CKC LABORATORIES, INC. Testing the Future

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803.01, 803.02, 803.03
803.05 - 803.08
EMC

ADDENDUM TO POWERWAVE TECHNOLOGIES TEST REPORT FC04-086

FOR THE

POWER AMPLIFIER, G3L-850-135

FCC PART 22 AND RSS-131

COMPLIANCE

DATE OF ISSUE: JANUARY 28, 2005

PREPARED FOR:

Powerwave Technologies
1801 E. St. Andrew Place
Santa Ana, CA 92705

W.O. No.: 82936

PREPARED BY:

Mary Ellen Clayton
CKC Laboratories, Inc.
5473A Clouds Rest
Mariposa, CA 95338

Date of test: November 16, 2004 – January 26, 2005

Report No.: FC04-086A

TABLE OF CONTENTS

ADMINISTRATIVE INFORMATION

DATE OF TEST:	November 16, 2004 – January 26, 2005
DATE OF RECEIPT:	November 16, 2004
PURPOSE OF TEST:	To demonstrate the compliance of the Power Amplifier, G3L-850-135 with the requirements for FCC Part 22 and RSS-131devices. **Addendum A** is to add data for additional modulations.
TEST METHOD:	FCC Part 22 and RSS-212
FREQUENCY RANGE TESTED:	9 kHz-9 GHz
MANUFACTURER:	Powerwave Technologies 1801 E. St. Andrew Place Santa Ana, CA 92705
REPRESENTATIVE:	Jeffrey Dale
TEST LOCATION:	CKC Laboratories, Inc. 110 Olinda Place Brea, CA 92621

FCC TO CANADA STANDARD CORRELATION MATRIX

Canadian Standard	Canadian Section	FCC Standard	FCC Section	Test Description
RSS-131	5.4	NA	NA	External Controls
RSS-131	5.5	47 CFR	1.1307	RF Exposure
RSS-131	6.1	NA	NA	Passband Gain and Bandwidth
RSS-131	6.2	47 CFR	22.913	RF Power Output
RSS-131	6.3	TIA/EIA	603	Non-Linearity (Intermodulation Attenuation)
RSS-131	6.4	47 CFR	22.917	Spurious Emissions Limitations
RSS-131	6.5	NA	NA	Frequency Stability (Band Translators)
	IC 3172-A		90473	Site No.

CONDITIONS FOR COMPLIANCE
No modifications to the EUT were necessary to comply.

APPROVALS

Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:

Joyce Walker, Quality Assurance Administrative Manager

TEST PERSONNEL:

Stuart Yamamoto, EMC Engineer

Eddie Wong, EMC Engineer

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The customer declares the EUT tested by CKC Laboratories was representative of a production unit.

EQUIPMENT UNDER TEST

Power Amplifier
Manuf: Powerwave Technologies, Inc.
Model: G3L-850-135
Serial: VS00010M7G
FCC ID: pending

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

27VDC Power Supply
Manuf: HP
Model: 6032A
Serial: 3542A12326

Power Supply
Manuf: HP
Model: E3616A
Serial: NA

Signal Generator
Manuf: Agilent Technologies
Model: E4433B
Serial: US50051477

Preamplifier
Manuf: Mini-Circuits
Model: ZHL-1042J
Serial: NA

Power Meter
Manuf: HP
Model: E4418B
Serial: US39251091

TEMPERATURE AND HUMIDITY DURING TESTING
The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

FCC 2.1033(c)(3) USER'S MANUAL
The necessary information is contained in a separate document.

FCC 2.1033 (c)(4) TYPE OF EMISSIONS
F9W, GXW, G7W, F1D, F8W and DXW.

FCC 2.1033 (c)(5) FREQUENCY RANGE
869-894 MHz.

FCC 2.1033 (c)(6) OPERATING POWER
145 Watts.

FCC 2.1033 (c)(7) MAXIMUM POWER RATING
500 Watts.

FCC 2.1033 (c)(8) DC VOLTAGES
The necessary information is contained in a separate document.

FCC 2.1033 (c)(9) TUNE-UP PROCEDURE
The necessary information is contained in a separate document.

FCC 2.1033(c)(10) SCHEMATICS AND CIRCUITRY DESCRIPTION
The necessary information is contained in a separate document.

FCC 2.1033(c)(11) LABEL AND PLACEMENT
The necessary information is contained in a separate document.

FCC 2.1033(c)(12) SUBMITTAL PHOTOS
The necessary information is contained in a separate document.

FCC 2.1033 (c)(13) MODULATION INFORMATION
GSM, EDGE, W-CDMA, AMPS Data, AMPS Voice, TDMA and CDMA

FCC 2.1033(c)(14)/2.1046/22.913 - RF POWER OUTPUT

22.913 Effective radiated power limits
The effective radiated power (ERP) of transmitters in the Cellular Radiotelephone Service must not exceed the limits in this section.
(a) *Maximum ERP.* The effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

Setup

The equipment under test (EUT) is a multi-carrier RF power amplifier for cellular phone base station use. The EUT is placed on the tabletop. Connected to the EUT are DC power cables, a RF input coaxial cable, and a RF output coaxial cable. A signal generator provides the modulated signal which is fed through a preamplifier and then to the EUT RF input port. The EUT RF output is fed through a high power attenuator, directional coupler, attenuator, power sensor and then to the power meter. The power is measured from the forward power port of the directional coupler.

The RF power of the EUT was measured at the antenna port.

Results

Modulation: GSM	
869.0 MHz	145 Watts
881.5 MHz	145 Watts
894.0 MHz	145 Watts
Modulation: EDGE	
869.0 MHz	145 Watts
881.5 MHz	145 Watts
894.0 MHz	145 Watts
Modulation: W-CDMA	
869.0 MHz	145 Watts
881.5 MHz	145 Watts
894.0 MHz	145 Watts

Since all reading were less than the limit of 500 Watts, the EUT fulfills the requirements of this section.

RF Output Power Test Equipment

Equipment	Asset #	Manufacturer	Model	Serial #	Cal Date	Cal Due
Coaxial Cable	02604	UTiFLEX	UFA147A-0-0360-200200	64639	012304	012305
RF Power meter	02082	HP	435B	2445A11881	061704	061706
Power Sensor	02036	HP	8482A	1551A01004	061806	061806

RF POWER OUTPUT

22.913 Effective radiated power limits (Testing 1/26/05)
The effective radiated power (ERP) of transmitters in the Cellular Radiotelephone Service must not exceed the limits in this section.
(a) *Maximum ERP.* The effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

Setup

The equipment under test (EUT) is a multi-carrier RF power amplifier for cellular phone base station use. The EUT is placed on the tabletop. Connected to the EUT are DC power cables, a RF input coaxial cable, and a RF output coaxial cable. A signal generator provides the modulated signal which is fed through a preamplifier and then to the EUT RF input port. The EUT RF output is fed through a high power attenuator, directional coupler, attenuator, power sensor and then to the power meter. The power is measured from the forward power port of the directional coupler.

The RF power of the EUT was measured at the antenna port. Three input channels were chosen due to the Intermodulation Test setup and are used here for demonstrative purposes.

Results

Modulation: GSM

869.0 MHz	48.3 Watts
881.5 MHz	48.3 Watts
894.0 MHz	48.3 Watts
Total Power	145 Watts

Modulation: EDGE

869.0 MHz	48.3 Watts
881.5 MHz	48.3 Watts
894.0 MHz	48.3 Watts
Total Power	145 Watts

Modulation: W-CDMA

869.0 MHz	48.3 Watts
881.5 MHz	48.3 Watts
894.0 MHz	48.3 Watts
Total Power	145 Watts

Modulation: CDMA

870.875 MHz	48.3 Watts
881.000 MHz	48.3 Watts
892.125 MHz	48.3 Watts
Total Power	145 Watts

Modulation: AMPS-Voice

869.1 MHz	48.3 Watts
881.0 MHz	48.3 Watts
893.9 MHz	48.3 Watts
Total Power	145 Watts

Modulation: AMPS-Data

869.1 MHz	48.3 Watts
881.0 MHz	48.3 Watts
893.9 MHz	48.3 Watts
Total Power	145 Watts

Modulation: TDMA

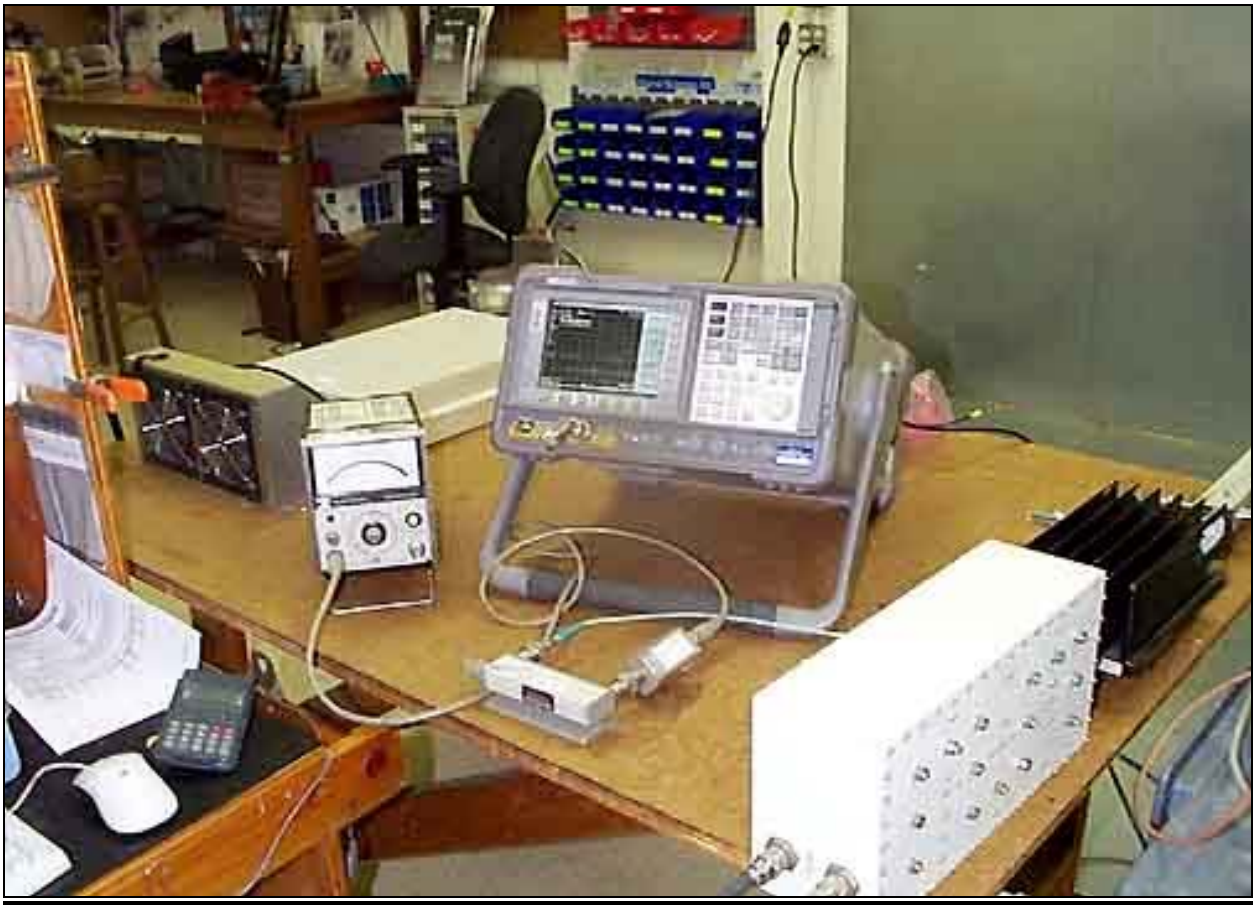
869.1 MHz	48.3 Watts
881.0 MHz	48.3 Watts
893.9 MHz	48.3 Watts
Total Power	145 Watts

Since all readings (48.3 watt per channel, total of 145 watts) were less than the limit of 500 Watts, the EUT fulfills the requirements of this section.

RF Output Power Test Equipment

Equipment	Asset #	Manufacturer	Model	Serial #	Cal Date	Cal Due
RF Power meter	02082	HP	435B	2445A11881	061704	061706
Power Sensor	02036	HP	8482A	1551A01004	061806	061806

PHOTOGRAPH SHOWING RF OUTPUT POWER



FCC 2.1033(c)(14)/2.1047(a) - MODULATION CHARACTERISTICS - AUDIO FREQUENCY RESPONSE

Not applicable to this unit.

FCC 2.1033(c)(14)/2.1047(b) MODULATION CHARACTERISTICS– Modulation Limiting Response

Not applicable to this unit.

FCC 2.1033(c)(14)/2.1051/22.917(a) - SPURIOUS EMISSIONS AT ANTENNA TERMINAL

Test Location: CKC Laboratories Inc. •180 N Olinda Place • Brea CA, 92823 • 714-993-6112

Customer:	**Powerwave Technologies**		
Specification:	**FCC Part 22.917(a) Conducted Spurious Emission**		
Work Order #:	**82936**	Date:	11/17/2004
Test Type:	**Conducted Emissions**	Time:	10:24:02
Equipment:	**Power Amplifier**	Sequence#:	3
Manufacturer:	Powerwave Technologies, Inc.	Tested By:	Stuart Yamamoto
Model:	G3L-850-135		110V 60Hz
S/N:	VS00010M7G		

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Power Amplifier*	Powerwave Technologies, Inc.	G3L-850-135	VS00010M7G

Support Devices:

Function	Manufacturer	Model #	S/N
27Vdc Power Supply	HP	6032A	3542A12326
Preamplifier	Mini-Circuits	ZHL-1042J	
Power Supply	HP	E3616A	
Power Meter	HP	E4418B	US39251091
Signal Generator	Agilent Technologies	E4433B	US50051477

Test Conditions / Notes:

The EUT is placed on the wooden table top. The RF Input port is connected to a remotely located support preamplifier and signal generator. The RF Output is connected to a remotely located RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. This data sheet represents a maximized scan for low (869 MHz), middle (881.5 MHz), and high (894 MHz) channels with GSM modulation. The EUT was set at maximum output power when the test was performed. Those levels are: low channel = 145 Watts, middle channel = 145 Watts, and high channel = 138 Watts. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. Spurious emissions are being evaluated at the antenna port via a directional coupler. Frequency range of measurement = 9 kHz to 9 GHz. Frequency 9 kHz - 150 kHz RBW=200 Hz, VBW=200 Hz; 150 kHz - 30 MHz RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz RBW=120 kHz, VBW=120 kHz; 1000 MHz - 9000 MHz RBW=1 MHz, VBW=1 MHz. 27VDC to the EUT, 22°C, 39%, 100kPa.

Transducer Legend:

T1=SMA Cable 1-40GHz AN2604_012305	T2=HPF_AN02116_1.5GHz_060605

Measurement Data: Reading listed by margin. Test Lead: Antenna Terminal

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	1763.000M	83.4	+0.5	+0.7			+0.0	84.6	94.0	-9.4	Anten
2	1738.000M	83.3	+0.5	+0.7			+0.0	84.5	94.0	-9.5	Anten

3	2682.000M	83.5	+0.5	+0.3	+0.0	84.3	94.0	-9.7	Anten
4	2644.500M	83.3	+0.5	+0.2	+0.0	84.0	94.0	-10.0	Anten
5	1788.000M	82.5	+0.5	+0.8	+0.0	83.8	94.0	-10.2	Anten
6	2607.000M	82.9	+0.5	+0.2	+0.0	83.6	94.0	-10.4	Anten

Test Location: CKC Laboratories Inc. •180 N Olinda Place • Brea CA, 92823 • 714-993-6112

Customer: **Powerwave Technologies**
Specification: **FCC Part 22.917(a) Conducted Spurious Emission**
Work Order #: **82936** Date: 11/17/2004
Test Type: **Conducted Emissions** Time: 11:05:35
Equipment: **Power Amplifier** Sequence#: 4
Manufacturer: Powerwave Technologies, Inc. Tested By: Stuart Yamamoto
Model: G3L-850-135 110V 60Hz
S/N: VS00010M7G

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Power Amplifier*	Powerwave Technologies, Inc.	G3L-850-135	VS00010M7G

Support Devices:

Function	Manufacturer	Model #	S/N
27Vdc Power Supply	HP	6032A	3542A12326
Preamplifier	Mini-Circuits	ZHL-1042J	
Power Supply	HP	E3616A	
Power Meter	HP	E4418B	US39251091
Signal Generator	Agilent Technologies	E4433B	US50051477

Test Conditions / Notes:

The EUT is placed on the wooden table top. The RF Input port is connected to a remotely located support preamplifier and signal generator. The RF Output is connected to a remotely located RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. This data sheet represents a maximized scan for low (869 MHz), middle (881.5 MHz), and high (894 MHz) channels with EDGE modulation. The EUT was set at maximum output power when the test was performed. Those levels are: low channel = 145 Watts, middle channel = 145 Watts, and high channel = 138 Watts. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. Spurious emissions are being evaluated at the antenna port via a directional coupler. Frequency range of measurement = 9 kHz to 9 GHz. Frequency 9 kHz - 150 kHz RBW=200 Hz, VBW=200 Hz; 150 kHz - 30 MHz RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz RBW=120 kHz, VBW=120 kHz; 1000 MHz - 9000 MHz RBW=1 MHz, VBW=1 MHz. 27VDC to the EUT, 22°C, 39%, 100kPa.

Transducer Legend:

T1=SMA Cable 1-40GHz AN2604_012305 T2=HPF_AN02116_1.5GHz_060605

Measurement Data: Reading listed by margin. Test Lead: Antenna Terminal

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	2607.000M	86.3	+0.5	+0.2			+0.0	87.0	94.0	-7.0	Anten
2	1788.000M	84.7	+0.5	+0.8			+0.0	86.0	94.0	-8.0	Anten
3	1738.000M Ave	77.9	+0.5	+0.7			+0.0	79.1	94.0	-14.9	Anten
^	1738.000M	87.3	+0.5	+0.7			+0.0	88.5	94.0	-5.5	Anten

5	1763.000M Ave	75.3	+0.5	+0.7	+0.0	76.5	94.0	-17.5	Anten
^	1763.000M	86.3	+0.5	+0.7	+0.0	87.5	94.0	-6.5	Anten
7	2682.000M Ave	74.6	+0.5	+0.3	+0.0	75.4	94.0	-18.6	Anten
^	2682.000M	86.8	+0.5	+0.3	+0.0	87.6	94.0	-6.4	Anten
9	2644.500M Ave	74.5	+0.5	+0.2	+0.0	75.2	94.0	-18.8	Anten
^	2644.500M	86.7	+0.5	+0.2	+0.0	87.4	94.0	-6.6	Anten

Test Location: CKC Laboratories Inc. •180 N Olinda Place • Brea CA, 92823 • 714-993-6112

Customer: **Powerwave Technologies**
Specification: **FCC Part 22.917(a) Conducted Spurious Emission**
Work Order #: **82936** Date: 11/17/2004
Test Type: **Conducted Emissions** Time: 12:01:43
Equipment: **Power Amplifier** Sequence#: 5
Manufacturer: Powerwave Technologies, Inc. Tested By: Stuart Yamamoto
Model: G3L-850-135 110V 60Hz
S/N: VS00010M7G

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Power Amplifier*	Powerwave Technologies, Inc.	G3L-850-135	VS00010M7G

Support Devices:

Function	Manufacturer	Model #	S/N
27Vdc Power Supply	HP	6032A	3542A12326
Preamplifier	Mini-Circuits	ZHL-1042J	
Power Supply	HP	E3616A	
Power Meter	HP	E4418B	US39251091
Signal Generator	Agilent Technologies	E4433B	US50051477

Test Conditions / Notes:

The EUT is placed on the wooden table top. The RF Input port is connected to a remotely located support preamplifier and signal generator. The RF Output is connected to a remotely located RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. This data sheet represents a maximized scan for low (869 MHz), middle (881.5 MHz), and high (894 MHz) channels with WCDMA modulation. The EUT was set at maximum output power when the test was performed. Those levels are: low channel = 145 Watts, middle channel = 145 Watts, and high channel = 138 Watts. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. Spurious emissions are being evaluated at the antenna port via a directional coupler. Frequency range of measurement = 9 kHz to 9 GHz. Frequency 9 kHz - 150 kHz RBW=200 Hz, VBW=200 Hz; 150 kHz - 30 MHz RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz RBW=120 kHz, VBW=120 kHz; 1000 MHz - 9000 MHz RBW=1 MHz, VBW=1 MHz. 27VDC to the EUT, 22°C, 39%, 100kPa.

Transducer Legend:

T1=SMA Cable 1-40GHz AN2604_012305	T2=HPF_AN02116_1.5GHz_060605

Measurement Data: Reading listed by margin. Test Lead: Antenna Terminal

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	2676.000M	86.2	+0.5	+0.3			+0.0	87.0	94.0	-7.0	Anten
2	2644.500M	86.2	+0.5	+0.2			+0.0	86.9	94.0	-7.1	Anten
3	1742.000M	85.6	+0.5	+0.7			+0.0	86.8	94.0	-7.2	Anten

4	1763.000M	85.6	+0.5	+0.7	+0.0	86.8	94.0	-7.2	Anten
5	2613.000M	85.5	+0.5	+0.2	+0.0	86.2	94.0	-7.8	Anten
6	1784.000M	84.9	+0.5	+0.7	+0.0	86.1	94.0	-7.9	Anten

Spurious Emissions - Antenna Terminal Test Equipment

Equipment	Asset #	Manufacturer	Model	Serial #	Cal Date	Cal Due
24" SMA Cable	2604	Argosy	UFA147A	0-0360-200200	012304	012305
Spectrum Analyzer	02467	Agilent	E7405A	US40240225	033103	033105
1.5 GHz HPF	02116	HP	84300-80037	3643A00027	060603	060605

PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP

FCC 2.1033(c)(14)/2.1053/22.917(a) - FIELD STRENGTH OF SPURIOUS RADIATION

Test Location: CKC Laboratories Inc. •180 N Olinda Place • Brea CA, 92823 • 714-993-6112

Customer: **Powerwave Technologies**
Specification: **FCC Part 22.917(a) Radiated Spurious Emission**
Work Order #: **82936** Date: 11/16/2004
Test Type: **Maximized Emissions** Time: 11:43:28
Equipment: **Power Amplifier** Sequence#: 0
Manufacturer: Powerwave Technologies, Inc. Tested By: Stuart Yamamoto
Model: G3L-850-135
S/N: VS00010M7G

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Power Amplifier*	Powerwave Technologies, Inc.	G3L-850-135	VS00010M7G

Support Devices:

Function	Manufacturer	Model #	S/N
27Vdc Power Supply	HP	6032A	3542A12326
Preamplifier	Mini-Circuits	ZHL-1042J	
Power Supply	HP	E3616A	
Power Meter	HP	E4418B	US39251091
Signal Generator	Agilent Technologies	E4433B	US50051477

Test Conditions / Notes:

The EUT is placed on the wooden table top. The RF Input port is connected to a remotely located support preamplifier and signal generator. The RF Output is connected to a remotely located RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. This data sheet represents a maximized scan for low (869 MHz), middle (881.5 MHz), and high (894 MHz) channels with EDGE modulation. The EUT was set at maximum output power when the test was performed. Those levels are: low channel = 145 Watts, middle channel = 145 Watts, and high channel = 139 Watts. Frequency range of measurement = 9 kHz to 9 GHz. Frequency 9 kHz - 150 kHz RBW=200 Hz, VBW=200 Hz; 150 kHz - 30 MHz RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz RBW=120 kHz, VBW=120 kHz; 1000 MHz - 9000 MHz RBW=1 MHz, VBW=1 MHz. 27VDC to the EUT, 21°C, 38%, 100kPa.

