



FCC RF Test Report

Product Name: Mobile WiFi

Model Number: CDMA HWD11

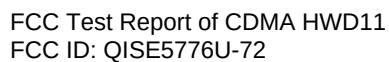
**Report No: SYBH(Z-RF)002082012-2001
FCC ID: QISE5776U-72**

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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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Contents

1	<u>General Information</u>	5
1.1	APPLIED STANDARD	5
1.2	TEST LOCATION	5
1.3	TEST ENVIRONMENTAL CONDITION	5
2	<u>Summary</u>	6
3	<u>Product Description</u>	7
3.1	PRODUCT INFORMATION	7
4	<u>Test Description</u>	8
4.1	SUPPORTED FREQUENCY RANGE	8
4.2	TRANSMITTER / RECEIVER CHARACTERISTICS	8
4.3	ANTENNA GAIN	8
4.4	POWER SUPPLY	8
5	<u>General Test Conditions / Configurations</u>	9
5.1	RF CHANNELS UNDER TEST	9
5.2	TEST MODES	9
5.3	TEST ENVIRONMENT	9
5.4	TEST SETUP	10
5.5	TEST CONDITIONS	14
6	<u>Main Test Instruments</u>	16
7	<u>Test Results</u>	17
8	<u>Measurement Uncertainty</u>	17

1 General Information

1.1 Applied Standard	
Applied Rules:	47 CFR FCC Part 2:2011, Subpart J 47 CFR FCC Part 22:2011, Subpart H ANSI/TIA 603C:2004
1.2 Test Location	
Test Location 1:	Reliability Laboratory of Huawei Technologies Co., Ltd.
Address:	Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China
1.3 Test Environmental Condition	
Ambient Temperature:	20 – 25 °C
Ambient Relative Humidity:	45 – 55 %
Atmospheric Pressure:	101 kPa

2 Summary

Table 1 Summary of results

Test Case	FCC Part No.	Requirements	Result
Cellular Band			
Transmitter Output Power	2.1046 & 22.913	ERP not exceed 7 W Peak-to-average ratio not exceed 13 dB	Pass
Modulation Characteristics	2.1047	Digital modulation	Pass
Occupied Bandwidth	2.1049	(Not specified)	Pass
Band Edges Compliance	2.1051 & 22.917	Below -13 dBm/1%*EBW, in 1 MHz range	Pass
Spurious Emission at Antenna Terminals	2.1051 & 22.917	Below -13 dBm/1 kHz, 9 kHz to 150 kHz Below -13 dBm/10 kHz, 150 kHz to 30 MHz Below -13 dBm/100 kHz, 30 MHz to 10 th harmonics	Pass
Field Strength of Spurious Radiation	2.1053 & 22.917	Below -13 dBm/100 kHz	Pass
Frequency Stability	2.1055 & 22.355	Maintained within the tolerances of ± 2.5 ppm	Pass

3 Product Description

3.1 Product Information

3.1.1 General Description

CDMA HWD11 LTE/EVDO/UMTS/GSM multi-mode 10 bands Mobile WiFi is subscriber equipment in the LTE/EVDO/UMTS/GSM system. CDMA HWD11 implement such functions as RF signal receiving/transmitting, LTE/EVDO/UMTS/GSM protocol processing, data service etc. and it can act as a Wi-Fi hotspot for user accessing to internet. Externally it provides USB interface (to connect to the notebook etc.) and USIM card interface. CDMA HWD11 has 3 internal antennas as default Wi-Fi, diversity, and main antenna.

3.1.2 Board Information

Table 2 Board Information

Mobile WiFi		
CDMA HWD11		
Board and Module		
Description	Software Version	Hardware Version
MAINBOARD	11.220.01.90.824	CL1E5776UM

3.1.3 Adapter Technical Data

Name	Manufacture	Description
Adapter	HUAWEI	AC/DCAdapter Model: HW-050200U3W Adapter,-10degC-45degC,100V-240V,5.0V/2.0A,UL 2PIN/ DC USB 2.0,ERP V,UL/DOE

3.1.4 Battery Technical Data

Name	Manufacture	Description
Li-ion Battery	HUAWEI	Battery Model: HB5P1H Rated capacity: 3000mAh Nominal Voltage:  +3.7V Charging Voltage:  +4.2V

4 Test Description

4.1 Supported Frequency Range

Characteristics	Description
Downlink	869 to 894 MHz
Uplink	824 to 849 MHz

4.2 Transmitter / Receiver Characteristics

Characteristics	Description
System Type	CDMA UMTS
TX Output Power (per Antenna Port)	CDMA system: 24dBm UMTS system: 24dBm
Channel Spacing(s) / Bandwidth(s)	CDMA system: 1.23 MHz UMTS system: 5 MHz
Designation of Emissions	CDMA system: 1M28F9W UMTS system: 4M18F9W

4.3 Antenna Gain

Antenna Gain(dBi)	0.5
Antenna Gain(dBd)	-1.65

4.4 Power Supply

Specification	Description
Power Supply Type	Directly Connected to DC /AC Power Supply
Input to EUT (DC power)	DC Voltage Nominal: $\approx$ 3.7 V DC Voltage Range: $\approx$ 3.6 V to 4.2 V

5 General Test Conditions / Configurations

5.1 RF Channels under Test

Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
TM1/TM3/ Subtype 0/ Subtype 2	TX	Channel 1013	Channel 384	Channel 777
		824.7MHz	836.52MHz	848.31MHz
	RX	Channel 1013	Channel 384	Channel 777
		869.7MHz	881.52MHz	893.31MHz
TM4/TM5/TM6	TX	Channel 4132	Channel 4182	Channel 4233
		826.4MHz	836.4MHz	846.6MHz
	RX	Channel 4357	Channel 4407	Channel 4458
		871.4MHz	881.4MHz	891.6MHz

5.2 Test Modes

Test Mode	Test Modes Description
TM1	CDMA2000 1x mode QPSK modulation
TM3	CDMA2000 1x mode HPSK modulation
Subtype 0	CDMA2000 1x EV-DO mode HPSK modulation
Subtype 2	CDMA2000 1x EV-DO mode The R-Data packet size determines the modulation format, R-Data Packet Size:128, 256, 512, 768 or 1024 BPSK Modulation R-Data Packet Size:1536 , 2048,3072,4096,6144 or 8192 QPSK Modulation R-Data Packet Size:12288 8-PSK Modulation
TM4	WCDMA, QPSK modulation
TM5	HSDPA, QPSK modulation
TM6	HSUPA, QPSK modulation

5.3 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Temperature	TN	Ambient
Voltage	VL	3.6V
	VN	3.7V
	VH	4.2V

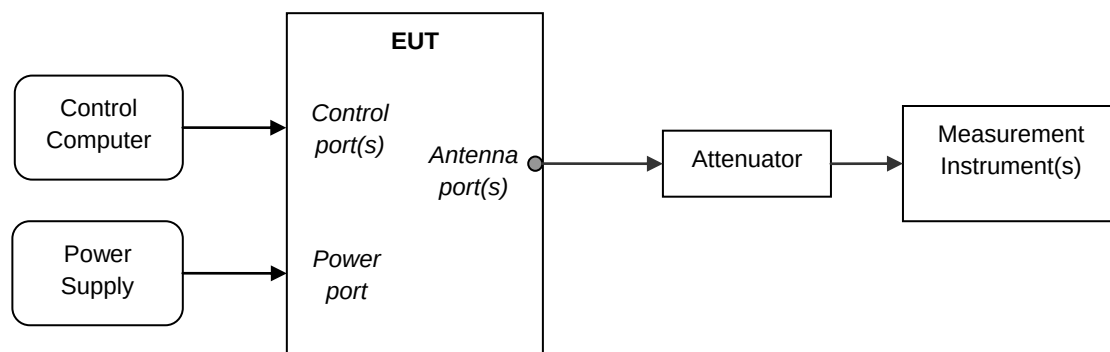
NOTE: VL= lower extreme test voltage
VN= nominal voltage
VH= upper extreme test voltage
TN= normal temperature

5.4 Test Setup

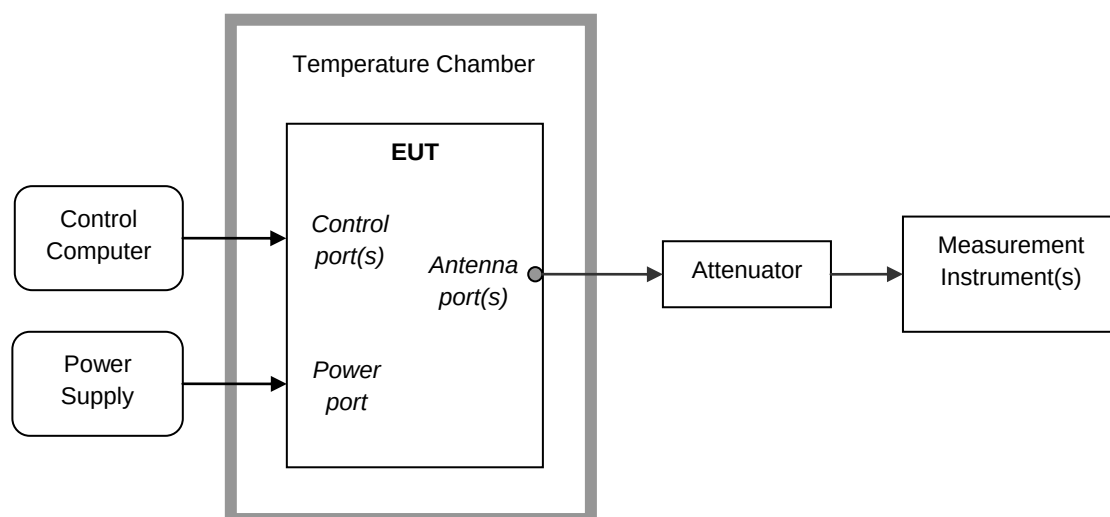
5.4.1 General Test Setup Configurations

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



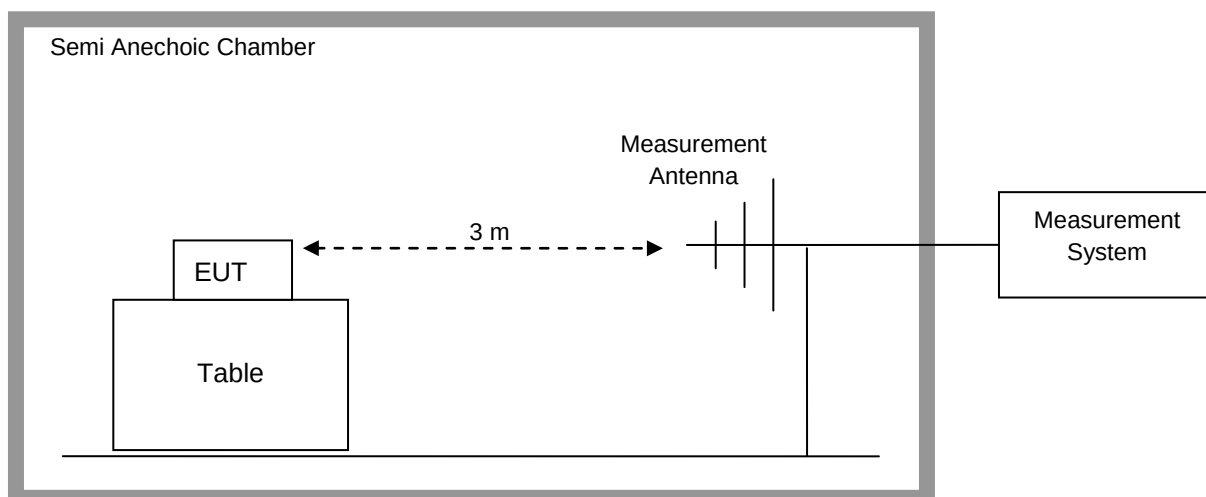
5.4.4 Test Setup 3

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.

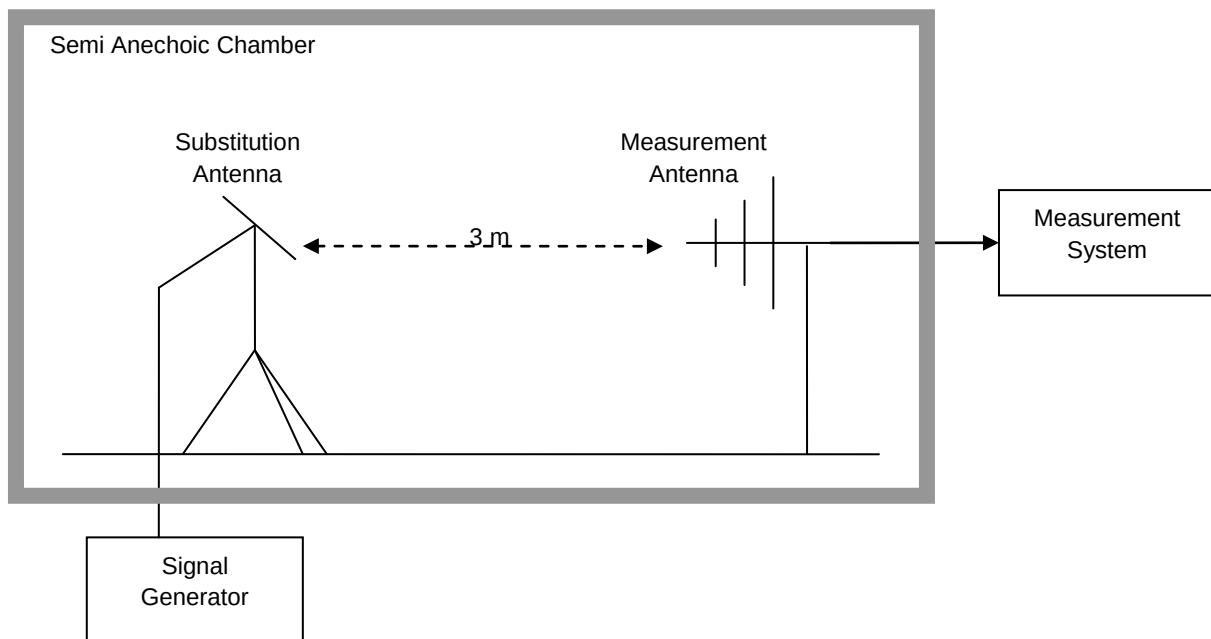
Step 1: Pre-test to find the Maximum ERP or EIRP

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 T, M, B 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. 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	TM1/TM3/ Subtype 0/ Subtype 2 / Two-channel carrier / Three-channel carrier / TM4/TM5/TM6
Modulation Characteristics	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	RF Channels (TX)	M
	Test Mode	TM1/TM3/ Subtype 0/ Subtype 2 / TM4
Occupied Bandwidth	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	Detector	PK
	RF Channels (TX)	L, M, H
	Test Mode	TM1/TM3/ Subtype 0/ Subtype 2 / Two-channel carrier / Three-channel carrier / TM4
Band Edges Compliance	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	Detector	RMS
	RF Channels (TX)	L, H
	Test Mode	TM1/TM3/ Subtype 0/ Subtype 2 / TM4
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	TM1/TM3/ Subtype 0/ Subtype 2 / 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	TM1/TM3/ Subtype 0/ Subtype 2 / TM4/TM5/TM6
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



Test Case	Test Conditions	
	RF Channels (TX)	M
	Test Mode	TM1/TM3/ Subtype 0/ Subtype 2 /TM4

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.17,2013
Signal Analyzer	R&S	FSQ31	200021	Sep .27 ,2012
Temperature Chamber	WEISS	WKL64	24600294	Feb .13 ,2013
Signal generator	Agilent	E8257D	MY49281095	Jul .09. 2013
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

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 & Part22.913



Conducted Power of Transmitter

TEST CONDITIONS (TN /VN)		RF Output Power(dBm)					
		Channel 1013(L) 824.7MHz		Channel 384(M) 836.52MHz		Channel 777(H) 848.31MHz	
		Measured	Limit	Measured	Limit	Measured	Limit
TM1		23.86	38.5	23.59	38.5	23.35	38.5
TM3		23.85	38.5	23.63	38.5	23.39	38.5
Subtype 0		23.72	38.5	23.65	38.5	23.37	38.5
Subtype 2		23.67	38.5	23.48	38.5	23.35	38.5
TEST CONDITIONS (TN /VN)		Channel(L)		Channel(M)		Channel(H)	
		Measured	Limit	Measured	Limit	Measured	Limit
Two-channels carrier		20.97	38.5	21.27	38.5	21.13	38.5
Three-channels carrier		18.98	38.5	18.88	38.5	18.61	38.5
TEST CONDITIONS (TN /VN)		Channel4132(L)		Channel4182(M)		Channel4233(H)	
		826.4MHz		836.4MHz		846.6MHz	
		Measured	Limit	Measured	Limit	Measured	Limit
TM4		22.02	38.5	21.69	38.5	21.55	38.5
TM5	Case1	21.73	38.5	21.45	38.5	21.38	38.5
	Case2	21.67	38.5	21.43	38.5	21.29	38.5
	Case3	21.16	38.5	20.83	38.5	20.78	38.5
	Case4	21.11	38.5	20.81	38.5	20.80	38.5
TM6	Case1	21.23	38.5	21.21	38.5	20.92	38.5
	Case2	20.53	38.5	20.09	38.5	20.12	38.5
	Case3	20.36	38.5	20.17	38.5	20.21	38.5
	Case4	20.47	38.5	20.14	38.5	20.08	38.5
	Case5	21.18	38.5	21.18	38.5	20.87	38.5



Peak-to-Average Ratio

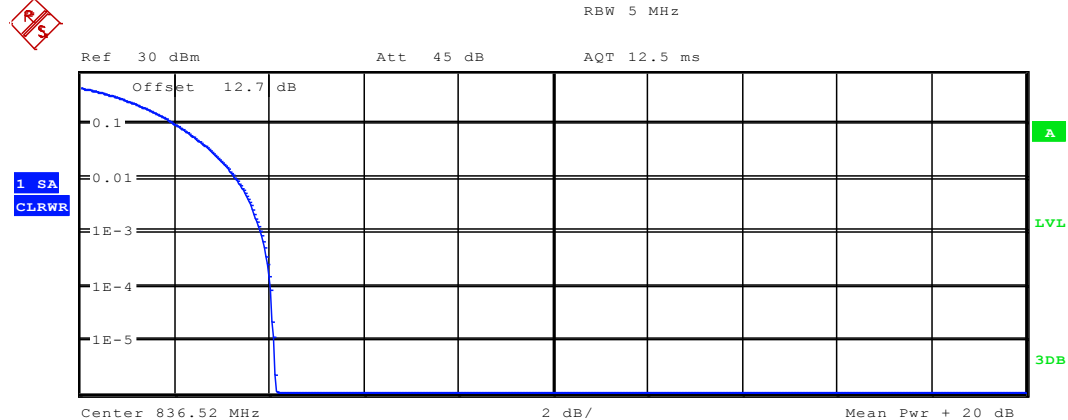
		Peak-to-Average Ratio					
TEST CONDITIONS		Channel1013(L)		Channel384 (M)		Channel777(H)	
		824.7MHz		836.52MHz		848.31MHz	
		dB		dB		dB	
(TN /VN)		Measured	Limit	Measured	Limit	Measured	Limit
TM1		3.45	13	3.46	13	3.25	13
TM3		3.73	13	3.81	13	3.31	13
Subtype 0		4.03	13	4.29	13	4.15	13
Subtype 2		4.08	13	3.98	13	4.04	13
TEST CONDITIONS		Channel4132(L)		Channel4182(M)		Channel4233(H)	
		826.4MHz		836.4MHz		846.6MHz	
		dB		dB		dB	
(TN /VN)		Measured	Limit	Measured	Limit	Measured	Limit
TM4		2.59	13	2.76	13	2.64	13
TM5	Case1	2.64	13	2.62	13	2.53	13
	Case2	2.62	13	2.51	13	2.42	13
	Case3	2.54	13	2.59	13	2.46	13
	Case4	2.33	13	2.43	13	2.49	13
TM6	Case1	2.65	13	2.62	13	2.63	13
	Case2	2.61	13	2.34	13	2.61	13
	Case3	2.54	13	2.36	13	2.48	13
	Case4	2.46	13	2.48	13	2.41	13
	Case5	2.58	13	2.41	13	2.62	13



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.

CDMA(TM1/TM3)



Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 7.1MHz

Trace 1
Mean 23.13 dBm
Peak 27.26 dBm
Crest 4.14 dB

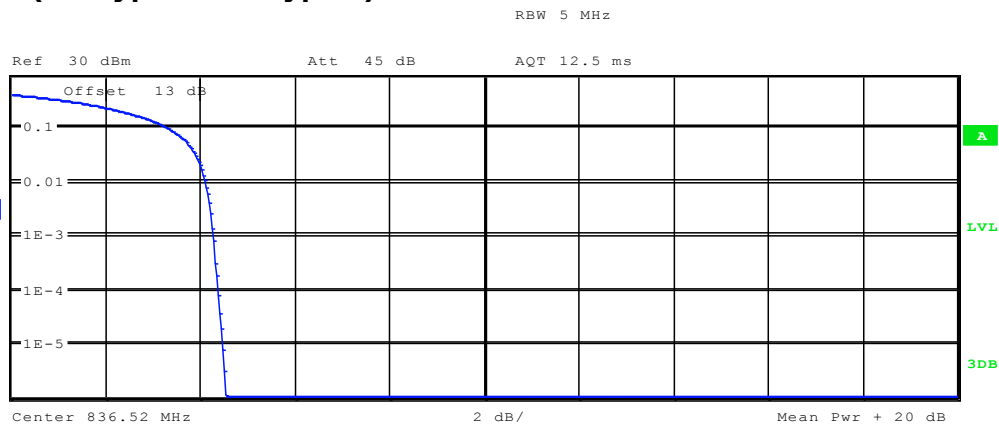
10 %	2.02 dB
1 %	3.30 dB
.1 %	3.81 dB
.01 %	4.04 dB



EVDO(Subtype 0/ Subtype 2)



1 SA
CLRWR



Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 7.1MHz

Trace 1

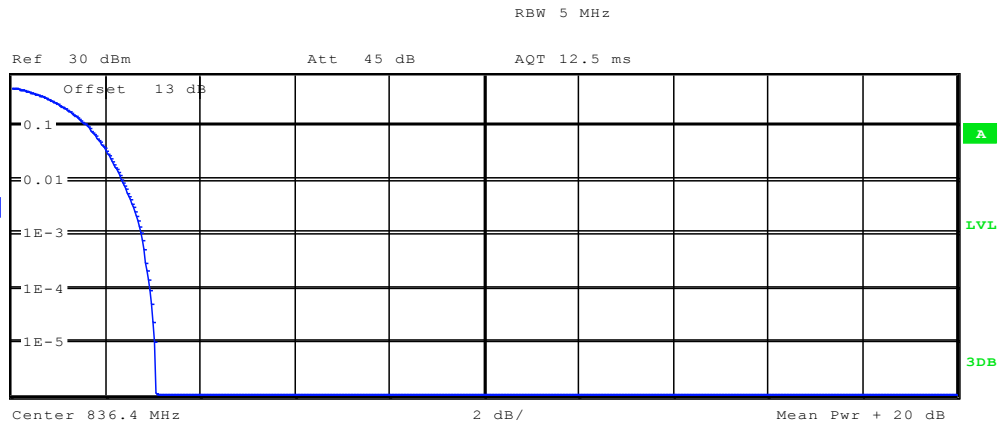
Mean	23.51	dBm
Peak	28.04	dBm
Crest	4.53	dB
10 %	3.33	dB
1 %	4.10	dB
.1 %	4.29	dB
.01 %	4.39	dB



TM4/TM5/TM6



1 SA
CLRWR



Complementary Cumulative Distribution Function
NOF samples: 100000, Usable BW: 7.1MHz

Trace 1

Mean	22.93	dBm
Peak	25.99	dBm
Crest	3.06	dB
10 %	1.63	dB
1 %	2.34	dB
.1 %	2.76	dB
.01 %	2.95	dB



Effective Radiated Power of Transmitter (ERP)

Test Mode	Freq. [MHz]	Meas. Level [dBm]	Substituti on Antenna Type	SGP [dBm]	Substi tution Gain [dBi]	Cable Loss [dB]	Substituti on Level (ERP)	FCC limit [dBm]	Result
							[dBm]		
TM1	824.7	22.21	Dipole Ant.	25.73	-2.95	0.6	22.18	38.5	Pass
TM1	836.5 2	21.94	Dipole Ant.	25.51	-3.02	0.6	21.89	38.5	Pass
TM1	848.3 1	21.70	Dipole Ant.	25.37	-3.11	0.6	21.66	38.5	Pass
TM3	824.7	22.20	Dipole Ant.	25.77	-2.95	0.6	22.22	38.5	Pass
TM3	836.5 2	21.98	Dipole Ant.	25.66	-3.02	0.6	22.04	38.5	Pass
TM3	848.3 1	21.74	Dipole Ant.	25.38	-3.11	0.6	21.67	38.5	Pass
Subtype0	824.7	22.07	Dipole Ant.	25.67	-2.95	0.6	22.12	38.5	Pass
Subtype0	836.5 2	22.00	Dipole Ant.	25.63	-3.02	0.6	22.01	38.5	Pass
Subtype0	848.3 1	21.72	Dipole Ant.	25.37	-3.11	0.6	21.66	38.5	Pass
Subtype2	824.7	22.02	Dipole Ant.	25.53	-2.95	0.6	21.98	38.5	Pass
Subtype2	836.5 2	21.83	Dipole Ant.	25.39	-3.02	0.6	21.77	38.5	Pass
Subtype2	848.3 1	21.70	Dipole Ant.	25.39	-3.11	0.6	21.68	38.5	Pass
Two-channel carrier	Chann el(L)	19.32	Dipole Ant.	22.84	-2.95	0.6	19.29	38.5	Pass
Two-channel carrier	Chann el(M)	19.62	Dipole Ant.	23.20	-3.02	0.6	19.58	38.5	Pass
Two-channel carrier	Chann el(H)	19.48	Dipole Ant.	23.24	-3.11	0.6	19.53	38.5	Pass



Three-channel carrier	Channel(L)	17.33	Dipole Ant.	20.81	-2.95	0.6	17.26	38.5	Pass
Three-channel carrier	Channel(M)	17.23	Dipole Ant.	20.79	-3.02	0.6	17.17	38.5	Pass
Three-channel carrier	Channel(H)	16.96	Dipole Ant.	20.75	-3.11	0.6	17.04	38.5	Pass
TM4	826.4	20.37	Dipole Ant.	23.66	-2.75	0.6	20.31	38.5	Pass
TM4	836.4	20.04	Dipole Ant.	23.45	-2.87	0.6	19.98	38.5	Pass
TM4	846.6	19.90	Dipole Ant.	23.31	-2.85	0.6	19.86	38.5	Pass

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

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

b, SGP=Signal Generator Level

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



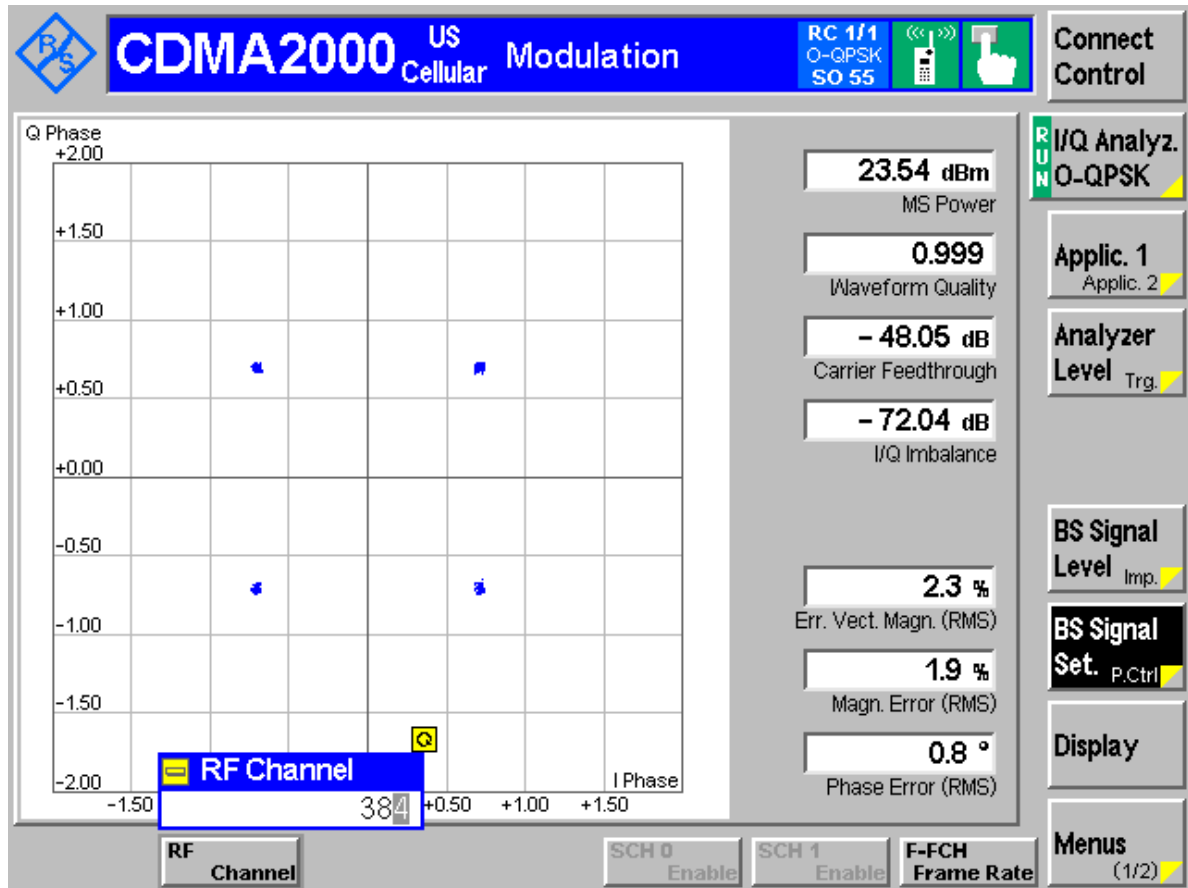
Appendix B

Modulation Characteristics

According to FCC Part 2.1047 & Part22 Subpart H

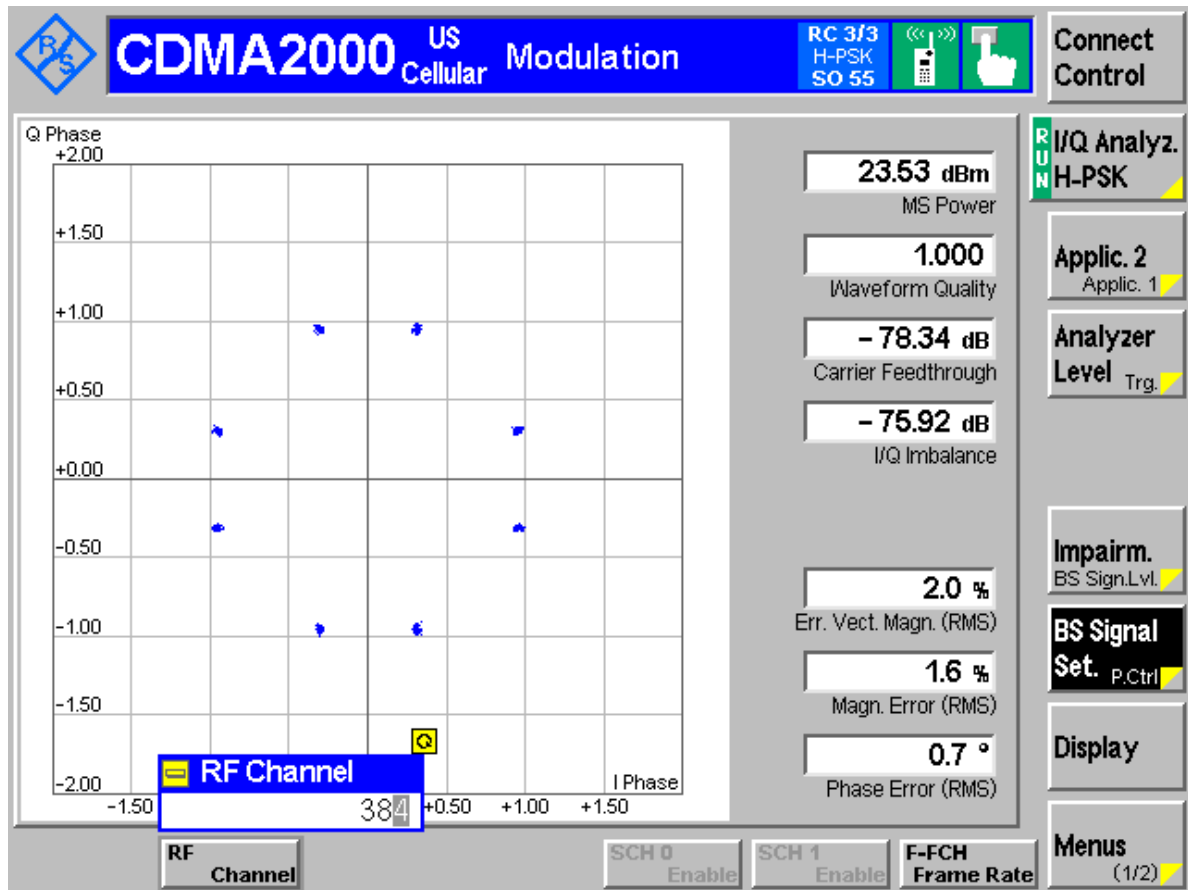


Channel 384(TM1)



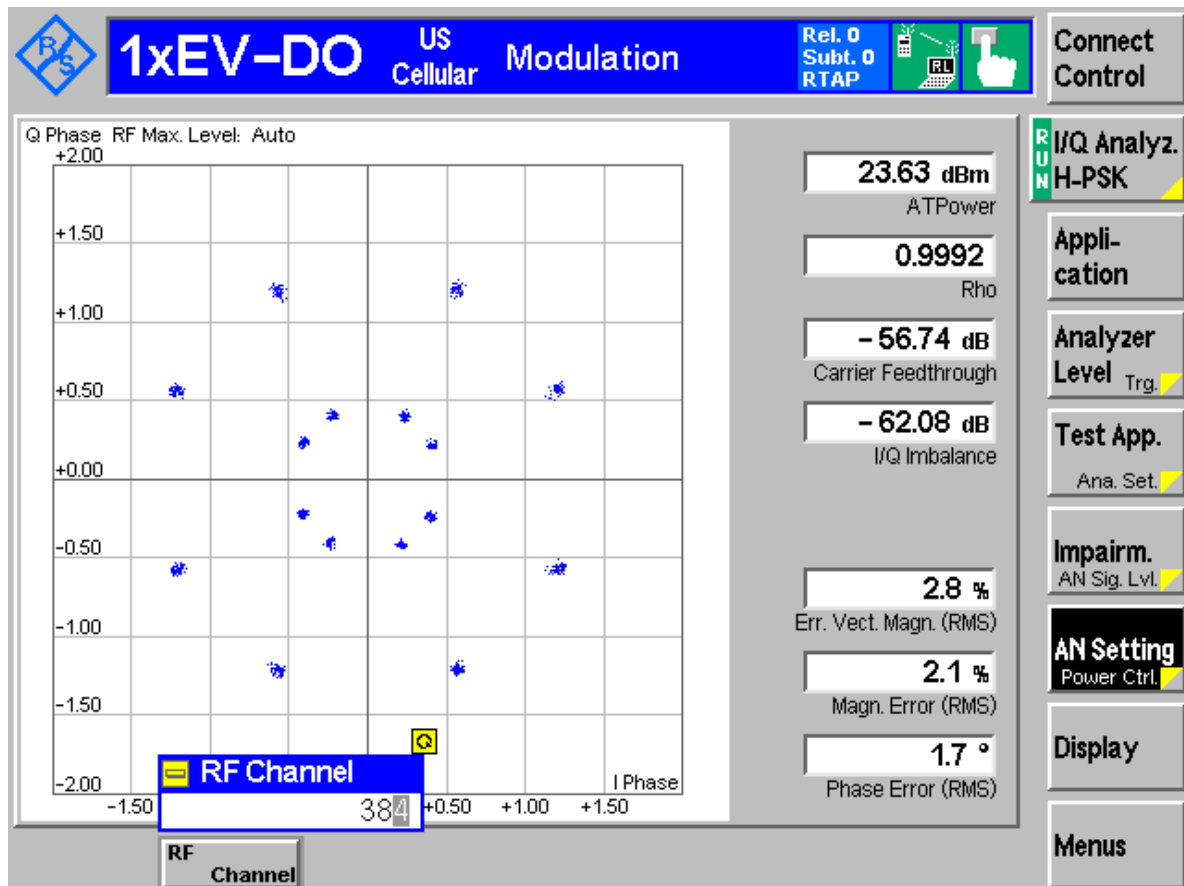


Channel 384(TM3)





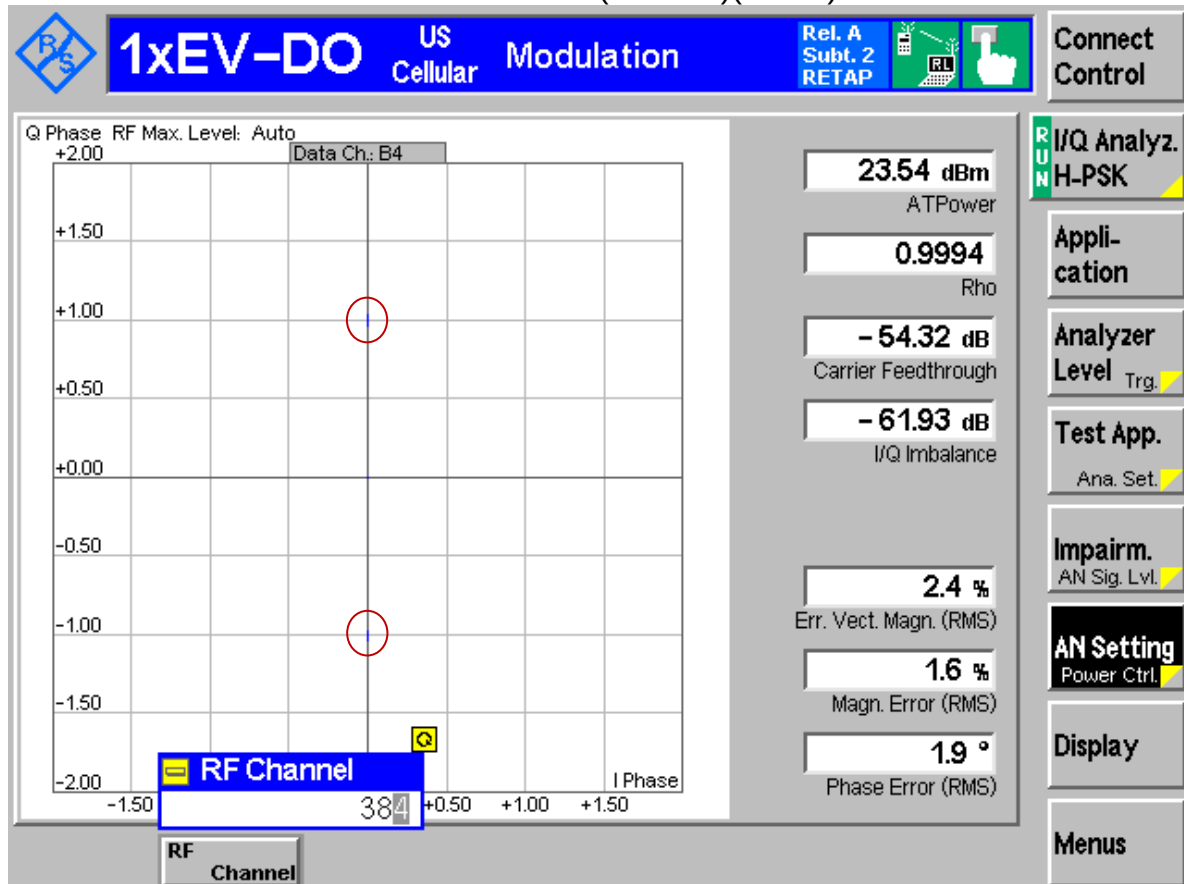
Channel 384(Subtype 0) (HPSK)





Channel 384(Subtype 2)

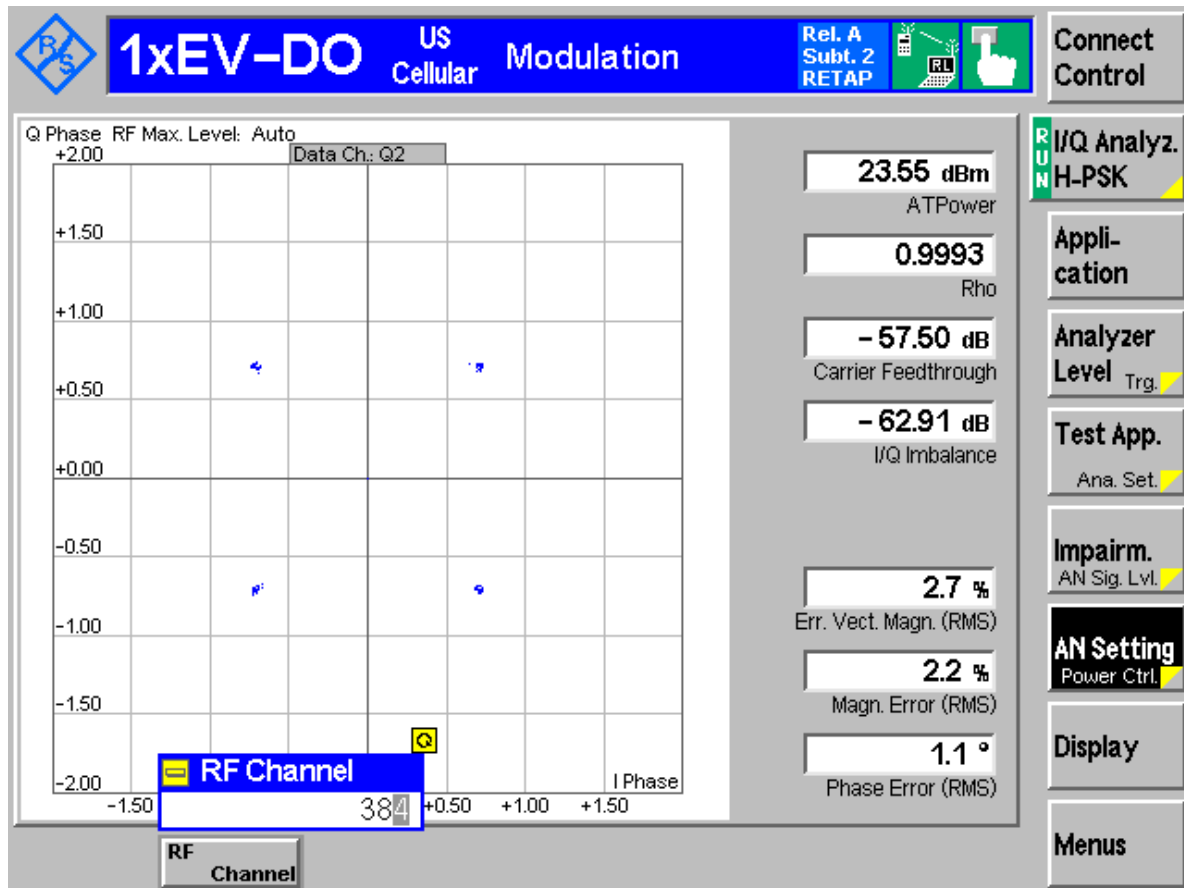
The R-Data packet size determines the modulation format:
R-Data Pkt Size (256 bits)(BPSK)



Actually there are two points on the plot (-1, 0 & 1, 0), even though it's not so clear. Please check the two red circled points

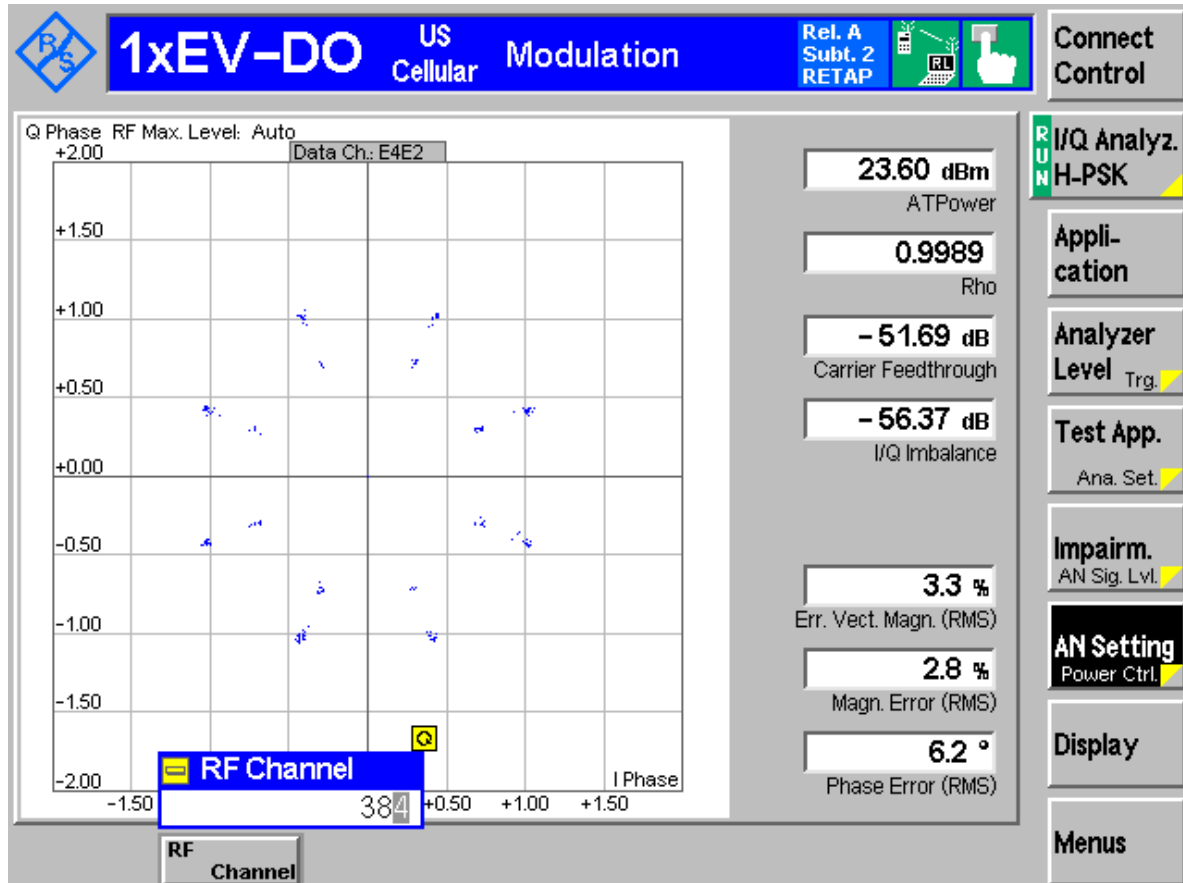


R-Data Pkt Size (4096 bits) (QPSK)



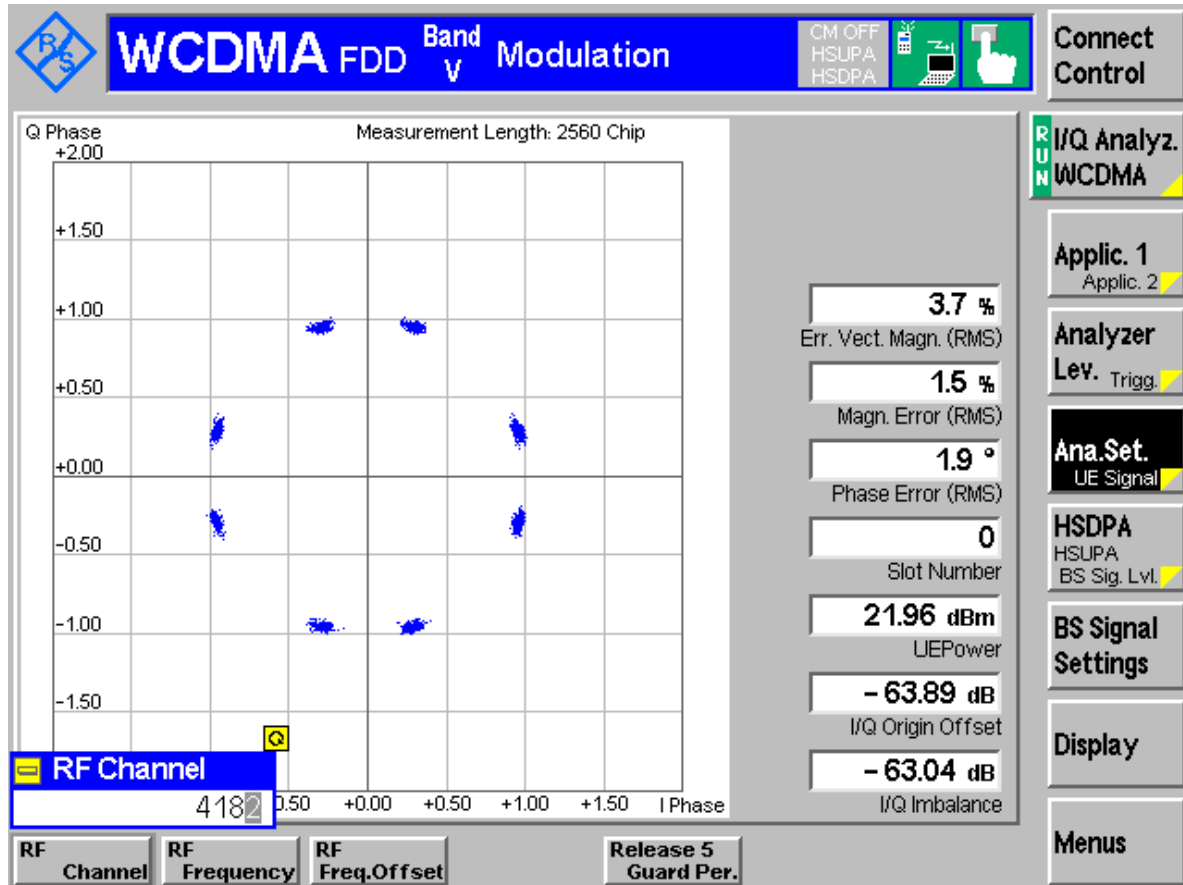


R-Data Pkt Size (12288 bits)(8PSK)





Channel 4182 (TM4: WCDMA)



