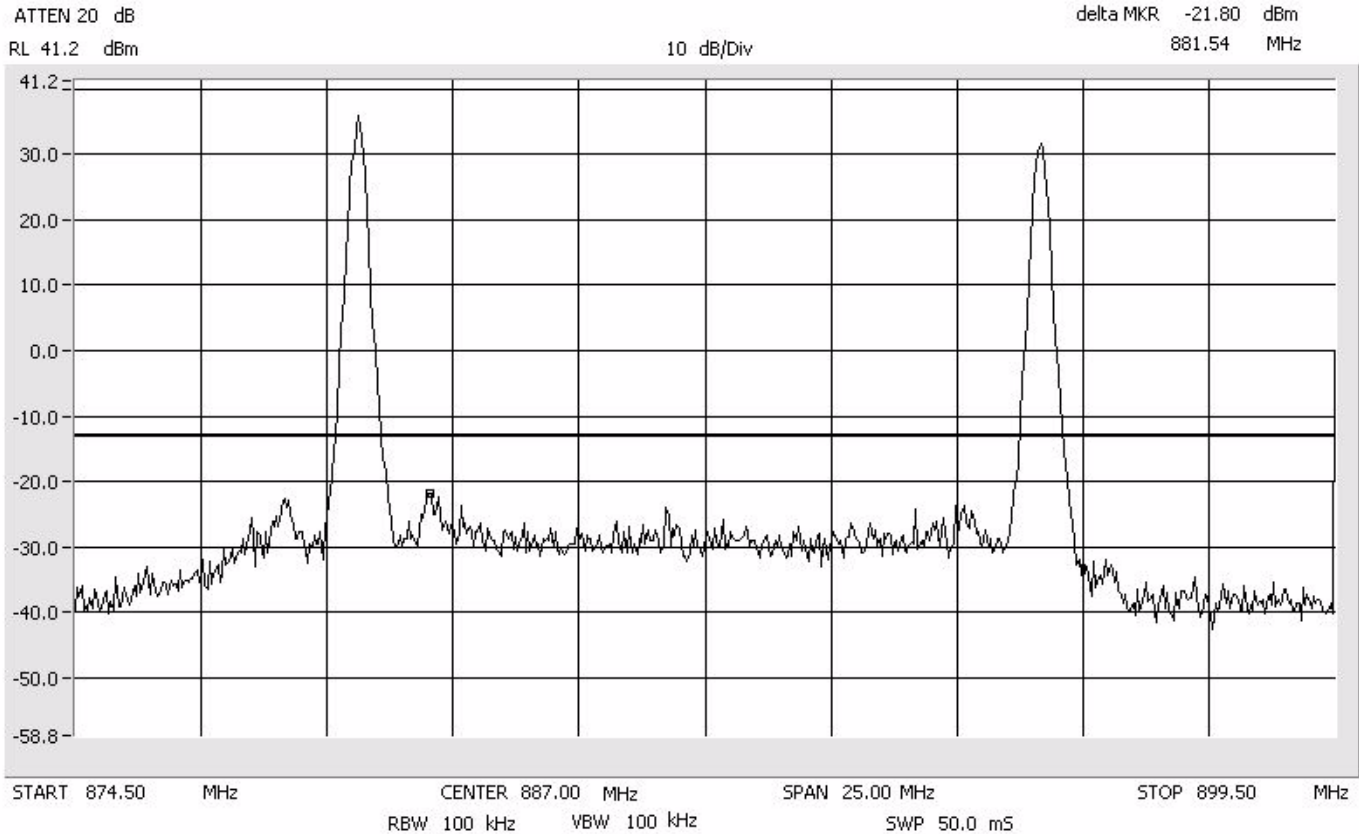


EDGE  
B Band

Intermodulation  
Apart  
Cellular 800 MHz

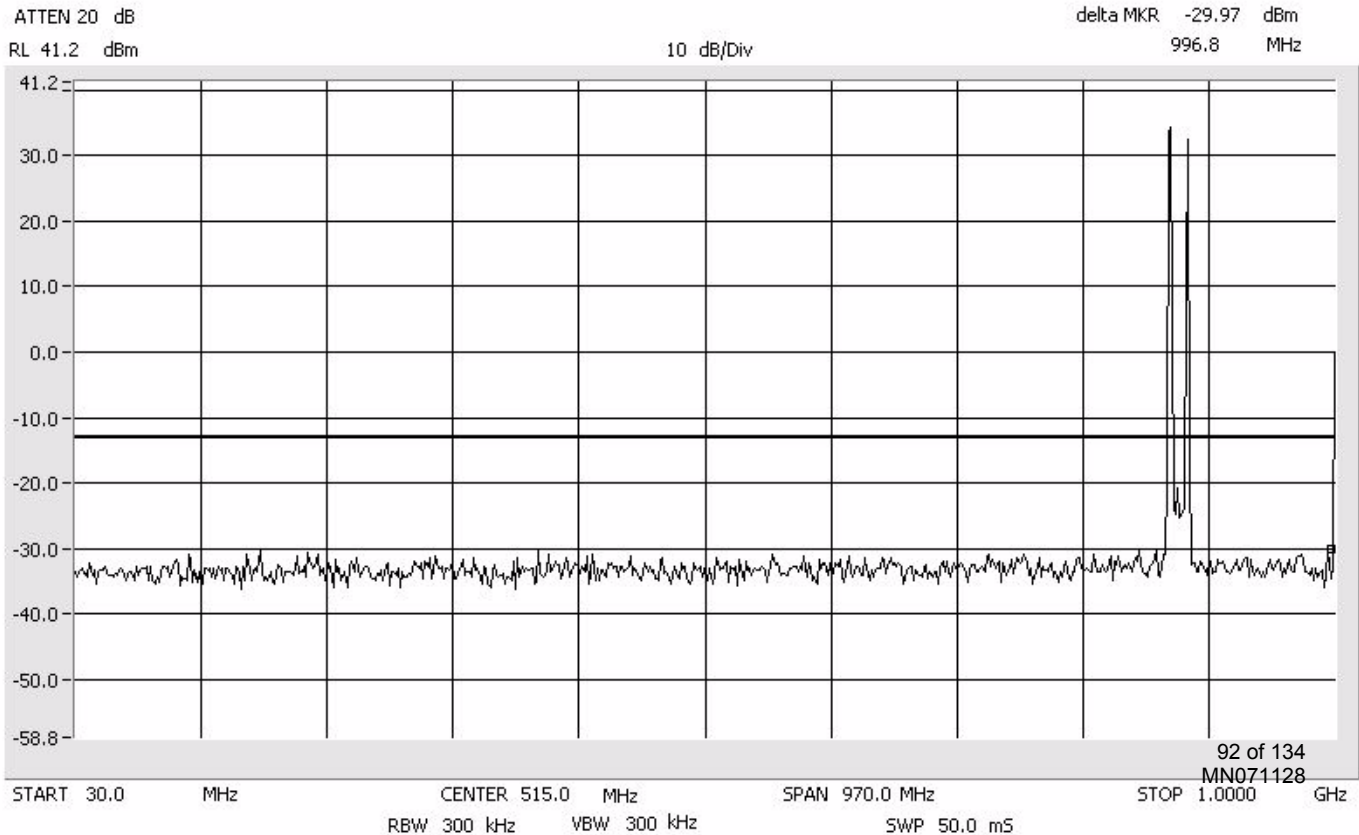
Center: 887.0 MHz  
Span: 100 MHz  
RBW/VBW: 100 kHz

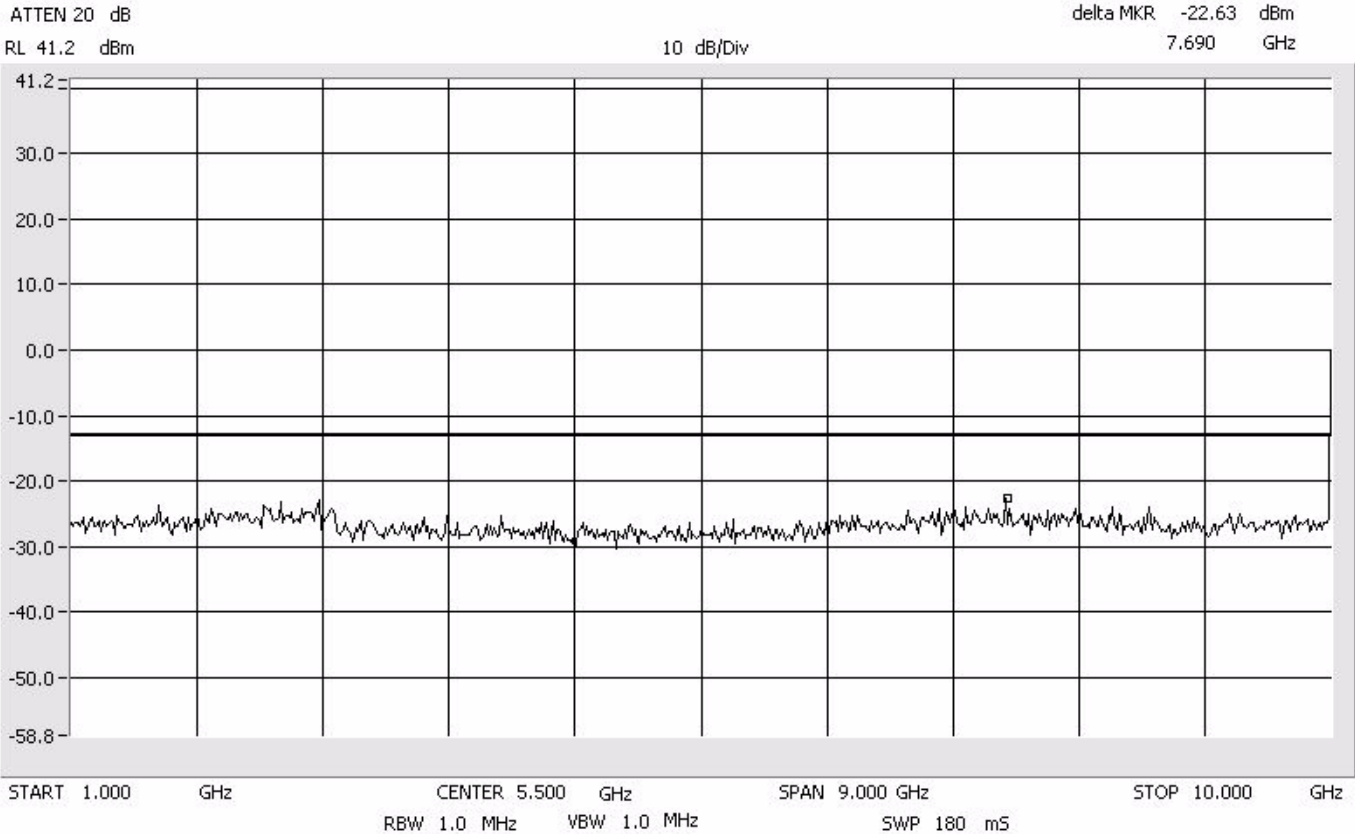


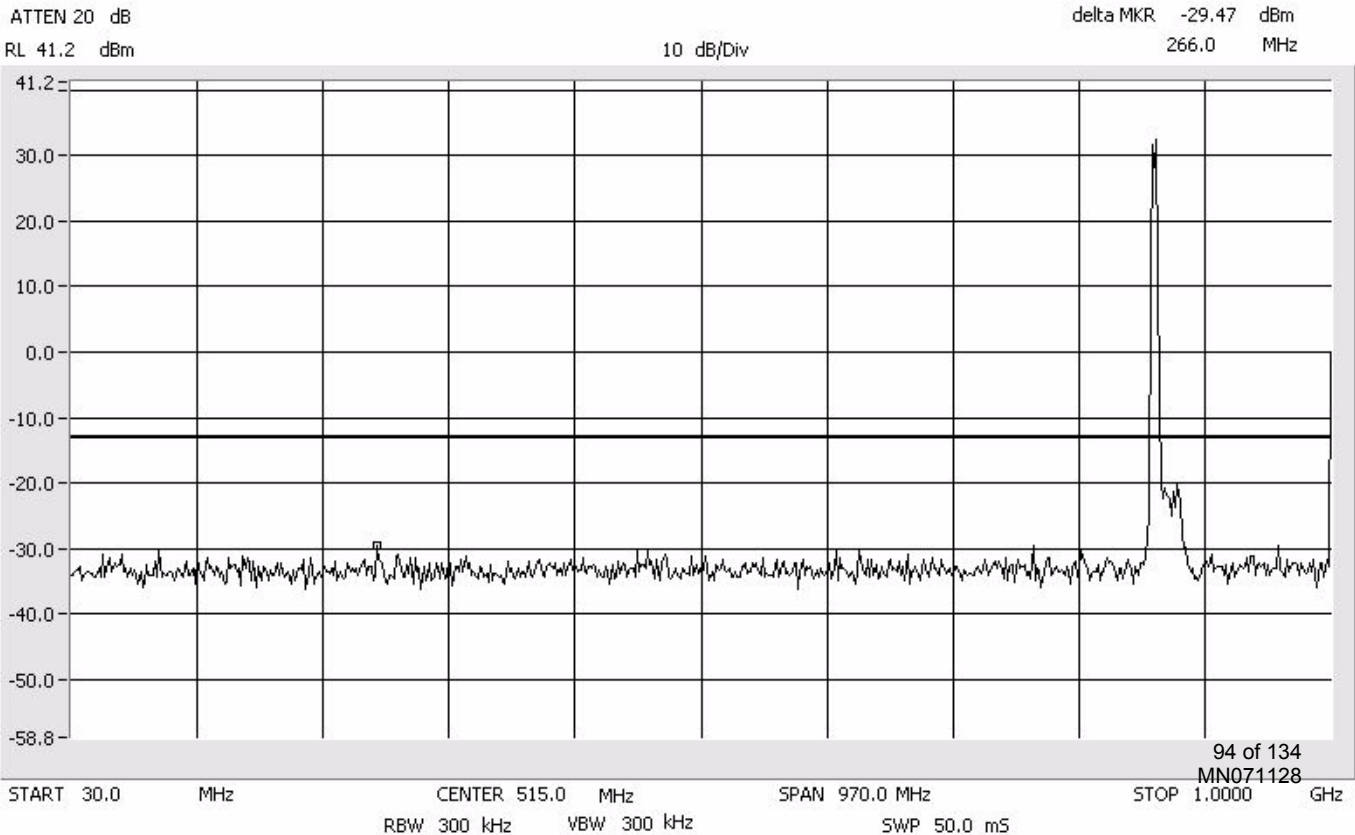
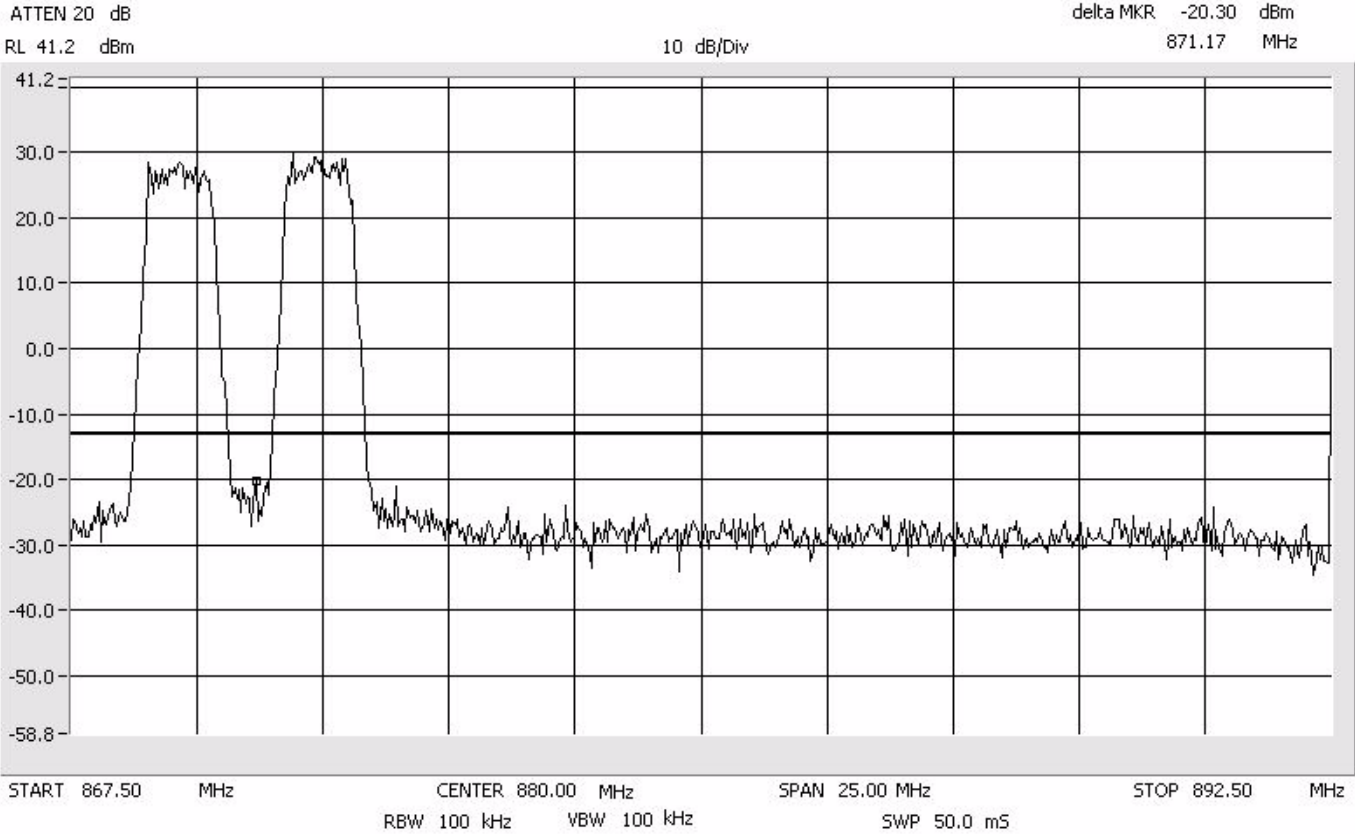
EDGE  
B Band

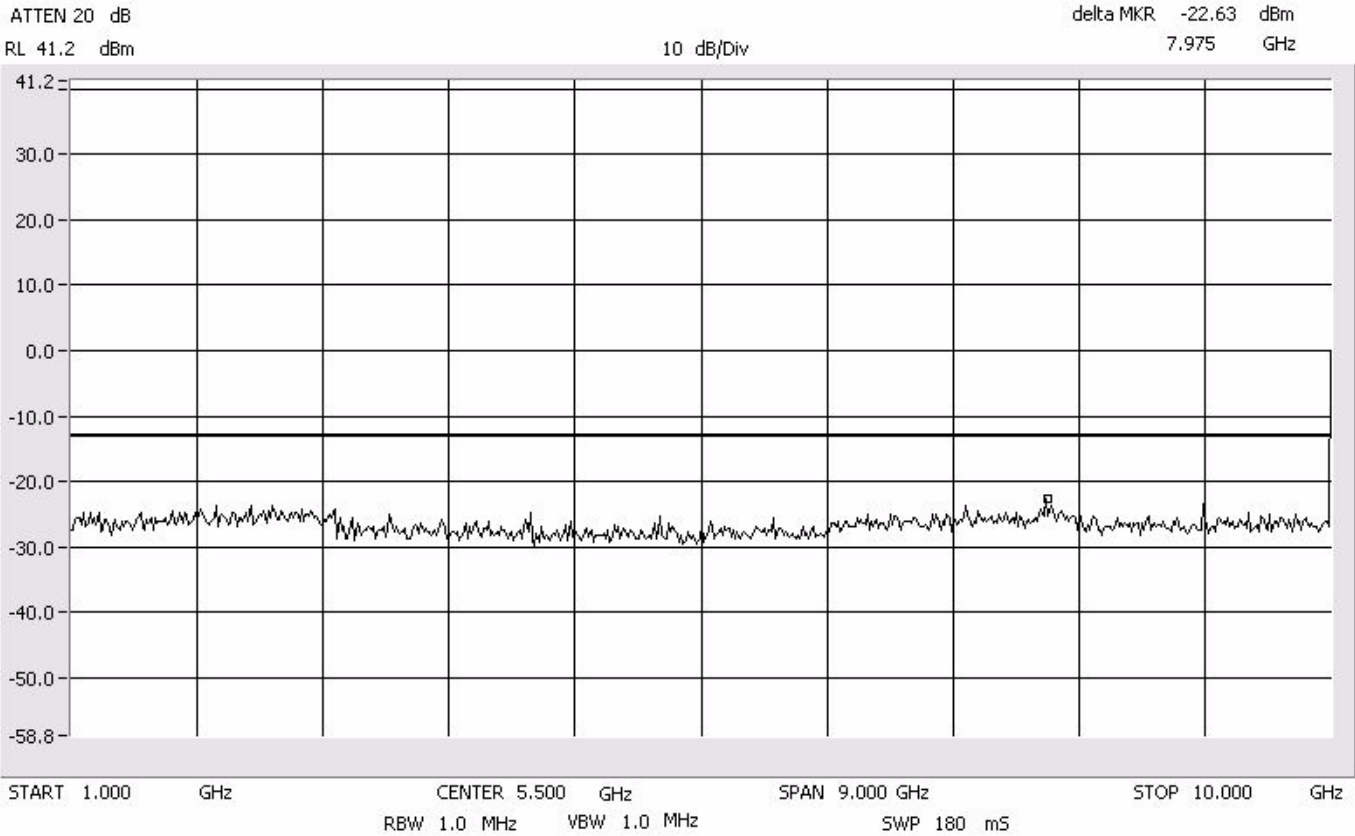
Intermodulation  
Apart  
Cellular 800 MHz

