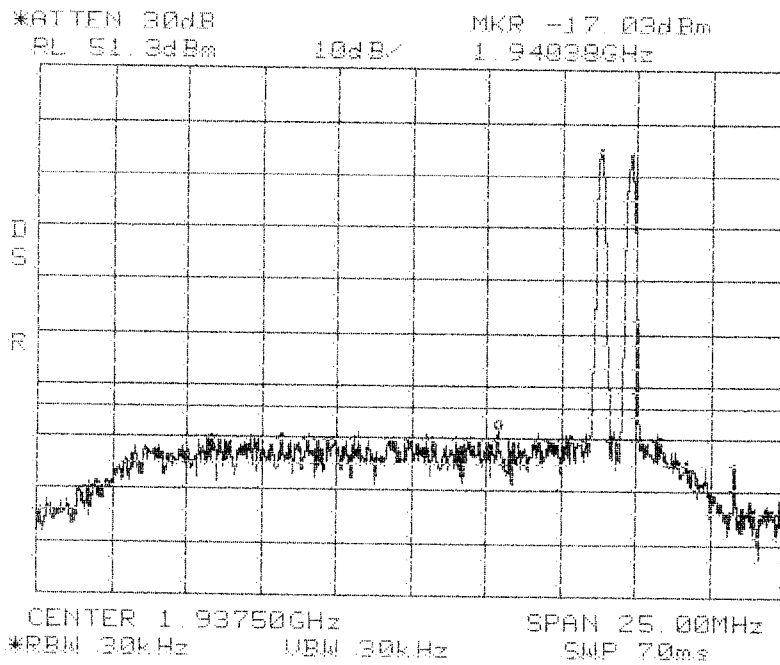
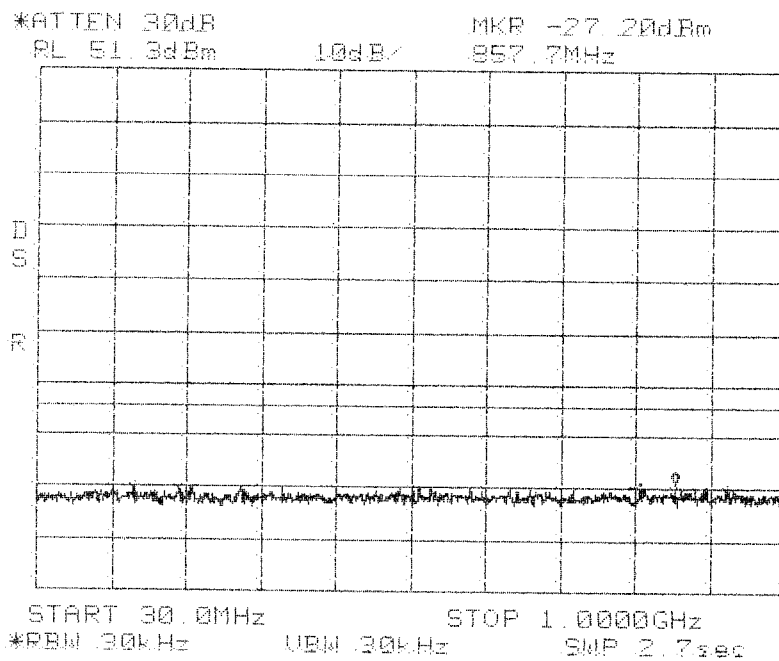


Center: 1937.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



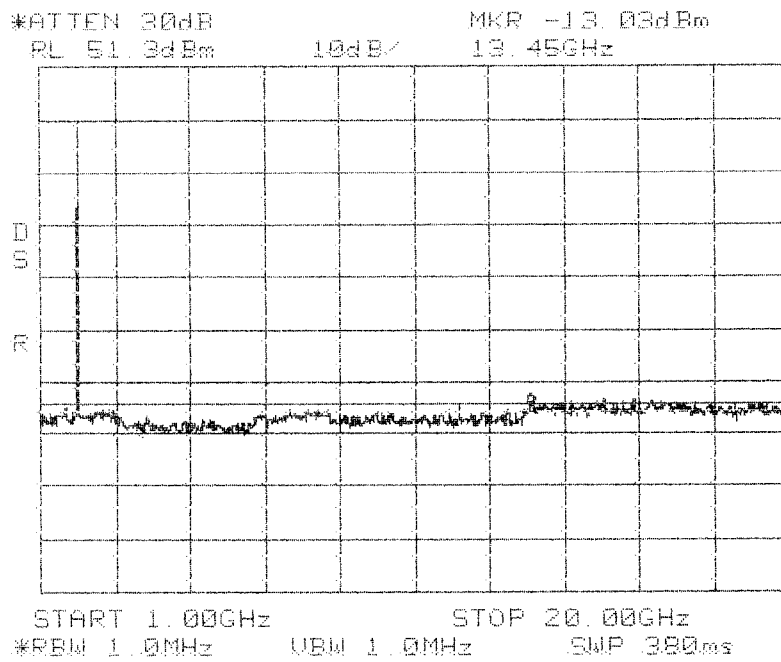
**Intermodulation
Close
Upper
GSM
PCS 1900 MHz
A Band**



**Intermodulation
Close
Upper
GSM
PCS 1900 MHz
A Band**

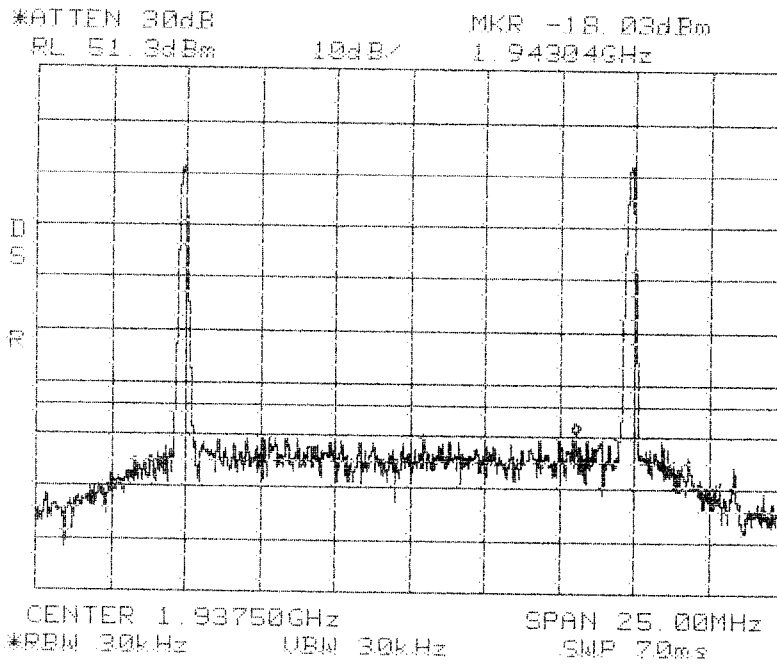
Span: 30 MHz to 1 GHz
RBW/VBW: 30 kHz

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

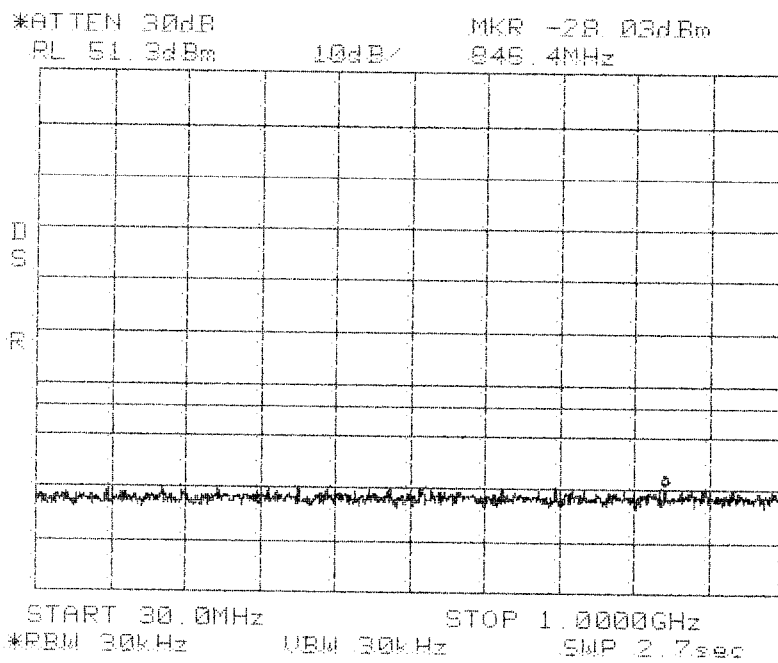


**Intermodulation
Close
Upper
GSM
PCS 1900 MHz
A Band**

Center: 1937.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



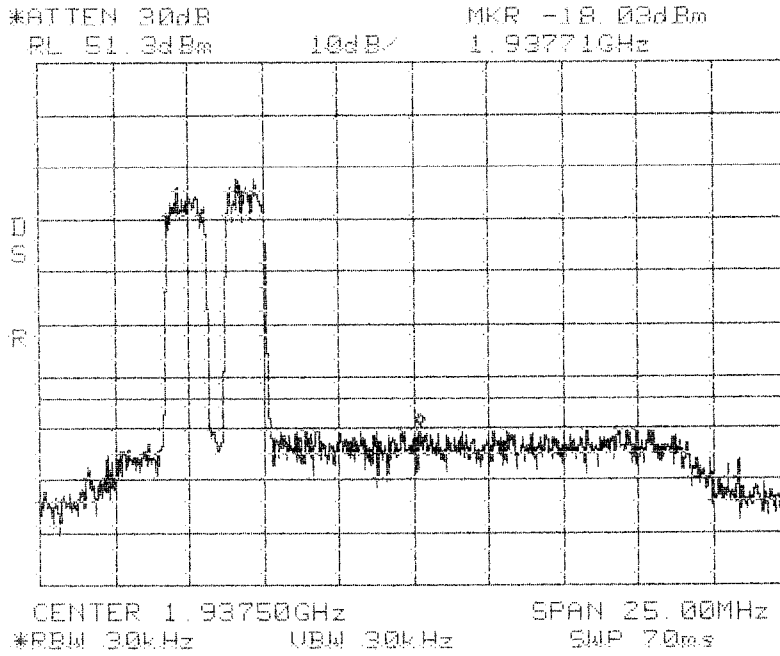
**Intermodulation
Apart
GSM
PCS 1900 MHz
A Band**



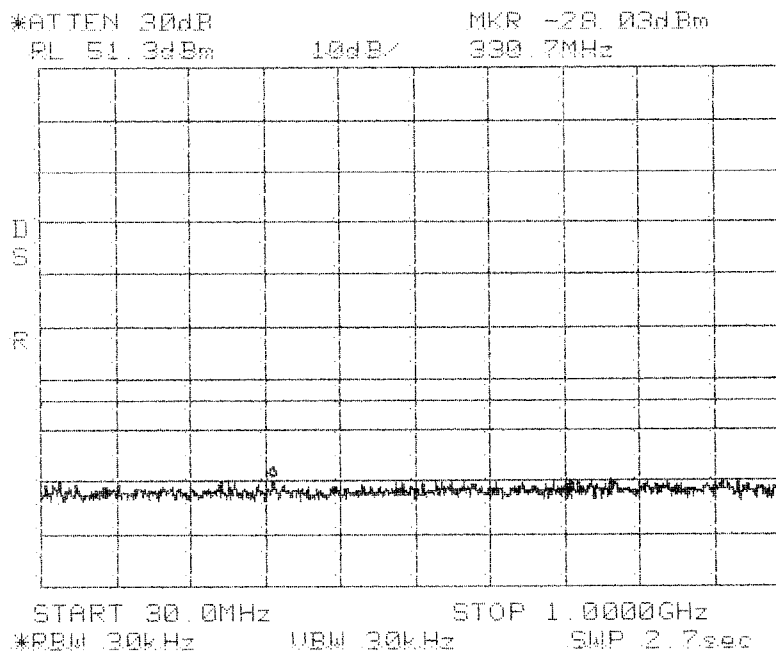
**Intermodulation
Apart
GSM
PCS 1900 MHz
A Band**

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

Center: 1937.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



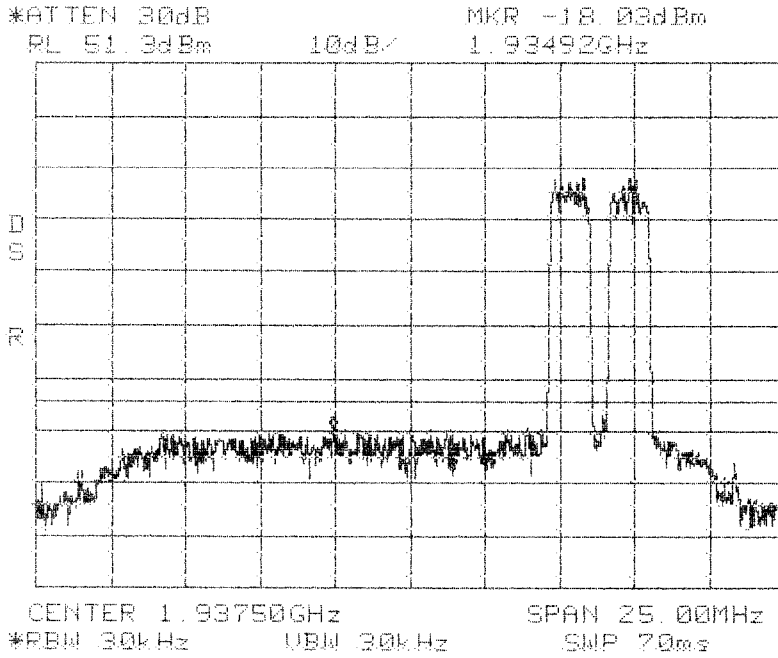
**Intermodulation
Close
Lower
CDMA
PCS 1900 MHz
A Band**



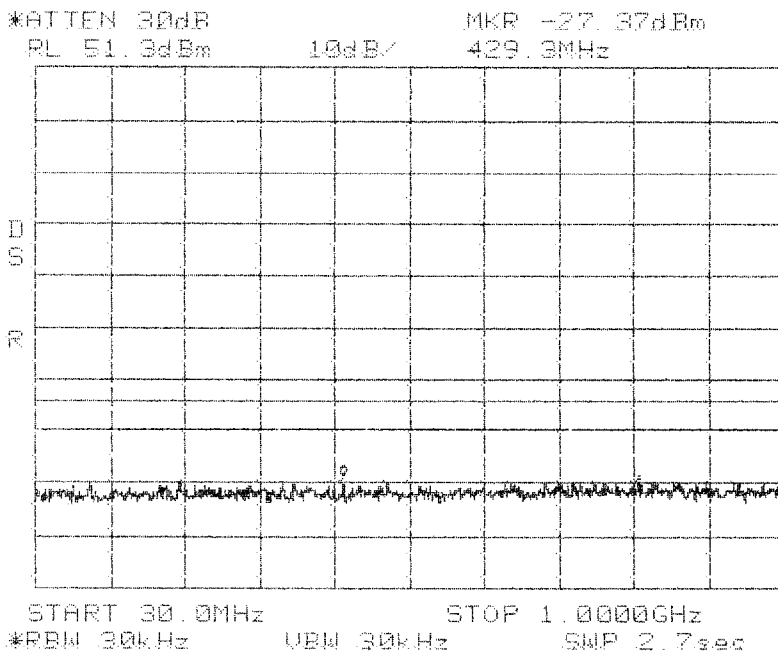
**Intermodulation
Close
Lower
CDMA
PCS 1900 MHz
A Band**

