



# Test Report Summary

## FCC CFR 47, Part 24

### Subpart E Broadband PCS

**Manufacturer:** ADC Telecommunications

**Name of Equipment:** Digivance® Street Coverage Solution "SCS"

**Model Number(s):** DGVC-4X1X4X1X200SYS

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

**Test Report Number:** MN070508

**Test Date(s):** 16-17 April, 2007 (ETL)  
2 May, 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 24.

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 24 and the EUT fulfills the requirements of the Federal Communications Commission's CFR 47 Part 24.

Date: 8 May, 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:** MN070508 **Date of Issue:** 8 May, 2007

**Model Number(s):** DGVC-4X1X4X1X200SYS

**Product Name:** Digivance® Street Coverage Solution "SCS"

**Product Type:** Outdoor Repeater

**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:** 3120522MIN-001  
**Reference(s)**

**Total pages including Appendices:** 179



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## 1.0 REVISION DESCRIPTION

Rev	Total Pages	Date	Description
A	179	May 8, 2007	Original Release

## 2.0 DOCUMENTATION

### 2.1 Test Regulations

- 24.232 Power and antenna height limits
- 24.235 Frequency stability
- 24.238 Emission limits for Broadband PCS equipment

**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: 97.9 kPa

##### **ETL**

24° C  
31%  
98.5 kPa

#### **Power Supply Utilized:**

Power Supply System (Remote) : 1 phase, 60 Hz, 120 VAC  
Power Supply System (Host) : 48 VDC

## 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 – PCS - 1930 to 1990 MHz

## 2.4 Product Options:

None

## 2.5 EUT Specifications and Requirements:

Length: 36"  
Width: 10"  
Height: 8"  
Weight: 83.0 pounds

## 2.6 Cables:

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

## 2.7 Power Requirements:

Voltage: 120 VAC  
Amps: 4.8 A

## 2.8 Typical Installation and/or Operating Environment:

Host indoor only with Remote Unit indoor or outdoor. System is typically employed as a Microcell.

## 2.9 Other Special Requirements:

None

## 2.10 EUT Software:

Revision Level: Version 7.01.00.04  
Description: Digivance Element Management System (DEMS). System Management and Interface Matching Software

### 2.11 EUT System Components

Description	Model #	Serial #	FCC ID #
Host Unit	DGVL-400000HU	None	
Remote Unit	DGVC-4X1X4X1X200RU	None	

### 2.12 Support Equipment

Description	Manufacturer	Model #	FCC ID #
Power Meter	HP	EPM-441A	
Signal Generator	Agilent	E4438C	
Attenuator	Aeroflex	49-30-33	
Power Supply	Xantrex	HPD 60-5	

### 2.13 Deviations from standard:

Modifications required to pass:

- As indicated on the data sheet(s)

- None**

Test Specification Deviations; Additions to or Exclusions from:

- As indicated in the Test Plan

- None**

### 2.14 General Remarks:

None.

### 2.15 Summary:

The requirements according to the technical regulations are

- met**

- not Met

The equipment under test does

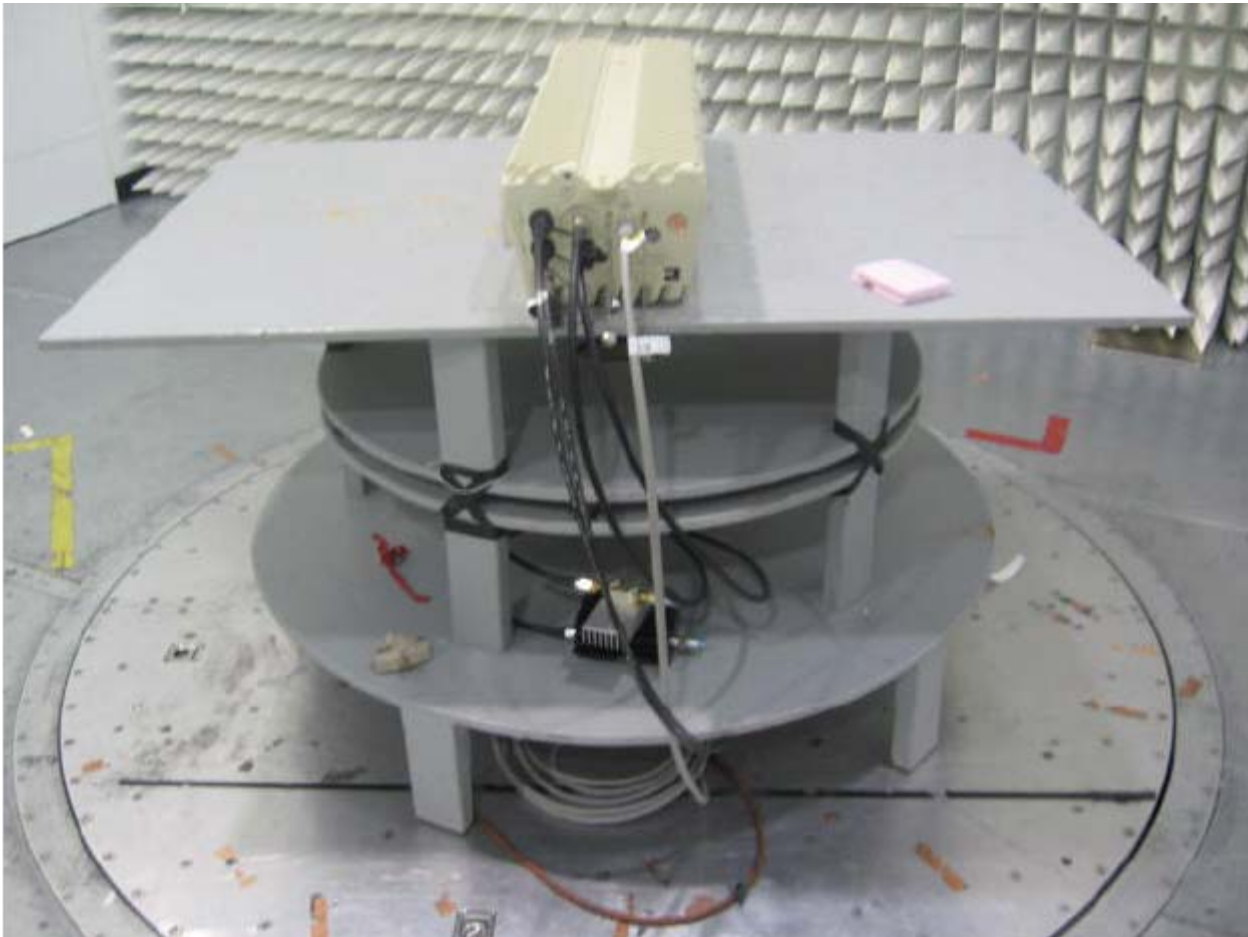
- fulfill the general approval requirements mentioned on page 4.**

- not fulfill the general approval requirements mentioned on page 4.

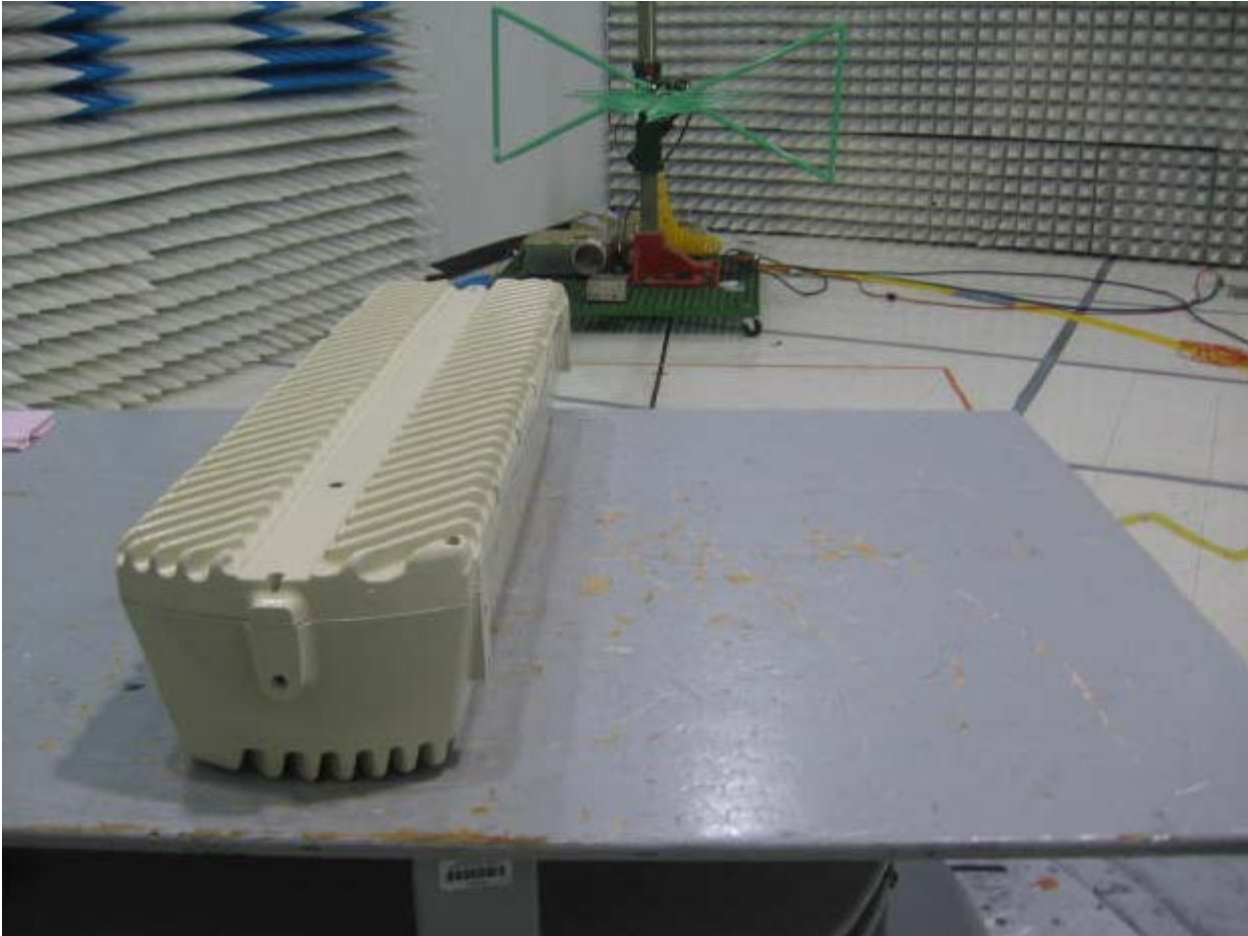
### 3.0 TEST SET-UP DRAWINGS AND PHOTOS

[Back to Table of Contents:](#)

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



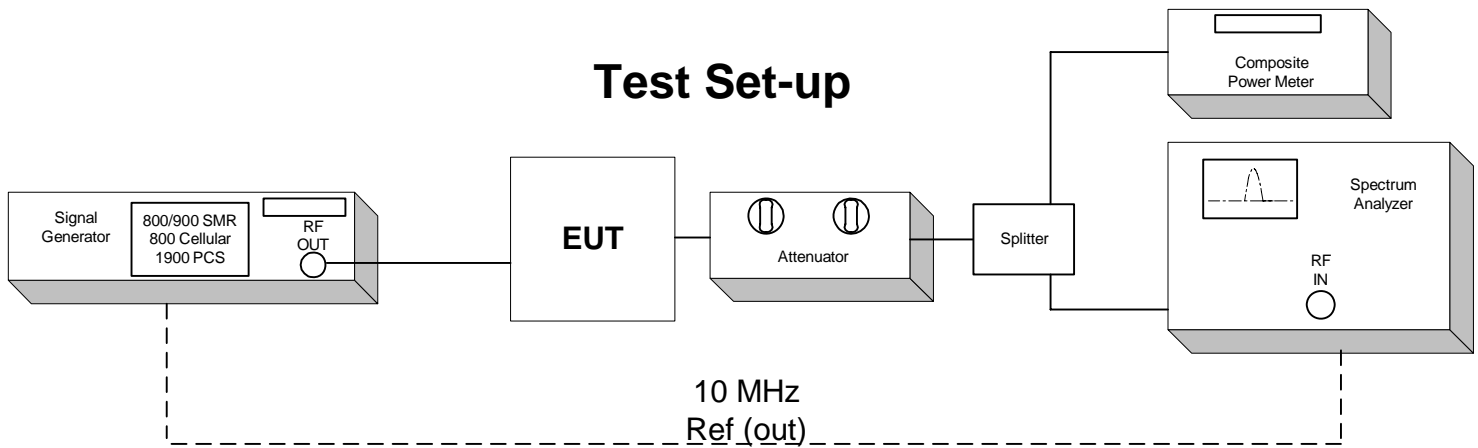
**3.2 Test set-up photo, radiated emissions**



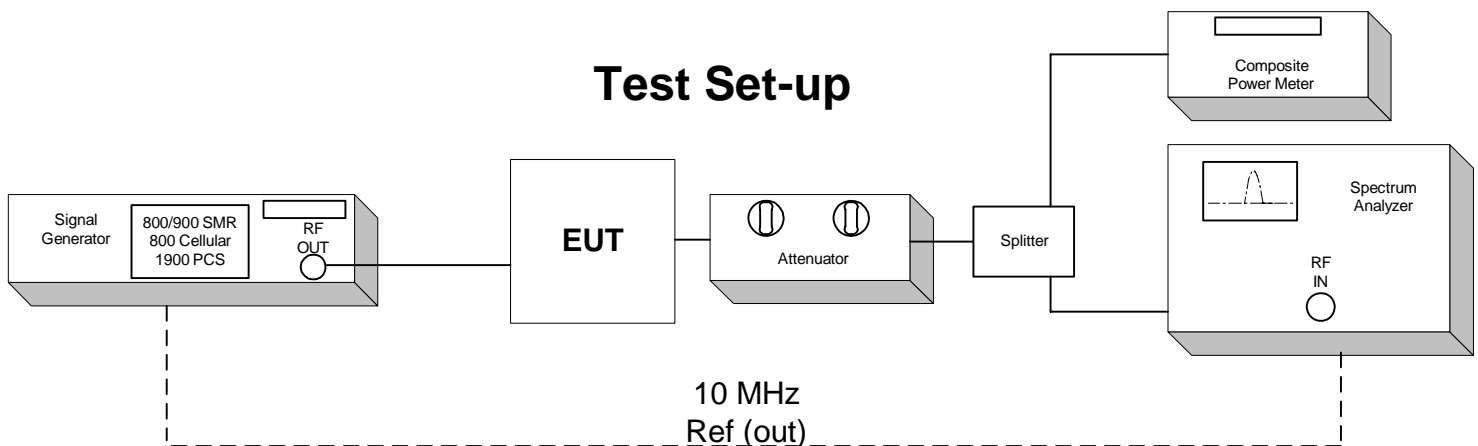


### 3.3 Test Set-up Drawings

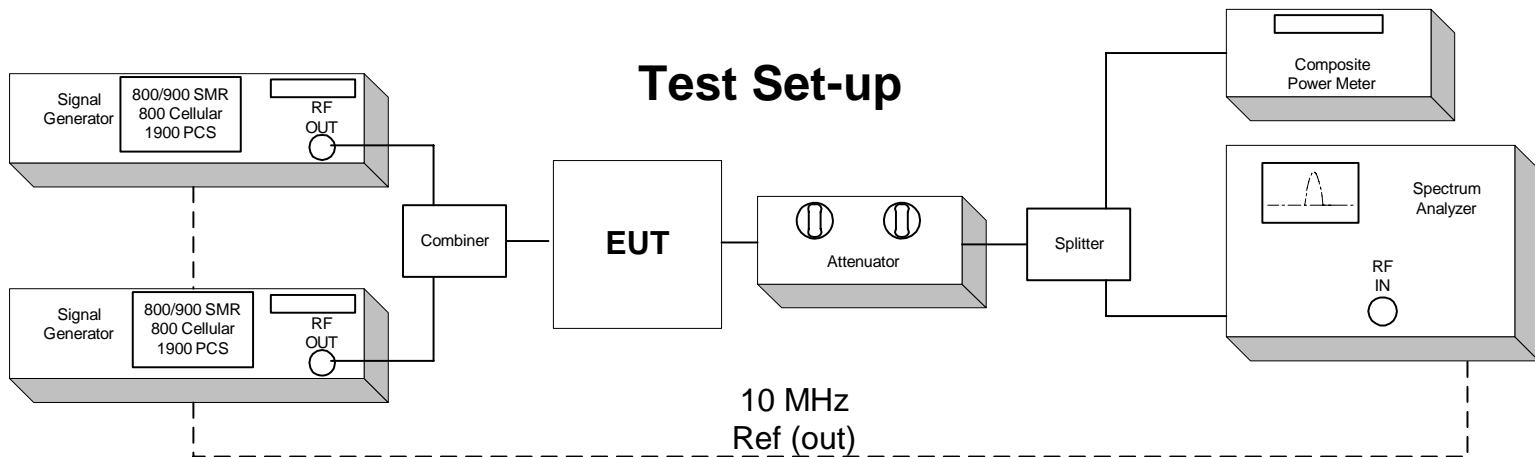
## Conducted and Radiated Emission Limits Test for ADC Inc. Digivance® SCS Model Number DGVC-4X1X4X1X200SYS



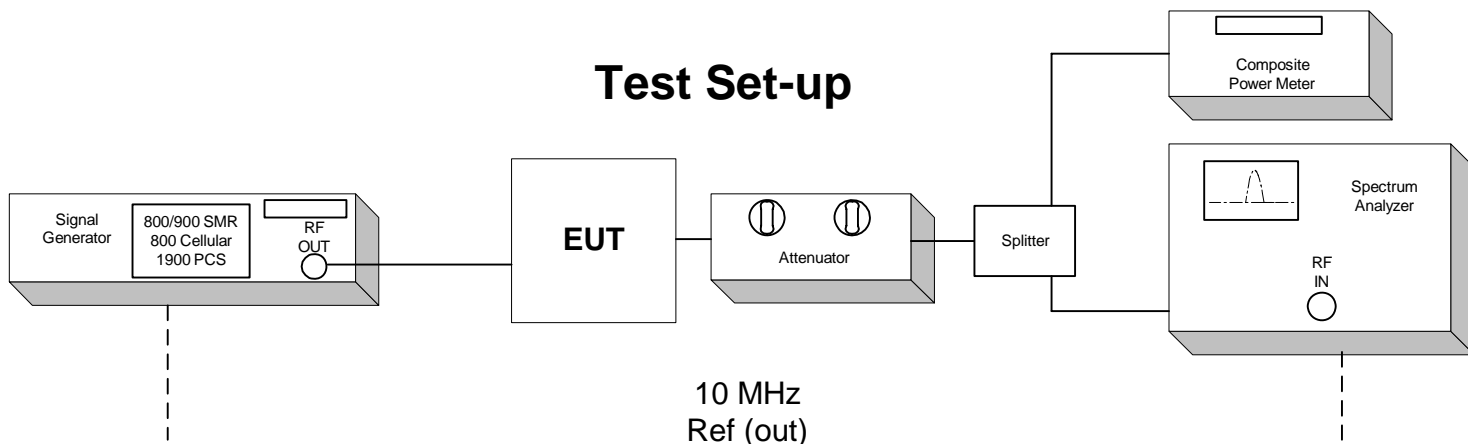
## Conducted Output Power Test for ADC Inc. Digivance® SCS Model Number DGVC-4X1X4X1X200SYS



**Inter-Modulation Test for ADC Inc.**  
**Digivance® SCS**  
**Model Number DGVC-4X1X4X1X200SYS**



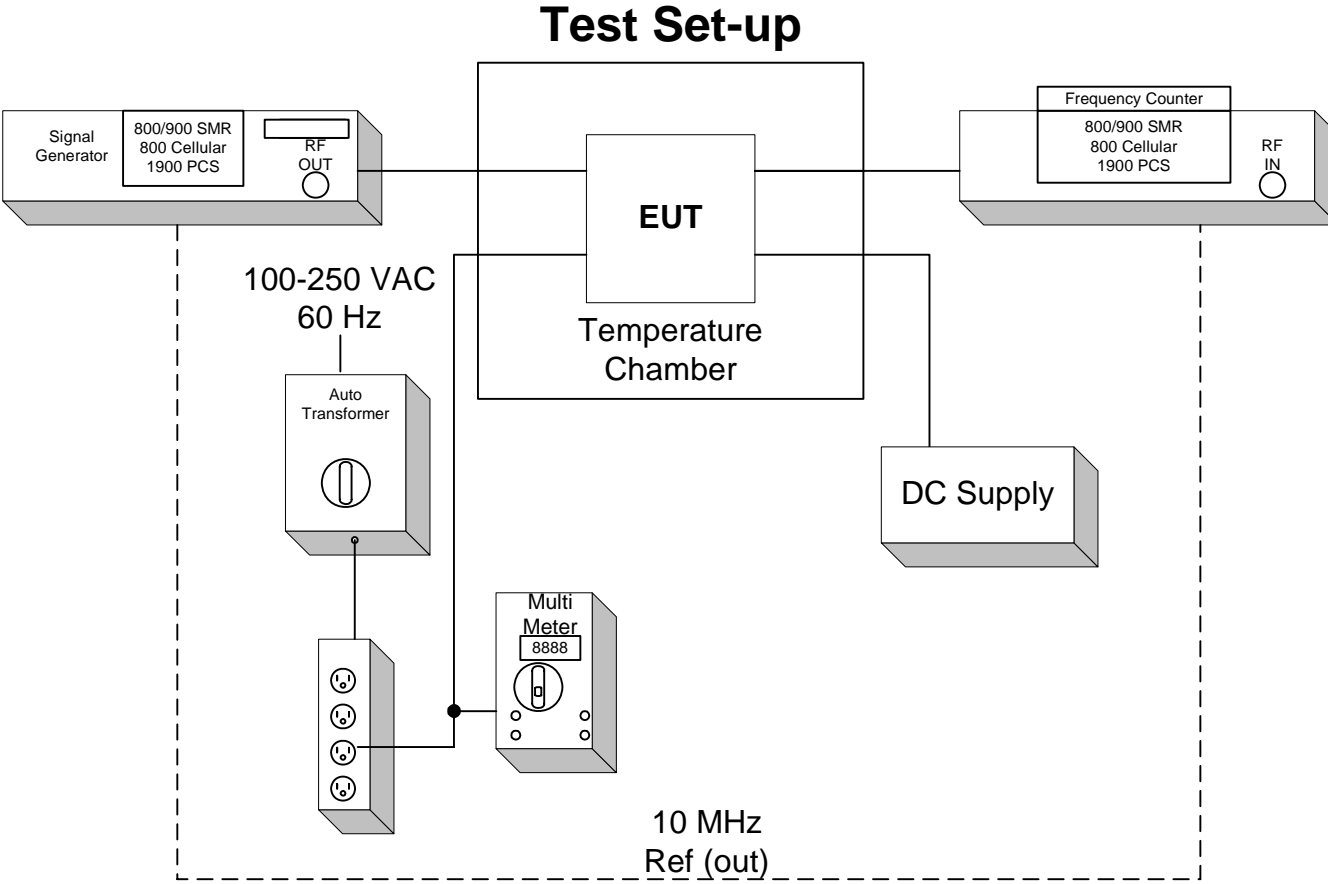
**Occupied Bandwidth Modulation Test for ADC Inc.**  
**Digivance® SCS**  
**Model Number DGVC-4X1X4X1X200SYS**



**Frequency Tolerance Test for ADC Inc.**  
**Digivance® SCS**  
**Model Number DGVC-4X1X4X1X200SYS**

EUT Host is specified for indoor use only with temperature range of 0° to +50° C, and was tested with its range.

EUT Remote is specified with a temperature range of -30° to +50° C and was tested with its range.



## 4.0 TEST RESULTS

### 4.1.1 24.232 Power and antenna height limits

#### Test Summary:

- The requirements are:  **MET**  NOT MET
- Minimum margin of compliance is 8.72 dB at 1960.0 MHz (W-CDMA)

#### 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	86-30-12	N/A	CNR
Spectrum Analyzer	HP	8563E	MC27690	7-22-07
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:

100 Watts or 50 dBm Limit

#### Test Data:

[See page 47](#)

**Test Engineer:** Mark F. Miska

**Date:** 2 May, 2007

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#### 4.1.2 24.235 Frequency Stability

##### Test Summary:

- The requirements are:  **MET**  NOT MET
- The fundamental emission stays within the authorized frequency block.
- Frequency measured over a temperature range of –30 to 50° C and an input voltage range of 100 to 250 VAC (Remote) and 24 to 48 DC (Host).

##### Test Location:

ETL (Oakdale, MN)

**ADC facility (Shakopee, MN)**

##### Test Equipment (ADC):

Equipment	Manufacturer	Model	ADC Serial Number	Calibration Due.
Multimeter	Fluke	87	MC17932	8-1-08
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:

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

##### Test Data:

[See pages](#) 152-155

**Test Engineer:** Mark F. Miska

**Date:** 2 May, 2007

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#### 4.1.3 24.238 Emission limitations for broadband PCS equipment

##### 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.
Attenuator	Aeroflex	86-30-12	N/A	CNR
Spectrum Analyzer	HP	8563E	MC27690	7-22-07
Power Meter	HP	EPM-441A	MC27670	9-20-07
Multimeter	Fluke	87	MC17932	8-1-08
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
Digital Barometer	Fisher Scientific	02-403	MC50719	6-28-07

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	07/07
Spectrum Analyzer	Rohde & Schwarz	ESCI	100358	04/07
Instrument Control	TILE!	Ver. 3.4 K.20	N/A	N/A
Antenna	Schaffner-Chase	Bicono-Log	2630	08/07
Antenna	EMCO	Horn 3115	6579	03/08
Antenna	EMCO	Horn 3116	9904-2423	07/07
Antenna	Roberts	3 140-400 MHz	00598	N/A
Antenna	Roberts	4 400-1000 MHz	00599	N/A
Pre-Amp	MITEQ	AMF-5D	1122951	02/08
Pre-Amp	MITEQ	AMF-6F-16002600-25-10P	1222383	09/07
Generator	Rohde & Schwarz	SMY 02	DE23691	10/07

##### 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 16 – 46

[Intermodulation Test](#), pages 48 – 144

[Occupied Bandwidth](#), pages 145 – 151

Radiated Emissions, pages 156 – 177 ([Appendix B](#))

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**Test Engineer:** Mark F. Miska

**Date:** 2 May, 2007

**Date:** 2 May, 2007

**Date:** 2 May, 2007

5.0

## APPENDIX A

Test Data

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**Test Engineer:** Mark F. Miska      **Date:** 2 May, 2007

# Conducted Emission Limits Test for ADC Inc.

## Digivance® SCS

### Model Number DGVC-4X1X4X1X200SYS

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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 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 TDMA, GSM, EDGE, CDMA, EVDO, and W-CDMA signal at the upper and lower limits of the band.

The Host unit connects directly to the BTS via coax. The Host unit does not connect to an antenna or amplifier, thus it is a Part 15 device and has been tested and is compliant as such. No FCC ID is necessary.

Industry practice has generally set the input signal power level. Test signal used was  $\approx -10$  dBm input to DHU. Industry practice has generally set the output signal power level.

Digital Host Unit (DHU):

Range: 24-48 VDC

Tested @: 48 VDC

Tested @: 1.2 A

Remote Unit (including LPA):

Range: 100 - 250 VAC

Tested @: 120 VAC

Tested @: 4.8 A

The LPA requires a constant input voltage supply of 28 VDC and was tested @ 11.7 A

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

The input to the host unit has a digital attenuation chip (ALC) to provide protection from overdrive with 5-10 millisecond attack time / 100 millisecond decay time and 31 dB of head room, such that single channel operation, or multi-channel operation will not exceed nominal gain of the system.

The frequency stability is derived by the BTS, base transceiver station. This product uses internal frequency stability to keep the signal inside our filter bandwidths. This means that the frequency can change, but the frequency that transmits is still at the original frequency. The remote system uses the data over the fiber optic path to phase/frequency lock to the host. The purpose is to frequency lock the up- and down-conversion local oscillators, and thereby eliminate any end-to-end frequency shift.

The spurious limitation is completed with the duplexer. The ALC also suppresses in-band spurious by preventing PA overdrive, while the duplexer 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:

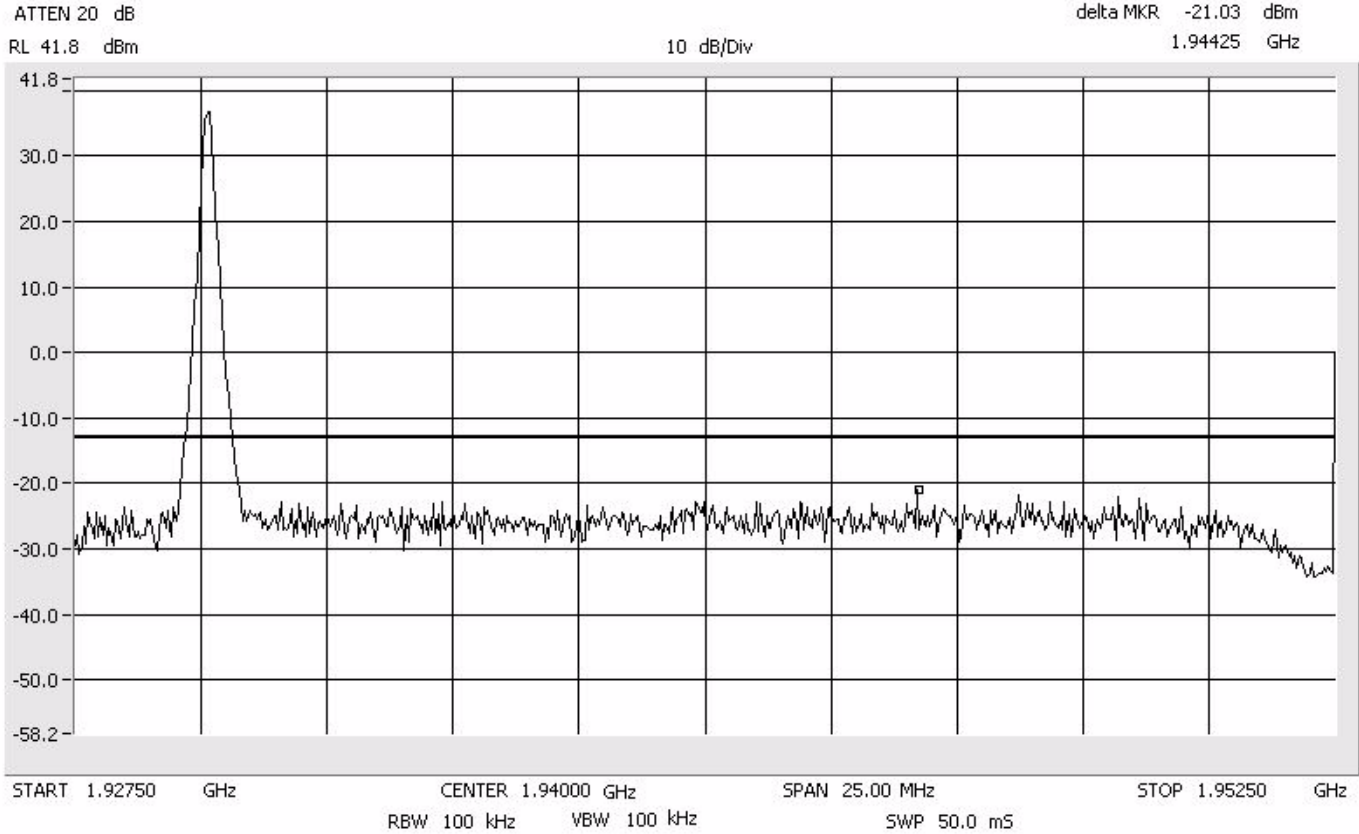
Pass (See plots)



AD Band

# Conducted Emissions Low PCS 1900 MHz

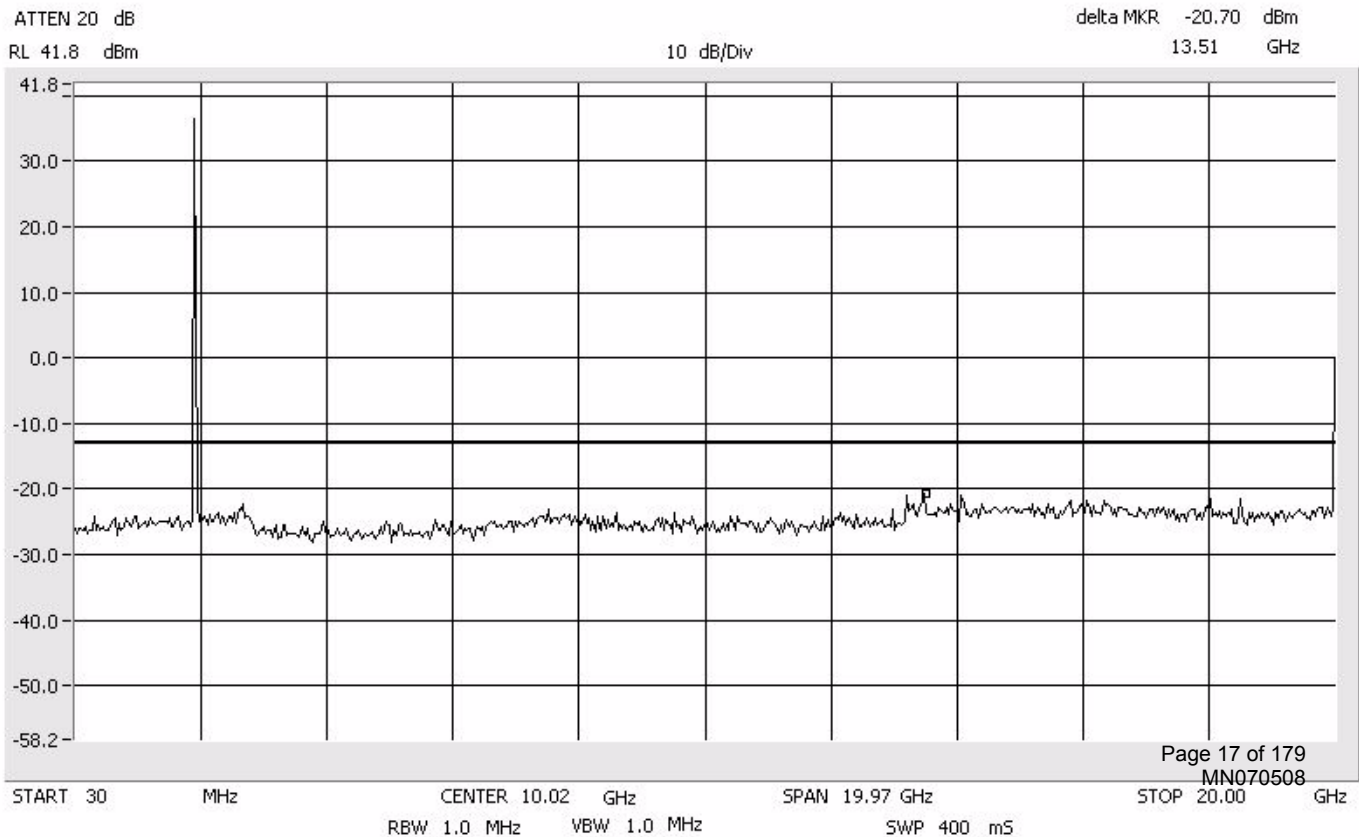
Center: 1940.0 MHz  
Span: 25 MHz  
RBW/VBW: 100 kHz



