



# Test Report Summary

## FCC CFR 47, Part 22

### Subpart H Cellular Radiotelephone Service

**Manufacturer:** ADC Telecommunications

**Name of Equipment:** Bi-Directional Amplifier – Cellular

**Model Number(s):** RPT-SBAAA12000

**Manufacturer's Address:** P.O. Box 1101  
Minneapolis, MN 55440-1101

**Test Report Number:** MN070817

**Test Date(s):** 26 July, 2007 (ETL)  
31 July, 2007 (ADC)

According to testing performed at Intertek, the above-mentioned unit is in accordance with the applicable electromagnetic compatibility (EMC) portions of the requirements defined in FCC Part 22.

It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. Any modifications necessary for compliance made during testing on the above mentioned date(s) must be implemented in all production units for compliance to be maintained.

All testing was done in accordance with the Federal Communications Commission's CFR 47 Part 22 and the EUT fulfills the requirements of the Federal Communications Commission's CFR 47 Part 22.

Date: 17 August, 2007

Location: Intertek Testing Services (ETL)  
7250 Hudson Blvd., Suite 100  
Oakdale, MN 55128  
Phone: (651) 730-1188  
Fax: (651) 730-1282

ADC Telecommunications  
5341 12<sup>th</sup> Ave E  
Shakopee, MN 55379  
Phone: (952) 403-8340  
Fax: (952) 403-8858

Testing Conducted by (ADC):  
And Report Written by:

  
Mark F. Miska  
Compliance Engineer



## **EMC Emission – T E S T R E P O R T**

**Test Report File Number:** MN070817 **Date of Issue:** 17 July, 2007

**Model Number(s):** RPT-SBAAA12000

**Product Name:** Bi-Directional Amplifier – Cellular

**Product Type:** Amplifier

**Applicant:** ADC Telecommunications

**Manufacturer:** ADC Telecommunications

**License Holder:** ADC Telecommunications

**Address:** P.O. Box 1101  
Minneapolis, MN 55440-1101

**Test Result:**  **Positive**  Negative

**Test Project Number:** 3129667MIN-001  
**Reference(s)**

**Total pages including Appendices:** 98



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## 1.0 REVISION DESCRIPTION

Rev	Total Pages	Date	Description
A	98	July 17, 2007	Original Release

## 2.0 DOCUMENTATION

### 2.1 Test Regulations

- 22.355 Frequency tolerance
- 22.913 Effective radiated power limits
- 22.917 Emission limitations for cellular

The emissions tests were performed according to the following regulations:

#### ■ FCC Part 22

- FCC Part 24
- FCC Part 90
- IC RSS-131 Issue 2

#### Environmental Conditions in the lab:

##### ADC

Temperature: 25° C  
Relative Humidity: 23%  
Atmospheric Pressure: 97.7 kPa

##### ETL

15-35° C  
30-60%  
86-106 kPa

#### Power Supply Utilized:

Power Supply System : 1 phase, 60 Hz, 120 VAC

## 2.2 Test Operation Mode

- Standby
- Test Program
- Practice Operation

### ■ Max composite in and out

## 2.3 Configuration of the device under test:

Normal Operation – Cellular - 869 to 894 MHz

## 2.4 Product Options:

None

## 2.5 EUT Specifications and Requirements:

Length: 8.75"

Width: 8.0"

Height: 2.5"

Weight: 7.85 pounds

## 2.6 Cables:

Cable Type	Length	From	To
RF	> 3M	Ancillary Equip	EUT
RF	< 3M	EUT	50 Ohm Load
Power	< 3M	Power	Input Power

## 2.7 Power Requirements:

Voltage: 120 VAC

Amps: 0.8 A

## 2.8 Typical Installation and/or Operating Environment:

Indoor only. System is typically employed as an indoor repeater.

## 2.9 Other Special Requirements:

None

## 2.10 EUT Software:

Revision Level: Version 1.0.0

Description: Repeater PC Program. System Management Software

### 2.11 EUT System Components

Description	Model #	Serial #	FCC ID #
BDA	RPT-SBAAA12000	None	

### 2.12 Support Equipment

Description	Manufacturer	Model #	FCC ID #
Power Meter	HP	EPM-441A	
Signal Generator	Agilent	E4438C	
Attenuator	Aeroflex	49-30-33	

### 2.13 Deviations from standard:

Modifications required to pass:

As indicated on the data sheet(s)

**None**

### 2.14 Test Specification Deviations; Additions to or Exclusions from:

As indicated in the Test Plan

**None**

### 2.15 General Remarks:

None.

### 2.16 Summary:

The requirements according to the technical regulations are

**met**

not Met

### 2.17 The equipment under test does

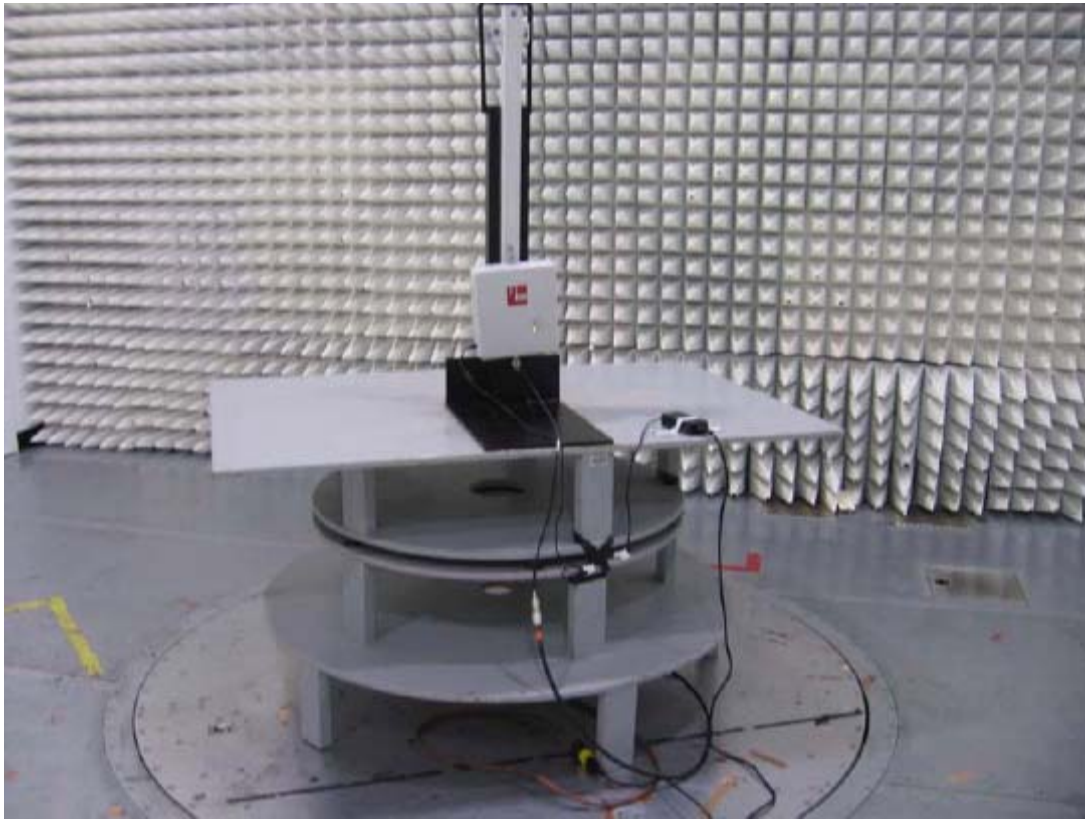
**fulfill the general approval requirements mentioned on page 4.**

not fulfill the general approval requirements mentioned on page 4.

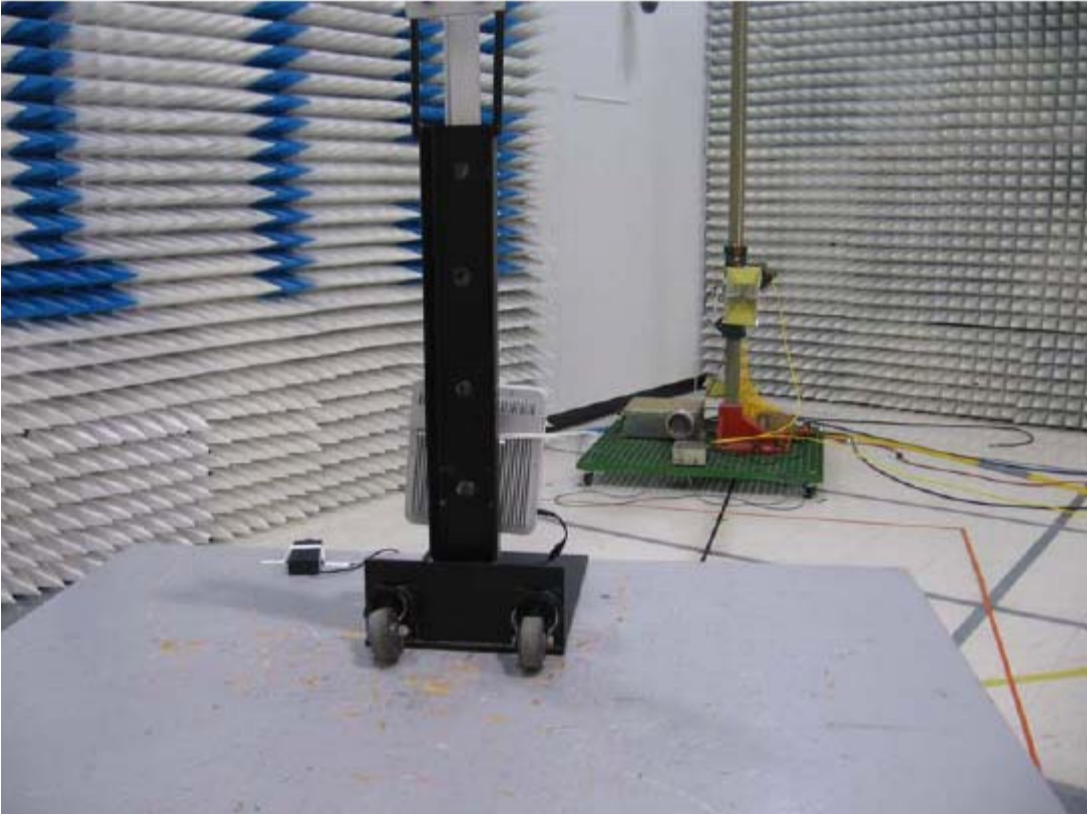
### 3.0 TEST SET-UP DRAWINGS AND PHOTOS

[Back to Table of Contents:](#)

#### 3.1 Test set-up photo, radiated emissions



3.2 Test set-up photo, radiated emissions





### 3.3 Test Set-up Drawings

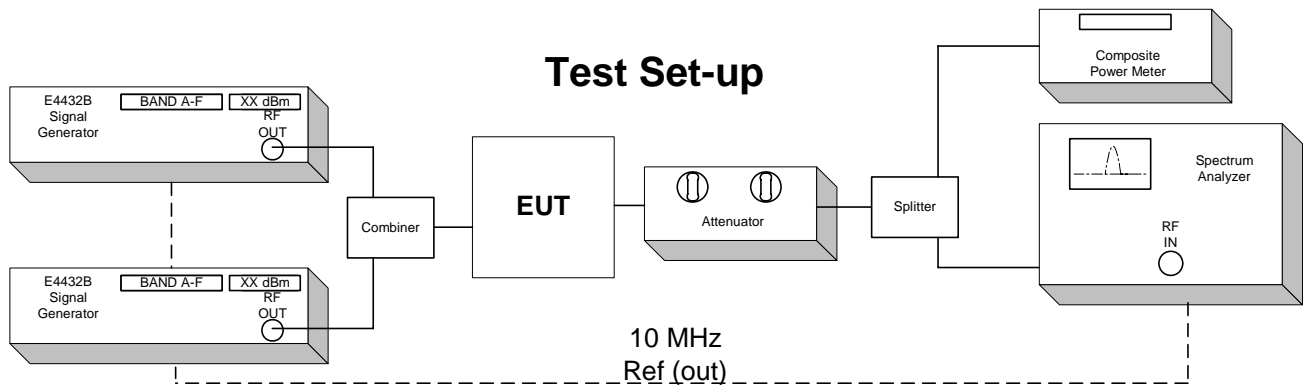
## Conducted and Radiated Emission Limits Test for ADC Inc.

### Conducted Output Power Test for ADC Inc

### Inter-Modulation Test for ADC Inc.

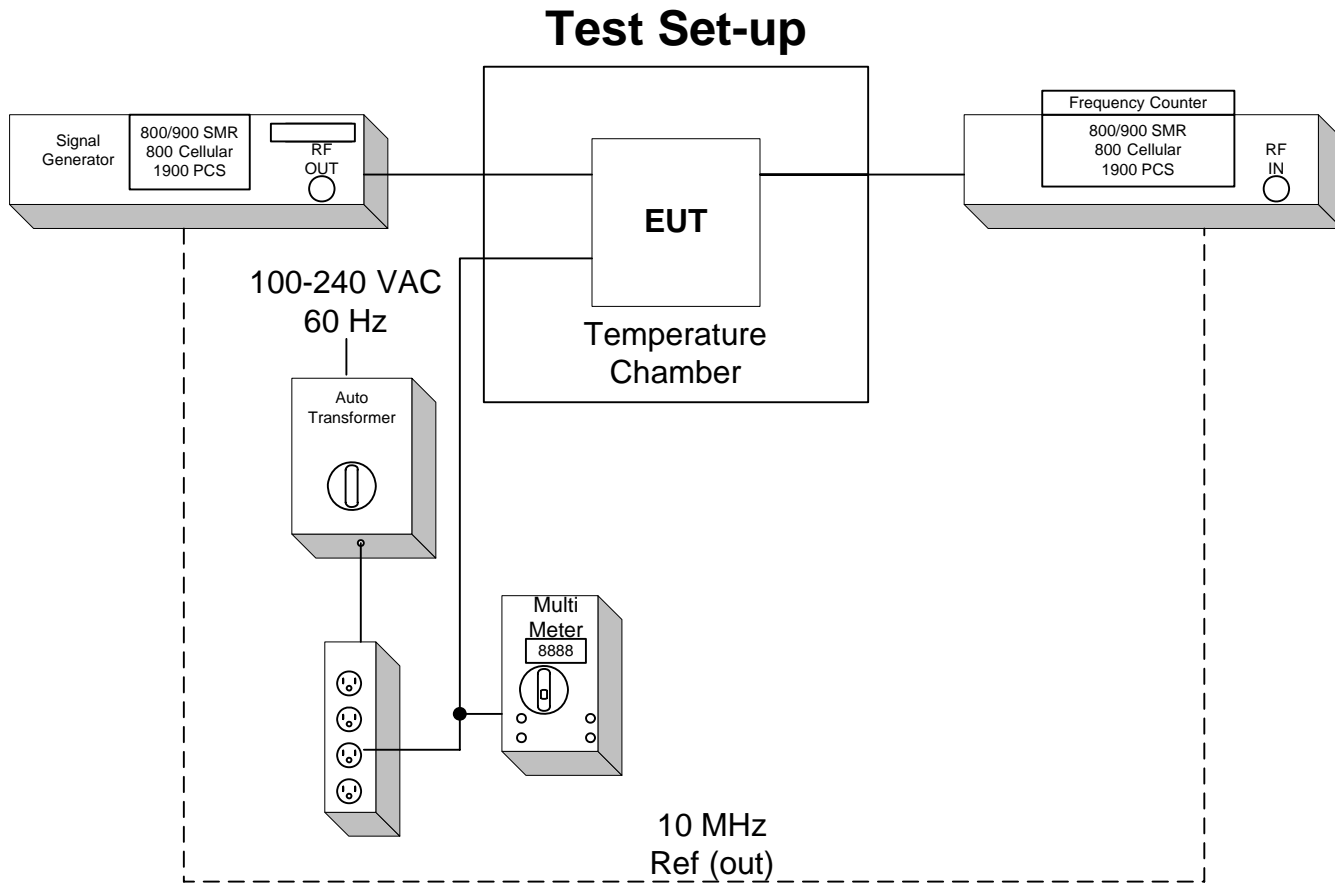
### Occupied Bandwidth Modulation Test for ADC Inc.

### Bi-Directional Amplifier – Cellular Model Number RPT-SBAAA12000



# Frequency Tolerance Test for ADC Inc. Bi-Directional Amplifier – Cellular Model Number RPT-SBAAA12000

EUT is specified for indoor use only with temperature range of  $-5^{\circ}$  to  $+45^{\circ}$  C, and was tested with its range.



## 4.0 TEST RESULTS

### 4.1.1 22.913 Effective radiated power limits

#### Test Summary:

- The requirements are:  **MET**  NOT MET
- Minimum margin of compliance is 37.02 dB at 882.5 MHz (EVDO)

#### Test Location:

- ETL (Oakdale, MN)
- ADC facility (Shakopee, MN)**

#### Test Distance:

- 3 Meters
- 10 Meters
- Conducted measurement**

#### Test Equipment (ADC):

Equipment	Manufacturer	Model	ADC Serial Number	Calibration Due.
Attenuator	Aeroflex	49-30-33	N/A	CNR
Spectrum Analyzer	HP	8563E	MC27690	11-22-07
Power Meter	HP	EPM-441A	MC27670	9-20-07
Signal Generator	Agilent	E4437B	83781	6-13-08

Equipment with a Calibration Not Required (CNR) listing is verified and compensated for with NIST traceable calibrated equipment.

#### Test Limit:

500 Watts or 57 dBm Limit

#### Test Data:

[See page 40](#)

**Test Engineer:** Mark F. Miska

**Date:** 31 July, 2007

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4.1.2 22.355 Frequency tolerance

**Test Summary:**

- The requirements are: ■ **MET** □ NOT MET
- The fundamental emission stays within the authorized frequency block.
- Frequency measured over a temperature range of -5 to 45° C and an input voltage range of 100 to 240 VAC.

**Test Location:**

□ ETL (Oakdale, MN)

■ **ADC facility (Shakopee, MN)**

**Test Equipment (ADC):**

Equipment	Manufacturer	Model	ADC Serial Number	Calibration Due.
Multimeter	Fluke	87	MC19056	8-20-08
Frequency Counter	HP	5347A	MC27548	8-18-07
Variable Auto Transformer	Staco	1520CT	MC44655	CNR
Signal Generator	Agilent	E4437B	83781	6-13-08

Equipment with a Calibration Not Required (CNR) listing is verified and compensated for with NIST traceable calibrated equipment.

**Test Limit:**

TABLE C-1.—FREQUENCY TOLERANCE FOR TRANSMITTERS IN THE PUBLIC MOBILE SERVICES

Frequency range (MHz)	Base, fixed (ppm)	Mobile ≤3 watts (ppm)	Mobile ≤3 watts (ppm)
25 to 50 .....	20.0	20.0	50.0
50 to 450 .....	5.0	5.0	50.0
450 to 512 .....	2.5	5.0	5.0
821 to 896 .....	1.5	2.5	2.5
928 to 929 .....	5.0	n/a	n/a
929 to 960 .....	1.5	n/a	n/a
2110 to 2220 .....	10.0	n/a	n/a

**Test Data:**

[See page 80](#)

**Test Engineer:** Mark F. Miska

**Date:** 31 July, 2007

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#### 4.1.3 22.917 Emission limitations cellular

##### Test Summary:

- The requirements are: ■ **MET** □ NOT MET
- Out of band emissions were less than  $-13$  dBm.
- Outside the emission bandwidth of the carrier, all emissions are attenuated at least 26 dB below the transmitter power.

##### Test Location:

□ ETL (Oakdale, MN)

##### ■ ADC facility (Shakopee, MN)

##### Test Equipment (ADC):

Equipment	Manufacturer	Model	ADC Serial Number	Calibration Due.
Spectrum Analyzer	HP	8563E	MC27690	11-22-07
Power Meter	HP	EPM-441A	MC27670	9-20-07
Multimeter	Fluke	87	MC19056	8-20-08
Frequency Counter	HP	5347A	MC27548	8-18-07
Temperature Chamber	Ecosphere		MC21679	1-11-08
Variable Auto Transformer	Staco	1520CT	MC44655	CNR
Signal Generator	Agilent	E4437B	83781	6-13-08
Signal Generator	Agilent	E4436B	1283112C	4-4-08
Power Supply	Xantrex	HPD 60-5	MC27764	6-25-08

Equipment with a Calibration Not Required (CNR) listing is verified and compensated for with NIST traceable calibrated equipment.

##### Test Equipment (Intertek):

Equipment	Manufacturer	Model	Serial No.	Cal. Due.
Spectrum Analyzer	Rohde & Schwarz	FSP 40	100024	07/08
Spectrum Analyzer	Rohde & Schwarz	ESCI	100358	04/08
Instrument Control	TILE!	Ver. 3.4 K.15	N/A	N/A
Cable	Schaffner-Chase	Bicono-Log	2630	08/07
Antenna	EMCO	Horn 3115	9507-4513	01/08
Antenna	EMCO	Horn 3115	6579	03/08
Pre-Amp	MITEQ	AMF-5D	1122951	04/08
Pre-Amp	MITEQ	AMF-6F	1222383	09/07

##### Test Limit:

Out of band emissions:

Attenuated below the transmitting power (P) by a factor of at least  $43 + 10\log(P)$  dB, or  $-13$  dBm.

