

# TEST RESULT SUMMARY

## FCC Part 22

MANUFACTURER	ADC Inc.
NAME OF EQUIPMENT	Digivance® CXD 800 MHz A and B Band
MODEL NUMBER	<b>DGVF-02000000XXCRN</b>
MANUFACTURER'S ADDRESS	P.O. Box 1101 Minneapolis, MN 55440-1101
TEST REPORT NUMBER	WC506388 Rev A
TEST DATES	30 September 2005 (ADC) 14 December 2005 (TÜV)

According to testing performed at TÜV America Inc, the above-mentioned unit is in compliance with the 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.

TÜV America Inc, as an independent testing laboratory, declares that the equipment tested as specified above conforms to the EMC requirements of FCC Part 22, Subpart C Section 22.355, "Frequency tolerance" and Subpart H Sections 22.913 "Effective radiated power limits" and 22.917 "Emission limitations for cellular".

Date: 25 March 2006

Tested By

Technical Writer



Joe Sausen



Greg Jakubowski

Not Transferable

# EMC Emission - TEST REPORT

Test Report File No. : **WC506388 Rev A** Date of issue: 25 April 2006

Model Nos. : **DGVF-02000000XXCRN**

Product Name : **Digivance® CXD 800 MHz A and B Band**

Product Type : **Transports RF between a remote antenna and a base station**

Applicant : **ADC Inc.**

Manufacturer : **ADC Inc.**

License Holder : **ADC Inc.**

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

Test Result : ☒ **Positive** ☐ **Negative**

Test Project Number :  
Reference(s) : **WC506388 Rev A**

Total pages including Appendices : **157**

*TÜV America Inc reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. TÜV America Inc shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV America Inc issued reports.*

*This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval. This report shall not be used by the client to claim product endorsement by NVLAP, NIST, or any agency of the US government.*

*TÜV America Inc and its professional staff hold government and professional organization certifications and are members of AAMI, ACIL, AEA, ANSI, IEEE, NVLAP, and VCCI*

## REVISION RECORD

REVISION	TOTAL NUMBER OF PAGES	DATE	DESCRIPTION
	157	16 February 2006	Initial Release
A	157	21 April 2006	Revisions include: ▪ Pages A2-A3, Updated EIRP Test Data

## DIRECTORY

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### Sign Explanations:

- ☐ - not applicable  
☒ - applicable

## EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to following regulations:

- ☐ - EN 50081-1 / 1991
- ☐ - EN 55011 / 1991

- ☐ - Group 1
- ☐ - Class A

- ☐ - Group 2
- ☐ - Class B

- ☐ - EN 55013 / 1990
- ☐ - EN 55014 / 1987

- ☐ - Household appliances and similar
- ☐ - Portable tools
- ☐ - Semiconductor devices

- ☐ - EN 55014 / A2:1990
- ☐ - EN 55014 / 1993

- ☐ - Household appliances and similar
- ☐ - Portable tools
- ☐ - Semiconductor devices

- ☐ - EN 55015 / 1987
- ☐ - EN 55015 / A1:1990
- ☐ - EN 55015 / 1993
- ☐ - EN 55022 / 1987
- ☐ - EN 55022 / 1991

- ☐ - Class A
- ☐ - Class A

- ☐ - Class B
- ☐ - Class B

- ☐ - BS
- ☐ - VCCI

- ☐ - Class A

- ☐ - Class B

- ☐ - FCC Part 15 Subpart B
- ☐ - FCC Part 15 Subpart C
- ☒ - FCC Part 22

- ☐ - Class A

- ☐ - Class B

- ☐ - CISPR 11 (1990)

- ☐ - Group 1
- ☐ - Class A

- ☐ - Group 2
- ☐ - Class B

- ☐ - CISPR 22 (1993)

- ☐ - Class A

- ☐ - Class B

- ☐ - IC RSS-Gen Issue 1
- ☐ - IC RSS-193 Issue 1

## 22.913 Effective radiated power limits

### Test summary

The requirements are: ☒ - MET ☐ - NOT MET

Minimum margin of compliance is 17.8 dB at 875 MHz (FM, band A)

### Test location

☐ - Wild River Lab Large Test Site (Open Area Test Site)

☐ - Wild River Lab Small Test Site (Open Area Test Site)

☒ - ADC facility

### Test Distance

☐ - 3 meters

☐ - 10 meters

☒ - Conducted measurement

### Test equipment (ADC)

Model Number	Manufacturer	Description	ADC Serial Number	Cal Due
49-30-33	Aeroflex	Attenuator	n/a	CNR
HP8563E	HP	Spectrum Analyzer	MC27690	6-22-06
EPM-441A	HP	Power Meter	MC27670	9-28-06

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

### Test limit

500 watts or 57dBm

### Test Data

See page A2 – A3

## 22.355 Frequency tolerance

### Test summary

The requirements are: ■ - MET □ - NOT MET

The carrier frequency of each channel is maintained within the tolerances given in Table C–1 of this section.

Frequency measured over a temperature range of -30 to 50°C and an input voltage range of 102 to 138 VAC

### Test location

□ - Wild River Lab Large Test Site (Open Area Test Site)

□ - Wild River Lab Small Test Site (Open Area Test Site)

■ - ADC facility

### Test equipment (ADC)

Model Number	Manufacturer	Description	ADC Serial Number	Cal Due
26III	Fluke	Multimeter	MC22687	4-27-06
5347A	HP	Freq. Counter	MC27569	7-21-06
1520CT	Staco	Variable Auto Transformer	MC/44655	CNR
E4436B	Agilent	Signal Generator	963739	10-16-06

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 pages A4 – A5

## 22.917 Emission limitations for cellular

### Test summary

The requirements are: ■ - MET □ - NOT MET

The power of any emission outside of the authorized operating frequency ranges are attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

Outside the emission bandwidth of the carrier, all emissions are attenuated at least 26 dB below the transmitter power.

### Test location

■ - Wild River Lab Large Test Site (Open Area Test Site)

□ - Wild River Lab Small Test Site (Open Area Test Site)

■ - ADC facility

### Test equipment (ADC)

Model Number	Manufacturer	Description	ADC Serial Number	Cal Due
49-30-33	Aeroflex	Attenuator	n/a	CNR
HP8563E	HP	Spectrum Analyzer	MC27690	6-22-06
EPM-441A	HP	Power Meter	MC27670	9-28-06
26III	Fluke	Multimeter	MC22687	4-27-06
5347A	HP	Freq. Counter	MC27569	7-21-06
Thermotron	Thermotron	Temperature Chamber	MC18966	3-1-06
1520CT	Staco	Variable Auto Transformer	MC/44655	CNR
E4436B	Agilent	Signal Generator	963739	10-16-06
E4436B	Agilent	Signal Generator	MC50601	12-29-06

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

### Test equipment (TUV)

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3203	EM-6917B	Electro-Metrics	Biconicalog Periodic	106	01-Apr-06
2074	3115	Electro-Mechanics (EMCO)	Ridge Guide Antenna	2504	22-Nov-06
3961	ZHL-1042J	Mini-Circuits	Preamplifier	D120403-1	Code B
3958	SL18B4020	Phase One Microwave	Preamplifier 1 – 18 GHz	0002	Code B
2681	85650A	Hewlett-Packard	Quasi-Peak Adapter	2430A00562	03-Feb-06
8052	8566B	Hewlett-Packard	Spectrum Analyzer	2115A00853	24-Mar-06
8051	85662A	Hewlett-Packard	Analyzer Display	2112A02220	24-Mar-06
3236	UHAP-10dB	Schwarzbeck	Dipole Antenna 300-1000	164	N/A
3333	SME03	Rhode & Schwarz	Signal Generator	100003	25-Apr-06

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

### Test limits

Out of band emissions:

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

$(19\text{dBm} - [43 + 10\log(0.08\text{W})]) = -13\text{ dBm}$

Outside of the carrier emission bandwidth:

26 dB below the transmitter power

### Test data

Occupied Bandwidth Modulation, pages A6 – A16

Conducted Emission Limits, pages A17 – A53

Radiated emissions, pages A54 – A70

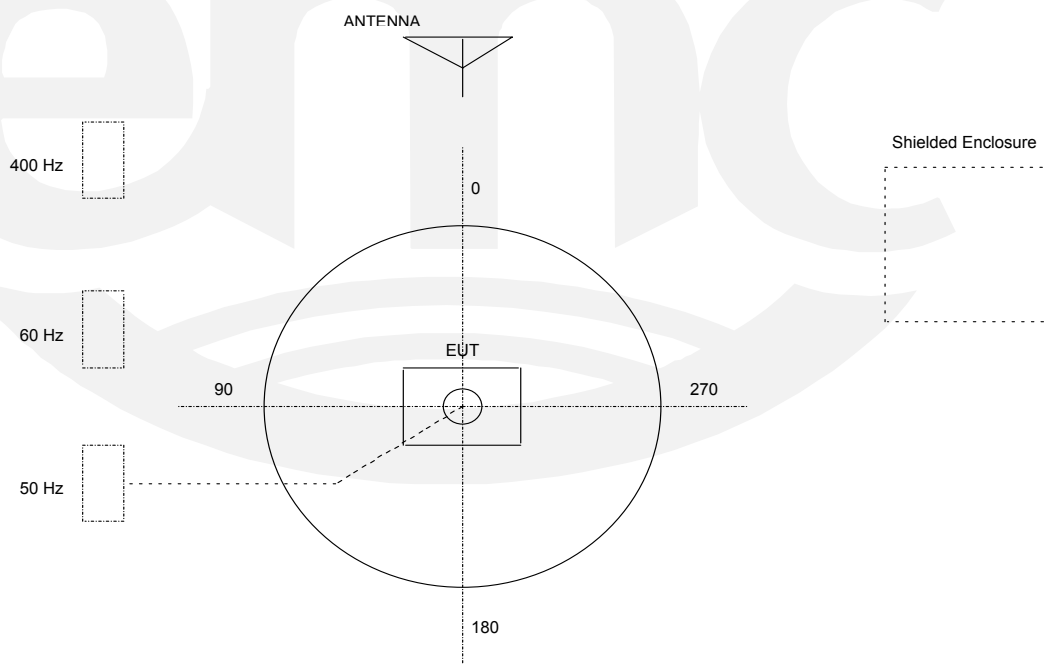
Inter-Modulation Test, pages A71 – A131

## TEST SETUP FOR EMISSIONS TESTING

### WILD RIVER LAB Large Test Site

#### Notes:

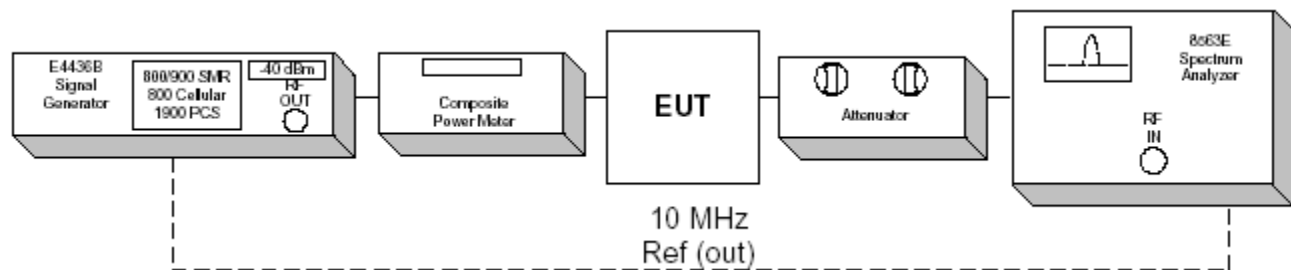
1. Items shown in dotted lines are located on the floor below the test area. It is 5 meters vertically from the ground floor to the test area.
2. 50 Hz, 60 Hz, and 400 Hz are power panels for alternating current.
3. The antenna may be positioned horizontally 3, 10 or 30 meters from the center of the turntable.
4. The circle is a 6.7 meter diameter turntable.
5. A ground plane is in the plane of this sheet.
6. The test sample is shown in the azimuthal position representing zero degrees.



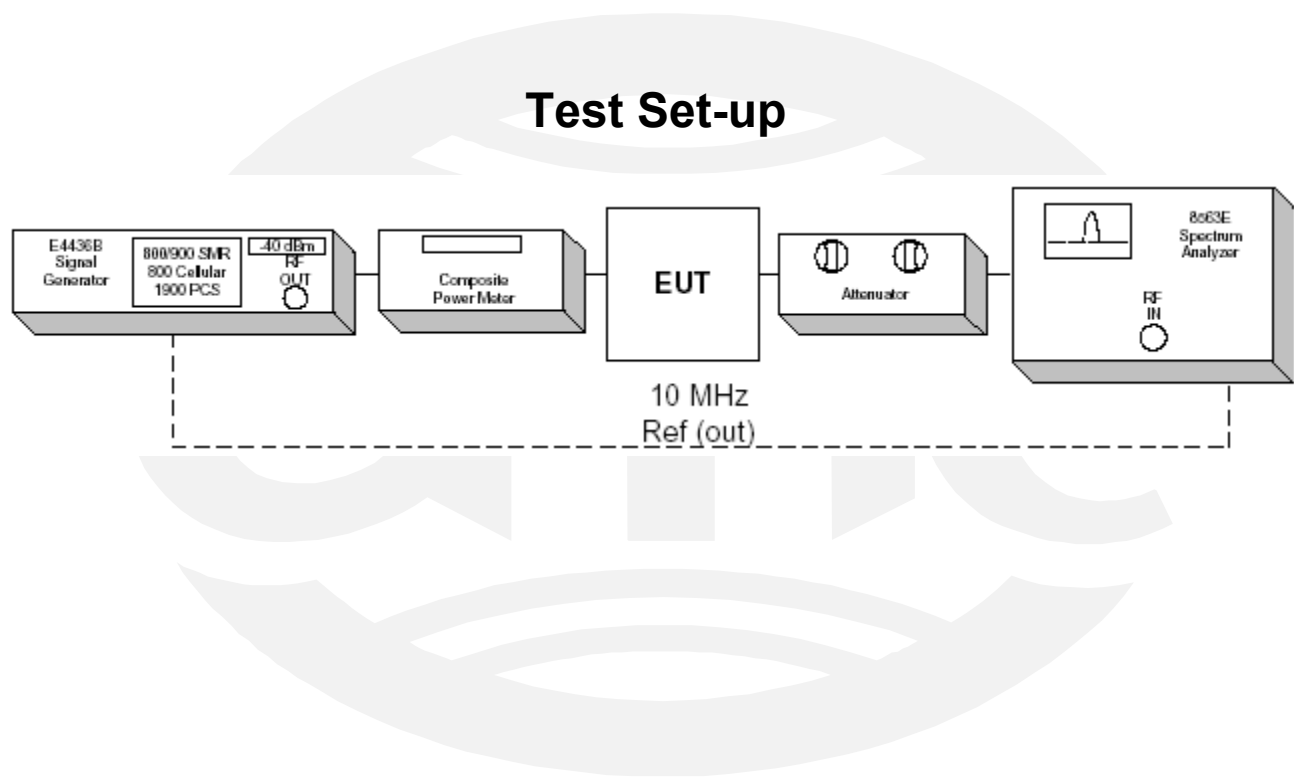


**Conducted Emission Limits Test for ADC Inc.**  
**Digivance CXD**  
**Model Number DGVF-02000000XXCRN**

**Test Set-up**



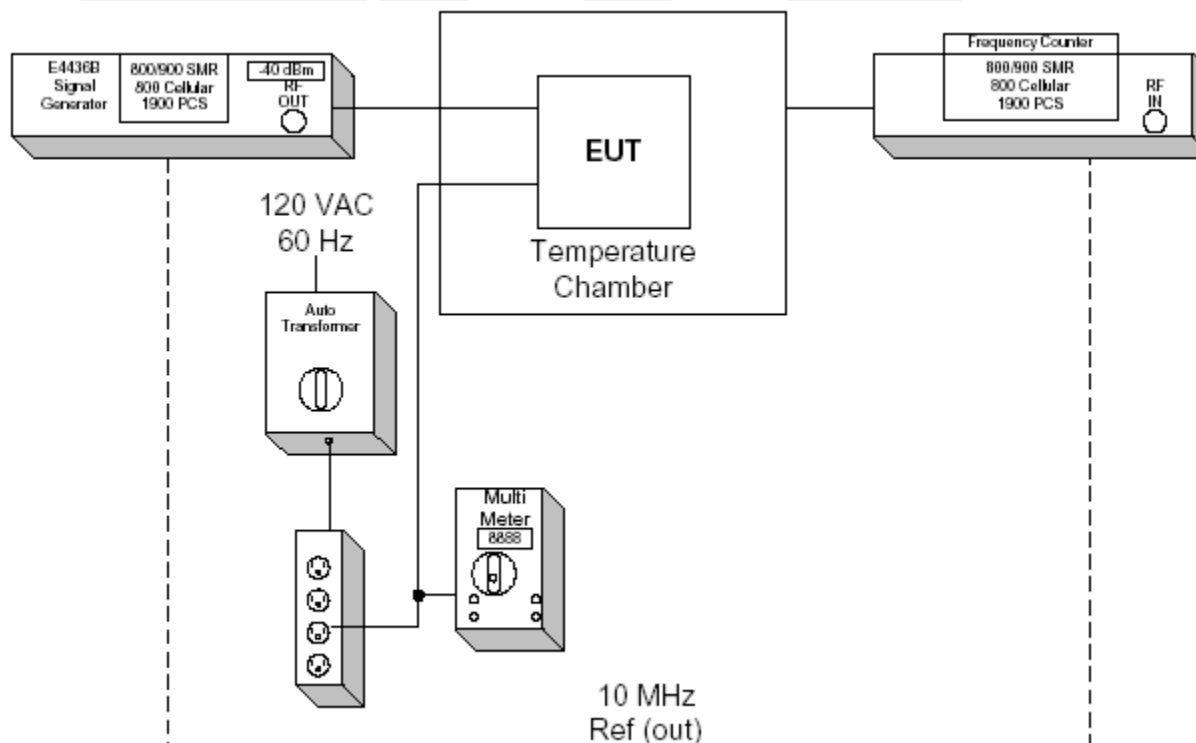
**Effective Radiated Power Limit Test for ADC Inc.  
Digivance CXD  
Model Number DGVF-02000000XXCRN**



# **Frequency Tolerance Test for ADC Inc. Digivance CXD Model Number DGVF-02000000XXCRN**

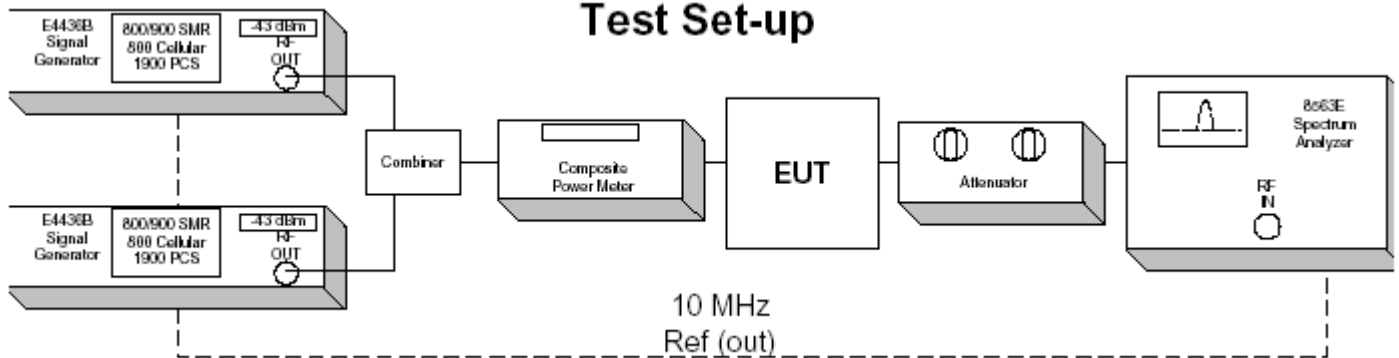
EUT Host is specified for indoor use only with temperature range of 0° to +50° C, and was tested with its range.  
EUT Remote is specified with a temperature range of -30° to +50° C and was tested with its range.

## **Test Set-up**



# **Inter-Modulation Test for ADC Inc. Digivance CXD Model Number DGVF-02000000XXCRN**

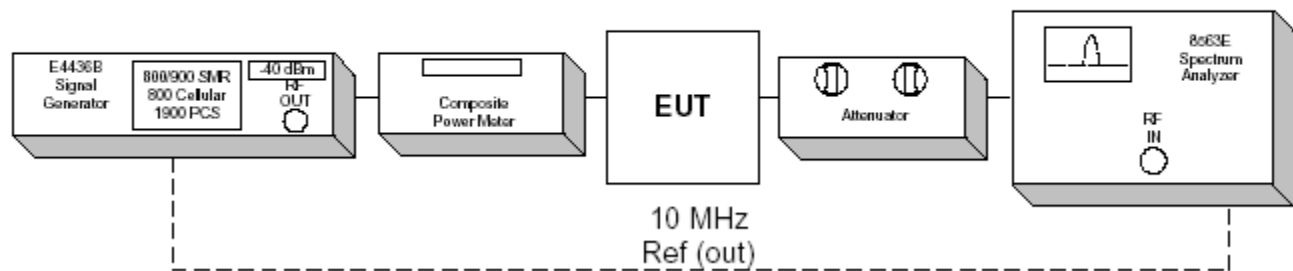
## **Test Set-up**



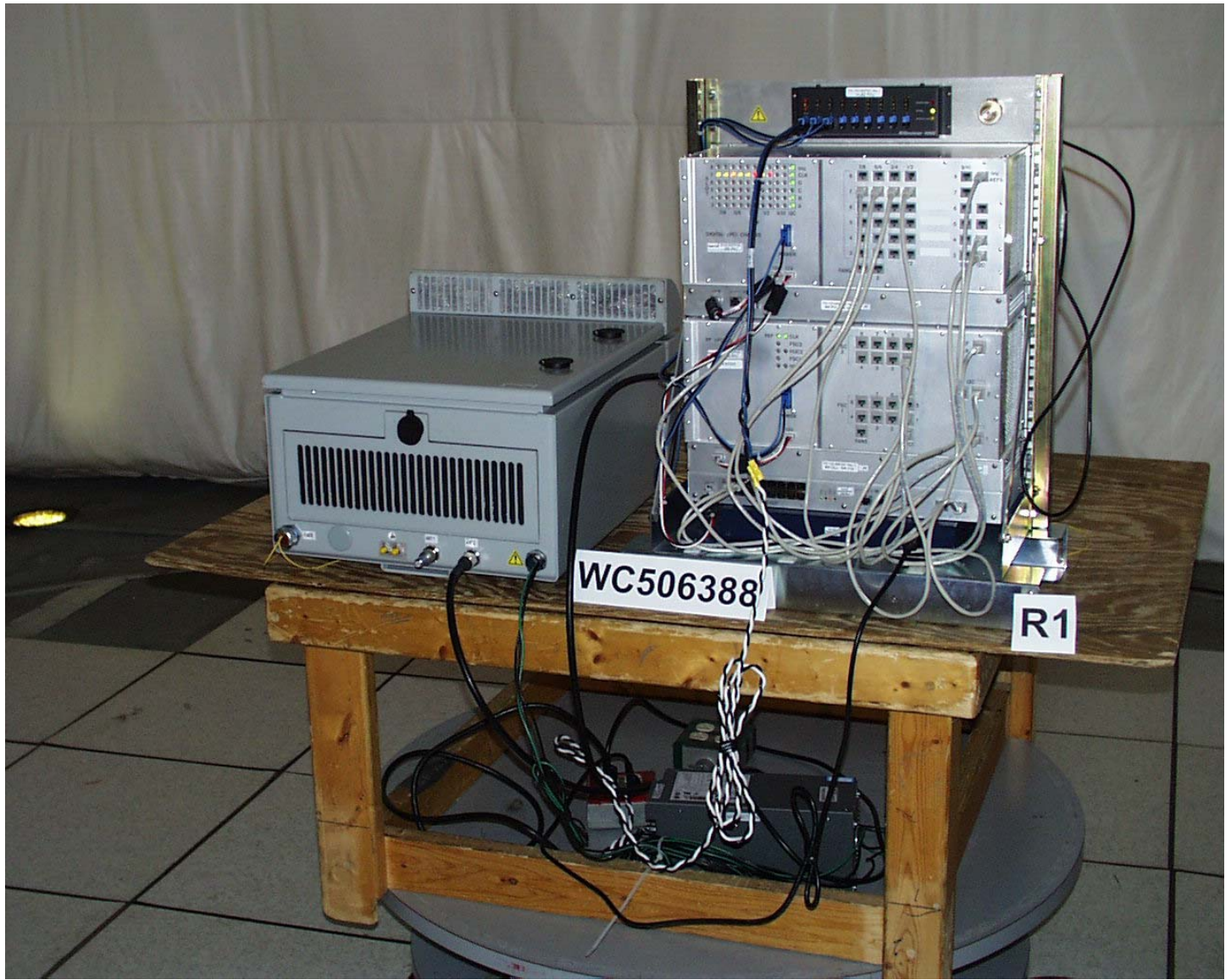
# Occupied Bandwidth Modulation Test for ADC Inc. Digivance CXD Model Number DGVF-02000000XXCRN