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

Center: 1937.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



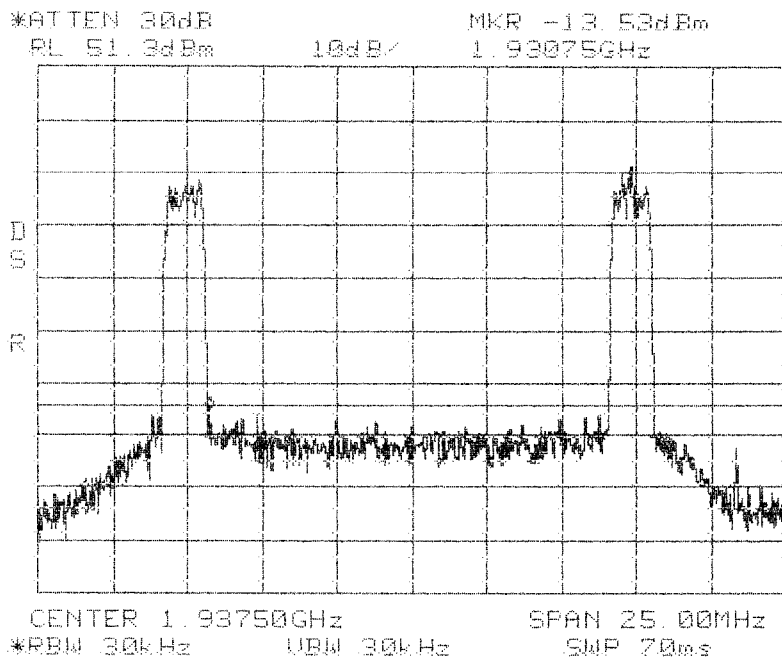
**Intermodulation
Close
Upper
CDMA
PCS 1900 MHz
A Band**



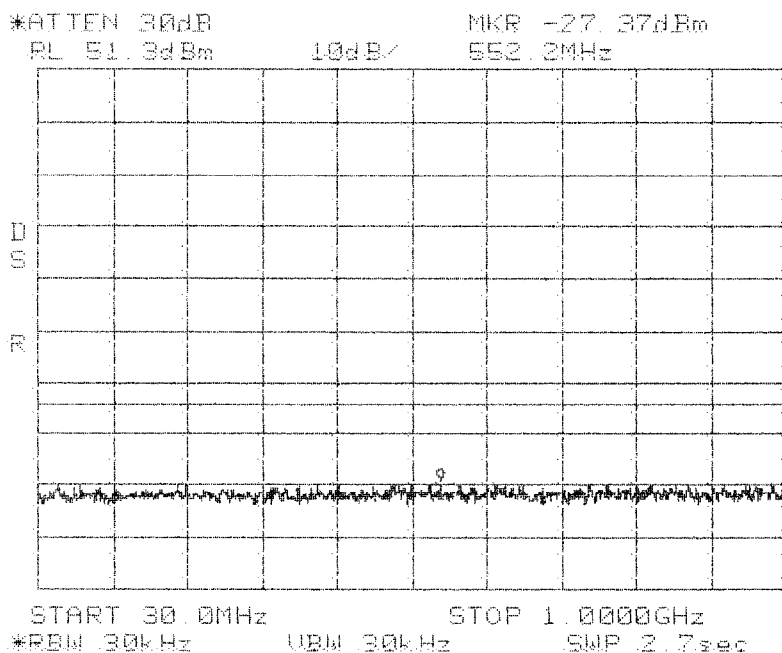
**Intermodulation
Close
Upper
CDMA
PCS 1900 MHz
A Band**

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

Center: 1937.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



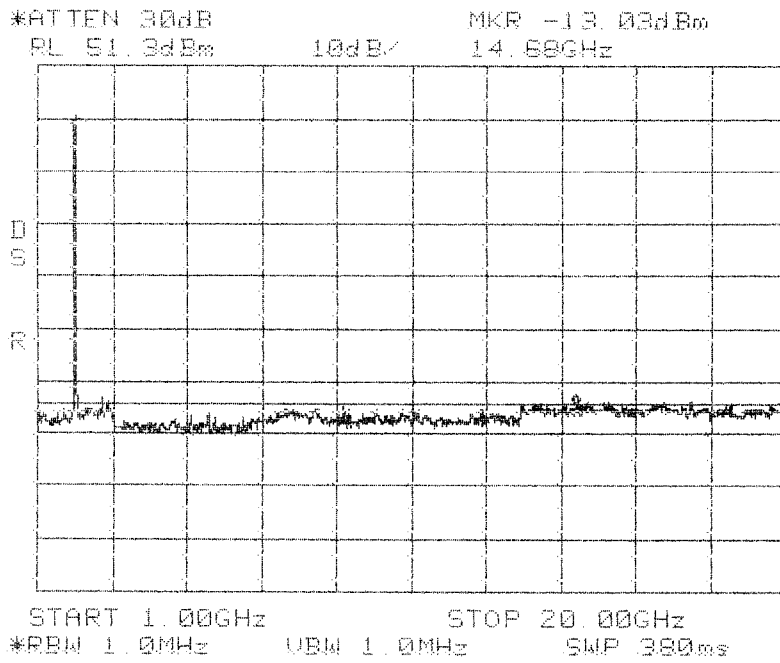
**Intermodulation
Apart
CDMA
PCS 1900 MHz
A Band**



**Intermodulation
Apart
CDMA
PCS 1900 MHz
A Band**

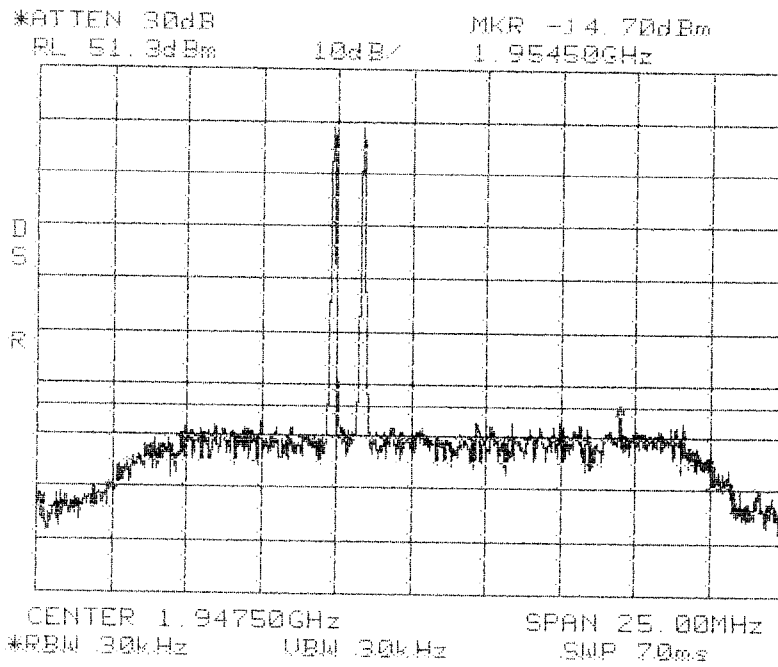
Span: 30 MHz to 1 GHz
RBW/VBW: 30 kHz

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

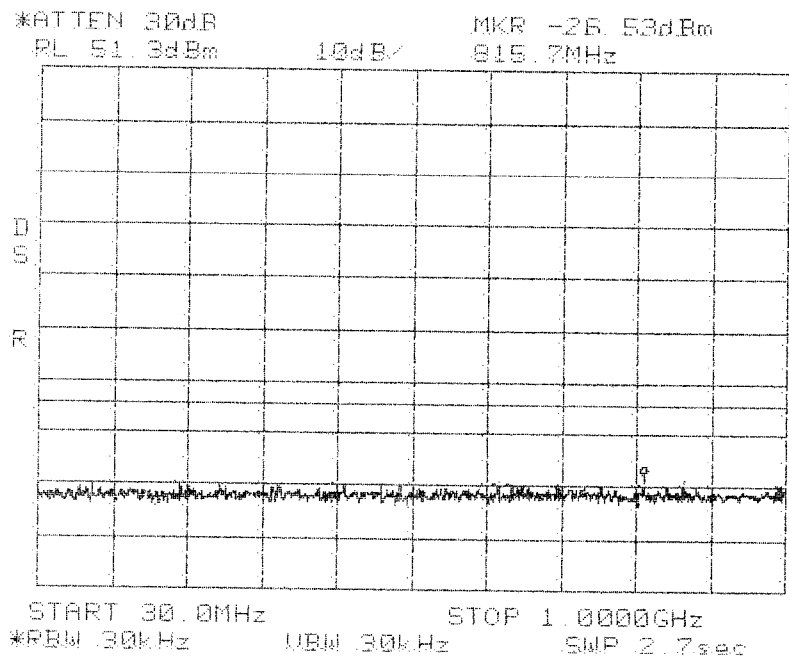


**Intermodulation
Apart
CDMA
PCS 1900 MHz
A Band**

Center: 1947.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



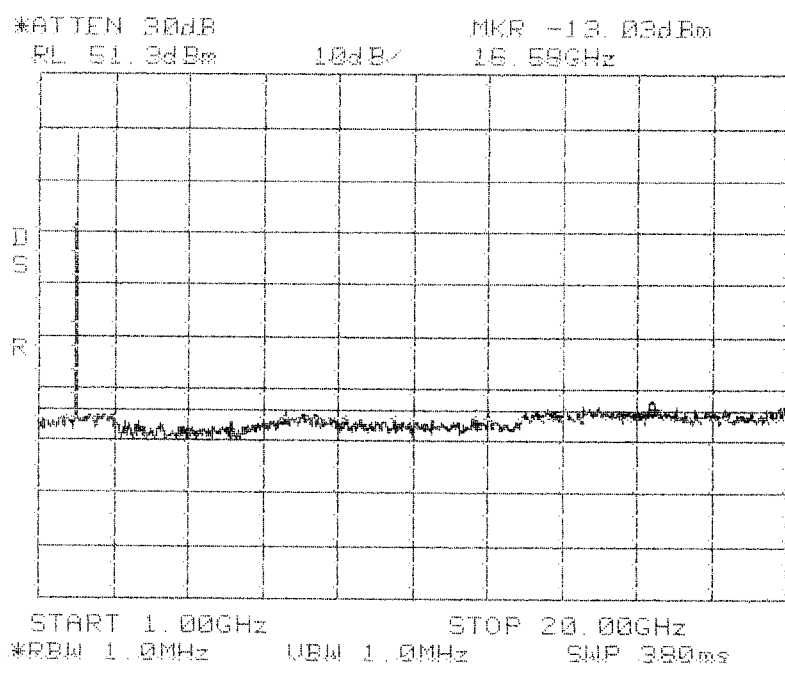
**Intermodulation
Close
Lower
FM
PCS 1900 MHz
D Band**



**Intermodulation
Close
Lower
FM
PCS 1900 MHz
D Band**

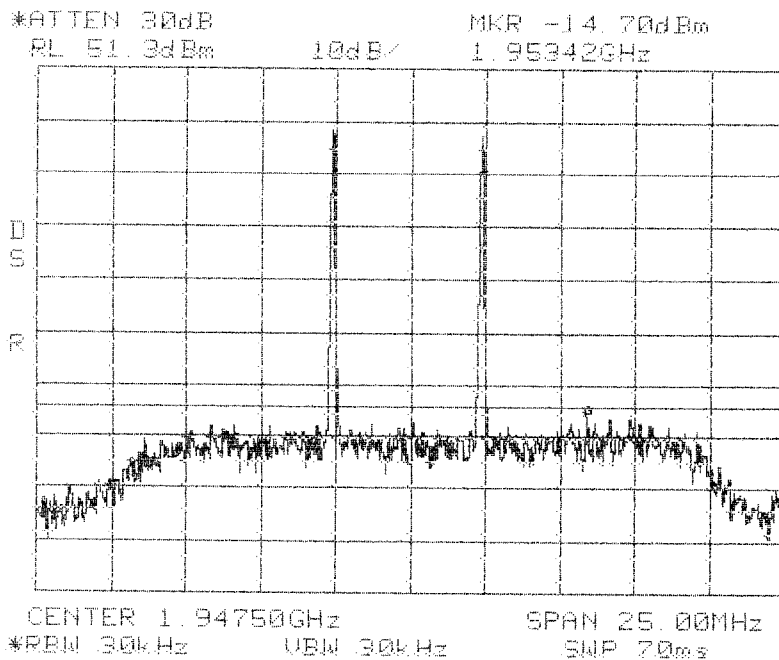
Span: 30 MHz to 1 GHz
RBW/VBW: 30 kHz

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

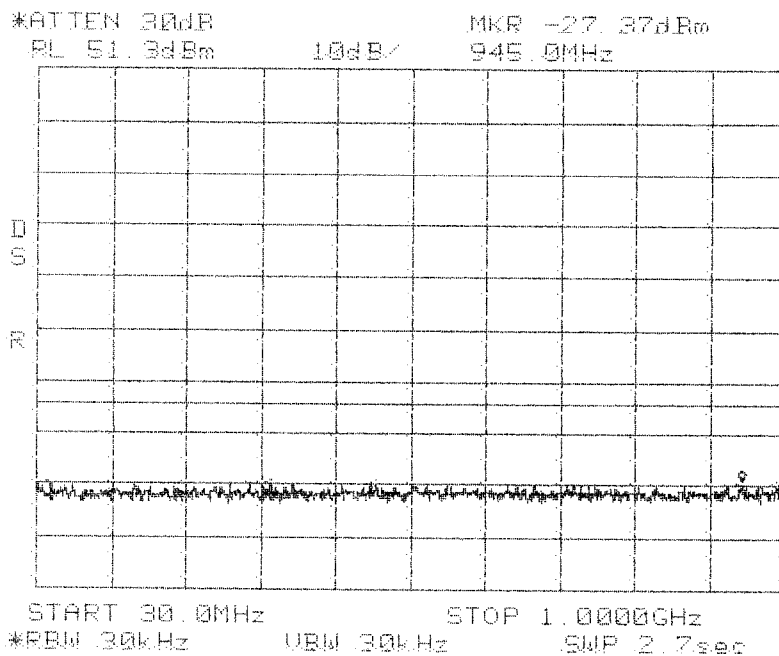


**Intermodulation
Close
Upper
FM
PCS 1900 MHz
D Band**

Center: 1947.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



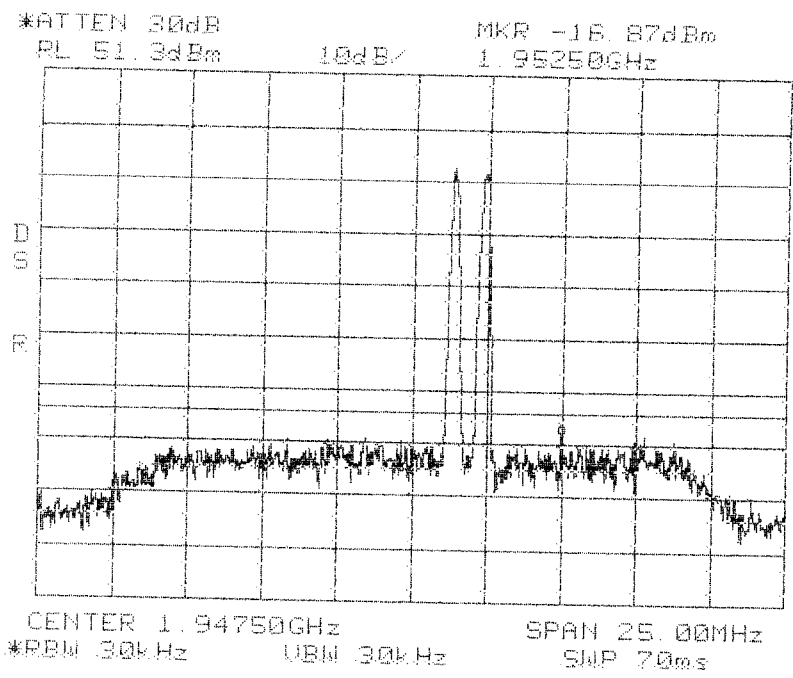
**Intermodulation
Apart
FM
PCS 1900 MHz
D Band**



