



# FCC Part 25 TEST REPORT

*For*

**Inmarsat BGAN Class 9 (FB250)**

Model Name: GX-9

Brade Name: /

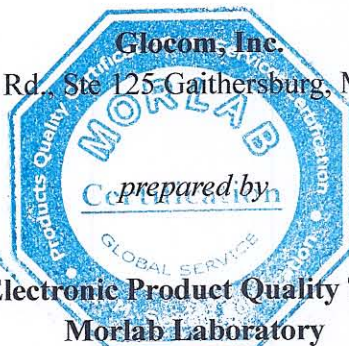
Report No.: SH10030058R01

FCC ID: XP4GLGX9

*prepared for*

**Glocom, Inc.**

22 Firstfield Rd., Ste 125 Gaithersburg, MD 20878 USA



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**Bluetooth®**

**CTIA Authorized Test Lab**

LAB CODE 20081223-00

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Report No.: SH10030058R01

## 1. Test Report Certification

**Equipment under Test:** Inmarsat BGAN Class 9 (FB250)

**Brand Name:** /

**Model Name:** GX9

**FCC ID:** XP4GLGX9

**Applicant:** Glocom, Inc.

22 Firstfield Rd., Ste 125 Gaithersburg, MD 20878 USA

**Manufacturer:** Glocom, Inc.

22 Firstfield Rd., Ste 125 Gaithersburg, MD 20878 USA

**Test Standards:** 47 CFR Part 25

**Test Date(s):** Dec.,2, 2010 –Feb.,12, 2011

**Test Result:** PASS

### \* We Hereby Certify That:

The equipment under test was tested by Shenzhen Electronic Product Quality Testing Center Morlab Laboratory. The test data, data evaluation, test procedures and equipment configurations shown in this report were made in accordance with the requirement of related European Commission's standards.

The test results of this report only apply for the tested sample equipment identified above. The test report shall be invalid without all the signatures of the test engineer, the reviewer and the approver.

Tested by:

Zhang Wenjie

Zhang Wenjie

Dated: 2011.2.14

Reviewed by:

Zhang Jun

Zhang Jun

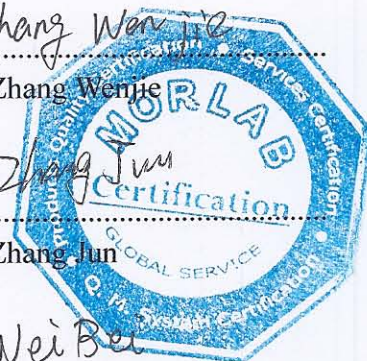
Dated: 2011.2.14

Approved by:

Wei Bei

Wei Bei

Dated: 2011.2.14



## 2. General Information

### 2.1. Description Of EUT

<b>Product</b>	Inmarsat BGAN Class 9 (FB250)
<b>Brand Name</b>	/
<b>Model Number</b>	GX9
<b>Frequency Range</b>	1626.5 ~ 1660.5MHz
<b>Modulation Technique</b>	QPSK;QAM
<b>Hardware Version</b>	GXseries IPB V1.2
<b>Software Version</b>	V31.06
<b>Antenna Information</b>	10.5dBi Gain

#### NOTE:

- Three channels as listed below, which respectively represent the lower, middle and upper channels of the EUT when it was configured to operate under test mode condition.

Transmit Channel	Frequency (MHz)
Lower Channel	1626.595
Middle Channel	1643.5
Upper Channel	1660.2

- Please refer to Appendix I for the photographs of the EUT. For a more detailed features description about the EUT, please refer to User's Manual.

### 2.2. Test Standards and Results

The EUT has been tested according to 47 CFR Part 25, SATELLITE COMMUNICATIONS.  
Test items and the results are as bellow:

No	FCC Rules	Test Type	Result
1	2.1046(a), 25.204	RF Output Power	PASS
2	2.1049	Occupied Bandwidth	PASS
3	25.202(f)	Emission Limitation Per FCC Part 25.202(f)	PASS
4	25.216(h)	Emission Limitation Per FCC Part 25.216(h)	PASS
5	25.202(d)	Frequency Stability	PASS



### 2.3. List of Equipments Used

Description	Manufacturer	Model No.	Cal. Date	Serial No.
Test Receiver	Rohde & Schwarz	ESIB26	2010.09	A0304218
Test Receiver	Schwarzbeck	FCKL1528	2010.09	A0304230
Spectrum Analyzer	Rohde & Schwarz	FSP13	2010.09	M-030176
Spectrum Analyzer	Agilent	E4440A	2010.09	MY46187763
Spectrum Analyzer	Rohde & Schwarz	FSU	2010.10	1166.1660.26
LISN	Schwarzbeck	NSLK8127	2010.09	A0304233
Loop Antenna	Rohde & Schwarz	HFH2-Z2	2010.09	A0304220
Ultra Broadband Ant.	Rohde & Schwarz	HL562	2010.09	A0304224
Horn Ant.	Rohde & Schwarz	HF906	2010.09	100150
Shield Room	Nanbo Tech	Site 1	2010.09	A0304188
Anechoic Chamber	Albatross	EMC12.8×6.8× 6.4(m)	2010.09	A0304210

### 2.4. Test Facility

Shenzhen Electronic Product Quality Testing Center Morlab Laboratory is a testing organization accredited by China National Accreditation Board for Laboratories (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659.

All measurement facilities used to collect the measurement data are located at Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen 518055 CHINA. The test site is constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22; the FCC registration number is 741109.

### 2.5. Environmental conditions

During the measurement, the environmental conditions were within the listed ranges:

<b>Temperature (°C):</b>	20 - 25
<b>Relative Humidity (%):</b>	40 - 60
<b>Atmospheric Pressure (kPa):</b>	96

### 2.6. Setup of Equipment Under Test

#### 2.6.1. Description Of Support Units

NO	Description	Manufacturer	Model No.
1	Note book PC	IBM	2373-75U

#### 2.6.2. EUT Operating Condition

1. The EUT was connected with the note book.
2. The test program “Perl” was used to control the EUT operate at different Channels and modulation types.

### 3. RF Power Output Test

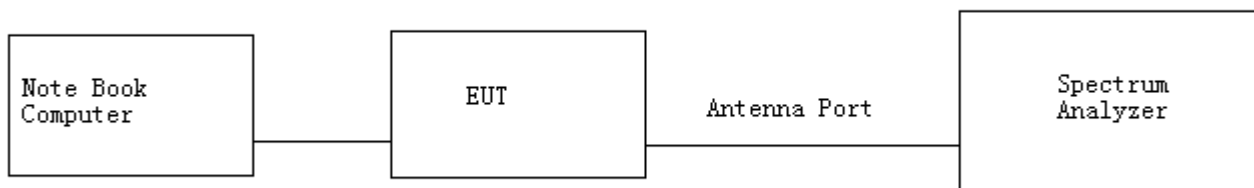
#### 1.1. Limits of RF Power Output

No limit with earth station.

#### 1.2. Test Procedure

- a The EUT was switched on and allowed to warm up to its normal operating condition. The EUT was then configured to operate in the test mode, transmitting frequency at lower, mid and higher channel.
- b The maximum peak power and average power of the transmitting frequency was measured and recorded .

#### 1.3. Test Setup



For the actual test configuration, please refer to the related item - Photographs of the Test Configuration.

#### 1.4. EUT Setup and Operating Conditions

A notebook was connected to the EUT, and the command “Perl” was used to control the EUT operating at different channel and modulation mode.

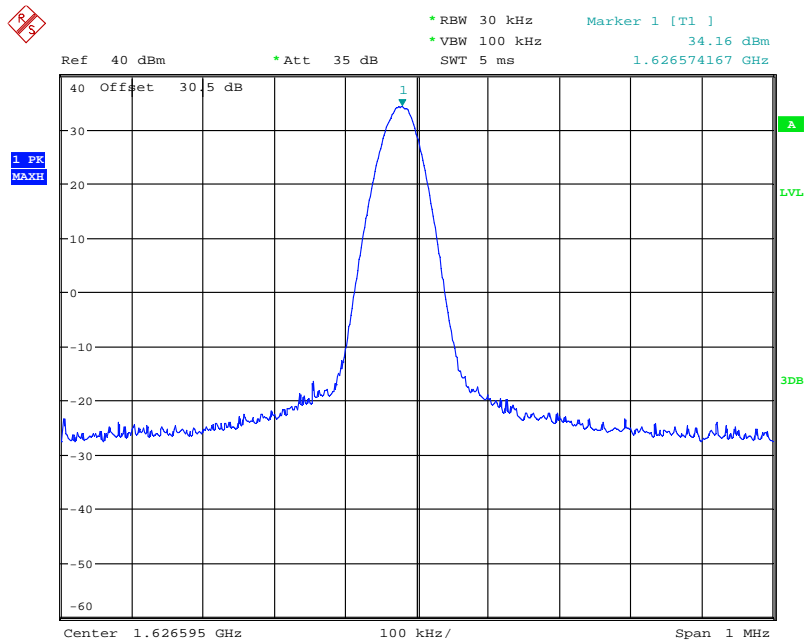


## 1.5. Test Results

Maximum Peak Power				
Frequency (MHz)	Test Mode	Output Power (dBm)	Output Power (W)	Plot
Low Channel 1626.595	QPSK0.5	34.16	2.60615	1
	QPSK1	34.32	2.70396	3
	QPSK2	34.03	2.52930	5
	QPSK4.5	34.19	2.62422	7
	QAM1	35.43	3.49140	9
	QAM2	35.26	3.35738	11
	QAM4.5	35.44	3.49945	13
Mid Channel 1643.5	QPSK0.5	34.59	2.87740	15
	QPSK1	34.92	3.10456	17
	QPSK2	34.56	2.85759	19
	QPSK4.5	34.63	2.90402	21
	QAM1	35.81	3.81066	23
	QAM2	35.56	3.59749	25
	QAM4.5	35.63	3.65595	27
Upper Channel 1660.2	QPSK0.5	34.09	2.56448	29
	QPSK1	34.42	2.76694	31
	QPSK2	34.06	2.54683	33
	QPSK4.5	34.15	2.60016	35
	QAM1	35.65	3.67282	37
	QAM2	35.38	3.45144	39
	QAM4.5	35.70	3.71535	41

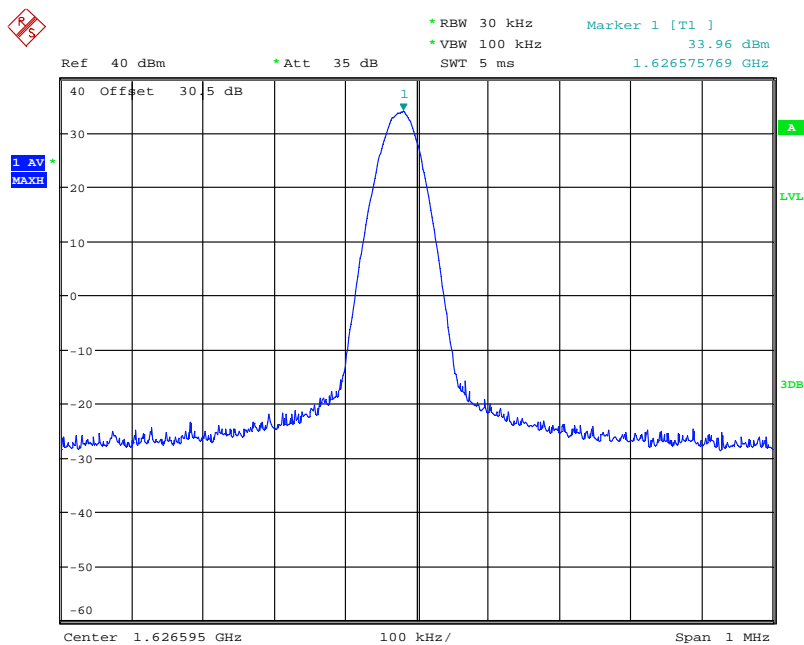
Average Power				
Frequency (MHz)	Test Mode	Output Power (dBm)	Output Power (W)	Plot
Low Channel 1626.595	QPSK0.5	33.96	2.48886	2
	QPSK1	34.06	2.54683	4
	QPSK2	33.83	2.41546	6
	QPSK4.5	33.75	2.37137	8
	QAM1	35.34	3.41979	10
	QAM2	35.16	3.28095	12
	QAM4.5	35.21	3.31894	14
Mid Channel 1643.5	QPSK0.5	34.45	2.78612	16
	QPSK1	34.59	2.87740	18
	QPSK2	34.52	2.83139	20
	QPSK4.5	35.25	3.34965	22
	QAM1	35.74	3.74973	24
	QAM2	35.48	3.53183	26
	QAM4.5	35.27	3.36512	28
Upper Channel 1660.2	QPSK0.5	34.05	2.54097	30
	QPSK1	34.27	2.67301	32
	QPSK2	33.89	2.44906	34
	QPSK4.5	33.71	2.34963	36
	QAM1	35.62	3.64754	38
	QAM2	35.27	3.36512	40
	QAM4.5	35.47	3.52371	42

## Test Plots:



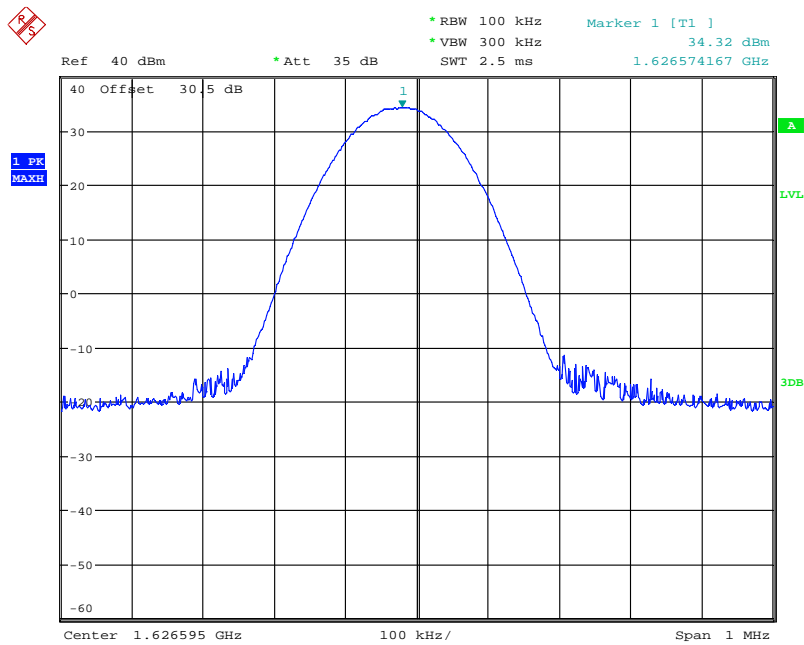
Date: 12.FEB.2011 11:28:30

(Plot 1: Low Channel – QPSK0.5 - Peak)



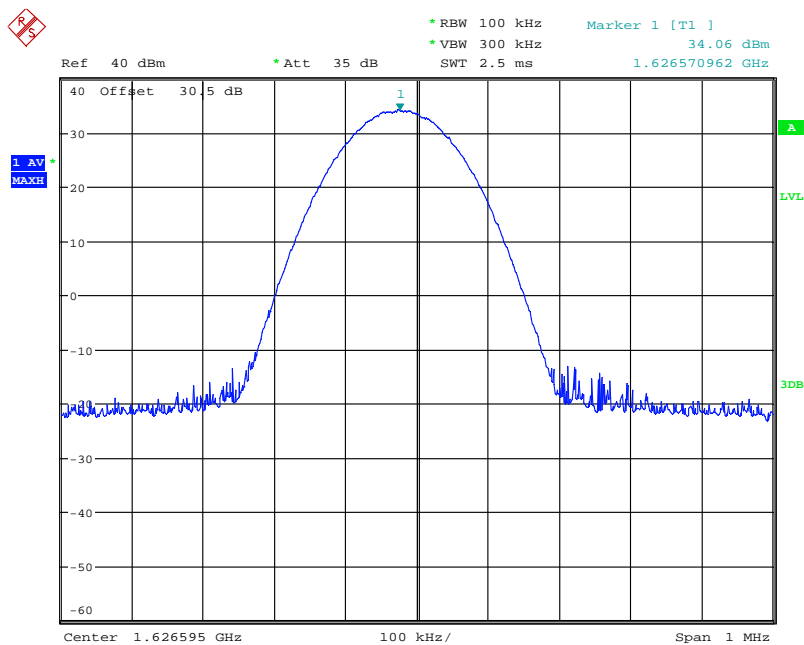
Date: 12.FEB.2011 11:45:13

(Plot 2: Low Channel – QPSK0.5 - Average)



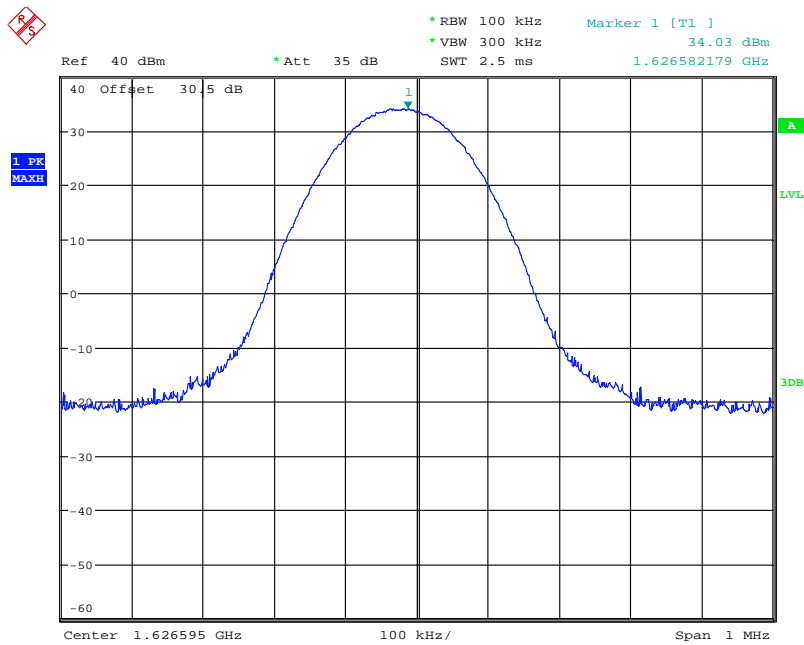
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(Plot 3: Low Channel – QPSK1 - Peak)



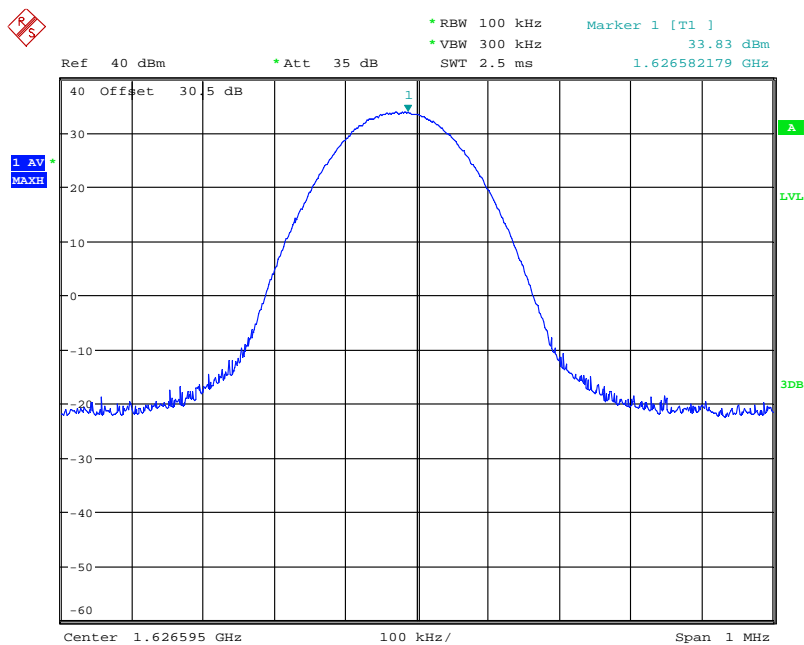
Date: 12.FEB.2011 11:46:19

(Plot 4: Low Channel – QPSK1 - Average)



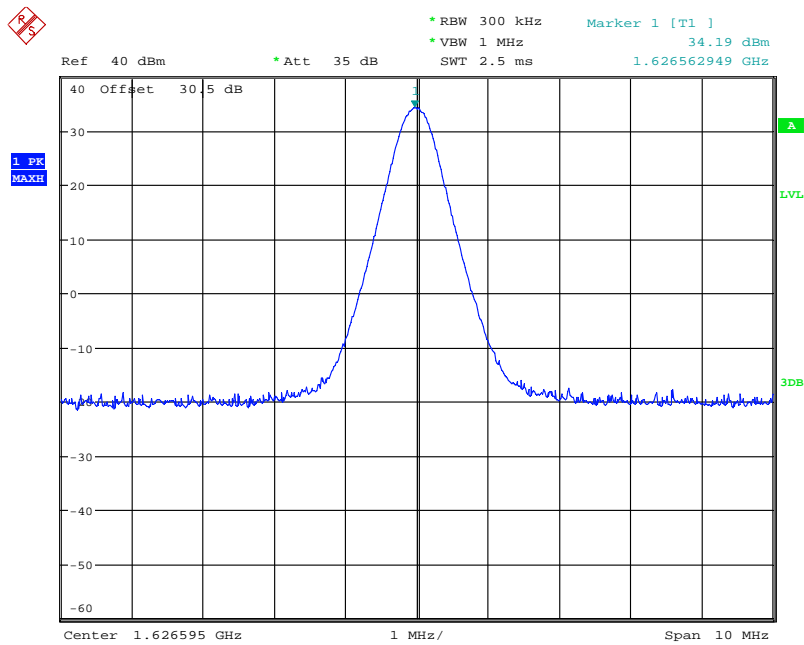
Date: 12.FEB.2011 11:31:37

(Plot 5: Low Channel – QPSK2 - Peak)



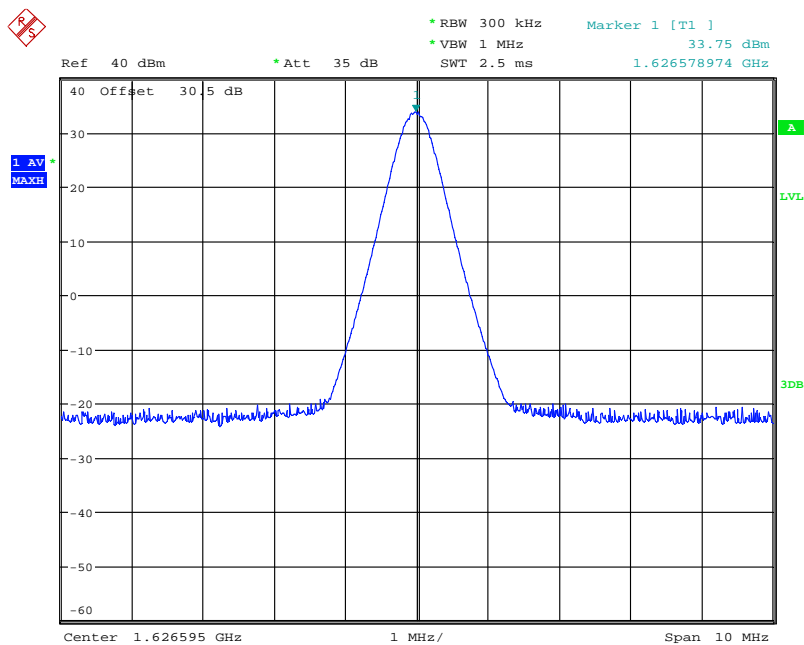
Date: 12.FEB.2011 11:47:36

(Plot 6: Low Channel – QPSK2 - Average)



Date: 12.FEB.2011 11:32:33

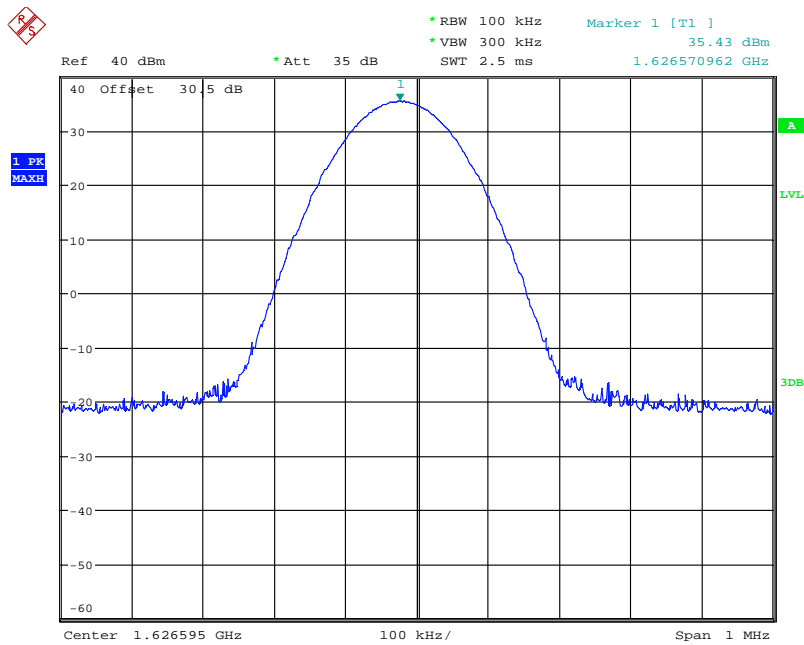
(Plot 7: Low Channel – QPSK4.5 - Peak)



Date: 12.FEB.2011 11:49:02

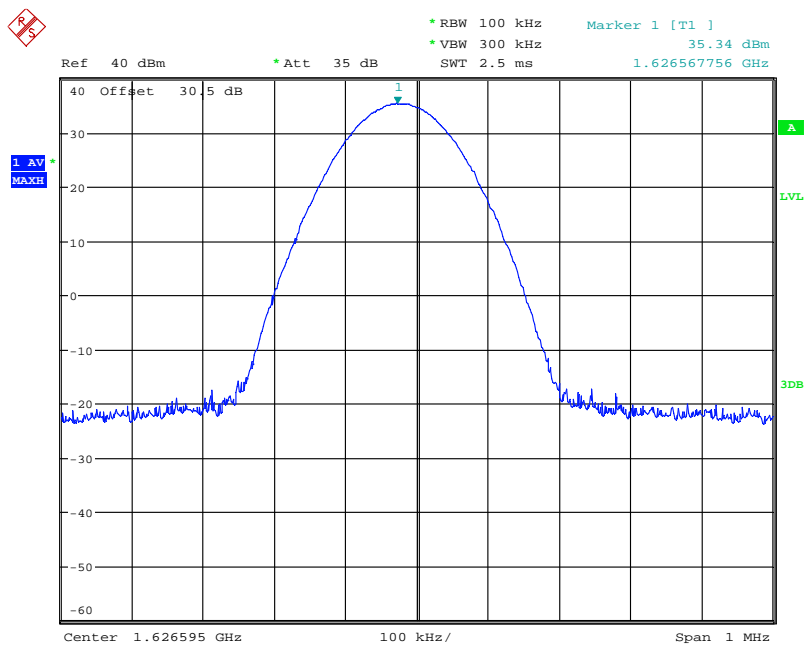
(Plot 8: Low Channel – QPSK4.5 - Average)





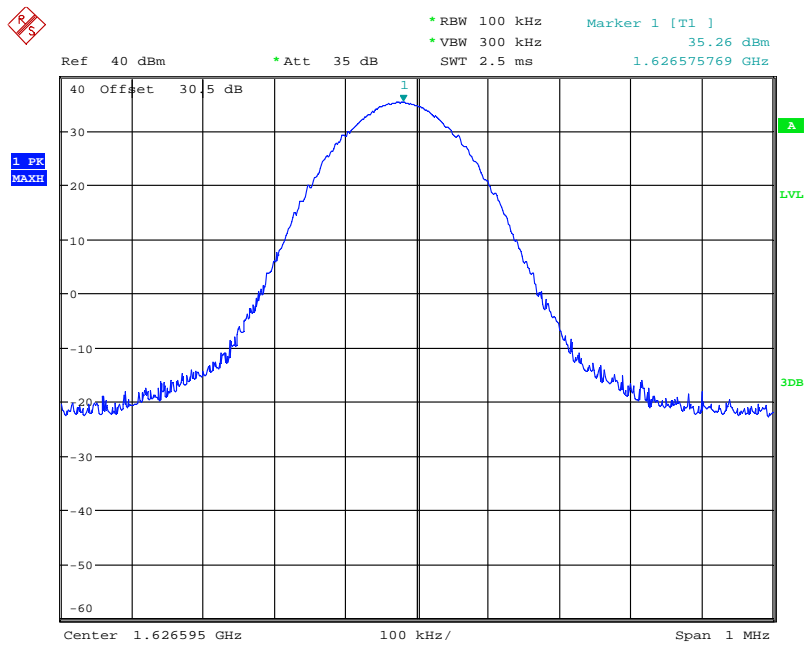
Date: 12.FEB.2011 11:38:41

(Plot 9: Low Channel – QAM1 - Peak)



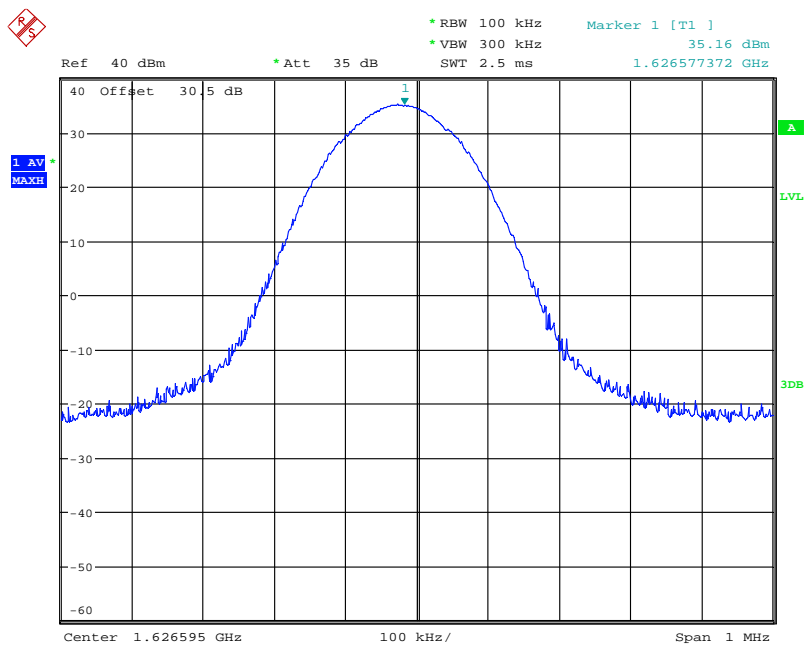
Date: 12.FEB.2011 11:42:52

(Plot 10: Low Channel – QAM1 - Average)



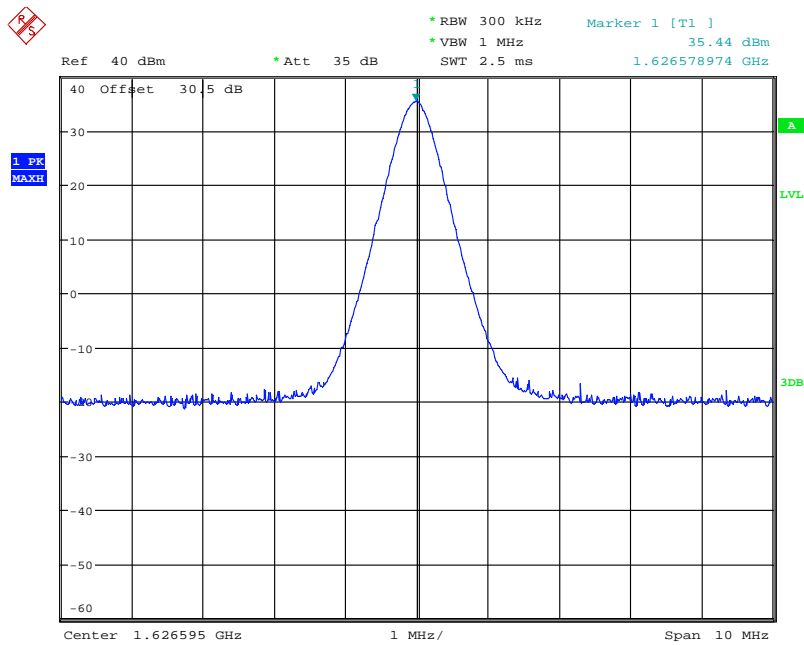
Date: 12.FEB.2011 11:39:31

(Plot 11:Low Channel – QAM2 - Peak)



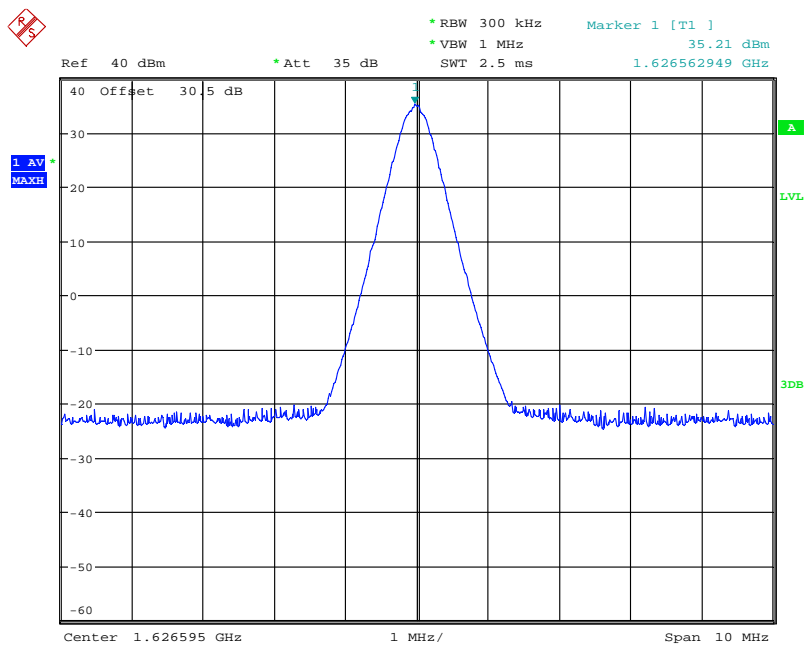
Date: 12.FEB.2011 11:42:21

(Plot 12: Low Channel – QAM2 - Average)



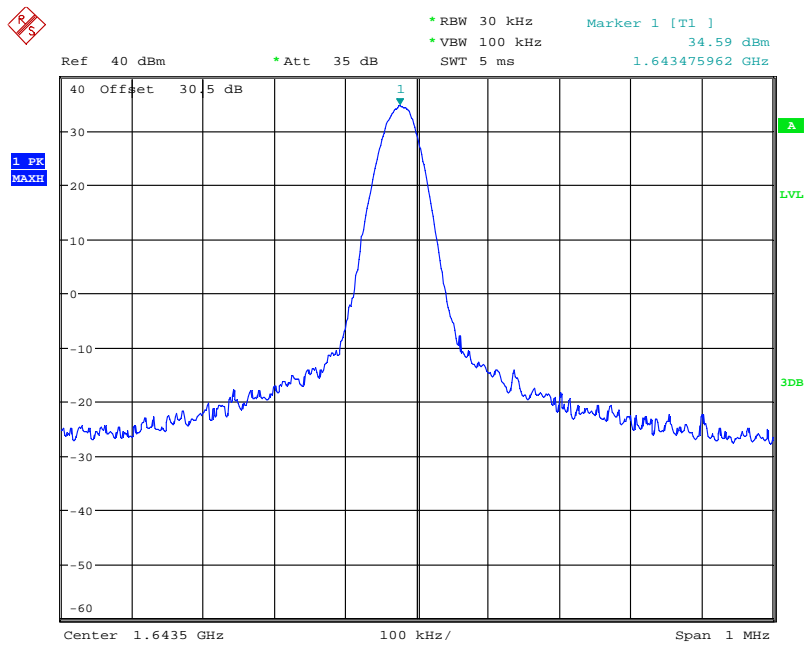
Date: 12.FEB.2011 11:40:21

(Plot 13: Low Channel – QAM4.5 - Peak )



