



# **FCC RF Test Report**

**Product Name: cdma2000 Digital Mobile Phone**

**Model Number: HUAWEI M866, M866**

**Report No: SYBH(Z-RF)005052012-2002**

**FCC ID: QISM866**

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

Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China

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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.



**Applicant:** Huawei Technologies Co., Ltd.  
**Address:** Huawei Base, Bantian, Longgang District, Shenzhen  
 518129, P.R. China  
**Date of Receipt Test Item:** May.09, 2012  
**Start Date of Test:** May.10, 2012  
**End Date of Test:** May.22, 2012

**Test Result:** Pass

Approved By Senior Engineer May.24, 2012 Dai Linjun *Dai Linjun*  
 Date Name Signature

Reviewed By May.24, 2012 Cousy Xu *Cousy XU*  
 Date Name Signature

Operator May.24, 2012 Huang Qiuliang *Huang Qiuliang*  
 Date Name Signature

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## GENERAL INFORMATION

<b>1.1 Applied Standard</b>	
Applied Rules:	47 CFR FCC Part 2, 2010. Subpart J 47 CFR FCC Part 27, 2010. Subpart C&L ANSI/TIA 603C:2004
<b>1.2 Test Location</b>	
Test Location 1:	Reliability Laboratory of Huawei Technologies Co., Ltd.
Address:	Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China
<b>1.3 Test Environment Condition</b>	
Ambient Temperature:	20 – 25 °C
Ambient Relative Humidity:	45 – 55 %
Atmospheric Pressure:	101 kPa

# 1 Summary

Table 1 Summary of results

AWS Band			
Test Case	FCC Part No.	Requirements	Result
Transmitter Output Power	2.1046 & 27.50(d)	Peak EIRP not exceed 1 W	Pass
Modulation Characteristics	2.1047	Digital modulation	Pass
Occupied Bandwidth	2.1049	(Not specified)	Pass
Band Edges Compliance	2.1051 & 27.53(h)	Below -13 dBm/1%*EBW, in 1 MHz range	Pass
Spurious Emission at Antenna Terminals	2.1051 & 27.53(h)	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 & 27.53(h)	Below -13 dBm/1 MHz	Pass
Frequency Stability	2.1055 & 27.54	Stay within the authorized bands of operation	Pass

## 2 Product Description

### 2.1 Production Information

#### 2.1.1 General Description

cdma2000 Digital Mobile Phone HUAWEI M866, M866 is subscriber equipment in the CDMA/EVDO system. The frequency band is US Cellular and N. American PCS and AWS, But only AWS Band test data 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.

The difference between M866 and H866C is showed in the following table.

	HUAWEI M866, M866	HUAWEI H866C, H866C
supports bands	BC0, BC1 and BC15.	BC0, BC1
FLASH	the same	the same
PCB	the same	the same
Appearance	the same	the same
Bluetooth mode	the same	the same
WLAN mode	the same	the same
BT/ WLAN antenna	the same	the same
GSM/ WCDMA antenna	the same	the same
External camera	the same	the same
internal camera	the same	the same
Adapter	the same	the same
Battery	the same	the same
Chipset	the same	the same
Memory	the same	the same
Form factor	Bar type, Internal antenna	Bar type, Internal antenna
RF Parameter	the same	the same
BT RF Parameter	the same	the same
Dimension	the same	the same
Weight	the same	the same
Bluetooth	the same	the same
External camera	the same	the same
Main Frequency NV	The same NV in the same band	The same NV in the same band
BT conducted power	the same	the same

WIFI conducted power	the same	the same
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The M866 CDMA BC0/BC1,BT/WIFI band test data refer to H866C.

## 2.1.2 Board

Table 1 Board Information

cdma2000 Digital Mobile Phone		
HUAWEI M866, M866		
Main board		
Software Version	Hardware Version	S/N
M866V100R001C289B815	HC1C8655M	N3L01A9242600128

## 2.1.3 Adapter

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

## 2.1.4 Battery Technical Data

Name	Manufacture	Description
Rechargeable Li-ion	Huawei Technologies Co., Ltd.	Battery Model: HB5K1H Rated capacity: 1400mAh Nominal Voltage:  +3.7V Charging Voltage:  +4.2V

### 3 Test Description

#### 3.1 Supported Frequency Range

Characteristics	Description
Downlink	2110 to 2155 MHz
Uplink	1710 to 1755 MHz

#### 3.2 Transmitter / Receiver Characteristics

Characteristics	Description
System Type	CDMA
TX Output Power (per Antenna Port)	CDMA system: 24 dBm
Channel Spacing(s) / Bandwidth(s)	CDMA system: 1.23 MHz (Celluar band) 1.25 MHz (Other than Cellular band)
Designation of Emissions	CDMA system: 1M29F9W (Celluar band) 1M29F9W (Other than Cellular band)

#### 3.3 Antenna Gain

Antenna Gain(dBi)	0.25
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#### 3.4 Power Supply

Specification	Description
Power Supply Type	Directly Connected to DC /AC Power Supply
Input to EUT (DC power)	DC Voltage Nominal: $\overline{\text{---}}$ +3.7V DC Voltage Range: $\overline{\text{---}}$ +3.6 V to +4.2V
Input to EUT (AC power)	AC Voltage Nominal: ~ 220V (50/60 Hz) AC Voltage Range: ~ 100V-240V

## 4 General Test Conditions / Configurations

### 4.1 RF Channels under Test

Test Mode	TX / RX	RF Channel		
		Bottom (B)	Middle (M)	Top (T)
TM1/TM3/ Subtype 0/ Subtype 2	TX	Channel 25	Channel 450	Channel 875
		1711.25MHz	1732.5MHz	1753.75MHz
	RX	Channel 25	Channel 450	Channel 875
		2111.25MHz	2132.5MHz	2153.75MHz

### 4.2 Test Modes

Test Mode	Test Modes Description
TM1/TM3	CDMA2000 1x
Subtype 0/ Subtype 2	CDMA2000 1x EV-DO

### 4.3 Test Environments

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

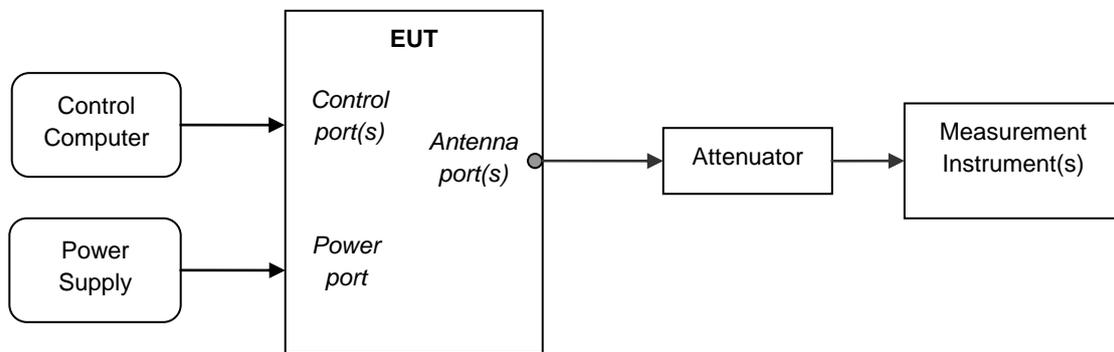
NOTE: VL= lower extreme test voltages  
 VN= nominal voltage  
 VH= upper extreme test voltage  
 TN= normal temperature

## 4.4 Test Setups

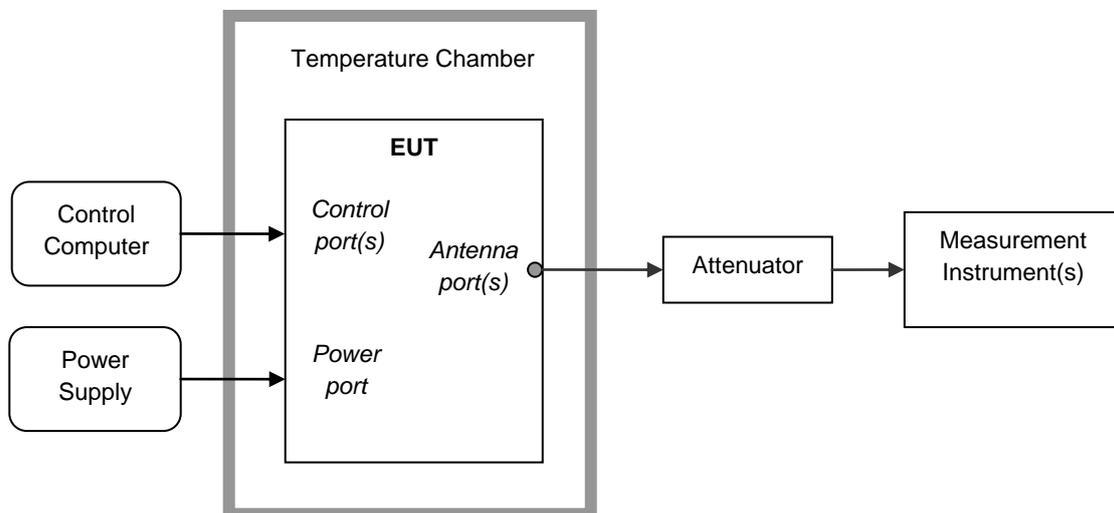
### 4.4.1 General Test Setup Configurations

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.

### 4.4.2 Test Setup 1



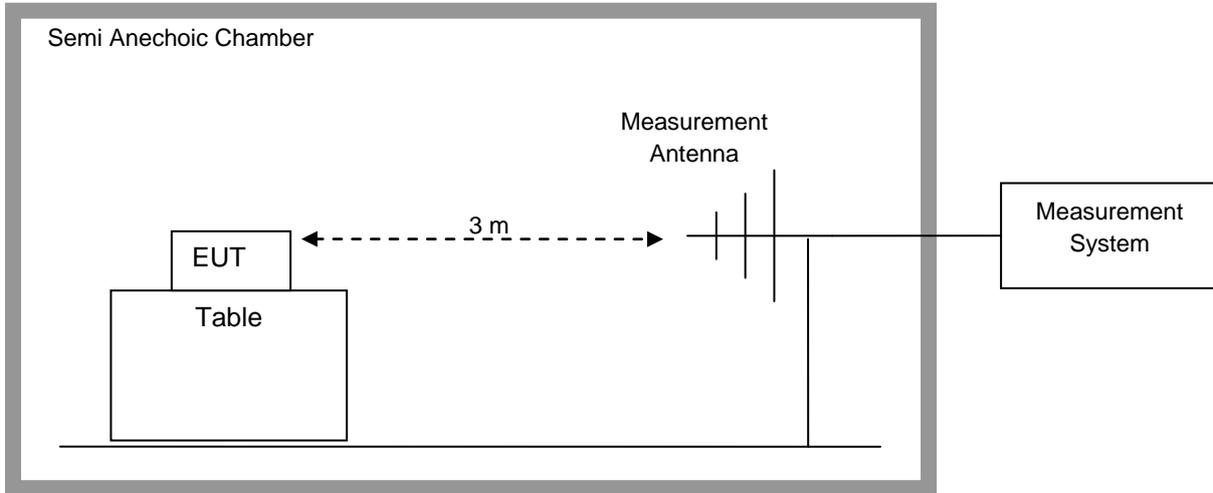
### 4.4.3 Test Setup 2



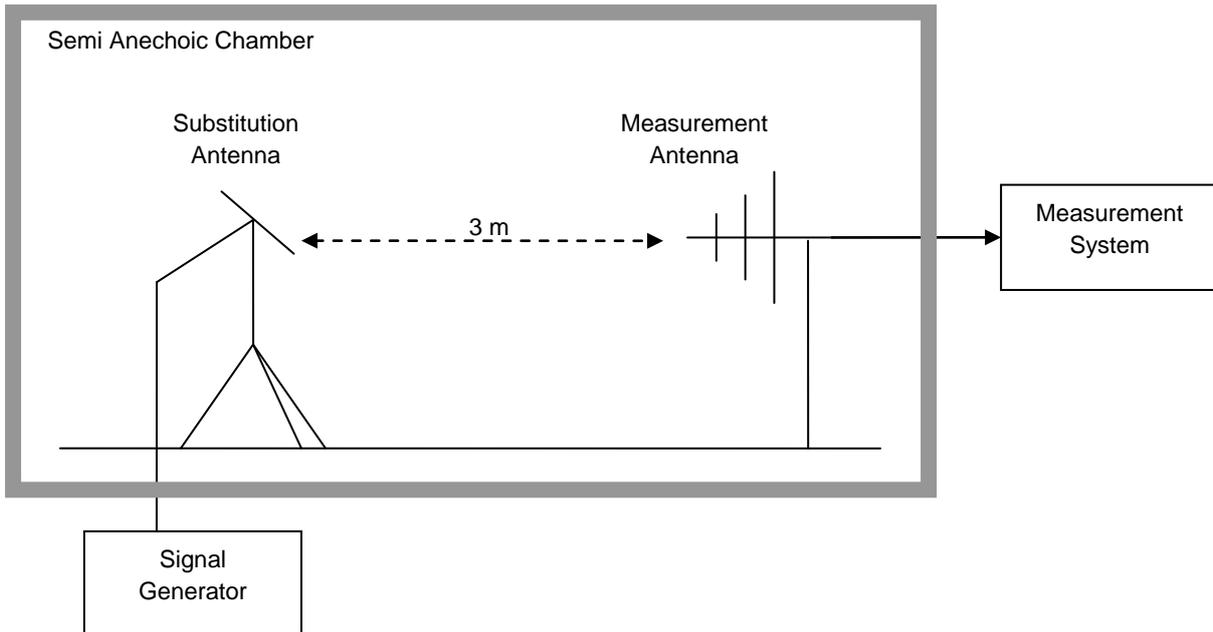
#### 4.4.4 Test Setup 3

NOTE: Efficient Isotropic Radiated Power (EIRP) refers to the radiation power output of the EUT, assuming all emissions are radiated from half-wave dipole antennas.

##### Step 1: Pre-test



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



## 4.5 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)	B, M, T
	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)	B, M, T
	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)	B, T
	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)	B, M, T
	Test Mode	TM1/TM3/ Subtype 0/ Subtype 2
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



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

## 5 Main Test Instruments

Table 2 Main Test Equipments

Equipment Description	Manufacturer	Model	Serial Number	Calibrated until
Power supply	KEITHLEY	2303	1288003	Sep.27,2012
Universal Radio Communication Tester	R&S	CMU200	117341	Jan.12.2013
Universal Radio Communication Tester	Agilent	E5515C	MY50260239	Aug.31,2012
Spectrum Analyzer	Agilent	E4440A	MY49420179	Jul.17,2012
Signal Analyzer	R&S	FSQ31	200021	Sep.27,2012
Temperature Chamber	WEISS	WKL64	24600294	Feb.13,2013
Signal generator	Agilent	E8257D	MY49281095	Jul.09.2012
Test receiver	R&S	ESU26	100150	May.29.2012
Tunable Dipole	Schwarzbeck	D69250-UHAP/D69250-VHAP	919/1009	Jan.29.2013
Tunable Dipole	Schwarzbeck	D69250-UHAP/D69250-VHAP	979/917	Jan.29.2013
Horn Antenna	R & S	HF906	100683	May.14, 2013
Horn Antenna	R & S	HF906	100684	Jul.01, 2012
Broadband Antenna	Schwarzbeck	VULB 9163	9163-357	May.14, 2013
Broadband Antenna	Schwarzbeck	VULB 9163	9163-356	May.14, 2013
Universal Radio Communication Tester	R & S	CMW500	20347676	Sep.07,2012
Universal Radio Communication Tester	Anritsu	MT8820C	6200971028	May.04, 2012

## 6 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 Radiated Spurious Emissions	Appendix H

NOTE: The Appendix H only photos of Radiated Spurious Emissions, no test data.



## 7 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-----



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# Appendix A

## Transmitter Output Power According to FCC Part 2.1046 & Part 27.50



## Conducted Power of Transmitter

### Measurement Results

TEST CONDITIONS (TN/VN)	RF Output Power(Conducted)					
	Channel 25(B) 1711.25MHz		Channel 450(M) 1732.50MHz		Channel 875(T) 1753.75MHz	
	dBm		dBm		dBm	
	Measured	Limit	Measured	Limit	Measured	Limit
TM1	23.36	30.0	23.10	30.0	23.48	30.0
TM3	23.38	30.0	23.17	30.0	23.38	30.0
Subtype 0	23.02	30.0	22.95	30.0	23.21	30.0
Subtype 2	23.35	30.0	23.14	30.0	23.46	30.0



## Peak-to-Average Ratio

Measurement Results(CDMA)

TEST CONDITIONS (TN/VN)						
	Channel 25(B) 1711.25MHz		Channel 450(M) 1732.50MHz		Channel 875(T) 1753.75MHz	
	dB		dB		dB	
	Measure d	Limit	Measure d	Limit	Measure d	Limit
TM1	6.55	13.0	<b>6.72</b>	13.0	6.42	13.0
TM3	6.43	13.0	6.51	13.0	6.63	13.0
Subtype 0	6.56	13.0	<b>6.82</b>	13.0	6.59	13.0
Subtype 2	6.63	13.0	6.63	13.0	6.57	13.0



## Test Plot of Peak-to-Average Ratio

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

CDMA





EVDO





## Effective Isotropic Radiated Power of Transmitter (EIRP)

### Substitution Results

Test Mode	Freq. [MHz]	Meas. Level [dBm]	Substitution Antenna Type	SGP [dBm]	Substitution Gain [dBi]	Cable Loss [dB]	Substitution Level (EIRP) [dBm]	FCC limit [dBm]	Result
TM1	1711.25	23.61	Horn Ant.	20.19	4.5	1	23.69	30	Pass
TM1	1732.5	23.35	Horn Ant.	19.93	4.5	1	23.43	30	Pass
TM1	1753.75	23.73	Horn Ant.	19.96	4.8	1	23.76	30	Pass
TM3	1711.25	23.63	Horn Ant.	20.21	4.5	1	23.71	30	Pass
TM3	1732.5	23.42	Horn Ant.	20.05	4.5	1	23.55	30	Pass
TM3	1753.75	23.63	Horn Ant.	19.93	4.8	1	23.73	30	Pass
Subtype 0	1711.25	23.27	Horn Ant.	19.81	4.5	1	23.31	30	Pass
Subtype 0	1732.5	23.20	Horn Ant.	19.96	4.5	1	23.46	30	Pass
Subtype 0	1753.75	23.46	Horn Ant.	19.81	4.8	1	23.61	30	Pass
Subtype 2	1711.25	23.60	Horn Ant.	20.25	4.5	1	23.75	30	Pass
Subtype 2	1732.5	23.39	Horn Ant.	19.94	4.5	1	23.44	30	Pass
Subtype 2	1753.75	23.71	Horn Ant.	20.03	4.8	1	23.83	30	Pass

Note: a, For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should take 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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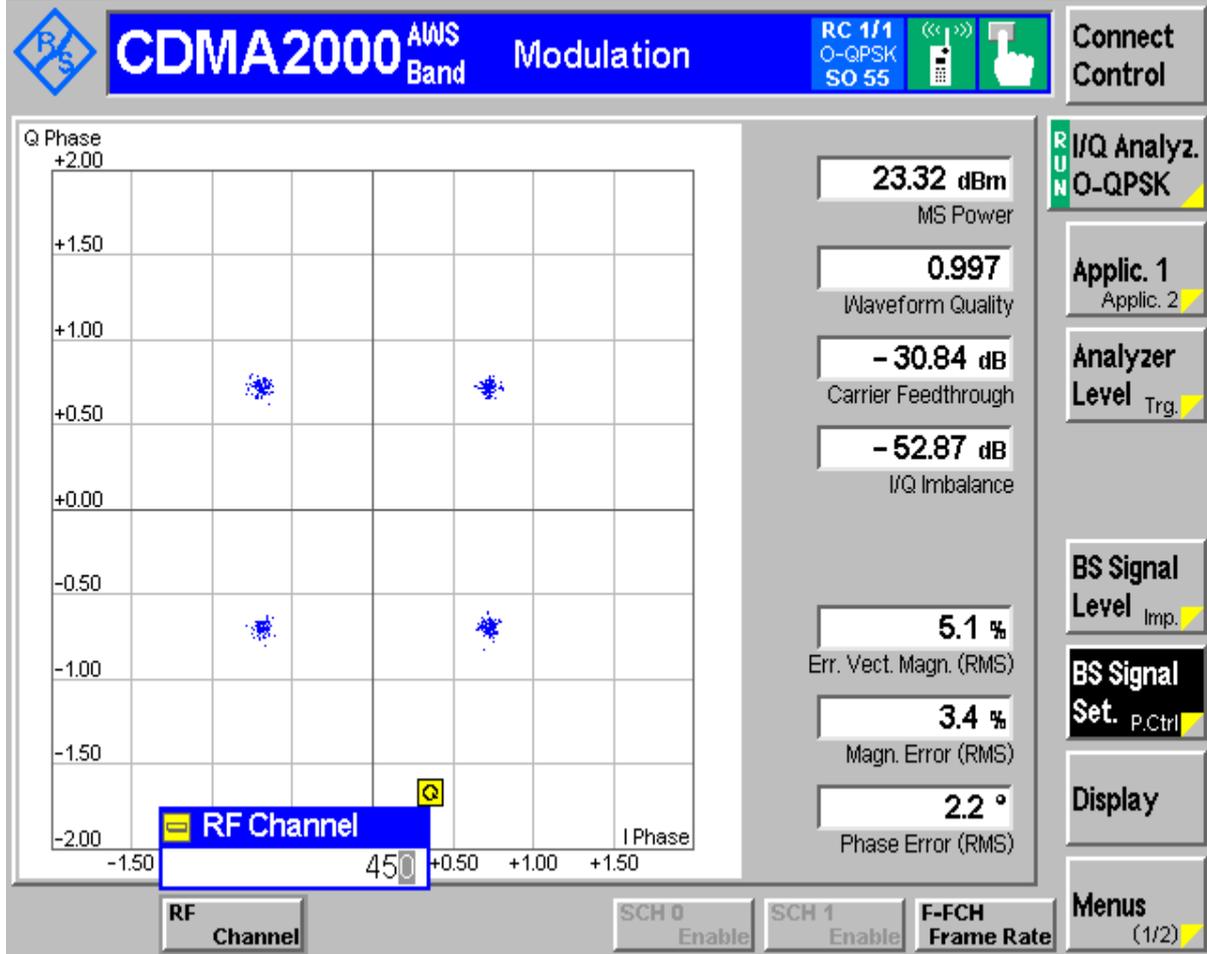
## Appendix B

# Modulation Characteristics

According to FCC Part 2.1047& Part 27 Subpart E

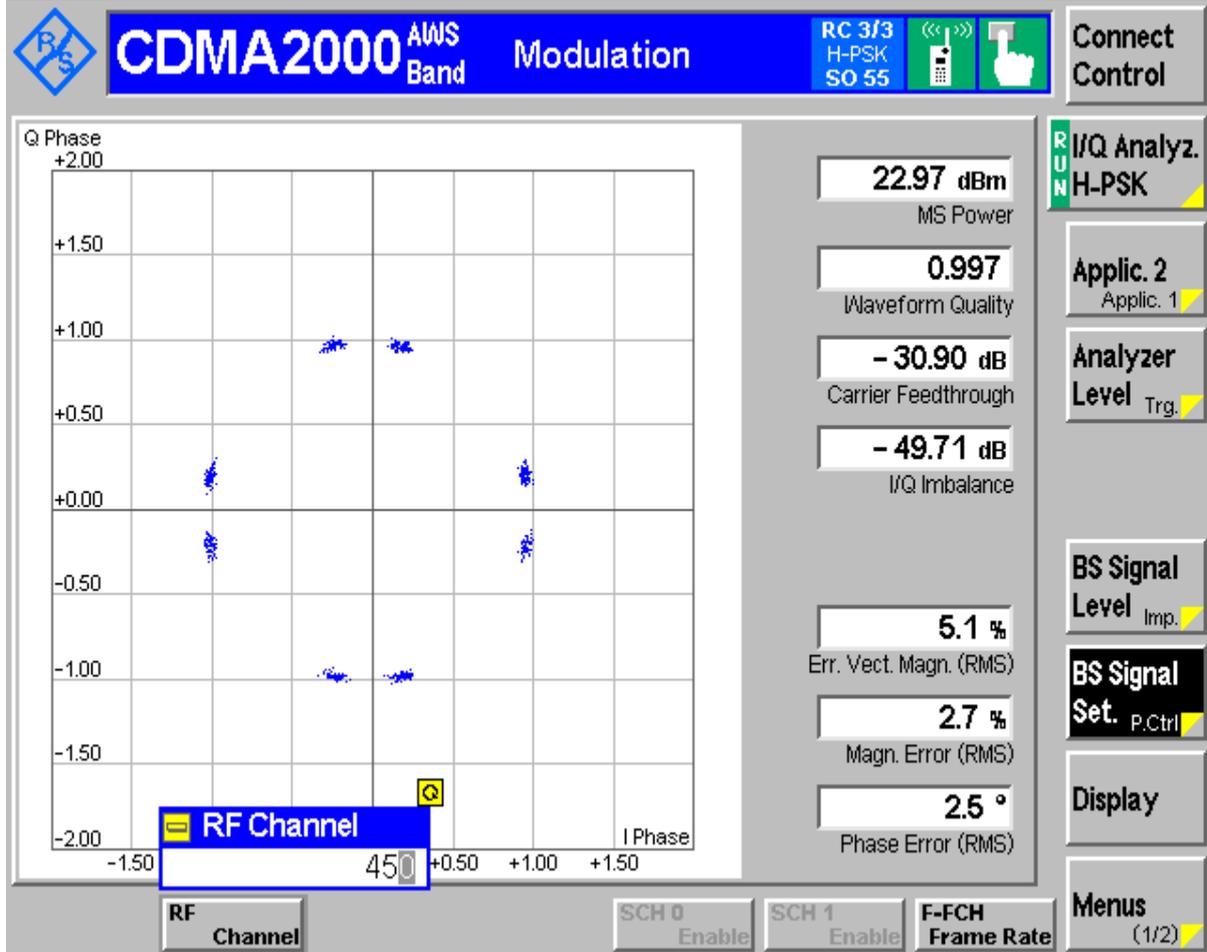


Channel 450 (TM1)



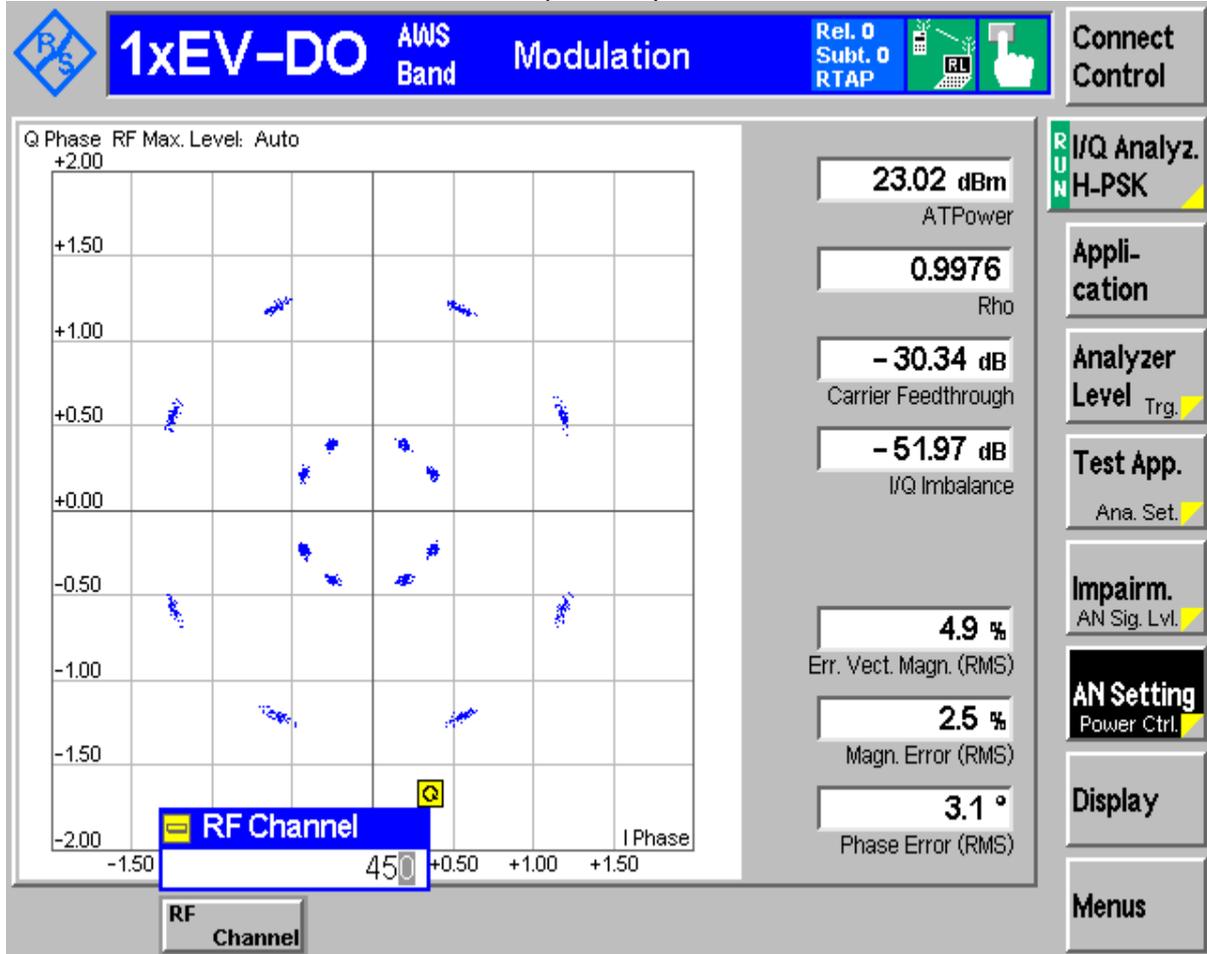


Channel 450 (TM3)





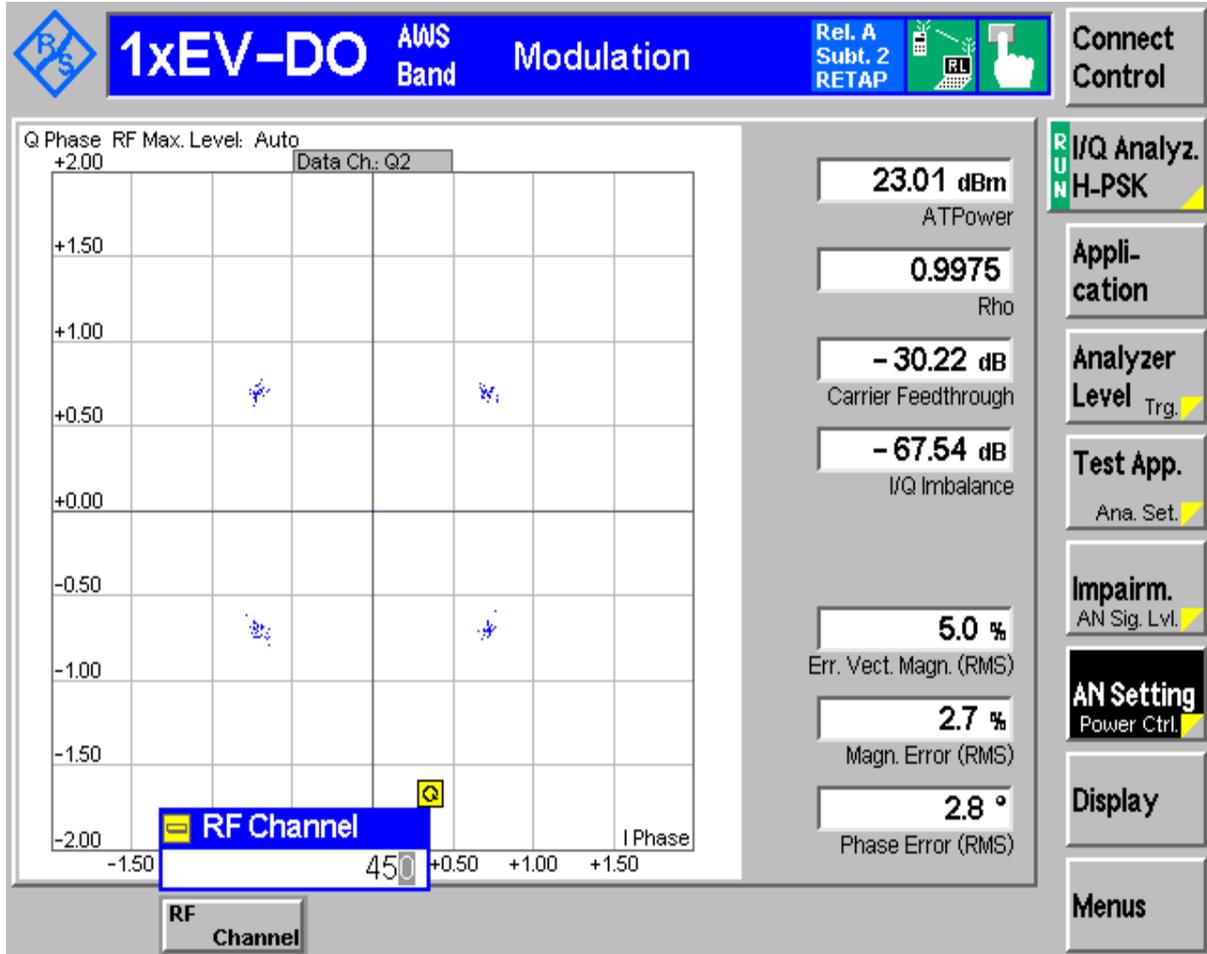
Channel450 (Subtype 0)  
(HPSK)





