



# FCC RF Test Report

**Product Name: LTE/HSPA+/HSUPA/HSDPA/UMTS/GSM/GPRS/EDGE  
Mobile Phone with Bluetooth**

**Model Number: 201HW**

**Report No: SYBH(Z-RF)016052012-2002  
FCC ID: QISU9201L**

**Reliability Laboratory of Huawei Technologies Co., Ltd.**

Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China  
Tel: +86 755 28780808 Fax: +86 755 89652518

## Notice

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2. The laboratory has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. The site recognition number is 97456.
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**Modification Record**

No.	Date	Modification Description
1	2012-07-26	First report.
2	2013-06-13	Updated the limits

<b>Applicant:</b>	Huawei Technologies Co., Ltd.
<b>Address:</b>	Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China
<b>Date of Receipt Test Item:</b>	May., 20, 2012
<b>Start Date of Test:</b>	May., 22, 2012
<b>End Date of Test:</b>	Jun., 15, 2012
<b>Test Result:</b>	Pass

Approved By Senior Engineer Jun, 13, 2013 Dai Linjun  
Date Name Signature

Reviewed By Jun, 13, 2013 Cousy Xu  
Date Name Signature

Operated By Jun, 13, 2013 Huang Qiuliang  
Date Name Signature

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# 1 General Information

<b>1.1 Applied Standard</b>	
Applied Rules:	47 CFR FCC Part 2:2011, Subpart J 47 CFR FCC Part 27:2011, Subpart C&M ANSI/TIA 603C:2004
<b>1.2 Test Location</b>	
Test Location 1:	Reliability Laboratory of Huawei Technologies Co., Ltd.
Address:	Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China
<b>1.3 Test Environmental Condition</b>	
Ambient Temperature:	20 – 25 °C
Ambient Relative Humidity:	45 – 55 %
Atmospheric Pressure:	101 kPa

## 2 Summary

Table 1 Summary of results

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
RF Power Output	§2.1046, §27.50(h) (2)	EIRP ≤ 2 W	Appendix A	Pass
Modulation Characteristics	§2.1047	Digital modulation	Appendix B	Pass
Bandwidth	§2.1049,	OBW: No limit. EBW: No limit.	Appendix C	Pass
Band Edges Compliance	§2.1051, §27.53(m) (4) §27.53(m) (6)		Appendix D	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(m) (4) §27.53(m) (6)		Appendix E	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(m) (4) §27.53(m) (6)		Appendix F	Pass
Frequency Stability	§2.1055, §27.54	Within authorized bands of operation/frequency block.	Appendix G	Pass
Photos of Test Setup	---	---	Appendix H	---

### 3 Product Description

#### 3.1 Product Information

##### 3.1.1 General Description

201HW is subscriber equipment in the LTE/WCDMA/GSM system. The LTE frequency band is AXGP B41, it included in this report. The HSPA+/HSUPA/HSDPA/UMTS frequency band is Band I, Band VIII and Band XI, but not included in this report. The GSM/GPRS/EDGE frequency band includes GSM900 and DCS1800 and PCS1900, but not included in this report. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/WCDMA/GSM protocol processing, voice, video, MMS service, GPS, AGPS and WIFI etc. Externally it provides micro SD card interface, earphone port (to provide voice service) and USIM card interface. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

##### 3.1.2 Board Information

Table 2 Board Information

LTE/HSPA+/HSUPA/HSDPA/UMTS/GSM/GPRS/EDGE Mobile Phone with Bluetooth		
201HW		
Board and Module		
Hardware Version	Software Version	Description
U9201L_VA	U9201LV100R001C111B108	Main board of Mobile Phone

##### 3.1.3 Adapter Technical Data

AC/DCAdapter Model	HW-050100U1W
Manufacturer	Huawei Technologies Co., Ltd.
Input Voltage	~100-240V 50/60Hz 0.2A
Output Voltage	5V  1A
Rated Power	5W

### 3.1.4 Battery Technical Data

Name	Manufacture	Description
Rechargeable Li-ion	Huawei Technologies Co., Ltd.	Battery Model: HB5R1H Rated capacity: 1930mAh Nominal Voltage: $\text{---} +3.7\text{V}$ Charging Voltage: $\text{---} +4.2\text{V}$



## 4 Test Description

### 4.1 Supported Frequency Range

Characteristics	Description
Downlink	2550 to 2570 MHz
Uplink	2550 to 2570 MHz

### 4.2 Transmitter / Receiver Characteristics

Characteristics	Description
System Type	LTE
TX Output Power (per Antenna Port)	LTE system: 23dBm
Channel Spacing(s) / Bandwidth(s)	LTE system: 10 MHz, 20 MHz,
Designation of Emissions	LTE system: 8M94G7D (10 MHz QPSK modulation), 8M94W7D (10 MHz 16QAM modulation) 17M93G7D (20 MHz QPSK modulation), 17M93W7D (20 MHz 16QAM modulation)

### 4.3 Antenna Gain

Antenna Gain(dBi)	2.2
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### 4.4 Power Supply

Specification	Description
Power Supply Type	Directly Connected to DC /AC Power Supply
Input to EUT (DC power)	DC Voltage Nominal: $\equiv$ 3.7 V DC Voltage Range: $\equiv$ 3.5 V to 4.2 V
Input to EUT (AC power)	AC Voltage Nominal: ~ 120 V (50/60 Hz) AC Voltage Range: ~ 100 V to 240 V

## 5 General Test Conditions / Configurations

### 5.1 RF Channels under Test

Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
TX (10M)		Channel 40190	Channel 40290	Channel 40390
		2550 MHz	2560 MHz	2570 MHz
TX (20M)		Channel 40240	Channel 40290	Channel 19150
		2555 MHz	2560 MHz	2565 MHz
RX (10M)		Channel 40190	Channel 40290	Channel 40390
		2550 MHz	2560 MHz	2570 MHz
RX (20M)		Channel 40240	Channel 40290	Channel 19150
		2555 MHz	2560 MHz	2565 MHz

### 5.2 Test Modes

Test Mode	Test Modes Description
TM4	LTE QPSK modulation
TM5	LTE 16QAM modulation

### 5.3 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Temperature	TN	Ambient
Voltage	VL	3.5V
	VN	3.7V
	VH	4.2V

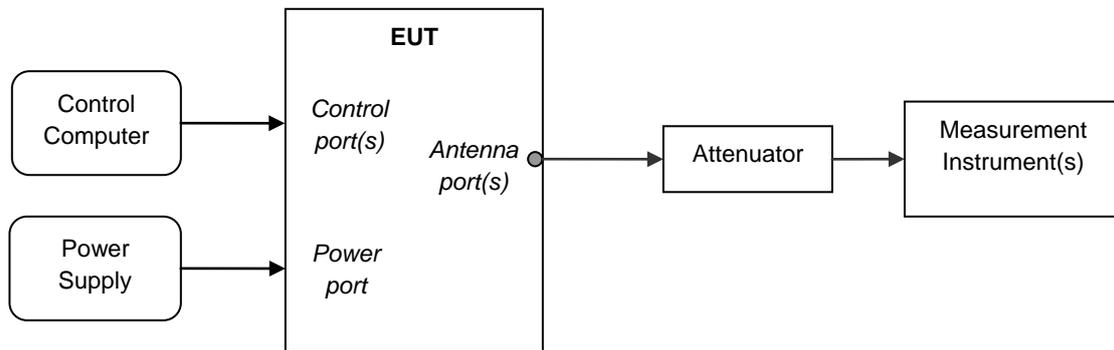
NOTE: VL= lower extreme test voltage  
 VN= nominal voltage  
 VH= upper extreme test voltage  
 TN= normal temperature

## 5.4 Test Setup

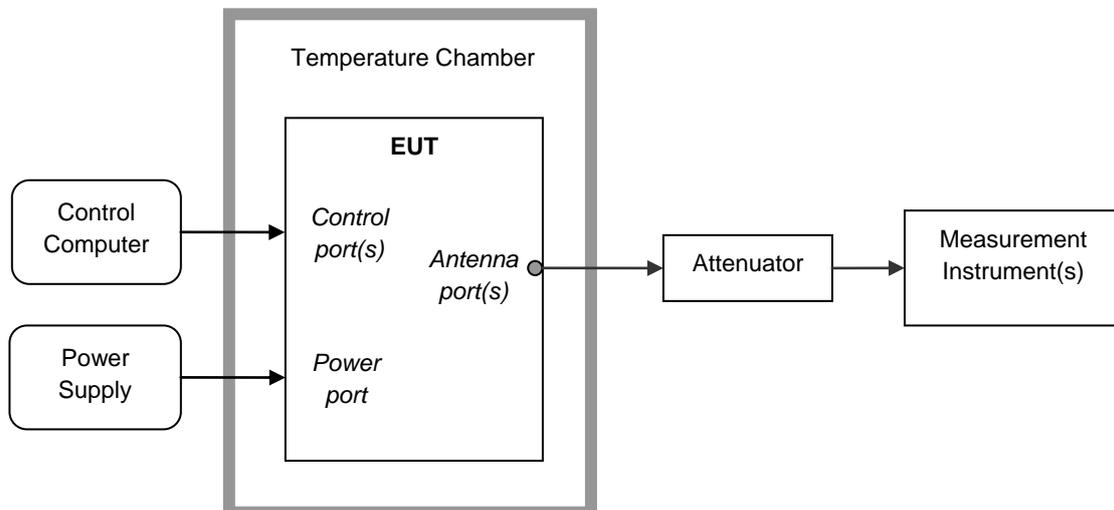
### 5.4.1 General Test Setup Configurations

Configuration	Description
Test Antenna Ports	Until otherwise declared, all TX tests are ONLY performed at the main Transmitter antenna port (e.g. TRXA, TXA and so on) of the EUT, and all RX tests are ONLY performed at the main Receiver antenna port (e.g. TRXA, RXA and so on) of the EUT.
Multiple RF Sources	Other than the tested RF source of the EUT, other RF source(s) are disabled or shutdown during measurements.

### 5.4.2 Test Setup 1



### 5.4.3 Test Setup 2



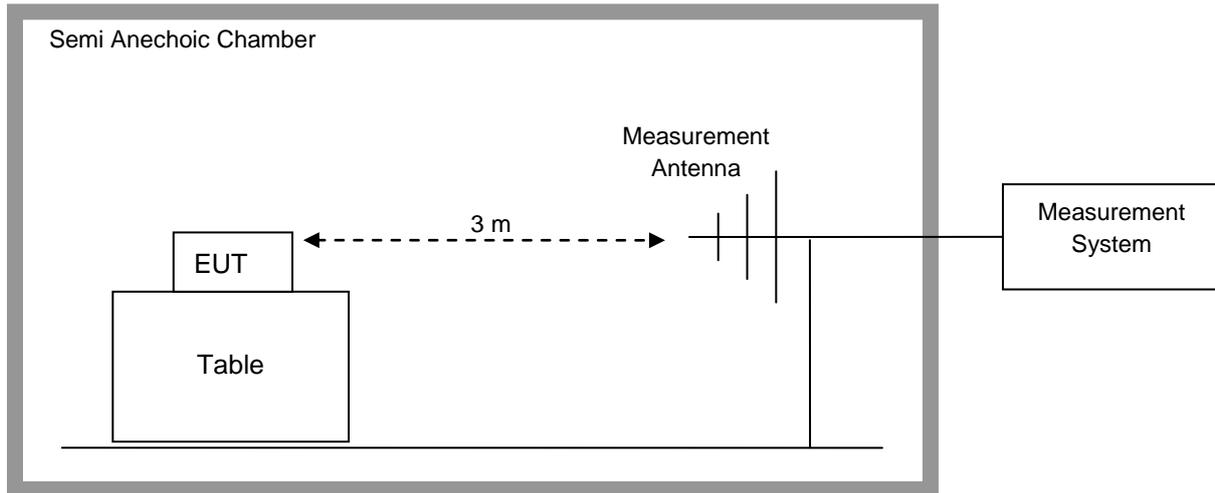
### 5.4.4 Test Setup 3

NOTE1: Effective radiated power (ERP) or Effective Isotropic radiated power (EIRP) refers to the EUT radiation power output, assuming all emissions are radiated from half-wave dipole antennas or horn antennas.

NOTE2: The EUT was set on insulator 80cm above the Ground Plane. The setup and test methods were according to ANSI-TIA-603C 2004. The measurements were carried through with a Rohde and Schwarz Test Receiver and control software.

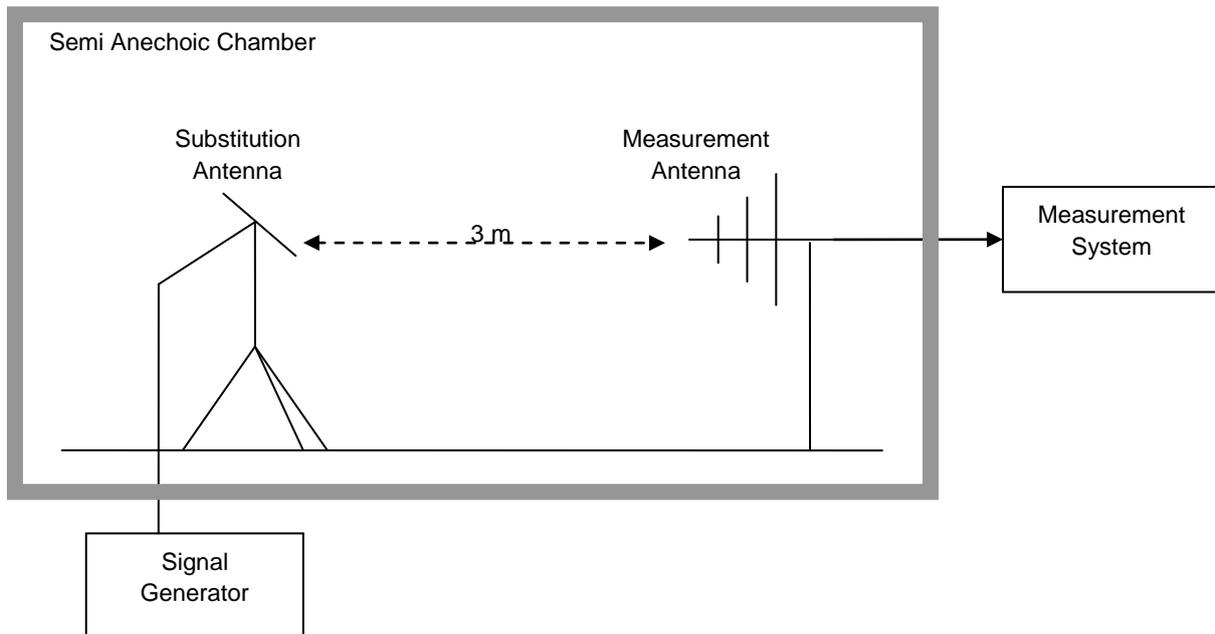
#### Step 1: Pre-test to find the Maximum ERP or EIRP

1. Connect the test system according to the following figure. EUT is running for 30 minutes before test, and measurement instruments are warming-up for 30 minutes.
2. Set up communication link between Universal radio communication tester and EUT, set EUT working frequency, and control EUT to transmit at maximum power.
3. Set the center frequency of the signal analyzer or receiver to the EUT's operating frequency, the RBW is equal to the emission bandwidth of the signal. Set RMS detector for the test, and the span is equal to 2 times of emission bandwidth, the other settings should remain automatic. Normally, the height range of antenna was 1m to 4m, the azimuth range of turntable was 0° to 360°. The receiver antenna has two polarizations V and H. A portable or small unlicensed wireless device shall be placed on a non-metallic test fixture or other non-metallic support during testing. The supporting fixture shall permit orientation of the EUT in each of three orthogonal (x, y, z) axis positions such that emissions from the EUT are maximized. Measure the EUT maximum RF power and record the result.
4. Changing EUT working frequency and measuring the RF power at channel L, M, H respectively. Complete the test data.



## Step 2: Substitution method to verify the maximum ERP or EIRP

1. Measurement setup is according to the following figure. EUT was substituted by antenna, and the polarization is identical with the test antenna; the signal generator was connected to the substitution antenna.
2. The radiated output power, measured by signal analyzer set, is the same as recorded in above item 5). Then this power level is matched by a signal from a calibrated signal generator which is substituted for EUT. The power supplied by the generator is then equal to the ERP or EIRP after corrected by the antenna gain and cable loss.



## 5.5 Test Conditions

Test Case	Test Conditions	
Transmitter Output Power	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1 & Test Setup 3
	Detector	RMS
	RF Channels (TX)	L, M, H
	Test Mode	TM4/TM5
Modulation Characteristics	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	RF Channels (TX)	M
	Test Mode	TM4/TM5
Occupied Bandwidth	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	Detector	PK
	RF Channels (TX)	L, M, H
	Test Mode	TM4/TM5
Band Edges Compliance	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	Detector	RMS
	RF Channels (TX)	L, H
	Test Mode	TM4/TM5
Spurious Emission at Antenna Terminals	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	Detector	PK
	RF Channels (TX)	L, M, H
	Test Mode	TM4
Field Strength of Spurious Radiation	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 3
	Detector	PK
	RF Channels (TX)	M
	Test Mode	TM4
Frequency Stability	Test Configuration	(1) -30 °C to +50 °C with step 10 °C at Rated Voltage; (2) 85%, 100% and 115% of Rated Voltage at Ambient Temperature.
	Test Setup	Test Setup 2
	RF Channels (TX)	M



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Test Case	Test Conditions	
	Test Mode	TM4/TM5

## 6 Main Test Instruments

Table 3 Main Test Equipments

Equipment Description	Manufacturer	Model	Serial Number	Calibrated until
Power supply	KEITHLEY	2303	1288003	Sep.27,2012
Universal Radio Communication Tester	R&S	CMU200	117341	Jan.12.2013
Universal Radio Communication Tester	Agilent	E5515C	MY50260239	Aug.31,2012
Spectrum Analyzer	Agilent	E4440A	MY49420179	Jul.17,2012
Signal Analyzer	R&S	FSQ31	200021	Sep.27,2012
Temperature Chamber	WEISS	WKL64	24600294	Feb.13,2013
Signal generator	Agilent	E8257D	MY49281095	Jul.09.2012
Spectrum analyzer	R&S	FSU3	200474	Mar., 05, 2013
Spectrum analyzer	R&S	FSU43	100144	Mar., 05, 2013
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100304	Apr., 05, 2013
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100391	Apr., 05, 2013
Trilog Broadband Antenna (30M~3GHz)	SCHWARZBECK	VULB 9163	9163-521	Jul., 07, 2013
Pyramidal Horn Antenna(26GHz-40GHz)	ETS-Lindgren	3160-10	00123940	Feb., 27, 2013
Pyramidal Horn Antenna(18GHz-26.5GHz)	ETS-Lindgren	3160-09	00125912	Feb.,27, 2013
Universal Radio Communication Tester	Anritsu	MT8820C	6200971028	May., 04, 2013

## 7 Test Results

No.	Test Item	Test Result
1	Transmitter Output Power	Appendix A
2	Modulation Characteristics	Appendix B
3	Occupied Bandwidth	Appendix C
4	Band Edges Compliance	Appendix D
5	Spurious Emission at Antenna Terminals	Appendix E
6	Field Strength of Spurious Radiation	Appendix F
7	Frequency Stability	Appendix G
8	Photos of Test Setup	Appendix H

NOTE: There is no test data in Appendix H, only Photos of Test Setup for Field Strength of Spurious Radiation.

## 8 Measurement Uncertainty

For a 95% confidence level ( $k=2$ ), the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

Test Item		Extended Uncertainty
Transmitter Output Power	Power (dBm)	U =0.39 dB
Occupied Bandwidth	Magnitude (%)	U=0.2%
Band Edge Compliance	Disturbance Power (dBm)	U=2.0 dB
Conducted Spurious Emissions	Disturbance Power (dBm)	U=2.0 dB
Field Strength of Spurious Radiation	ERP (dBm)	U=4.6 dB (30 MHz – 1GHz) U=3.0 dB (above 1 GHz)
Frequency Stability	Frequency Accuracy (ppm)	U=0.21 ppm

-----The END-----



# **Appendix A**

## **Transmitter Output Power**

According to FCC Part 2.1046 & Part 27.50(h) (2)



## Conducted Power of Transmitter

Table 1 Measurement Results(LTE) BAND 41

RF Output Power(Conducted)				
Test Mode	TN/VN			
	Modulation	RB	Measured (dBm)	Limit (dBm )
Channel (L) 10MHz(BW)	QPSK	1RB#0	22.86	33.0
		1RB#max	22.65	33.0
		25RB#13	21.78	33.0
		Full	21.67	33.0
	16QAM	1RB#0	21.88	33.0
		1RB#max	21.73	33.0
		25RB#13	20.74	33.0
		Full	20.63	33.0
Channel (L) 20MHz(BW)	QPSK	1RB#0	22.81	33.0
		1RB#max	22.74	33.0
		50RB#25	21.66	33.0
		Full	21.79	33.0
	16QAM	1RB#0	22.05	33.0
		1RB#max	22.13	33.0
		50RB#25	20.51	33.0
		Full	20.68	33.0
Channel (M) 10MHz(BW)	QPSK	1RB#0	23.10	33.0
		1RB#max	23.07	33.0
		25RB#13	21.81	33.0
		Full	21.62	33.0
	16QAM	1RB#0	21.81	33.0
		1RB#max	21.76	33.0
		25RB#13	20.67	33.0
		Full	20.58	33.0
Channel (M) 20MHz(BW)	QPSK	1RB#0	23.24	33.0
		1RB#max	23.16	33.0
		50RB#25	21.79	33.0
		Full	21.8	33.0
	16QAM	1RB#0	21.98	33.0
		1RB#max	21.94	33.0



		50RB#25	20.54	33.0
		Full	20.56	33.0
Channel (H) 10MHz(BW)	QPSK	1RB#0	22.75	33.0
		1RB#max	22.80	33.0
		25RB#13	21.79	33.0
		Full	21.74	33.0
	16QAM	1RB#0	21.75	33.0
		1RB#max	21.71	33.0
		25RB#13	20.62	33.0
		Full	20.65	33.0
Channel (H) 20MHz(BW)	QPSK	1RB#0	22.81	33.0
		1RB#max	22.84	33.0
		50RB#25	21.52	33.0
		Full	21.65	33.0
	16QAM	1RB#0	21.99	33.0
		1RB#max	21.93	33.0
		50RB#25	20.48	33.0
		Full	20.62	33.0



## Peak-to-Average Ratio

Table 2 Measurement Results(LTE) BAND 41

Peak-to-Average Ratio				
Test Mode	TN/VN			
	Modulation	RB	Measured (dB)	Limit (dB )
Channel (L) 10MHz(BW)	QPSK	1RB#0	9.67	13.0
		1RB#max	9.21	13.0
		25RB#13	9.21	13.0
		Full	7.61	13.0
	16QAM	1RB#0	6.54	13.0
		1RB#max	8.01	13.0
		25RB#13	6.76	13.0
		Full	8.31	13.0
Channel (L) 20MHz(BW)	QPSK	1RB#0	7.01	13.0
		1RB#max	6.54	13.0
		50RB#25	7.12	13.0
		Full	8.61	13.0
	16QAM	1RB#0	10.15	13.0
		1RB#max	8.79	13.0
		50RB#25	7.48	13.0
		Full	8.19	13.0
Channel (M) 10MHz(BW)	QPSK	1RB#0	9.67	13.0
		1RB#max	8.78	13.0
		25RB#13	9.54	13.0
		Full	<b>10.29</b>	13.0
	16QAM	1RB#0	7.86	13.0
		1RB#max	8.82	13.0
		25RB#13	6.91	13.0
		Full	8.77	13.0
Channel (M) 20MHz(BW)	QPSK	1RB#0	6.84	13.0
		1RB#max	7.22	13.0
		50RB#25	7.68	13.0
		Full	9.05	13.0
		1RB#0	8.38	13.0



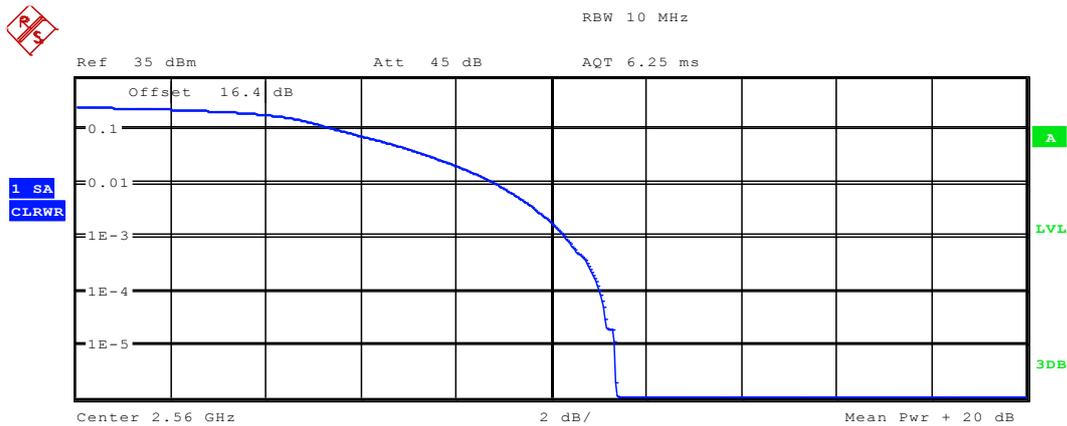
	16QAM	1RB#max	10.07	13.0
		50RB#25	7.66	13.0
		Full	8.71	13.0
Channel (H) 10MHz(BW)	QPSK	1RB#0	8.07	13.0
		1RB#max	7.29	13.0
		25RB#13	5.74	13.0
		Full	8.11	13.0
	16QAM	1RB#0	7.42	13.0
		1RB#max	8.51	13.0
		25RB#13	6.93	13.0
Full	7.37	13.0		
Channel (H) 20MHz(BW)	QPSK	1RB#0	7.22	13.0
		1RB#max	9.45	13.0
		50RB#25	6.92	13.0
		Full	7.59	13.0
	16QAM	1RB#0	8.96	13.0
		1RB#max	<b>11.19</b>	13.0
		50RB#25	8.15	13.0
Full	9.78	13.0		



## Test Plot of Peak-to-Average Ratio

Note: All relevant operation modes have been tested, and the worst case Plot is included in this report.

### LTE 10MHz (BW)



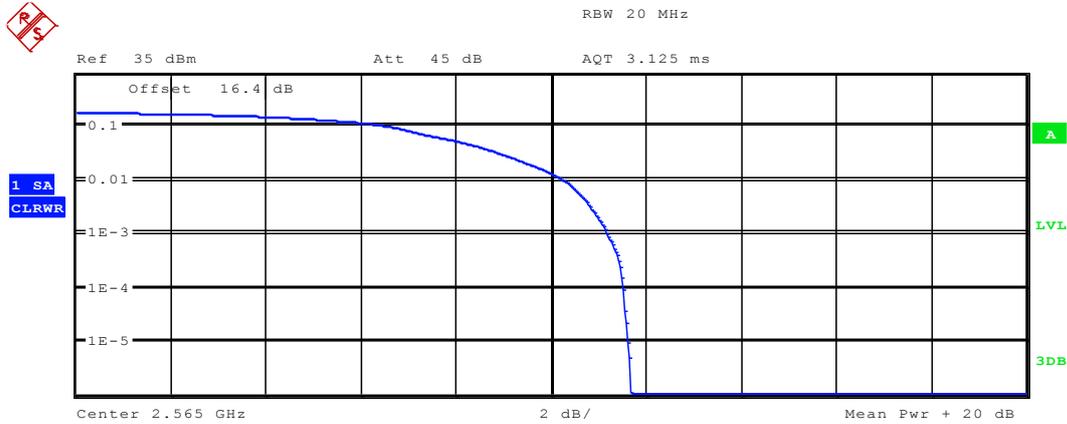
Complementary Cumulative Distribution Function  
NOF samples: 100000, Usable BW: 11.2MHz

Trace 1	
Mean	16.12 dBm
Peak	27.49 dBm
Crest	11.37 dB
10 %	5.61 dB
1 %	8.85 dB
.1 %	10.29 dB
.01 %	11.03 dB

Date: 13.JUN.2012 11:05:40



**LTE 20MHz (BW)**



Complementary Cumulative Distribution Function  
NOF samples: 100000, Usable BW: 23.7MHz

Trace 1	
Mean	15.59 dBm
Peak	27.28 dBm
Crest	11.68 dB
10 %	6.70 dB
1 %	10.29 dB
.1 %	11.19 dB
.01 %	11.54 dB

Date: 13.JUN.2012 11:14:20



## Effective Isotropic Radiated Power of Transmitter (EIRP)

Table 3 Substitution Results (LTE)Band 41

Test Mode			Meas. Level [dBm]	Substitution Antenna Type	SGP[dBm]	Substitution Gain [dBi]	Cable Loss [dB]	Substitution Level (EIRP) [dBm]	FCC limit [dBm]	Result
Channel	Modulation	RB								
Channel (L) 10MHz(BW)	QPSK	1 RB/#0	25.06	Horn Ant.	21.36	4.5	1	24.86	33	Pass
		1 RB/#max	24.85	Horn Ant.	21.15	4.5	1	24.65	33	Pass
		25 RB/#13	23.98	Horn Ant.	20.28	4.5	1	23.78	33	Pass
		Full	23.87	Horn Ant.	20.40	4.5	1	23.90	33	Pass
	16QAM	1 RB/#0	24.08	Horn Ant.	20.75	4.5	1	24.25	33	Pass
		1 RB/#max	23.93	Horn Ant.	20.23	4.5	1	23.73	33	Pass
		25 RB/#13	22.94	Horn Ant.	19.24	4.5	1	22.74	33	Pass
		Full	22.83	Horn Ant.	19.37	4.5	1	22.87	33	Pass
Channel (L) 20MHz(BW)	QPSK	1 RB/#0	25.01	Horn Ant.	21.69	4.5	1	25.19	33	Pass
		1 RB/#max	24.94	Horn Ant.	21.24	4.5	1	24.74	33	Pass
		50 RB/#25	23.86	Horn Ant.	20.42	4.5	1	23.92	33	Pass
		Full	23.99	Horn Ant.	20.29	4.5	1	23.79	33	Pass
	16QAM	1 RB/#0	24.25	Horn Ant.	20.55	4.5	1	24.05	33	Pass
		1 RB/#max	24.33	Horn Ant.	20.84	4.5	1	24.34	33	Pass
		50 RB/#25	22.71	Horn Ant.	19.01	4.5	1	22.51	33	Pass



		Full	22.88	Horn Ant.	19.18	4.5	1	22.68	33	Pass
Channel (M) 10MHz(BW)	QPSK	1 RB/#0	25.30	Horn Ant.	21.98	4.5	1	25.48	33	Pass
		1 RB/#max	25.27	Horn Ant.	21.78	4.5	1	25.28	33	Pass
		25 RB/#13	24.01	Horn Ant.	20.31	4.5	1	23.81	33	Pass
		Full	23.82	Horn Ant.	20.47	4.5	1	23.97	33	Pass
	16QAM	1 RB/#0	24.01	Horn Ant.	20.67	4.5	1	24.17	33	Pass
		1 RB/#max	23.96	Horn Ant.	20.63	4.5	1	24.13	33	Pass
		25 RB/#13	22.87	Horn Ant.	19.46	4.5	1	22.96	33	Pass
		Full	22.78	Horn Ant.	19.32	4.5	1	22.82	33	Pass
Channel (M) 20MHz(BW)	QPSK	1 RB/#0	25.44	Horn Ant.	21.74	4.5	1	25.24	33	Pass
		1 RB/#max	25.36	Horn Ant.	21.66	4.5	1	25.16	33	Pass
		50 RB/#25	23.99	Horn Ant.	20.29	4.5	1	23.79	33	Pass
		Full	24.00	Horn Ant.	20.54	4.5	1	24.04	33	Pass
	16QAM	1 RB/#0	24.18	Horn Ant.	20.48	4.5	1	23.98	33	Pass
		1 RB/#max	24.14	Horn Ant.	20.44	4.5	1	23.94	33	Pass
		50 RB/#25	22.74	Horn Ant.	19.04	4.5	1	22.54	33	Pass
		Full	22.76	Horn Ant.	19.37	4.5	1	22.87	33	Pass
Channel (H) 10MHz(BW)	QPSK	1 RB/#0	24.95	Horn Ant.	21.21	4.8	1	25.01	33	Pass
		1 RB/#max	25.00	Horn Ant.	21.37	4.8	1	25.17	33	Pass



		25 RB/#13	23.99	Horn Ant.	20.31	4.8	1	24.11	33	Pass
		Full	23.94	Horn Ant.	20.20	4.8	1	24.00	33	Pass
	16QAM	1 RB/#0	23.95	Horn Ant.	20.31	4.8	1	24.11	33	Pass
		1 RB/#max	23.91	Horn Ant.	19.91	4.8	1	23.71	33	Pass
		25 RB/#13	22.82	Horn Ant.	19.19	4.8	1	22.99	33	Pass
		Full	22.85	Horn Ant.	18.85	4.8	1	22.65	33	Pass
Channel (H) 20MHz(BW)	QPSK	1 RB/#0	25.01	Horn Ant.	21.26	4.8	1	25.06	33	Pass
		1 RB/#max	25.04	Horn Ant.	21.04	4.8	1	24.84	33	Pass
		50 RB/#25	23.72	Horn Ant.	19.72	4.8	1	23.52	33	Pass
		Full	23.85	Horn Ant.	19.85	4.8	1	23.65	33	Pass
	16QAM	1 RB/#0	24.19	Horn Ant.	20.45	4.8	1	24.25	33	Pass
		1 RB/#max	24.13	Horn Ant.	20.13	4.8	1	23.93	33	Pass
		50 RB/#25	22.68	Horn Ant.	18.92	4.8	1	22.72	33	Pass
		Full	22.82	Horn Ant.	19.13	4.8	1	22.93	33	Pass

Note: a, For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

$$\text{EIRP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBi]}$$

b, SGP=Signal Generator Level

-----END-----



## **Appendix B**

# Modulation Characteristics

According to FCC Part 2.1047



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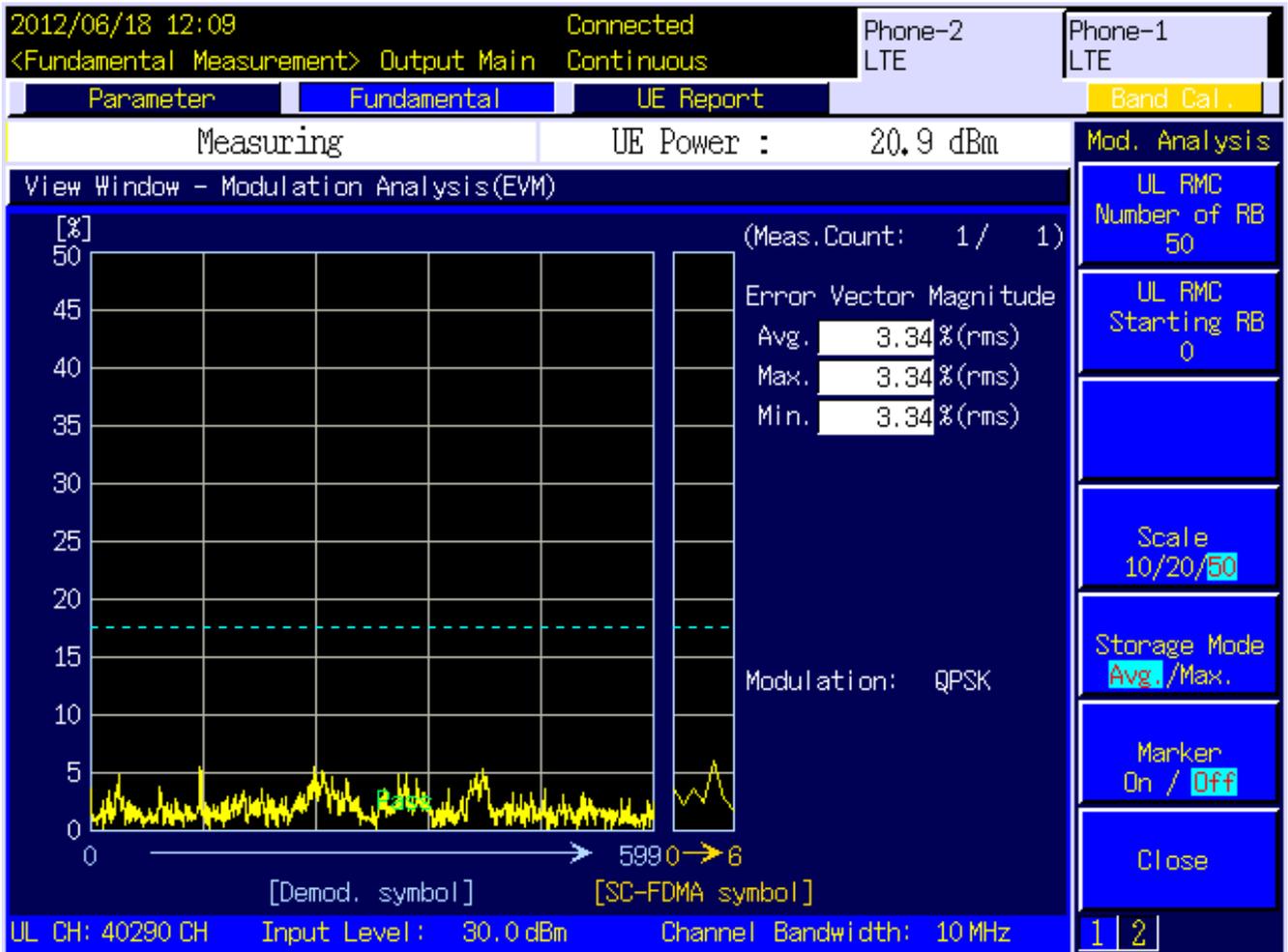
**1 For Band 41**