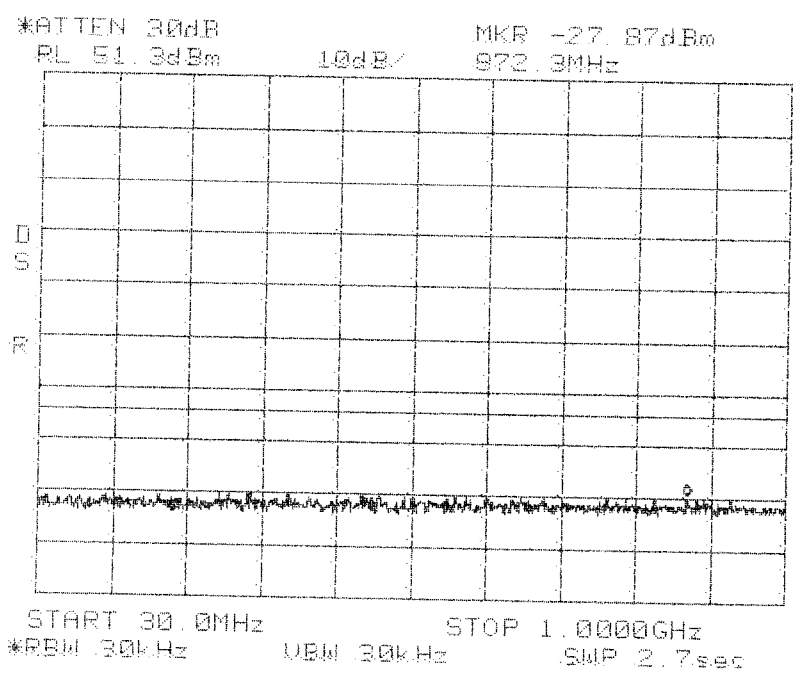
**Intermodulation
Apart
FM
PCS 1900 MHz
D Band**

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

Center: 1947.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



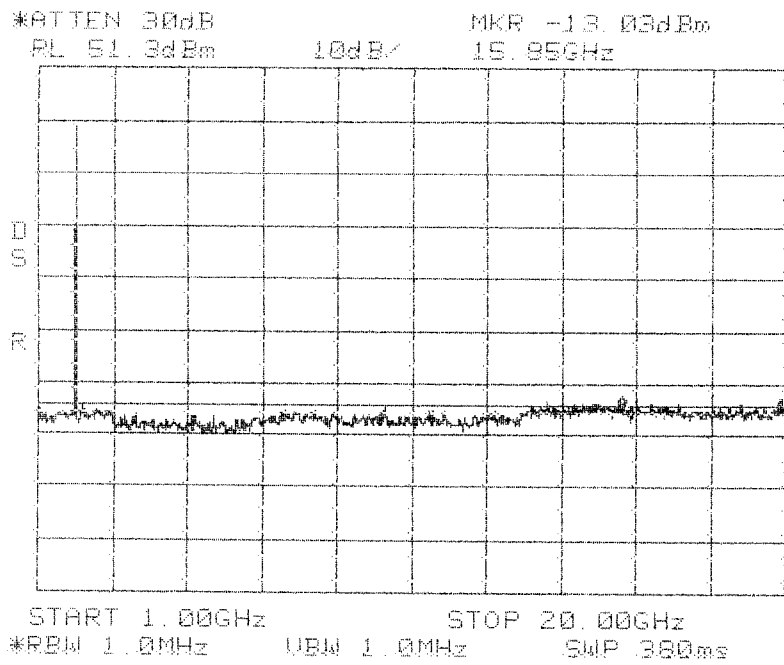
**Intermodulation
Close
Upper
GSM
PCS 1900 MHz
D Band**



**Intermodulation
Close
Upper
GSM
PCS 1900 MHz
D Band**

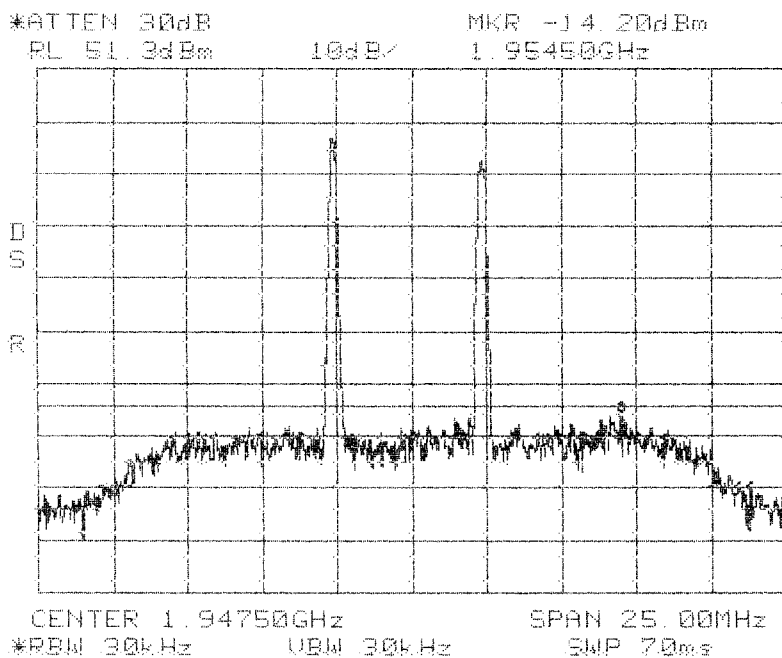
Span: 30 MHz to 1 GHz
RBW/VBW: 30 kHz

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

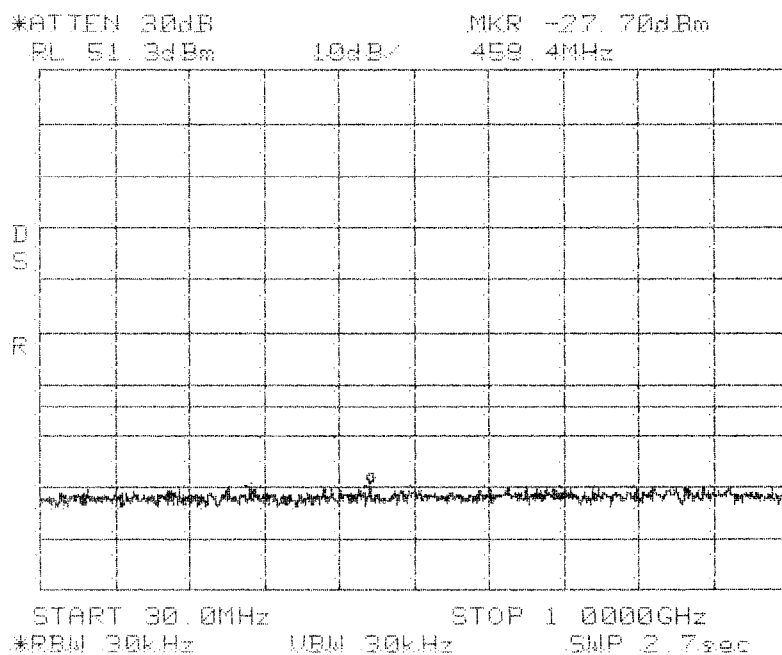


**Intermodulation
Close
Upper
GSM
PCS 1900 MHz
D Band**

Center: 1947.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



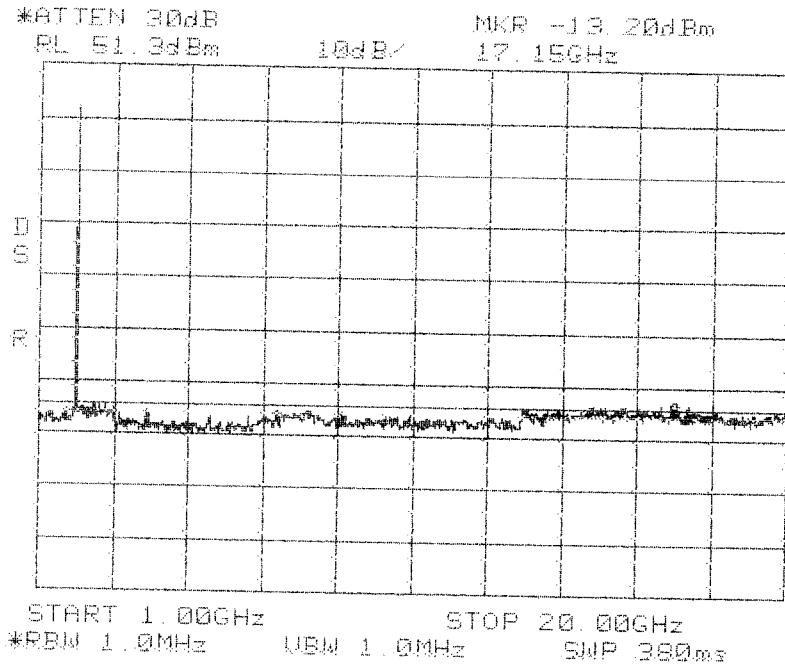
**Intermodulation
Apart
GSM
PCS 1900 MHz
D Band**



**Intermodulation
Apart
GSM
PCS 1900 MHz
D Band**

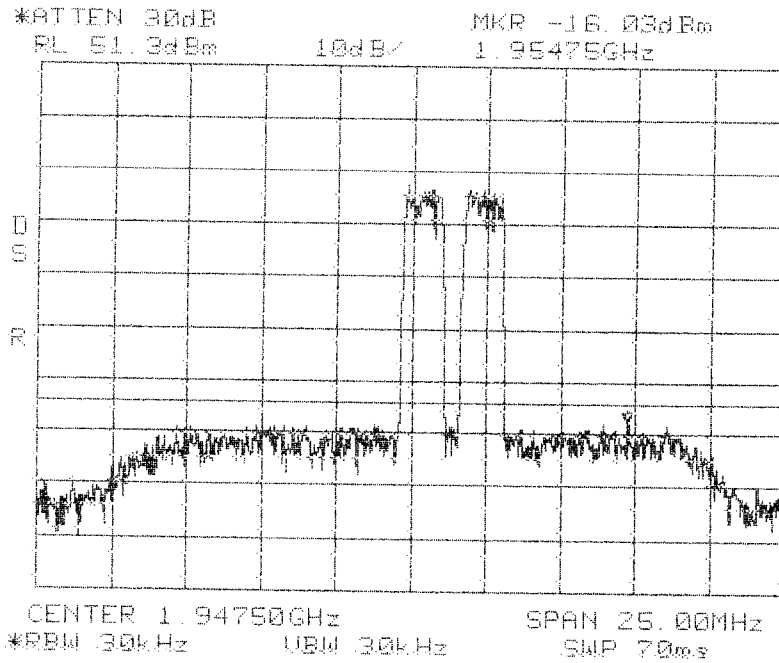
Span: 30 MHz to 1 GHz
RBW/VBW: 30 kHz

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

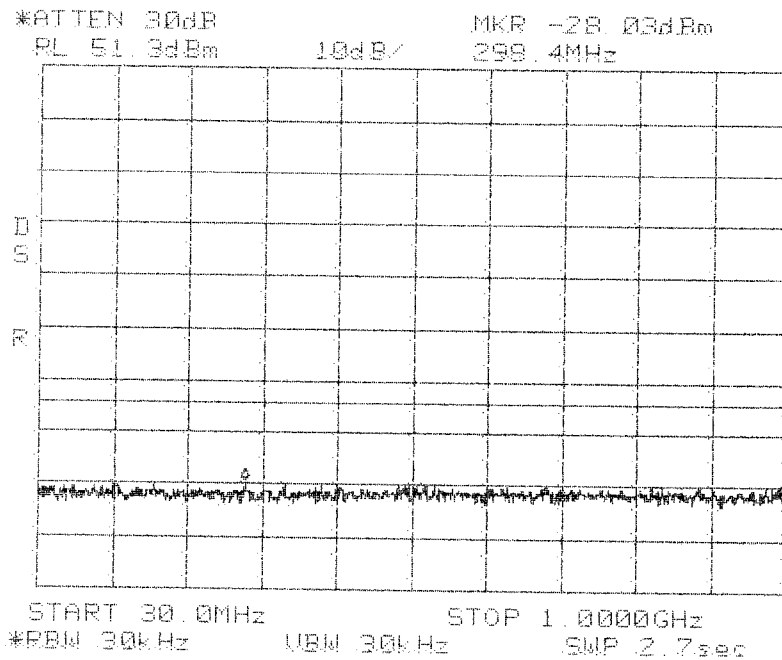


**Intermodulation
Close
Lower
CDMA
PCS 1900 MHz
D Band**

Center: 1947.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



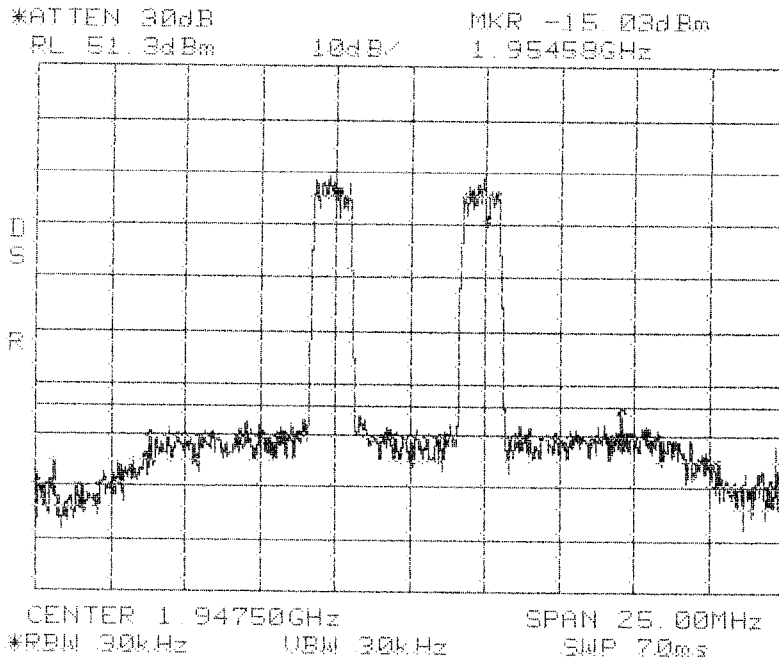
**Intermodulation
Close
Upper
CDMA
PCS 1900 MHz
D Band**



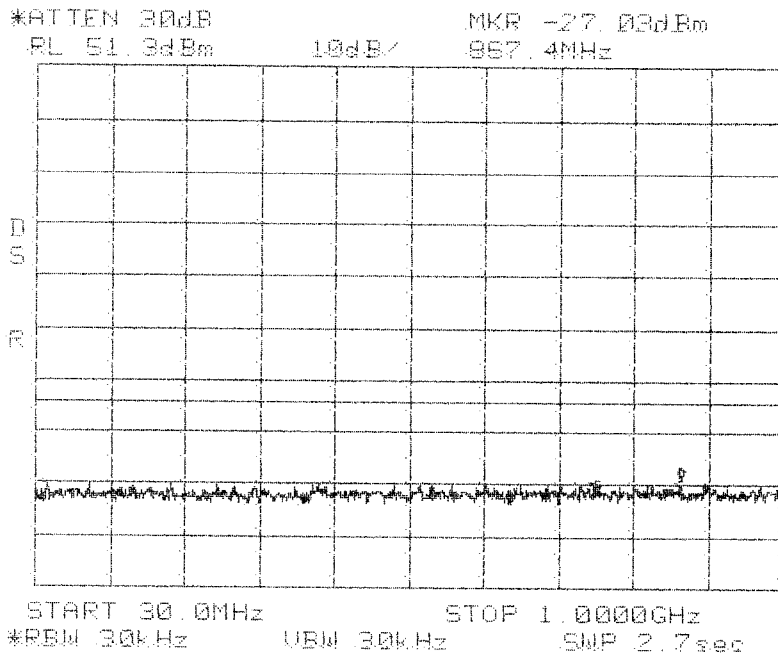
**Intermodulation
Close
Upper
CDMA
PCS 1900 MHz
D Band**

