

TEST RESULT SUMMARY

FCC Part 22

MANUFACTURER

ADC Inc.

NAME OF EQUIPMENT

Digivance® CXD 800 MHz A and B Band

MODEL NUMBER

DGVF-02000000XXCRN

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



Joe Sausen

Technical Writer



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: <ul style="list-style-type: none"> ▪ Pages A2-A3, Updated EIRP Test Data

DIRECTORY

Documentation

Test Regulations	Page(s)
Test setup drawings and photos	3
Test Operation Mode	7 – 14
Configuration of the device under test	15
Deviations from standard	15
General Remarks	16
Summary	16

Test Results

22.913 Effective radiated power limits	4
22.355 Frequency tolerance	5
22.917 Emission limitations for cellular	6

Appendix A

Test data	A1 – A131
-----------	-----------

Appendix B

Constructional data form	B1 – B8
--------------------------	---------

Appendix C

Measurement Protocol	C1 – C2
----------------------	---------

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

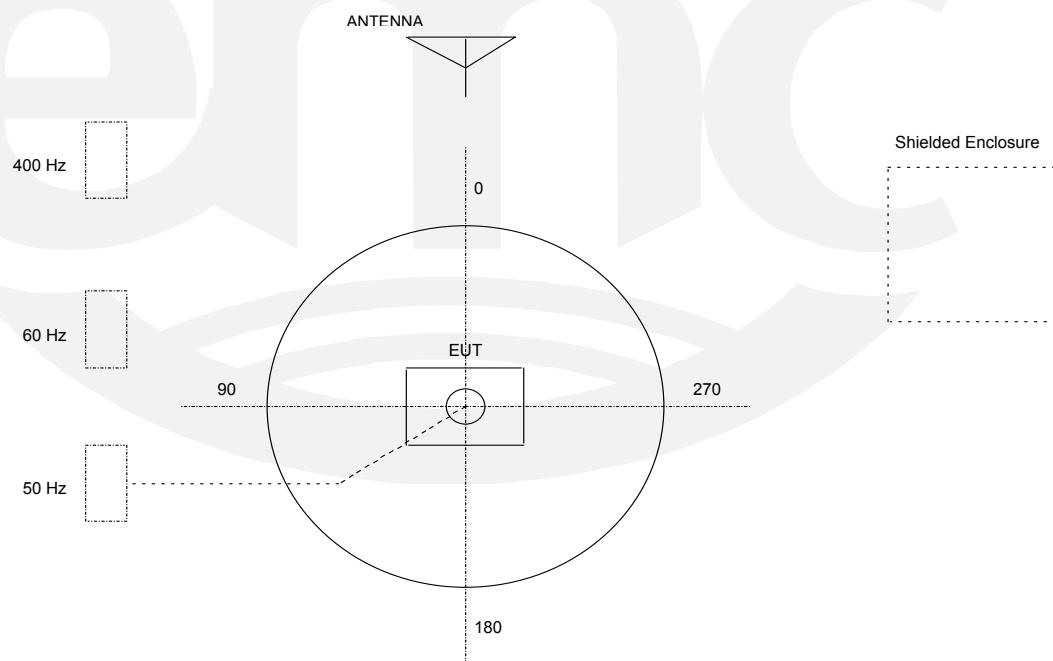
Inter-Modulation Test, pages A71 – A131

TEST SETUP FOR EMISSIONS TESTING

WILD RIVER LAB Large Test Site

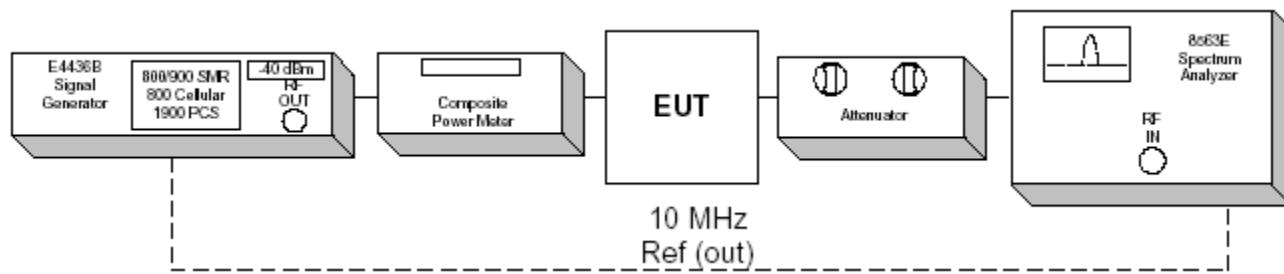
Notes:

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.



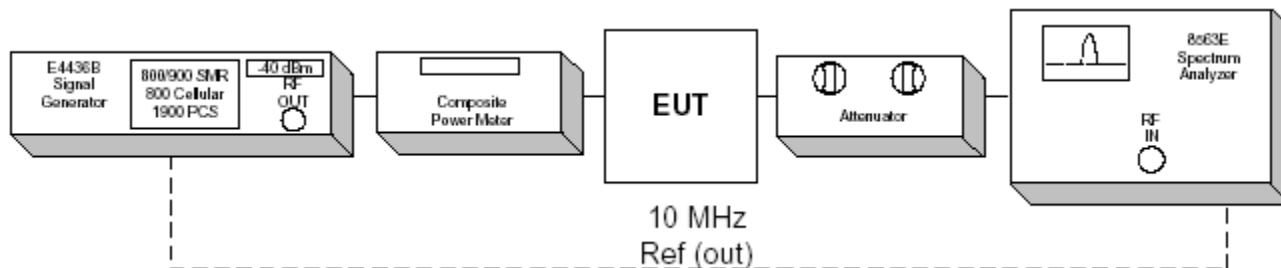
Conducted Emission Limits Test for ADC Inc.
Digivance CXD
Model Number DGVF-02000000XXCRN

Test Set-up



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

Test Set-up



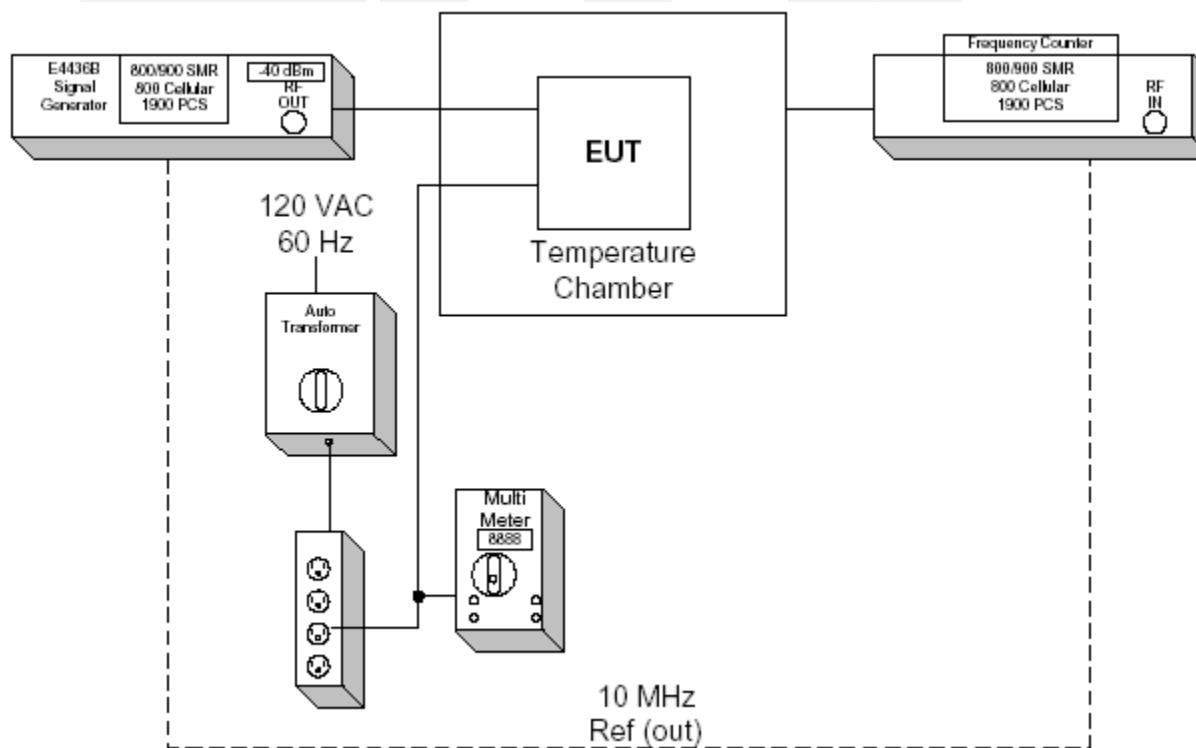
Frequency Tolerance Test for ADC Inc.

Digivance CXD

Model Number DGVF-02000000XXCRN

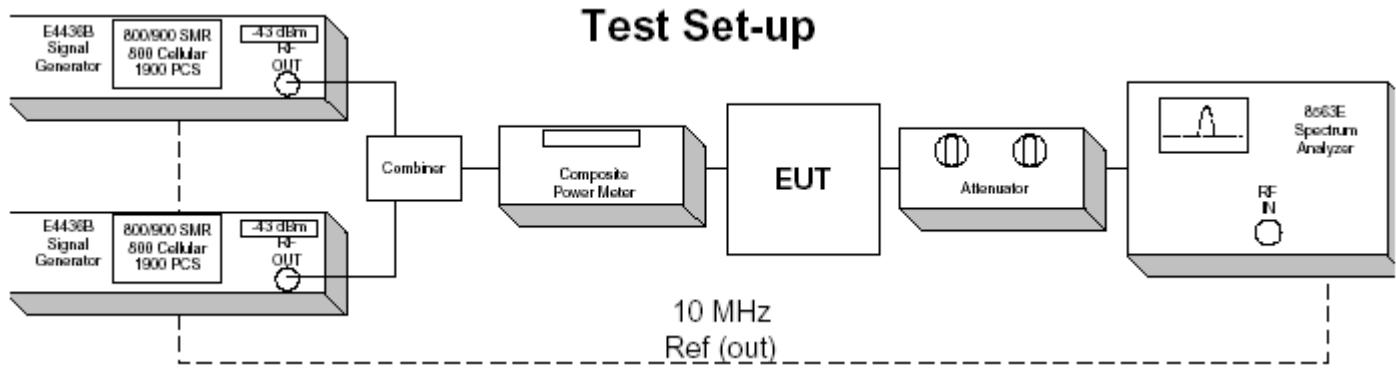
EUT Host is specified for indoor use only with temperature range of 0° to +50° C, and was tested with its range. EUT Remote is specified with a temperature range of -30° to +50° C and was tested with its range.

Test Set-up

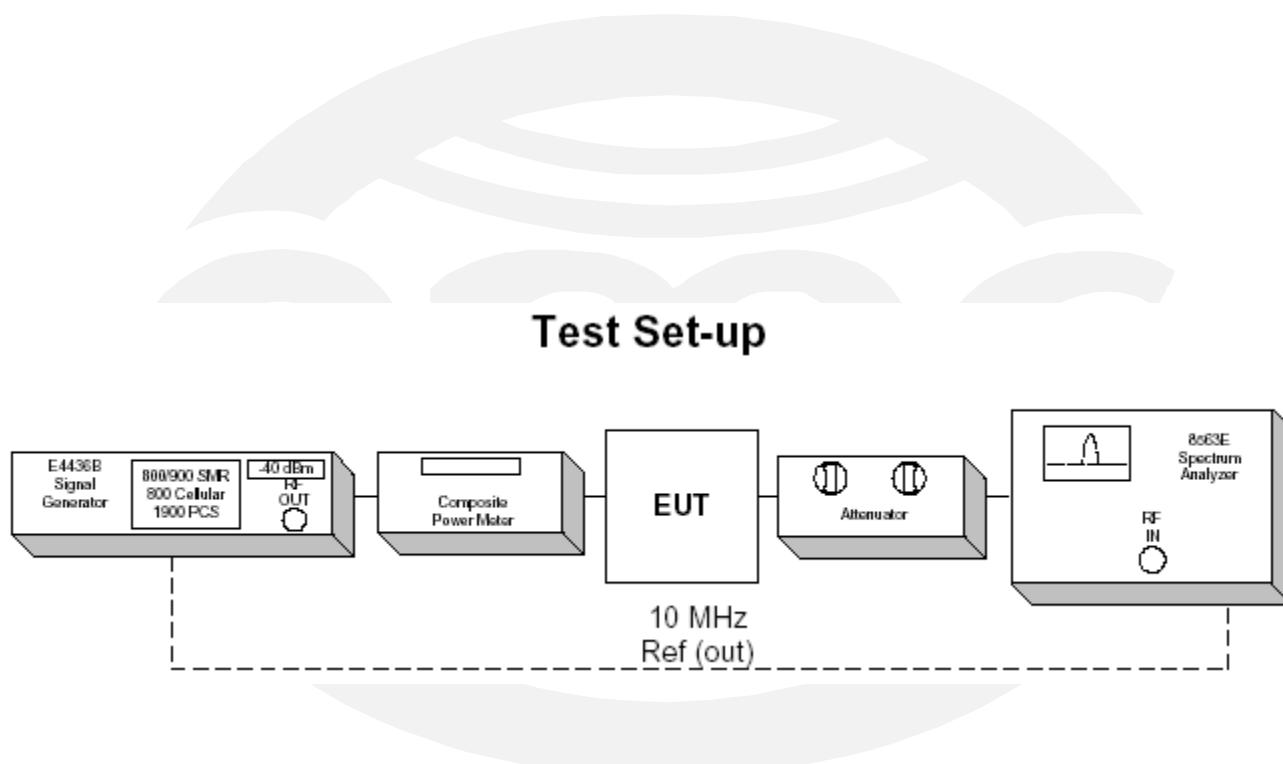


Inter-Modulation Test for ADC Inc.
Digivance CXD
Model Number DGVF-02000000XXCRN

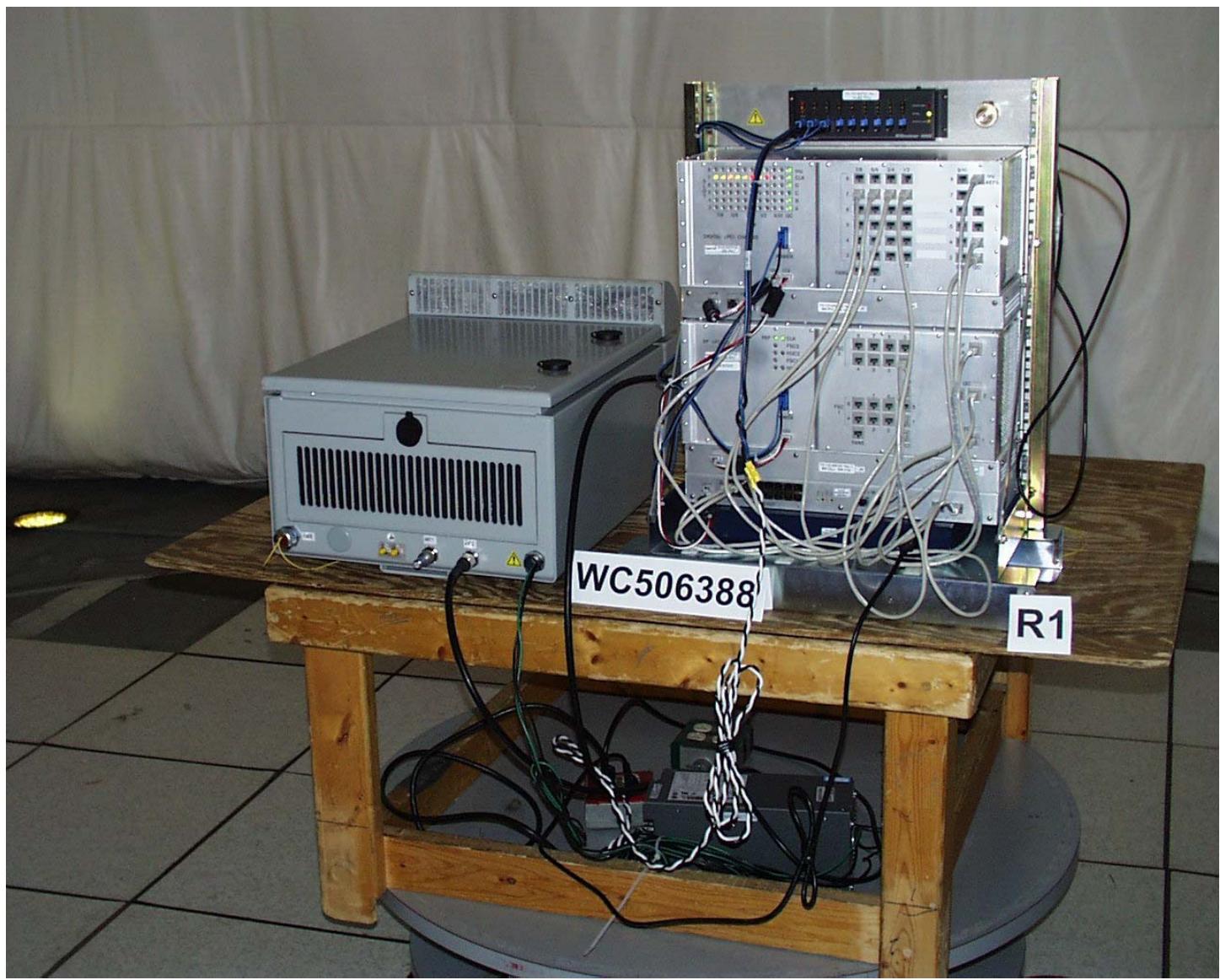
Test Set-up



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



Test 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)

14 December 2005

Condition of EUT:

Normal

Testing Start Date: (ADC)

30 September 2005

Testing End Date: (TÜV)

14 December 2005

- 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

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

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

Band B

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

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

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

Band B

Carrier Frequency	(800 MHz)
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)

Input Voltage	Carrier Frequency	Measured Frequency	Meets Requirements?
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
Temperature	Carrier Frequency	Measured Frequency	Meets Requirements?
-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)

Input Voltage	Carrier Frequency	Measured Frequency	Meets Requirements?
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
Temperature	Carrier Frequency	Measured Frequency	Meets Requirements?
-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

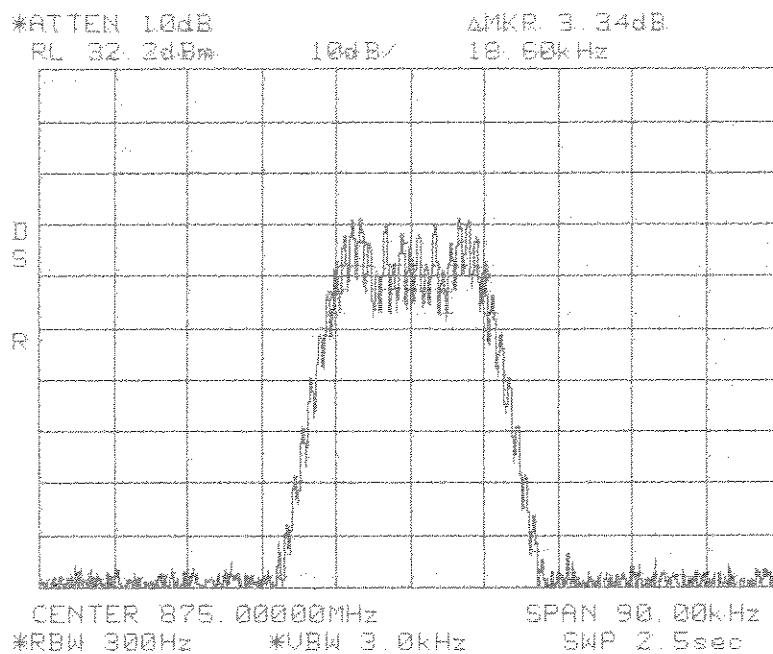
Occupied Bandwidth Modulation Test for ADC Inc.
Digivance CXD
Model Number DGVF-02000000XXCRN

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.