**1.1 Test Mode = TM4**

**1.1.1 Channel Bandwidth = Lowest (10 MHz)**

**1.1.1.1 Channel = M**

**1.1.1.1.1 QPSK/full RBs**

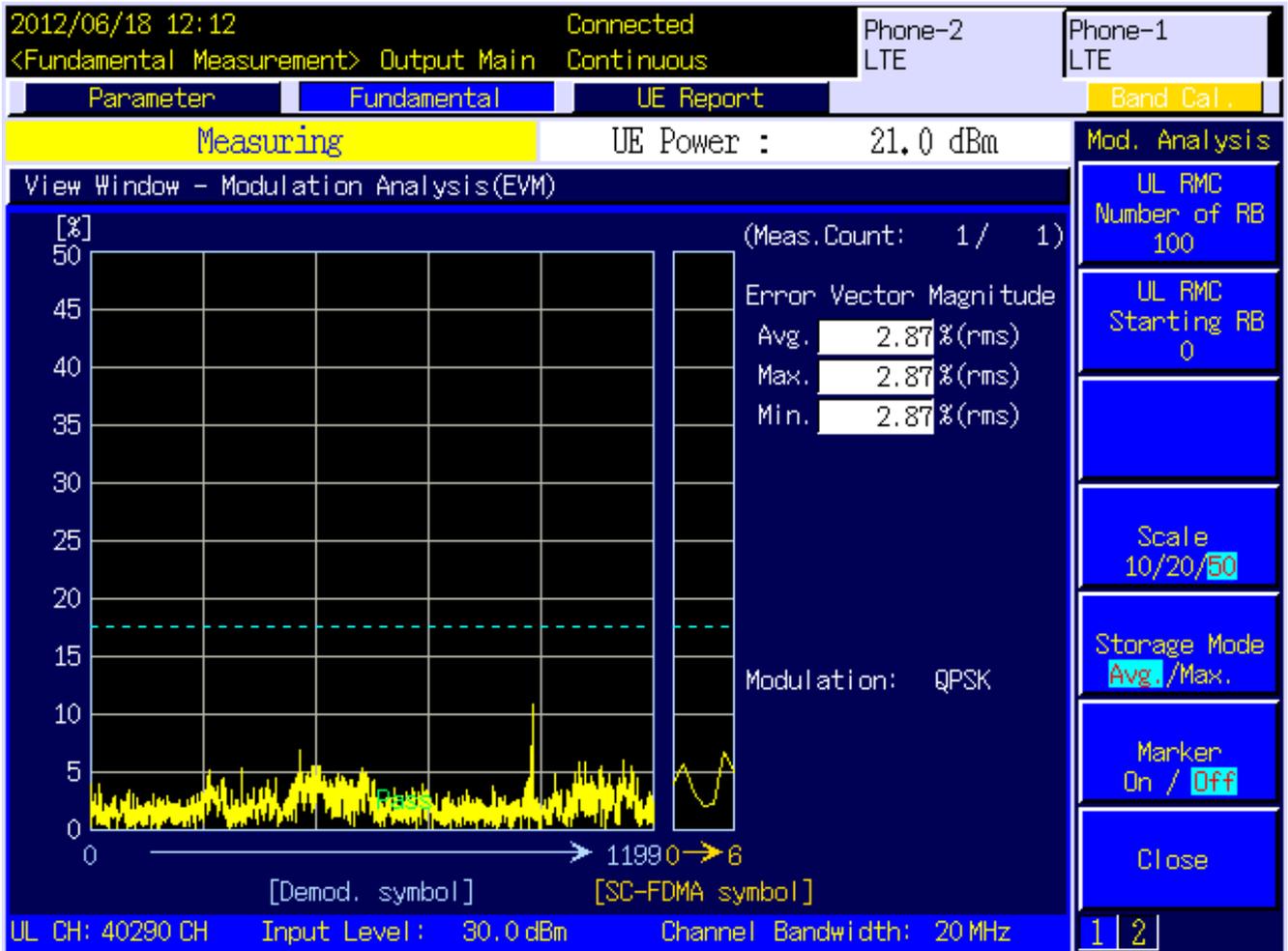




### 1.1.2 Channel Bandwidth = Highest (20 MHz)

#### 1.1.2.1 Channel = M

##### 1.1.2.1.1 QPSK/full RBs



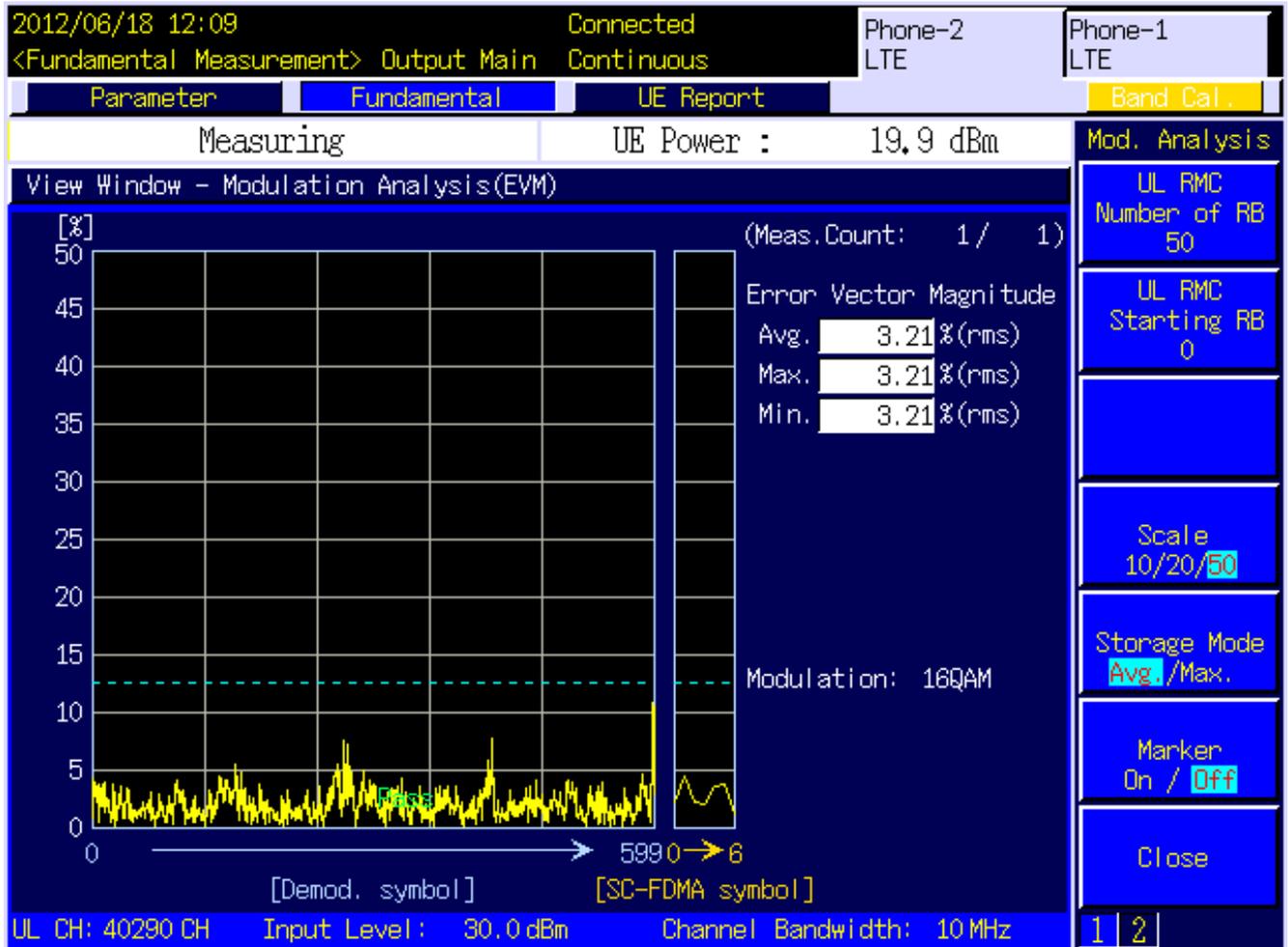


## 1.2 Test Mode = TM5

### 1.2.1 Channel Bandwidth = Lowest (10 MHz)

#### 1.2.1.1 Channel = M

##### 1.2.1.1.1 16QAM/full RBs

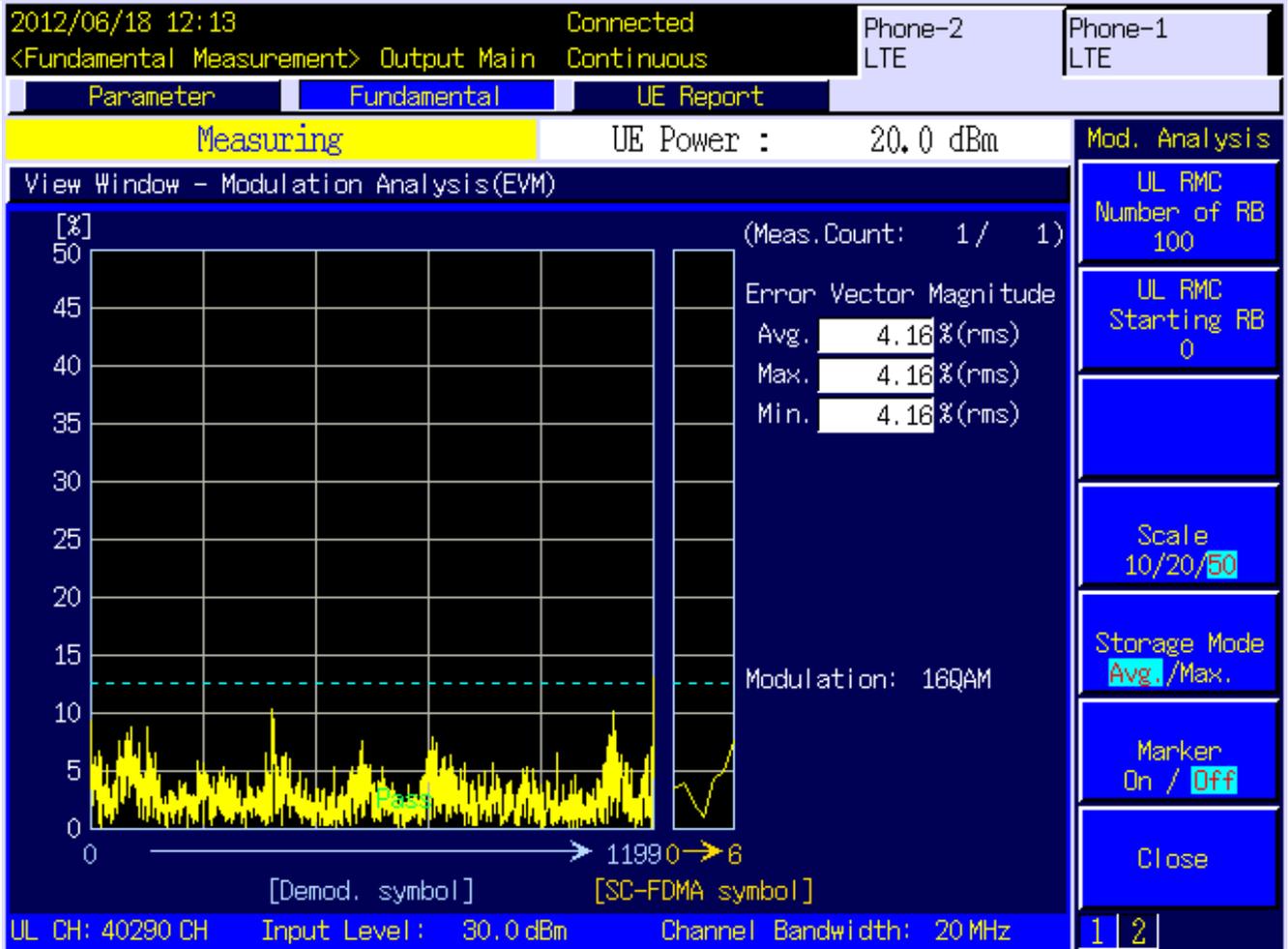




## 1.2.2 Channel Bandwidth = Highest (20 MHz)

### 1.2.2.1 Channel = M

#### 1.2.2.1.1 16QAM/full RBs



-----END-----



# Appendix C

## Occupied Bandwidth According to FCC part 2.1049



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Result Table

NOTE: All relevant operation modes have been tested, and the full RB data is included in this report.

Table 1 Measurement Results (LTE) BAND 41

Test Mode	Carrier Conf.	RF Ch.	Occupied Bandwidth [MHz]	Verdict
TM4	10 MHz	L	8.94	Pass
		M	8.92	Pass
		H	8.94	Pass
	20 MHz	L	17.88	Pass
		M	17.93	Pass
		H	17.93	Pass
TM5	10 MHz	L	8.94	Pass
		M	8.94	Pass
		H	8.94	Pass
	20 MHz	L	17.88	Pass
		M	17.93	Pass
		H	17.93	Pass



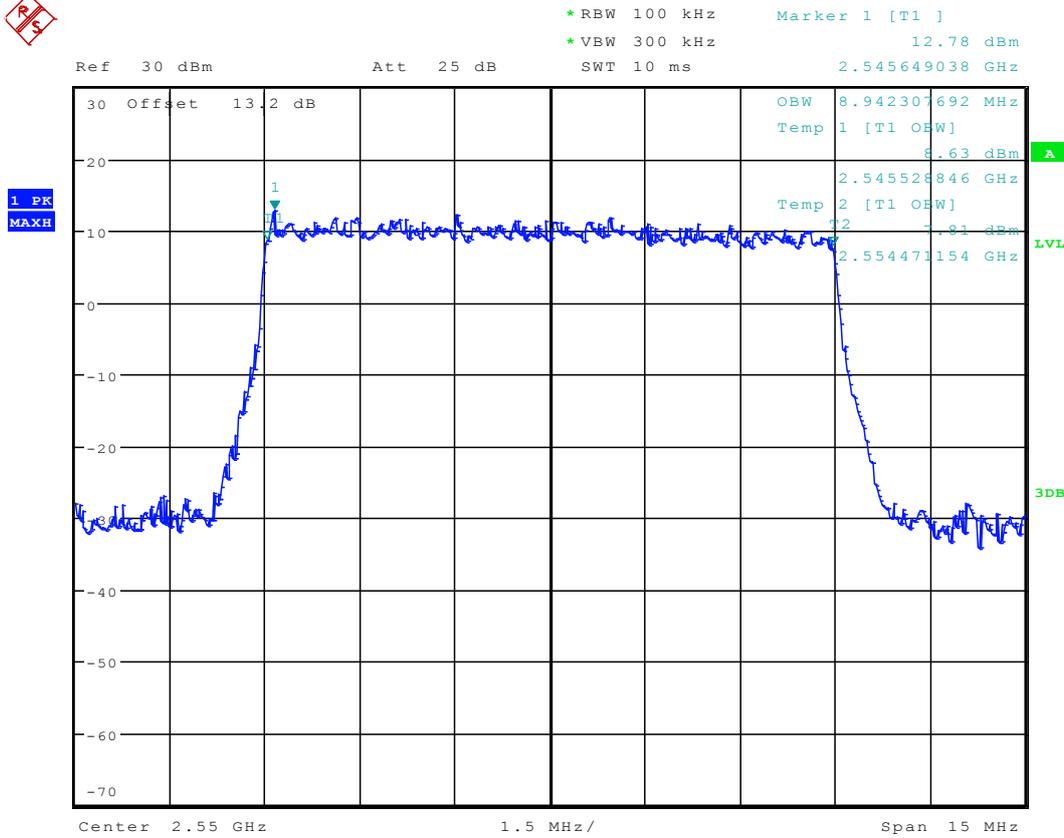
# 1 For Band 41

## 1.1 Test Mode=TM4

### 1.1.1 Channel Bandwidth = Lowest (10 MHz)

#### 1.1.1.1 Channel = L

##### 1.1.1.1.1 QPSK/full RBs

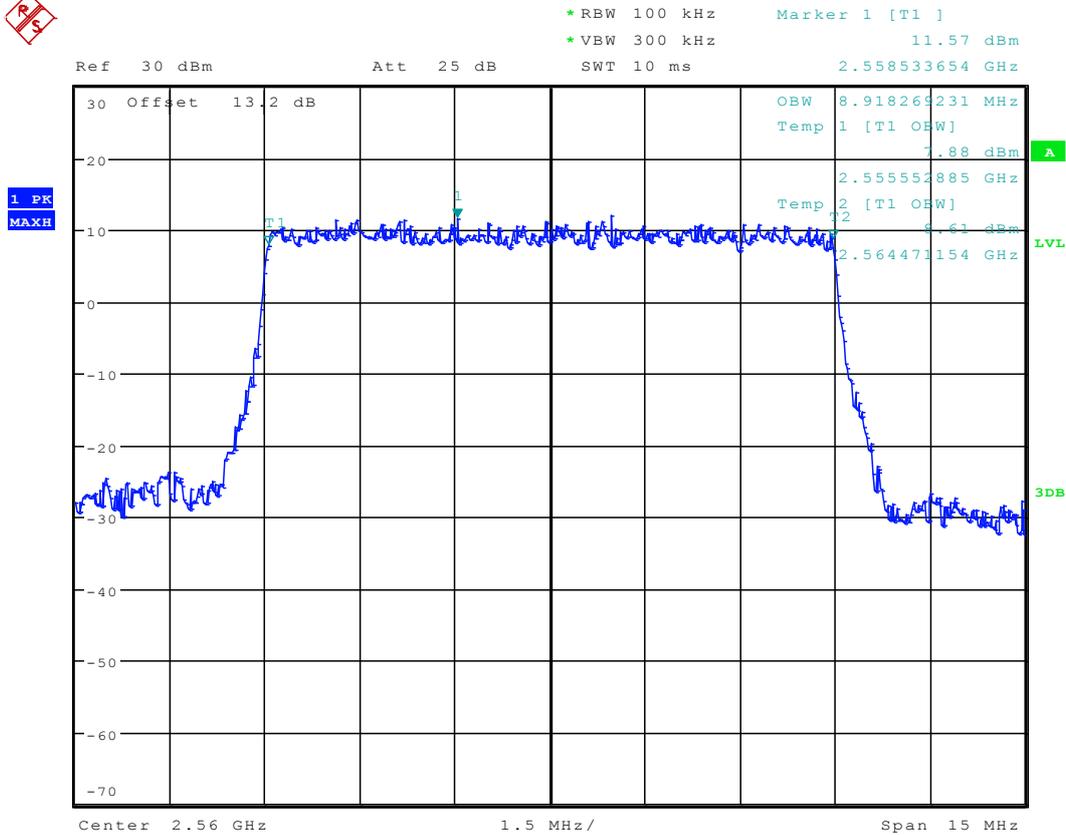


Date: 24.MAY.2012 00:21:12



### 1.1.1.2 Channel = M

#### 1.1.1.2.1 QPSK/full RBs

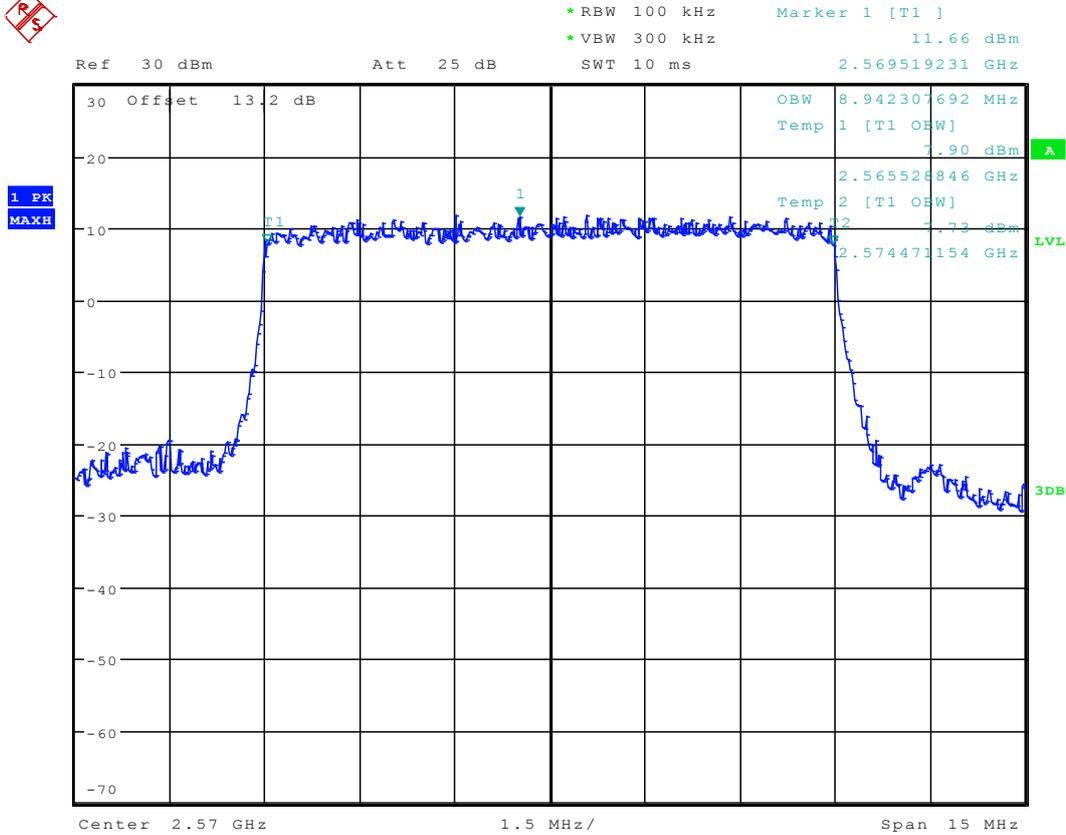


Date: 24.MAY.2012 00:33:04



### 1.1.1.3 Channel = H

#### 1.1.1.3.1 QPSK/full RBs



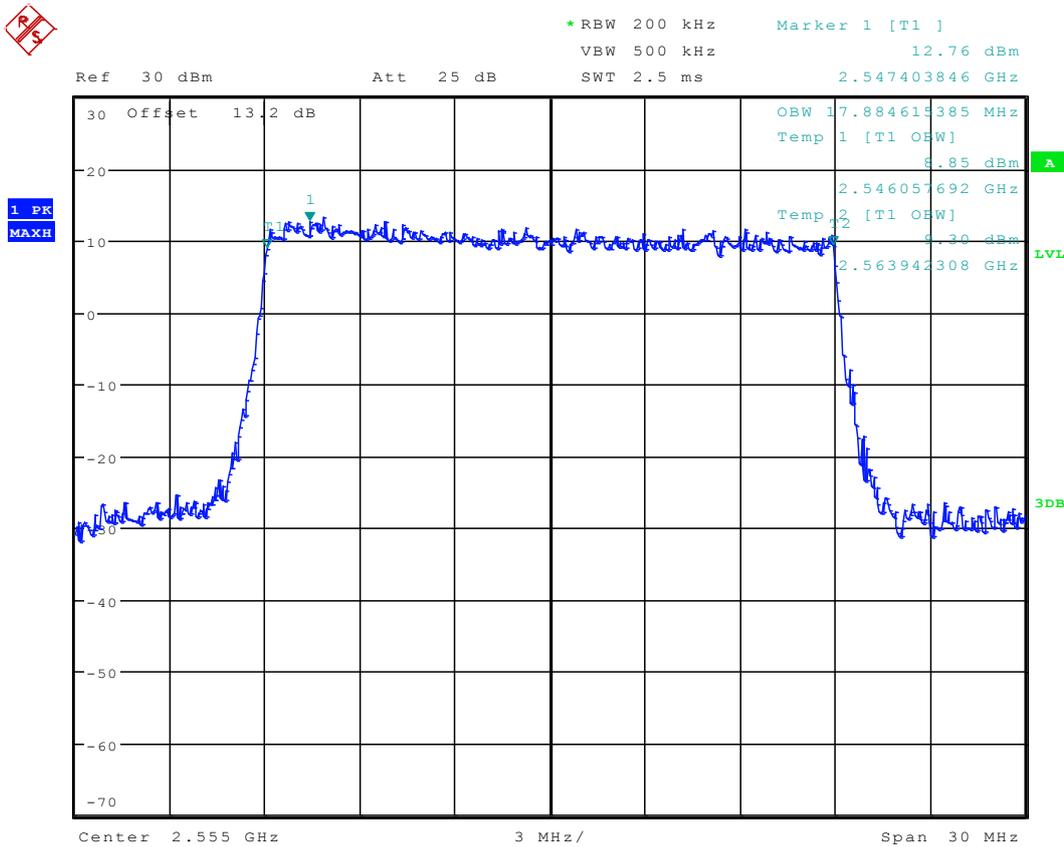
Date: 24.MAY.2012 00:25:08



### 1.1.2 Channel Bandwidth = Highest(20 MHz)

#### 1.1.2.1 Channel = L

##### 1.1.2.1.1 QPSK/full RBs

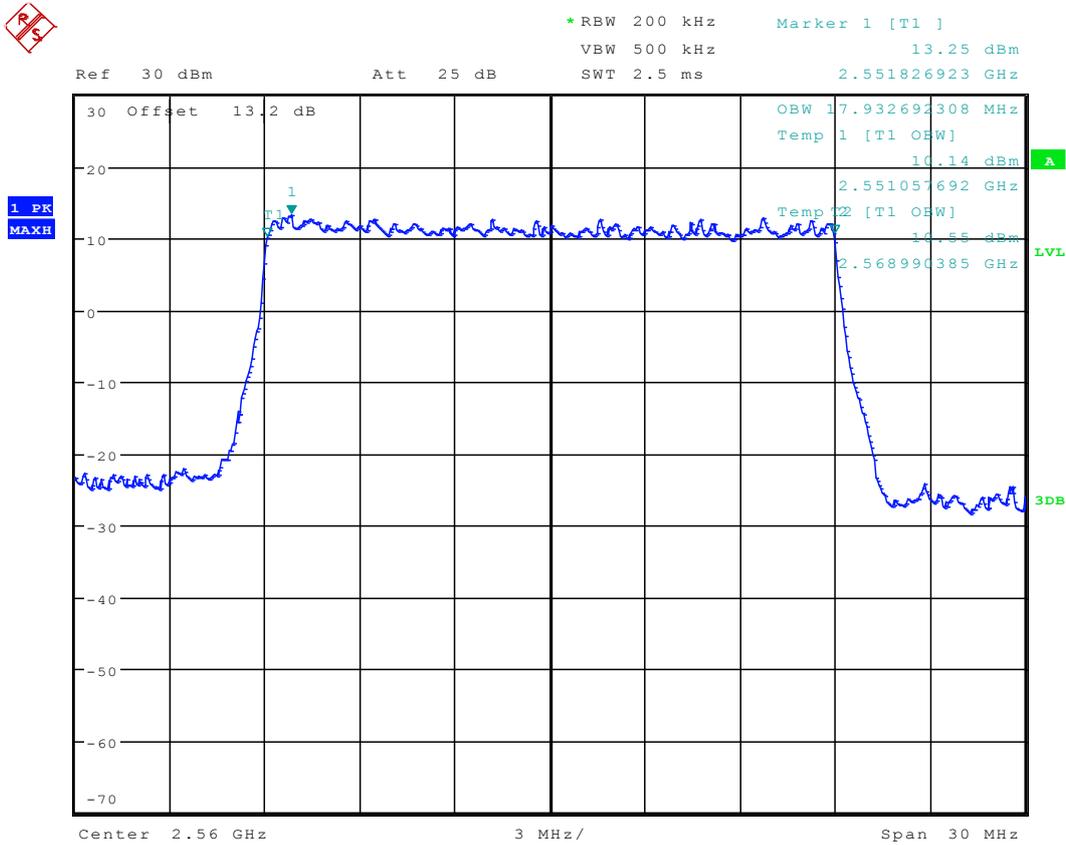


Date: 24.MAY.2012 00:07:28



### 1.1.2.2 Channel = M

#### 1.1.2.2.1 QPSK/full RBs

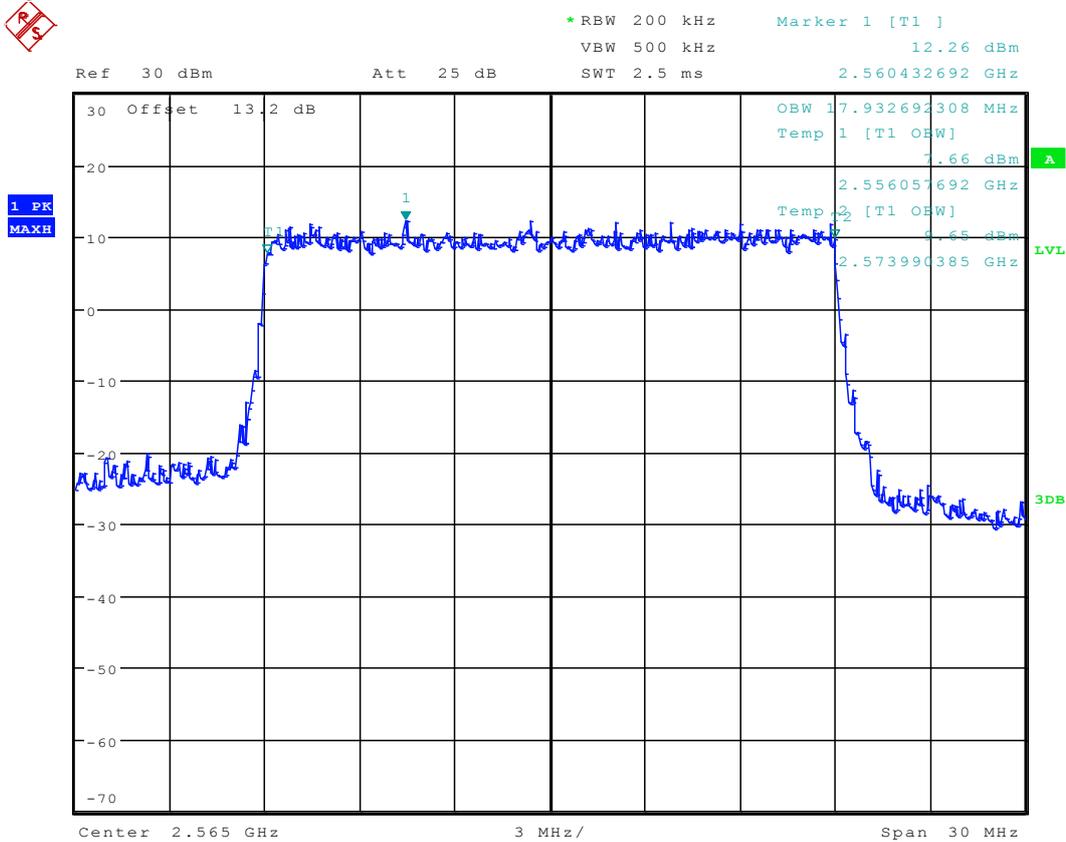


Date: 24.MAY.2012 00:04:49



### 1.1.2.3 Channel = H

#### 1.1.2.3.1 QPSK/full RBs



Date: 24.MAY.2012 00:08:40

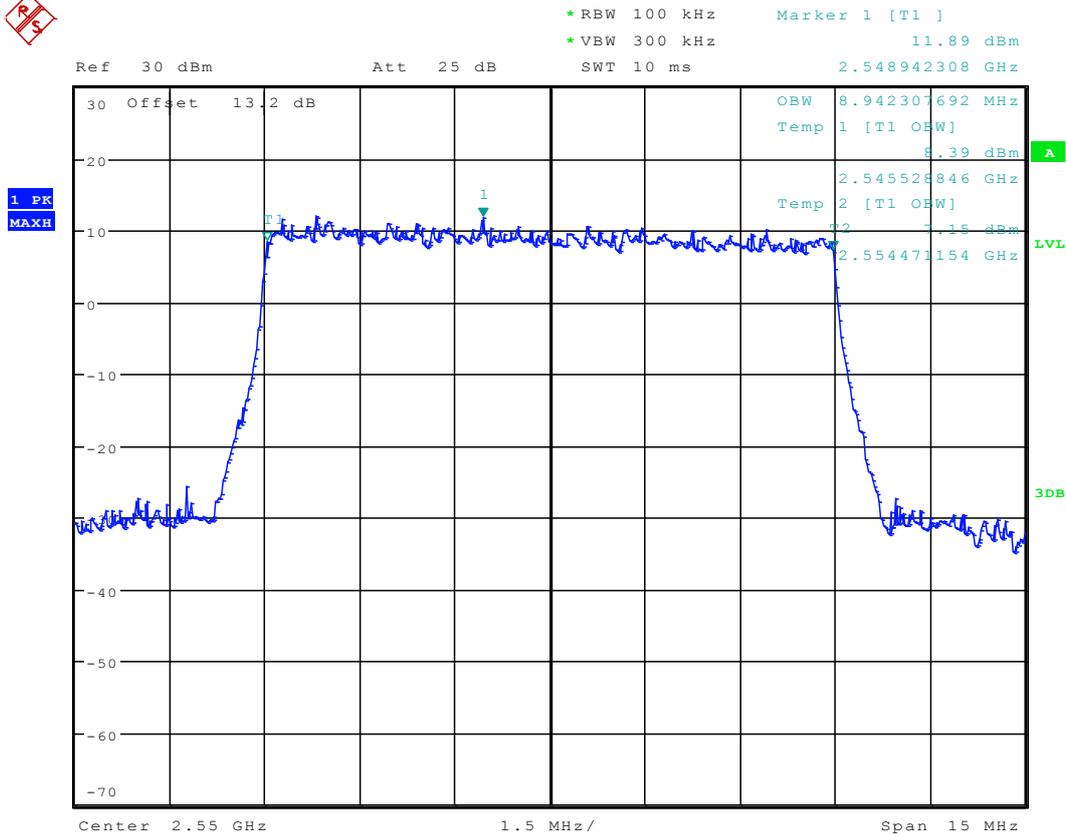


## 1.2 Test Mode=TM5

### 1.2.1 Channel Bandwidth = Lowest (10 MHz)

#### 1.2.1.1 Channel = L

##### 1.2.1.1.1 16QAM/full RBs

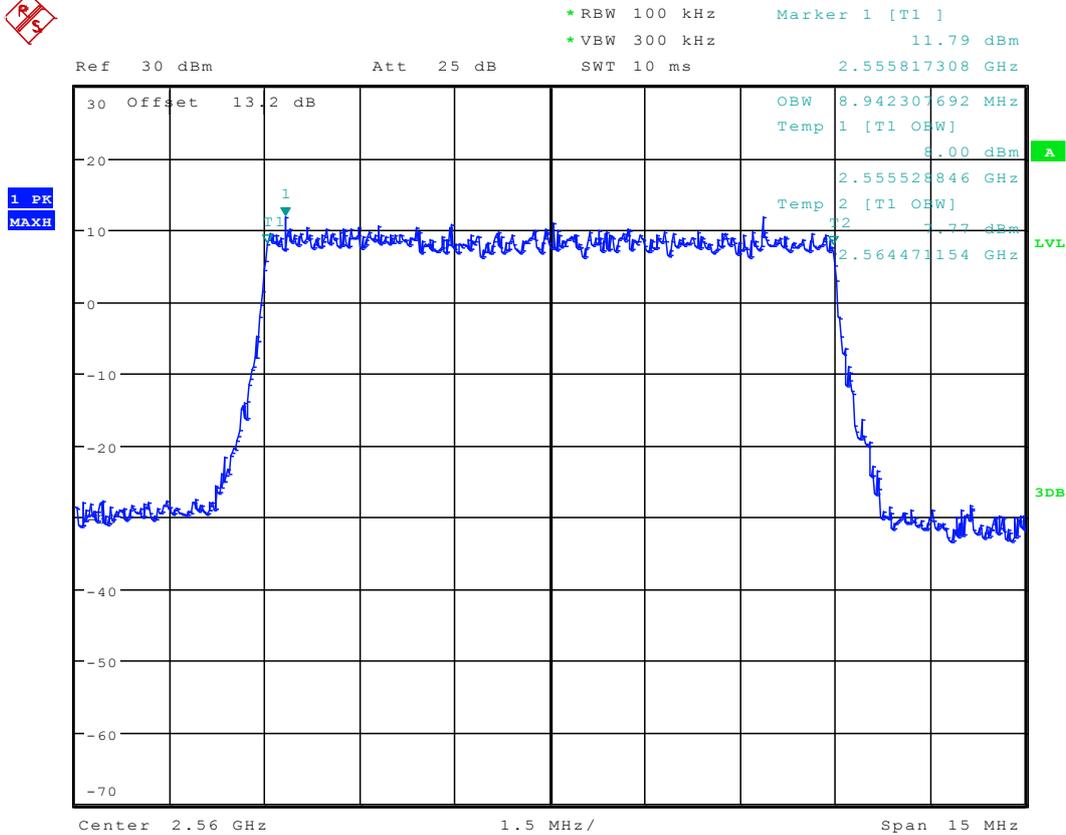


Date: 24.MAY.2012 00:19:42



### 1.2.1.2 Channel = M

#### 1.2.1.2.1 16QAM /full RBs

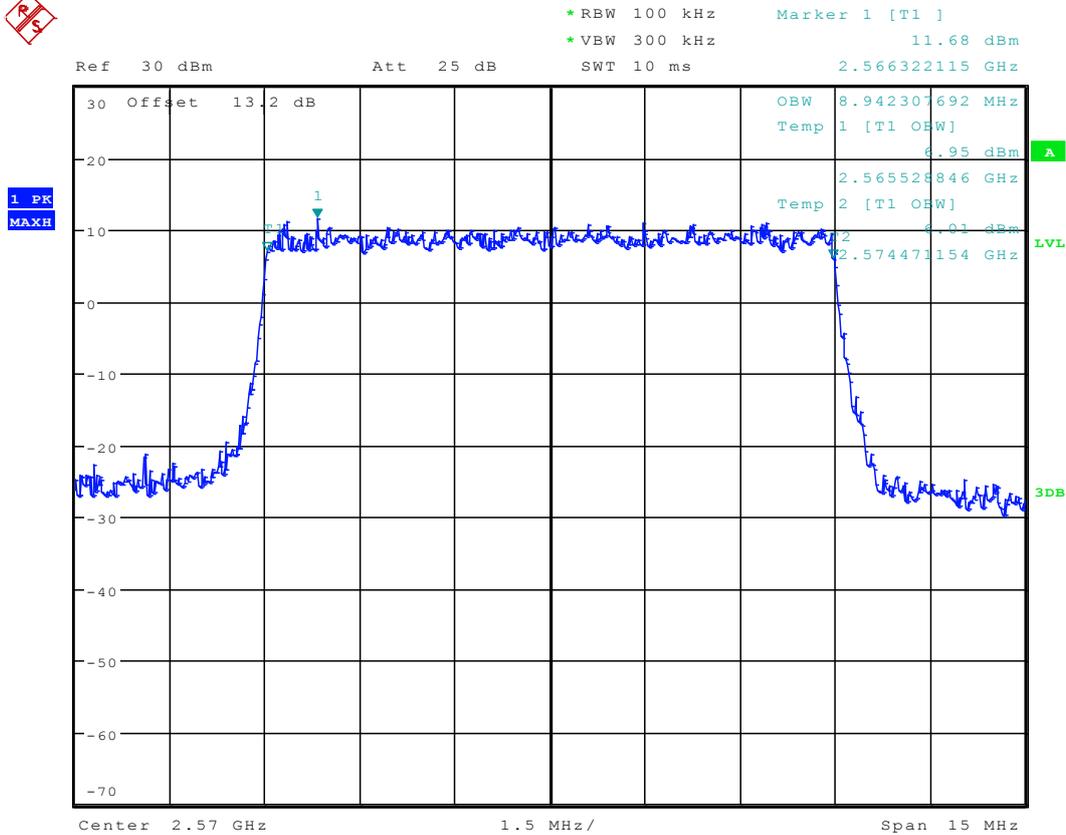


Date: 24.MAY.2012 00:32:20



### 1.2.1.3 Channel = H

#### 1.2.1.3.1 16QAM /full RBs



Date: 24.MAY.2012 00:25:55

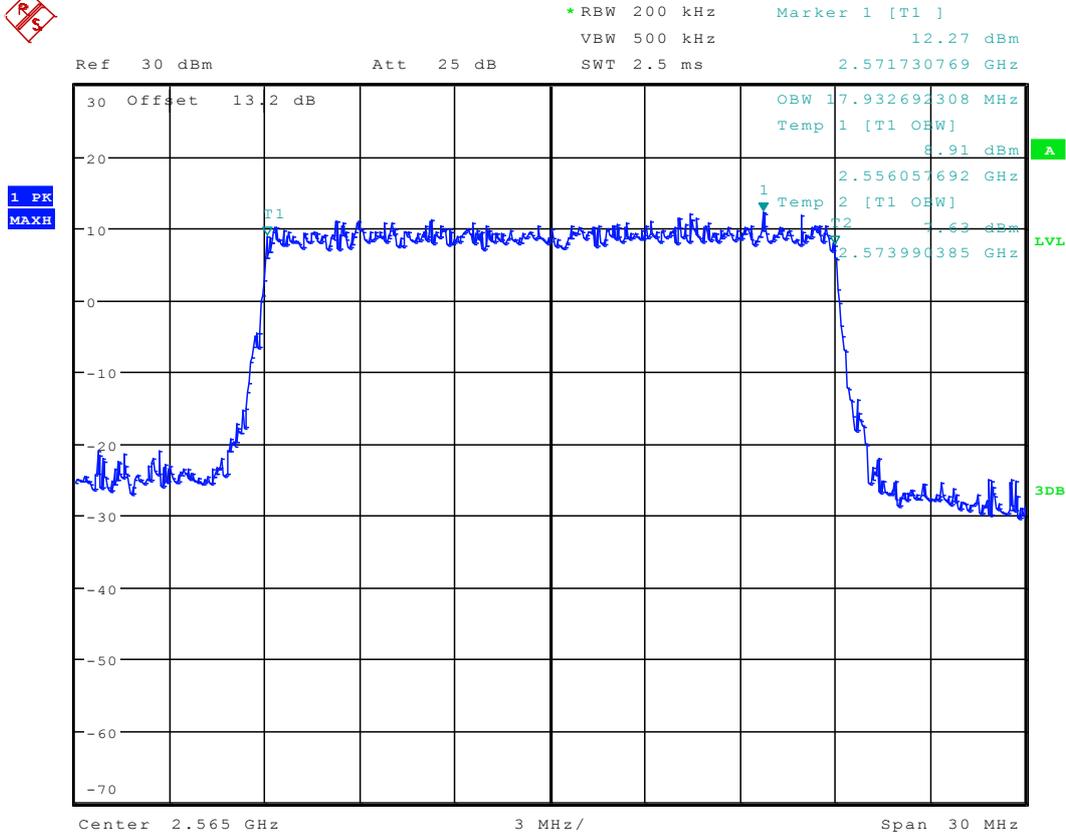






### 1.2.2.3 Channel = H

#### 1.2.2.3.1 16QAM /full RBs



Date: 24.MAY.2012 00:09:24

-----END-----



# Appendix D

## Band Edges Compliance According to FCC Part 2.1051 & 27.53(m)



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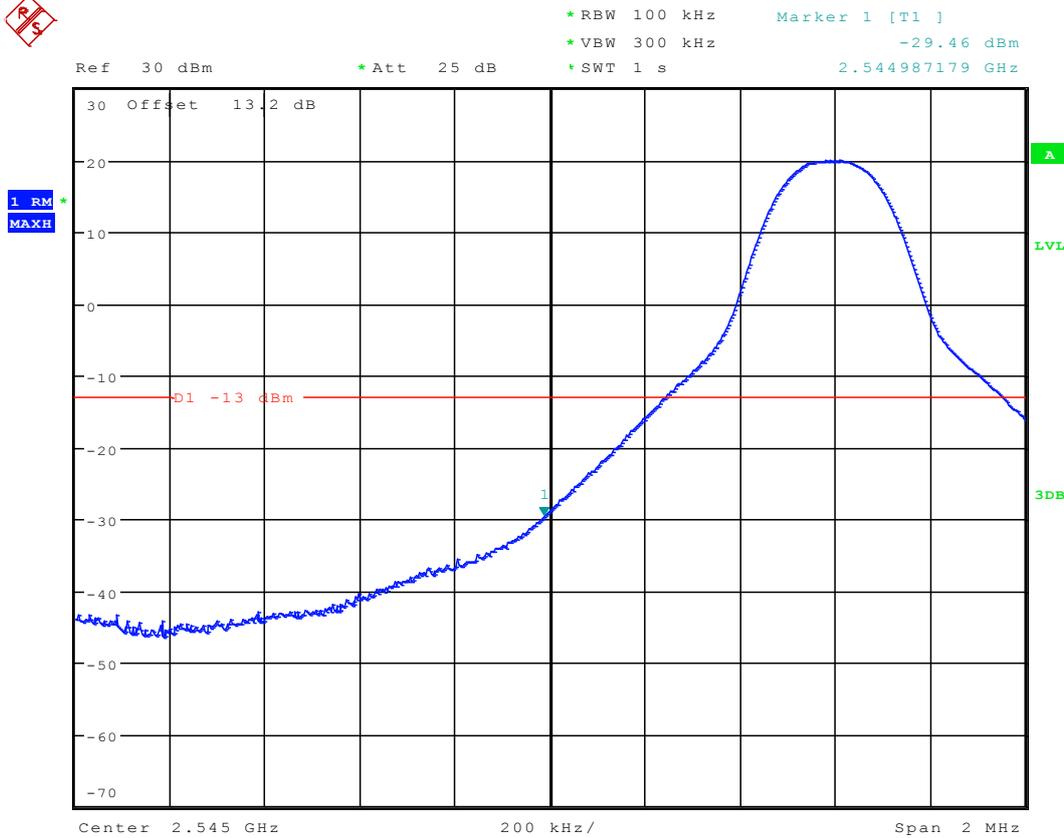
# 1 For Band 41

