Test Report:	2W06467
Applicant:	Radio Frequency Systems 4100 SW Research Way Corvallis, OR 97333 USA
Equipment Under Test: (EUT)	**Bi-Directional Amplifiers, 48900 Series** 48910, 48920 & 48930
FCC ID:	IWD48900
In Accordance With:	**FCC Part 22 & FCC Part 90**
Tested By:	Nemko Canada Inc. 303 River Road, R.R. 5 Ottawa, Ontario K1V 1H2
Authorized By:	 Kevin Carr, EMC Specialist
Date:	27 November 2002
Total Number of Pages:	50

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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 22 and FCC Part 90 for family listing.

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: 27 November 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	N/A

Notes:
(1) These amplifiers do not translate the RF input, therefore frequency stability is not applicable.

Test Conditions:

Indoor	Temperature:	23°C
	Humidity:	46%
Outdoor	Temperature:	3°C
	Humidity:	65%

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Section 2. General Equipment Specification

Manufacturer:	Radio Frequency Systems
Model No.:	48910, 48920 & 48930
Date Received In Laboratory:	28 Oct. 2002
Nemko Identification No.:	#1,2 & 3
Frequency Range:	**48910** (Part 22) 824-849MHz (Uplink) 869-894MHz (Downlink) **48920** (Part 90) 806-821MHz (Uplink) 851-866MHz (Downlink) **48930** (Part 90) 896-901MHz (Uplink) 935-940MHz (Downlink)
RF Output Power:	48910 = 23dBm 48920 = 23dBm 48930 = 22dBm
Emission Designator (modulation):	48910 = F3E (AMPS) F9W (TDMA) DXW (CDMA) 48920 & 48930 = F3E D7W

Section 3. RF Power Output

Para. No.: 2.1046

Test Performed By: Glen Westwell	**Date of Test:** 18 Nov 2002

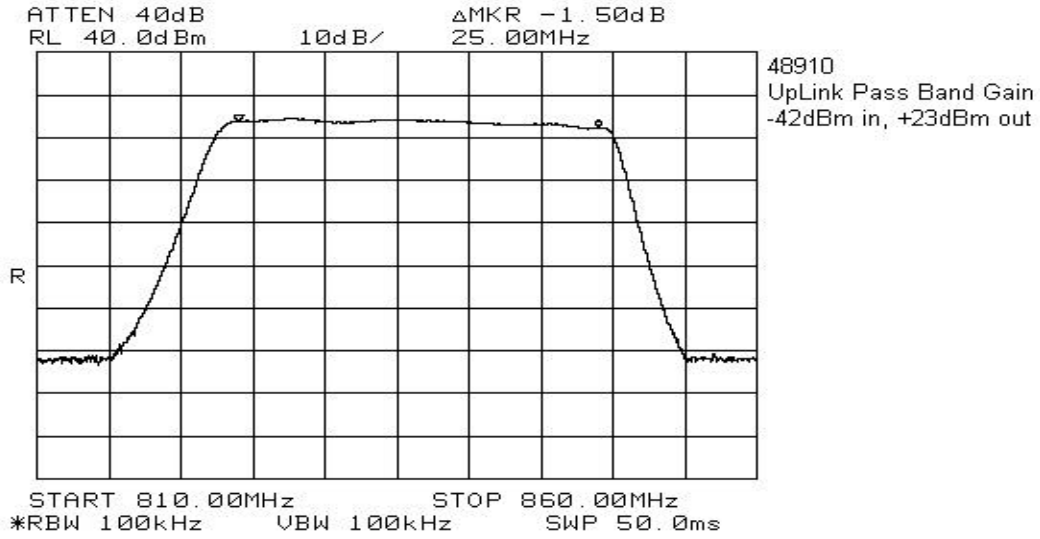
Minimum Standard: 22.913(a), 90.635

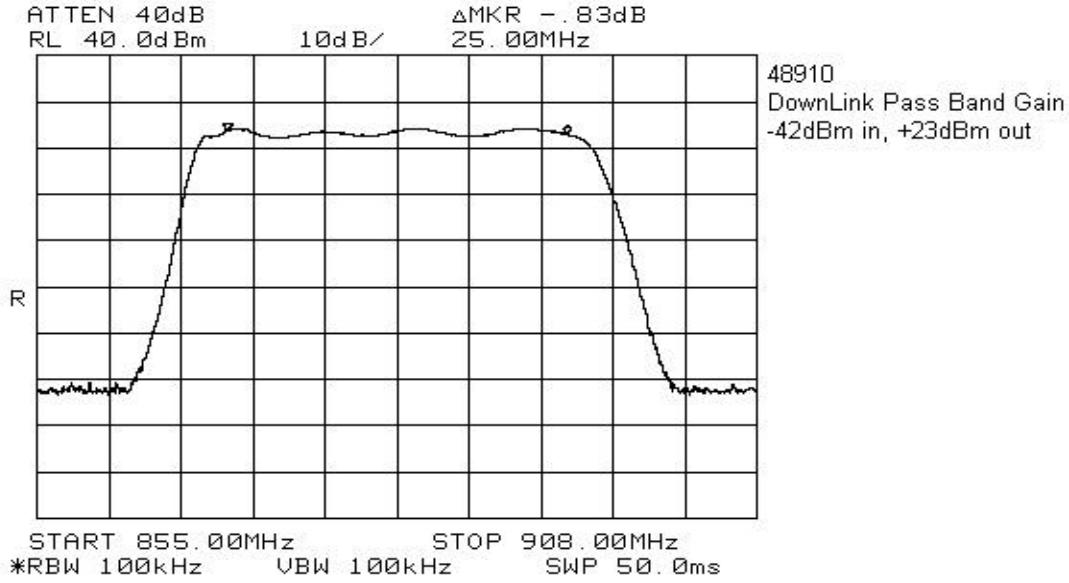
Test Results: Complies.

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.

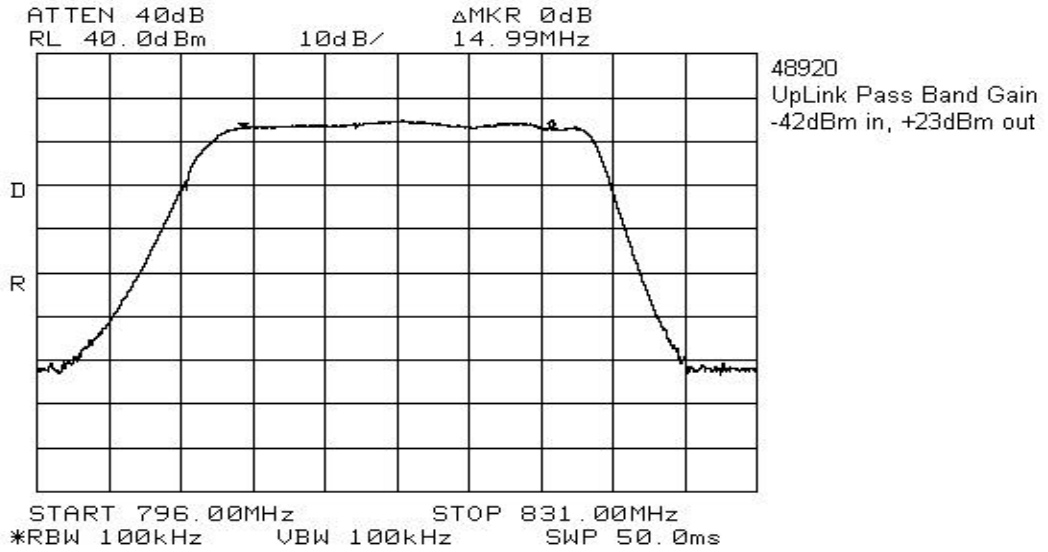
Pmax = Maximum RF Output Power
N = Number Of Channels