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





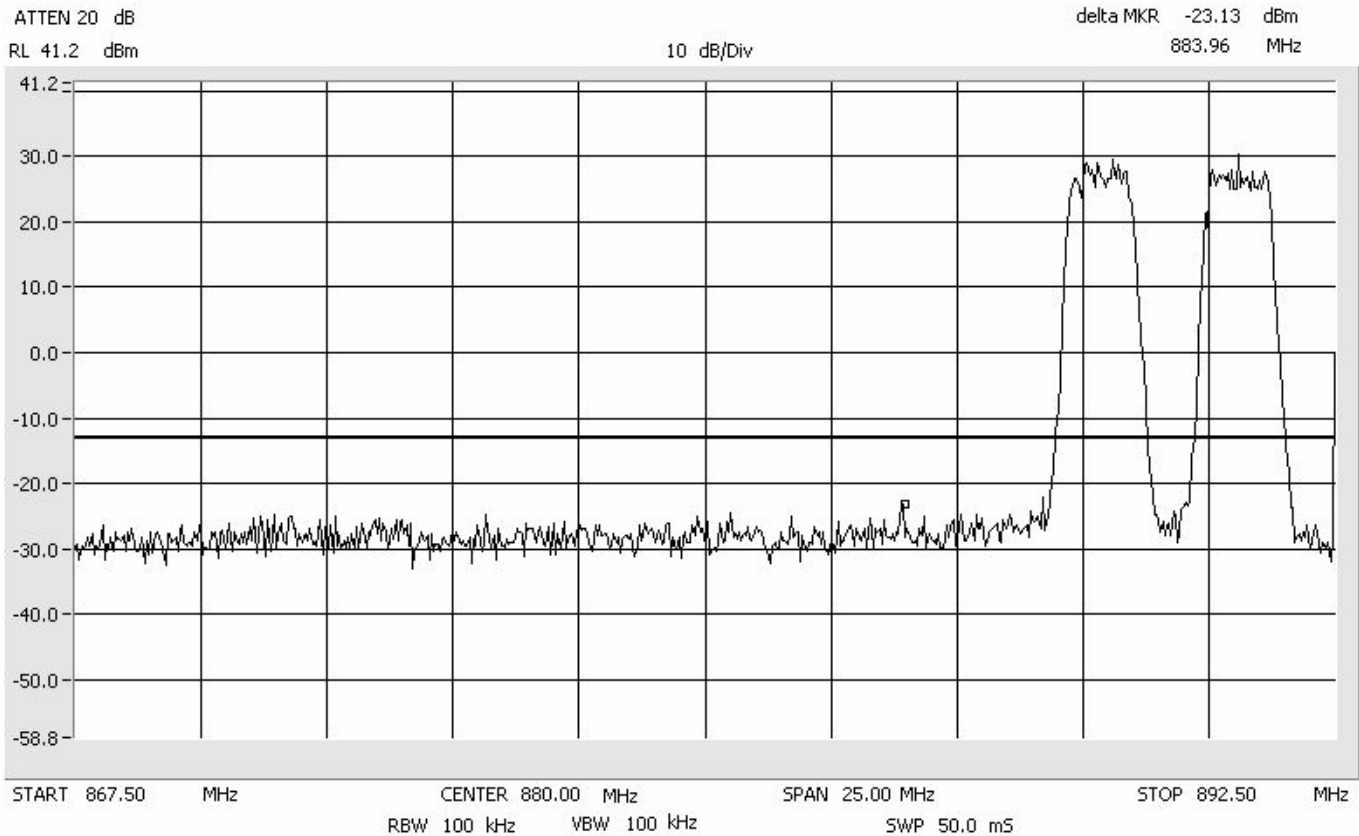




CDMA  
A Band

Intermodulation  
Close - Upper  
Cellular 800 MHz

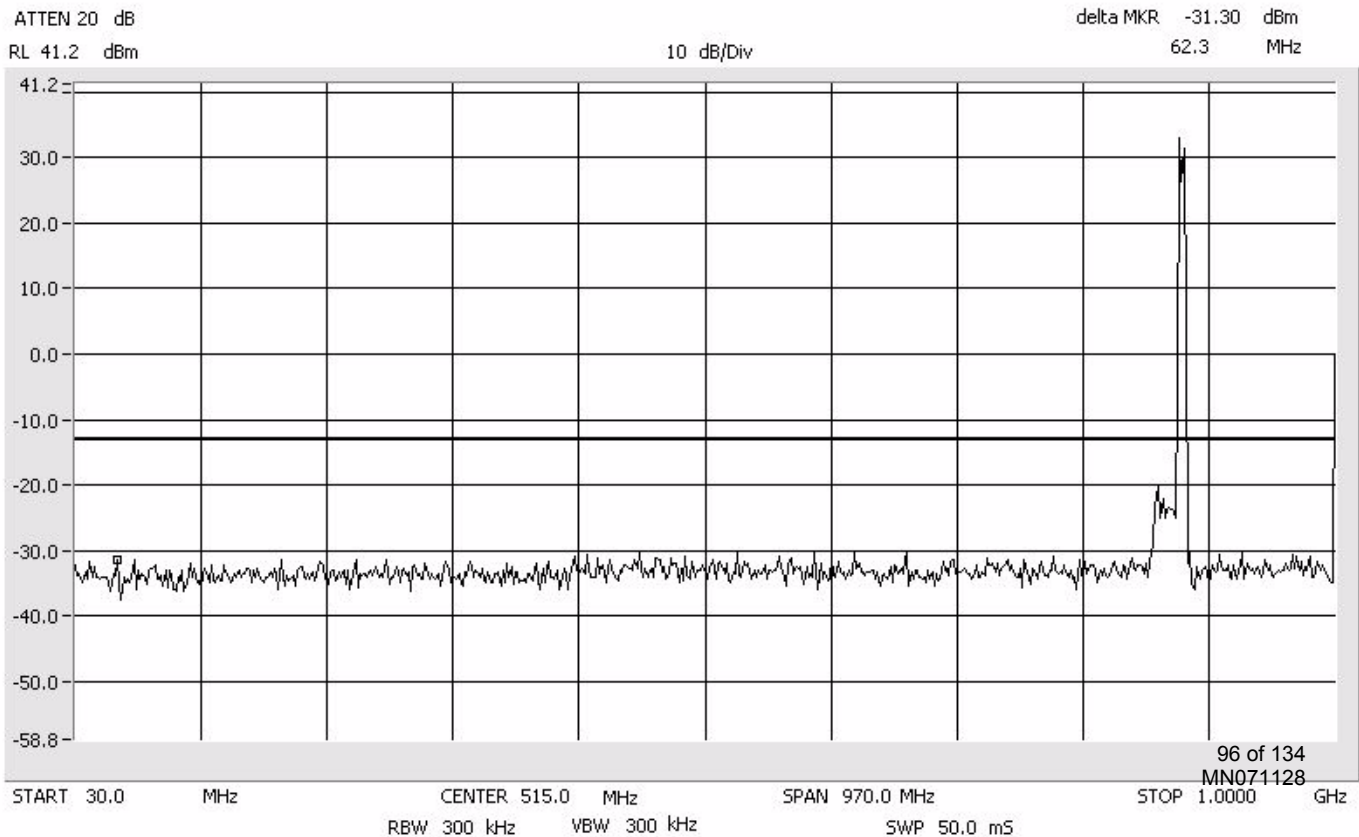
Center: 880.0 MHz  
Span: 25 MHz  
RBW/VBW: 100 kHz

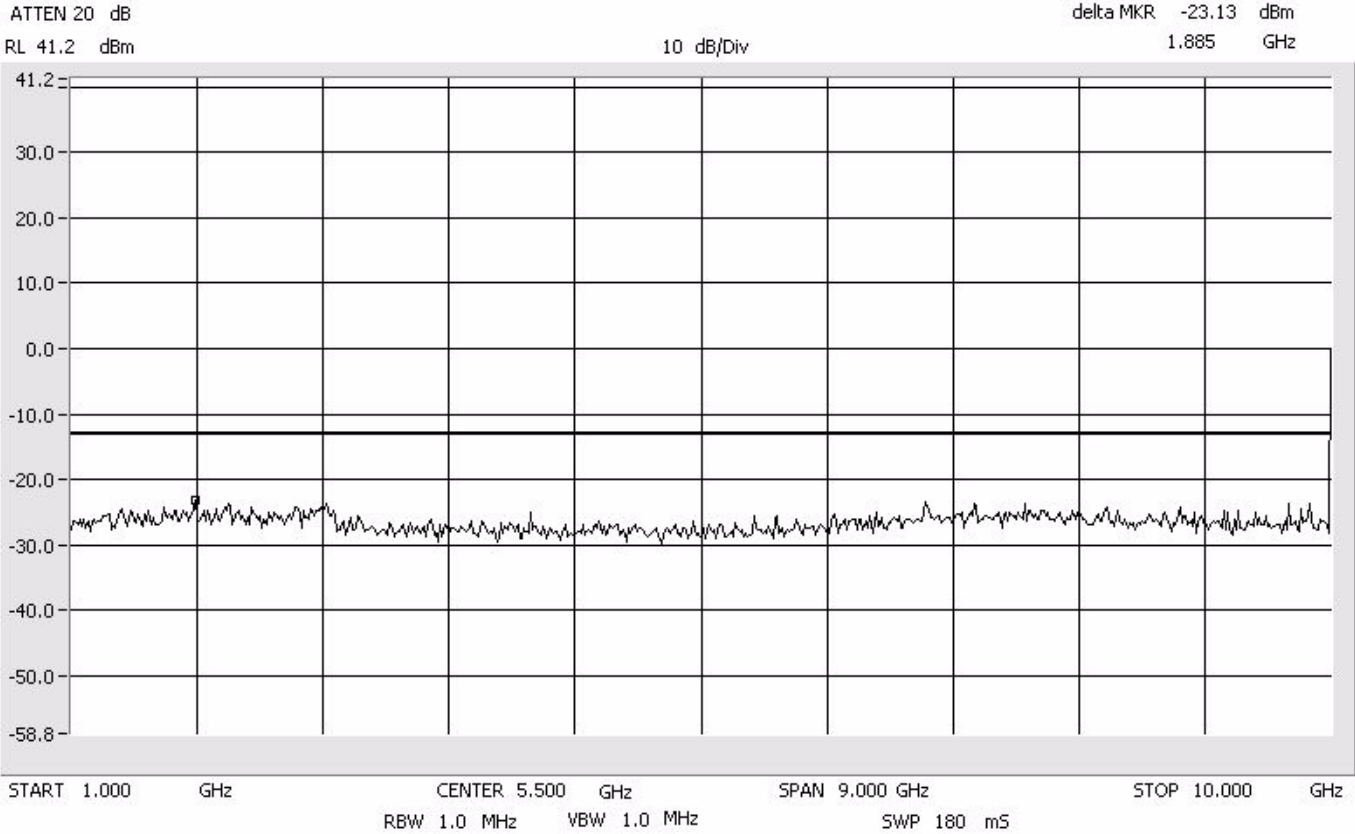


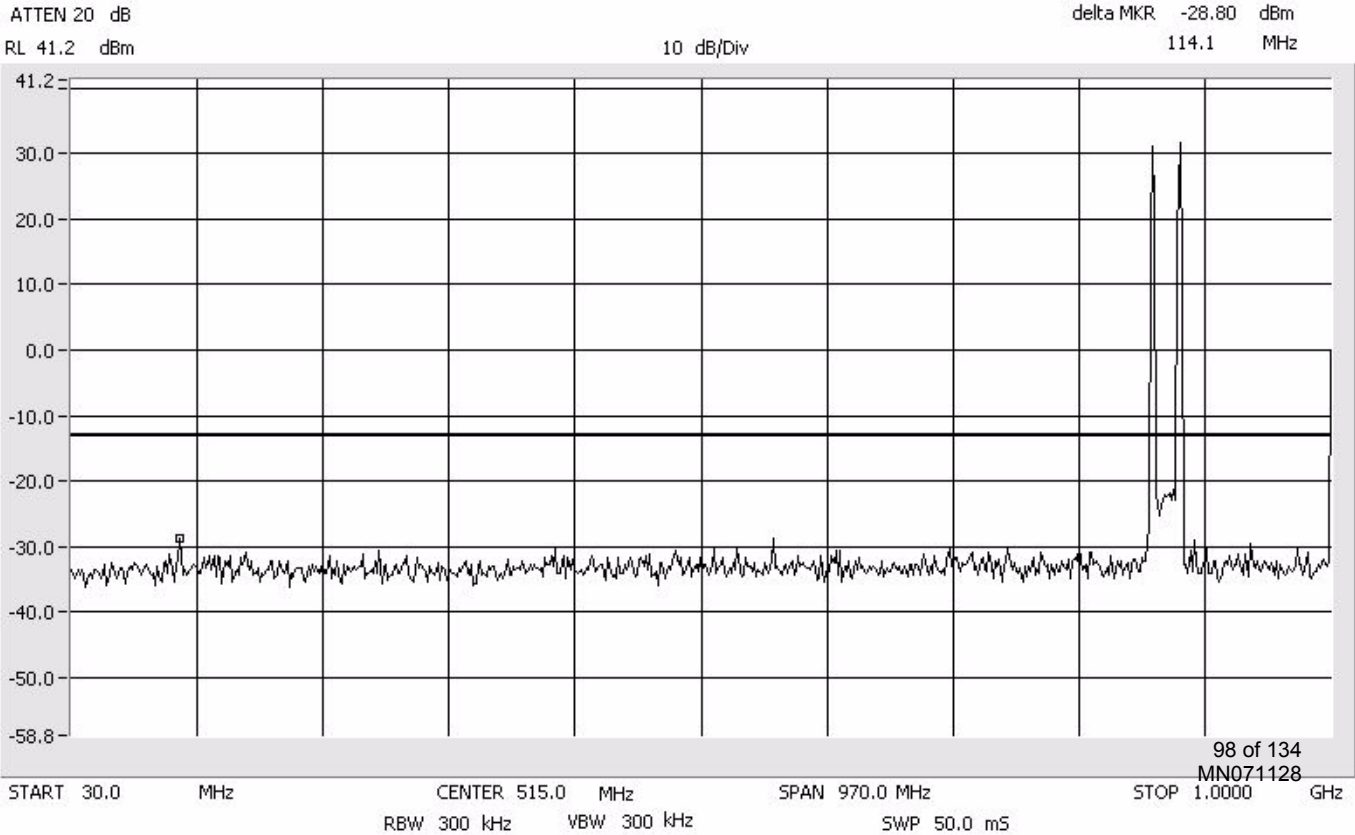
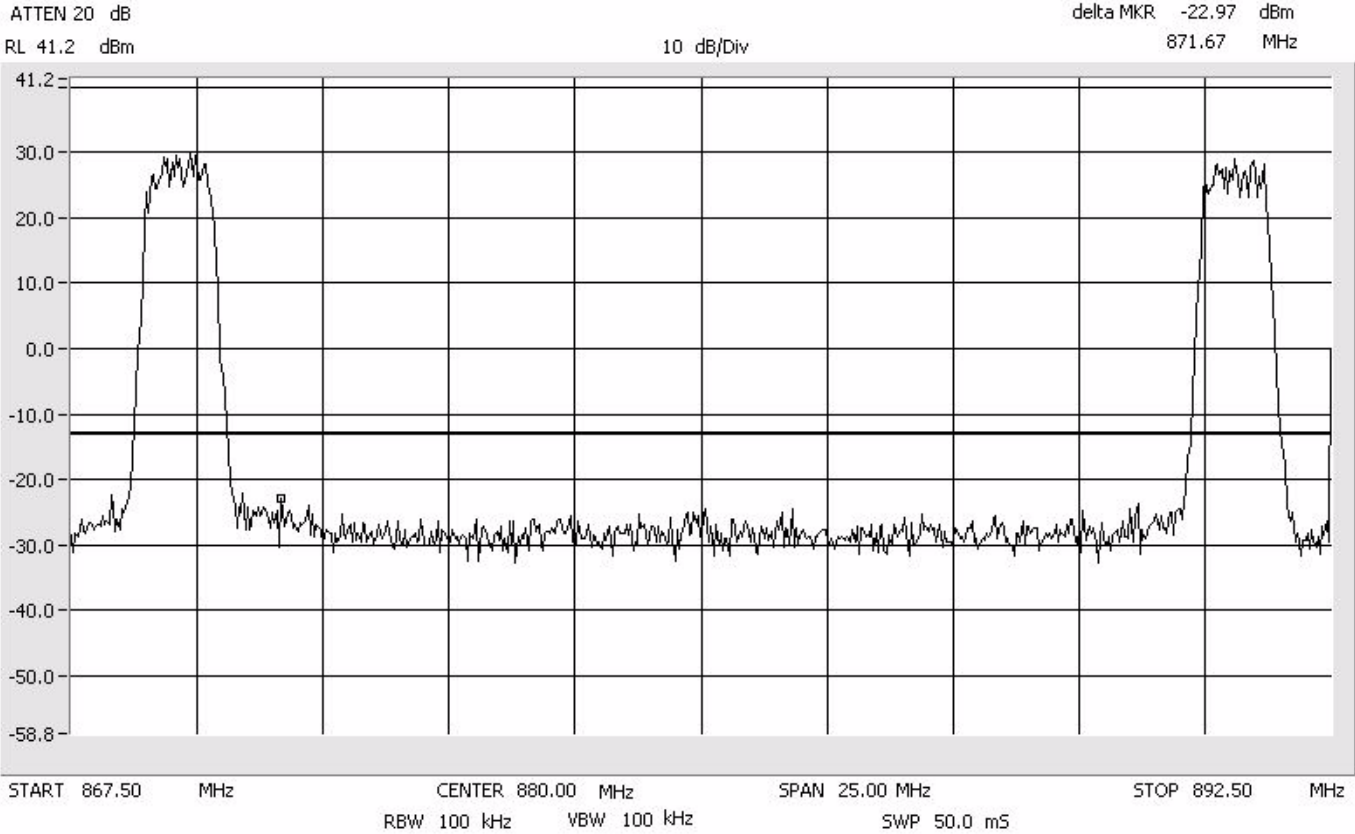
CDMA  
A Band

Intermodulation  
Close - Upper  
Cellular 800 MHz

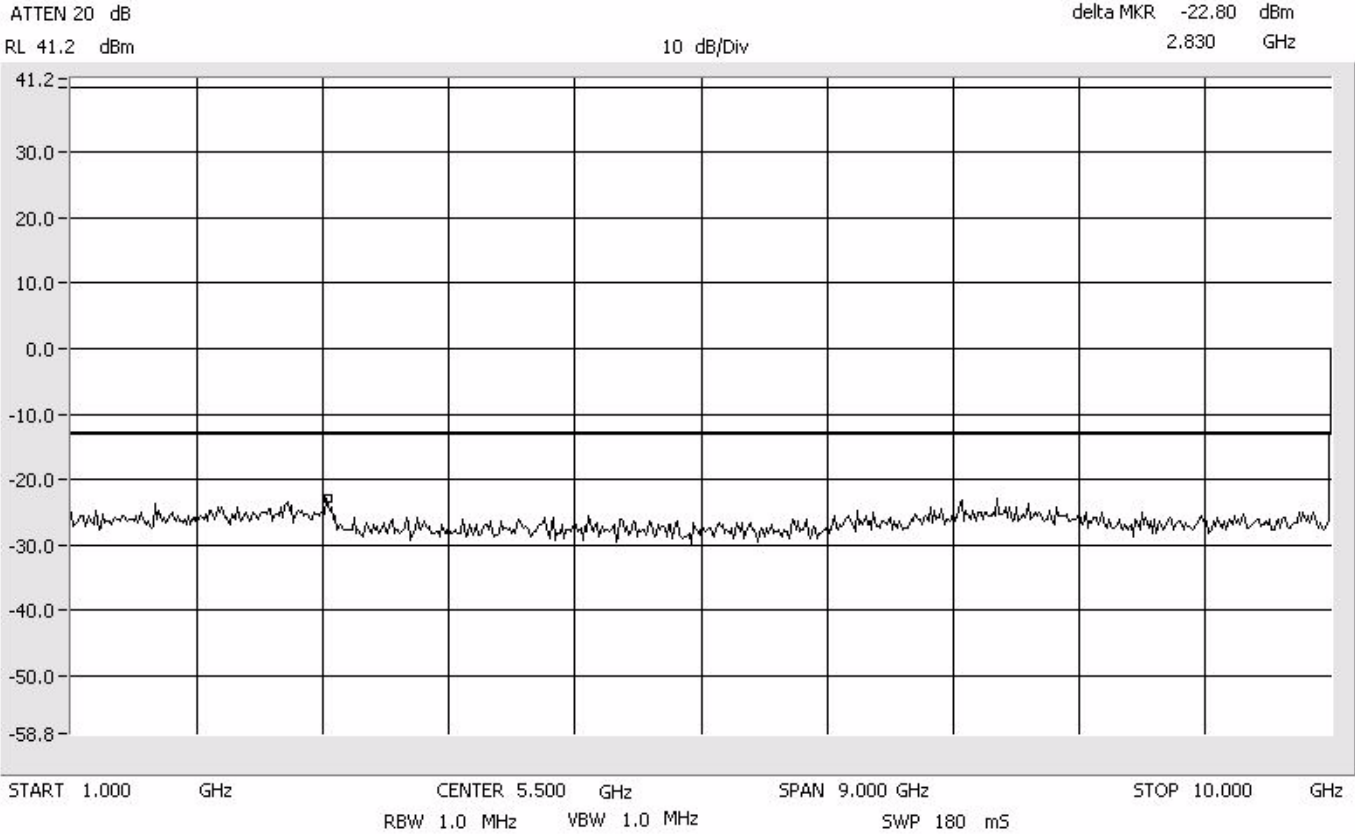
Span: 30 MHz to 1 GHz  
RBW/VBW: 300 kHz