## 1.1 Test Mode=TM4

### 1.1.1 Channel Bandwidth = Lowest (10 MHz)

#### 1.1.1.1 Channel= L

##### 1.1.1.1.1 QPSK/1RB #0



Date: 24.MAY.2012 00:54:56



### 1.1.1.1.2 QPSK/Partial RBs /RB #0

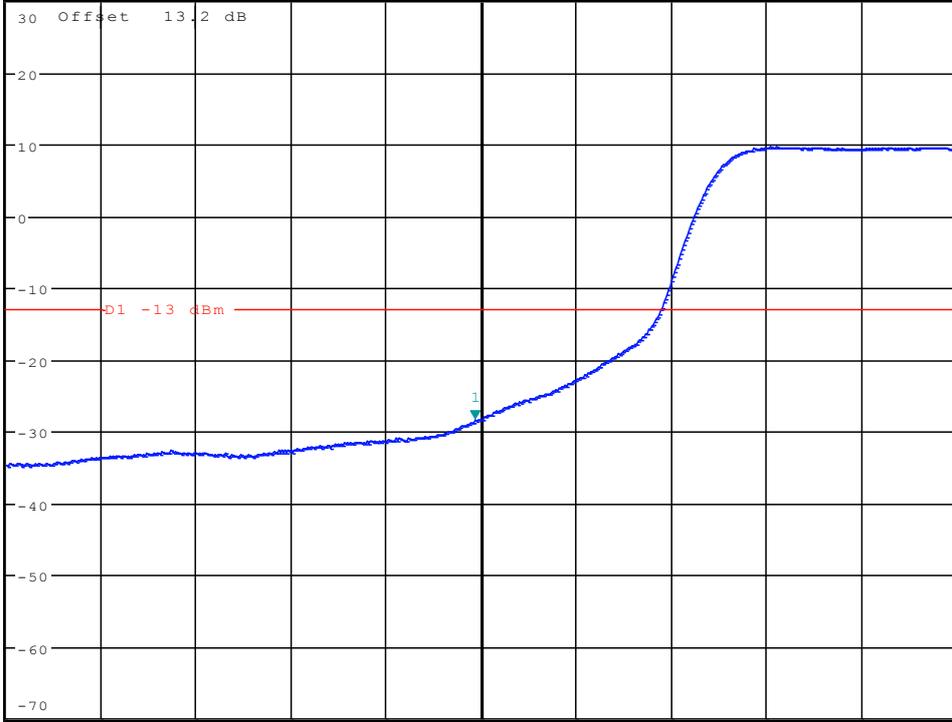


\* RBW 100 kHz      Marker 1 [T1 ]  
\* VBW 300 kHz      -28.33 dBm  
\* SWT 1 s            2.544987179 GHz

Ref 30 dBm

\* Att 25 dB

2.544987179 GHz



Center 2.545 GHz

200 kHz/

Span 2 MHz

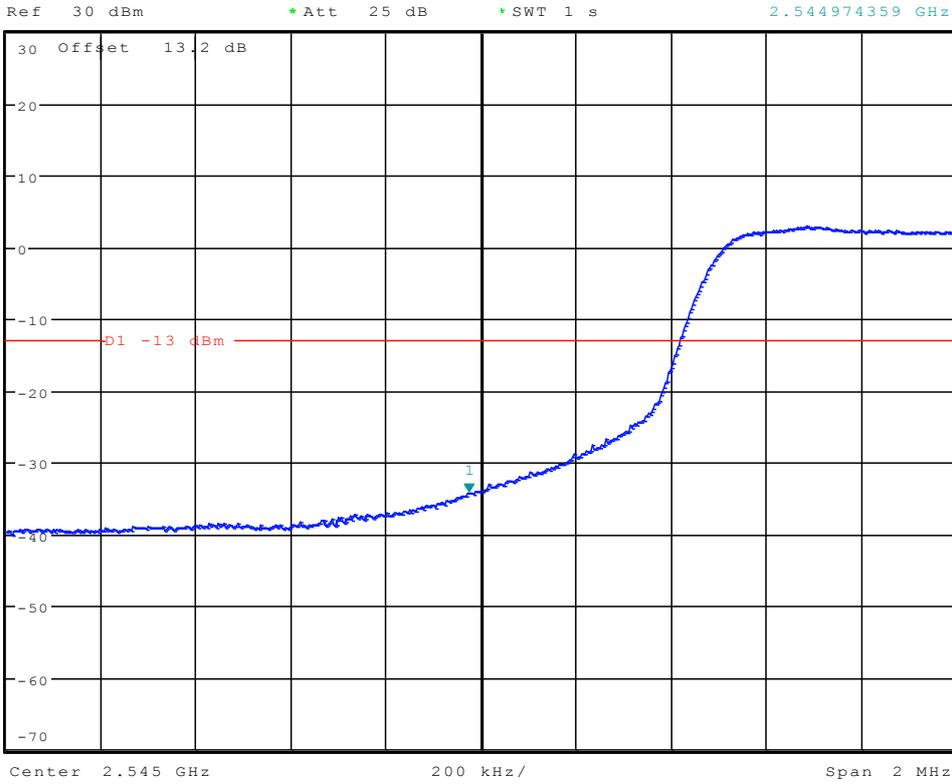
Date: 24.MAY.2012 00:57:36



### 1.1.1.1.3 QPSK/full RBs



\*RBW 100 kHz      Marker 1 [T1 ]  
\*VBW 300 kHz      -34.09 dBm  
\*SWT 1 s            2.544974359 GHz

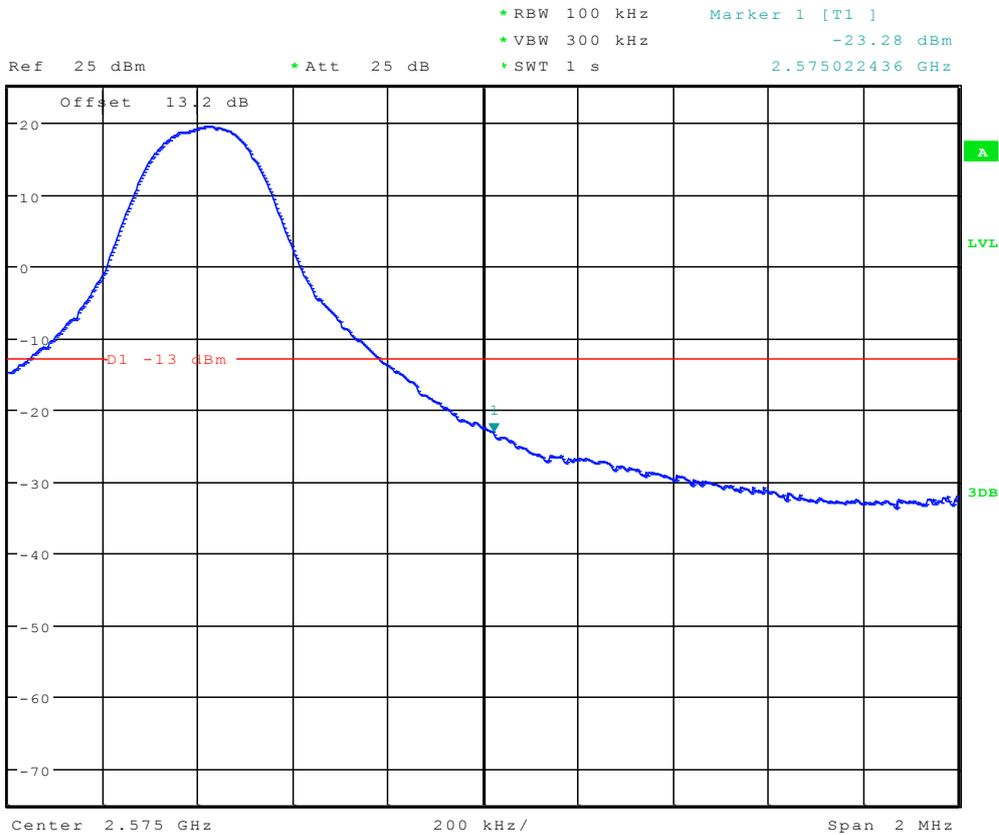


Date: 24.MAY.2012 00:55:49



### 1.1.1.2 Channel= H

#### 1.1.1.2.1 QPSK/1RB #max



Date: 24.MAY.2012 01:15:52



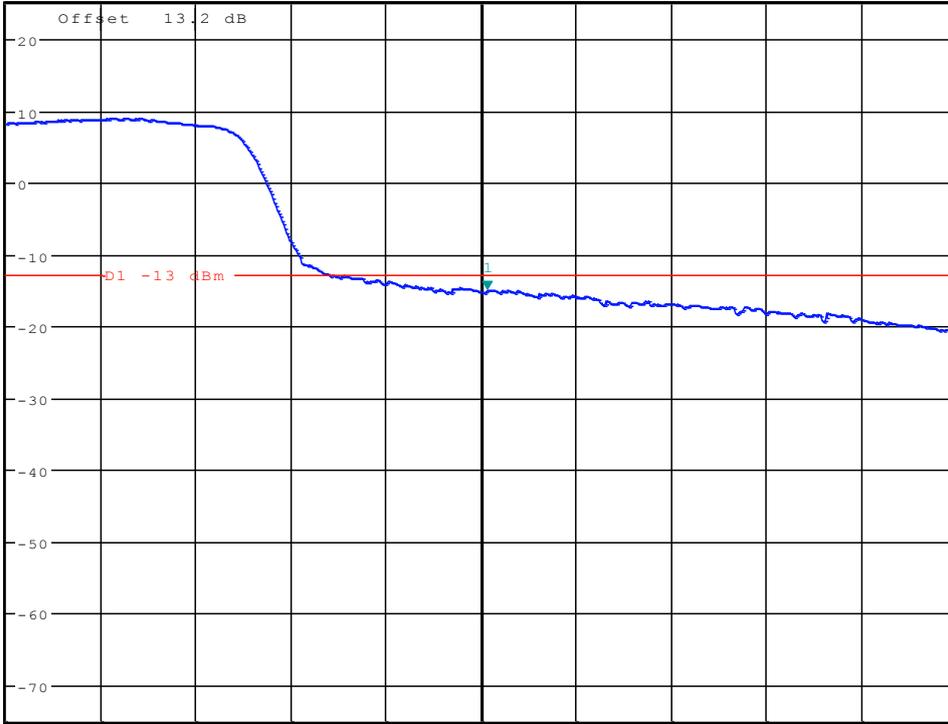
### 1.1.1.2.2 QPSK/Partial RBs /RB #max



\* RBW 100 kHz      Marker 1 [T1 ]  
\* VBW 300 kHz      -15.06 dBm  
\* SWT 1 s            2.575012821 GHz

Ref 25 dBm

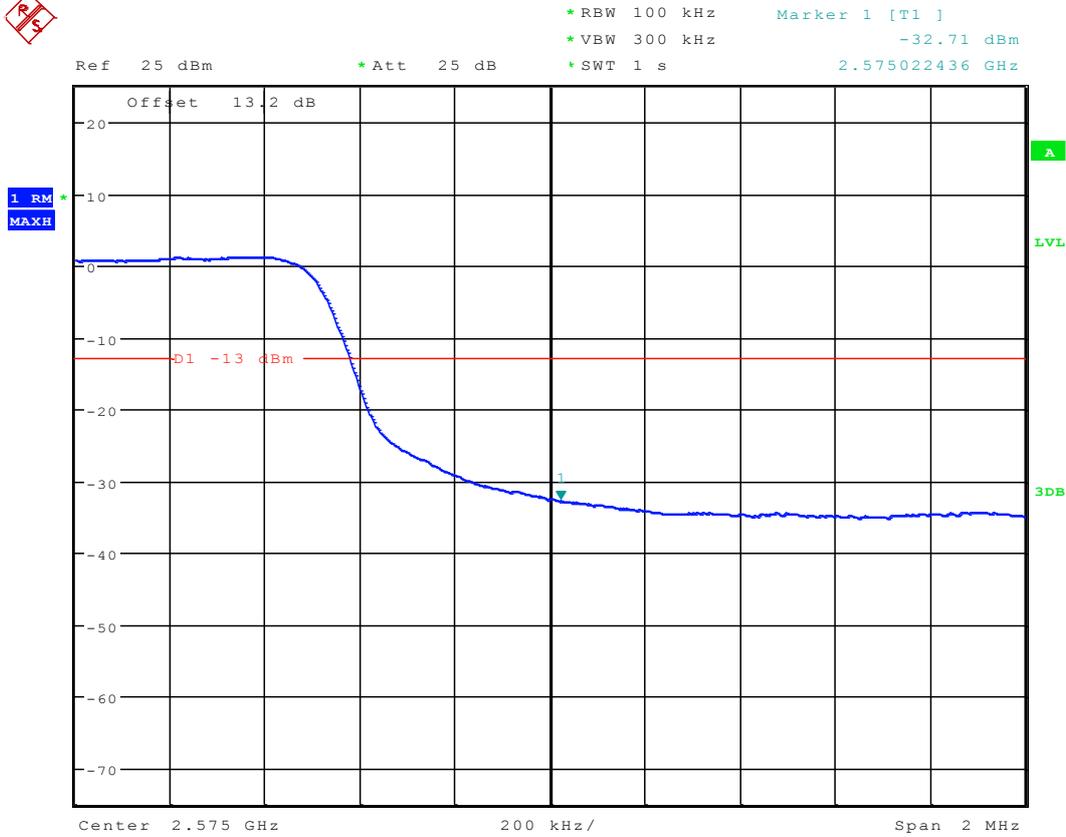
\* Att 25 dB



Date: 24.MAY.2012 01:13:41



### 1.1.1.2.3 QPSK/full RBs



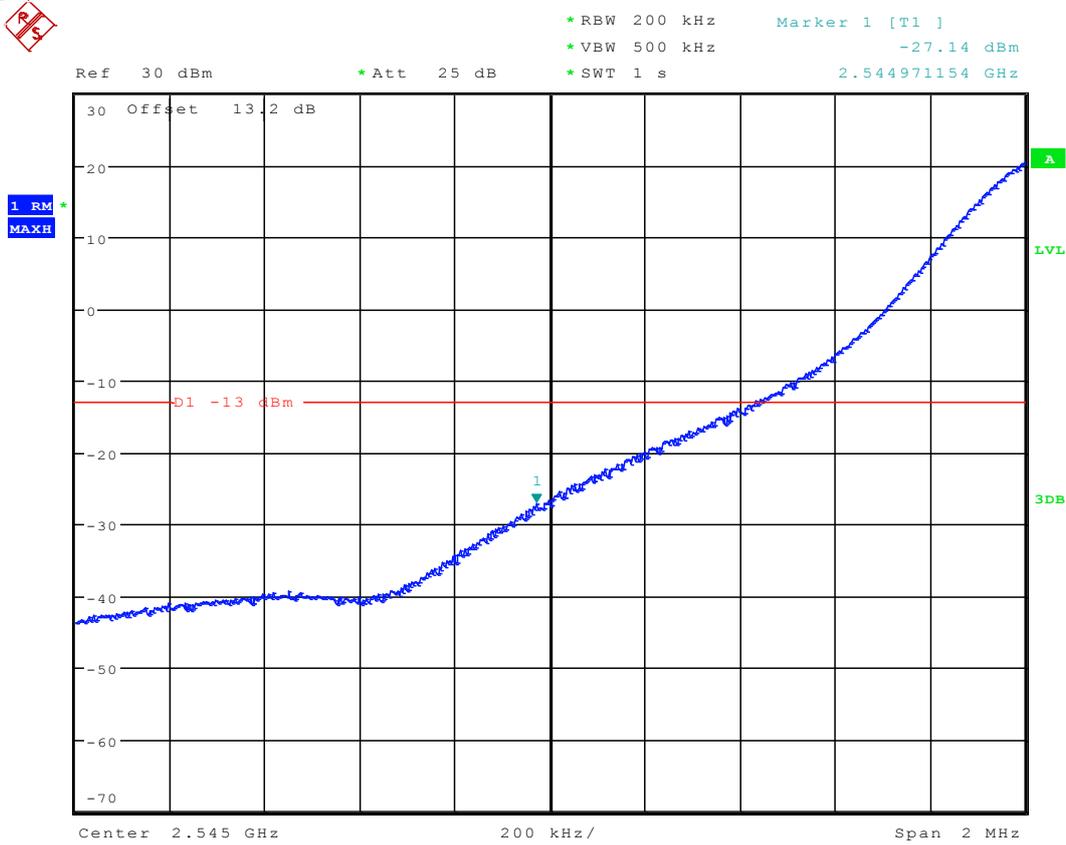
Date: 24.MAY.2012 01:14:57



## 1.1.2 Channel Bandwidth = Highest (20 MHz)

### 1.1.2.1 Channel= L

#### 1.1.2.1.1 QPSK/1RB #0



Date: 24.MAY.2012 01:36:44



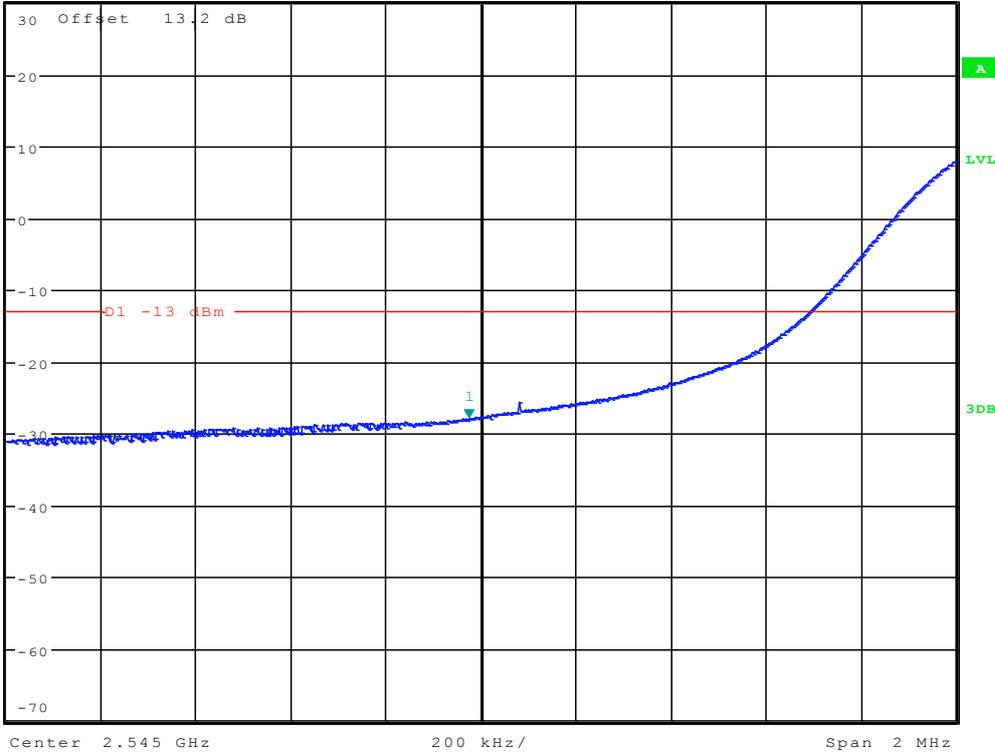
### 1.1.2.1.2 QPSK/Partial RBs /RB #0



\* RBW 200 kHz      Marker 1 [T1 ]  
\* VBW 500 kHz      -27.88 dBm  
\* SWT 1 s            2.544974359 GHz

Ref 30 dBm      \* Att 25 dB

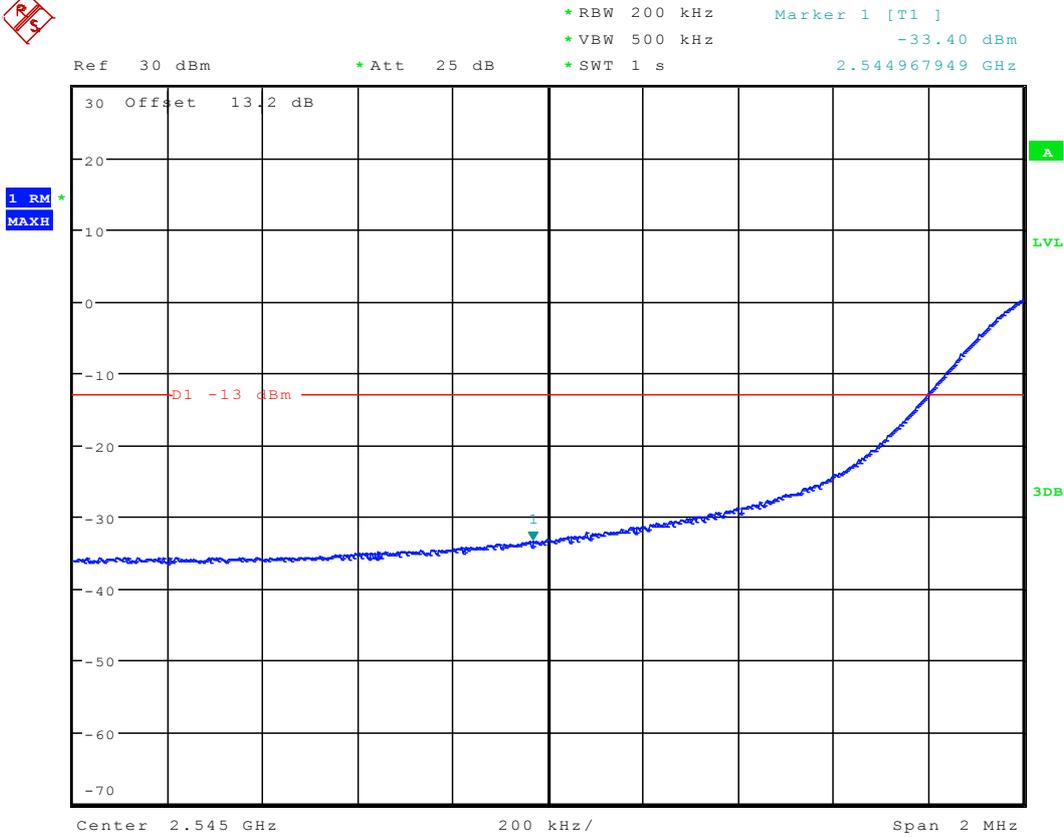
1 RM  
MAXH



Date: 24.MAY.2012 01:37:31



### 1.1.2.1.3 QPSK/full RBs

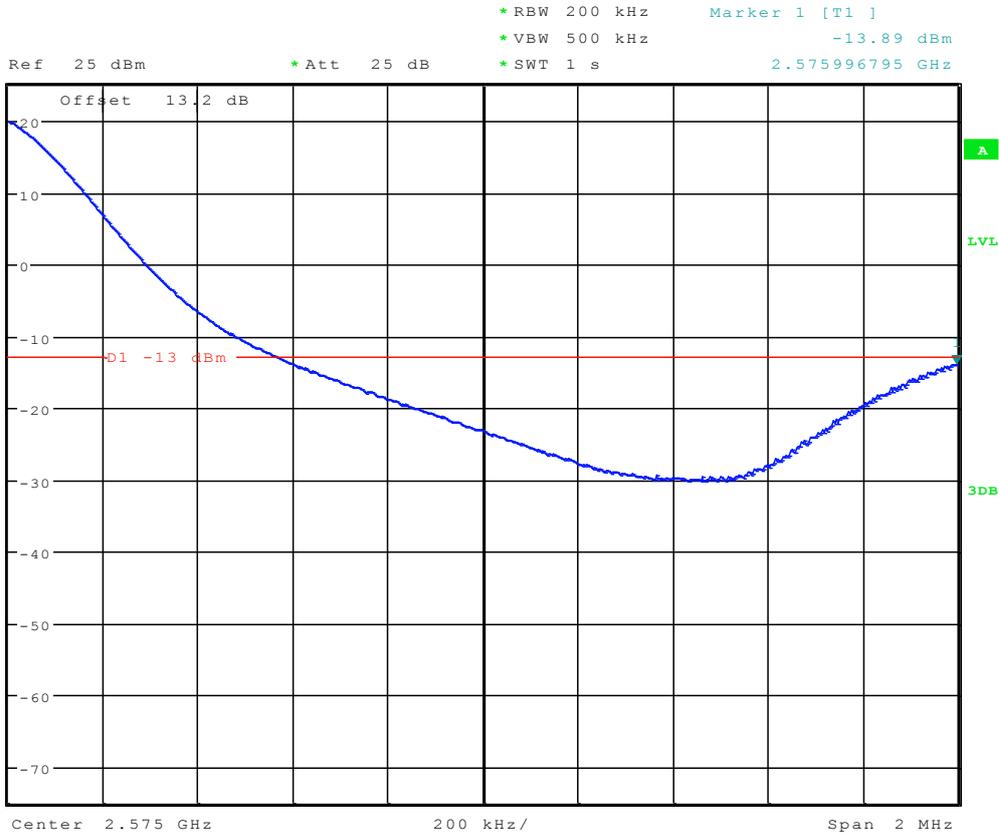


Date: 24.MAY.2012 01:38:14



### 1.1.2.2 Channel= H

#### 1.1.2.2.1 QPSK/1RB #max



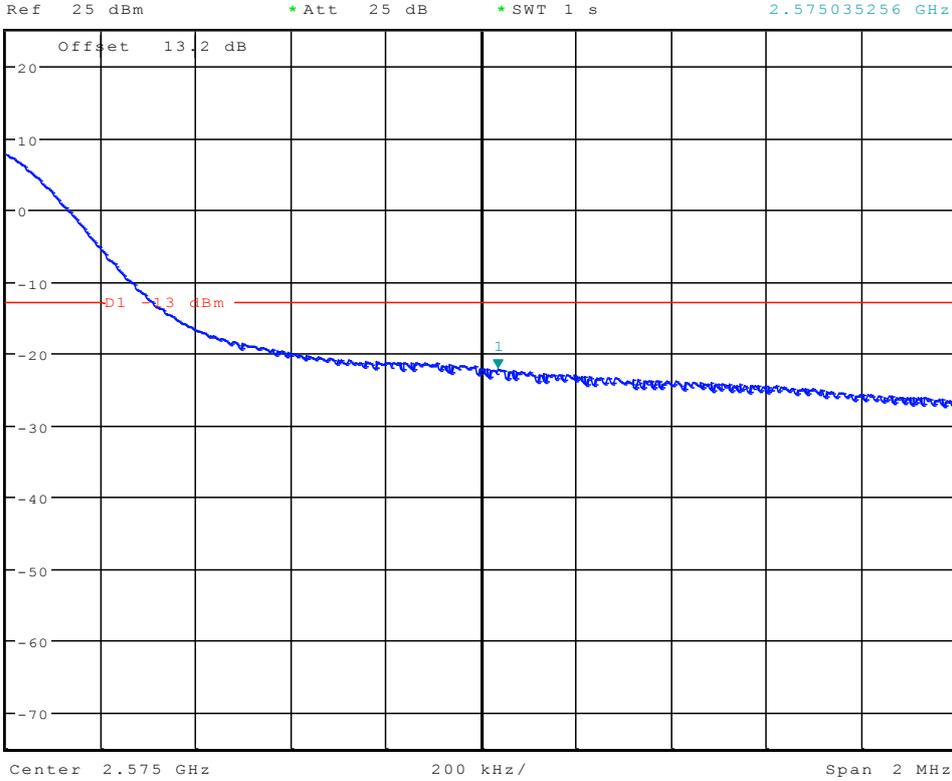
Date: 24.MAY.2012 01:24:30



### 1.1.2.2.2 QPSK/Partial RBs /RB #max



\*RBW 200 kHz      Marker 1 [T1 ]  
\*VBW 500 kHz      -22.24 dBm  
\*SWT 1 s            2.575035256 GHz



Date: 24.MAY.2012 01:26:24



### 1.1.2.2.3 QPSK/full RBs



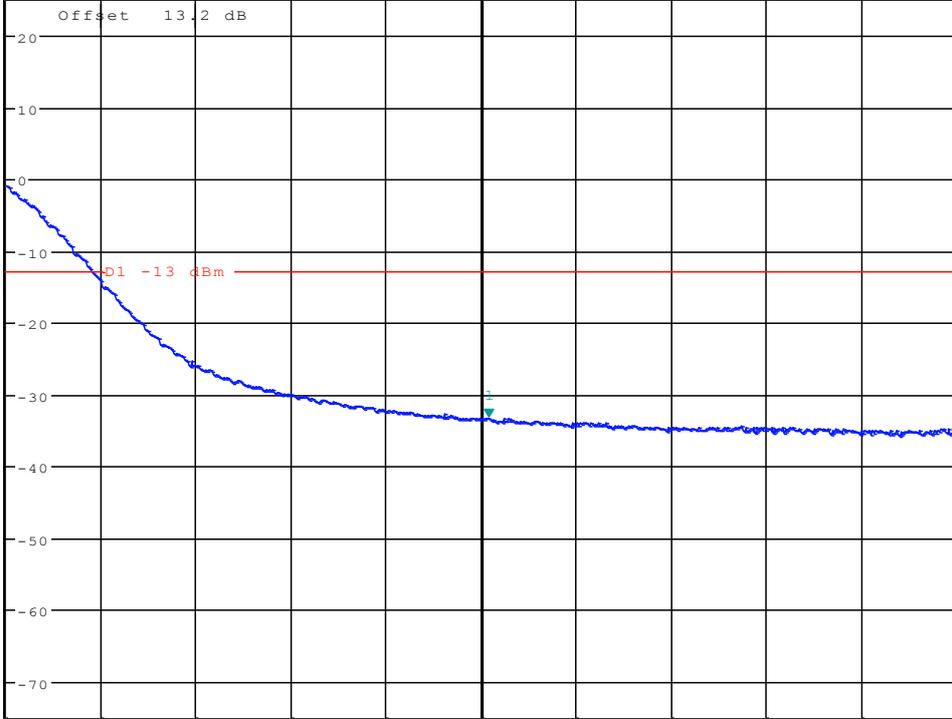
\*RBW 200 kHz      Marker 1 [T1 ]  
\*VBW 500 kHz      -33.21 dBm  
\*SWT 1 s            2.575016026 GHz

Ref 25 dBm

\*Att 25 dB

\*SWT 1 s

2.575016026 GHz



Center 2.575 GHz

200 kHz/

Span 2 MHz

Date: 24.MAY.2012 01:18:16

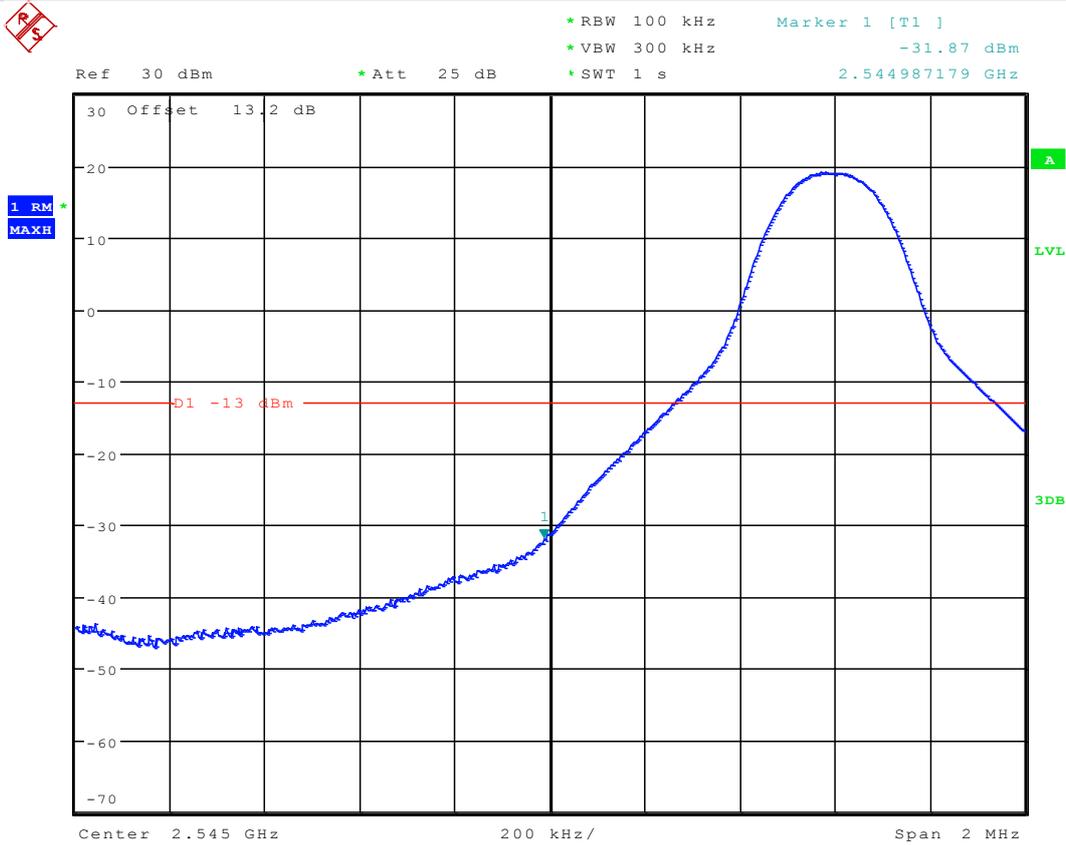


## 1.2 Test Mode=TM5

### 1.2.1 Channel Bandwidth = Lowest (10 MHz)

#### 1.2.1.1 Channel= L

##### 1.2.1.1.1 16QAM/1RB #0



Date: 24.MAY.2012 01:01:12



### 1.2.1.1.2 16QAM /Partial RBs /RB #0

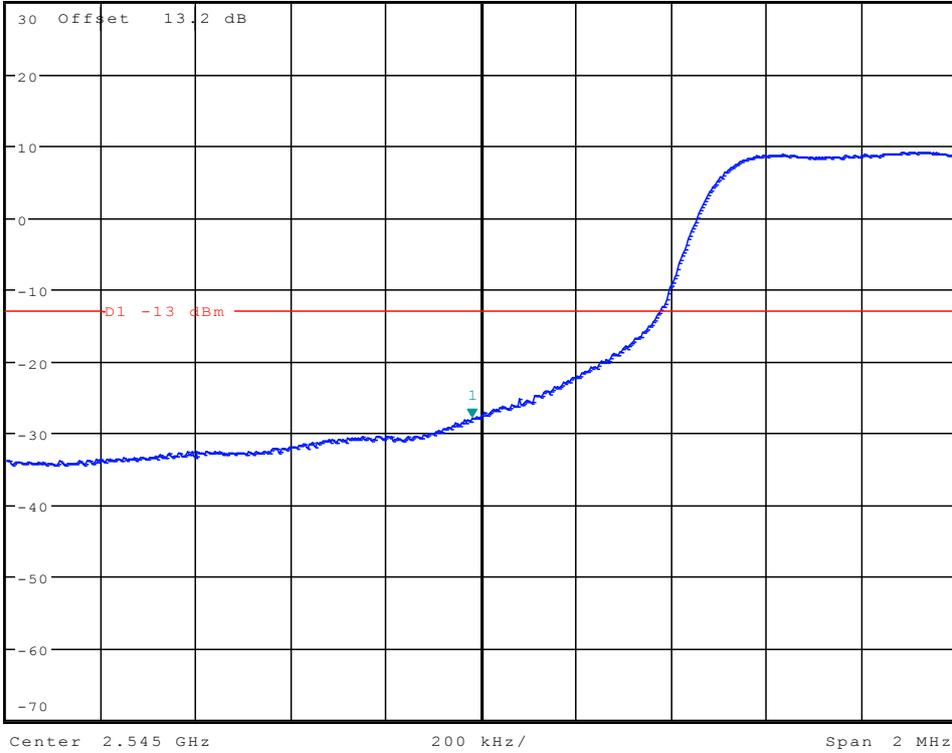


\*RBW 100 kHz      Marker 1 [T1 ]  
\*VBW 300 kHz      -27.94 dBm  
\*SWT 1 s            2.544980769 GHz