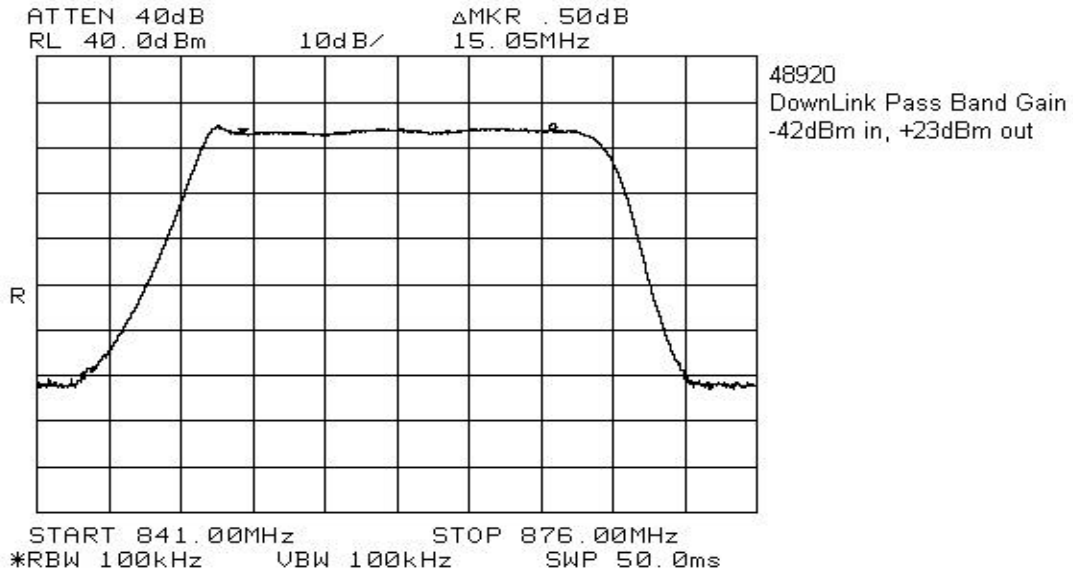
48910


ATTEN 40dB
RL 40.0dBm
10dB/
ΔMKR -1.50dB
25.00MHz
48910
UpLink Pass Band Gain
-42dBm in, +23dBm out
R
START 810.00MHz
STOP 860.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms

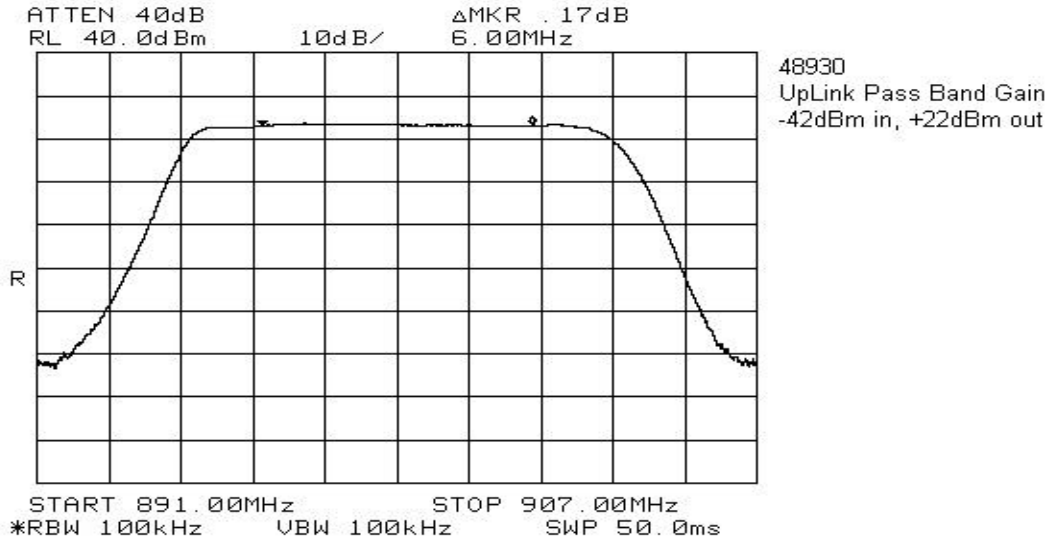

ATTEN 40dB
RL 40.0dBm
10dB/
ΔMKR -.83dB
25.00MHz
48910
DownLink Pass Band Gain
-42dBm in, +23dBm out
R
START 855.00MHz
STOP 908.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms

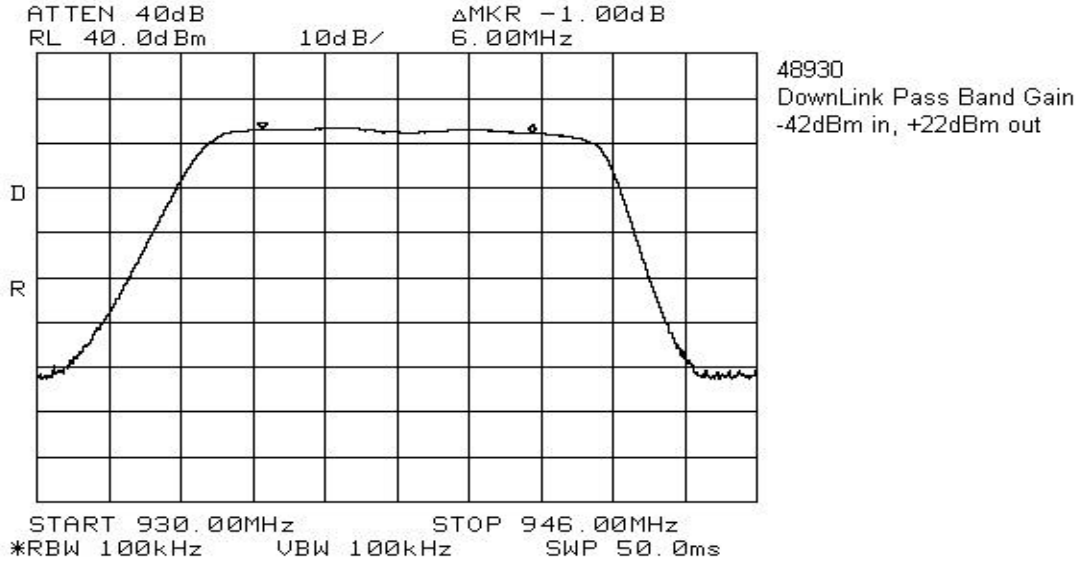
48920


ATTEN 40dB
RL 40.0dBm
10dB/
ΔMKR 0dB
14.99MHz
D
R
START 796.00MHz
STOP 831.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms
48920
UpLink Pass Band Gain
-42dBm in, +23dBm out