Outside of the carrier emissions bandwidth:

26 dB below the transmitter power

##### Test Data:

[Conducted Emissions](#), pages 15 – 39

[Intermodulation Test](#), pages 41 – 71

[Occupied Bandwidth](#), pages 72 – 79

Radiated Emissions, pages 81 – 96 ([Appendix B](#))

**Test Engineer:** Mark F. Miska

**Date:** 31 July, 2007

**Date:** 31 July, 2007

**Date:** 31 July, 2007

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5.0

## APPENDIX A

Test Data

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**Test Engineer:** Mark F. Miska      **Date:** 31 July, 2007

# Conducted Emission Limits Test for ADC Inc.

## Bi-Directional Amplifier – Cellular

### Model Number RPT-SBAAA12000

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The out of band emissions were measured directly from the EUT antenna output with a spectrum analyzer from 30 MHz to the 10<sup>th</sup> harmonic of the highest carrier frequency. Test signals used are FM, TDMA, GSM, EDGE, CDMA, EVDO, and W-CDMA. The different signals were input one at a time to the EUT. In all cases, the out of band emissions were less than -13 dBm from the equation

$$(19\text{dBm} - [43 + 10\log(0.08\text{W})])$$

Band edge compliance is also demonstrated using a FM, TDMA, GSM, EDGE, CDMA, EVDO, and W-CDMA signal at the upper and lower limits of the band.

Industry practice has generally set the input signal power level. Test signal used was  $\approx -47$  dBm input to EUT. Industry practice has generally set the output signal power level.

EUT:  
Range: 100 - 240 VAC  
Tested @: 120 VAC  
Tested @: 0.8 A

Application details for 2.1033(c)(10), and 2.1033(c)(13):

The input to the unit has a digital attenuation chip (ALC) to provide protection from overdrive. The circuit detects the power level of the final stage amplifier and compares with the pre-set value. If the detected value is bigger than the pre-set, ALC will increase the attenuation until the detect value is on level with pre-set value. If the detected value is smaller than the pre-set, ALC will decrease the attenuation until the detect value is on level with pre-set value. With above mentioned functions, the ALC circuit maintains the output power level at +13dBm (pre-set value). Single channel operation, or multi-channel operation will not exceed nominal gain of the system.

The frequency stability is derived from two 13MHz TCVCXOs (RTVS-104), separate for the Forward and Reverse paths. These each feed two PLLs for the IF down conversion.

The spurious limitation uses ALC to help suppress in-band spurious by preventing final stage amplifier overdrive, while the duplex filter suppresses out-of-band spurious. Internal to the electronics, the use of SAW filters provides for higher Q roll-off at band edges.

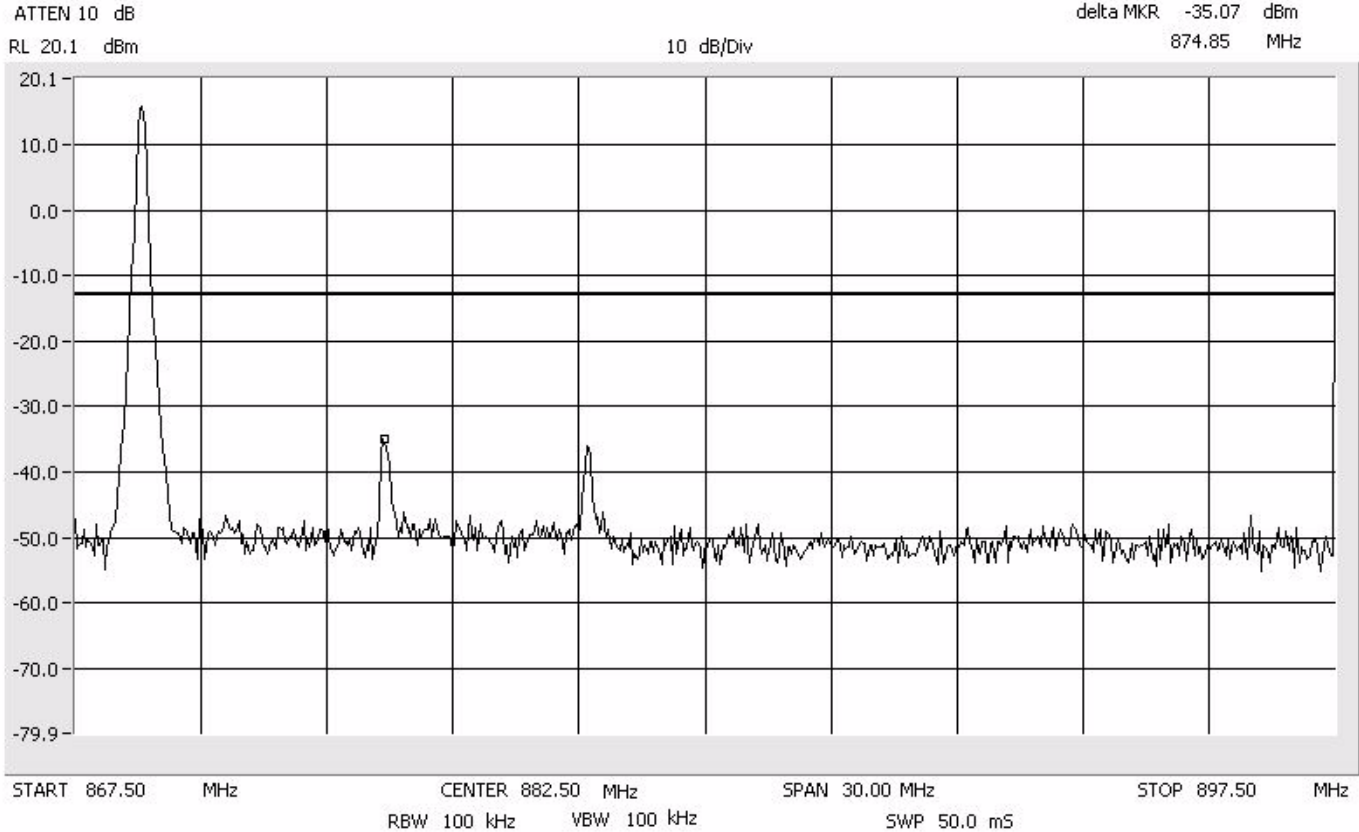
This equipment does not modulate the RF, so there is no modulation limiter. This equipment does not change the modulation of the RF or the occupied bandwidth of any channel. It transports the signal, as is, over an optical link. The RF input is not changed in the RF output.

This is a constant gain device, so the setup controls the output. There is an overdrive and overpower limit control that prevents excess power.

Results:  
Pass (See plots)

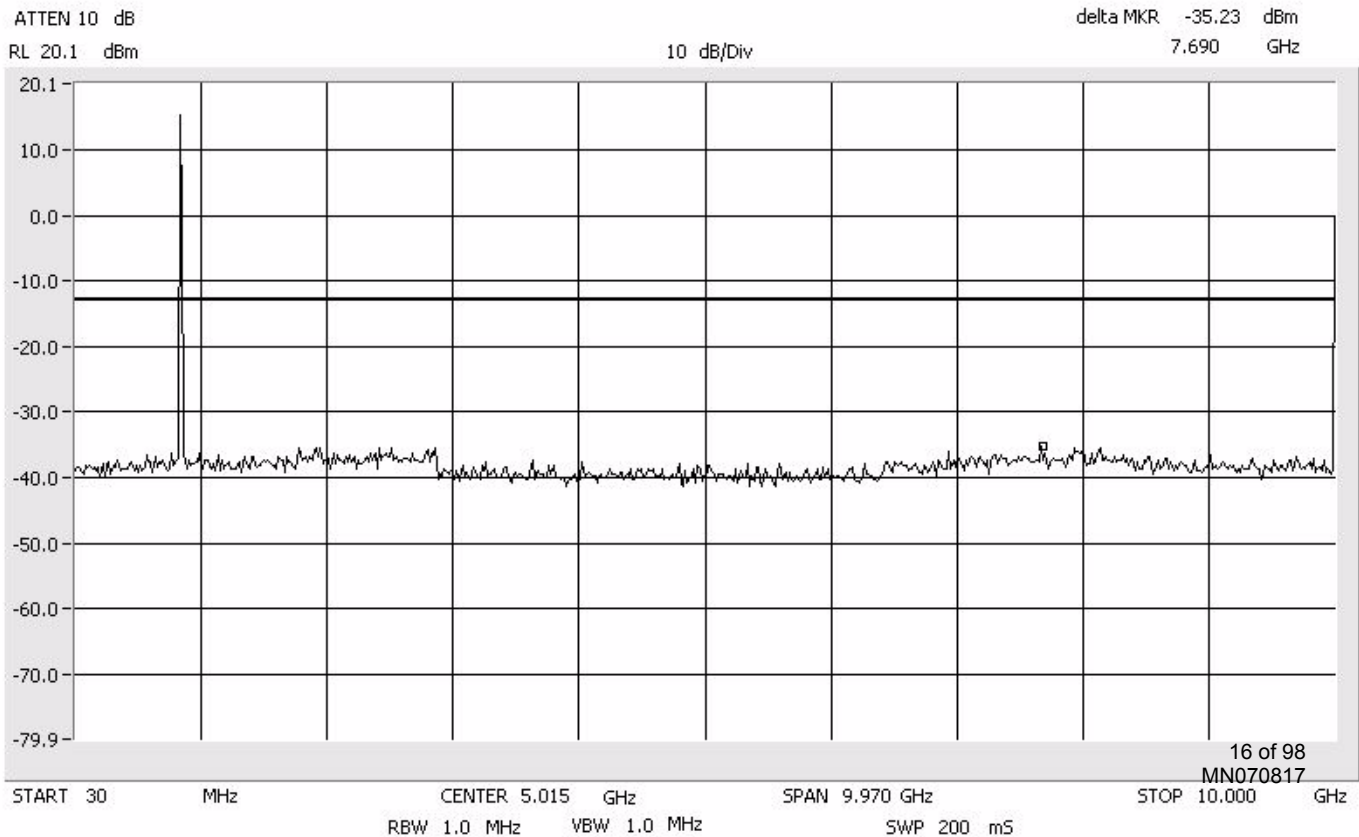
# Conducted Emissions Low Cellular 800 MHz

Center: 882.5 MHz  
Span: 30 MHz  
RBW/VBW: 100 kHz



# Conducted Emissions Low Cellular 800 MHz

Span: 30 MHz to 10 GHz  
RBW/VBW: 1 MHz





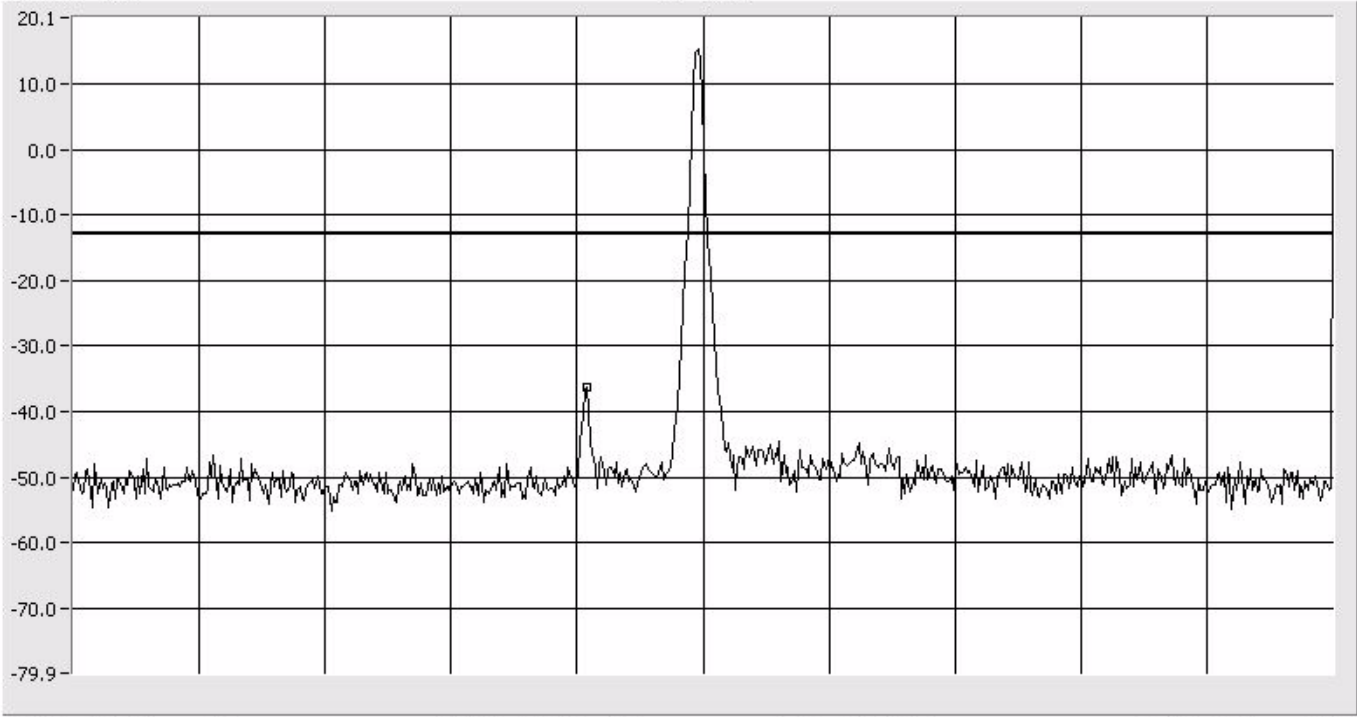
# Conducted Emissions Mid Cellular 800 MHz

Center: 882.5 MHz  
Span: 30 MHz  
RBW/VBW: 100 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -36.23 dBm  
879.75 MHz

10 dB/Div



START 867.50 MHz CENTER 882.50 MHz SPAN 30.00 MHz STOP 897.50 MHz  
RBW 100 kHz VBW 100 kHz SWP 50.0 mS

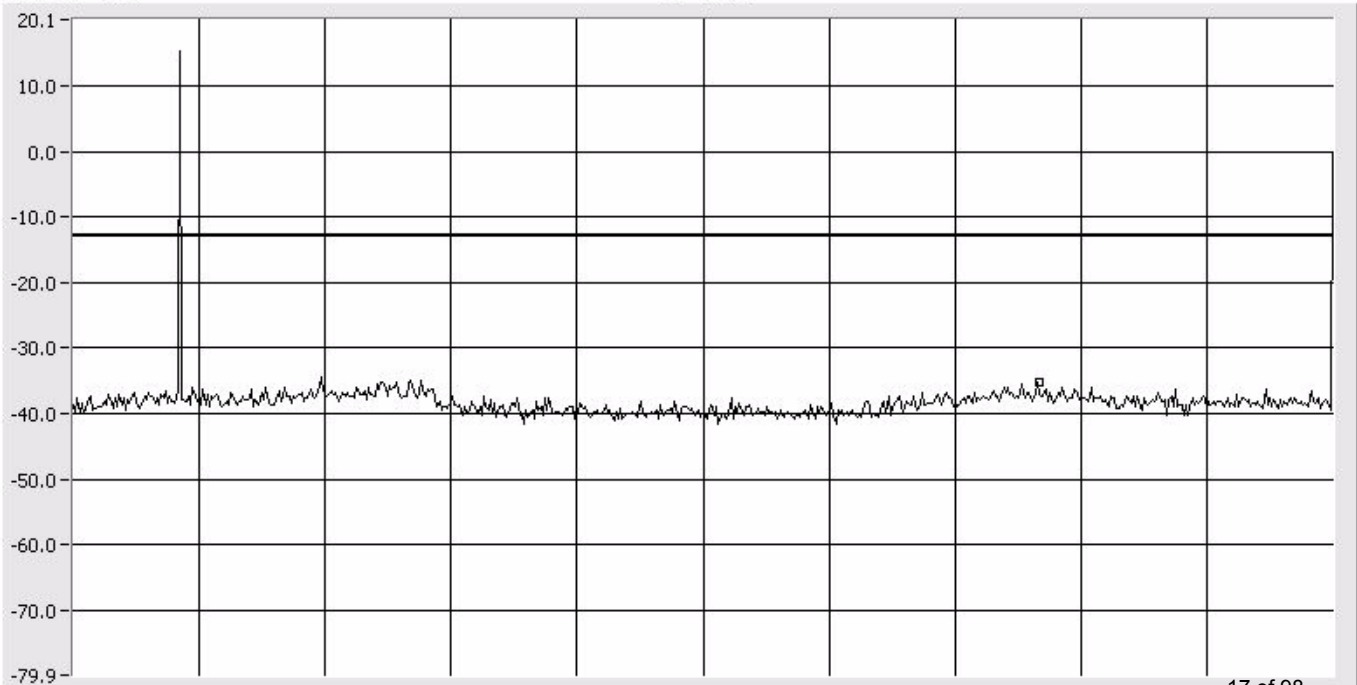
# Conducted Emissions Mid Cellular 800 MHz

Span: 30 MHz to 10 GHz  
RBW/VBW: 1 MHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -35.23 dBm  
7.674 GHz

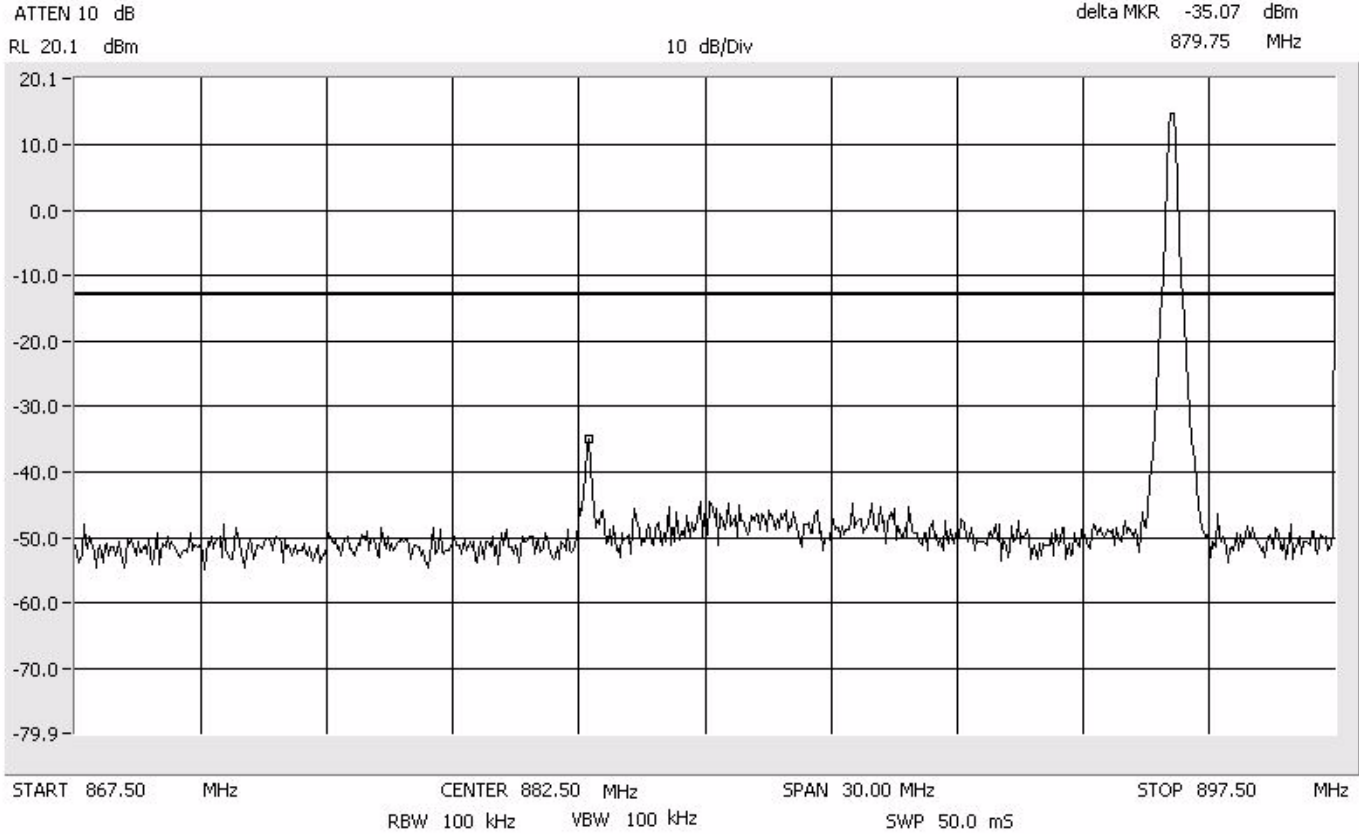
10 dB/Div



START 30 MHz CENTER 5.015 GHz SPAN 9.970 GHz STOP 10.000 GHz  
RBW 1.0 MHz VBW 1.0 MHz SWP 200 mS

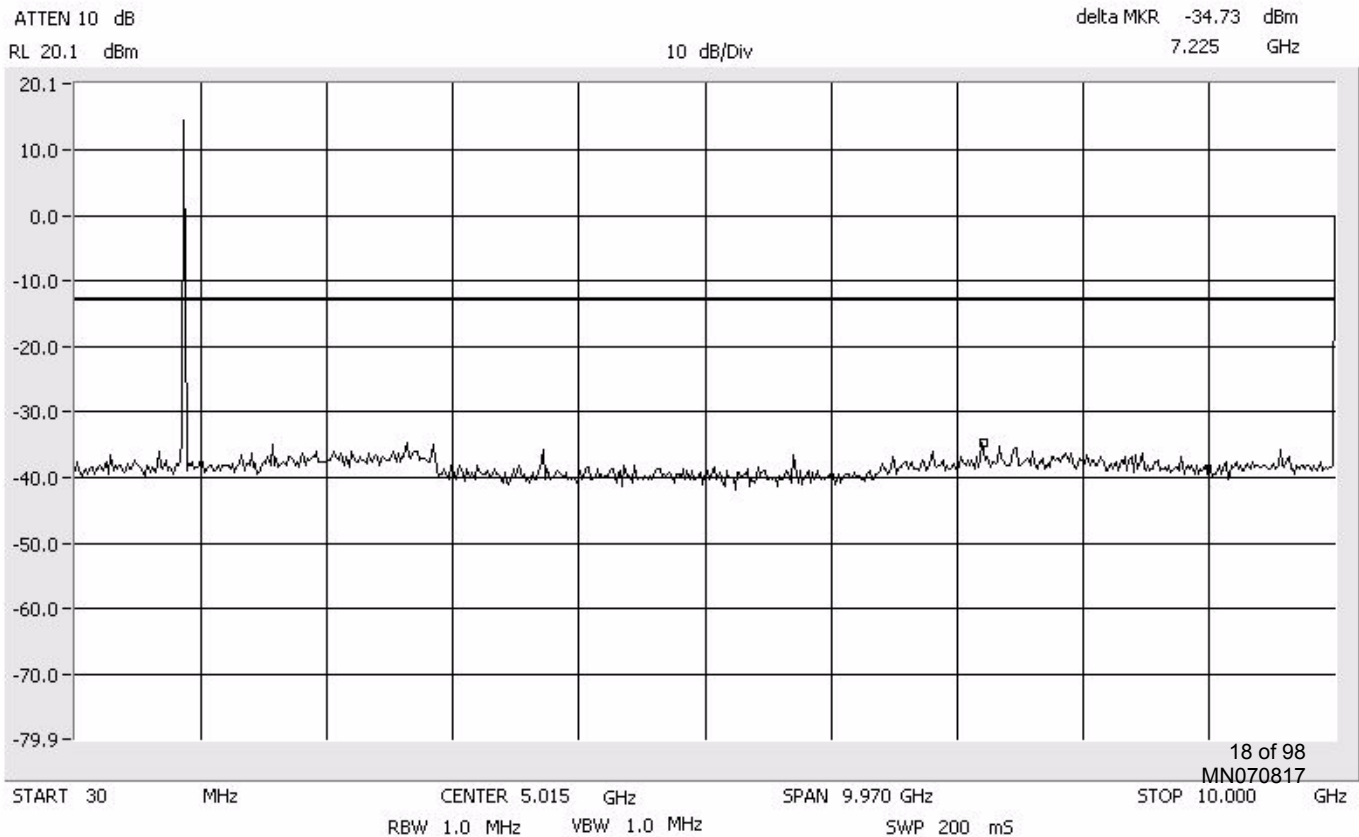
# Conducted Emissions High Cellular 800 MHz