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



Appendix C

Occupied Bandwidth According to FCC Part 2.1049 & Part 22 Subpart H



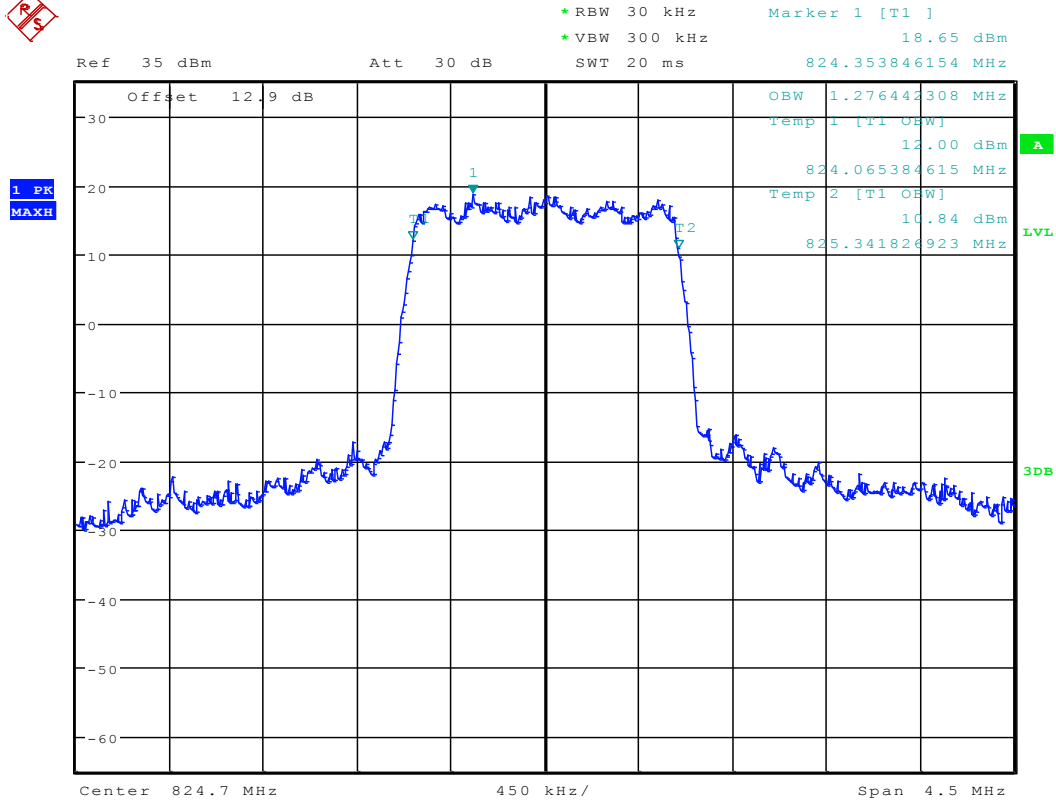
Result Table

Table 1 Measurement Results

Test Mode	RF Channel	Occupied Bandwidth [MHz]	Verdict
TM1	1013	1.28	Pass
	384	1.28	Pass
	777	1.28	Pass
TM3	1013	1.28	Pass
	384	1.28	Pass
	777	1.28	Pass
Subtype 0	1013	1.27	Pass
	384	1.27	Pass
	777	1.27	Pass
Subtype 2	1013	1.28	Pass
	384	1.28	Pass
	777	1.27	Pass
Two-channelss carrier	channel-L	2.47	Pass
	Channel-M	2.47	Pass
	Channel-H	2.47	Pass
Three-channels carrier	channel-L	3.69	Pass
	Channel-M	3.69	Pass
	Channel-H	3.69	Pass
TM4	4132	4.17	Pass
	4182	4.17	Pass
	4233	4.18	Pass



Channel 1013 (TM1)



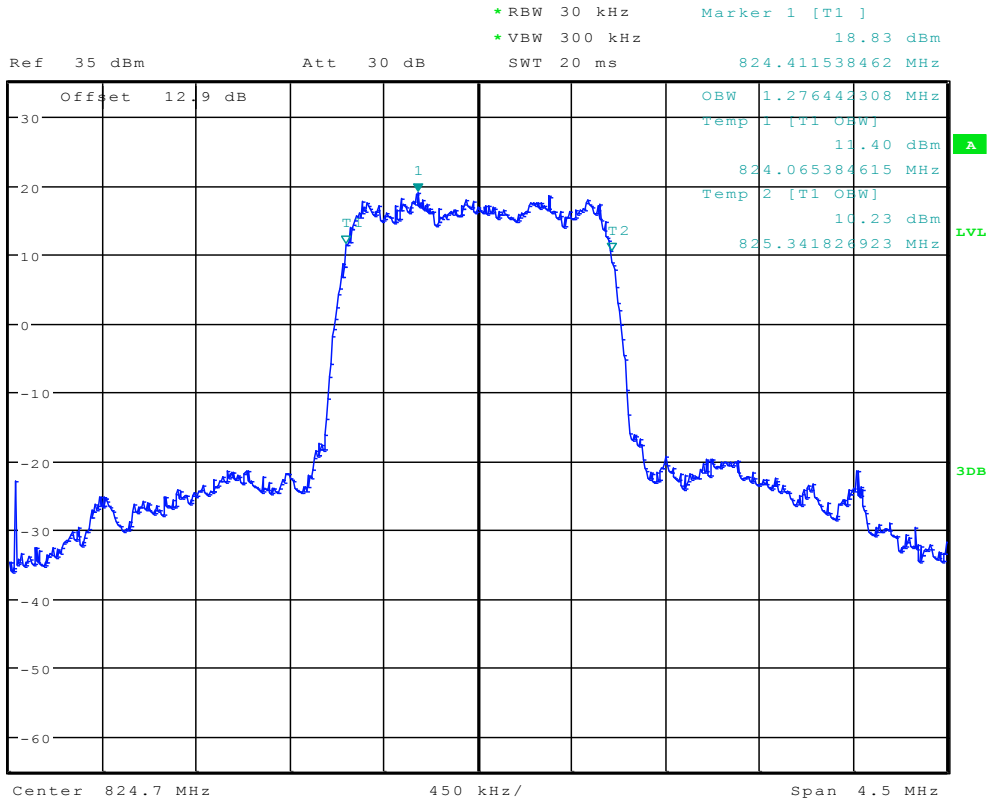
Date: 23.JUL.2012 17:30:08



Channel 1013 (TM3)



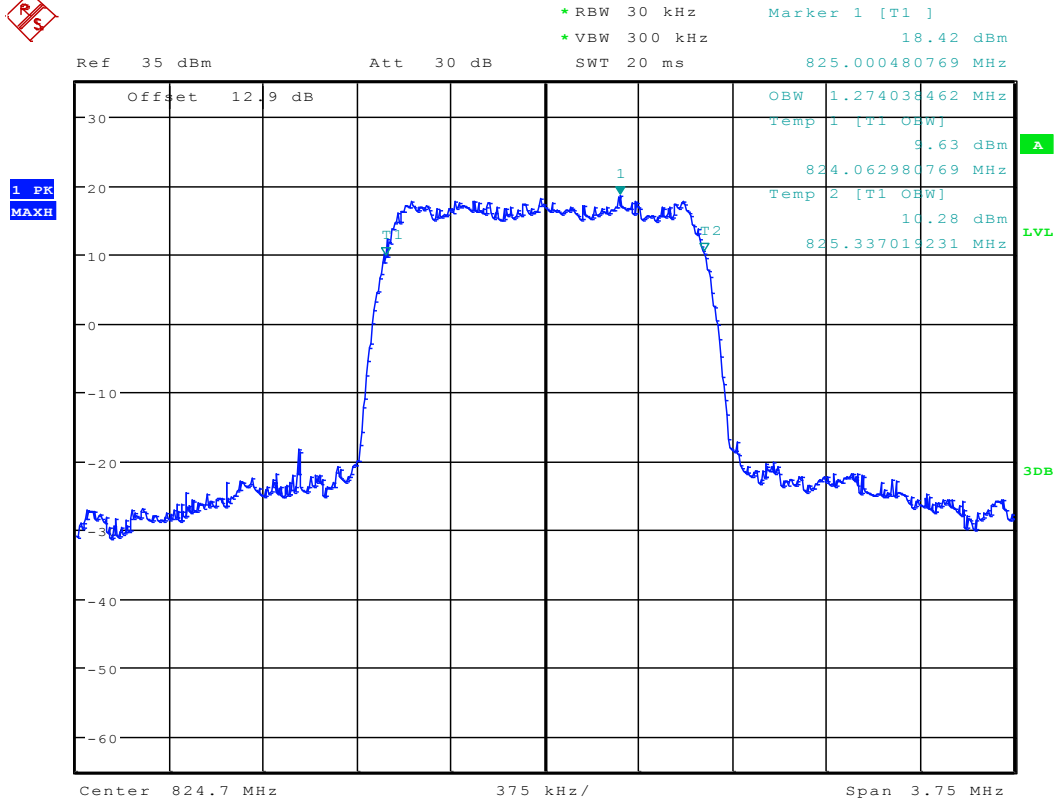
1 PK
MAXH



Date: 23.JUL.2012 17:30:51



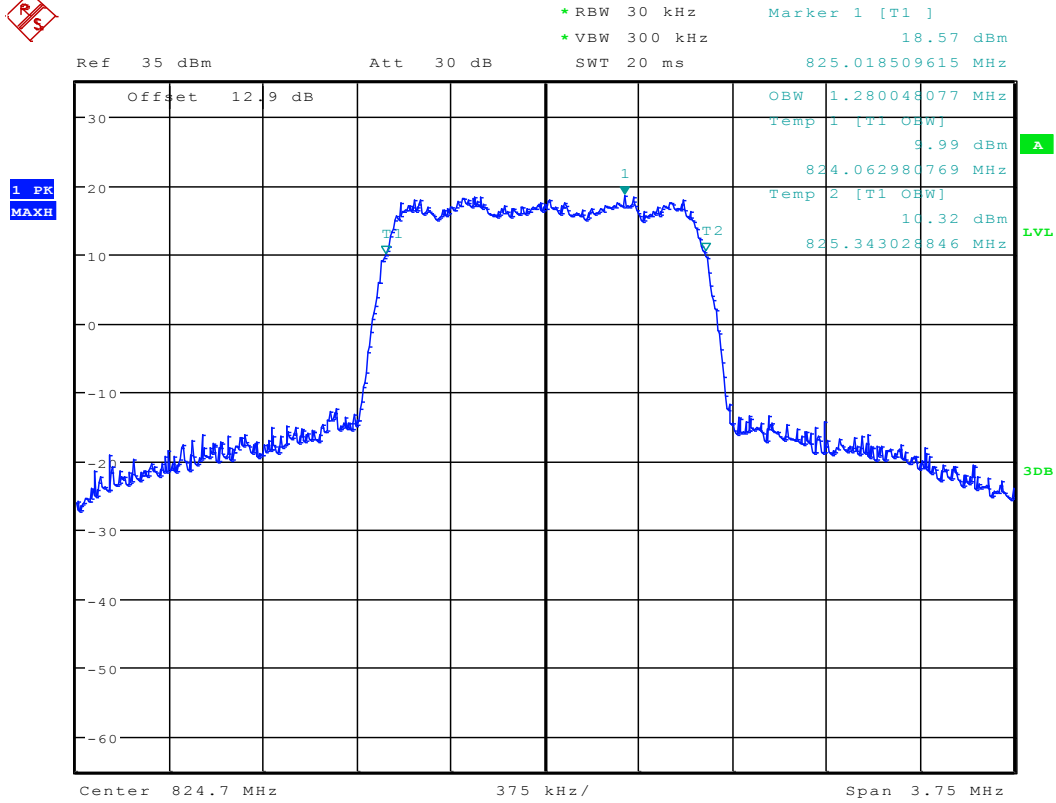
Channel 1013 (EVDO subtype 0)



Date: 23.JUL.2012 17:49:17



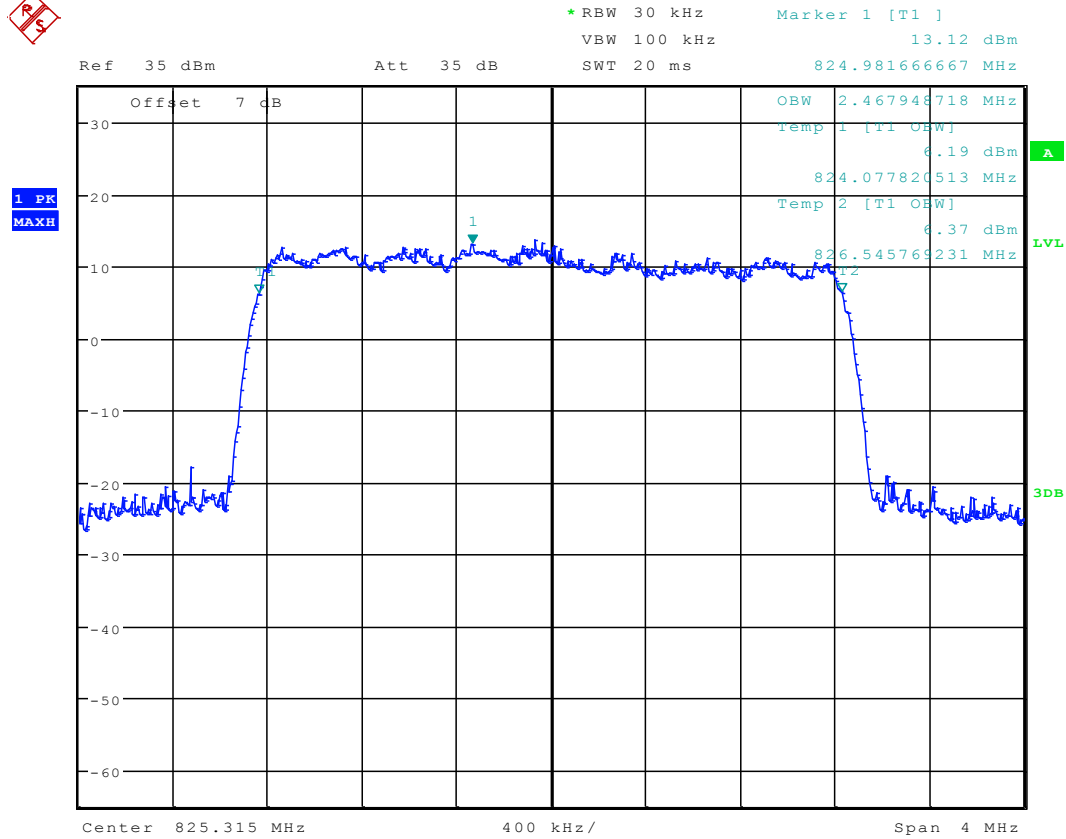
Channel 1013 (EVDO subtype 2)



Date: 24.JUL.2012 11:00:58



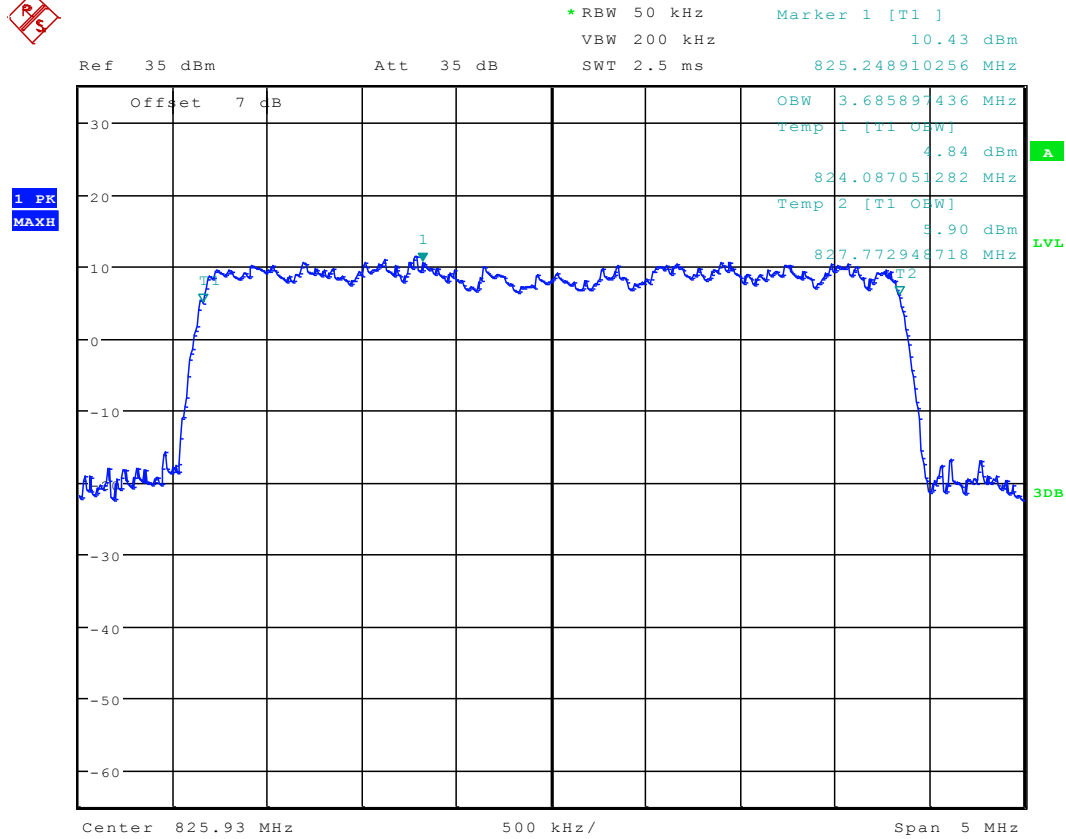
Channel -L(Two-channels carrier)



Date: 27.JUL.2012 12:27:31



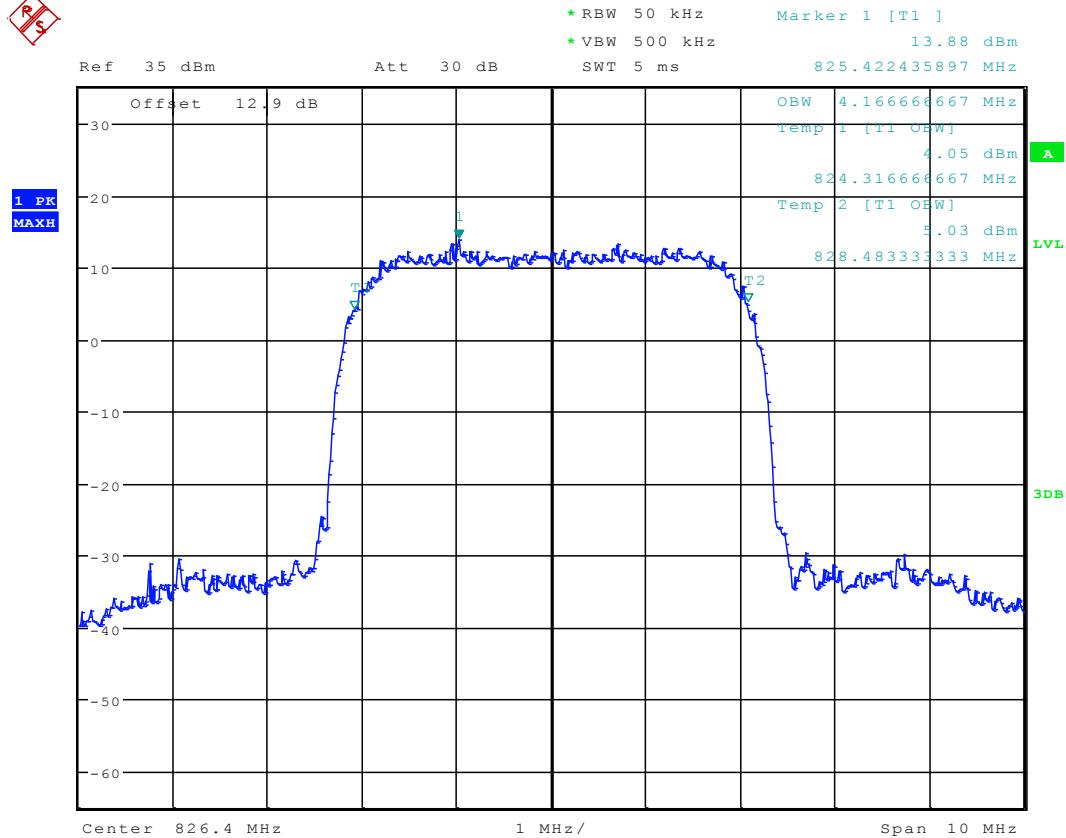
Channel -L(Three -channels carrier)



Date: 27.JUL.2012 12:20:02



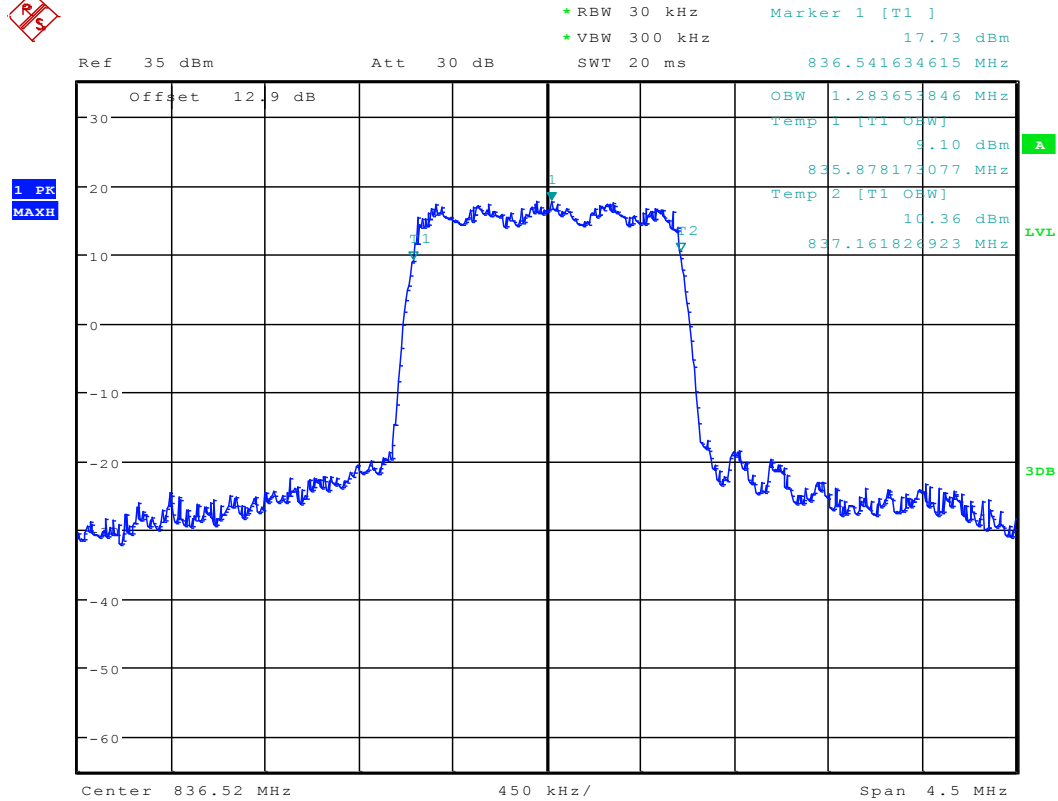
Channel 4132 (TM4: WCDMA)



Date: 23.JUL.2012 16:11:56



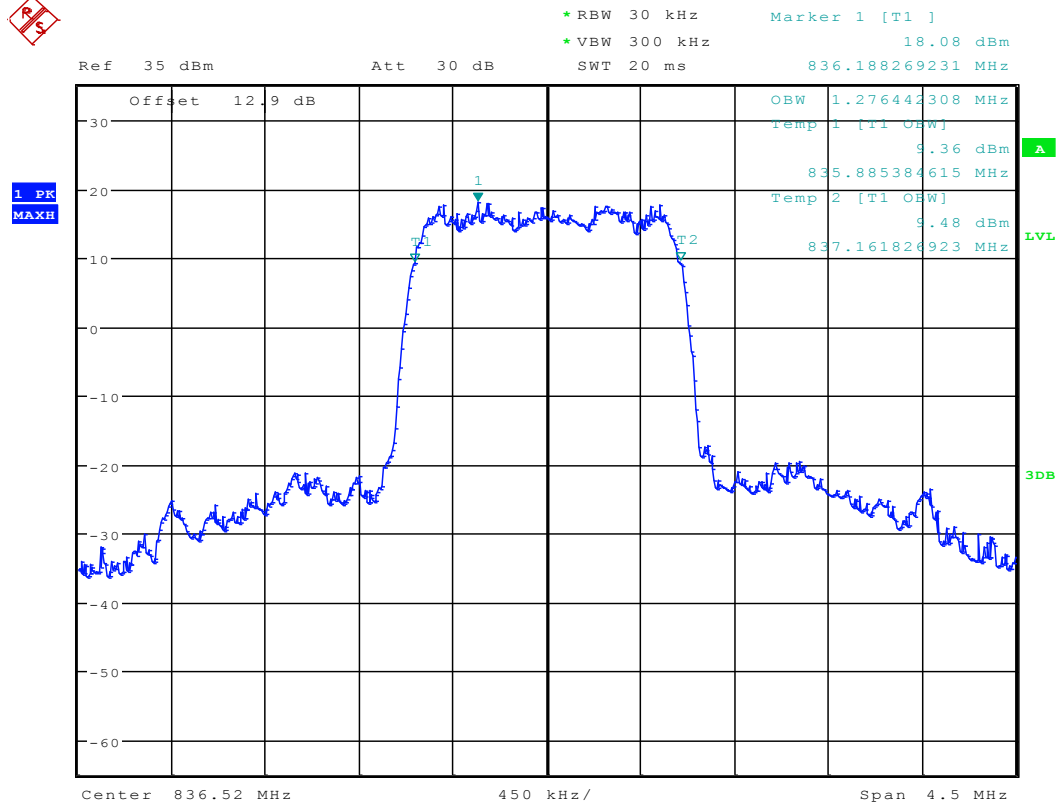
Channel 384 (TM1)



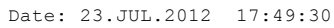
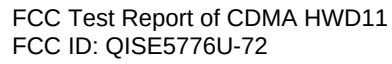
Date: 23.JUL.2012 17:30:22



Channel 384 (TM3)

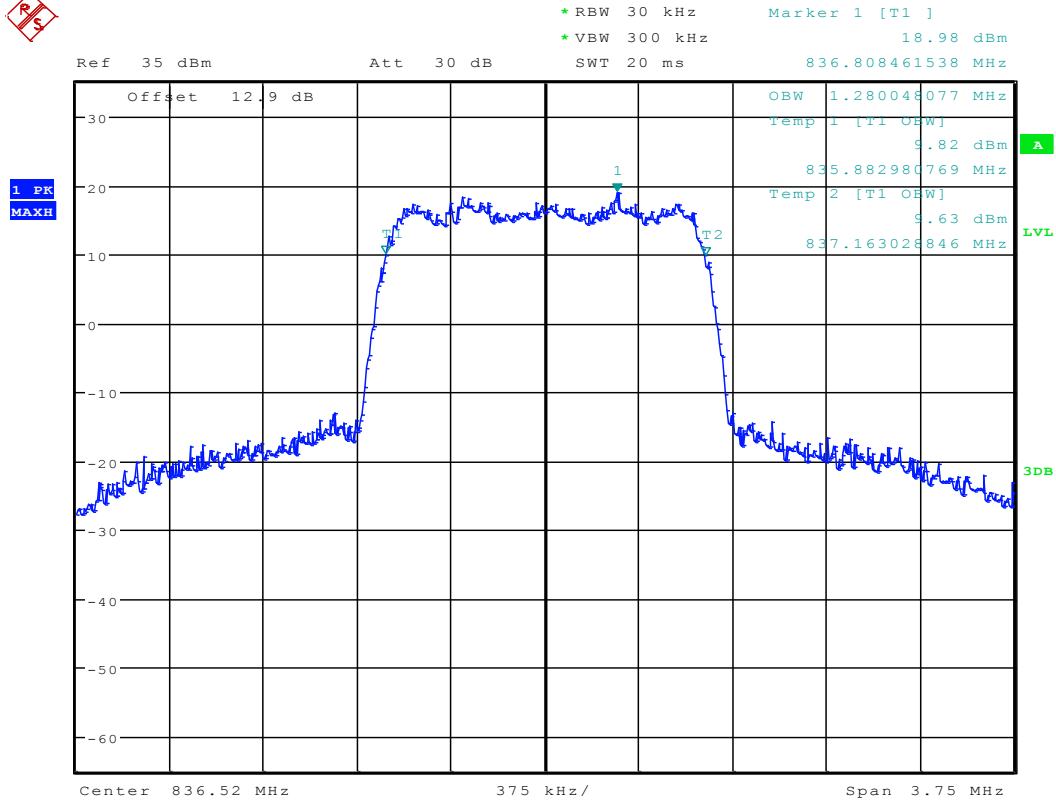


Date: 23.JUL.2012 17:31:04





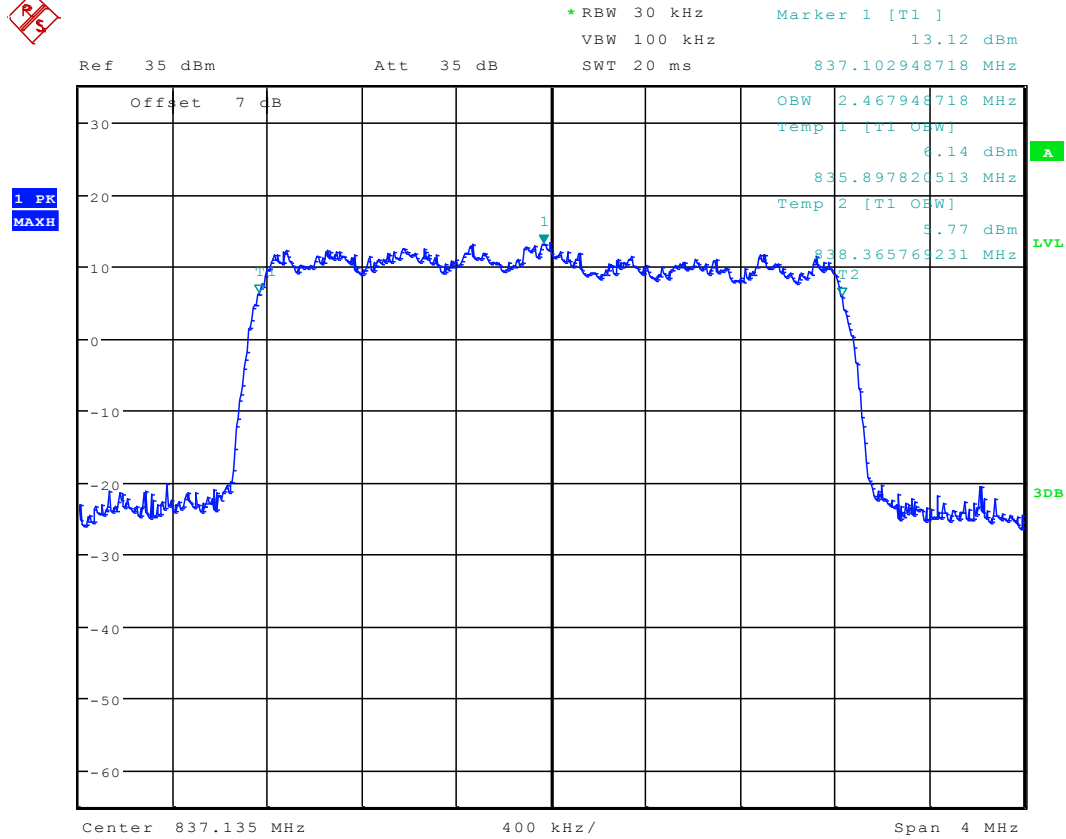
Channel 384 (EVDO Subtype 2)



Date: 24.JUL.2012 11:01:10



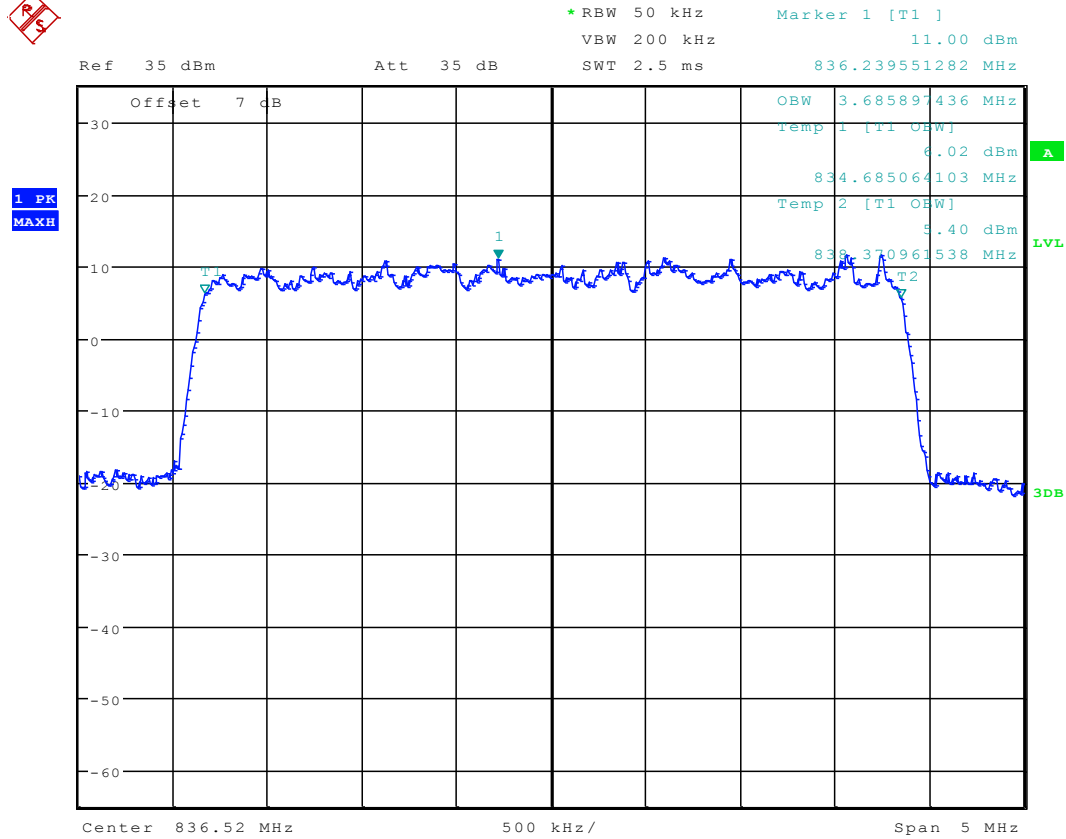
Channel -M(Two-channels carrier)



Date: 27.JUL.2012 12:26:01



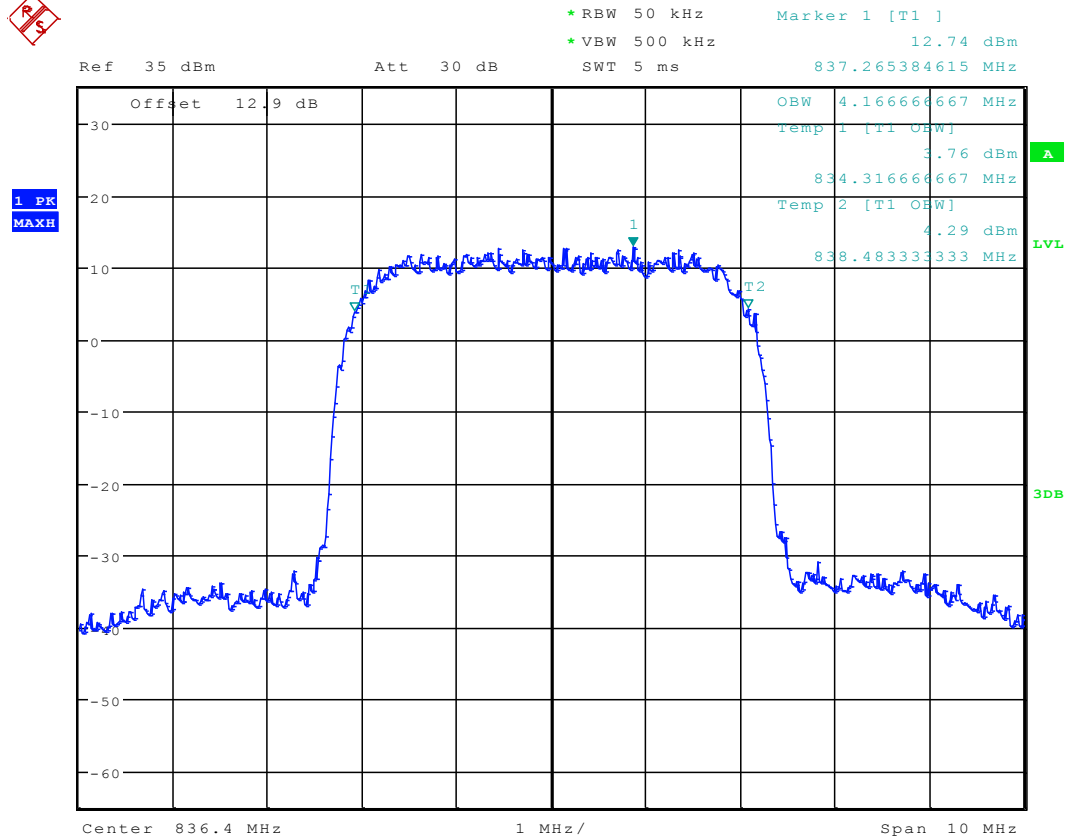
Channel -M(Three -channels carrier)



Date: 27.JUL.2012 11:58:28



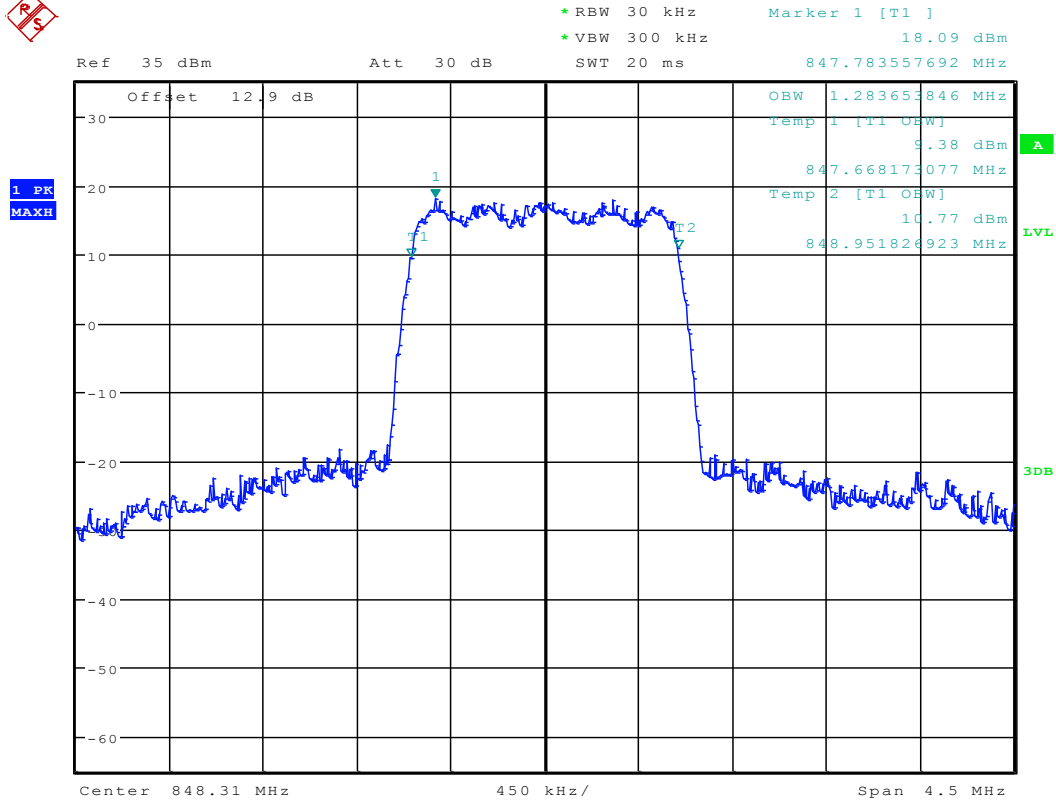
Channel 4182 (TM4: WCDMA)



Date: 23.JUL.2012 16:12:10



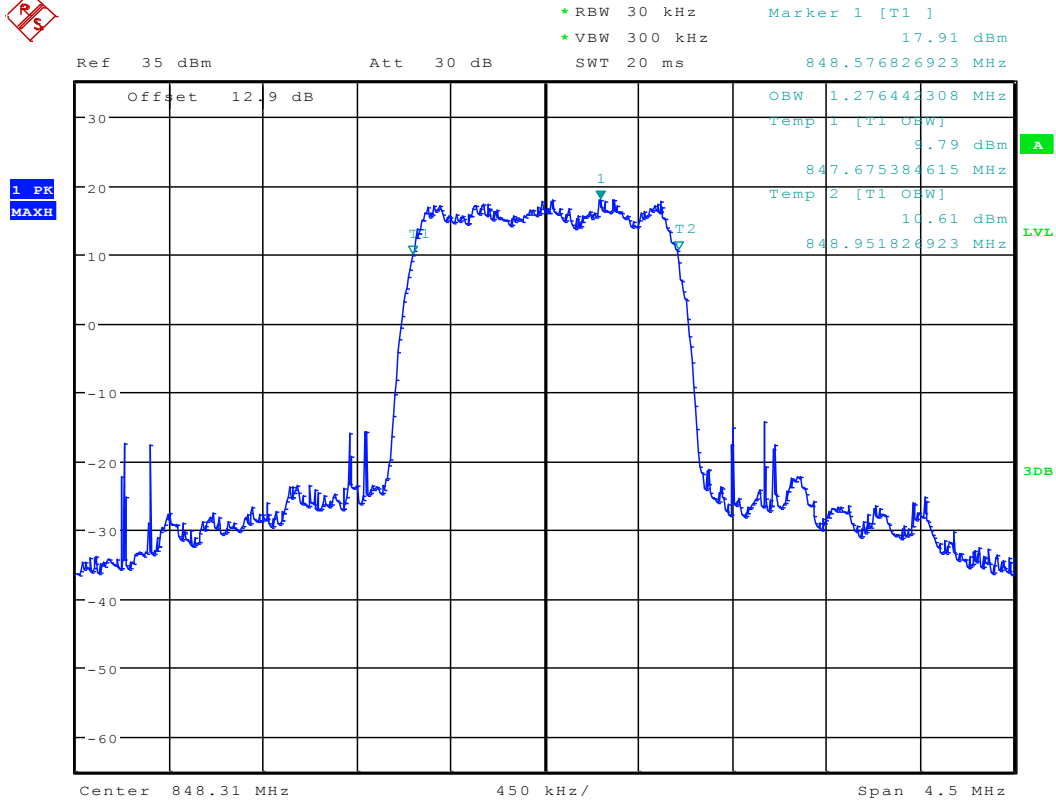
Channel 777 (TM1)



Date: 23.JUL.2012 17:30:35



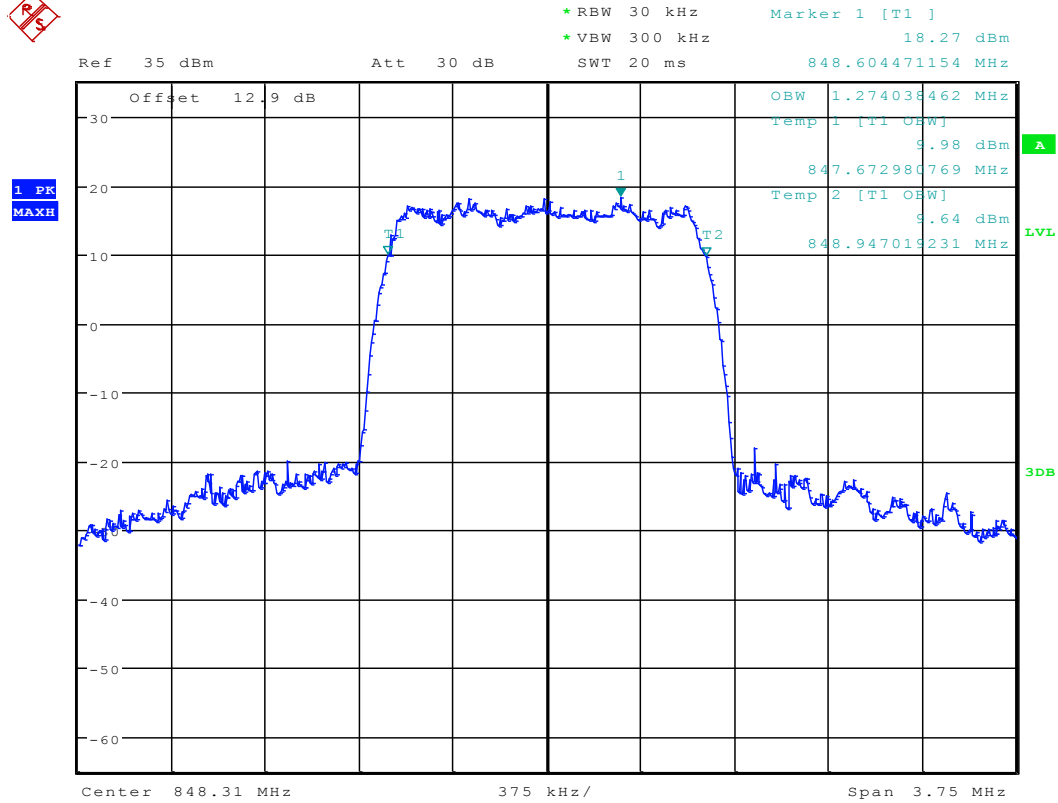
Channel 777 (TM3)



Date: 23.JUL.2012 17:31:18



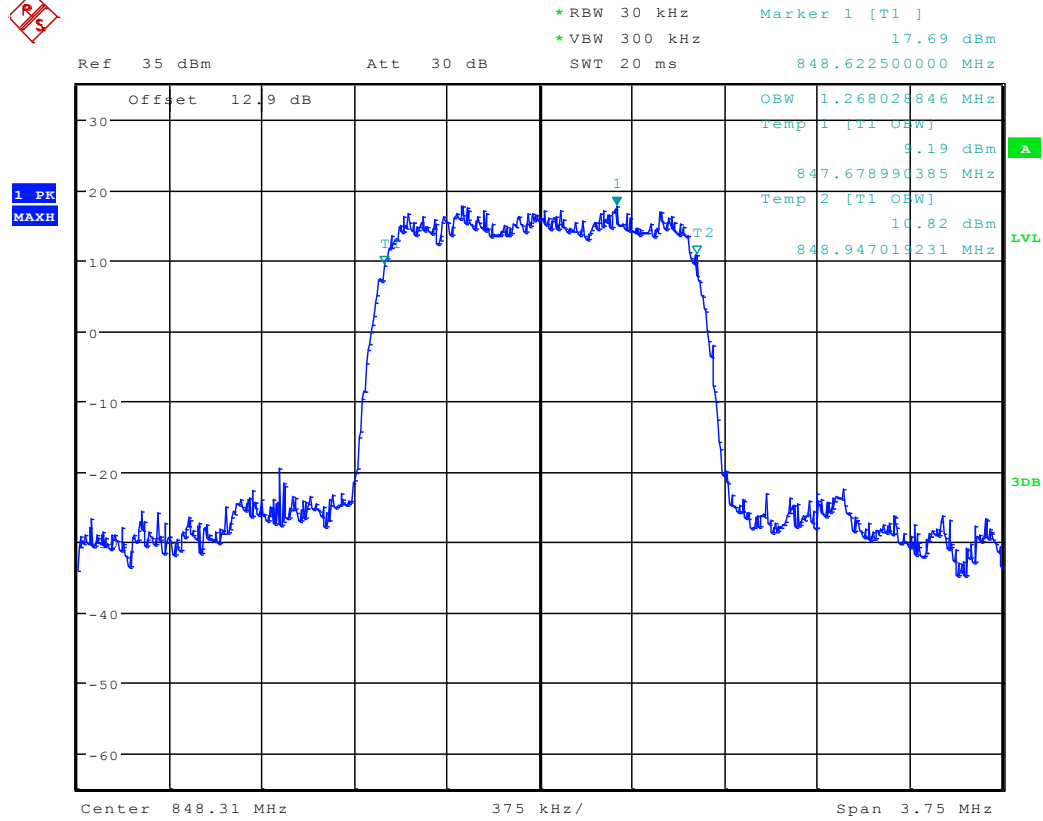
Channel 777 (EVDO subtype 0)



Date: 23.JUL.2012 17:49:44



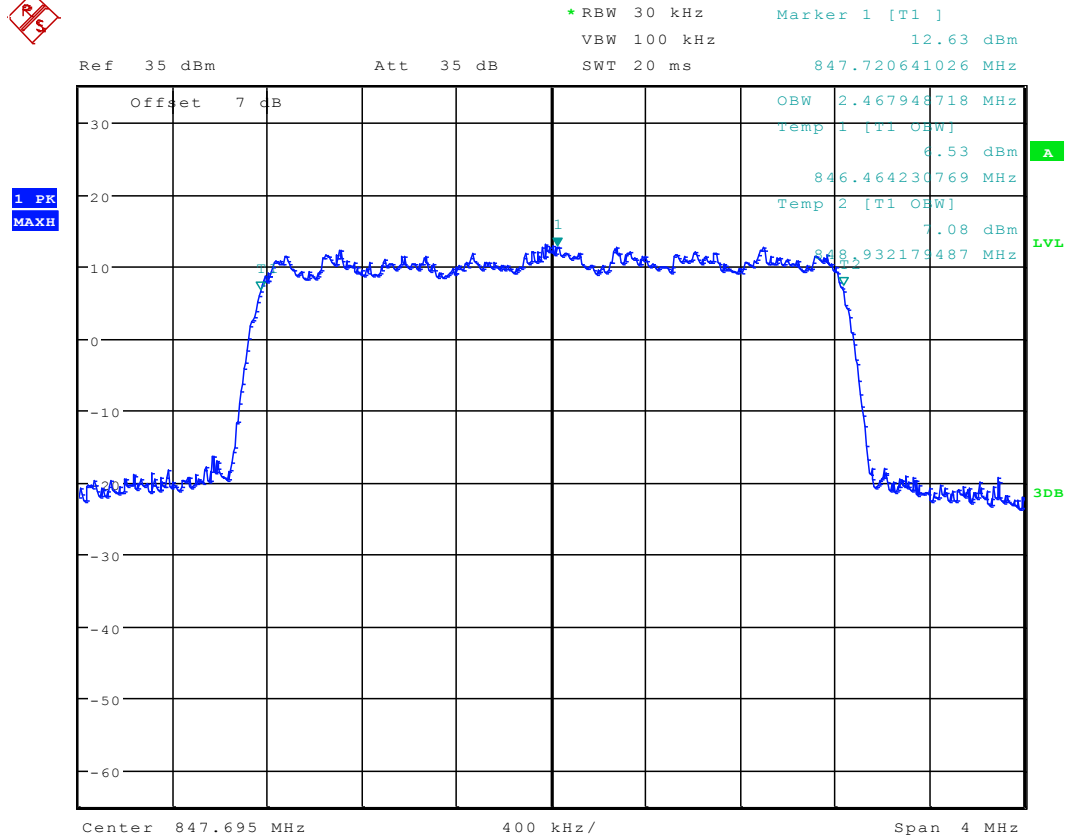
Channel 777 (EVDO Subtype 2)



Date: 24.JUL.2012 11:02:05



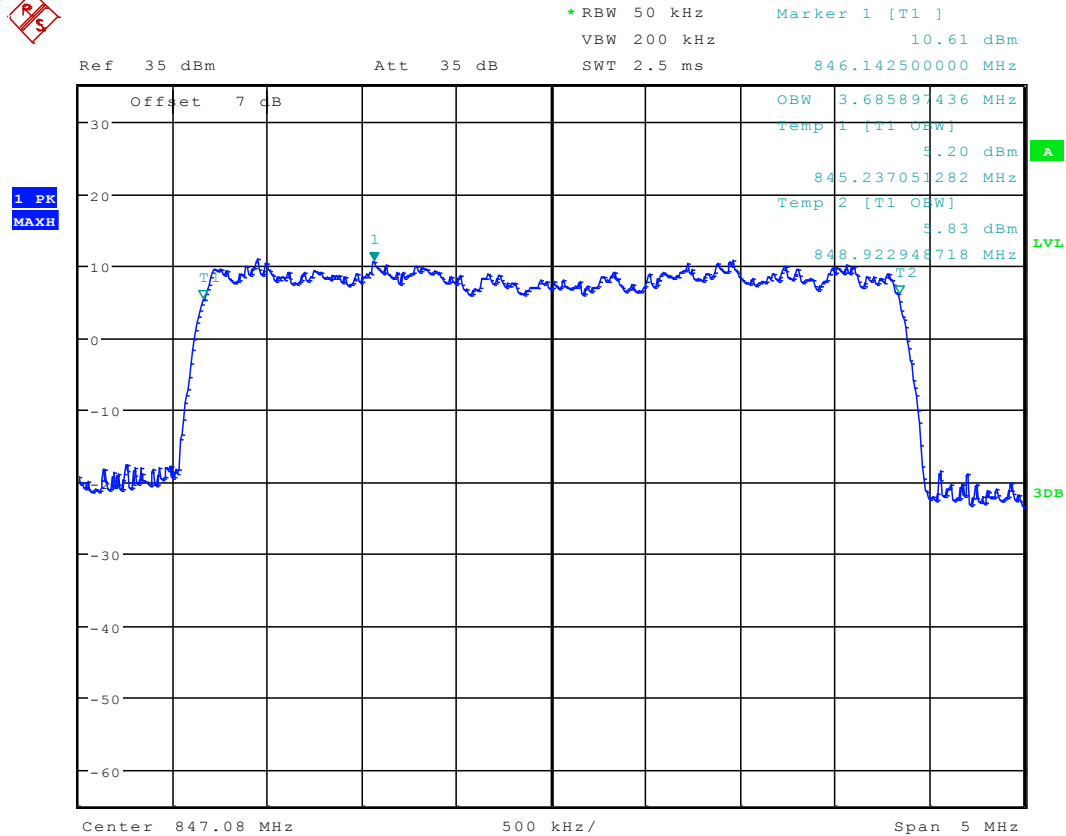
Channel -H(Two-channels carrier)