ATTEN 40dB
RL 40.0dBm
10dB/
ΔMKR .50dB
15.05MHz
R
START 841.00MHz
STOP 876.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms
48920
DownLink Pass Band Gain
-42dBm in, +23dBm out

48930


ATTEN 40dB
RL 40.0dBm
10dB/
ΔMKR .17dB
6.00MHz
R
START 891.00MHz
STOP 907.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms
48930
UpLink Pass Band Gain
-42dBm in, +22dBm out


ATTEN 40dB
RL 40.0dBm
10dB/
ΔMKR -1.00dB
6.00MHz
D
R
START 930.00MHz
STOP 946.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms
48930
DownLink Pass Band Gain
-42dBm in, +22dBm out

Section 4. Occupied Bandwidth

Para. No.: 2.1049

Test Performed By: Glen Westwell	**Date of Test:** 18 Nov 2002

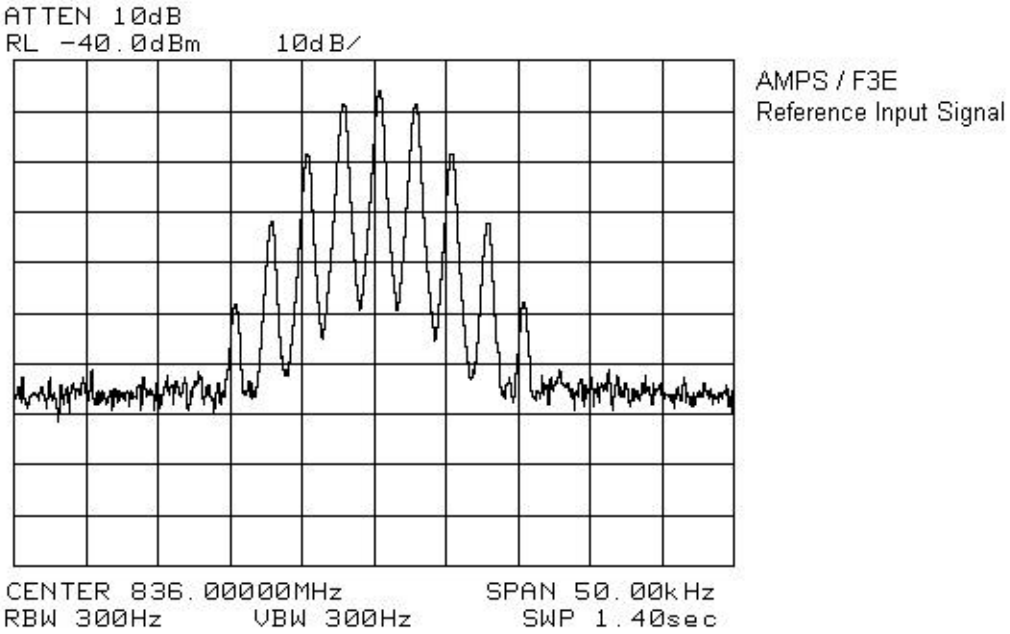
Minimum Standard: Para. No.'s 90.669
22.917

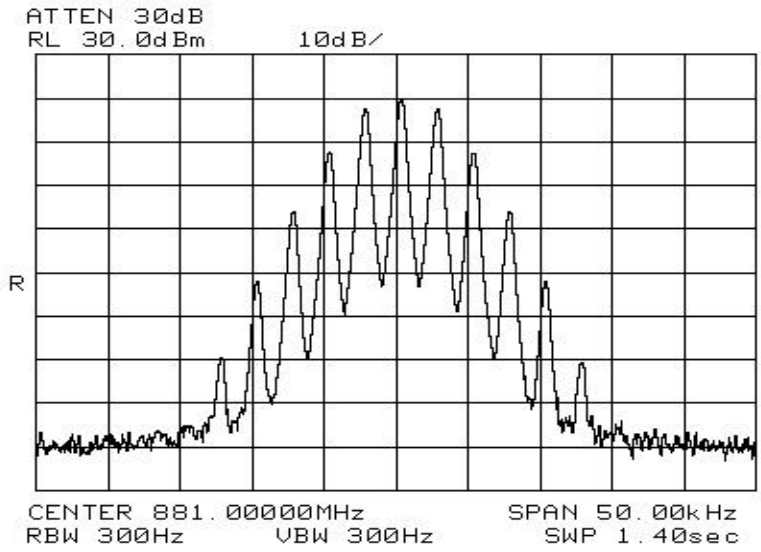
Test Results: Complies.

Measurement Data: See attached graphs.

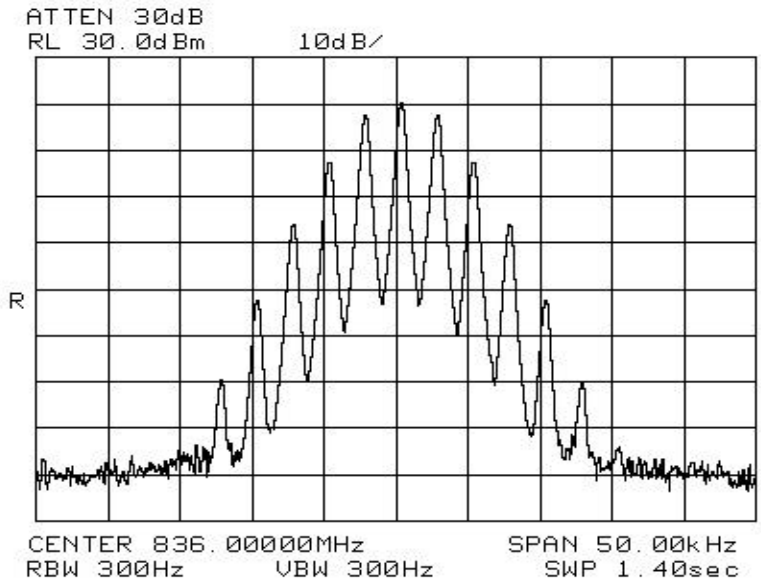
The occupied bandwidth was measured by comparison of input to the output signal. This was done in order to determine if there was any degradation to the output signal due to the amplification through the repeater.

