FCC PART 22H, PART 24E

FCC PART 27

MEASUREMENT AND TEST REPORT

For

DT Research Inc.

6F., NO.1, Ning-Po E. Street, Taipei 100, Taiwan

FCC ID: YE3800D
Model: DT311

Report Type:	**Product Type:**
Original Report	Mobile Tablet

Test Engineer:	Dean Liu
Report Number:	RDG150615001-00C
Report Date:	2015-07-01
Reviewed By:	Sula Huang RF Leader
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

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan). This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *DT Research Inc.*'s product, model number: *DT311 (FCC ID: YE3800D)* (the "EUT") in this report was a *Mobile Tablet*, which was measured approximately: 31.5 cm (L) x 21.2 cm (W) x 4.2 cm (H), rated input voltage: DC 7.2V rechargeable Li-ion battery or DC19V charging from adapter. The device used SIERRA WIRELESS^{TM}`s MC7355 module, FCC ID: N7NMC7355, which support CDMA2000(850/1900 band) 1xRTT and EVDO Rav.A and LTE band 4/band 13, all of the other functions eg.GSM,GRPS,EDGE, WCDMA R99,HSPA,HSPA+ and other band were disabled by software.

Adapter information:
Model: A11-065N1A
Input: 100-240V~50/60Hz, 1.7A
Output: 19V, 3.42A

All measurement and test data in this report was gathered from production sample serial number: 150615001 (Assigned by BACL, Dongguan). The EUT was received on 2015-06-15.

Objective

This report is prepared on behalf of *DT Research Inc.* in accordance with: Part 2-Subpart J, Part 22-Subpart H, Part 24-Subpart E and part 27 of the Federal Communications Commission's rules.

The objective is to determine compliance with FCC rules for output power, modulation characteristic, occupied bandwidth, spurious emissions at antenna terminal, spurious radiated emission, frequency stability and band edge.

Related Submittal(s)/Grant(s)

FCC Part 15B JBP, 15C DSS, DTS, and 15E NII submissions with FCC ID: YE3800D.

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 J as well as the following parts:

Part 22 Subpart H - Public Mobile Services
Part 24 Subpart E - Personal Communication Services
Part 27 – Miscellaneous wireless communications services

Applicable Standards: TIA/EIA 603-D-2010.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp.(Dongguan).

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.

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SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to TIA/EIA-603-D-2010.

The test items were performed with the EUT operating at testing mode.

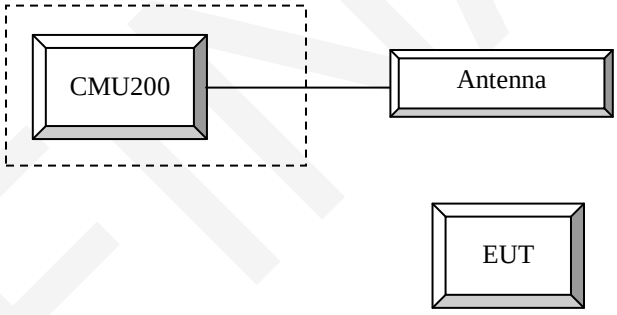
Equipment Modifications

No modification was made to the EUT.

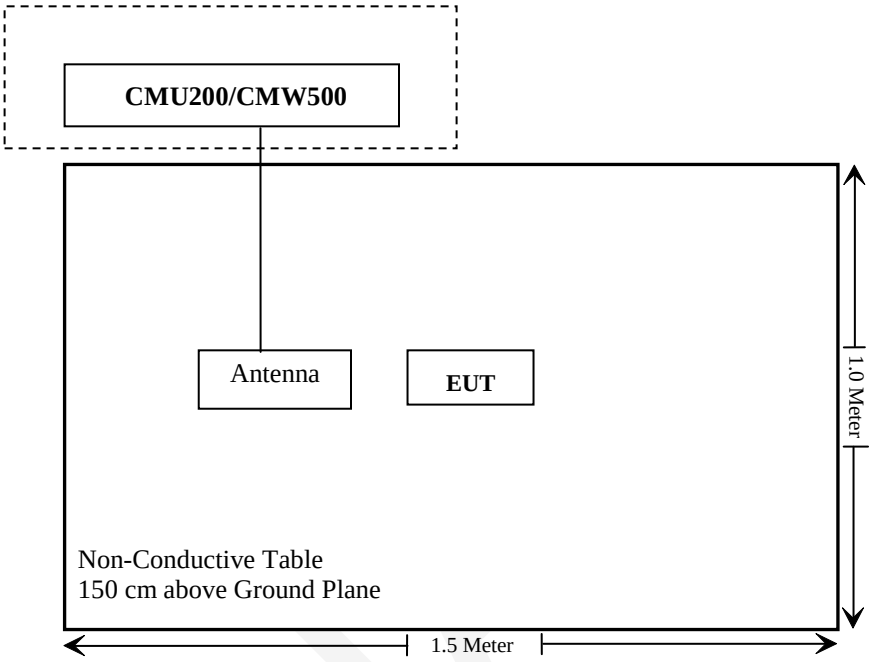
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Universal Radio Communication Tester	CMU200	109038
R&S	Wideband Radio Communication Tester	CMW500	106891
N/A	ANTENNA	N/A	N/A

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310, §2.1093	RF Exposure	Compliance
§2.1046; §22.913 (a); §24.232 (c); §27.50	RF Output Power	Compliance
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905 § 22.917; § 24.238; §27.53	Occupied Bandwidth	Compliance
§ 2.1051, § 22.917 (a); § 24.238 (a); §27.53	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053 § 22.917 (a); § 24.238 (a); §27.53	Field Strength of Spurious Radiation	Compliance
§ 22.917 (a); § 24.238 (a); §27.53	Out of band emission, Band Edge	Compliance
§ 2.1055 § 22.355; § 24.235; §27.54	Frequency stability vs. temperature Frequency stability vs. voltage	Compliance

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FCC §1.1310 & §2.1093- RF EXPOSURE

Applicable Standard

FCC §1.1310 and §2.1093.

Test Result

Compliant, please refer to the SAR report: RDG150615001-20 and RDG150615001-20A.

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FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC §2.1047(d), Part 22H & 24E, Part 27 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

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FCC §2.1046, §22.913 (a) & §24.232 (c) & §27.50 - RF OUTPUT POWER

Applicable Standard

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (C), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications..

According to FCC §2.1046 and §27.50 (d), (4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

According to §24.232 (d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

Test Procedure

CDMA 1x RTT

Maximum output power is verified on the high, middle and low channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. Steps 3 and 4 are measured using Loopback Service Option SO55 with power control bits in “All Up” condition. Step 10 is measured using TDSO/SO32 with power control bits in the “Bits Hold” condition (i.e. alternative Up/Down Bits).

Table 4.4.5.2-1. Test Parameters for Maximum RF Output Power with a Single Traffic Code Channel, Spreading Rate 1

Parameter	Units	Value
$\hat{I}_{or}$	dBm/1.23 MHz	-104
$\frac{\text{Pilot } E_c}{I_{or}}$	dB	-7
Traffic E_c	dB	-7.4

Table 4.4.5.2-2. Test Parameters for Maximum RF Output Power with Multiple Traffic Code Channels, Spreading Rate 1

Parameter	Units	Value
$\frac{\text{Pilot } E_c}{I_{or}}$	dB	-7
$\frac{\text{Traffic } E_c}{I_{or}}$	dB	-7.4

EVDO

Maximum output power is verified on the high, middle and low channels according to procedures in section 3.1.2.3.4 of 3GPP2 C.S0033-0/TIA-866 for Rev. 0, section 4.3.4 of 3GPP2 C.S0033-A for Rev. A.

Maximum output power is measured for Rev. 0 and Rev. A in Subtype 0/1 and Subtype 2 Physical Layer configurations, respectively.

LTE:

The following tests were conducted according to the test requirements in 3GPP TS36.101

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS_01".

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4,10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10,15,20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3 6.6.3.3.2	13	10	Table 6.2.4-2	Table 6.2.4-2
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23[1]	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.

Radiated method:

ANSI/TIA 603-D section 2.2.17

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2015-05-09	2016-05-09
Sunol Sciences	Antenna	JB3	A060611-3	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2014-09-01	2015-09-01
R&S	Spectrum Analyzer	FSEM	DE31388	2015-05-09	2016-05-09
ETS LINDGREN	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2015-02-19	2016-02-19
Giga	Signal Generator	1026	320408	2015-05-09	2016-05-09
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
TDK RF	Horn Antenna	HRN-0118	130 084	2012-09-06	2015-09-06

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

Test Data

Environmental Conditions

Temperature:	25.3-26.1 °C
Relative Humidity:	53-57 %
ATM Pressure:	99.7~100.3 kPa

The testing was performed by Dean Liu from 2015-06-22 to 2015-06-30.

Conducted Output Power:

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CDMA 1x RTT

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)			
			RC1+SO55	RC3+SO55	RC3+SO32 (FCH)	RC3+SO32 (SCH)
BC0	1013	824.7	23.45	23.61	23.52	23.04
	283	833.49	23.52	23.52	23.54	23.44
	777	848.31	23.45	23.71	23.48	23.52
BC1	25	1851.25	22.87	22.64	22.70	22.71
	600	1880	22.75	22.75	22.68	22.59
	1175	1908.75	22.73	22.61	22.59	22.61

EVDO

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)	
			RTAP 153.6kbps Subtype 0	RETAP 4096pbs Subtype 2
BC0	1013	824.7	23.47	23.56
	283	833.49	23.52	23.50
	777	848.31	23.49	23.48
BC1	25	1851.25	22.82	22.55
	600	1880	22.75	22.39
	1175	1908.75	22.68	22.46

LTE Band 4

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4 MHz	QPSK	1#0	22.33	22.34	22.35
		1#3	22.33	22.31	22.32
		1#5	22.28	22.29	22.27
		3#0	22.23	22.21	22.26
		3#1	22.17	22.20	22.18
		3#3	22.22	22.19	22.24
		6#0	21.27	21.29	21.27
	16QAM	1#0	21.05	21.03	21.10
		1#3	21.02	21.01	20.99
		1#5	21.03	21.01	21.02
		3#0	21.10	21.08	21.09
		3#1	21.04	21.07	21.06
		3#3	21.03	21.06	21.00
		6#0	20.26	20.26	20.22
3 MHz	QPSK	1#0	22.22	22.24	22.26
		1#7	22.25	22.26	22.23
		1#14	22.29	22.25	22.28
		8#0	21.26	21.26	21.25
		8#4	21.25	21.25	21.27
		8#7	21.23	21.24	21.20
		15#0	21.25	21.23	21.21
	16QAM	1#0	21.46	21.46	21.44
		1#7	21.47	21.44	21.50
		1#14	21.42	21.43	21.46
		8#0	20.21	20.18	20.25
		8#4	20.18	20.19	20.18
		8#7	20.19	20.20	20.22
		15#0	20.33	20.30	20.36
5 MHz	QPSK	1#0	22.34	22.33	22.30
		1#12	22.30	22.30	22.34
		1#24	22.26	22.26	22.28
		12#0	21.22	21.23	21.22
		12#6	21.24	21.28	21.23
		12#11	21.33	21.29	21.33
		25#0	21.21	21.19	21.23
	16QAM	1#0	21.11	21.14	21.14
		1#12	21.14	21.15	21.12
		1#24	21.12	21.14	21.12
		12#0	20.29	20.29	20.30
		12#6	20.27	20.27	20.25
		12#11	20.25	20.24	20.21
		25#0	20.15	20.18	20.11

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10 MHz	QPSK	1#0	22.26	22.25	22.23
		1#24	22.24	22.23	22.23
		1#49	22.22	22.24	22.20
		25#0	21.18	21.18	21.18
		25#12	21.17	21.16	21.18
		25#24	21.15	21.14	21.12
		50#0	21.13	21.10	21.13
	16QAM	1#0	21.39	21.41	21.40
		1#24	21.45	21.45	21.46
		1#49	21.46	21.46	21.45
		25#0	20.22	20.25	20.24
		25#12	20.20	20.21	20.18
		25#24	20.22	20.22	20.21
		50#0	20.06	20.03	20.04
15 MHz	QPSK	1#0	22.28	22.31	22.24
		1#37	22.36	22.36	22.36
		1#74	22.34	22.33	22.35
		36#0	21.06	21.08	21.05
		36#17	21.05	21.09	21.05
		36#35	21.08	21.07	21.07
		75#0	21.01	21.03	21.01
	16QAM	1#0	21.54	21.55	21.54
		1#37	21.54	21.58	21.55
		1#74	21.58	21.59	21.60
		36#0	20.34	20.34	20.31
		36#17	20.33	20.33	20.36
		36#35	20.35	20.36	20.34
		75#0	19.98	20.01	20.00
20 MHz	QPSK	1#0	22.23	22.22	22.21
		1#49	22.20	22.20	22.23
		1#99	22.23	22.19	22.20
		50#0	21.16	21.14	21.17
		50#24	21.11	21.12	21.09
		50#49	21.13	21.13	21.14
		100#0	21.09	21.08	21.12
	16QAM	1#0	21.76	21.76	21.77
		1#49	21.71	21.72	21.68
		1#99	21.73	21.71	21.70
		50#0	20.22	20.22	20.22
		50#24	20.22	20.23	20.23
		50#49	20.19	20.19	20.19
		100#0	20.14	20.12	20.18

Band 13

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5 MHz	QPSK	1#0	22.13	22.44	22.42
		1#12	22.25	22.71	22.81
		1#24	22.33	22.52	22.43
		12#0	20.54	21.09	21.13
		12#6	21.37	21.52	21.64
		12#11	21.29	21.43	21.39
		25#0	20.96	21.46	20.88
	16QAM	1#0	20.70	21.28	21.57
		1#12	20.89	21.53	21.30
		1#24	21.34	21.49	21.42
		12#0	20.31	20.24	20.46
		12#6	20.41	20.38	20.37
		12#11	20.15	20.33	20.22
		25#0	20.12	20.26	20.28
10 MHz	QPSK	1#0	\	22.05	\
		1#24	\	22.48	\
		1#49	\	22.17	\
		25#0	\	21.26	\
		25#12	\	21.32	\
		25#24	\	21.25	\
		50#0	\	21.23	\
	16QAM	1#0	\	20.71	\
		1#24	\	21.11	\
		1#49	\	22.06	\
		25#0	\	20.33	\
		25#12	\	20.29	\
		25#24	\	20.28	\
		50#0	\	20.24	\

Peak-to-average ratio (PAR):

CDMA2000:

Frequency Band	Test Mode	Test Status	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limits (dB)
BC0	1x RTT	RC1+SO55	4.16	4.2	4.2	13
	1xEVDO Rev. 0	RTAP 153.6kbps	4.36	4.28	4.16	13
BC0	1x RTT	RC1+SO55	3.76	3.16	3.36	13
	1xEVDO Rev. 0	RTAP 153.6kbps	3.76	3.12	3.40	13

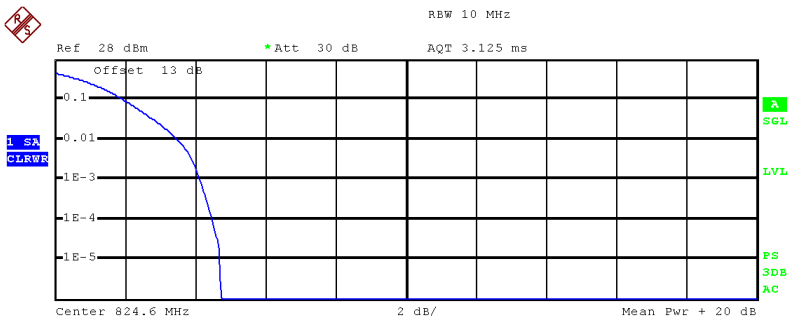
LTE:

Frequency Band	Test Modulation		Channel Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limits (dB)
Band 4	QPSK	1 RB	20 MHz	4.52	5.44	5.84	13
		100 RB		7.92	8.12	8.04	13
	16QAM	1 RB	20 MHz	4.84	3.84	5.36	13
		100 RB		6.80	6.80	6.84	13
Band 13	QPSK	1 RB	20 MHz	/	4.60	/	13
		100 RB		/	5.60	/	13
	16QAM	1 RB	20 MHz	/	4.52	/	13
		100 RB		/	5.52	/	13

Note: peak-to-average ratio (PAR) <13 dB.

Peak-to-average ratio (PAR)

BC0 Low Channel: 1x RTT

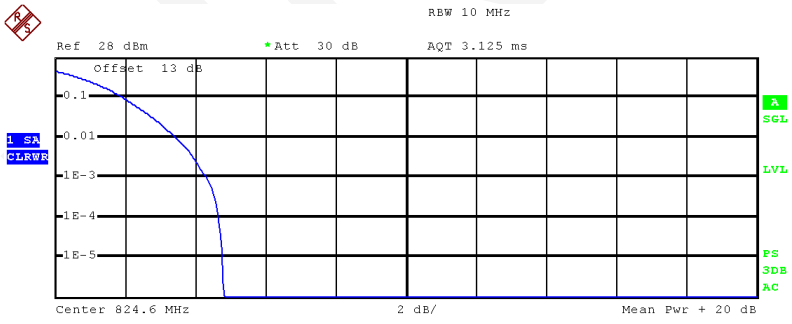


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.32 dBm
Peak	26.03 dBm
Crest	4.72 dB
10 %	2.00 dB
1 %	3.48 dB
.1 %	4.16 dB
.01 %	4.48 dB

Date: 30.JUN.2015 13:58:50

BC0 Low Channel: 1xEVDO Rev. 0

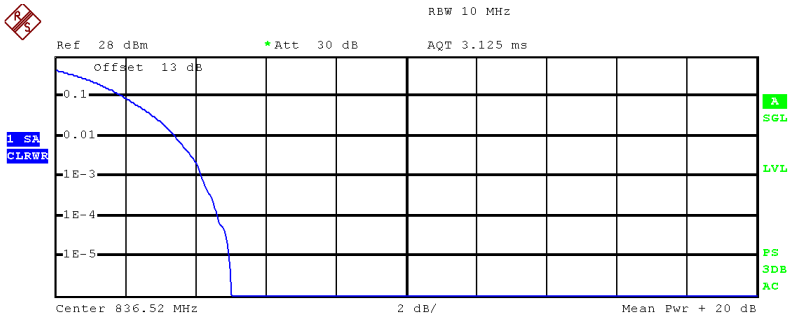


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.31 dBm
Peak	26.10 dBm
Crest	4.80 dB
10 %	2.00 dB
1 %	3.48 dB
.1 %	4.36 dB
.01 %	4.68 dB

Date: 30.JUN.2015 13:59:16

BC0 Middle Channel: 1x RTT



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.29 dBm
Peak	26.32 dBm
Crest	5.03 dB
10 %	2.00 dB
1 %	3.44 dB
.1 %	4.20 dB
.01 %	4.64 dB

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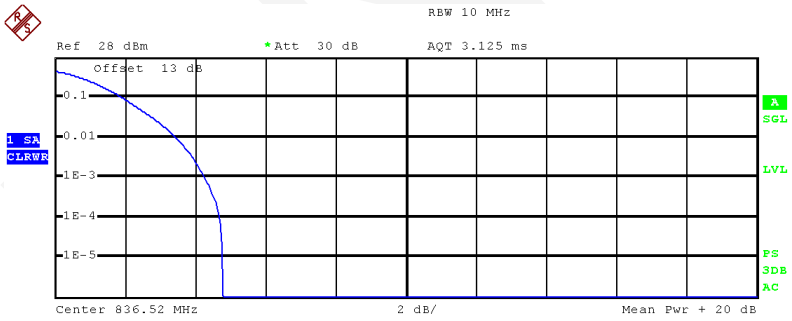
BC0 Middle Channel: 1xEVDO Rev. 0

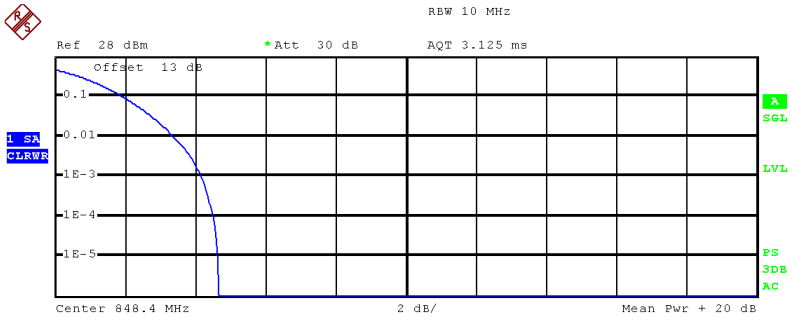


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.26 dBm
Peak	26.03 dBm
Crest	4.77 dB
10 %	1.96 dB
1 %	3.44 dB
.1 %	4.28 dB
.01 %	4.72 dB

Date: 30.JUN.2015 13:51:00

BC0 High Channel: 1x RTT

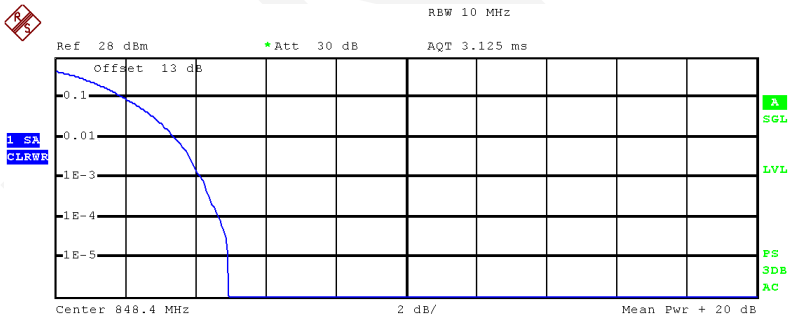


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.01 dBm
Peak	25.68 dBm
Crest	4.67 dB
10 %	1.96 dB
1 %	3.40 dB
.1 %	4.20 dB
.01 %	4.52 dB

Date: 30.JUN.2015 13:52:17

BC0 High Channel: 1xEVDO Rev. 0

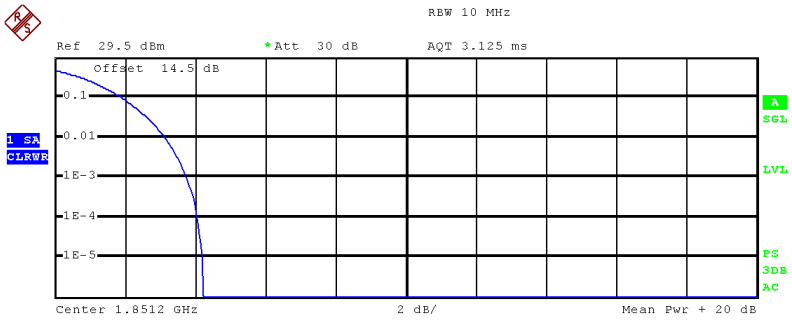


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.01 dBm
Peak	25.96 dBm
Crest	4.95 dB
10 %	2.00 dB
1 %	3.44 dB
.1 %	4.16 dB
.01 %	4.68 dB

Date: 30.JUN.2015 13:59:37

BC1 Low Channel: 1x RTT

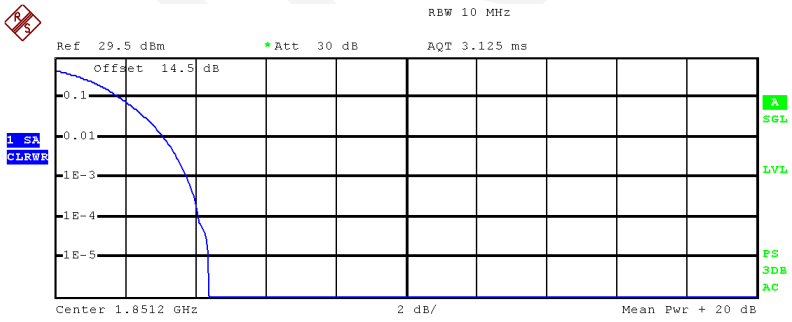


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.83 dBm
Peak	25.06 dBm
Crest	4.23 dB
10 %	1.92 dB
1 %	3.16 dB
.1 %	3.76 dB
.01 %	4.04 dB

Date: 30.JUN.2015 14:08:18

BC1 Low Channel: 1xEVDO Rev. 0

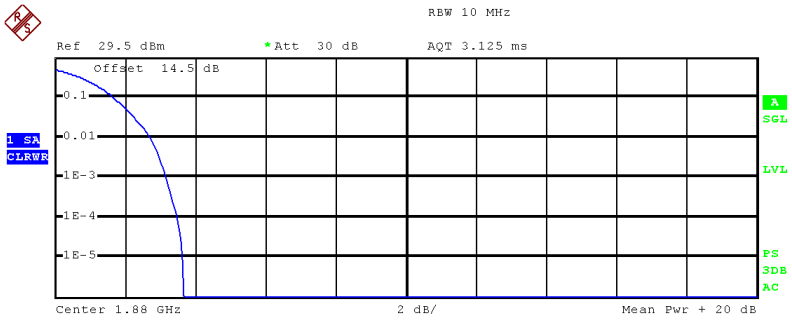


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.82 dBm
Peak	25.21 dBm
Crest	4.39 dB
10 %	1.88 dB
1 %	3.12 dB
.1 %	3.76 dB
.01 %	4.12 dB

Date: 30.JUN.2015 14:08:56

BC1 Low Channel: 1x RTT

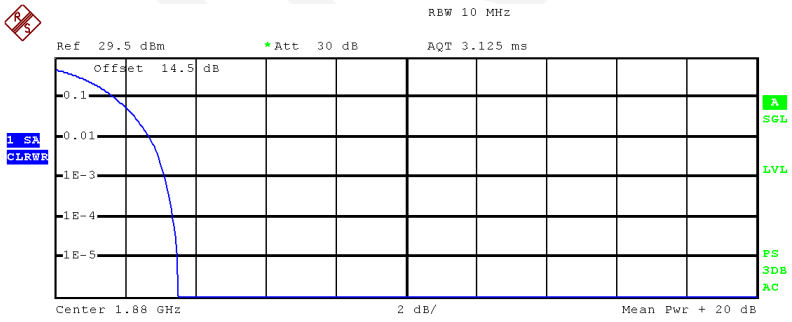


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.13 dBm
Peak	24.78 dBm
Crest	3.65 dB
10 %	1.68 dB
1 %	2.72 dB
.1 %	3.16 dB
.01 %	3.48 dB

Date: 30.JUN.2015 14:00:30

BC1 Low Channel: 1xEVDO Rev. 0

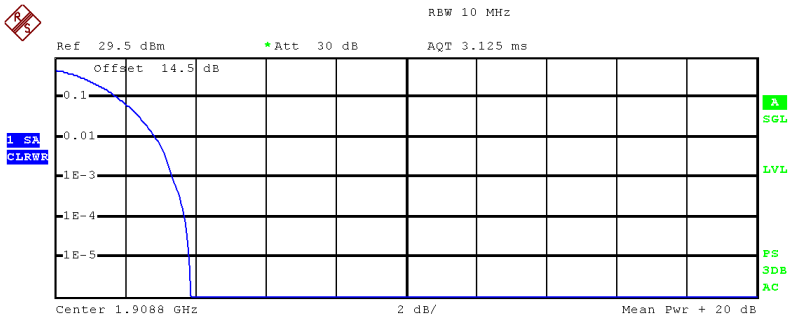


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.15 dBm
Peak	24.64 dBm
Crest	3.50 dB
10 %	1.72 dB
1 %	2.72 dB
.1 %	3.12 dB
.01 %	3.36 dB

Date: 30.JUN.2015 14:00:40

BC1 High Channel: 1x RTT

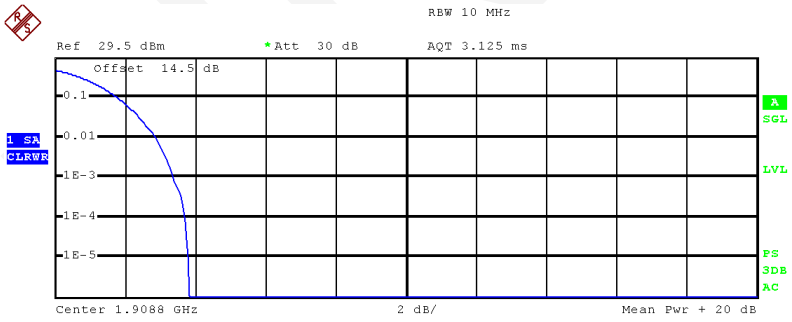


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.54 dBm
Peak	25.42 dBm
Crest	3.88 dB
10 %	1.80 dB
1 %	2.88 dB
.1 %	3.36 dB
.01 %	3.72 dB

Date: 30.JUN.2015 14:10:19

BC1 High Channel: 1xEVDO Rev. 0



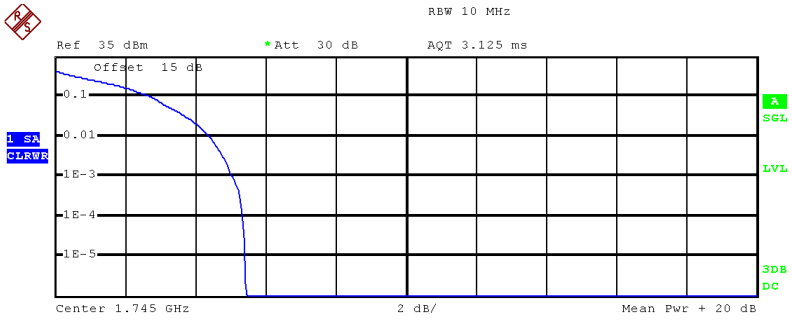
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.46 dBm
Peak	25.28 dBm
Crest	3.82 dB
10 %	1.80 dB
1 %	2.88 dB
.1 %	3.40 dB
.01 %	3.72 dB

Date: 30.JUN.2015 14:10:42

LTE Band 4 (PART 27)

QPSK_20MHz_1RB_Low Channel

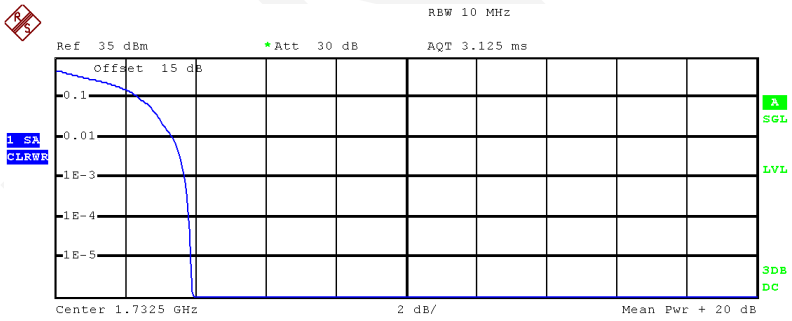


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.04 dBm
Peak	26.47 dBm
Crest	5.43 dB
10 %	2.80 dB
1 %	4.40 dB
.1 %	5.08 dB
.01 %	5.36 dB

Date: 24.JUN.2015 09:31:01

QPSK_20MHz_1RB Middle Channel

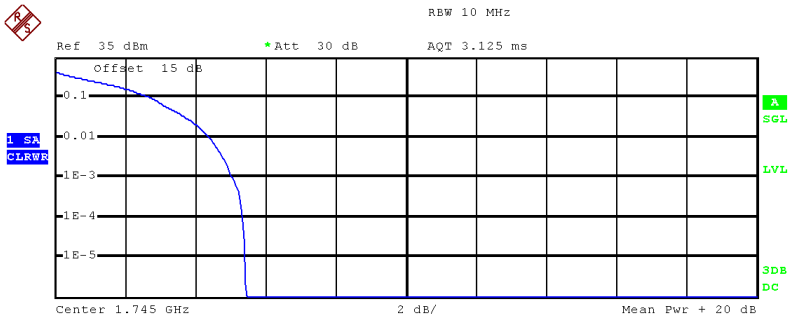


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.63 dBm
Peak	25.56 dBm
Crest	3.92 dB
10 %	2.40 dB
1 %	3.36 dB
.1 %	3.72 dB
.01 %	3.84 dB

Date: 24.JUN.2015 09:29:31

QPSK_20MHz_1RB High Channel

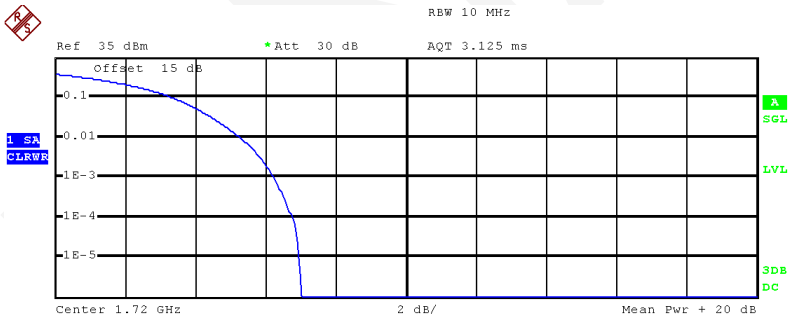


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.04 dBm
Peak	26.47 dBm
Crest	5.43 dB
10 %	2.80 dB
1 %	4.40 dB
.1 %	5.08 dB
.01 %	5.36 dB

Date: 24.JUN.2015 09:31:01

QPSK_20MHz_FULL RB Low Channel

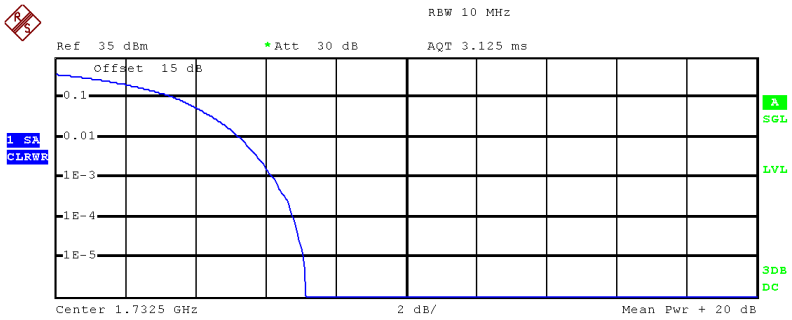


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.69 dBm
Peak	24.71 dBm
Crest	7.01 dB
10 %	3.44 dB
1 %	5.32 dB
.1 %	6.24 dB
.01 %	6.80 dB

Date: 24.JUN.2015 09:23:48

QPSK_20MHz_FULL RB Middle Channel

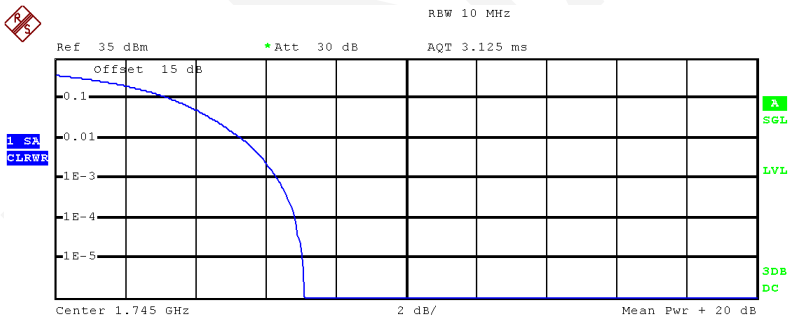


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.55 dBm
Peak	24.90 dBm
Crest	7.15 dB
10 %	3.48 dB
1 %	5.28 dB
.1 %	6.24 dB
.01 %	6.80 dB

Date: 24.JUN.2015 09:28:57

QPSK 20MHz_FULL RB High Channel

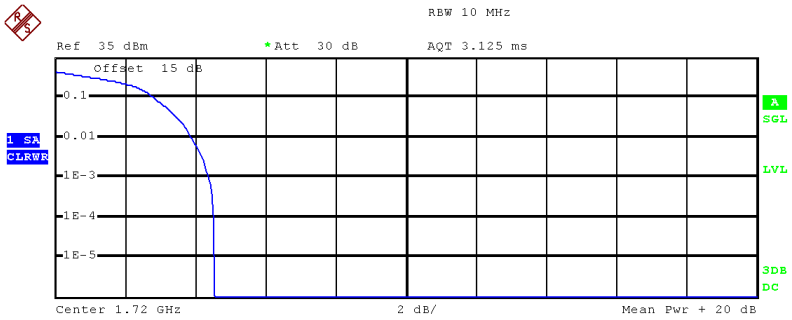


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.68 dBm
Peak	24.79 dBm
Crest	7.11 dB
10 %	3.36 dB
1 %	5.36 dB
.1 %	6.36 dB
.01 %	6.84 dB

Date: 24.JUN.2015 09:31:23

16QAM_20MHz_1RB_Low Channel

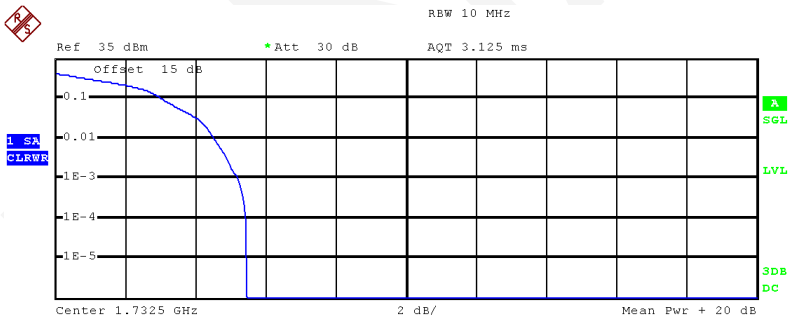


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.53 dBm
Peak	25.06 dBm
Crest	4.53 dB
10 %	2.84 dB
1 %	3.92 dB
.1 %	4.40 dB
.01 %	4.52 dB

Date: 24.JUN.2015 09:14:19

16QAM 20MHz_1RB Middle Channel

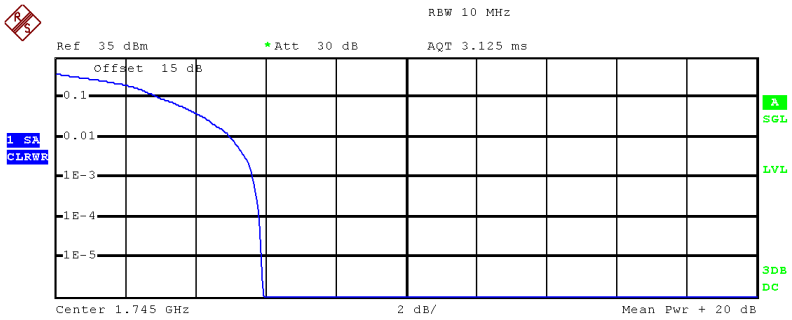


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.02 dBm
Peak	25.49 dBm
Crest	5.46 dB
10 %	3.08 dB
1 %	4.56 dB
.1 %	5.24 dB
.01 %	5.44 dB

Date: 24.JUN.2015 09:29:48

16QAM 20MHz_1RB High Channel

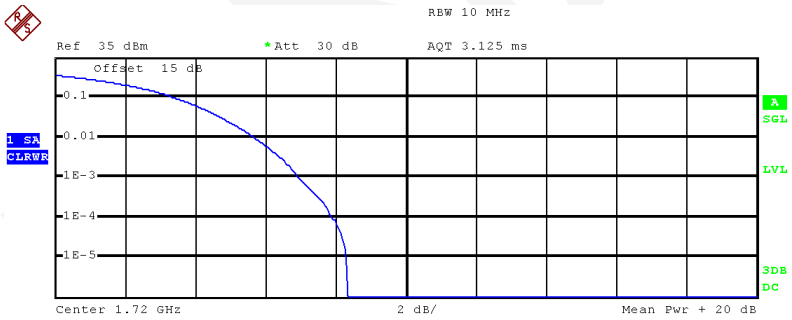


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.34 dBm
Peak	26.26 dBm
Crest	5.92 dB
10 %	3.04 dB
1 %	5.04 dB
.1 %	5.64 dB
.01 %	5.84 dB

Date: 24.JUN.2015 09:30:42

16QAM 20MHz_FULL RB Low Channel

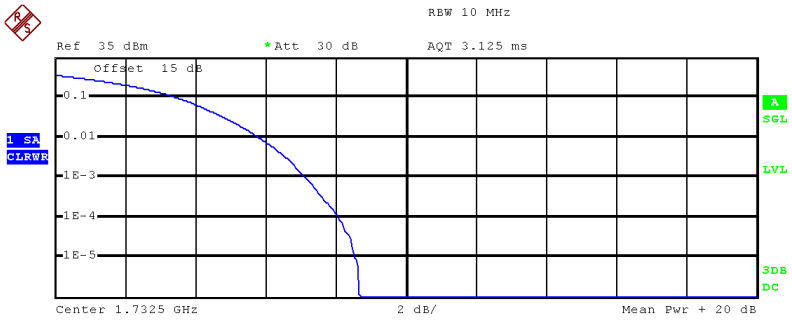


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	19.66 dBm
Peak	24.99 dBm
Crest	8.33 dB
10 %	3.48 dB
1 %	5.72 dB
.1 %	6.96 dB
.01 %	7.92 dB

Date: 24.JUN.2015 09:25:47

16QAM 20MHz_FULL RB Middle Channel

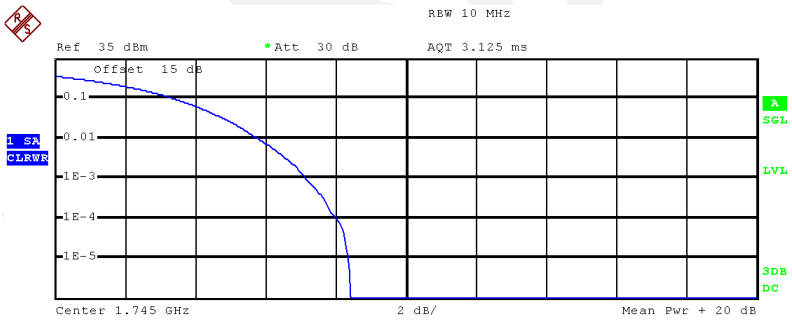


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	19.54 dBm
Peak	24.22 dBm
Crest	8.67 dB
10 %	3.56 dB
1 %	5.84 dB
.1 %	7.16 dB
.01 %	8.12 dB

Date: 24.JUN.2015 09:28:30

16QAM 20MHz_FULL RB High Channel



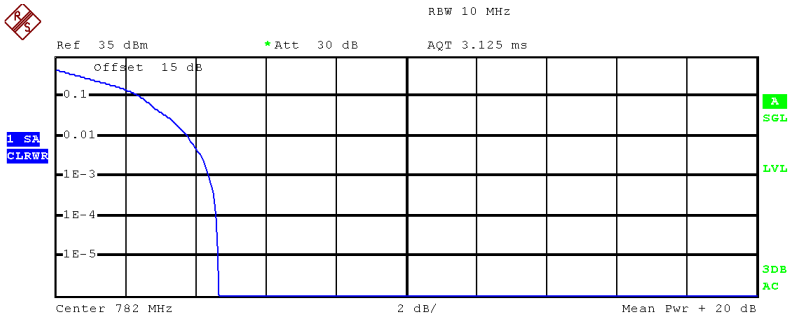
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	19.58 dBm
Peak	24.90 dBm
Crest	8.42 dB
10 %	3.48 dB
1 %	5.84 dB
.1 %	7.16 dB
.01 %	8.04 dB

Date: 24.JUN.2015 09:31:41

LTE Band 13(PART 27)

QPSK_20MHz_1RB Middle Channel

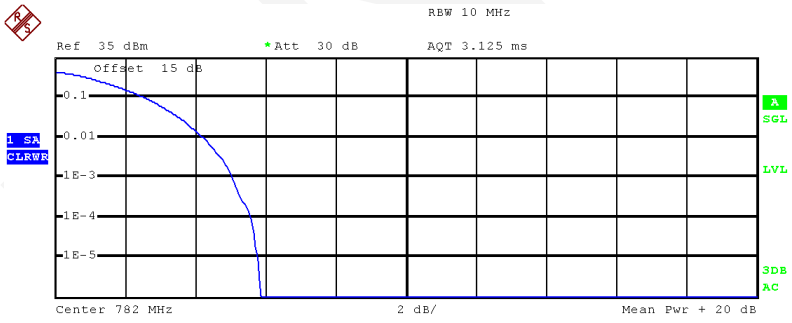


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.97 dBm
Peak	26.61 dBm
Crest	4.64 dB
10 %	2.44 dB
1 %	3.80 dB
.1 %	4.40 dB
.01 %	4.60 dB

Date: 22.JUN.2015 18:07:04

QPSK_20MHz_FULL RB Middle Channel

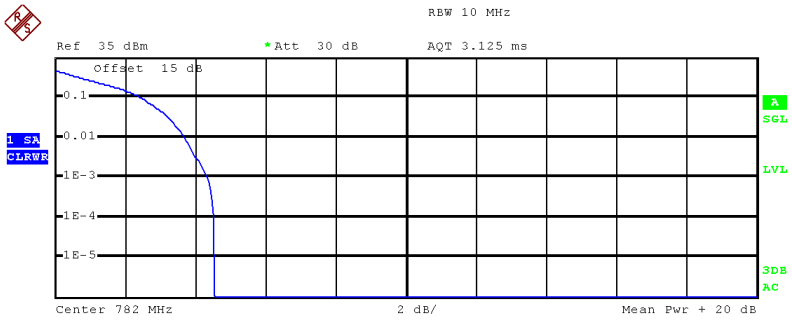


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.48 dBm
Peak	26.33 dBm
Crest	5.85 dB
10 %	2.64 dB
1 %	4.24 dB
.1 %	5.08 dB
.01 %	5.60 dB

Date: 22.JUN.2015 18:08:01

16QAM 20MHz_1RB Middle Channel

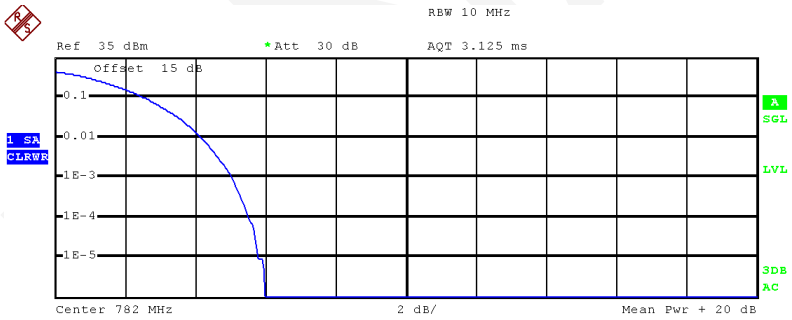


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.93 dBm
Peak	26.47 dBm
Crest	4.54 dB
10 %	2.48 dB
1 %	3.72 dB
.1 %	4.36 dB
.01 %	4.52 dB

