



# FCC RF Test Report

**Product Name: cdma2000 Digital Mobile Phone; Asura**

**Model Number: HUAWEI H881C, H881C**

**Report No: SYBH(Z-RF)003112012-2002**

**FCC ID: QISH881C**

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

Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District,  
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## Notice

1. The laboratory has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS), and accreditation number: L0310.
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.
3. The laboratory has been listed by industry Canada to perform electromagnetic emission measurement. The site recognition number is 6369A-2.
4. The test report is invalid if not marked with "exclusive stamp for the test report".
5. The test report is invalid if not marked with the stamps or the signatures of the persons responsible for performing, revising and approving the test report.
6. The test report is invalid if there is any evidence of erasure and/or falsification.
7. If there is any dissidence for the test report, please file objection to the test centre within 15 days from the date of receiving the test report.
8. Normally, the test report is only responsible for the samples that have undergone the test.
9. Context of the test report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of the laboratory.



<b>Applicant:</b>	Huawei Technologies Co., Ltd.
<b>Address:</b>	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
<b>Date of Receipt Test Item:</b>	Nov., 05, 2012
<b>Start Date of Test:</b>	Nov., 07, 2012
<b>End Date of Test:</b>	Nov., 12, 2012
<b>Test Result:</b>	Pass

Approved By Senior Engineer Nov., 19, 2012 Dai Linjun  
 Date Name Signature

Reviewed By Nov., 19, 2012 Cousy Xu  
 Date Name Signature

Operated By Nov., 19, 2012 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 24:2011, Subpart E ANSI/TIA 603C:2004
<b>1.2 Test Location</b>	
Test Location 1:	Reliability Laboratory of Huawei Technologies Co., Ltd.
Address:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
<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 Case	FCC Part No.	Requirements	Result
PCS Band			
Transmitter Output Power	2.1046 & 24.232	Peak EIRP not exceed 2 W Peak-to-average ratio not exceed 13 dB	Pass
Modulation Characteristics	2.104	Digital modulation	Pass
Occupied Bandwidth	2.104	(Not specified)	Pass
Band Edges Compliance	2.1051 & 24.238	Below -13 dBm/1%*EBW, in 1 MHz range	Pass
Spurious Emission at Antenna Terminals	2.1051 & 24.238	Below -13 dBm/1 kHz, 9 kHz to 150 kHz Below -13 dBm/10 kHz, 150 kHz to 30 MHz Below -13 dBm/1 MHz, 30 MHz to 10 <sup>th</sup> harmonics	Pass
Field Strength of Spurious Radiation	2.1053 & 24.238	Below -13 dBm/1 MHz	Pass
Frequency Stability	2.1055 & 24.235	Stay within the authorized frequency block	Pass

### 3 Product Description

#### 3.1 Product Information

##### 3.1.1 General Description

CDMA2000 Digital Mobile Phone- HUAWEI H881C, H881C is subscriber equipment in the CDMA/EVDO system. The frequency band is US Cellular and N. American PCS, but only N. American PCS band test data included in this report. The Mobile Phone implements such functions as RF signal receiving/transmitting, CDMA2000 1x and 1XEV-DO protocol processing, voice, MMS service, GPS, AGPS and WIFI etc. Externally it provides micro SD card interface, earphone port (to provide voice service). 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

cdma2000 Digital Mobile Phone; Asura		
HUAWEI H881C, H881C		
Board and Module		
Equipment Designation / Description	Serial Number	Hardware V
MAINBOARD	P9L01A92A0900541	HC1H881CM

##### 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	Qty.	Manufacture	Description
Rechargeable Li-ion	1	Huawei Technologies Co., Ltd.	Battery Model: HB4W1H Rated capacity: 1750mAh Nominal Voltage:  +3.7V Charging Voltage:  +4.2V



## 4 Test Description

### 4.1 Supported Frequency Range

Characteristics	Description
Downlink	1930 to 1990 MHz
Uplink	1850 to 1910 MHz

### 4.2 Transmitter / Receiver Characteristics

Characteristics	Description
System Type	CDMA
TX Output Power (per Antenna Port)	CDMA system: 24dBm
Channel Spacing(s) / Bandwidth(s)	CDMA system: 1.29 MHz (Cellular band)
Designation of Emissions	CDMA system: 1M29F9W (Cellular band)

### 4.3 Antenna Gain

Antenna Gain(dBi)	0.731
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## 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 25	Channel 600	Channel 1175
		1851.25MHz	1880.0MHz	1908.75MHz
	RX	Channel 25	Channel 600	Channel 1175
		1931.25MHz	1960.0MHz	1988.75MHz

### 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

### 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

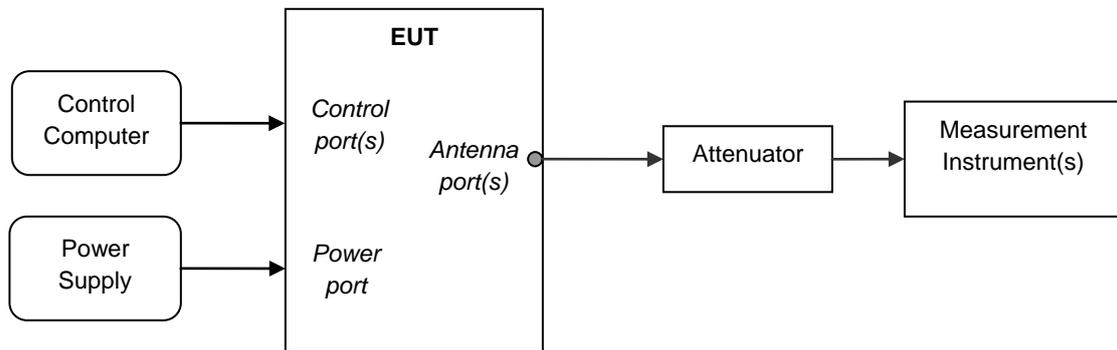
TN= normal temperature

## 5.4 Test Setup

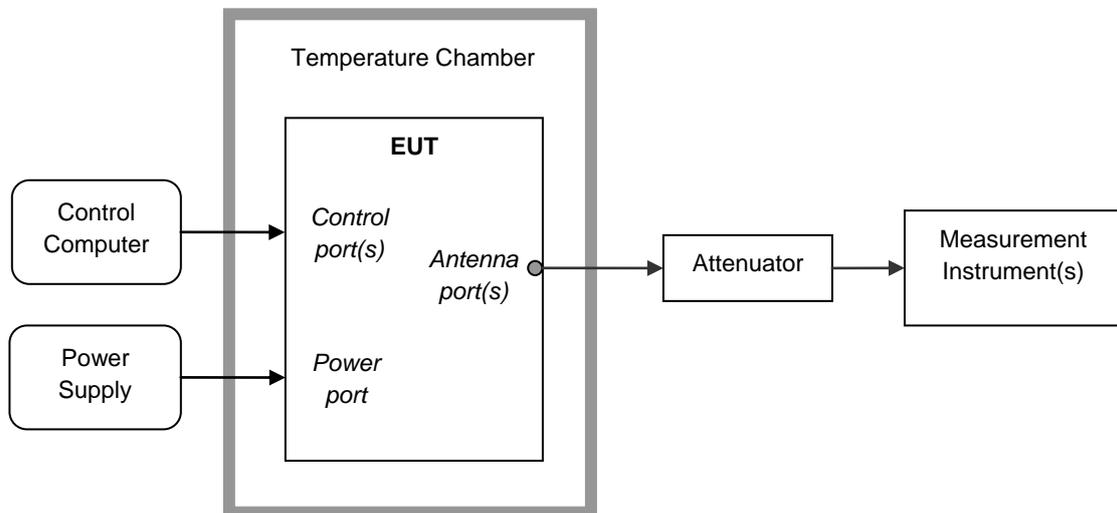
### 5.4.1 General Test Setup Configurations

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



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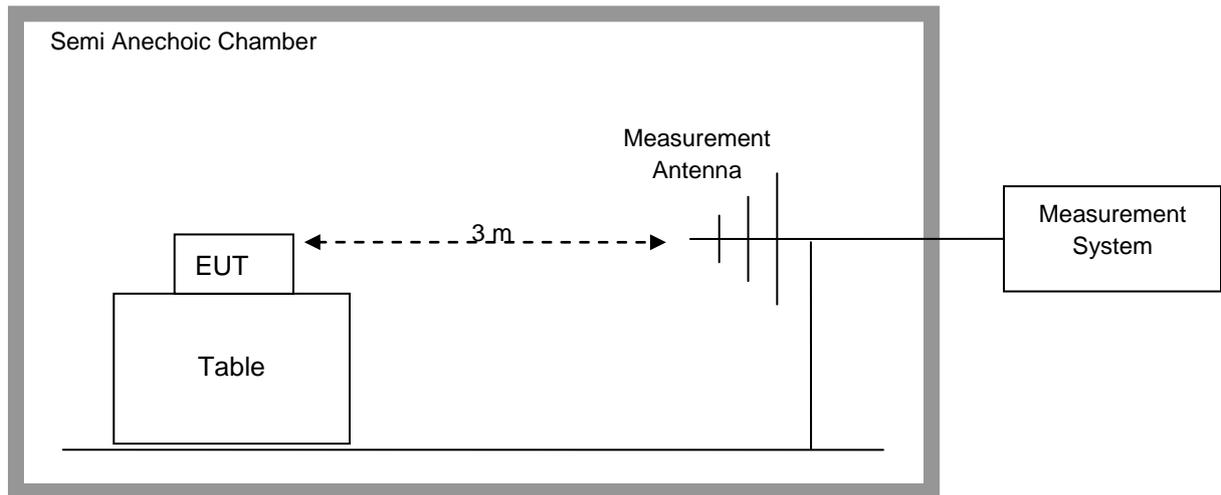
#### 5.4.4 Test Setup 3

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.

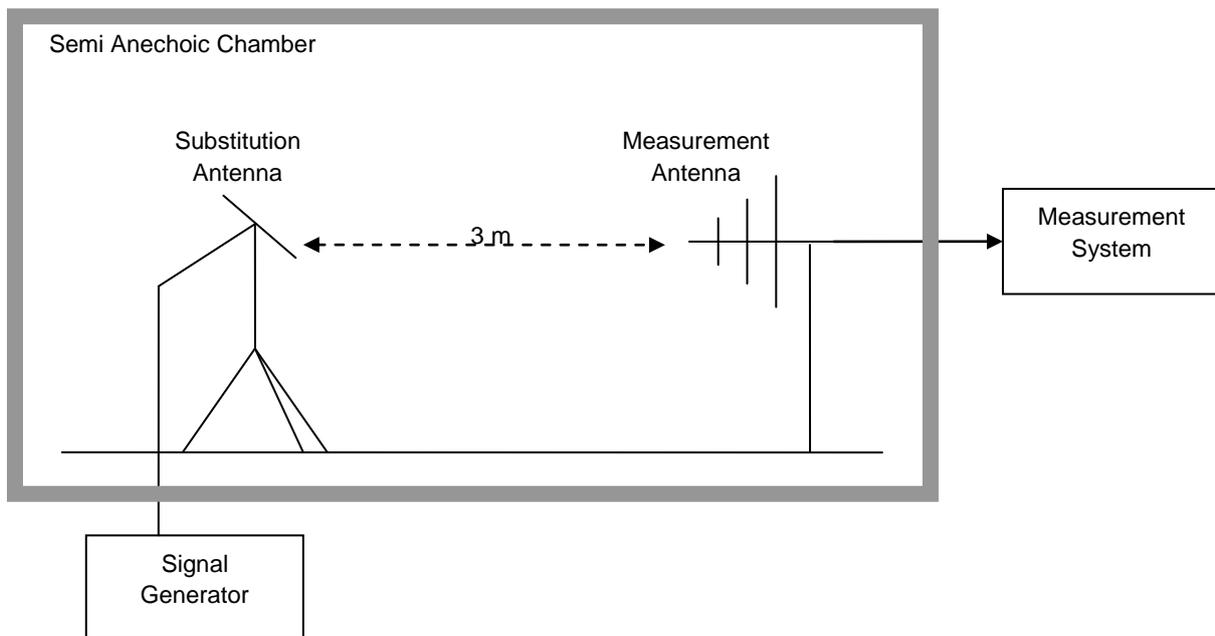
#### Step 1: Pre-test to find the Maximum ERP or EIRP

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 figures. 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
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
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
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
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
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
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	TM1/TM3/ Subtype 0/ Subtype 2

## 6 Main Test Instruments

Table 3 Main Test Equipments

Equipment Description	Manufacturer	Model	Serial Number	Calibrated until
Power supply	KEITHLEY	2303	1288003	Sept., 27,2013
Universal Radio Communication Tester	R&S	CMU200	117341	Jan., 12,2013
Universal Radio Communication Tester	Agilent	E5515C	MY50260239	Aug., 30,2013
Spectrum Analyzer	Agilent	E4440A	MY49420179	Jul., 17,2013
Signal Analyzer	R&S	FSQ31	200021	Sept., 27,2013
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

Note: All the equipments are calibrated once a year. When it's almost due, we will arrange calibration again before the calibration deadline.



## 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 & Part24.232



## Conducted Power of Transmitter

Table 1 Measurement Results

TEST CONDITIONS (TN/VN)	RF Output Power(Conducted)					
	Channel 25(L) 1851.25MHz		Channel 600(M) 1880.0MHz		Channel 1175(H) 1908.75MHz	
	dBm		dBm		dBm	
	Measured	Limit	Measured	Limit	Measured	Limit
TM1	24.16	33.0	24.15	33.0	24.45	33.0
TM3	24.21	33.0	23.85	33.0	24.06	33.0
Subtype 0	23.75	33.0	23.34	33.0	23.68	33.0
Subtype 2	23.74	33.0	23.42	33.0	23.72	33.0



## Peak-to-Average Ratio

TEST CONDITIONS (TN/VN)	Peak-to-Average Ratio					
	Channel 25(L) 1851.25MHz		Channel 600(M) 1880.0MHz		Channel 1175(H) 1908.75MHz	
	dB		dB		dB	
	Measured	Limit	Measured	Limit	Measured	Limit
TM1	4.48	13	4.52	13	4.45	13
TM3	4.01	13	4.06	13	4.08	13
Subtype 0	4.73	13	4.78	13	4.68	13
Subtype 2	4.88	13	5.07	13	4.97	13



## Effective Isotropic Radiated Power of Transmitter (EIRP)

Table 2 Substitution Results

Test Mode	Freq. [MHz]	Meas. Level [dBm]	Substitution on Antenna Type	SGP [dBm]	Substitution Gain [dBi]	Cable Loss [dB]	Substitution Level (EIRP) [dBm]	FCC limit [dBm]	Result
TM1	1851.25	24.89	Horn Ant.	21.57	4.5	1	25.07	33	Pass
TM1	1880.0	24.88	Horn Ant.	21.18	4.5	1	24.68	33	Pass
TM1	1908.75	25.18	Horn Ant.	21.18	4.8	1	24.98	33	Pass
TM3	1851.25	24.94	Horn Ant.	21.24	4.5	1	24.74	33	Pass
TM3	1880.0	24.58	Horn Ant.	21.14	4.5	1	24.64	33	Pass
TM3	1908.75	24.79	Horn Ant.	20.99	4.8	1	24.79	33	Pass
Subtype 0	1851.25	24.48	Horn Ant.	21.01	4.5	1	24.51	33	Pass
Subtype 0	1880.0	24.07	Horn Ant.	20.37	4.5	1	23.87	33	Pass
Subtype 0	1908.75	24.41	Horn Ant.	20.41	4.8	1	24.21	33	Pass
Subtype 2	1851.25	24.47	Horn Ant.	20.98	4.5	1	24.48	33	Pass
Subtype 2	1880.0	24.15	Horn Ant.	20.75	4.5	1	24.25	33	Pass
Subtype 2	1908.75	24.45	Horn Ant.	20.45	4.8	1	24.25	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

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



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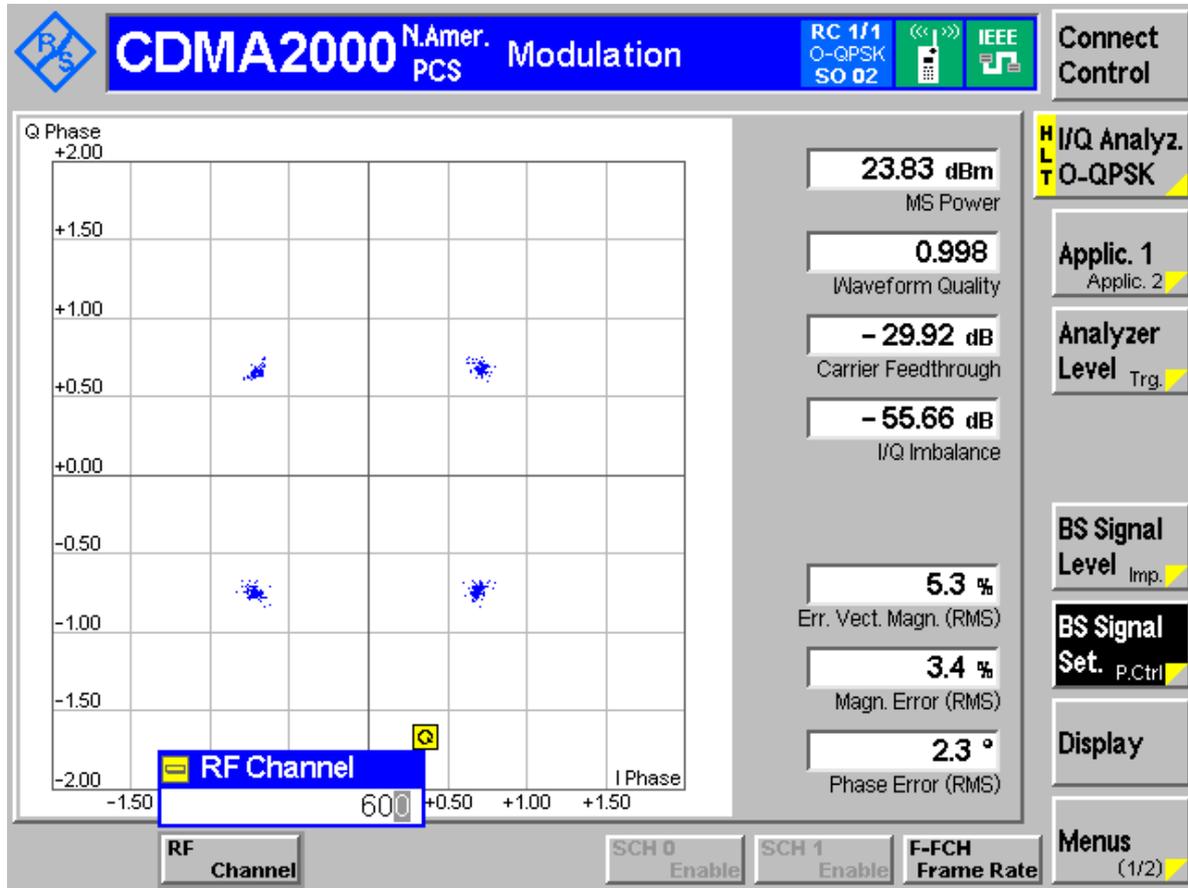
## **Appendix B**

# Modulation Characteristics

According to FCC Part 2.1047& Part 24 Subpart E

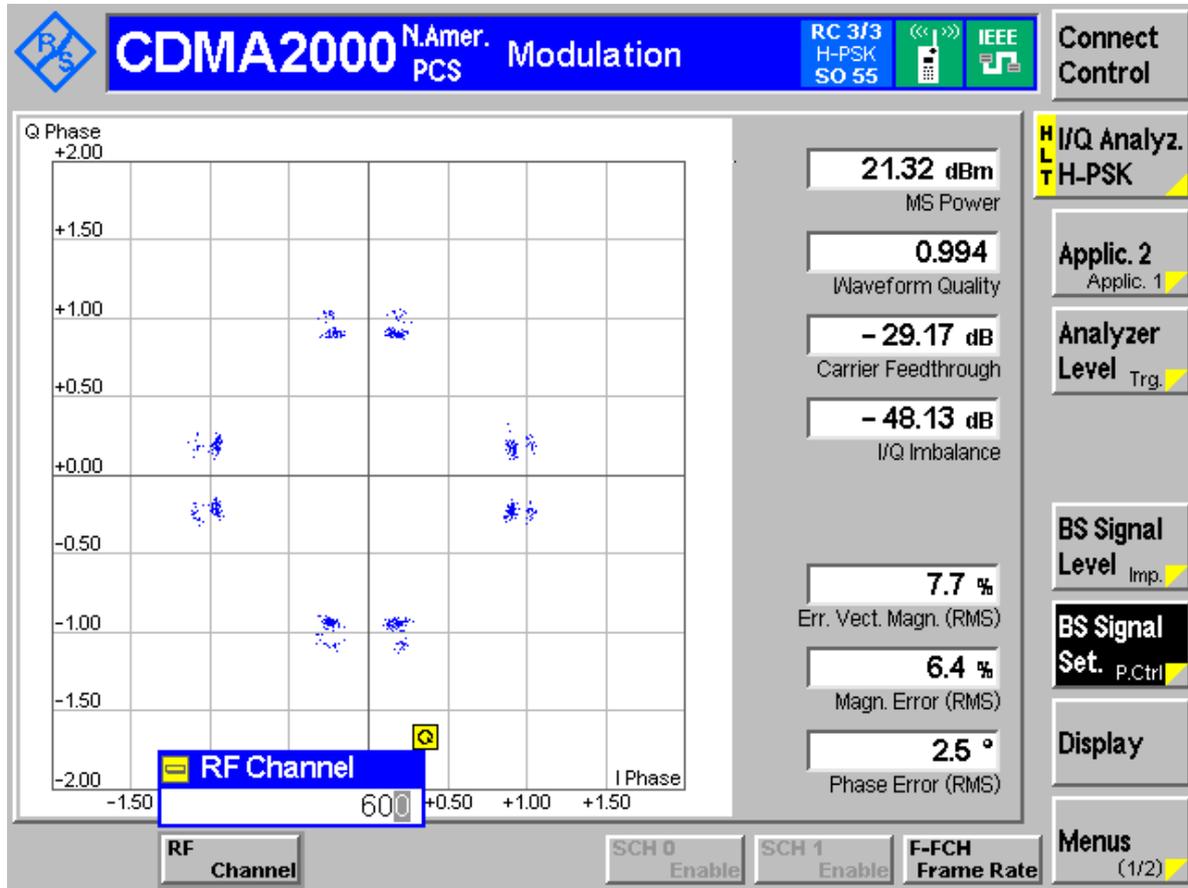


## Channel 600(TM1)



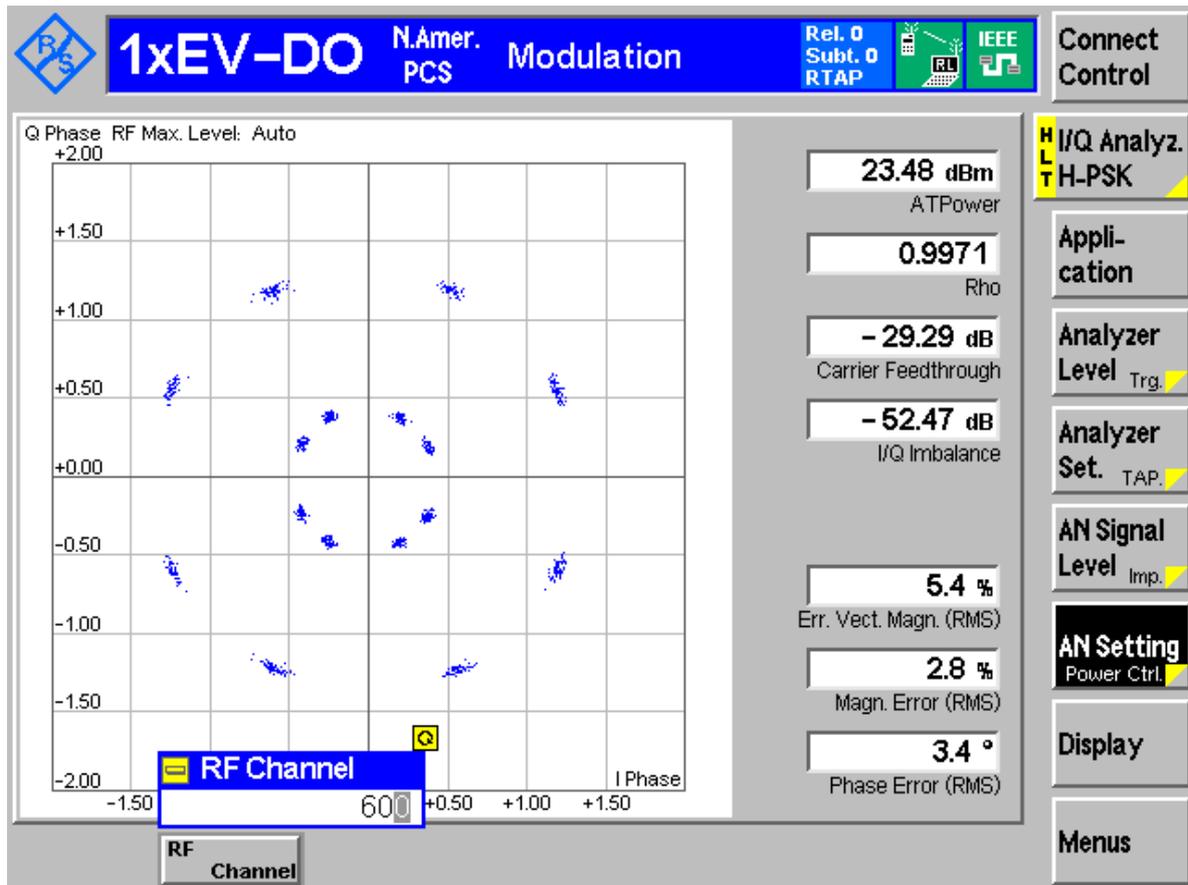


## Channel 600(TM3)





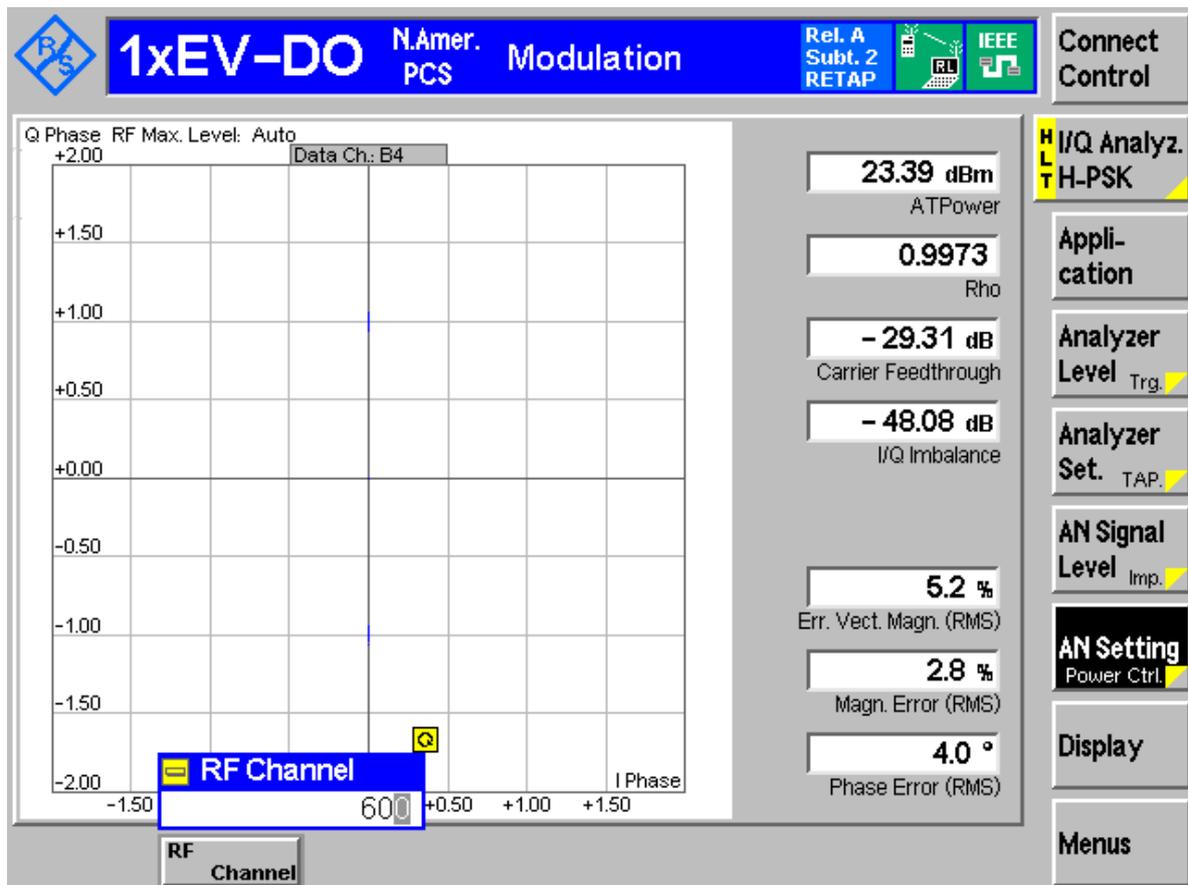
## Channel 600(Subtype 0) (HPSK)





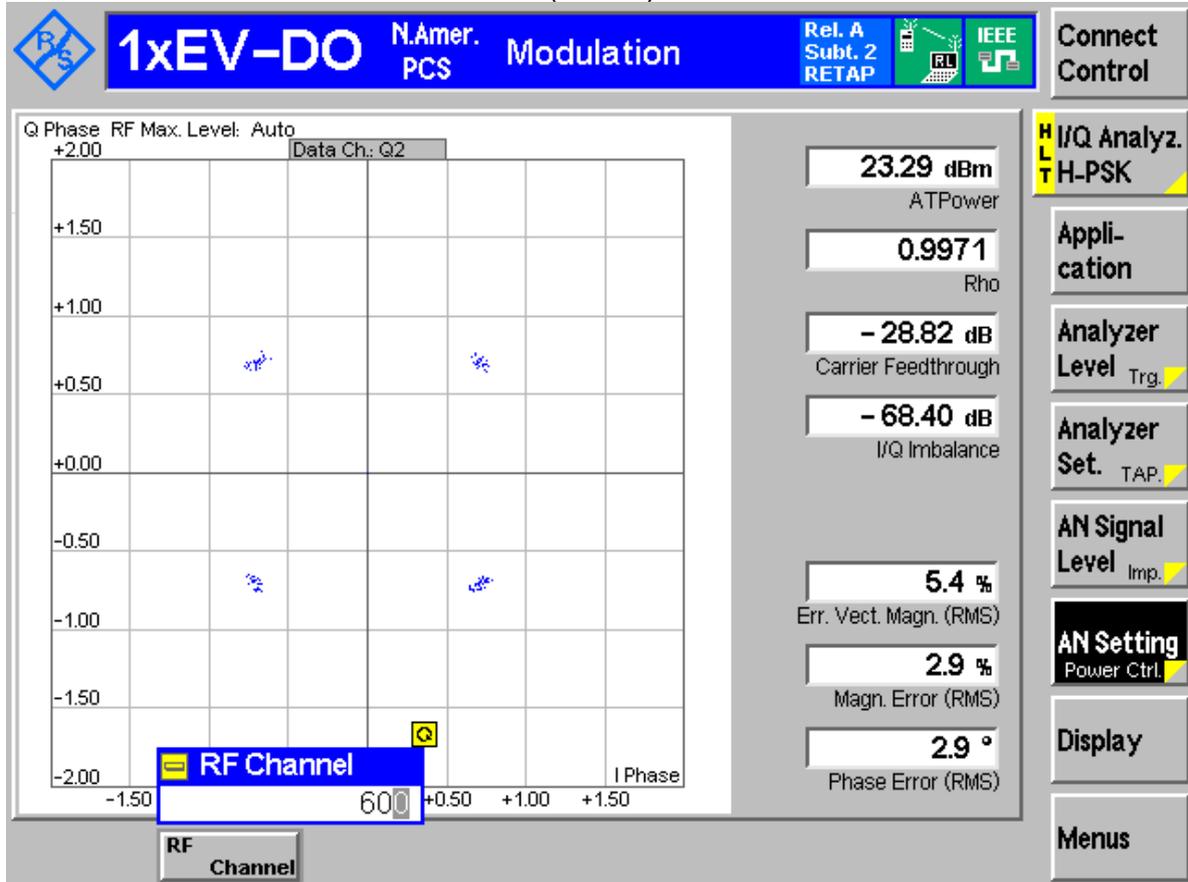
## Channel 600(Subtype 2)