48910

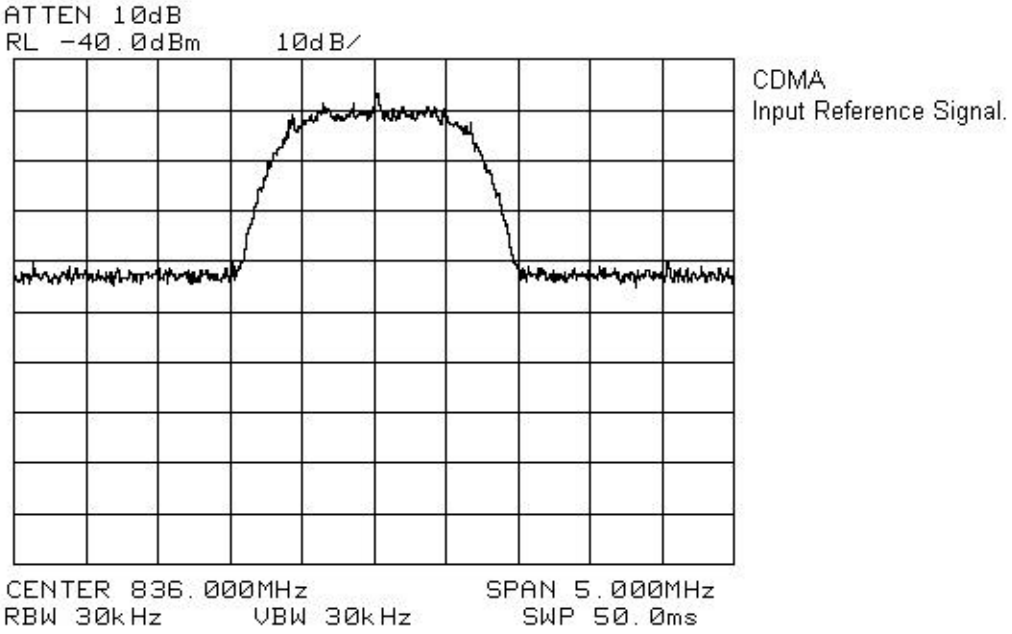

ATTEN 10dB
RL -40.0dBm
10dB/
AMPS / F3E
Reference Input Signal
CENTER 836.00000MHz
SPAN 50.00kHz
RBW 300Hz
VBW 300Hz
SWP 1.40sec

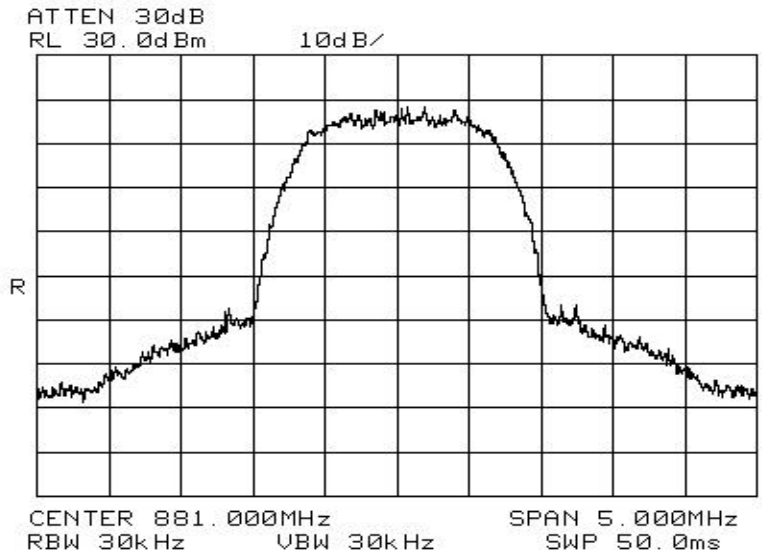


48910
AMPS, DownLink Output
-42dBm in, +23dBm out.

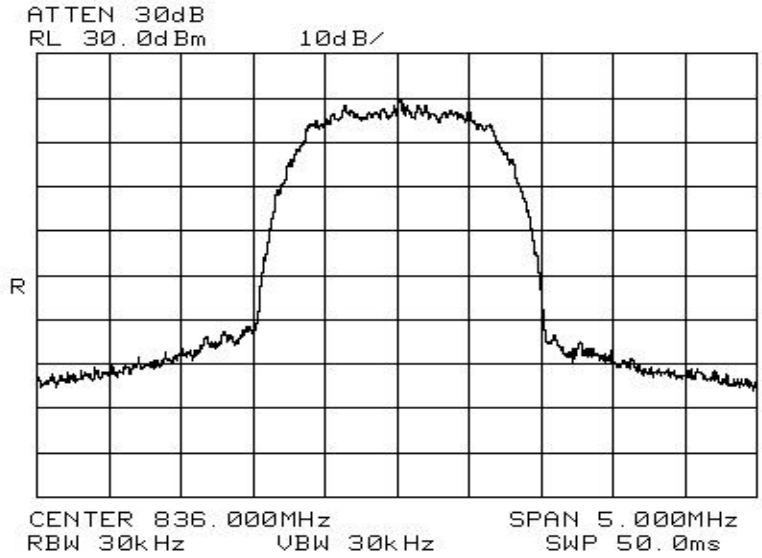


48910
AMPS, UpLink Output
-42dBm in, +23dBm out.

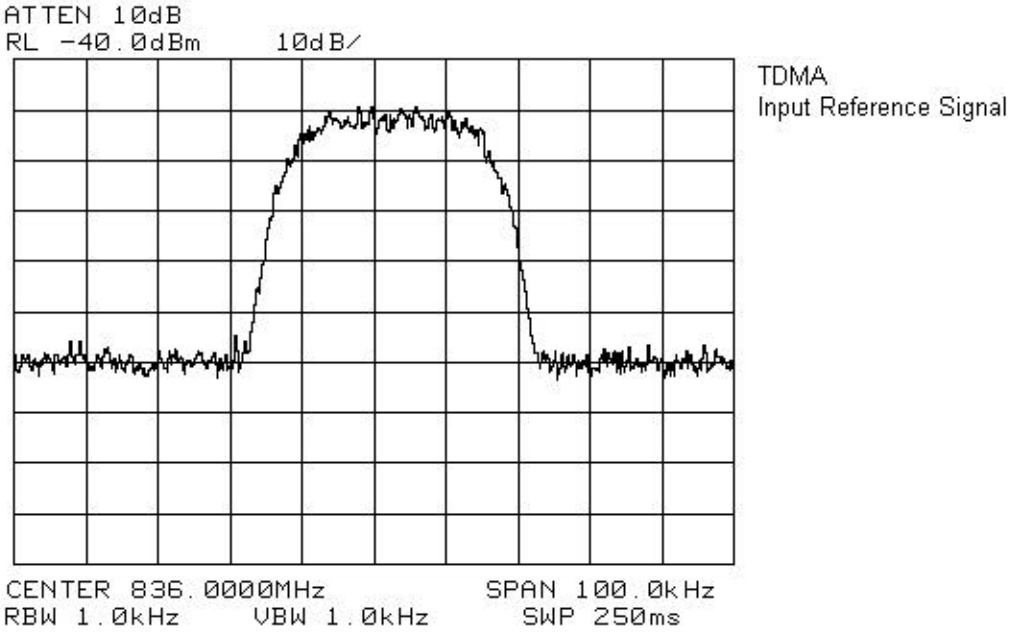

ATTEN 10dB
RL -40.0dBm
10dB/
CDMA
Input Reference Signal.
CENTER 836.000MHz
SPAN 5.000MHz
RBW 30kHz
VBW 30kHz
SWP 50.0ms