Ref 30 dBm

\*Att 25 dB

1 RM  
MAXH



Date: 24.MAY.2012 00:59:49



### 1.2.1.1.3 16QAM /full RBs



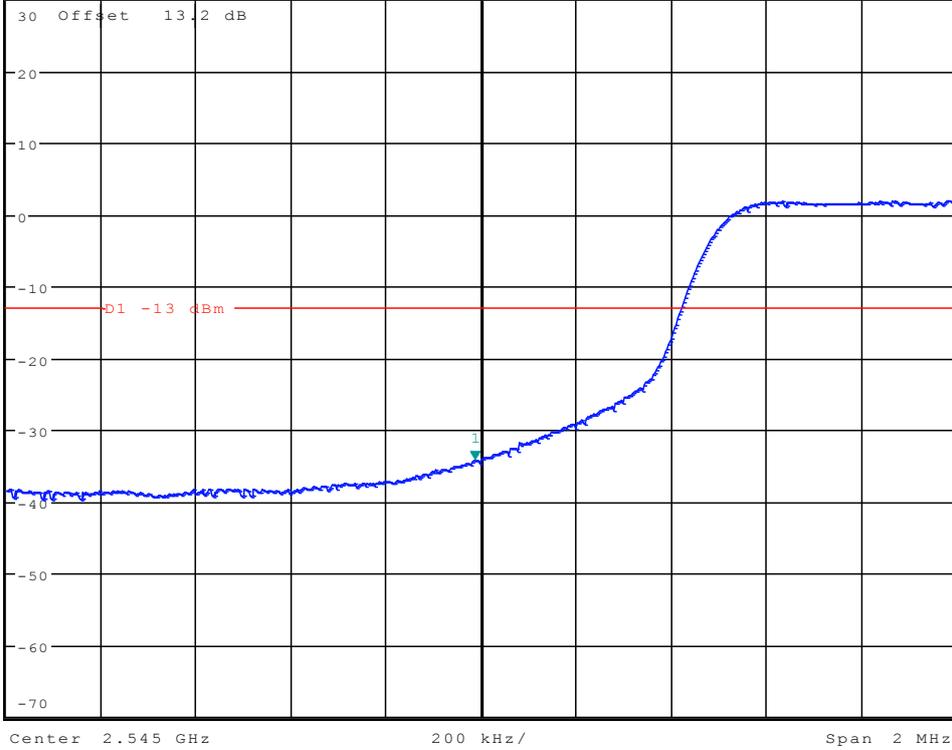
\*RBW 100 kHz      Marker 1 [T1 ]  
\*VBW 300 kHz      -34.22 dBm  
\*SWT 1 s            2.544987179 GHz

Ref 30 dBm

\*Att 25 dB

\*SWT 1 s

2.544987179 GHz



Date: 24.MAY.2012 00:58:41

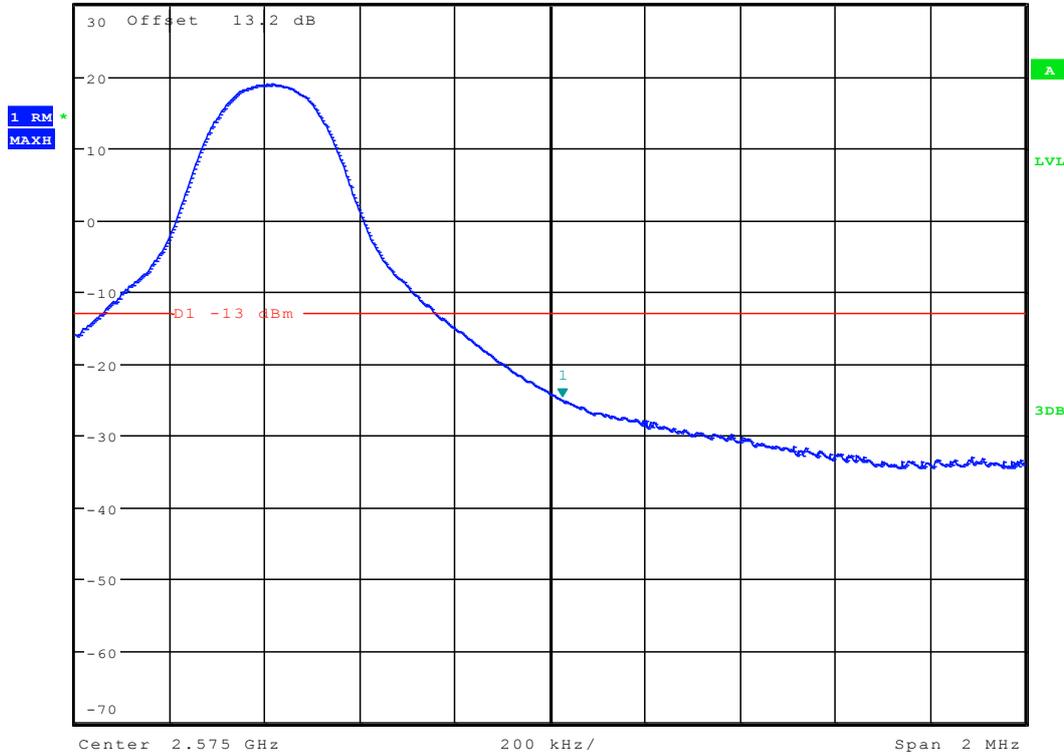


### 1.2.1.2 Channel= H

#### 1.2.1.2.1 16QAM /1RB #max



\* RBW 100 kHz      Marker 1 [T1 ]  
 \* VBW 300 kHz      -24.83 dBm  
 \* SWT 1 s            2.575025641 GHz  
 Ref 30 dBm      \* Att 25 dB



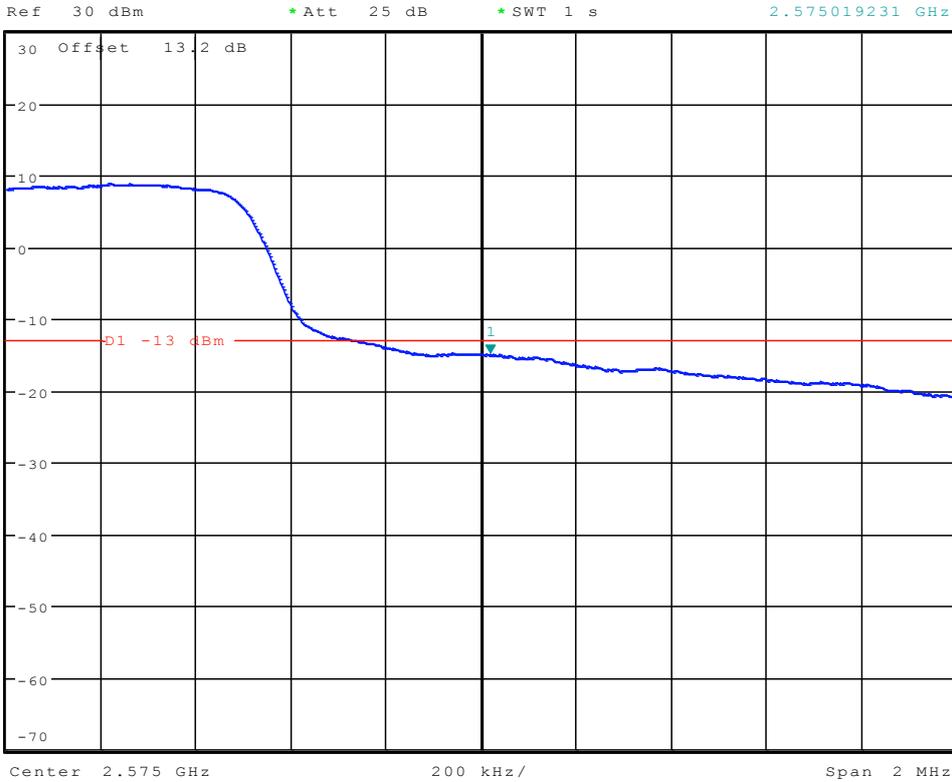
Date: 24.MAY.2012 01:06:48



### 1.2.1.2.2 16QAM /Partial RBs /RB #max



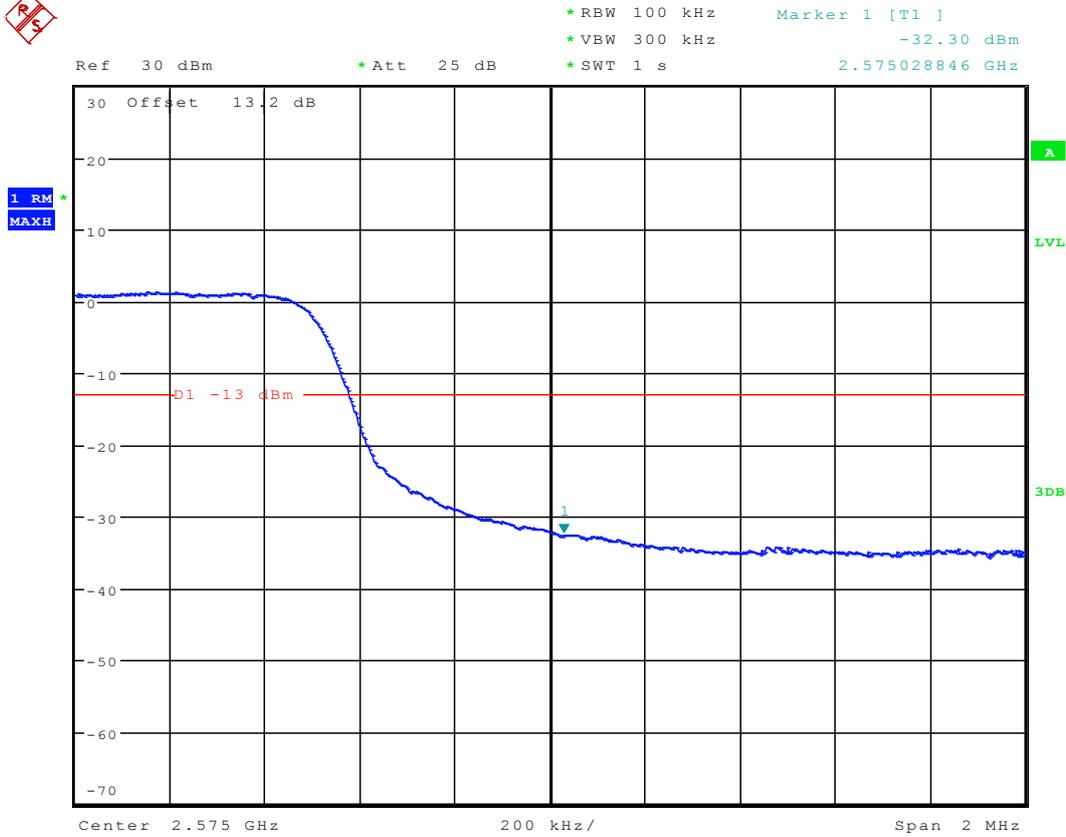
\* RBW 100 kHz      Marker 1 [T1 ]  
\* VBW 300 kHz      -14.95 dBm  
\* SWT 1 s            2.575019231 GHz



Date: 24.MAY.2012 01:08:04



### 1.2.1.2.3 16QAM /full RBs



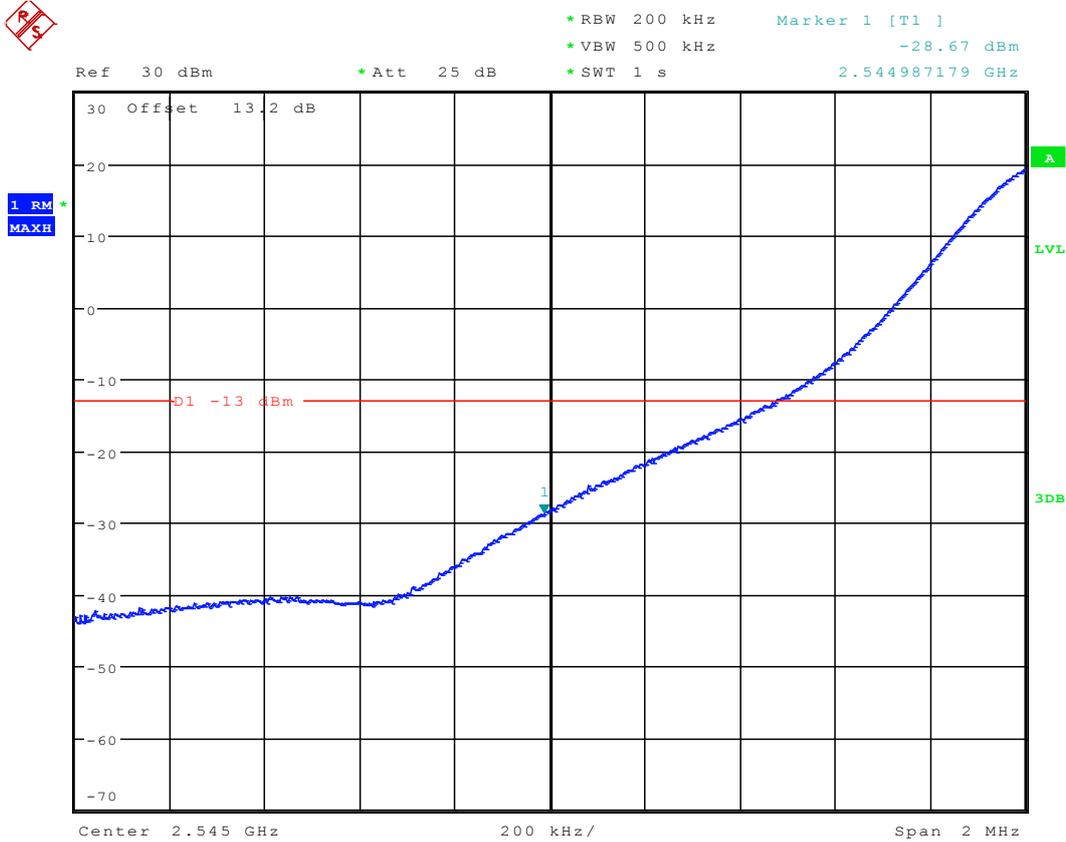
Date: 24.MAY.2012 01:04:33



## 1.2.2 Channel Bandwidth = Highest (20 MHz)

### 1.2.2.1 Channel= L

#### 1.2.2.1.1 16QAM /1RB #0



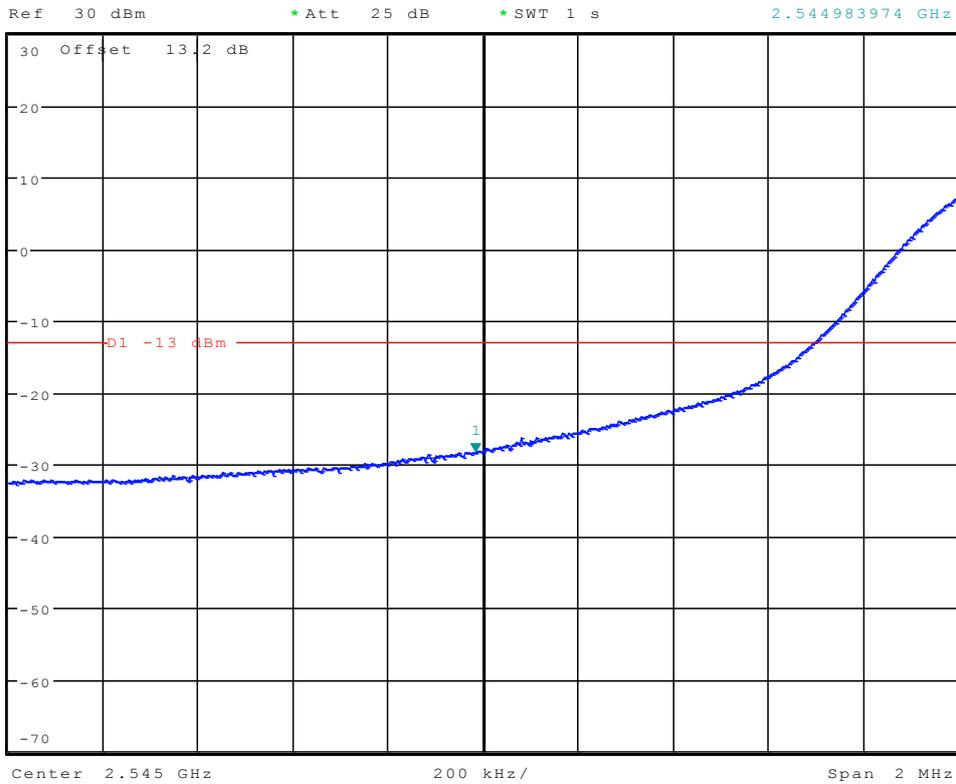
Date: 24.MAY.2012 01:40:46



### 1.2.2.1.2 16QAM /Partial RBs /RB #0



\* RBW 200 kHz      Marker 1 [T1 ]  
 \* VBW 500 kHz      -28.30 dBm  
 \* SWT 1 s            2.544983974 GHz



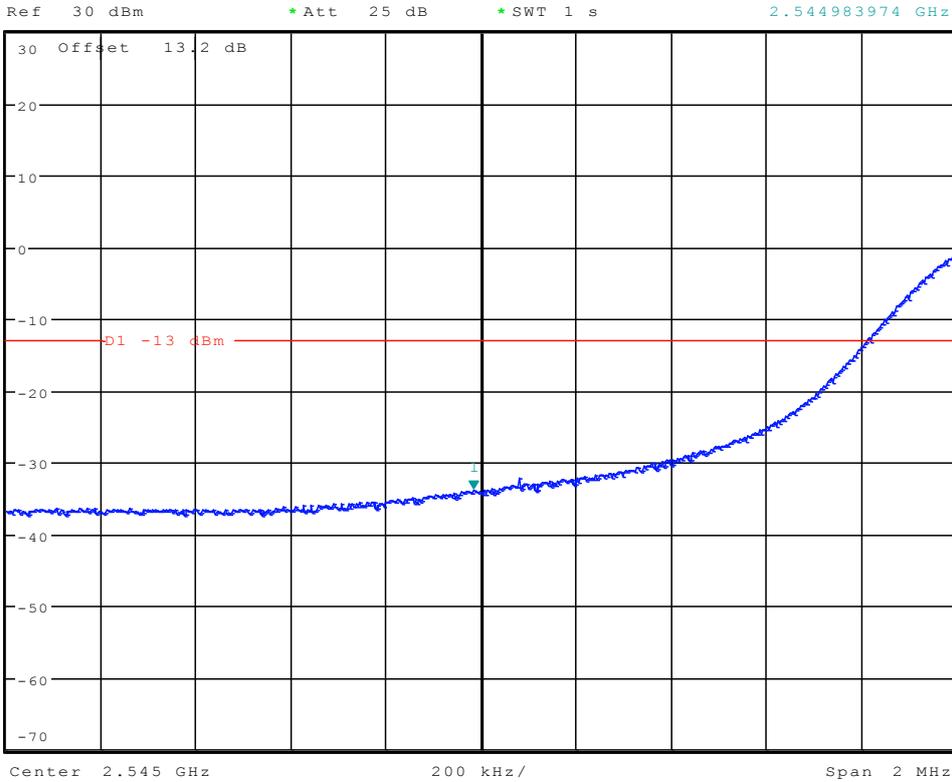
Date: 24.MAY.2012 01:39:57



### 1.2.2.1.3 16QAM /full RBs



\* RBW 200 kHz      Marker 1 [T1 ]  
\* VBW 500 kHz      -33.84 dBm  
\* SWT 1 s            2.544983974 GHz



Date: 24.MAY.2012 01:38:50

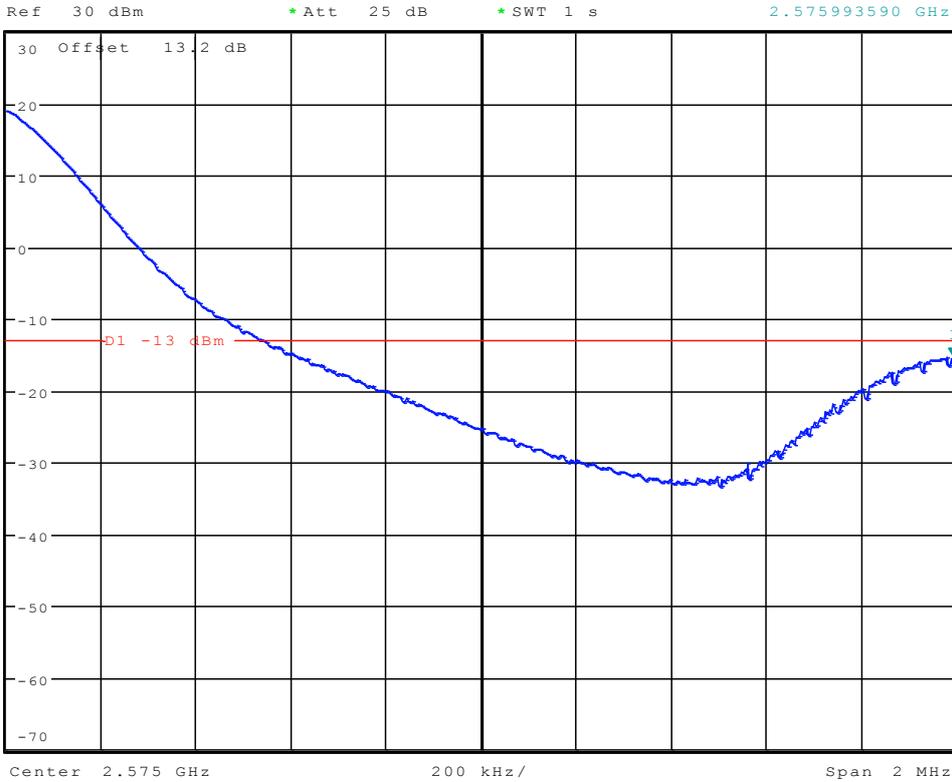
### 1.2.2.2 Channel= H



### 1.2.2.2.1 16QAM /1RB #max



\* RBW 200 kHz      Marker 1 [T1 ]  
\* VBW 500 kHz      -15.30 dBm  
\* SWT 1 s            2.575993590 GHz



Date: 24.MAY.2012 01:29:38

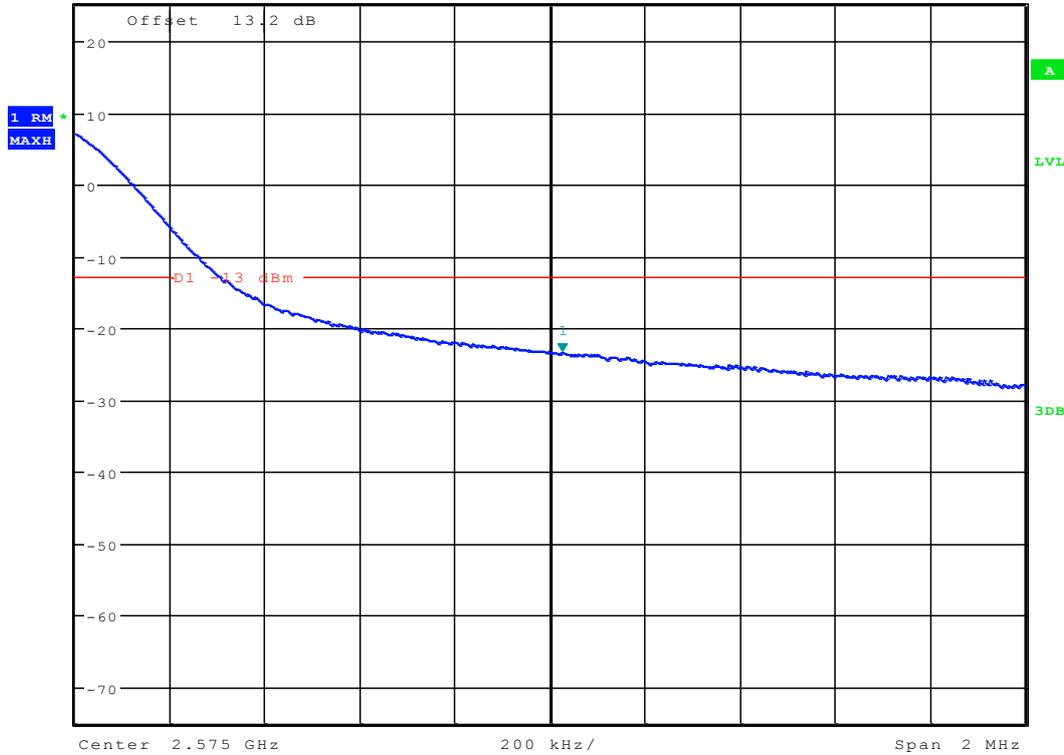


### 1.2.2.2.2 16QAM /Partial RBs /RB #max



\* RBW 200 kHz      Marker 1 [T1 ]  
\* VBW 500 kHz      -23.47 dBm  
\* SWT 1 s            2.575025641 GHz

Ref 25 dBm      \* Att 25 dB



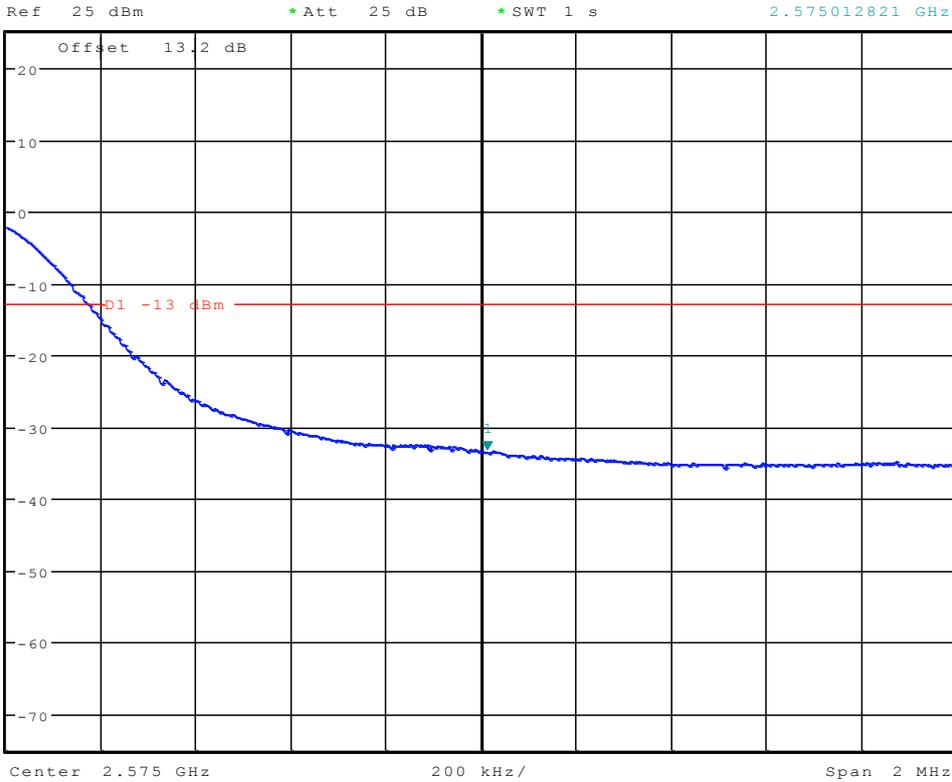
Date: 24.MAY.2012 01:27:27



### 1.2.2.2.3 16QAM /full RBs



\* RBW 200 kHz      Marker 1 [T1 ]  
\* VBW 500 kHz      -33.26 dBm  
\* SWT 1 s            2.575012821 GHz



Date: 24.MAY.2012 01:28:14

-----END-----



## Appendix E

# Spurious Emission at Antenna Terminal

According to FCC Part 2.1051 & 27.53(m)



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# 1 For Band 41

NOTE1: QPSK output power higher than 16QAM, so only test the QPSK mode.

NOTE2: All relevant operation modes have been tested, and the 1RB&full RB case data is included in this report.

## 1.1 Test Mode=TM4

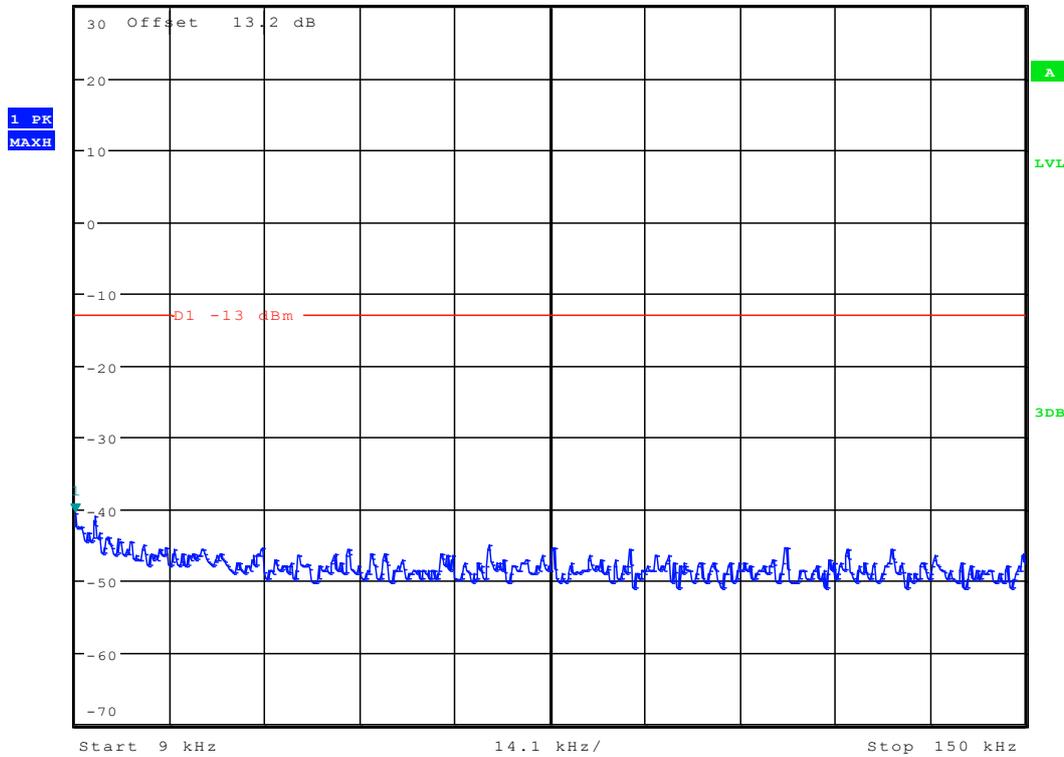
### 1.1.1 Channel Bandwidth = Lowest (10 MHz)

#### 1.1.1.1 Channel = B

##### 1.1.1.1.1 QPSK/1RBs /RB #0



\*RBW 1 kHz                    Marker 1 [T1 ]  
\*VBW 10 kHz                    -40.44 dBm  
Ref 30 dBm                    Att 45 dB                    SWT 145 ms                    9.000000000 kHz



Date: 24.MAY.2012 02:06:33



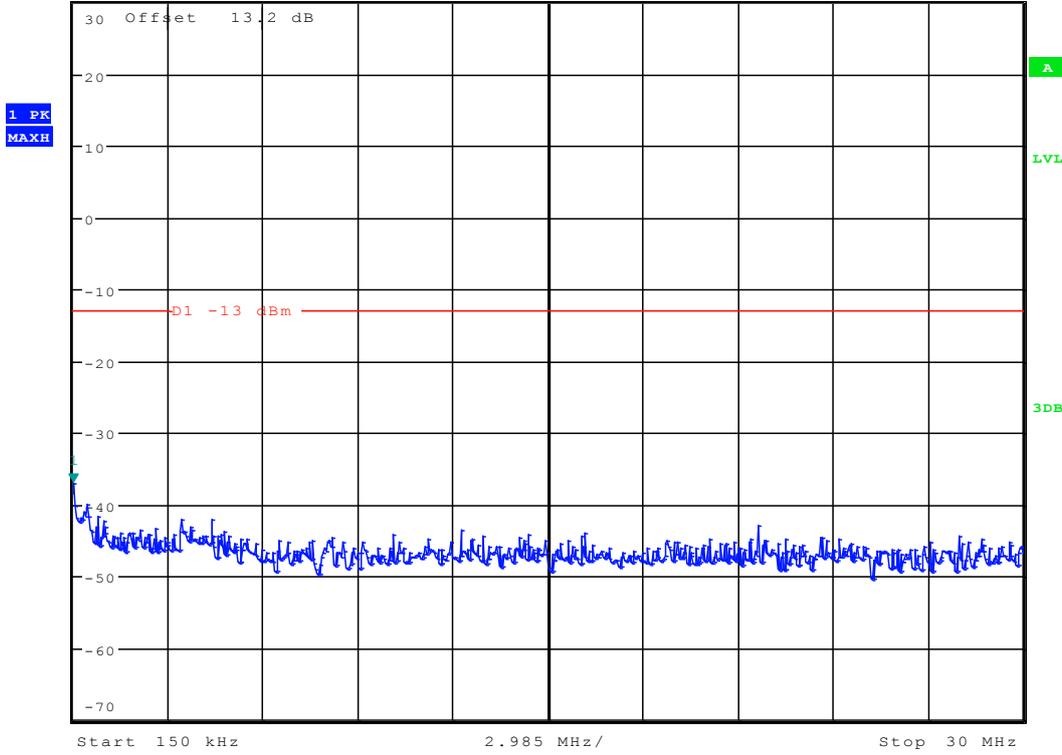
\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -36.92 dBm  
SWT 300 ms      150.00000000 kHz

Ref 30 dBm

Att 45 dB

SWT 300 ms

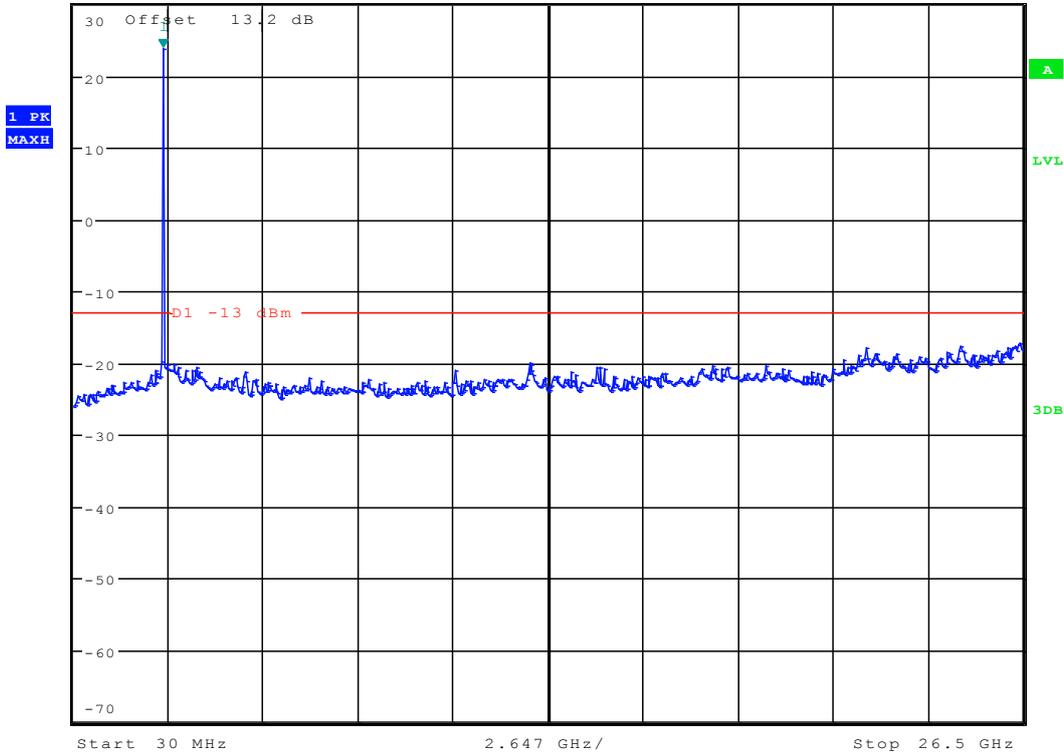
150.00000000 kHz



Date: 24.MAY.2012 02:04:58



\* RBW 1 MHz      Marker 1 [T1 ]  
\* VBW 3 MHz      23.83 dBm  
Ref 30 dBm      Att 45 dB      SWT 155 ms      2.532772436 GHz