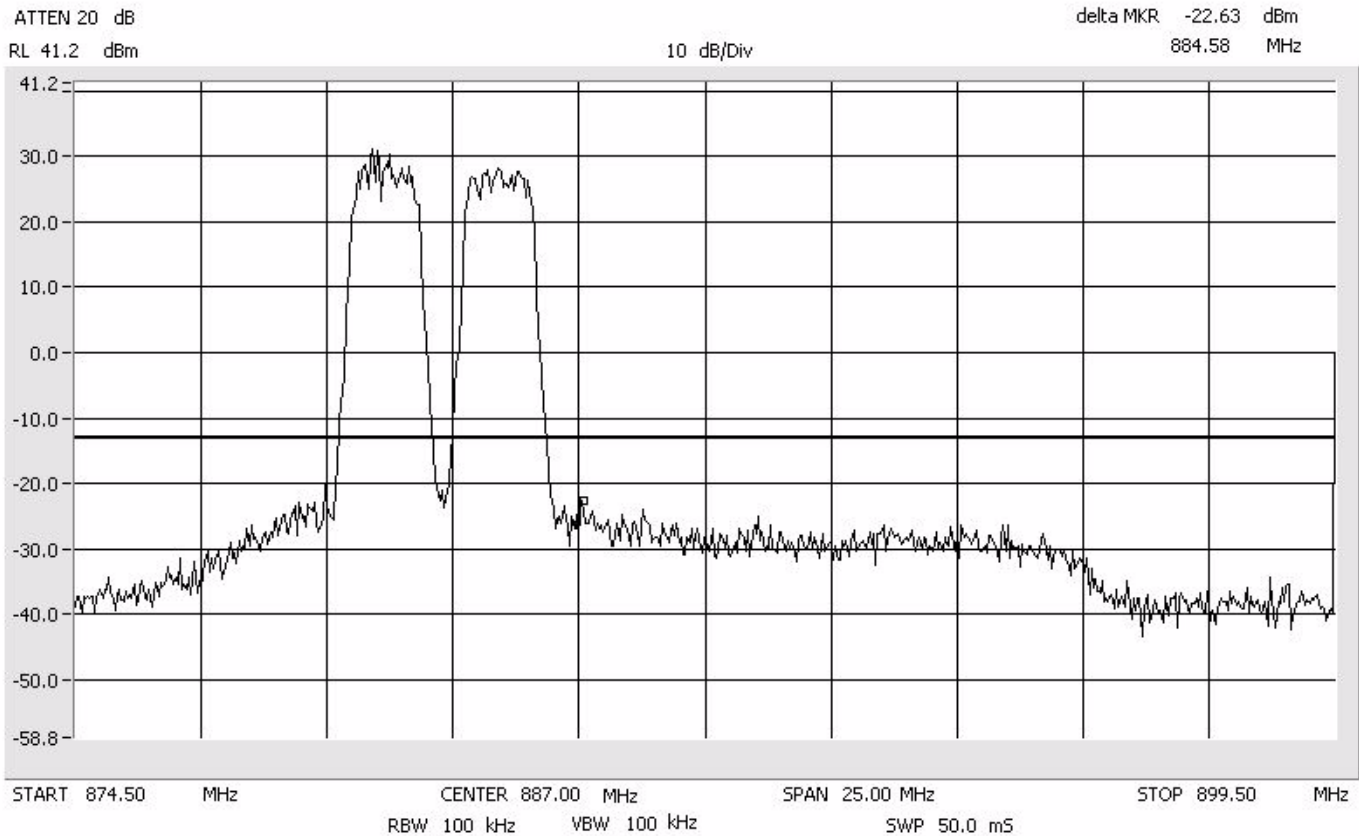




CDMA  
B Band

Intermodulation  
Close - Lower  
Cellular 800 MHz

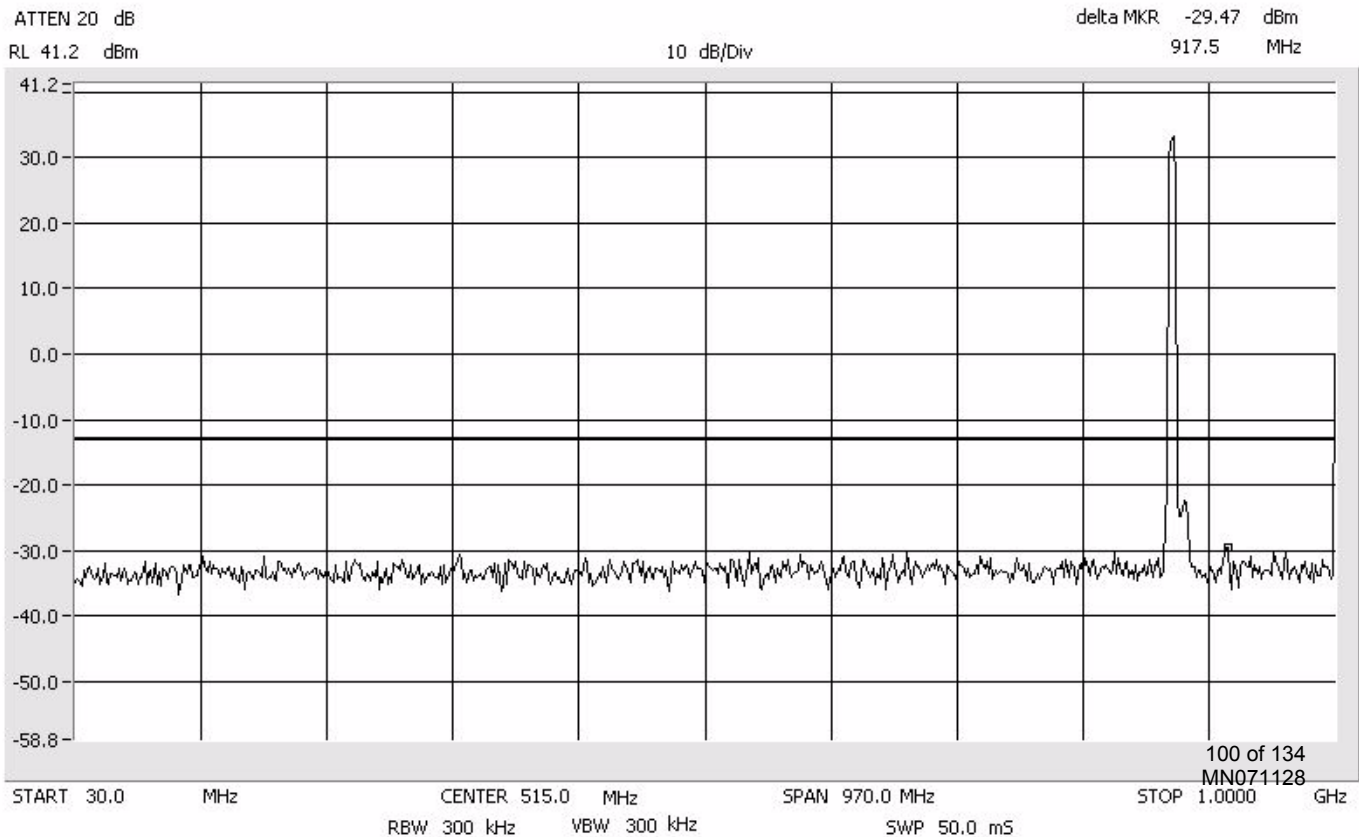
Center: 887.0 MHz  
Span: 25 MHz  
RBW/VBW: 100 kHz

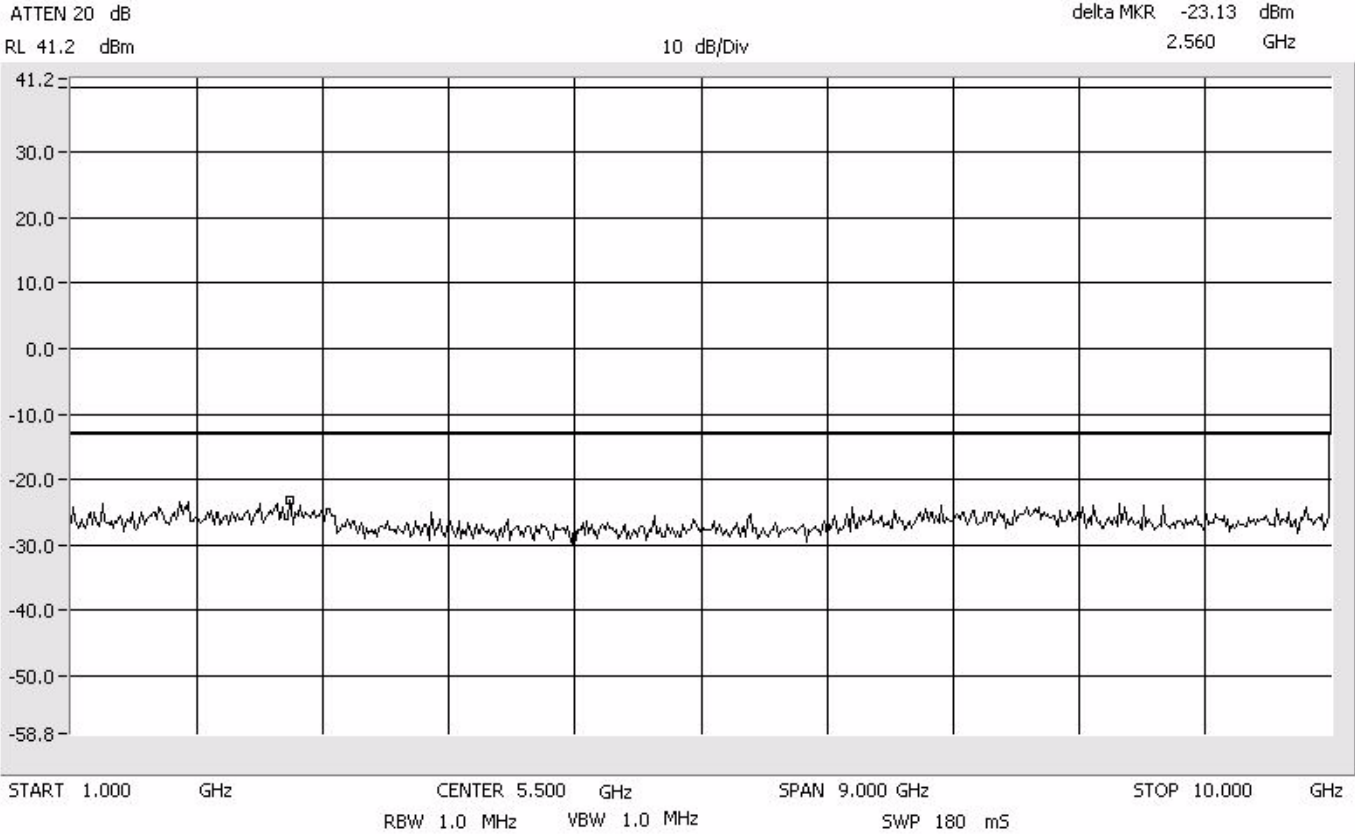


CDMA  
B Band

Intermodulation  
Close - Lower  
Cellular 800 MHz

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

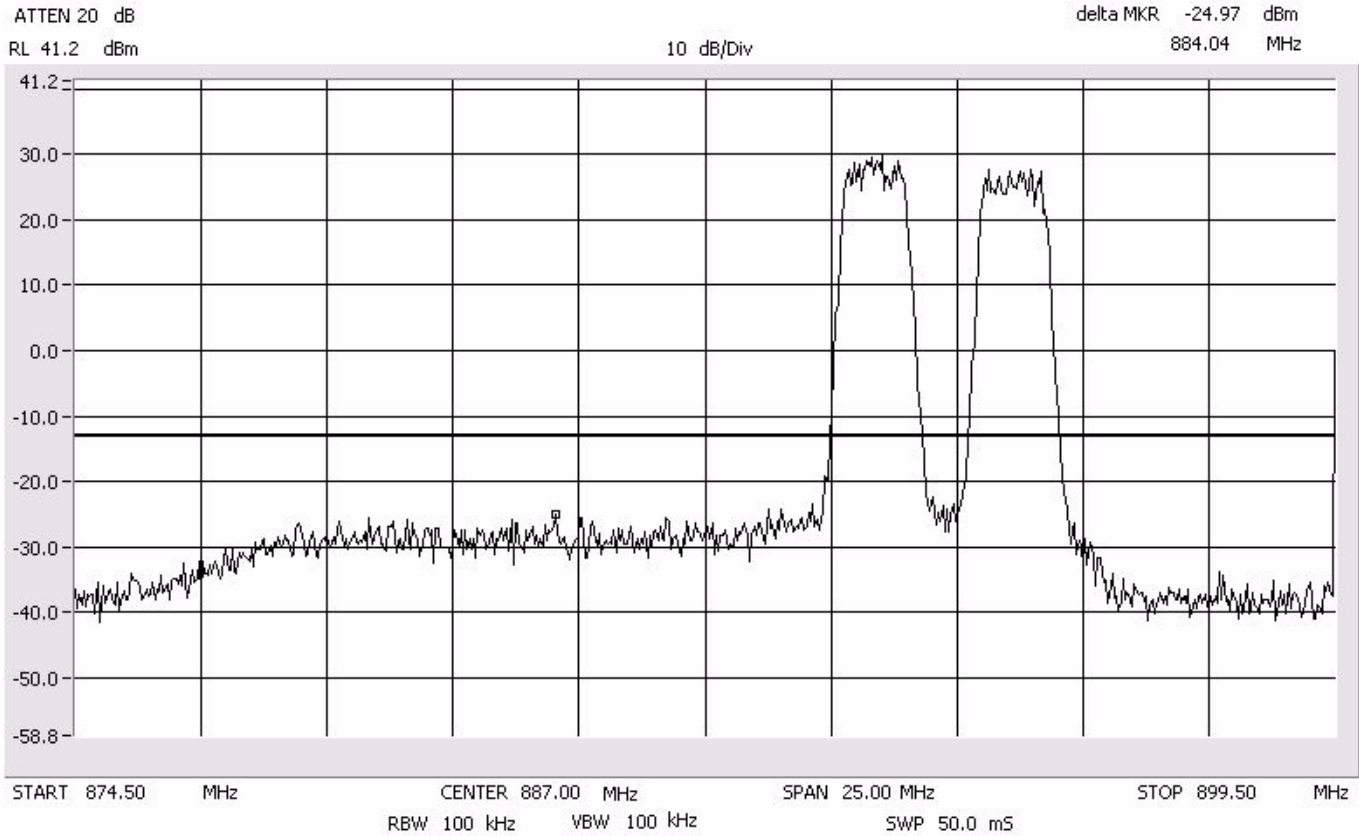




CDMA  
B Band

Intermodulation  
Close - Upper  
Cellular 800 MHz

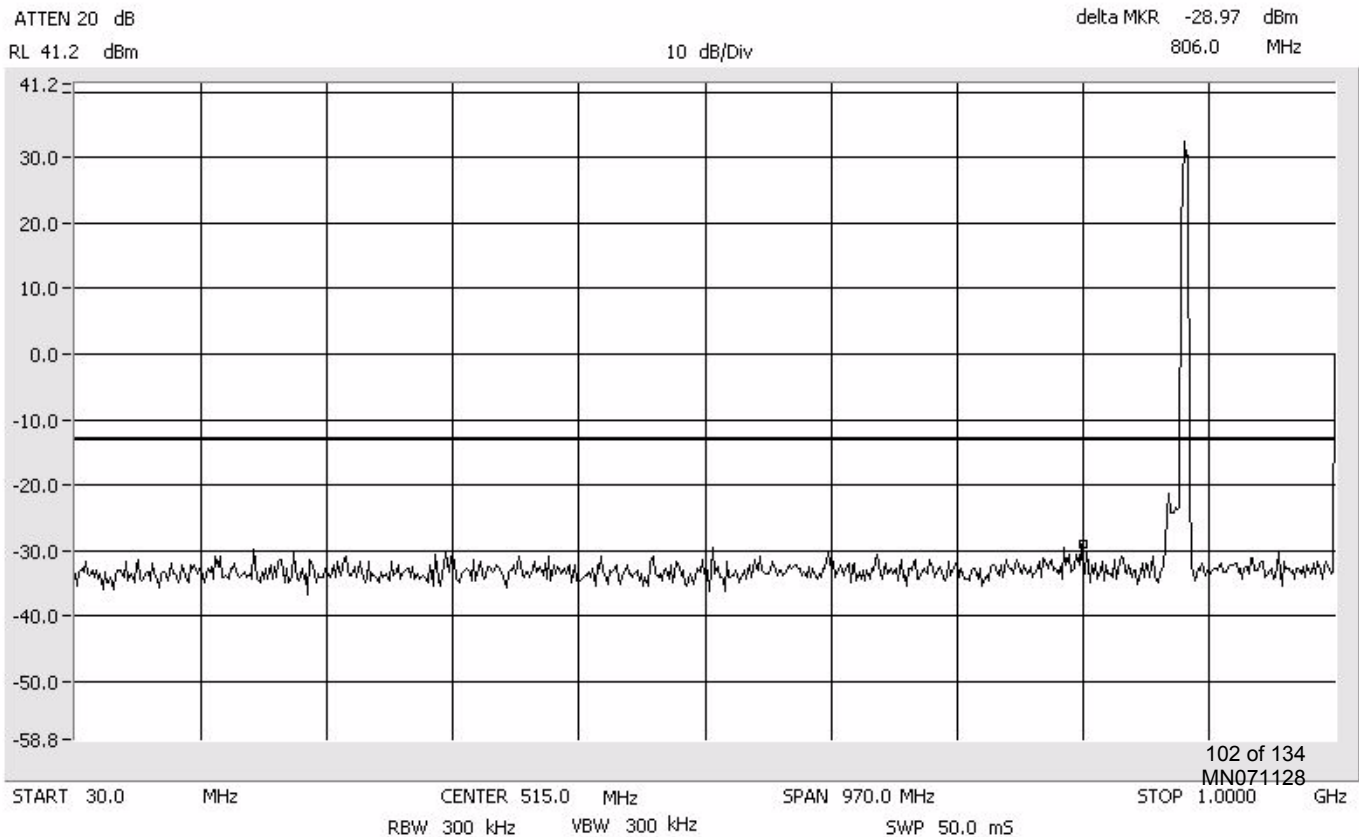
Center: 887.0 MHz  
Span: 25 MHz  
RBW/VBW: 100 kHz