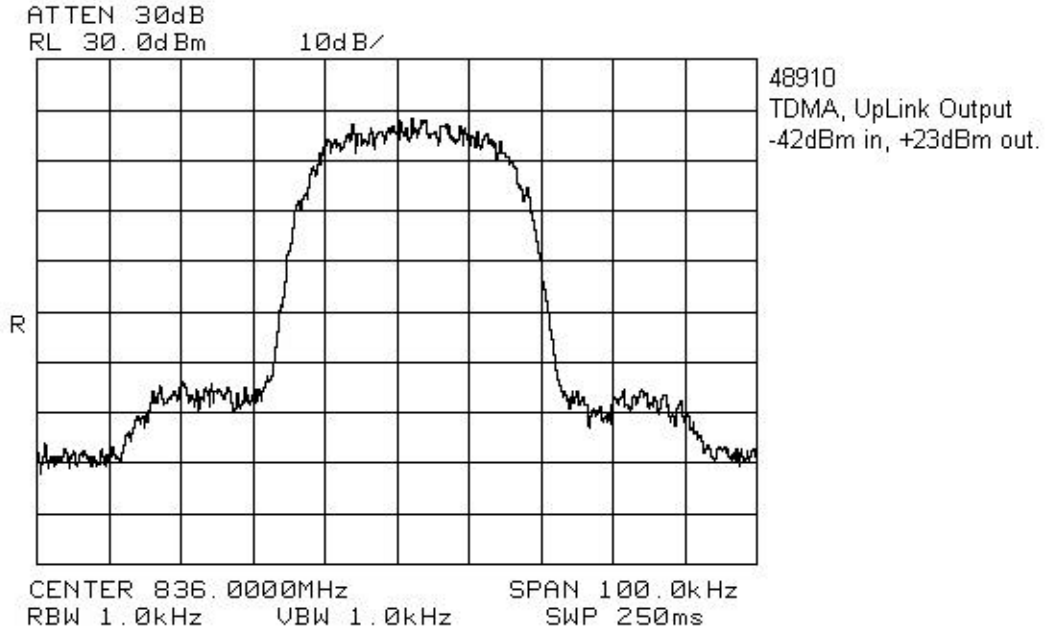


48910
CDMA, DownLink Output
-42dBm in, +23dBm out.

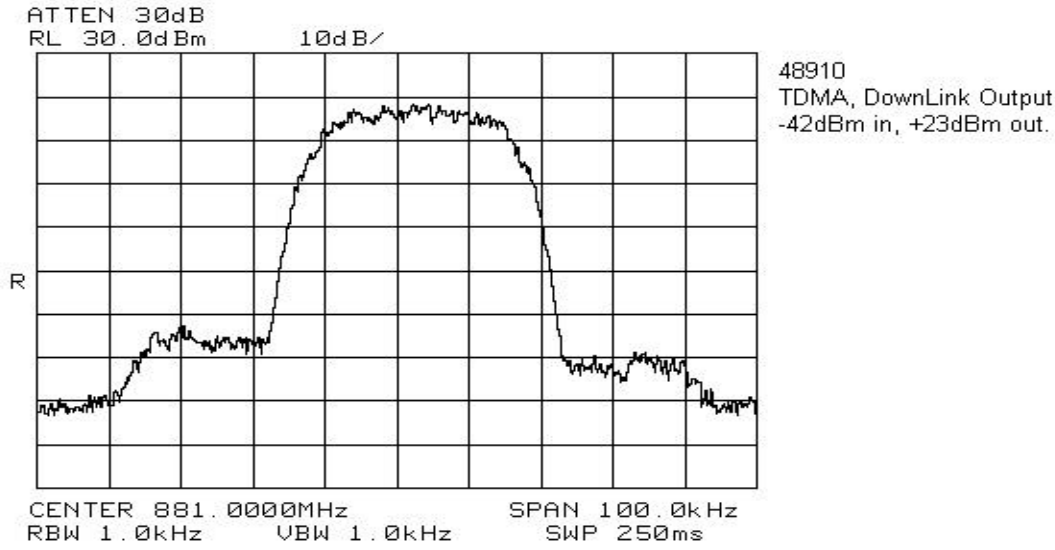


48910
CDMA, UpLink Output
-42dBm in, +23dBm out.


ATTEN 10dB
RL -40.0dBm
10dB/
TDMA
Input Reference Signal
CENTER 836.0000MHz
SPAN 100.0kHz
RBW 1.0kHz
VBW 1.0kHz
SWP 250ms

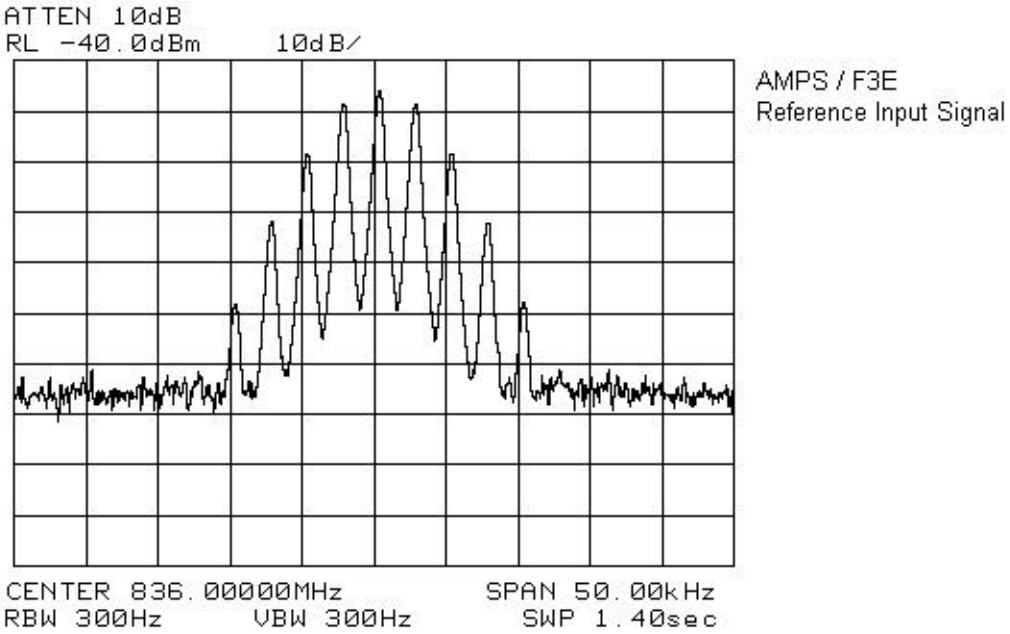


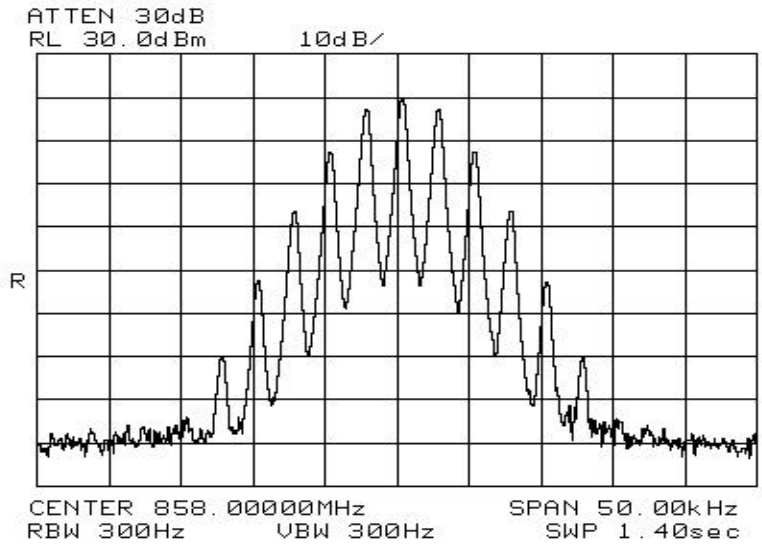
48910
TDMA, UpLink Output
-42dBm in, +23dBm out.