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



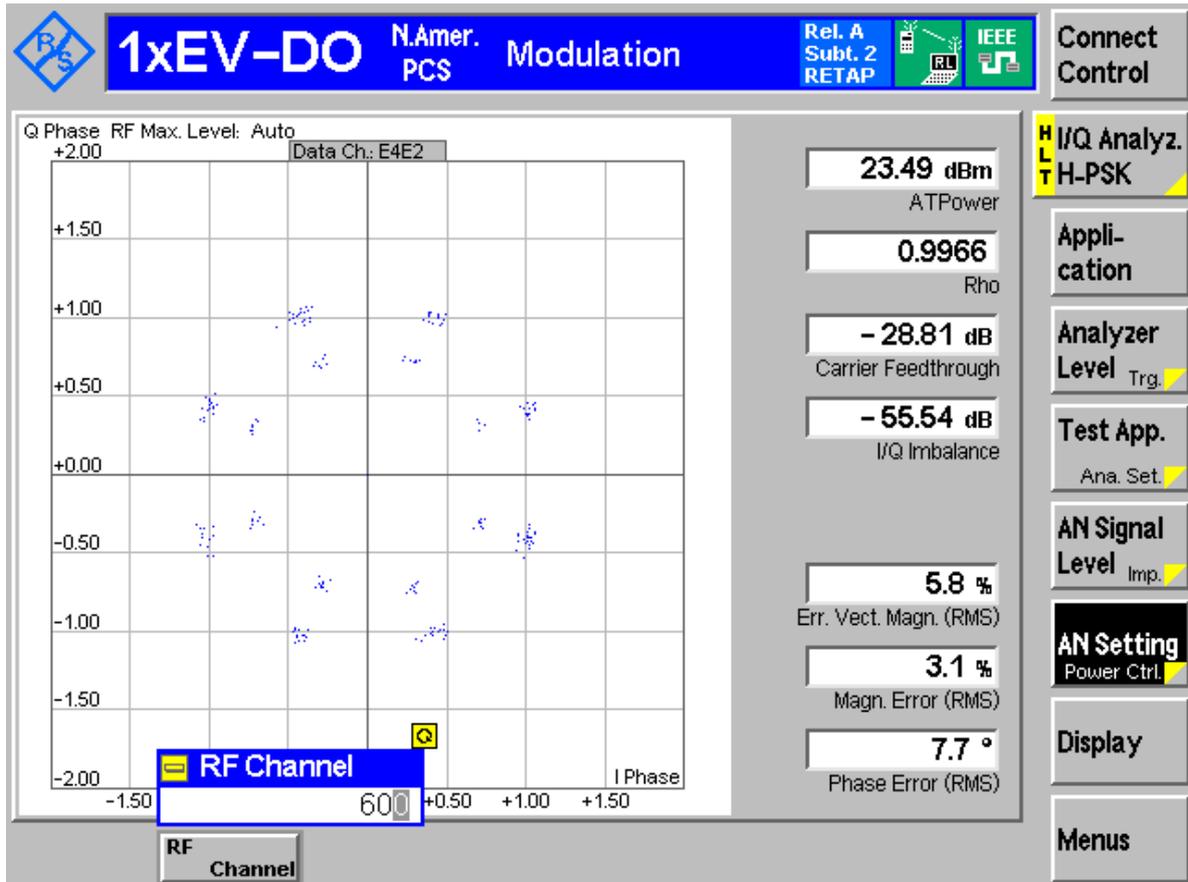


R-Data Pkt Size (4096 bits)  
(QPSK)





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



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



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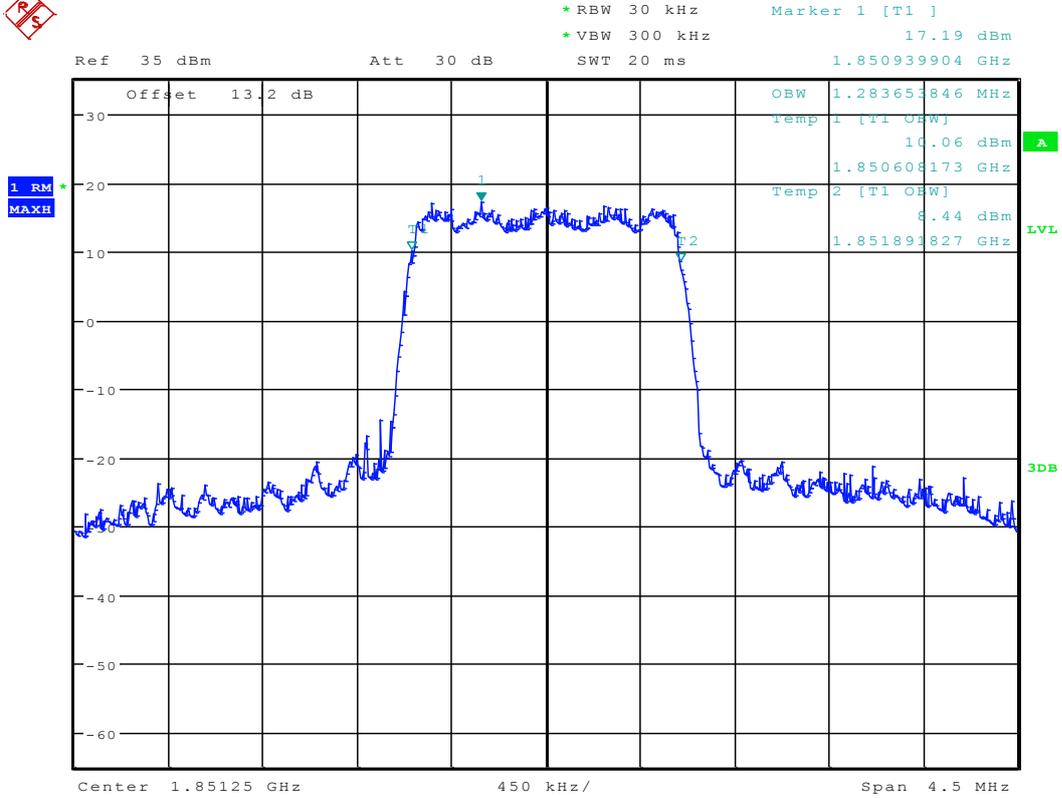
# Appendix C

## Occupied Bandwidth

According to FCC part 2.1049 & Part 24 Subpart E



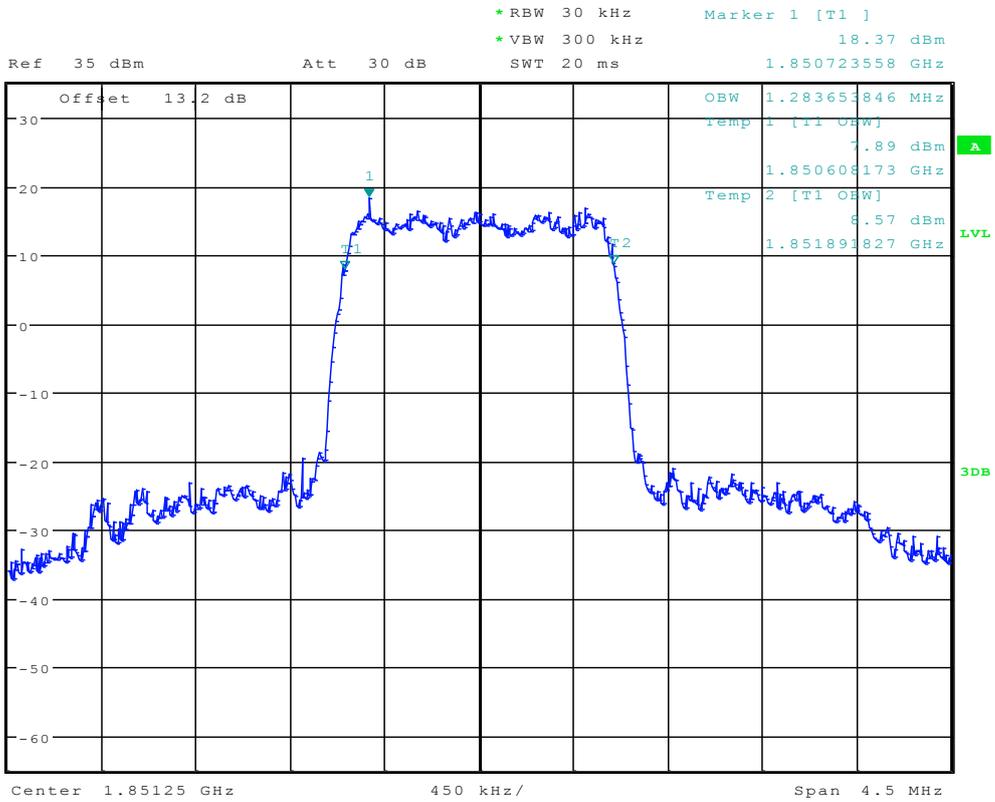
## Channel 25 (TM1)



Date: 7.NOV.2012 22:01:08



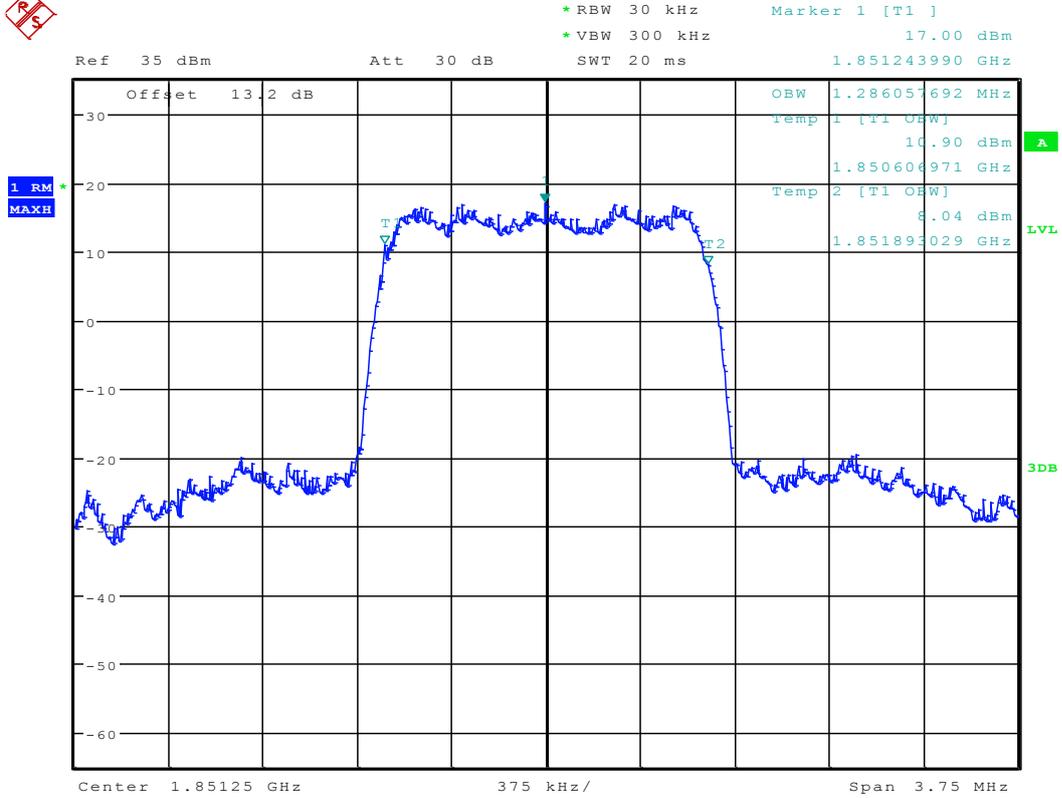
## Channel 25 (TM3)



Date: 7.NOV.2012 22:01:51



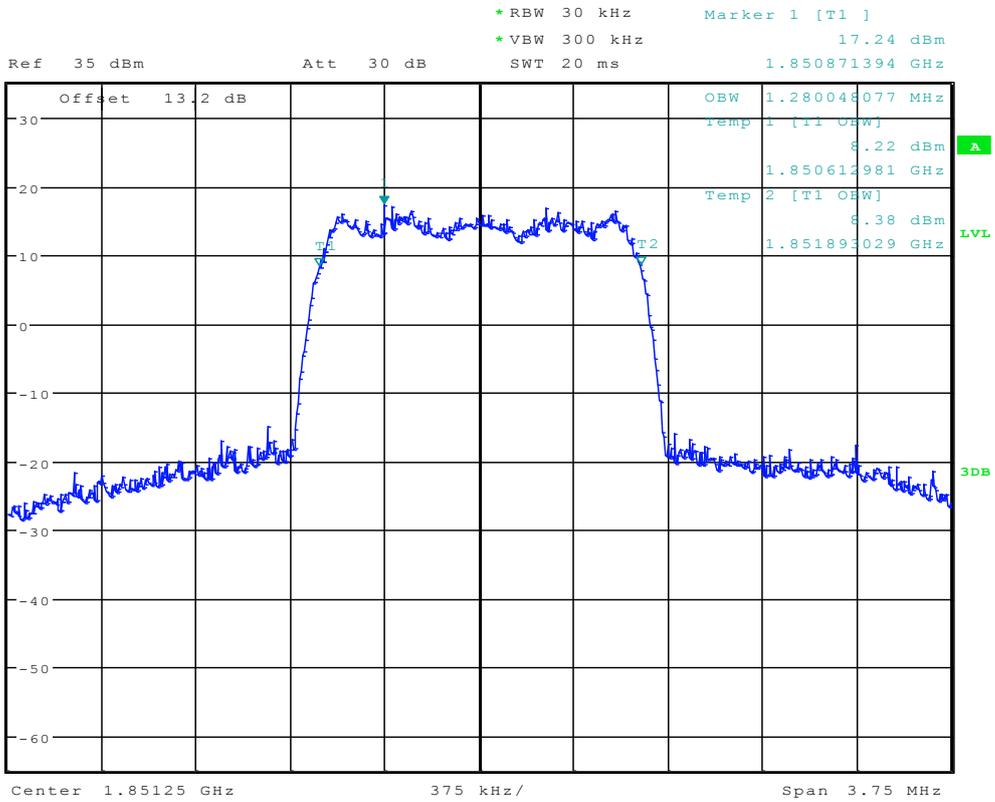
### Channel 25 (EVDO subtype 0)



Date: 7.NOV.2012 22:06:25



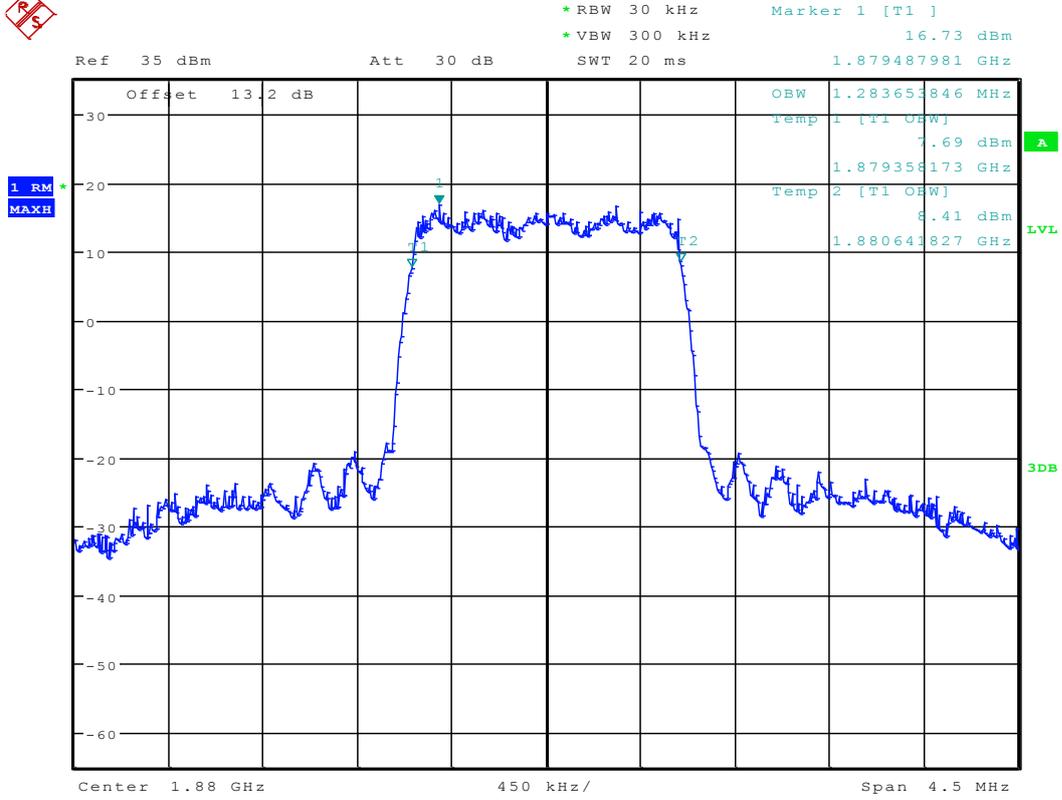
## Channel 25 (EVDO Subtype 2)



Date: 7.NOV.2012 22:11:05



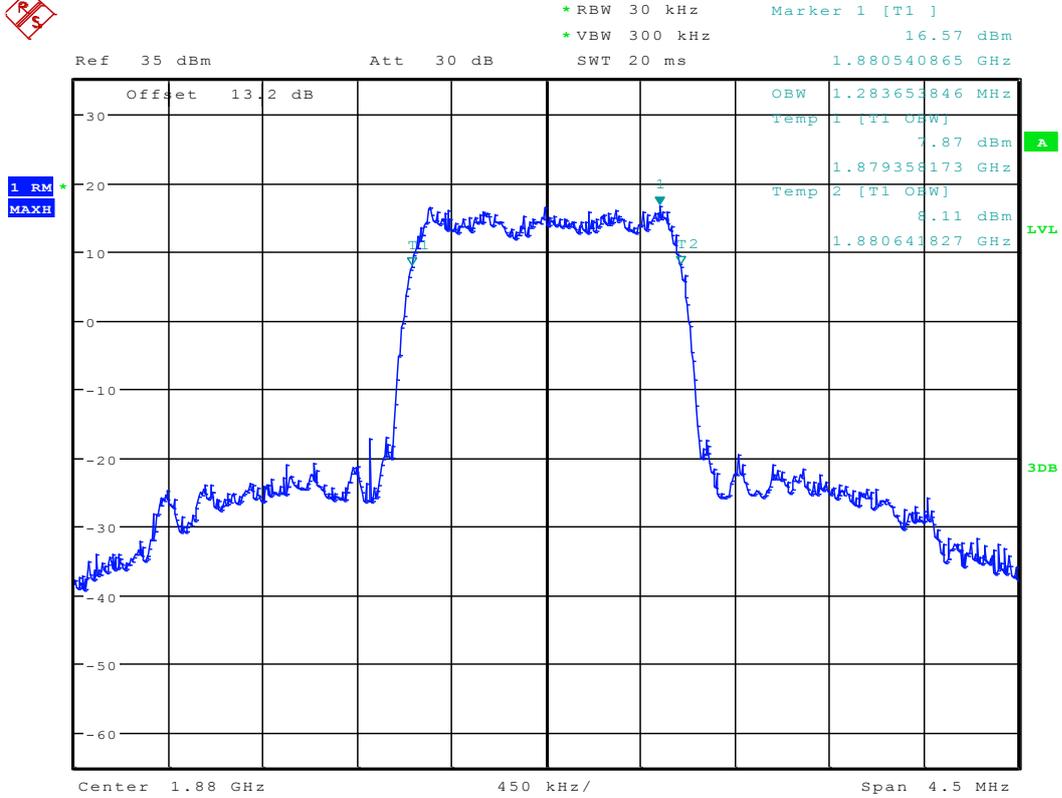
### Channel 600(TM1)



Date: 7.NOV.2012 22:01:22



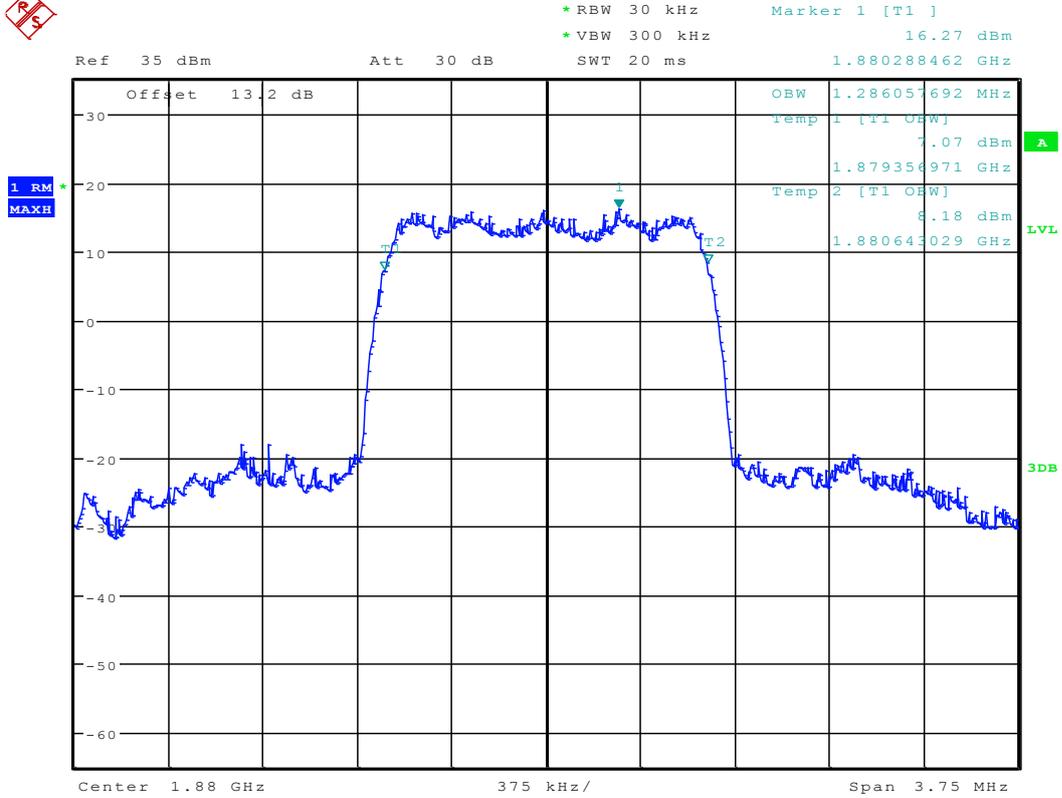
### Channel 600(TM3)



Date: 7.NOV.2012 22:02:05



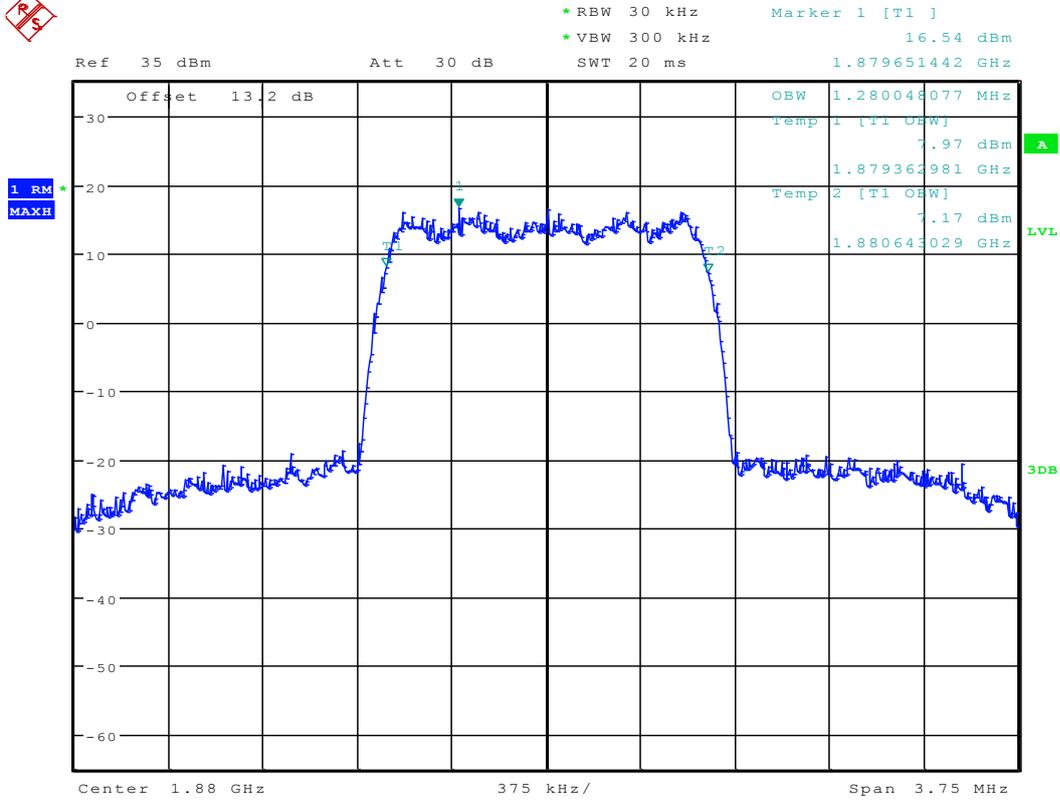
## Channel 600 (EVDO subtype 0)



Date: 7.NOV.2012 22:06:39



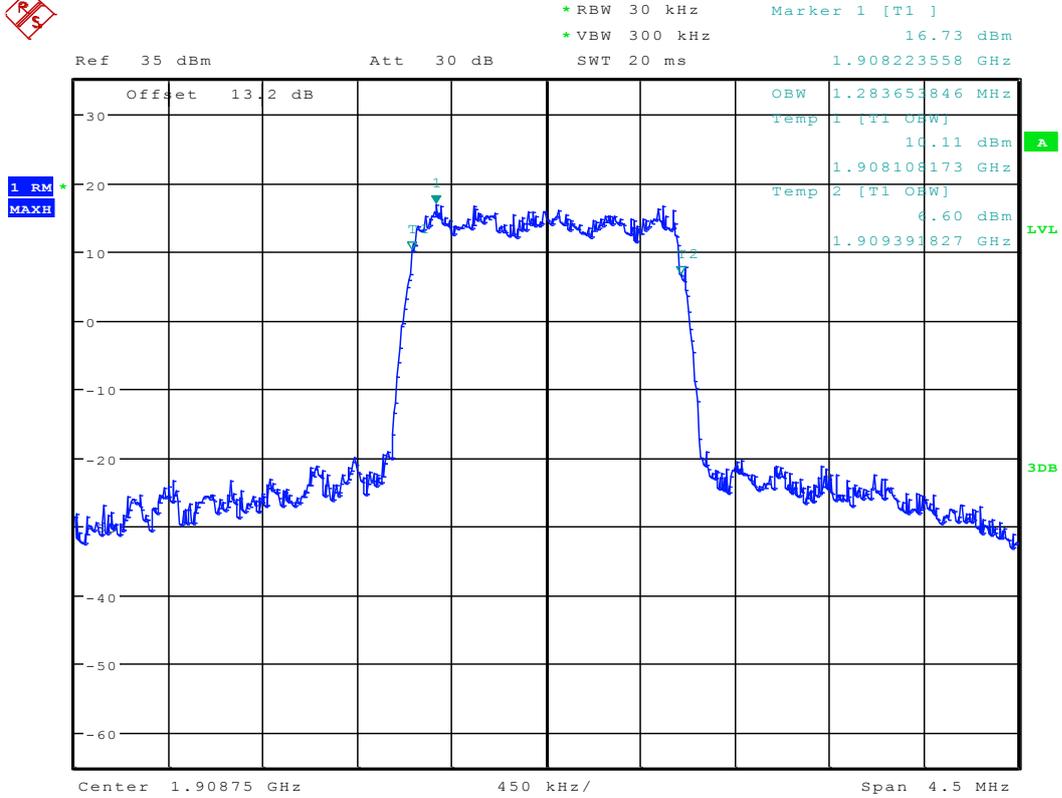
## Channel 600 (EVDO subtype 2)



Date: 7.NOV.2012 22:11:17



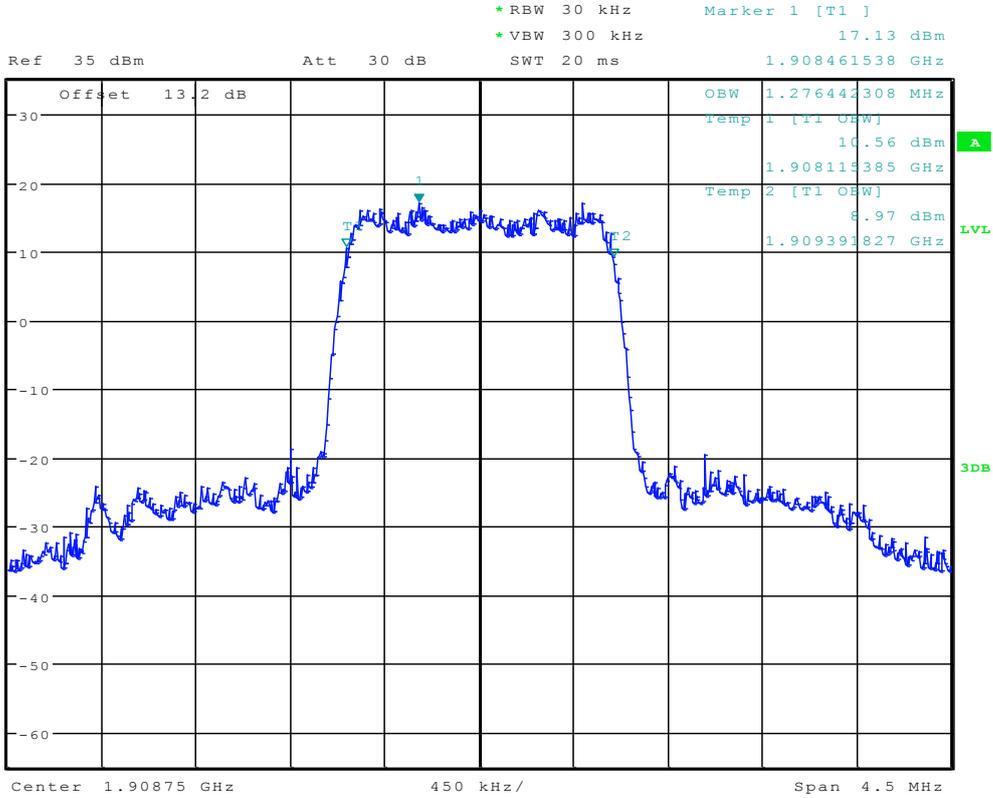
## Channel 1175 (TM1)



Date: 7.NOV.2012 22:01:35



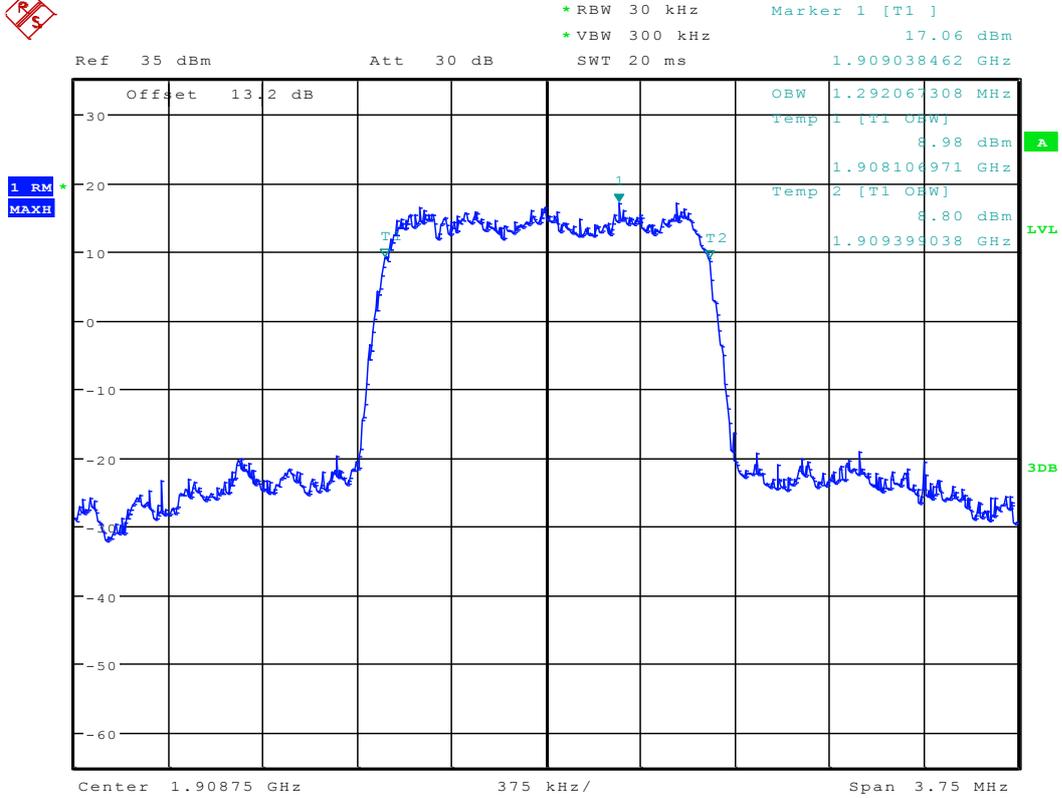
### Channel 1175(TM3)