Date: 27.JUL.2012 12:24:19



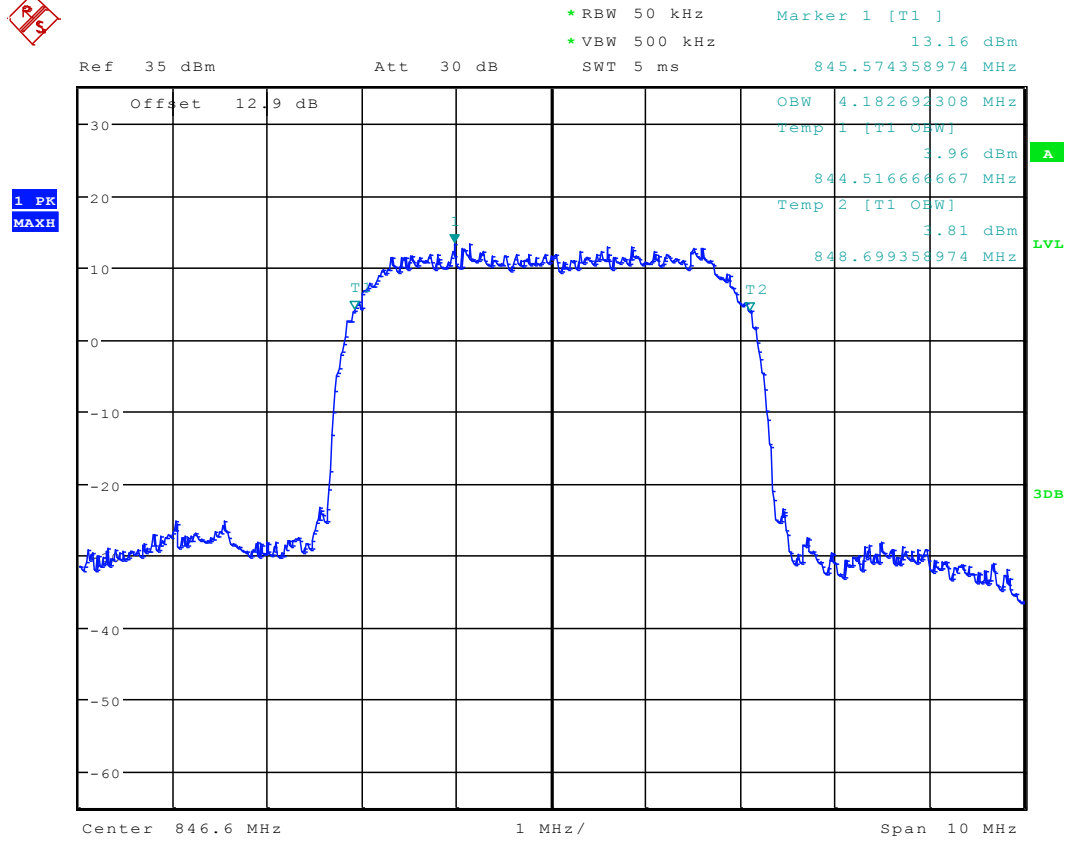
Channel -H(Three -channels carrier)



Date: 27.JUL.2012 12:22:02



Channel 4233 (TM4: WCDMA)



Date: 23.JUL.2012 16:12:23

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



FCC Test Report of CDMA HWD11
FCC ID: QISE5776U-72



Appendix D

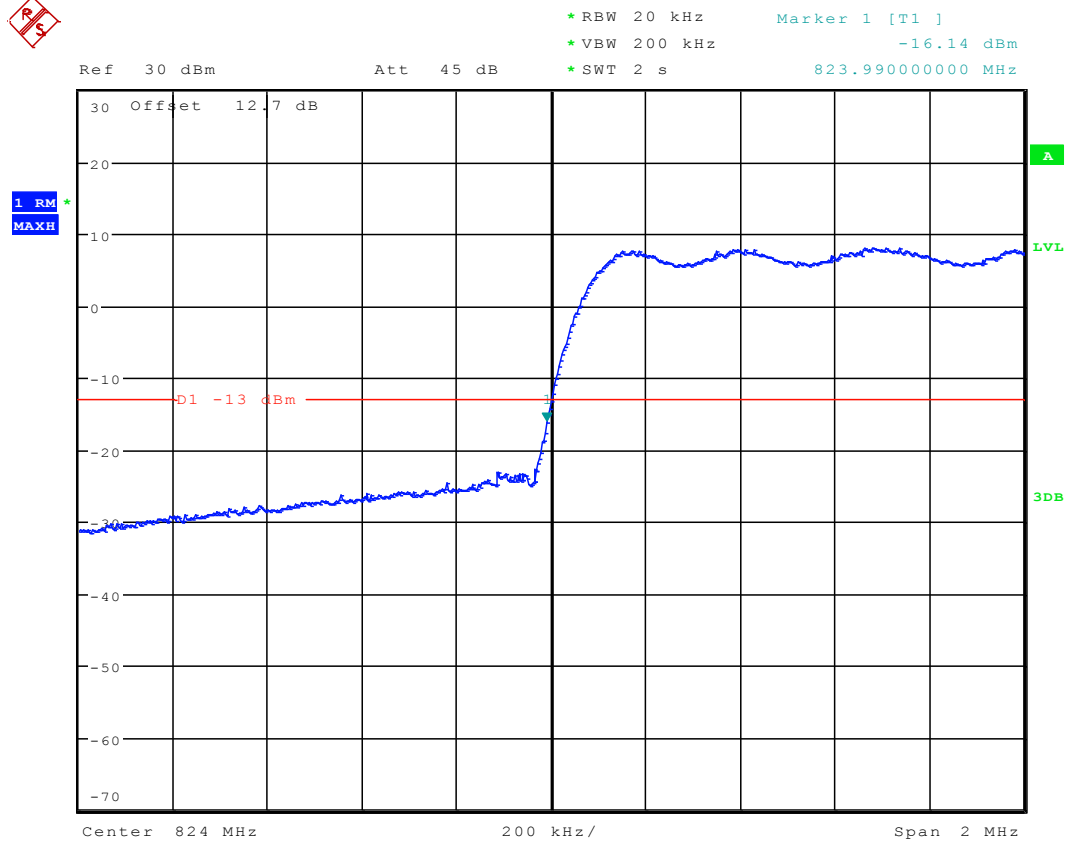
Band Edges Compliance According to FCC Part 2.1051 & Part 22 917



TM1

Left Edge (824 MHz)

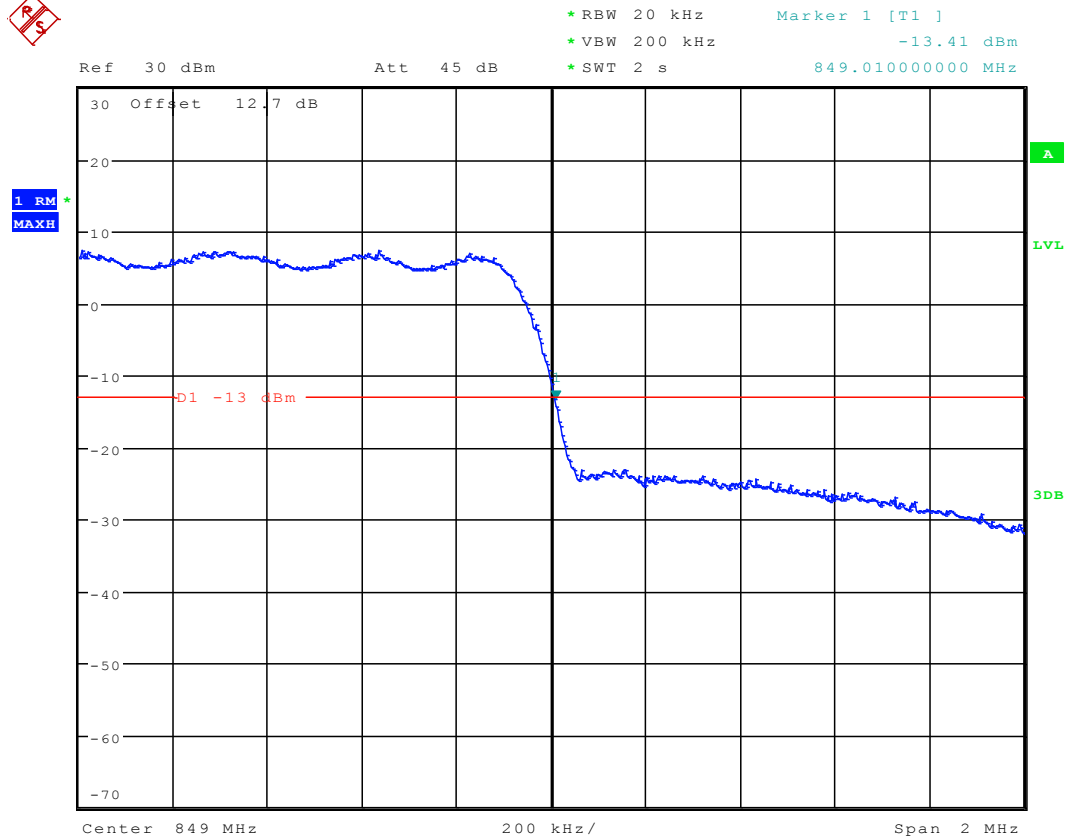
Channel 1013



Date: 8.AUG.2012 10:33:49



Right Edge (849MHz) Channel 777



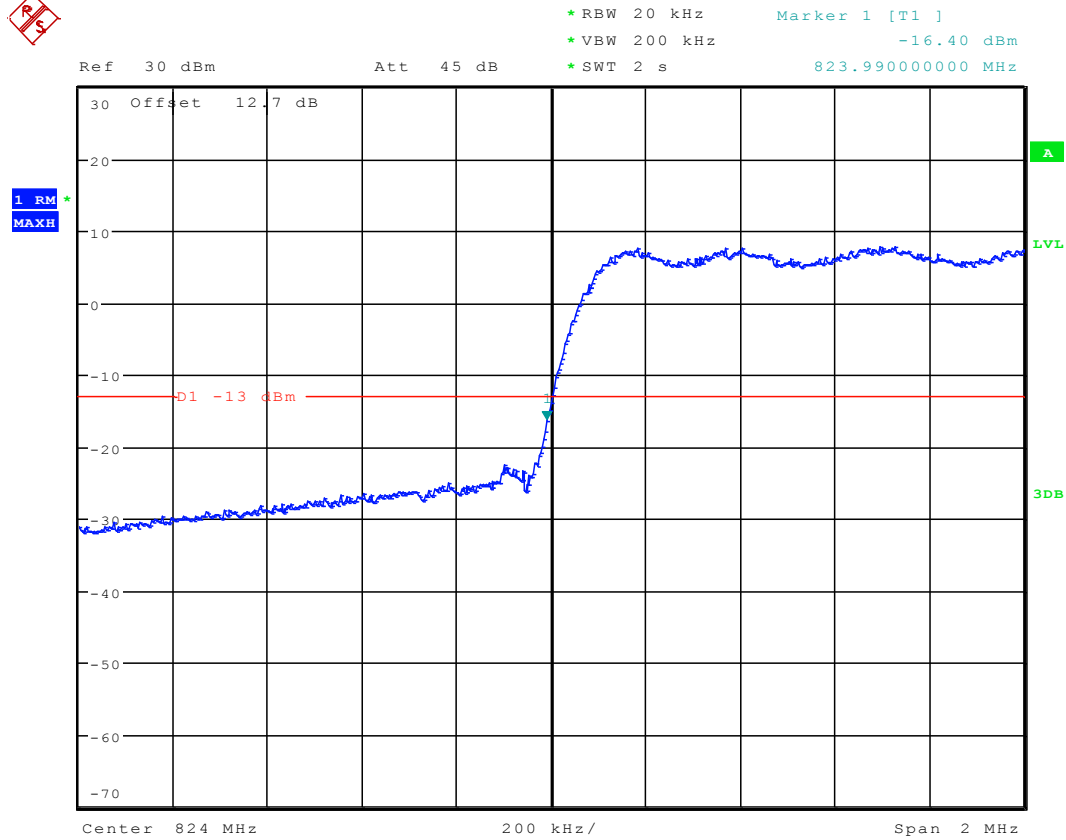
Date: 8.AUG.2012 10:38:08



TM3

Left Edge (824 MHz)

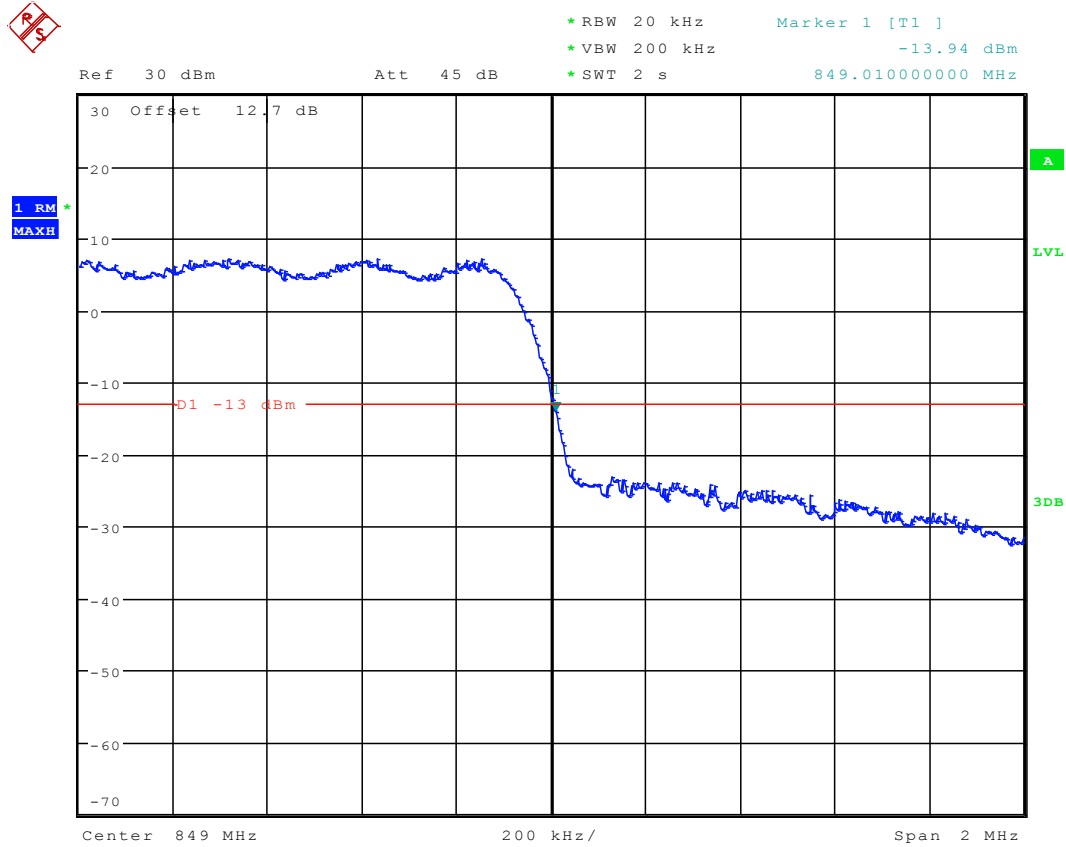
Channel 1013



Date: 8.AUG.2012 10:34:12



Right Edge (849MHz) Channel 777



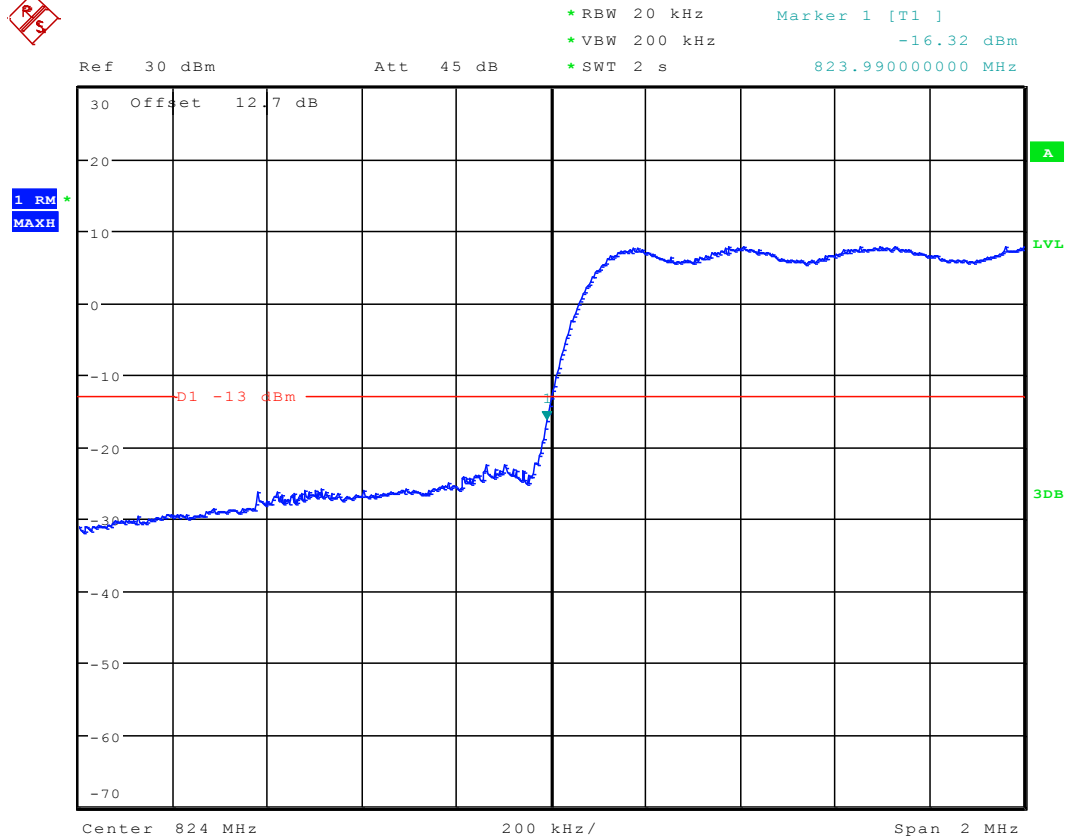
Date: 8.AUG.2012 10:38:20



EVDO Subtype 0

Left Edge (824 MHz)

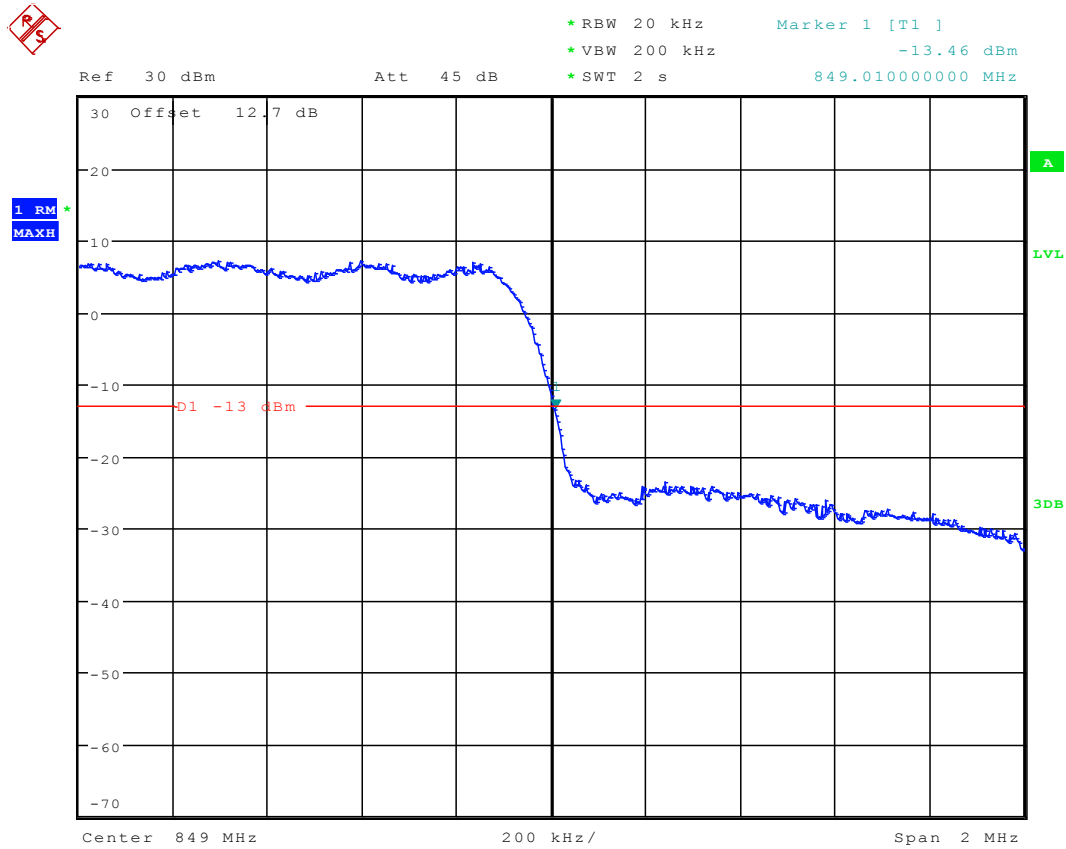
Channel 1013



Date: 8.AUG.2012 10:34:58



Right Edge (849MHz) Channel 777

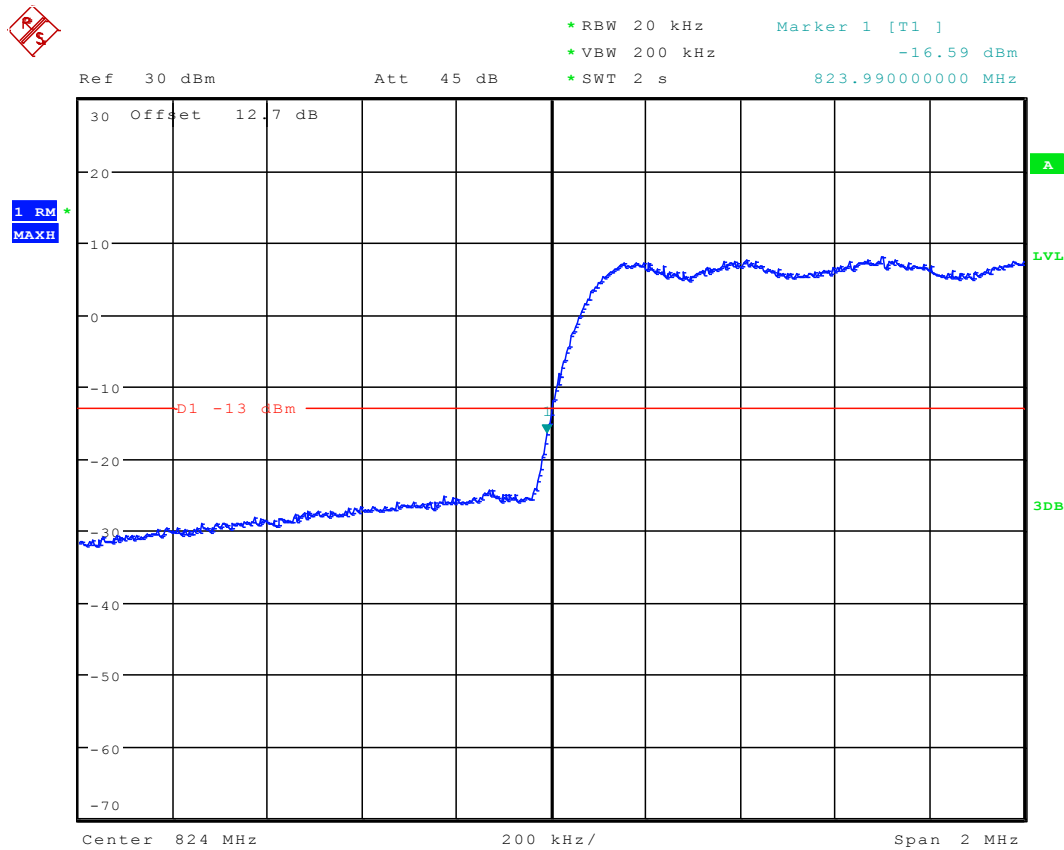


Date: 8.AUG.2012 10:38:32

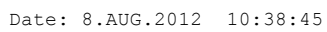
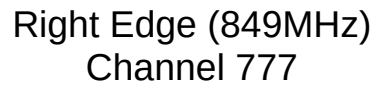
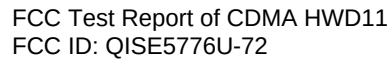


EVDO Subtype 2

Modulation: BPSK
Left Edge (824 MHz)
Channel 1013

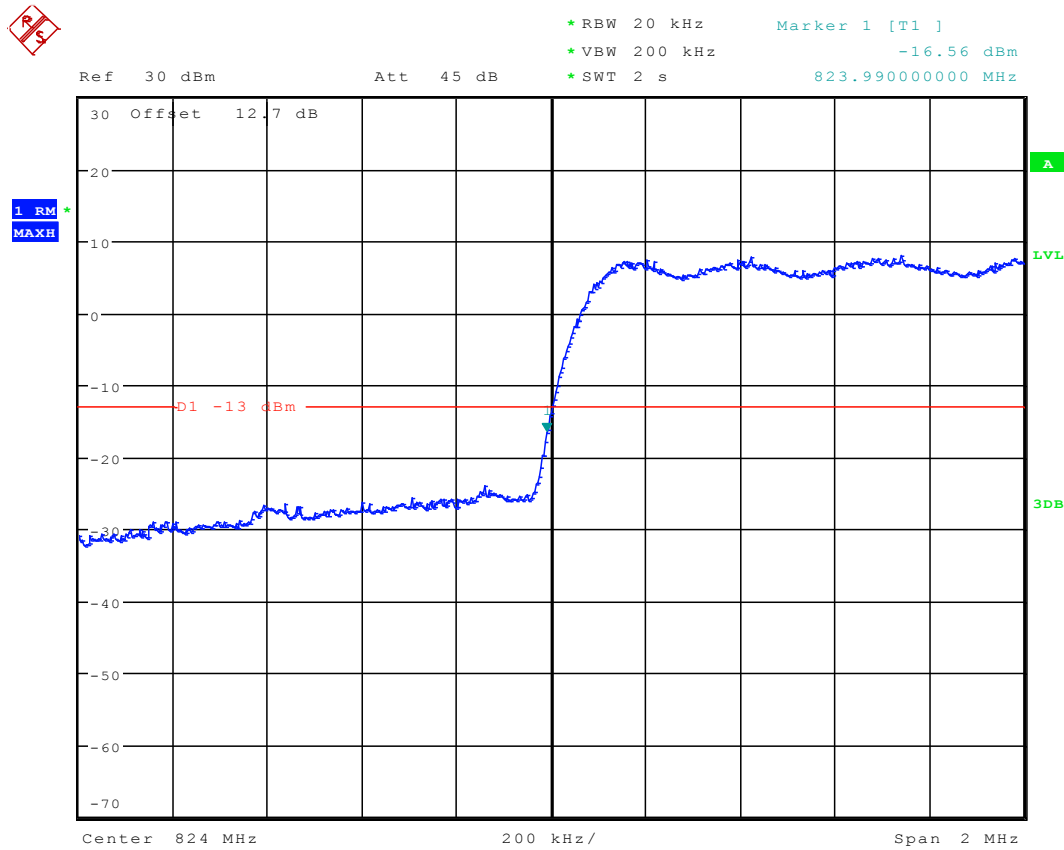


Date: 8.AUG.2012 10:35:13





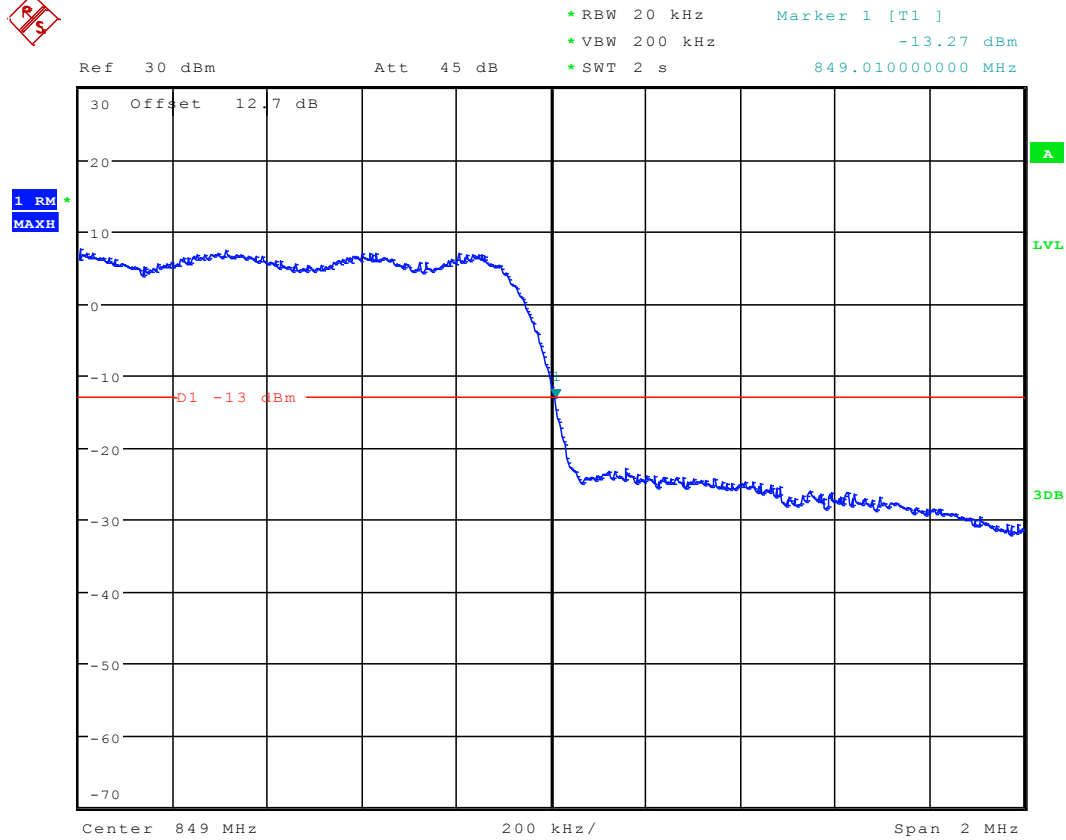
Modulation: QPSK
Left Edge (824 MHz)
Channel 1013



Date: 8.AUG.2012 10:35:49



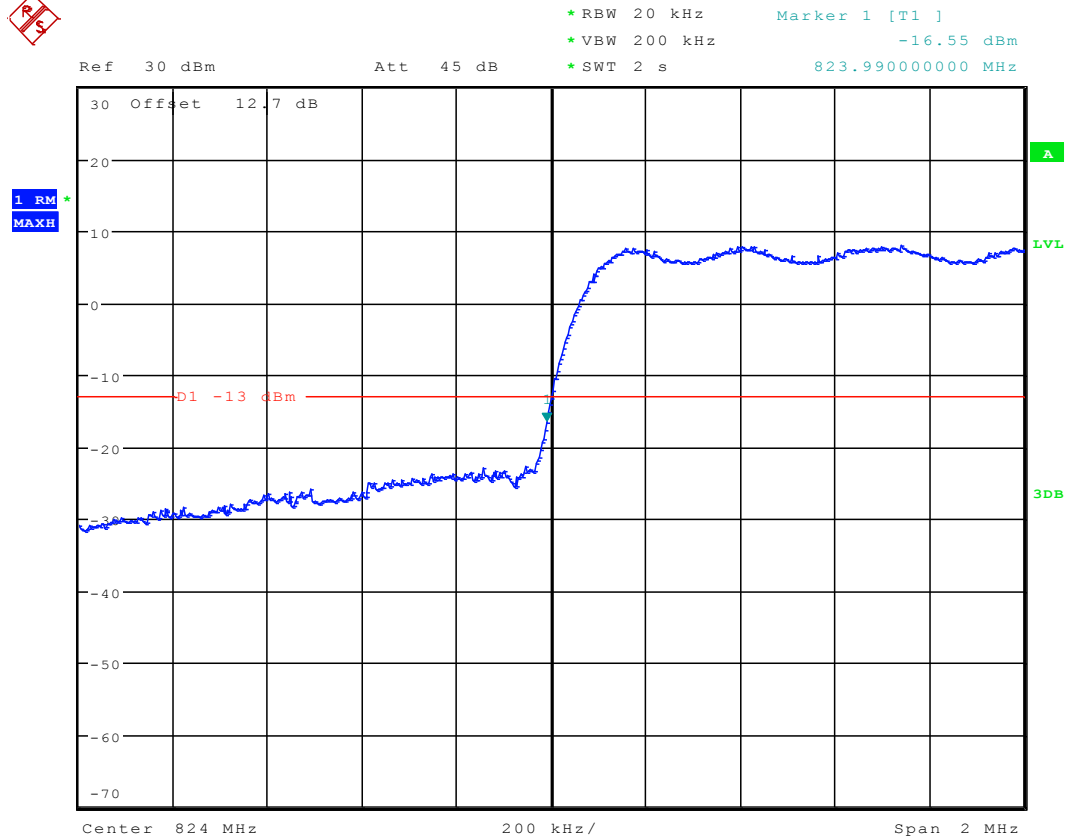
Right Edge (849MHz) Channel 777



Date: 8.AUG.2012 10:38:56



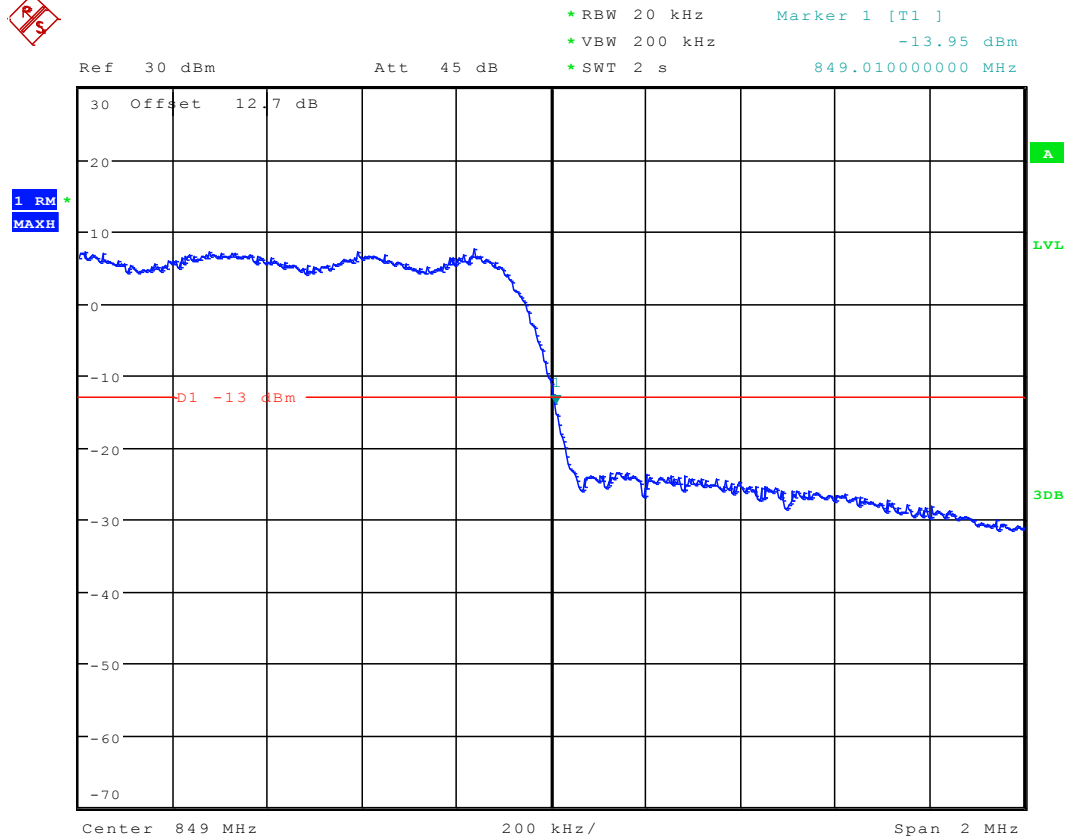
Modulation: 8PSK
Left Edge (824 MHz)
Channel 1013