Operating Frequency: 869-894 MHz MHz
Channels: Low, Mid and High
Highest Measured Output Power: 51.61 ERP(dBm)= 145 ERP(Watts)
Distance: 3 meters
Limit: 43+10Log(P) 64.61 dBc

Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
4,345.00	-19.2	Horiz	70.81
4,470.00	-19.6	Horiz	71.21
4,407.50	-20.1	Horiz	71.71
4,407.50	-20.1	Vert	71.71
4,470.00	-21.9	Vert	73.51
4,345.00	-22.1	Vert	73.71
3,526.00	-24.5	Horiz	76.11
5,364.00	-24.7	Vert	76.31
3,476.00	-24.9	Horiz	76.51
5,289.00	-26.6	Vert	78.21
5,364.00	-27.1	Horiz	78.71
1,788.00	-27.5	Vert	79.11
5,289.00	-27.7	Horiz	79.31
6,170.50	-28	Horiz	79.61
3,576.00	-28.6	Horiz	80.21
5,214.00	-29.3	Horiz	80.91
6,083.00	-29.8	Vert	81.41
5,214.00	-30.1	Vert	81.71
6,083.00	-30.4	Horiz	82.01
6,170.50	-30.8	Vert	82.41
1,763.00	-30.8	Vert	82.41
1,738.00	-31	Vert	82.61
1,788.00	-32	Horiz	83.61
3,526.00	-32.6	Vert	84.21
6,258.00	-32.9	Horiz	84.51
1,738.00	-33	Horiz	84.61
3,576.00	-34.8	Vert	86.41
3,476.00	-34.9	Vert	86.51
2,607.00	-35	Horiz	86.61
1,763.00	-35.5	Horiz	87.11
8,815.00	-35.9	Vert	87.51
8,690.00	-36.4	Horiz	88.01
8,046.00	-36.7	Vert	88.31
7,821.00	-37.2	Horiz	88.81
7,821.00	-37.5	Vert	89.11
7,933.50	-37.7	Horiz	89.31
6,258.00	-37.7	Vert	89.31
8,940.00	-38	Horiz	89.61
8,940.00	-38.1	Vert	89.71
8,690.00	-38.2	Vert	89.81
2,644.50	-38.7	Horiz	90.31
8,046.00	-39.1	Horiz	90.71
8,815.00	-39.3	Horiz	90.91
7,933.50	-39.3	Vert	90.91
2,644.50	-40.2	Vert	91.81
2,607.00	-40.3	Vert	91.91
2,682.00	-42	Vert	93.61
2,682.00	-43.4	Horiz	95.01
7,152.00	-44.2	Horiz	95.81

4,345.00	-19	Horiz	70.61
4,470.00	-19.8	Horiz	71.41
5,214.00	-20	Horiz	71.61
5,289.00	-20.2	Horiz	71.81
3,526.00	-20.8	Horiz	72.41
5,214.00	-20.9	Vert	72.51
4,407.50	-21.4	Horiz	73.01
4,345.00	-21.6	Vert	73.21
4,345.00	-15.8	Vert	67.41
4,407.50	-22.2	Vert	73.81
4,407.50	-15.9	Vert	67.51
4,470.00	-22.5	Vert	74.11
4,470.00	-15.7	Vert	67.31
1,788.00	-23.5	Vert	75.11
6,170.50	-24	Horiz	75.61
6,083.00	-24.3	Horiz	75.91
6,083.00	-24.3	Vert	75.91
6,170.50	-24.6	Vert	76.21
3,526.00	-24.9	Vert	76.51
1,788.00	-25.8	Horiz	77.41
5,364.00	-25.9	Vert	77.51
5,364.00	-16.8	Vert	68.41
3,476.00	-26	Vert	77.61
3,476.00	-27	Horiz	78.61
3,476.00	-19.5	Horiz	71.11
2,607.00	-27.2	Horiz	78.81
6,258.00	-27.7	Horiz	79.31
5,289.00	-27.7	Vert	79.31
5,289.00	-18.6	Vert	70.21
1,763.00	-27.8	Vert	79.41
3,576.00	-28.4	Vert	80.01
3,576.00	-28.5	Horiz	80.11
3,576.00	-19.6	Horiz	71.21
8,046.00	-29.1	Vert	80.71
1,738.00	-29.2	Vert	80.81
7,821.00	-29.5	Vert	81.11
7,933.50	-29.7	Horiz	81.31
5,364.00	-29.9	Horiz	81.51
5,364.00	-19.3	Horiz	70.91
8,046.00	-30.8	Horiz	82.41
1,763.00	-31.5	Horiz	83.11
1,738.00	-31.6	Horiz	83.21
6,258.00	-32	Vert	83.61
7,821.00	-32.1	Horiz	83.71
7,933.50	-32.3	Vert	83.91
2,644.50	-32.8	Horiz	84.41
2,607.00	-33	Vert	84.61
8,690.00	-34	Horiz	85.61
4,345.00	-19.2	Horiz	70.81
4,345.00	-13.8	Horiz	65.41
4,470.00	-19.6	Horiz	71.21

4,407.50	-20.1	Horiz	71.71
4,407.50	-20.1	Vert	71.71
4,470.00	-21.9	Vert	73.51
4,345.00	-22.1	Vert	73.71
3,526.00	-24.5	Horiz	76.11
5,364.00	-24.7	Vert	76.31
3,476.00	-24.9	Horiz	76.51
5,289.00	-26.6	Vert	78.21
5,364.00	-27.1	Horiz	78.71
1,788.00	-27.5	Vert	79.11
5,289.00	-27.7	Horiz	79.31
6,170.50	-28	Horiz	79.61
3,576.00	-28.6	Horiz	80.21
5,214.00	-29.3	Horiz	80.91
6,083.00	-29.8	Vert	81.41
5,214.00	-30.1	Vert	81.71
6,083.00	-30.4	Horiz	82.01
6,170.50	-30.8	Vert	82.41
1,763.00	-30.8	Vert	82.41
1,738.00	-31	Vert	82.61
1,788.00	-32	Horiz	83.61
3,526.00	-32.6	Vert	84.21
6,258.00	-32.9	Horiz	84.51
1,738.00	-33	Horiz	84.61
3,576.00	-34.8	Vert	86.41
3,476.00	-34.9	Vert	86.51
2,607.00	-35	Horiz	86.61
1,763.00	-35.5	Horiz	87.11
8,815.00	-35.9	Vert	87.51
8,690.00	-36.4	Horiz	88.01
8,046.00	-36.7	Vert	88.31
7,821.00	-37.2	Horiz	88.81
7,821.00	-37.5	Vert	89.11
7,933.50	-37.7	Horiz	89.31
6,258.00	-37.7	Vert	89.31
8,940.00	-38	Horiz	89.61
8,940.00	-38.1	Vert	89.71
8,690.00	-38.2	Vert	89.81
2,644.50	-38.7	Horiz	90.31
8,046.00	-39.1	Horiz	90.71
8,815.00	-39.3	Horiz	90.91
7,933.50	-39.3	Vert	90.91
2,644.50	-40.2	Vert	91.81
2,607.00	-40.3	Vert	91.91
2,682.00	-42	Vert	93.61
2,682.00	-43.4	Horiz	95.01
7,152.00	-44.2	Horiz	95.81
7,052.00	-44.4	Vert	96.01
7,152.00	-44.5	Vert	96.11
7,052.00	-44.7	Horiz	96.31
6,952.00	-44.9	Horiz	96.51
6,952.00	-45	Vert	96.61

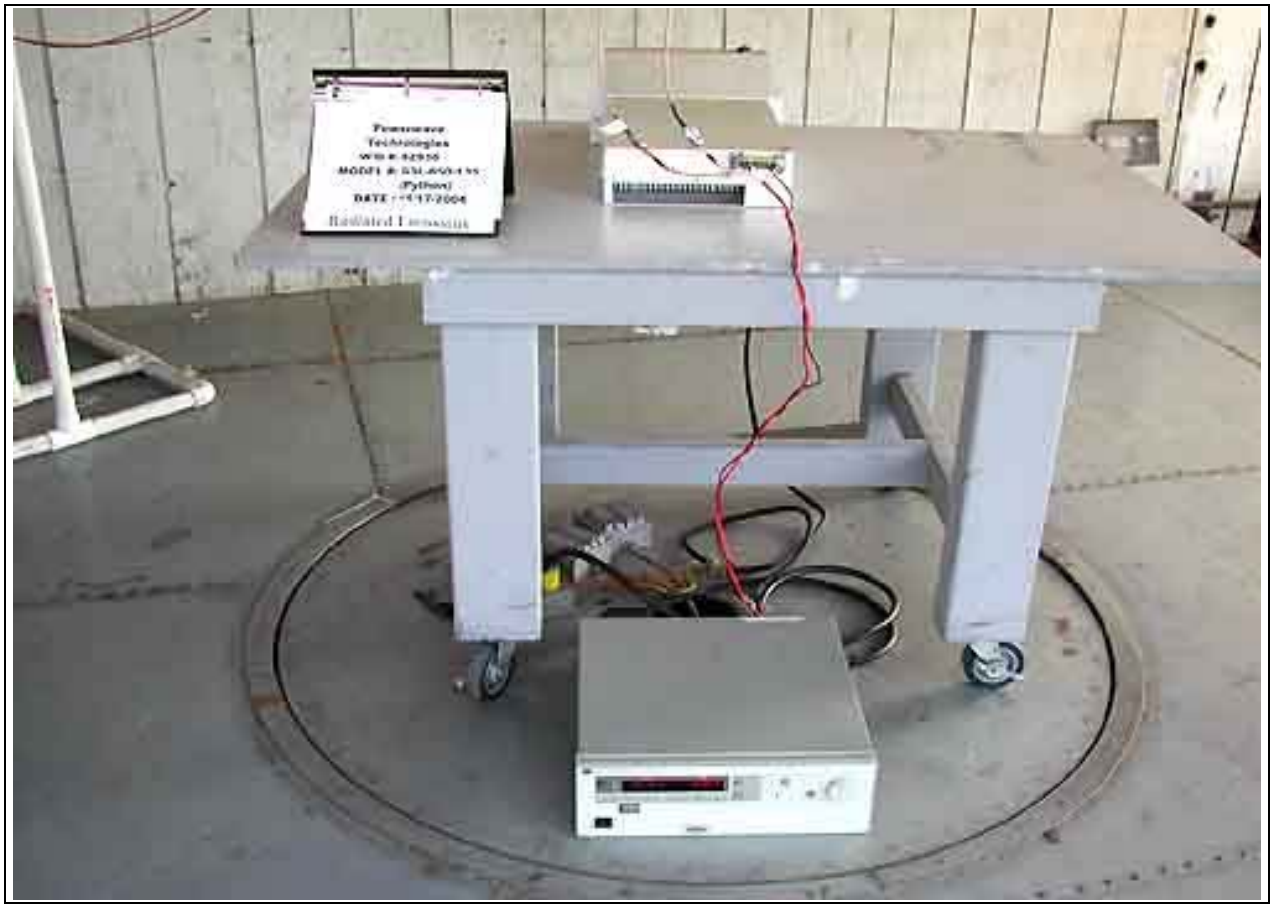
Field Strength of Spurious Radiation Test Equipment

Equipment	Asset #	Manufacturer	Model	Serial #	Cal Date	Cal Due
24" SMA Cable	2604	Argosy	UFA147A	0-0360-200200	012304	012305
Spectrum Analyzer	02467	Agilent	E7405A	US40240225	033103	033105
1.5 GHz HPF	02116	HP	84300-80037	3643A00027	060603	060605
Spectrum Analyzer RF Section	02462	HP	8568B	2928A04874	100804	100806
Spectrum Analyzer Display Section	02472	HP	85662A	3001A18430	100804	100806
QP Adapter	01437	HP	85650A	3303A01884	100804	100806
Biconilog Antenna	01995	Chase	CBL6111C	2451	040804	040806
Pre-amp	00309	HP	8447D	1937A02548	071404	071406
Antenna cable	NA	NA	RG214	Cable#15	123003	123004
Pre-amp to SA cable	NA	Pasternack	RG223/U	Cable#10	051304	051305
Horn Antenna	0849	EMCO	3115	6246	072204	072206
Microwave Pre-amp	00786	HP	83017A	3123A00281	081204	081206
Heliax Antenna cable	NA	Andrew	LDF1-50	Cable#20	091604	091605
Loop Antenna	00314	EMCO	6502	2014	062804	062806

PHOTOGRAPH SHOWING RADIATED EMISSIONS

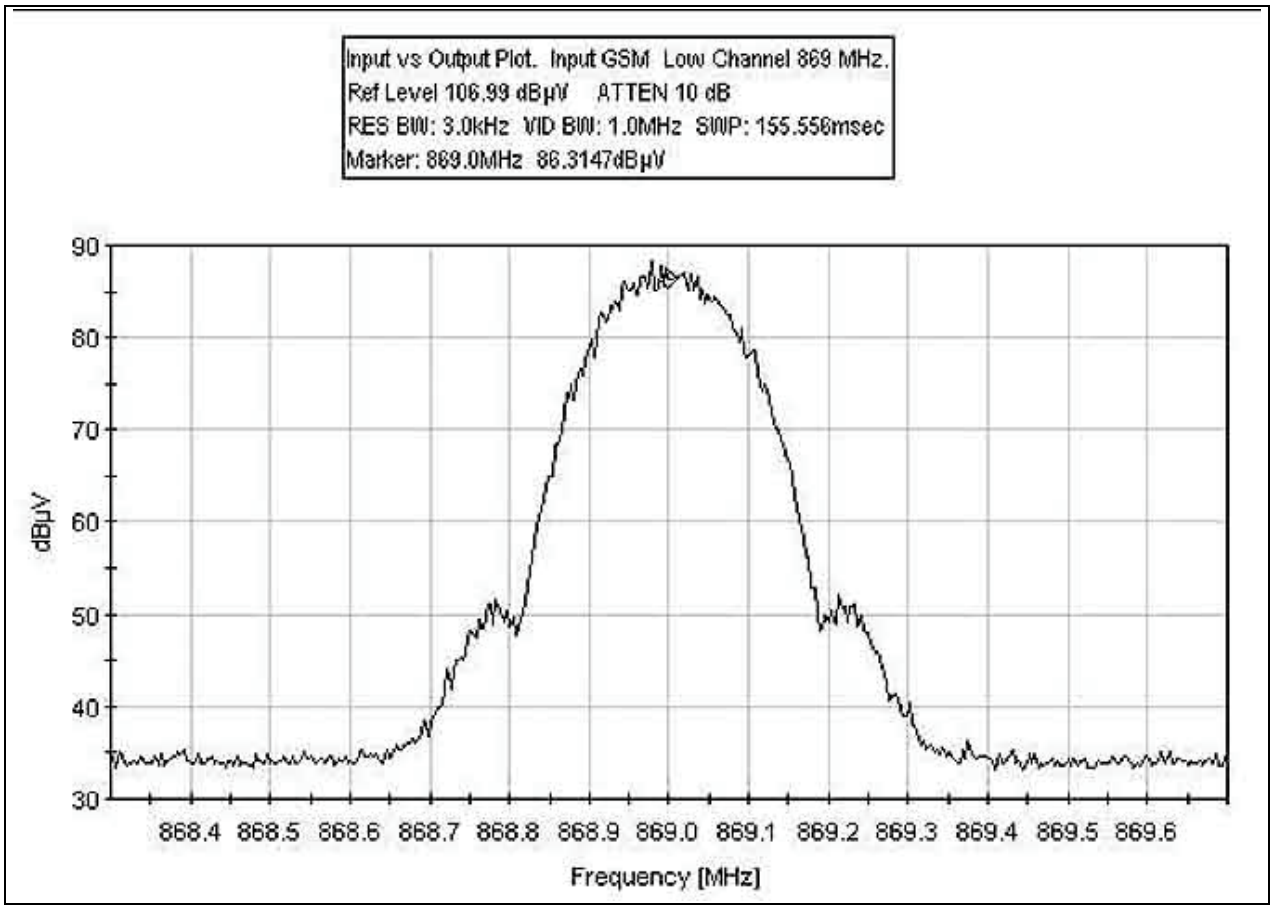
Radiated Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS

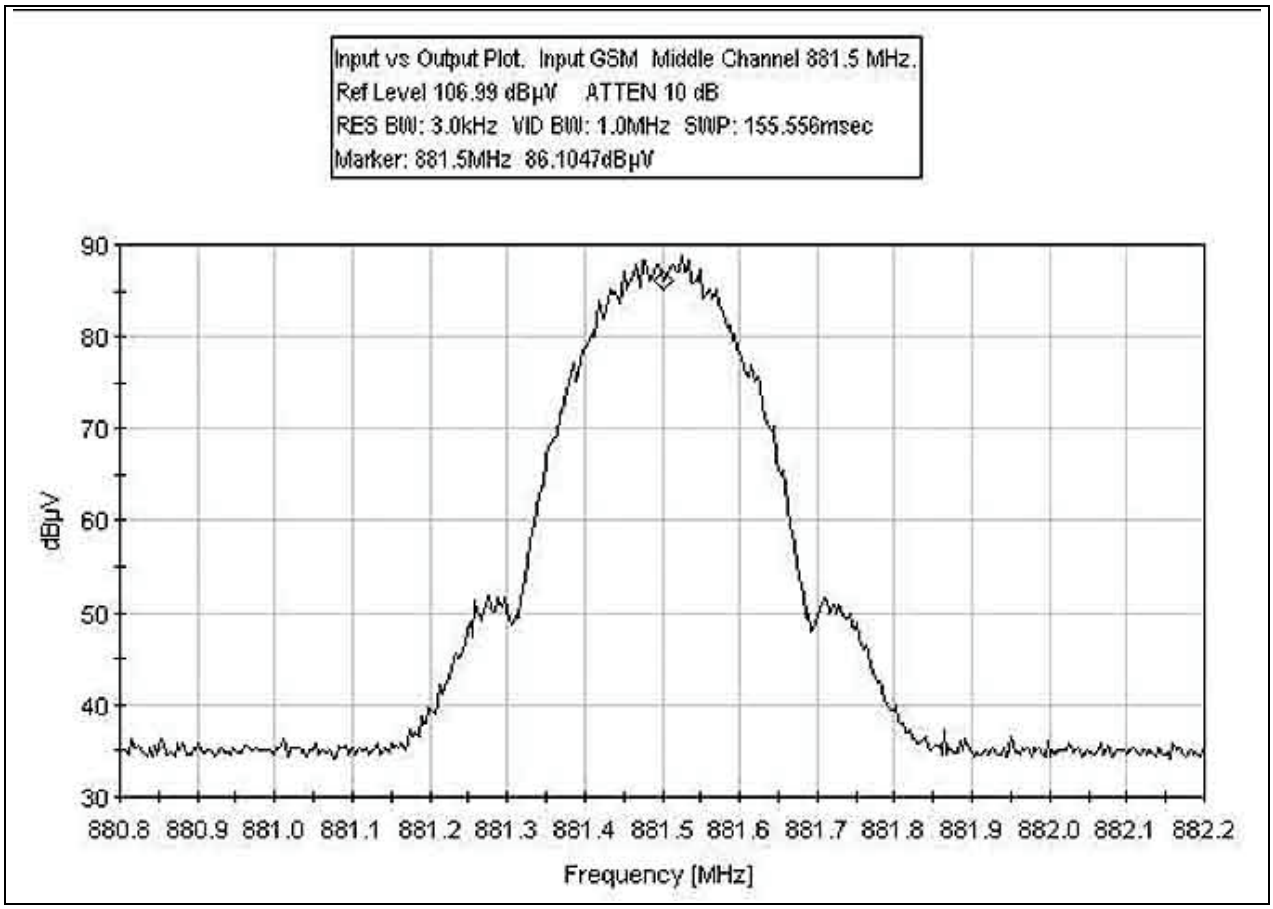


Radiated Emissions - Back View

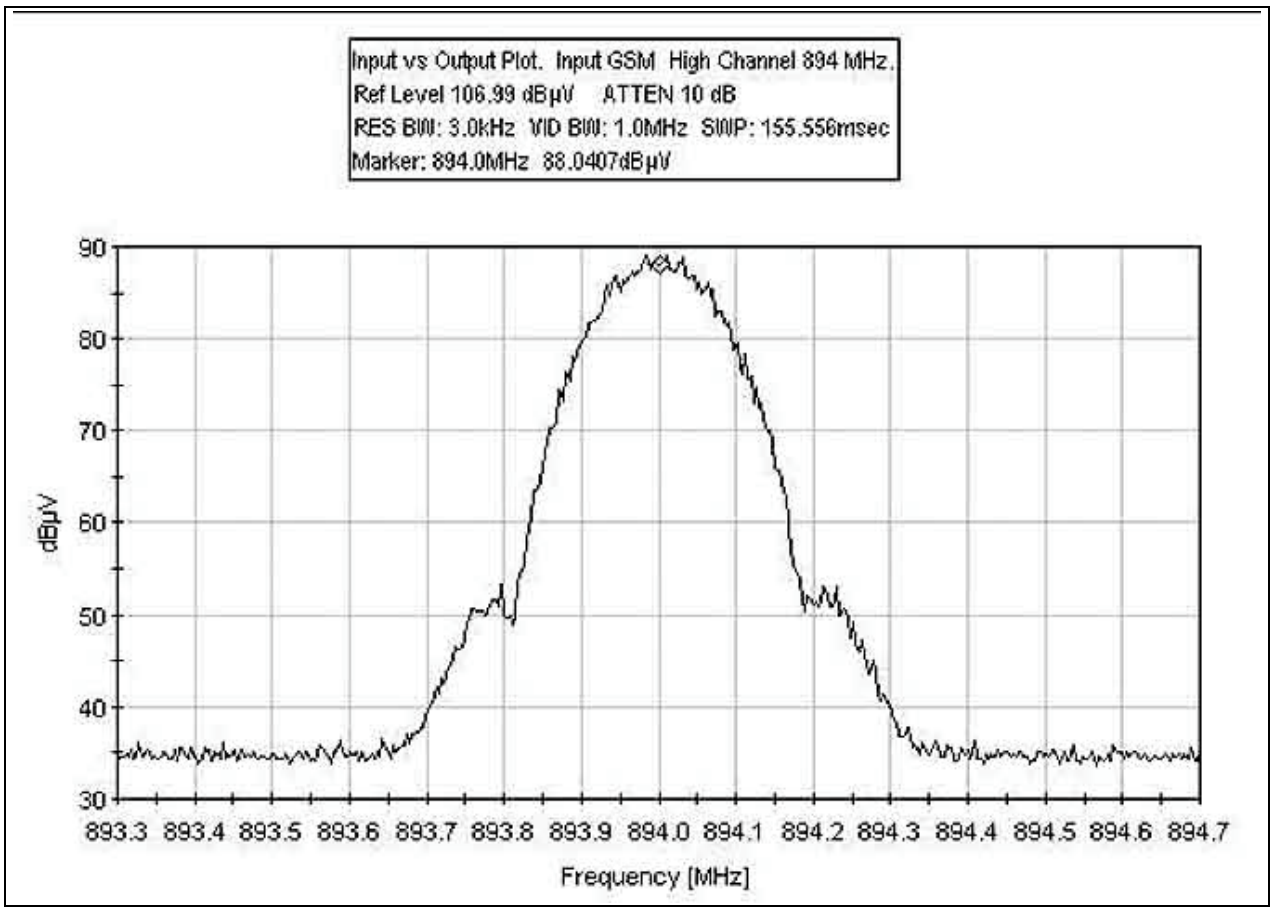
INPUT PLOT GSM LOW CHANNEL 869 MHz



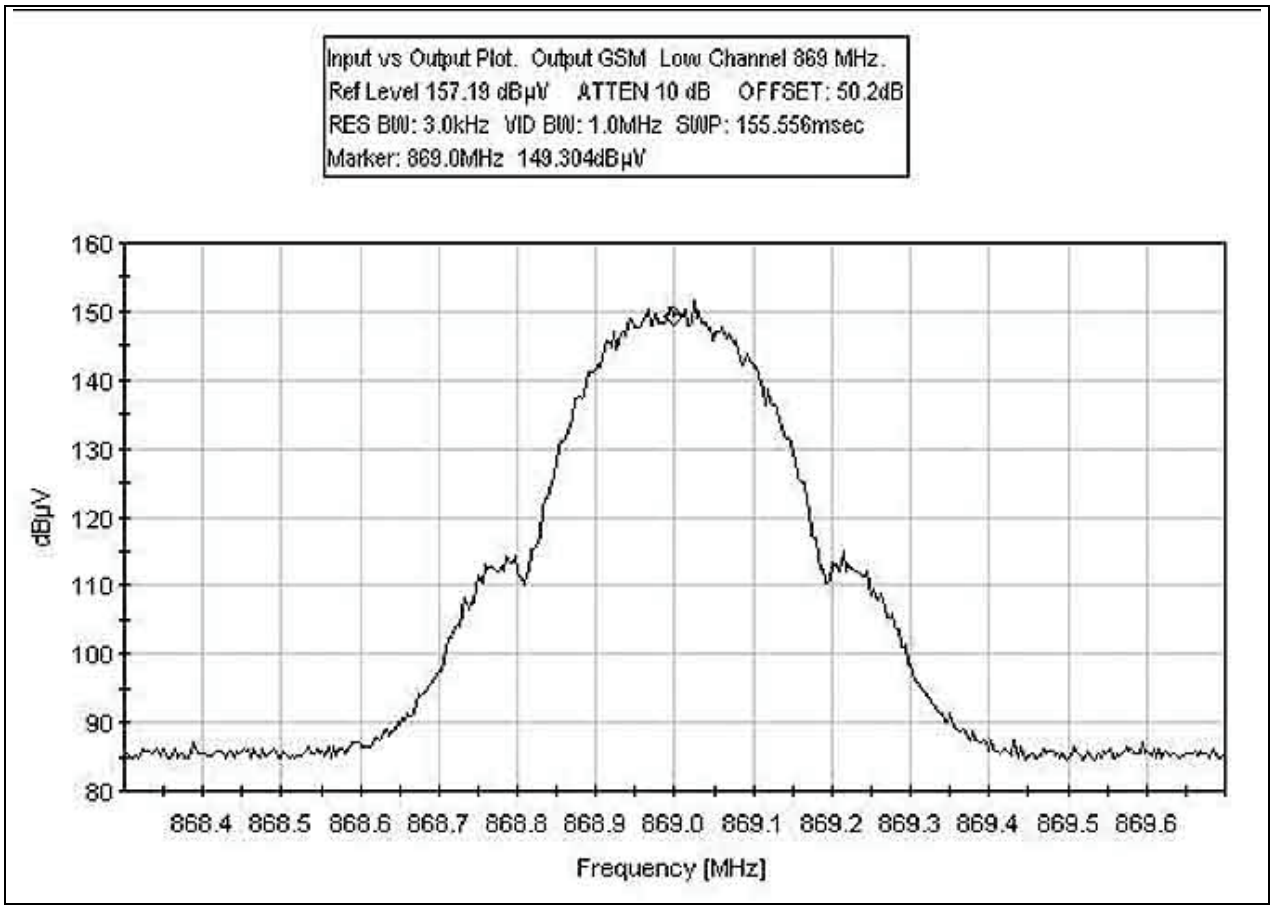
INPUT PLOT GSM MIDDLE CHANNEL 881.5 MHz



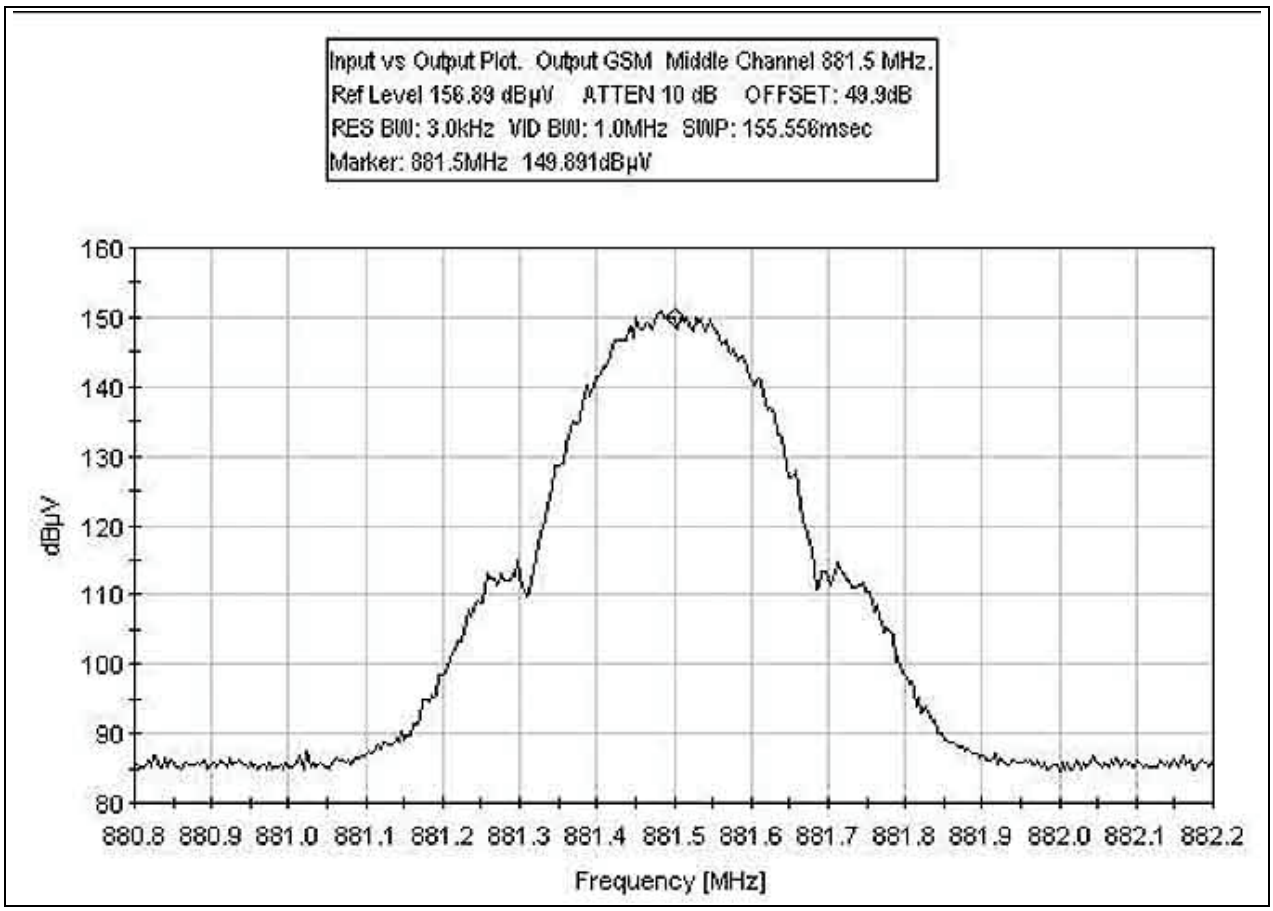
INPUT PLOT GSM HIGH CHANNEL 894 MHz



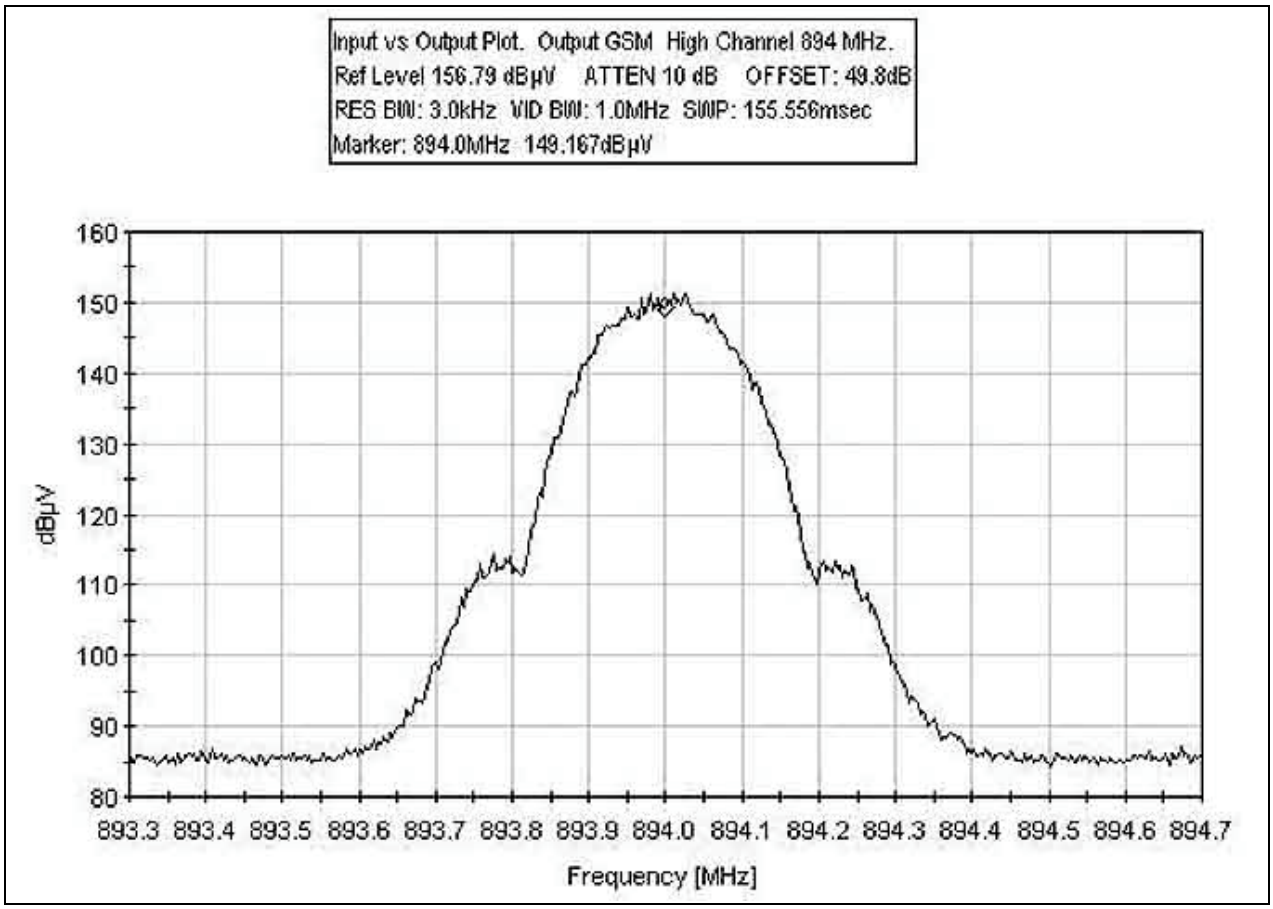
OUTPUT PLOT GSM LOW CHANNEL 869 MHz



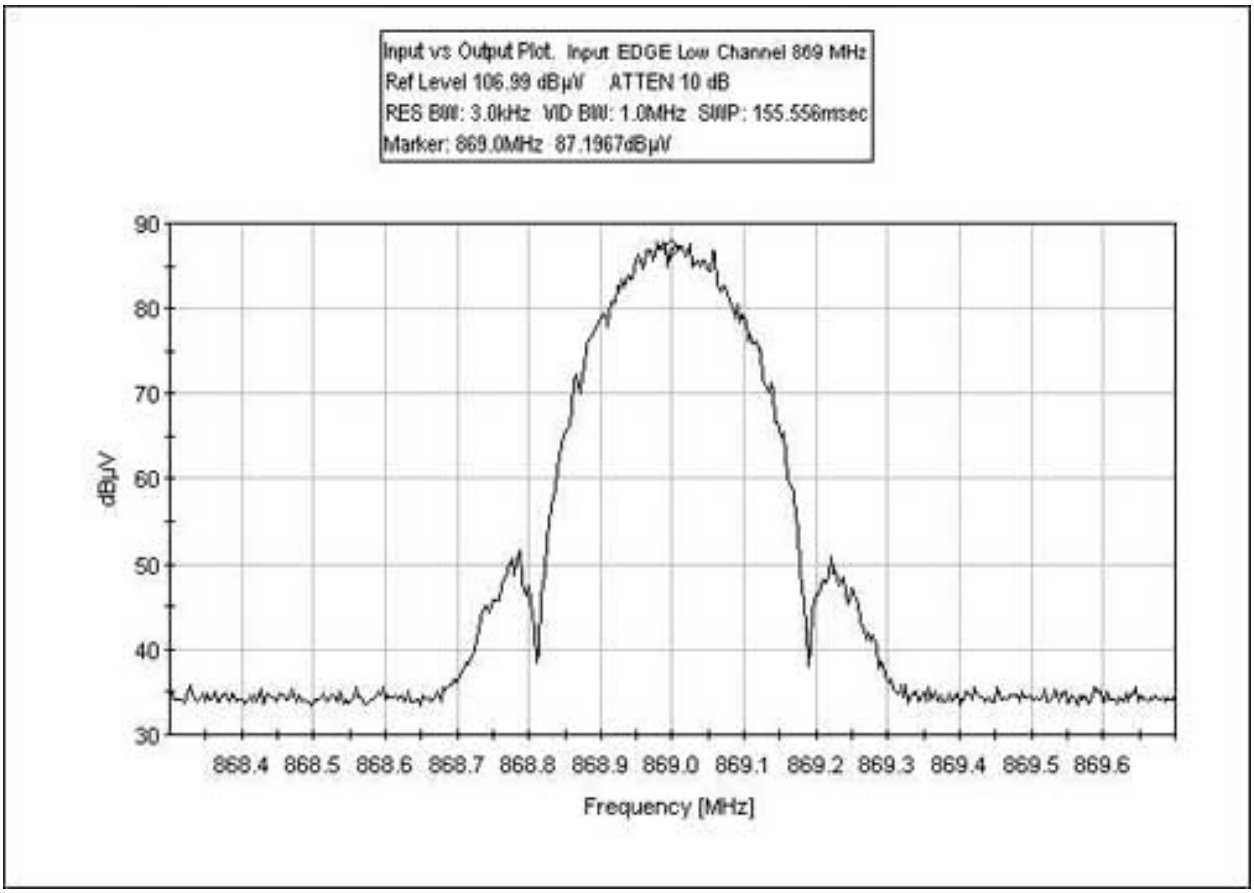
OUTPUT PLOT GSM MIDDLE CHANNEL 881.5 MHz



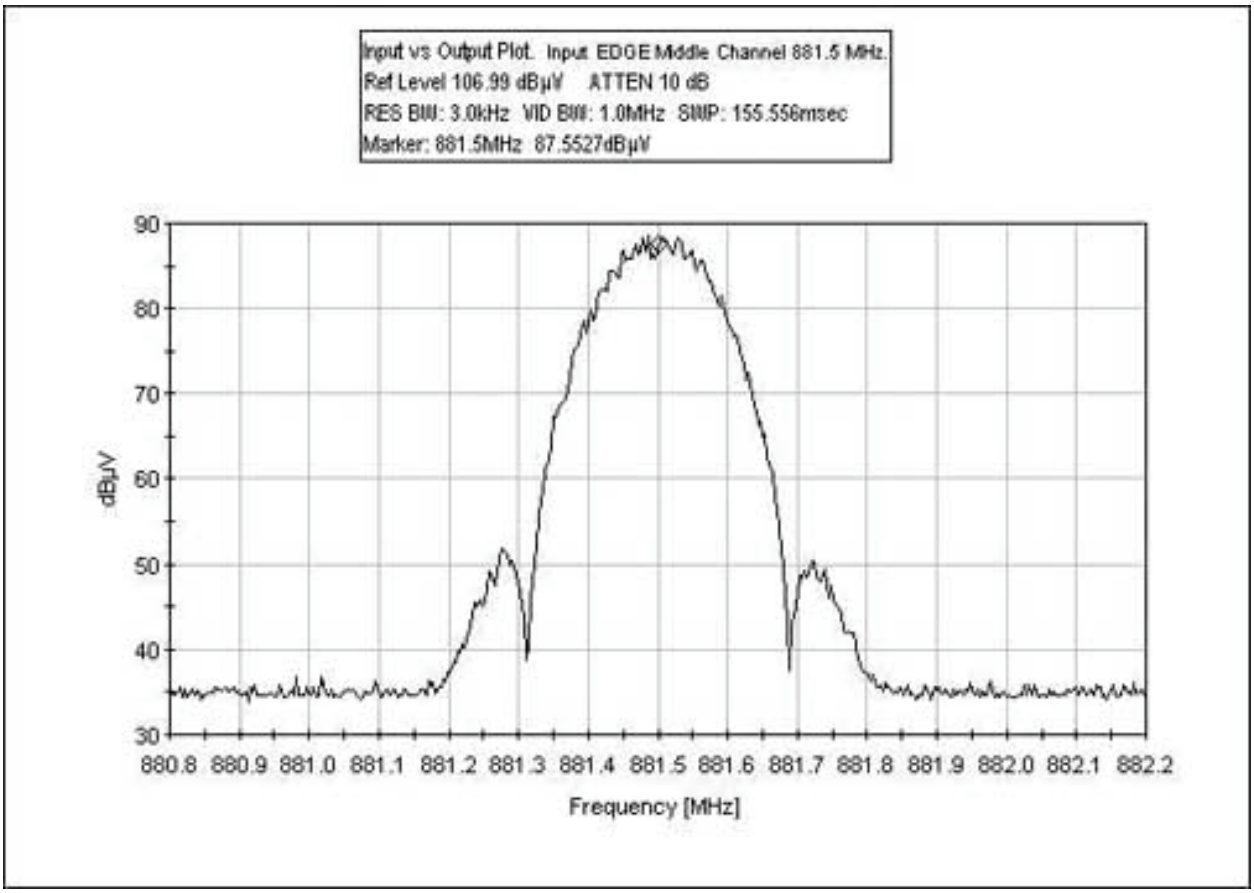
OUTPUT PLOT GSM HIGH CHANNEL 894 MHz



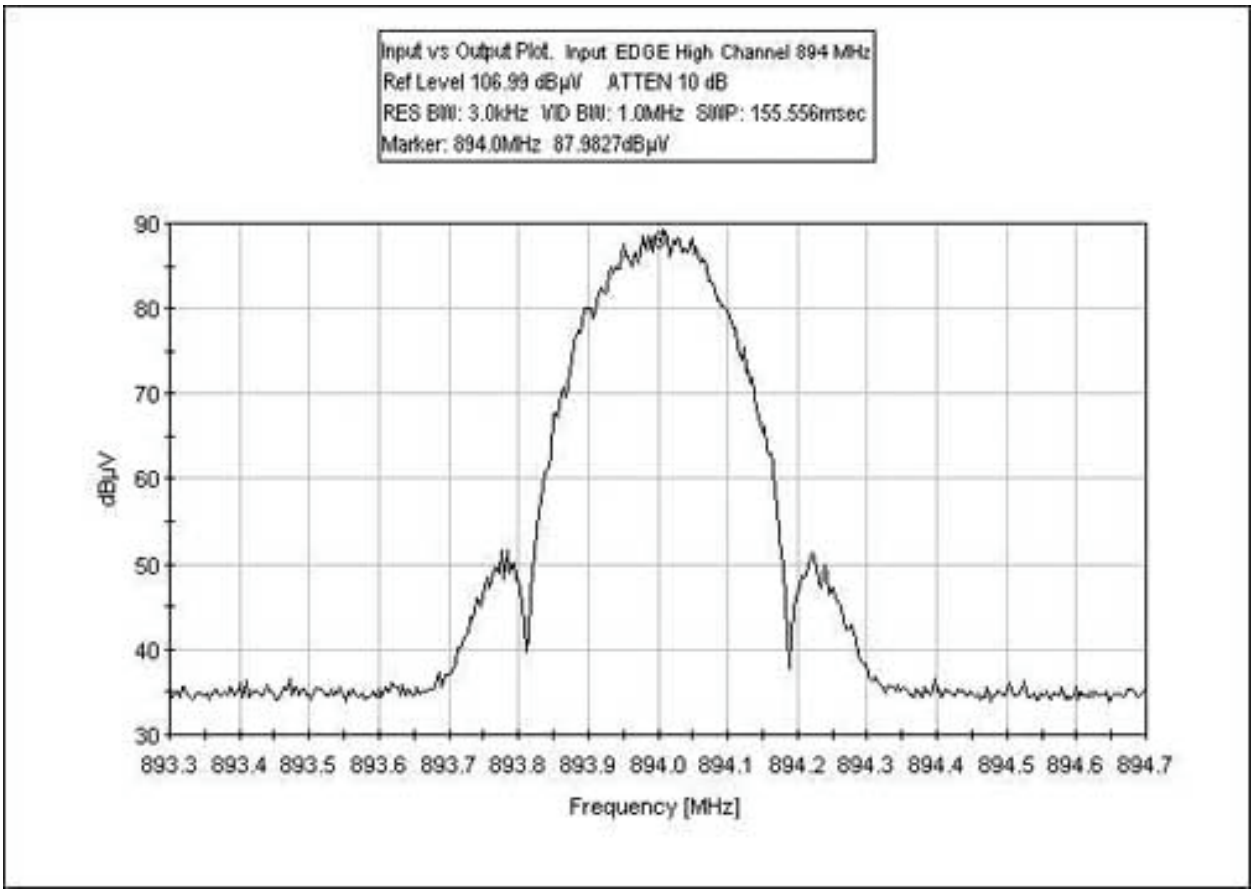
INPUT PLOT EDGE LOW CHANNEL 869 MHz



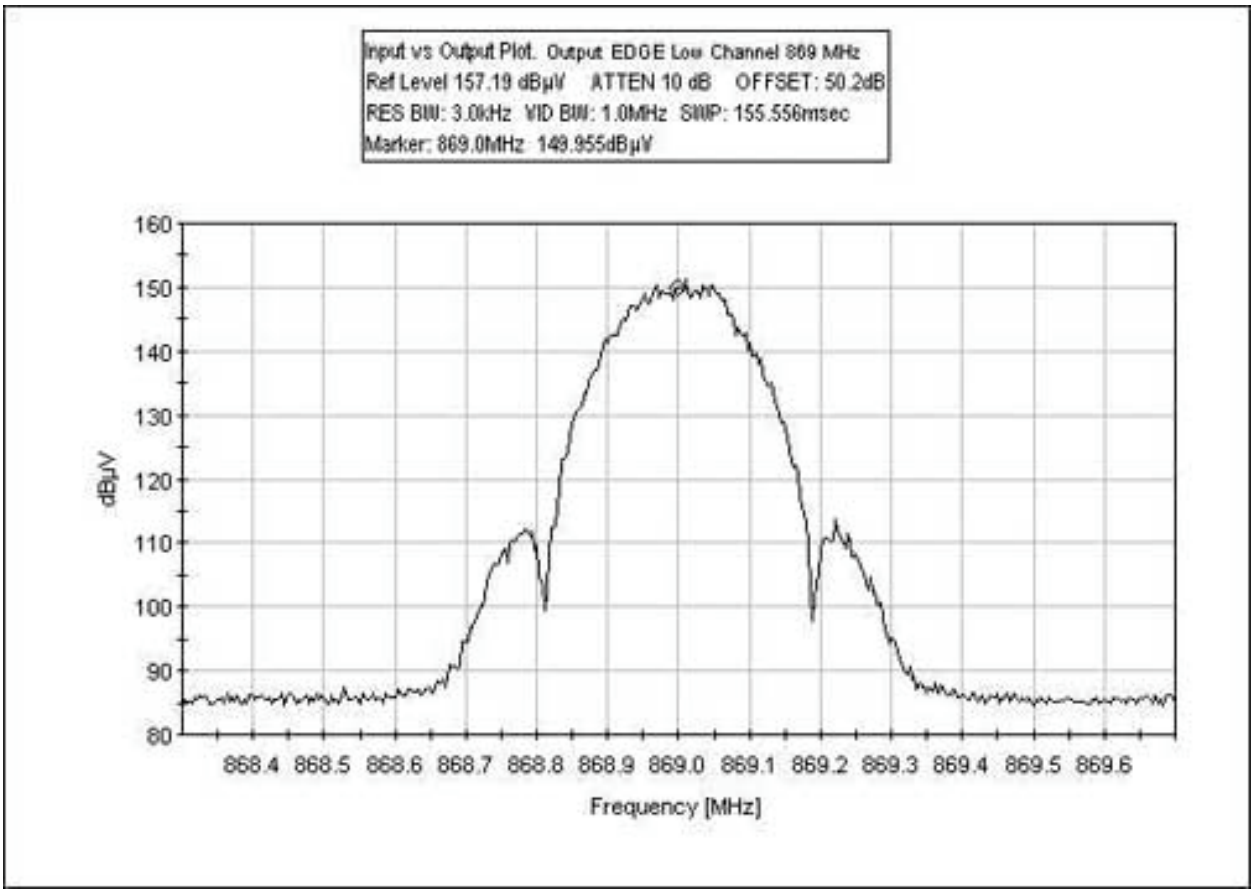
INPUT PLOT EDGE MIDDLE CHANNEL 881.5 MHz