Date: 22.JUN.2015 18:07:29

16QAM 20MHz_FULL RB Middle Channel



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.13 dBm
Peak	26.12 dBm
Crest	5.99 dB
10 %	2.60 dB
1 %	4.20 dB
.1 %	5.08 dB
.01 %	5.52 dB

Date: 22.JUN.2015 18:07:51

ERP & EIRP

CDMA 2000:

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)			
BC0 1xRTT RC1+SO55 Middle Channel (836.52MHz)								
836.520	H	95.49	20.6	0.0	1	19.6	38.5	18.9
836.520	V	94.80	23	0.0	1	22.0	38.5	16.5
BC0 1xEvDO RTAP 153.6kbps Middle Channel (836.52MHz)								
836.520	H	96.14	21.2	0.0	1	20.2	38.5	18.3
836.520	V	95.35	23.6	0.0	1	22.6	38.5	15.9
BC1 1xRTT RC1+SO55 Middle Channel(1880MHz)								
1880.000	H	85.33	13.7	11.7	1.4	24.0	33.0	9.0
1880.000	V	81.02	9.6	11.7	1.4	19.9	33.0	13.1
BC1 1xEvDO RTAP 153.6kbps Middle Channel (1880MHz)								
1880.000	H	84.86	13.3	11.7	1.4	23.6	33.0	9.4
1880.000	V	81.71	10.3	11.7	1.4	20.6	33.0	12.4

LTE Band 13

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)			
QPSK 5MHz Bandwidth Middle Channel (782MHz)								
782.000	H	95.03	19.5	0.0	0.9	18.6	30.0	11.4
782.000	V	93.98	21.4	0.0	0.9	20.5	30.0	9.5
QPSK 10MHz Bandwidth Middle Channel(782MHz)								
782.000	H	95.11	19.6	0.0	0.9	18.7	30.0	11.3
782.000	V	93.86	21.3	0.0	0.9	20.4	30.0	9.6
16QAM 5MHz Bandwidth Middle Channel (782MHz)								
782.000	H	94.88	19.3	0.0	0.9	18.4	30.0	11.6
782.000	V	93.42	20.8	0.0	0.9	19.9	30.0	10.1
16QAM 10MHz Bandwidth Middle Channel (782MHz)								
782.000	H	94.59	19.1	0.0	0.9	18.2	30.0	11.8
782.000	V	93.29	20.7	0.0	0.9	19.8	30.0	10.2

LTE Band 4

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)			
QPSK 1.4MHz Bandwidth Middle Channel (1732.5MHz)								
1732.500	H	85.27	12.3	10.9	1.5	21.7	30.0	8.3
1732.500	V	85.94	12.6	10.9	1.5	22.0	30.0	8.0
QPSK 3Hz Bandwidth Middle Channel (1732.5MHz)								
1732.500	H	85.12	12.1	10.9	1.5	21.5	30.0	8.5
1732.500	V	85.87	12.5	10.9	1.5	21.9	30.0	8.1
QPSK 5MHz Bandwidth Middle Channel (1732.5MHz)								
1732.500	H	85.03	12	10.9	1.5	21.4	30.0	8.6
1732.500	V	85.61	12.3	10.9	1.5	21.7	30.0	8.3
QPSK 10MHz Bandwidth Middle Channel (1732.5MHz)								
1732.500	H	83.73	10.7	10.9	1.5	20.1	30.0	9.9
1732.500	V	85.14	11.8	10.9	1.5	21.2	30.0	8.8
QPSK 15MHz Bandwidth Middle Channel (1732.5MHz)								
1732.500	H	83.58	10.6	10.9	1.5	20.0	30.0	10.0
1732.500	V	84.74	11.4	10.9	1.5	20.8	30.0	9.2
QPSK 20MHz Bandwidth Middle Channel (1732.5MHz)								
1732.500	H	83.55	10.5	10.9	1.5	19.9	30.0	10.1
1732.500	V	84.36	11	10.9	1.5	20.4	30.0	9.6
16QAM 1.4MHz Bandwidth Middle Channel (1732.5MHz)								
1732.500	H	85.74	12.7	10.9	1.5	22.1	30.0	7.9
1732.500	V	86.95	13.6	10.9	1.5	23.0	30.0	7.0
16QAM 3Hz Bandwidth Middle Channel (1732.5MHz)								
1732.500	H	85.71	12.7	10.9	1.5	22.1	30.0	7.9
1732.500	V	86.92	13.6	10.9	1.5	23.0	30.0	7.0
16QAM 5MHz Bandwidth Middle Channel (1732.5MHz)								
1732.500	H	85.61	12.6	10.9	1.5	22.0	30.0	8.0
1732.500	V	86.86	13.5	10.9	1.5	22.9	30.0	7.1
16QAM 10MHz Bandwidth Middle Channel (1732.5MHz)								
1732.500	H	83.81	10.8	10.9	1.5	20.2	30.0	9.8
1732.500	V	84.95	11.6	10.9	1.5	21.0	30.0	9.0
16QAM 15MHz Bandwidth Middle Channel (1732.5MHz)								
1732.500	H	83.06	10.1	10.9	1.5	19.5	30.0	10.5
1732.500	V	84.32	11	10.9	1.5	20.4	30.0	9.6
16QAM 20MHz Bandwidth Middle Channel (1732.5MHz)								
1732.500	H	82.25	9.2	10.9	1.5	18.6	30.0	11.4
1732.500	V	83.69	10.4	10.9	1.5	19.8	30.0	10.2

FCC §2.1049, §22.917, §22.905 & §24.238 & §27.53- OCCUPIED BANDWIDTH

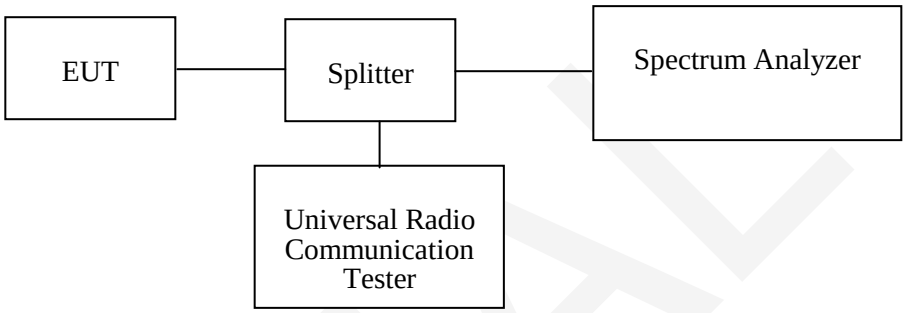
Applicable Standard

FCC §2.1049, §22.917, §22.905, §24.238 and §27.53.

Test Procedure

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The 26 dB & 99% bandwidth was recorded.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09

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

Test Data

Environmental Conditions

Temperature:	25.3-26.1 °C
Relative Humidity:	53-57 %
ATM Pressure:	99.7~100.3 kPa

The testing was performed by Dean Liu from 2015-06-22 to 2015-06-29.

Test Mode: Transmitting

Test Result: Compliant. Please refer to the following table and plots.

CDMA 2000:

Band	Channel	Configuration		99% Occupied Bandwidth	26 dB Bandwidth
				MHz	MHz
BC0	384	1xRTT	RC1+SO55	1.27	1.44
			RC3+SO55	1.27	1.44
		1xEvDO	RTAP 153.6kbps	1.27	1.44
BC1	600	1xRTT	RC1+SO55	1.28	1.45
			RC3+SO55	1.28	1.44
		1xEvDO	RTAP 153.6kbps	1.28	1.44

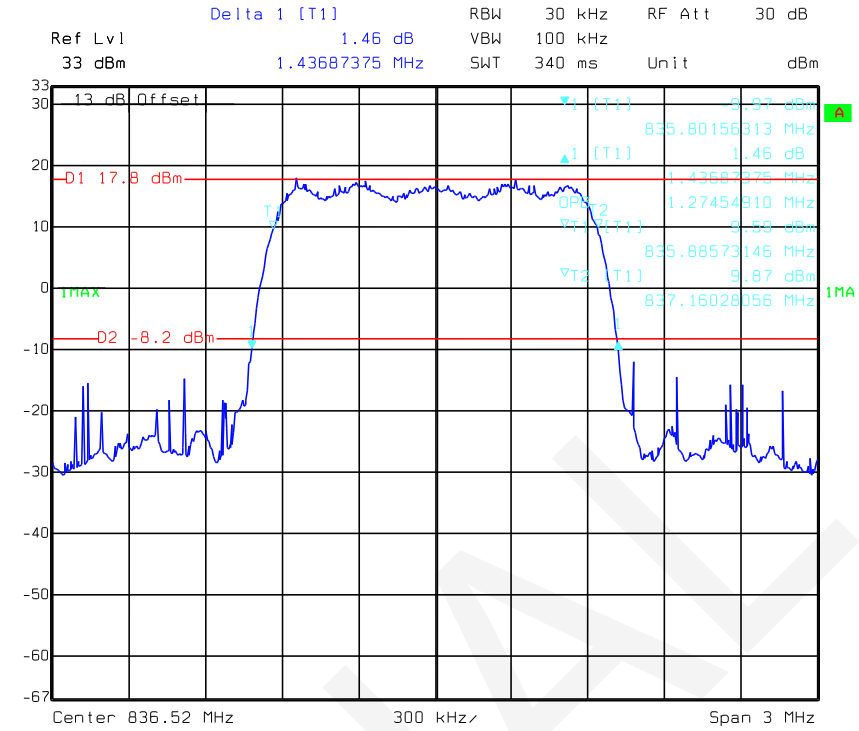
LTE Band 4:

Test Modulation	Test Bandwidth	Test Channel	99% Occupied Bandwidth	26 dB Bandwidth
			MHz	MHz
QPSK	1.4M	M	1.11	1.33
	3M		2.78	3.20
	5M		4.55	5.21
	10M		9.10	10.46
	15M		13.59	15.44
	20M		18.28	20.60
16-QAM	1.4M	M	1.12	1.33
	3M		2.77	3.25
	5M		4.55	5.23
	10M		9.10	10.42
	15M		13.59	15.15
	20M		18.28	20.20

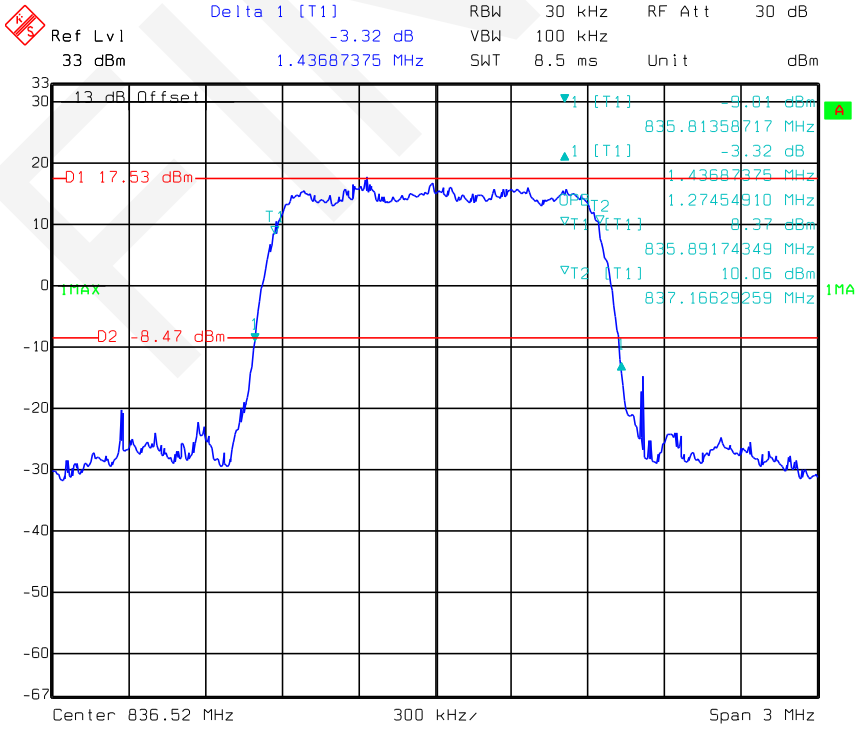
LTE Band 13:

Test Modulation	Test Bandwidth	Test Channel	99% Occupied Bandwidth	26 dB Bandwidth
			MHz	MHz
QPSK	5M	M	4.53	5.13
	10M		8.94	9.78
16QAM	5M		4.53	5.15
	10M		8.94	9.78