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

Center: 1947.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



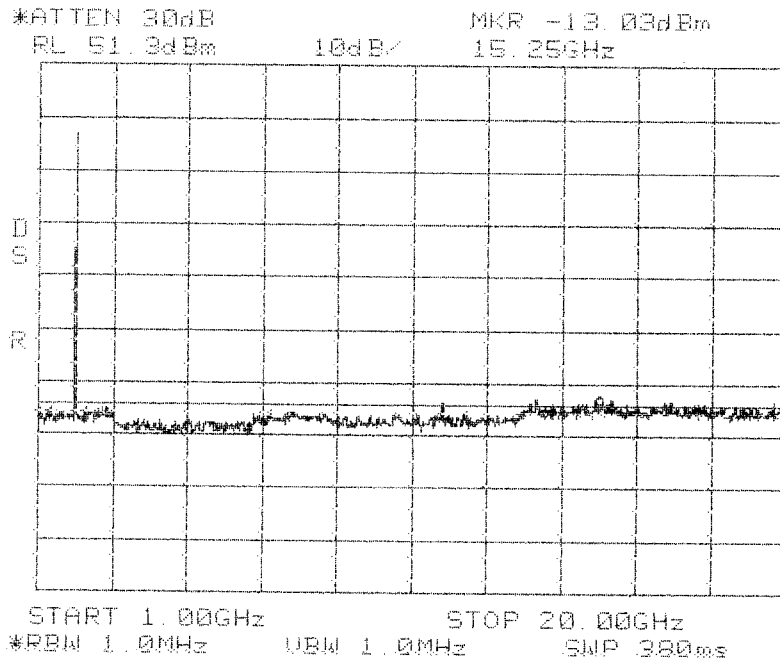
**Intermodulation
Apart
CDMA
PCS 1900 MHz
D Band**



**Intermodulation
Apart
CDMA
PCS 1900 MHz
D Band**

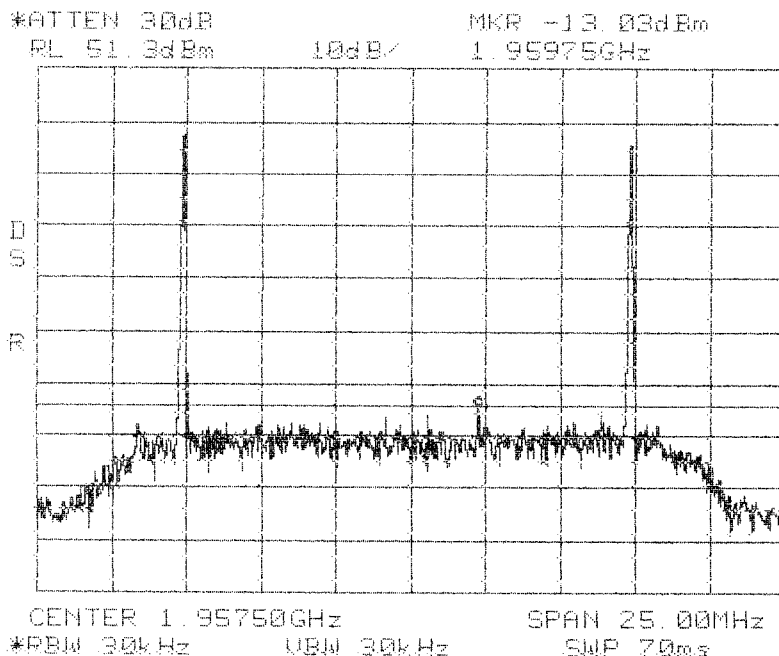
Span: 30 MHz to 1 GHz
RBW/VBW: 30 kHz

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

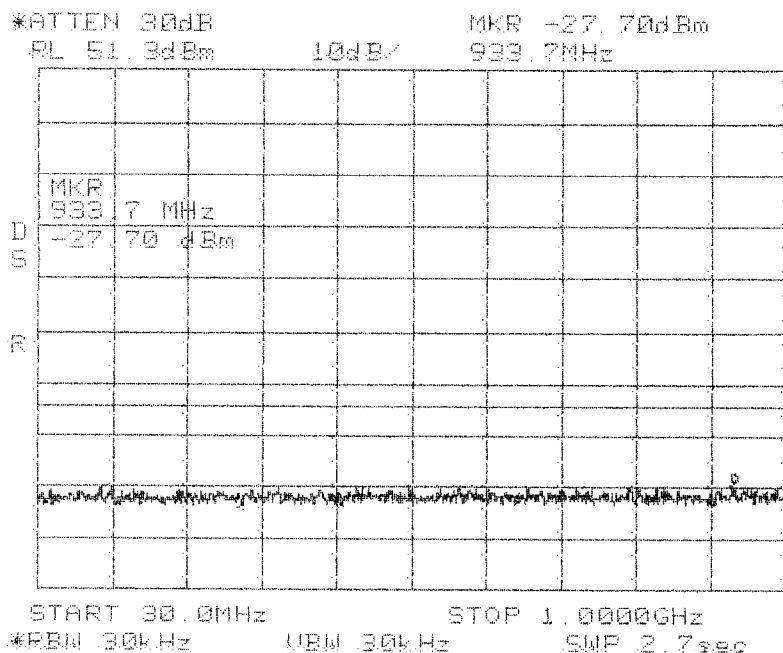


**Intermodulation
Close
Lower
FM
PCS 1900 MHz
B Band**

Center: 1957.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



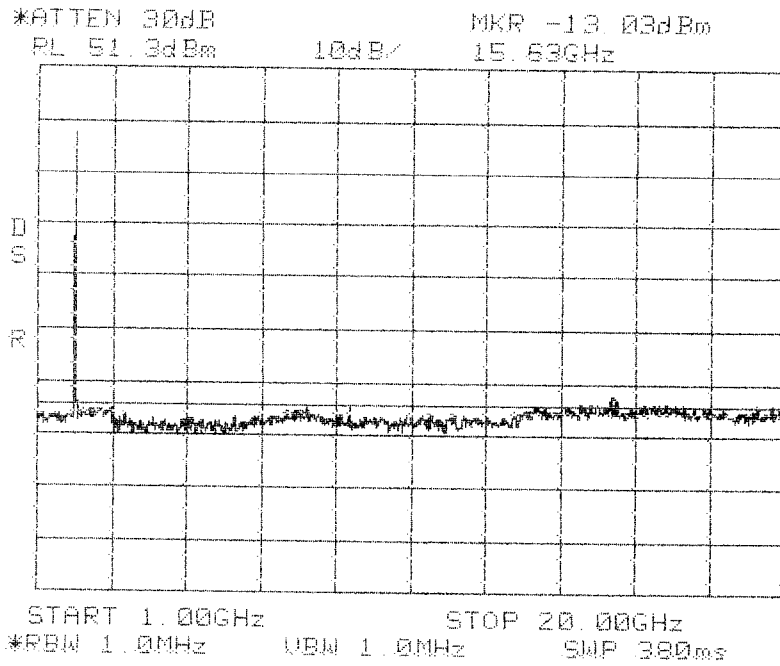
**Intermodulation
Apart
FM
PCS 1900 MHz
B Band**



**Intermodulation
Apart
FM
PCS 1900 MHz
B Band**

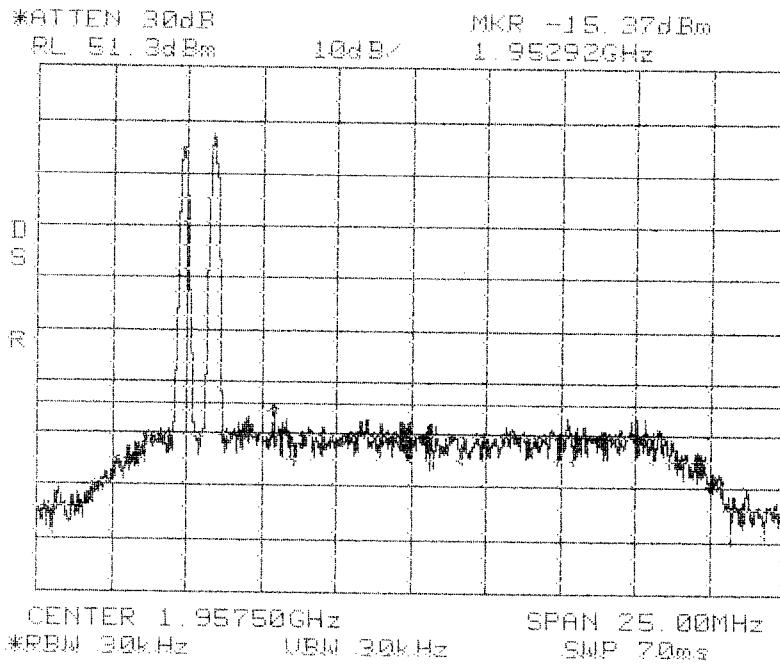
Span: 30 MHz to 1 GHz
RBW/VBW: 30 kHz

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

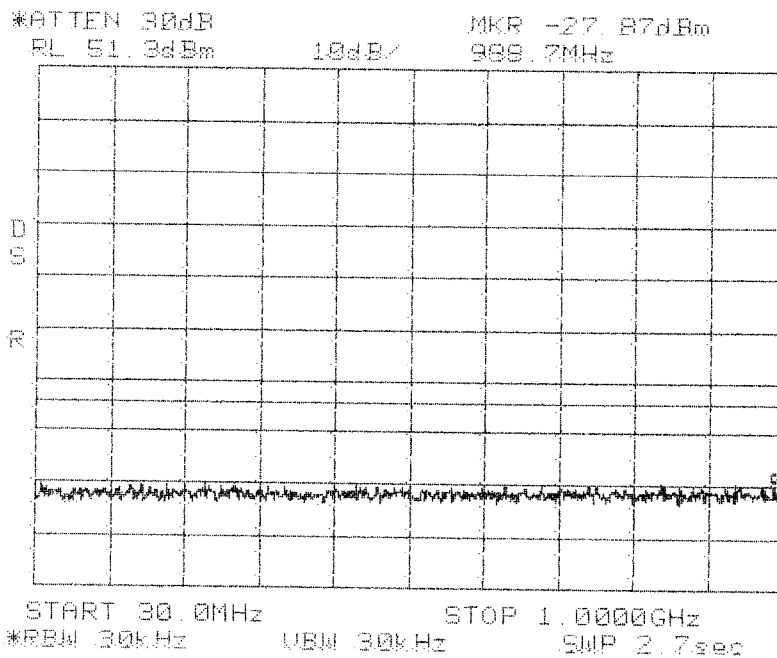


**Intermodulation
Apart
FM
PCS 1900 MHz
B Band**

Center: 1957.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



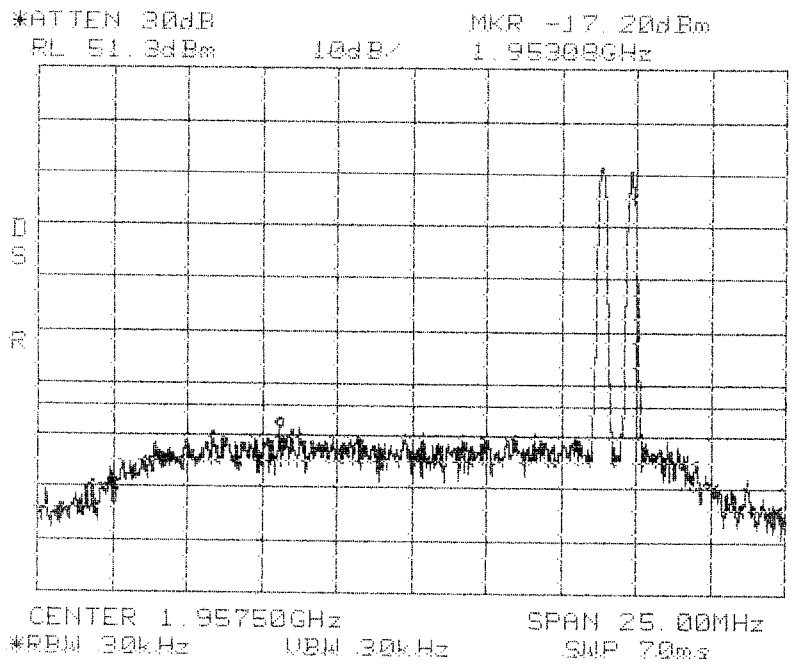
**Intermodulation
Close
Lower
GSM
PCS 1900 MHz
B Band**



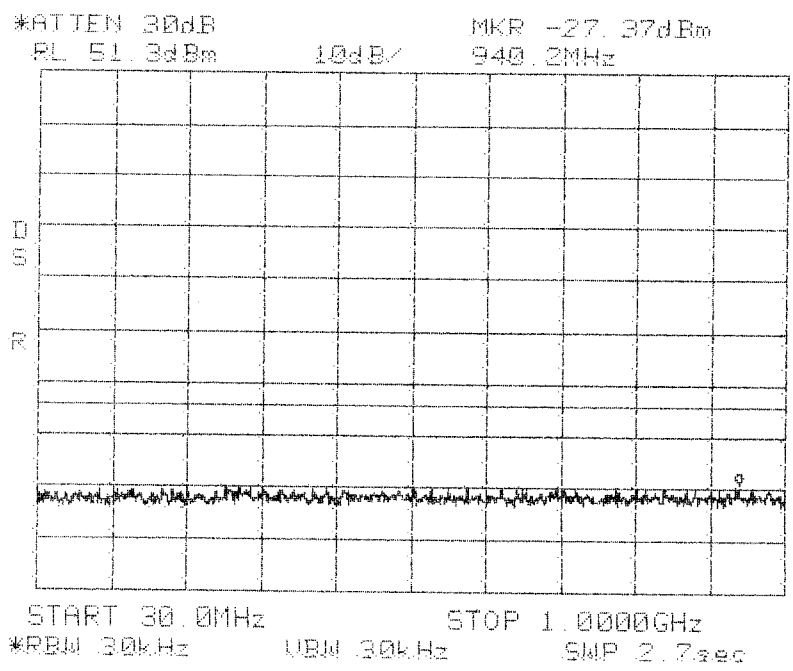
**Intermodulation
Close
Lower
GSM
PCS 1900 MHz
B Band**

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

Center: 1957.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



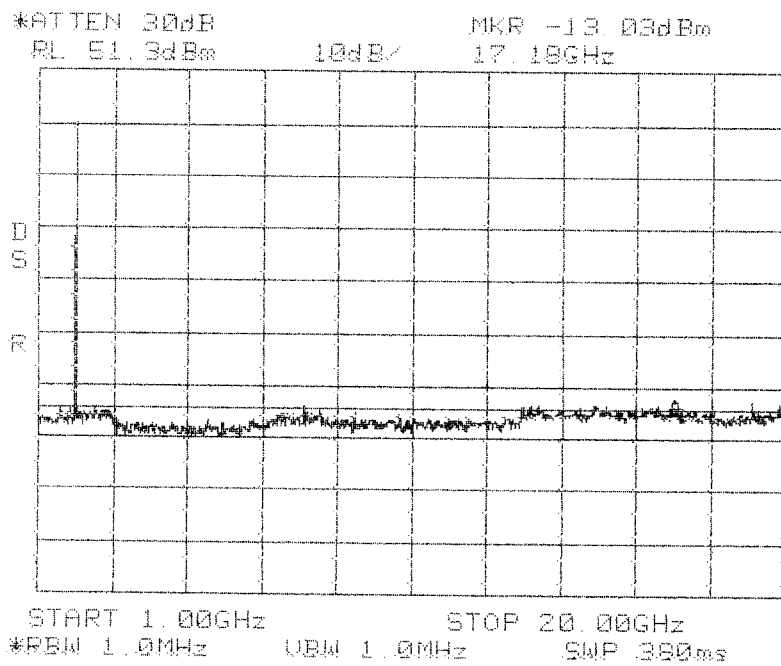
**Intermodulation
Close
Upper
GSM
PCS 1900 MHz
B Band**