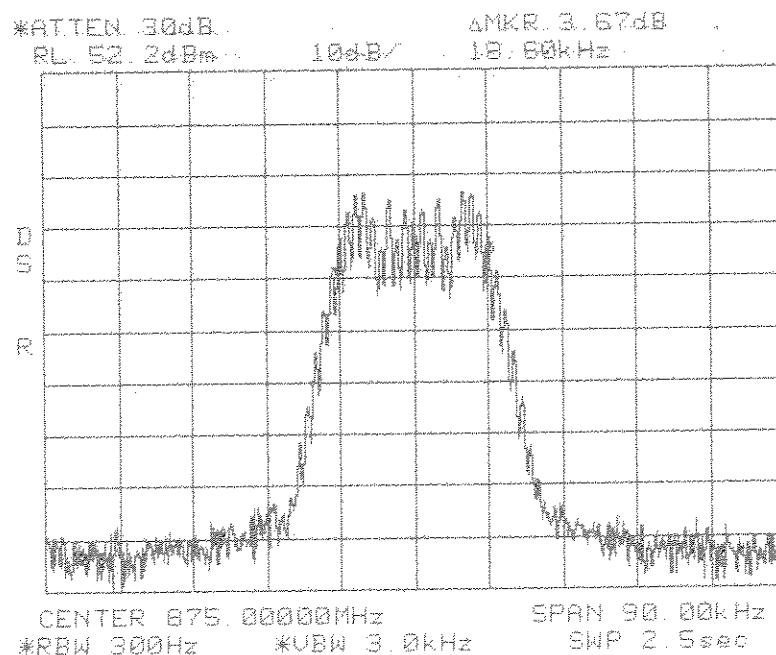
Results:

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**



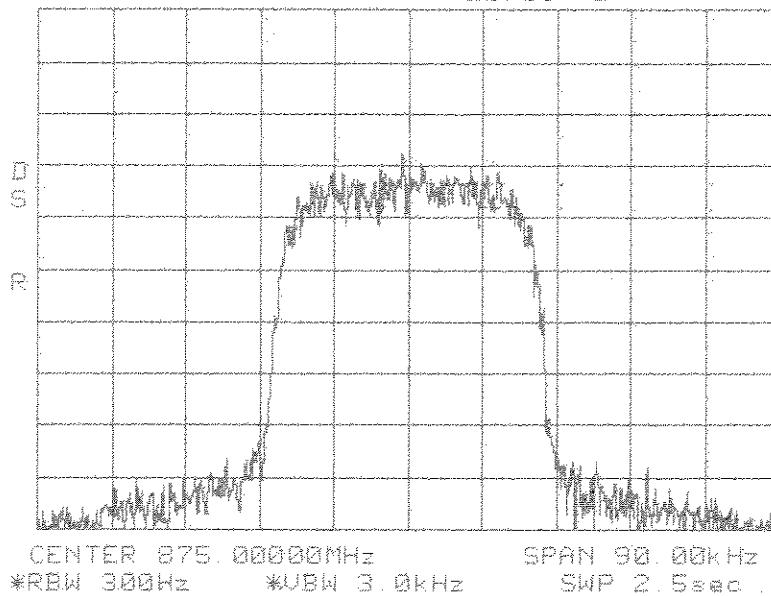
**Occupied Bandwidth
FM Out
Cellular 800 MHz
A Band**

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

*ATTEN: 10dB.
RL: 32.2dBm. 10dB/
28.58kHz.

AMKR -2.33dB
28.58kHz.

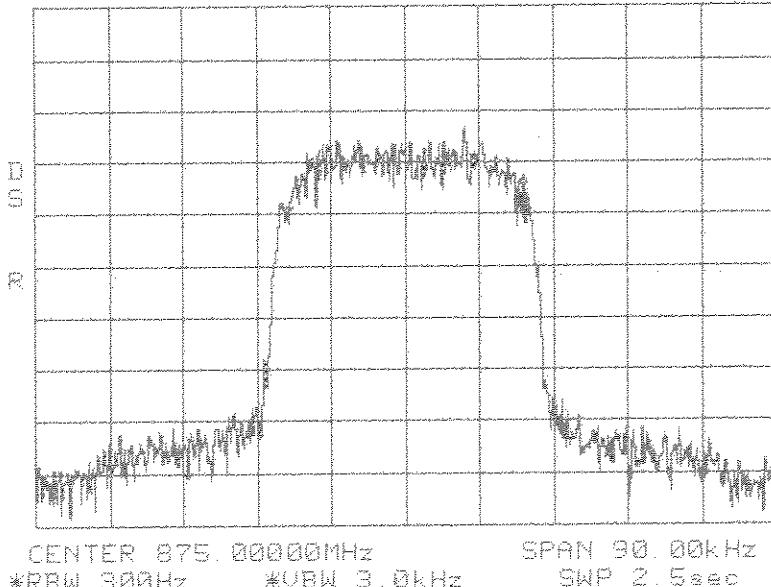
Center: 875.0 MHz
Span: 90 KHz
RBW/VBW: 300 Hz / 3 kHz



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

*ATTEN 30dB
RL 52.2dBm 10dB/
28.65kHz

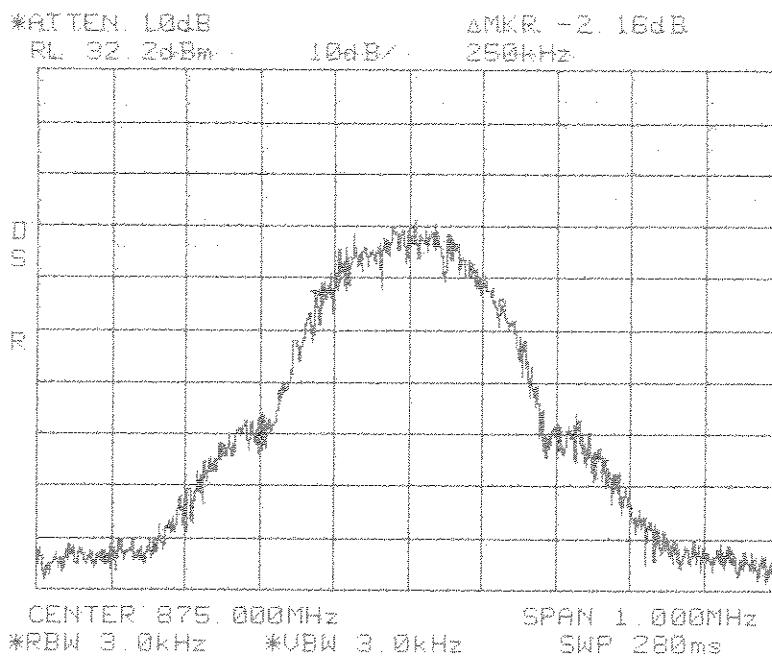
AMKR 5.33dB
28.65kHz



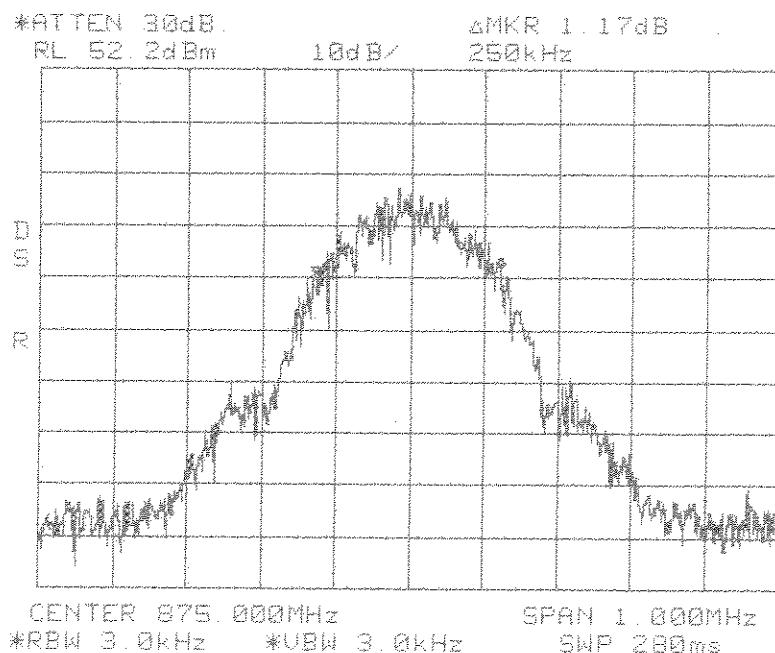
**Occupied Bandwidth
16 QAM Out
Cellular 800 MHz
A Band**

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



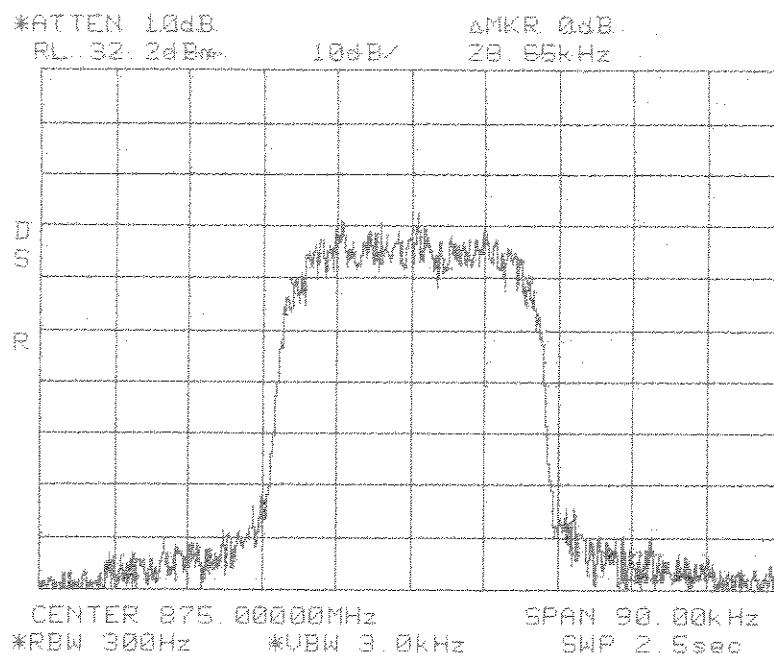
**Occupied Bandwidth
GSM In
Cellular 800 MHz
A Band**



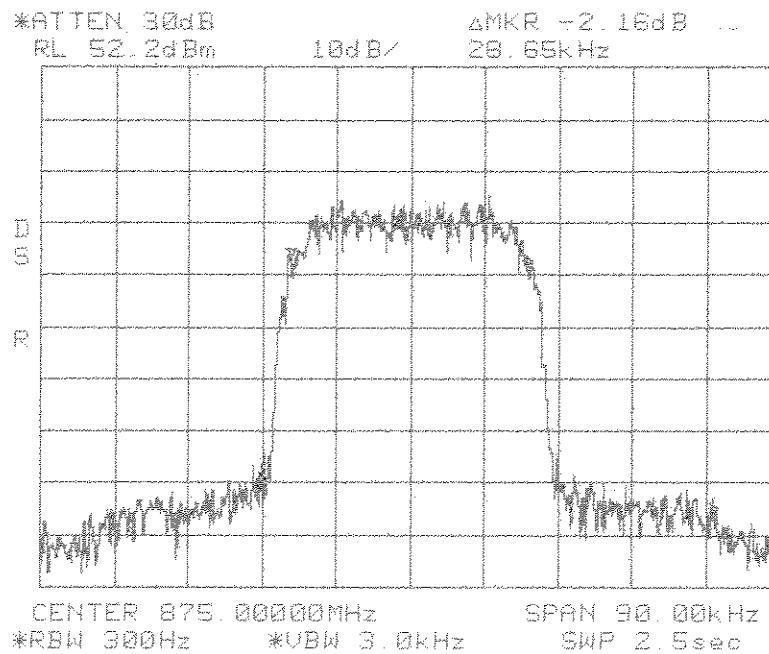
**Occupied Bandwidth
GSM Out
Cellular 800 MHz
A Band**

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

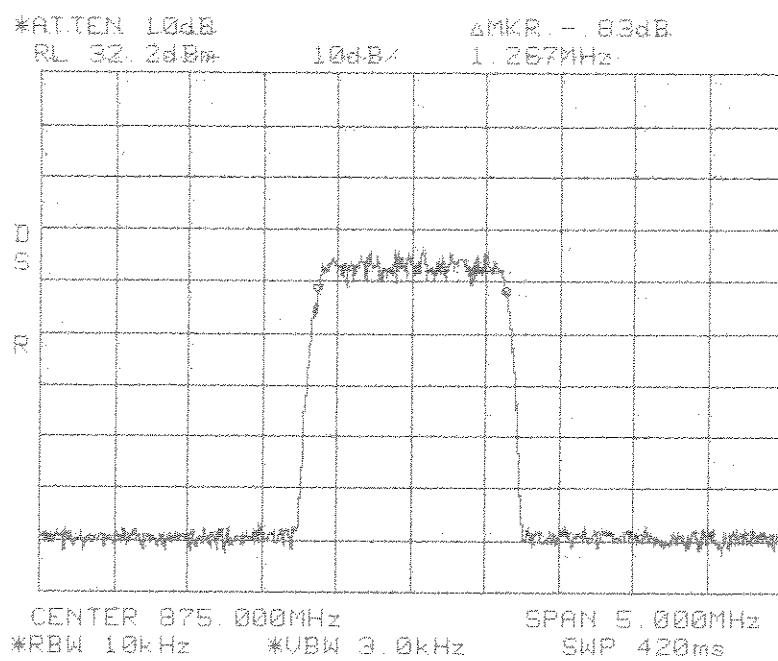


**Occupied Bandwidth
TDMA In
Cellular 800 MHz
A Band**



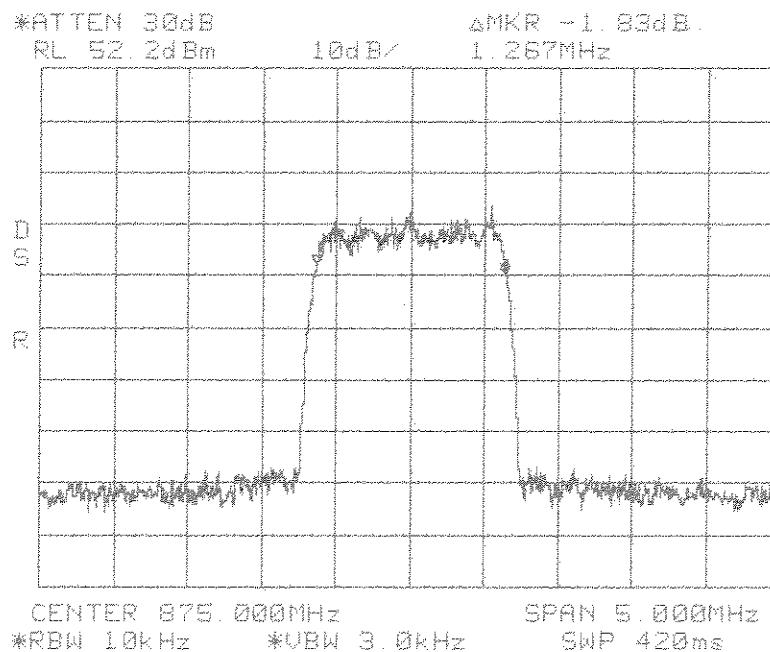
**Occupied Bandwidth
TDMA Out
Cellular 800 MHz
A Band**

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

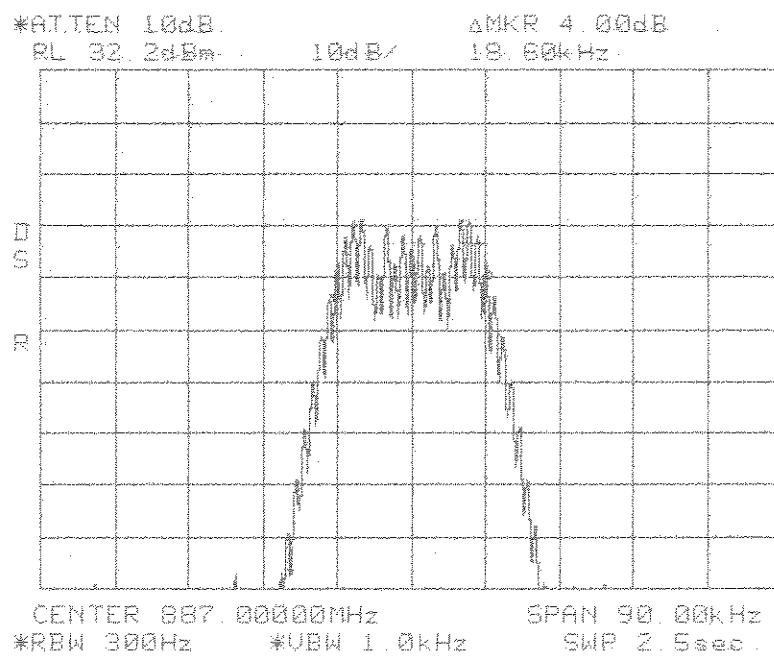
Occupied Bandwidth
CDMA In
Cellular 800 MHz
A Band



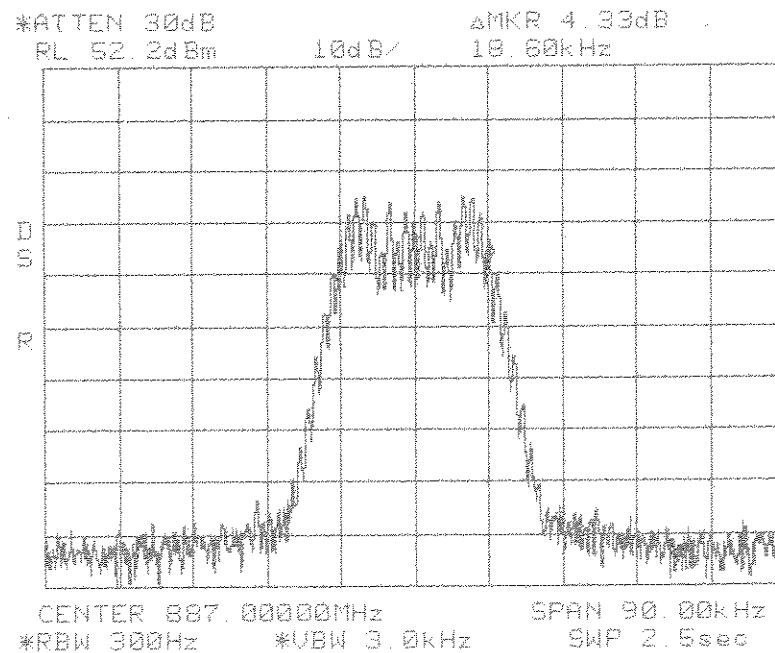
Occupied Bandwidth
CDMA Out
Cellular 800 MHz
A Band