## Test Set-up



Test setup photo, radiated emissions





Test setup photo, radiated emissions



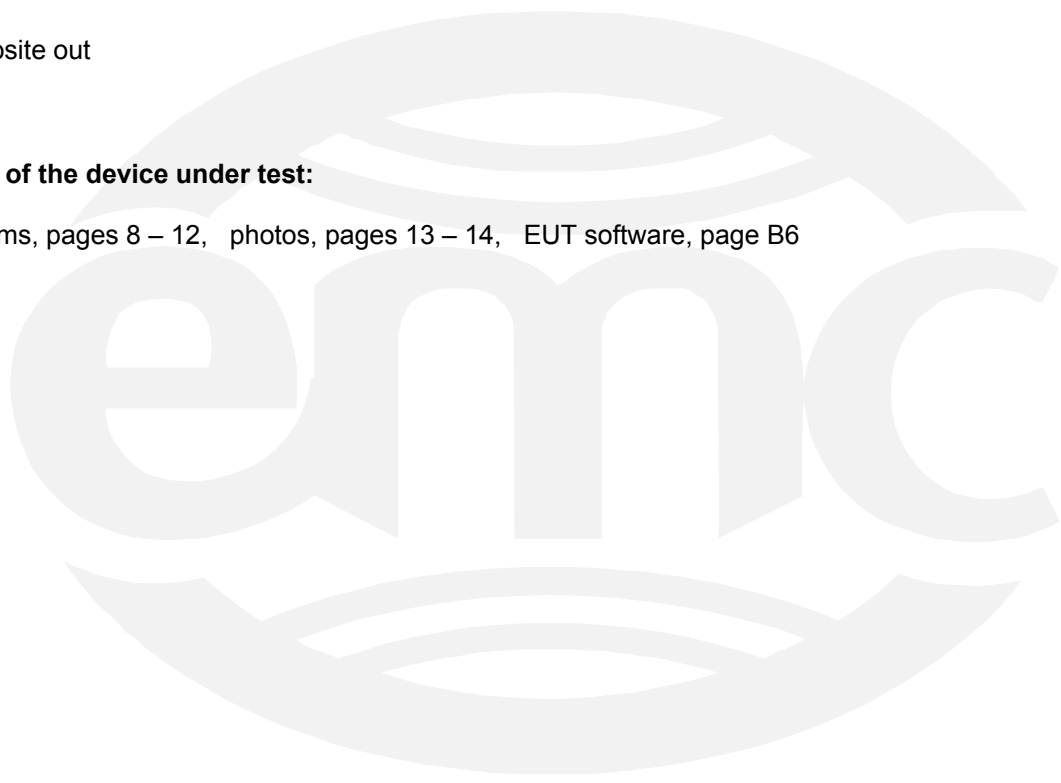
### **Test Operation Mode:**

**The device under test was operated under the following conditions during emissions testing:**

- ☐ - Standby
- ☐ - Test program (H - Pattern)
- ☐ - Test program (color bar)
- ☐ - Test program (customer specific)
- ☐ - Practice operation
- ☒ - Max composite out

### **Configuration of the device under test:**

- ☒ - See diagrams, pages 8 – 12, photos, pages 13 – 14, EUT software, page B6





## DEVIATIONS FROM STANDARD:

None.

## GENERAL REMARKS:

### Modifications required to pass:

- ☒ None
- ☐ As indicated on the data sheet(s)

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

- ☒ None
- ☐ As indicated in the Test Plan

## SUMMARY:

The requirements according to the technical regulations are

- ☒ - met
- ☐ - **not** met.

The device under test does

- ☒ - fulfill the general approval requirements mentioned on page 3.
- ☐ - **not** fulfill the general approval requirements mentioned on page 3.

EUT Received Date: (TÜV)	<u>14 December 2005</u>
Condition of EUT:	<u>Normal</u>
Testing Start Date: (ADC)	<u>30 September 2005</u>
Testing End Date: (TÜV)	<u>14 December 2005</u>

- TÜV AMERICA INC -

Tested By:



Joe Sausen, Michael Schultz

Reviewed By:



Greg Jakubowski

## Appendix A

Test data



# Effective Radiated Power Test for ADC Inc.

## Digivance CXD

### Model Number DGVF-02000000XXCRN

\*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, 16 QAM, GSM, TDMA, and CDMA signal generator. The power meter level was offset to compensate for attenuators and cable loss between the EUT and the meter. The power meter head correction factors were calibrated and included for the measurements as well.

A signal was used at the low, mid and high parts of the selected band. The power meter level was offset by 32.2 dB to compensate for attenuators and cable loss between the EUT and the meter.

#### **FM – 8.32 Watts**

Band A	(800 MHz)
Carrier Frequency	Carrier Output
869.0 MHz	<u>38.63</u> dBm
875.0 MHz	<u>39.20</u> dBm
880.0 MHz	<u>38.97</u> dBm

Band B	(800 MHz)
Carrier Frequency	Carrier Output
880.0 MHz	<u>37.53</u> dBm
887. MHz	<u>38.47</u> dBm
894.0 MHz	<u>38.67</u> dBm

#### **GSM – 7.89 Watts**

Band A	(800 MHz)
Carrier Frequency	Carrier Output
869.0 MHz	<u>38.80</u> dBm
875.5 MHz	<u>38.30</u> dBm
880.0 MHz	<u>38.97</u> dBm

Band B	(800 MHz)
Carrier Frequency	Carrier Output
880.0 MHz	<u>37.63</u> dBm
887. MHz	<u>38.47</u> dBm
894.0 MHz	<u>38.97</u> dBm

#### **16 QAM – 8.18 Watts**

Band A	(800 MHz)
Carrier Frequency	Carrier Output
869.0 MHz	<u>38.13</u> dBm
875.0 MHz	<u>37.97</u> dBm
880.0 MHz	<u>37.57</u> dBm

Band B	(800 MHz)
Carrier Frequency	Carrier Output
880.0 MHz	<u>38.57</u> dBm
887.0 MHz	<u>37.83</u> dBm
894.0 MHz	<u>39.13</u> dBm

#### **TDMA – 7.29 Watts**

Band A	(800 MHz)
Carrier Frequency	Carrier Output
869.0 MHz	<u>38.30</u> dBm
875.5 MHz	<u>38.13</u> dBm
880.0 MHz	<u>38.63</u> dBm

Band B	(800 MHz)
Carrier Frequency	Carrier Output
880.0 MHz	<u>37.87</u> dBm
887.0 MHz	<u>37.47</u> dBm
894.0 MHz	<u>38.57</u> dBm

**CDMA – 7.69 Watts**

Band A	(800 MHz)
Carrier Frequency	Carrier Output
869.0 MHz	<u>38.53</u> dBm
875.5 MHz	<u>37.70</u> dBm
880.0 MHz	<u>38.86</u> dBm

Band B	(800 MHz)
Carrier Frequency	Carrier Output
880.0 MHz	<u>38.33</u> dBm
887. MHz	<u>38.76</u> dBm
894.0 MHz	<u>38.20</u> dBm

**Frequency Tolerance Test for ADC Inc.  
Digivance CXD  
Model Number DGVF-02000000XXCRN**

**EUT A Band (800 MHz)**

<b>Input Voltage</b>	<b>Carrier Frequency</b>	<b>Measured Frequency</b>	<b>Meets Requirements?</b>
102 VAC	869.000 MHz	869.000 MHz	Yes
120 VAC	869.000 MHz	869.000 MHz	Yes
138 VAC	869.000 MHz	869.000 MHz	Yes
102 VAC	875.000 MHz	875.000 MHz	Yes
120 VAC	875.000 MHz	875.000 MHz	Yes
138 VAC	875.000 MHz	875.000 MHz	Yes
102 VAC	880.000 MHz	880.000 MHz	Yes
120 VAC	880.000 MHz	880.000 MHz	Yes
138 VAC	880.000 MHz	880.000 MHz	Yes
<b>Temperature</b>	<b>Carrier Frequency</b>	<b>Measured Frequency</b>	<b>Meets Requirements?</b>
-30 Deg. C	869.000 MHz	869.000 MHz	Yes
-20 Deg. C	869.000 MHz	869.000 MHz	Yes
-10 Deg. C	869.000 MHz	869.000 MHz	Yes
0 Deg. C	869.000 MHz	869.000 MHz	Yes
10 Deg. C	869.000 MHz	869.000 MHz	Yes
20 Deg. C	869.000 MHz	869.000 MHz	Yes
30 Deg. C	869.000 MHz	869.000 MHz	Yes
40 Deg. C	869.000 MHz	869.000 MHz	Yes
50 Deg. C	869.000 MHz	869.000 MHz	Yes
-30 Deg. C	875.000 MHz	875.000 MHz	Yes
-20 Deg. C	875.000 MHz	875.000 MHz	Yes
-10 Deg. C	875.000 MHz	875.000 MHz	Yes
0 Deg. C	875.000 MHz	875.000 MHz	Yes
10 Deg. C	875.000 MHz	875.000 MHz	Yes
20 Deg. C	875.000 MHz	875.000 MHz	Yes
30 Deg. C	875.000 MHz	875.000 MHz	Yes
40 Deg. C	875.000 MHz	875.000 MHz	Yes
50 Deg. C	875.000 MHz	875.000 MHz	Yes
-30 Deg. C	880.000 MHz	880.000 MHz	Yes
-20 Deg. C	880.000 MHz	880.000 MHz	Yes
-10 Deg. C	880.000 MHz	880.000 MHz	Yes
0 Deg. C	880.000 MHz	880.000 MHz	Yes
10 Deg. C	880.000 MHz	880.000 MHz	Yes
20 Deg. C	880.000 MHz	880.000 MHz	Yes
30 Deg. C	880.000 MHz	880.000 MHz	Yes
40 Deg. C	880.000 MHz	880.000 MHz	Yes
50 Deg. C	880.000 MHz	880.000 MHz	Yes

**Frequency Tolerance Test for ADC Inc.  
Digivance CXD  
Model Number DGVF-02000000XXCRN**

**EUT B Band (800 MHz)**

<b>Input Voltage</b>	<b>Carrier Frequency</b>	<b>Measured Frequency</b>	<b>Meets Requirements?</b>
102 VAC	880.000 MHz	880.000 MHz	Yes
120 VAC	880.000 MHz	880.000 MHz	Yes
138 VAC	880.000 MHz	880.000 MHz	Yes
102 VAC	887.000 MHz	887.000 MHz	Yes
120 VAC	887.000 MHz	887.000 MHz	Yes
138 VAC	887.000 MHz	887.000 MHz	Yes
102 VAC	894.000 MHz	894.000 MHz	Yes
120 VAC	894.000 MHz	894.000 MHz	Yes
138 VAC	894.000 MHz	894.000 MHz	Yes
<b>Temperature</b>	<b>Carrier Frequency</b>	<b>Measured Frequency</b>	<b>Meets Requirements?</b>
-30 Deg. C	880.000 MHz	880.000 MHz	Yes
-20 Deg. C	880.000 MHz	880.000 MHz	Yes
-10 Deg. C	880.000 MHz	880.000 MHz	Yes
0 Deg. C	880.000 MHz	880.000 MHz	Yes
10 Deg. C	880.000 MHz	880.000 MHz	Yes
20 Deg. C	880.000 MHz	880.000 MHz	Yes
30 Deg. C	880.000 MHz	880.000 MHz	Yes
40 Deg. C	880.000 MHz	880.000 MHz	Yes
50 Deg. C	880.000 MHz	880.000 MHz	Yes
-30 Deg. C	887.000 MHz	887.000 MHz	Yes
-20 Deg. C	887.000 MHz	887.000 MHz	Yes
-10 Deg. C	887.000 MHz	887.000 MHz	Yes
0 Deg. C	887.000 MHz	887.000 MHz	Yes
10 Deg. C	887.000 MHz	887.000 MHz	Yes
20 Deg. C	887.000 MHz	887.000 MHz	Yes
30 Deg. C	887.000 MHz	887.000 MHz	Yes
40 Deg. C	887.000 MHz	887.000 MHz	Yes
50 Deg. C	887.000 MHz	887.000 MHz	Yes
-30 Deg. C	894.000 MHz	894.000 MHz	Yes
-20 Deg. C	894.000 MHz	894.000 MHz	Yes
-10 Deg. C	894.000 MHz	894.000 MHz	Yes
0 Deg. C	894.000 MHz	894.000 MHz	Yes
10 Deg. C	894.000 MHz	894.000 MHz	Yes
20 Deg. C	894.000 MHz	894.000 MHz	Yes
30 Deg. C	894.000 MHz	894.000 MHz	Yes
40 Deg. C	894.000 MHz	894.000 MHz	Yes
50 Deg. C	894.000 MHz	894.000 MHz	Yes

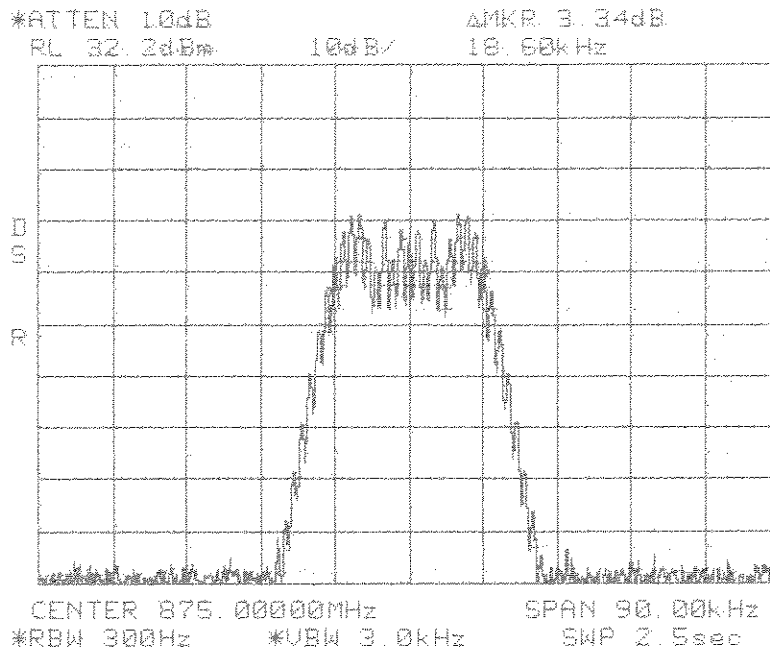
**Occupied Bandwidth Modulation Test for ADC Inc.**  
**Digivance CXD**  
**Model Number DGVF-02000000XXCRN**

An input/output Occupied Bandwidth test was done with modulation types: FM, 16 QAM, GSM, TDMA, and 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.

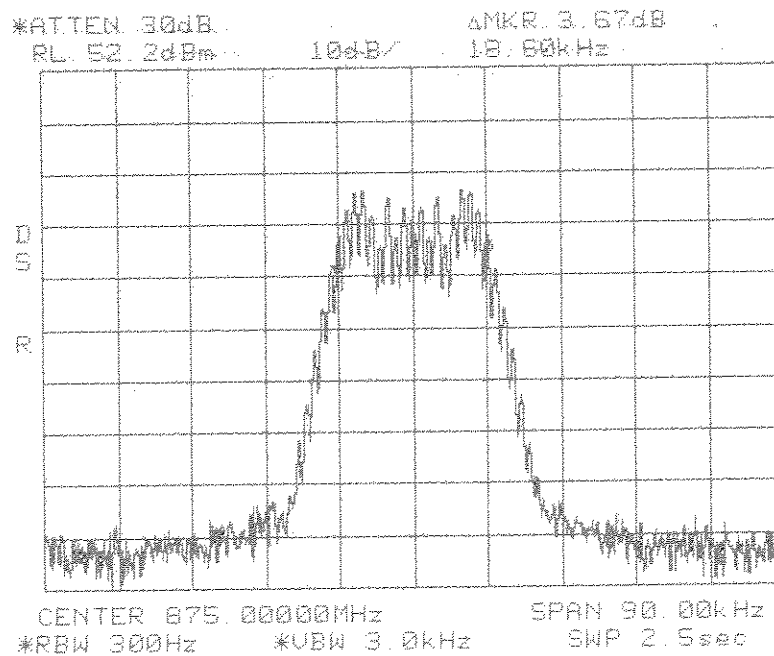
**Results:**

Pass (see plots)

Center: 875.0 MHz  
Span: 90 KHz  
RBW/VBW: 300 Hz / 3 kHz



**Occupied Bandwidth  
FM In  
Cellular 800 MHz  
A Band**

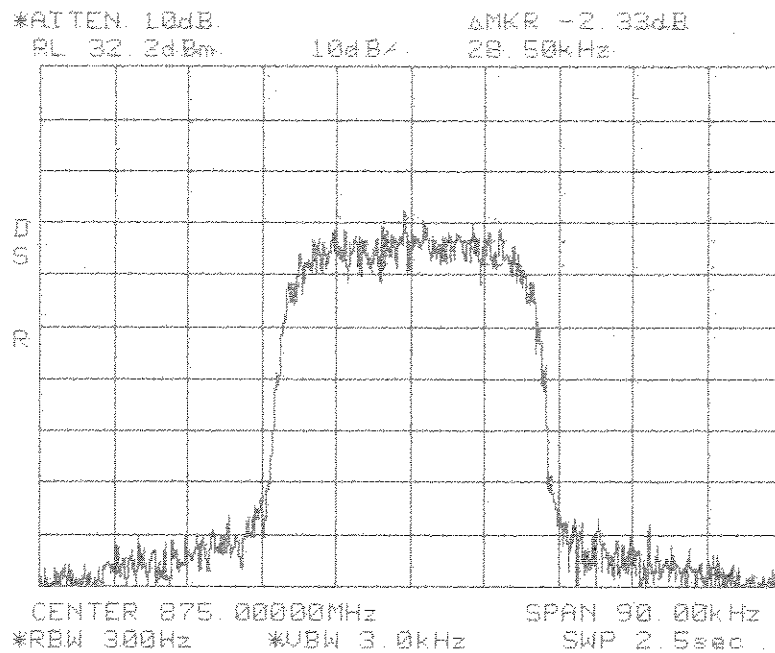


**Occupied Bandwidth  
FM Out  
Cellular 800 MHz  
A Band**

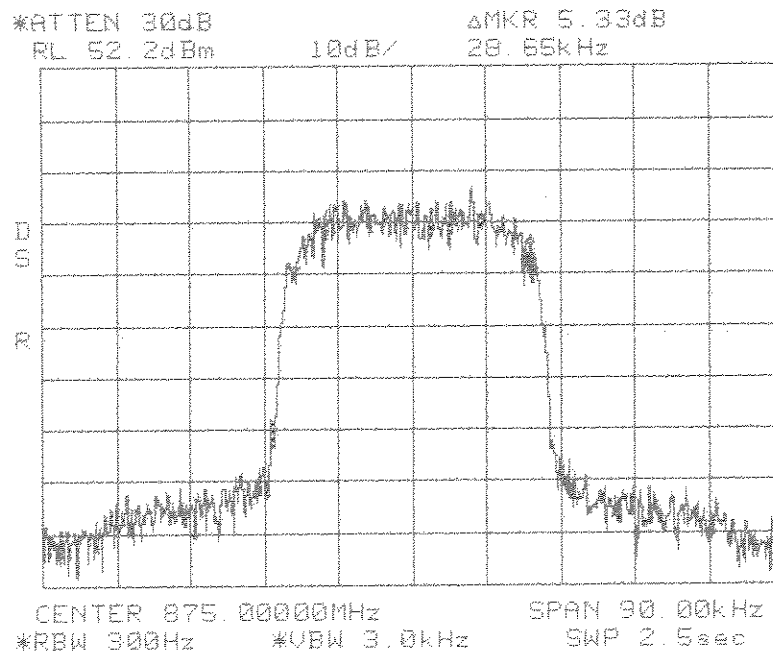
Center: 875.0 MHz  
Span: 90 KHz  
RBW/VBW: 300 Hz / 3 kHz



Center: 875.0 MHz  
Span: 90 KHz  
RBW/VBW: 300 Hz / 3 kHz



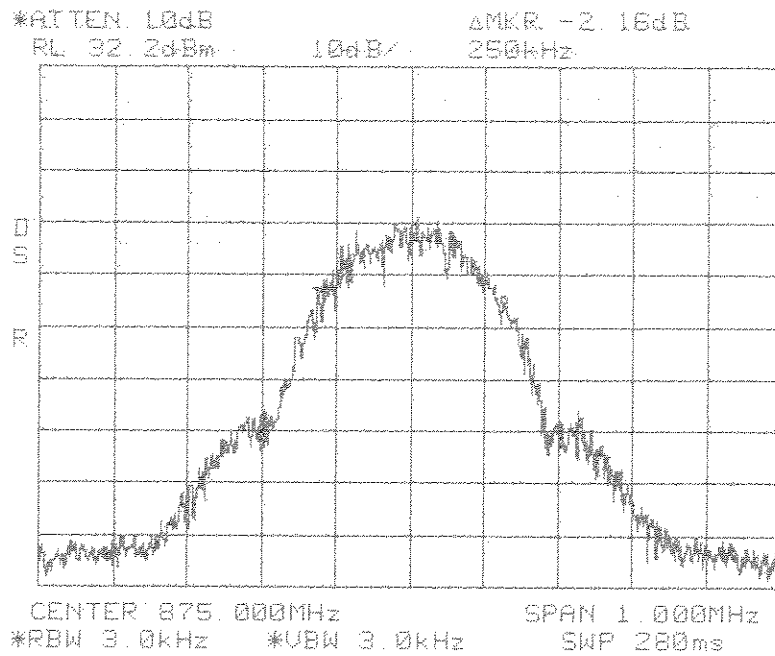
**Occupied Bandwidth  
16 QAM In  
Cellular 800 MHz  
A Band**