Date: 7.NOV.2012 22:02:18



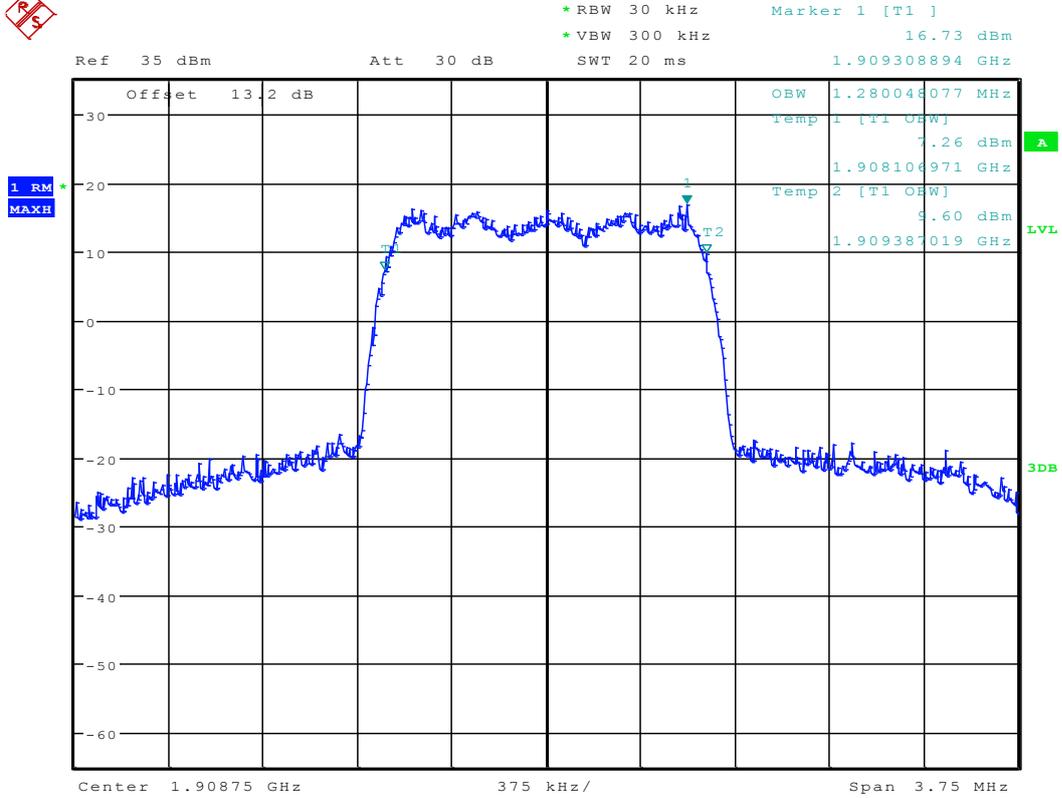
### Channel 1175(EVDO subtype 0)



Date: 7.NOV.2012 22:06:52



## Channel 1175 (EVDO subtype 2)



Date: 7.NOV.2012 22:11:28

-----END-----



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# Appendix C

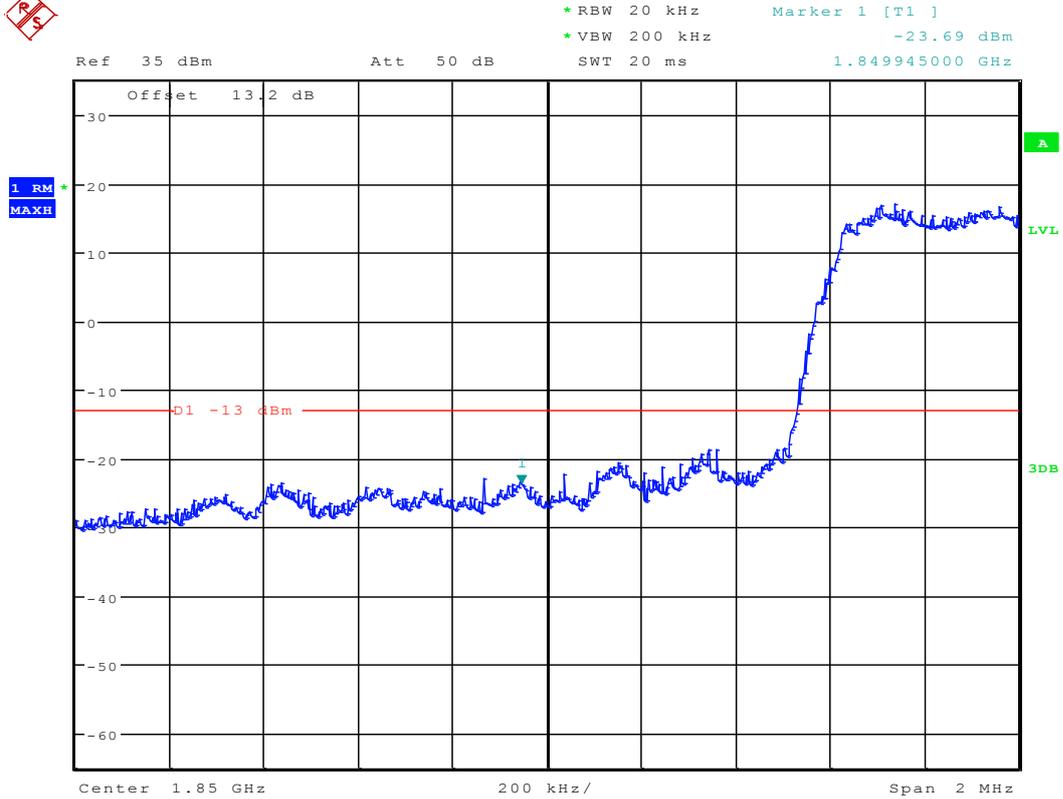
## Band Edges Compliance According to FCC Part 2.1051 & 24.238



# TM1

## Left Edge (1850 MHz)

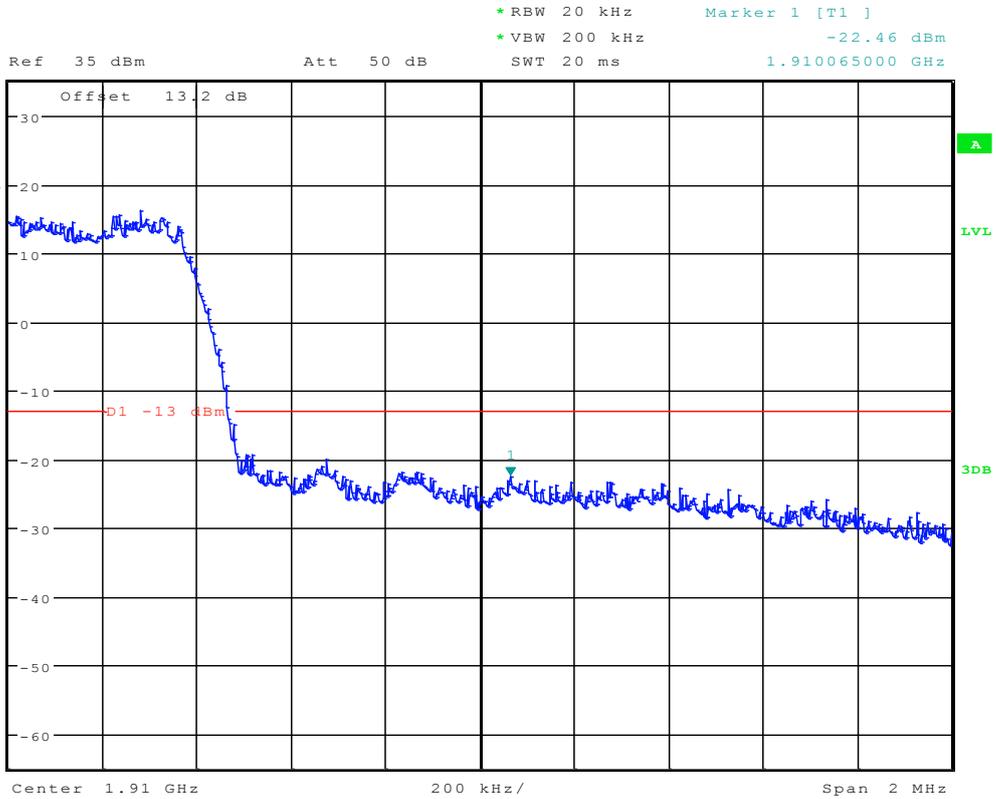
### Channel 25



Date: 7.NOV.2012 22:00:08



### Right Edge (1910MHz) Channel 1175



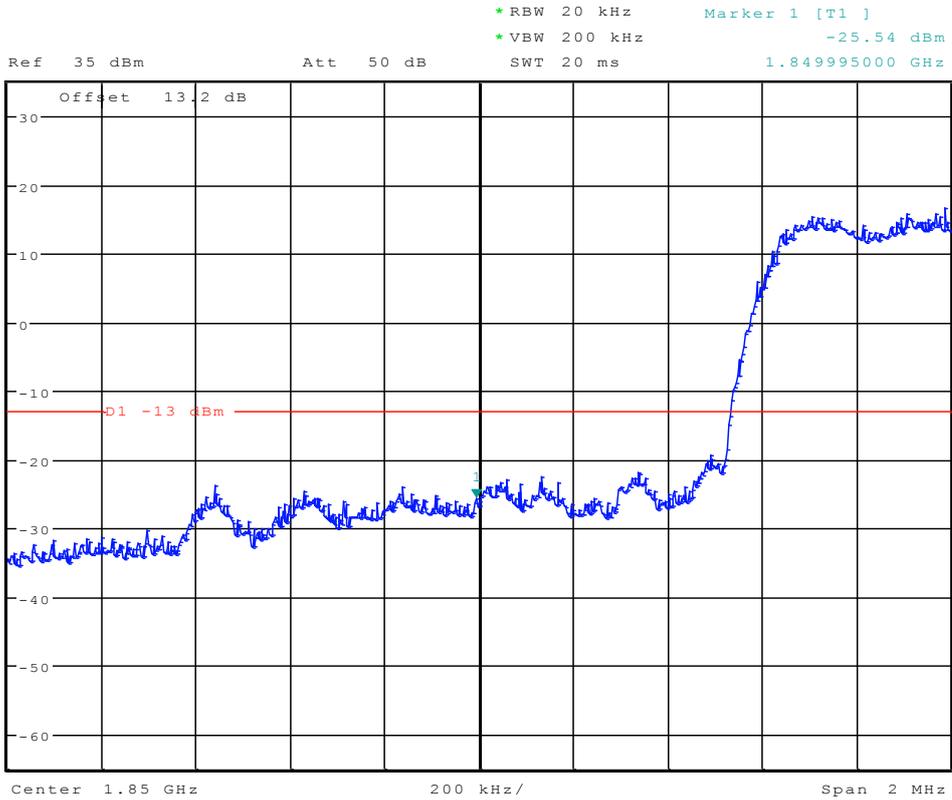
Date: 7.NOV.2012 22:00:22



# TM3

## Left Edge (1850 MHz)

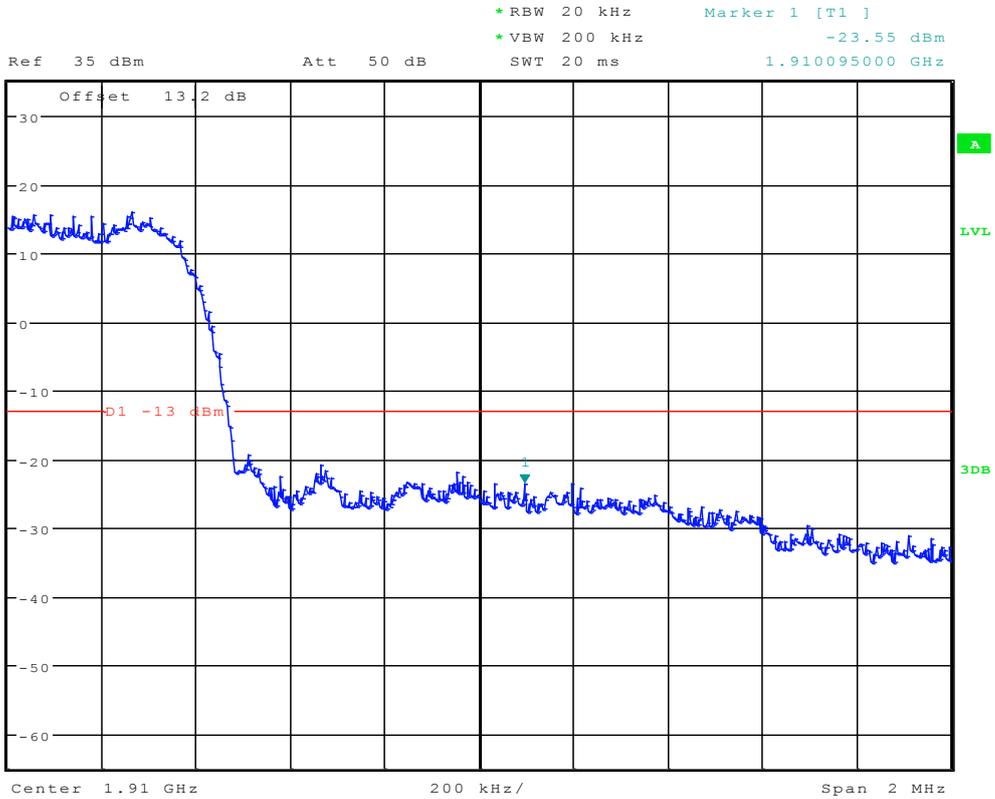
### Channel 25



Date: 7.NOV.2012 22:00:38



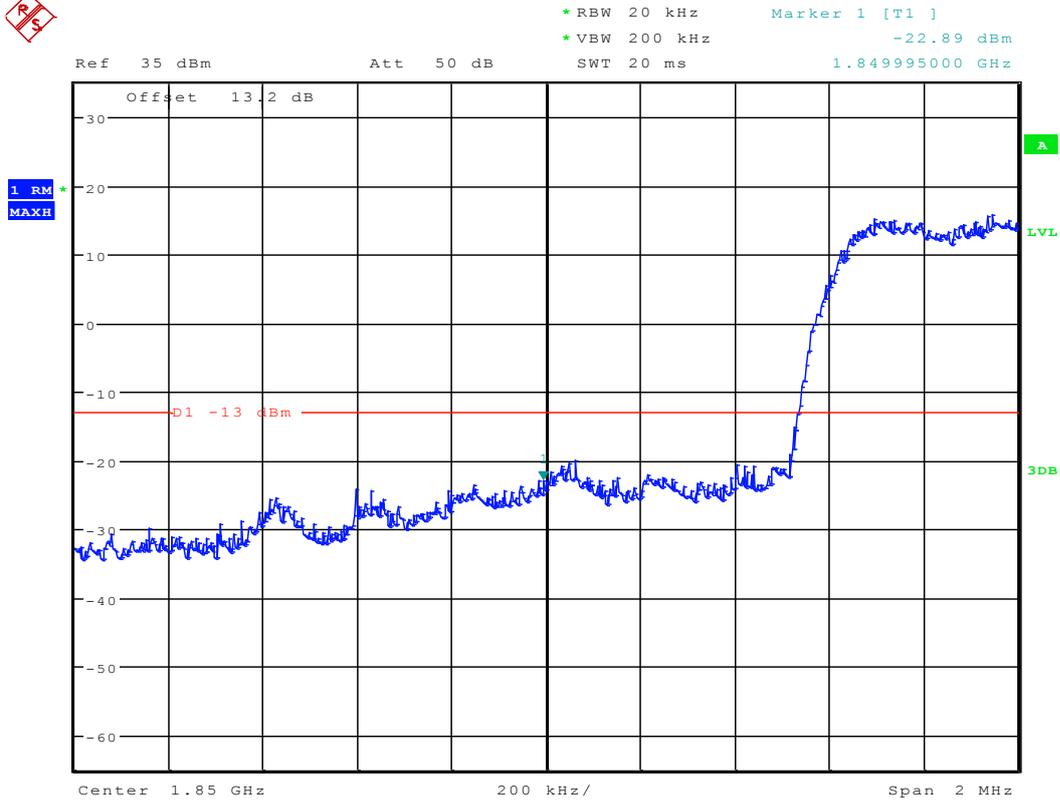
## Right Edge (1910MHz) Channel 1175



Date: 7.NOV.2012 22:00:52



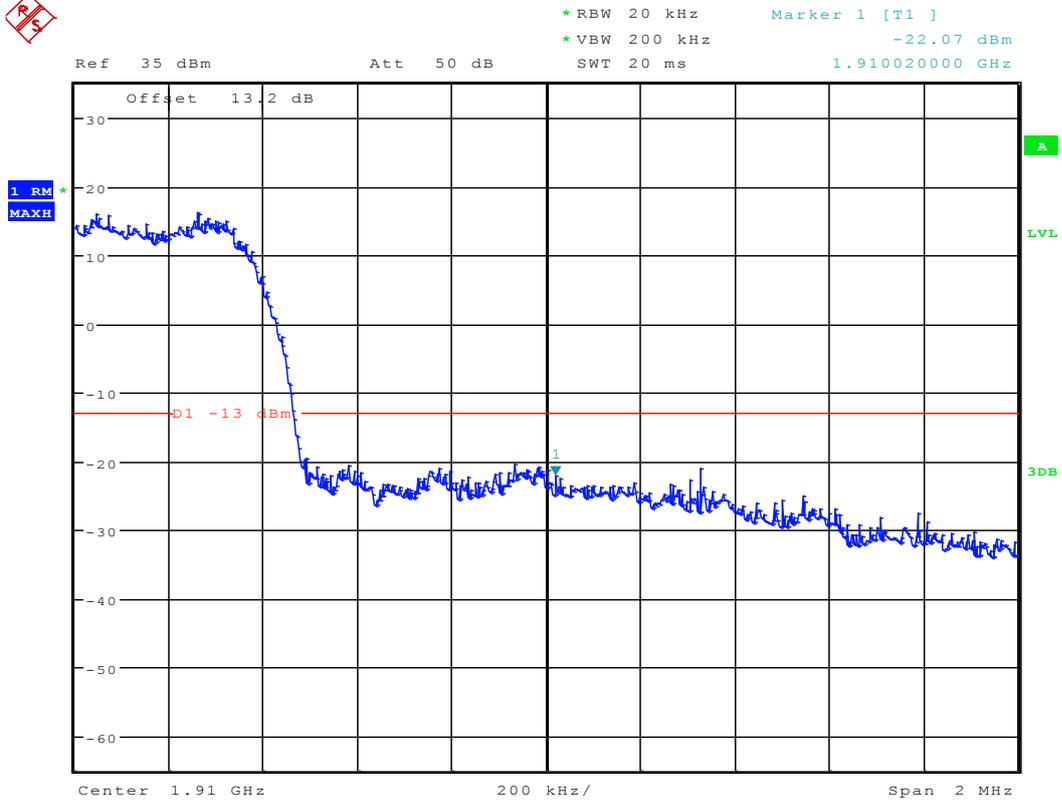
# EVDO subtype 0 Left Edge (1850 MHz) Channel 25



Date: 7.NOV.2012 22:05:55



### Right Edge (1910MHz) Channel 1175



Date: 7.NOV.2012 22:06:08

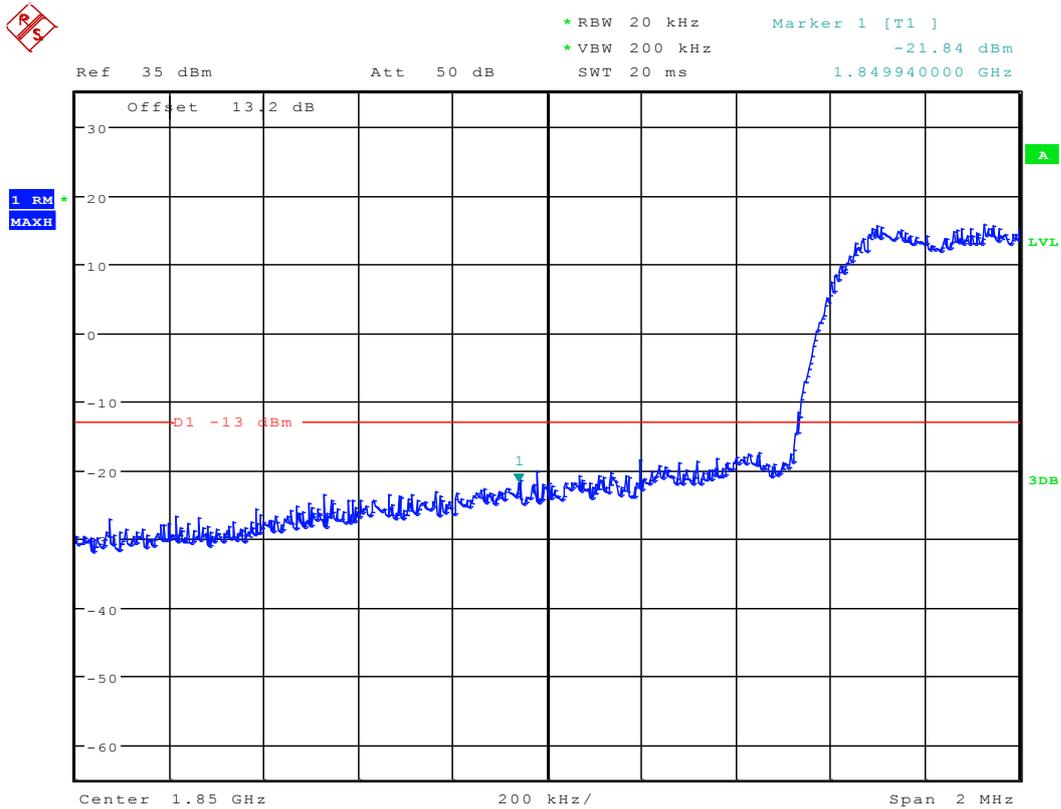


# EVDO subtype 2

## Modulation: BPSK

### Left Edge (1850 MHz)

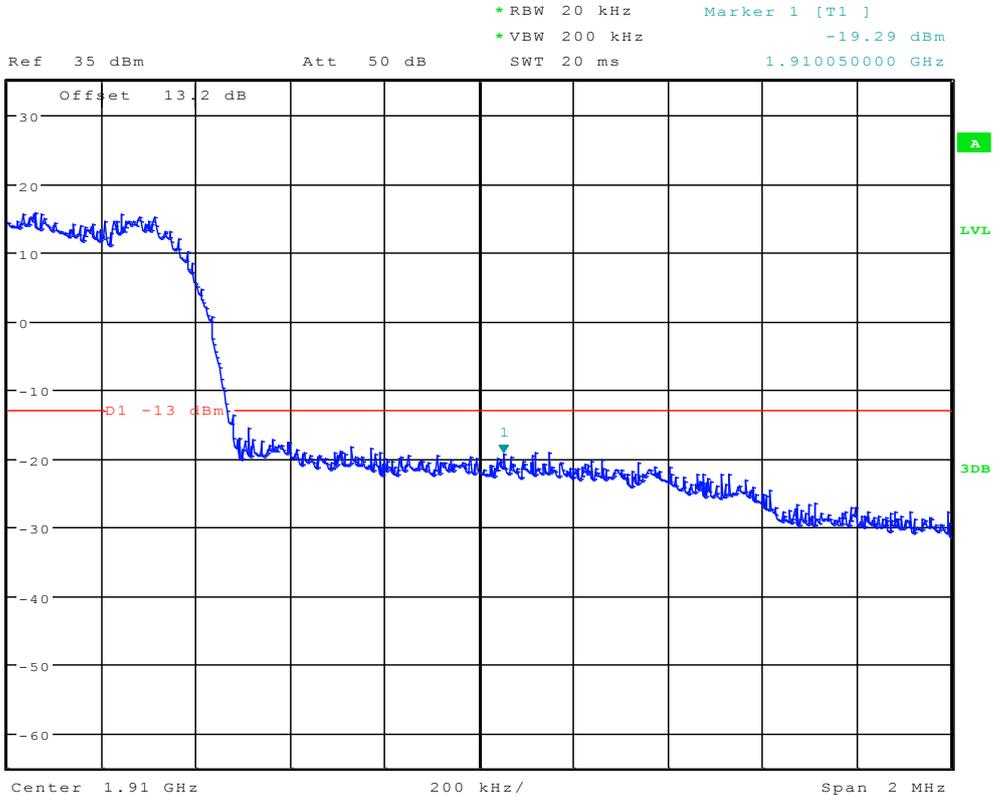
### Channel 25



Date: 7.NOV.2012 22:09:44



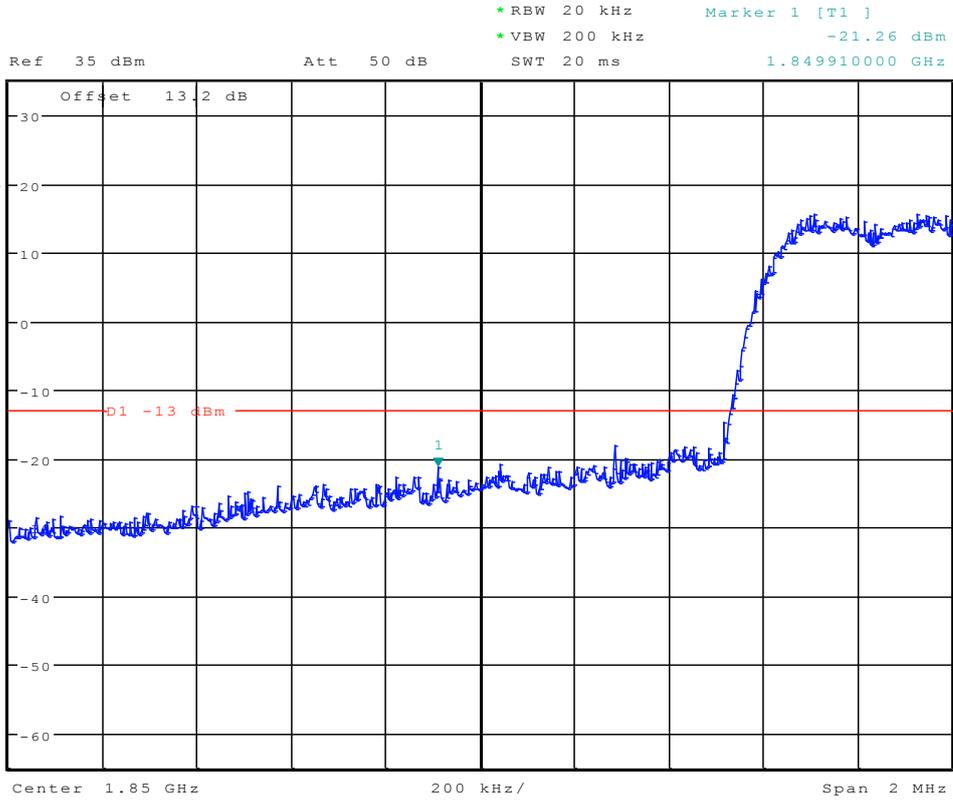
### Right Edge (1910MHz) Channel 1175



Date: 7.NOV.2012 22:09:57



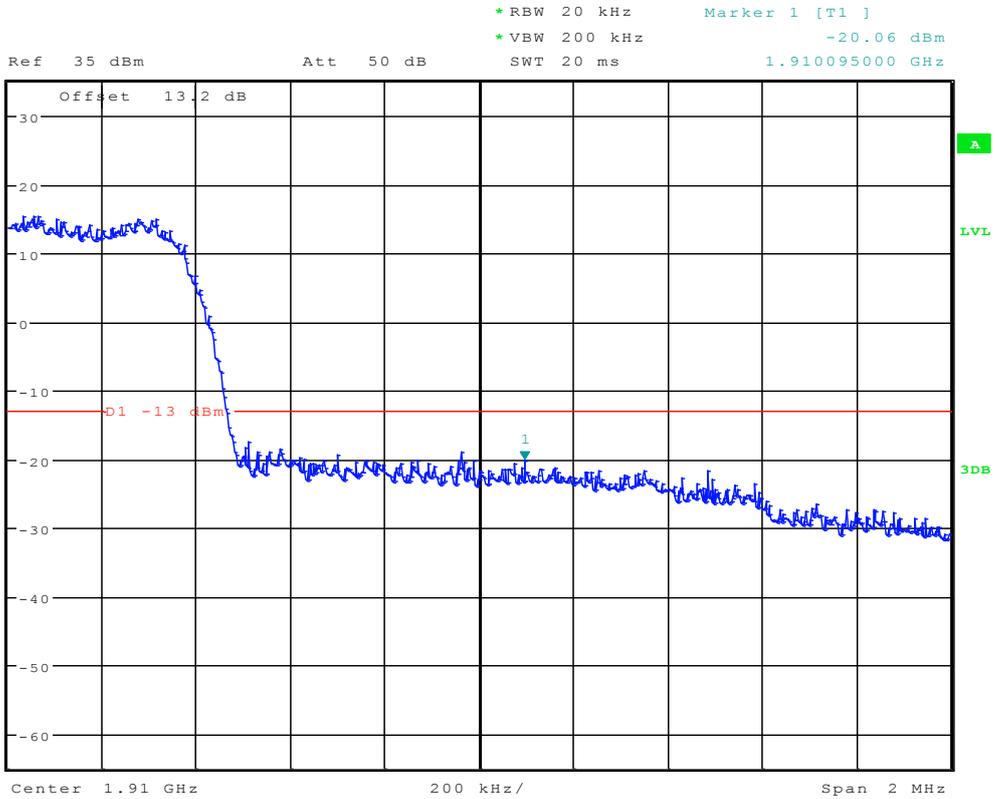
Modulation: QPSK  
Left Edge (1850 MHz)  
Channel 25



Date: 7.NOV.2012 22:10:11



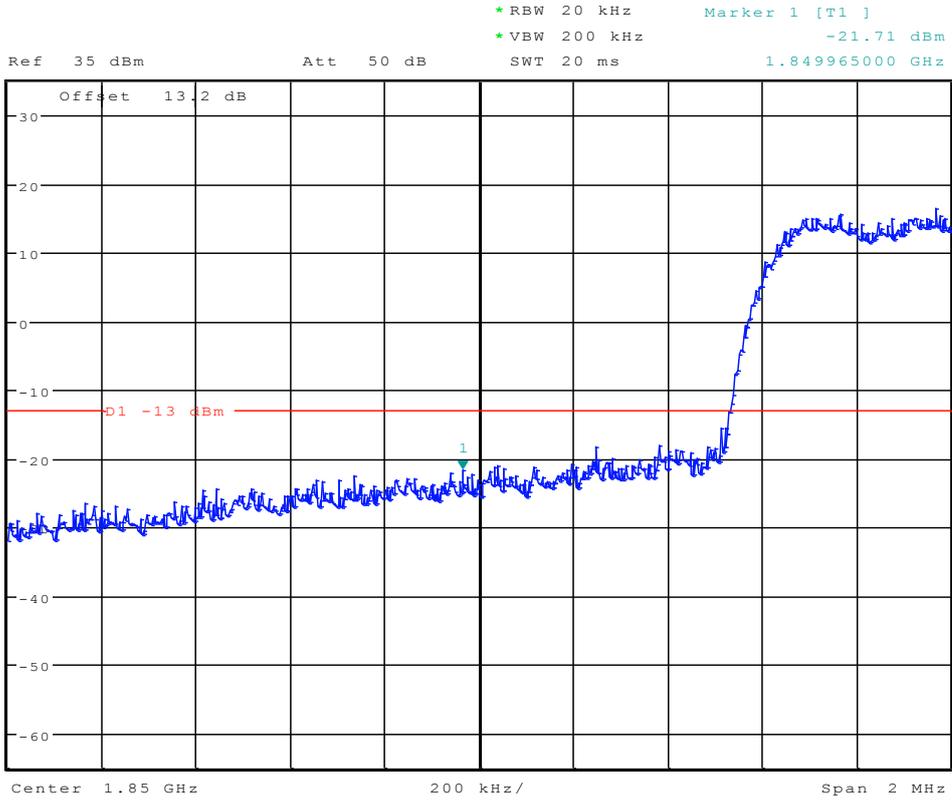
### Right Edge (1910MHz) Channel 1175



Date: 7.NOV.2012 22:10:25



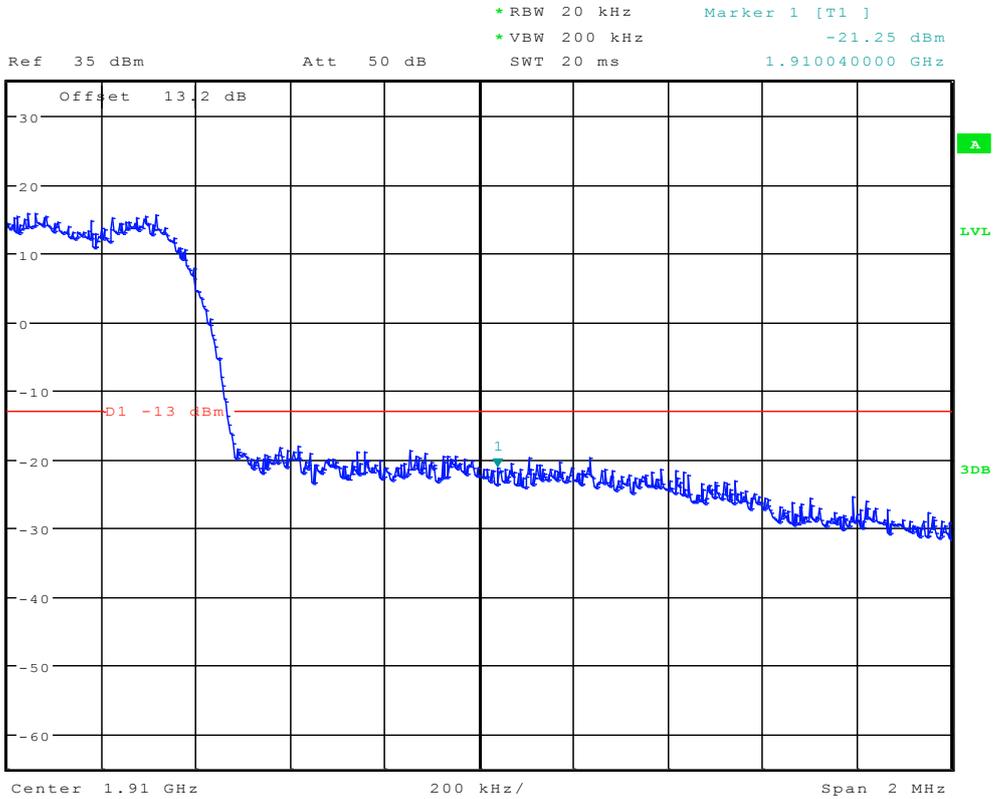
Modulation: 8PSK  
Left Edge (1850 MHz)  
Channel 25