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

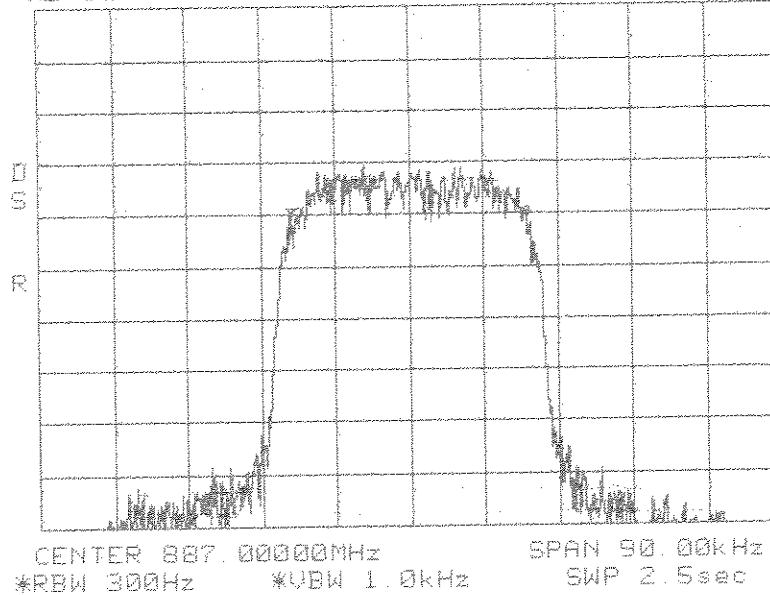
Center: 887.0 MHz
Span: 90 KHz
RBW/VBW: 300 Hz / 3 kHz

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

*ATTEN 10dB
RL 52.2dBm

10dB/
20.50kHz

ΔMKR = .67dB
20.50kHz

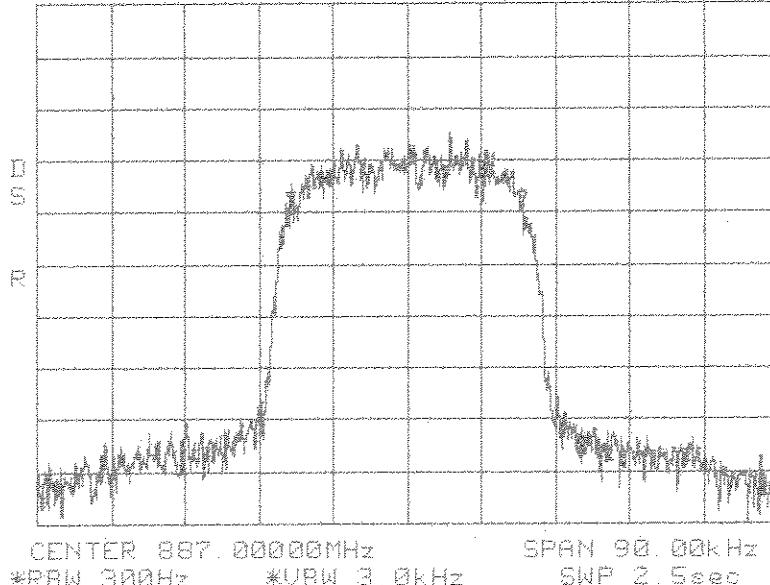


**Occupied Bandwidth
16 QAM In
Cellular 800 MHz
B Band**

*ATTEN 30dB
RL 52.2dBm

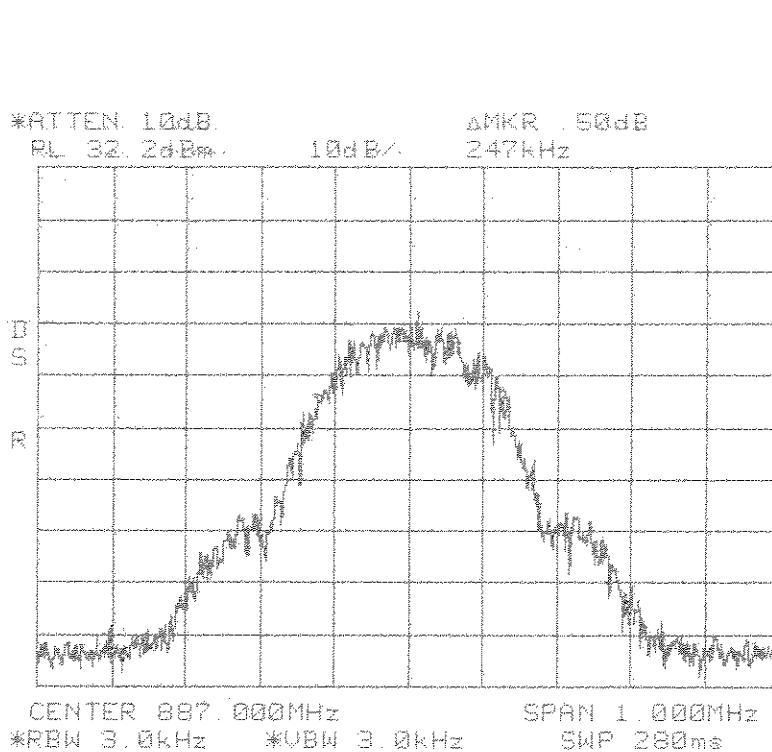
10dB/
20.20kHz

ΔMKR = .33dB
20.20kHz



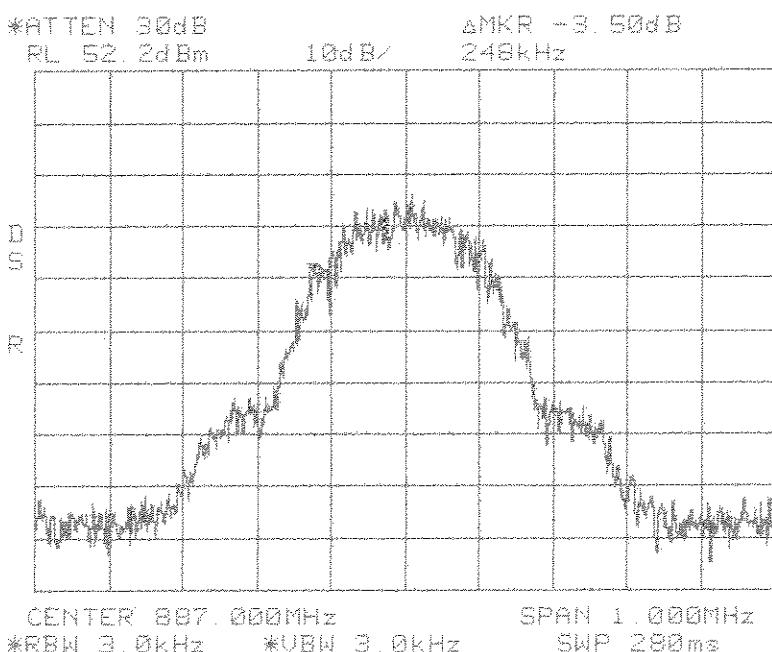
**Occupied Bandwidth
16 QAM Out
Cellular 800 MHz
B Band**

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



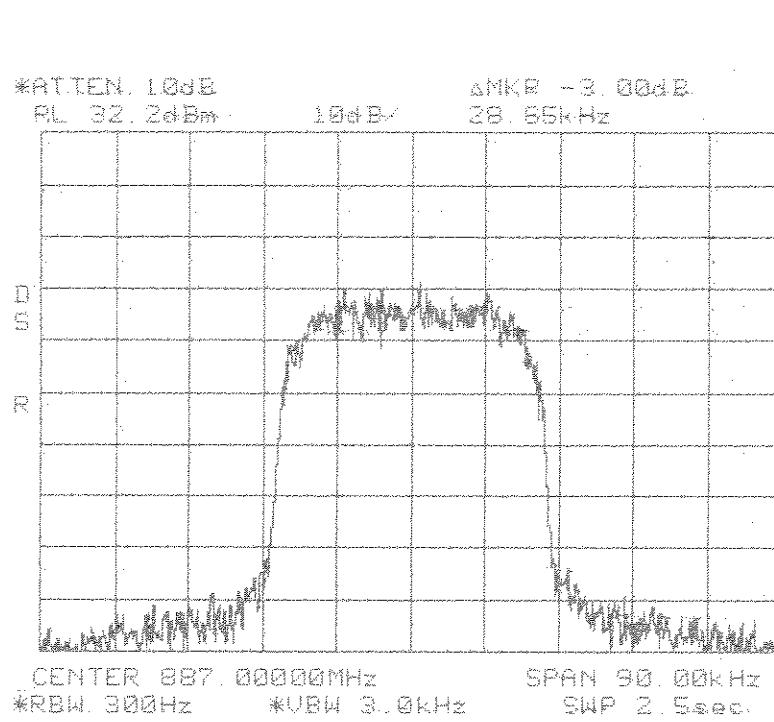
Center: 887.0 MHz
 Span: 1 MHz
 RBW/VBW: 3 kHz / 3 kHz

Occupied Bandwidth
GSM In
Cellular 800 MHz
B Band



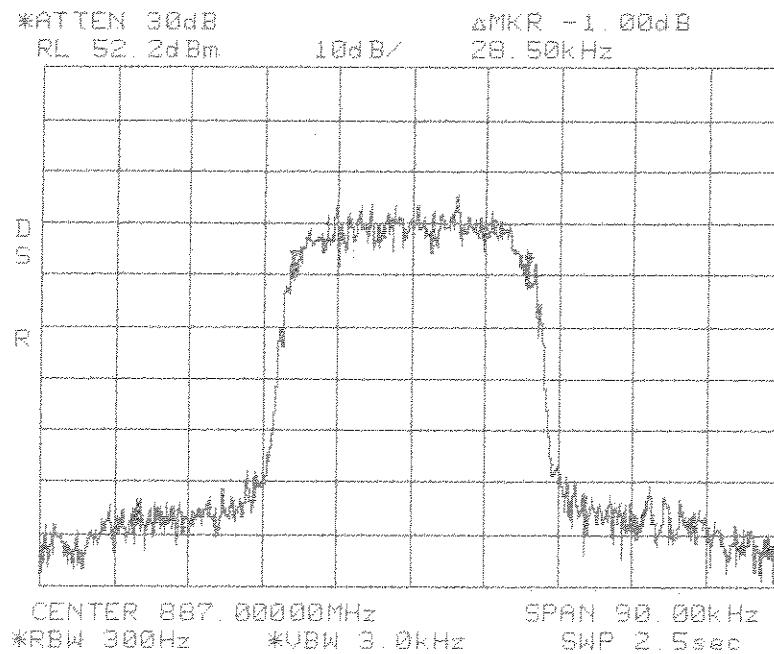
Occupied Bandwidth
GSM Out
Cellular 800 MHz
B Band

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



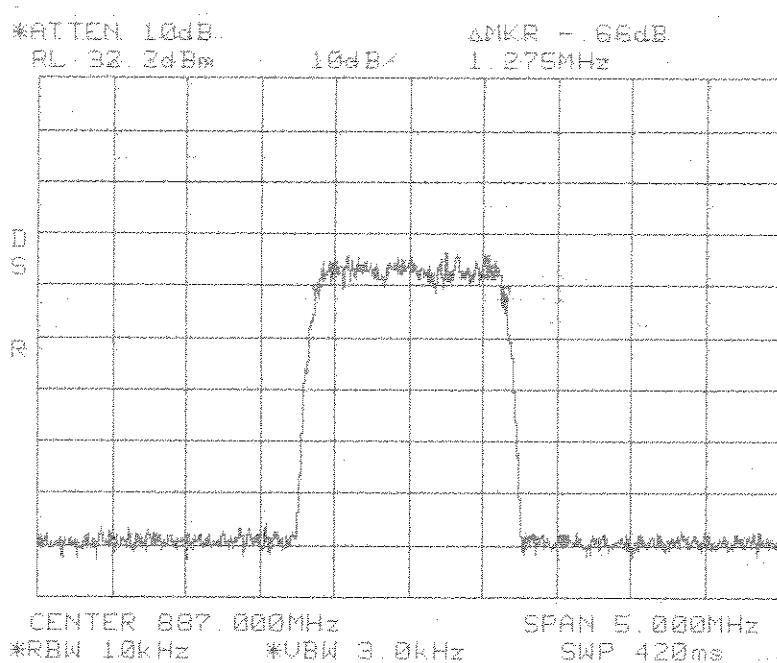
Center: 887.0 MHz
 Span: 90 kHz
 RBW/VBW: 300 Hz / 3 kHz

Occupied Bandwidth
TDMA In
Cellular 800 MHz
B Band



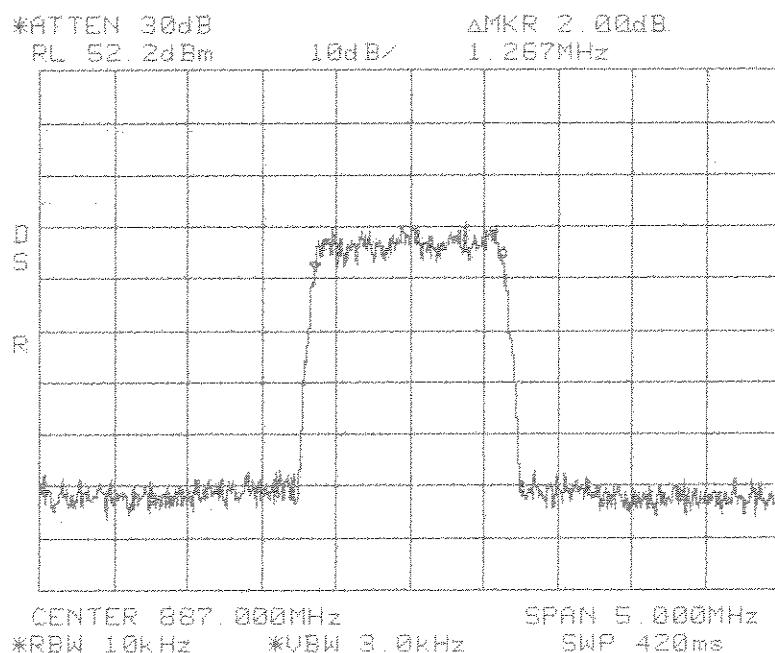
Occupied Bandwidth
TDMA Out
Cellular 800 MHz
B Band

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

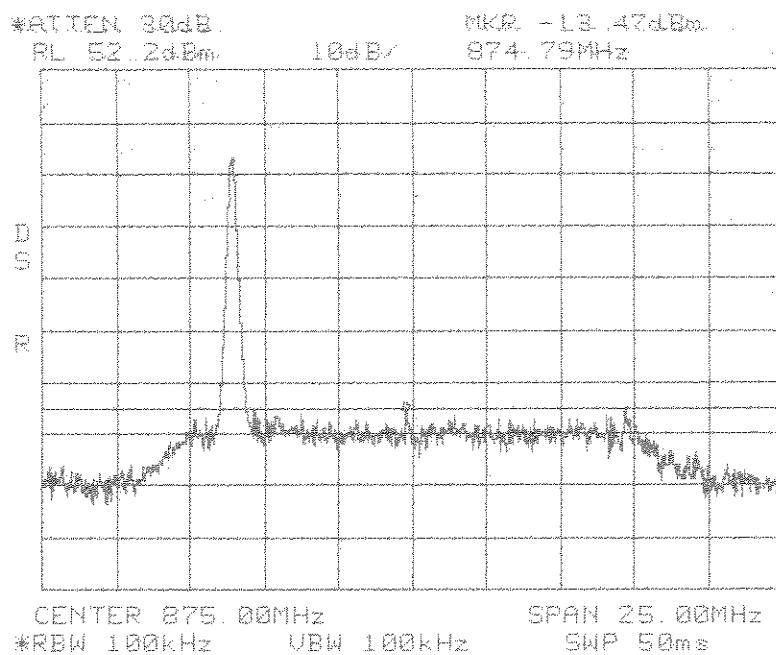
The out of band emissions were measured directly from the EUT antenna output with a spectrum analyzer from 30 MHz to the 10th harmonic of the highest carrier frequency. Test signals used are FM, 16QAM, GSM, TDMA, and CDMA. The different signals were input one at a time to the EUT. In all cases, the out of band emissions were less than -13dBm from the equation

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

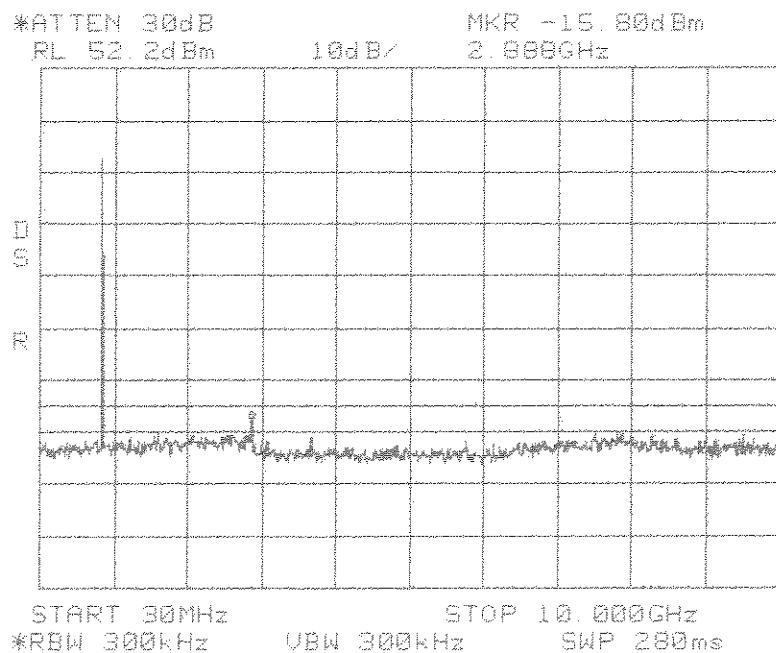
Band edge compliance is also demonstrated using a signal at the upper and lower limits of the band and a resolution bandwidth of 300 Hz.