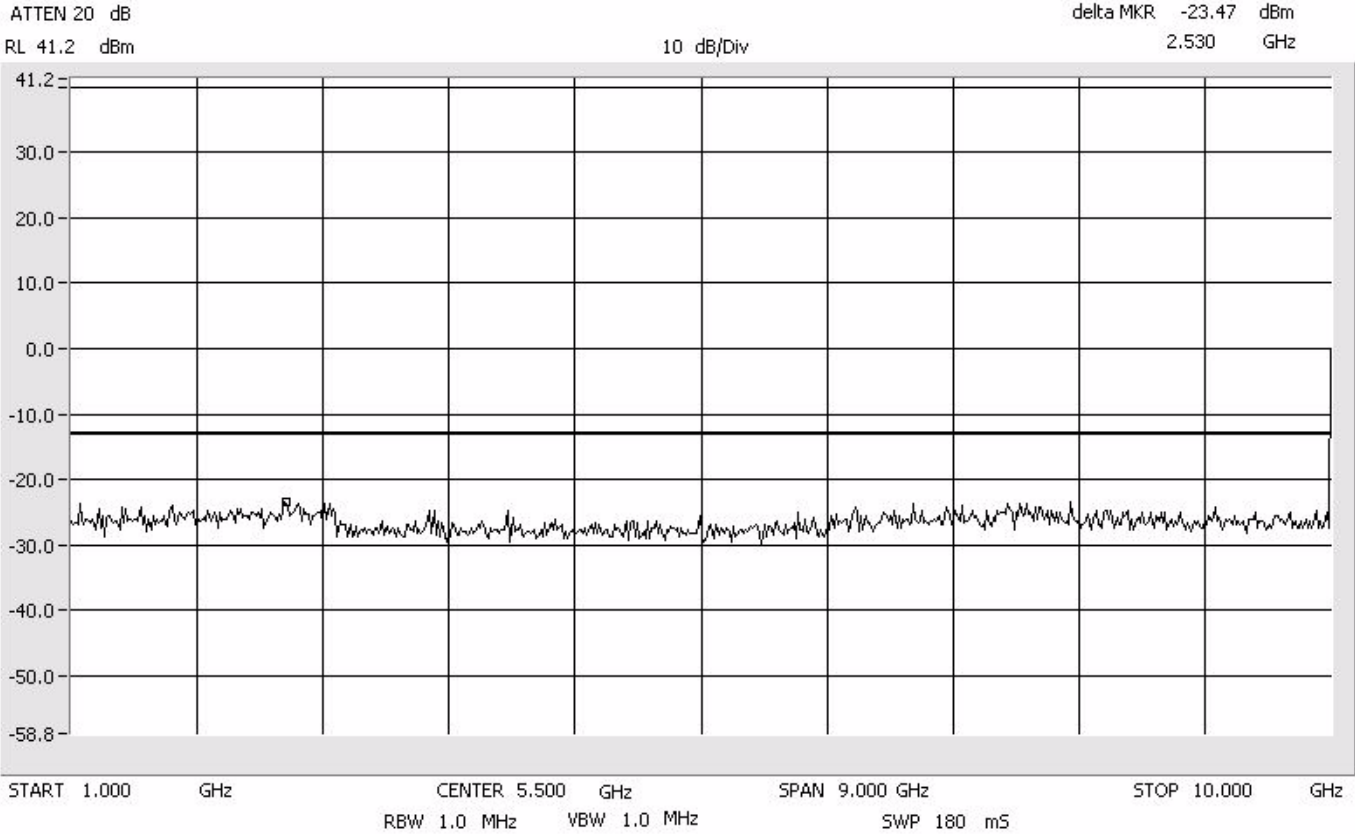


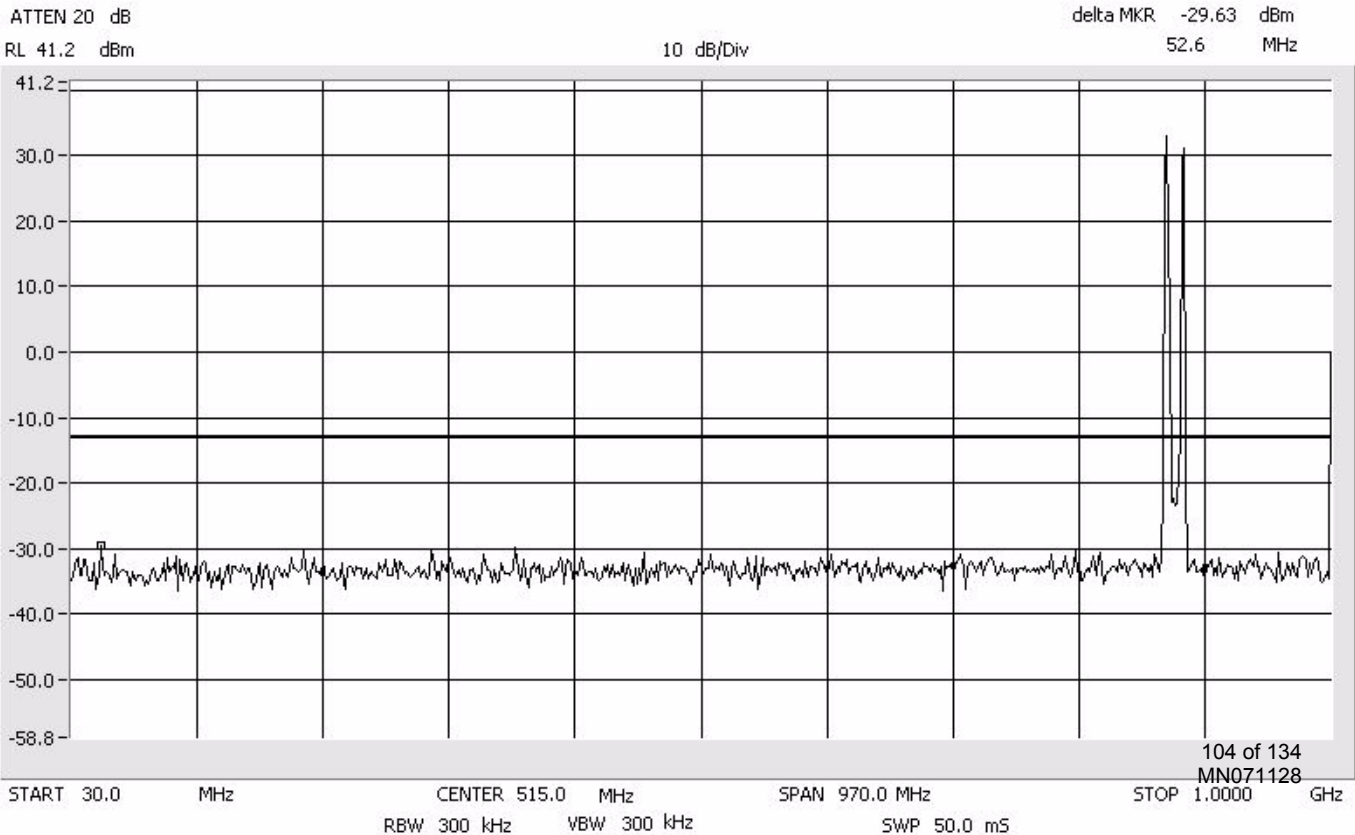
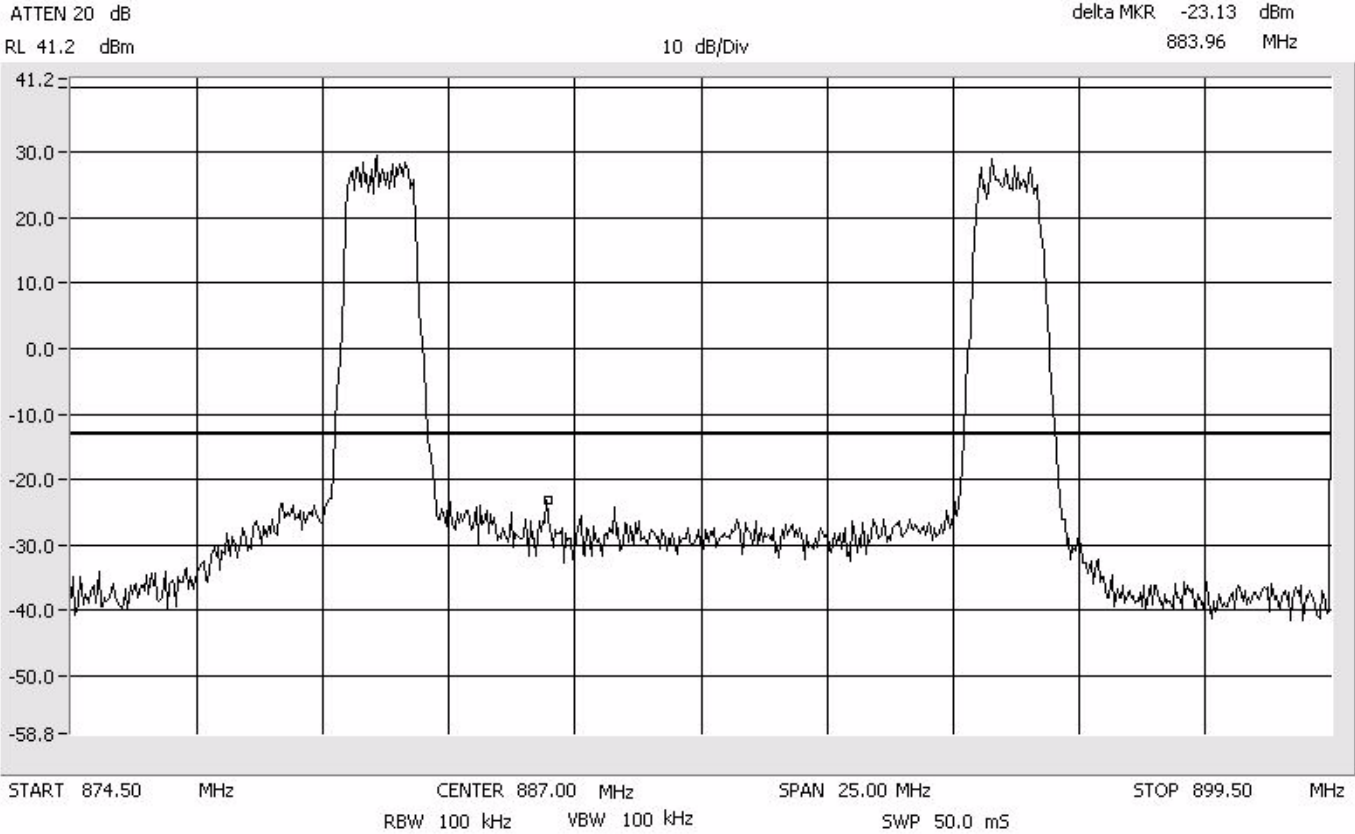
CDMA  
B Band

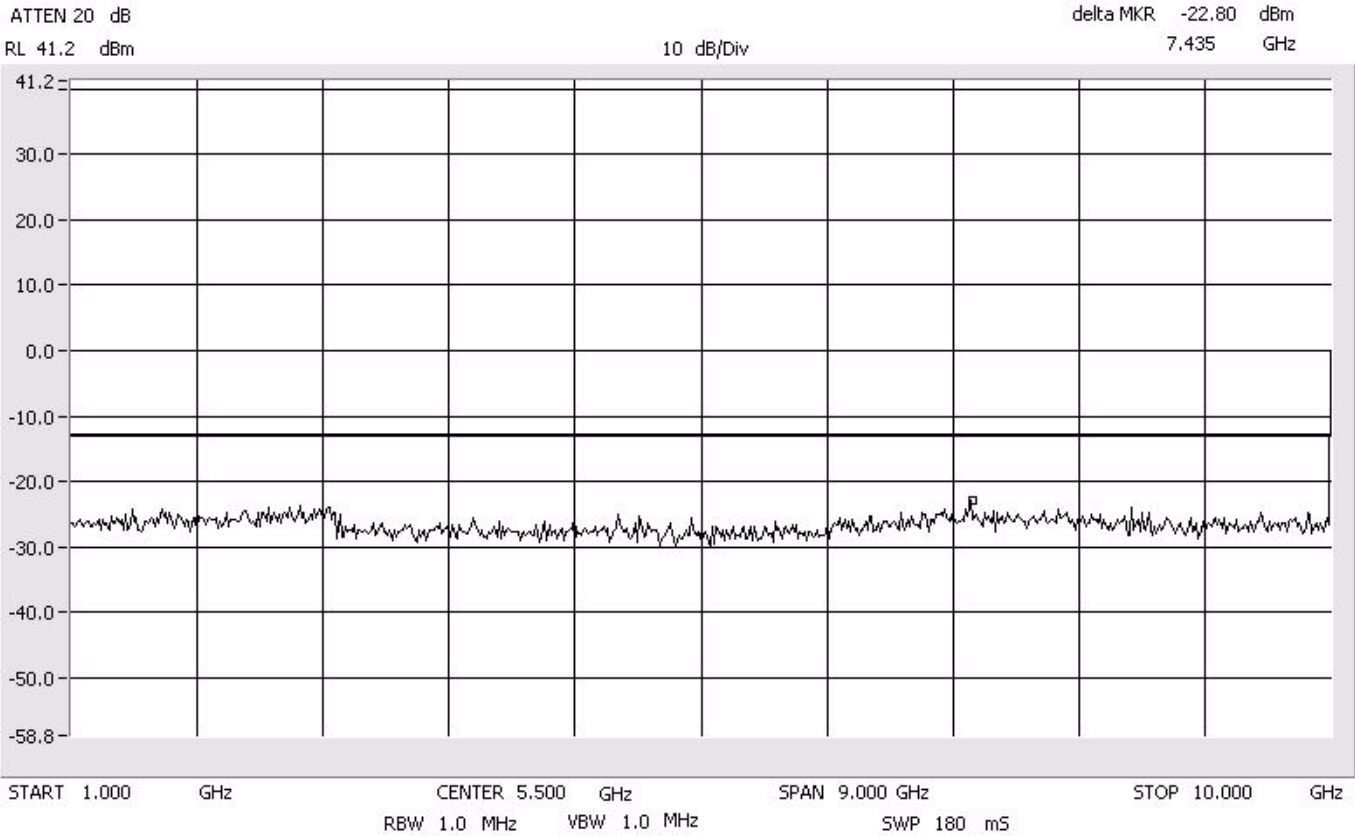
Intermodulation  
Close - Upper  
Cellular 800 MHz

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









**Occupied Bandwidth Modulation Test for ADC Inc.**  
**FlexWave™ URH - Cellular**  
**Model Number FWU-220000002110RU**

[Back](#)

An input/output Occupied Bandwidth test was done with modulation types: FM, TDMA, GSM, EDGE, CDMA, EVDO, and W-CDMA. The purpose was to determine the amount of distortion added to different types of modulation schemes by the EUT. The following plots show input signals vs. output signals.

The resolution bandwidth is reduced to 1% of the estimated emission bandwidth and the video bandwidth is set to 3 times the resolution bandwidth. The markers are moved to the -20 dB points (from the previously established center frequency level) on either side of center frequency.

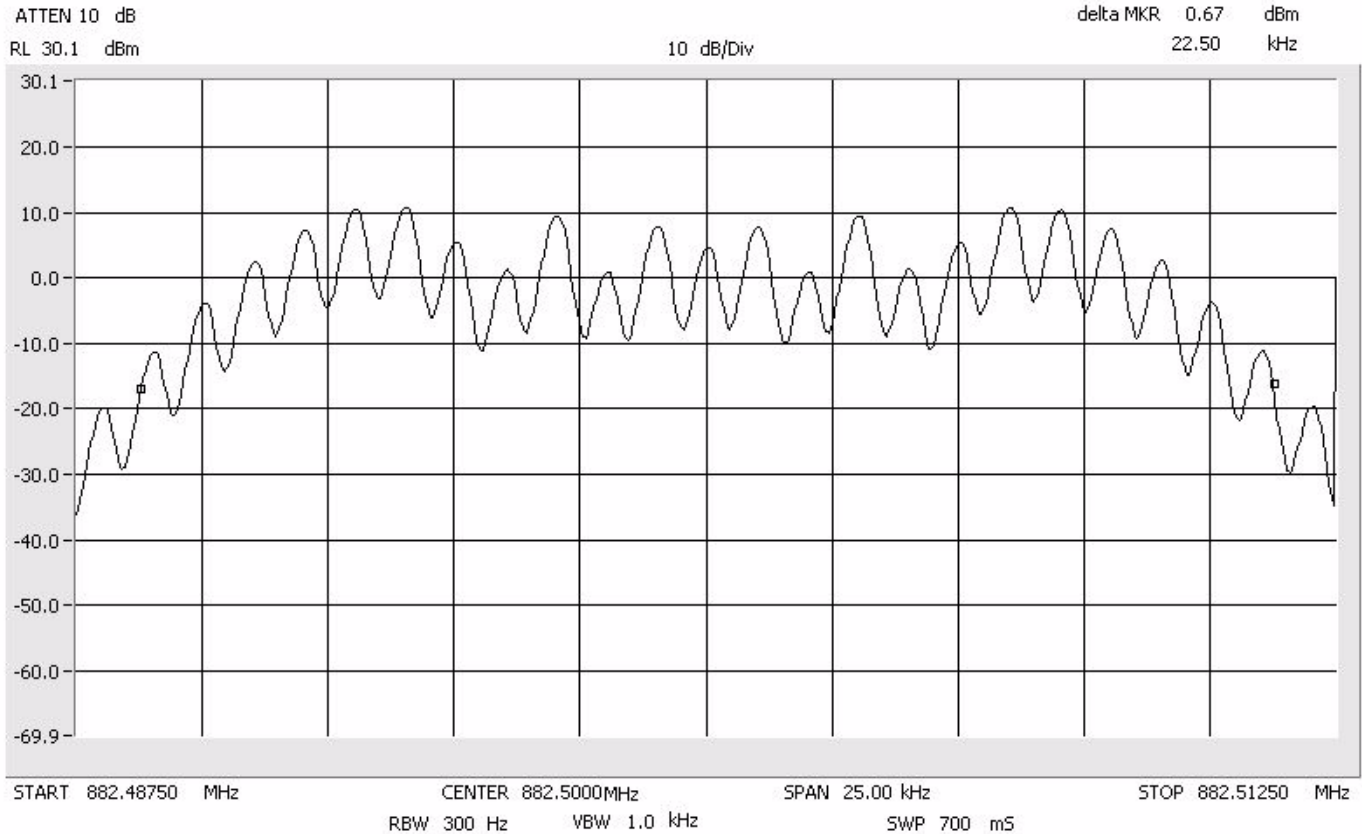
**Results:**

Pass (see plots)