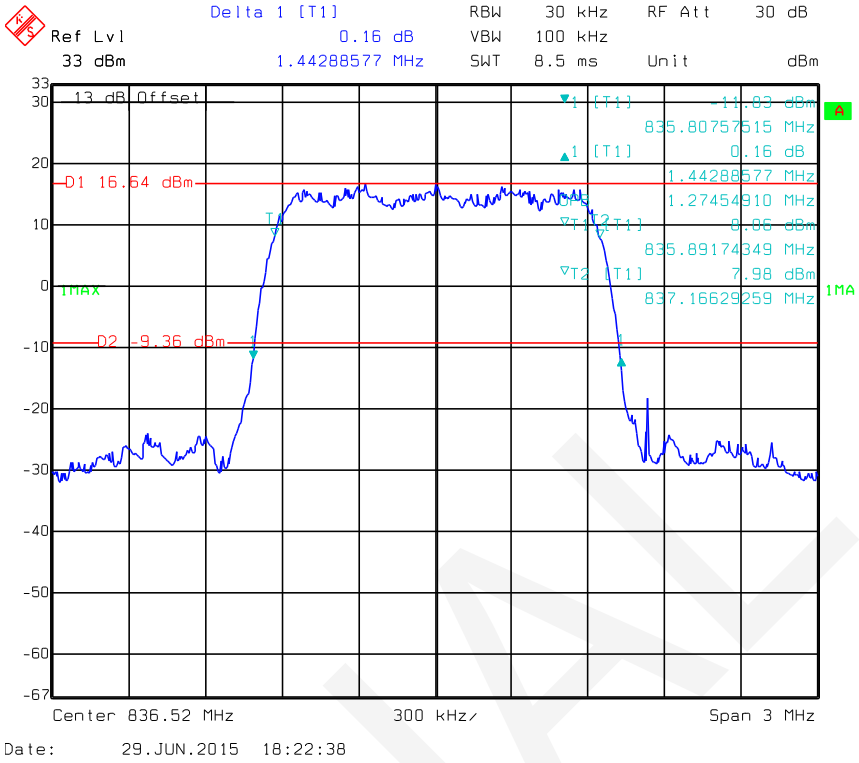
BC0- RC1+SO55



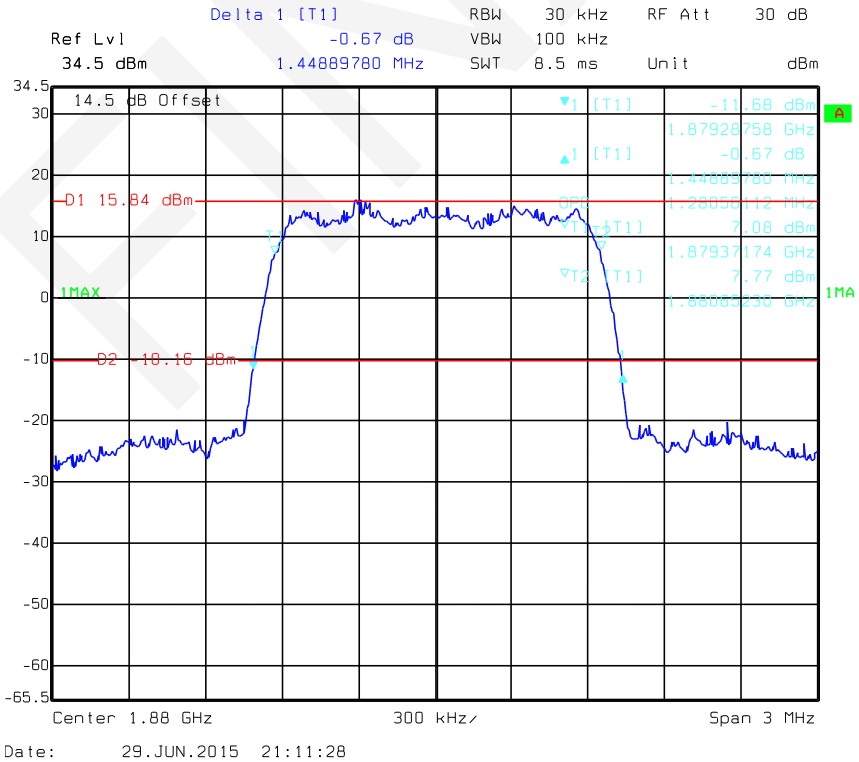
BC0- RC3+SO55



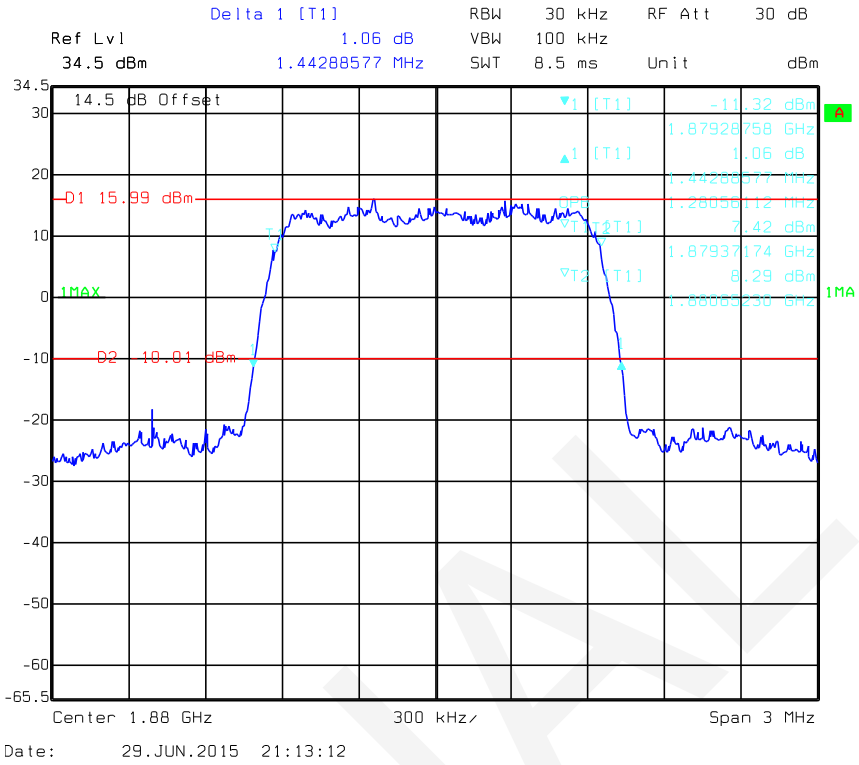
BC0- RTAP 153.6kbps



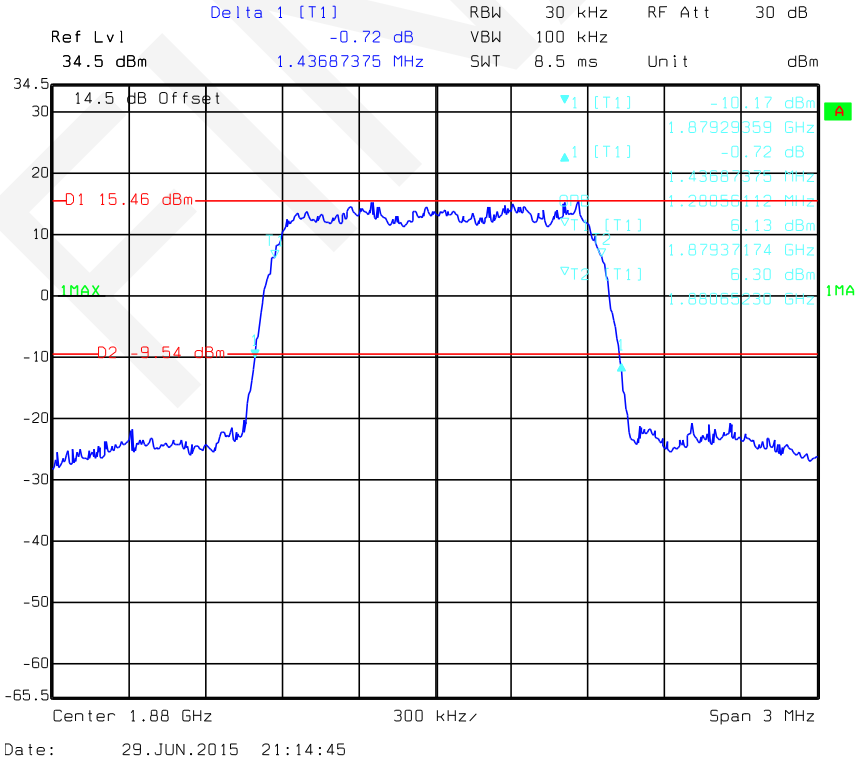
BC1- RC1+SO55



BC1- RC3+SO55

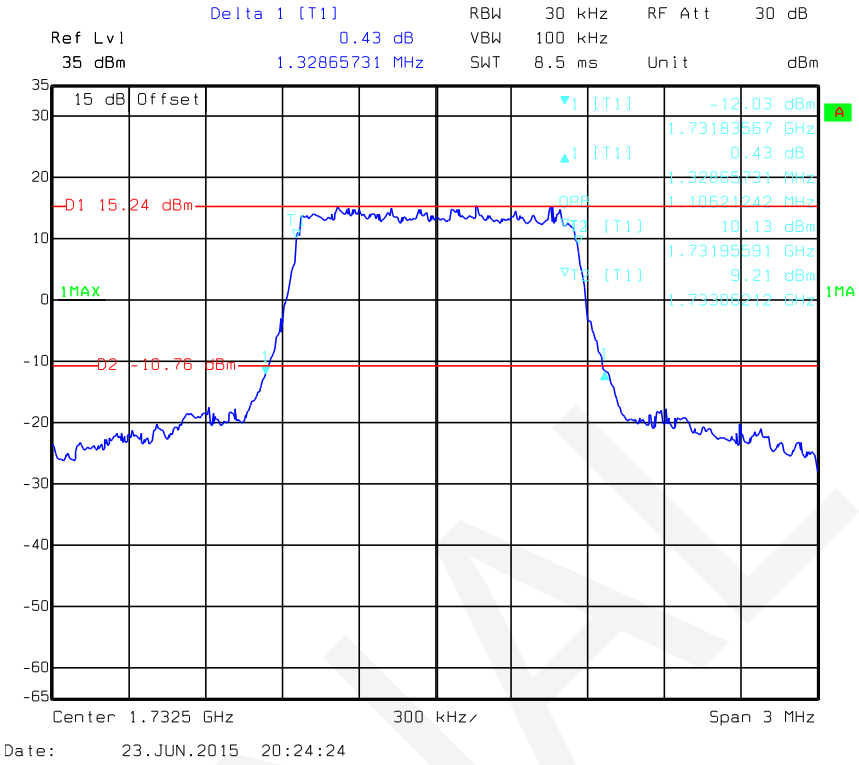


BC1- RTAP 153.6kbps

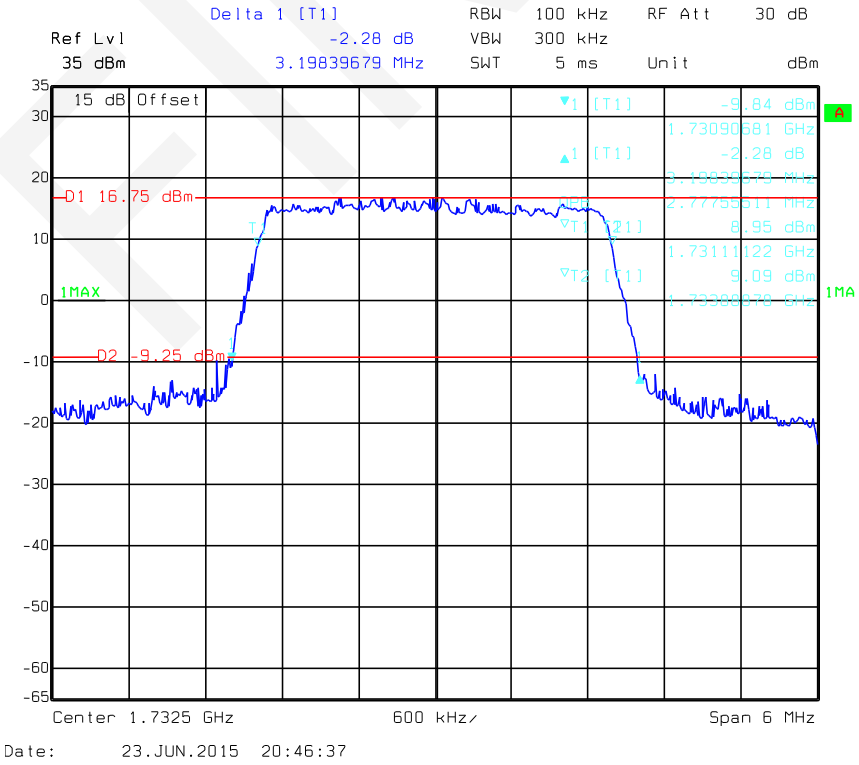


LTE Band 4

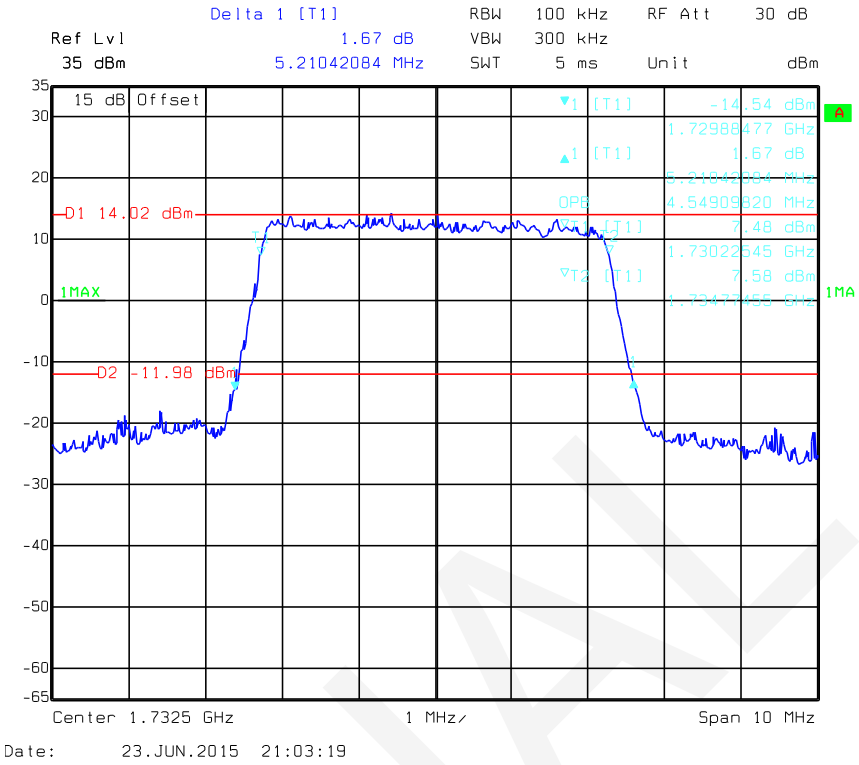
QPSK_1.4 MHz



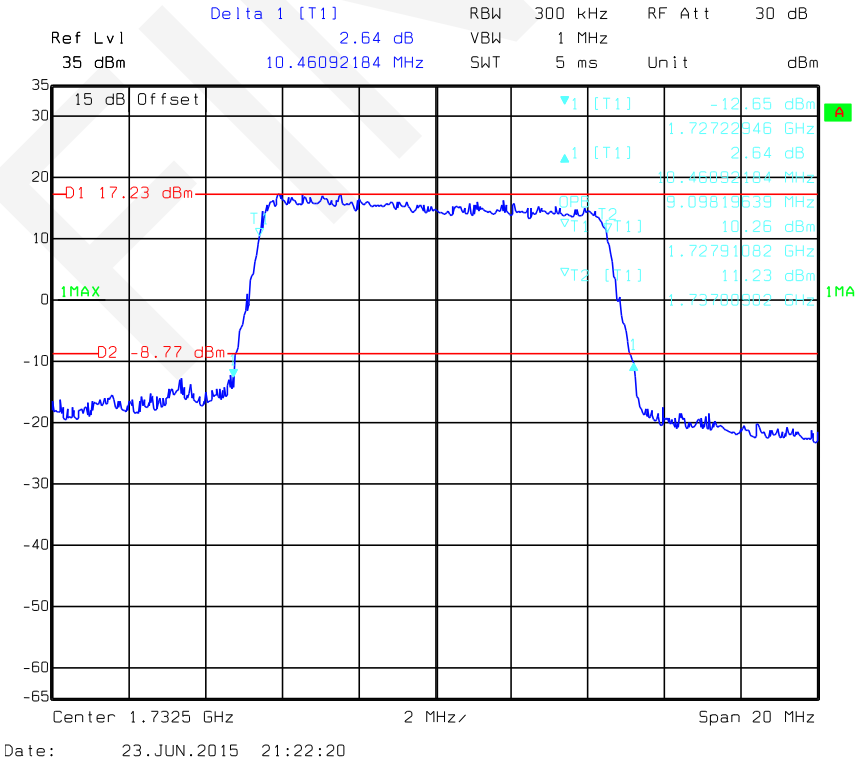
QPSK_3 MHz



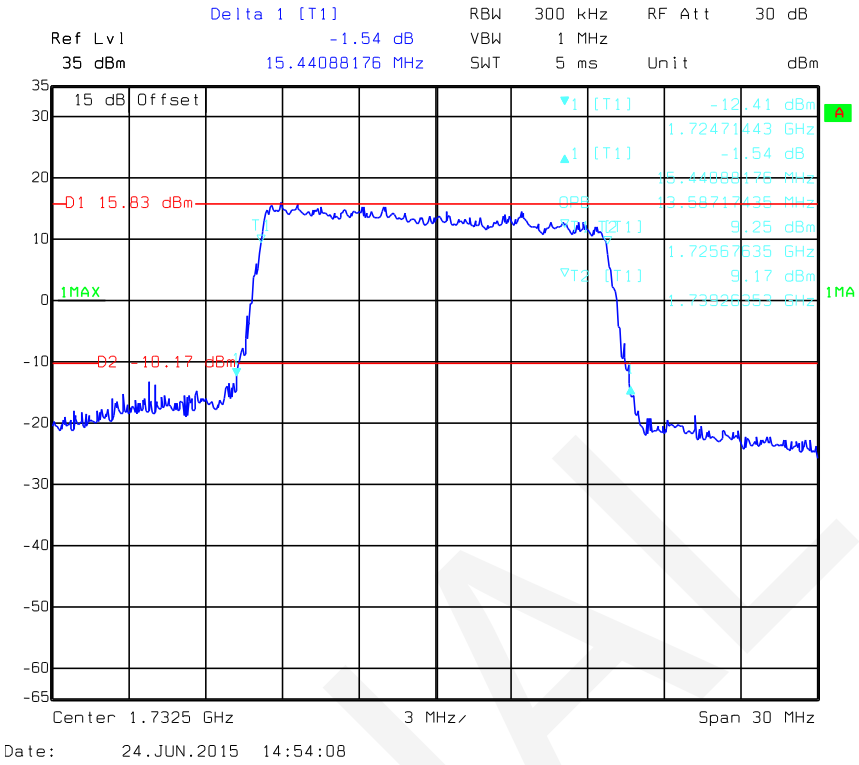
QPSK_5 MHz



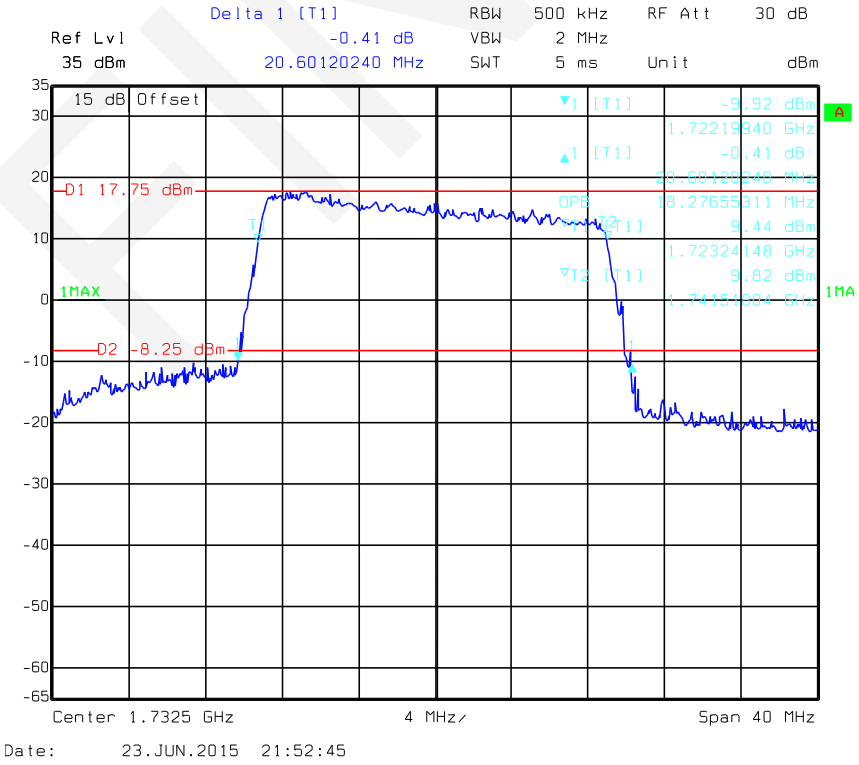
QPSK_10 MHz



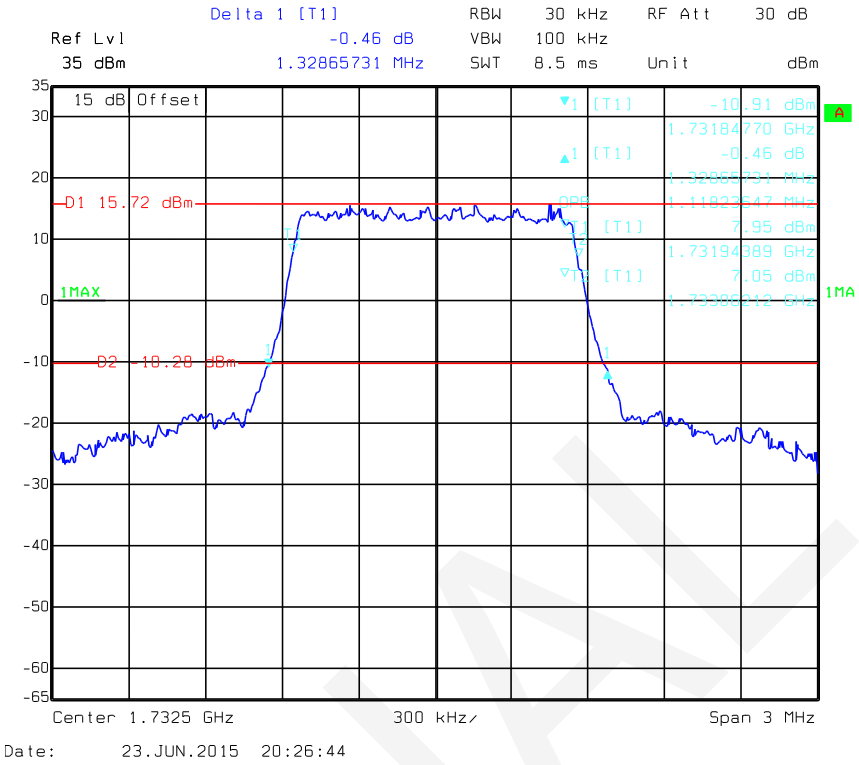
QPSK_15 MHz



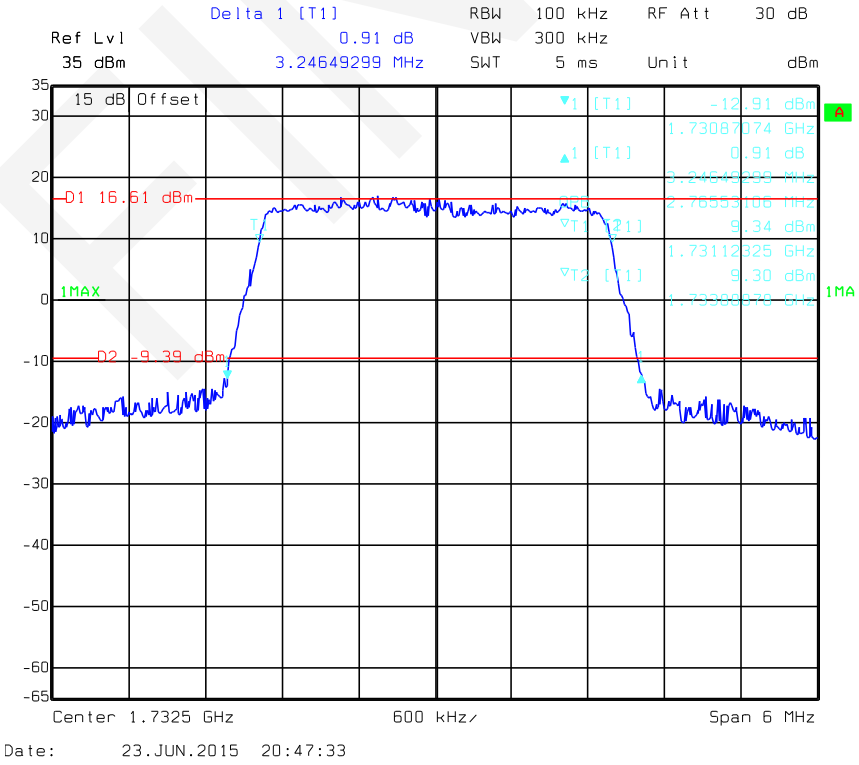
QPSK_20 MHz



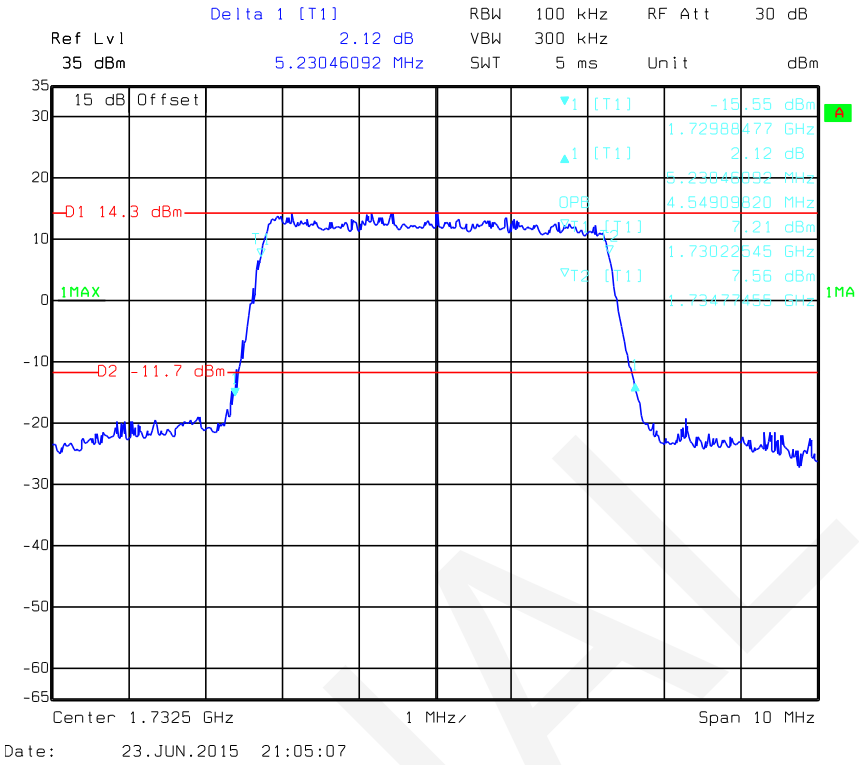
16QAM_1.4 MHz



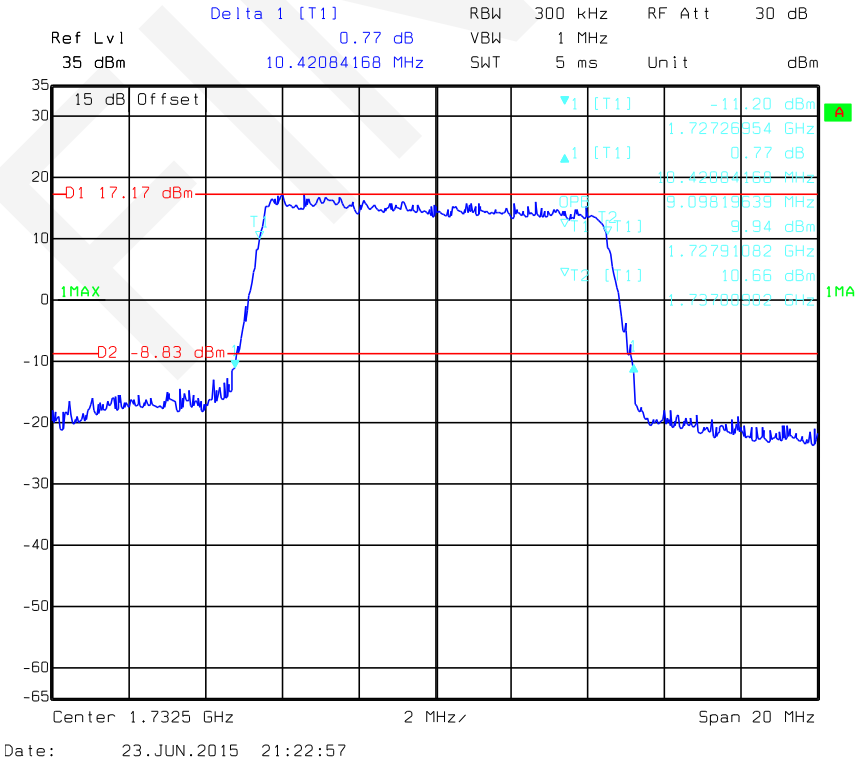
16QAM_3 MHz



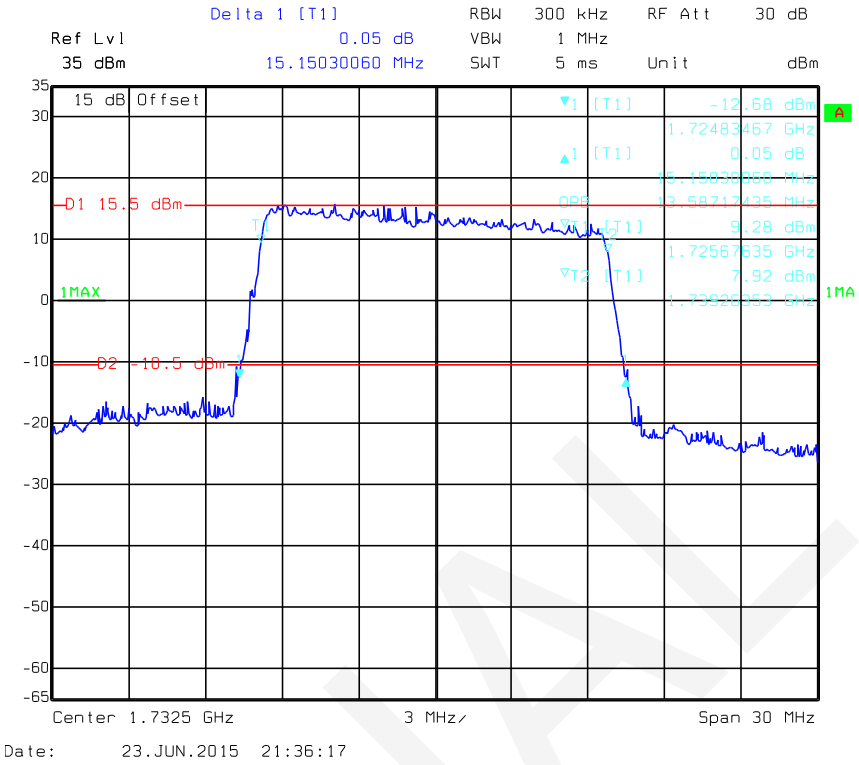
16QAM_5 MHz



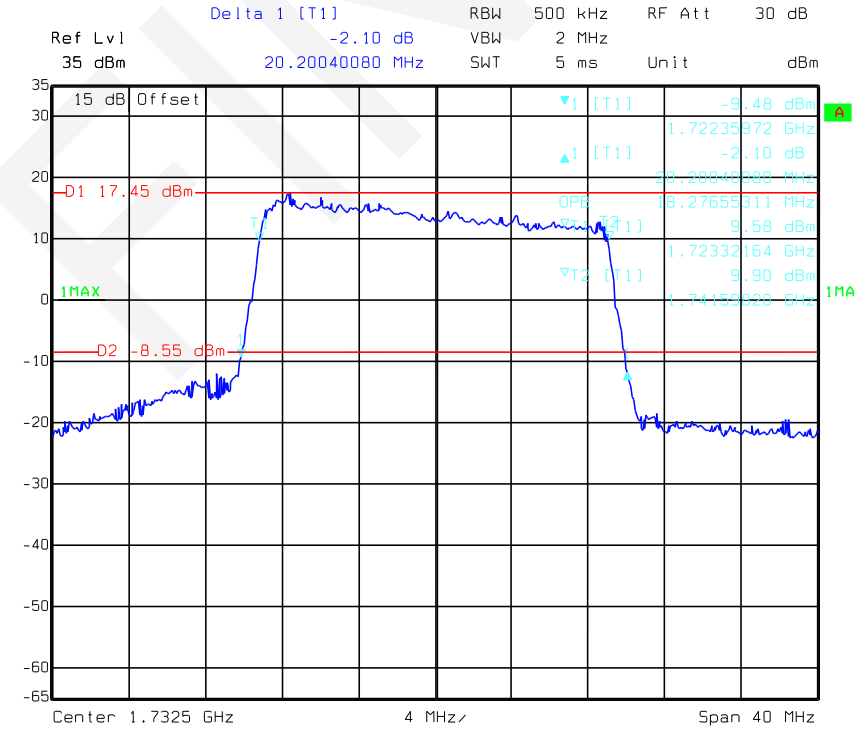
16QAM_10 MHz



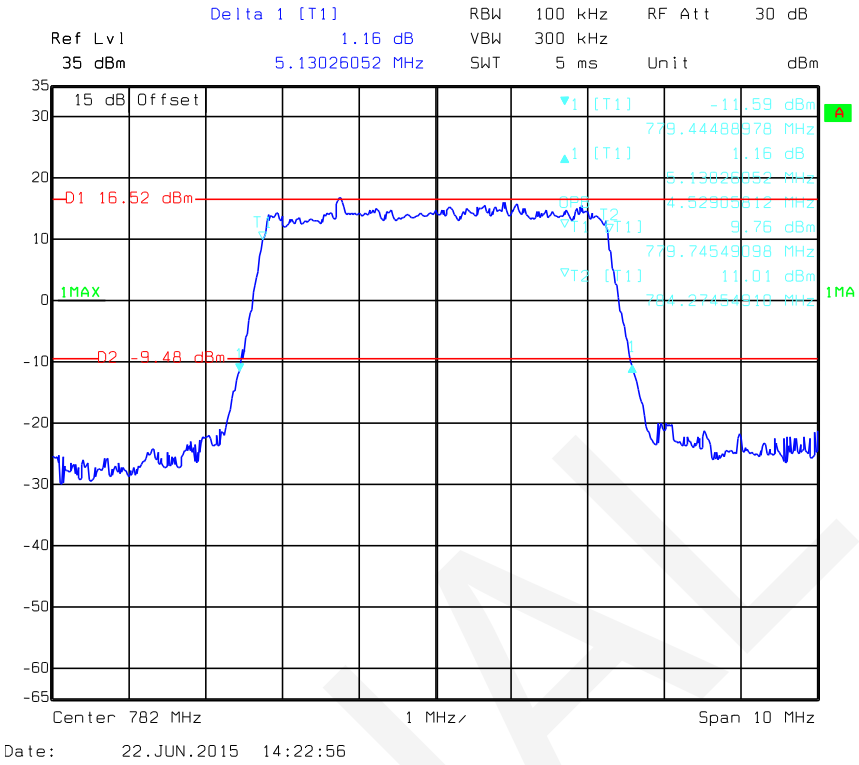
16QAM_15 MHz



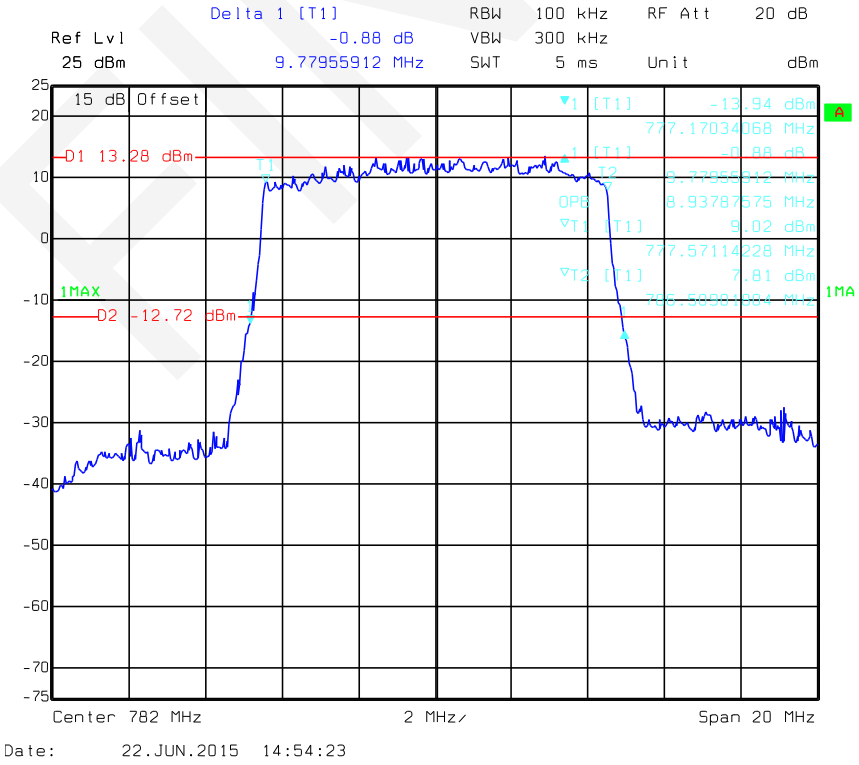
16QAM_20 MHz



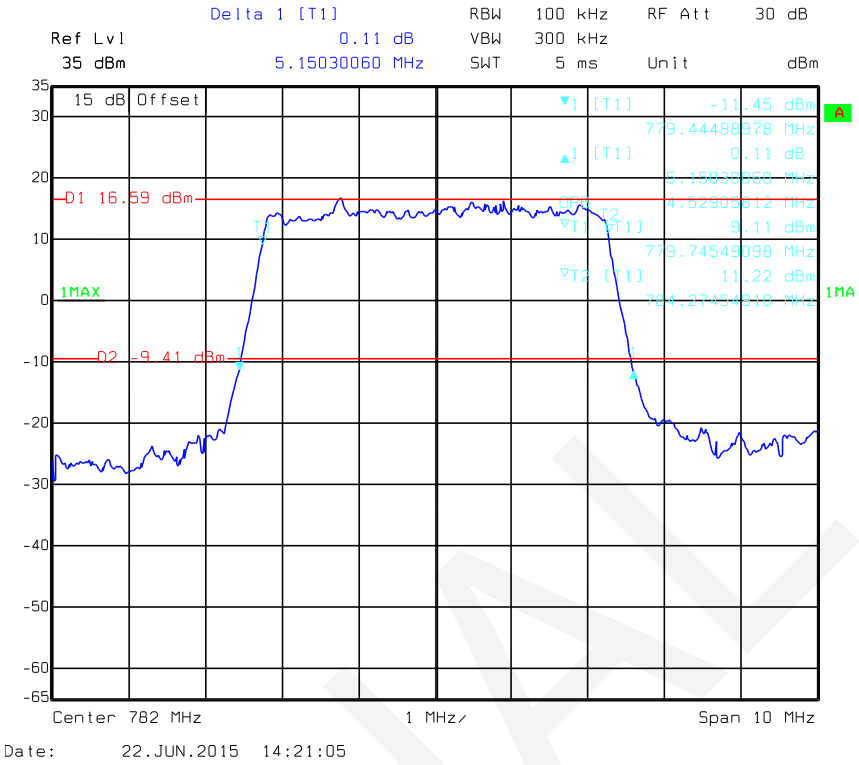
QPSK_5 MHz



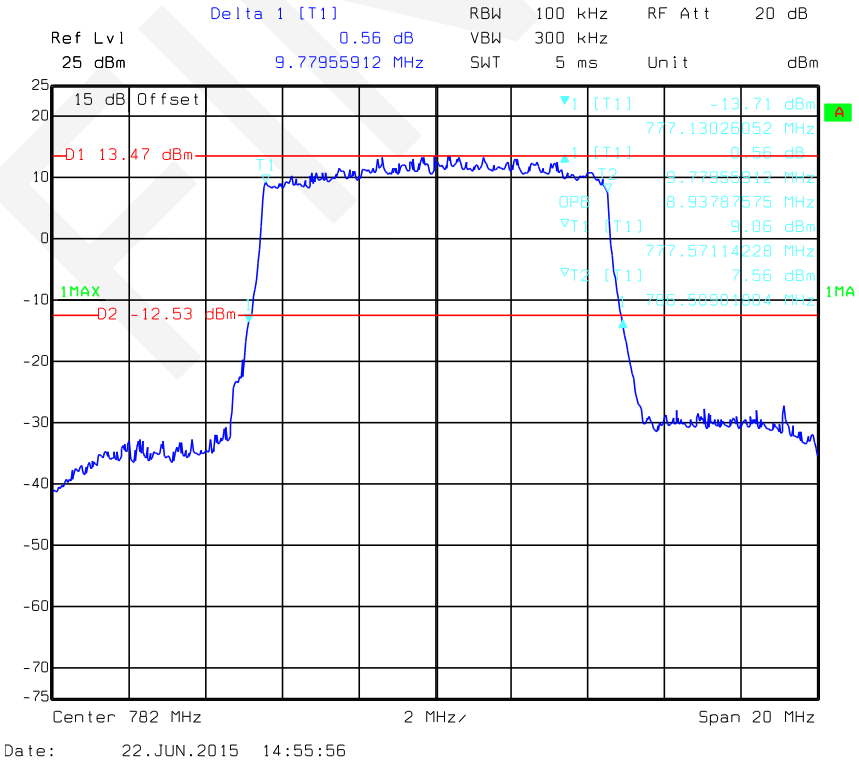
QPSK_10 MHz



16QAM_5 MHz



16QAM_10 MHz



FCC §2.1051, §22.917(a) & §24.238(a) & §27.53- SPURIOUS EMISSIONS AT ANTENNA TERMINALS

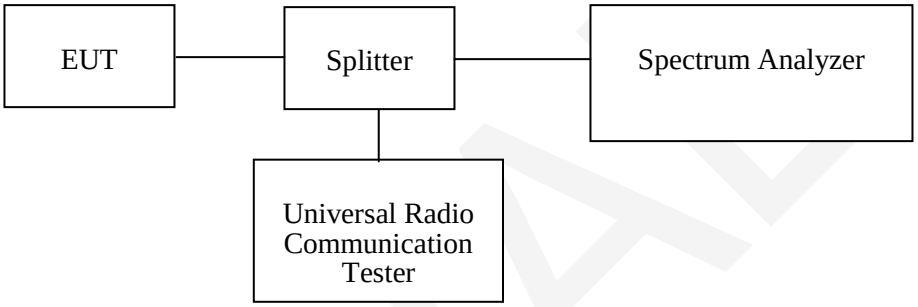
Applicable Standard

FCC §2.1051, §22.917(a) , §24.238(a) and §27.53.

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in §2.1051.

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09

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

Test Data

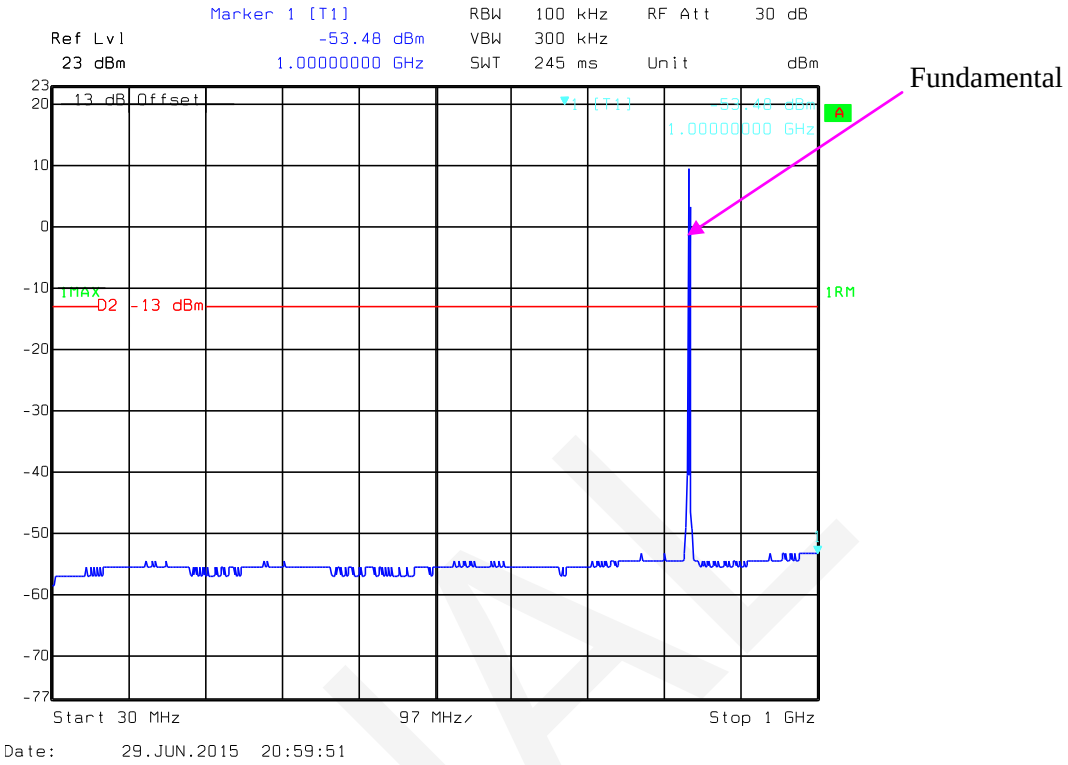
Environmental Conditions

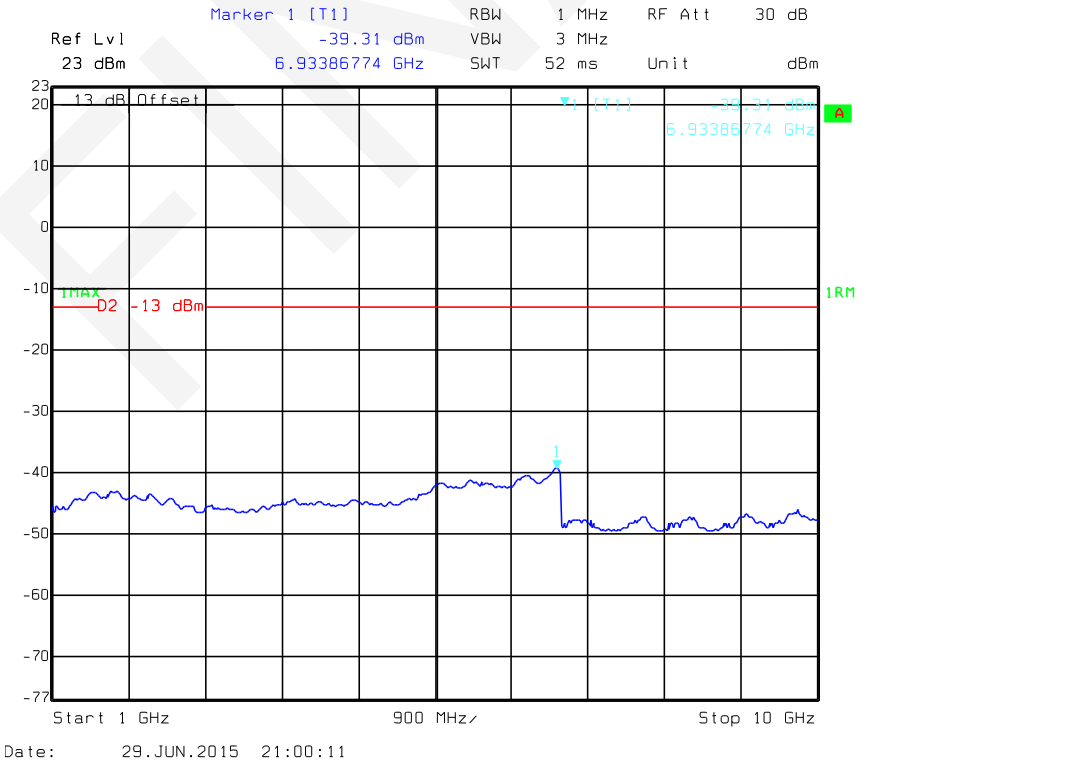
Temperature:	25.3-26.1 °C
Relative Humidity:	53-57 %
ATM Pressure:	99.7~100.3 kPa

The testing was performed by Dean Liu from 2015-06-22 to 2015-06-29.

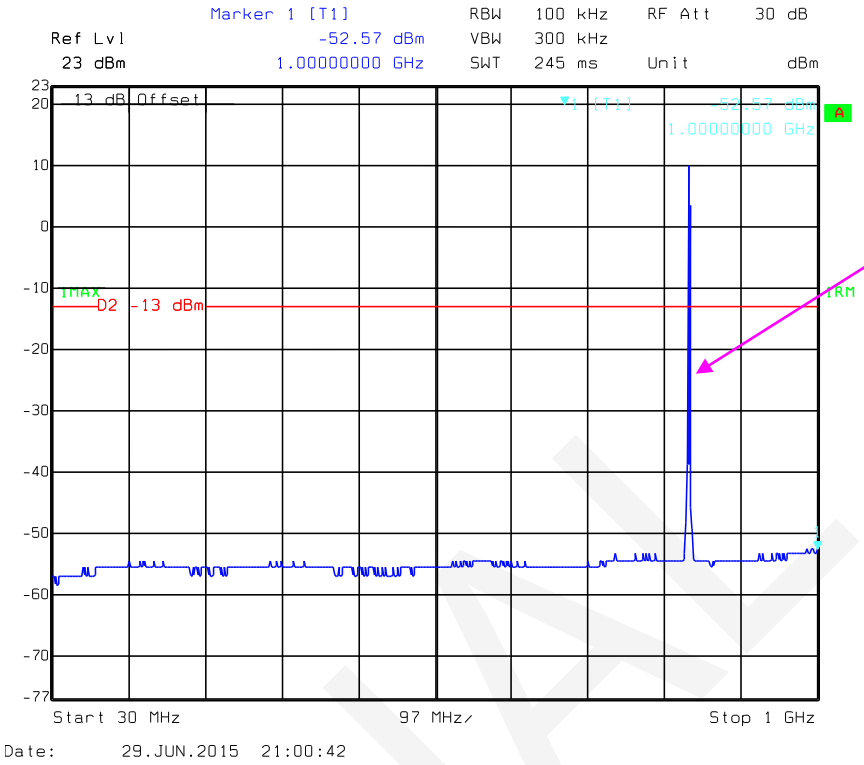
Please refer to the following plots.