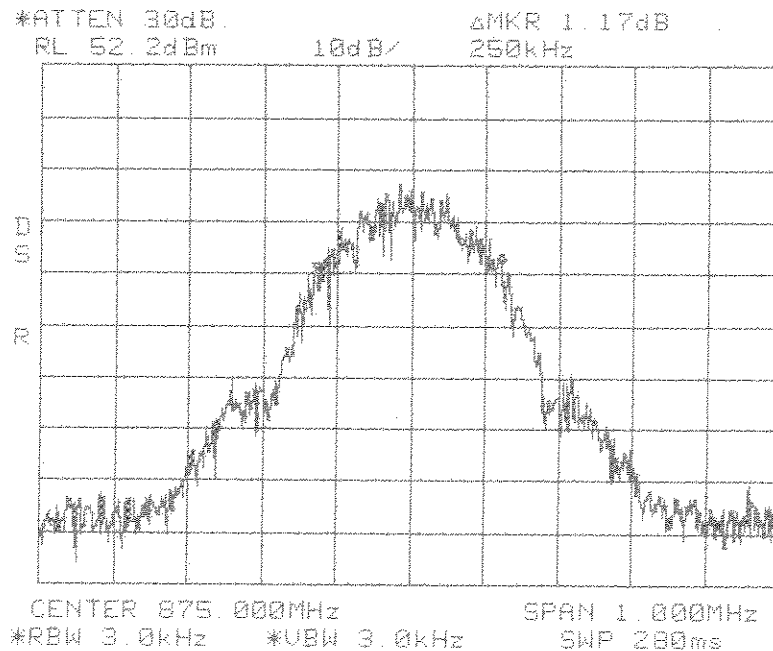
**Occupied Bandwidth  
16 QAM Out  
Cellular 800 MHz  
A Band**

Center: 875.0 MHz  
Span: 90 KHz  
RBW/VBW: 300 Hz / 3 kHz

Center: 875.0 MHz  
Span: 1 MHz  
RBW/VBW: 3 kHz / 3 kHz



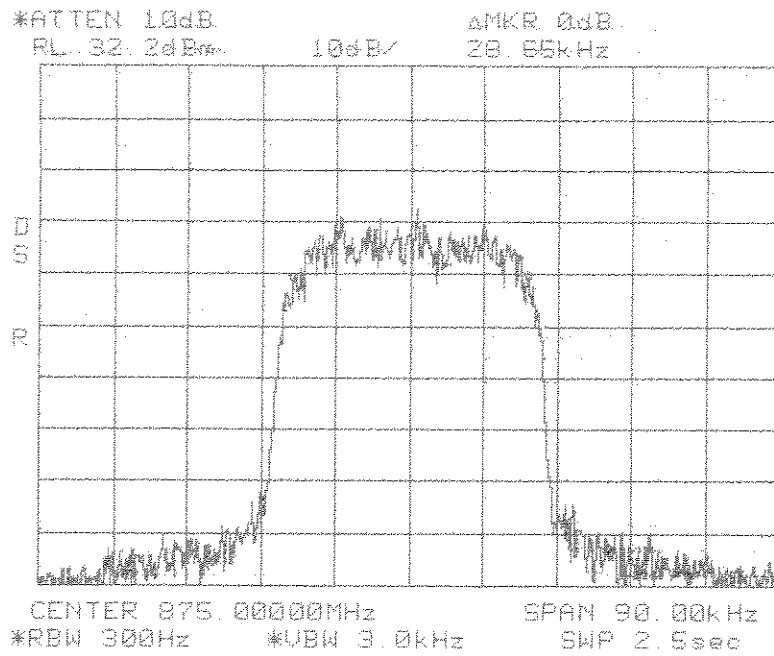
**Occupied Bandwidth  
GSM In  
Cellular 800 MHz  
A Band**



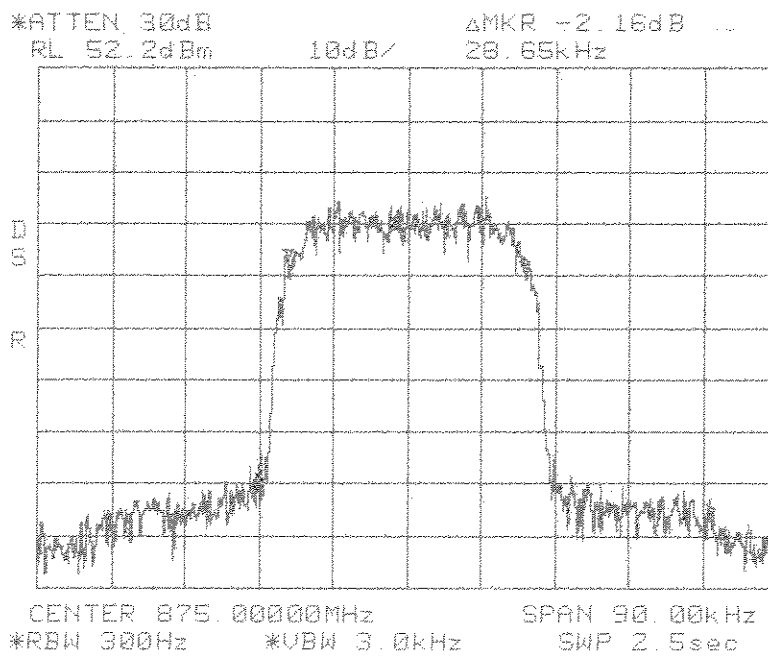
**Occupied Bandwidth  
GSM Out  
Cellular 800 MHz  
A Band**

Center: 875.0 MHz  
Span: 1 MHz  
RBW/VBW: 3 kHz / 3 kHz

Center: 875.0 MHz  
Span: 90 kHz  
RBW/VBW: 300 Hz / 3 kHz



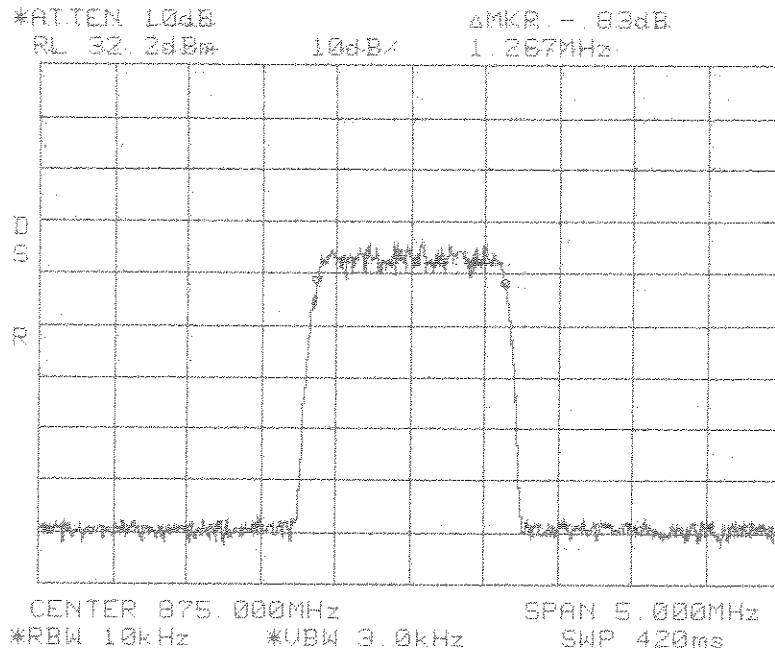
**Occupied Bandwidth  
TDMA In  
Cellular 800 MHz  
A Band**



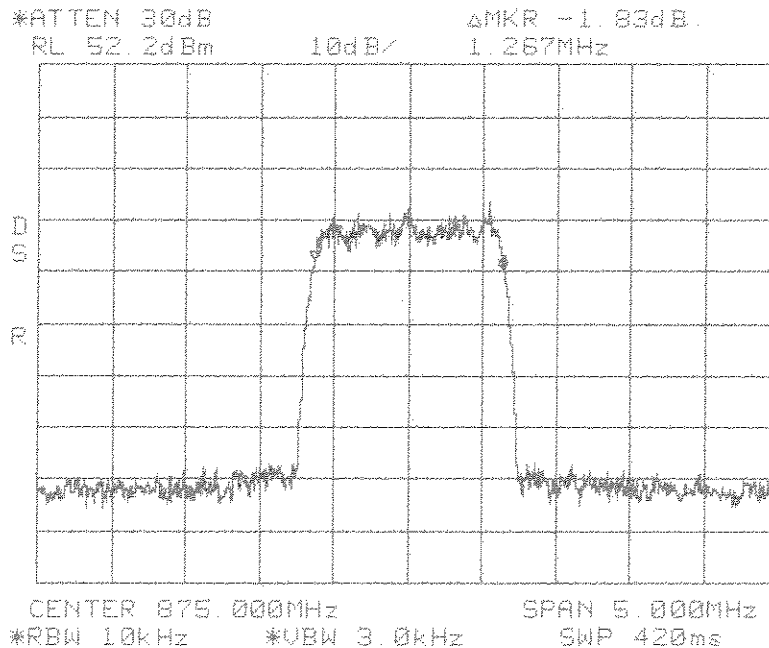
**Occupied Bandwidth  
TDMA Out  
Cellular 800 MHz  
A Band**

Center: 875.0 MHz  
Span: 90 kHz  
RBW/VBW: 300 Hz / 3 kHz

Center: 875.0 MHz  
Span: 5 MHz  
RBW/VBW: 10 kHz / 3 kHz



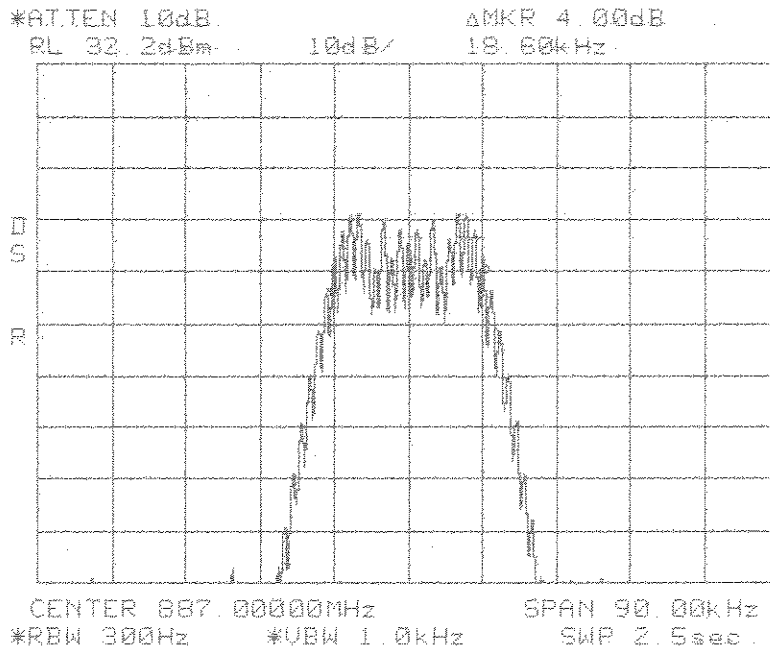
**Occupied Bandwidth  
CDMA In  
Cellular 800 MHz  
A Band**



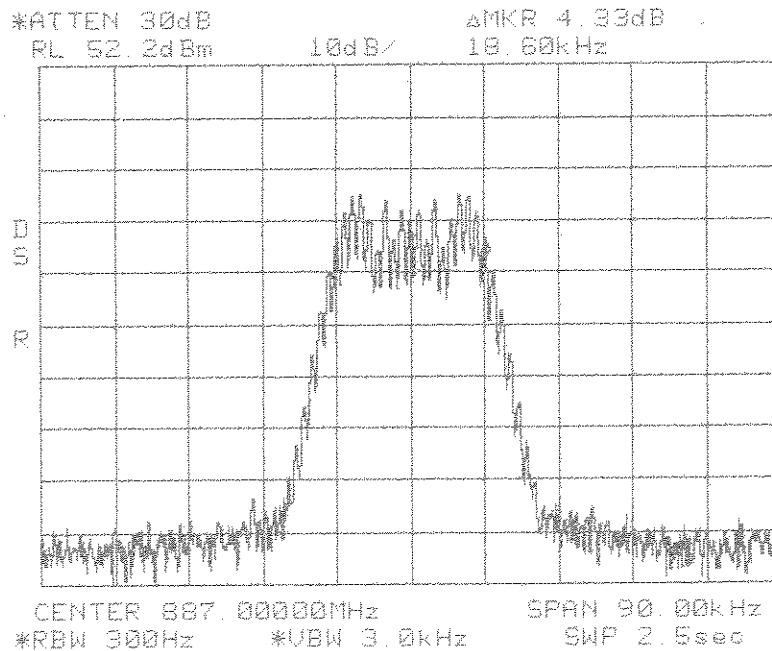
**Occupied Bandwidth  
CDMA Out  
Cellular 800 MHz  
A Band**

Center: 875.0 MHz  
Span: 5 MHz  
RBW/VBW: 10 kHz / 3 kHz

Center: 887.0 MHz  
Span: 90 KHz  
RBW/VBW: 300 Hz / 3 kHz



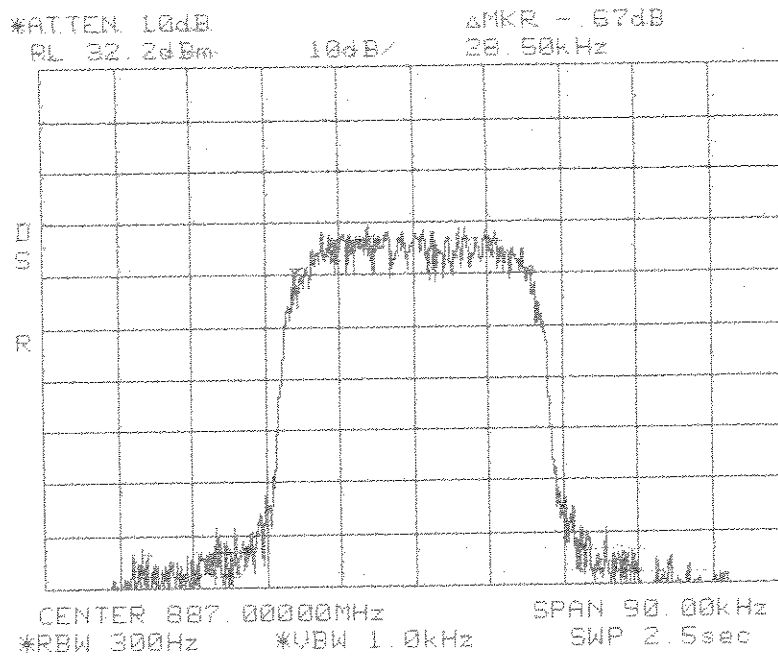
**Occupied Bandwidth  
FM In  
Cellular 800 MHz  
B Band**



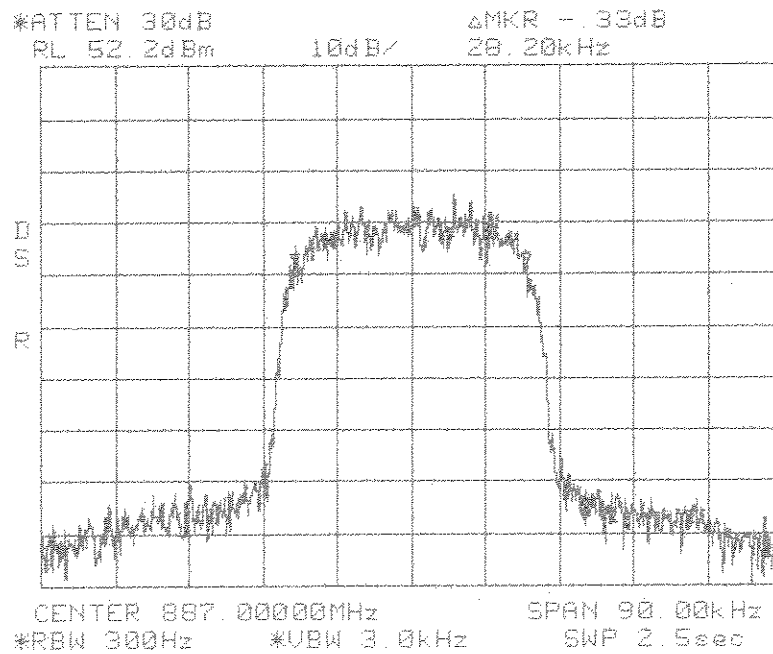
**Occupied Bandwidth  
FM Out  
Cellular 800 MHz  
B Band**

Center: 887.0 MHz  
Span: 90 KHz  
RBW/VBW: 300 Hz / 3 kHz

Center: 887.0 MHz  
Span: 90 KHz  
RBW/VBW: 300 Hz / 3 kHz



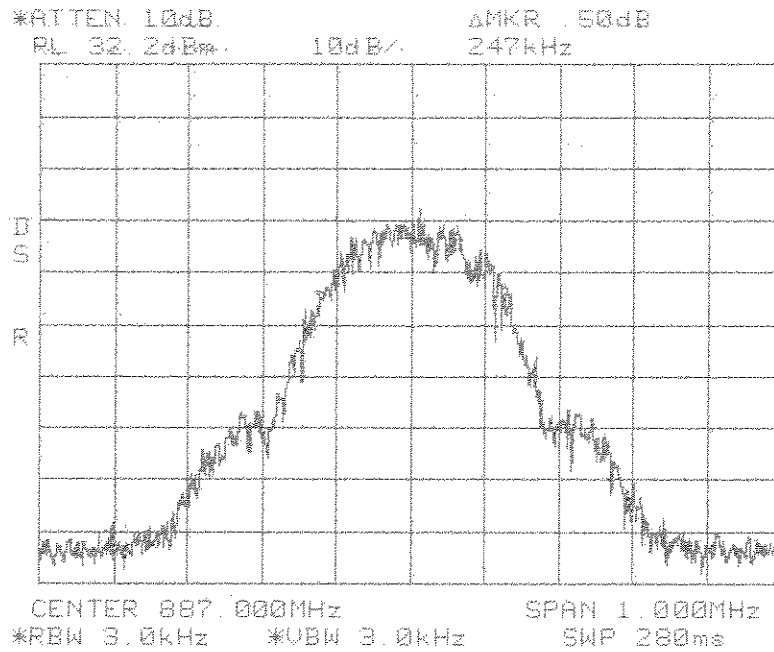
**Occupied Bandwidth  
16 QAM In  
Cellular 800 MHz  
B Band**



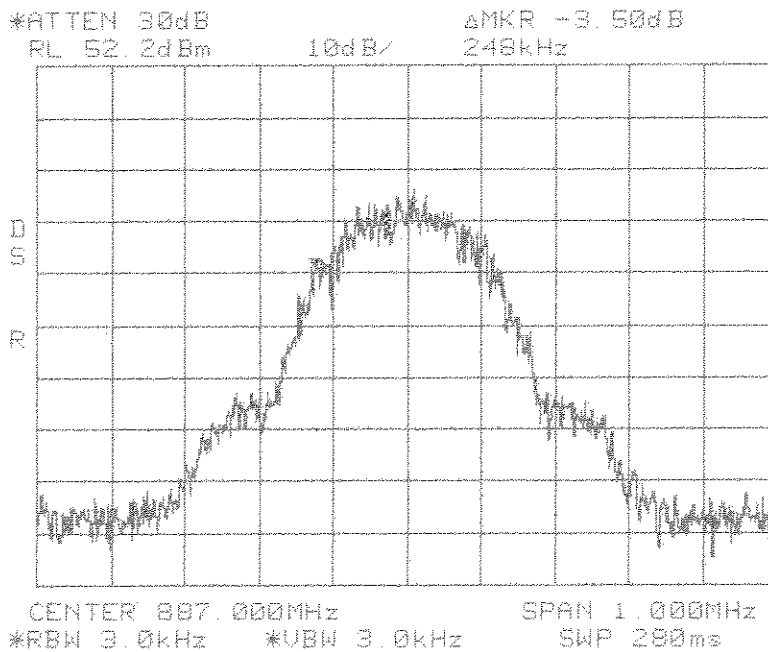
**Occupied Bandwidth  
16 QAM Out  
Cellular 800 MHz  
B Band**

Center: 887.0 MHz  
Span: 90 KHz  
RBW/VBW: 300 Hz / 3 kHz

Center: 887.0 MHz  
Span: 1 MHz  
RBW/VBW: 3 kHz / 3 kHz



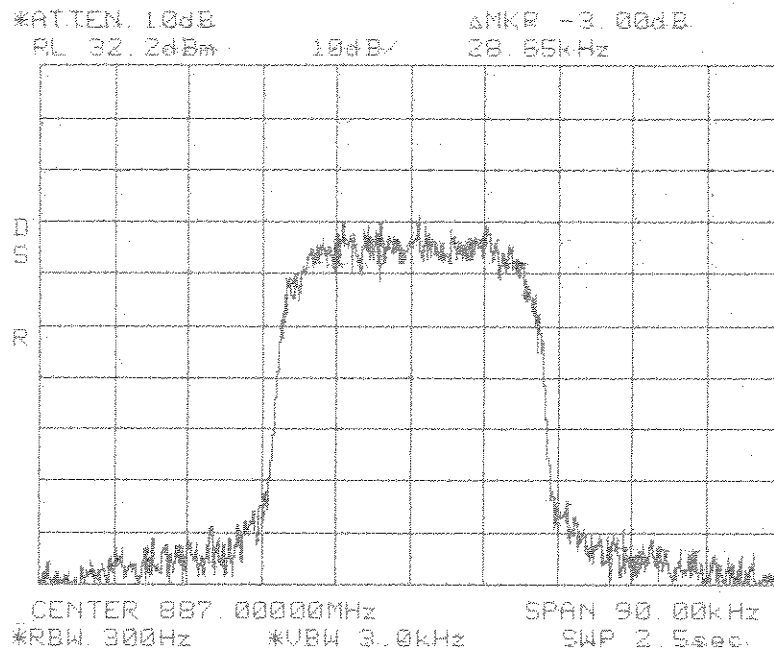
**Occupied Bandwidth  
GSM In  
Cellular 800 MHz  
B Band**



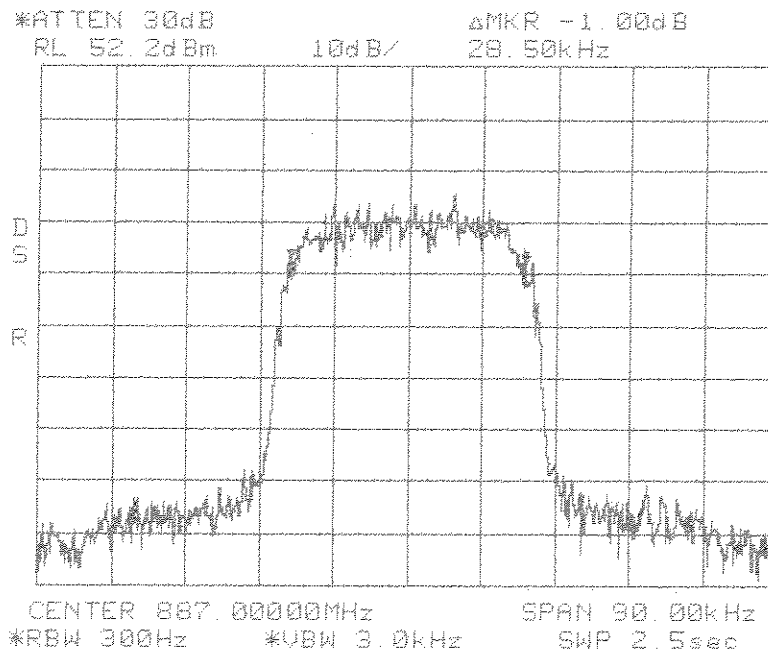
**Occupied Bandwidth  
GSM Out  
Cellular 800 MHz  
B Band**