Results:
Pass (See plots)

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



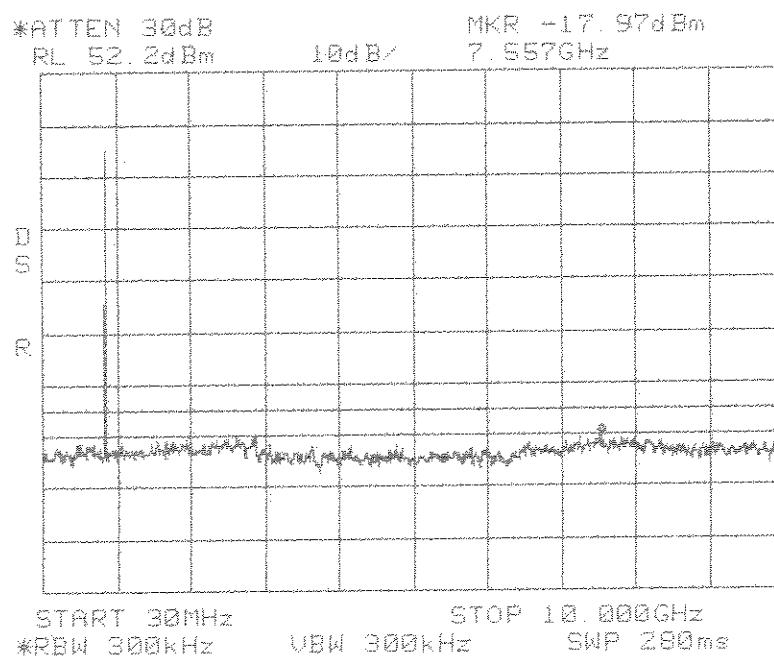
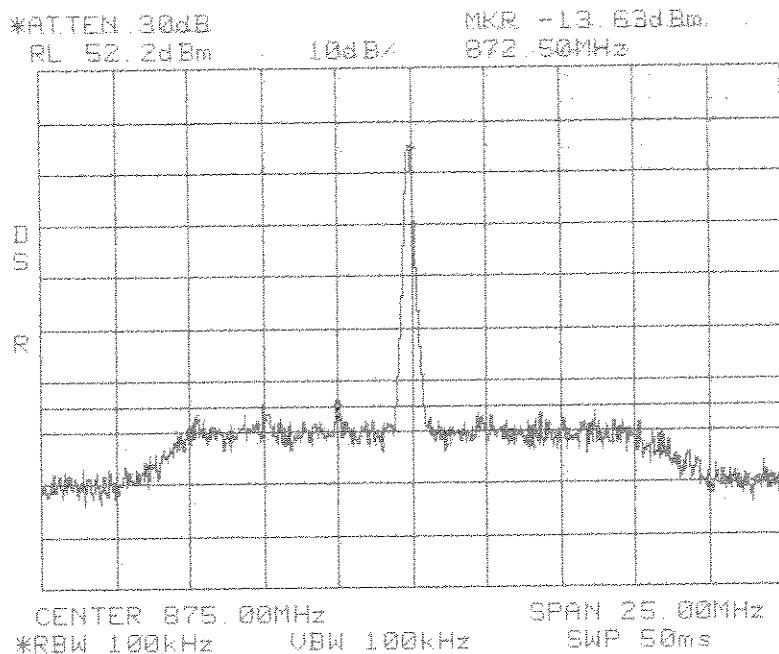
**Conducted Emissions
Low
Cellular 800 MHz
A Band**



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

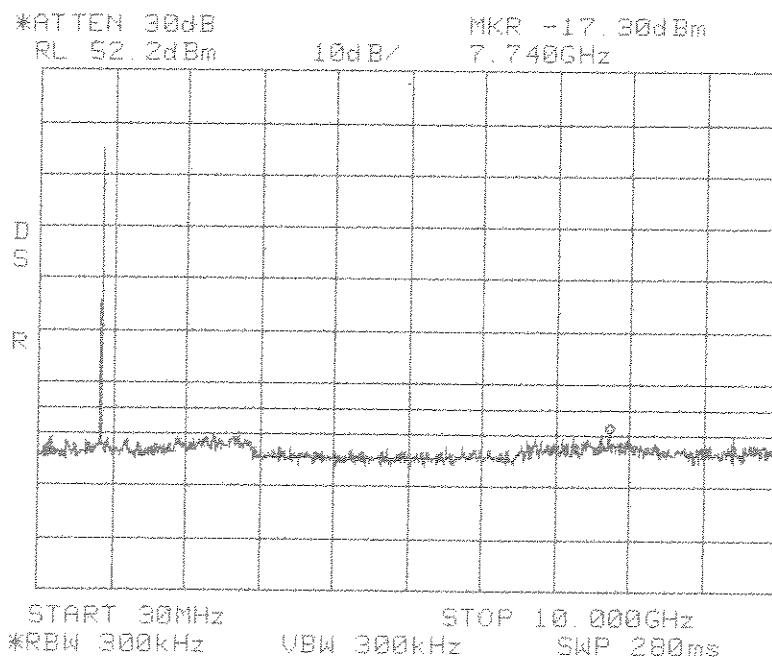
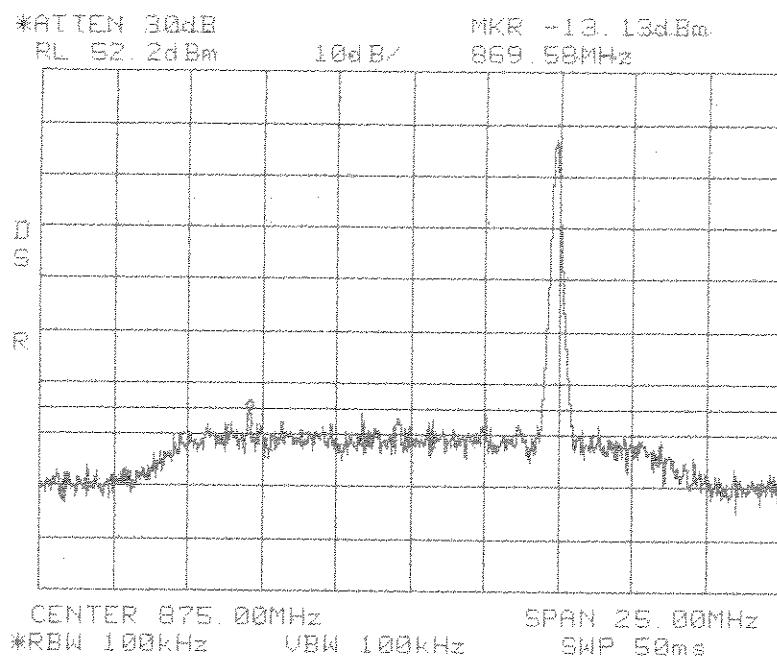
Span: 30 MHz to 10 GHz
RBW/VBW: 300 kHz

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

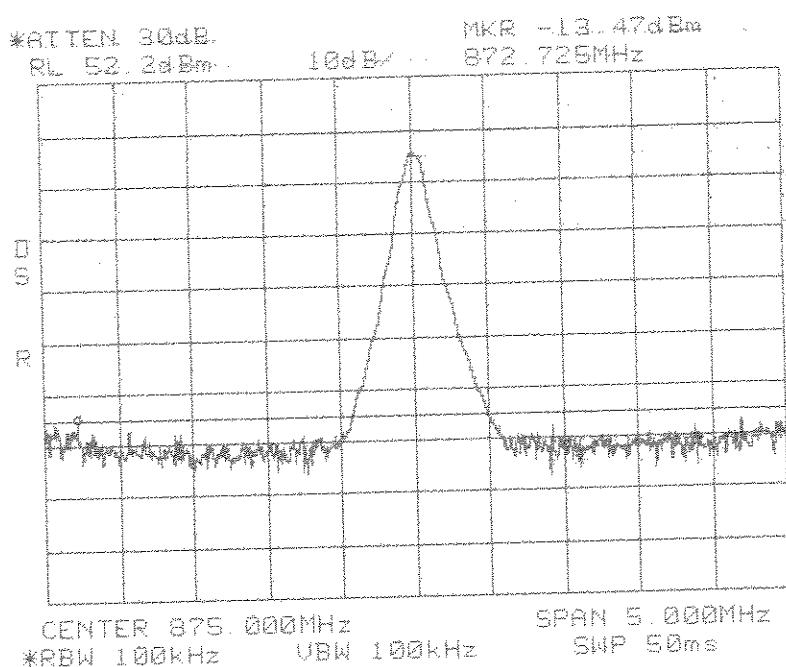


Span: 30 MHz to 10 GHz
RBW/VBW: 300 kHz

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

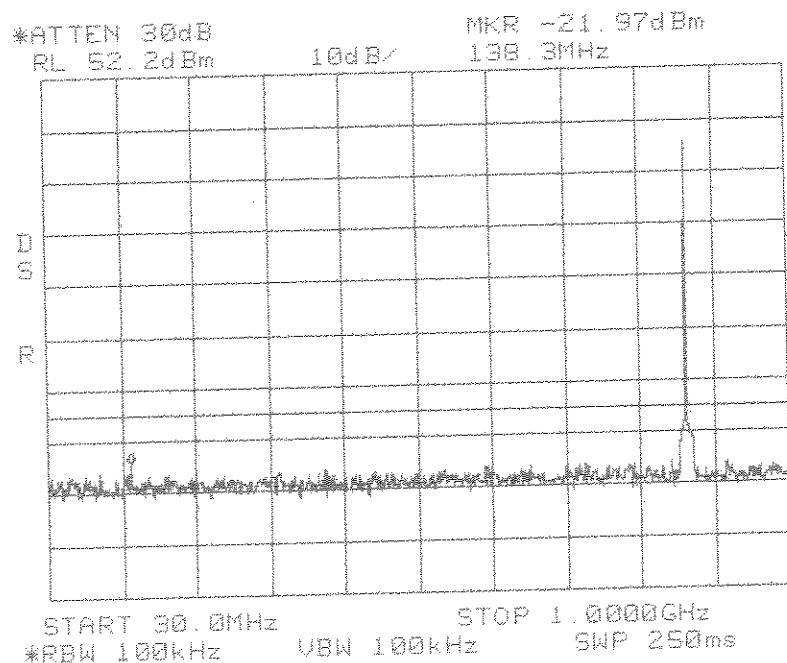


Span: 30 MHz to 10 GHz
RBW/VBW: 300 kHz



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

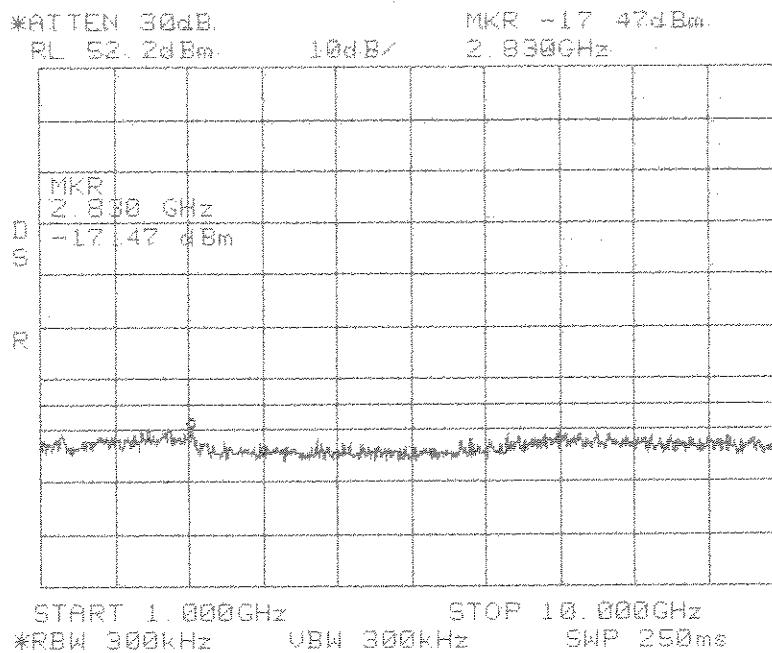
Conducted Emissions
FM
Cellular 800 MHz
A Band



Conducted Emissions
FM
Cellular 800 MHz
A Band

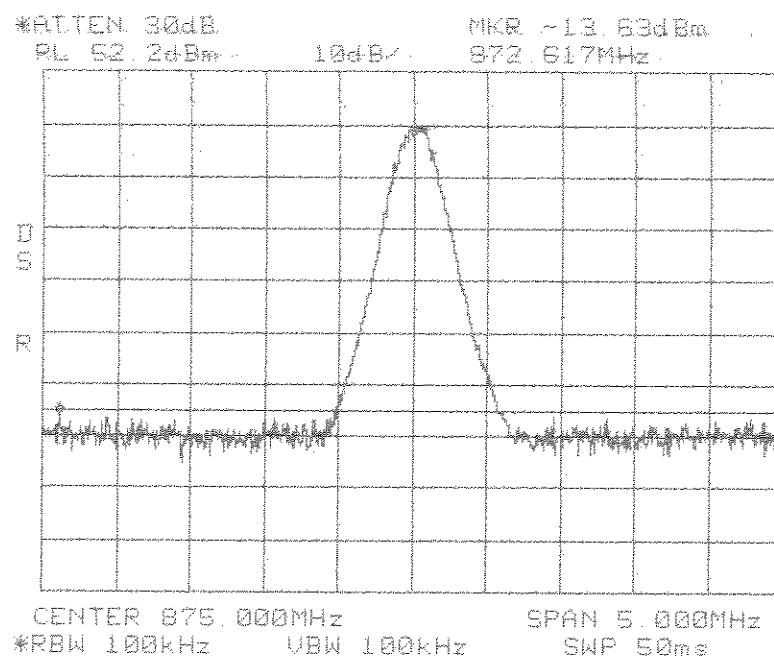
Span: 30 MHz to 1 GHz
 RBW/VBW: 100 kHz

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

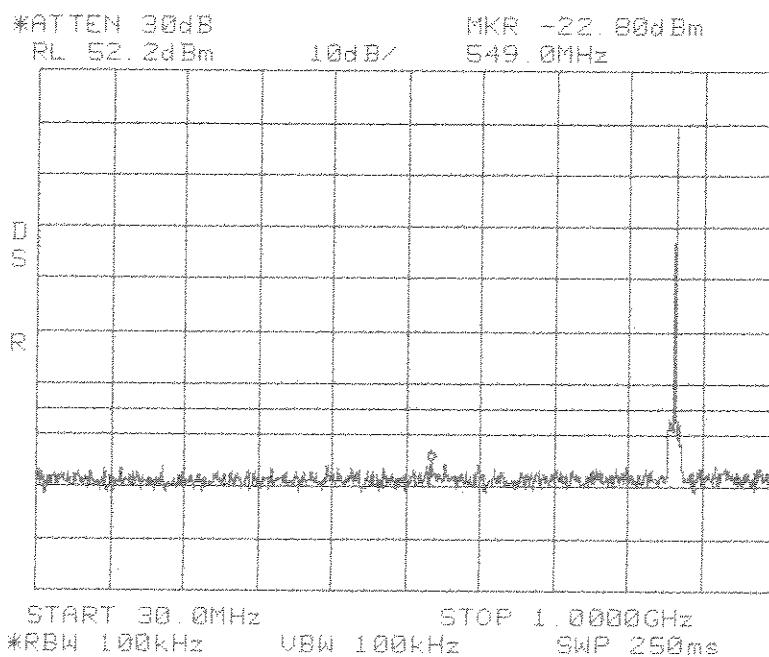


**Conducted Emissions
FM
Cellular 800 MHz
A Band**

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



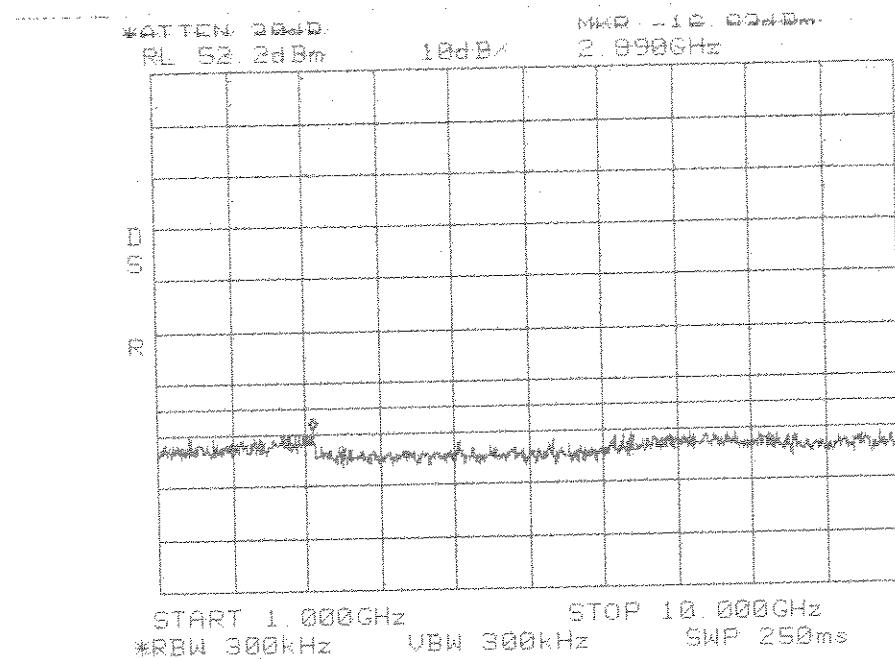
**Conducted Emissions
16QAM
Cellular 800 MHz
A Band**



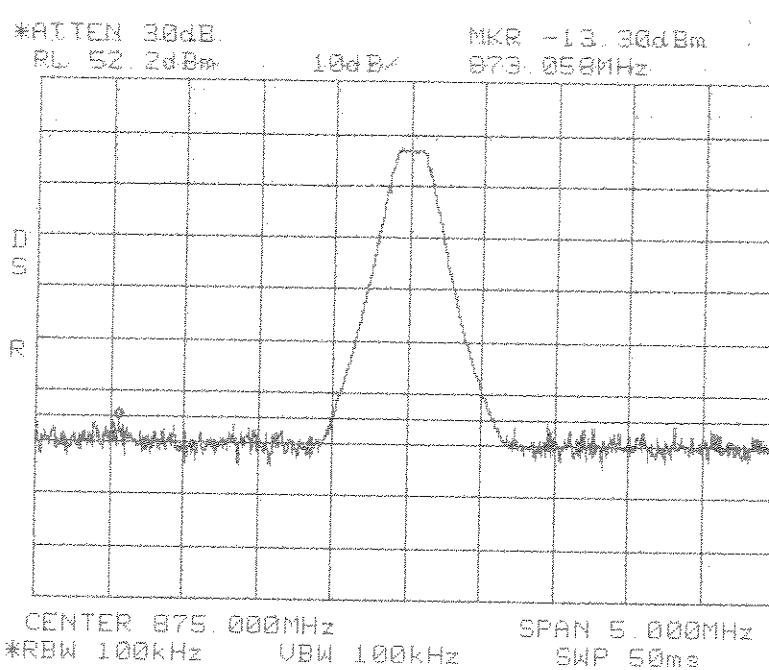
**Conducted Emissions
16QAM
Cellular 800 MHz
A Band**