Center: 882.5 MHz  
Span: 30 MHz  
RBW/VBW: 100 kHz



# Conducted Emissions High Cellular 800 MHz

Span: 30 MHz to 10 GHz  
RBW/VBW: 1 MHz

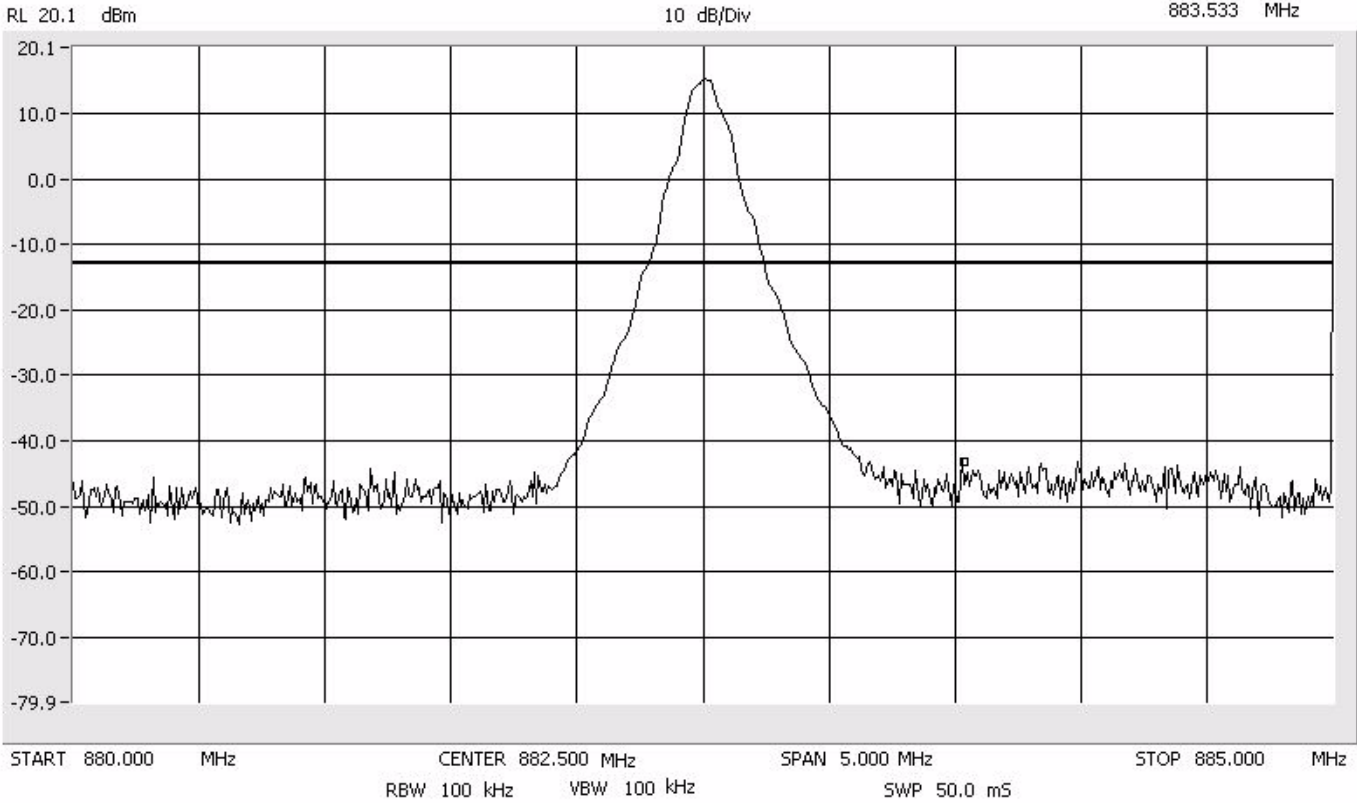


# Conducted Emissions FM 800 MHz

Mid Band  
Span: 5 MHz  
RBW/VBW: 100 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -43.07 dBm  
883.533 MHz

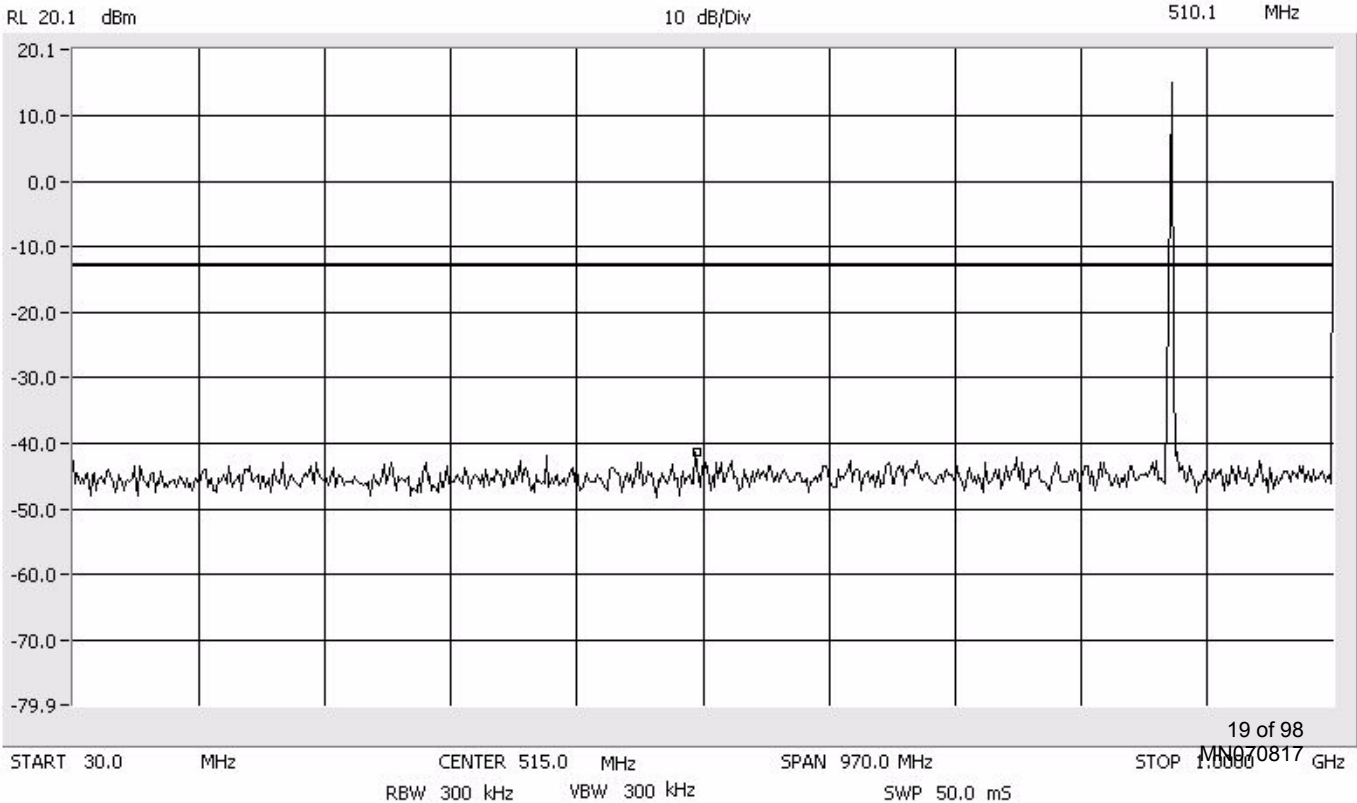


# Conducted Emissions FM 800 MHz

Span: 30 MHz to 1 GHz  
RBW/VBW: 300 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -41.40 dBm  
510.1 MHz



# Conducted Emissions FM 800 MHz

1 GHz to 10 GHz  
RBW/VBW: 1 MHz

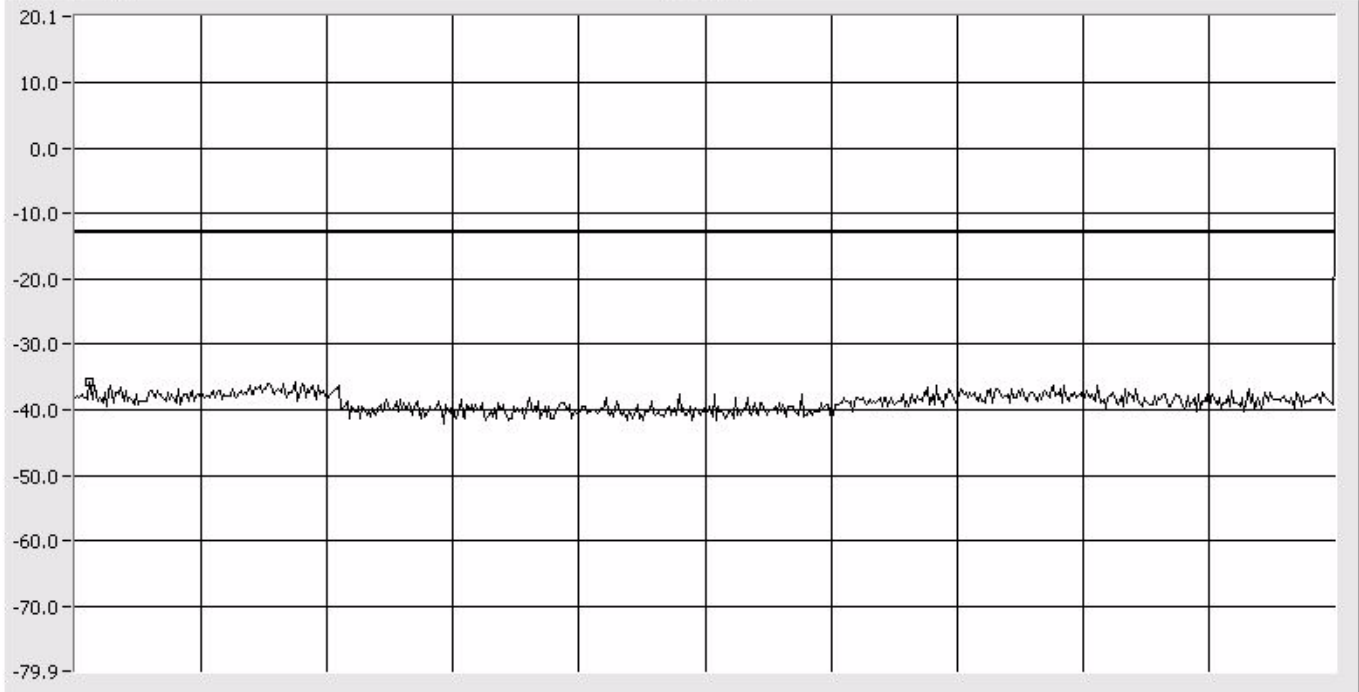
ATTEN 10 dB

RL 20.1 dBm

delta MKR -35.73 dBm

1.105 GHz

10 dB/Div



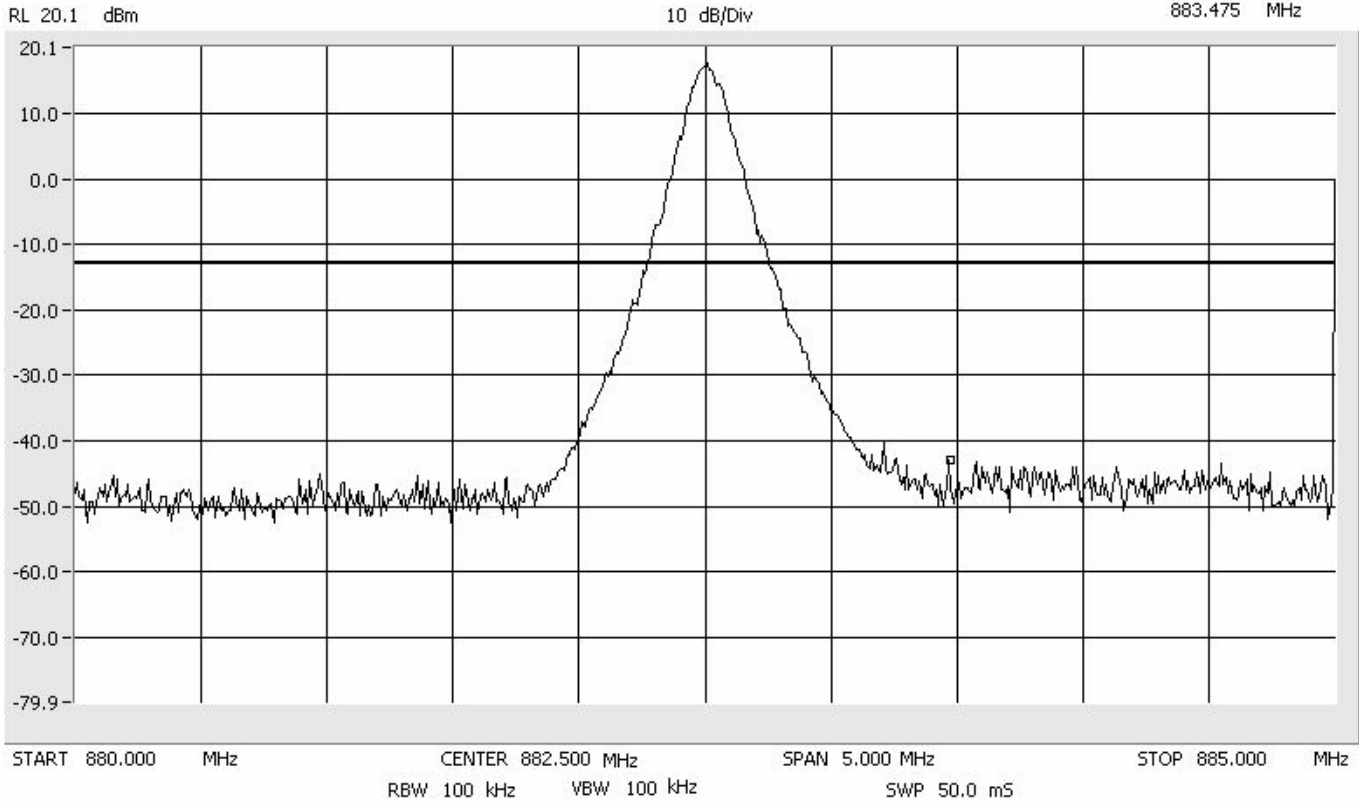
START 1.000 GHz CENTER 5.500 GHz SPAN 9.000 GHz STOP 10.000 GHz  
RBW 1.0 MHz VBW 1.0 MHz SWP 180 mS

# Conducted Emissions TDMA 800 MHz

Mid Band  
Span: 5 MHz  
RBW/VBW: 100 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -42.90 dBm  
883.475 MHz

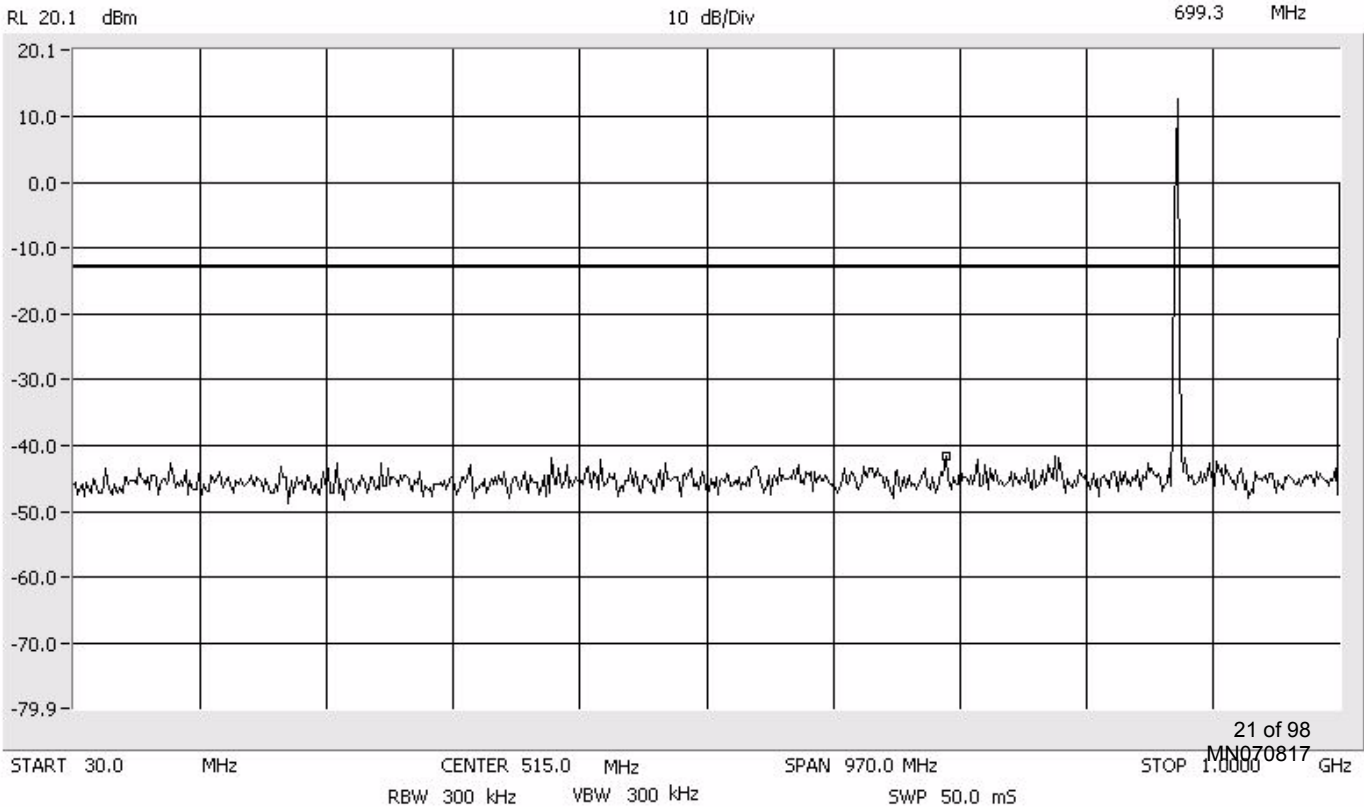


# Conducted Emissions TDMA 800 MHz

Span: 30 MHz to 1 GHz  
RBW/VBW: 300 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -41.57 dBm  
699.3 MHz