Date: 24.MAY.2012 02:03:35

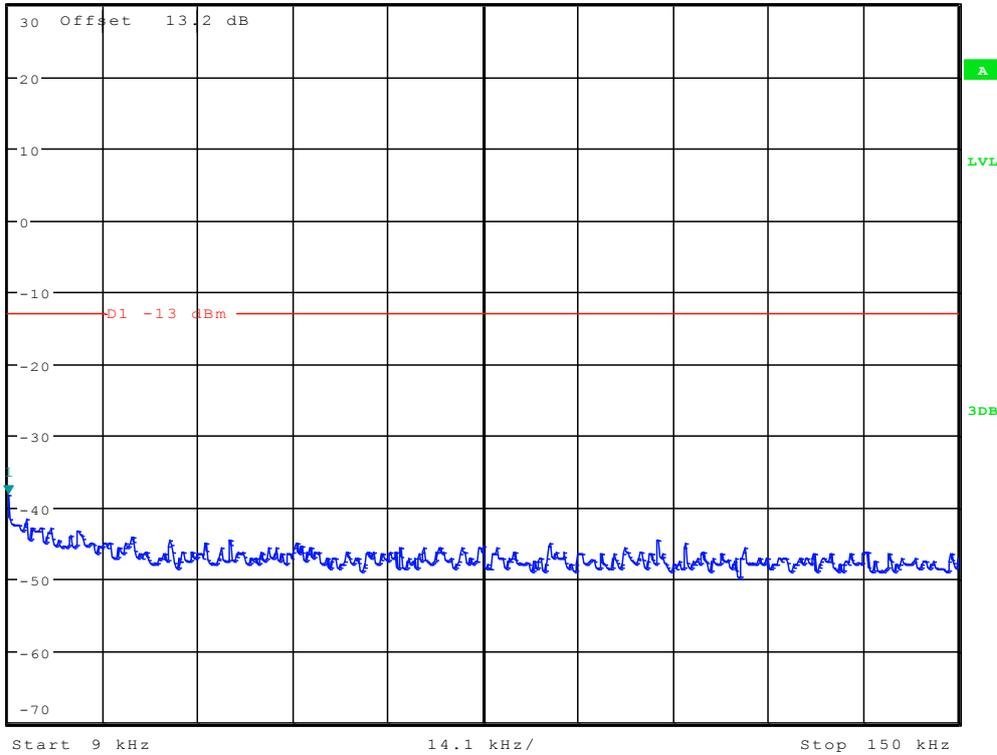


### 1.1.1.1.2 QPSK/1RBs /RB #max



\*RBW 1 kHz                   Marker 1 [T1 ]  
\*VBW 10 kHz                   -38.26 dBm  
Ref 30 dBm                   Att 45 dB                   SWT 145 ms                   9.000000000 kHz

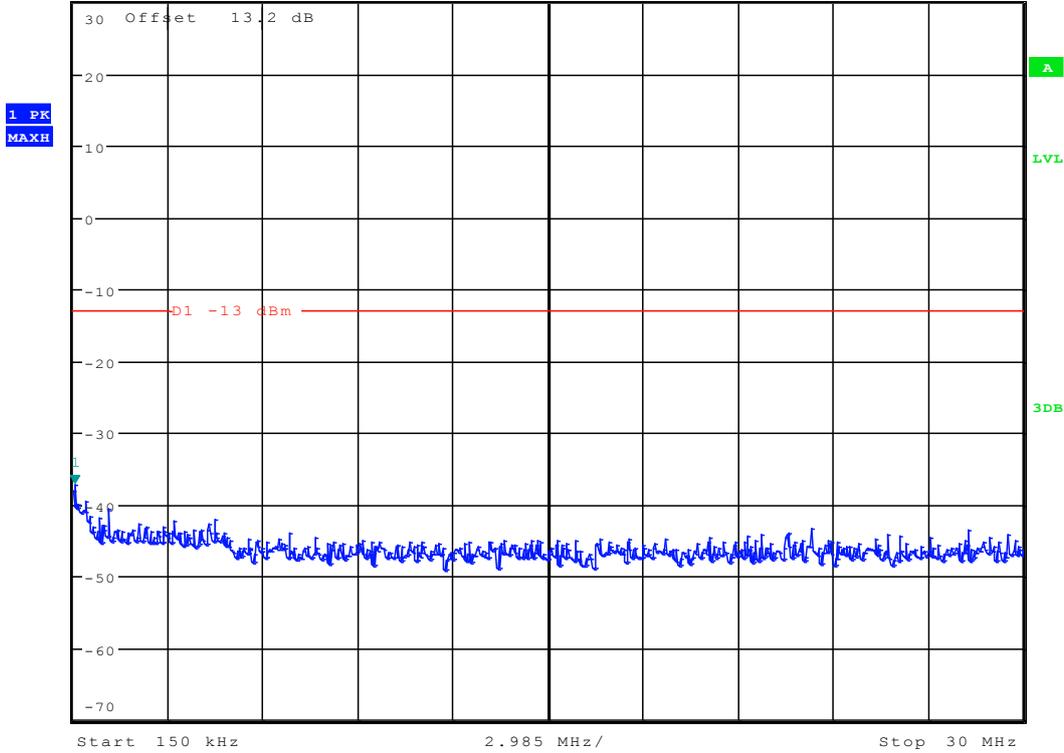
1 PK  
MAXH



Date: 24.MAY.2012 02:07:18



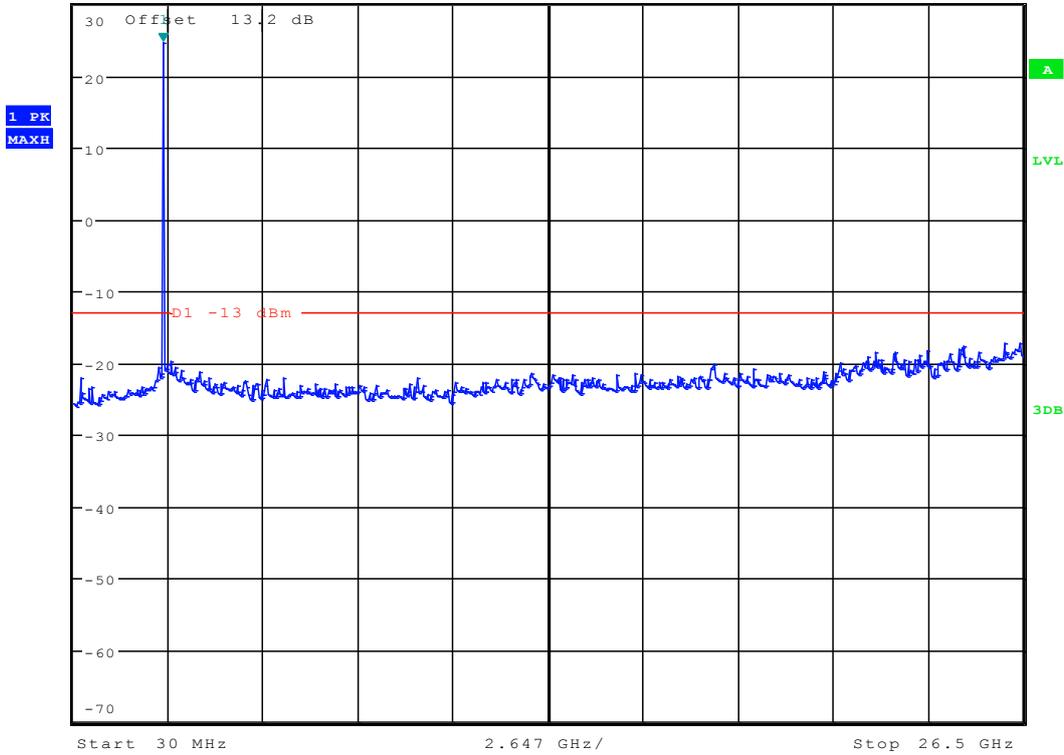
\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -37.22 dBm  
Ref 30 dBm      Att 45 dB      SWT 300 ms      197.836538462 kHz



Date: 24.MAY.2012 02:04:41



\* RBW 1 MHz      Marker 1 [T1 ]  
\* VBW 3 MHz      24.74 dBm  
Ref 30 dBm      Att 45 dB      SWT 155 ms      2.532772436 GHz



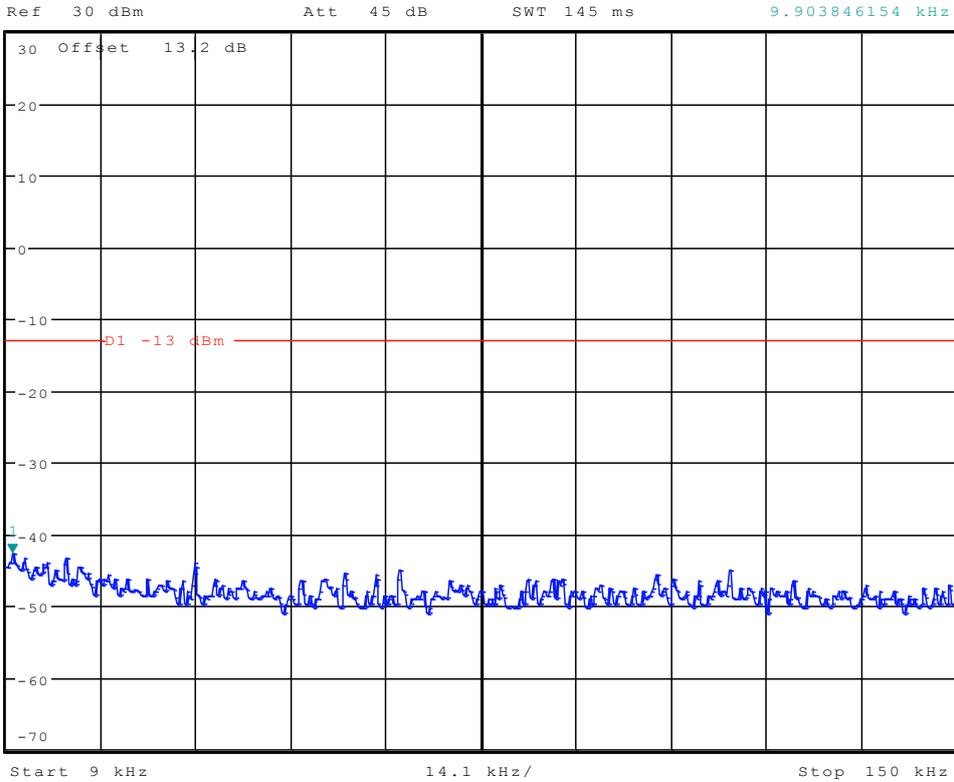
Date: 24.MAY.2012 02:04:07



### 1.1.1.1.3 QPSK/full RBs



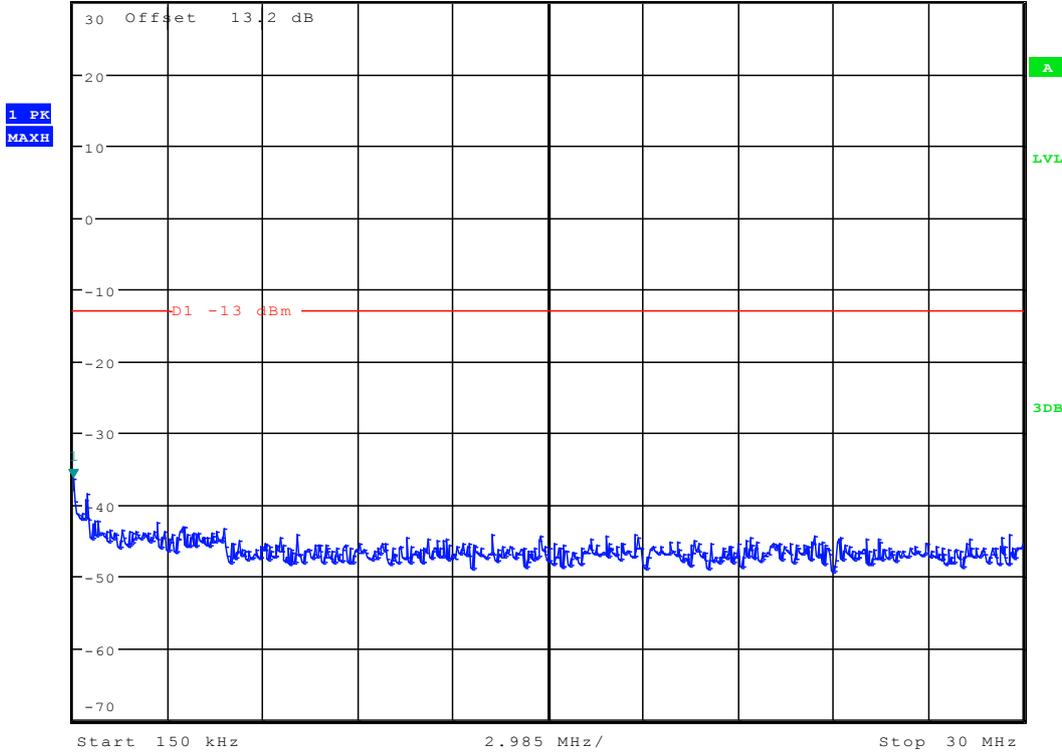
\*RBW 1 kHz                   Marker 1 [T1 ]  
\*VBW 10 kHz                   -42.65 dBm  
SWT 145 ms                   9.903846154 kHz



Date: 24.MAY.2012 02:06:10



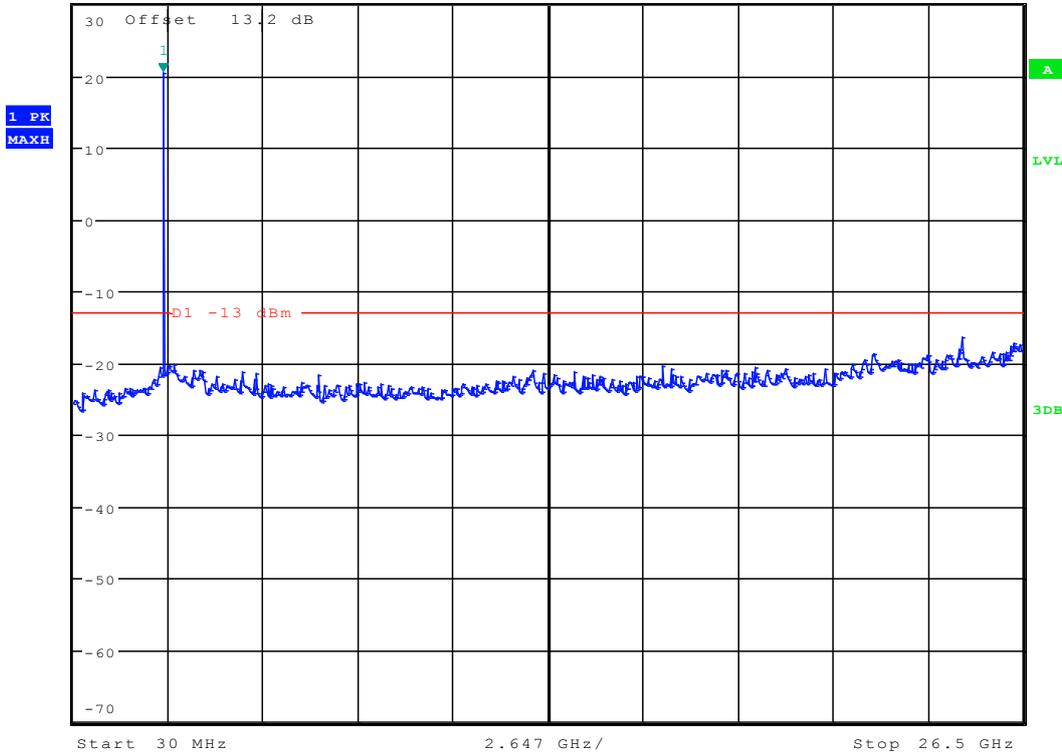
\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -36.29 dBm  
Ref 30 dBm      Att 45 dB      SWT 300 ms      150.00000000 kHz



Date: 24.MAY.2012 02:05:19



\* RBW 1 MHz                      Marker 1 [T1 ]  
\* VBW 3 MHz                      20.50 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 155 ms                      2.532772436 GHz



Date: 24.MAY.2012 02:03:09

### 1.1.1.2 Channel = M

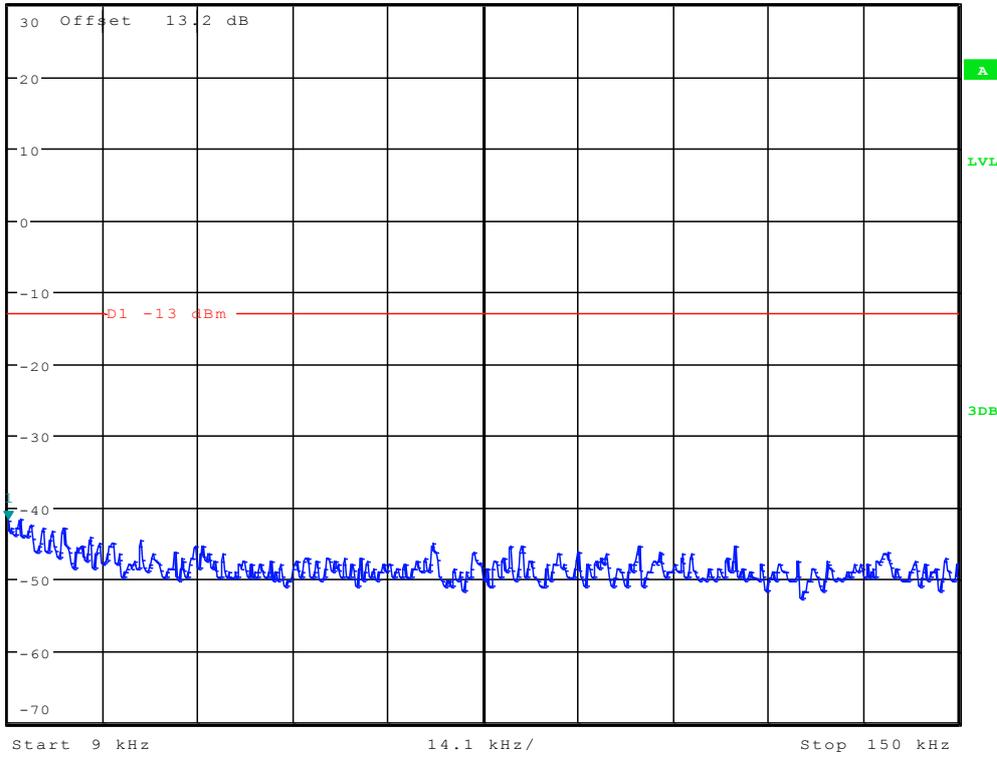


### 1.1.1.2.1 QPSK/1RBs /RB #0



\*RBW 1 kHz                   Marker 1 [T1 ]  
\*VBW 10 kHz                   -41.78 dBm  
Ref 30 dBm                   Att 45 dB                   SWT 145 ms                   9.000000000 kHz

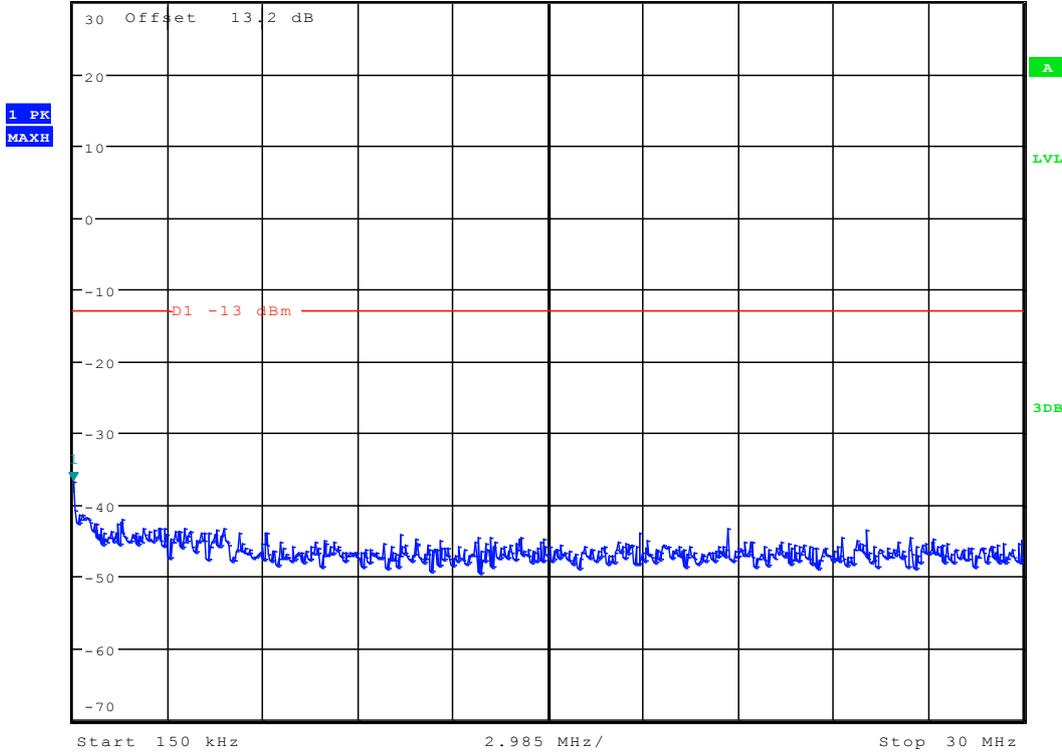
1 PK  
MAXH



Date: 24.MAY.2012 02:08:48



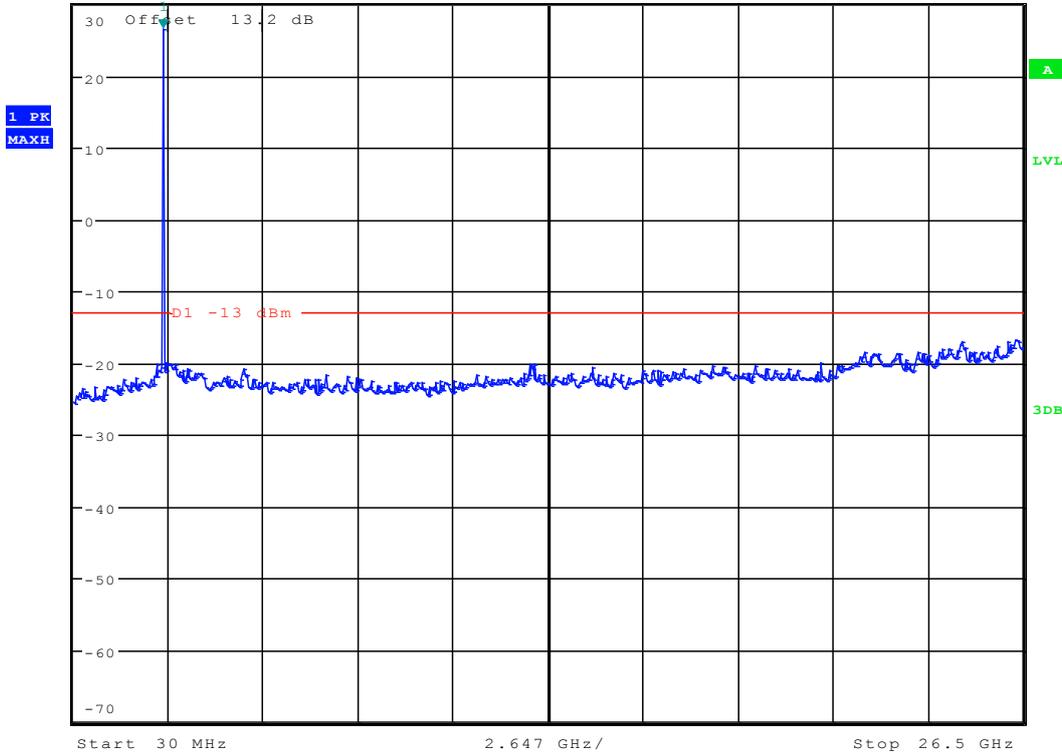
\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -36.74 dBm  
Ref 30 dBm      Att 45 dB      SWT 300 ms      150.000000000 kHz



Date: 24.MAY.2012 02:10:03



\* RBW 1 MHz                      Marker 1 [T1 ]  
\* VBW 3 MHz                      26.47 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 155 ms                      2.532772436 GHz



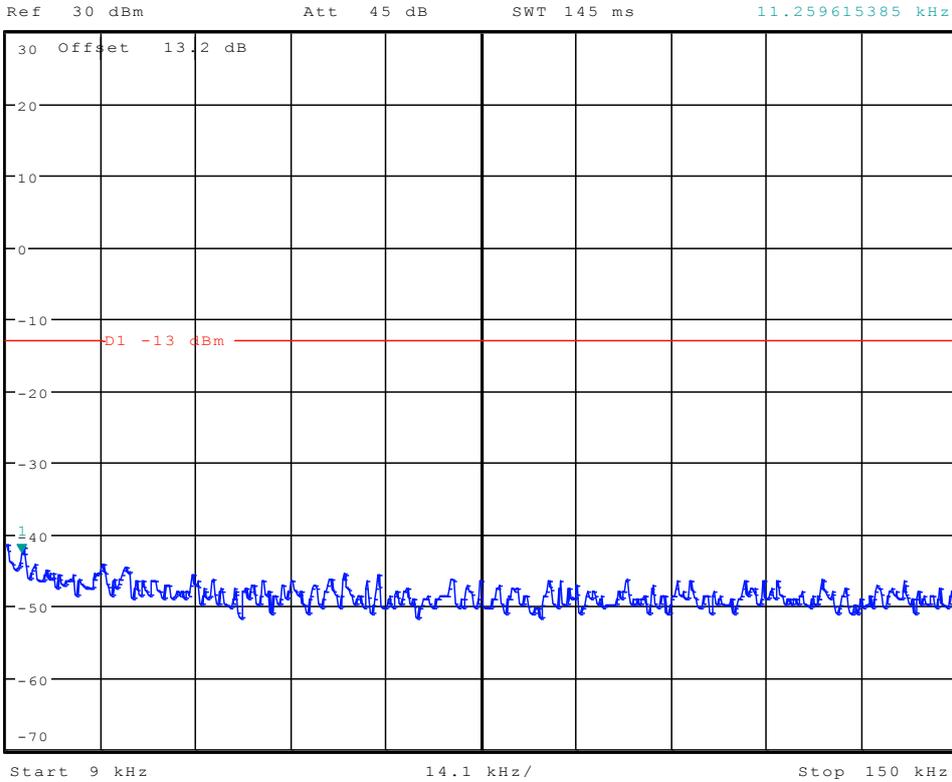
Date: 24.MAY.2012 02:56:18



### 1.1.1.2.2 QPSK/1RBs /RB #max



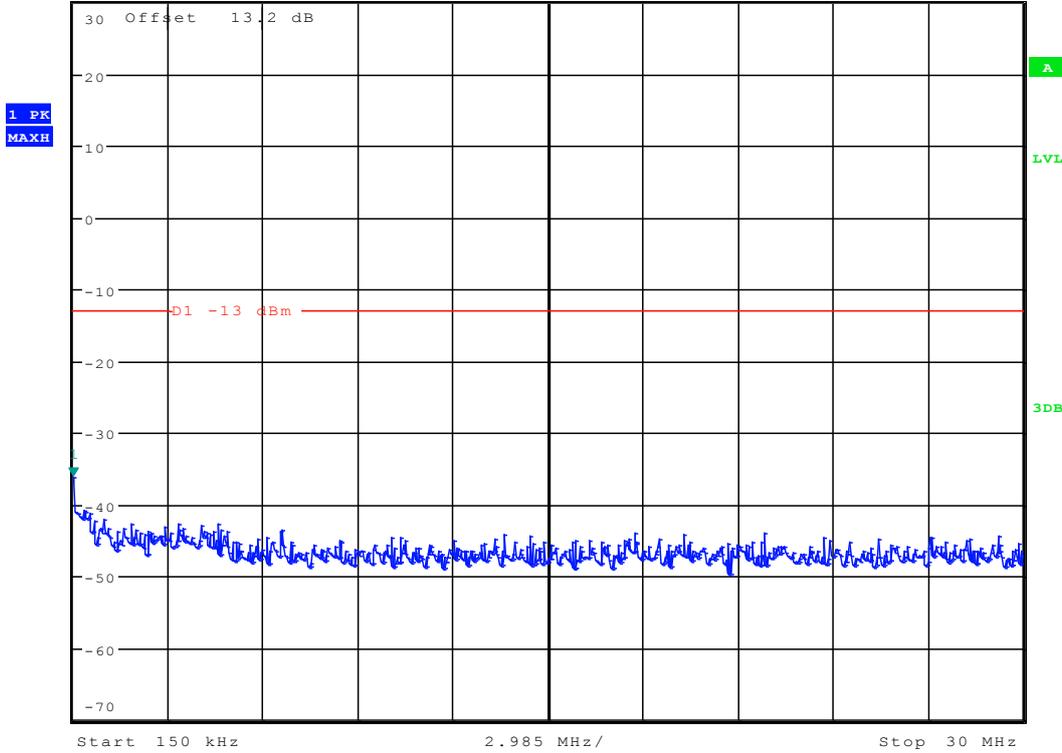
\*RBW 1 kHz                   Marker 1 [T1 ]  
\*VBW 10 kHz                   -42.65 dBm  
SWT 145 ms                   11.259615385 kHz



Date: 24.MAY.2012 02:08:21



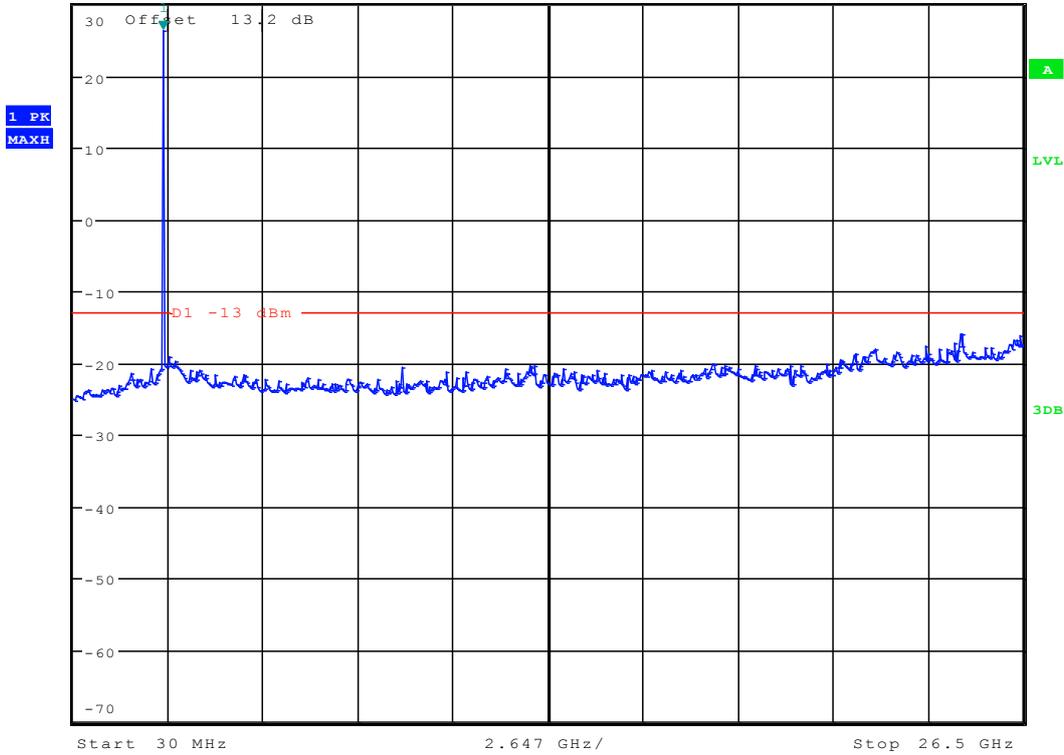
\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -36.02 dBm  
Ref 30 dBm      Att 45 dB      SWT 300 ms      150.00000000 kHz



Date: 24.MAY.2012 02:10:24



\* RBW 1 MHz                      Marker 1 [T1 ]  
\* VBW 3 MHz                      26.41 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 155 ms                      2.532772436 GHz



Date: 24.MAY.2012 02:55:39

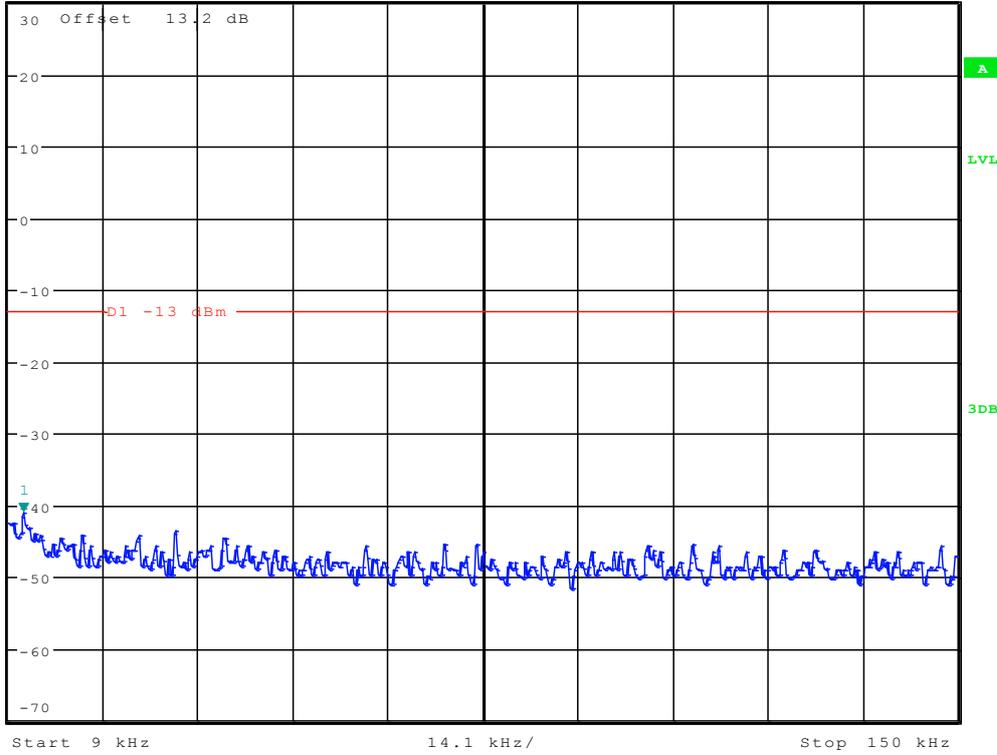


### 1.1.1.2.3 QPSK/full RBs



\*RBW 1 kHz                      Marker 1 [T1 ]  
\*VBW 10 kHz                      -40.89 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 145 ms                      11.259615385 kHz

1 PK  
MAXH



Date: 24.MAY.2012 02:09:18



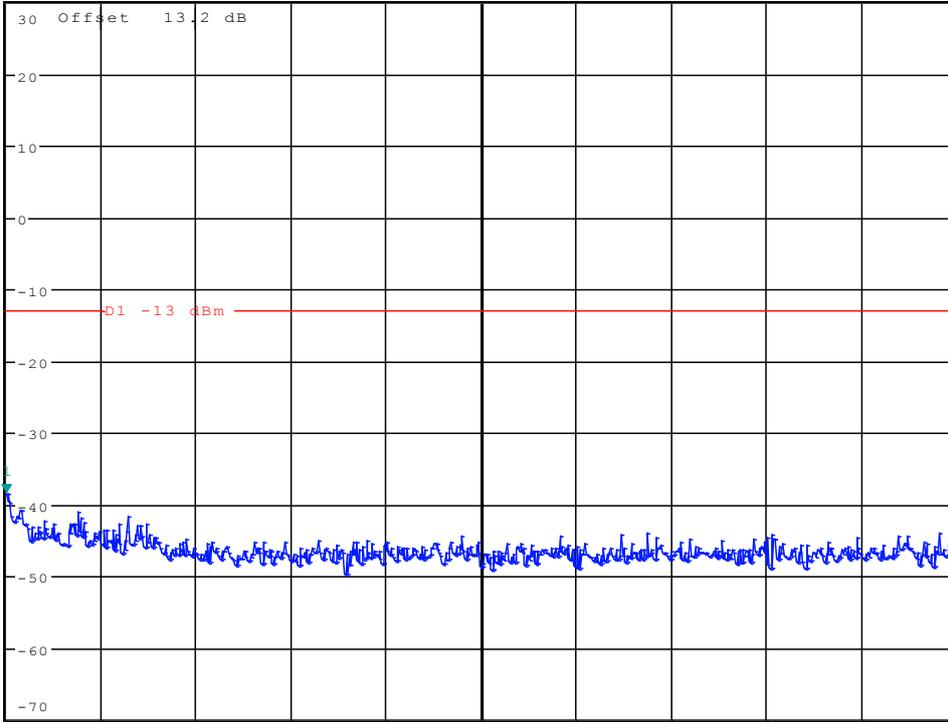
\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -38.46 dBm  
SWT 300 ms      150.000000000 kHz

Ref 30 dBm

Att 45 dB

SWT 300 ms

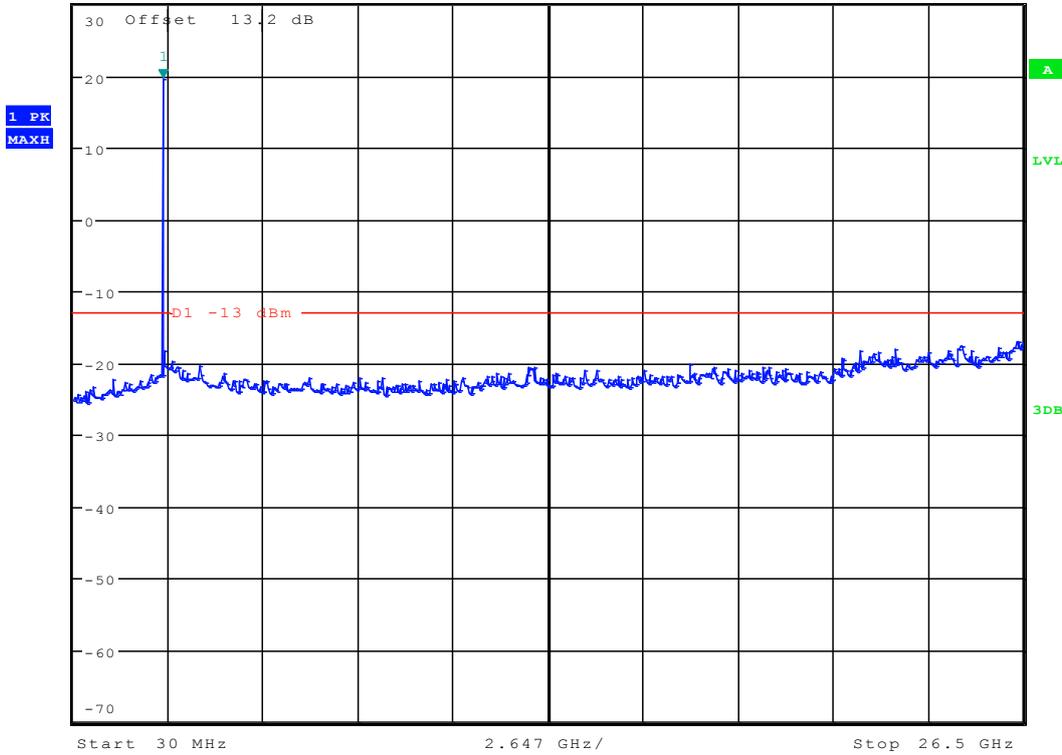
150.000000000 kHz



Date: 24.MAY.2012 02:09:44



\* RBW 1 MHz                      Marker 1 [T1 ]  
\* VBW 3 MHz                      19.66 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 155 ms                      2.532772436 GHz