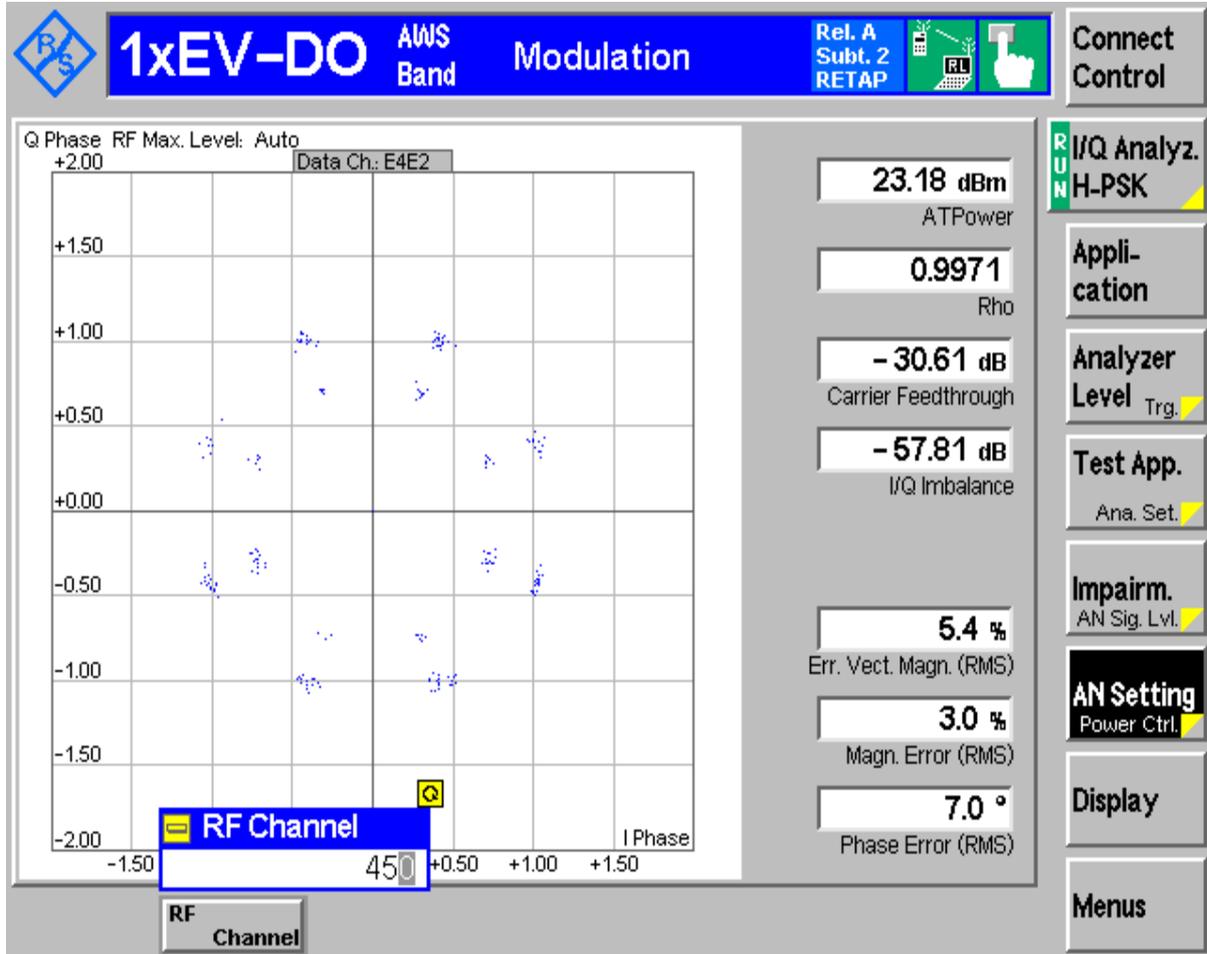


R-Data Pkt Size (4096 bits)  
(QPSK)





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



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



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# Appendix C

## Occupied Bandwidth

According to FCC part 2.1049 & Part 27 Subpart E

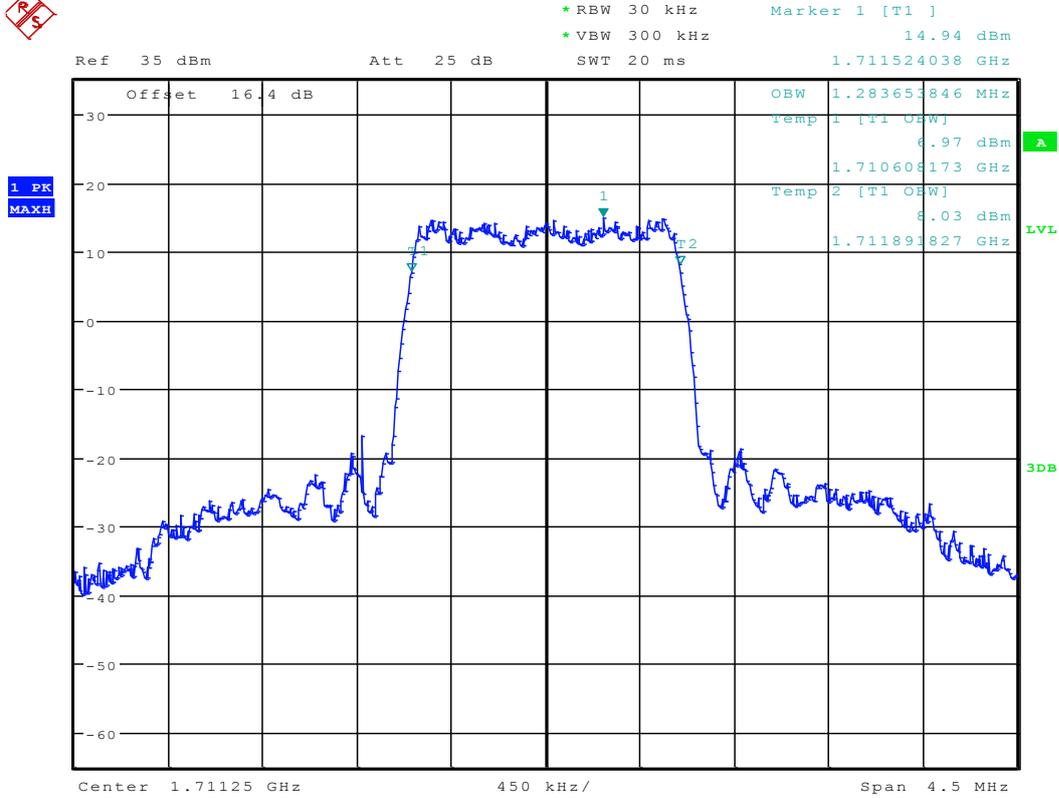


### Result Table

Test Mode	RF Channel	Occupied Bandwidth [MHz]	Verdict
TM1	B	1.284	Pass
	M	1.284	Pass
	T	1.284	Pass
TM3	B	1.291	Pass
	M	1.284	Pass
	T	1.284	Pass
Subtype 0	B	1.286	Pass
	M	1.286	Pass
	T	1.286	Pass
Subtype 2	B	1.280	Pass
	M	1.280	Pass
	T	1.286	Pass



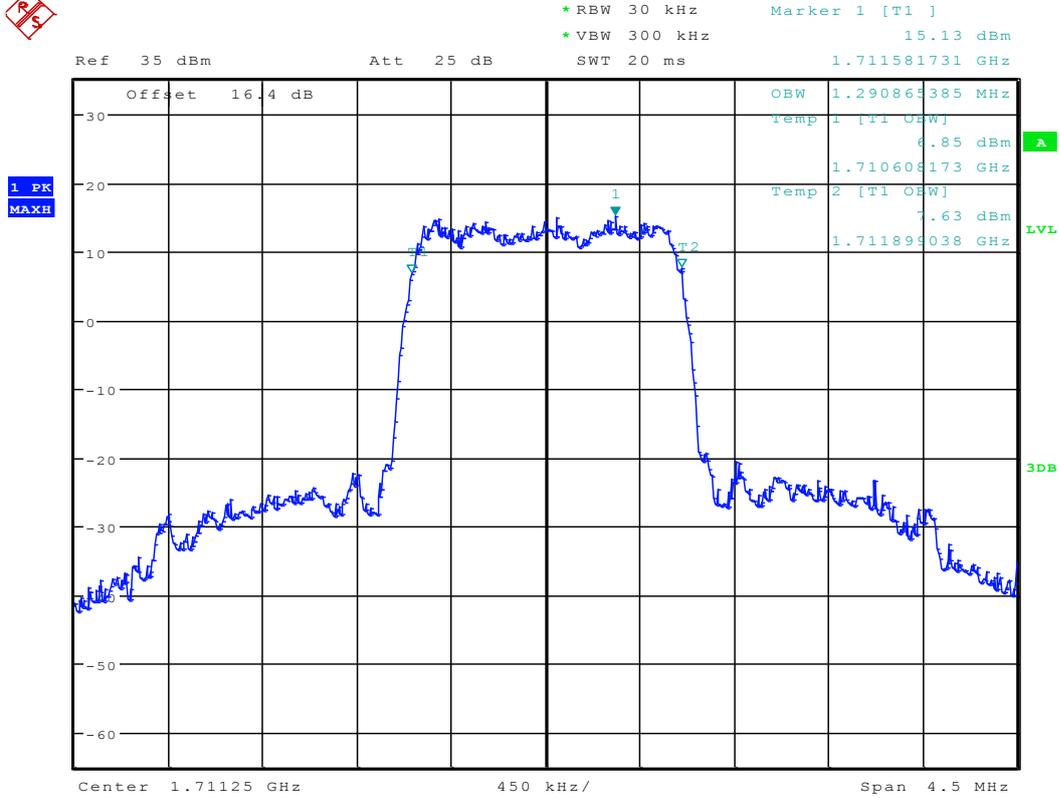
## Channel 25(TM1)



Date: 27.APR.2012 00:57:25



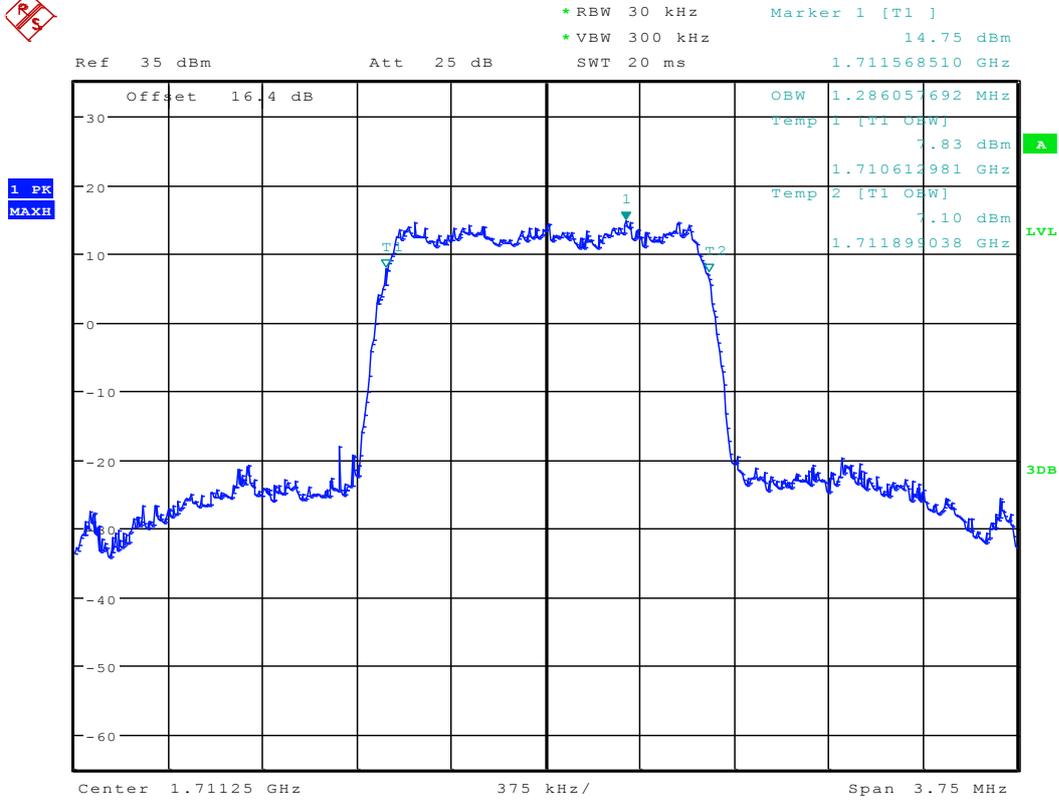
## Channel 25 (TM3)



Date: 27.APR.2012 00:58:08



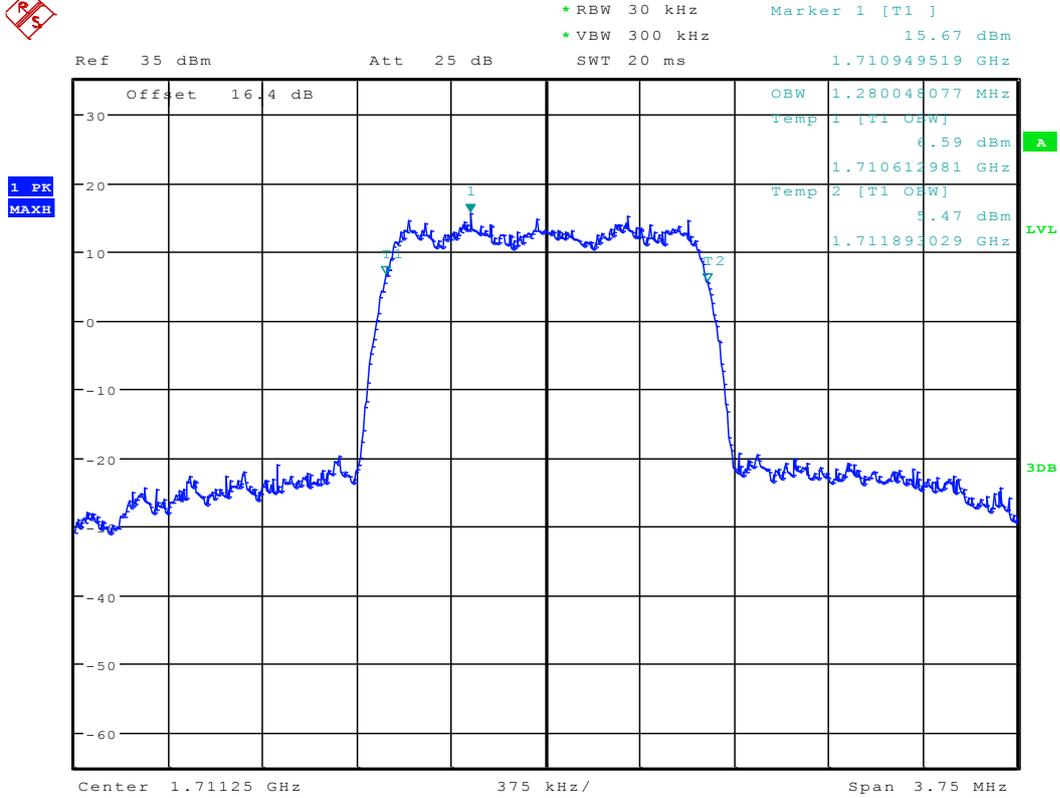
## Channel 25 (EVDO subtype 0)



Date: 27.APR.2012 01:02:57



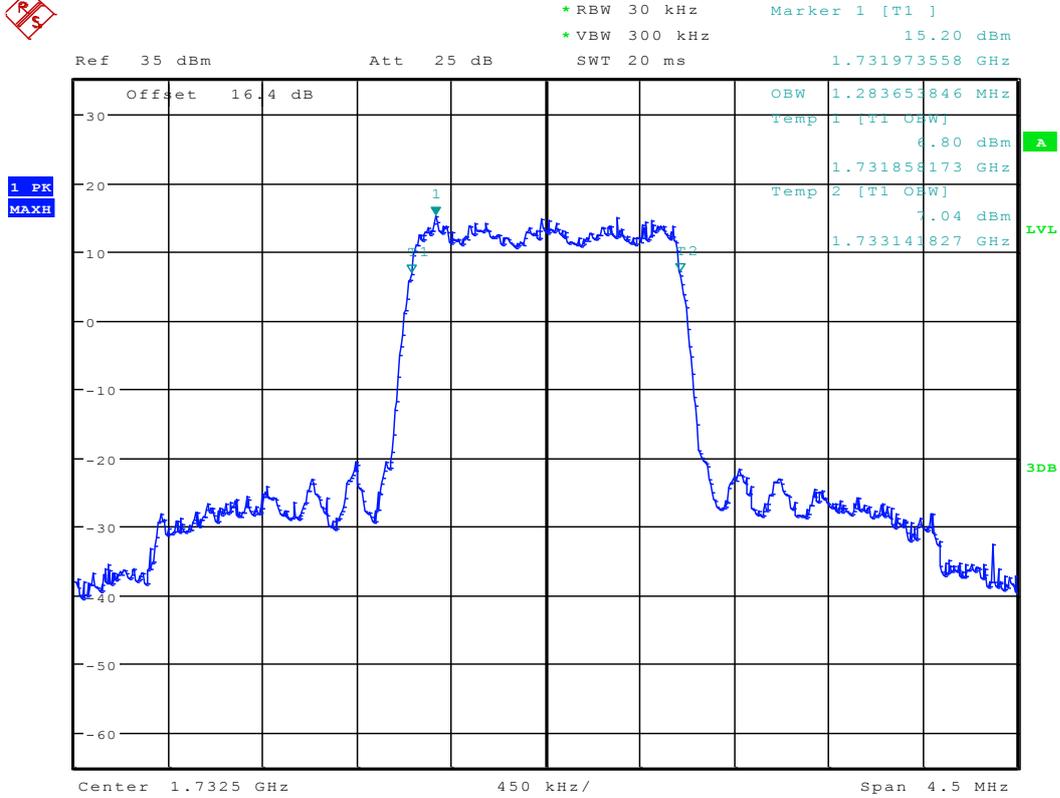
## Channel 25(EVDO Subtype 2)



Date: 27.APR.2012 01:07:37



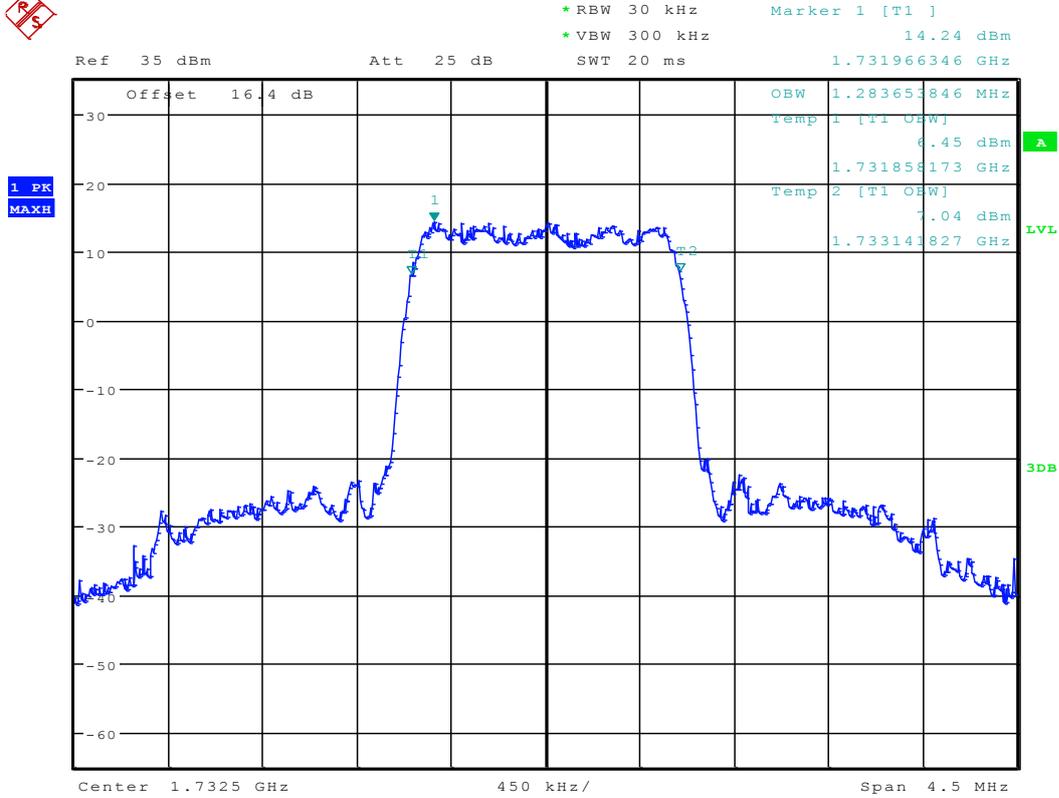
## Channel 450 (TM1)



Date: 27.APR.2012 00:57:39



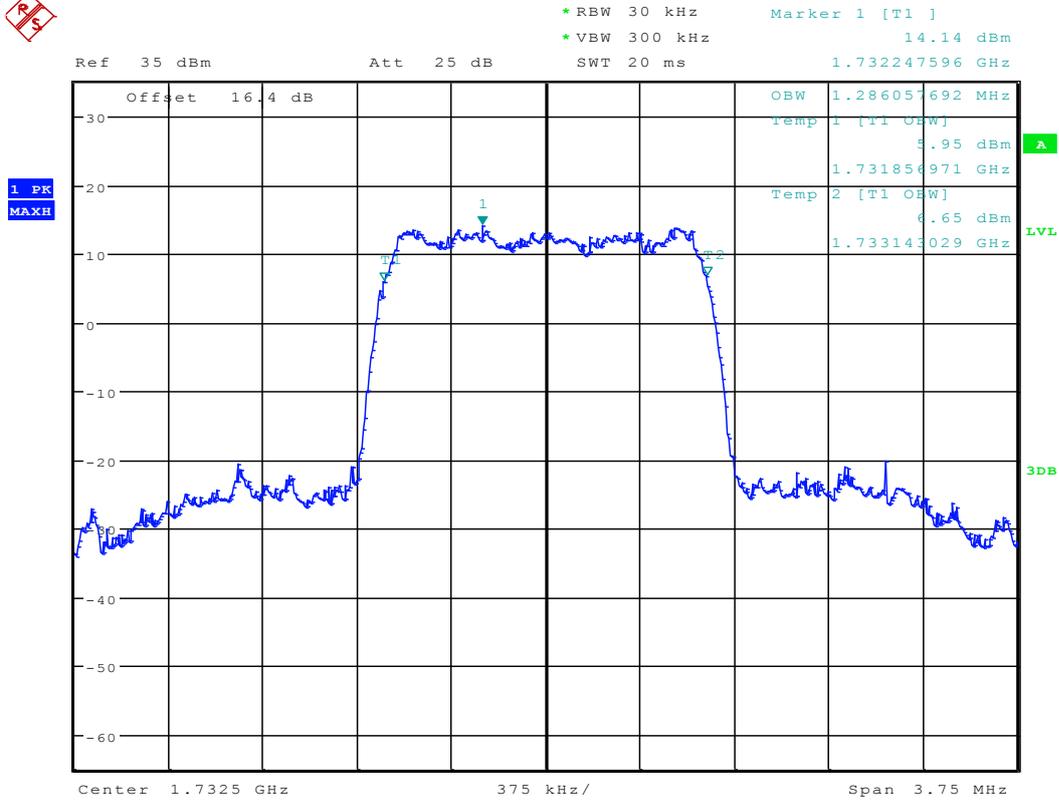
### Channel 450 (TM3)



Date: 27.APR.2012 00:58:22



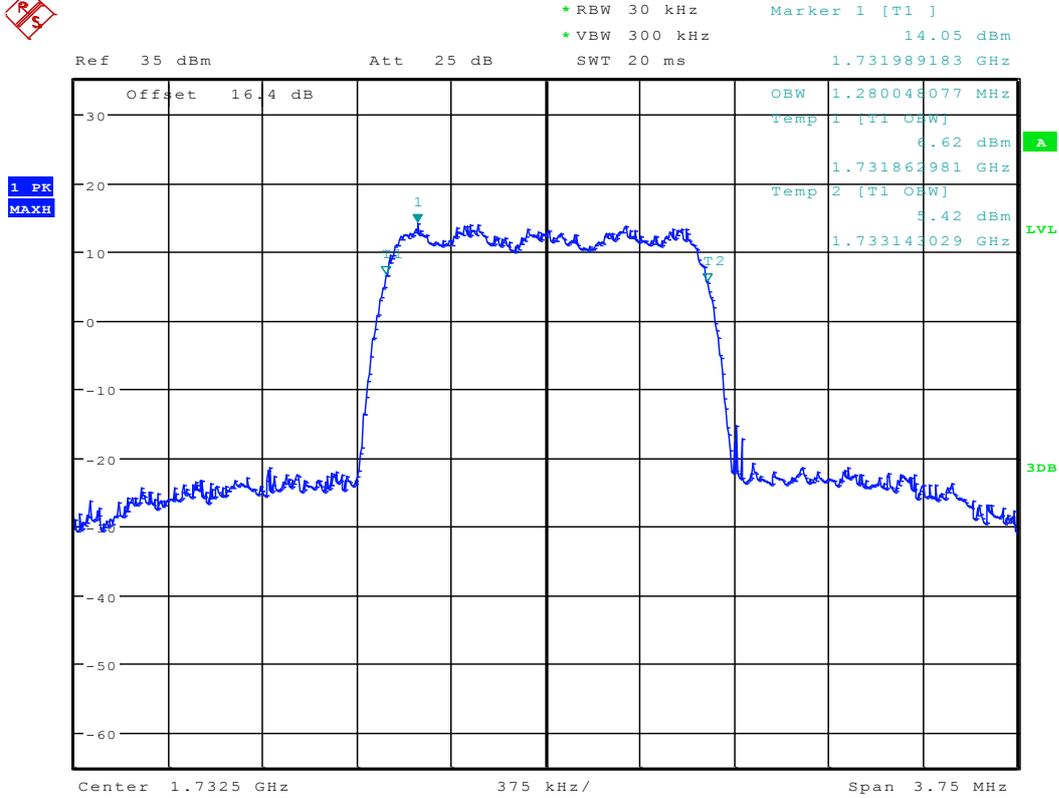
## Channel 450 (EVDO subtype 0)



Date: 27.APR.2012 01:03:11



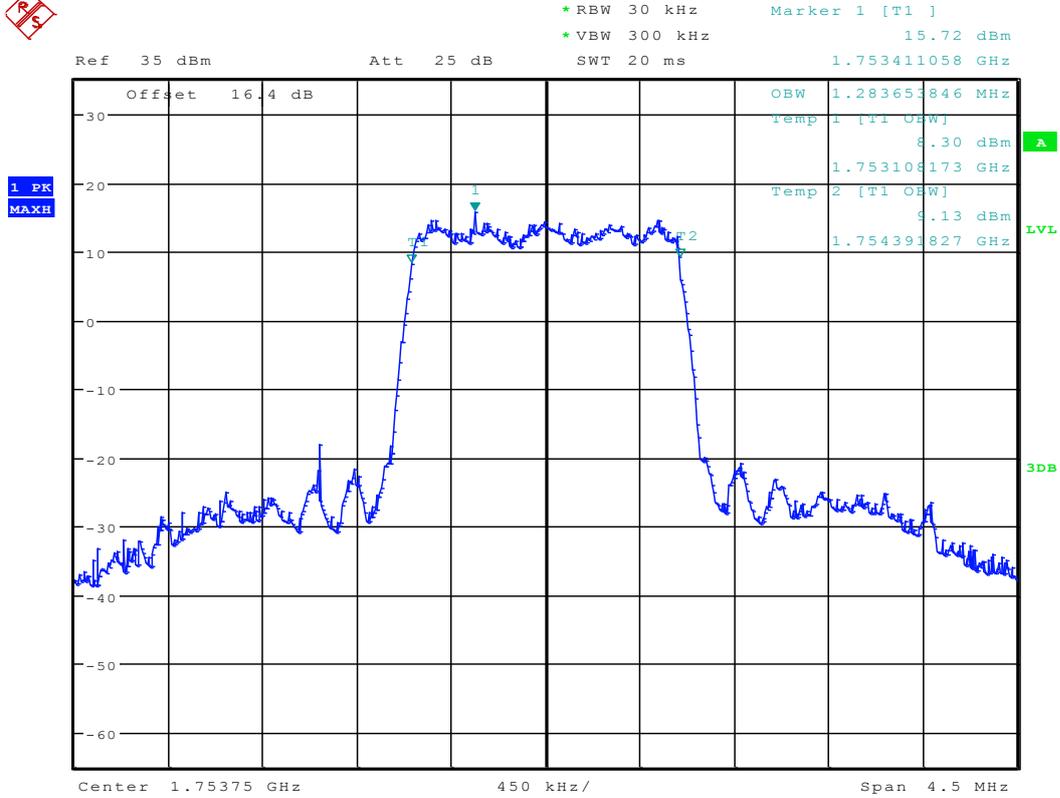
## Channel 450 (EVDO subtype 2)



Date: 27.APR.2012 01:07:49



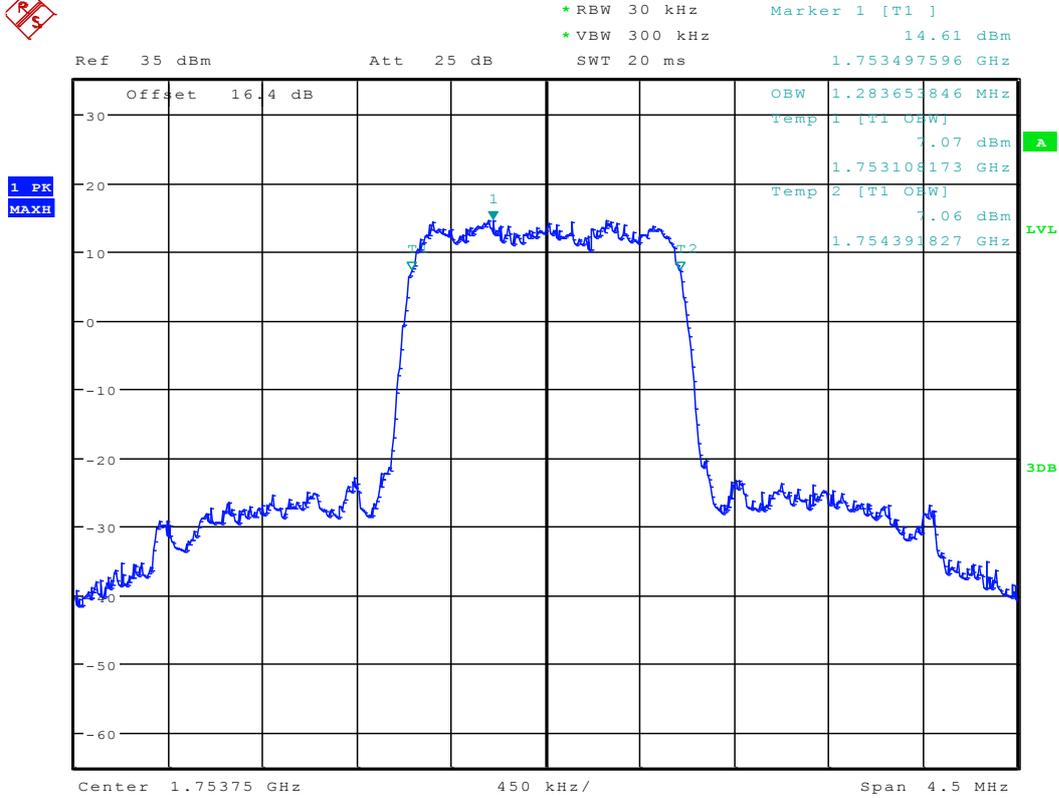
## Channel 875 (TM1)