# Conducted Emissions TDMA 800 MHz

1 GHz to 10 GHz  
RBW/VBW: 1 MHz

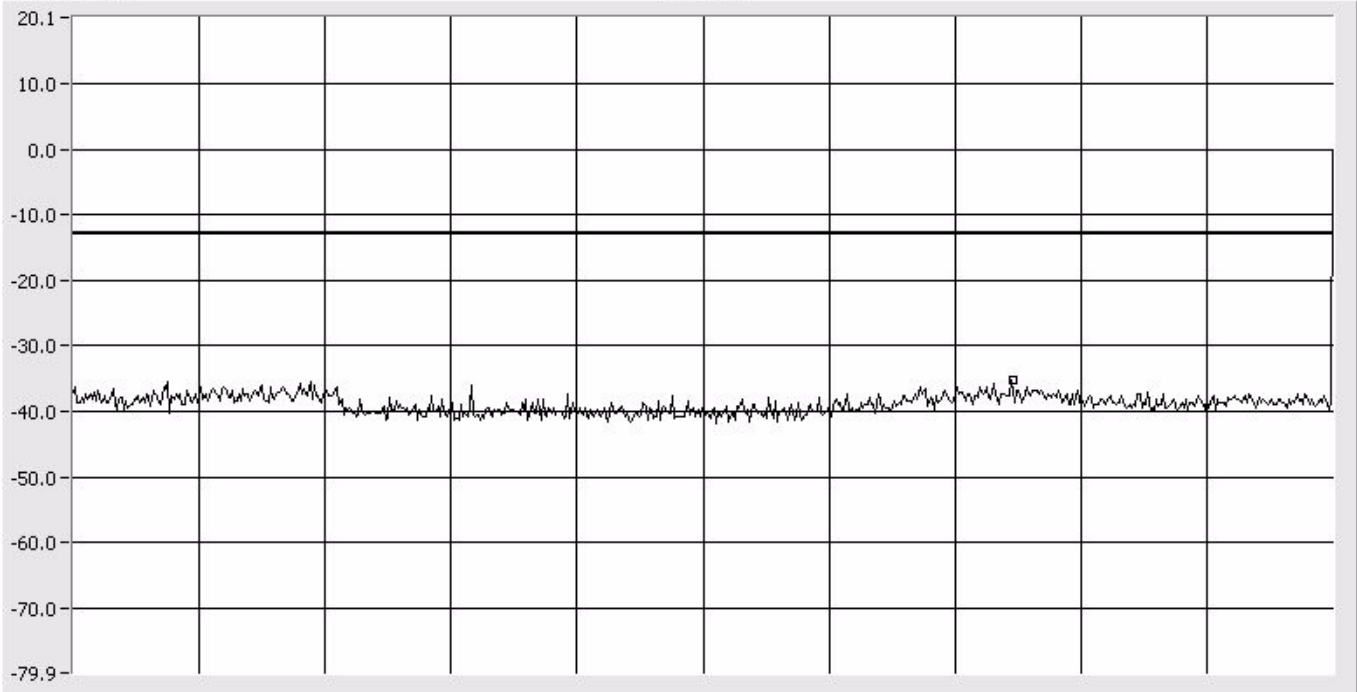
ATTEN 10 dB

delta MKR -35.23 dBm

RL 20.1 dBm

10 dB/Div

7.720 GHz



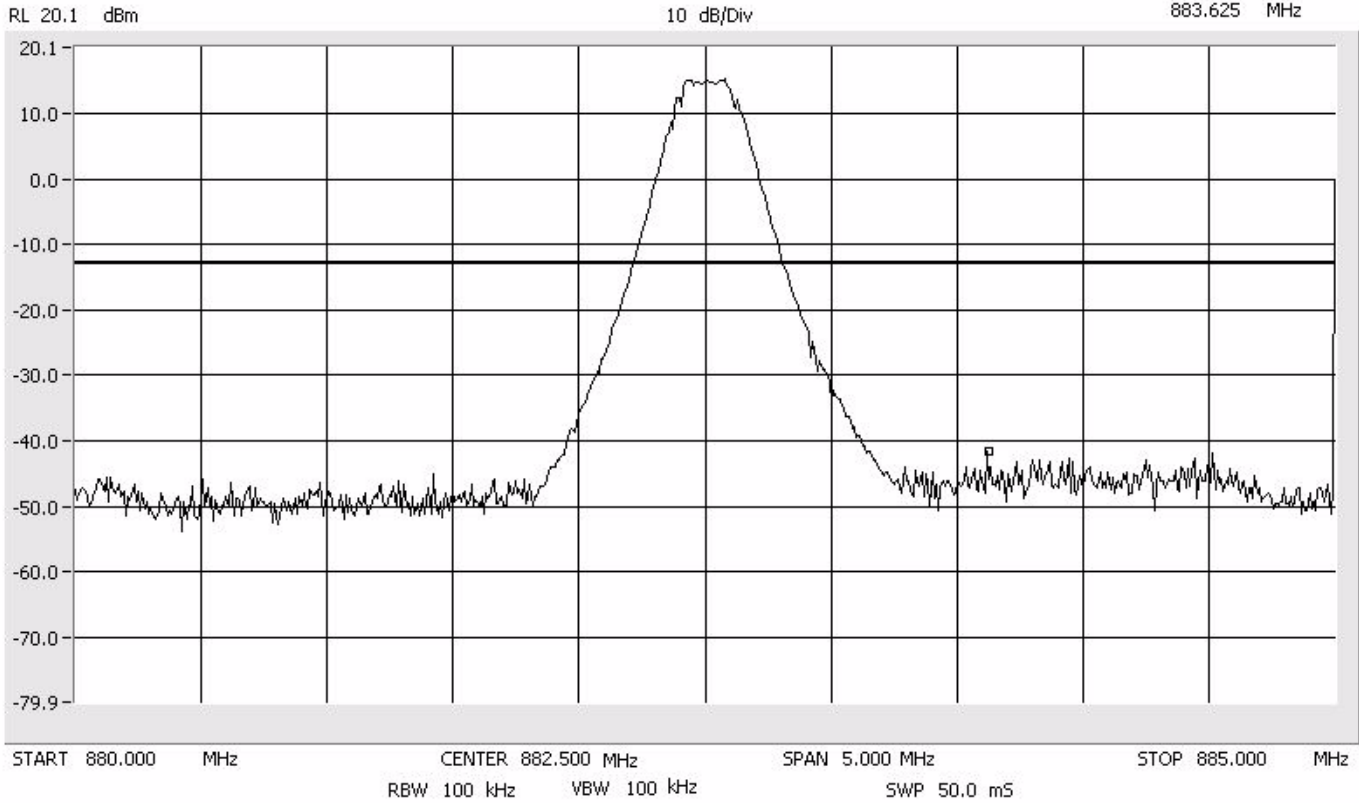
START 1.000 GHz      CENTER 5.500 GHz      SPAN 9.000 GHz      STOP 10.000 GHz  
RBW 1.0 MHz      VBW 1.0 MHz      SWP 180 mS

# Conducted Emissions GSM 800 MHz

Mid Band  
Span: 5 MHz  
RBW/VBW: 100 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -41.57 dBm  
883.625 MHz

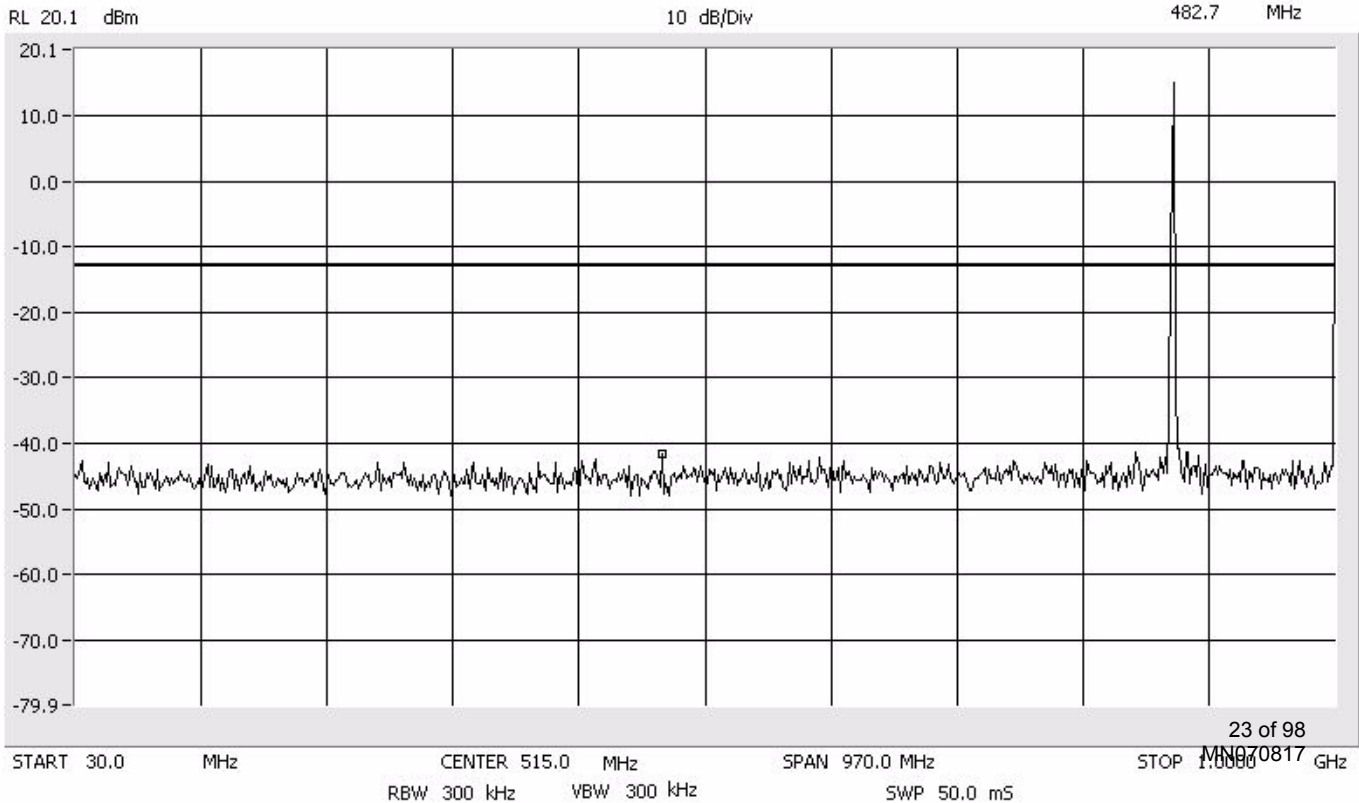


# Conducted Emissions GSM 800 MHz

Span: 30 MHz to 1 GHz  
RBW/VBW: 300 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -41.57 dBm  
482.7 MHz



# Conducted Emissions GSM 800 MHz

1 GHz to 10 GHz  
RBW/VBW: 1 MHz

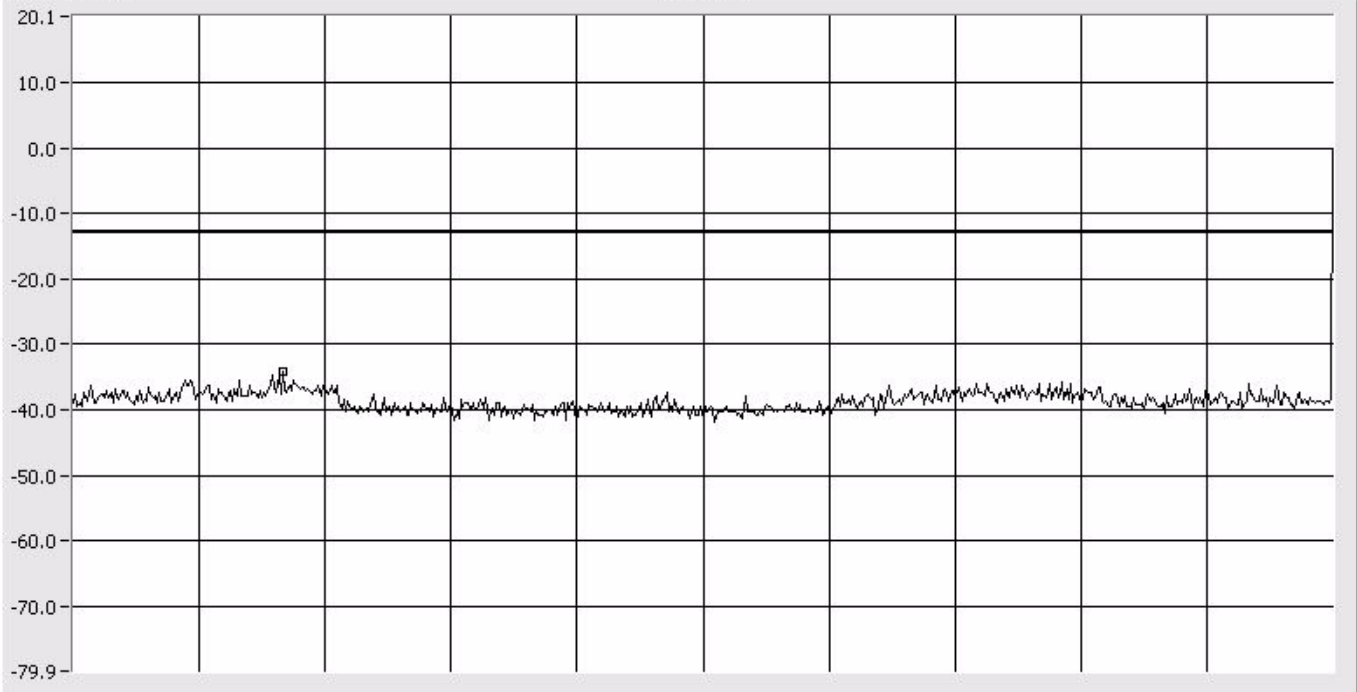
ATTEN 10 dB

delta MKR -34.23 dBm

RL 20.1 dBm

10 dB/Div

2,500 GHz



START 1.000 GHz      CENTER 5.500 GHz      SPAN 9.000 GHz      STOP 10.000 GHz  
RBW 1.0 MHz      VBW 1.0 MHz      SWP 180 mS

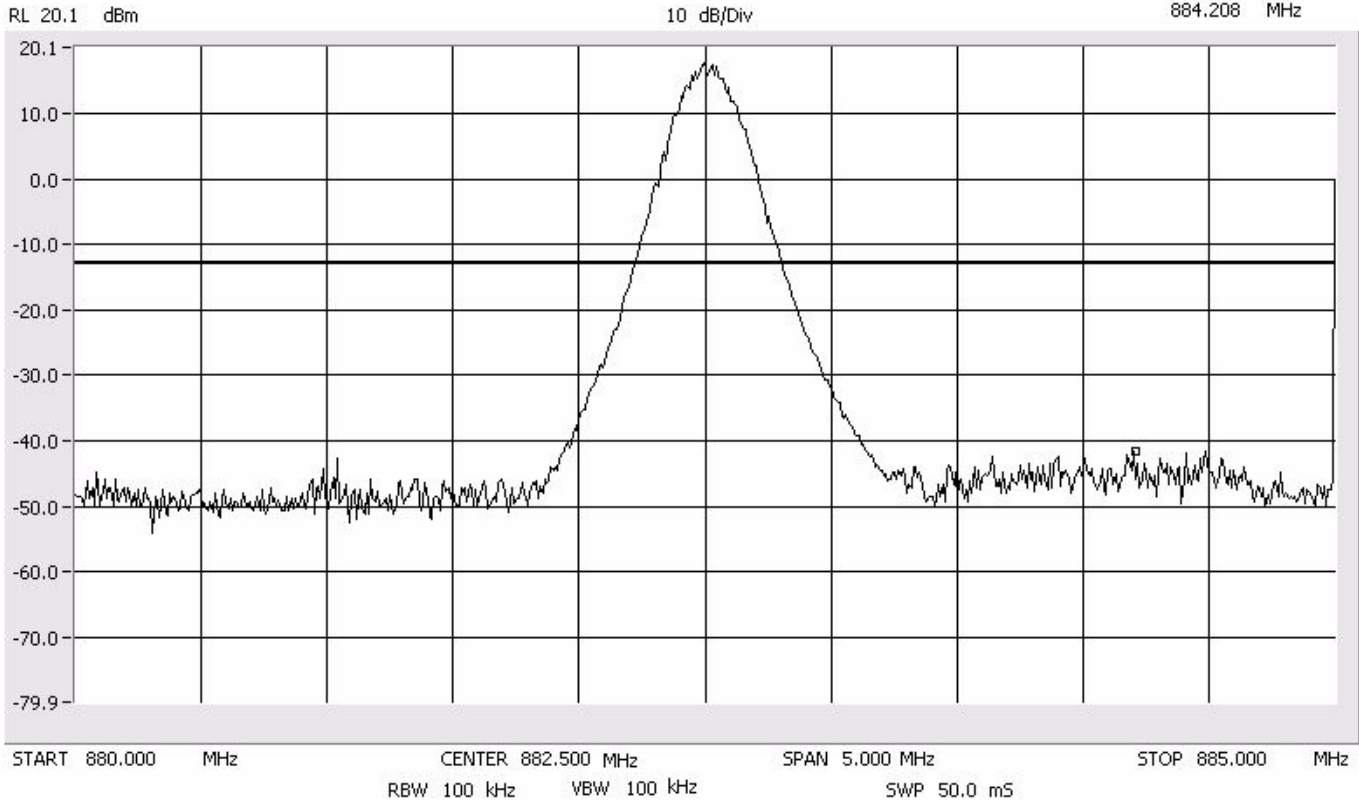


# Conducted Emissions EDGE 800 MHz

Mid Band  
Span: 5 MHz  
RBW/VBW: 100 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -41.57 dBm  
884.208 MHz

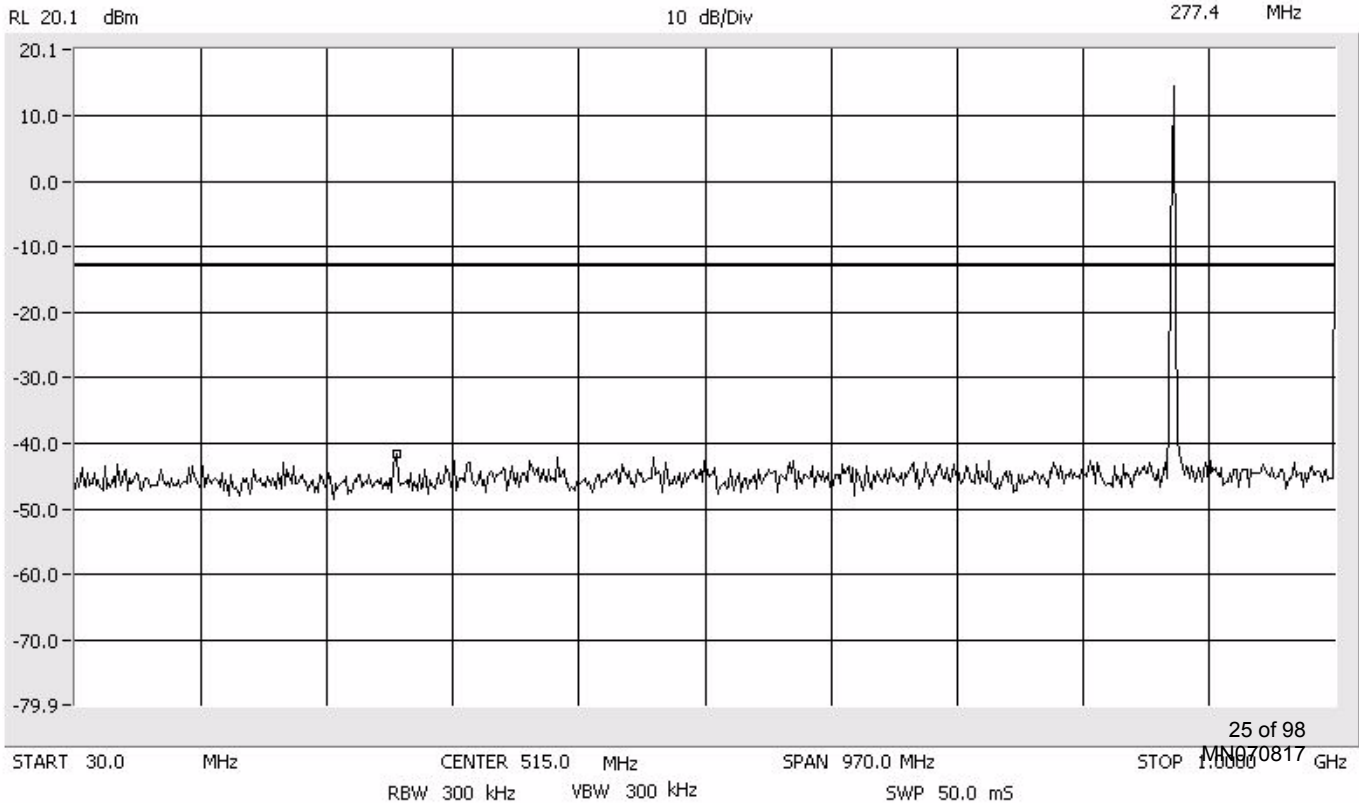


# Conducted Emissions EDGE 800 MHz

Span: 30 MHz to 1 GHz  
RBW/VBW: 300 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -41.57 dBm  
277.4 MHz