Date: 8.AUG.2012 10:36:32



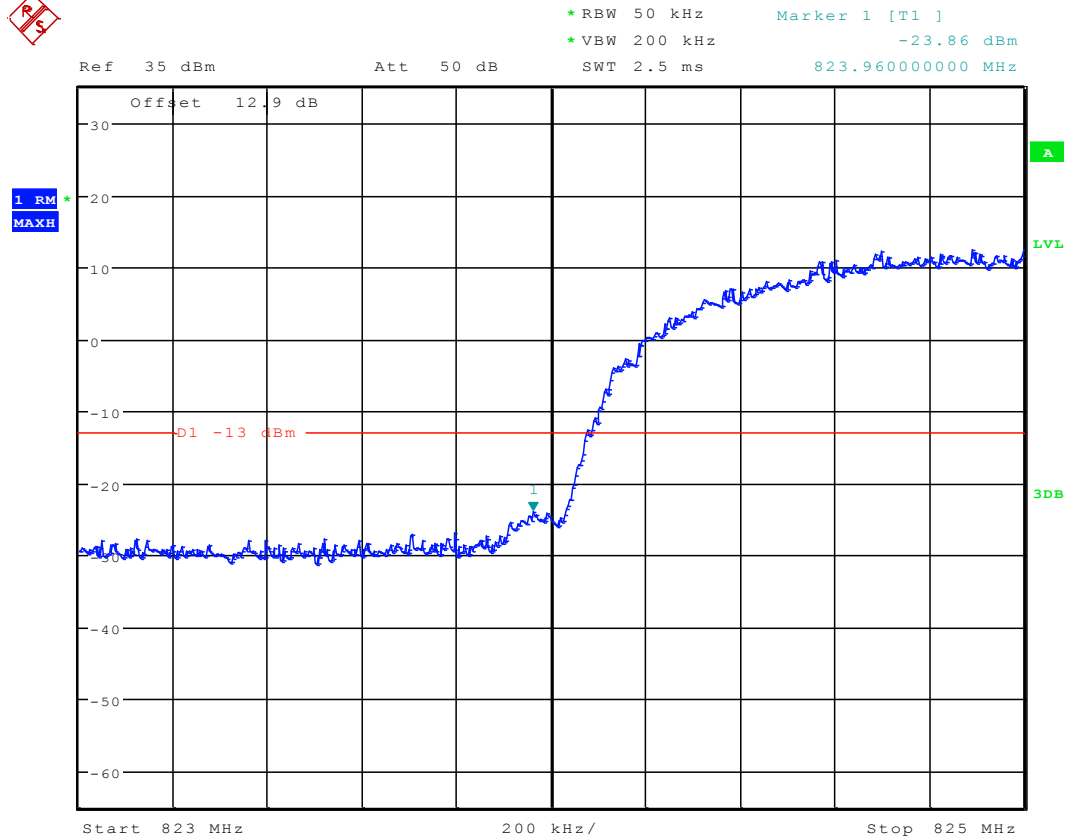
Right Edge (849MHz) Channel 777



Date: 8.AUG.2012 10:39:15



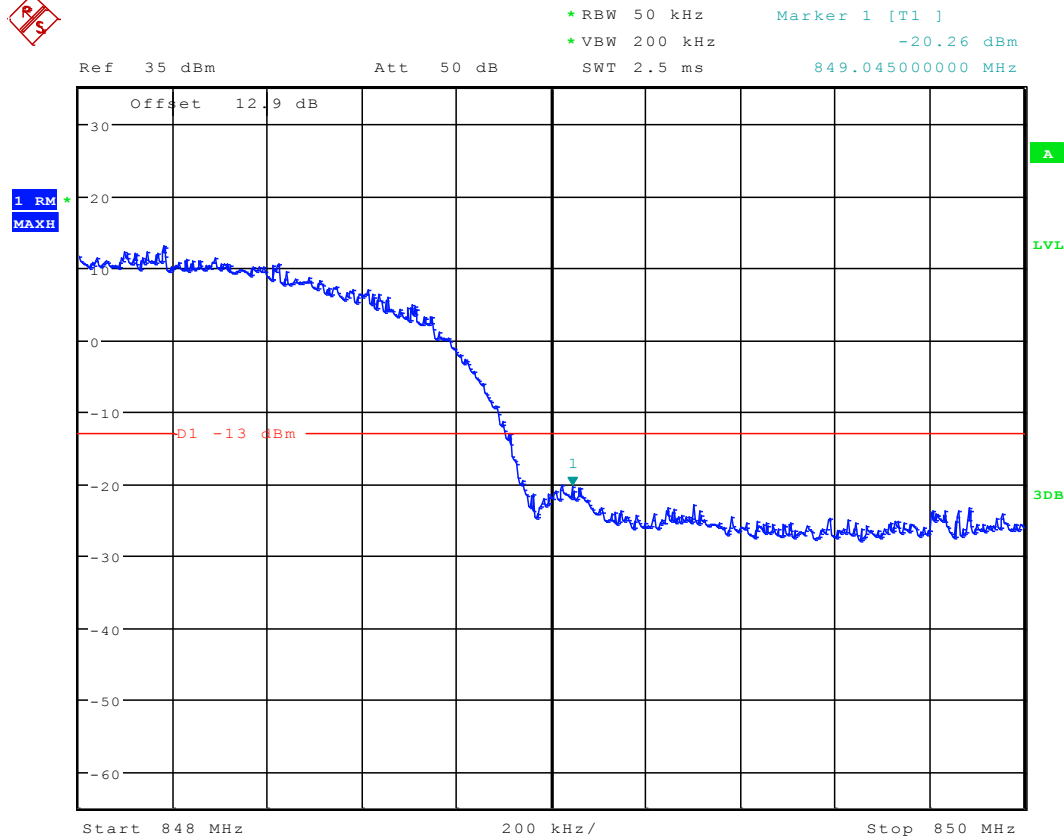
TM4: WCDMA Left Edge Channel 4132



Date: 23.JUL.2012 16:15:33



Right Edge Channel 4233



Date: 23.JUL.2012 16:15:46

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



FCC Test Report of CDMA HWD11
FCC ID: QISE5776U-72



Appendix E

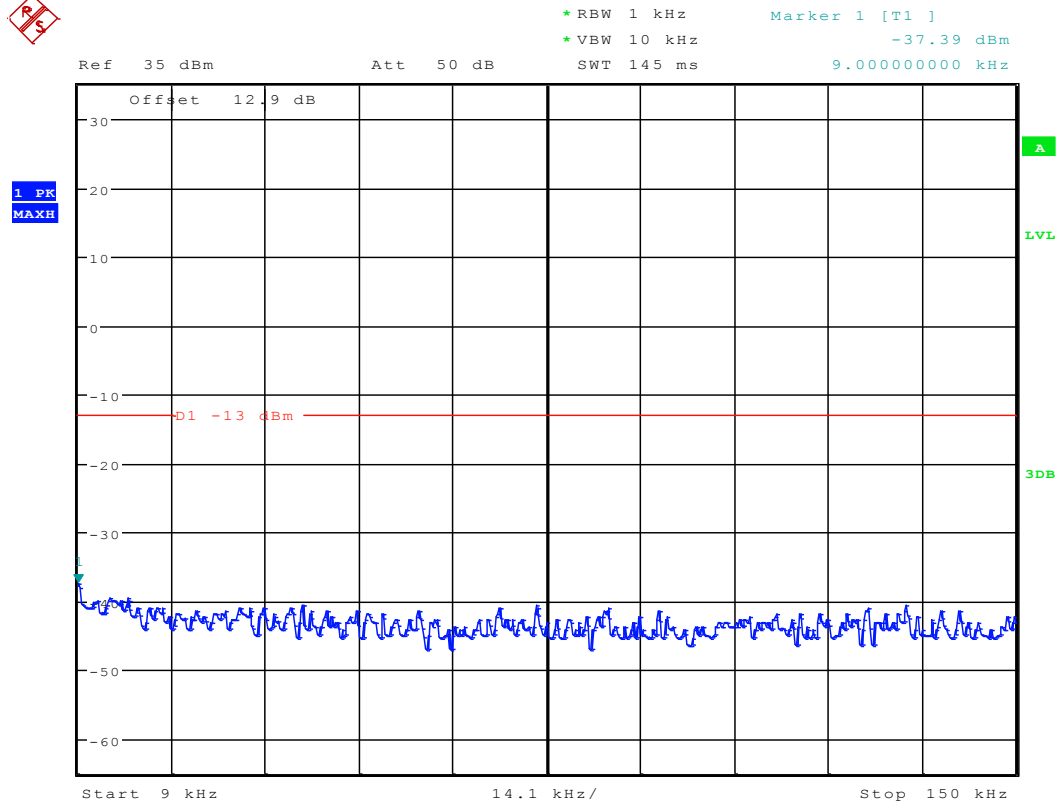
Spurious Emission at Antenna Terminal

According to FCC Part 2.1051 & Part 22 Subpart H

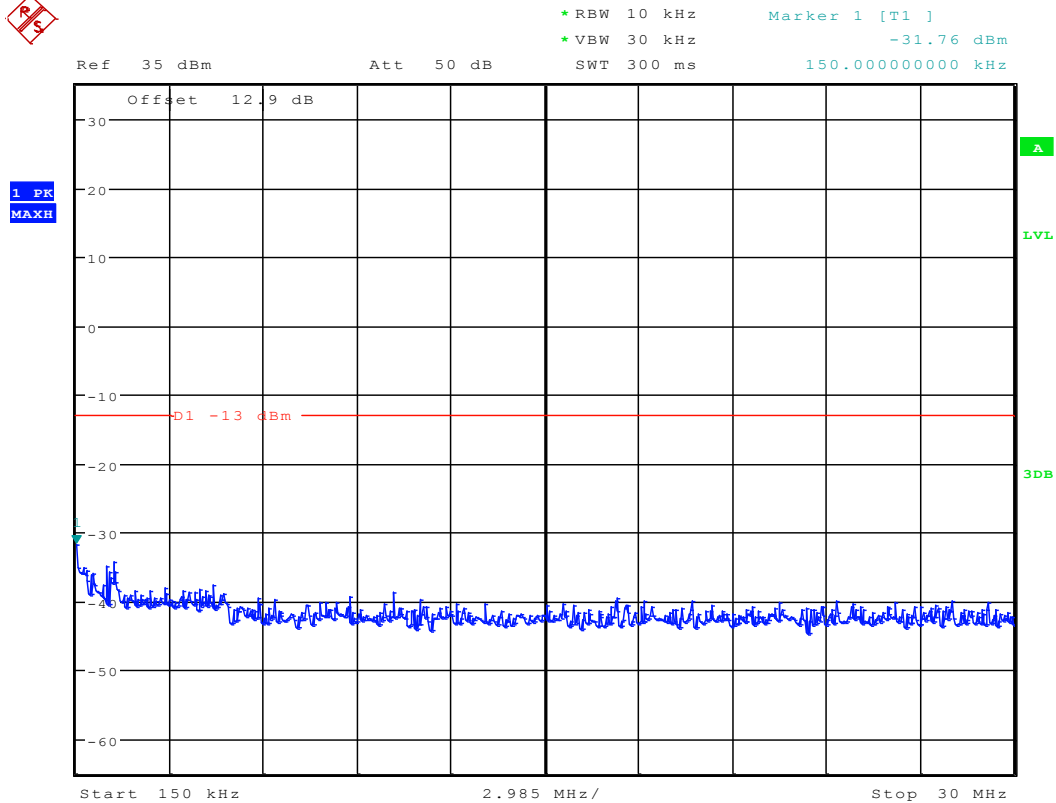


TM1

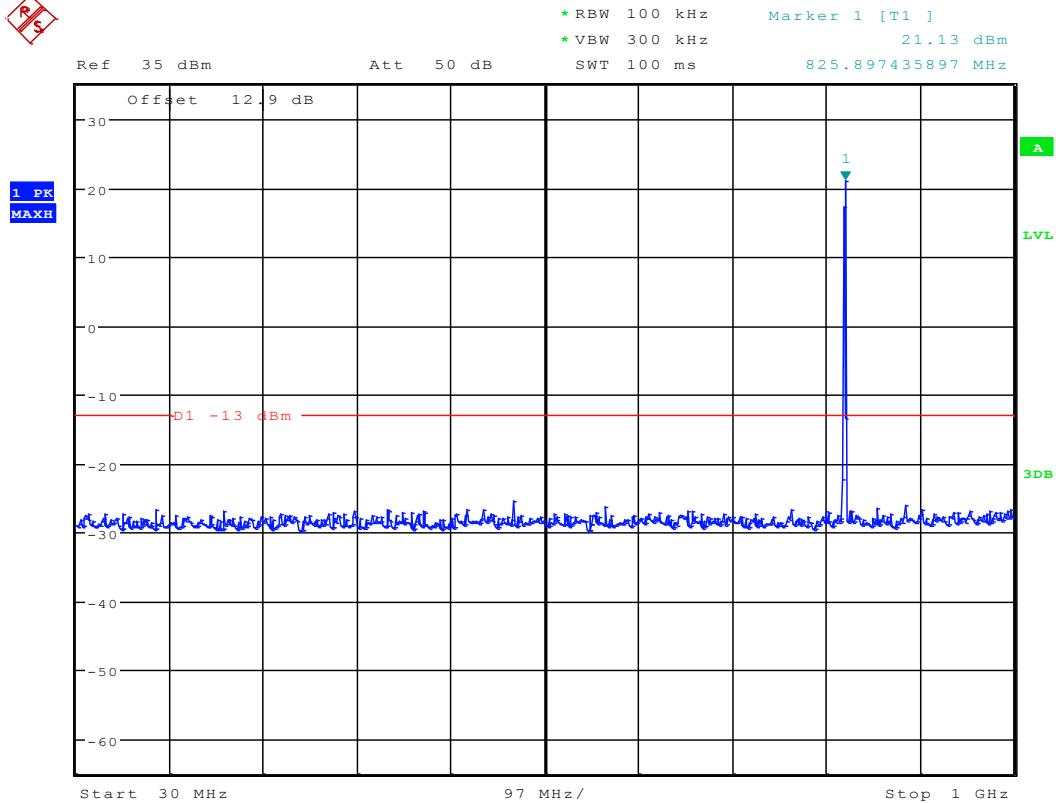
Channel 1013



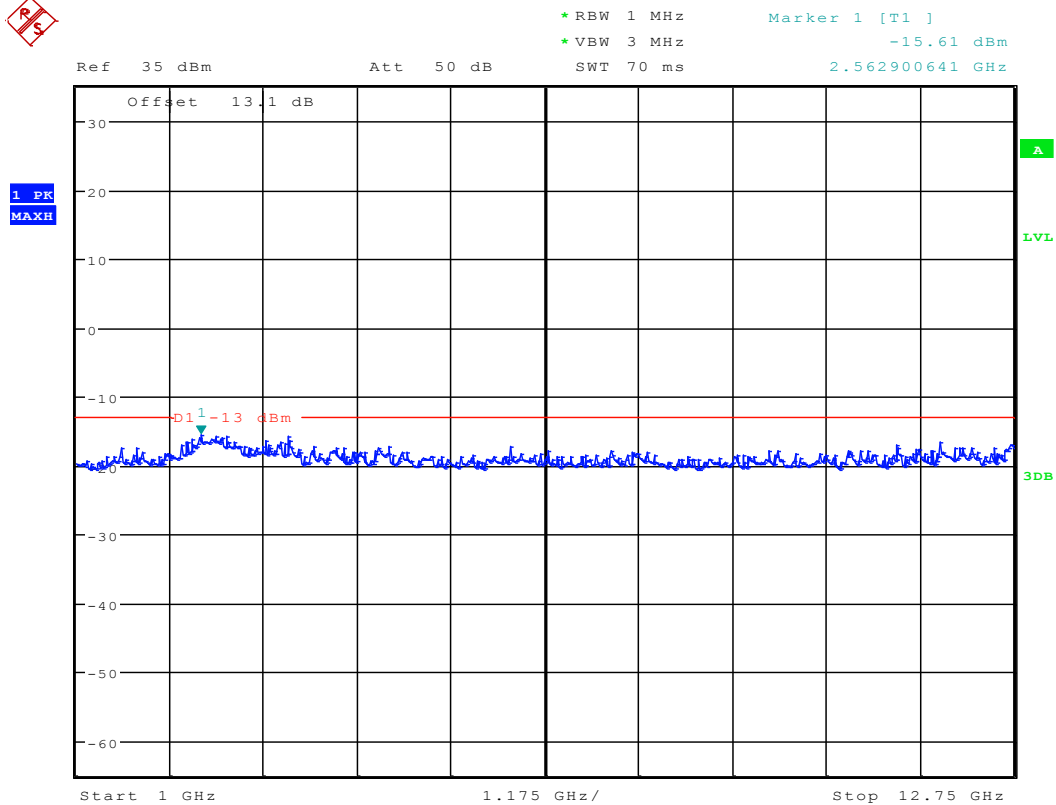
Date: 23.JUL.2012 17:31:29



Date: 23.JUL.2012 17:31:55



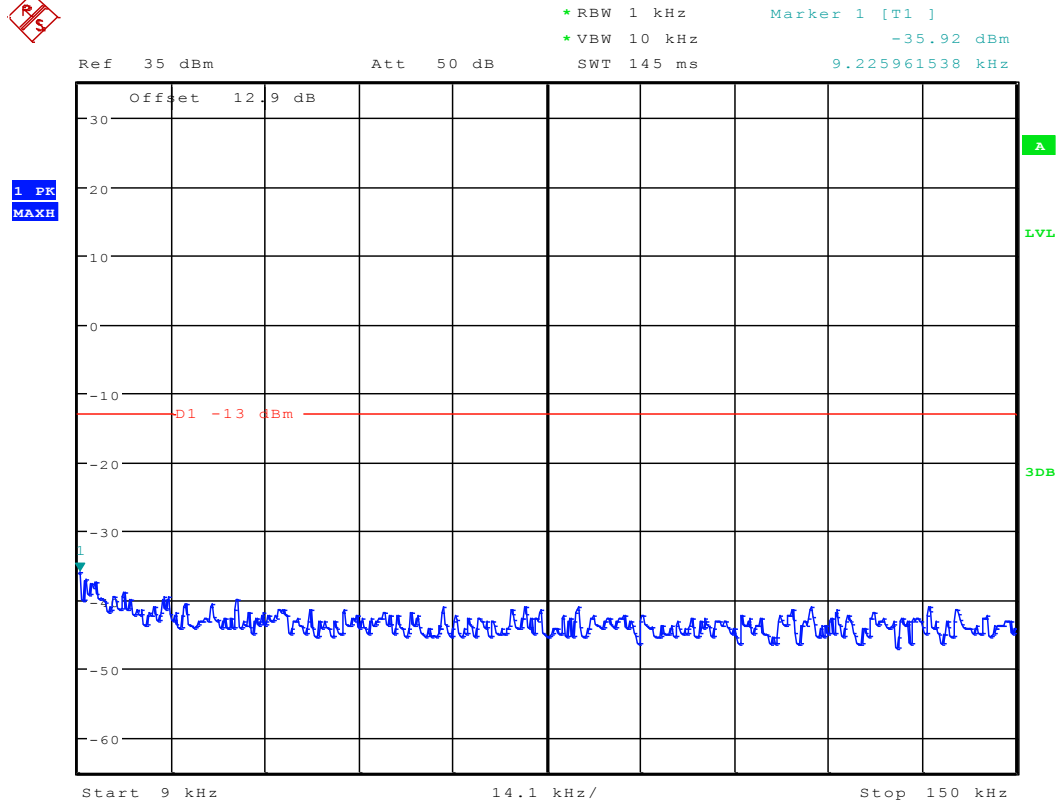
Date: 23.JUL.2012 17:32:20



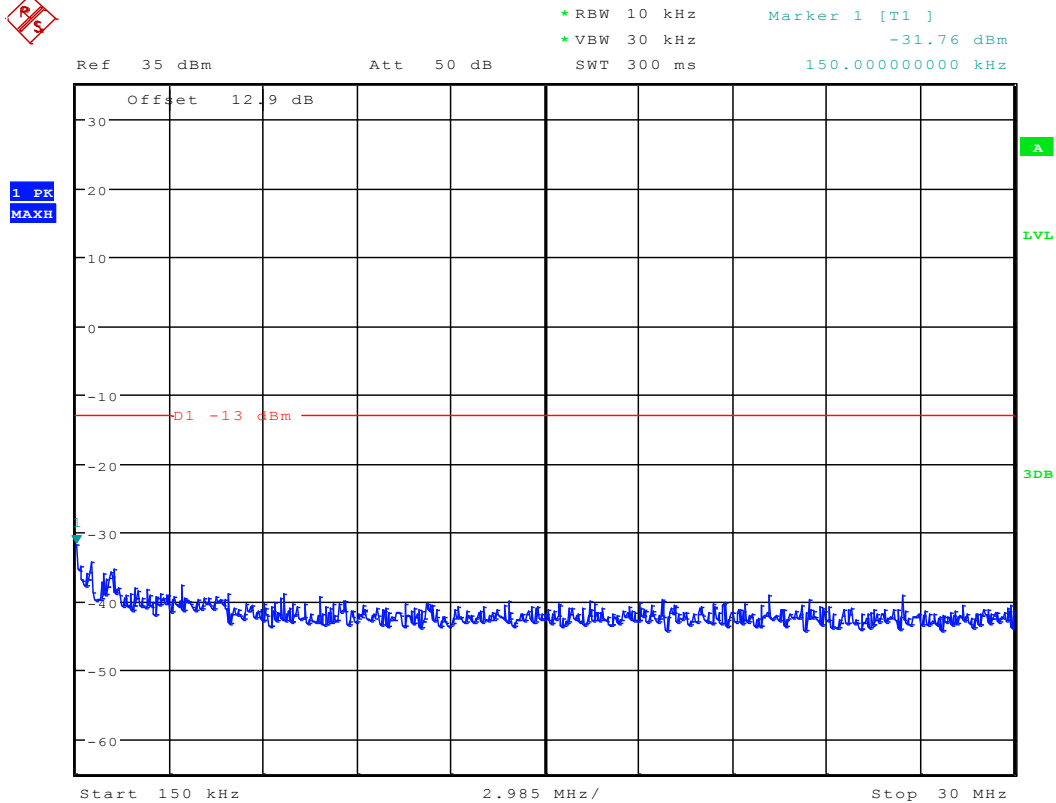
Date: 23.JUL.2012 17:32:46



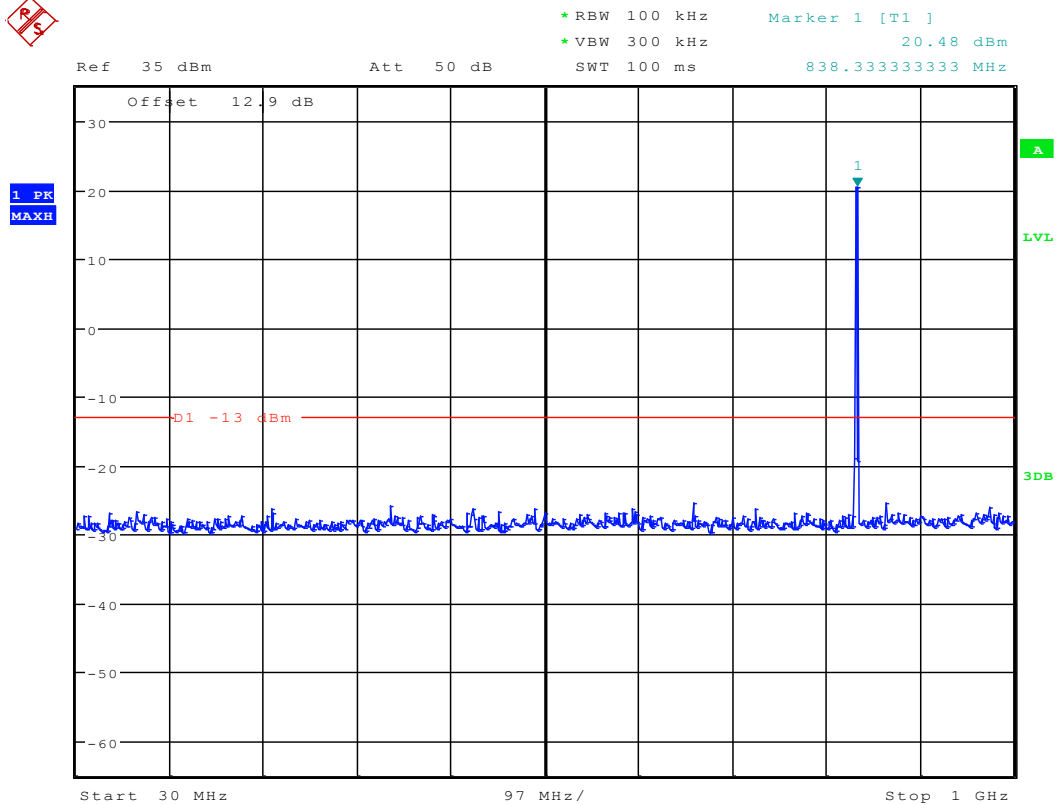
Channel 384



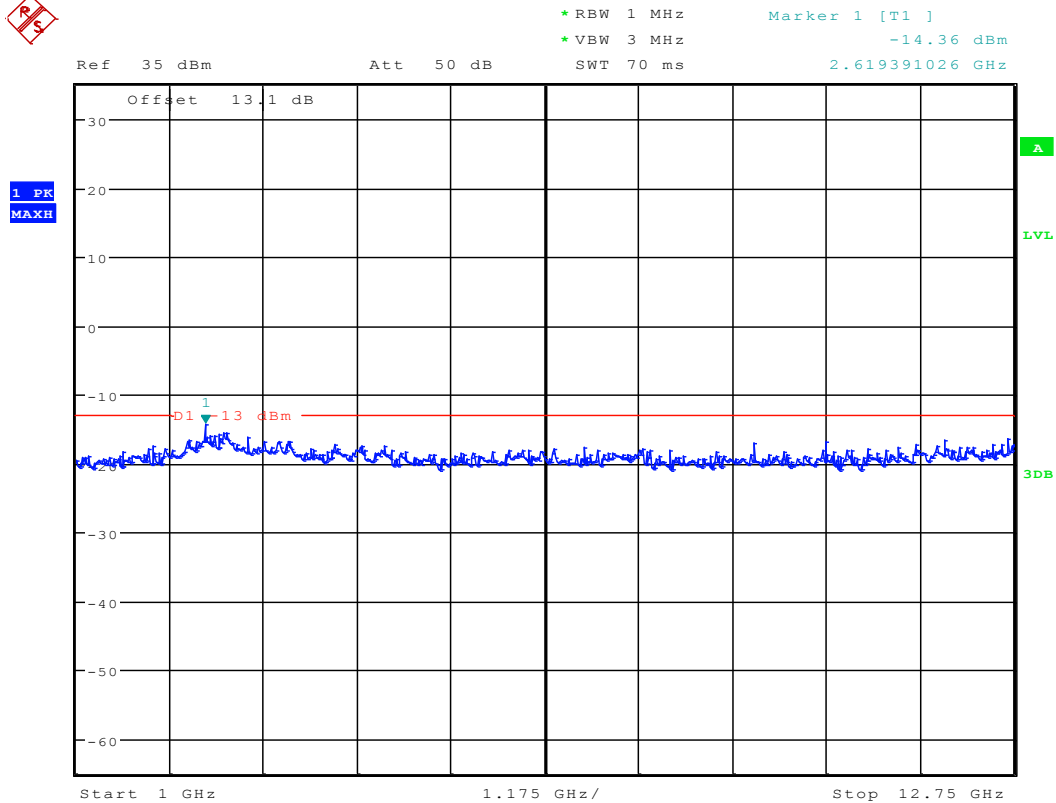
Date: 23.JUL.2012 17:31:38



Date: 23.JUL.2012 17:32:03



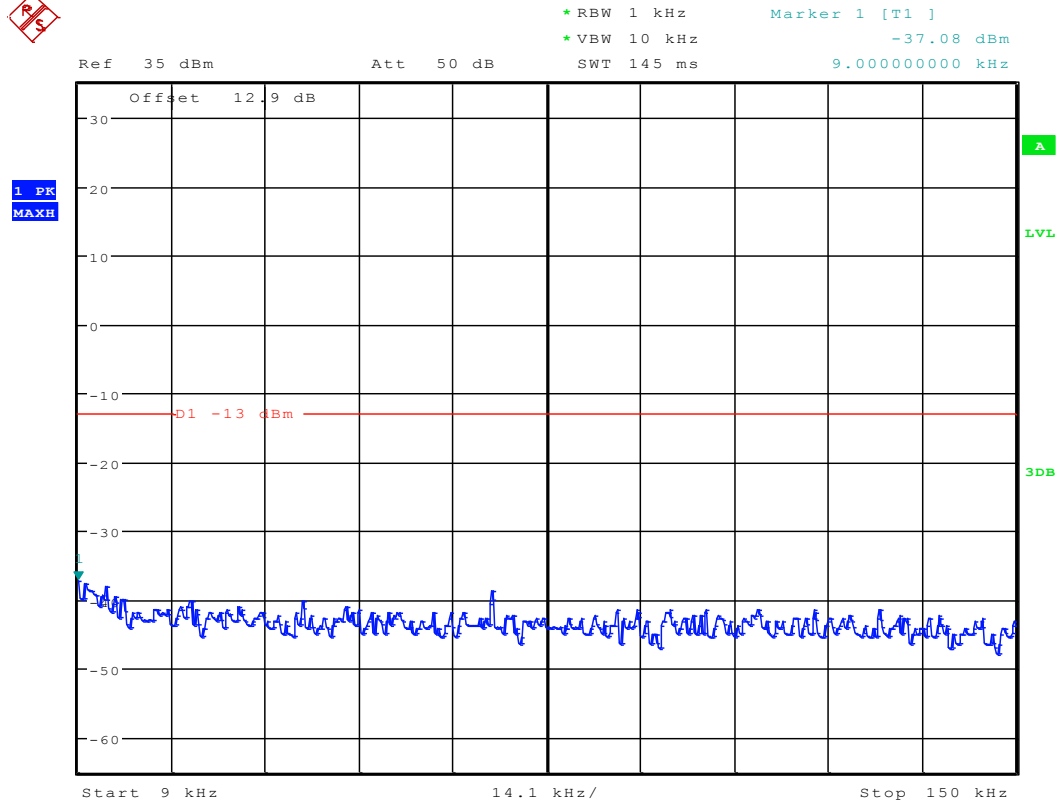
Date: 23.JUL.2012 17:32:29



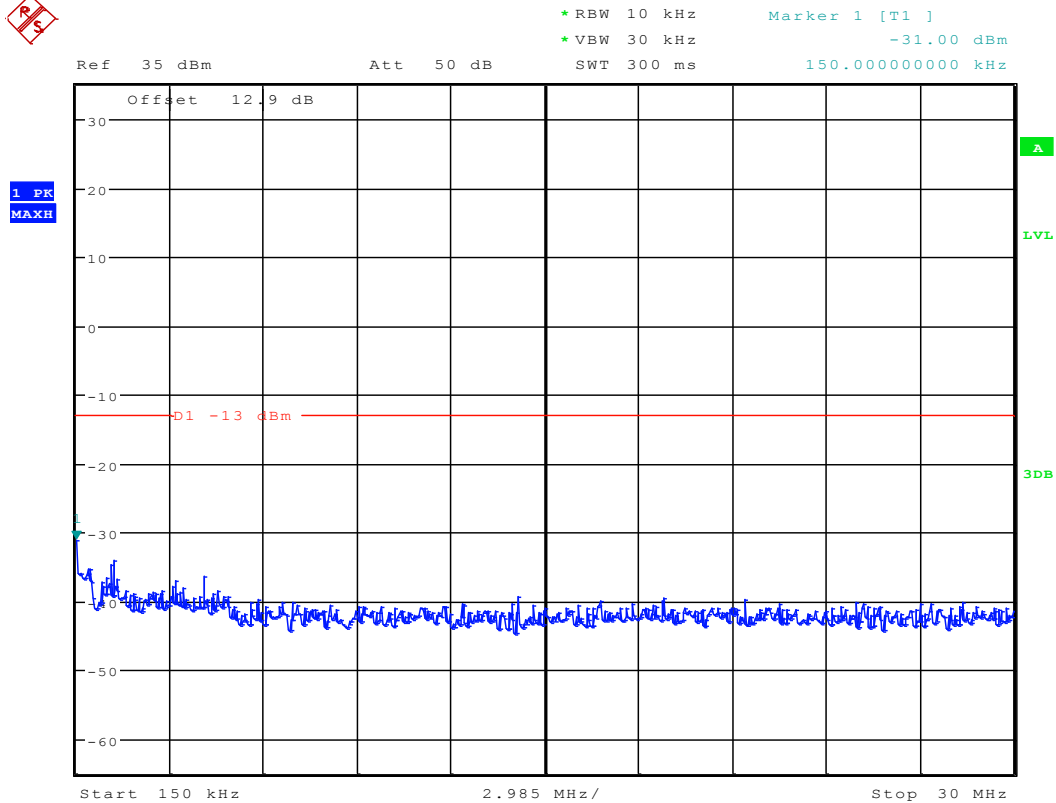
Date: 23.JUL.2012 17:32:54



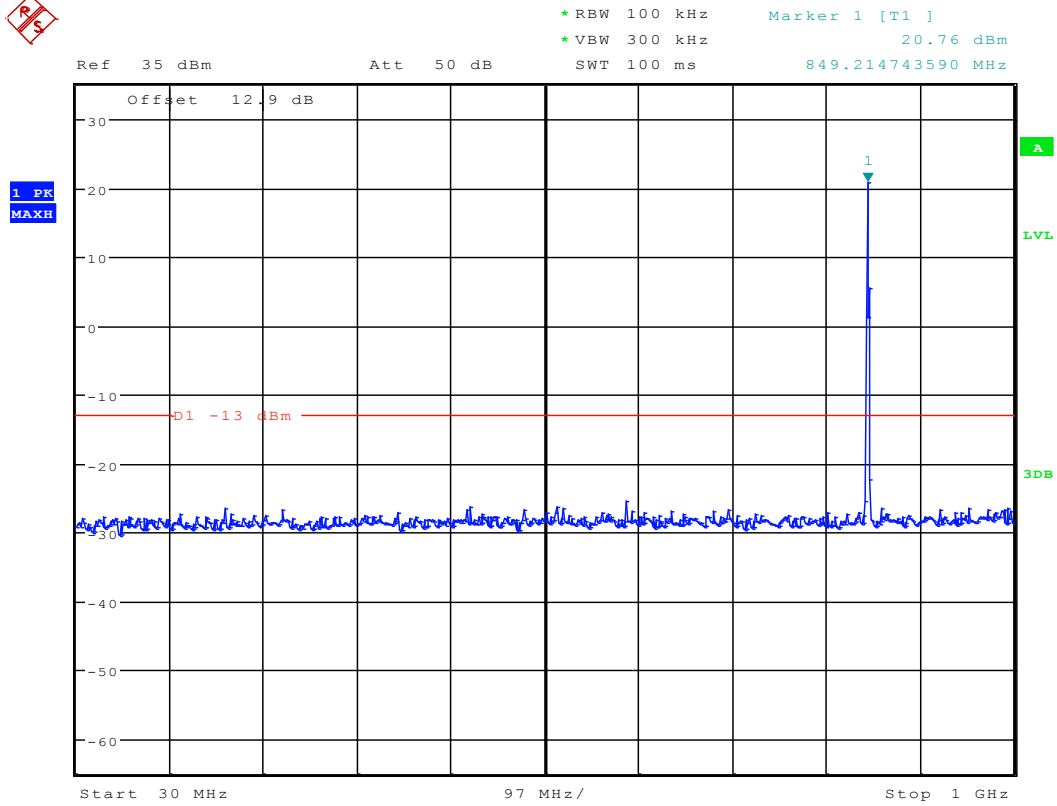
Channel 777



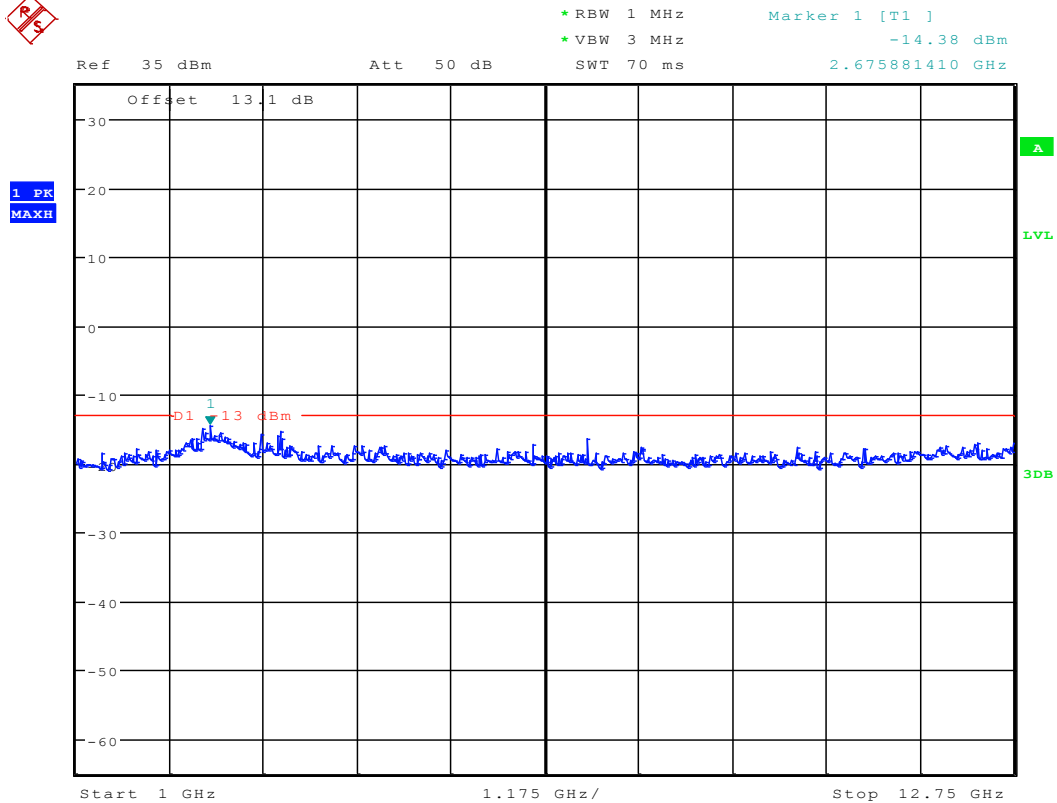
Date: 23.JUL.2012 17:31:46



Date: 23.JUL.2012 17:32:12



Date: 23.JUL.2012 17:32:37

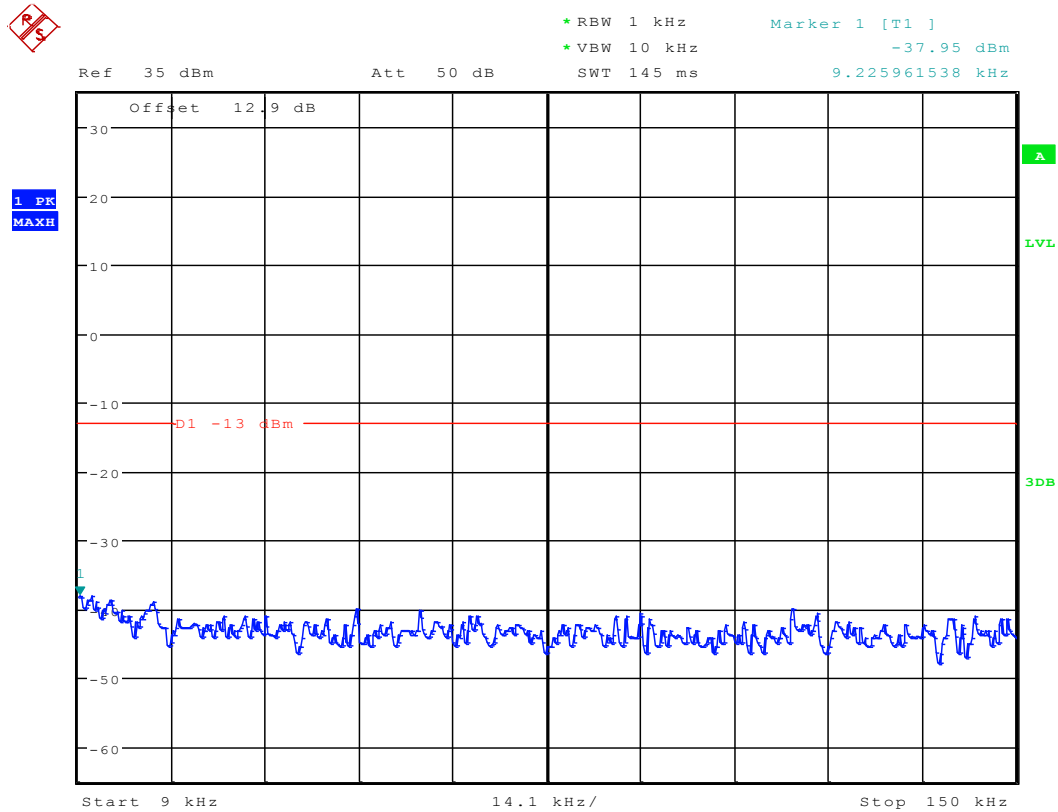


Date: 23.JUL.2012 17:33:03

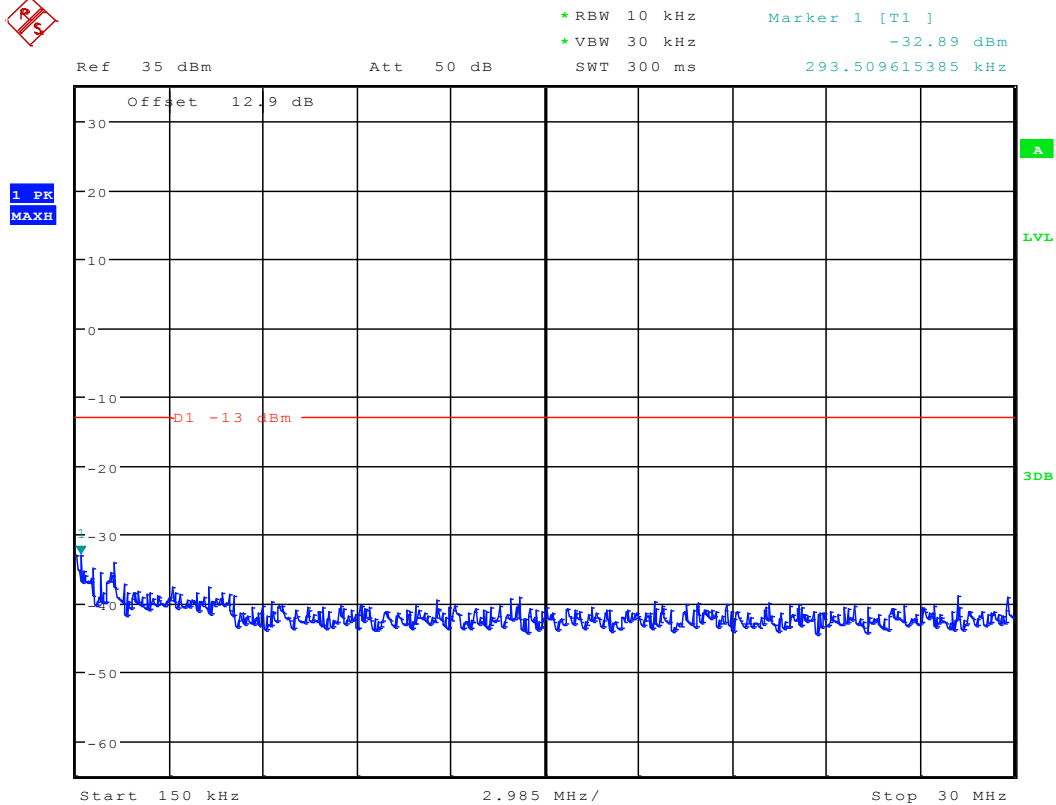


TM3

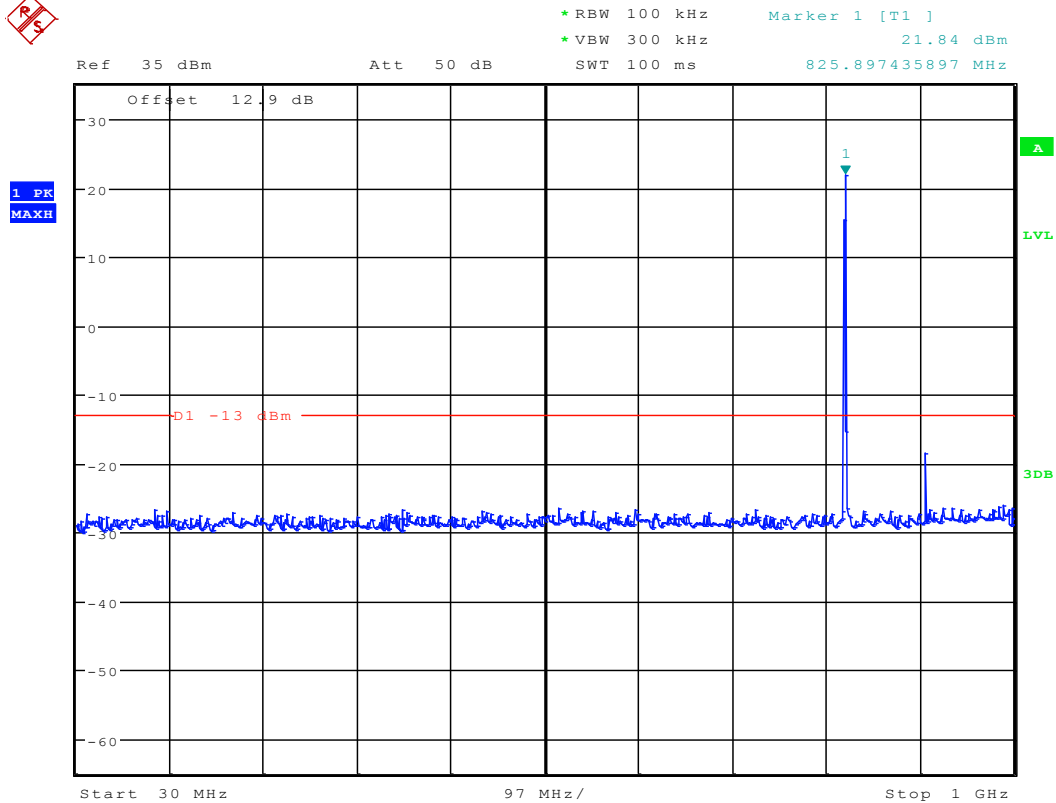
Channel 1013



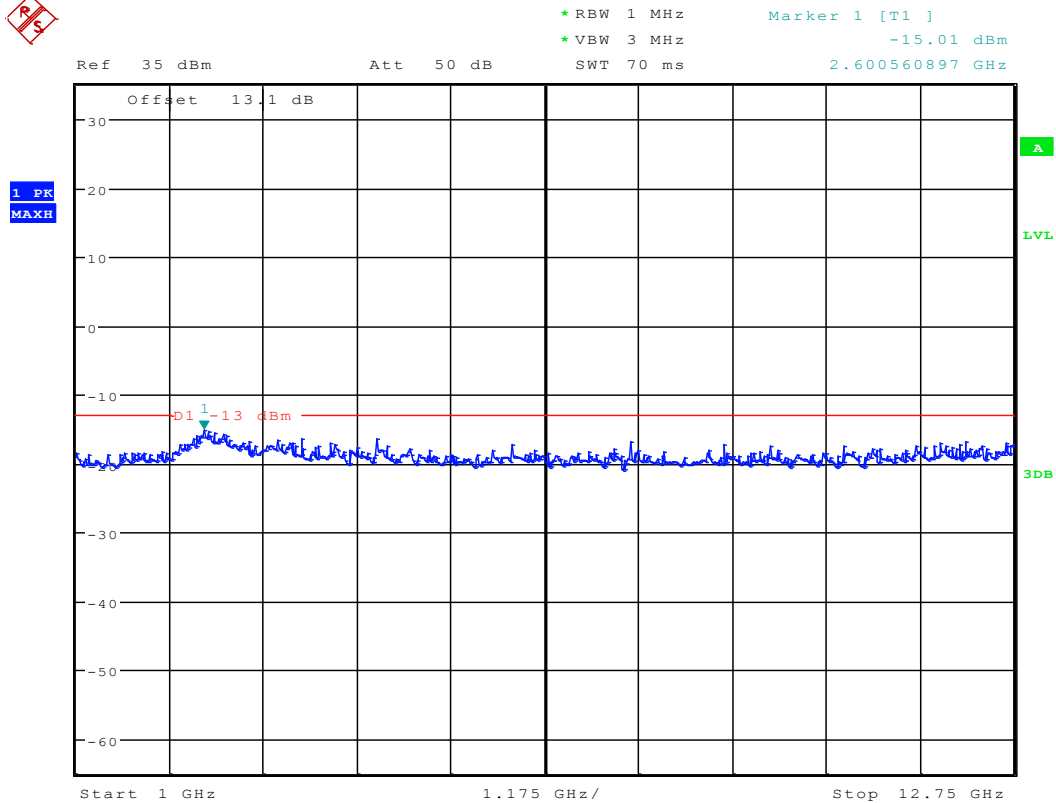
Date: 23.JUL.2012 17:33:13



Date: 23.JUL.2012 17:33:39



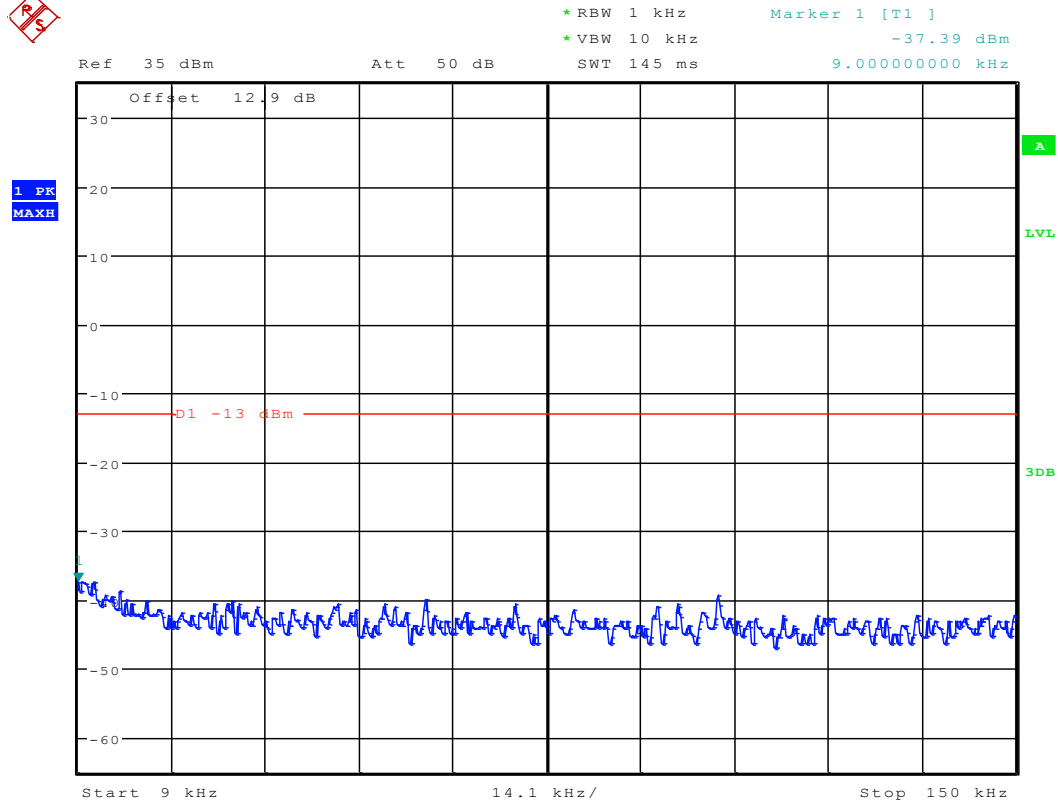