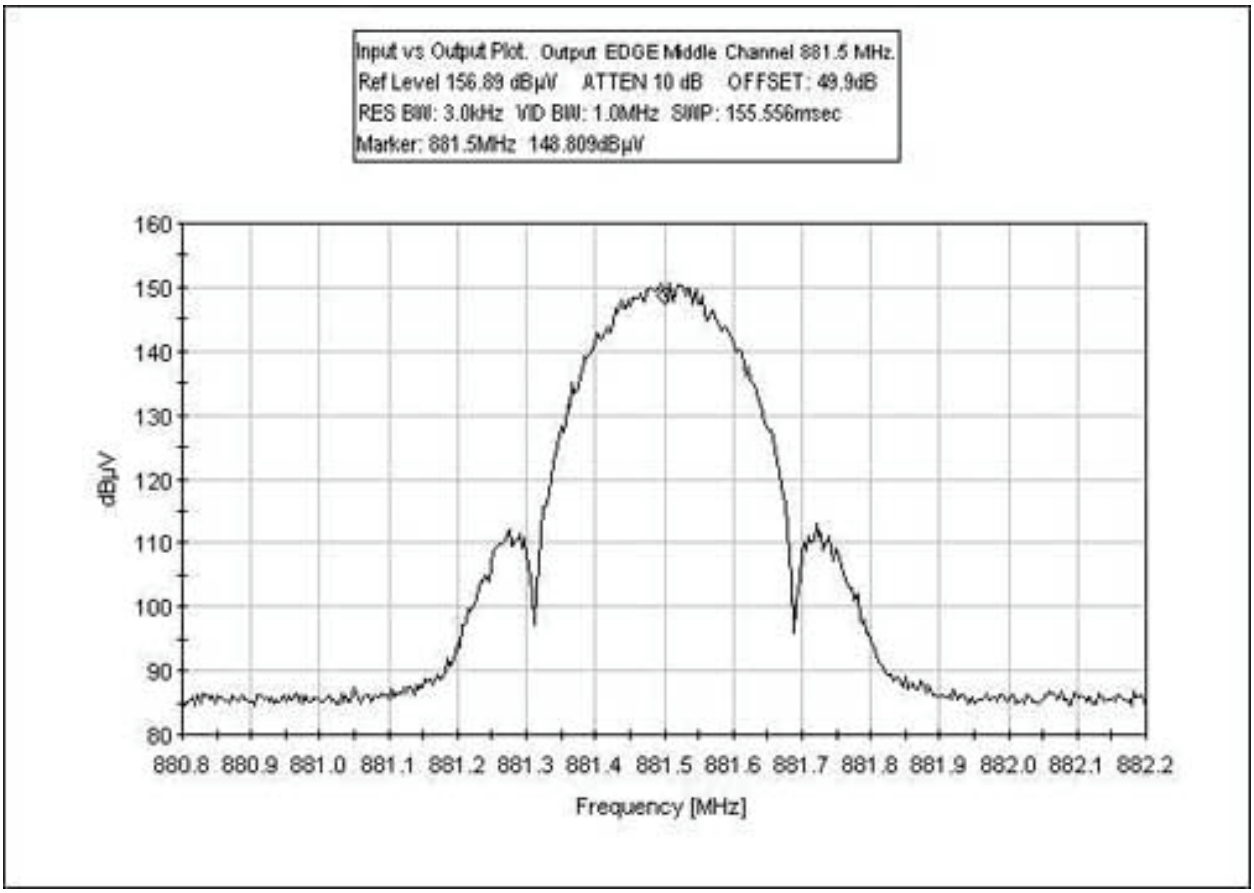
INPUT PLOT EDGE HIGH CHANNEL 894 MHz



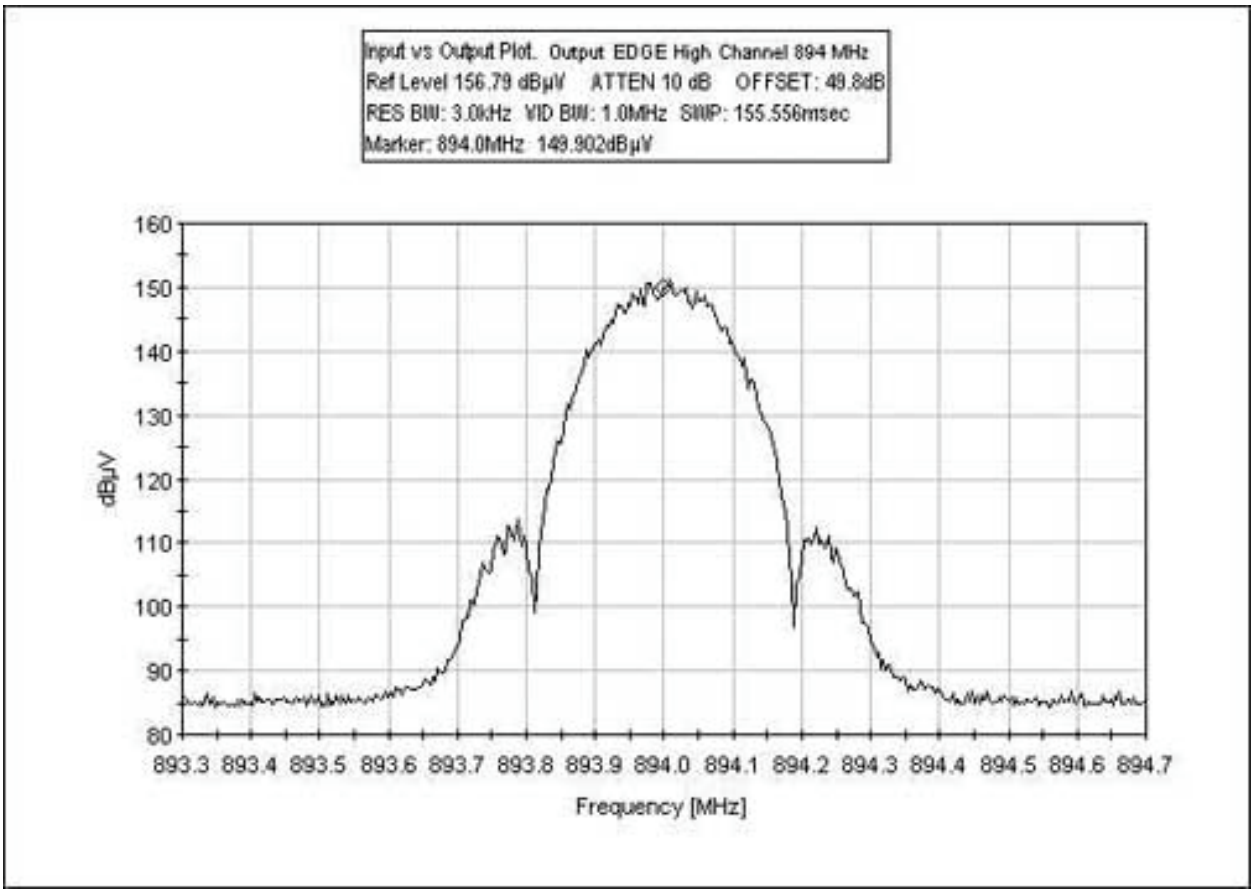
OUTPUT PLOT EDGE LOW CHANNEL 869 MHz



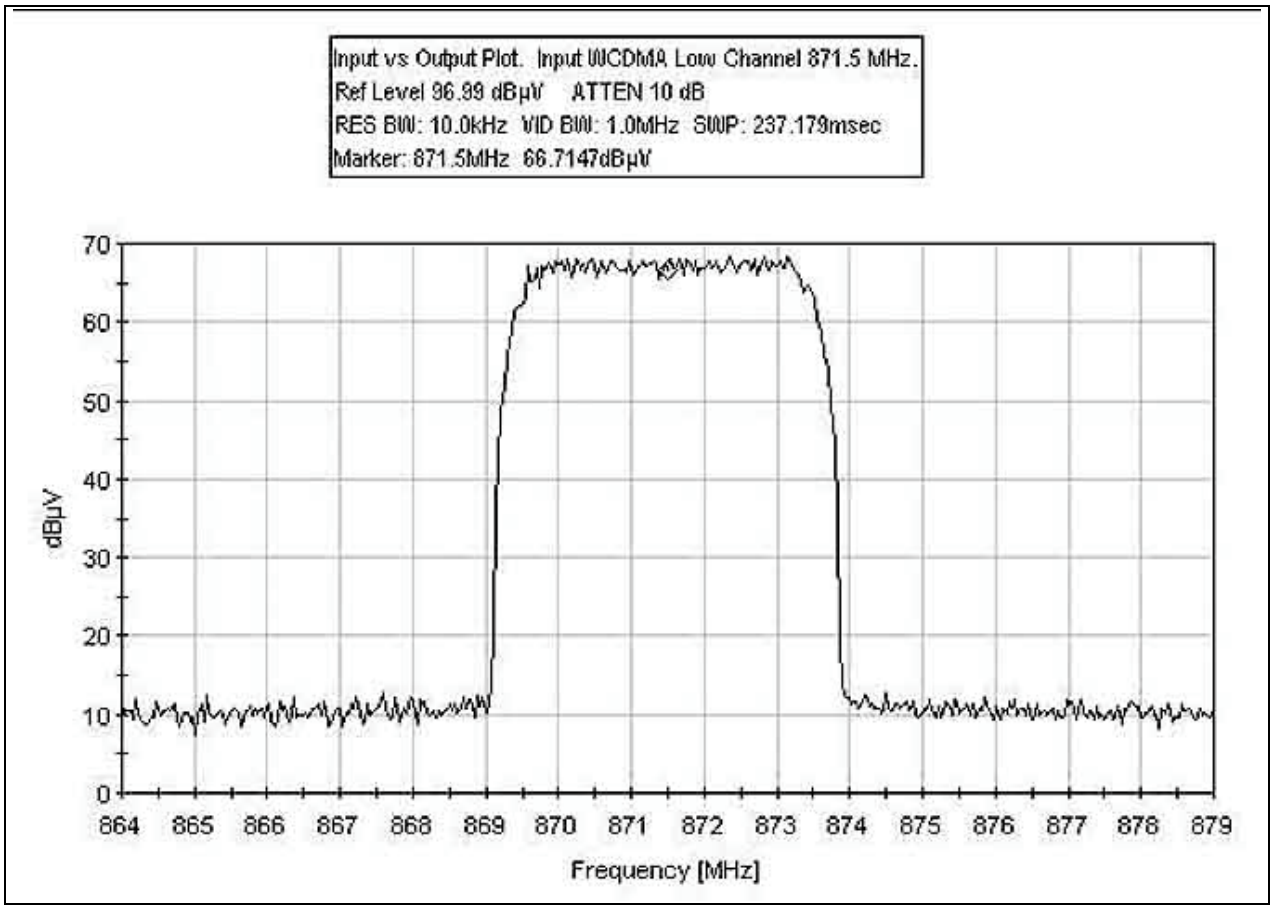
OUTPUT PLOT EDGE MIDDLE CHANNEL 881.5 MHz



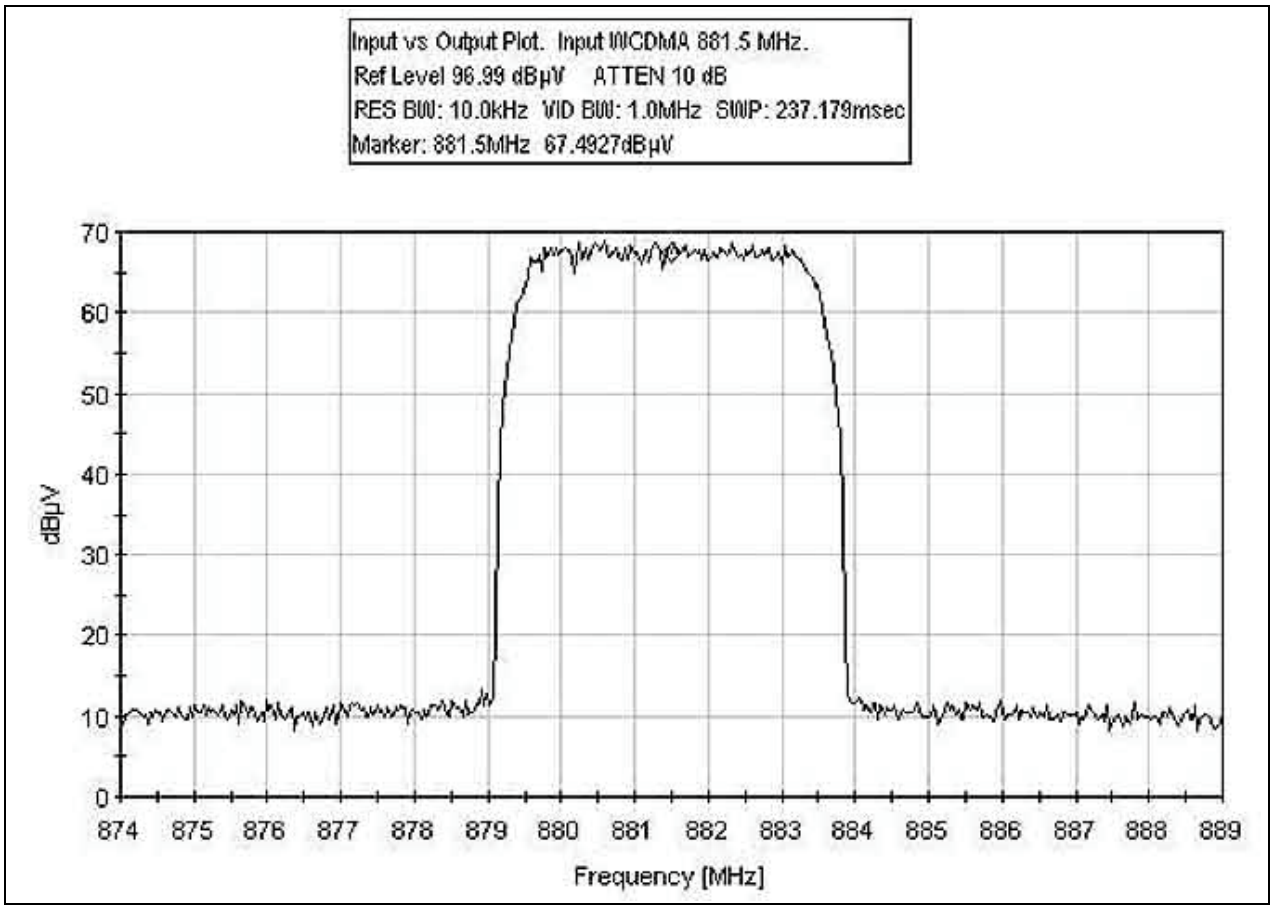
OUTPUT PLOT EDGE HIGH CHANNEL 894 MHz



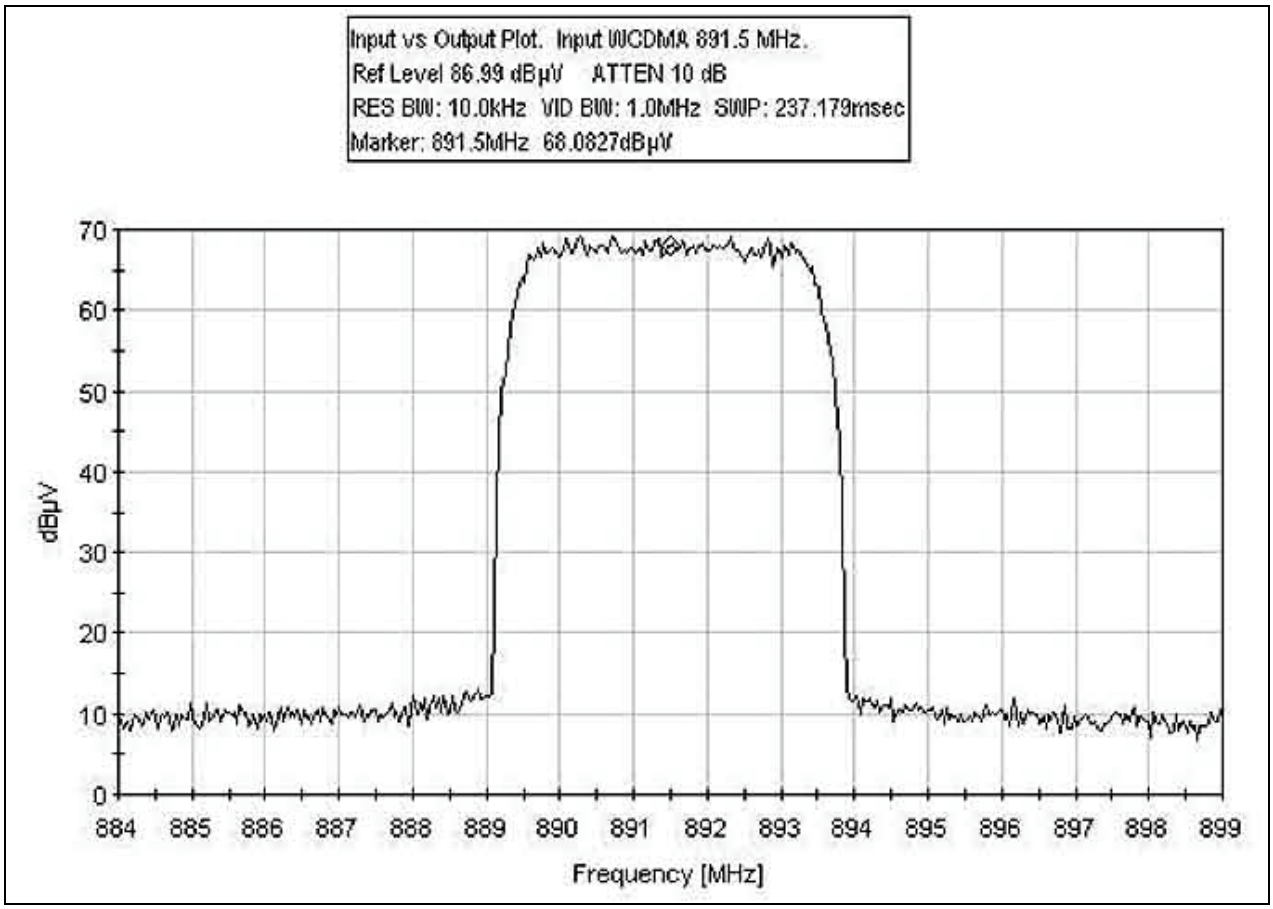
INPUT PLOT WCDMA LOW CHANNEL 871.5 MHz



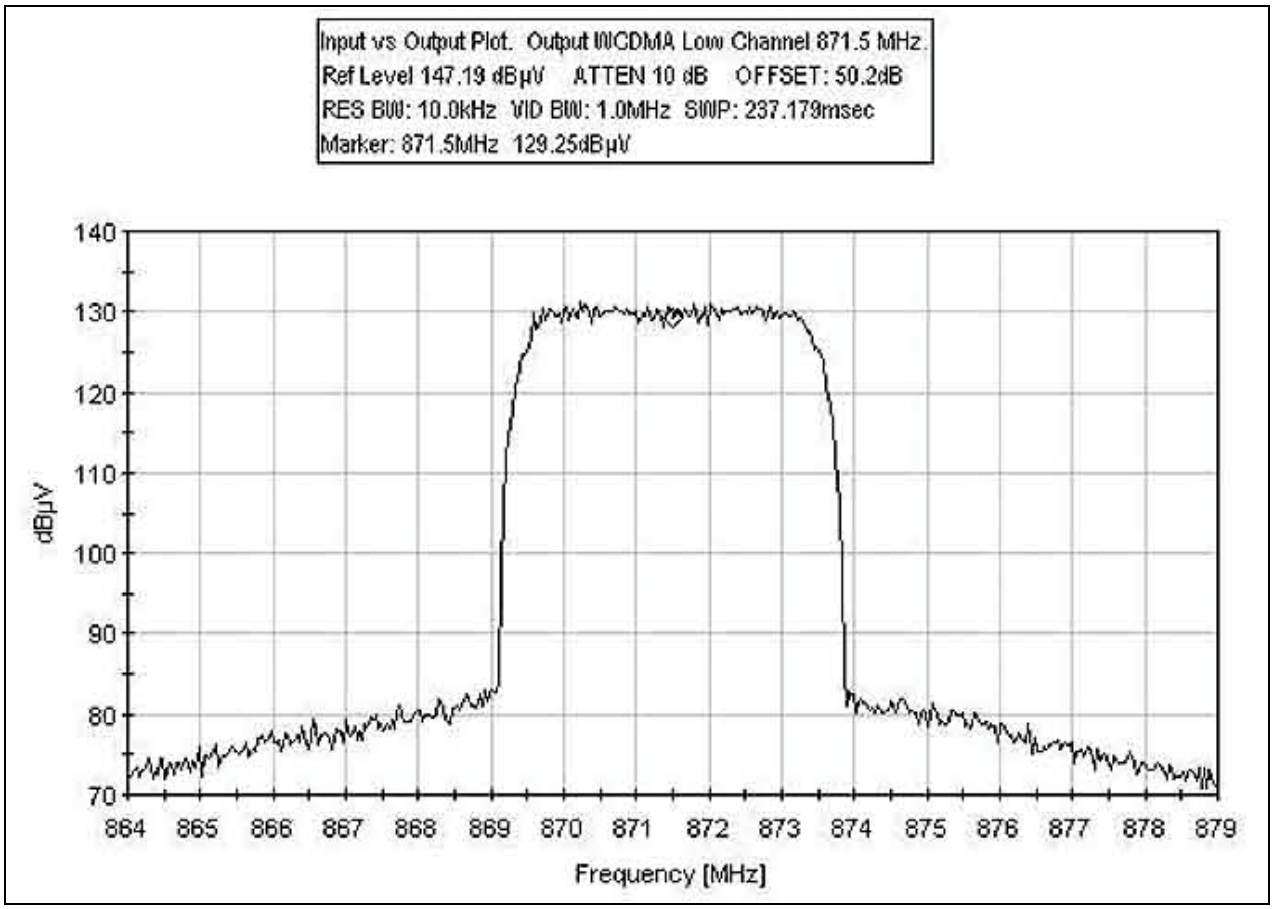
INPUT PLOT WCDMA MIDDLE CHANNEL 881.5 MHz