# Conducted Emissions EDGE 800 MHz

1 GHz to 10 GHz  
RBW/VBW: 1 MHz

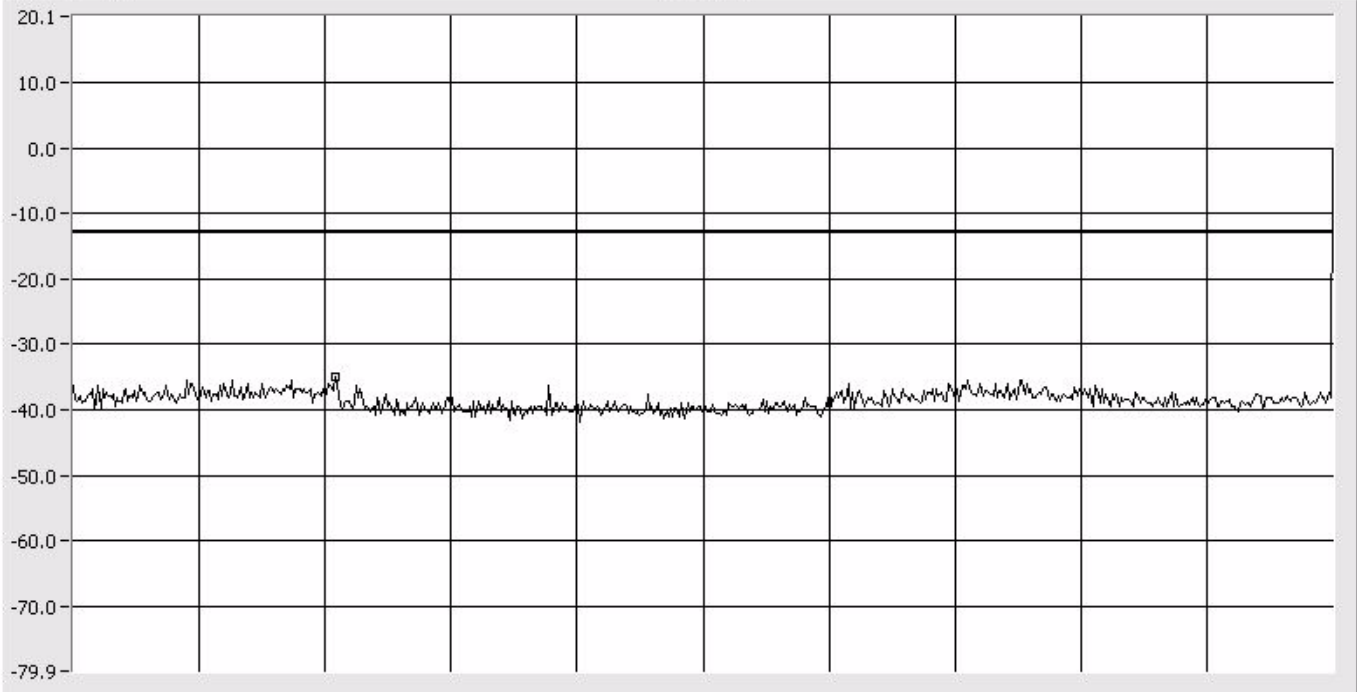
ATTEN 10 dB

delta MKR -35.07 dBm

RL 20.1 dBm

10 dB/Div

2.875 GHz



START 1.000 GHz      CENTER 5.500 GHz      SPAN 9.000 GHz      STOP 10.000 GHz  
RBW 1.0 MHz      VBW 1.0 MHz      SWP 180 mS

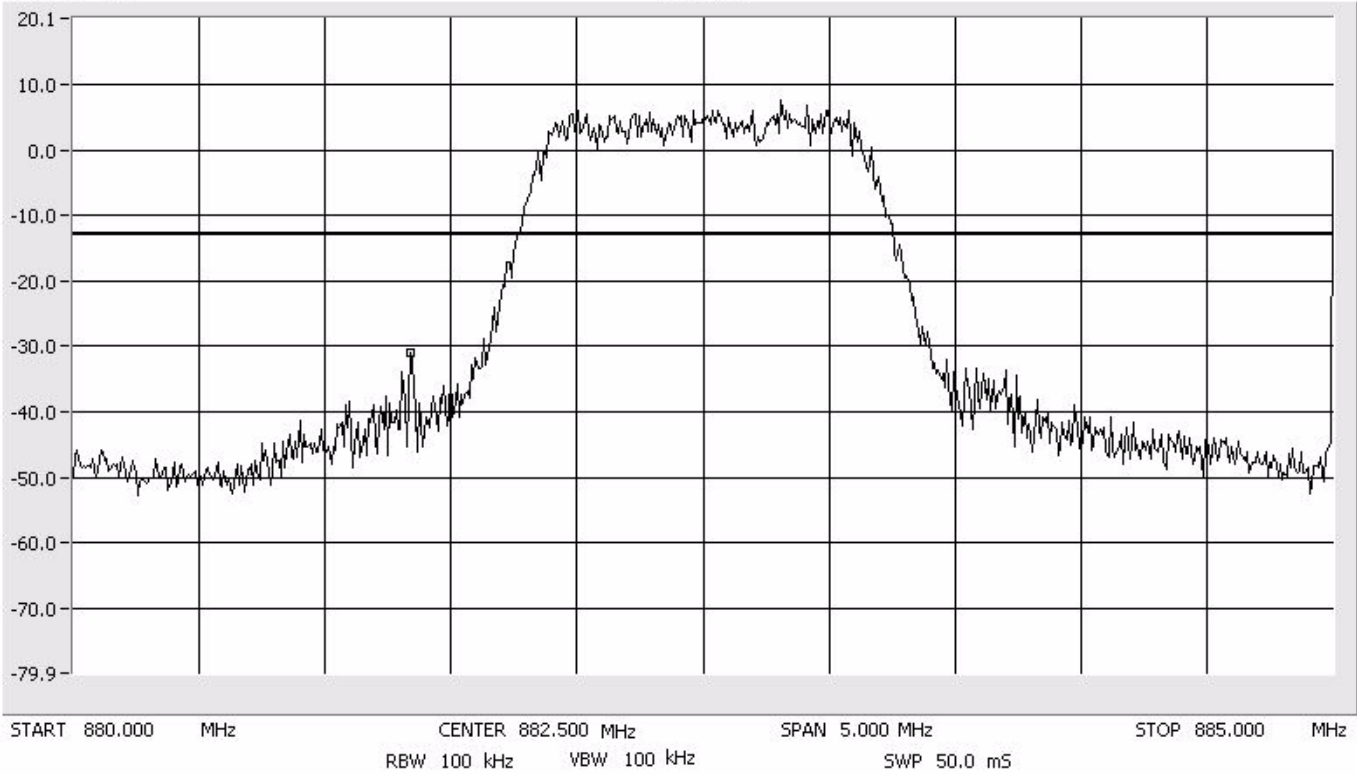
# Conducted Emissions CDMA 800 MHz

Mid Band  
Span: 5 MHz  
RBW/VBW: 100 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -31.07 dBm  
881.342 MHz

10 dB/Div



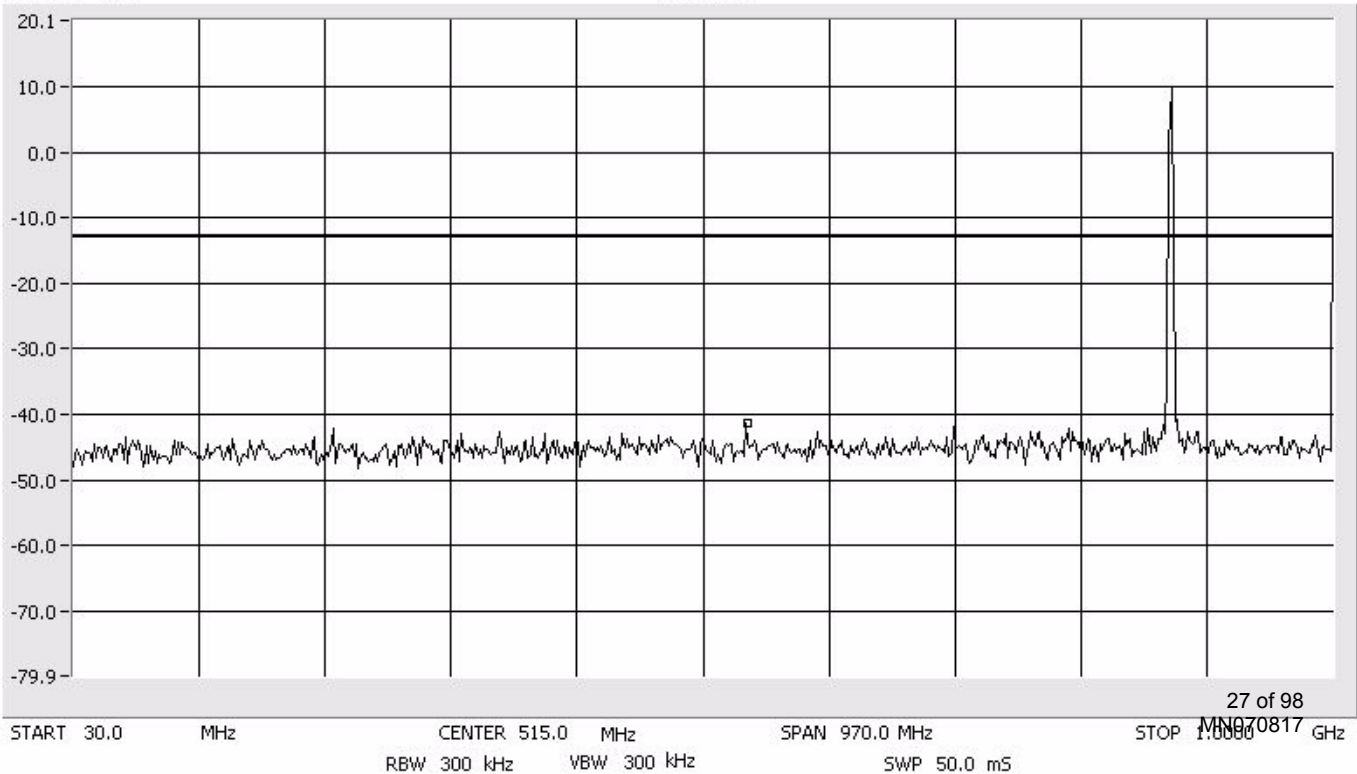
# Conducted Emissions CDMA 800 MHz

Span: 30 MHz to 1 GHz  
RBW/VBW: 300 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -41.40 dBm  
549.0 MHz

10 dB/Div



# Conducted Emissions CDMA 800 MHz

1 GHz to 10 GHz  
RBW/VBW: 1 MHz

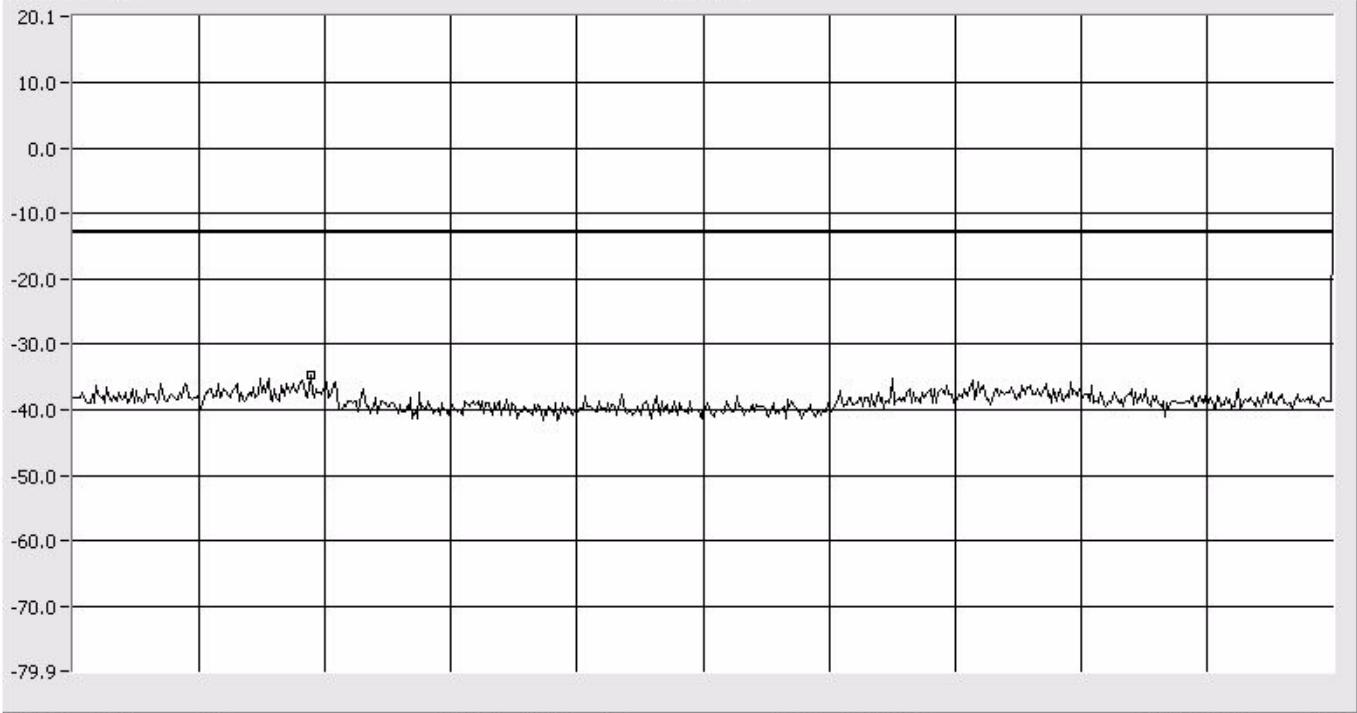
ATTEN 10 dB

delta MKR -34.73 dBm

RL 20.1 dBm

10 dB/Div

2.695 GHz



START 1.000 GHz CENTER 5.500 GHz SPAN 9.000 GHz STOP 10.000 GHz  
RBW 1.0 MHz VBW 1.0 MHz SWP 180 mS

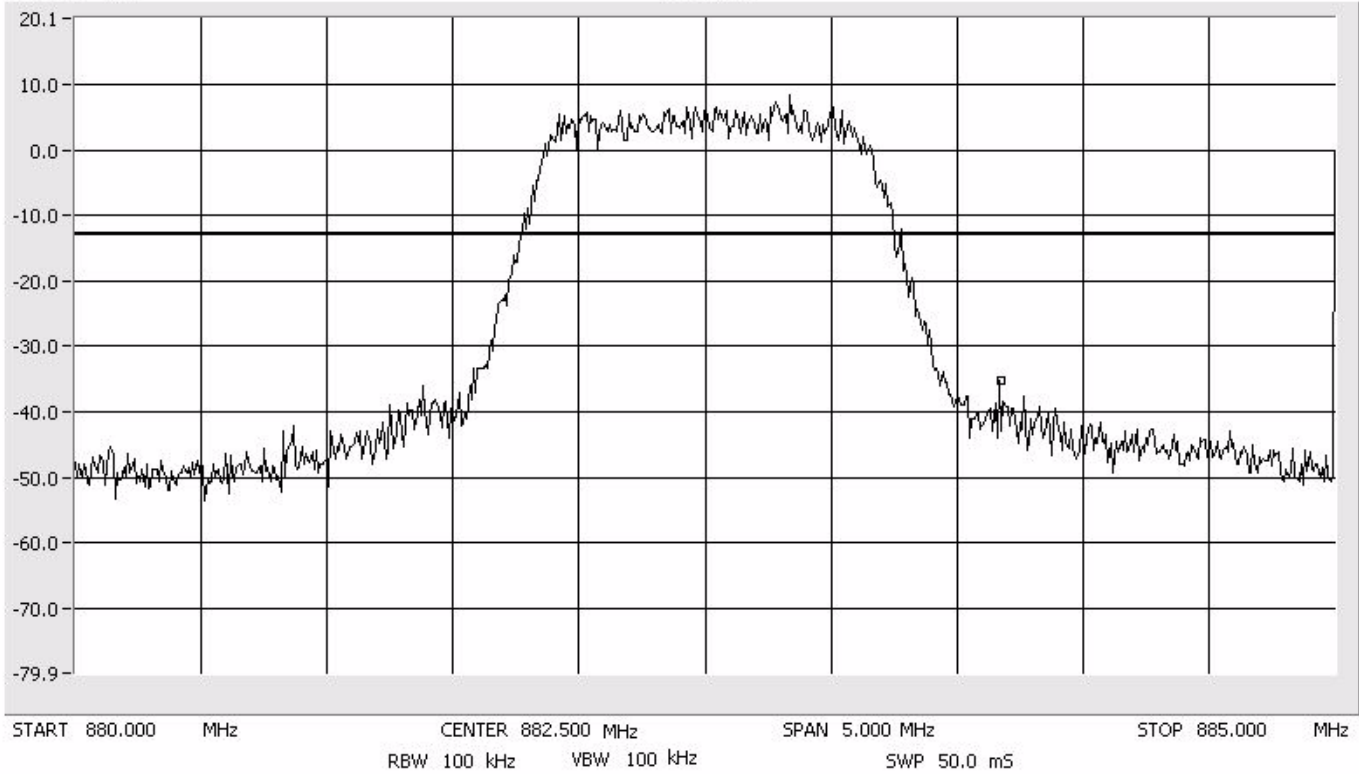
# Conducted Emissions EVDO 800 MHz

Mid Band  
Span: 5 MHz  
RBW/VBW: 100 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -35.23 dBm  
883.675 MHz

10 dB/Div



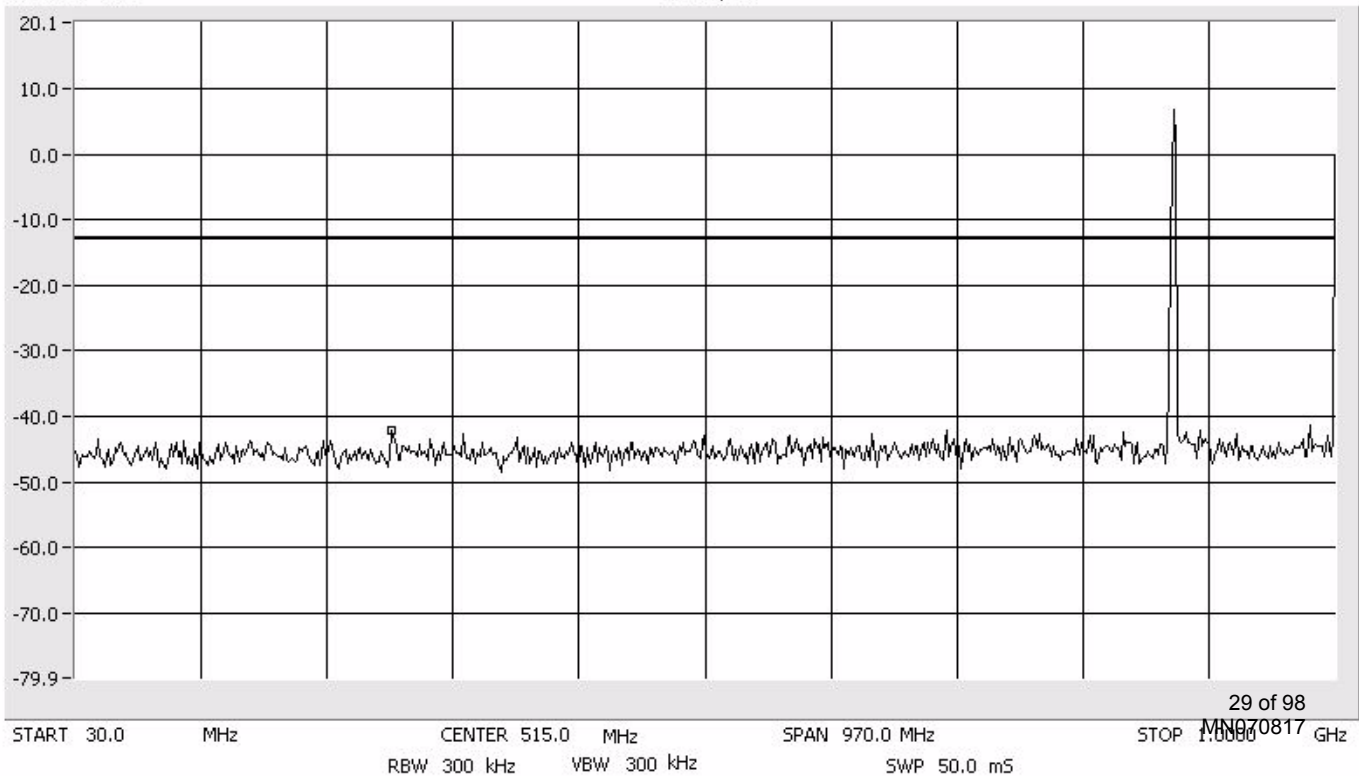
# Conducted Emissions EVDO 800 MHz

Span: 30 MHz to 1 GHz  
RBW/VBW: 300 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -42.23 dBm  
274.1 MHz

10 dB/Div



# Conducted Emissions EVDO 800 MHz

1 GHz to 10 GHz  
RBW/VBW: 1 MHz

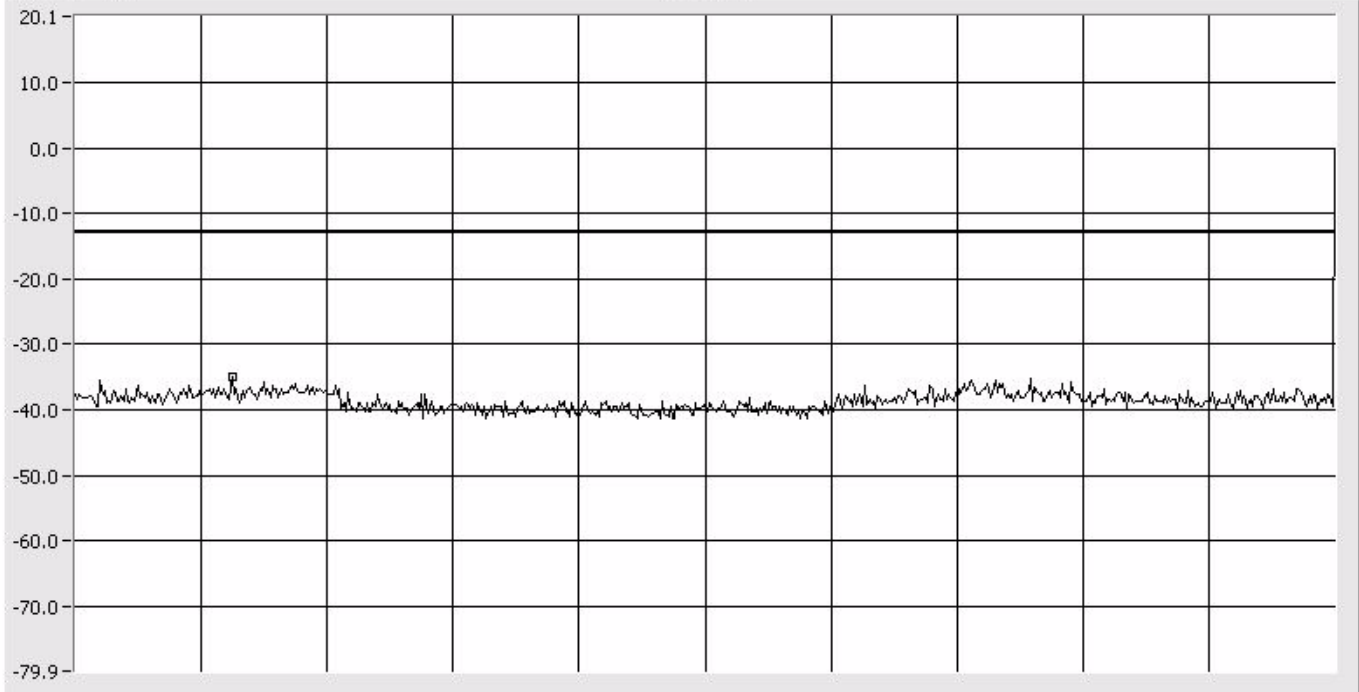
ATTEN 10 dB

delta MKR -34.90 dBm

RL 20.1 dBm

10 dB/Div

2.125 GHz



START 1.000 GHz      CENTER 5.500 GHz      SPAN 9.000 GHz      STOP 10.000 GHz  
RBW 1.0 MHz      VBW 1.0 MHz      SWP 180 mS

