Test Report:	3W06968
Applicant:	Spotwave Wireless Inc. 1 Hines Rd. Ottawa, Ontario K2K 3C7
Equipment Under Test: **(EUT)**	SpotCell 111/112 CU PCS Low Power Repeater
In Accordance With:	**FCC Part 24, Subpart E**
FCC ID. :	P3YSPOTCELL0007
Tested By:	Nemko Canada Inc. 303 River Road, R.R. 5 Ottawa, Ontario K1V 1H2
Authorized By:	Russell Grant, Senior Approvals Eng.
Date:	25 March 2003
Total Number of Pages:	29

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Section 1. Summary of Test Results

General

All measurements are traceable to national standards.

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 24, Subpart E.

☒ New Submission ☒ Production Unit

☐ Class II Permissive Change ☐ Pre-Production Unit

A	M	P

Equipment Code

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE.
See " Summary of Test Data".

TESTED BY: _____ DATE: 25 March 2003
Glen Westwell, Wireless Technologist

Summary Of Test Data

Name Of Test	Para. No.	Result
RF Power Output	2.1046	Complies
Occupied Bandwidth	2.1049	Complies
Spurious Emissions at Antenna Terminals	2.1051	Complies
Field Strength of Spurious Emissions	2.1053	Complies
Frequency Stability	2.1055	N/A

Notes:
This RF device, the Sptocell 111/112 CU is part of a PCS Band amplifier. It is used to enhance signals in the Downlink direction.

The EUT is an f1-f1 amplifier, as such frequency stability was not performed.

Indoor Temperature: 22 °C
Humidity: 45 %

Outdoor Temperature: 23 °C
Humidity: 48 %

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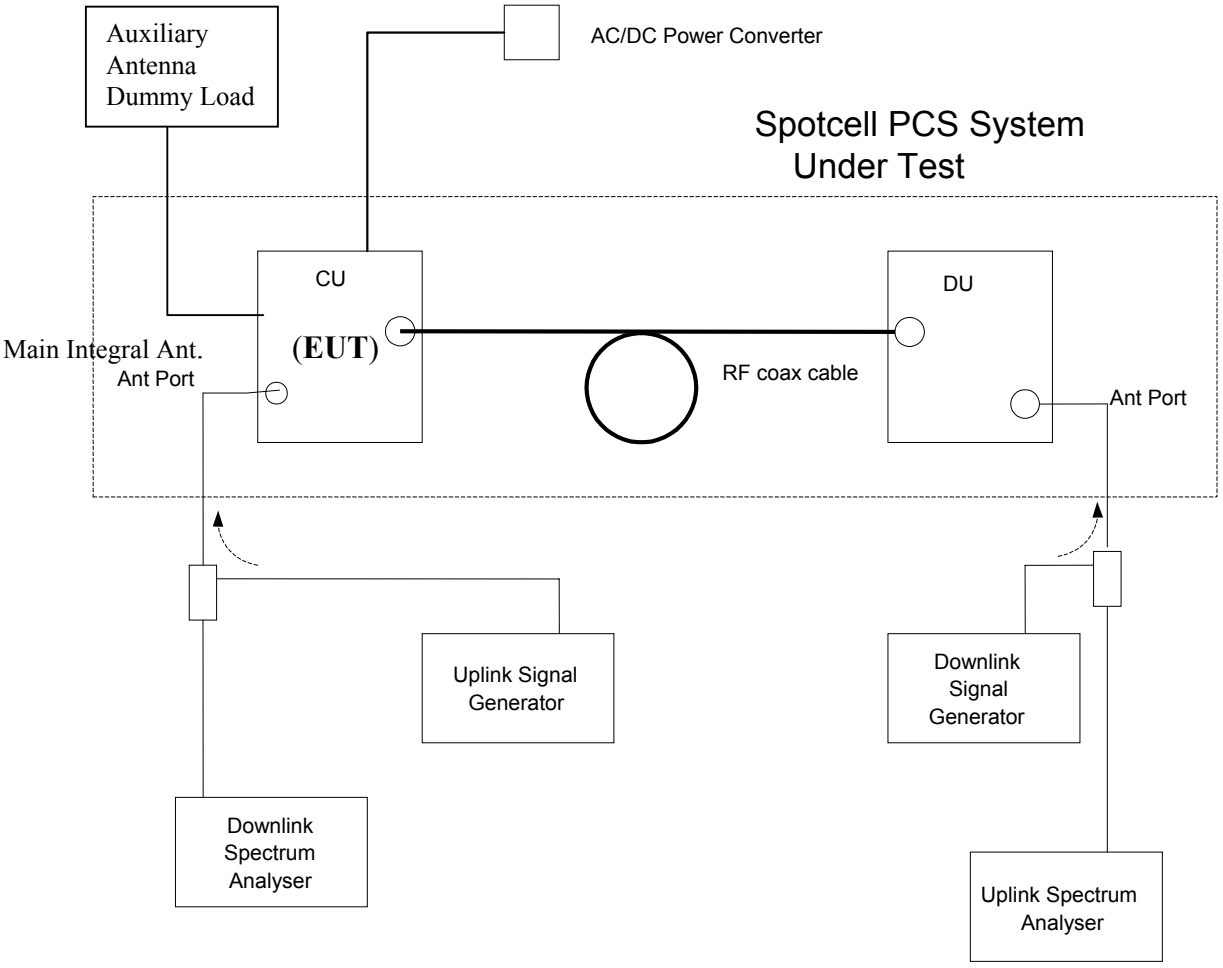
Section 2. General Equipment Specification

Manufacturer:	Spotwave Wireless Inc.
Model No.:	SpotCell 111/112 CU
Serial No.:	CU S/N SPO-030001570001
Date Received In Laboratory:	17 Mar. 2003
Nemko Identification No.:	#3
Supply Input Voltage:	120 VAC
Frequency Range:	Downlink: BLK A&D: 1930-1950MHz BLK B&E: 1950-1970MHz BLK F&C: 1970-1990MHz
RF Output (Rated/Antenna Port):	CU (Downlink): +7dBm (Max. Composite)
Antenna Gain (Integral):	CU (Downlink): 3dBi
Emission Designator(modulation):	CDMA - G7W GSM - F7W