Date: 24.MAY.2012 02:56:47

### 1.1.1.3 Channel = T



---

### 1.1.1.3.1 QPSK/1RBs /RB #0



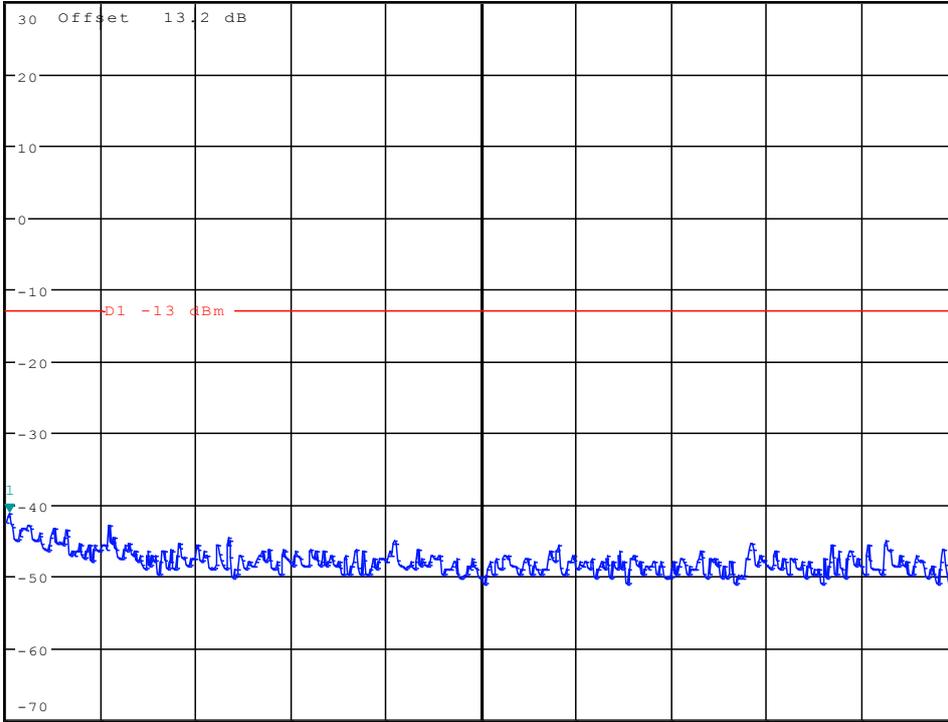
\*RBW 1 kHz                   Marker 1 [T1 ]  
\*VBW 10 kHz                   -41.08 dBm  
SWT 145 ms                   9.451923077 kHz

Ref 30 dBm

Att 45 dB

SWT 145 ms

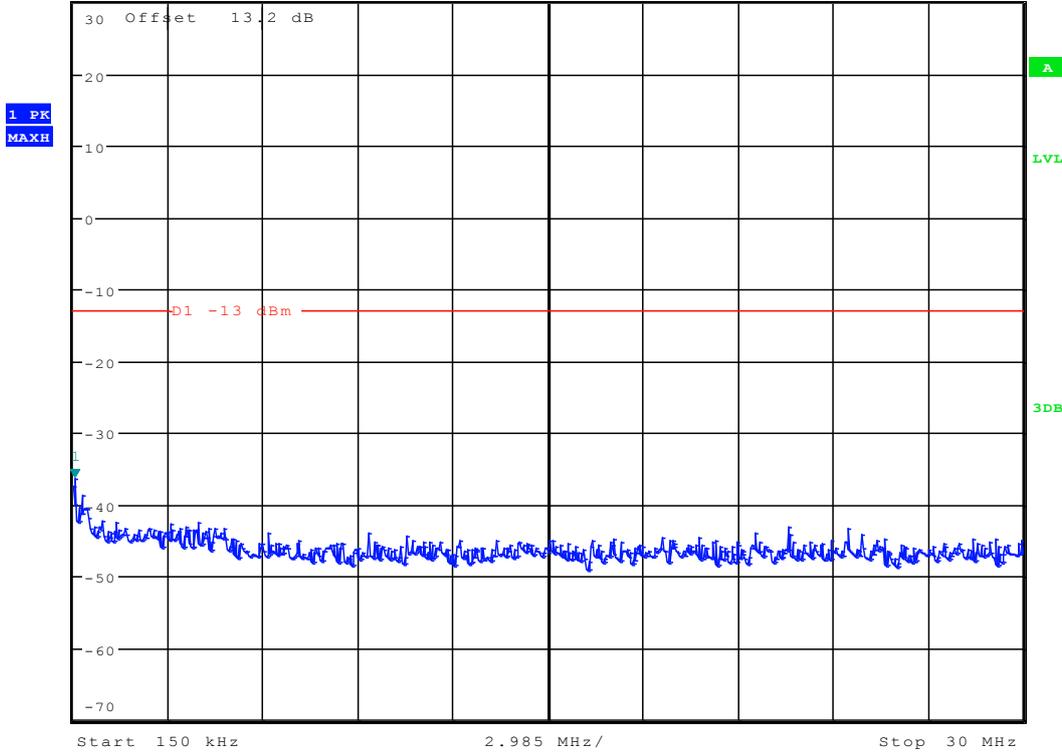
9.451923077 kHz



Date: 24.MAY.2012 03:00:48



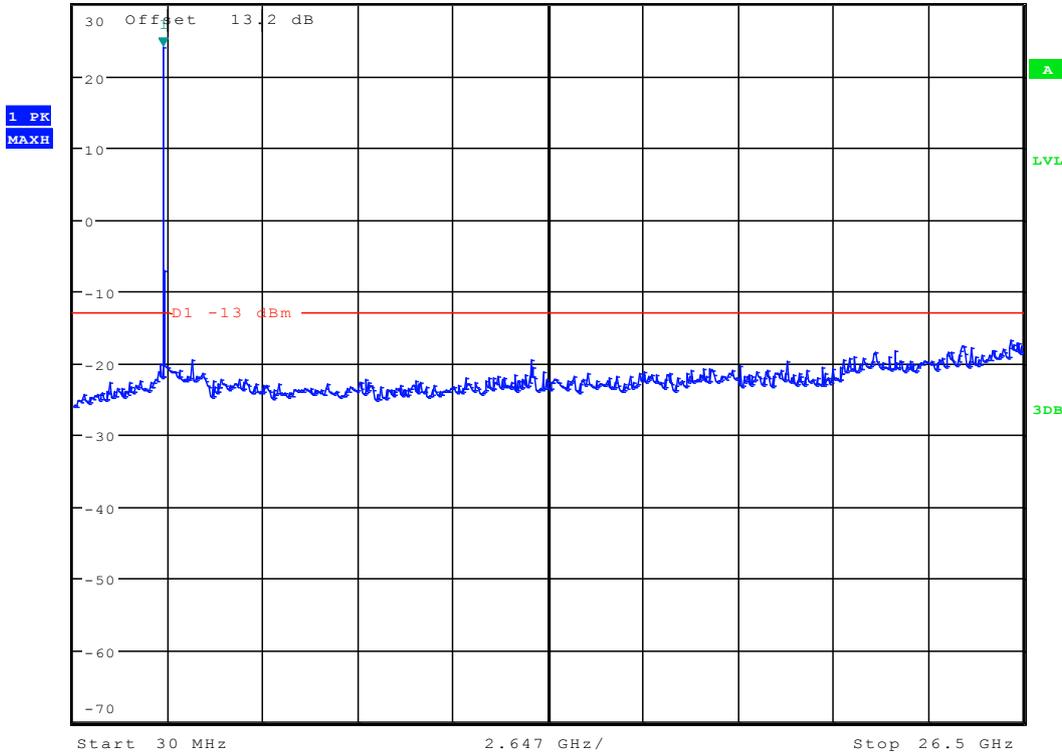
\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -36.29 dBm  
Ref 30 dBm      Att 45 dB      SWT 300 ms      197.836538462 kHz



Date: 24.MAY.2012 02:59:30



\* RBW 1 MHz      Marker 1 [T1 ]  
\* VBW 3 MHz      24.10 dBm  
Ref 30 dBm      Att 45 dB      SWT 155 ms      2.532772436 GHz



Date: 24.MAY.2012 02:57:56

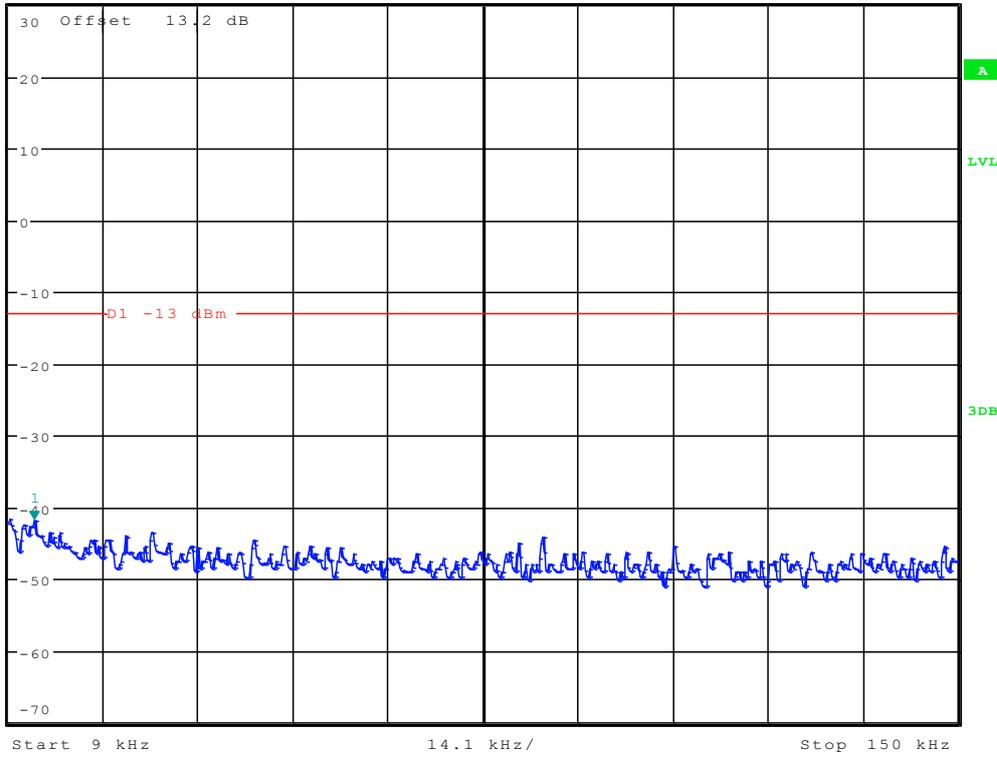


### 1.1.1.3.2 QPSK/1RBs /RB #max



\* RBW 1 kHz                      Marker 1 [T1 ]  
\* VBW 10 kHz                      -41.78 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 145 ms                      12.841346154 kHz

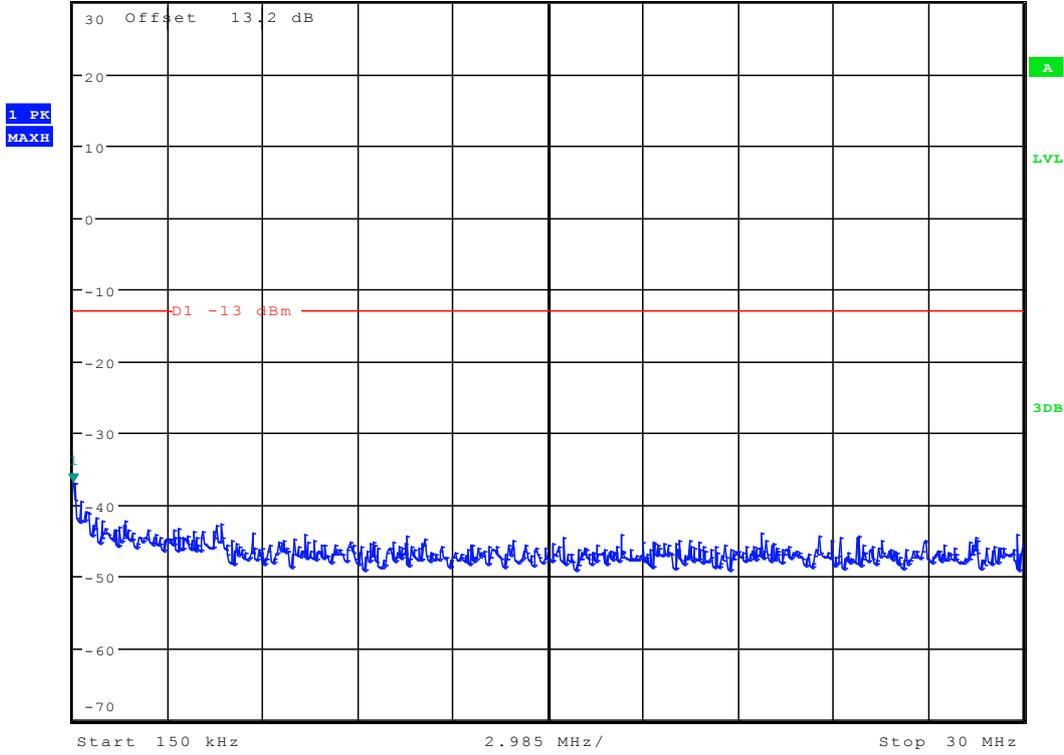
1 PK  
MAXH



Date: 24.MAY.2012 03:01:14



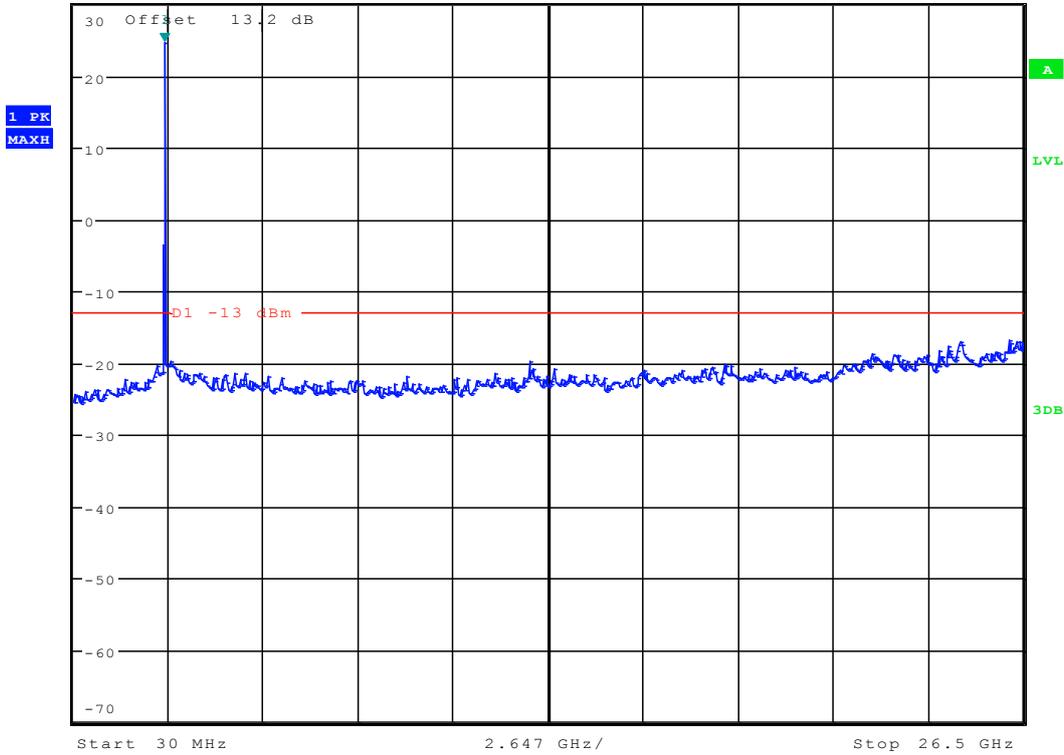
\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -36.92 dBm  
Ref 30 dBm      Att 45 dB      SWT 300 ms      150.00000000 kHz



Date: 24.MAY.2012 02:58:56



\* RBW 1 MHz                      Marker 1 [T1 ]  
\* VBW 3 MHz                      24.61 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 155 ms                      2.575192308 GHz



Date: 24.MAY.2012 02:58:28





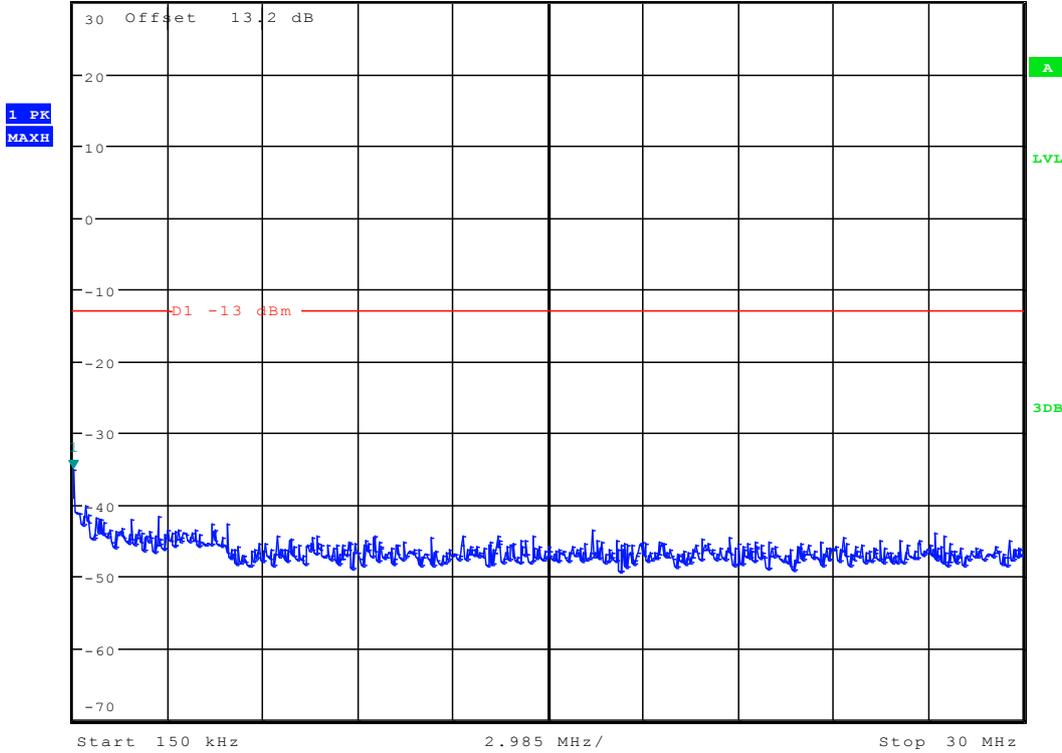
\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -35.11 dBm  
SWT 300 ms      150.00000000 kHz

Ref 30 dBm

Att 45 dB

SWT 300 ms

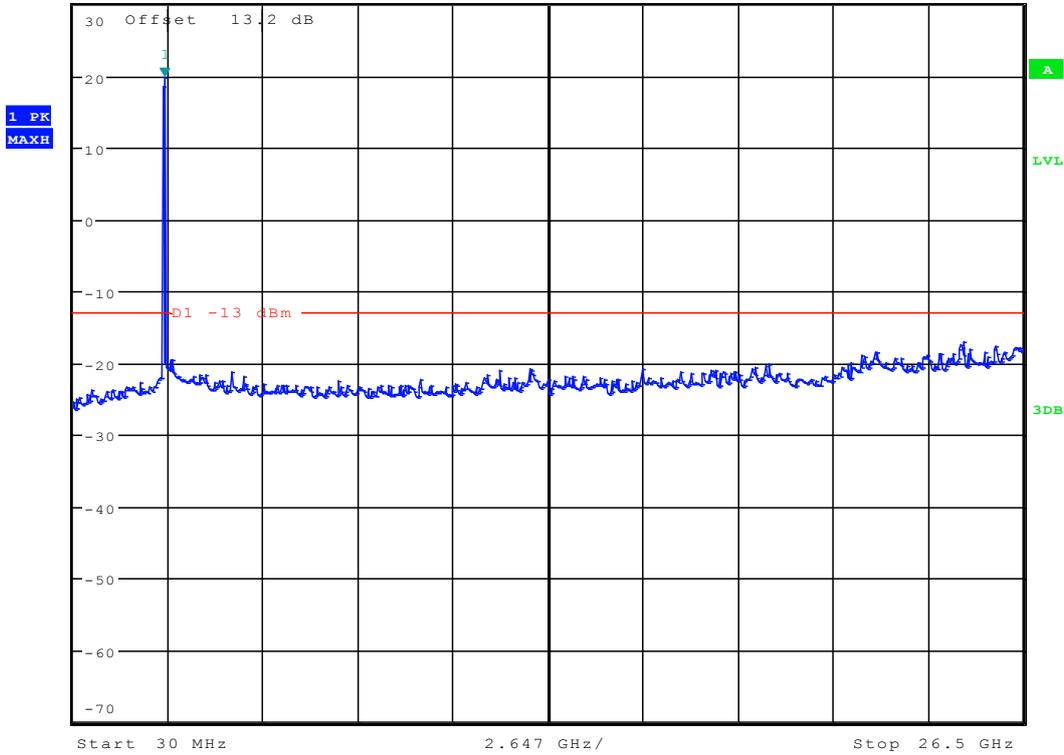
150.00000000 kHz



Date: 24.MAY.2012 02:59:53



\* RBW 1 MHz      Marker 1 [T1 ]  
\* VBW 3 MHz      19.74 dBm  
Ref 30 dBm      Att 45 dB      SWT 155 ms      2.575192308 GHz



Date: 24.MAY.2012 02:57:25



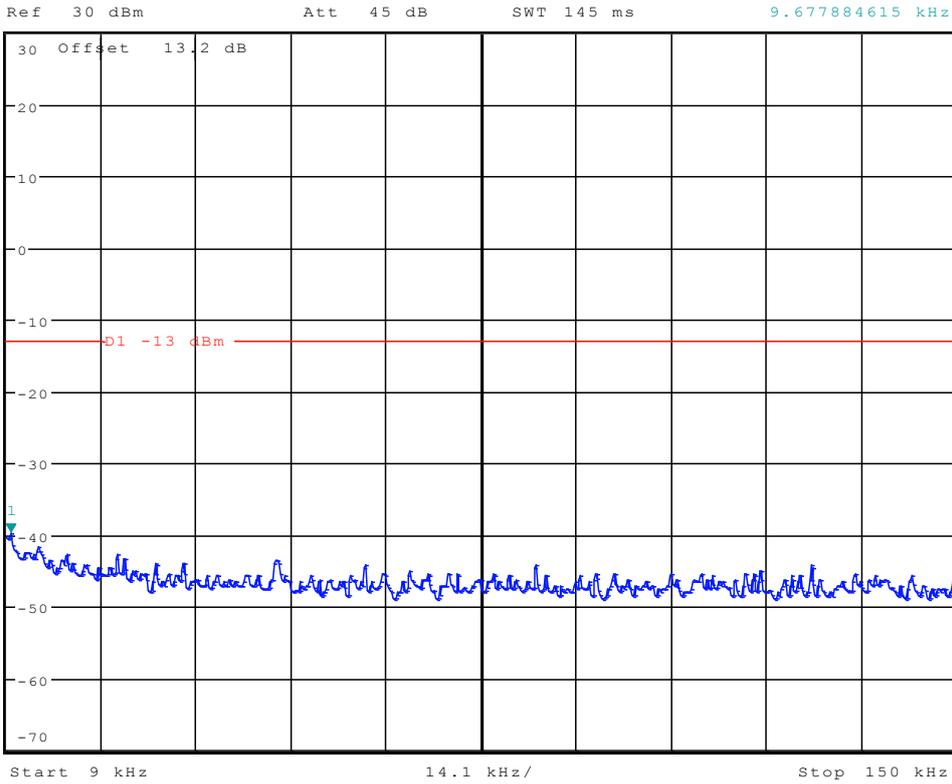
### 1.1.2 Channel Bandwidth = Highest (20 MHz)

#### 1.1.2.1 Channel = B

##### 1.1.2.1.1 QPSK/1RBs /RB #0



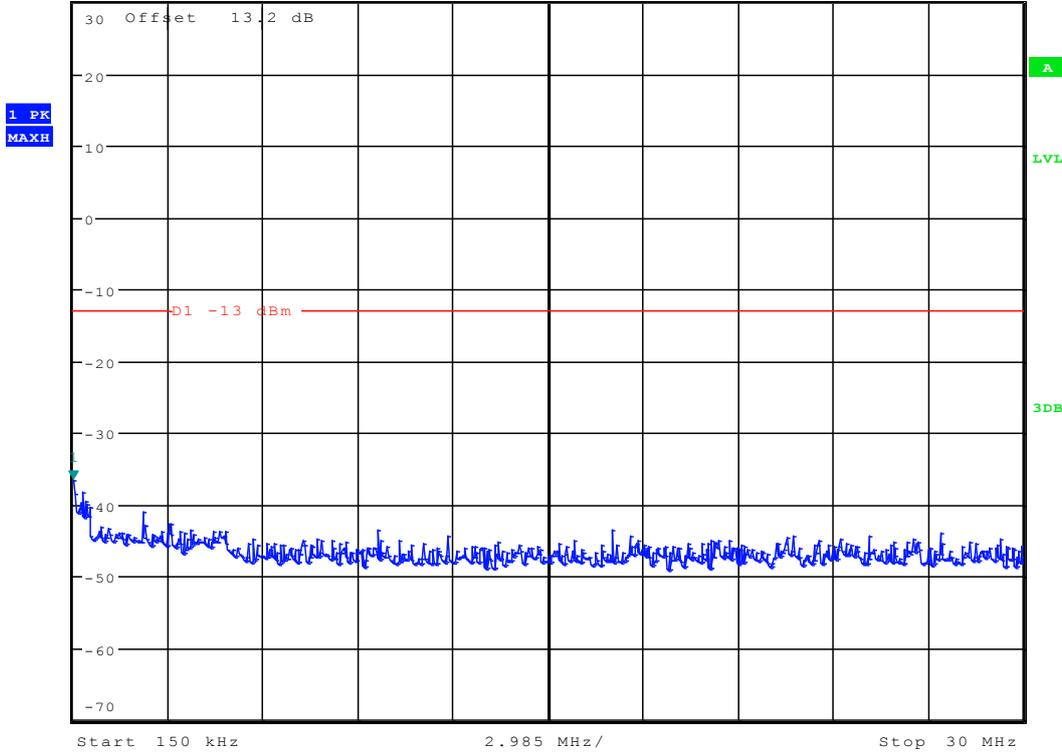
\*RBW 1 kHz                    Marker 1 [T1 ]  
\*VBW 10 kHz                    -39.59 dBm  
SWT 145 ms                    9.677884615 kHz



Date: 24.MAY.2012 01:43:02



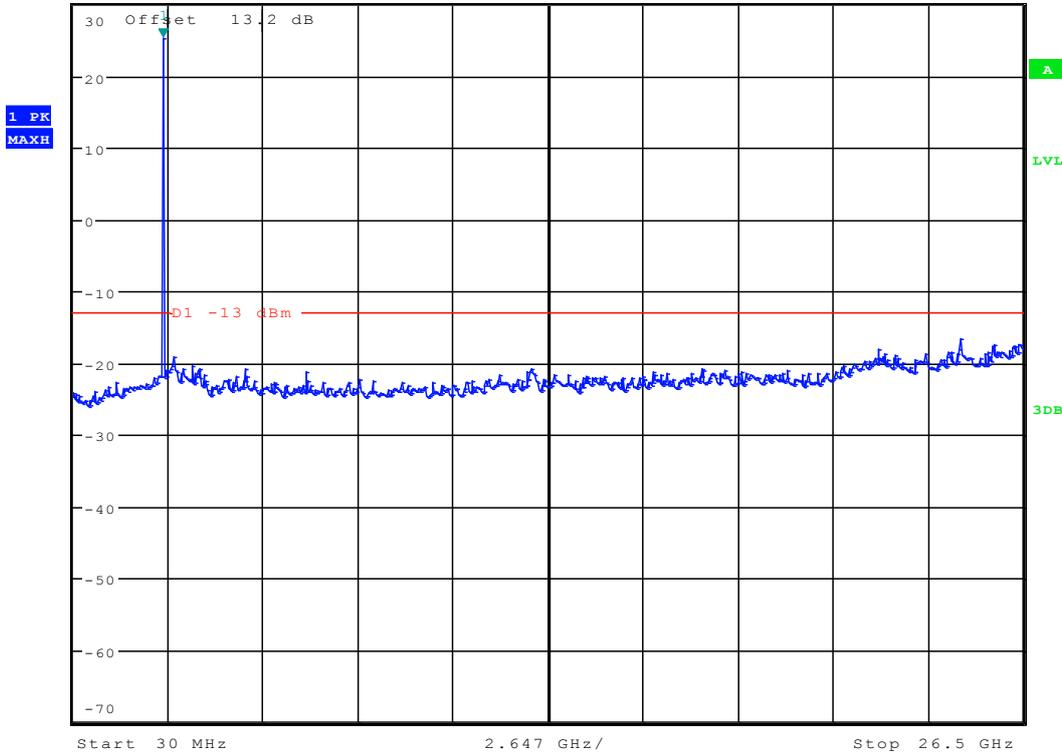
\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -36.57 dBm  
Ref 30 dBm      Att 45 dB      SWT 300 ms      150.00000000 kHz



Date: 24.MAY.2012 01:45:02



\* RBW 1 MHz                      Marker 1 [T1 ]  
\* VBW 3 MHz                        25.24 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 155 ms                      2.532772436 GHz



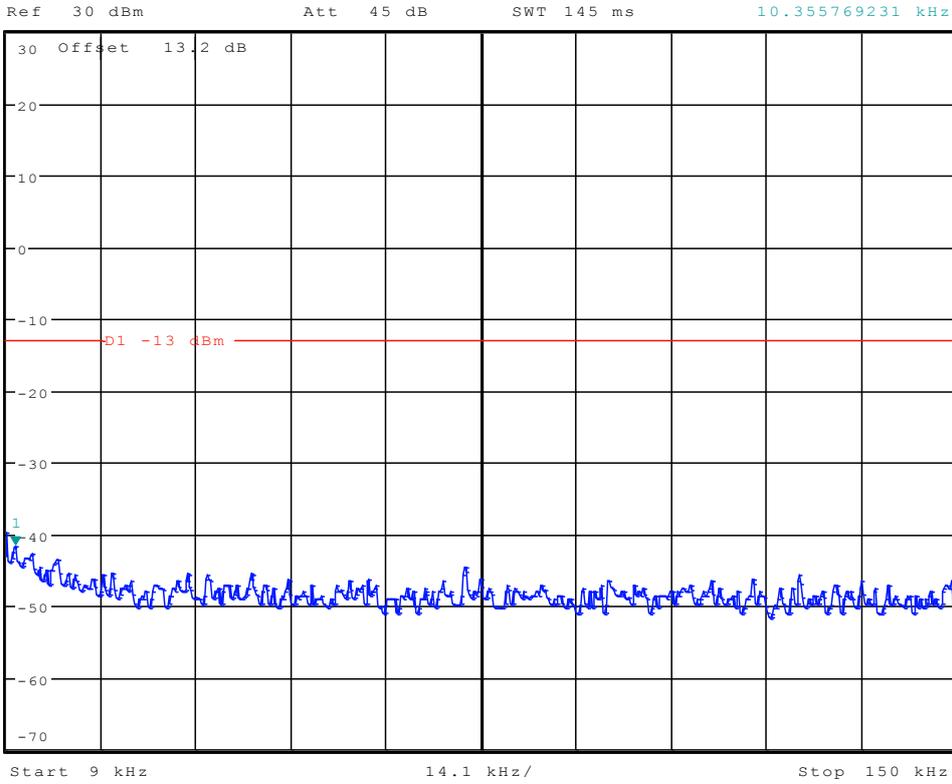
Date: 24.MAY.2012 01:48:46



### 1.1.2.1.2 QPSK/1RBs /RB #max



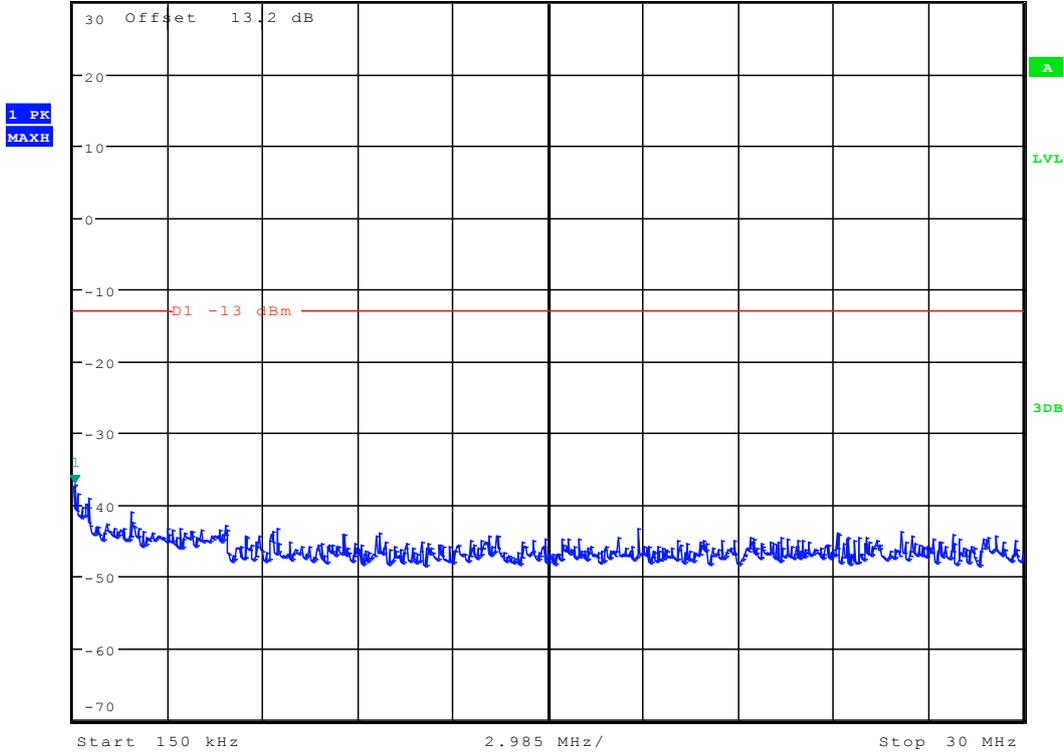
\*RBW 1 kHz                      Marker 1 [T1 ]  
\*VBW 10 kHz                      -41.57 dBm  
SWT 145 ms                      10.355769231 kHz



Date: 24.MAY.2012 01:43:32



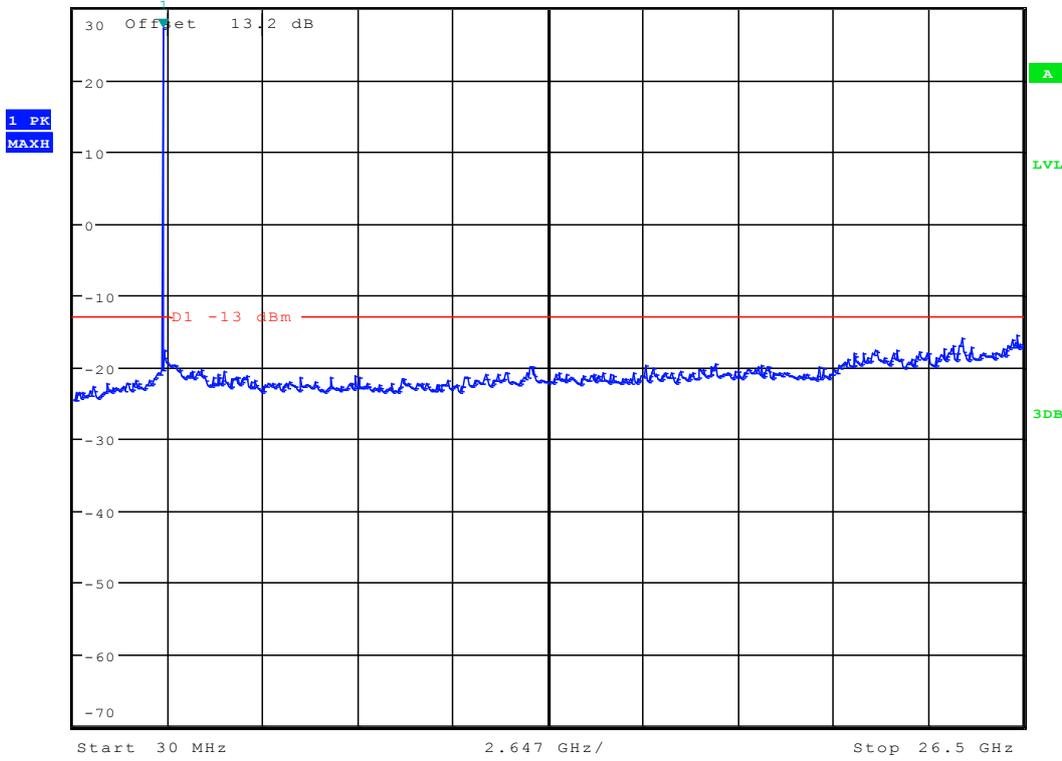
\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -37.22 dBm  
Ref 30 dBm      Att 45 dB      SWT 300 ms      197.836538462 kHz



Date: 24.MAY.2012 01:45:23



\* RBW 1 MHz                      Marker 1 [T1 ]  
\* VBW 3 MHz                      27.07 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 155 ms                      2.532772436 GHz