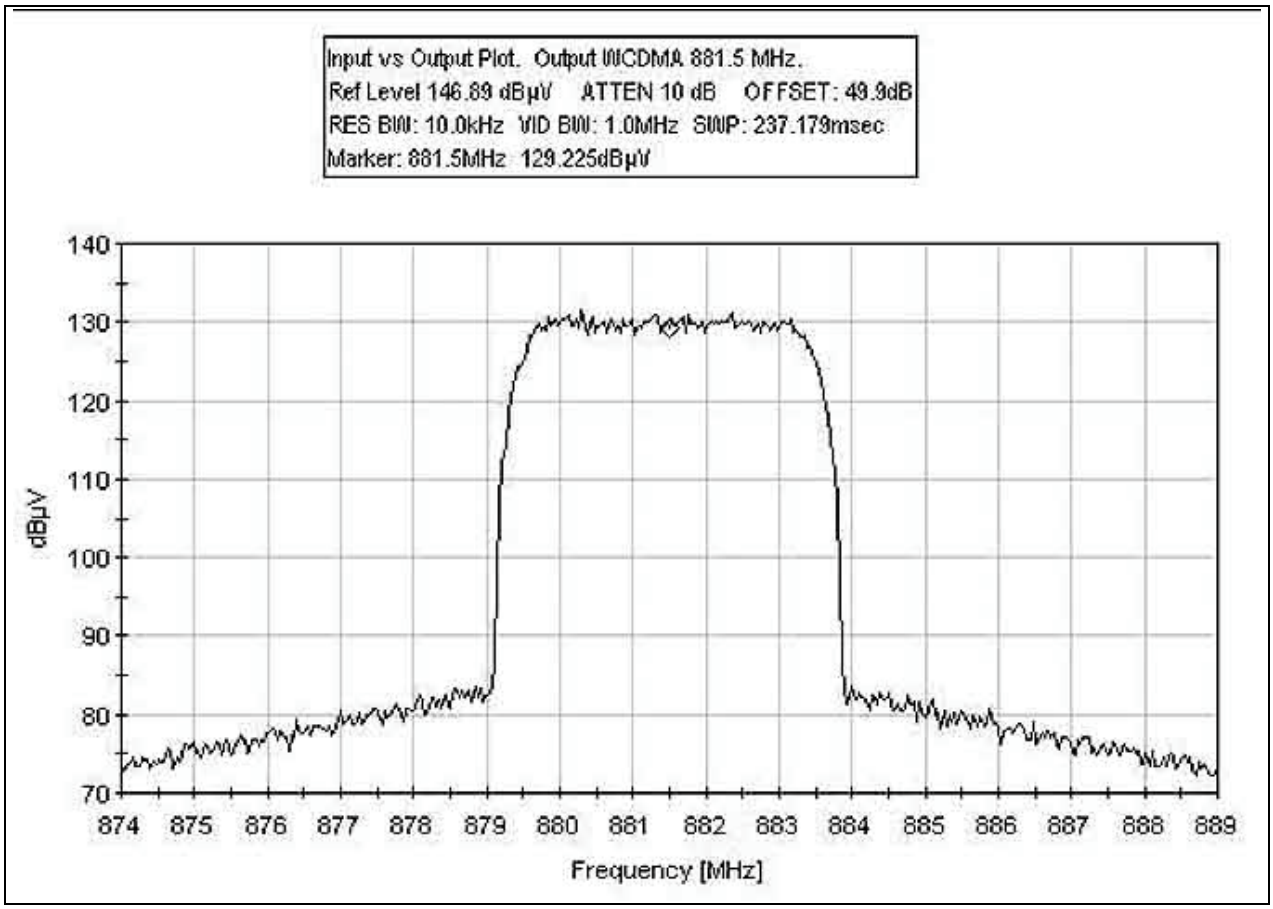
INPUT PLOT WCDMA HIGH CHANNEL 891.5 MHz



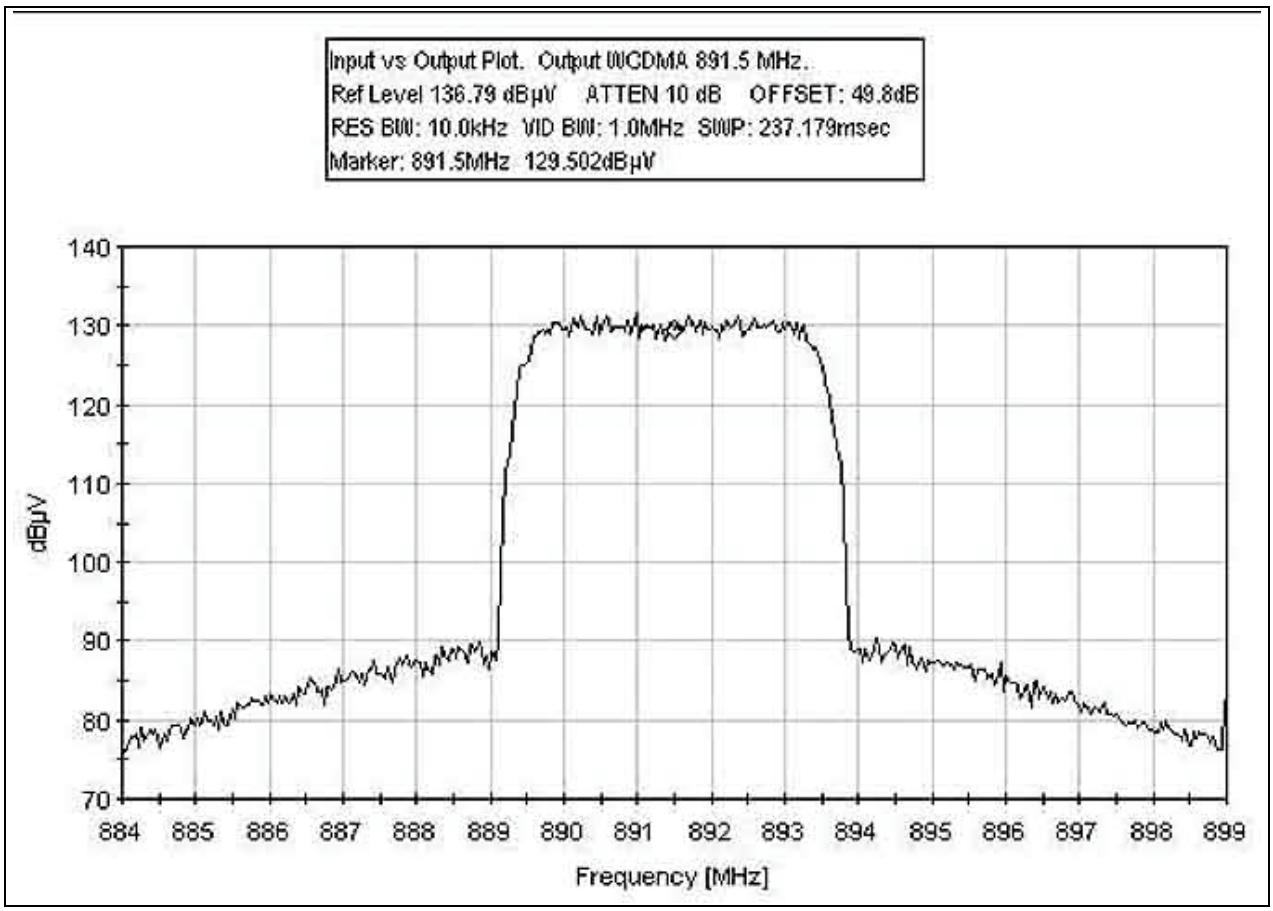
OUTPUT PLOT WCDMA LOW CHANNEL 871.5 MHz



OUTPUT PLOT WCDMA MIDDLE CHANNEL 881.5 MHz



OUTPUT PLOT WCDMA HIGH CHANNEL 891.5 MHz

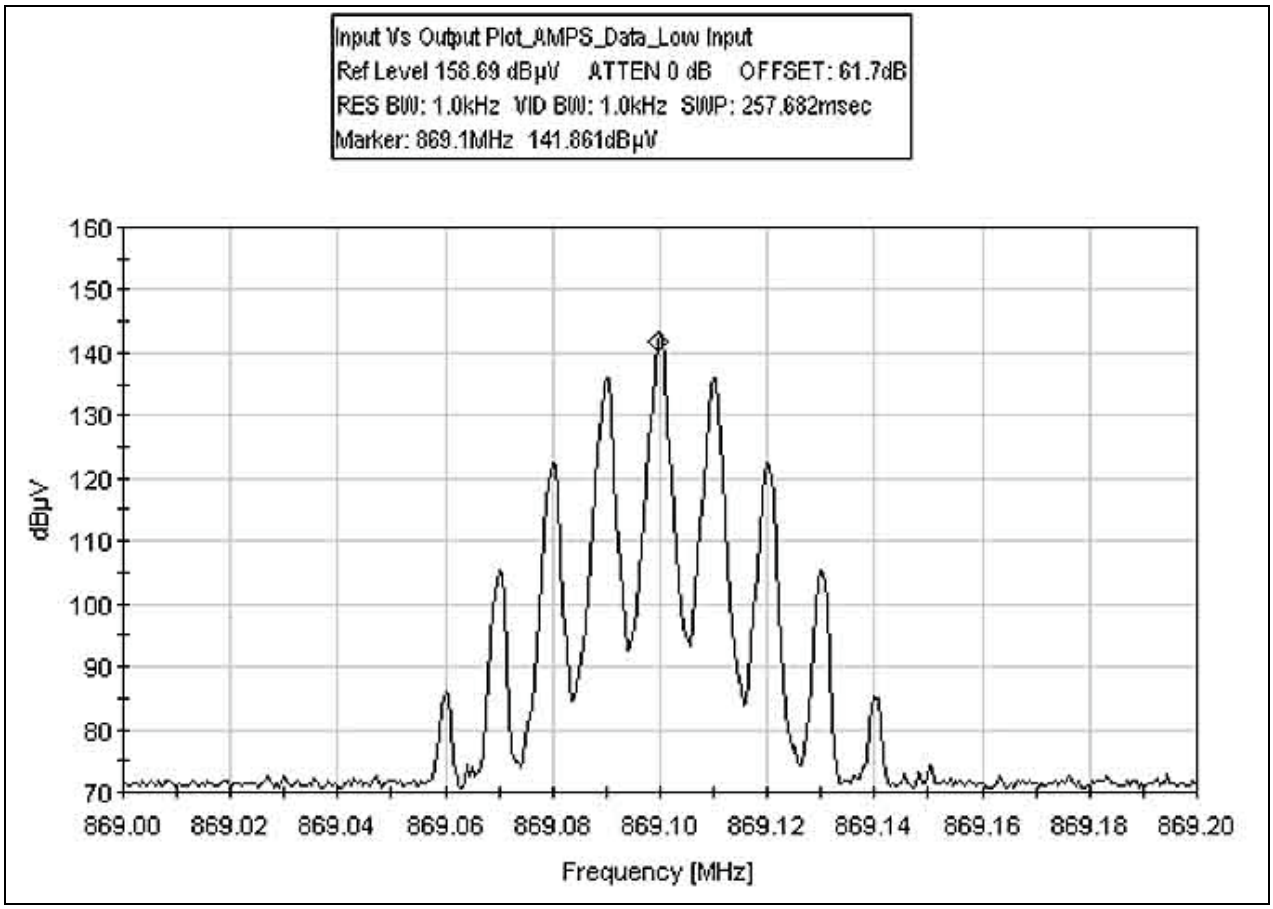


Input and Output Test Equipment

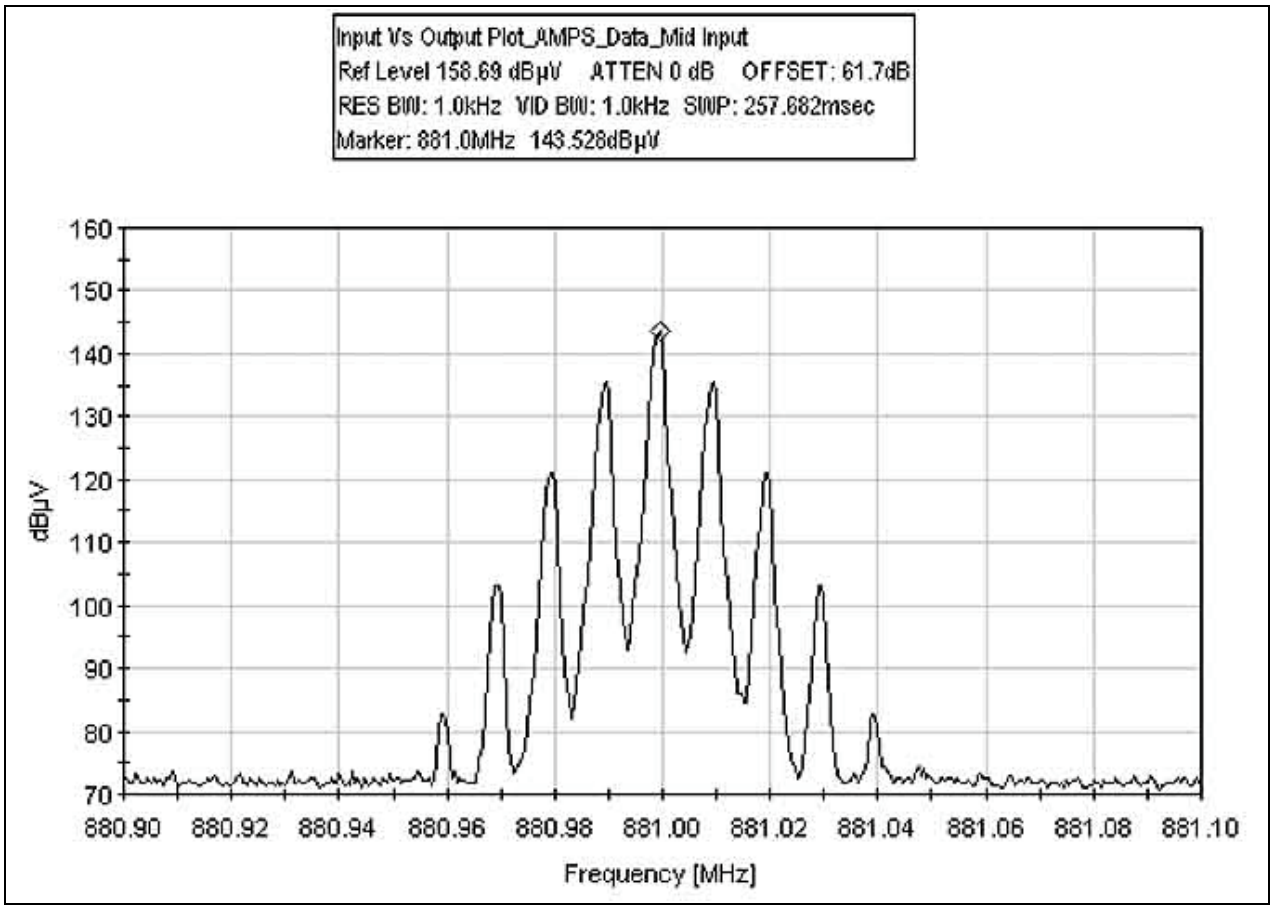
Equipment	Asset #	Manufacturer	Model	Serial #	Cal Date	Cal Due
24" SMA Cable	2604	Argosy	UFA147A	0-0360-200200	012304	012306
Spectrum Analyzer	02467	Agilent	E7405A	US40240225	033103	033105