**Intermodulation
Close
Upper
GSM
PCS 1900 MHz
B Band**

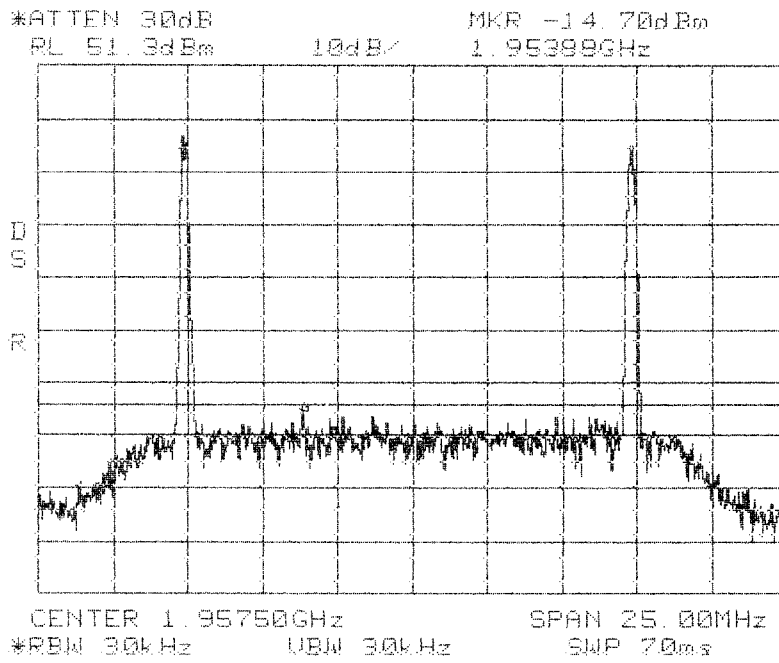
Span: 30 MHz to 1 GHz
RBW/VBW: 30 kHz

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

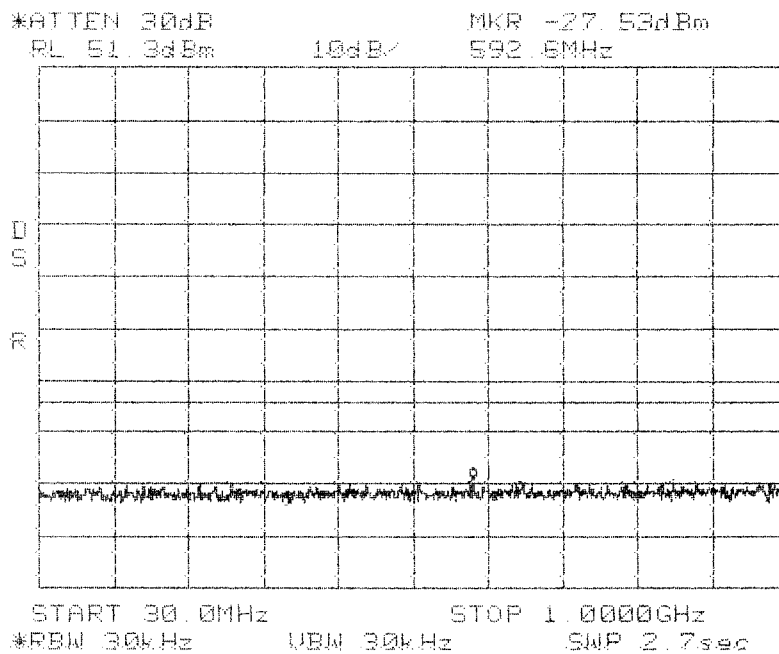


**Intermodulation
Close
Upper
GSM
PCS 1900 MHz
B Band**

Center: 1957.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



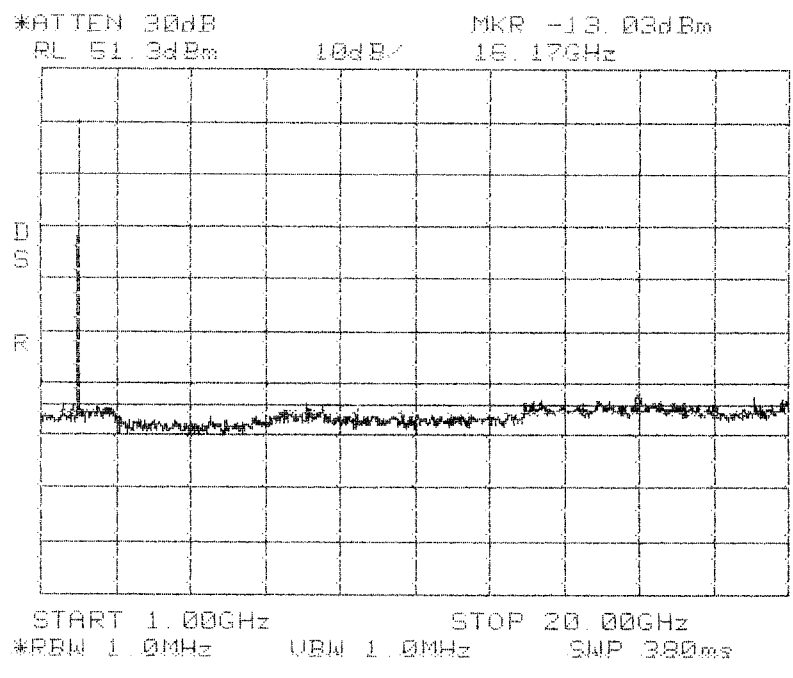
**Intermodulation
Apart
GSM
PCS 1900 MHz
B Band**



**Intermodulation
Apart
GSM
PCS 1900 MHz
B Band**

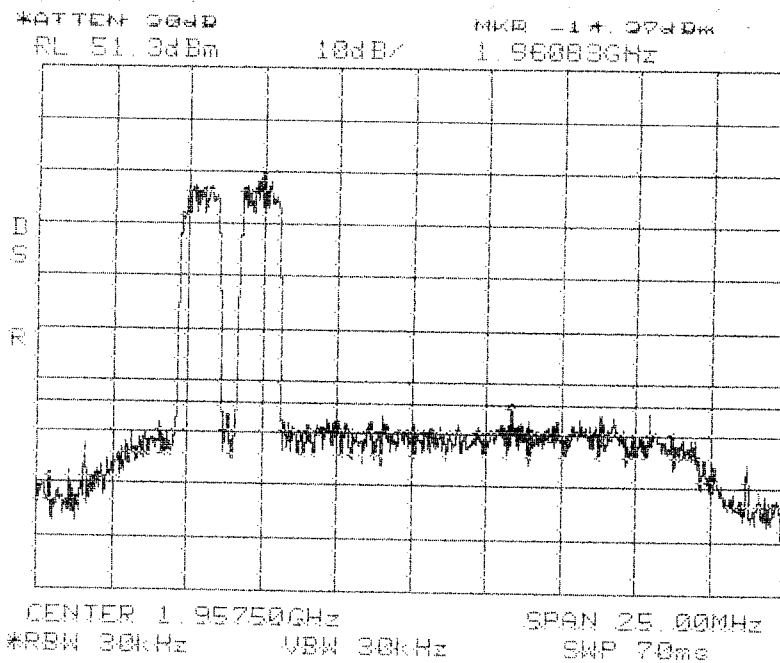
Span: 30 MHz to 1 GHz
RBW/VBW: 30 kHz

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

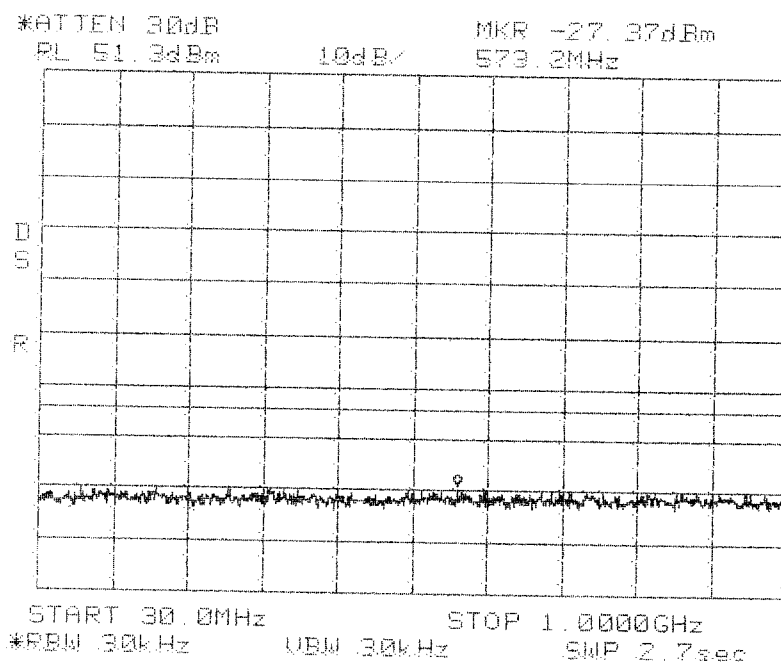


**Intermodulation
Apart
GSM
PCS 1900 MHz
B Band**

Center: 1957.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



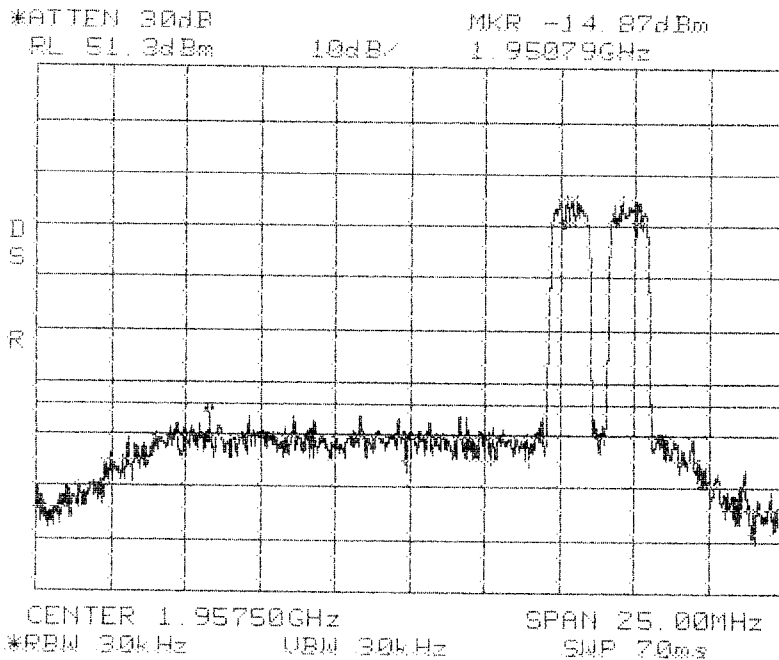
**Intermodulation
Close
Lower
CDMA
PCS 1900 MHz
B Band**



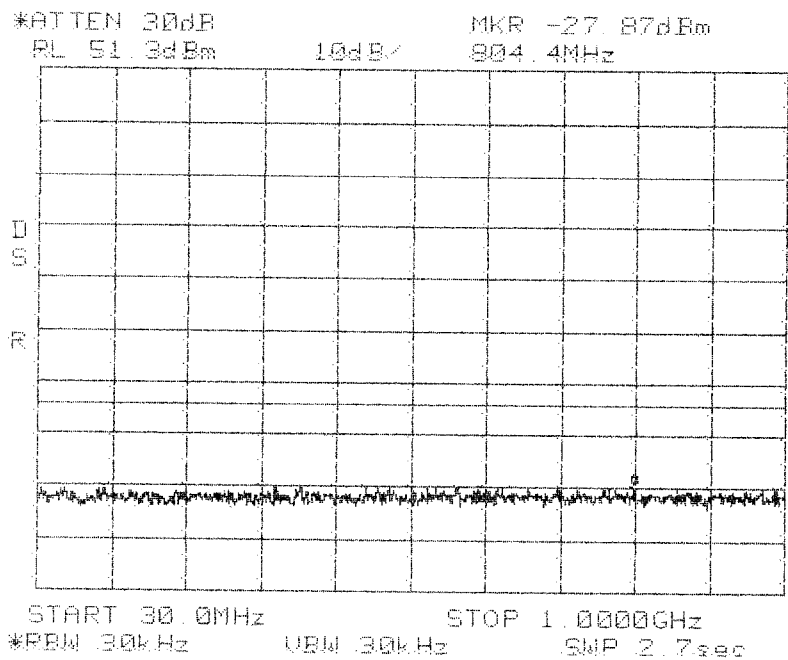
**Intermodulation
Close
Lower
CDMA
PCS 1900 MHz
B Band**

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

Center: 1957.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



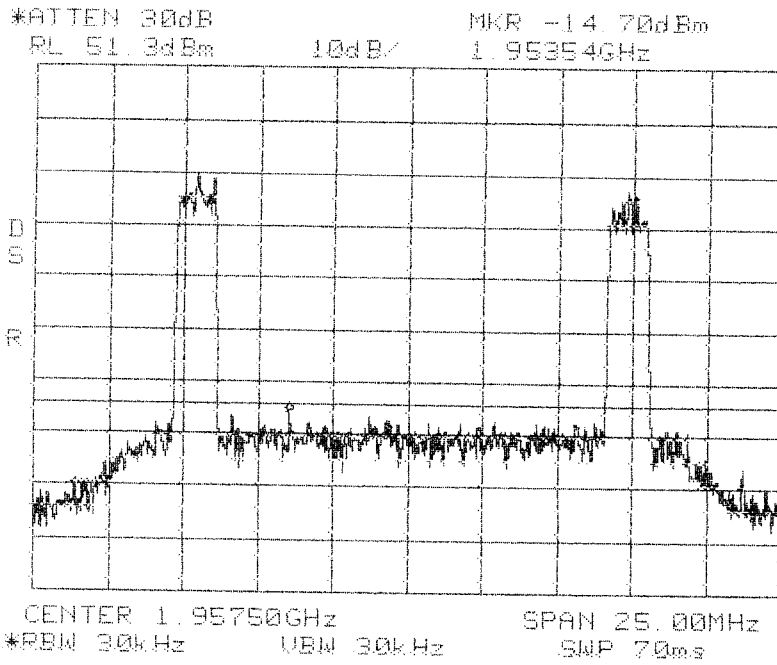
**Intermodulation
Close
Upper
CDMA
PCS 1900 MHz
B Band**



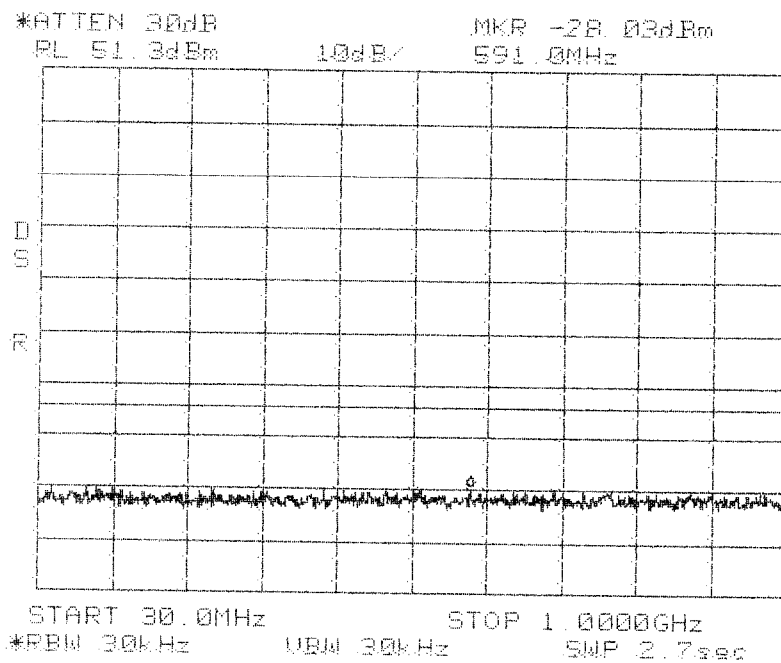
**Intermodulation
Close
Upper
CDMA
PCS 1900 MHz
B Band**