Date: 24.MAY.2012 01:48:27

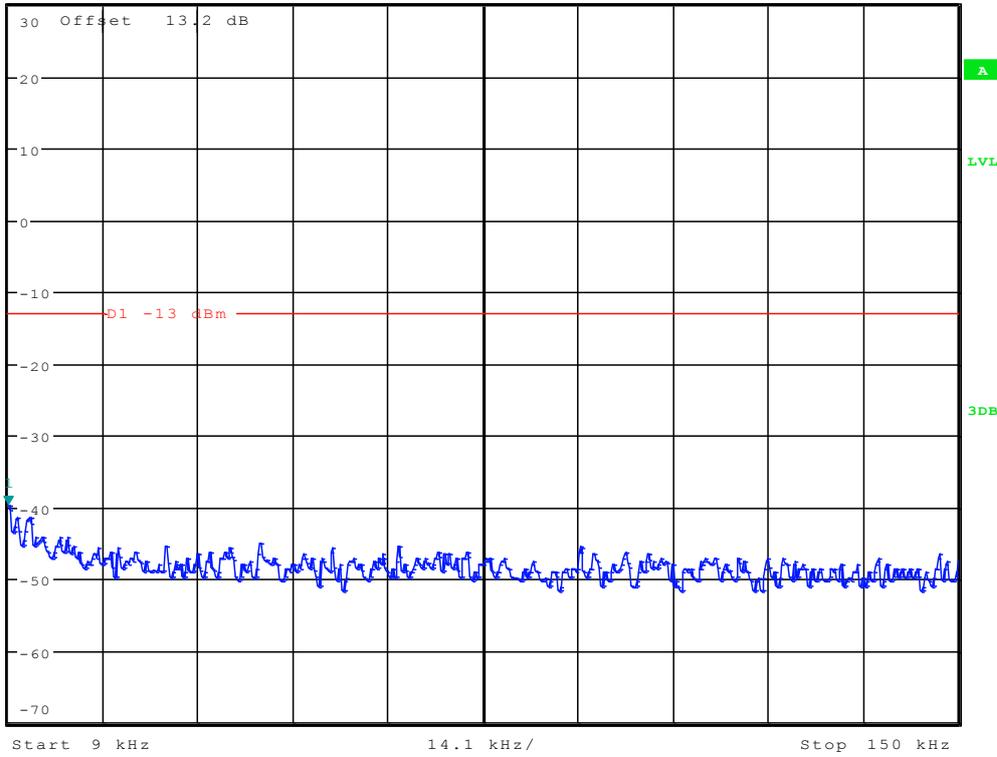


### 1.1.2.1.3 QPSK/full RBs



\*RBW 1 kHz                      Marker 1 [T1 ]  
\*VBW 10 kHz                      -39.59 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 145 ms                      9.000000000 kHz

1 PK  
MAXH



Date: 24.MAY.2012 01:43:53



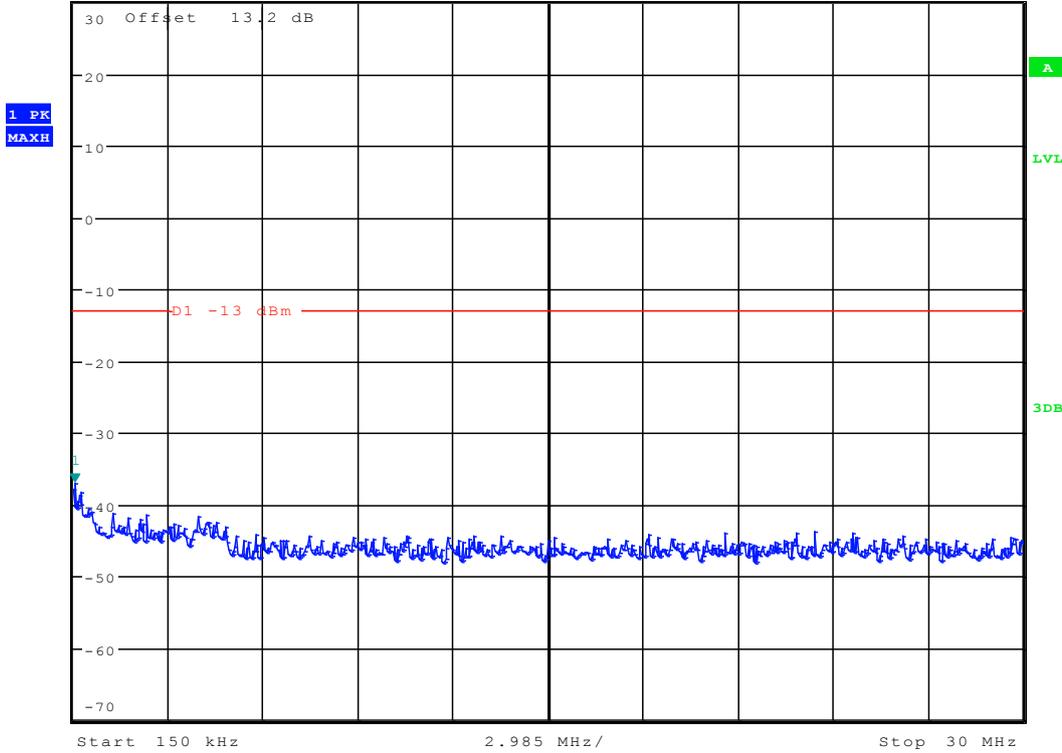
\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -36.98 dBm  
SWT 300 ms      197.836538462 kHz

Ref 30 dBm

Att 45 dB

SWT 300 ms

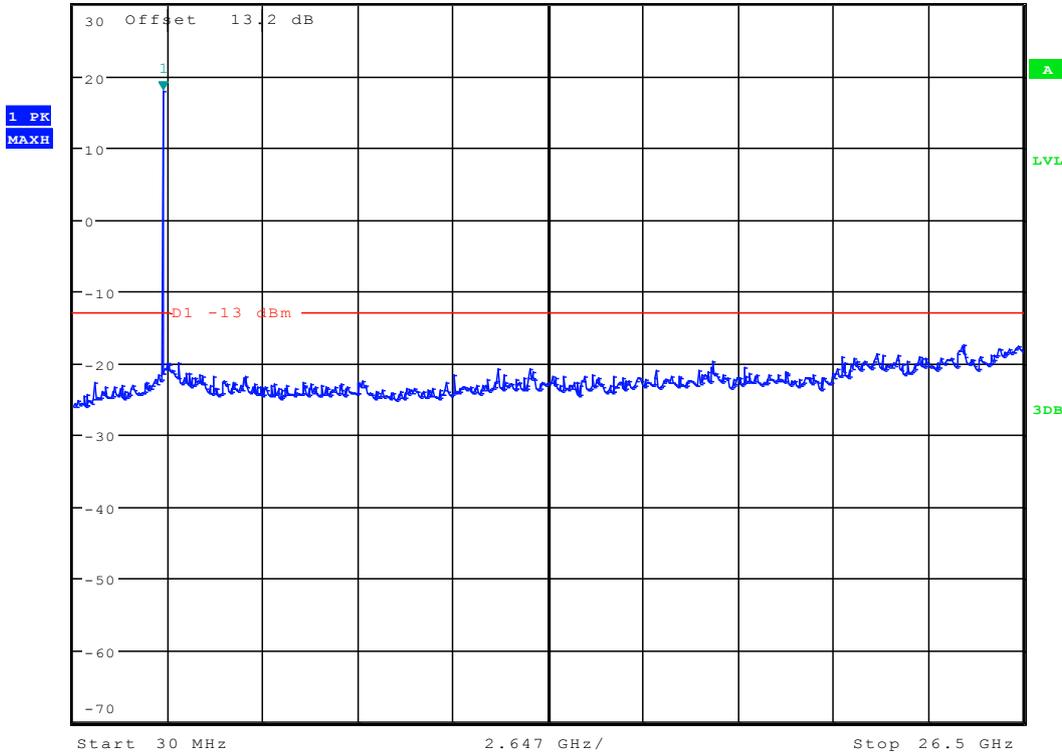
197.836538462 kHz



Date: 24.MAY.2012 01:44:44



\* RBW 1 MHz                      Marker 1 [T1 ]  
\* VBW 3 MHz                      17.94 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 155 ms                      2.532772436 GHz



Date: 24.MAY.2012 01:49:21

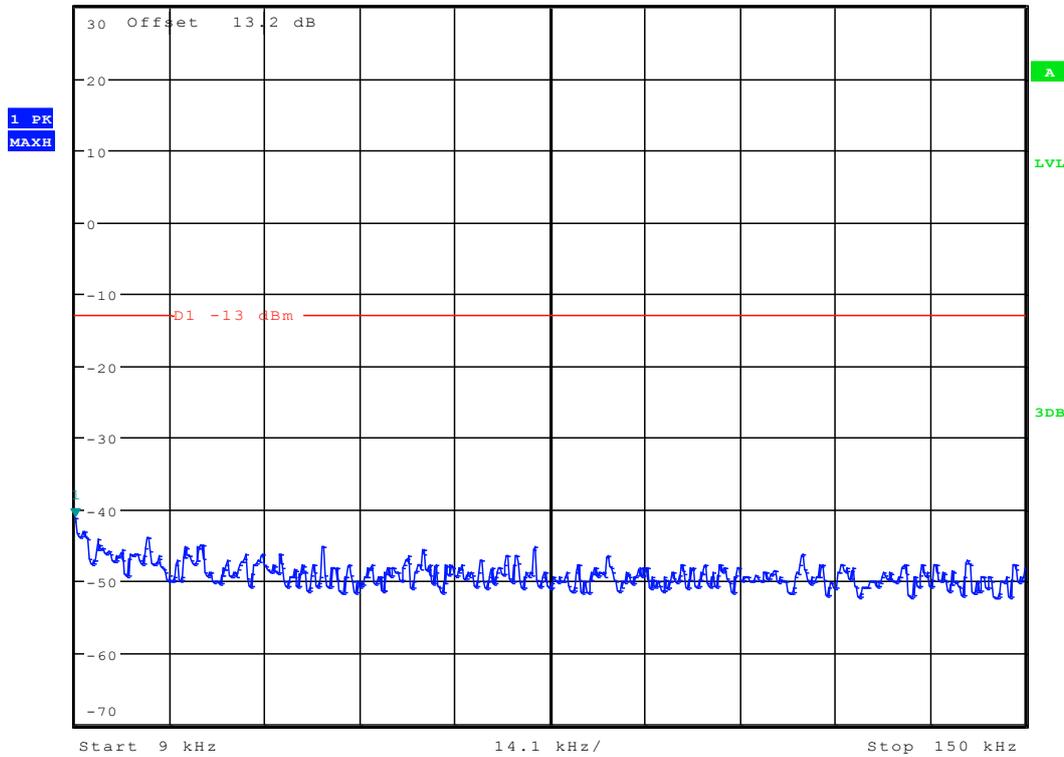


### 1.1.2.2 Channel = M

#### 1.1.2.2.1 QPSK/1RBs /RB #0



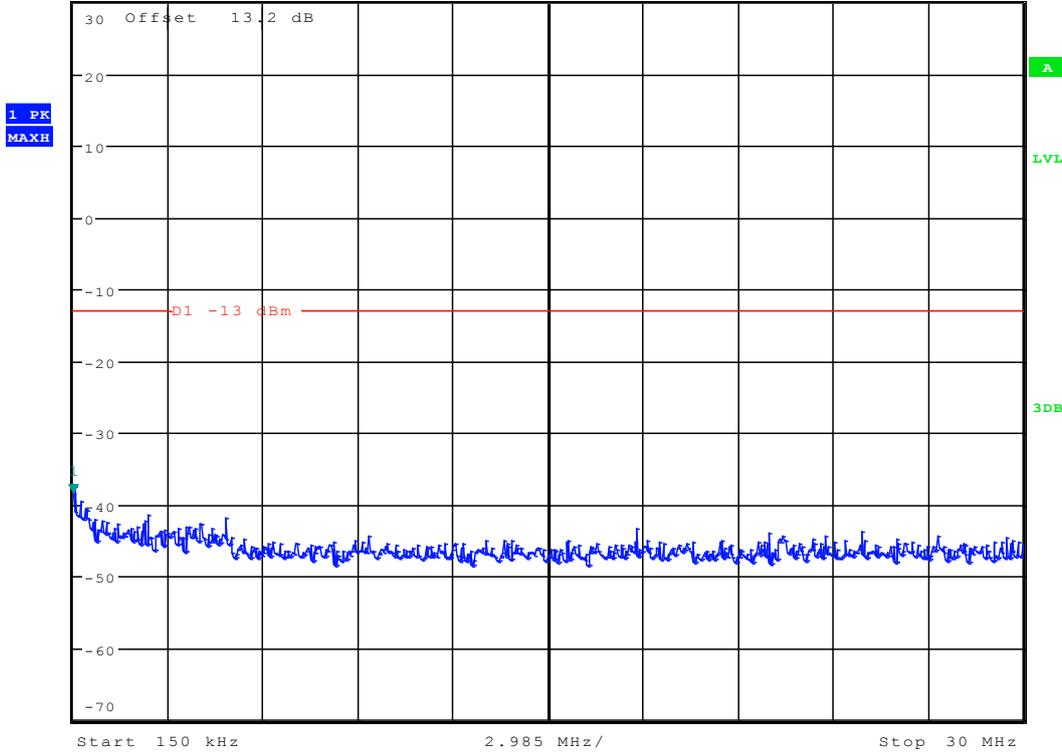
\* RBW 1 kHz                      Marker 1 [T1 ]  
\* VBW 3 kHz                      -41.08 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 145 ms                      9.000000000 kHz



Date: 24.MAY.2012 01:53:07



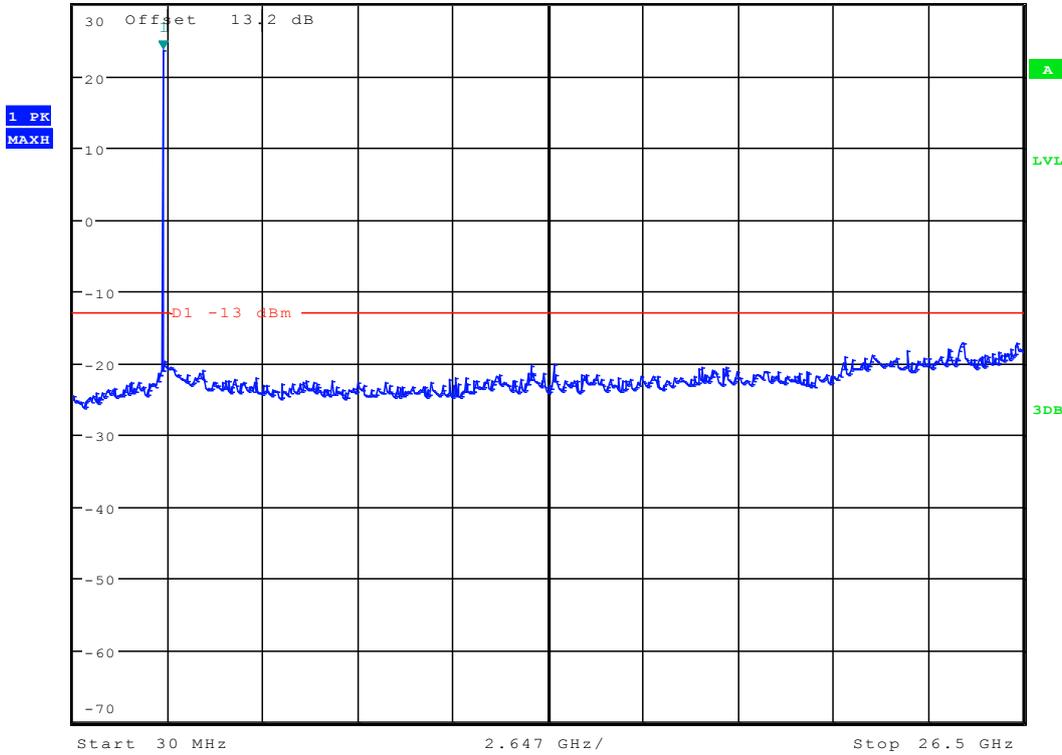
\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -38.46 dBm  
Ref 30 dBm      Att 45 dB      SWT 300 ms      150.000000000 kHz



Date: 24.MAY.2012 01:51:40



\* RBW 1 MHz      Marker 1 [T1 ]  
\* VBW 3 MHz      23.54 dBm  
Ref 30 dBm      Att 45 dB      SWT 155 ms      2.532772436 GHz



Date: 24.MAY.2012 01:50:26

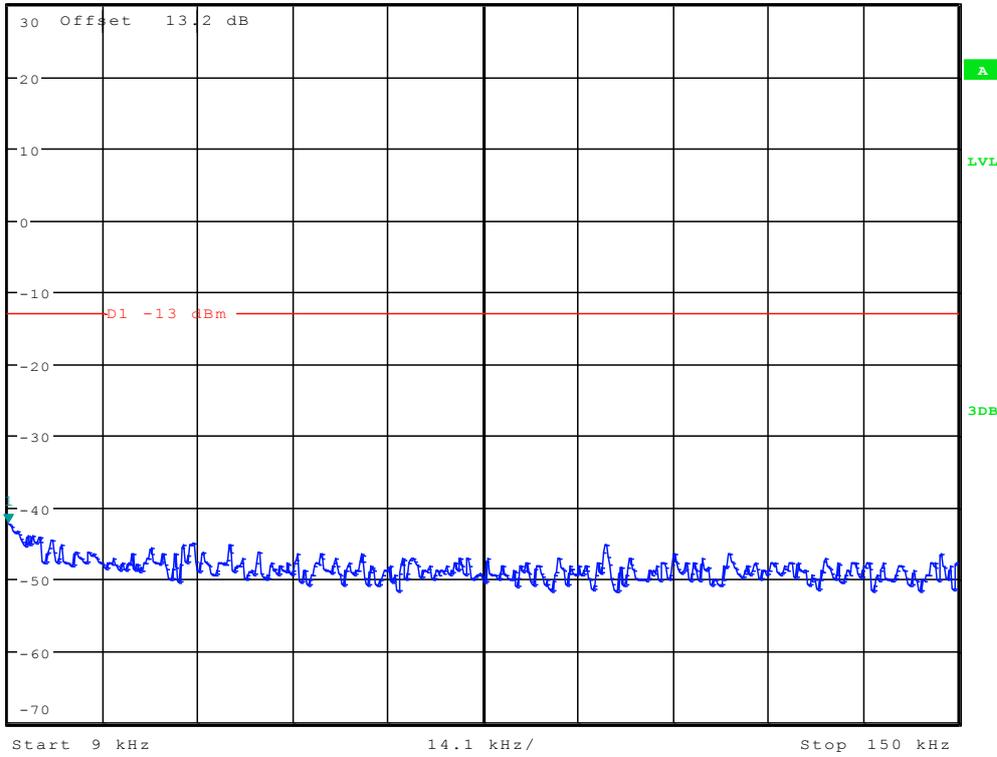


### 1.1.2.2.2 QPSK/1RBs /RB #max



\* RBW 1 kHz      Marker 1 [T1 ]  
\* VBW 3 kHz      -42.20 dBm  
Ref 30 dBm      Att 45 dB      SWT 145 ms      9.000000000 kHz

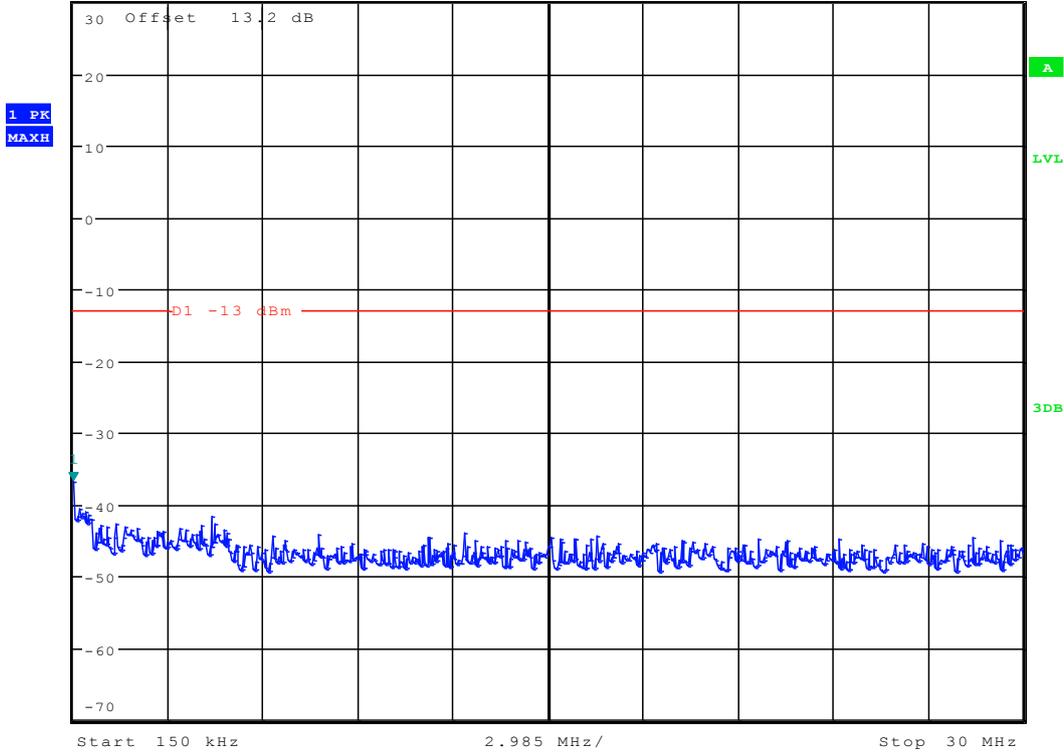
1 PK  
MAXH



Date: 24.MAY.2012 01:53:32



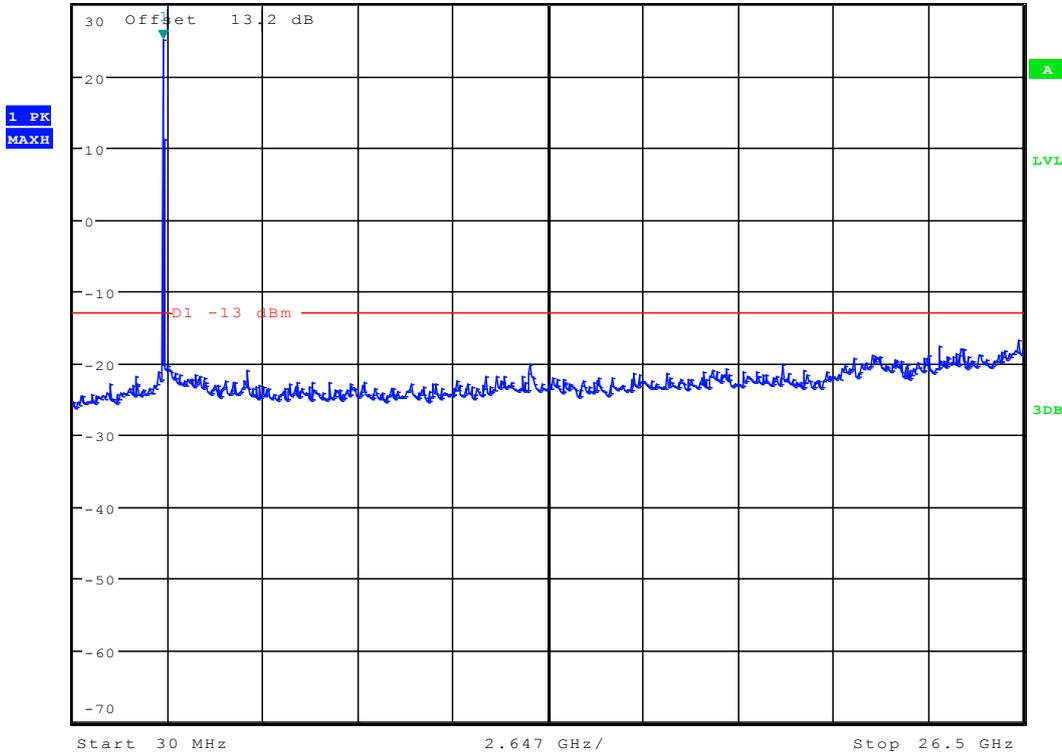
\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -36.74 dBm  
Ref 30 dBm      Att 45 dB      SWT 300 ms      150.000000000 kHz



Date: 24.MAY.2012 01:51:17



\* RBW 1 MHz                      Marker 1 [T1 ]  
\* VBW 3 MHz                      25.00 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 155 ms                      2.532772436 GHz



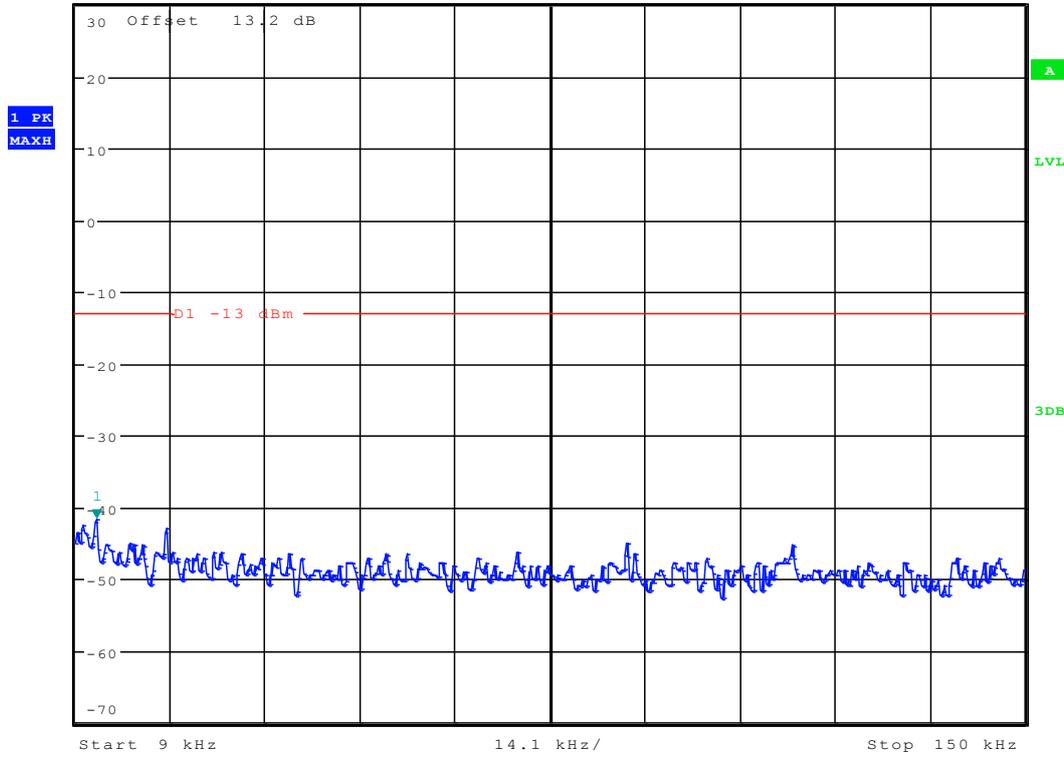
Date: 24.MAY.2012 01:50:43



### 1.1.2.2.3 QPSK/full RBs



\* RBW 1 kHz                      Marker 1 [T1 ]  
\* VBW 3 kHz                      -41.57 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 145 ms                      12.163461538 kHz



Date: 24.MAY.2012 01:52:42



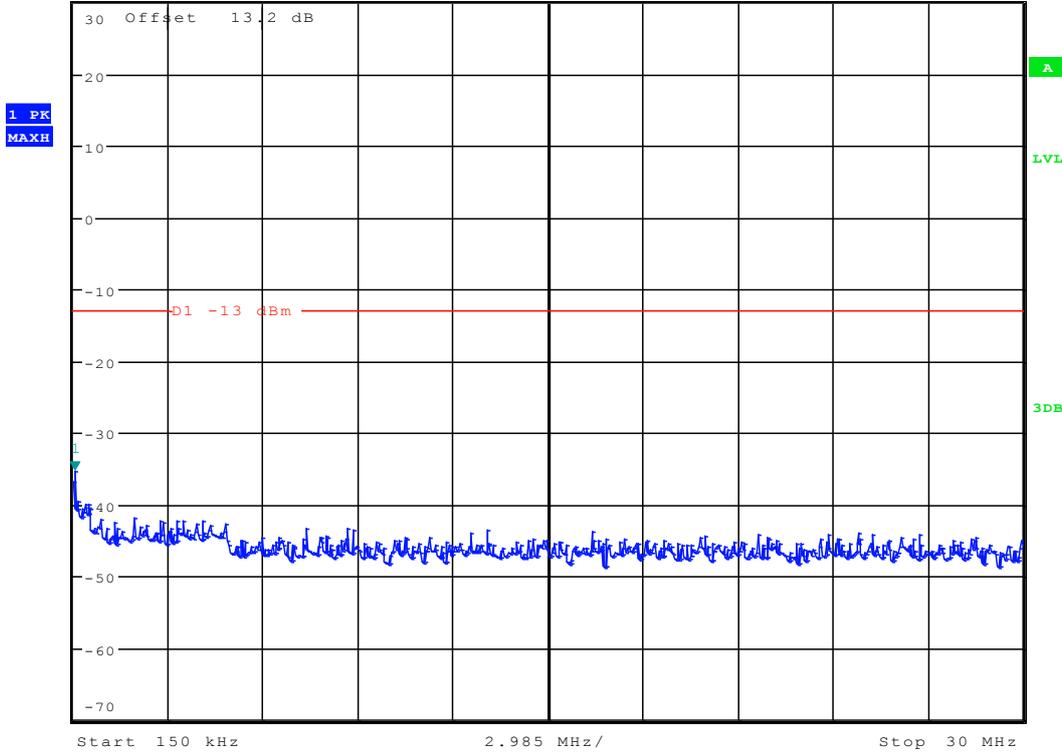
\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -35.21 dBm  
SWT 300 ms      197.836538462 kHz

Ref 30 dBm

Att 45 dB

SWT 300 ms

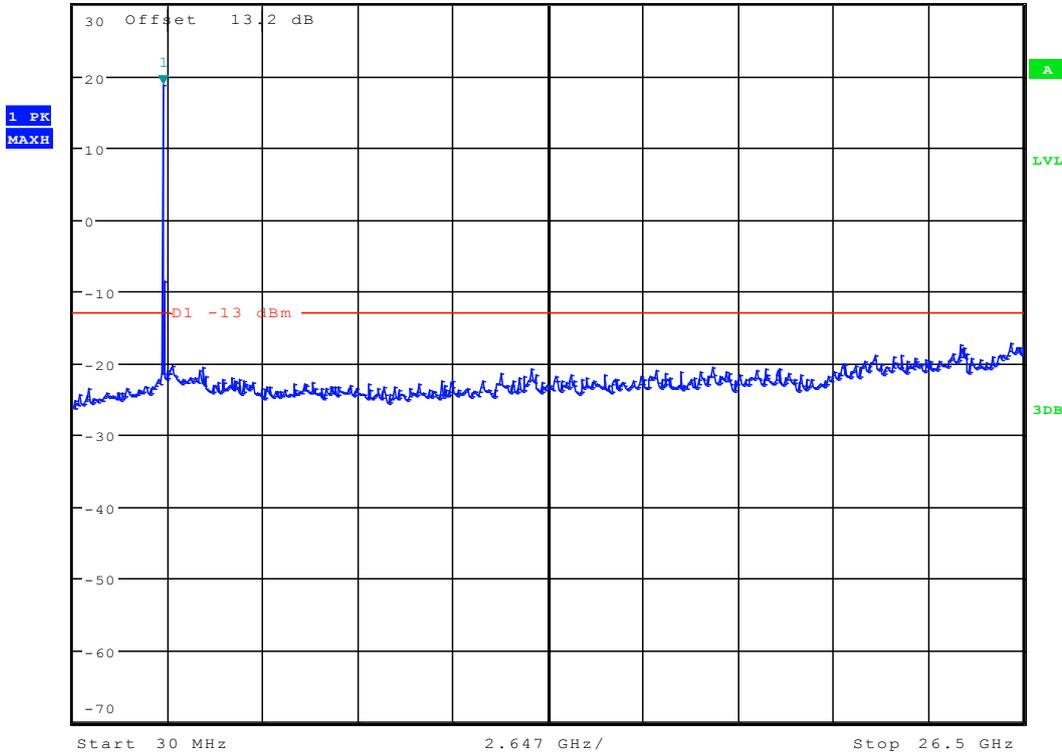
197.836538462 kHz



Date: 24.MAY.2012 01:52:02



\* RBW 1 MHz                      Marker 1 [T1 ]  
\* VBW 3 MHz                      18.69 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 155 ms                      2.532772436 GHz



Date: 24.MAY.2012 01:50:02

### 1.1.2.3 Channel = T

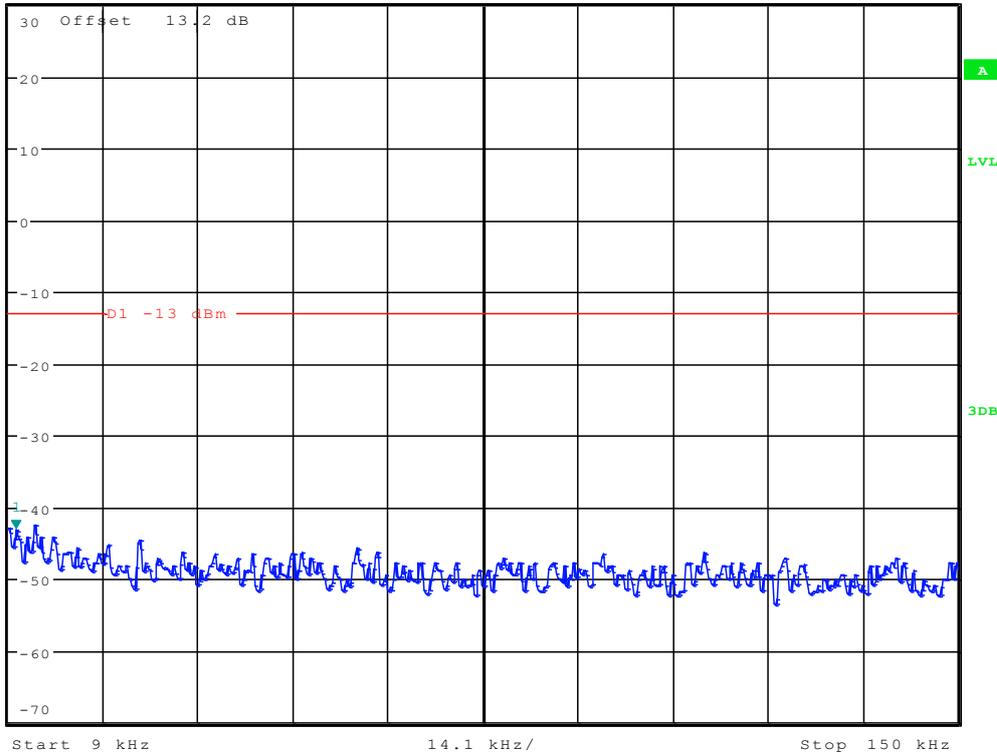


### 1.1.2.3.1 QPSK/1RBs /RB #0



\* RBW 1 kHz                      Marker 1 [T1 ]  
\* VBW 3 kHz                      -43.00 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 145 ms                      10.129807692 kHz

1 PK  
MAXH



Date: 24.MAY.2012 01:57:28



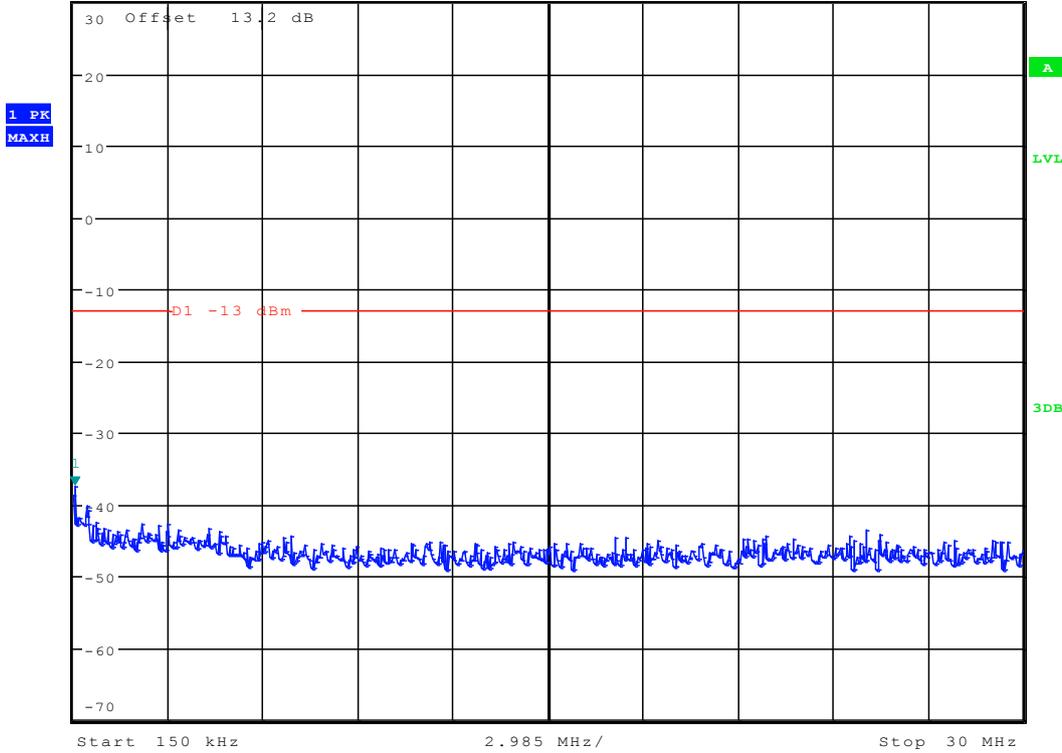
\*RBW 10 kHz      Marker 1 [T1 ]  
\*VBW 30 kHz      -37.28 dBm  
SWT 300 ms      197.836538462 kHz

Ref 30 dBm

Att 45 dB

SWT 300 ms

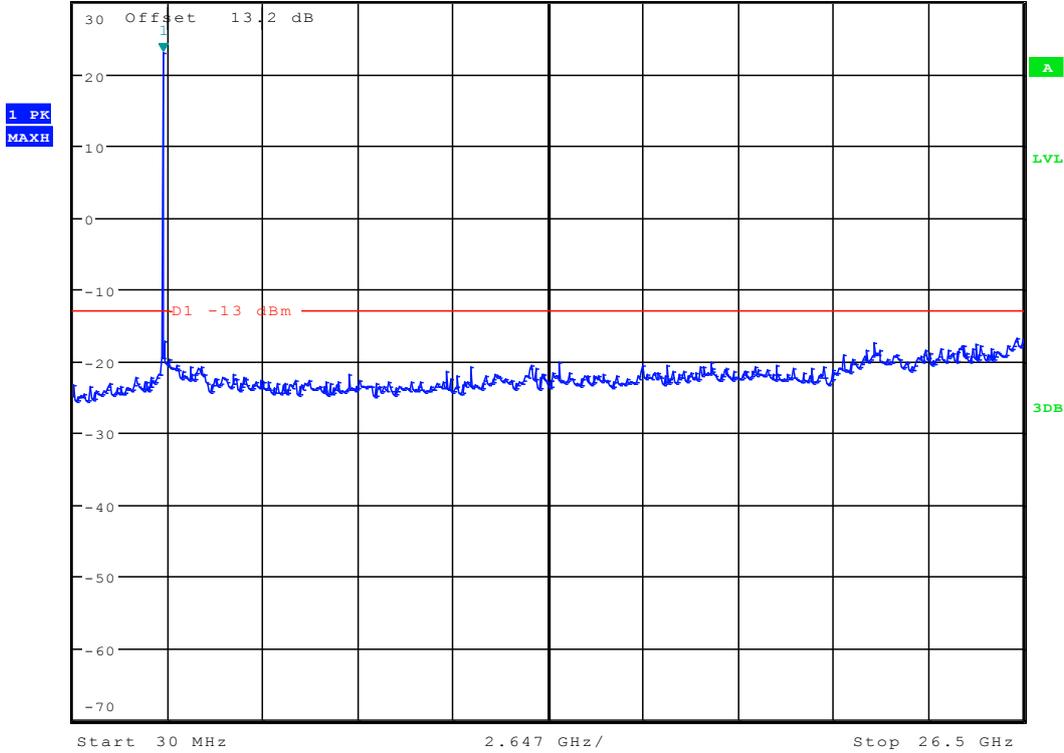
197.836538462 kHz



Date: 24.MAY.2012 01:58:57



\* RBW 1 MHz                      Marker 1 [T1 ]  
\* VBW 3 MHz                      22.99 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 155 ms                      2.532772436 GHz