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

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

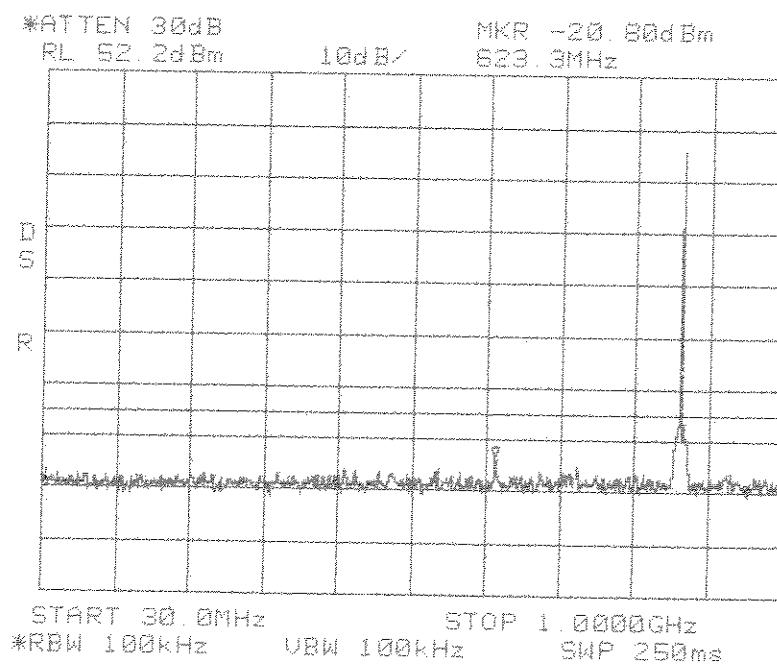


**Conducted Emissions
16QAM
Cellular 800 MHz
A Band**



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

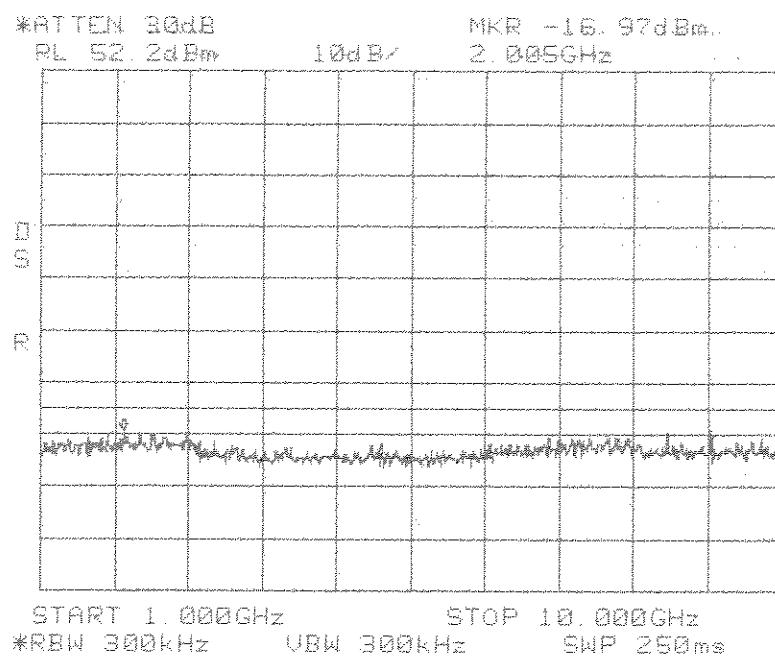
Conducted Emissions
GSM
Cellular 800 MHz
A Band



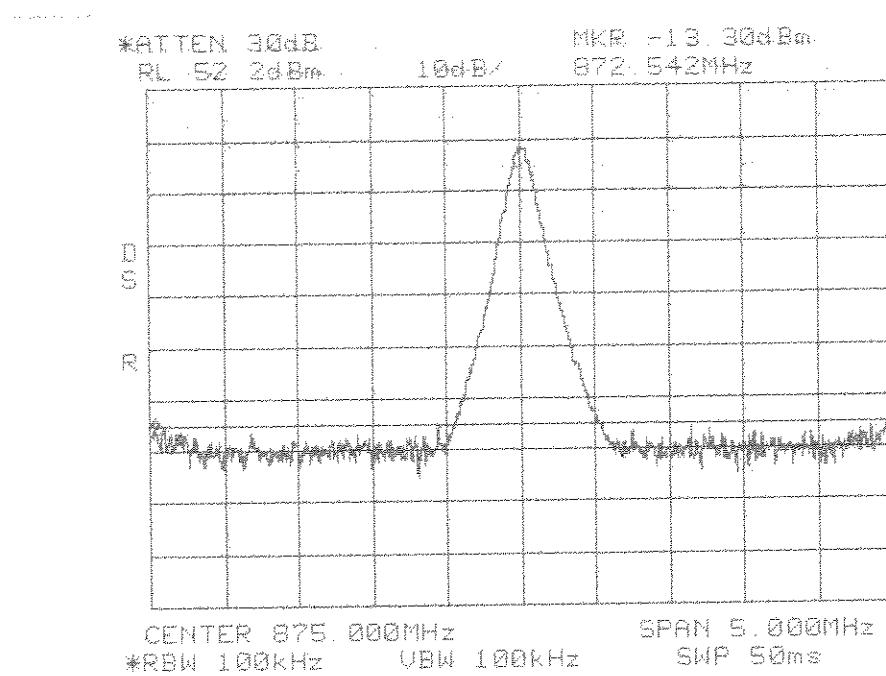
Conducted Emissions
GSM
Cellular 800 MHz
A Band

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

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

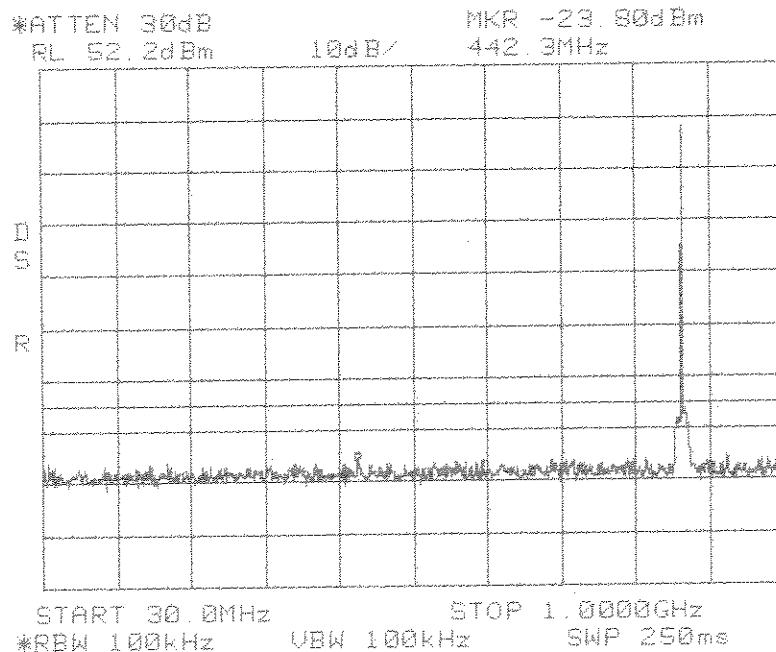


Conducted Emissions
GSM
Cellular 800 MHz
A Band



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

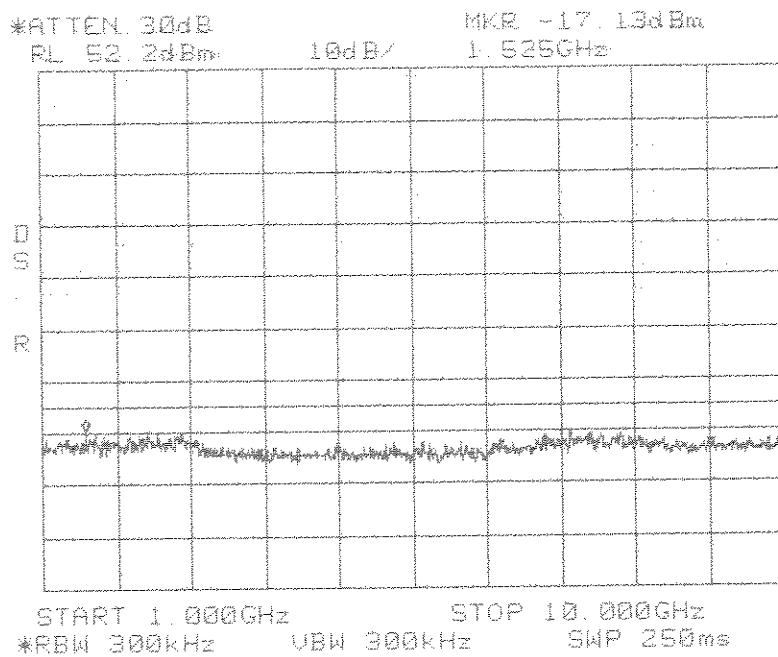
Conducted Emissions
TDMA
Cellular 800 MHz
A Band

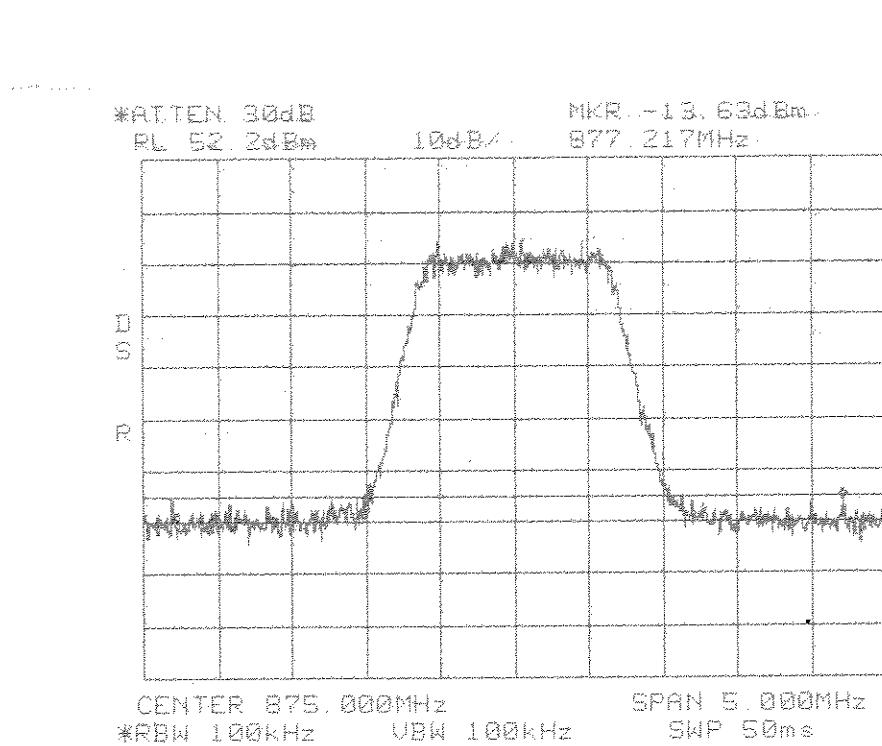


Conducted Emissions
TDMA
Cellular 800 MHz
A Band

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

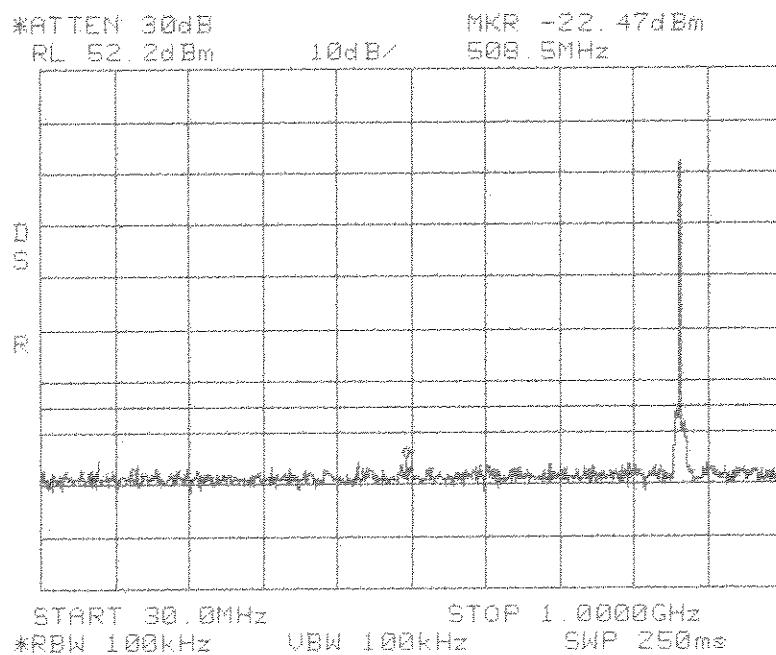
Span: 1 GHz to 10 GHz
RBW/VBW: 300 kHz





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

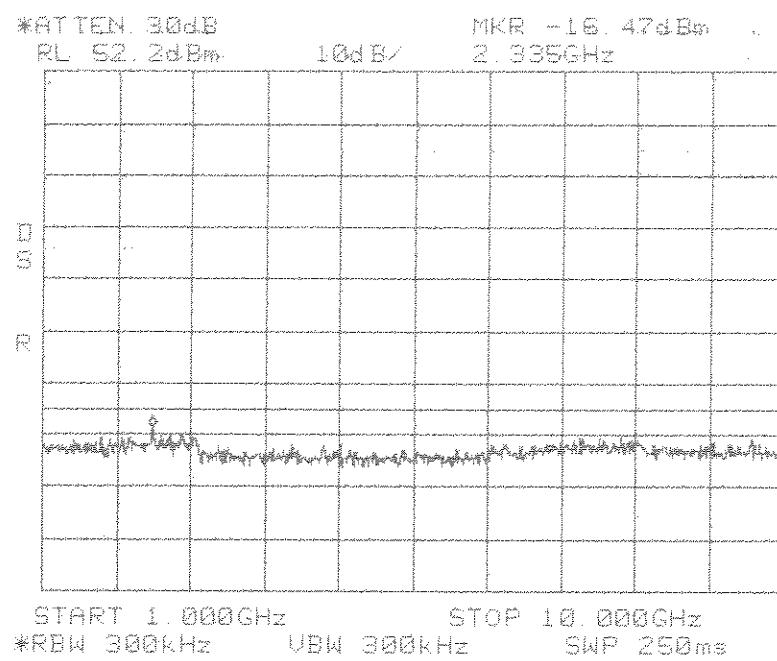
Conducted Emissions
CDMA
Cellular 800 MHz
A Band



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

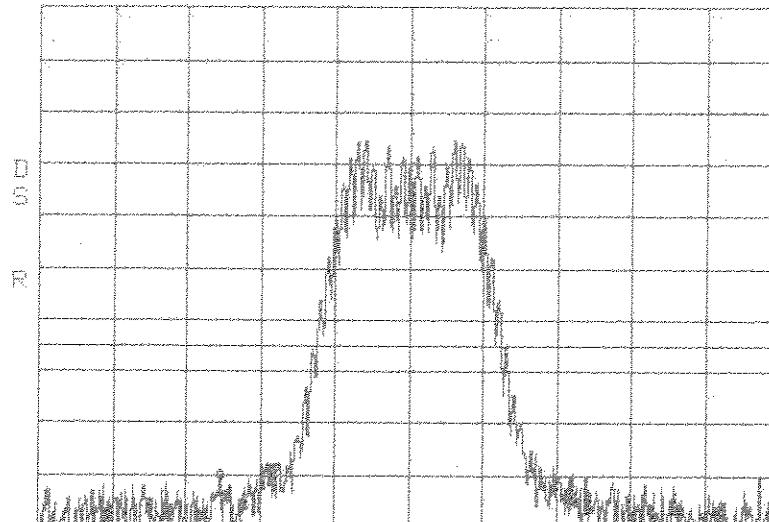


Conducted Emissions
CDMA
Cellular 800 MHz
A Band

*ATTEN 30dB
RL 52.2dBm

10dBv

MKR -38.86dBm
869.1747MHz



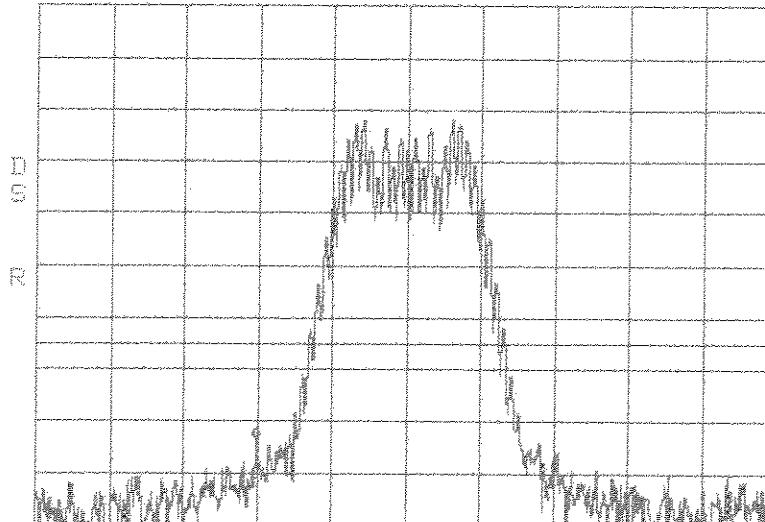
Center: 869.2 MHz
Span: 100 kHz
RBW/VBW: 300 Hz / 300 Hz

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

*ATTEN 30dB
RL 52.2dBm

10dBv

MKR -31.13dBm
879.7798MHz



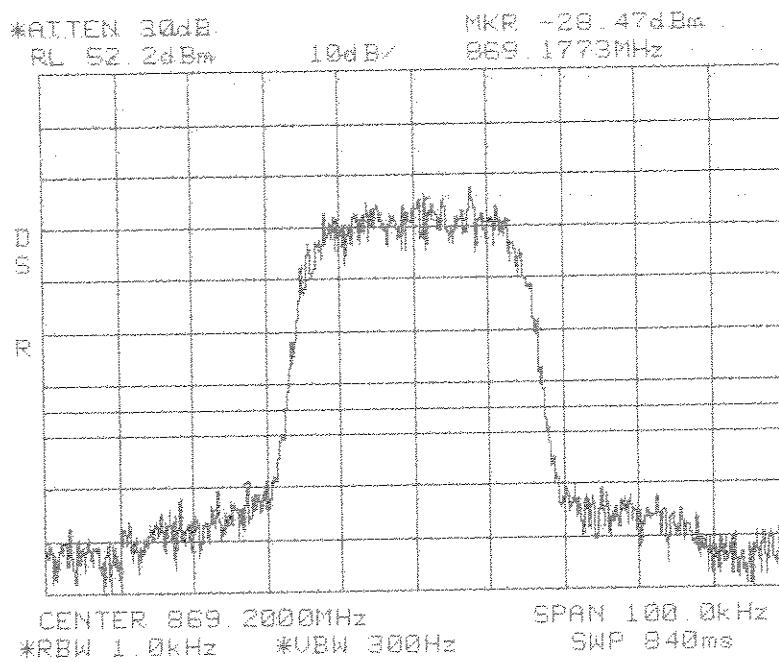
**Conducted Emissions
Band Edge
FM
Cellular 800 MHz
A Band**

CENTER 879.7798MHz
*RBW 300Hz

VBW 300Hz

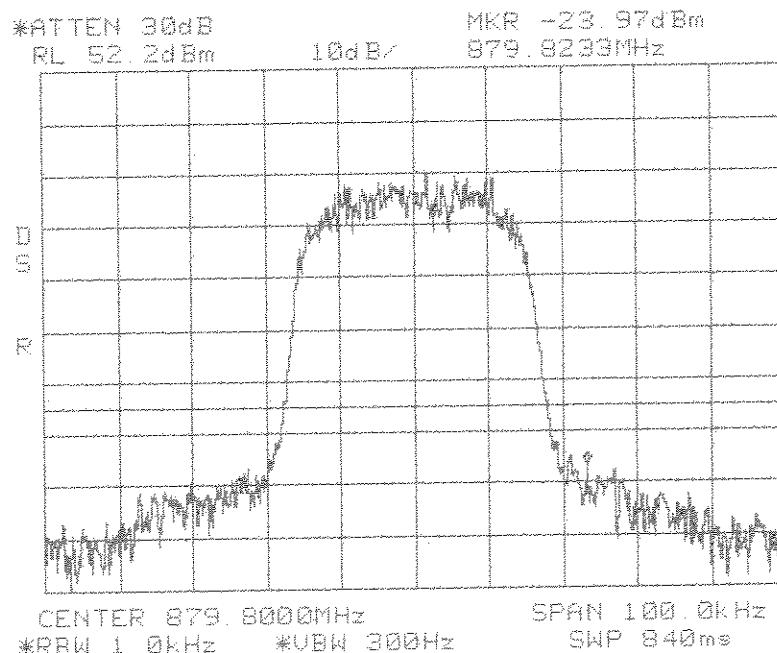
SPAN 100.0kHz
SWP 2.0sec

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



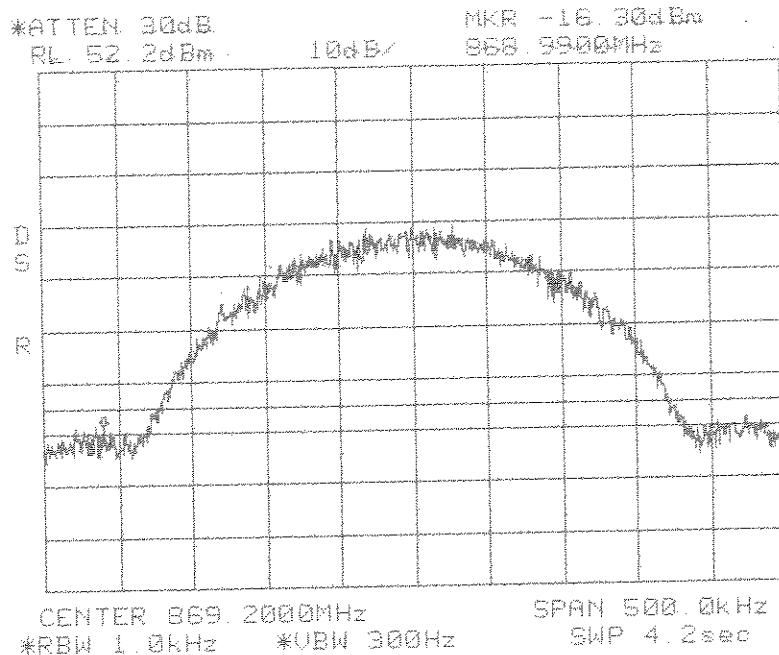
Center: 869.2 MHz
 Span: 100 kHz
 RBW/VBW: 1 kHz / 300 Hz