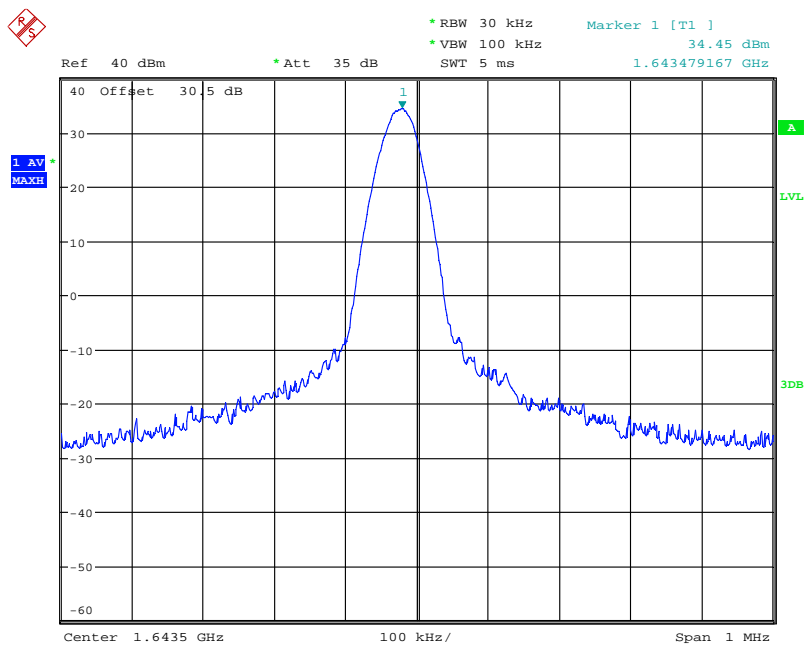
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(Plot 14:Low Channel – QAM4.5 - Average)



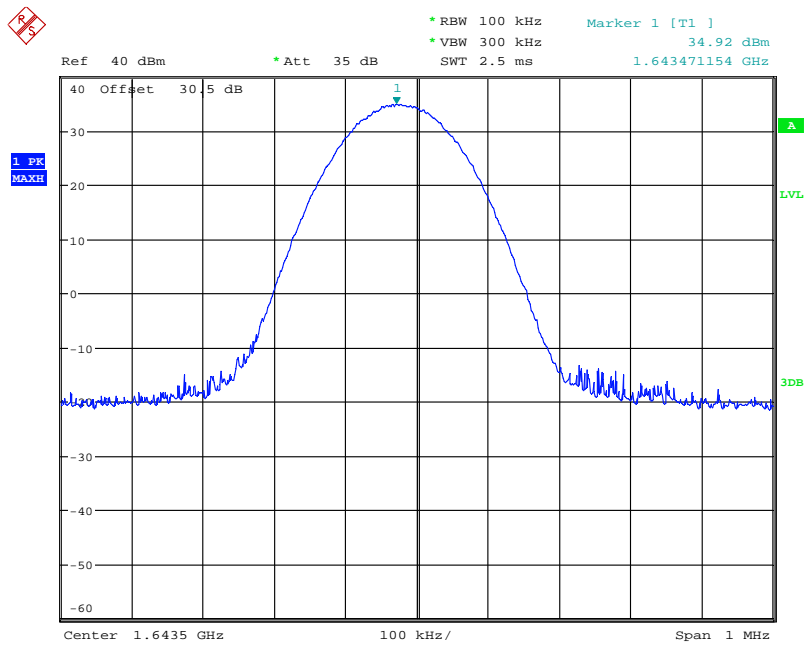
Date: 12.FEB.2011 11:51:33

(Plot 15:Mid Channel –QPSK0.5 - Peak)



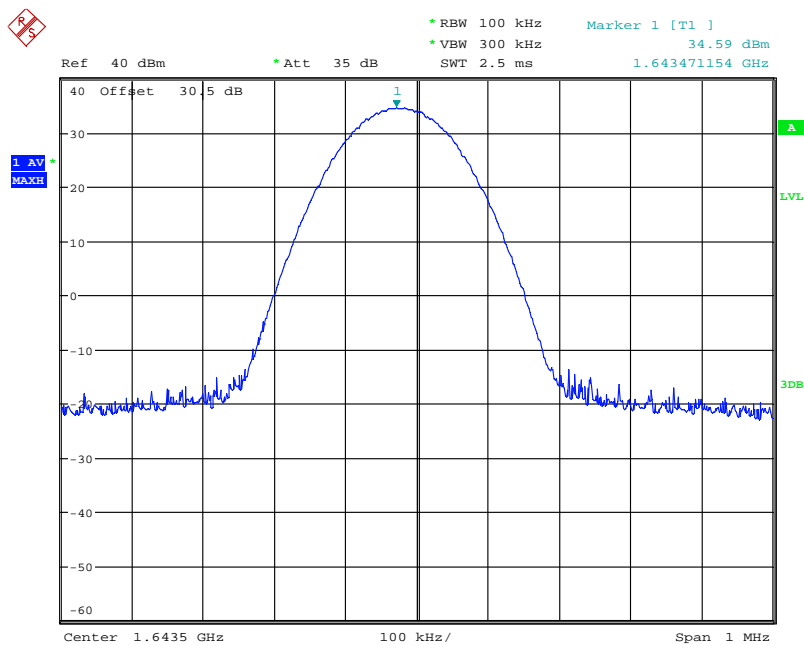
Date: 12.FEB.2011 11:52:27

(Plot 16:Mid Channel –QPSK0.5 - Average)



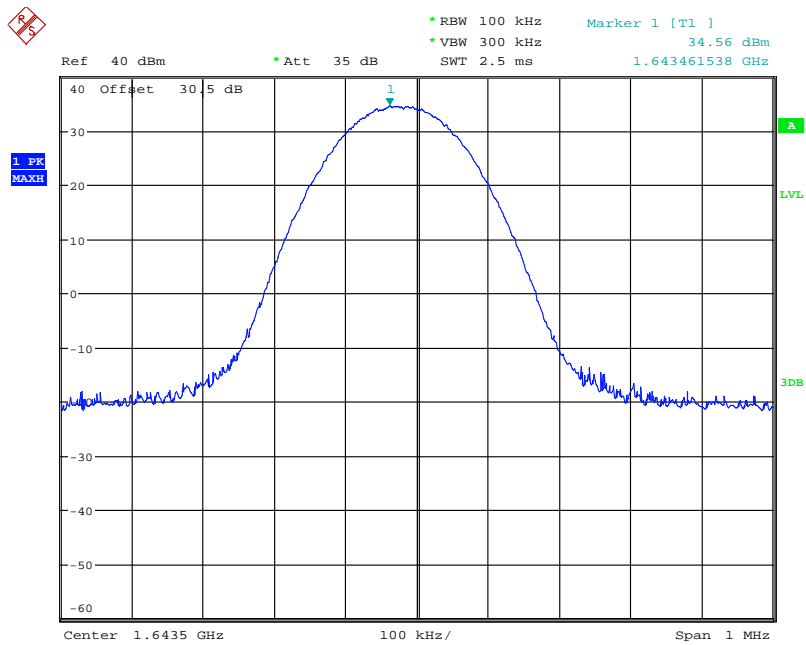
Date: 12.FEB.2011 11:53:39

(Plot 17:Mid Channel –QPSK1 - Peak)



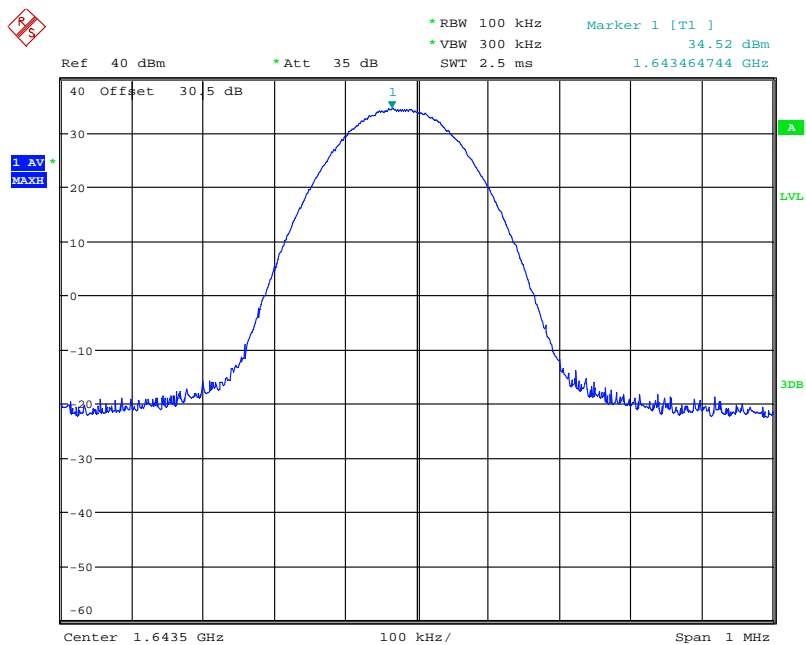
Date: 12.FEB.2011 11:54:14

(Plot 18:Mid Channel –QPSK1 - Average)



Date: 12.FEB.2011 11:55:48

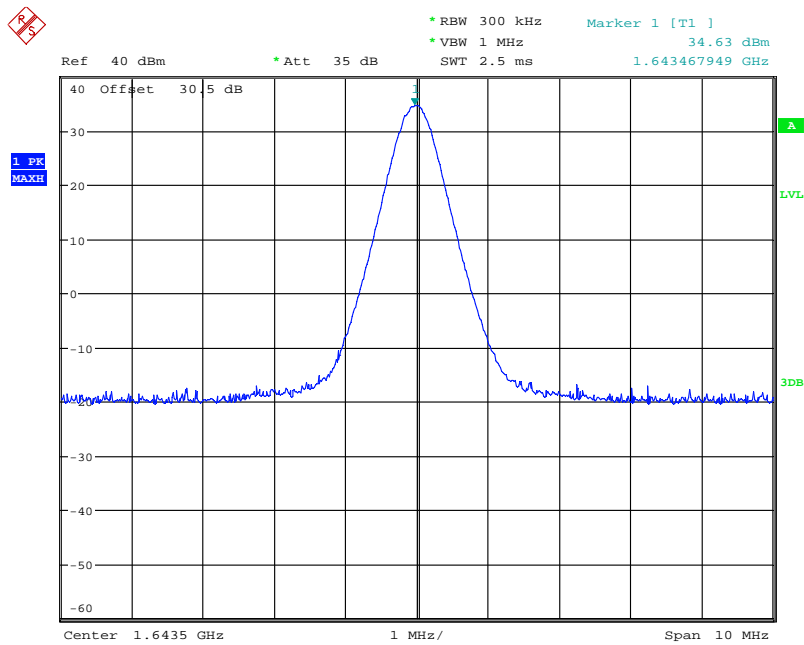
(Plot 19:Mid Channel –QPSK2 - Peak)



Date: 12.FEB.2011 11:55:00

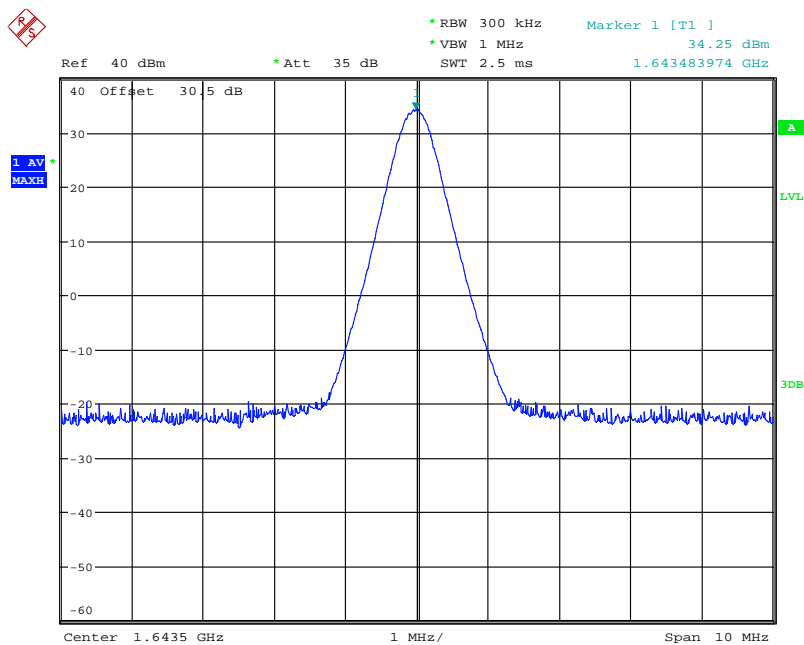
(Plot 20:Mid Channel –QPSK2 - Average)





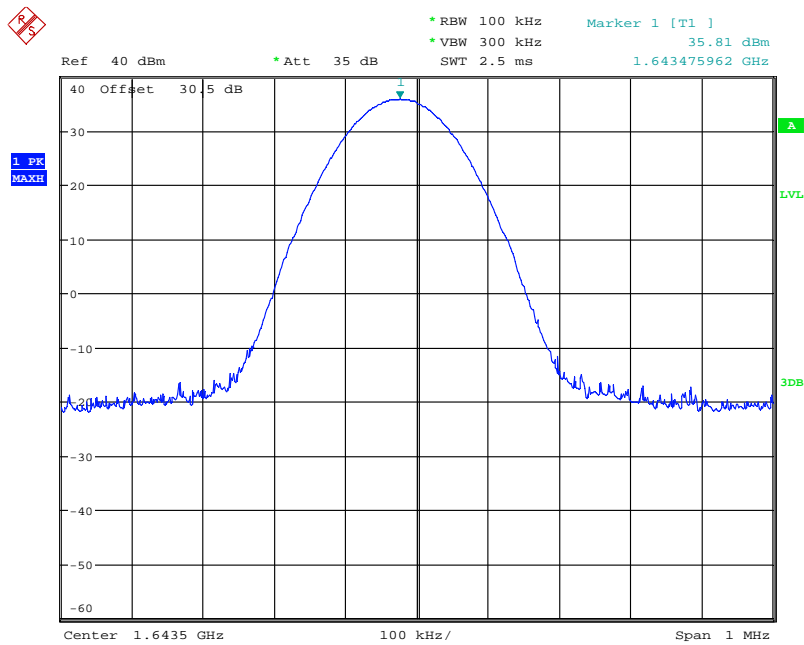
Date: 12.FEB.2011 11:56:40

(Plot 21: Mid Channel –QPSK4.5 - Peak)



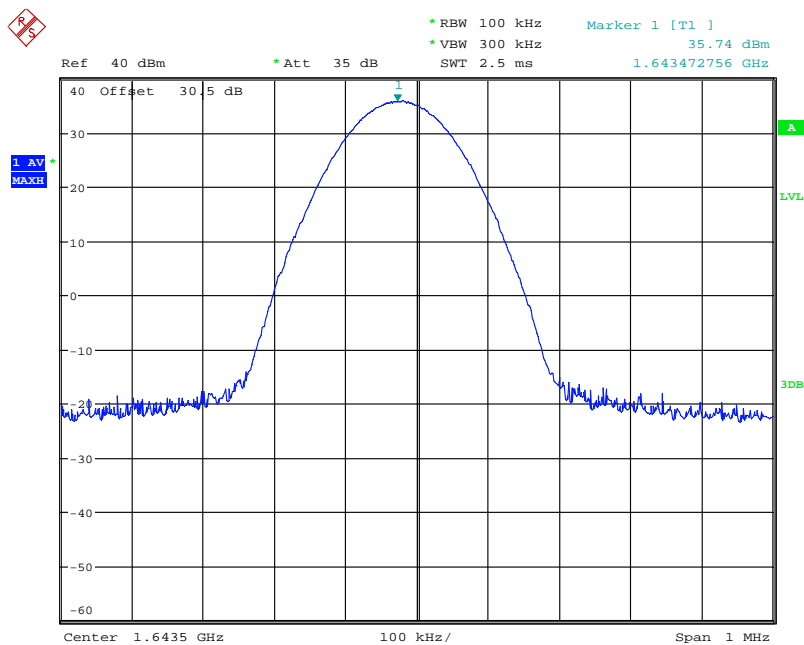
Date: 12.FEB.2011 11:57:36

(Plot 22:Mid Channel –QPSK4.5 - Average)



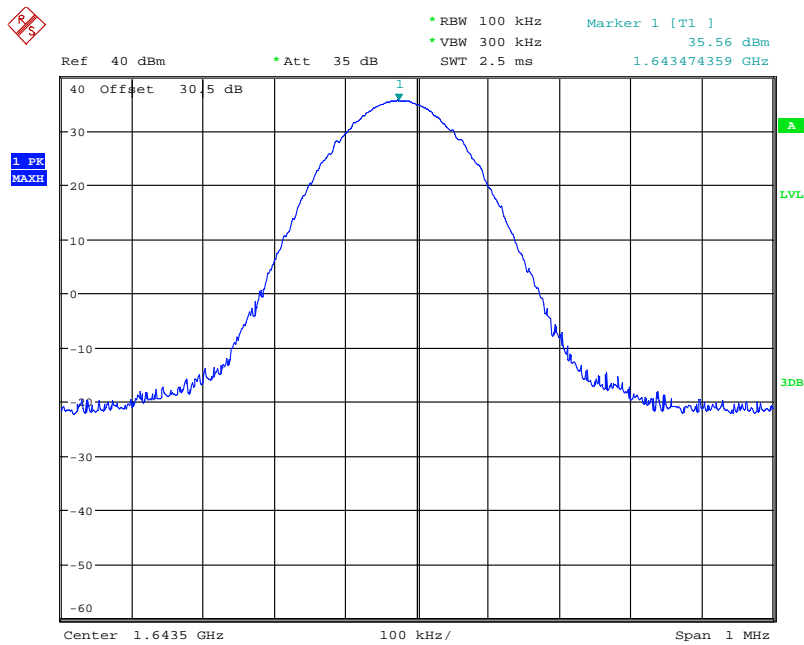
Date: 12.FEB.2011 11:59:53

(Plot 23: Mid Channel – QAM1 - Peak)



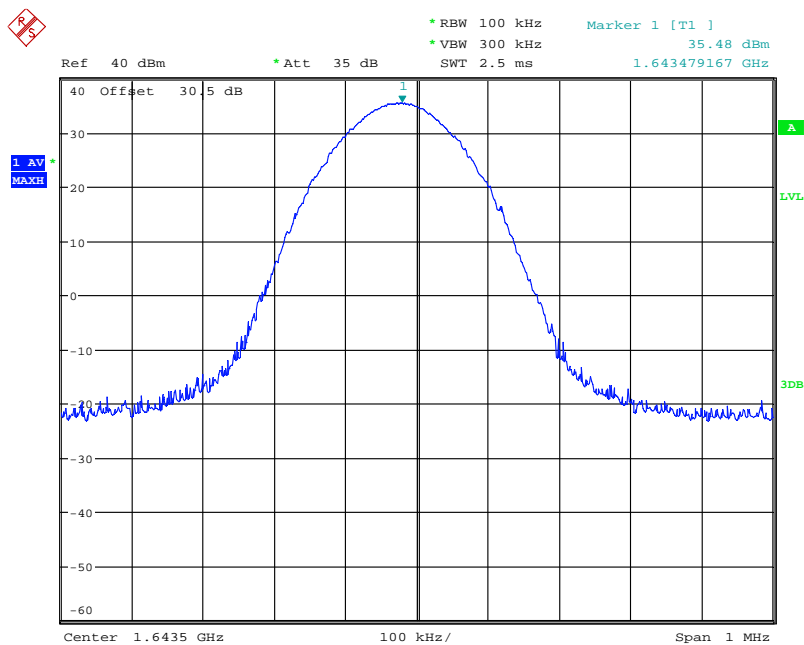
Date: 12.FEB.2011 12:00:18

(Plot 24: Mid Channel – QAM1 - Average)



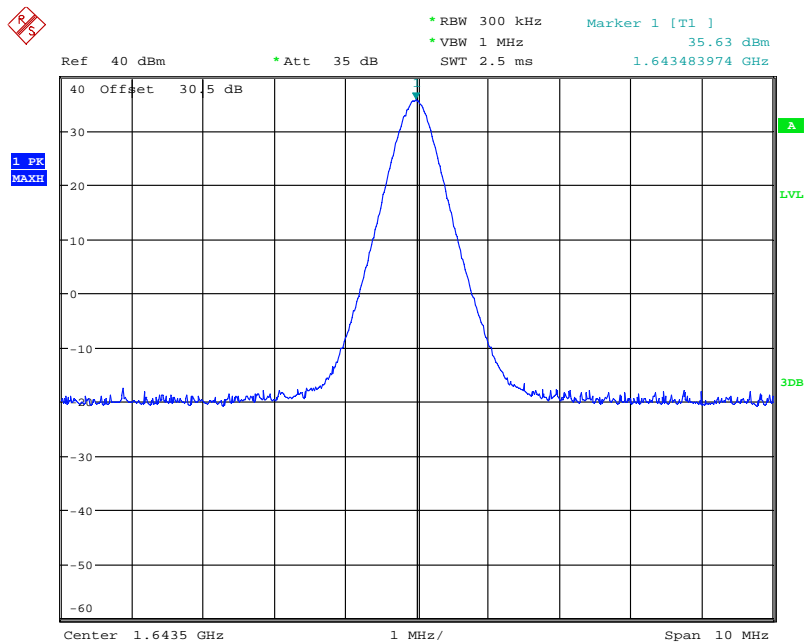
Date: 12.FEB.2011 12:01:02

(Plot 25: Mid Channel – QAM2 - Peak)



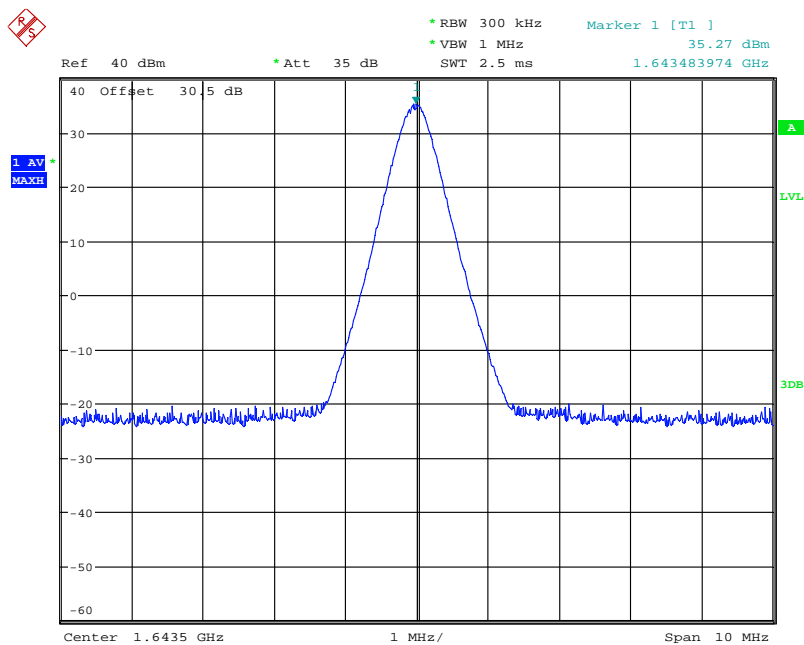
Date: 12.FEB.2011 12:01:29

(Plot 26:Mid Channel – QAM2 - Average)



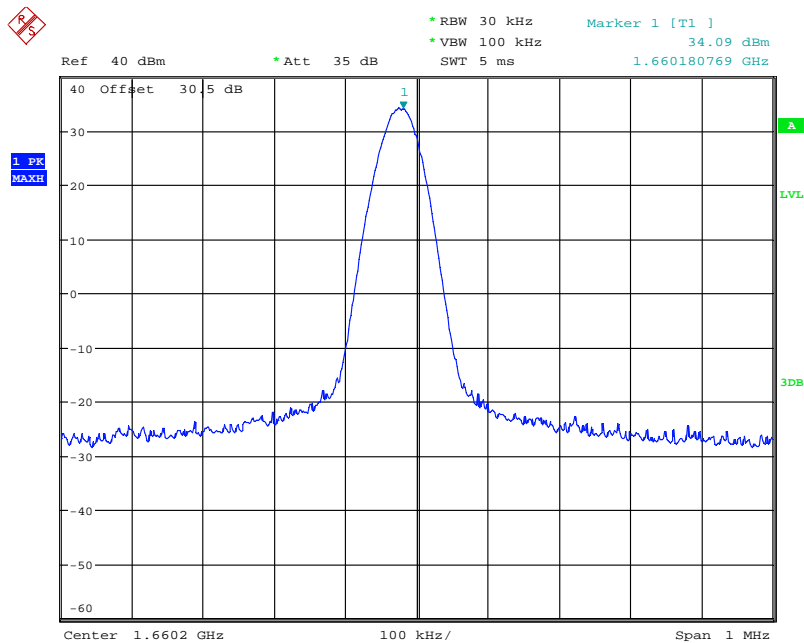
Date: 12.FEB.2011 12:02:44

(Plot 27: Mid Channel – QAM4.5 - Peak)



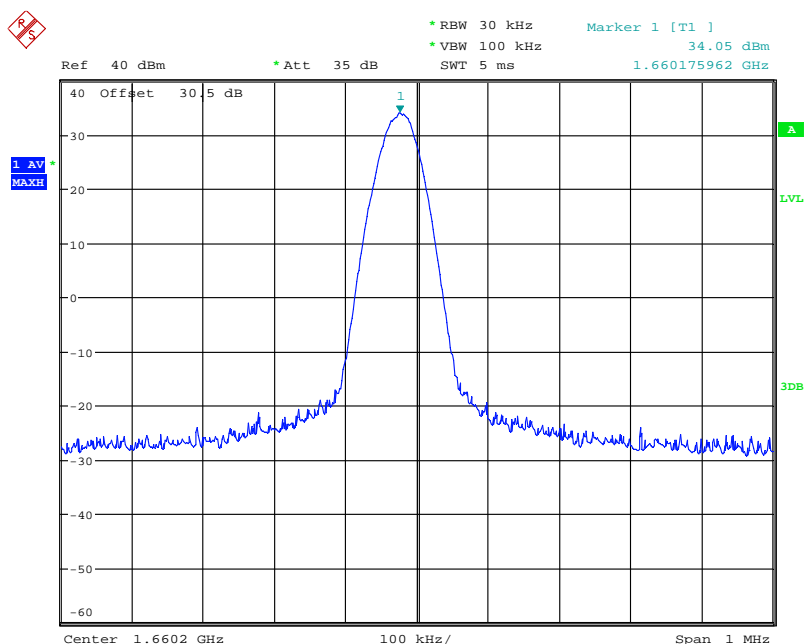
Date: 12.FEB.2011 12:03:51

(Plot 28:Mid Channel – QAM4.5 - Average)



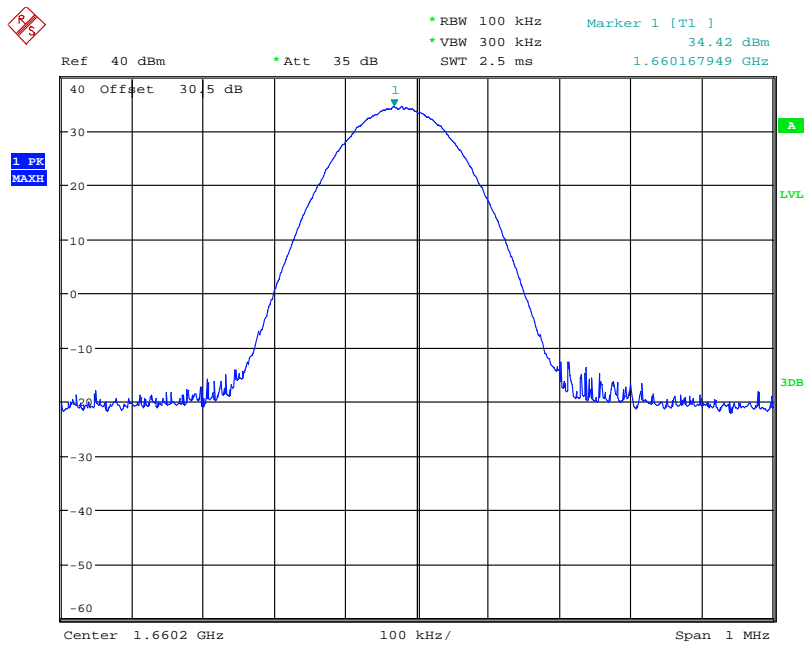
Date: 12.FEB.2011 12:06:43

(Plot 29:Upper Channel –QPSK0.5 - Peak)



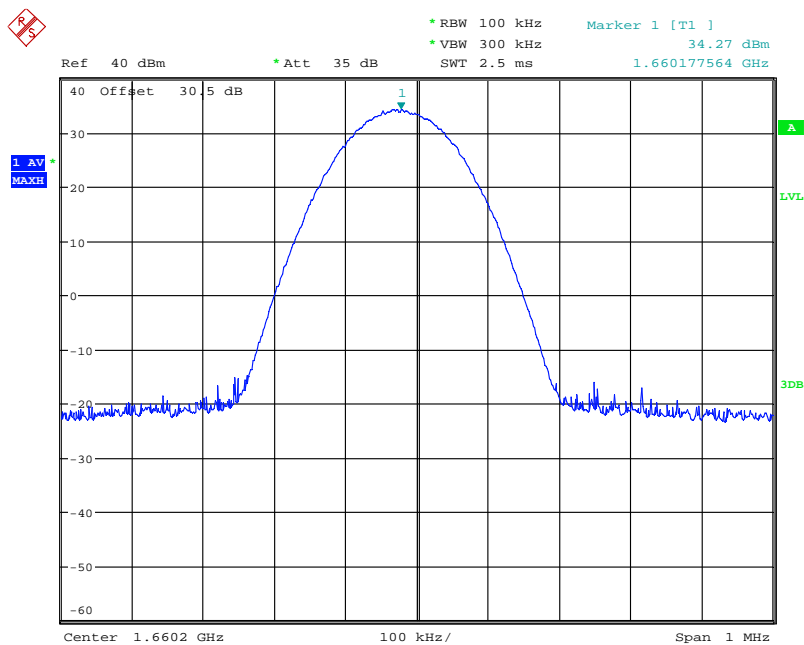
Date: 12.FEB.2011 12:07:23

(Plot 30: Upper Channel –QPSK0.5 - Average)



Date: 12.FEB.2011 12:08:40

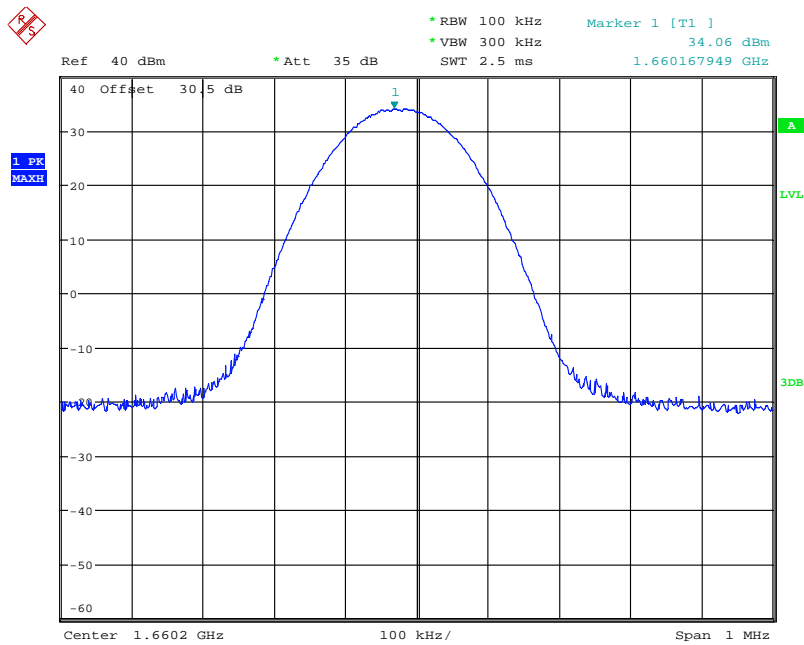
(Plot 31: Upper Channel –QPSK1 - Peak)



Date: 12.FEB.2011 12:07:59

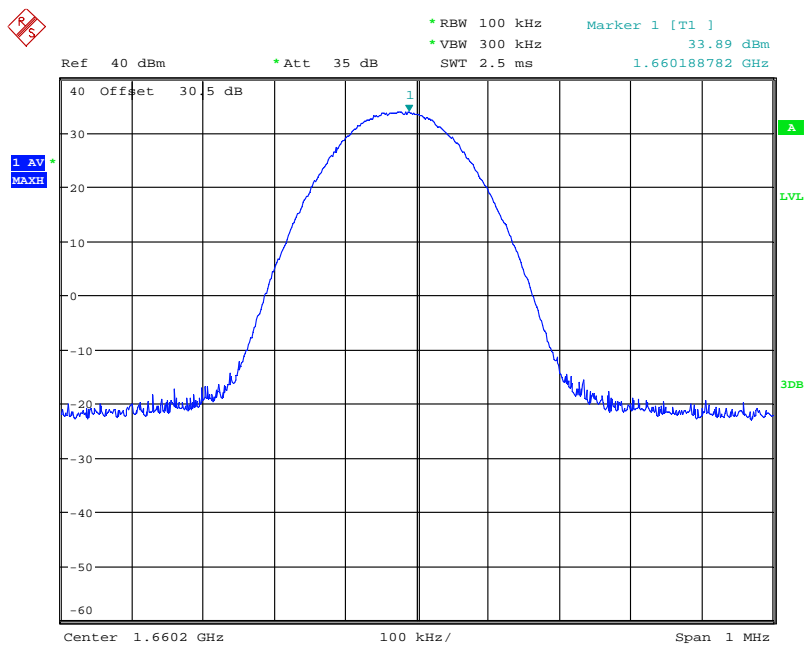
(Plot 32: Upper Channel –QPSK1 - Average)





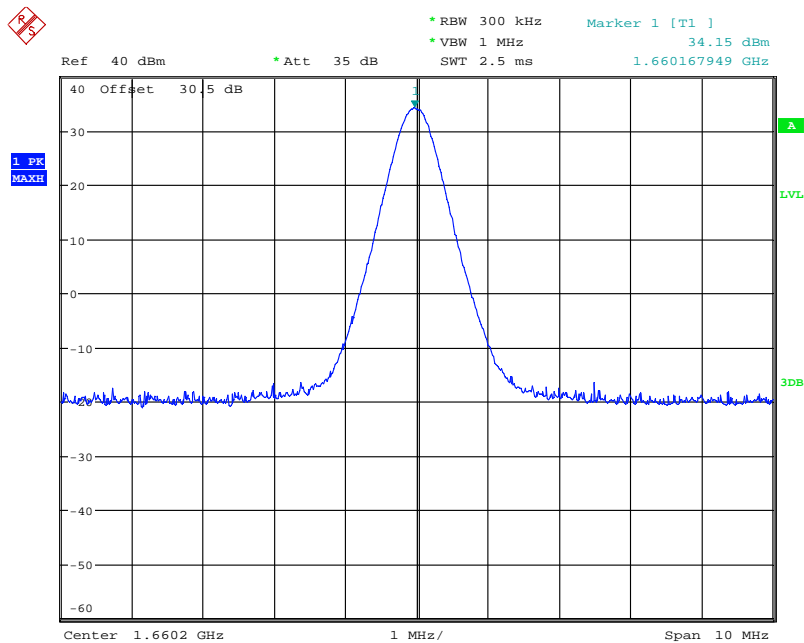
Date: 12.FEB.2011 12:09:28

(Plot 33: Upper Channel –QPSK2 - Peak)



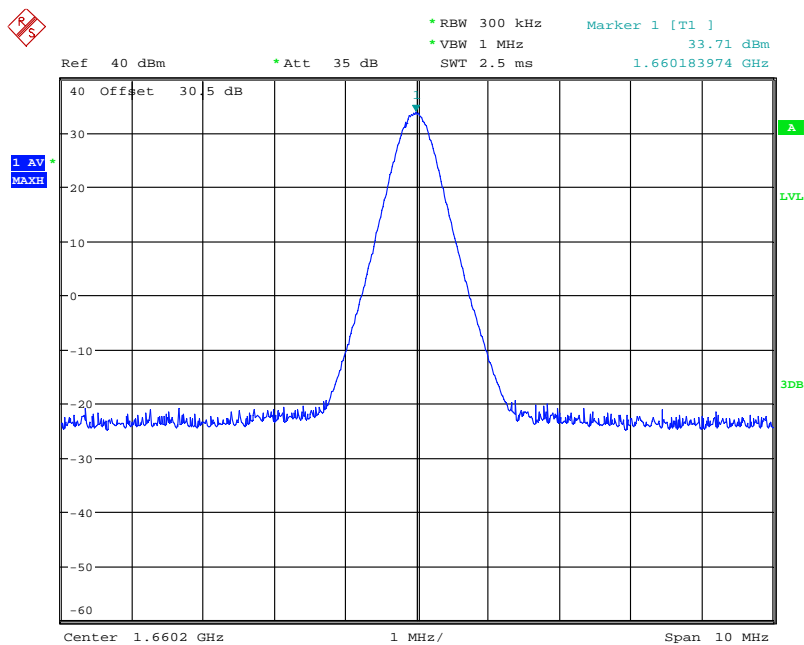
Date: 12.FEB.2011 12:10:13

(Plot 34:Upper Channel –QPSK2 - Average)