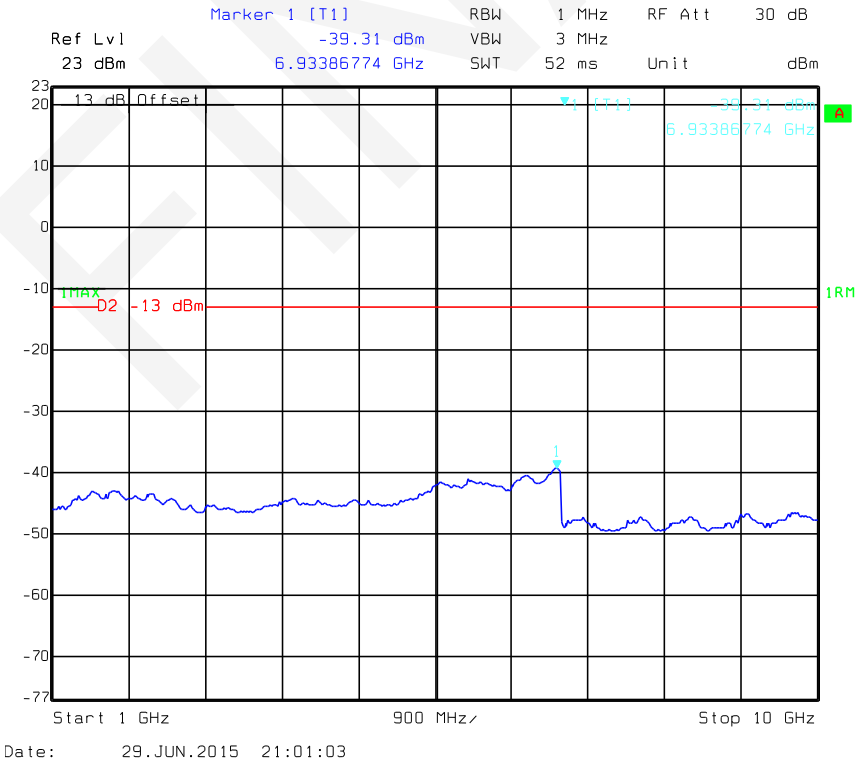
BC0-RC1_Middle Channel



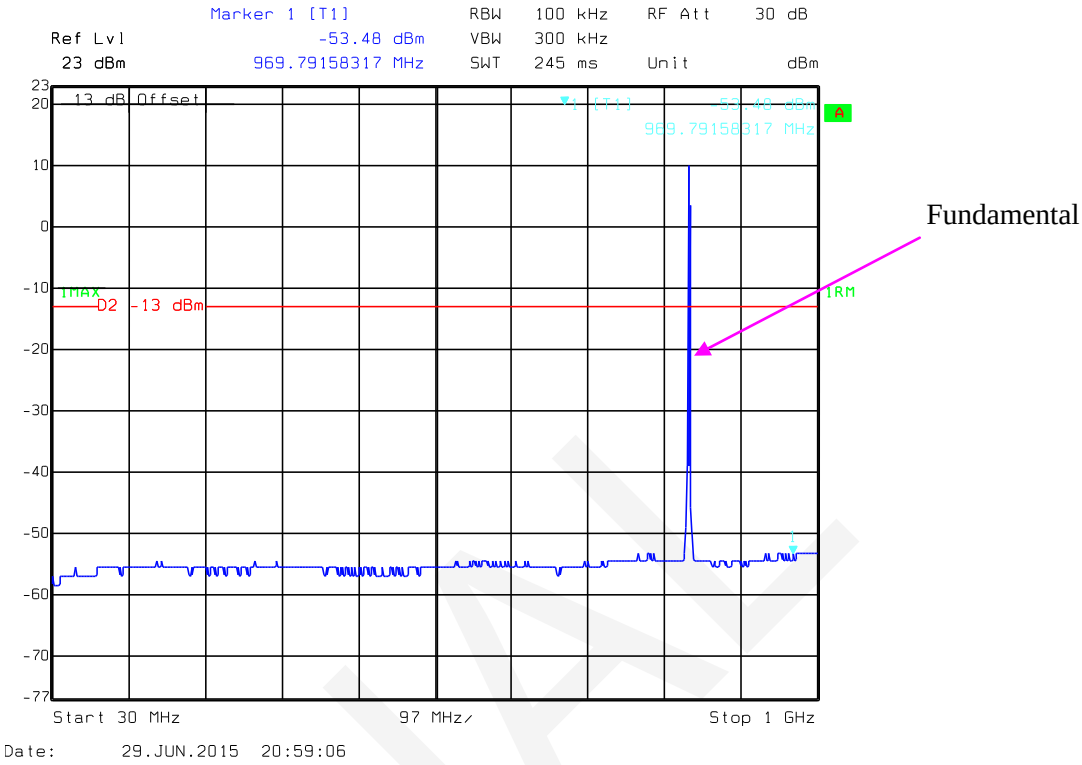


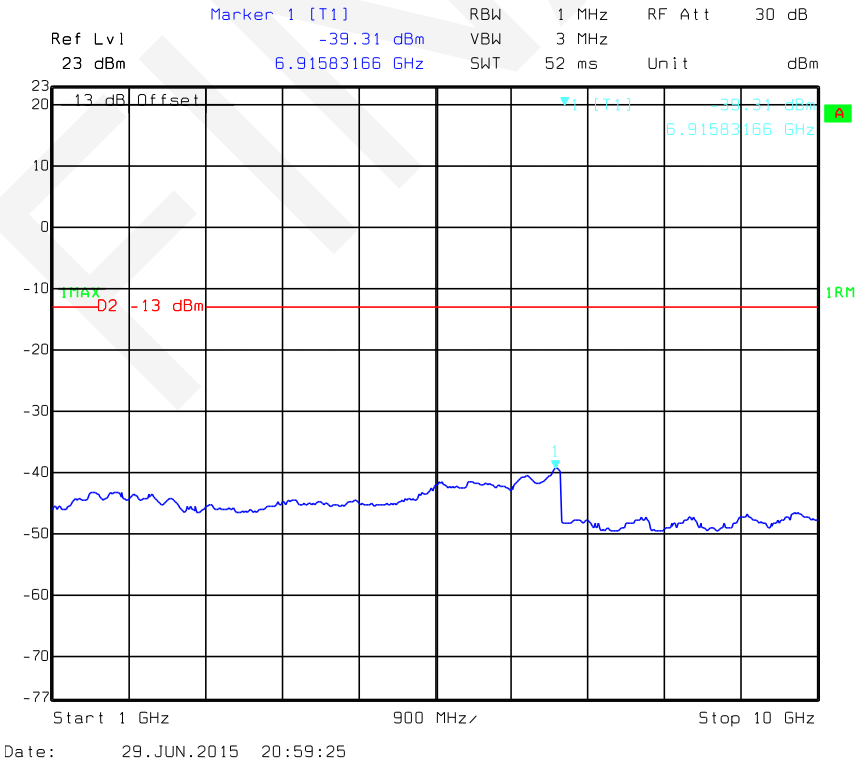
BC0-RC3_Middle Channel



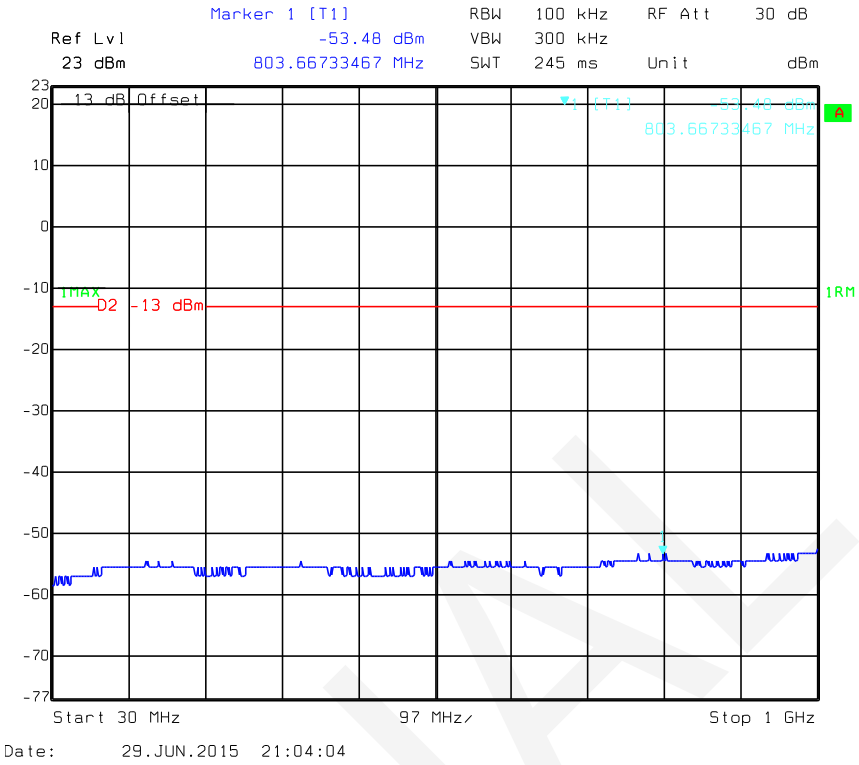


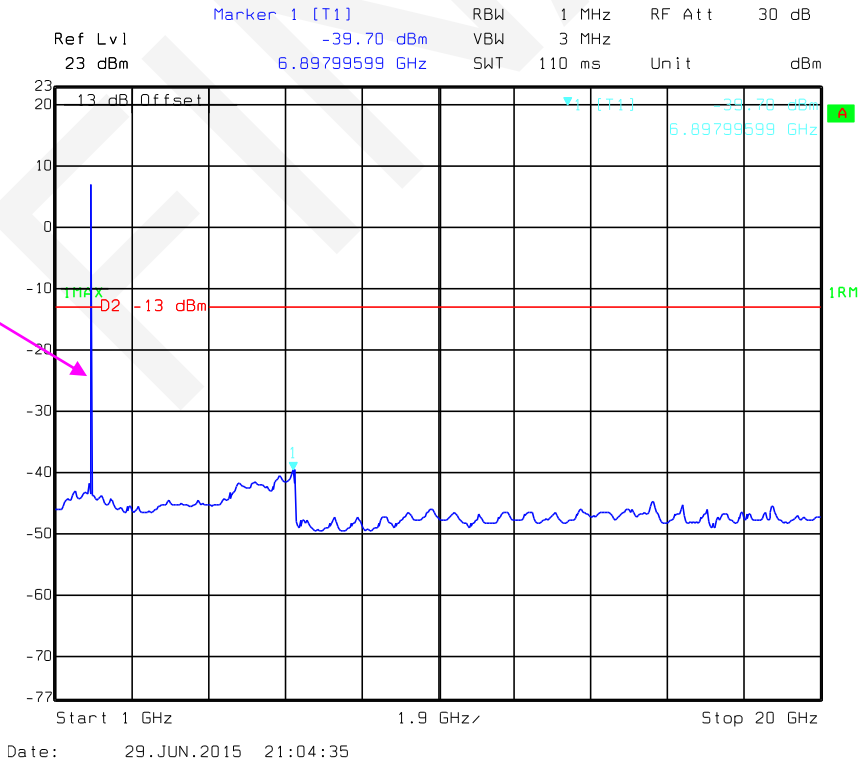
BC0- RTAP _Middle Channel





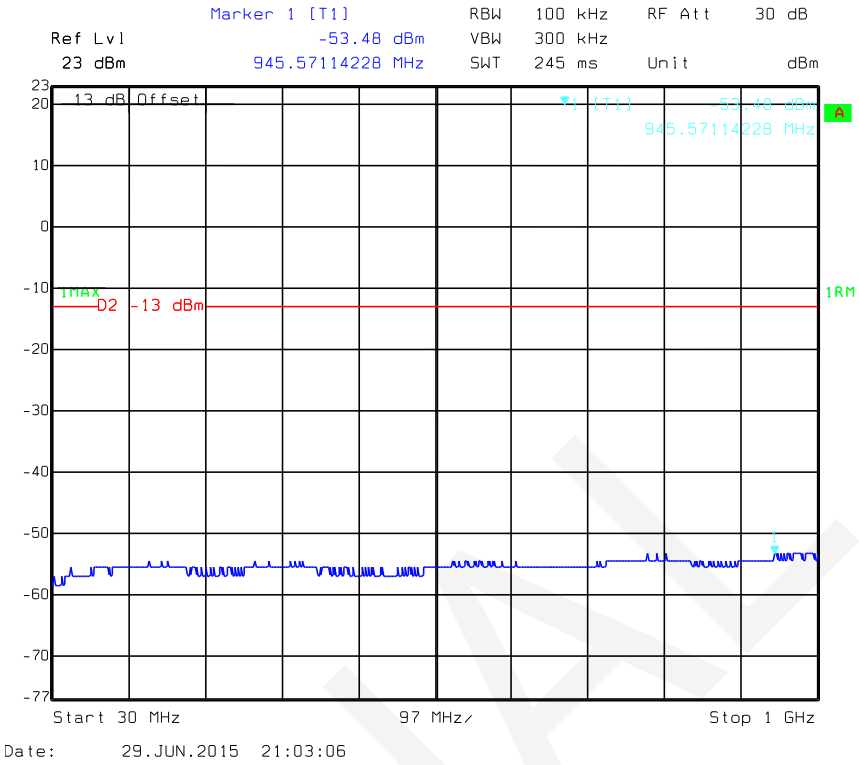
BC1-RC1 _Middle Channel

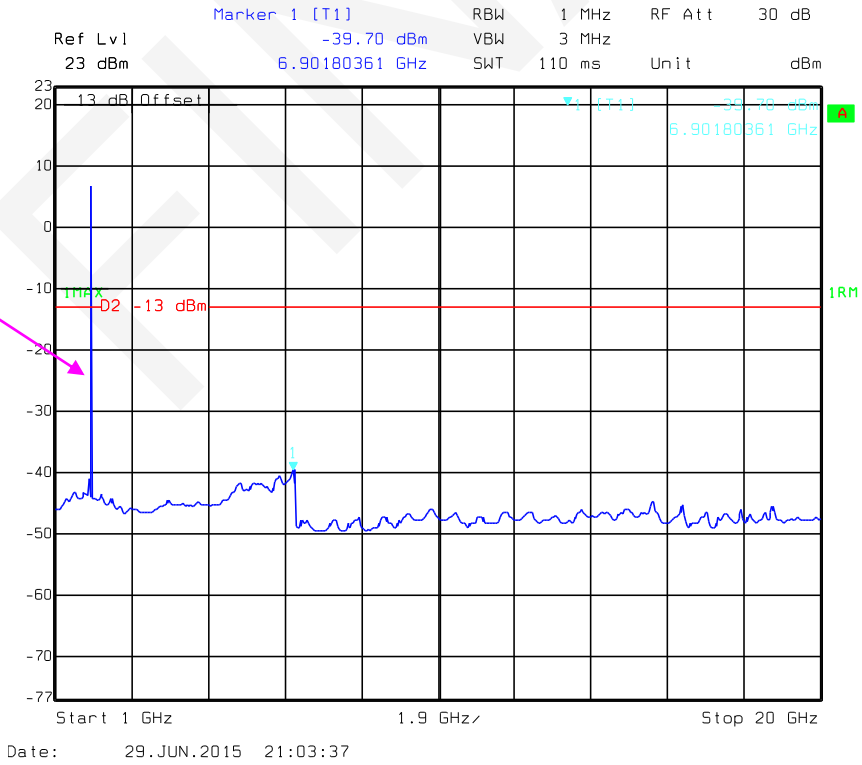




Fundamental

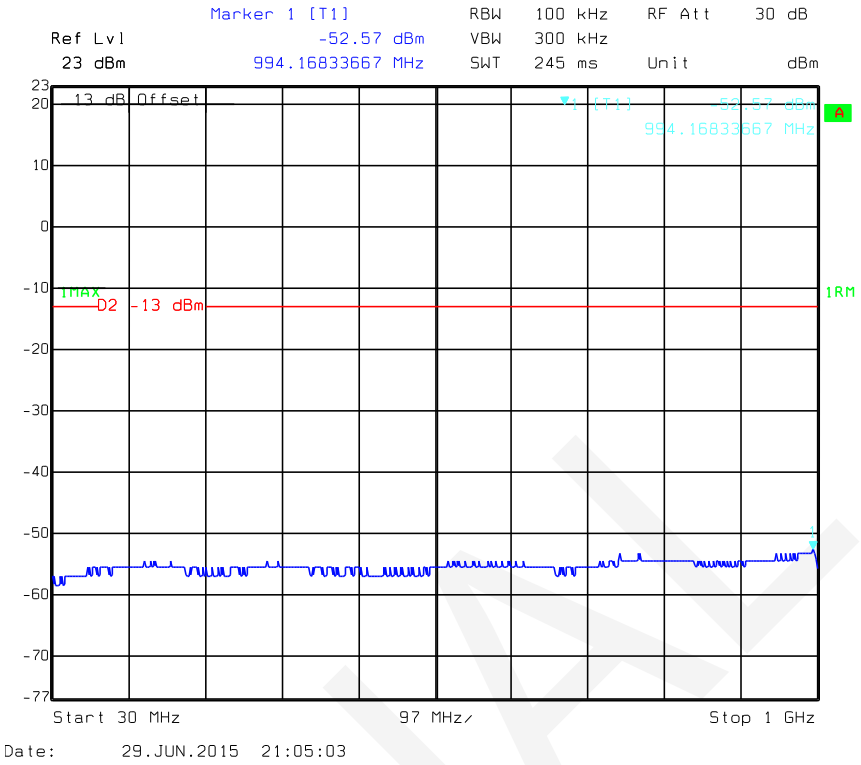
BC1-RC3 _Middle Channel

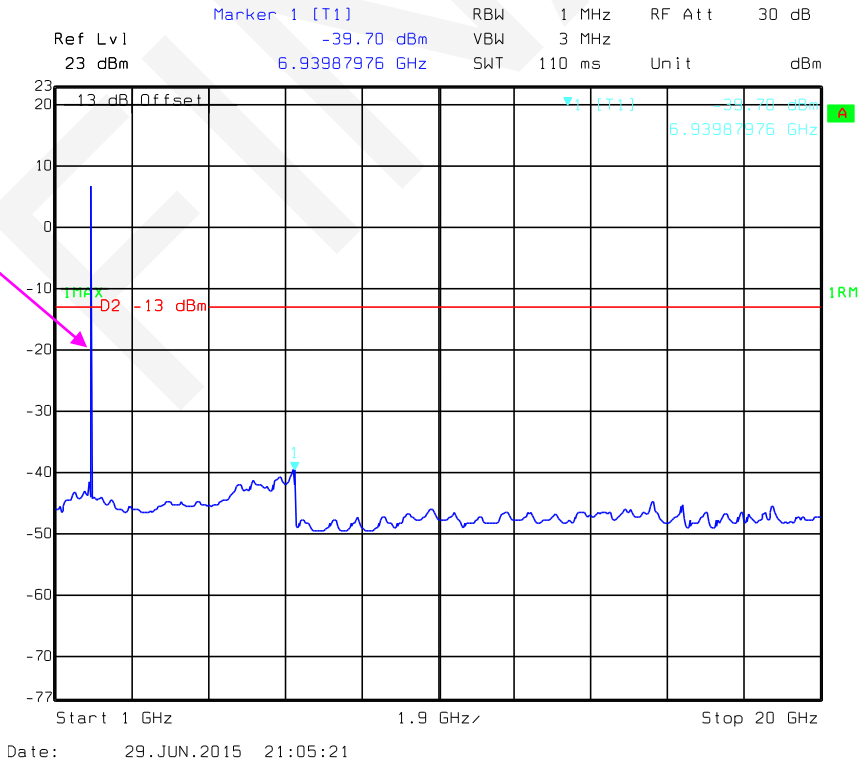




Fundamental

BC1- RTAP _Middle Channel

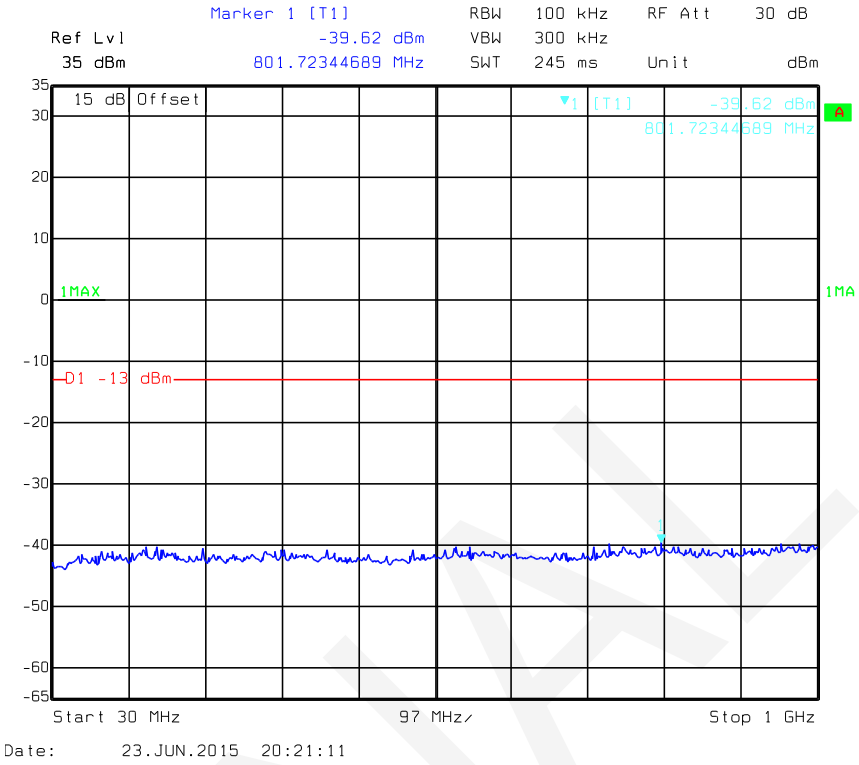


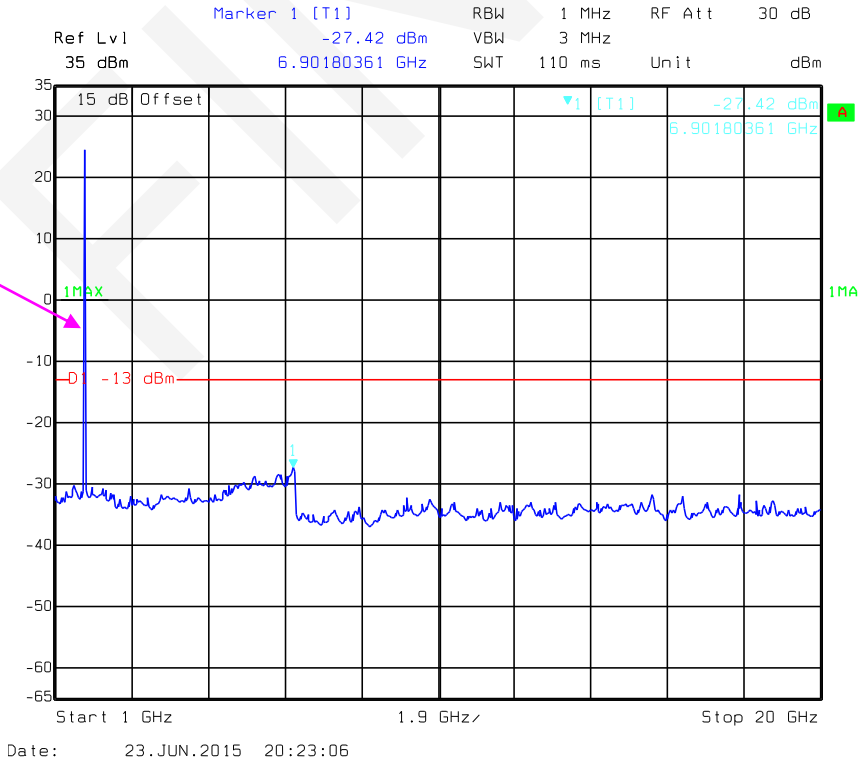


Fundamental

LTE Band 4, Middle Channel

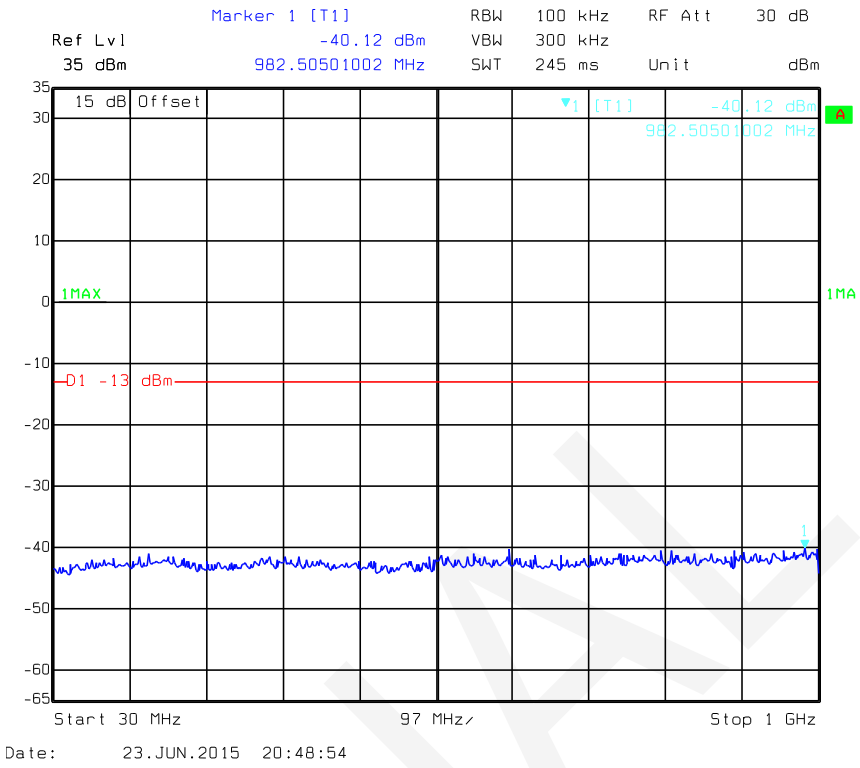
QPSK-1.4 MHz

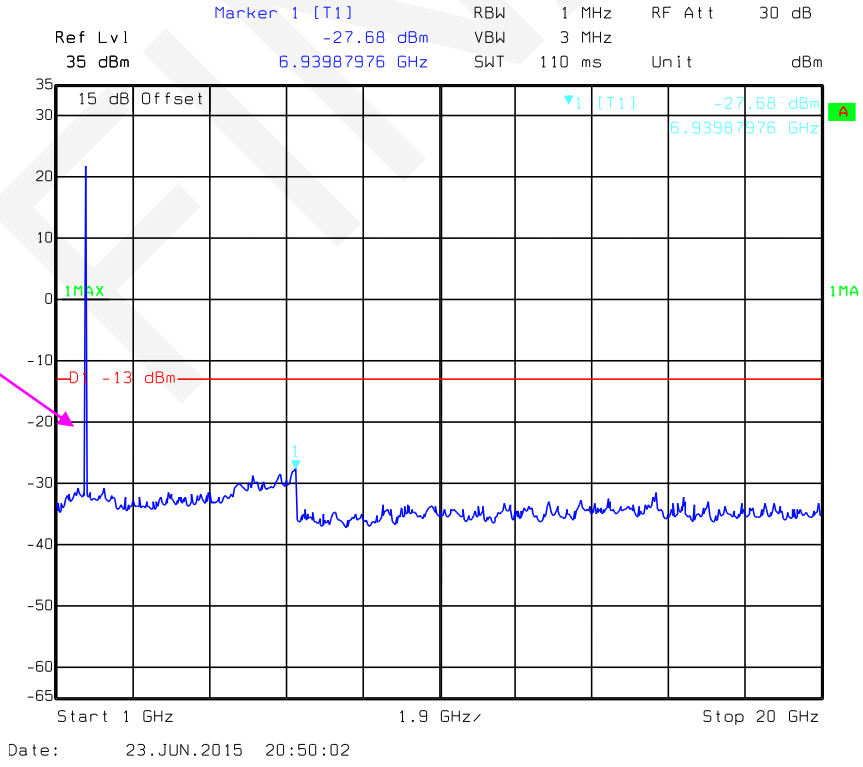




Fundamental

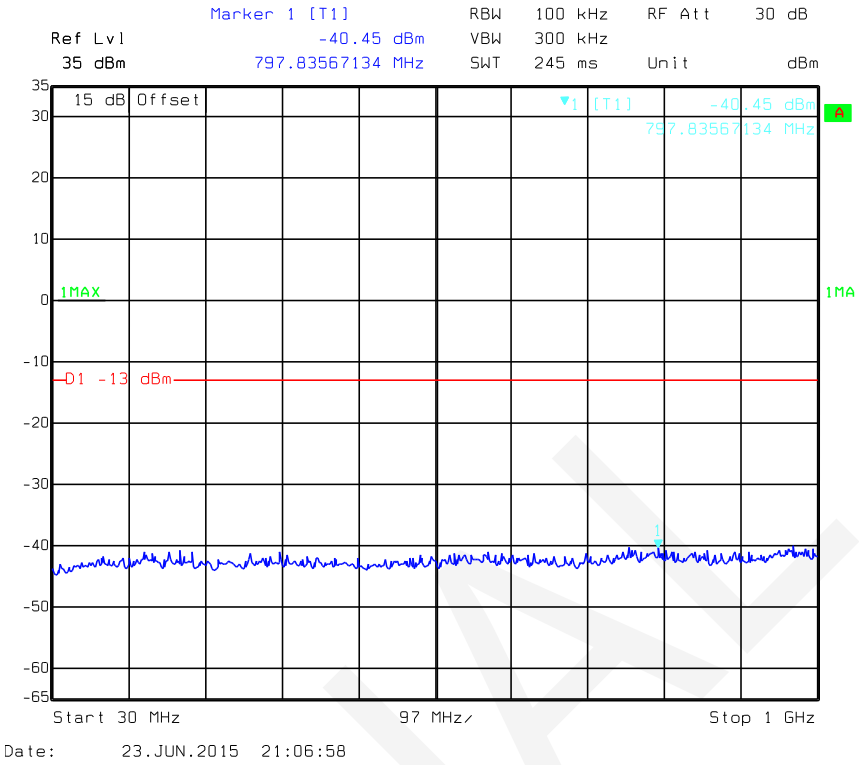
QPSK_3MHz

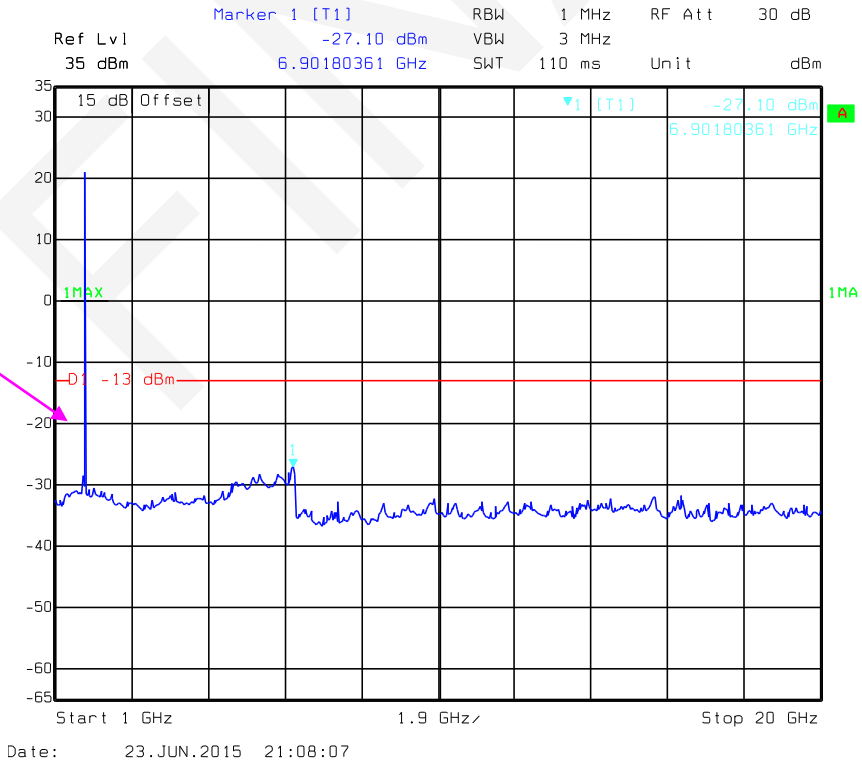




Fundamental

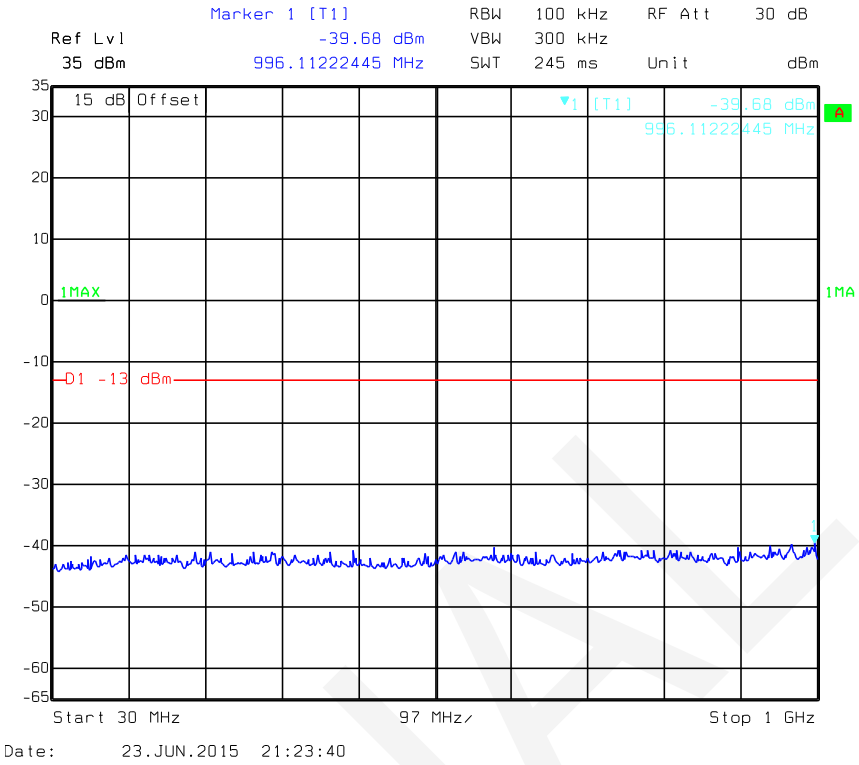
QPSK_5MHz

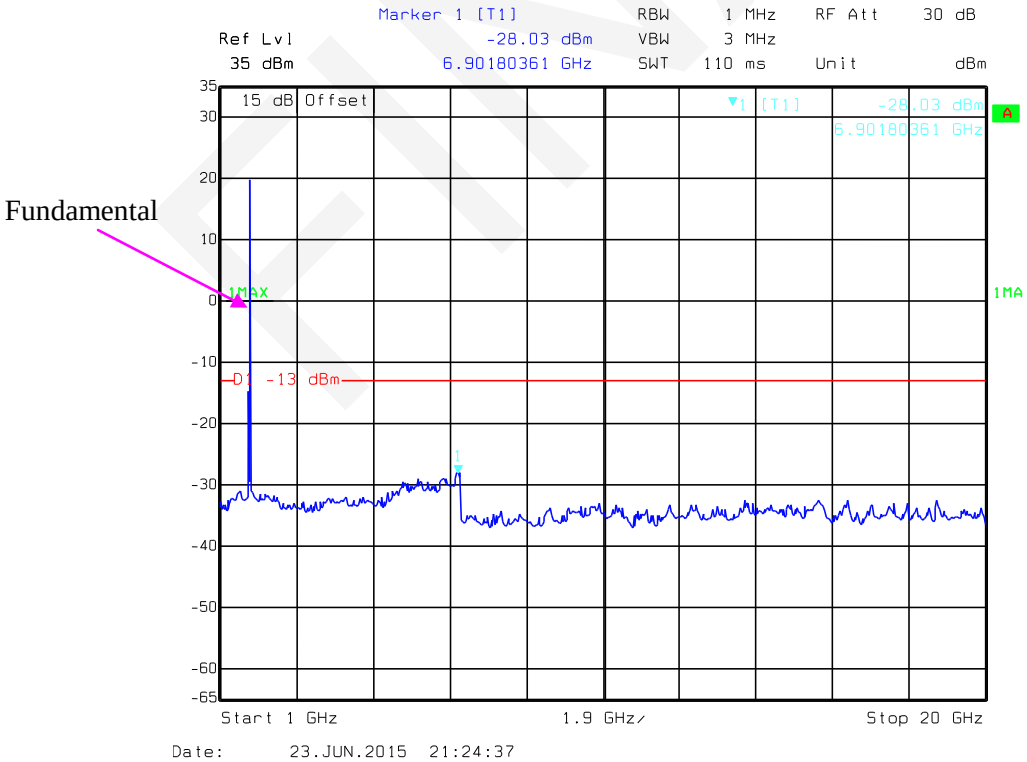




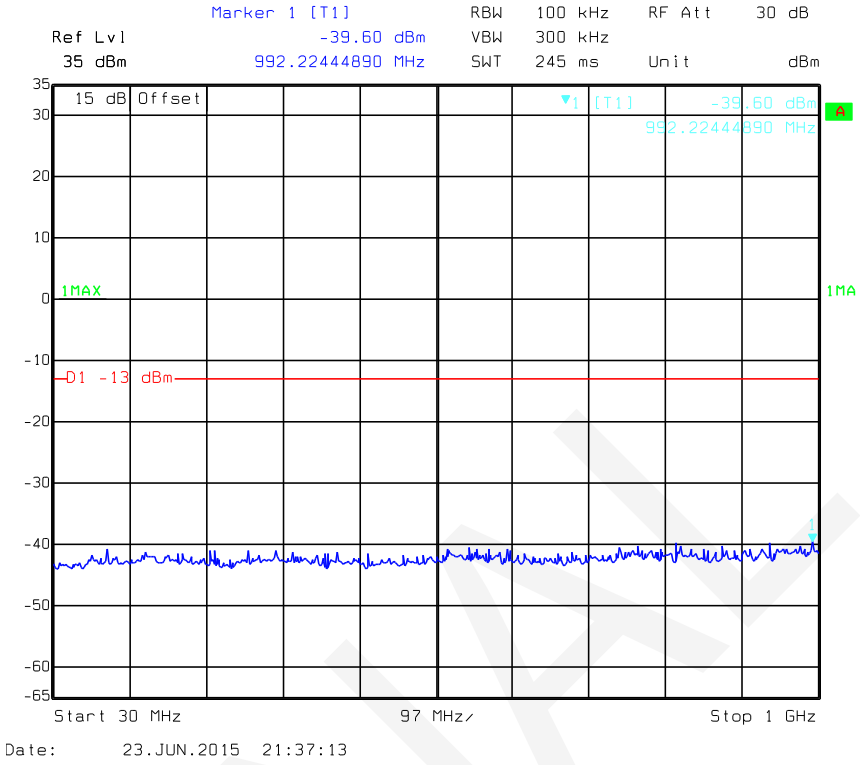
Fundamental

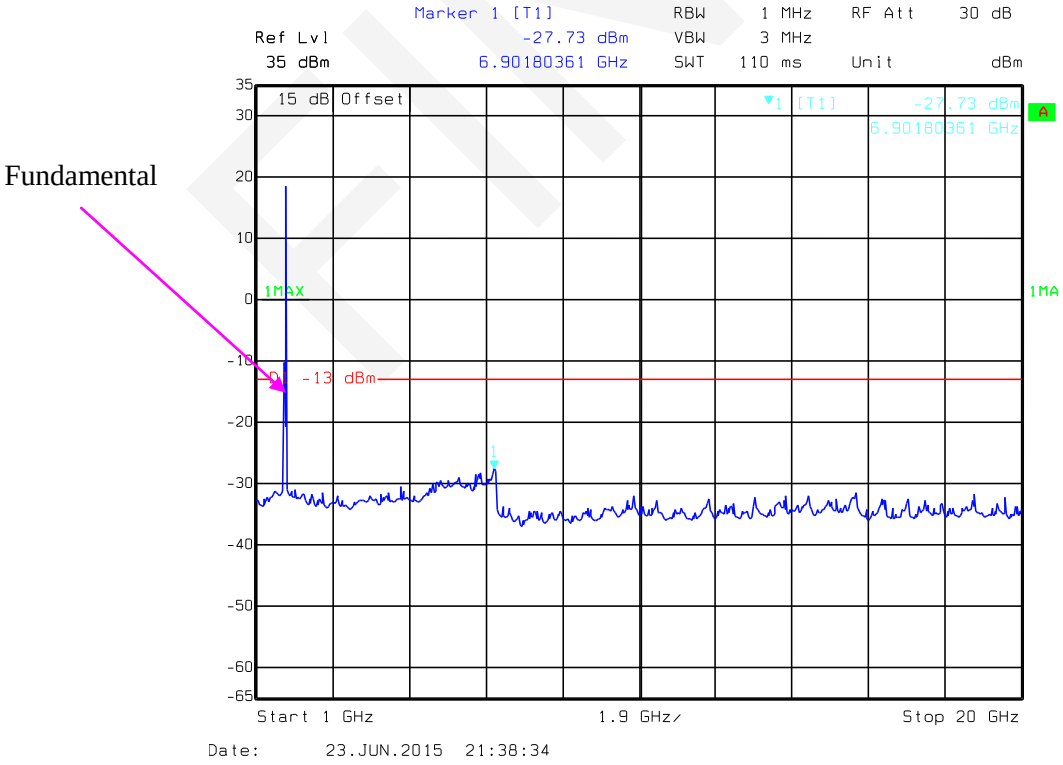
QPSK_10MHz


Marker 1 [T1]
RBW 100 kHz
RF Att 30 dB
Ref Lvl
-39.68 dBm
VBW 300 kHz
35 dBm
996.11222445 MHz
SWT 245 ms
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 23.JUN.2015 21:23:40

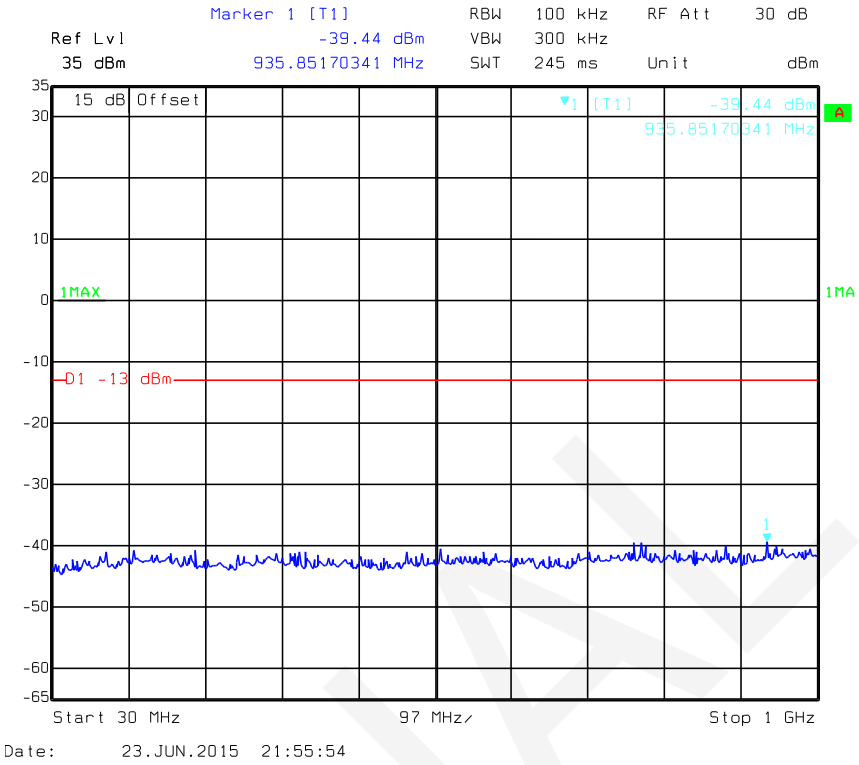

Marker 1 [T1]
RBW 1 MHz
RF Att 30 dB
Ref Lvl
-28.03 dBm
VBW 3 MHz
35 dBm
6.90180361 GHz
SWT 110 ms
Unit dBm
15 dB Offset
Fundamental
1MAX
D1 -13 dBm
1MA
Start 1 GHz
1.9 GHz/
Stop 20 GHz
Date: 23.JUN.2015 21:24:37

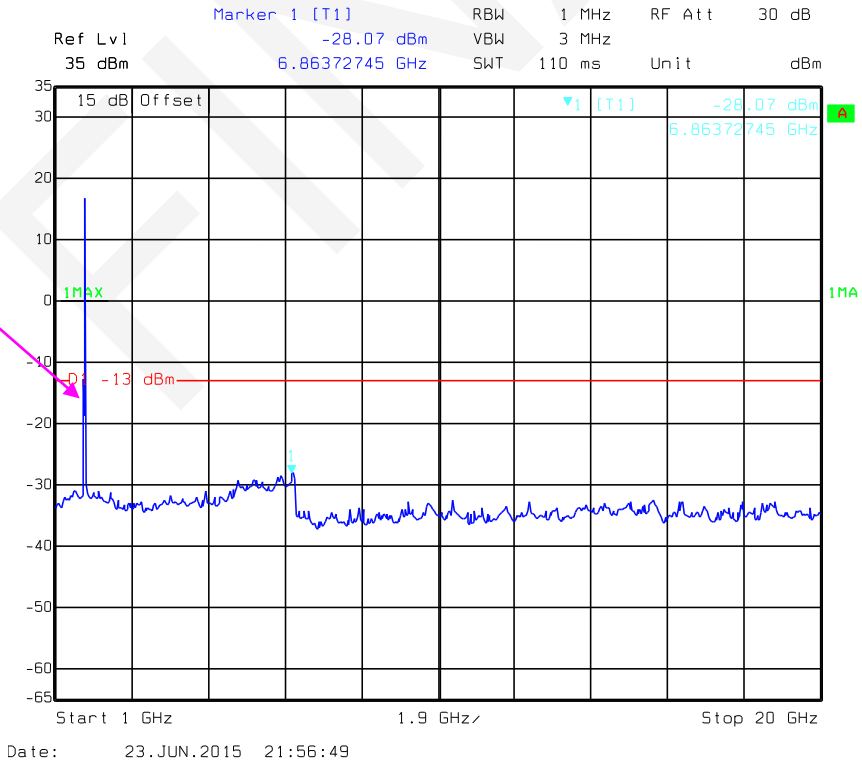
QPSK_15MHz


Marker 1 [T1]
-39.60 dBm
992.22444890 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
1MA
D1 -13 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 23.JUN.2015 21:37:13


Marker 1 [T1]
-27.73 dBm
6.90180361 GHz
RBW 1 MHz
VBW 3 MHz
SWT 110 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
1MA
D1 -13 dBm
Start 1 GHz
1.9 GHz/
Stop 20 GHz
Date: 23.JUN.2015 21:38:34
Fundamental

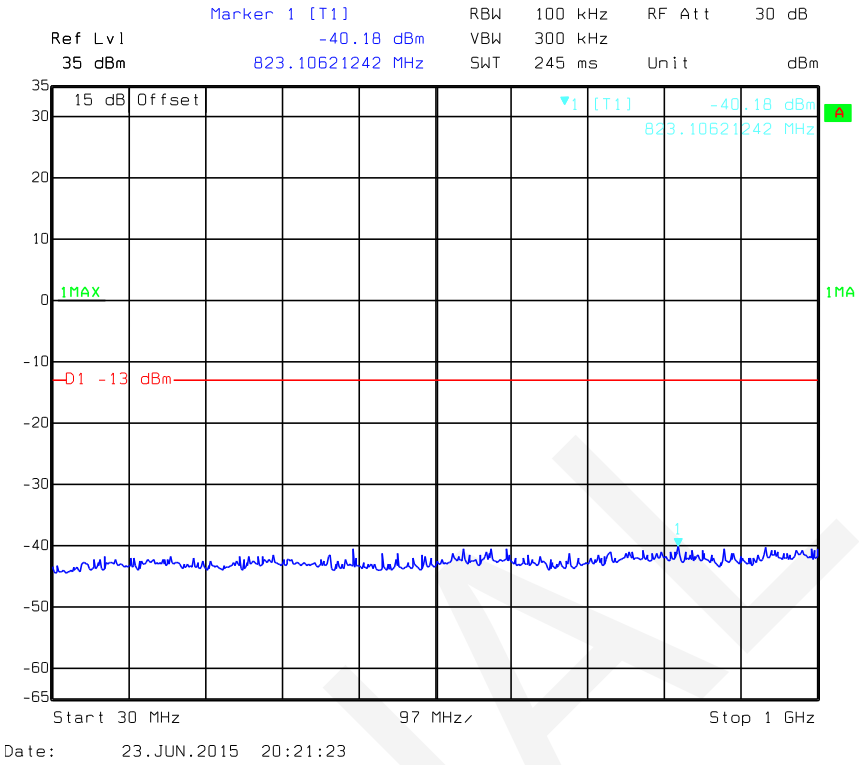
QPSK_20MHz

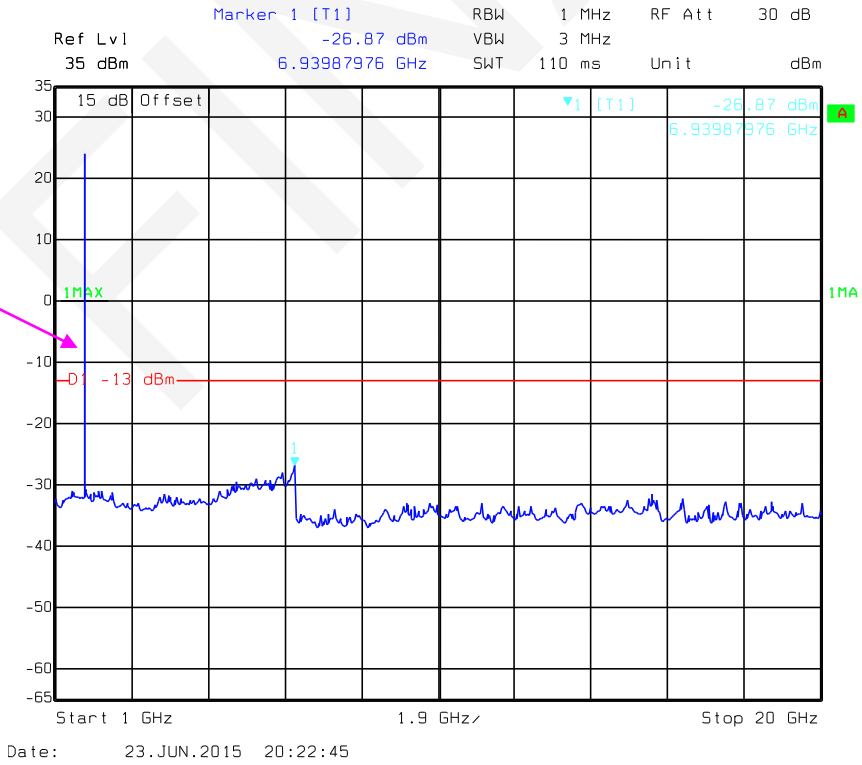




Fundamental

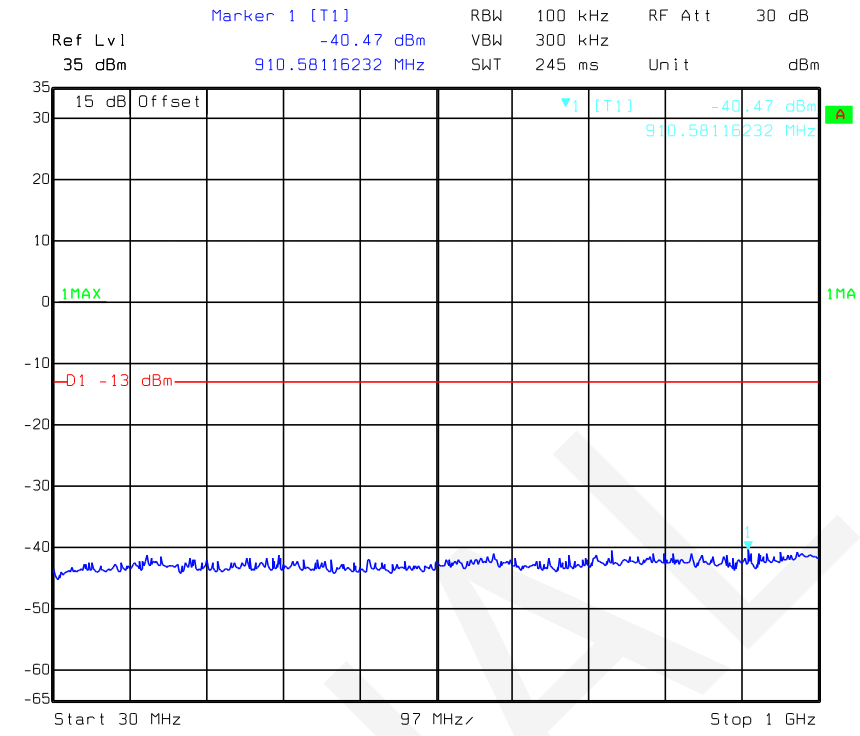
16QAM_1.4 MHz



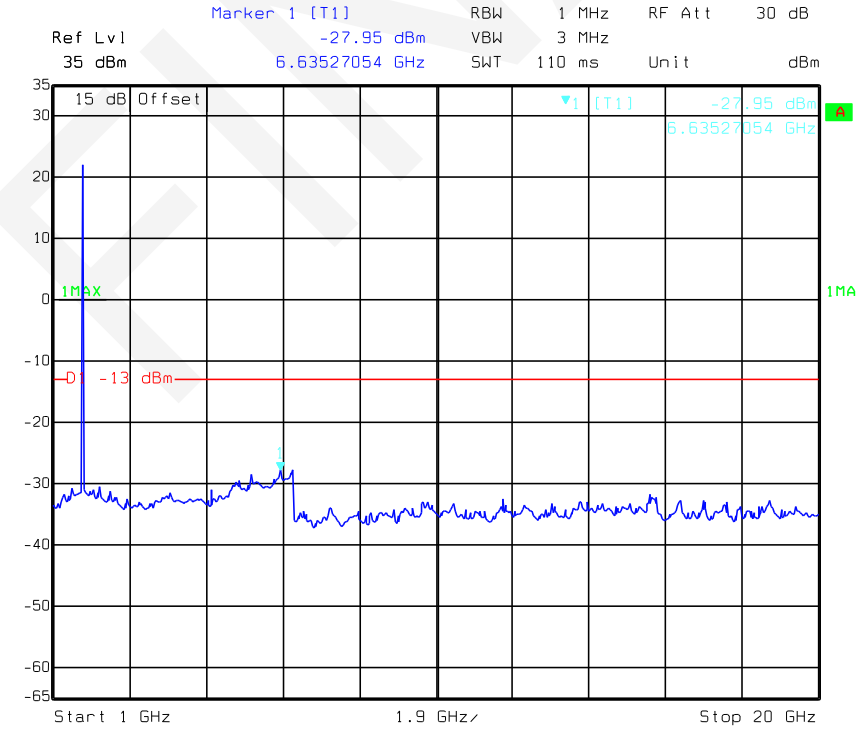


Fundamental

16QAM_3 MHz

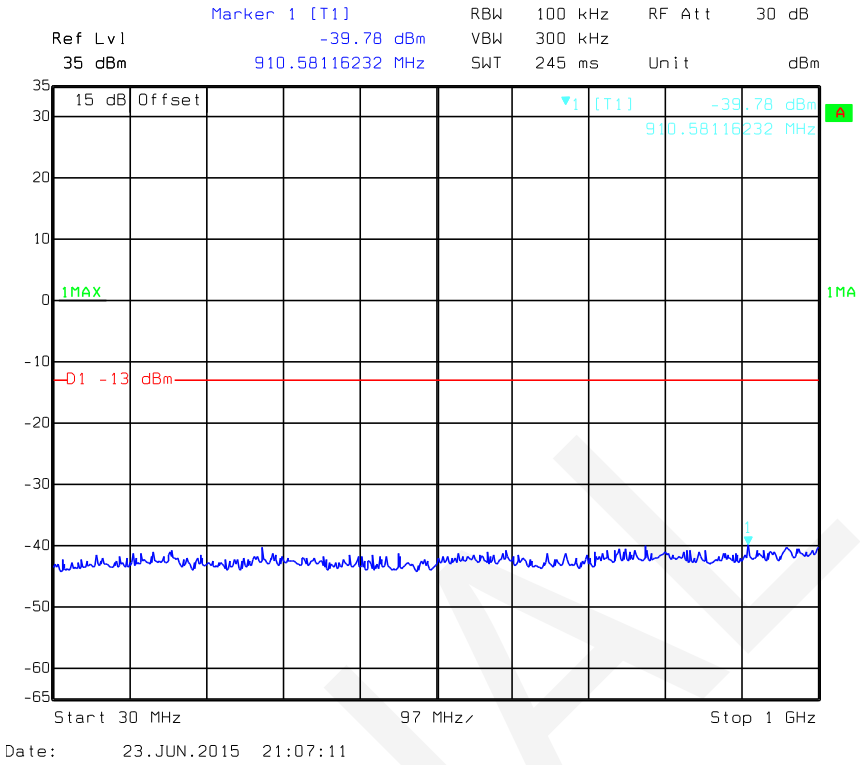


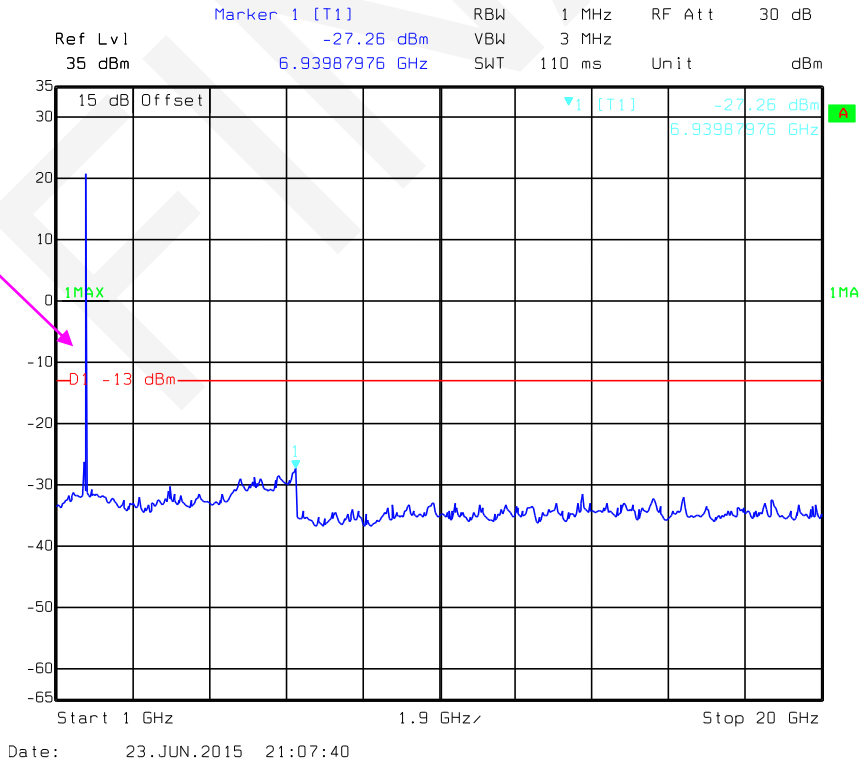
Date: 23.JUN.2015 20:49:04



Date: 23.JUN.2015 20:49:49

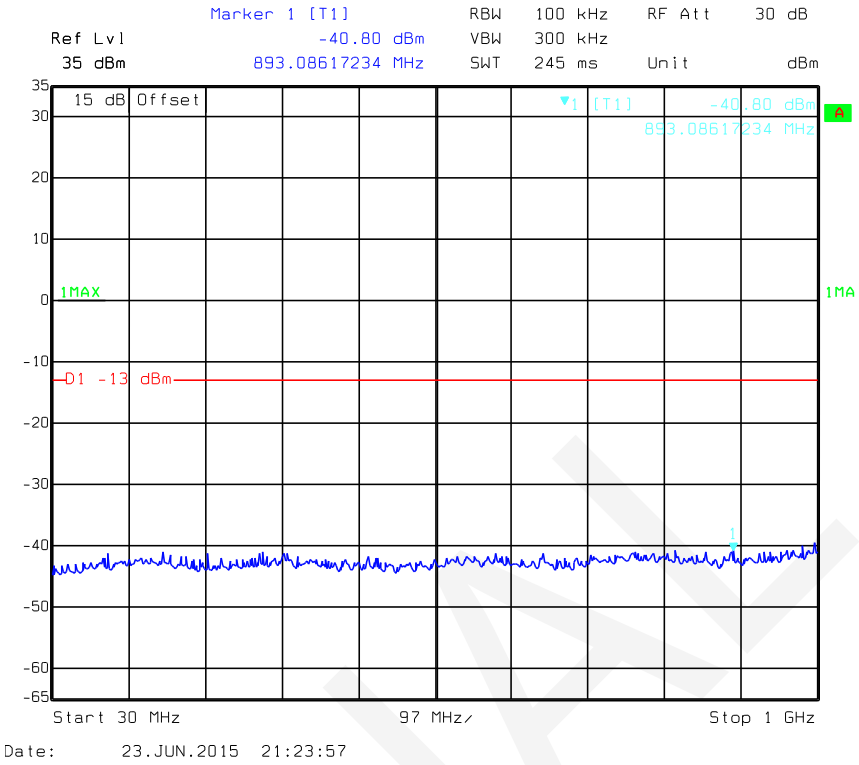
16QAM_5 MHz

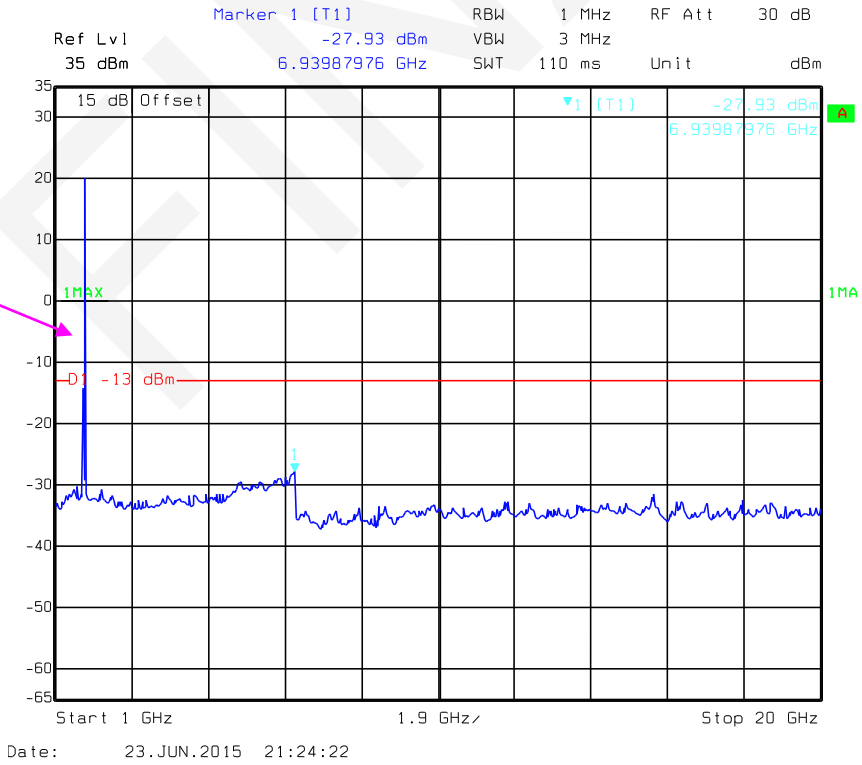




Fundamental

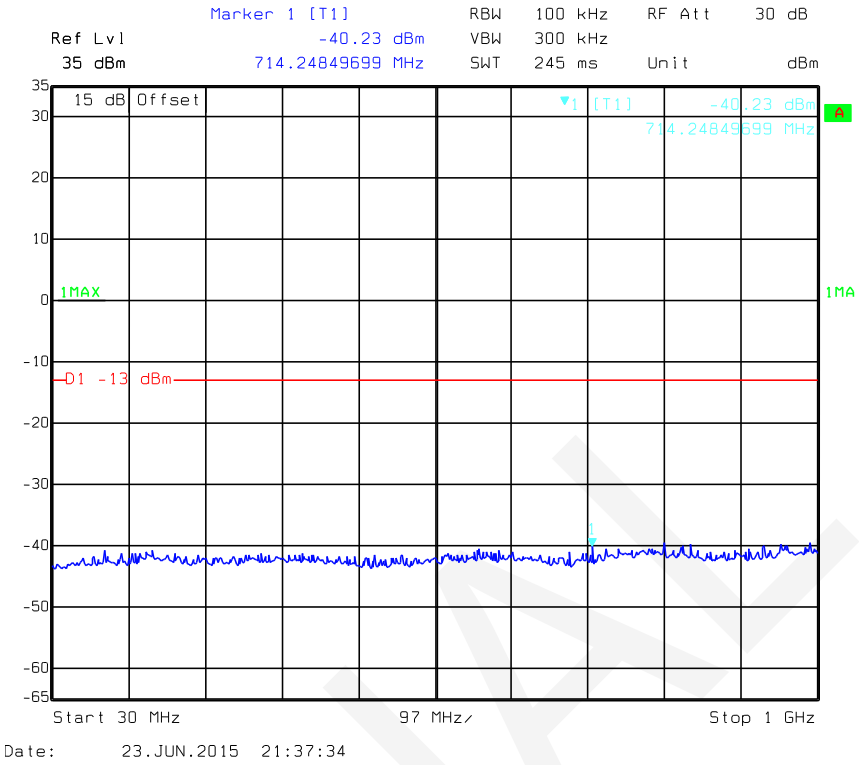
16QAM_10MHz

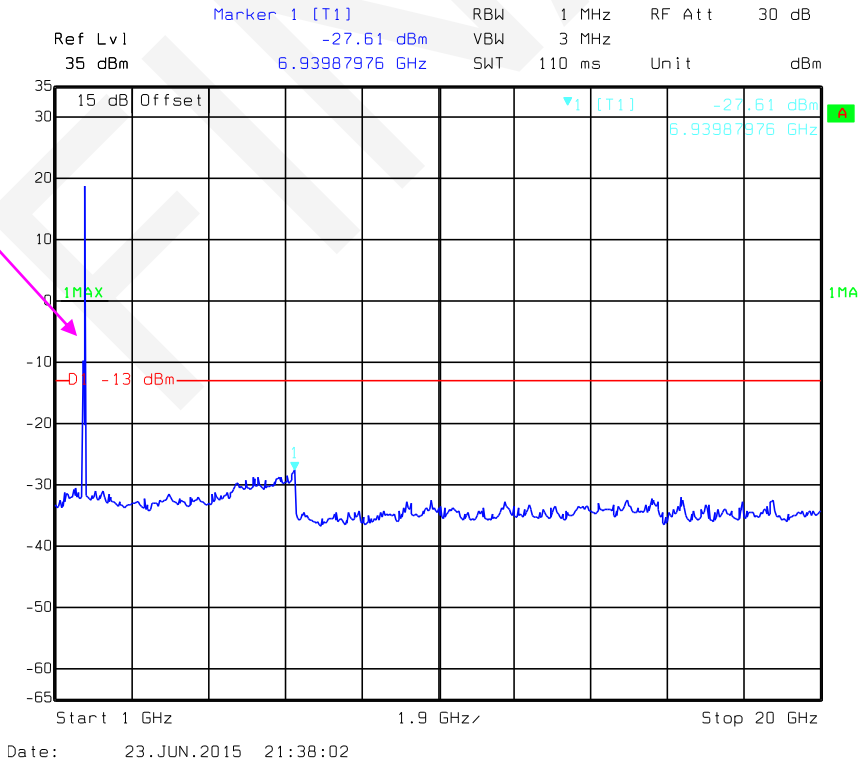




Fundamental

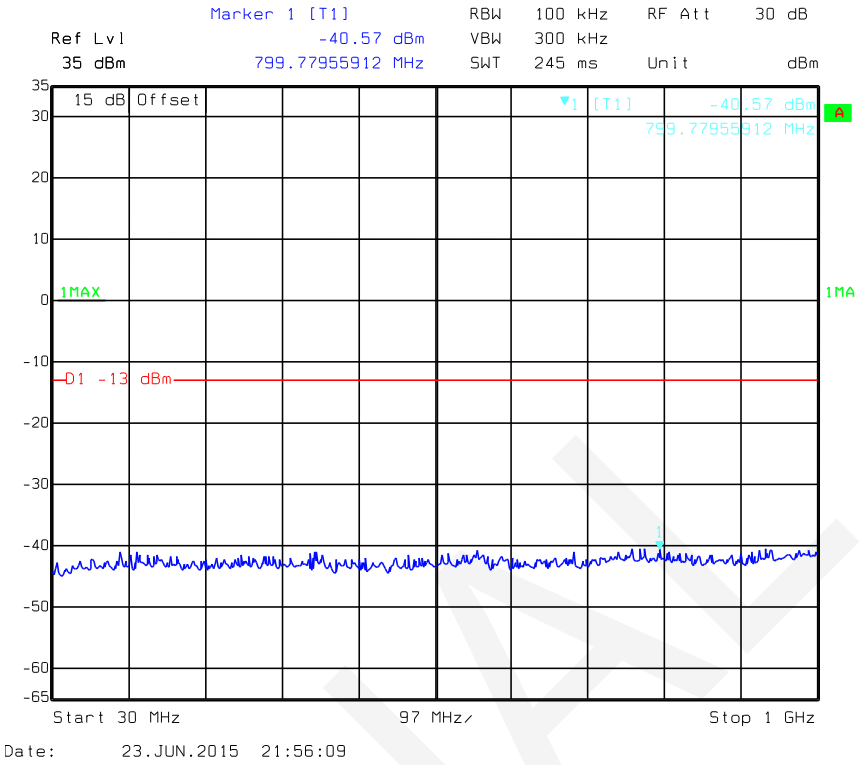
16QAM_15 MHz

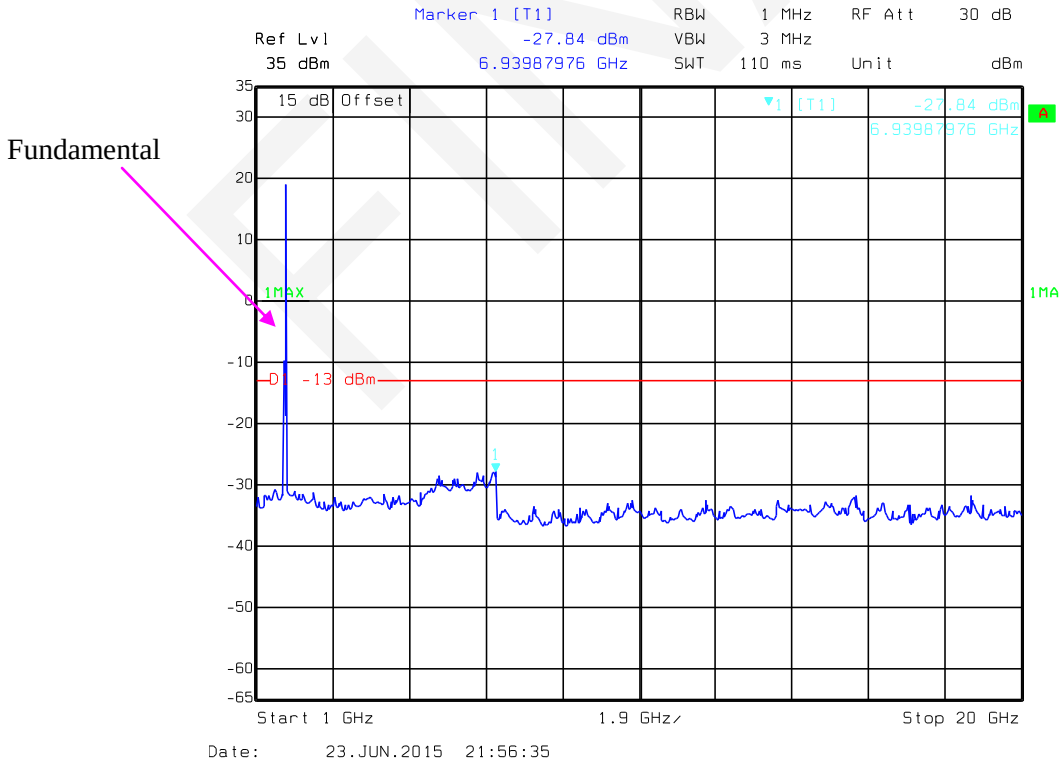




Fundamental

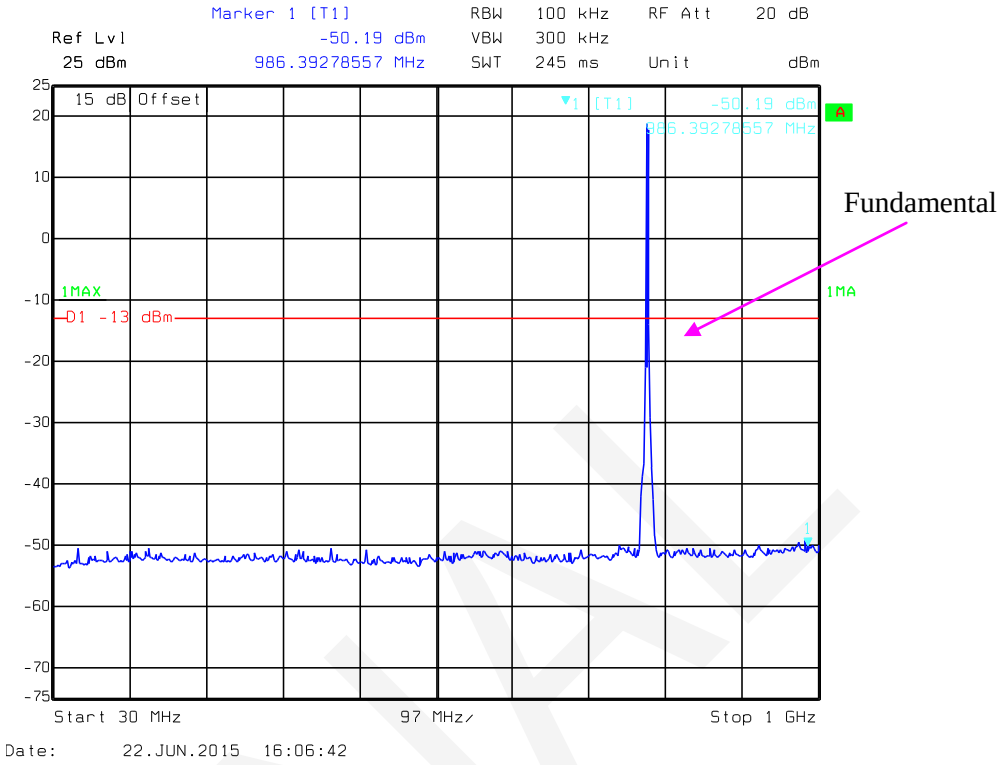
16QAM_20 MHz

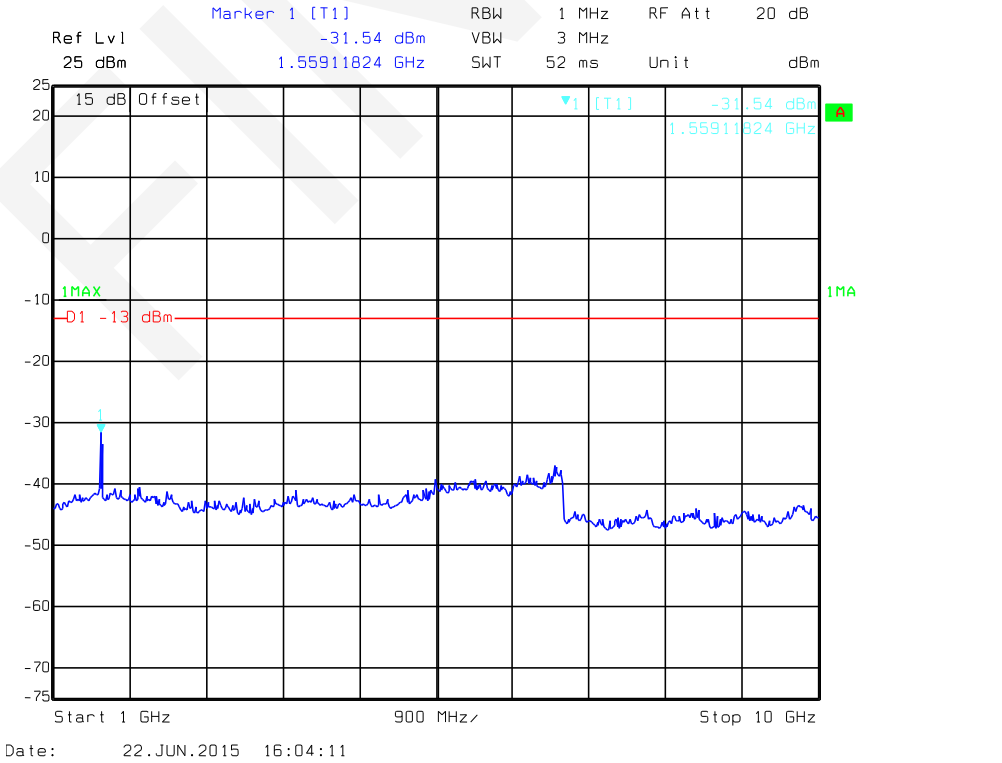

Marker 1 [T1]
-40.57 dBm
799.77955912 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 23.JUN.2015 21:56:09