Date: 7.NOV.2012 22:10:38



## Right Edge (1910MHz) Channel 1175



Date: 7.NOV.2012 22:10:52

-----END-----



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# Appendix E

## Spurious Emission at Antenna Terminal

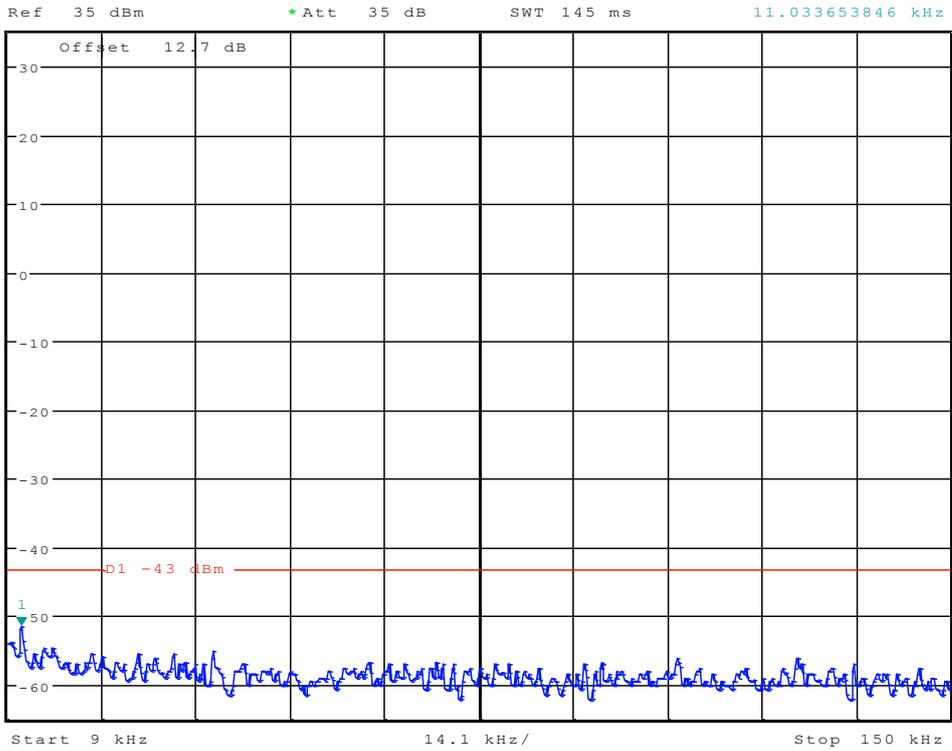
According to FCC Part 2.1051 & 24.238



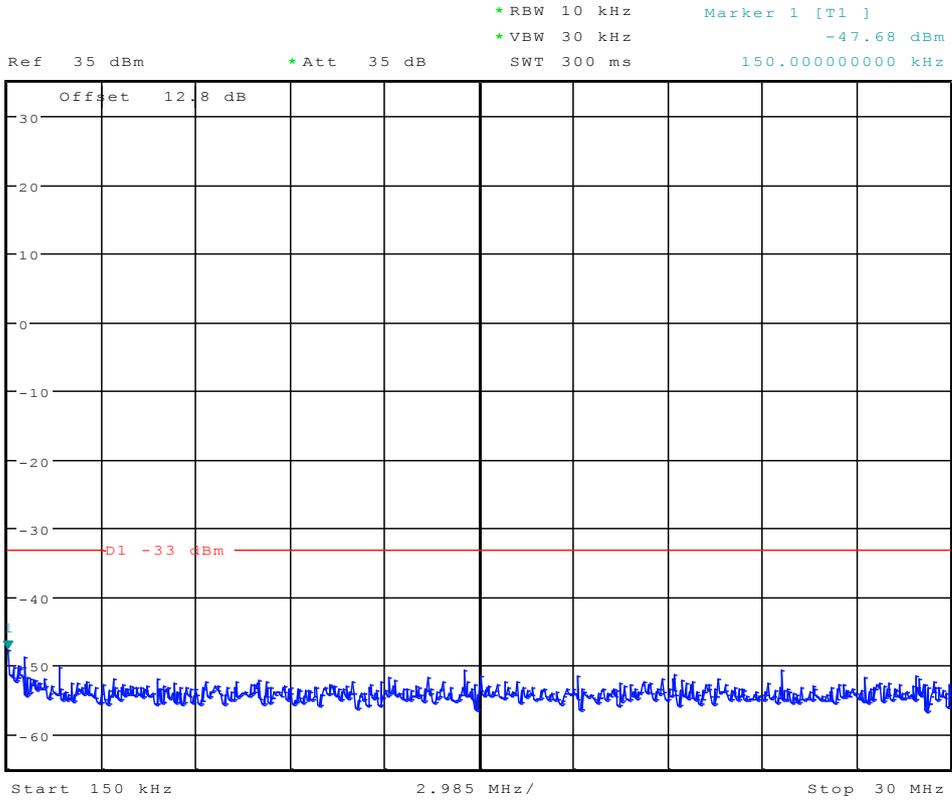
# TM1 Channel 25



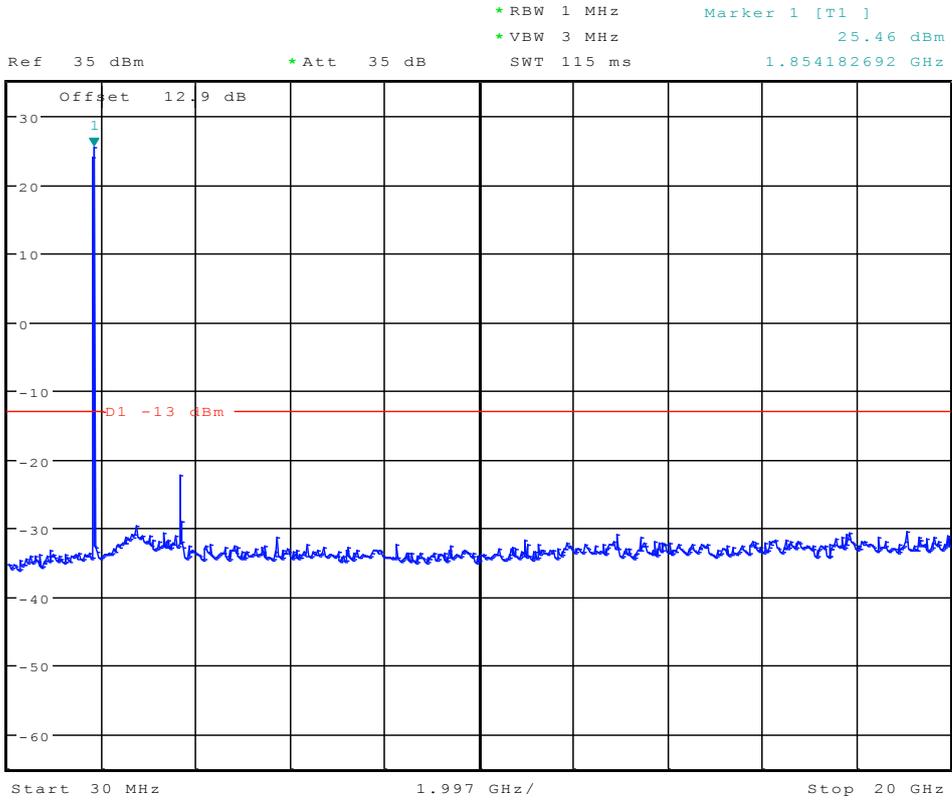
\*RBW 1 kHz      Marker 1 [T1 ]  
\*VBW 10 kHz      -51.39 dBm  
SWT 145 ms      11.033653846 kHz



Date: 7.NOV.2012 22:02:29



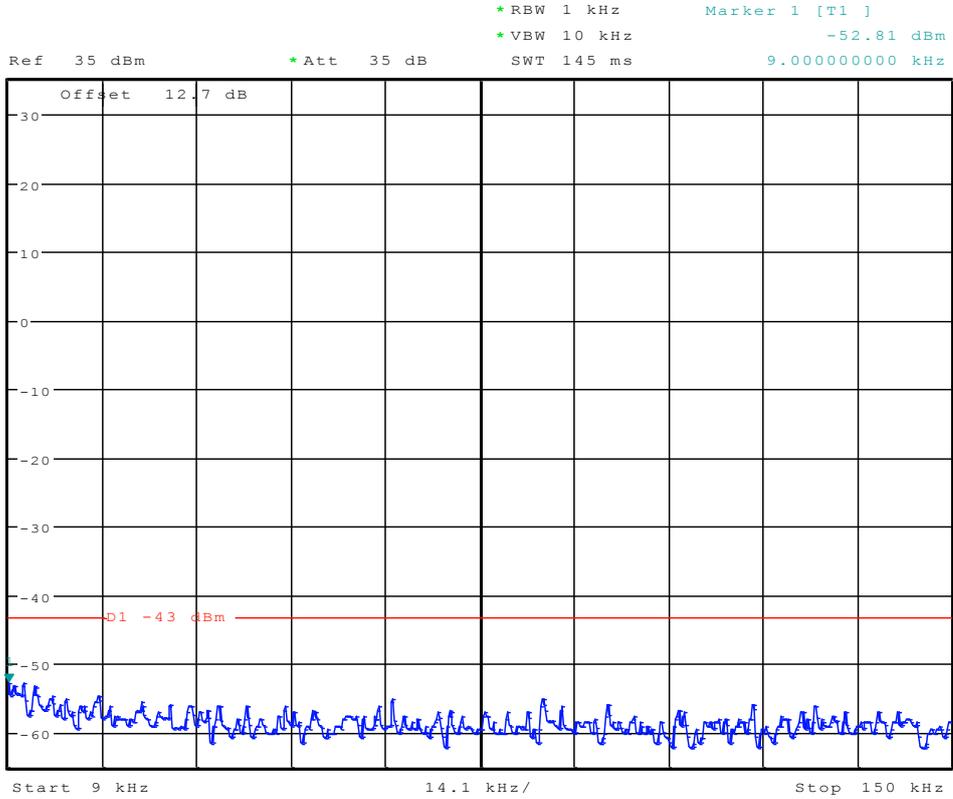
Date: 7.NOV.2012 22:02:55



Date: 7.NOV.2012 22:03:21



## Channel 600



Date: 7.NOV.2012 22:02:38

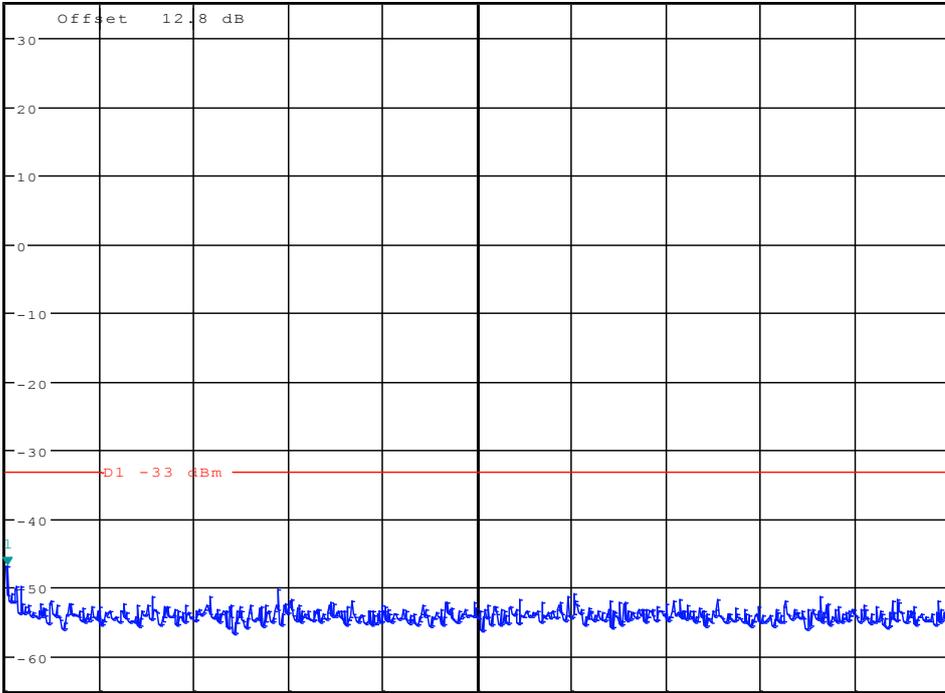


\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -46.74 dBm  
SWT 300 ms      197.836538462 kHz

Ref 35 dBm

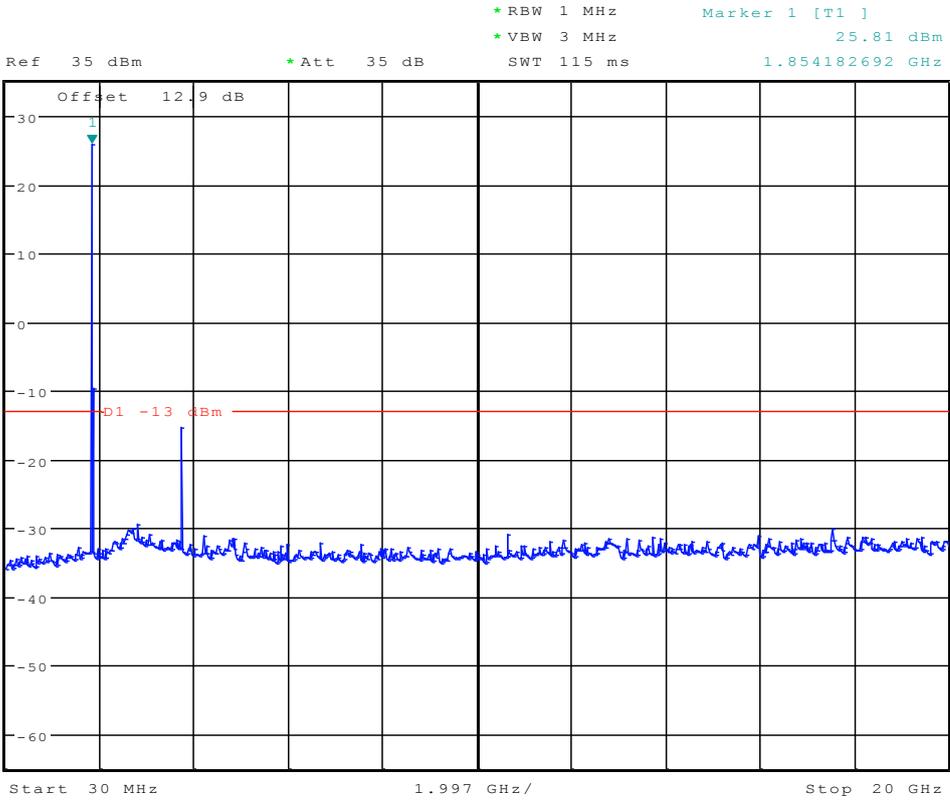
\* Att 35 dB

1 PK  
MAXH



Start 150 kHz      2.985 MHz/      Stop 30 MHz

Date: 7.NOV.2012 22:03:03



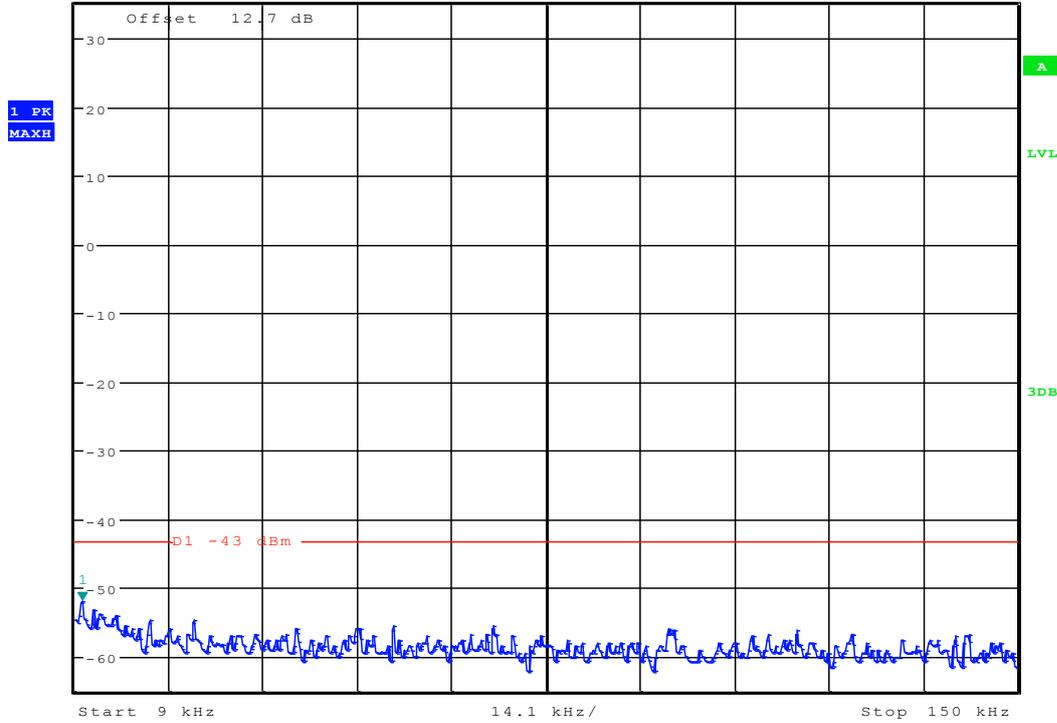
Date: 7.NOV.2012 22:03:29



## Channel 1175



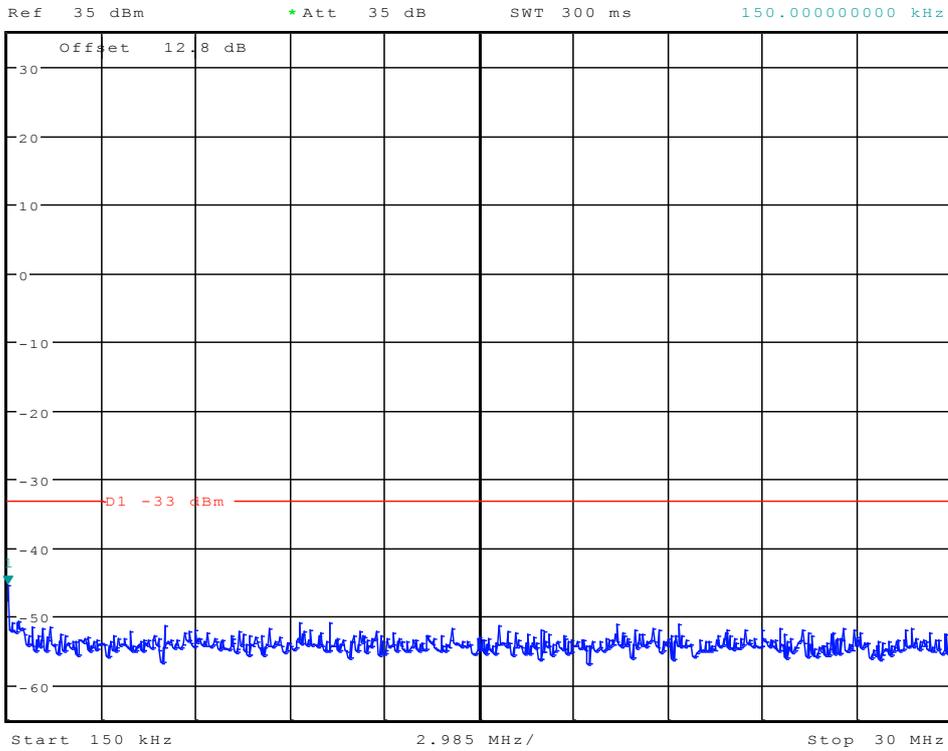
\* RBW 1 kHz      Marker 1 [T1 ]  
\* VBW 10 kHz      -51.87 dBm  
Ref 35 dBm      \* Att 35 dB      SWT 145 ms      10.129807692 kHz



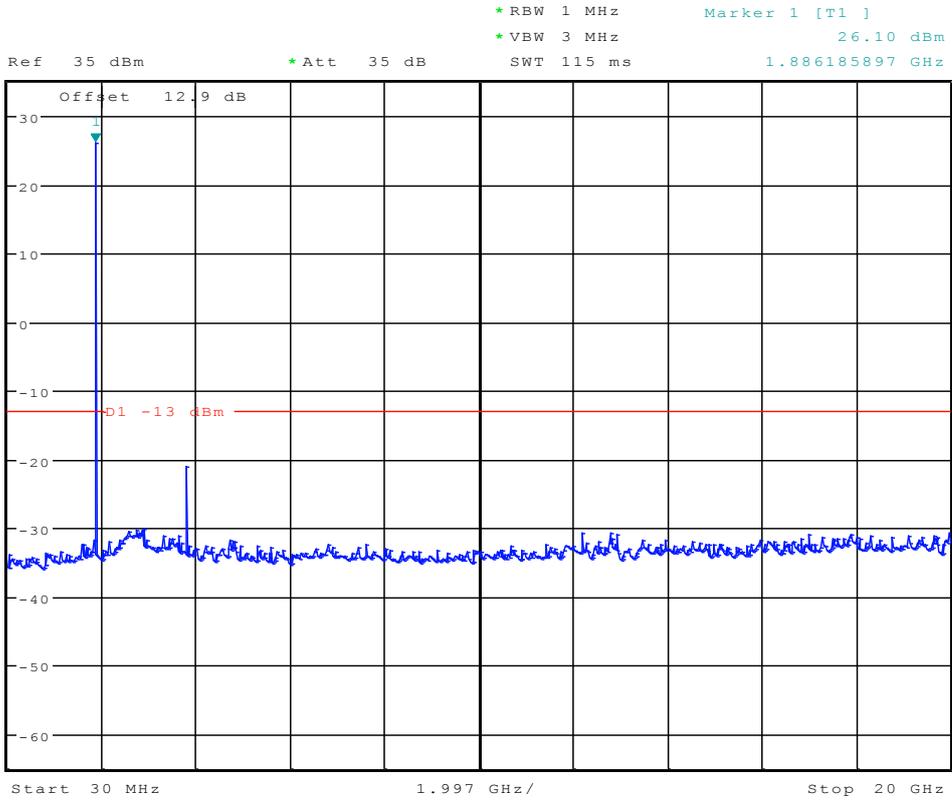
Date: 7.NOV.2012 22:02:46



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -45.32 dBm  
SWT 300 ms      150.00000000 kHz



Date: 7.NOV.2012 22:03:12



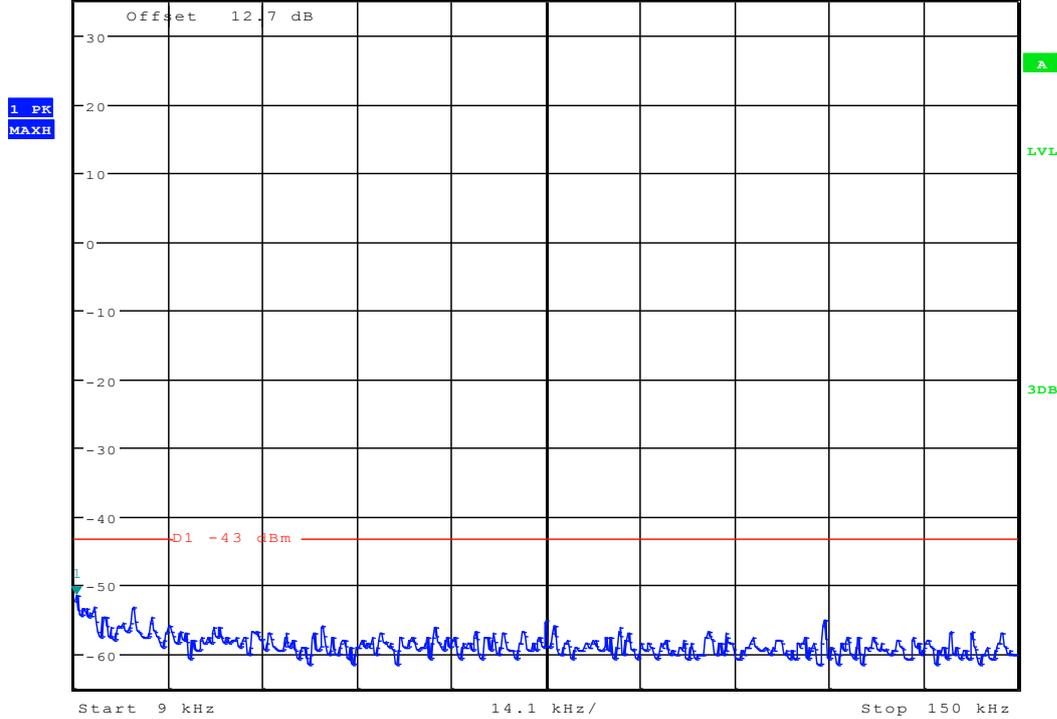
Date: 7.NOV.2012 22:03:38



# TM3 Channel 25



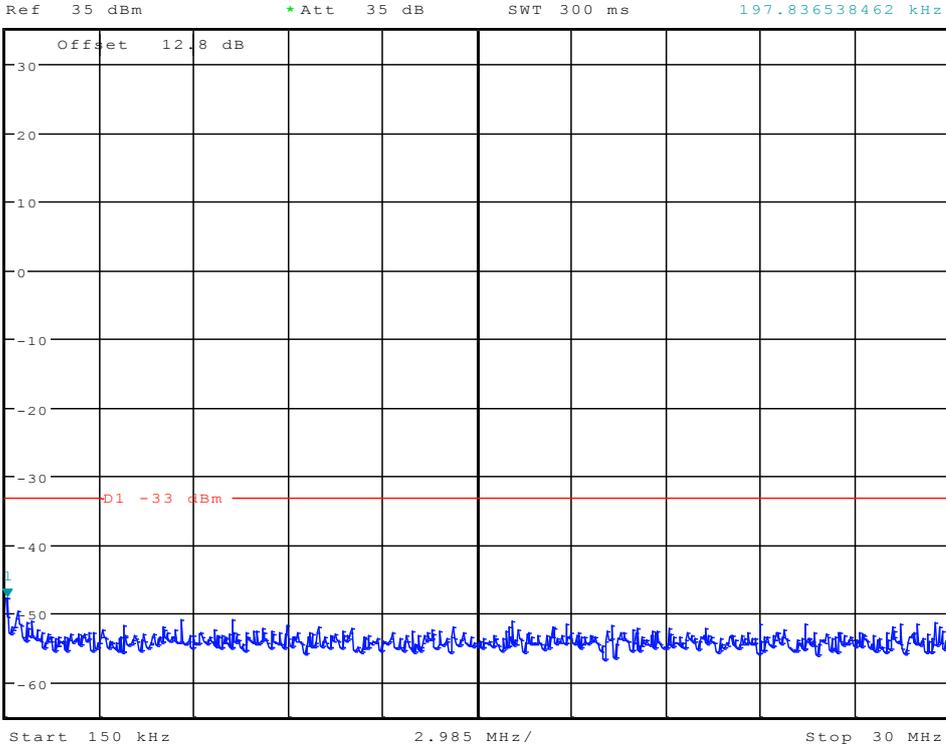
\* RBW 1 kHz                      Marker 1 [T1 ]  
 \* VBW 10 kHz                     -51.39 dBm  
 Ref 35 dBm                        \* Att 35 dB                      SWT 145 ms                      9.225961538 kHz



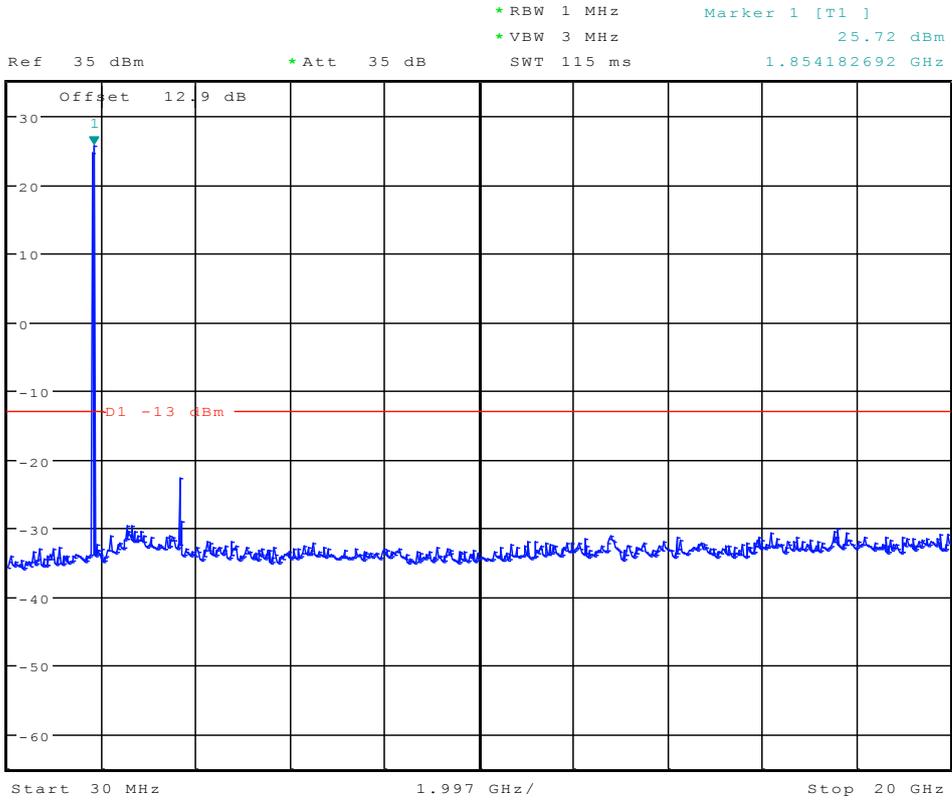
Date: 7.NOV.2012 22:03:48



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -47.68 dBm  
SWT 300 ms      197.836538462 kHz



Date: 7.NOV.2012 22:04:14



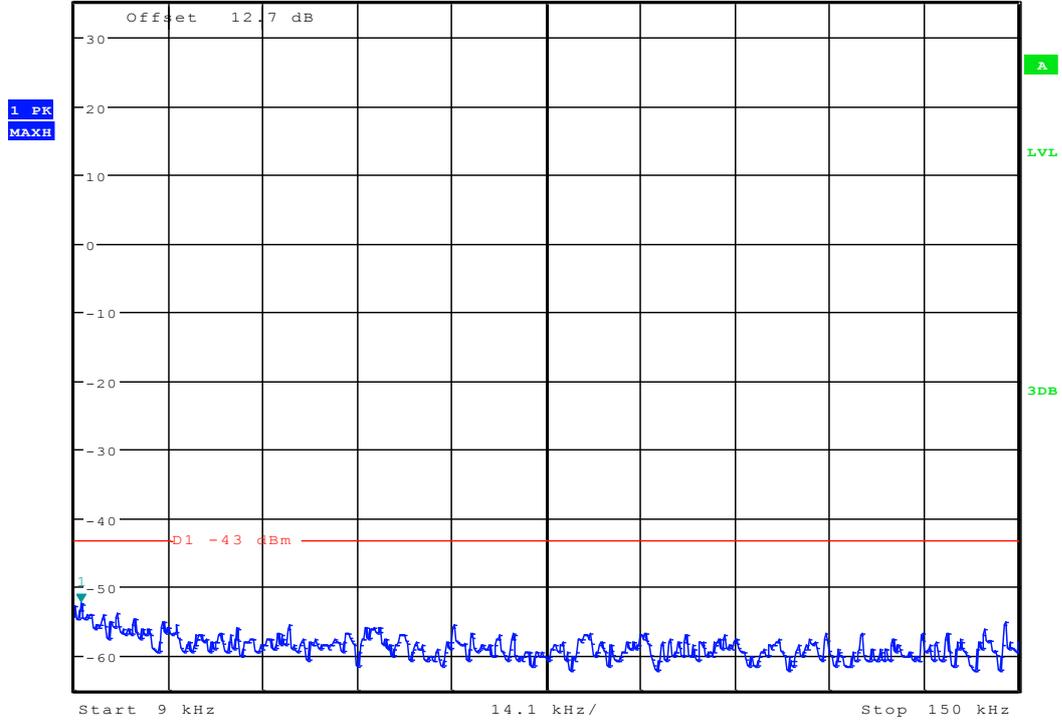
Date: 7.NOV.2012 22:04:39



## Channel 600



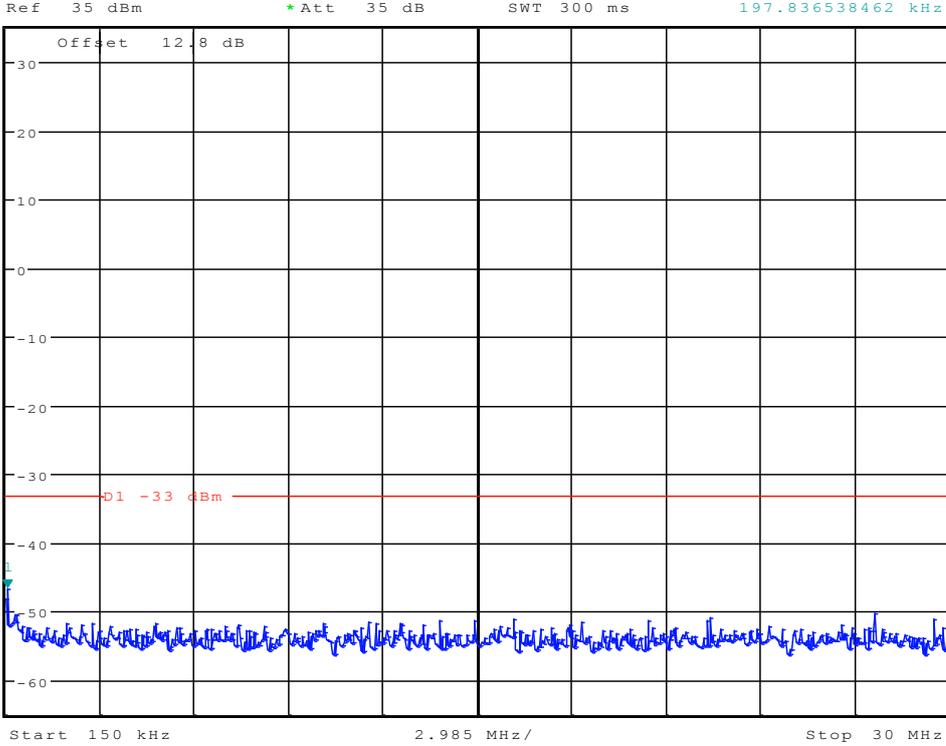
\* RBW 1 kHz      Marker 1 [T1 ]  
 \* VBW 10 kHz      -52.28 dBm  
 Ref 35 dBm      \* Att 35 dB      SWT 145 ms      9.903846154 kHz