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

Center: 1957.5 MHz
Span: 25 MHz
RBW/VBW: 30 kHz



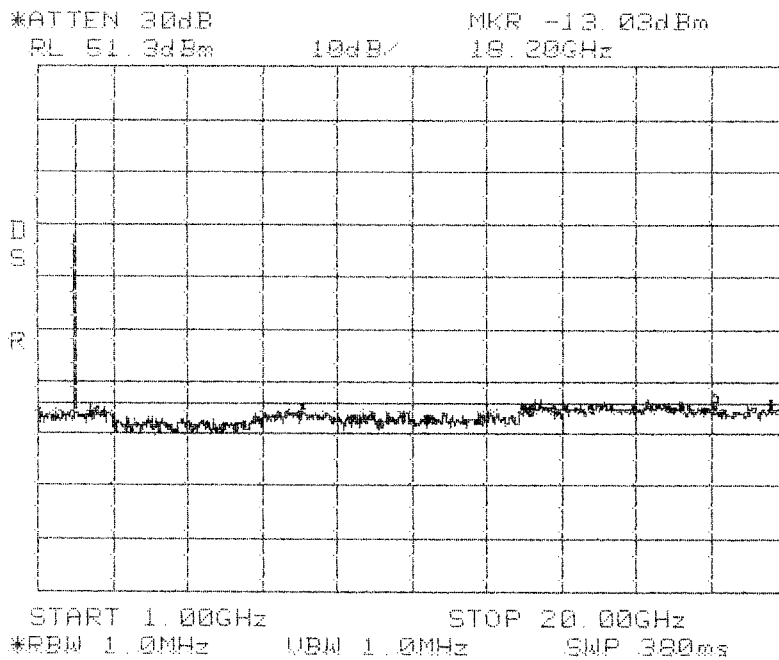
**Intermodulation
Apart
CDMA
PCS 1900 MHz
B Band**



**Intermodulation
Apart
CDMA
PCS 1900 MHz
B Band**

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

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



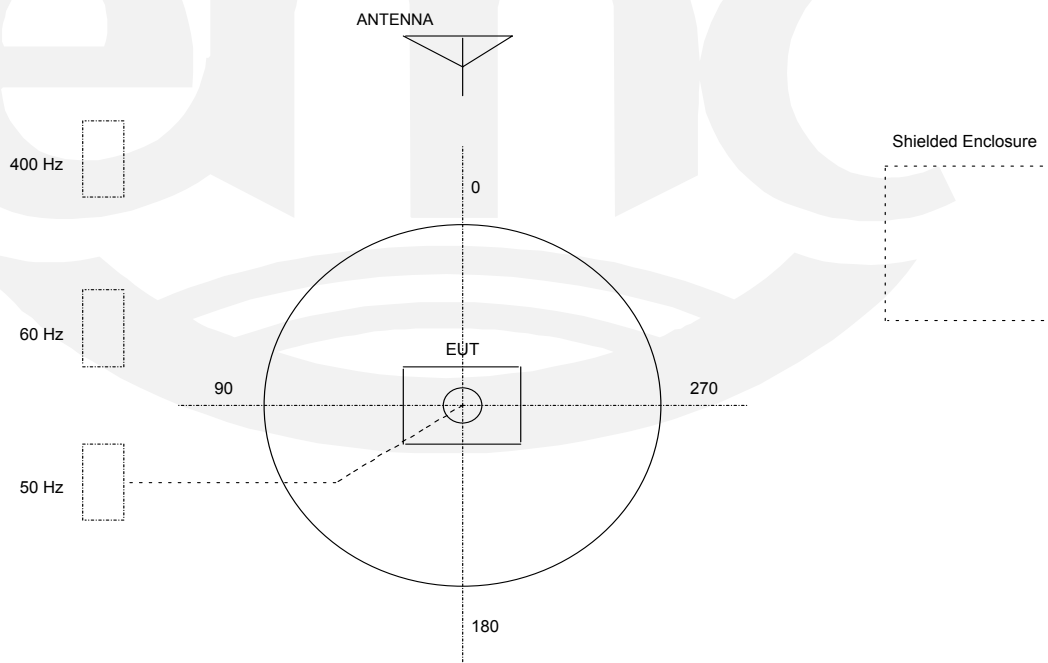
**Intermodulation
Apert
CDMA
PCS 1900 MHz
B Band**

TEST SETUP FOR EMISSIONS TESTING

WILD RIVER LAB Large Test Site

Notes:

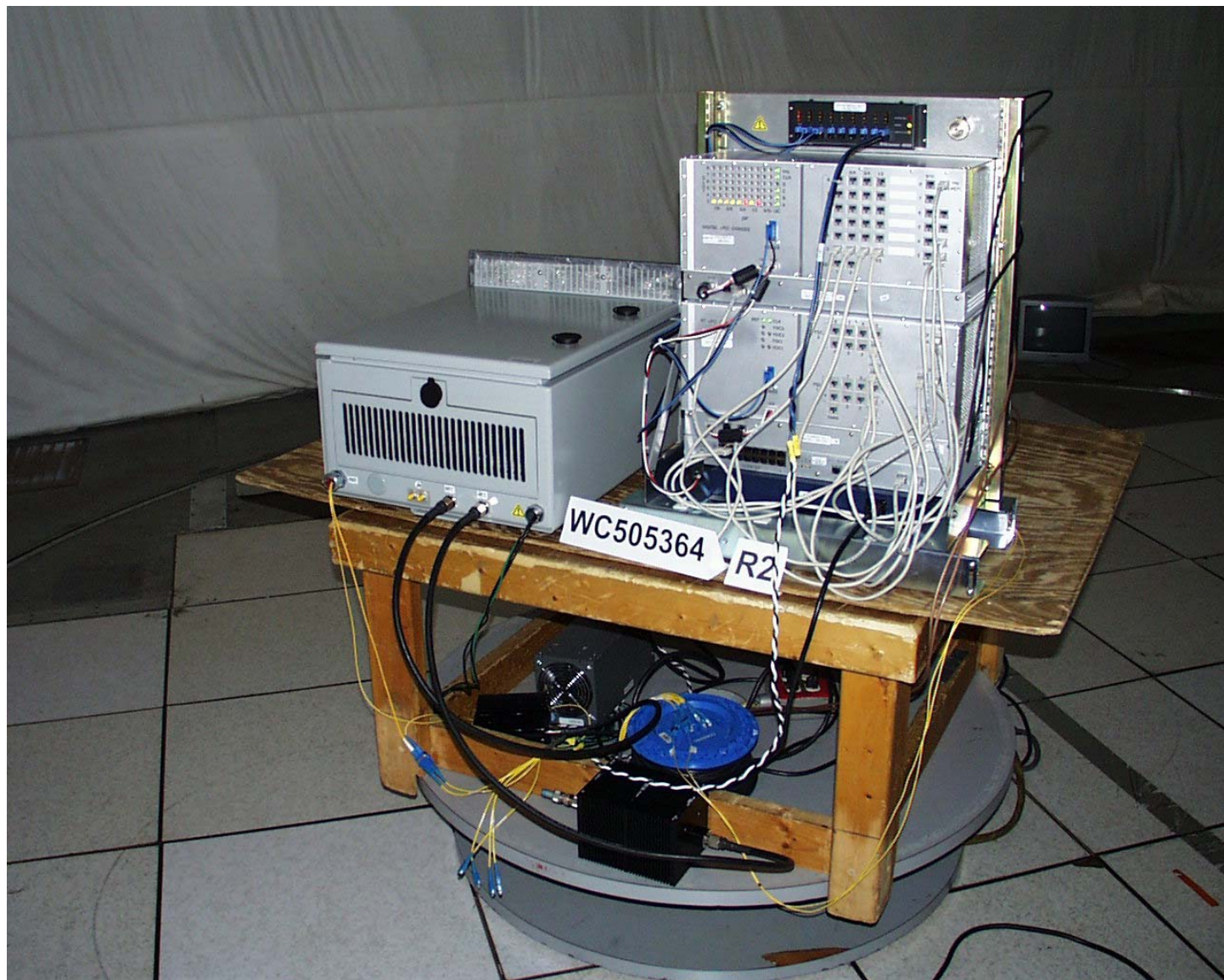
1. Items shown in dotted lines are located on the floor below the test area. It is 5 meters vertically from the ground floor to the test area.
2. 50 Hz, 60 Hz, and 400 Hz are power panels for alternating current.
3. The antenna may be positioned horizontally 3, 10 or 30 meters from the center of the 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.



Test-setup photos (TÜV run 2)

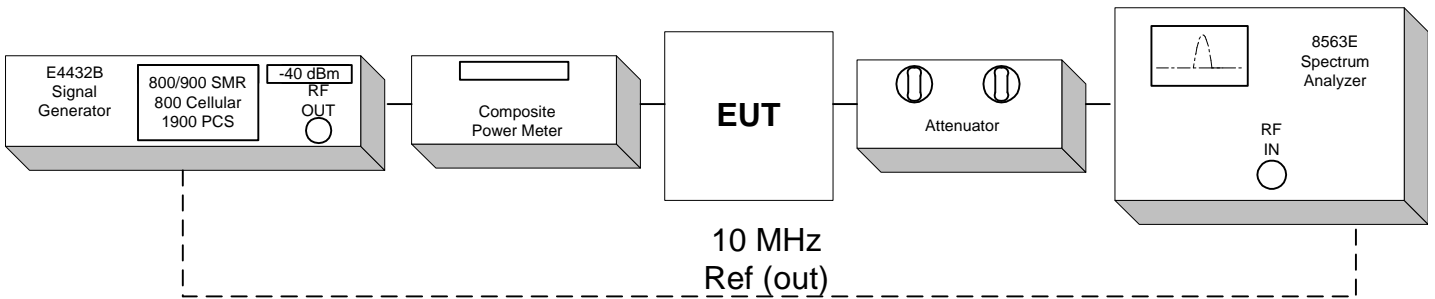


Test-setup photos (TÜV run 2)



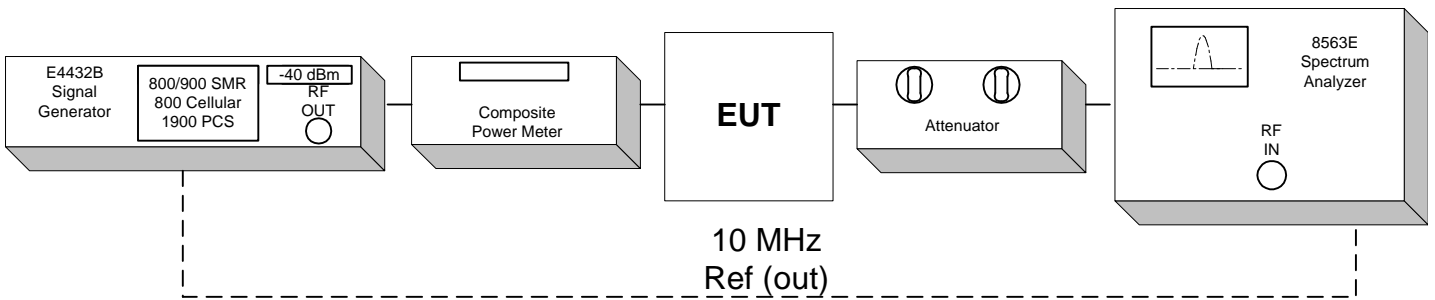
**Conducted Emission Limits Test for ADC Inc.
Digivance CXD
Model Number DGVF-04000000CRN**

Test Set-up



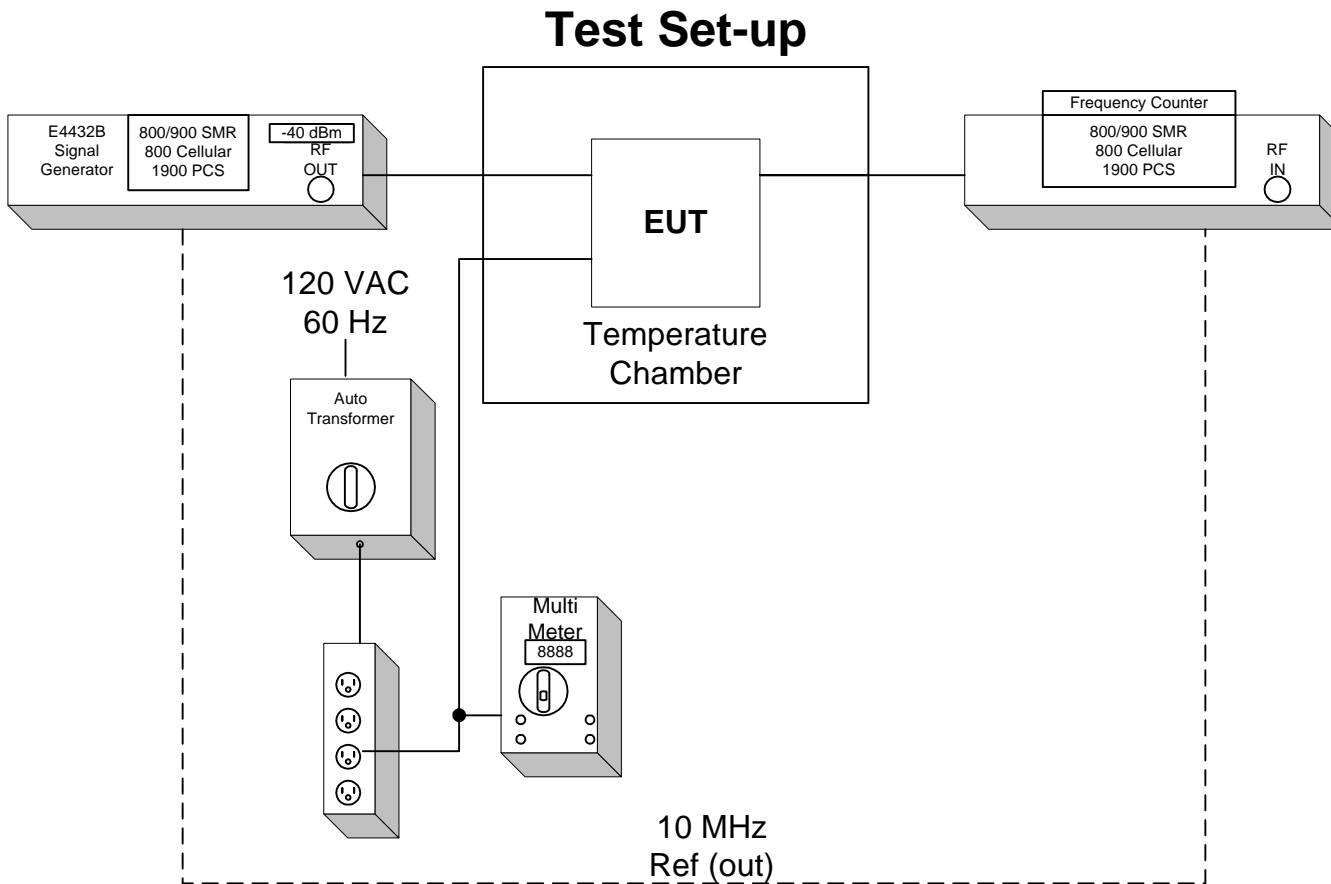
**Effective Isotropic Radiated Power Limit Test for ADC Inc.
Digivance CXD
Model Number DGVF-04000000CRN**

Test Set-up

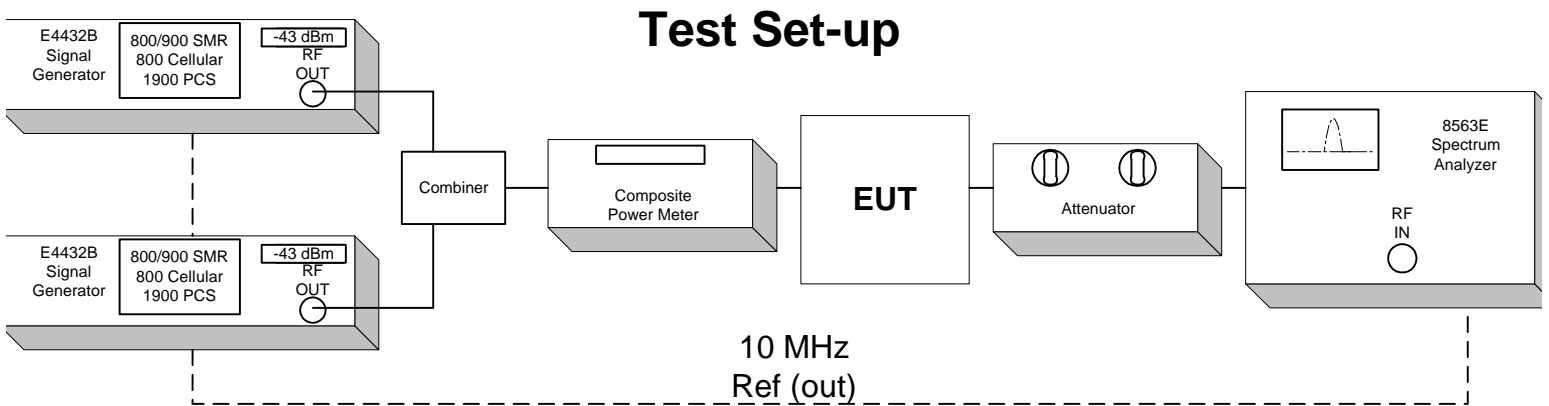


**Frequency Tolerance Test for ADC Inc.
Digivance CXD
Model Number DGVF-04000000XXCRN**

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.