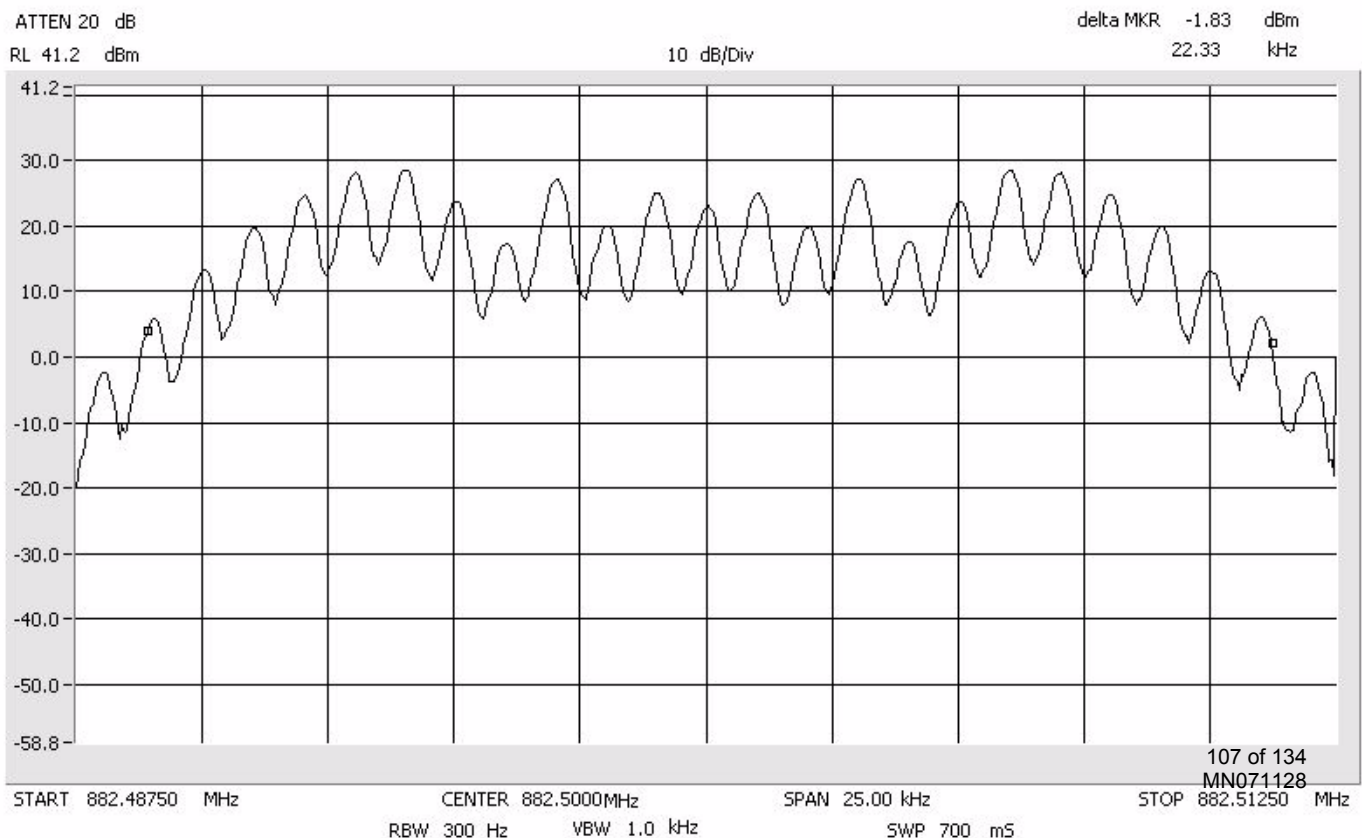
# Occupied Bandwidth FM Signal In

Span: 25 kHz  
RBW: 300 Hz  
VBW: 1.0 kHz



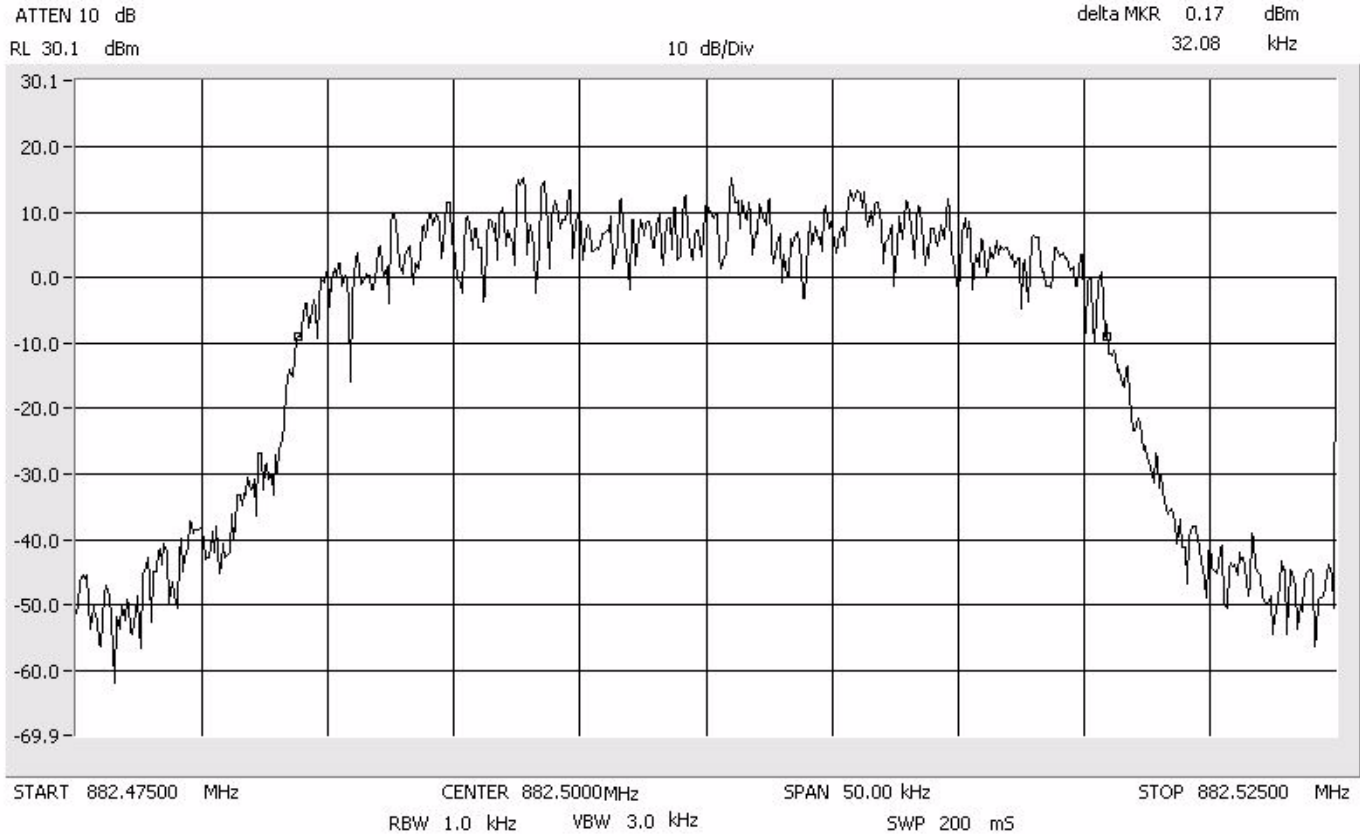
# Occupied Bandwidth FM Signal Out

Span: 25 kHz  
RBW: 300 Hz  
VBW: 1.0 kHz



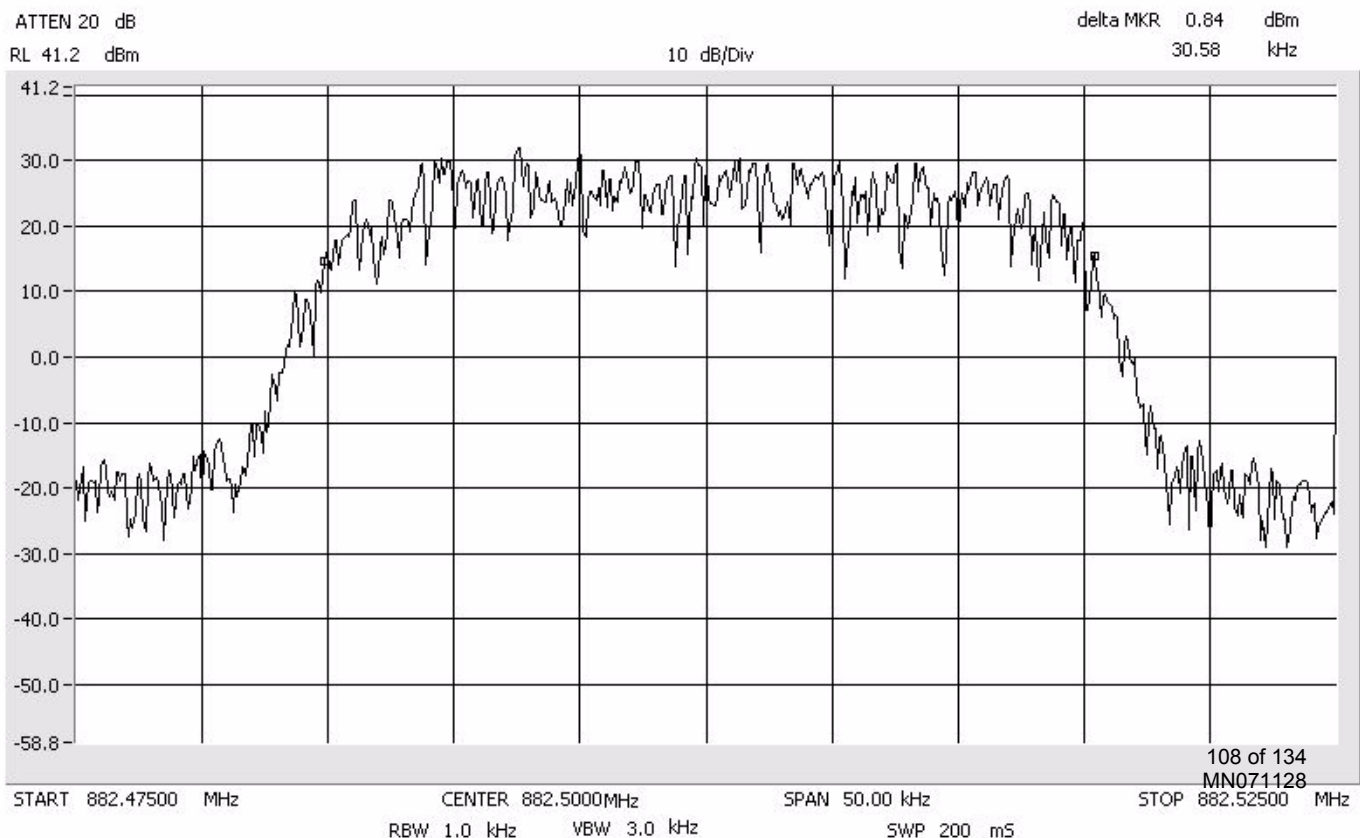
# Occupied Bandwidth TDMA Signal In

Span: 50 kHz  
RBW: 1 kHz  
VBW: 3 kHz



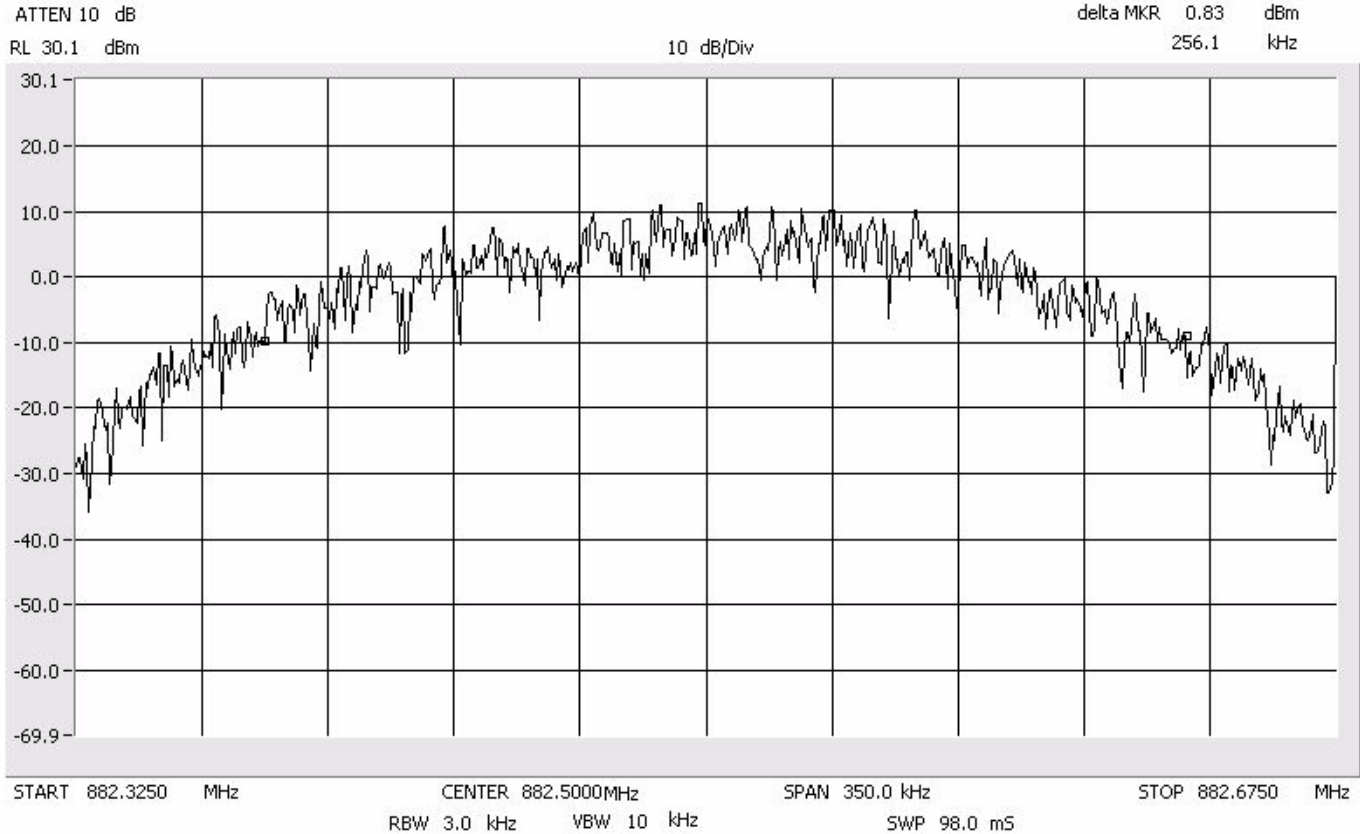
# Occupied Bandwidth TDMA Signal Out

Span: 50 kHz  
RBW: 1 kHz  
VBW: 3 kHz



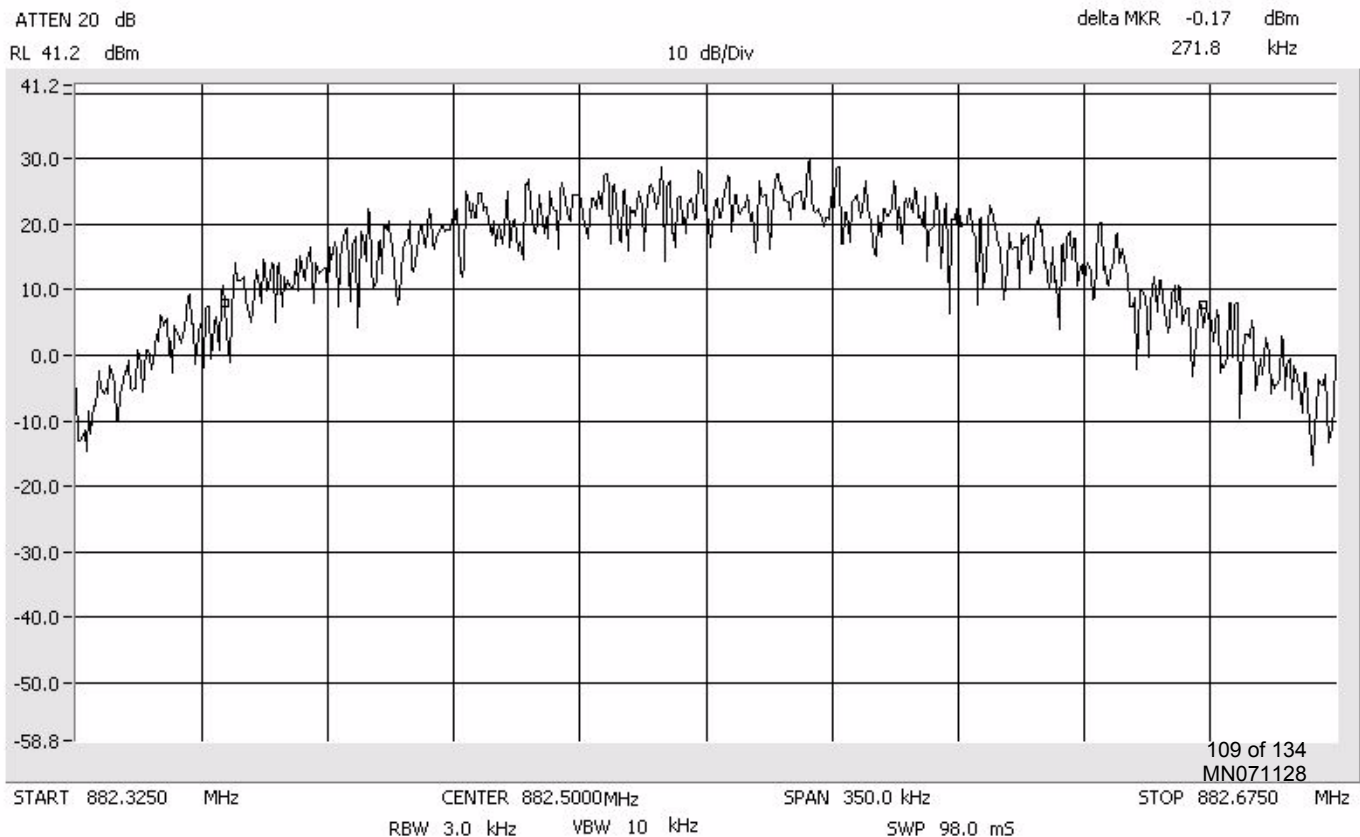
# Occupied Bandwidth GSM Signal In

Span: 350 kHz  
RBW: 3 kHz  
VBW: 10 kHz



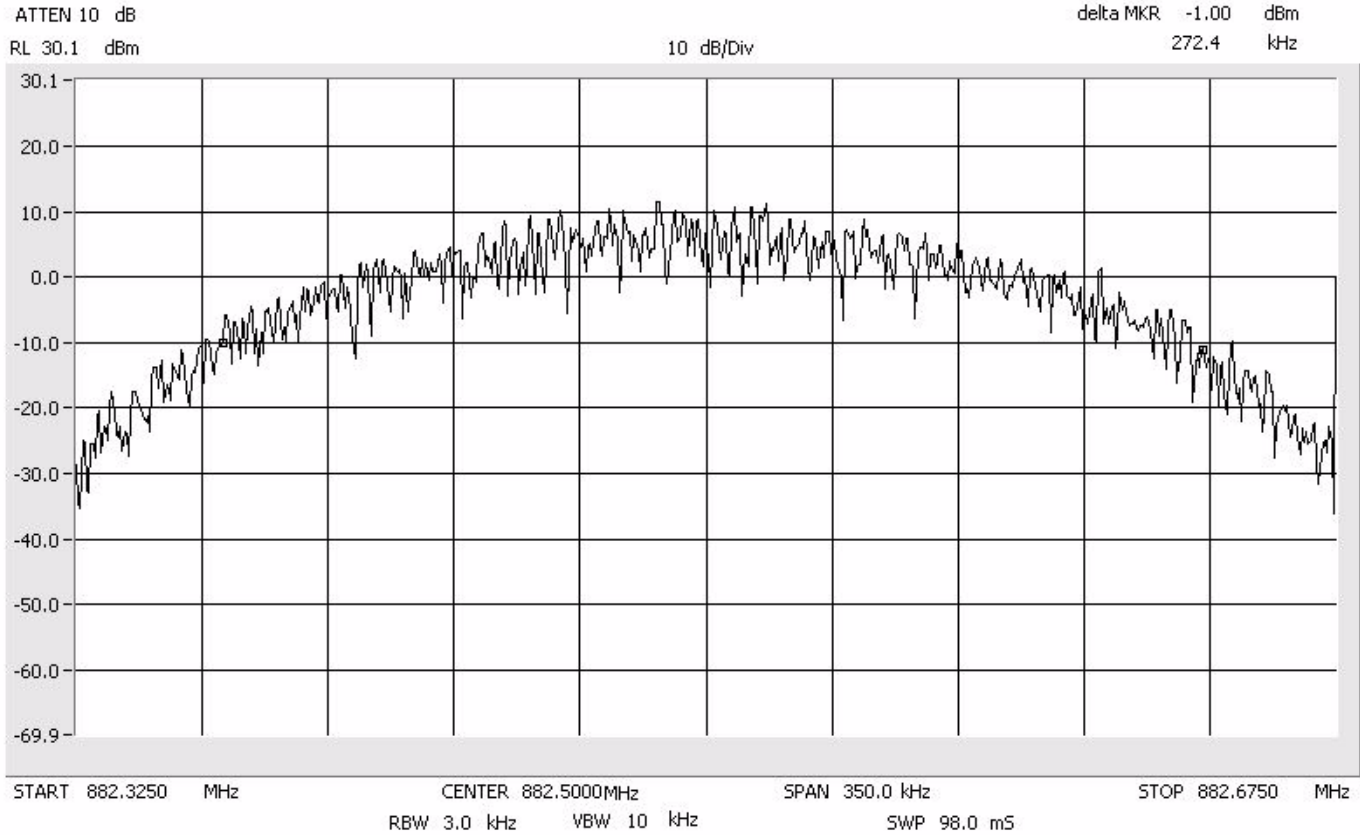
# Occupied Bandwidth GSM Signal Out

Span: 350 kHz  
RBW: 3 kHz  
VBW: 10 kHz



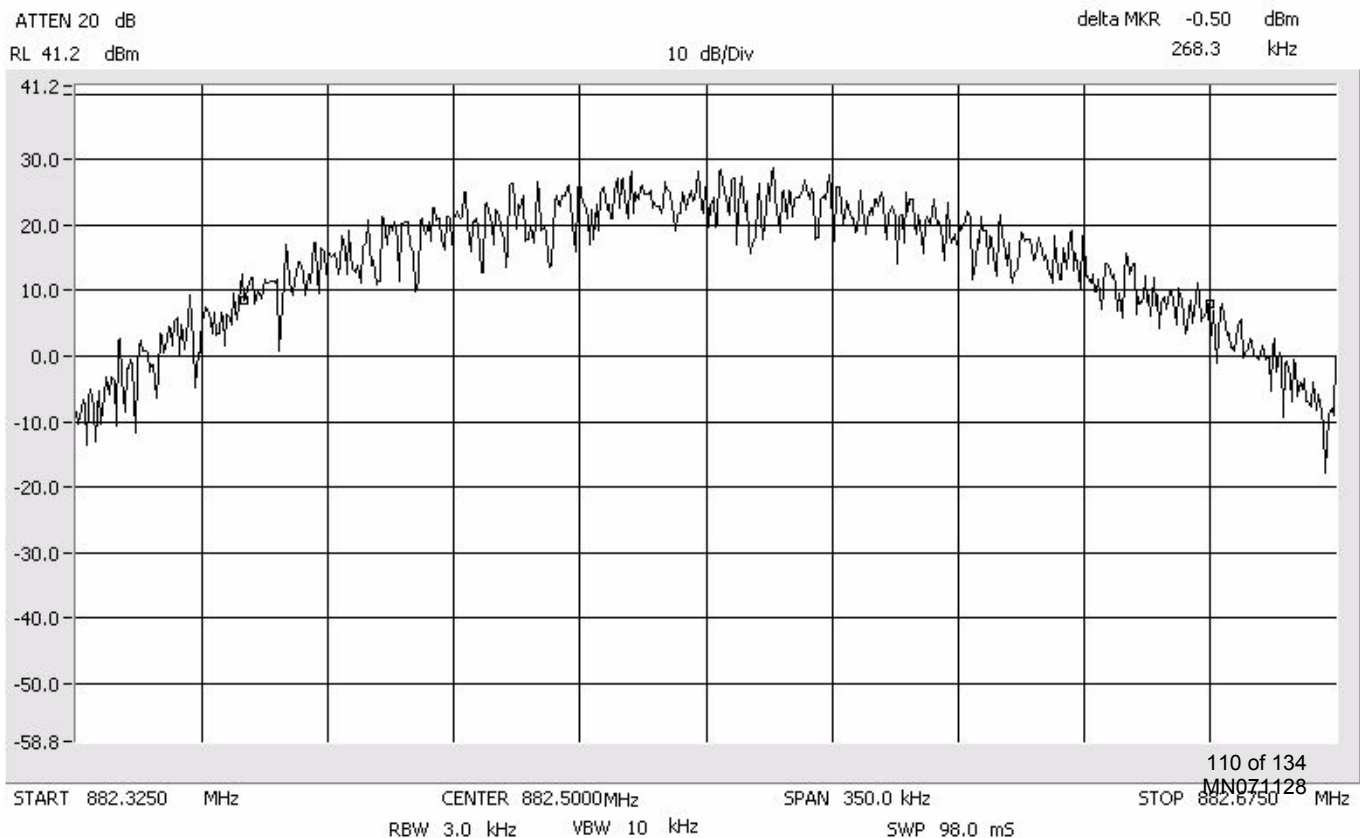
# Occupied Bandwidth EDGE Signal In

Span: 350 kHz  
RBW: 3 kHz  
VBW: 10 kHz



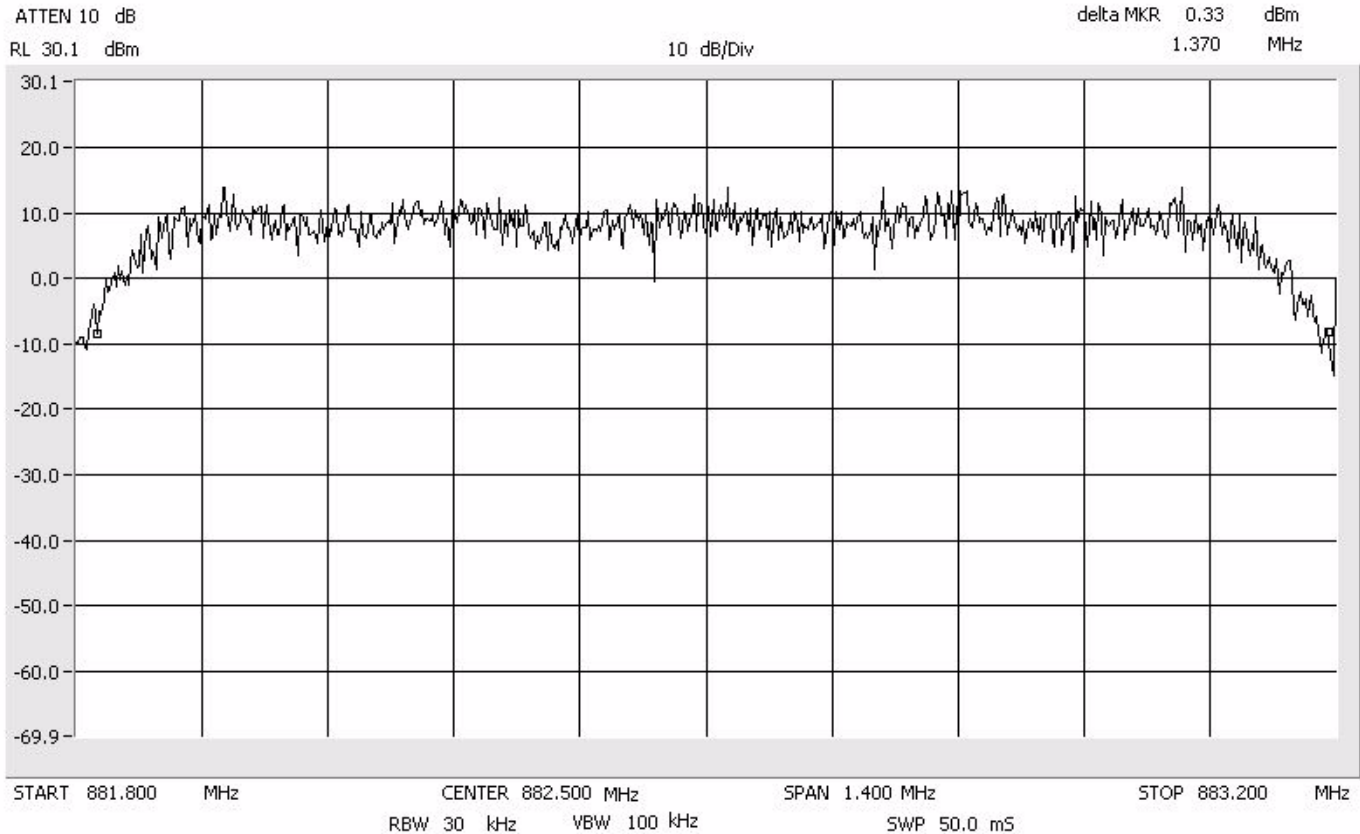
# Occupied Bandwidth EDGE Signal Out

Span: 350 kHz  
RBW: 3 kHz  
VBW: 10 kHz



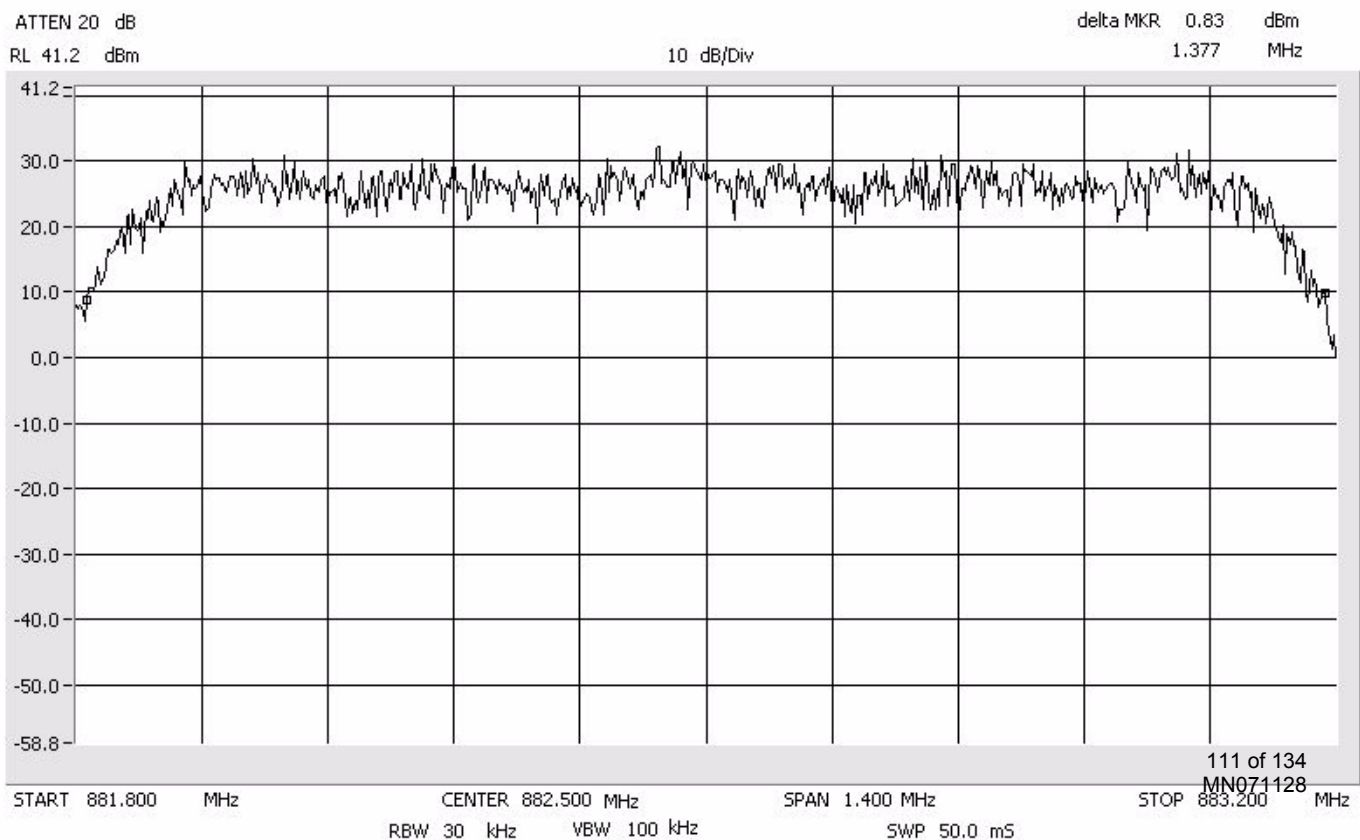
# Occupied Bandwidth CDMA Signal In

Span: 1.4 MHz  
RBW: 30 kHz  
VBW: 100 kHz



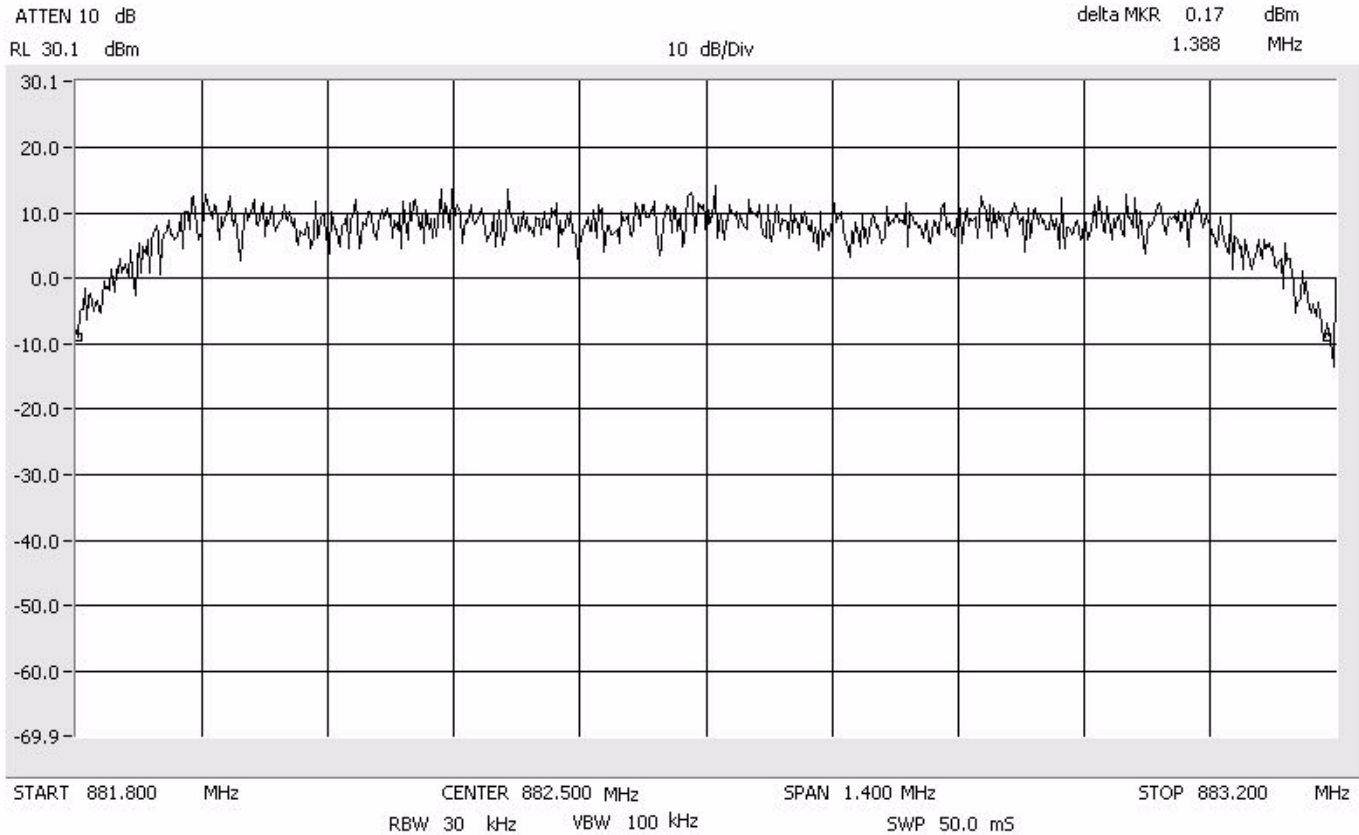
# Occupied Bandwidth CDMA Signal Out

Span: 1.4 MHz  
RBW: 30 kHz  
VBW: 100 kHz



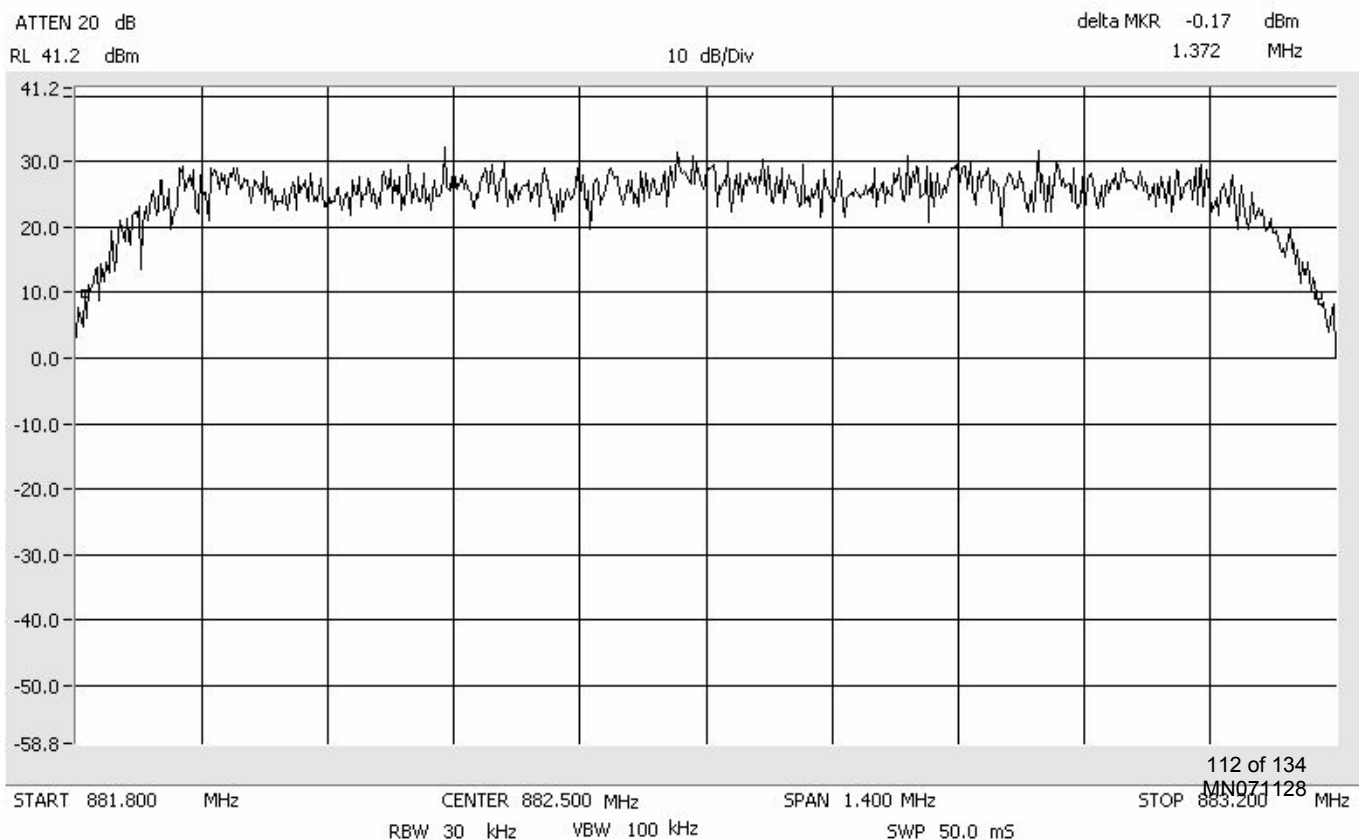
# Occupied Bandwidth EVDO Signal In

Span: 1.4 MHz  
RBW: 30 kHz  
VBW: 100 kHz



# Occupied Bandwidth EVDO Signal Out

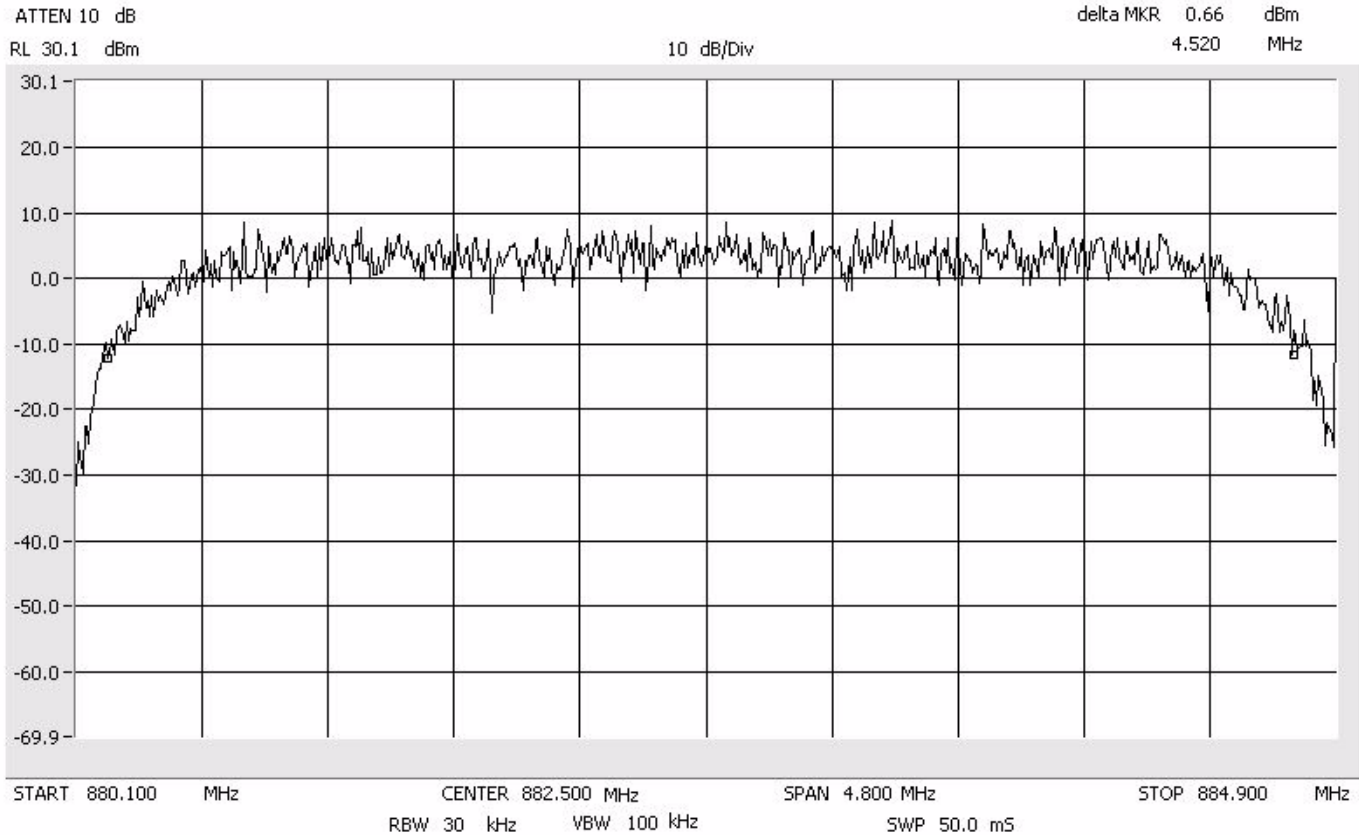
Span: 1.4 MHz  
RBW: 30 kHz  
VBW: 100 kHz





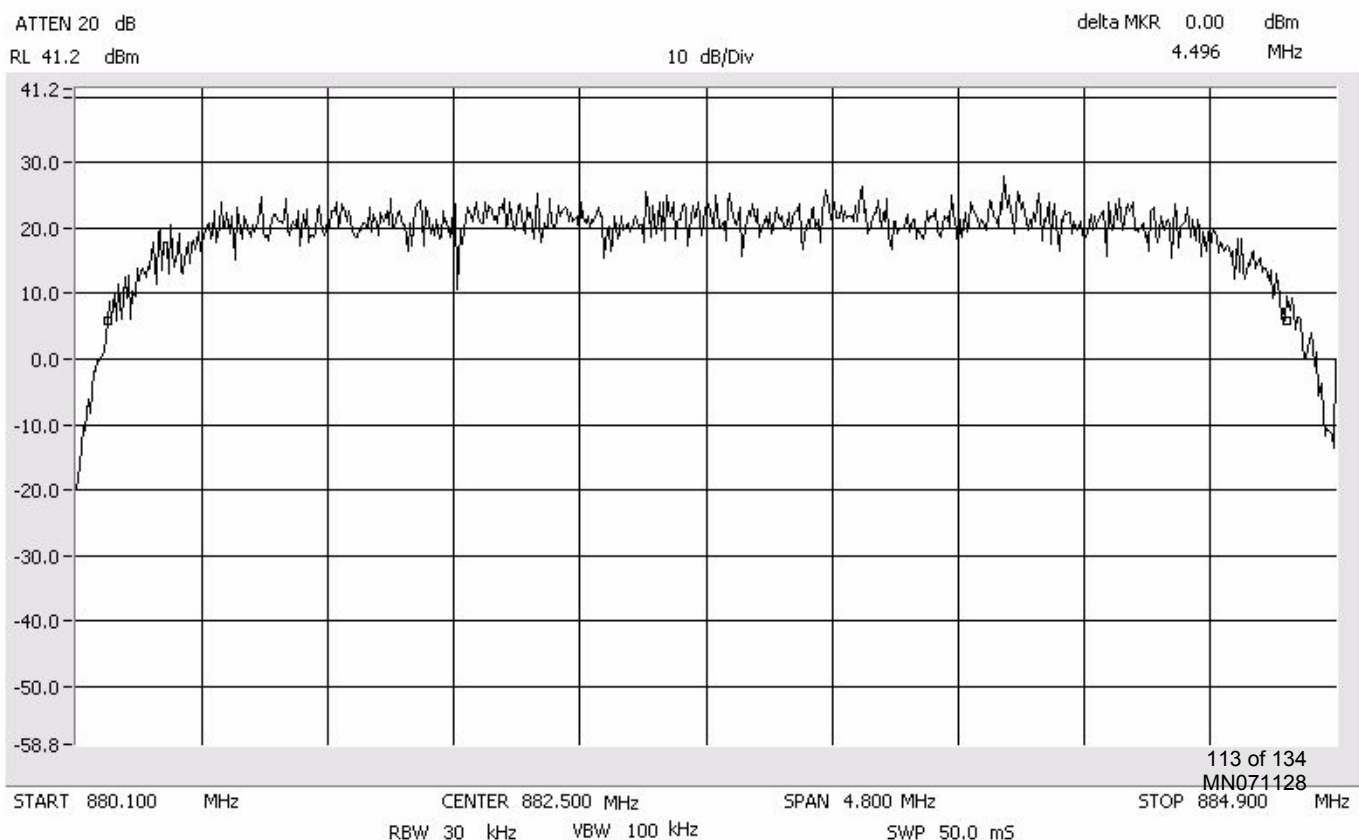
# Occupied Bandwidth W-CDMA Signal In

Span: 4.8 MHz  
RBW: 30 kHz  
VBW: 100 kHz



# Occupied Bandwidth W-CDMA Signal Out

Span: 4.8 MHz  
RBW: 30 kHz  
VBW: 100 kHz



# Frequency Tolerance Test for ADC Inc. FlexWave™ URH - Cellular Model Number FWU-220000002110RU

[Back](#)

## EUT Cellular 800 MHz

HOST	REMOTE			
Input Voltage	Input Voltage	Carrier Frequency	Measured Frequency	Meets Requirements?
21 VDC	100 VAC	869.200 MHz	869.200 MHz	Yes
48 VDC	170 VAC	869.200 MHz	869.200 MHz	Yes
60 VDC	240 VAC	869.200 MHz	869.200 MHz	Yes
21 VDC	100 VAC	881.500 MHz	881.500 MHz	Yes
48 VDC	170 VAC	881.500 MHz	881.500 MHz	Yes
60 VDC	240 VAC	881.500 MHz	881.500 MHz	Yes
21 VDC	100 VAC	893.800 MHz	893.800 MHz	Yes
48 VDC	170 VAC	893.800 MHz	893.800 MHz	Yes
60 VDC	240 VAC	893.800 MHz	893.800 MHz	Yes
Temperature		Carrier Frequency	Measured Frequency	Meets Requirements?
-30 Deg. C		869.200 MHz	869.200 MHz	Yes
-20 Deg. C		869.200 MHz	869.200 MHz	Yes
-10 Deg. C		869.200 MHz	869.200 MHz	Yes
0 Deg. C		869.200 MHz	869.200 MHz	Yes
10 Deg. C		869.200 MHz	869.200 MHz	Yes
20 Deg. C		869.200 MHz	869.200 MHz	Yes
30 Deg. C		869.200 MHz	869.200 MHz	Yes
40 Deg. C		869.200 MHz	869.200 MHz	Yes
50 Deg. C		869.200 MHz	869.200 MHz	Yes
-30 Deg. C		881.500 MHz	881.500 MHz	Yes
-20 Deg. C		881.500 MHz	881.500 MHz	Yes
-10 Deg. C		881.500 MHz	881.500 MHz	Yes
0 Deg. C		881.500 MHz	881.500 MHz	Yes
10 Deg. C		881.500 MHz	881.500 MHz	Yes
20 Deg. C		881.500 MHz	881.500 MHz	Yes
30 Deg. C		881.500 MHz	881.500 MHz	Yes
40 Deg. C		881.500 MHz	881.500 MHz	Yes
50 Deg. C		881.500 MHz	881.500 MHz	Yes
-30 Deg. C		893.800 MHz	893.800 MHz	Yes
-20 Deg. C		893.800 MHz	893.800 MHz	Yes
-10 Deg. C		893.800 MHz	893.800 MHz	Yes
0 Deg. C		893.800 MHz	893.800 MHz	Yes
10 Deg. C		893.800 MHz	893.800 MHz	Yes
20 Deg. C		893.800 MHz	893.800 MHz	Yes
30 Deg. C		893.800 MHz	893.800 MHz	Yes
40 Deg. C		893.800 MHz	893.800 MHz	Yes
50 Deg. C		893.800 MHz	893.800 MHz	Yes



## 7.0 APPENDIX B

Intertek Test Data

[Back to Test Data:](#)

[Back to Table of Contents:](#)