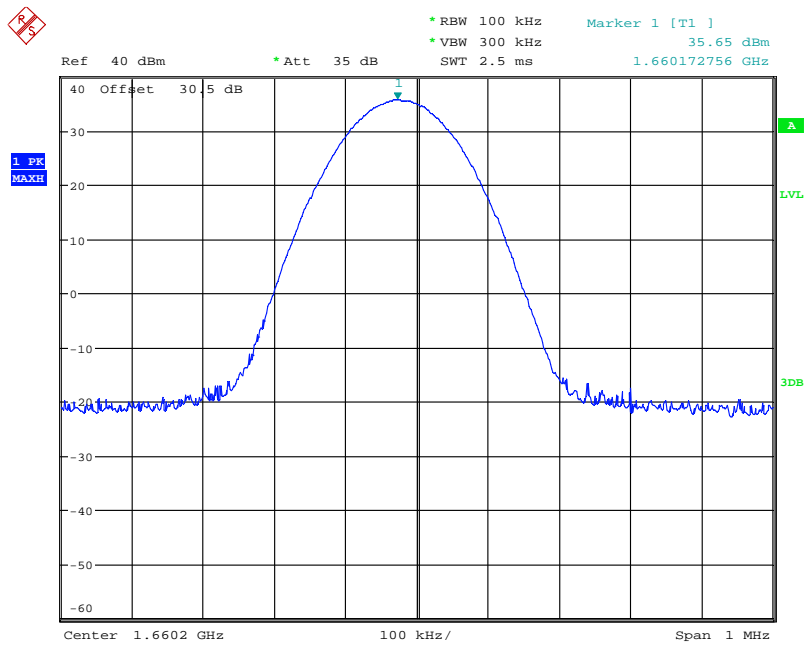
Date: 12.FEB.2011 12:11:29

(Plot 35: Upper Channel –QPSK4.5 - Peak)



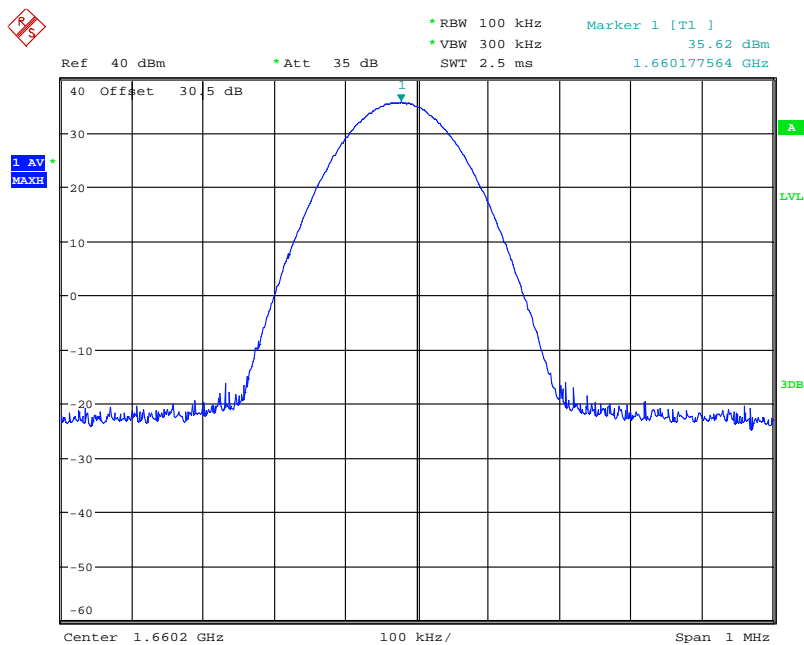
Date: 12.FEB.2011 12:10:59

(Plot 36: Upper Channel –QPSK4.5 - Average)



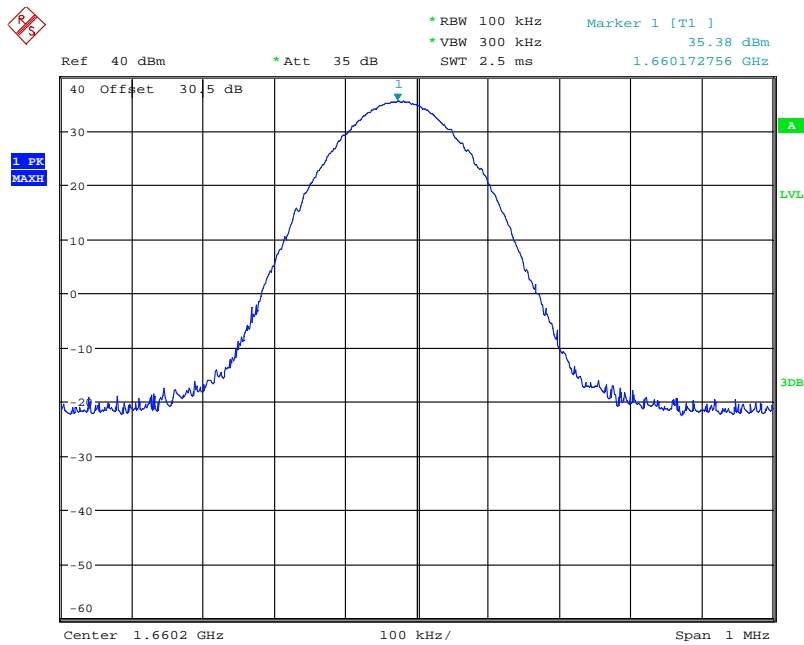
Date: 12.FEB.2011 12:13:54

(Plot 37: Upper Channel –QAM1 - Peak )



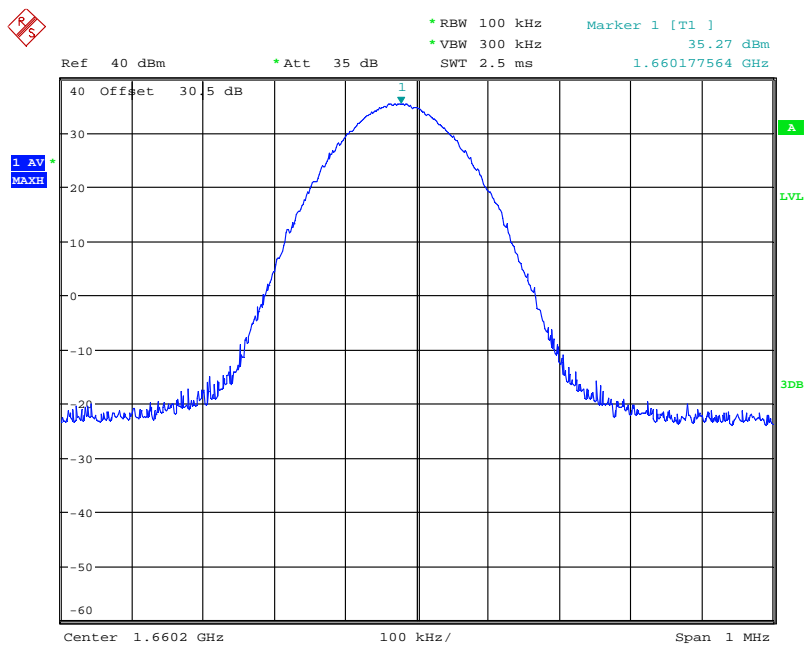
Date: 12.FEB.2011 12:15:11

(Plot 38:Upper Channel –QAM1 - Average)



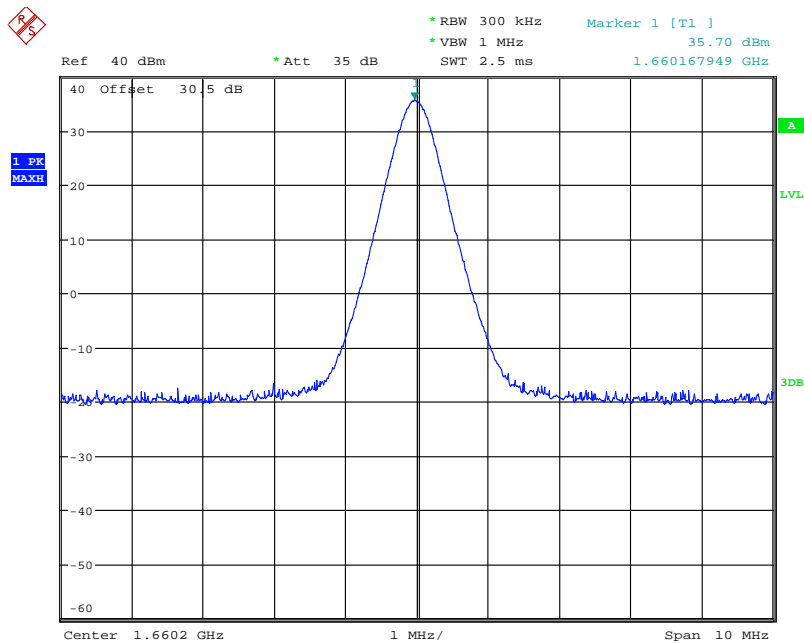
Date: 12.FEB.2011 12:16:00

(Plot 39:Upper Channel –QAM2 - Peak)



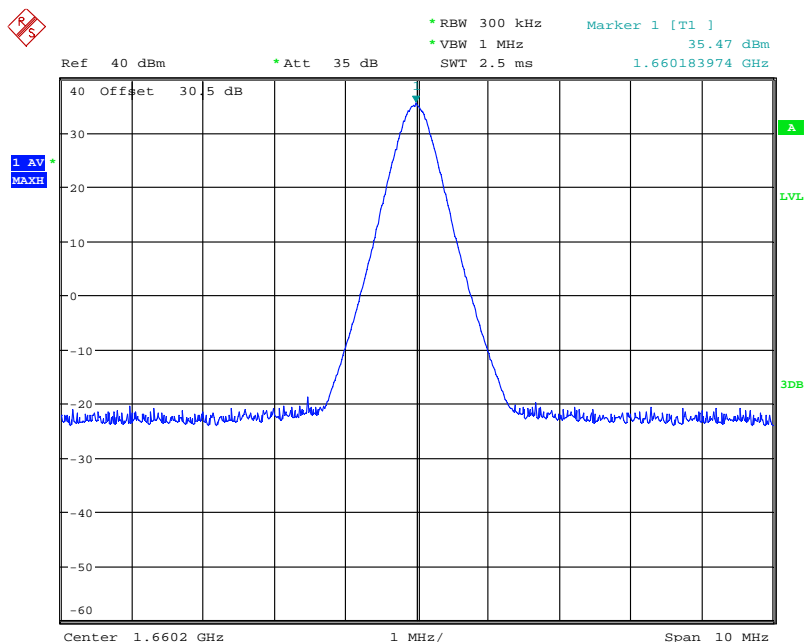
Date: 12.FEB.2011 12:16:20

(Plot 40:Upper Channel –QAM2 - Average)



Date: 12.FEB.2011 12:18:10

(Plot 41: Upper Channel –QAM4.5 - Peak)



Date: 12.FEB.2011 12:19:07

(Plot 42: Upper Channel –QAM4.5 - Average)

## 4. Occupied Bandwidth Test

### 2.1. Limit of Occupied Bandwidth Test

Refer to FCC Part 2.1049

### 2.2. Test Procedure

- a The EUT was switched on and allowed to warm up to its normal operating condition. The EUT was then configured to operate in the test mode, transmitting frequency at lower, mid and higher channel.
- b The EUT temporary antenna port was coupled to the spectrum analyzer. The loss of the cables the test system is calibrated to correct the reading.
- c The 26dB Occupied Bandwidth was measured and recorded .

### 2.3. Test Setup

Refer to 4.3

### 2.4. Setup and Operating Conditions

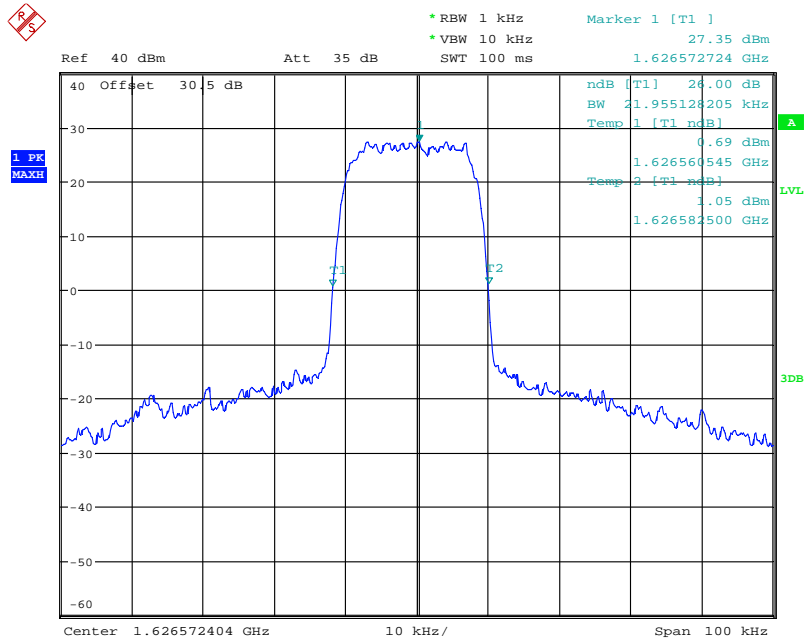
Refer to 4.4



## 2.5. Test Results

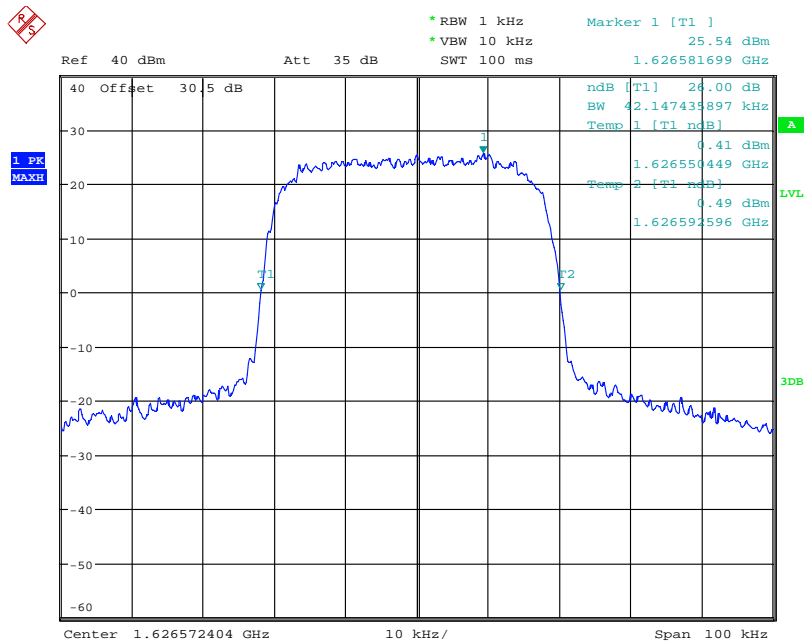
Frequency	Test Mode	26dB Bandwidth(KHz)	Plot
1626.595MHz	QPSK0.5	21.95	43
	QPSK1	42.14	44
	QPSK2	83.65	45
	QPSK4.5	189.10	46
	QAM1	42.30	47
	QAM2	83.65	48
	QAM4.5	190.70	49
1643.5MHz	QPSK0.5	21.95	50
	QPSK1	42.14	51
	QPSK2	83.65	52
	QPSK4.5	189.90	53
	QAM1	42.14	54
	QAM2	83.65	55
	QAM4.5	190.70	56
1660.2Mhz	QPSK0.5	21.79	57
	QPSK1	42.14	58
	QPSK2	83.65	59
	QPSK4.5	189.90	60
	QAM1	42.14	61
	QAM2	83.65	62
	QAM4.5	189.90	63

## Test Plots:



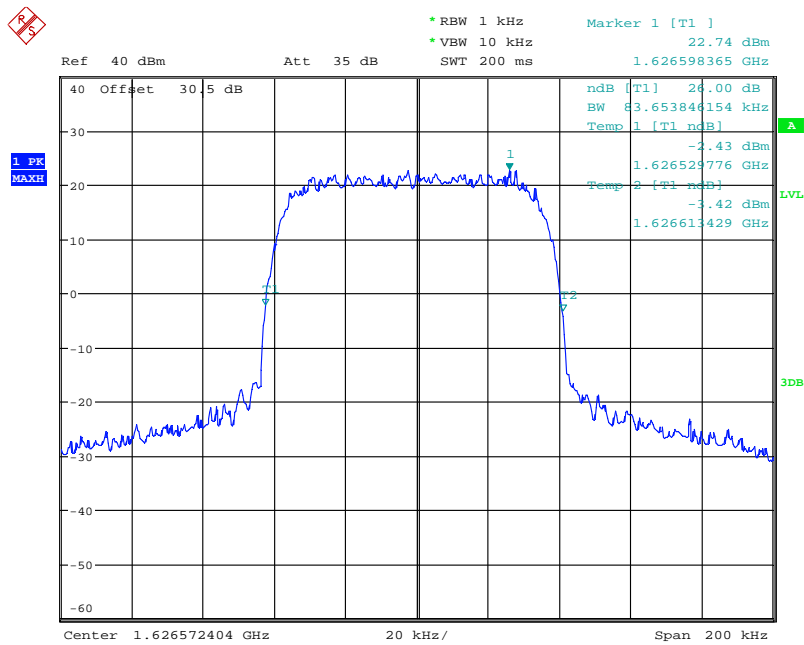
Date: 3.DEC.2010 16:08:18

(Plot 43: Low Channel –QPSK0.5)



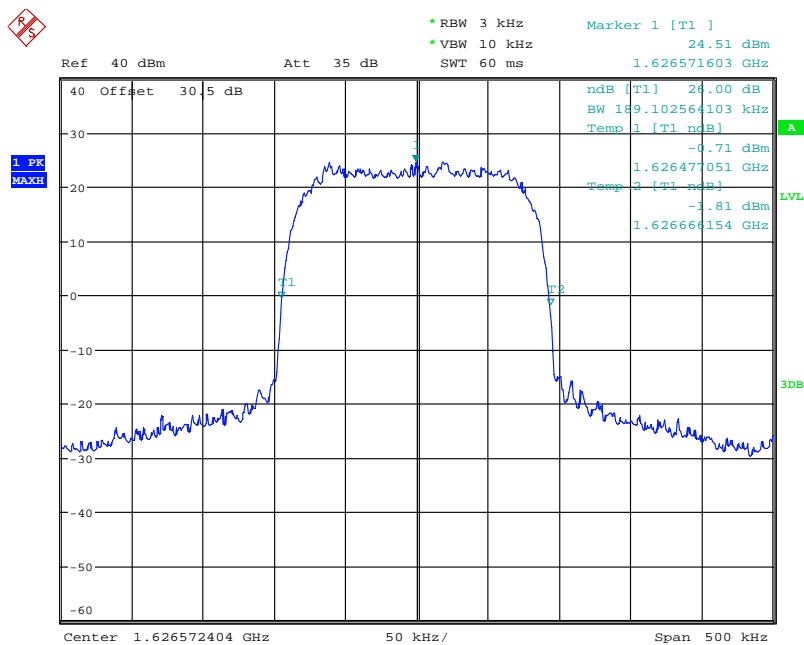
Date: 3.DEC.2010 16:10:16

(Plot 44:Low Channel –QPSK1)



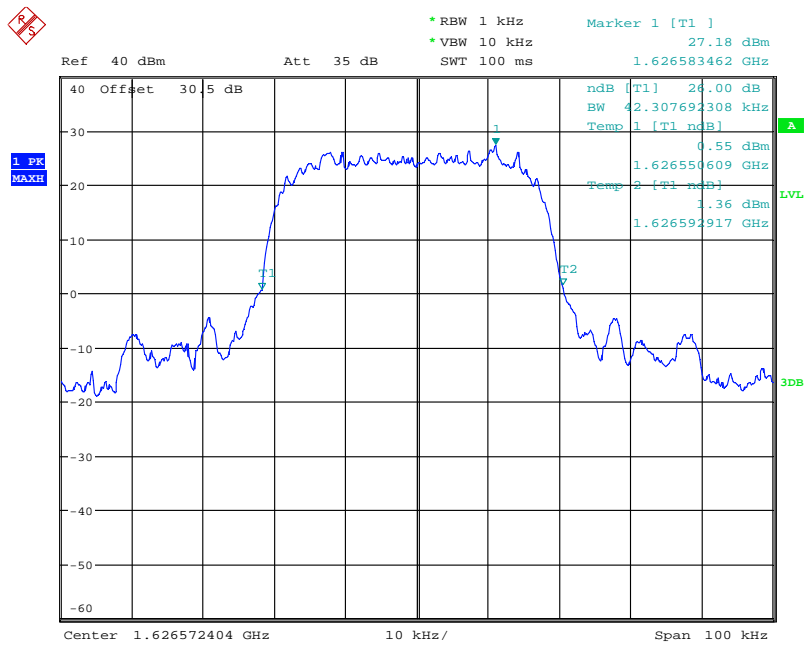
Date: 3.DEC.2010 16:12:06

(Plot 45:Low Channel –QPSK2)



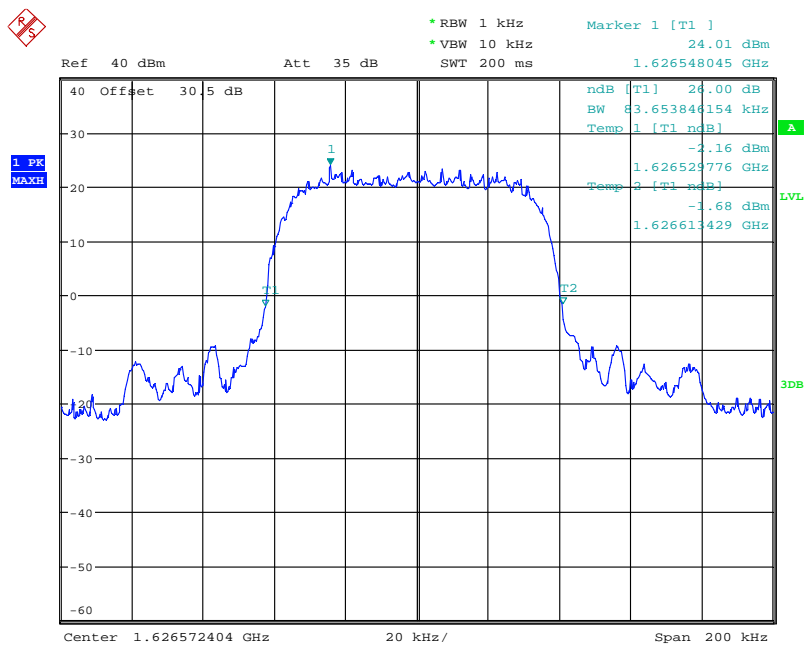
Date: 3.DEC.2010 16:13:25

(Plot 46: Low Channel –QPSK4.5 )



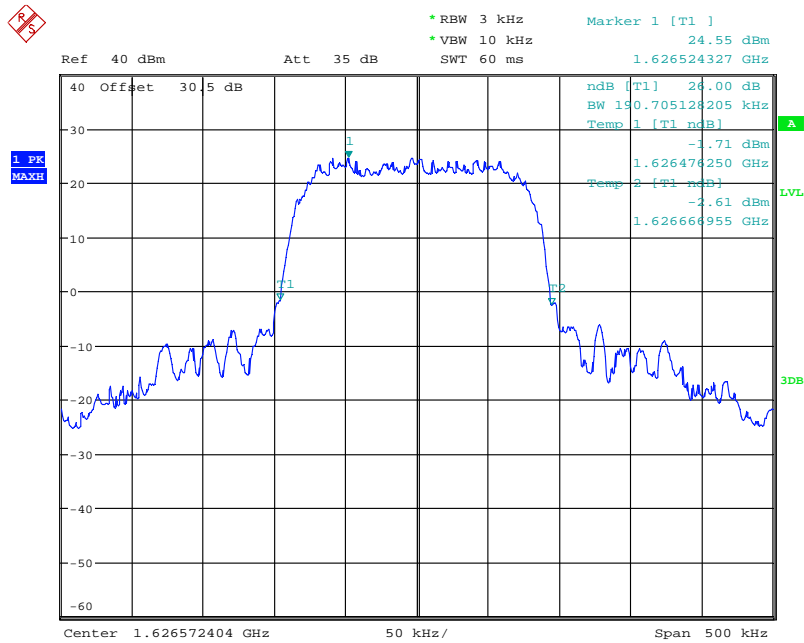
Date: 3.DEC.2010 16:15:58

(Plot 47: Low Channel -QAM1)



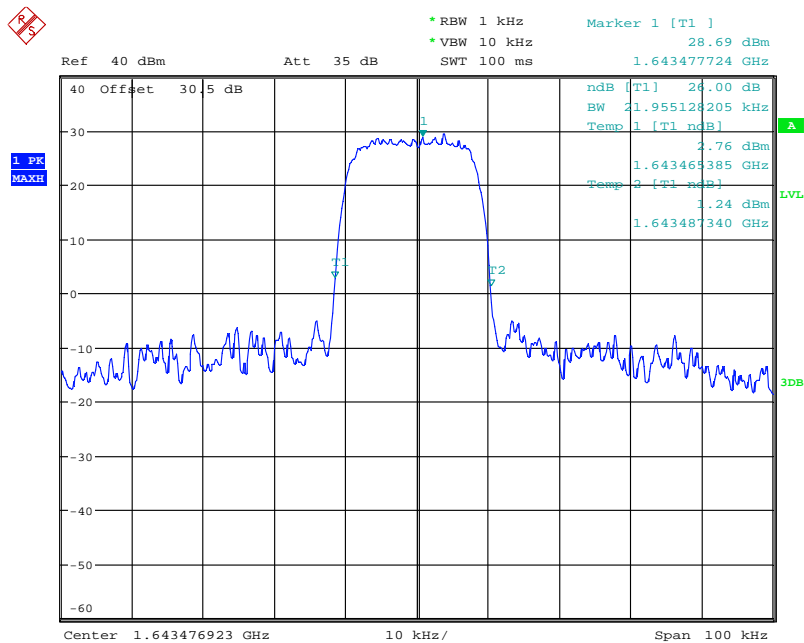
Date: 3.DEC.2010 16:18:12

(Plot 48:Low Channel -QAM2)



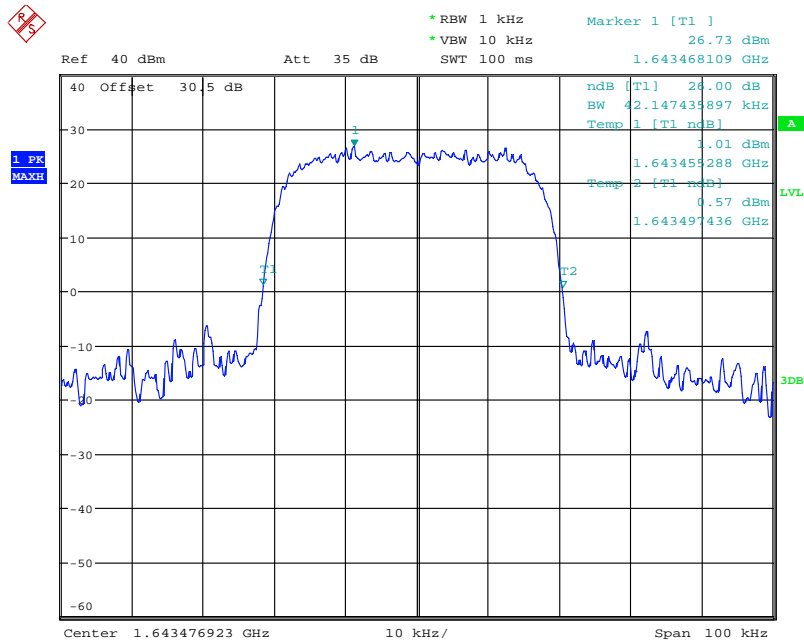
Date: 3.DEC.2010 16:19:15

(Plot 49:Low Channel –QAM4.5)



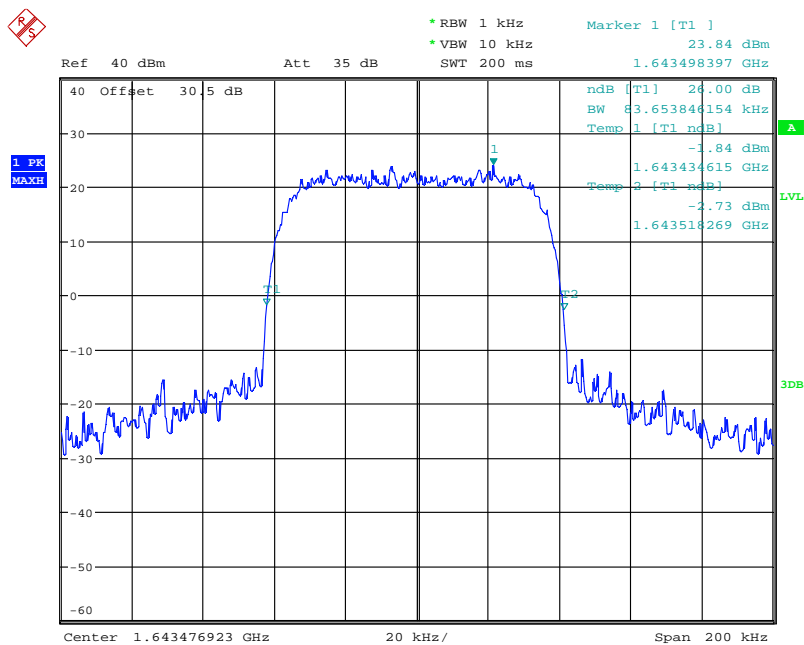
Date: 3.DEC.2010 15:55:16

(Plot 50:Mid Channel –QPSK0.5)



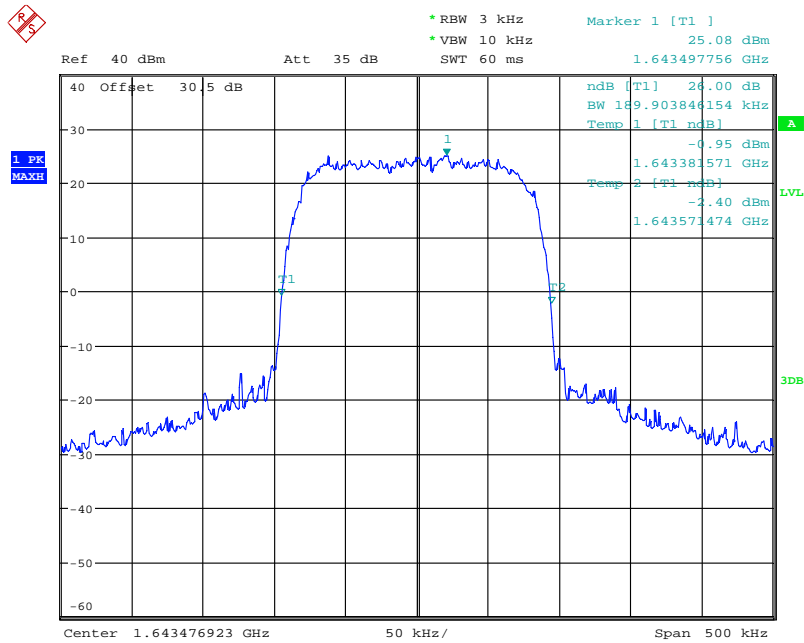
Date: 3.DEC.2010 15:57:08

(Plot 51:Mid Channel –QPSK1)



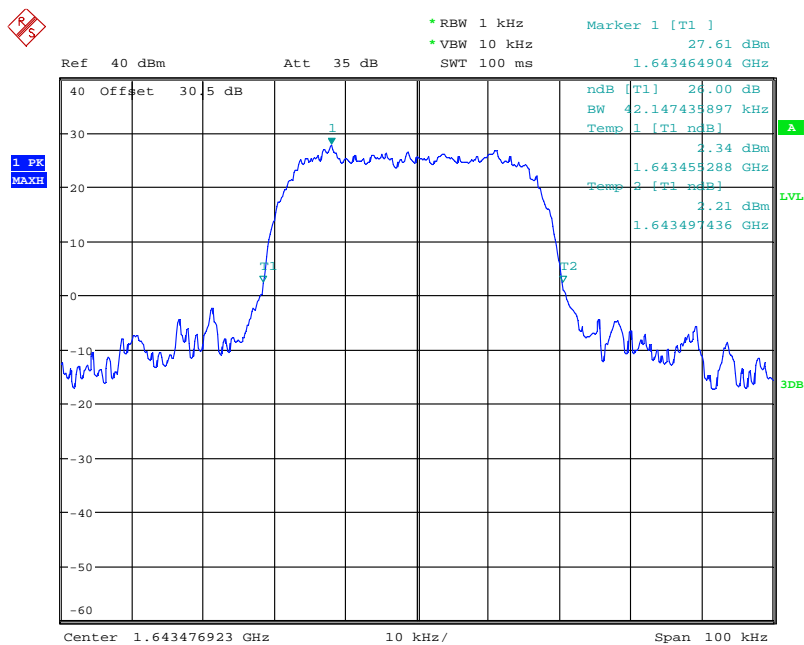
Date: 3.DEC.2010 15:59:15

(Plot 52:Mid Channel –QPSK2)



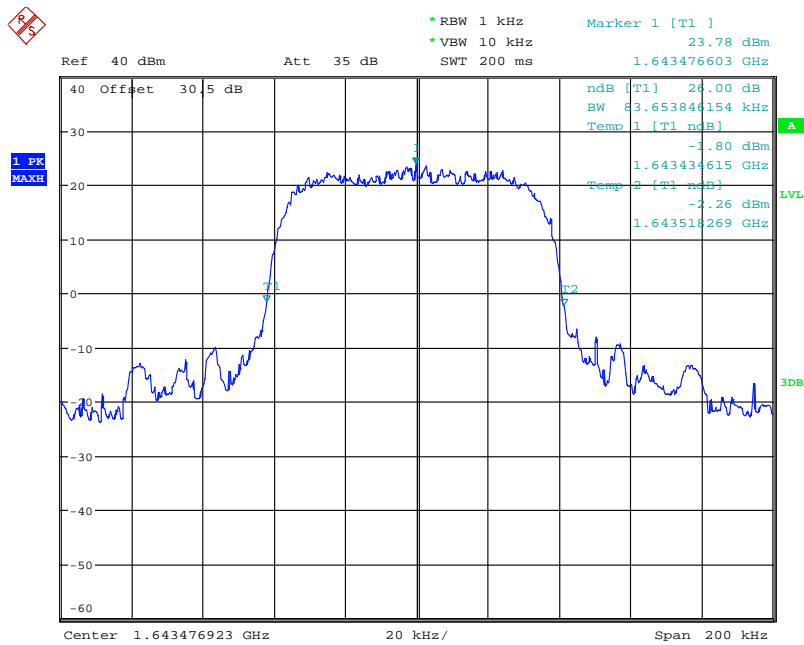
Date: 3.DEC.2010 16:00:32

(Plot 53:Mid Channel -QPSK4.5)



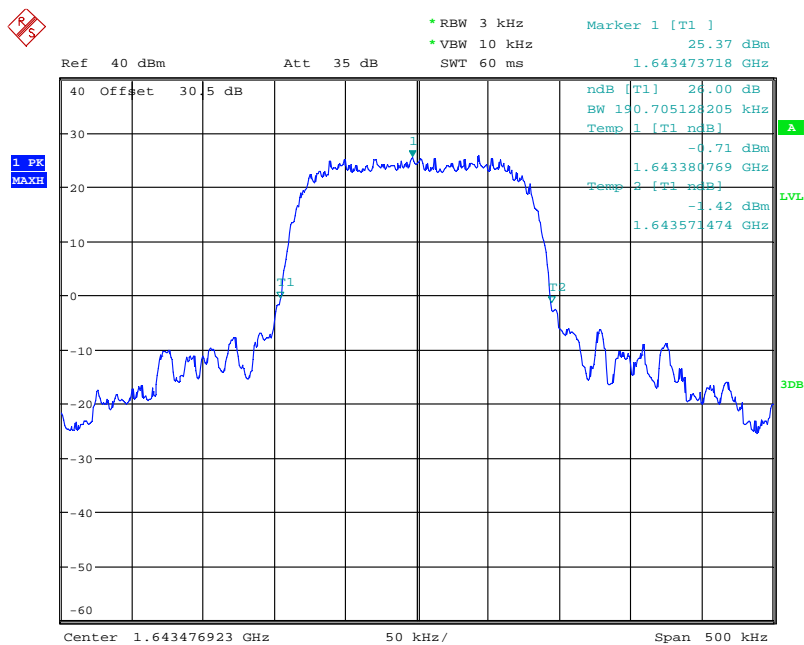
Date: 3.DEC.2010 16:03:35

(Plot 54:Mid Channel -QAM1)