AD Band

# Conducted Emissions Low PCS 1900 MHz

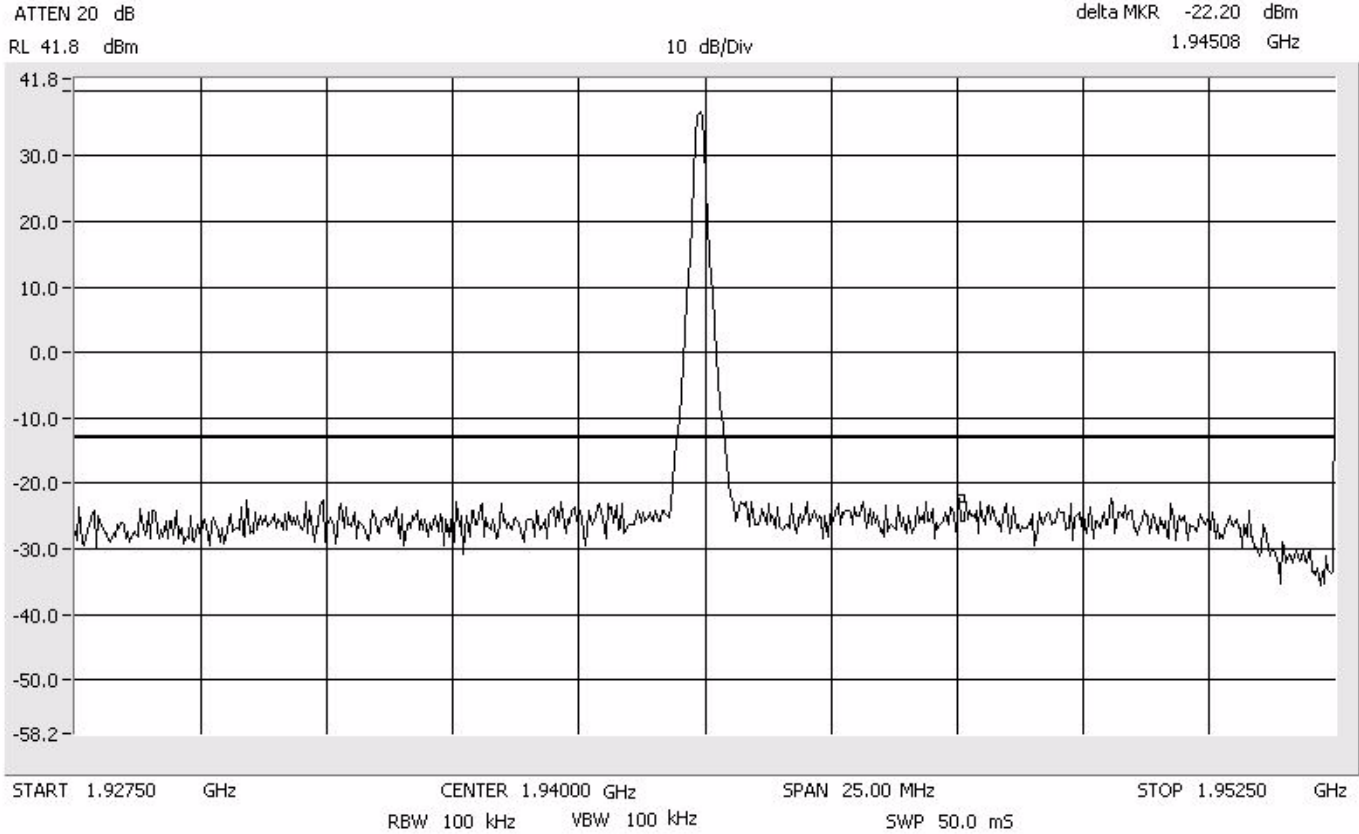
Span: 30 MHz to 20 GHz  
RBW/VBW: 1 MHz



AD Band

# Conducted Emissions Mid PCS 1900 MHz

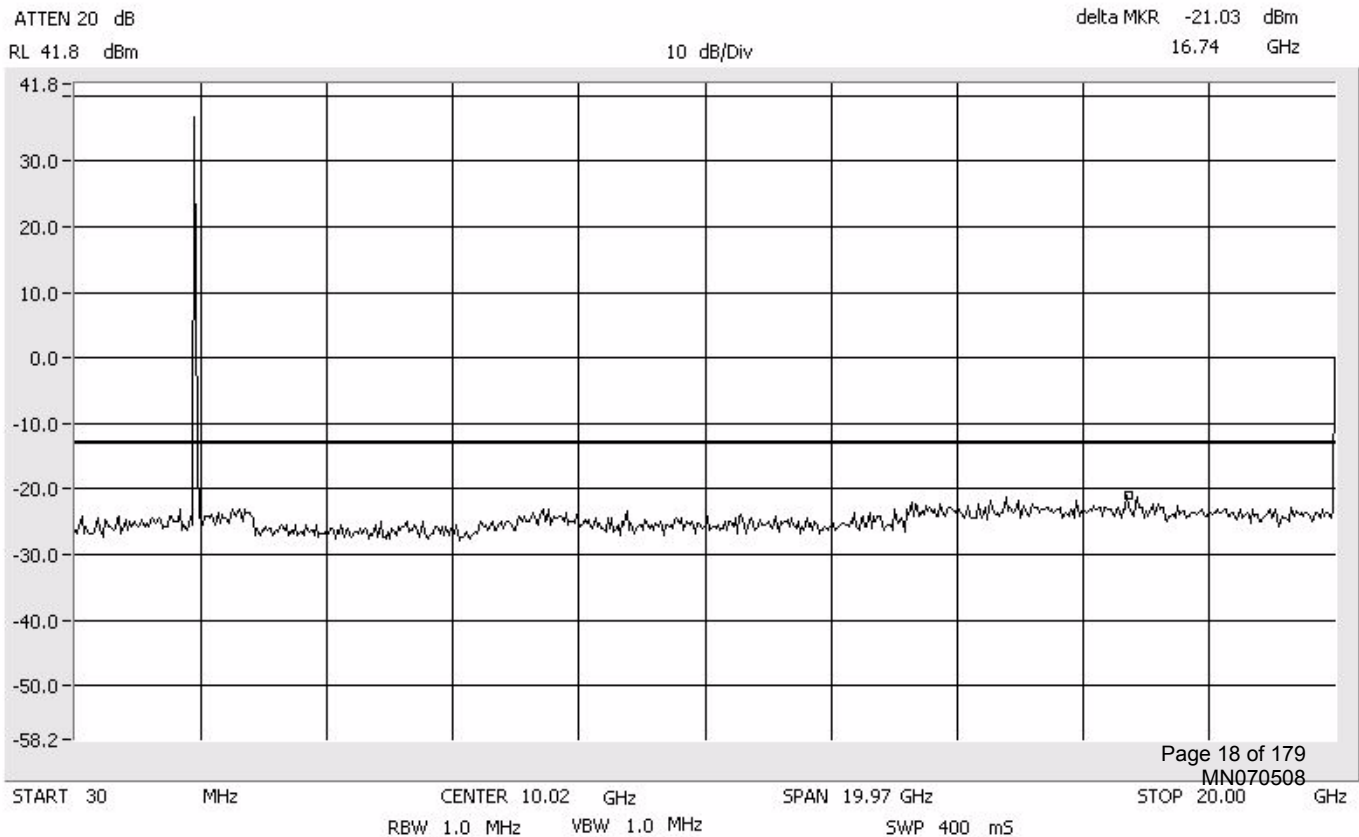
Center: 1940.0 MHz  
Span: 25 MHz  
RBW/VBW: 100 kHz



AD Band

# Conducted Emissions Mid PCS 1900 MHz

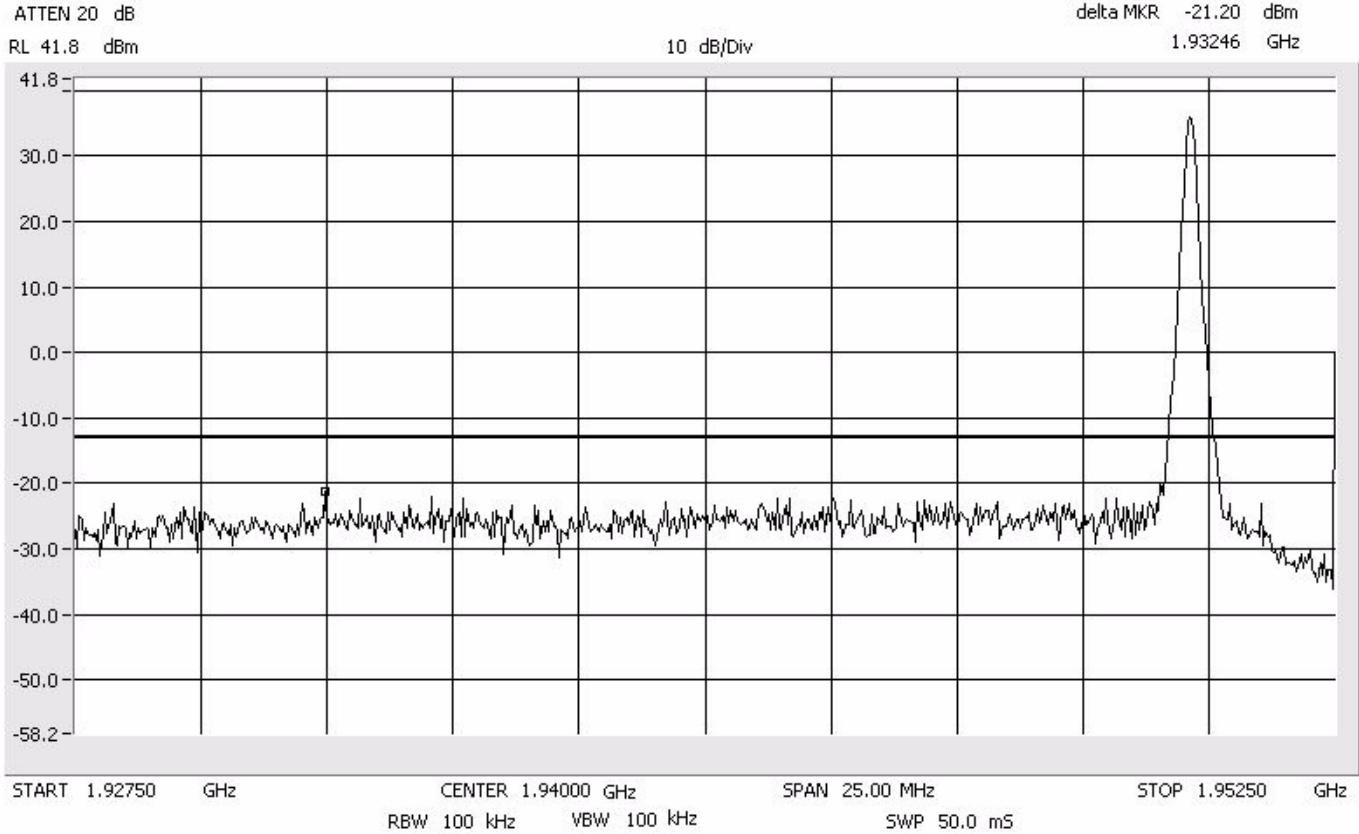
Span: 30 MHz to 20 GHz  
RBW/VBW: 1 MHz



AD Band

# Conducted Emissions High PCS 1900 MHz

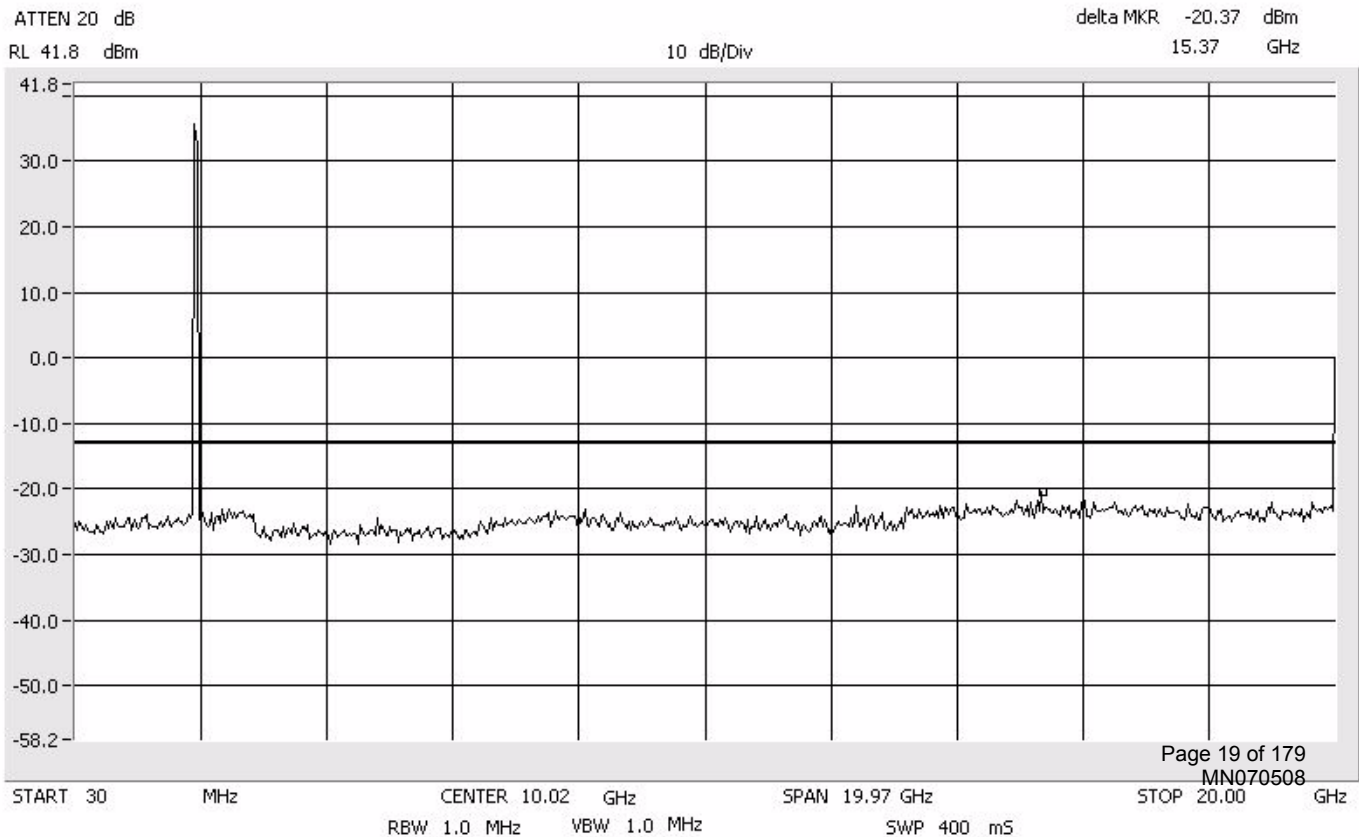
Center: 1940.0 MHz  
Span: 25 MHz  
RBW/VBW: 100 kHz



AD Band

# Conducted Emissions High PCS 1900 MHz

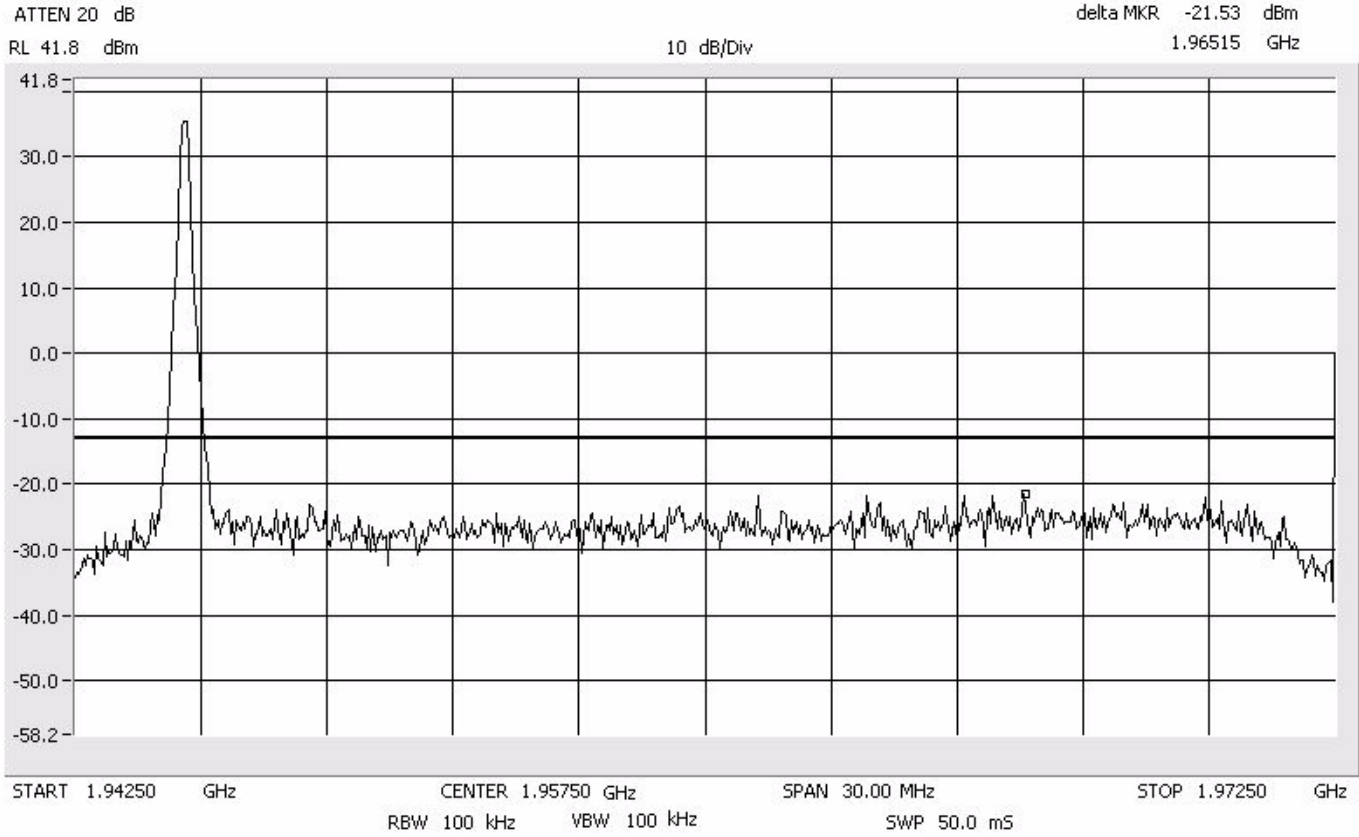
Span: 30 MHz to 20 GHz  
RBW/VBW: 1 MHz



DBE Band

# Conducted Emissions Low PCS 1900 MHz

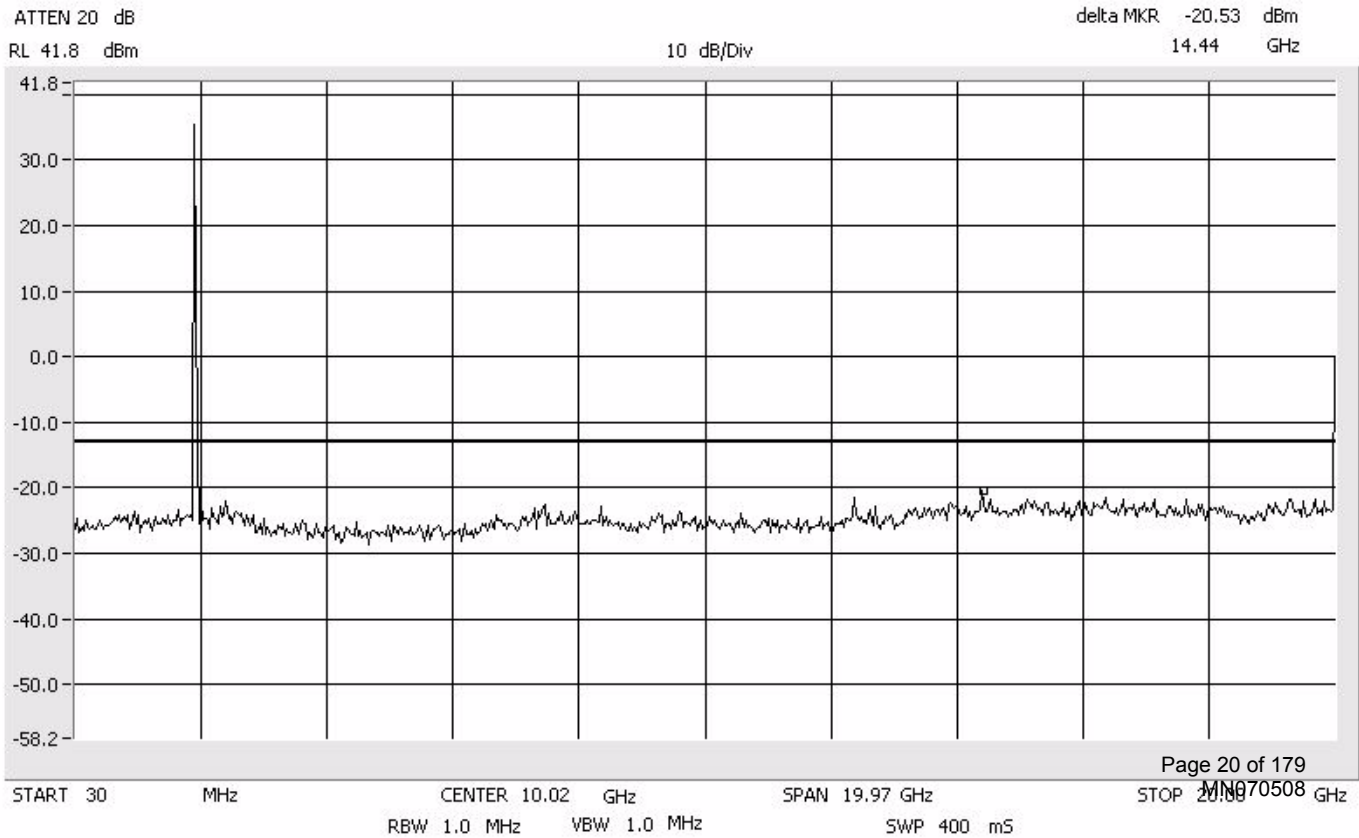
Center: 1957.5 MHz  
Span: 30 MHz  
RBW/VBW: 100 kHz



DBE Band

# Conducted Emissions Low PCS 1900 MHz

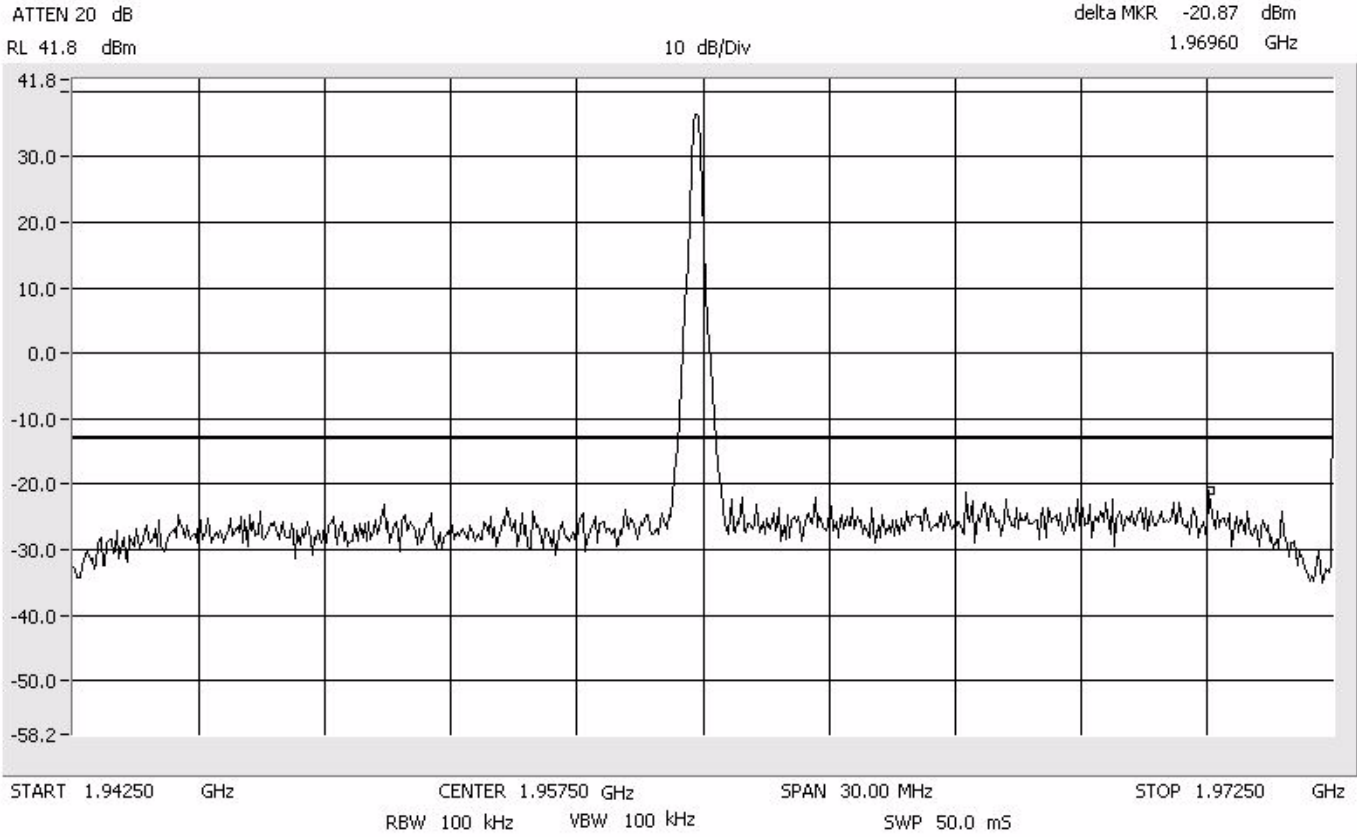
Span: 30 MHz to 20 GHz  
RBW/VBW: 1 MHz



DBE Band

# Conducted Emissions Mid PCS 1900 MHz

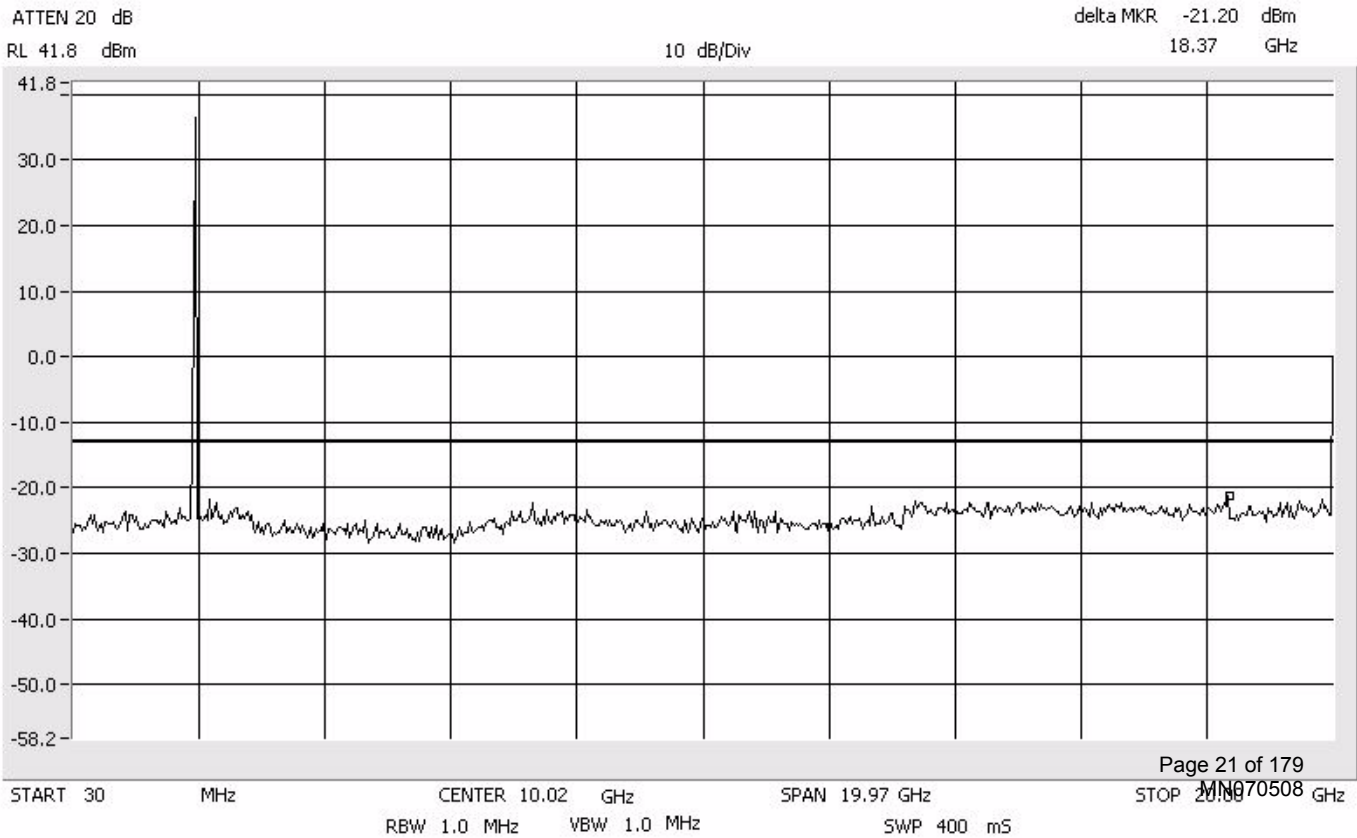
Center: 1957.5 MHz  
Span: 30 MHz  
RBW/VBW: 100 kHz



DBE Band

# Conducted Emissions Mid PCS 1900 MHz

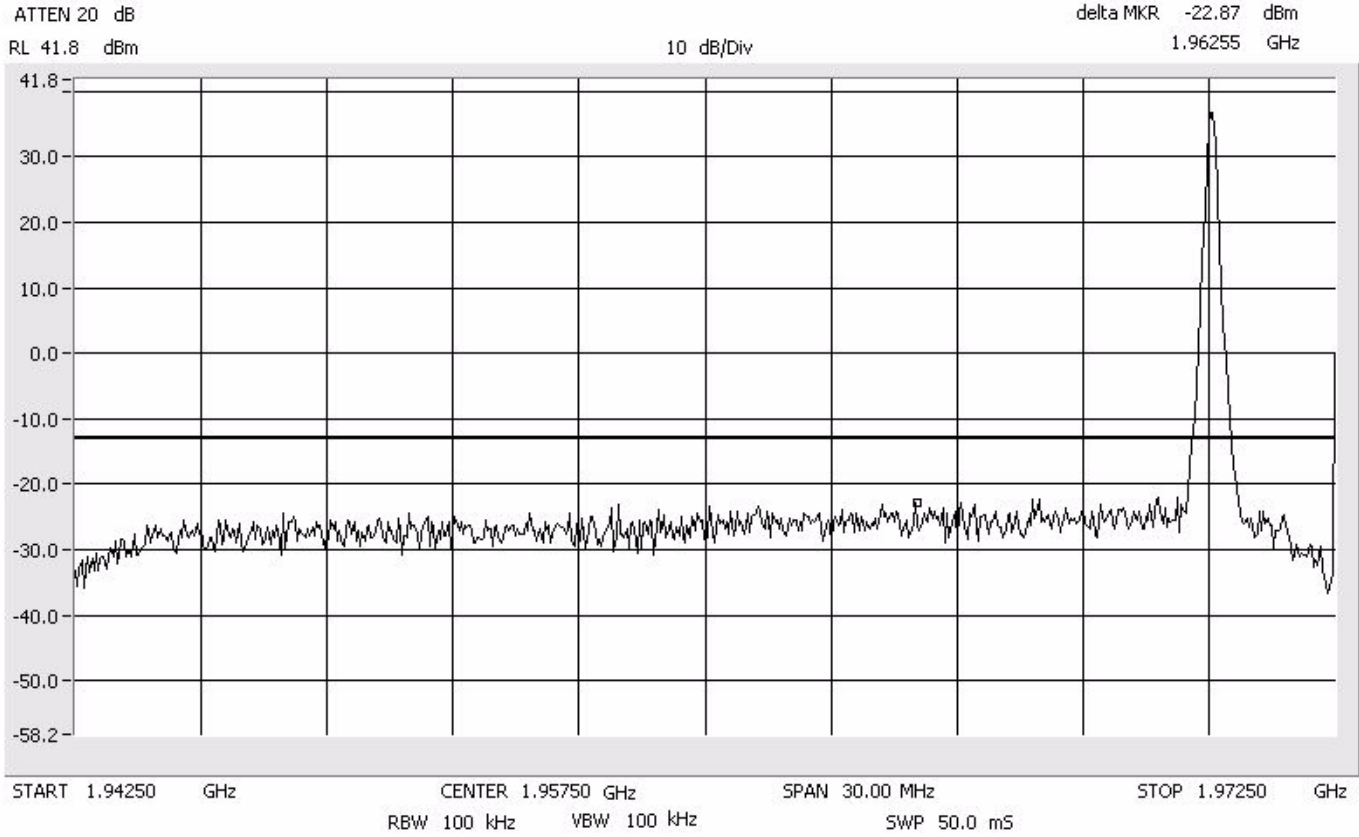
Span: 30 MHz to 20 GHz  
RBW/VBW: 1 MHz



DBE Band

# Conducted Emissions High PCS 1900 MHz

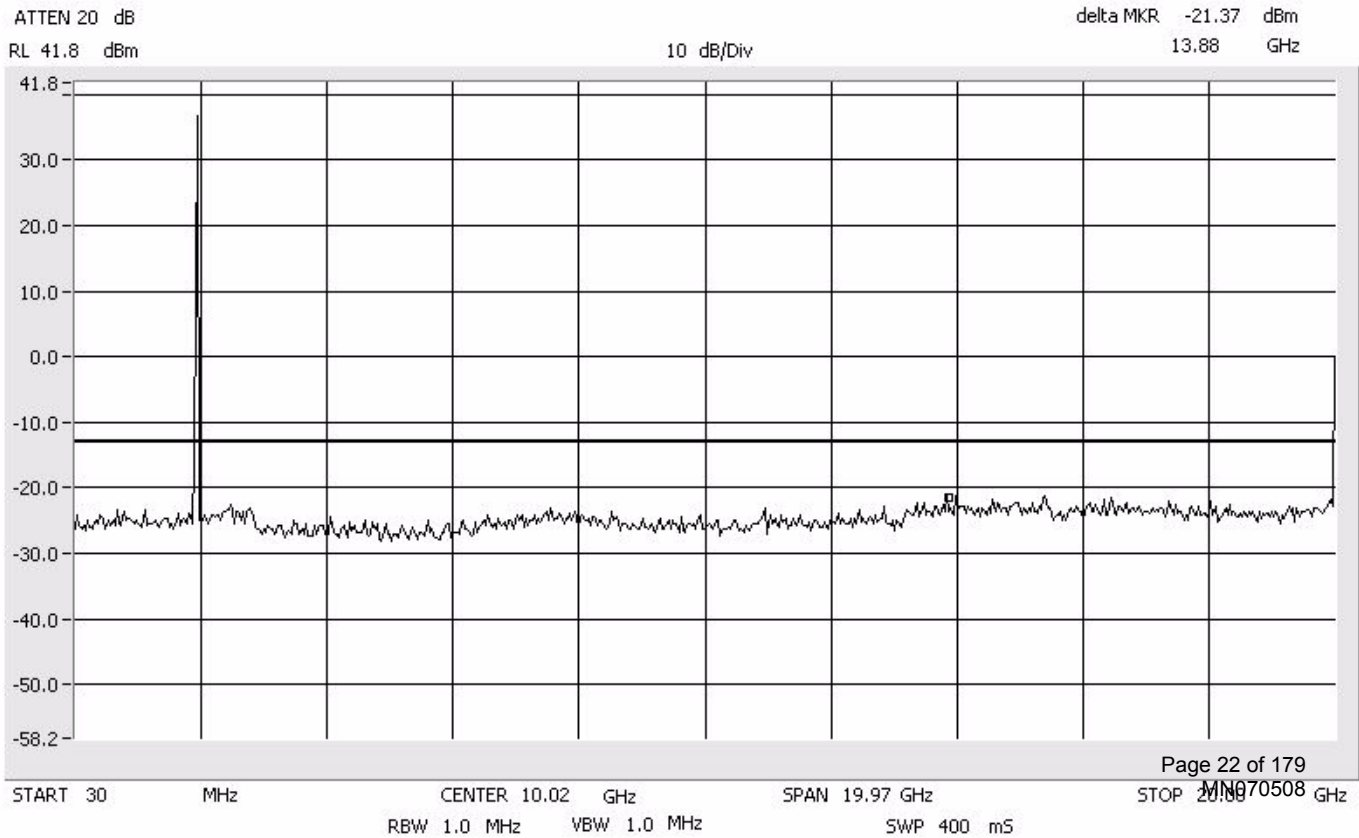
Center: 1957.5 MHz  
Span: 30 MHz  
RBW/VBW: 100 kHz