Date: 23.JUL.2012 17:34:04



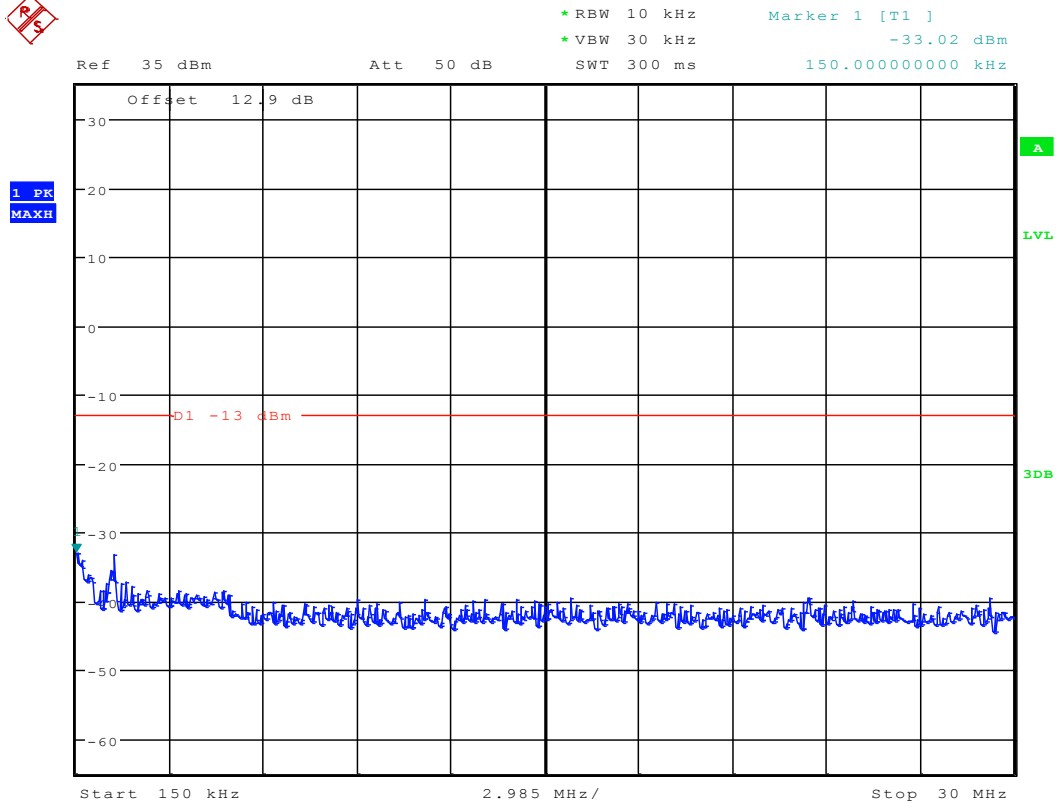
Date: 23.JUL.2012 17:34:30



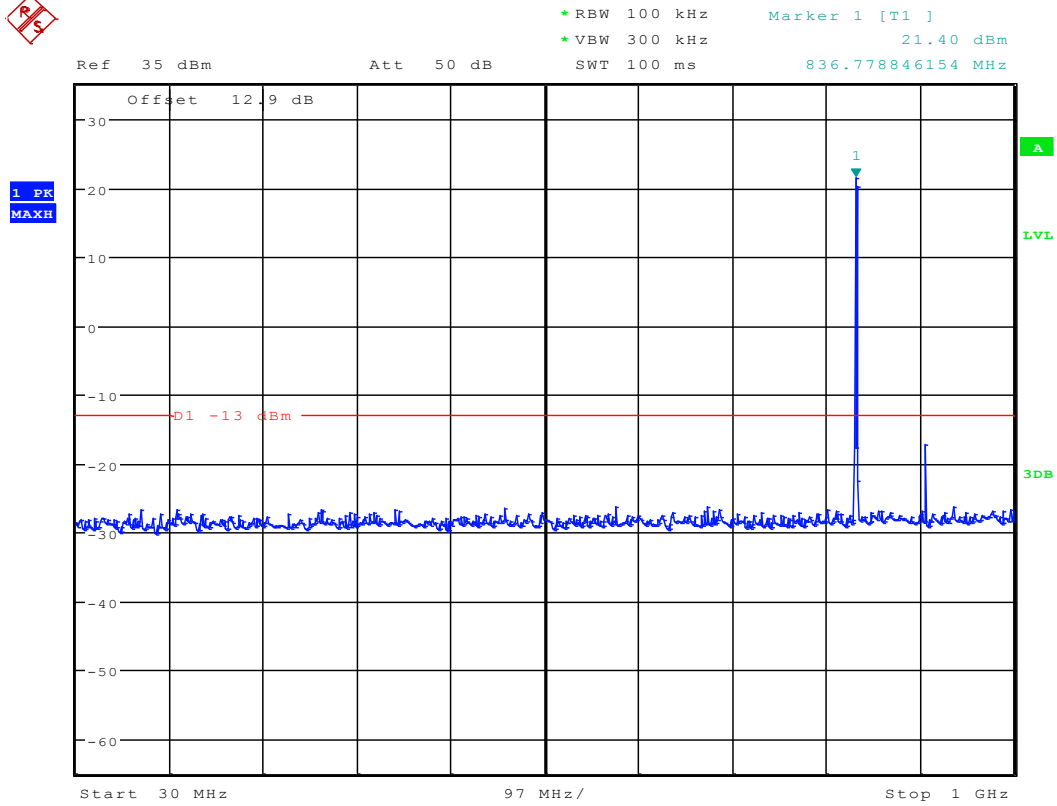
Channel 384



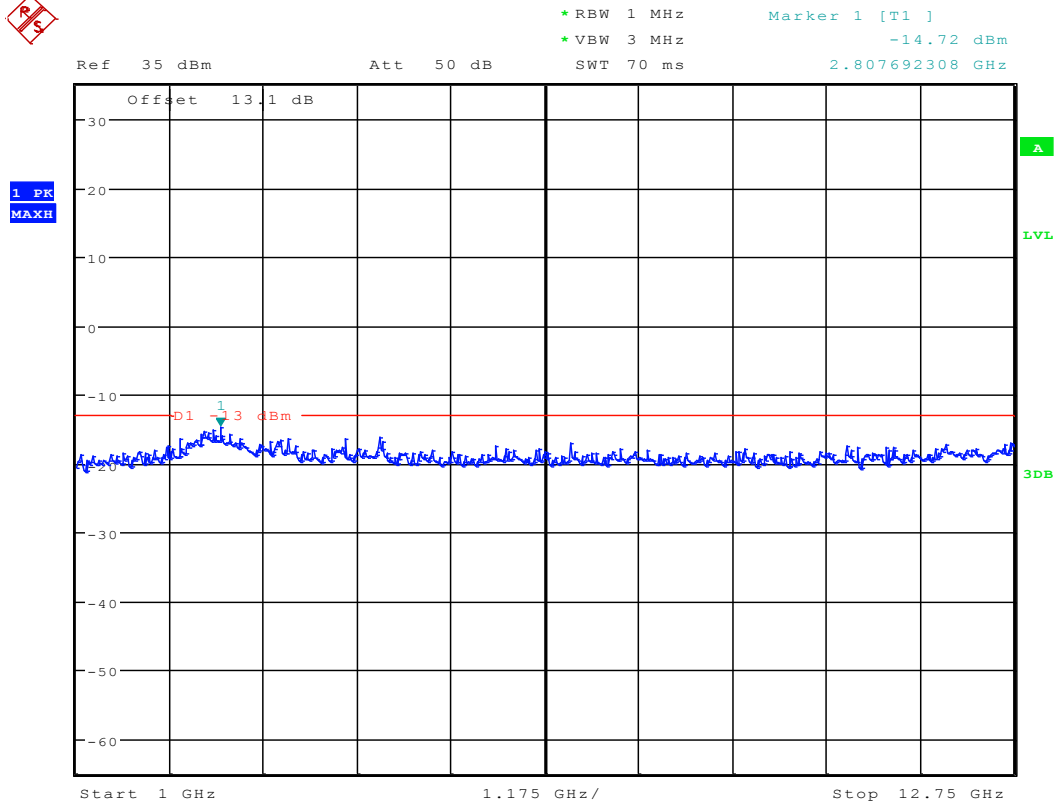
Date: 23.JUL.2012 17:33:21



Date: 23.JUL.2012 17:33:47



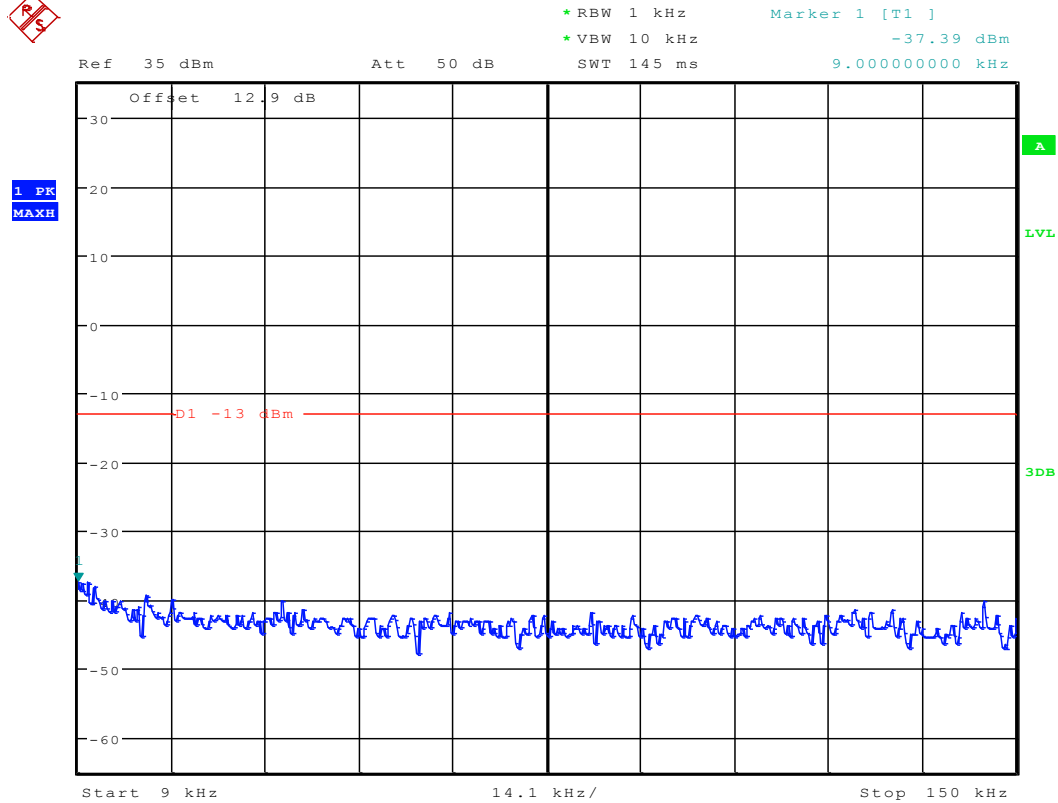
Date: 23.JUL.2012 17:34:13



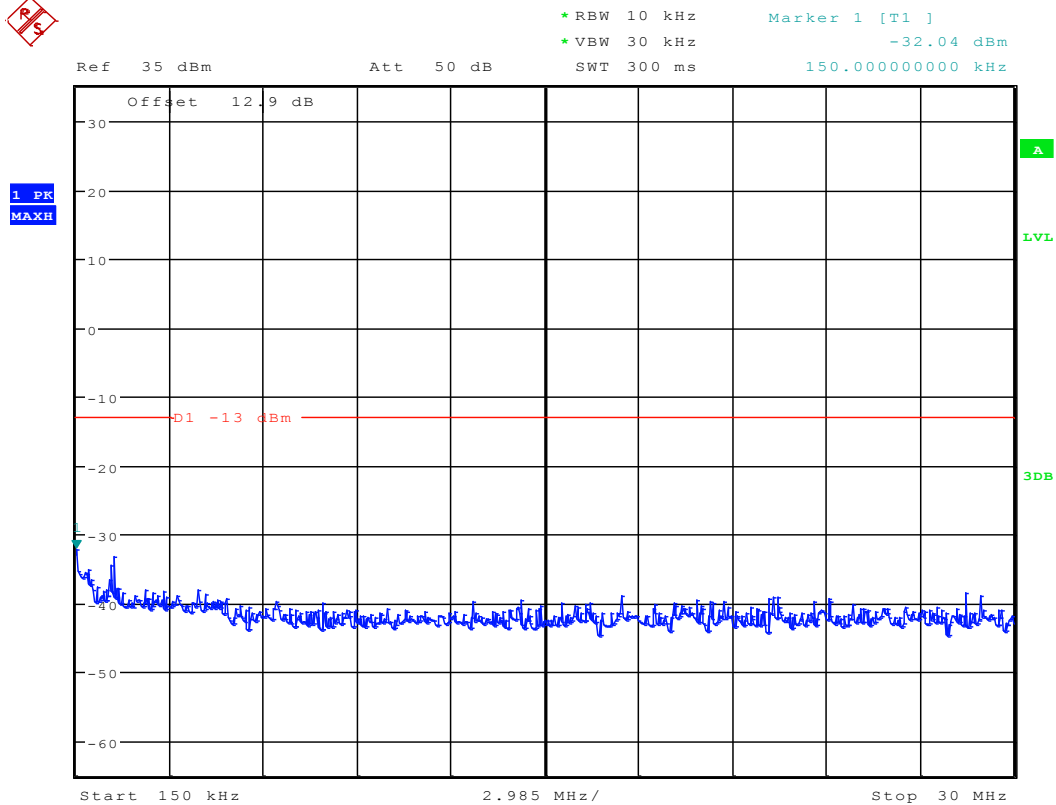
Date: 23.JUL.2012 17:34:38



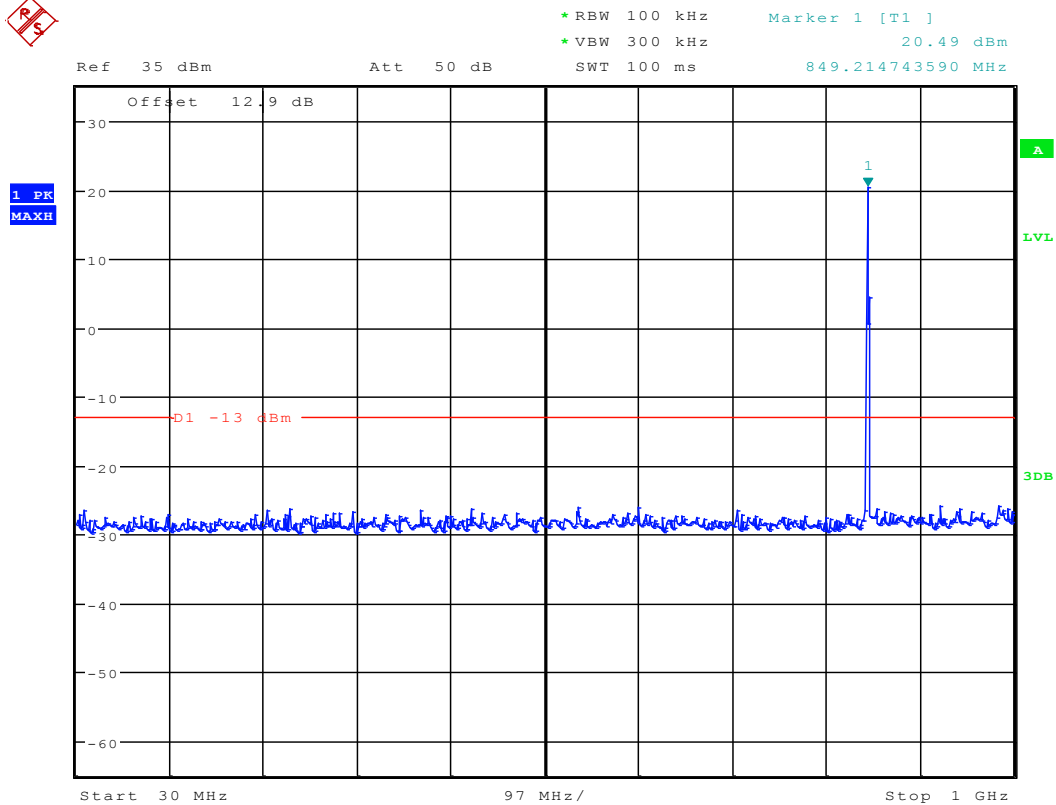
Channel 777



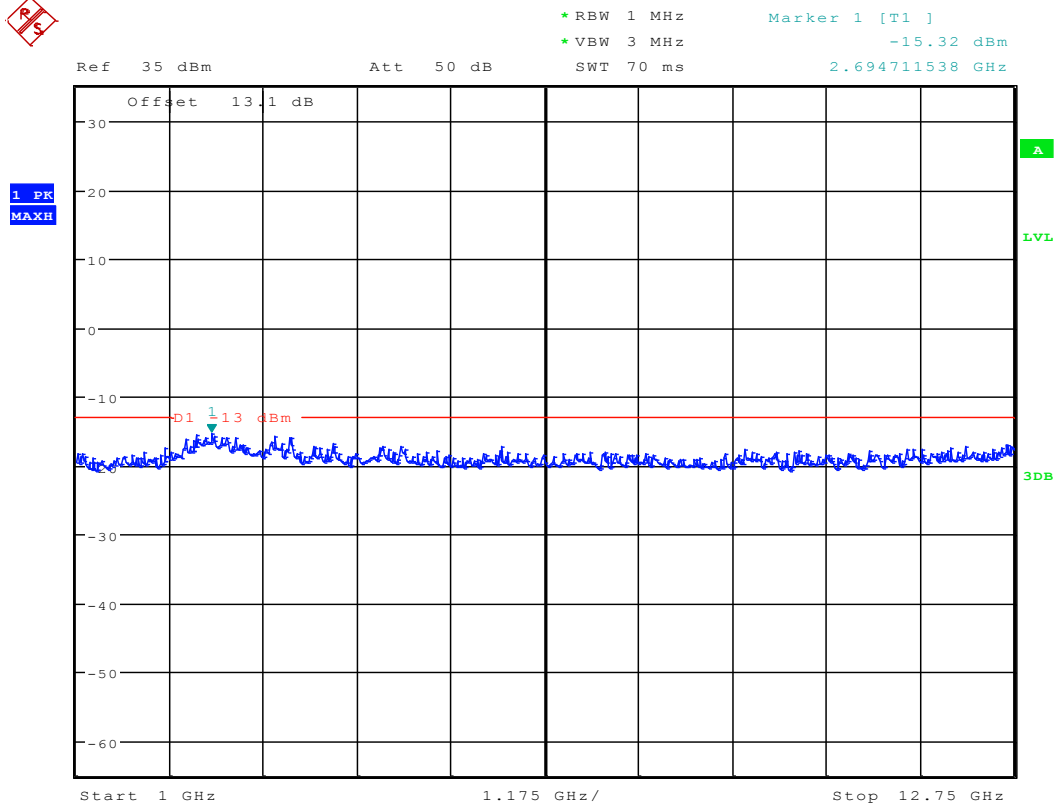
Date: 23.JUL.2012 17:33:30



Date: 23.JUL.2012 17:33:56



Date: 23.JUL.2012 17:34:21

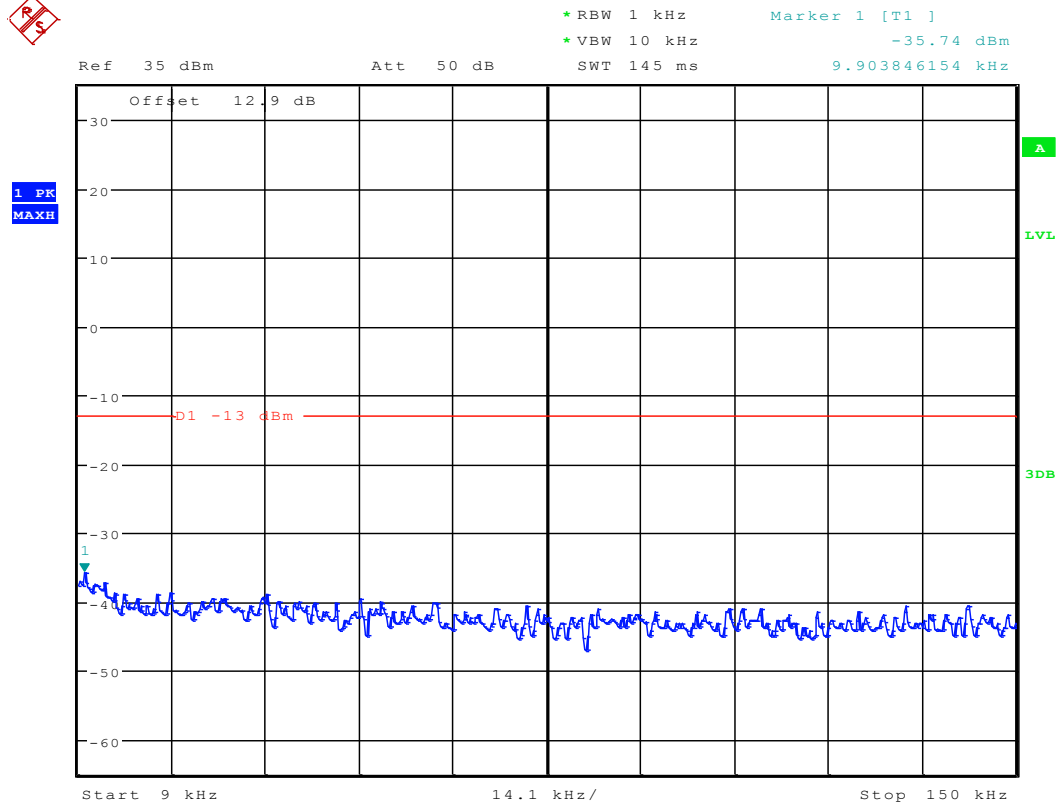


Date: 23.JUL.2012 17:34:47

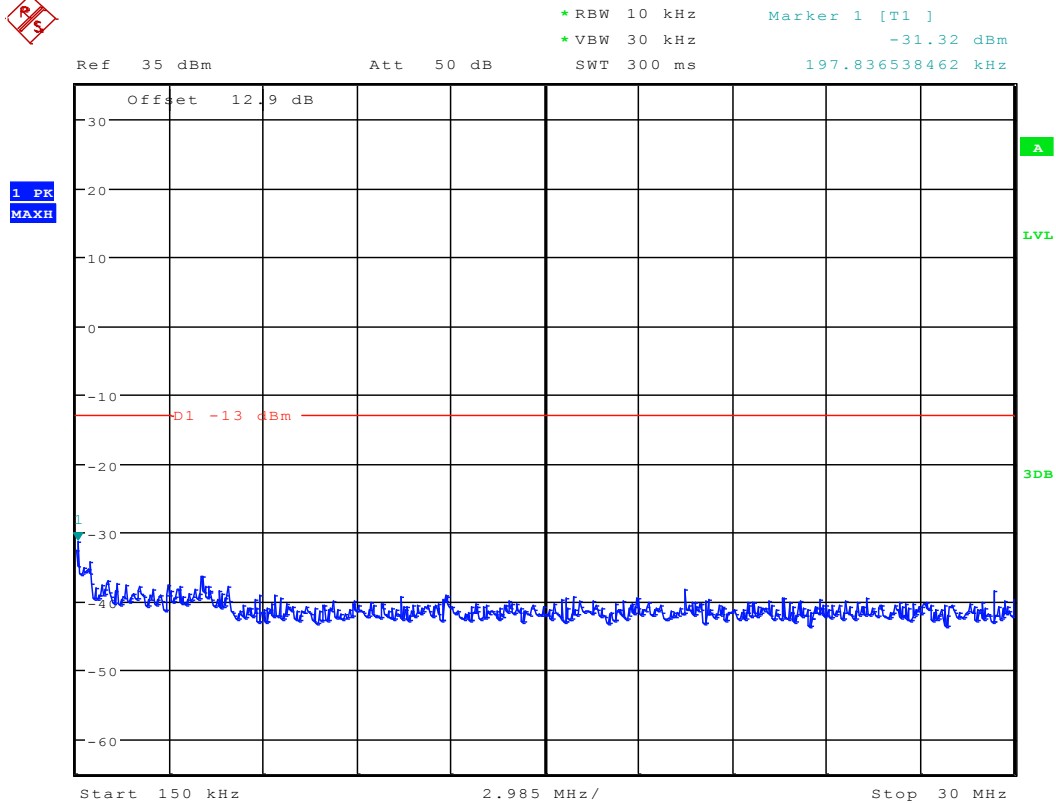


EVDO subtype 0

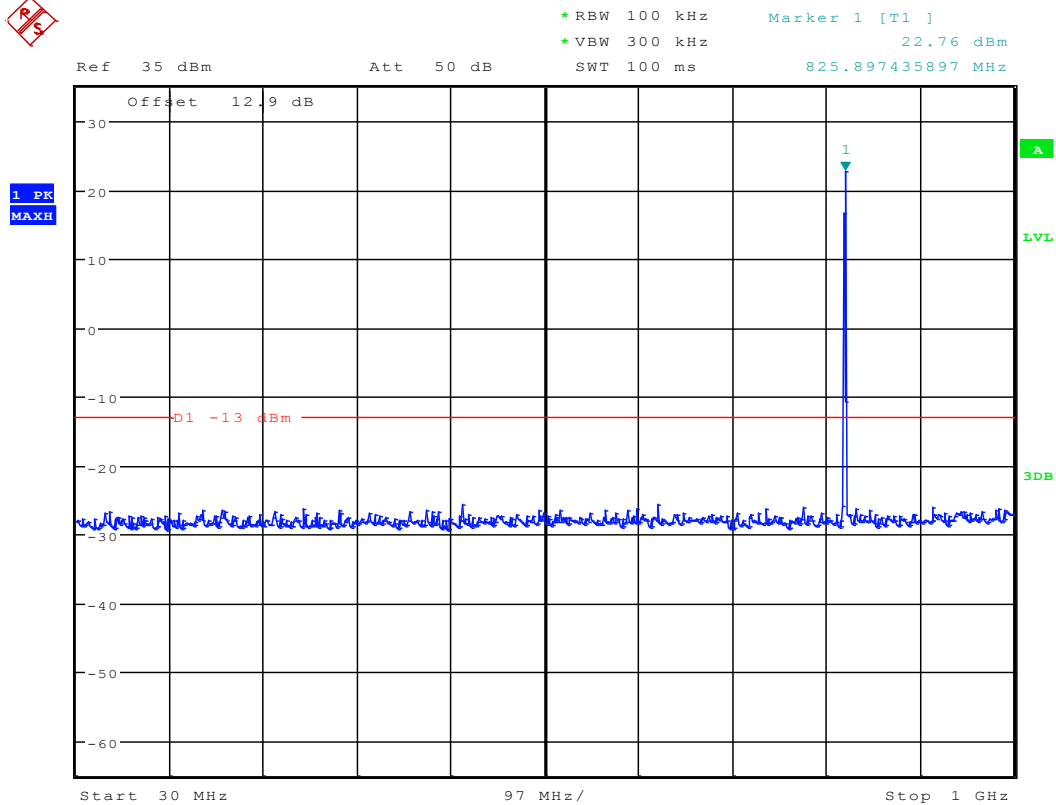
Channel 1013



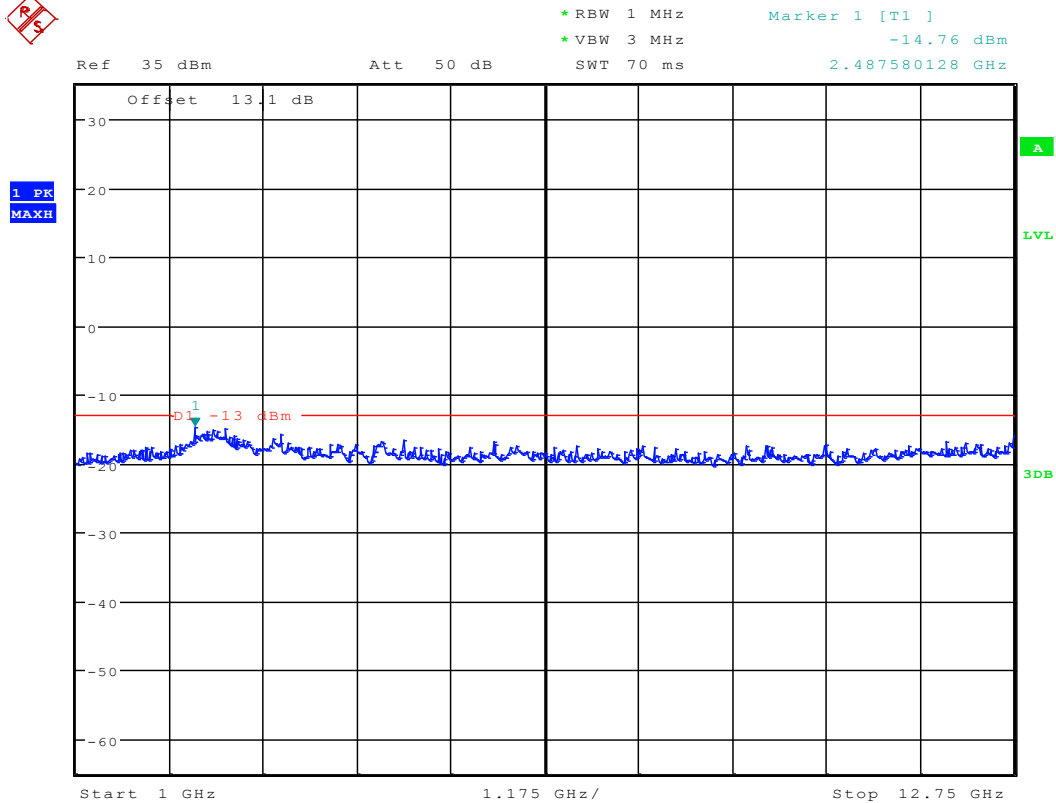
Date: 23.JUL.2012 17:50:01



Date: 23.JUL.2012 17:50:45



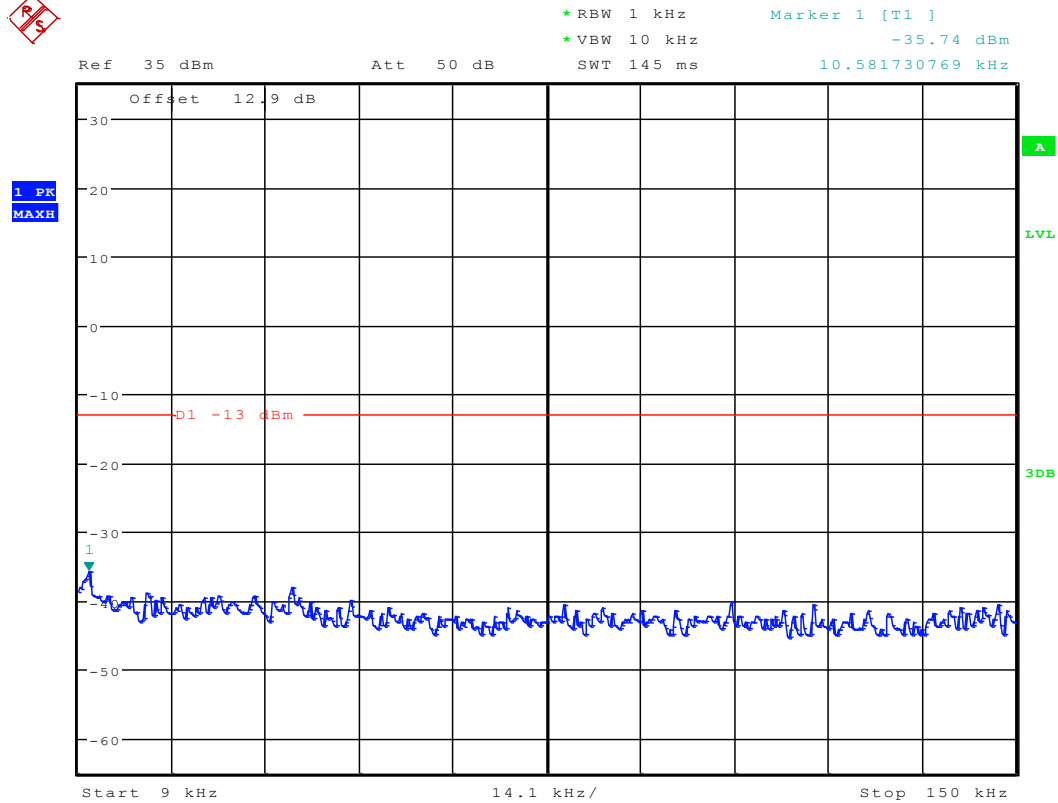
Date: 23.JUL.2012 17:51:29



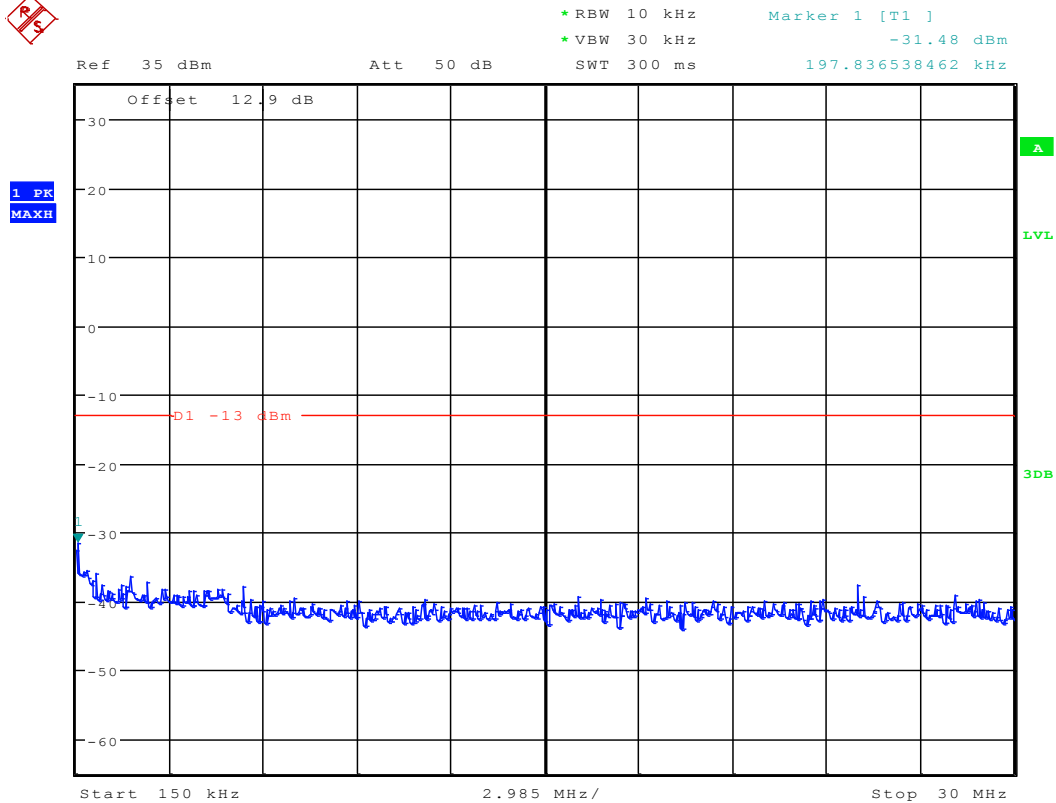
Date: 23.JUL.2012 17:52:12



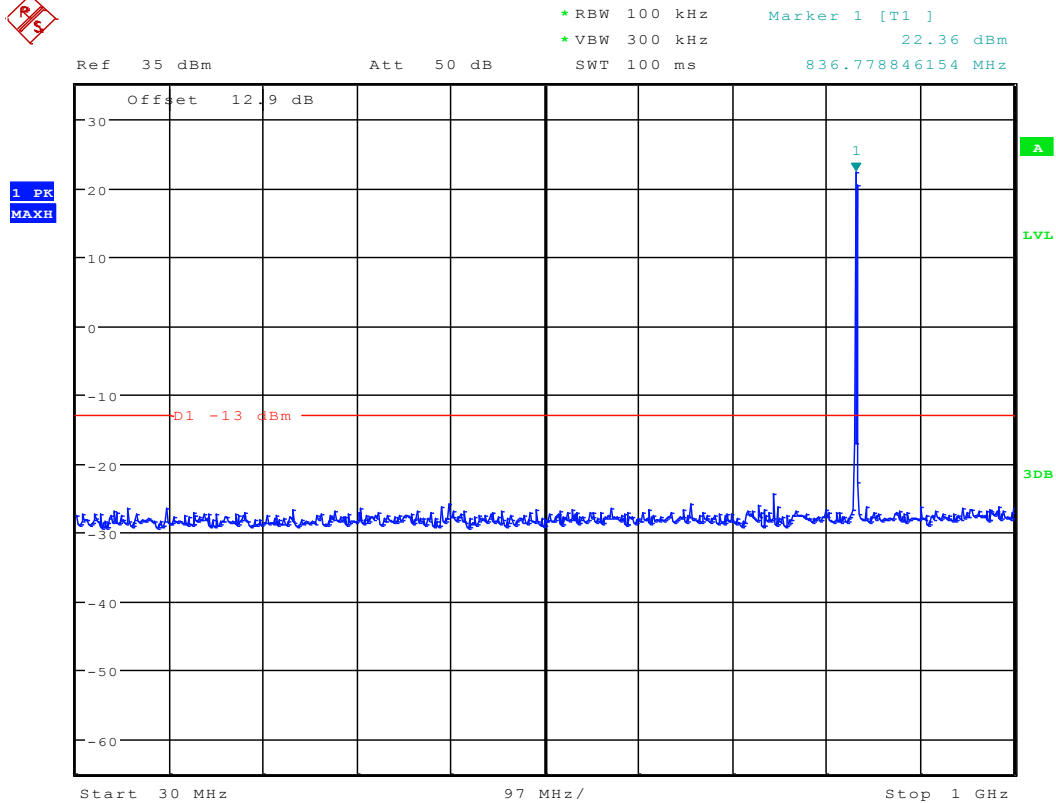
Channel 384



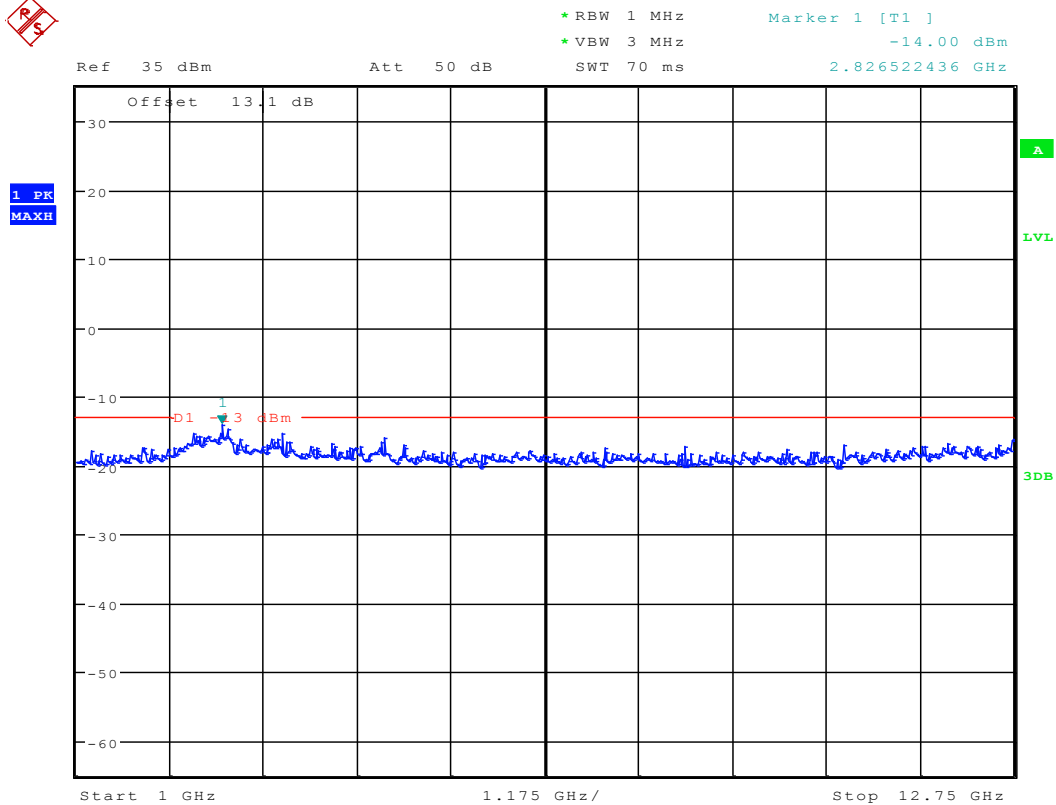
Date: 23.JUL.2012 17:50:16



Date: 23.JUL.2012 17:50:59



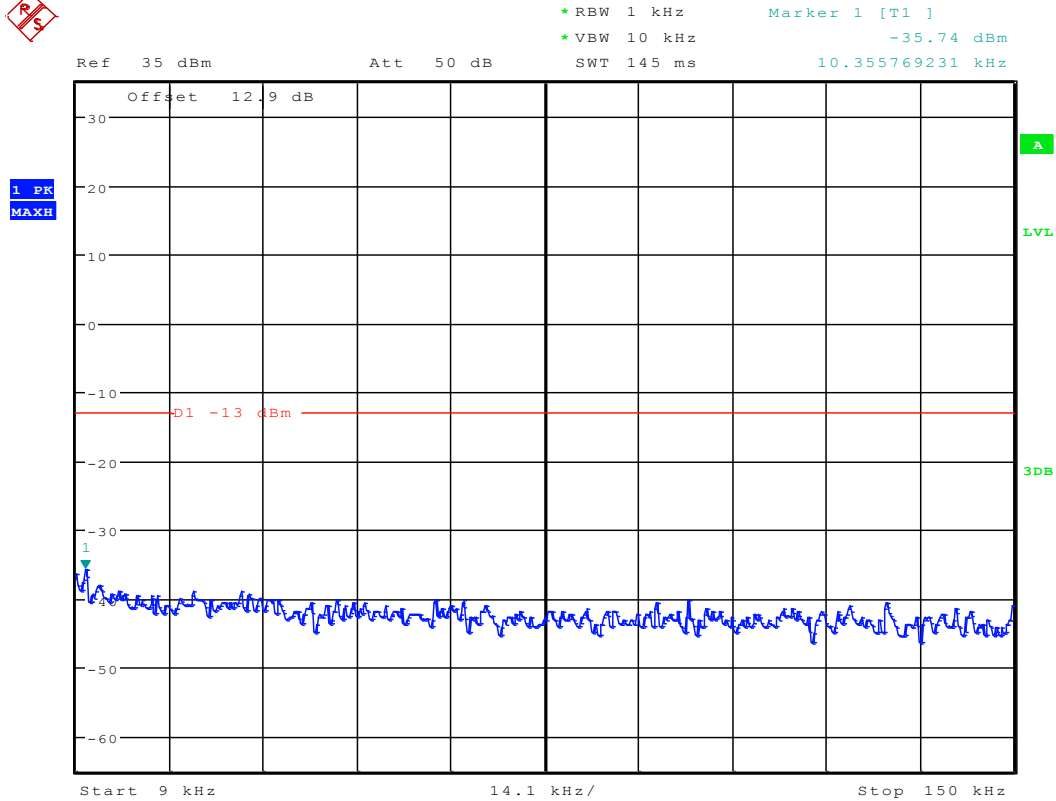
Date: 23.JUL.2012 17:51:43



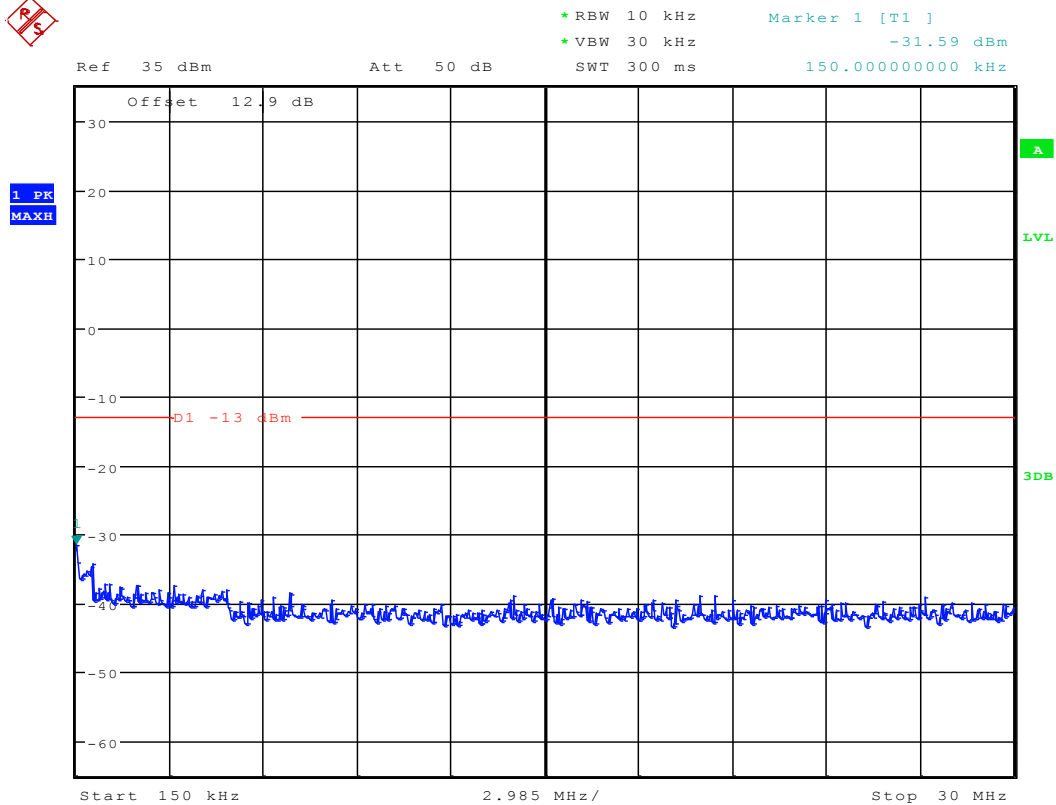
Date: 23.JUL.2012 17:52:27



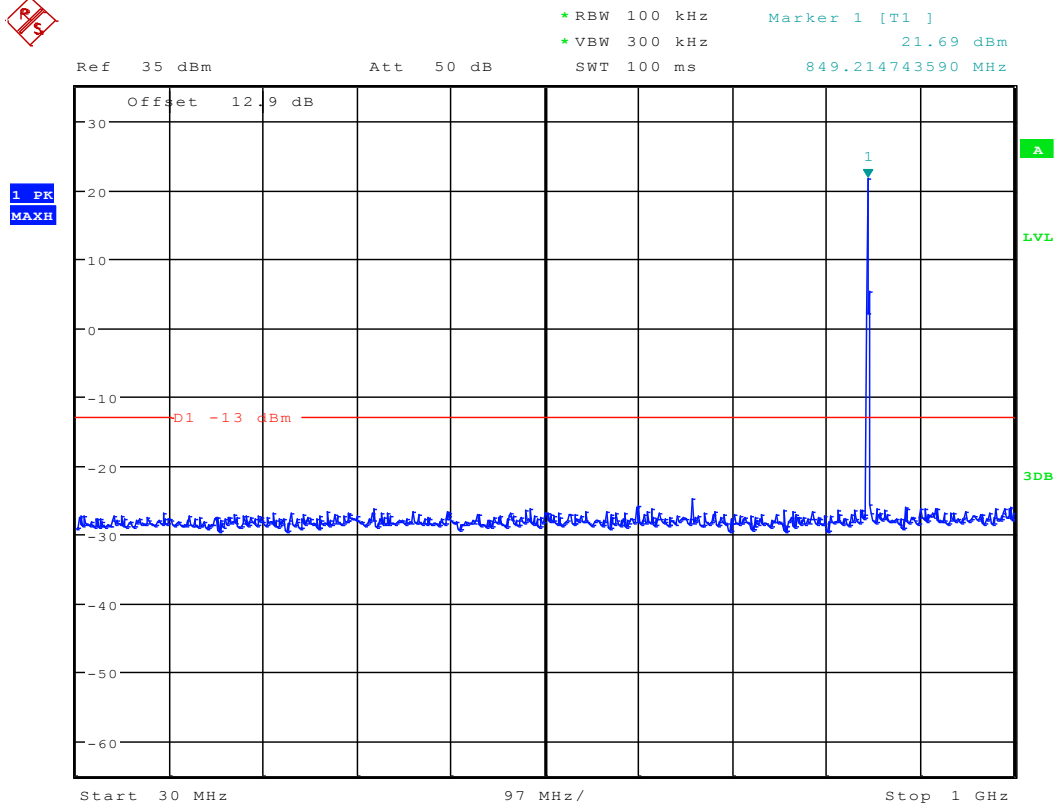
Channel 777



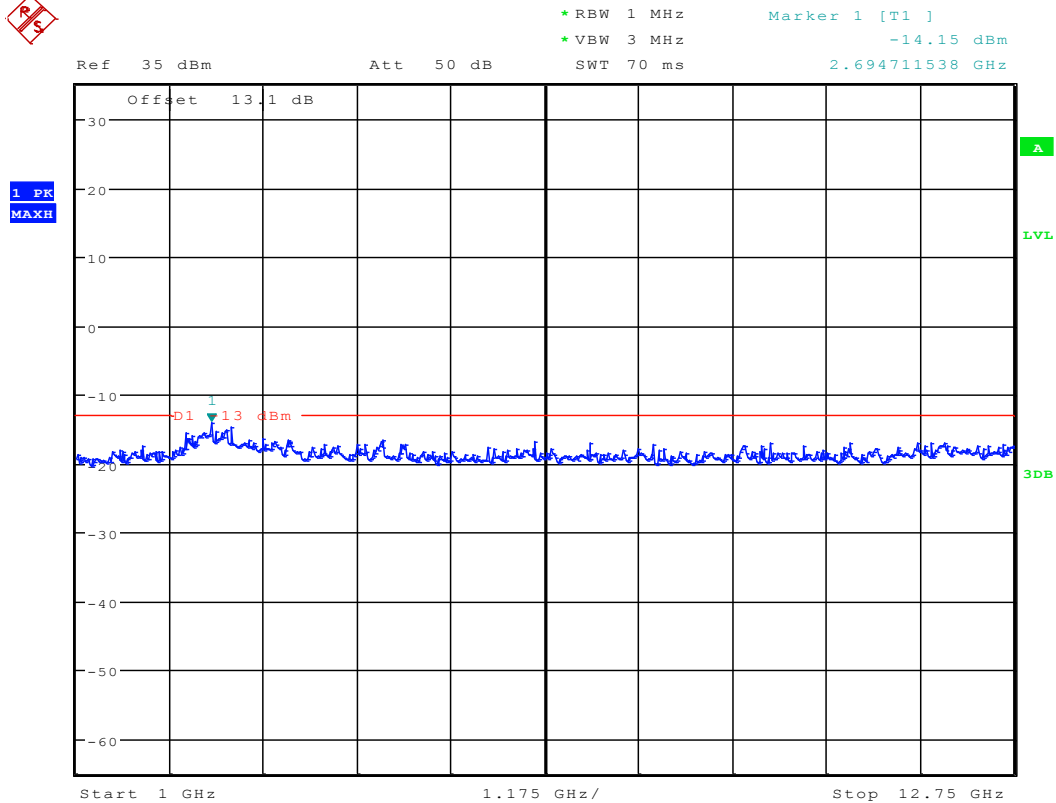
Date: 23.JUL.2012 17:50:30



Date: 23.JUL.2012 17:51:14



Date: 23.JUL.2012 17:51:57



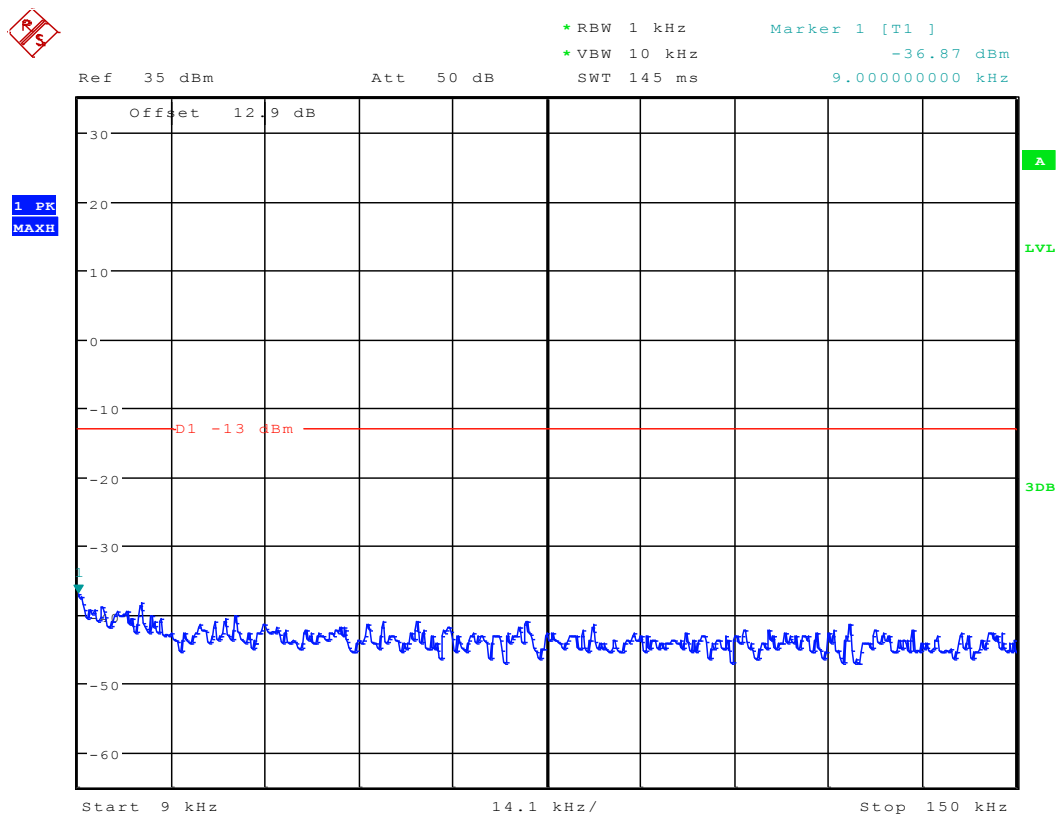
Date: 23.JUL.2012 17:52:41



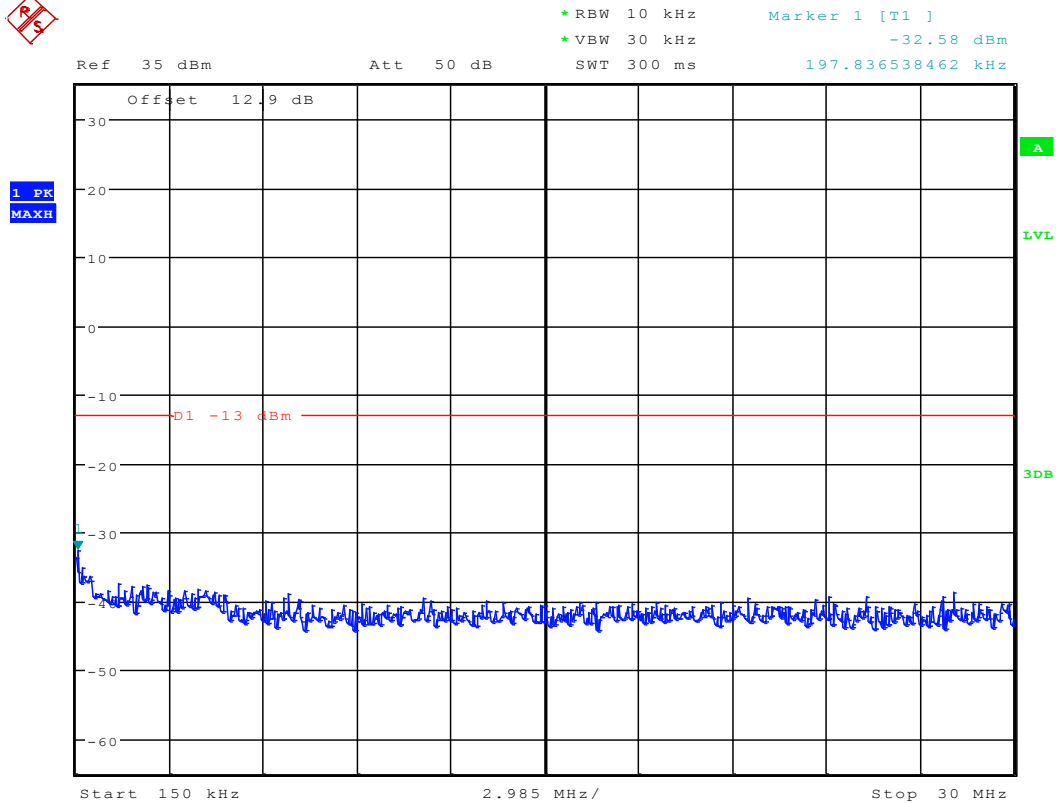
EVDO subtype 2

Modulation: BPSK

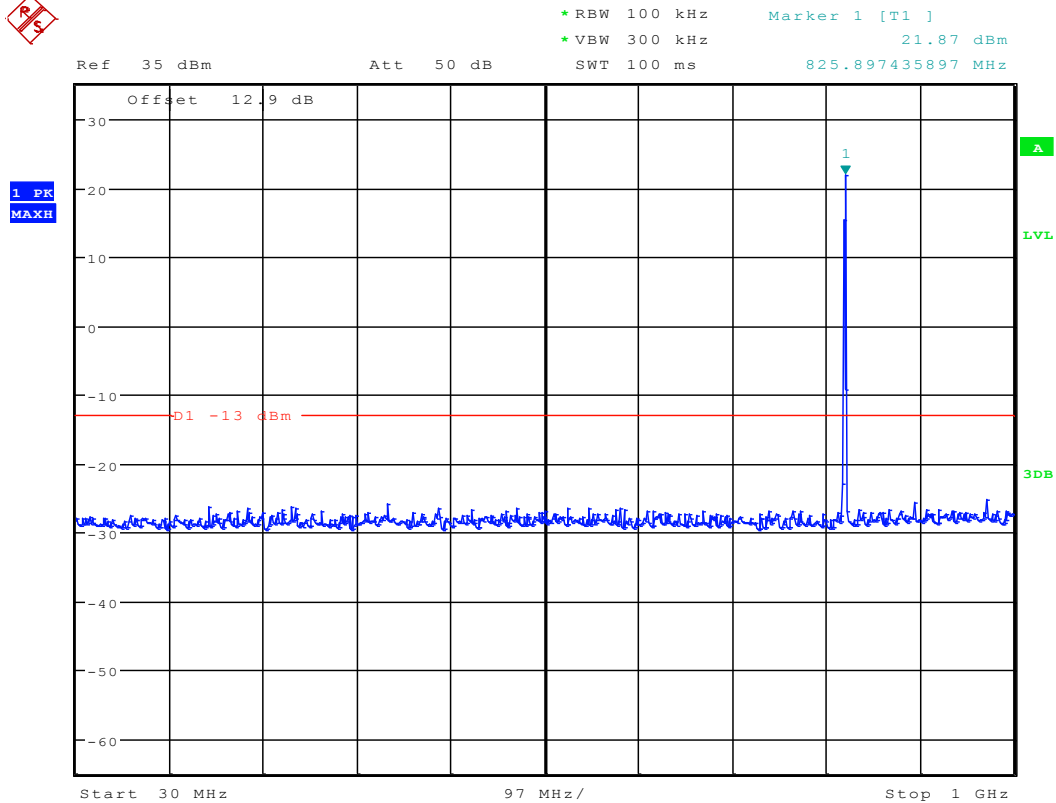