Date: 3.DEC.2010 16:04:49

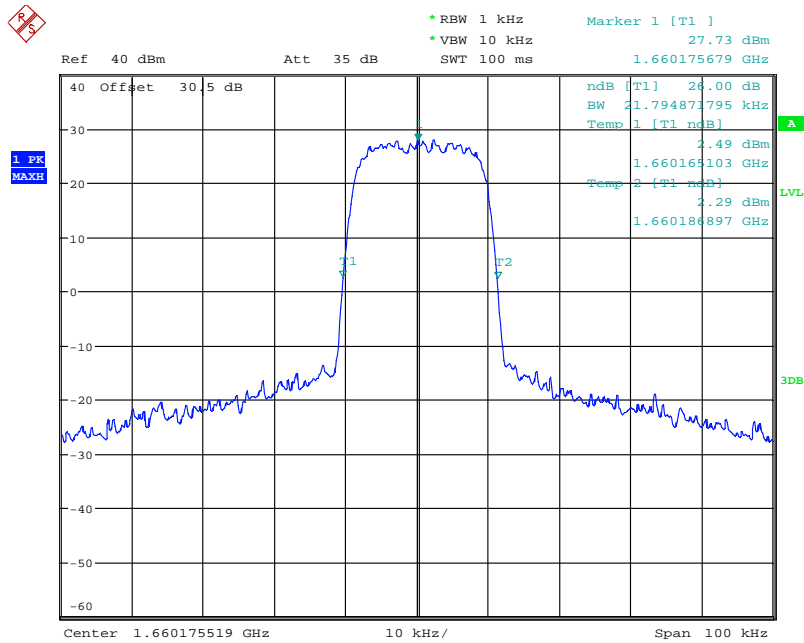
(Plot 55:Mid Channel -QAM2)



Date: 3.DEC.2010 16:06:31

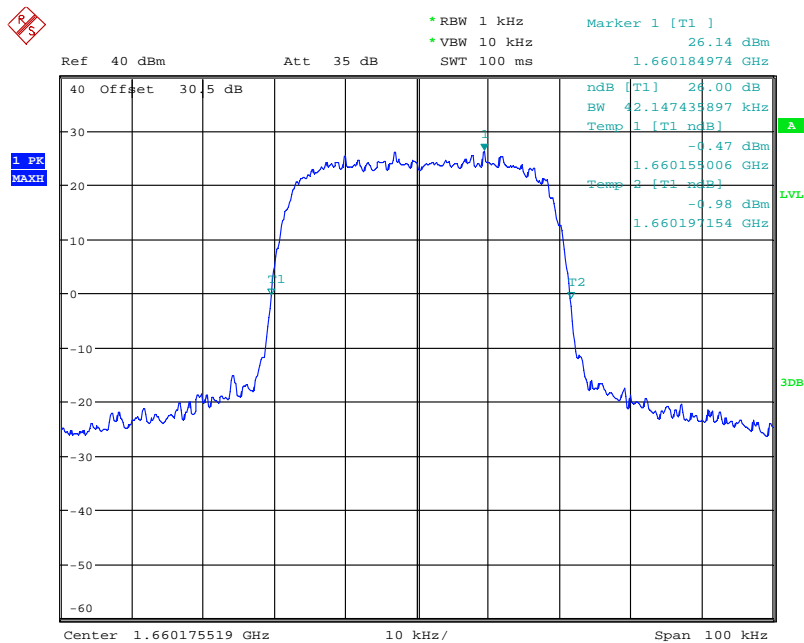
(Plot 56:Mid Channel -QAM4.5)





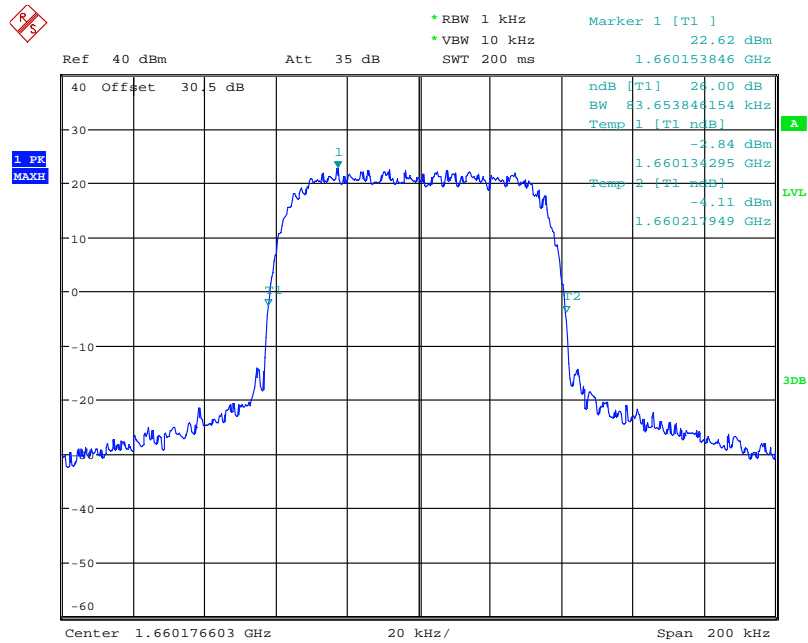
Date: 3.DEC.2010 16:21:30

(Plot 57:Upper Channel -QPSK0.5)



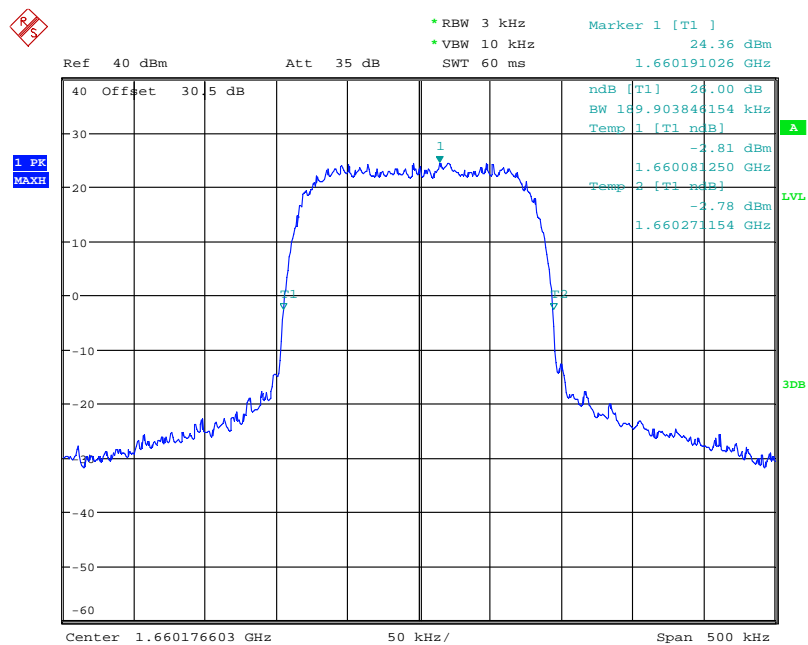
Date: 3.DEC.2010 16:22:43

(Plot 58:Upper Channel -QPSK1)



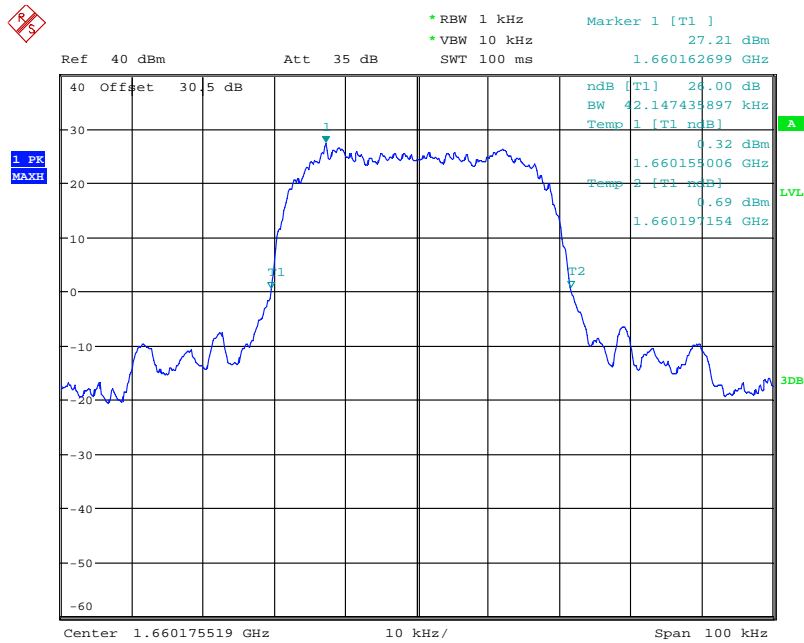
Date: 22.DEC.2010 12:36:41

(Plot 59:Upper Channel –QPSK2)



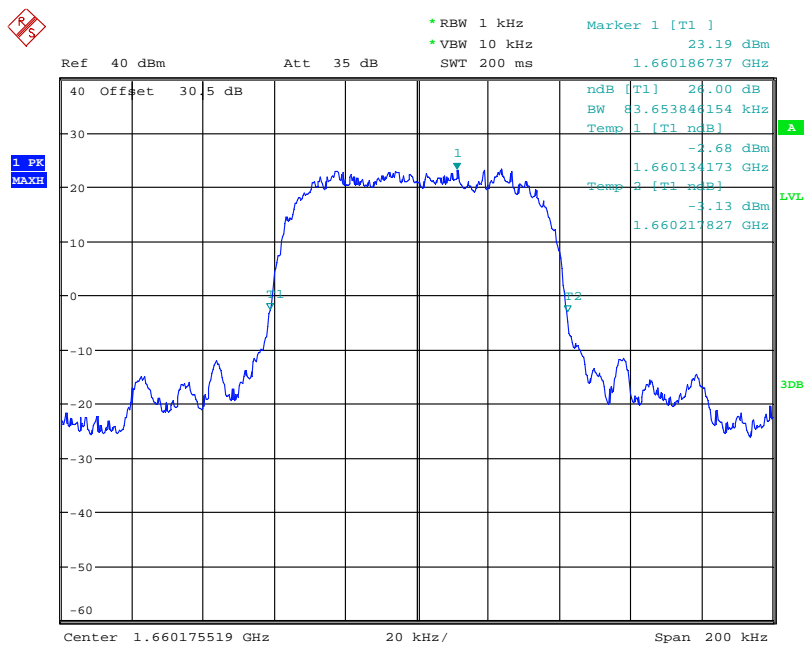
Date: 22.DEC.2010 12:38:14

(Plot 60:Upper Channel –QPSK4.5)



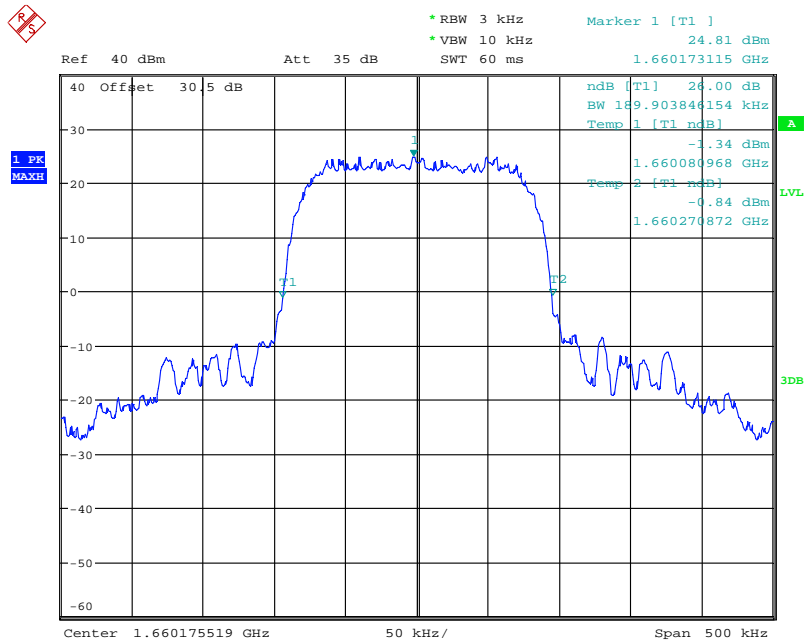
Date: 3.DEC.2010 16:28:35

(Plot 61:Upper Channel –QAM1)



Date: 3.DEC.2010 16:29:51

(Plot 62:Upper Channel –QAM2)



Date: 3.DEC.2010 16:31:05

(Plot 63:Upper Channel –QAM4.5)

## 5. Emission Limitations Per FCC Part 25.202(f)

### 3.1. Limit

According to FCC §25.202 (f), The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

- 1) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: 25 dB;
- 2) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: 35 dB;
- 3) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: An amount equal to 43 dB plus 10 times the logarithm (to the base 10) of the transmitter power in watts;
- 4) In any event, when an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in paragraphs (f) (1), (2) and (3) of this section.

### 3.2. Test Procedure

- a) The EUT was switched on and allowed to warm up to its normal operating condition. The EUT was then configured to operate in the test mode, transmitting frequency at lower, mid and higher channel.
- b) The EUT temporary antenna port was coupled to the spectrum analyzer. The loss of the cables the test system is calibrated to correct the reading.
- c) The RBW was corrected from 4KHz by  $10\lg[(\text{used RBW})/4\text{KHz}]$
- d) Emission limits are computed based on following:

Emission Limits (dBm) (50%-100% authorized bandwidth) =  $P - 25 + CF$

Emission Limits (dBm) (100%-250% authorized bandwidth) =  $P - 35 + CF$

Emission Limits (dBm) (>250 authorized bandwidth) =  $P - [43 + 10\lg P_w] + 30 + CF$

Where:

P = Measured mean power in dBm

P<sub>w</sub> = Measured mean power in dBW

CF = RBW correction factor

### 3.3. Setup of the RBW and Limit

## In Band Emission

Frequency (MHz)	Test Mode	Mean Power (dBm)	RBW (KHz)	CF	Limit(dBm)			Plot
					50%-100%	100%-250%	>250%	
1626.595	QPSK0.5	33.96	0.3	-11.24939	-2.28939	-12.28939	-24.249	65
	QPSK1	34.06	0.3	-11.24939	-2.18939	-12.18939	-24.249	68
	QPSK2	33.83	0.3	-11.24939	-2.41939	-12.41939	-24.249	71
	QPSK4.5	33.75	0.3	-11.24939	-2.49939	-12.49939	-24.249	74
	QAM1	35.34	0.3	-11.24939	-0.90939	-10.90939	-24.249	77
	QAM2	35.16	0.3	-11.24939	-1.08939	-11.08939	-24.249	80
	QAM4.5	35.21	0.3	-11.24939	-1.03939	-11.03939	-24.249	83
	QPSK0.5	34.45	0.3	-11.24939	-1.79939	-11.79939	-24.249	86
1643.5	QPSK1	34.59	0.3	-11.24939	-1.65939	-11.65939	-24.249	89
	QPSK2	34.52	0.3	-11.24939	-1.72939	-11.72939	-24.249	92
	QPSK4.5	34.25	0.3	-11.24939	-1.99939	-11.99939	-24.249	95
	QAM1	35.74	0.3	-11.24939	-0.50939	-10.50939	-24.249	98
	QAM2	35.48	0.3	-11.24939	-0.76939	-10.76939	-24.249	101
	QAM4.5	35.27	0.3	-11.24939	-0.97939	-10.97939	-24.249	104
	QPSK0.5	34.05	0.3	-11.24939	-2.19939	-12.19939	-24.249	105
	QPSK1	34.27	0.3	-11.24939	-1.97939	-11.97939	-24.249	110
1660.2	QPSK2	33.89	0.3	-11.24939	-2.35939	-12.35939	-24.249	113
	QPSK4.5	33.71	0.3	-11.24939	-2.53939	-12.53939	-24.249	116
	QAM1	35.62	0.3	-11.24939	-0.62939	-10.62939	-24.249	119
	QAM2	35.27	0.3	-11.24939	-0.97939	-10.97939	-24.249	122
	QAM4.5	35.47	0.3	-11.24939	-0.77939	-10.77939	-24.249	125

#### Out Band Emission

Frequency (MHz)	Test Mode	RBW (KHz)	CF	Limit (dBm)	Plot
1626.595	QPSK0.5	100	13.97940009	0.979400087	64,66
	QPSK1	100	13.97940009	0.979400087	67,69
	QPSK2	100	13.97940009	0.979400087	70,72
	QPSK4.5	100	13.97940009	0.979400087	73,75
	QAM1	100	13.97940009	0.979400087	76,78
	QAM2	100	13.97940009	0.979400087	79,81
	QAM4.5	100	13.97940009	0.979400087	82,84
	QPSK0.5	100	13.97940009	0.979400087	85,87
1643.5	QPSK1	100	13.97940009	0.979400087	88,90
	QPSK2	100	13.97940009	0.979400087	91,93
	QPSK4.5	100	13.97940009	0.979400087	94,96
	QAM1	100	13.97940009	0.979400087	97,99
	QAM2	100	13.97940009	0.979400087	100,102
	QAM4.5	100	13.97940009	0.979400087	103,105
	QPSK0.5	100	13.97940009	0.979400087	106,108
	QPSK1	100	13.97940009	0.979400087	109,111
1660.2	QPSK2	100	13.97940009	0.979400087	112,114
	QPSK4.5	100	13.97940009	0.979400087	115,117
	QAM1	100	13.97940009	0.979400087	118,120
	QAM2	100	13.97940009	0.979400087	121,123
	QAM4.5	100	13.97940009	0.979400087	124,126

### 3.4. Test Setup

Refer to 4.3

### 3.5. EUT Setup and Operating Conditions

Refer to 4.4

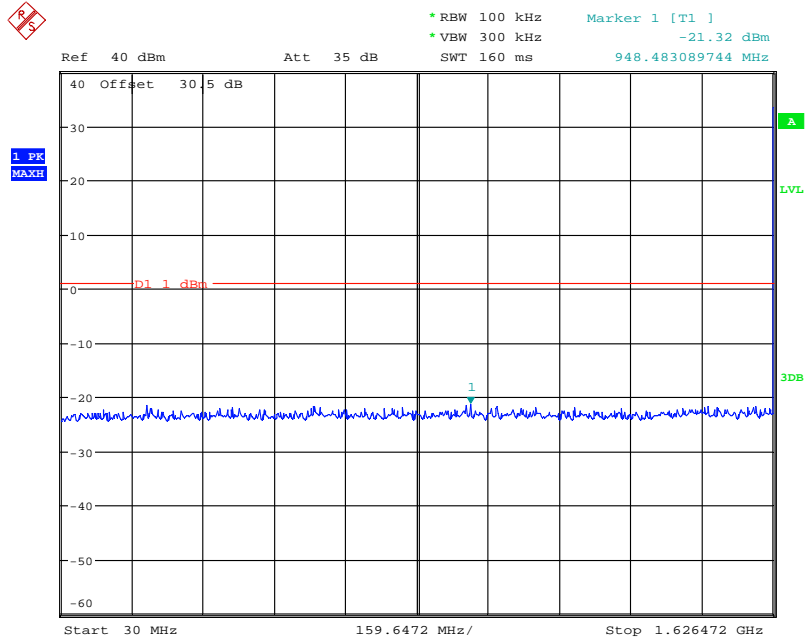
### 3.6. Test Results

**Passed**

Frequency	Test Mode	Plot
1626.595MHz	QPSK0.5	64-66
	QPSK1	67-69
	QPSK2	70-72
	QPSK4.5	73-75
	QAM1	76-78
	QAM2	79-81
	QAM4.5	82-84
1643.5MHz	QPSK0.5	85-87
	QPSK1	88-90
	QPSK2	91-93
	QPSK4.5	94-96
	QAM1	97-99
	QAM2	100-102
	QAM4.5	103-105
1660.2Mhz	QPSK0.5	106-108
	QPSK1	109-111
	QPSK2	112-114
	QPSK4.5	115-117
	QAM1	118-120
	QAM2	121-123
	QAM4.5	124-126

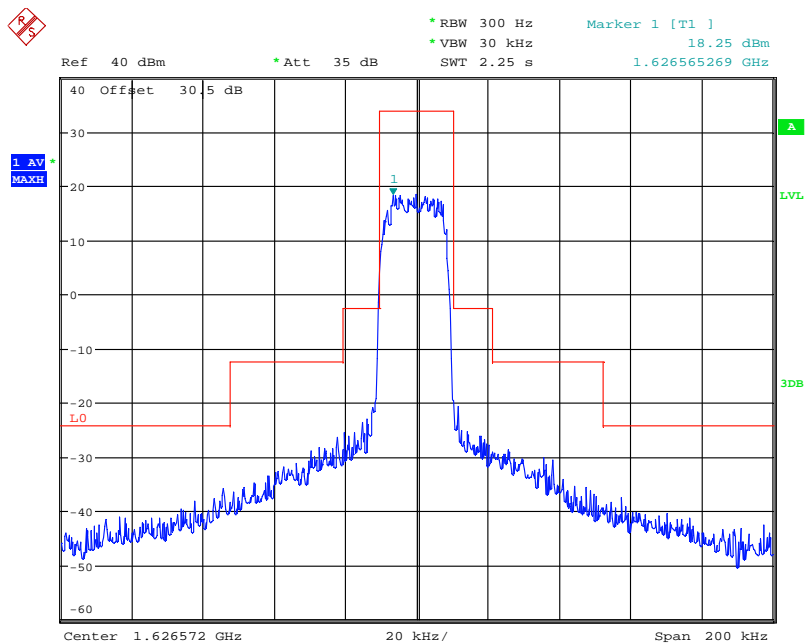


## Test Plots



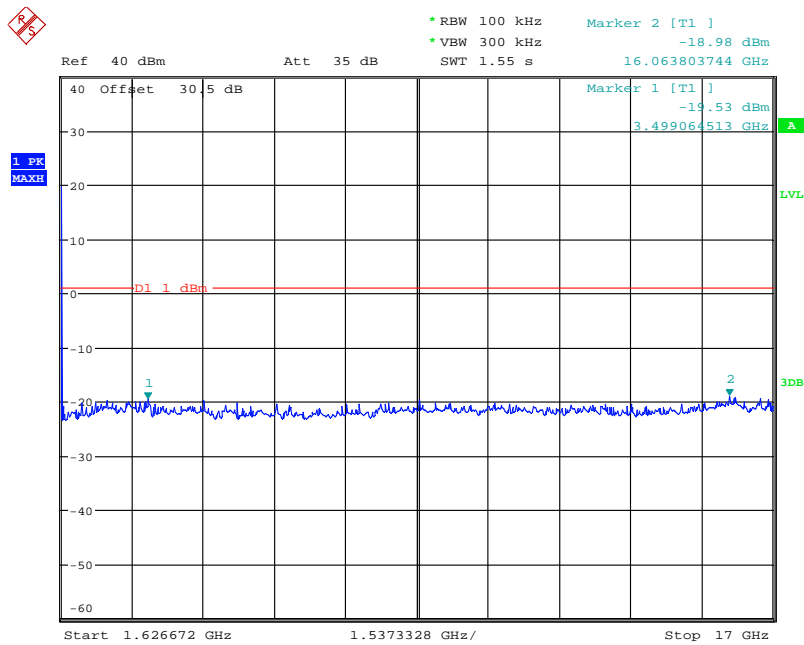
Date: 22.DEC.2010 12:21:15

(Plot 64:Low Channel –QPSK0.5)



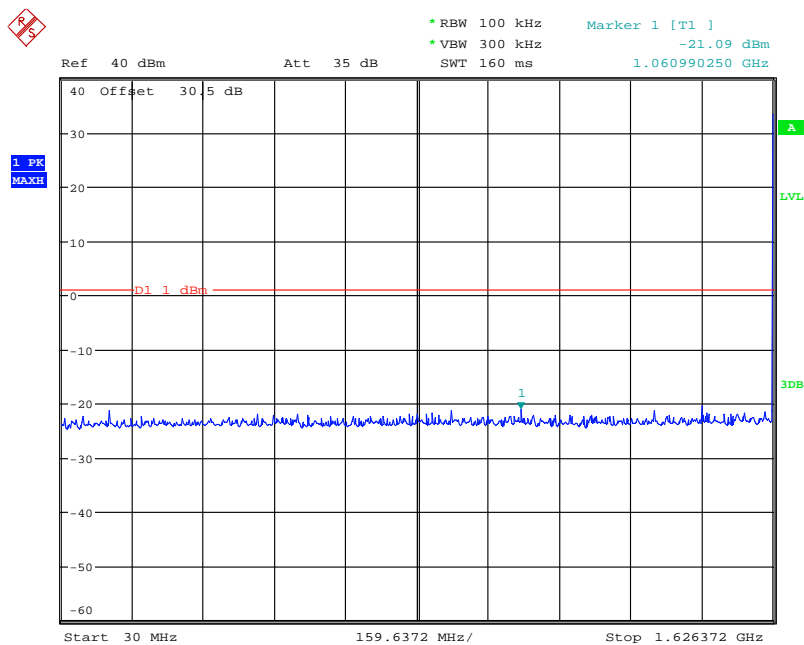
Date: 12.FEB.2011 12:50:41

(Plot 65:Low Channel –QPSK0.5)



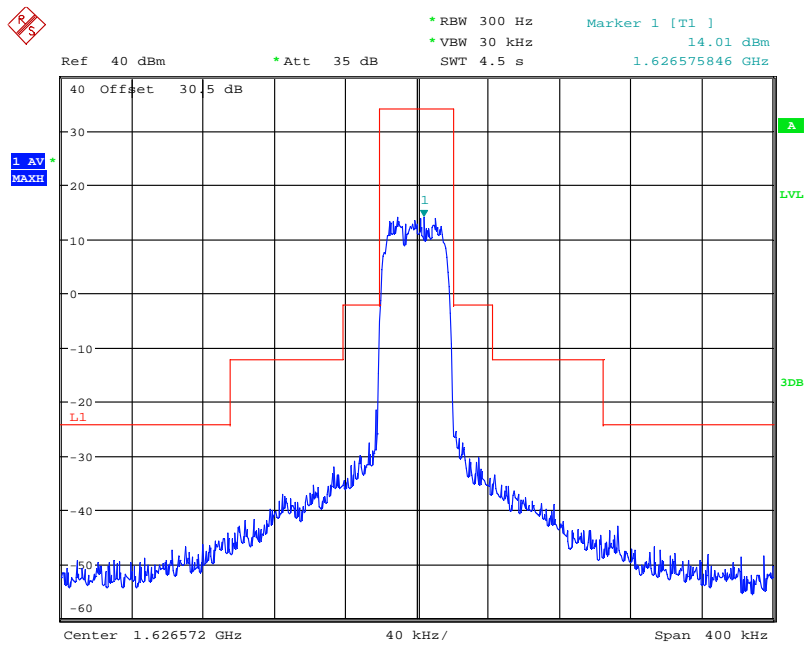
Date: 22.DEC.2010 12:22:11

(Plot 66:Low Channel -QPSK0.5)



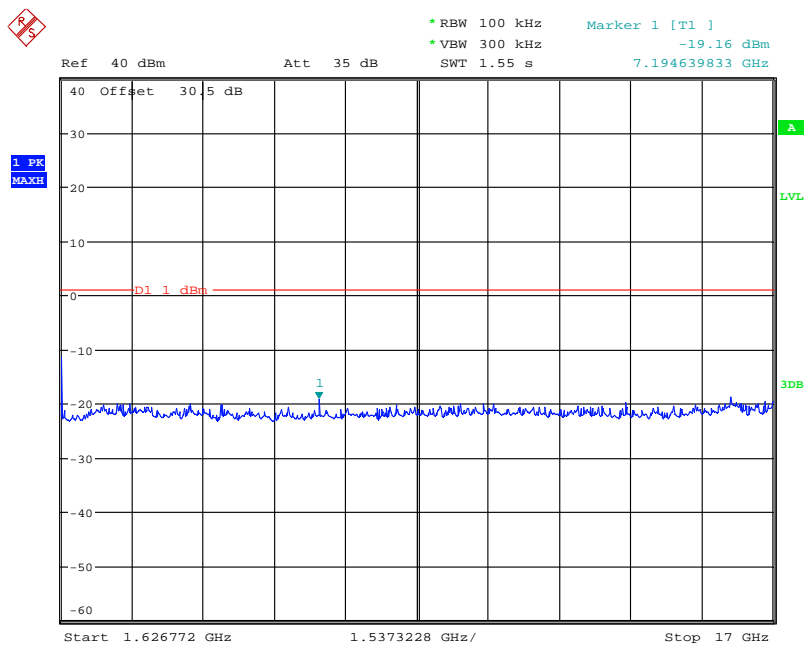
Date: 22.DEC.2010 12:23:06

(Plot 67:Low Channel -QPSK1)



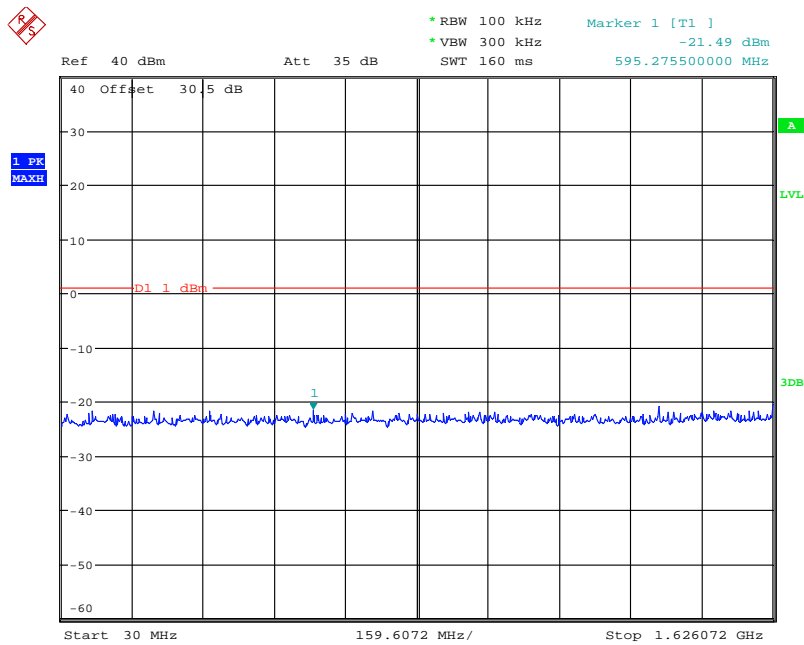
Date: 12.FEB.2011 12:49:54

(Plot 68:Low Channel –QPSK1)



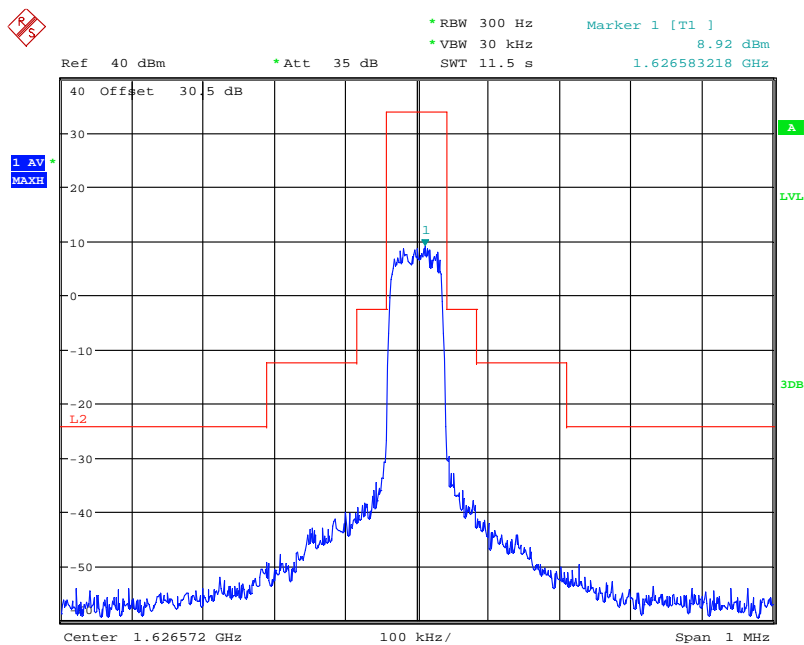
Date: 22.DEC.2010 12:23:53

(Plot 69:Low Channel –QPSK1)



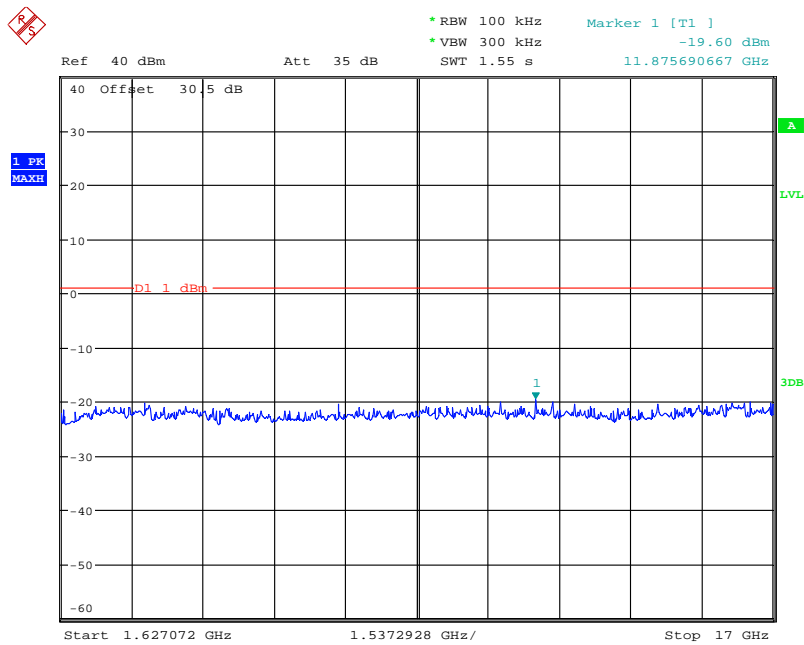
Date: 22.DEC.2010 12:24:42

(Plot 70:Low Channel –QPSK2)



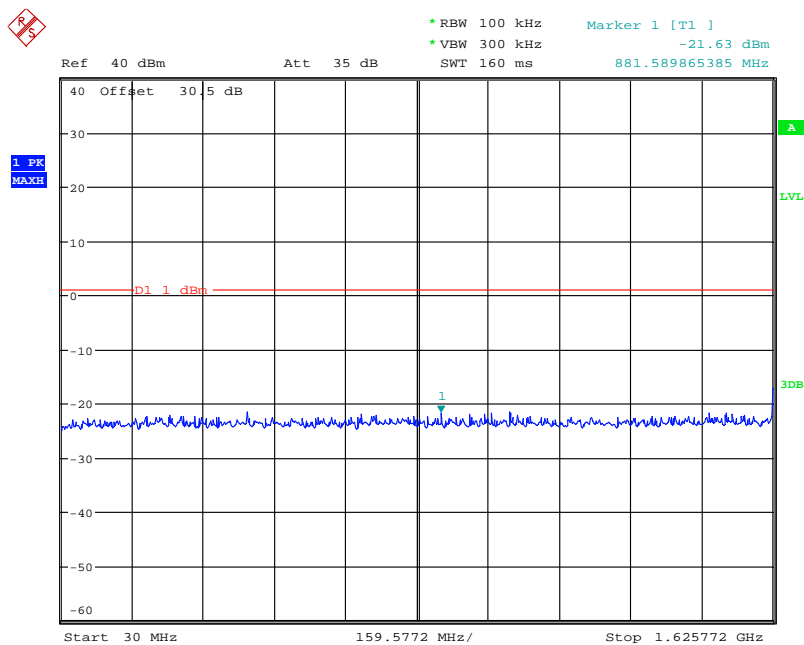
Date: 12.FEB.2011 12:52:06

(Plot 71:Low Channel –QPSK2)