DBE Band

# Conducted Emissions High PCS 1900 MHz

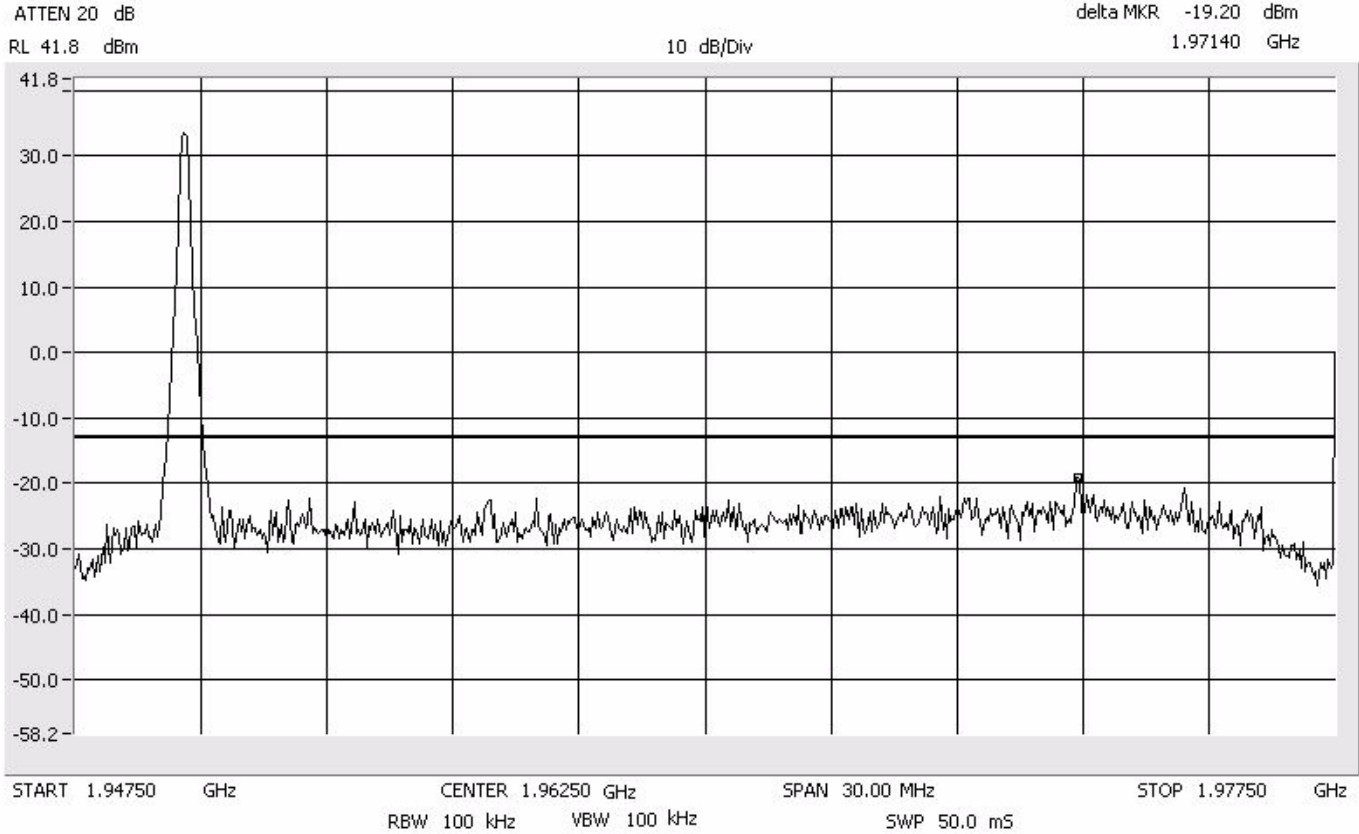
Span: 30 MHz to 20 GHz  
RBW/VBW: 1 MHz



BEF Band

# Conducted Emissions Low PCS 1900 MHz

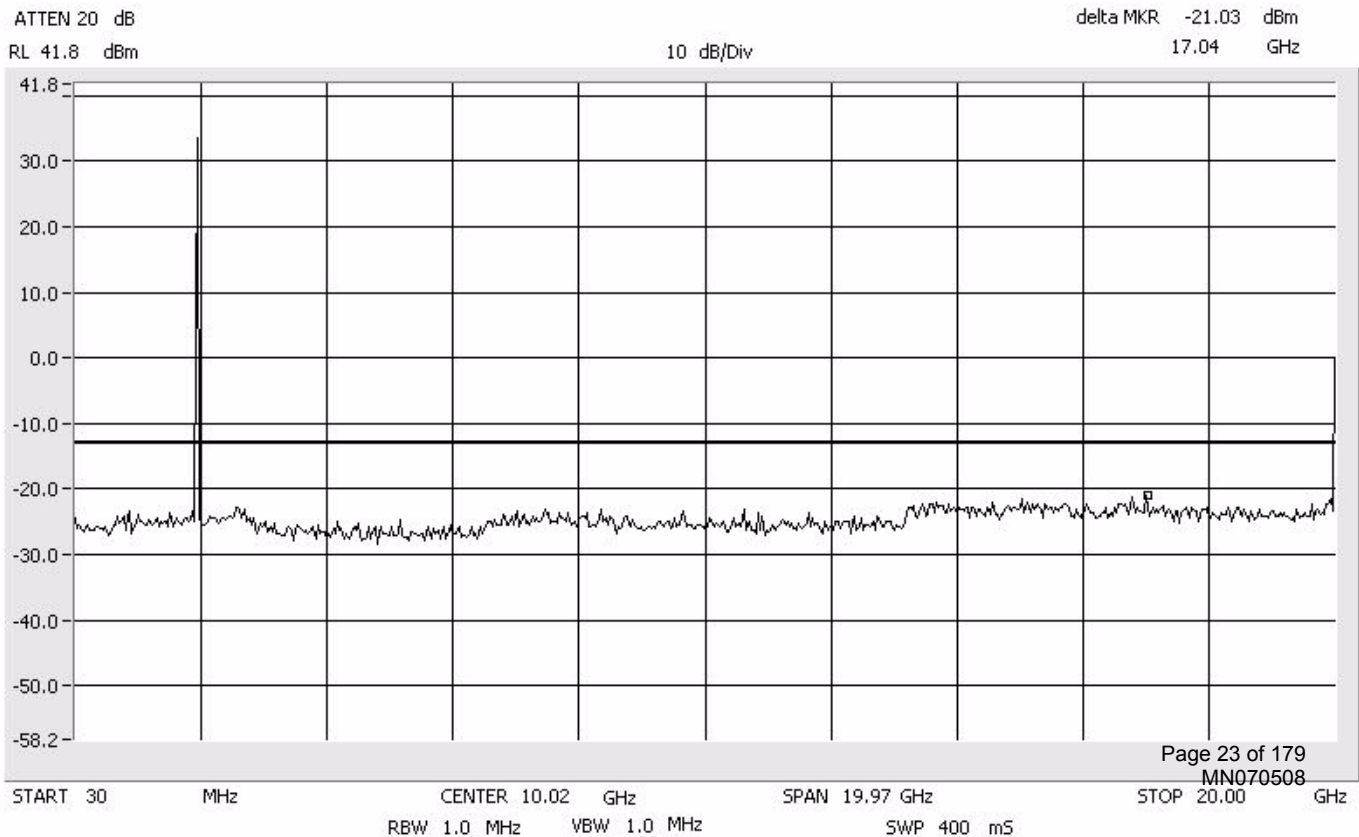
Center: 1962.5 MHz  
Span: 30 MHz  
RBW/VBW: 100 kHz



BEF Band

# Conducted Emissions Low PCS 1900 MHz

Span: 30 MHz to 20 GHz  
RBW/VBW: 1 MHz

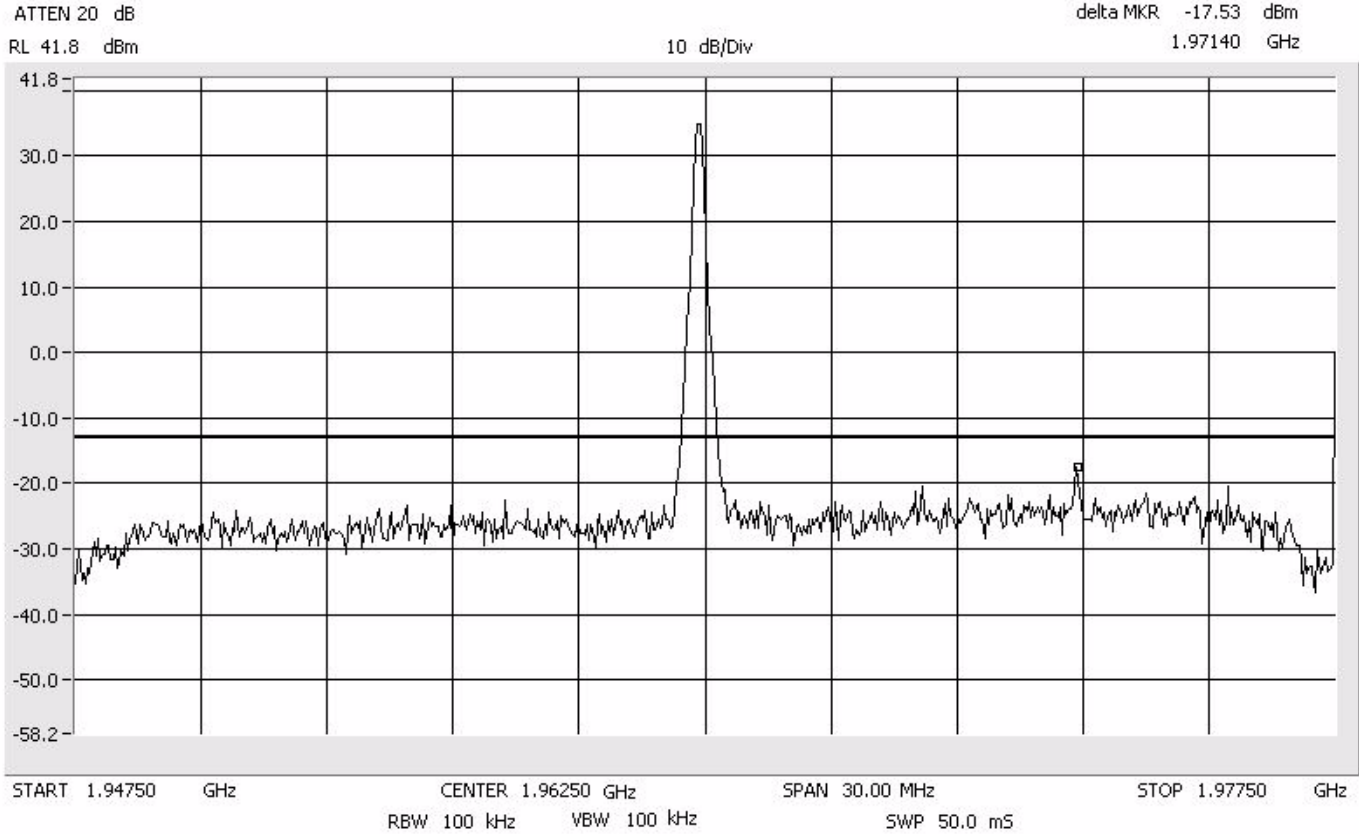




BEF Band

# Conducted Emissions Mid PCS 1900 MHz

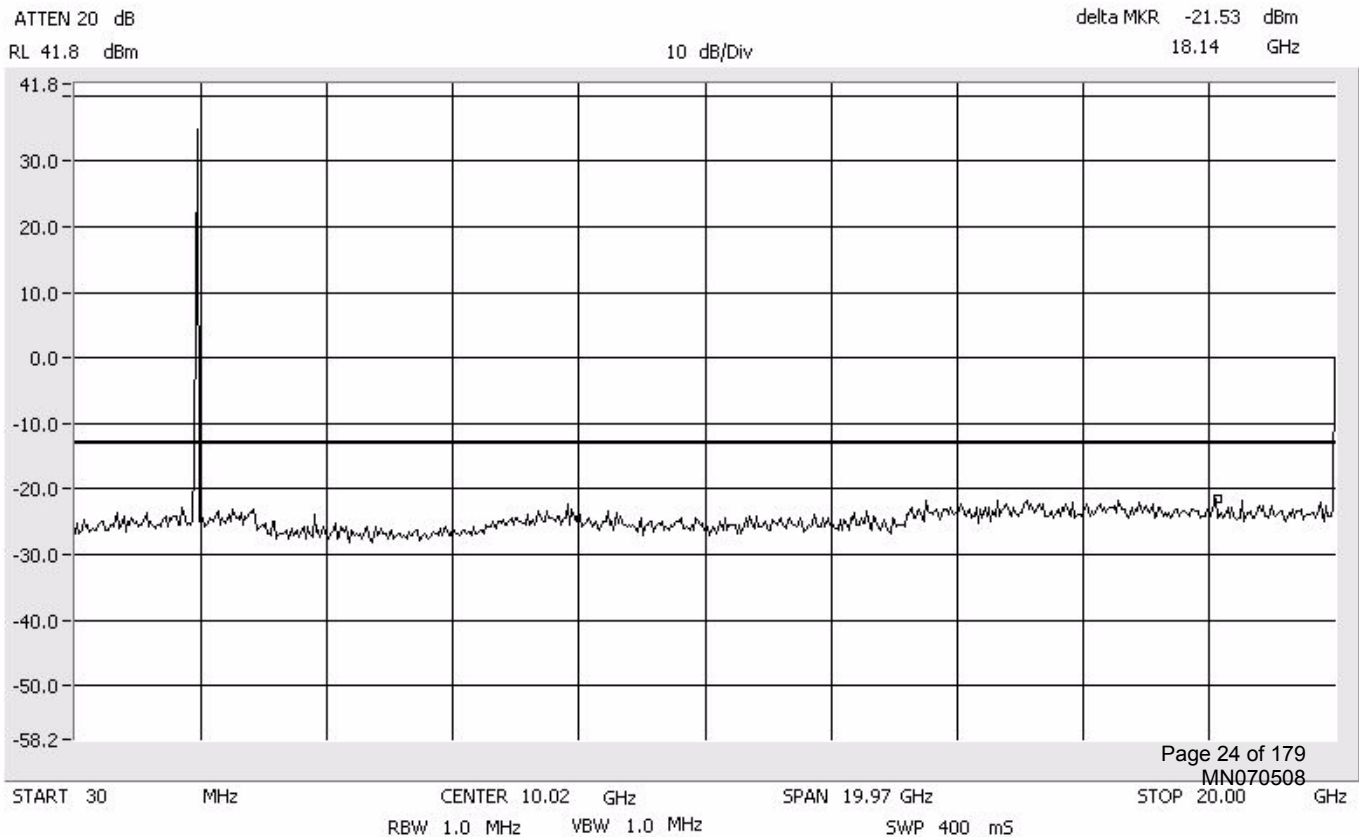
Center: 1962.5 MHz  
Span: 30 MHz  
RBW/VBW: 100 kHz



BEF Band

# Conducted Emissions Mid PCS 1900 MHz

Span: 30 MHz to 20 GHz  
RBW/VBW: 1 MHz

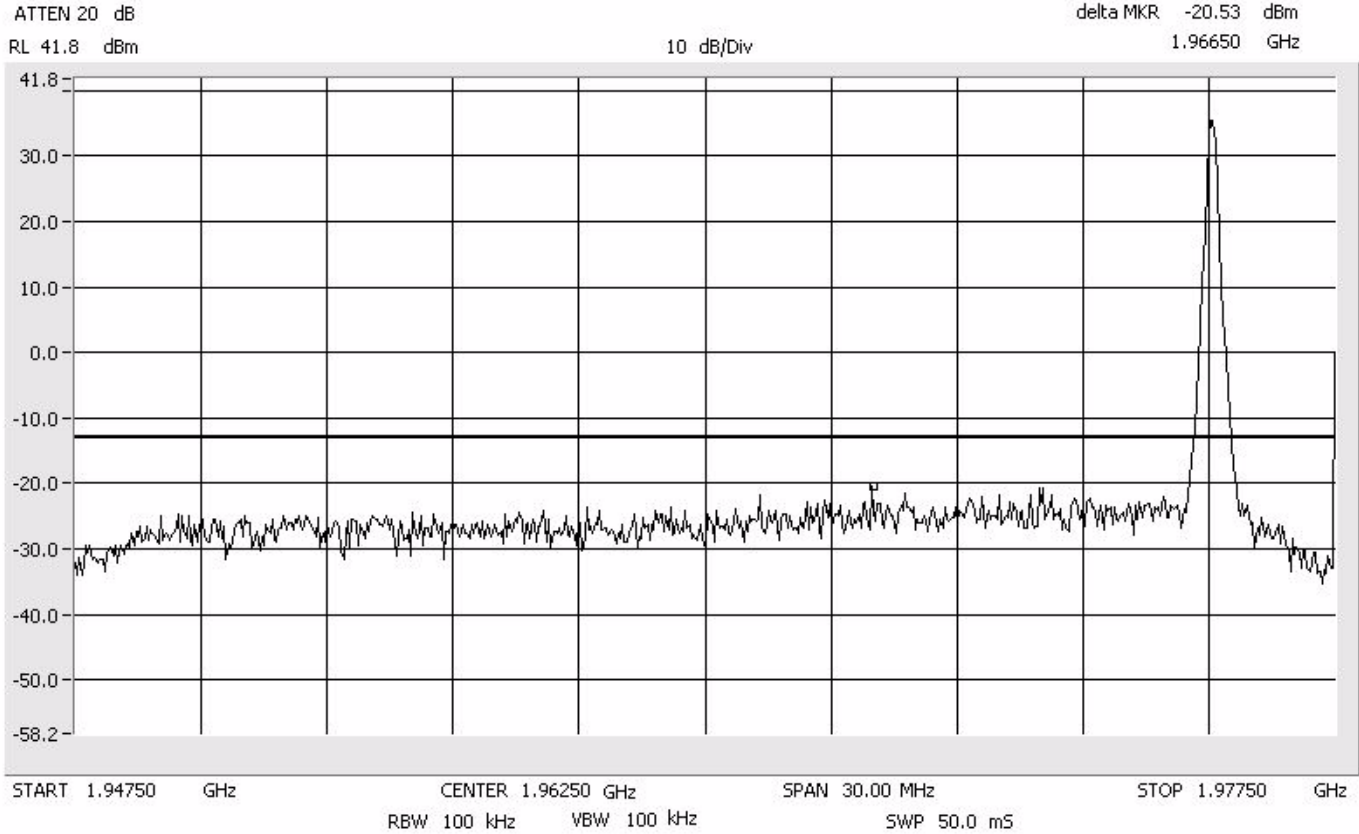




BEF Band

# Conducted Emissions High PCS 1900 MHz

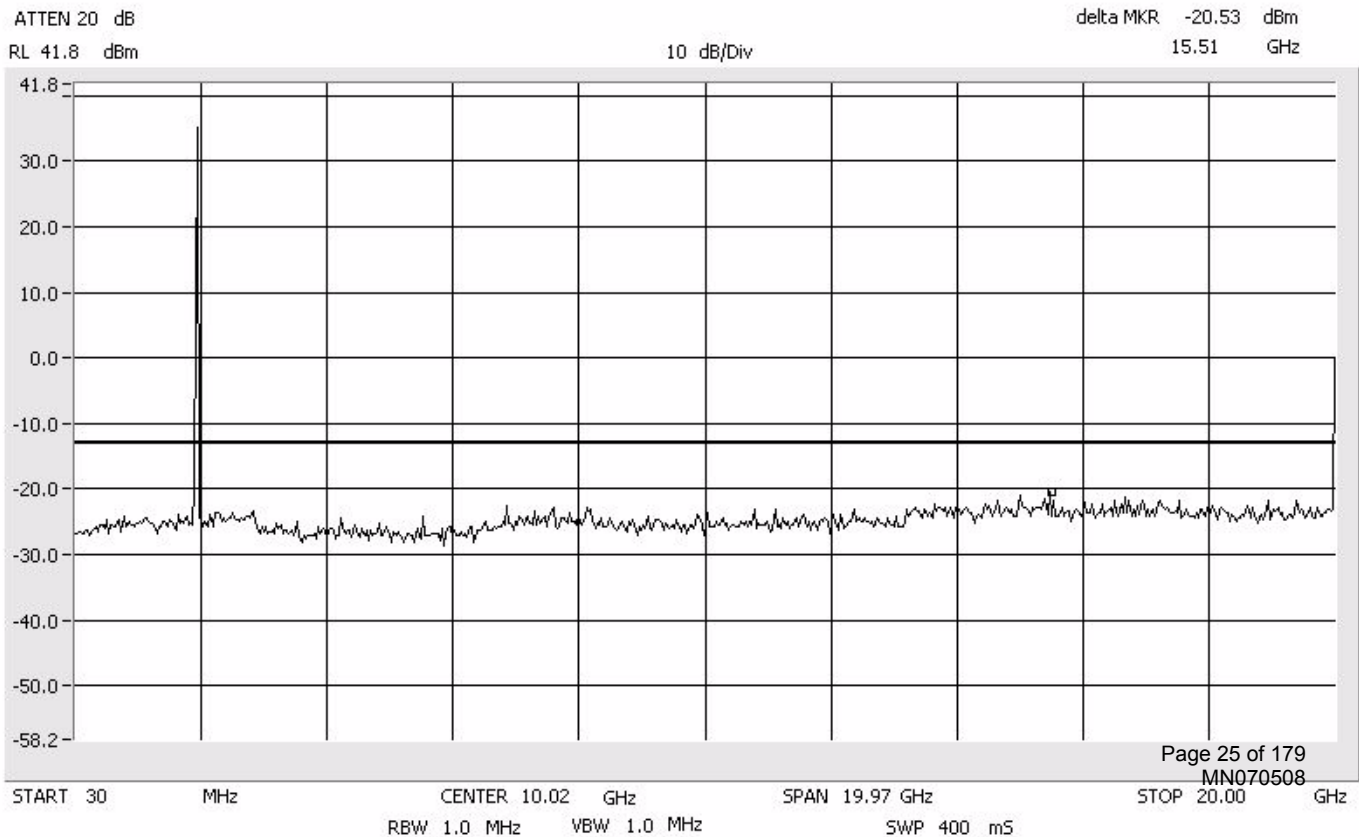
Center: 1962.5 MHz  
Span: 30 MHz  
RBW/VBW: 100 kHz



BEF Band

# Conducted Emissions High PCS 1900 MHz

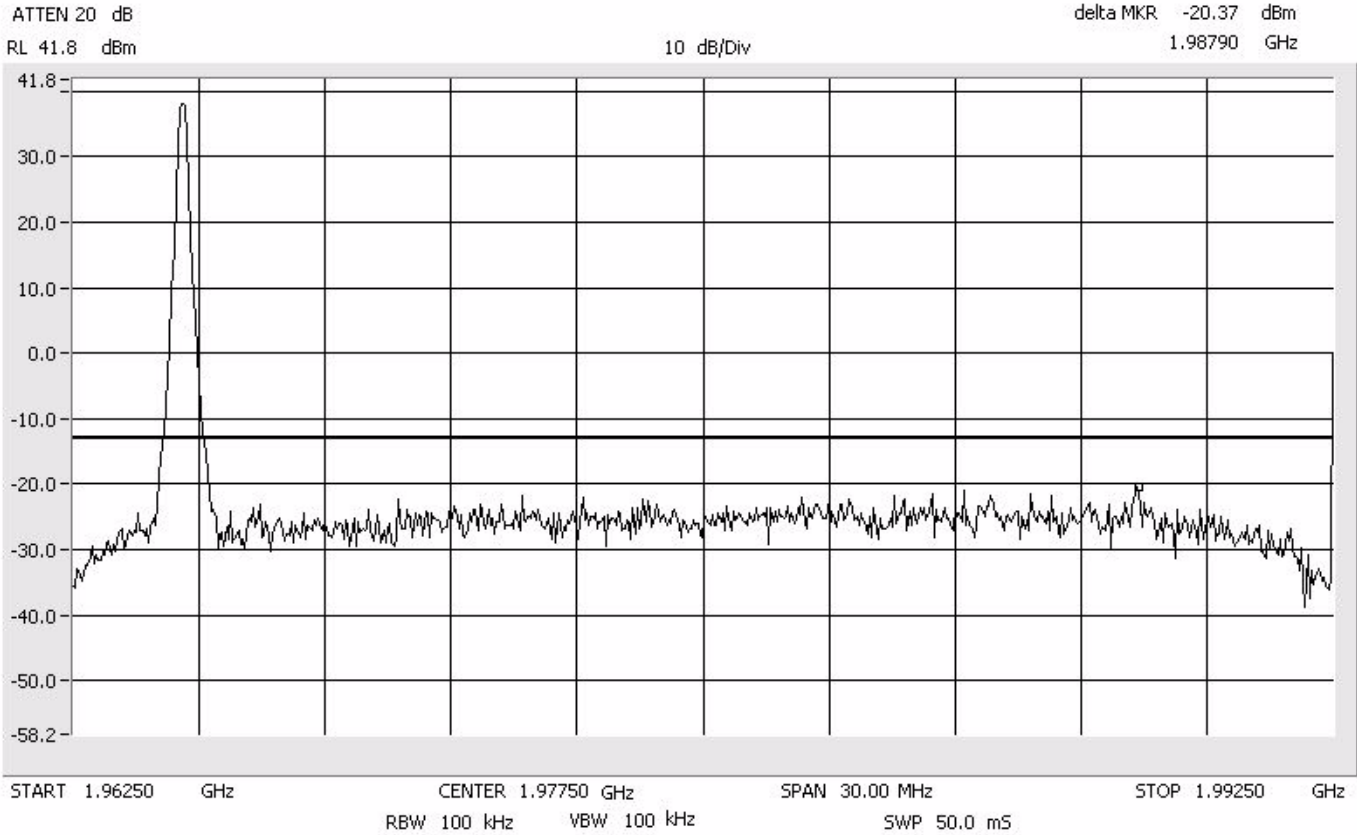
Span: 30 MHz to 20 GHz  
RBW/VBW: 1 MHz



EFC Band

# Conducted Emissions Low PCS 1900 MHz

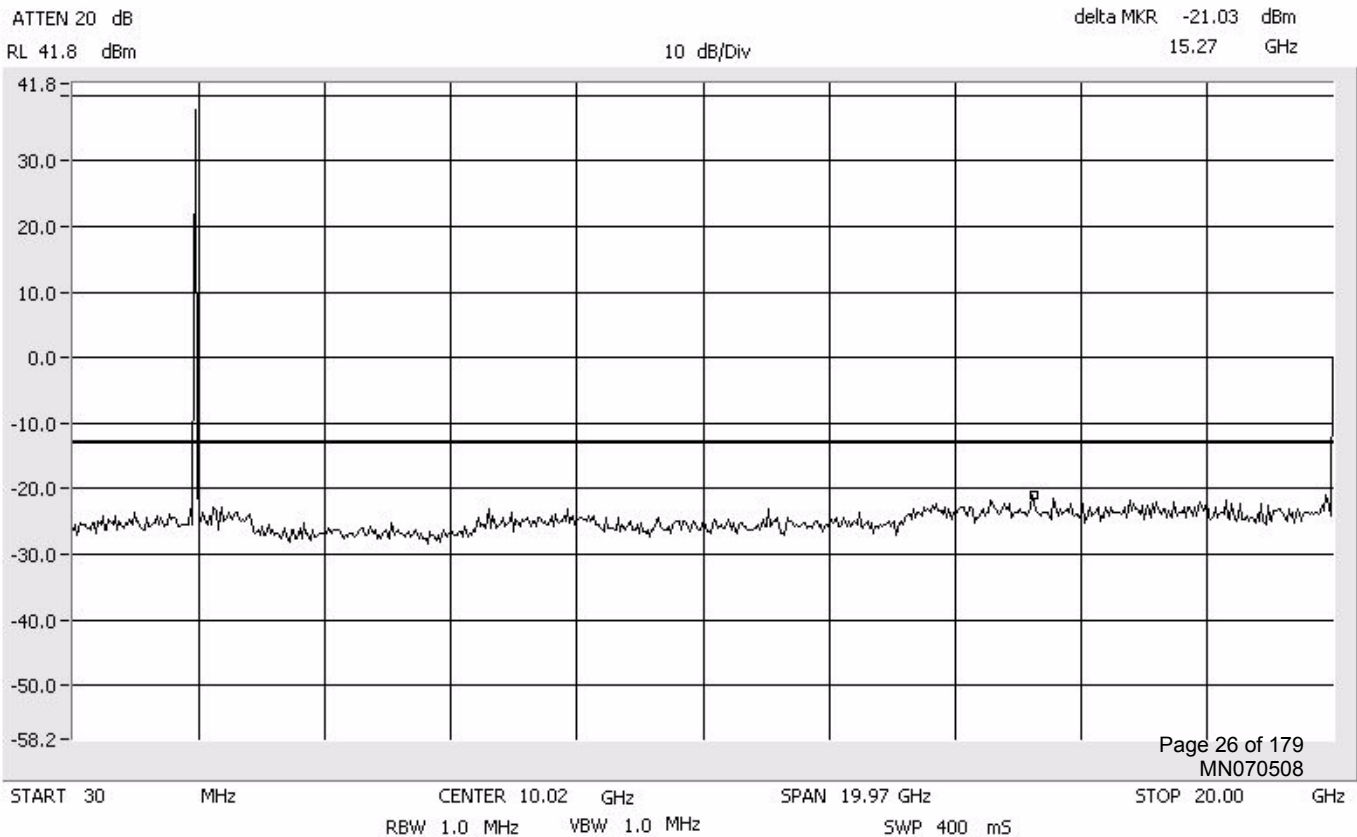
Center: 1977.5 MHz  
Span: 30 MHz  
RBW/VBW: 100 kHz



EFC Band

# Conducted Emissions Low PCS 1900 MHz

Span: 30 MHz to 20 GHz  
RBW/VBW: 1 MHz



EFC Band

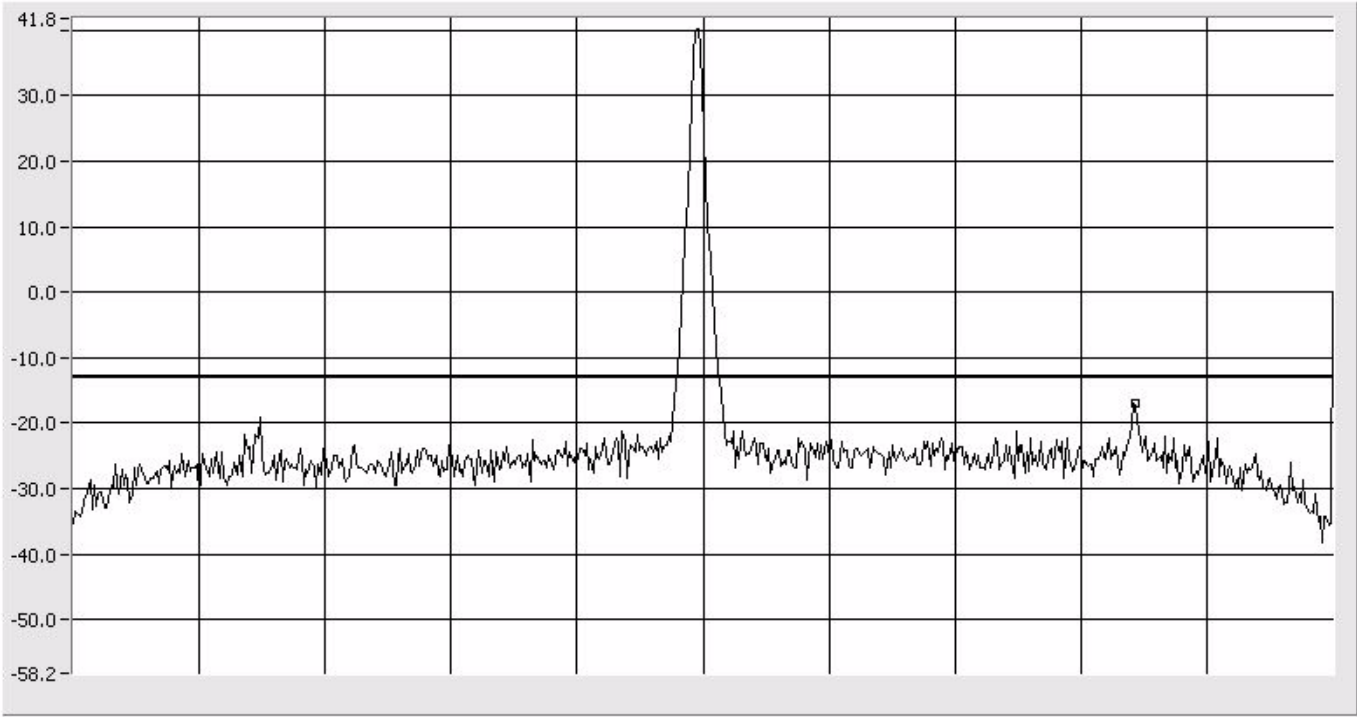
# Conducted Emissions Mid PCS 1900 MHz

Center: 1977.5 MHz  
Span: 30 MHz  
RBW/VBW: 100 kHz

ATTEN 20 dB  
RL 41.8 dBm

delta MKR -16.87 dBm  
1.98780 GHz

10 dB/Div



START 1.96250 GHz      CENTER 1.97750 GHz      SPAN 30.00 MHz      STOP 1.99250 GHz  
RBW 100 kHz      VBW 100 kHz      SWP 50.0 mS