Test Set Up Configuration



Section 3. RF Power Output

Para. No.: 2.1046

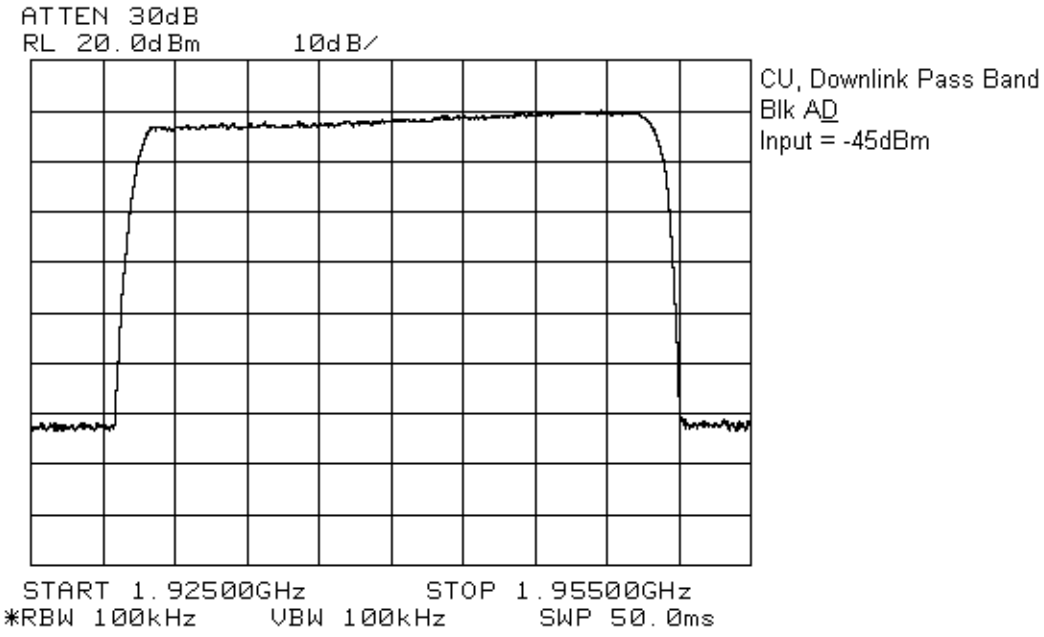
Test Performed By: Glen Westwell	**Date of Test:** 24 Mar. 2003

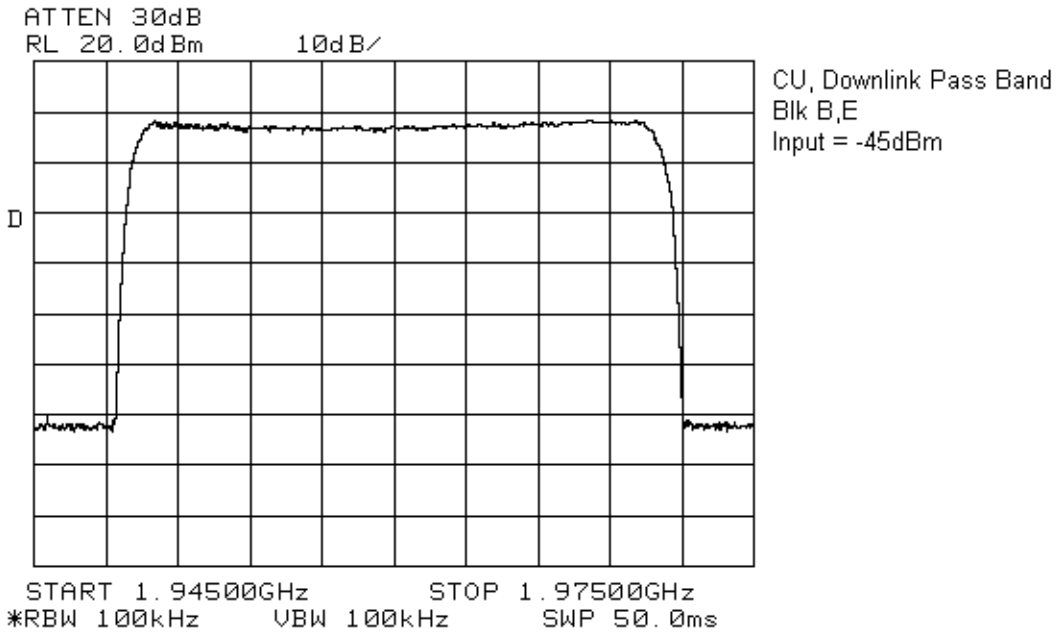
Minimum Standard: 24.232

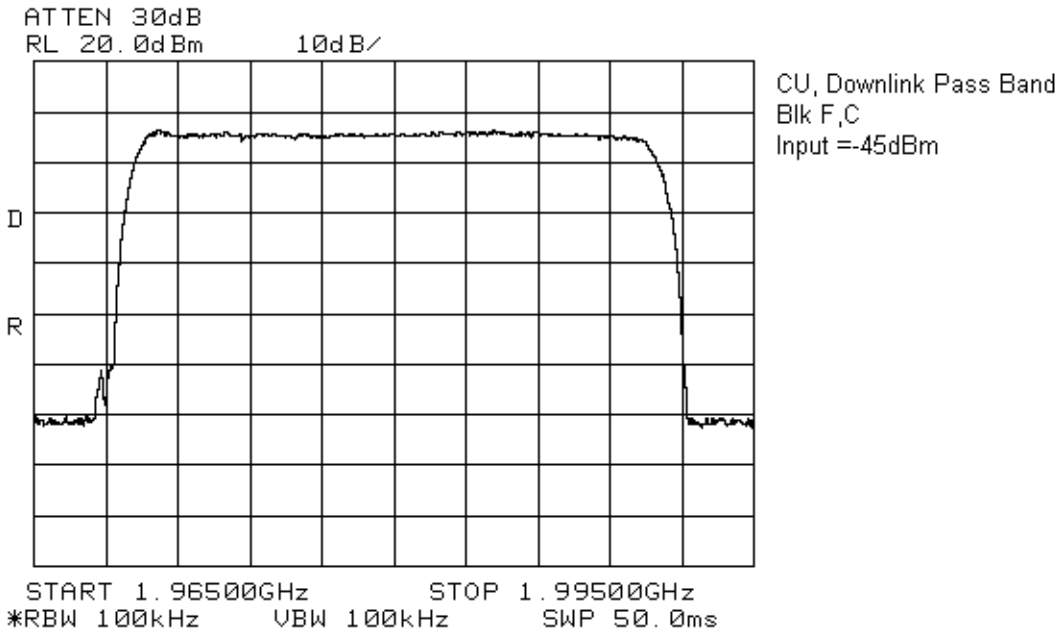
Test Results: Complies.

The maximum RF output power is within ± 1dB of the manufacturer's rating. The RF output power is de-rated according to the number of channels via AGC and is equal to Pmax –10LogN.