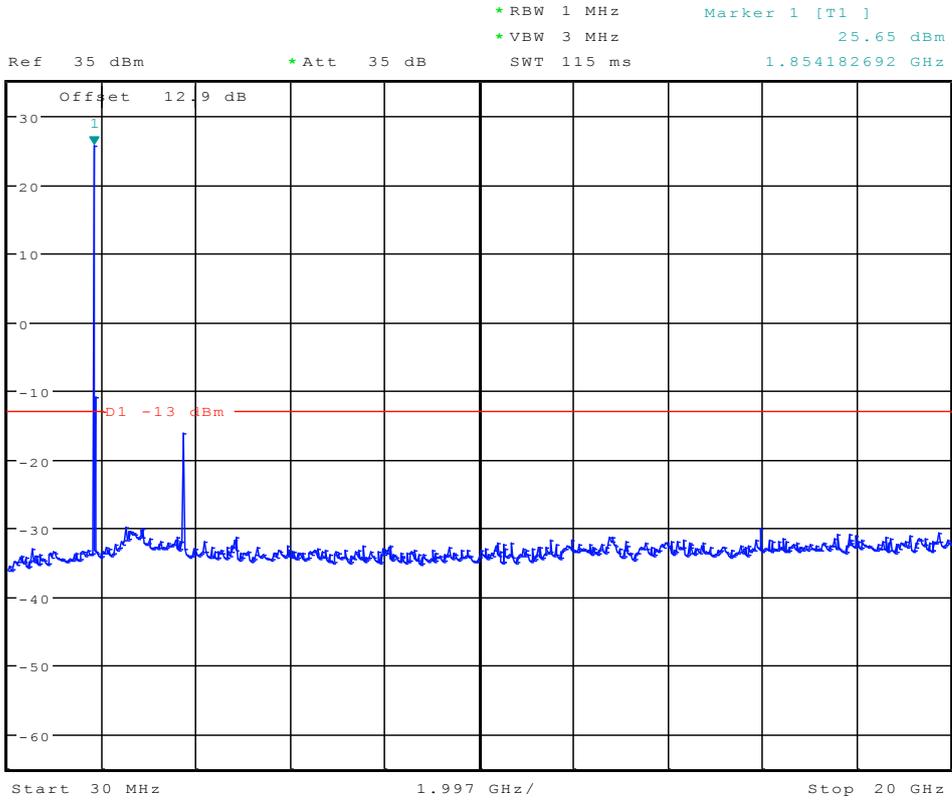
Date: 7.NOV.2012 22:03:56



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -46.69 dBm  
SWT 300 ms      197.836538462 kHz



Date: 7.NOV.2012 22:04:22



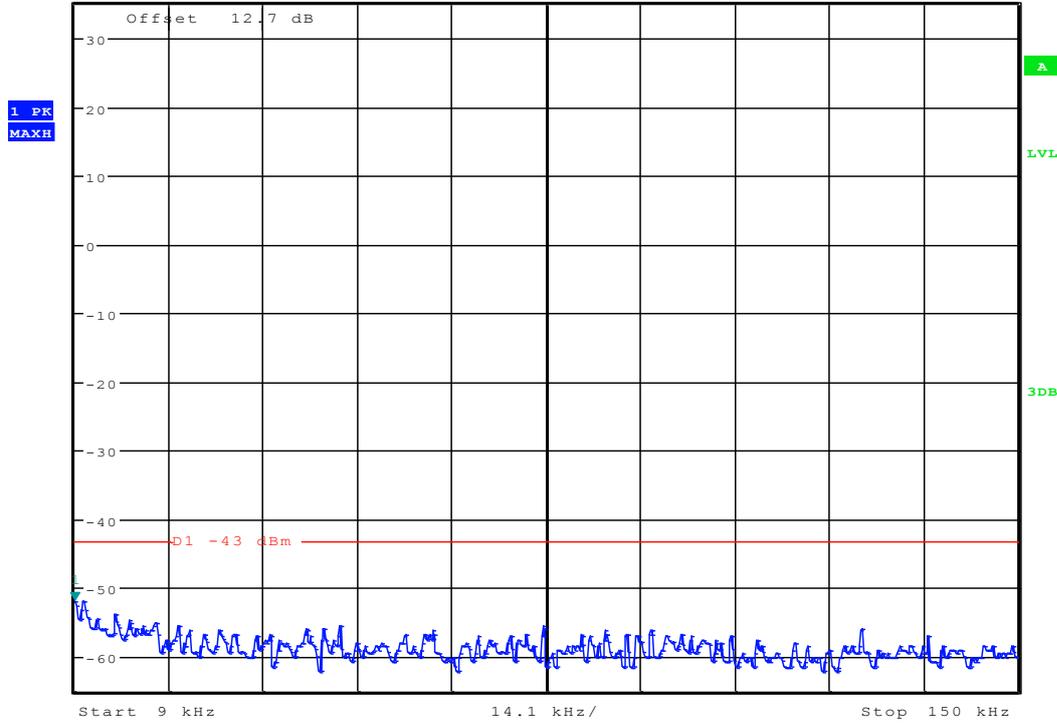
Date: 7.NOV.2012 22:04:48



## Channel 1175



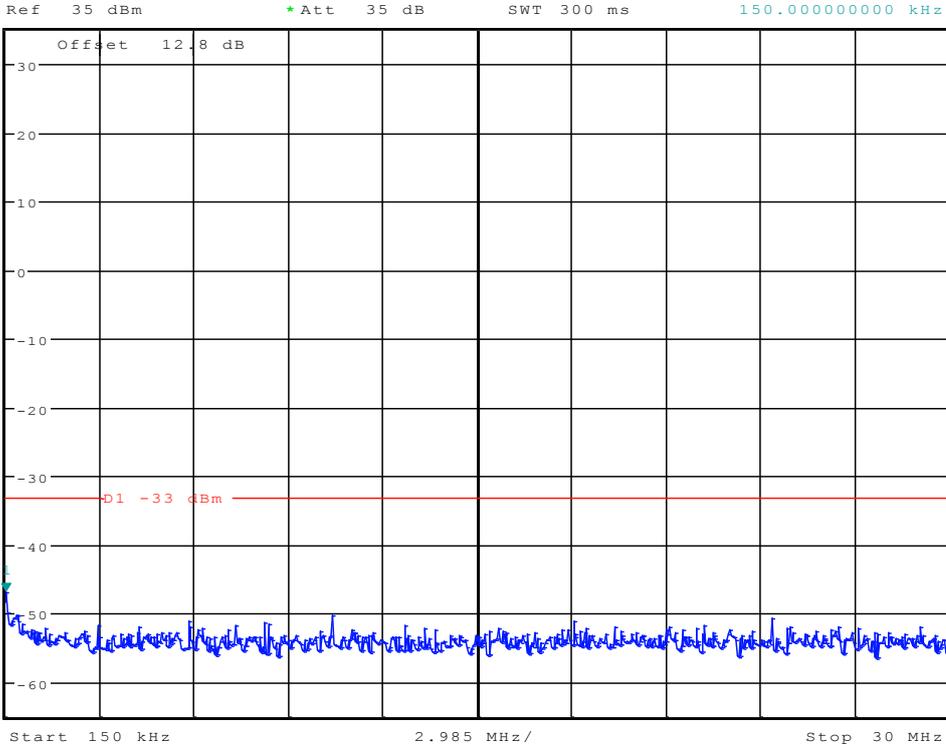
\* RBW 1 kHz      Marker 1 [T1 ]  
 \* VBW 10 kHz      -51.87 dBm  
 Ref 35 dBm      \* Att 35 dB      SWT 145 ms      9.000000000 kHz



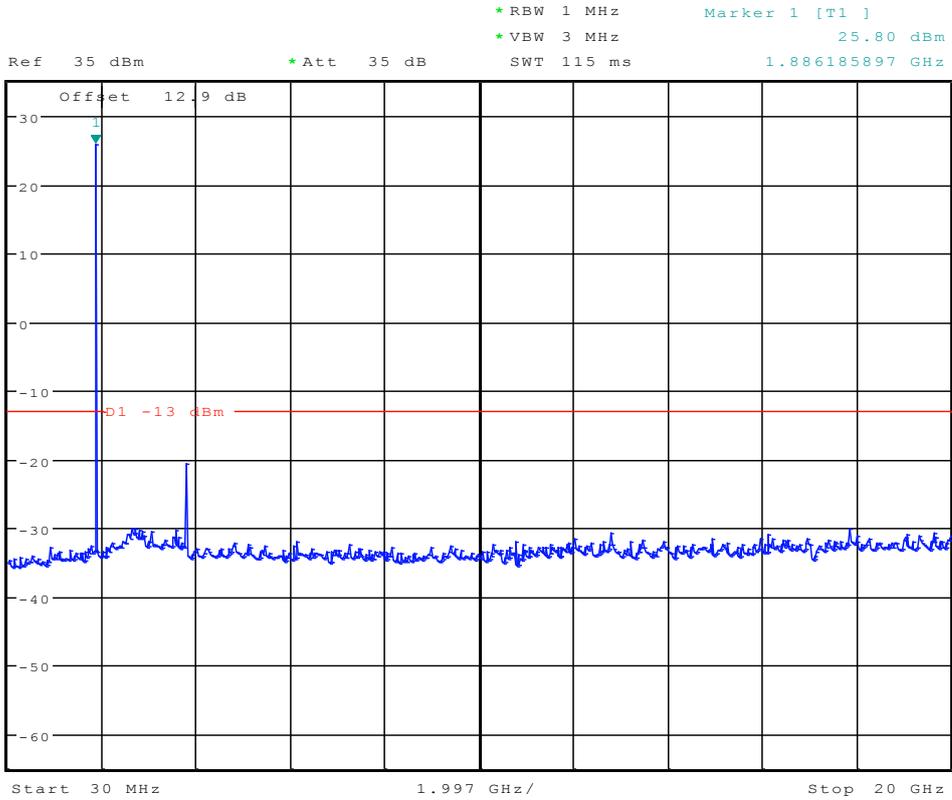
Date: 7.NOV.2012 22:04:05



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -46.74 dBm  
SWT 300 ms      150.00000000 kHz



Date: 7.NOV.2012 22:04:30



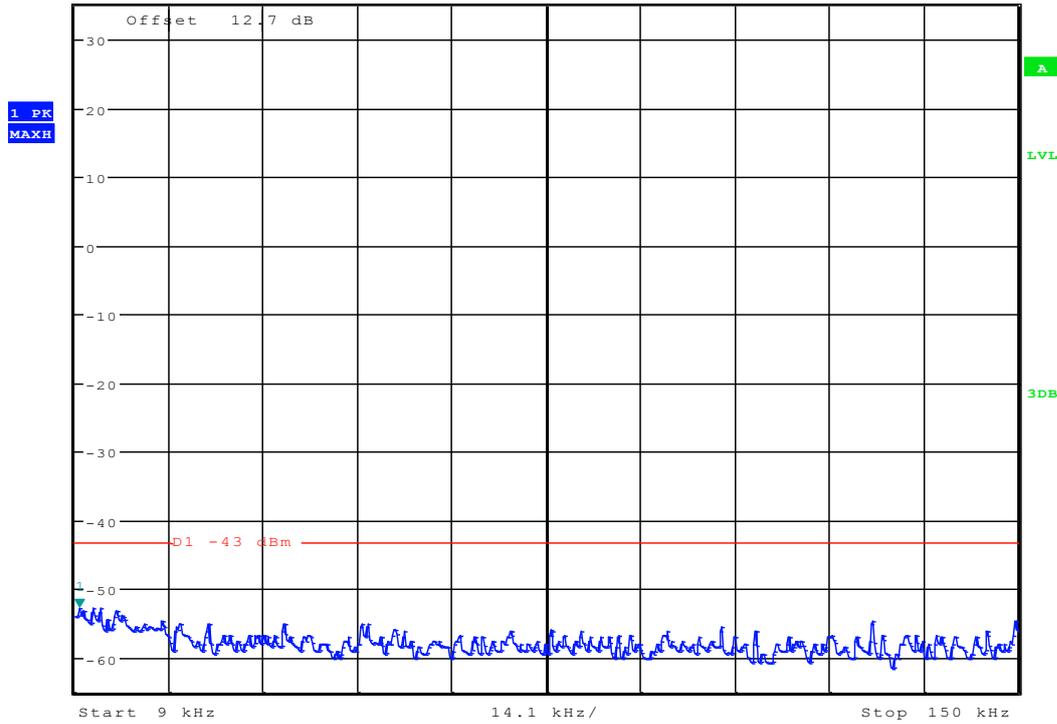
Date: 7.NOV.2012 22:04:57



# EVDO subtype 0 Channel 25



\*RBW 1 kHz      Marker 1 [T1 ]  
 \*VBW 10 kHz      -52.81 dBm  
 Ref 35 dBm      \*Att 35 dB      SWT 145 ms      9.677884615 kHz



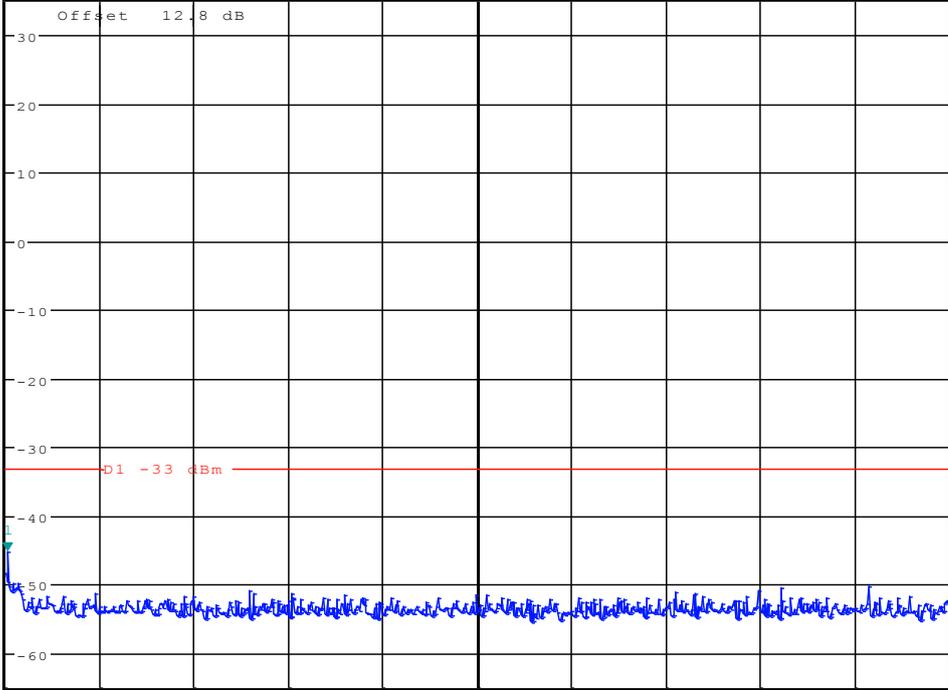
Date: 7.NOV.2012 22:07:10



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -45.09 dBm  
SWT 300 ms      197.836538462 kHz

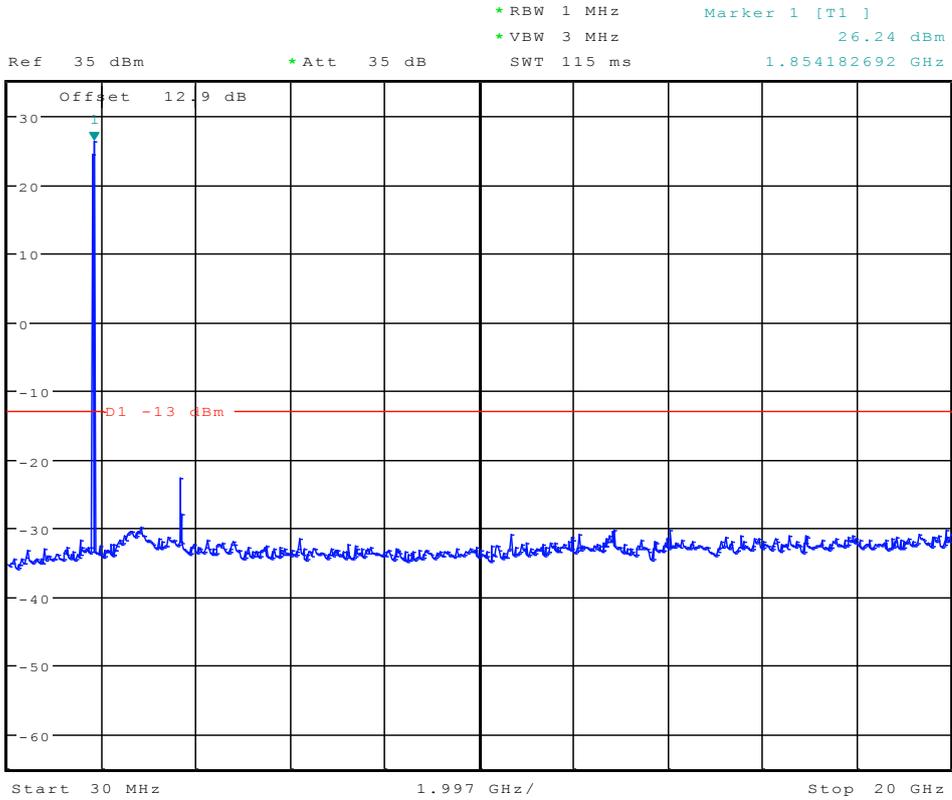
Ref 35 dBm

\* Att 35 dB



Start 150 kHz      2.985 MHz/      Stop 30 MHz

Date: 7.NOV.2012 22:07:53



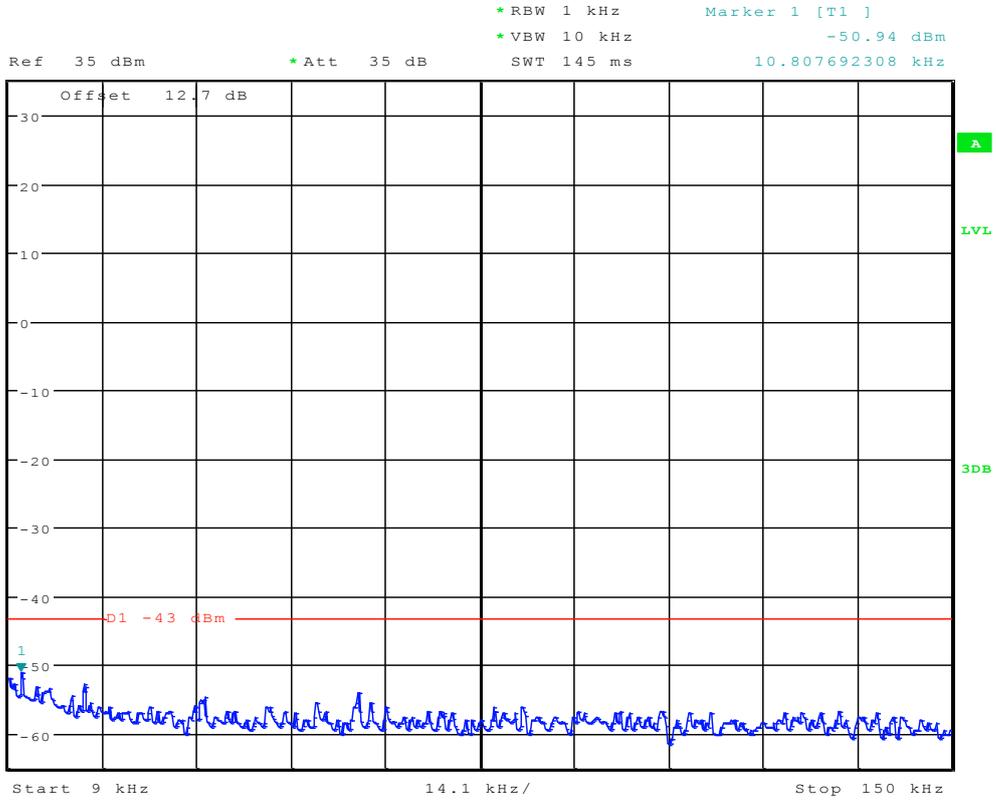
Date: 7.NOV.2012 22:08:37



## Channel 600



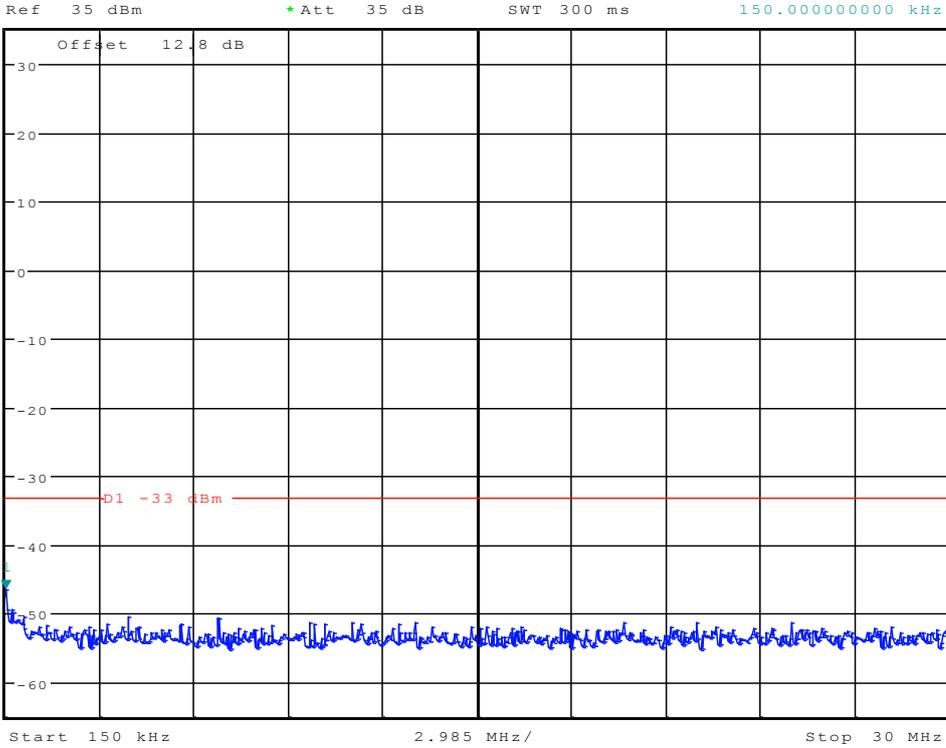
1 PK  
MAXH



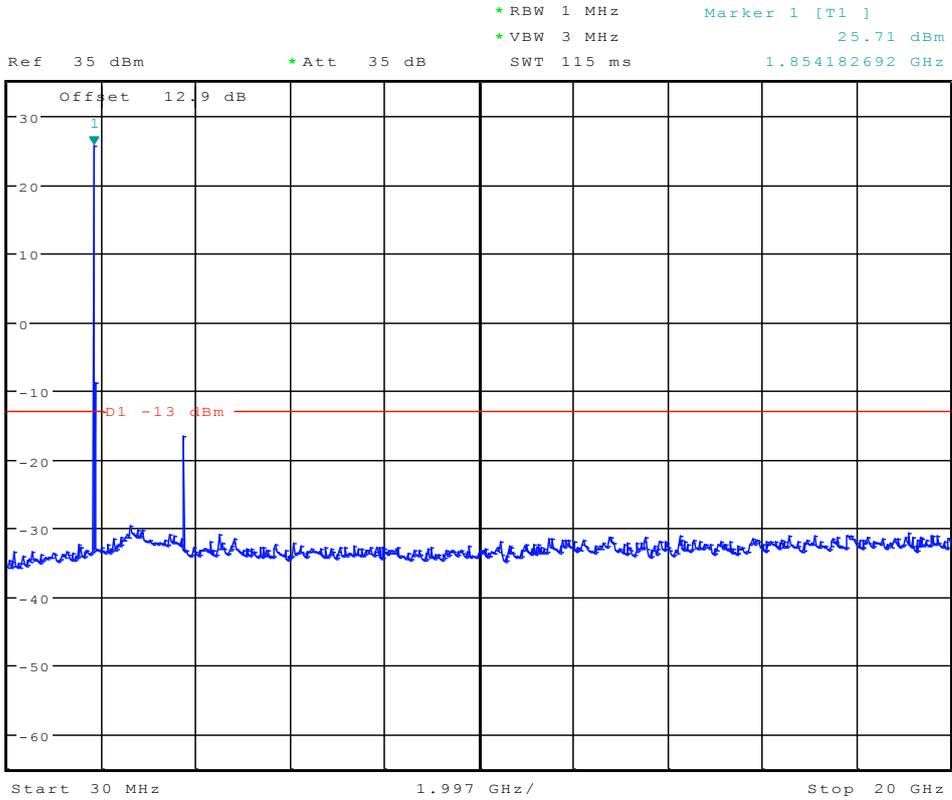
Date: 7.NOV.2012 22:07:24



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -46.31 dBm  
SWT 300 ms      150.00000000 kHz



Date: 7.NOV.2012 22:08:08



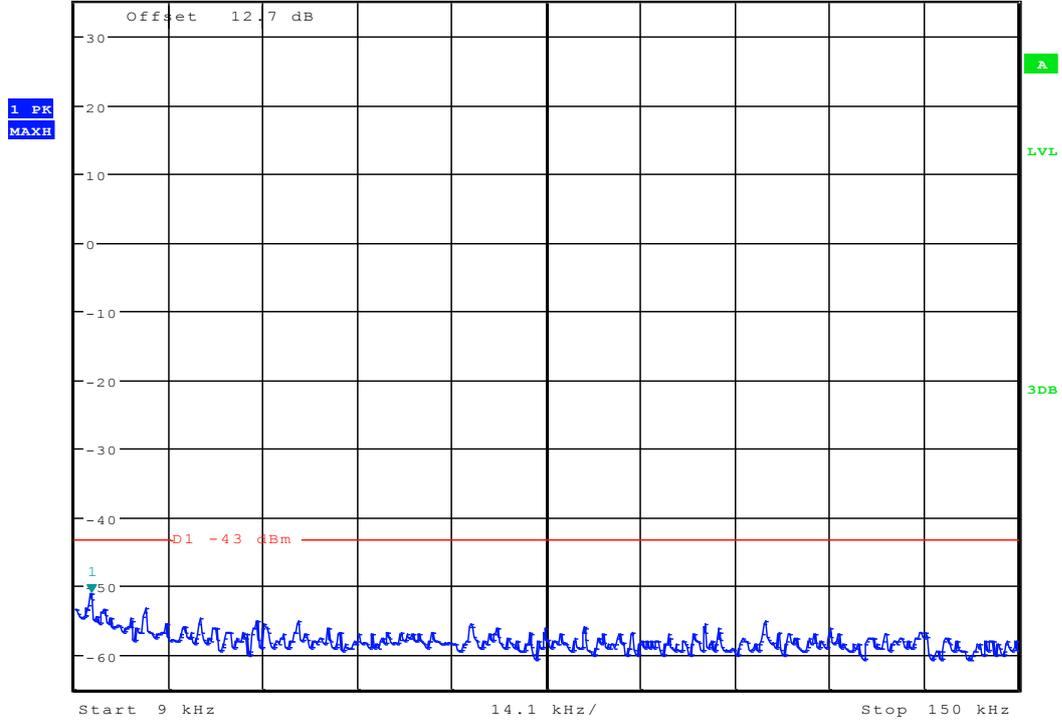
Date: 7.NOV.2012 22:08:51



## Channel 1175



Ref 35 dBm      \* Att 35 dB      \* RBW 1 kHz      Marker 1 [T1]      -50.94 dBm  
\* VBW 10 kHz      SWT 145 ms      11.485576923 kHz



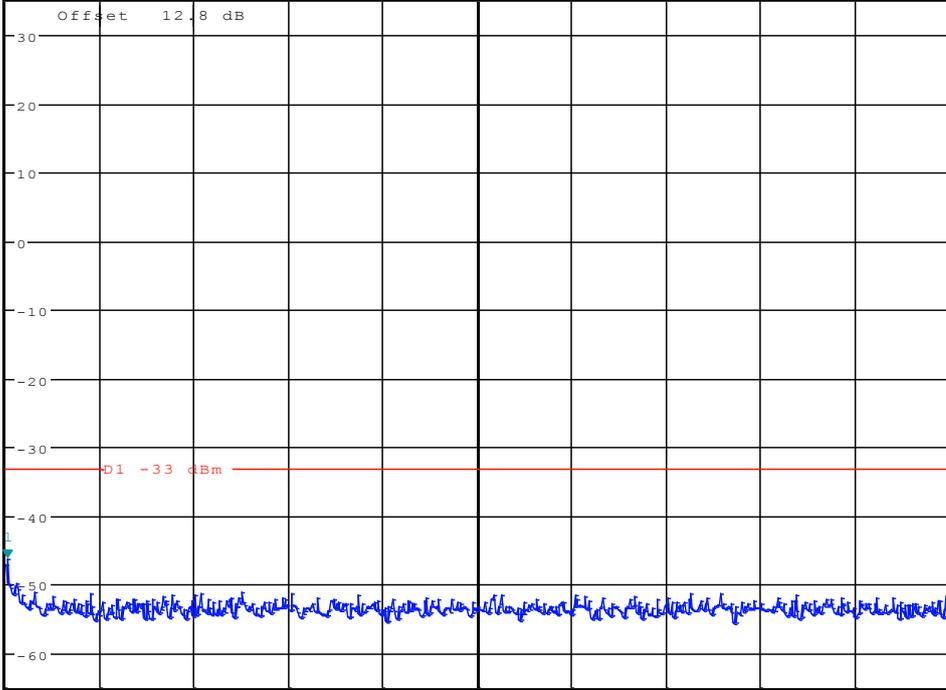
Date: 7.NOV.2012 22:07:38



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -46.21 dBm  
SWT 300 ms      197.836538462 kHz