EFC Band

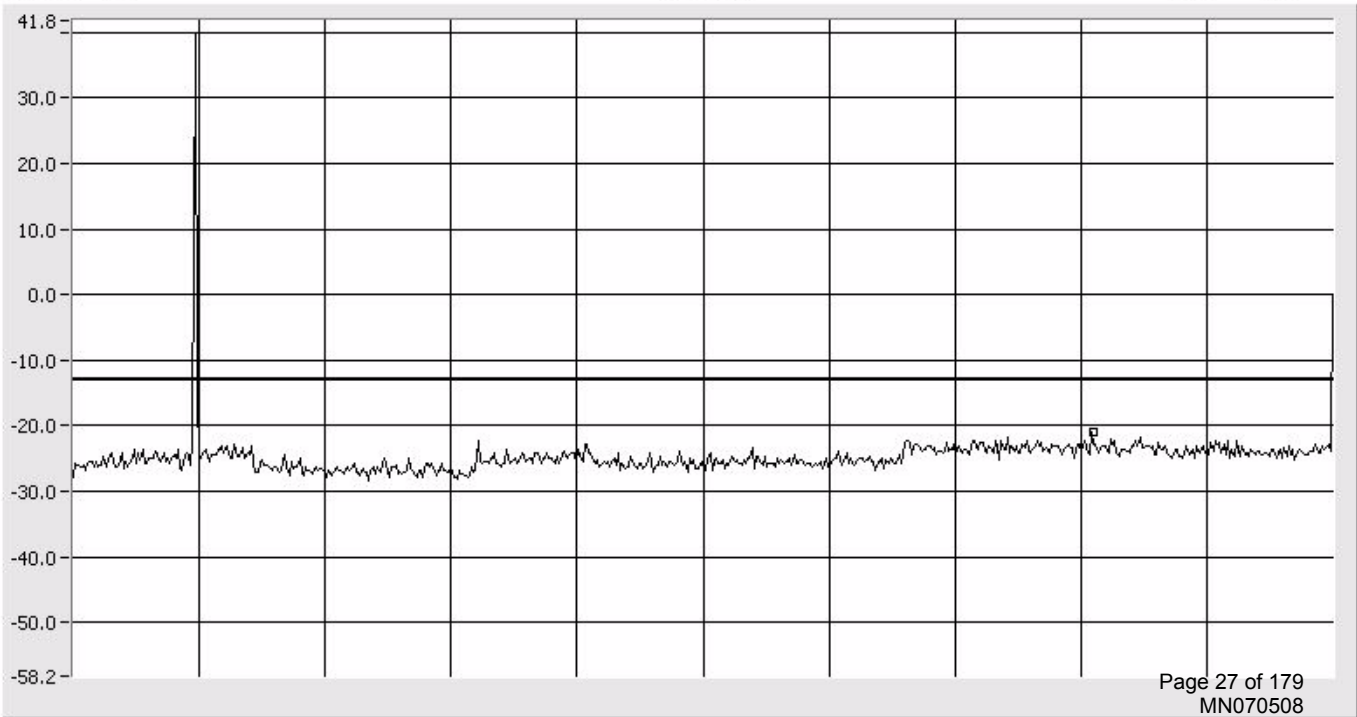
# Conducted Emissions Mid PCS 1900 MHz

Span: 30 MHz to 20 GHz  
RBW/VBW: 1 MHz

ATTEN 20 dB  
RL 41.8 dBm

delta MKR -21.03 dBm  
16.21 GHz

10 dB/Div

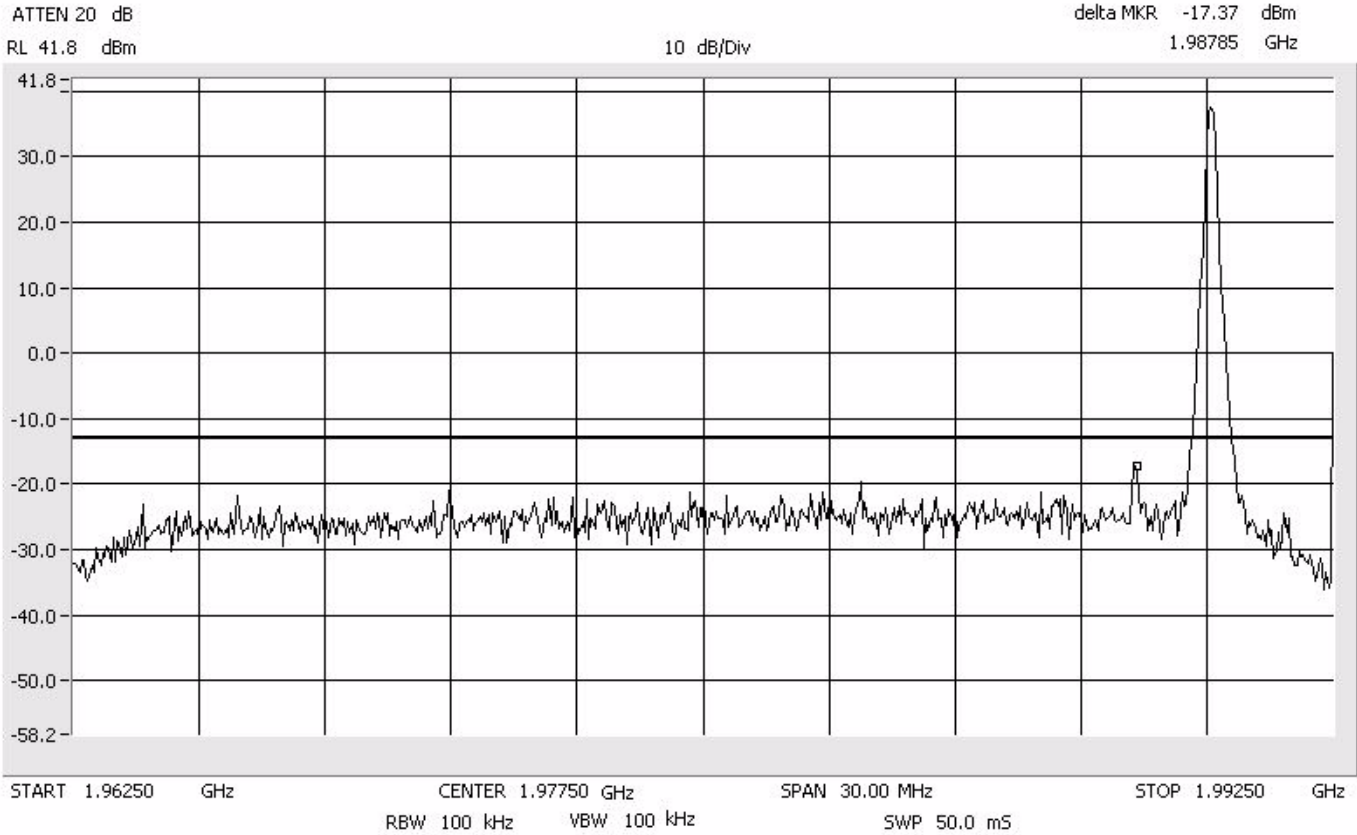


START 30 MHz      CENTER 10.02 GHz      SPAN 19.97 GHz      STOP 20.00 GHz  
RBW 1.0 MHz      VBW 1.0 MHz      SWP 400 mS

EFC Band

# Conducted Emissions High PCS 1900 MHz

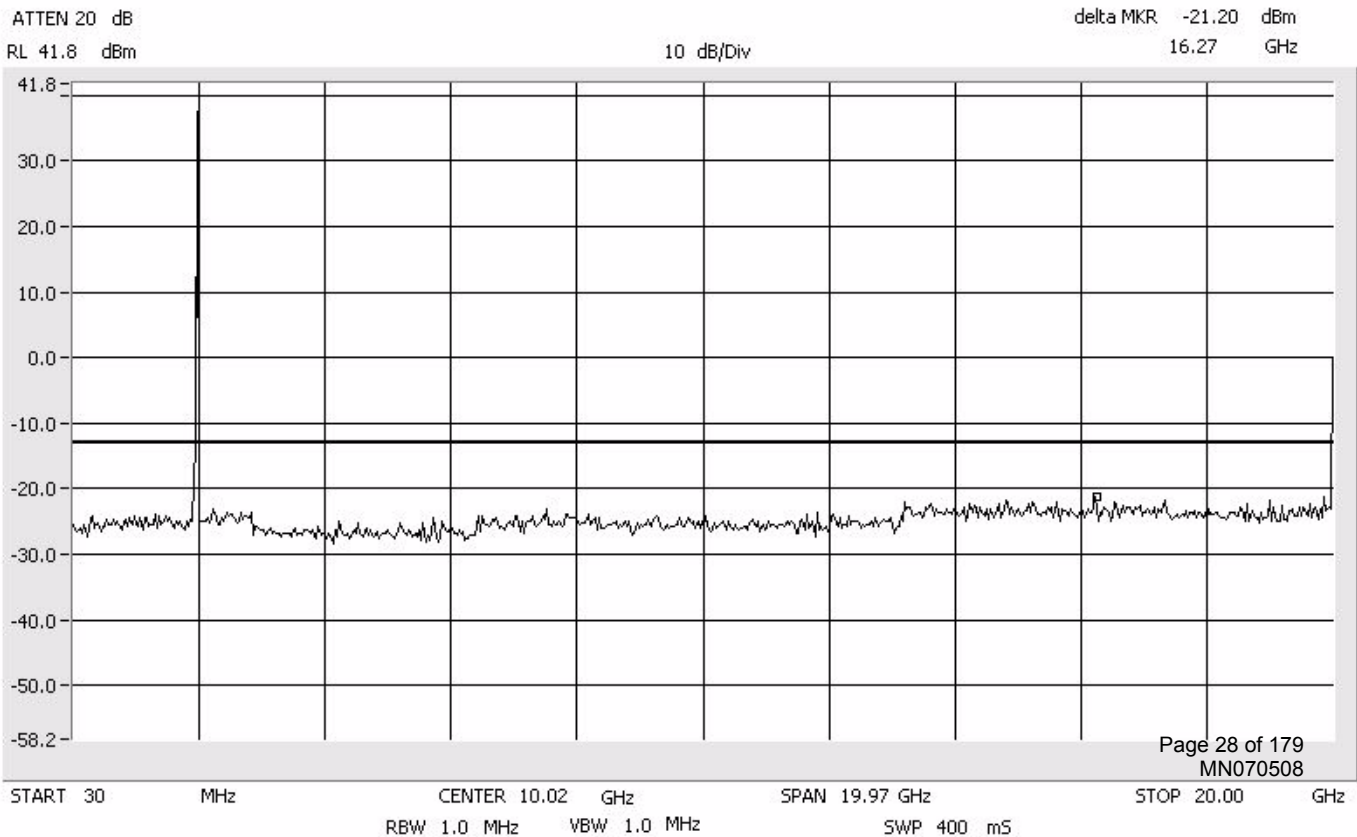
Center: 1977.5 MHz  
Span: 30 MHz  
RBW/VBW: 100 kHz



EFC Band

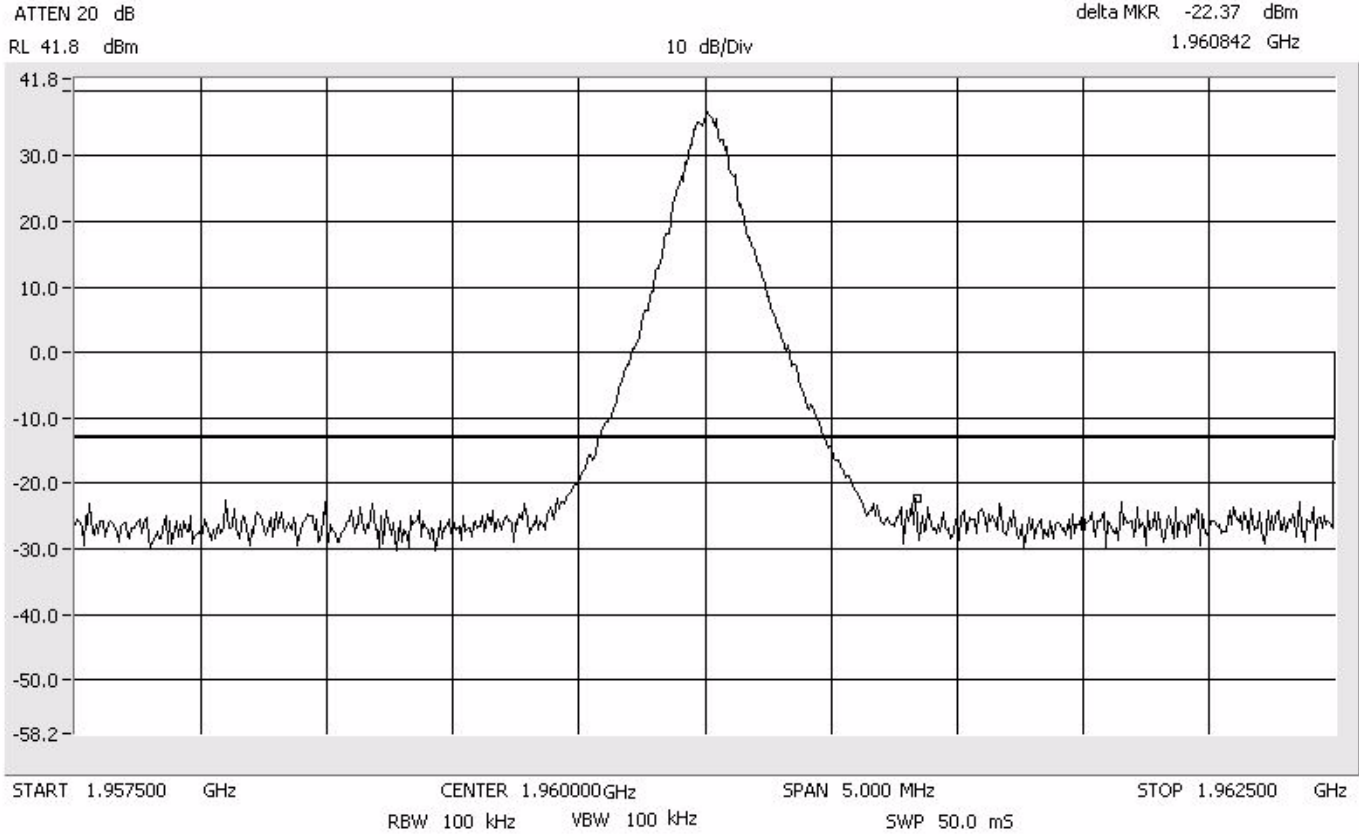
# Conducted Emissions High PCS 1900 MHz

Span: 30 MHz to 20 GHz  
RBW/VBW: 1 MHz



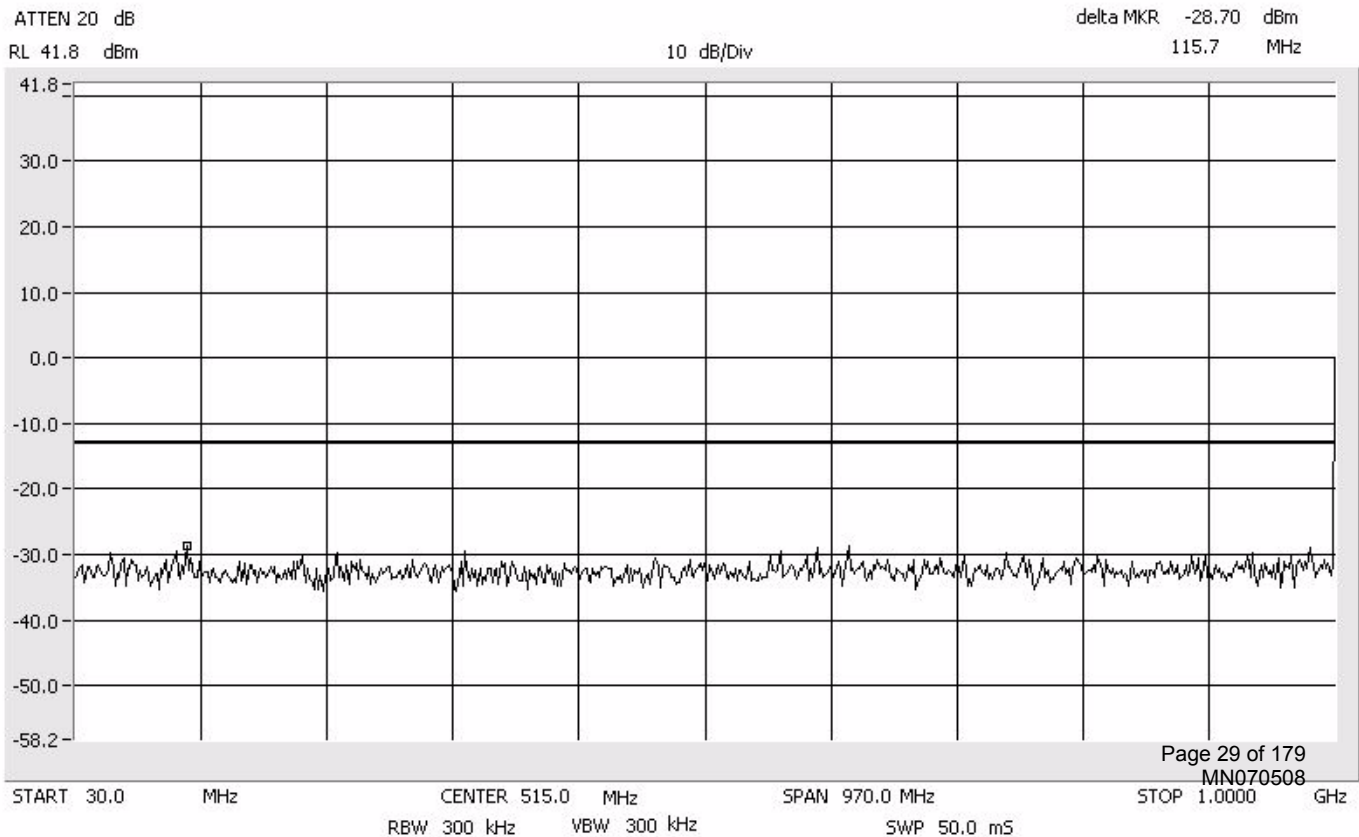
# Conducted Emissions TDMA 1900 MHz

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



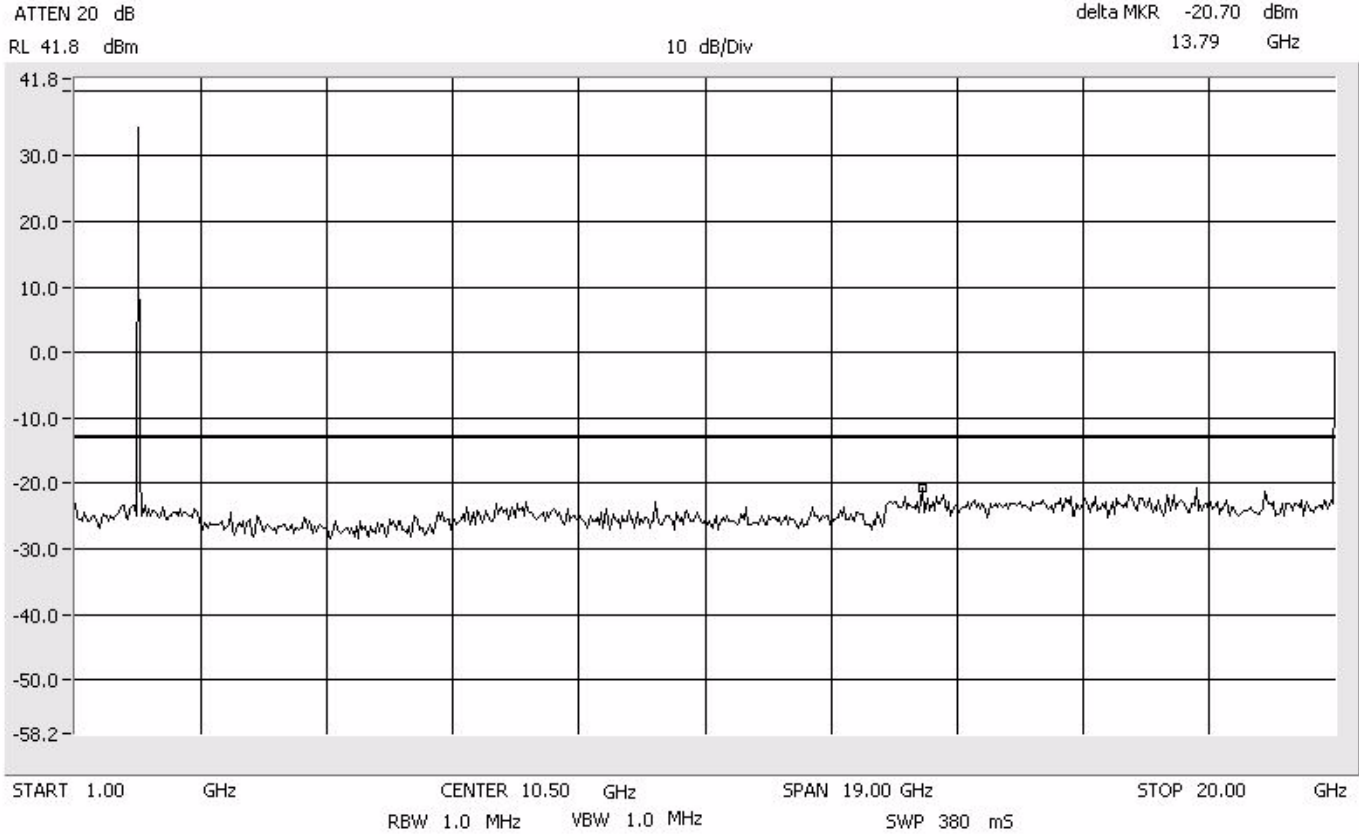
# Conducted Emissions TDMA 1900 MHz

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



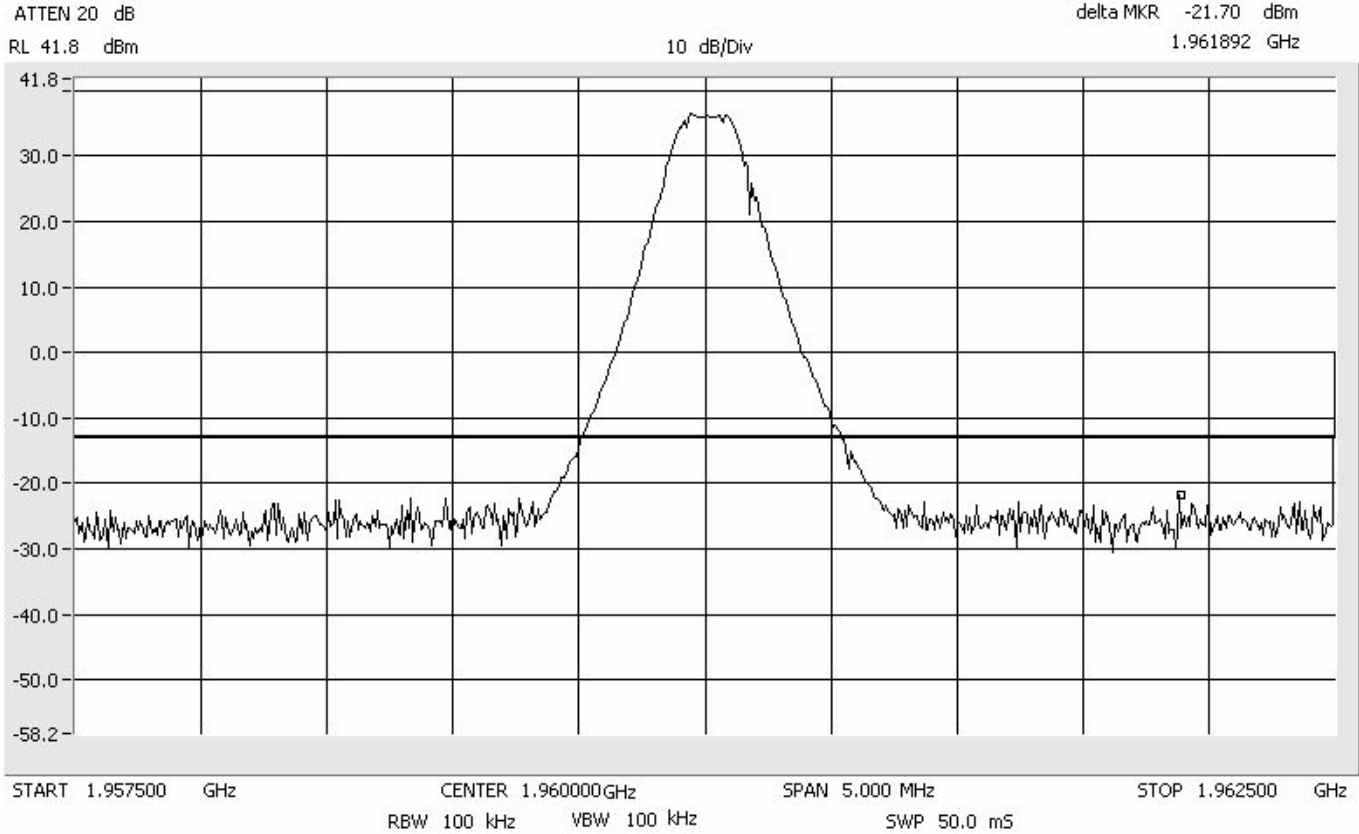
# Conducted Emissions TDMA 1900 MHz

1 GHz to 10 GHz  
RBW/VBW: 1 MHz



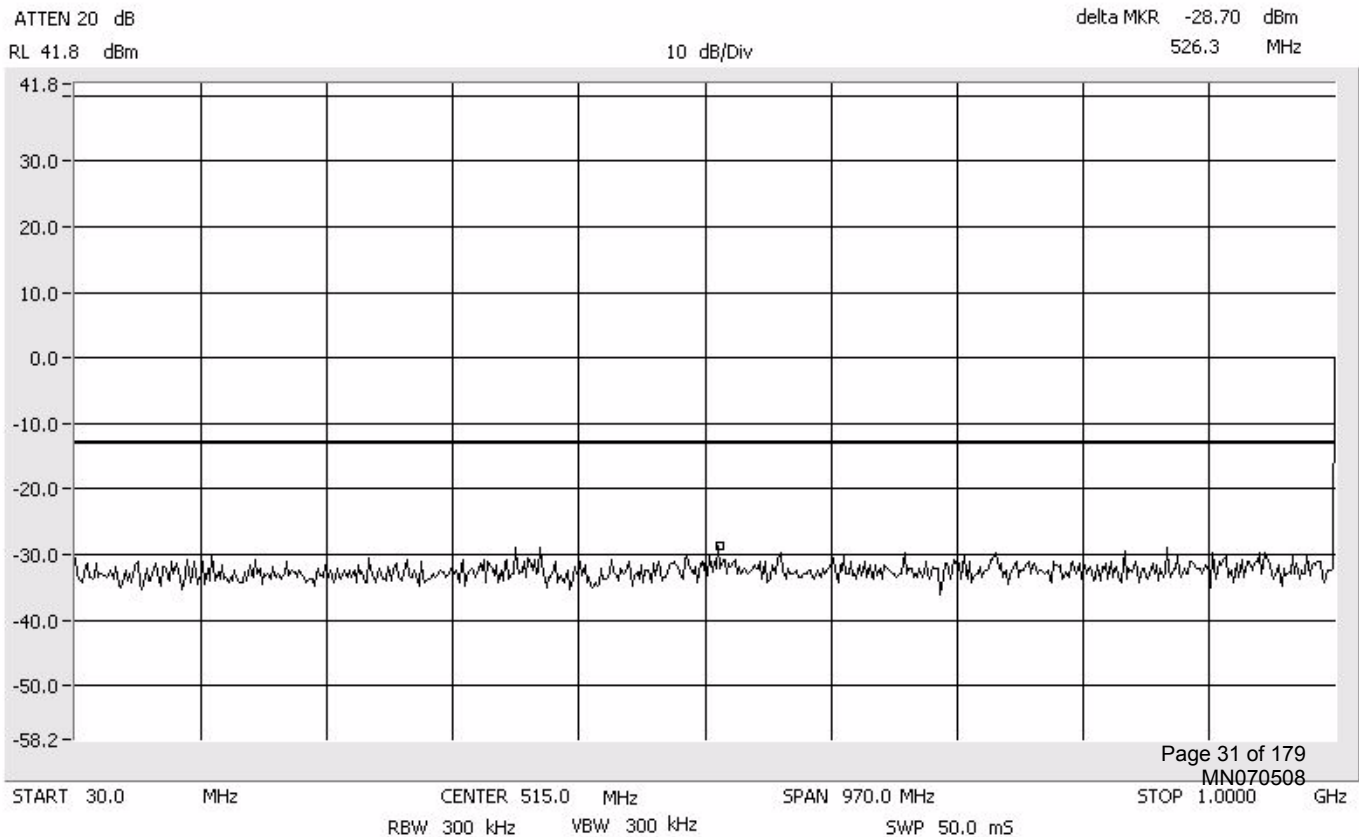
# Conducted Emissions GSM 1900 MHz

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



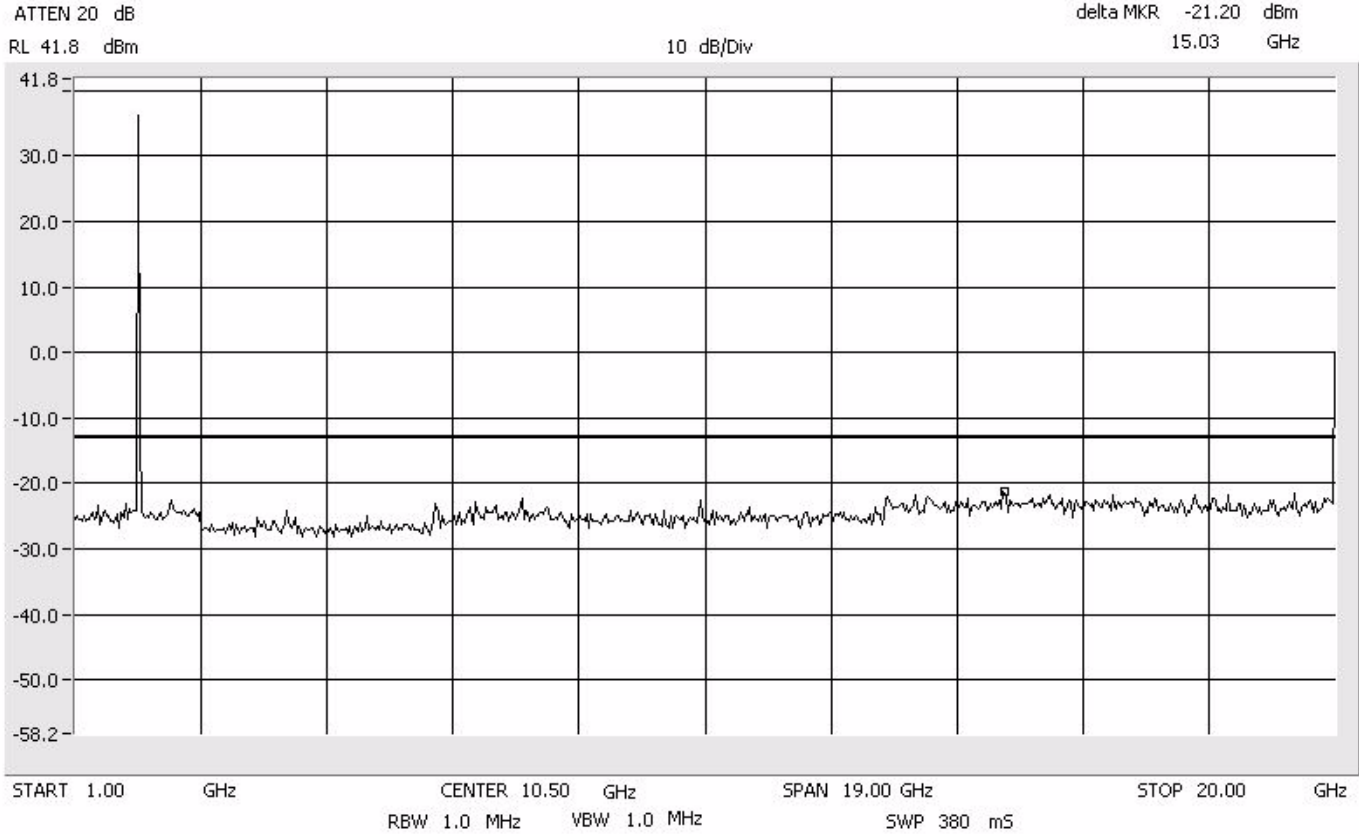
# Conducted Emissions GSM 1900 MHz

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



# Conducted Emissions GSM 1900 MHz

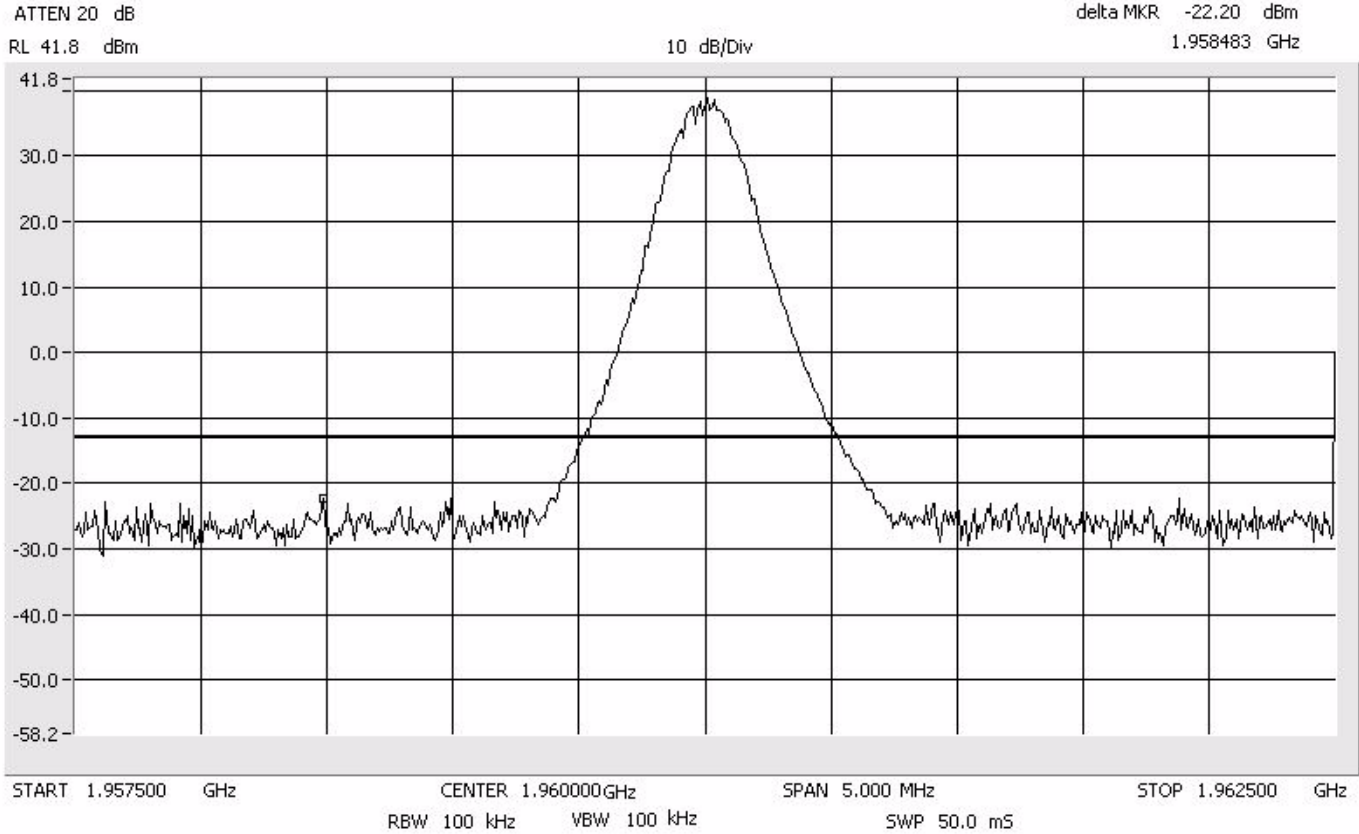
1 GHz to 20 GHz  
RBW/VBW: 1 MHz





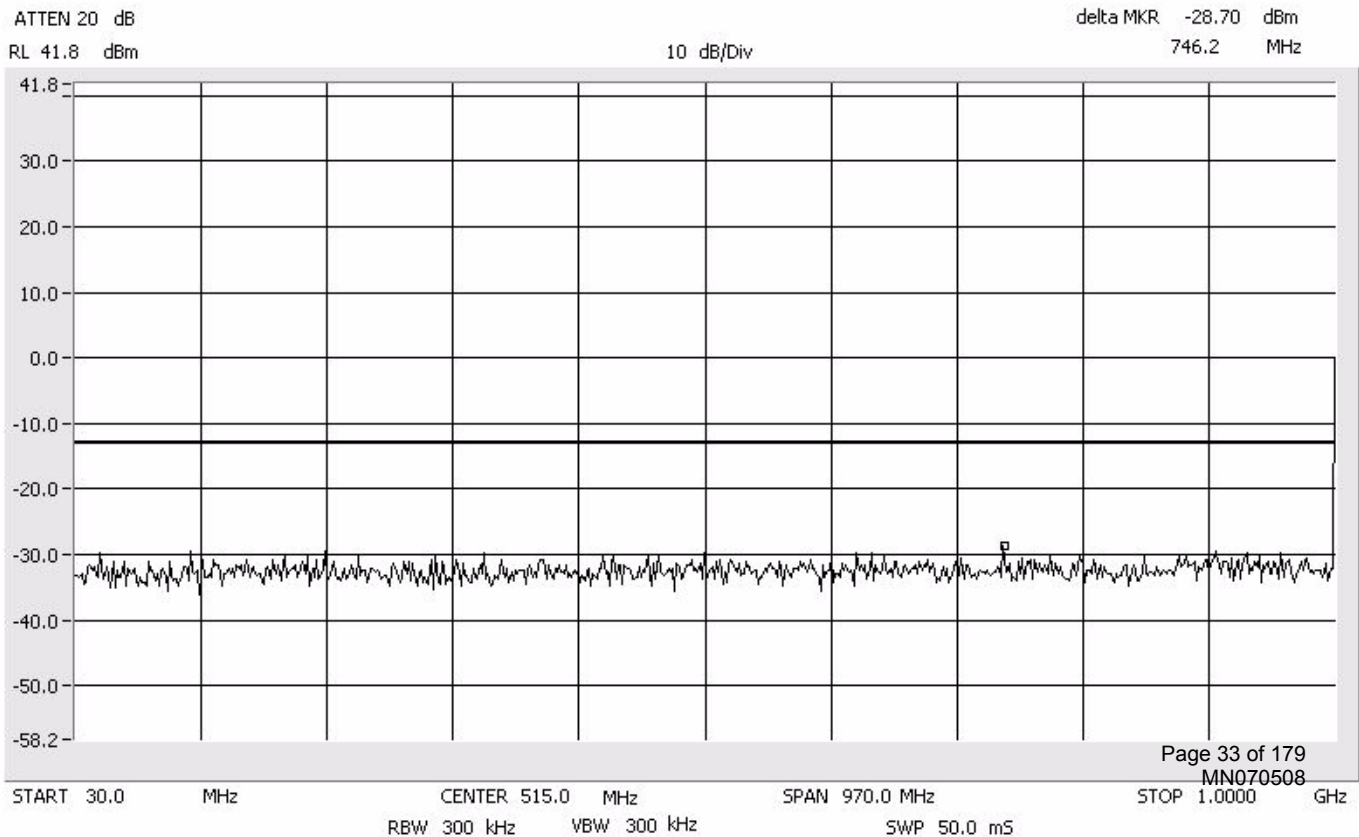
# Conducted Emissions EDGE 1900 MHz

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



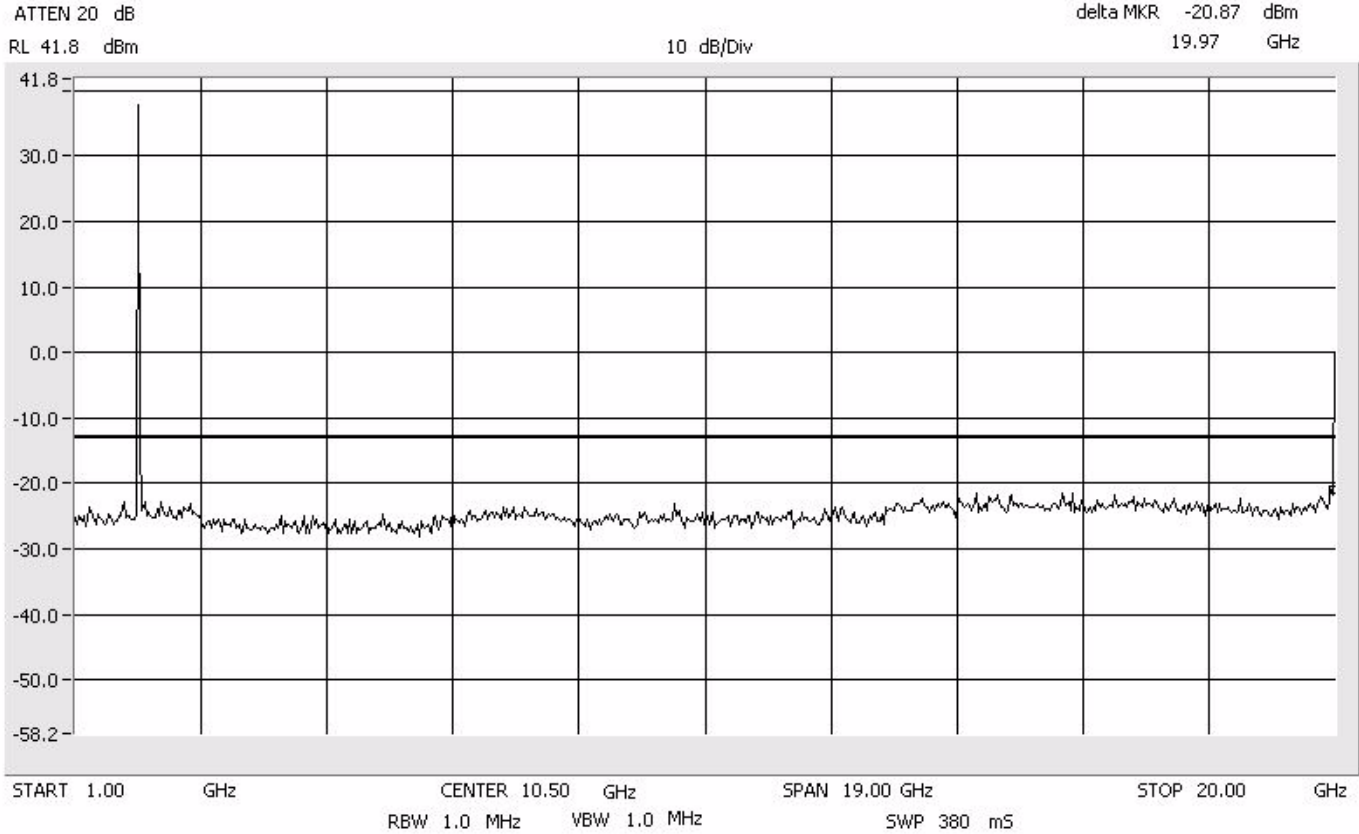
# Conducted Emissions EDGE 1900 MHz

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



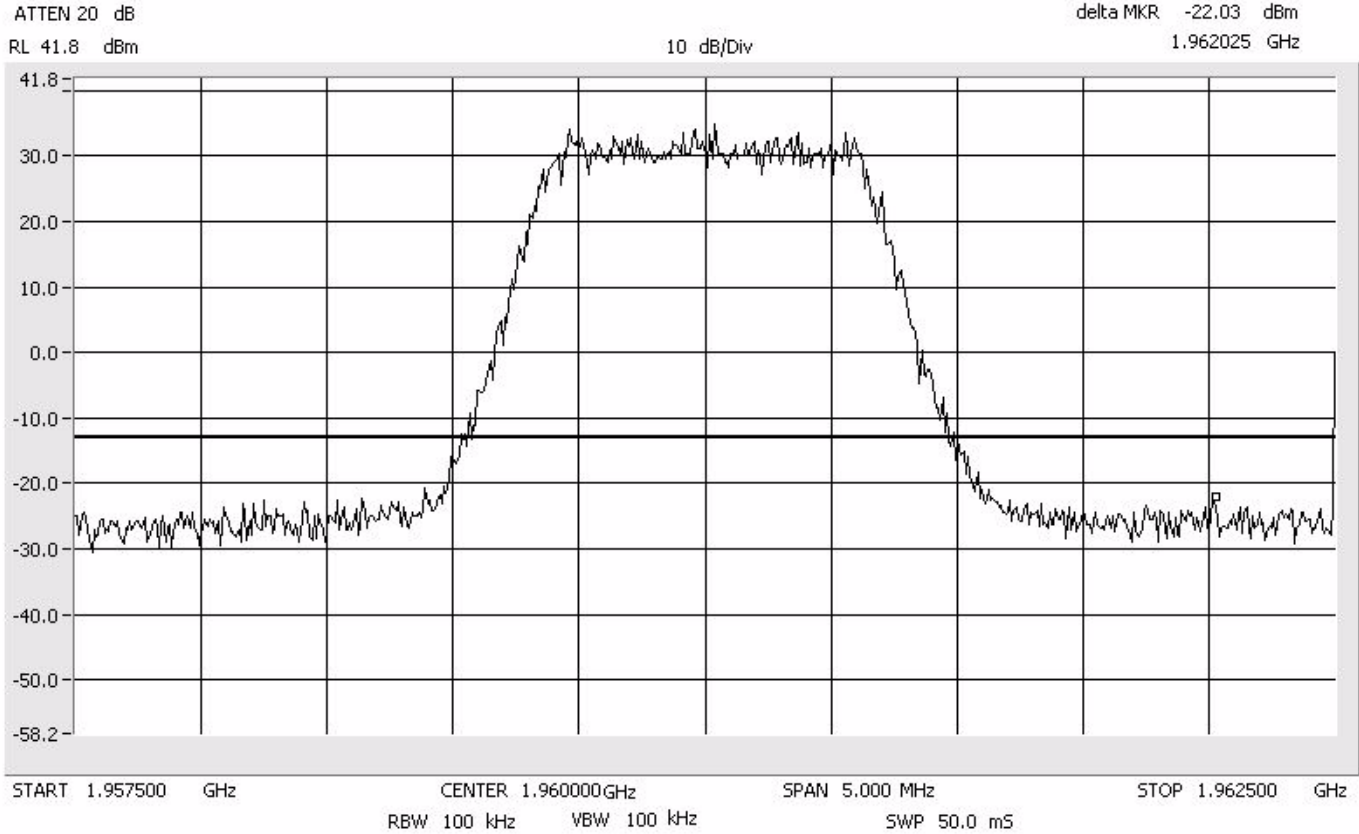
# Conducted Emissions EDGE 1900 MHz

1 GHz to 20 GHz  
RBW/VBW: 1 MHz



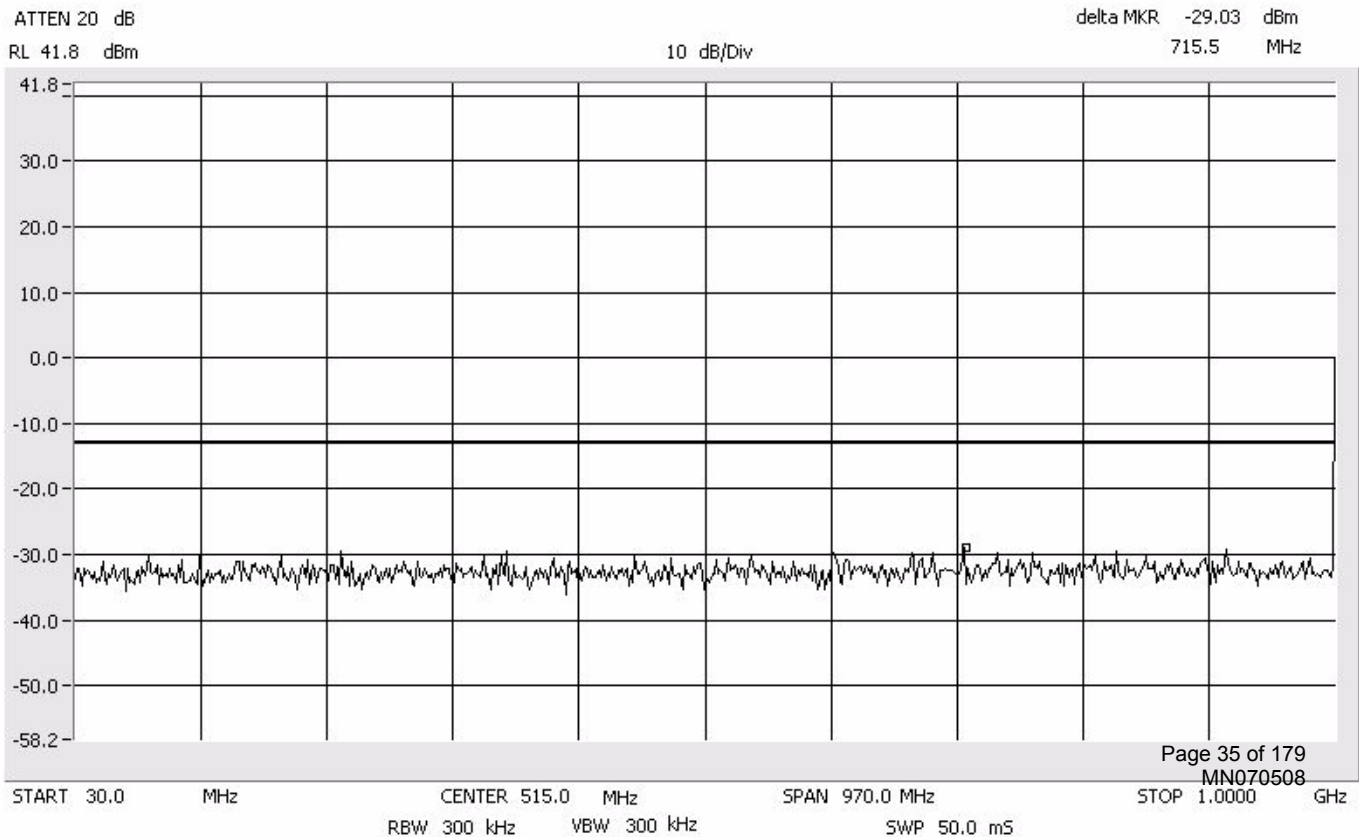
# Conducted Emissions CDMA 1900 MHz

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



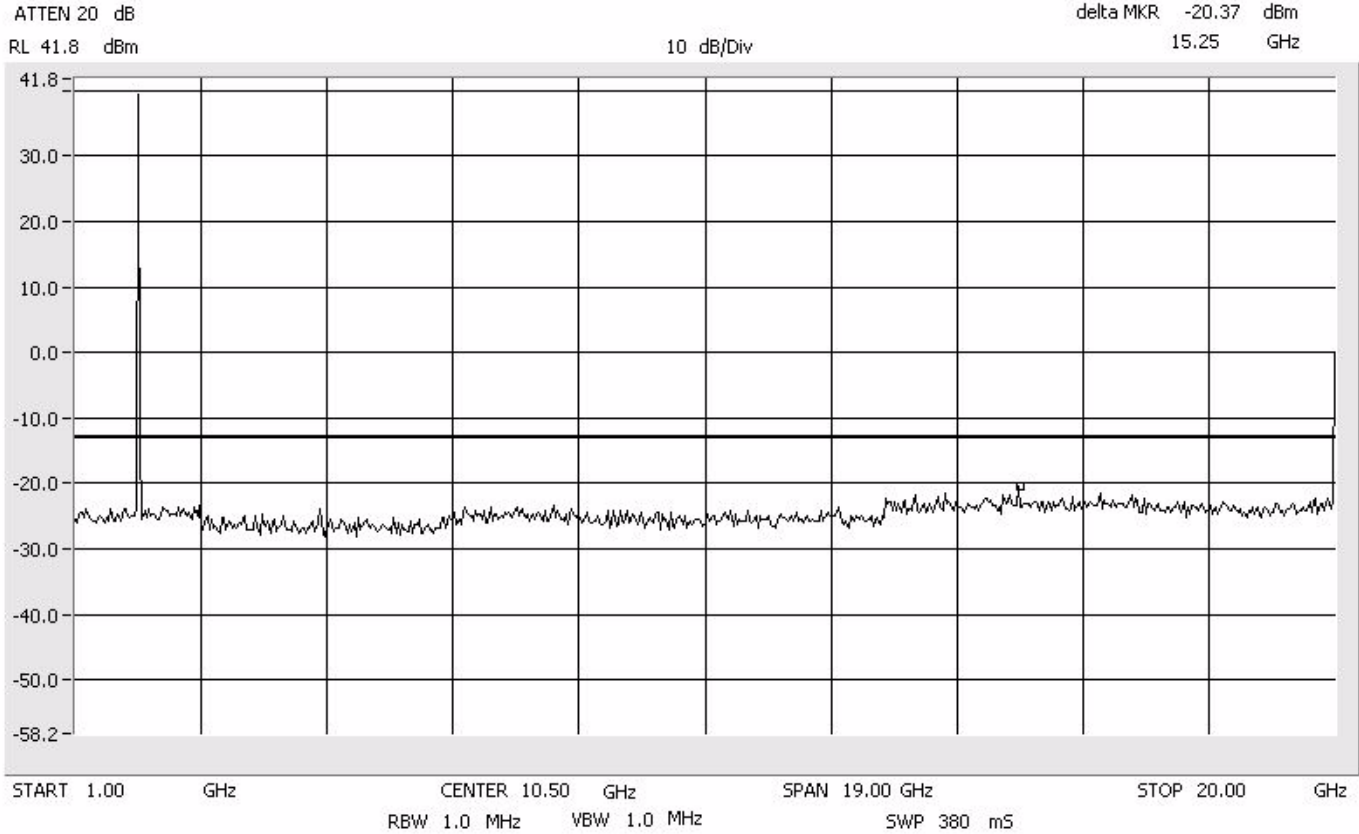
# Conducted Emissions CDMA 1900 MHz

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



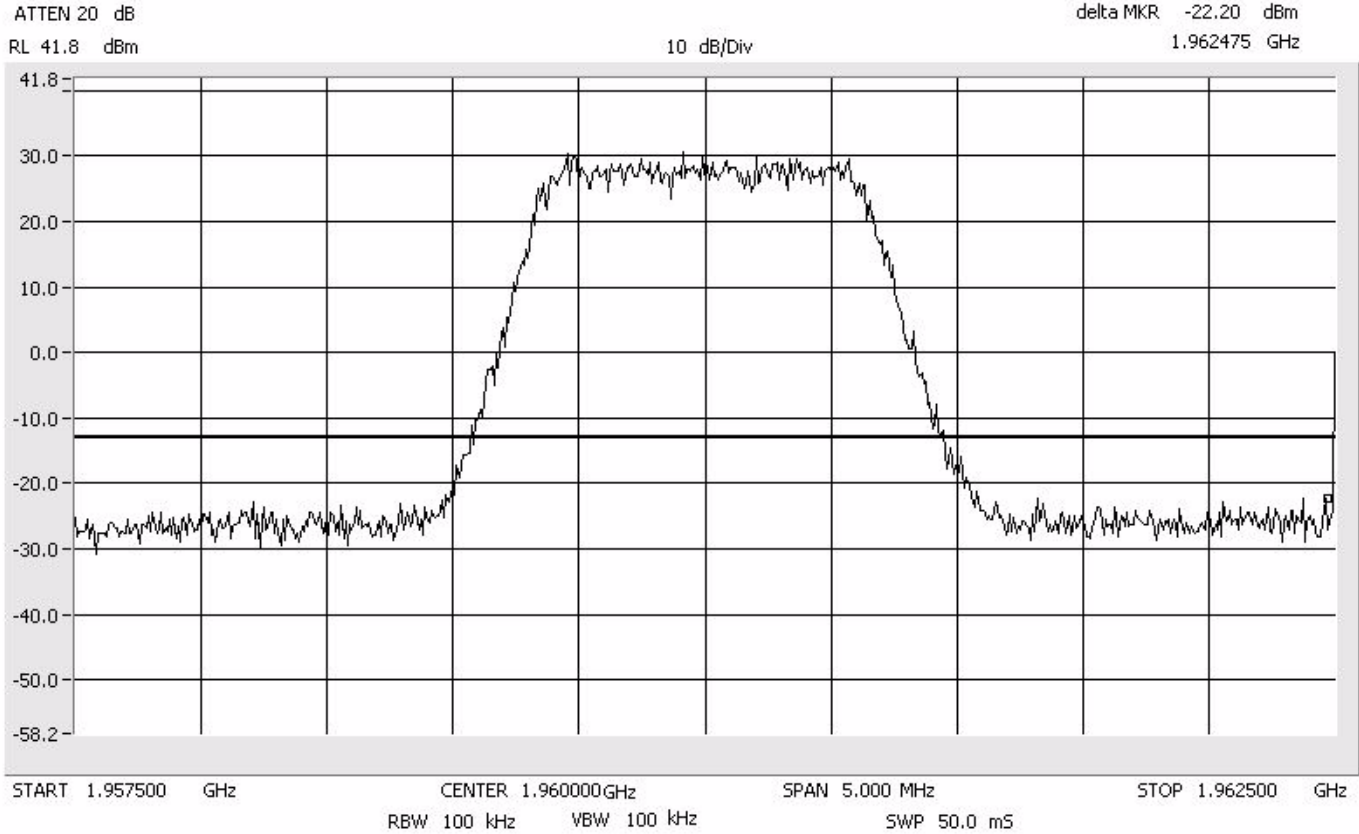
# Conducted Emissions CDMA 1900 MHz

1 GHz to 20 GHz  
RBW/VBW: 1 MHz



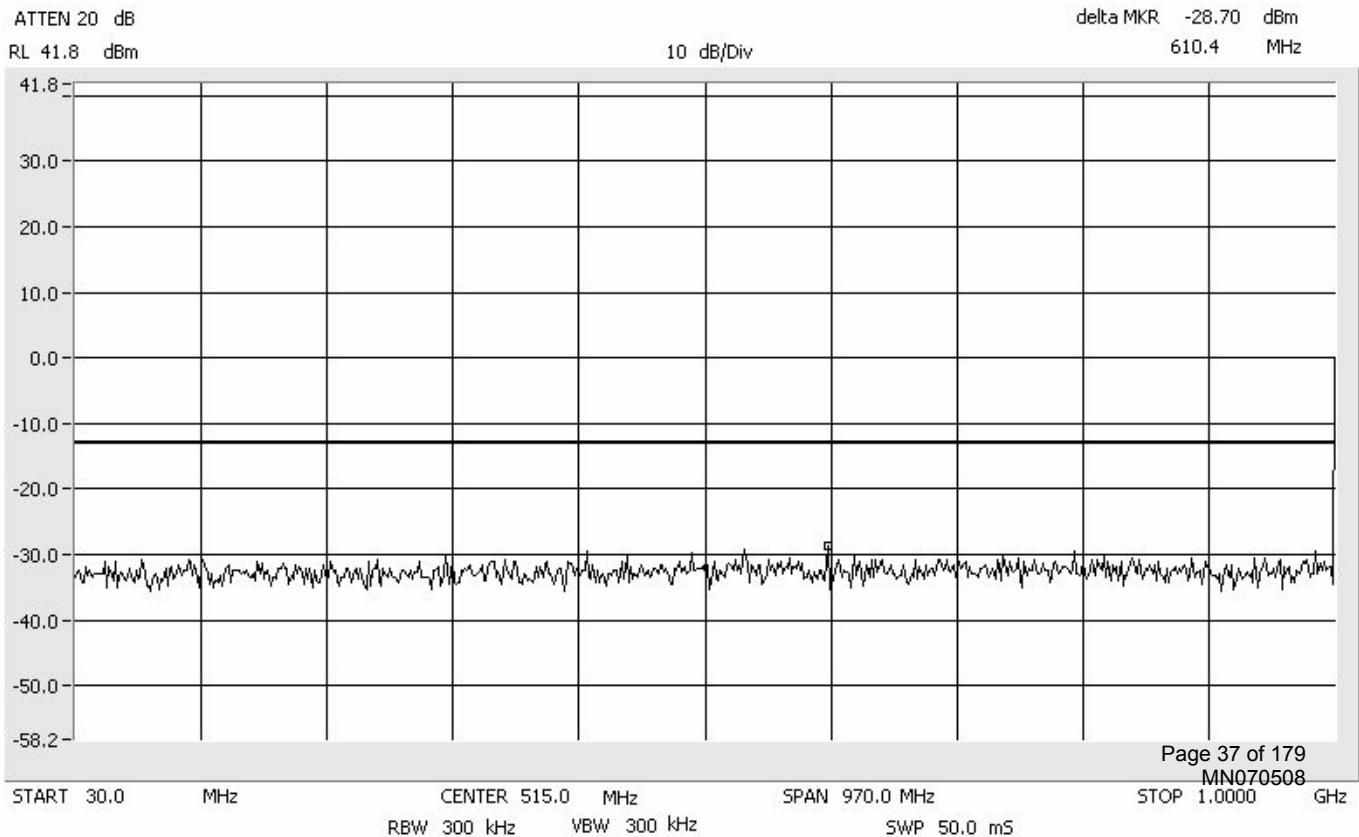
# Conducted Emissions EVDO 1900 MHz

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



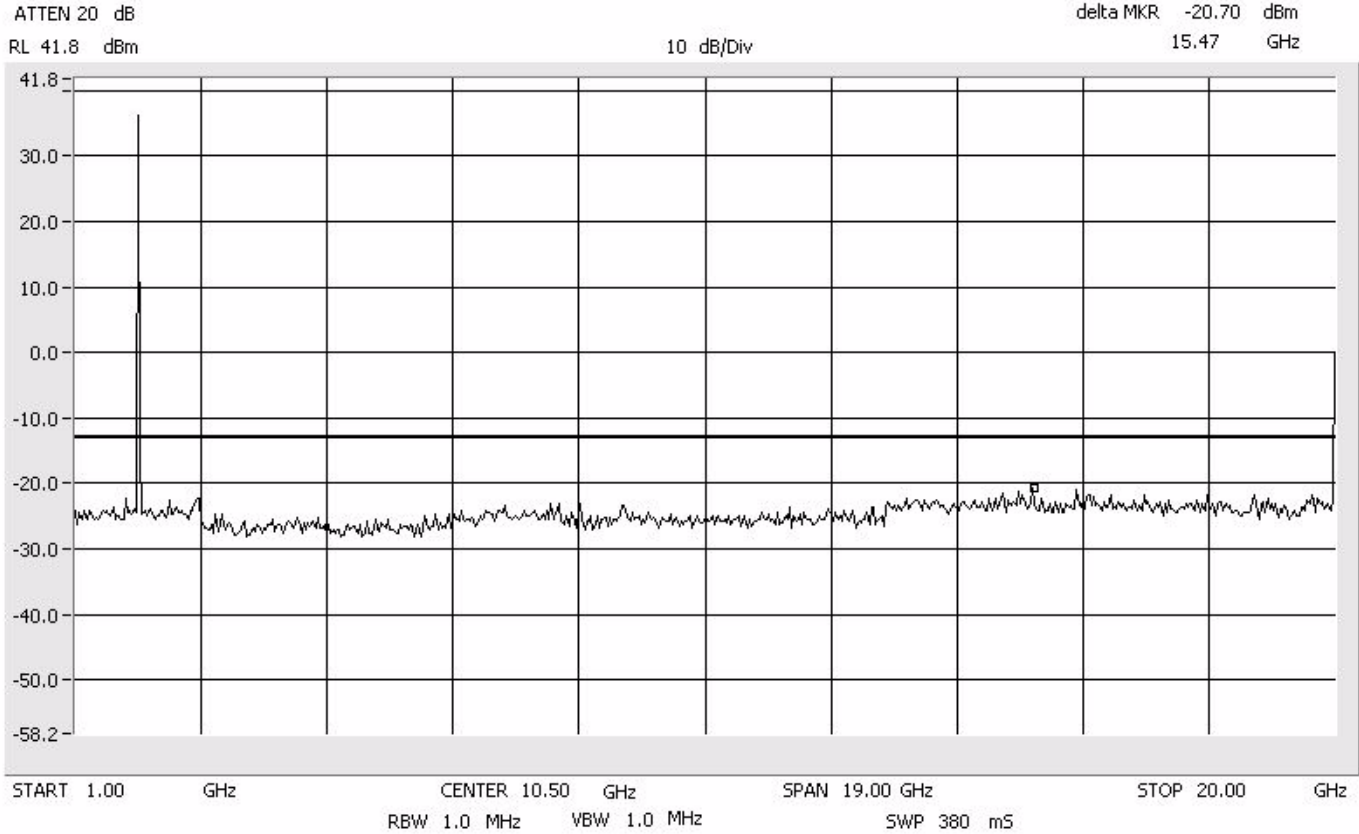
# Conducted Emissions EVDO 1900 MHz

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



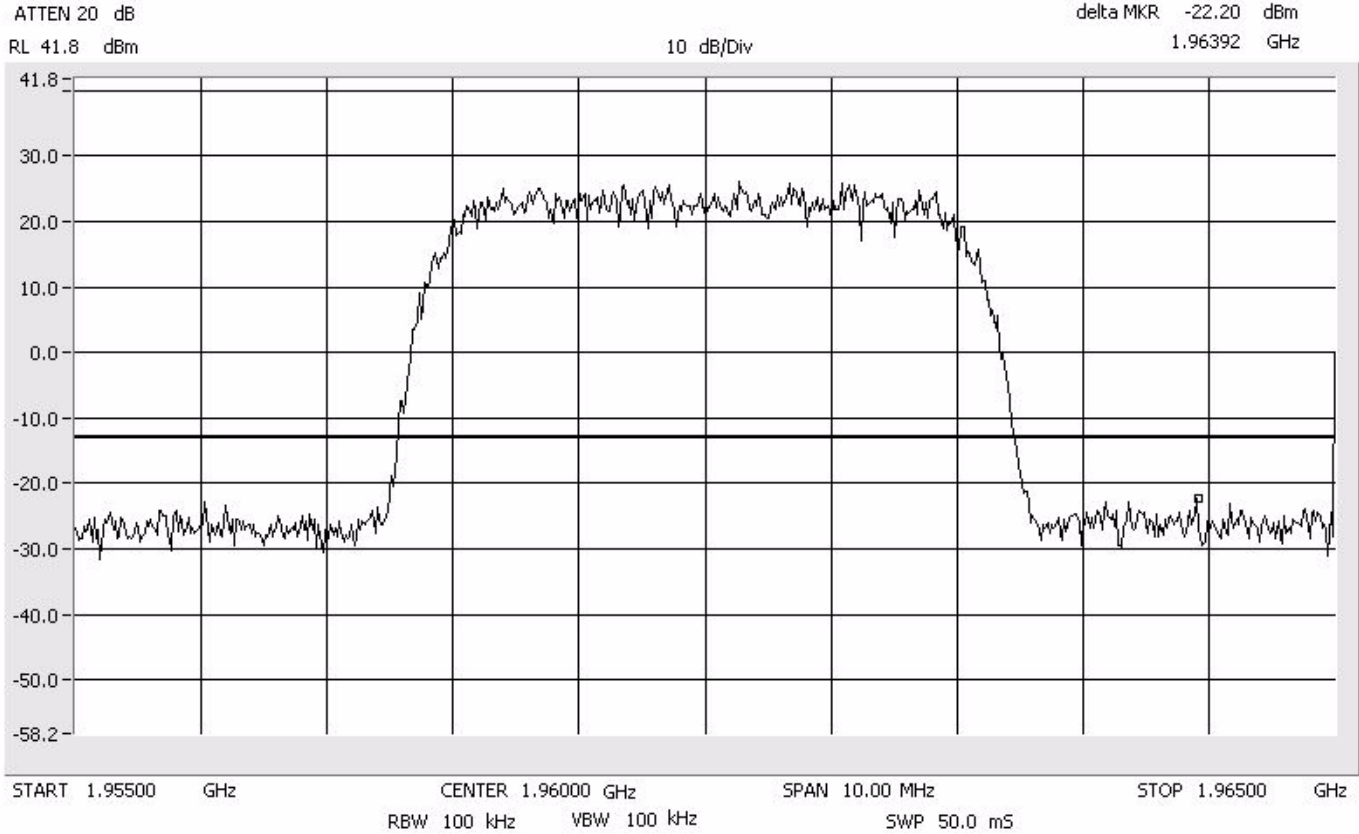
# Conducted Emissions EVDO 1900 MHz

1 GHz to 20 GHz  
RBW/VBW: 1 MHz



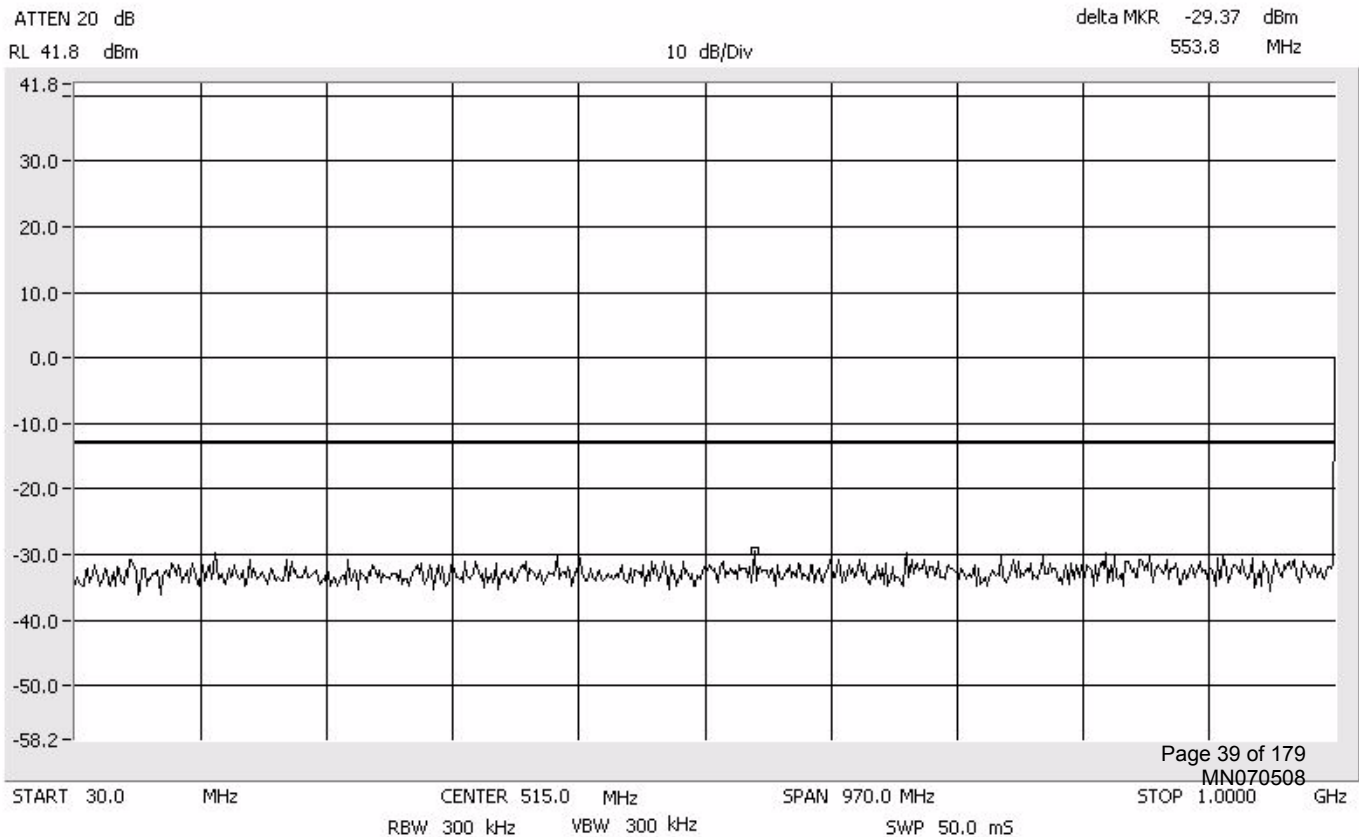
# Conducted Emissions W-CDMA 1900 MHz

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



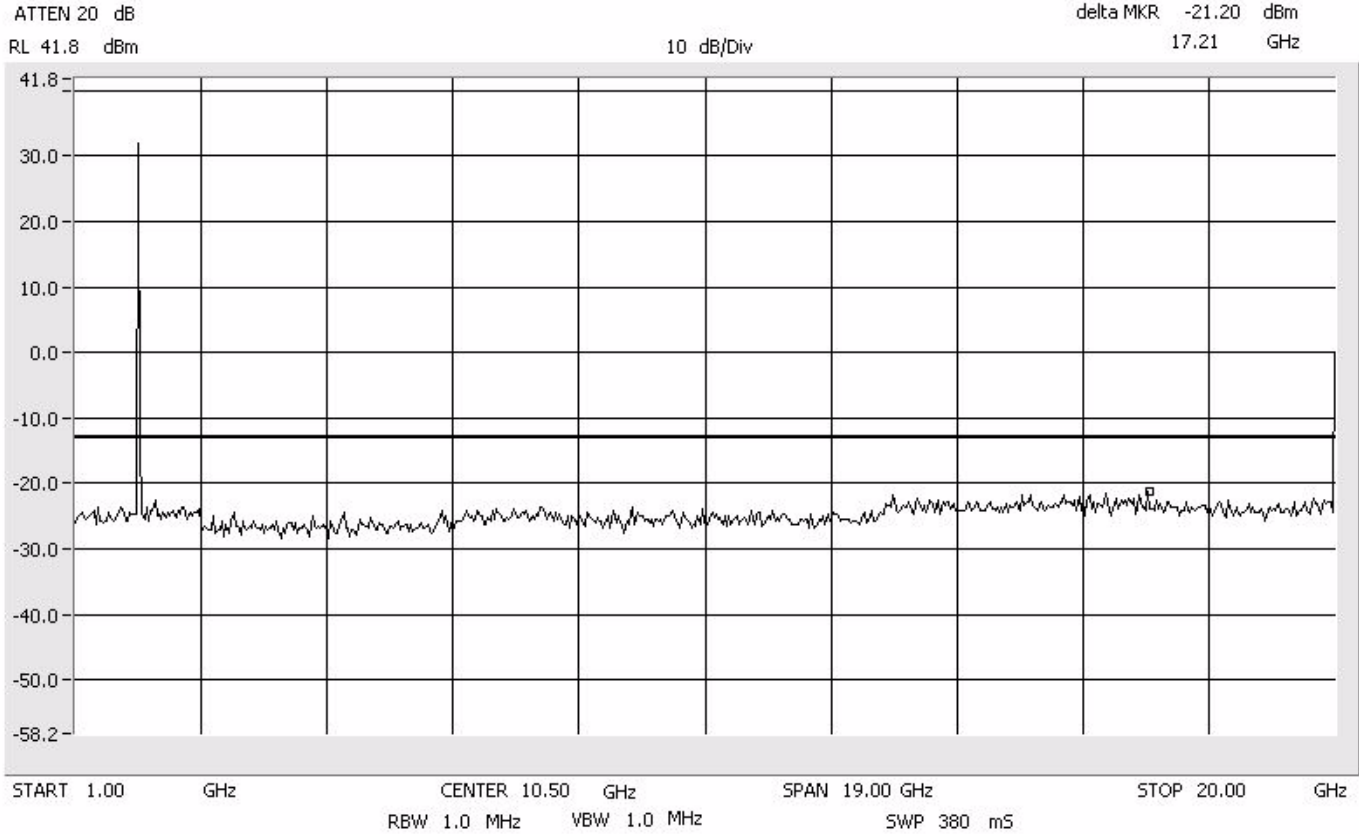
# Conducted Emissions W-CDMA 1900 MHz

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



# Conducted Emissions W-CDMA 1900 MHz

1 GHz to 20 GHz  
RBW/VBW: 1 MHz





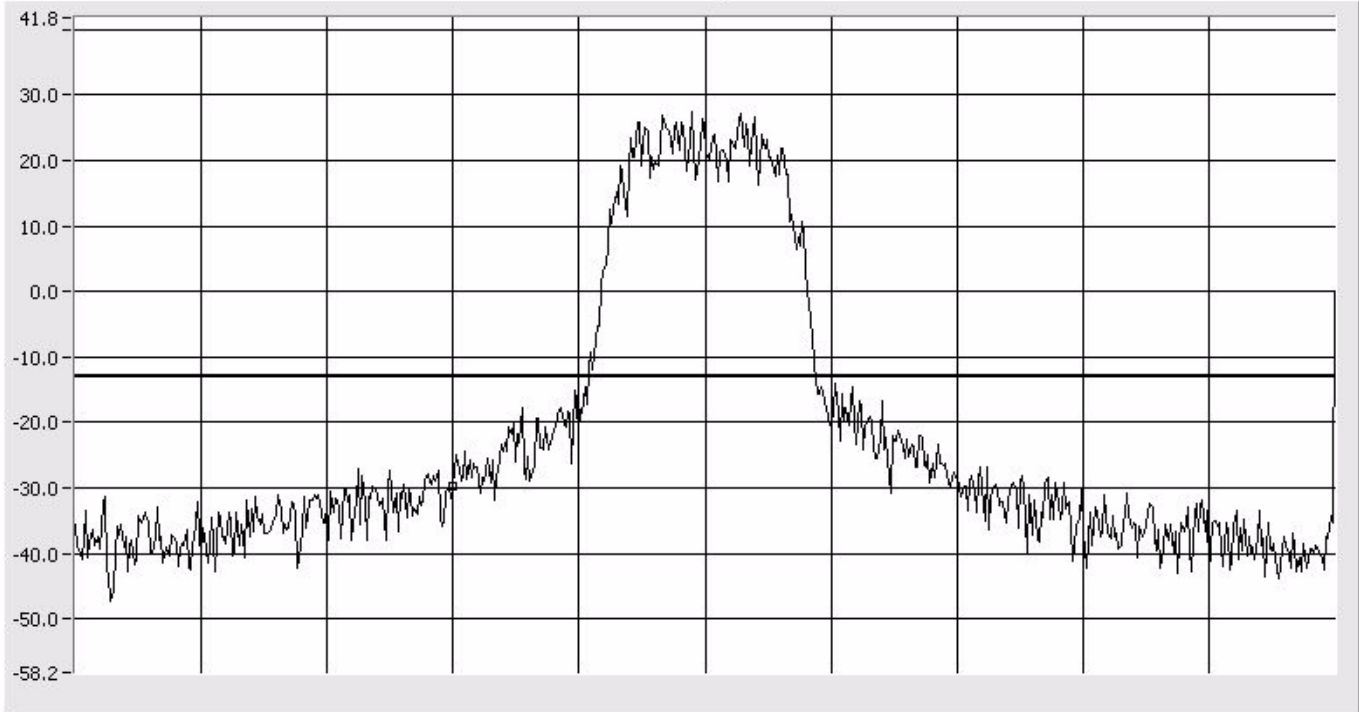
# Band Edge TDMA

Center: 1930.04  
Span: 200 kHz  
RBW: 1 kHz  
VBW: 3 kHz

ATTEN 20 dB  
RL 41.8 dBm

delta MKR -29.87 dBm  
1.930000 GHz

10 dB/Div



START 1.9299400 GHz CENTER 1.930040GHz SPAN 200.0 kHz STOP 1.9301400 GHz  
RBW 1.0 kHz VBW 3.0 kHz SWP 500 mS

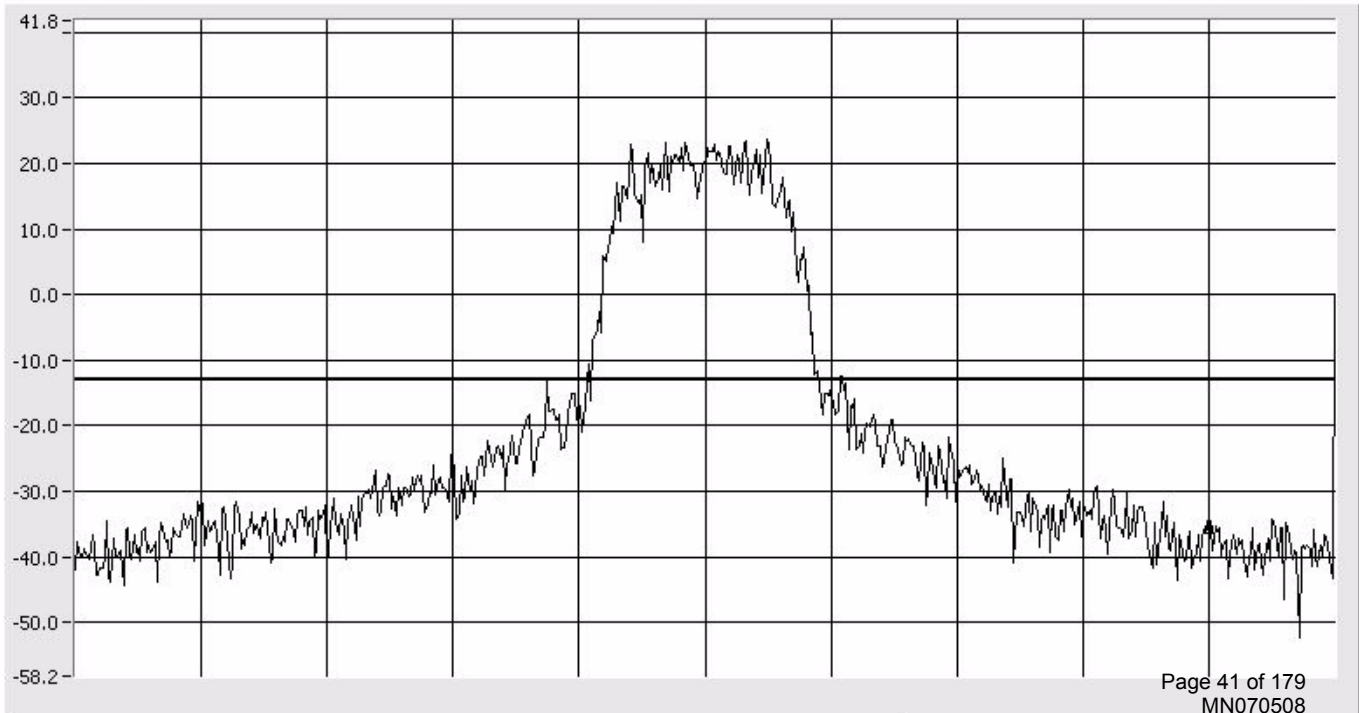
# Band Edge TDMA

Center: 1989.92 MHz  
Span: 200 kHz  
RBW: 1 kHz  
VBW: 3 kHz

ATTEN 20 dB  
RL 41.8 dBm

delta MKR -35.87 dBm  
1.990000 GHz

10 dB/Div



START 1.9898200 GHz CENTER 1.989920GHz SPAN 200.0 kHz STOP 1.9900200 GHz  
RBW 1.0 kHz VBW 3.0 kHz SWP 500 mS

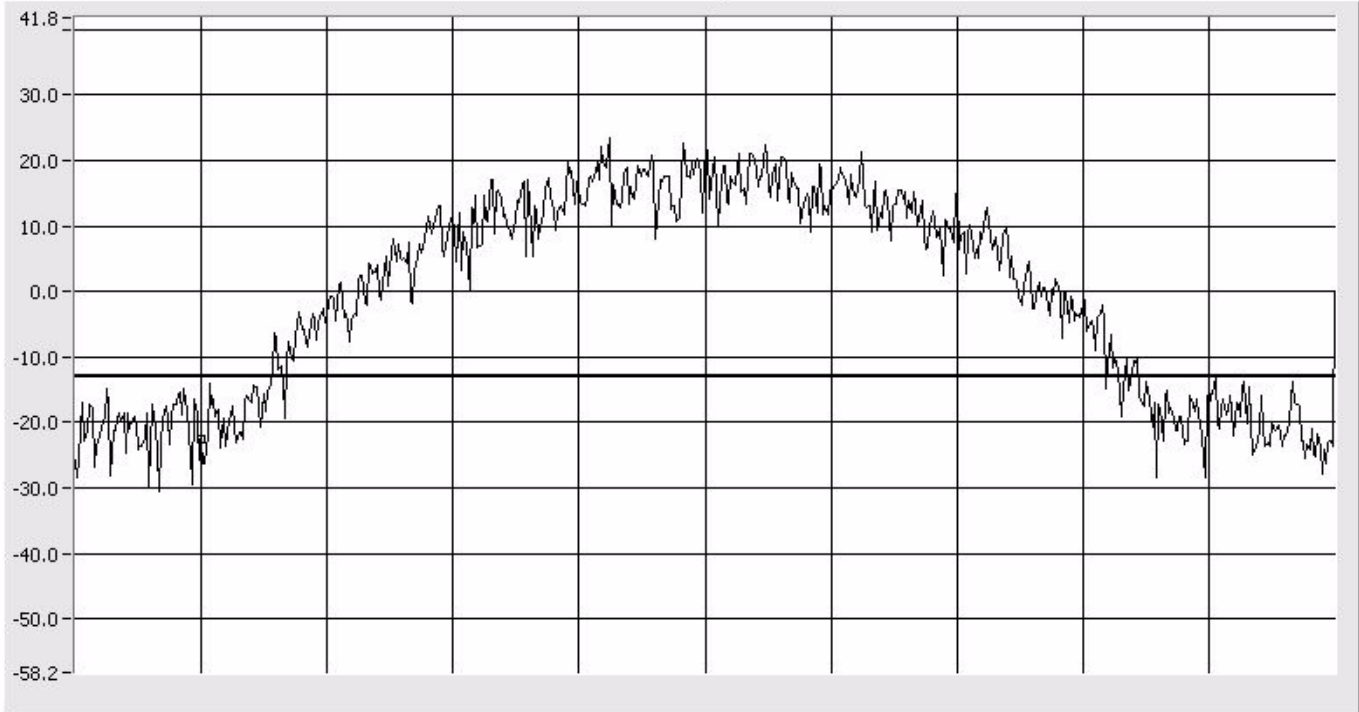
# Band Edge GSM

Center: 1930.20  
Span: 500 kHz  
RBW: 3 kHz  
VBW: 10 kHz

ATTEN 20 dB  
RL 41.8 dBm

delta MKR -22.53 dBm  
1.930000 GHz

10 dB/Div



START 1.9299500 GHz CENTER 1.930200GHz SPAN 500.0 kHz STOP 1.9304500 GHz  
RBW 3.0 kHz VBW 10 kHz SWP 140 mS

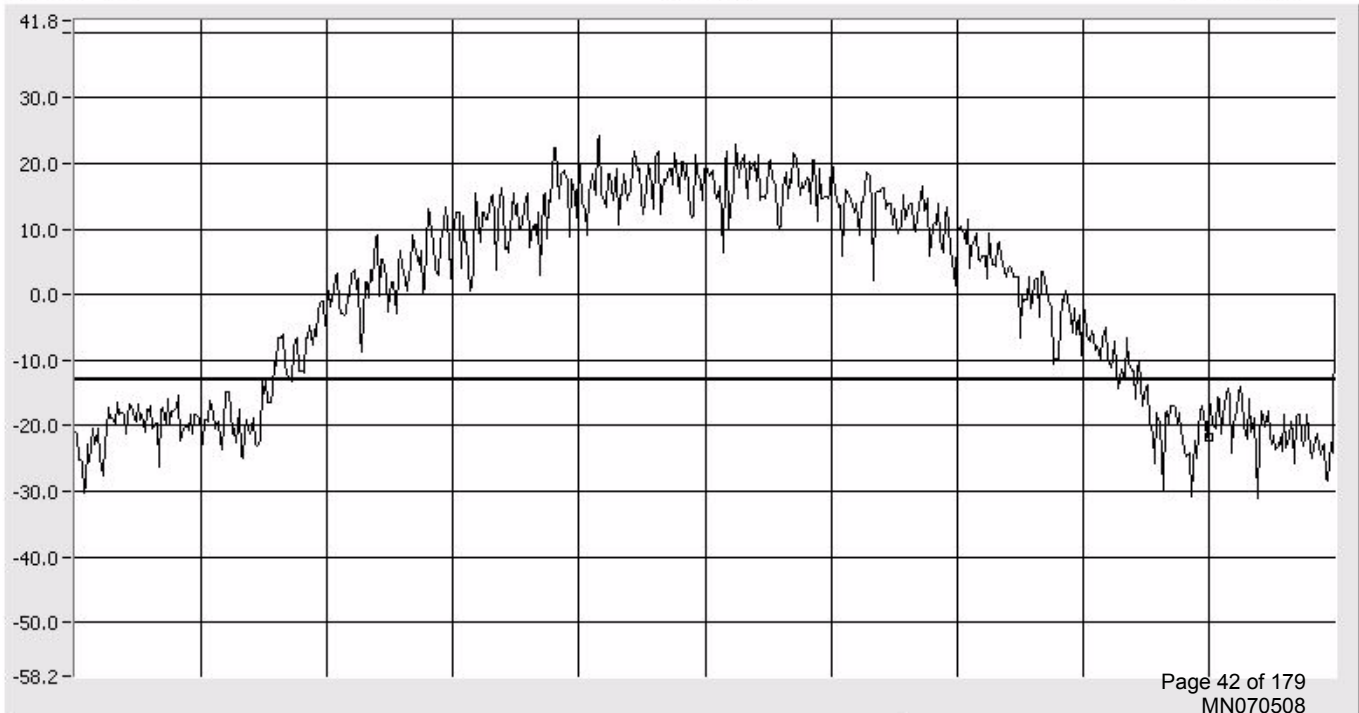
# Band Edge GSM

Center: 1989.80 MHz  
Span: 500 kHz  
RBW: 3 kHz  
VBW: 10 kHz

ATTEN 20 dB  
RL 41.8 dBm

delta MKR -21.87 dBm  
1.990000 GHz

10 dB/Div



START 1.9895500 GHz CENTER 1.989800GHz SPAN 500.0 kHz STOP 1.9900500 GHz  
RBW 3.0 kHz VBW 10 kHz SWP 140 mS

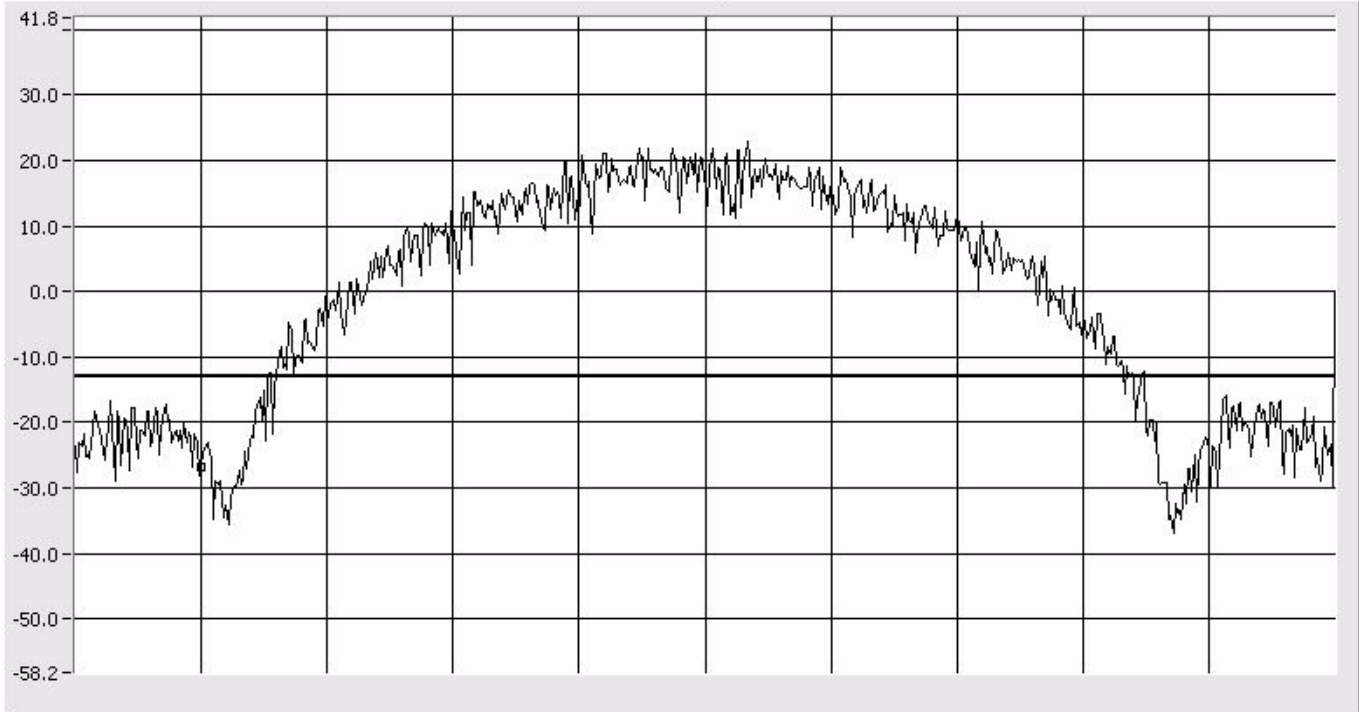
# Band Edge EDGE

Center: 1930.20  
Span: 500 kHz  
RBW: 3 kHz  
VBW: 10 kHz

ATTEN 20 dB  
RL 41.8 dBm

delta MKR -26.70 dBm  
1.930000 GHz

10 dB/Div



START 1.9299500 GHz CENTER 1.930200GHz SPAN 500.0 kHz STOP 1.9304500 GHz  
RBW 3.0 kHz VBW 10 kHz SWP 140 mS

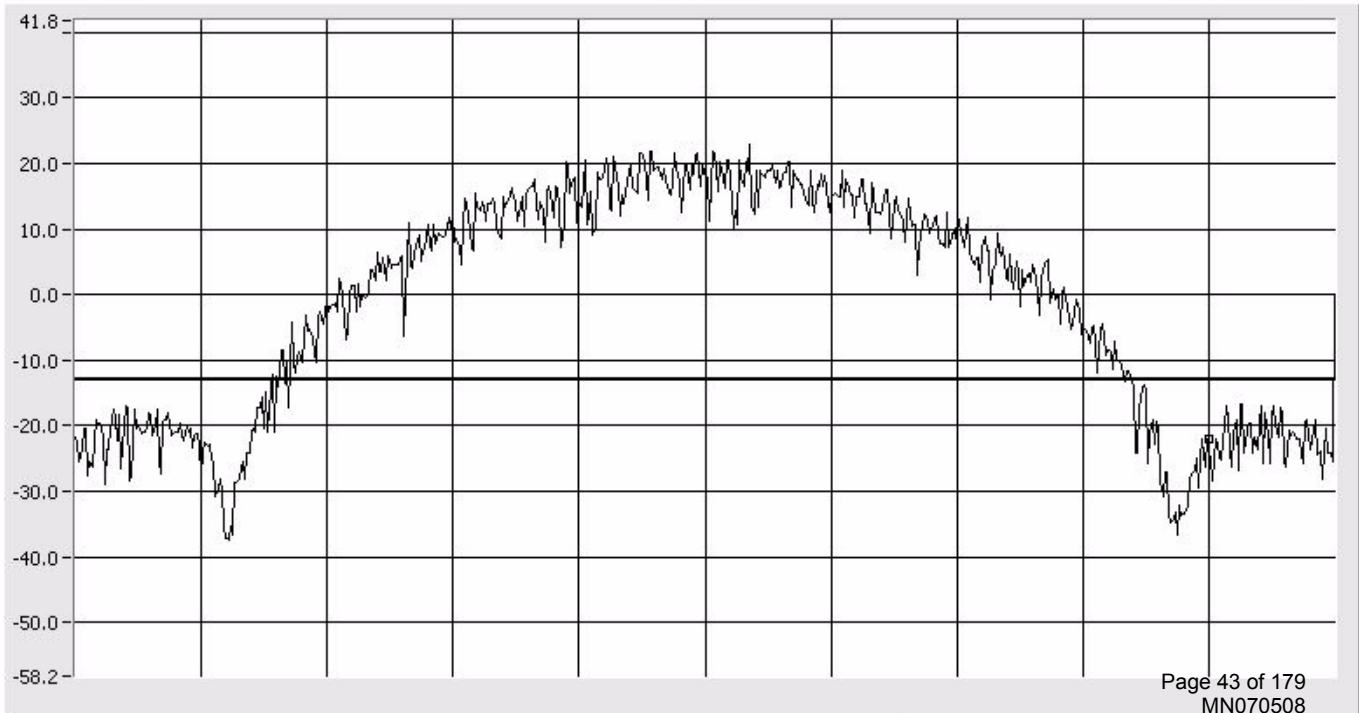
# Band Edge EDGE

Center: 1989.80 MHz  
Span: 500 kHz  
RBW: 3 kHz  
VBW: 10 kHz

ATTEN 20 dB  
RL 41.8 dBm

delta MKR -22.03 dBm  
1.990000 GHz

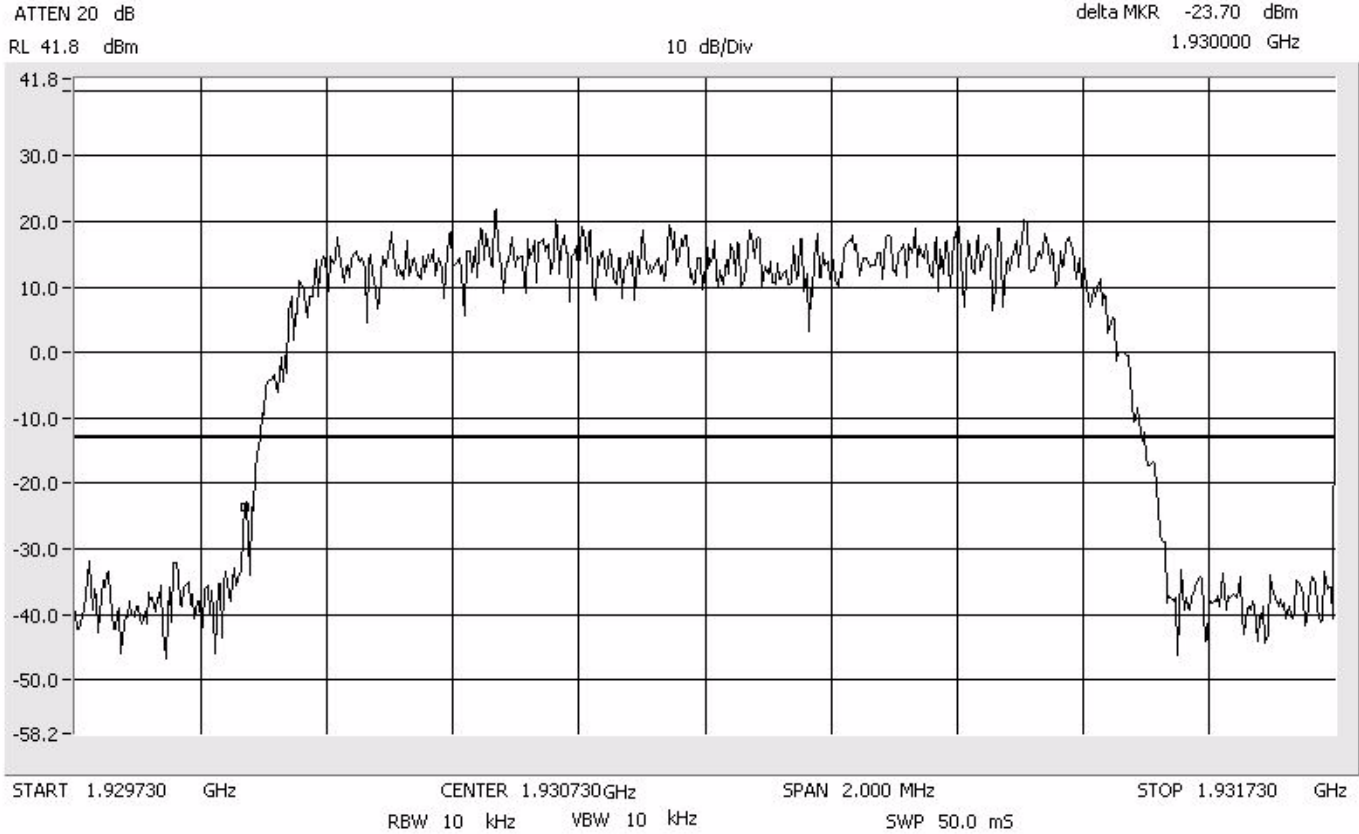
10 dB/Div



START 1.9895500 GHz CENTER 1.989800GHz SPAN 500.0 kHz STOP 1.9900500 GHz  
RBW 3.0 kHz VBW 10 kHz SWP 140 mS