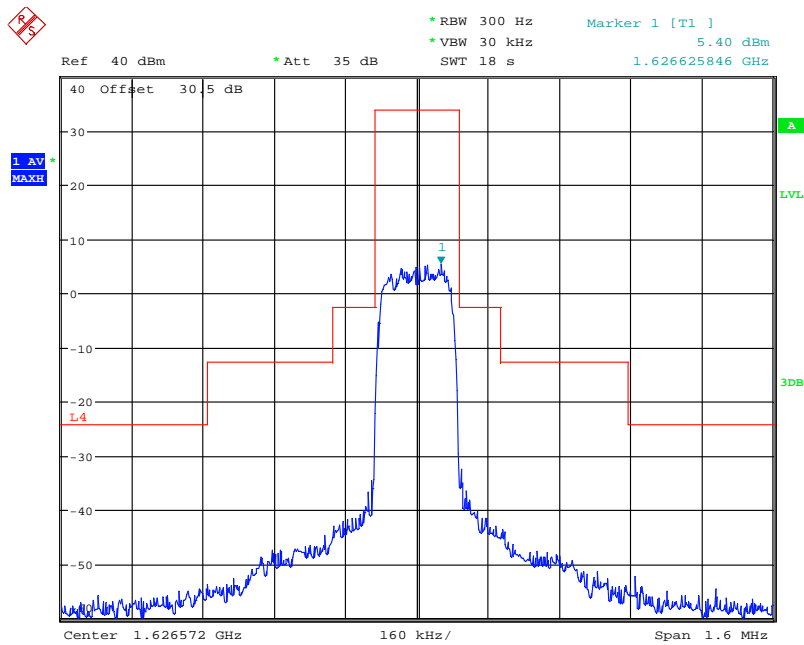
Date: 22.DEC.2010 12:25:19

(Plot 72:Low Channel –QPSK2)



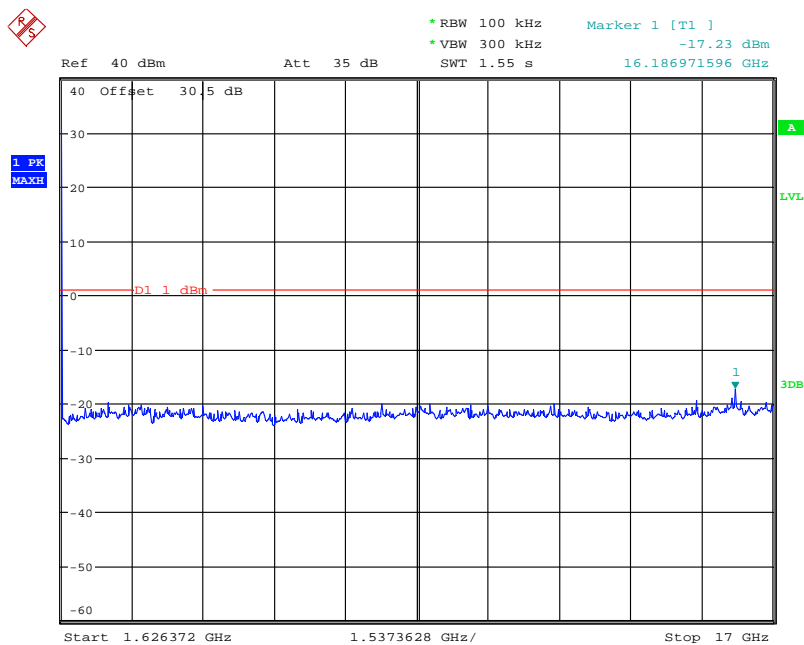
Date: 22.DEC.2010 12:26:13

(Plot 73:Low Channel –QPSK4.5)



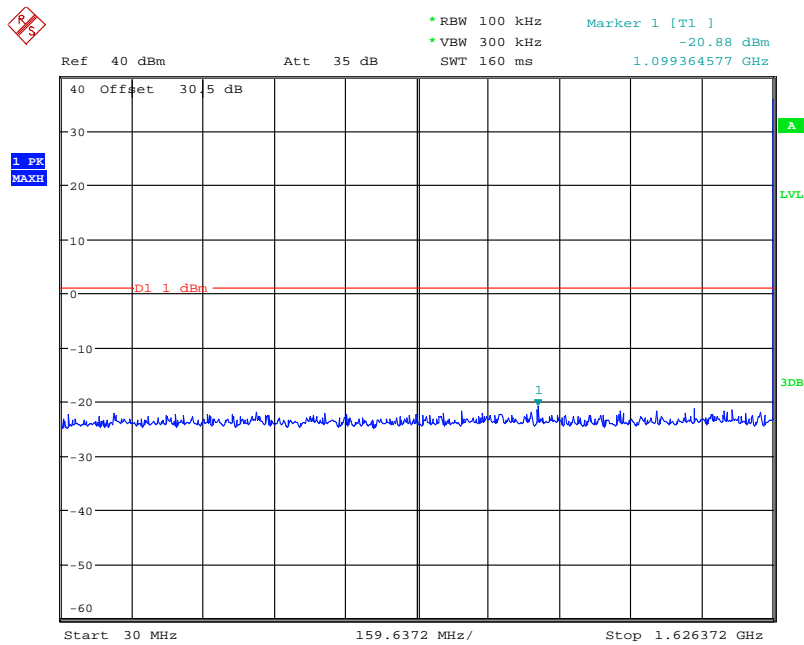
Date: 12.FEB.2011 12:59:24

(Plot 74:Low Channel –QPSK4.5)



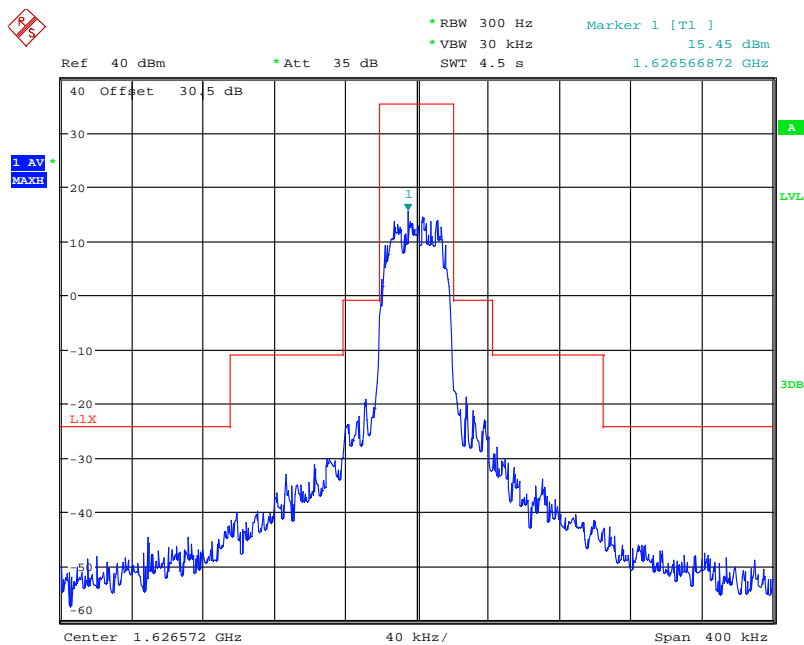
Date: 22.DEC.2010 12:27:22

(Plot 75:Low Channel –QPSK4.5)



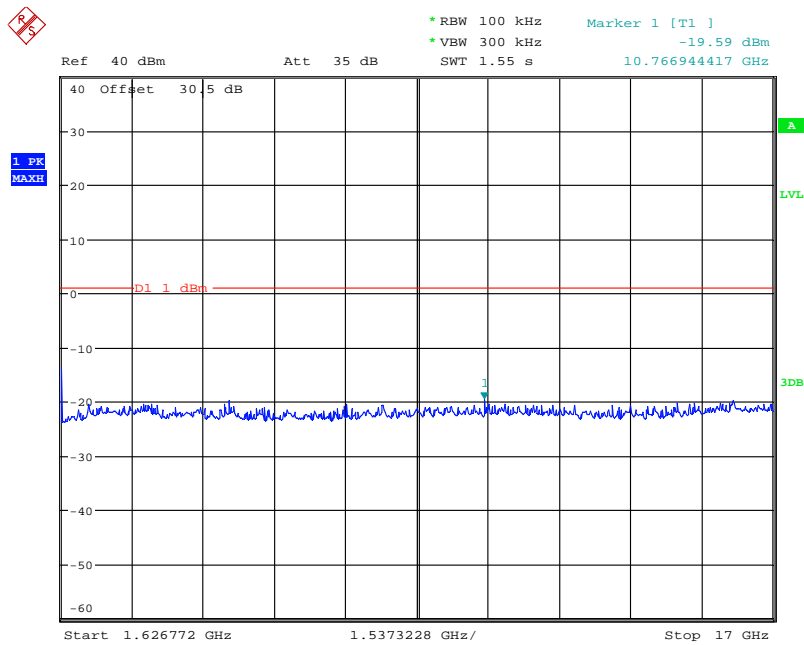
Date: 22.DEC.2010 12:28:02

(Plot 76:Low Channel –QAM1)



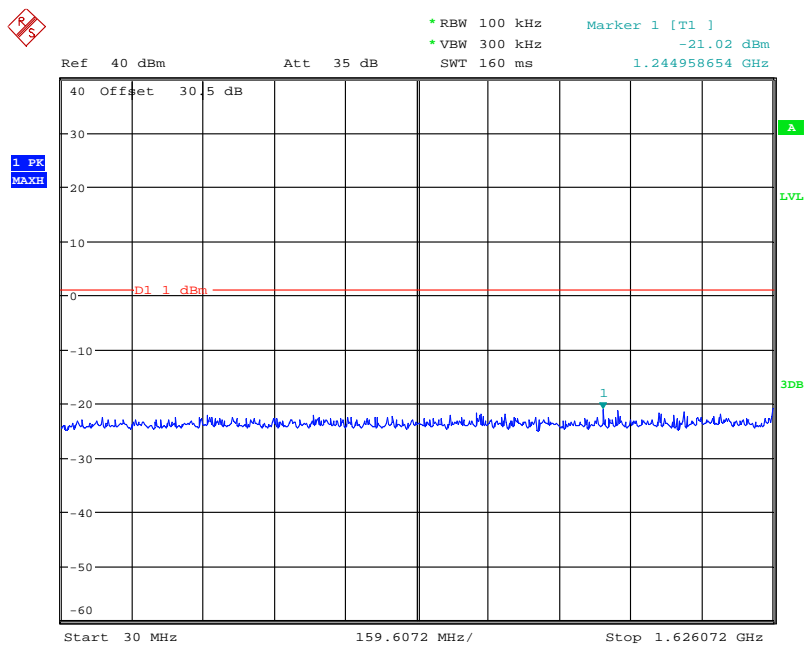
Date: 12.FEB.2011 13:00:25

(Plot 77:Low Channel –QAM1)



Date: 22.DEC.2010 12:28:34

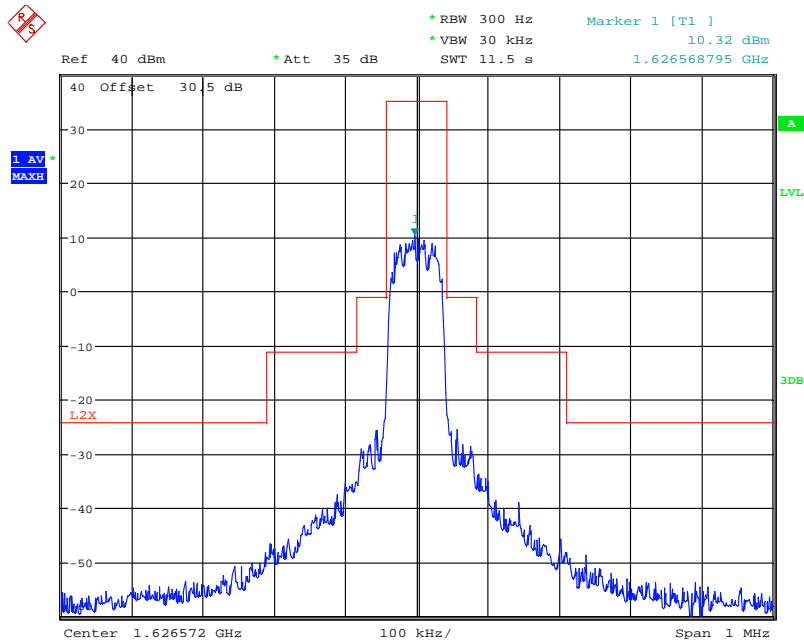
(Plot 78:Low Channel -QAM1)



Date: 22.DEC.2010 12:29:08

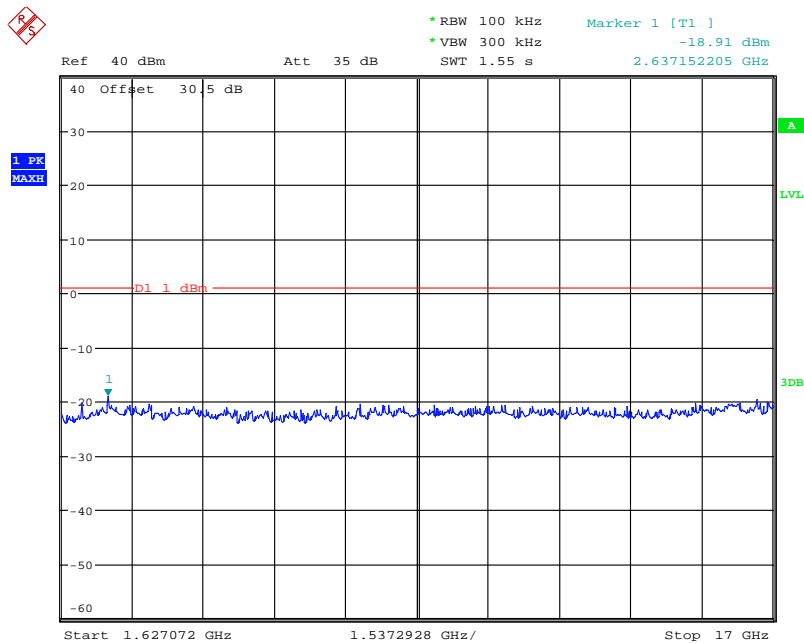
(Plot 79:Low Channel -QAM2)





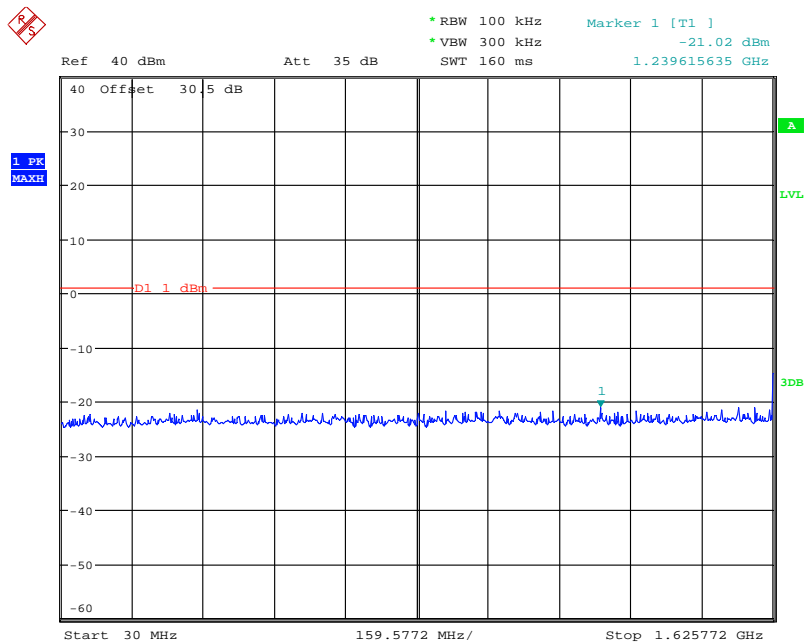
Date: 12.FEB.2011 13:01:29

(Plot 80:Low Channel –QAM2)



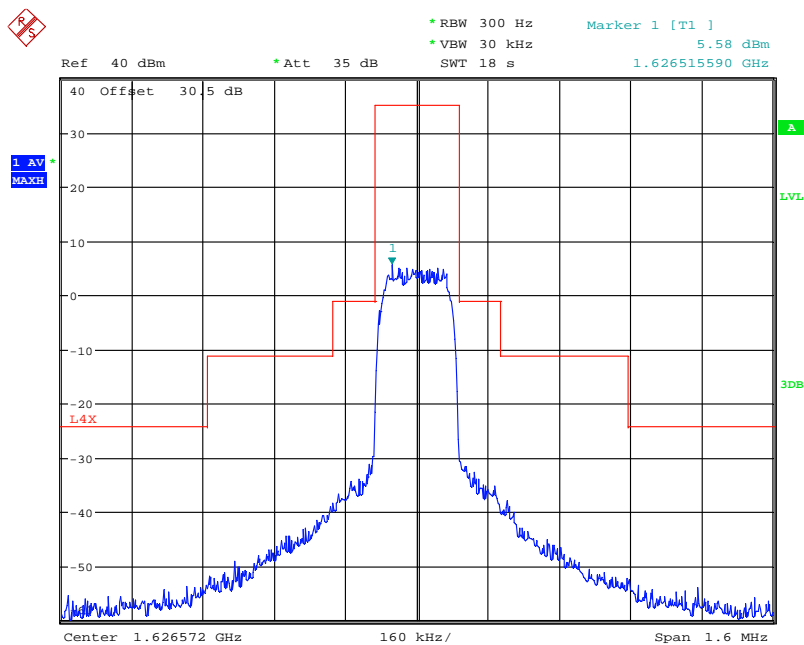
Date: 22.DEC.2010 12:29:31

(Plot 81:Low Channel –QAM2)



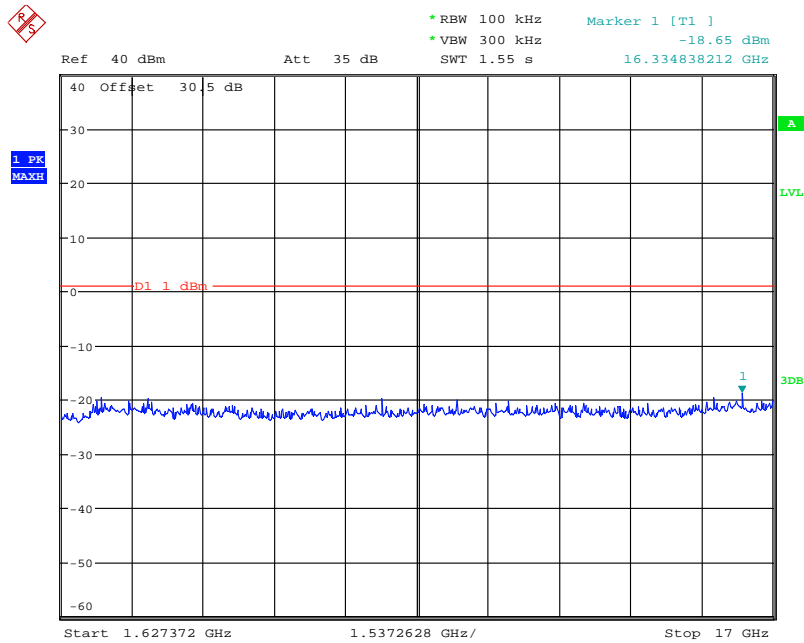
Date: 22.DEC.2010 12:30:18

(Plot 82:Low Channel –QAM4.5)



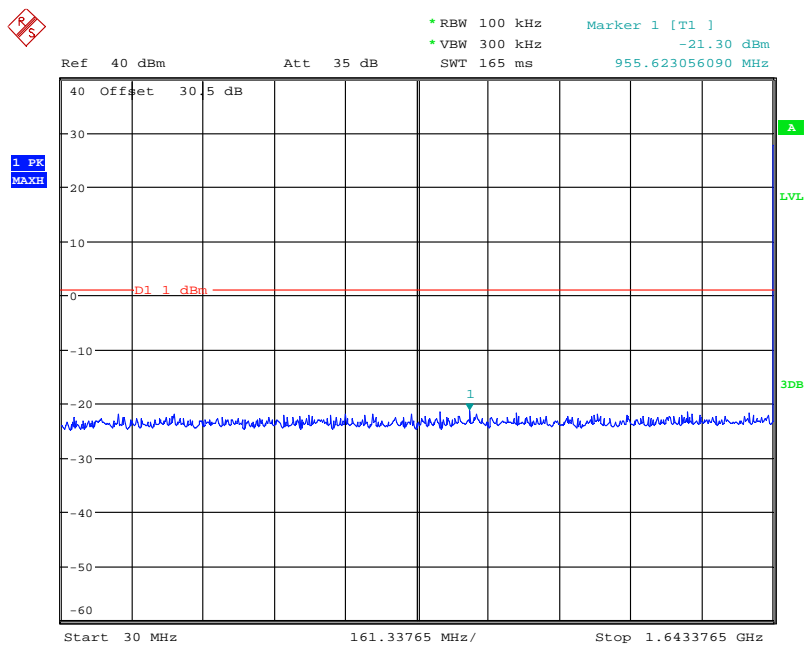
Date: 12.FEB.2011 13:02:58

(Plot 83:Low Channel –QAM4.5)



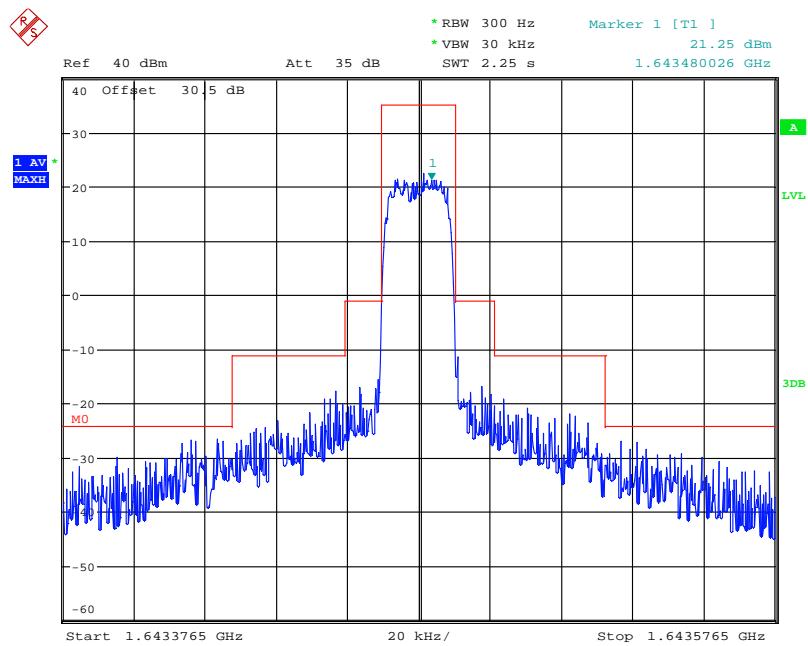
Date: 22.DEC.2010 12:30:43

(Plot 84:Low Channel –QAM4.5)



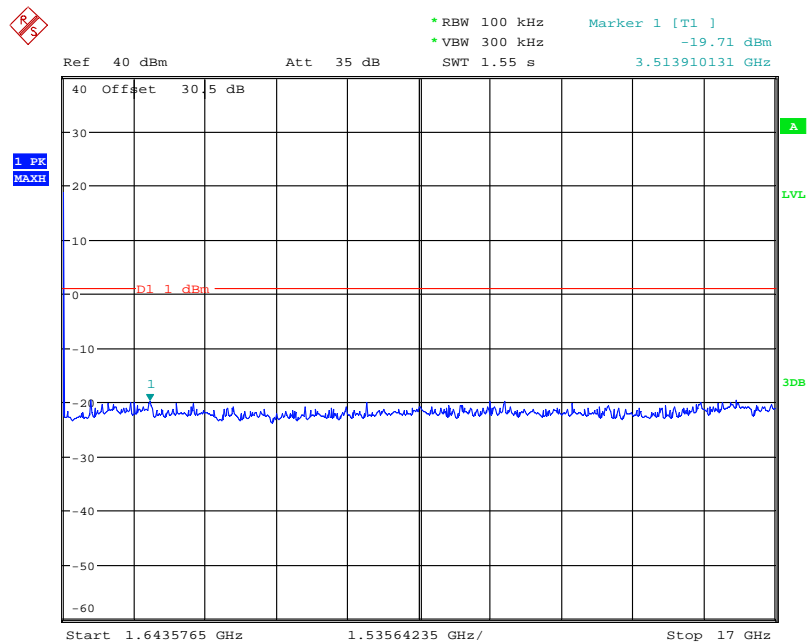
Date: 22.DEC.2010 12:45:54

(Plot 85:Mid Channel –QPSK0.5)



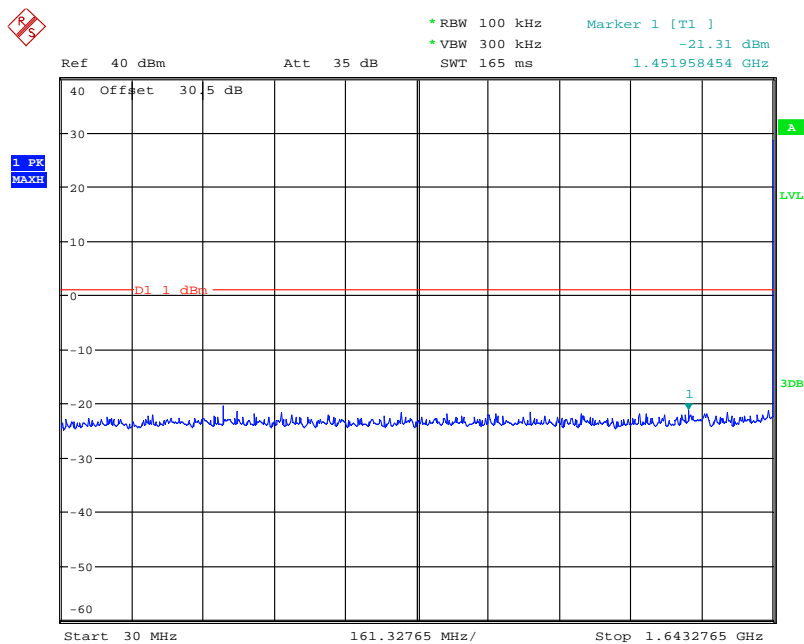
Date: 9.DEC.2010 12:21:49

(Plot 86:Mid Channel –QPSK0.5)



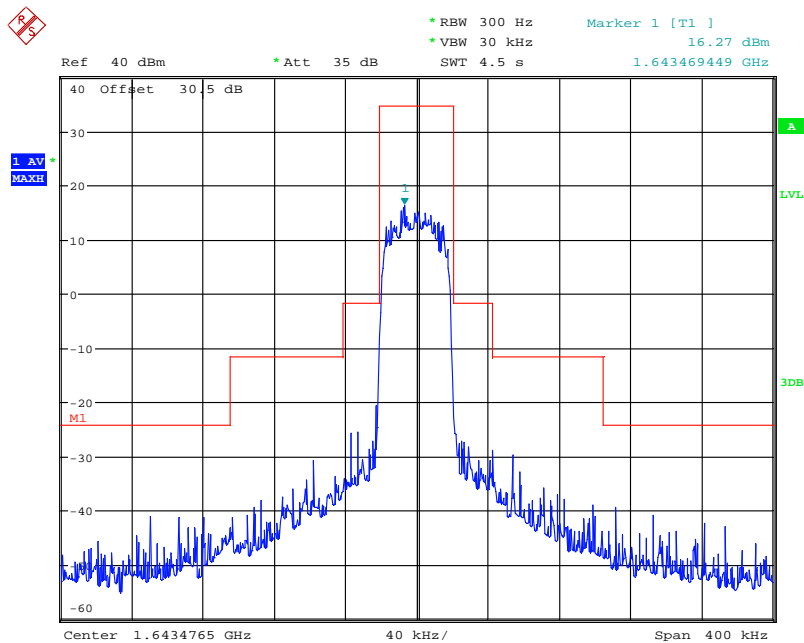
Date: 22.DEC.2010 12:46:30

(Plot 87:Mid Channel –QPSK0.5)



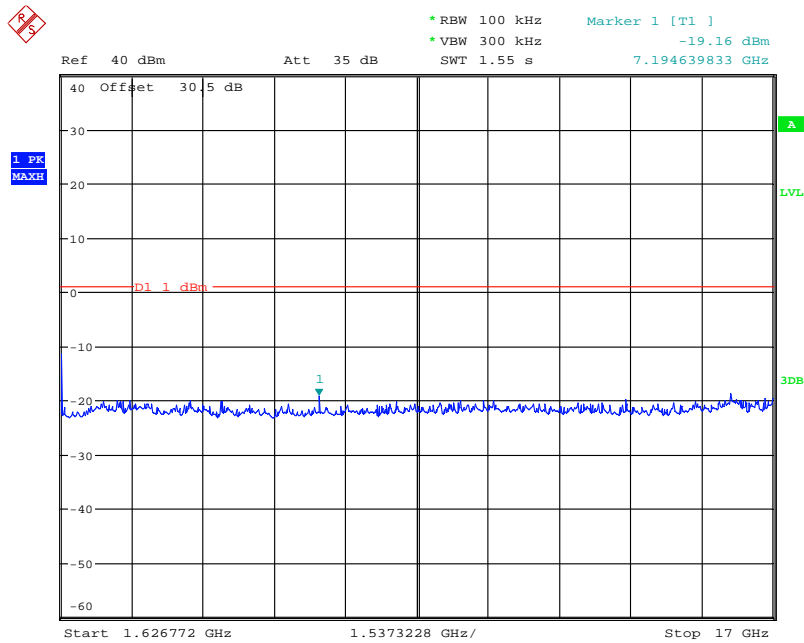
Date: 22.DEC.2010 12:47:13

(Plot 88:Mid Channel –QPSK1)



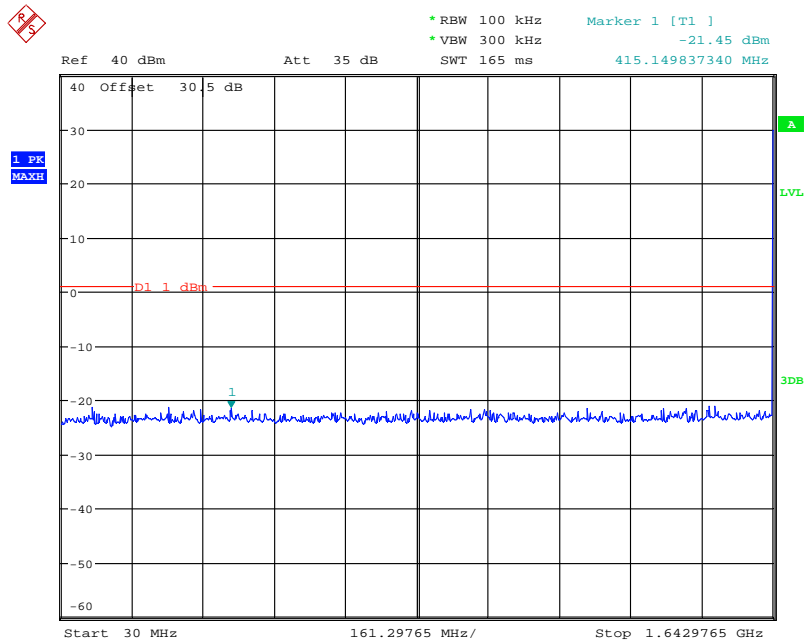
Date: 12.FEB.2011 14:34:49

(Plot 89:Mid Channel –QPSK1)



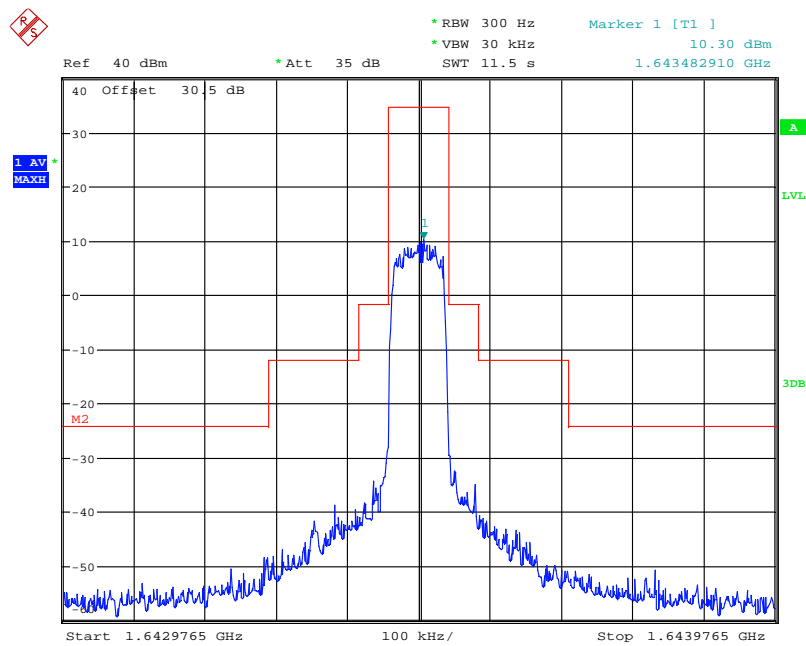
Date: 22.DEC.2010 12:23:53

(Plot 90:Mid Channel –QPSK1)



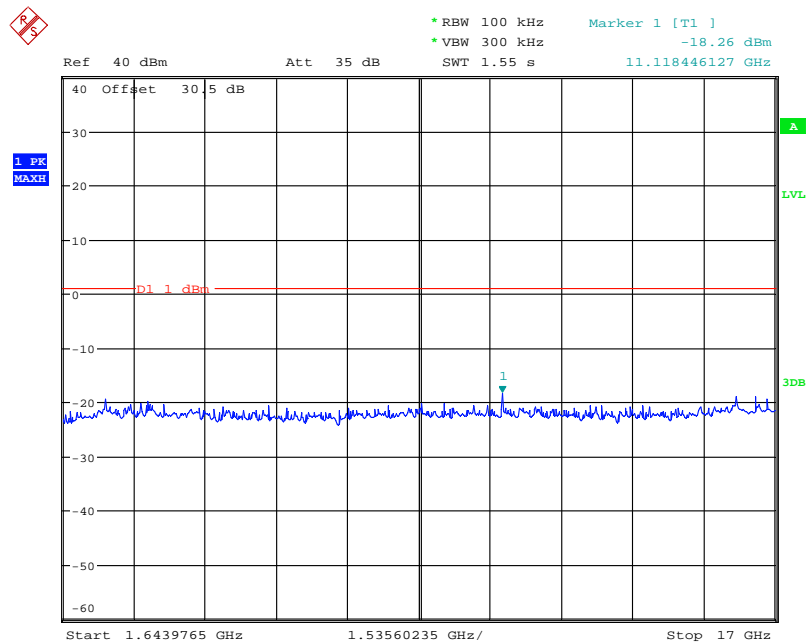
Date: 22.DEC.2010 15:24:16

(Plot 91:Mid Channel –QPSK2)



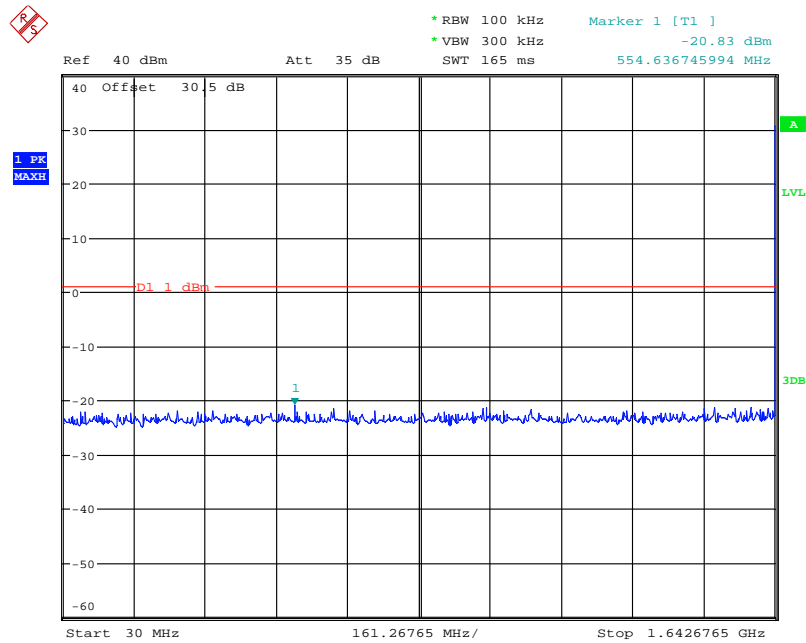
Date: 12.FEB.2011 14:41:52

(Plot 92:Mid Channel –QPSK2)