Center: 887.0 MHz  
Span: 1 MHz  
RBW/VBW: 3 kHz / 3 kHz

Center: 887.0 MHz  
Span: 90 kHz  
RBW/VBW: 300 Hz / 3 kHz



**Occupied Bandwidth  
TDMA In  
Cellular 800 MHz  
B Band**

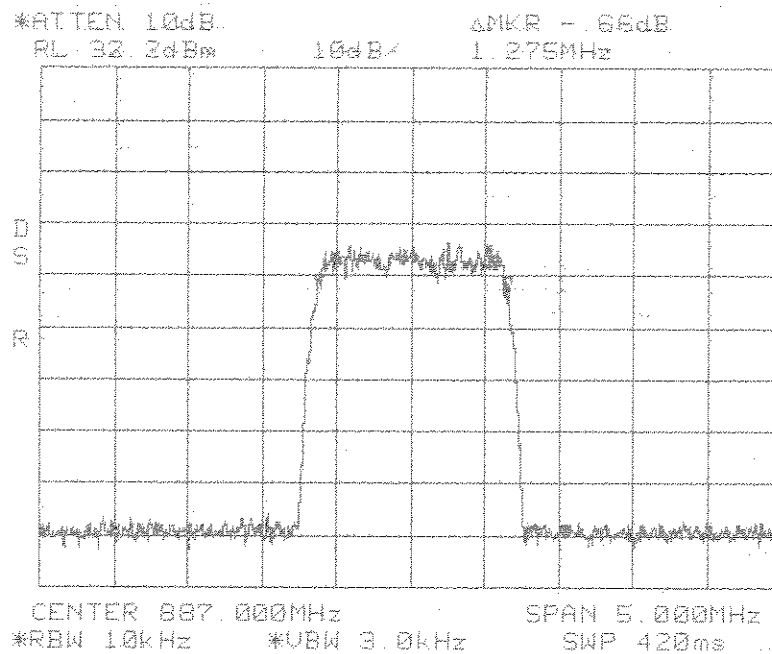


**Occupied Bandwidth  
TDMA Out  
Cellular 800 MHz  
B Band**

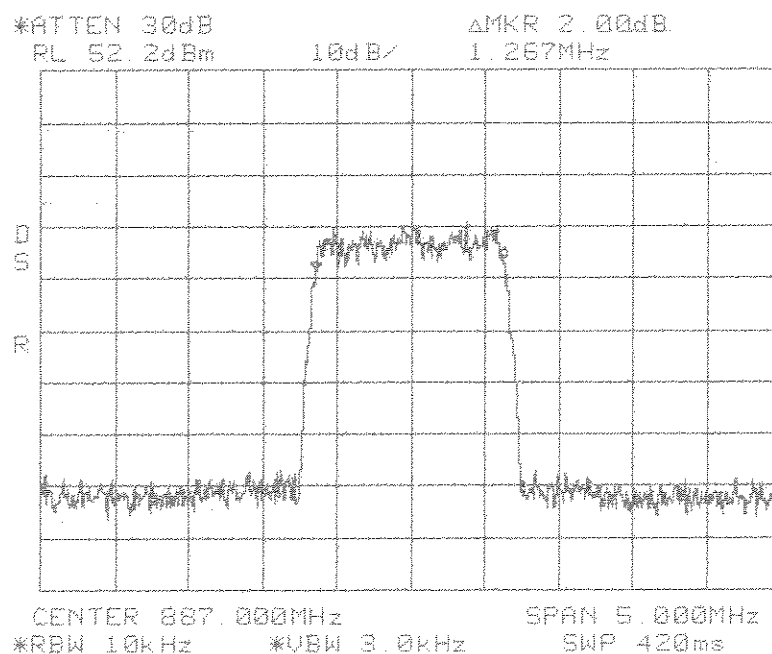
Center: 887.0 MHz  
Span: 90 kHz  
RBW/VBW: 300 Hz / 3 kHz



Center: 887.0 MHz  
Span: 5 MHz  
RBW/VBW: 10 kHz / 3 kHz



**Occupied Bandwidth  
CDMA In  
Cellular 800 MHz  
B Band**



**Occupied Bandwidth  
CDMA Out  
Cellular 800 MHz  
B Band**

Center: 887.0 MHz  
Span: 5 MHz  
RBW/VBW: 10 kHz / 3 kHz

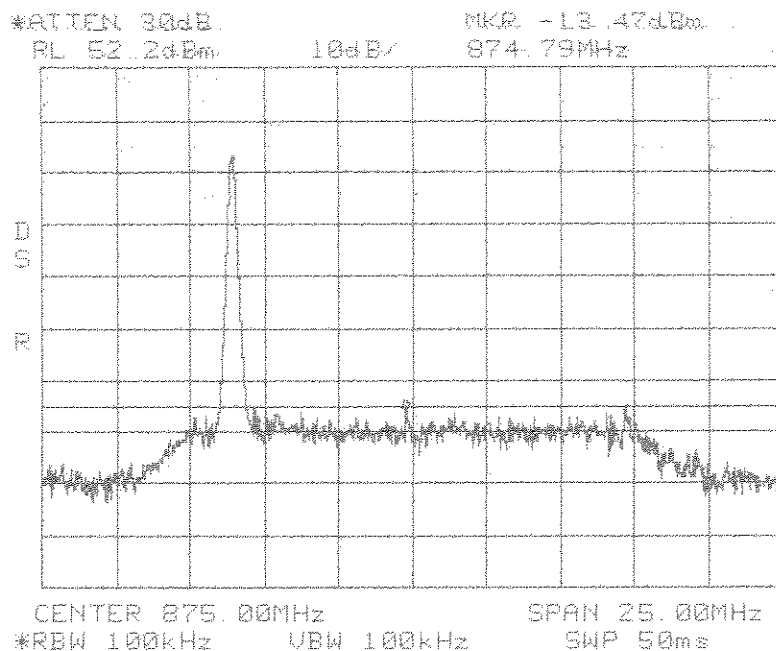
**Conducted Emission Limits Test for ADC Inc.**  
**Digivance CXD**  
**Model Number DGVF-02000000XXCRN**

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, 16QAM, GSM, TDMA, and CDMA. The different signals were input one at a time to the EUT. In all cases, the out of band emissions were less than -13dBm from the equation  
$$(19\text{dBm} - [43 + 10\log(0.08\text{W})])$$

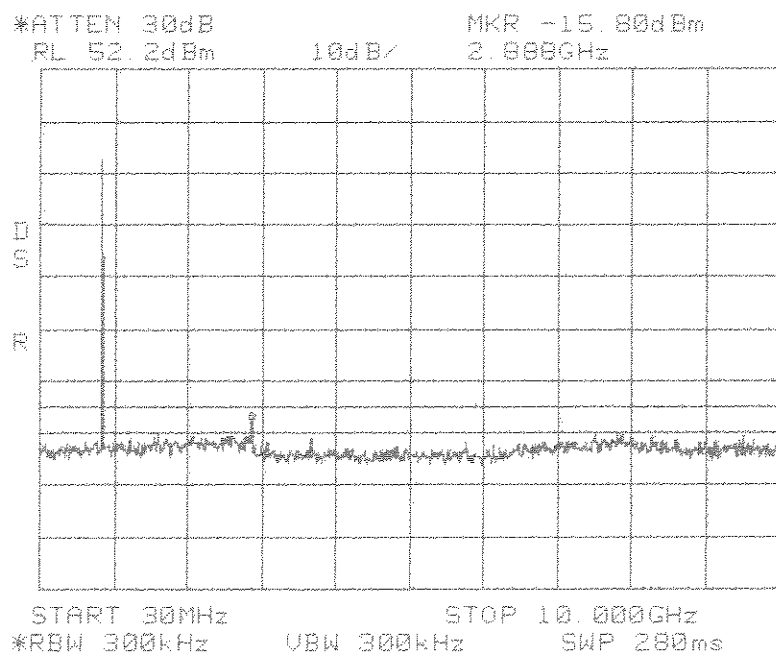
Band edge compliance is also demonstrated using a signal at the upper and lower limits of the band and a resolution bandwidth of 300 Hz.

Results:  
Pass (See plots)

Center: 875.0 MHz  
Span: 25 MHz  
RBW/VBW: 100 kHz



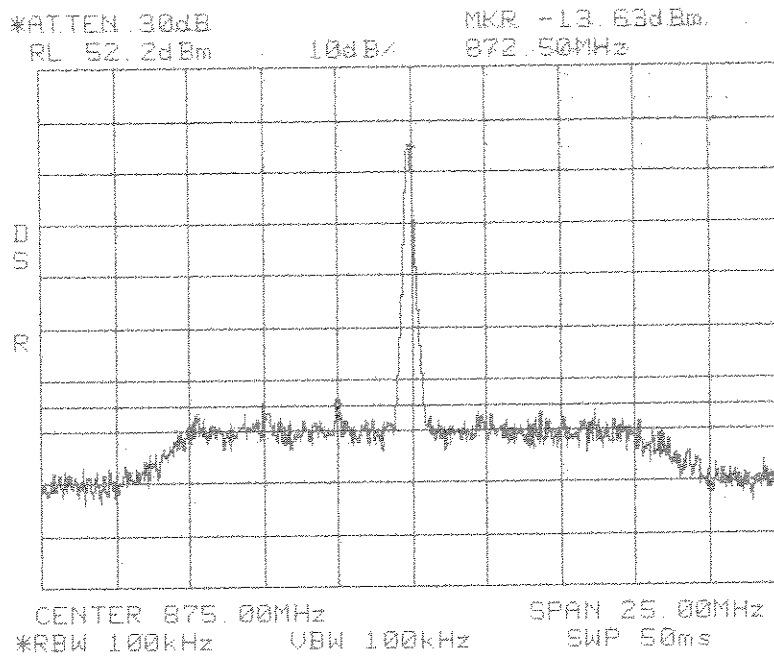
**Conducted Emissions**  
**Low**  
**Cellular 800 MHz**  
**A Band**



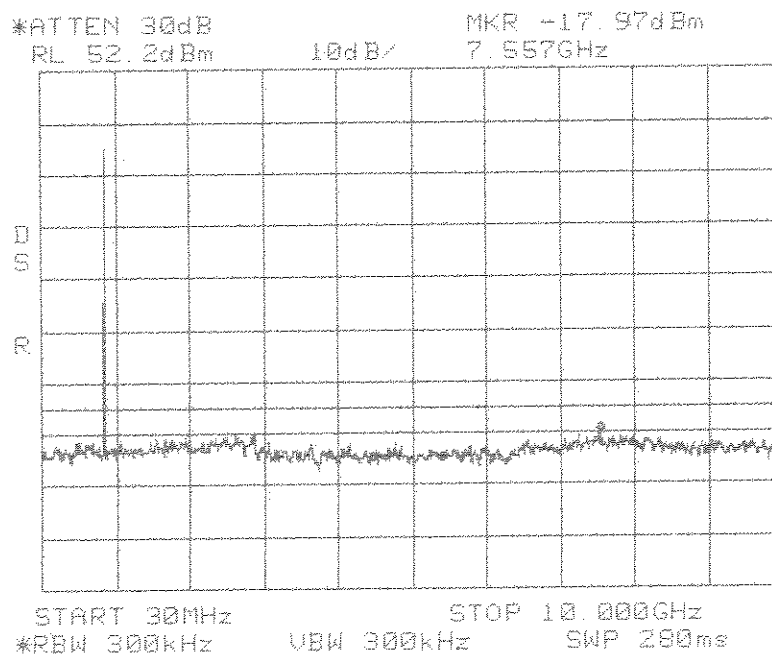
**Conducted Emissions**  
**Low**  
**Cellular 800 MHz**  
**A Band**

Span: 30 MHz to 10 GHz  
RBW/VBW: 300 kHz

Center: 875.0 MHz  
Span: 25 MHz  
RBW/VBW: 100 kHz



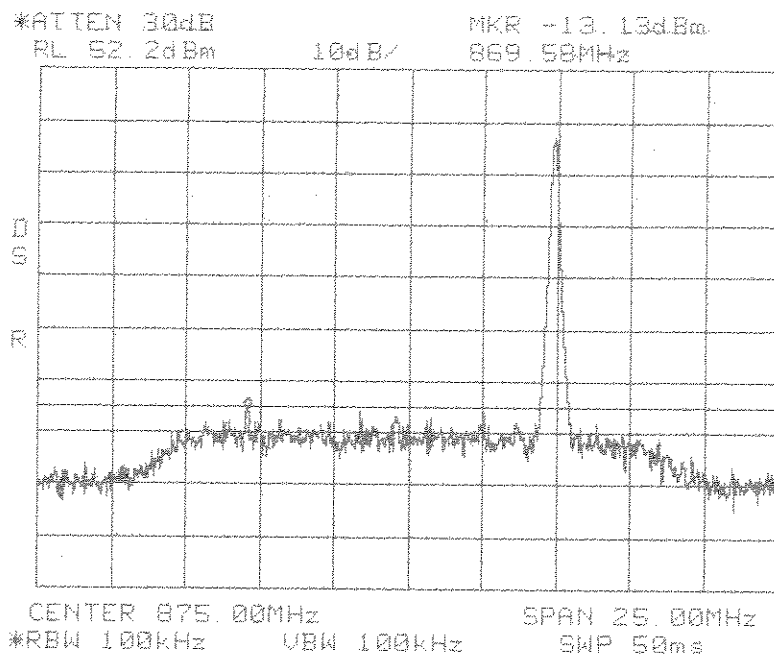
**Conducted Emissions  
Mid  
Cellular 800 MHz  
A Band**



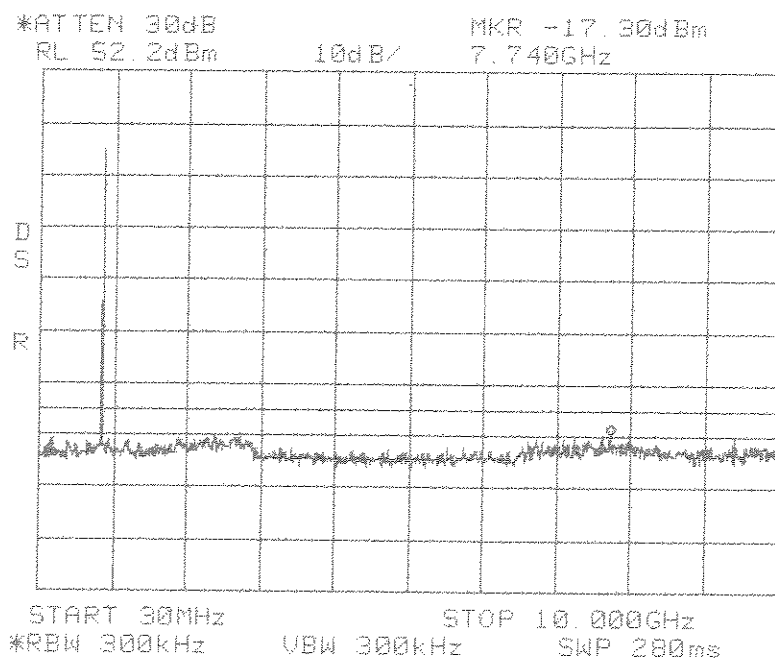
**Conducted Emissions  
Mid  
Cellular 800 MHz  
A Band**

Span: 30 MHz to 10 GHz  
RBW/VBW: 300 kHz

Center: 875.0 MHz  
Span: 25 MHz  
RBW/VBW: 100 kHz



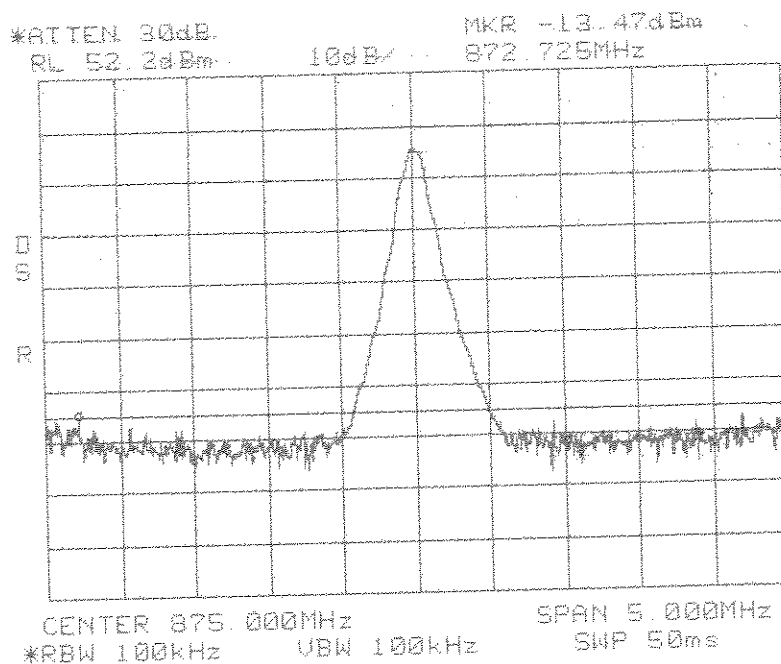
**Conducted Emissions  
High  
Cellular 800 MHz  
A Band**



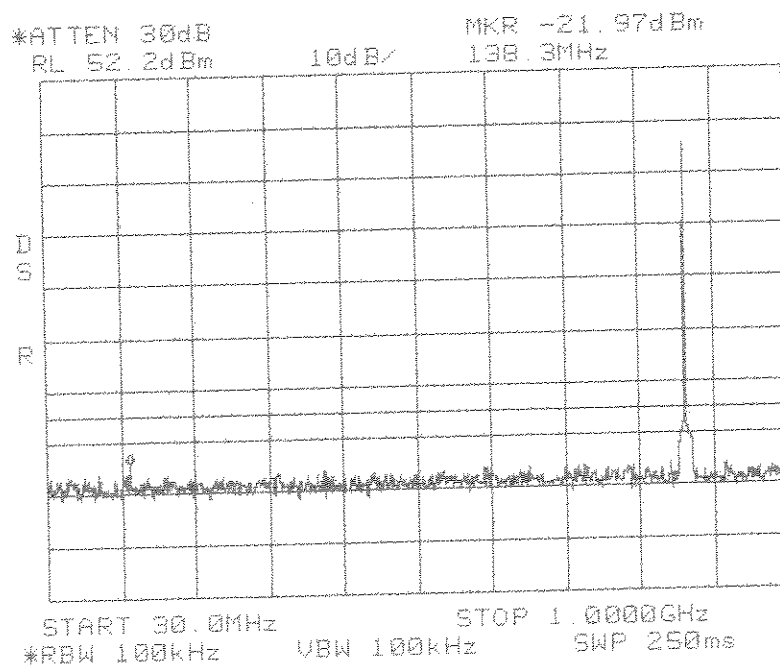
**Conducted Emissions  
High  
Cellular 800 MHz  
A Band**

Span: 30 MHz to 10 GHz  
RBW/VBW: 300 kHz

Center: 875.0 MHz  
Span: 5 MHz  
RBW/VBW: 100 kHz



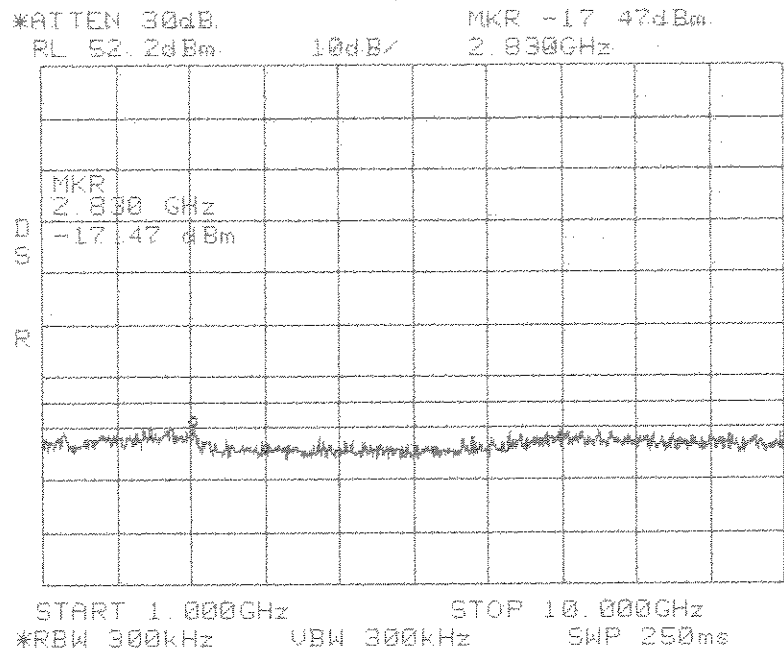
**Conducted Emissions**  
**FM**  
**Cellular 800 MHz**  
**A Band**



**Conducted Emissions**  
**FM**  
**Cellular 800 MHz**  
**A Band**

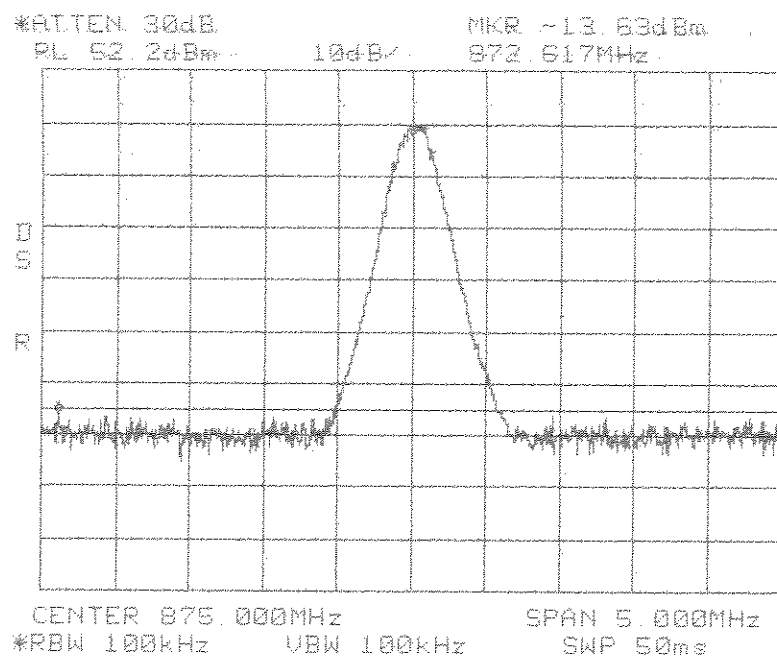
Span: 30 MHz to 1 GHz  
RBW/VBW: 100 kHz