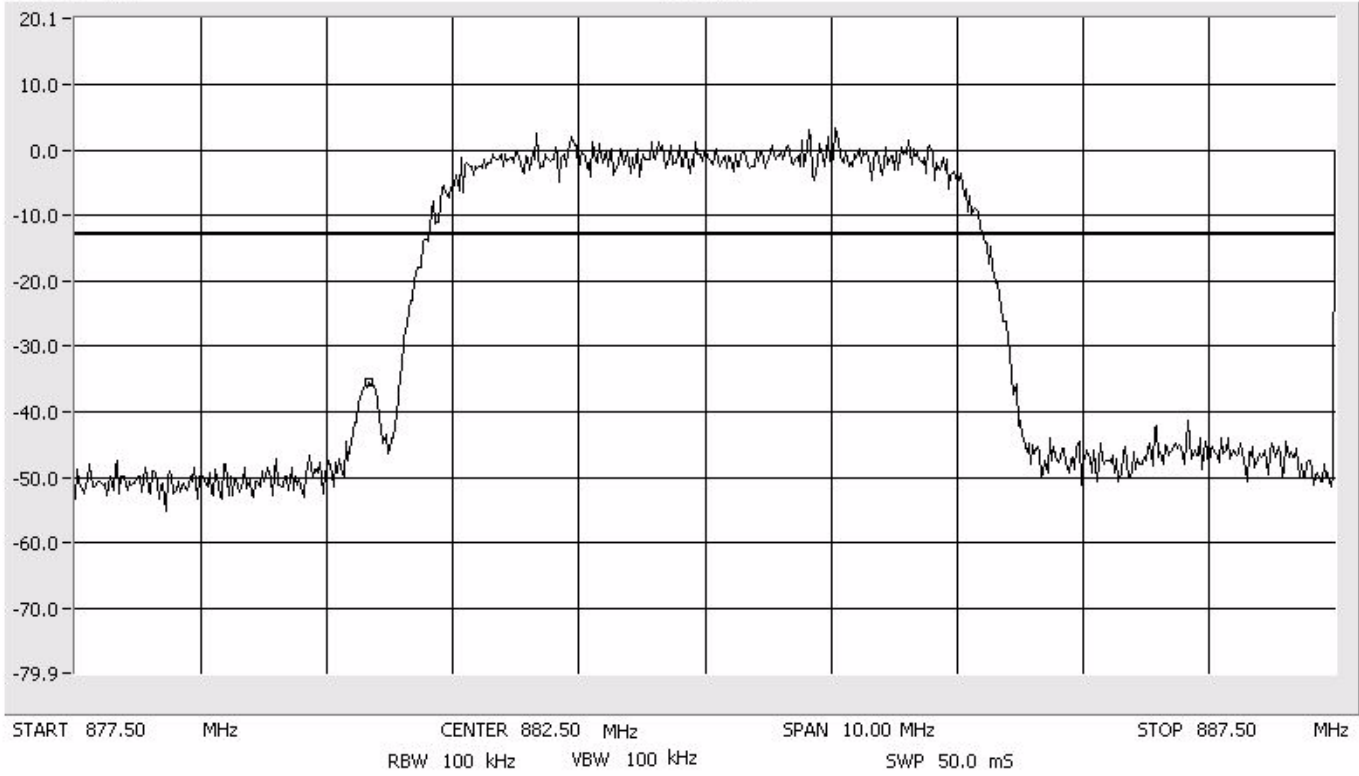
# Conducted Emissions W-CDMA 800 MHz

Mid Band  
Span: 10 MHz  
RBW/VBW: 100 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -35.57 dBm  
879.83 MHz

10 dB/Div



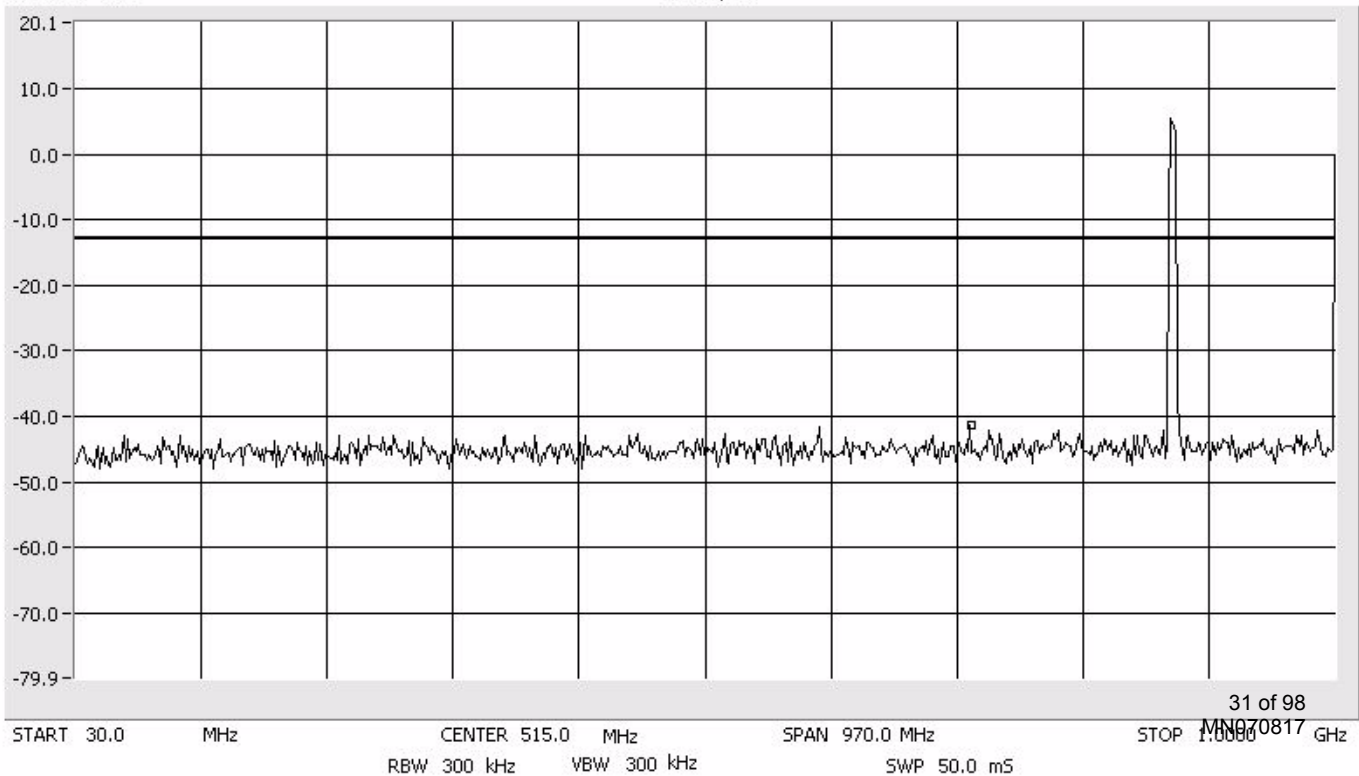
# Conducted Emissions W-CDMA 800 MHz

Span: 30 MHz to 1 GHz  
RBW/VBW: 300 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -41.23 dBm  
720.3 MHz

10 dB/Div



# Conducted Emissions W-CDMA 800 MHz

1 GHz to 10 GHz  
RBW/VBW: 1 MHz

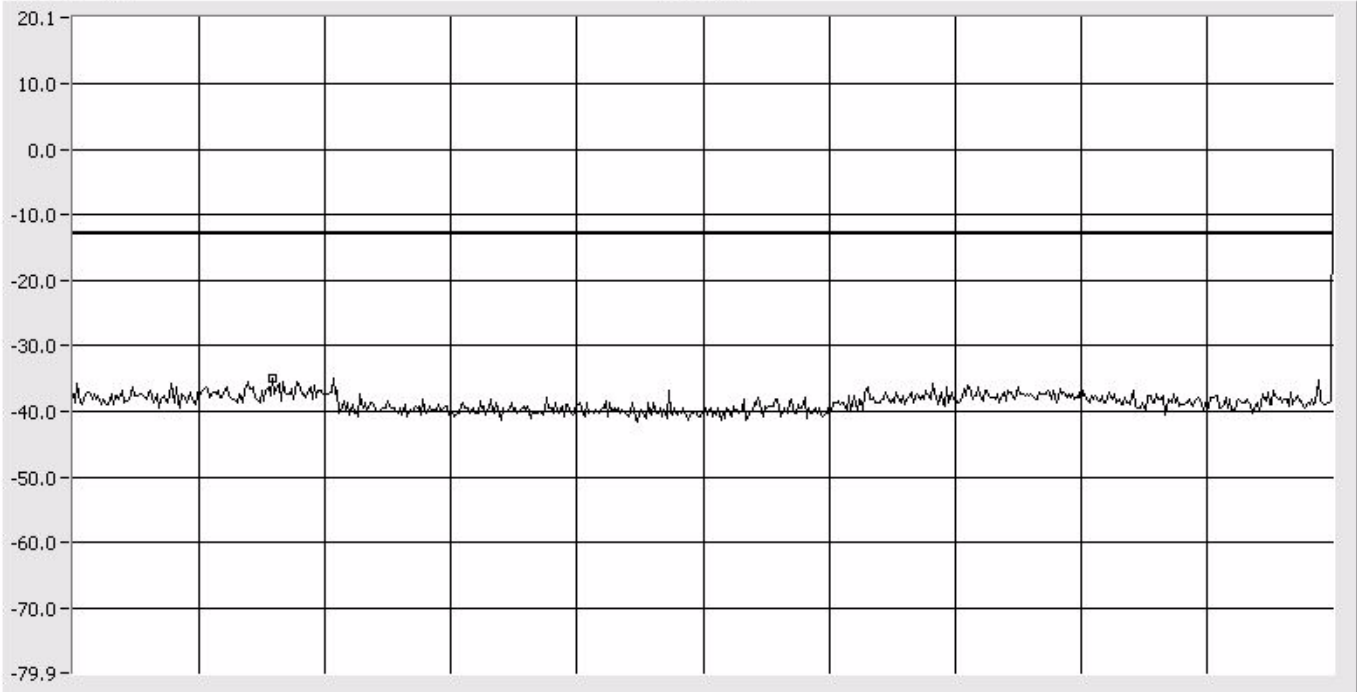
ATTEN 10 dB

delta MKR -34.90 dBm

RL 20.1 dBm

10 dB/Div

2.425 GHz



START 1.000 GHz      CENTER 5.500 GHz      SPAN 9.000 GHz      STOP 10.000 GHz  
RBW 1.0 MHz      VBW 1.0 MHz      SWP 180 mS



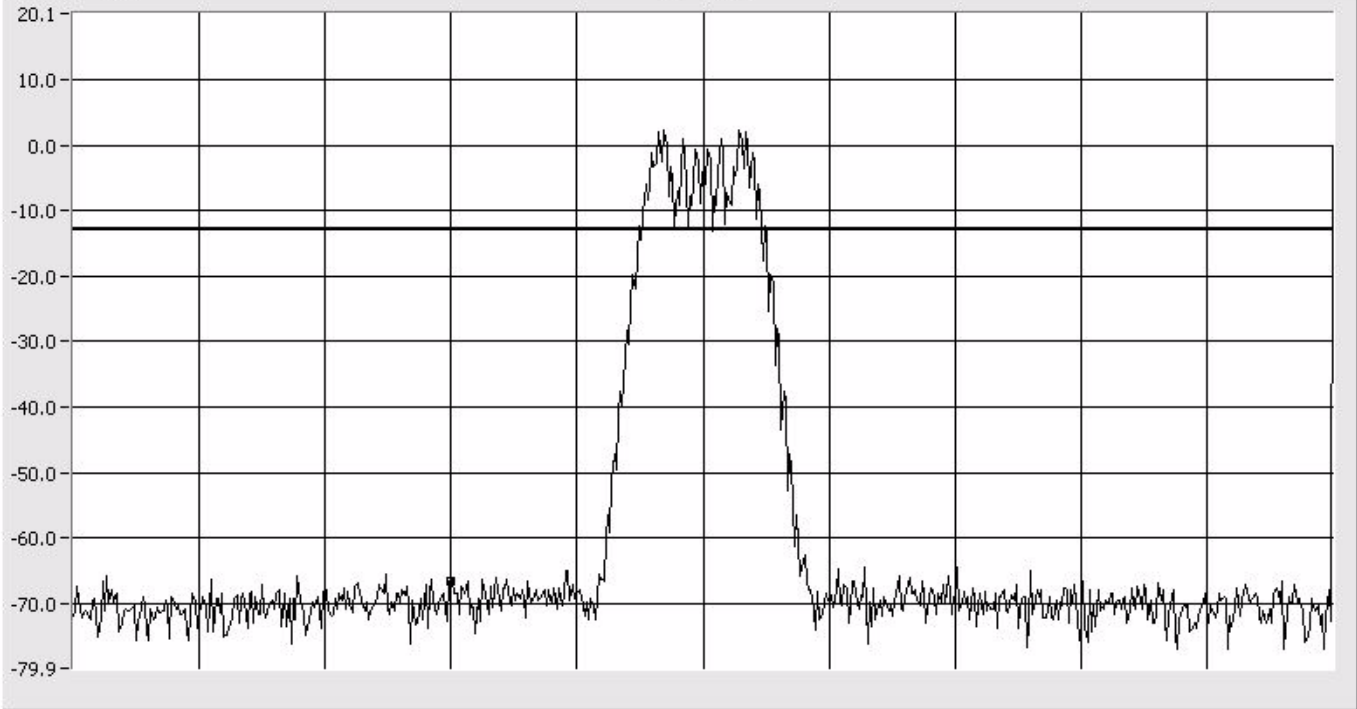
# Band Edge FM

Center: 869.04 MHz  
Span: 200 kHz  
RBW: 300 Hz  
VBW: 1 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -66.57 dBm  
869.0000 MHz

10 dB/Div



START 868.9400 MHz CENTER 869.0400MHz SPAN 200.0 kHz STOP 869.1400 MHz  
RBW 300 Hz VBW 1.0 kHz SWP 5.60 Sec

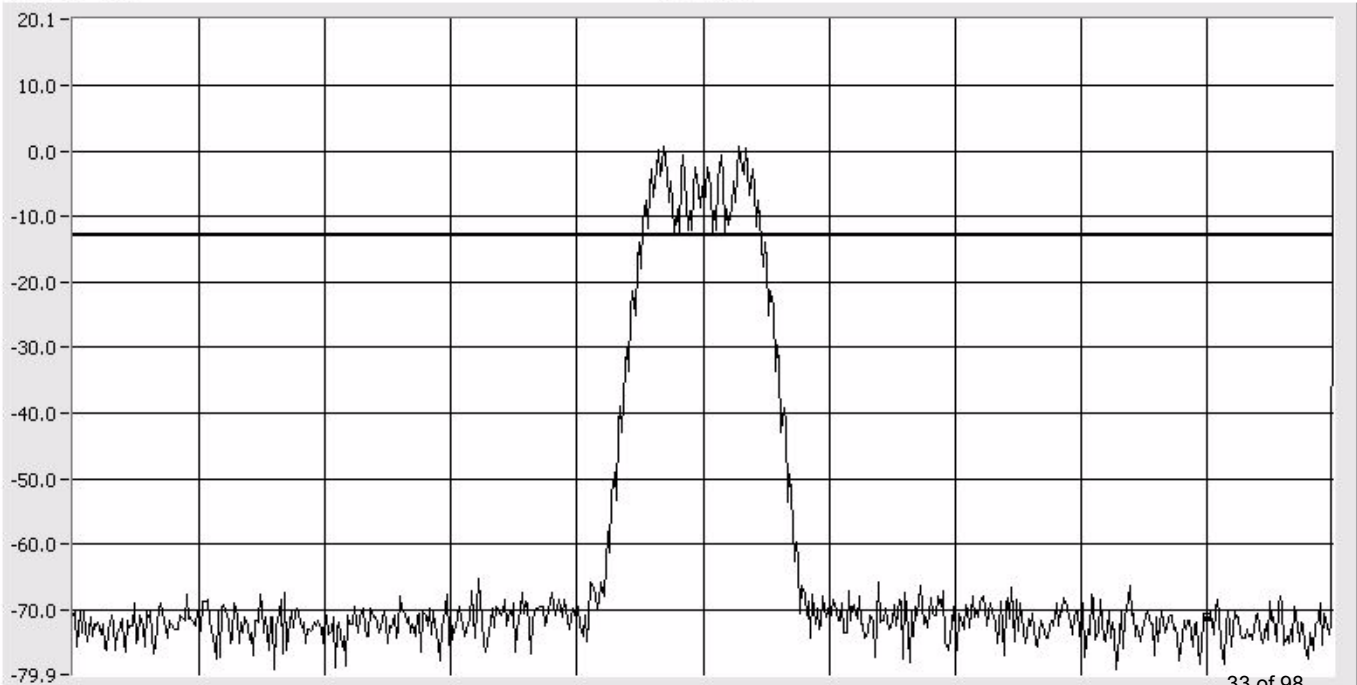
# Band Edge FM

Center: 893.92 MHz  
Span: 200 kHz  
RBW: 300 Hz  
VBW: 1 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -71.23 dBm  
894.0000 MHz

10 dB/Div

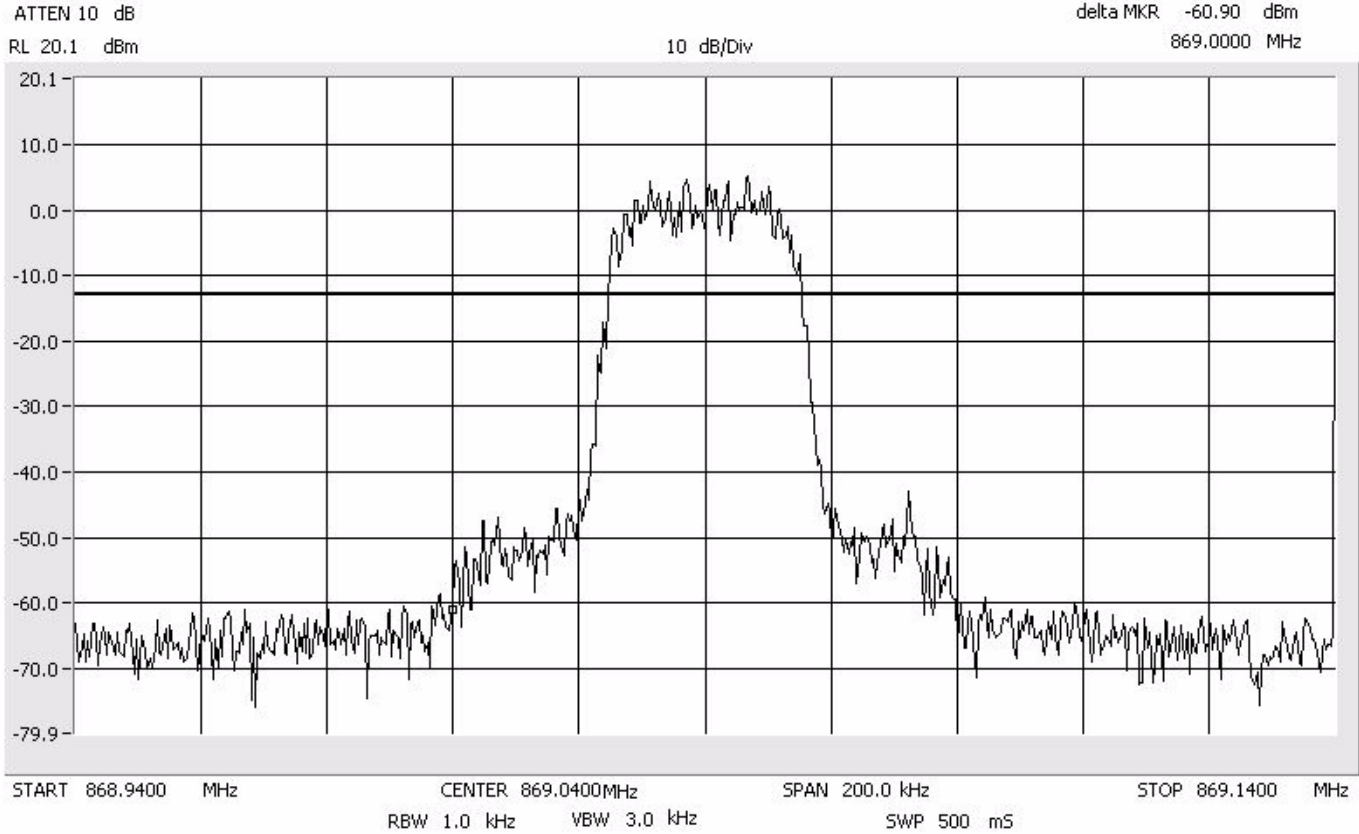


START 893.8201 MHz CENTER 893.9200MHz SPAN 200.0 kHz STOP 894.0200 MHz  
RBW 300 Hz VBW 1.0 kHz SWP 5.60 Sec