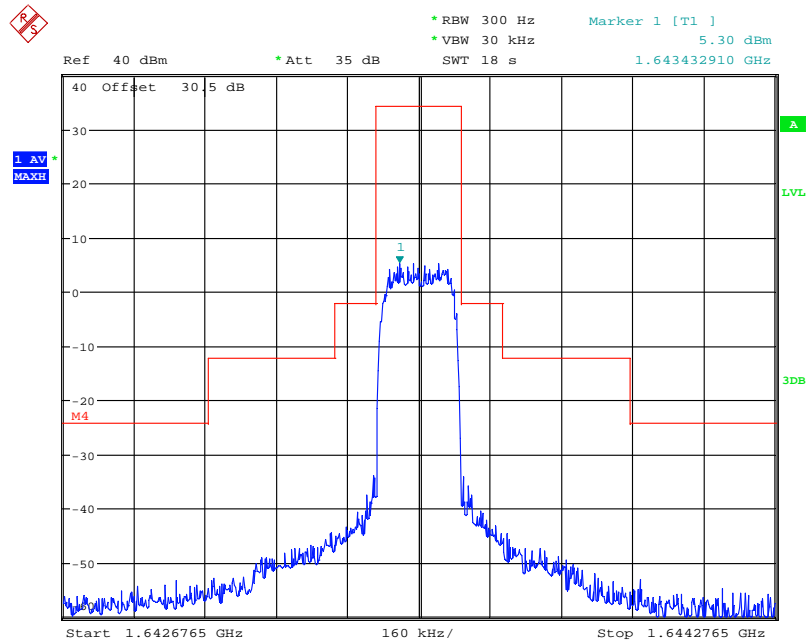
Date: 22.DEC.2010 15:24:50

(Plot 93:Mid Channel –QPSK2)



Date: 22.DEC.2010 15:25:45

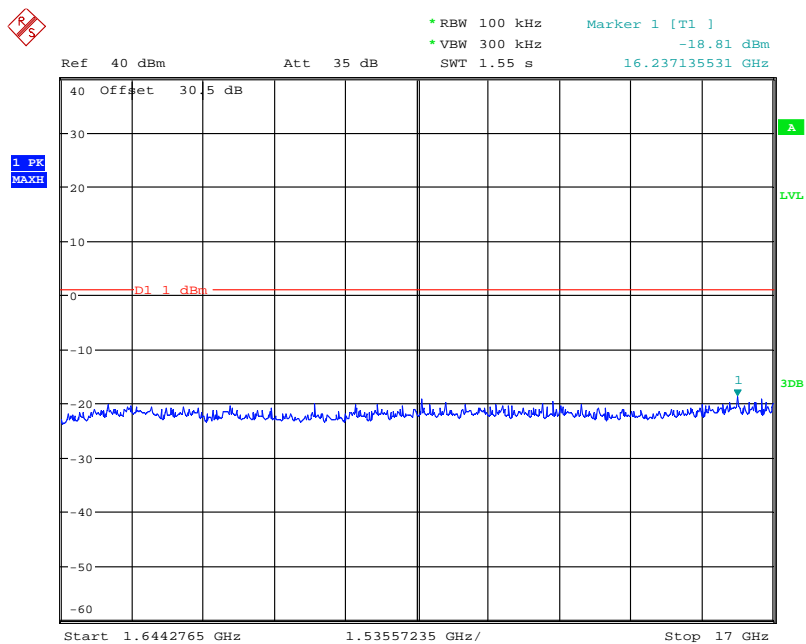
(Plot 94:Mid Channel –QPSK4.5)



Date: 12.FEB.2011 14:43:13

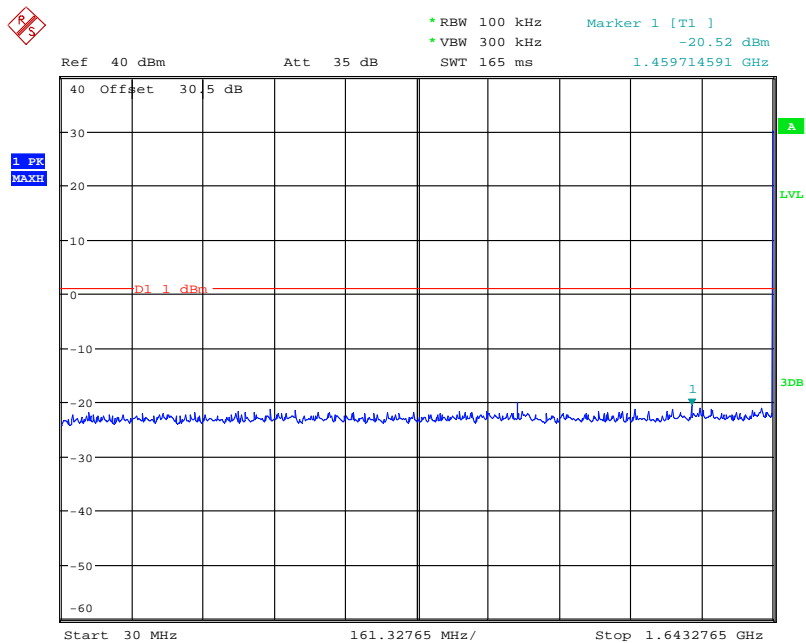


(Plot 95:Mid Channel –QPSK4.5)



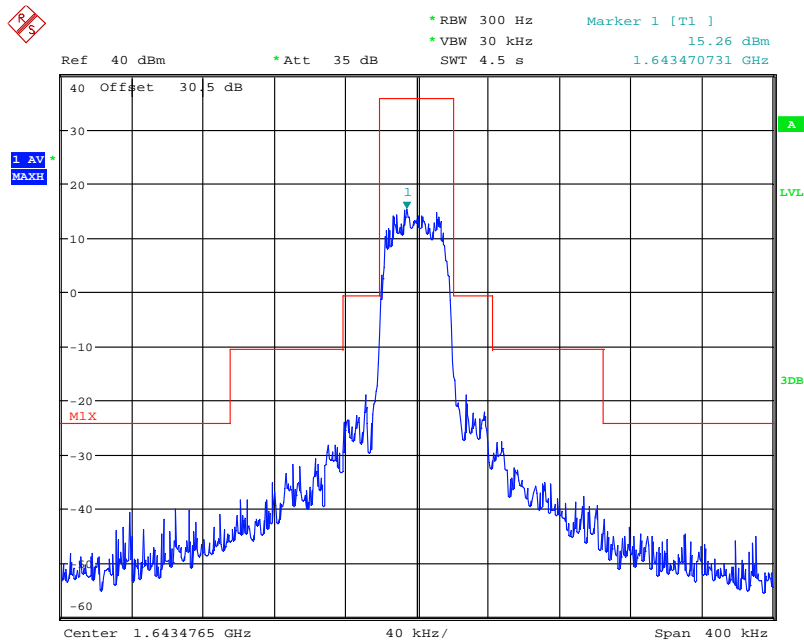
Date: 22.DEC.2010 15:26:21

(Plot 96:Mid Channel –QPSK4.5)



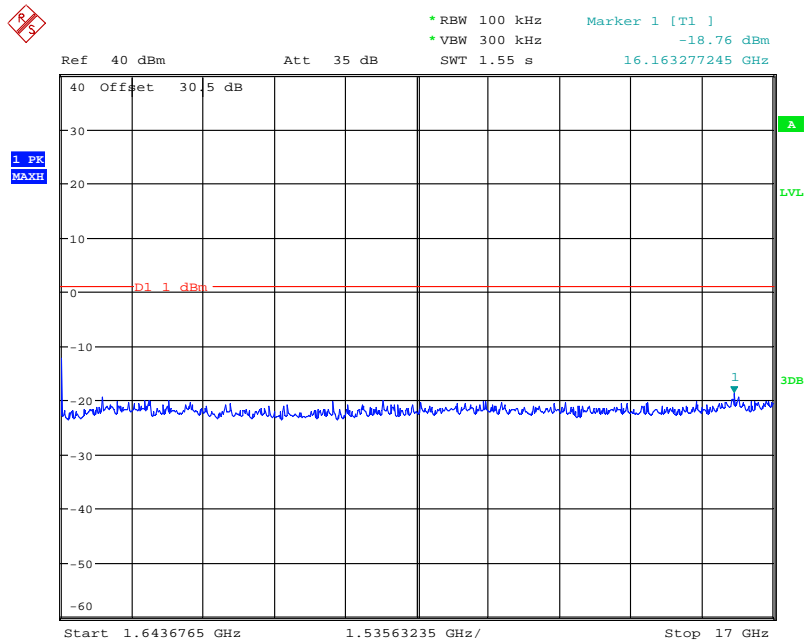
Date: 22.DEC.2010 15:28:52

(Plot 97:Mid Channel –QAM1)



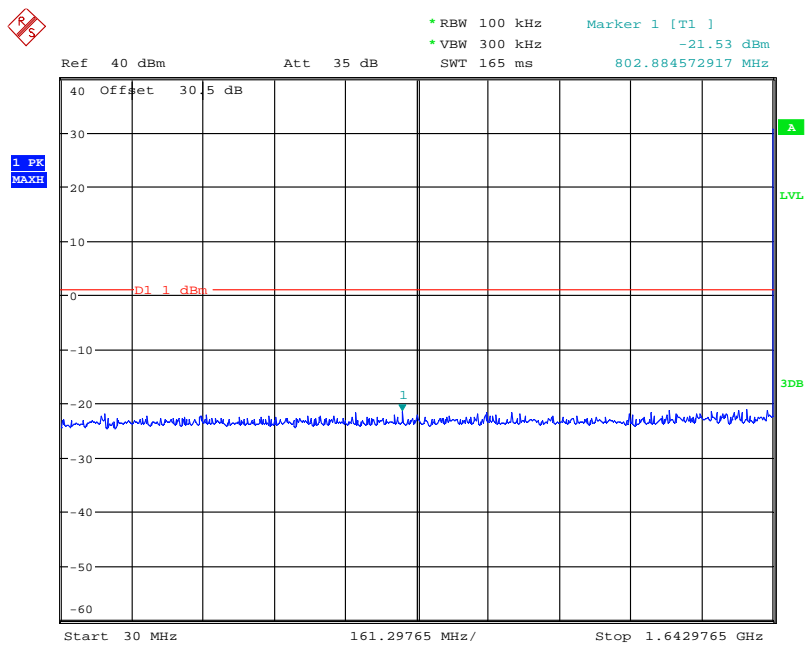
Date: 12.FEB.2011 14:44:17

(Plot 98:Mid Channel –QAM1)



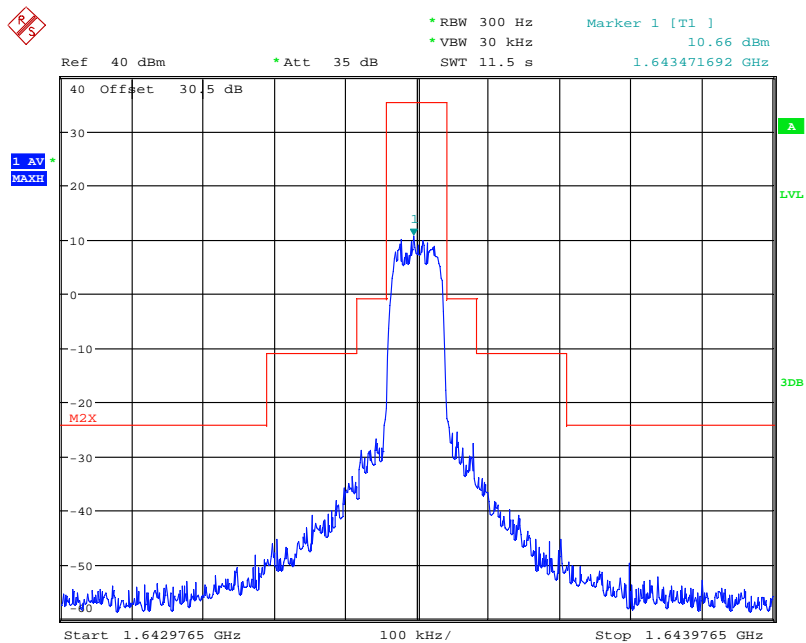
Date: 22.DEC.2010 15:29:36

(Plot 99:Mid Channel –QAM1)



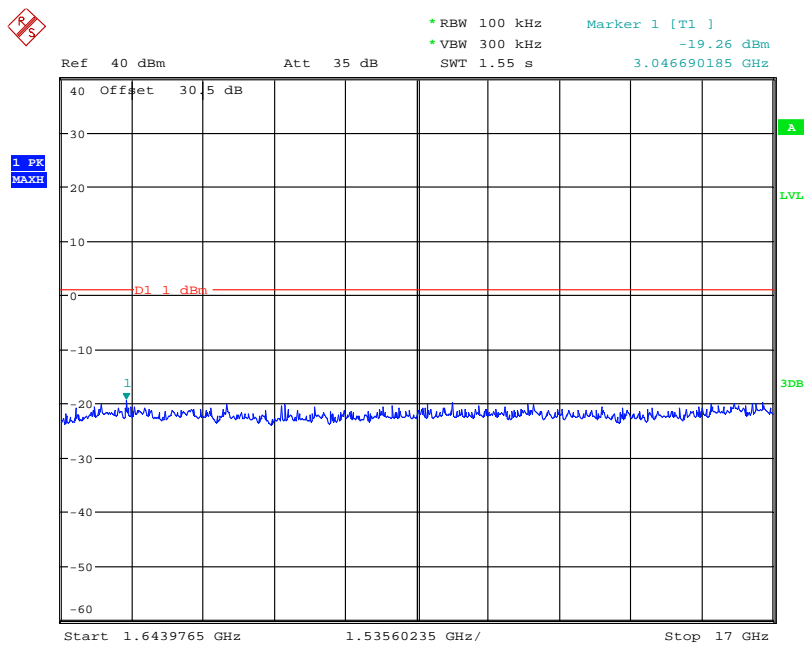
Date: 22.DEC.2010 15:30:31

(Plot 100:Mid Channel –QAM2)



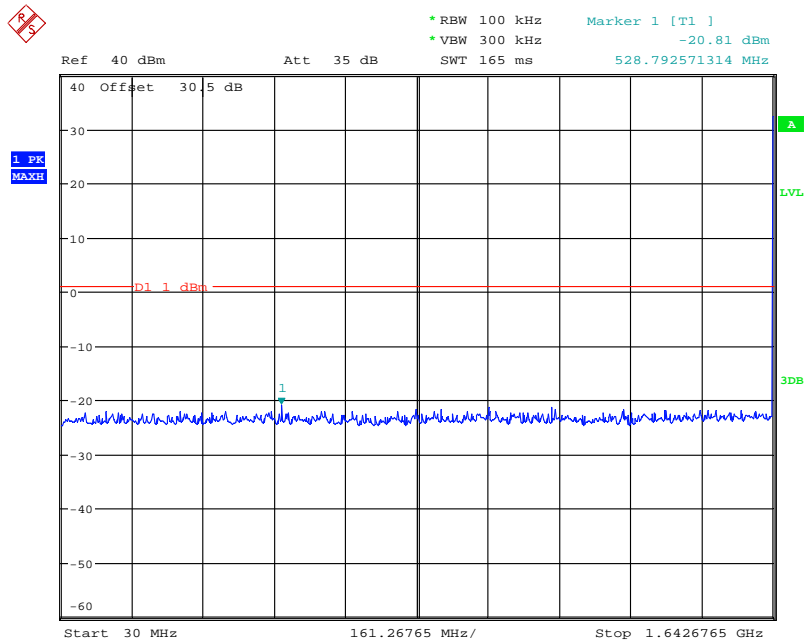
Date: 12.FEB.2011 14:45:38

(Plot 101:Mid Channel –QAM2)



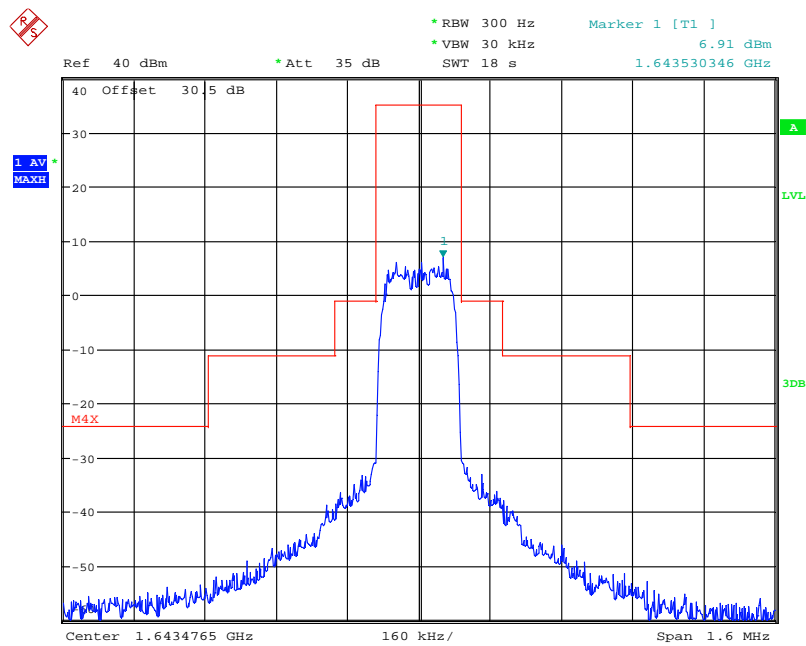
Date: 22.DEC.2010 15:31:04

(Plot 102:Mid Channel –QAM2)



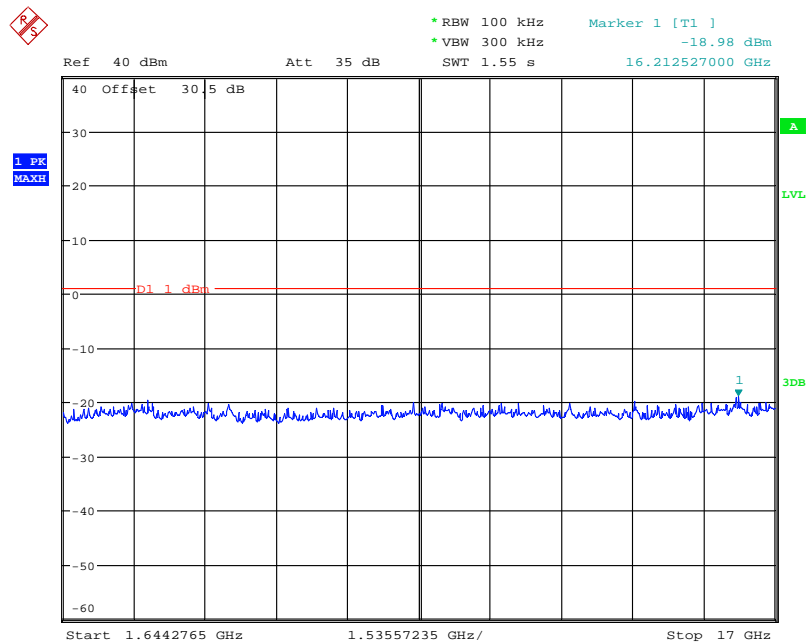
Date: 22.DEC.2010 15:31:51

(Plot 103:Mid Channel –QAM4.5)



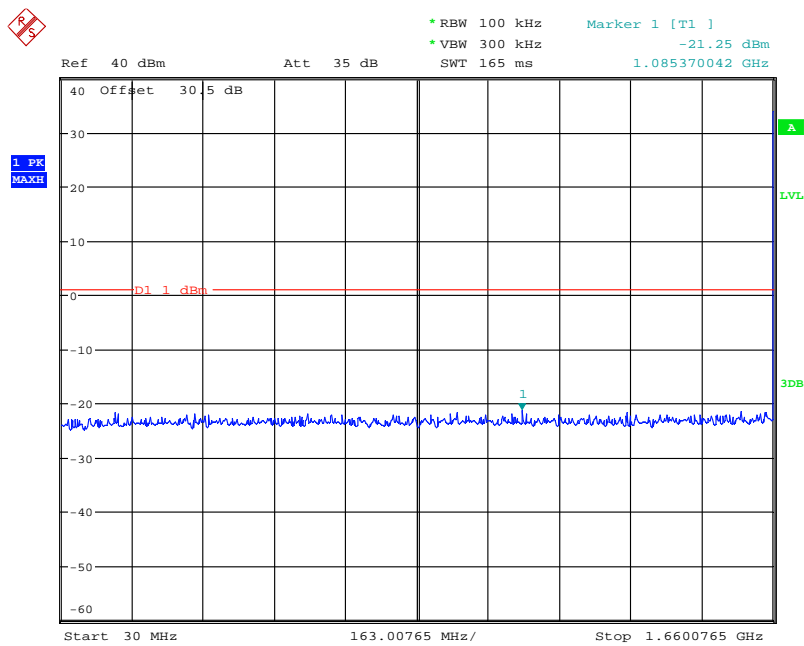
Date: 12.FEB.2011 14:46:33

(Plot 104:Mid Channel –QAM4.5)



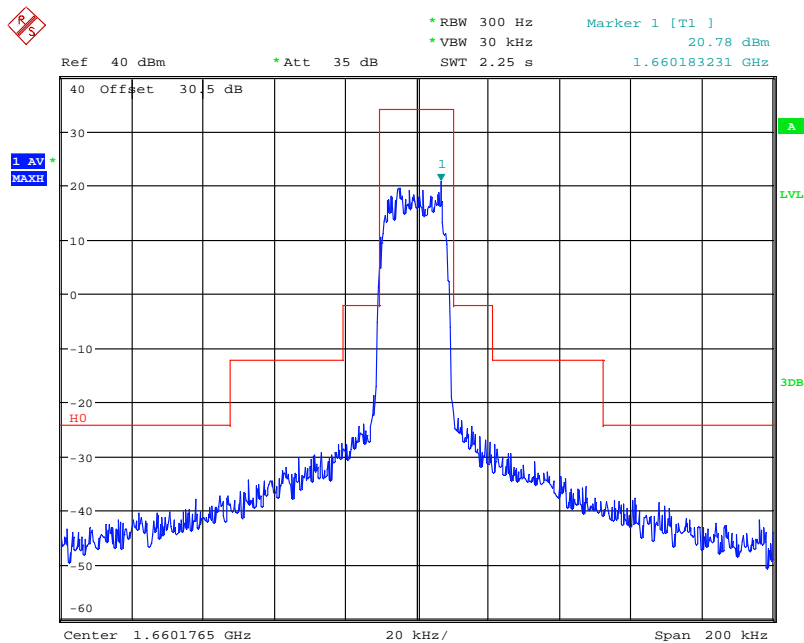
Date: 22.DEC.2010 15:32:25

(Plot 105:Mid Channel –QAM4.5)



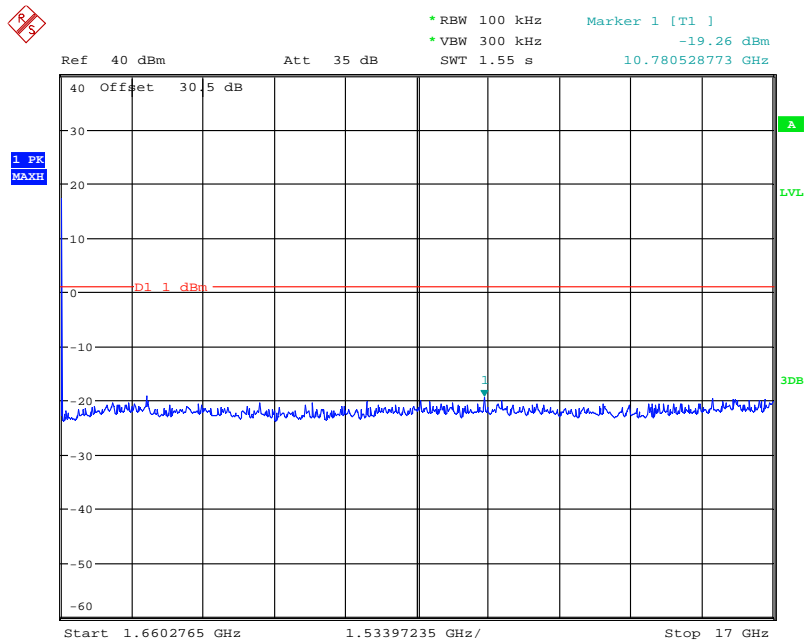
Date: 22.DEC.2010 15:33:15

(Plot 106:Upper Channel –QPSK0.5)



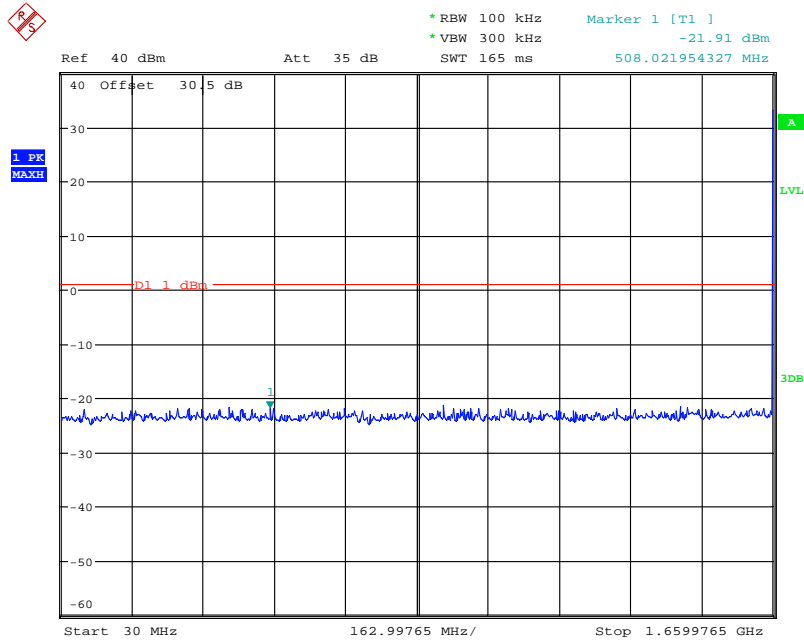
Date: 12.FEB.2011 14:55:31

(Plot 107:Upper Channel –QPSK0.5)



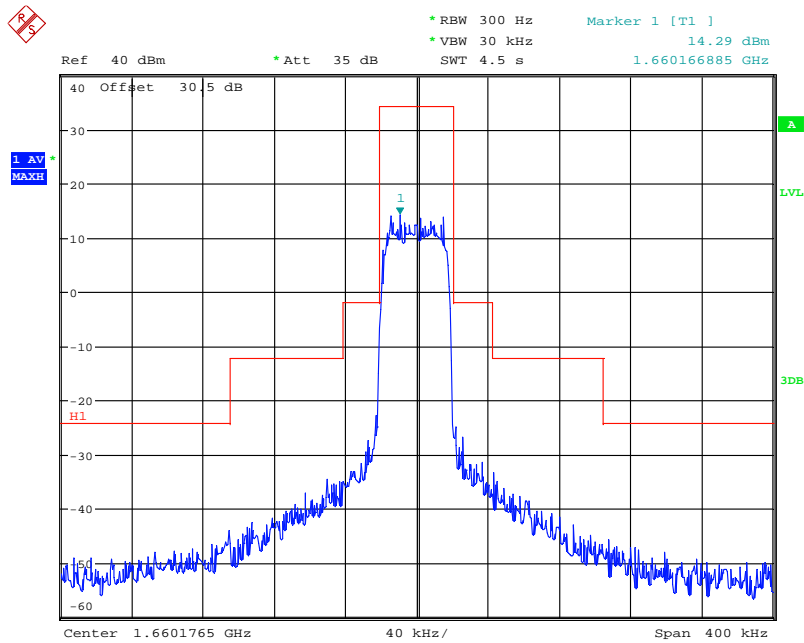
Date: 22.DEC.2010 15:33:50

(Plot 108:Upper Channel –QPSK0.5)



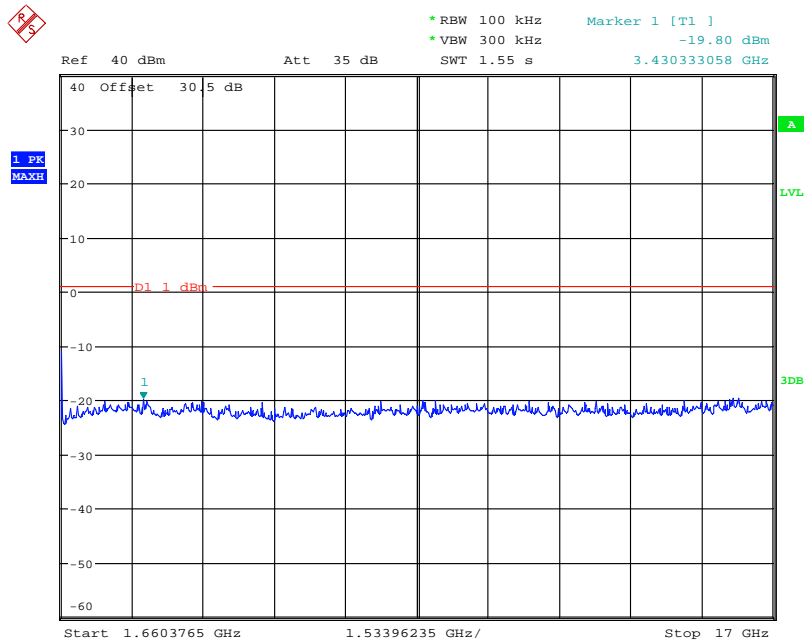
Date: 22.DEC.2010 15:34:46

(Plot 109:Upper Channel –QPSK1)



Date: 12.FEB.2011 14:56:09

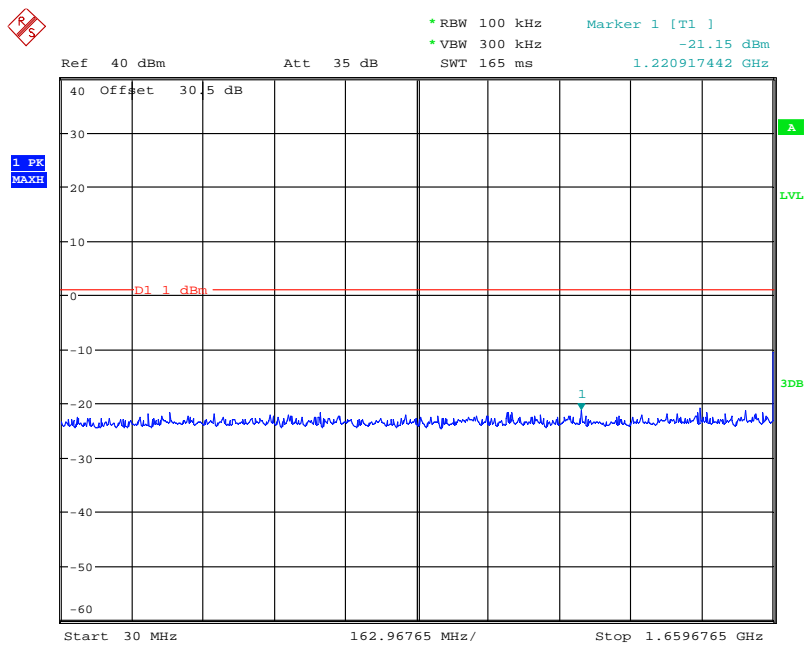
(Plot 110:Upper Channel –QPSK1)



Date: 22.DEC.2010 15:35:29

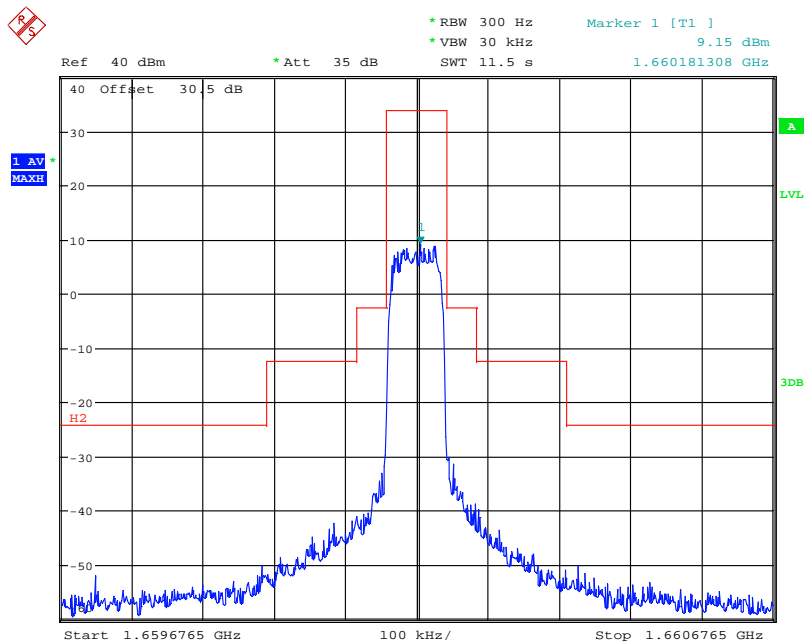


(Plot 111:Upper Channel –QPSK1)



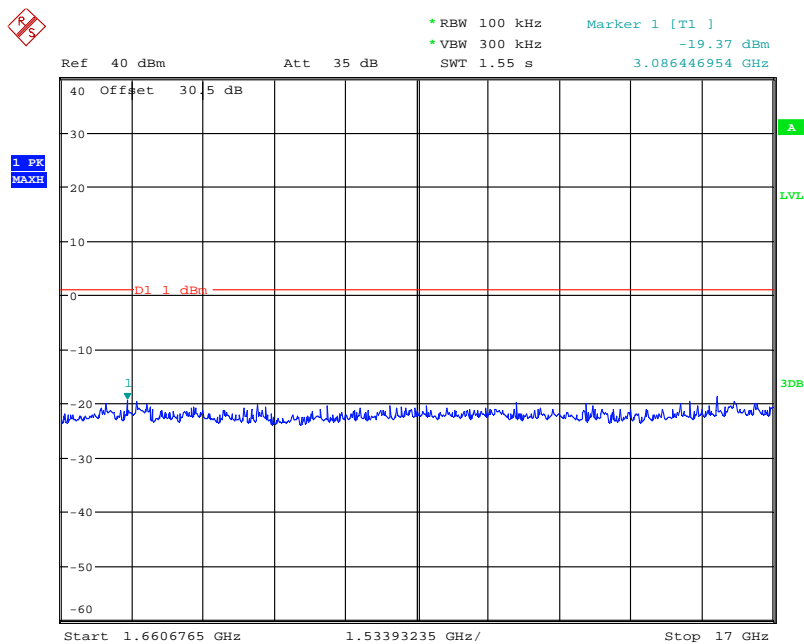
Date: 22.DEC.2010 15:36:13

(Plot 112:Upper Channel –QPSK2)



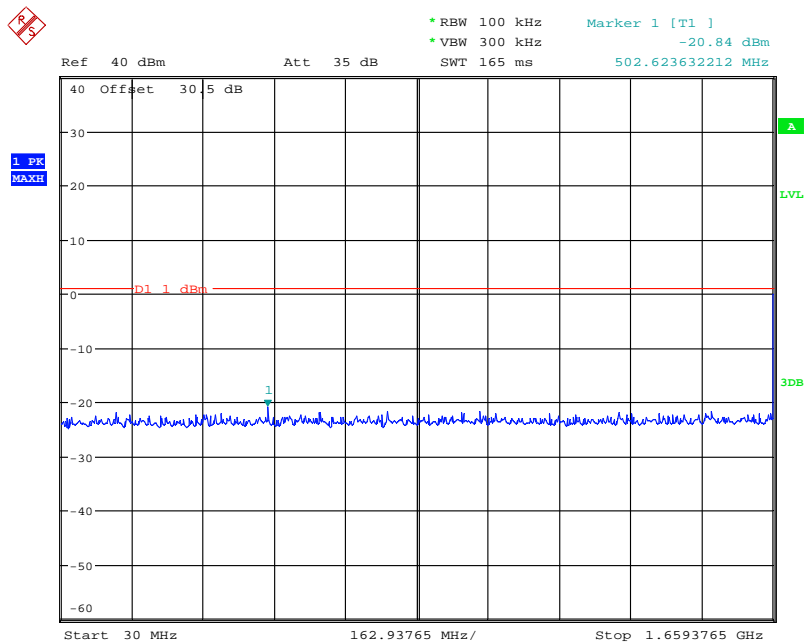
Date: 12.FEB.2011 14:57:15

(Plot 113:Upper Channel –QPSK2)