**Test Engineer:** Simon Khazon

**Date:** 21 November, 2007

**Test Procedure:**

Test measurements were made in accordance with ANSI C63.4-2003, Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz.

**Test Site Location:**

The test site is a 3 meter Semi-Anechoic Chamber, constructed by Panashield™ Inc. and located inside the building at 7250 Hudson Blvd. Suite 100, Oakdale, MN 55128.

**Test Site Description:**

The 3 meter Semi-Anechoic Chamber is constructed of Panabolt™ modular RF shielding and self-supported with structural steel designed for the local seismic zone rating. The chamber has the nominal size of 20' wide x 29' long x 18' high. All walls and ceiling of the chamber are treated with FFG-1000 Ferrite Grid absorber which was developed specifically to meet international requirements for EMC anechoic chambers for emissions and immunity measurements. To meet high frequency testing white HY-35 hybrid absorber is mounted on the ferrites in specular regions of the chamber.

The chamber has a 2 meter diameter ANSI test volume area and meets the requirements of ANSI C63.4 (1992), EN55022, and FCC Part 15 standards for testing at a 3 meter path length.

FCC Registration Number: 90706

IC Registration Number: 4359

## TEST DATA

Test Data Number: 3136761MIN-001  
Project Number: 3136761

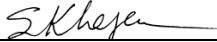
Testing performed on the  
Universal Radio Head-Cellular

To  
47 CFR, Part 22

For  
ADC Telecommunications Inc.

Test Performed by:  
Intertek Testing Services NA, Inc.  
7250 Hudson Blvd., Suite 100  
Oakdale, MN 55128

Test Authorized by:  
ADC Telecommunications Inc.  
5341 12<sup>th</sup> Avenue East  
Shakopee, MN 55379

Prepared by:   
Simon Khazon

Date: November 21, 2007

Reviewed by:   
Norman Shpilsher

Date: November 21, 2007

**TABLE OF CONTENTS**

<b>1.0</b>	<b>DESCRIPTION OF THE SAMPLE (EUT)</b> .....	<b>3</b>
<b>2.0</b>	<b>TEST SUMMARY</b> .....	<b>4</b>
2.1	Statement of the Measurement Uncertainty .....	4
<b>3.0</b>	<b>TEST RESULTS</b> .....	<b>5</b>
3.1	Environmental conditions .....	14
<b>5.0</b>	<b>TEST EQUIPMENT</b> .....	<b>17</b>

## 1.0 DESCRIPTION OF THE SAMPLE (EUT)

<b>Model:</b>	Universal Radio Head-Cellular
<b>Type of EUT:</b>	Outdoor Repeater
<b>Serial Number:</b>	N/A
<b>Company:</b>	ADC Telecommunications Inc.
<b>Customer:</b>	Mr. Mark Miska
<b>Address:</b>	1187 Park Place Shakopee, MN 55379
<b>Phone:</b>	952-403-8340
<b>Fax:</b>	952-403-8858
<b>Test Standards:</b>	<input type="checkbox"/> EN 55022:2006, Class <input type="checkbox"/> EN 55011:1998 + A1:1999 + A2:2002, Group <span style="background-color: #cccccc; padding: 0 5px;"> </span> , Class <input checked="" type="checkbox"/> 47 CFR, Part 22:2006 <input type="checkbox"/> 47 CFR, Part 15:2006, §15.109, Class <input type="checkbox"/> EN 55014-1:2000 + A1:2001 + A2:2002 <input type="checkbox"/> EN 61326-1:2006 <input type="checkbox"/> Class <span style="background-color: #cccccc; padding: 0 5px;"> </span> for Radiated and Conducted Emissions <input type="checkbox"/> EN 60601-1-2:2001 +A1:2006 <input type="checkbox"/> Class <span style="background-color: #cccccc; padding: 0 5px;"> </span> Radiated and Conducted Emissions <input type="checkbox"/> EN 61000-6-3:2001 <input type="checkbox"/> EN 61000-6-4:2001 <input type="checkbox"/> EN 61000-3-2:2006 <input type="checkbox"/> EN 61000-3-3:1995 +A1:2001 +A2:2006 <input type="checkbox"/> Other

## 2.0 TEST SUMMARY

Referring to the performance criteria and the operating mode during the tests specified in this report, the equipment complies with the requirements according to the following standards.

