Test Report:	2W06371.2
Applicant:	Spotwave Wireless Inc. 1 Hines Rd. Ottawa, Ontario K2K 3C7
Equipment Under Test: (EUT)	SpotCell 111/112 DU PCS Low Power Repeater Class II Permissive Change
In Accordance With:	**FCC Part 24, Subpart E**
FCC ID. :	P3YSPOTCELL0005
Tested By:	Nemko Canada Inc. 303 River Road, R.R. 5 Ottawa, Ontario K1V 1H2
Authorized By:	 Kevin Carr, EMC Specialist
Date:	20 December 2002
Total Number of Pages:	32

Table of Contents

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: 20 December 2002
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	Complies

Notes:

(1) This RF device, the Sptocell 111/112 DU is part of a PCS Band amplifier. It is used to enhance signals in the Uplink direction.

(2) The original application covered frequency block C up to 1905MHz. This Class II permissive change covers the full frequency block C from 1895-1910MHz. This EUT has not been changed in any way from the original application and is the same EUT used in the original application. The original test set up manipulation was limiting the performance for the last 5MHz of frequency block C.

(3) This report has been amended with plots on pages 10,21& 25 to support this class II permissive change.

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 DU
Serial No.:	DU (ABDE) S/N 020003020009 DU (EFC) S/N 020003020010
Date Received In Laboratory:	3 Sept., 2002
Nemko Identification No.:	#1&2
Supply Input Voltage:	120 VAC
Frequency Range:	Uplink: BLK A: 1850-1865MHz BLK D: 1865-1870MHz BLK B: 1870-1885MHz BLK E: 1885-1890MHz BLK F: 1890-1895MHz BLK C: 1895-1910MHz
RF Output (Rated):	DU (Uplink): +18.5dBm
Antenna Gain (Integral):	DU (Uplink): 11.5dBi
Emission Designator(modulation):	CDMA - G7W GSM - F7W

Section 3. RF Power Output

Para. No.: 2.1046

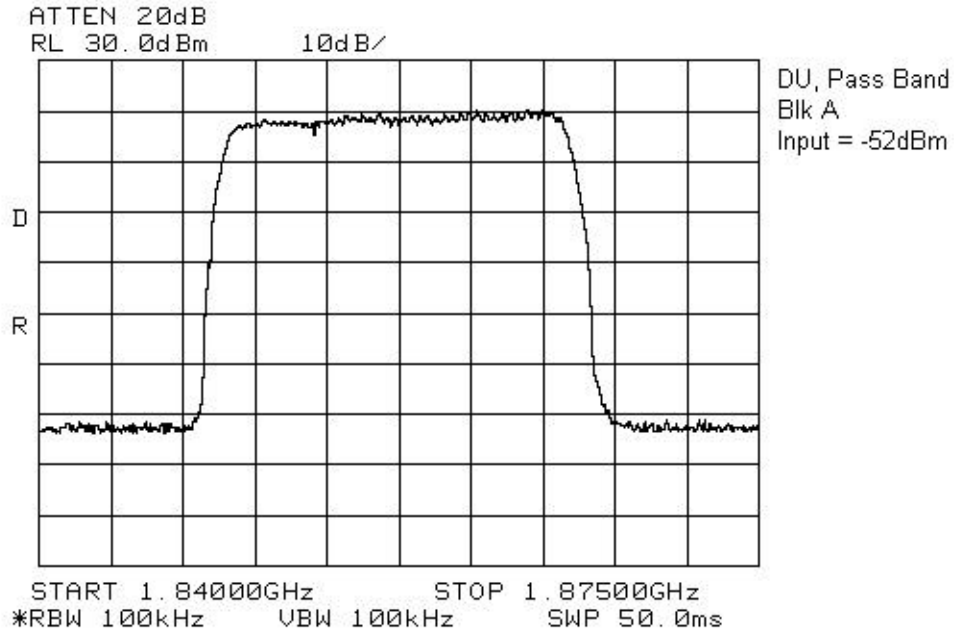
Test Performed By: Glen Westwell	**Date of Test:** 5 Sept., 2002 19 Dec. 2002