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



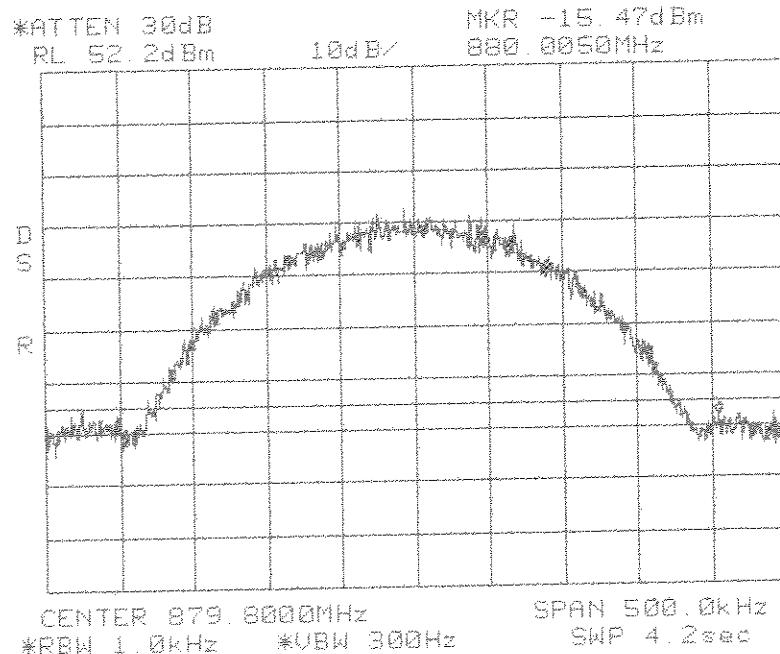
**Conducted Emissions
 Band Edge
 16QAM
 Cellular 800 MHz
 A Band**

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

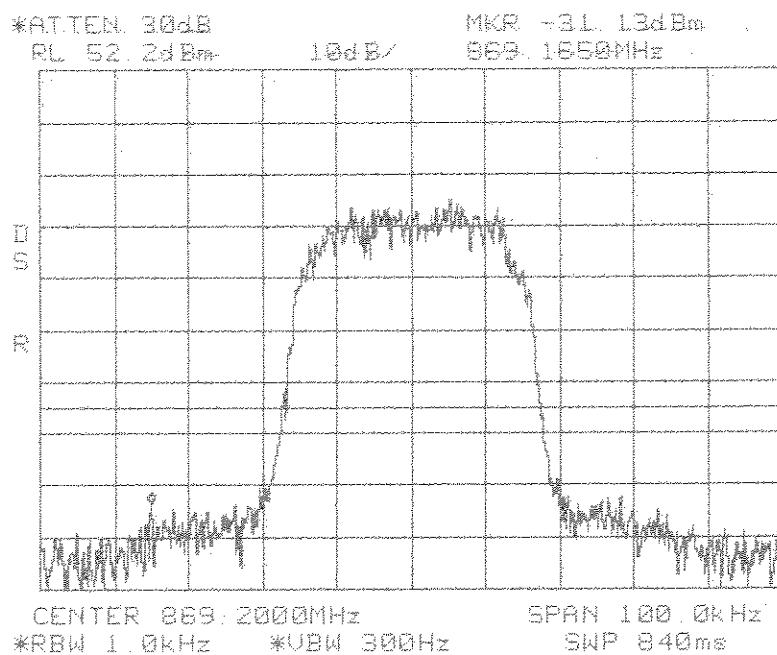
**Conducted Emissions
 Band Edge
 GSM
 Cellular 800 MHz
 A Band**



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

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

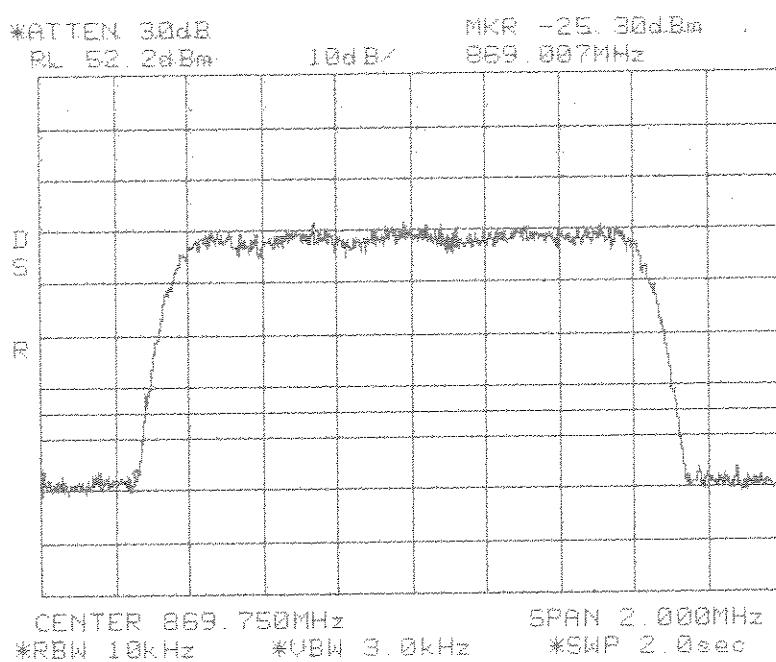
Center: 869.2 MHz
Span: 100 kHz
RBW/VBW: 1 kHz / 300 Hz



Conducted Emissions Band Edge TDMA Cellular 800 MHz A Band

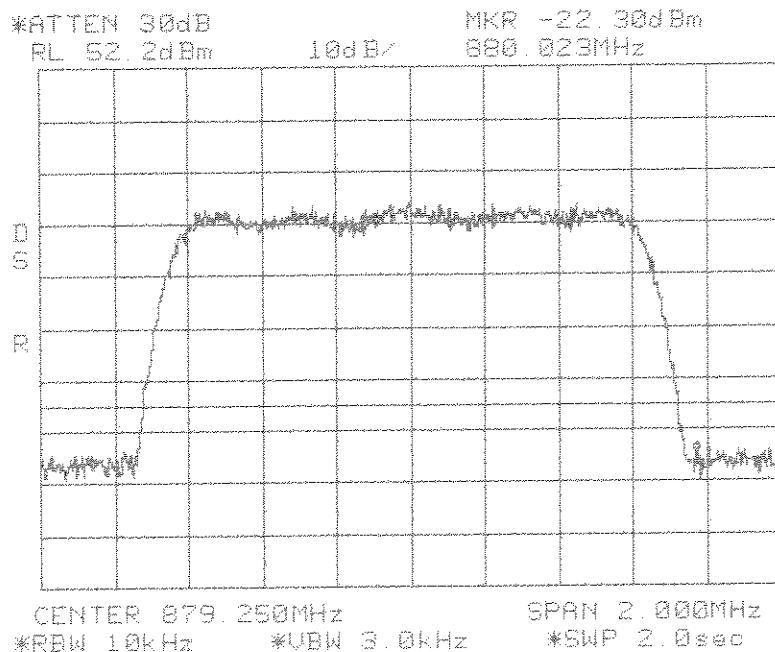
Conducted Emissions Band Edge TDMA Cellular 800 MHz A Band

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



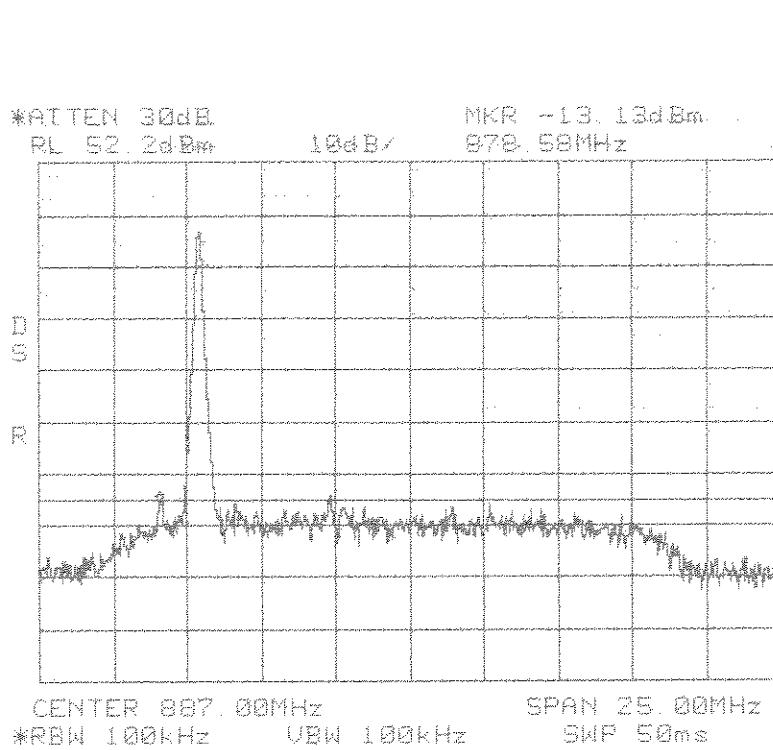
Center: 869.75 MHz
 Span: 2 MHz
 RBW/VBW: 10 kHz / 3 kHz

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



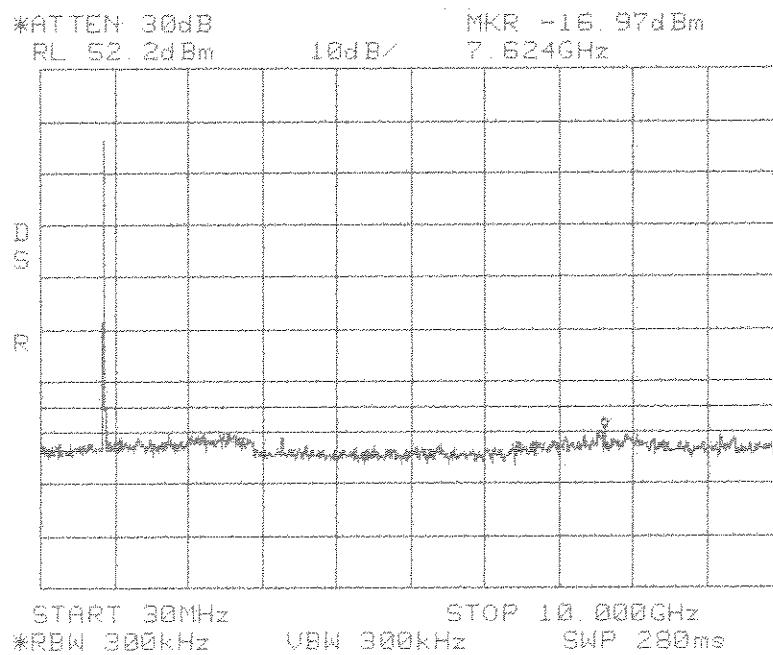
**Conducted Emissions
 Band Edge
 CDMA
 Cellular 800 MHz
 A Band**

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



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

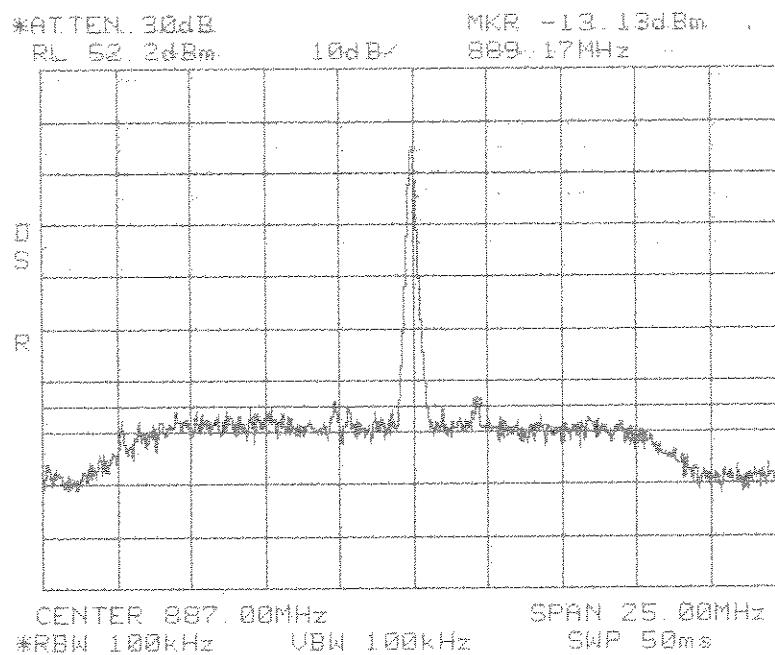
**Conducted Emissions
 Low
 Cellular 800 MHz
 B Band**



**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

*ATTEN 30dB RL 52.2dBm 10dB/

MKR -16.97dBm Z 672GHz

D (dB)

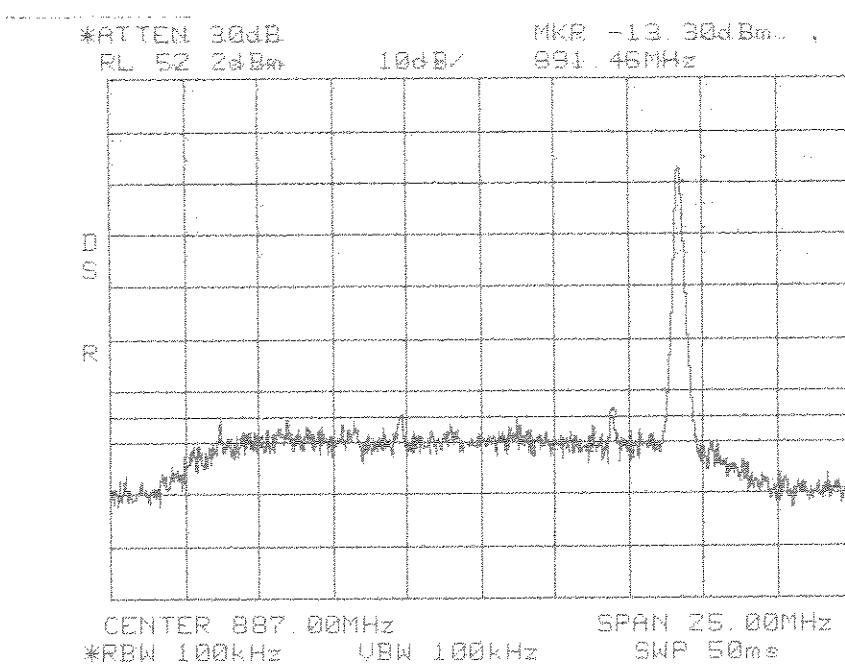
R

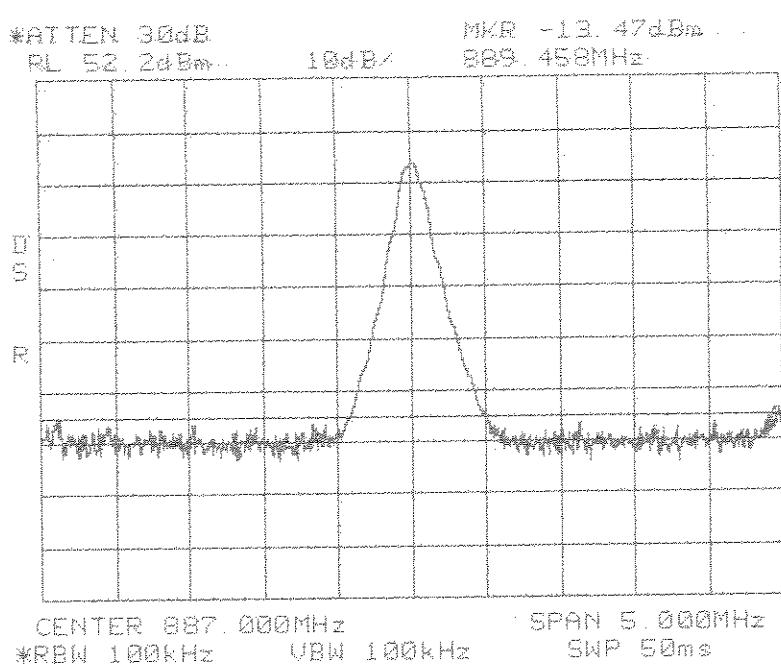
START 30MHz STOP 10.000GHz

*RBW 300kHz VBW 300kHz SWP 280ms

Conducted Emissions Mid Cellular 800 MHz B Band

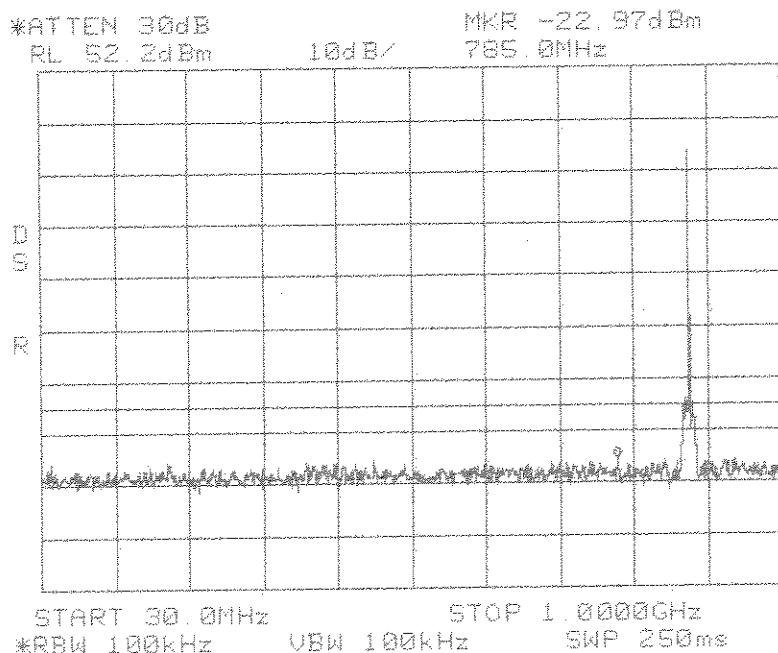
Span: 30 MHz to 10 GHz
RBW/VBW: 300 kHz





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

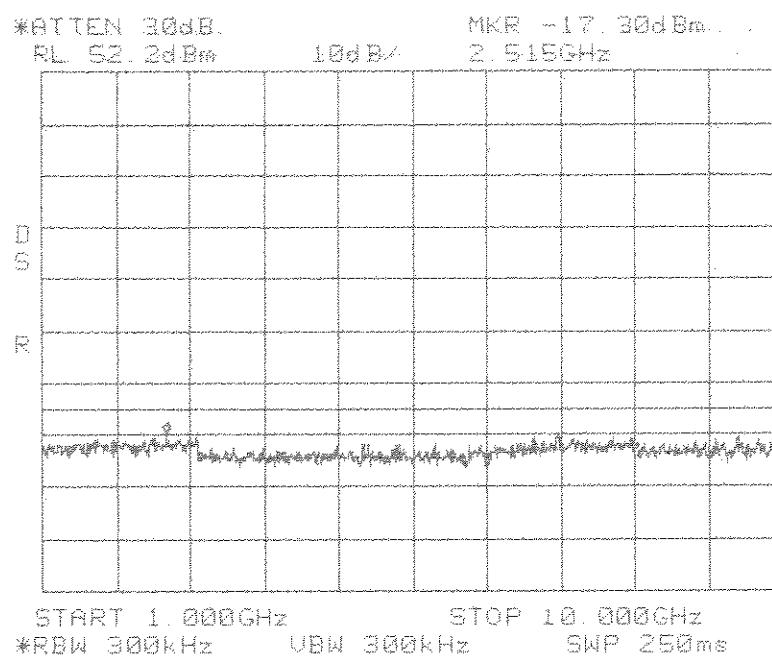
Conducted Emissions
FM
Cellular 800 MHz
B Band