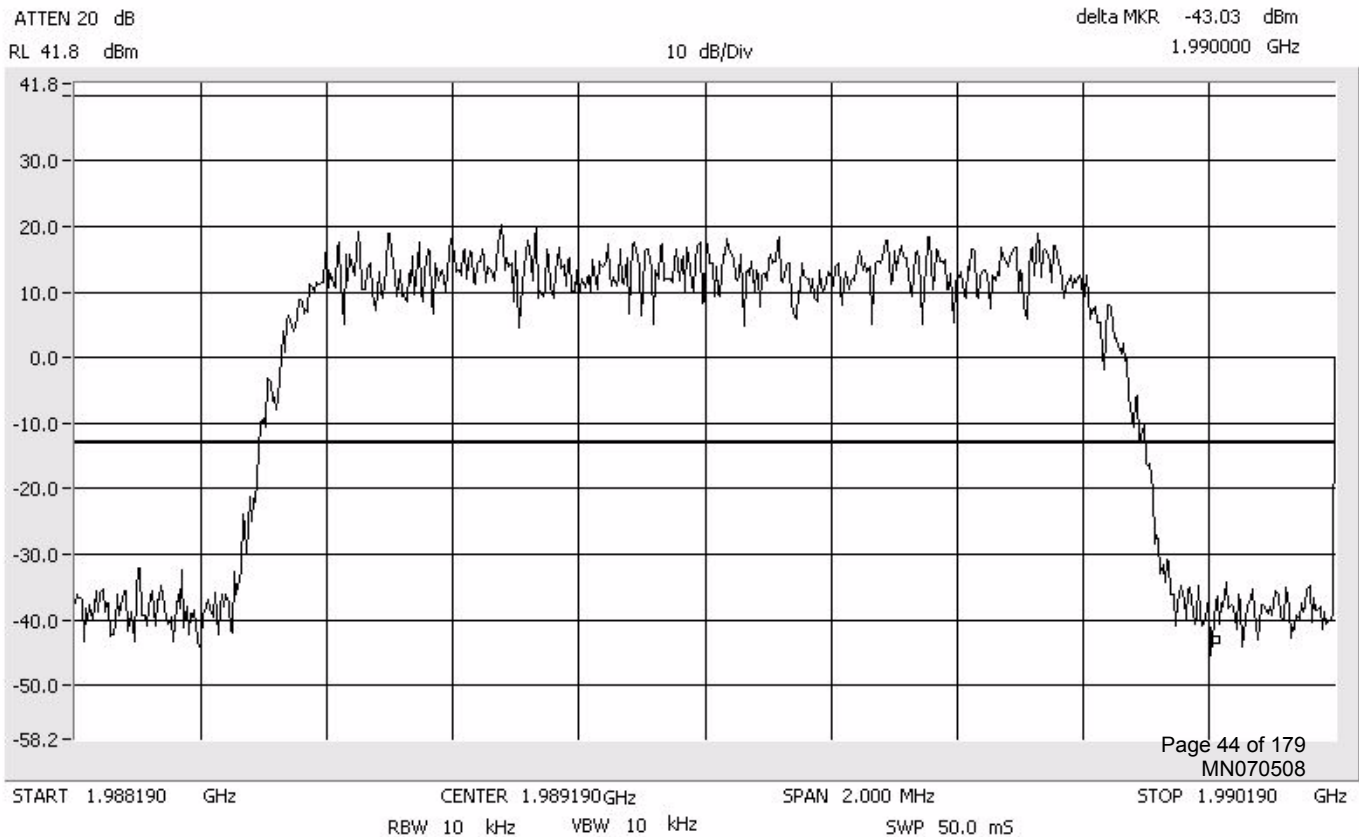
# Band Edge CDMA

Center: 1930.73  
Span: 2 MHz  
RBW: 10 kHz  
VBW: 10 kHz



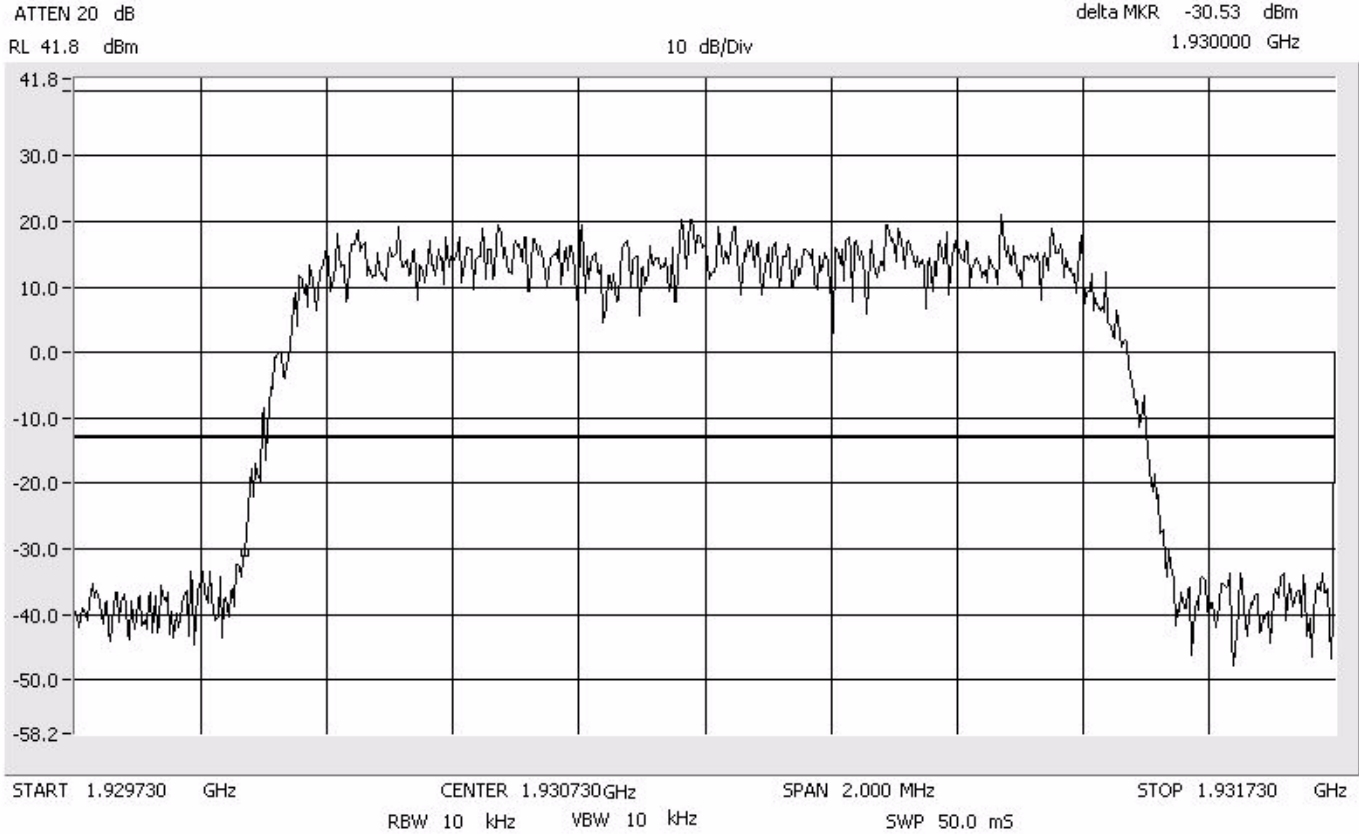
# Band Edge CDMA

Center: 1989.19 MHz  
Span: 2 MHz  
RBW: 10 kHz  
VBW: 10 kHz



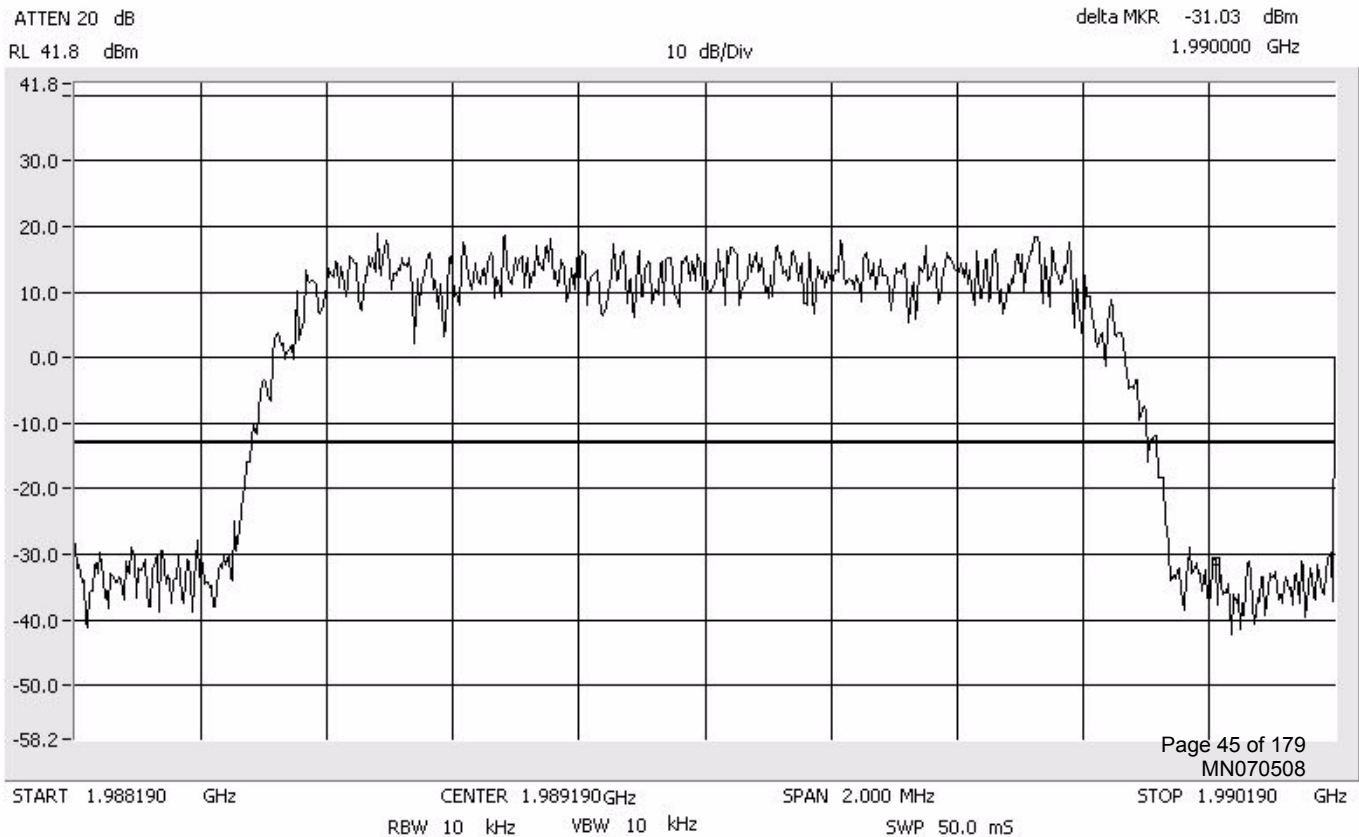
# Band Edge EVDO

Center: 1930.73  
Span: 2 MHz  
RBW: 10 kHz  
VBW: 10 kHz



# Band Edge EVDO

Center: 1989.19 MHz  
Span: 2 MHz  
RBW: 10 kHz  
VBW: 10 kHz



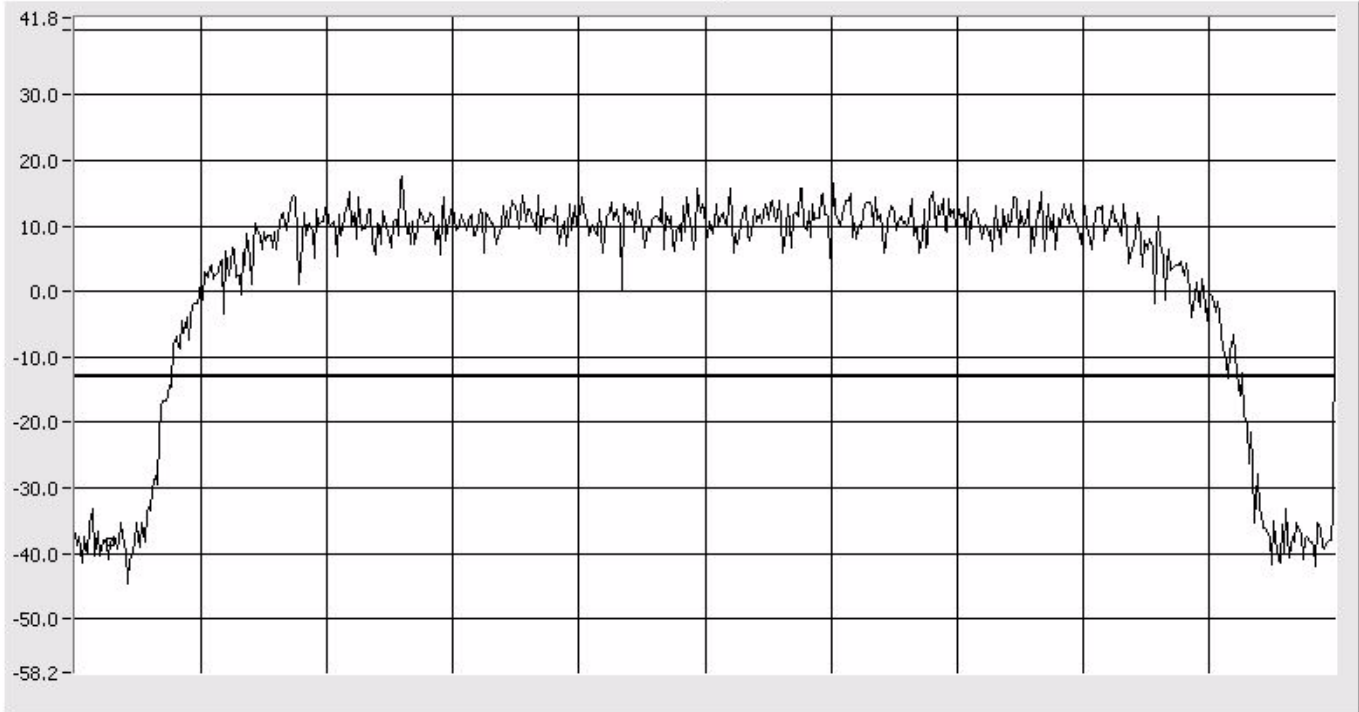
# Band Edge W-CDMA

Center: 1932.60  
Span: 5.5 MHz  
RBW: 10 kHz  
VBW: 10 kHz

ATTEN 20 dB  
RL 41.8 dBm

delta MKR -38.20 dBm  
1.930006 GHz

10 dB/Div



START 1.929850 GHz CENTER 1.932600GHz SPAN 5.500 MHz STOP 1.935350 GHz  
RBW 10 kHz VBW 10 kHz SWP 140 mS

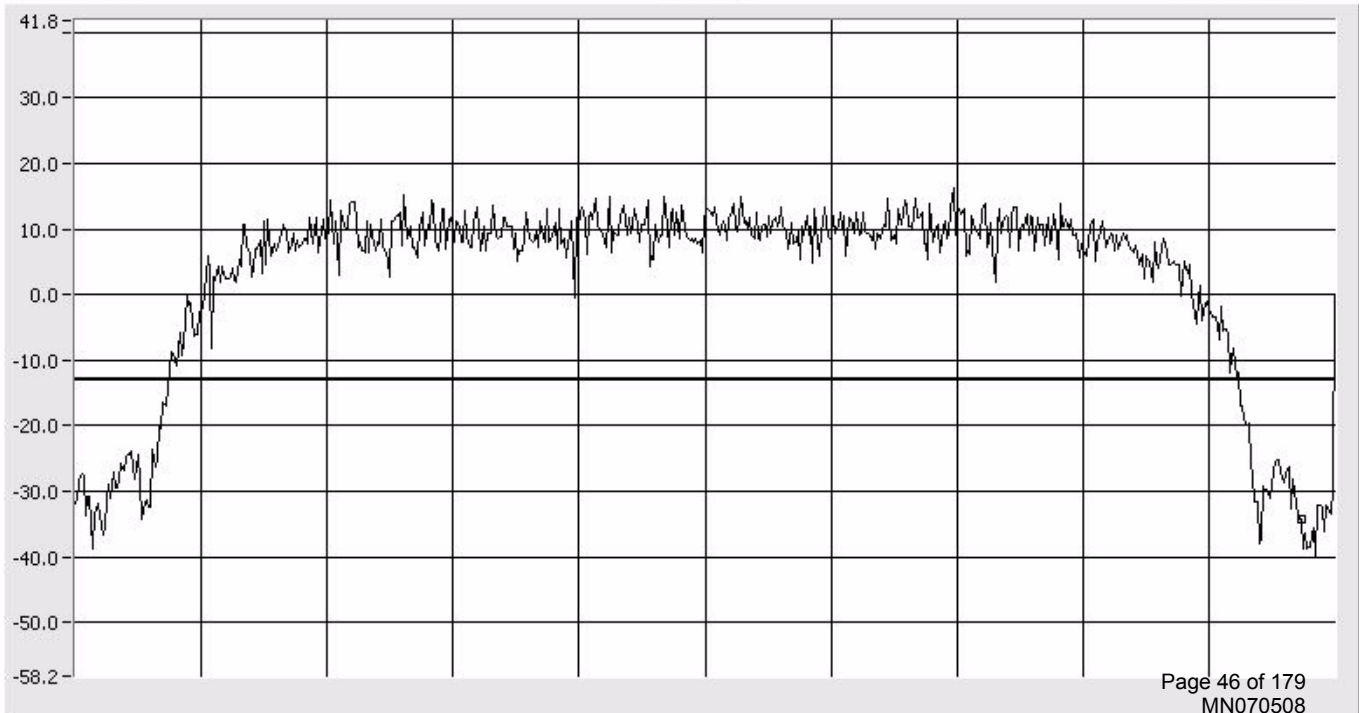
# Band Edge W-CDMA

Center: 1987.40 MHz  
Span: 5.5 MHz  
RBW: 10 kHz  
VBW: 10 kHz

ATTEN 20 dB  
RL 41.8 dBm

delta MKR -34.37 dBm  
1.990003 GHz

10 dB/Div



START 1.984650 GHz CENTER 1.987400GHz SPAN 5.500 MHz STOP 1.990150 GHz  
RBW 10 kHz VBW 10 kHz SWP 140 mS



# Conducted Output Power Test for ADC Inc. Digivance® SCS Model Number DGVC-4X1X4X1X200SYS

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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 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 41.8 dB to compensate for attenuators and cable loss between the EUT and the power meter.

<b><u>TDMA</u></b>	<b><u>13.09 Watts</u></b>
Carrier Frequency	Carrier Output
1930.2 MHz	<u>41.00</u> dBm
1960.0 MHz	<u>41.17</u> dBm
1989.8 MHz	<u>41.07</u> dBm

<b><u>GSM</u></b>	<b><u>13.37 Watts</u></b>
Carrier Frequency	Carrier Output
1930.2 MHz	<u>40.83</u> dBm
1960.0 MHz	<u>41.26</u> dBm
1989.8 MHz	<u>41.17</u> dBm

<b><u>EDGE</u></b>	<b><u>13.37 Watts</u></b>
Carrier Frequency	Carrier Output
1930.2 MHz	<u>41.25</u> dBm
1960.0 MHz	<u>41.26</u> dBm
1989.8 MHz	<u>40.97</u> dBm

<b><u>CDMA</u></b>	<b><u>12.25 Watts</u></b>
Carrier Frequency	Carrier Output
1930.8 MHz	<u>40.85</u> dBm
1960.0 MHz	<u>40.77</u> dBm
1989.2 MHz	<u>40.88</u> dBm

<b><u>EVDO</u></b>	<b><u>12.68 Watts</u></b>
Carrier Frequency	Carrier Output
1930.8 MHz	<u>41.03</u> dBm
1960.0 MHz	<u>40.34</u> dBm
1989.2 MHz	<u>40.47</u> dBm

<b><u>W-CDMA</u></b>	<b><u>13.43 Watts</u></b>
Carrier Frequency	Carrier Output
1932.6 MHz	<u>40.55</u> dBm
1960.0 MHz	<u>41.28</u> dBm
1987.4 MHz	<u>40.87</u> dBm

**Intermodulation Test for ADC Inc**  
**Digivance® SCS**  
**Model Number DGVC-4X1X4X1X200SYS**

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The inter-modulation products test was performed for the EUT. Three tests were performed with the modulation type. Test 1 was with 2 signals input to the EUT at lower end channels. Test 2 was with 2 signals input to the EUT at upper end channels. Test 3 was with 2 signals input to the EUT at upper and lower end channels. The modulation types tested were TDMA, GSM, EDGE, CDMA, EVDO, and W-CDMA. An investigation was made from 30 MHz to the 10<sup>th</sup> Harmonic of the highest fundamental frequency (~20 GHz). The following plots show the results. Modulation types EVDO and CDMA have the same mask and intermodulation properties. Modulation types GSM and EDGE have the same mask and intermodulation properties.

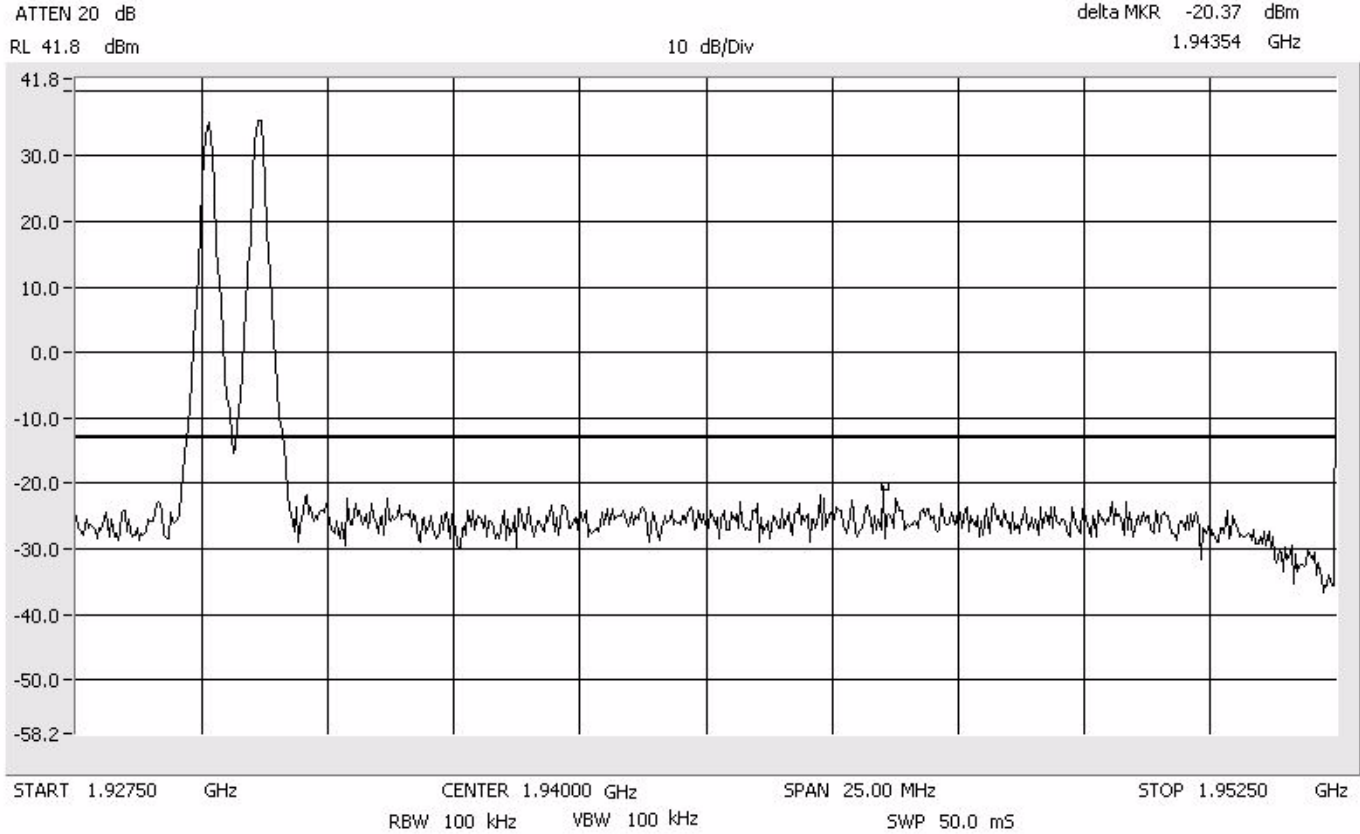
Results:  
(See Plots)



**TDMA  
AD Band**

**Intermodulation  
Close - Lower  
PCS 1900 MHz**

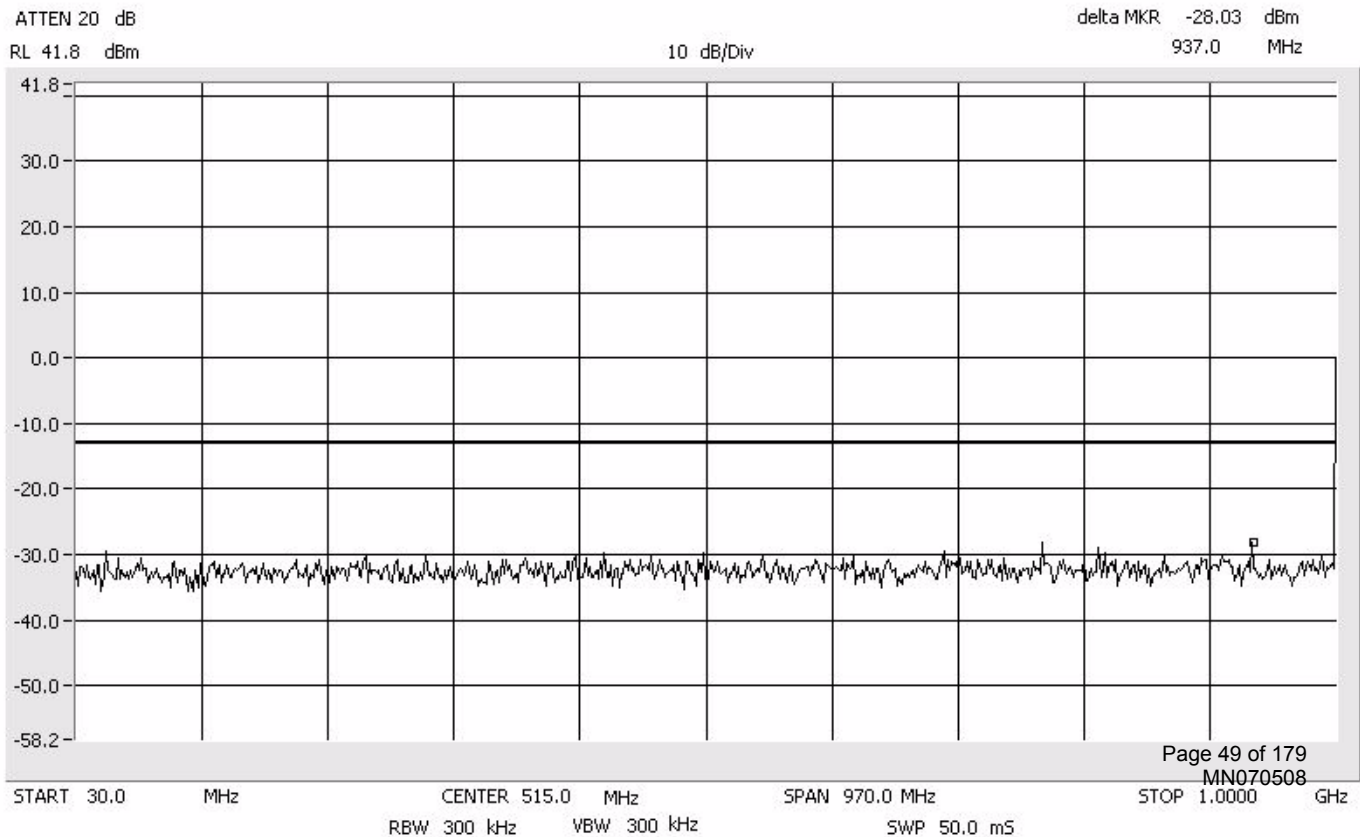
Center: 1940.0 MHz  
Span: 25 MHz  
RBW/VBW: 100 kHz

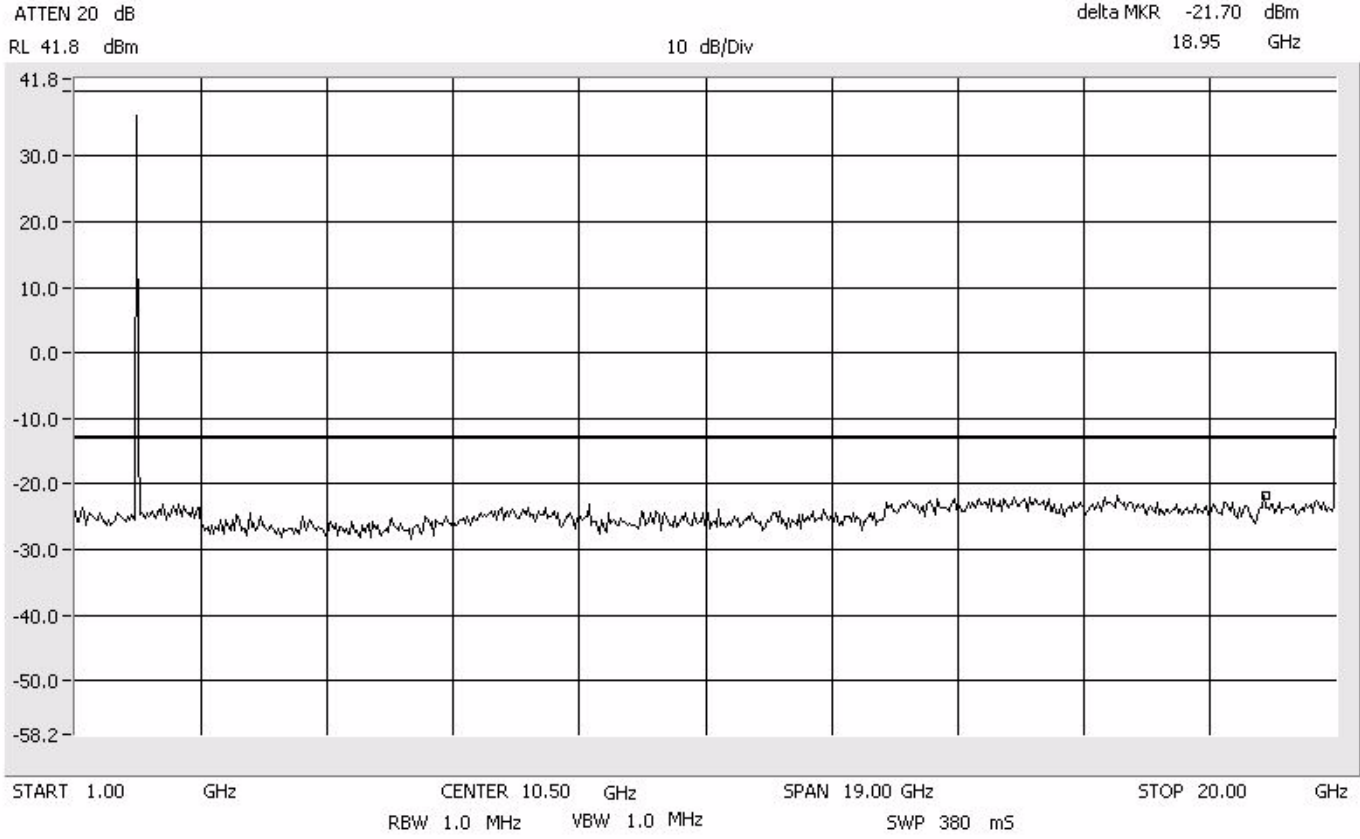


**TDMA  
AD Band**

**Intermodulation  
Close - Lower  
PCS 1900 MHz**

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

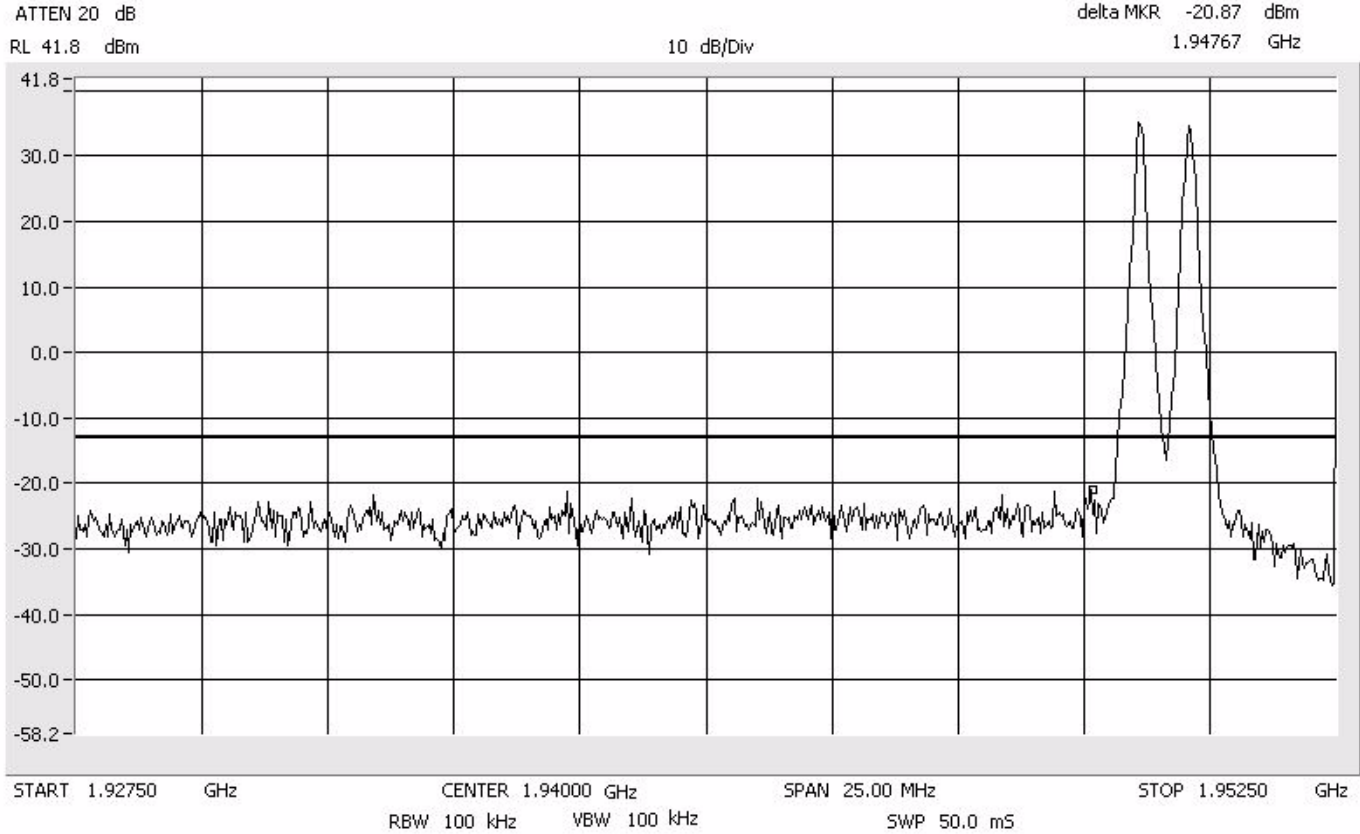




**TDMA  
AD Band**

**Intermodulation  
Close - Upper  
PCS 1900 MHz**

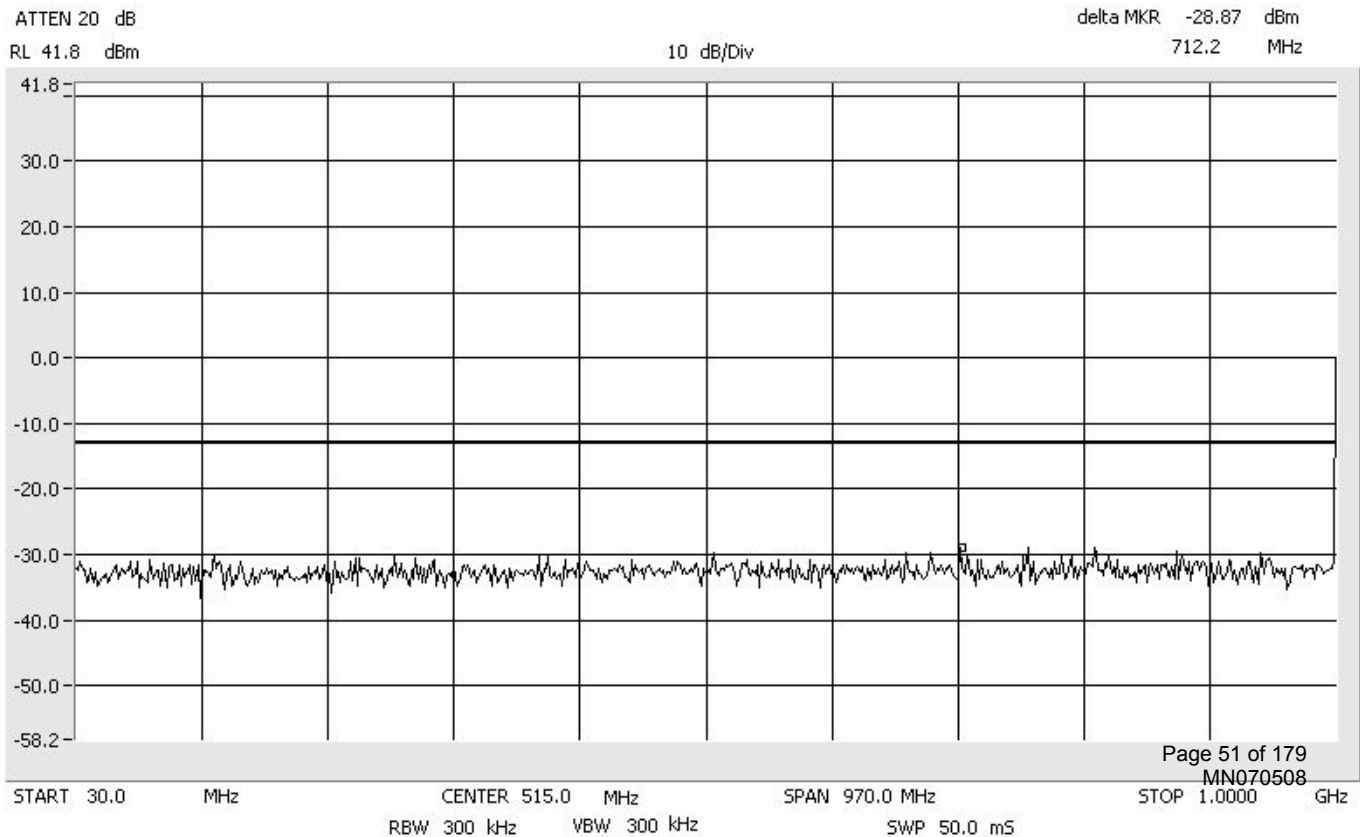
Center: 1940.0 MHz  
Span: 25 MHz  
RBW/VBW: 100 kHz