Span: 1 GHz to 10 GHz  
RBW/VBW: 300 kHz

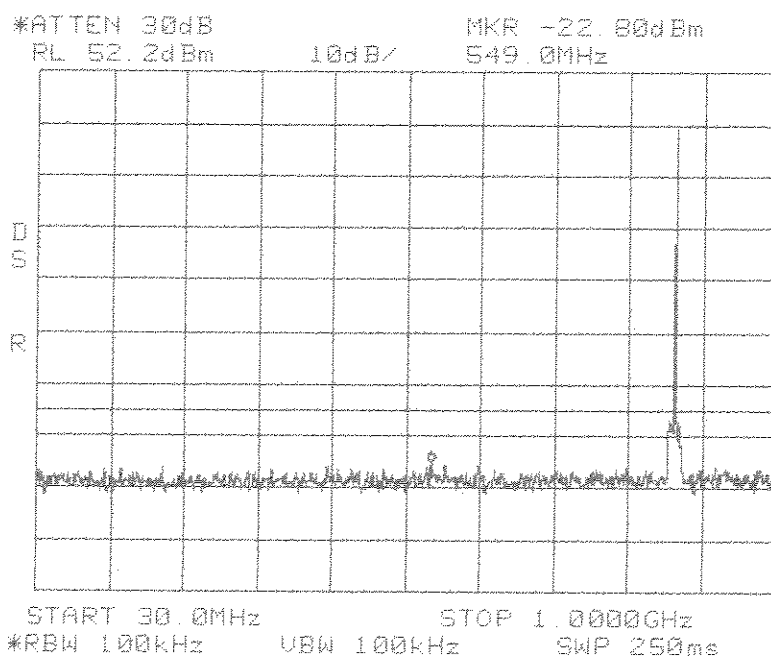


**Conducted Emissions  
FM  
Cellular 800 MHz  
A Band**

Center: 875.0 MHz  
Span: 5 MHz  
RBW/VBW: 100 kHz



**Conducted Emissions**  
**16QAM**  
**Cellular 800 MHz**  
**A Band**

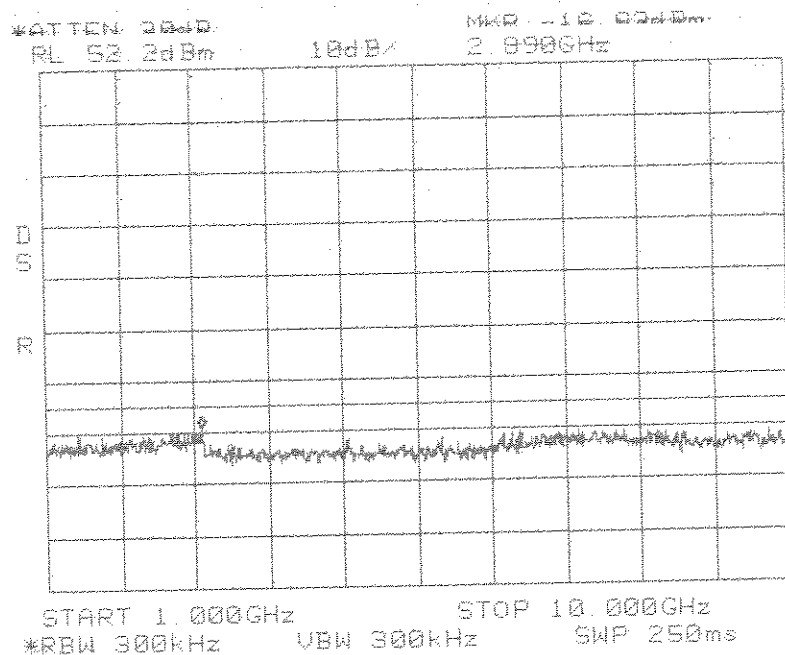


**Conducted Emissions**  
**16QAM**  
**Cellular 800 MHz**  
**A Band**

Span: 30 MHz to 1 GHz  
RBW/VBW: 100 kHz

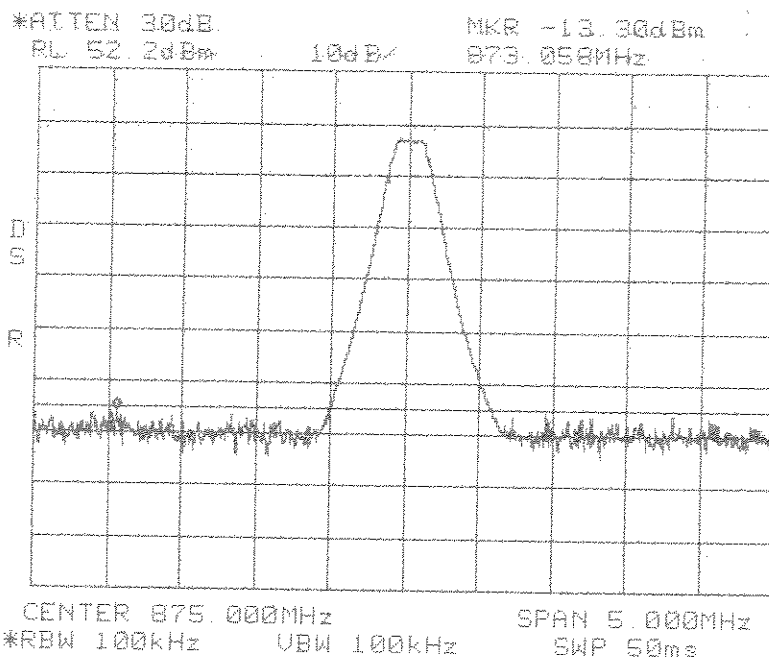


Span: 1 GHz to 10 GHz  
RBW/VBW: 300 kHz

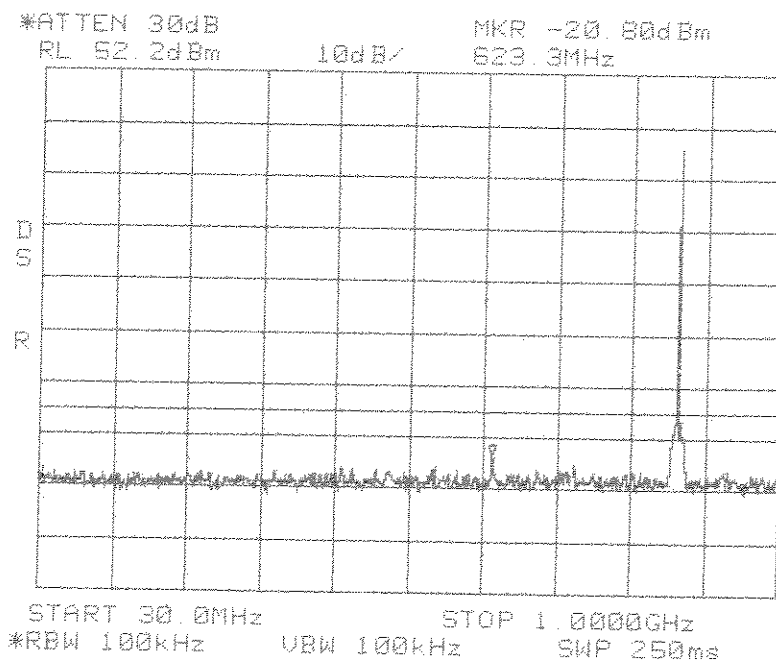


**Conducted Emissions**  
**16QAM**  
**Cellular 800 MHz**  
**A Band**

Center: 875.0 MHz  
Span: 5 MHz  
RBW/VBW: 100 kHz



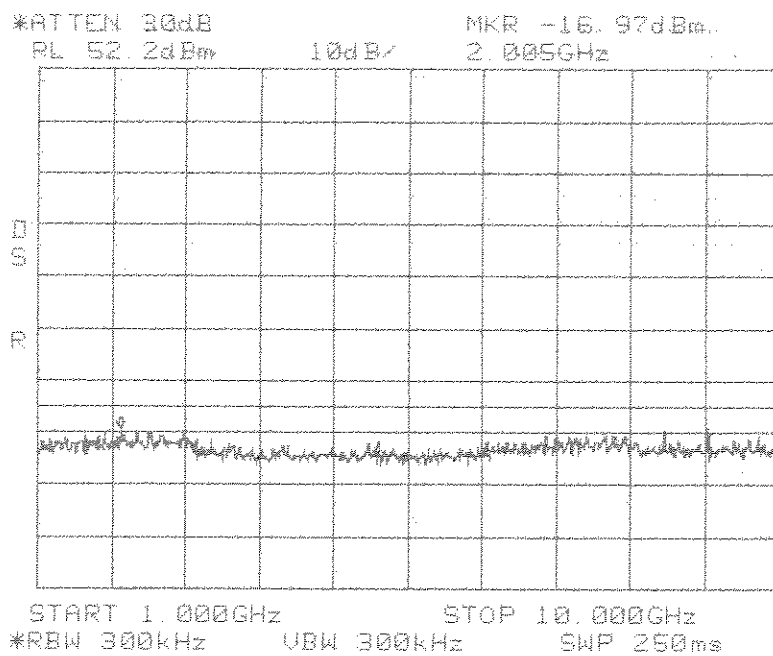
**Conducted Emissions**  
**GSM**  
**Cellular 800 MHz**  
**A Band**



**Conducted Emissions**  
**GSM**  
**Cellular 800 MHz**  
**A Band**

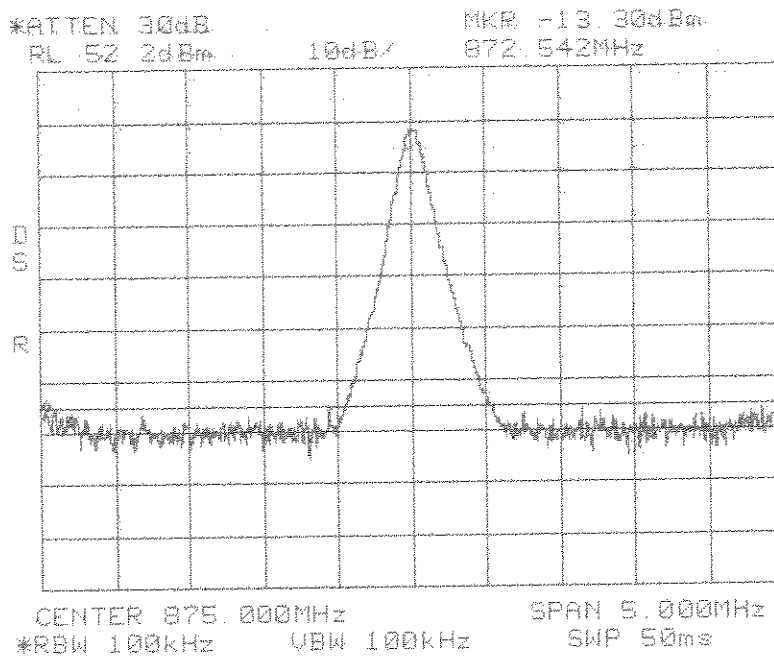
Span: 30 MHz to 1 GHz  
RBW/VBW: 100 kHz

Span: 1 GHz to 10 GHz  
RBW/VBW: 300 kHz

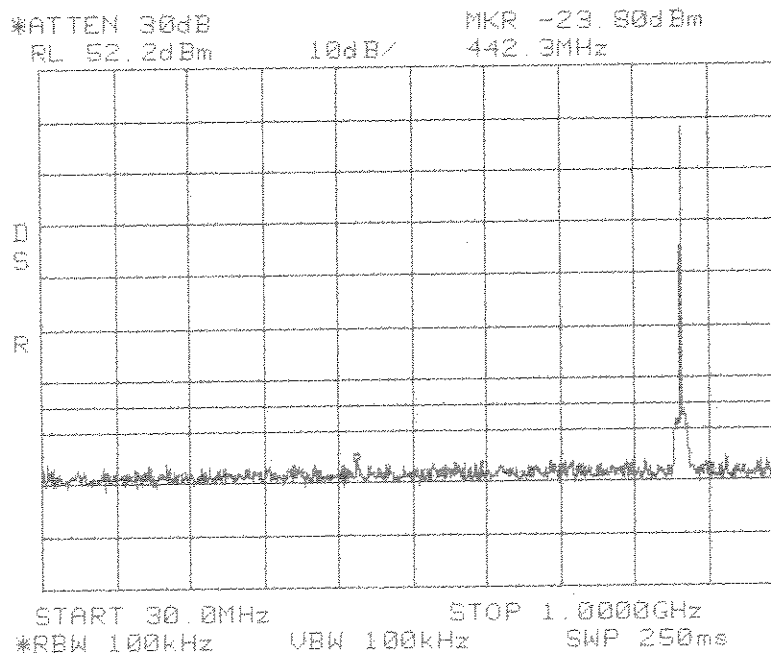


**Conducted Emissions**  
**GSM**  
**Cellular 800 MHz**  
**A Band**

Center: 875.0 MHz  
Span: 5 MHz  
RBW/VBW: 100 kHz



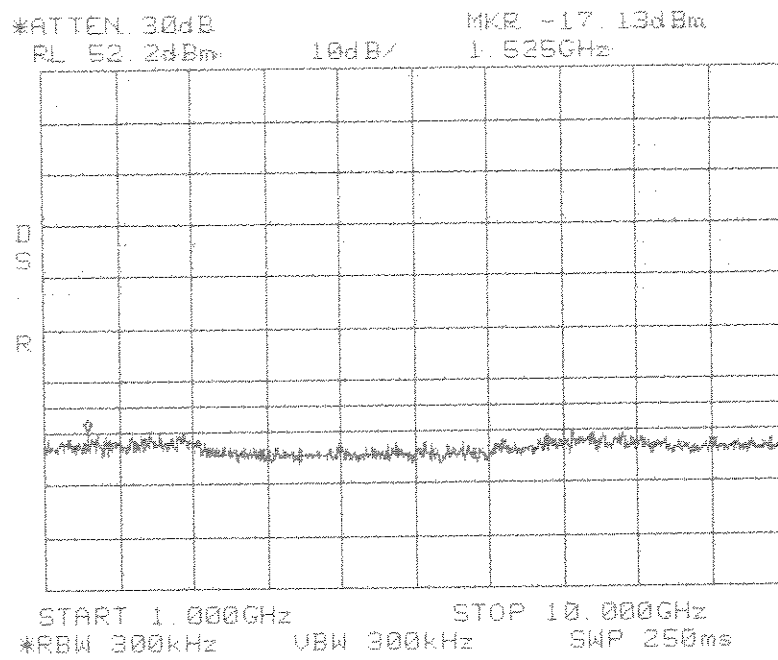
**Conducted Emissions**  
**TDMA**  
**Cellular 800 MHz**  
**A Band**



**Conducted Emissions**  
**TDMA**  
**Cellular 800 MHz**  
**A Band**

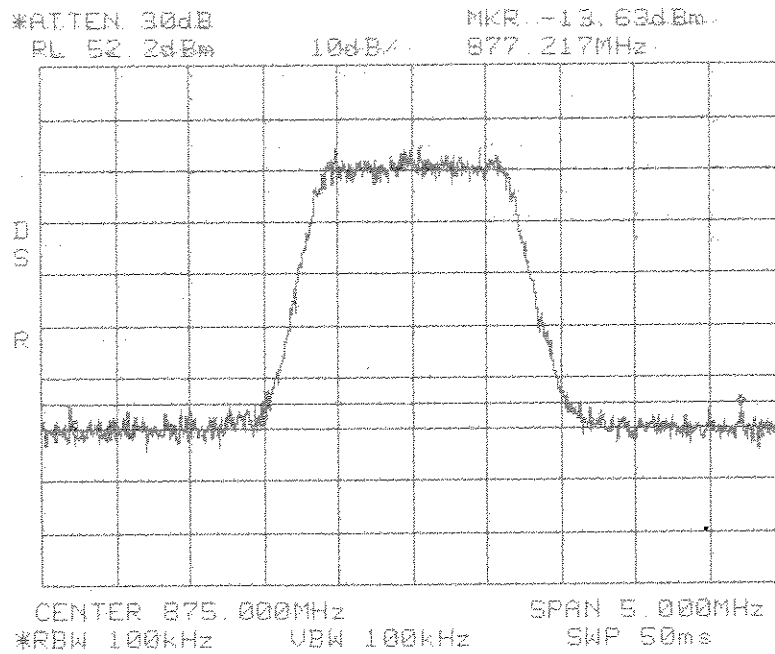
Span: 30 MHz to 1 GHz  
RBW/VBW: 100 kHz

Span: 1 GHz to 10 GHz  
RBW/VBW: 300 kHz

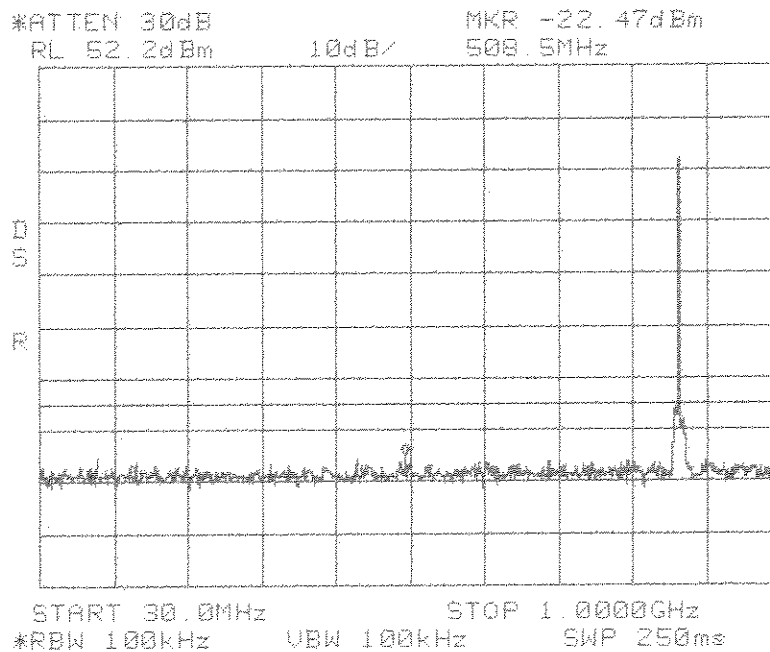


**Conducted Emissions  
TDMA  
Cellular 800 MHz  
A Band**

Center: 875.0 MHz  
Span: 5 MHz  
RBW/VBW: 100 kHz



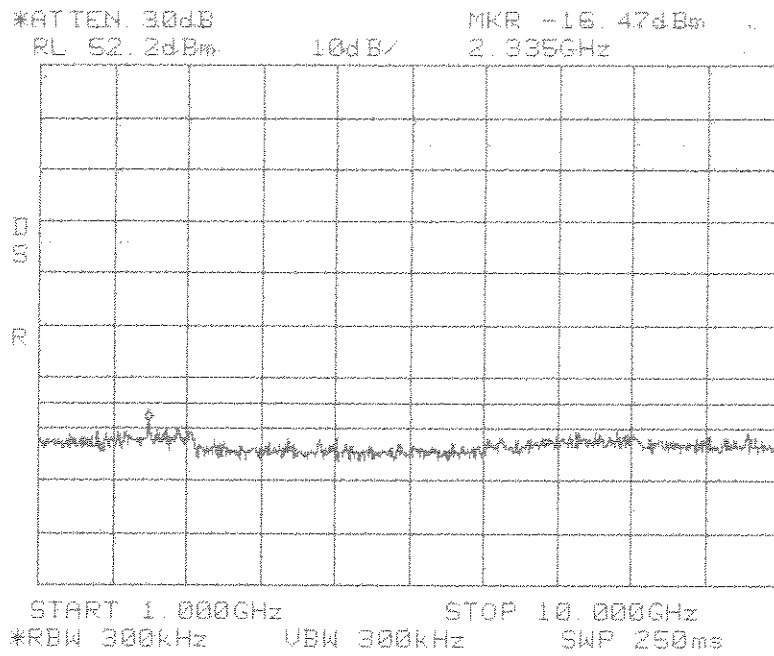
**Conducted Emissions**  
**CDMA**  
**Cellular 800 MHz**  
**A Band**



**Conducted Emissions**  
**CDMA**  
**Cellular 800 MHz**  
**A Band**

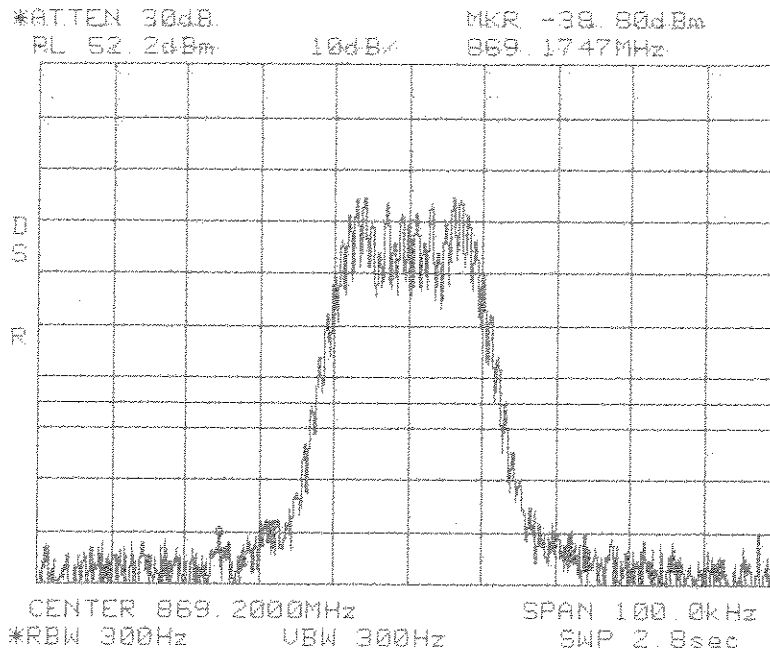
Span: 30 MHz to 1 GHz  
RBW/VBW: 100 kHz

Span: 1 GHz to 10 GHz  
RBW/VBW: 300 kHz

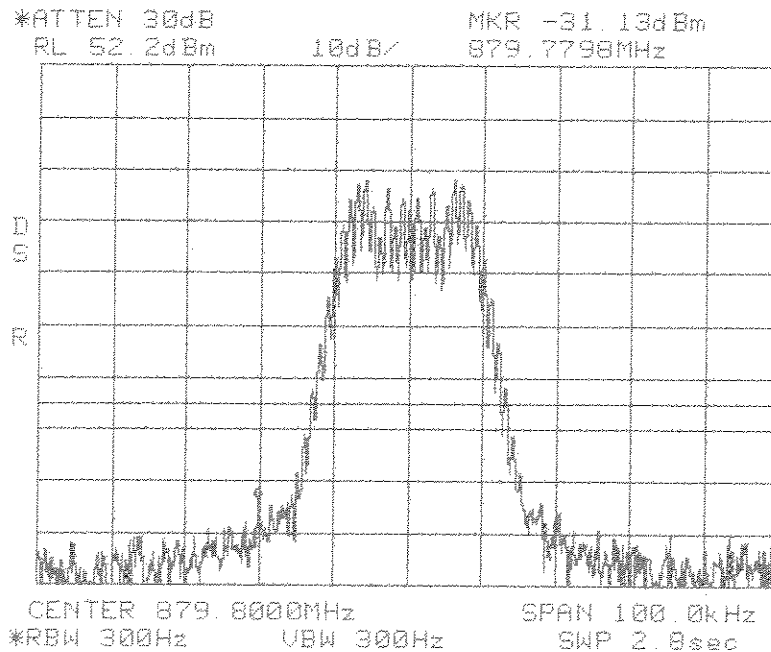


**Conducted Emissions**  
**CDMA**  
**Cellular 800 MHz**  
**A Band**

Center: 869.2 MHz  
Span: 100 kHz  
RBW/VBW: 300 Hz / 300 Hz



**Conducted Emissions  
Band Edge  
FM  
Cellular 800 MHz  
A Band**

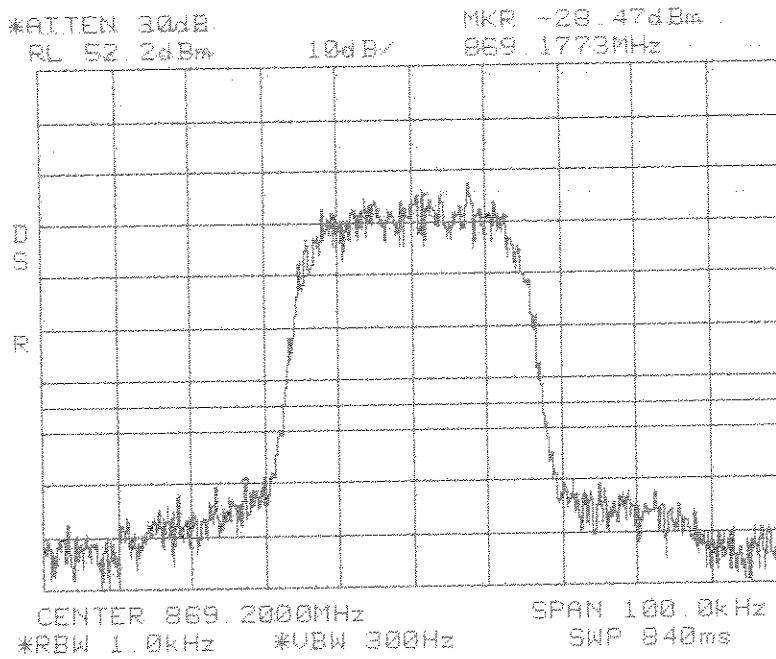


**Conducted Emissions  
Band Edge  
FM  
Cellular 800 MHz  
A Band**

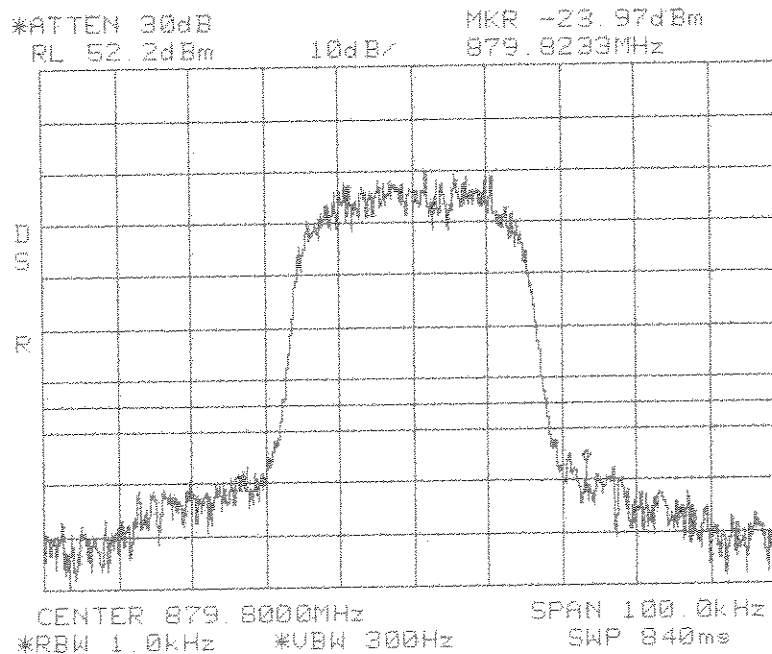
Center: 879.8 MHz  
Span: 100 kHz  
RBW/VBW: 300 Hz / 300 Hz