Pmax = Maximum RF Output Power
N = Number Of Channels


ATTEN 30dB
RL 20.0dBm
10dB/
CU, Downlink Pass Band
Blk AD
Input = -45dBm
START 1.92500GHz
STOP 1.95500GHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
D
CU, Downlink Pass Band
Blk B,E
Input = -45dBm
START 1.94500GHz
STOP 1.97500GHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
D
R
CU, Downlink Pass Band
Blk F,C
Input =-45dBm
START 1.96500GHz
STOP 1.99500GHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms

Section 4. Occupied Bandwidth

Para. No.: 2.1049

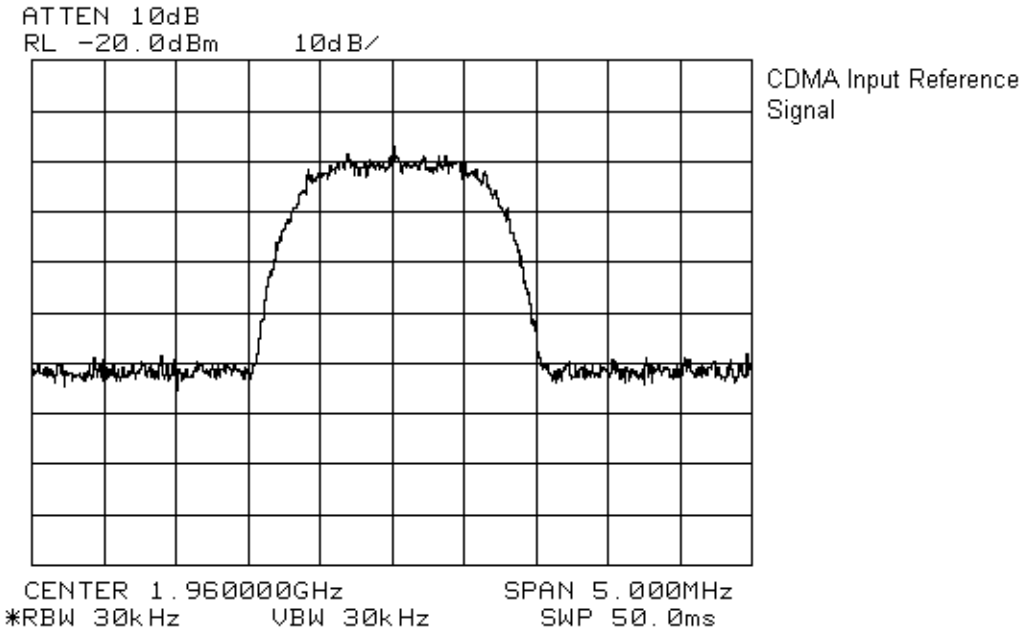
Test Performed By: Glen Westwell	**Date of Test:** 24 Mar. 2003

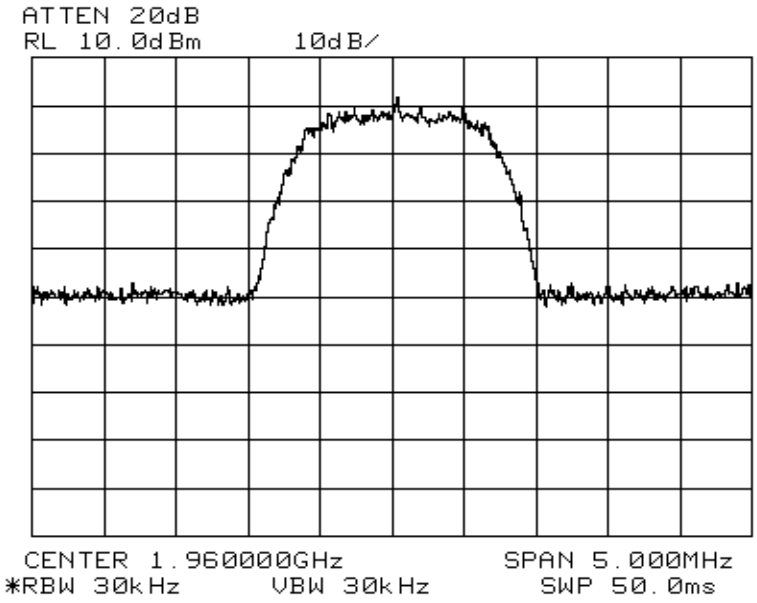
Minimum Standard: 24.238

Test Results: Complies.

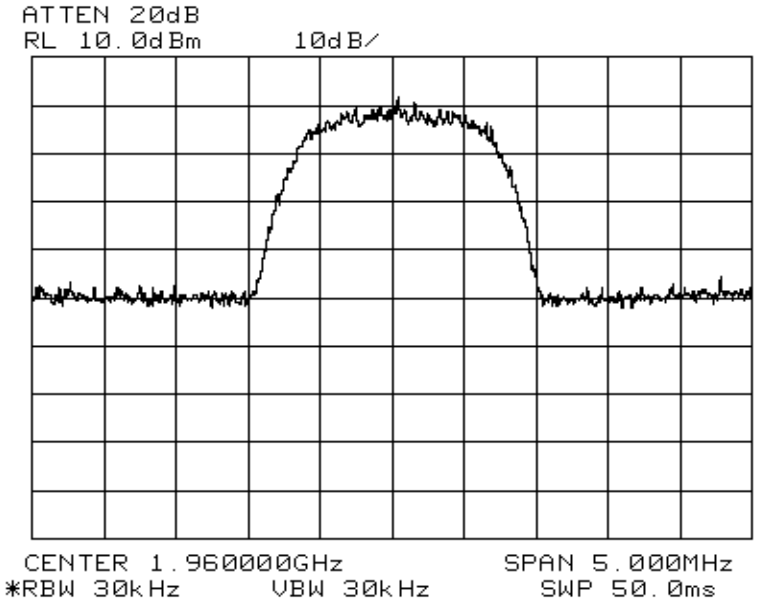
Measurement Data: See attached graphs.

The occupied bandwidth was measured by comparison of input to the output signal. This was done in order to determine if there was any degradation to the output signal due to the amplification through the repeater.