Date: 27.APR.2012 00:57:53



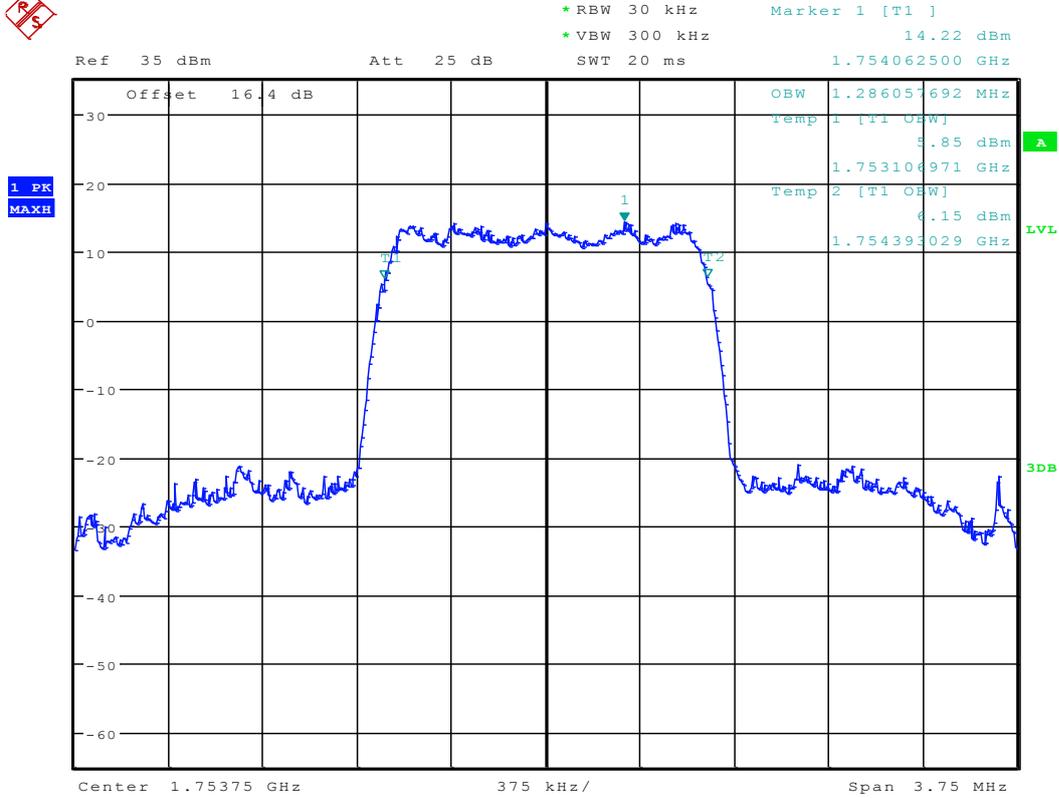
### Channel 875(TM3)



Date: 27.APR.2012 00:58:36



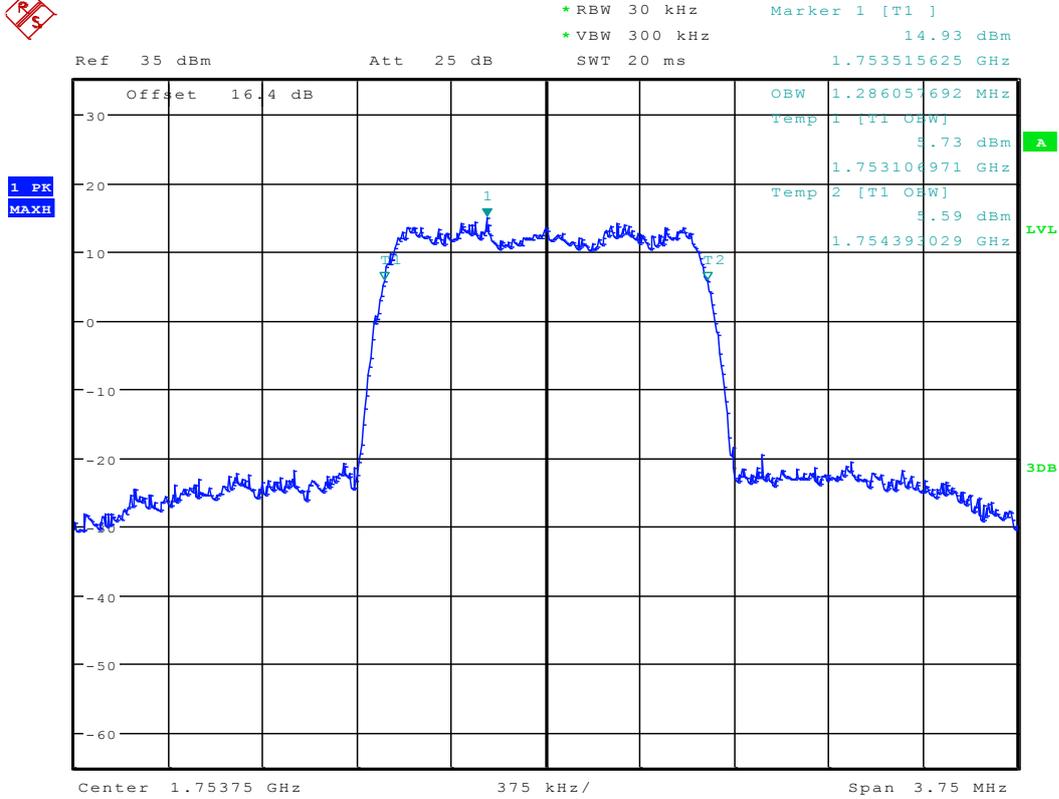
## Channel 875 (EVDO subtype 0)



Date: 27.APR.2012 01:03:24



## Channel 875 (EVDO subtype 2)



Date: 27.APR.2012 01:08:00

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



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# Appendix D

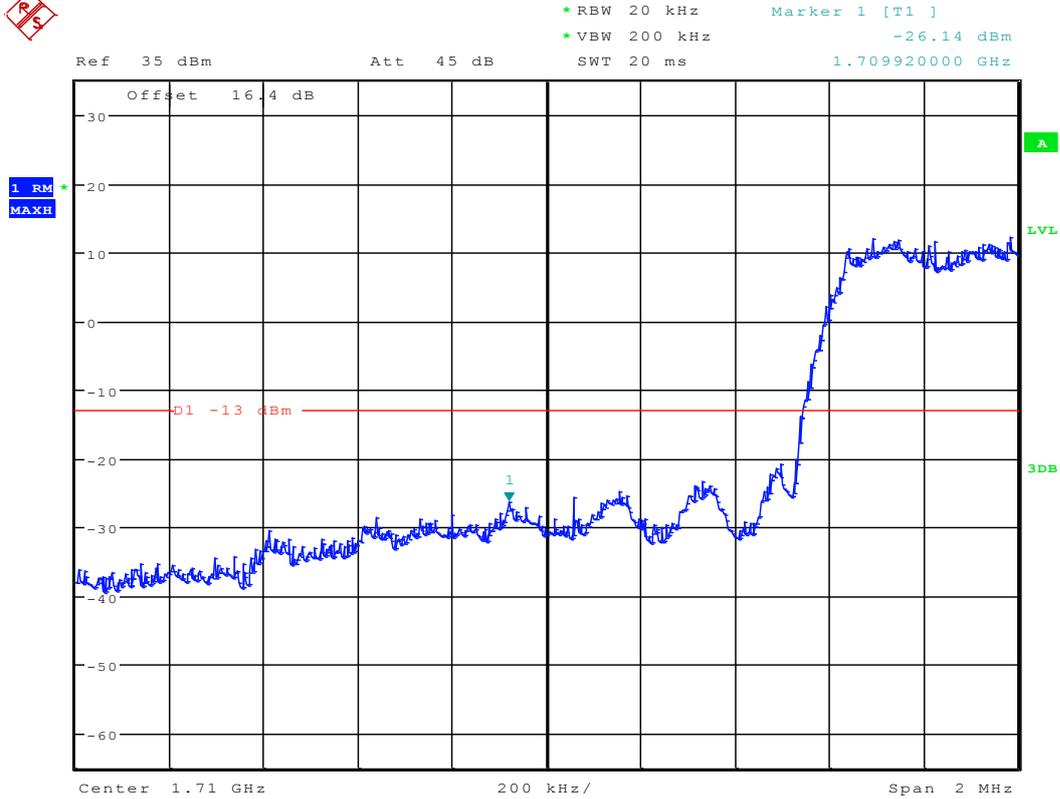
## Band Edges Compliance According to FCC Part 2.1051 & 27.53(g)



# TM1

## Left Edge (1710 MHz)

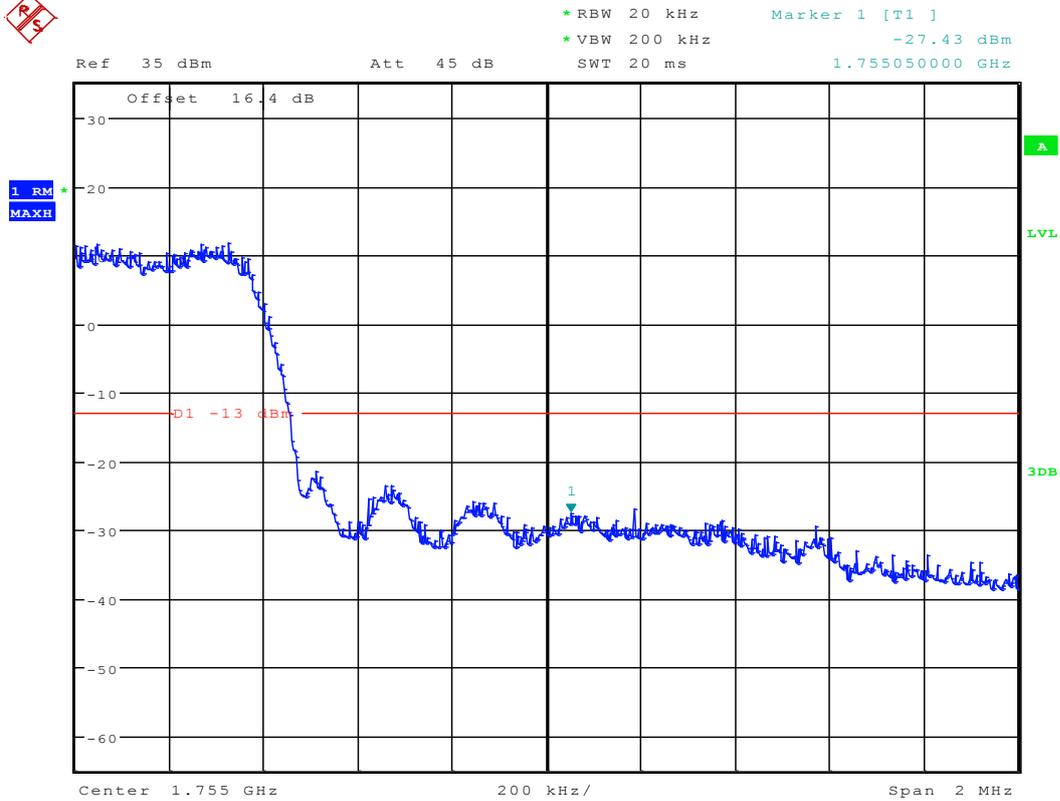
### Channel 25



Date: 27.APR.2012 00:56:25



## Right Edge (1755MHz) Channel 875



Date: 27.APR.2012 00:56:39



# TM3

## Left Edge (1710 MHz)

### Channel 25

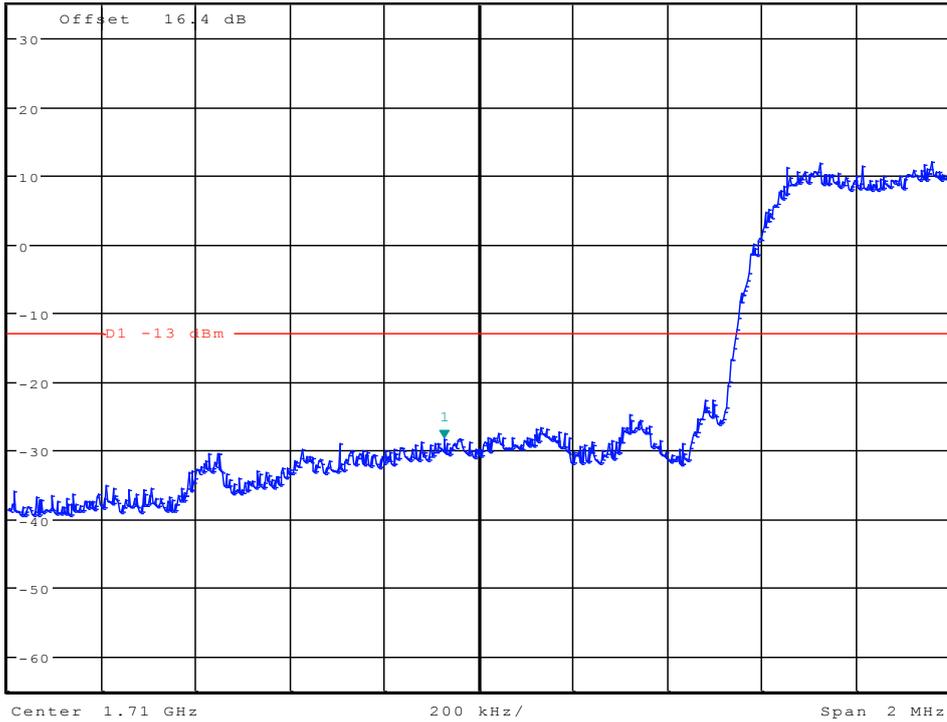


Ref 35 dBm Att 45 dB \*RBW 20 kHz \*VBW 200 kHz SWT 20 ms

Marker 1 [T1]

-28.35 dBm

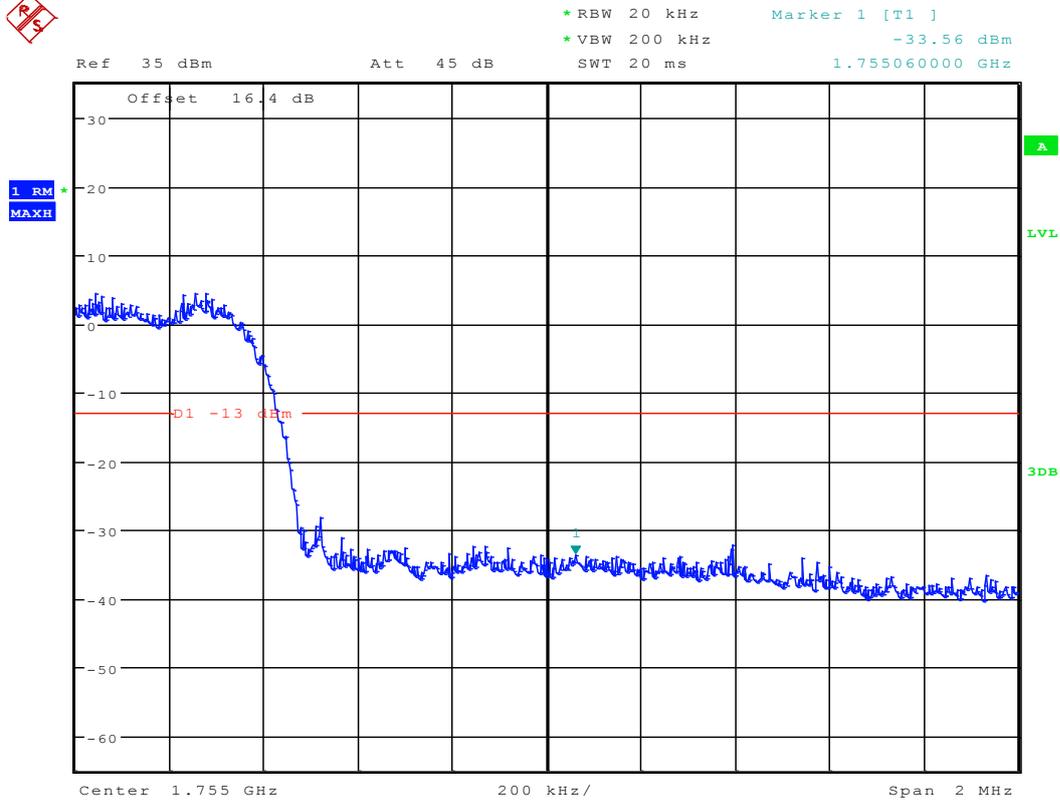
1.709925000 GHz



Date: 27.APR.2012 00:56:55



## Right Edge (1755MHz) Channel 875



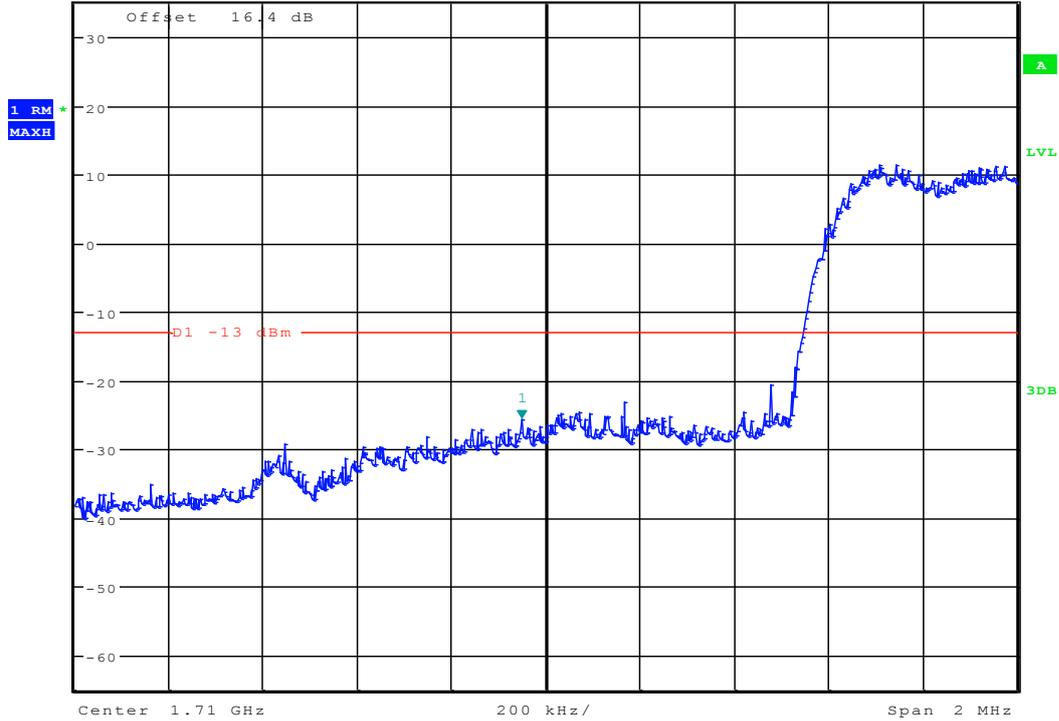
Date: 27.APR.2012 00:57:10



# EVDO subtype 0 Left Edge (1710 MHz) Channel 25



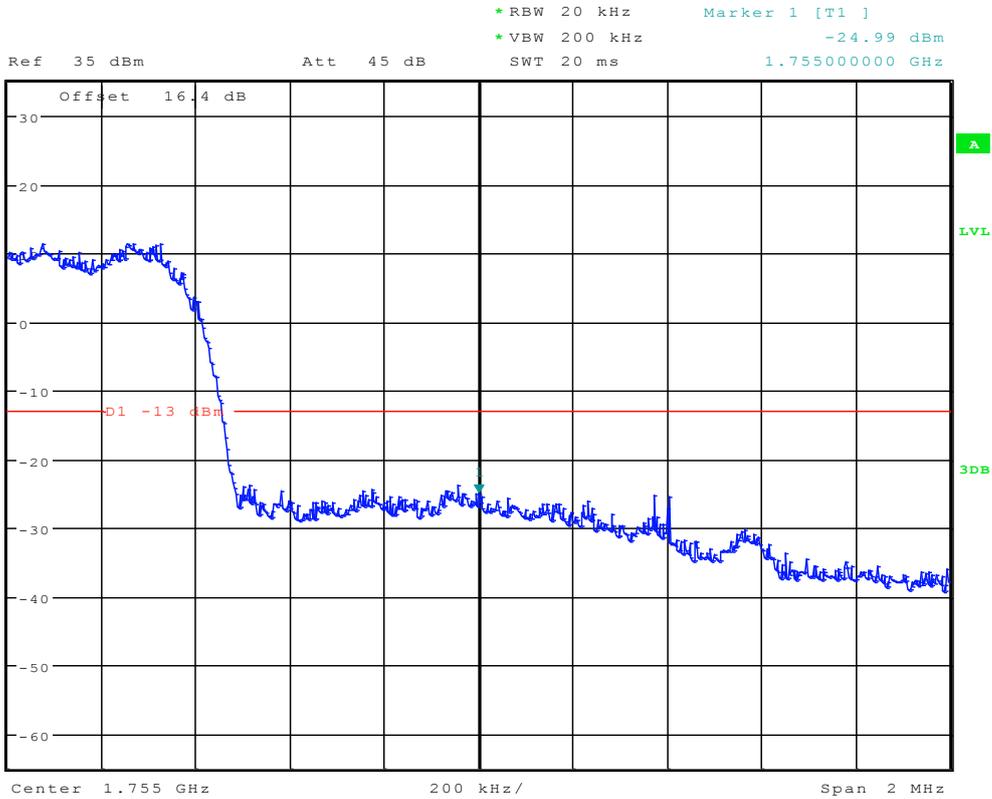
Ref 35 dBm Att 45 dB \*RBW 20 kHz Marker 1 [T1]  
\*VBW 200 kHz -25.59 dBm  
SWT 20 ms 1.709950000 GHz



Date: 27.APR.2012 01:02:27



## Right Edge (1755MHz) Channel 875



Date: 27.APR.2012 01:02:41

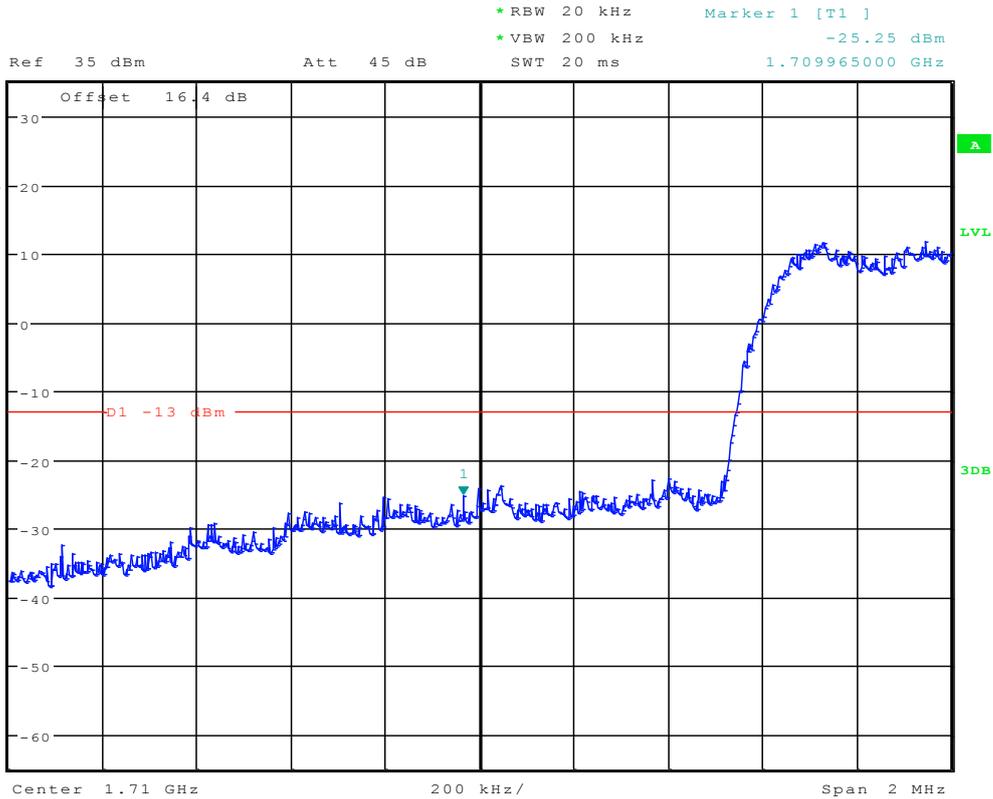


# EVDO subtype 2

## Modulation: BPSK

### Left Edge (1710 MHz)

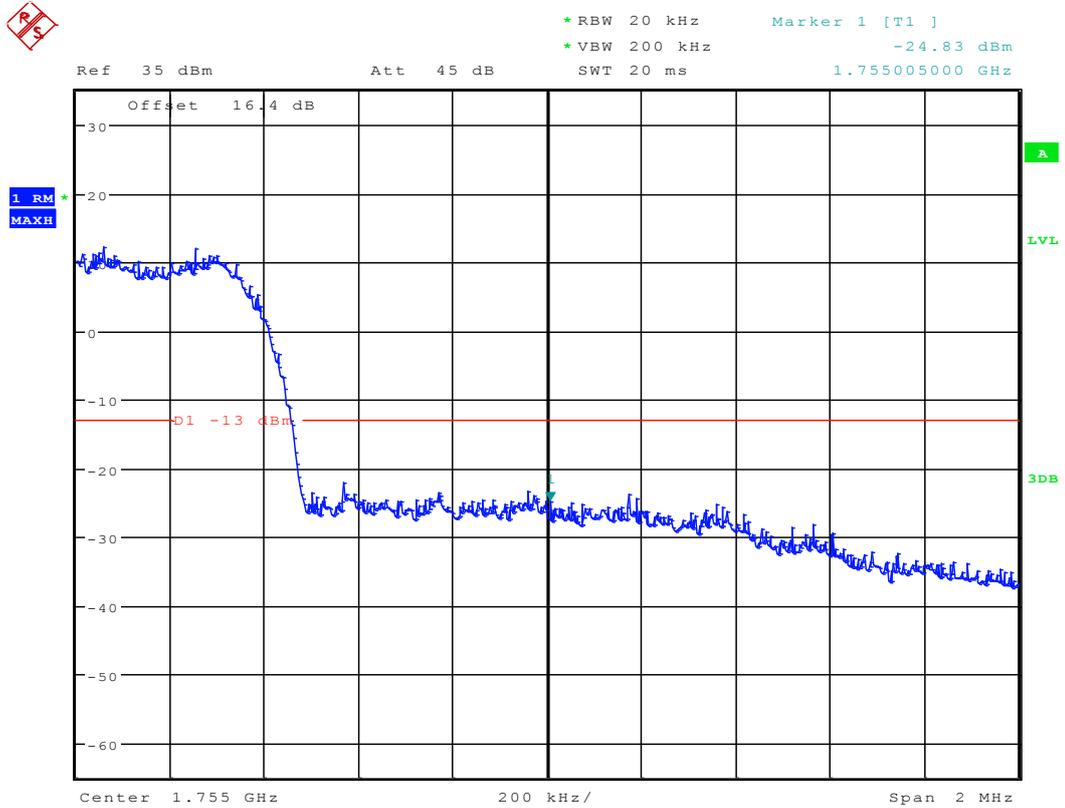
### Channel 25



Date: 27.APR.2012 01:06:16



### Right Edge (1755MHz) Channel 875



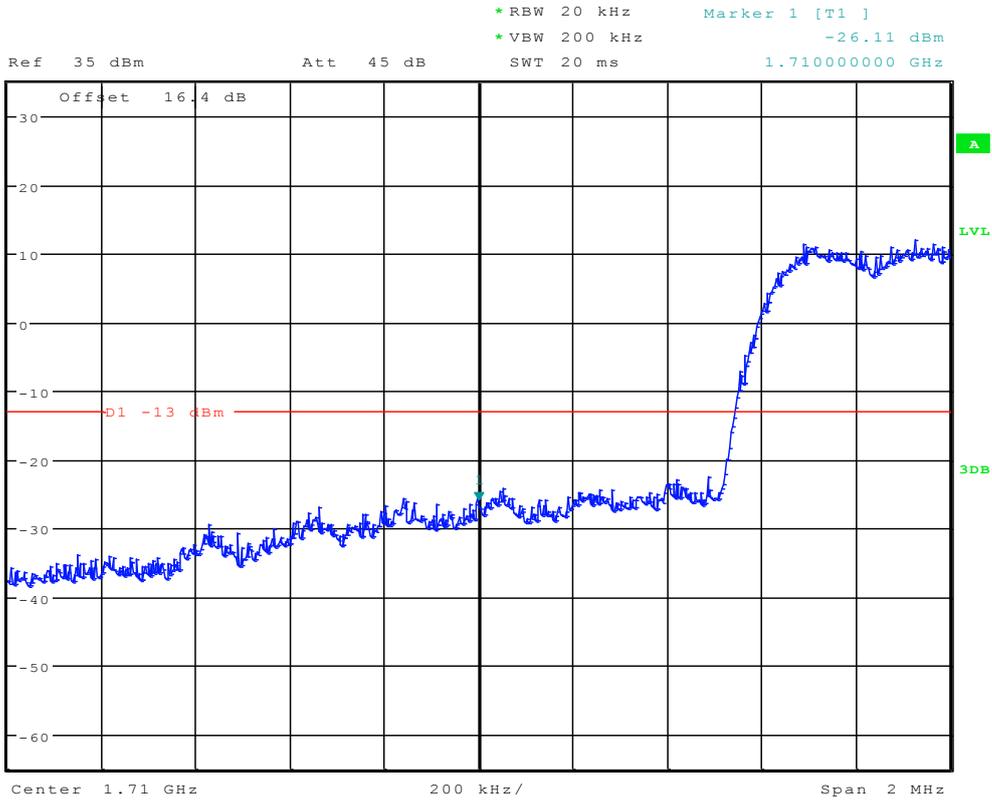
Date: 27.APR.2012 01:06:29



# Modulation: QPSK

## Left Edge (1710 MHz)

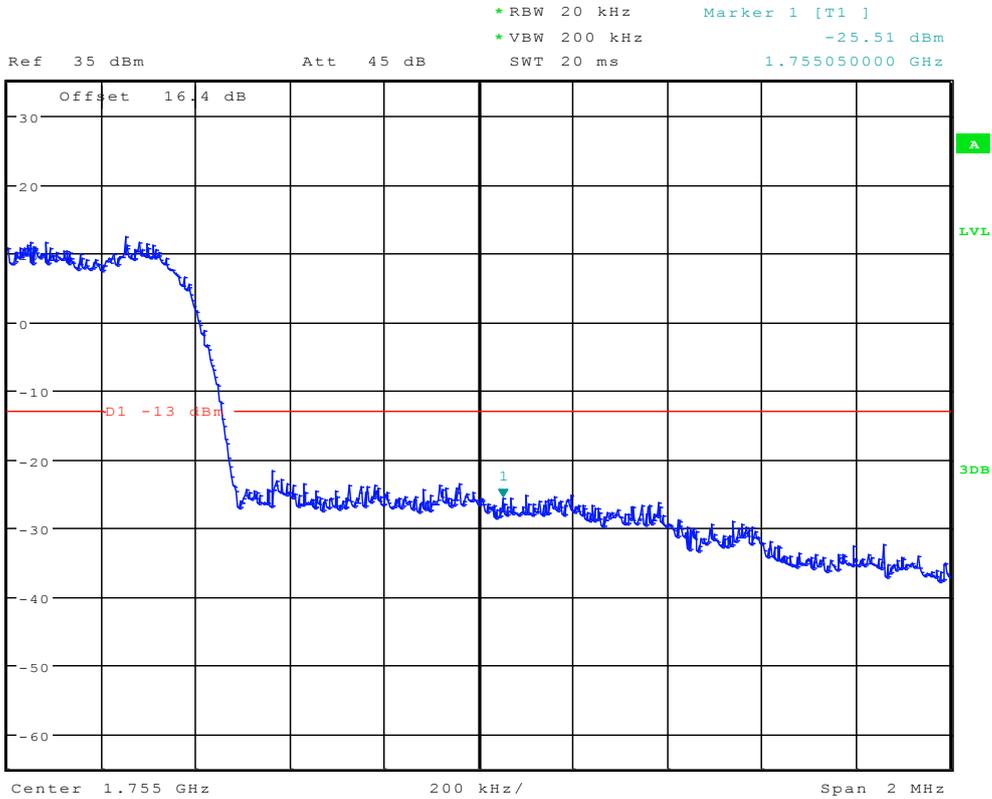
### Channel 25



Date: 27.APR.2012 01:06:43



## Right Edge (1755MHz) Channel 875



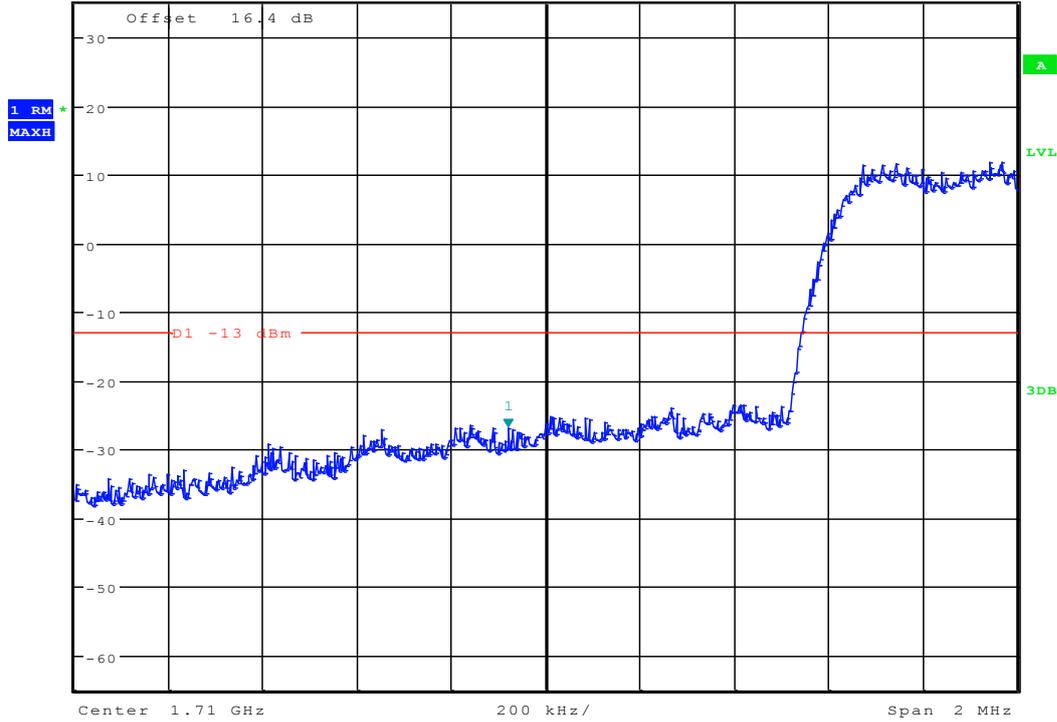
Date: 27.APR.2012 01:06:56



Modulation: 8PSK  
Left Edge (1710 MHz)  
Channel 25



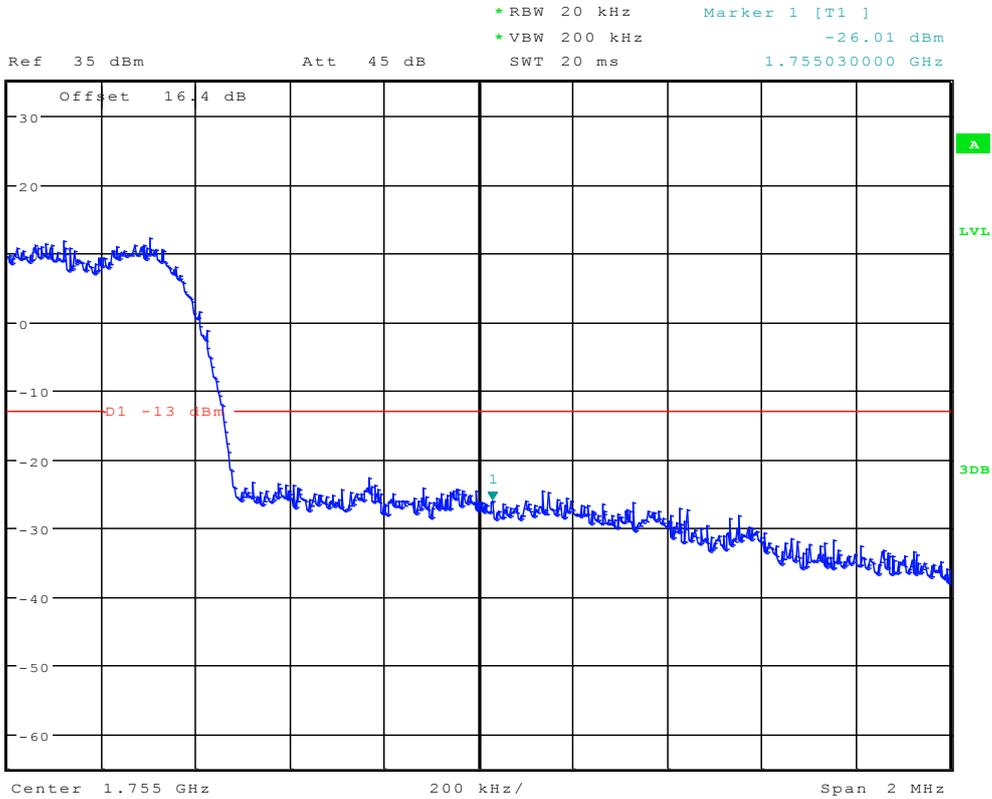
Ref 35 dBm Att 45 dB \*RBW 20 kHz \*VBW 200 kHz SWT 20 ms  
Marker 1 [T1] -26.83 dBm 1.709920000 GHz