Center: 869.2 MHz  
Span: 100 kHz  
RBW/VBW: 1 kHz / 300 Hz



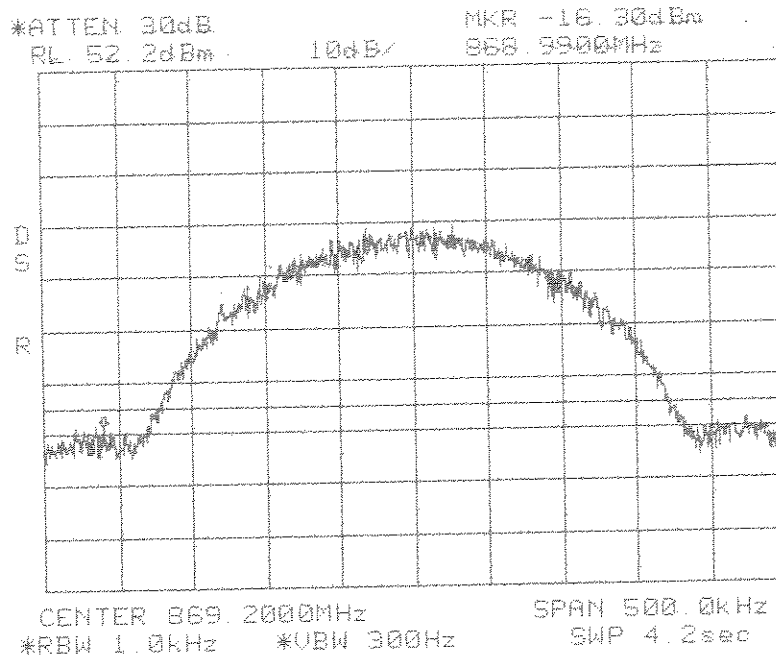
**Conducted Emissions  
Band Edge  
16QAM  
Cellular 800 MHz  
A Band**



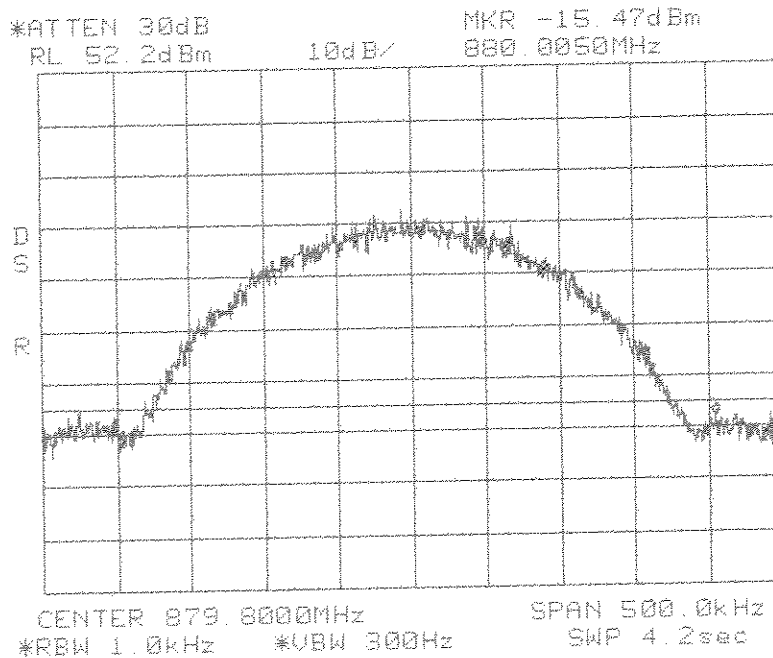
**Conducted Emissions  
Band Edge  
16QAM  
Cellular 800 MHz  
A Band**

Center: 879.8 MHz  
Span: 100 kHz  
RBW/VBW: 1 kHz / 300 Hz

Center: 869.2 MHz  
Span: 500 kHz  
RBW/VBW: 1 kHz / 300 Hz



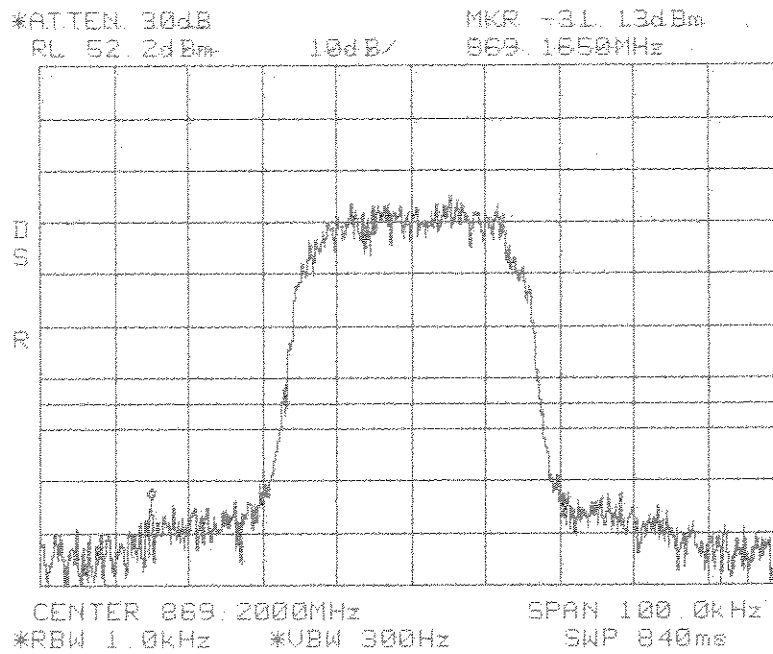
**Conducted Emissions  
Band Edge  
GSM  
Cellular 800 MHz  
A Band**



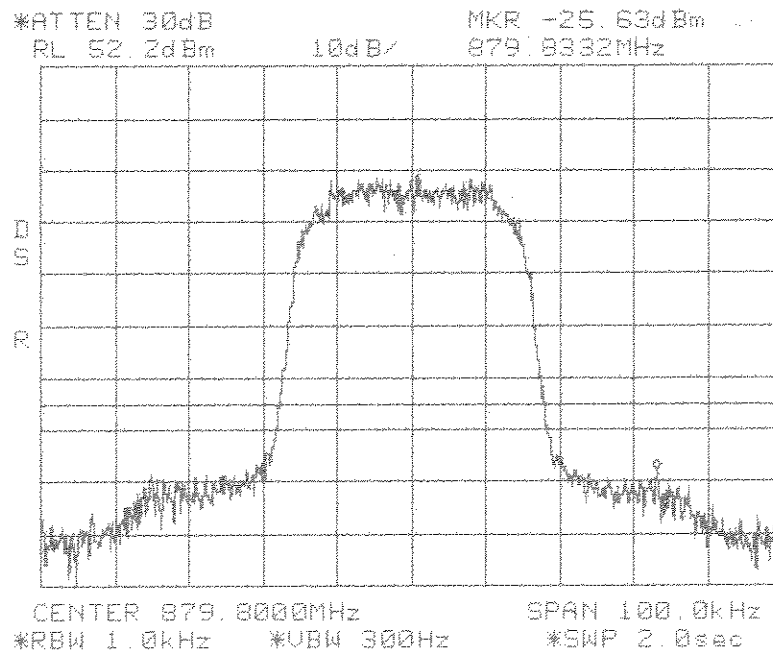
**Conducted Emissions  
Band Edge  
GSM  
Cellular 800 MHz  
A Band**

Center: 879.8 MHz  
Span: 500 kHz  
RBW/VBW: 1 kHz / 300 Hz

Center: 869.2 MHz  
Span: 100 kHz  
RBW/VBW: 1 kHz / 300 Hz



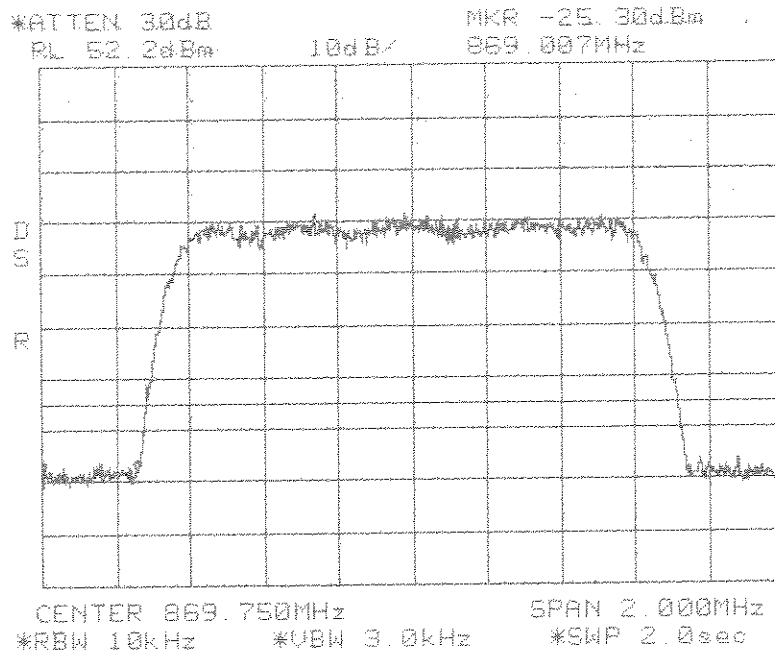
**Conducted Emissions  
Band Edge  
TDMA  
Cellular 800 MHz  
A Band**



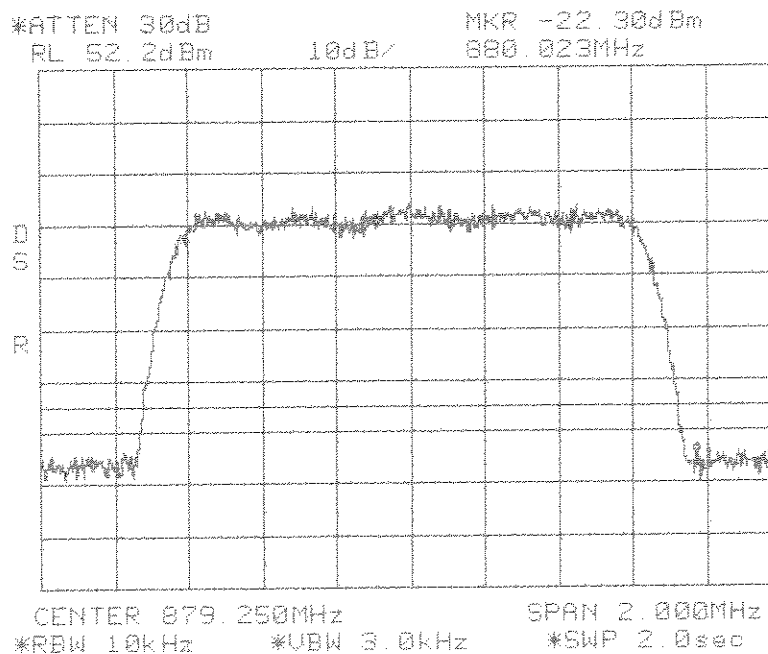
**Conducted Emissions  
Band Edge  
TDMA  
Cellular 800 MHz  
A Band**

Center: 879.8 MHz  
Span: 100 kHz  
RBW/VBW: 1 kHz / 300 Hz

Center: 869.75 MHz  
Span: 2 MHz  
RBW/VBW: 10 kHz / 3 kHz



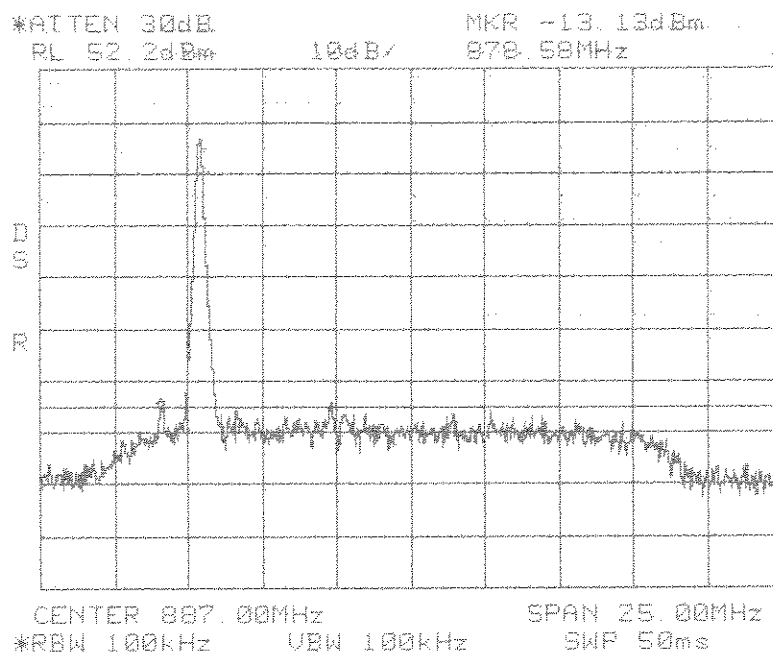
**Conducted Emissions  
Band Edge  
CDMA  
Cellular 800 MHz  
A Band**



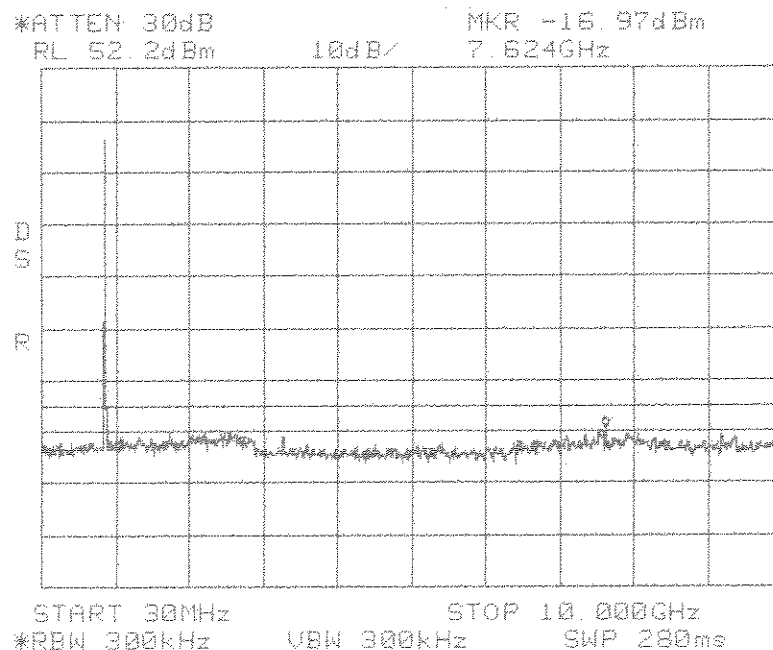
**Conducted Emissions  
Band Edge  
CDMA  
Cellular 800 MHz  
A Band**

Center: 879.25 MHz  
Span: 2 MHz  
RBW/VBW: 10 kHz / 3 kHz

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



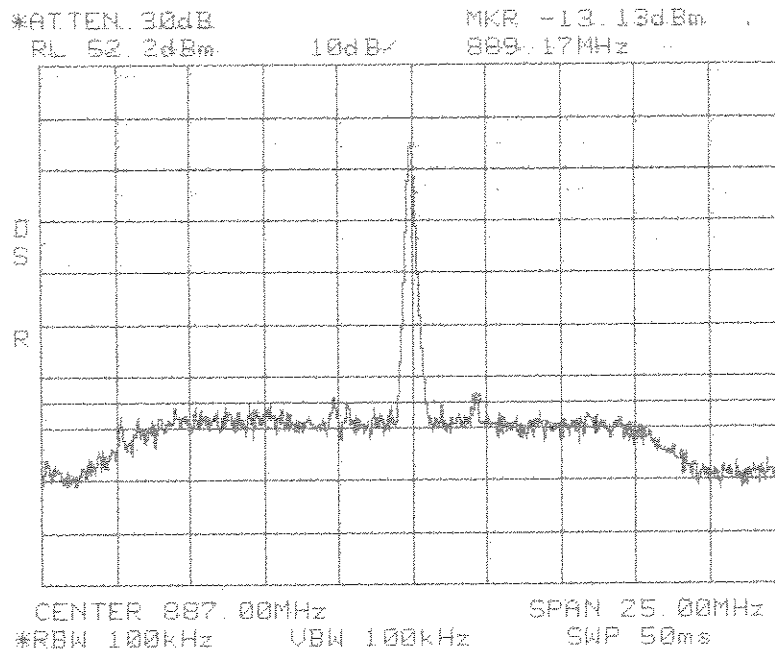
**Conducted Emissions**  
**Low**  
**Cellular 800 MHz**  
**B Band**



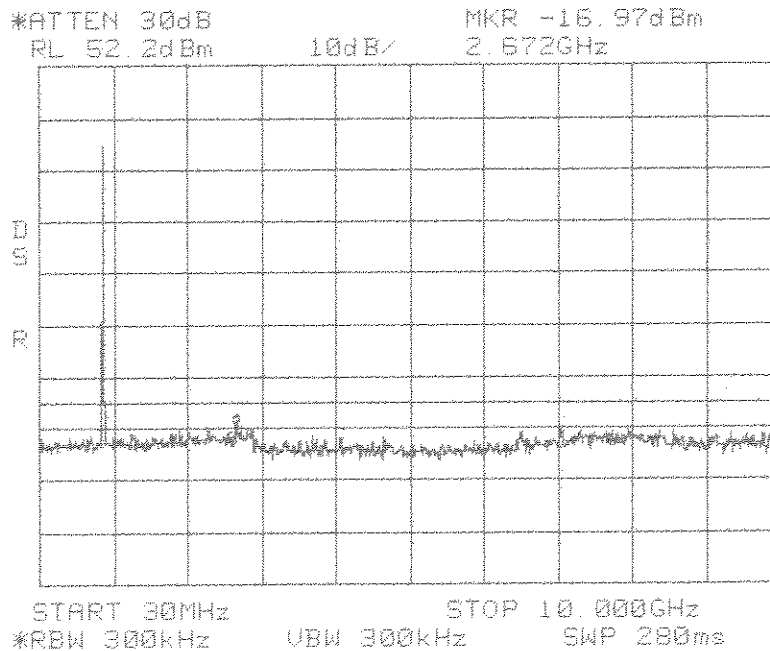
**Conducted Emissions**  
**Low**  
**Cellular 800 MHz**  
**B Band**

Span: 30 MHz to 10 GHz  
RBW/VBW: 300 kHz

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



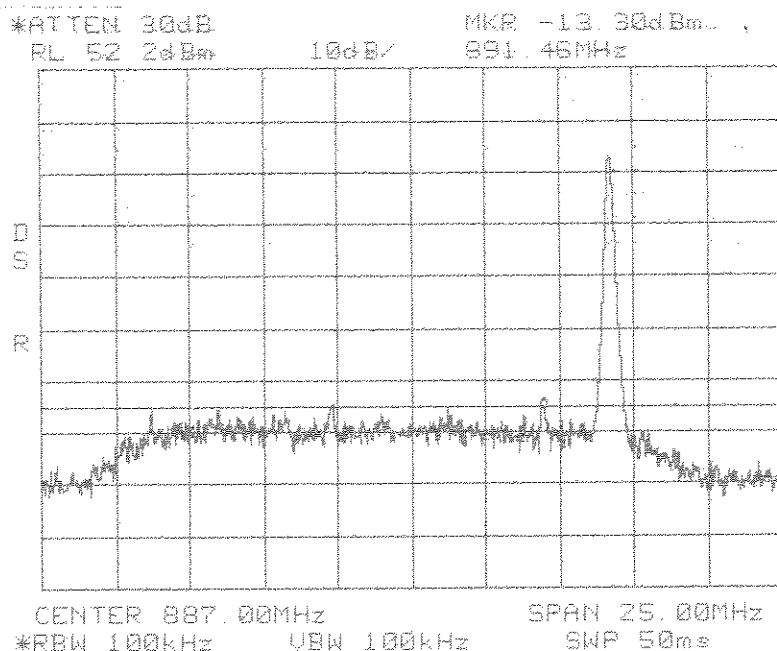
**Conducted Emissions  
Mid  
Cellular 800 MHz  
B Band**



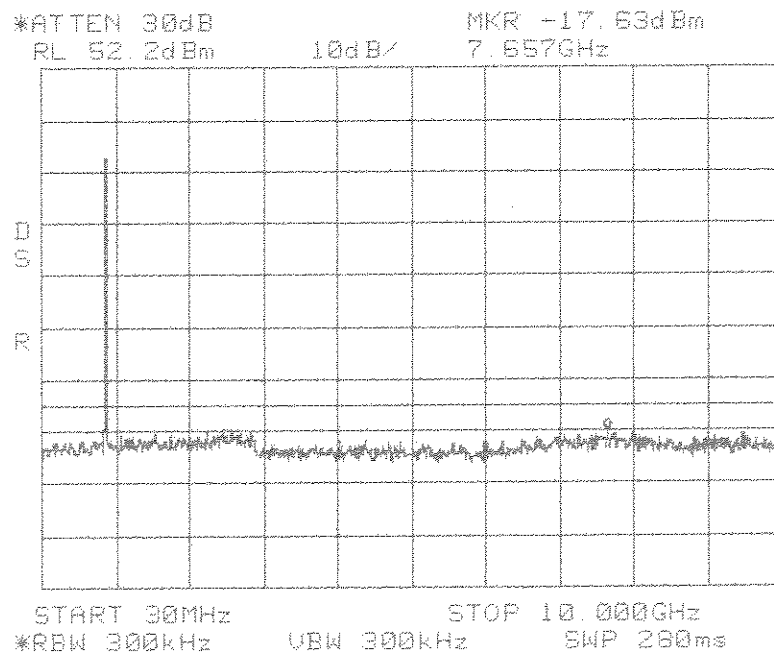
**Conducted Emissions  
Mid  
Cellular 800 MHz  
B Band**