TEST STANDARD	TEST	RESULT
Part 22	Spurious Enclosure Radiated Emissions	Pass

### 2.1 Statement of the Measurement Uncertainty

**Note:** The measured result in this report is within the specification limits by more than the measurement uncertainty; the measured result indicates that the product tested complies with the specification limit.

The expanded uncertainty ( $k = 2$ ) for radiated emissions from 30 to 1000 MHz has been determined to be:  $\pm 4$  dB at 10m and  $\pm 5.4$  dB at 3m

The expanded uncertainty ( $k = 2$ ) for conducted emissions from 150 kHz to 30 MHz has been determined to be:  
 $\pm 2.6$  dB

General notes:

1. Test was performed with the tuned low channel 871.0MHz), middle channel (881.50MHz), and upper channel (892 MHz) operating frequency.  
Testing was performed in frequency range from 30MHz to 10GHz.
2. The signal generator was located outside of the test site.
3. The Spurious Radiated Power limits of -13dBm was correlated with field strength reference level of 82.2dB $\mu$ V/m during field strength measurements at 3m measurement distance

### 3.0 TEST RESULTS

#### TILE Instrument Control System EMI Measurement Software

**Radiated Emissions from 30MHz to 1GHz**

**Date:** 11/21/2007

**Company:** ADC Telecommunications Inc.  
**Model:** Universal Radio Head-Cellular  
**Test Engineer:** Simon Khazon  
**Standard:** FCC Part 22  
**Test Site:** 3m Anechoic Chamber, 3m measurement distance  
**Note:** The table shows the worst case radiated emissions  
Measurements were taken using a Peak detector

**Table # 1**

Frequency	Ant. Polarity	Peak Reading dBμV	Ant.Factor dB1/m	Total at 3m dBμV/m	QP Limit dBμV/m	Margin dB
Operating Frequency 871MHz						
34.557 MHz	V	52.73	16.34	69.07	82.2	-13.13
52.823 MHz	V	55.35	8.12	63.48	82.2	-18.72
94.9 MHz	V	48.47	11.01	59.49	82.2	-22.71
36.31 MHz	H	40.8	15.32	56.12	82.2	-26.08
169.55 MHz	H	43.83	11.47	55.3	82.2	-26.9
499.98 MHz	H	37.78	20.62	58.4	82.2	-23.8
Operating Frequency 881.5MHz						
35.772 MHz	V	52.14	15.63	67.78	82.2	-14.42
52.758 MHz	V	56.52	8.14	64.66	82.2	-17.54
101.04 MHz	V	47.56	12.31	59.87	82.2	-22.33
437.63 MHz	H	38.27	19.51	57.78	82.2	-24.42
499.98 MHz	H	37.12	20.62	57.74	82.2	-24.46
881.32 MHz	H	33.55	25.19	58.74	82.2	-23.46
Operating Frequency 892MHz						
36.193 MHz	V	52.34	15.39	67.72	82.2	-14.48
52.368 MHz	V	54.85	8.2	63.06	82.2	-19.14
100.73 MHz	V	47.96	12.26	60.22	82.2	-21.98
116.01 MHz	V	42.38	13.73	56.1	82.2	-26.1
36.45 MHz	H	40.53	15.24	55.77	82.2	-26.43
52.433 MHz	H	43.53	8.19	51.72	82.2	-30.48
156.96 MHz	H	43.13	11.97	55.1	82.2	-27.1
437.63 MHz	H	37.98	19.51	57.5	82.2	-24.7

**Note:** Emissions at operating frequencies were removed from the Table

TILE Instrument Control System EMI Measurement Software

**Radiated Emissions from 1 to 10GHz**

**Date:** 11/21/2007

**Company:** ADC Telecommunications Inc.  
**Model:** Universal Radio Head-Cellular  
**Test Engineer:** Simon Khazon  
**Special Info:**  
**Standard:** FCC Part 22  
**Test Site:** 3m Anechoic Chamber, 3m measurement distance  
**Note:** The table shows the worst case radiated emissions  
All measurements were taken using a Peak detector

**Table # 2**

Frequency MHz	Antenna Polarity	Reading dBμV	Total C.F. dB1/m	Pre-Amp. Gain (dB)	Total at 3m dBμV/m	QP Limit dBμV/m	Margin dB
Operating Frequency 871MHz							
1.75 GHz	V	55.94	29.33	39	46.28	82.2	-35.92
1.84 GHz	V	58.38	29.74	38.86	49.26	82.2	-32.94
2.068 GHz	V	48.37	30.64	38.49	40.52	82.2	-41.68
1.246 GHz	H	59.23	27.5	39.6	47.12	82.2	-35.08
1.474 GHz	H	56.62	28.11	39.42	45.3	82.2	-36.9
1.498 GHz	H	57.85	28.17	39.4	46.62	82.2	-35.58
Operating Frequency 881.5MHz							
1.75 GHz	V	55.85	29.33	39	46.19	82.2	-36.01
1.84 GHz	V	57.29	29.74	38.86	48.17	82.2	-34.03
2.038 GHz	V	48.17	30.58	38.54	40.21	82.2	-41.99
3.04 GHz	H	50.26	33.33	37.97	45.63	82.2	-36.57
3.136 GHz	H	52.6	33.58	37.89	48.29	82.2	-33.91
3.322 GHz	H	54.89	34.05	37.74	51.2	82.2	-31
Operating Frequency 892MHz							
1.25 GHz	V	59.31	27.51	39.6	47.22	82.2	-34.98
1.474 GHz	V	53.94	28.11	39.42	42.63	82.2	-39.57
1.5 GHz	V	52.84	28.17	39.4	41.61	82.2	-40.59
1.75 GHz	V	56.18	29.33	39	46.52	82.2	-35.68
3.134 GHz	H	54.09	33.57	37.89	49.77	82.2	-32.43
3.318 GHz	H	55.19	34.04	37.75	51.49	82.2	-30.71
3.502 GHz	H	51.71	34.51	37.6	48.62	82.2	-33.58
3.686 GHz	H	52.8	35.14	37.64	50.3	82.2	-31.9

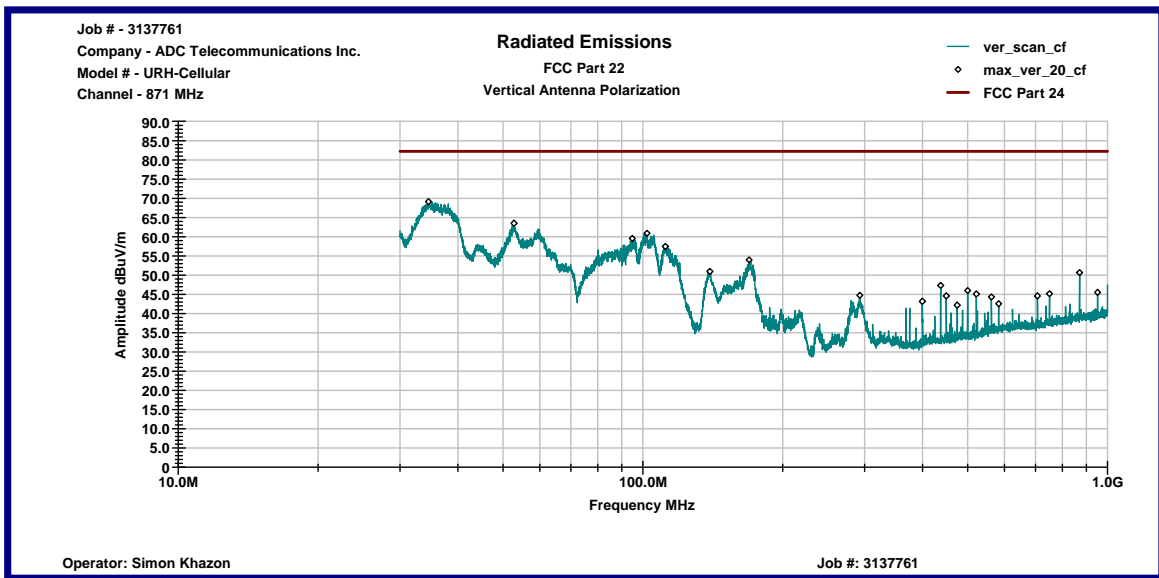
**Spurious Radiated Emissions Power**
**Date:** 11-21-2007

**Company:** ADC Telecommunications  
**Model:** URH-Cellular  
**Test Engineer:** Simon Khazon  
**Special Config. Info:** Substitution Method  
**Standard:** FCC Part 22  
**Frequency Range:** 30MHz to 10GHz  
**Test Site:** 3m Anechoic Chamber  
**Note:** The table shows the worst case radiated emissions  
Emissions at fundamental frequency removed from the Table

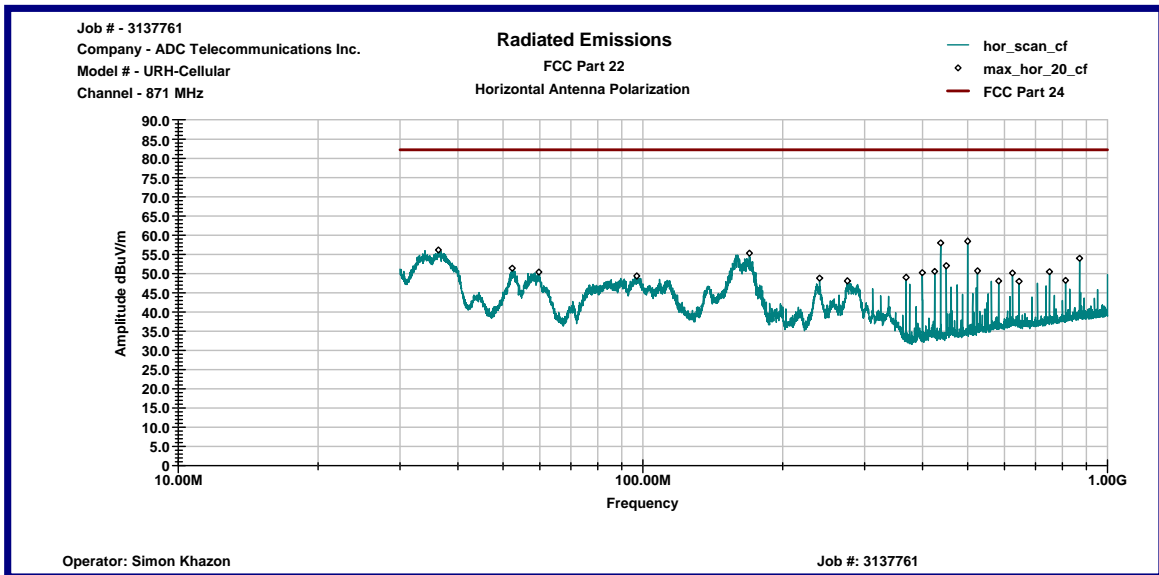
**Table # 3**

Frequency of Emissions MHz	Operating Frequency MHz	Antenna Polarity	Measured Emissions dBμV	Substitution Generator Power dBm	Substitution Antenna Gain dBi	Cable Loss dB	ERP Spur. Emissions dBm	Limit dBm	Margin dB
34.56	871	V	52.7	-11.3	-9.6	0.1	-21.0	-13.0	-8.0
52.82	871	V	55.4	-8.6	-5.5	0.3	-14.4	-13.0	-1.4
35.77	881.5	V	68.2	-12.9	-8.9	0.3	-22.1	-11.0	-11.1
52.75	881.5	V	69.7	-8.9	-5.5	0.3	-14.7	-13.0	-1.7
36.19	892	V	49.0	-14.6	-8.7	0.1	-23.4	-13.0	-10.4
52.37	892	V	62.5	-12.0	-5.6	0.3	-17.9	-13.0	-4.9