Channel 1013



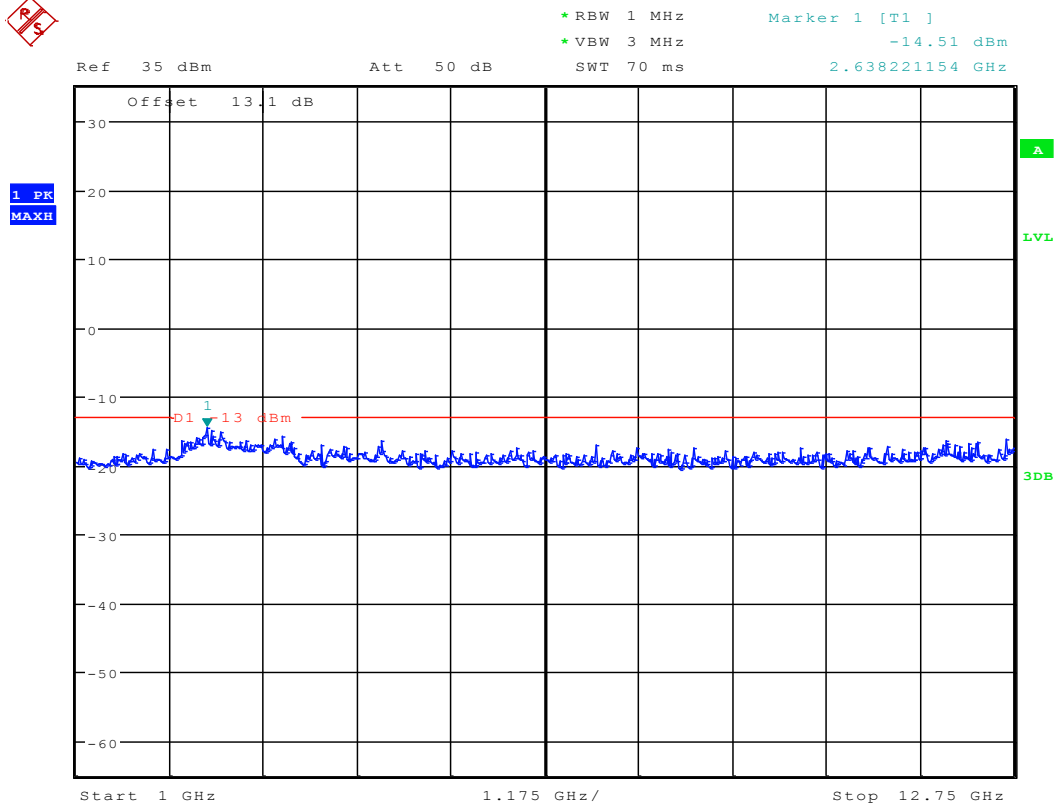
Date: 24.JUL.2012 11:09:41



Date: 24.JUL.2012 11:10:06

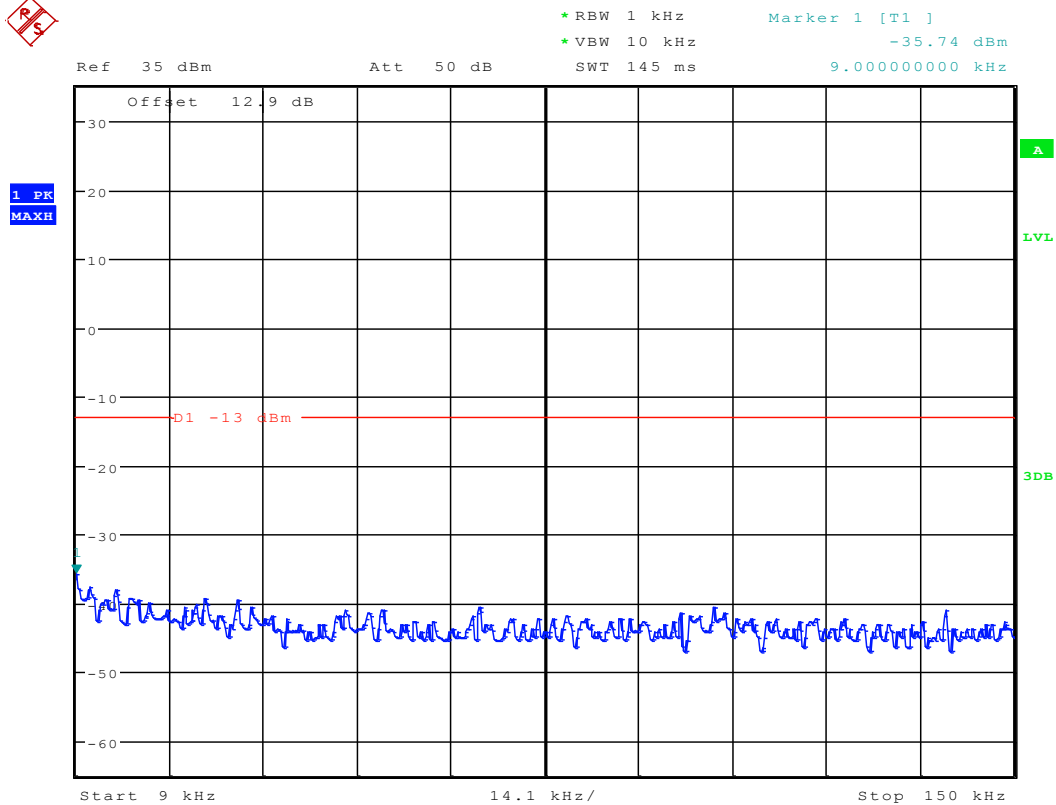


Date: 24.JUL.2012 11:10:32

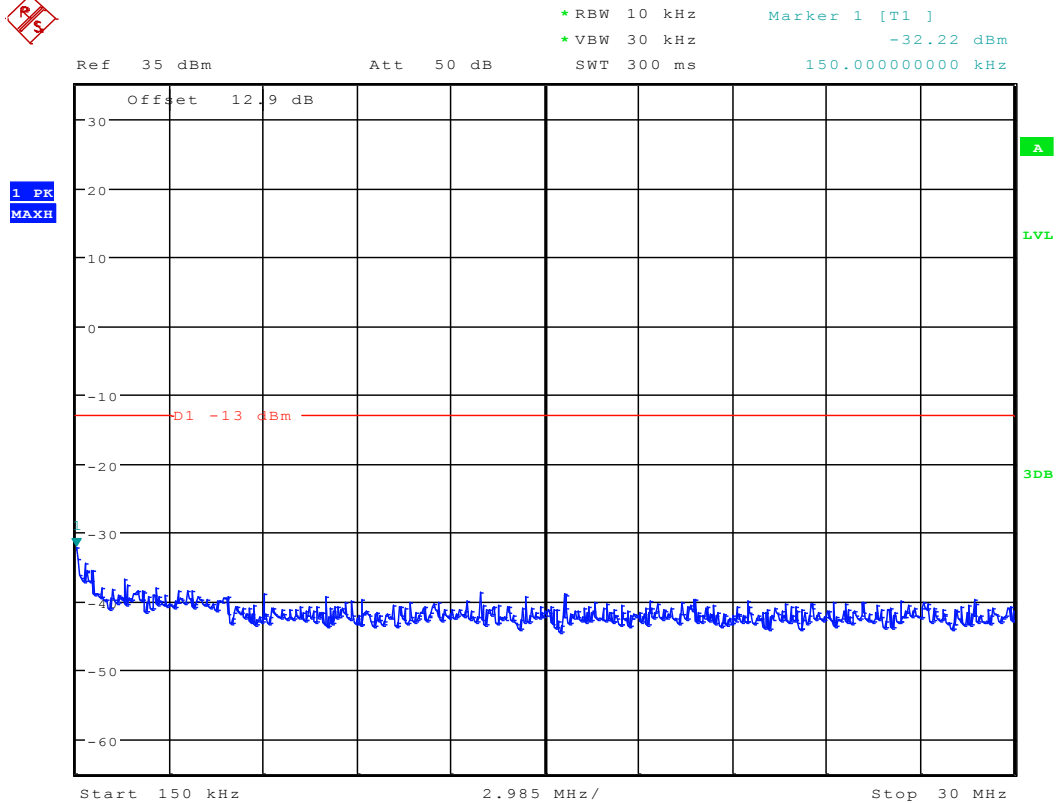


Date: 24.JUL.2012 11:11:04

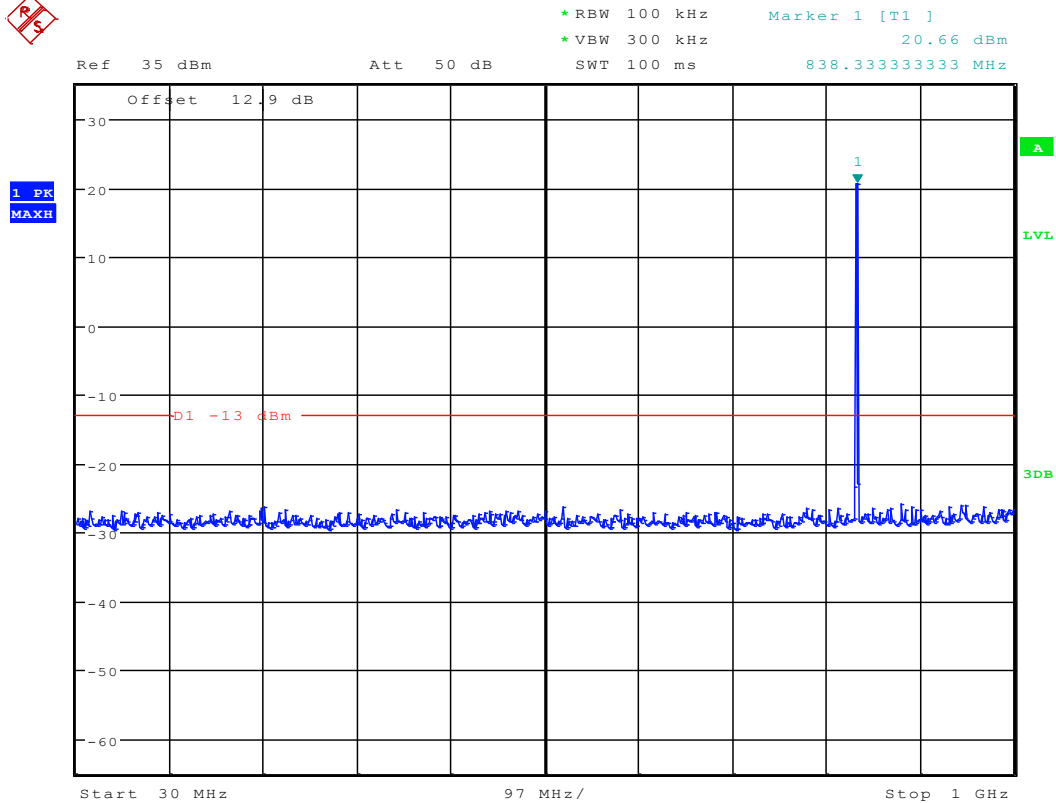
Channel 384



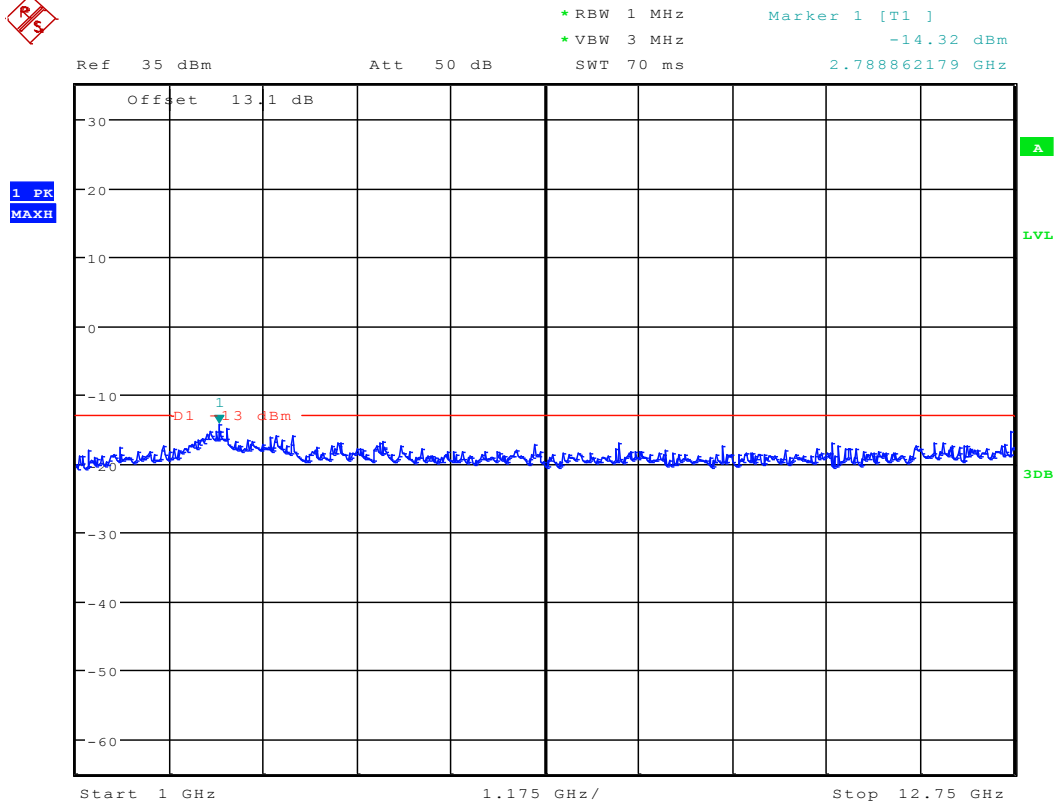
Date: 24.JUL.2012 11:09:49



Date: 24.JUL.2012 11:10:15



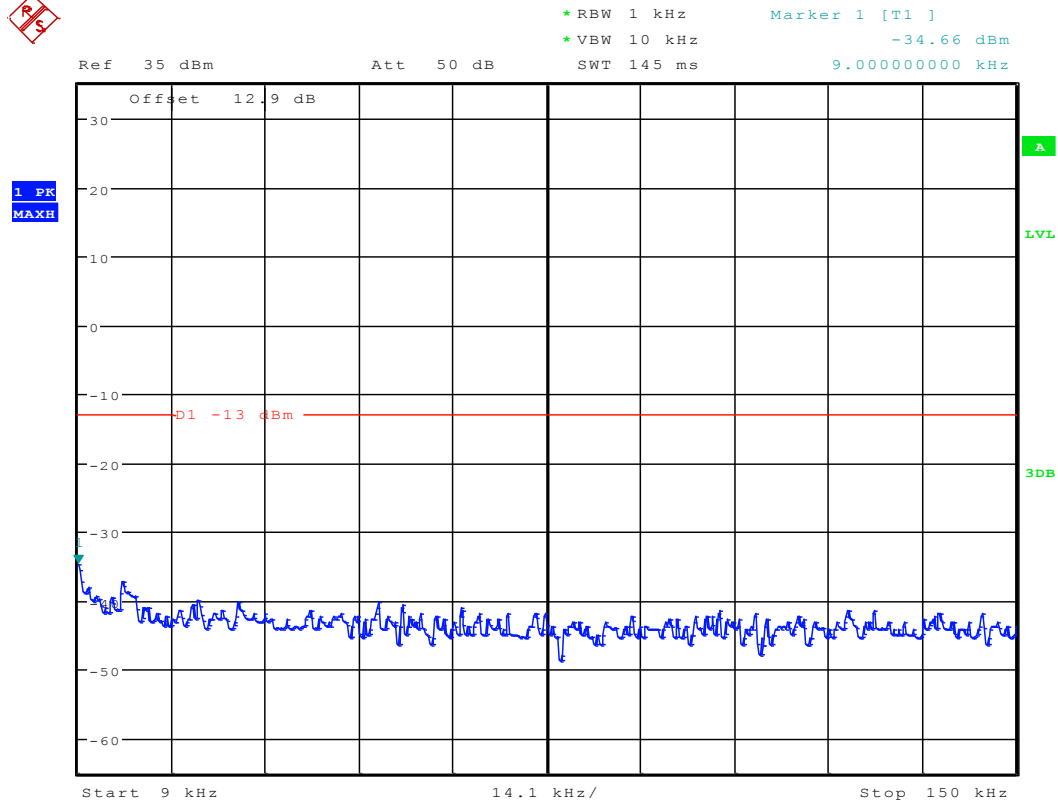
Date: 24.JUL.2012 11:10:40



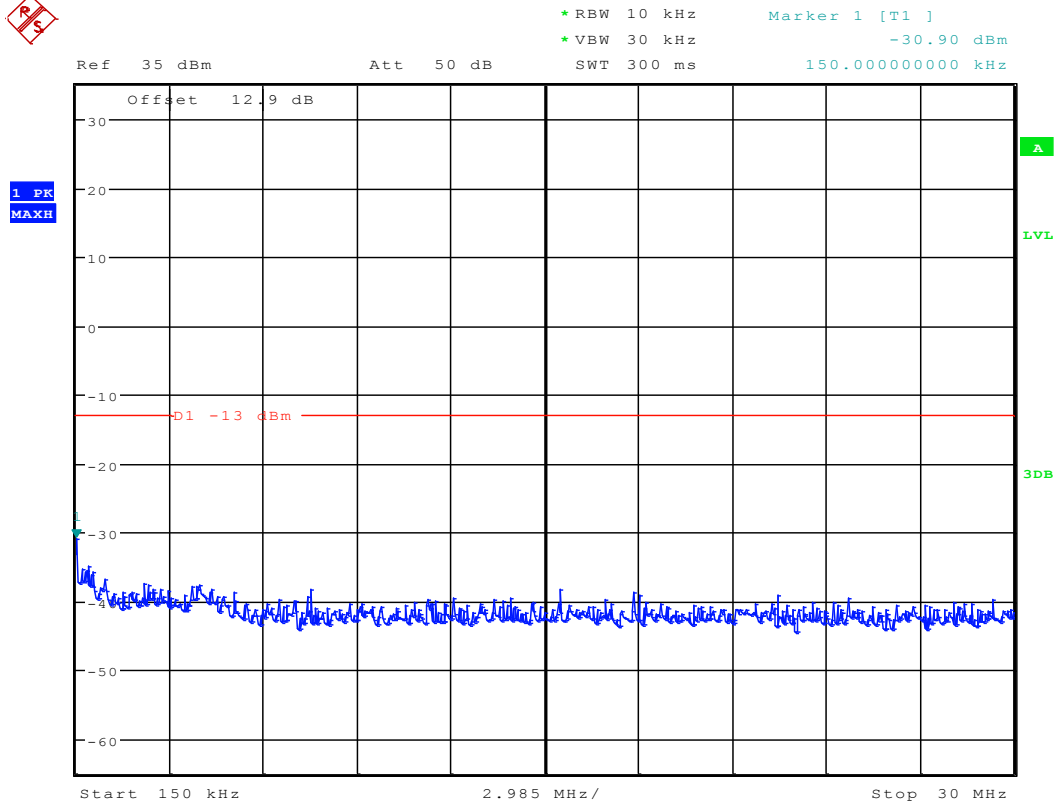
Date: 24.JUL.2012 11:11:12



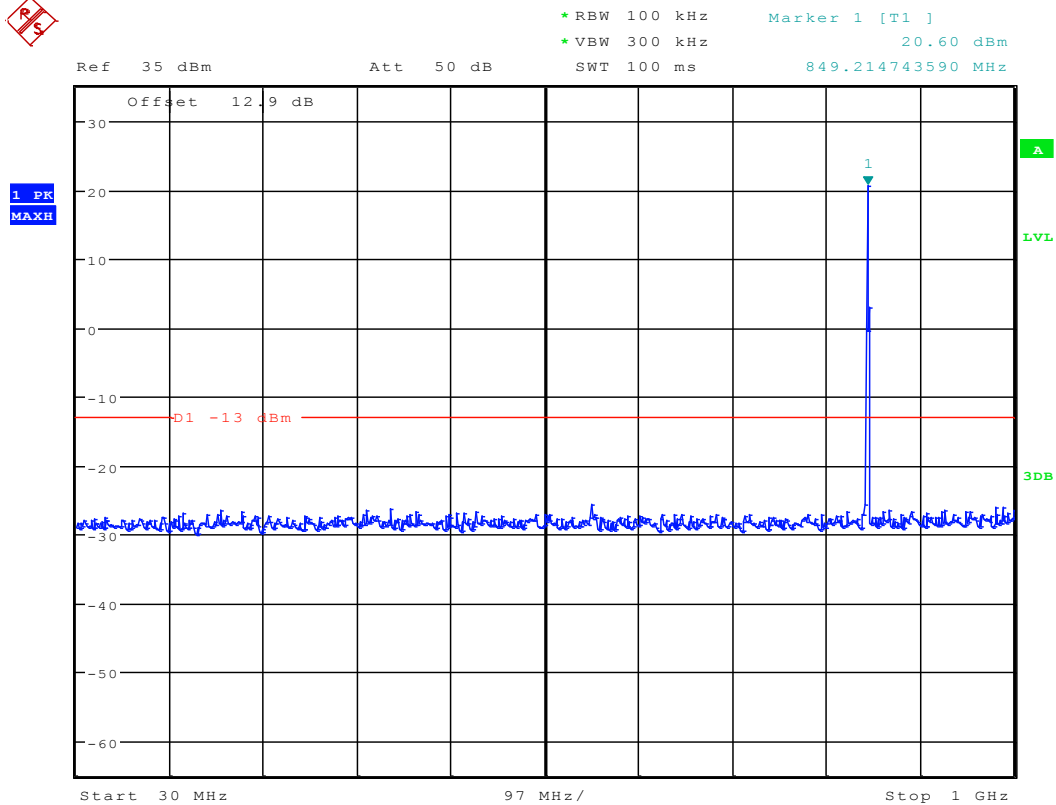
Channel 777



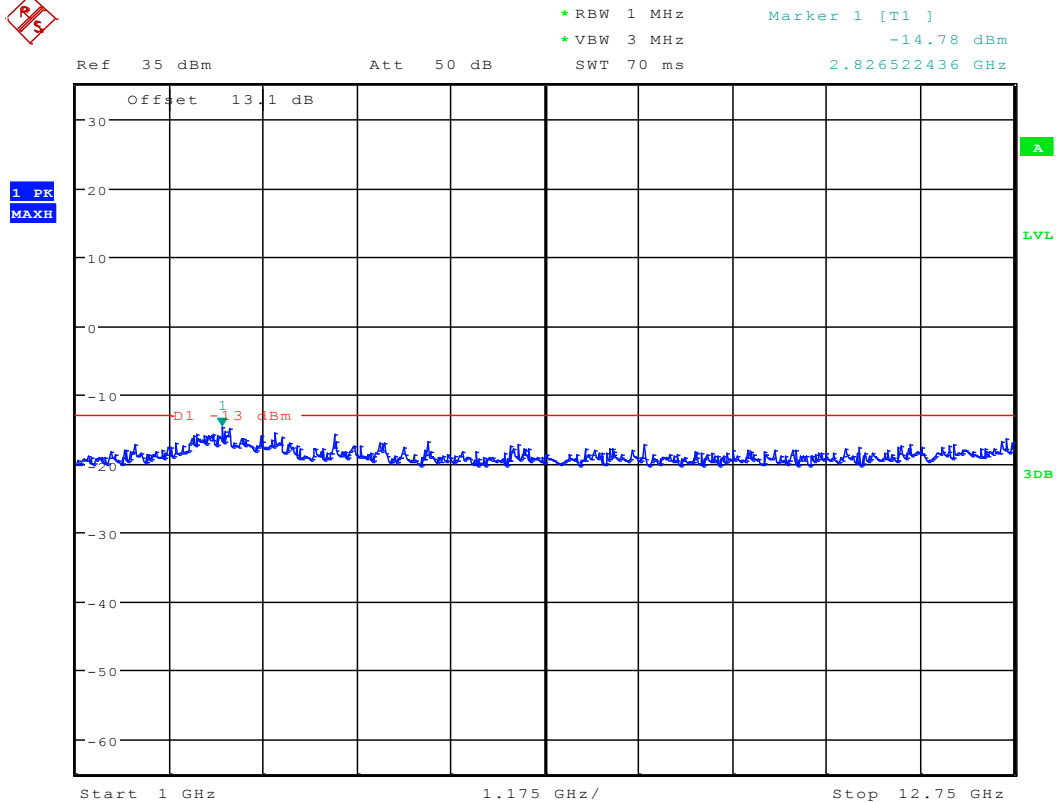
Date: 24.JUL.2012 11:09:58



Date: 24.JUL.2012 11:10:23



Date: 24.JUL.2012 11:10:55

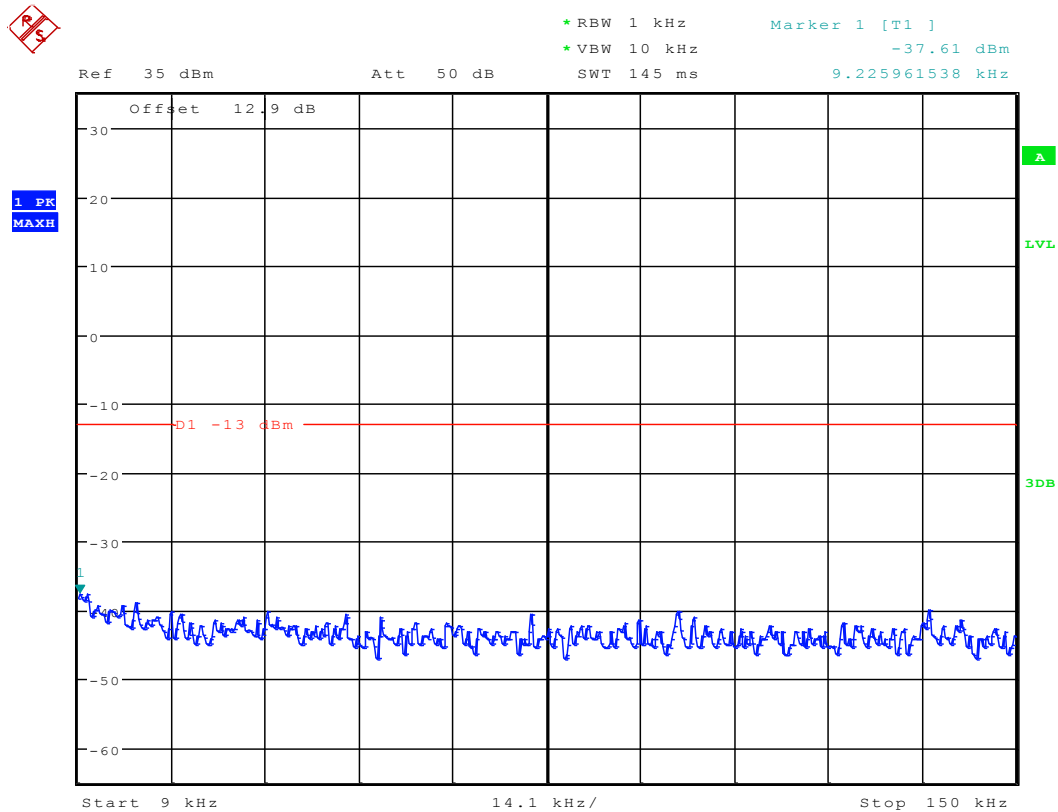


Date: 24.JUL.2012 11:11:20

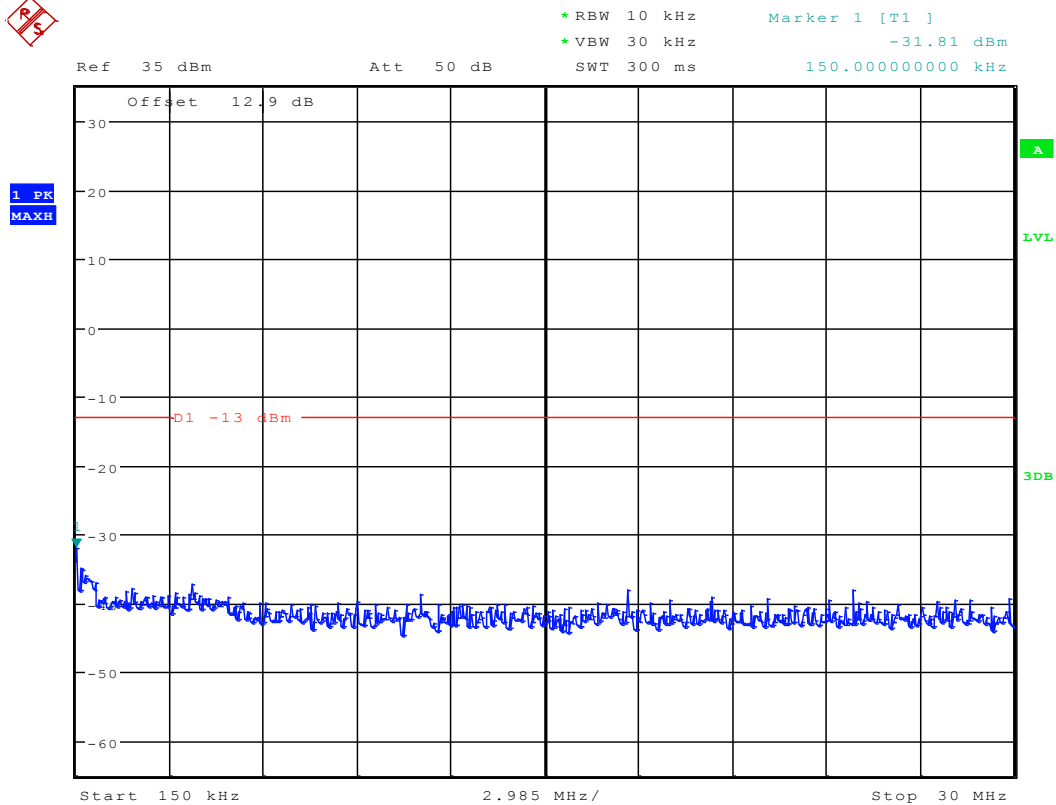


Modulation: QPSK

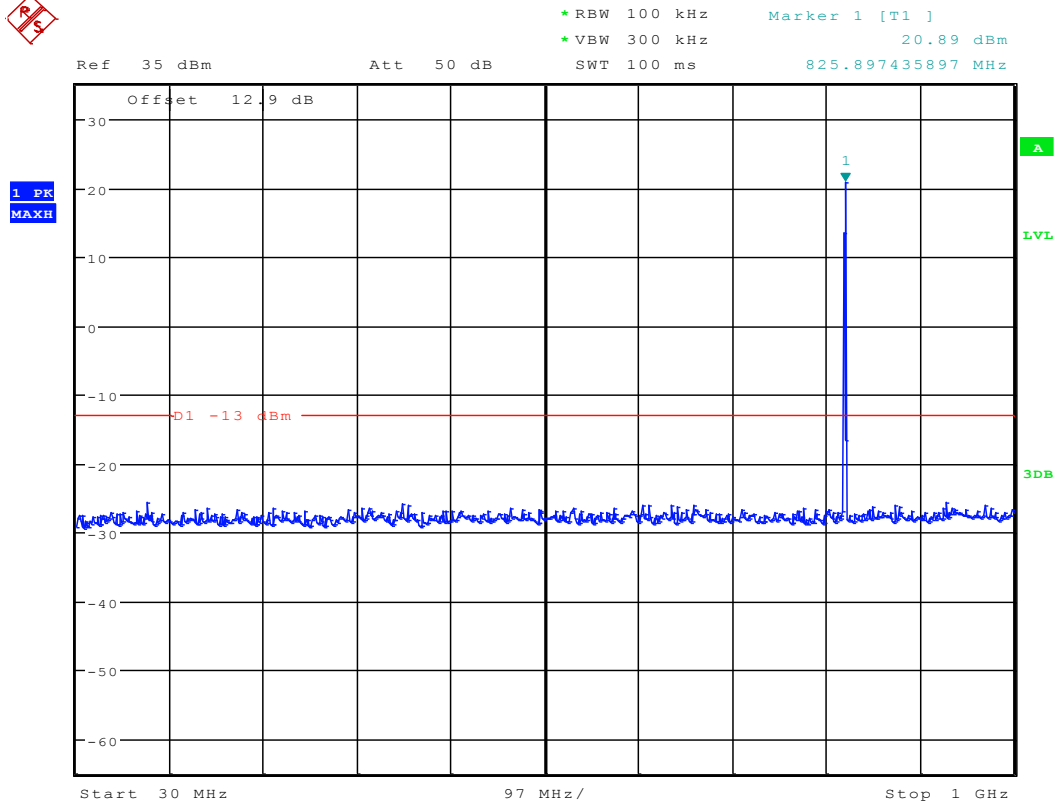
Channel 1013



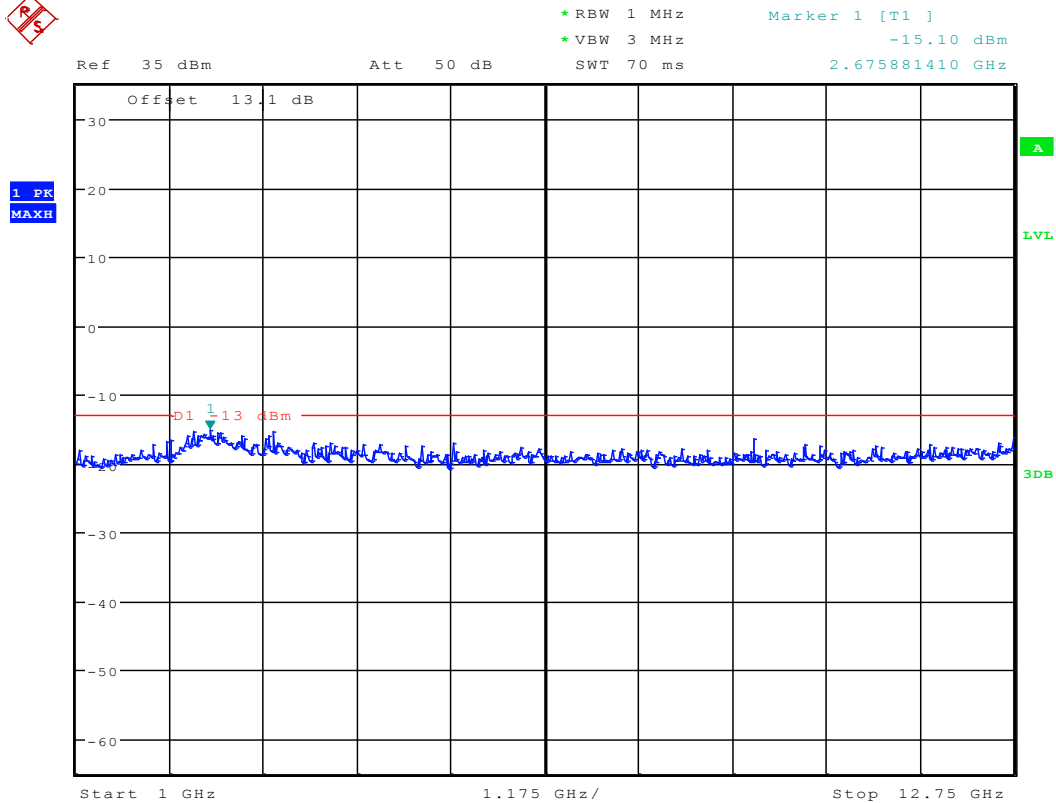
Date: 24.JUL.2012 11:11:29



Date: 24.JUL.2012 11:11:55



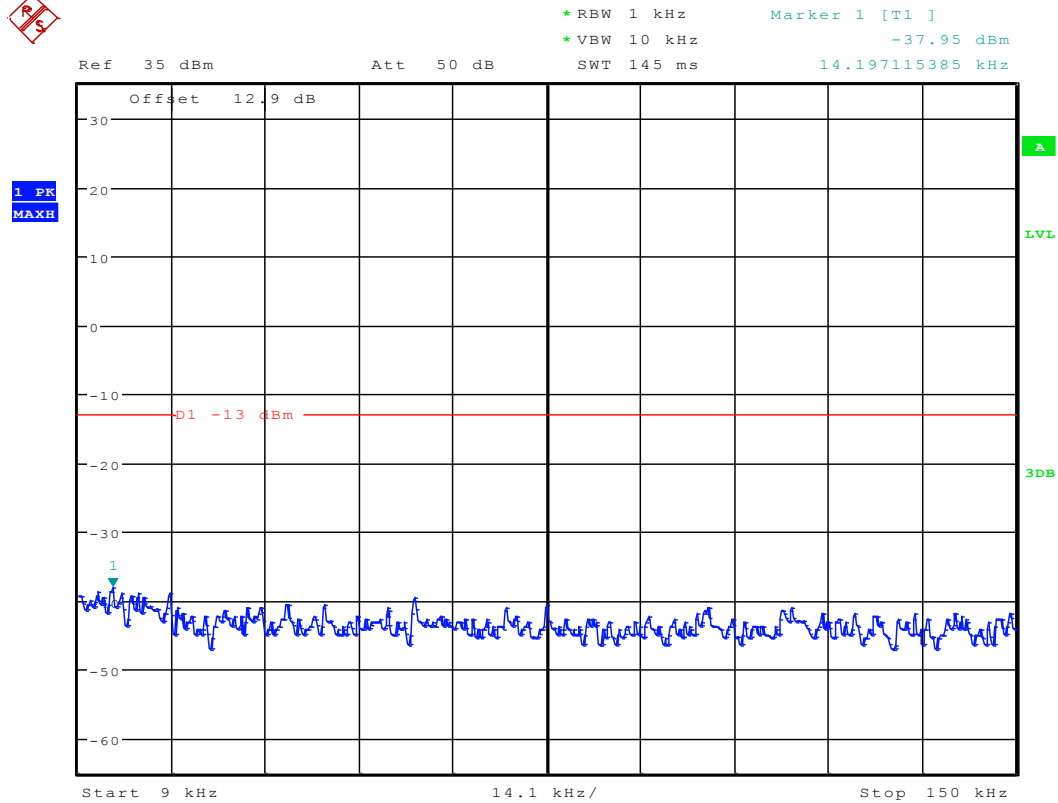
Date: 24.JUL.2012 11:12:28



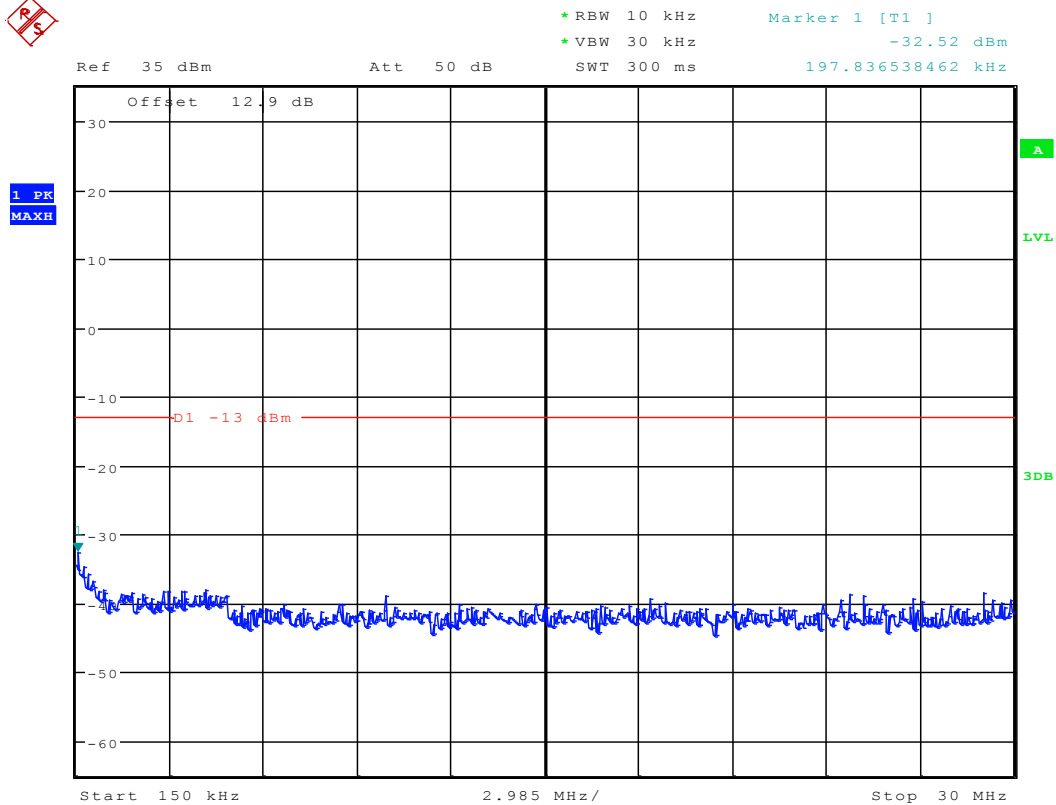
Date: 24.JUL.2012 11:12:54



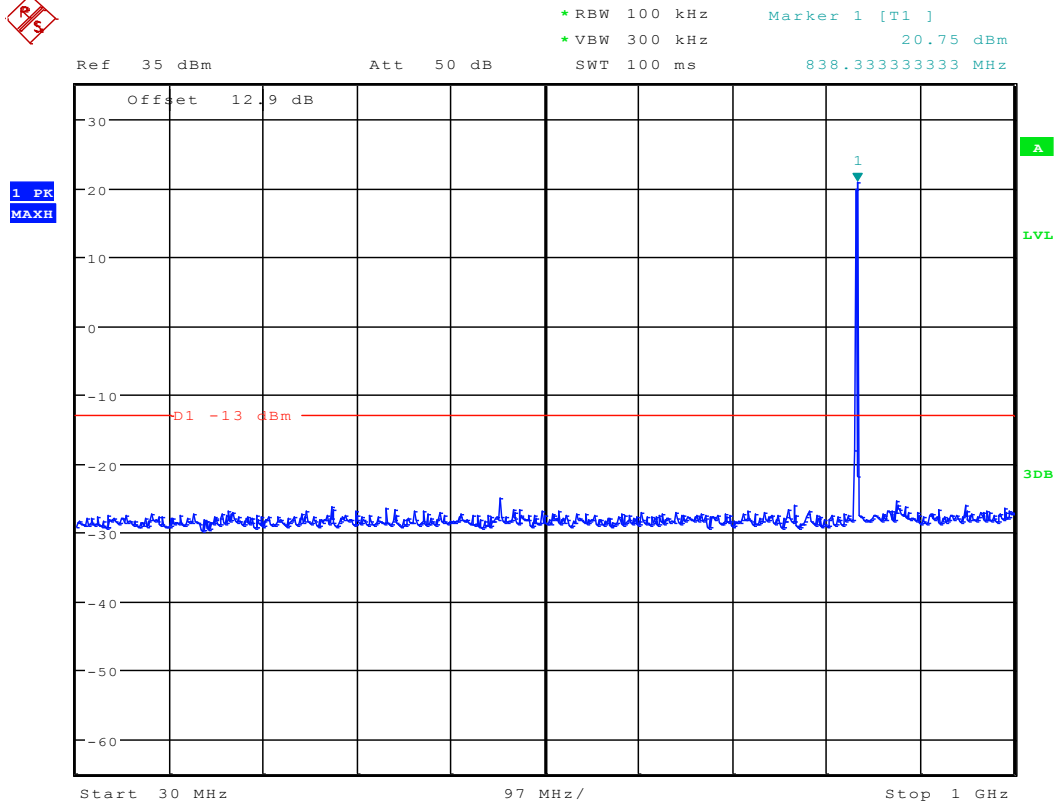
Channel 384



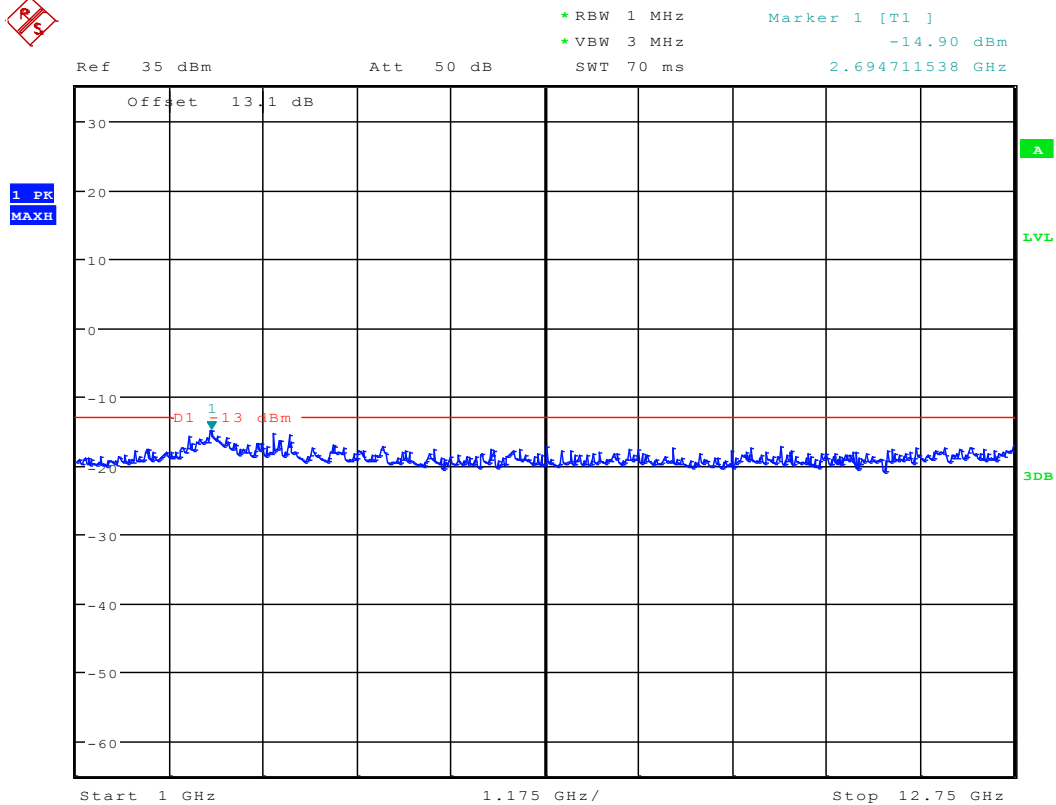
Date: 24.JUL.2012 11:11:38



Date: 24.JUL.2012 11:12:03



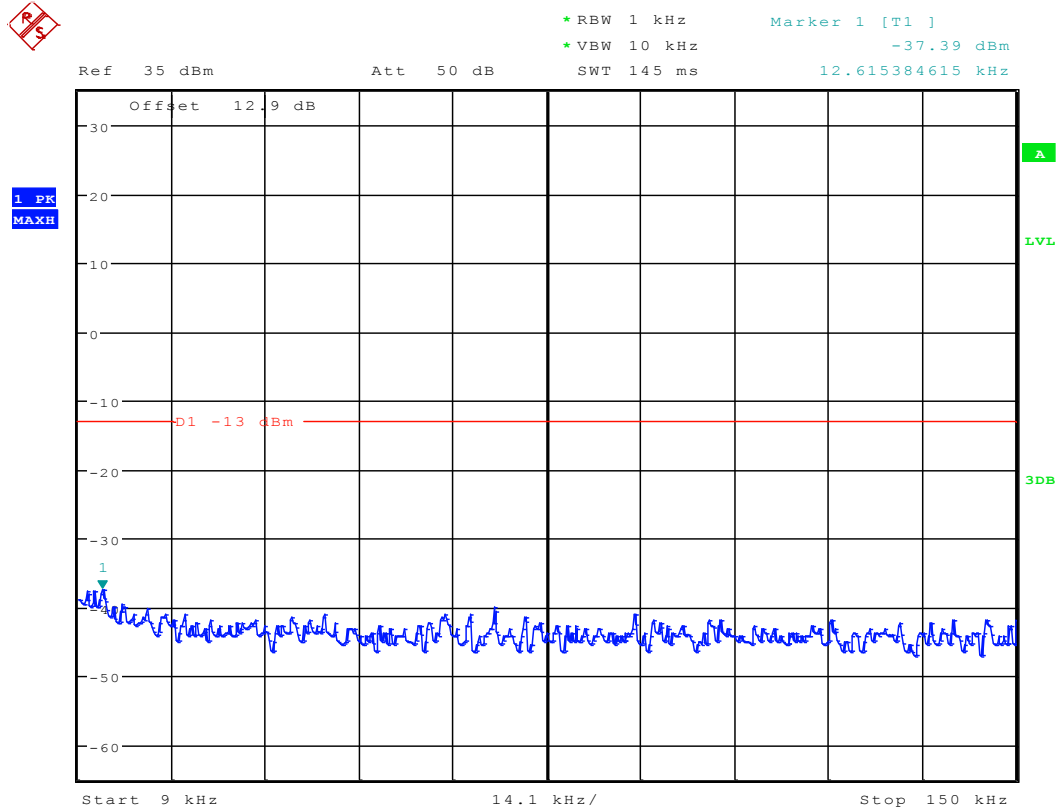
Date: 24.JUL.2012 11:12:37



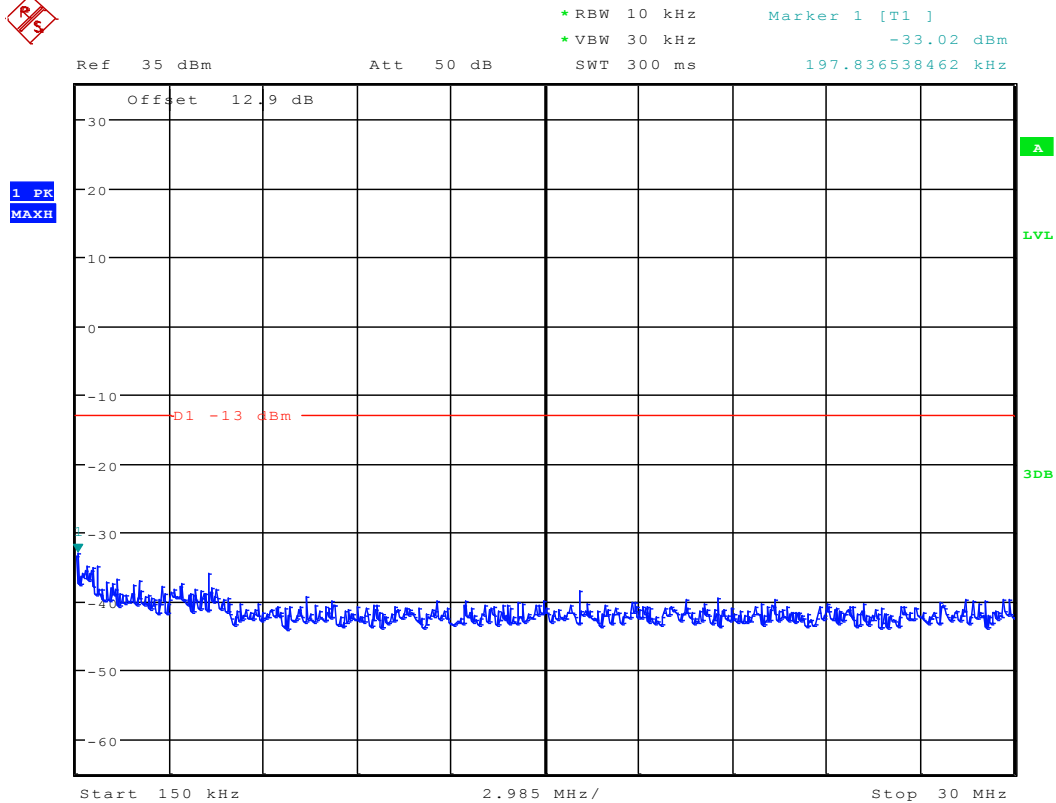
Date: 24.JUL.2012 11:13:03



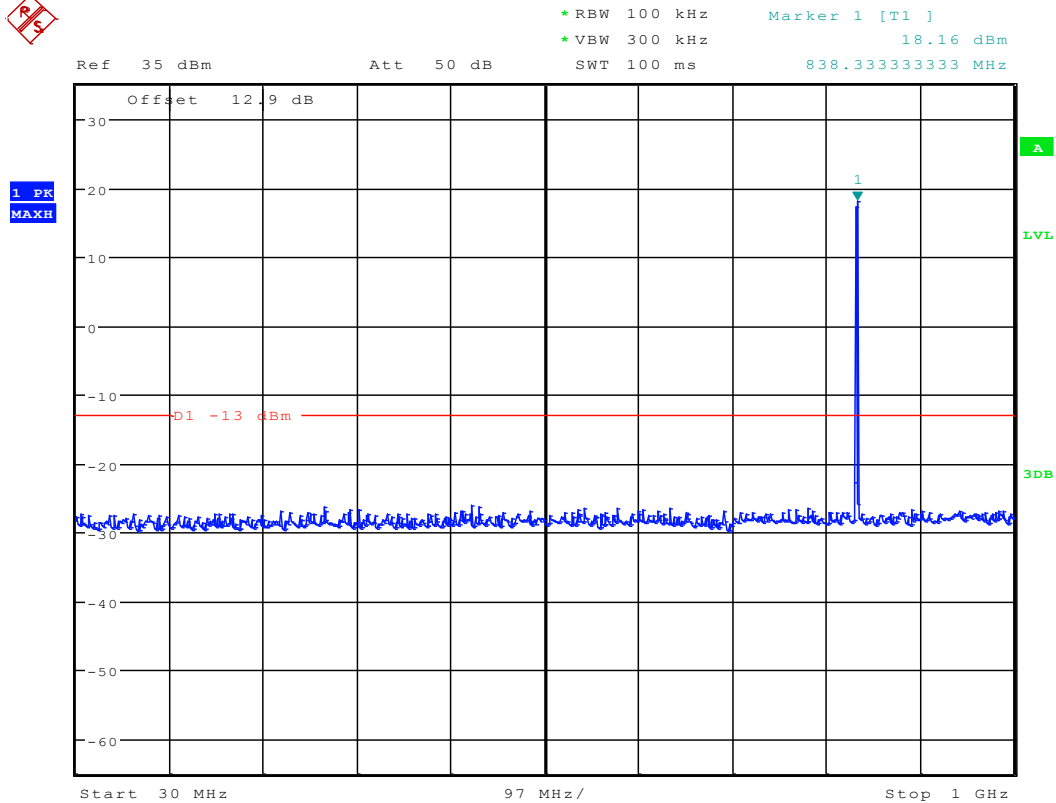
Channel 777



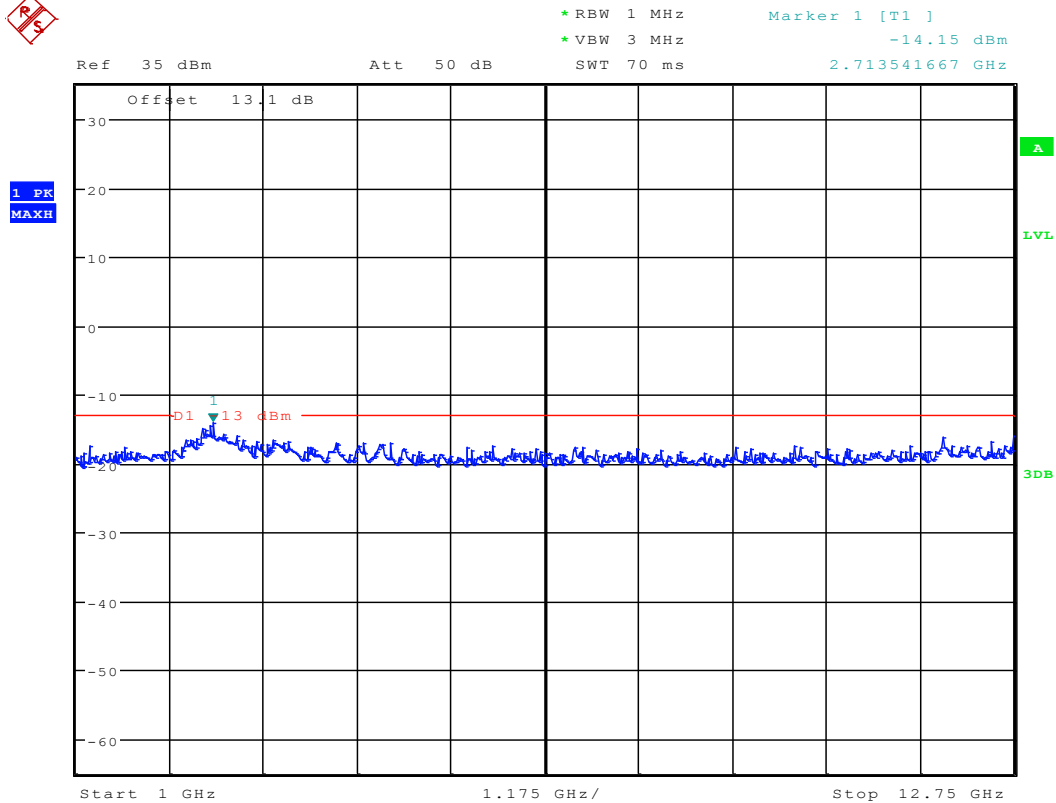
Date: 24.JUL.2012 11:11:46



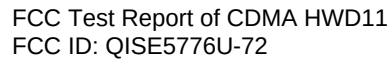
Date: 24.JUL.2012 11:12:12



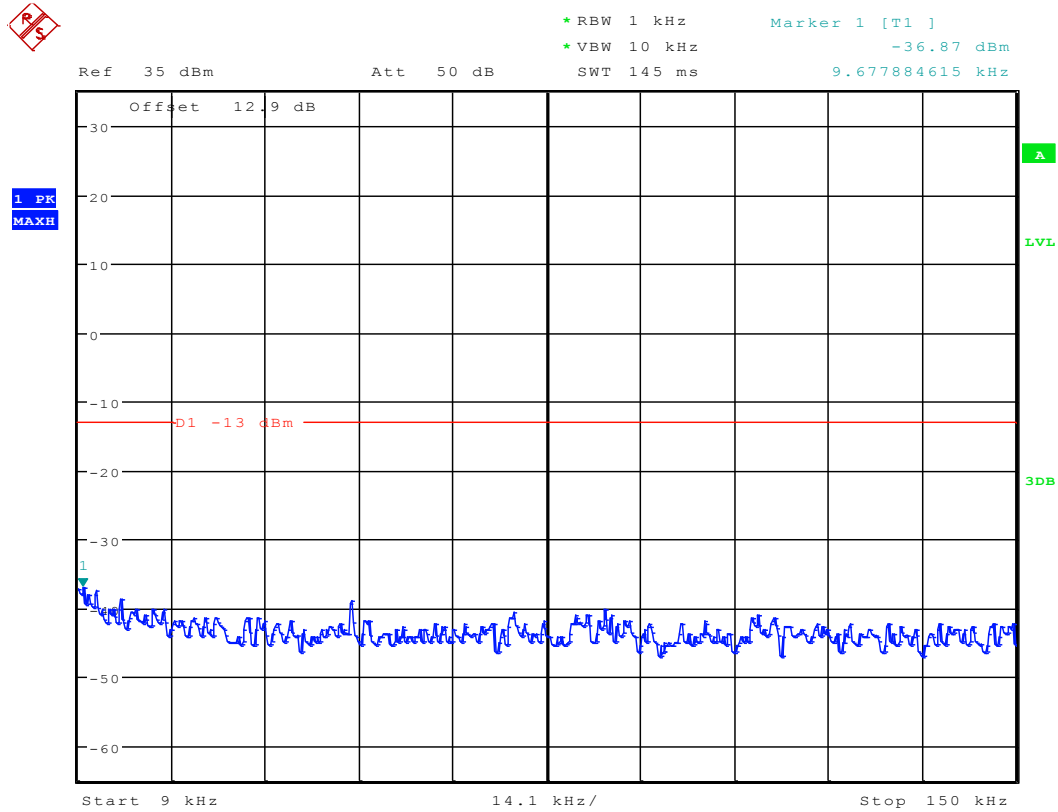
Date: 24.JUL.2012 11:12:45



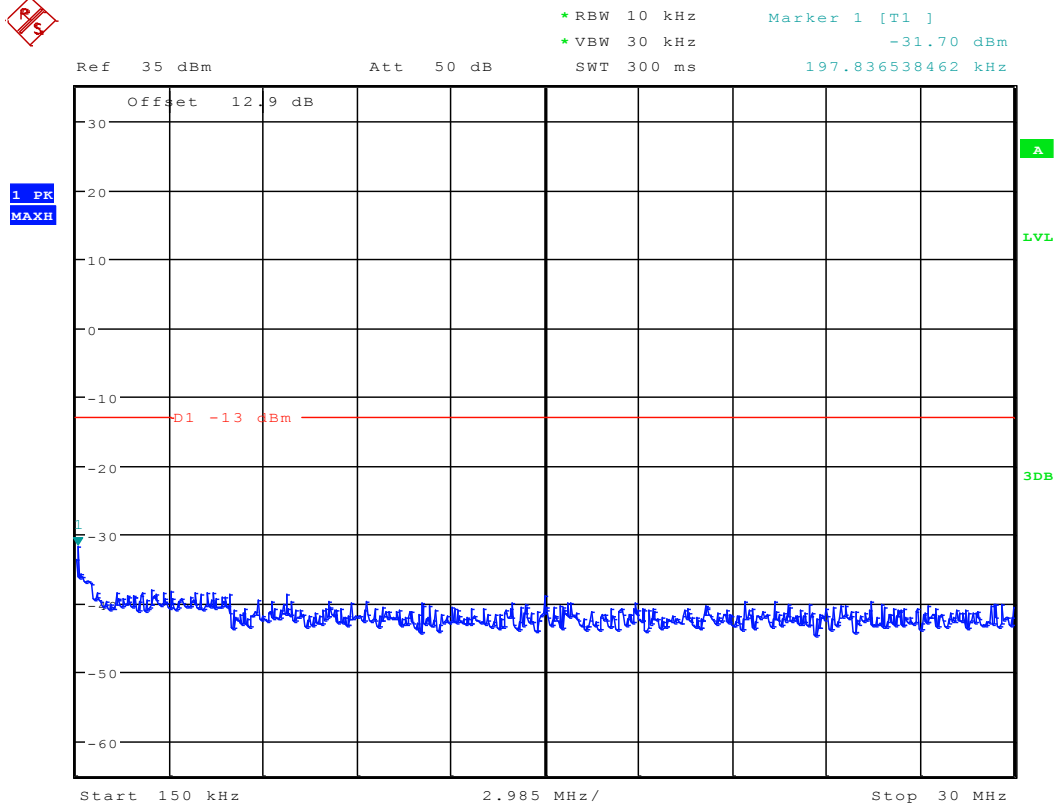
Date: 24.JUL.2012 11:13:11



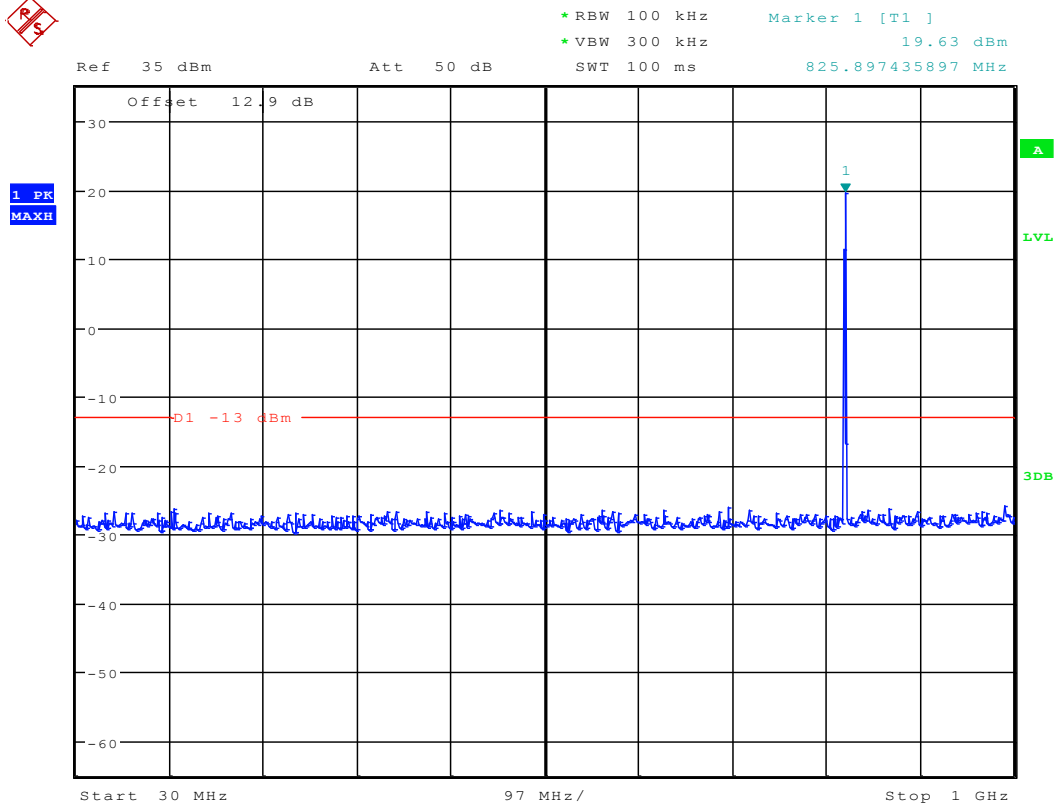
Channel 1013



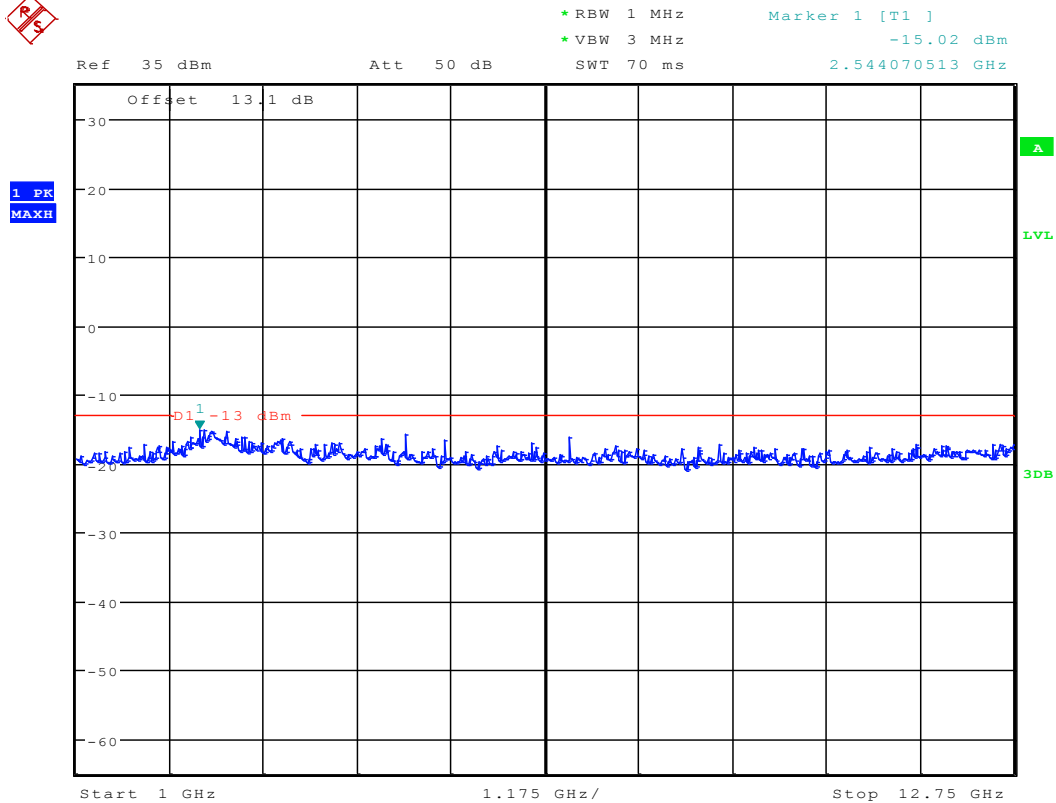
Date: 24.JUL.2012 11:13:20



Date: 24.JUL.2012 11:13:46



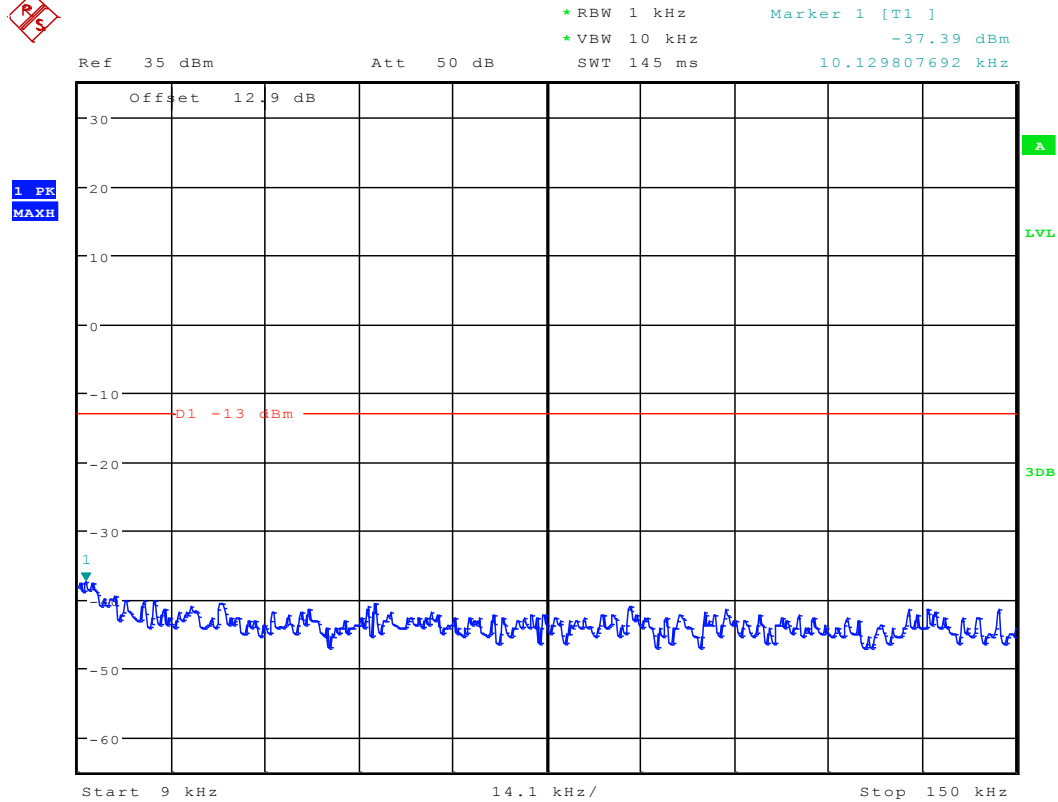
Date: 24.JUL.2012 11:14:11



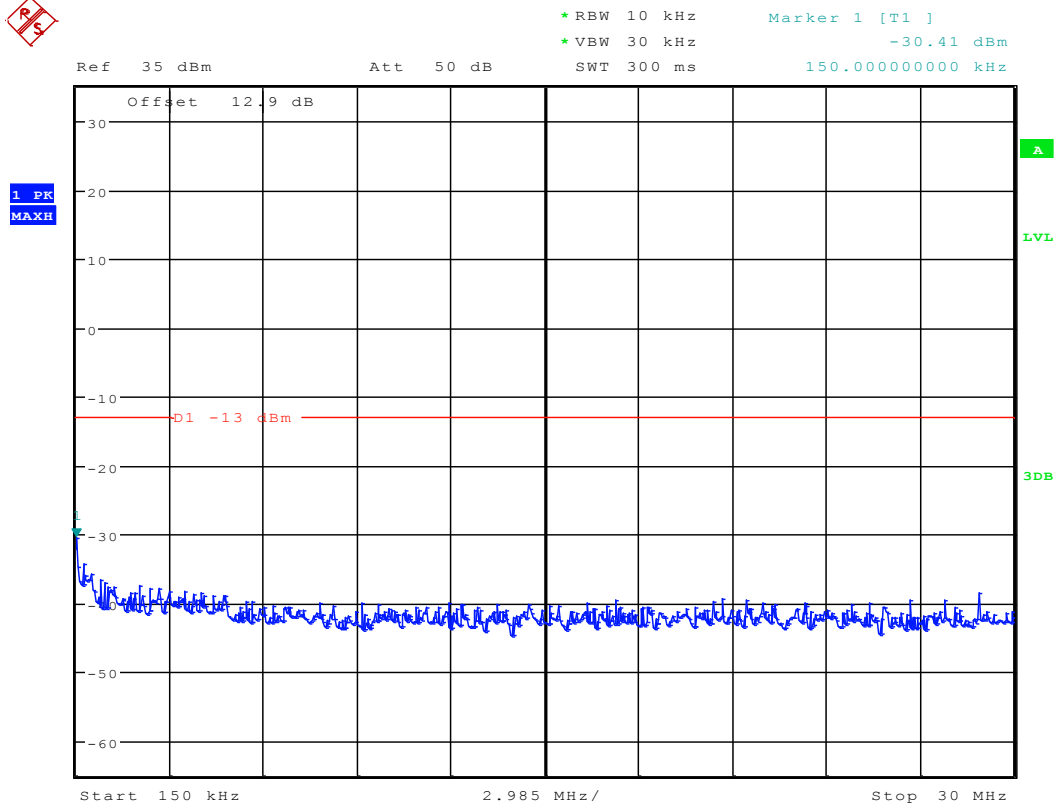
Date: 24.JUL.2012 11:14:37



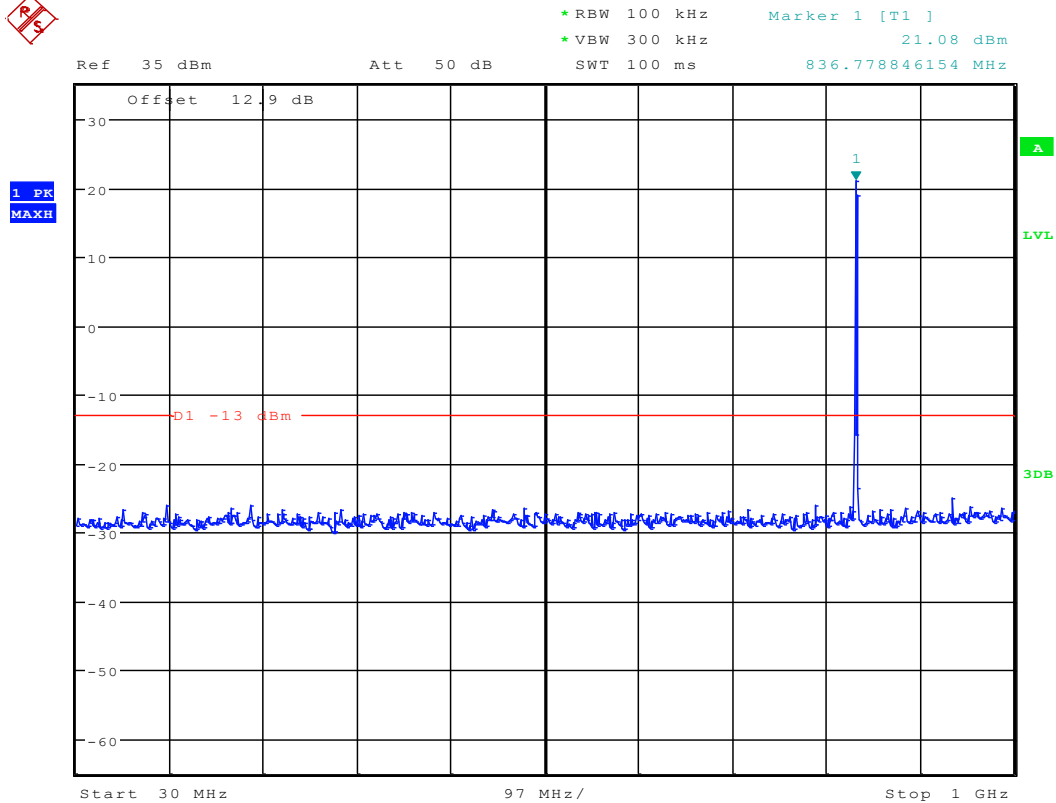
Channel 384



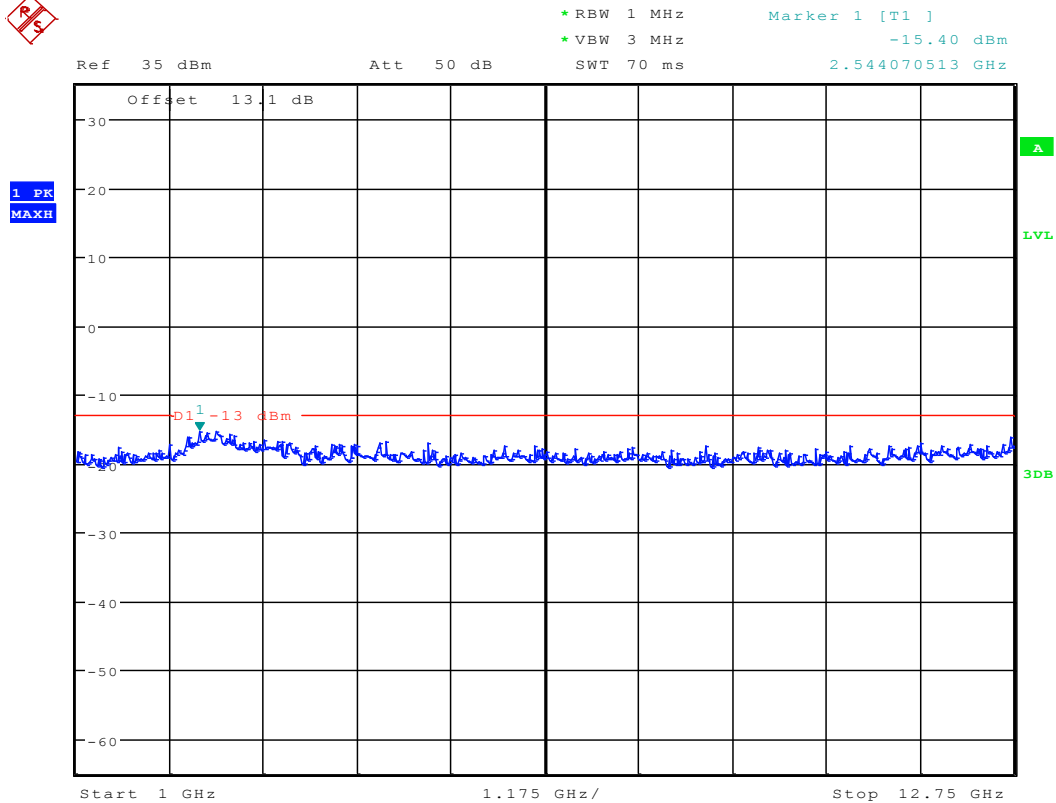
Date: 24.JUL.2012 11:13:28



Date: 24.JUL.2012 11:13:54



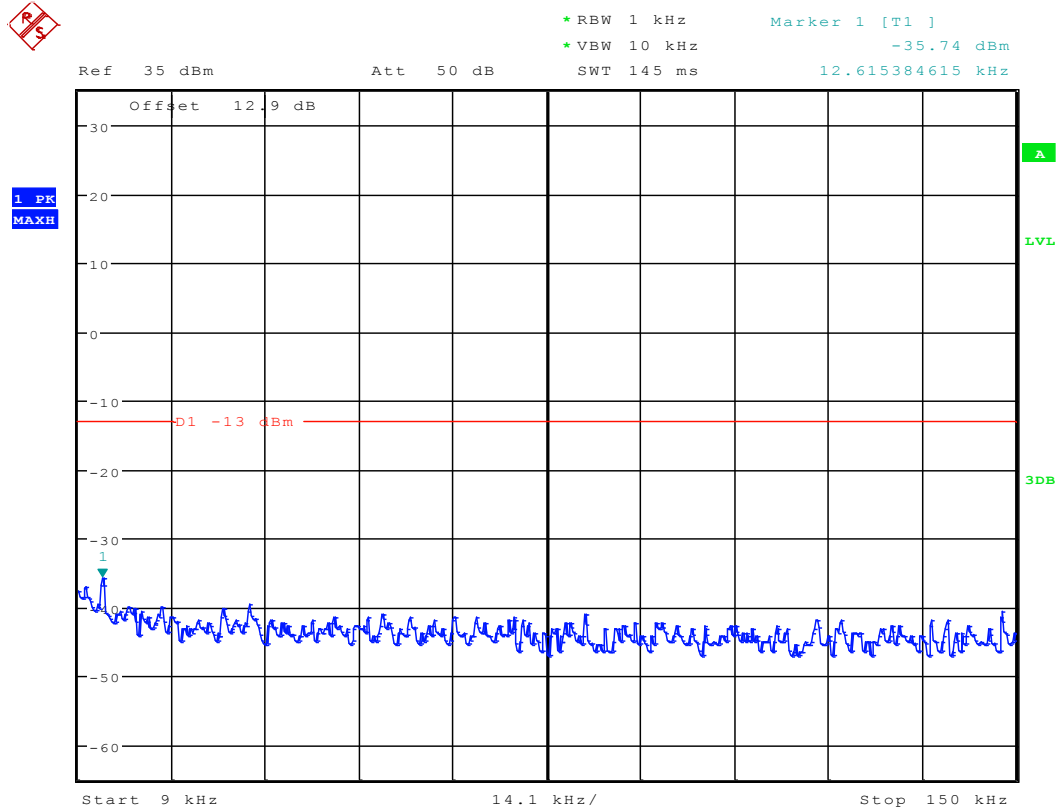
Date: 24.JUL.2012 11:14:20



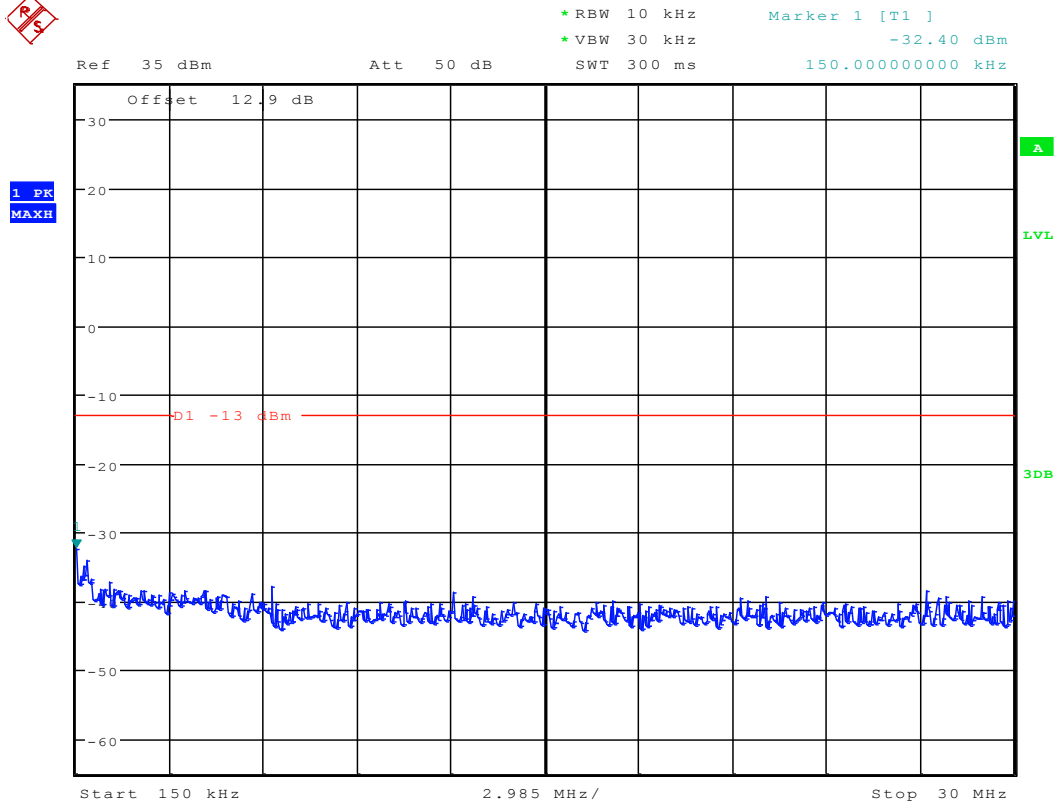
Date: 24.JUL.2012 11:14:46



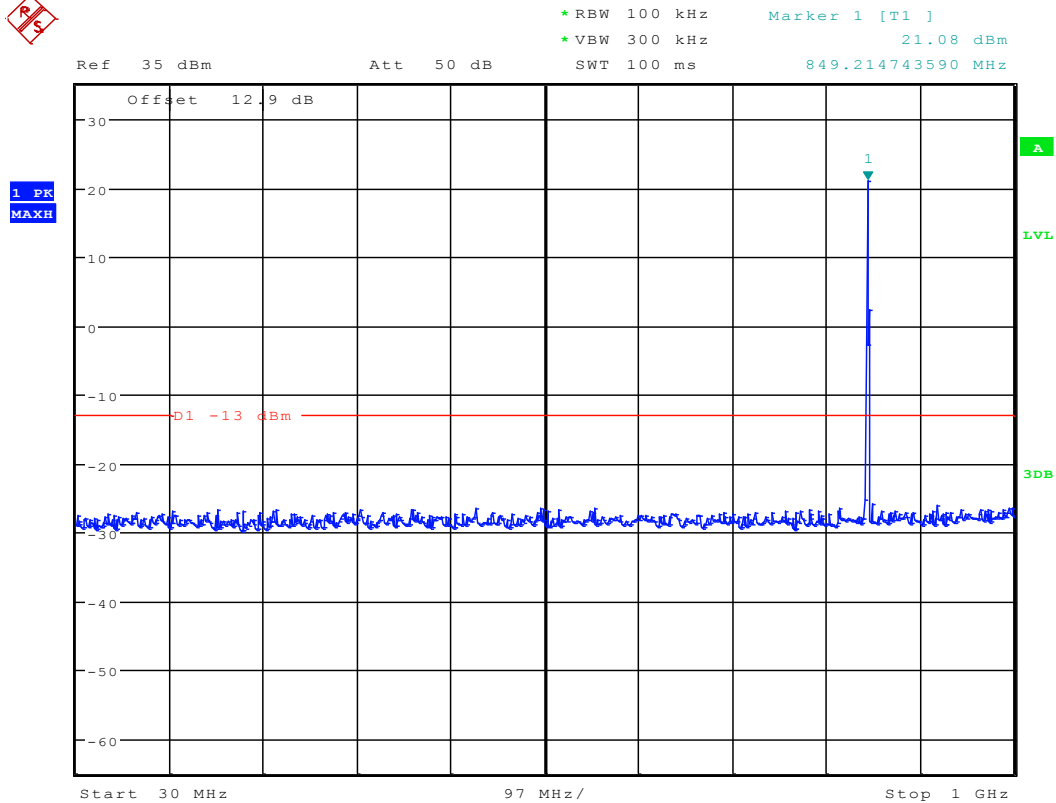
Channel 777



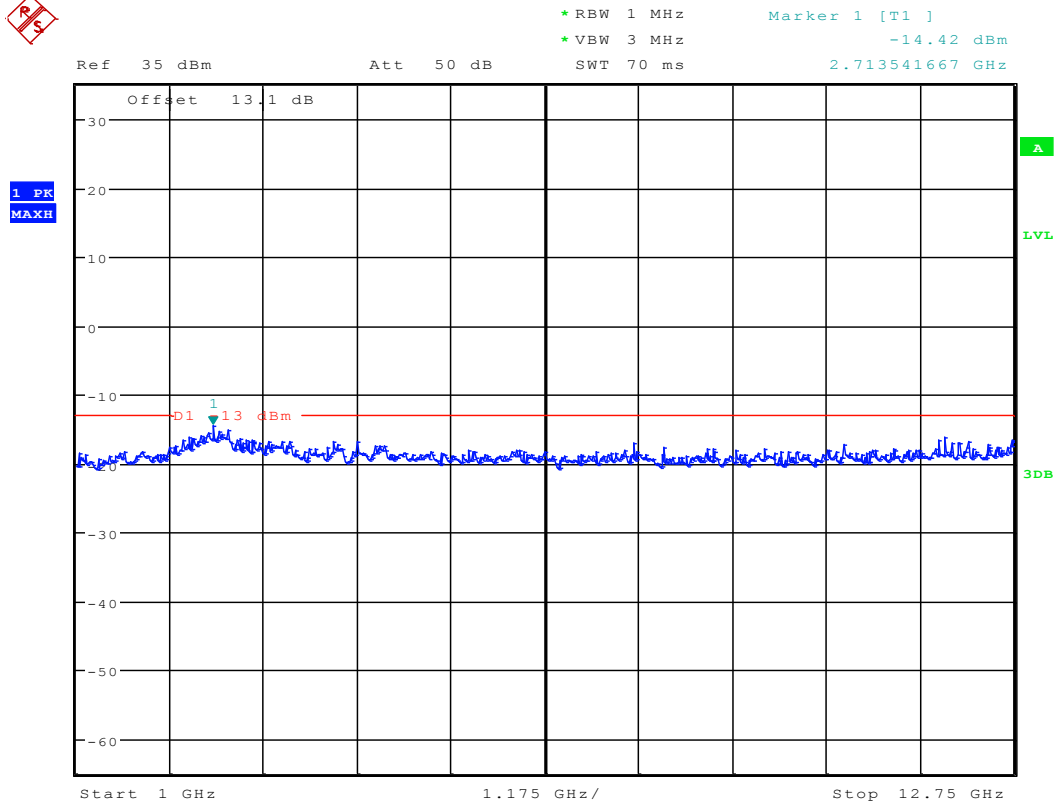
Date: 24.JUL.2012 11:13:37



Date: 24.JUL.2012 11:14:02



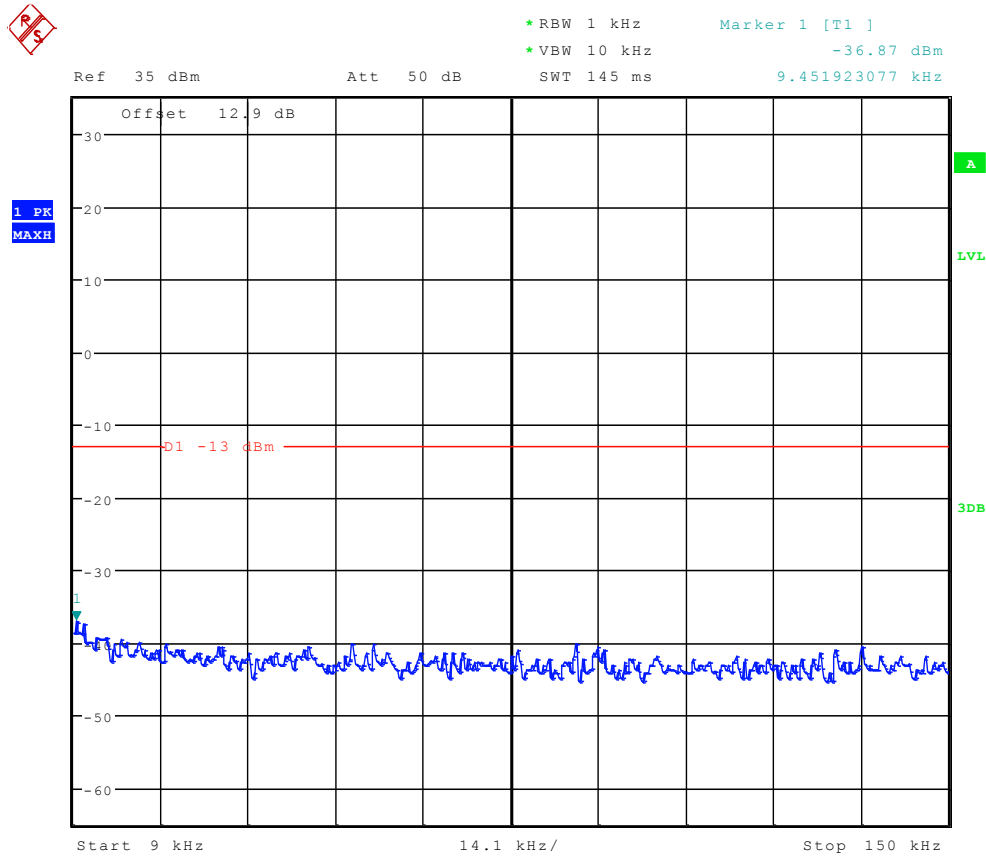
Date: 24.JUL.2012 11:14:28



Date: 24.JUL.2012 11:14:54



TM4: WCDMA Channel 4132

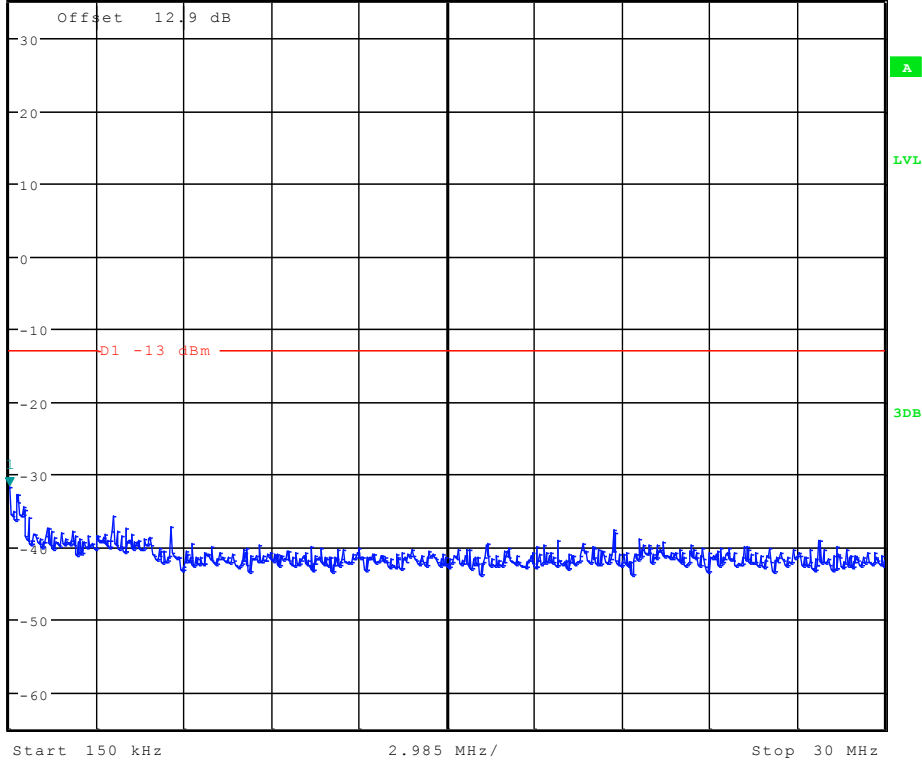


Date: 23.JUL.2012 16:12:38

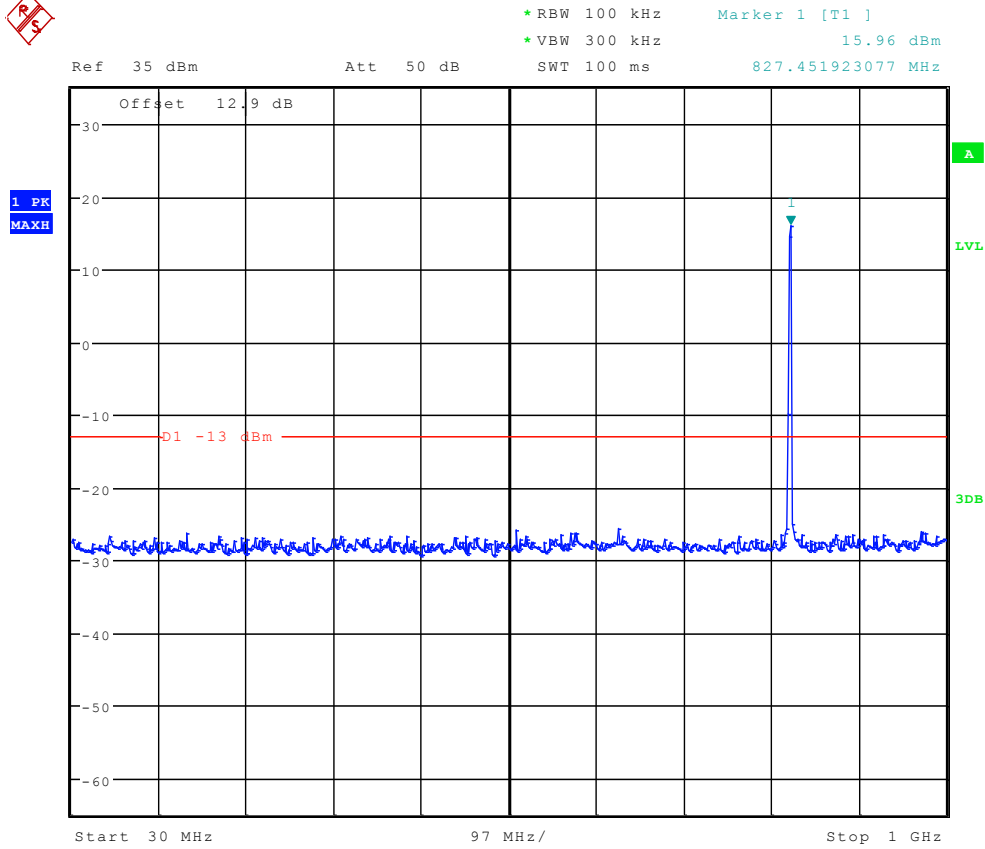


1 PK
MAXH

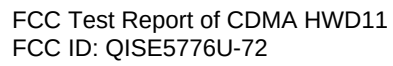
*RBW 10 kHz Marker 1 [T1]
*VBW 30 kHz -31.76 dBm
Ref 35 dBm Att 50 dB SWT 300 ms 150.00000000 kHz



Date: 23.JUL.2012 16:13:22



Date: 23.JUL.2012 16:14:06

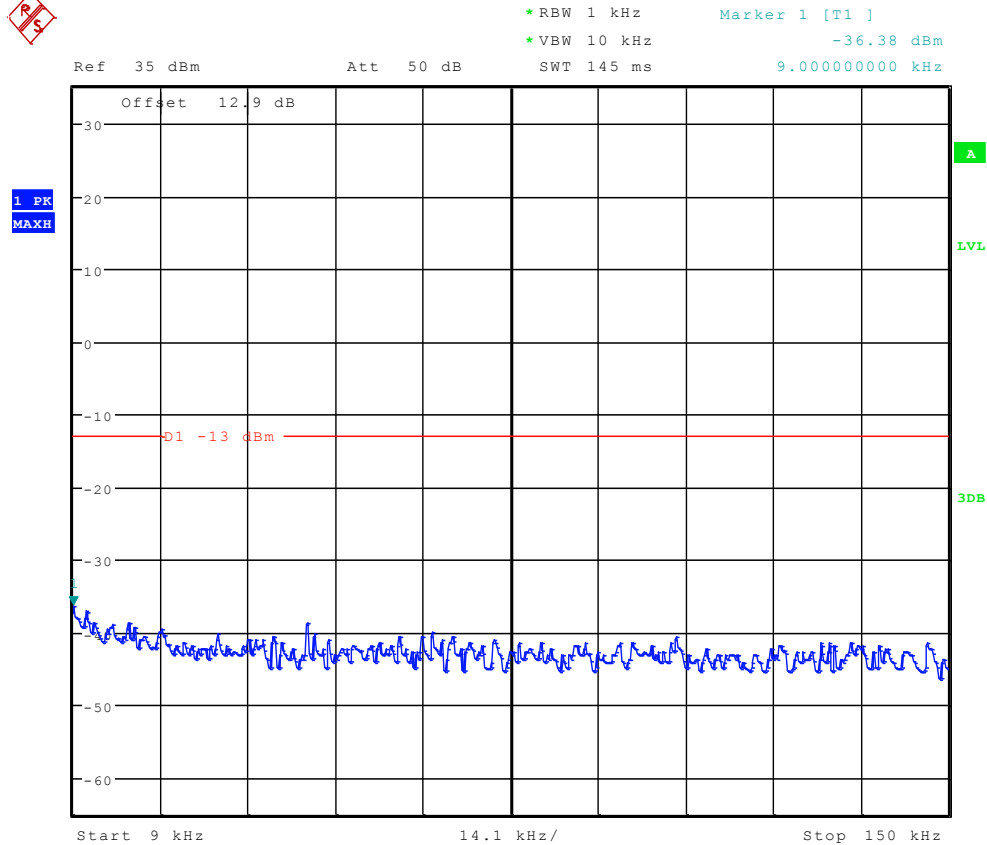


Ref 35 dB Att 50 dB SWT 70 ms 2.845352564 GHz

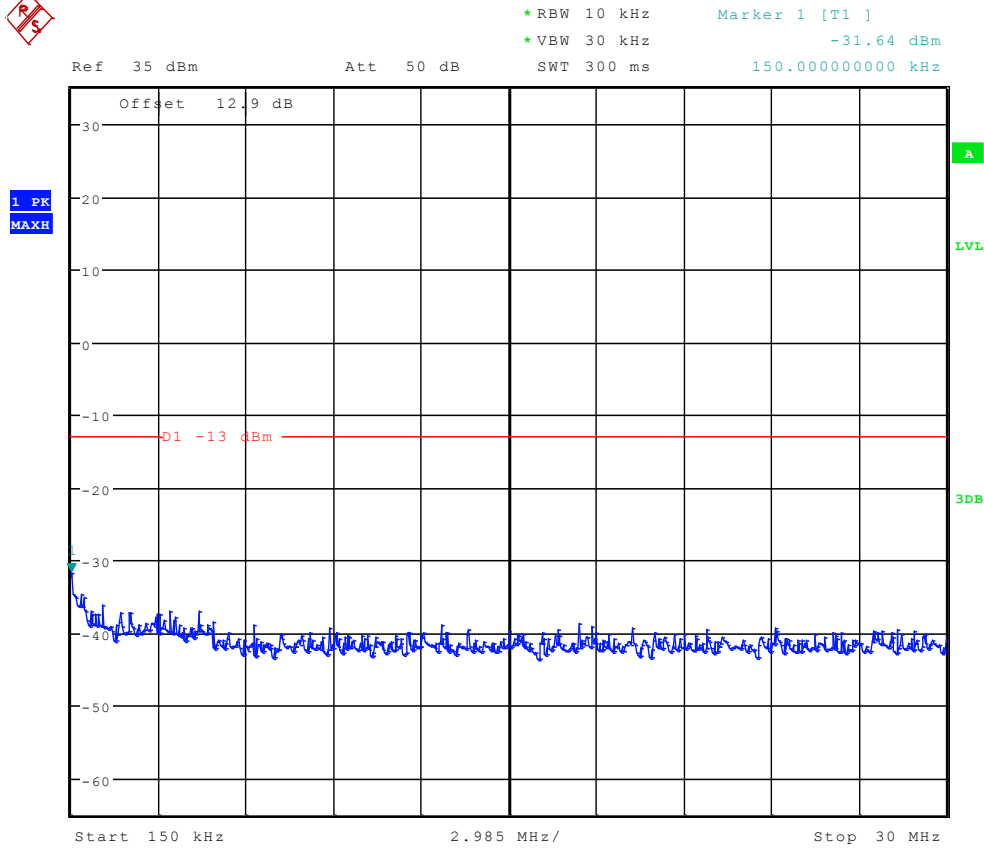




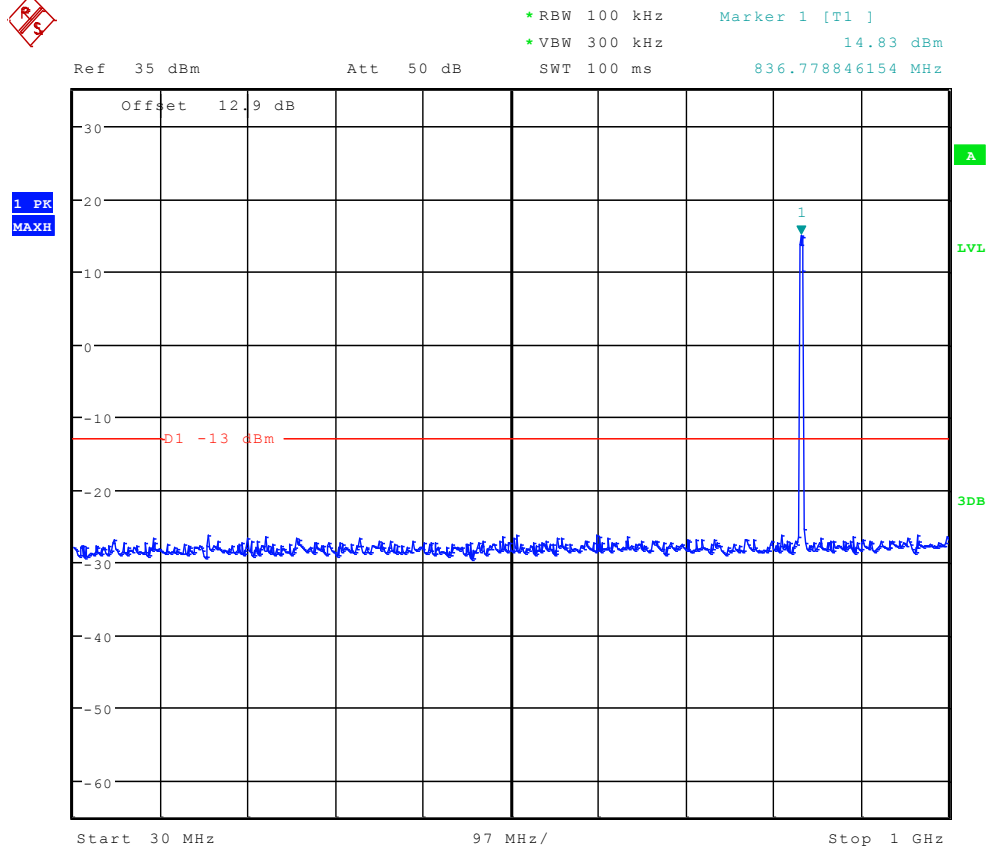
Channel 4182



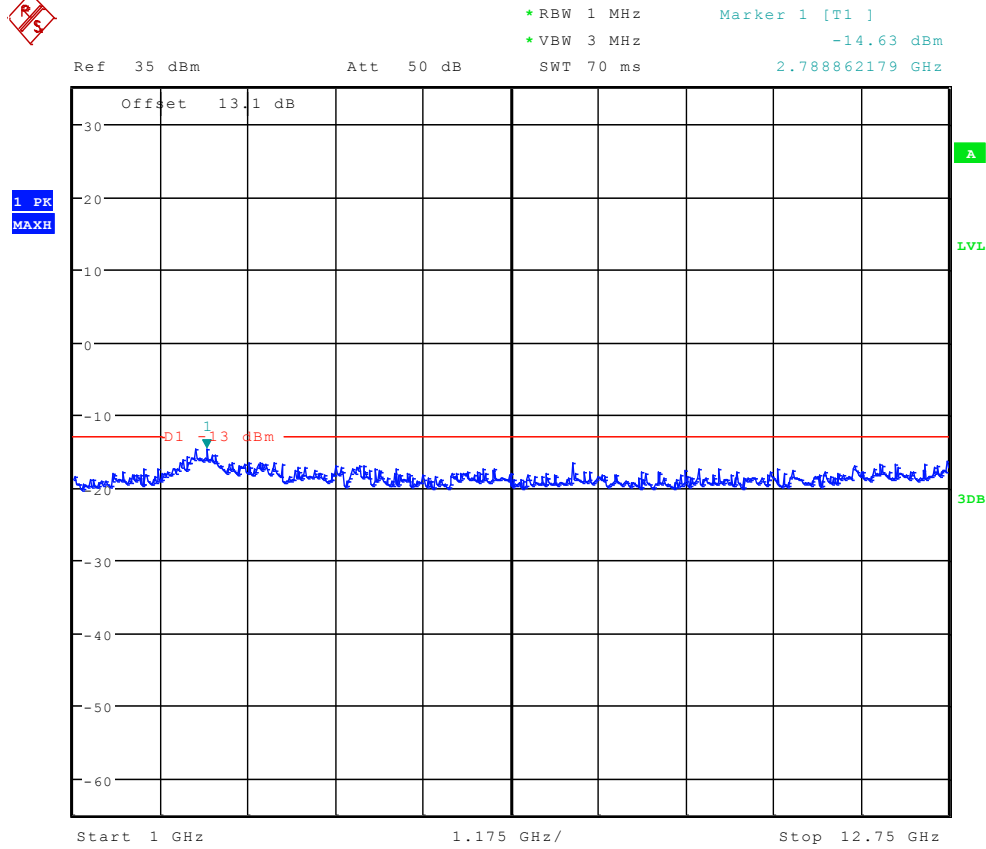
Date: 23.JUL.2012 16:12:53



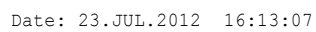
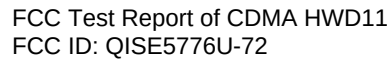
Date: 23.JUL.2012 16:13:36