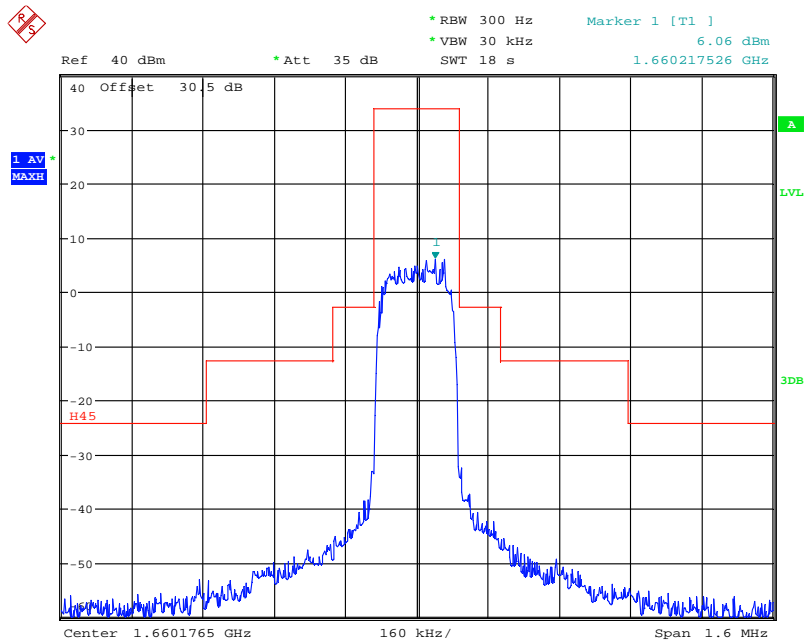
Date: 22.DEC.2010 15:36:39

(Plot 114:Upper Channel –QPSK2)



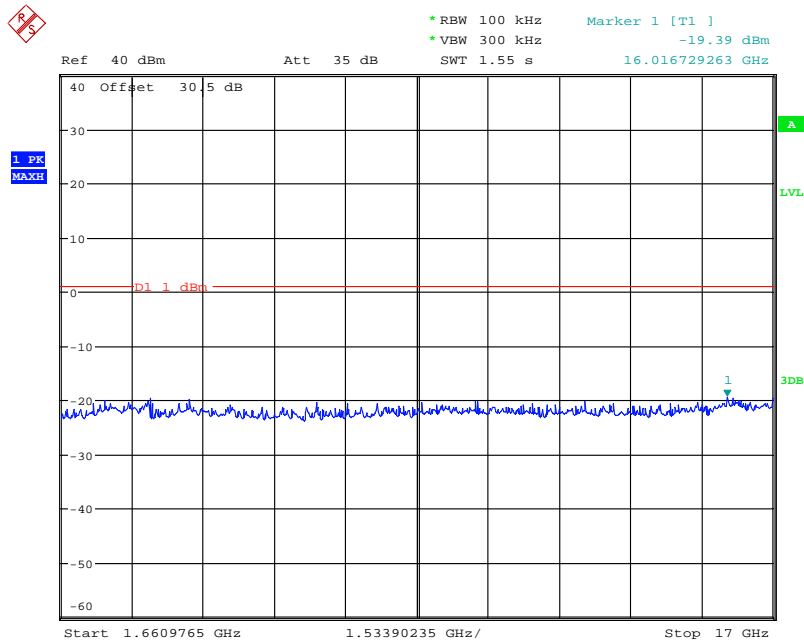
Date: 22.DEC.2010 15:37:37

(Plot 115:Upper Channel –QPSK4.5)



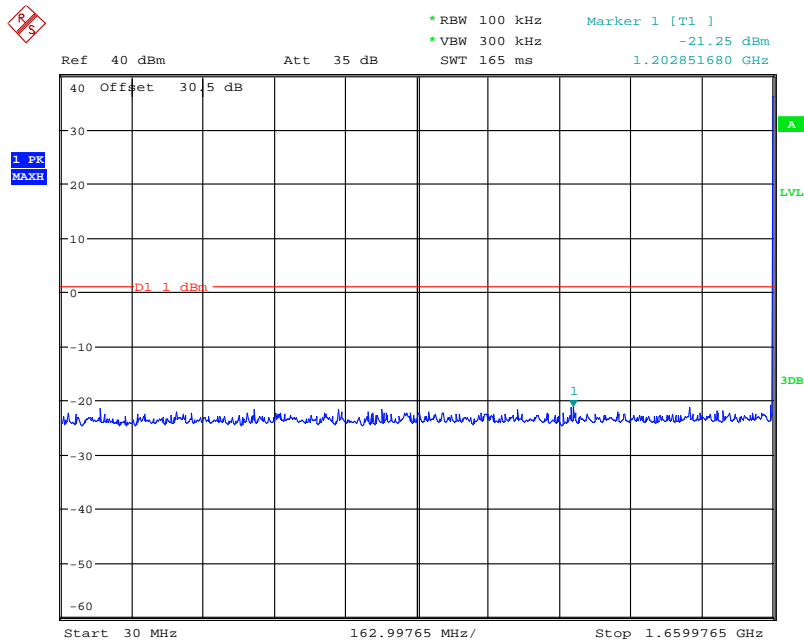
Date: 12.FEB.2011 14:58:04

(Plot 116:Upper Channel –QPSK4.5)



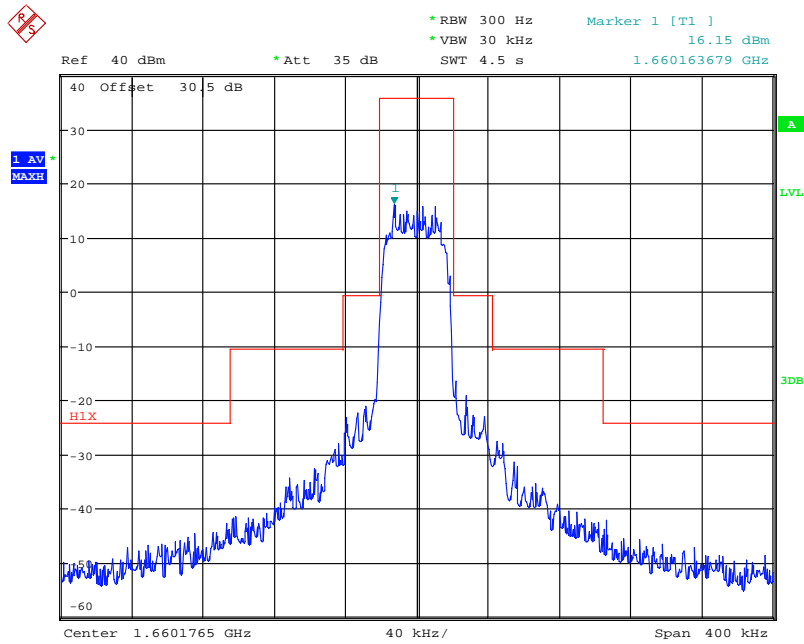
Date: 22.DEC.2010 15:38:21

(Plot 117:Upper Channel –QPSK4.5)



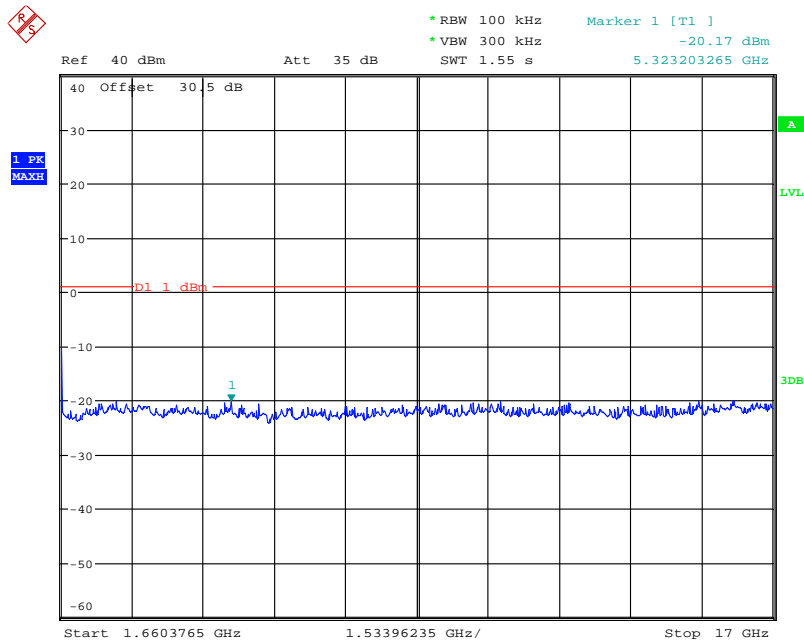
Date: 22.DEC.2010 15:40:02

(Plot 118:Upper Channel –QAM1)



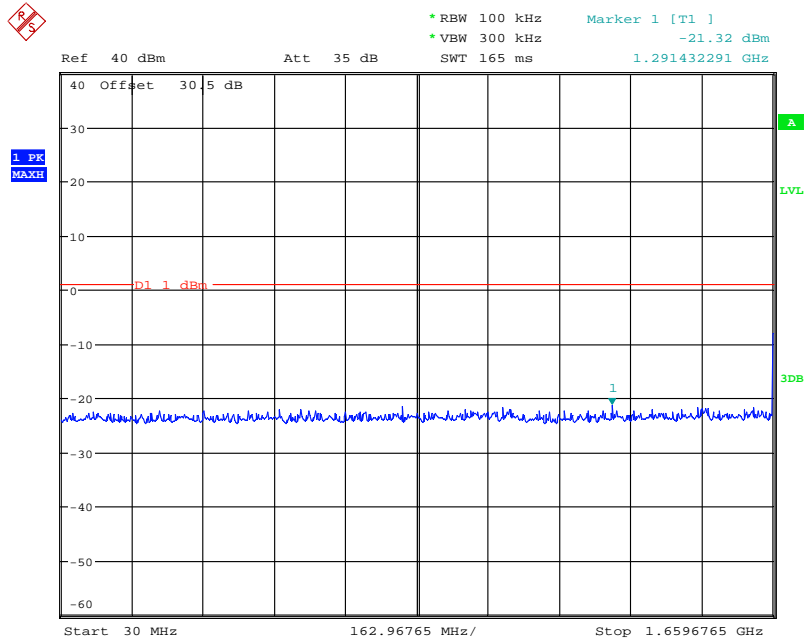
Date: 12.FEB.2011 14:59:15

(Plot 119:Upper Channel –QAM1)



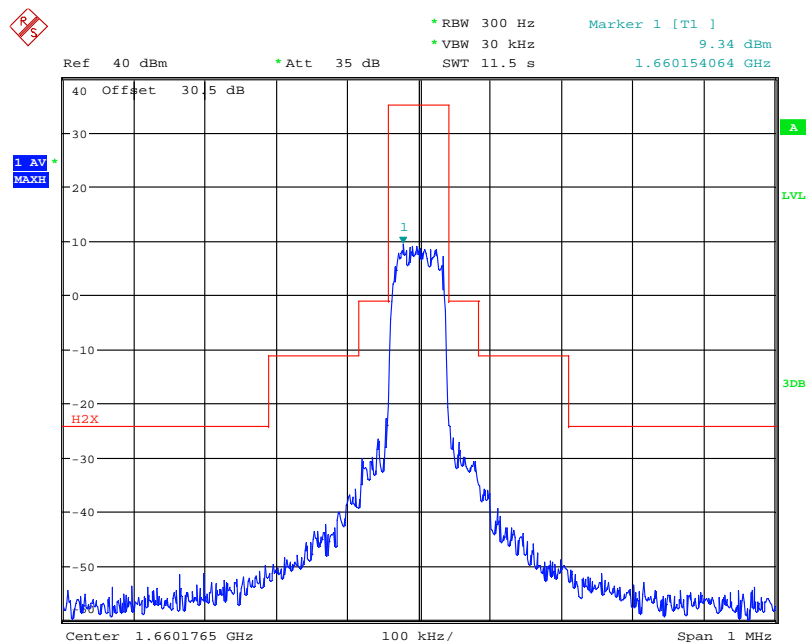
Date: 22.DEC.2010 15:40:27

(Plot 120:Upper Channel –QAM1)



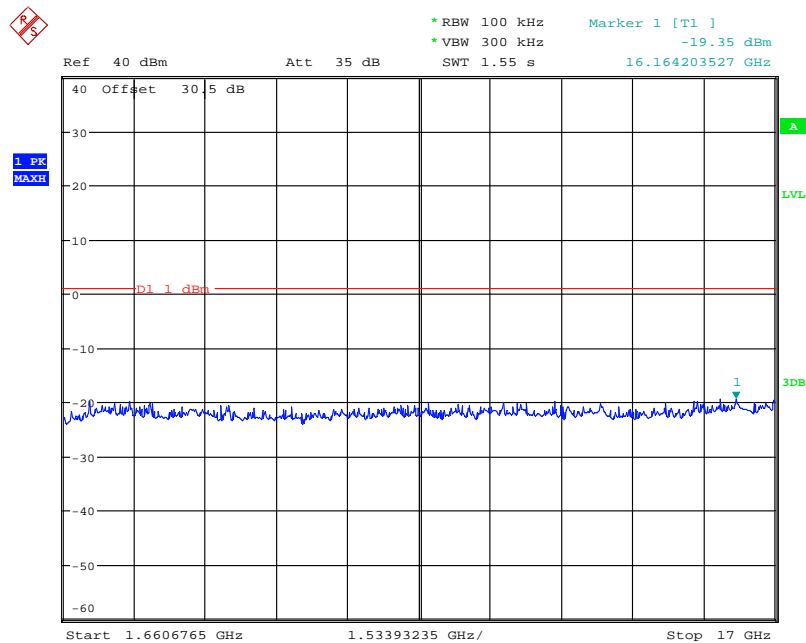
Date: 22.DEC.2010 15:41:24

(Plot 121:Upper Channel –QAM2)



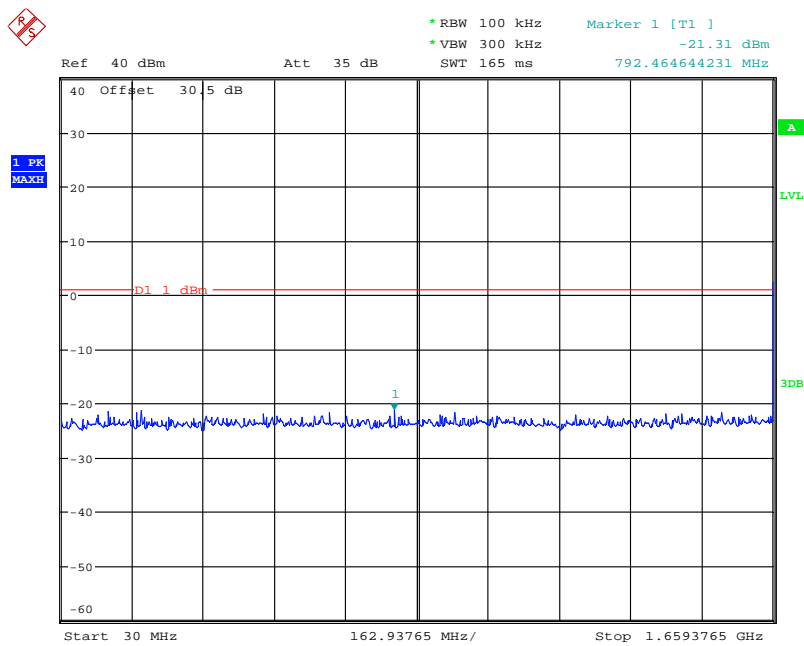
Date: 12.FEB.2011 15:00:06

(Plot 122:Upper Channel –QAM2)



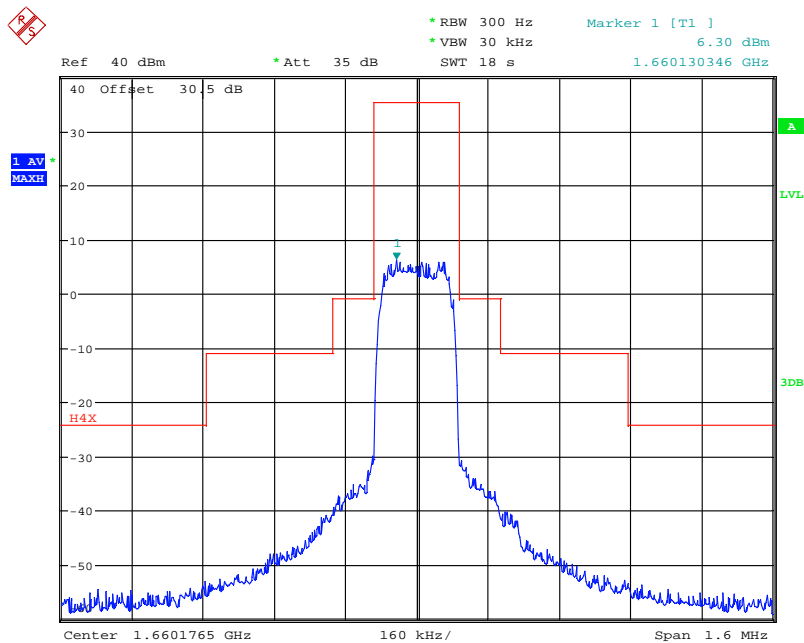
Date: 22.DEC.2010 15:41:53

(Plot 123:Upper Channel –QAM2)



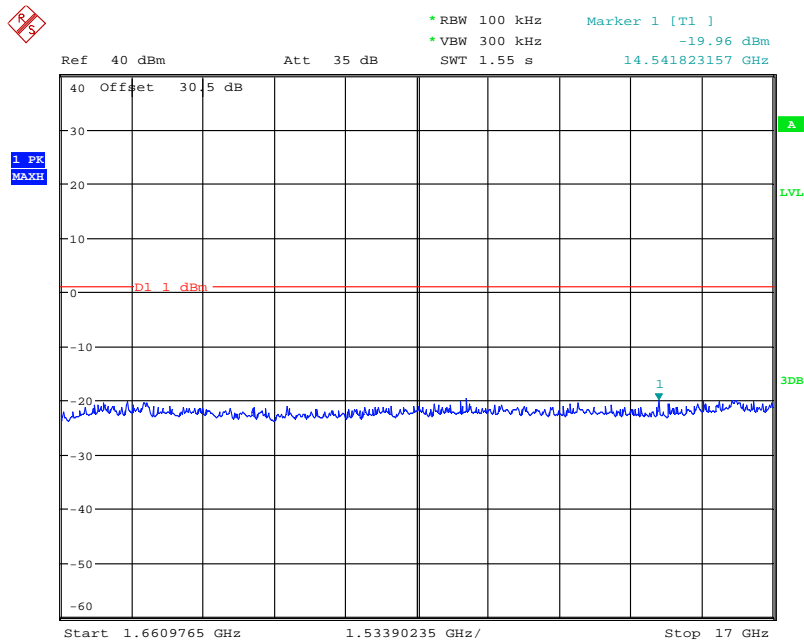
Date: 22.DEC.2010 15:42:36

(Plot 124:Upper Channel –QAM4.5)



Date: 12.FEB.2011 15:02:09

(Plot 125:Upper Channel –QAM4.5)



Date: 22.DEC.2010 15:43:00

(Plot 126:Upper Channel –QAM4.5)



## 6. Emission Limitations Per FCC Part 25.216(h)

### 4.1. Limit

According to FCC §25.216(h), Mobile earth stations manufactured more than six months after FEDERAL REGISTER publication of the rule changes adopted in FCC 03–283 with assigned uplink frequencies in the 1626.5– 1660.5 MHz band shall suppress the power density of emissions in the 1605– 1610 MHz band-segment to an extent determined by linear interpolation from -70 dBW/MHz at 1605 MHz to -46 dBW/MHz at 1610 MHz, averaged over any 2 millisecond active transmission interval. The e.i.r.p of discrete emissions of less than 700 Hz bandwidth from such stations shall not exceed a level determined by linear interpolation from -80 dBW at 1605 MHz to -56 dBW at 1610 MHz, averaged over any 2 millisecond active transmission interval.

Frequency Range	Limit (dBm/MHz)
1559MHz to 1605MHz	-40
1605MHz to 1610MHz	-40 to -16

### 4.2. Test Procedure

- a) The EUT was switched on and set to transmit at the maximum power at the lower, mid and upper channel with the modulation on at normal test condition.

### 4.3. Test Setup

Refer to 4.3

### 4.4. EUT Setup and Operating Conditions

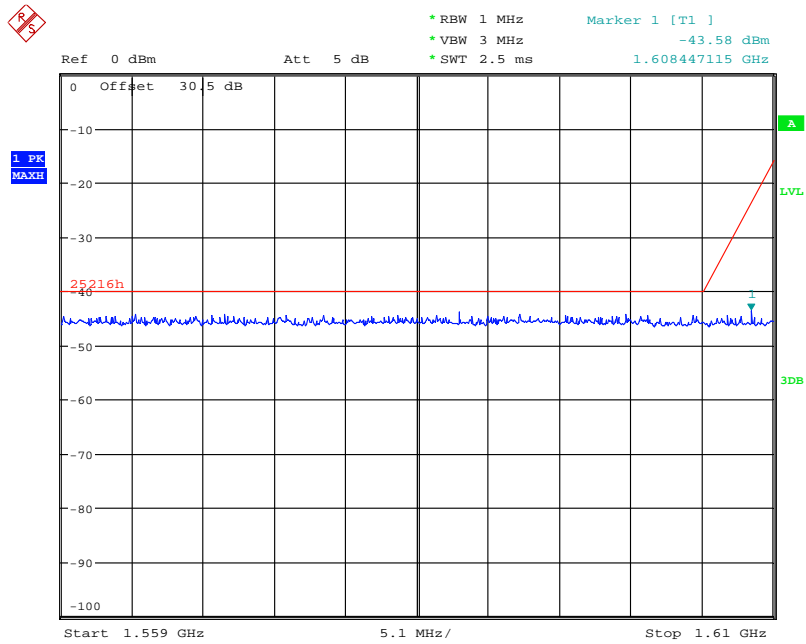
Refer to 4.4

## 4.5. Test Results

### Passed

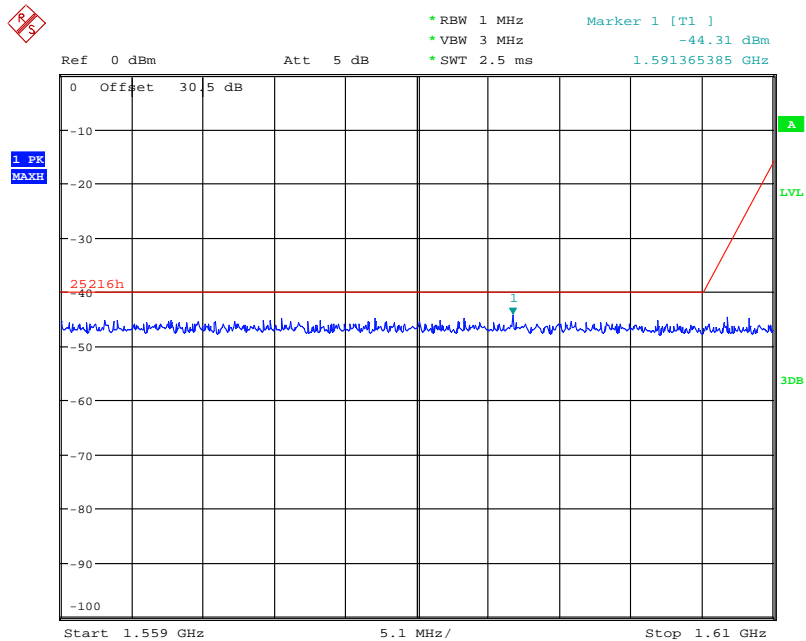
Frequency	Test Mode	Plot
1626.595MHz	QPSK0.5	127
	QPSK1	128
	QPSK2	129
	QPSK4.5	130
	QAM1	131
	QAM2	132
	QAM4.5	133
1643.5MHz	QPSK0.5	134
	QPSK1	135
	QPSK2	136
	QPSK4.5	137
	QAM1	138
	QAM2	139
	QAM4.5	140
1660.2Mhz	QPSK0.5	141
	QPSK1	142
	QPSK2	143
	QPSK4.5	144
	QAM1	145
	QAM2	146
	QAM4.5	147

## Test Plots



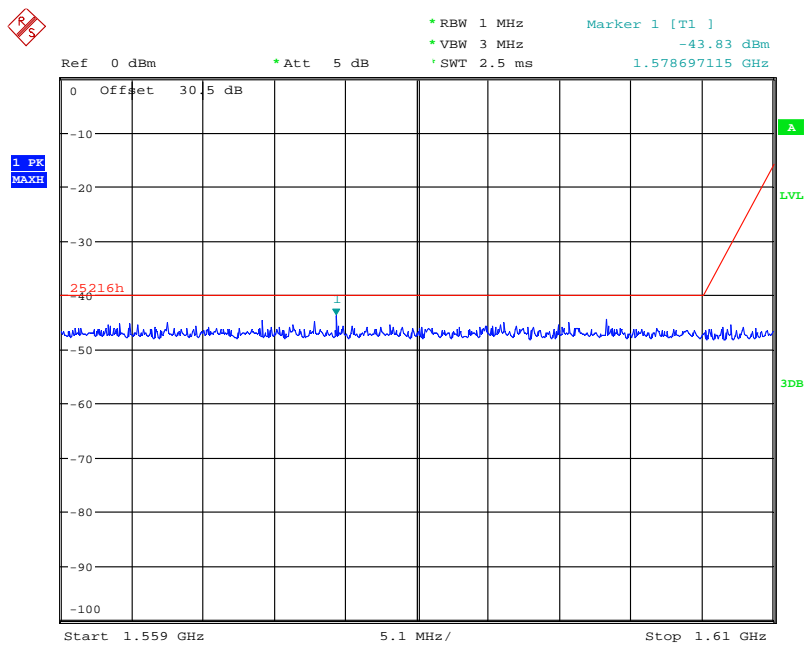
Date: 22.DEC.2010 15:54:28

(Plot 127:Low Channel –QPSK0.5)



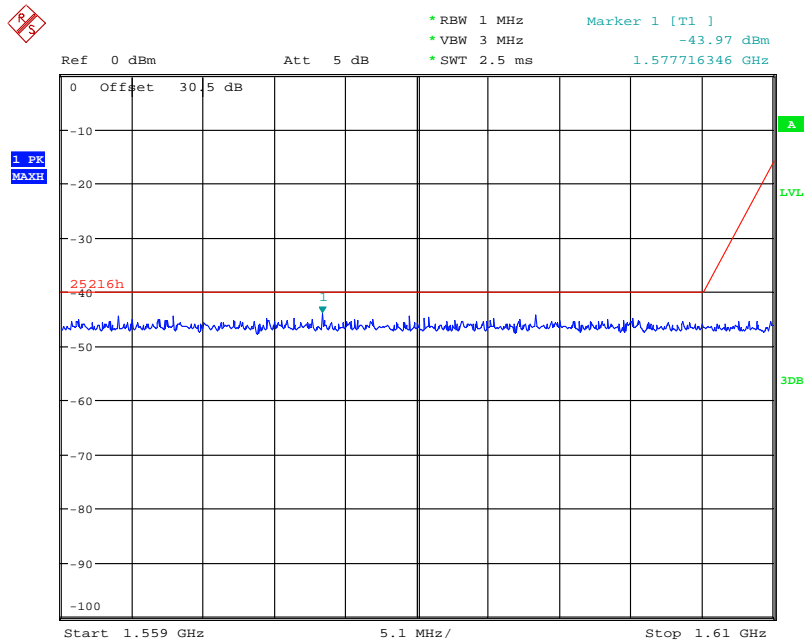
Date: 22.DEC.2010 15:54:53

(Plot 128:Low Channel –QPSK1)



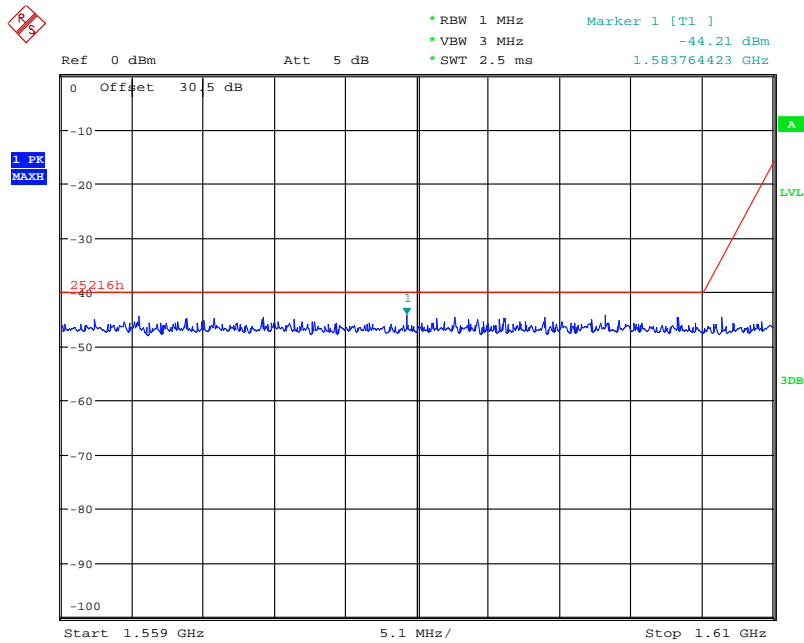
Date: 22.DEC.2010 16:08:10

(Plot 129:Low Channel –QPSK2)



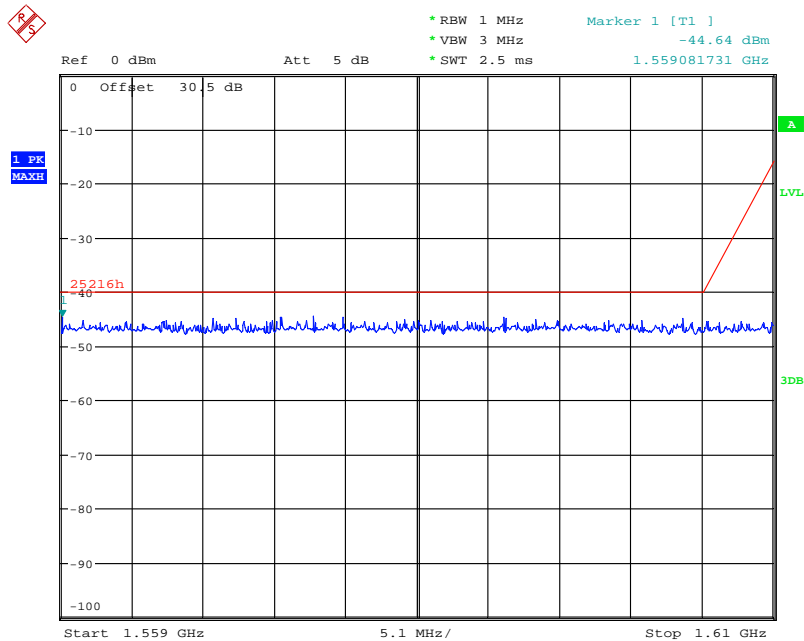
Date: 22.DEC.2010 15:58:04

(Plot 130:Low Channel –QPSK4.5)



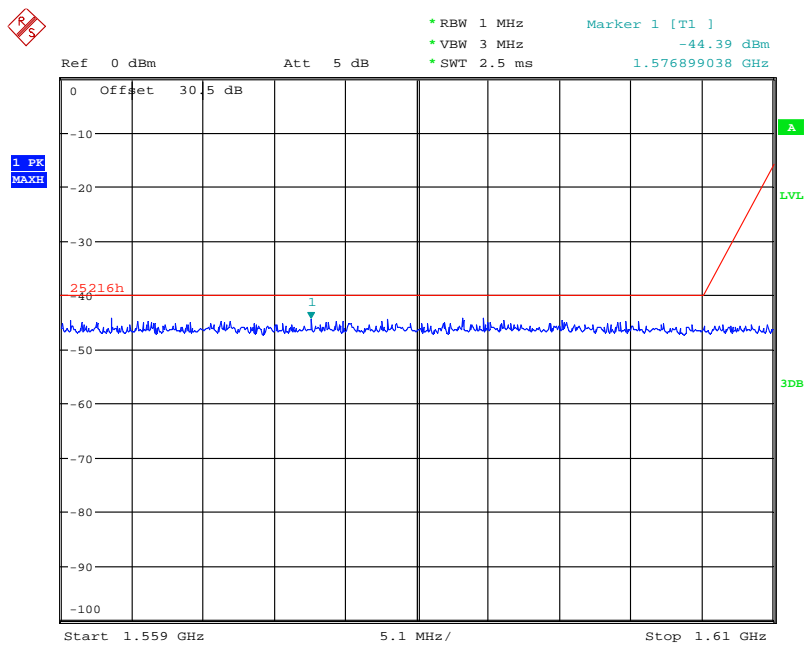
Date: 22.DEC.2010 15:58:37

(Plot 131:Low Channel –QAM1)



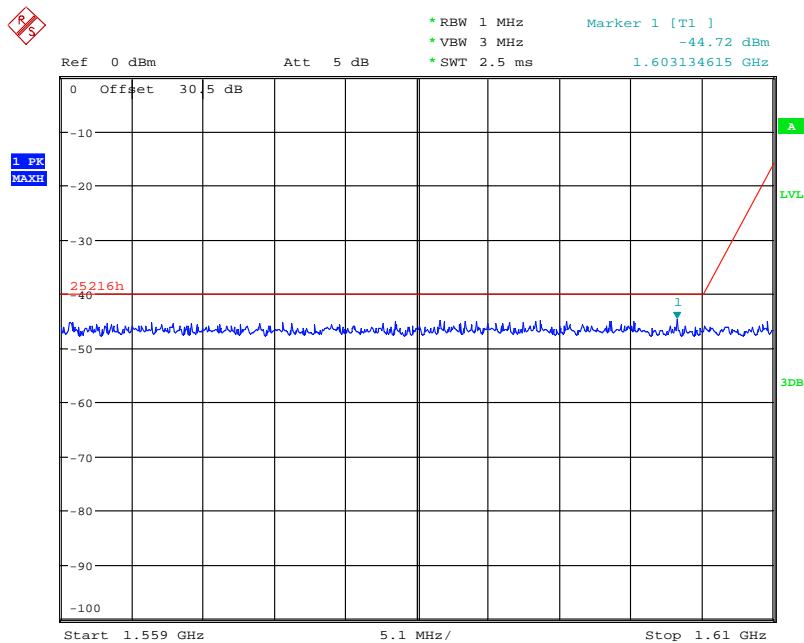
Date: 22.DEC.2010 15:59:13

(Plot 132:Low Channel –QAM2)



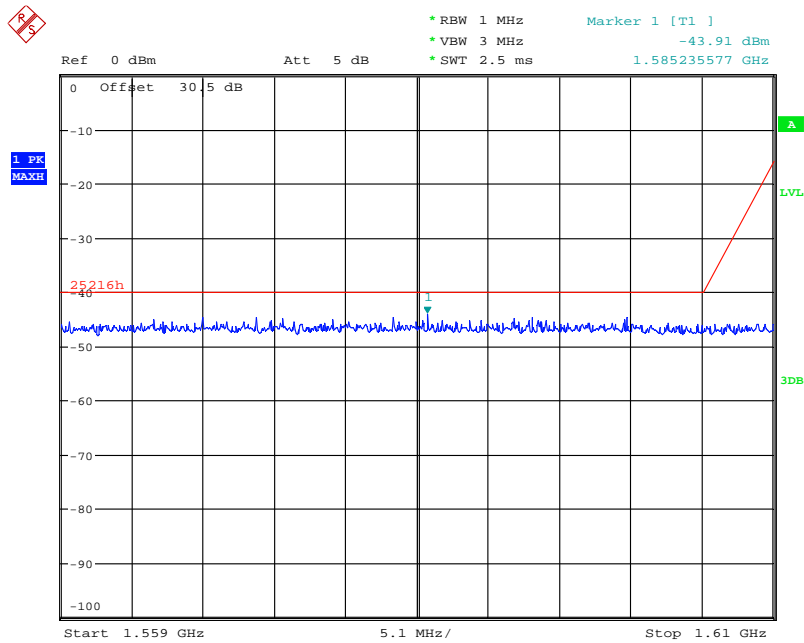
Date: 22.DEC.2010 16:00:07

(Plot 133:Low Channel –QAM4.5)