Date: 27.APR.2012 01:07:10



## Right Edge (1755MHz) Channel 875



Date: 27.APR.2012 01:07:24

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



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## Appendix E

# Spurious Emission at Antenna Terminal

According to FCC Part 2.1051 & 27.53(g)

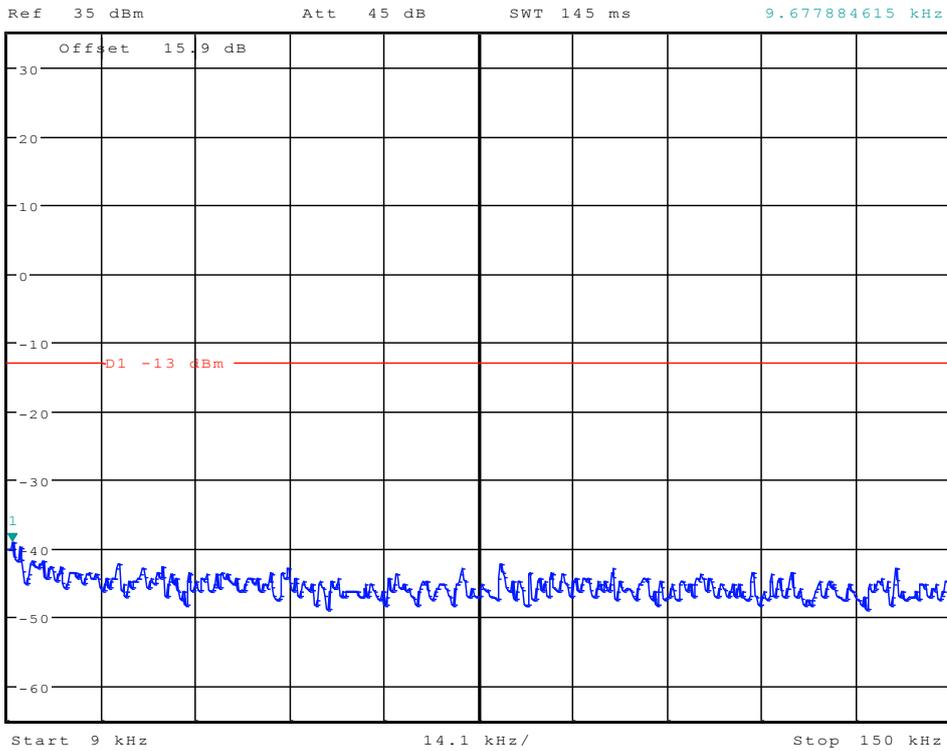


# TM1

## Channel 25



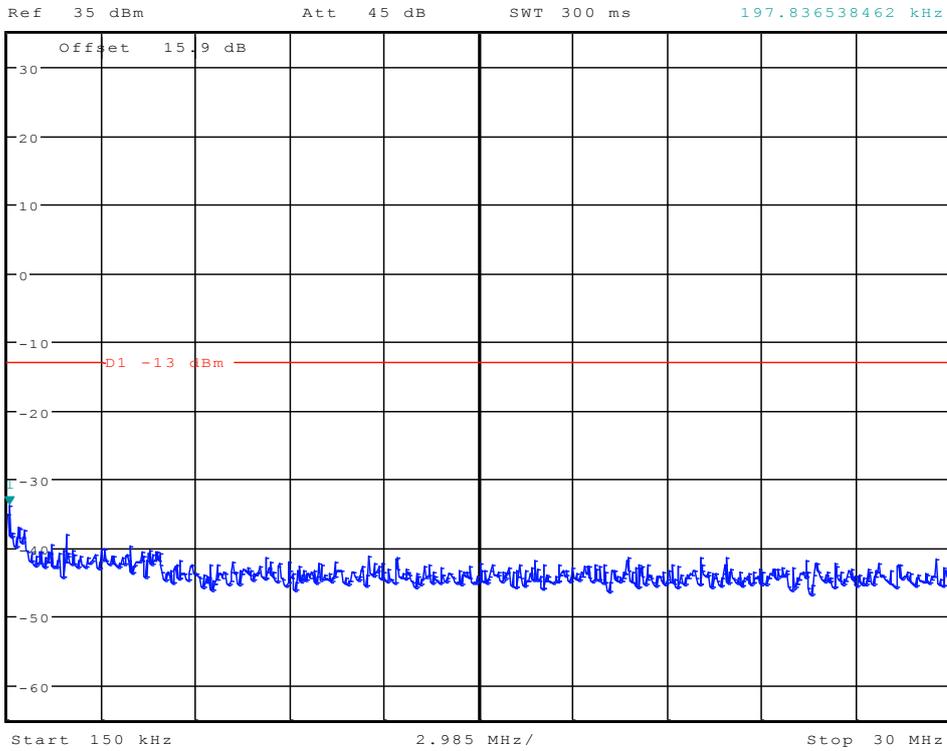
\*RBW 1 kHz      Marker 1 [T1 ]  
\*VBW 10 kHz      -39.08 dBm  
SWT 145 ms      9.677884615 kHz



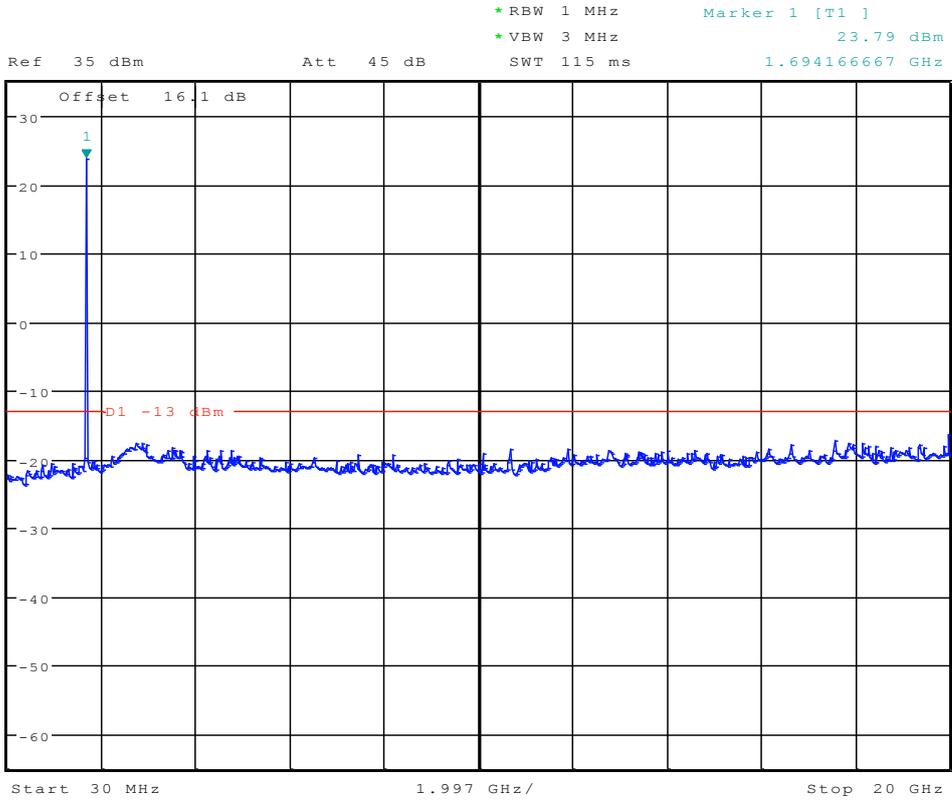
Date: 27.APR.2012 00:58:46



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -33.81 dBm  
SWT 300 ms      197.836538462 kHz



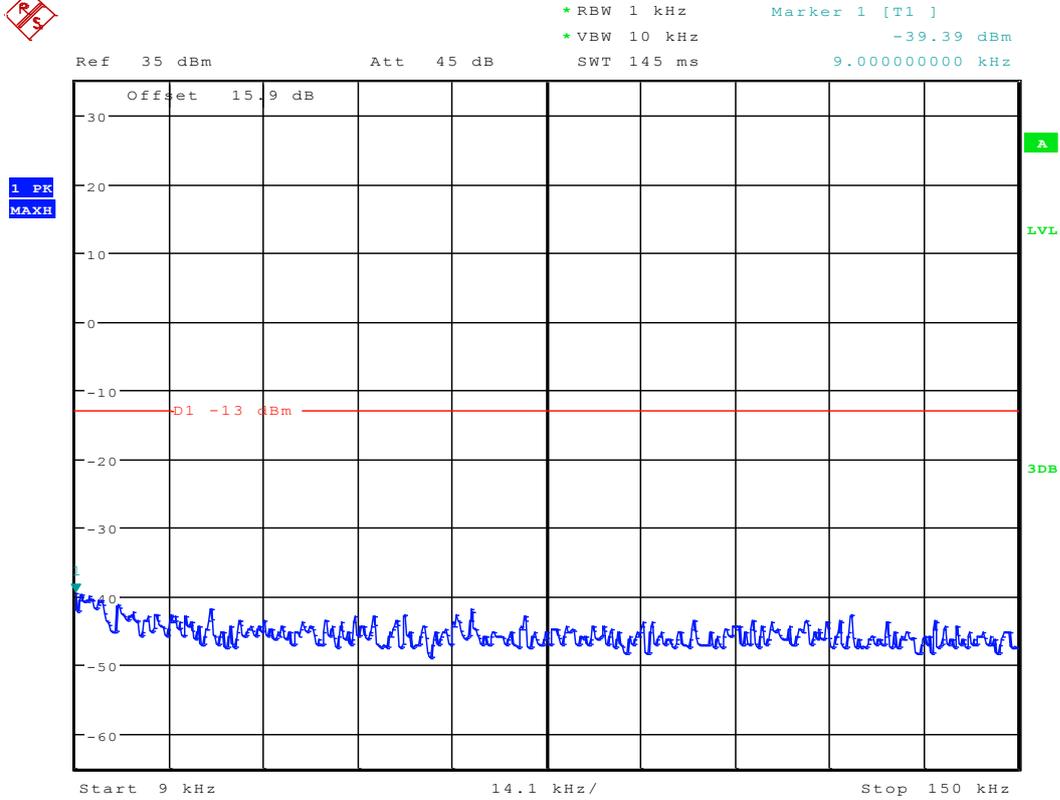
Date: 27.APR.2012 00:59:12



Date: 27.APR.2012 00:59:38



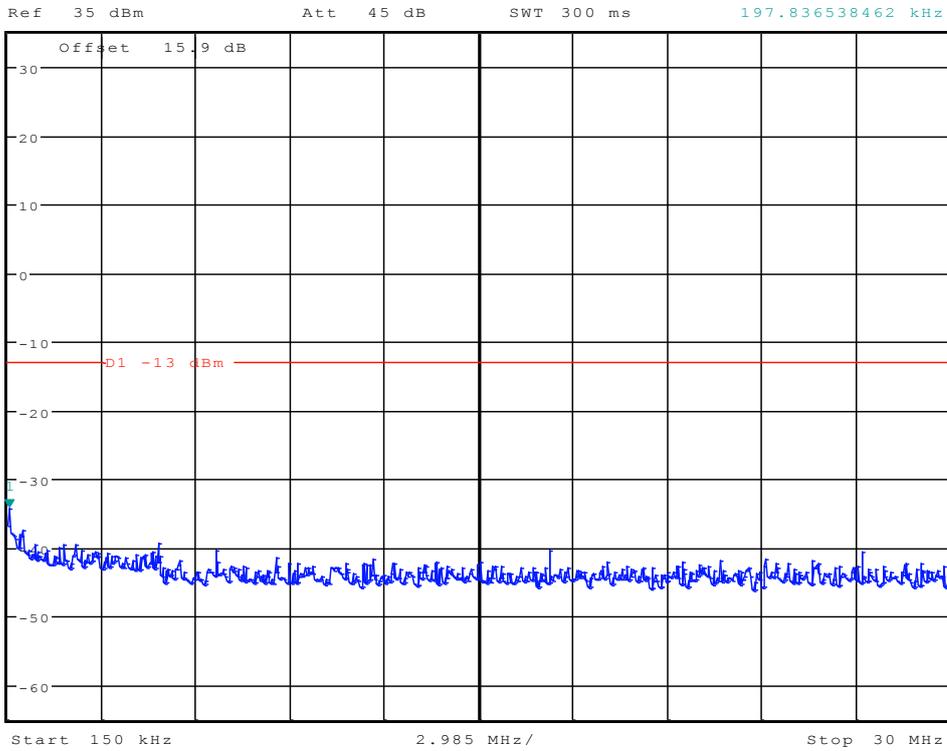
## Channel 450



Date: 27.APR.2012 00:58:55



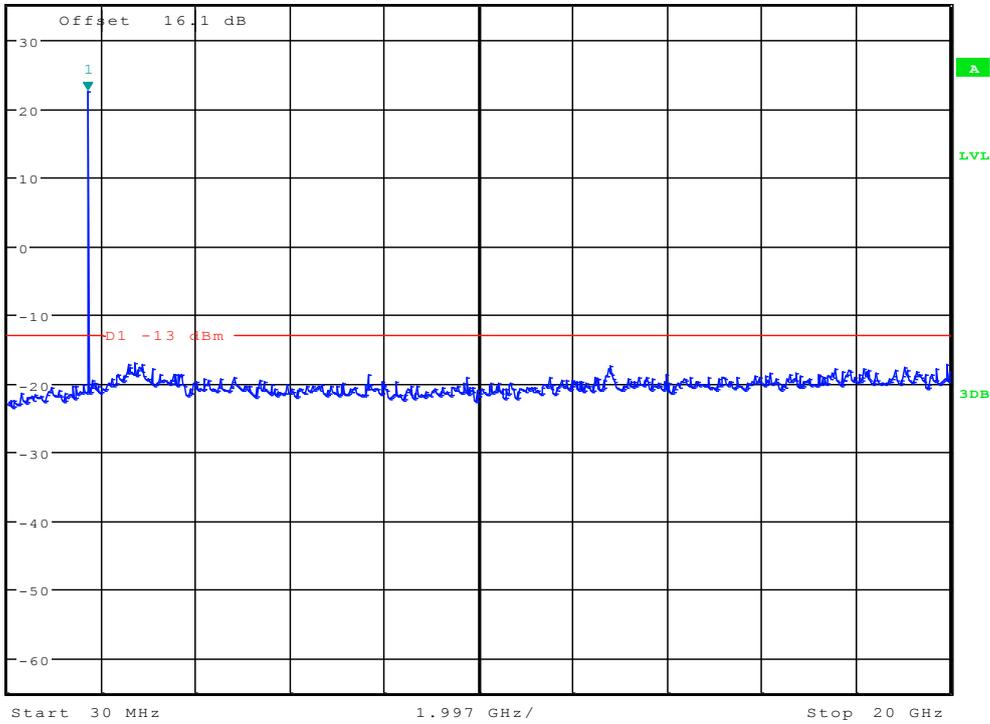
\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -34.22 dBm  
SWT 300 ms      197.836538462 kHz



Date: 27.APR.2012 00:59:20



Ref 35 dBm Att 45 dB SWT 115 ms  
\*RBW 1 MHz \*VBW 3 MHz  
Marker 1 [T1] 22.41 dBm  
1.726169872 GHz



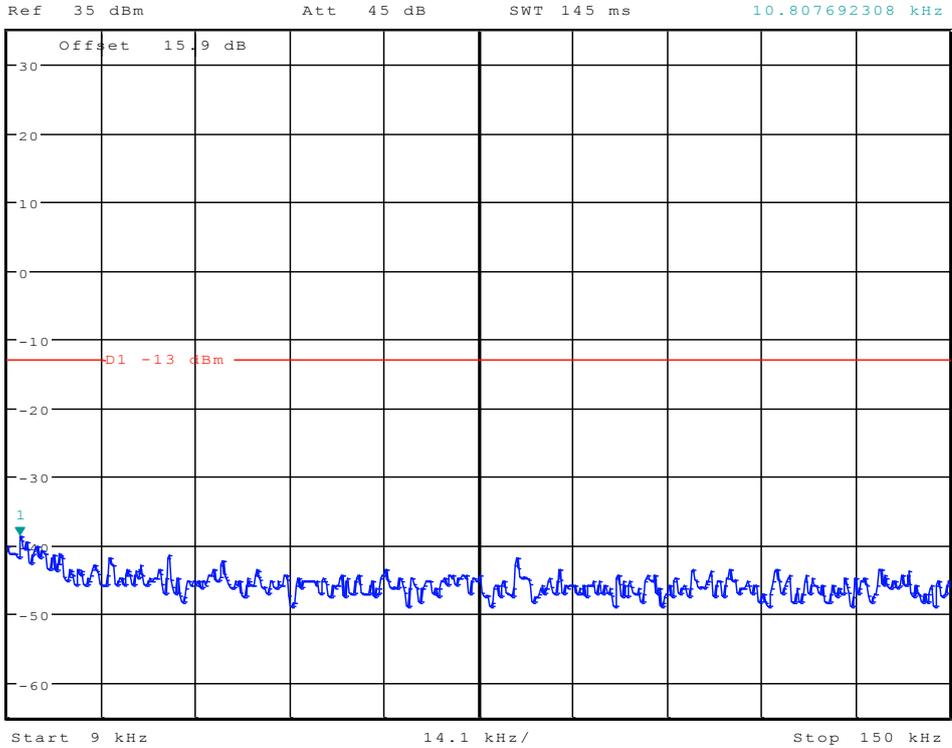
Date: 27.APR.2012 00:59:46



## Channel 875



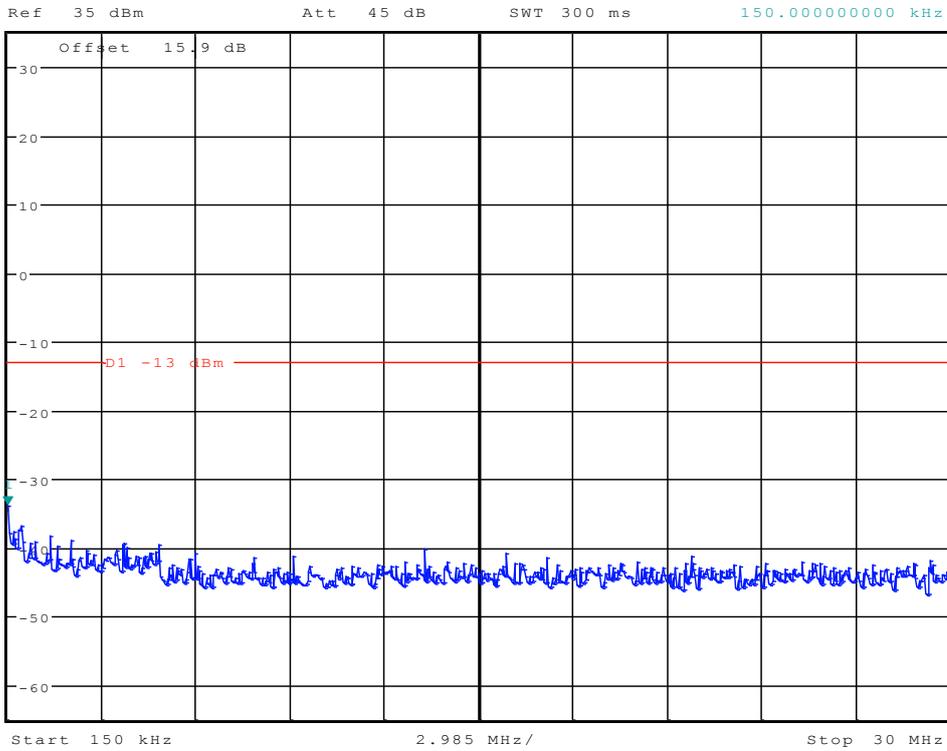
\*RBW 1 kHz      Marker 1 [T1 ]  
\*VBW 10 kHz      -38.67 dBm  
SWT 145 ms      10.807692308 kHz



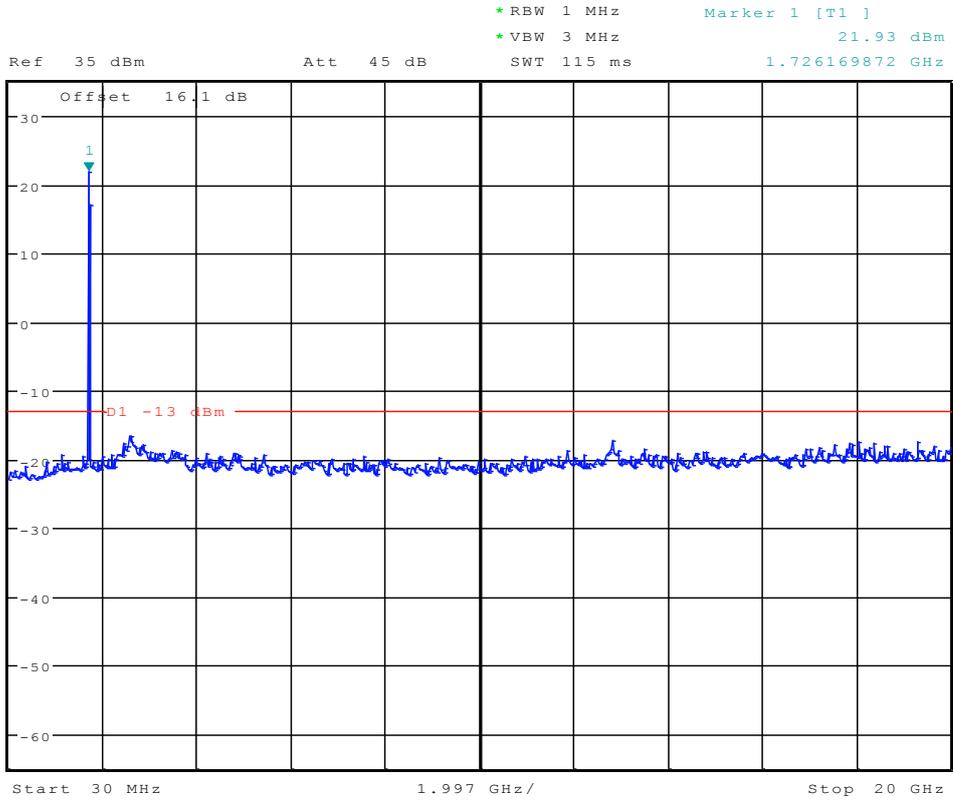
Date: 27.APR.2012 00:59:03



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -33.87 dBm  
SWT 300 ms      150.00000000 kHz



Date: 27.APR.2012 00:59:29



Date: 27.APR.2012 00:59:55

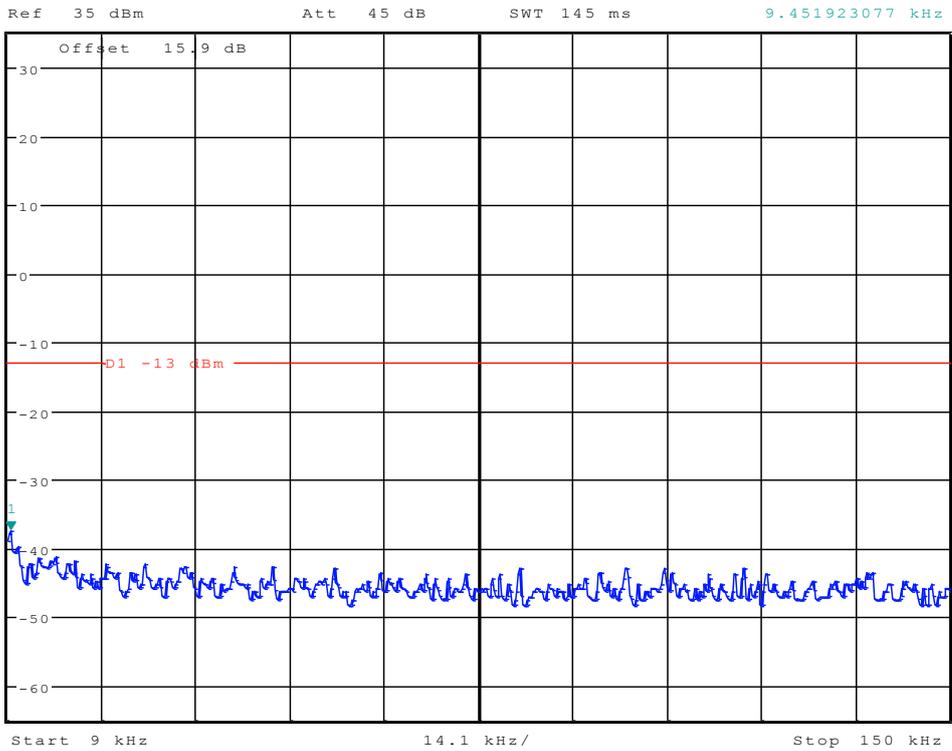


# TM3

## Channel 25



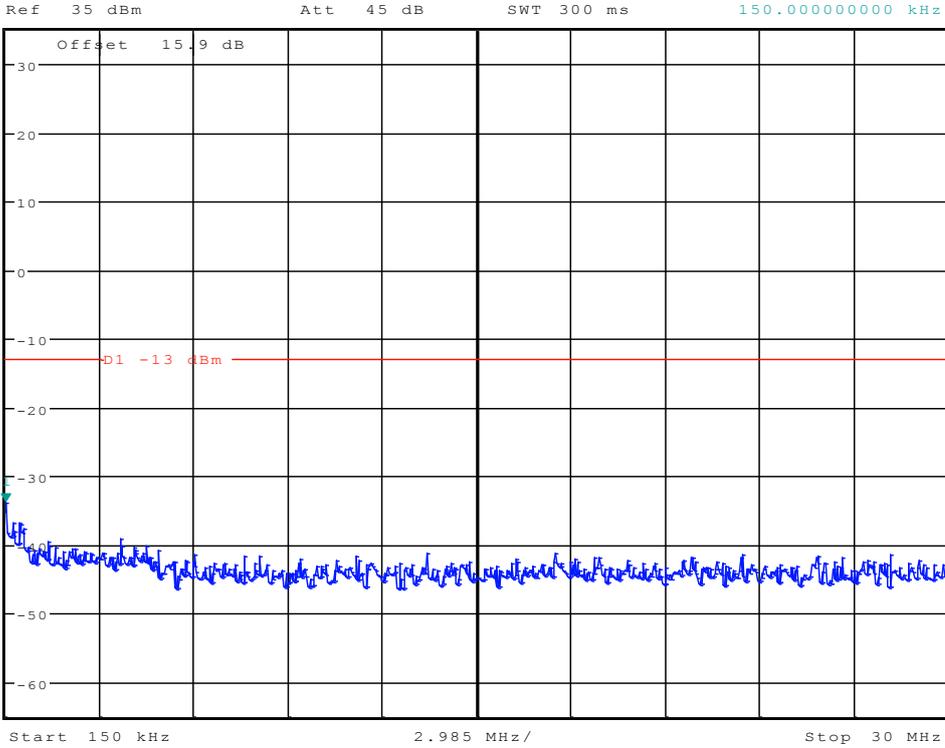
\*RBW 1 kHz      Marker 1 [T1 ]  
\*VBW 10 kHz      -37.31 dBm  
SWT 145 ms      9.451923077 kHz



Date: 27.APR.2012 01:00:05



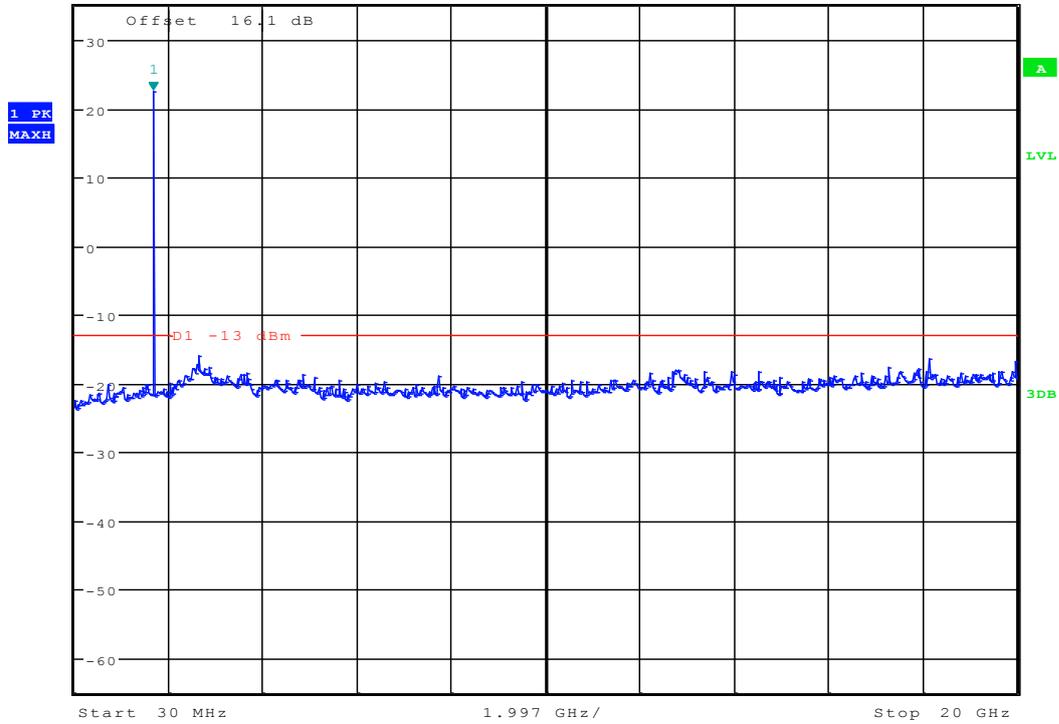
\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -33.76 dBm  
SWT 300 ms      150.00000000 kHz