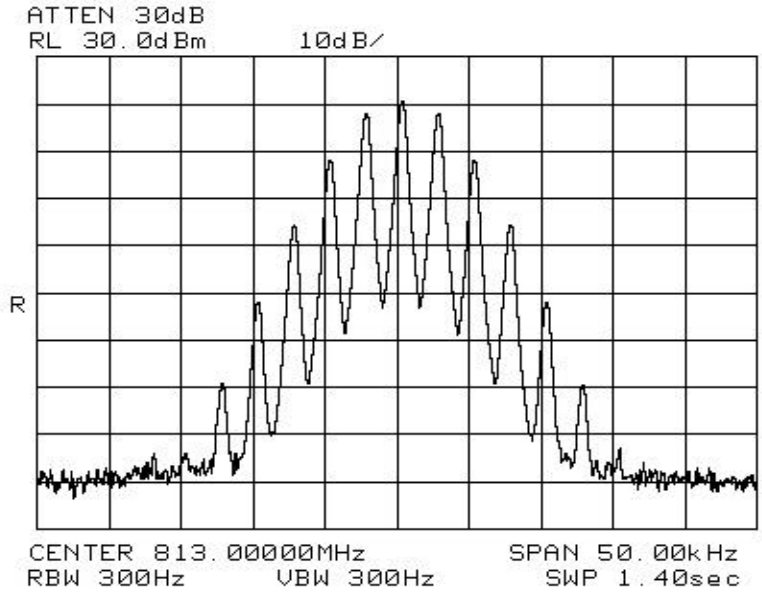
48910
TDMA, DownLink Output
-42dBm in, +23dBm out.

48920

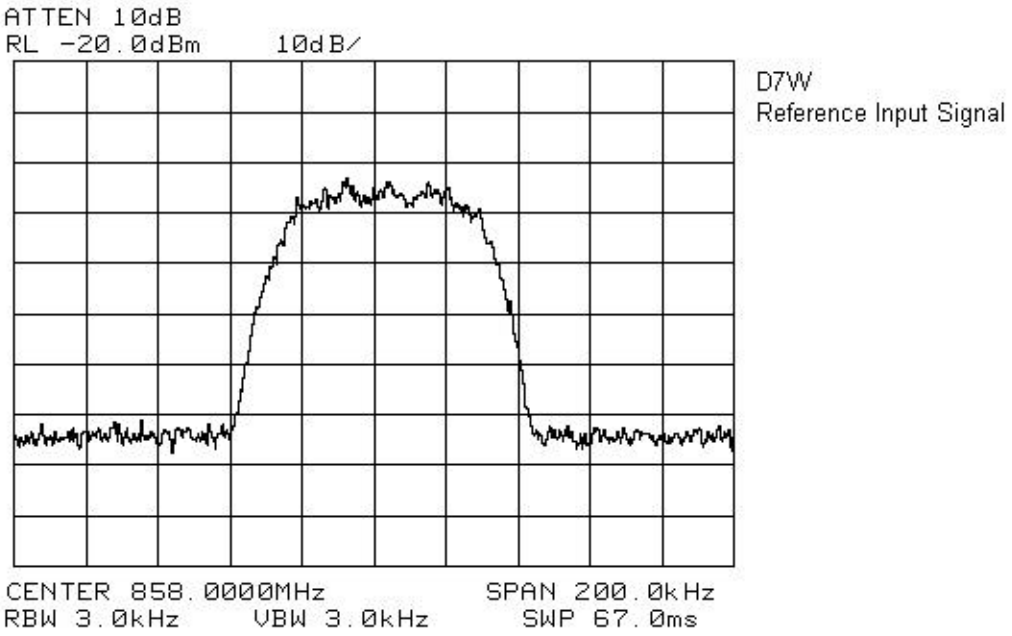

ATTEN 10dB
RL -40.0dBm
10dB/
AMPS / F3E
Reference Input Signal
CENTER 836.00000MHz
SPAN 50.00kHz
RBW 300Hz
VBW 300Hz
SWP 1.40sec

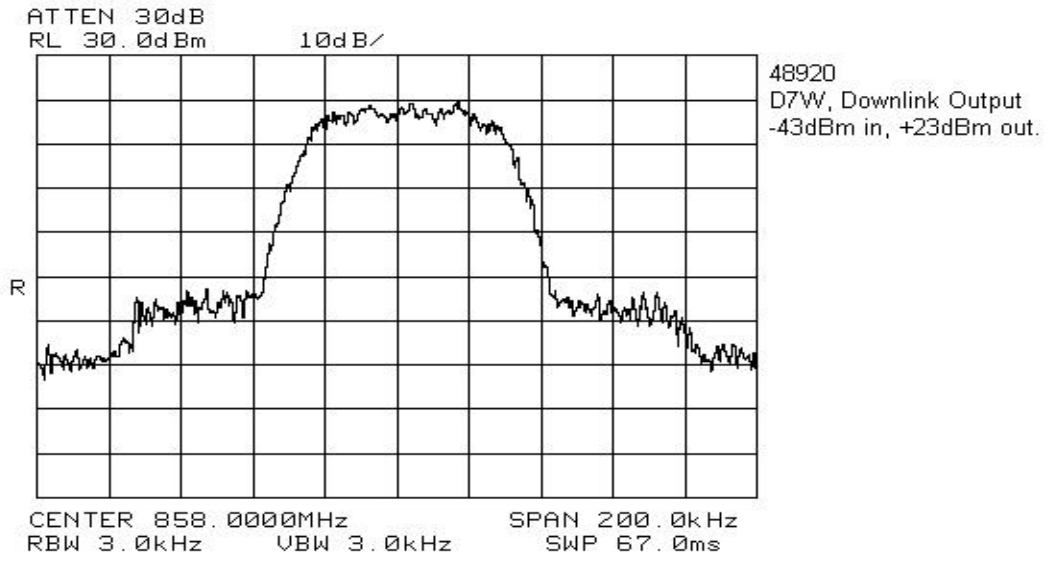


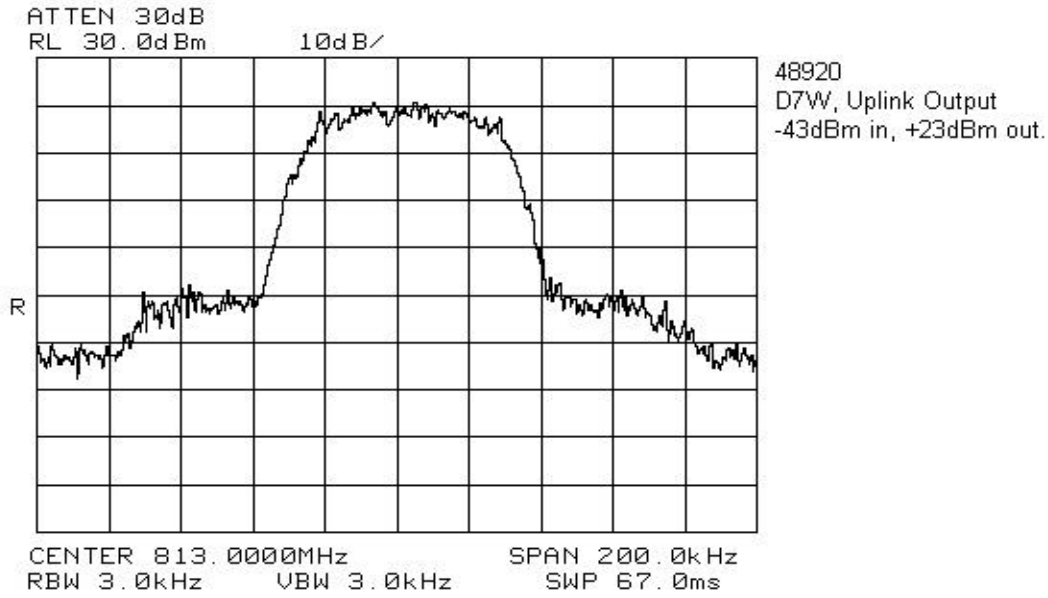
48920
F3E, DownLink Output
-43dBm in, +23dBm out.