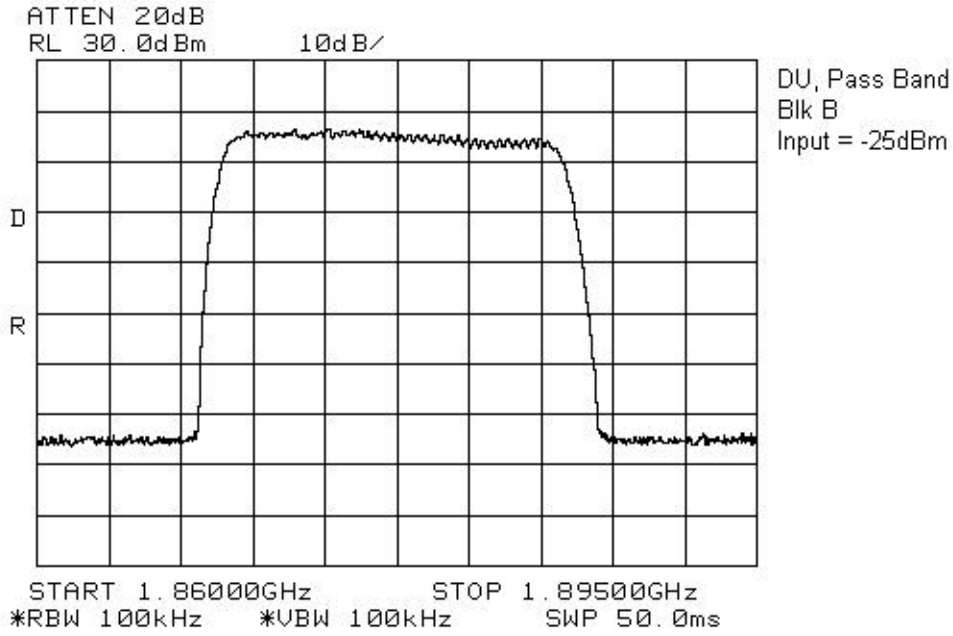
Minimum Standard: 24.232

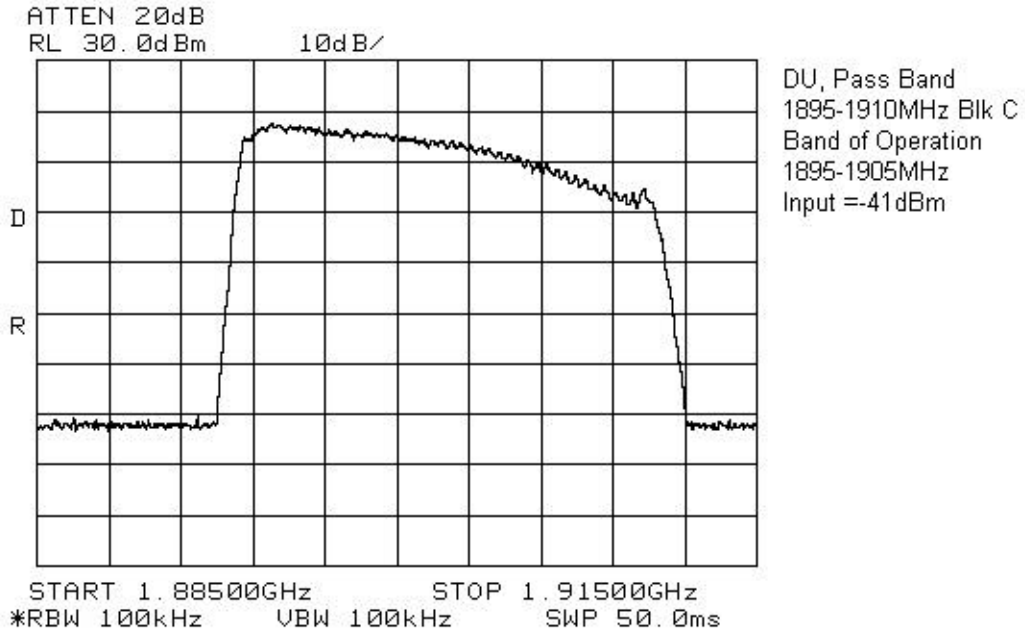
Test Results: Complies.

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 AGE and is equal to Pmax –10LogN.

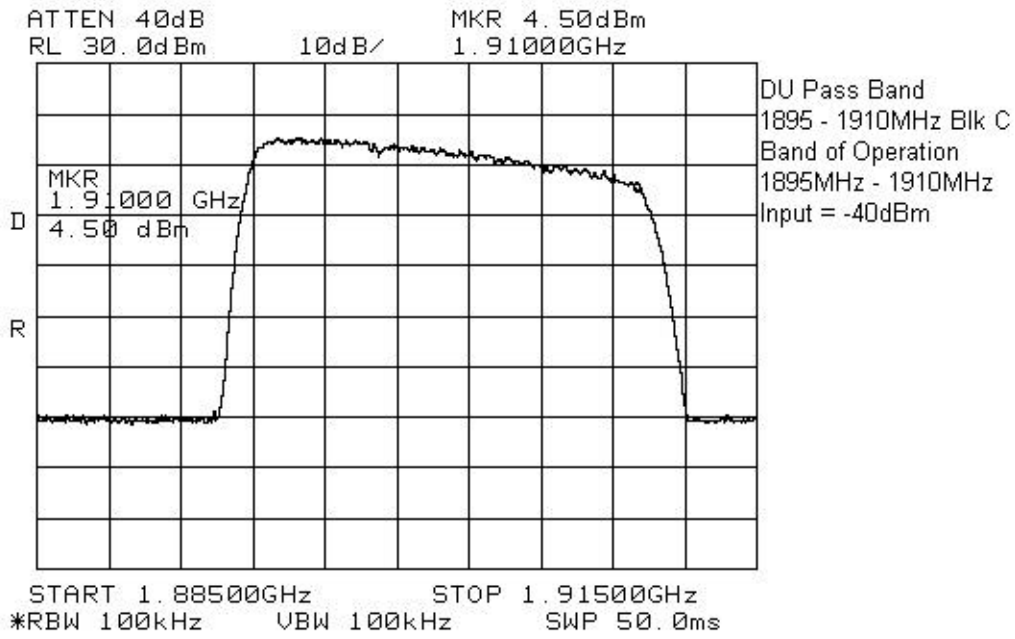
Pmax = Maximum RF Output Power
N = Number Of Channels


ATTEN 20dB
RL 30.0dBm
10dB/
DU, Pass Band
Blk A
Input = -52dBm
D
R
START 1.84000GHz
STOP 1.87500GHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 20dB
RL 30.0dBm
10dB/
DU, Pass Band
Blk B
Input = -25dBm
D
R
START 1.86000GHz
STOP 1.89500GHz
*RBW 100kHz
*VBW 100kHz
SWP 50.0ms


ATTEN 20dB
RL 30.0dBm
10dB/
D
R
START 1.88500GHz
STOP 1.91500GHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms
DU, Pass Band
1895-1910MHz Blk C
Band of Operation
1895-1905MHz
Input =-41dBm

Class II Permissive Change Plot



Section 4. Occupied Bandwidth

Para. No.: 2.1049

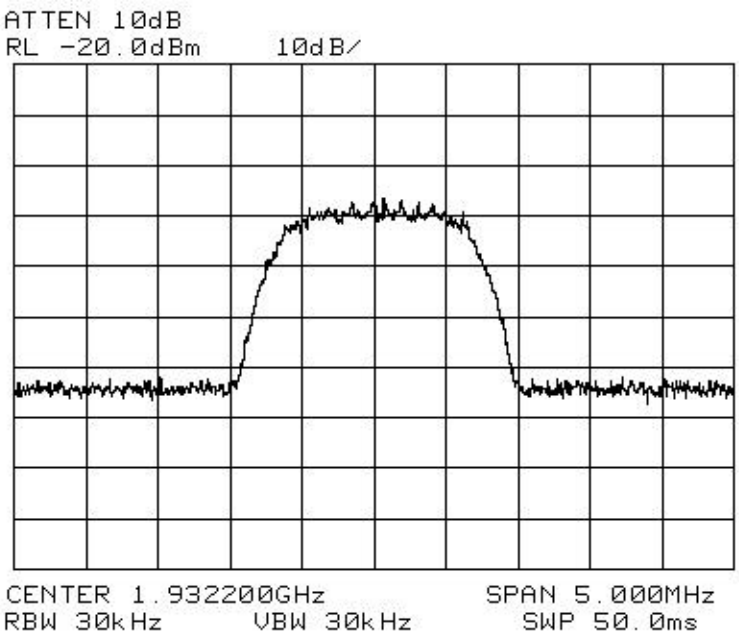
Test Performed By: Glen Westwell	**Date of Test:** 5 Sept., 2002

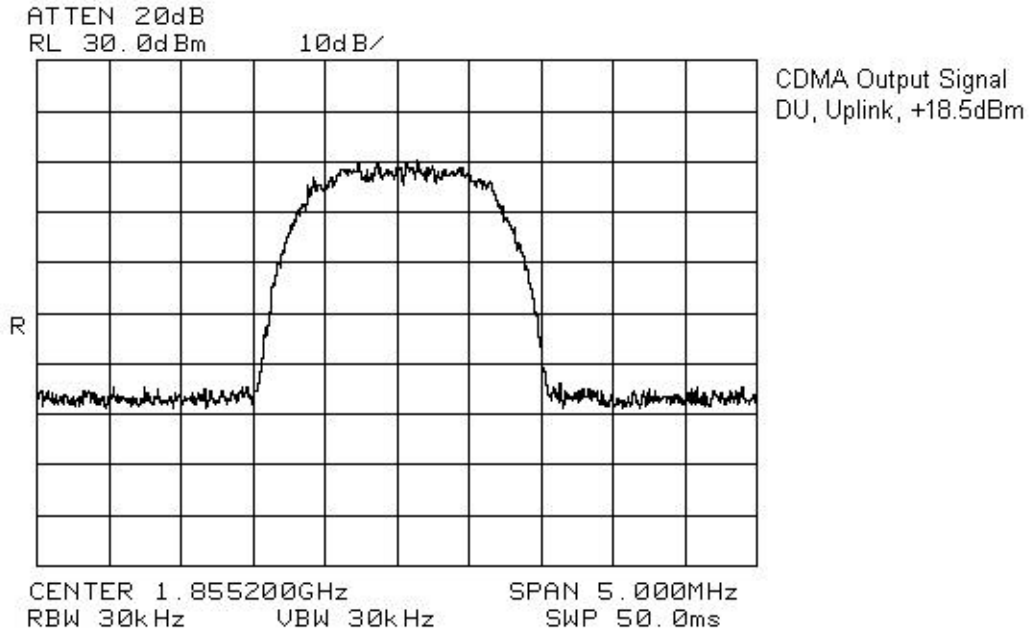
Minimum Standard: 24.238

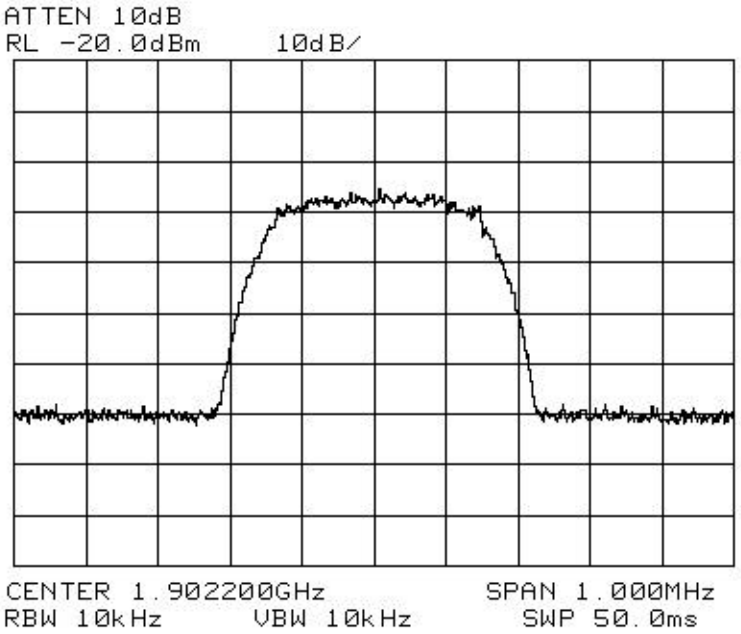
Test Results: Complies.

Measurement Data: See attached graphs.

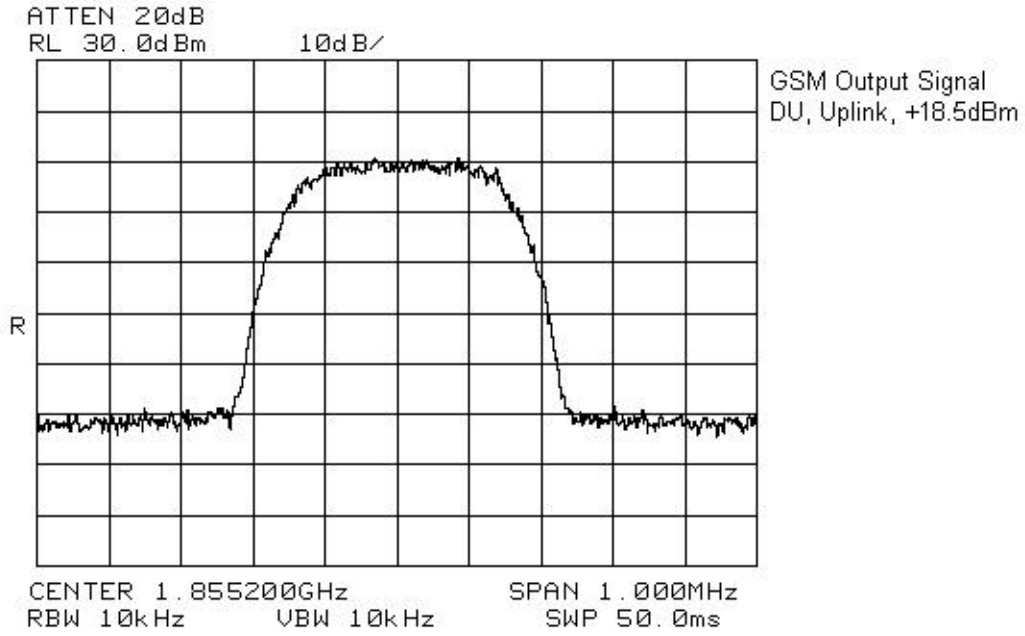
The occupied bandwidth was measured by comparison of input to the output signal. This was done in order to determine if there was any degradation to the output signal due to the amplification through the repeater.


ATTEN 10dB
RL -20.0dBm
10dB/
CDMA Input Reference Signal
CENTER 1.932200GHz
SPAN 5.000MHz
RBW 30kHz
VBW 30kHz
SWP 50.0ms


ATTEN 20dB
RL 30.0dBm
10dB/
R
CDMA Output Signal
DU, Uplink, +18.5dBm
CENTER 1.855200GHz
SPAN 5.000MHz
RBW 30kHz
VBW 30kHz
SWP 50.0ms



GSM Input Reference Signal


ATTEN 20dB
RL 30.0dBm
10dB/
GSM Output Signal
DU, Uplink, +18.5dBm
R
CENTER 1.855200GHz
SPAN 1.000MHz
RBW 10kHz
VBW 10kHz
SWP 50.0ms

Section 5. Spurious Emissions at Antenna Terminals

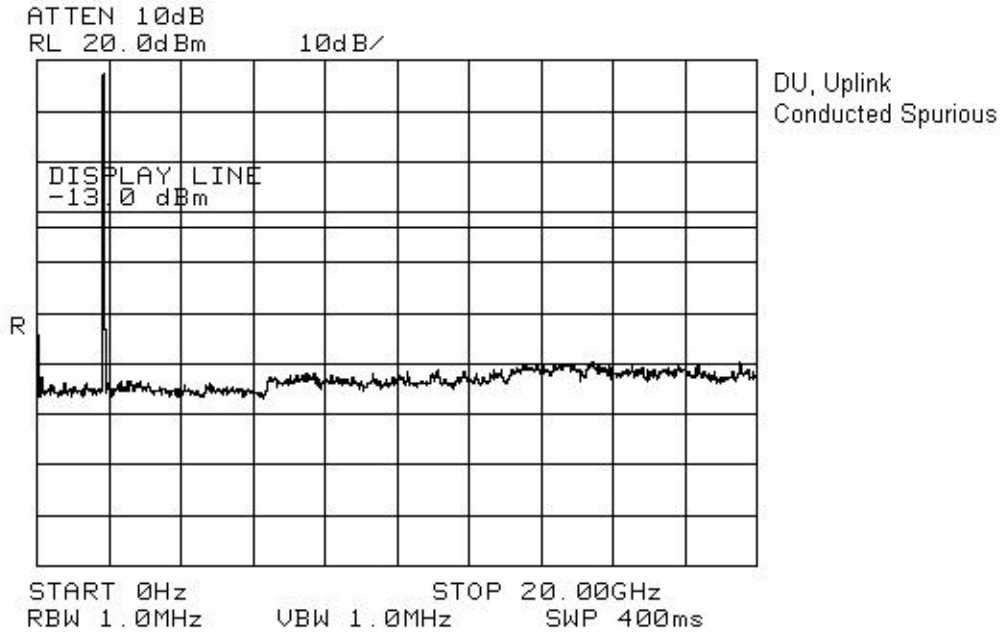
Para. No.: 2.1051

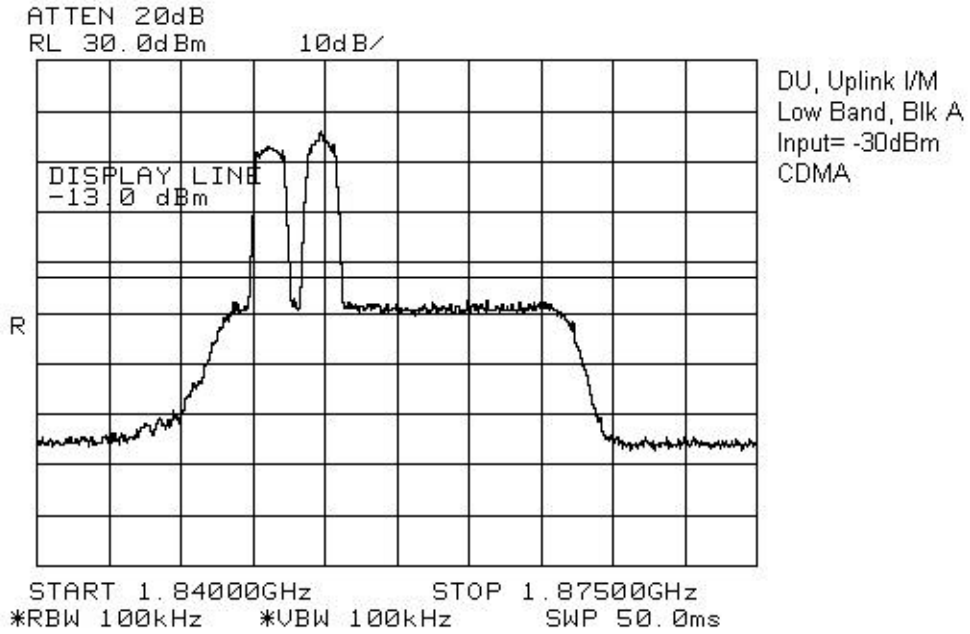
Test Performed By: Glen Westwell	**Date of Test:** 6 Sept., 2002 19 Dec. 2002

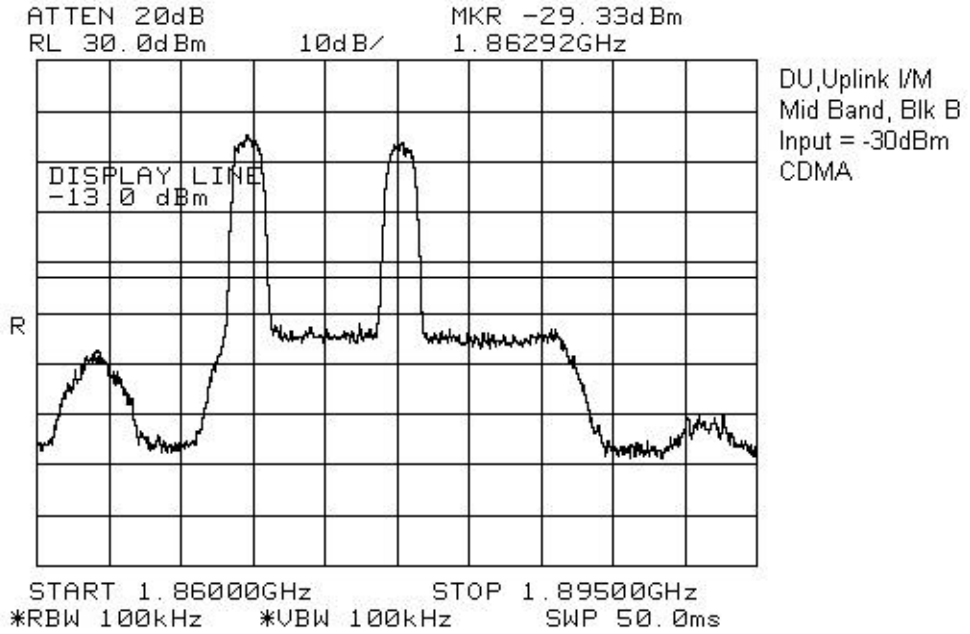
Minimum Standard: 24.238 (a); -13 dBm

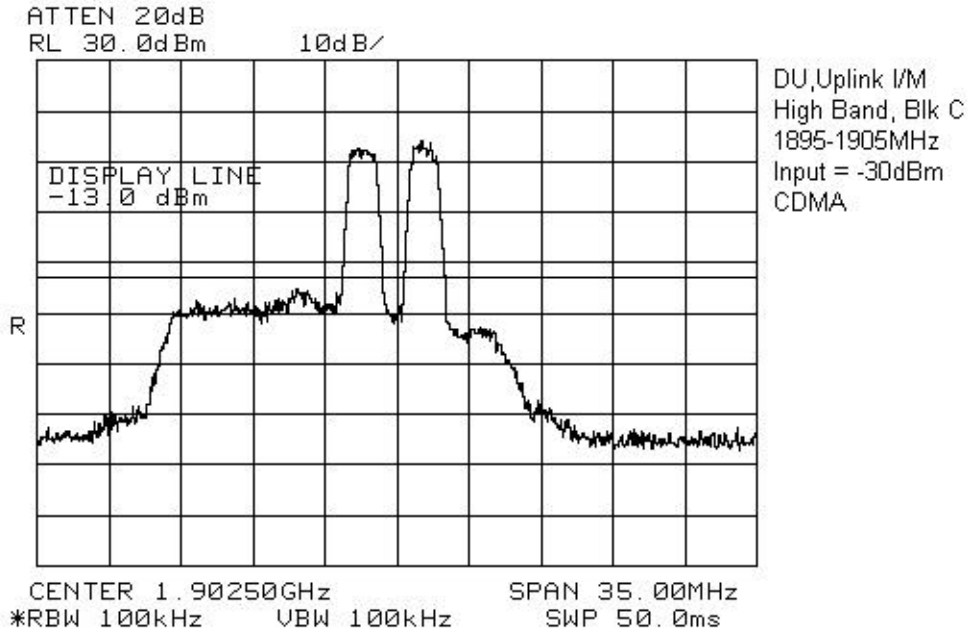
Test Results: Complies.

Measurement Data: See attached graphs (worst case).

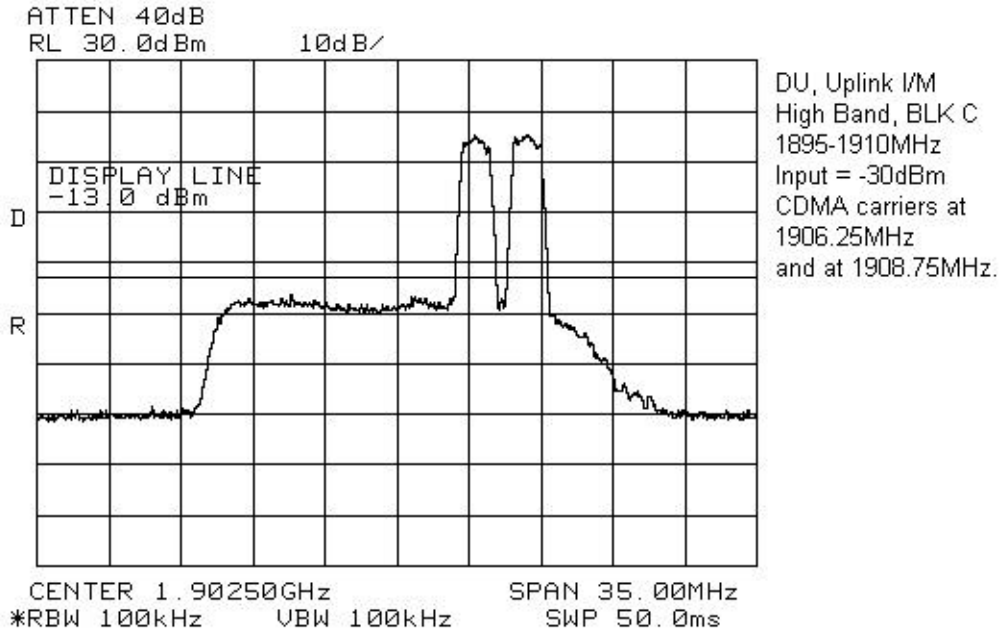

ATTEN 10dB
RL 20.0dBm
10dB/
DU, Uplink
Conducted Spurious
DISPLAY LINE
-13.0 dBm
R
START 0Hz
STOP 20.00GHz
RBW 1.0MHz
VBW 1.0MHz
SWP 400ms

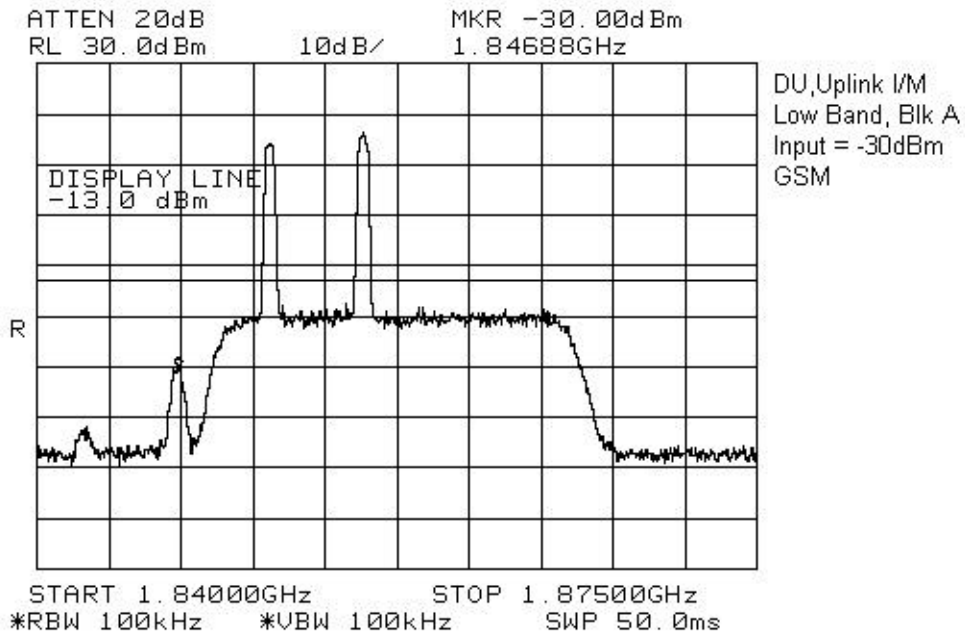

ATTEN 20dB
RL 30.0dBm
10dB/
DISPLAY LINE
-13.0 dBm
R
DU, Uplink I/M
Low Band, Blk A
Input= -30dBm
CDMA
START 1.84000GHz
STOP 1.87500GHz
*RBW 100kHz
*VBW 100kHz
SWP 50.0ms

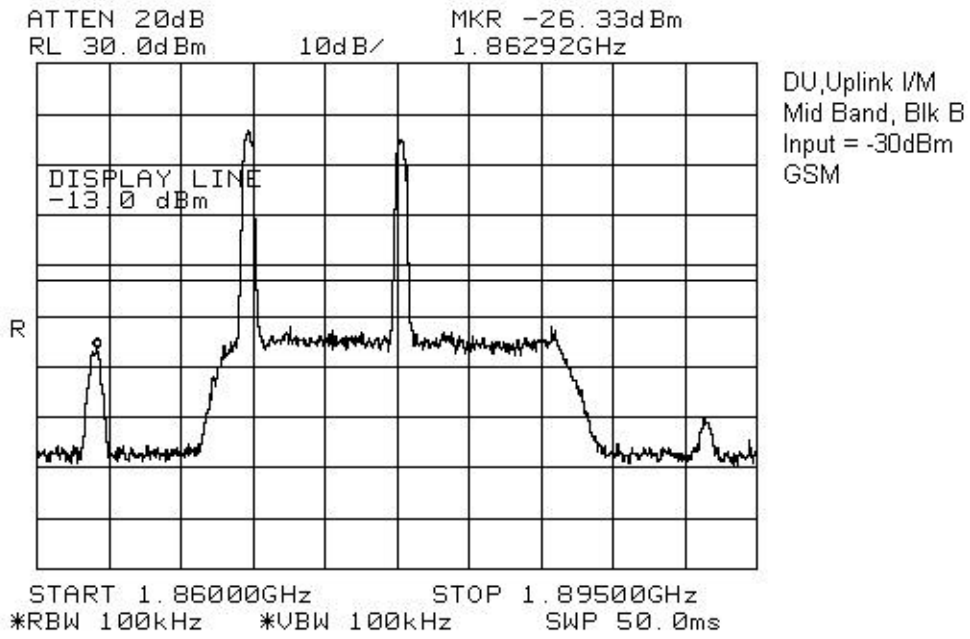

ATTEN 20dB
RL 30.0dBm
10dB/
MKR -29.33dBm
1.86292GHz
DISPLAY LINE
-13.0 dBm
R
DU,Uplink I/M
Mid Band, Blk B
Input = -30dBm
CDMA
START 1.86000GHz
STOP 1.89500GHz
*RBW 100kHz
*VBW 100kHz
SWP 50.0ms

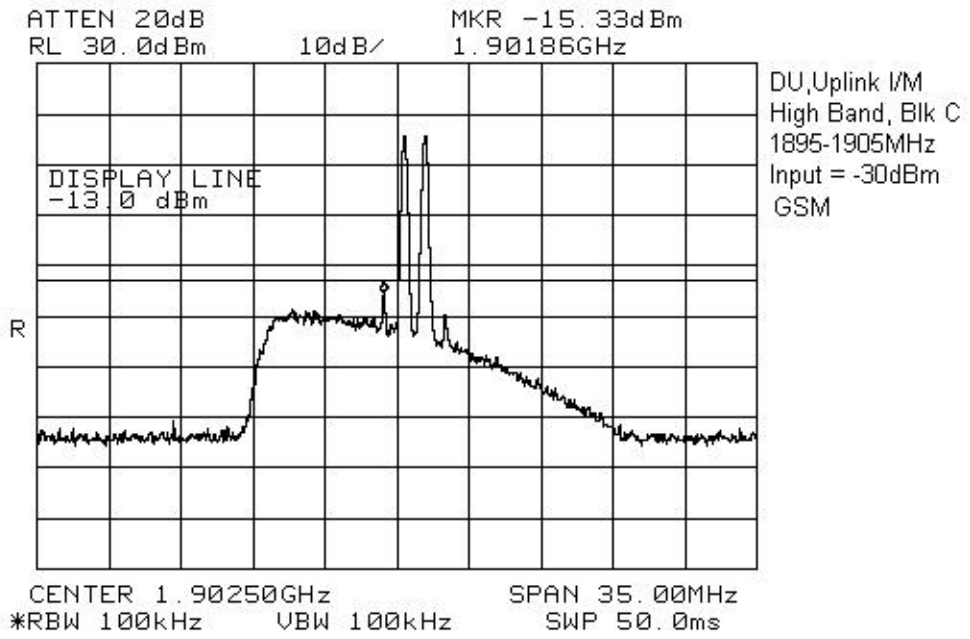

ATTEN 20dB
RL 30.0dBm
10dB/
DISPLAY LINE
-13.0 dBm
R
DU,Uplink I/M
High Band, Blk C
1895-1905MHz
Input = -30dBm
CDMA
CENTER 1.90250GHz
SPAN 35.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms

Class II Permissive Change Plot

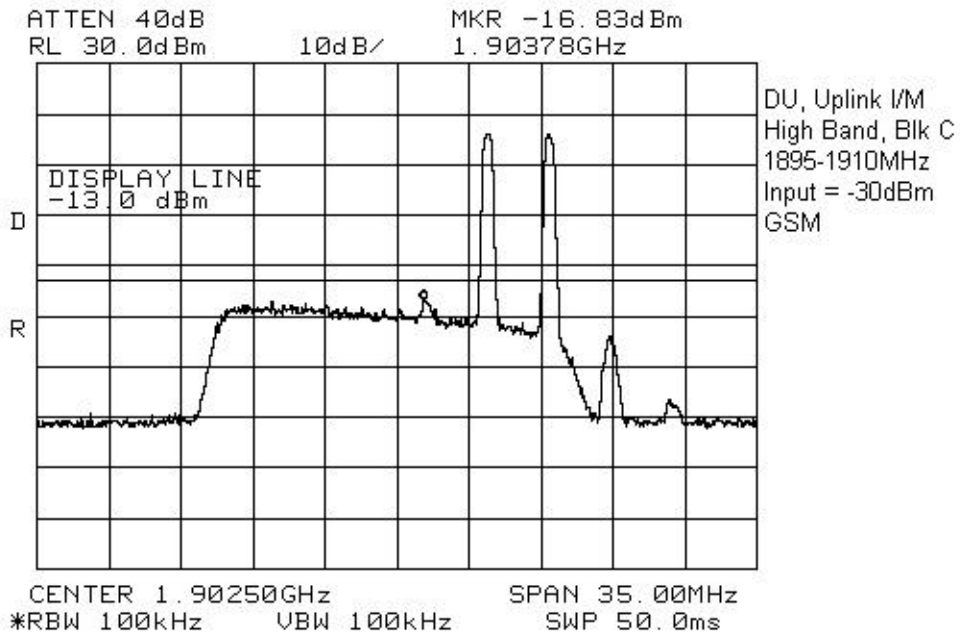



ATTEN 20dB
RL 30.0dBm
10dB/
MKR -30.00dBm
1.84688GHz
DISPLAY LINE
-13.0 dBm
R
START 1.84000GHz
STOP 1.87500GHz
*RBW 100kHz
*VBW 100kHz
SWP 50.0ms
DU,Uplink I/M
Low Band, Blk A
Input = -30dBm
GSM


ATTEN 20dB
RL 30.0dBm
10dB/
MKR -26.33dBm
1.86292GHz
DISPLAY LINE
-13.0 dBm
R
START 1.86000GHz
STOP 1.89500GHz
*RBW 100kHz
*VBW 100kHz
SWP 50.0ms
DU,Uplink I/M
Mid Band, Blk B
Input = -30dBm
GSM


ATTEN 20dB
RL 30.0dBm
10dB/
MKR -15.33dBm
1.90186GHz
DISPLAY LINE
-13.0 dBm
R
DU,Uplink I/M
High Band, Blk C
1895-1905MHz
Input = -30dBm
GSM
CENTER 1.90250GHz
SPAN 35.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms

Class II Permissive Change Plot



Section 6. Field Strength of Spurious Emissions

Para. No.: 2.1053

Test Performed By: Glen Westwell	**Date of Test:** 9 Sept., 2002

Minimum Standard: 24.238(a); -13dBm

Test Results: Complies.

Measurement Data: See Attached Table.

Test Data - Field Strength of Spurious Emissions

Test Distance (meters) : 3		Range: A Tower		Receiver: 8565E		RBW(kHz): 1000		Detector: Peak	
Freq. (MHz)	Ant. *	Pol. (V/H)	RCVD Signal (dB? V)	Signal Substitution Conversion Factor (dB)**	Amp. Gain (dB)***	Dist. Corr. (dB)	Field Strength (dBm)	Limit (dBm)	Margin (dB)
3710.0	SSV	V	56.7	-118.4			-61.7	-13.0	48.7
3710.0	SSH	H	62.2	-119.8			-57.6	-13.0	44.6

Notes:
B/C = Biconical, B/L = Biconilog, L/P = Log-Periodic, H = Horn, D/P = Dipole
* Re-measured using dipole antenna.
** Includes cable loss when amplifier is not used.
*** Includes cable loss.
( ) Denotes failing emission level.
N.D. = Not Detected

All spurious and harmonic emissions to the 10th harmonic were searched.

Field Strength of Spurious Emissions - Photograph
SpotCell 111/112 DU

Section 7. Frequency Stability

Para. No.: 2.1055

Test Performed By: Glen Westwell	**Date of Test:** 10 Sept., 2002

Minimum Standard: 22.355

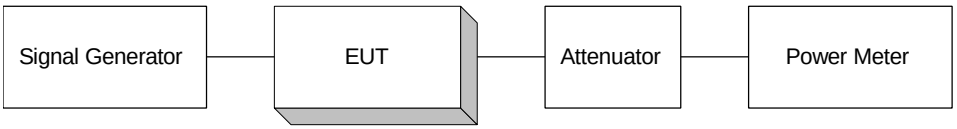
Test Results: Complies. The maximum frequency drift is 0 Hz.
There is no frequency translation.

Measurement Data: Standard Test Frequency: (-30?C to +50?C)

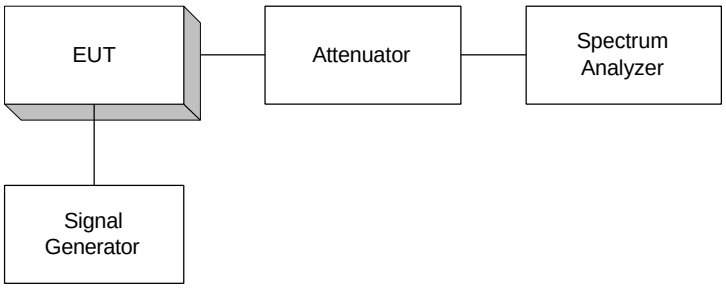
Uplink: 1855.000 000 MHz

Section 8. Block Diagrams

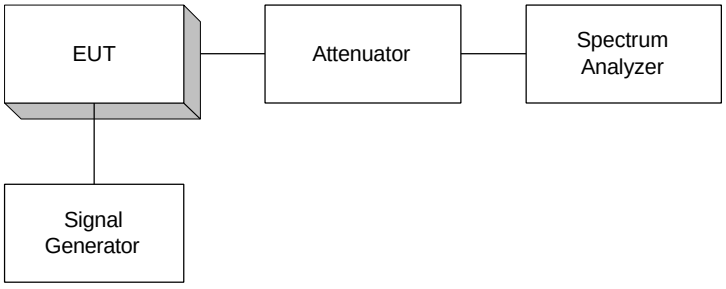
Para. No. 2.1046 - R.F. Power Output



Para. No. 2.1049 - Occupied Bandwidth

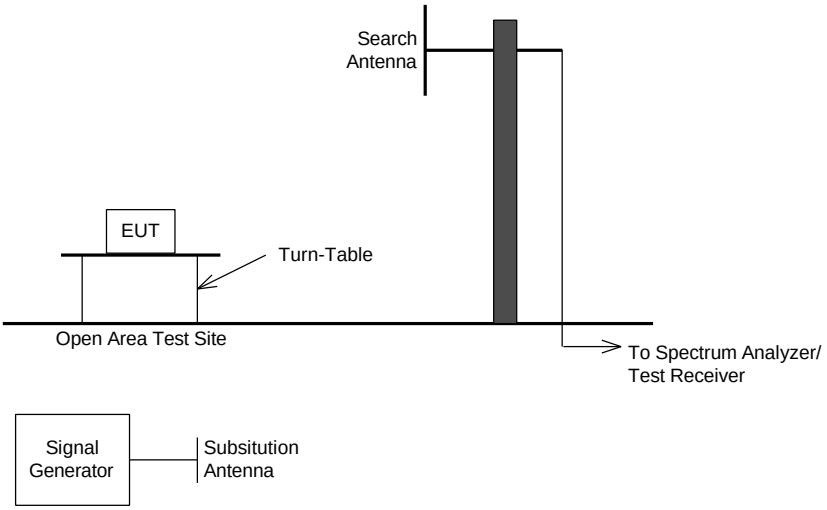


Para. No. 2.1051 - Spurious Emissions at Antenna Terminals

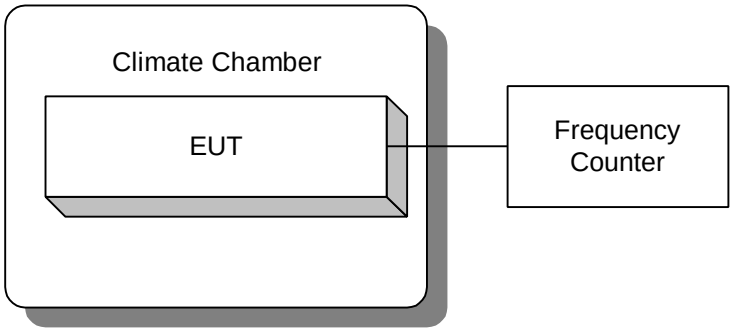


Para. No. 2.1053 - Field Strength of Spurious Radiation

TIA/EIA 603
Effective Radiated Power
Spurious Emissions



Para. No. 2.1055 - Frequency Stability



Section 9. Test Equipment List

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.
1 Year	Spectrum Analyzer	Hewlett Packard	8565E	FA000981	6 Mar. 02	6 Mar. 03
1 Year	Spectrum Analyzer-**1**	Hewlett Packard	8566B	2311A02238	27 Nov 2001	27 Nov 2002
1 Year	Spectrum Analyzer Display-**1**	Hewlett Packard	8566B	2314A04759	27 Nov 2001	27 Nov 2002
1 Year	Quasi-peak adapter-**1**	Hewlett-Packard	85650A	2043A00302	27 Nov 2001	27 Nov 2002
1 Year	Climate Chamber	Thermotron	SM-16C	15649-S	COU	COU
1 Year	Horn Antenna	EMCO #2	3115	4336	Dec. 1/01	Dec. 1/02
1 Year	RF AMP	JCA	2-4 GHz	FA001496	COU	COU
1 Year	RF AMP	JCA	1-2 GHz	FA001498	COU	COU
1 Year	RF AMP	JCA	4-8 GHz	FA001497	COU	COU
1 Year	RF AMP	DBS Microwave	5-18GHz	FA001409	COU	COU
1Year	Frequency Counter	Hewlett Packard	HP5350A	2444A00135	11 Jan 2002	11 Jan 2003
3 Year	RF Generator	Rohde & Schwarz	SIMIQ03	DE22004	Sept. 10/00	Sept. 18/03
3 Year	RF Generator	Rohde & Schwarz	SIMIQ03E	DE24154	Oct. 4/99	Oct. 4/02

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