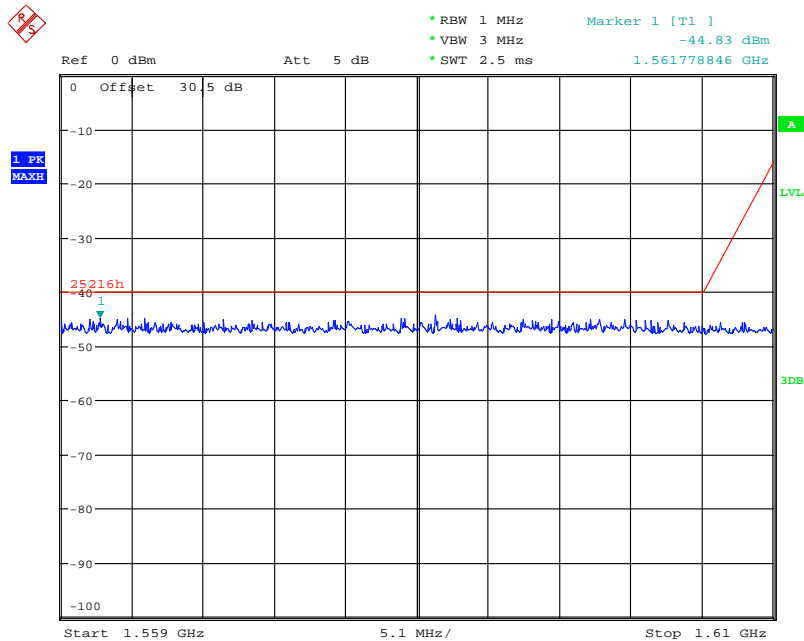
Date: 22.DEC.2010 16:00:41

(Plot 134:Mid Channel –QPSK0.5)



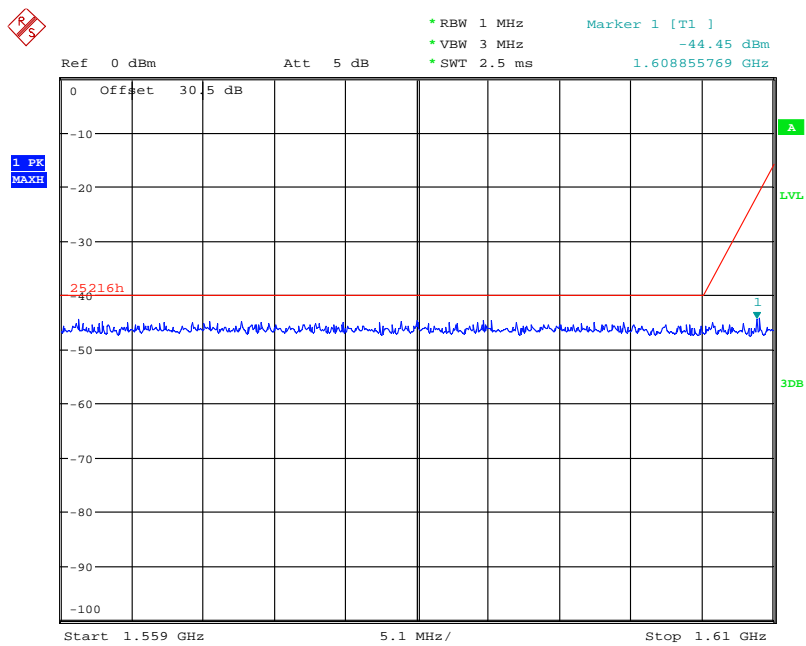
Date: 22.DEC.2010 16:01:10

(Plot 135: Mid Channel –QPSK1)



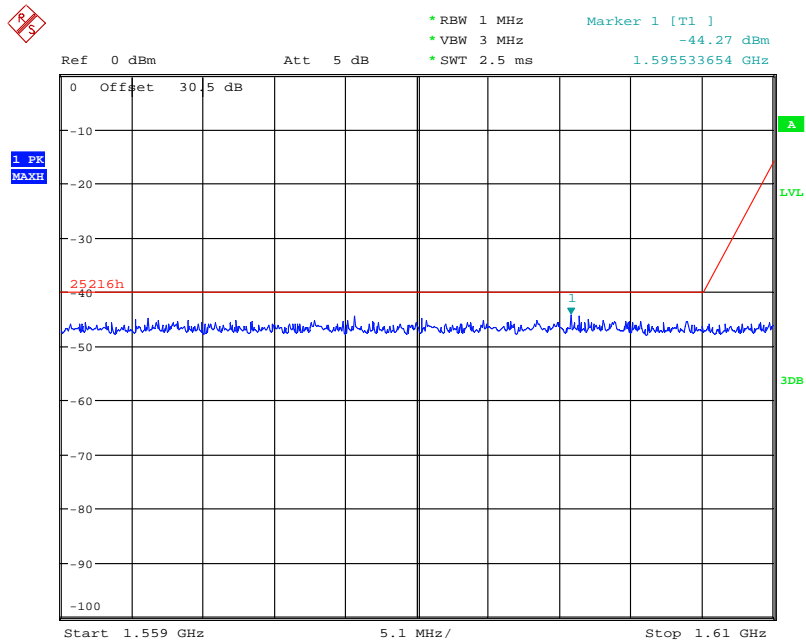
Date: 22.DEC.2010 16:01:36

(Plot 136: Mid Channel –QPSK2)



Date: 22.DEC.2010 16:02:29

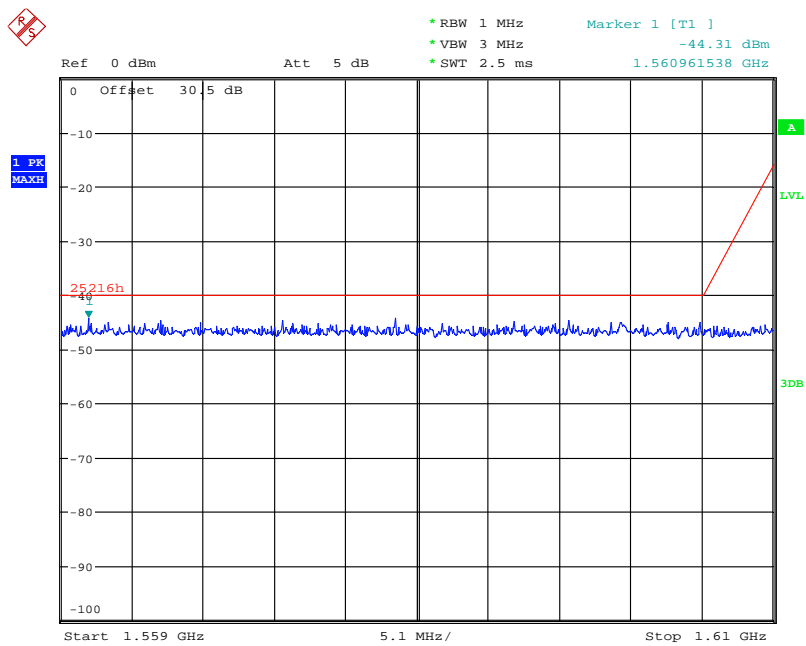
(Plot 137: Mid Channel –QPSK4.5)



Date: 22.DEC.2010 16:03:06

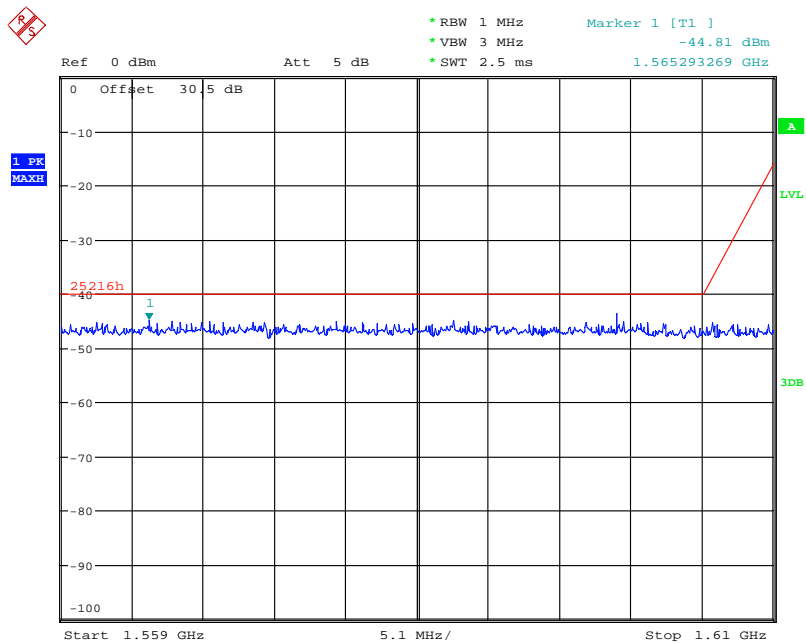


(Plot 138: Mid Channel –QAM1)



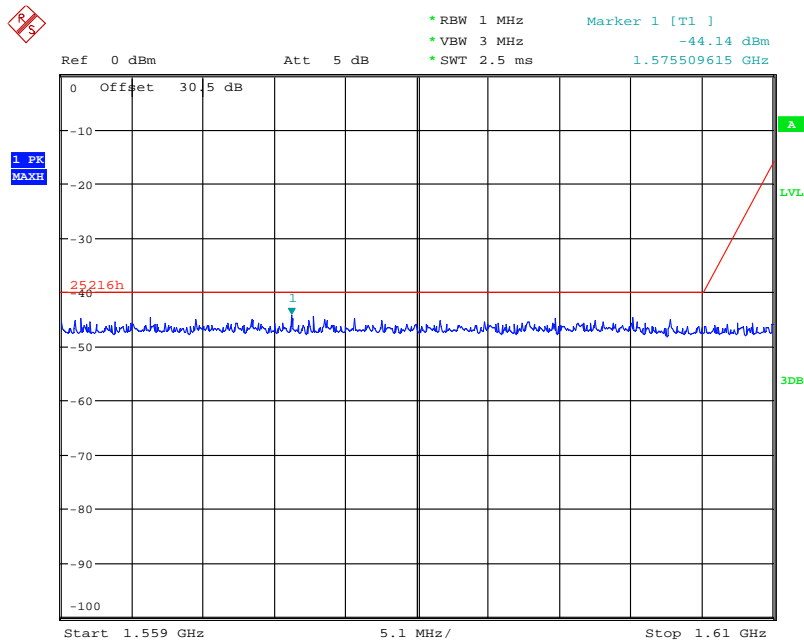
Date: 22.DEC.2010 16:03:35

(Plot 139: Mid Channel –QAM2)



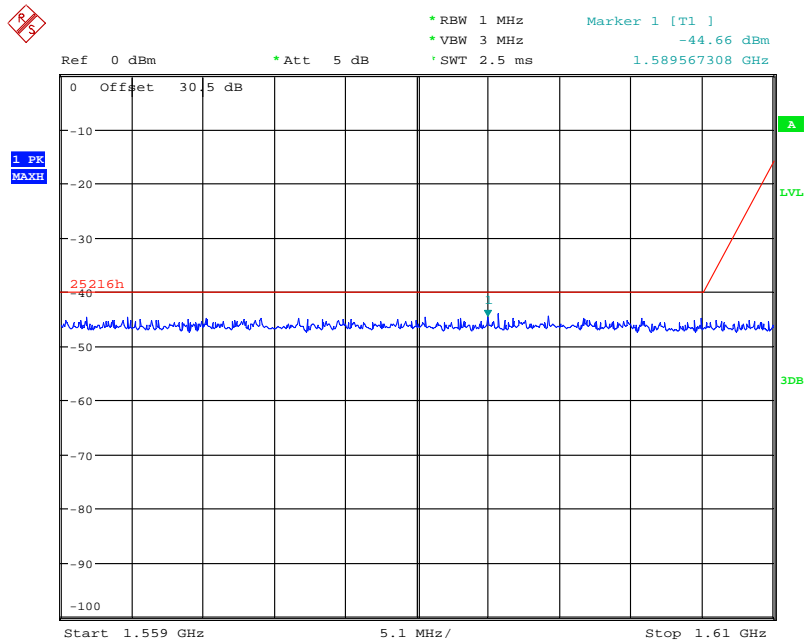
Date: 22.DEC.2010 16:03:57

(Plot 140: Mid Channel –QAM4.5)



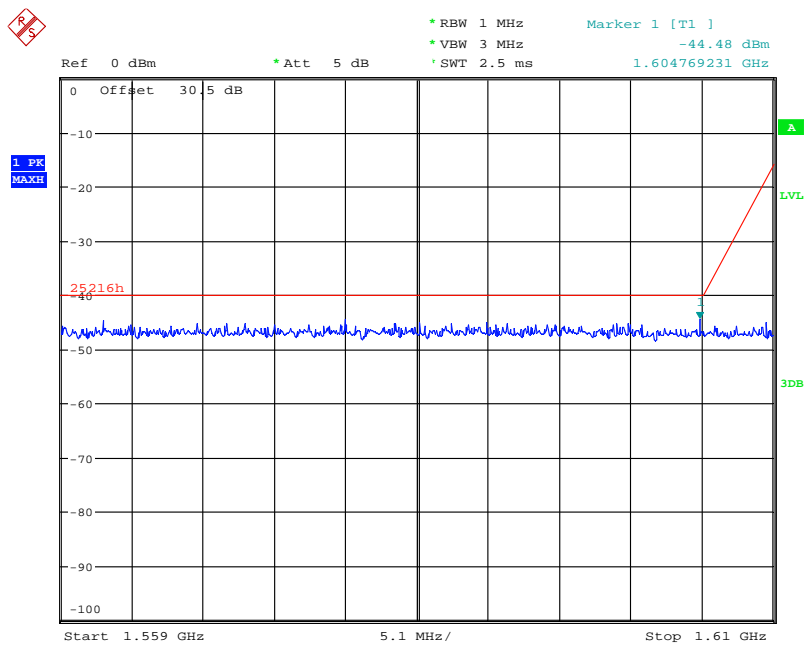
Date: 22.DEC.2010 16:04:25

(Plot 141:Upper Channel –QPSK0.5)



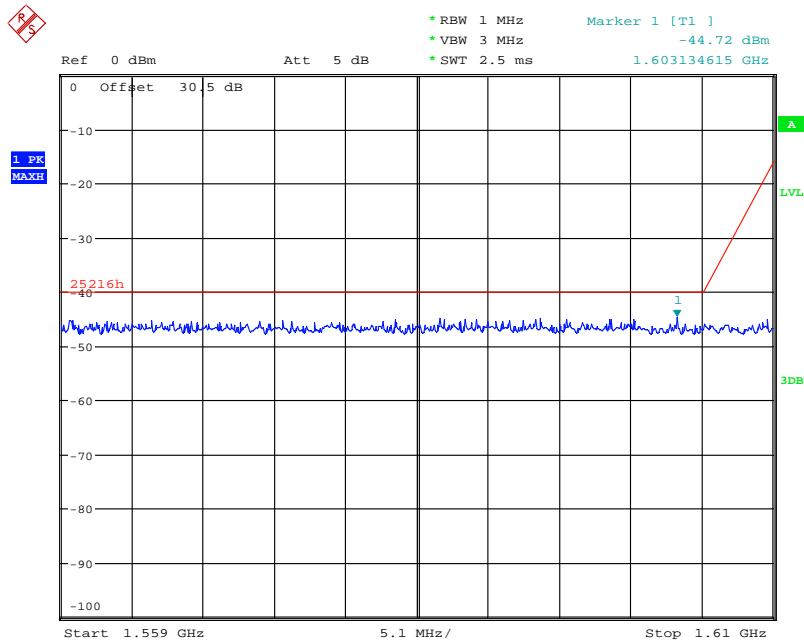
Date: 22.DEC.2010 16:07:03

(Plot 142: Upper Channel –QPSK1)



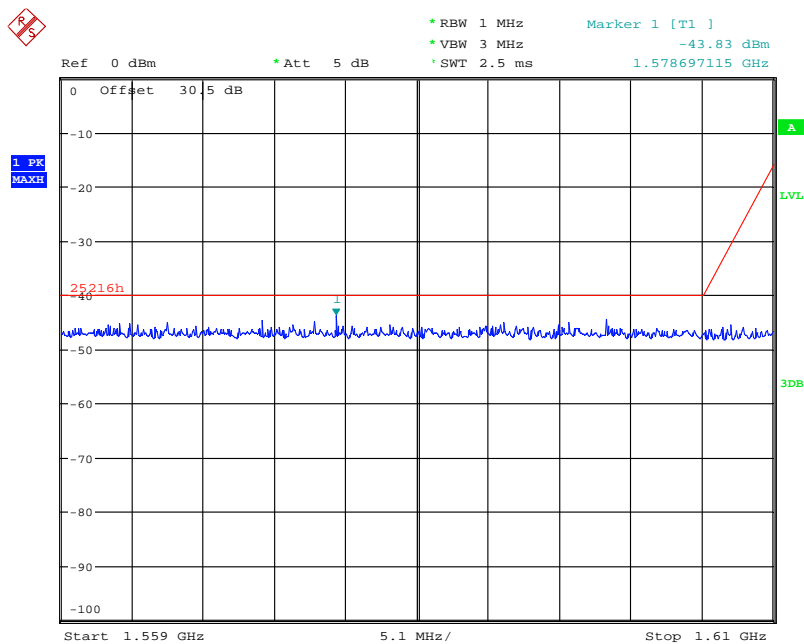
Date: 22.DEC.2010 16:07:25

(Plot 143: Upper Channel –QPSK2)



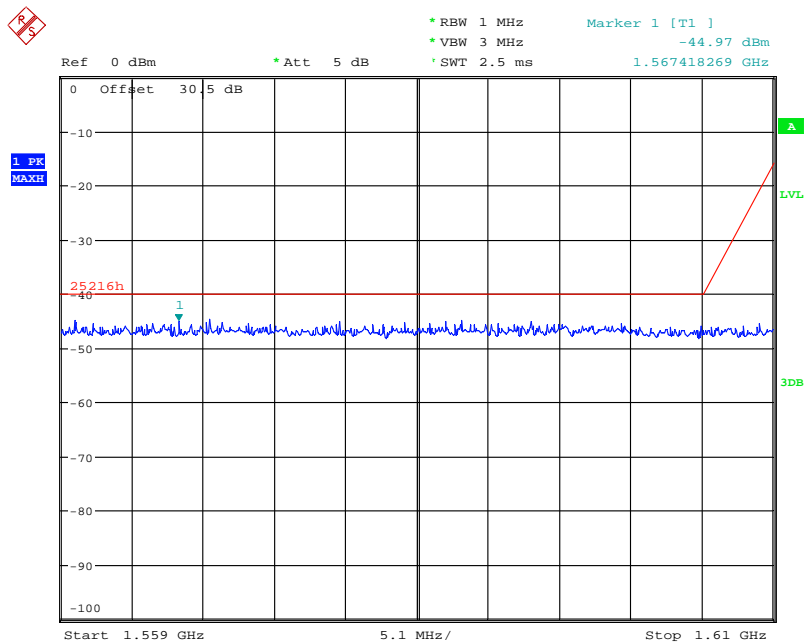
Date: 22.DEC.2010 16:00:41

(Plot 144: Upper Channel –QPSK4.5)



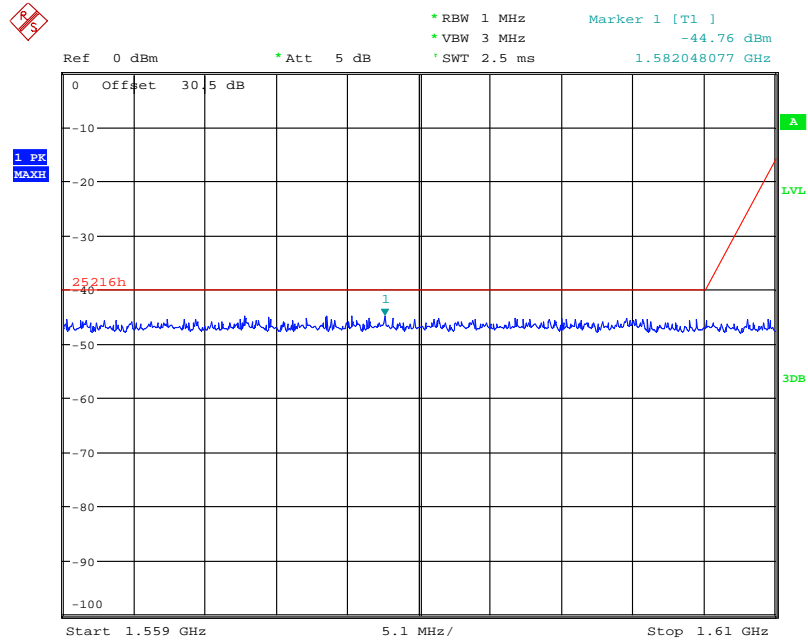
Date: 22.DEC.2010 16:08:10

(Plot 145: Upper Channel –QAM1)



Date: 22.DEC.2010 16:08:30

(Plot 146: Upper Channel –QAM2)



Date: 22.DEC.2010 16:08:53

(Plot 147: Upper Channel –QAM4.5)

## 7. Frequency Stability Measurement

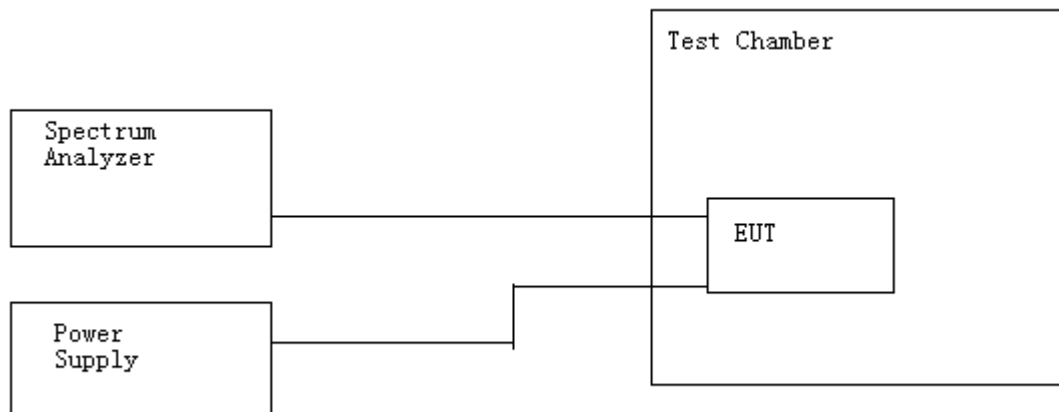
### 5.1. Limit

According to FCC §25.202(d), The carrier frequency of each earth station transmitter authorised in these services shall be maintained within 0.001% (10ppm) of the reference frequency.

### 5.2. Test Procedure

The frequency stability of the transmitter was examined at the voltage extremes from 20.4V to 27.6V and for the temperature range of -30°C to +50°C. The carrier frequency was measured while the EUT was in the temperature chamber. The reference frequency of the EUT was measured at the ambient room temperature with the frequency counter.

### 5.3. Test Setup



### 5.4. EUT Setup and Operating Conditions

Same as 5.4

## 5.5. Test Results

### Passed

Channel	1626.595	Modulation Type	QPSK0.5
Temperature(°C)	Measured Frequency(Hz)	Difference(Hz)	Deviation(PPM)
50	1626570672	275	0.169
40	1626570233	-164	-0.101
30	1626570164	-233	-0.143
20(Ref)	1626570397	0	0.000
10	1626570210	-187	-0.115
0	1626570281	-116	-0.071
-10	1626570723	326	0.200
-20	1626570143	-254	-0.156
-30	1626571011	614	0.377
Votalge(V)	Measured Frequency(Hz)	Difference(Hz)	Deviation(%)
20.4 as 85%	1626570138	-272	-0.167
24(Ref)	1626570410	0	0.000
27.6 as 115%	1626570603	193	0.119

Channel	1626.595	Modulation Type	QAM4.5
Temperature(°C)	Measured Frequency(Hz)	Difference(Hz)	Deviation(PPM)
50	1626523601	319	0.196
40	1626523534	252	0.155
30	1626523481	199	0.122
20(Ref)	1626523282	0	0.000
10	1626523410	128	0.079
0	1626522957	-325	-0.200
-10	1626523551	269	0.165
-20	1626522093	-1189	-0.731
-30	1626522118	-1164	-0.716
Votalge(V)	Measured Frequency(Hz)	Difference(Hz)	Deviation(%)
20.4 as 85%	1626523803	486	0.299
24(Ref)	1626523317	0	0.000
27.6 as 115%	1626523448	131	0.081

Channel	1643.5	Modulation Type	QPSK0.5
Temperature(°C)	Measured Frequency(Hz)	Difference(Hz)	Deviation(PPM)
50	1643481025	999	0.608
40	1643480957	931	0.566
30	1643480571	545	0.332
20(Ref)	1643480026	0	0.000
10	1643480356	330	0.201
0	1643480018	-8	-0.005
-10	1643481035	1009	0.614
-20	1643480728	702	0.427
-30	1643479244	-782	-0.476
Votalge(V)	Measured Frequency(Hz)	Difference(Hz)	Deviation(%)
20.4 as 85%	1643481214	1046	0.636
24(Ref)	1643480168	0	0.000
27.6 as 115%	1643480854	686	0.417

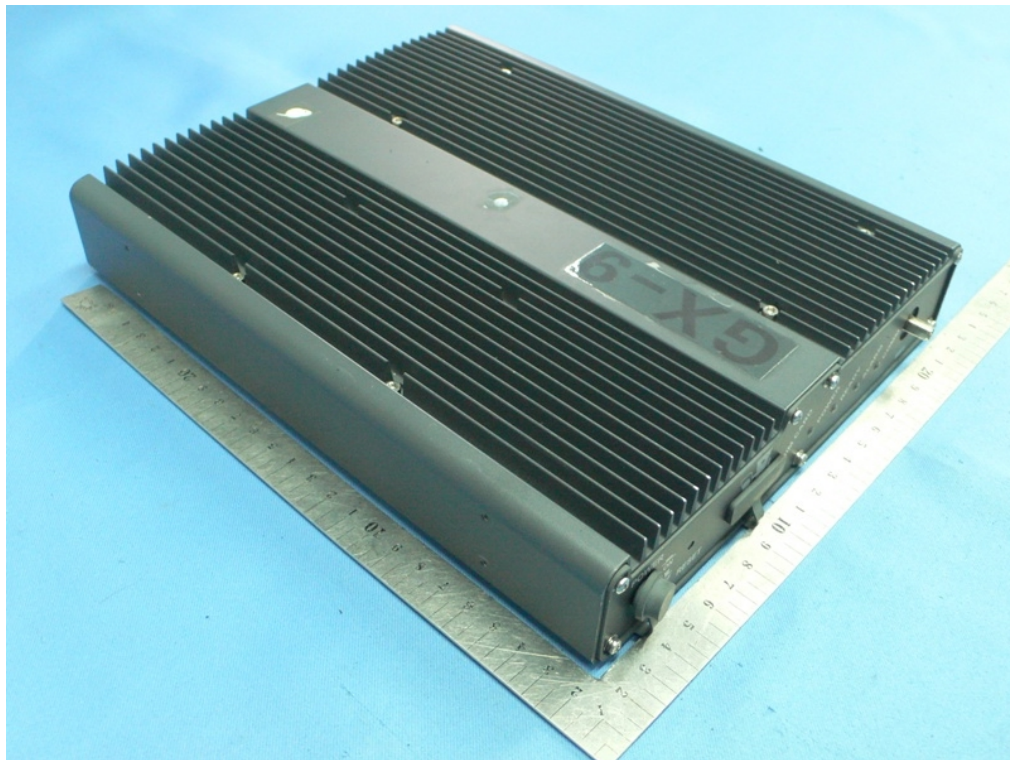
Channel	1643.5	Modulation Type	QAM4.5
Temperature(°C)	Measured Frequency(Hz)	Difference(Hz)	Deviation(PPM)
50	1643448964	669	0.407
40	1643447215	-1080	-0.657
30	1643448457	162	0.099
20(Ref)	1643448295	0	0.000
10	1643448131	-164	-0.100
0	1643448923	628	0.382
-10	1643448121	-174	-0.106
-20	1643448571	276	0.168
-30	1643448715	420	0.256
Votalge(V)	Measured Frequency(Hz)	Difference(Hz)	Deviation(%)
20.4 as 85%	1643448145	-171	-0.104
24(Ref)	1643448316	0	0.000
27.6 as 115%	1643448079	-237	-0.144



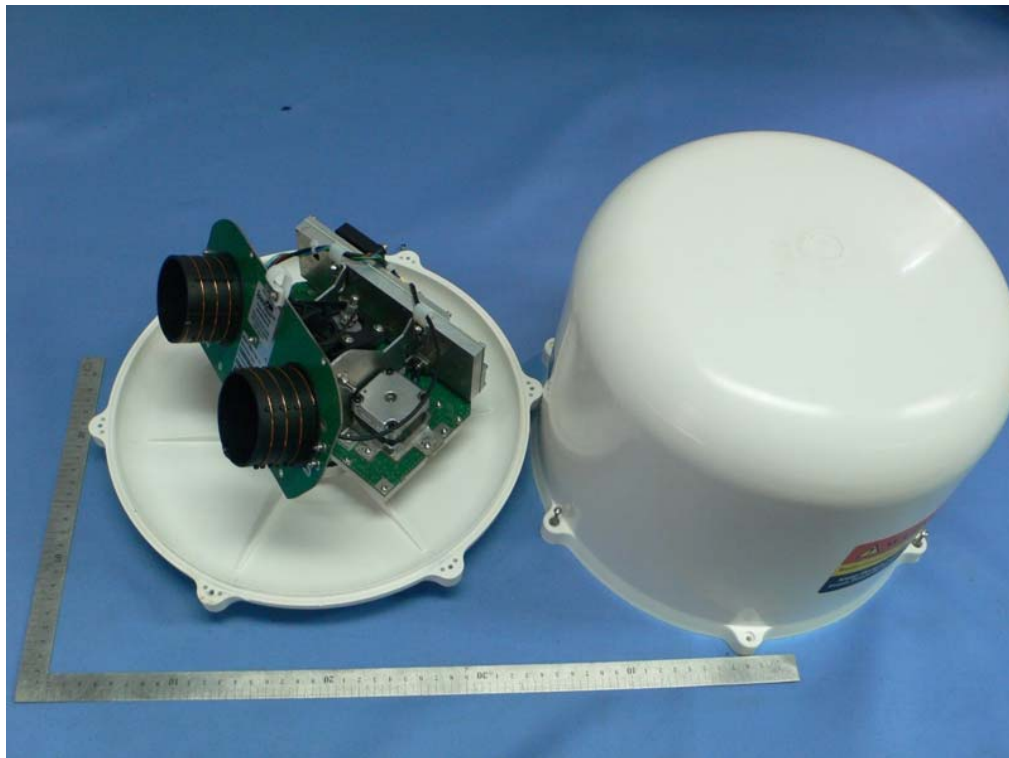
Channel	1660.2	Modulation Type	QPSK0.5
Temperature(°C)	Measured Frequency(Hz)	Difference(Hz)	Deviation(PPM)
50	1660180134	-853	-0.514
40	1660180489	-498	-0.300
30	1660180714	-273	-0.164
20(Ref)	1660180987	0	0.000
10	1660180850	-137	-0.083
0	1660180302	-685	-0.413
-10	1660180743	-244	-0.147
-20	1660181854	867	0.522
-30	1660182003	1016	0.612
Votalge(V)	Measured Frequency(Hz)	Difference(Hz)	Deviation(%)
20.4 as 85%	1660181257	375	0.226
24(Ref)	1660180882	0	0.000
27.6 as 115%	1660179871	-1011	-0.609

Channel	1660.2	Modulation Type	QAM4.5
Temperature(°C)	Measured Frequency(Hz)	Difference(Hz)	Deviation(PPM)
50	1660181785	798	0.481
40	1660181248	261	0.157
30	1660180486	-501	-0.302
20(Ref)	1660180987	0	0.000
10	1660180491	-496	-0.299
0	1660181084	97	0.058
-10	1660181784	797	0.480
-20	1660180567	-420	-0.253
-30	1660181994	1007	0.607
Votalge(V)	Measured Frequency(Hz)	Difference(Hz)	Deviation(%)
20.4 as 85%	1660161781	666	0.401
24(Ref)	1660161115	0	0.000
27.6 as 115%	1660160891	-224	-0.135

## Appendix I: Photographs of the EUT

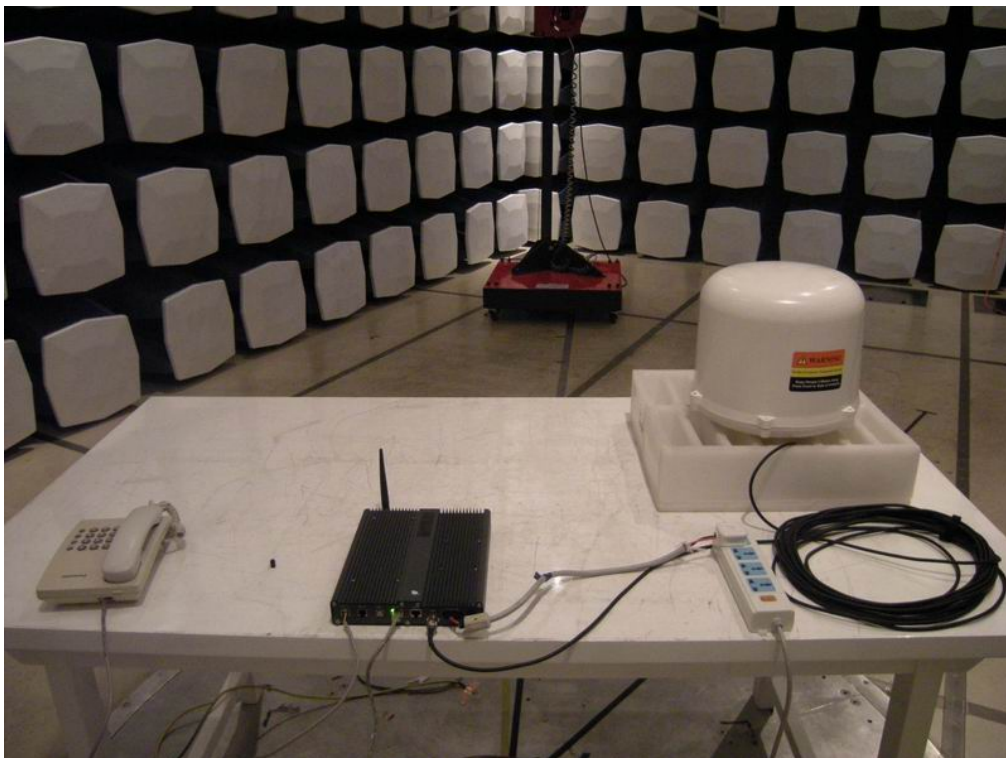
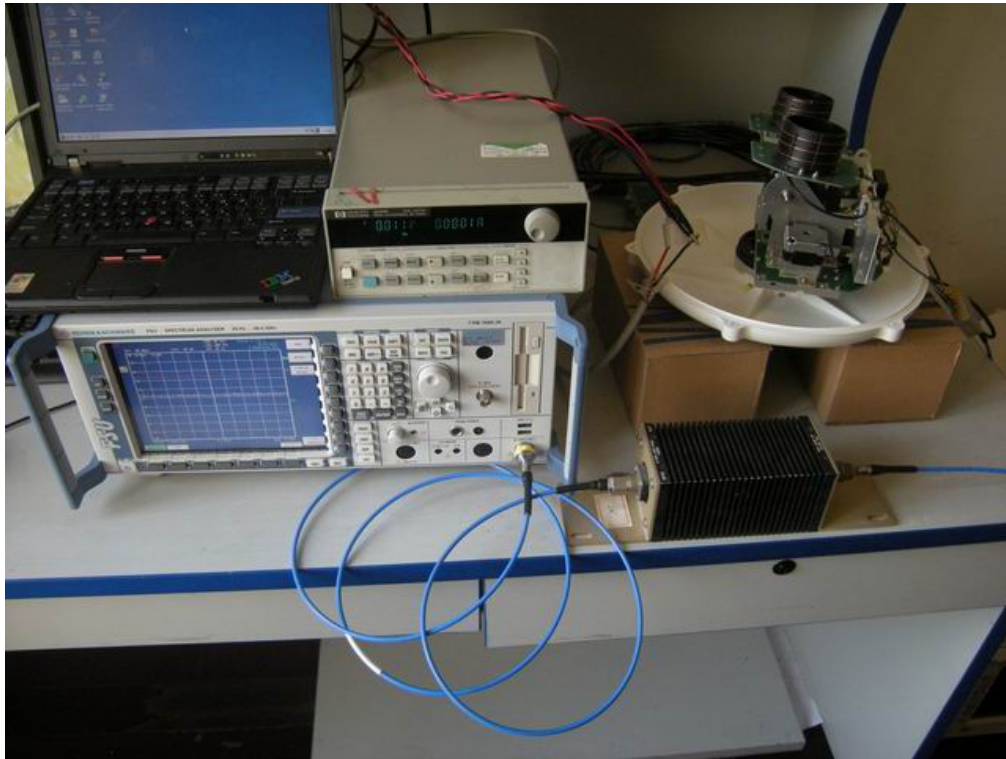








## Appendix II: Photographs of Test Configuration



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