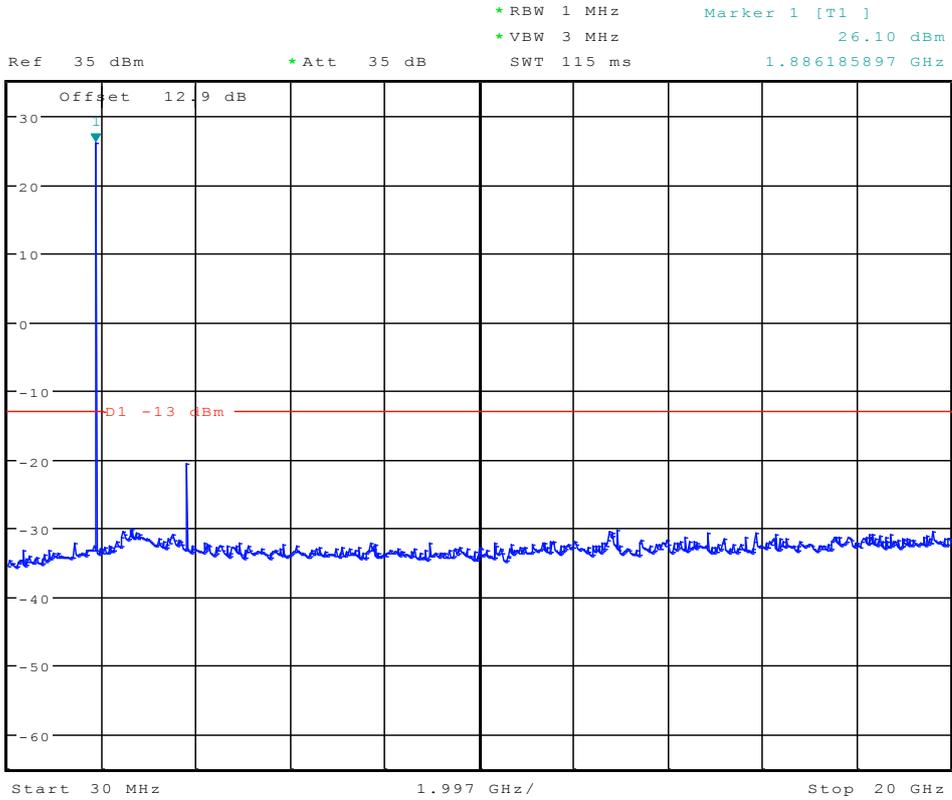
Ref 35 dBm

\* Att 35 dB



Start 150 kHz      2.985 MHz/      Stop 30 MHz

Date: 7.NOV.2012 22:08:22



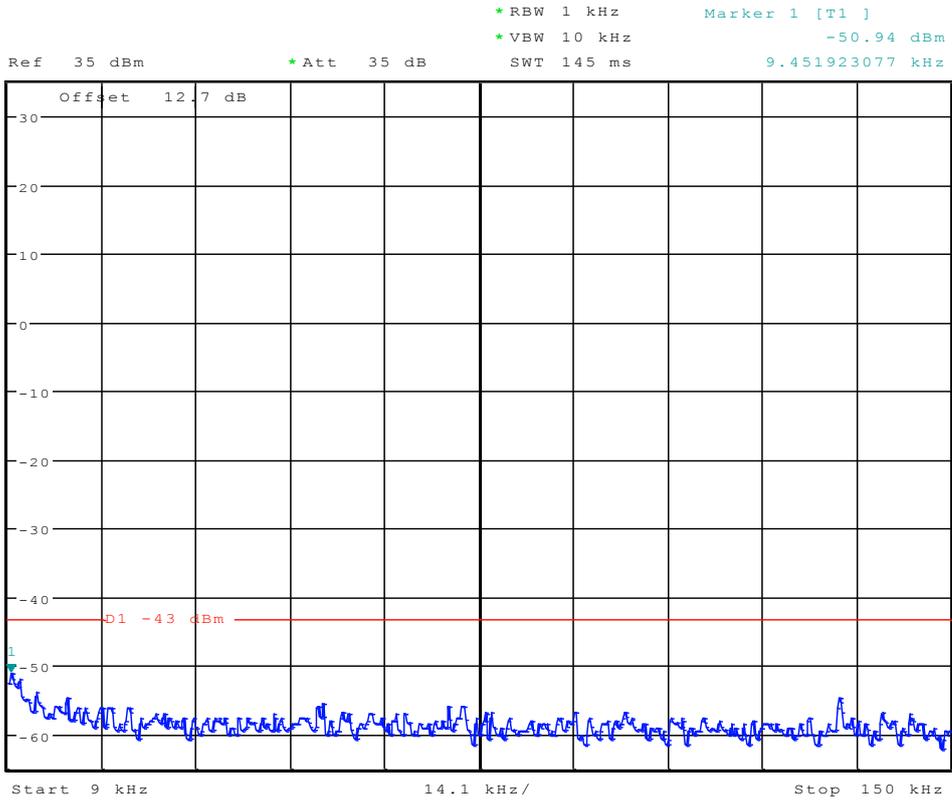
Date: 7.NOV.2012 22:09:06



# EVDO subtype 2

## Modulation: BPSK

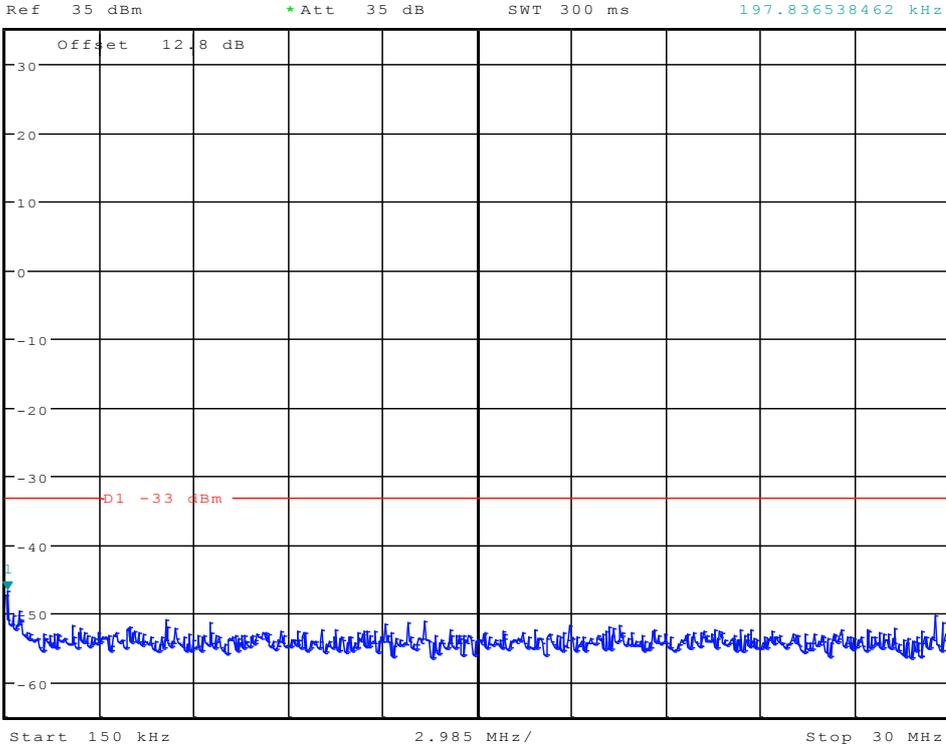
### Channel 25



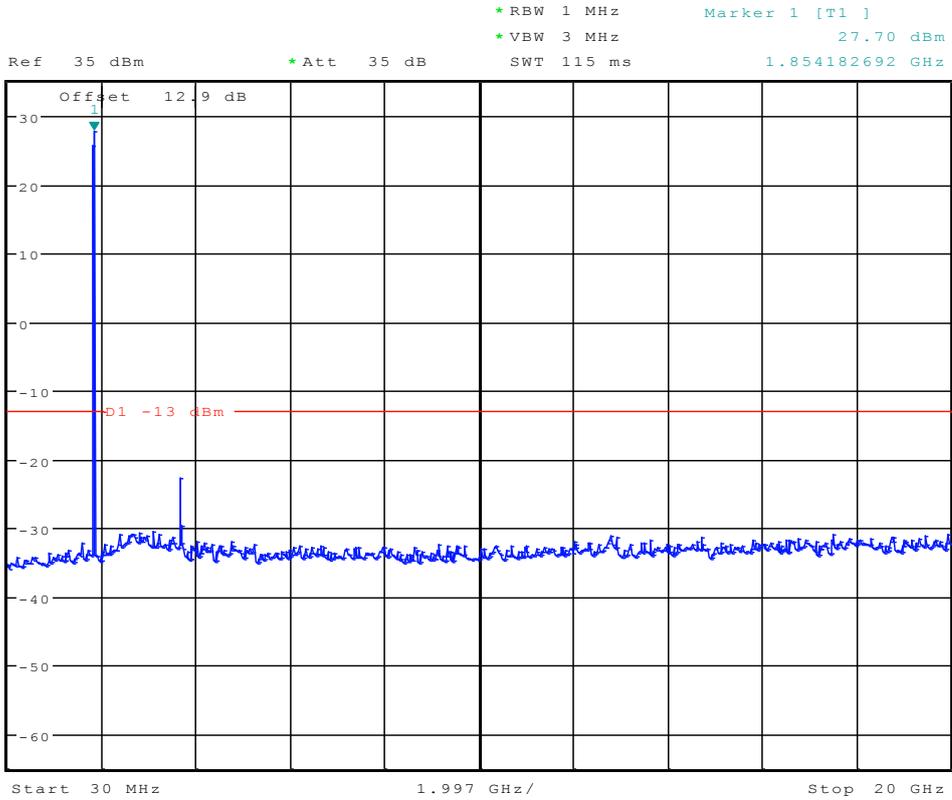
Date: 7.NOV.2012 22:19:30



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -46.69 dBm  
SWT 300 ms      197.836538462 kHz



Date: 7.NOV.2012 22:19:56



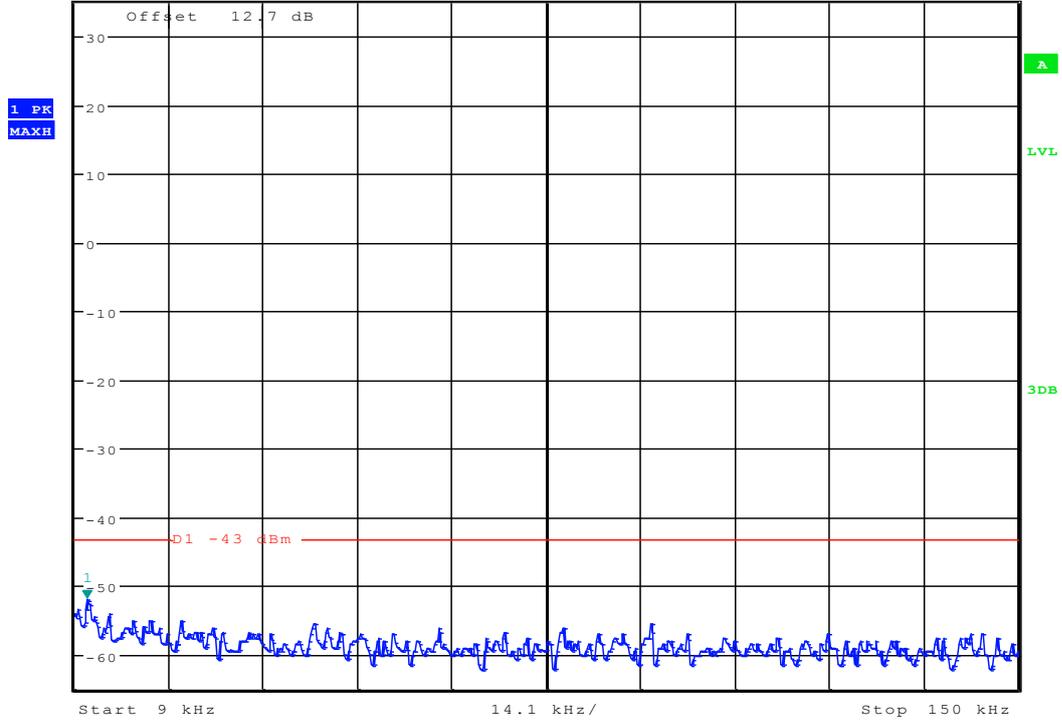
Date: 7.NOV.2012 22:20:22



## Channel 600



Ref 35 dBm      \* Att 35 dB      \* RBW 1 kHz      \* VBW 10 kHz      Marker 1 [T1]      -51.87 dBm  
SWT 145 ms      10.807692308 kHz



Date: 7.NOV.2012 22:19:39

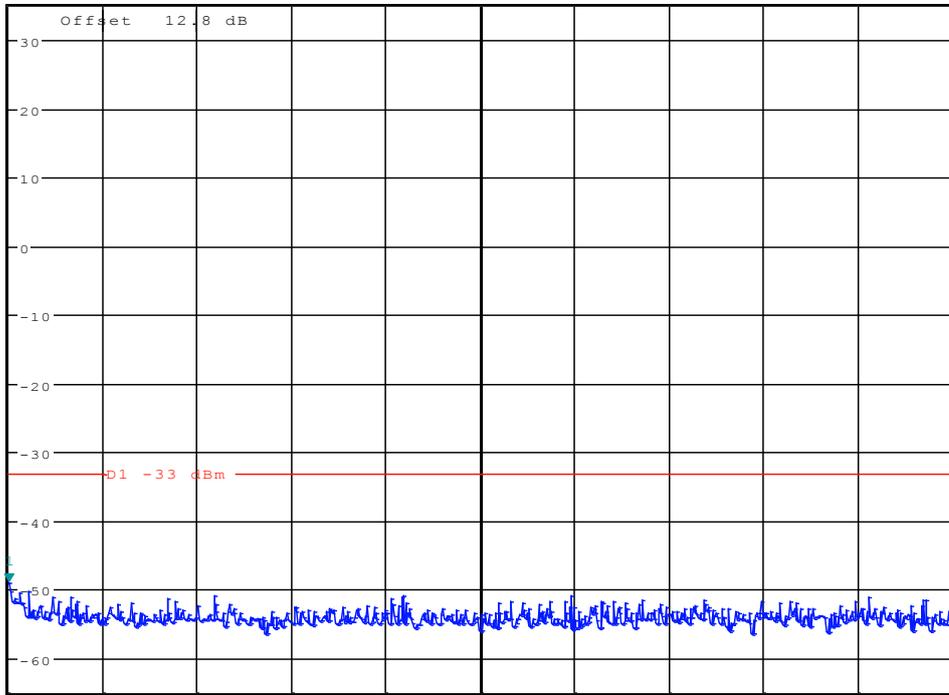


\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -48.86 dBm  
SWT 300 ms      150.00000000 kHz

Ref 35 dBm

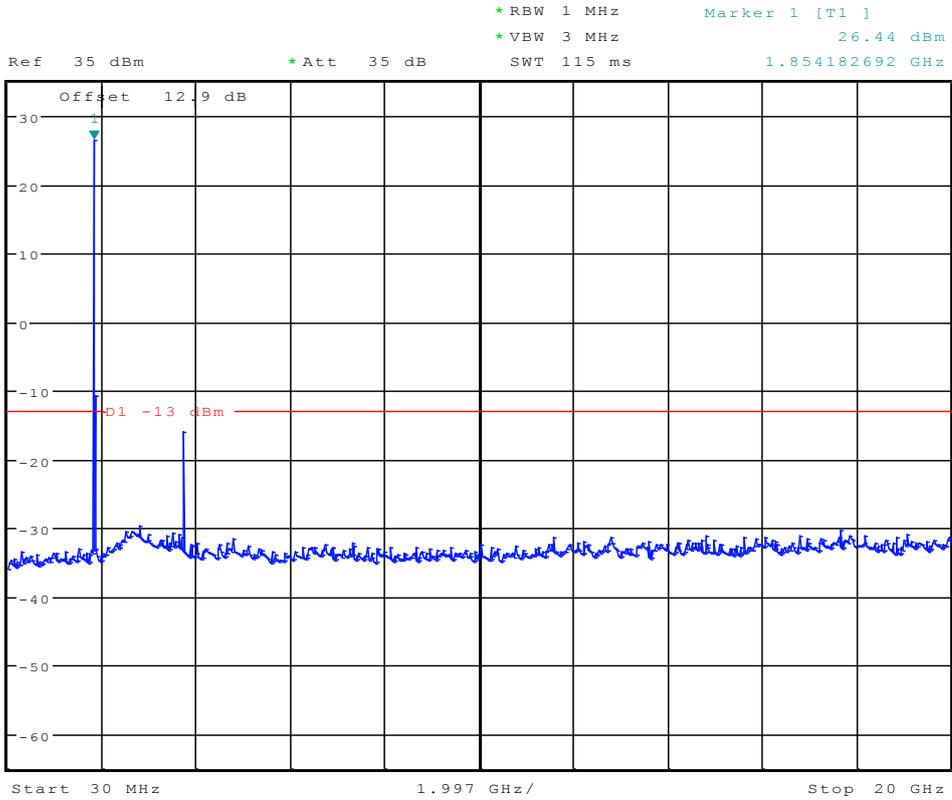
\* Att 35 dB

1 PK  
MAXH



Start 150 kHz      2.985 MHz/      Stop 30 MHz

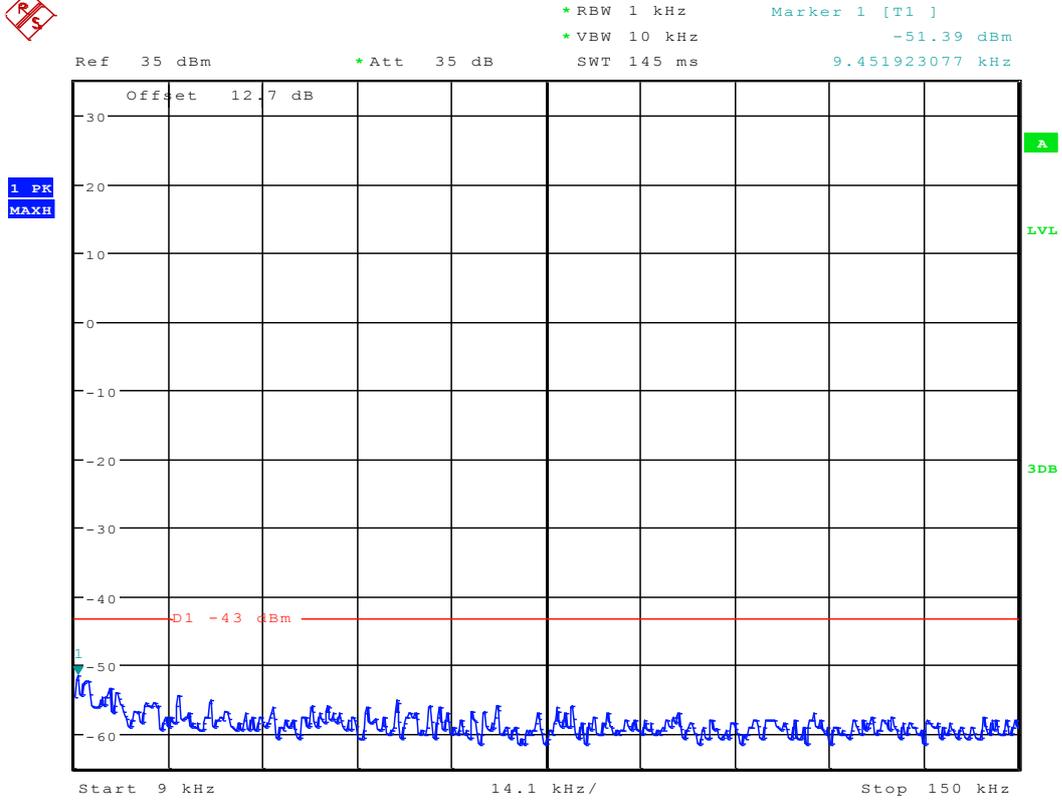
Date: 7.NOV.2012 22:20:04



Date: 7.NOV.2012 22:20:30



## Channel 1175



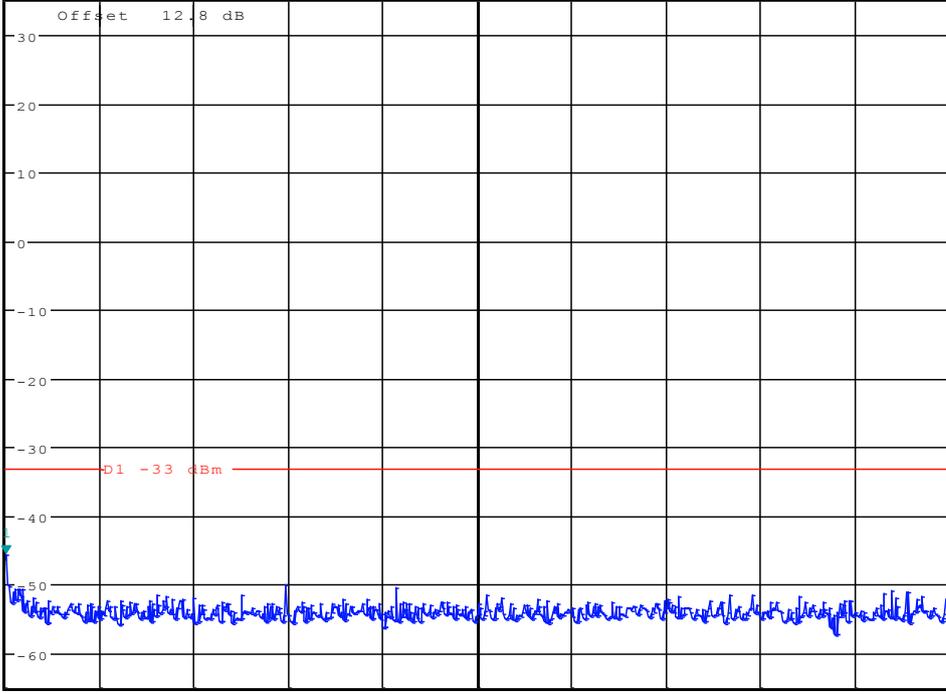
Date: 7.NOV.2012 22:19:47



\* RBW 10 kHz      Marker 1 [T1 ]  
 \* VBW 30 kHz      -45.61 dBm  
 SWT 300 ms      150.00000000 kHz

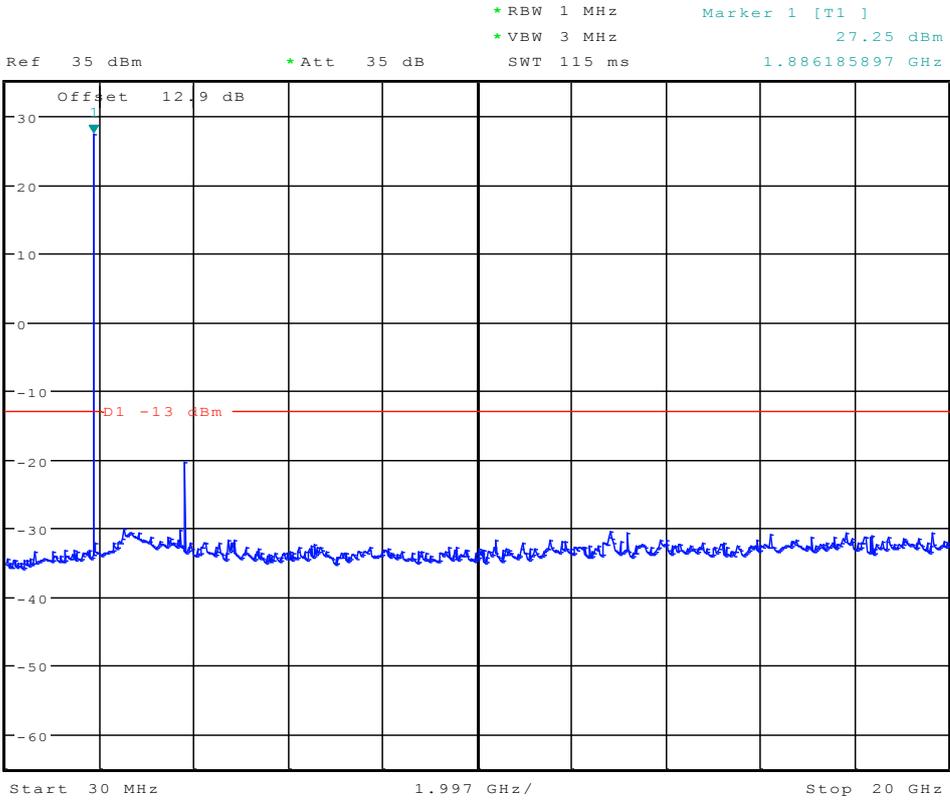
Ref 35 dBm

\* Att 35 dB



Start 150 kHz      2.985 MHz/      Stop 30 MHz

Date: 7.NOV.2012 22:20:13



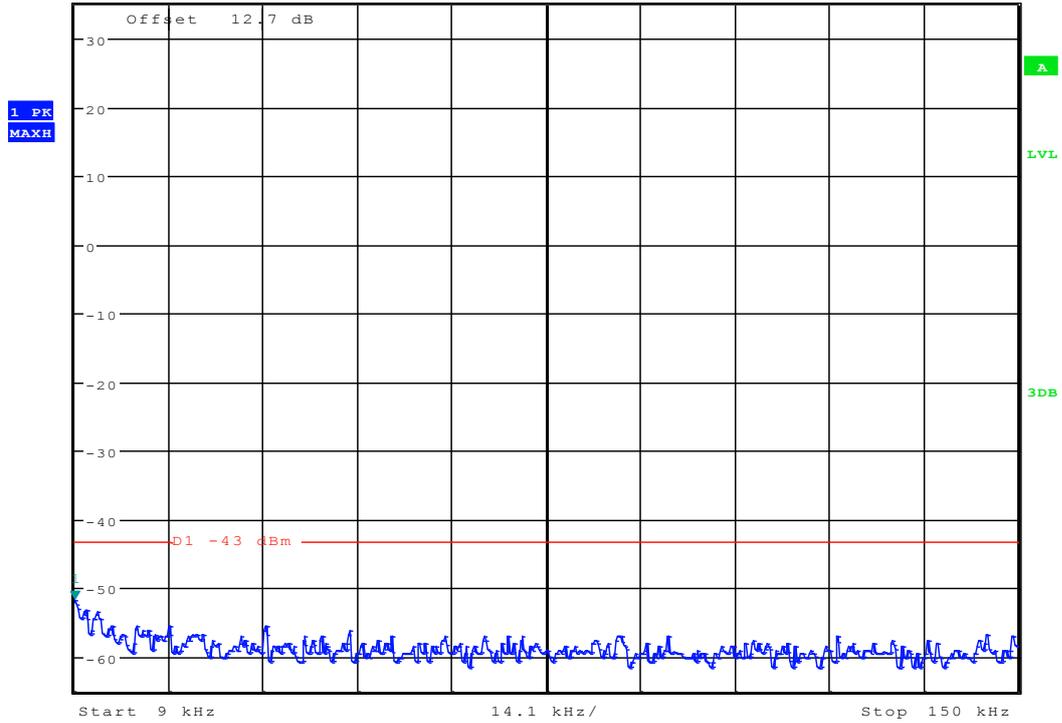
Date: 7.NOV.2012 22:20:39



## Modulation: QPSK Channel 25



Ref 35 dBm      \* Att 35 dB      SWT 145 ms      Marker 1 [T1] -51.58 dBm  
\* RBW 1 kHz      \* VBW 10 kHz      9.000000000 kHz



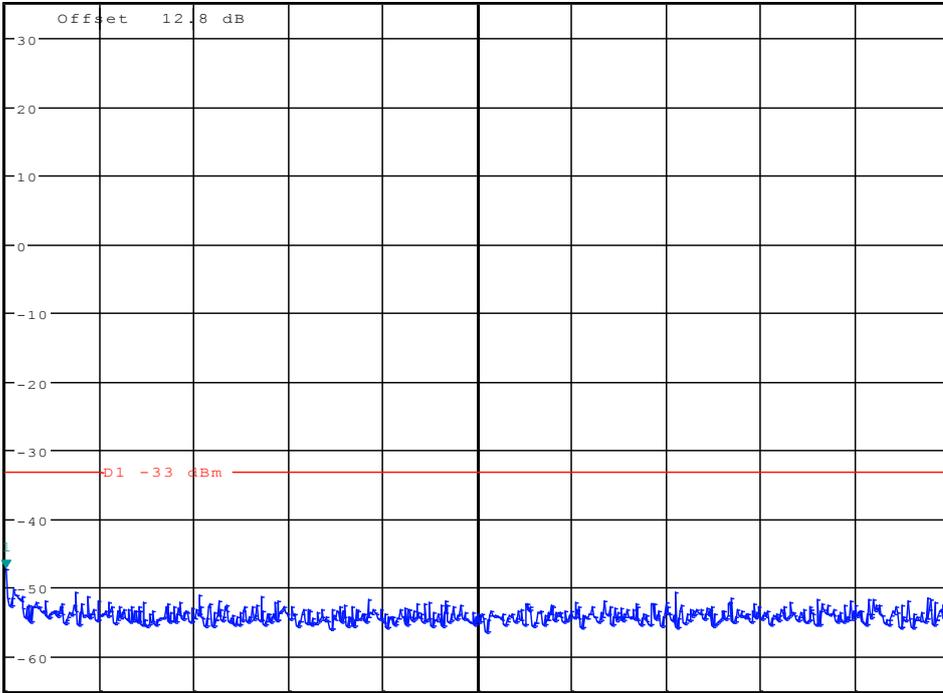
Date: 7.NOV.2012 22:20:48



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -47.32 dBm  
SWT 300 ms      150.00000000 kHz

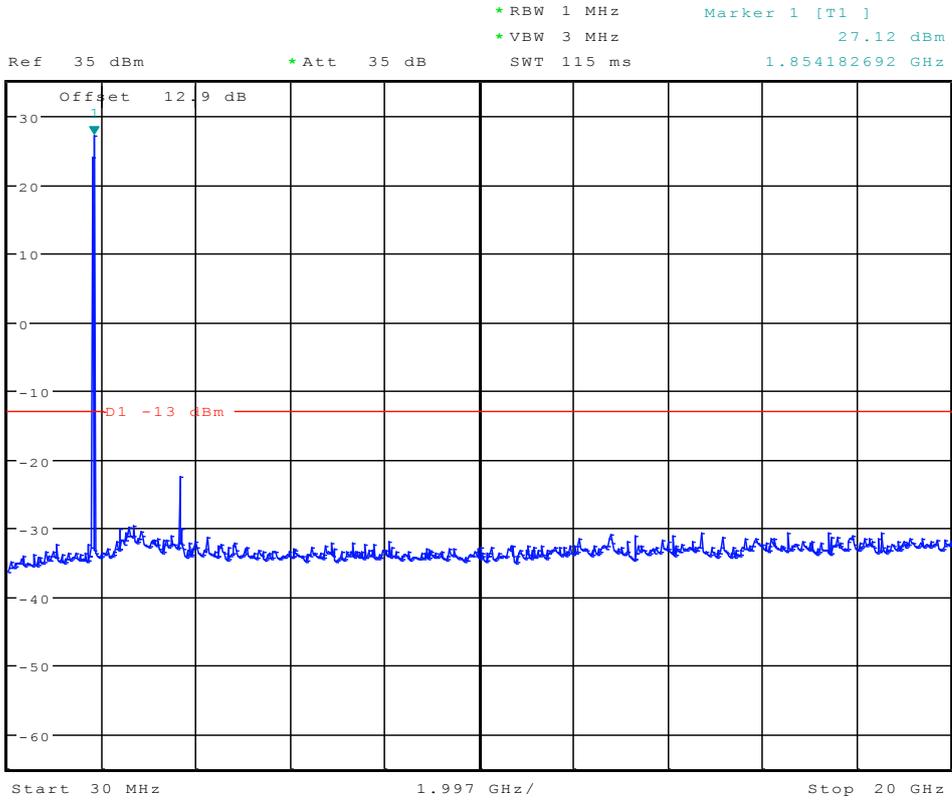
Ref 35 dBm

\* Att 35 dB



Start 150 kHz      2.985 MHz/      Stop 30 MHz

Date: 7.NOV.2012 22:21:13



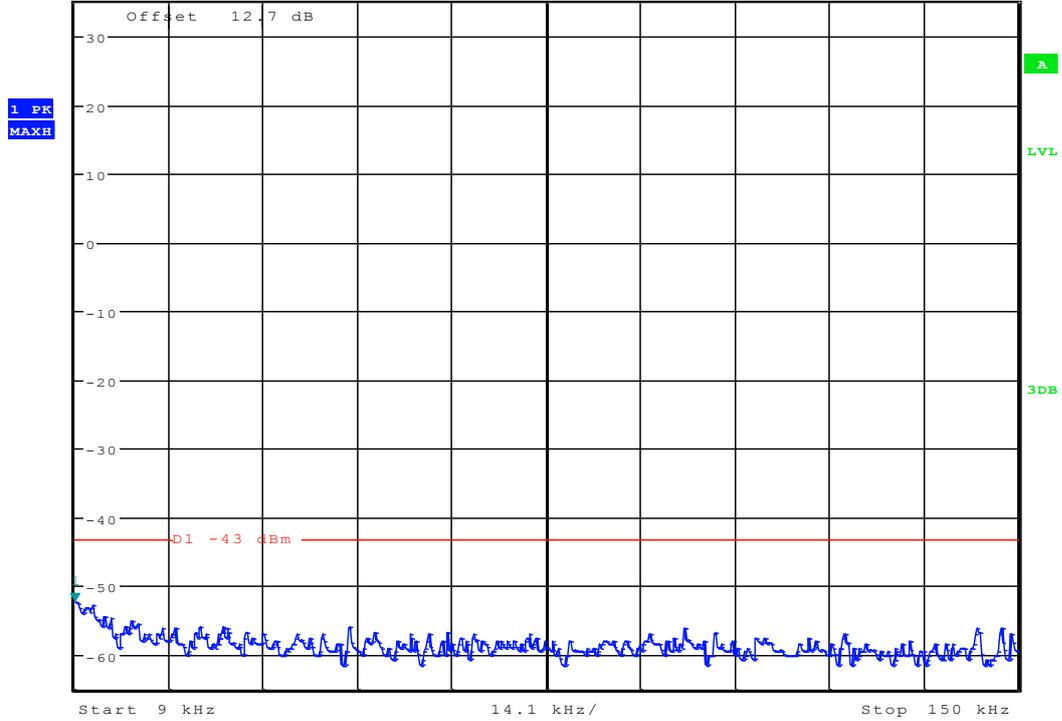
Date: 7.NOV.2012 22:21:39



## Channel 600



Ref 35 dBm      \*Att 35 dB      \*RBW 1 kHz      \*VBW 10 kHz      Marker 1 [T1]      -52.28 dBm  
 SWT 145 ms      9.000000000 kHz