INPUT VS OUTPUT

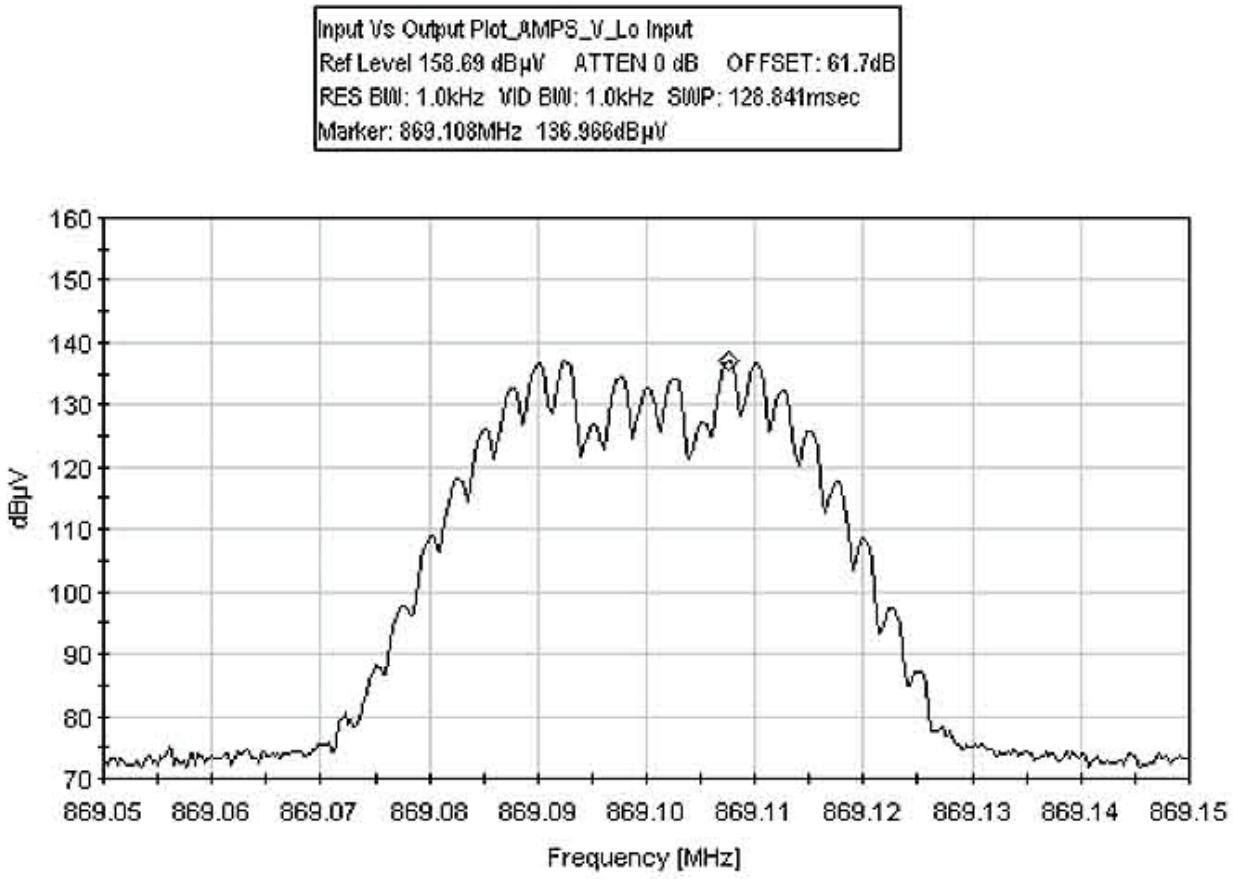
INPUT PLOT AMPS DATA LOW



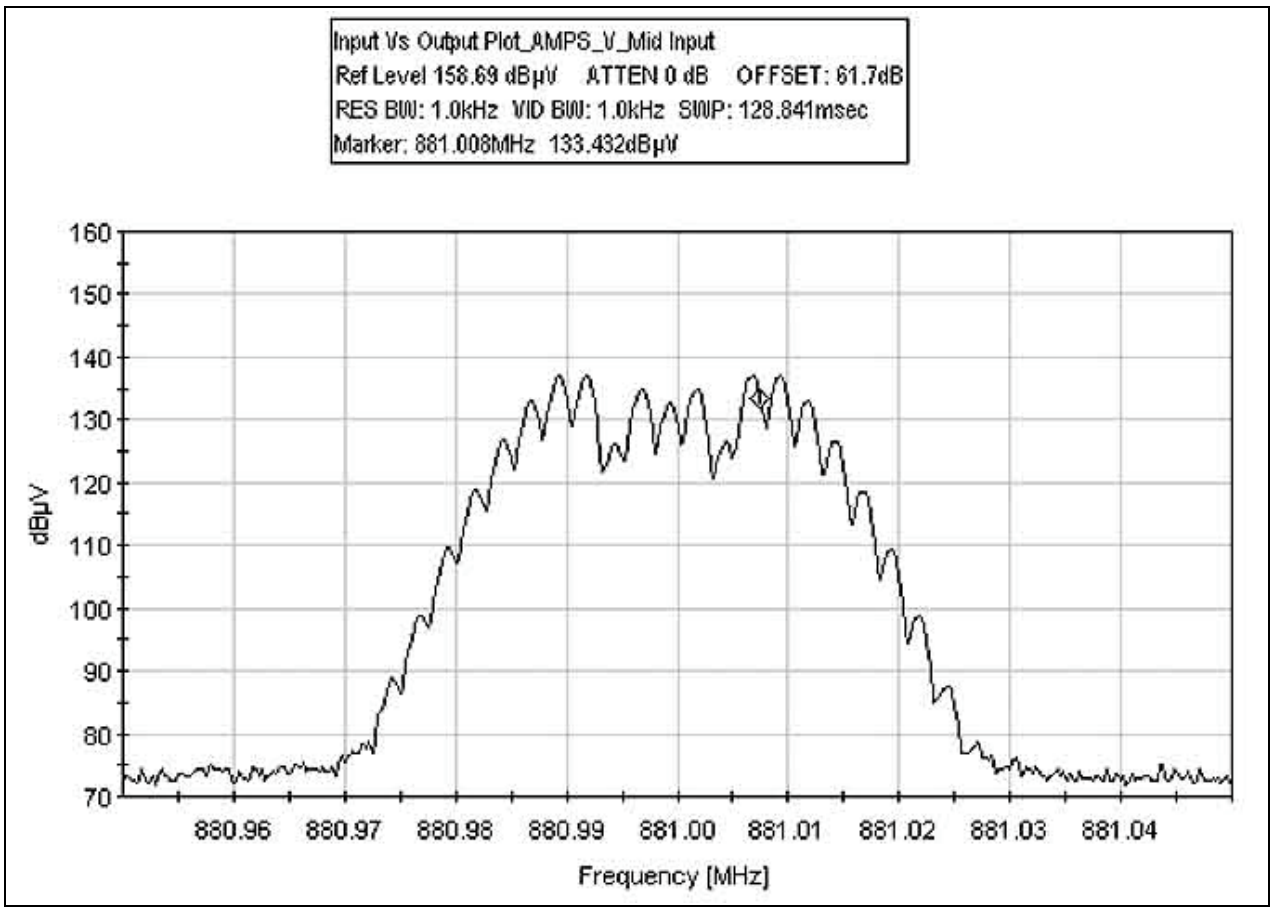
INPUT PLOT AMPS DATA MID



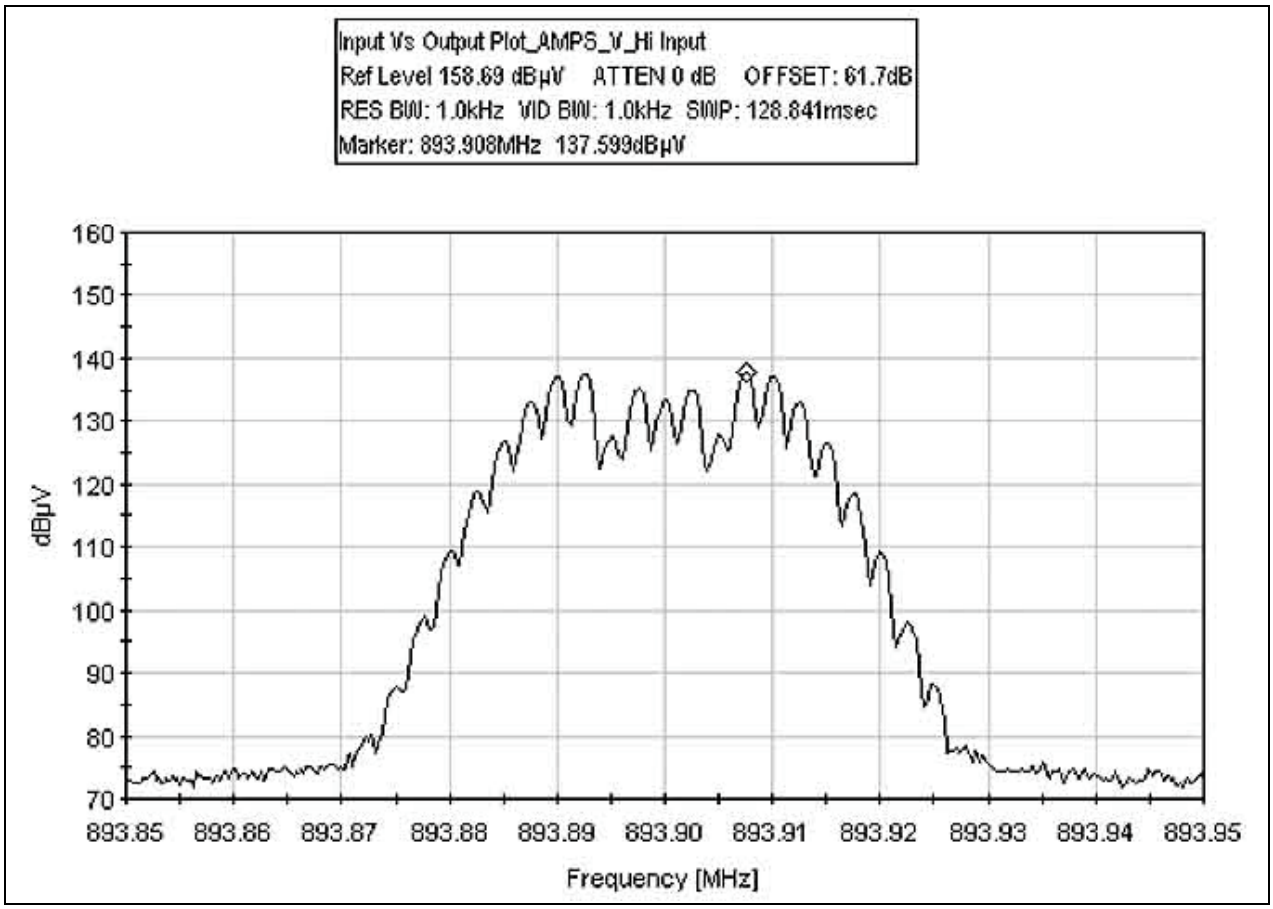
INPUT PLOT AMPS V LOW



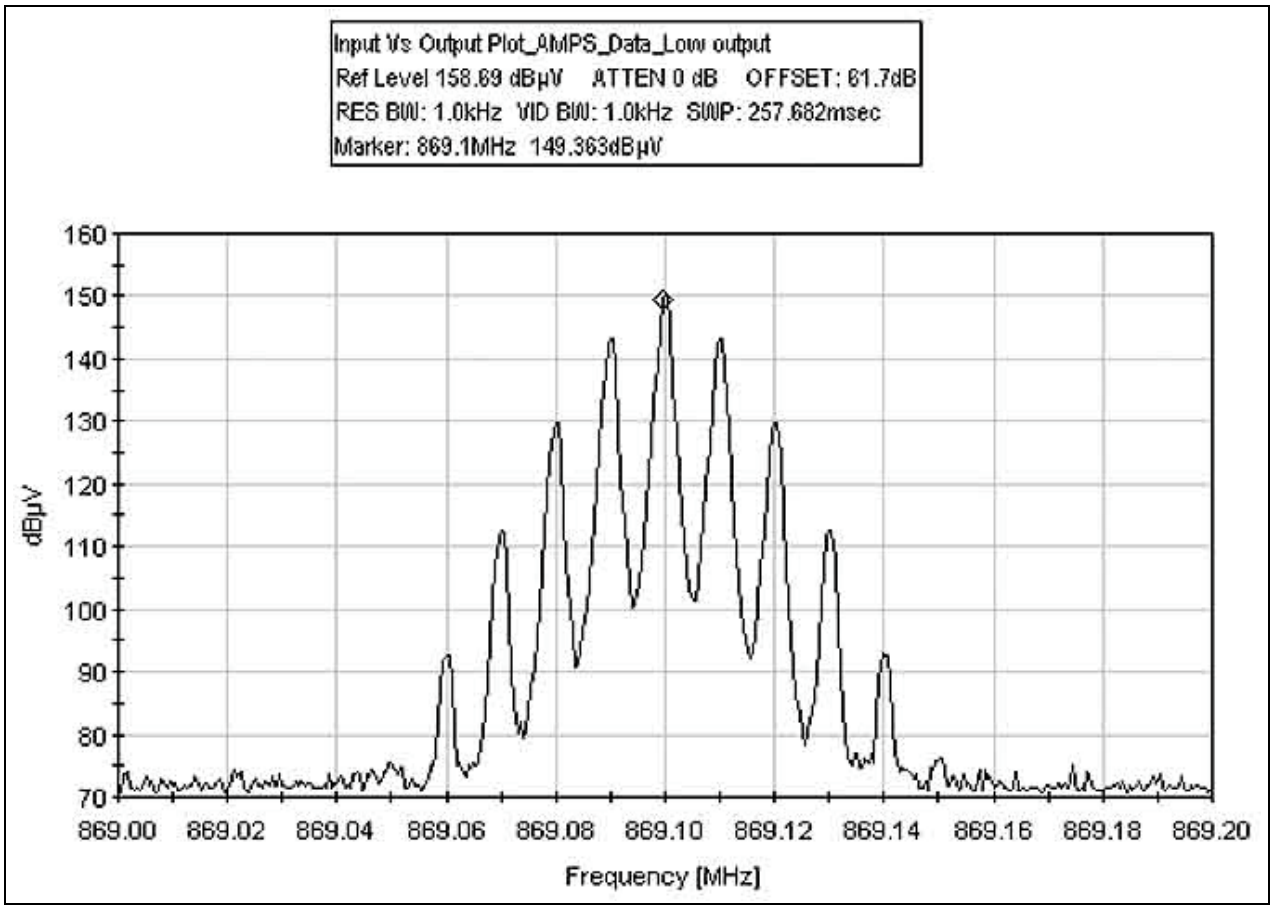
INPUT PLOT AMPS V MID



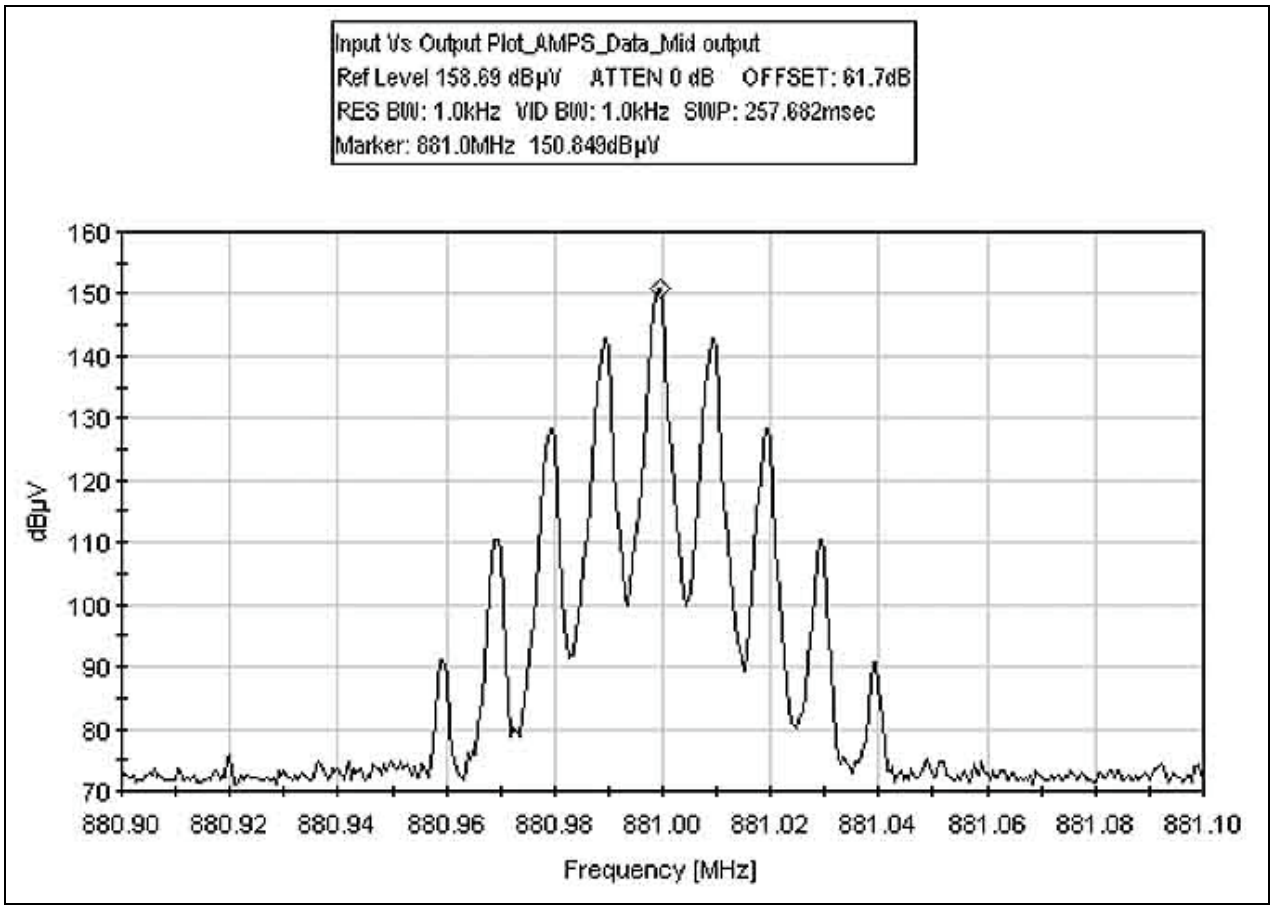
INPUT PLOT AMPS V HIGH



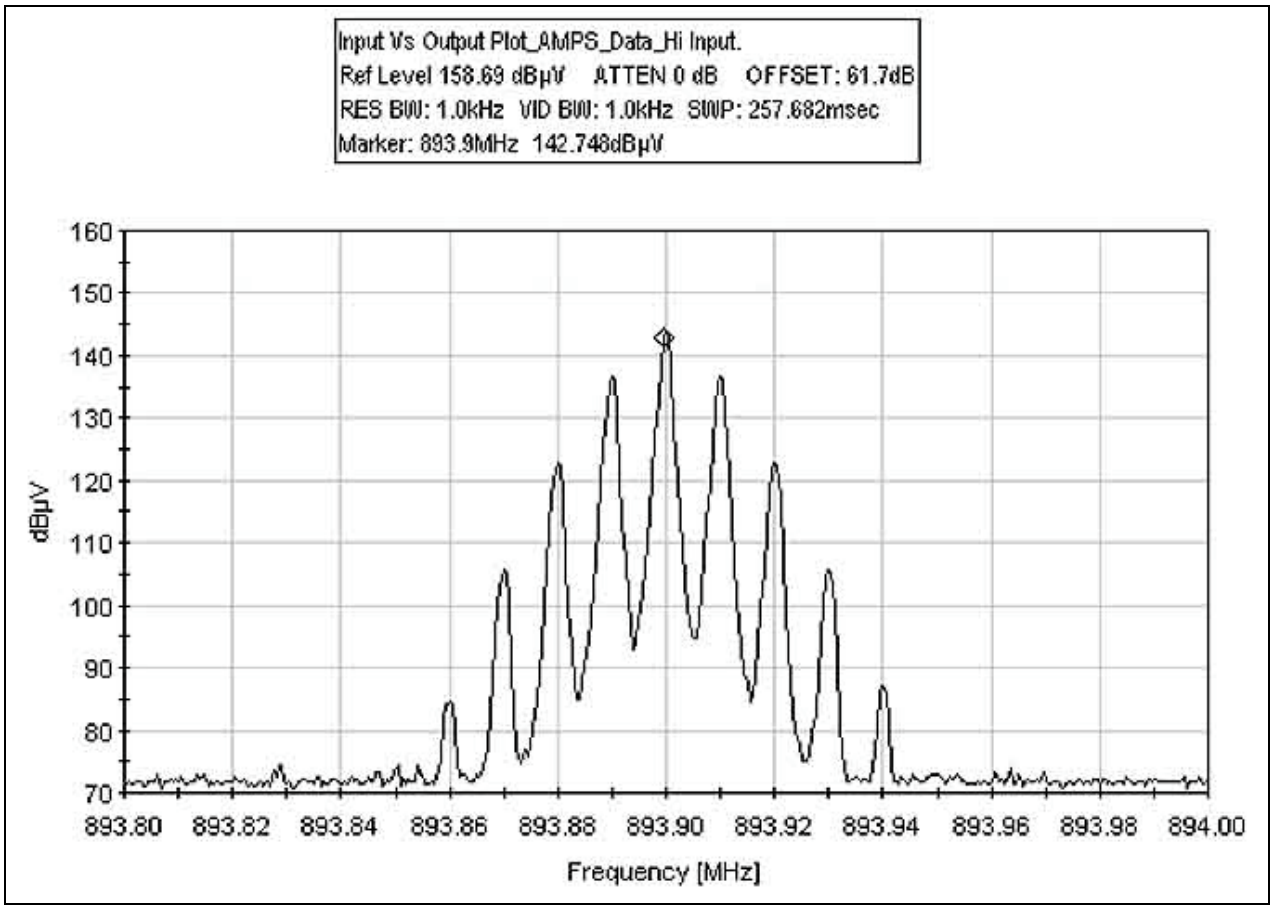
OUTPUT PLOT AMPS DATA LOW



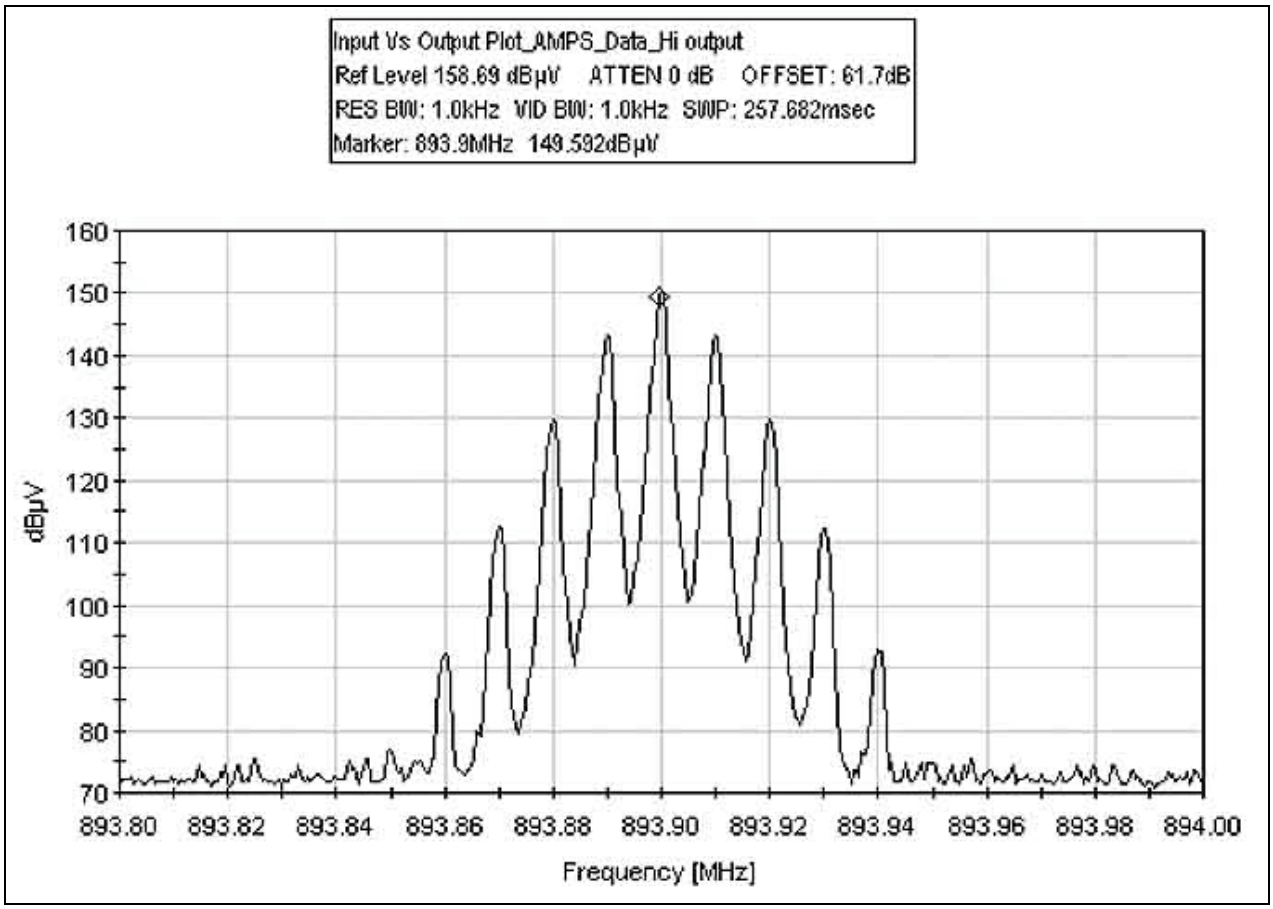
OUTPUT PLOT AMPS DATA MID



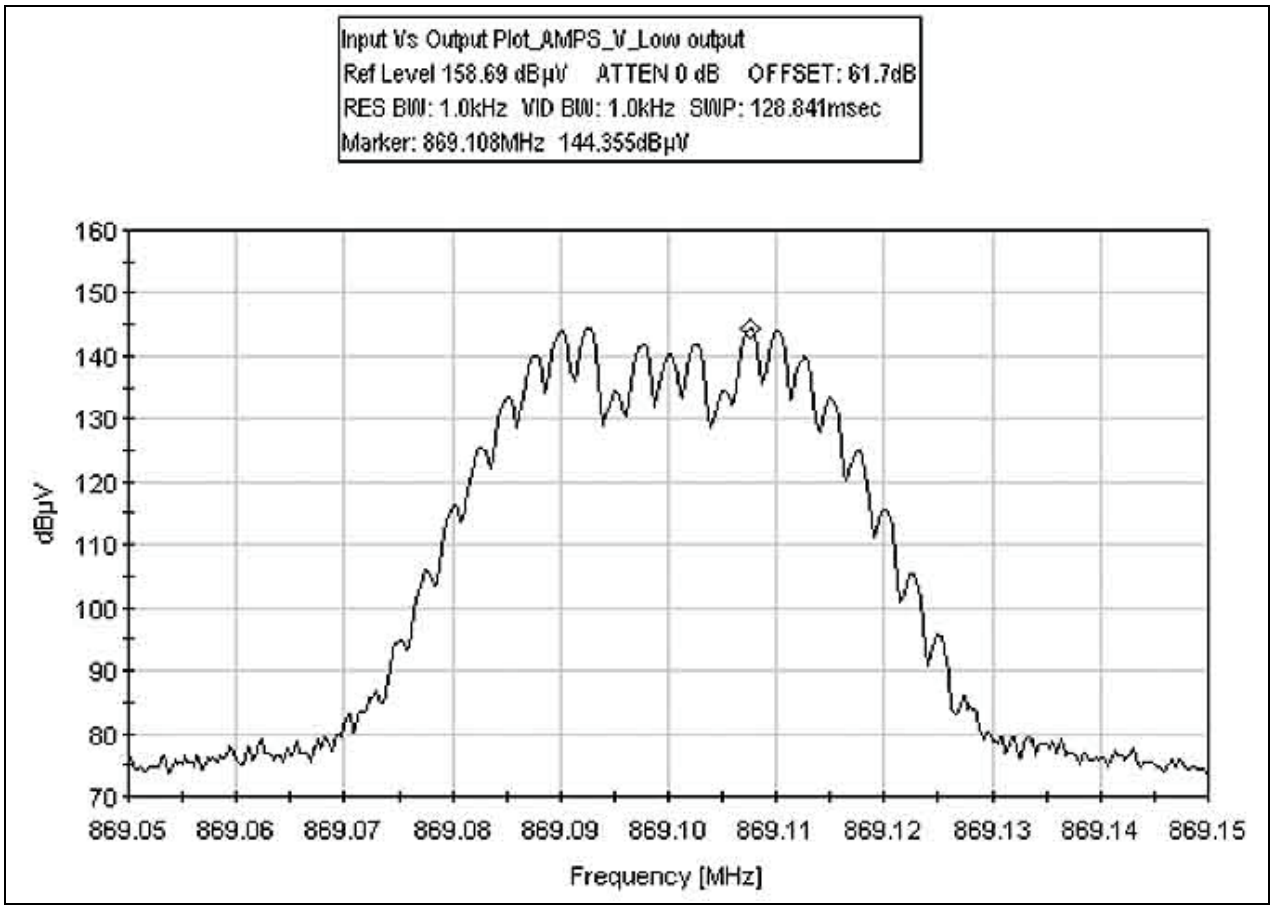
OUTPUT PLOT AMPS DATA HIGH