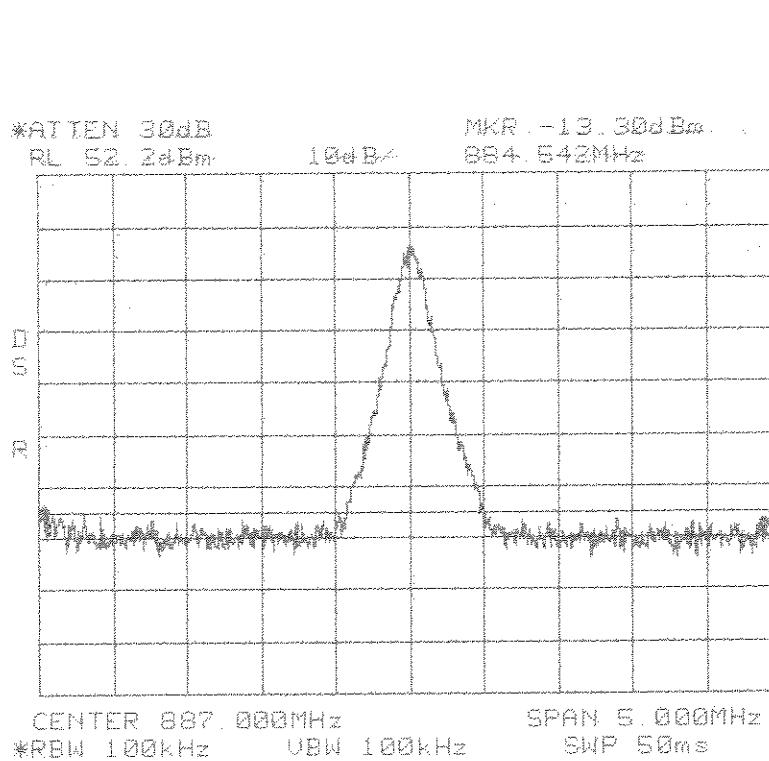
Conducted Emissions
FM
Cellular 800 MHz
B Band

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

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

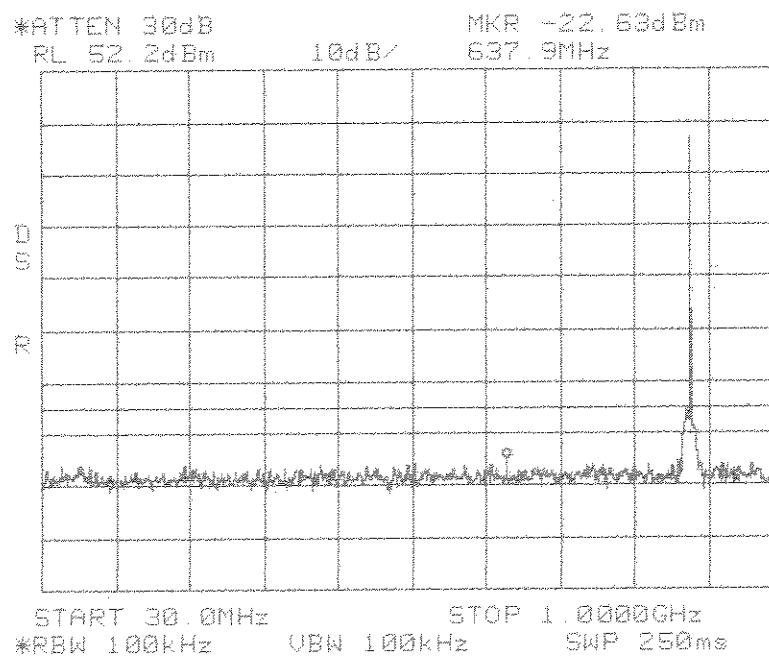


Conducted Emissions
FM
Cellular 800 MHz
B Band



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

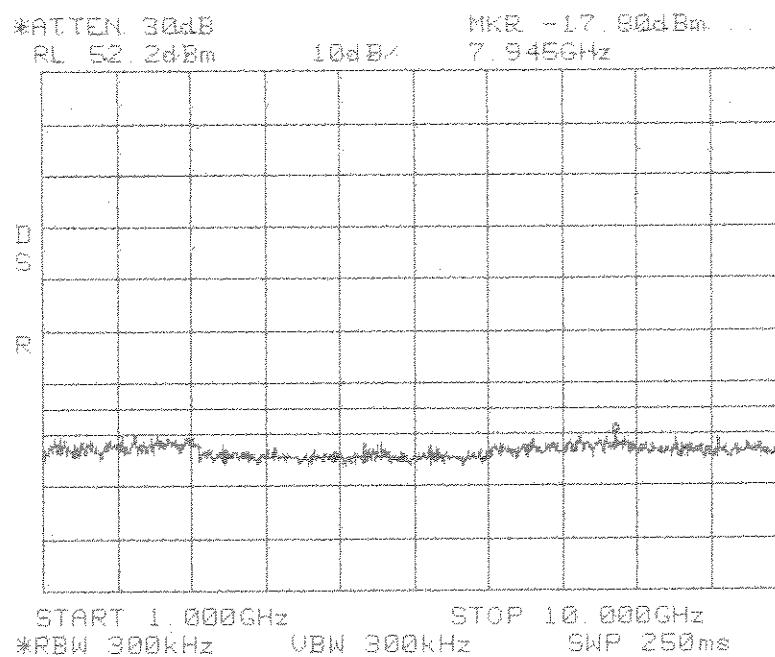
Conducted Emissions
16QAM
Cellular 800 MHz
B Band



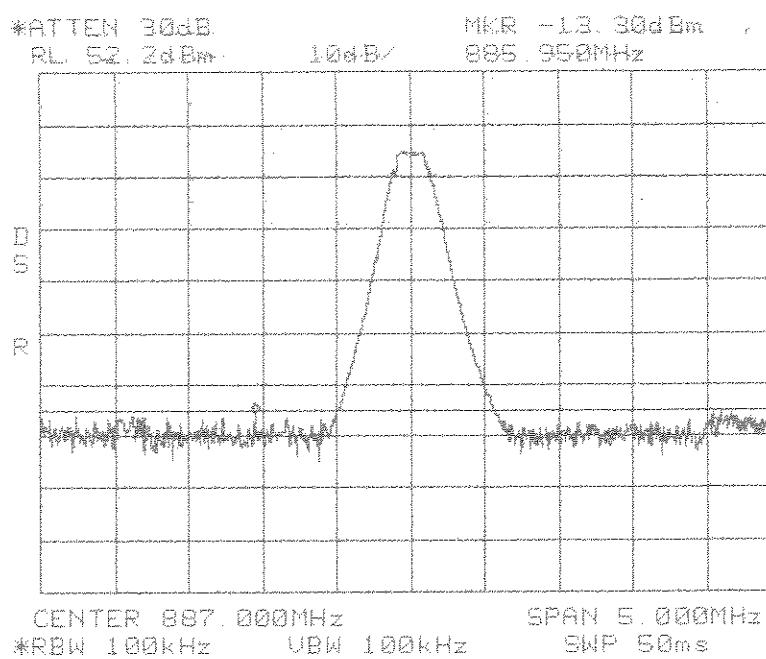
Conducted Emissions
16QAM
Cellular 800 MHz
B Band

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

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

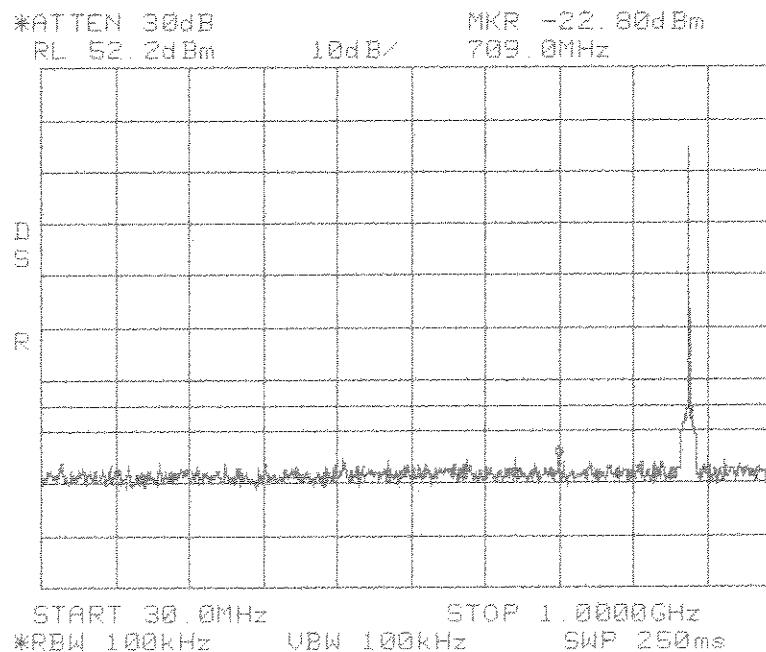


**Conducted Emissions
16QAM
Cellular 800 MHz
B Band**



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

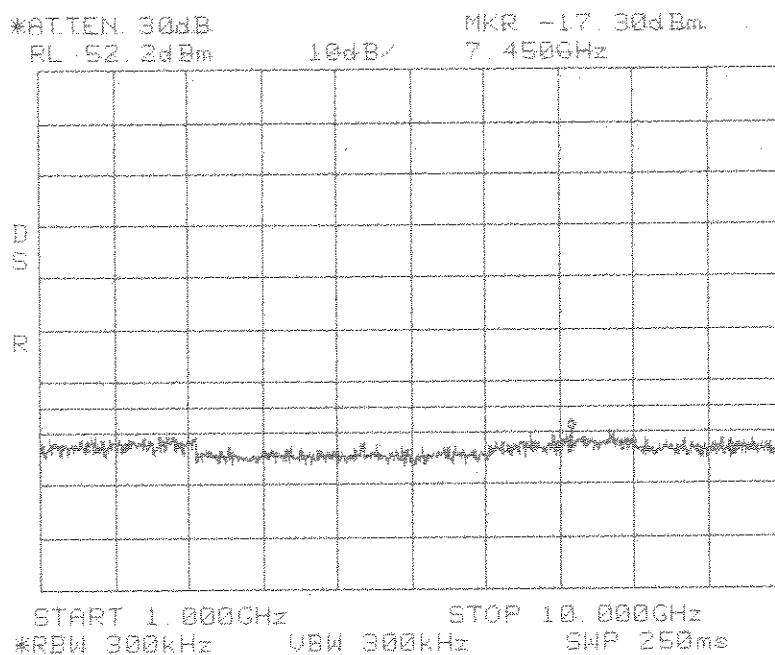
Conducted Emissions
GSM
Cellular 800 MHz
B Band



Conducted Emissions
GSM
Cellular 800 MHz
B Band

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

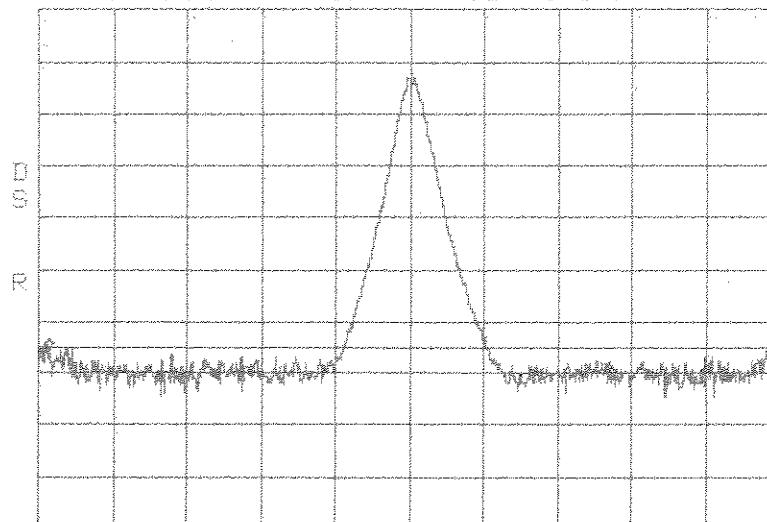
Span: 1 GHz to 10 GHz
RBW/VBW: 300 kHz



*ATTEN 30dB
RL 52.2dBm.

10dB/
V

MKR -13.13dBm.
884.575MHz.



CENTER 887.000MHz
*RBW 100kHz VBW 100kHz

SPAN 5.000MHz
SWP 50ms

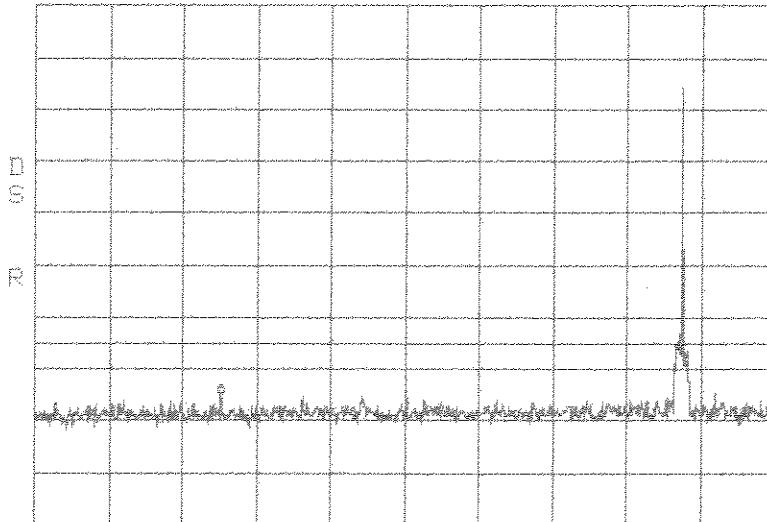
Center: 887.0 MHz
Span: 5 MHz
RBW/VBW: 100 kHz