Span: 30 MHz to 10 GHz  
RBW/VBW: 300 kHz

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



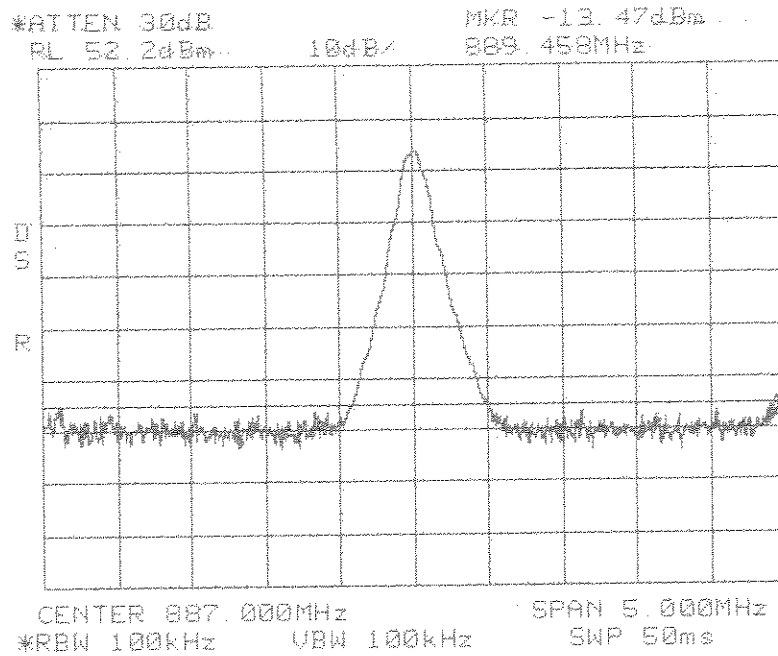
**Conducted Emissions  
High  
Cellular 800 MHz  
B Band**



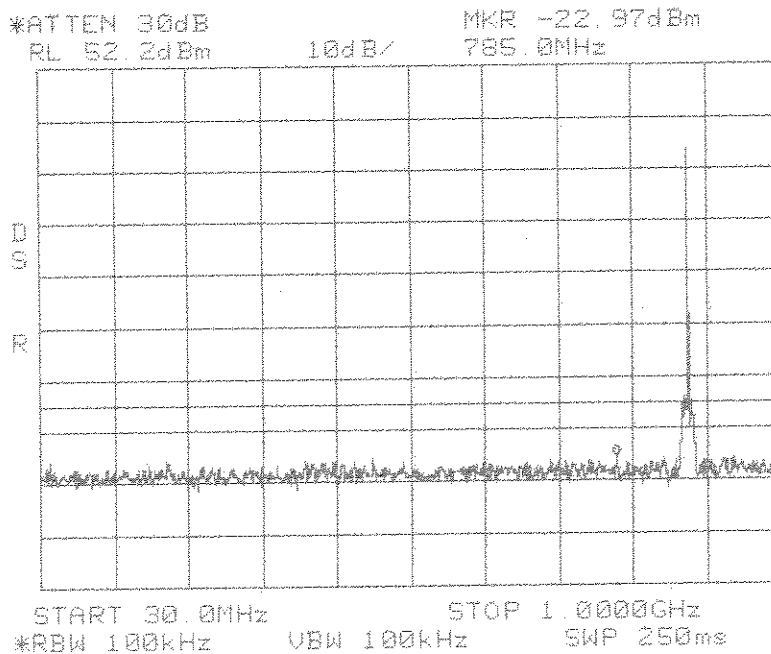
**Conducted Emissions  
High  
Cellular 800 MHz  
B Band**

Span: 30 MHz to 10 GHz  
RBW/VBW: 300 kHz

Center: 887.0 MHz  
Span: 5 MHz  
RBW/VBW: 100 kHz



**Conducted Emissions**  
**FM**  
**Cellular 800 MHz**  
**B Band**

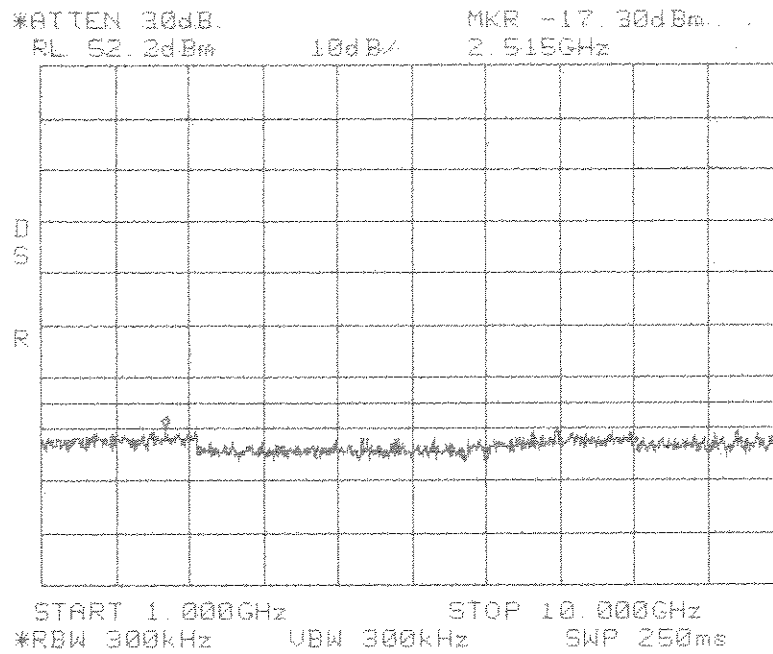


**Conducted Emissions**  
**FM**  
**Cellular 800 MHz**  
**B Band**

Span: 30 MHz to 1 GHz  
RBW/VBW: 100 kHz

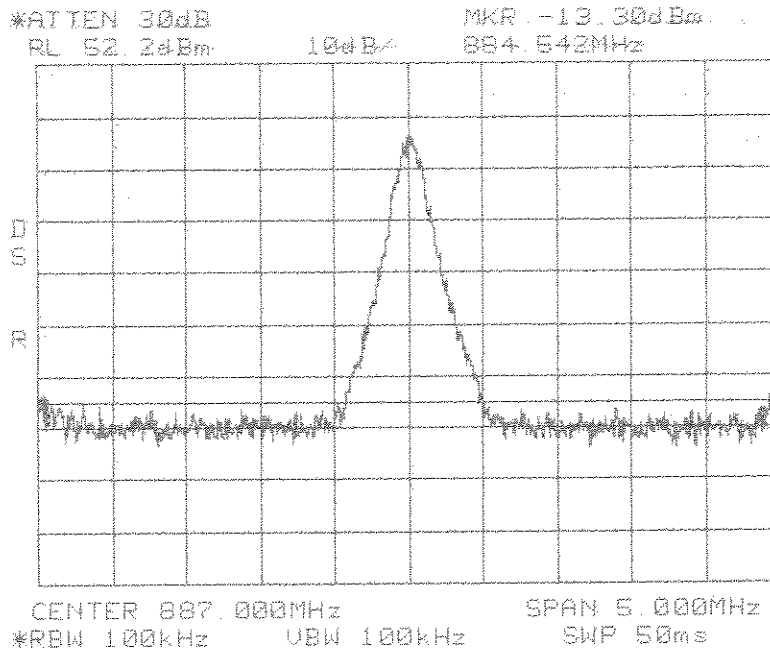


Span: 1 GHz to 10 GHz  
RBW/VBW: 300 kHz

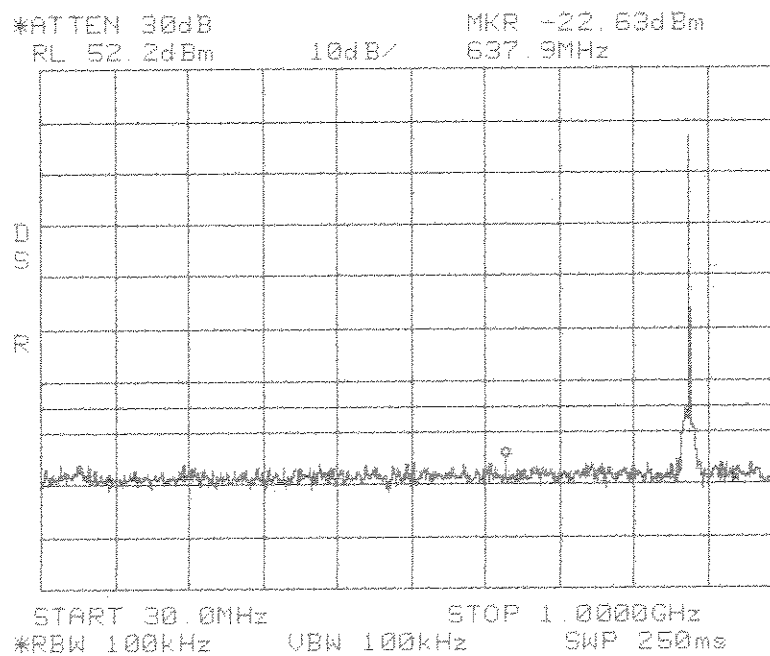


**Conducted Emissions**  
**FM**  
**Cellular 800 MHz**  
**B Band**

Center: 887.0 MHz  
Span: 5 MHz  
RBW/VBW: 100 kHz



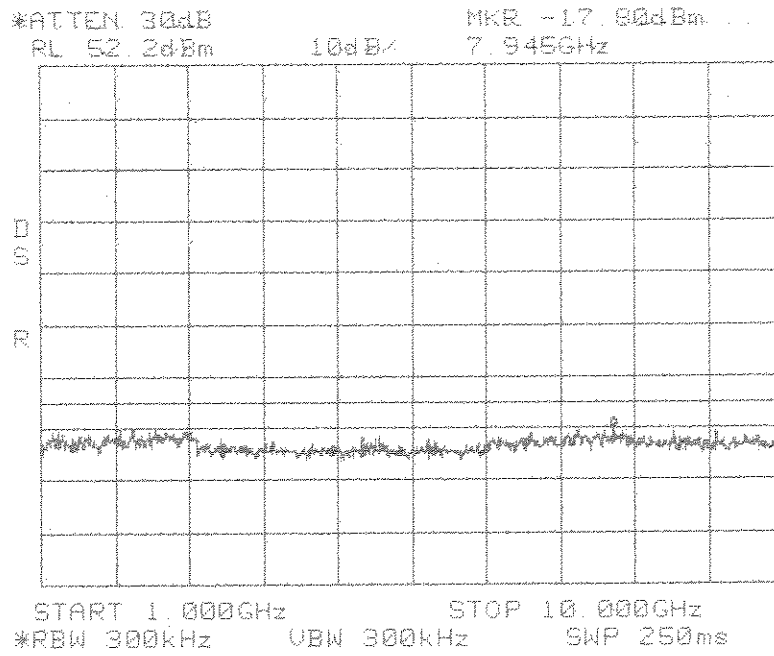
**Conducted Emissions**  
**16QAM**  
**Cellular 800 MHz**  
**B Band**



**Conducted Emissions**  
**16QAM**  
**Cellular 800 MHz**  
**B Band**

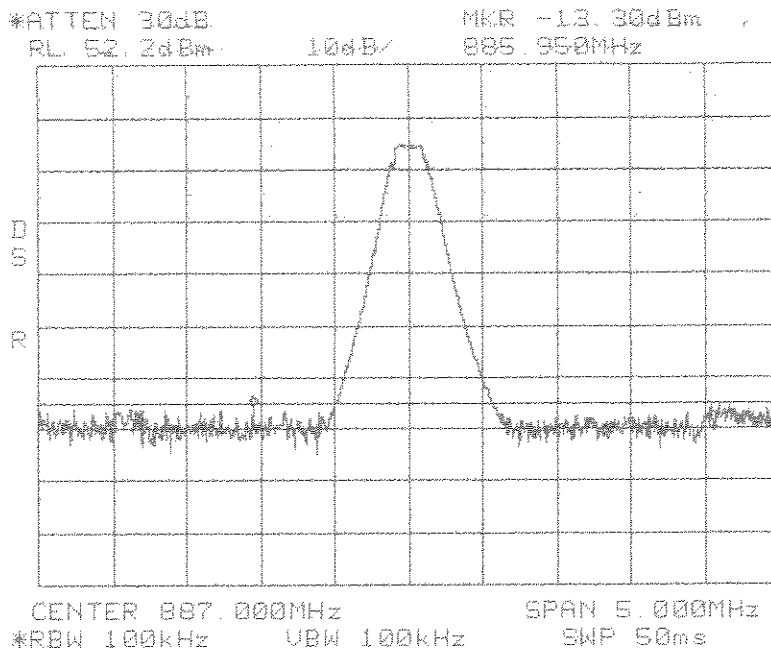
Span: 30 MHz to 1 GHz  
RBW/VBW: 100 kHz

Span: 1 GHz to 10 GHz  
RBW/VBW: 300 kHz

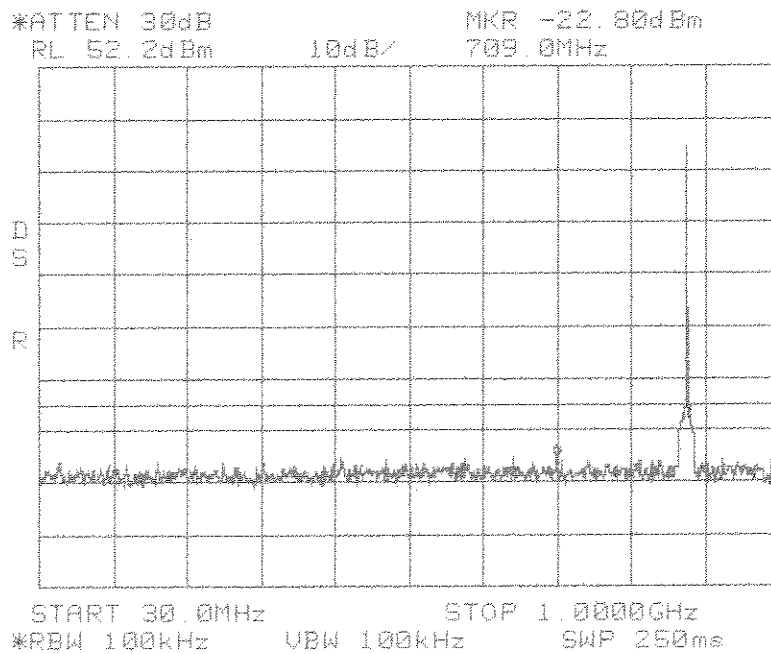


**Conducted Emissions**  
**16QAM**  
**Cellular 800 MHz**  
**B Band**

Center: 887.0 MHz  
Span: 5 MHz  
RBW/VBW: 100 kHz



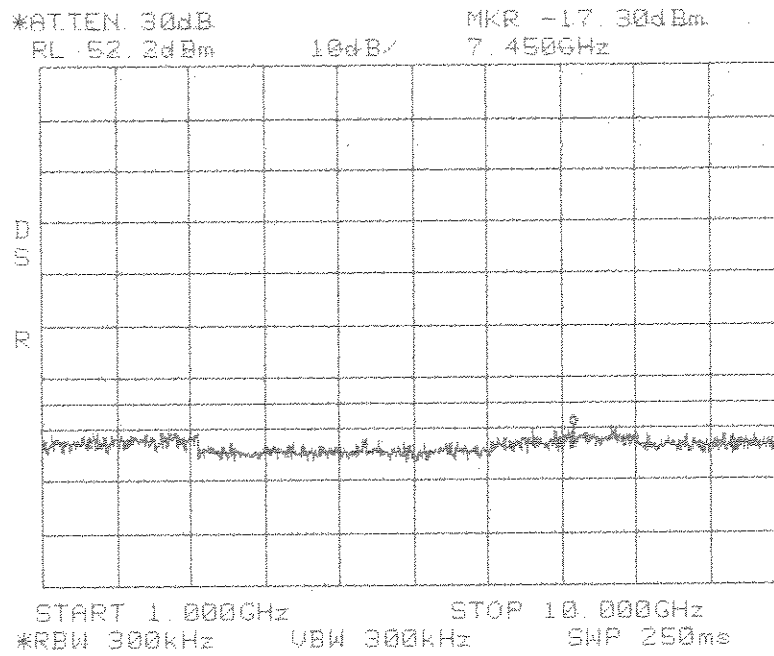
**Conducted Emissions**  
**GSM**  
**Cellular 800 MHz**  
**B Band**



**Conducted Emissions**  
**GSM**  
**Cellular 800 MHz**  
**B Band**

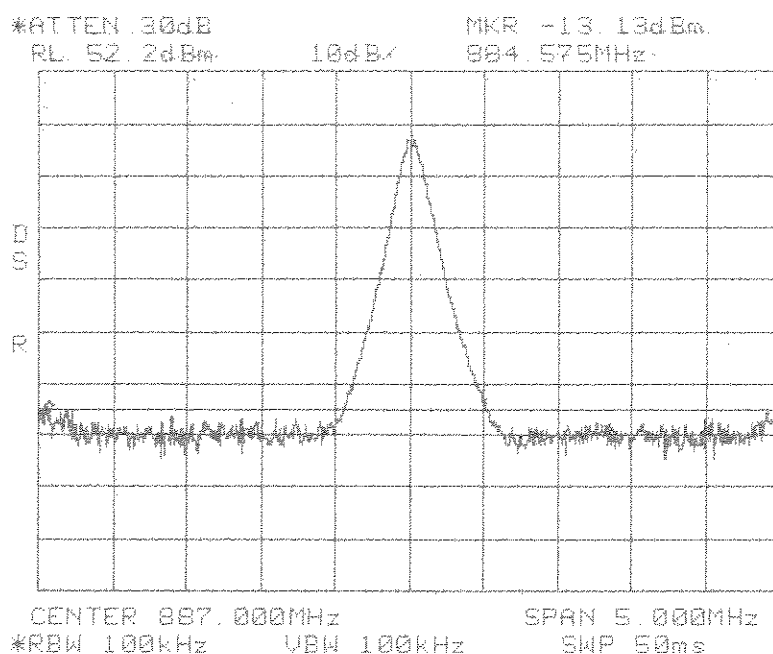
Span: 30 MHz to 1 GHz  
RBW/VBW: 100 kHz

Span: 1 GHz to 10 GHz  
RBW/VBW: 300 kHz

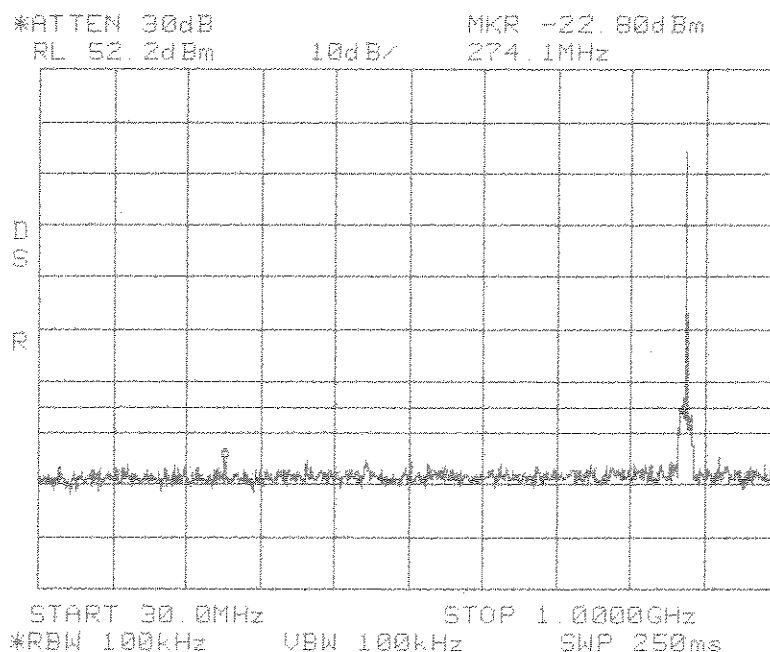


**Conducted Emissions  
GSM  
Cellular 800 MHz  
B Band**

Center: 887.0 MHz  
Span: 5 MHz  
RBW/VBW: 100 kHz



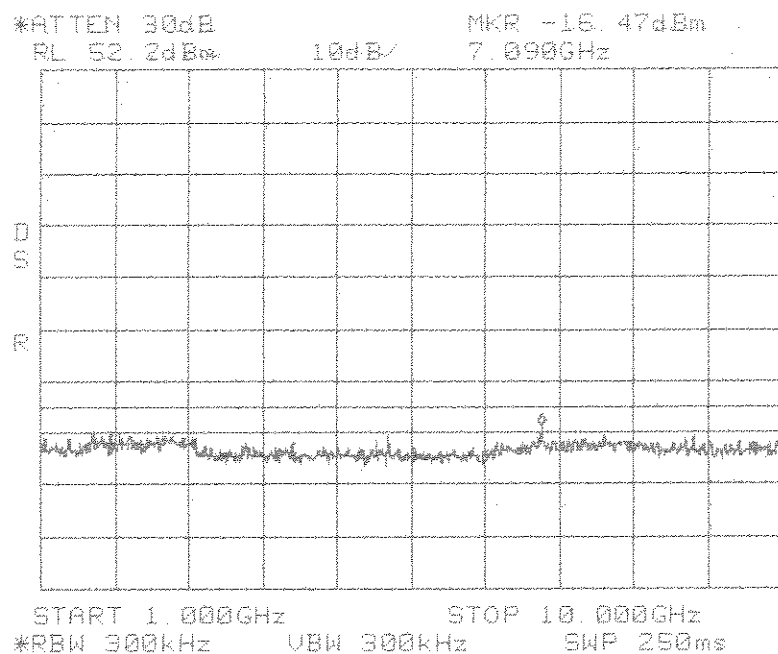
**Conducted Emissions**  
**TDMA**  
**Cellular 800 MHz**  
**B Band**



**Conducted Emissions**  
**TDMA**  
**Cellular 800 MHz**  
**B Band**

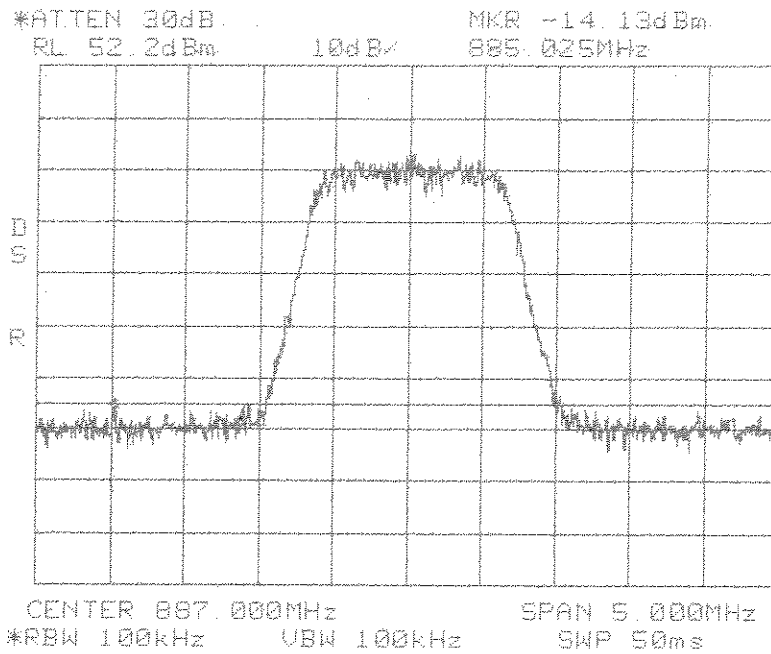
Span: 30 MHz to 1 GHz  
RBW/VBW: 100 kHz