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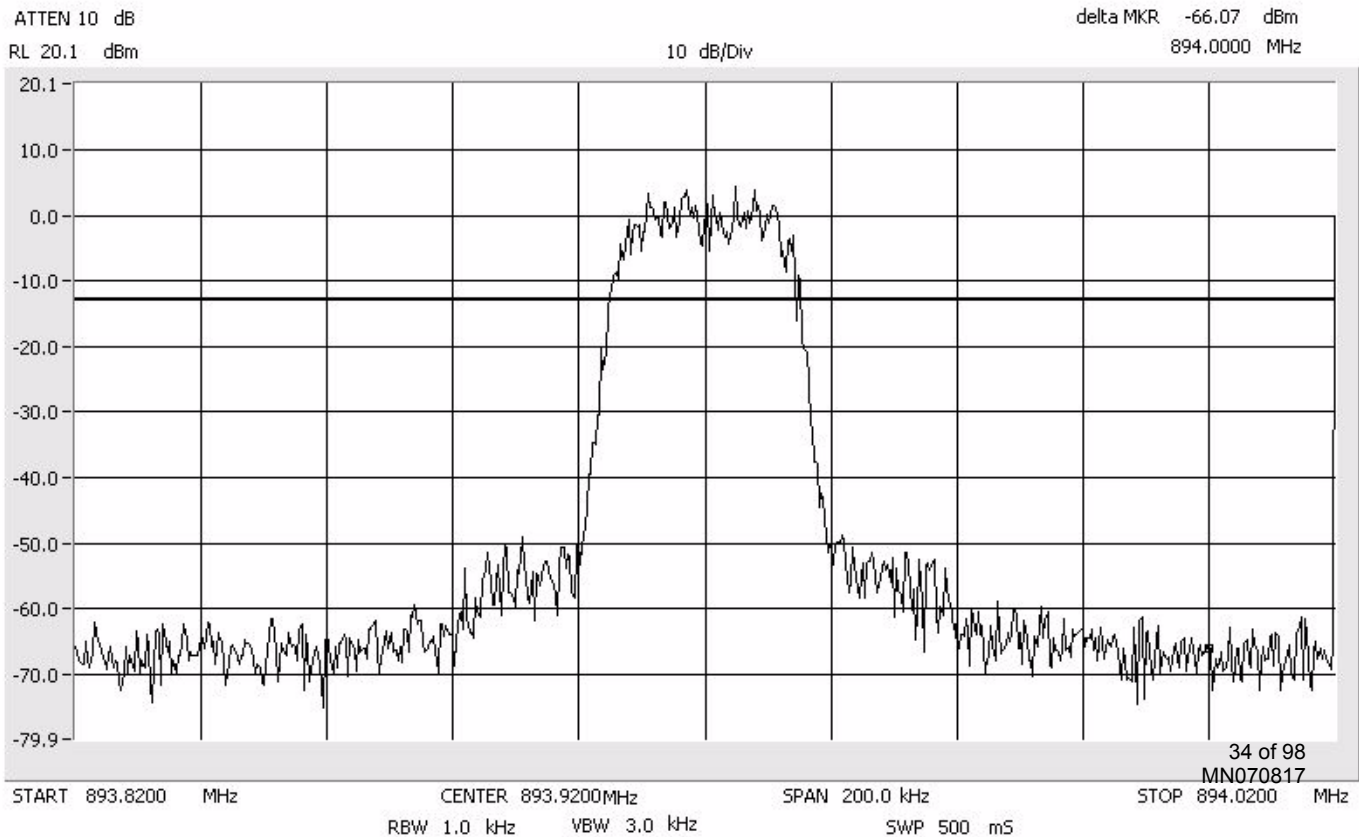
# Band Edge TDMA

Center: 869.04 MHz  
Span: 200 kHz  
RBW: 1 kHz  
VBW: 3 kHz



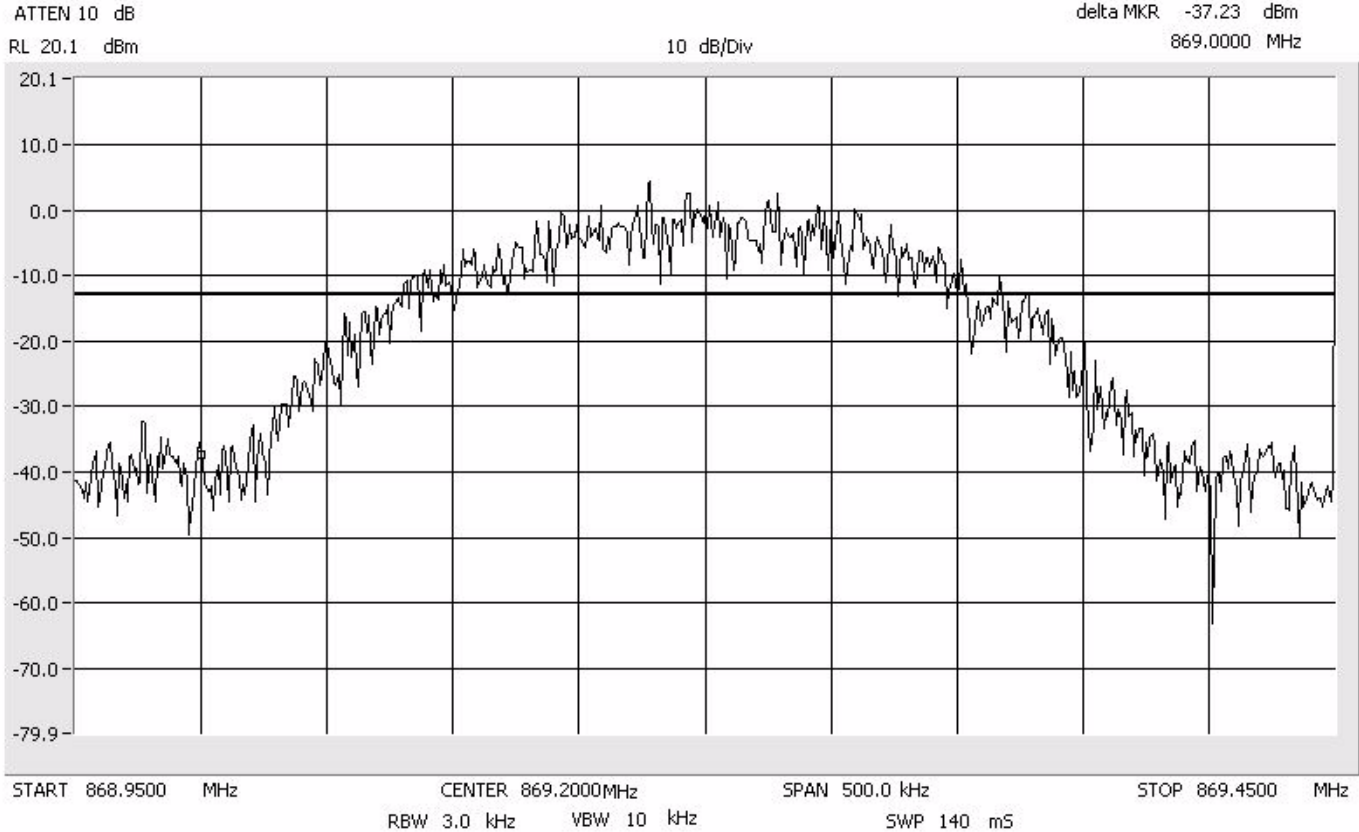
# Band Edge TDMA

Center: 893.92 MHz  
Span: 200 kHz  
RBW: 1 kHz  
VBW: 3 kHz



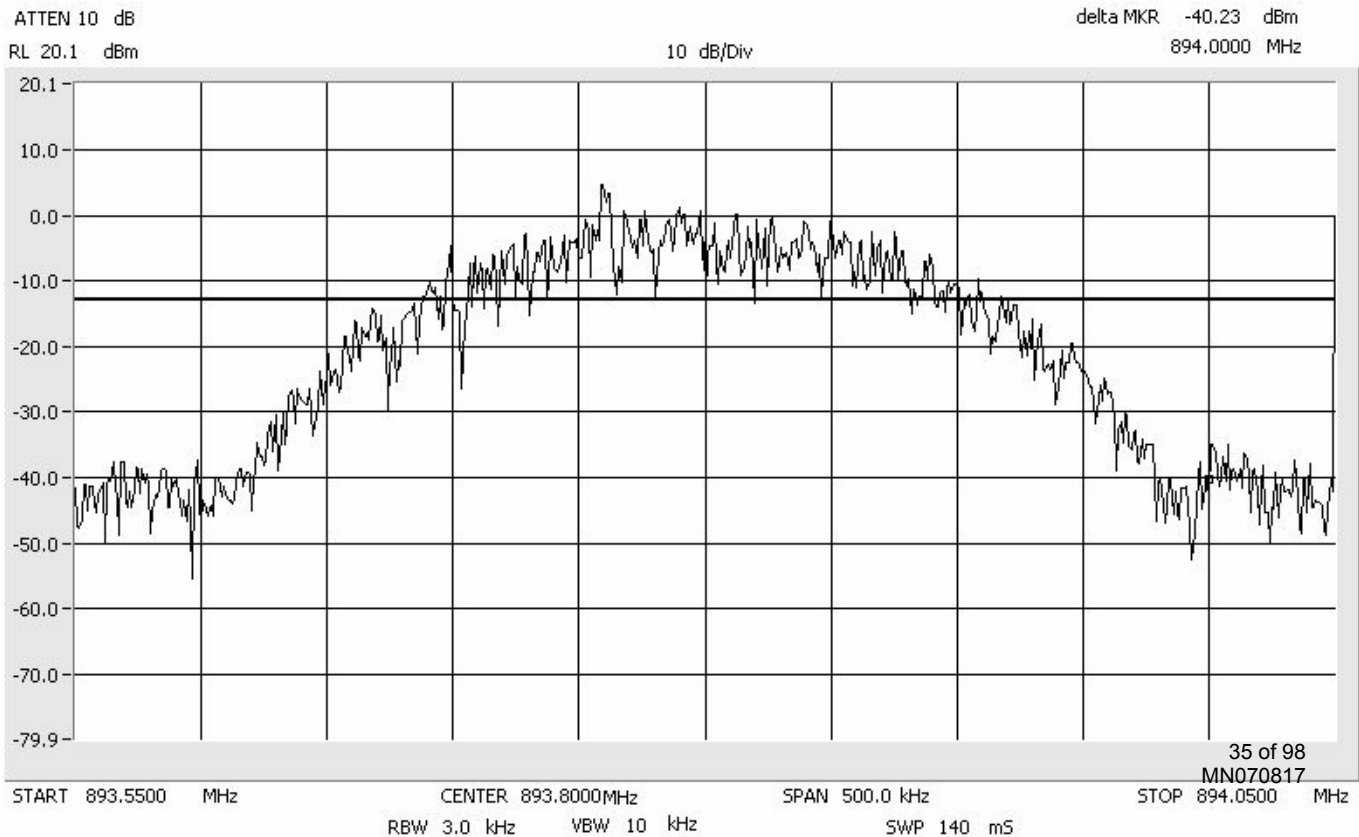
# Band Edge GSM

Center: 869.2 MHz  
Span: 500 kHz  
RBW: 3 kHz  
VBW: 10 kHz



# Band Edge GSM

Center: 893.8 MHz  
Span: 500 kHz  
RBW: 3 kHz  
VBW: 10 kHz



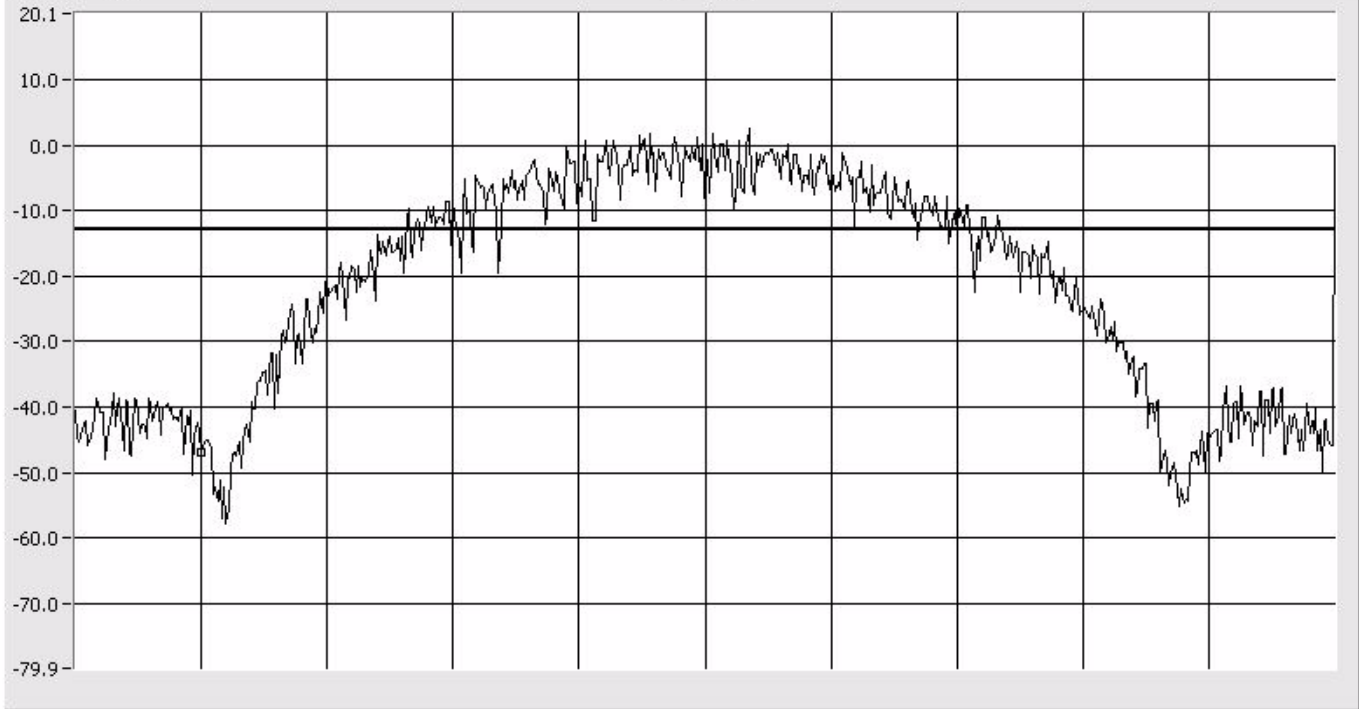
# Band Edge EDGE

Center: 869.2 MHz  
Span: 500 kHz  
RBW: 3 kHz  
VBW: 10 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -46.90 dBm  
869.0000 MHz

10 dB/Div



START 868.9500 MHz CENTER 869.2000MHz SPAN 500.0 kHz STOP 869.4500 MHz  
RBW 3.0 kHz VBW 10 kHz SWP 140 mS

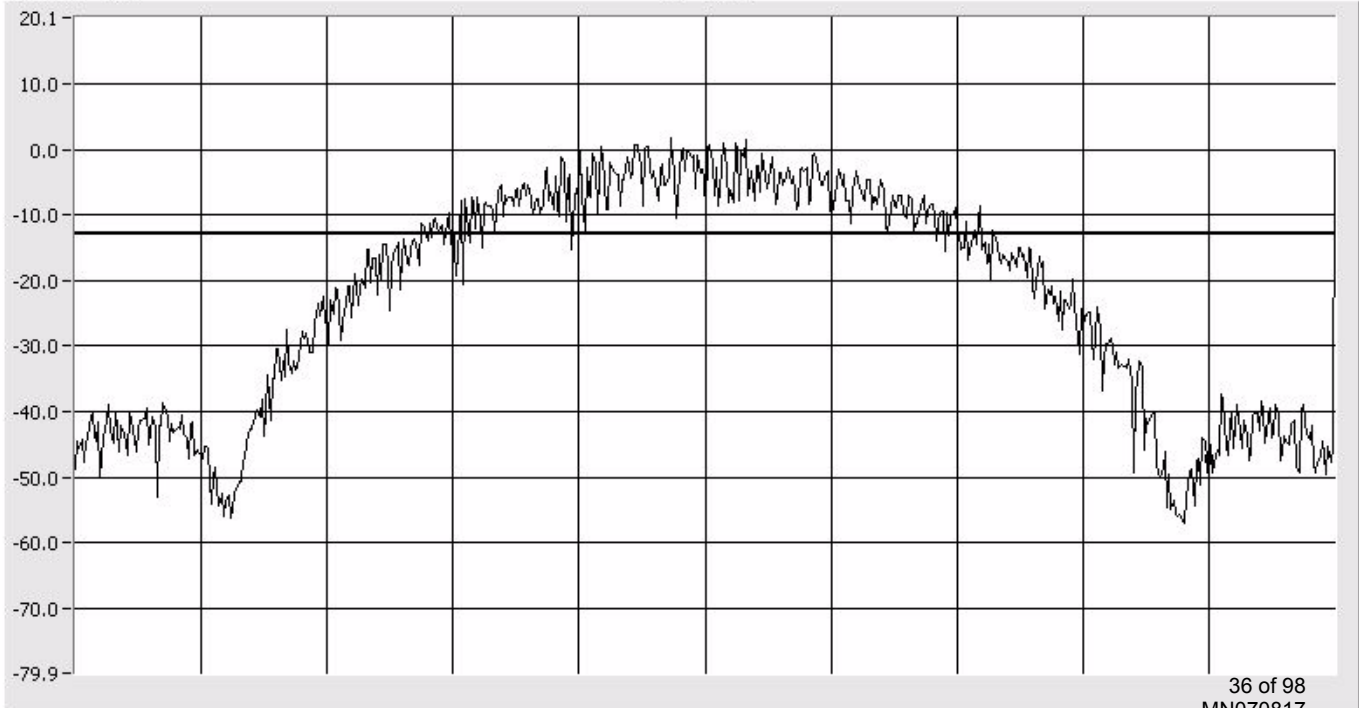
# Band Edge EDGE

Center: 893.8 MHz  
Span: 500 kHz  
RBW: 3 kHz  
VBW: 10 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -47.23 dBm  
894.0000 MHz

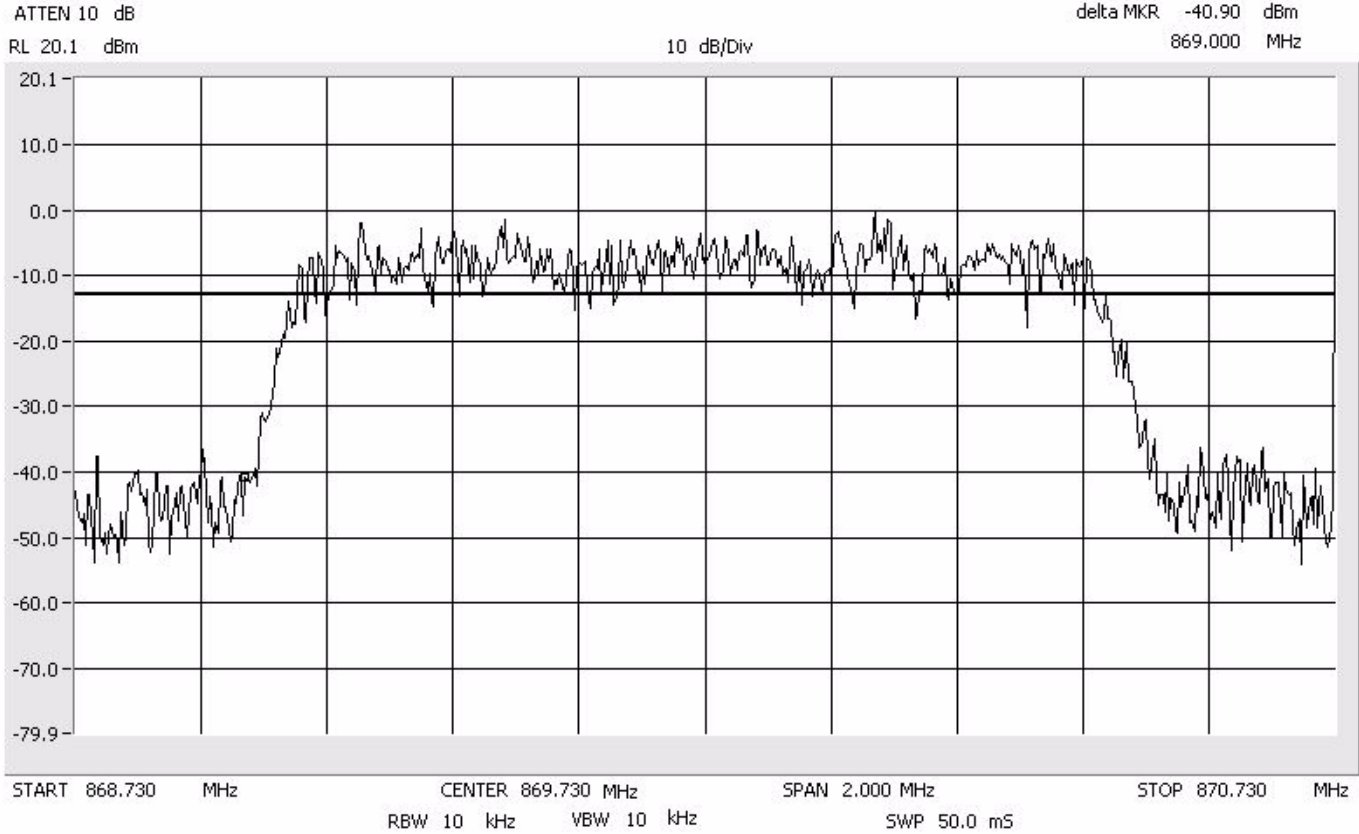
10 dB/Div



START 893.5501 MHz CENTER 893.8001MHz SPAN 500.0 kHz STOP 894.0501 MHz  
RBW 3.0 kHz VBW 10 kHz SWP 140 mS