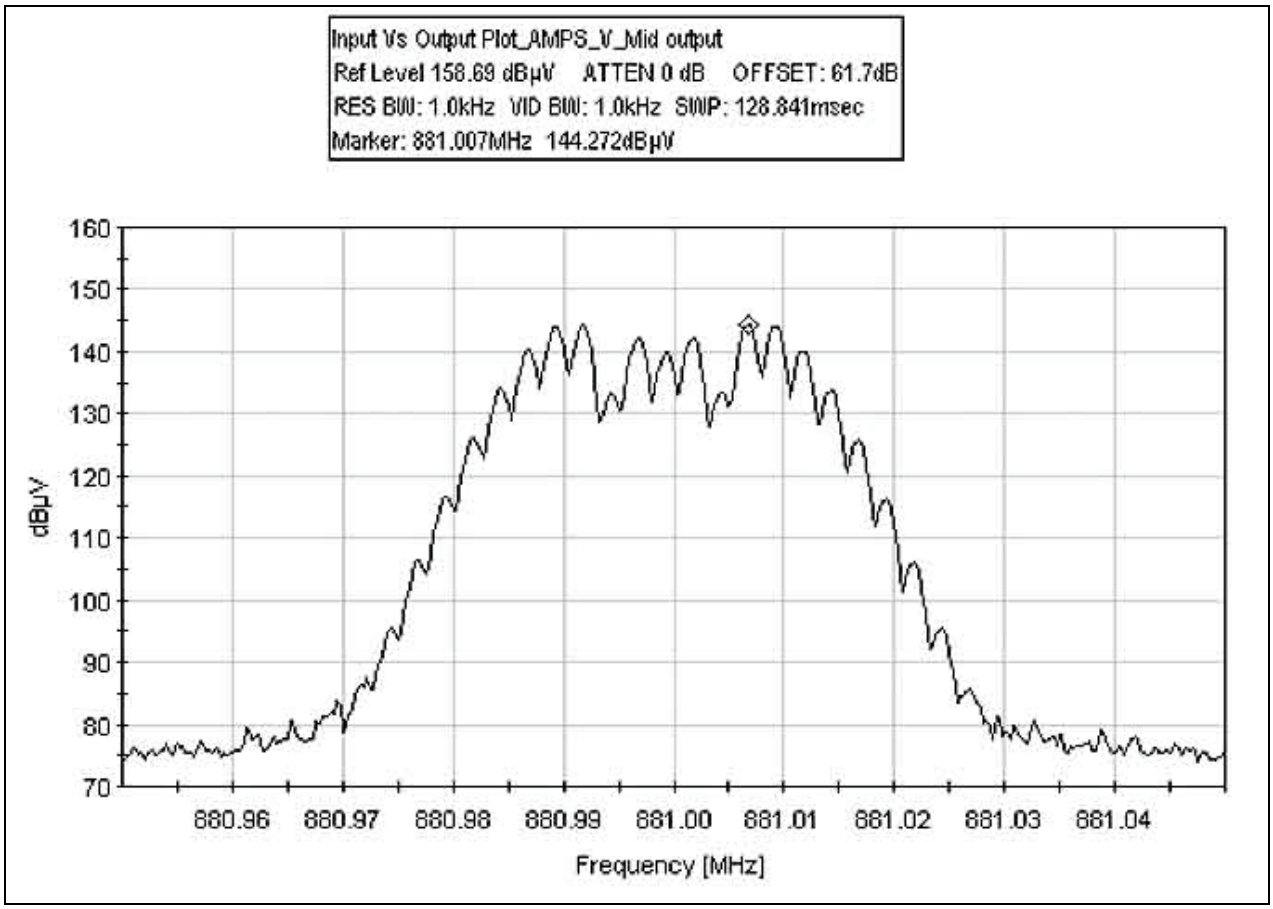
OUTPUT PLOT AMPS DATA HIGH



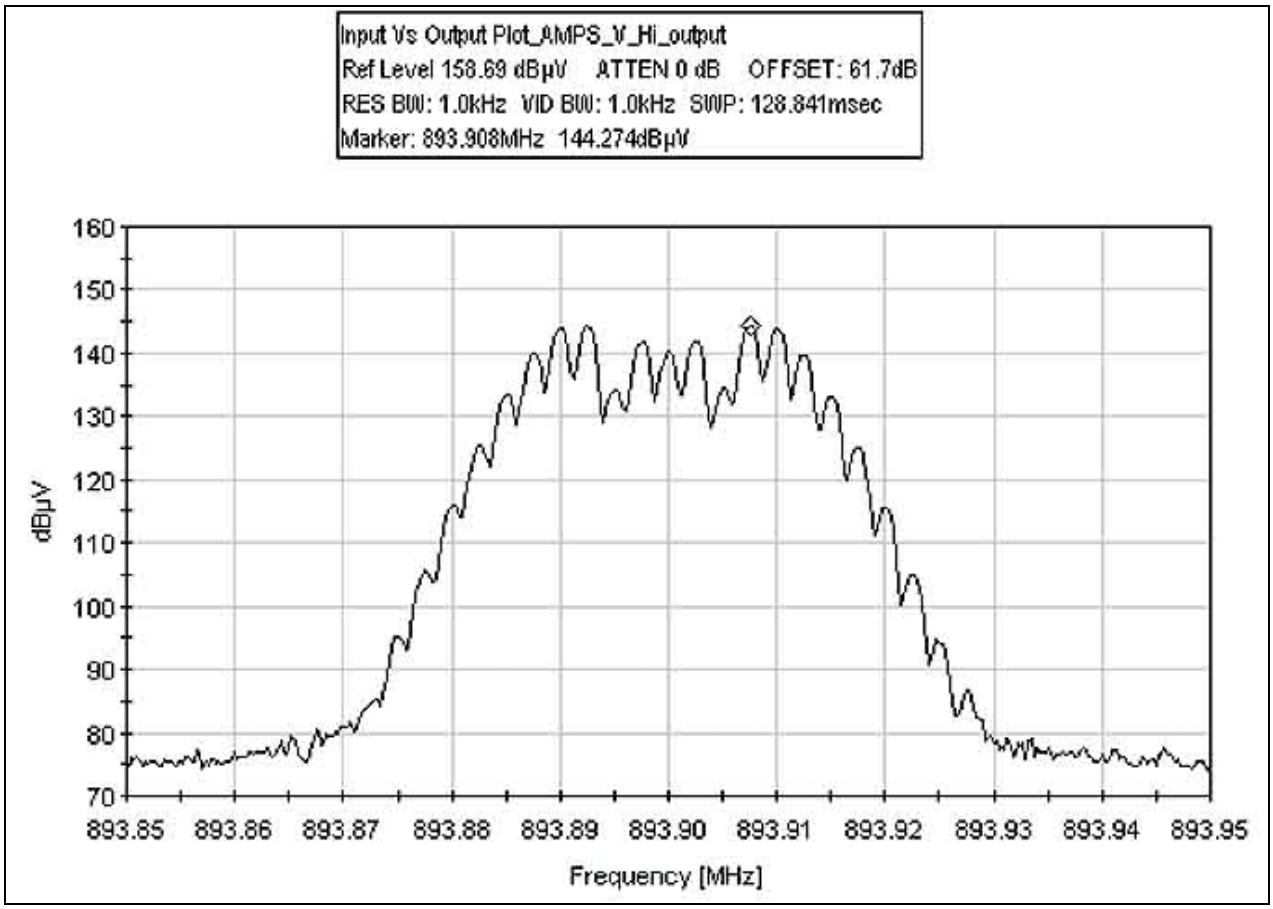
OUTPUT PLOT AMPS V LOW



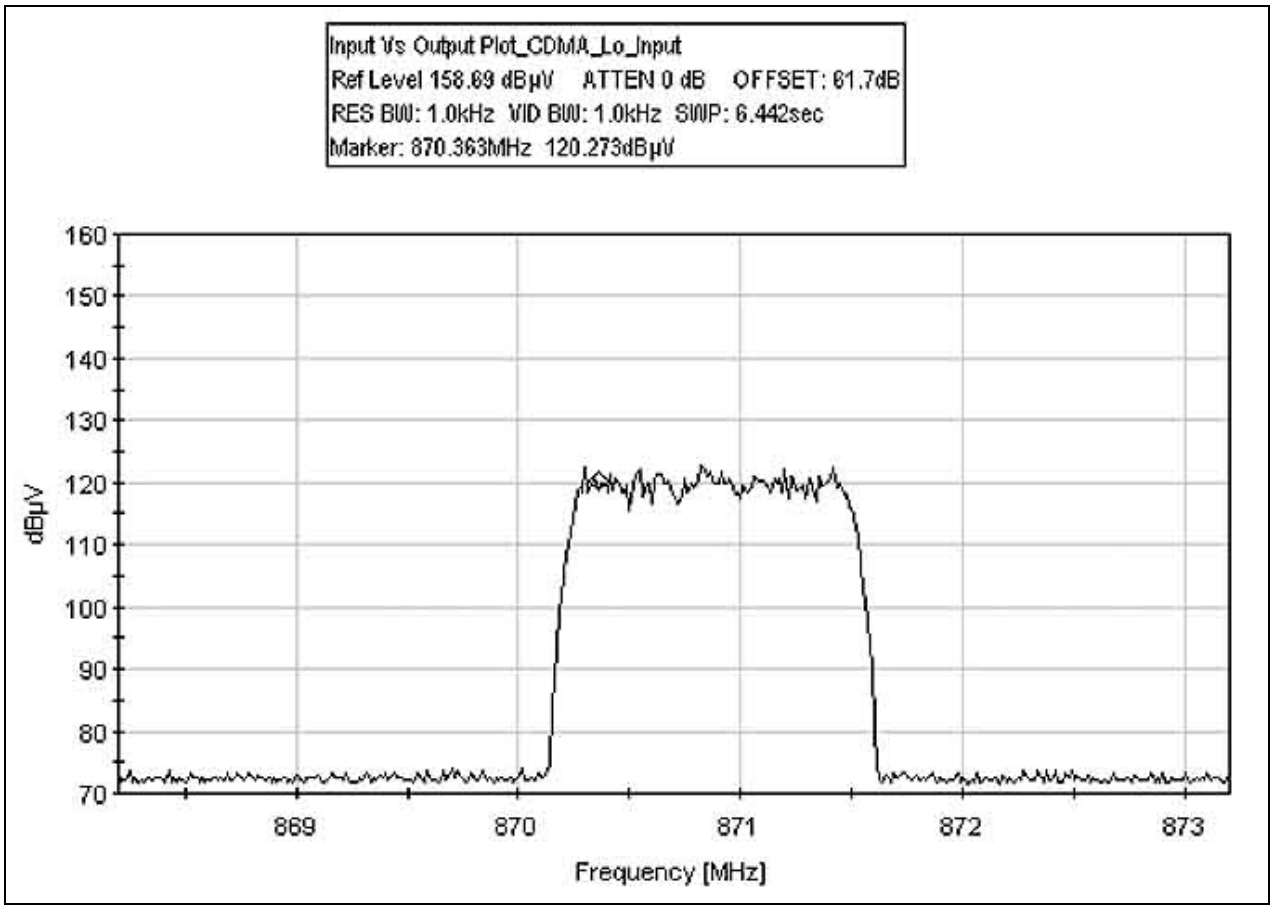
OUTPUT PLOT AMPS V MID



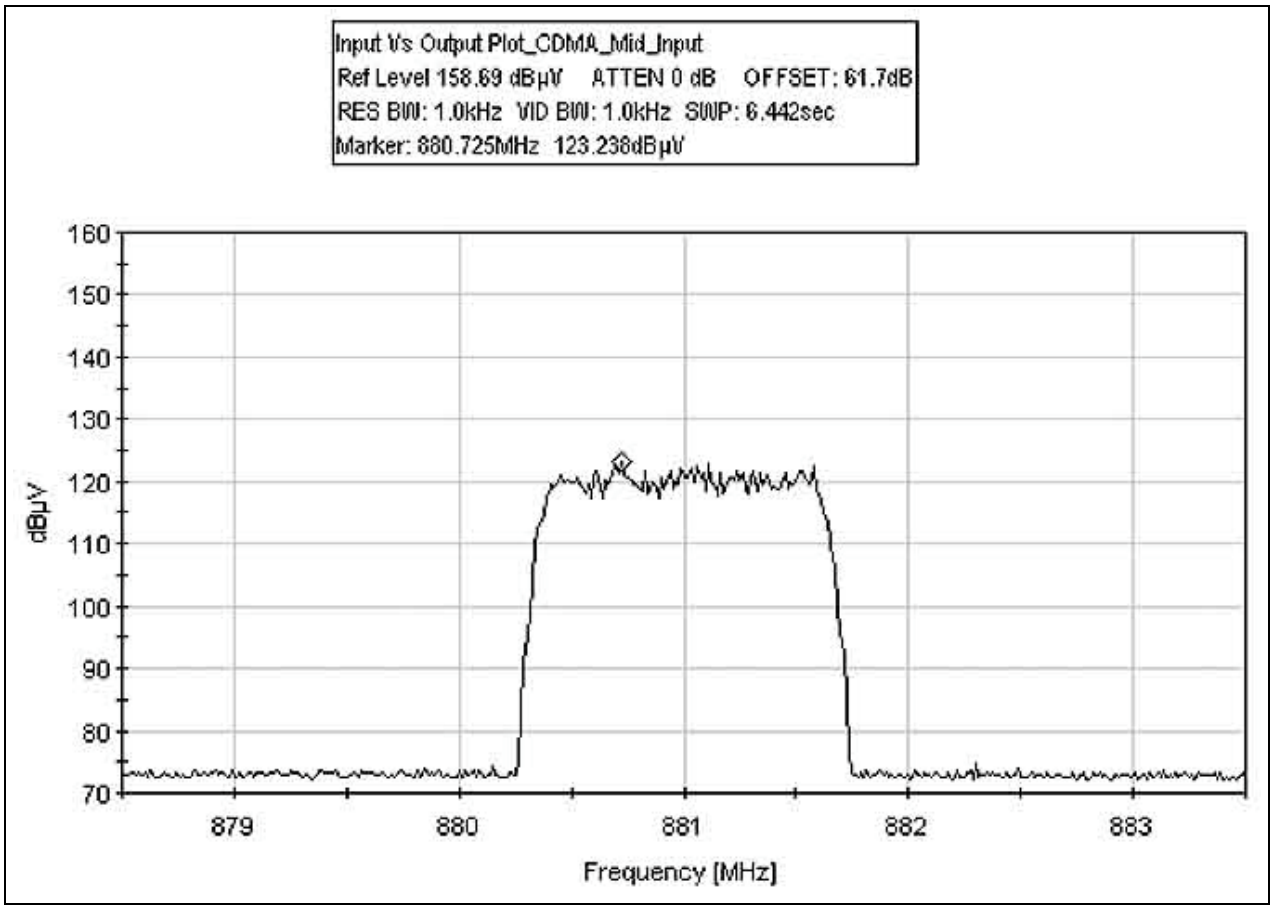
OUTPUT PLOT AMPS V HIGH



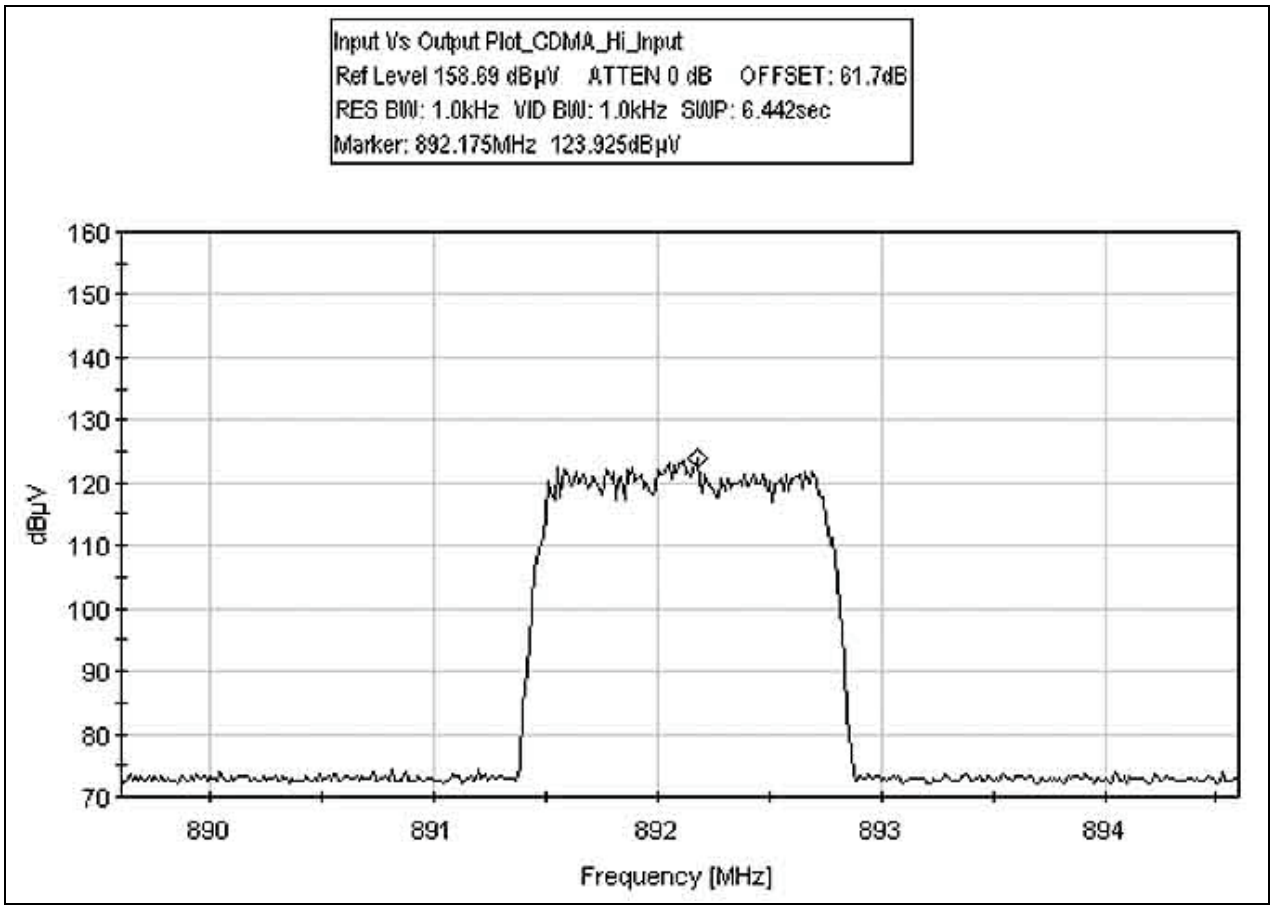
INPUT PLOT CDMA LOW



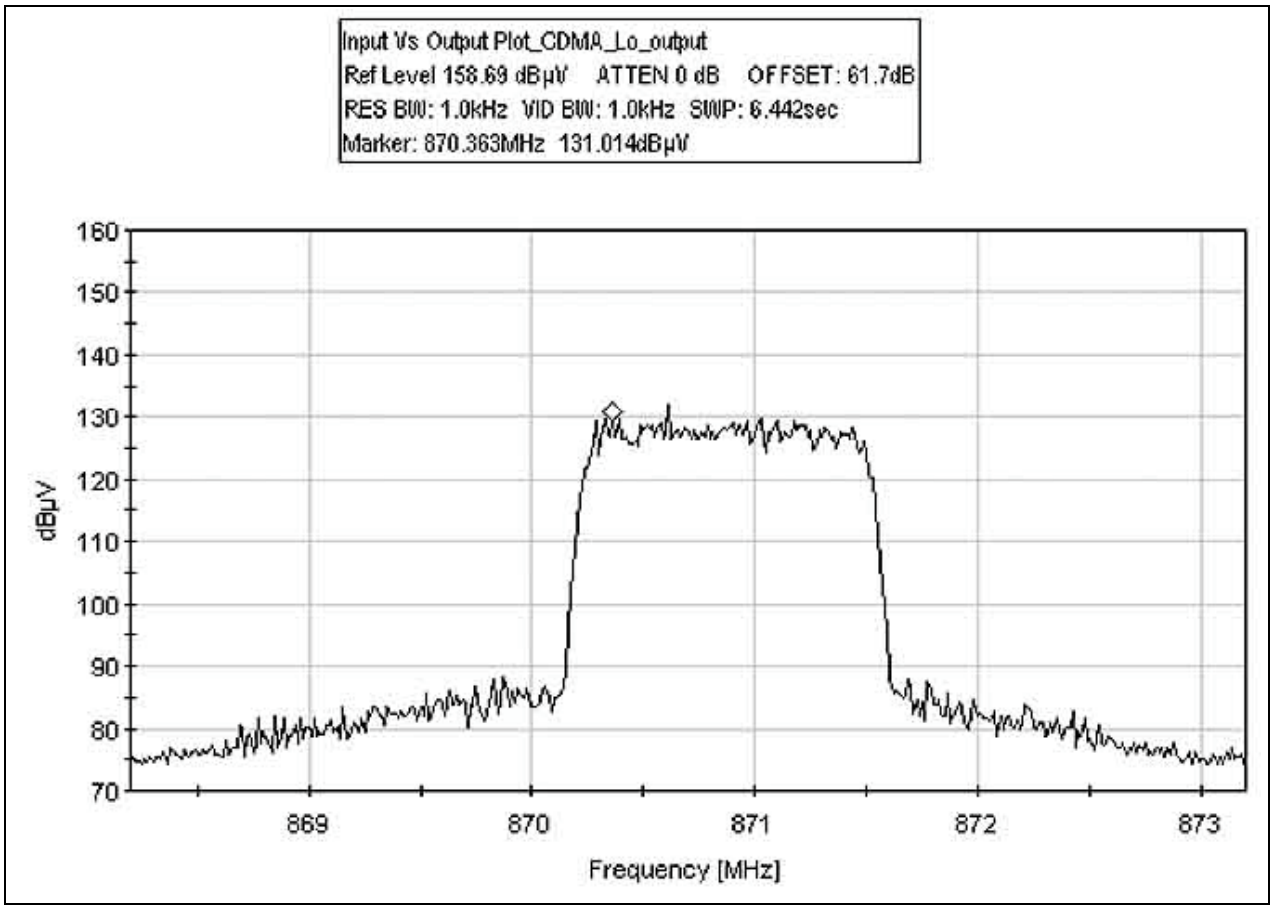
INPUT PLOT CDMA MID



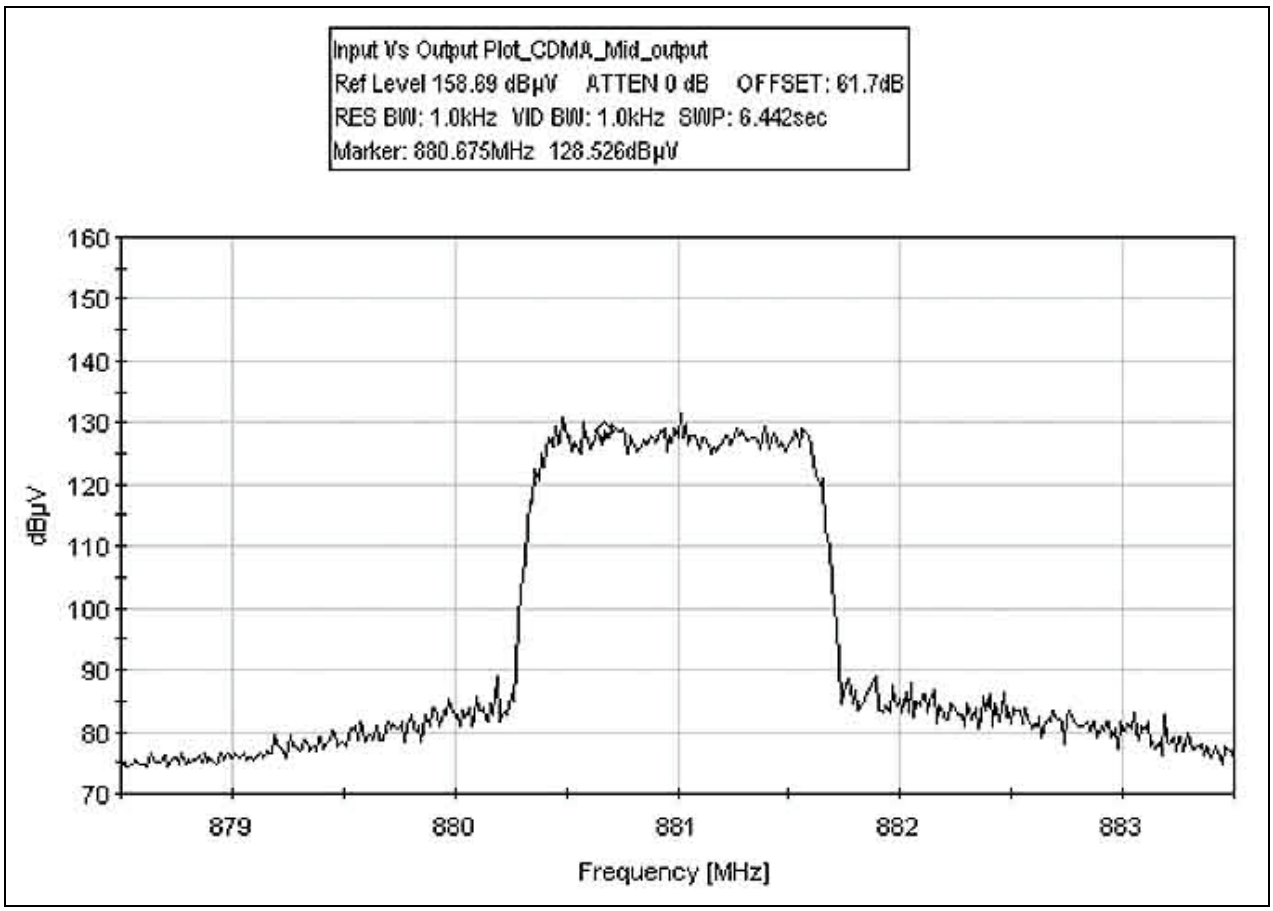
INPUT PLOT CDMA HIGH



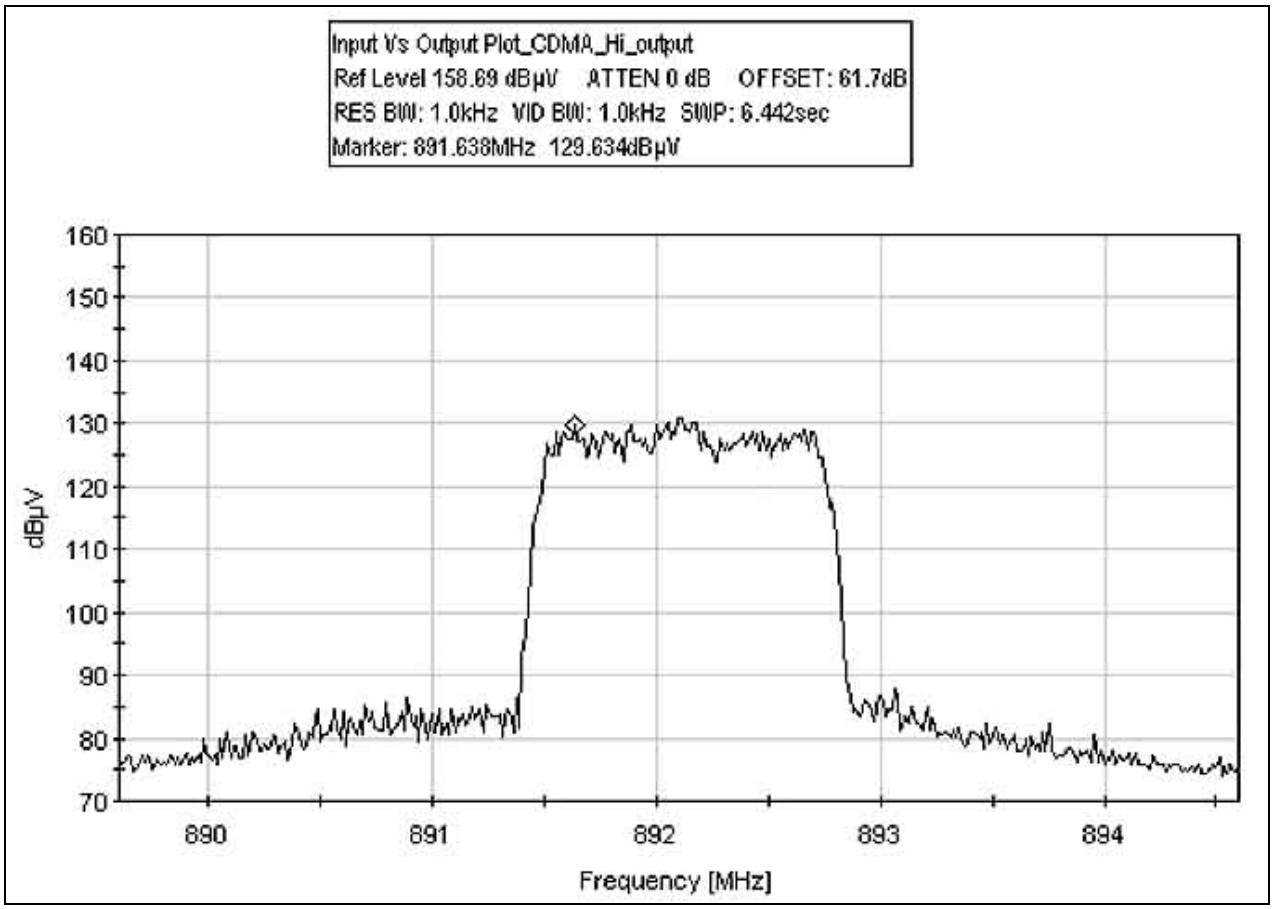
OUTPUT PLOT CDMA LOW



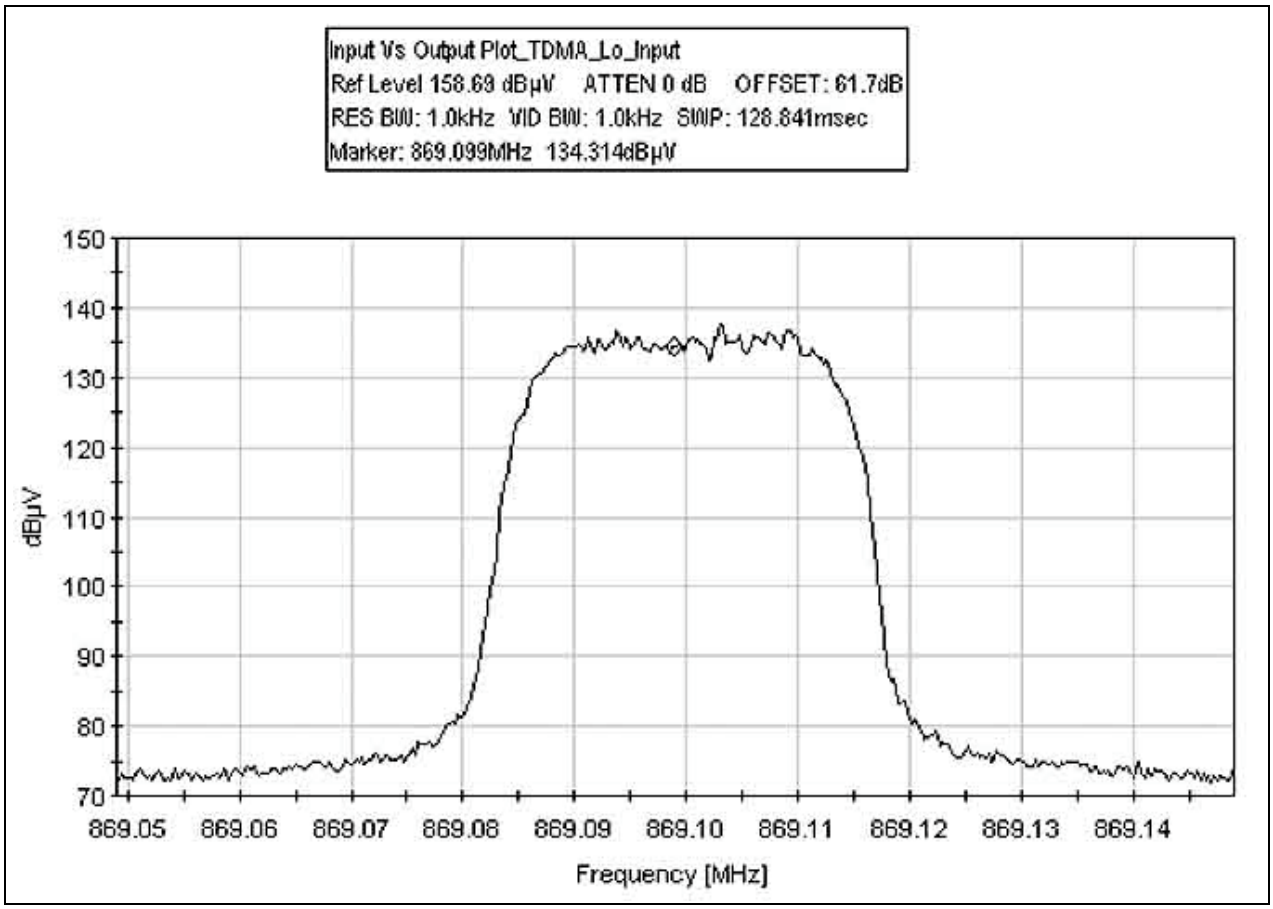