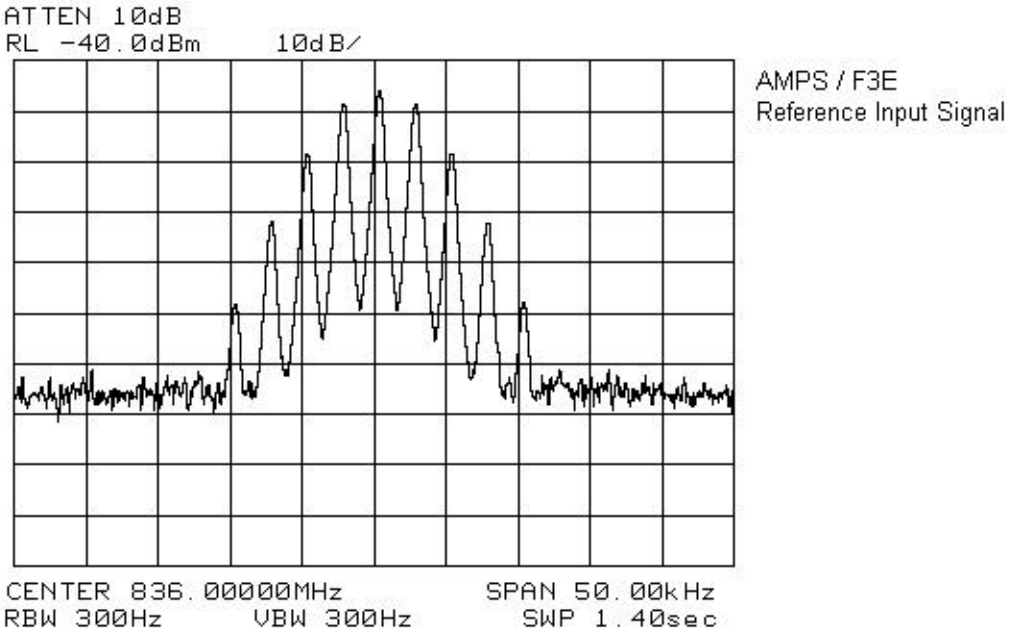
48920
F3E, UpLink Output
-43dBm in, +23dBm out.

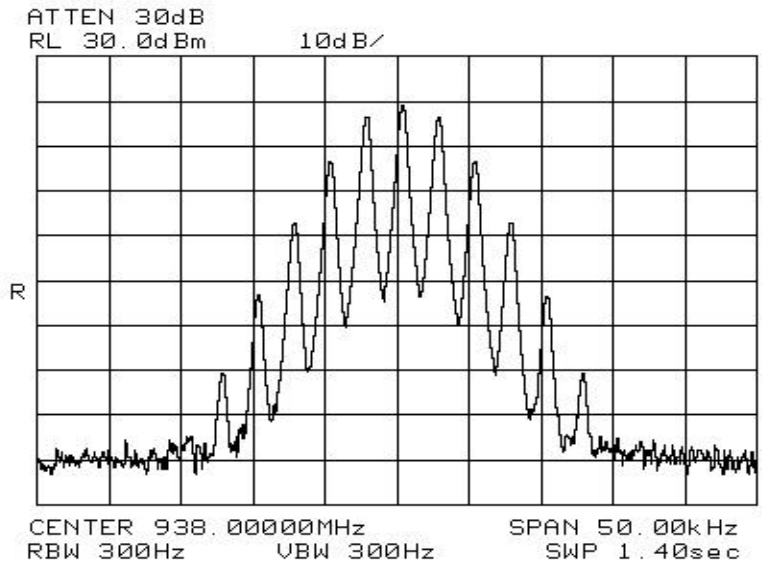

ATTEN 10dB
RL -20.0dBm
10dB/
D7W
Reference Input Signal
CENTER 858.0000MHz
SPAN 200.0kHz
RBW 3.0kHz
VBW 3.0kHz
SWP 67.0ms


ATTEN 30dB
RL 30.0dBm
10dB/
R
CENTER 858.0000MHz
SPAN 200.0kHz
RBW 3.0kHz
VBW 3.0kHz
SWP 67.0ms
48920
D7W, Downlink Output
-43dBm in, +23dBm out.

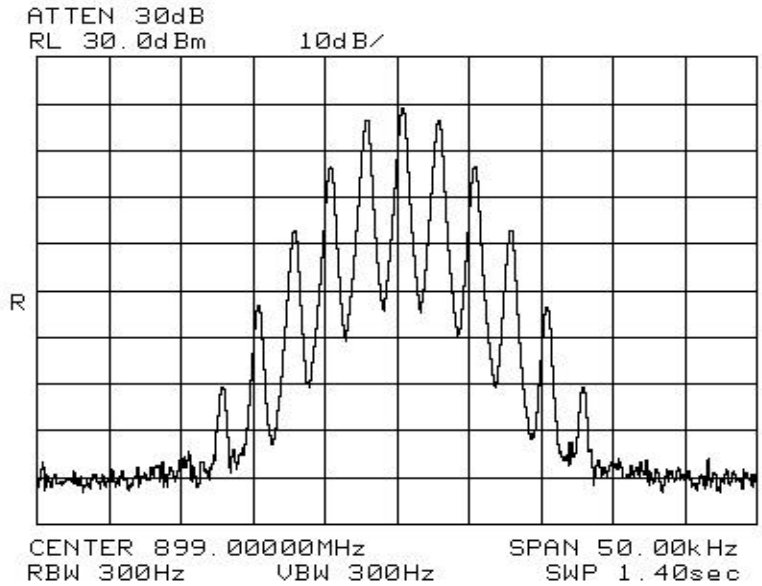

ATTEN 30dB
RL 30.0dBm
10dB/
R
CENTER 813.0000MHz
SPAN 200.0kHz
RBW 3.0kHz
VBW 3.0kHz
SWP 67.0ms
48920
D7W, Uplink Output
-43dBm in, +23dBm out.