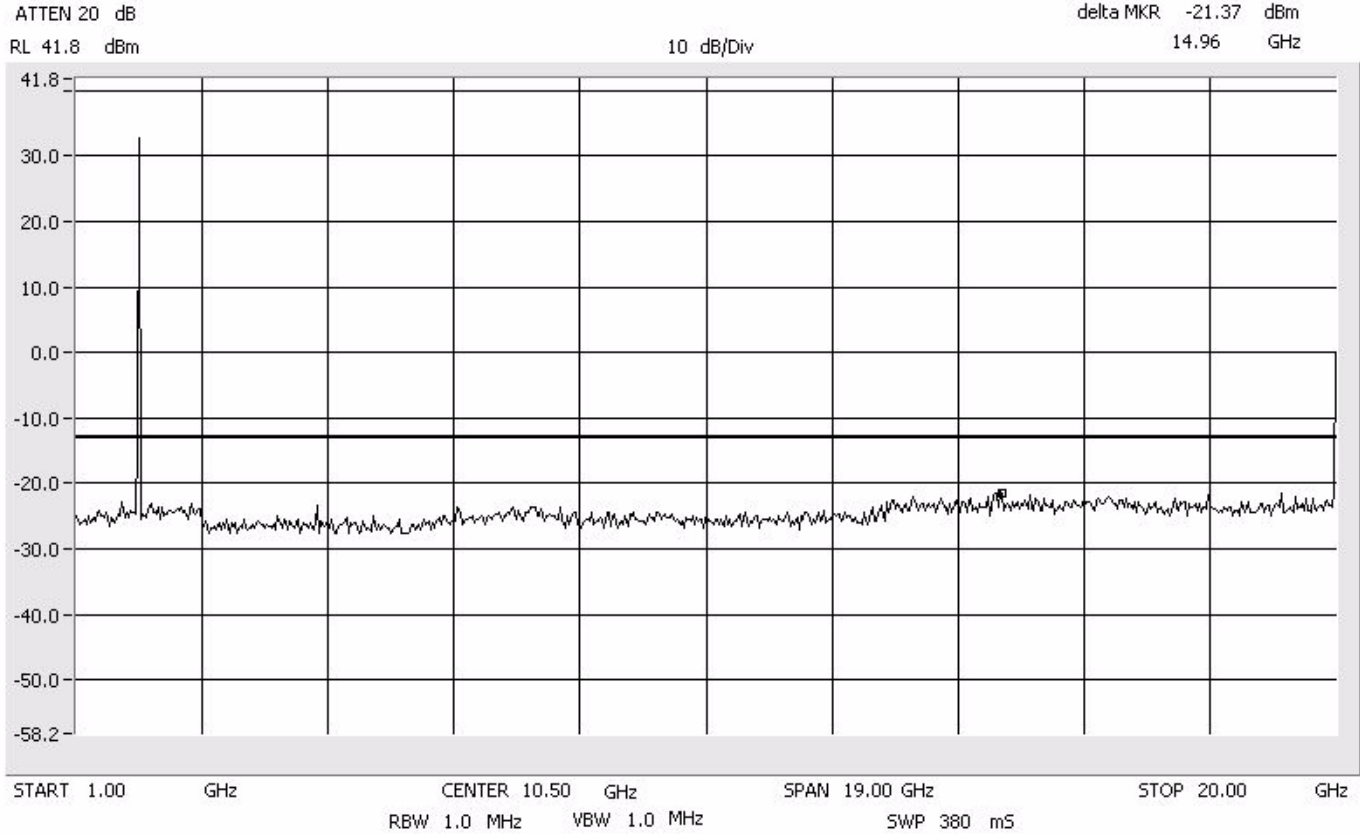


**TDMA  
AD Band**

**Intermodulation  
Close - Upper  
PCS 1900 MHz**

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

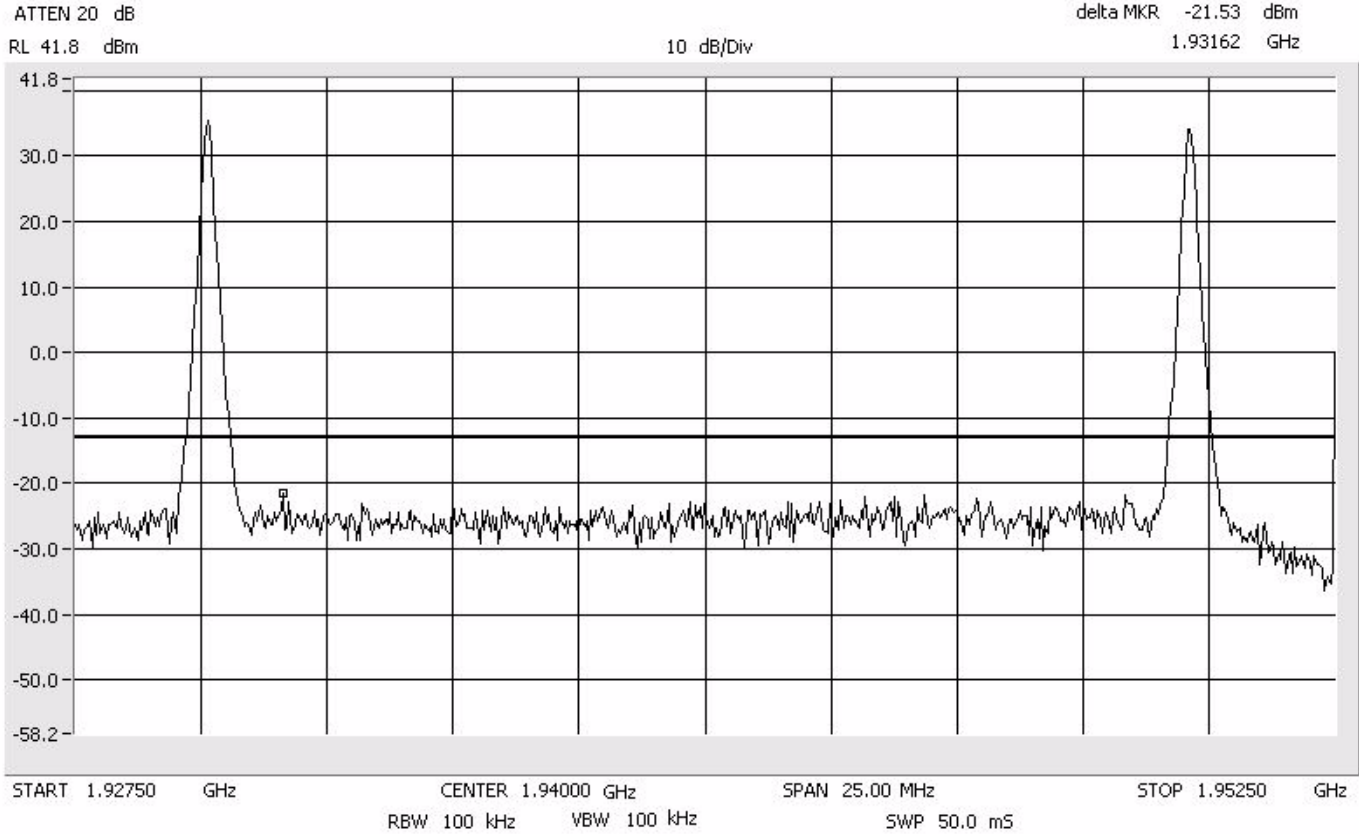




**TDMA  
AD Band**

**Intermodulation  
Apart  
PCS 1900 MHz**

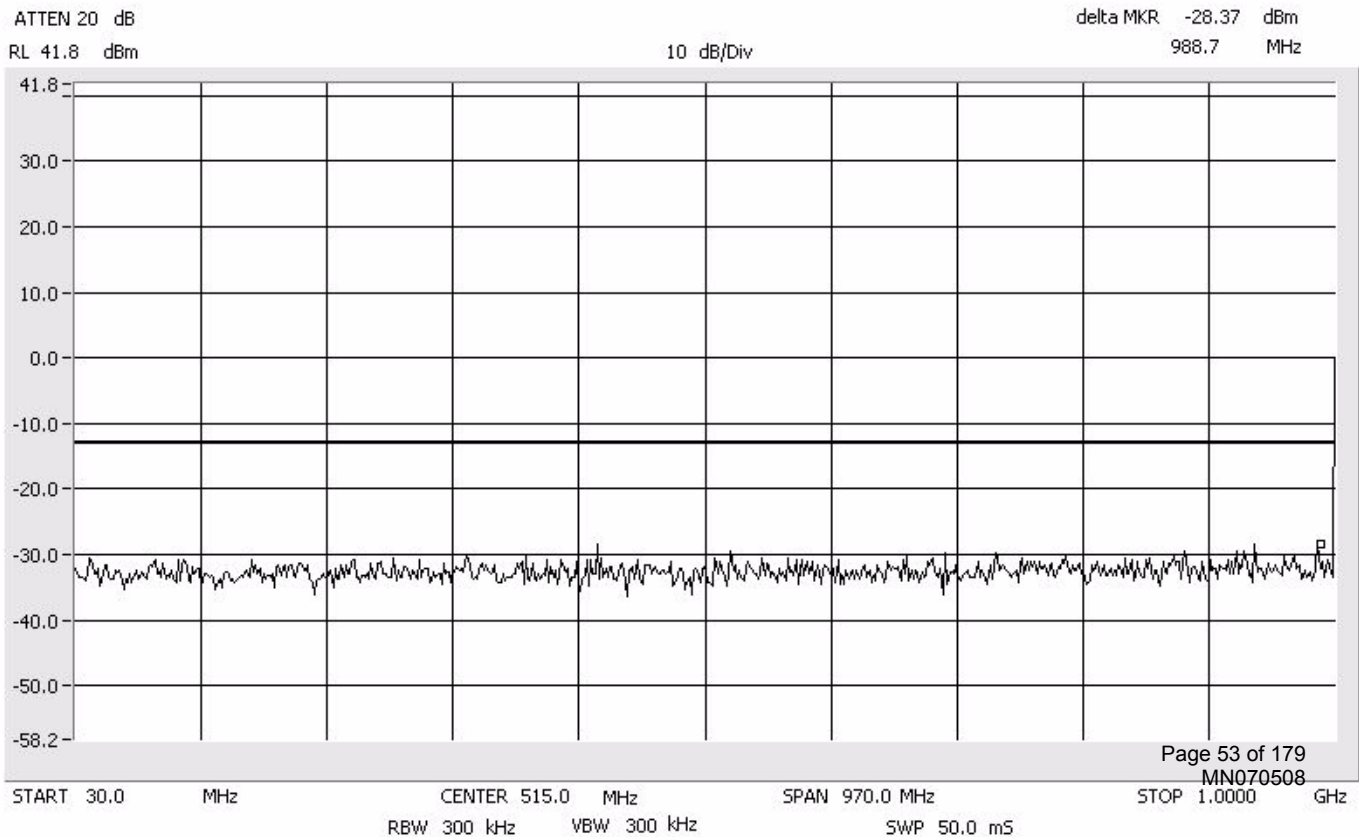
Center: 1940.0 MHz  
Span: 25 MHz  
RBW/VBW: 100 kHz

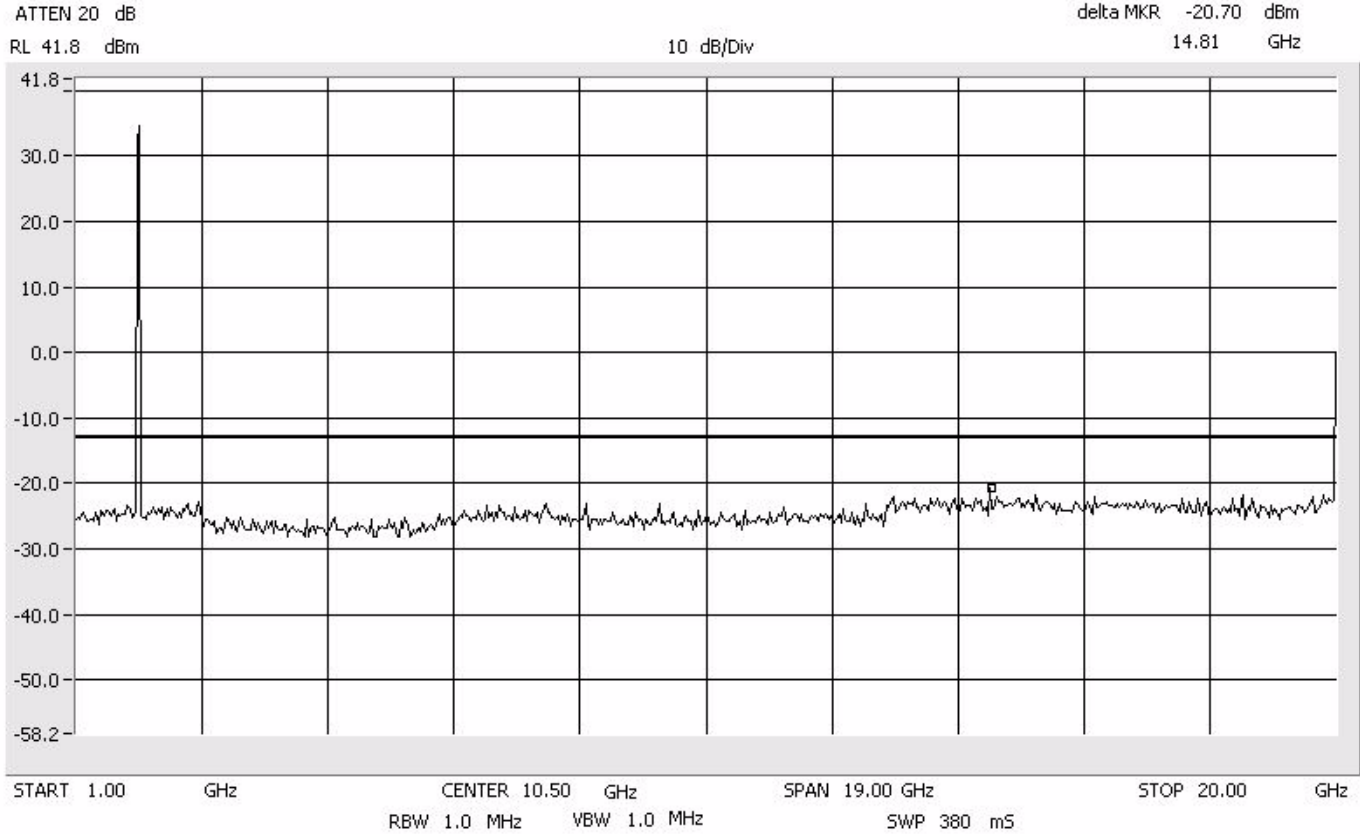


**TDMA  
AD Band**

**Intermodulation  
Apart  
PCS 1900 MHz**

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

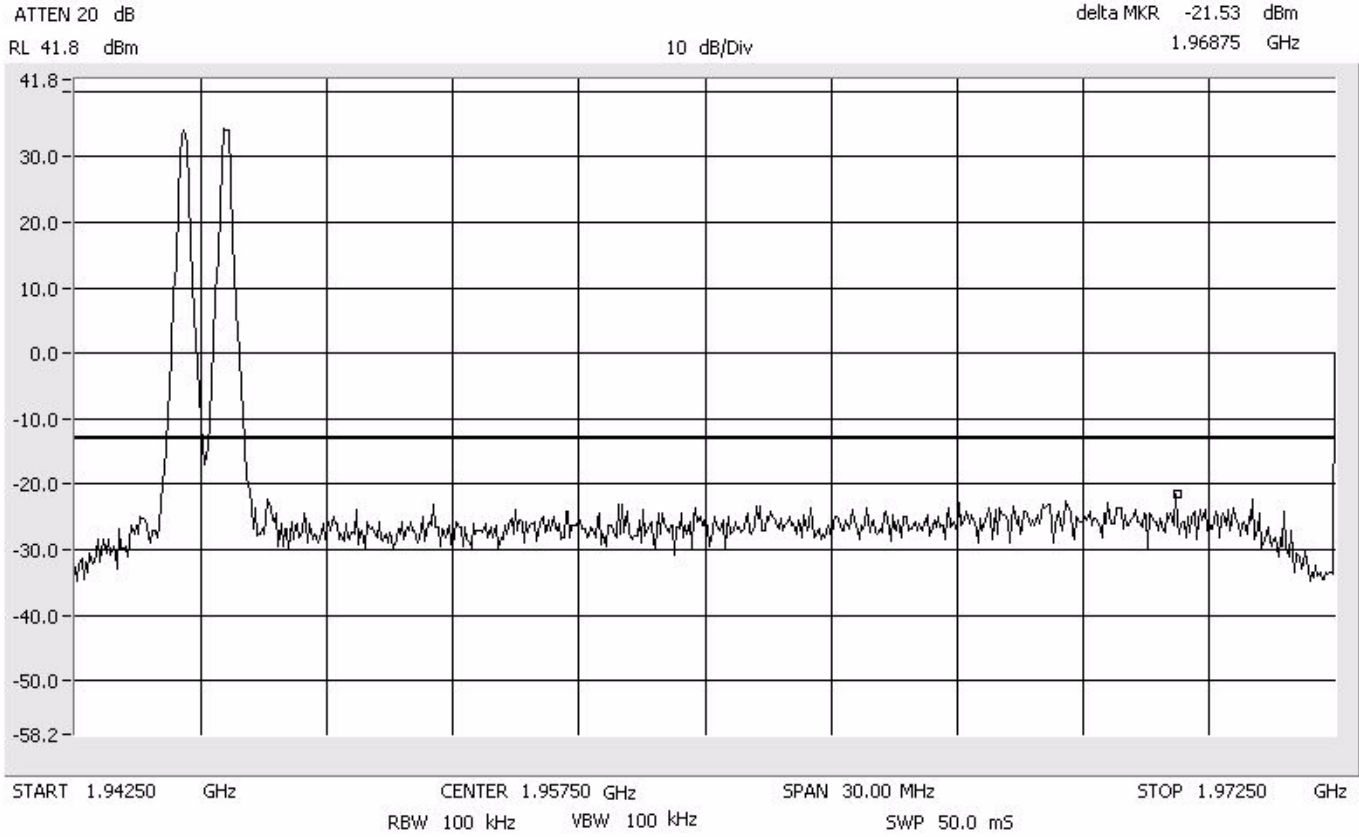




**TDMA  
DBE Band**

**Intermodulation  
Close - Lower  
PCS 1900 MHz**

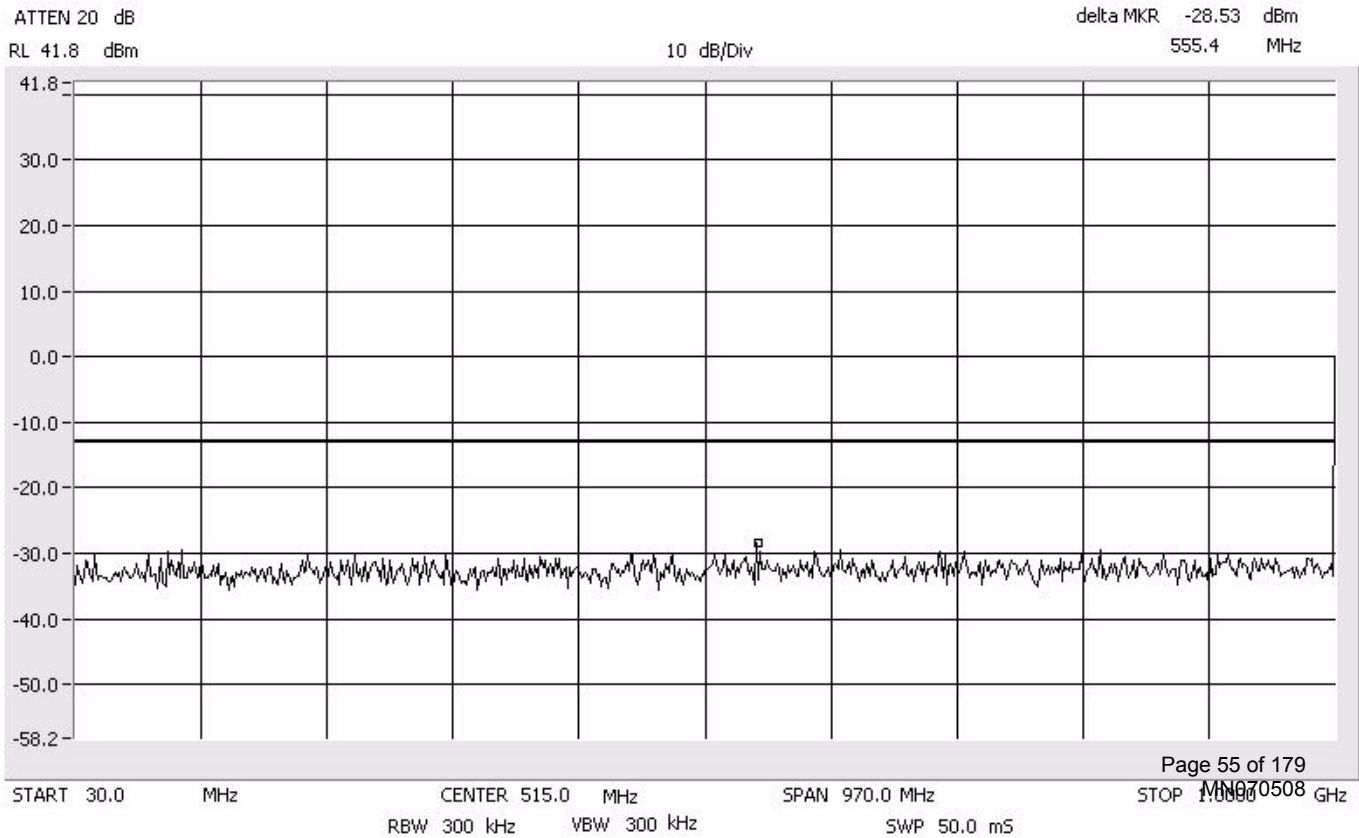
Center: 1957.5 MHz  
Span: 30 MHz  
RBW/VBW: 100 kHz

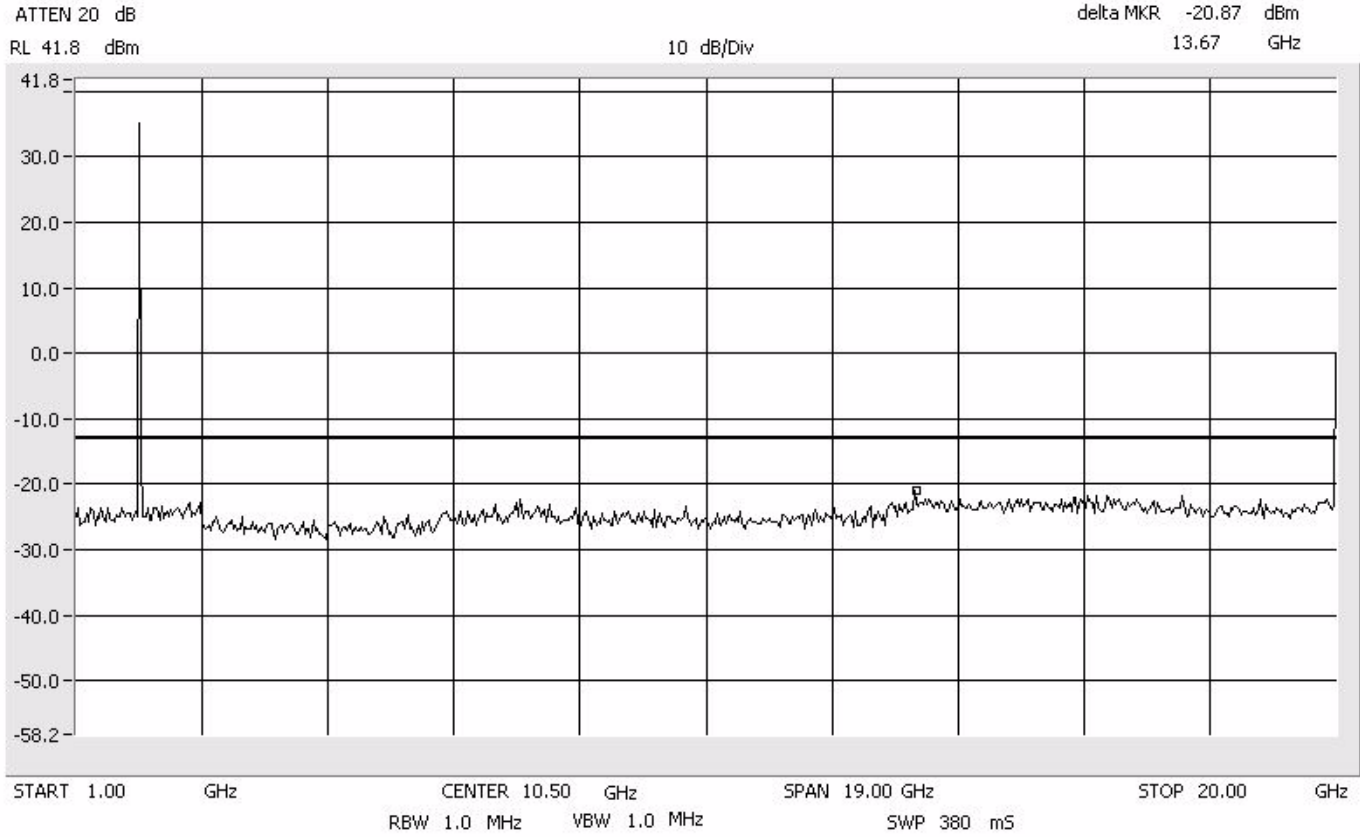


**TDMA  
DBE Band**

**Intermodulation  
Close - Lower  
PCS 1900 MHz**

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



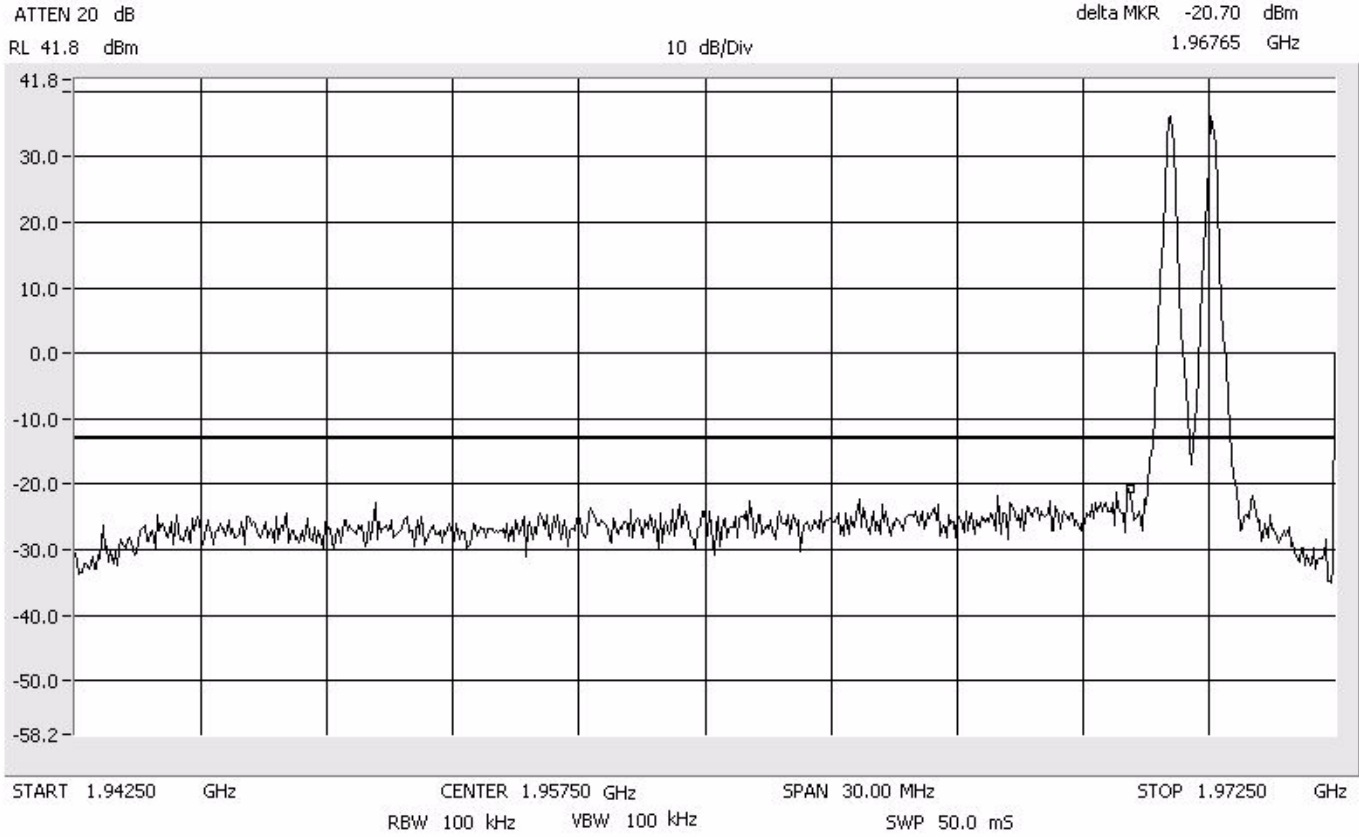




**TDMA  
DBE Band**

**Intermodulation  
Close - Upper  
PCS 1900 MHz**

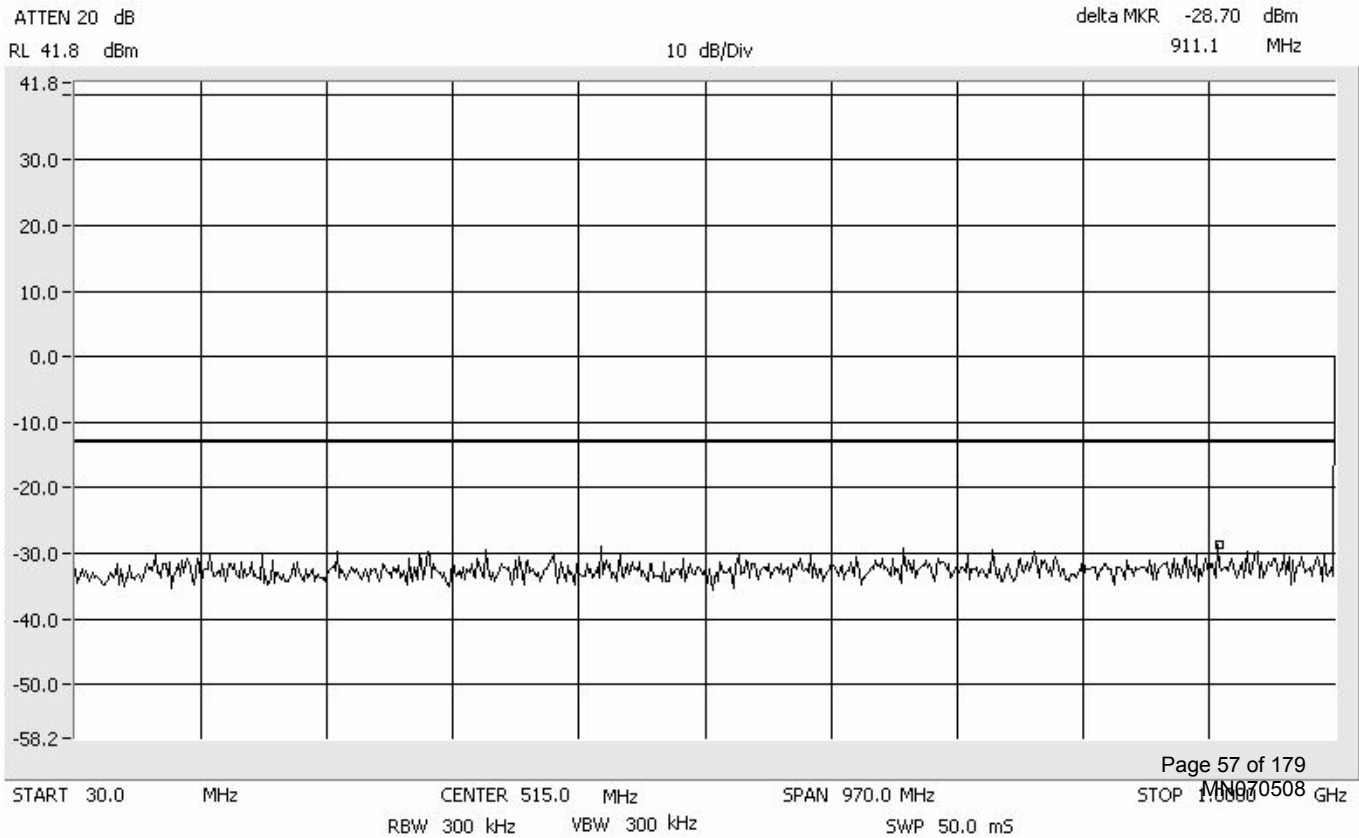
Center: 1957.5 MHz  
Span: 30 MHz  
RBW/VBW: 100 kHz

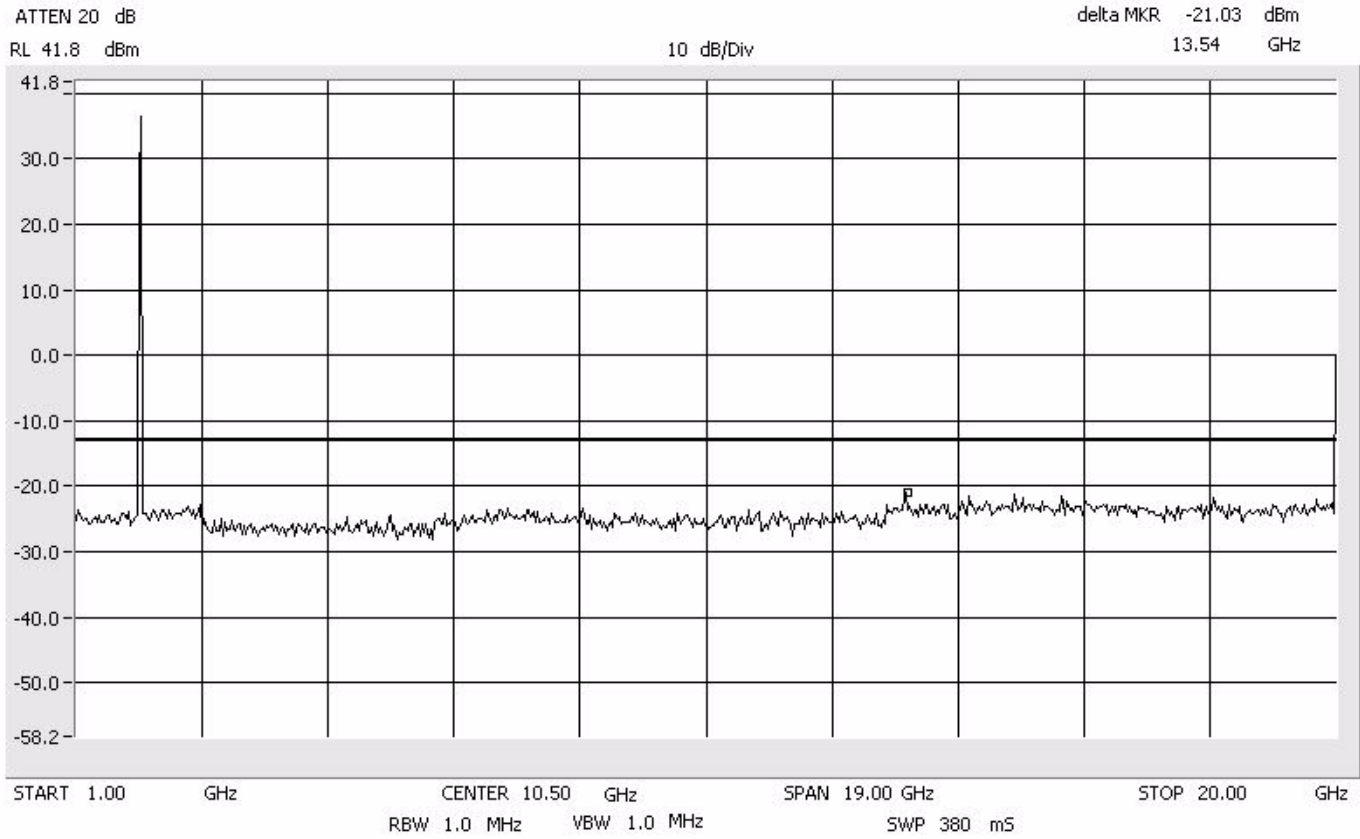


**TDMA  
DBE Band**

**Intermodulation  
Close - Upper  
PCS 1900 MHz**

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

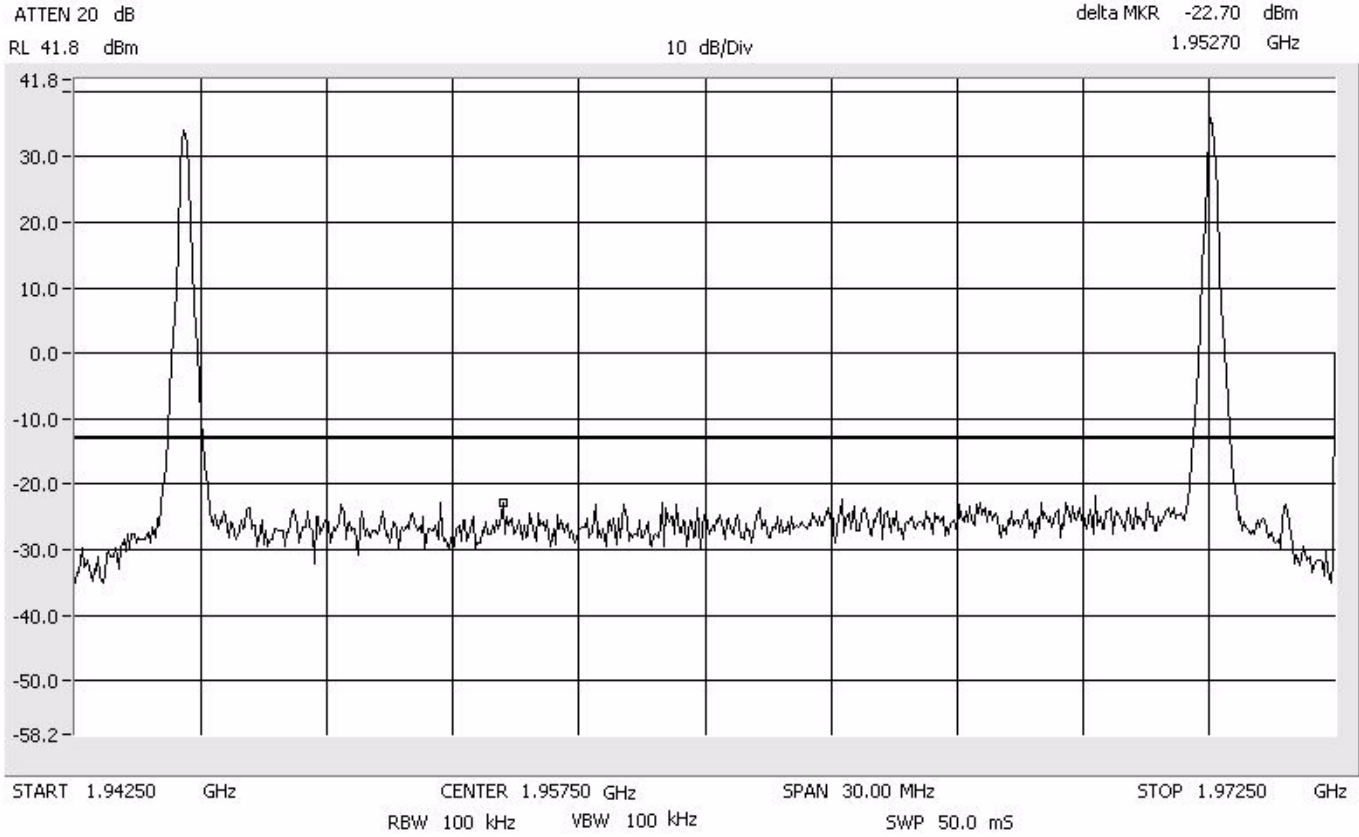




**TDMA  
DBE Band**

**Intermodulation  
Apart  
PCS 1900 MHz**

Center: 1957.5 MHz  
Span: 30 MHz  
RBW/VBW: 100 kHz



**TDMA  
DBE Band**

**Intermodulation  
Apart  
PCS 1900 MHz**

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