Marker 1 [T1]
-27.84 dBm
6.93987976 GHz
RBW 1 MHz
VBW 3 MHz
SWT 110 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 1 GHz
1.9 GHz/
Stop 20 GHz
Date: 23.JUN.2015 21:56:35
Fundamental

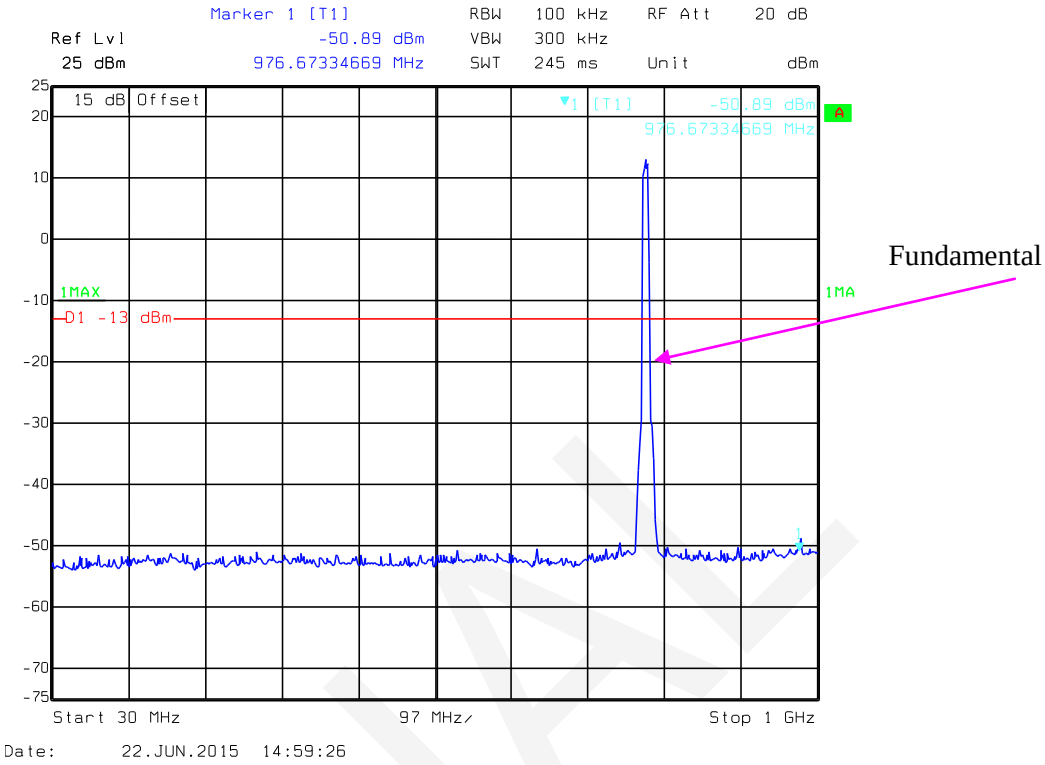
LTE BAND 13

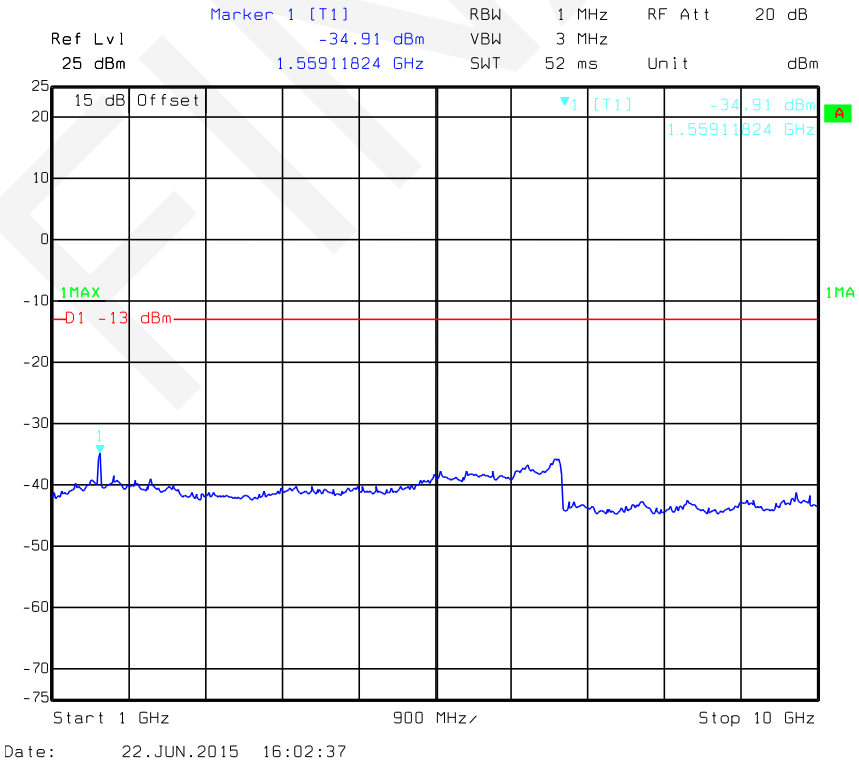
QPSK_5MHz



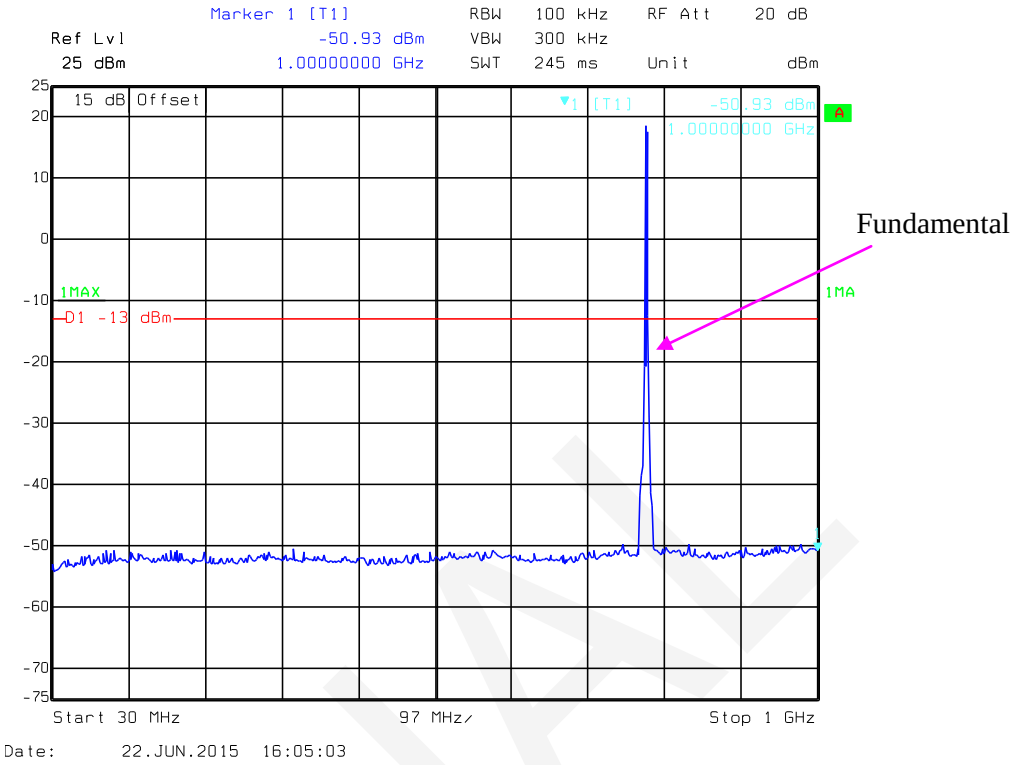


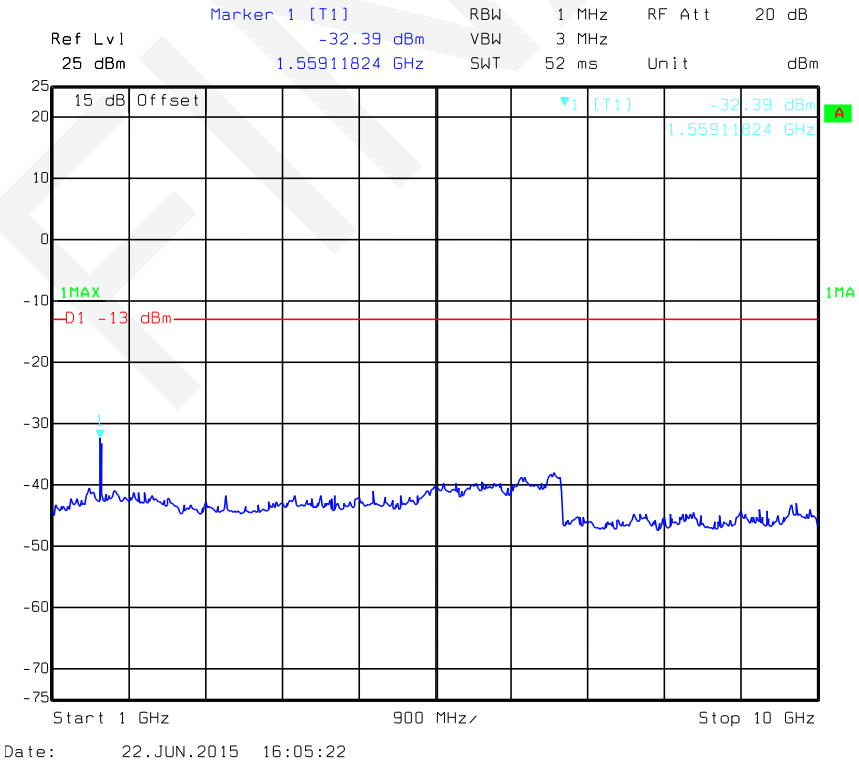
QPSK_10MHz


Marker 1 [T1]
RBW 100 kHz
RF Att 20 dB
Ref Lvl
-50.89 dBm
VBW 300 kHz
25 dBm
976.67334669 MHz
SWT 245 ms
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Fundamental
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 22.JUN.2015 14:59:26

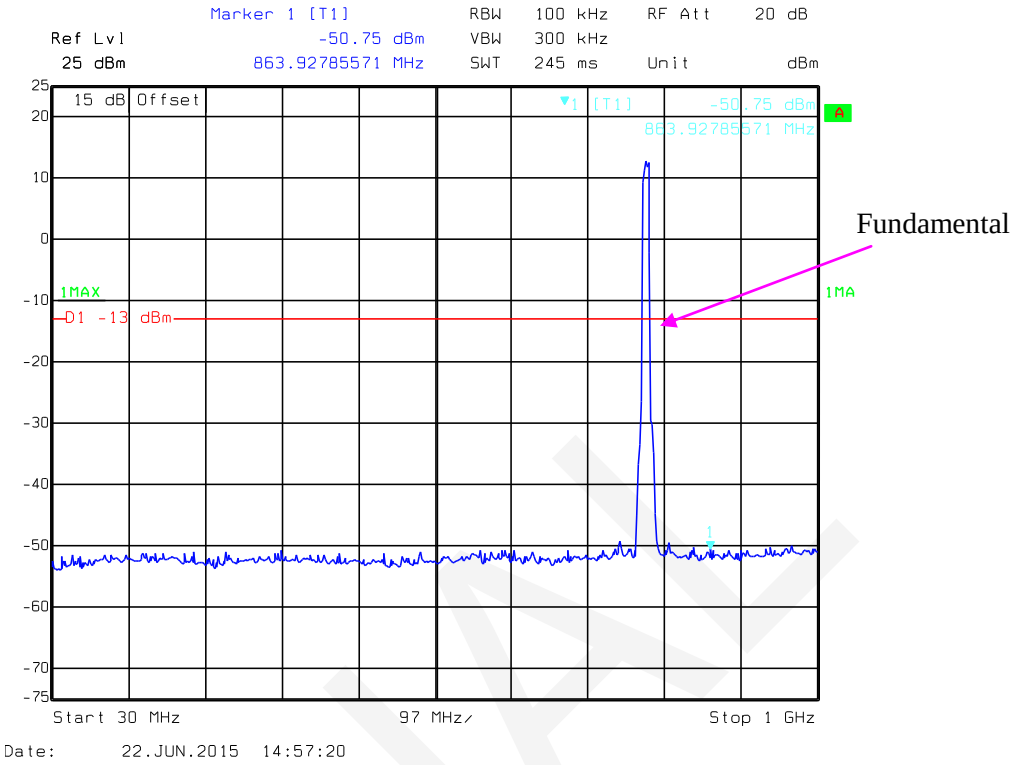

Marker 1 [T1]
RBW 1 MHz
RF Att 20 dB
Ref Lvl
-34.91 dBm
VBW 3 MHz
25 dBm
1.55911824 GHz
SWT 52 ms
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 22.JUN.2015 16:02:37

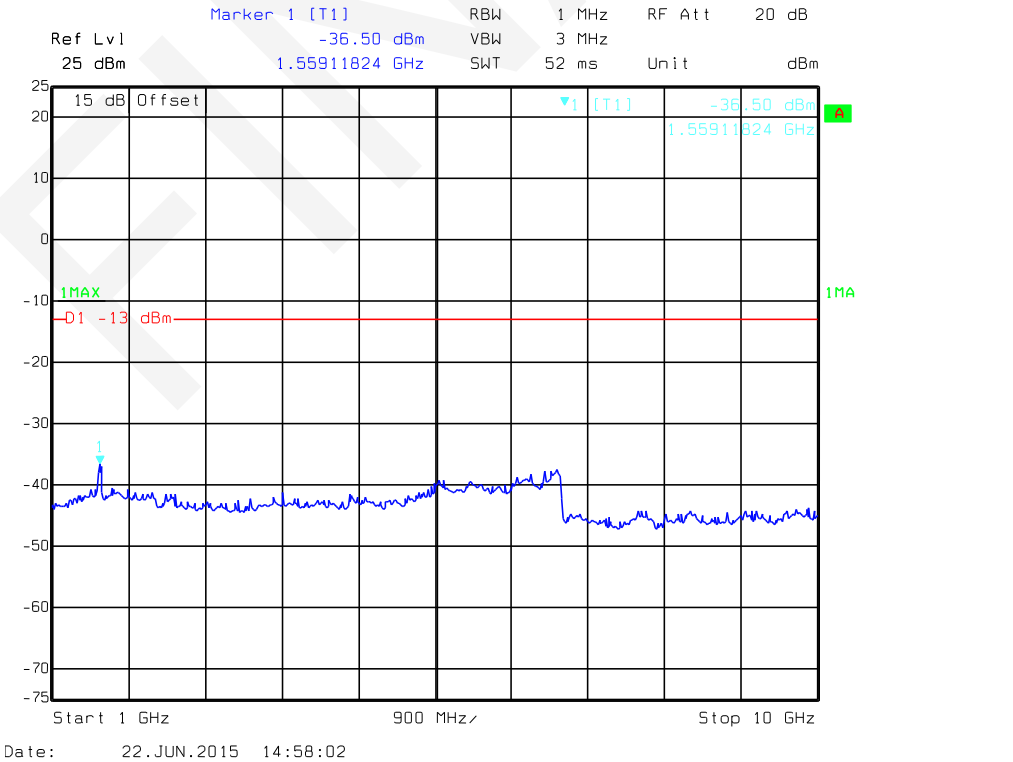
16QAM_5 MHz


Marker 1 [T1]
RBW 100 kHz
RF Att 20 dB
Ref Lvl
-50.93 dBm
VBW 300 kHz
25 dBm
1.00000000 GHz
SWT 245 ms
Unit dBm
15 dB Offset
1 [T1] -50.93 dBm
1.00000000 GHz
A
1MAX
D1 -13 dBm
1MA
Fundamental
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 22.JUN.2015 16:05:03


Marker 1 [T1]
RBW 1 MHz
RF Att 20 dB
Ref Lvl
-32.39 dBm
VBW 3 MHz
25 dBm
1.55911824 GHz
SWT 52 ms
Unit dBm
15 dB Offset
1 [T1] -32.39 dBm
1.55911824 GHz
A
1MAX
D1 -13 dBm
1MA
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 22.JUN.2015 16:05:22

16QAM_10 MHz


Marker 1 [T1]
RBW 100 kHz
RF Att 20 dB
Ref Lvl
-50.75 dBm
VBW 300 kHz
25 dBm
863.92785571 MHz
SWT 245 ms
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Fundamental
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 22.JUN.2015 14:57:20


Marker 1 [T1]
RBW 1 MHz
RF Att 20 dB
Ref Lvl
-36.50 dBm
VBW 3 MHz
25 dBm
1.55911824 GHz
SWT 52 ms
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 22.JUN.2015 14:58:02

FCC §2.1053, §22.917 & §24.238 & §27.53- SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC §2.1053, §22.917, §24.238 and §27.53.

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 tenth 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 emissions in dB = 10 lg (TXpwr in Watts/0.001) – the absolute level

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2015-05-09	2016-05-09
Sunol Sciences	Antenna	JB3	A060611-3	2014-07-28	2017-07-27
HP	Amplifier	8447E	2434A02181	2014-09-01	2015-09-01
R&S	Spectrum Analyzer	FSEM	DE31388	2015-05-09	2016-05-09
ETS LINDGREN	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2015-02-19	2016-02-19
Giga	Signal Generator	1026	320408	2015-05-09	2016-05-09
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
TDK RF	Horn Antenna	HRN-0118	130 084	2012-09-06	2015-09-06

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

Test Data

Environmental Conditions

Temperature:	26.4°C
Relative Humidity:	51 %
ATM Pressure:	99.9kPa

The testing was performed by Dean Liu on 2015-06-24.

EUT Operation Mode: Transmitting

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)			
BC0 RC1 Middle Channel (836.52MHz)								
1673.040	H	36.32	-64.8	10.6	1.5	-55.7	-13.0	42.7
1673.040	V	37.18	-64.2	10.6	1.5	-55.1	-13.0	42.1
2509.560	H	33.39	-64.6	13.1	2.8	-54.3	-13.0	41.3
2509.560	V	33.62	-63.5	13.1	2.8	-53.2	-13.0	40.2
195.300	H	38.04	-69.9	0.0	0.5	-70.4	-13.0	57.4
195.300	V	38.95	-66.8	0.0	0.5	-67.3	-13.0	54.3
BC0 RC3 Middle Channel (836.52MHz)								
1673.040	H	36.20	-64.9	10.6	1.5	-55.8	-13.0	42.8
1673.040	V	37.02	-64.4	10.6	1.5	-55.3	-13.0	42.3
2509.560	H	33.31	-64.7	13.1	2.8	-54.4	-13.0	41.4
2509.560	V	33.51	-63.6	13.1	2.8	-53.3	-13.0	40.3
195.300	H	38.19	-69.7	0.0	0.5	-70.2	-13.0	57.2
195.300	V	38.89	-66.8	0.0	0.5	-67.3	-13.0	54.3
BC0 RTAP Middle Channel (836.52MHz)								
1673.040	H	36.18	-64.9	10.6	1.5	-55.8	-13.0	42.8
1673.040	V	37.14	-64.2	10.6	1.5	-55.1	-13.0	42.1
2509.560	H	33.38	-64.7	13.1	2.8	-54.4	-13.0	41.4
2509.560	V	33.47	-63.6	13.1	2.8	-53.3	-13.0	40.3
195.300	H	37.96	-70	0.0	0.5	-70.5	-13.0	57.5
195.300	V	38.79	-66.9	0.0	0.5	-67.4	-13.0	54.4

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)			
BC1 RC1 Middle Channel (1880MHz)								
3760.000	H	36.26	-58	13.8	2.9	-47.1	-13.0	34.1
3760.000	V	37.07	-56	13.8	2.9	-45.1	-13.0	32.1
5640.000	H	33.27	-58.4	14.0	2.1	-46.5	-13.0	33.5
5640.000	V	33.48	-58.2	14.0	2.1	-46.3	-13.0	33.3
195.300	H	38.08	-69.8	0.0	0.5	-70.3	-13.0	57.3
195.300	V	39.10	-66.6	0.0	0.5	-67.1	-13.0	54.1
BC1 RC3 Middle Channel (1880MHz)								
3760.000	H	36.33	-58	13.8	2.9	-47.1	-13.0	34.1
3760.000	V	36.92	-56.1	13.8	2.9	-45.2	-13.0	32.2
5640.000	H	33.43	-58.3	14.0	2.1	-46.4	-13.0	33.4
5640.000	V	33.62	-58	14.0	2.1	-46.1	-13.0	33.1
195.300	H	38.19	-69.7	0.0	0.5	-70.2	-13.0	57.2
195.300	V	39.00	-66.7	0.0	0.5	-67.2	-13.0	54.2
BC1 RTAP Middle Channel (1880MHz)								
3760.000	H	36.18	-58.1	13.8	2.9	-47.2	-13.0	34.2
3760.000	V	37.13	-55.9	13.8	2.9	-45.0	-13.0	32.0
5640.000	H	33.30	-58.4	14.0	2.1	-46.5	-13.0	33.5
5640.000	V	33.49	-58.2	14.0	2.1	-46.3	-13.0	33.3
195.300	H	37.81	-70.1	0.0	0.5	-70.6	-13.0	57.6
195.300	V	38.69	-67	0.0	0.5	-67.5	-13.0	54.5

LTE Band 4

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)			
QPSK 20MHz Bandwidth Middle Channel (1732.5MHz)								
3465.000	H	36.05	-60.9	13.9	1.9	-48.9	-13.0	35.9
3465.000	V	36.91	-59.3	13.9	1.9	-47.3	-13.0	34.3
5197.500	H	33.10	-57.9	14.0	2.3	-46.2	-13.0	33.2
5197.500	V	33.28	-59.3	14.0	2.3	-47.6	-13.0	34.6
195.300	H	37.40	-70.5	0.0	0.5	-71.0	-13.0	58.0
195.300	V	38.36	-67.4	0.0	0.5	-67.9	-13.0	54.9
16-QAM 20MHz Bandwidth Middle Channel (1732.5MHz)								
3465.000	H	36.26	-60.7	13.9	1.9	-48.7	-13.0	35.7
3465.000	V	37.06	-59.1	13.9	1.9	-47.1	-13.0	34.1
5197.500	H	33.28	-57.7	14.0	2.3	-46.0	-13.0	33.0
5197.500	V	33.54	-59	14.0	2.3	-47.3	-13.0	34.3
195.300	H	38.03	-69.9	0.0	0.5	-70.4	-13.0	57.4
195.300	V	38.79	-66.9	0.0	0.5	-67.4	-13.0	54.4

LTE Band 13

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)			
QPSK 10MHz Bandwidth Middle Channel (782MHz)								
1564.000	H	36.17	-65.1	9.9	1.4	-56.6	-13.0	43.6
1564.000	V	37.09	-64.8	9.9	1.4	-56.3	-13.0	43.3
2346.000	H	33.50	-63.1	11.7	2	-53.4	-13.0	40.4
2346.000	V	34.48	-61.3	11.7	2	-51.6	-13.0	38.6
195.300	H	38.98	-68.9	0.0	0.5	-69.4	-13.0	56.4
195.300	V	39.87	-65.9	0.0	0.5	-66.4	-13.0	53.4
16-QAM 10MHz Bandwidth Middle Channel (782MHz)								
1564.000	H	36.58	-64.7	9.9	1.4	-56.2	-13.0	43.2
1564.000	V	37.43	-64.5	9.9	1.4	-56.0	-13.0	43.0
2346.000	H	33.76	-62.8	11.7	2	-53.1	-13.0	40.1
2346.000	V	34.60	-61.2	11.7	2	-51.5	-13.0	38.5
195.300	H	38.61	-69.3	0.0	0.5	-69.8	-13.0	56.8
195.300	V	39.42	-66.3	0.0	0.5	-66.8	-13.0	53.8

Note:
1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
2) Absolute Level = SG Level - Cable loss + Antenna Gain
3) Margin = Limit-Absolute Level

FCC §22.917(a) & §24.238(a) & §27.53(h)- BAND EDGES

Applicable Standard

According to §22.917(a), the power of any emissions 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.

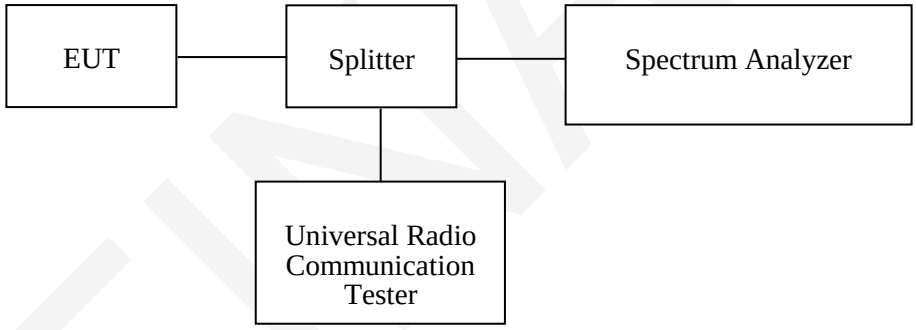
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

According to §27.53 (h), AWS emission limits—(1) General protection levels. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09

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

Test Data

Environmental Conditions

Temperature:	25.3~26.1°C
Relative Humidity:	53~57 %
ATM Pressure:	99.7~100.3 kPa

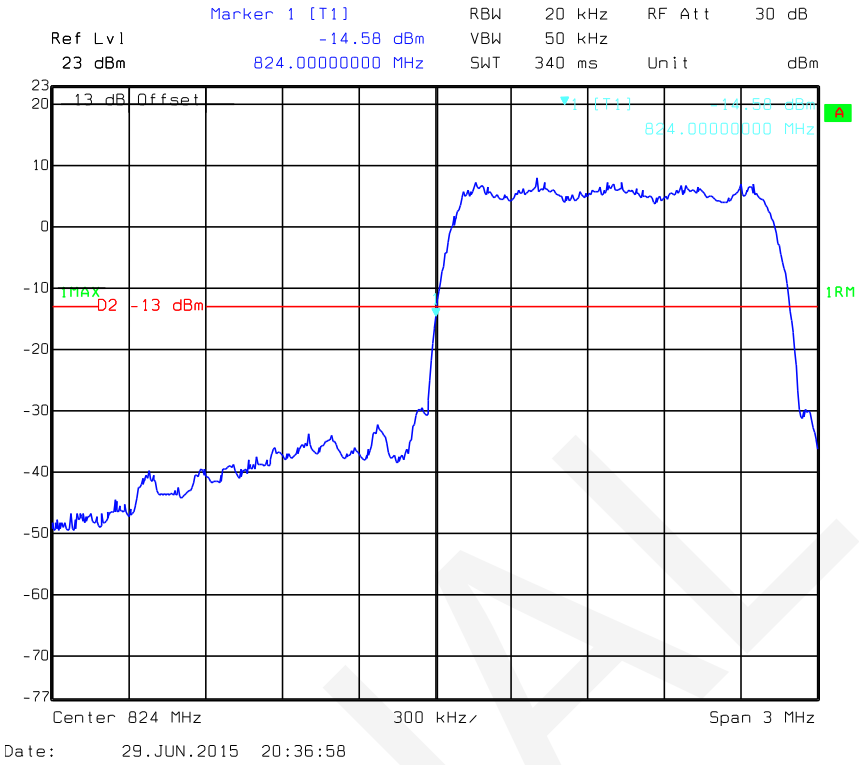
The testing was performed by Dean Liu from 2015-06-22 to 2015-06-29.

Test Mode: Transmitting

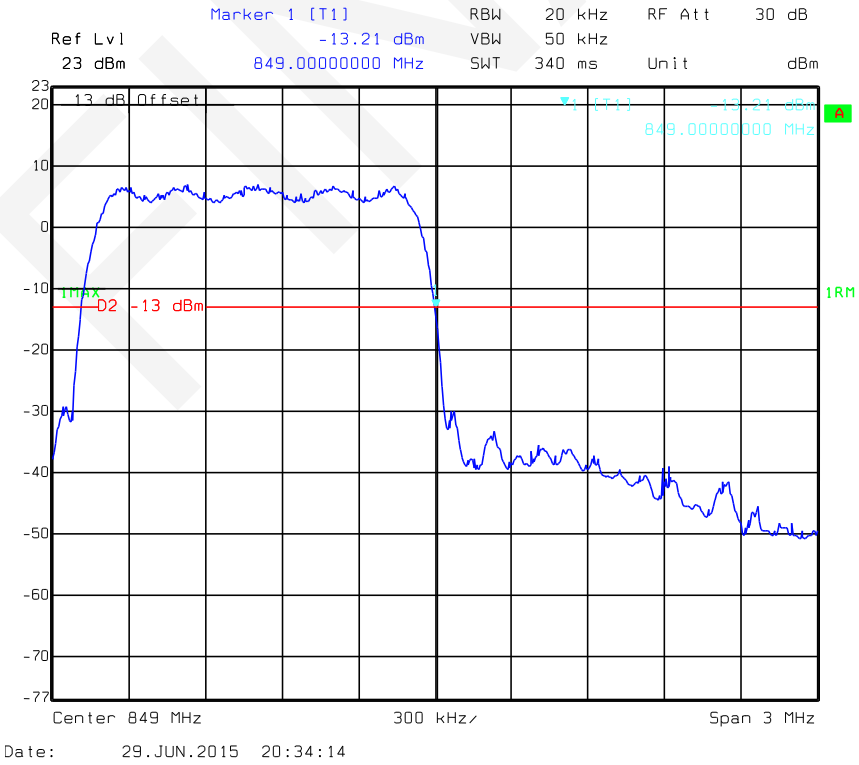
Test Result: Compliant. Please refer to the following plots.