48930

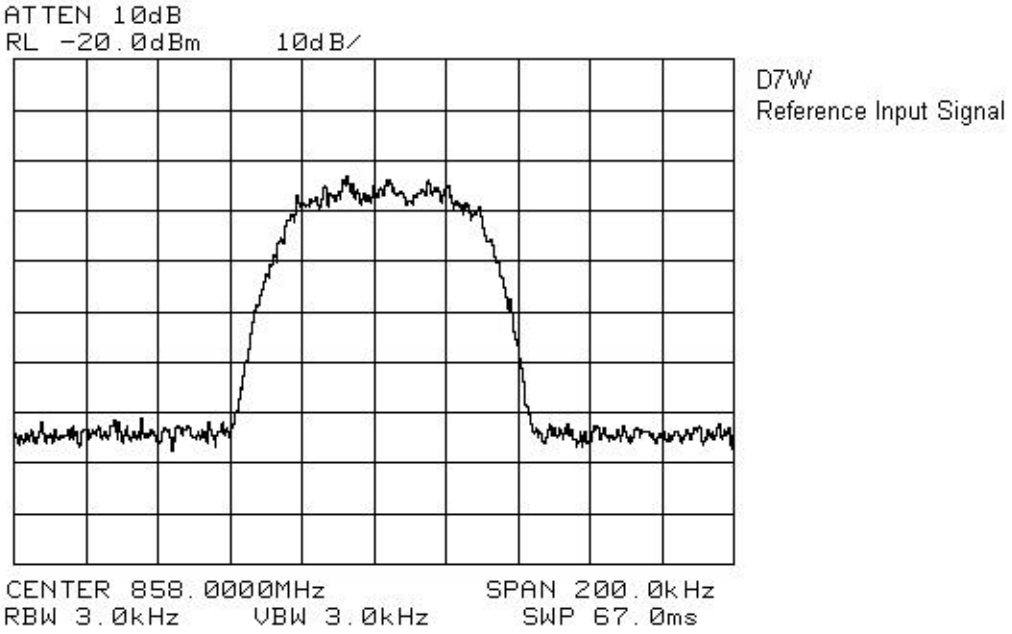

ATTEN 10dB
RL -40.0dBm
10dB/
AMPS / F3E
Reference Input Signal
CENTER 836.00000MHz
SPAN 50.00kHz
RBW 300Hz
VBW 300Hz
SWP 1.40sec

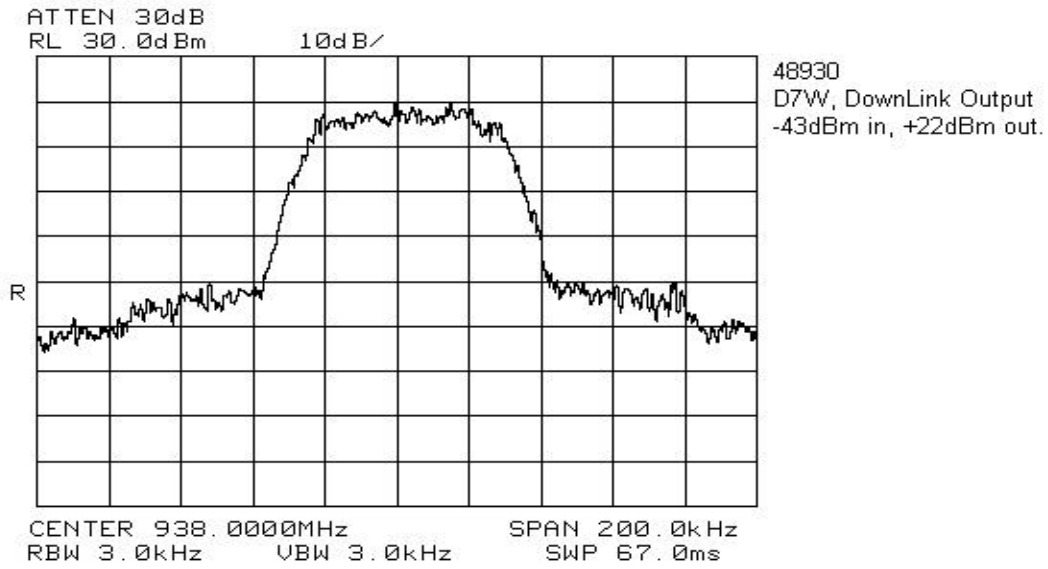


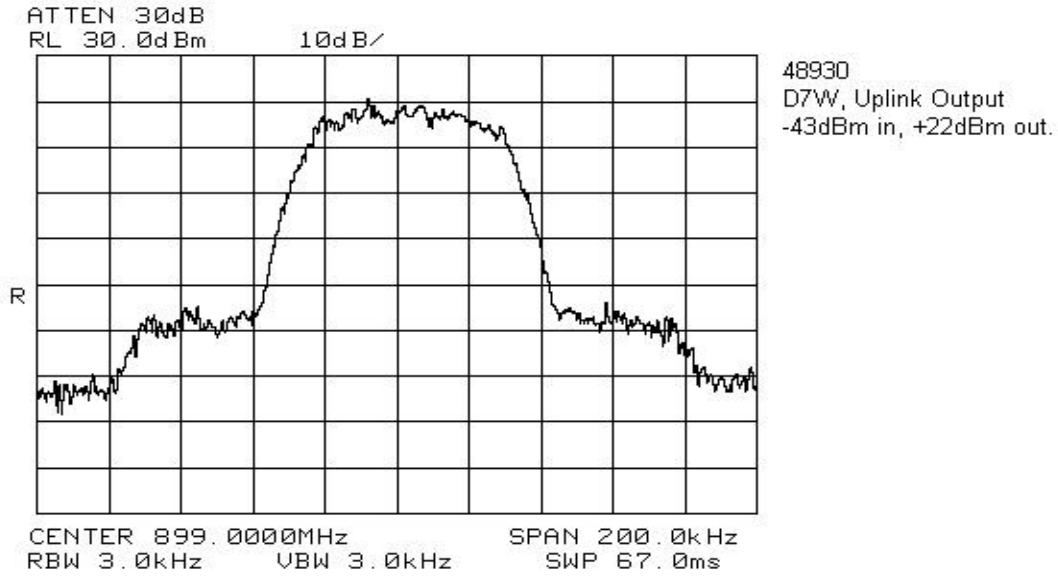
48930
F3E, DownLink Output
-43dBm in, +22dBm out.



48930
F3E, UpLink Output
-43dBm in, +22dBm out.


ATTEN 10dB
RL -20.0dBm
10dB/
D7W
Reference Input Signal
CENTER 858.0000MHz
SPAN 200.0kHz
RBW 3.0kHz
VBW 3.0kHz
SWP 67.0ms


ATTEN 30dB
RL 30.0dBm
10dB/
R
CENTER 938.0000MHz
SPAN 200.0kHz
RBW 3.0kHz
VBW 3.0kHz
SWP 67.0ms
48930
D7W, DownLink Output
-43dBm in, +22dBm out.


ATTEN 30dB
RL 30.0dBm
10dB/
R
CENTER 899.0000MHz
SPAN 200.0kHz
RBW 3.0kHz
VBW 3.0kHz
SWP 67.0ms
48930
D7W, Uplink Output
-43dBm in, +22dBm out.

Section 8. Spurious Emissions at Antenna Terminals

Para. No.: 2.1051

Test Performed By: Glen Westwell	**Date of Test:** 20 Nov 2002

Minimum Standard: Para. No.'s 90.210
22.917

Test Results: Complies.

Measurement Data: See attached graphs (worst case).