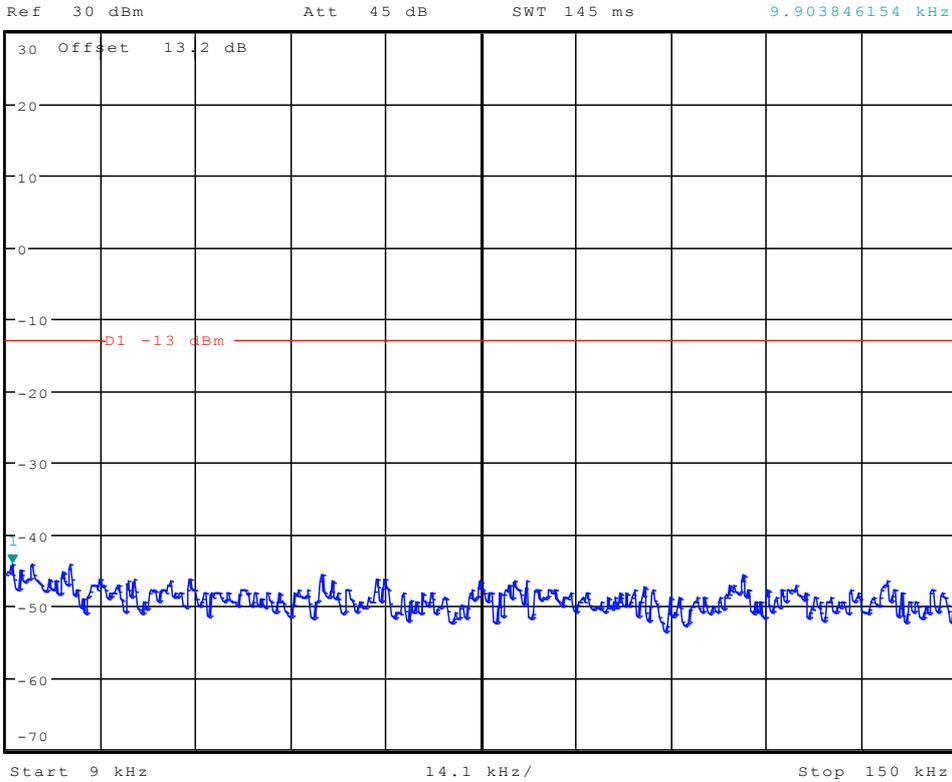
Date: 24.MAY.2012 02:00:39



### 1.1.2.3.2 QPSK/1RBs /RB #max



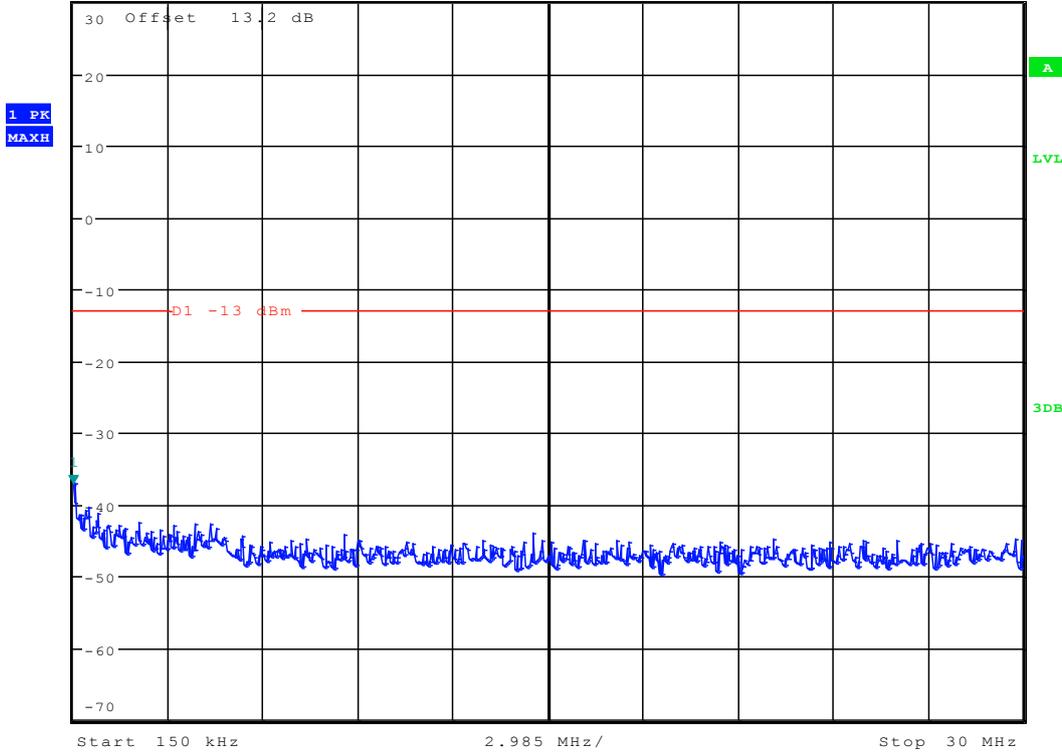
\* RBW 1 kHz                      Marker 1 [T1 ]  
\* VBW 3 kHz                      -44.00 dBm  
SWT 145 ms                      9.903846154 kHz



Date: 24.MAY.2012 01:58:07



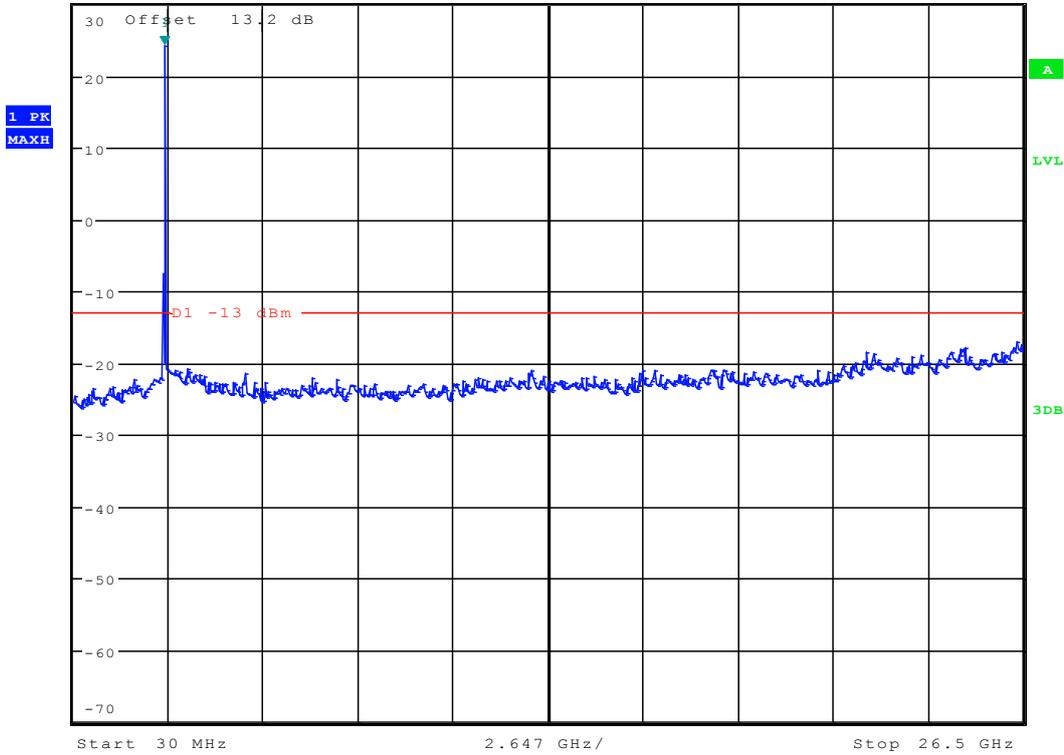
\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -37.22 dBm  
Ref 30 dBm      Att 45 dB      SWT 300 ms      150.00000000 kHz



Date: 24.MAY.2012 01:58:35



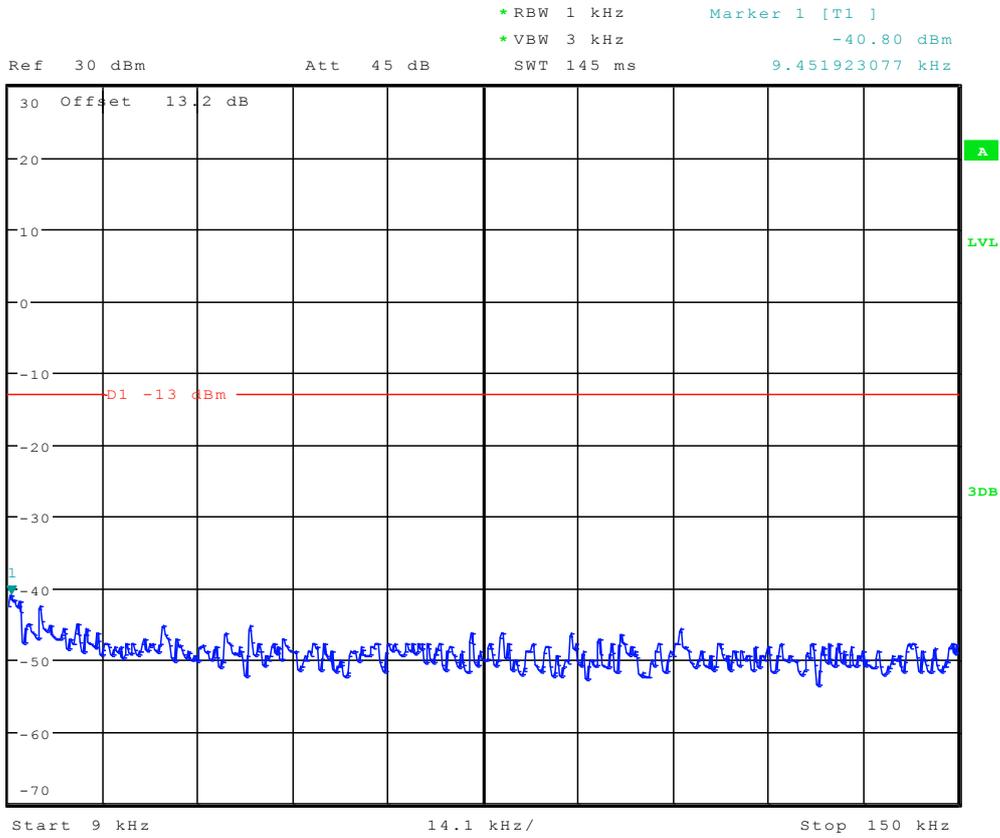
\* RBW 1 MHz                      Marker 1 [T1 ]  
\* VBW 3 MHz                      24.18 dBm  
Ref 30 dBm                      Att 45 dB                      SWT 155 ms                      2.575192308 GHz



Date: 24.MAY.2012 02:00:59



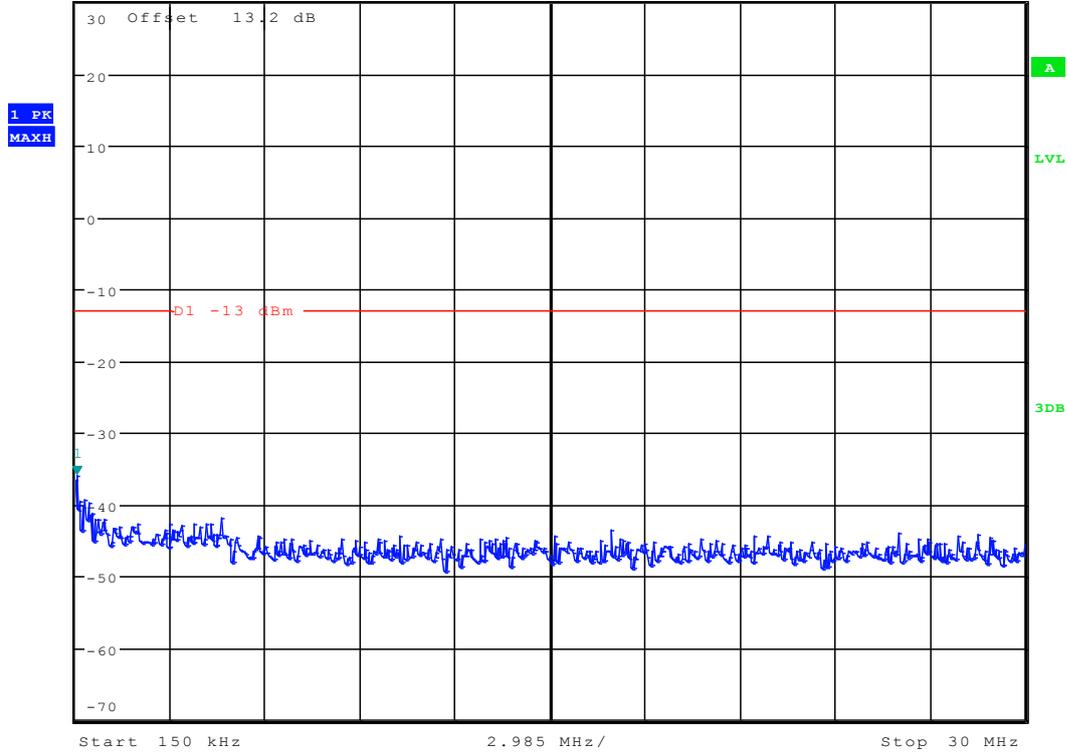
### 1.1.2.3.3 QPSK/full RBs



Date: 24.MAY.2012 01:57:12



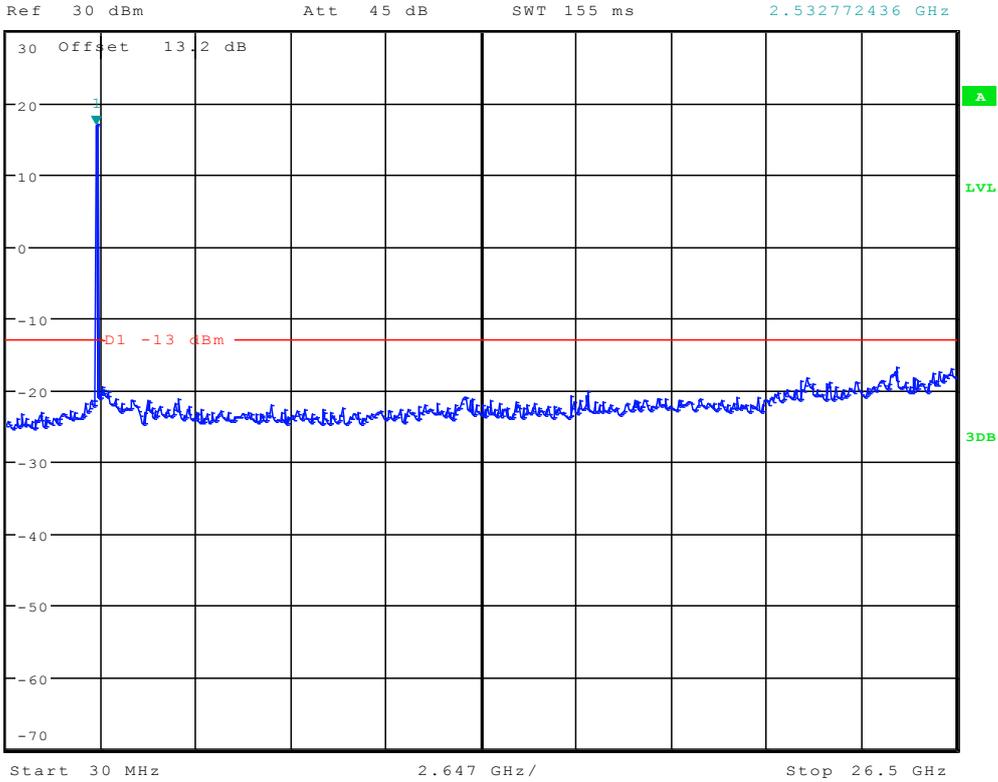
\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -35.97 dBm  
Ref 30 dBm      Att 45 dB      SWT 300 ms      197.836538462 kHz



Date: 24.MAY.2012 01:59:23



\* RBW 1 MHz      Marker 1 [T1 ]  
\* VBW 3 MHz      16.79 dBm  
SWT 155 ms      2.532772436 GHz



Date: 24.MAY.2012 02:00:13

-----END-----



# Appendix F

## Field Strength of Spurious Radiation

According to FCC Part 2.1053 & 27.53(m)



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## 1 For Band 41

NOTE1: QPSK output power higher than 16QAM, so only test the QPSK mode.

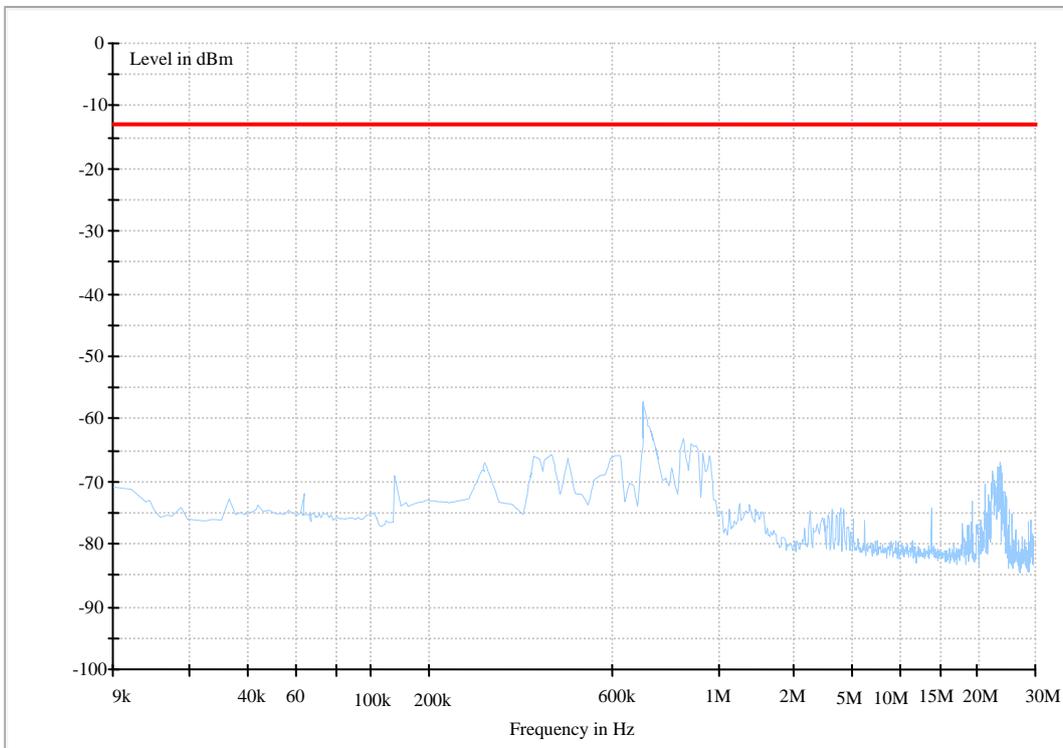
NOTE2: All relevant operation modes have been tested, and the worst case data is included in this report.

### 1.1 Test Mode=TM4

#### 1.1.1 Channel Bandwidth = Lowest (10 MHz)

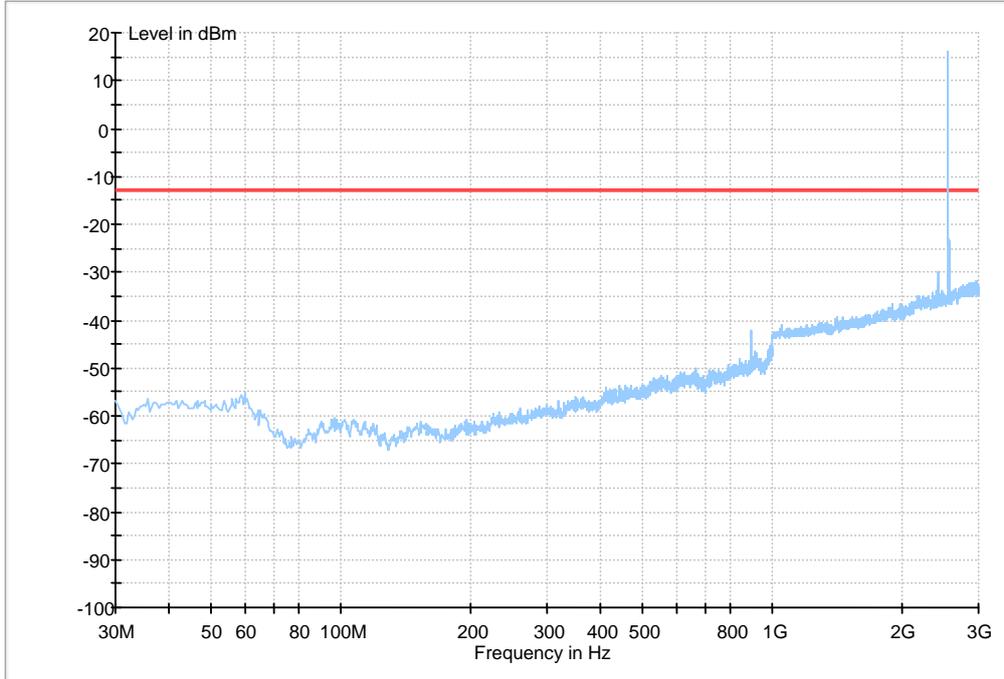
##### 1.1.1.1 Channel = M

(9KHz~30MHz)



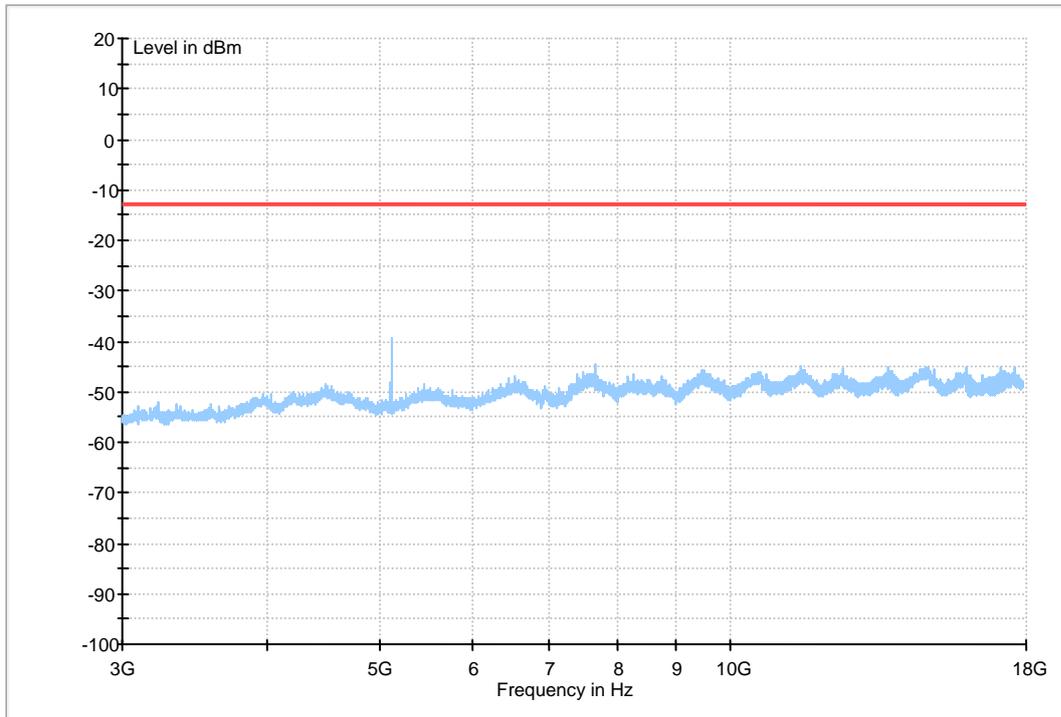


(30MHz ~3GHz)



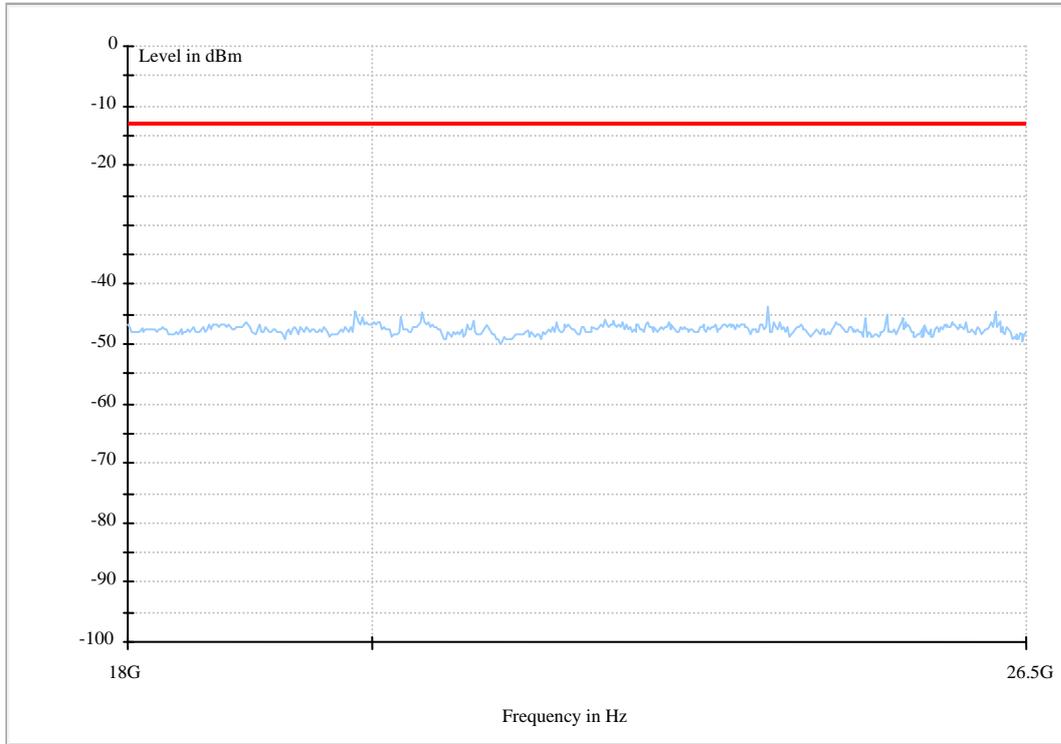


(3GHz~18GHz)





(18GHz~26.5GHz)

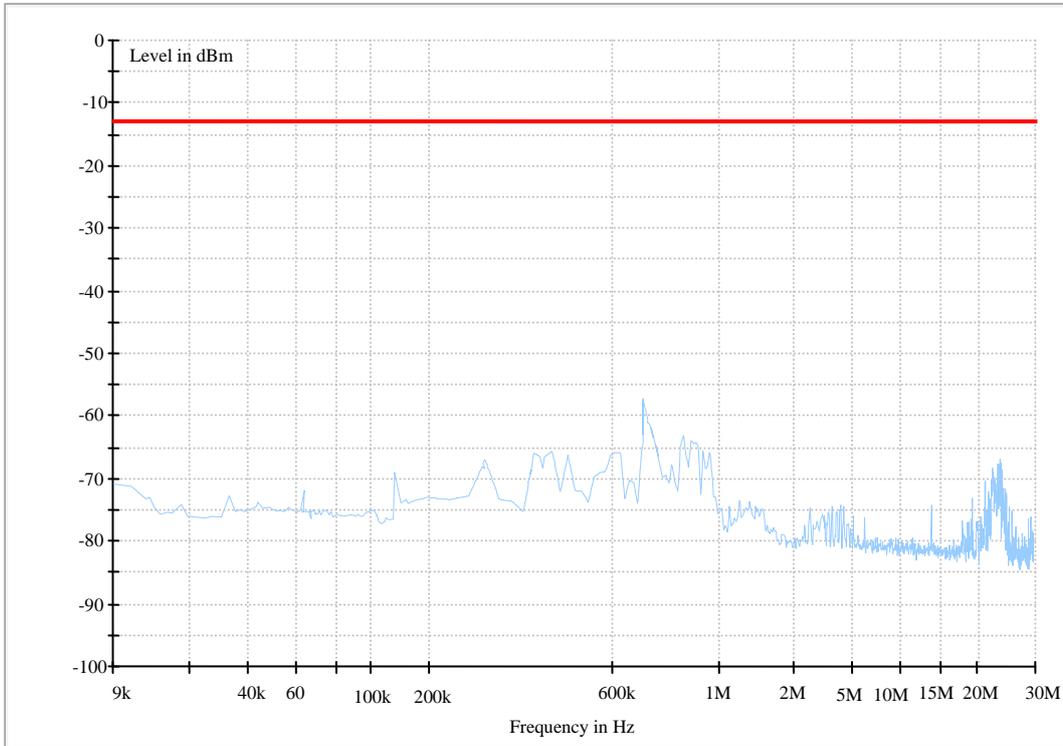




## 1.1.2 Channel Bandwidth = Highest (20 MHz)

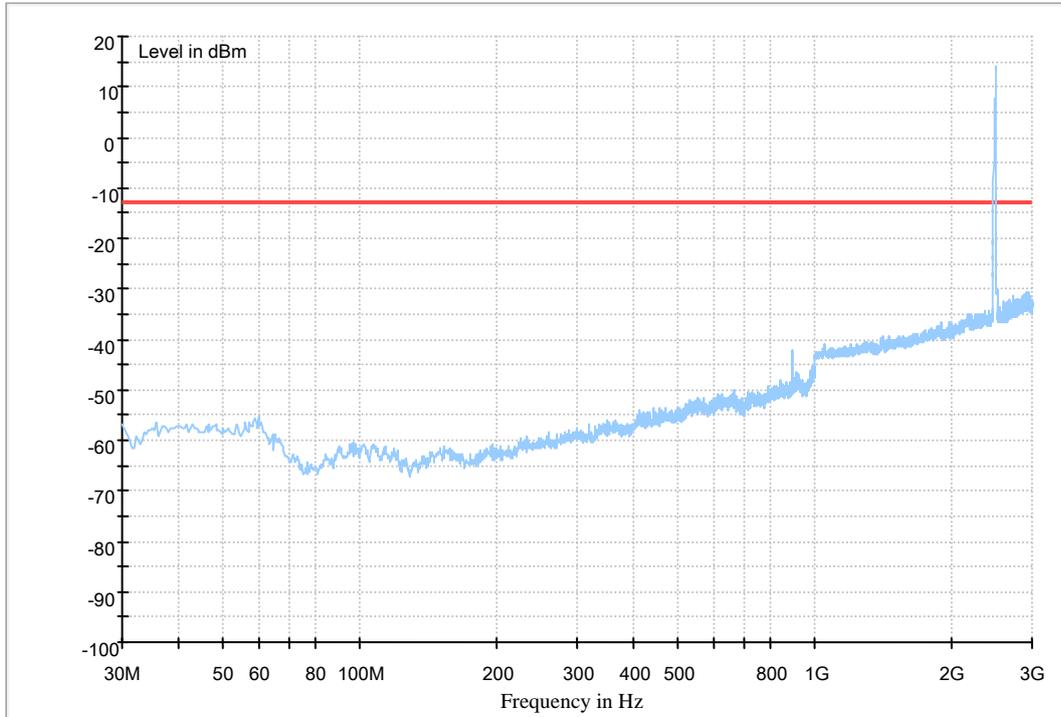
### 1.1.2.1 Channel = M

(9KHz~30MHz)



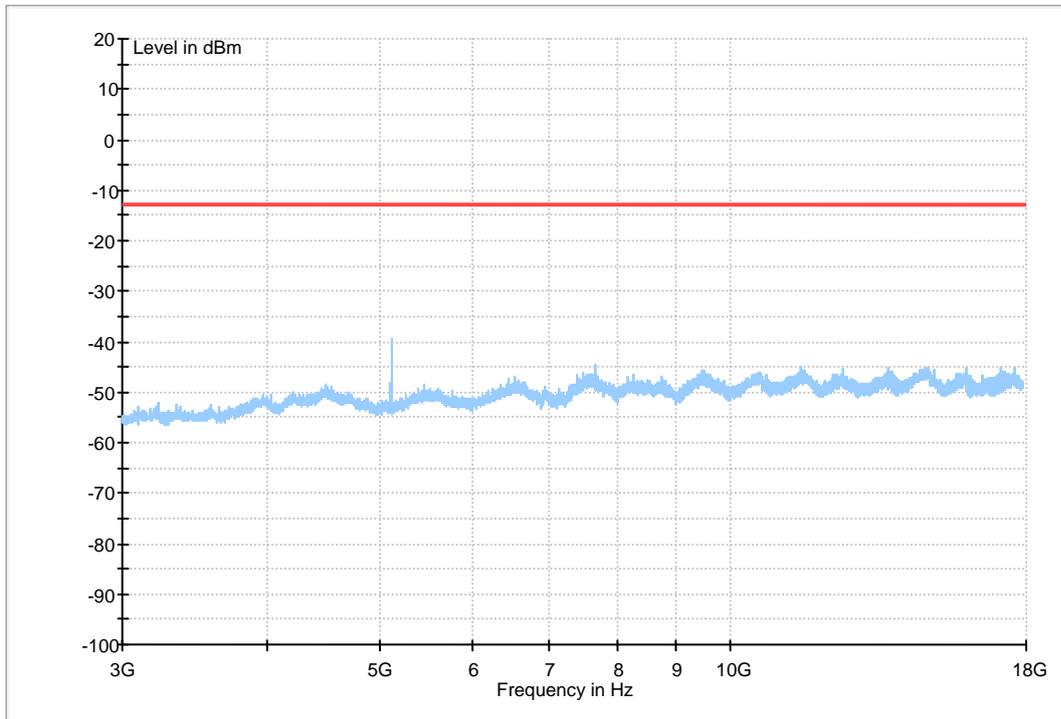


(30MHz~3GHz)



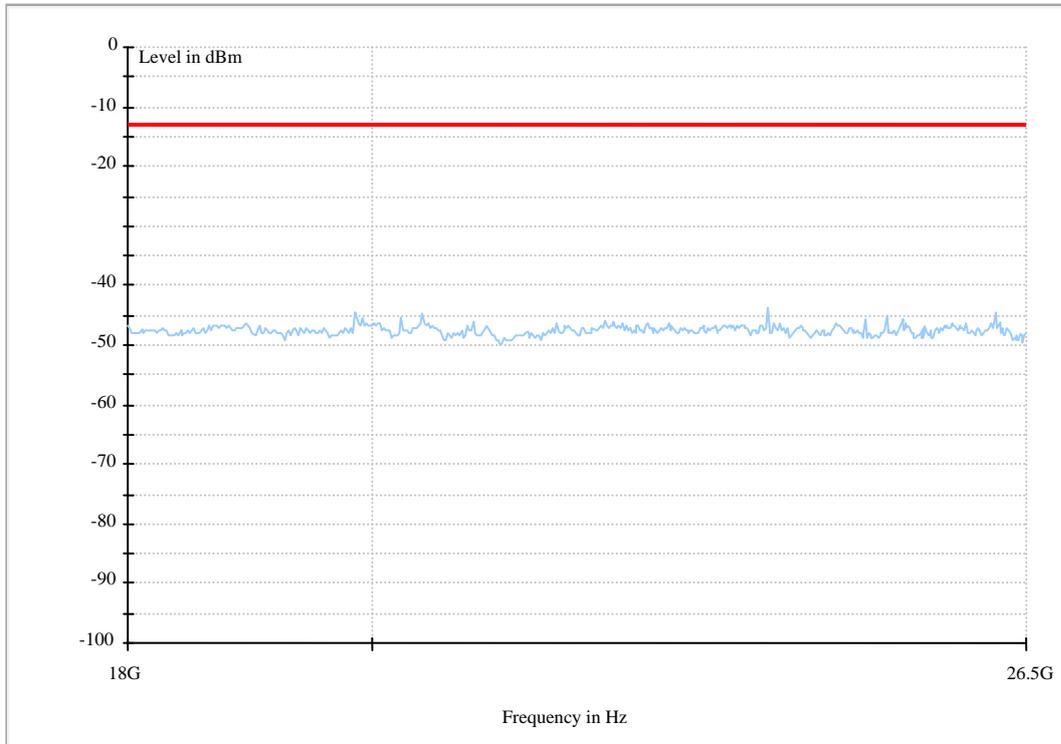


**(3GHz~18GHz)**





(18GHz~26.5GHz)



-----END-----



# Appendix G

## Frequency Stability According to FCC Part 2.1055 & Part 27.54



## Frequency Error vs. Temperature:

NOTE: All relevant operation modes have been tested, and the worst case data is included in this report.

Table 1 Measurement Results (LTE) BAND 41

Test Mode	RF Ch.	Volt.	Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM 4(10M)	M	VN	-30 °C	27	0.01055	---	±2.5	Pass
			-20 °C	-25	-0.00977	---	±2.5	Pass
			-10 °C	-13	-0.00508	---	±2.5	Pass
			0 °C	-8	-0.00313	---	±2.5	Pass
			10 °C	14	0.00547	---	±2.5	Pass
			20 °C	28	0.01094	---	±2.5	Pass
			30 °C	14	0.00547	---	±2.5	Pass
			40 °C	27	0.01055	---	±2.5	Pass
			50 °C	-21	-0.00820	---	±2.5	Pass
TM 4(20M)	M	VN	-30 °C	-24	-0.00938	---	±2.5	Pass
			-20 °C	-22	-0.00859	---	±2.5	Pass
			-10 °C	10	0.00391	---	±2.5	Pass
			0 °C	18	0.00703	---	±2.5	Pass
			10 °C	-24	-0.00938	---	±2.5	Pass
			20 °C	-18	-0.00703	---	±2.5	Pass
			30 °C	13	0.00508	---	±2.5	Pass
			40 °C	17	0.00664	---	±2.5	Pass
			50 °C	-11	-0.00430	---	±2.5	Pass



## **Frequency Error vs. Voltage:**

Table 2 Measurement Results (LTE) BAND 41

Test Mode	RF Ch.	Temp.	Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM4(10M)	M	20 °C	VL	-24	-0.00938	---	±2.5	Pass
			VN	22	0.00859	---	±2.5	Pass
			VH	27	0.01055	---	±2.5	Pass
TM4(20M)	M	20 °C	VL	19	0.00742	---	±2.5	Pass
			VN	27	0.01055	---	±2.5	Pass
			VH	-15	-0.00586	---	±2.5	Pass

-----END-----