FINAL

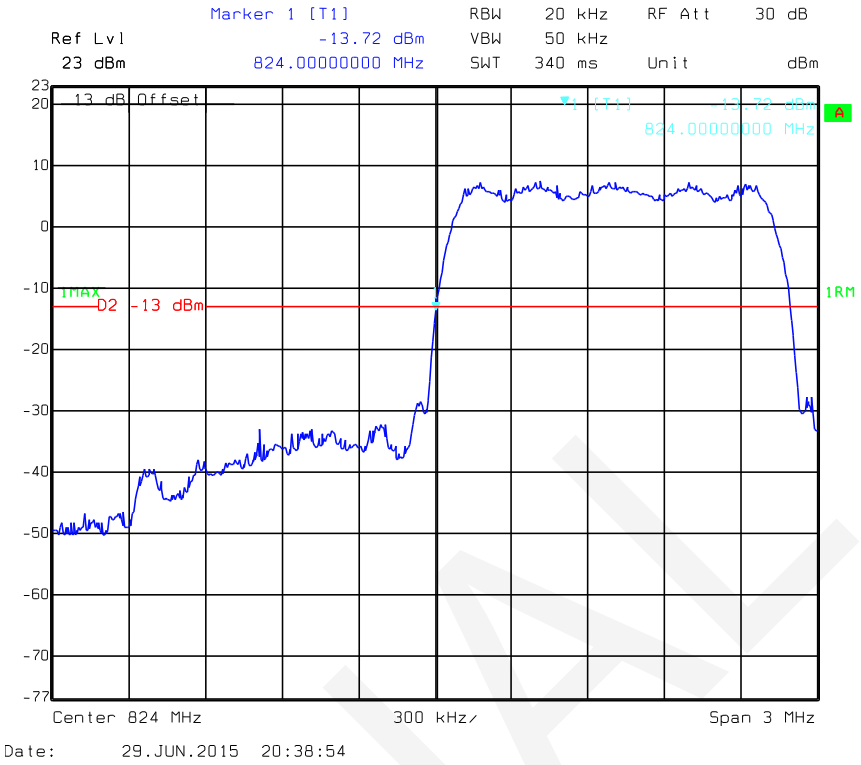
BC0-RC1, Left Band Edge



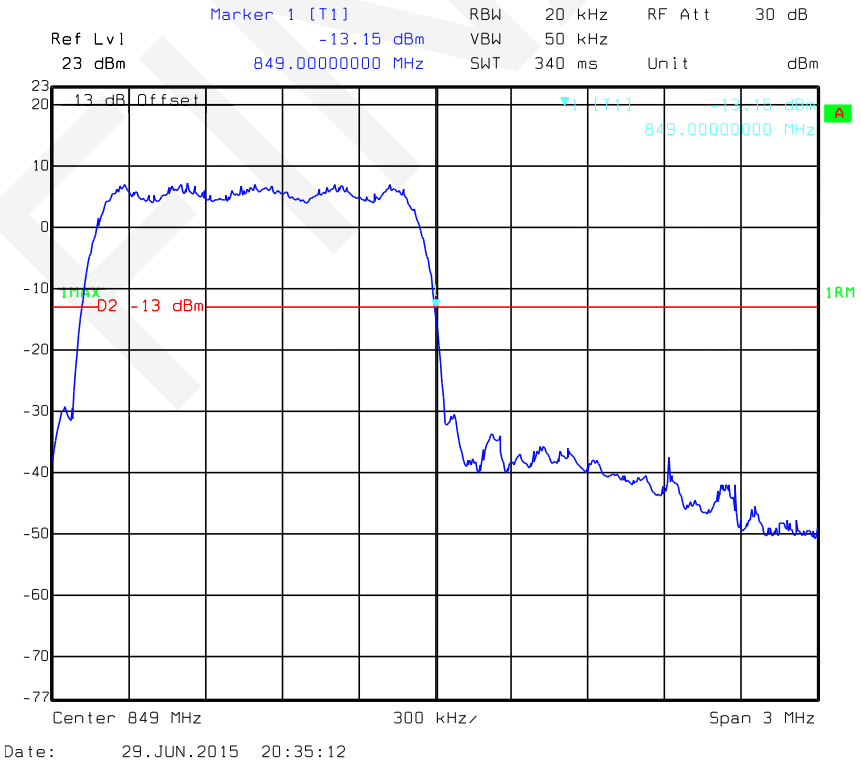
BC0-RC1, Right Band Edge



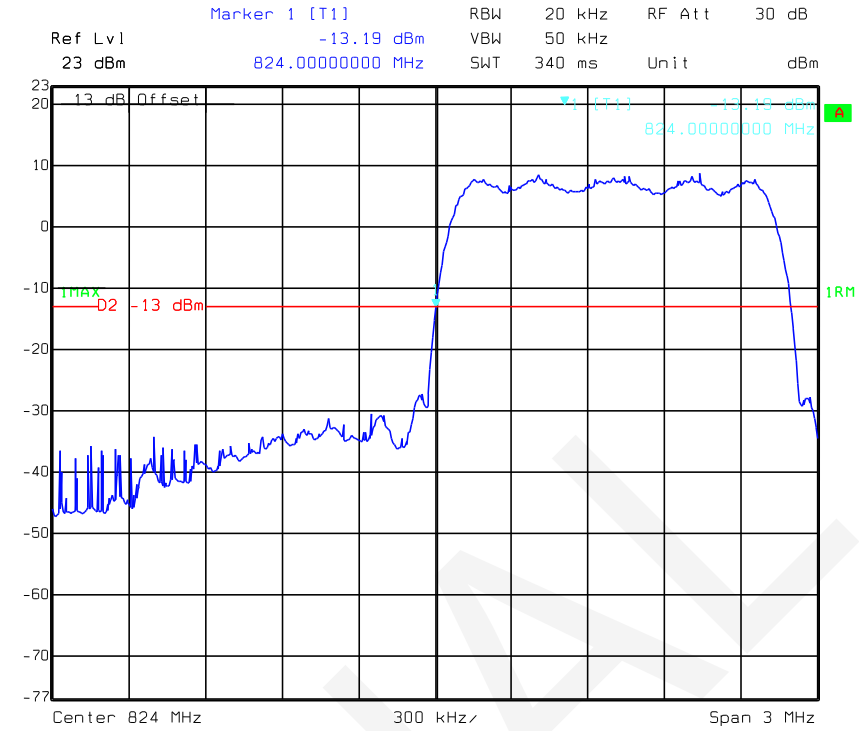
BC0-RC3, Left Band Edge



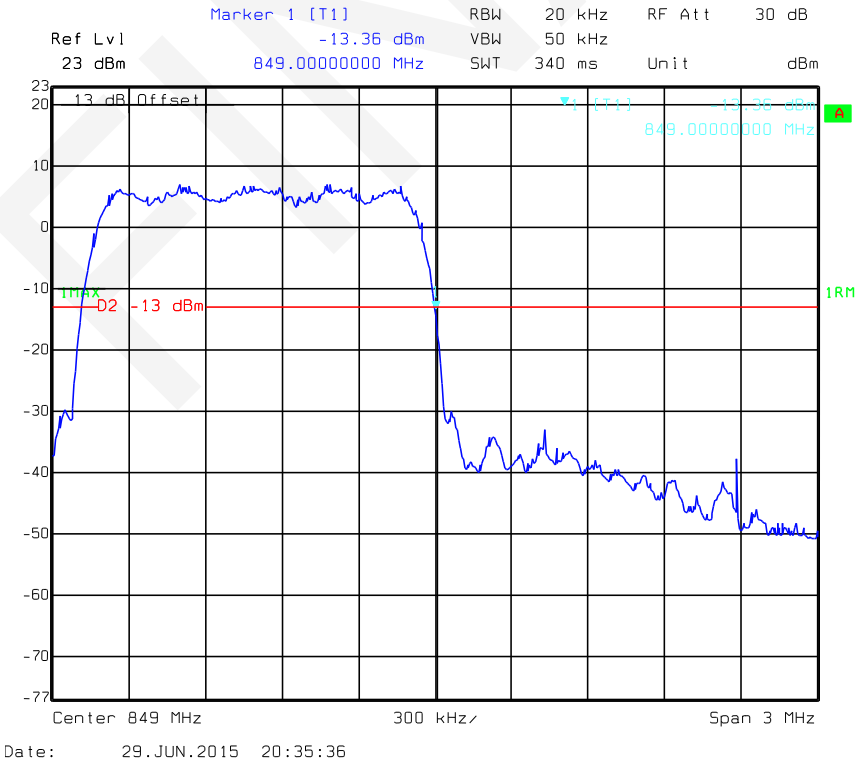
BC0-RC3, Right Band Edge



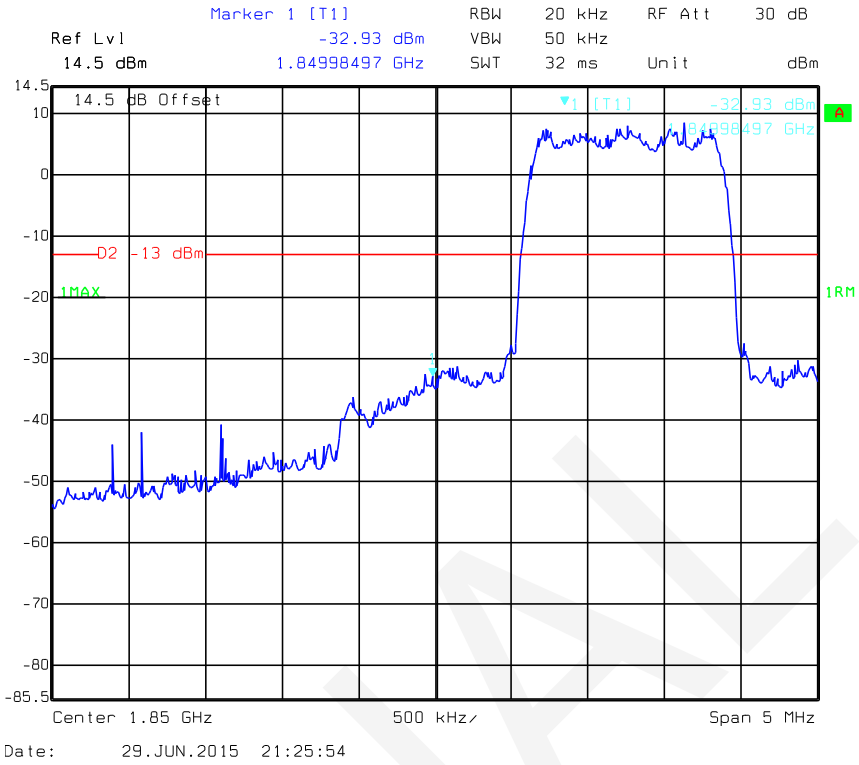
BC0-Rel. A, Left Band Edge



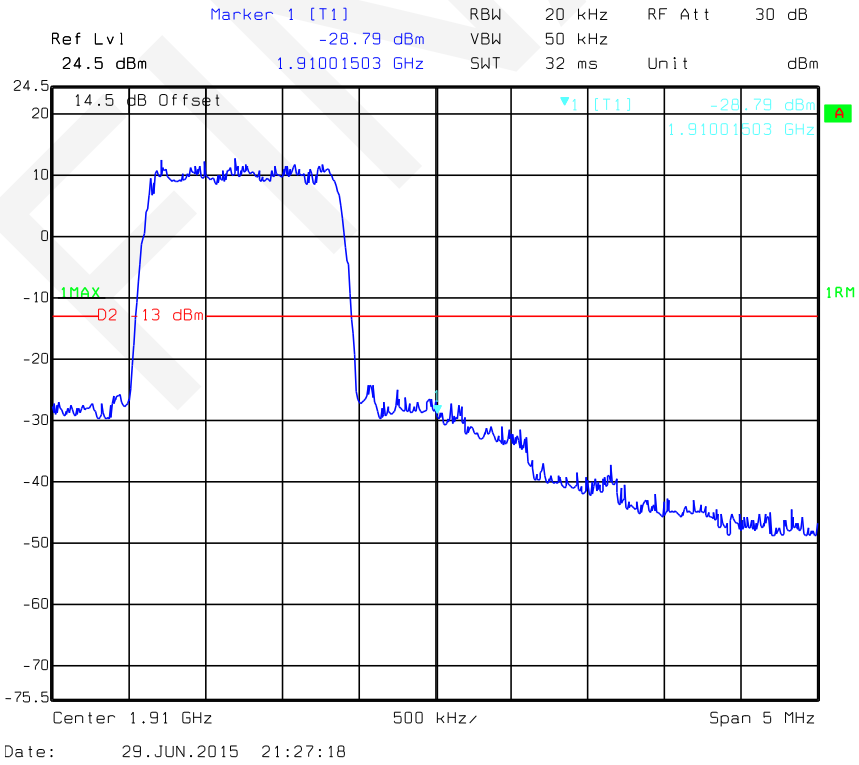
BC0-Rel. A, Right Band Edge



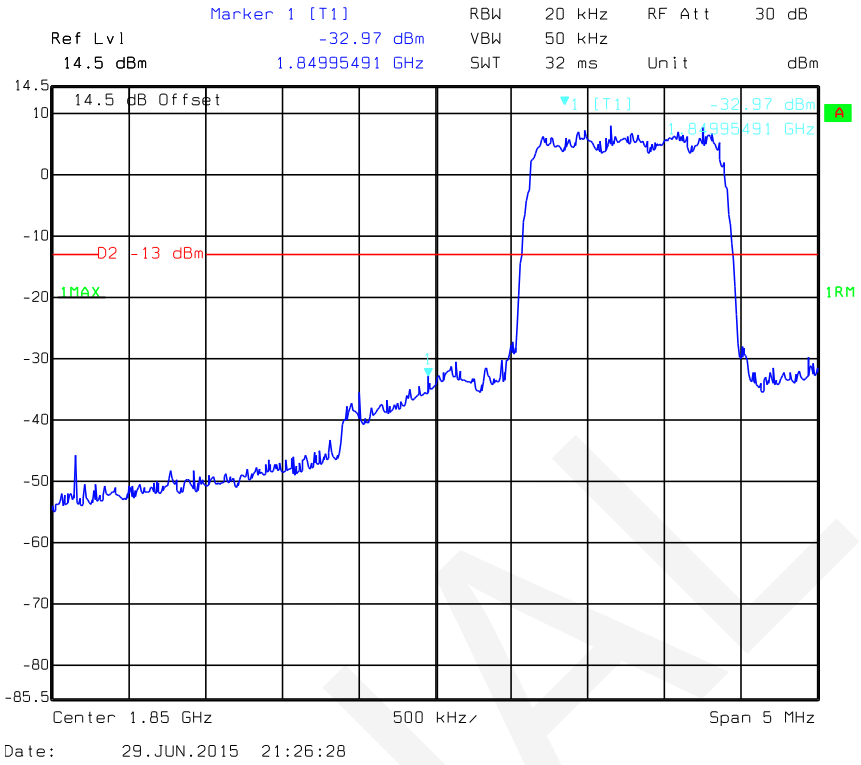
BC1-RC1, Left Band Edge



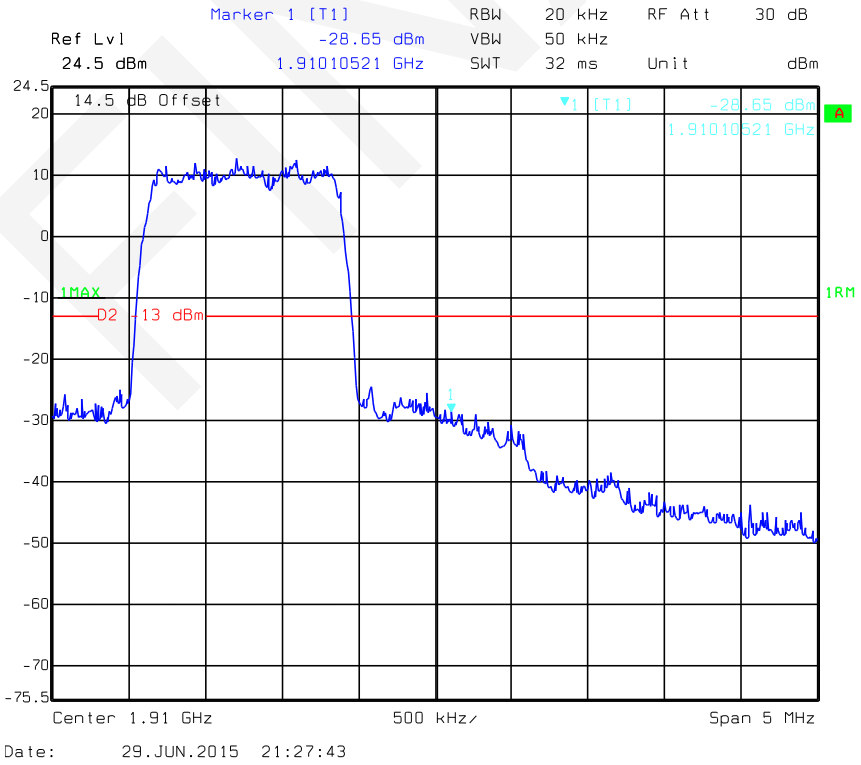
BC1-RC1, Right Band Edge



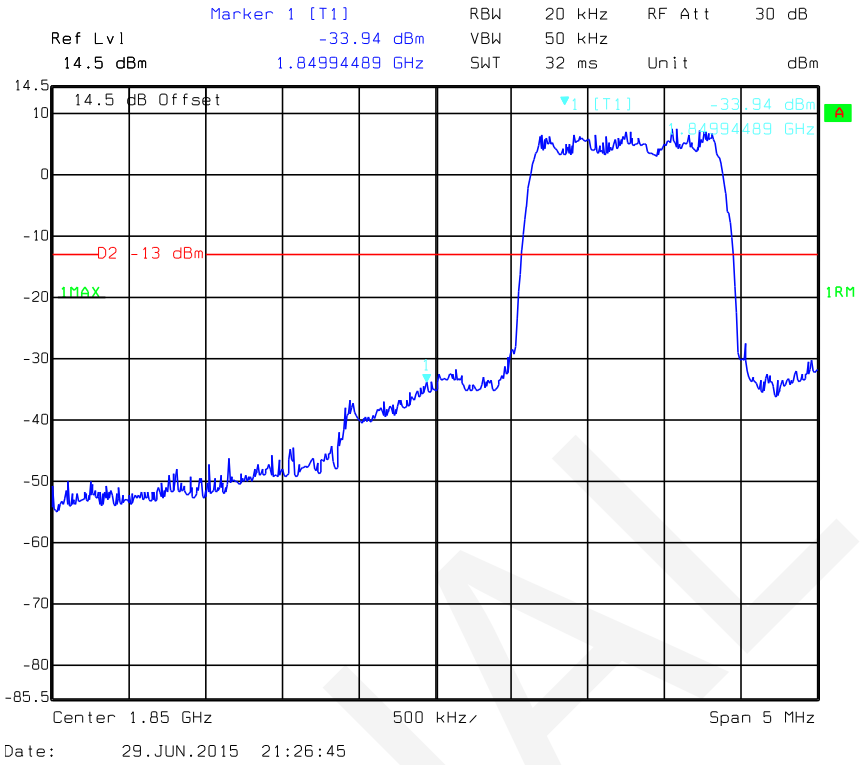
BC1-RC3, Left Band Edge



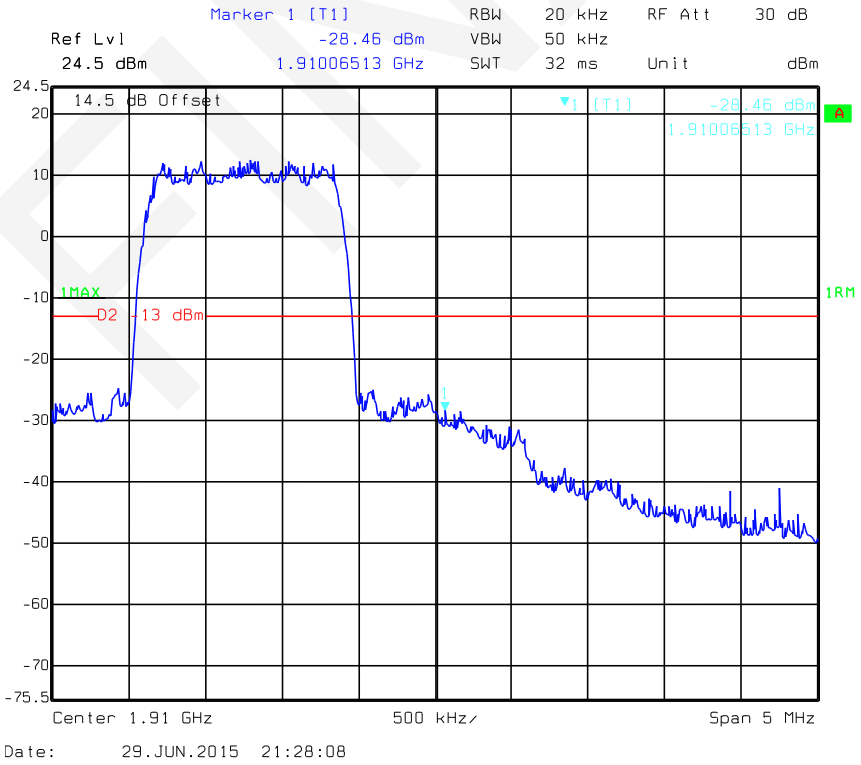
BC1-RC3, Right Band Edge



BC1-Rel.A, Left Band Edge

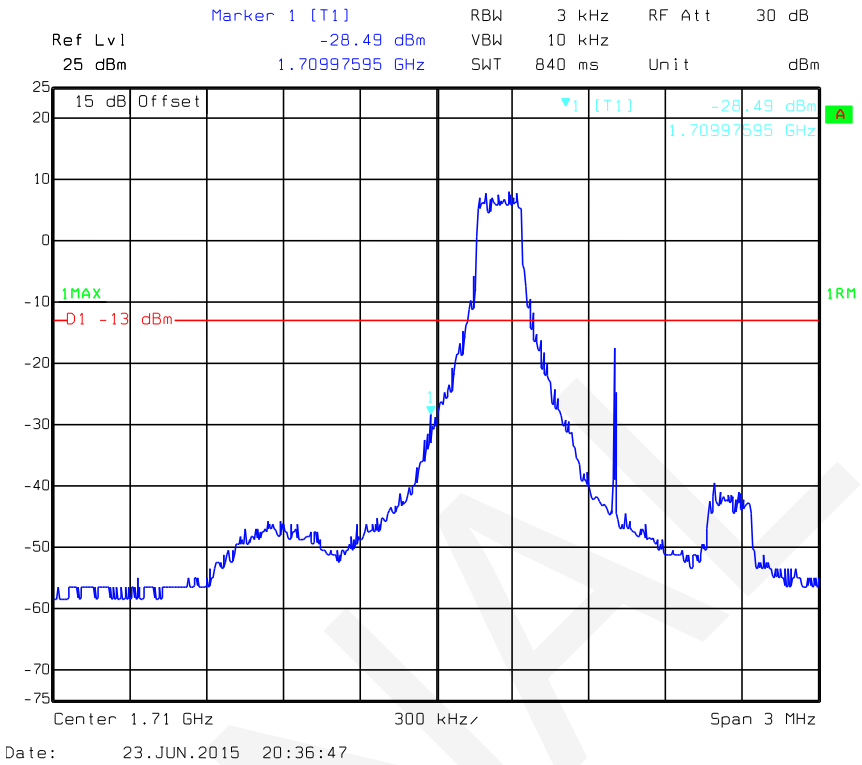


BC1-Rel.A, Right Band Edge

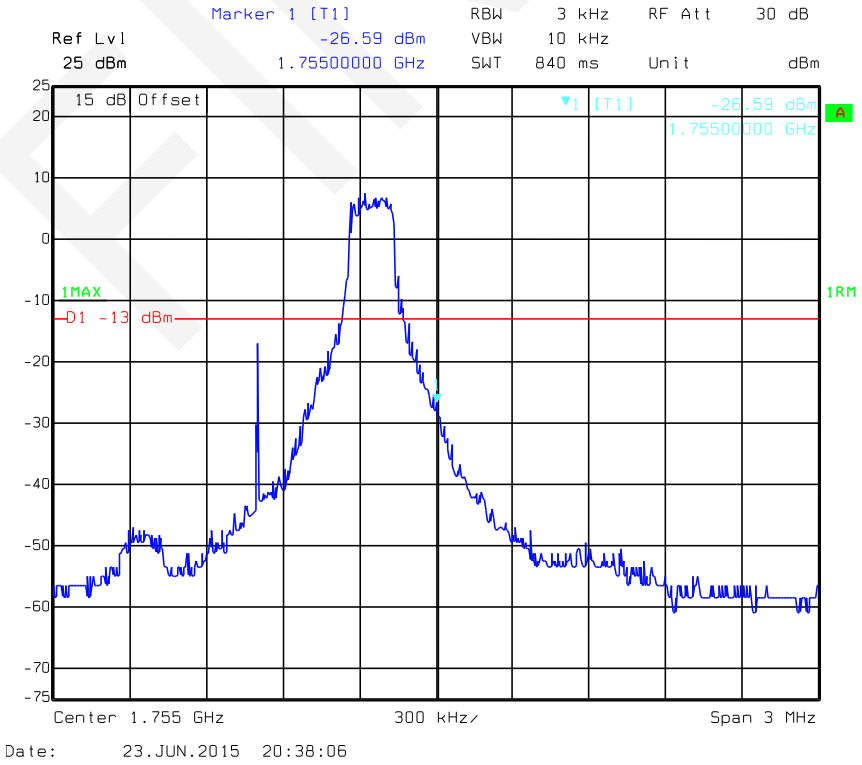


LTE Band 4:

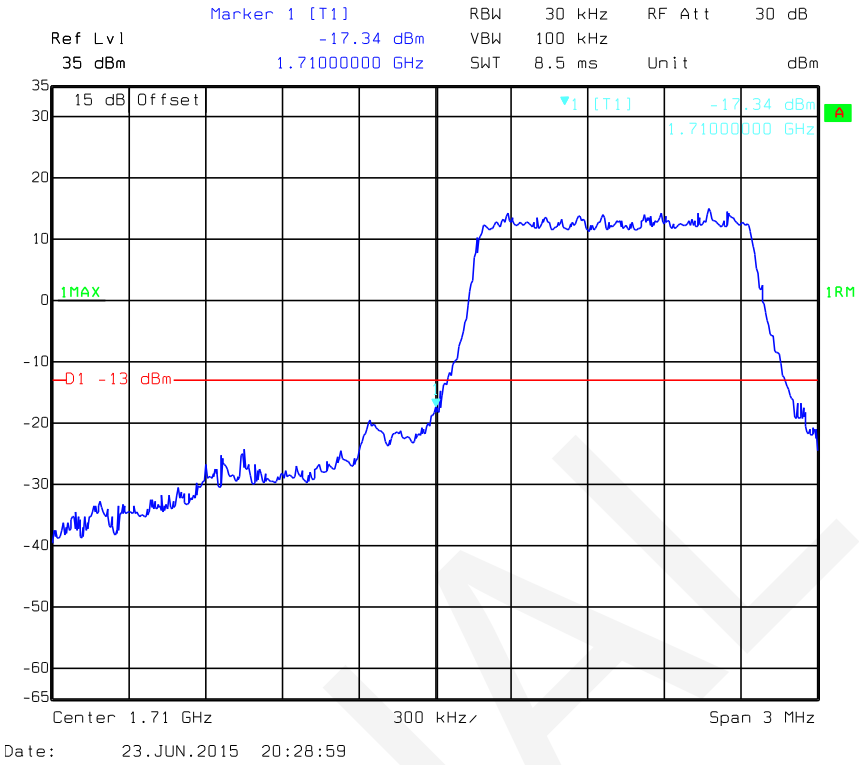
QPSK_1.4MHz_1RB_Left



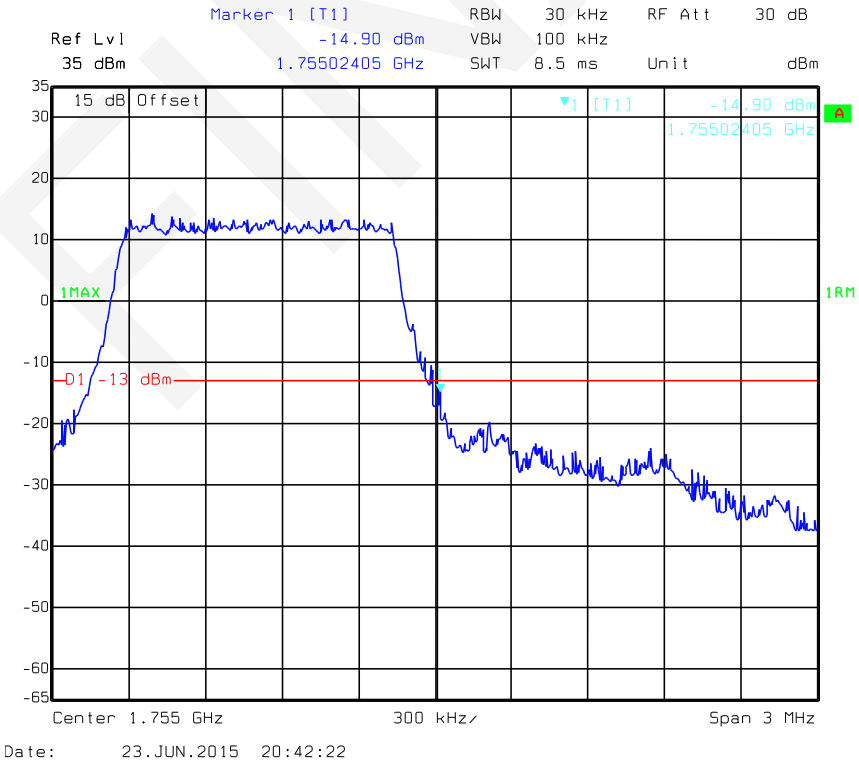
QPSK_1.4MHz_1RB_Right



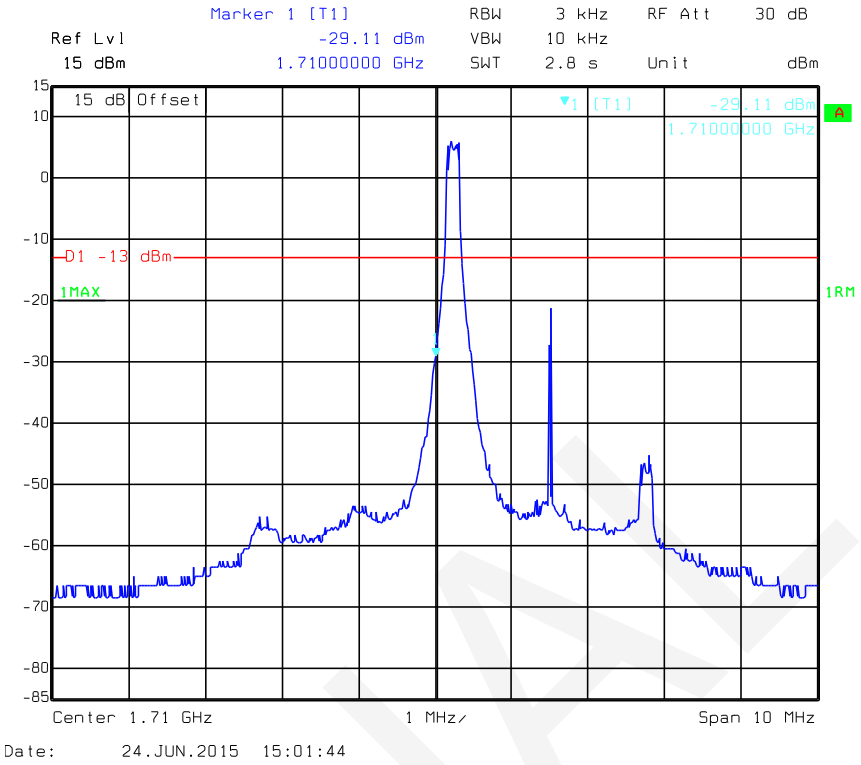
QPSK_1.4MHz_FULL RB_ Left



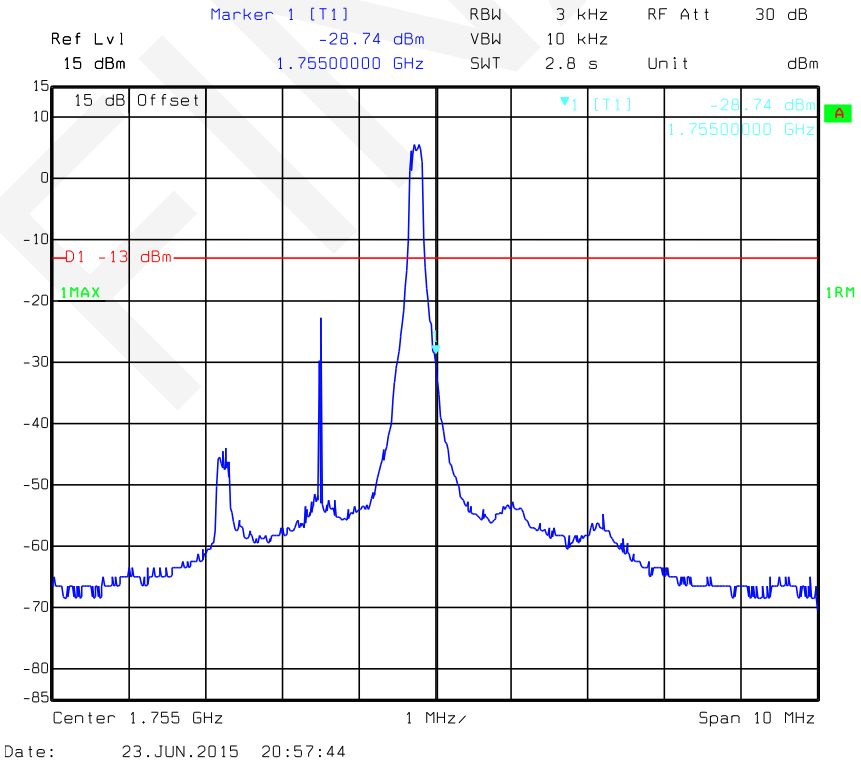
QPSK_1.4MHz_FULL RB_ Right



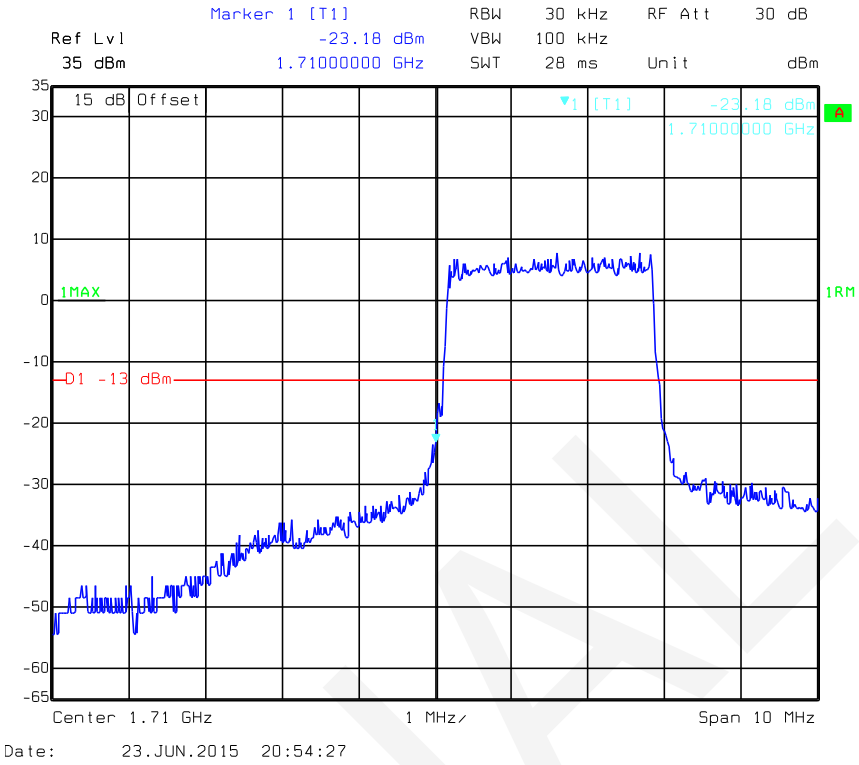
QPSK_3MHz_1RB_Left



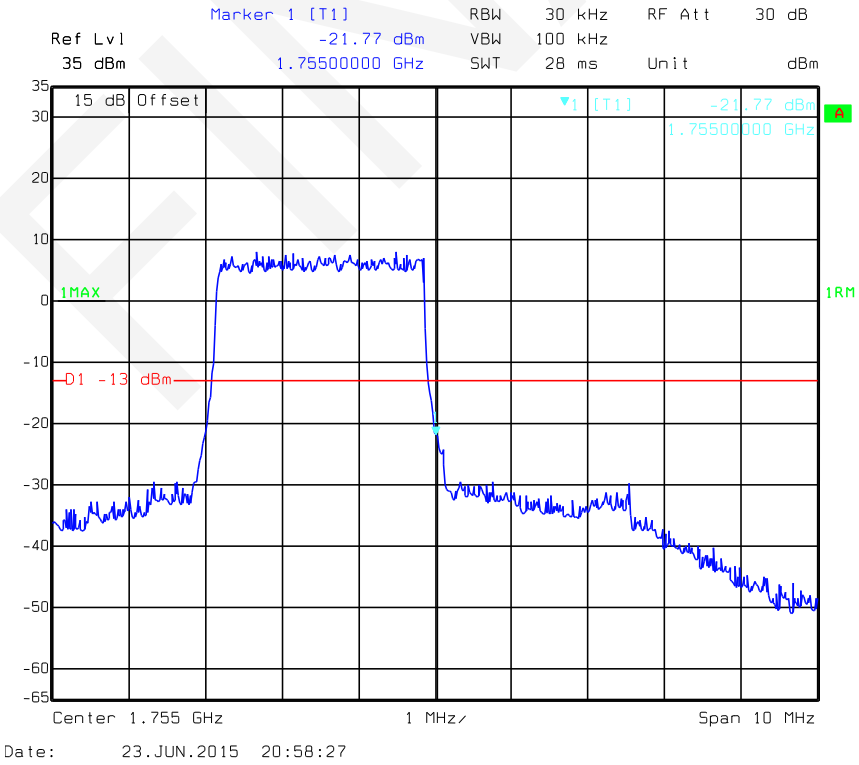
QPSK_3MHz_1RB_ Right



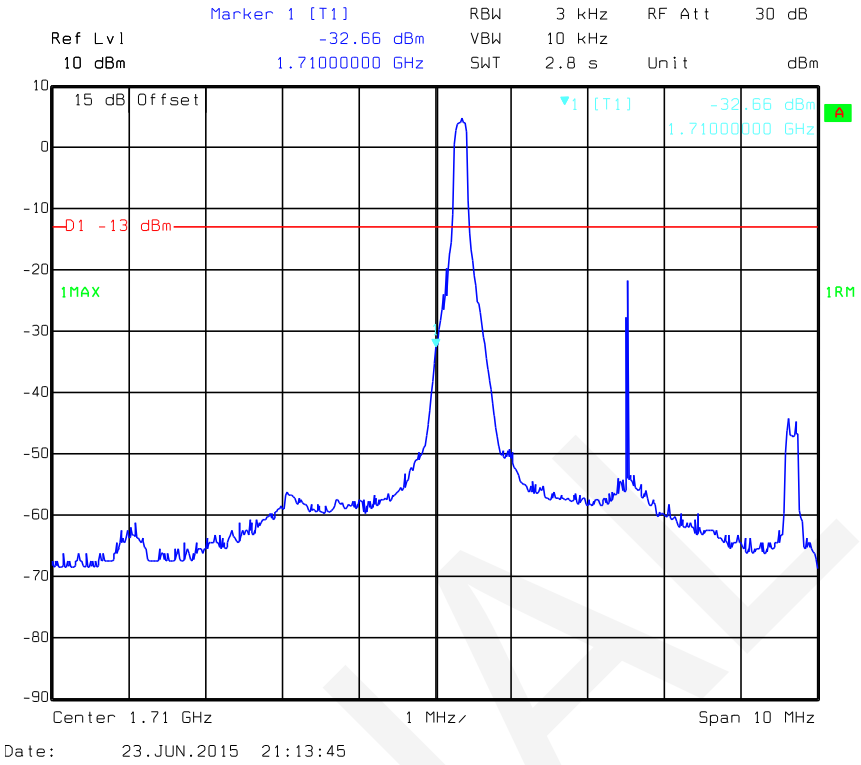
QPSK_3MHz_FULL RB_ Left



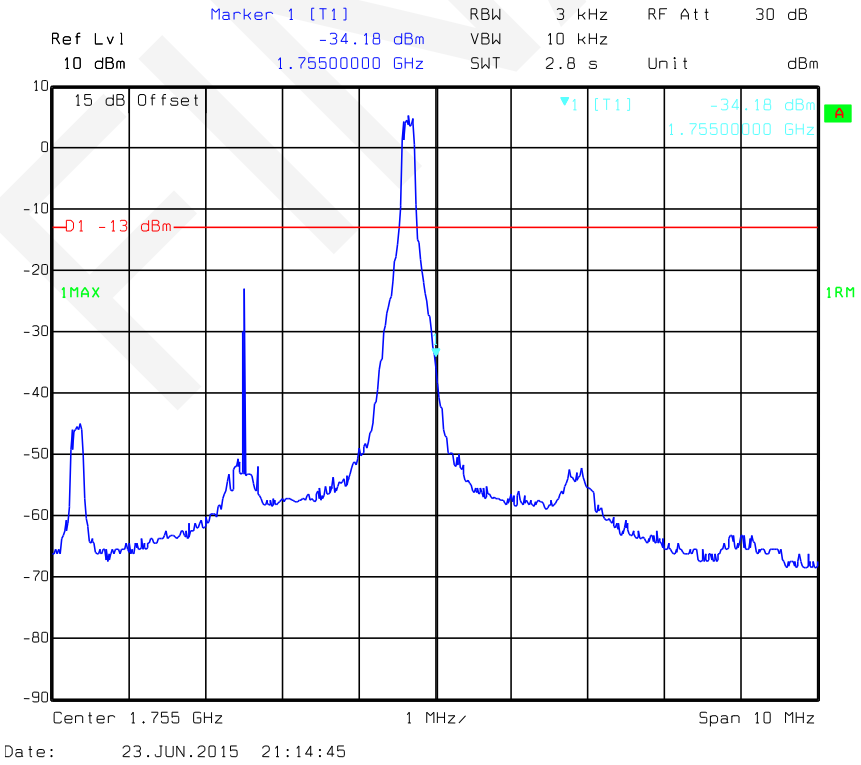
QPSK_3MHz_ FULL RB_ Right



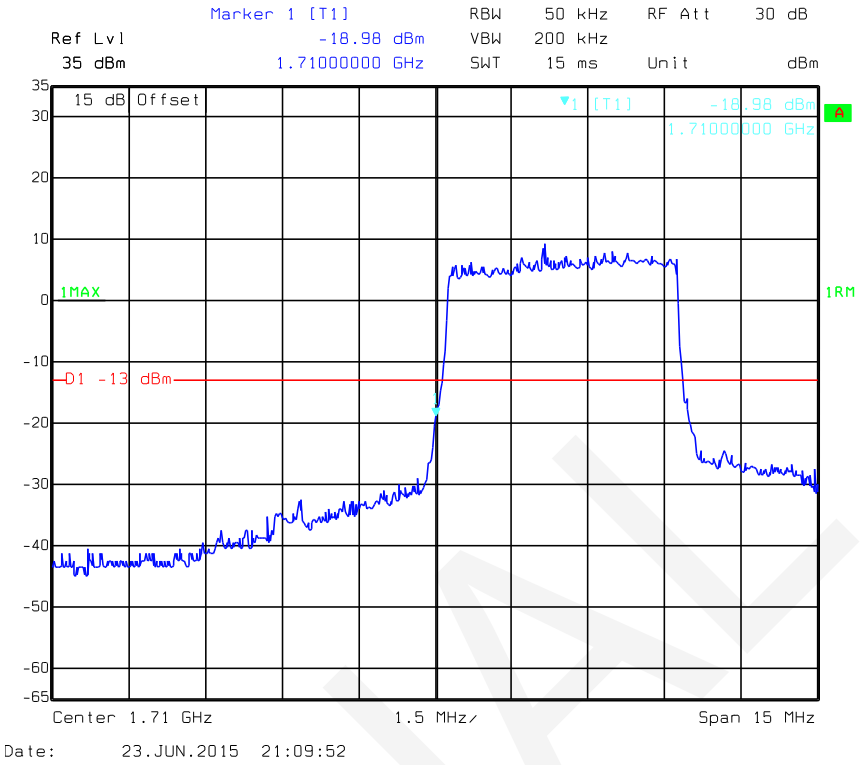
QPSK_5MHz_1RB_ Left



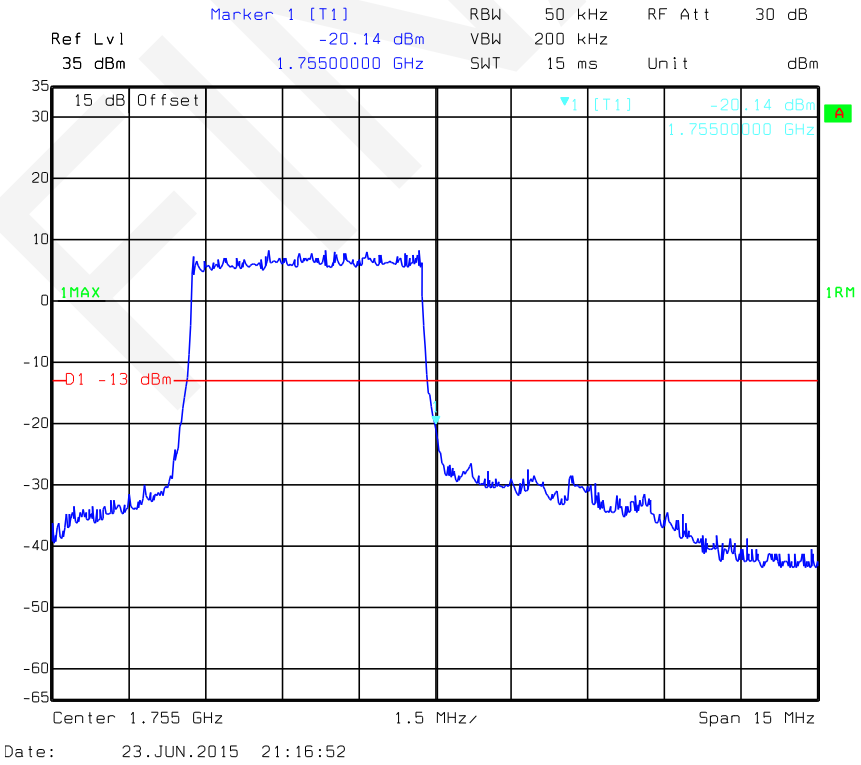
QPSK_5MHz_1RB_Right



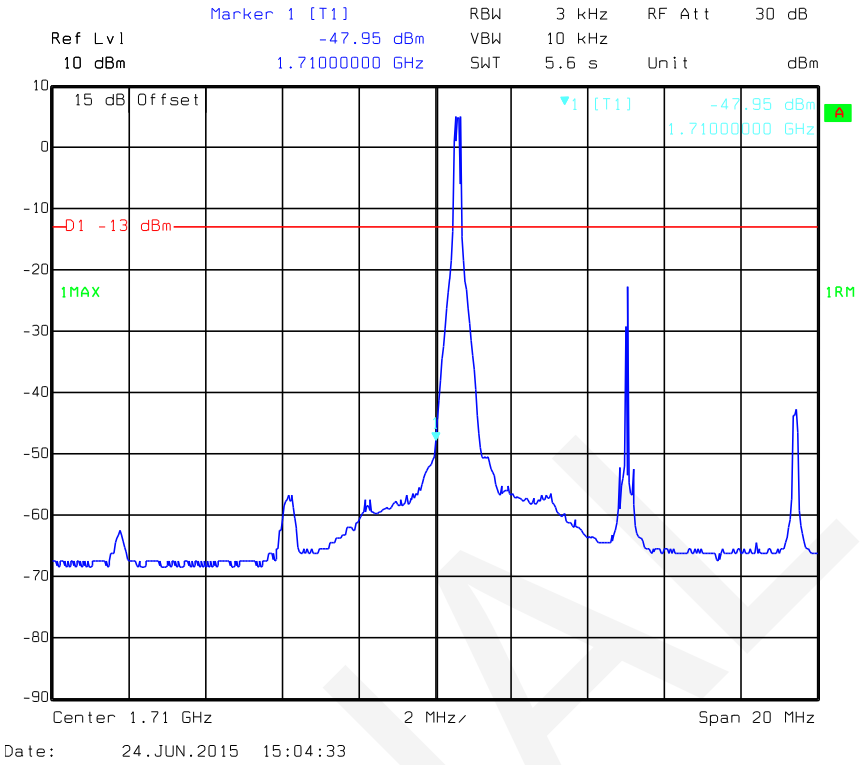
QPSK_5MHz_ FULL RB_ Left



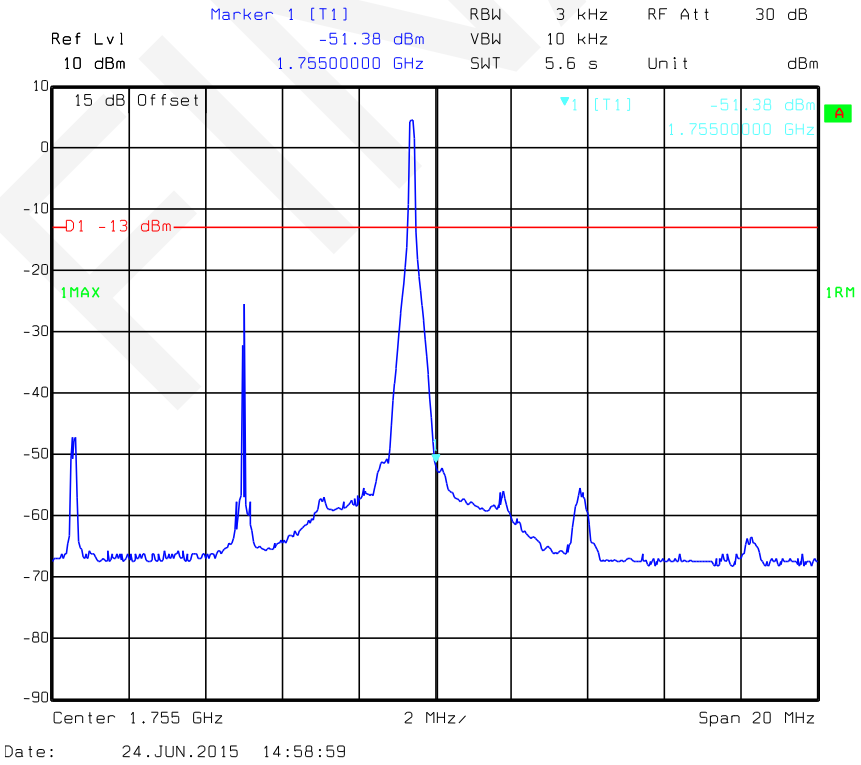
QPSK_5MHz_ FULL RB_ Right



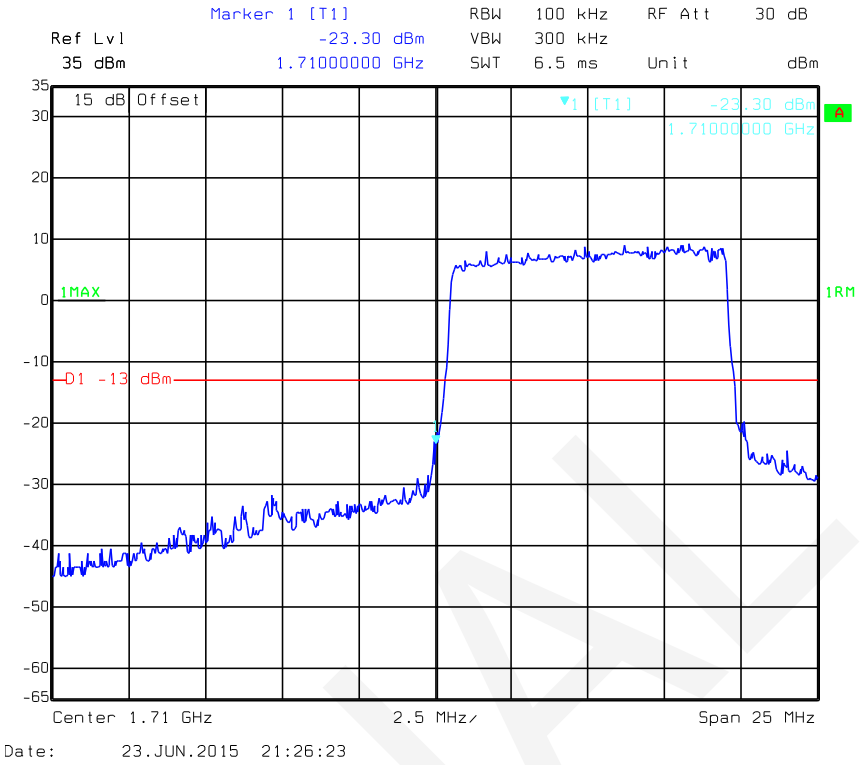
QPSK_10MHz_ 1RB_ Left



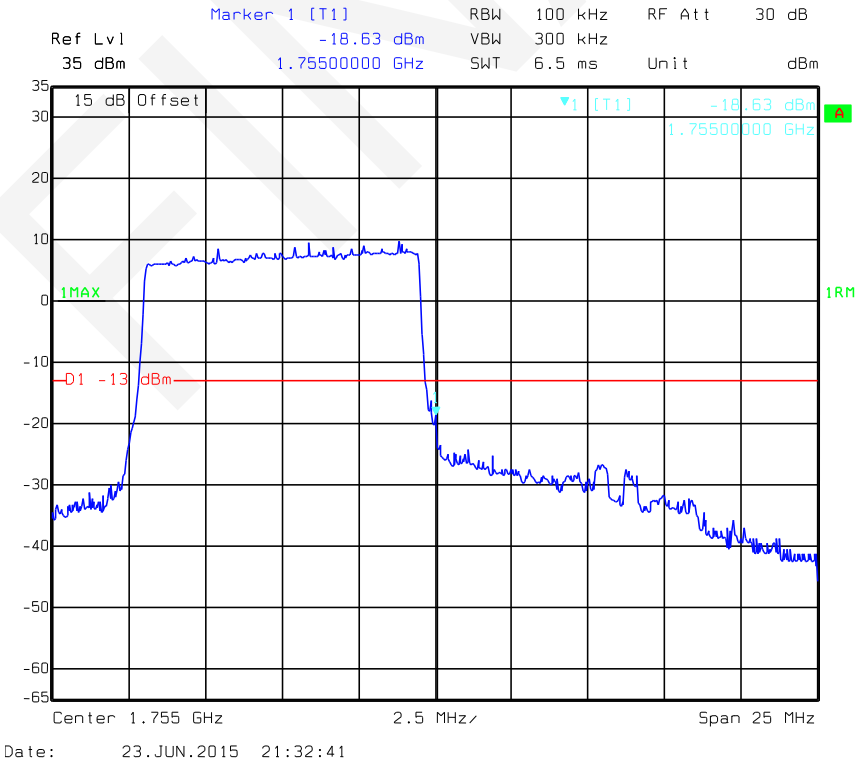
QPSK_10MHz_1 RB_ Right



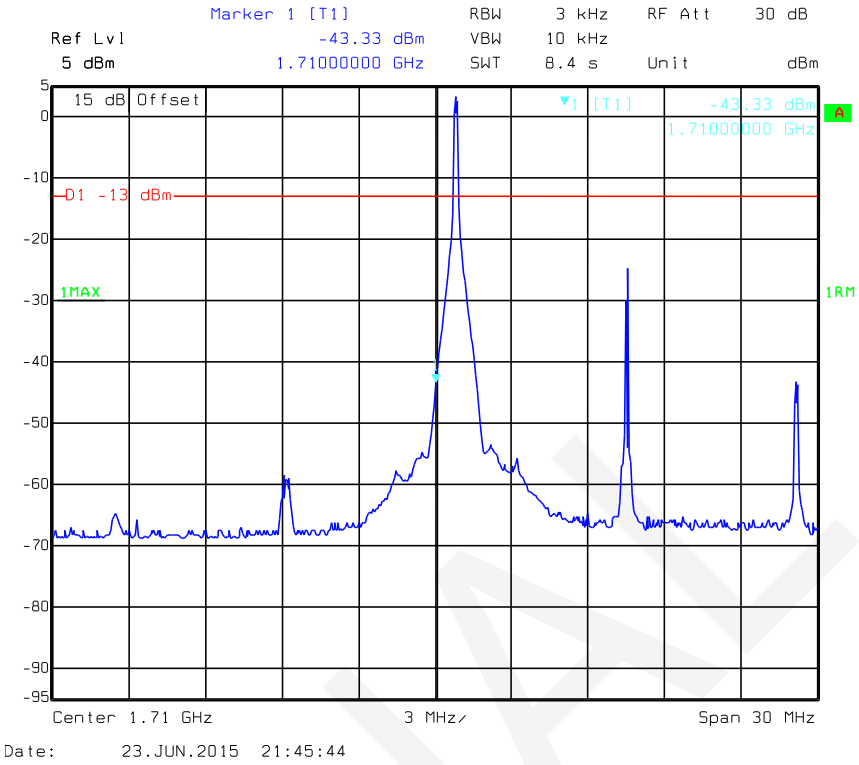
QPSK_10MHz_ FULL RB_ Left



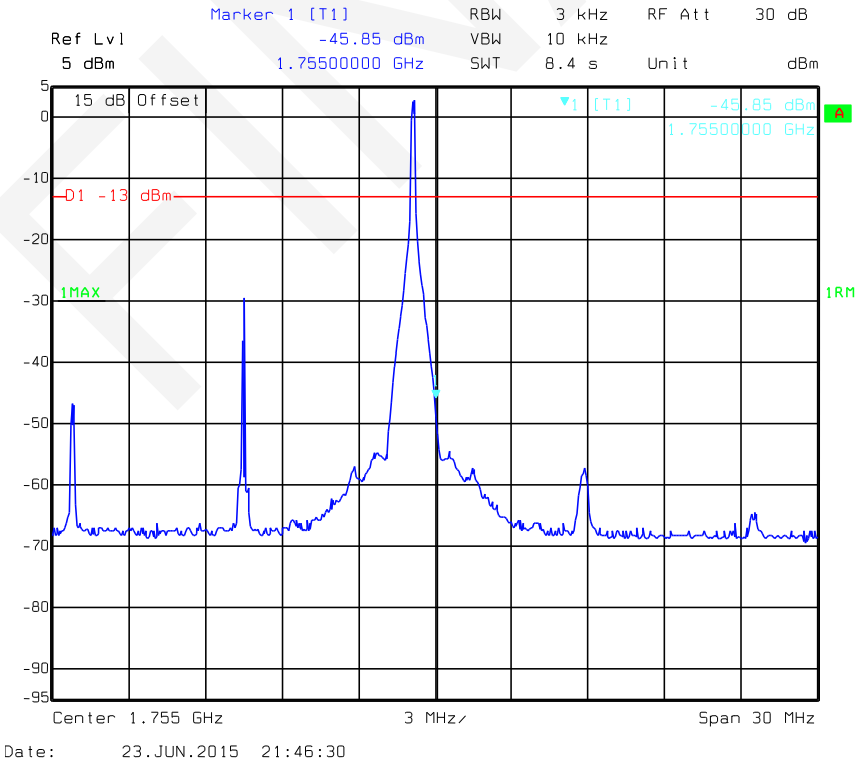
QPSK_10MHz_ FULL RB_ Right



QPSK_15MHz_ 1RB_ Left



QPSK_15MHz_ 1RB_ Right



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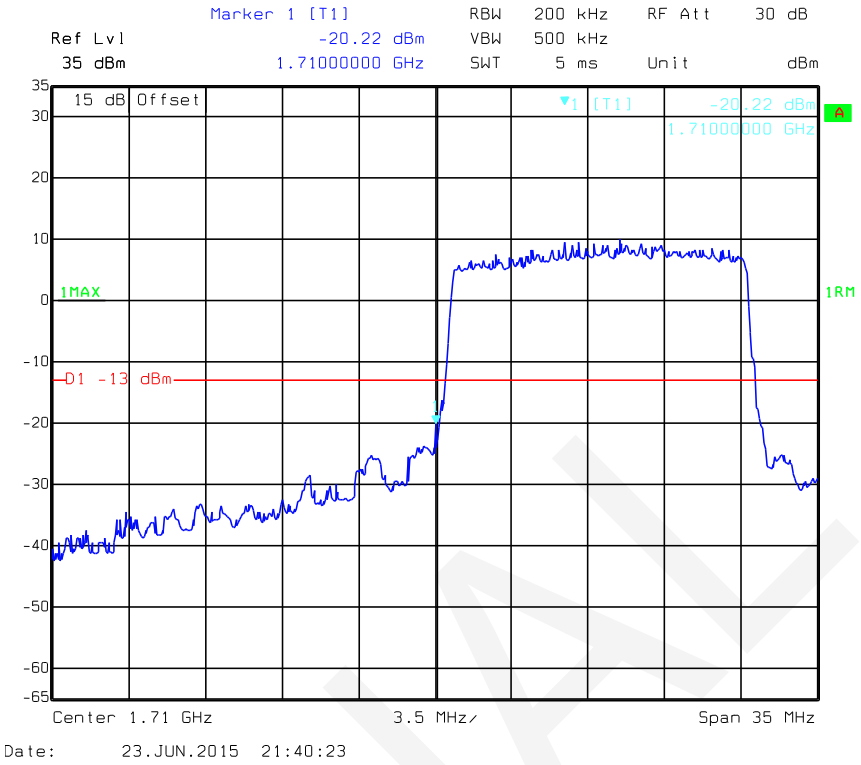
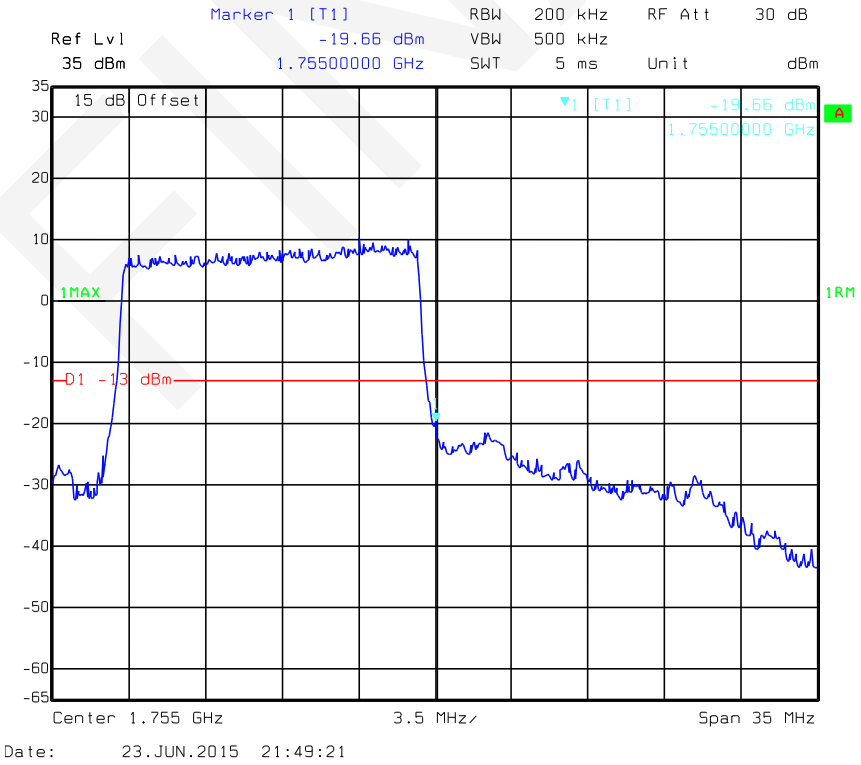
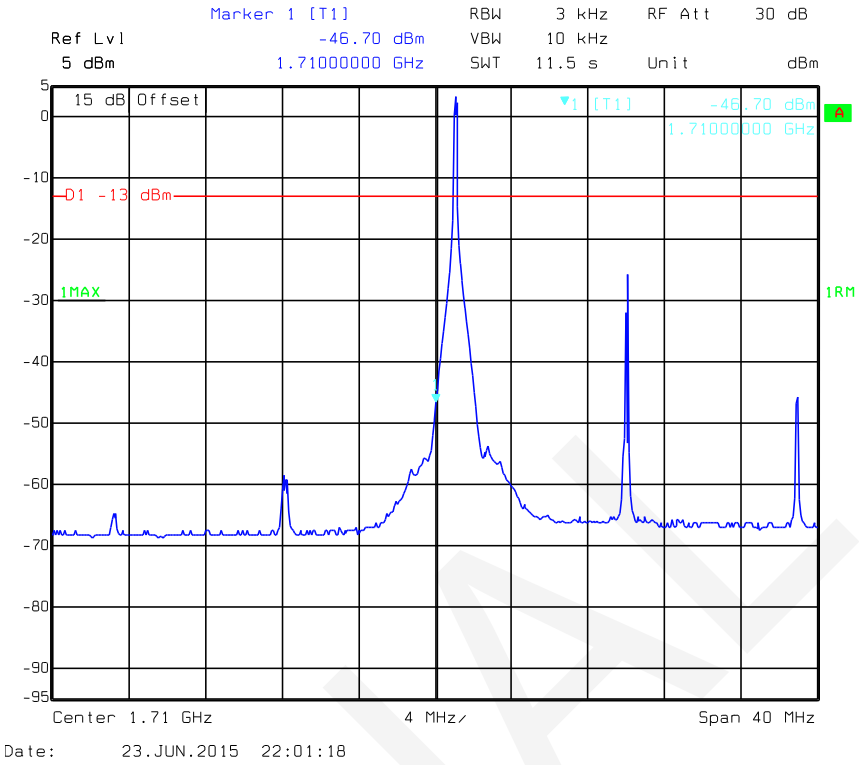