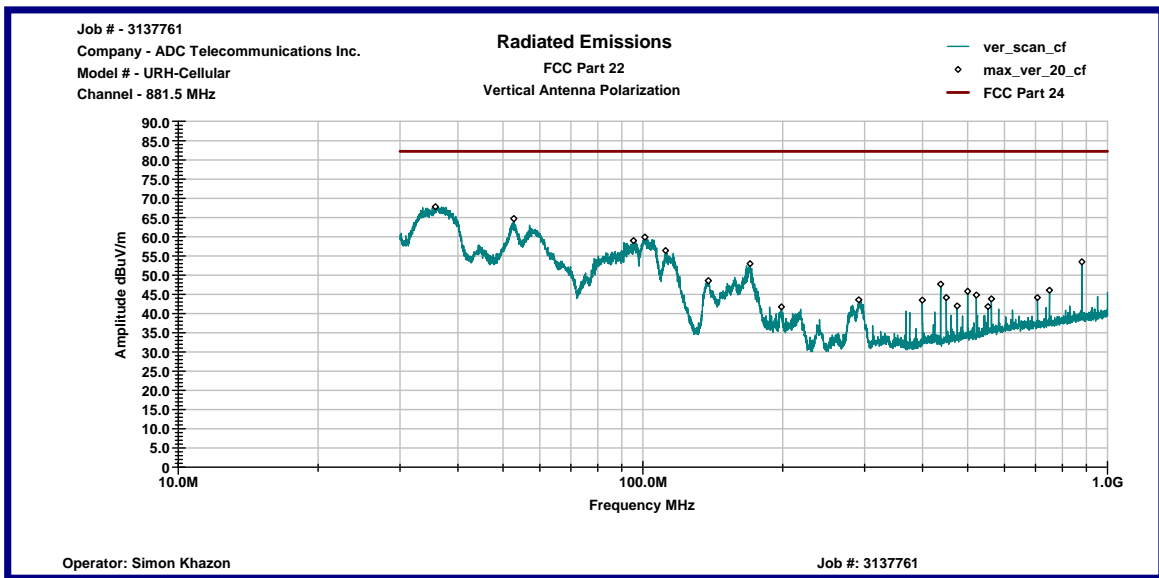




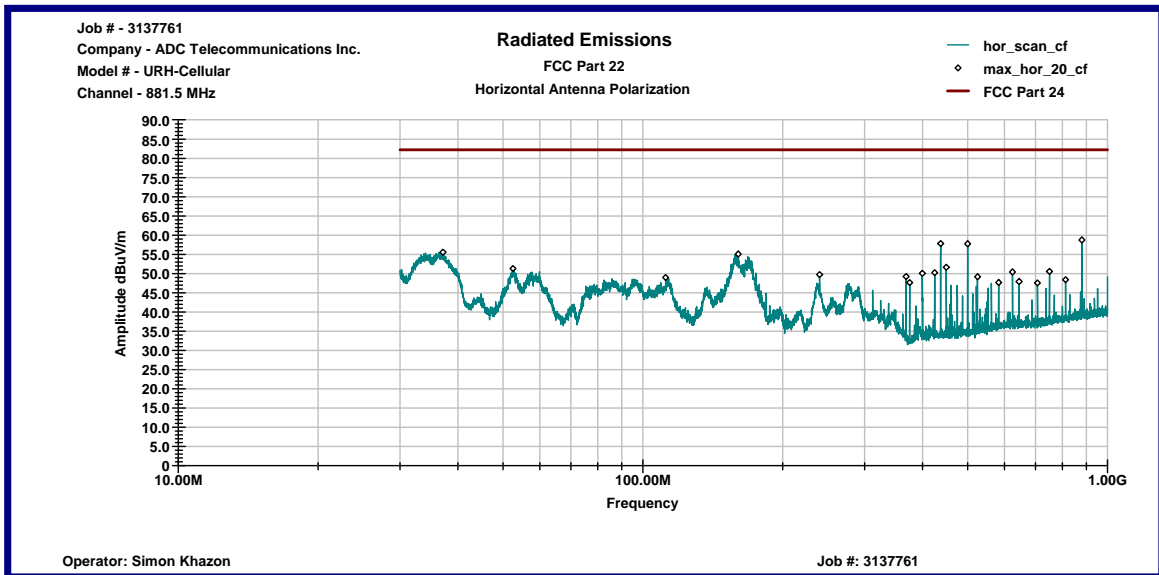
Graph 1



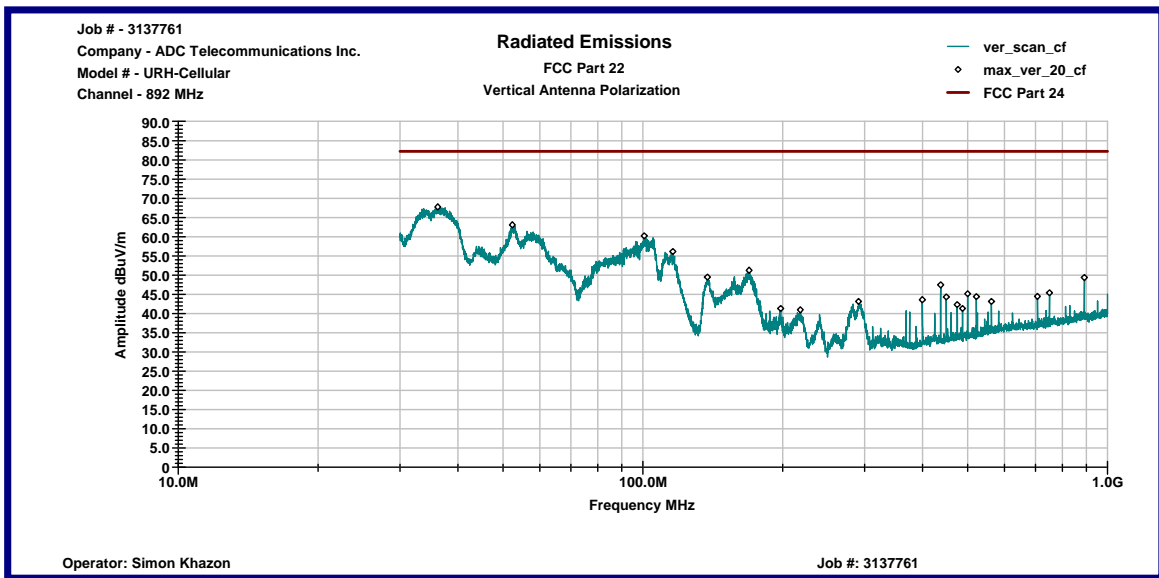
Graph 2



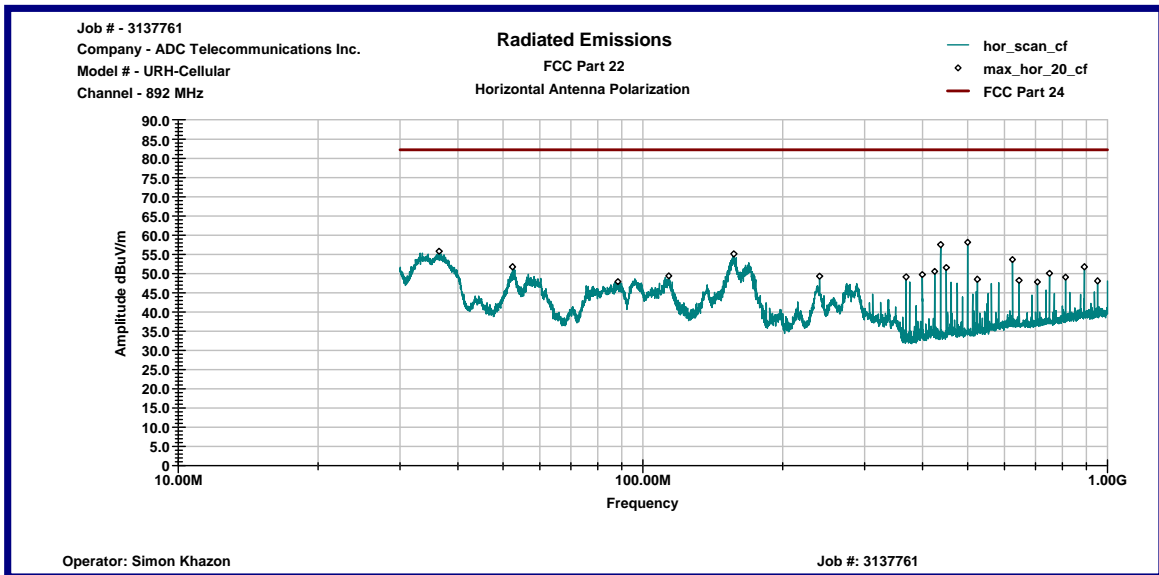
Graph 3



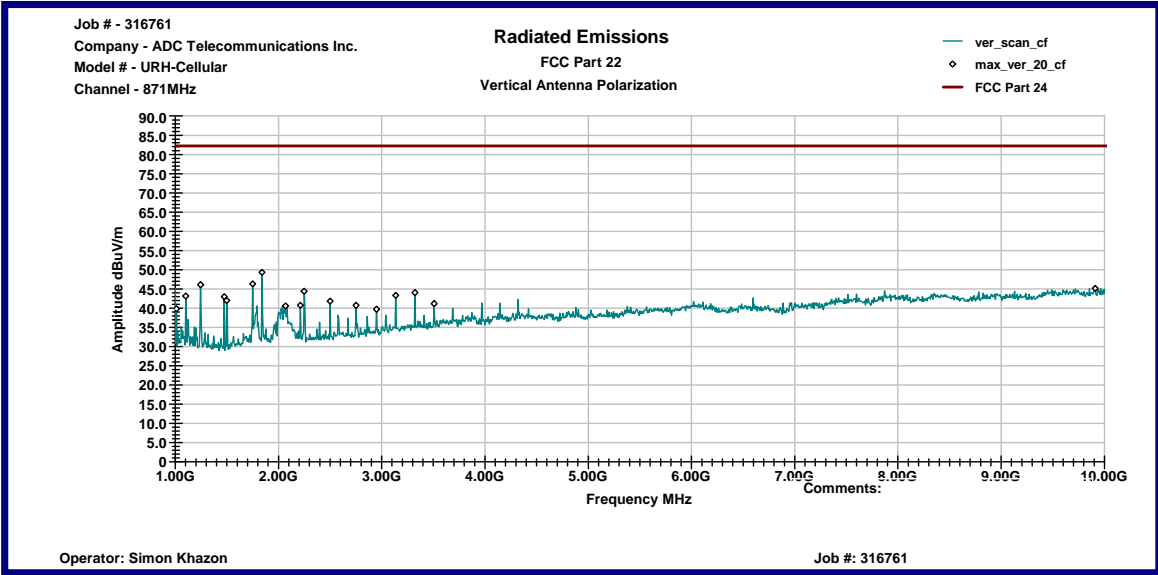
Graph 4



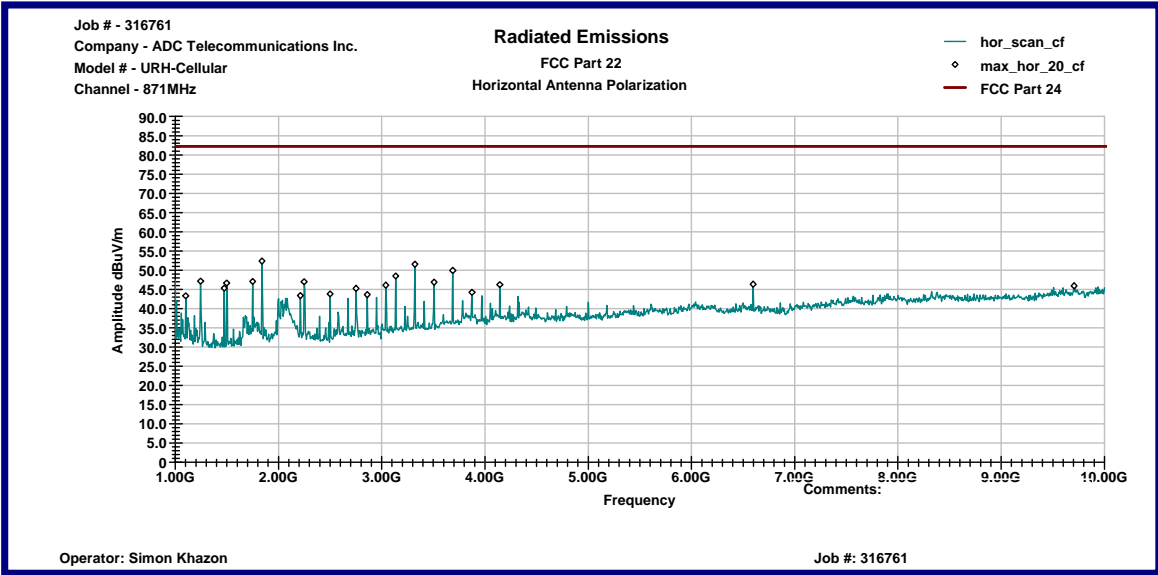
Graph 5



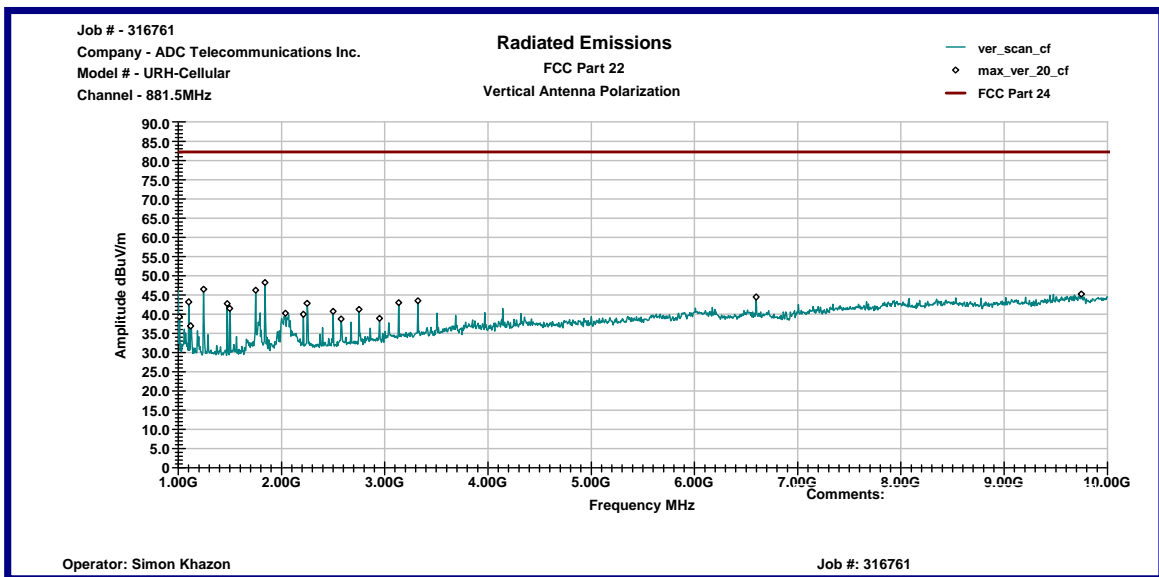
Graph 6



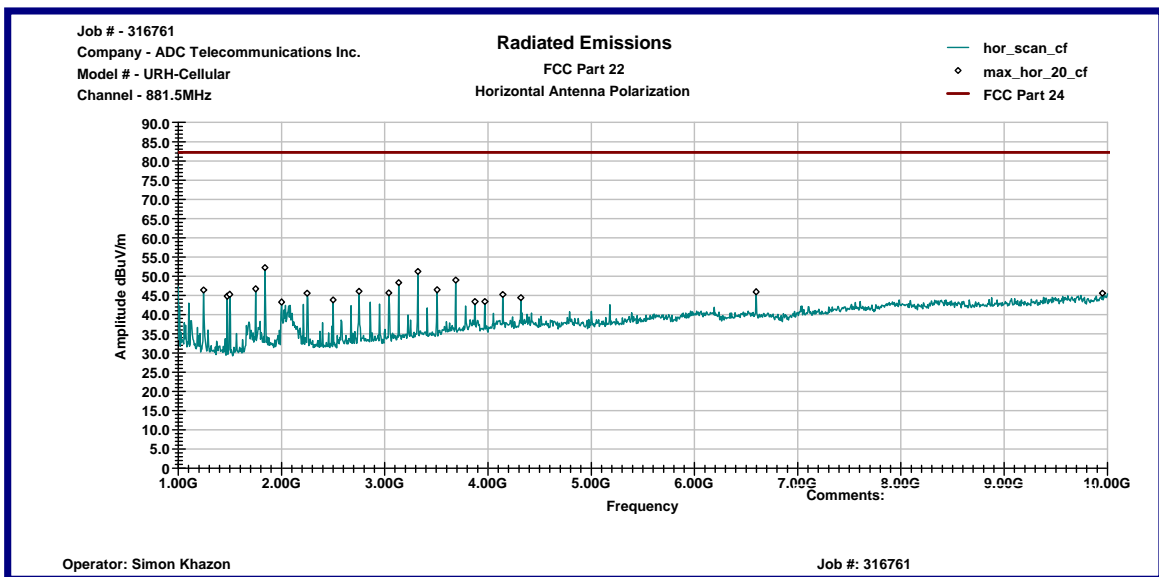
Graph 7



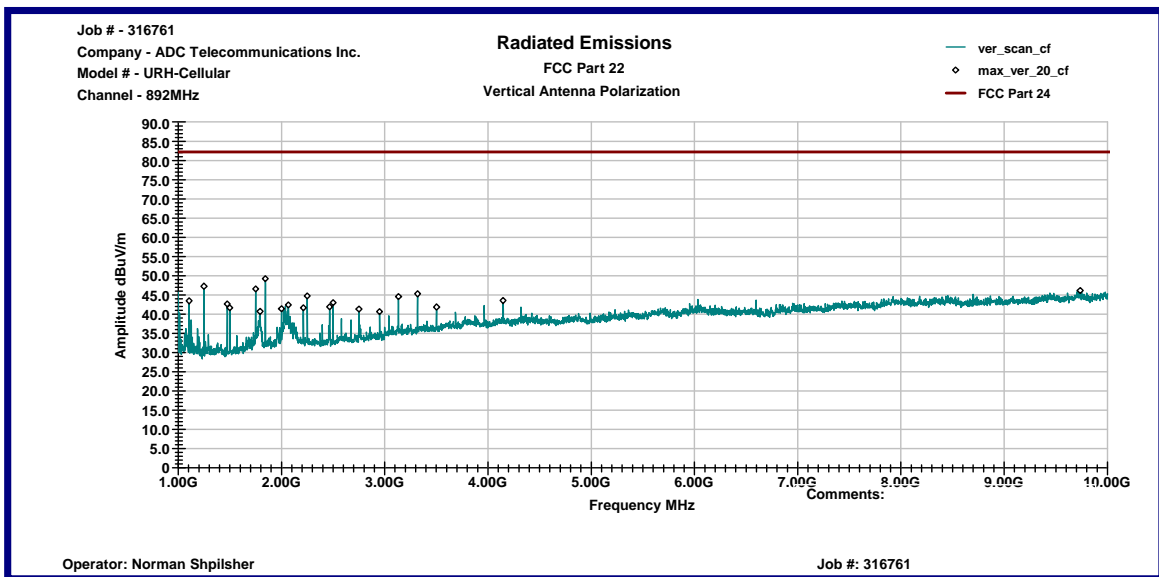
Graph 8



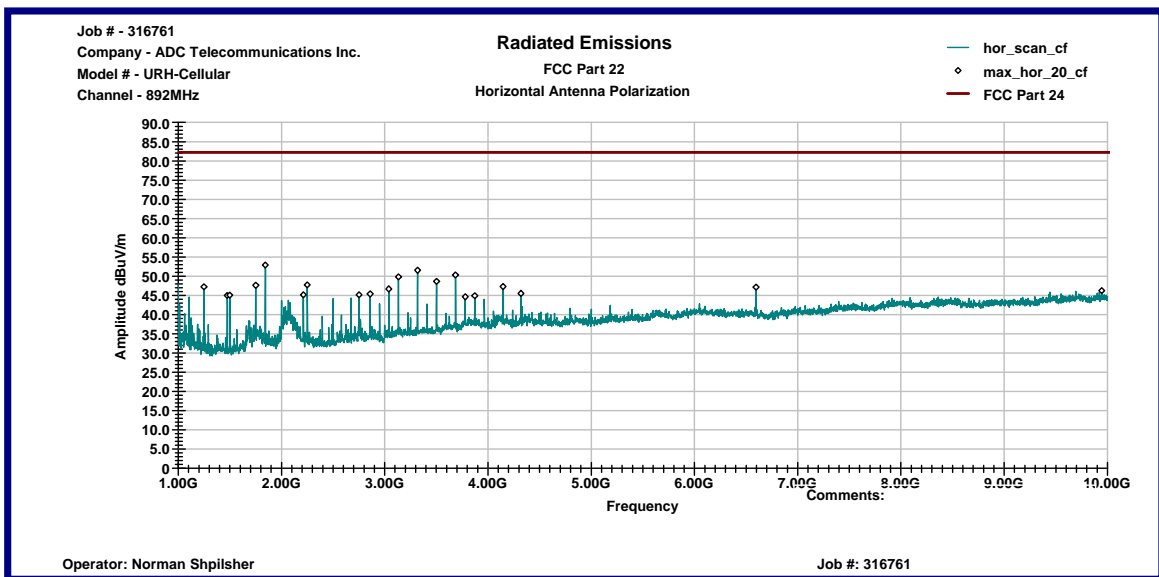
Graph 9



Graph 10



Graph 11



Graph 12

### 3.1 Environmental conditions

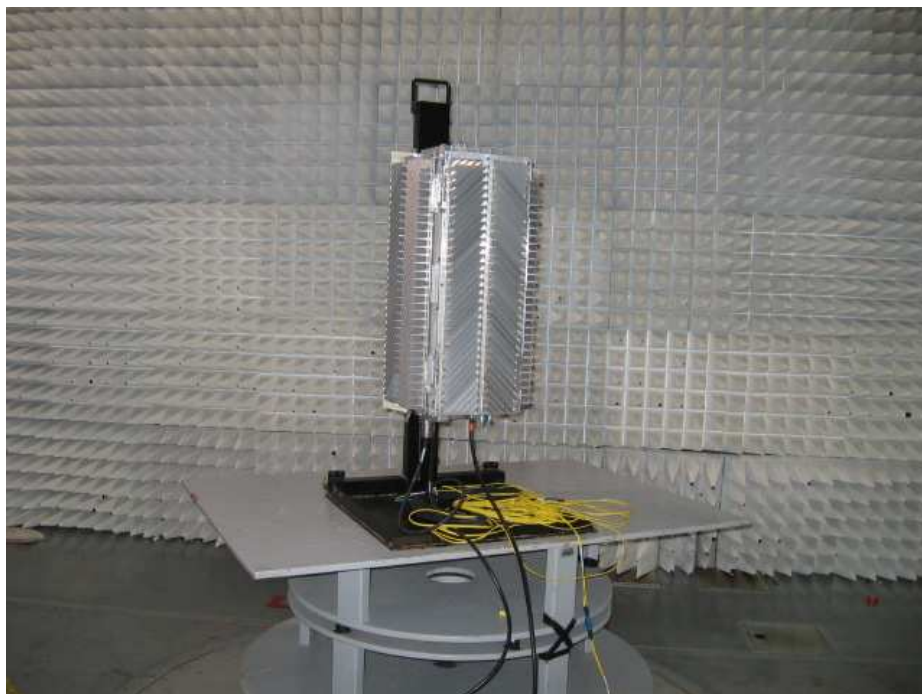
During the measurement the environmental conditions were within the listed ranges:

**Temperature:** 15-35 °C

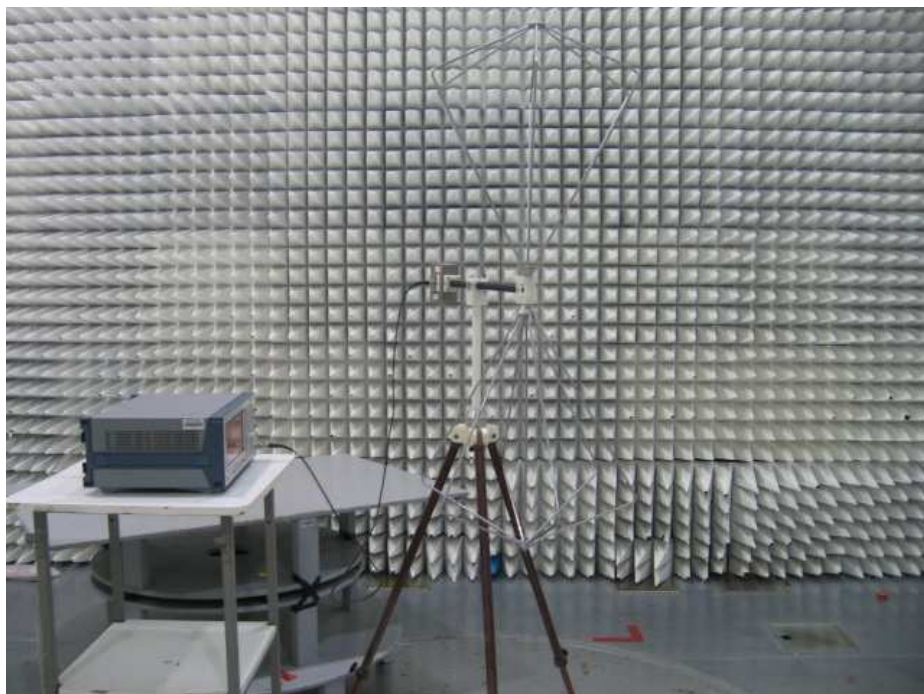
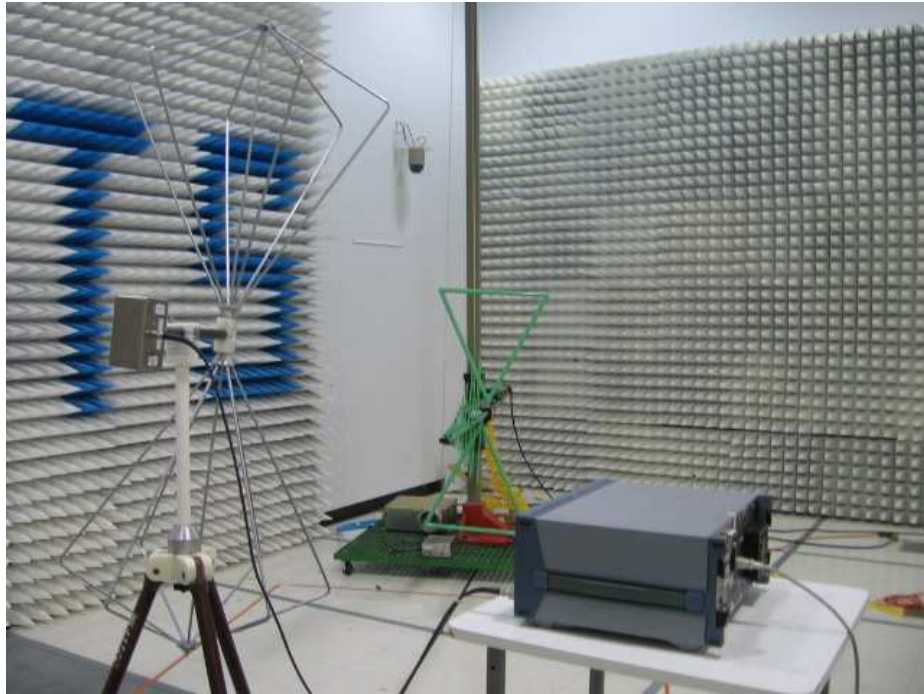
**Humidity:** 30-60 %

**Atmospheric pressure:** 86-106 kPa

#### 4.0 PHOTOS







## 5.0 TEST EQUIPMENT

### Emissions Equipment

DESCRIPTION	MANUFACTURER	MODEL	SERIAL NO.	CAL DUE	USED
Receiver RF Section	HP	85462A	3549A00306	02/27/2008	<input type="checkbox"/>
RF Filter Section	HP	85460A	3448A00276	02/27/2008	<input type="checkbox"/>
Spectrum Analyzer	R & S	FSP 40	100024	08/23/2008	<input checked="" type="checkbox"/>
Spectrum Analyzer	R & S	ESCI	100358	04/27/2008	<input checked="" type="checkbox"/>
Bicono-Log Antenna	Schaffner-Chase	CBL 6112 B	2630	08/29/2008	<input checked="" type="checkbox"/>
Horn Antenna	EMCO	3115	9507-4513	01/09/2008	<input checked="" type="checkbox"/>
Horn Antenna	EMCO	3115	6579	03/06/2008	<input type="checkbox"/>
Waveguide Horn Antenna	EMCO	3116	9904-2423	06/28/2008	<input checked="" type="checkbox"/>
Monopole Antenna	A.H.Systems	SAS-200/550-1	692	05/09/2008	<input type="checkbox"/>
LISN	Fischer Custom Communications	FCC-LISN-50-50-4.02	07005	01/30/2008	<input type="checkbox"/>
LISN	Fischer Custom Communications	FCC-TLISN-T4	15333.01	03/01/2008	<input type="checkbox"/>
RF Current Probe	Fischer Custom Communications	F-33-2	330	03/07/2008	<input type="checkbox"/>
Absorbing Clamp	Fischer Custom Communications	F-201	167	03/07/2008	<input type="checkbox"/>
Pre-Amplifier	MITEQ	AMF-5D-00501800-28-13P	1122951	04/24/2008	<input checked="" type="checkbox"/>
Pre-Amplifier	HP	8447F OPT H64	3113A04974	03/07/2008	<input type="checkbox"/>
System	TILE! Instrument Control		Ver. 3.4.K.29	VBU	<input checked="" type="checkbox"/>
5001ix	California Instruments System	5001	55864, 55863, 55862, 72277	11/09/2007	<input type="checkbox"/>
CTS 3.0.19	California Instruments Harmonic/Flicker Software	632		11/09/2007	<input type="checkbox"/>

Measurement Protocol

[Back to Table of Contents:](#)

# Measurement Protocol

## Environmental conditions of the lab, (ADC)

Temperature: 21 - 26° C

Relative Humidity: 21 - 24 %

Atmospheric Pressure: 97.8 - 100.0 kPa

## **Test Methodology:**

Emission testing is performed according to the procedures in ANSI C63.4-2003.

## **Measurement Uncertainty**

The test system for conducted emissions is defined as the signal generator(s), the power meter, the spectrum analyzer and the coaxial cable. The equipment comprising the test systems is calibrated prior to testing the EUT.

## **Justification**

The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into its characteristic impedance or left un-terminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

## **Radiated Emissions**

The final level, in dBuV/m, equals the reading from the spectrum analyzer (Level dBuV), adding the antenna correction factor and cable loss factor (Factor dB) to it, and subtracting the preamp gain (and duty cycle correction factor, if applicable). This result then has the limit subtracted from it to provide the Delta, which gives the tabular data as shown in the data sheets in Appendix B.

Example:

FREQ (MHz)	LEVEL (dBuV)	CABLE/ANT/PREAMP (dB) (dB/m) (dB)	FINAL (dBuV/m)	POL/HGT/AZ (m) (deg)	DELTA1
60.80	42.5Qp +	1.2 + 10.9 - 25.5 =	29.1	V 1.0 0.0	-10.9

## **Substitution Method**

A cabinet (or enclosure) radiated emission scan was also made, at Intertek, with the EUT's antenna replaced with a termination to demonstrate case radiation compliance to the -13 dBm requirement. Radiated emissions from the EUT are measured in the frequency range of 30 to 20,000 MHz using a spectrum analyzer and appropriate broadband linearly polarized antennas. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna is positioned 3 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT are rotated 360 degrees. The field strength levels were measured per ANSI C63.4. The EUT is then replaced with a tuned dipole antenna (below 1GHz) or horn antenna (above 1 GHz). The substitute antenna was placed in the same polarization as the test antenna. A signal generator was used to generate a signal level that matched the highest level measured from the EUT. The signal generator level minus the cable loss from the signal generator to the substitute antenna plus the substitute antenna gain equals the spurious power level.

## **Test Equipment**

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure.