



Nemko

Test Report: 2W06371.1

Applicant: Spotwave Wireless Inc.
1 Hines Rd.
Ottawa, Ontario
K2K 3C7

**Equipment Under Test:
(EUT)** SpotCell 111/112 DU
PCS Low Power Repeater

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 September 2002

Total Number of Pages: 29

Table of Contents

Section 1.	Summary of Test Results	3
Section 2.	General Equipment Specification	5
Section 3.	RF Power Output.....	6
Section 4.	Occupied Bandwidth	10
Section 5.	Spurious Emissions at Antenna Terminals	15
Section 7.	Frequency Stability.....	26
Section 8.	Block Diagrams.....	27
Section 9.	Test Equipment List	29

EQUIPMENT: *SpotCell 111/112 DU, PCS Low Power Repeater*

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: _____
Glen Westwell, Wireless Technologist

DATE: 20 September 2002

Nemko Canada Inc. authorizes the above named company to reproduce this report provided it is reproduced in its entirety and for use by the company's employees only.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Nemko Canada Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

This report applies only to the items tested.

EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater

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:

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.

Indoor Temperature: 22 °C
 Humidity: 45 %

Outdoor Temperature: 23 °C
 Humidity: 48 %

.

EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater

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: 1895-1905MHz
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
---	------------------------------------

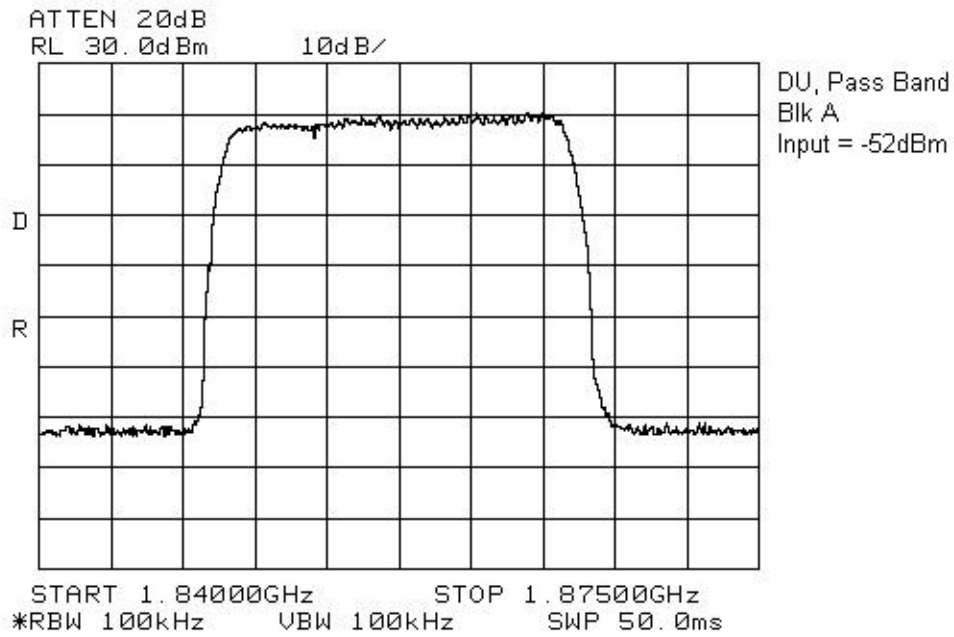
Minimum Standard: 24.232

Test Results: Complies.

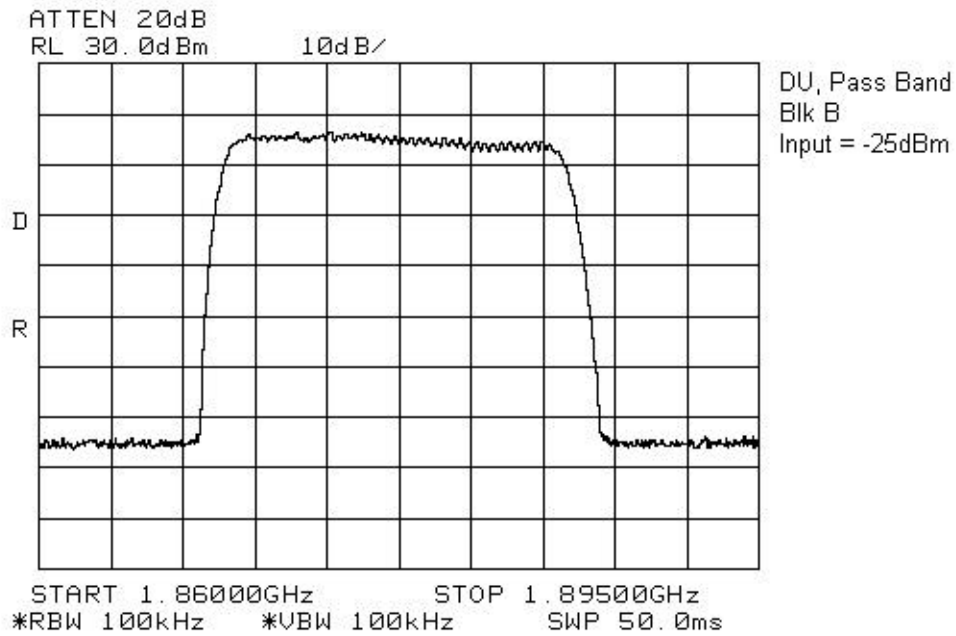
The maximum RF output power is within ± 1 dB of the manufacturer's rating. The RF output power is de-rated according to the number of channels via AGE and is equal to $P_{max} - 10\log N$.

P_{max} = Maximum RF Output Power
N = Number Of Channels

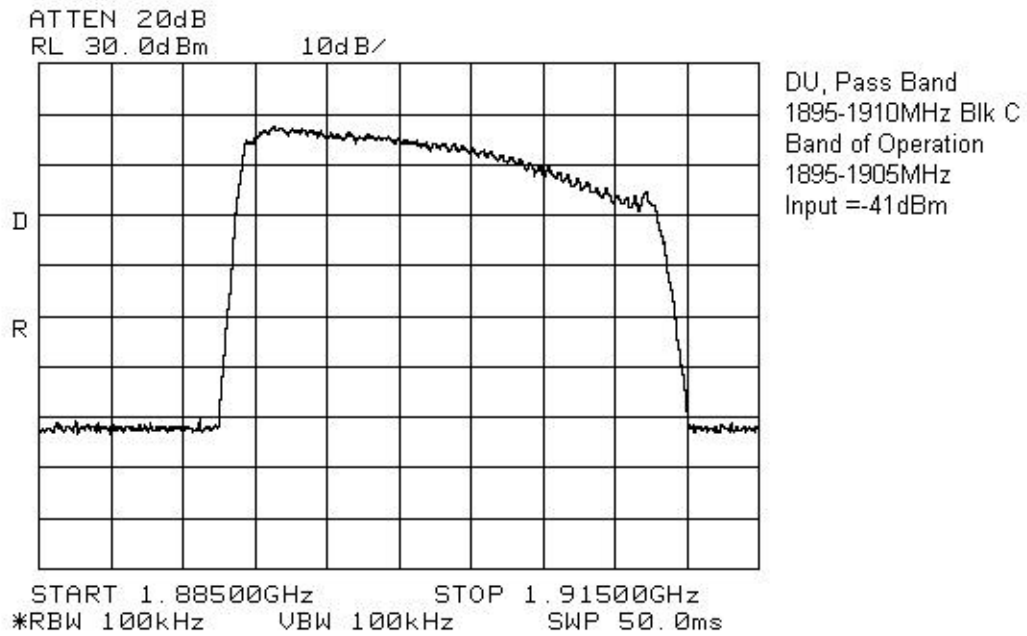
EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater



EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater



EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater



EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater

Section 4. Occupied Bandwidth

Para. No.: 2.1049

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

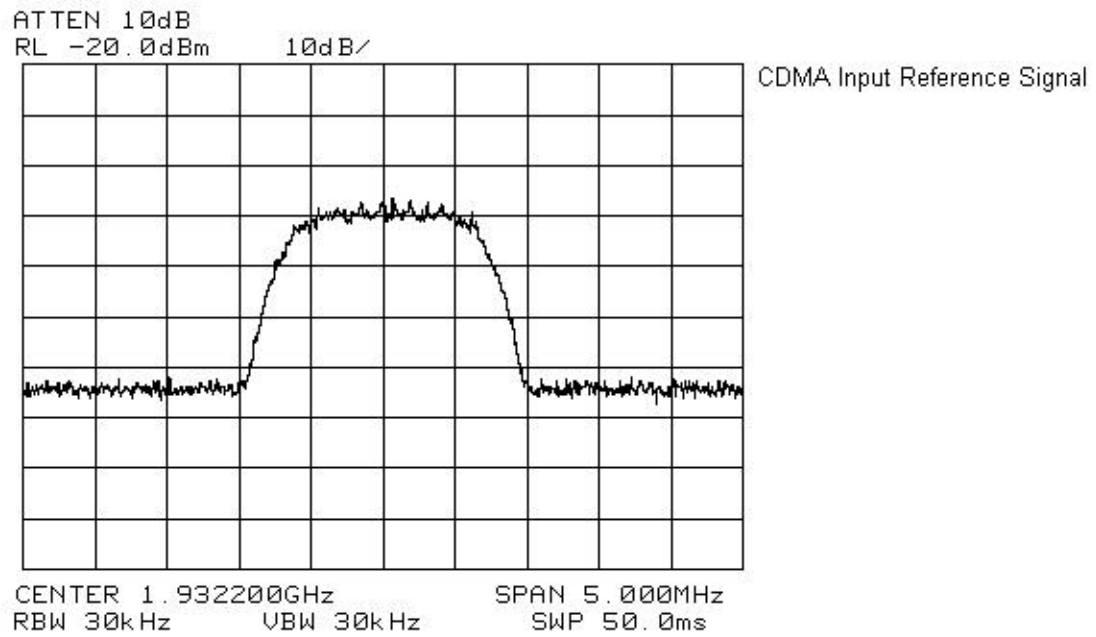
Minimum Standard: 24.238

Test Results: Complies.

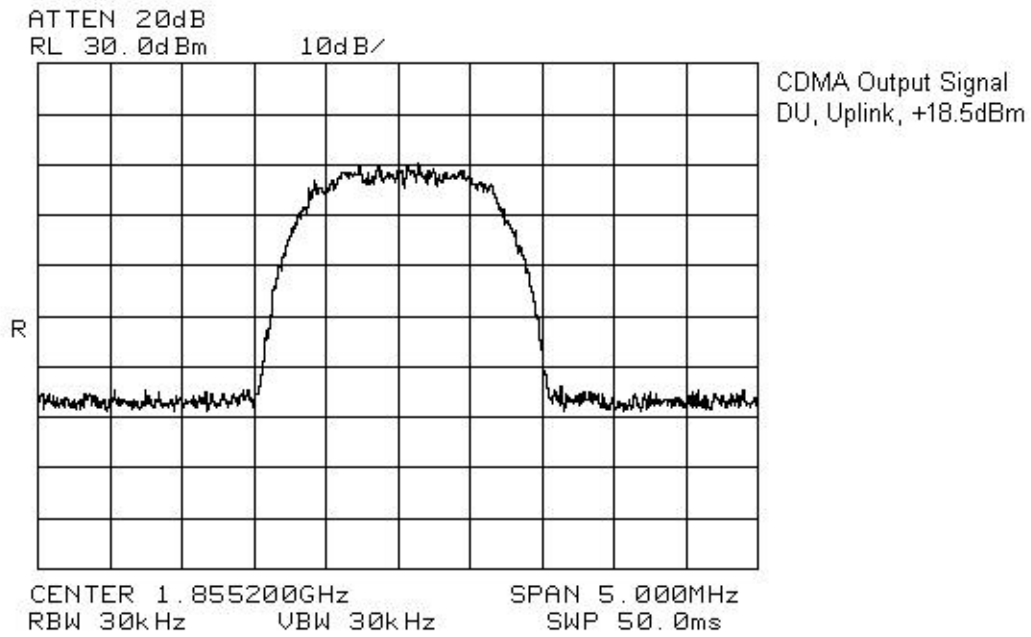
Measurement Data: See attached graphs.

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.

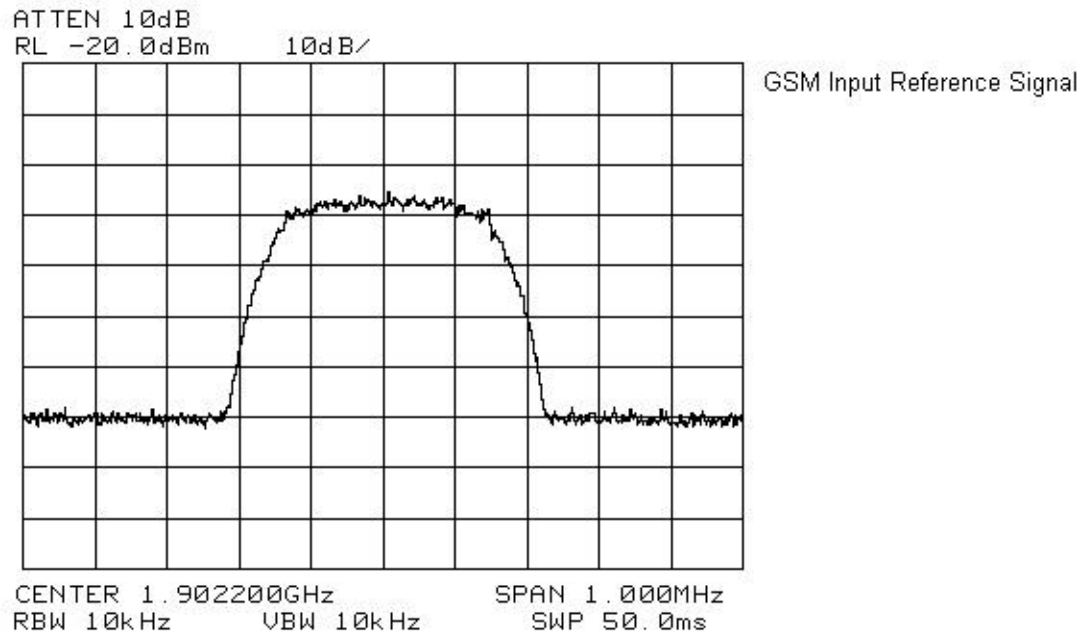
EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater

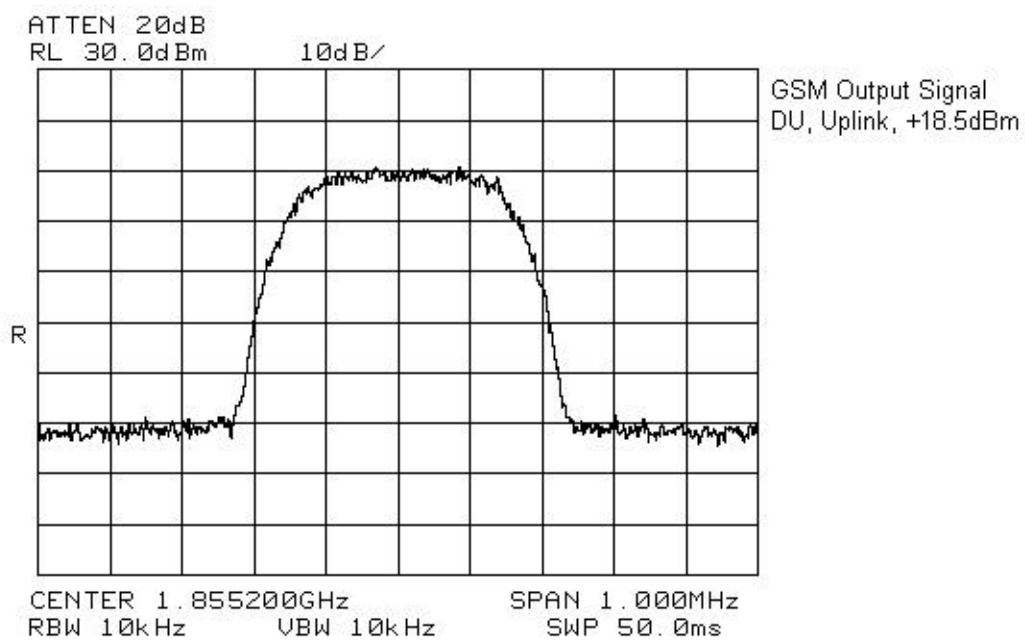


EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater



EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater





EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater

Section 5. Spurious Emissions at Antenna Terminals

Para. No.: 2.1051

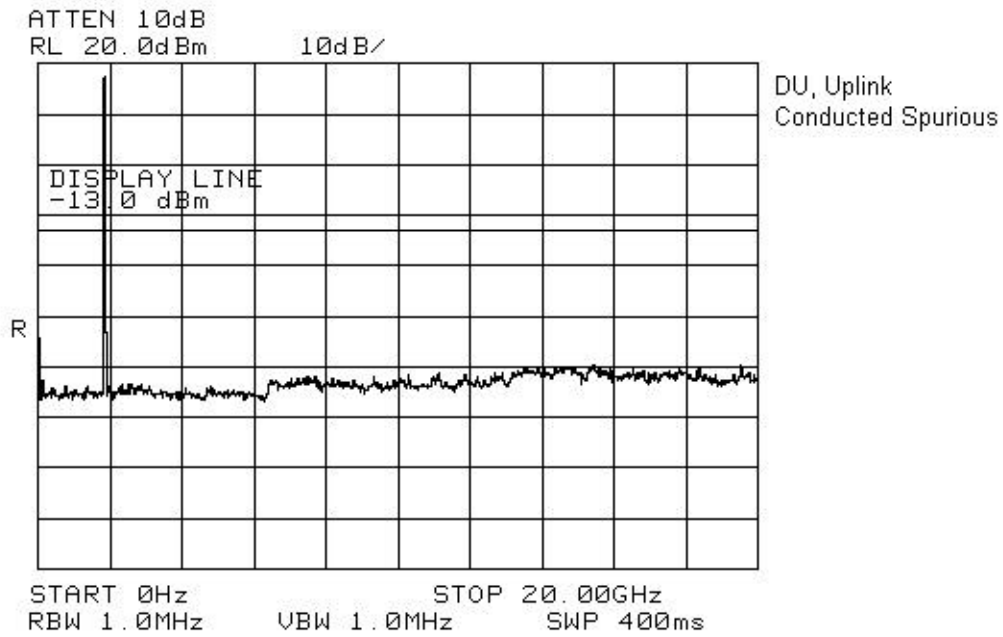
Test Performed By: Glen Westwell	Date of Test: 6 Sept., 2002
---	------------------------------------

Minimum Standard: 24.238 (a); -13 dBm

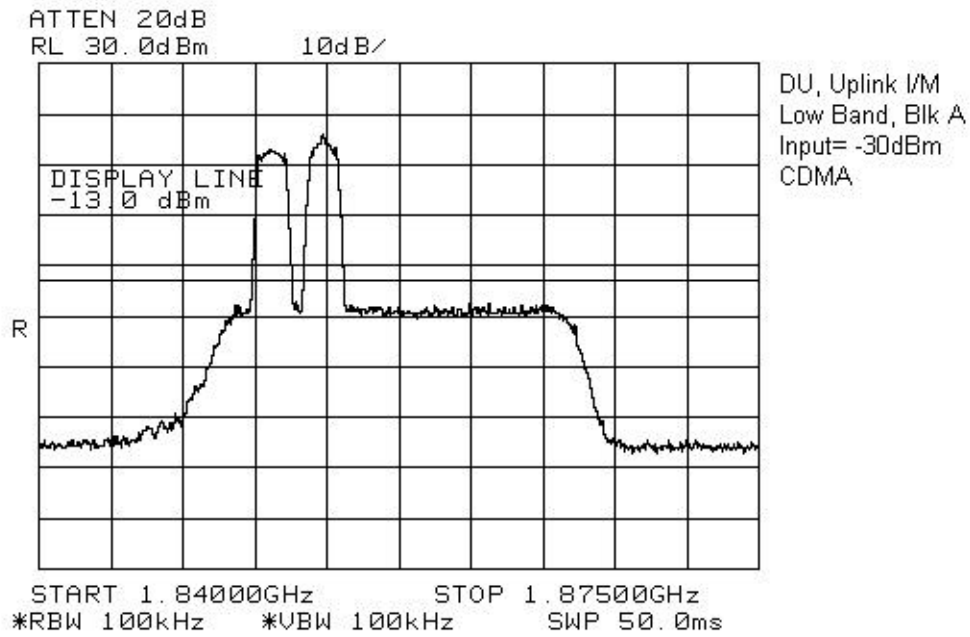
Test Results: Complies.

Measurement Data: See attached graphs (worst case).

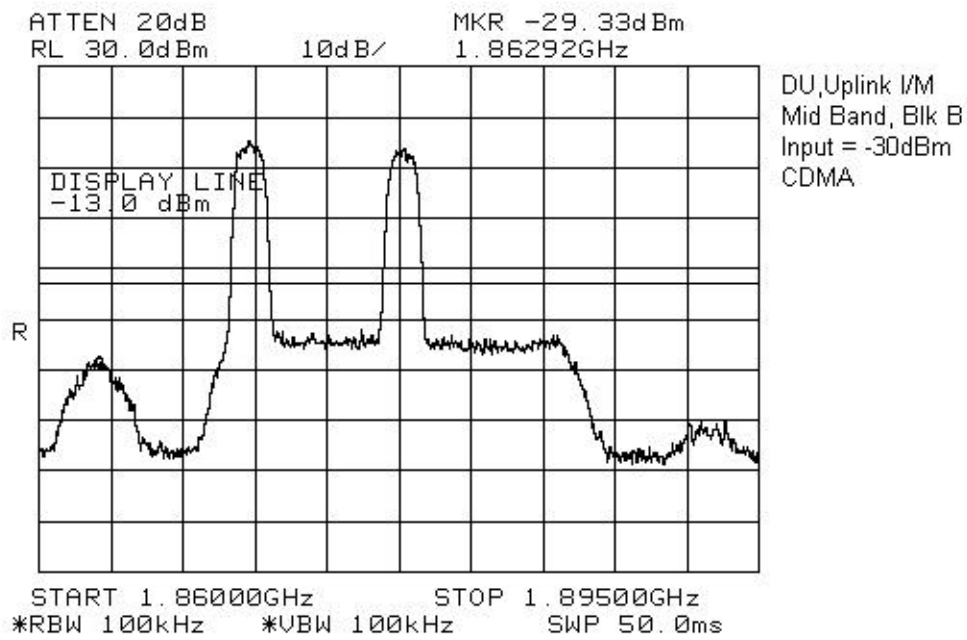
EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater



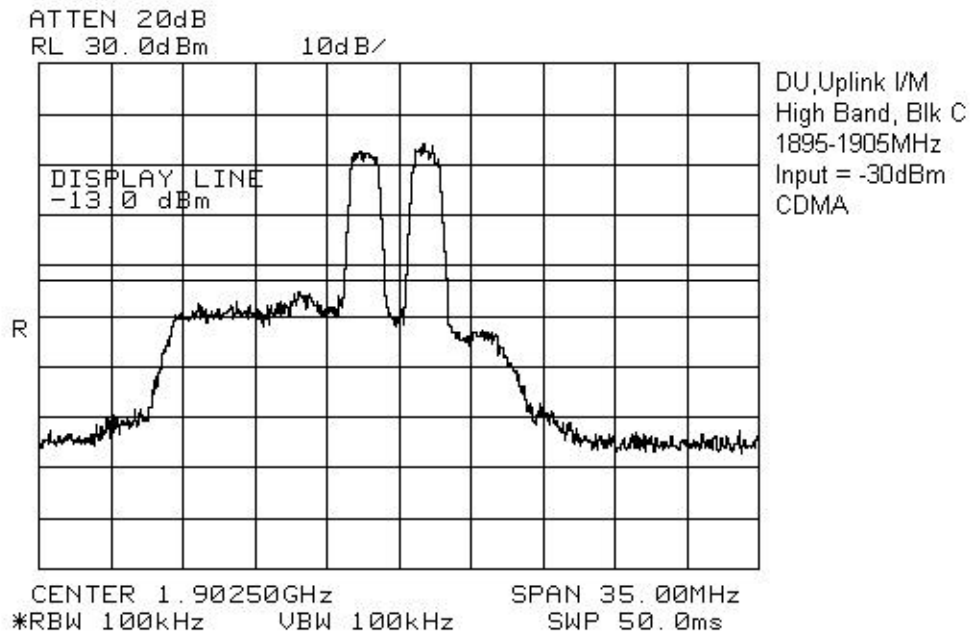
EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater



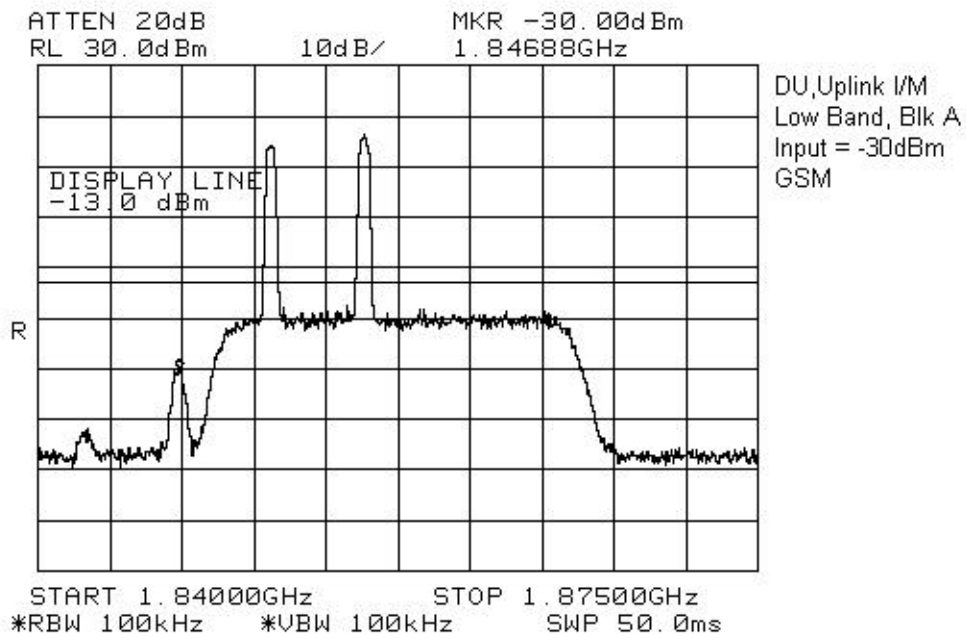
EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater



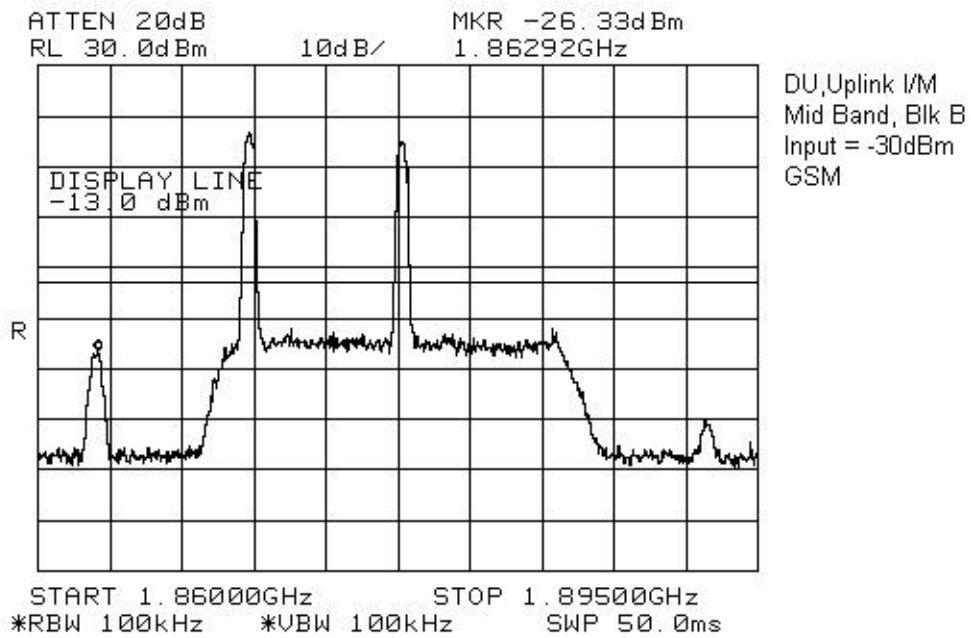
EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater



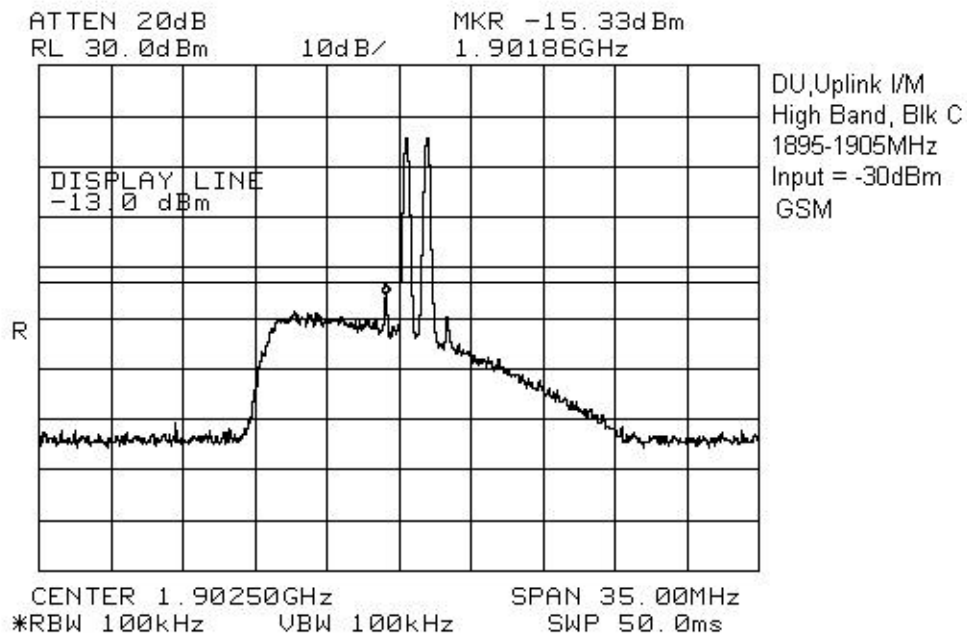
EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater



EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater



EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater



EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater

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.

*EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater***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 (dBμV)	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.

EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater

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



EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater

Section 7. Frequency Stability

Para. No.: 2.1055

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

Minimum Standard: 22.355

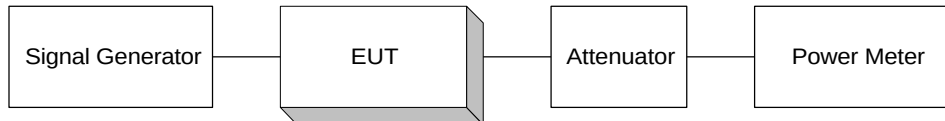
Test Results: Complies. The maximum frequency drift is 0 Hz.
There is no frequency translation.

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

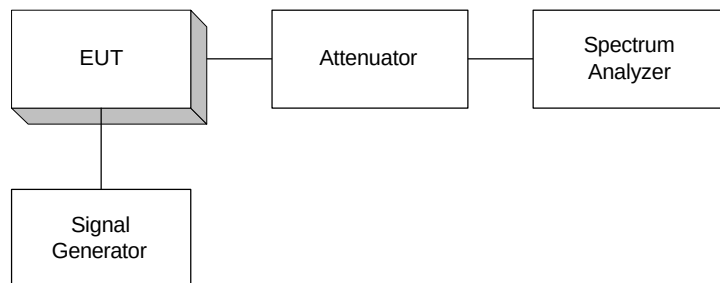
Uplink:1855.000 000 MHz

Section 8. Block Diagrams

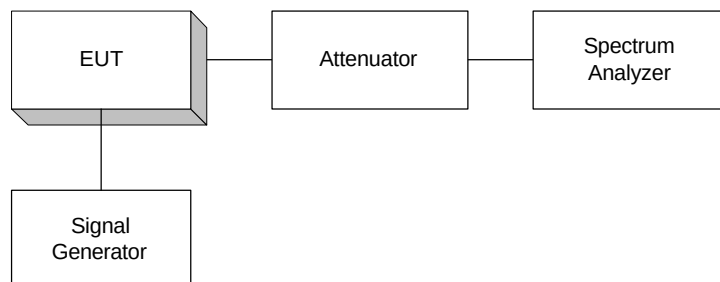
Para. No. 2.1046 - R.F. Power Output



Para. No. 2.1049 - Occupied Bandwidth



Para. No. 2.1051 - Spurious Emissions at Antenna Terminals

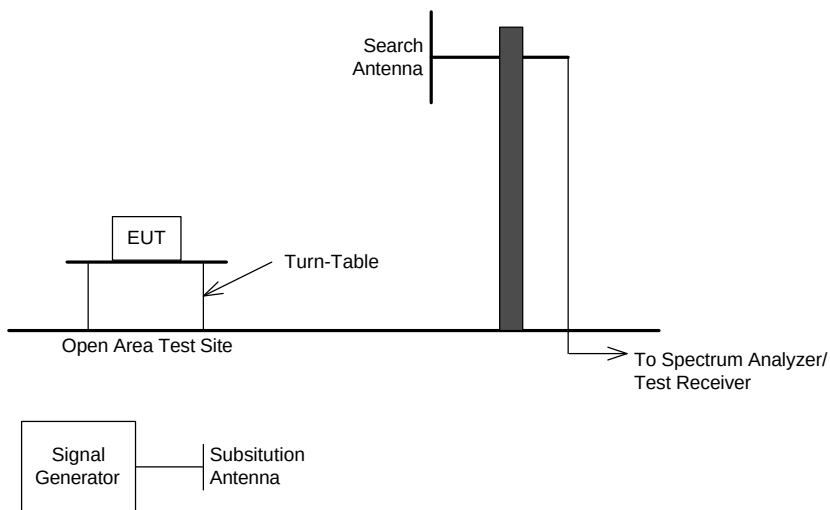


EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater

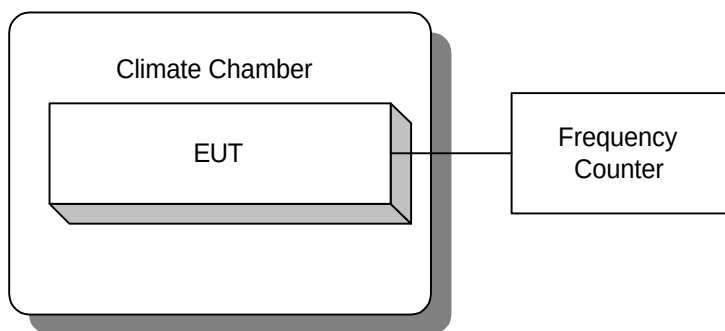
Para. No. 2.1053 - Field Strength of Spurious Radiation

TIA/EIA 603

Effective Radiated Power
Spurious Emissions



Para. No. 2.1055 - Frequency Stability



EQUIPMENT: SpotCell 111/112 DU, PCS Low Power Repeater

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