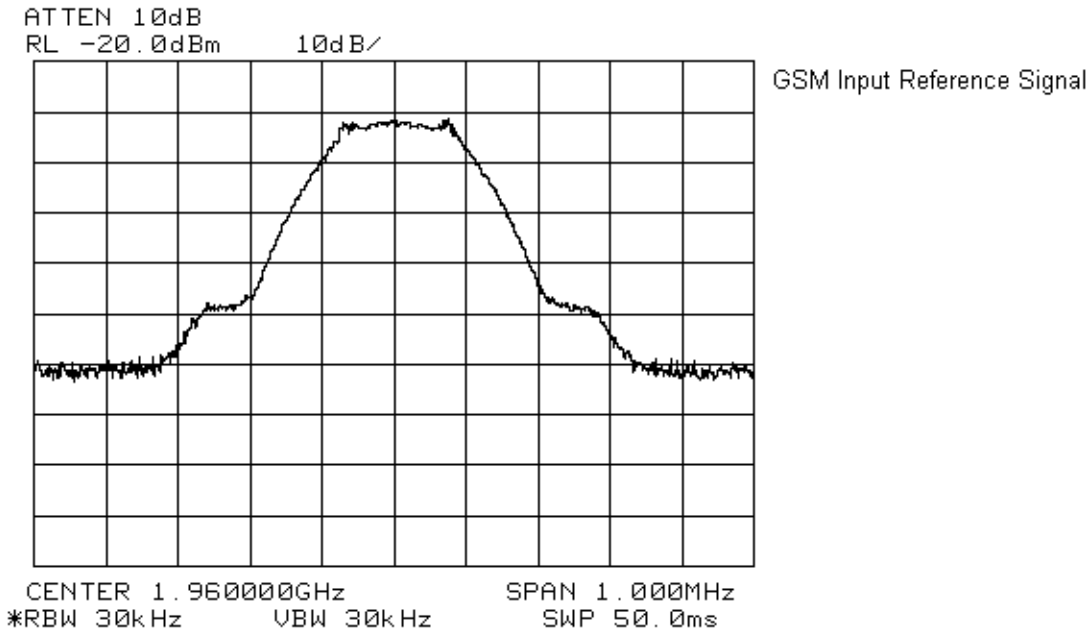

ATTEN 10dB
RL -20.0dBm
10dB/
CDMA Input Reference Signal
CENTER 1.960000GHz
SPAN 5.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms

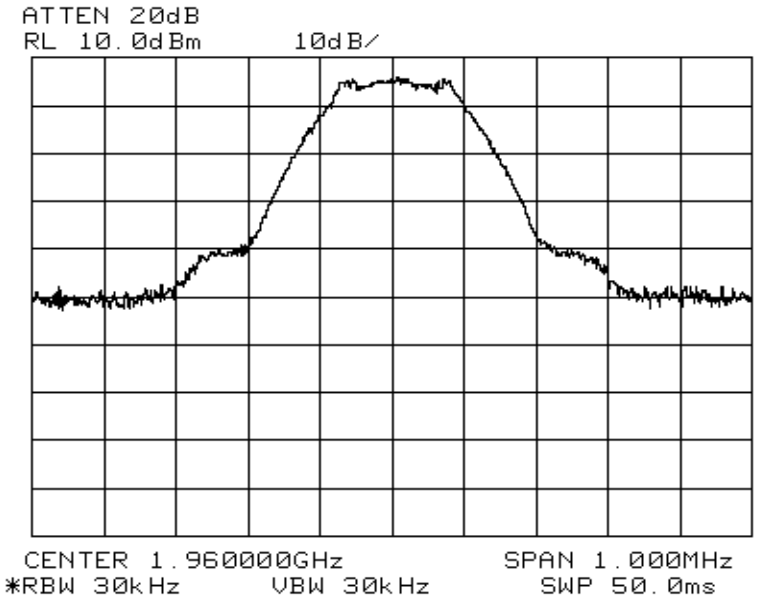


CDMA Output Signal
CU, Downlink, +7dBm
Main Antenna

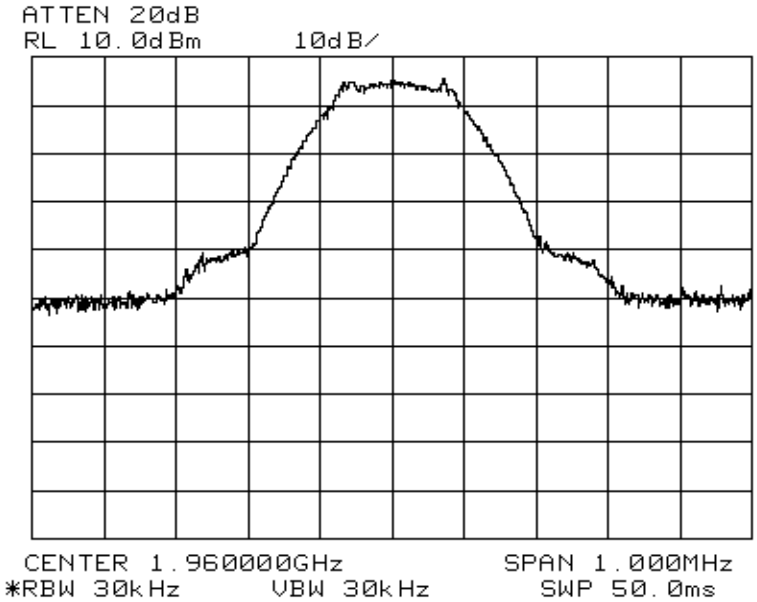


CDMA Output Signal
CU, Downlink, +7dBm
Auxillary Antenna Port.


ATTEN 10dB
RL -20.0dBm
10dB/
GSM Input Reference Signal
CENTER 1.960000GHz
SPAN 1.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms



GSM Output Signal
CU, Downlink, +7dBm
Main Antenna



GSM Output Signal
CU, Downlink, +7dBm
Auxillary Antenna Port.