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

*ATTEN 30dB
RL 52.2dBm

10dB/
V

MKR -22.80dBm
274.1MHz



START 30.0MHz
*RBW 100kHz

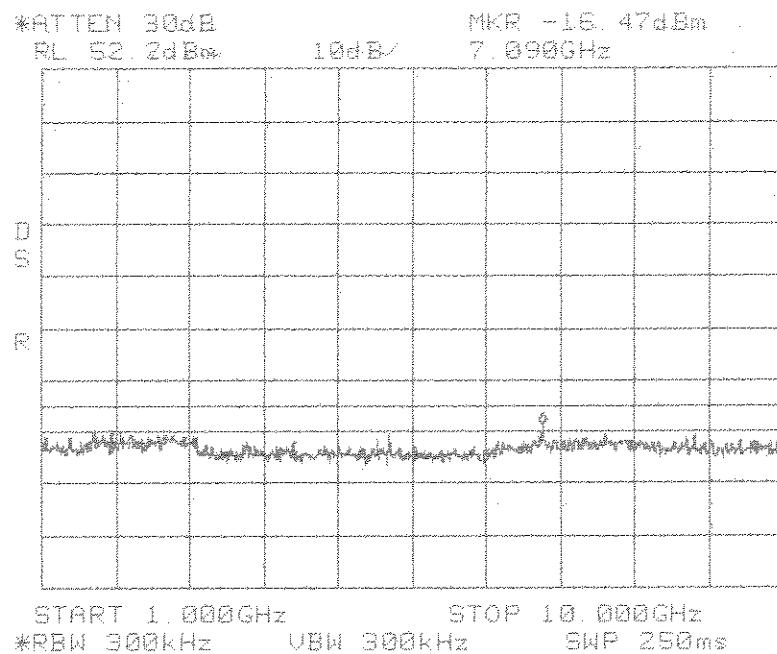
VBW 100kHz

STOP 1.0000GHz
SWP 250ms

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

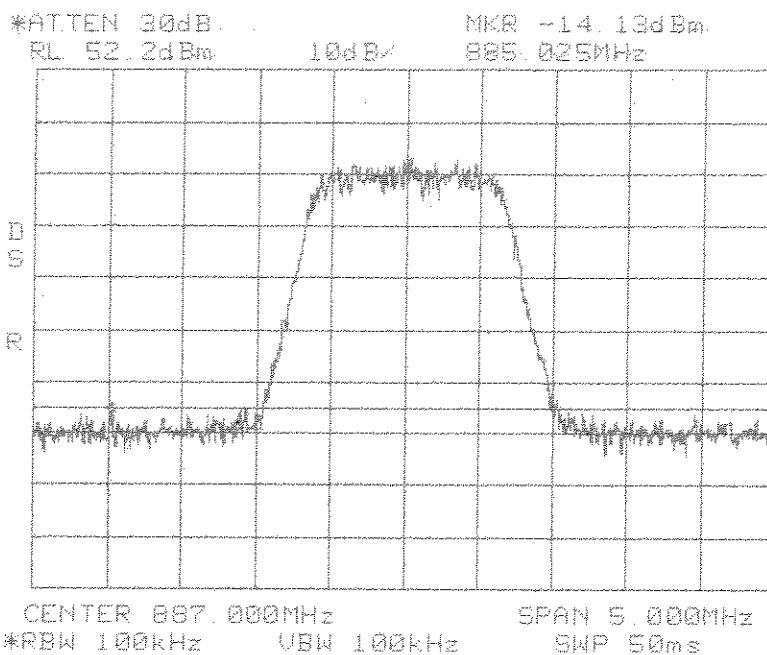
Span: 30 MHz to 1 GHz
RBW/VBW: 100 kHz

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

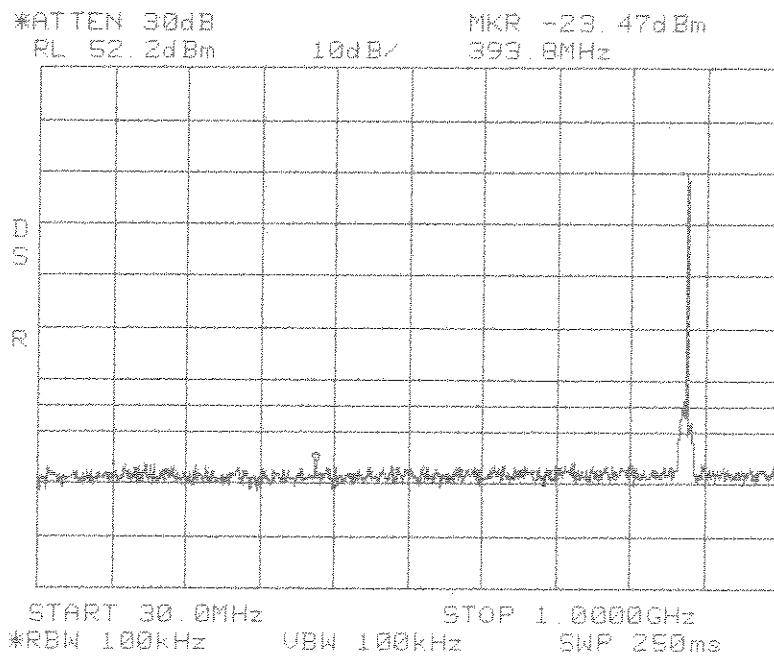


**Conducted Emissions
TDMA
Cellular 800 MHz
B Band**

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



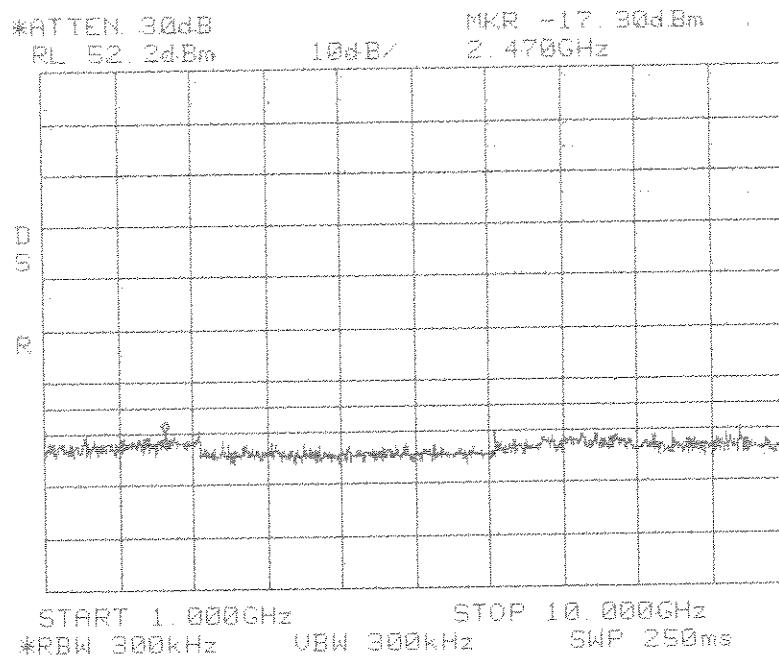
**Conducted Emissions
CDMA
Cellular 800 MHz
B Band**



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

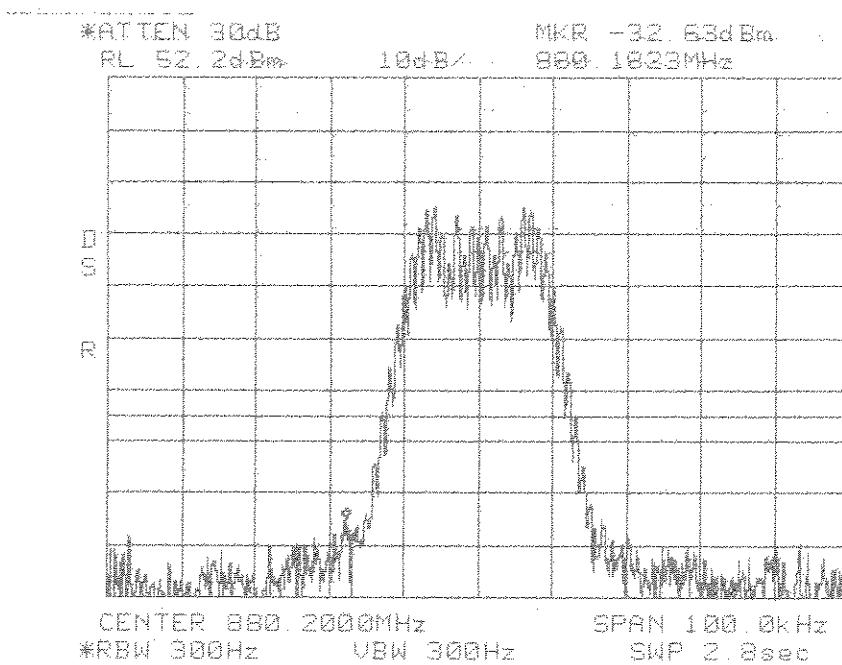
Span: 30 MHz to 1 GHz
RBW/VBW: 100 kHz

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

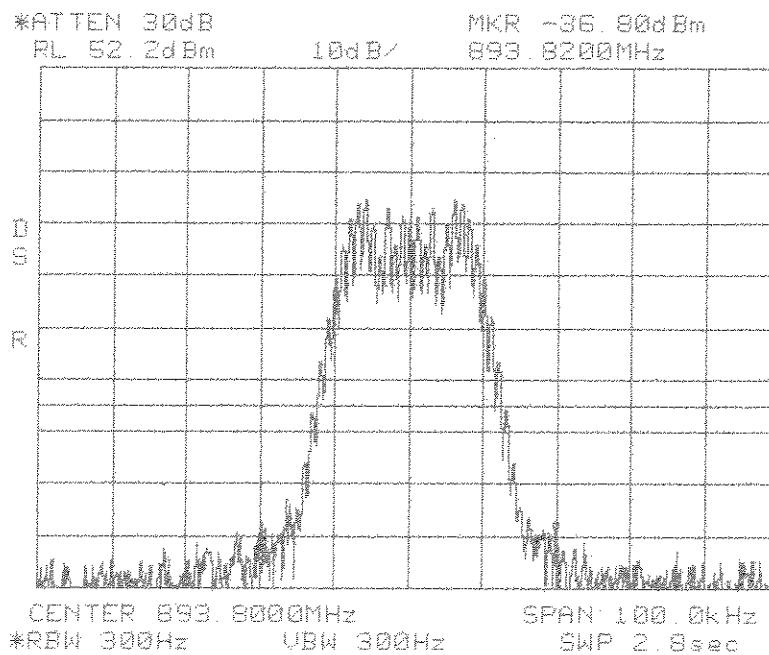


**Conducted Emissions
CDMA
Cellular 800 MHz
B Band**

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

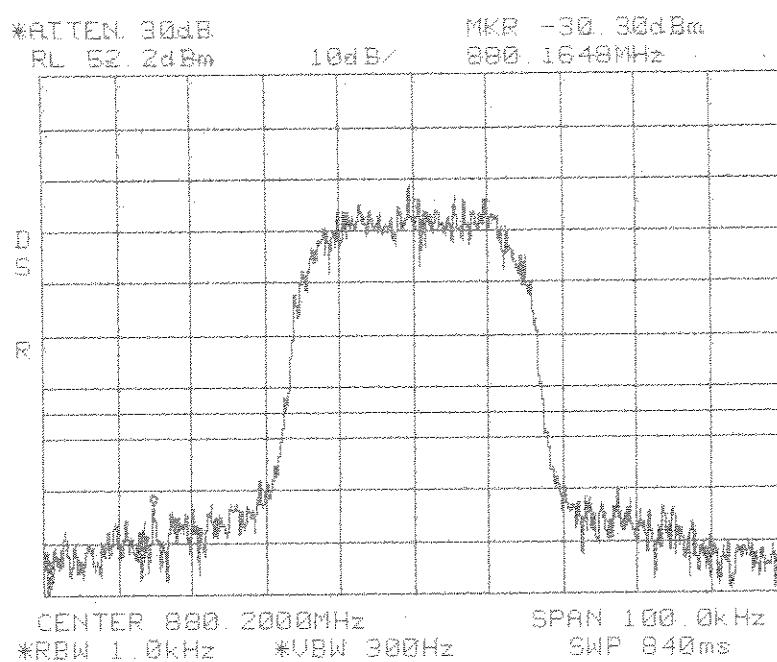


**Conducted Emissions
Band Edge
FM
Cellular 800 MHz
B Band**



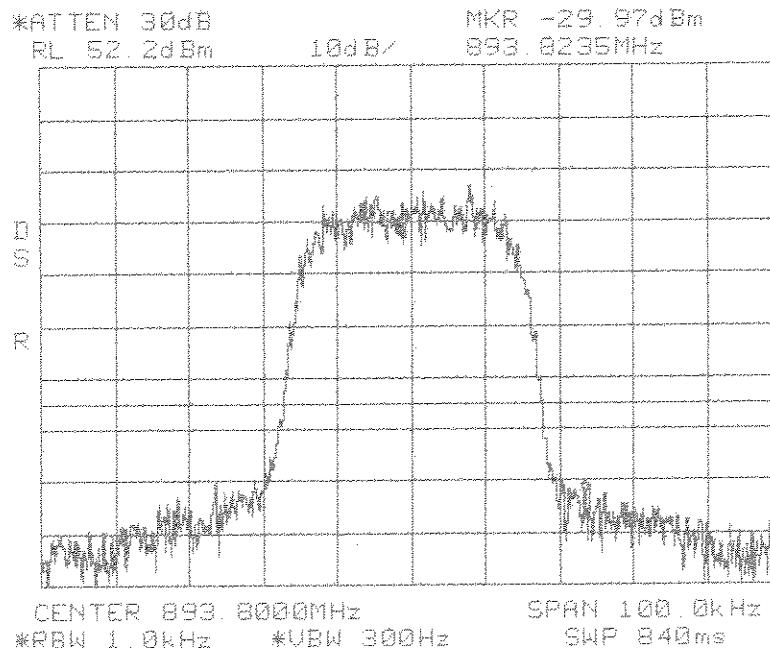
**Conducted Emissions
Band Edge
FM
Cellular 800 MHz
B Band**

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



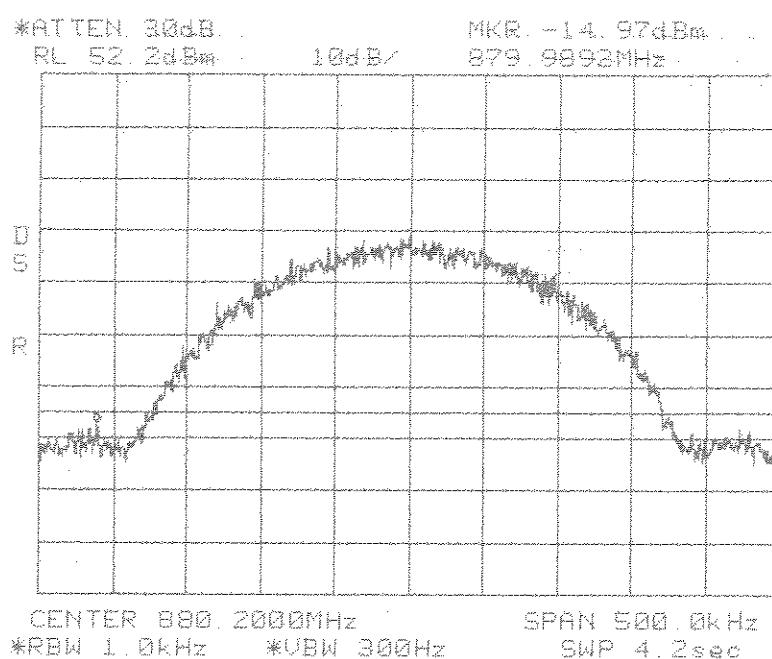
Center: 880.2 MHz
 Span: 100 kHz
 RBW/VBW: 1 kHz / 300 Hz

Conducted Emissions
Band Edge
16QAM
Cellular 800 MHz
B Band



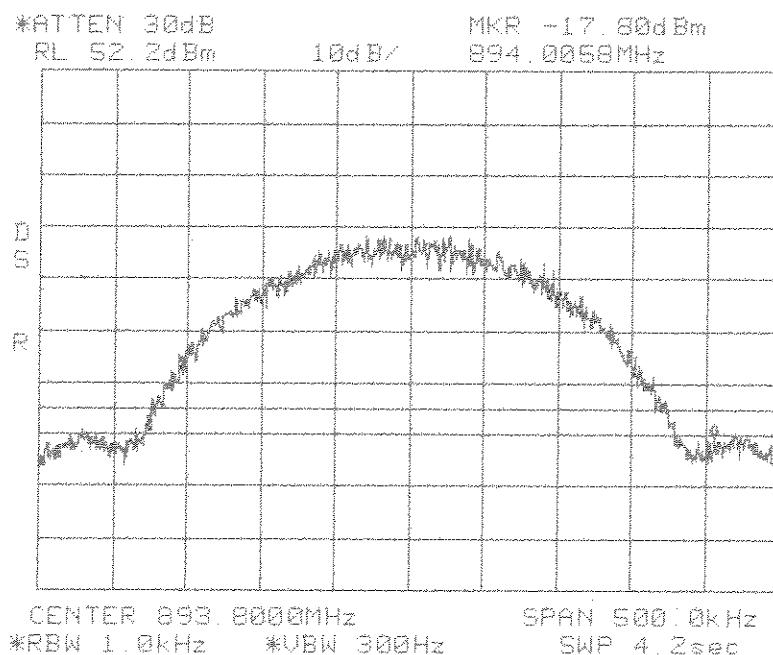
Conducted Emissions
Band Edge
16QAM
Cellular 800 MHz
B Band

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

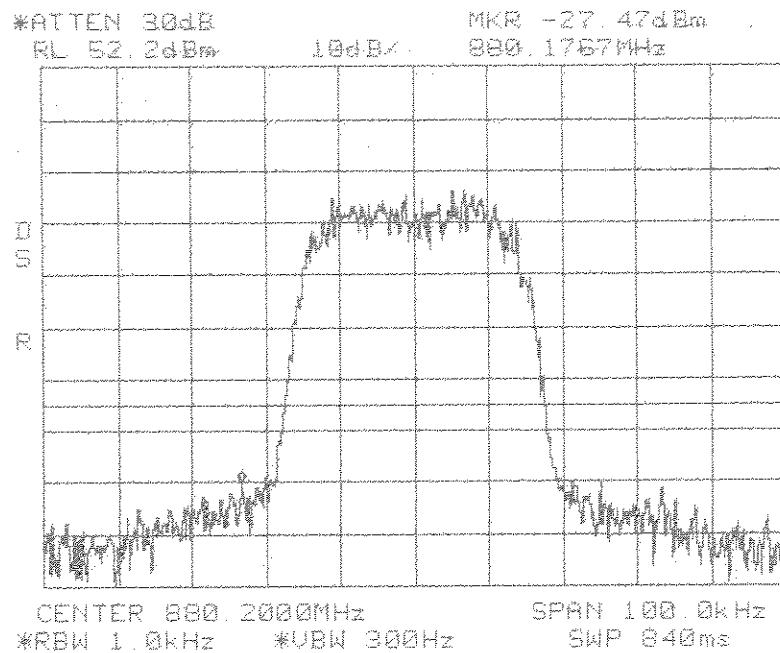
**Conducted Emissions
 Band Edge
 GSM
 Cellular 800 MHz
 B Band**



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

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

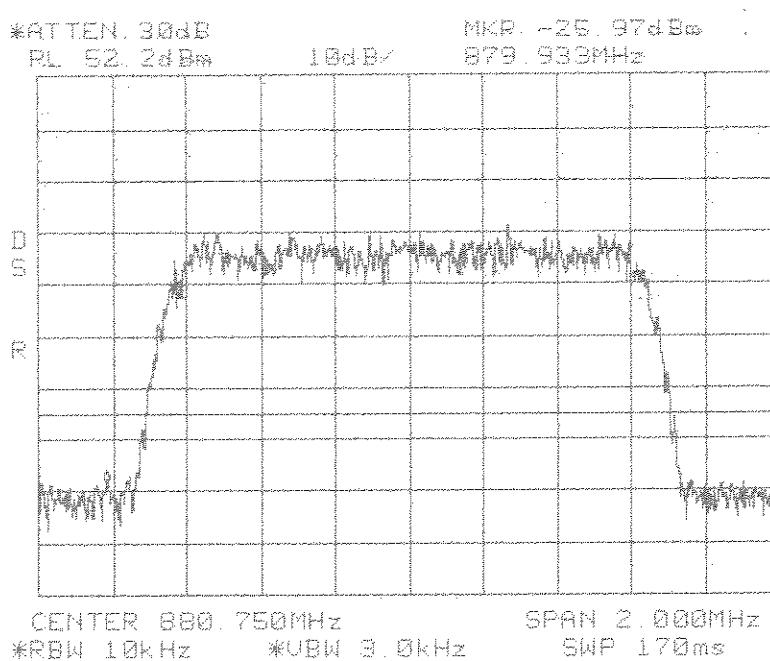
Center: 880.2 MHz
Span: 100 kHz
RBW/VBW: 1 kHz / 300 Hz



Conducted Emissions Band Edge TDMA Cellular 800 MHz B Band

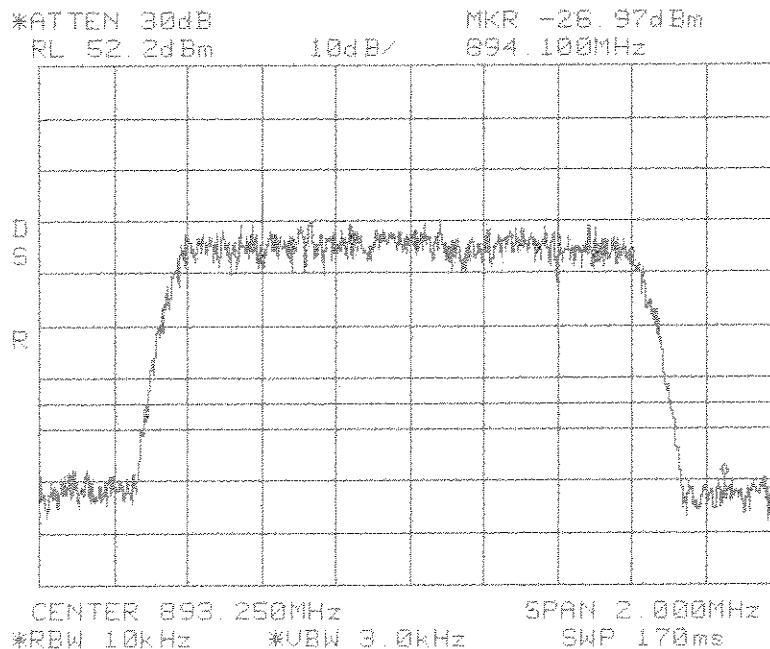
Conducted Emissions Band Edge TDMA Cellular 800 MHz B Band

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

Freq. (MHz)	Matches			Dipole Ant. Gain (dB)	Matches Final (dBm)
	Final (dBuV/m)	Sig Gen Level (dBm)	Cable Loss (dB)		
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