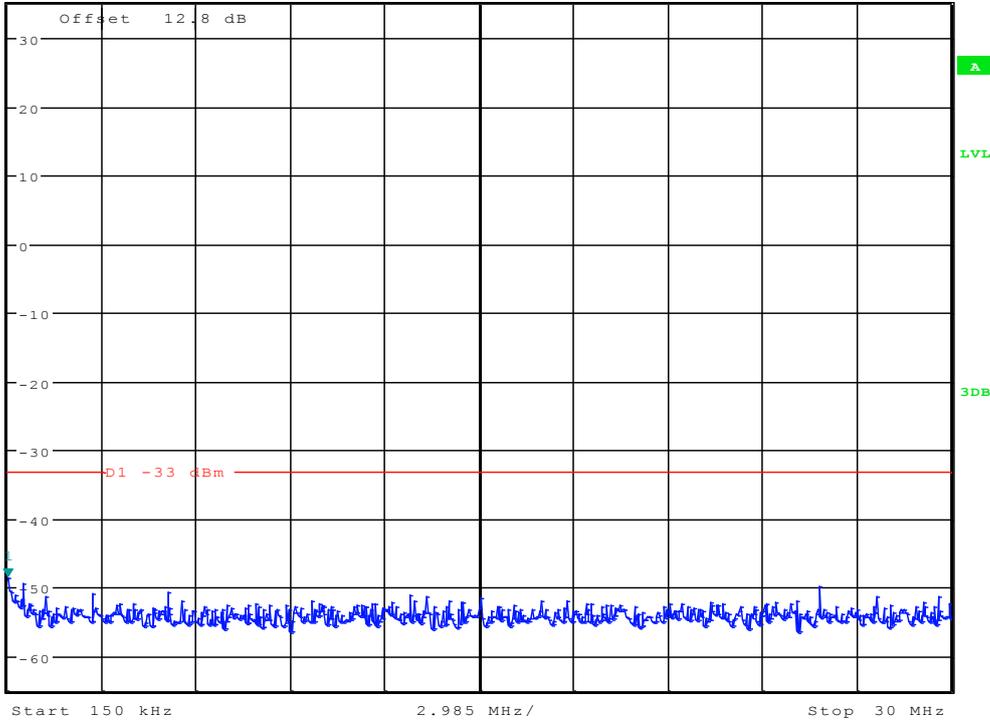


Date: 7.NOV.2012 22:20:56

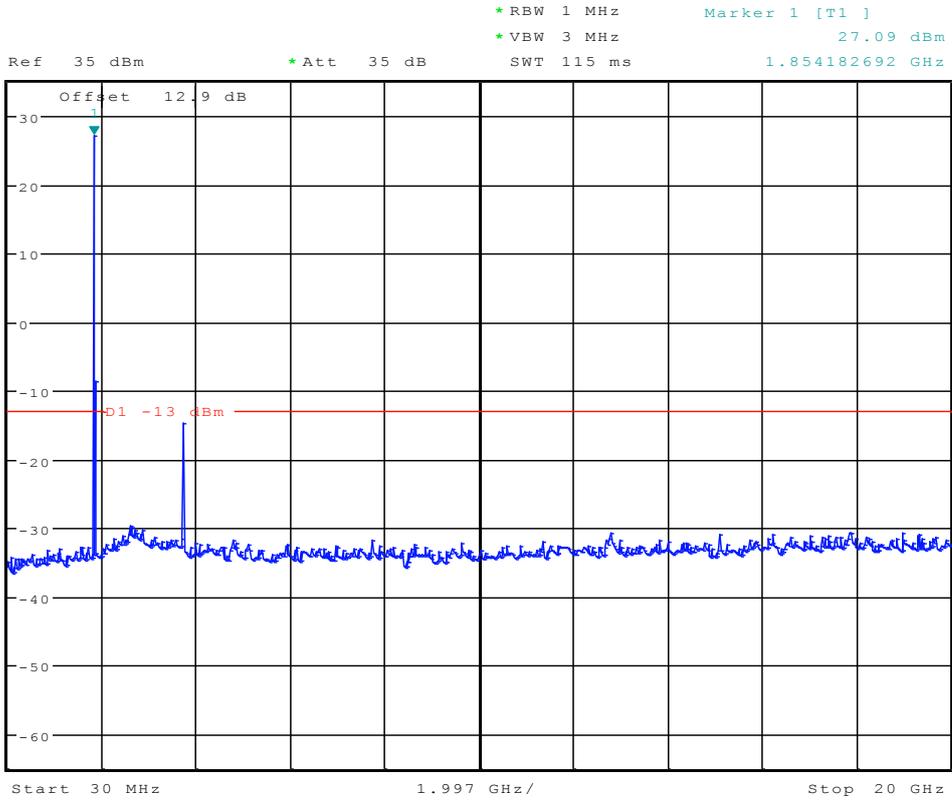


Ref 35 dBm      \* Att 35 dB      \* RBW 10 kHz      \* VBW 30 kHz      Marker 1 [T1]      -48.59 dBm  
SWT 300 ms      150.00000000 kHz

1 PK  
MAXH



Date: 7.NOV.2012 22:21:22



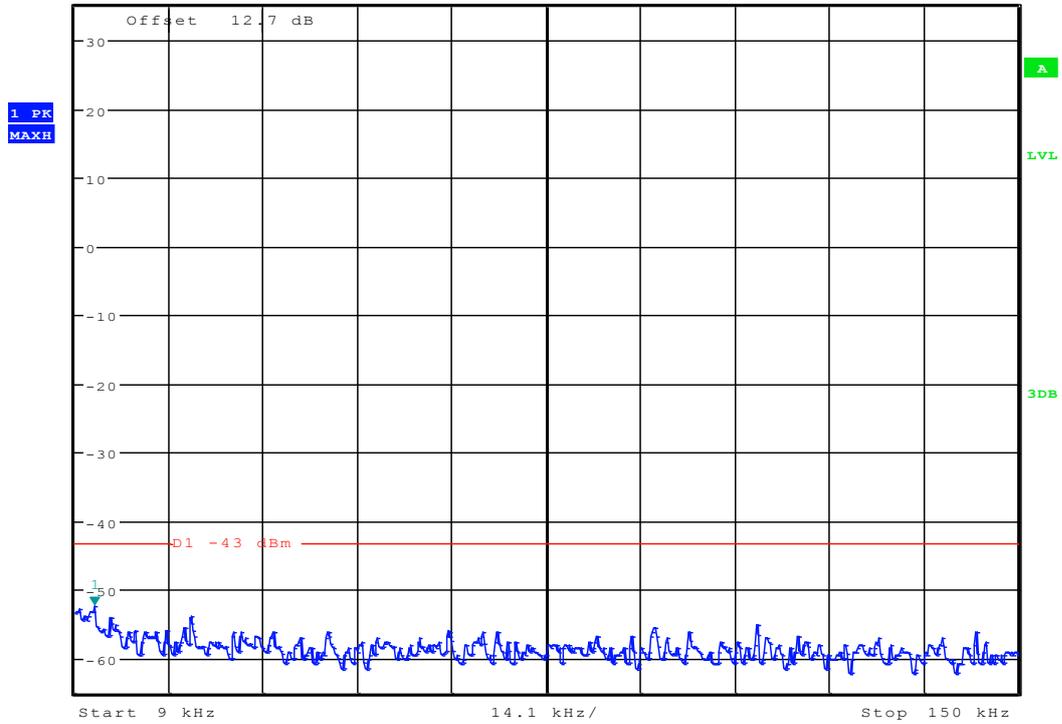
Date: 7.NOV.2012 22:21:47



## Channel 1175



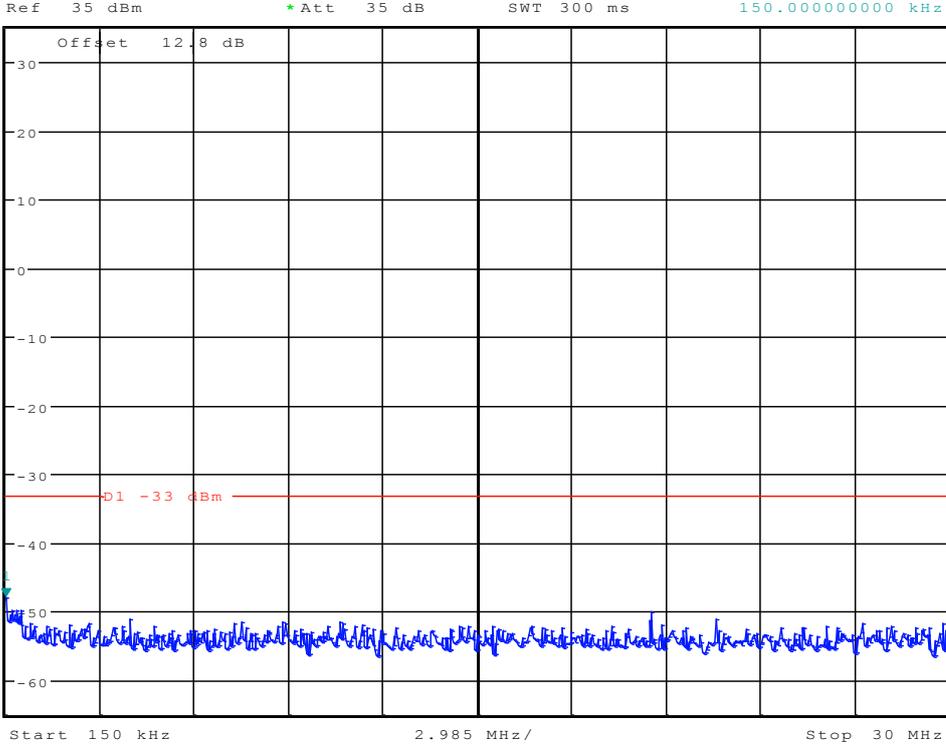
Ref 35 dBm      \* Att 35 dB      \* RBW 1 kHz      \* VBW 10 kHz      Marker 1 [T1]      -52.28 dBm  
SWT 145 ms      11.937500000 kHz



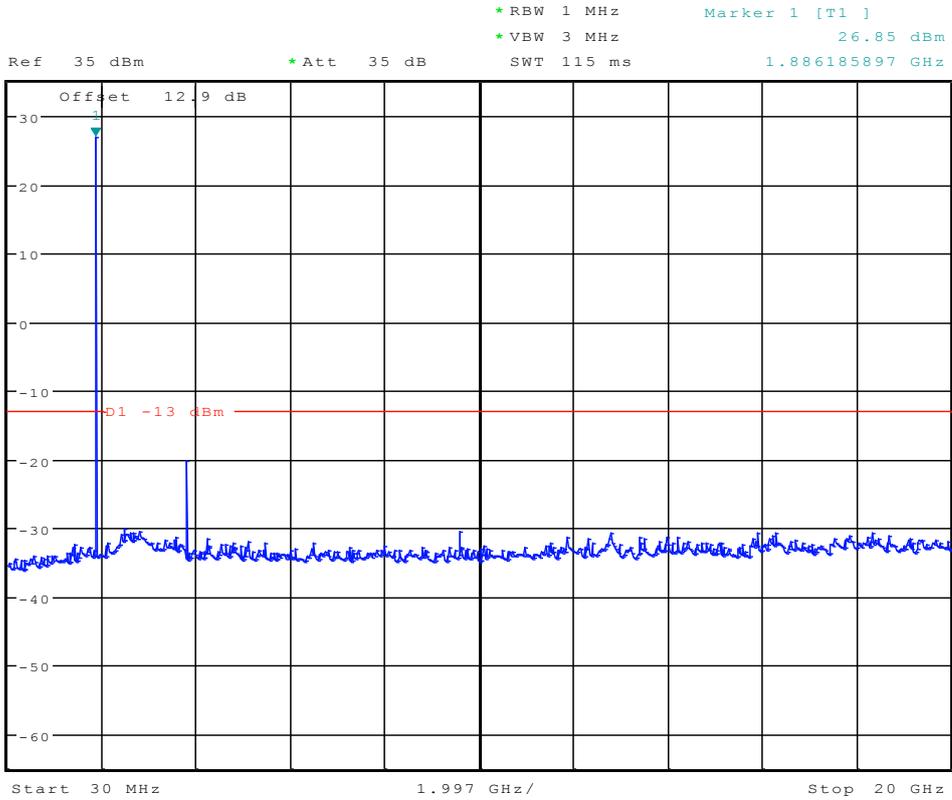
Date: 7.NOV.2012 22:21:04



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -47.80 dBm  
SWT 300 ms      150.000000000 kHz



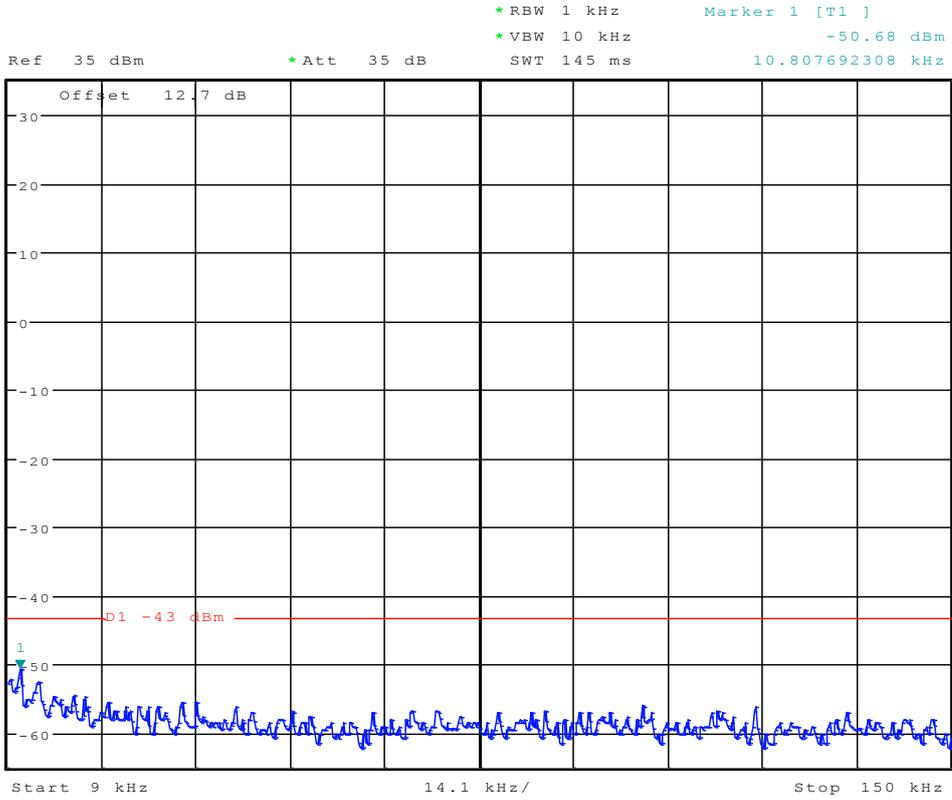
Date: 7.NOV.2012 22:21:30



Date: 7.NOV.2012 22:21:56



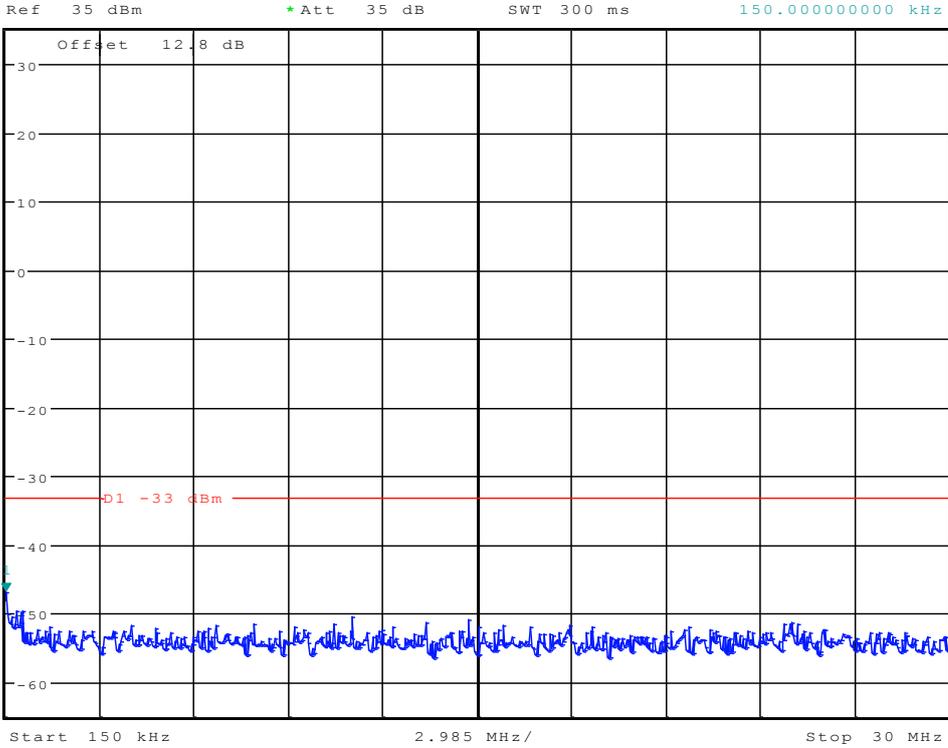
## Modulation: 8PSK Channel 25



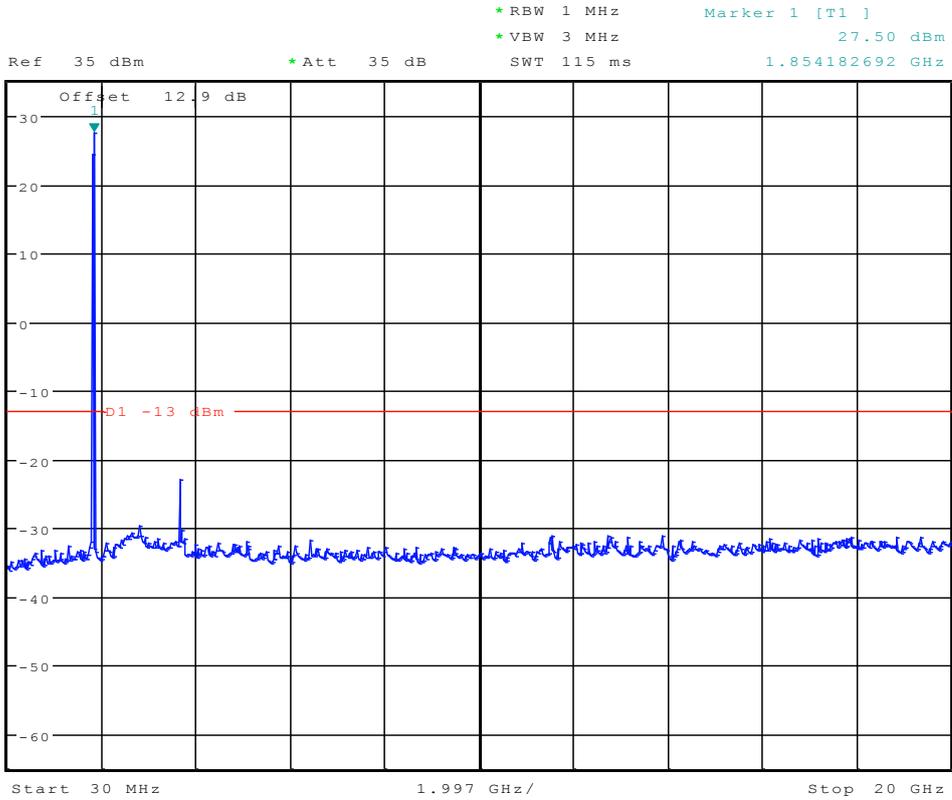
Date: 7.NOV.2012 22:22:05



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -46.86 dBm  
SWT 300 ms      150.00000000 kHz



Date: 7.NOV.2012 22:22:30



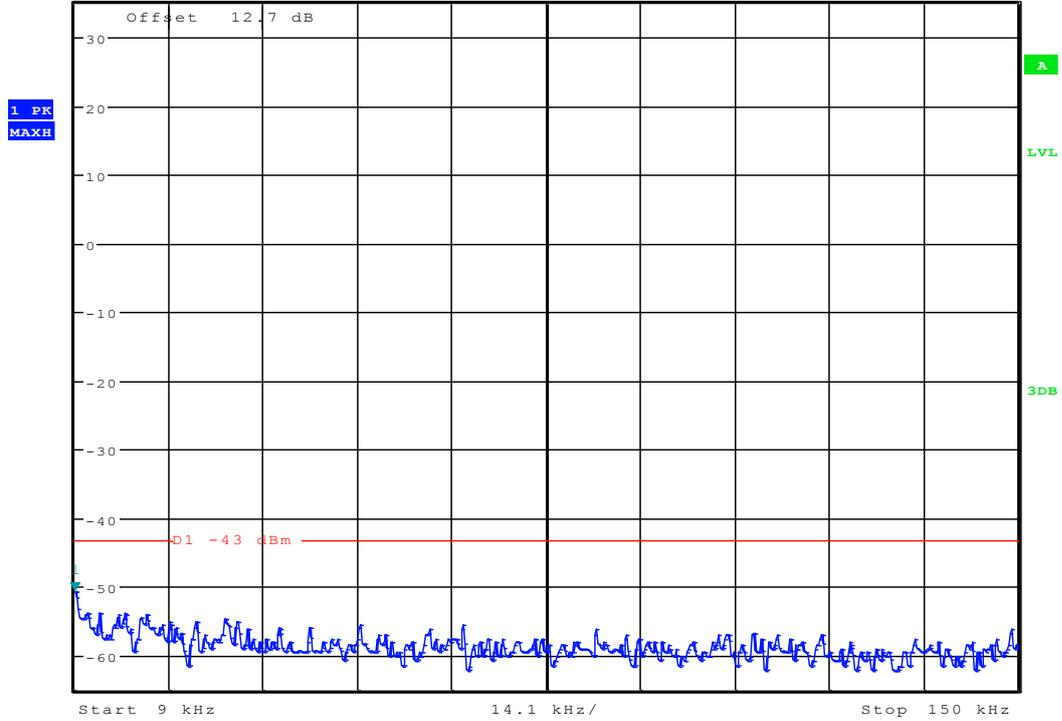
Date: 7.NOV.2012 22:22:56



## Channel 600



\* RBW 1 kHz      Marker 1 [T1 ]  
 \* VBW 10 kHz      -50.51 dBm  
 Ref 35 dBm      \* Att 35 dB      SWT 145 ms      9.000000000 kHz



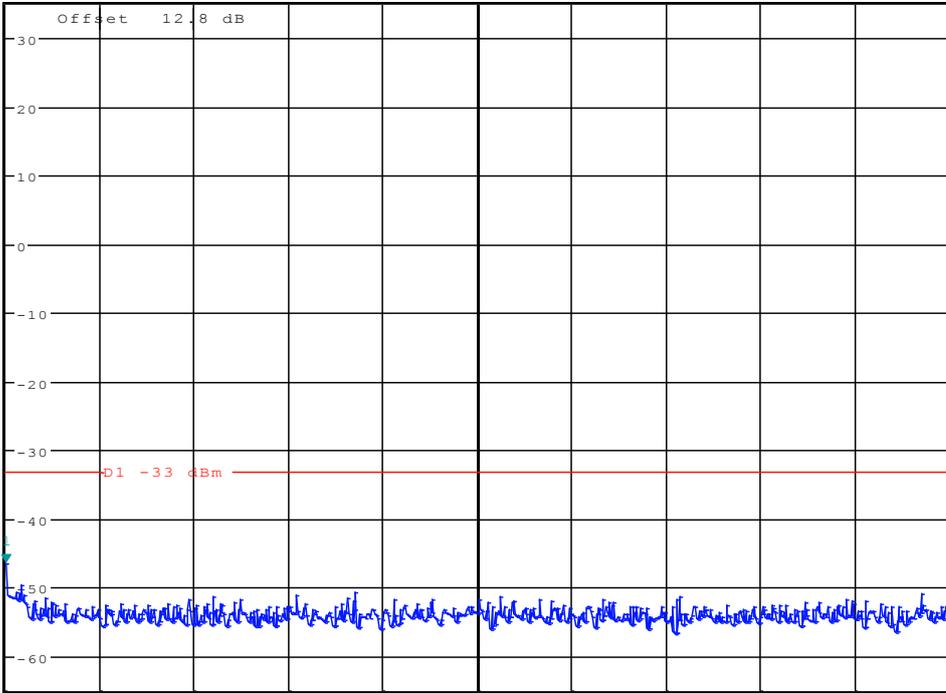
Date: 7.NOV.2012 22:22:13



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -46.47 dBm  
SWT 300 ms      150.00000000 kHz

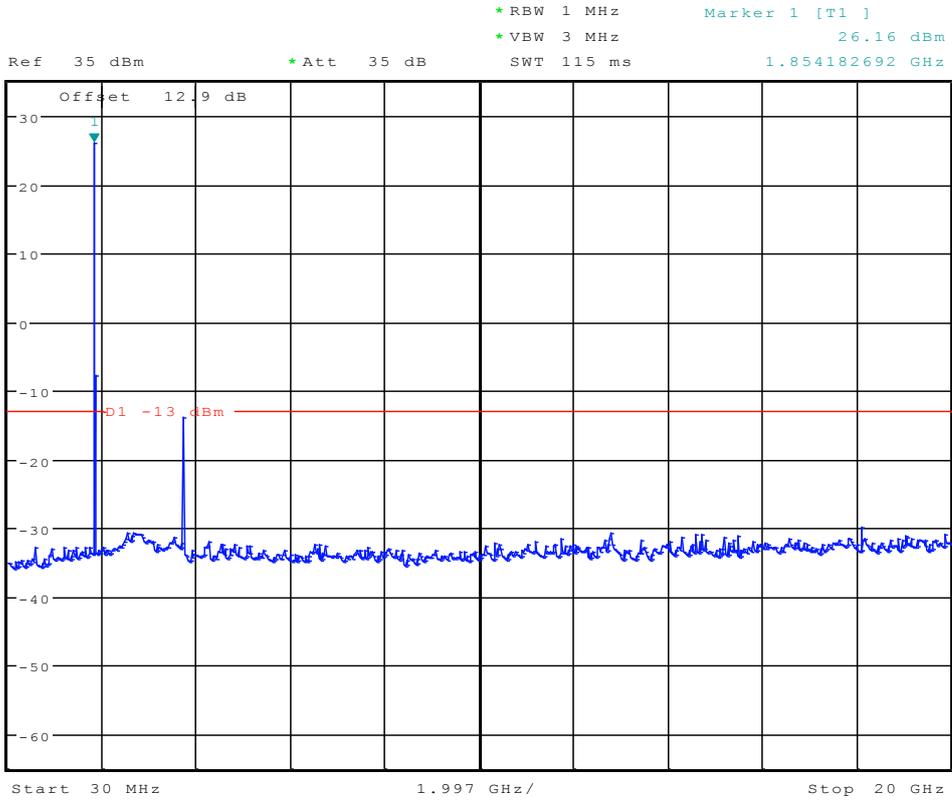
Ref 35 dBm

\* Att 35 dB



Start 150 kHz      2.985 MHz/      Stop 30 MHz

Date: 7.NOV.2012 22:22:39



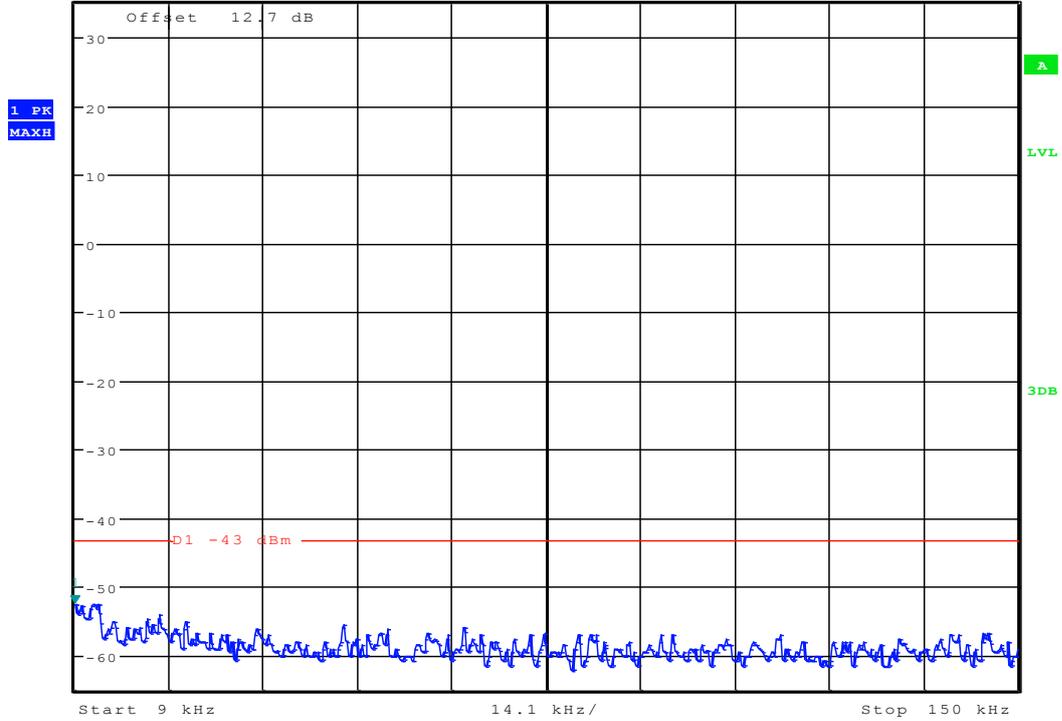
Date: 7.NOV.2012 22:23:05



## Channel 1175



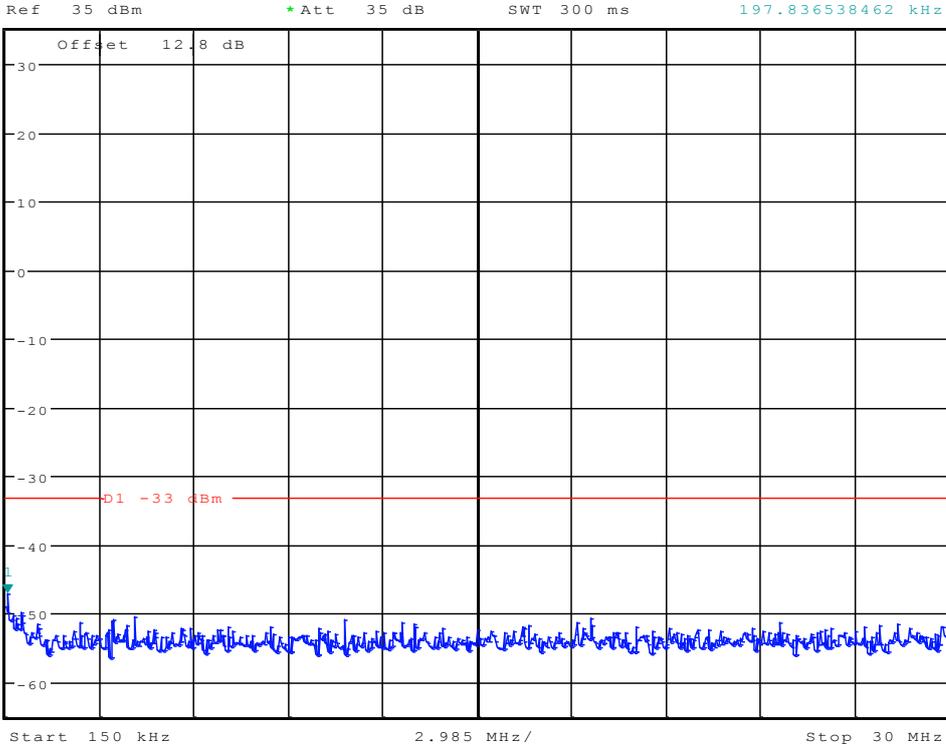
\*RBW 1 kHz      Marker 1 [T1 ]  
 \*VBW 10 kHz      -52.59 dBm  
 Ref 35 dBm      \*Att 35 dB      SWT 145 ms      9.000000000 kHz



Date: 7.NOV.2012 22:22:21



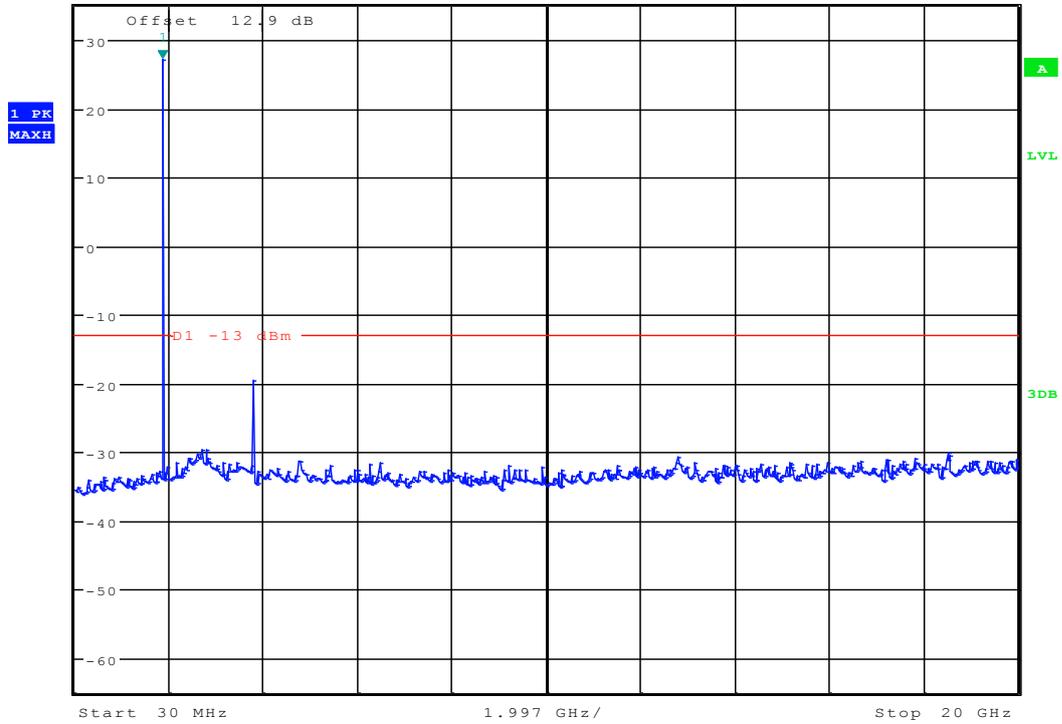
\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -47.08 dBm  
SWT 300 ms      197.836538462 kHz



Date: 7.NOV.2012 22:22:47



Ref 35 dBm      \* Att 35 dB      SWT 115 ms      Marker 1 [T1]      27.03 dBm  
\* RBW 1 MHz      \* VBW 3 MHz      1.886185897 GHz