Section 5. Spurious Emissions at Antenna Terminals

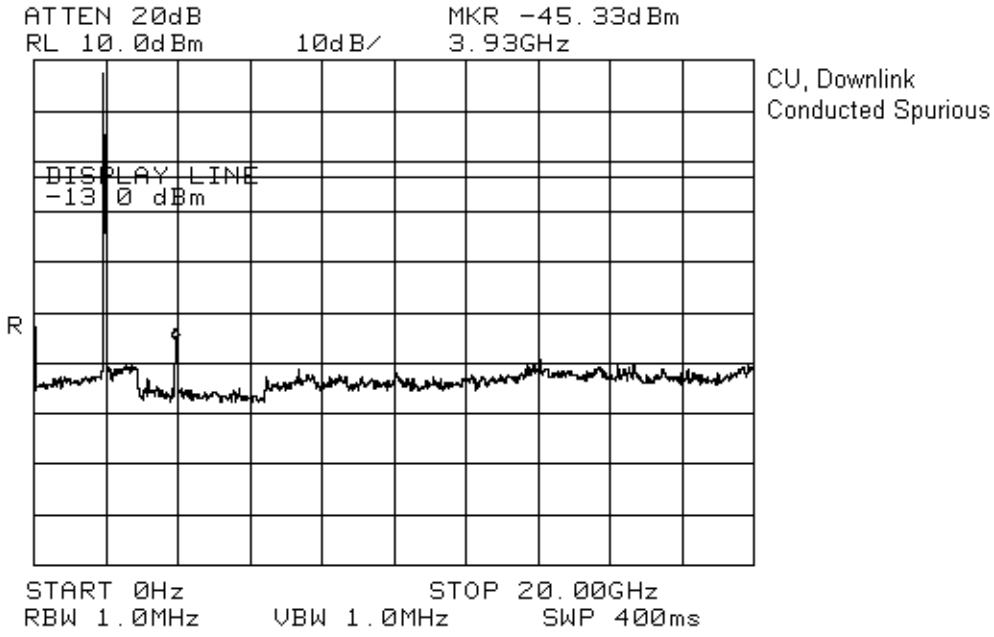
Para. No.: 2.1051

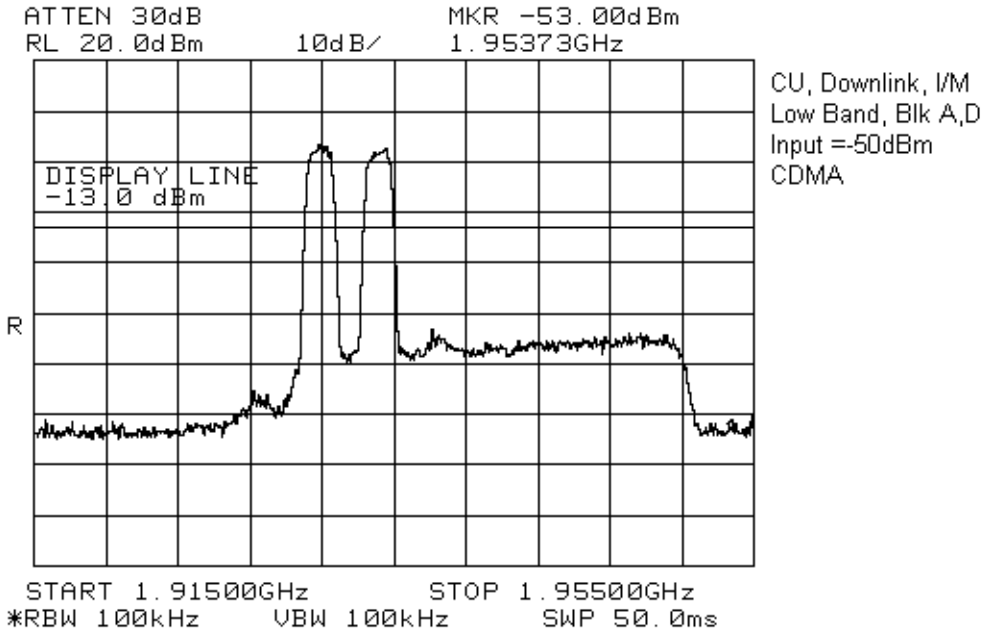
Test Performed By: Glen Westwell	**Date of Test:** 24 Mar. 2003

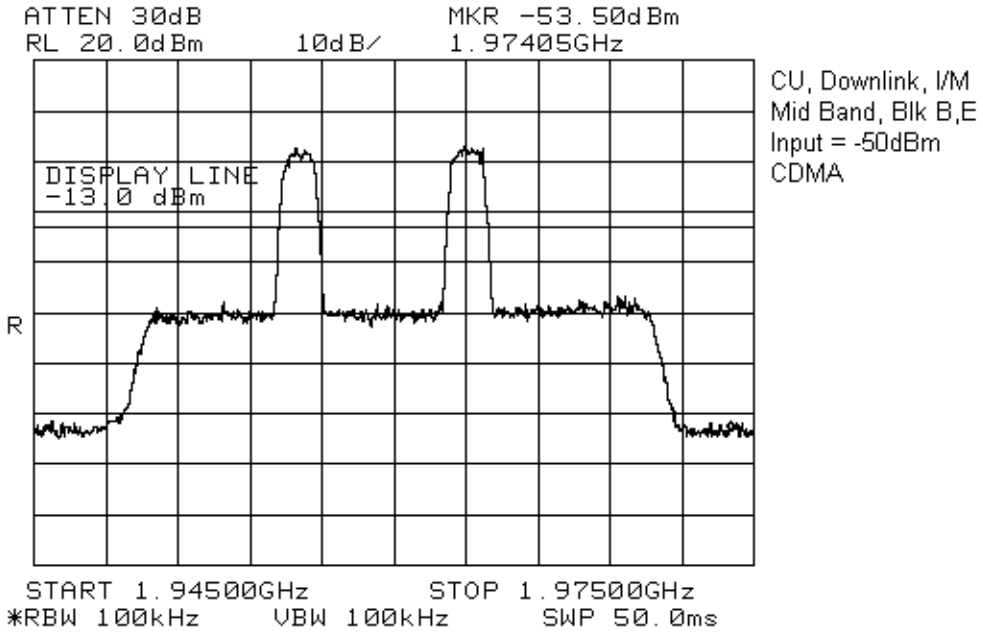
Minimum Standard: 24.238 (a); -13 dBm

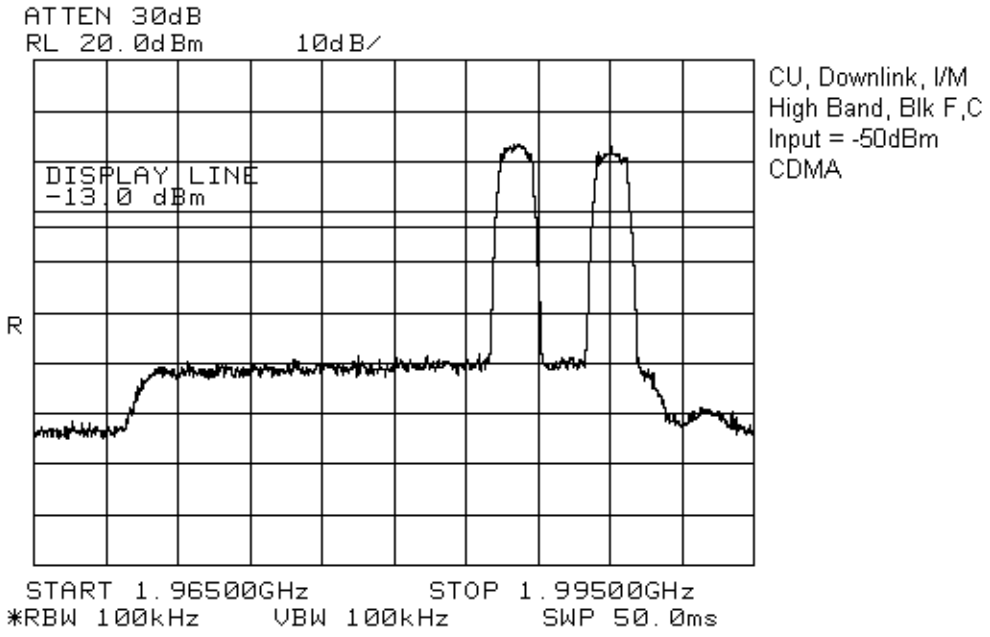
Test Results: Complies.