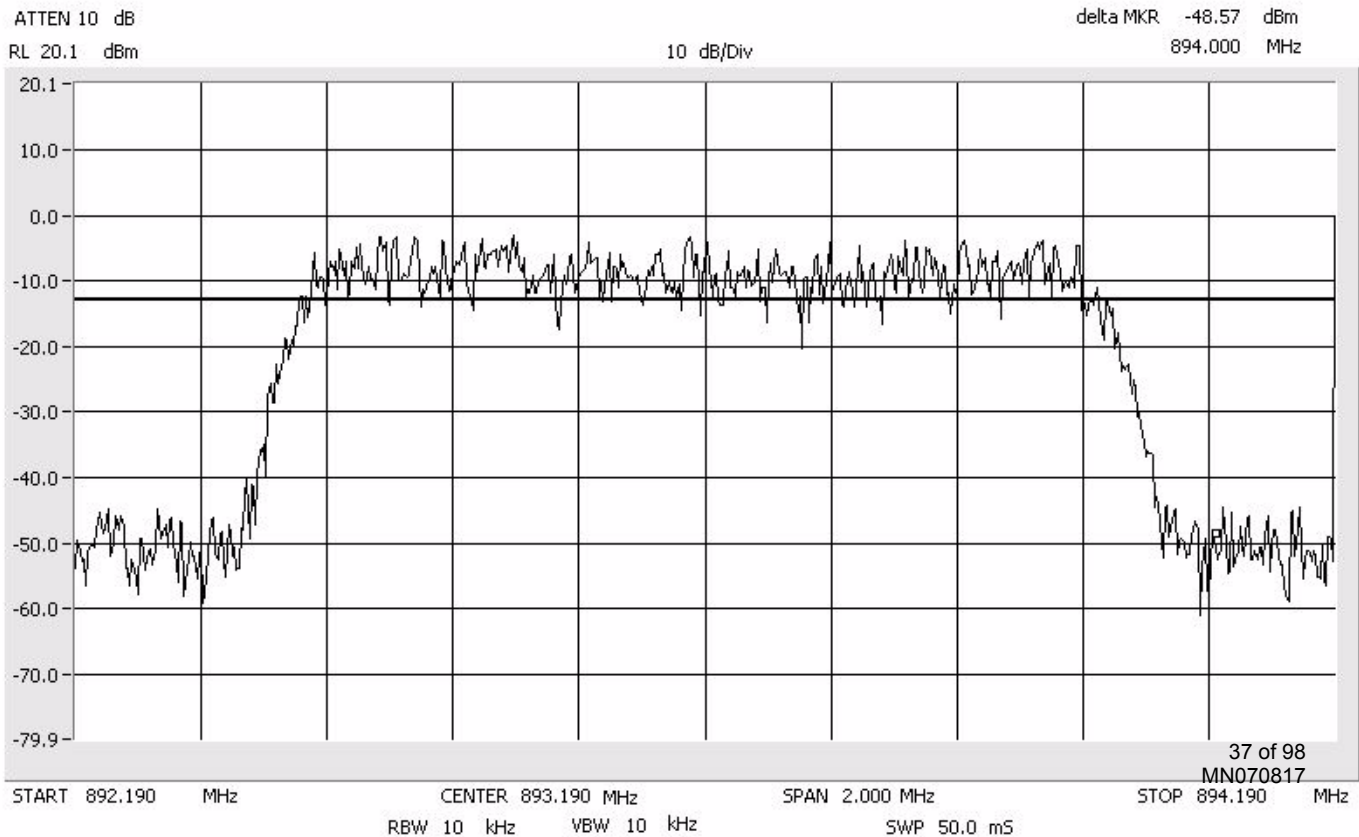
# Band Edge CDMA

Center: 869.73  
Span: 2 MHz  
RBW: 10 kHz  
VBW: 10 kHz



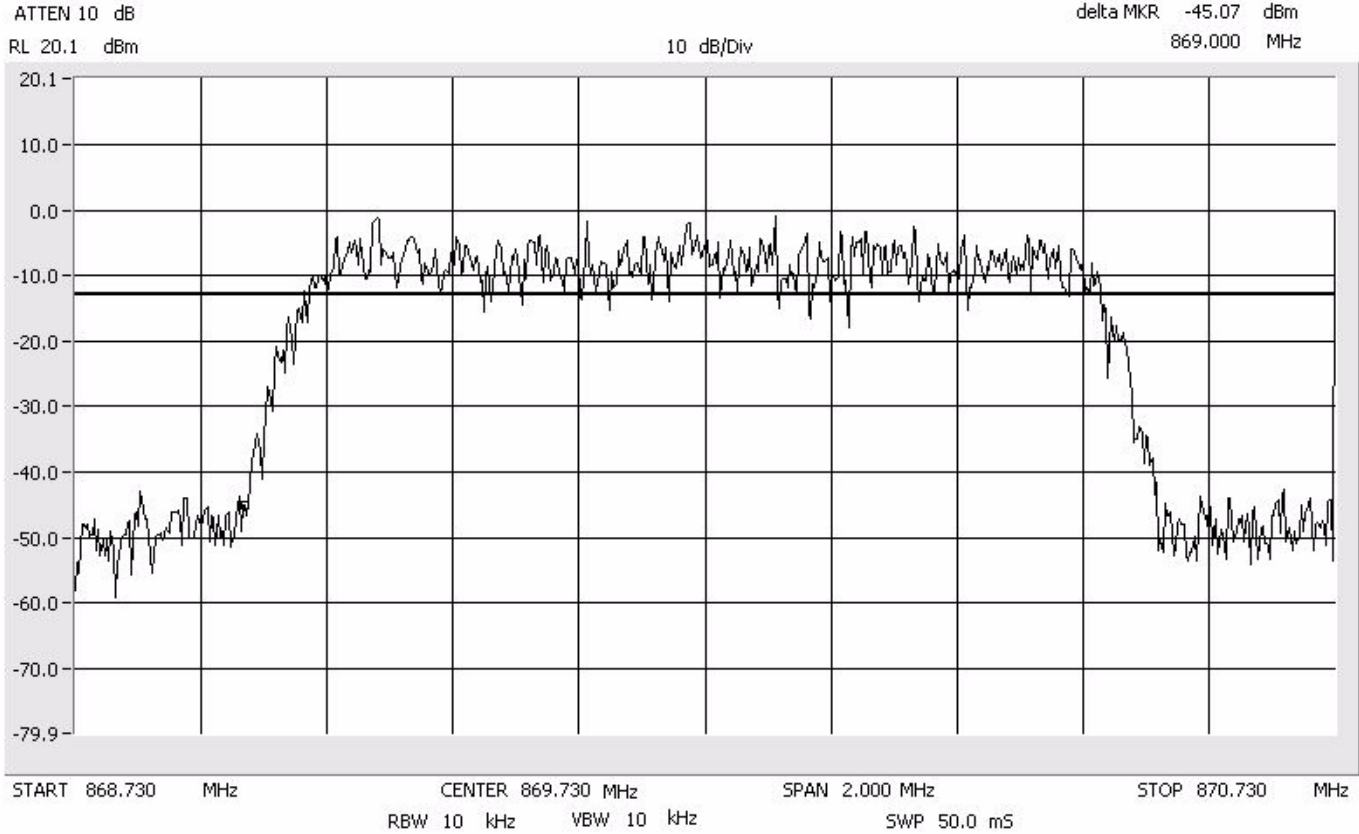
# Band Edge CDMA

Center: 893.19 MHz  
Span: 2 MHz  
RBW: 10 kHz  
VBW: 10 kHz



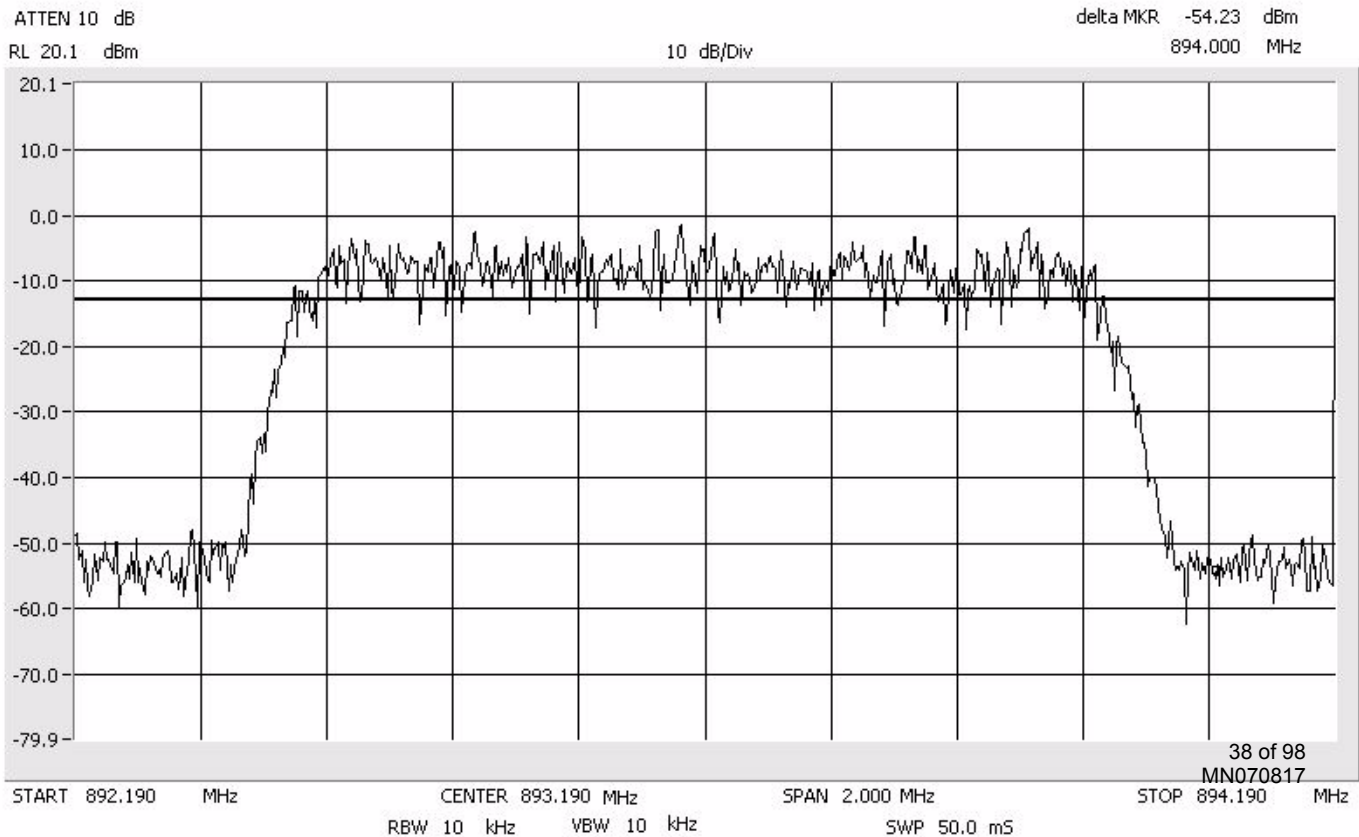
# Band Edge EVDO

Center: 869.73  
Span: 2 MHz  
RBW: 10 kHz  
VBW: 10 kHz



# Band Edge EVDO

Center: 893.19 MHz  
Span: 2 MHz  
RBW: 10 kHz  
VBW: 10 kHz





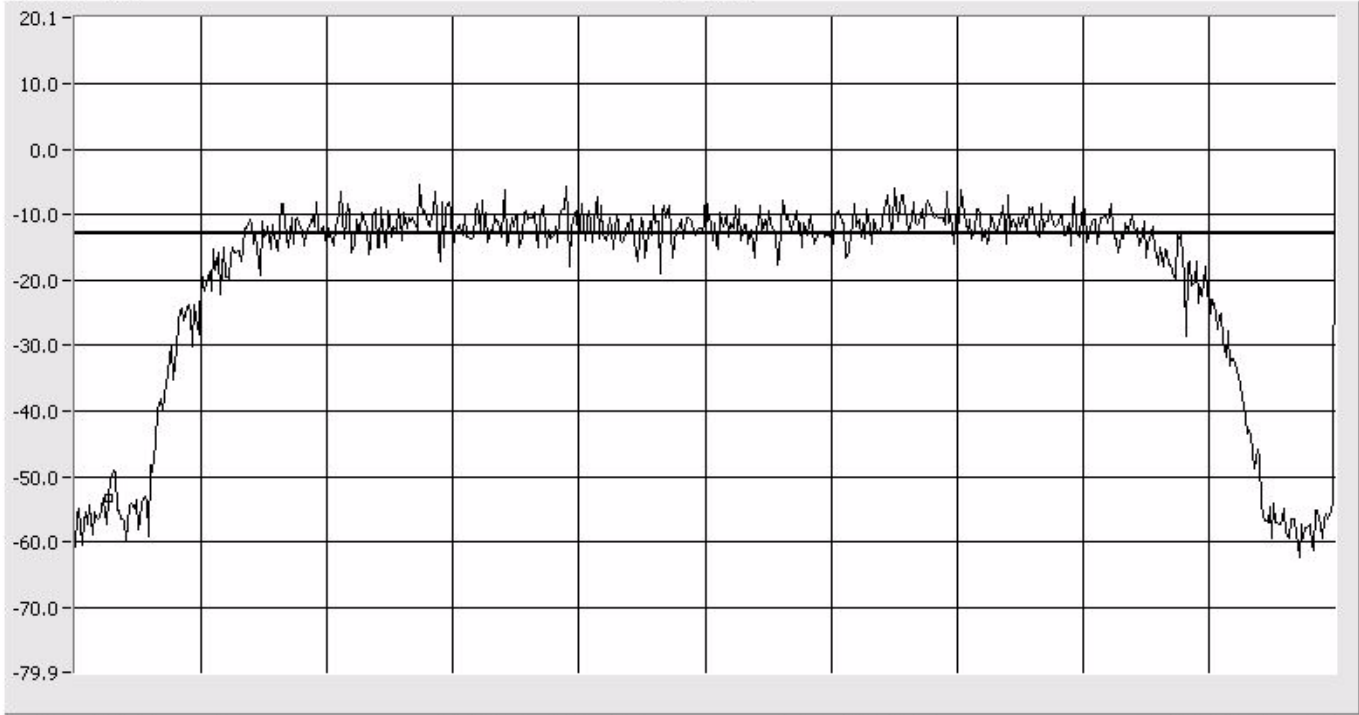
# Band Edge W-CDMA

Center: 871.60 MHz  
Span: 5.5 MHz  
RBW: 10 kHz  
VBW: 10 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -53.40 dBm  
868.997 MHz

10 dB/Div



RBW 10 kHz VBW 10 kHz SWP 140 mS

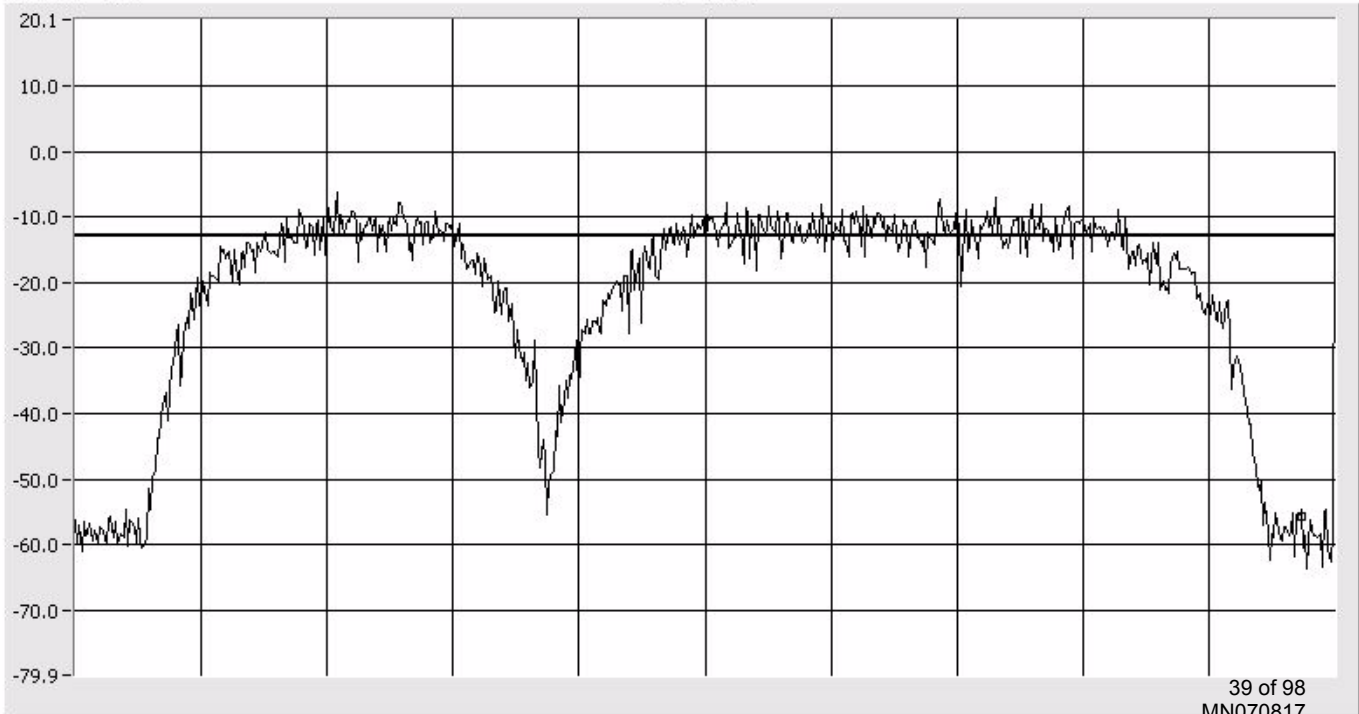
# Band Edge W-CDMA

Center: 891.40 MHz  
Span: 5.5 MHz  
RBW: 10 kHz  
VBW: 10 kHz

ATTEN 10 dB  
RL 20.1 dBm

delta MKR -55.57 dBm  
894.003 MHz

10 dB/Div



RBW 10 kHz VBW 10 kHz SWP 140 mS

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## Conducted Output Power Test for ADC Inc. Bi-Directional Amplifier – Cellular Model Number RPT-SBAAA12000

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\*Note: The EUT is a fixed repeater and not a base station.

This measurement was made as a direct conducted emission measurement. The output from the EUT antenna connector was connected to the power meter. The carrier output, below, was conducted using a single FM, TDMA, GSM, EDGE, CDMA, EVDO, and W-CDMA signal generator. The power meter level was offset to compensate for attenuators and cable loss between the EUT and the power meter.

A signal was used at the low, mid and high parts of the selected band. The power meter level was offset by 33.44 dB to compensate for attenuators and cable loss between the EUT and the power meter.

<b><u>FM</u></b>	<b><u>98.40 mWatts</u></b>	<b><u>GSM</u></b>	<b><u>94.84 mWatts</u></b>
Carrier Frequency	Carrier Output	Carrier Frequency	Carrier Output
869.2 MHz	<u>19.92</u> dBm	869.5 MHz	<u>19.27</u> dBm
882.5 MHz	<u>19.93</u> dBm	882.5 MHz	<u>19.77</u> dBm
893.8 MHz	<u>19.10</u> dBm	893.5 MHz	<u>19.43</u> dBm
<b><u>TDMA</u></b>	<b><u>93.54 mWatts</u></b>	<b><u>EDGE</u></b>	<b><u>97.49 mWatts</u></b>
Carrier Frequency	Carrier Output	Carrier Frequency	Carrier Output
869.2 MHz	<u>19.25</u> dBm	869.5 MHz	<u>19.47</u> dBm
882.5 MHz	<u>19.71</u> dBm	882.5 MHz	<u>19.57</u> dBm
893.8 MHz	<u>19.61</u> dBm	893.5 MHz	<u>19.89</u> dBm
<b><u>CDMA</u></b>	<b><u>97.49 mWatts</u></b>	<b><u>EVDO</u></b>	<b><u>99.54 mWatts</u></b>
Carrier Frequency	Carrier Output	Carrier Frequency	Carrier Output
869.8 MHz	<u>19.89</u> dBm	869.8 MHz	<u>19.89</u> dBm
882.5 MHz	<u>19.06</u> dBm	882.5 MHz	<u>19.98</u> dBm
893.2 MHz	<u>19.58</u> dBm	893.2 MHz	<u>19.57</u> dBm
<b><u>W-CDMA</u></b>	<b><u>98.62 mWatts</u></b>		
Carrier Frequency	Carrier Output		
871.6 MHz	<u>19.94</u> dBm		
882.5 MHz	<u>19.75</u> dBm		
891.4 MHz	<u>19.39</u> dBm		