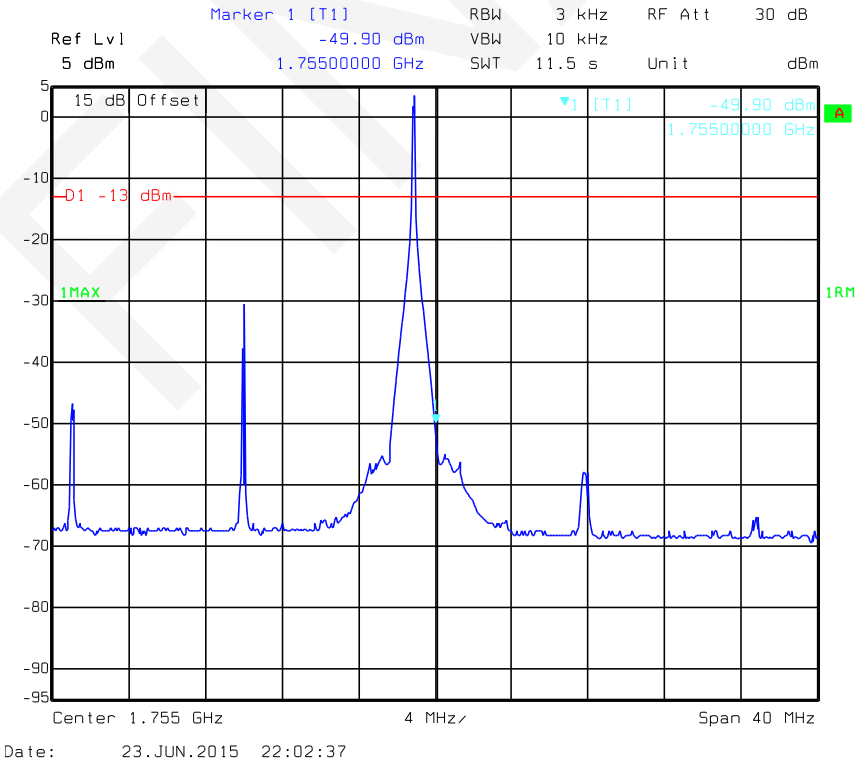
QPSK_15MHz_ FULL RB_ Right



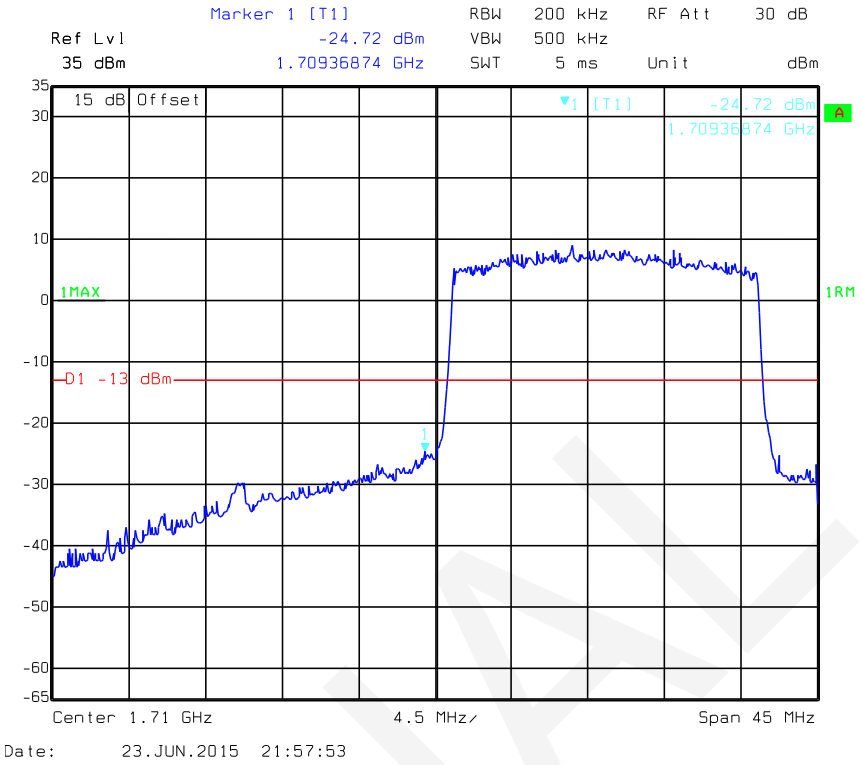
QPSK_20MHz_ 1RB_ Left



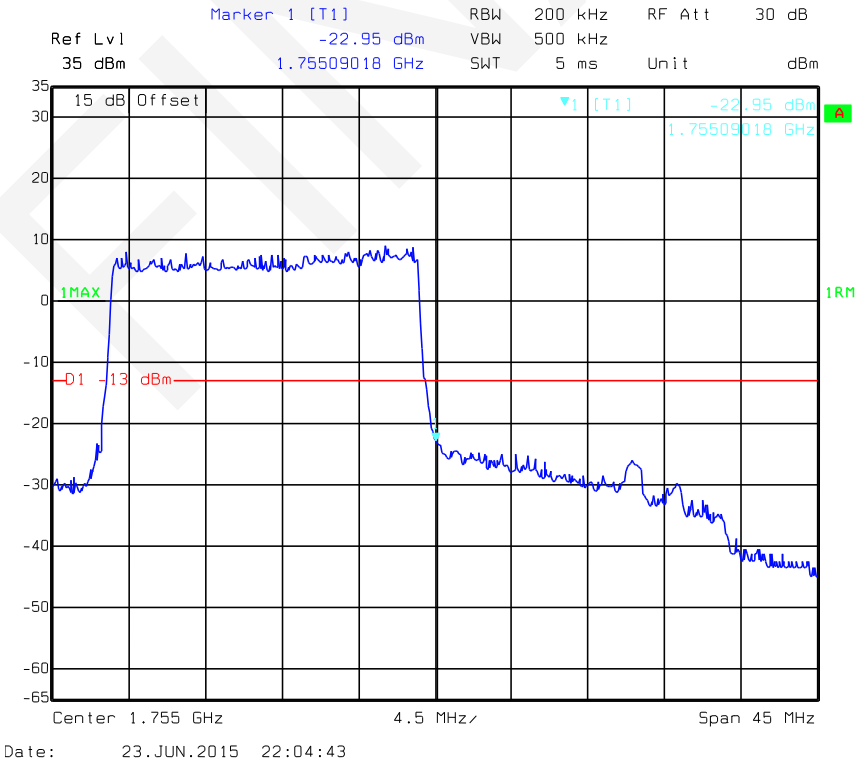
QPSK_10MHz_ 1RB_ Right



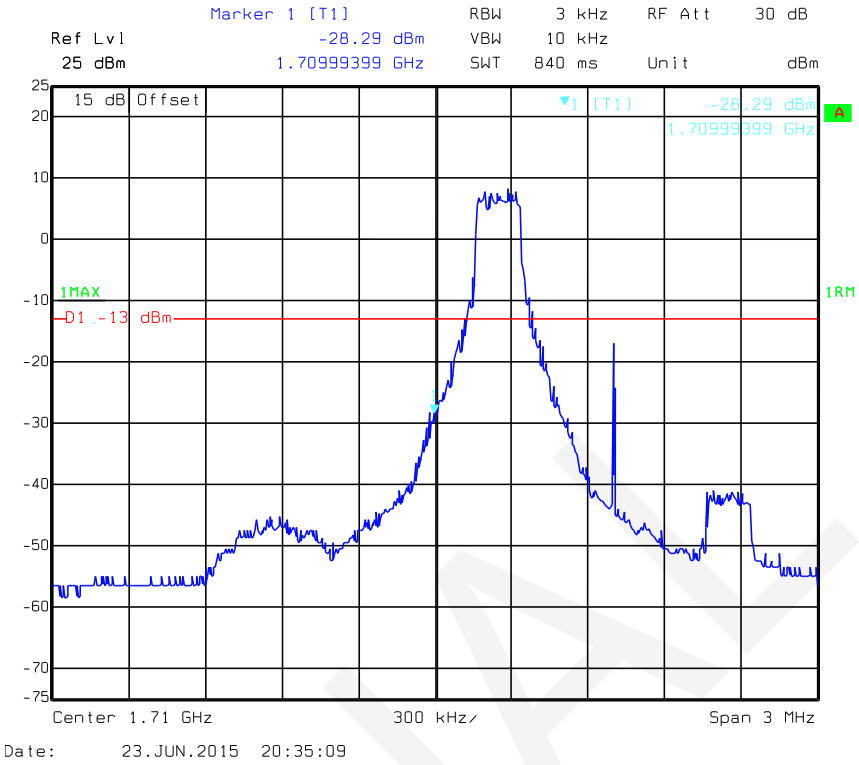
QPSK_20MHz_ FULL RB_ Left



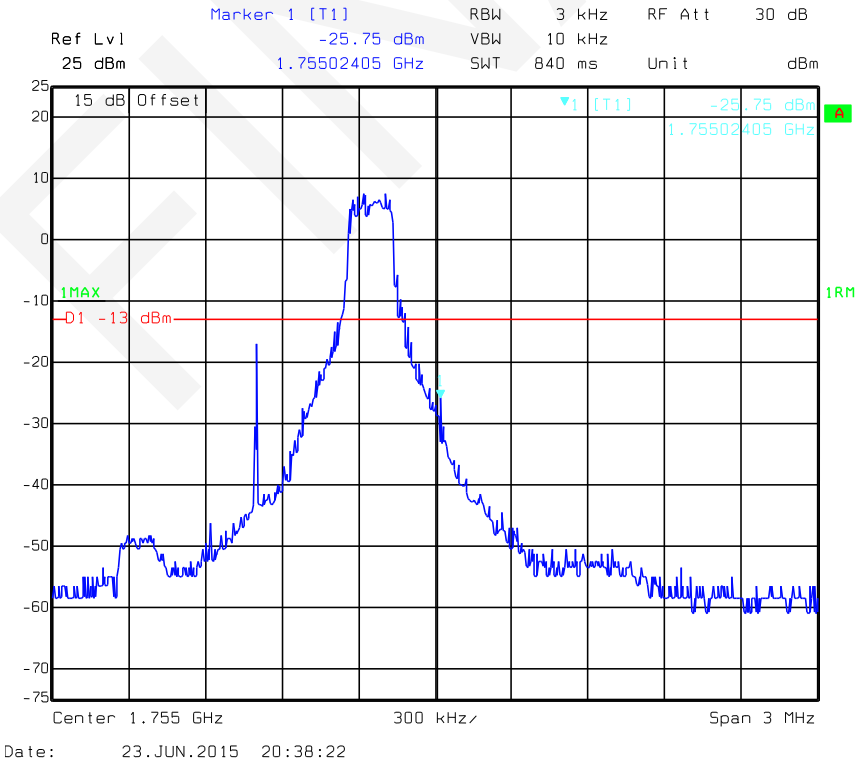
QPSK_20MHz_ FULL RB_ Right



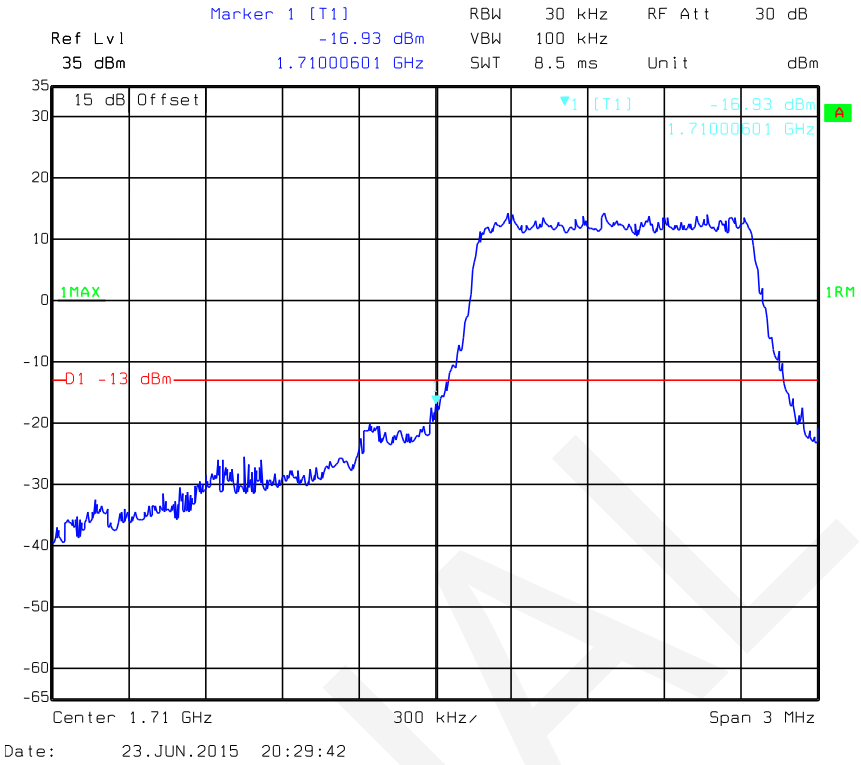
16QAM_1.4MHz_ 1RB_ Left



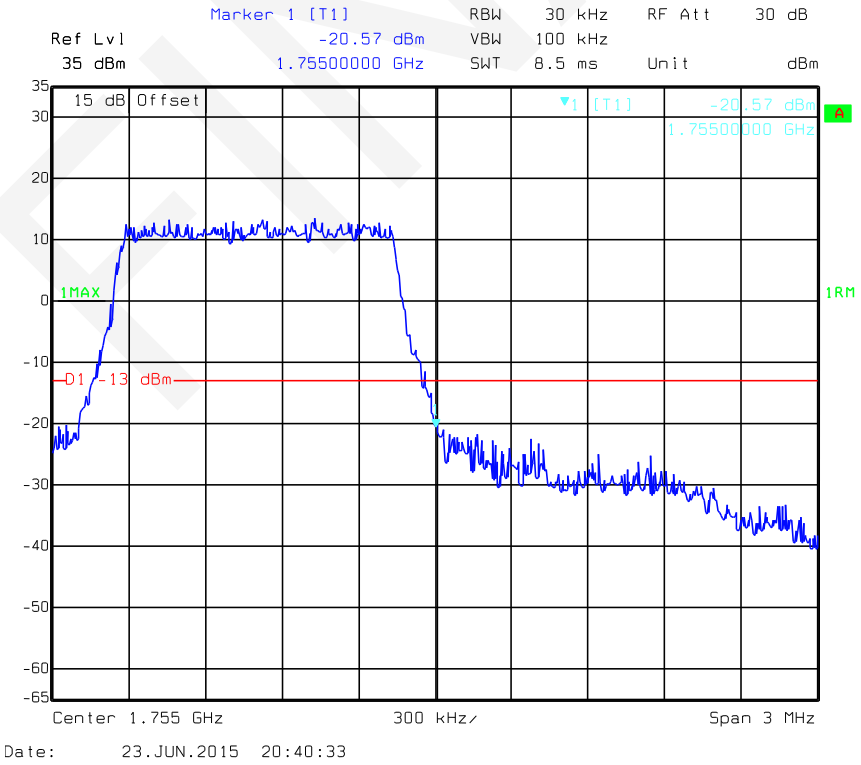
16QAM_1.4MHz_ 1RB_ Right



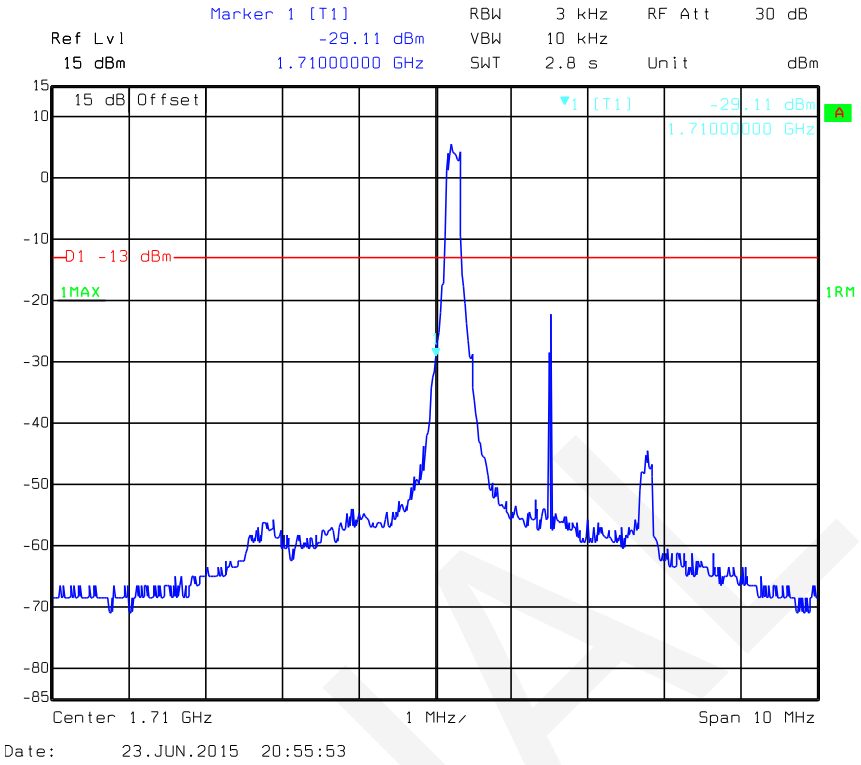
16QAM_1.4MHz_ FULL RB_ Left



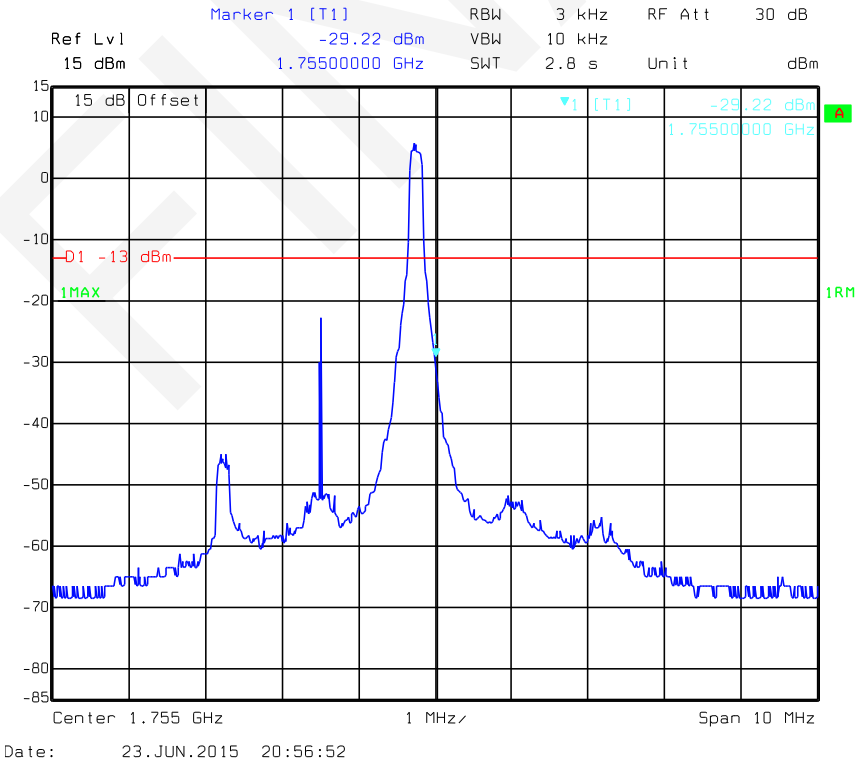
16QAM_1.4MHz_ FULL RB_ Right



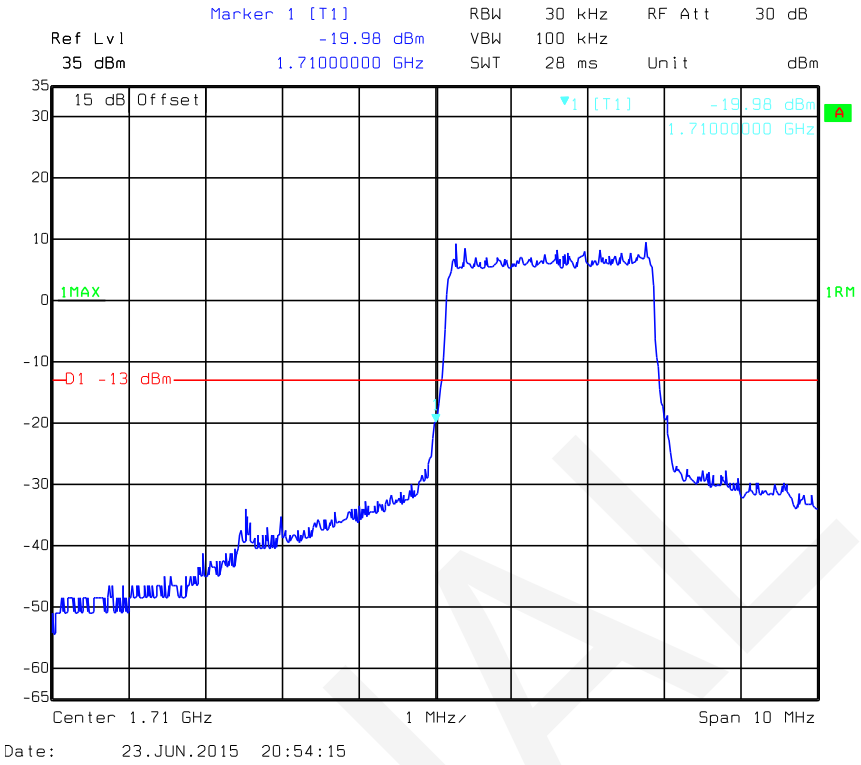
16QAMHz_3MHz_ RB_ Left



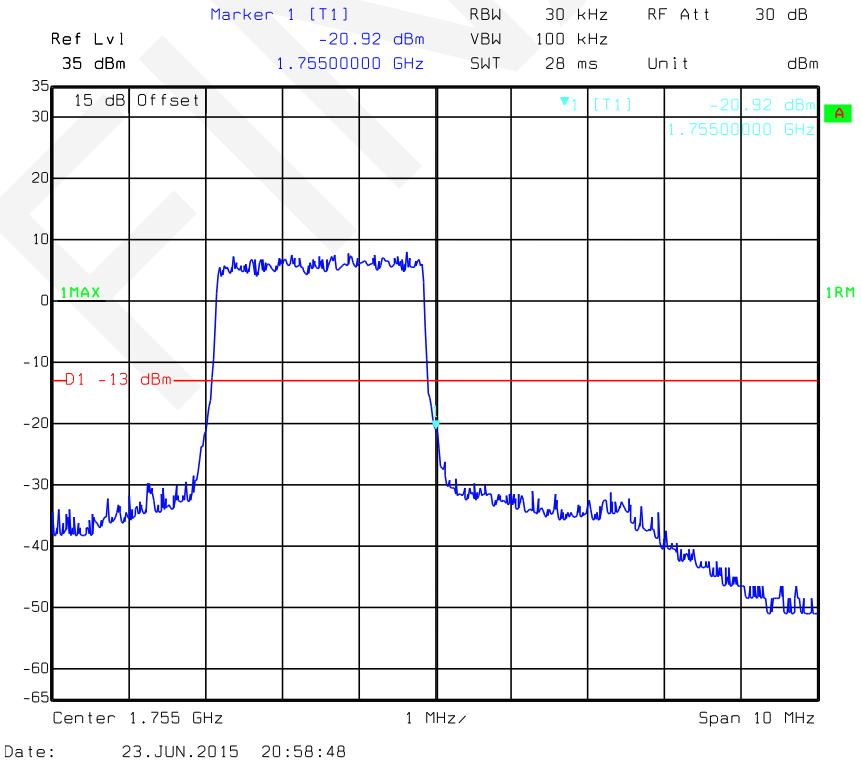
16QAMHz_3MHz_ RB_ Right



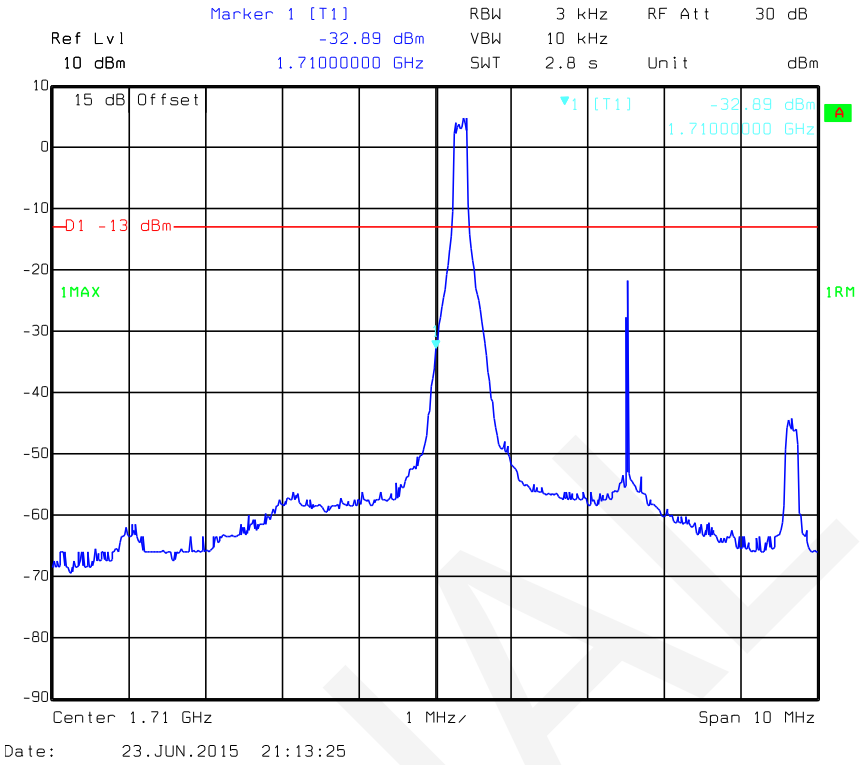
16QAM_3MHz_ FULL RB_ Left



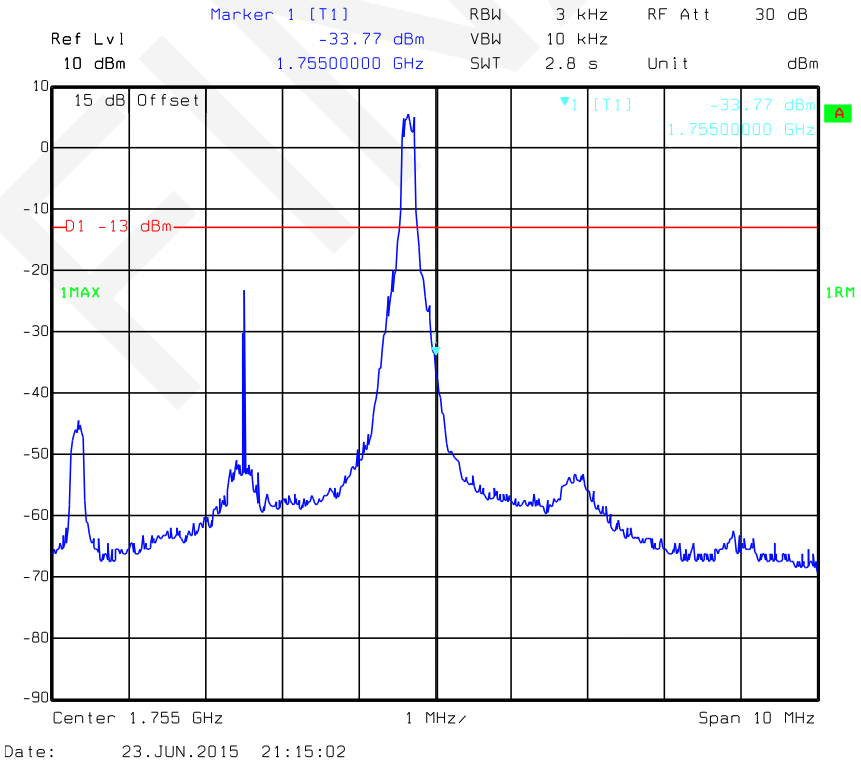
16QAM_3M_ FULL RB_ Right



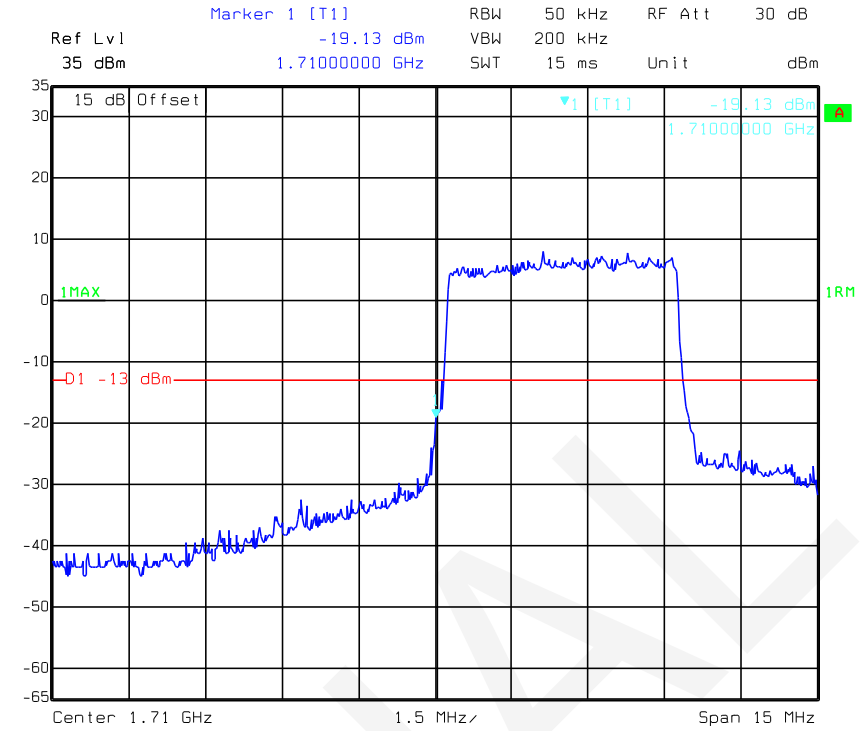
16QAM_5MHz_ RB_ Left



16QAM_5MHz_ RB_ Right

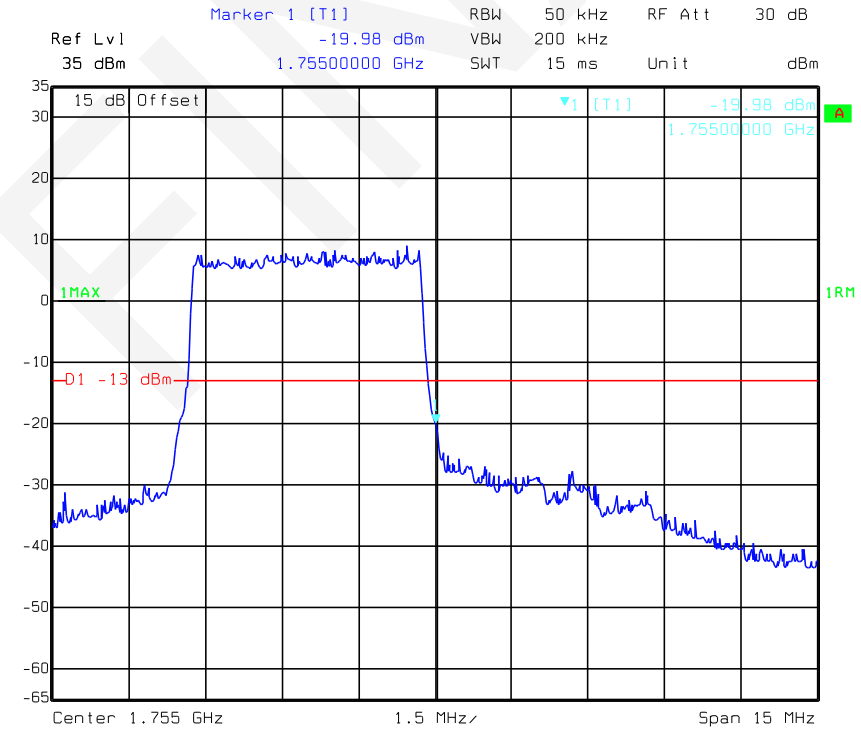


16QAM_5MHz_ FULL RB_ Left



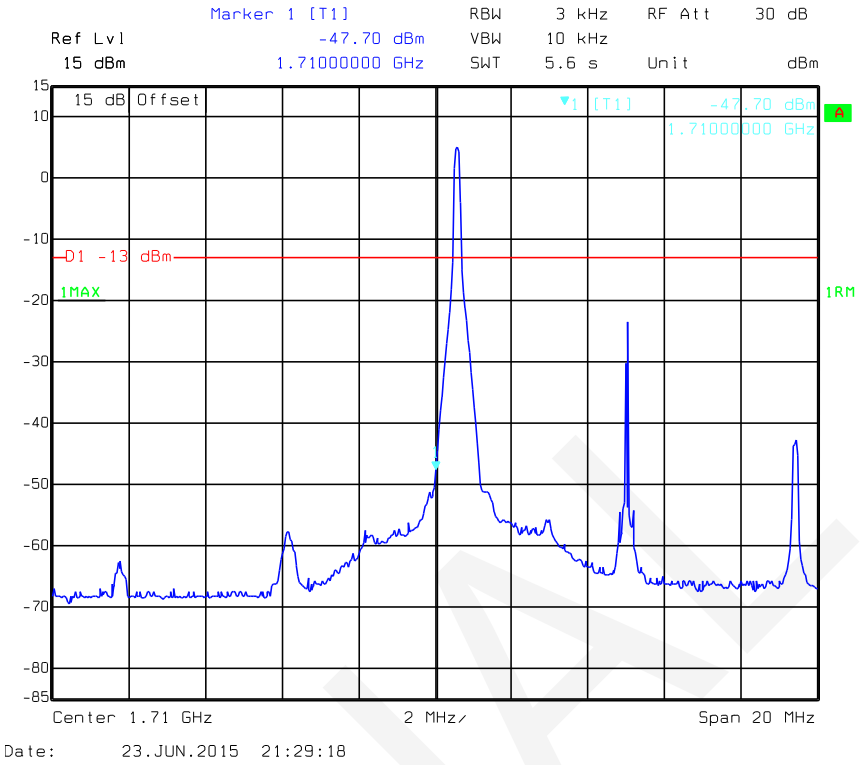
Date: 23.JUN.2015 21:10:21

16QAM_5MHz_ FULL RB_ Right

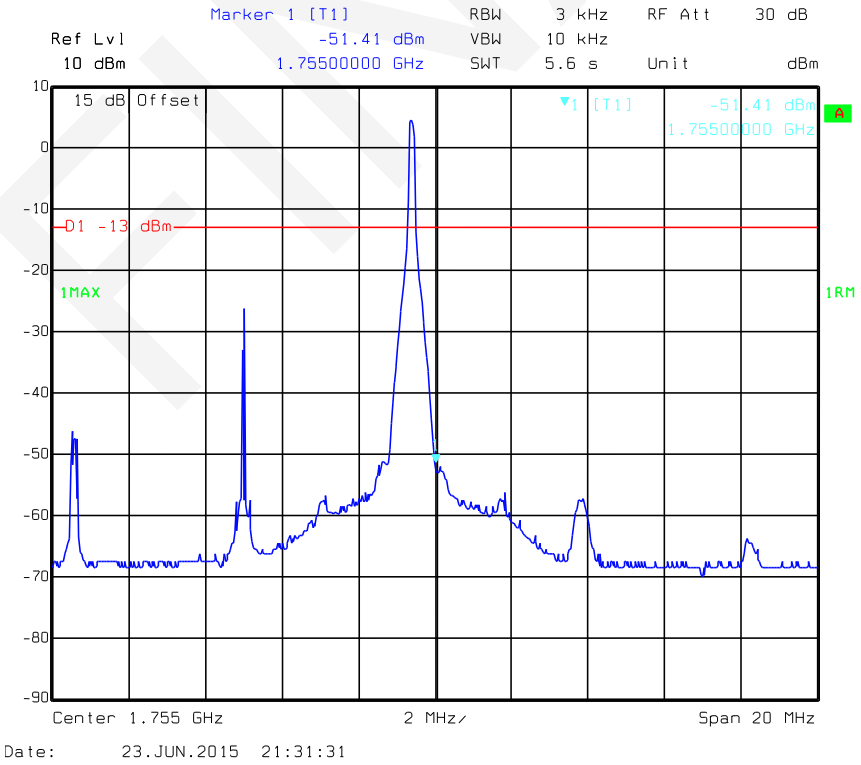


Date: 23.JUN.2015 21:16:30

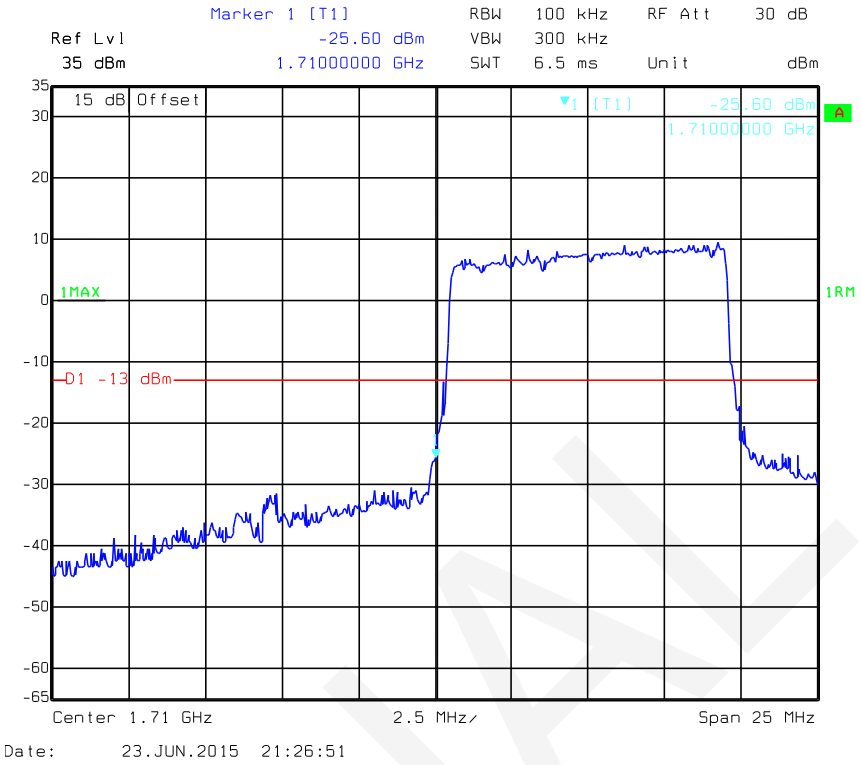
16QAM_10MHz_ RB_ Left



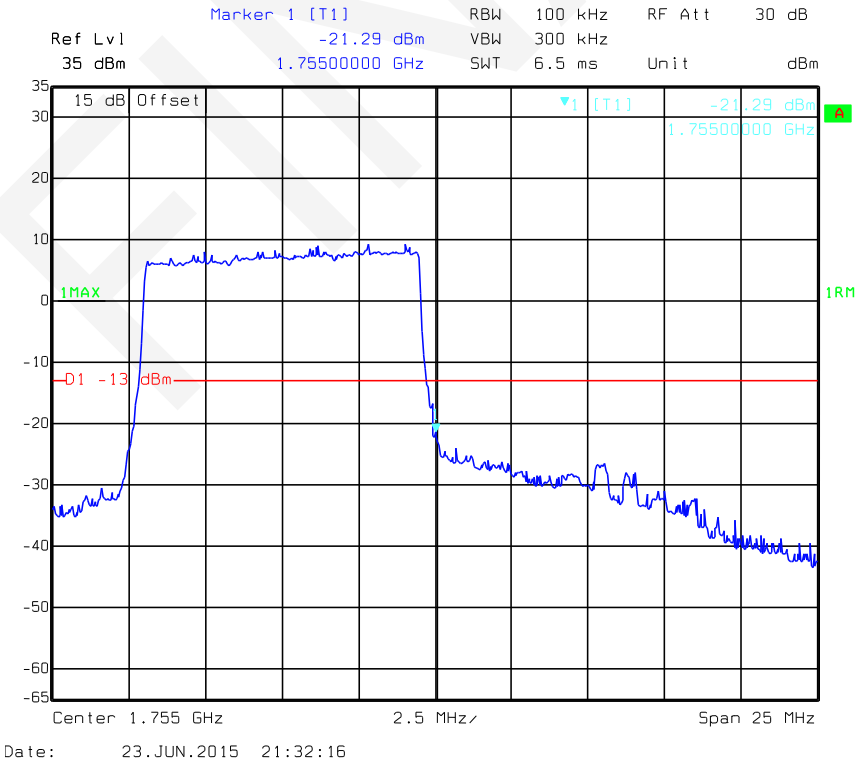
16QAM_10MHz_ RB_ Right



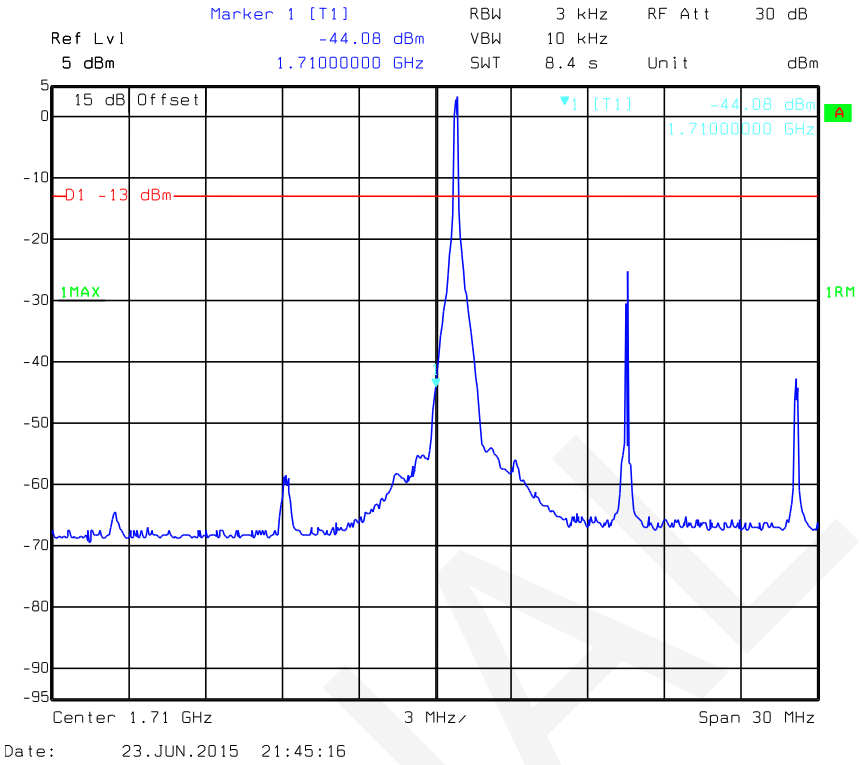
16QAM_10MHz_ FULL RB_ Left



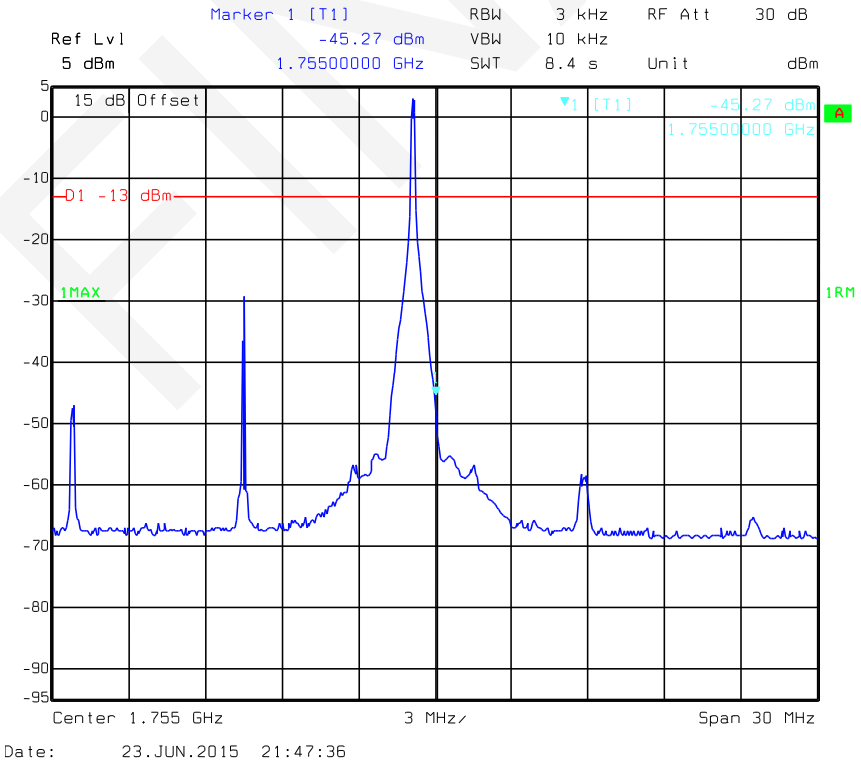
16QAM_10MHz_ FULL RB_ Right



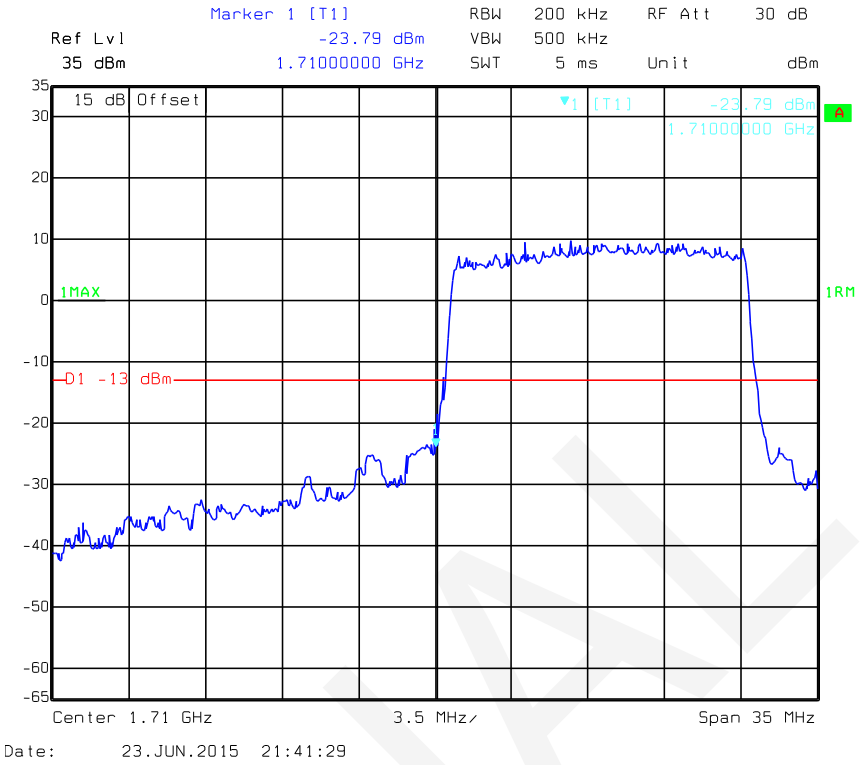
16QAM_15MHz_ RB_ Left



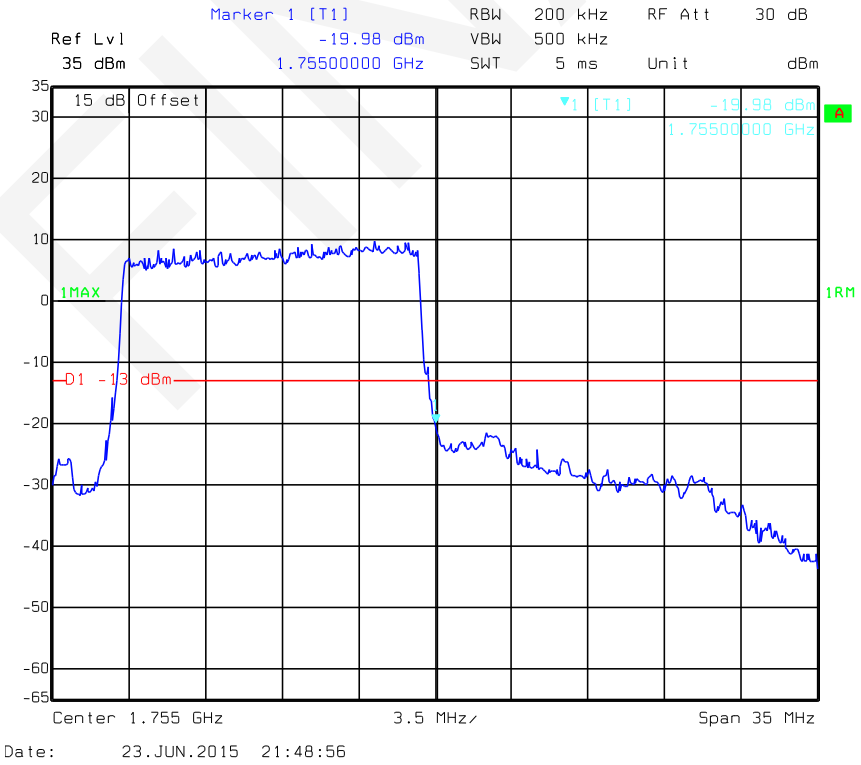
16QAM_15MHz_ RB_ Right



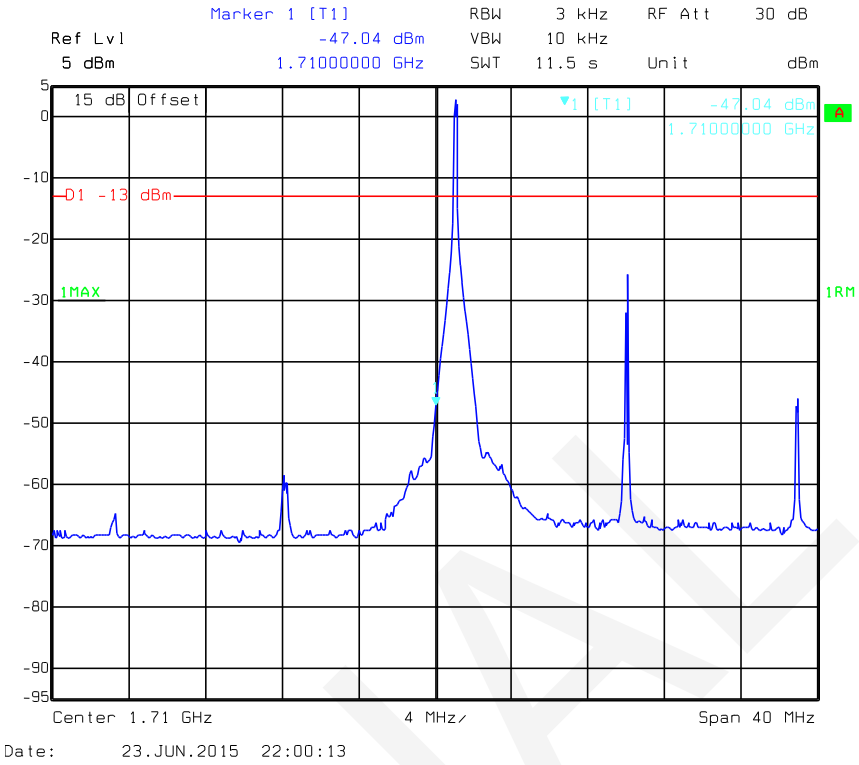
16QAM_15MHz_ FULL RB_ Left



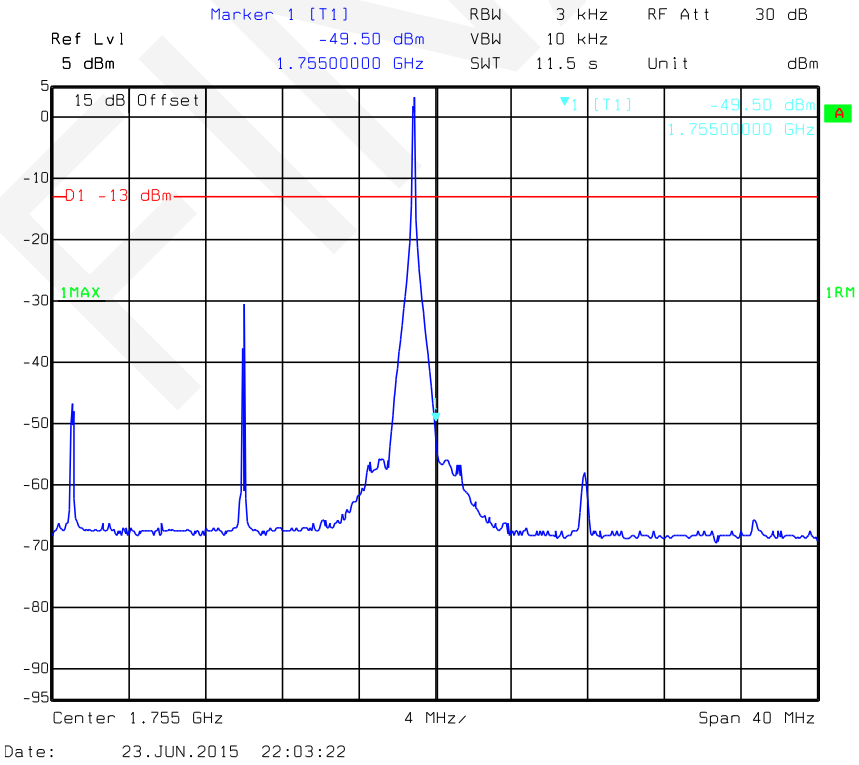
16QAM_15MHz_ FULL RB_ Right



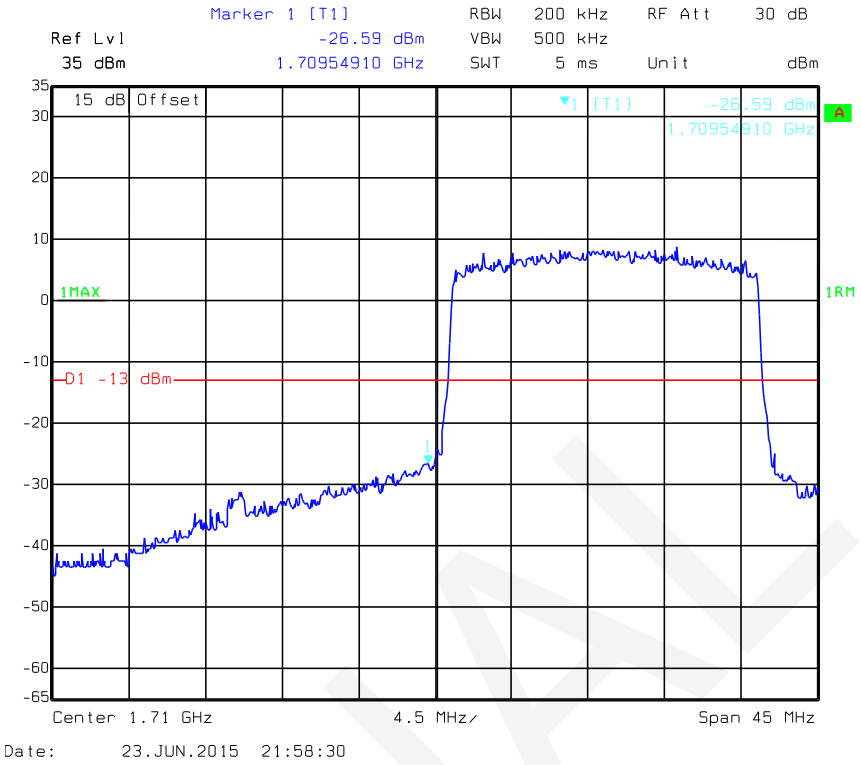
16QAM_20MHz_ RB_ Left



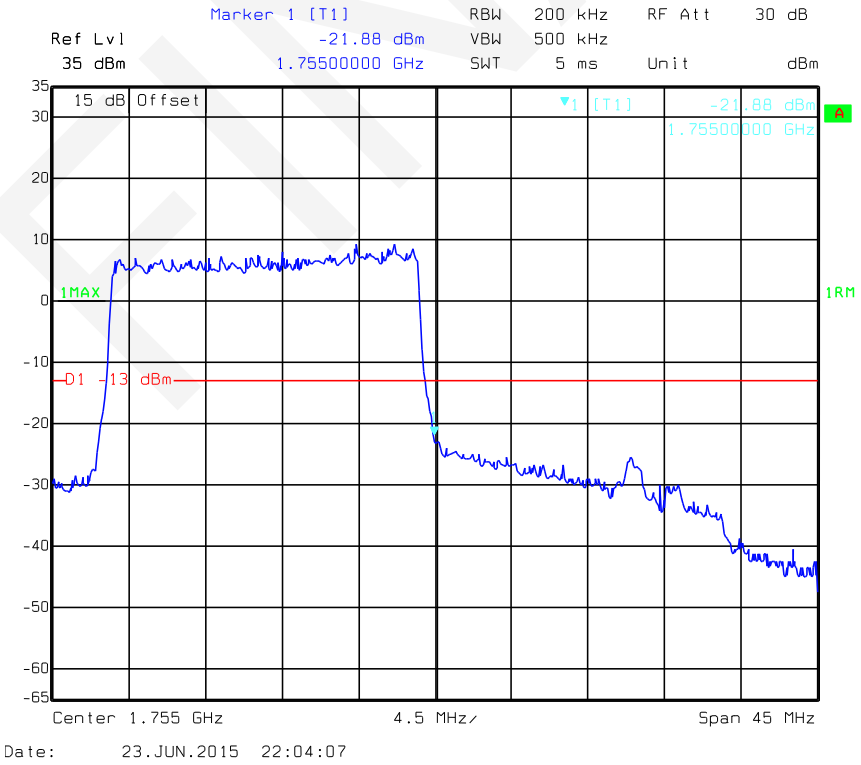
16QAM_20M_ RB_ Right



16QAM_20MHz_ FULL RB_ Left

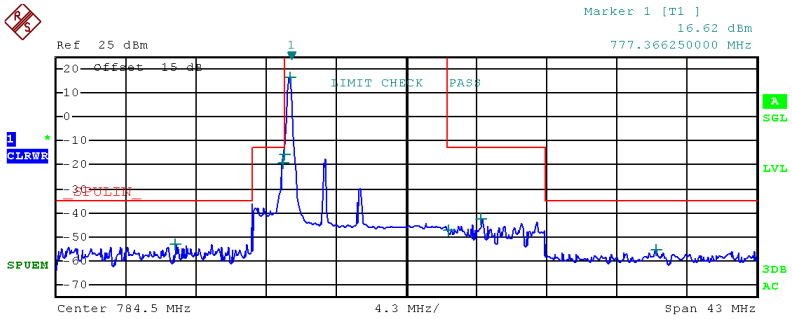


16QAM_20MHz_ FULL RB_ Right



LTE Band 13

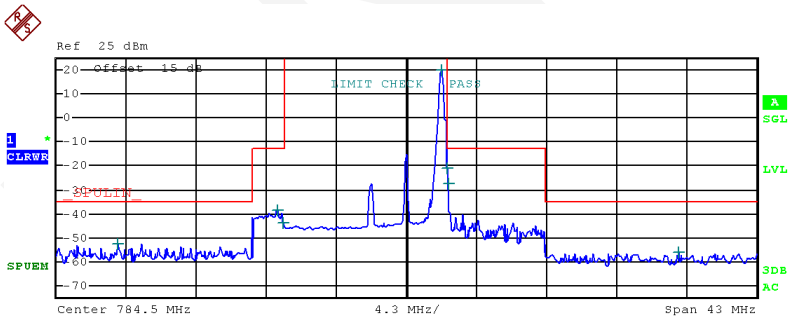
QPSK_5MHz_1RB_ Left



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
763.000 M	775.000 M	10.00 k	770.344000 M	-52.91	-17.91
775.000 M	776.900 M	100.00 k	776.897625 M	-19.04	-6.04
776.900 M	777.000 M	30.00 k	776.993637 M	-15.65	-2.65
777.000 M	787.000 M	100.00 k	777.366250 M	16.62	-13.38
787.000 M	787.100 M	30.00 k	787.070968 M	-47.22	-34.22
787.100 M	793.000 M	100.00 k	789.098387 M	-42.60	-29.60
793.000 M	806.000 M	10.00 k	799.814516 M	-55.41	-20.41

Date: 22.JUN.2015 17:27:54

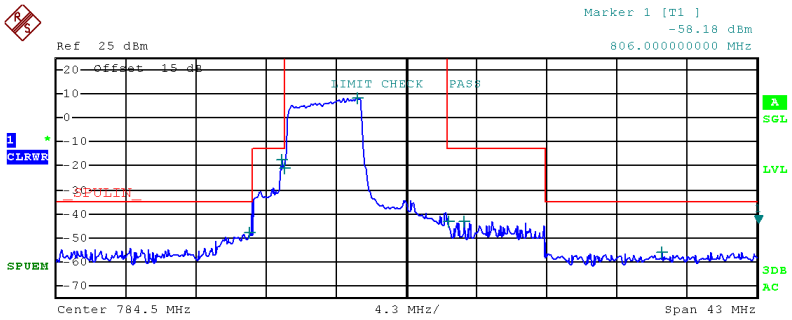
QPSK_5MHz_1RB_Right



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
763.000 M	775.000 M	10.00 k	766.744000 M	-52.31	-17.31
775.000 M	776.900 M	100.00 k	776.602175 M	-38.24	-25.24
776.900 M	777.000 M	30.00 k	776.915025 M	-44.00	-31.00
777.000 M	787.000 M	100.00 k	786.610000 M	19.96	-10.04
787.000 M	787.100 M	30.00 k	787.031452 M	-20.73	-7.73
787.100 M	793.000 M	100.00 k	787.100000 M	-27.61	-14.61
793.000 M	806.000 M	10.00 k	801.177419 M	-55.89	-20.89

Date: 22.JUN.2015 17:32:19

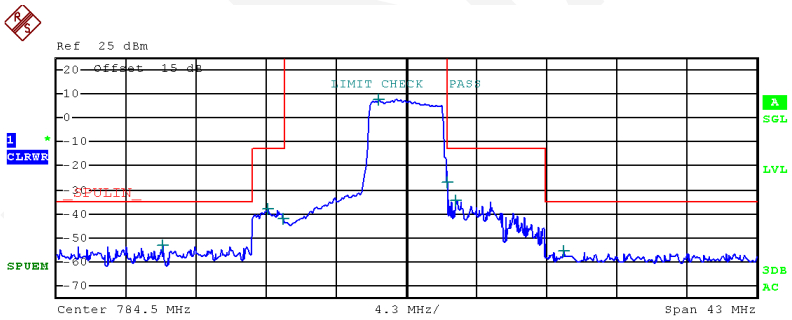
QPSK_5MHz_ FULL RB_ Left



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
763.000 M	775.000 M	10.00 k	774.856000 M	-48.06	-13.06
775.000 M	776.900 M	100.00 k	776.887175 M	-17.34	-4.34
776.900 M	777.000 M	30.00 k	776.993338 M	-20.95	-7.95
777.000 M	787.000 M	100.00 k	781.487500 M	8.23	-21.77
787.000 M	787.100 M	30.00 k	787.070161 M	-42.84	-29.84
787.100 M	793.000 M	100.00 k	788.004032 M	-43.12	-30.12
793.000 M	806.000 M	10.00 k	800.129032 M	-56.08	-21.08

Date: 22.JUN.2015 17:19:28

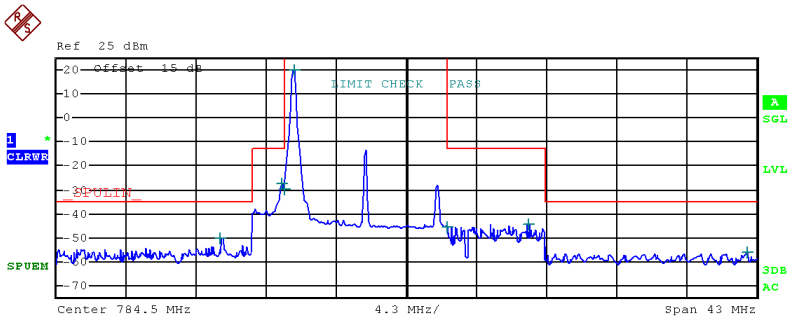
QPSK_5MHz_ FULL RB_ Right



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
763.000 M	775.000 M	10.00 k	769.504000 M	-53.04	-18.04
775.000 M	776.900 M	100.00 k	775.963300 M	-37.66	-24.66
776.900 M	777.000 M	30.00 k	776.954150 M	-41.80	-28.80
777.000 M	787.000 M	100.00 k	782.757500 M	7.72	-22.28
787.000 M	787.100 M	30.00 k	787.012903 M	-26.49	-13.49
787.100 M	793.000 M	100.00 k	787.528226 M	-34.45	-21.45
793.000 M	806.000 M	10.00 k	794.153226 M	-55.53	-20.53

Date: 22.JUN.2015 17:52:01

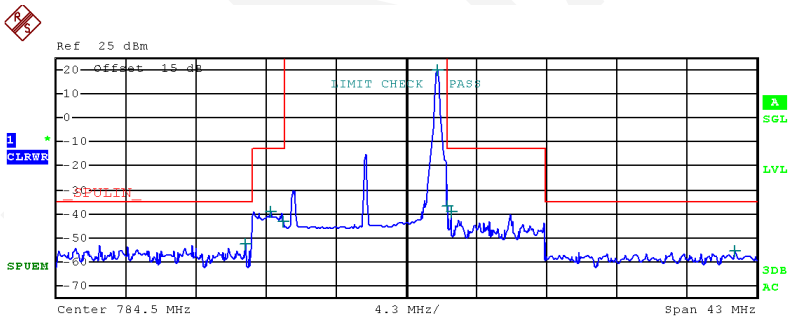
QPSK_10MHz_ 1RB_ Left



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
763.000 M	775.000 M	10.00 k	773.104000 M	-50.31	-15.31
775.000 M	776.900 M	100.00 k	776.838250 M	-27.21	-14.21
776.900 M	777.000 M	30.00 k	776.991525 M	-29.70	-16.70
777.000 M	787.000 M	100.00 k	777.593750 M	19.99	-10.01
787.000 M	787.100 M	30.00 k	787.015323 M	-45.26	-32.26
787.100 M	793.000 M	100.00 k	792.000806 M	-44.36	-31.36
793.000 M	806.000 M	10.00 k	805.370968 M	-56.10	-21.10

Date: 22.JUN.2015 17:55:38

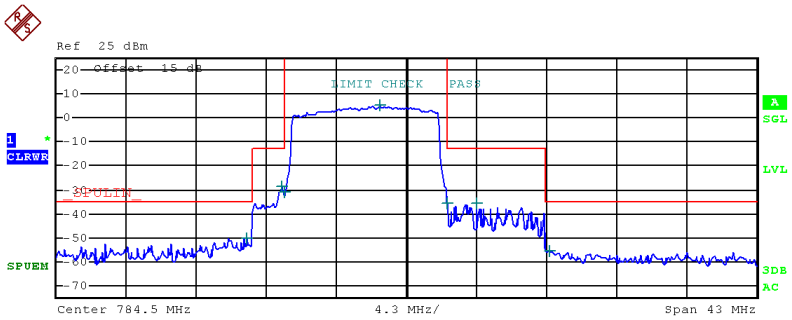
QPSK_10MHz_1 RB_ Right



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
763.000 M	775.000 M	10.00 k	774.616000 M	-52.31	-17.31
775.000 M	776.900 M	100.00 k	776.154725 M	-38.89	-25.89
776.900 M	777.000 M	30.00 k	776.907462 M	-43.01	-30.01
777.000 M	787.000 M	100.00 k	786.416250 M	20.02	-9.98
787.000 M	787.100 M	30.00 k	787.023387 M	-36.64	-23.64
787.100 M	793.000 M	100.00 k	787.242742 M	-38.94	-25.94
793.000 M	806.000 M	10.00 k	804.637097 M	-55.67	-20.67

Date: 22.JUN.2015 17:54:03

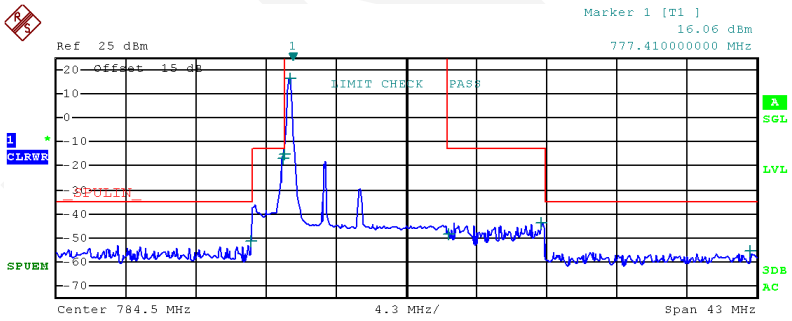
QPSK_10MHz_ FULL RB



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
763.000 M	775.000 M	10.00 k	774.664000 M	-50.08	-15.08
775.000 M	776.900 M	100.00 k	776.862950 M	-28.32	-15.32
776.900 M	777.000 M	30.00 k	776.985600 M	-30.86	-17.86
777.000 M	787.000 M	100.00 k	782.876250 M	5.22	-24.78
787.000 M	787.100 M	30.00 k	787.036290 M	-35.31	-22.31
787.100 M	793.000 M	100.00 k	788.765323 M	-35.75	-22.75
793.000 M	806.000 M	10.00 k	793.314516 M	-55.51	-20.51

Date: 22.JUN.2015 17:52:35

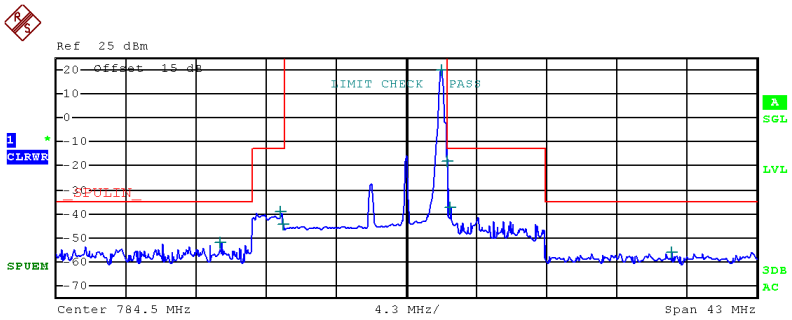
16QAM_5MHz_ RB_ Left



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
763.000 M	775.000 M	10.00 k	774.976000 M	-51.21	-16.21
775.000 M	776.900 M	100.00 k	776.897625 M	-16.76	-3.76
776.900 M	777.000 M	30.00 k	776.999525 M	-15.04	-2.04
777.000 M	787.000 M	100.00 k	777.352500 M	16.77	-13.23
787.000 M	787.100 M	30.00 k	787.077419 M	-48.28	-35.28
787.100 M	793.000 M	100.00 k	792.762097 M	-43.50	-30.50
793.000 M	806.000 M	10.00 k	805.580645 M	-55.60	-20.60

Date: 22.JUN.2015 17:29:07

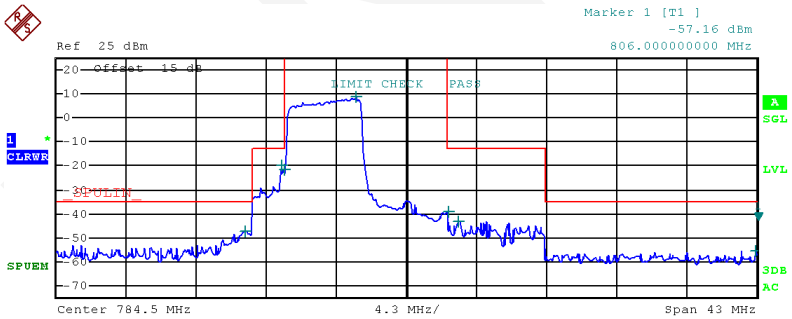
16QAM_5MHz_ RB_ Right



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
763.000 M	775.000 M	10.00 k	773.104000 M	-52.13	-17.13
775.000 M	776.900 M	100.00 k	776.764625 M	-39.23	-26.23
776.900 M	777.000 M	30.00 k	776.920500 M	-44.49	-31.49
777.000 M	787.000 M	100.00 k	786.656250 M	20.07	-9.93
787.000 M	787.100 M	30.00 k	787.017742 M	-18.12	-5.12
787.100 M	793.000 M	100.00 k	787.195161 M	-37.47	-24.47
793.000 M	806.000 M	10.00 k	800.758065 M	-55.71	-20.71

Date: 22.JUN.2015 17:32:55

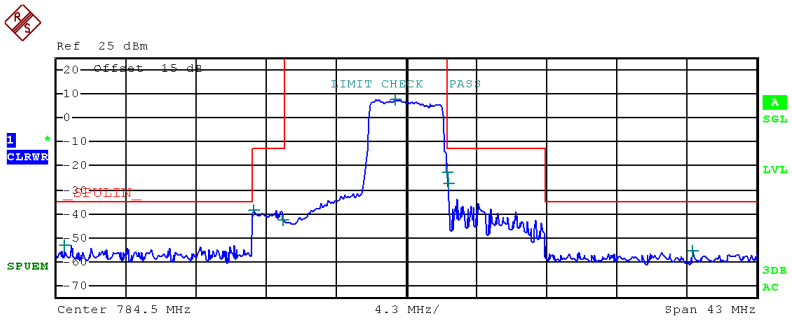
16QAM_5MHz_ FULL RB_ Left



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
763.000 M	775.000 M	10.00 k	774.616000 M	-47.13	-12.13
775.000 M	776.900 M	100.00 k	776.819725 M	-19.90	-6.90
776.900 M	777.000 M	30.00 k	776.978838 M	-21.47	-8.47
777.000 M	787.000 M	100.00 k	781.376250 M	8.70	-21.30
787.000 M	787.100 M	30.00 k	787.080645 M	-38.86	-25.86
787.100 M	793.000 M	100.00 k	787.718548 M	-43.00	-30.00
793.000 M	806.000 M	10.00 k	805.895161 M	-55.44	-20.44

Date: 22.JUN.2015 17:19:03

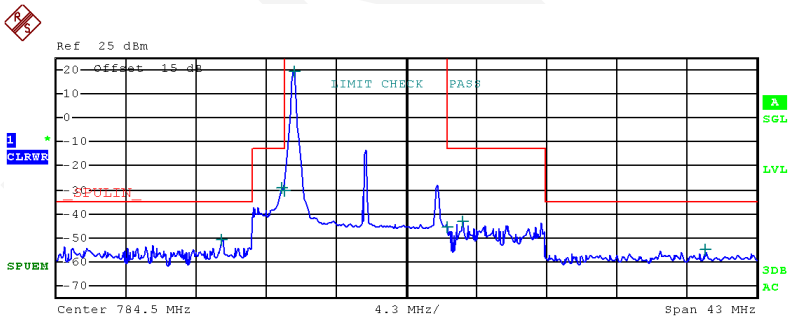
16QAM_5MHz_ FULL RB_ Right



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
763.000 M	775.000 M	10.00 k	763.528000 M	-53.00	-18.00
775.000 M	776.900 M	100.00 k	775.147250 M	-38.16	-25.16
776.900 M	777.000 M	30.00 k	776.915538 M	-42.29	-29.29
777.000 M	787.000 M	100.00 k	783.823750 M	7.83	-22.17
787.000 M	787.100 M	30.00 k	787.013710 M	-22.83	-9.83
787.100 M	793.000 M	100.00 k	787.100000 M	-27.48	-14.48
793.000 M	806.000 M	10.00 k	802.016129 M	-55.61	-20.61

Date: 22.JUN.2015 17:51:41

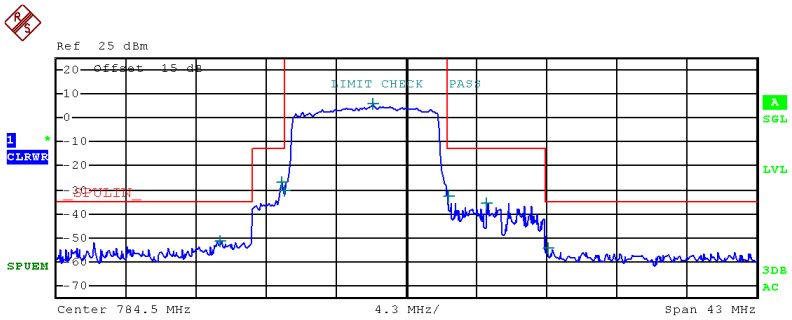
16QAM_10MHz_ RB_ Left



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
763.000 M	775.000 M	10.00 k	773.176000 M	-50.70	-15.70
775.000 M	776.900 M	100.00 k	776.877200 M	-28.97	-15.97
776.900 M	777.000 M	30.00 k	776.997125 M	-30.24	-17.24
777.000 M	787.000 M	100.00 k	777.585000 M	19.62	-10.38
787.000 M	787.100 M	30.00 k	787.031452 M	-45.34	-32.34
787.100 M	793.000 M	100.00 k	787.908871 M	-43.29	-30.29
793.000 M	806.000 M	10.00 k	802.854839 M	-54.56	-19.56

Date: 22.JUN.2015 17:54:26

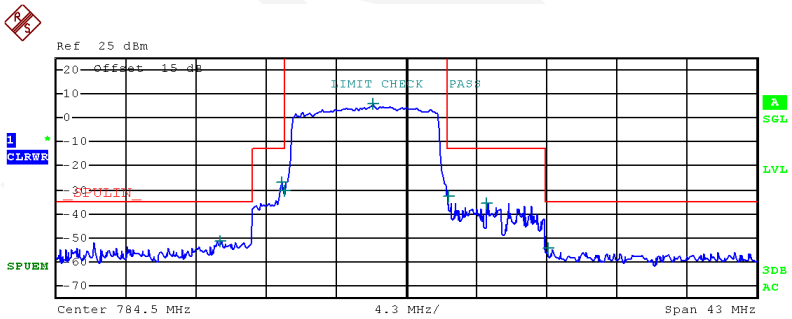
16QAM_10MHz_ RB_ Right



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
763.000 M	775.000 M	10.00 k	773.104000 M	-51.30	-16.30
775.000 M	776.900 M	100.00 k	776.867225 M	-26.48	-13.48
776.900 M	777.000 M	30.00 k	776.989775 M	-30.43	-17.43
777.000 M	787.000 M	100.00 k	782.407500 M	5.89	-24.11
787.000 M	787.100 M	30.00 k	787.089516 M	-32.74	-19.74
787.100 M	793.000 M	100.00 k	789.431452 M	-35.53	-22.53
793.000 M	806.000 M	10.00 k	793.209677 M	-54.15	-19.15

Date: 22.JUN.2015 17:52:50

16QAM_10MHz_ FULL RB_ Left



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
763.000 M	775.000 M	10.00 k	773.104000 M	-51.30	-16.30
775.000 M	776.900 M	100.00 k	776.867225 M	-26.48	-13.48
776.900 M	777.000 M	30.00 k	776.989775 M	-30.43	-17.43
777.000 M	787.000 M	100.00 k	782.407500 M	5.89	-24.11
787.000 M	787.100 M	30.00 k	787.089516 M	-32.74	-19.74
787.100 M	793.000 M	100.00 k	789.431452 M	-35.53	-22.53
793.000 M	806.000 M	10.00 k	793.209677 M	-54.15	-19.15

Date: 22.JUN.2015 17:52:50

FCC §2.1055, §22.355 & §24.235 & §27.54 - FREQUENCY STABILITY

Applicable Standard

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

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

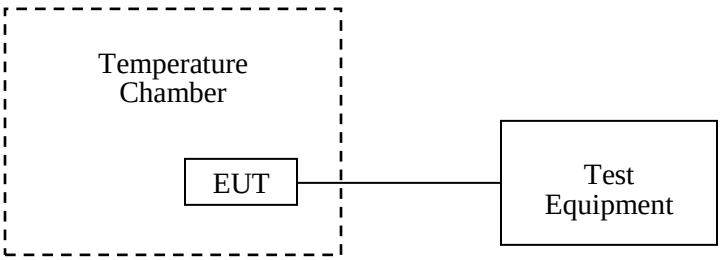
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC 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 communication test set.

Frequency Stability vs. Voltage: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set from 85% to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Dongzhixu	High Temperature Test Chamber	DP1000	201105083-3	2014-08-01	2015-08-01
R&S	Universal Radio Communication Tester	CMU200	109 038	2015-05-09	2016-05-09
R&S	Wideband Radio Communication Tester	CMW500	106891	2014-11-23	2015-11-23

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

Test Data

Environmental Conditions

Temperature:	25.6 °C
Relative Humidity:	57%
ATM Pressure:	99.9kPa

The testing was performed by Dean Liu on 2015-06-24.

BC0 RC1,Middle Channel			
Power Supplied	**Temperature**	**Frequency Error**	**Frequency Error**
Vdc	**℃**	**Hz**	**ppm**
7.2	-30	-17.2	-0.0206
	-20	-15.6	-0.0186
	-10	-10.5	-0.0126
	0	-5.6	-0.0067
	10	-6.3	-0.0075
	20	-2.1	-0.0025
	30	-3.5	-0.0042
	40	-4.5	-0.0054
	50	-6.2	-0.0074
6.2	25	-8.9	-0.0106
8.3	25	-7.6	-0.0091

BC0Rel.A, Middle Channel,			
Power Supplied	**Temperature**	**Frequency Error**	**Frequency Error**
Vdc	**℃**	**Hz**	**ppm**
7.2	-30	-16.5	-0.0197
	-20	-11.8	-0.0141
	-10	-6.7	-0.0080
	0	-8.2	-0.0098
	10	-5.4	-0.0065
	20	-4.6	-0.0055
	30	-3.5	-0.0042
	40	-2.5	-0.0030
	50	-6.3	-0.0075
6.2	25	-7.1	-0.0085
8.3	25	-5.9	-0.0071

BC1 RC1,Middle Channel			
Power Supplied	**Temperature**	**Frequency Error**	**Frequency Error**
Vdc	**℃**	**Hz**	**ppm**
7.2	-30	-12.3	-0.0147
	-20	-14.9	-0.0178
	-10	-10.5	-0.0126
	0	-7.2	-0.0086
	10	-8	-0.0096
	20	-3.5	-0.0042
	30	-9.4	-0.0112
	40	-6.7	-0.0080
	50	-4.8	-0.0057
6.2	25	-7.7	-0.0092
8.3	25	-6.3	-0.0075

BC1 Rel.A, Middle Channel			
Power Supplied	**Temperature**	**Frequency Error**	**Frequency Error**
Vdc	**℃**	**Hz**	**ppm**
7.2	-30	-13.5	-0.0161
	-20	-4.9	-0.0059
	-10	-10.5	-0.0126
	0	-9.7	-0.0116
	10	-8.6	-0.0103
	20	-7.5	-0.0090
	30	-6.3	-0.0075
	40	-10.2	-0.0122
	50	-3.7	-0.0044
6.2	25	-9.3	-0.0111
8.3	25	-7.6	-0.0091

LTE Band 4:

10MHz,Middle Channel, QPSK			
Power Supplied	**Temperature**	**Frequency Error**	**Frequency Error**
Vdc	**℃**	**Hz**	**ppm**
3.7	-30	26	0.0111
	-20	29	0.0123
	-10	22	0.0094
	0	30	0.0128
	10	25	0.0106
	20	16	0.0068
	30	24	0.0102
	40	22	0.0094
	50	28	0.0119
3.5	25	26	0.0111
4.2	25	29	0.0123

10MHz,Middle Channel,16-QAM			
Power Supplied	**Temperature**	**Frequency Error**	**Frequency Error**
Vdc	**℃**	**Hz**	**ppm**
3.7	-30	13	0.0055
	-20	5	0.0021
	-10	8	0.0034
	0	12	0.0051
	10	16	0.0068
	20	14	0.0060
	30	11	0.0047
	40	10	0.0043
	50	13	0.0055
3.5	25	7	0.0030
4.2	25	14	0.0060

Band 13

10MHz,Middle Channel, QPSK			
Power Supplied	**Temperature**	**Frequency Error**	**Frequency Error**
Vdc	**℃**	**Hz**	**ppm**
3.7	-30	0	0.0000
	-20	-1	-0.0013
	-10	5	0.0064
	0	3	0.0038
	10	-4	-0.0051
	20	-2	-0.0026
	30	0	0.0000
	40	3	0.0038
	50	-1	-0.0013
3.5	25	4	0.0051
4.2	25	3	0.0038

10MHz,Middle Channel,16-QAM			
Power Supplied	**Temperature**	**Frequency Error**	**Frequency Error**
Vdc	**℃**	**Hz**	**ppm**
3.7	-30	2	0.0026
	-20	3	0.0038
	-10	4	0.0051
	0	-1	-0.0013
	10	0	0.0000
	20	-5	-0.0064
	30	-2	-0.0026
	40	-4	-0.0051
	50	-1	-0.0013
3.5	25	3	0.0038
4.2	25	2	0.0026

Note: The fundamental emissions stay within the authorized bands of operation based on the frequency deviation measured is small.

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

FINAL