OUTPUT PLOT CDMA MID



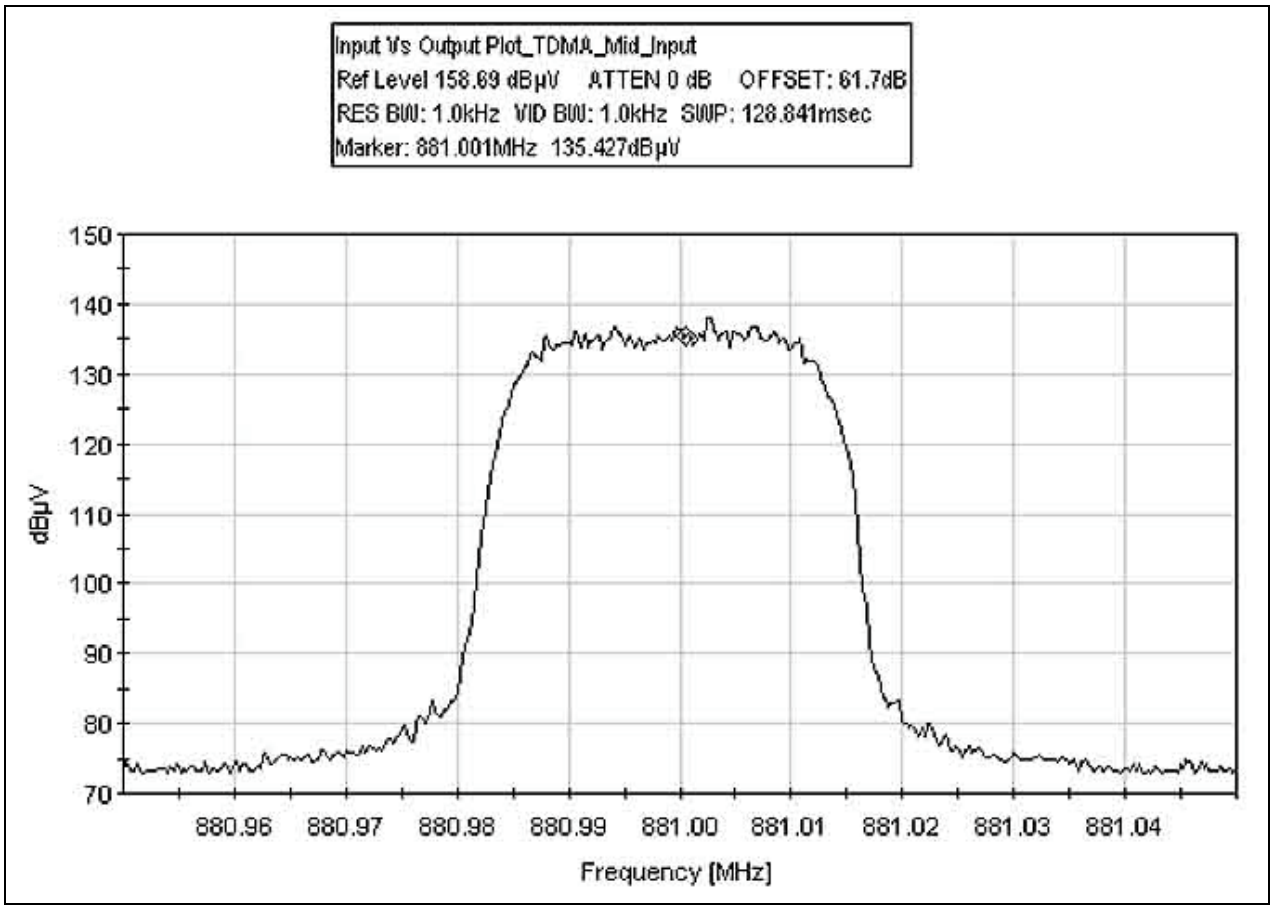
OUTPUT PLOT CDMA HIGH



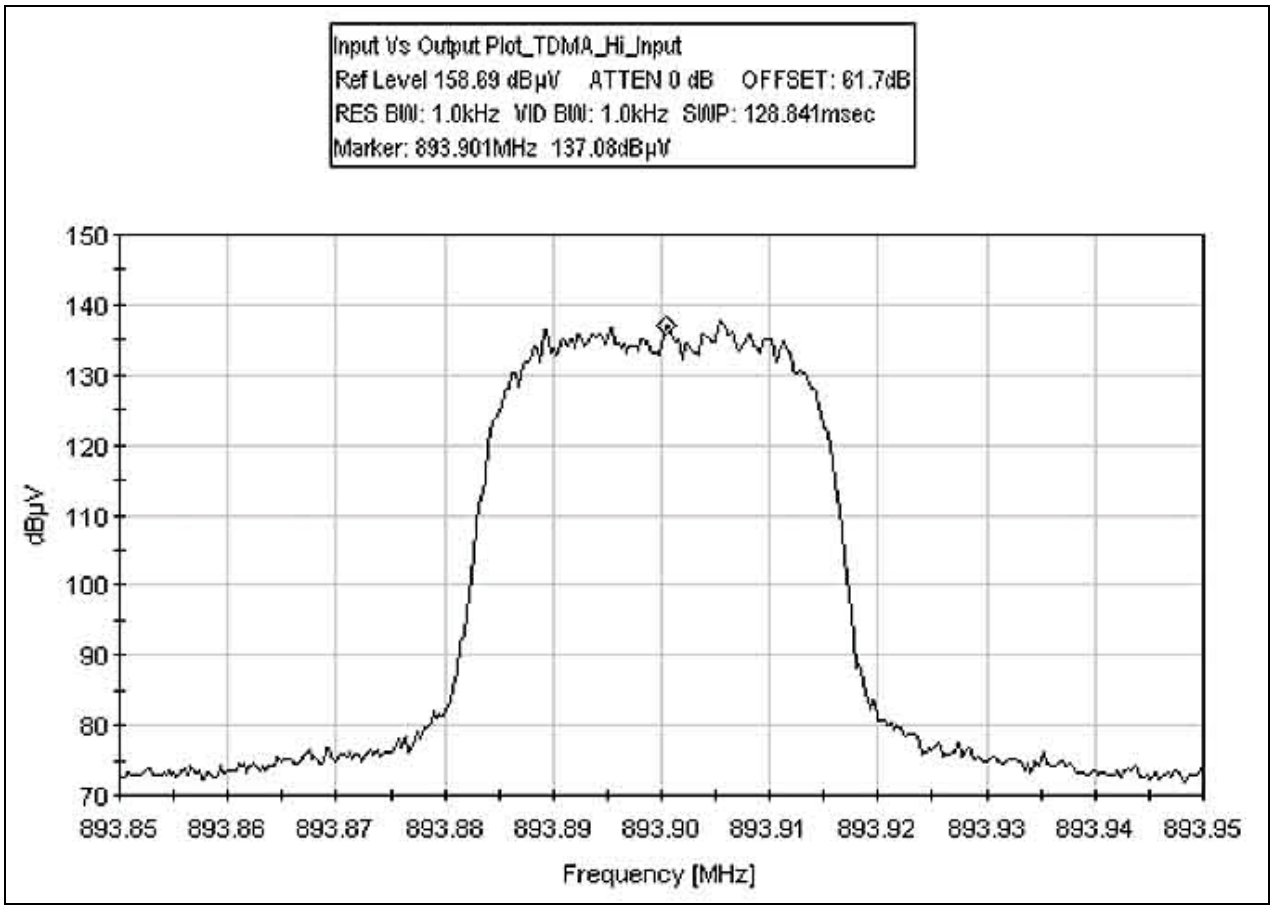
INPUT PLOT TDMA LOW



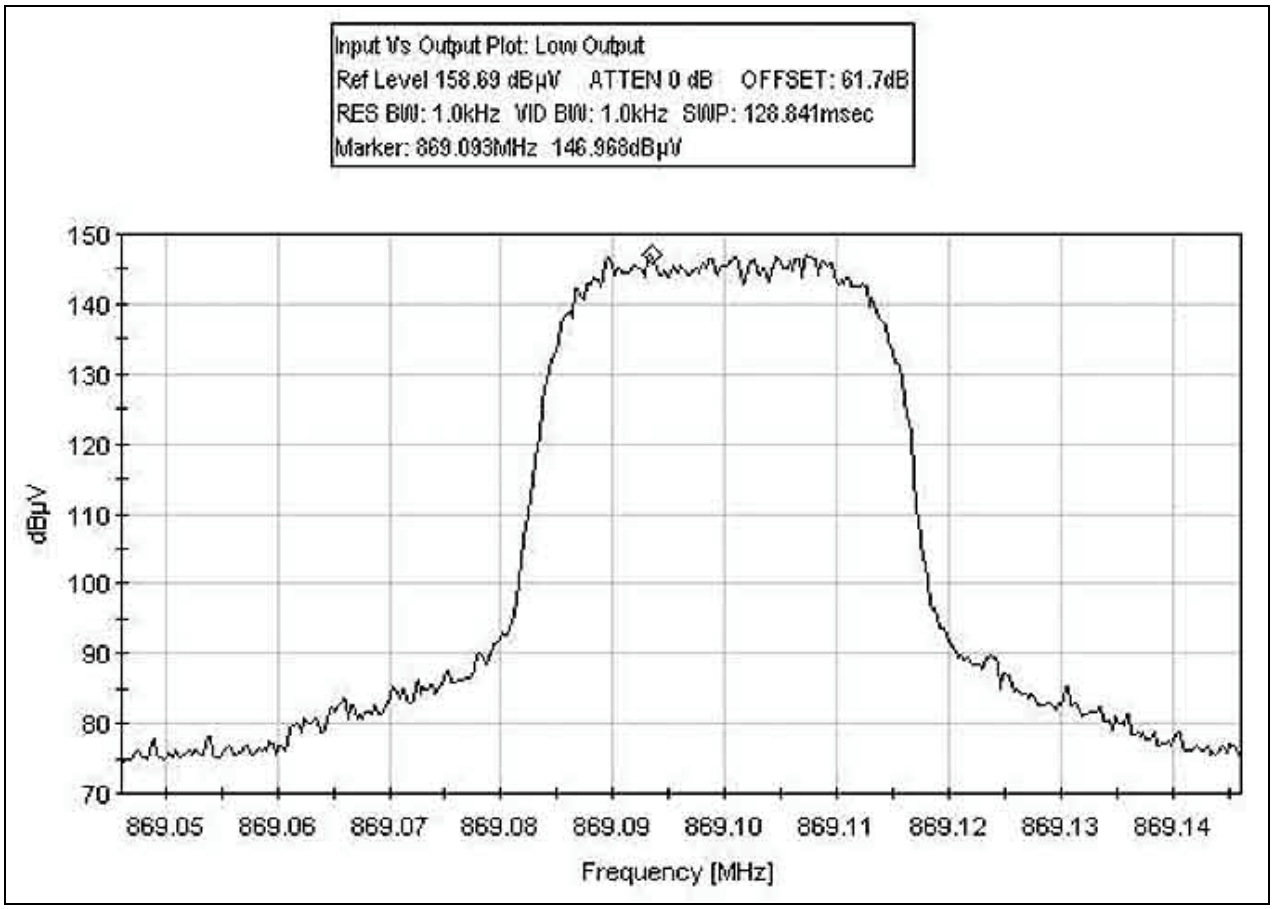
INPUT PLOT TDMA MID



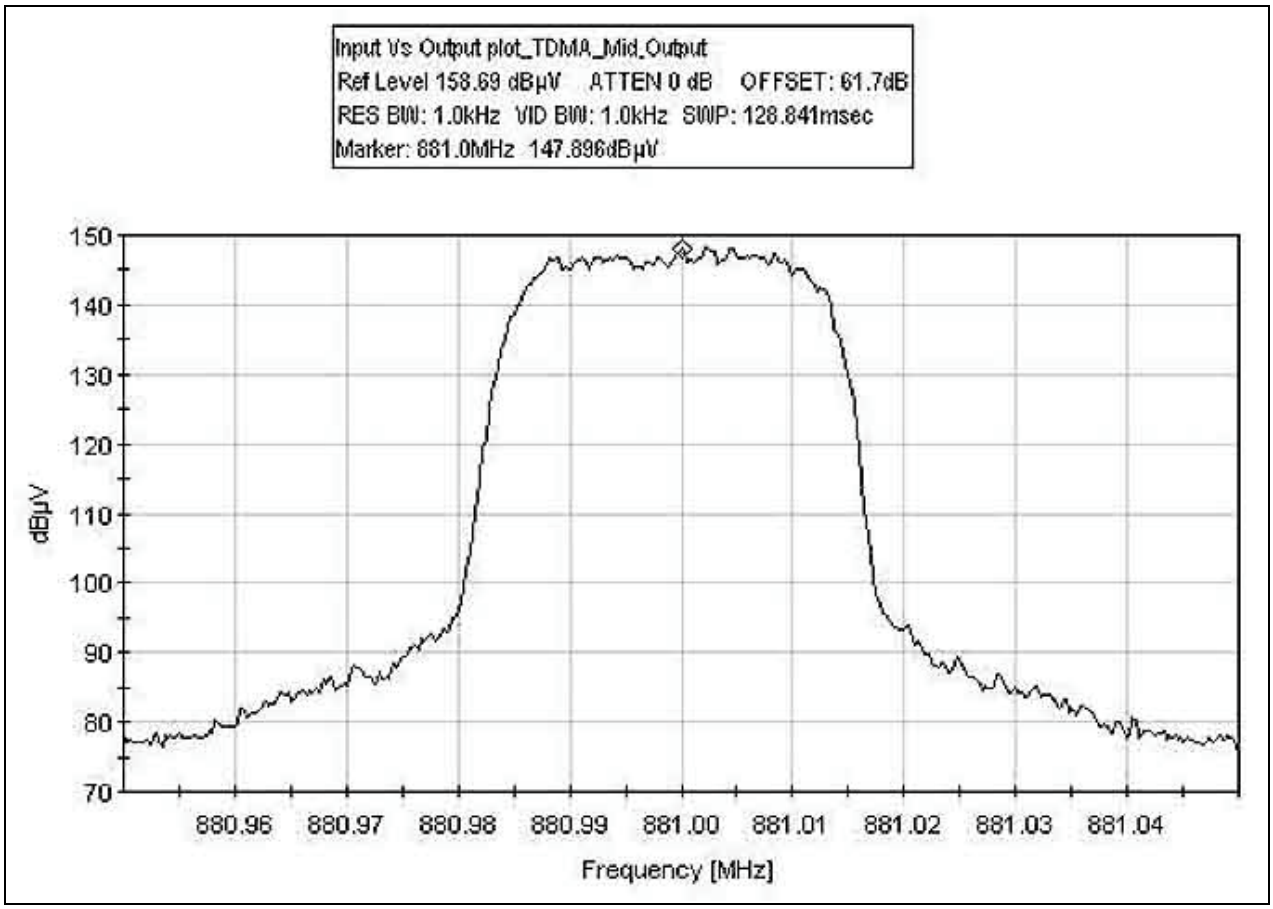
INPUT PLOT TDMA HIGH



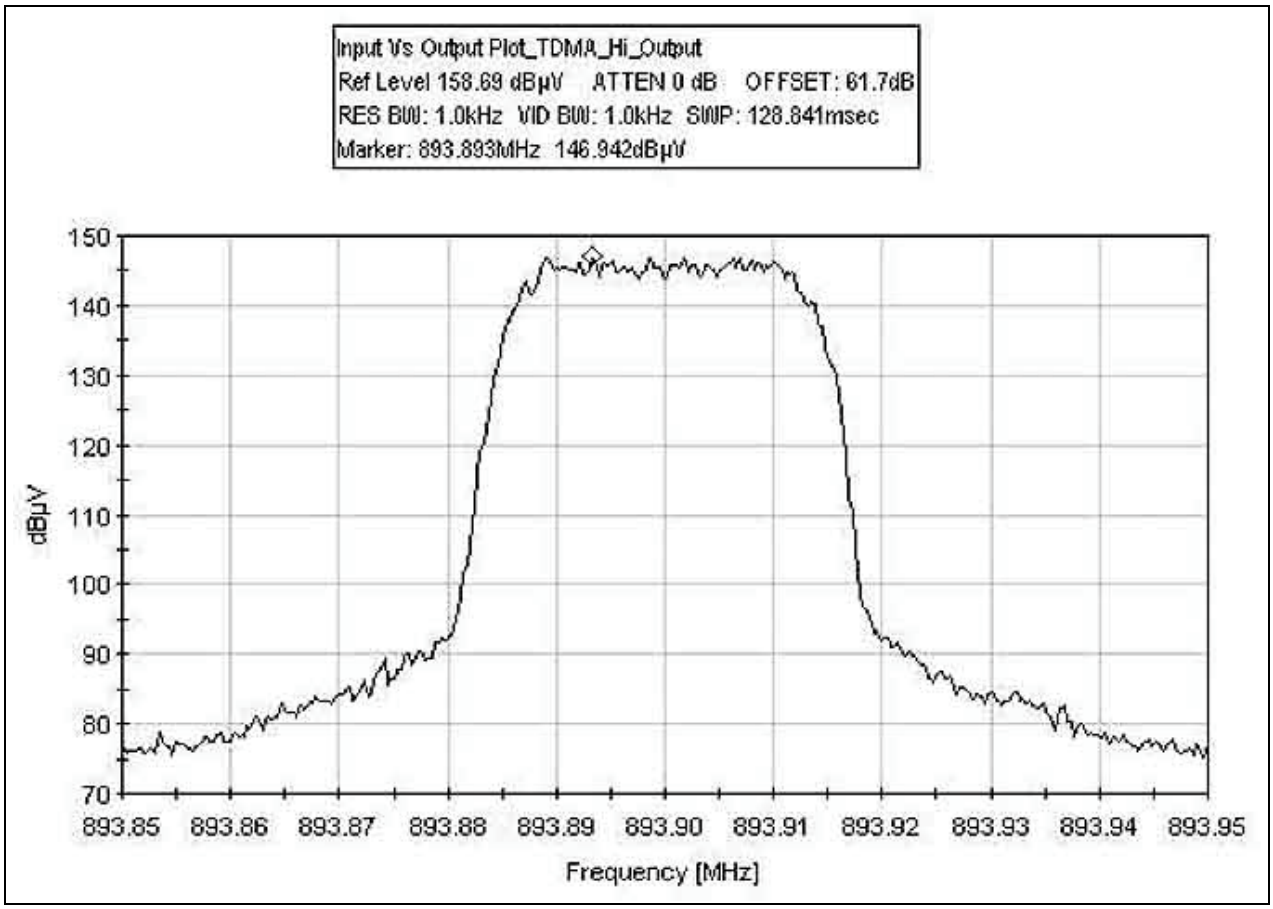
OUTPUT PLOT TDMA LOW



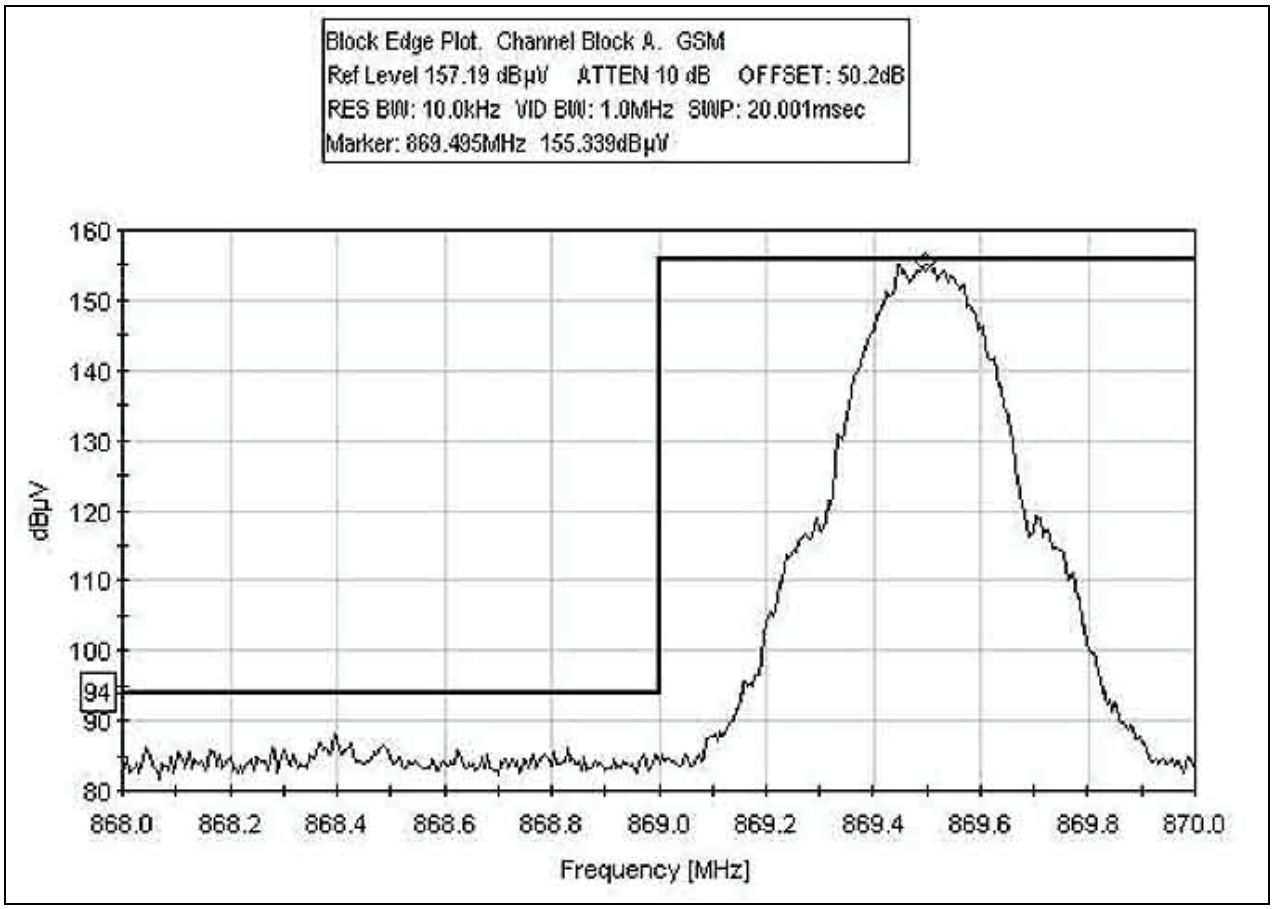
OUTPUT PLOT TDMA MID



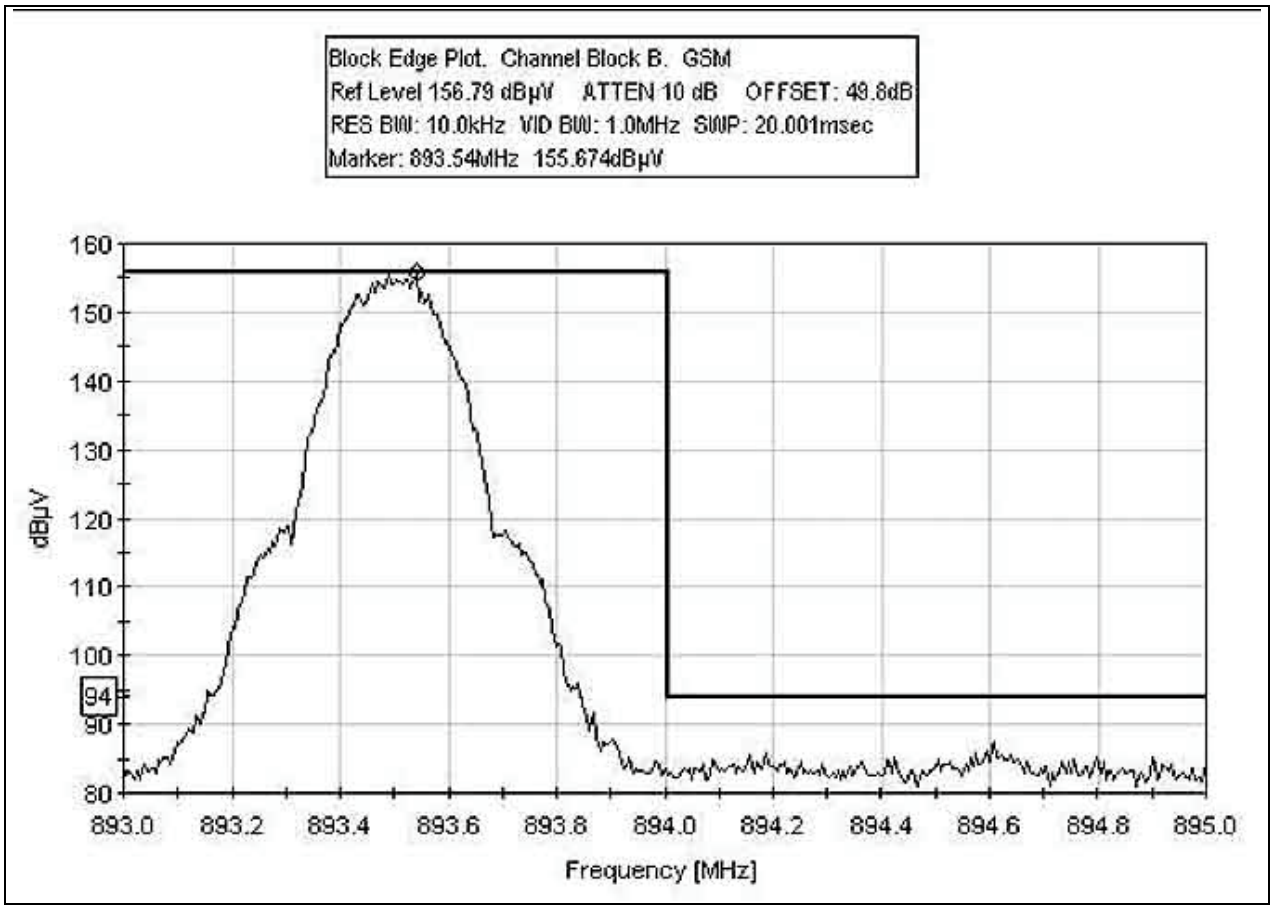
OUTPUT PLOT TDMA HIGH



BLOCKEDGE PLOT GSM BLOCK A



BLOCKEDGE PLOT GSM BLOCK B



BLOCKEDGE PLOT EDGE BLOCK A