Span: 1 GHz to 10 GHz  
RBW/VBW: 300 kHz

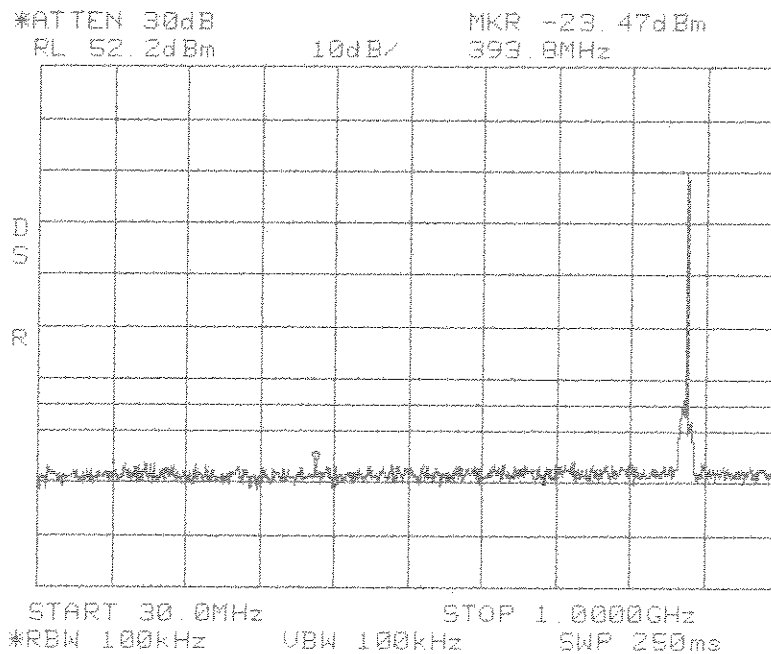


**Conducted Emissions**  
**TDMA**  
**Cellular 800 MHz**  
**B Band**

Center: 887.0 MHz  
Span: 5 MHz  
RBW/VBW: 100 kHz



**Conducted Emissions**  
**CDMA**  
**Cellular 800 MHz**  
**B Band**

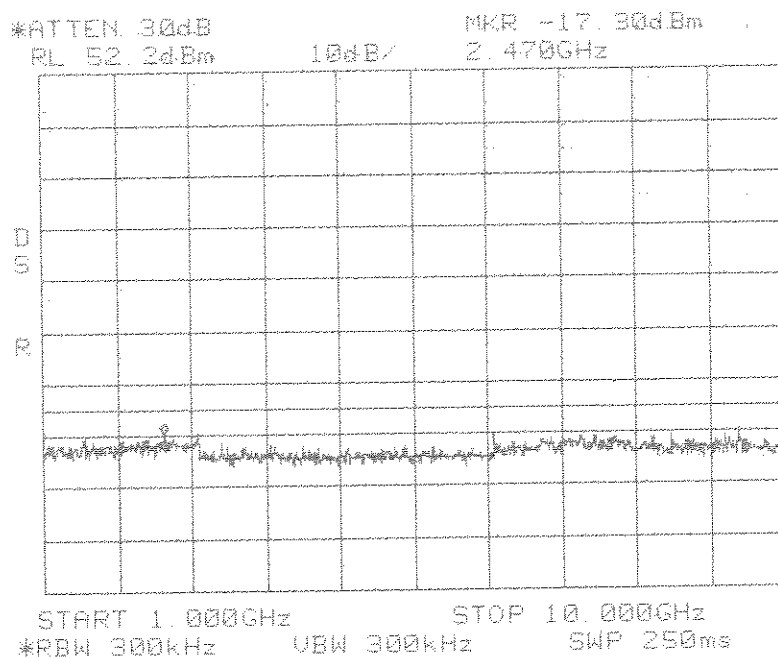


**Conducted Emissions**  
**CDMA**  
**Cellular 800 MHz**  
**B Band**

Span: 30 MHz to 1 GHz  
RBW/VBW: 100 kHz

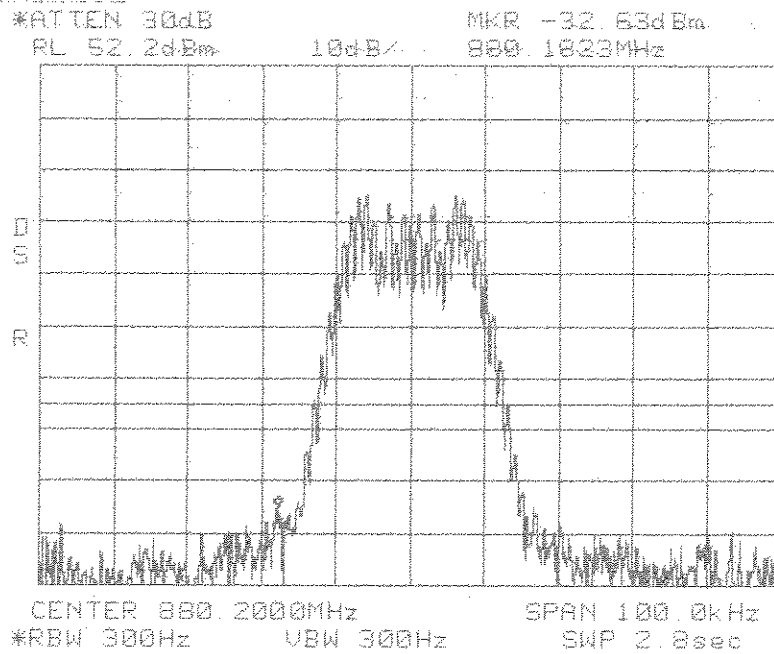


Span: 1 GHz to 10 GHz  
RBW/VBW: 300 kHz

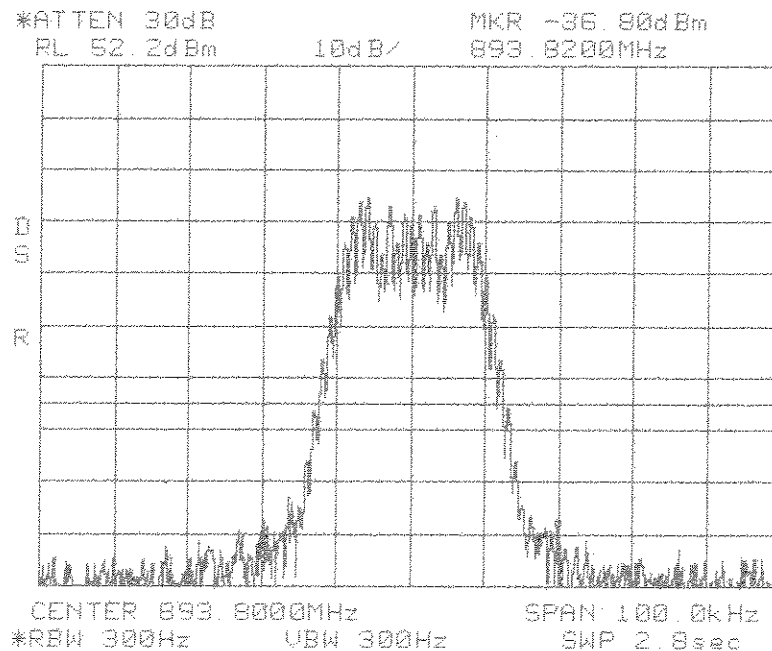


**Conducted Emissions**  
**CDMA**  
**Cellular 800 MHz**  
**B Band**

Center: 880.2 MHz  
Span: 100 kHz  
RBW/VBW: 300 Hz / 300 Hz



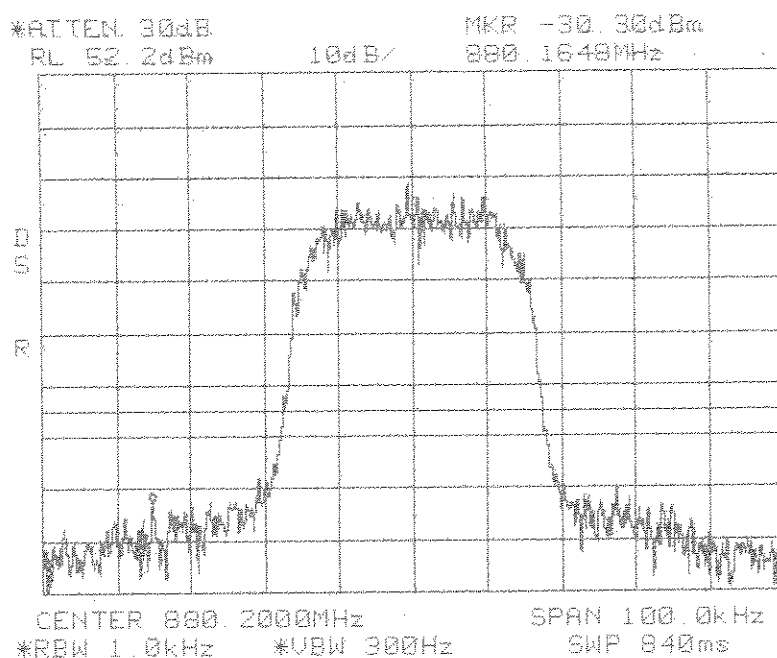
**Conducted Emissions  
Band Edge  
FM  
Cellular 800 MHz  
B Band**



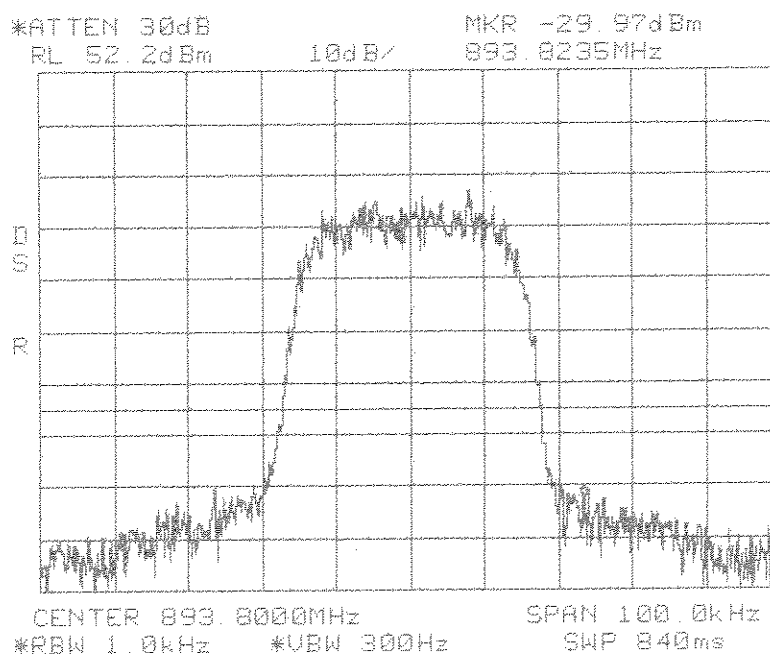
**Conducted Emissions  
Band Edge  
FM  
Cellular 800 MHz  
B Band**

Center: 893.8 MHz  
Span: 100 kHz  
RBW/VBW: 300 Hz / 300 Hz

Center: 880.2 MHz  
Span: 100 kHz  
RBW/VBW: 1 kHz / 300 Hz



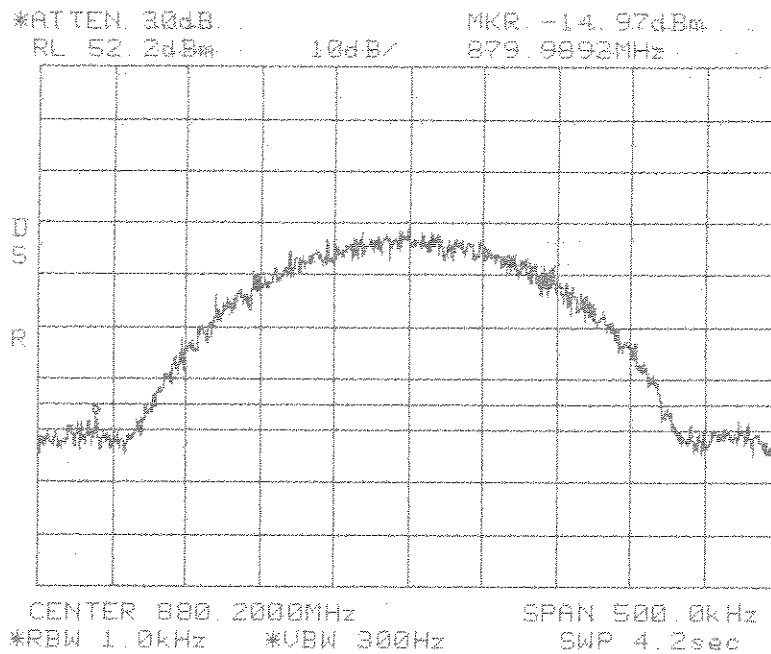
**Conducted Emissions**  
**Band Edge**  
**16QAM**  
**Cellular 800 MHz**  
**B Band**



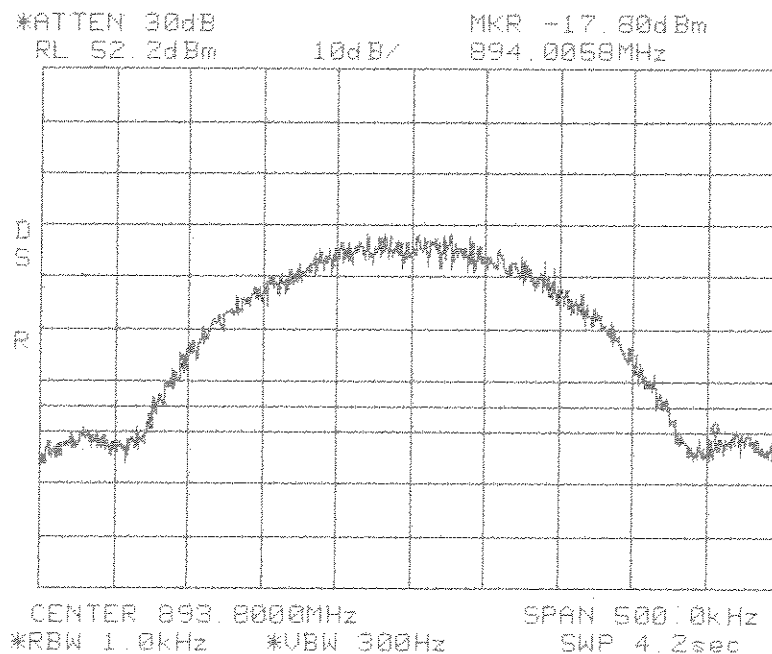
**Conducted Emissions**  
**Band Edge**  
**16QAM**  
**Cellular 800 MHz**  
**B Band**

Center: 893.8 MHz  
Span: 100 kHz  
RBW/VBW: 1 kHz / 300 Hz

Center: 880.2 MHz  
Span: 500 kHz  
RBW/VBW: 1 kHz / 300 Hz



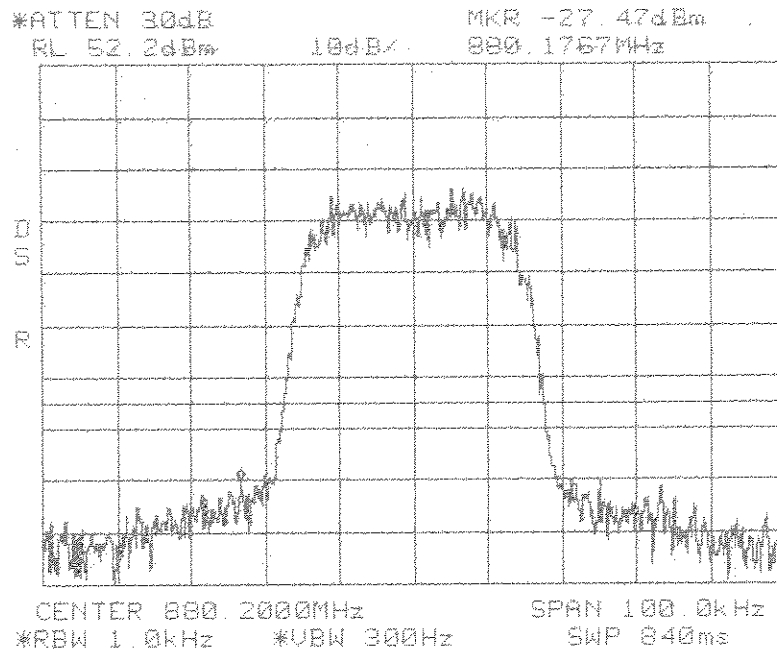
**Conducted Emissions  
Band Edge  
GSM  
Cellular 800 MHz  
B Band**



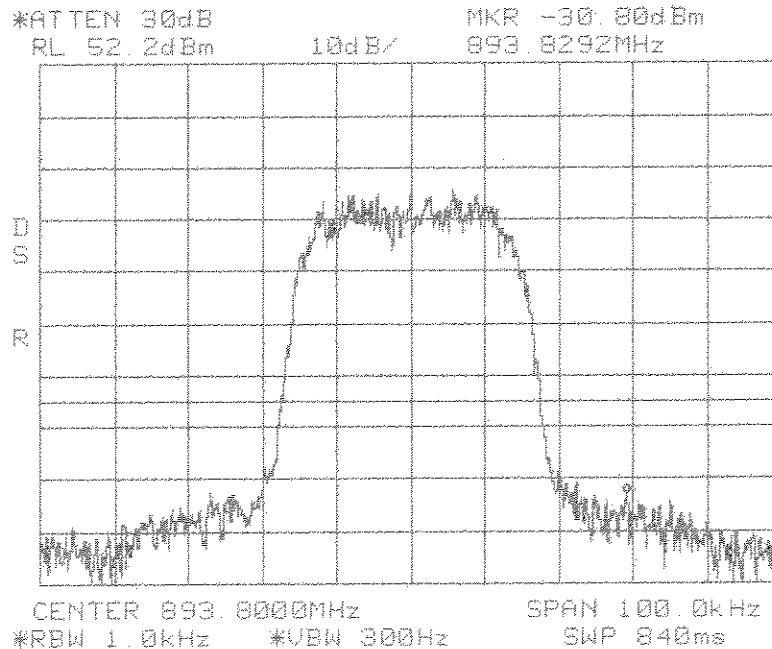
**Conducted Emissions  
Band Edge  
GSM  
Cellular 800 MHz  
B Band**

Center: 893.8 MHz  
Span: 500 kHz  
RBW/VBW: 1 kHz / 300 Hz

Center: 880.2 MHz  
Span: 100 kHz  
RBW/VBW: 1 kHz / 300 Hz



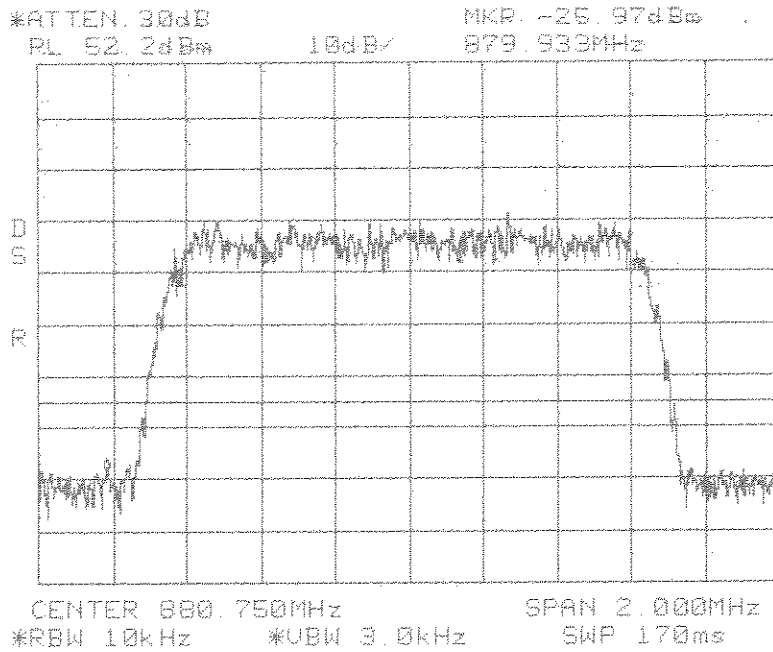
**Conducted Emissions  
Band Edge  
TDMA  
Cellular 800 MHz  
B Band**



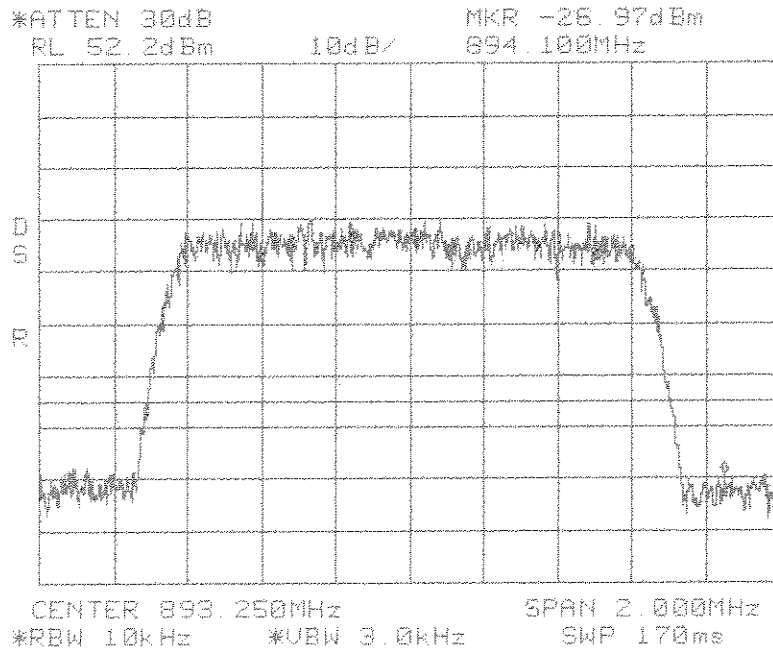
**Conducted Emissions  
Band Edge  
TDMA  
Cellular 800 MHz  
B Band**

Center: 893.8 MHz  
Span: 100 kHz  
RBW/VBW: 1 kHz / 300 Hz

Center: 880.75 MHz  
Span: 2 MHz  
RBW/VBW: 10 kHz / 3 kHz



**Conducted Emissions  
Band Edge  
CDMA  
Cellular 800 MHz  
B Band**



**Conducted Emissions  
Band Edge  
CDMA  
Cellular 800 MHz  
B Band**

Center: 893.25 MHz  
Span: 2 MHz  
RBW/VBW: 10 kHz / 3 kHz

### Equivalent Isotropically Radiated Power (EIRP) Substitution

Company: ADC Inc.  
EUT: DGVL461110SYS  
Date: 11/10/05  
Tested By: Joe Sausen

### SUBSTITUTION PERFORMED

Plug in freq, final dBuV/m, Matching Sig gen level, and cable loss

(if using antenna other than dipole also enter ant. Gain) - final matching dBm will automatically be calculated in column F. (Final dBm = Sig gen level (dBm) - Cable loss + Ant. Gain)

Schwarzbeck dipole antenna gain : 2.15dBi -10dB + 1.64dB = -6.21

2.15dBi theoretical gain of a dipole, 10dB internal attenuator, 1.64dB correction for 73 / 50 ohm balun

		Matches		Dipole	Matches
Freq. (MHz)	Final (dBuV/m)	Sig Gen Level (dBm)	Cable Loss (dB)	Ant. Gain (dB)	Final (dBm)
426	68.8	-31.3	1.6	-6.21	-39.11

### SUBSTITUTION EXTRAPOLATED TO OTHER SPURIOUS EMISSIONS

Enter any more spurious frequencies and final dBuV/m. Corresponding final power levels will automatically be calculated.

Freq. MHz	Final dBuV/m	Correction Factor	Final dBm	Final uW
426	68.8	107.91	-39.11	0.122744
2446	70.55	107.91	-37.36	0.183654
1202	75.2	107.91	-32.71	0.535797
2703	65.55	107.91	-42.36	0.058076
2746	63.5	107.91	-44.41	0.036224