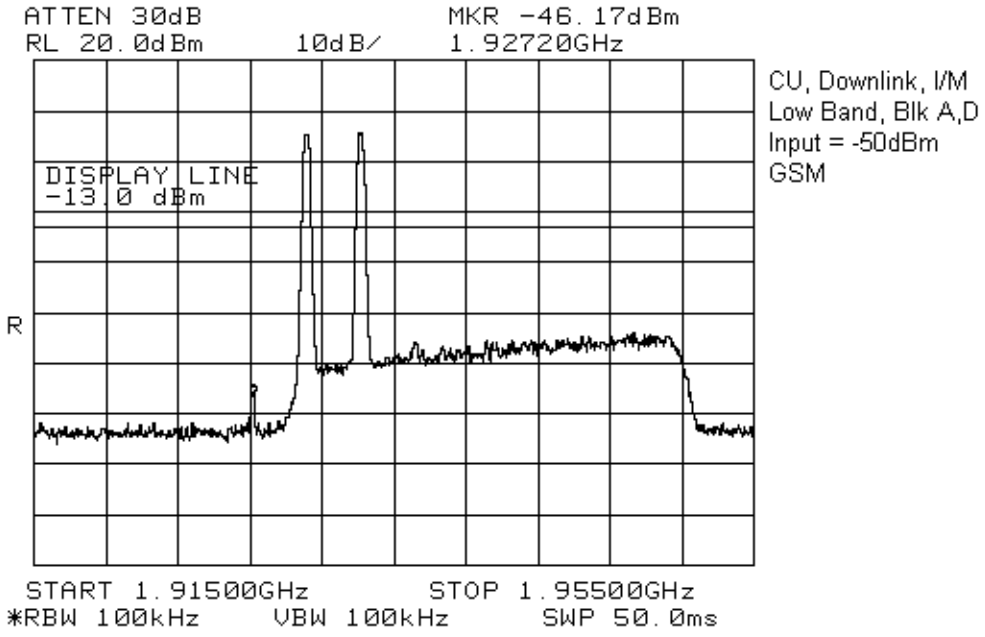
Measurement Data: See attached graphs (worst case).

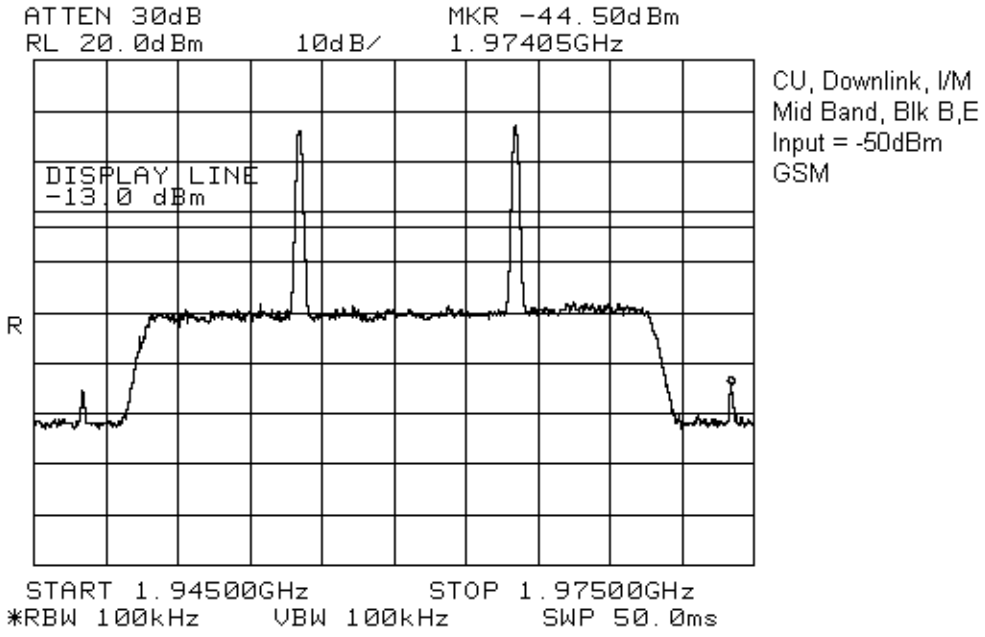

ATTEN 20dB
RL 10.0dBm
10dB/
MKR -45.33dBm
3.93GHz
CU, Downlink
Conducted Spurious
DISPLAY LINE
-13.0 dBm
R
START 0Hz
STOP 20.00GHz
RBW 1.0MHz
VBW 1.0MHz
SWP 400ms