Date: 27.APR.2012 01:00:31



\* RBW 1 MHz      Marker 1 [T1 ]  
\* VBW 3 MHz      22.48 dBm  
Ref 35 dBm      Att 45 dB      SWT 115 ms      1.694166667 GHz



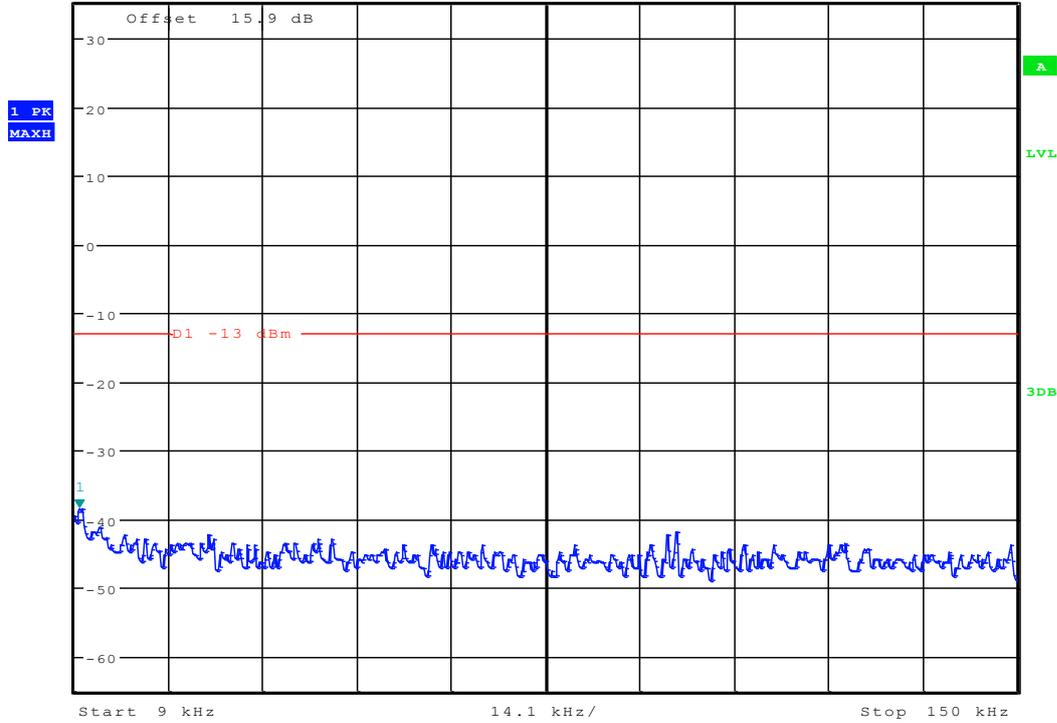
Date: 27.APR.2012 01:00:56



## Channel 450



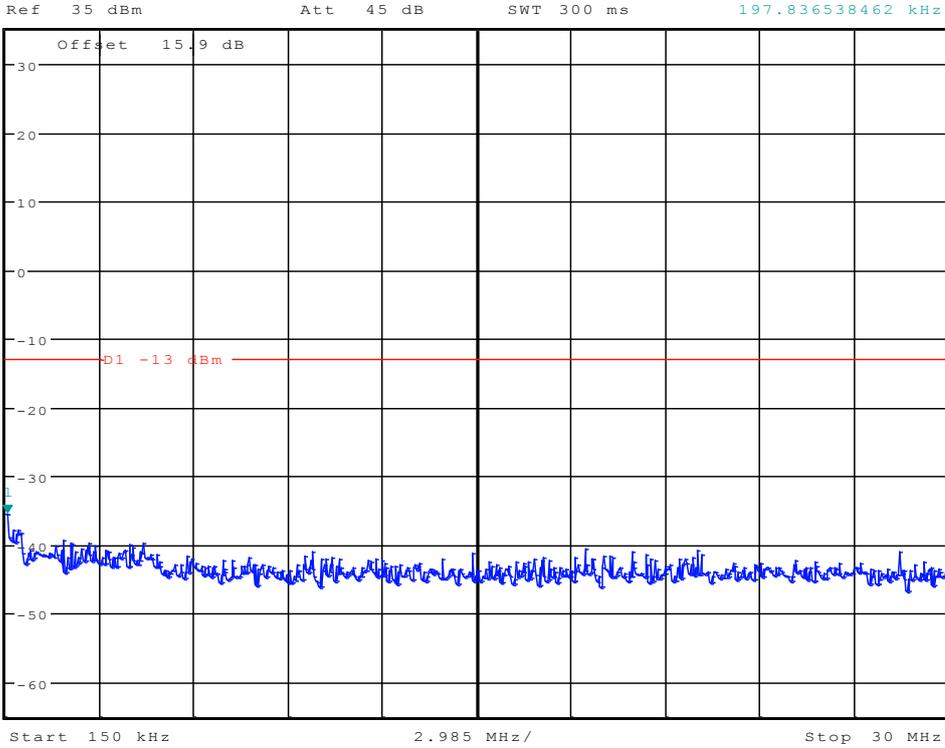
\* RBW 1 kHz      Marker 1 [T1 ]  
 \* VBW 10 kHz      -38.38 dBm  
 Ref 35 dBm      Att 45 dB      SWT 145 ms      9.677884615 kHz



Date: 27.APR.2012 01:00:13



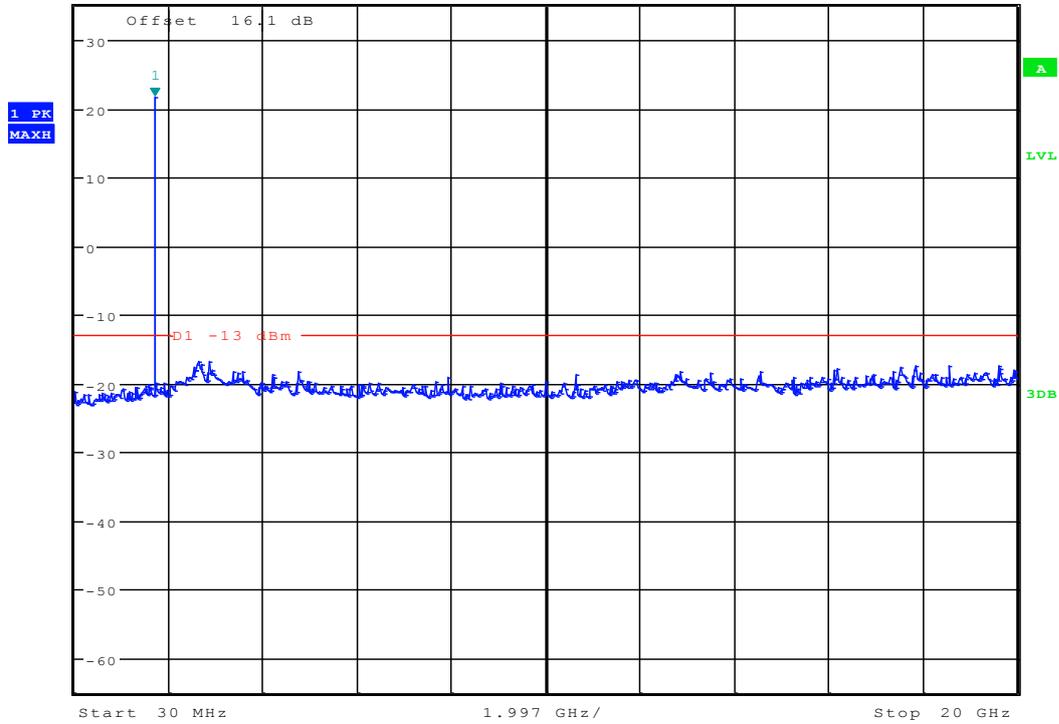
\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -35.49 dBm  
SWT 300 ms      197.836538462 kHz



Date: 27.APR.2012 01:00:39



\* RBW 1 MHz      Marker 1 [T1 ]  
\* VBW 3 MHz      21.67 dBm  
Ref 35 dBm      Att 45 dB      SWT 115 ms      1.726169872 GHz



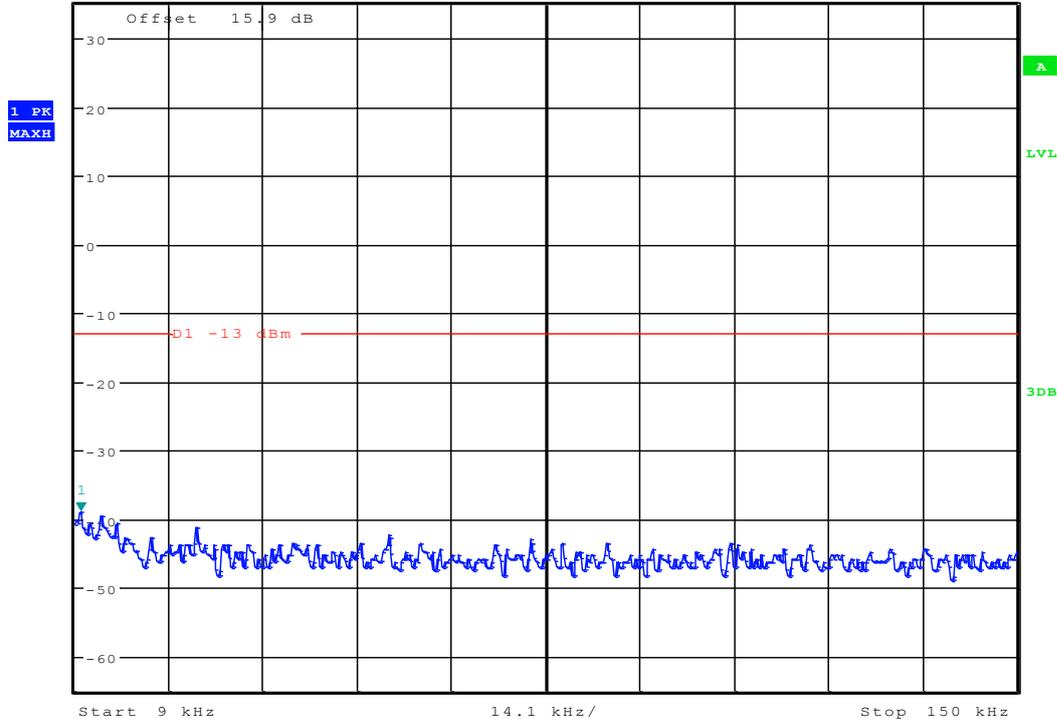
Date: 27.APR.2012 01:01:05



## Channel 875



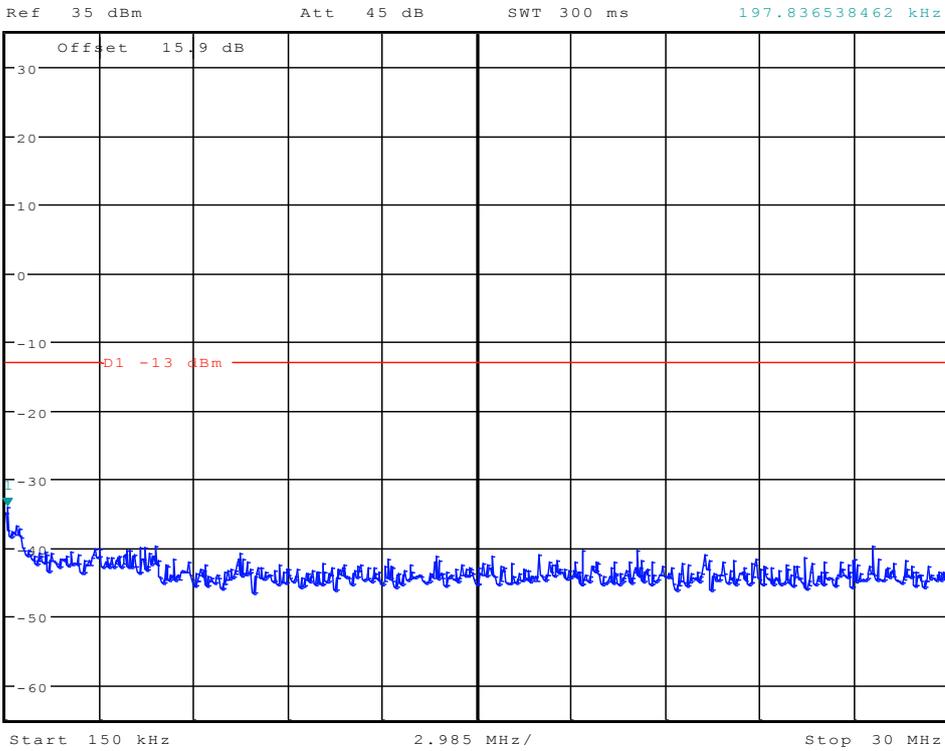
\* RBW 1 kHz      Marker 1 [T1 ]  
 \* VBW 10 kHz      -38.87 dBm  
 Ref 35 dBm      Att 45 dB      SWT 145 ms      9.903846154 kHz



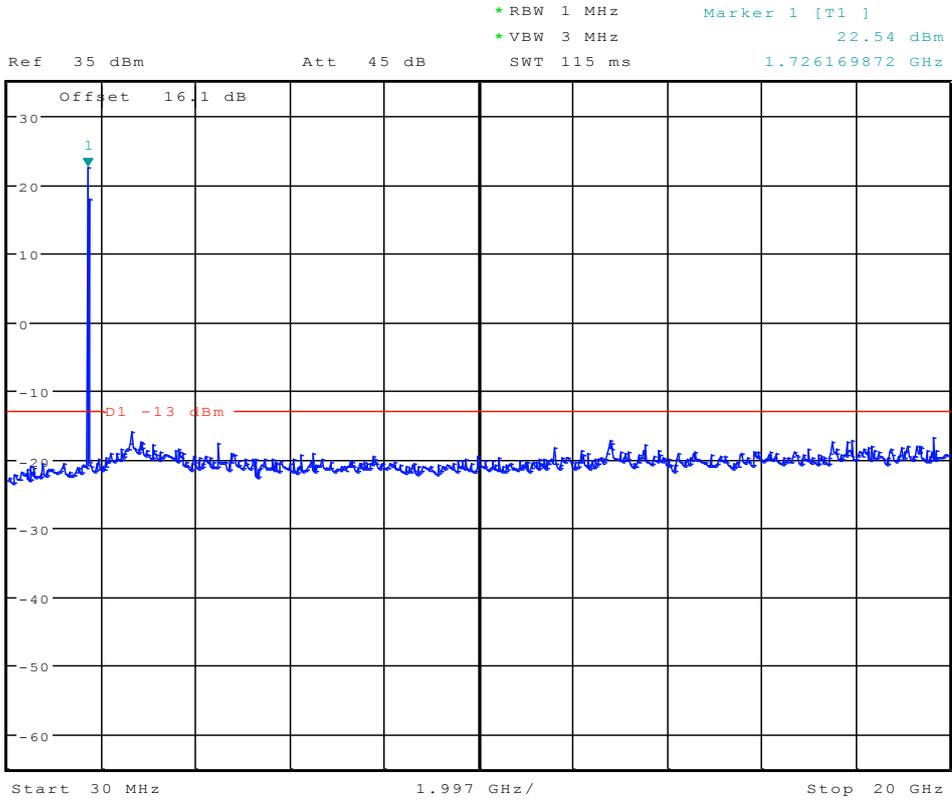
Date: 27.APR.2012 01:00:22



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -34.10 dBm  
SWT 300 ms      197.836538462 kHz



Date: 27.APR.2012 01:00:47



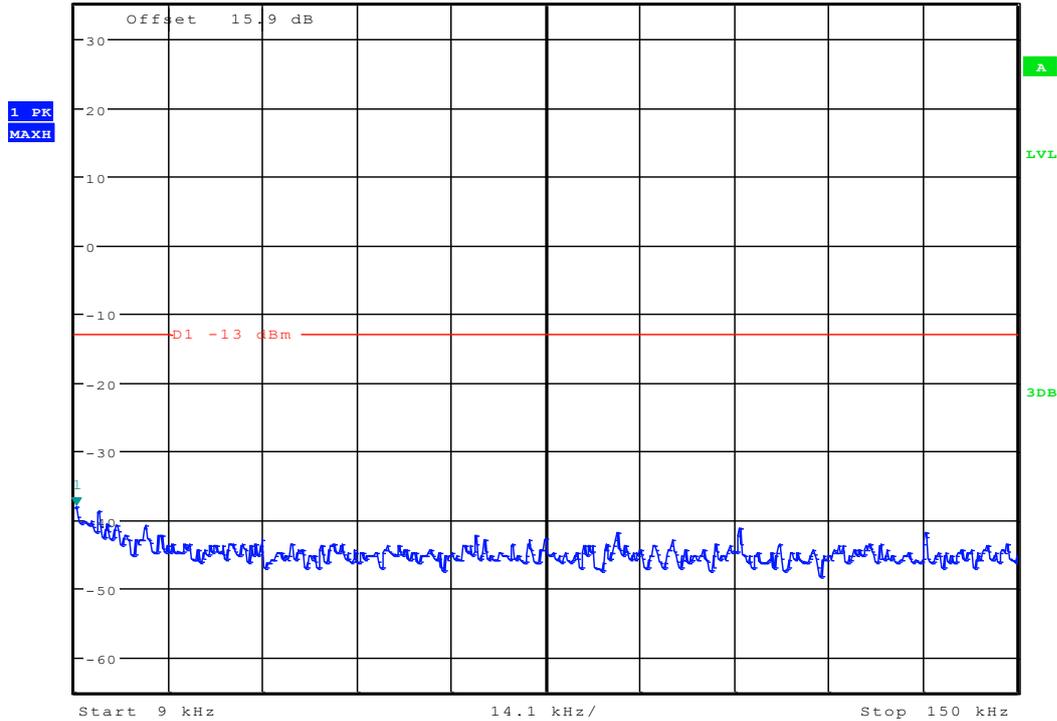
Date: 27.APR.2012 01:01:14



# EVDO subtype 0 Channel 25



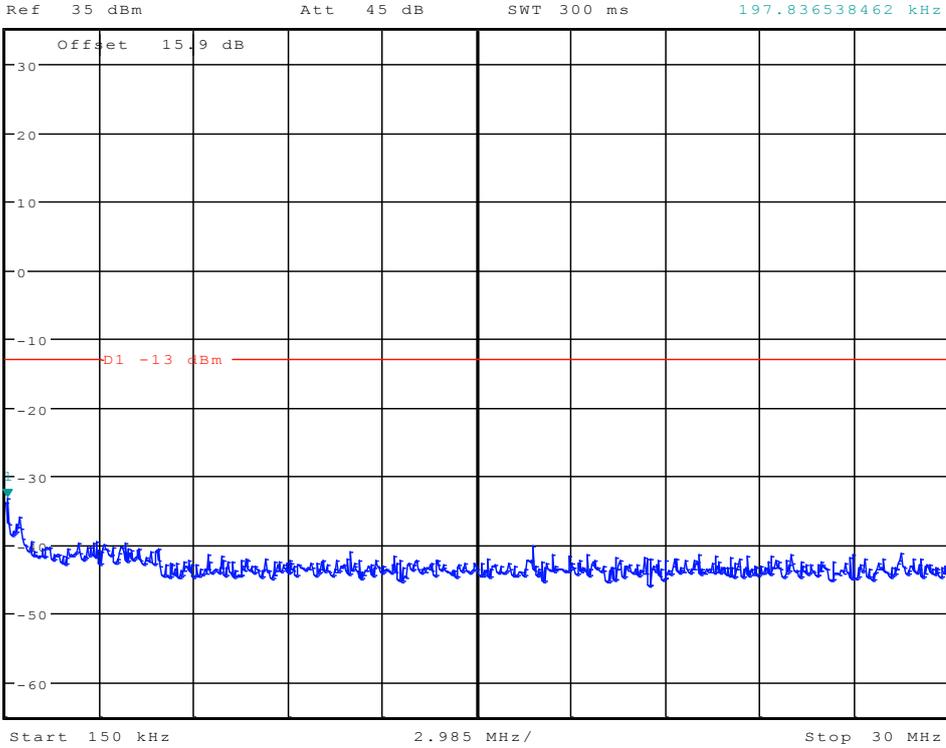
Ref 35 dBm Att 45 dB SWT 145 ms  
 \*RBW 1 kHz \*VBW 10 kHz  
 Marker 1 [T1] -37.92 dBm  
 9.225961538 kHz



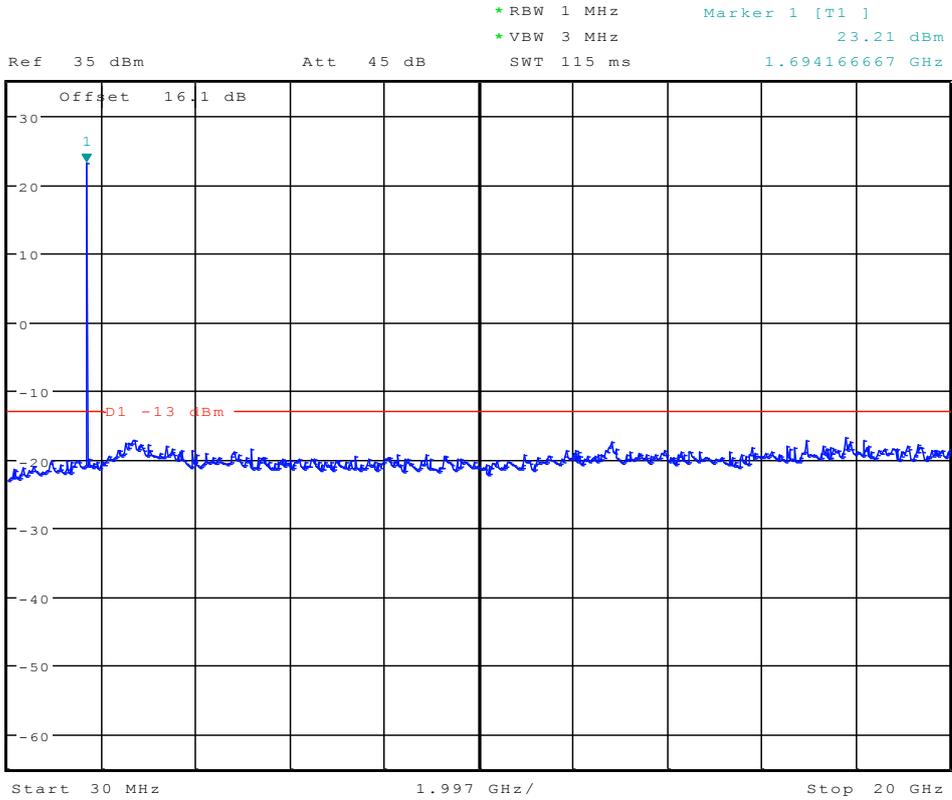
Date: 27.APR.2012 01:03:42



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -33.11 dBm  
SWT 300 ms      197.836538462 kHz



Date: 27.APR.2012 01:04:25



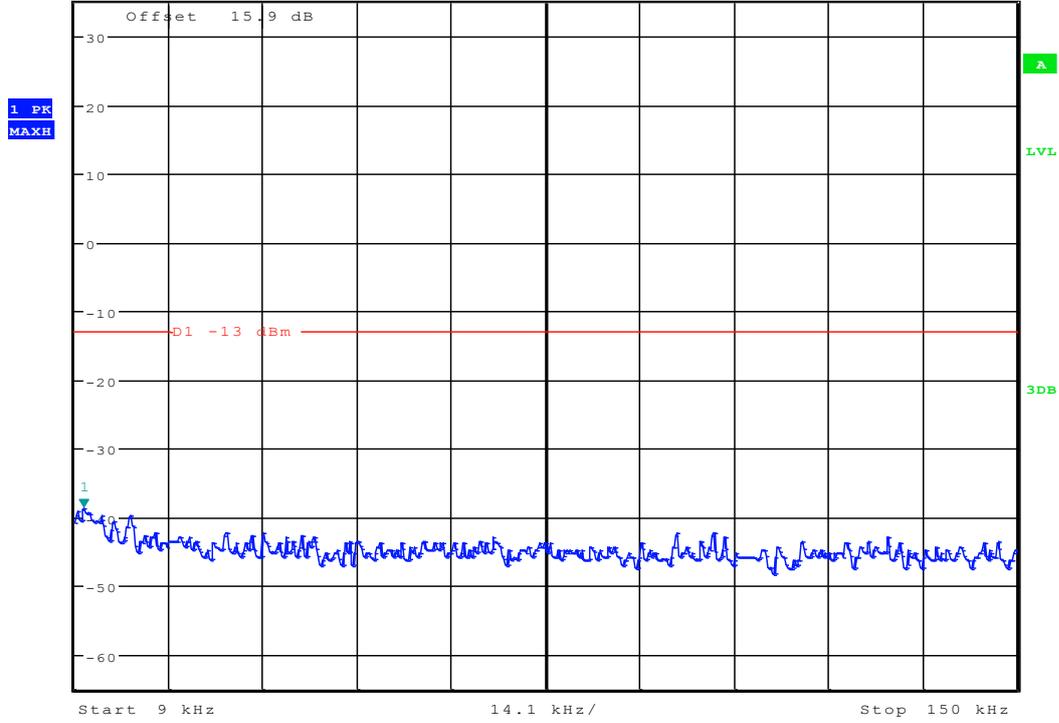
Date: 27.APR.2012 01:05:09



## Channel 450



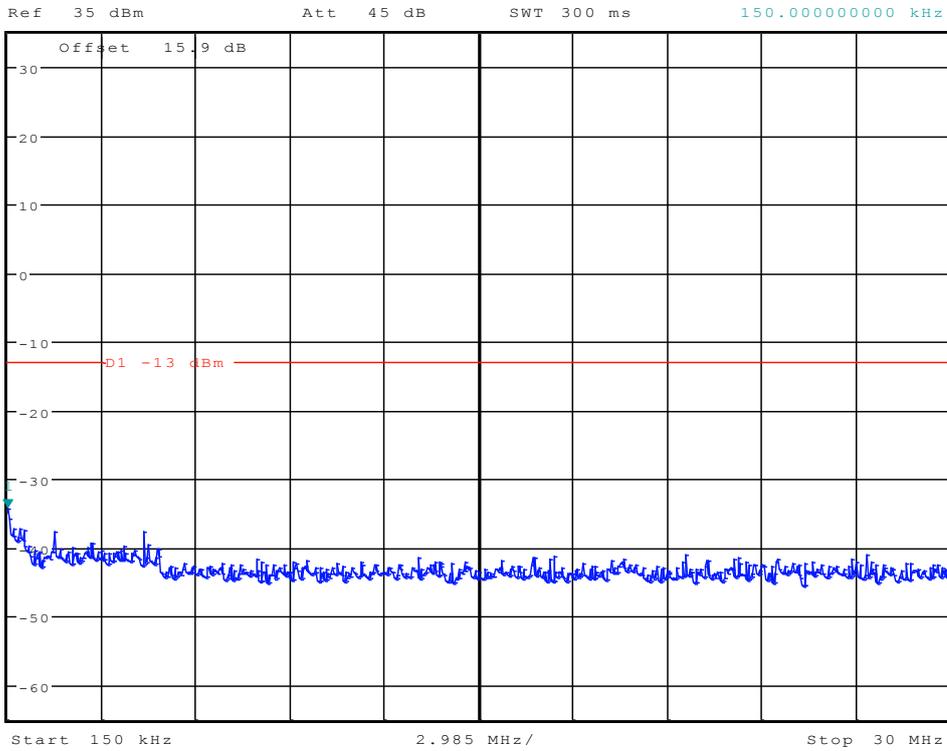
Ref 35 dBm Att 45 dB SWT 145 ms  
 \*RBW 1 kHz \*VBW 10 kHz  
 Marker 1 [T1] -38.67 dBm  
 10.355769231 kHz



Date: 27.APR.2012 01:03:56



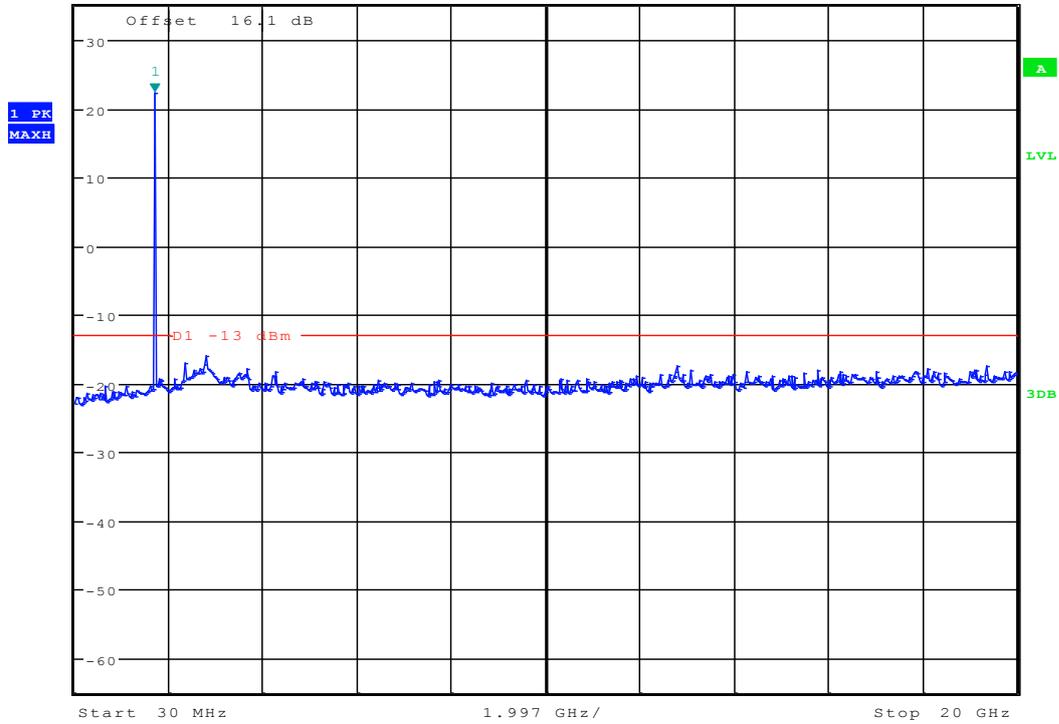
\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -34.22 dBm  
SWT 300 ms      150.00000000 kHz



Date: 27.APR.2012 01:04:40



\* RBW 1 MHz      Marker 1 [T1 ]  
\* VBW 3 MHz      22.25 dBm  
Ref 35 dBm      Att 45 dB      SWT 115 ms      1.726169872 GHz



Date: 27.APR.2012 01:05:23



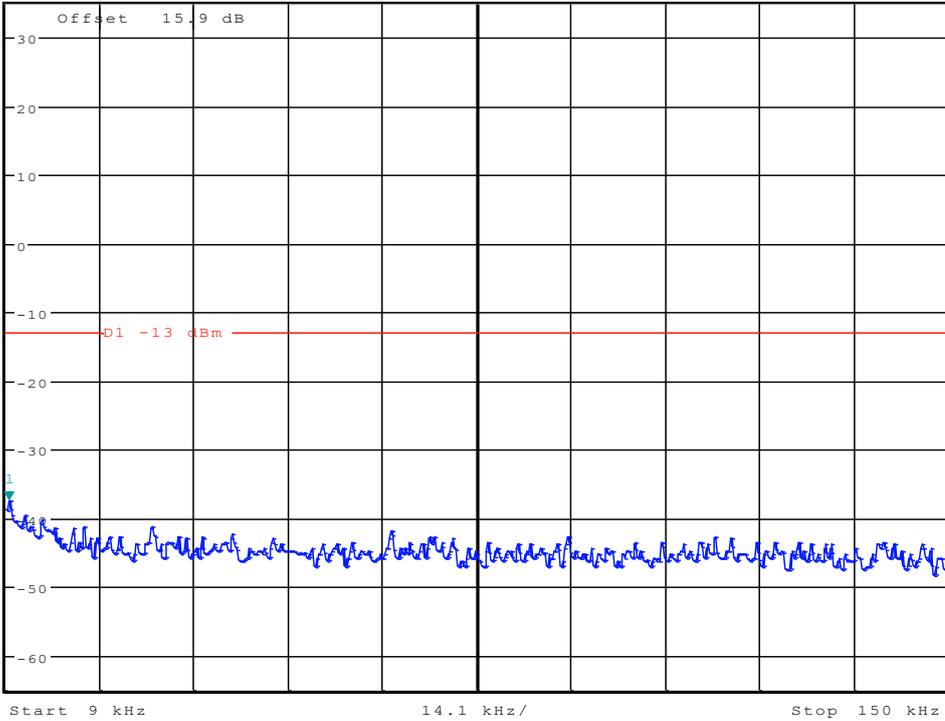
## Channel 875



\*RBW 1 kHz      Marker 1 [T1]  
\*VBW 10 kHz      -37.31 dBm  
SWT 145 ms      9.451923077 kHz

Ref 35 dBm

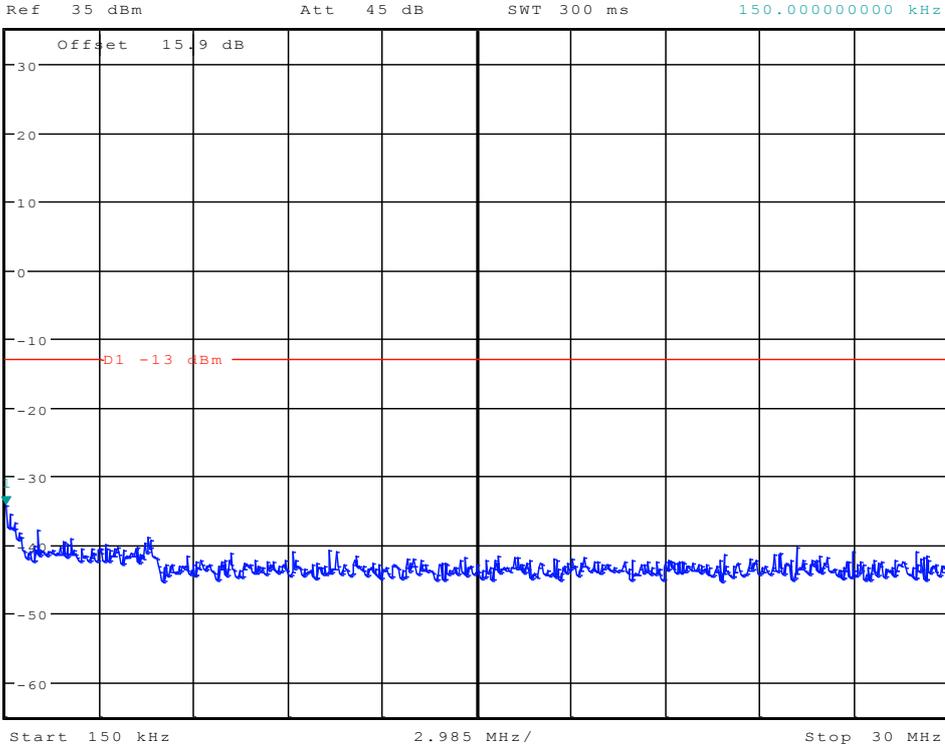
Att 45 dB



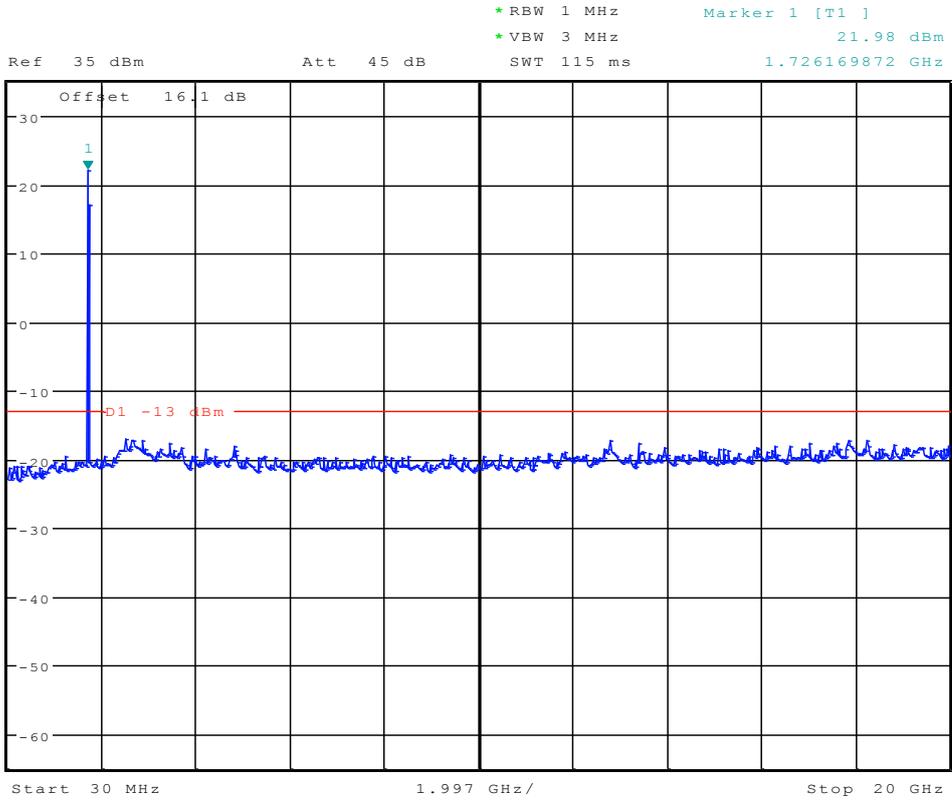
Date: 27.APR.2012 01:04:11



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -34.28 dBm  
SWT 300 ms      150.000000000 kHz



Date: 27.APR.2012 01:04:54



Date: 27.APR.2012 01:05:38



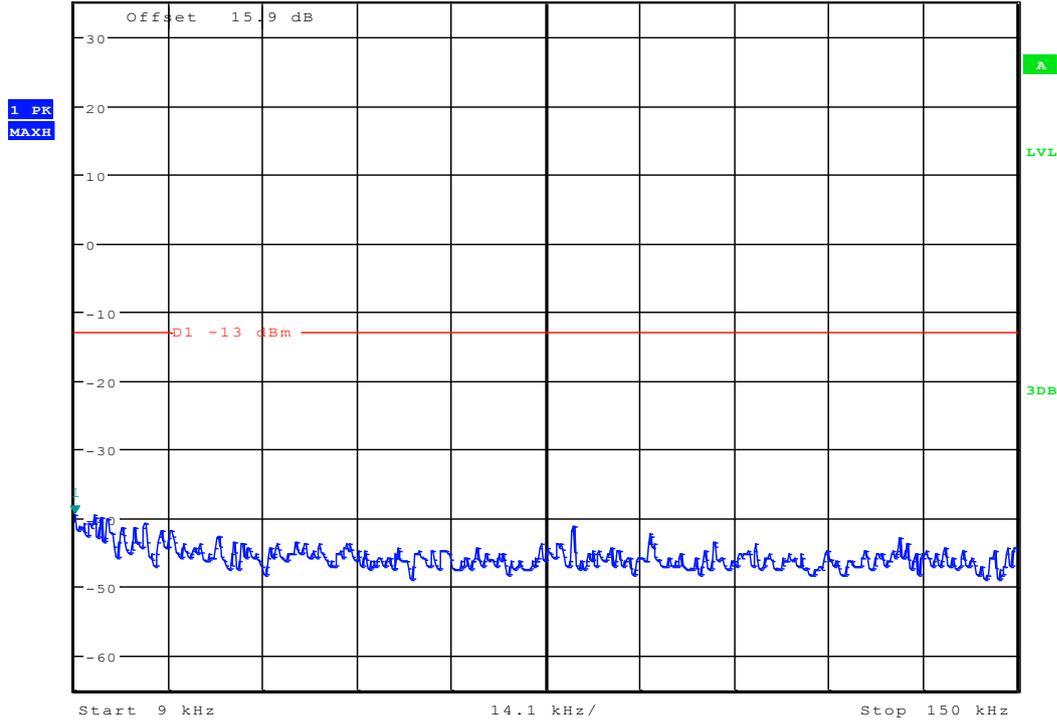
# EVDO subtype 2

## Modulation: BPSK

### Channel 25



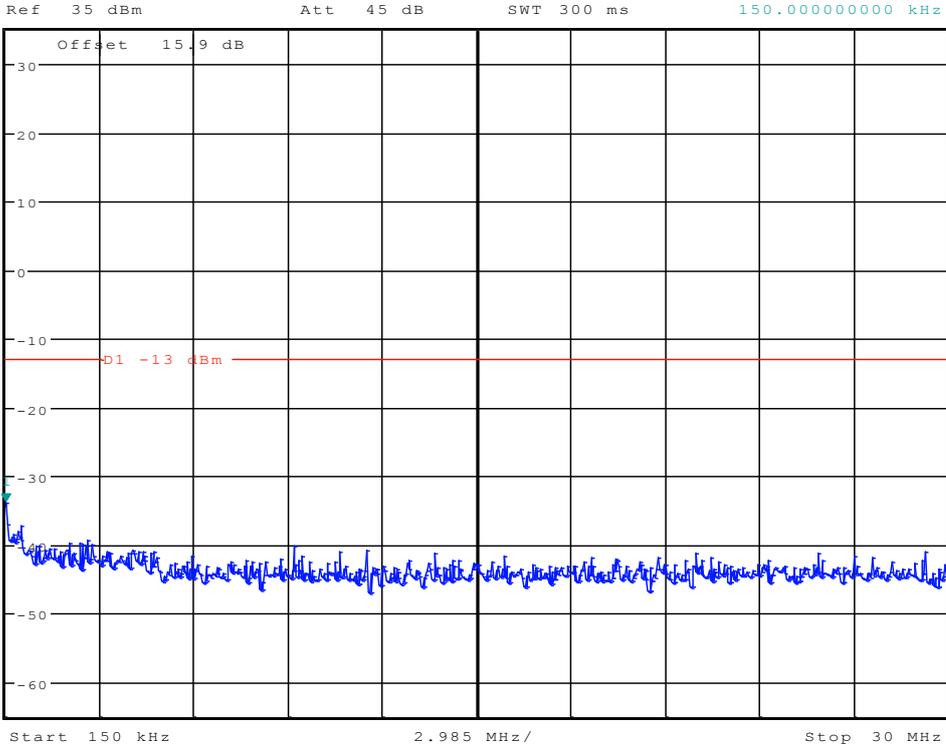
Ref 35 dBm      Att 45 dB      \*RBW 1 kHz      Marker 1 [T1]      -39.39 dBm  
\*VBW 10 kHz      SWT 145 ms      9.000000000 kHz



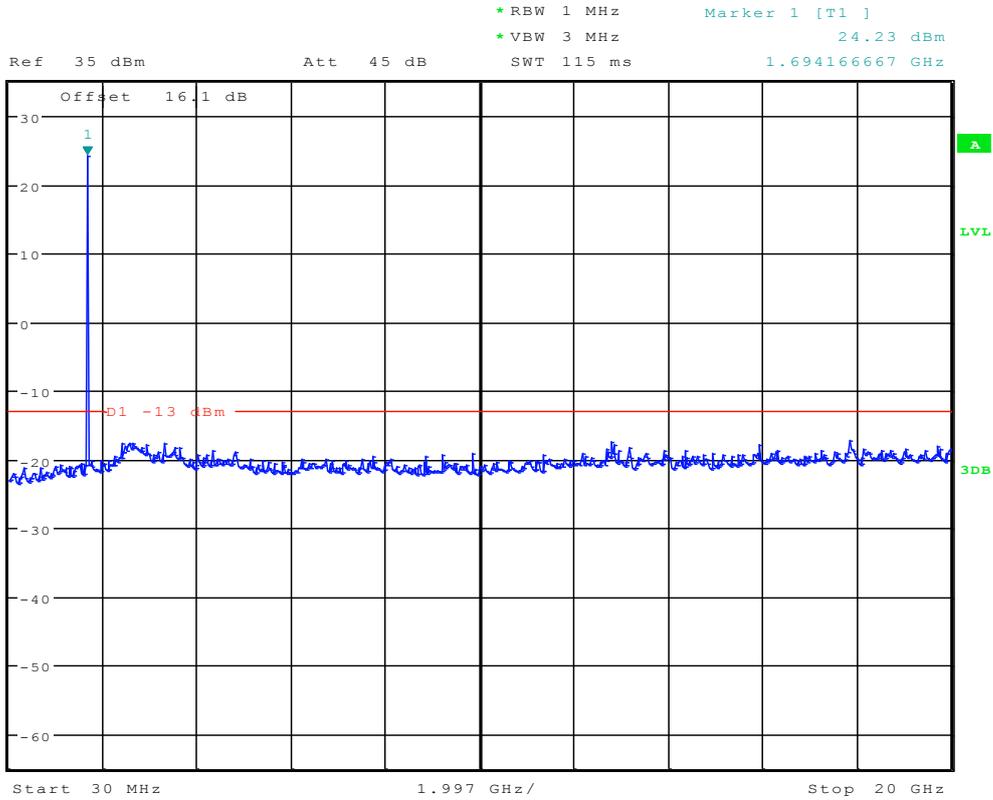
Date: 27.APR.2012 01:09:21



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -33.76 dBm  
SWT 300 ms      150.000000000 kHz



Date: 27.APR.2012 01:09:46



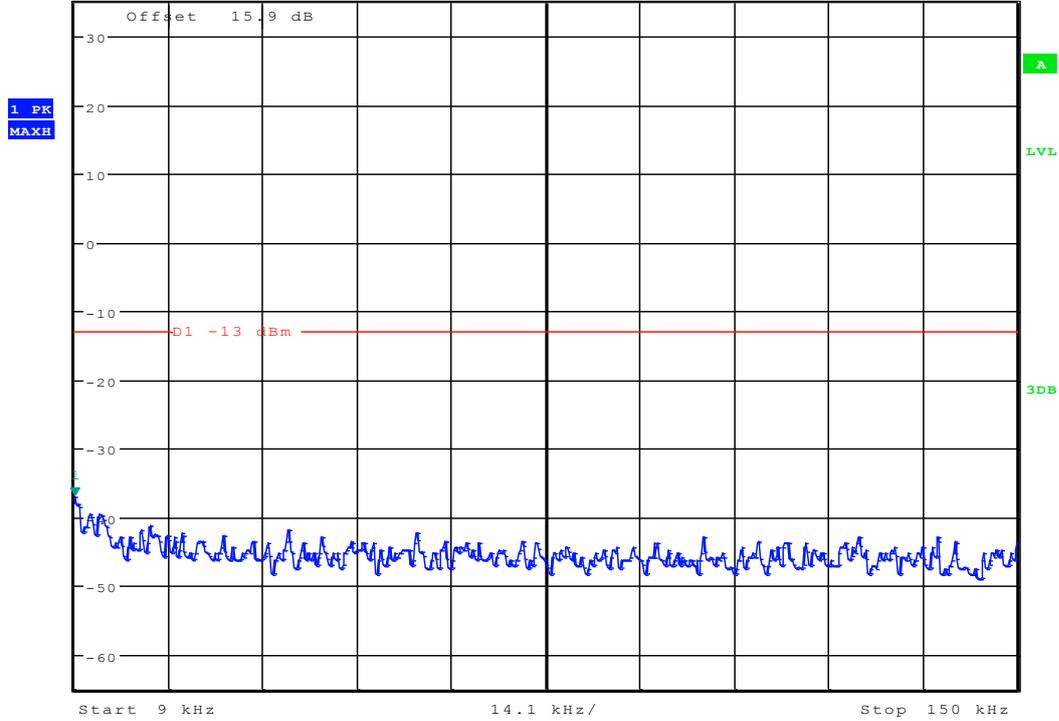
Date: 27.APR.2012 01:10:12



## Channel 450



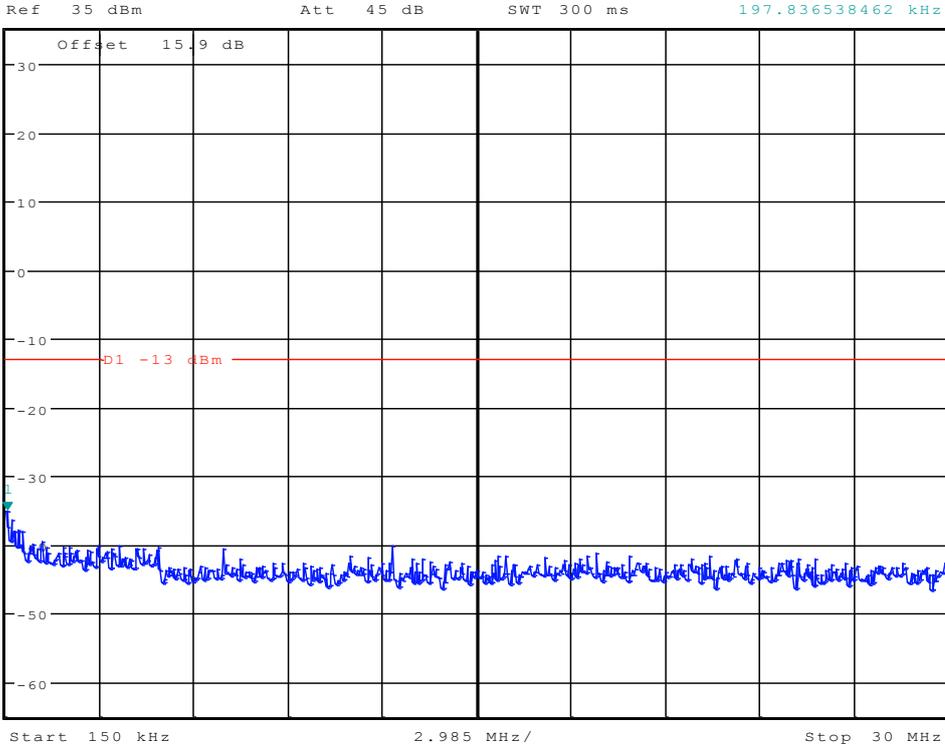
\*RBW 1 kHz      Marker 1 [T1 ]  
 \*VBW 10 kHz      -37.06 dBm  
 Ref 35 dBm      Att 45 dB      SWT 145 ms      9.000000000 kHz



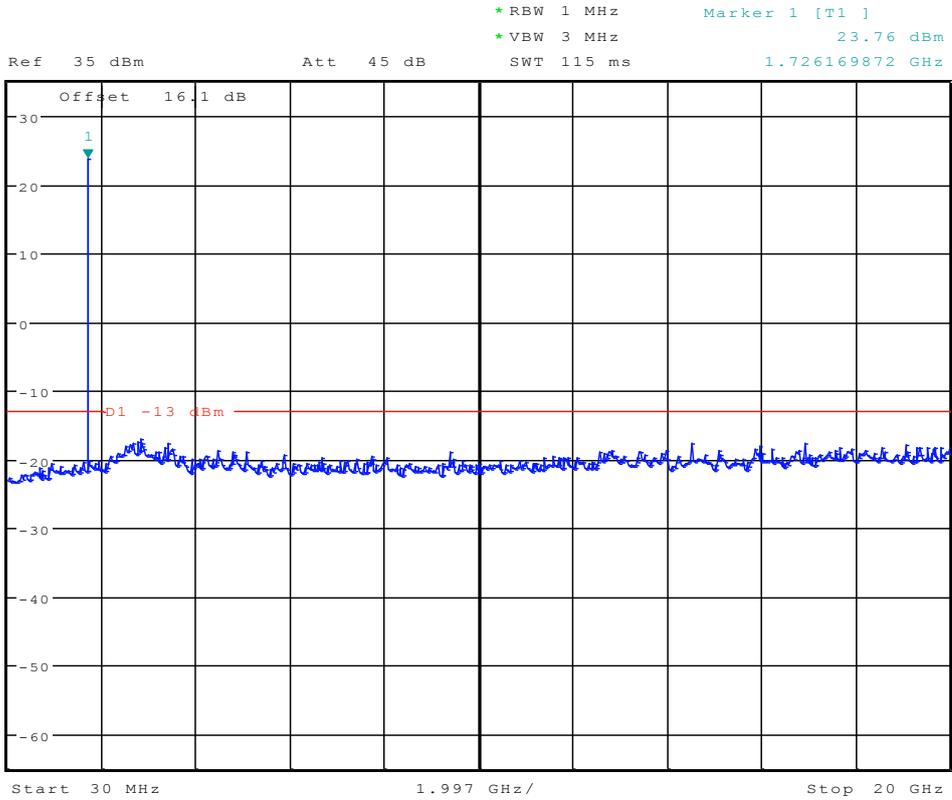
Date: 27.APR.2012 01:09:29



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -35.02 dBm  
SWT 300 ms      197.836538462 kHz



Date: 27.APR.2012 01:09:55



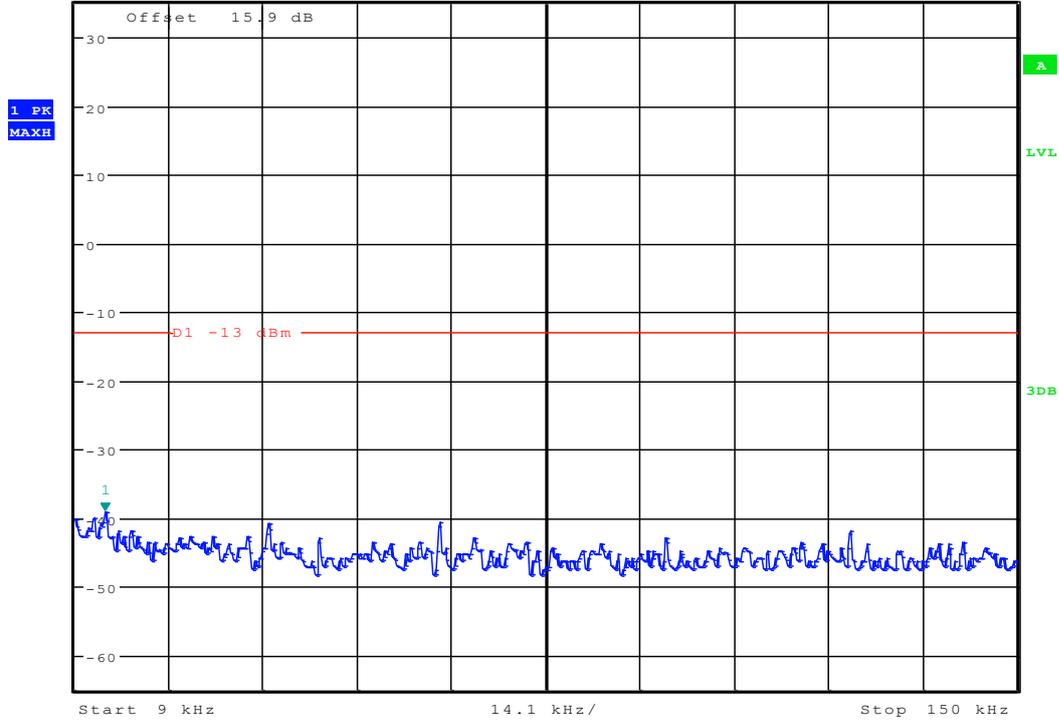
Date: 27.APR.2012 01:10:21



## Channel 875



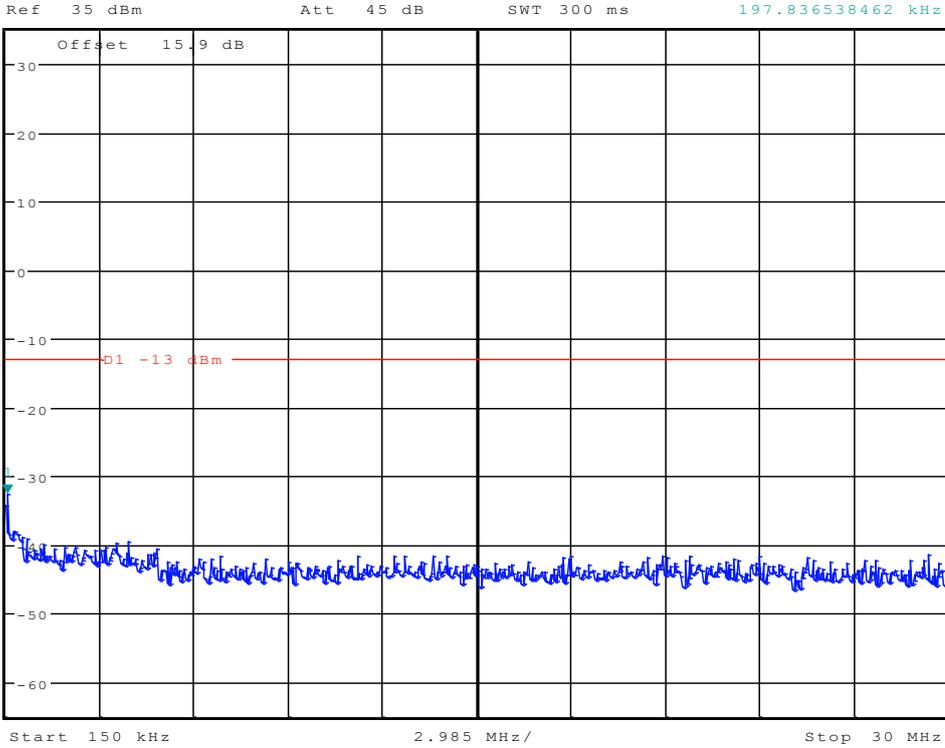
Ref 35 dBm Att 45 dB SWT 145 ms  
\*RBW 1 kHz \*VBW 10 kHz  
Marker 1 [T1] -39.08 dBm  
13.519230769 kHz



Date: 27.APR.2012 01:09:38



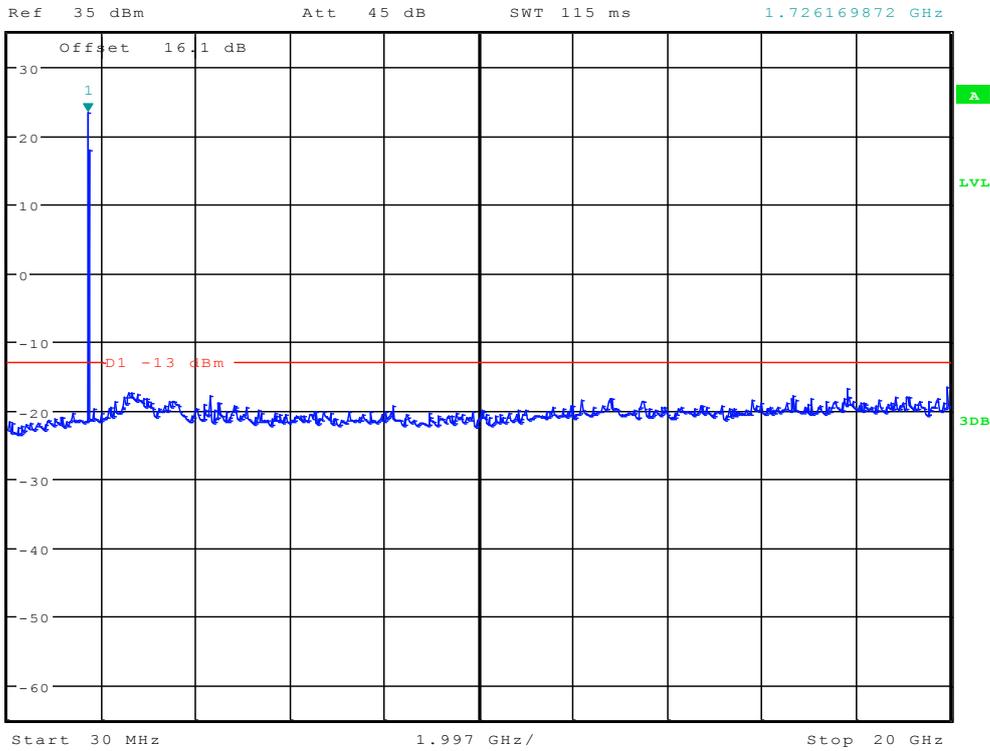
\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -32.51 dBm  
SWT 300 ms      197.836538462 kHz



Date: 27.APR.2012 01:10:03



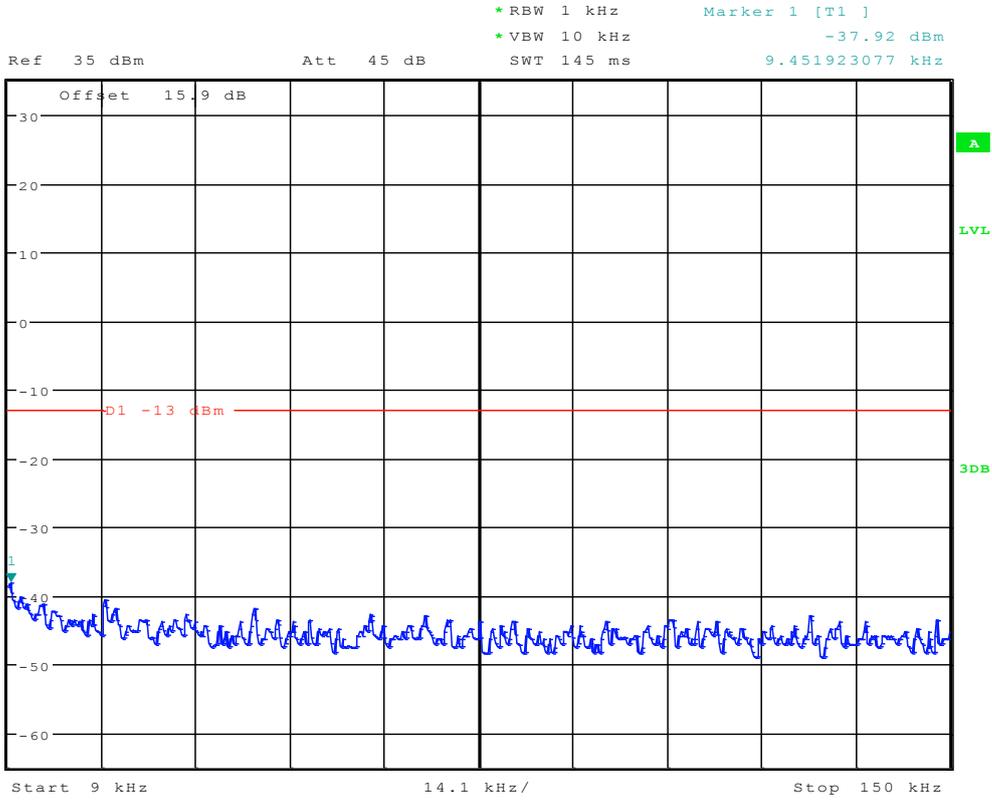
\* RBW 1 MHz      Marker 1 [T1 ]  
\* VBW 3 MHz      23.40 dBm  
SWT 115 ms      1.726169872 GHz



Date: 27.APR.2012 01:10:29



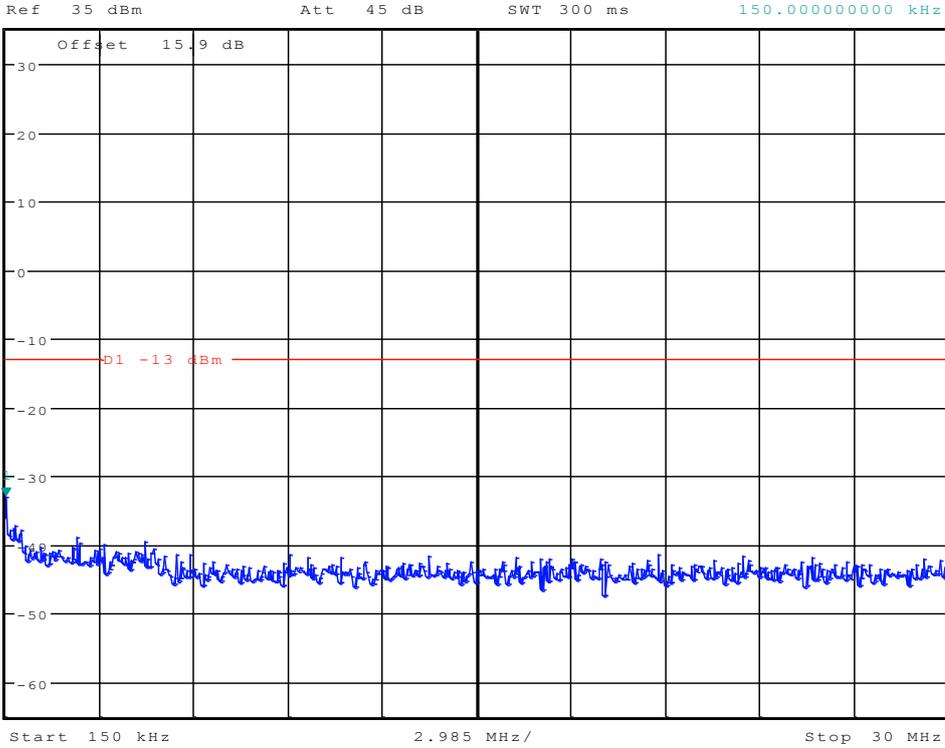
Modulation: QPSK  
Channel 25



Date: 27.APR.2012 01:10:38



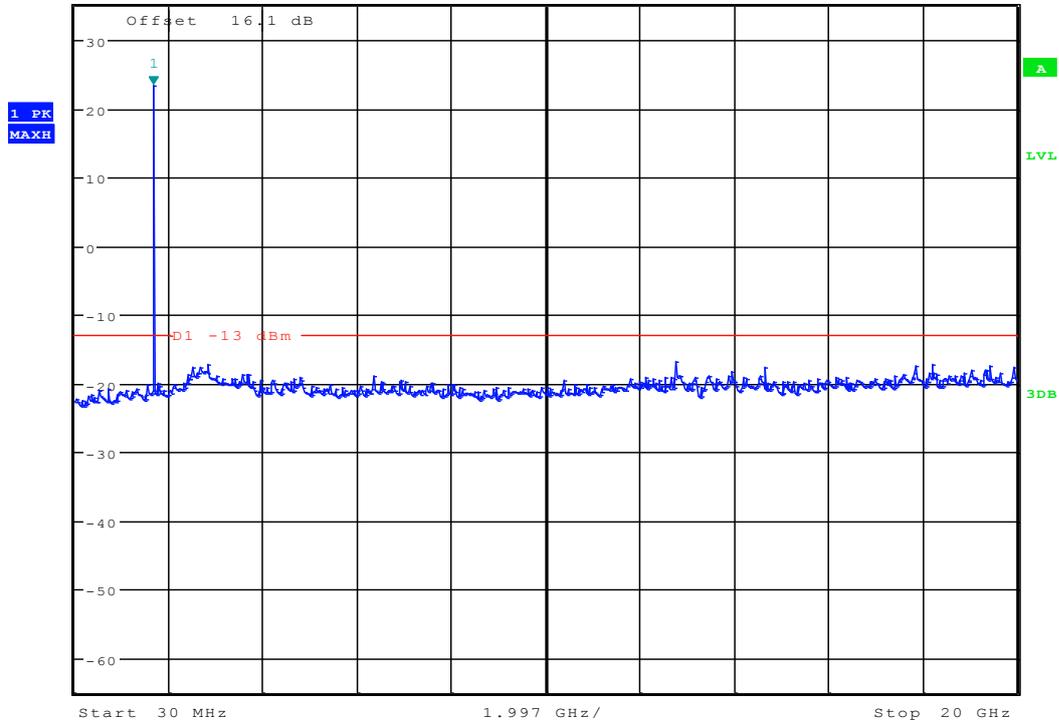
\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -33.00 dBm  
SWT 300 ms      150.000000000 kHz



Date: 27.APR.2012 01:11:03



Ref 35 dBm Att 45 dB SWT 115 ms  
\*RBW 1 MHz \*VBW 3 MHz  
Marker 1 [T1] 23.34 dBm  
1.694166667 GHz



Date: 27.APR.2012 01:11:29

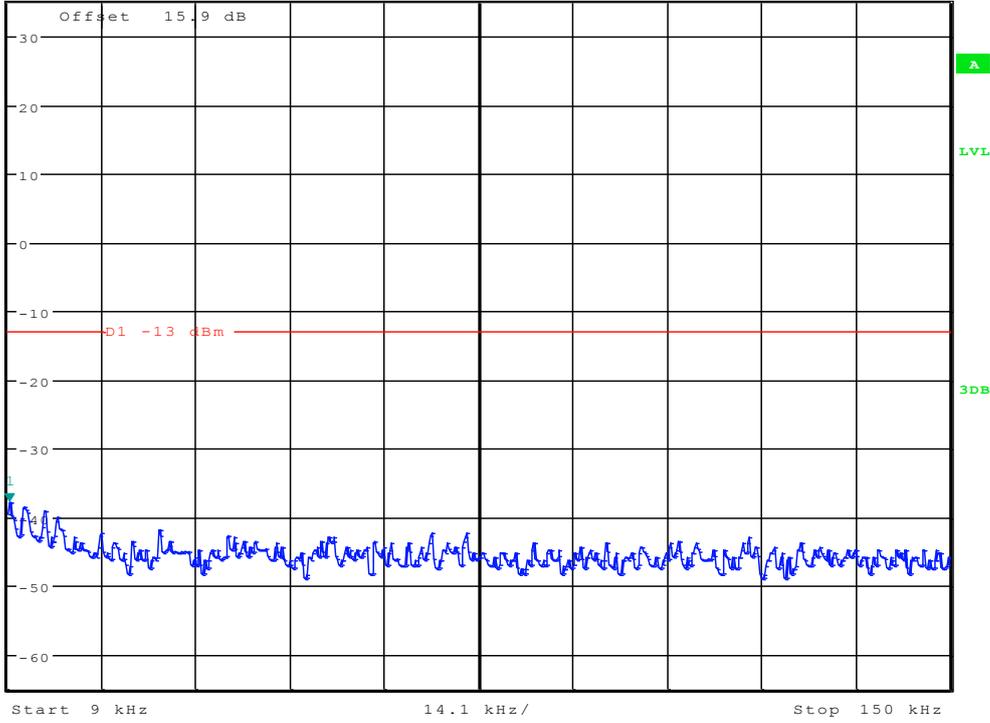


## Channel 450



Ref 35 dBm Att 45 dB SWT 145 ms  
 \*RBW 1 kHz \*VBW 10 kHz  
 Marker 1 [T1] -37.74 dBm  
 9.225961538 kHz

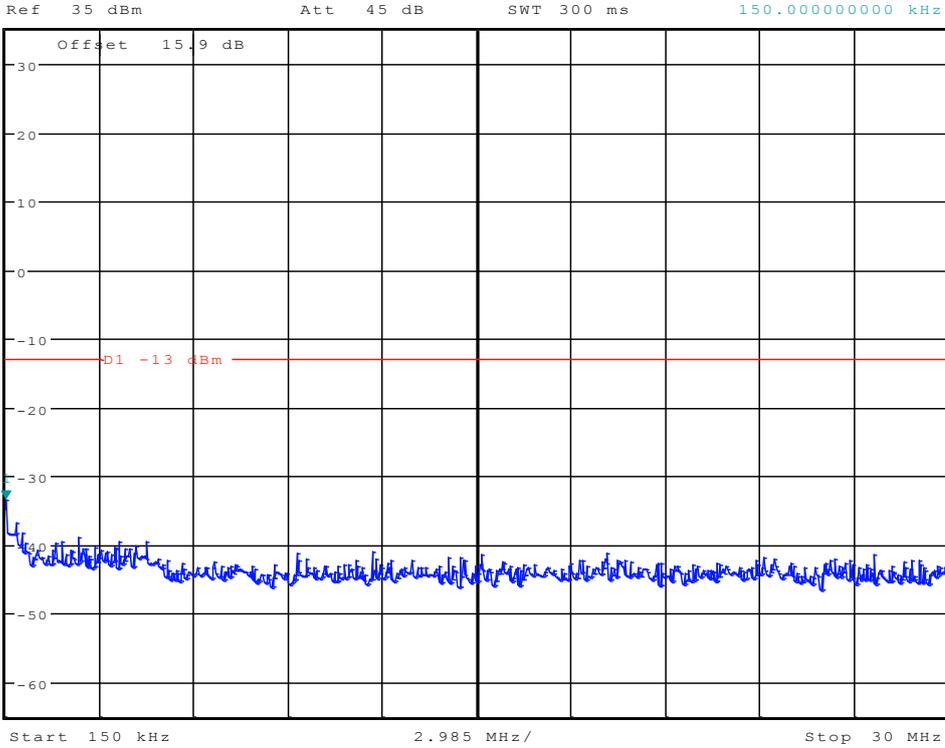
1 PK  
MAXH



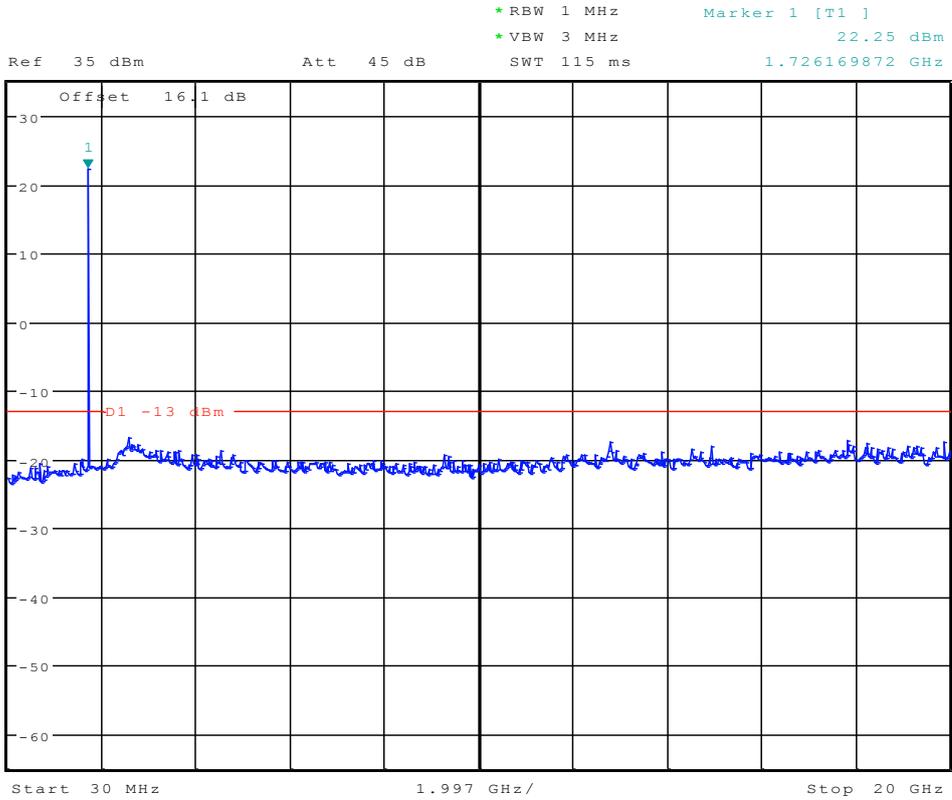
Date: 27.APR.2012 01:10:46



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -33.32 dBm  
SWT 300 ms      150.000000000 kHz



Date: 27.APR.2012 01:11:12



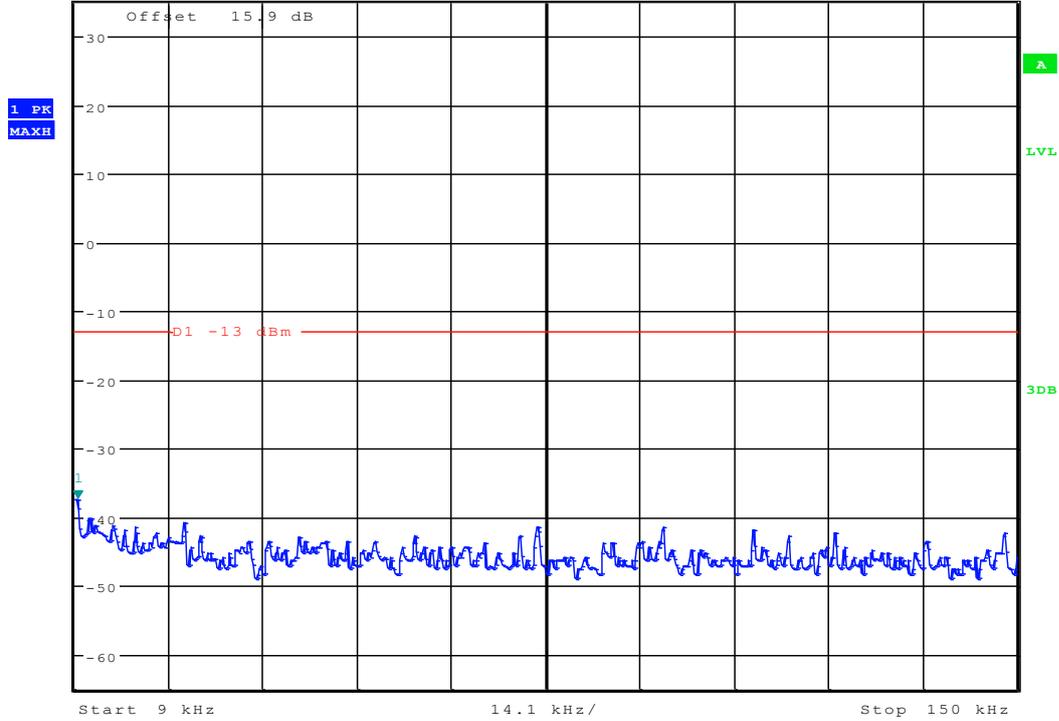
Date: 27.APR.2012 01:11:38



## Channel 875



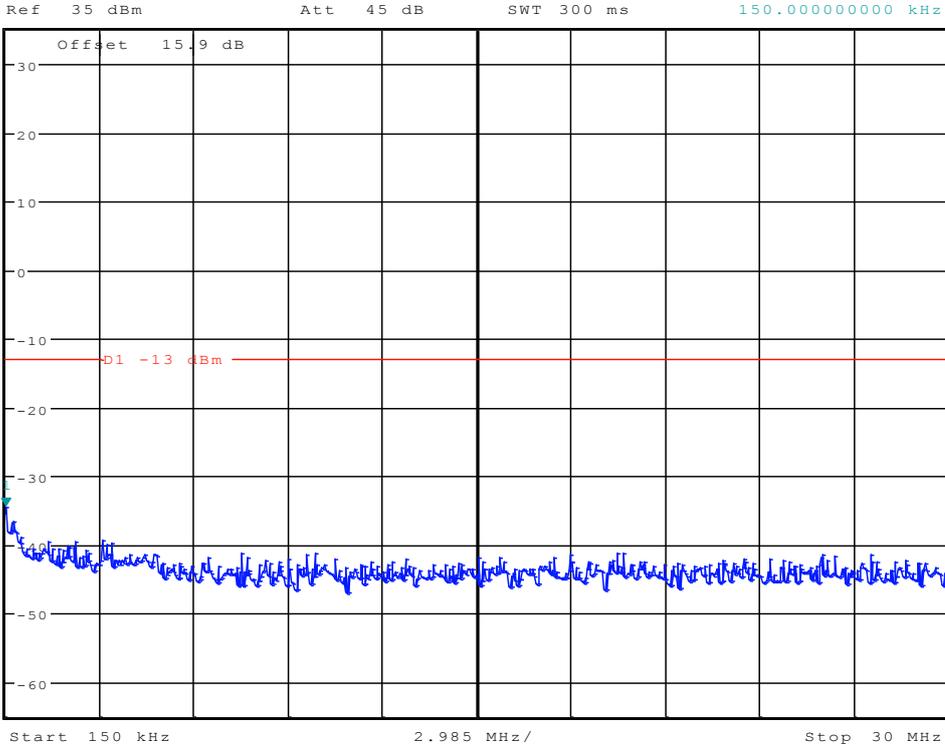
\*RBW 1 kHz      Marker 1 [T1 ]  
 \*VBW 10 kHz      -37.31 dBm  
 Ref 35 dBm      Att 45 dB      SWT 145 ms      9.451923077 kHz



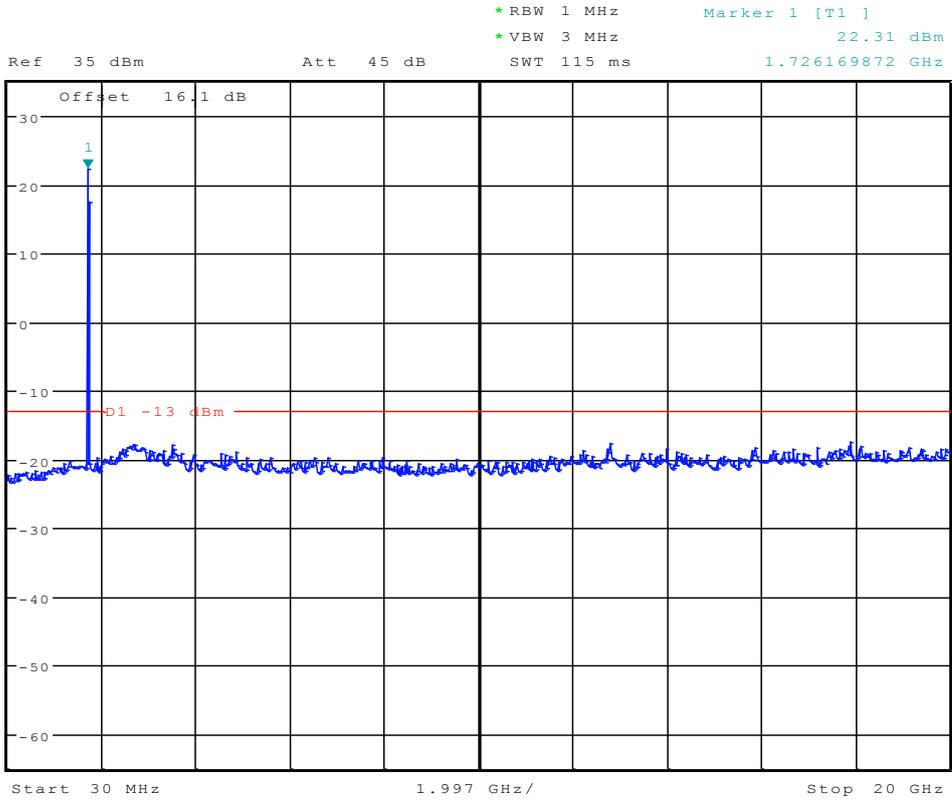
Date: 27.APR.2012 01:10:55



\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -34.40 dBm  
SWT 300 ms      150.00000000 kHz



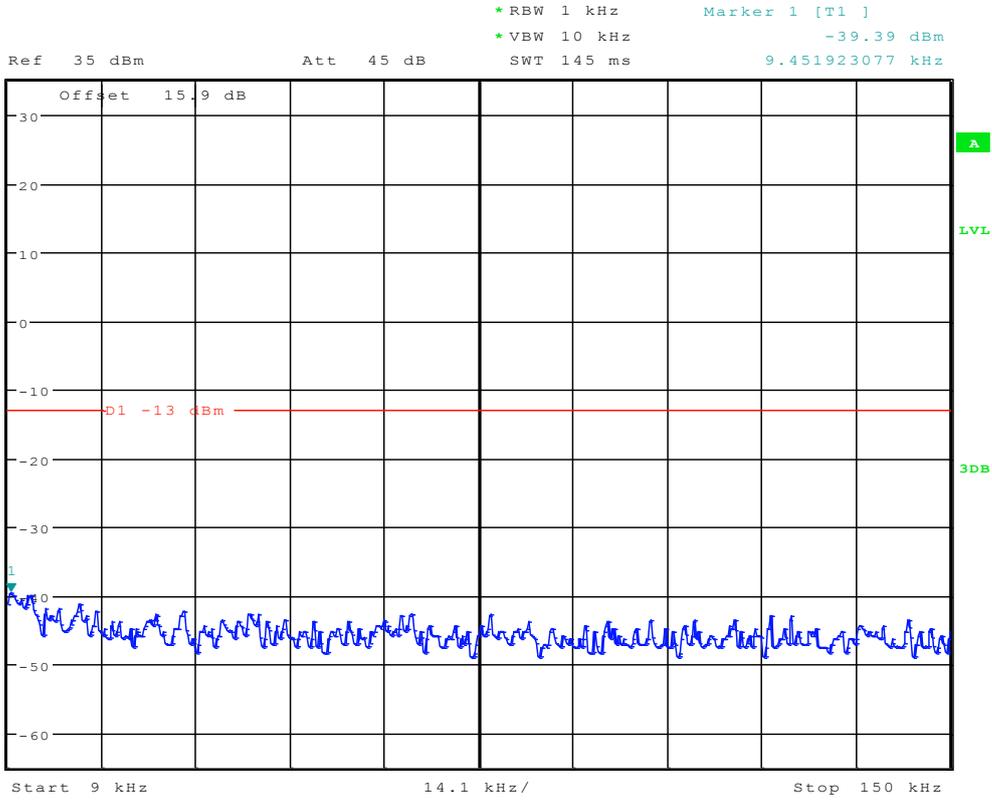
Date: 27.APR.2012 01:11:20



Date: 27.APR.2012 01:11:46



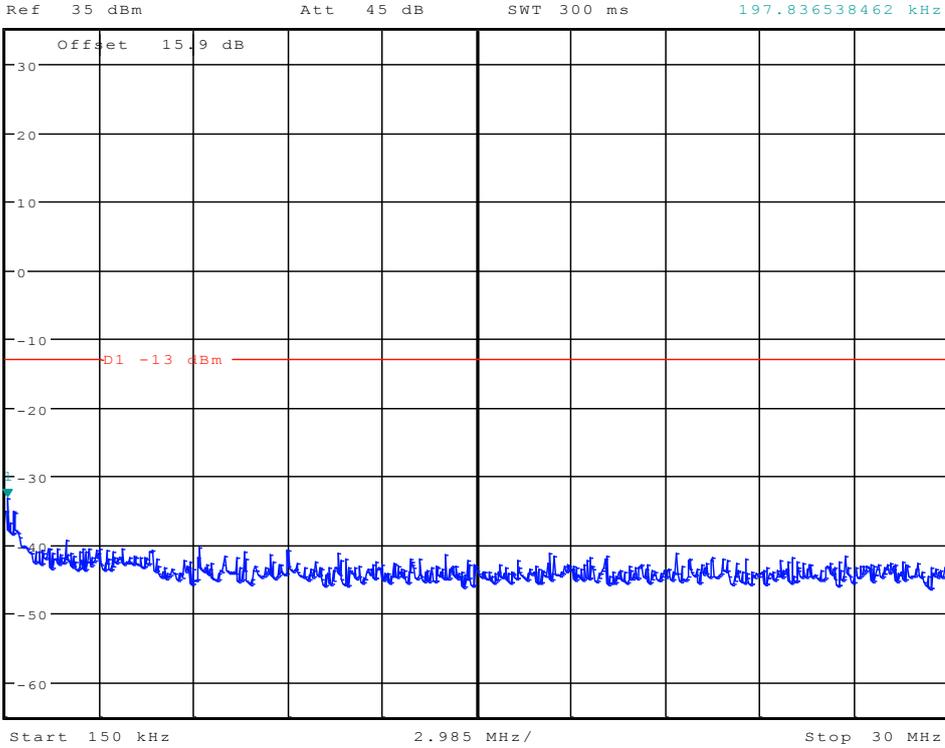
## Modulation: 8PSK Channel 25



Date: 27.APR.2012 01:11:55



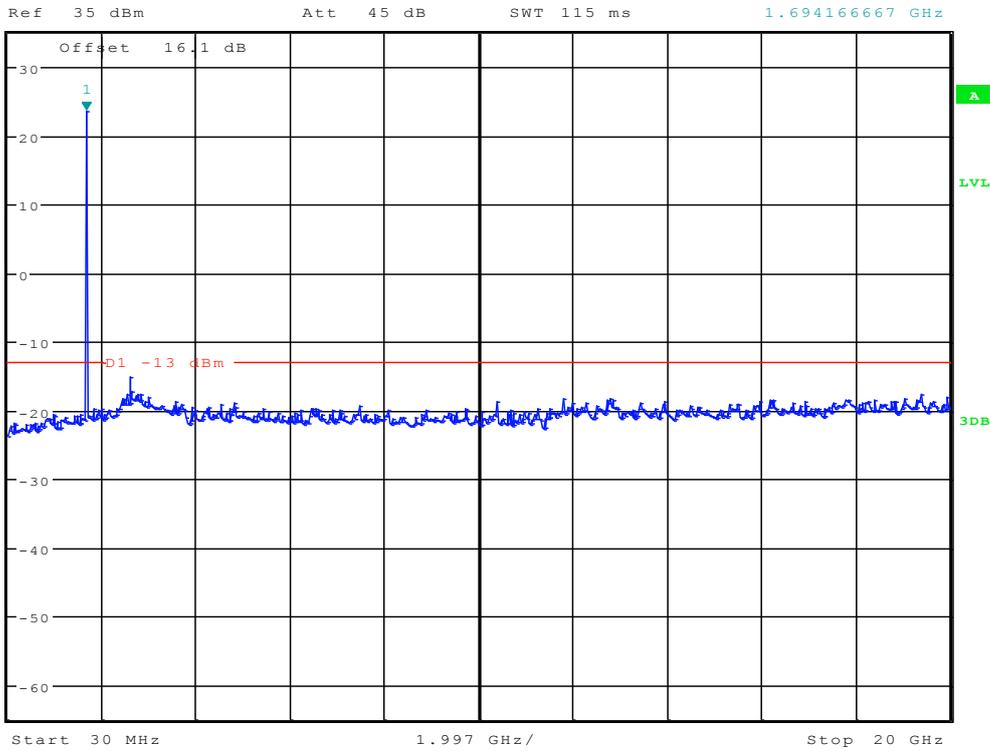
\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -33.16 dBm  
SWT 300 ms      197.836538462 kHz



Date: 27.APR.2012 01:12:20



\* RBW 1 MHz      Marker 1 [T1 ]  
\* VBW 3 MHz      23.58 dBm  
SWT 115 ms      1.694166667 GHz



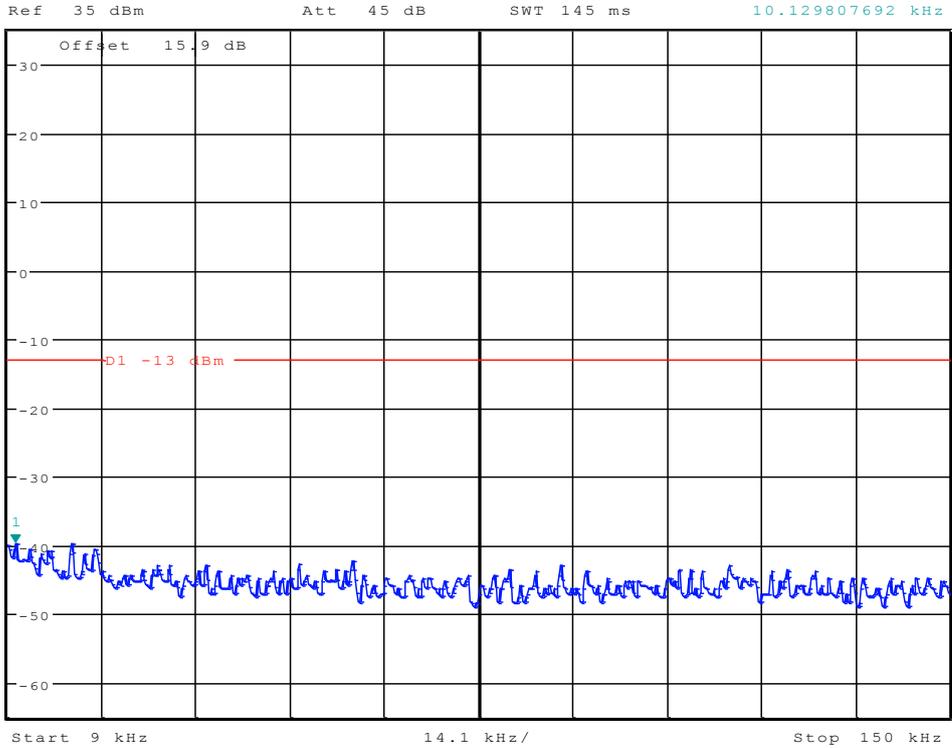
Date: 27.APR.2012 01:12:46



## Channel 450



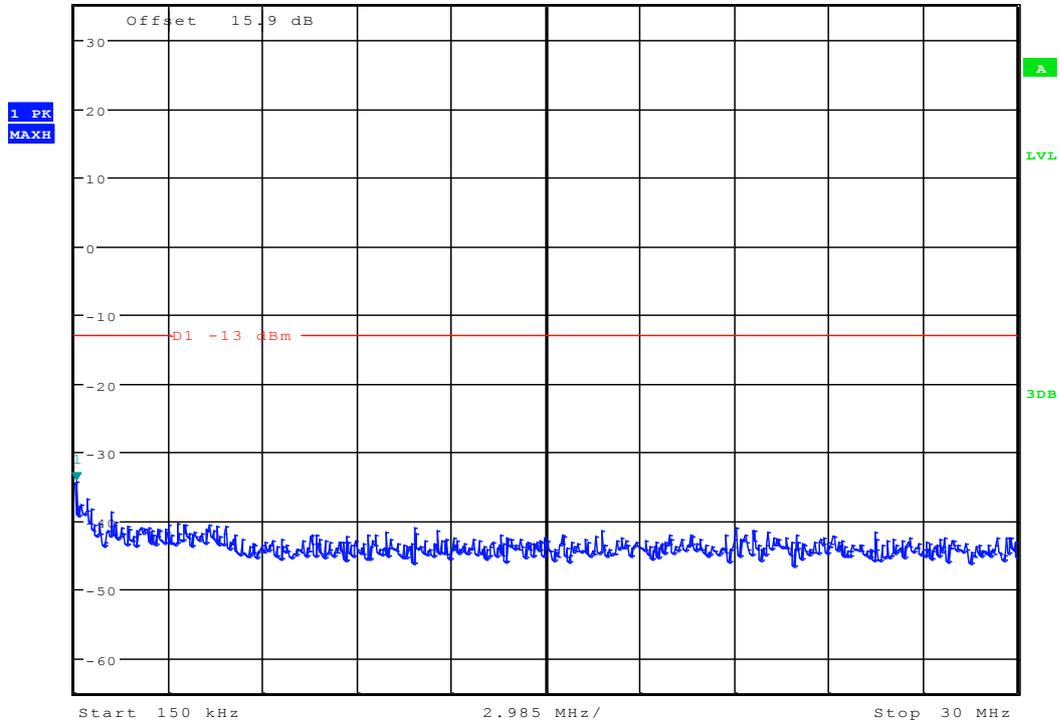
\*RBW 1 kHz      Marker 1 [T1 ]  
\*VBW 10 kHz      -39.61 dBm  
SWT 145 ms      10.129807692 kHz



Date: 27.APR.2012 01:12:03



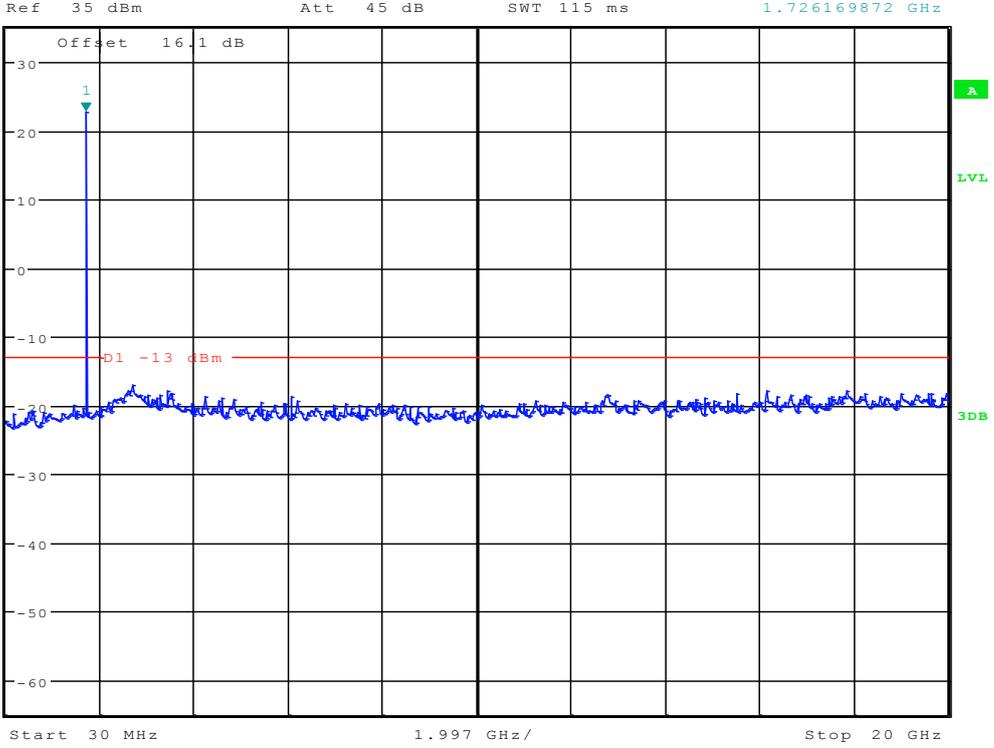
Ref 35 dBm Att 45 dB SWT 300 ms  
\*RBW 10 kHz \*VBW 30 kHz  
Marker 1 [T1] -34.22 dBm  
197.836538462 kHz



Date: 27.APR.2012 01:12:29



\* RBW 1 MHz      Marker 1 [T1 ]  
\* VBW 3 MHz      22.78 dBm  
SWT 115 ms      1.726169872 GHz



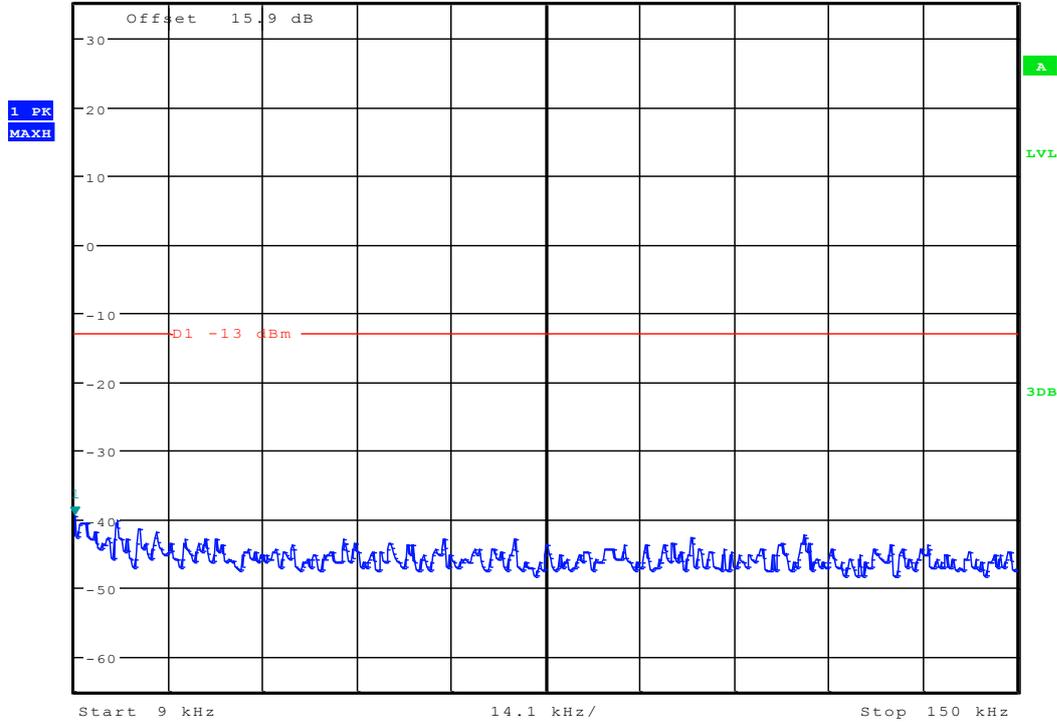
Date: 27.APR.2012 01:12:55



## Channel 875



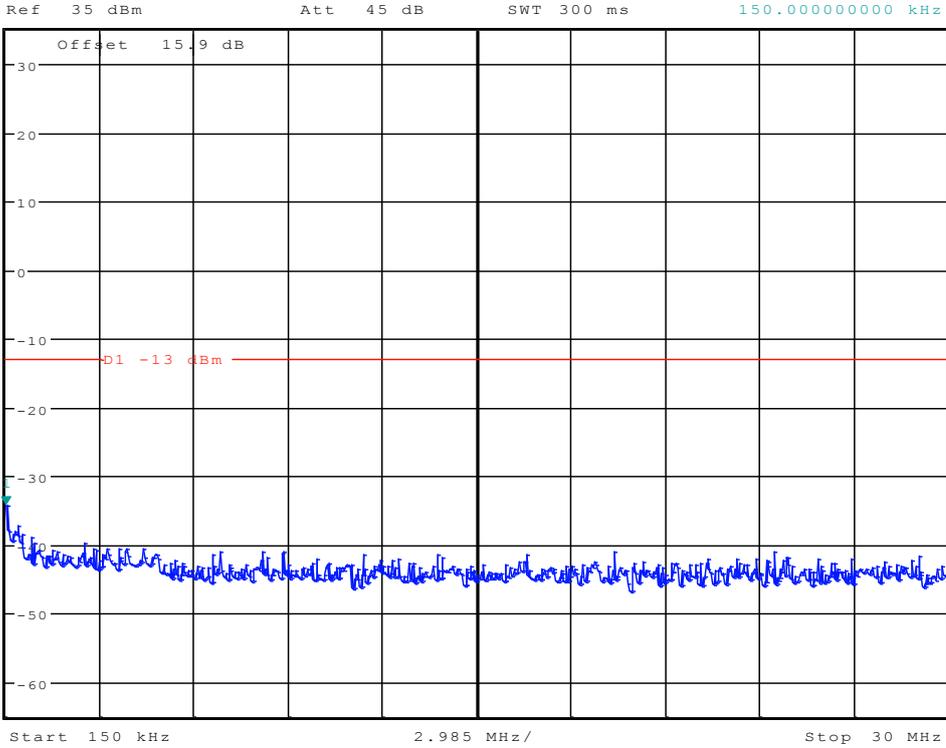
\* RBW 1 kHz      Marker 1 [T1 ]  
 \* VBW 10 kHz      -39.39 dBm  
 Ref 35 dBm      Att 45 dB      SWT 145 ms      9.000000000 kHz



Date: 27.APR.2012 01:12:12



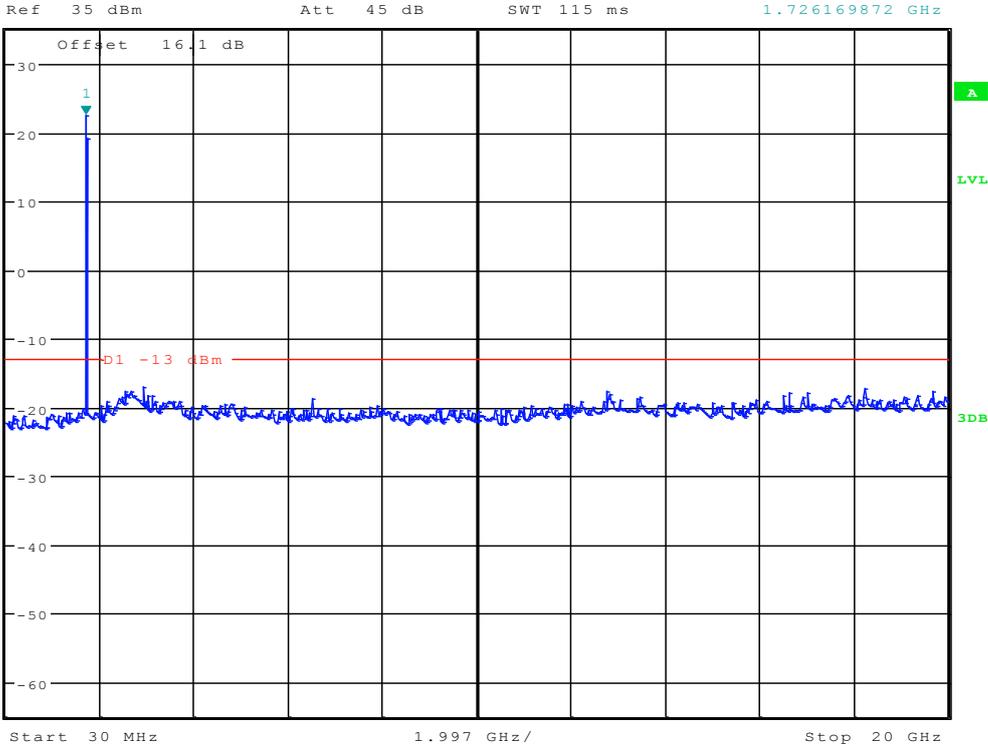
\* RBW 10 kHz      Marker 1 [T1 ]  
\* VBW 30 kHz      -34.16 dBm  
SWT 300 ms      150.000000000 kHz



Date: 27.APR.2012 01:12:37



\* RBW 1 MHz      Marker 1 [T1 ]  
\* VBW 3 MHz      22.60 dBm  
SWT 115 ms      1.726169872 GHz



Date: 27.APR.2012 01:13:03

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

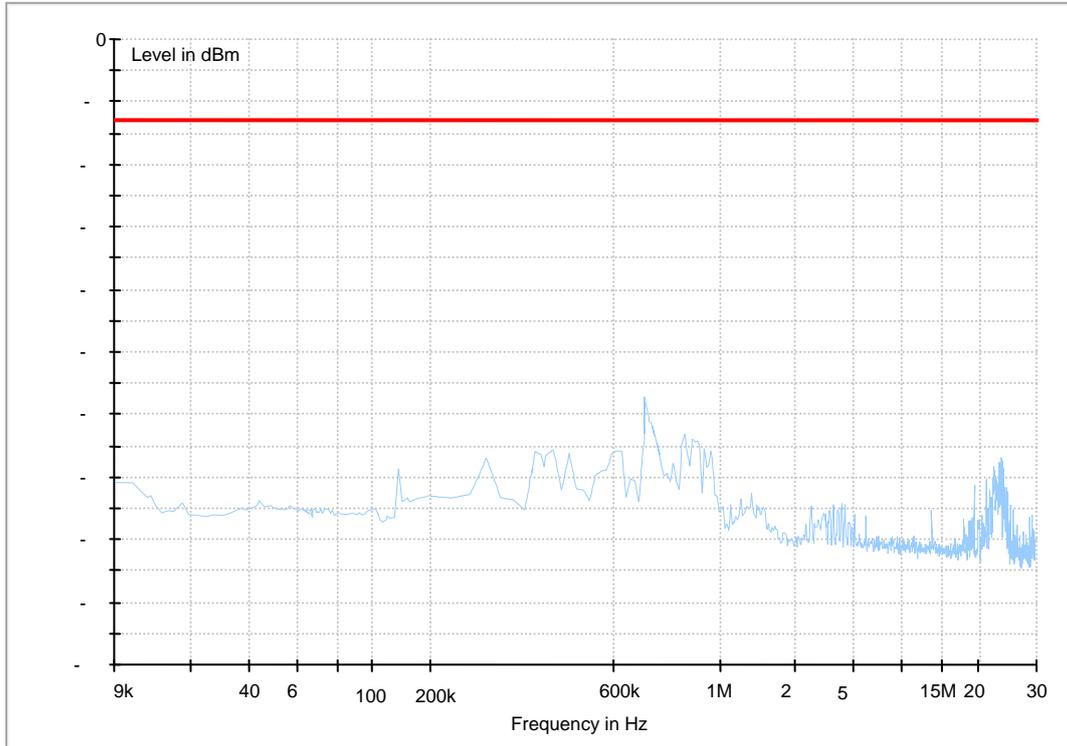


# Appendix F

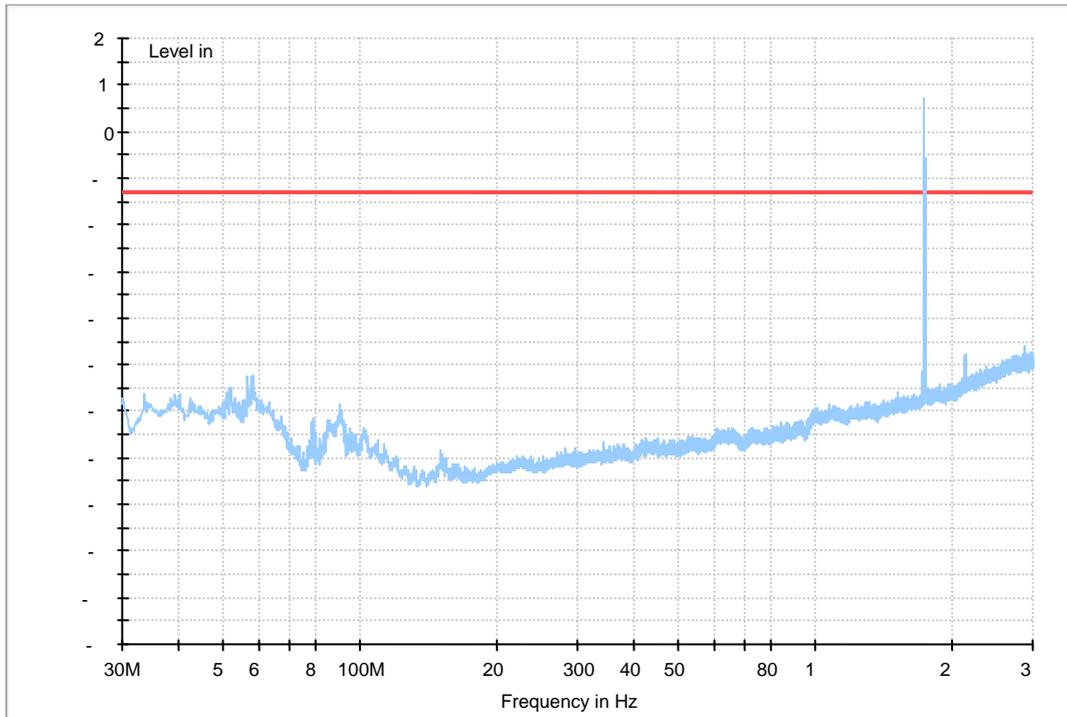
## Radiated spurious emission

# CDMA AWS

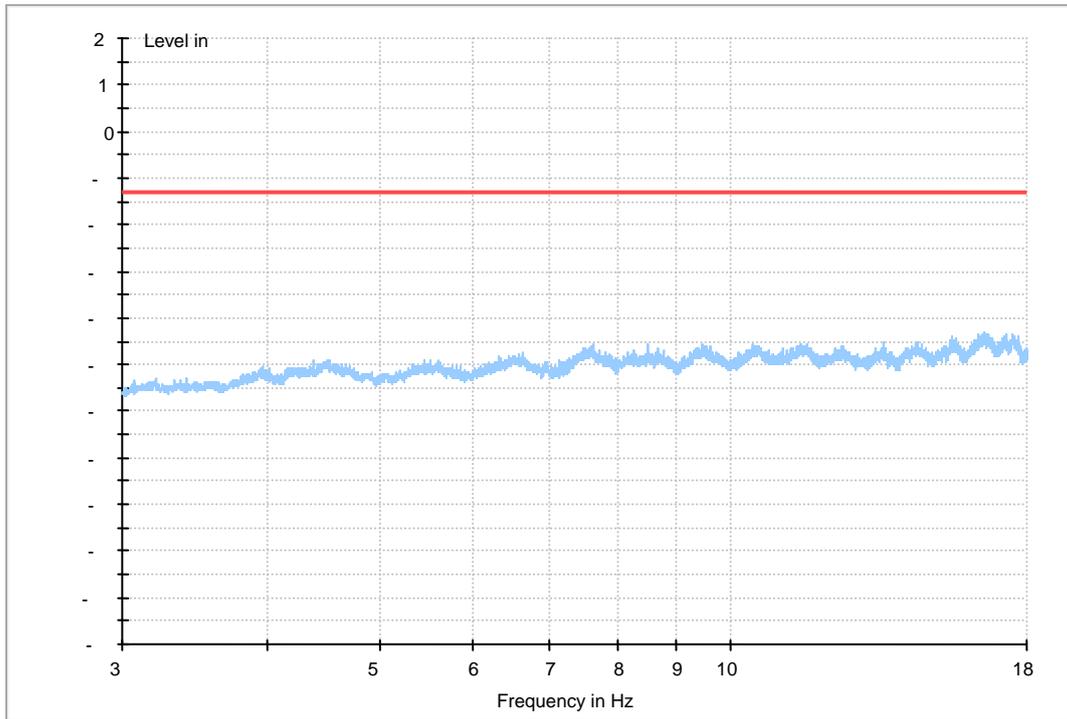
## (9kHz-30MHz)



## Traffic Mode (30MHz-3GHz)

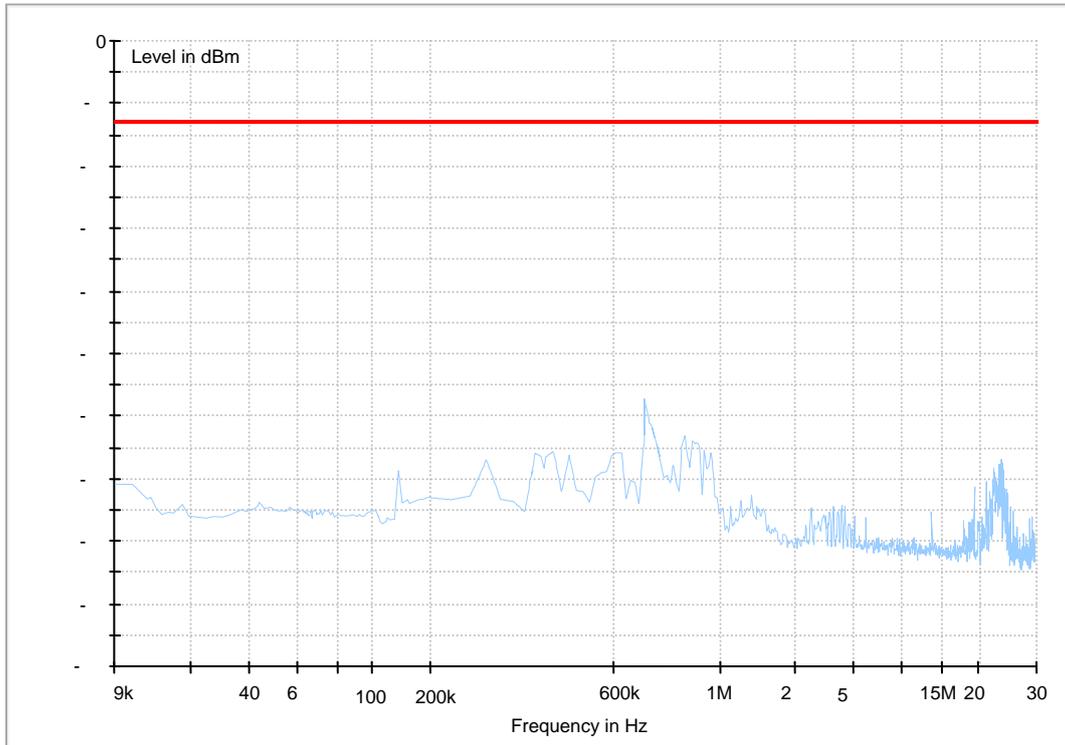


### Traffic Mode (3GHz-18GHz)

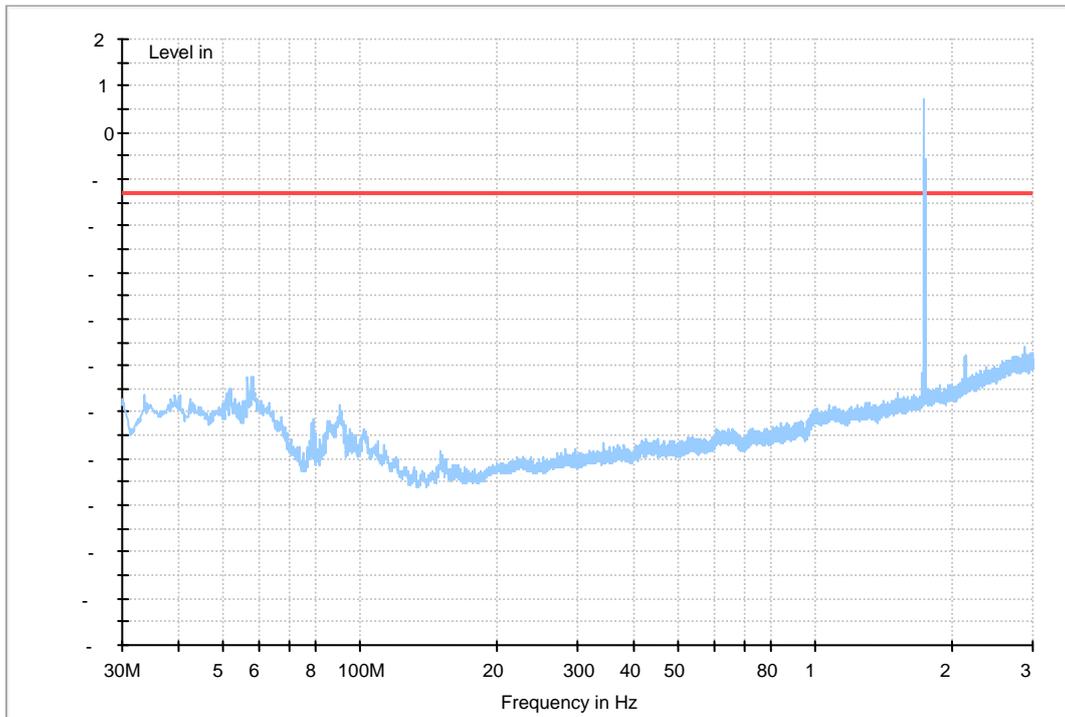


## EVDO AWS R.0

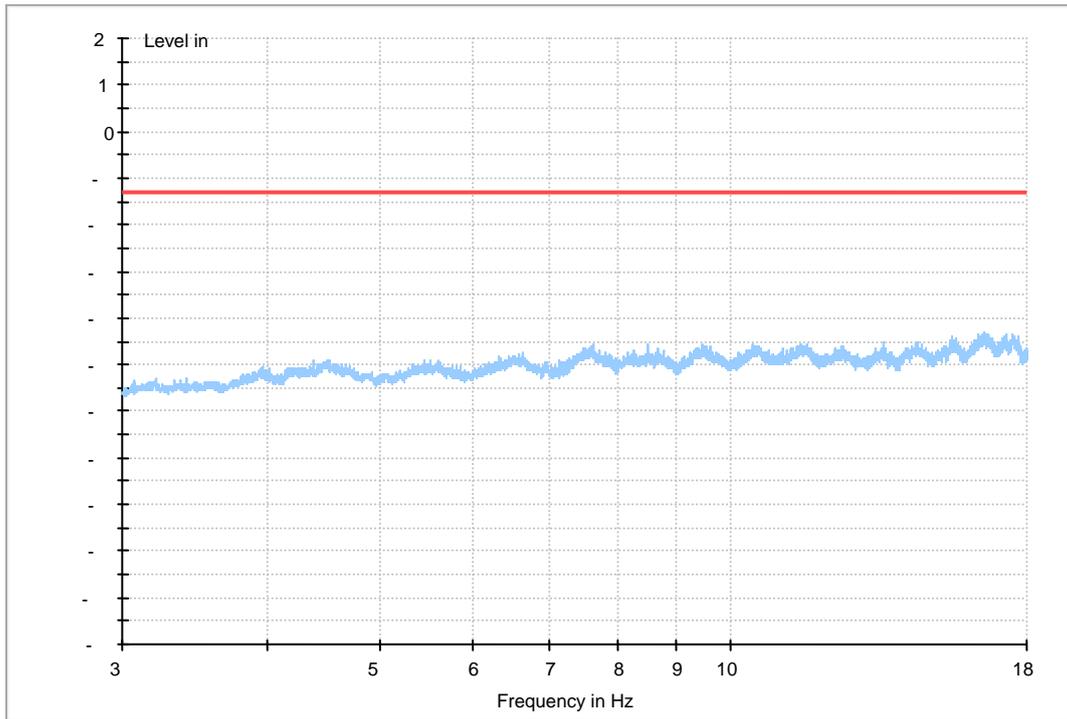
(9kHz-30MHz)



Traffic Mode (30MHz-3GHz)

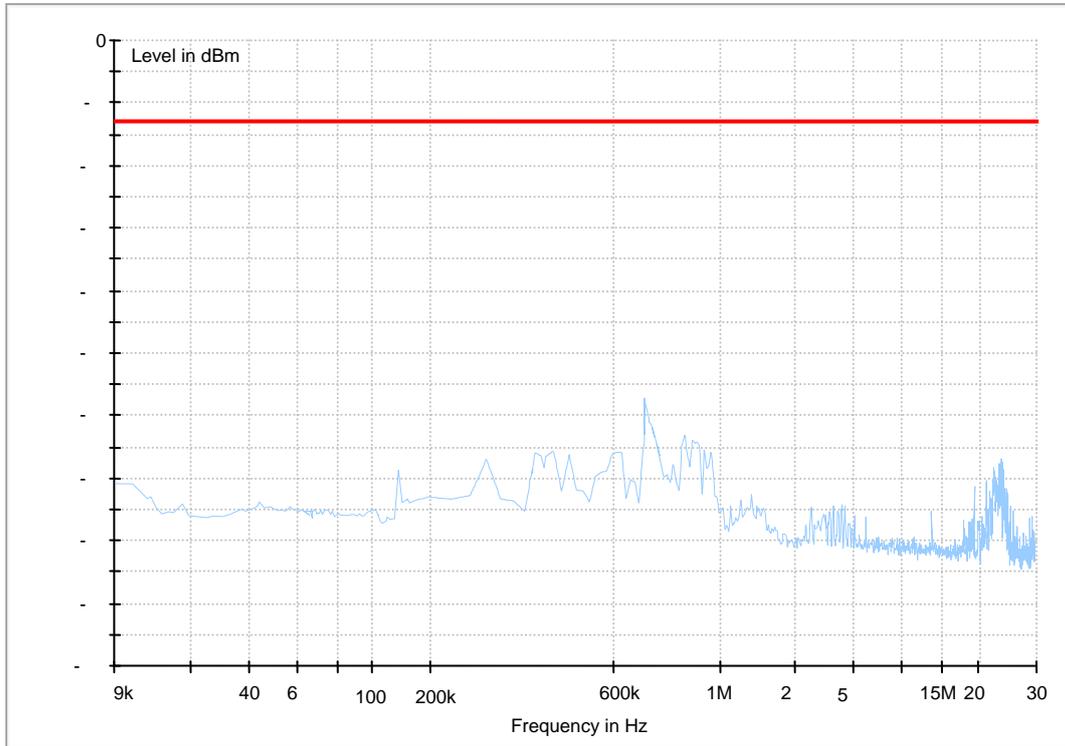


## Traffic Mode (3GHz-18GHz)

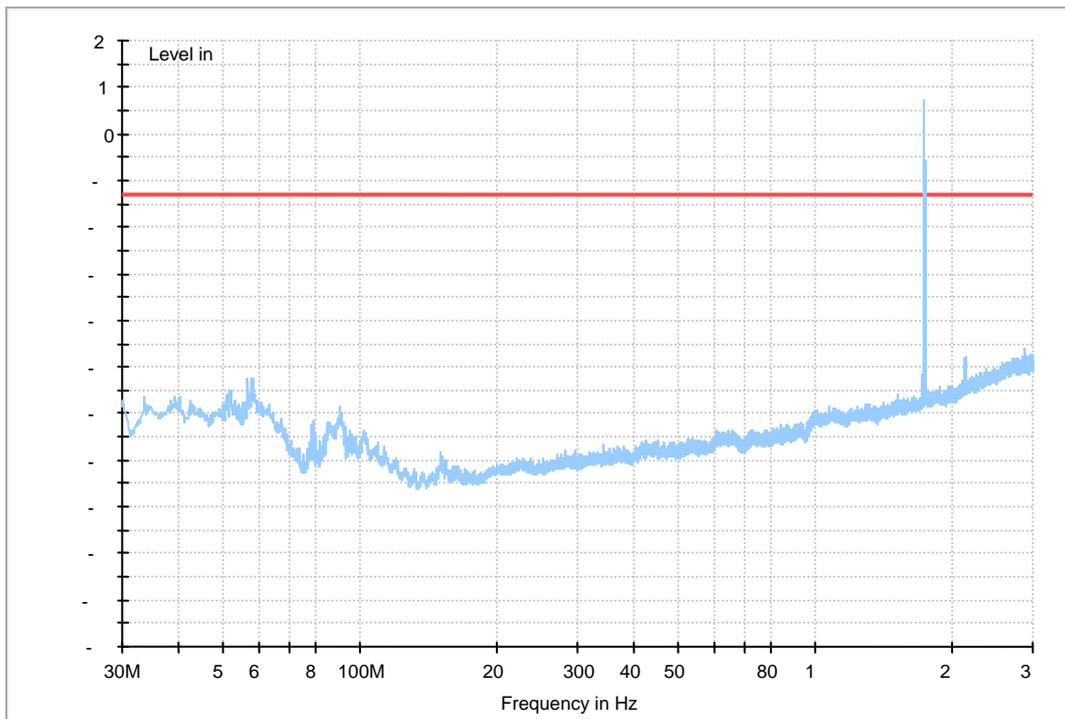


## EVDO AWS R.A

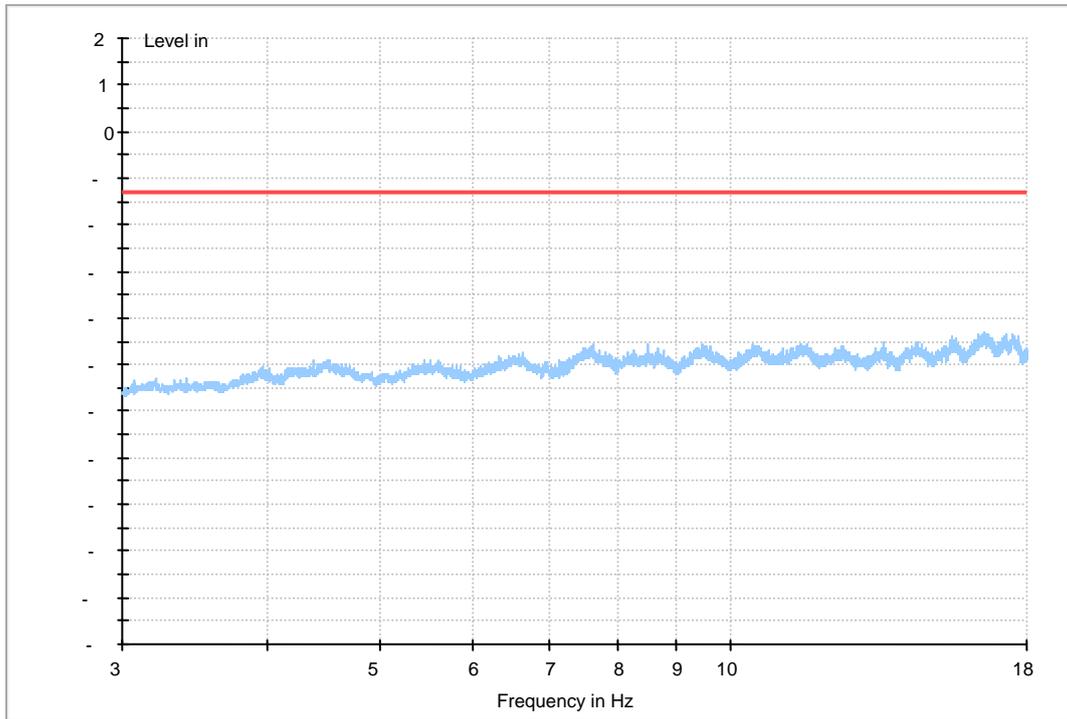
(9kHz-30MHz)



Traffic Mode (30MHz-3GHz)



### Traffic Mode (3GHz-18GHz)



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



# Appendix G

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



### 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	100%	-30 °C	15	0.0087	---	±2.5	Pass
			-20 °C	-14	-0.0081	---	±2.5	Pass
			-10 °C	18	0.0104	---	±2.5	Pass
			0 °C	9	0.0052	---	±2.5	Pass
			10 °C	13	0.0075	---	±2.5	Pass
			20 °C	-17	-0.0098	---	±2.5	Pass
			30 °C	19	0.0110	---	±2.5	Pass
			40 °C	-18	-0.0104	---	±2.5	Pass
			50 °C	10	0.0058	---	±2.5	Pass
TM 3	M	100%	-30 °C	15	0.0087	---	±2.5	Pass
			-20 °C	-8	-0.0046	---	±2.5	Pass
			-10 °C	-16	-0.0092	---	±2.5	Pass
			0 °C	10	0.0058	---	±2.5	Pass
			10 °C	-13	-0.0075	---	±2.5	Pass
			20 °C	-8	-0.0046	---	±2.5	Pass
			30 °C	-15	-0.0087	---	±2.5	Pass
			40 °C	-12	-0.0069	---	±2.5	Pass
			50 °C	16	0.0092	---	±2.5	Pass
Subtype 0	M	100%	-30 °C	8	0.0046	---	±2.5	Pass
			-20 °C	12	0.0069	---	±2.5	Pass
			-10 °C	-15	-0.0087	---	±2.5	Pass
			0 °C	17	0.0098	---	±2.5	Pass
			10 °C	-14	-0.0081	---	±2.5	Pass
			20 °C	-13	-0.0075	---	±2.5	Pass
			30 °C	11	0.0063	---	±2.5	Pass
			40 °C	-10	-0.0058	---	±2.5	Pass
			50 °C	-9	-0.0052	---	±2.5	Pass
Subtype 2	M	100%	-30 °C	17	0.0098	---	±2.5	Pass
			-20 °C	-15	-0.0087	---	±2.5	Pass
			-10 °C	-11	-0.0063	---	±2.5	Pass
			0 °C	14	0.0081	---	±2.5	Pass
			10 °C	13	0.0075	---	±2.5	Pass
			20 °C	-17	-0.0098	---	±2.5	Pass
			30 °C	18	0.0104	---	±2.5	Pass
			40 °C	8	0.0046	---	±2.5	Pass
			50 °C	-10	-0.0058	---	±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	20 °C	VL	18	0.0104	---	±2.5	Pass
			VN	-15	-0.0087	---	±2.5	Pass
			VH	14	0.0081	---	±2.5	Pass
TM 3	M	20 °C	VL	-16	-0.0092	---	±2.5	Pass
			VN	18	0.0104	---	±2.5	Pass
			VH	-17	-0.0098	---	±2.5	Pass
Subtype 0	M	20 °C	VL	17	0.0098	---	±2.5	Pass
			VN	-11	-0.0063	---	±2.5	Pass
			VH	13	0.0075	---	±2.5	Pass
Subtype 2	M	20 °C	VL	19	0.0110	---	±2.5	Pass
			VN	15	0.0087	---	±2.5	Pass
			VH	-13	-0.0075	---	±2.5	Pass

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