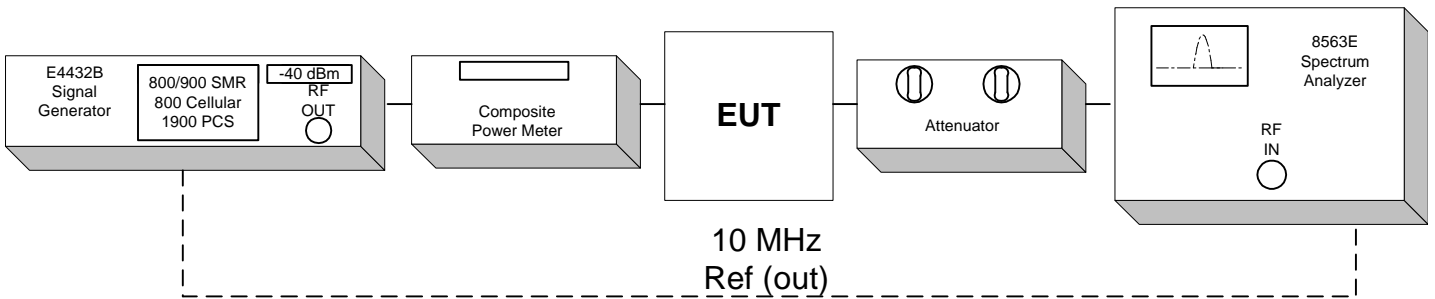


**Inter-Modulation Test for ADC Inc.
Digivance CXD
Model Number DGVF-04000000XXCRN**



**Occupied Bandwidth Modulation Test for ADC Inc.
Digivance CXD
Model Number DGVF-04000000XXCRN**

Test Set-up



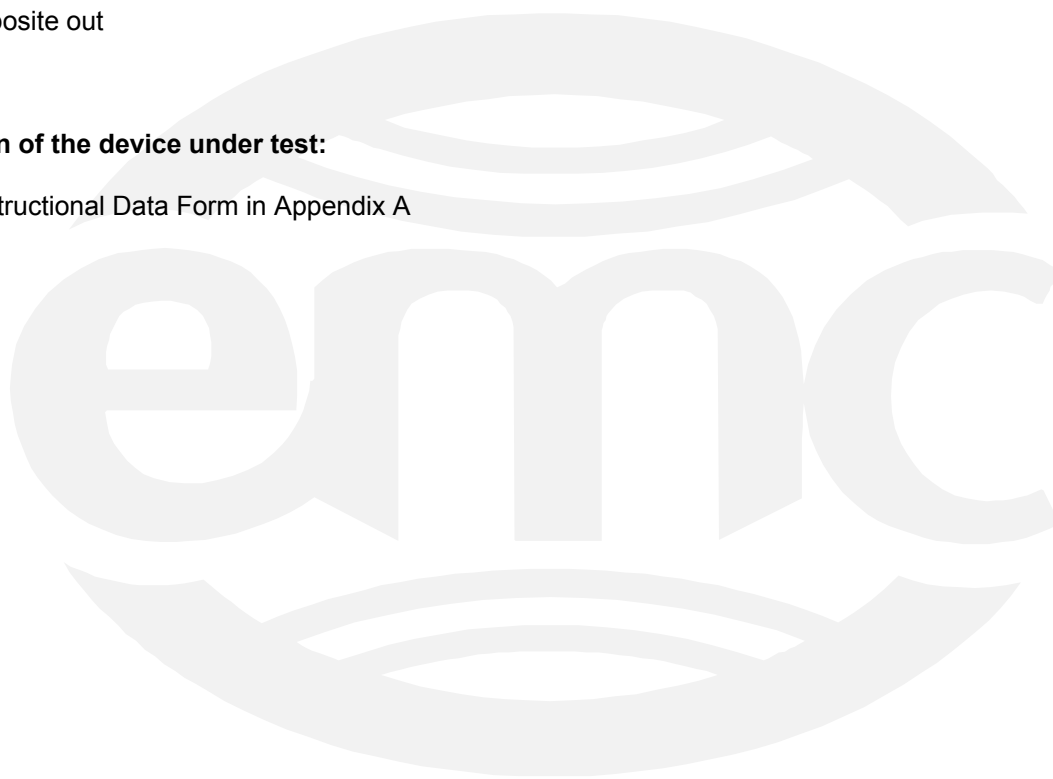
Test Operation Mode:

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 Constructional Data Form in Appendix A



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): 17 October, 2005

Condition of EUT: Normal

Testing Start Date (TÜV): 18 October, 2005

Testing End Date: (ADC) 20 October, 2005

- TÜV AMERICA INC -

Tested By:



J. C. Sausen

Reviewed By:



G. S. Jakubowski

Appendix A

Constructional Data Form

and

Block Diagrams



EMC Test Plan and Constructional Data Form



PLEASE COMPLETE THIS DOCUMENT IN FULL, ENTERING N/A IF THE FIELD IS NOT APPLICABLE.

Applicant -- NOTE: This information will be input into your test report as shown below.
Press the F1 key at any time to get HELP for the current field selected.

Company: ADC Inc.

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

Contact: Mark F. Miska Position: Compliance Engineer

Phone: 952-403-8340 Fax: 952-403-8858

E-mail Address: mark.miska@adc.com

General Equipment Description -- NOTE: This information will be input into your test report as shown below.

EUT Description: Transports RF between a remote antenna and base station.

EUT Name: Digivance® CXD 1900 MHz ADB Band

Model No.: DGVF-04000000XXCRN Serial No.: None

Product Options: Receive Diversity

Configurations to be tested: PCS 1900 MHz A, D, and B Band

Test Objective

- EMC Directive 89/336/EEC (EMC) FCC: Class A B Part 24
- Std: VCCI: Class A B
- Machinery Directive 89/392/EEC (EMC) BCIC: Class A B
- Std: Canada: Class A B
- Medical Device Directive 93/42/EEC (EMC) Australia: Class A B
- Std: Other: _____
- Vehicle Directive 72/245/EEC (EMC)
Std: _____
- FDA Reviewers Guidance for Premarket
Notification Submissions (EMC)

TÜV Product Service Certification Requested

- Attestation of Conformity (AoC) International EMC Mark (IEM)
- Certificate of Conformity (CoC) Compliance Document
- Protection Class (N/A for vehicles) Class I Class II Class III

EMC Test Plan and Constructional Data Form

 (Press **F1** when field is selected to show additional information on Protection Class.)

Attendance

 Test will be: Attended by the customer Unattended by the customer

Failure - Complete this section if testing will not be attended by the customer.

If a failure occurs, TUV Product Service should:

- Call contact listed above, if not available then stop testing. (After hrs phone): _____
 Continue testing to complete test series.
 Continue testing to define corrective action.
 Stop testing.

EUT Specifications and Requirements

 Length: 18" Width: 11" Height: 23" Weight: 95 LBS
Power Requirements
Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)

 Voltage: 176-238 VAC (If battery powered, make sure battery life is sufficient to complete testing.)

 # of Phases: 1

 Current (Amps/phase(max)): 6/4 Current (Amps/phase(nominal)): 4

Other _____

Other Special Requirements

none

Typical Installation and/or Operating Environment

(ie. Hospital, Small Business, Industrial/Factory, etc.)

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

EUT Power Cable

Permanent OR Removable Length (in meters): 1
 Shielded OR Unshielded
 Not Applicable

EMC Test Plan and Constructional Data Form



EUT Interface Ports and Cables												
Interface			Shielding									
Type	Analog	Digital	Qty	Yes	No	Type	Termination	Connector Type	Port Termination	Length (in meters)	Removable	Permanent
EXAMPLE: RS232	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Foil over braid	Coaxial	Metallized 9-pin D-Sub	Characteristic Impedance	6	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RF "N" type	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Braid	Coaxial	N	50 Ohms	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RF "SMA" type	<input checked="" type="checkbox"/>	<input type="checkbox"/>	63	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Braid	Coaxial	SMA	50 Ohms	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12V DC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A	N/A	3 Pin Standoff		3	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fiber	<input type="checkbox"/>	<input checked="" type="checkbox"/>	4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A	N/A	SC	N/A	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>
PA CNTRL	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	N/A	N/A	8 Pin Standoff		3	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AC power	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A				3	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Battery Connection	<input checked="" type="checkbox"/>	<input type="checkbox"/>	9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A	N/A	2 Pin Standoff		1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RJ-45	<input checked="" type="checkbox"/>	<input type="checkbox"/>	117	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A	N/A	RJ-45		1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RS-232	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A	N/A	9 Pin D-Sub		1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fan Power	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A	N/A	18 Pin Standoff		1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
USB	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A	N/A	USB		1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>

EMC Test Plan and Constructional Data Form

EUT Software.

Revision Level: SNMP v1 & v2

Description: Digivance Element Management System (DEMS). System Management and Interface Matching Software.

EUT Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing. Consult with your TÜV Product Service Representative if additional assistance is required.

1. Max composite out

- 2.

- 3.

EUT System Components -- List and describe all components which are part of the EUT. For FCC testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc.)

Description	Model #	Serial #	FCC ID #
HUB	OP-DC-DIGCH2	None	
RAN	DGVF-0204000023CRN	None	
Digivance CXD System consist of the HUB and RAN.		None	

EMC Test Plan and Constructional Data Form

Support Equipment -- List and describe all support equipment which is not part of the EUT. (i.e. peripherals, simulators, etc)			
<i>Description</i>	<i>Model #</i>	<i>Serial #</i>	<i>FCC ID #</i>
Power Supply	Xantrex HPD 60-5	MC 27764	
Signal Generator	Agilent E4436B	963739	
Ethernet Switch	Netgear	N/A	

Oscillator Frequencies			
<i>Frequency</i>	<i>Derived Frequency</i>	<i>Component # / Location</i>	<i>Description of Use</i>

Power Supply			
<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Type</i>
			<input type="checkbox"/> Switched-mode: (Frequency) _____ <input type="checkbox"/> Linear <input type="checkbox"/> Other: _____
			<input type="checkbox"/> Switched-mode: (Frequency) _____ <input type="checkbox"/> Linear <input type="checkbox"/> Other: _____

Power Line Filters		
<i>Manufacturer</i>	<i>Model #</i>	<i>Location in EUT</i>
None		

Form

EMC Test Plan and Constructional Data Form



Critical EMI Components (Capacitors, ferrites, etc.)				
<i>Description</i>	<i>Manufacturer</i>	<i>Part # or Value</i>	<i>Qty</i>	<i>Component # / Location</i>
None				

EMC Critical Detail -- Describe other EMC Design details used to reduce high frequency noise.

None

(PLEASE INSERT "ELECTRONIC SIGNATURE" BELOW IF POSSIBLE)

Authorization Signatures

Customer authorization to perform tests according to this test plan.

Date

Test Plan/CDF Prepared By (please print)

Date

Reviewed by TÜV Product Service Associate

Date

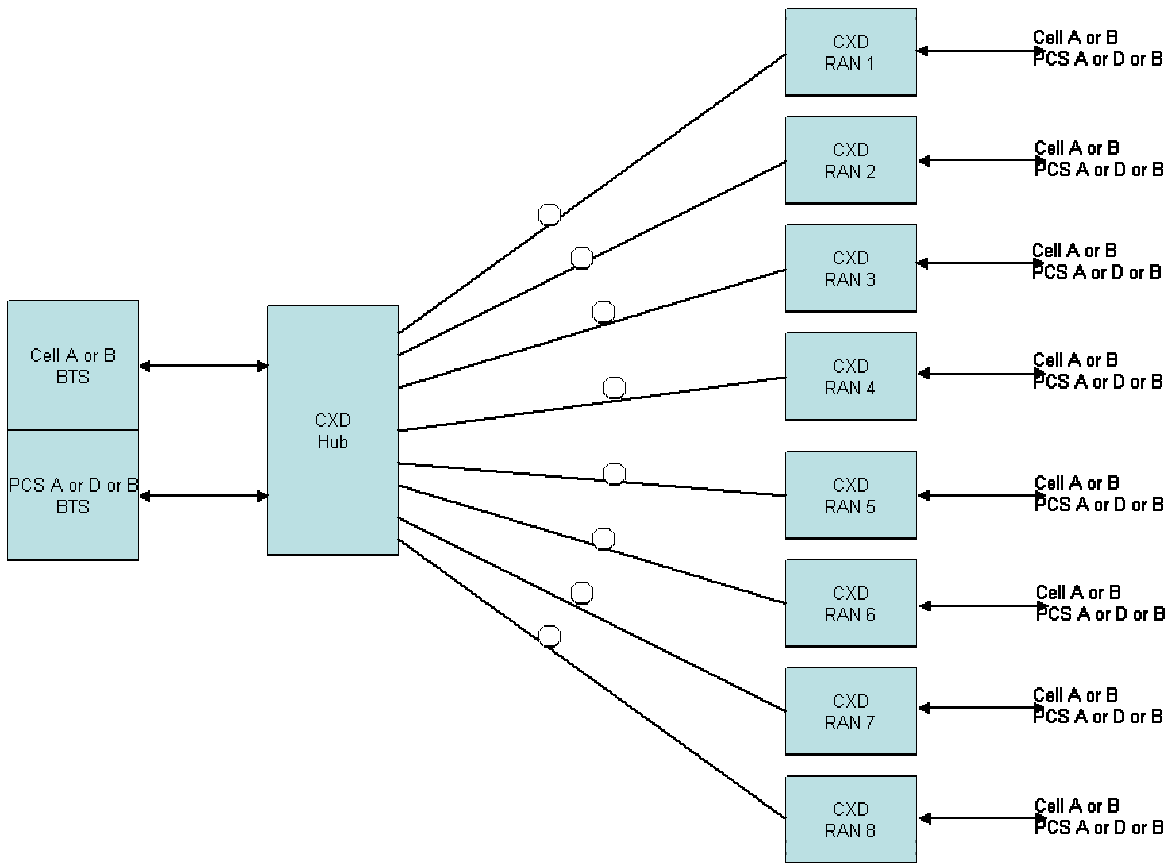


Figure 1 CXD Architecture

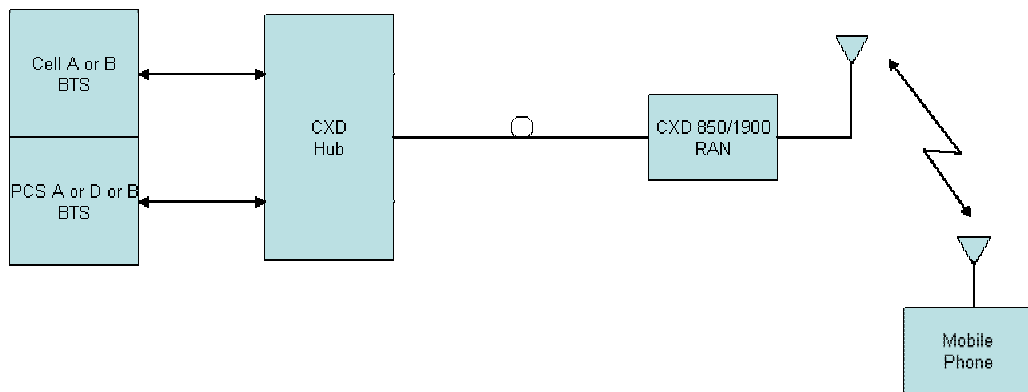


Figure 2 CXD Top Level Diagram

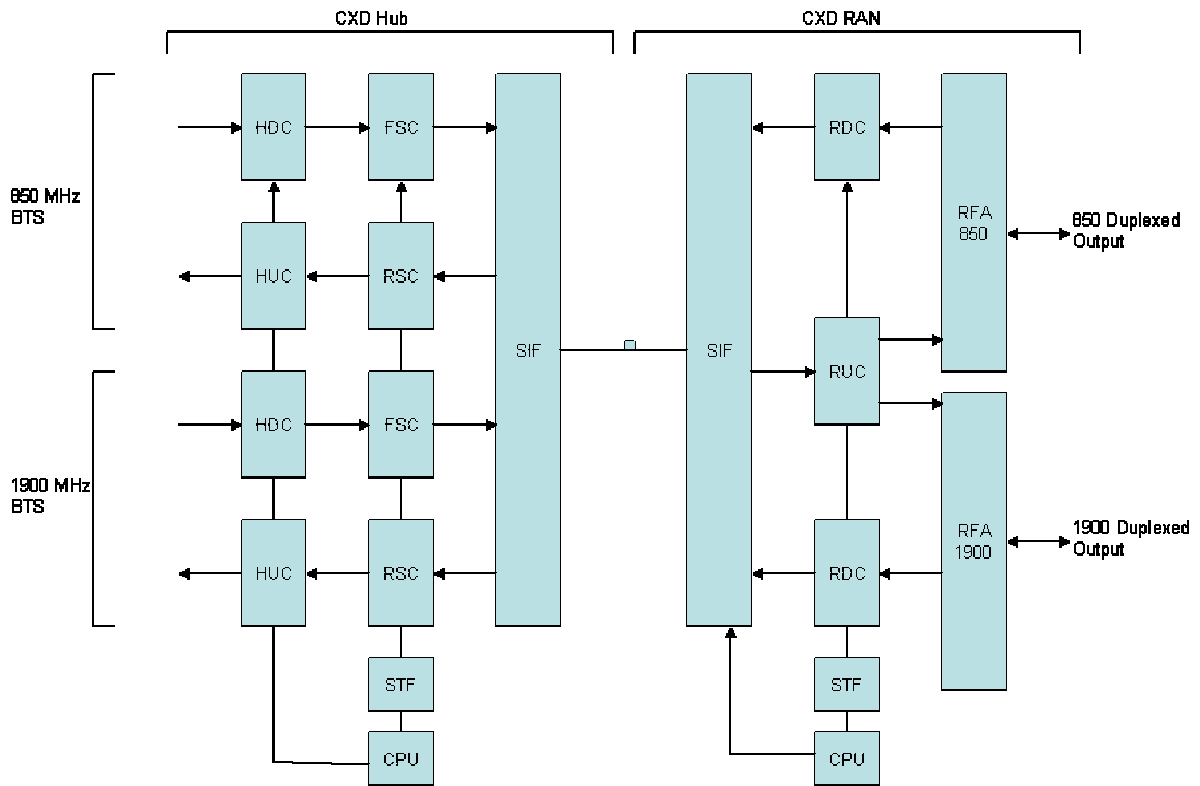


Figure 3 CXD System Block Diagram

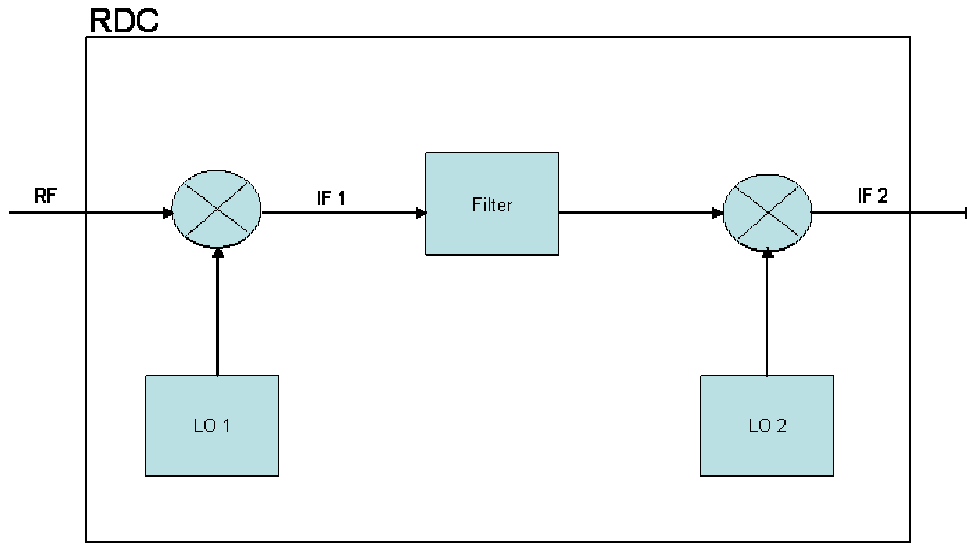


Figure 4. RDC Block diagram

The frequency plan for the RDC module is shown in the following table.

Table 1. RDC PCS Band Frequency Plan

Band	Band Width	LO 2	LO 1	Center In Freq	Inter Freq	Mid Out Freq
1900 A	15000000	249000000	1577500000	1857500000	2800000000	31000000
1900 B	15000000	249000000	1597500000	1877500000	2800000000	31000000
1900 D	5000000	249000000	1587500000	1867500000	2800000000	31000000

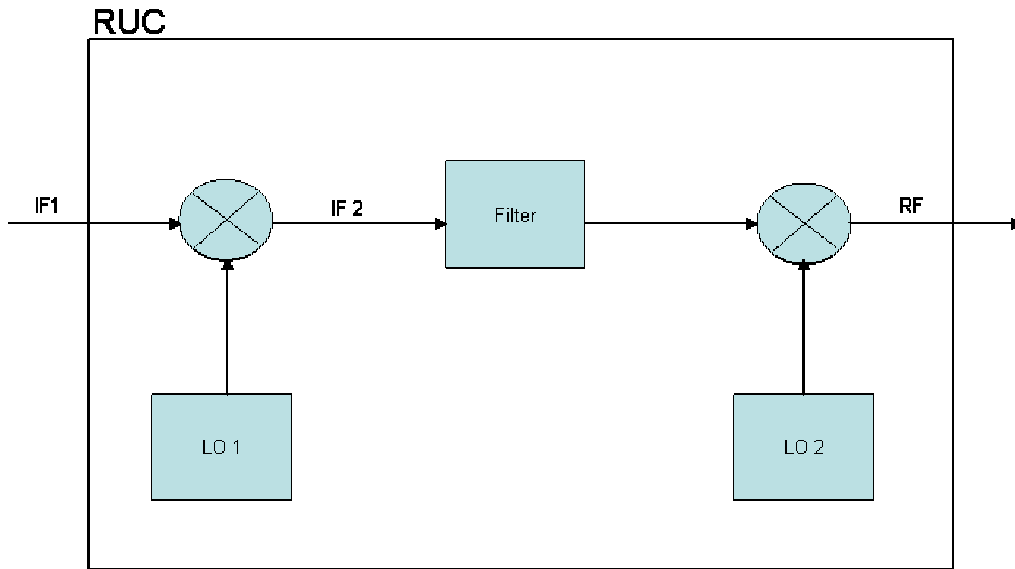


Figure 5. RUC Block diagram

The frequency plan for the RUC module is shown in the following table.

Table 2. RUC PCS Band Frequency Plan

Band	Band Width	LO 1	LO 2	In Freq	Out Freq	IF	Test Out
1900 A	15000000	1611200000	294,400,000	25,200,000	1,930,800,000	319,600,000	1,937,784,000
1900 B	15000000	1631200000	294,800,000	24,000,000	1,950,000,000	318,800,000	1,958,184,000
1900 D	5000000	1622400000	294,000,000	28,800,000	1,945,200,000	322,800,000	1,948,584,000

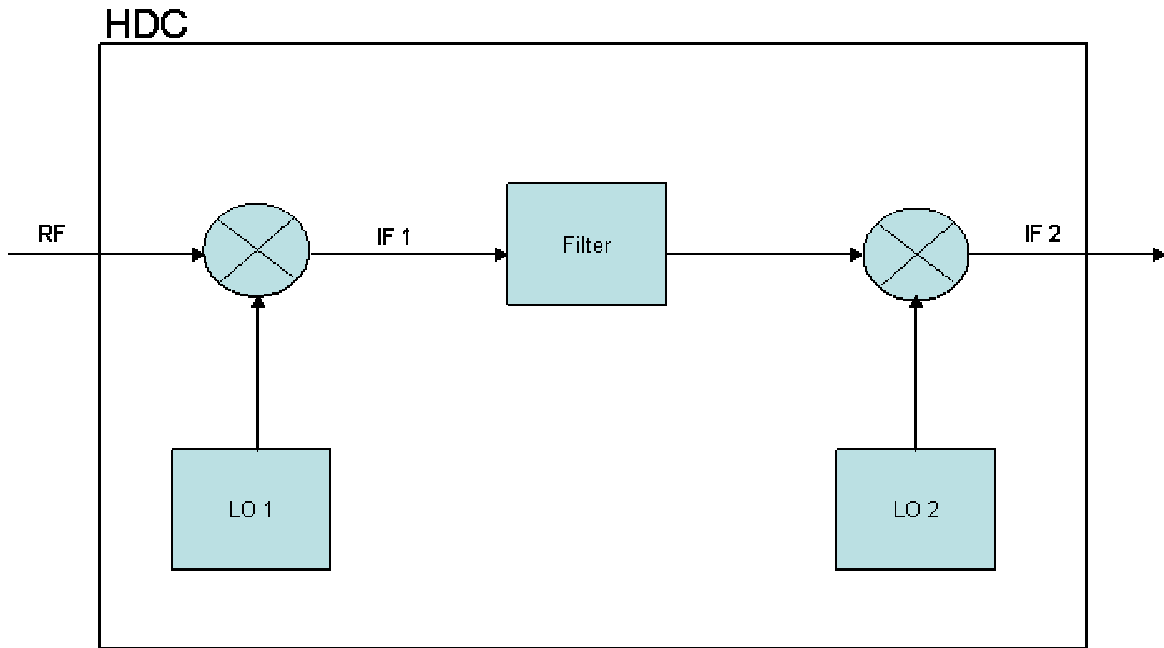


Figure 6. HDC Block diagram

The frequency plan for the HDC module is shown in the following table.

Table 3. HDC PCS Band Frequency Plan

Band	Band Width	LO 1	LO 2	Mid In Freq	Mid Out Freq	Mid IF
1900 A	15000000	1611200000	294,400,000	1,930,800,000	25,200,000	319,600,000
1900 B	15000000	1631200000	294,800,000	1,950,000,000	24,000,000	318,800,000
1900 D	5000000	1622400000	294,000,000	1,945,200,000	28,800,000	322,800,000

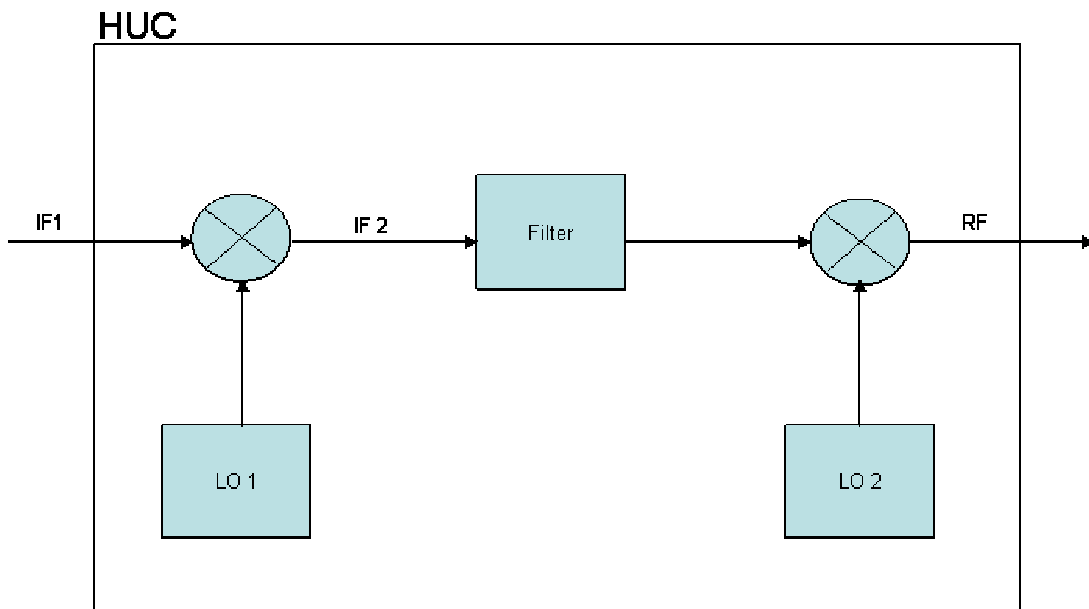


Figure 7. HUC Block diagram

The frequency plan for the HUC module is shown in the following table.

Table 4. HUC PCS Band Frequency Plan

Band	Band Width	LO 2	LO 1	Mid In Freq	Inter Freq	Mid Out Freq
1900 A	15000000	248900000	1577600000	31000000	279900000	1857500000
1900 B	15000000	248900000	1597600000	31000000	279900000	1877500000
1900 D	5000000	248900000	1587600000	31000000	279900000	1867500000

Appendix B

Measurement Protocol



MEASUREMENT PROTOCOL

GENERAL INFORMATION

Environmental conditions in the lab,

ADC Inc.

Temperature: 78 °F
 Relative Humidity: 28 %
 Atmospheric pressure: 29.15" Hg
 Power supply system: 60 Hz, 120 VAC;

TUV America Large Test Site

Temperature: 22 °C
 Relative Humidity: 40 %
 Atmospheric pressure: 99.0 kPa
 Power supply system: 60 Hz, 120 VAC;

The FCC guideline for measuring a device which draws its power from a device which connects to the AC mains, indicates that it must be demonstrated that it does not cause the device which connects to the AC mains to become non-compliant. If it can be demonstrated that it will be compliant in a representative host, it does not have to demonstrate compliance in every possible host. Thus, the testing proves the EUT's RF board, when connected to a compliant host connected to the AC mains, allows the host to remain compliant. The host that was provided for the testing operated at 60 Hz 120 VAC.

Test Methodology

Conducted and radiated emission testing is performed according to the procedures in ANSI C63.4-2003.

Measurement Uncertainty

The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. The test system has a measurement uncertainty of ±1.8 dB. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. The test system has a measurement uncertainty of ±4.8 dB. The equipment comprising the test systems is calibrated on an annual basis.

Justification

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

Conducted Emissions

The final level, in dB μ V, equals the EMI receiver level plus the cable loss and LISN factor.

Radiated Emissions

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

Example:

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

Test Equipment

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

Substitution Method

A radiated emission scan was also made, at TÜV America's Wild River Lab Large Test Site, with the EUT's antenna replaced with a termination to demonstrate case radiation compliance to the -13 dBm requirement. Radiated emissions from the EUT are measured in the frequency range of 30 to 19600 MHz using a spectrum analyzer and appropriate broadband linearly polarized antennas. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna is positioned 3 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT are rotated 360 degrees. The field strength levels were measured per ANSI C63.4. The EUT is then replaced with a tuned dipole antenna (below 1 GHz) or horn antenna (above 1 GHz). The substitute antenna was placed in the same polarization as the test antenna. A signal generator was used to generate a signal level that matched the highest level measured from the EUT. The signal generator level minus the cable loss from the signal generator to the substitute antenna plus the substitute antenna gain equals the spurious power level.