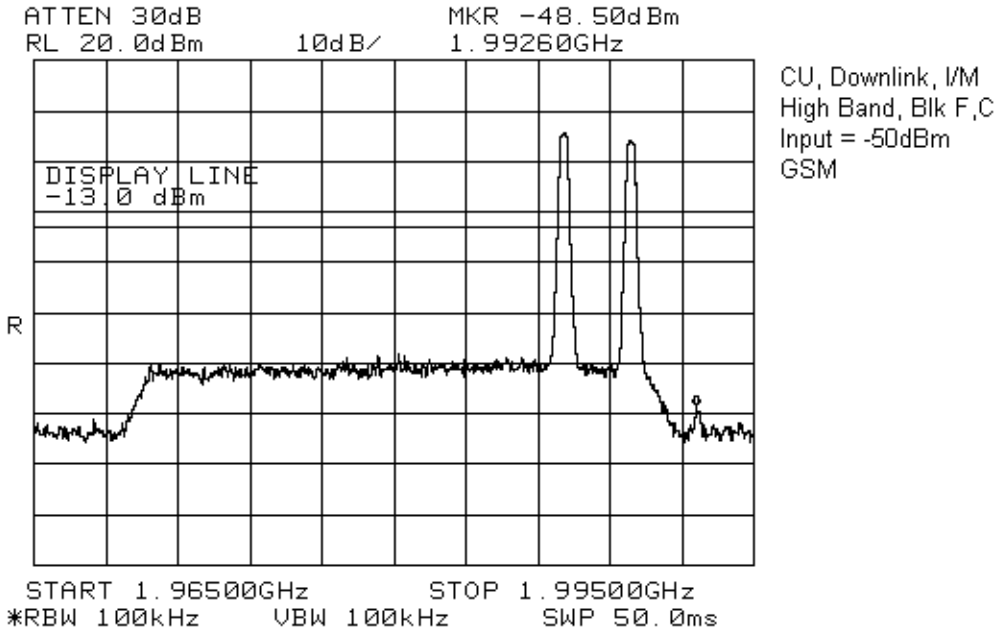

ATTEN 30dB
RL 20.0dBm
10dB/
MKR -53.00dBm
1.95373GHz
DISPLAY LINE
-13.0 dBm
R
CU, Downlink, I/M
Low Band, Blk A,D
Input =-50dBm
CDMA
START 1.91500GHz
STOP 1.95500GHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -53.50dBm
1.97405GHz
DISPLAY LINE
-13.0 dBm
R
START 1.94500GHz
STOP 1.97500GHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms
CU, Downlink, I/M
Mid Band, Blk B,E
Input = -50dBm
CDMA


ATTEN 30dB
RL 20.0dBm
10dB/
DISPLAY LINE
-13.0 dBm
R
CU, Downlink, I/M
High Band, Blk F,C
Input = -50dBm
CDMA
START 1.96500GHz
STOP 1.99500GHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -46.17dBm
1.92720GHz
DISPLAY LINE
-13.0 dBm
R
CU, Downlink, I/M
Low Band, Blk A,D
Input = -50dBm
GSM
START 1.91500GHz
STOP 1.95500GHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -44.50dBm
1.97405GHz
DISPLAY LINE
-13.0 dBm
R
START 1.94500GHz
STOP 1.97500GHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms
CU, Downlink, I/M
Mid Band, Blk B,E
Input = -50dBm
GSM


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -48.50dBm
1.99260GHz
DISPLAY LINE
-13.0 dBm
R
START 1.96500GHz
STOP 1.99500GHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms
CU, Downlink, I/M
High Band, Blk F,C
Input = -50dBm
GSM

Section 6. Field Strength of Spurious Emissions

Para. No.: 2.1053

Test Performed By: Glen Westwell	**Date of Test:** 25 Mar, 2003

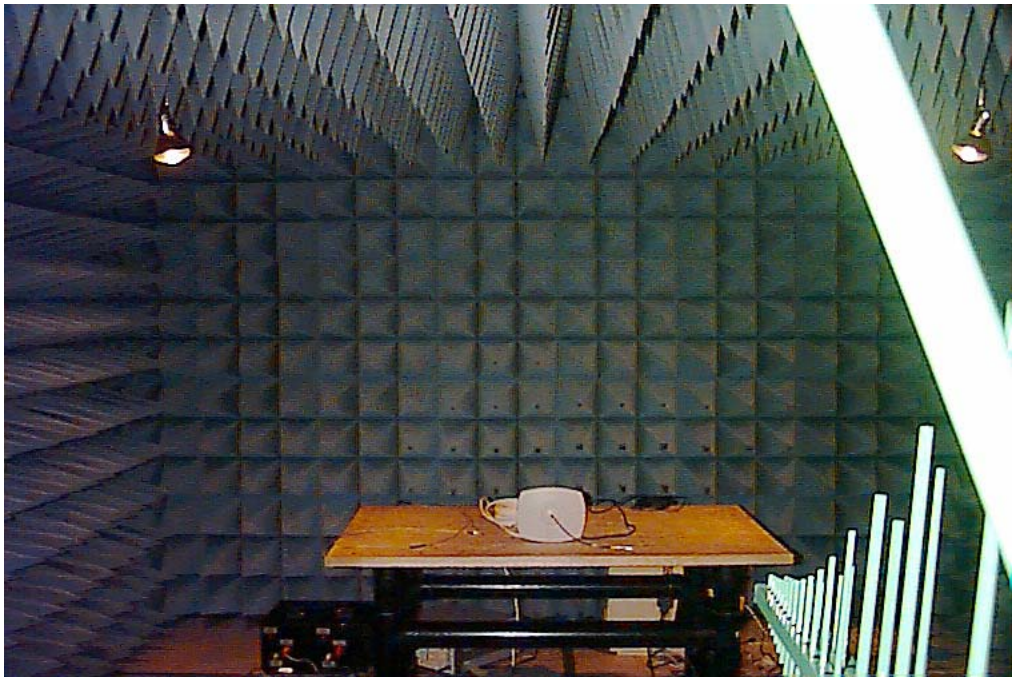
Minimum Standard: 24.238(a); -13dBm

Test Results: Complies.

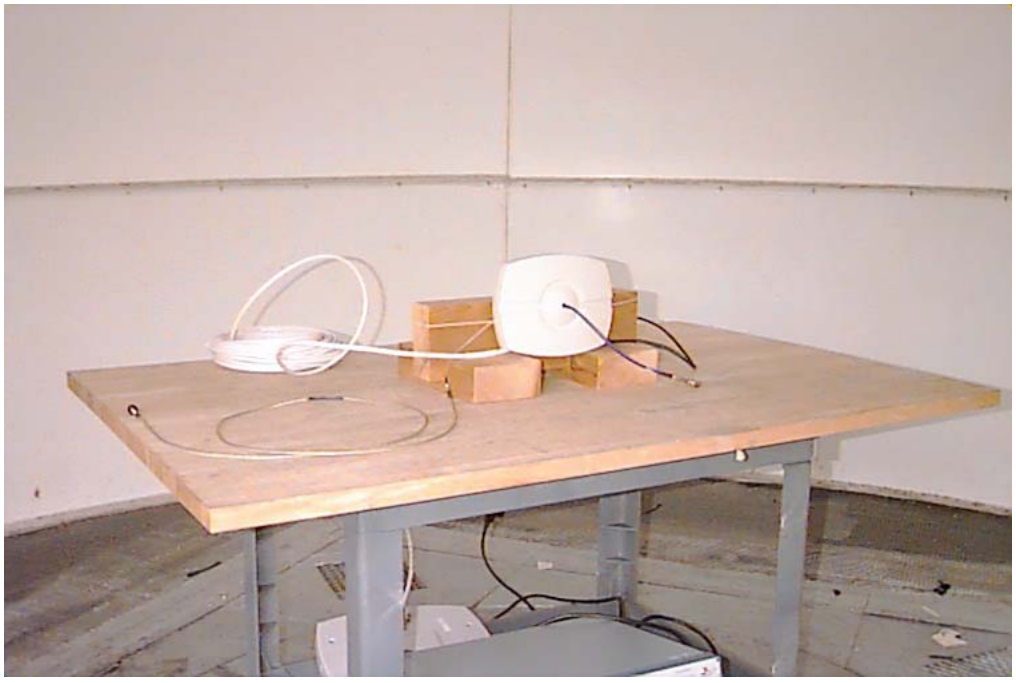
Measurement Data: No emissions detected.