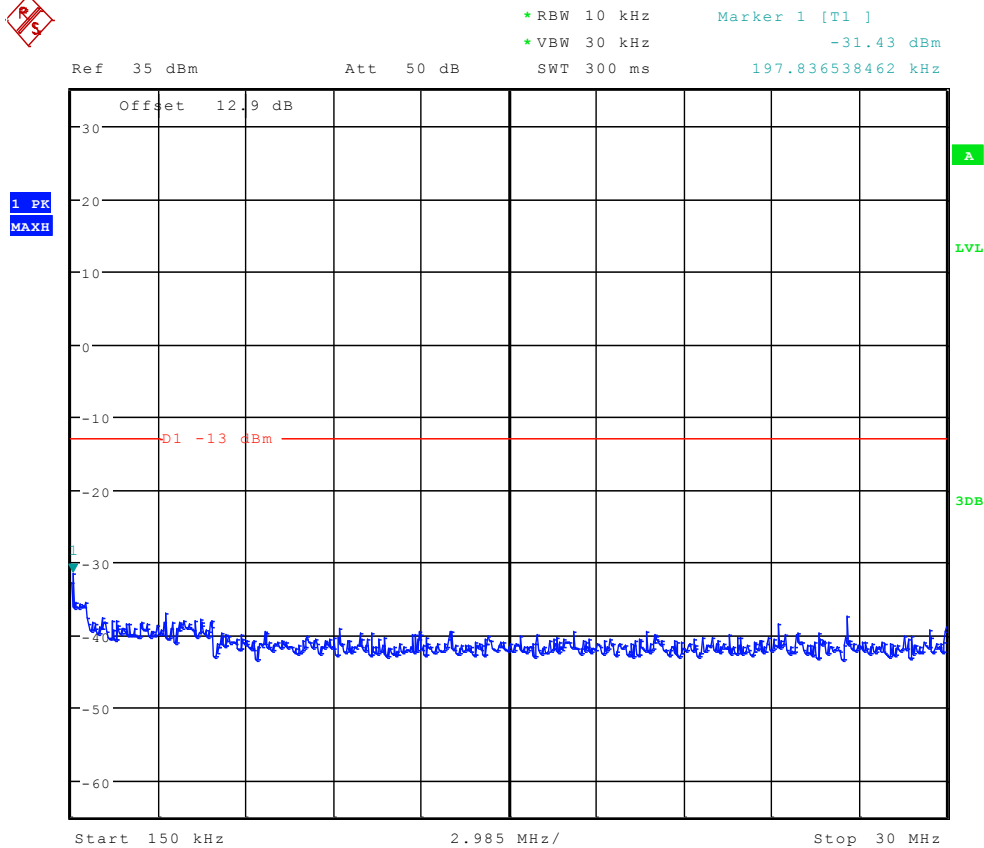


Date: 23.JUL.2012 16:14:20

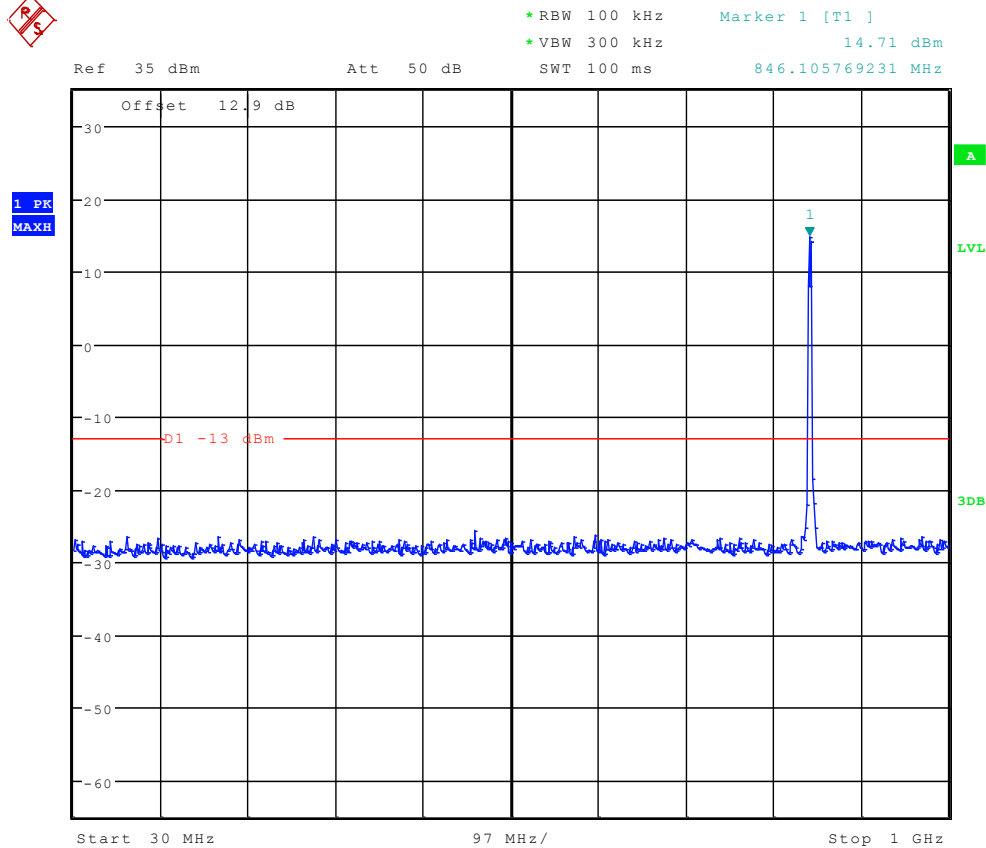


Date: 23.JUL.2012 16:15:04

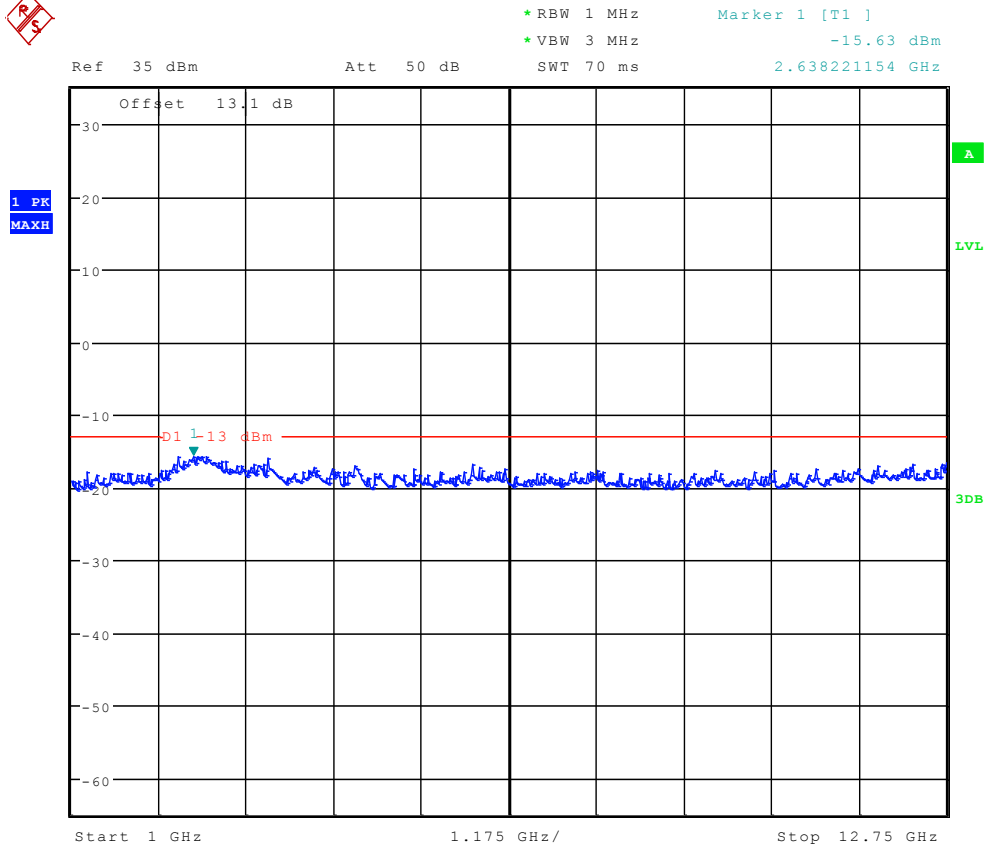




Date: 23.JUL.2012 16:13:51



Date: 23.JUL.2012 16:14:34



Date: 23.JUL.2012 16:15:18

-----END-----



Appendix F

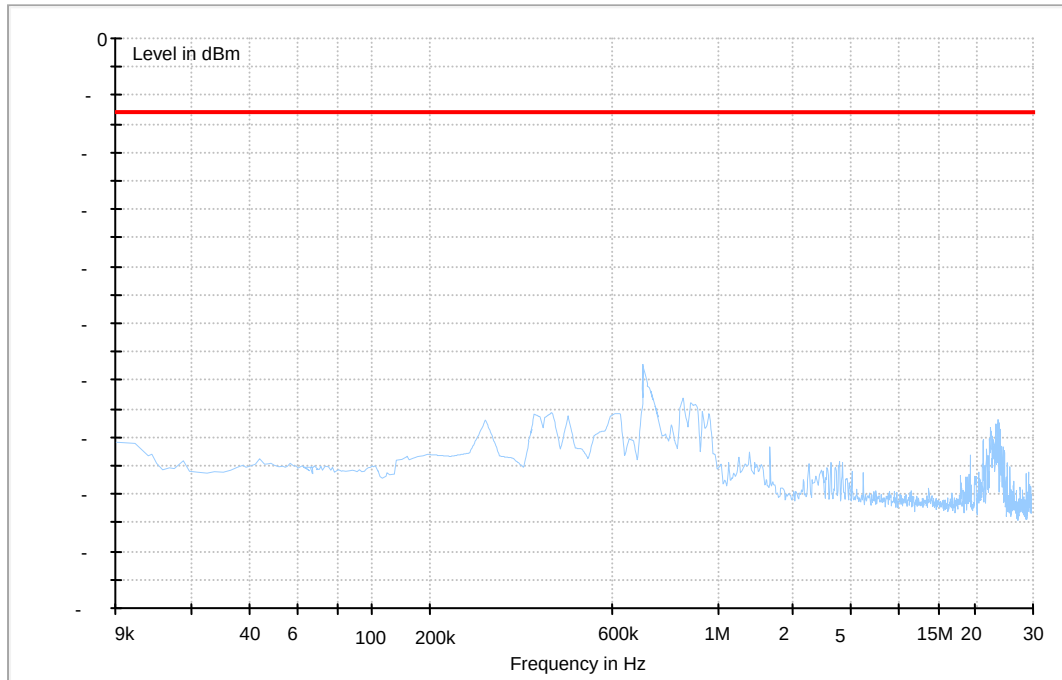
Radiated spurious emission

According to FCC Part 2.1053& Part 22.917



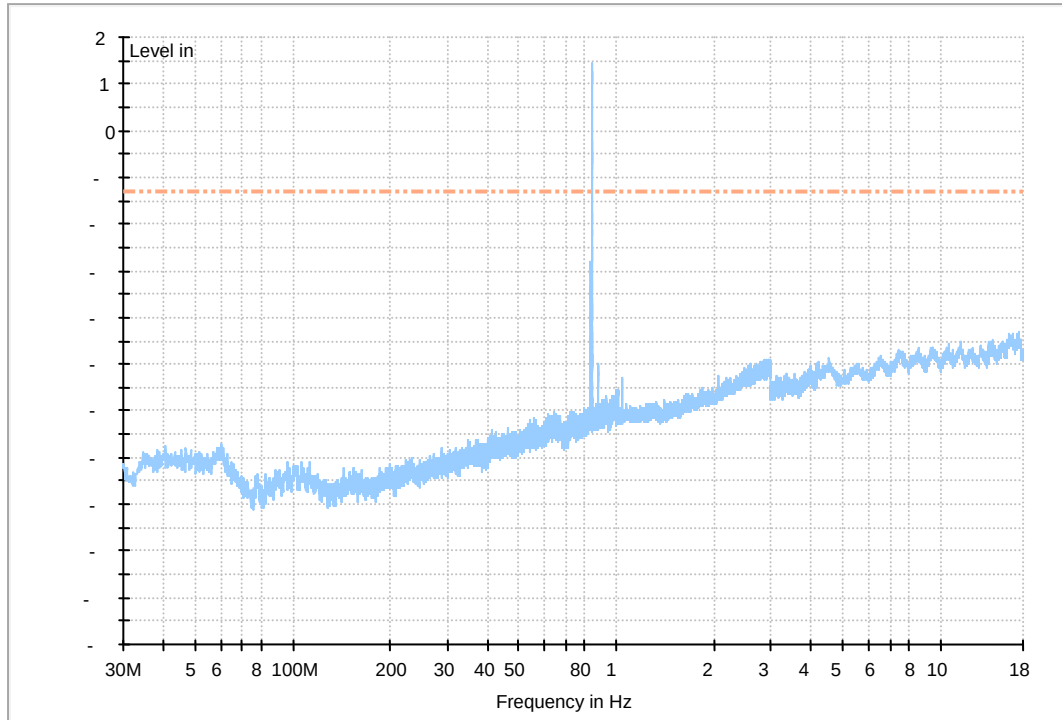
CDMA BC0

Traffic Mode (9kHz-30MHz)





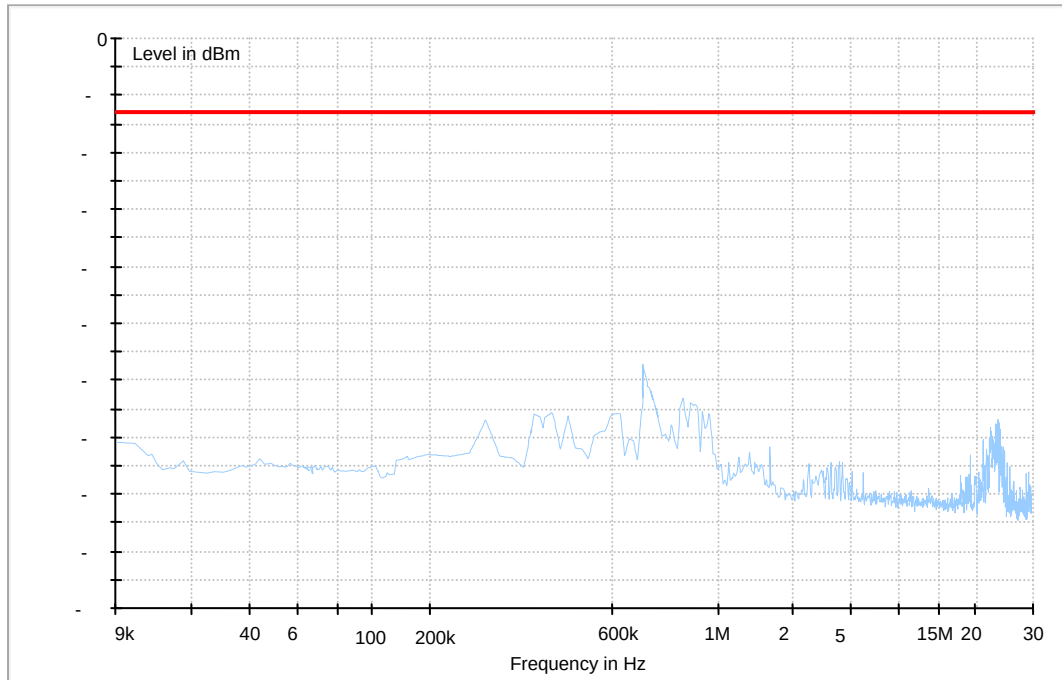
Traffic Mode (30MHz-18GHz)





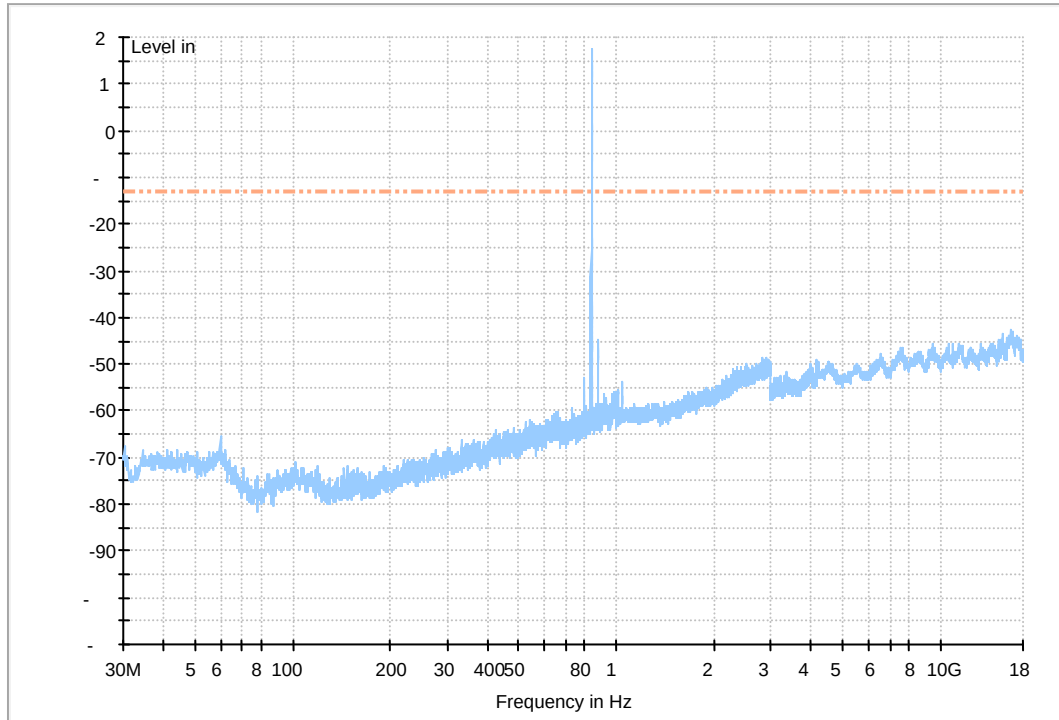
EVDO BC0 REV.0

Traffic Mode (9kHz-30MHz)





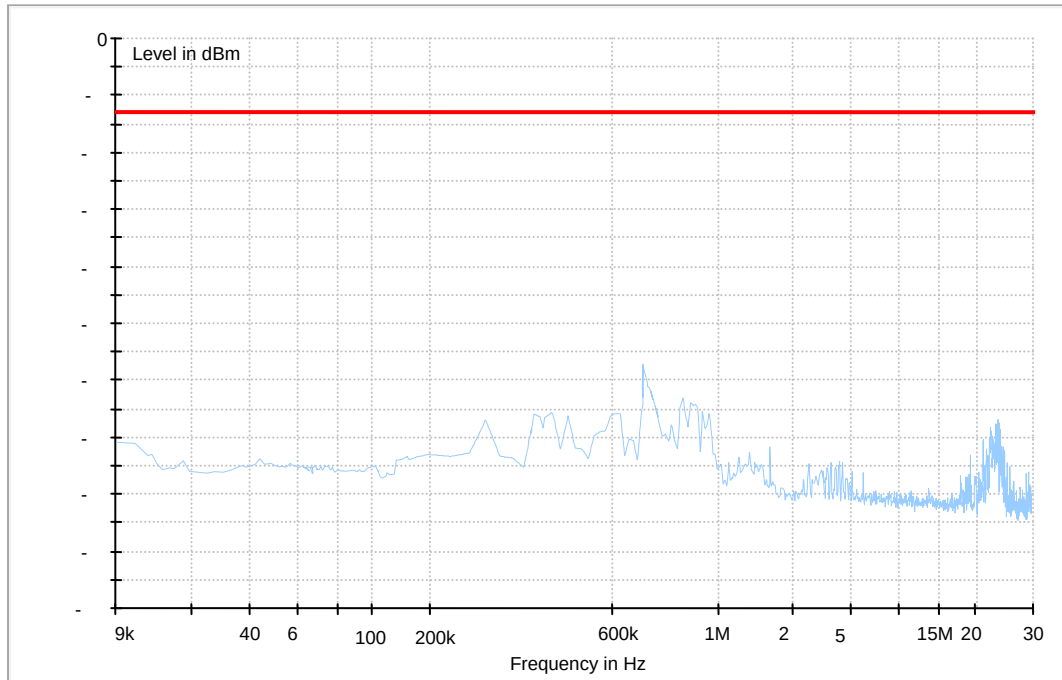
Traffic Mode (30MHz18GHz)





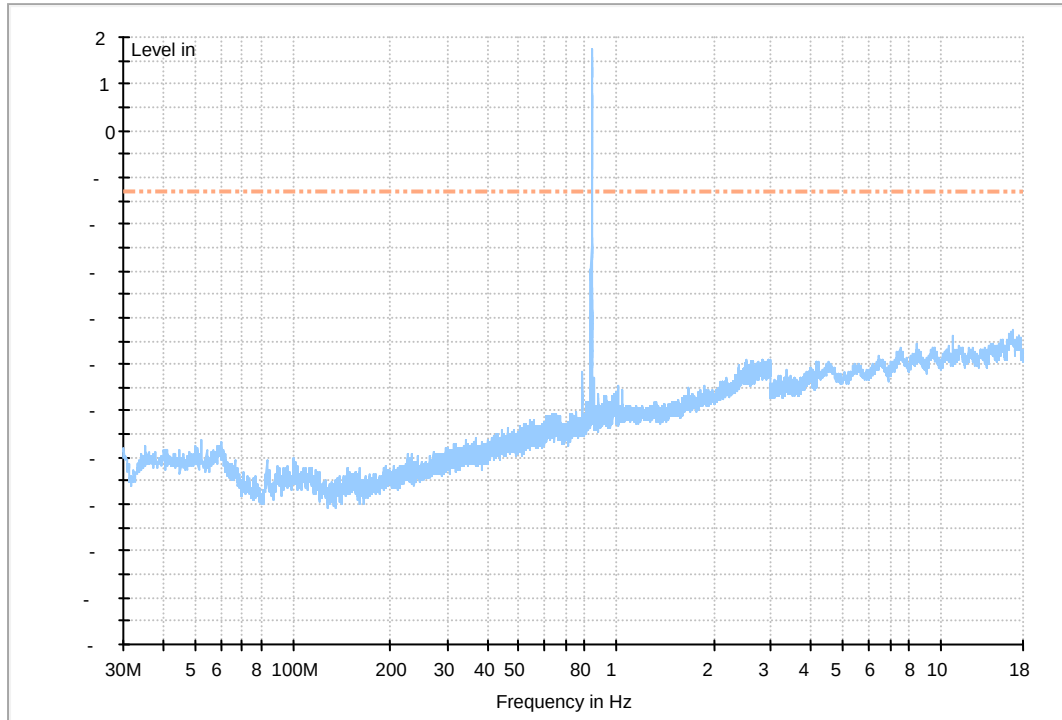
EVDO BC0 REV.A

Traffic Mode (9kHz-30MHz)





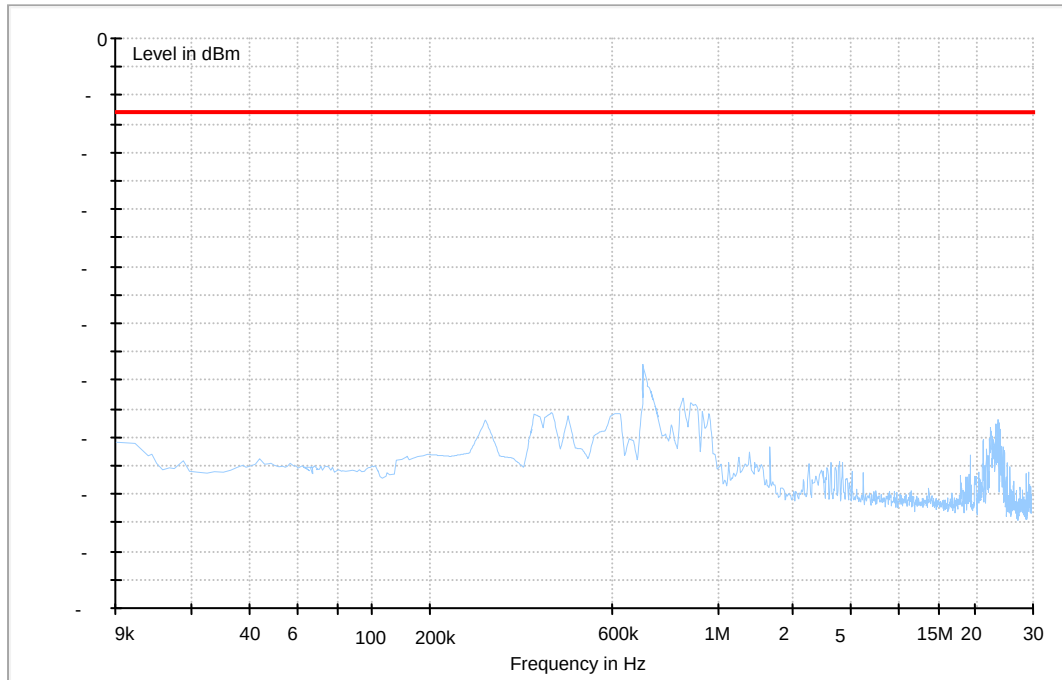
Traffic Mode (30MHz-18GHz)





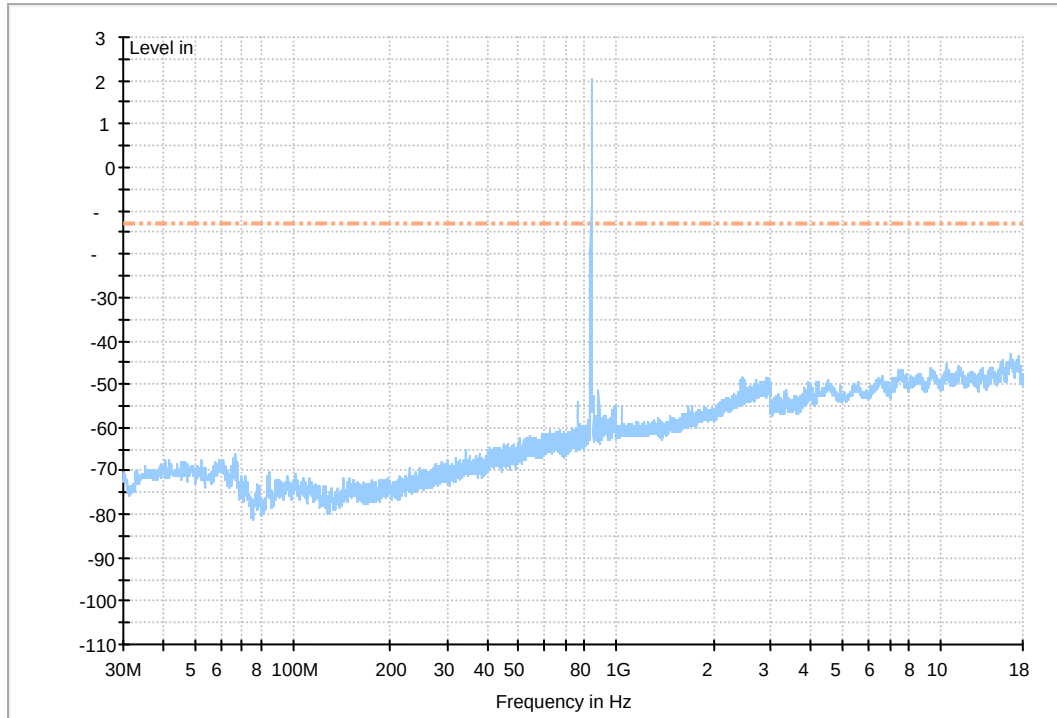
EVDO BC0 REV.B

Traffic Mode (9kHz-30MHz)





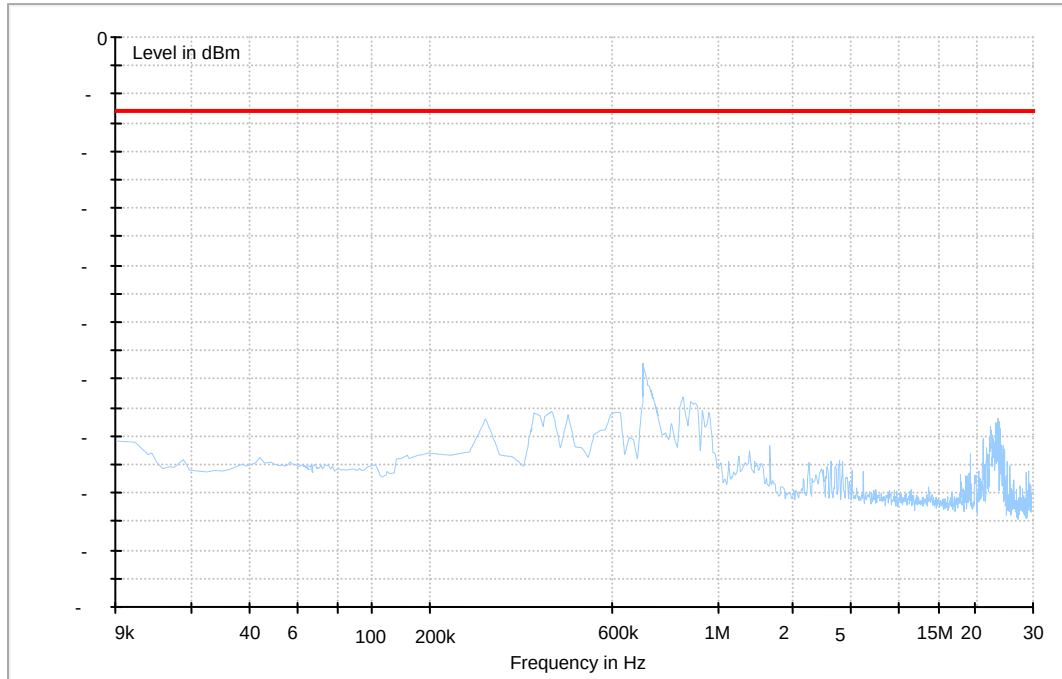
Traffic Mode (30MHz-18GHz)





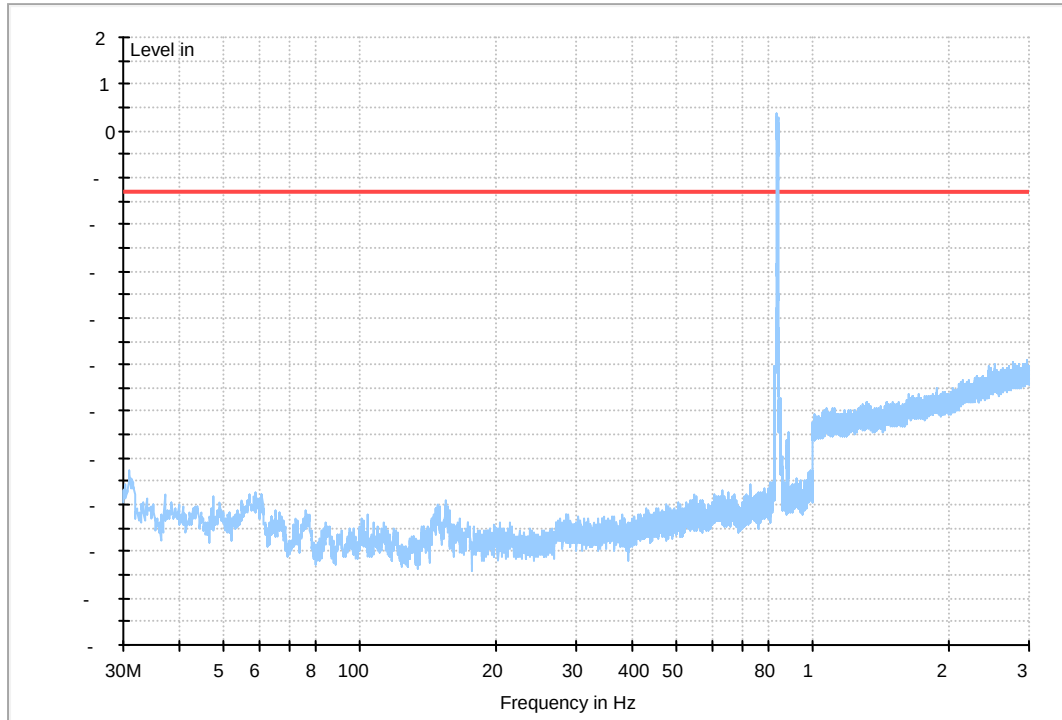
WCDMA 850

Traffic Mode (9kHz-30MHz)



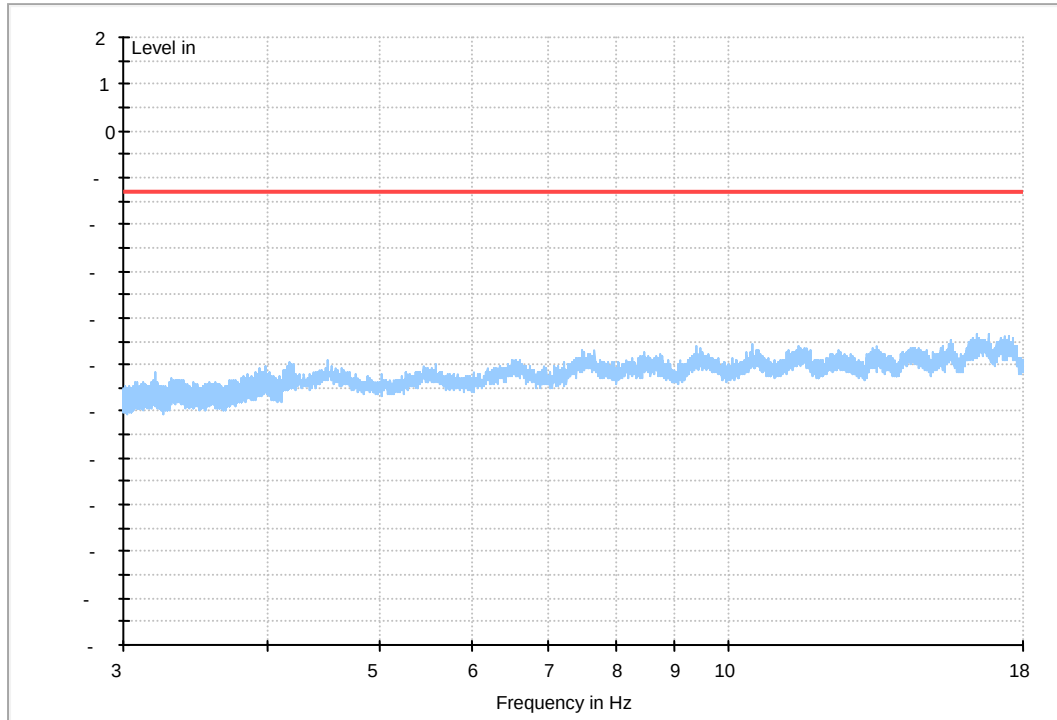


Traffic Mode (30MHz-3GHz)





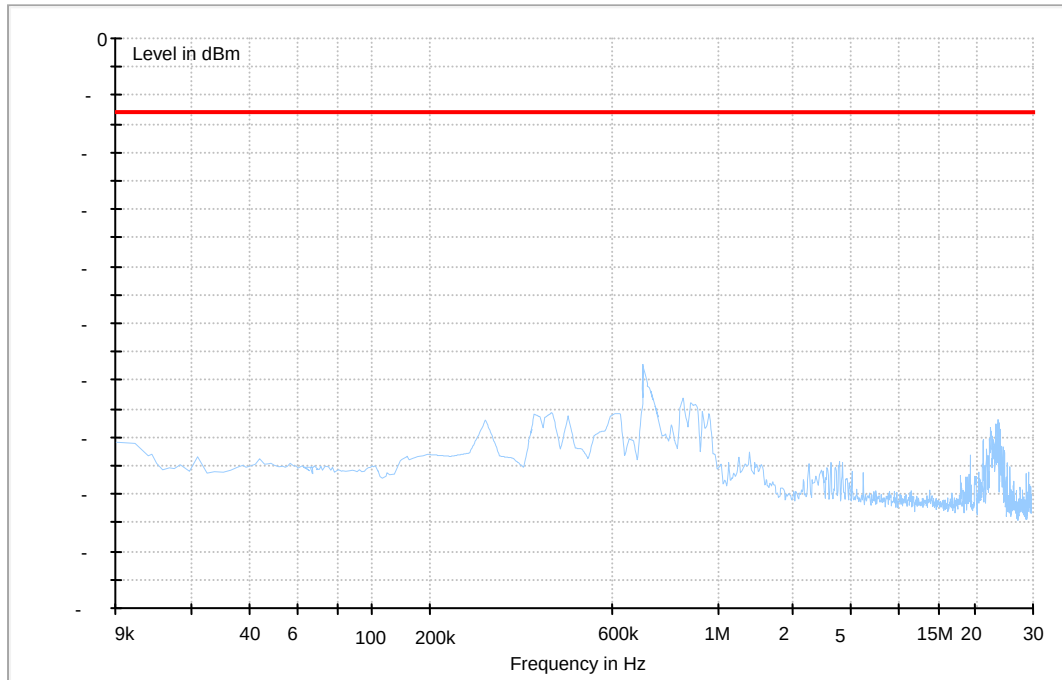
Traffic Mode (3GHz-18GHz)





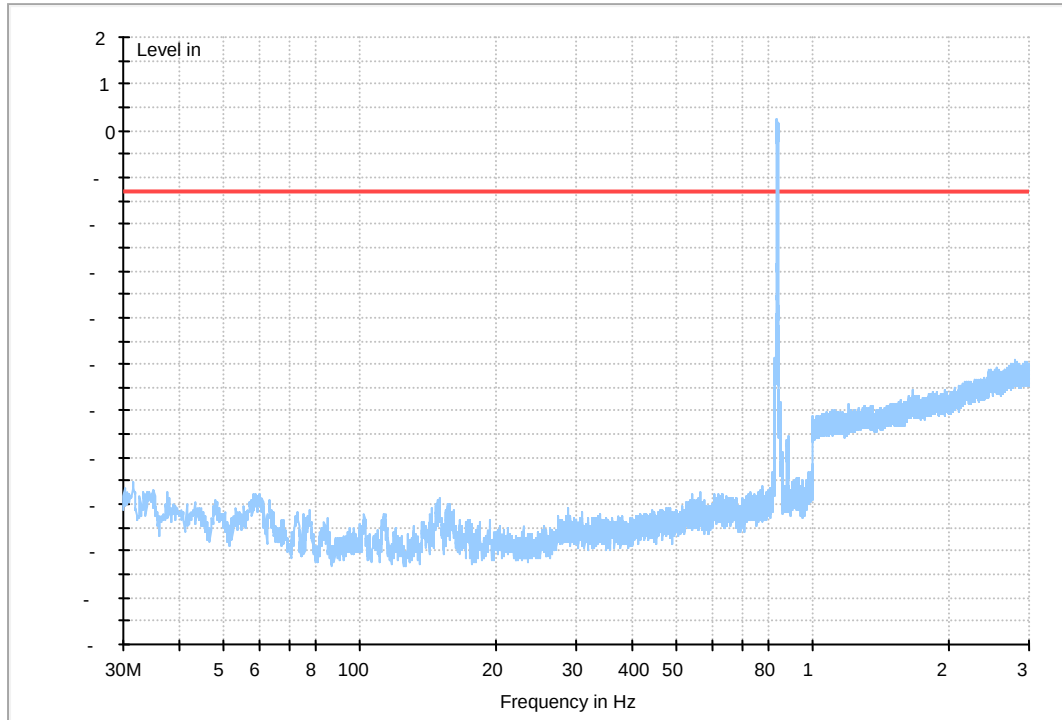
HSDPA 850

Traffic Mode (9kHz-30MHz)



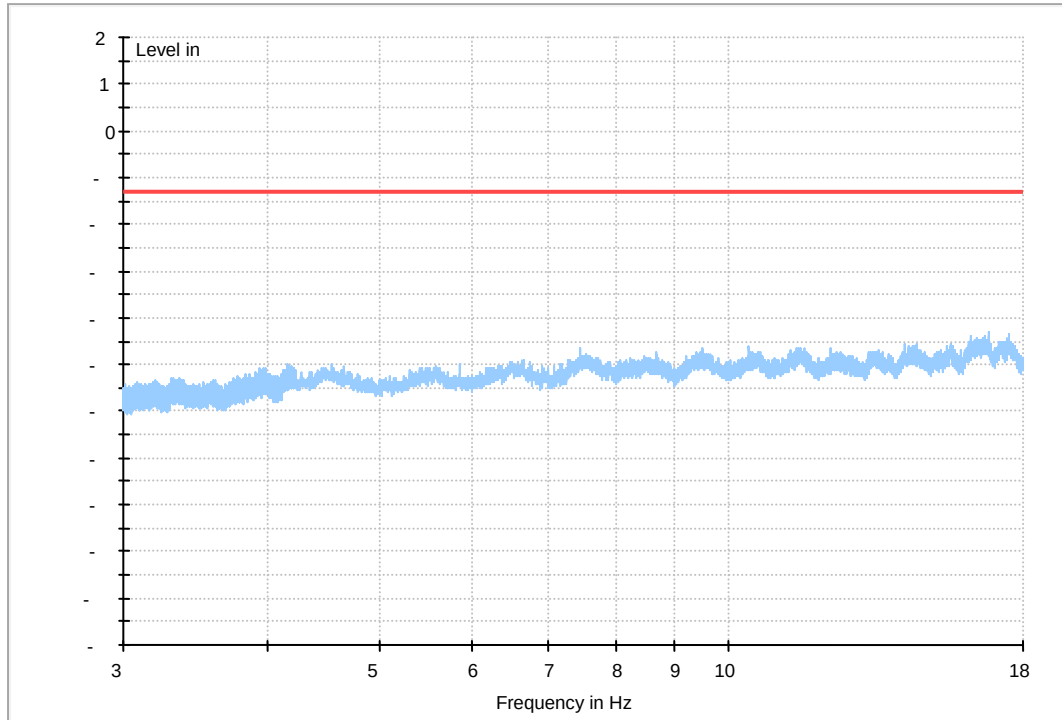


Traffic Mode (30MHz-3GHz)





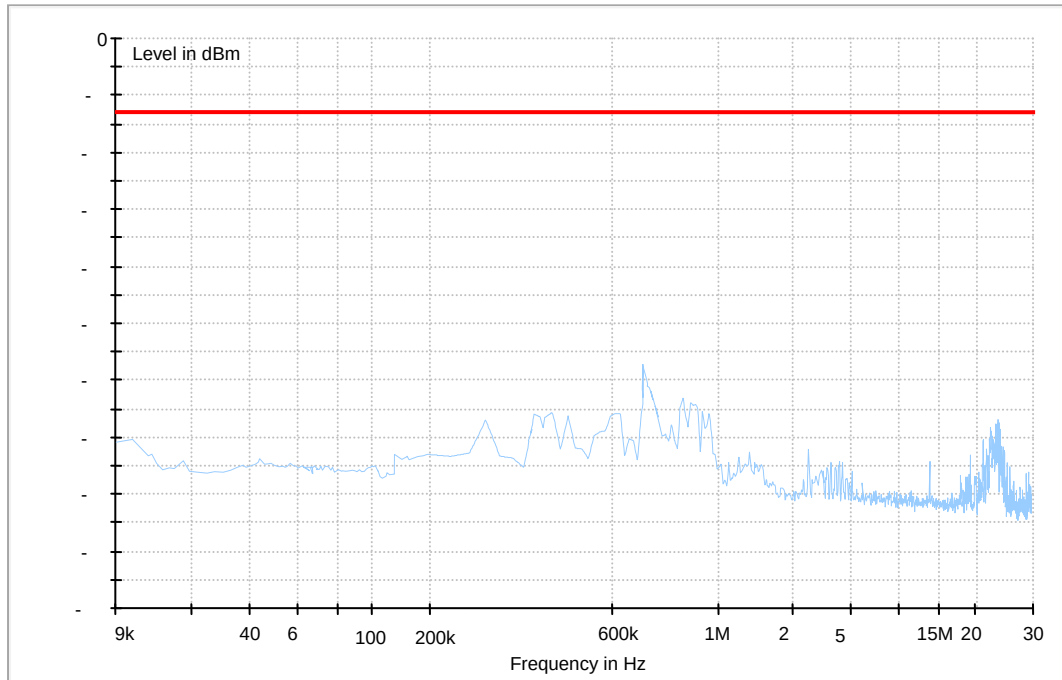
Traffic Mode (3GHz-18GHz)





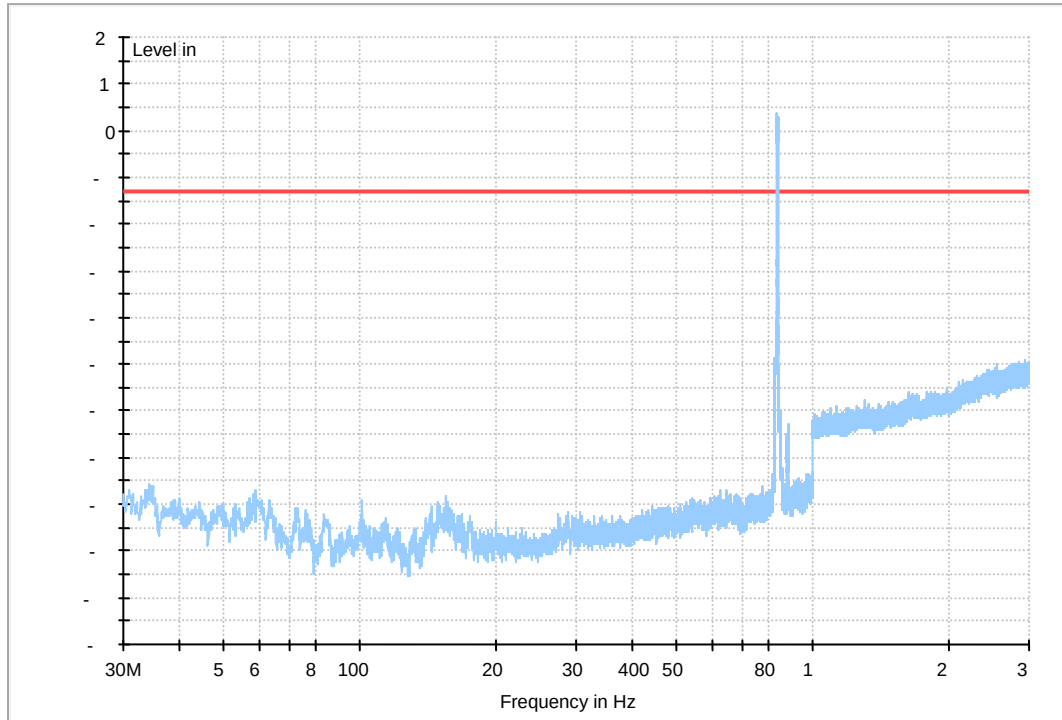
HSUPA 850

Traffic Mode (9kHz-30MHz)



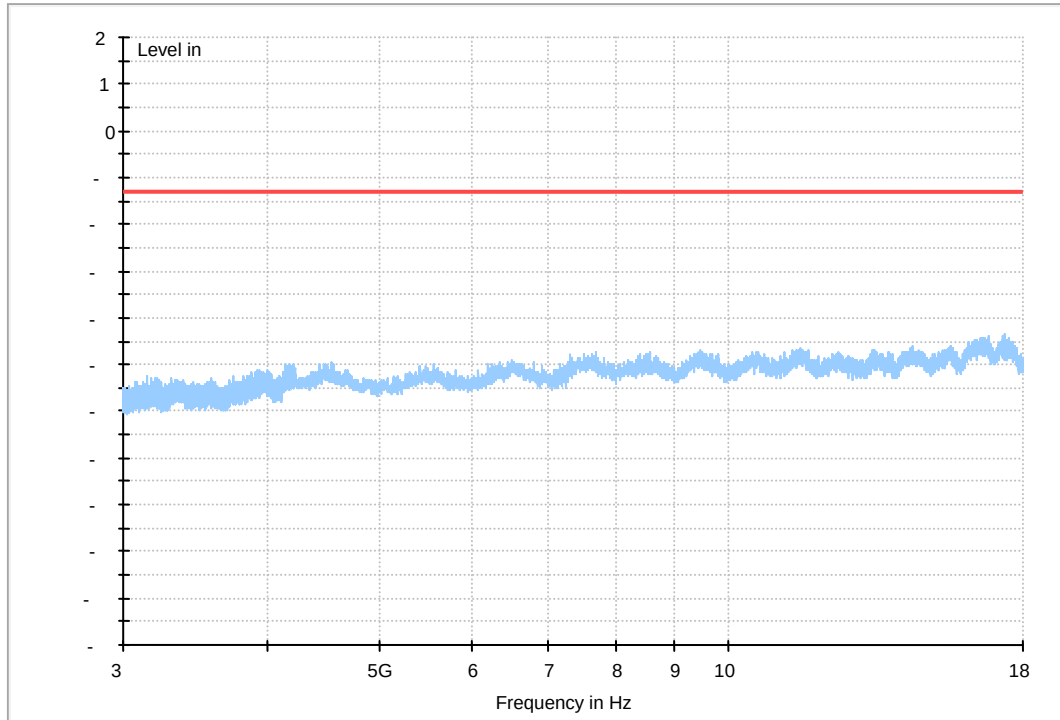


Traffic Mode (30MHz-3GHz)





Traffic Mode (3GHz-18GHz)



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



Appendix G

Frequency Stability

According to FCC Part 2.1055 & Part 22.355



Frequency Error vs. Temperature:

Test Mode	RF Ch.	Volt.	Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM 1	M	VN	-30 °C	21	0.02510	---	±2.5	Pass
			-20 °C	-12	-0.01435	---	±2.5	Pass
			-10 °C	26	0.03108	---	±2.5	Pass
			0 °C	-15	-0.01793	---	±2.5	Pass
			10 °C	27	0.03228	---	±2.5	Pass
			20 °C	9	0.01076	---	±2.5	Pass
			30 °C	-13	-0.01554	---	±2.5	Pass
			40 °C	18	0.02152	---	±2.5	Pass
			50 °C	-24	-0.02869	---	±2.5	Pass
TM 3	M	VN	-30 °C	-10	-0.01195	---	±2.5	Pass
			-20 °C	26	0.03108	---	±2.5	Pass
			-10 °C	27	0.03228	---	±2.5	Pass
			0 °C	-24	-0.02869	---	±2.5	Pass
			10 °C	-19	-0.02271	---	±2.5	Pass
			20 °C	10	0.01195	---	±2.5	Pass
			30 °C	-21	-0.02510	---	±2.5	Pass
			40 °C	25	0.02989	---	±2.5	Pass
			50 °C	12	0.01435	---	±2.5	Pass
Subtype 0	M	VN	-30 °C	-22	-0.02630	---	±2.5	Pass
			-20 °C	20	0.02391	---	±2.5	Pass
			-10 °C	12	0.01435	---	±2.5	Pass
			0 °C	-22	-0.02630	---	±2.5	Pass
			10 °C	-20	-0.02391	---	±2.5	Pass
			20 °C	11	0.01315	---	±2.5	Pass
			30 °C	-7	-0.00837	---	±2.5	Pass
			40 °C	-21	-0.02510	---	±2.5	Pass
			50 °C	28	0.03347	---	±2.5	Pass
Subtype 2	M	VN	-30 °C	-20	-0.02391	---	±2.5	Pass
			-20 °C	-18	-0.02152	---	±2.5	Pass
			-10 °C	20	0.02391	---	±2.5	Pass
			0 °C	7	0.00837	---	±2.5	Pass
			10 °C	16	0.01913	---	±2.5	Pass
			20 °C	18	0.02152	---	±2.5	Pass
			30 °C	8	0.00956	---	±2.5	Pass
			40 °C	27	0.03228	---	±2.5	Pass



Test Mode	RF Ch.	Volt.	Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
			50 °C	-17	-0.02032	---	± 2.5	Pass
TM4	M	VN	-30 °C	-18	-0.02152	---	± 2.5	Pass
			-20 °C	-19	-0.02272	---	± 2.5	Pass
			-10 °C	26	0.03109	---	± 2.5	Pass
			0 °C	11	0.01315	---	± 2.5	Pass
			10 °C	28	0.03348	---	± 2.5	Pass
			20 °C	14	0.01674	---	± 2.5	Pass
			30 °C	14	0.01674	---	± 2.5	Pass
			40 °C	-12	-0.01435	---	± 2.5	Pass
			50 °C	9	0.01076	---	± 2.5	Pass



Frequency Error vs. Voltage:

Test Mode	RF Ch.	Temp.	Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM 1	M	TN	VL	-12	-0.01435	---	± 2.5	Pass
			VN	18	0.02152	---	± 2.5	Pass
			VH	-14	-0.01674	---	± 2.5	Pass
TM 3	M	TN	VL	-13	-0.01554	---	± 2.5	Pass
			VN	12	0.01435	---	± 2.5	Pass
			VH	-15	-0.01793	---	± 2.5	Pass
Subtype 0	M	TN	VL	19	0.02271	---	± 2.5	Pass
			VN	22	0.02630	---	± 2.5	Pass
			VH	27	0.03228	---	± 2.5	Pass
Subtype 2	M	TN	VL	11	0.01315	---	± 2.5	Pass
			VN	27	0.03228	---	± 2.5	Pass
			VH	-10	-0.01195	---	± 2.5	Pass
TM4	M	TN	VL	18	0.02152	---	± 2.5	Pass
			VN	-16	-0.01913	---	± 2.5	Pass
			VH	29	0.03467	---	± 2.5	Pass

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