Date: 7.NOV.2012 22:23:14

-----END-----



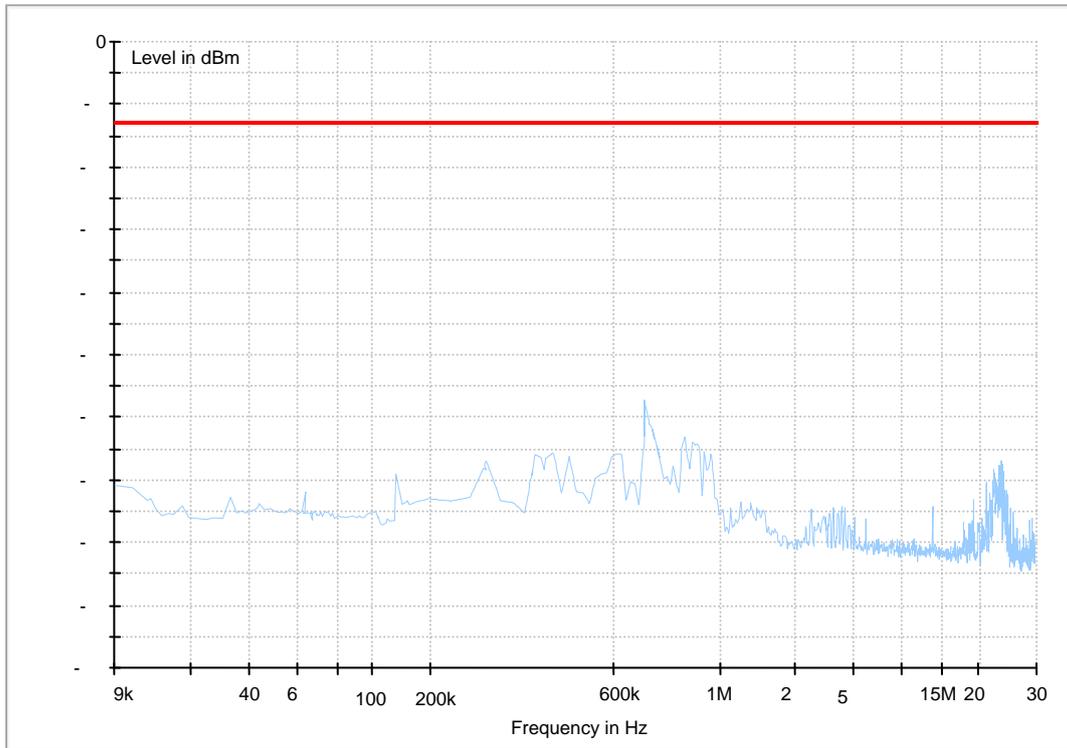
# **Appendix F**

## Radiated spurious emission

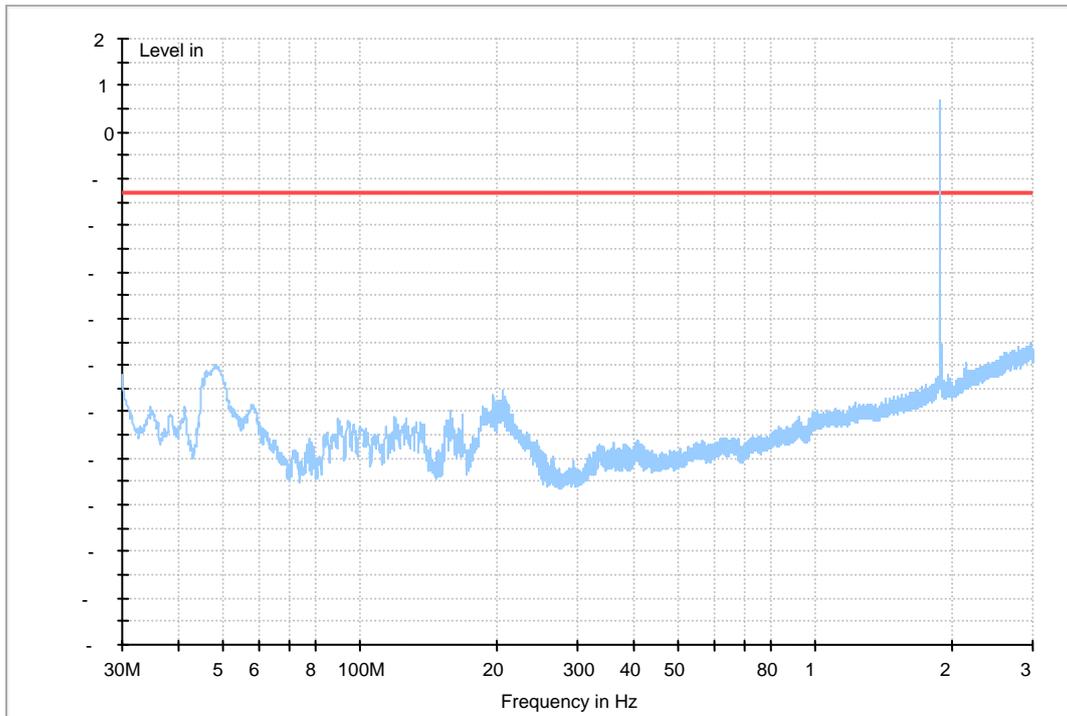
According to FCC Part 2.1053& Part 24.238

## CDMA 1900

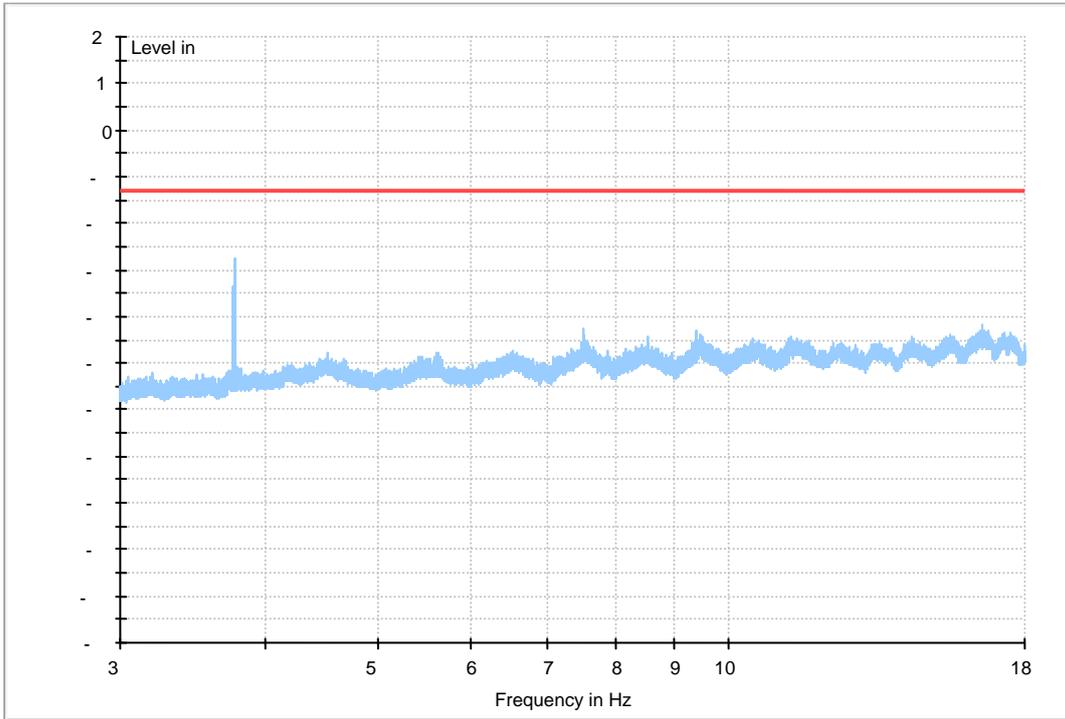
(9 kHz-30MHz)



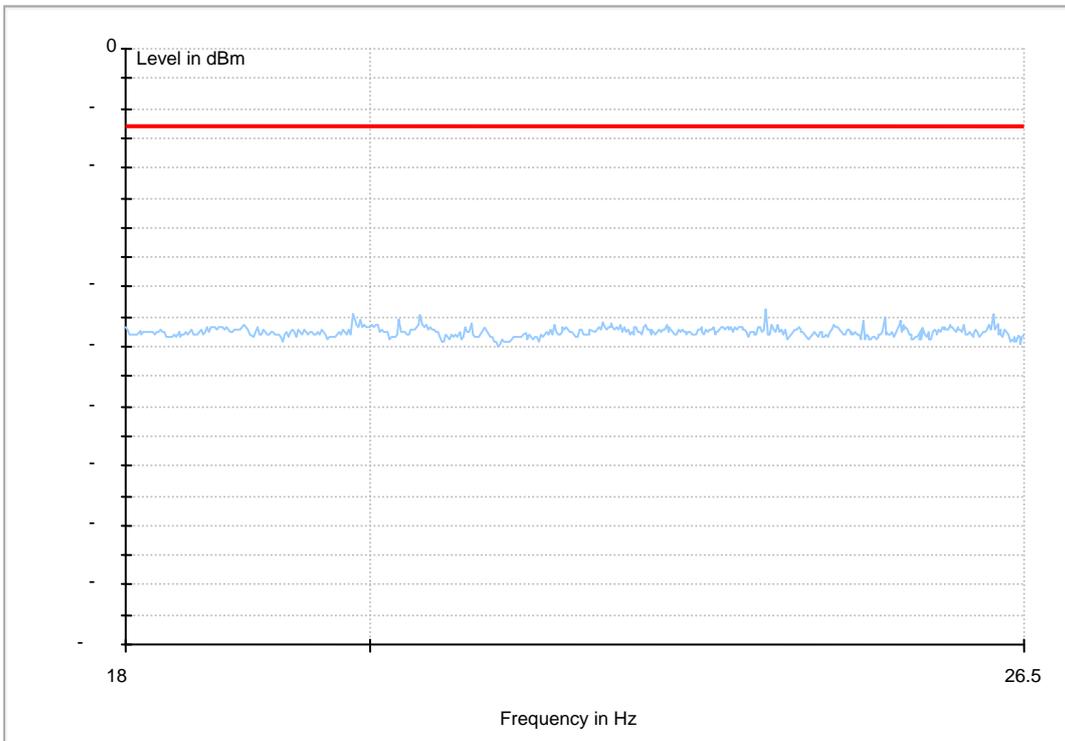
(30MHz~3GHz)



**(3GHz~18GHz)**

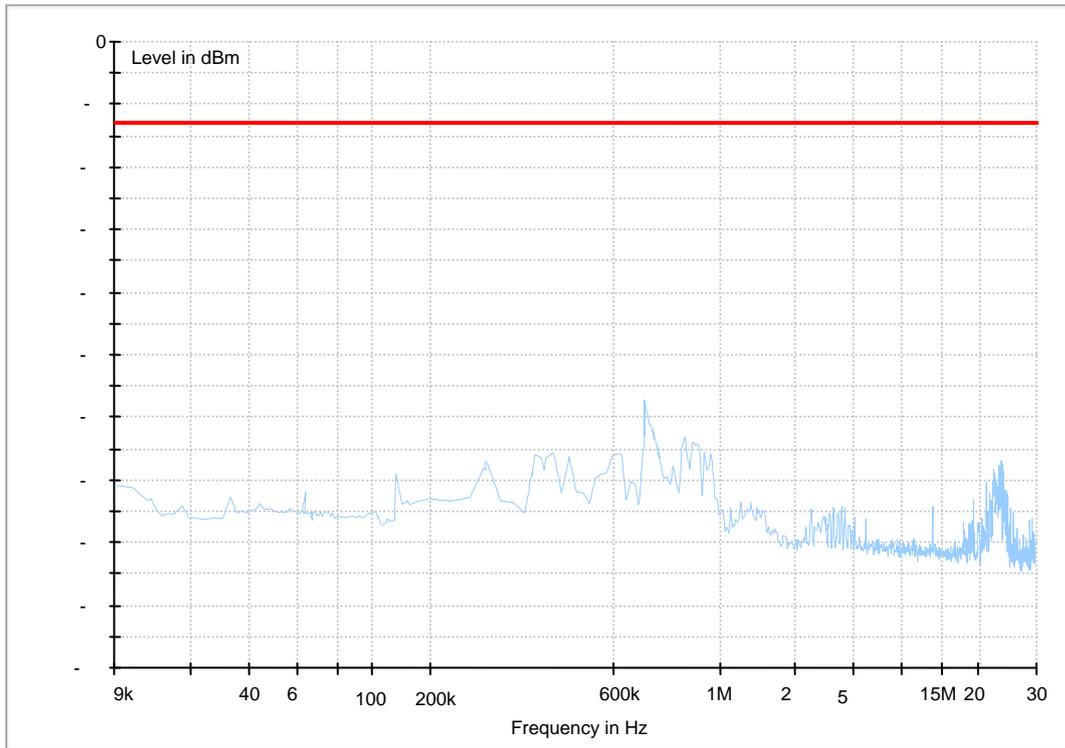


**(18GHz-26.5GHz)**

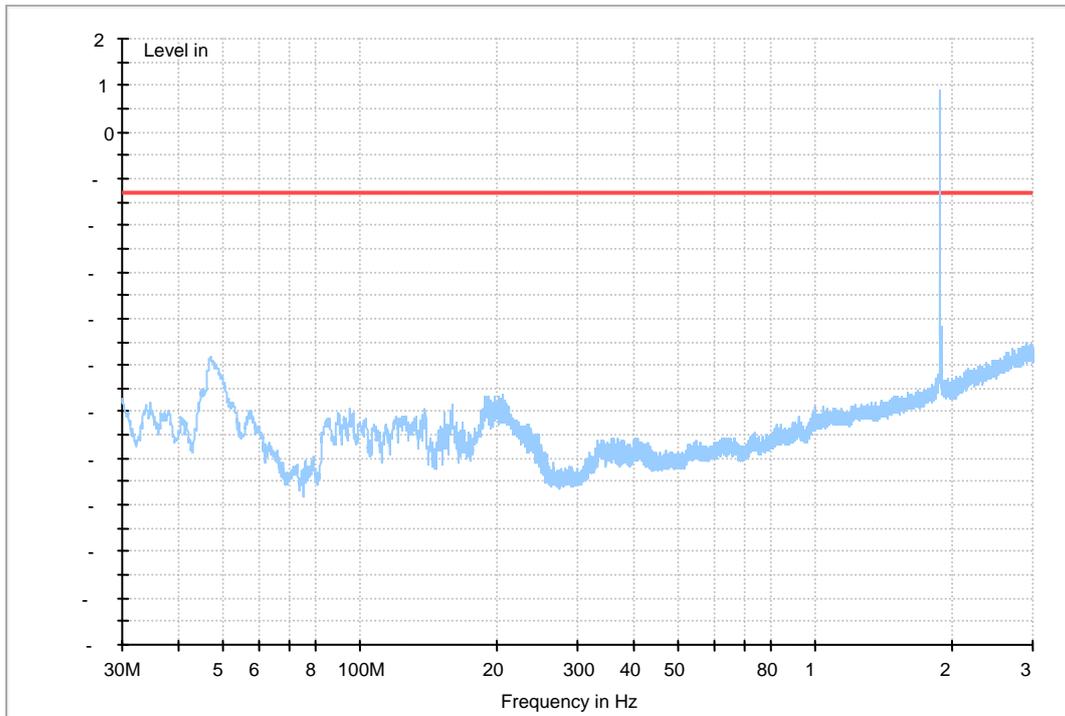


## EVDO 1900 Rev.0

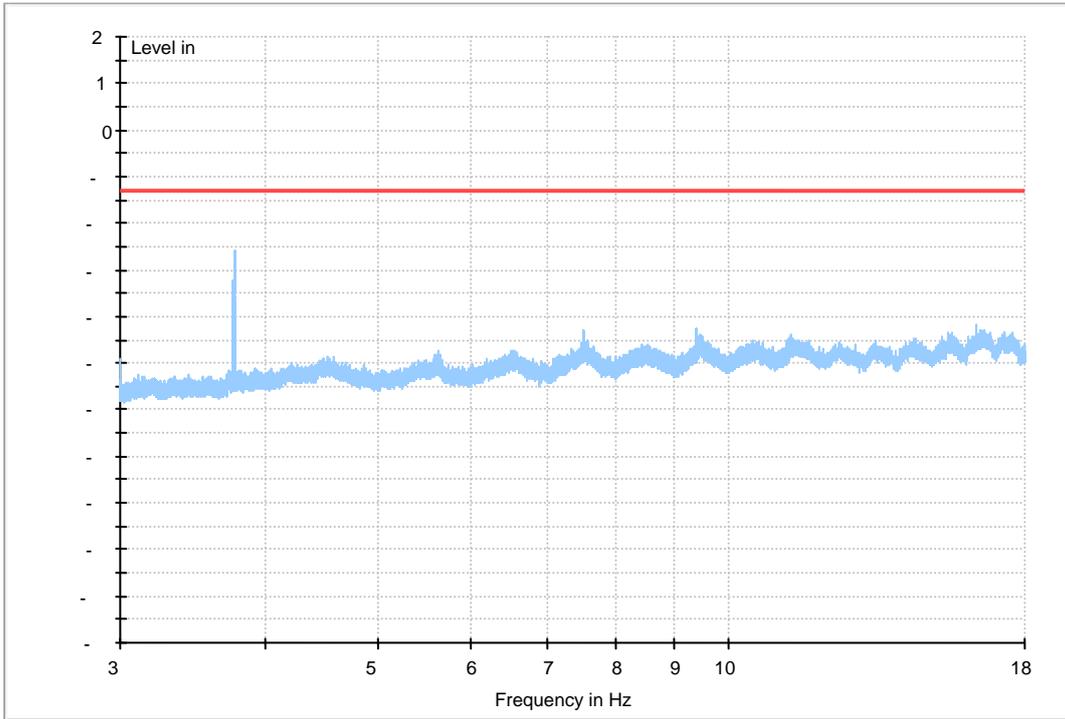
(9kHz-30MHz)



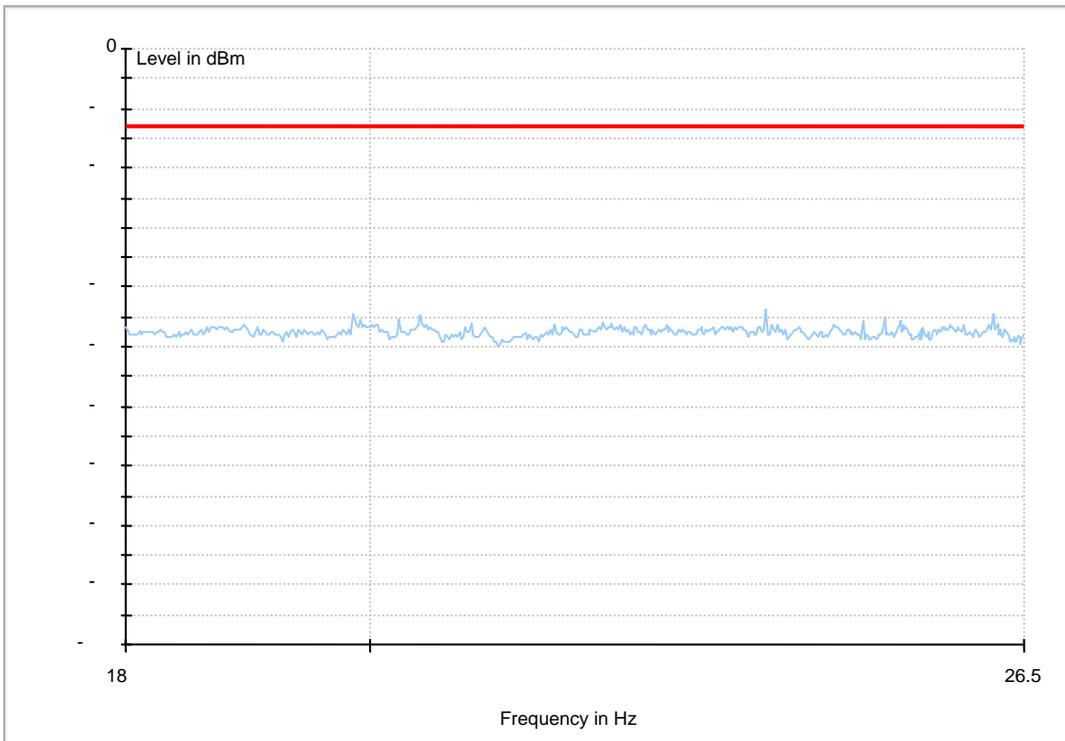
(30MHz~3GHz)



**(3GHz~18GHz)**

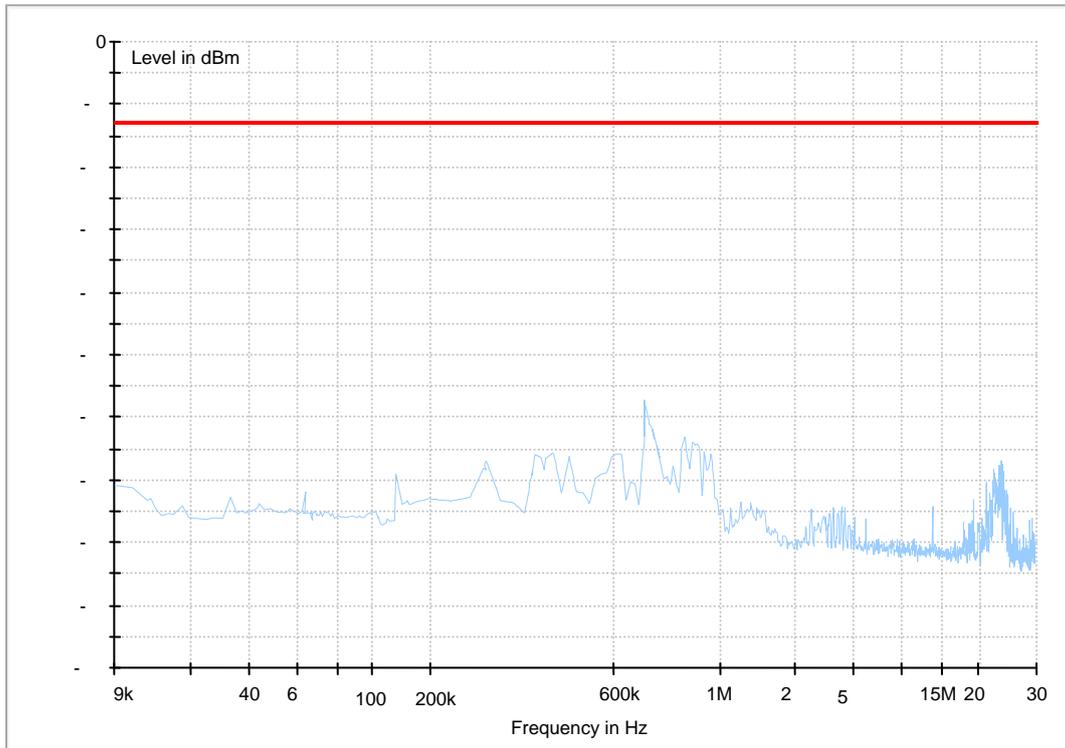


**(18GHz-26.5GHz)**

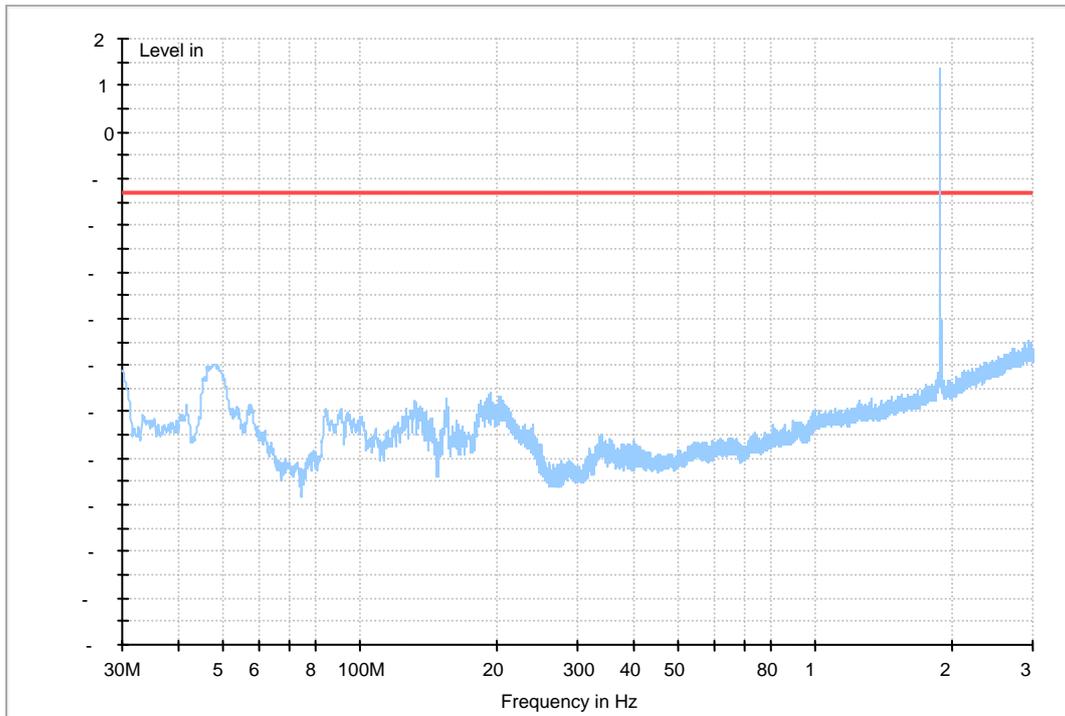


## EVDO 1900 Rev.A

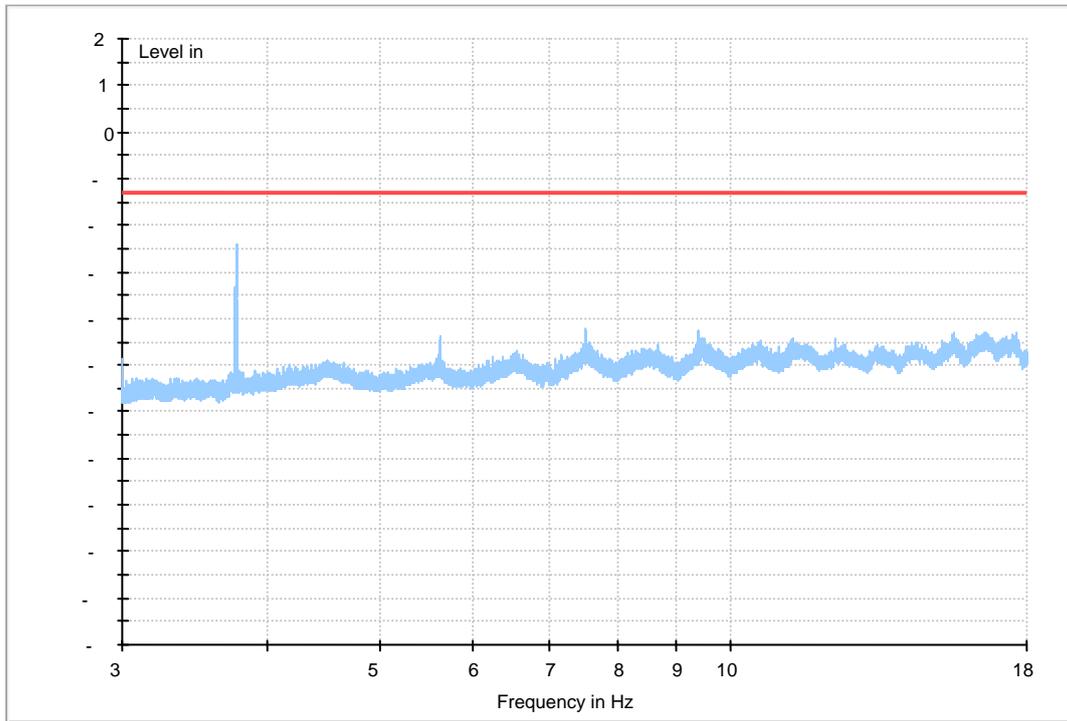
(9kHz-30MHz)



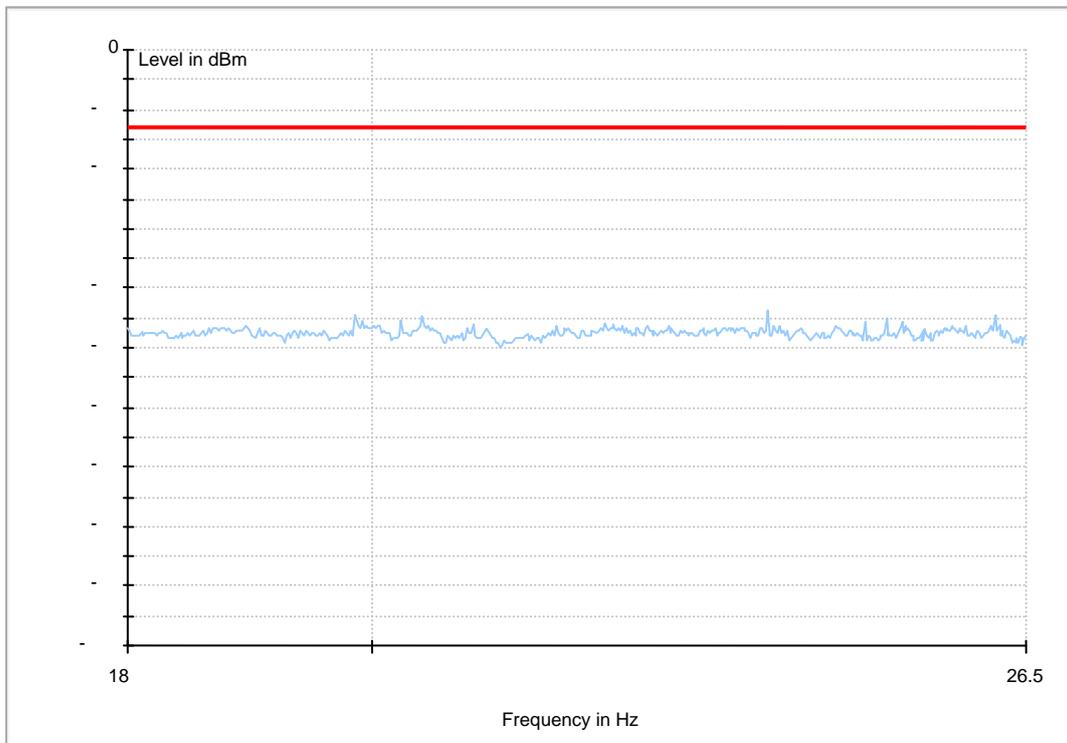
(30MHz~3GHz)



**(3GHz~18GHz)**



**(18GHz-26.5GHz)**





# Appendix G

## Frequency Stability According to FCC Part 2.1055& Part 24.235



## 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 CDMA&EVDO

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	-22	-0.01170	---	±2.5	Pass
			-20 °C	29	0.01543	---	±2.5	Pass
			-10 °C	7	0.00372	---	±2.5	Pass
			0 °C	-24	-0.01277	---	±2.5	Pass
			10 °C	8	0.00426	---	±2.5	Pass
			20 °C	13	0.00691	---	±2.5	Pass
			30 °C	-25	-0.01330	---	±2.5	Pass
			40 °C	-23	-0.01223	---	±2.5	Pass
TM 3	M	VN	50 °C	-18	-0.00957	---	±2.5	Pass
			-30 °C	-22	-0.01170	---	±2.5	Pass
			-20 °C	14	0.00745	---	±2.5	Pass
			-10 °C	-14	-0.00745	---	±2.5	Pass
			0 °C	9	0.00479	---	±2.5	Pass
			10 °C	28	0.01489	---	±2.5	Pass
			20 °C	20	0.01064	---	±2.5	Pass
			30 °C	12	0.00638	---	±2.5	Pass
Subtype 0	M	VN	40 °C	10	0.00532	---	±2.5	Pass
			50 °C	12	0.00638	---	±2.5	Pass
			-30 °C	-20	-0.01064	---	±2.5	Pass
			-20 °C	21	0.01117	---	±2.5	Pass
			-10 °C	17	0.00904	---	±2.5	Pass
			0 °C	-17	-0.00904	---	±2.5	Pass
			10 °C	-17	-0.00904	---	±2.5	Pass
			20 °C	20	0.01064	---	±2.5	Pass
Subtype 2	M	VN	30 °C	22	0.01170	---	±2.5	Pass
			40 °C	15	0.00798	---	±2.5	Pass
			50 °C	-7	-0.00372	---	±2.5	Pass
			-30 °C	25	0.01330	---	±2.5	Pass
			-20 °C	-18	-0.00957	---	±2.5	Pass
			-10 °C	16	0.00851	---	±2.5	Pass
			0 °C	-17	-0.00904	---	±2.5	Pass
			10 °C	21	0.01117	---	±2.5	Pass
Subtype 2	M	VN	20 °C	8	0.00426	---	±2.5	Pass
			30 °C	-13	-0.00691	---	±2.5	Pass
			40 °C	-21	-0.01117	---	±2.5	Pass
			50 °C	-6	-0.00319	---	±2.5	Pass



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

Table 2 Measurement Results CDMA&EVDO

Test Mode	RF Ch.	Temp.	Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM 1	M	20 °C	VL	15	0.00798	---	±2.5	Pass
			VN	-22	-0.01170	---	±2.5	Pass
			VH	23	0.01223	---	±2.5	Pass
TM 3	M	20 °C	VL	-9	-0.00479	---	±2.5	Pass
			VN	10	0.00532	---	±2.5	Pass
			VH	-12	-0.00638	---	±2.5	Pass
Subtype 0	M	20 °C	VL	-21	-0.01117	---	±2.5	Pass
			VN	18	0.00957	---	±2.5	Pass
			VH	18	0.00957	---	±2.5	Pass
Subtype 2	M	20 °C	VL	-18	-0.00957	---	±2.5	Pass
			VN	12	0.00638	---	±2.5	Pass
			VH	-23	-0.01223	---	±2.5	Pass

-----END-----