All spurious and harmonic emissions were search to the 10^{th} harmonic.

Field Strength of Spurious Emissions – Pre-Scan Photograph
SpotCell 111/112 CU



Oats Photograph



Section 7. Frequency Stability

Para. No.: 2.1055

Test Performed By: Glen Westwell	**Date of Test:** 24 Mar. 2003

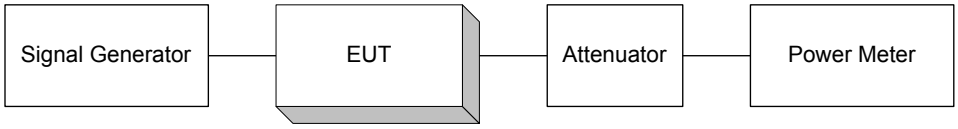
Minimum Standard: 22.355

Test Results: N/A

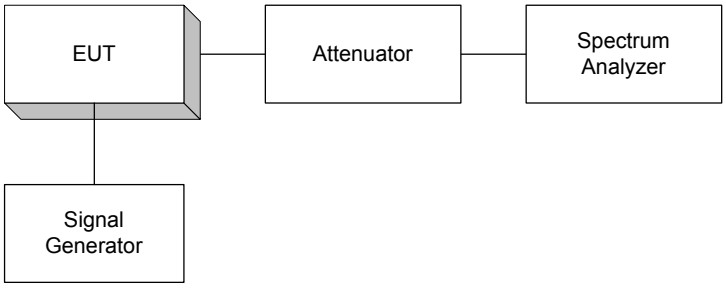
The EUT is a f1-f1 amplifier, as such frequency stability was not performed.

Section 8. Block Diagrams

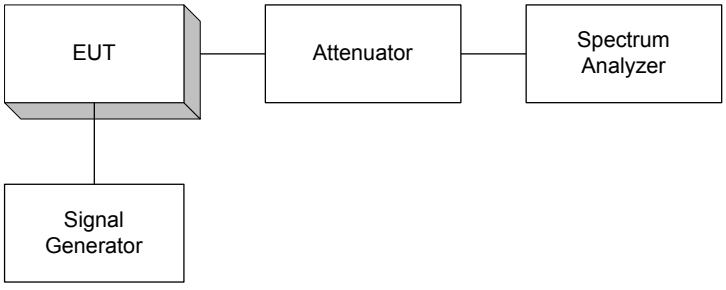
Para. No. 2.1046 - R.F. Power Output



Para. No. 2.1049 - Occupied Bandwidth

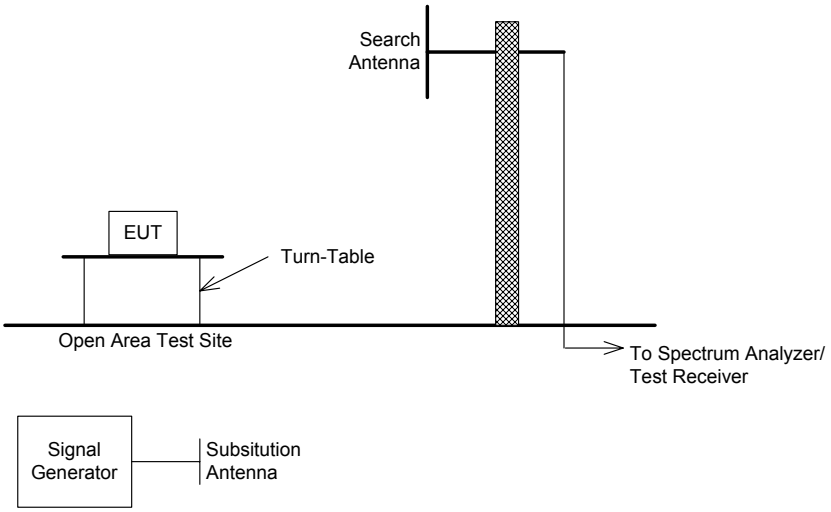


Para. No. 2.1051 - Spurious Emissions at Antenna Terminals



Para. No. 2.1053 - Field Strength of Spurious Radiation

TIA/EIA 603
Effective Radiated Power
Spurious Emissions



Section 9. Test Equipment List

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.
1 Year	Spectrum Analyzer	Hewlett Packard	8565E	FA000981	15 Jul 02	15 Jul 03
Extended	Spectrum Analyzer	Hewlett-Packard	8566B	FA001309	Nov. 27/01	May. 27/03
Extended	Spectrum Analyzer Display	Hewlett-Packard	85662A	FA001309	Nov. 27/01	May. 27/03
NCR	Bilog	Schaffner	CBL6112B	FA001504	NCR	NCR
1 Year	Horn Antenna	EMCO #2	3115	FA000825	09 Dec 02	09 Dec 03
1 Year	1.0 – 2.0 GHz Amplifier	JCA	12-400	FA001498	June. 04/02	June. 04/03
1 Year	2.0 – 4.0 GHz Amplifier	JCA	24-600	FA001496	June. 04/02	June. 04/03
1 Year	4.0 – 8.0 GHz Amplifier	JCA	48-600	FA001497	June. 04/02	June. 04/03
1 Year	RF AMP	DBS Microwave	5-18GHz	FA001409	COU	COU
3 Year	Signal Generator	Rhode & Schwarz	SM1Q03E	FA001269	06 Dec 02	06 Dec 03
3 Year	Signal Generator	Rohde & Schwarz	SM1Q03	FA001091	18 Sep 00	18 Sep 03
Extended	Power Meter	Hewlett Packard	E4418B	FA001413	14 Feb 02	14 May 03
Extended	Power Sensor	Hewlett Packard	8487A	FA001419	14 Feb 02	14 May 03

NA: Not Applicable
NCR: No Cal Required
COU: CAL On Use