ADDENDUM TO IP MOBILENET TEST REPORT FC06-043

FOR THE

MOBILE DATA RADIO, M64780D25

FCC PART 90 AND RSS-119

COMPLIANCE

DATE OF ISSUE: MAY 1, 2007

PREPARED FOR:

IP MobileNet
16842 Von Karman Avenue, Ste 200
Irvine, CA 92606

PREPARED BY:

Mary Ellen Clayton
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

W.O. No.: 85421

Date of test: August 22, 2006 – April 26, 2007

Report No.: FC06-043A

TABLE OF CONTENTS

ADMINISTRATIVE INFORMATION

DATE OF TEST:	August 22, 2006 – April 26, 2007
DATE OF RECEIPT:	August 22, 2006
FREQUENCY RANGE TESTED:	9 kHz-9 GHz
MANUFACTURER:	IP MobileNet 16842 Von Karman Avenue, Ste 200 Irvine, CA 92606
REPRESENTATIVE:	Eric Tanner
TEST LOCATION:	CKC Laboratories, Inc. 110 Olinda Place Brea, CA 92823
TEST METHOD:	FCC Part 90, RSS-119 & RSS GEN
PURPOSE OF TEST:	**Original Report** is to demonstrate the compliance of the Mobile Data Radio, M64780D25 with the requirements for FCC Part 90 and RSS-119 devices. **Addendum A** is to add 90.543(e) data with new testing.

FCC TO CANADA STANDARD CORRELATION MATRIX

Canadian Standard	Canadian Section	FCC Standard	FCC Section	Test Description
RSS119	5.5	90	90.209	Bandwidth Limitations
RSS119	5.5.1	NA	NA	Specific Requirements for Channel BW > 12.5kHz
RSS119	5.5.7	90	90.217	Exemption from technical standards
RSS119	5.7	90	90.207	Authorized Modulation Types
RSS119	5.8	NA	NA	Equivalent Channels (>12.5kHz)
RSS119	6.2	90	90.205	Power Output
RSS119	6.3	90	90.210	Spurious Emissions OATS
RSS119	6.3	90	90.210	Spurious Emissions Ant Terminal
RSS119	6.4	90	90.210	Emissions Mask
RSS119	6.5	90	90.214	Transient Freq Behavior
RSS119	6.6	2	2.1047	Modulation Limiting
RSS119	7	90	90.213	Frequency Stability
RSS119	8	15	Subpart B	Receiver Requirements
RSS119	9	OET	65 Sup. C	RF Exposure Requirements
	IC 3172-A		90473	Site File No.

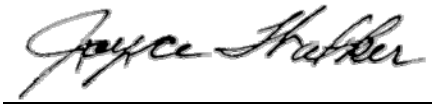
CONDITIONS FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

APPROVALS

Steve Behm, Director of Engineering Services

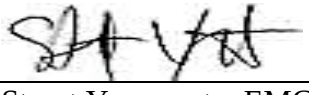
QUALITY ASSURANCE:



Joyce Walker, Quality Assurance Administrative Manager

TEST PERSONNEL:

Eddie Wong, EMC Engineer



Stuart Yamamoto, 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

Mobile Data Radio
Manuf: IP MobileNet
Model: M64780D25
Serial: 06208941
FCC ID: pending

PERIPHERAL DEVICES

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

DC Power Supply
Manuf: HP
Model: 6652A
Serial: 3235A-00835

Laptop Computer
Manuf: Dell Corporation
Model: PP02L Inspiron I2500
Serial: 5TZ6611

GPS Antenna
Manuf: San Jose Navigation, Inc.
Model: SM-25
Serial: 2569790

High Power Termination
Manuf: JFW
Model: 50FH-040-100-2N
Serial: NA

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
18K0F1D

FCC 2.1033 (c)(5) FREQUENCY RANGE
794 MHz – 806 MHz

FCC 2.1033 (c)(6) OPERATING POWER
29.9 Watts

FCC 2.1033 (c)(7) MAXIMUM POWER RATING
30 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
Frequency

FCC 2.1033(c)(14)/2.1046/90.541 - RF POWER OUTPUT

§90.541 Transmitting power limits. - The transmitting power of base, mobile, portable and control stations operating in the 764-776 MHz and 794-806 MHz frequency bands must not exceed the maximum limits in this section,

b) The transmitter output power of mobile and control transmitters must not exceed 30 Watts

Test Conditions: The EUT is located on the wooden table top. Connected to the EUT Tx/Rx port is one high power load attenuator. Connected to the EUT serial port is an unterminated shielded serial cable. Connected to the EUT Rx2 port is a 50 Ohm terminator. Connected to the EUT GPS port is a standard GPS antenna with 5 meter long coaxial cable. The EUT ethernet port is connected to the remotely located laptop computer using an unshielded cat. 5E cable. The laptop computer is used to check the status of the EUT as well as send commands to have it transmit continuously. DC power is supplied by a remote support DC power supply. RF Output Power measured at the TX antenna port with a RF Power meter.

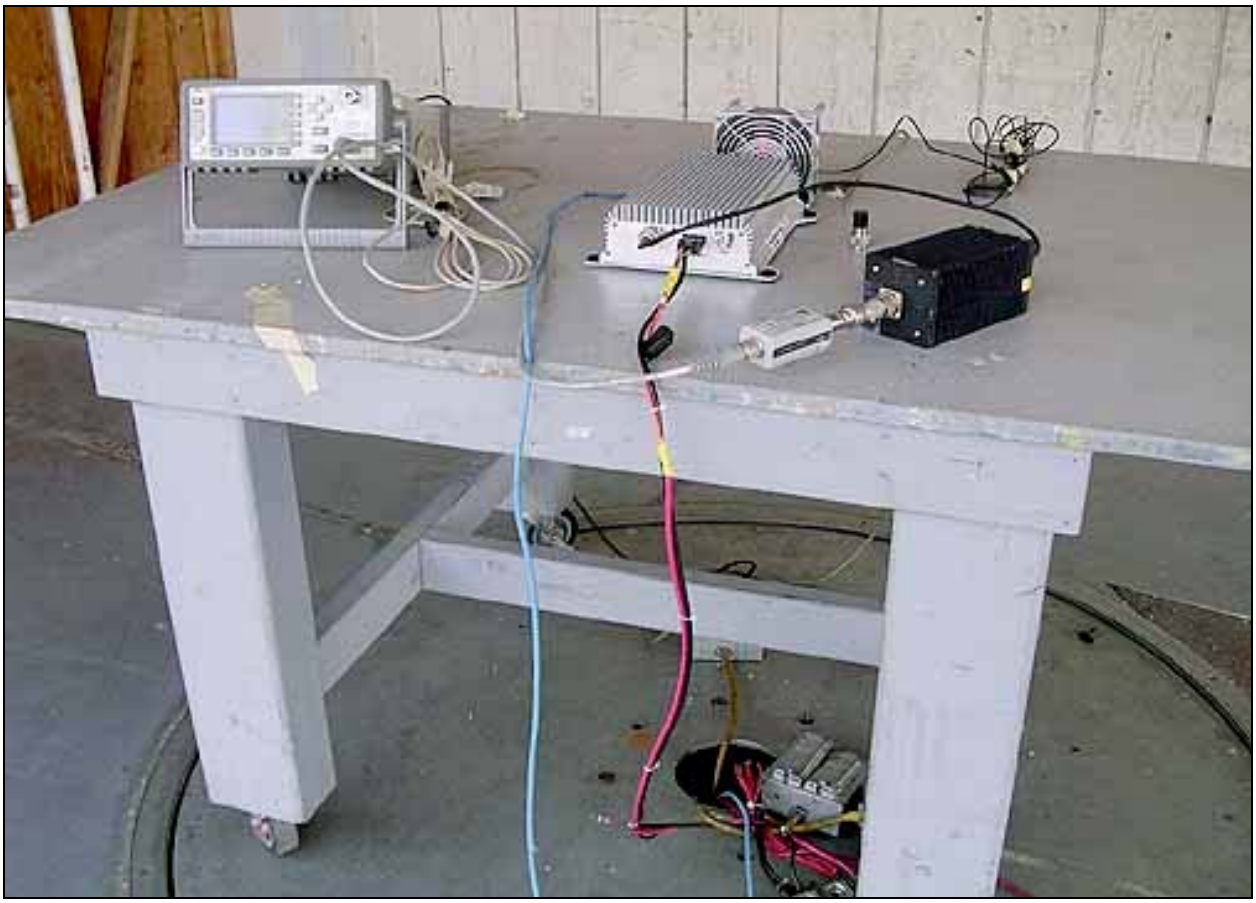
	11.7 VDC	**13.8 VDC (nominal)**	**15.9 VDC**
794.0MHz	16.8W	22.7W	29.9W
800.0MHz	17.2W	23.0 W	29.9W
805.9MHz	18.1	23.7W	29.4W

The result satisfies the requirement by demonstrating the measured power is below 30 watts.

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
RF Power meter	02778	HP	EPM-441A	GB37170458	012706	012708
Power Sensor	02777	HP	E4412A	MY41499662	012706	012708

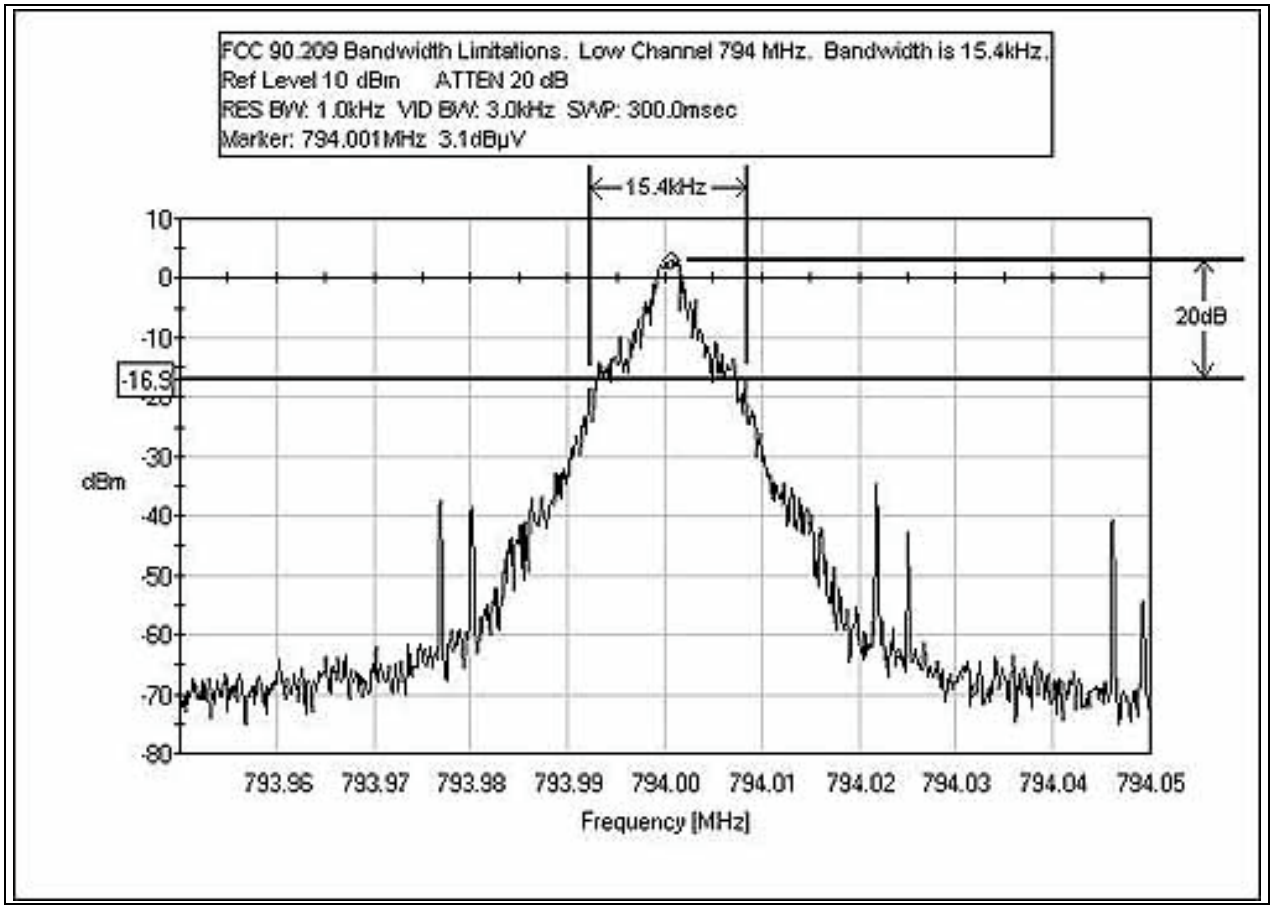
PHOTOGRAPH SHOWING RF OUTPUT POWER



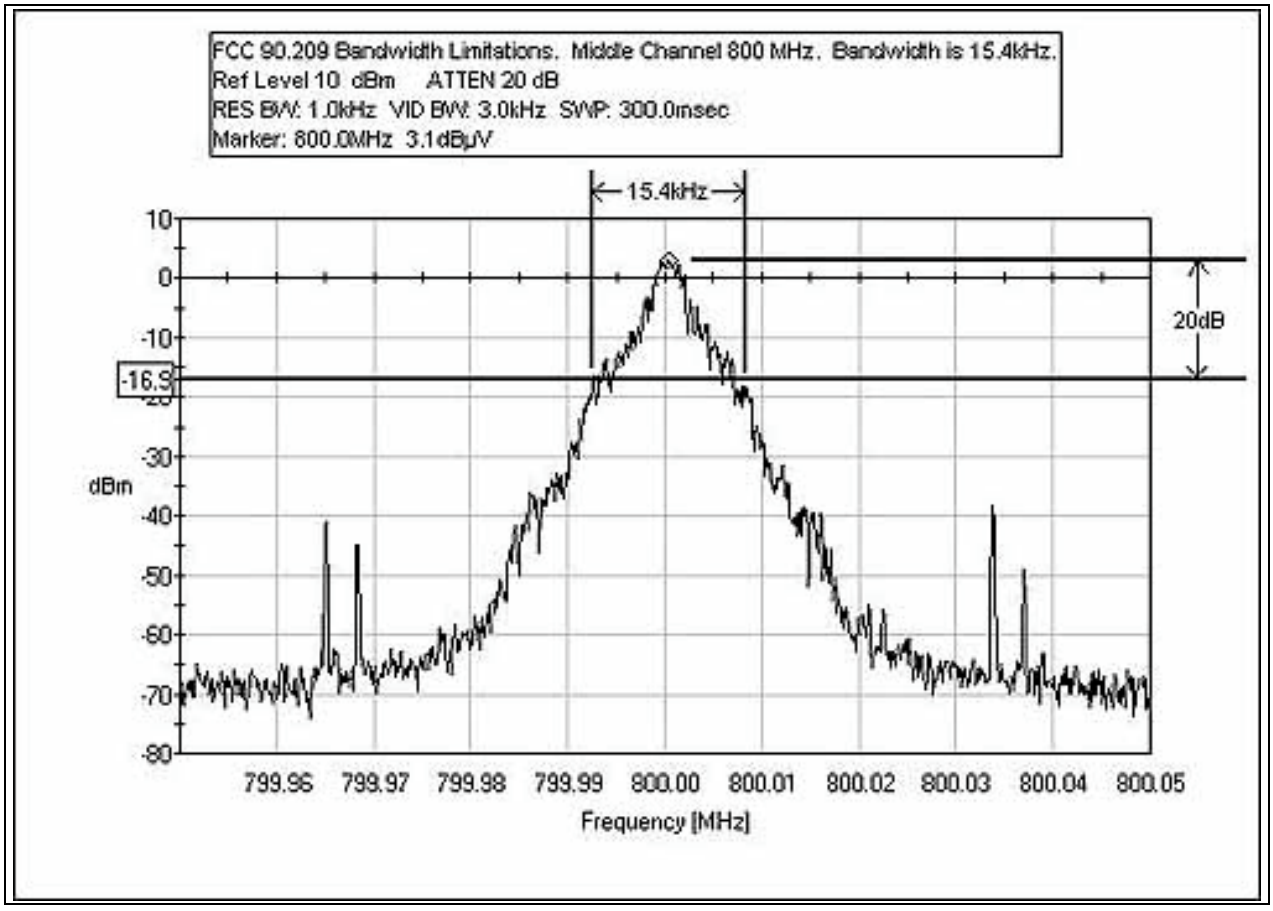
FCC 2.1033(c)(14)/2.1049(i)/90.209- OCCUPIED BANDWIDTH

Test Conditions: The EUT and its support equipment are located adjacent to each other on the table top. Connected to the EUT RX1/TX port is one high powered attenuator and then a coaxial cable to the spectrum analyzer. Connected to the EUT serial port is an unterminated shielded serial cable. Connected to the EUT Rx2 port is a termination. Connect to the EUT GPS port is a standard GPS antenna with 5 meter long coaxial cable. The EUT ethernet port is connected to the laptop computer using an unshielded cat. 6 crossover cable. Power to the EUT is supplied by an external DC Power supply. The laptop computer is used to check the status of the EUT as well as send commands to have it transmit continuously or to change channels. Voltage to the EUT is 13.8 VDC. RBW=1kHz, VBW=3kHz. Low Channel, 794 MHz. 20dBc BW is 15.4 kHz. Middle Channel, 800 MHz. 20dBc BW is 15.4 kHz. High Channel, 805.9 MHz. 20dBc BW is 16.2 kHz.

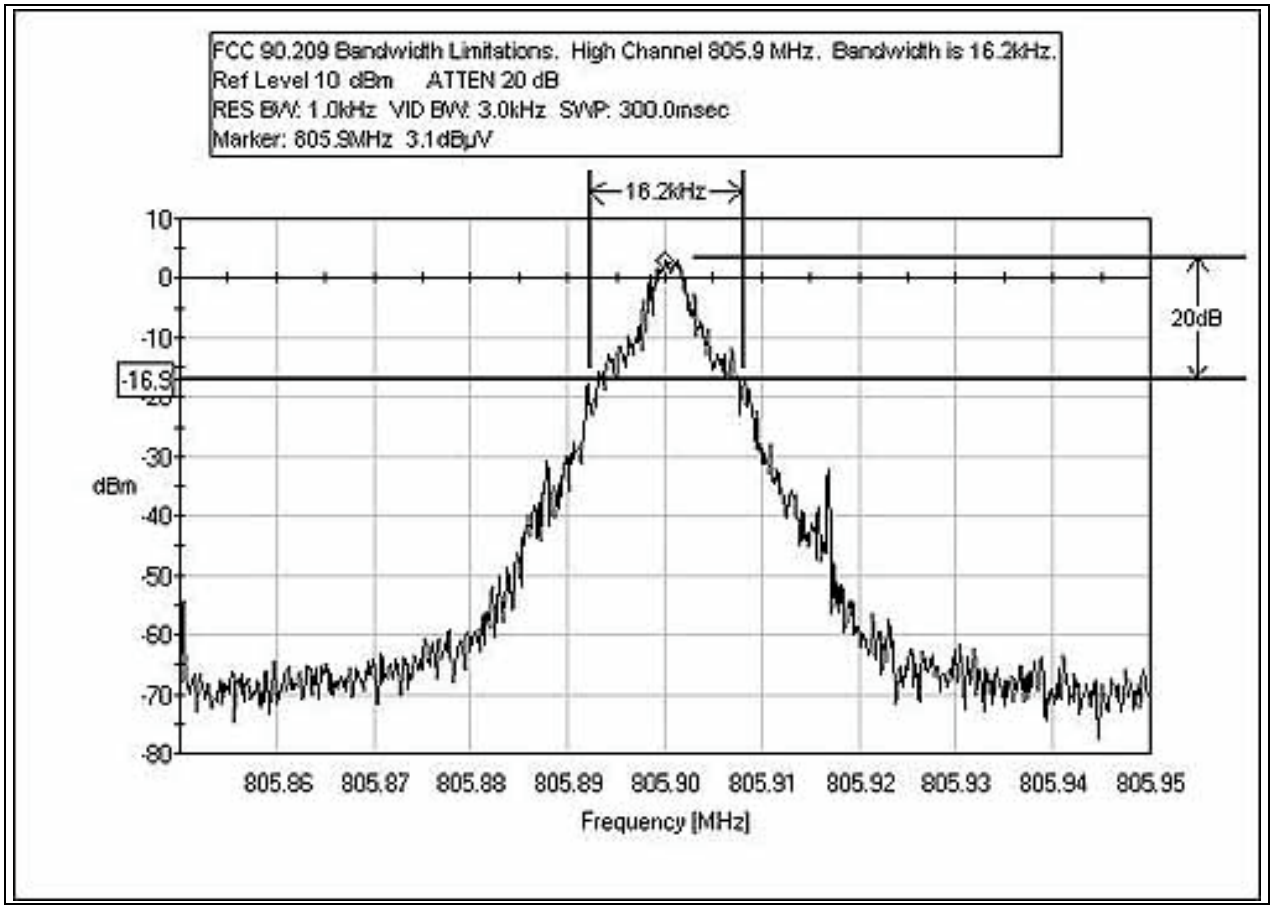
LOW CHANNEL 794 MHz



FCC 90.209 BANDWIDTH - MIDDLE CHANNEL 800 MHz



FCC 90.209 BANDWIDTH - HIGH CHANNEL 805.9 MHz



Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
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

PHOTOGRAPH SHOWING BANDWIDTH LIMITATION AND 99% BANDWIDTH

FCC 2.1033(c)(14)/2.1051/90.210/90.543(c) - SPURIOUS EMISSIONS AT ANTENNA TERMINAL

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

Customer: **IP MobileNet**
Specification: **FCC 90.210/90.543(c) Antenna Conducted Spurious Emission**
Work Order #: **85421** Date: 9/26/2006
Test Type: **Conducted Spurious Emissions** Time: 16:22:11
Equipment: **Mobile Data Radio** Sequence#: 1
Manufacturer: IP MobileNet Tested By: Stuart Yamamoto
Model: M64780D25 13.8Vdc
S/N: 06208941

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

Function	Manufacturer	Model #	S/N
Mobile Data Radio*	IP MobileNet	M64780D25	06208941

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	HP	6652A	3235A-00835
Laptop Computer	Dell Corporation	PP02L Inspiron I2500	5TZ6611
GPS Antenna	San Jose Navigation, Inc.	SM-25	2569790
High Power Termination	JFW	50FH-040-100-2N	(none)

Test Conditions / Notes:

The EUT and its support equipment are located adjacent to each other on the table top. Connected to the EUT RX1/TX port is one high powered attenuator and then a coaxial cable to the spectrum analyzer. Connected to the EUT serial port is an unterminated shielded serial cable. Connected to the EUT Rx2 port is a termination. Connected to the EUT GPS port is a standard GPS antenna with 5 meter long coaxial cable. The EUT ethernet port is connected to the laptop computer using an unshielded cat. 5E cable. Power to the EUT is supplied by an external DC Power supply. The laptop computer is used to check the status of the EUT as well as send commands to have it transmit continuously. Voltage to the EUT is 13.8 VDC. Temperature: 22°C, Humidity: 51%, Pressure: 100kPa. Frequency 5 MHz – 1000 MHz RBW=100kHz, VBW=100kHz; 1000 MHz - 9000 MHz RBW=1MHz, VBW=1MHz. Frequency range scanned and maximized, 5 MHz to 9000 MHz. This data sheet is for the EUT transmitting at rated power (25 Watts) on Low (794 MHz), Mid (800 MHz), and High (805.9 MHz) channels.

Transducer Legend:

T1=1-40 GHz Cable_011708	T2=HPF_AN02116_1.5GHz_062707

Measurement Data: Reading listed by margin. Test Lead: Tx

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	798.650M	88.8	+0.4	+0.0			+0.0	89.2	94.0	-4.8	Tx
2	793.150M	88.3	+0.4	+0.0			+0.0	88.7	94.0	-5.3	Tx
3	1588.012M Ave	87.5	+0.5	+0.7			+0.0	88.7	94.0	-5.3	Tx
^	1588.002M	89.7	+0.5	+0.7			+0.0	90.9	94.0	-3.1	Tx
5	800.150M	87.9	+0.4	+0.0			+0.0	88.3	94.0	-5.7	Tx

6	884.575M	87.9	+0.4	+0.0	+0.0	88.3	94.0	-5.7	Tx
7	1600.000M Ave	86.8	+0.5	+0.7	+0.0	88.0	94.0	-6.0	Tx
^	1600.002M	88.7	+0.5	+0.7	+0.0	89.9	94.0	-4.1	Tx
9	705.900M	86.9	+0.4	+0.0	+0.0	87.3	94.0	-6.7	Tx
10	793.150M	86.5	+0.4	+0.0	+0.0	86.9	94.0	-7.1	Tx
11	1611.800M Ave	85.5	+0.5	+0.7	+0.0	86.7	94.0	-7.3	Tx
^	1611.802M	87.7	+0.5	+0.7	+0.0	88.9	94.0	-5.1	Tx
13	880.700M	86.2	+0.4	+0.0	+0.0	86.6	94.0	-7.4	Tx
14	797.850M	86.1	+0.4	+0.0	+0.0	86.5	94.0	-7.5	Tx
15	708.950M	85.8	+0.4	+0.0	+0.0	86.2	94.0	-7.8	Tx
16	5641.300M Ave	83.9	+1.0	+1.1	+0.0	86.0	94.0	-8.0	Tx
^	5641.303M	86.4	+1.0	+1.1	+0.0	88.5	94.0	-5.5	Tx
18	803.000M	84.8	+0.4	+0.0	+0.0	85.2	94.0	-8.8	Tx
19	806.900M	84.4	+0.4	+0.0	+0.0	84.8	94.0	-9.2	Tx
20	5600.002M	82.4	+1.0	+1.1	+0.0	84.5	94.0	-9.5	Tx
21	816.250M	83.9	+0.4	+0.0	+0.0	84.3	94.0	-9.7	Tx
22	818.650M	83.8	+0.4	+0.0	+0.0	84.2	94.0	-9.8	Tx
23	814.675M	83.5	+0.4	+0.0	+0.0	83.9	94.0	-10.1	Tx
24	784.475M	83.3	+0.4	+0.0	+0.0	83.7	94.0	-10.3	Tx
25	814.275M	82.8	+0.4	+0.0	+0.0	83.2	94.0	-10.8	Tx
26	783.838M	82.5	+0.4	+0.0	+0.0	82.9	94.0	-11.1	Tx
27	785.425M	81.7	+0.4	+0.0	+0.0	82.1	94.0	-11.9	Tx
28	2400.002M	79.6	+0.7	+0.6	+0.0	80.9	94.0	-13.1	Tx
29	806.875M	80.4	+0.4	+0.0	+0.0	80.8	94.0	-13.2	Tx
30	2382.002M	79.5	+0.7	+0.6	+0.0	80.8	94.0	-13.2	Tx

31	5558.002M	78.0	+1.0	+1.3	+0.0	80.3	94.0	-13.7	Tx
32	2417.702M	78.9	+0.7	+0.6	+0.0	80.2	94.0	-13.8	Tx
33	783.250M	78.0	+0.4	+0.0	+0.0	78.4	94.0	-15.6	Tx
34	783.006M	77.4	+0.4	+0.0	+0.0	77.8	94.0	-16.2	Tx
35	780.750M	76.4	+0.4	+0.0	+0.0	76.8	94.0	-17.2	Tx
36	828.795M	72.9	+0.4	+0.0	+0.0	73.3	94.0	-20.7	Tx
37	746.706M	71.8	+0.4	+0.0	+0.0	72.2	94.0	-21.8	Tx

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	011405	011407

PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP

FCC 90.543(e) – WIDEBAND RADIATED EMISSIONS

Test Setup Photos

Test Data Sheets

Test Location: CKC Laboratories, Inc. •110 N Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **IP MobileNet**
Specification: **90.543(e) Wideband Radiated Emission**
Work Order #: **85421** Date: 4/26/2007
Test Type: **Maximized Emissions** Time: 14:21:22
Equipment: **Mobile Data Radio** Sequence#: 25
Manufacturer: IP MobileNet Tested By: Sep Apahidean
Model: M64780D25
S/N: 06208941

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
1.5GHz High Pass Filter	3643A00027	06/27/2005	06/27/2007	02116
Spectrum Analyzer	US44300438	01/03/2007	01/03/2009	02672
Horn Antenna	6246	06/29/2006	06/29/2008	00849
24" SMA Cable	1-40GHz_white	02/16/2007	02/16/2009	P05204
Microwave Pre-amp	3123A00281	07/19/2006	07/19/2008	00786
Heliax Antenna Cable	P5565	09/18/2006	09/18/2008	P05565

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

Function	Manufacturer	Model #	S/N
Mobile Data Radio*	IP MobileNet	M64780D25	06208941
Magnetic Mount Base	Antenex	G8N	
800MHz Mobile Load Coil Antenna	Antenex	B8063	

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	HP	6652A	3235A-00835
Laptop Computer	Dell Corporation	PP02L Inspiron I2500	5TZ6611
GPS Antenna	San Jose Navigation, Inc.	SM-25	2569790

Test Conditions / Notes:

The equipment under test and all of the support equipment except the transmit antenna are located on or under the ground plane. The transmit antenna is located on styrofoam which is placed on top of cardboard boxes. Connected to the EUT RX1/TX port is the magmount transmit antenna. The EUT ethernet port is connected to a remotely located laptop computer using an unshielded cat. 5E cable. Power to the EUT is supplied by an external DC Power supply. The laptop computer is used to check the status of the EUT as well as send commands to have it transmit continuously. Voltage to the EUT is 13.8 VDC. Temperature: 22°C, Humidity: 36%, Pressure: 100kPa. RBW=30kHz, VBW=1MHz. Frequency range scanned and maximized, 1559 MHz to 1610 MHz. This data sheet is for the EUT transmitting at rated power (25 Watts) on Mid (800 MHz) channel. Added 1db offset for extra cable-R142 coaxial cable used.

Transducer Legend:

T1=Pre amp 1- 26GHz 071908	T2=54' Heliax Cable 091808 P05565
T3=Horn 00849_062908	T4=SMA-cable_W_05204-021609-26GHz
T5=HPF_AN02116_1.5GHz_062707	

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	1600.000M	61.8	-39.1 +0.7	+2.5	+25.2	+1.4	+0.0	52.5	55.2	-2.7	Vert
2	1600.000M	60.4	-39.1 +0.7	+2.5	+25.2	+1.4	+0.0	51.1	55.2	-4.1	Horiz

FCC 2.1033(c)(14)/2.1053/90.210 - FIELD STRENGTH OF SPURIOUS RADIATION

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

Customer: **IP MobileNet**
Specification: **FCC 90.210 Radiated Spurious Emissions**
Work Order #: **85421** Date: 8/23/2006
Test Type: **Maximized Emissions** Time: 13:49:39
Equipment: **Mobile Data Radio** Sequence#: 3
Manufacturer: IPMobileNet Tested By: E. Wong
Model: M64780D-25
S/N: NA

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

Function	Manufacturer	Model #	S/N
Mobile Data Radio*	IPMobileNet	M64780D-25	NA

Support Devices:

Function	Manufacturer	Model #	S/N
High Power Termination	Weinschel Corporation	45-40-43	MN216
Laptop Computer	Dell Corporation	PP01L Inspiron 4100	05D481
GPS Antenna	San Jose Navigation, Inc.	SM-25	2533961
DC Power Supply	HP	6652ASEC 1223	3235A-00835

Test Conditions / Notes:

The EUT is located on the wooden table top. Connected to the EUT Tx/Rx port is one high power load attenuator. Connected to the EUT serial port is an unterminated shielded serial cable. Connected to the EUT Rx2 port is a 50 Ohm terminator. Connected to the EUT GPS port is a standard GPS antenna with 5 meter long coaxial cable. The EUT ethernet port is connected to the remotely located laptop computer using an unshielded cat. 5E cable. The laptop computer is used to check the status of the EUT as well as send commands to have it transmit continuously. DC power is supplied by a remote support DC power supply. TX =794 MHz, RX = 764 MHz, Inj = 809 MHz. TX =800 MHz, RX = 770 MHz, Inj = 815 MHz. TX = 805.9 MHz, RX = 775.9 MHz, Inj = 8240.9 MHz. Frequency range of measurement = 9 kHz - 9 GHz. Frequency 9 kHz - 150 kHz RBW=200Hz, VBW=200Hz; 150 kHz - 30 MHz RBW=9kHz, VBW=9kHz; 30 MHz - 1000 MHz RBW=120kHz, VBW=120kHz; 1000 MHz - 9000 MHz RBW=1MHz, VBW=1MHz. 13.8 VDC (110/60Hz source). 24°F, 58% relative humidity.

Operating Frequency: 794 MHz - 806 MHz
Channels: Low, Mid and High
Highest Measured Output Power: 43.75 ERP(dBm)= 23.7 ERP(Watts)
Distance: 3 meters
Limit: 43+10Log(P) 56.75 dBc

Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
2,381.99	-17.8	Horiz	61.55
2,382.00	-19.3	Vert	63.05
1,587.98	-22.9	Vert	66.65
7,214.43	-26.2	Horiz	69.95
7,214.45	-27.3	Vert	71.05
1,587.98	-29.1	Horiz	72.85
3,176.00	-29.4	Vert	73.15
5,557.97	-29.5	Vert	73.25
3,175.99	-31.5	Horiz	75.25
5,557.98	-33.6	Horiz	77.35
7,145.98	-34.9	Horiz	78.65
4,763.85	-39.5	Vert	83.25
3,970.01	-41	Vert	84.75
8,008.37	-42.9	Horiz	86.65
4,763.98	-43.7	Horiz	87.45
6,351.98	-45.1	Horiz	88.85
2,426.92	-47	Vert	90.75
3,969.97	-48.5	Horiz	92.25
525.43	-60.6	Horiz	104.35
629.42	-60.8	Horiz	104.55
531.22	-62.4	Vert	106.15
609.47	-62.4	Horiz	106.15
540.48	-62.6	Vert	106.35
665.28	-63.2	Horiz	106.95
612.38	-64.9	Vert	108.65
630.17	-65	Vert	108.75
351.18	-65.2	Horiz	108.95
831.42	-65.4	Vert	109.15
652.62	-65.9	Horiz	109.65
510.20	-66.2	Horiz	109.95
487.18	-67.2	Horiz	110.95
586.02	-67.2	Vert	110.95
363.20	-67.3	Vert	111.05
586.33	-67.8	Horiz	111.55
481.13	-68.5	Horiz	112.25
545.83	-68.6	Horiz	112.35
556.83	-68.8	Horiz	112.55
375.70	-69.6	Horiz	113.35
301.62	-69.8	Horiz	113.55

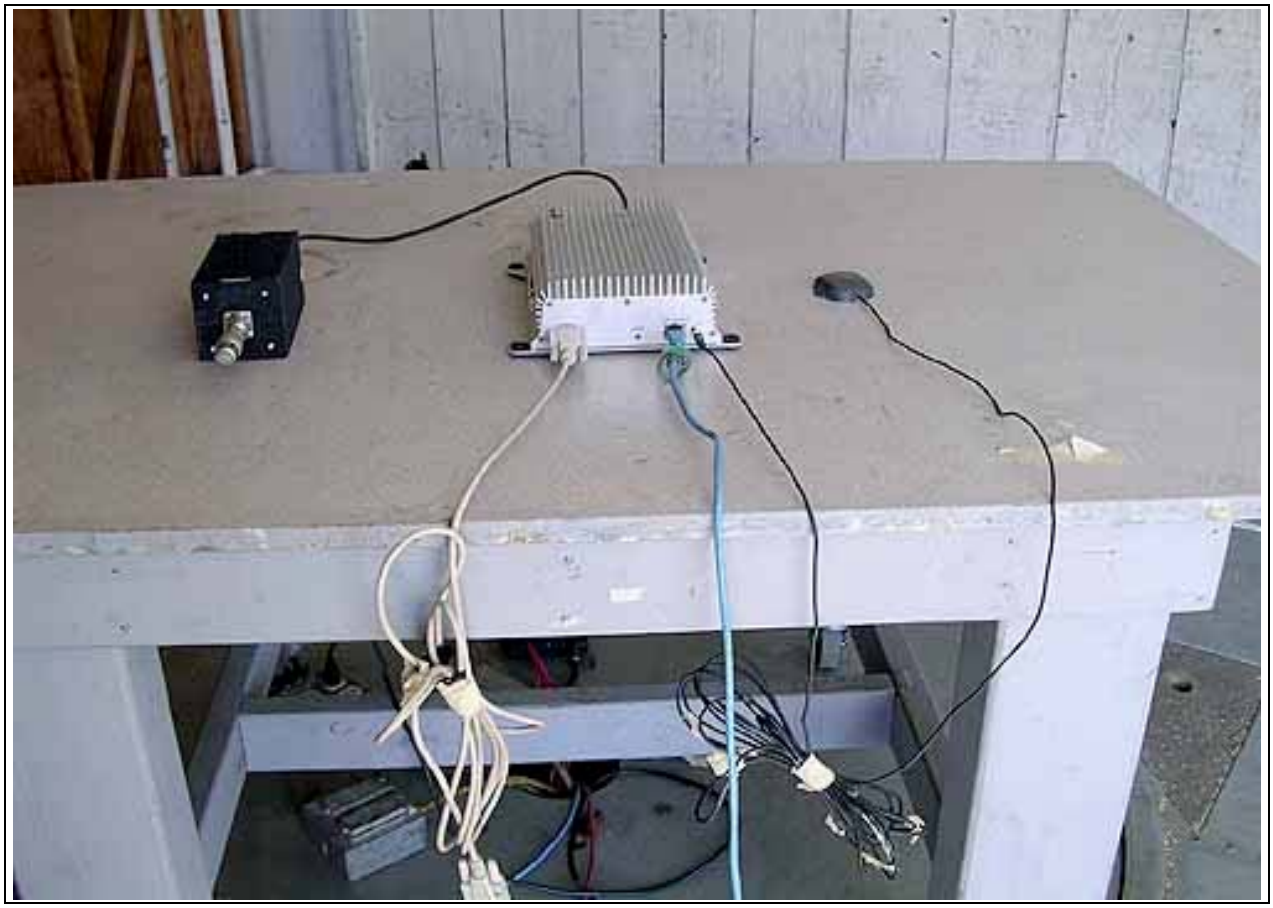
2,400.00	-15.4	Vert	59.15
2,400.00	-15.3	Vert	59.05
2,400.00	-16.3	Horiz	60.05
1,600.00	-25.7	Horiz	69.45
1,600.00	-27	Vert	70.75
5,599.95	-29.2	Horiz	72.95
3,200.00	-31.6	Vert	75.35
5,600.00	-32.1	Vert	75.85
3,200.00	-35.9	Horiz	79.65
7,995.25	-40.8	Vert	84.55
4,800.00	-40.8	Horiz	84.55
4,800.00	-41	Vert	84.75
4,000.00	-42.3	Vert	86.05
7,200.00	-42.6	Vert	86.35
7,200.08	-43.7	Horiz	87.45
4,000.00	-44.4	Horiz	88.15
7,996.17	-45.3	Horiz	89.05
6,400.00	-47.9	Vert	91.65
6,400.07	-49.6	Horiz	93.35
525.23	-54.7	Horiz	98.45
540.02	-61.6	Horiz	105.35
547.85	-62.2	Vert	105.95
548.02	-62.3	Horiz	106.05
354.13	-65.1	Horiz	108.85
612.93	-66.3	Horiz	110.05
301.58	-66.6	Horiz	110.35
359.08	-66.7	Horiz	110.45
517.60	-67	Horiz	110.75
351.10	-67.2	Vert	110.95
592.82	-67.7	Horiz	111.45
612.30	-67.7	Vert	111.45
658.92	-67.8	Vert	111.55
382.30	-67.9	Vert	111.65
375.98	-68.1	Vert	111.85
398.28	-68.7	Horiz	112.45
306.22	-69	Horiz	112.75
480.65	-69.1	Horiz	112.85
360.52	-69.6	Vert	113.35
330.07	-70.5	Horiz	114.25
319.23	-72.1	Vert	115.85
347.22	-72.3	Horiz	116.05
254.92	-74	Horiz	117.75
211.68	-74.7	Horiz	118.45
2,417.70	-16.6	Vert	60.35
2,417.67	-20.2	Horiz	63.95
2,417.67	-19.2	Horiz	62.95

1,611.77	-27.7	Vert	71.45
5,641.33	-30.8	Horiz	74.55
5,641.20	-31	Vert	74.75
1,611.80	-31.9	Horiz	75.65
3,223.65	-36.1	Vert	79.85
3,223.47	-36.7	Horiz	80.45
4,835.07	-39.2	Horiz	82.95
4,835.28	-39.7	Vert	83.45
8,003.75	-44.8	Vert	88.55
4,029.35	-44.8	Vert	88.55
4,029.23	-44.9	Horiz	88.65
6,447.50	-47.6	Horiz	91.35
538.18	-58.2	Horiz	101.95
530.87	-59.2	Horiz	102.95
548.12	-60.4	Horiz	104.15
531.23	-60.8	Vert	104.55
629.22	-61.1	Horiz	104.85
539.32	-61.8	Vert	105.55
592.62	-63.5	Horiz	107.25
612.40	-63.9	Vert	107.65
556.07	-64.1	Horiz	107.85
367.22	-64.5	Horiz	108.25
661.28	-64.6	Horiz	108.35
349.17	-64.8	Vert	108.55
353.93	-65.1	Horiz	108.85
608.78	-65.1	Horiz	108.85
359.50	-65.3	Horiz	109.05
515.58	-66.4	Vert	110.15
299.38	-67.6	Vert	111.35
382.33	-67.8	Vert	111.55
480.50	-68.2	Horiz	111.95
331.42	-68.3	Vert	112.05
381.80	-68.4	Horiz	112.15
267.75	-69	Horiz	112.75
510.80	-70.2	Horiz	113.95
307.72	-71.2	Horiz	114.95
388.28	-71.4	Vert	115.15
486.15	-72	Vert	115.75
164.28	-73.9	Horiz	117.65

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	011405	011407
9kHz-30MHz						
Loop Antenna	00314	EMCO	6502	2014	061406	061408
30 -1000MHz						
Bilog Antenna	01995	Chase	CBL6111C	2451	020206	020208
Pre-amp	00309	HP	8447D	1937A02548	060106	060108
Antenna cable	P05198	Belden	8268 (RG-214)	Cable#15	010305	010307
Pre-amp to SA cable	P05050	Pasternack	RG223/U	Cable#10	051605	051607
1-9GHz						
Horn Antenna	00849	EMCO	3115	6246	062906	062908
Microwave Pre-amp	2114	HP	83017A	000009002,	121504	120516
Heliax Antenna cable	P04384	Andrew	LDF1-50	Cable#20	080706	080708
1.0 GHz HPF	02749	K&L	9SH10-1000	1	030706	030708

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS

Radiated Emissions - Back View

FCC 2.1033(c)(14)/2.1055- FREQUENCY STABILITY

Test Conditions: The EUT is placed in the temperature chamber. DC power is supplied from a support power supply, ethernet port is connected to a remote support laptop. The frequency stability of the RF signal is evaluated with a spectrum analyzer by direct connection to the RF output port.

Customer: IP MobileNet
WO#: 85420
Date: 1-Sep-06
Test Engineer: E. Wong

Device Model #: M64780D-25
Operating Voltage: 13.8 **Vac**

Frequency Limit: 1.25E+00 **ppm**

Temperature Variations

Channel Frequency:		Channel 1 (MHz) 793.999170000	Dev (ppm)	Channel 2 (MHz) 799.998830000	Dev (ppm)	Channel 3 (MHz) 805.899160000	Dev (ppm)
Temp (C)	Voltage						
-30	13.8	794.000117000	-1.192696	799.999805000	-1.218752	805.899763000	-0.748233
-20	13.8	793.999683000	-0.646096	799.999622000	-0.990001	805.899583000	-0.524880
-10	13.8	793.999213000	-0.054156	799.999233000	-0.503751	805.899227000	-0.083137
0	13.8	793.999653000	-0.608313	799.999660000	-1.037502	805.899663000	-0.624148
10	13.8	793.999413000	-0.306046	799.999420000	-0.737501	805.899503000	-0.425612
20	13.8	793.999170000	0.000000	799.998830000	0.000000	805.899160000	0.000000
30	13.8	793.999160000	0.012594	799.999176000	-0.432501	805.899157000	0.003723
40	13.8	793.999267000	-0.122166	799.999200000	-0.462501	805.899173000	-0.016131
50	13.8	793.999327000	-0.197733	799.999367000	-0.671251	805.899443000	-0.351161

Voltage Variations (±15%)

Temp (C)	Voltage	Channel 1 (MHz)	Dev. (ppm)	Channel 2 (MHz)	Dev. (ppm)	Channel 3 (MHz)	Dev. (ppm)
20	11.7	793.999170000	0.000000	799.998830000	0.000000	805.899160000	0.000000
20	13.8	793.999170000	0.000000	799.998830000	0.000000	805.899160000	0.000000
20	15.9	793.999180000	-0.012594	799.998840000	-0.012500	805.899170000	-0.012409

Max Deviation (ppm)	+	**0.01259**		+	**0.00000**	+	**0.00372**
Max Deviation (ppm)	-	**1.19270**		-	**1.21875**	-	**0.74823**
		PASS			**PASS**		**PASS**

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
RF Power meter	02778	HP	EPM-441A	GB37170458	012706	012708
Power Sensor	02777	HP	E4412A	MY41499662	012706	012708
Temperature Chamber	01878	Thermaltron	S1.2	NA	060106	060108
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	011405	011407

PHOTOGRAPH SHOWING TEMPERATURE TESTING

FCC 15.209 – RADIATED EMISSIONS

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

Customer: **IP MobileNet**
Specification: **FCC 15.209**
Work Order #: **85421** Date: 8/23/2006
Test Type: **Maximized Emissions** Time: 10:27:38
Equipment: **Mobile Data Radio** Sequence#: 1
Manufacturer: IPMobileNet Tested By: E. Wong
Model: M64780D-25
S/N: NA

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

Function	Manufacturer	Model #	S/N
Mobile Data Radio*	IPMobileNet	M64780D-25	NA

Support Devices:

Function	Manufacturer	Model #	S/N
High Power Termination	Weinschel Corporation	45-40-43	MN216
Laptop Computer	Dell Corporation	PP01L Inspiron 4100	05D481
GPS Antenna	San Jose Navigation, Inc.	SM-25	2533961
DC Power Supply	HP	6652ASEC 1223	3235A-00835

Test Conditions / Notes:

The EUT is located on the wooden table top. Connected to the EUT Tx/Rx port is one high power load attenuator. Connected to the EUT serial port is an unterminated shielded serial cable. Connected to the EUT Rx2 port is a 50 Ohm terminator. Connected to the EUT GPS port is a standard GPS antenna with 5 meter long coaxial cable. The EUT ethernet port is connected to the remotely located laptop computer using an unshielded cat. 5E cable. The laptop computer is used to check the status of the EUT as well as send commands to have it transmit continuously. DC power is supplied by a remote support DC power supply. TX =794 MHz, RX = 764MHz, Inj = 809 MHz. Frequency range of measurement = 9 kHz - 9 GHz. Frequency 9 kHz - 150 kHz RBW=200Hz, VBW=200Hz; 150 kHz - 30 MHz RBW=9kHz, VBW=9kHz; 30 MHz - 1000 MHz RBW=120kHz, VBW=120kHz; 1000 MHz - 9000 MHz RBW=1MHz, VBW=1MHz. 13.8 VDC (110/60Hz source). 24°F, 58% relative humidity.

Transducer Legend:

T1=Preamp 8447D 060108	T2=Bilog AN01995 020208 Chase
T3=Cable #10 051607	T4=Cable #15, Site A, 010307
T5=Cable #20 48ft Heliax 091606	T6=Horn 00849_062908
T7=1-40 GHz Cable_020807	T8=Filter 1GHz HP AN02749
T9=Pre amp 1- 26GHz 071908	

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9	T2 T6	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	7214.430M	62.8	+0.0 +5.9 -37.2	+0.0 +35.7	+0.0 +1.8	+0.0 +0.1	+0.0	69.1	54.0 tx, not a spur of fundamental	+15.1	Horiz
2	7214.450M	61.7	+0.0 +5.9 -37.2	+0.0 +35.7	+0.0 +1.8	+0.0 +0.1	+0.0	68.0	54.0 tx, not a spur of fundamental	+14.0	Vert

3	8008.370M	44.0	+0.0 +6.6 -37.2	+0.0 +36.9	+0.0 +1.9	+0.0 +0.2	+0.0	52.4	54.0	-1.6	Horiz
4	525.430M	38.4	-27.5 +0.0 +0.0	+18.9 +0.0	+0.5 +0.0	+4.4 +0.0	+0.0	34.7	46.0	-11.3	Horiz
5	629.420M	36.1	-27.2 +0.0 +0.0	+20.2 +0.0	+0.5 +0.0	+4.9 +0.0	+0.0	34.5	46.0	-11.5	Horiz
6	609.470M	35.0	-27.3 +0.0 +0.0	+19.9 +0.0	+0.5 +0.0	+4.8 +0.0	+0.0	32.9	46.0	-13.1	Horiz
7	531.220M	36.4	-27.5 +0.0 +0.0	+19.1 +0.0	+0.5 +0.0	+4.4 +0.0	+0.0	32.9	46.0	-13.1	Vert
8	540.480M	35.7	-27.4 +0.0 +0.0	+19.4 +0.0	+0.5 +0.0	+4.5 +0.0	+0.0	32.7	46.0	-13.3	Vert
9	665.280M	33.1	-27.1 +0.0 +0.0	+20.5 +0.0	+0.5 +0.0	+5.1 +0.0	+0.0	32.1	46.0	-13.9	Horiz
10	612.380M	32.3	-27.3 +0.0 +0.0	+20.0 +0.0	+0.5 +0.0	+4.9 +0.0	+0.0	30.4	46.0	-15.6	Vert
11	630.170M	31.9	-27.2 +0.0 +0.0	+20.2 +0.0	+0.5 +0.0	+4.9 +0.0	+0.0	30.3	46.0	-15.7	Vert
12	351.180M	39.3	-27.6 +0.0 +0.0	+14.5 +0.0	+0.3 +0.0	+3.6 +0.0	+0.0	30.1	46.0	-15.9	Horiz
13	831.420M	27.9	-27.1 +0.0 +0.0	+22.8 +0.0	+0.6 +0.0	+5.7 +0.0	+0.0	29.9	46.0	-16.1	Vert
14	652.620M	30.6	-27.1 +0.0 +0.0	+20.4 +0.0	+0.5 +0.0	+5.0 +0.0	+0.0	29.4	46.0	-16.6	Horiz
15	510.200M	33.6	-27.6 +0.0 +0.0	+18.4 +0.0	+0.4 +0.0	+4.3 +0.0	+0.0	29.1	46.0	-16.9	Horiz
16	487.180M	33.2	-27.6 +0.0 +0.0	+17.9 +0.0	+0.4 +0.0	+4.2 +0.0	+0.0	28.1	46.0	-17.9	Horiz
17	586.020M	30.5	-27.4 +0.0 +0.0	+19.8 +0.0	+0.5 +0.0	+4.7 +0.0	+0.0	28.1	46.0	-17.9	Vert
18	363.200M	36.9	-27.7 +0.0 +0.0	+14.9 +0.0	+0.3 +0.0	+3.6 +0.0	+0.0	28.0	46.0	-18.0	Vert
19	586.330M	29.9	-27.4 +0.0 +0.0	+19.8 +0.0	+0.5 +0.0	+4.7 +0.0	+0.0	27.5	46.0	-18.5	Horiz

20	481.130M	32.1	-27.6 +0.0 +0.0	+17.7 +0.0	+0.4 +0.0	+4.2 +0.0	+0.0	26.8	46.0	-19.2	Horiz
21	545.830M	29.5	-27.4 +0.0 +0.0	+19.6 +0.0	+0.5 +0.0	+4.5 +0.0	+0.0	26.7	46.0	-19.3	Horiz
22	556.830M	29.2	-27.4 +0.0 +0.0	+19.7 +0.0	+0.5 +0.0	+4.5 +0.0	+0.0	26.5	46.0	-19.5	Horiz
23	375.700M	34.2	-27.7 +0.0 +0.0	+15.2 +0.0	+0.3 +0.0	+3.7 +0.0	+0.0	25.7	46.0	-20.3	Horiz
24	301.620M	36.4	-27.6 +0.0 +0.0	+13.2 +0.0	+0.3 +0.0	+3.2 +0.0	+0.0	25.5	46.0	-20.5	Horiz
25	348.750M	34.4	-27.6 +0.0 +0.0	+14.5 +0.0	+0.3 +0.0	+3.6 +0.0	+0.0	25.2	46.0	-20.8	Horiz
26	338.550M	33.8	-27.6 +0.0 +0.0	+14.2 +0.0	+0.3 +0.0	+3.5 +0.0	+0.0	24.2	46.0	-21.8	Vert
27	127.070M	34.1	-27.6 +0.0 +0.0	+11.5 +0.0	+0.1 +0.0	+2.0 +0.0	+0.0	20.1	43.5	-23.4	Horiz
28	380.500M	30.9	-27.7 +0.0 +0.0	+15.3 +0.0	+0.3 +0.0	+3.7 +0.0	+0.0	22.5	46.0	-23.5	Vert
29	112.800M	34.4	-27.6 +0.0 +0.0	+10.9 +0.0	+0.1 +0.0	+1.9 +0.0	+0.0	19.7	43.5	-23.8	Horiz
30	417.280M	28.9	-27.7 +0.0 +0.0	+16.3 +0.0	+0.3 +0.0	+3.8 +0.0	+0.0	21.6	46.0	-24.4	Vert

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

Customer: **IP MobileNet**
Specification: **FCC 15.209**
Work Order #: **85421** Date: 8/23/2006
Test Type: **Maximized Emissions** Time: 13:08:01
Equipment: **Mobile Data Radio** Sequence#: 2
Manufacturer: IPMobileNet Tested By: E. Wong
Model: M64780D-25
S/N: NA

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

Function	Manufacturer	Model #	S/N
Mobile Data Radio*	IPMobileNet	M64780D-25	NA

Support Devices:

Function	Manufacturer	Model #	S/N
High Power Termination	Weinschel Corporation	45-40-43	MN216
Laptop Computer	Dell Corporation	PP01L Inspiron 4100	05D481
GPS Antenna	San Jose Navigation, Inc.	SM-25	2533961
DC Power Supply	HP	6652ASEC 1223	3235A-00835

Test Conditions / Notes:

The EUT is located on the wooden table top. Connected to the EUT Tx/Rx port is one high power load attenuator. Connected to the EUT serial port is an unterminated shielded serial cable. Connected to the EUT Rx2 port is a 50 Ohm terminator. Connected to the EUT GPS port is a standard GPS antenna with 5 meter long coaxial cable. The EUT ethernet port is connected to the remotely located laptop computer using an unshielded cat. 5E cable. The laptop computer is used to check the status of the EUT as well as send commands to have it transmit continuously. DC power is supplied by a remote support DC power supply. TX =800 MHz, RX = 770 MHz, Inj = 815 MHz. Frequency range of measurement = 9 kHz - 9 GHz. Frequency 9 kHz - 150 kHz RBW=200Hz, VBW=200Hz; 150 kHz - 30 MHz RBW=9kHz, VBW=9kHz; 30 MHz - 1000 MHz RBW=120kHz, VBW=120kHz; 1000 MHz - 9000 MHz RBW=1MHz, VBW=1MHz. 13.8 VDC (110/60Hz source). 24°F, 58% relative humidity.

Transducer Legend:

T1=Preamp 8447D 060108	T2=Bilog AN01995 020208 Chase
T3=Cable #10 051607	T4=Cable #15, Site A, 010307
T5=Cable #20 48ft Heliax 091606	T6=Horn 00849_062908
T7=1-40 GHz Cable_020807	T8=Filter 1GHz HP AN02749
T9=Pre amp 1- 26GHz 071908	

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9	T2 T6	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	7197.730M	62.6	+0.0 +5.9 -37.2	+0.0 +35.7	+0.0 +1.8	+0.0 +0.1	+0.0	68.9	54.0 Tx non harmonics	+14.9	Horiz
2	7197.200M	59.0	+0.0 +5.9 -37.2	+0.0 +35.7	+0.0 +1.8	+0.0 +0.1	+0.0	65.3	54.0 TX on, non harmonics	+11.3	Vert

3	525.230M	44.3	-27.5 +0.0 +0.0	+18.9 +0.0	+0.5 +0.0	+4.4 +0.0	+0.0	40.6	46.0	-5.4	Horiz
4	540.020M	36.7	-27.4 +0.0 +0.0	+19.4 +0.0	+0.5 +0.0	+4.5 +0.0	+0.0	33.7	46.0	-12.3	Horiz
5	547.850M	35.9	-27.4 +0.0 +0.0	+19.6 +0.0	+0.5 +0.0	+4.5 +0.0	+0.0	33.1	46.0	-12.9	Vert
6	548.020M	35.8	-27.4 +0.0 +0.0	+19.6 +0.0	+0.5 +0.0	+4.5 +0.0	+0.0	33.0	46.0	-13.0	Horiz
7	354.130M	39.3	-27.6 +0.0 +0.0	+14.6 +0.0	+0.3 +0.0	+3.6 +0.0	+0.0	30.2	46.0	-15.8	Horiz
8	612.930M	30.9	-27.3 +0.0 +0.0	+20.0 +0.0	+0.5 +0.0	+4.9 +0.0	+0.0	29.0	46.0	-17.0	Horiz
9	301.580M	39.6	-27.6 +0.0 +0.0	+13.2 +0.0	+0.3 +0.0	+3.2 +0.0	+0.0	28.7	46.0	-17.3	Horiz
10	359.080M	37.6	-27.6 +0.0 +0.0	+14.7 +0.0	+0.3 +0.0	+3.6 +0.0	+0.0	28.6	46.0	-17.4	Horiz
11	517.600M	32.3	-27.5 +0.0 +0.0	+18.7 +0.0	+0.4 +0.0	+4.4 +0.0	+0.0	28.3	46.0	-17.7	Horiz
12	351.100M	37.3	-27.6 +0.0 +0.0	+14.5 +0.0	+0.3 +0.0	+3.6 +0.0	+0.0	28.1	46.0	-17.9	Vert
13	612.300M	29.5	-27.3 +0.0 +0.0	+20.0 +0.0	+0.5 +0.0	+4.9 +0.0	+0.0	27.6	46.0	-18.4	Vert
14	592.820M	29.9	-27.4 +0.0 +0.0	+19.8 +0.0	+0.5 +0.0	+4.8 +0.0	+0.0	27.6	46.0	-18.4	Horiz
15	658.920M	28.7	-27.1 +0.0 +0.0	+20.4 +0.0	+0.5 +0.0	+5.0 +0.0	+0.0	27.5	46.0	-18.5	Vert
16	382.300M	35.7	-27.7 +0.0 +0.0	+15.4 +0.0	+0.3 +0.0	+3.7 +0.0	+0.0	27.4	46.0	-18.6	Vert
17	375.980M	35.7	-27.7 +0.0 +0.0	+15.2 +0.0	+0.3 +0.0	+3.7 +0.0	+0.0	27.2	46.0	-18.8	Vert
18	398.280M	34.6	-27.8 +0.0 +0.0	+15.8 +0.0	+0.3 +0.0	+3.7 +0.0	+0.0	26.6	46.0	-19.4	Horiz
19	306.220M	36.9	-27.6 +0.0 +0.0	+13.4 +0.0	+0.3 +0.0	+3.3 +0.0	+0.0	26.3	46.0	-19.7	Horiz

20	480.650M	31.5	-27.6 +0.0 +0.0	+17.7 +0.0	+0.4 +0.0	+4.2 +0.0	+0.0	26.2	46.0	-19.8	Horiz
21	360.520M	34.6	-27.6 +0.0 +0.0	+14.8 +0.0	+0.3 +0.0	+3.6 +0.0	+0.0	25.7	46.0	-20.3	Vert
22	330.070M	34.7	-27.6 +0.0 +0.0	+14.0 +0.0	+0.3 +0.0	+3.4 +0.0	+0.0	24.8	46.0	-21.2	Horiz
23	319.230M	33.4	-27.6 +0.0 +0.0	+13.7 +0.0	+0.3 +0.0	+3.4 +0.0	+0.0	23.2	46.0	-22.8	Vert
24	211.680M	35.7	-27.6 +0.0 +0.0	+9.7 +0.0	+0.2 +0.0	+2.6 +0.0	+0.0	20.6	43.5	-22.9	Horiz
25	347.220M	32.3	-27.6 +0.0 +0.0	+14.4 +0.0	+0.3 +0.0	+3.6 +0.0	+0.0	23.0	46.0	-23.0	Horiz
26	254.920M	33.2	-27.7 +0.0 +0.0	+12.6 +0.0	+0.2 +0.0	+3.0 +0.0	+0.0	21.3	46.0	-24.7	Horiz

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

Customer: **IP MobileNet**
Specification: **FCC 15.209**
Work Order #: **85421** Date: 8/23/2006
Test Type: **Maximized Emissions** Time: 13:49:39
Equipment: **Mobile Data Radio** Sequence#: 3
Manufacturer: IPMobileNet Tested By: E. Wong
Model: M64780D-25
S/N: NA

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

Function	Manufacturer	Model #	S/N
Mobile Data Radio*	IPMobileNet	M64780D-25	NA

Support Devices:

Function	Manufacturer	Model #	S/N
High Power Termination	Weinschel Corporation	45-40-43	MN216
Laptop Computer	Dell Corporation	PP01L Inspiron 4100	05D481
GPS Antenna	San Jose Navigation, Inc.	SM-25	2533961
DC Power Supply	HP	6652ASEC 1223	3235A-00835

Test Conditions / Notes:

The EUT is located on the wooden table top. Connected to the EUT Tx/Rx port is one high power load attenuator. Connected to the EUT serial port is an unterminated shielded serial cable. Connected to the EUT Rx2 port is a 50 Ohm terminator. Connect to the EUT GPS port is a standard GPS antenna with 5 meter long coaxial cable. The EUT ethernet port is connected to the remotely located laptop computer using an unshielded cat. 5E cable. The laptop computer is used to check the status of the EUT as well as send commands to have it transmit continuously. DC power is supplied by a remote support DC power supply. TX = 805.9 MHz, RX = 775.9 MHz, Inj = 8240.9 MHz. Frequency range of measurement = 9 kHz – 9 GHz. Frequency 9 kHz – 150 kHz RBW=200Hz, VBW=200Hz; 150 kHz – 30 MHz RBW=9kHz, VBW=9kHz; 30 MHz – 1000 MHz RBW=120kHz, VBW=120kHz; 1000 MHz – 9000 MHz RBW=1MHz, VBW=1MHz. 13.8 VDC (110/60Hz source). 24°F, 58% relative humidity.

Transducer Legend:

T1=Preamp 8447D 060108	T2=Bilog AN01995 020208 Chase
T3=Cable #10 051607	T4=Cable #15, Site A, 010307
T5=Cable #20 48ft Heliax 091606	T6=Horn 00849_062908
T7=1-40 GHz Cable_020807	T8=Filter 1GHz HP AN02749
T9=Pre amp 1- 26GHz 071908	

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9	T2 T6	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	7198.000M	59.9	+0.0 +5.9 -37.2	+0.0 +35.7	+0.0 +1.8	+0.0 +0.1	+0.0	66.2	54.0 TX non harmonic	+12.2	Horiz
2	7196.100M	59.8	+0.0 +5.9 -37.2	+0.0 +35.7	+0.0 +1.8	+0.0 +0.1	+0.0	66.1	54.0 TX non harmonics	+12.1	Vert

3	538.180M	40.2	-27.4 +0.0 +0.0	+19.3 +0.0	+0.5 +0.0	+4.5 +0.0	+0.0	37.1	46.0	-8.9	Horiz
4	530.870M	39.6	-27.5 +0.0 +0.0	+19.1 +0.0	+0.5 +0.0	+4.4 +0.0	+0.0	36.1	46.0	-9.9	Horiz
5	548.120M	37.7	-27.4 +0.0 +0.0	+19.6 +0.0	+0.5 +0.0	+4.5 +0.0	+0.0	34.9	46.0	-11.1	Horiz
6	531.230M	38.0	-27.5 +0.0 +0.0	+19.1 +0.0	+0.5 +0.0	+4.4 +0.0	+0.0	34.5	46.0	-11.5	Vert
7	629.220M	35.8	-27.2 +0.0 +0.0	+20.2 +0.0	+0.5 +0.0	+4.9 +0.0	+0.0	34.2	46.0	-11.8	Horiz
8	539.320M	36.5	-27.4 +0.0 +0.0	+19.4 +0.0	+0.5 +0.0	+4.5 +0.0	+0.0	33.5	46.0	-12.5	Vert
9	592.620M	34.1	-27.4 +0.0 +0.0	+19.8 +0.0	+0.5 +0.0	+4.8 +0.0	+0.0	31.8	46.0	-14.2	Horiz
10	612.400M	33.3	-27.3 +0.0 +0.0	+20.0 +0.0	+0.5 +0.0	+4.9 +0.0	+0.0	31.4	46.0	-14.6	Vert
11	556.070M	33.9	-27.4 +0.0 +0.0	+19.7 +0.0	+0.5 +0.0	+4.5 +0.0	+0.0	31.2	46.0	-14.8	Horiz
12	367.220M	39.6	-27.7 +0.0 +0.0	+15.0 +0.0	+0.3 +0.0	+3.6 +0.0	+0.0	30.8	46.0	-15.2	Horiz
13	661.280M	31.9	-27.1 +0.0 +0.0	+20.4 +0.0	+0.5 +0.0	+5.0 +0.0	+0.0	30.7	46.0	-15.3	Horiz
14	349.170M	39.7	-27.6 +0.0 +0.0	+14.5 +0.0	+0.3 +0.0	+3.6 +0.0	+0.0	30.5	46.0	-15.5	Vert
15	353.930M	39.3	-27.6 +0.0 +0.0	+14.6 +0.0	+0.3 +0.0	+3.6 +0.0	+0.0	30.2	46.0	-15.8	Horiz
16	608.780M	32.3	-27.3 +0.0 +0.0	+19.9 +0.0	+0.5 +0.0	+4.8 +0.0	+0.0	30.2	46.0	-15.8	Horiz
17	359.500M	38.9	-27.6 +0.0 +0.0	+14.8 +0.0	+0.3 +0.0	+3.6 +0.0	+0.0	30.0	46.0	-16.0	Horiz
18	515.580M	33.0	-27.5 +0.0 +0.0	+18.6 +0.0	+0.4 +0.0	+4.4 +0.0	+0.0	28.9	46.0	-17.1	Vert
19	299.380M	38.6	-27.6 +0.0 +0.0	+13.2 +0.0	+0.3 +0.0	+3.2 +0.0	+0.0	27.7	46.0	-18.3	Vert

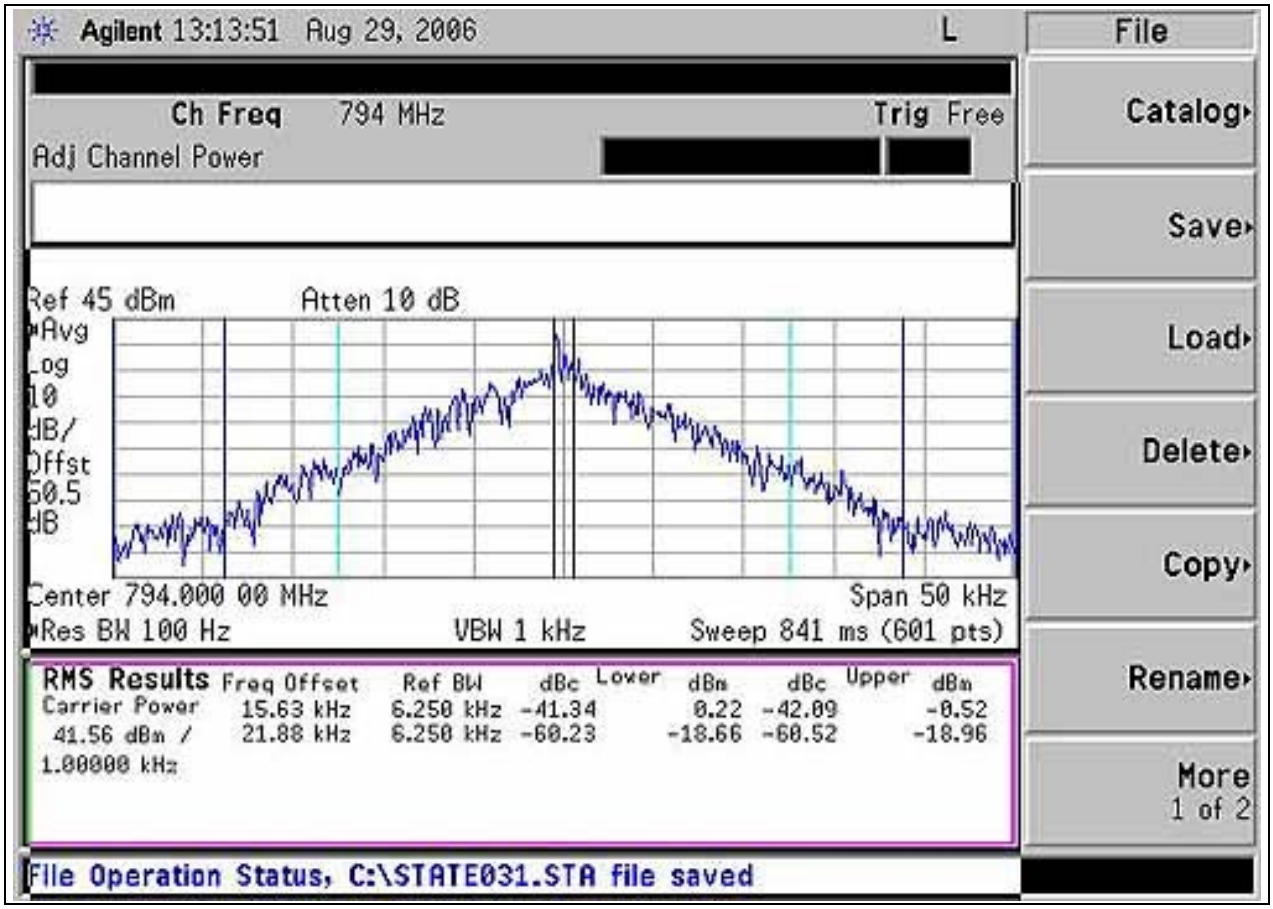
20	382.330M	35.8	-27.7 +0.0 +0.0	+15.4 +0.0	+0.3 +0.0	+3.7 +0.0	+0.0	27.5	46.0	-18.5	Vert
21	480.500M	32.4	-27.6 +0.0 +0.0	+17.7 +0.0	+0.4 +0.0	+4.2 +0.0	+0.0	27.1	46.0	-18.9	Horiz
22	331.420M	36.8	-27.6 +0.0 +0.0	+14.0 +0.0	+0.3 +0.0	+3.5 +0.0	+0.0	27.0	46.0	-19.0	Vert
23	381.800M	35.3	-27.7 +0.0 +0.0	+15.3 +0.0	+0.3 +0.0	+3.7 +0.0	+0.0	26.9	46.0	-19.1	Horiz
24	267.750M	37.8	-27.7 +0.0 +0.0	+12.8 +0.0	+0.3 +0.0	+3.1 +0.0	+0.0	26.3	46.0	-19.7	Horiz
25	510.800M	29.5	-27.6 +0.0 +0.0	+18.5 +0.0	+0.4 +0.0	+4.3 +0.0	+0.0	25.1	46.0	-20.9	Horiz
26	307.720M	34.7	-27.6 +0.0 +0.0	+13.4 +0.0	+0.3 +0.0	+3.3 +0.0	+0.0	24.1	46.0	-21.9	Horiz
27	388.280M	32.2	-27.8 +0.0 +0.0	+15.5 +0.0	+0.3 +0.0	+3.7 +0.0	+0.0	23.9	46.0	-22.1	Vert
28	164.280M	36.5	-27.7 +0.0 +0.0	+10.0 +0.0	+0.2 +0.0	+2.4 +0.0	+0.0	21.4	43.5	-22.1	Horiz
29	486.150M	28.5	-27.6 +0.0 +0.0	+17.8 +0.0	+0.4 +0.0	+4.2 +0.0	+0.0	23.3	46.0	-22.7	Vert

Test Equipment

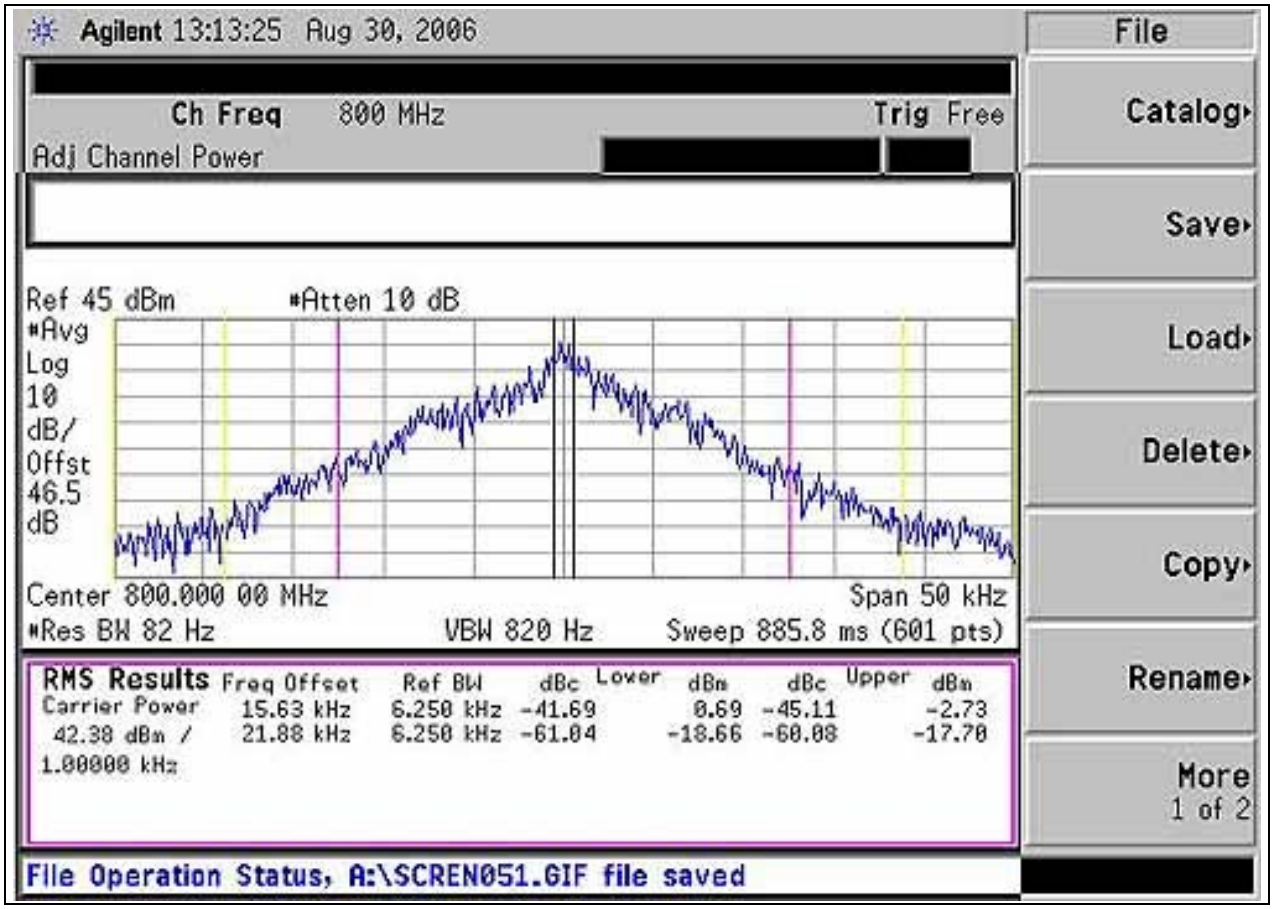
Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	011405	011407
9kHz-30MHz						
Loop Antenna	00314	EMCO	6502	2014	061406	061408
30 -1000MHz						
Bilog Antenna	01995	Chase	CBL6111C	2451	020206	020208
Pre-amp	00309	HP	8447D	1937A02548	060106	060108
Antenna cable	P05198	Belden	8268 (RG-214)	Cable#15	010305	010307
Pre-amp to SA cable	P05050	Pasternack	RG223/U	Cable#10	051605	051607
1-9GHz						
Horn Antenna	00849	EMCO	3115	6246	062906	062908
Microwave Pre-amp	2114	HP	83017A	000009002,	121504	120516
Heliax Antenna cable	P04384	Andrew	LDF1-50	Cable#20	080706	080708
1.0 GHz HPF	02749	K&L	9SH10-1000	1	030706	030708

ADJACENT CHANNEL POWER - CONDITION 1 & 2 LOW CHANNEL

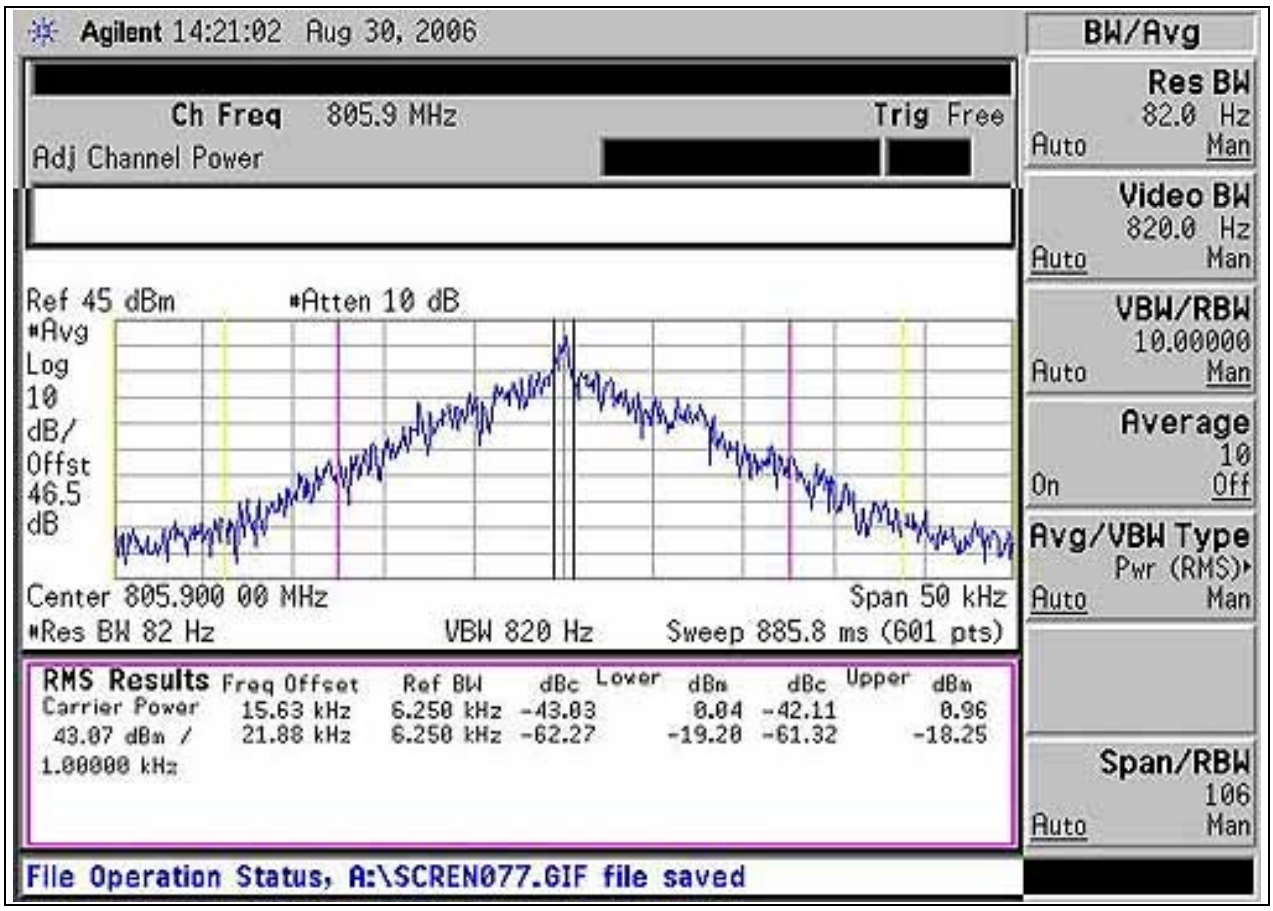
Test Conditions: The EUT and its support equipment are located adjacent to each other on the table top. Connected to the EUT RX1/TX port is one high powered attenuator and then a coaxial cable to the spectrum analyzer. Connected to the EUT serial port is an unterminated shielded serial cable. Connected to the EUT Rx2 port is a termination. Connect to the EUT GPS port is a standard GPS antenna with 5 meter long coaxial cable. The EUT ethernet port is connected to the laptop computer using an unshielded cat. 6 crossover cable. Power to the EUT is supplied by an external DC Power supply. The laptop computer is used to check the status of the EUT as well as send commands to have it transmit continuously or to change channels. Voltage to the EUT is 13.8 VDC. The RBW and VBW used are indicated on each screen capture from the spectrum analyzer.



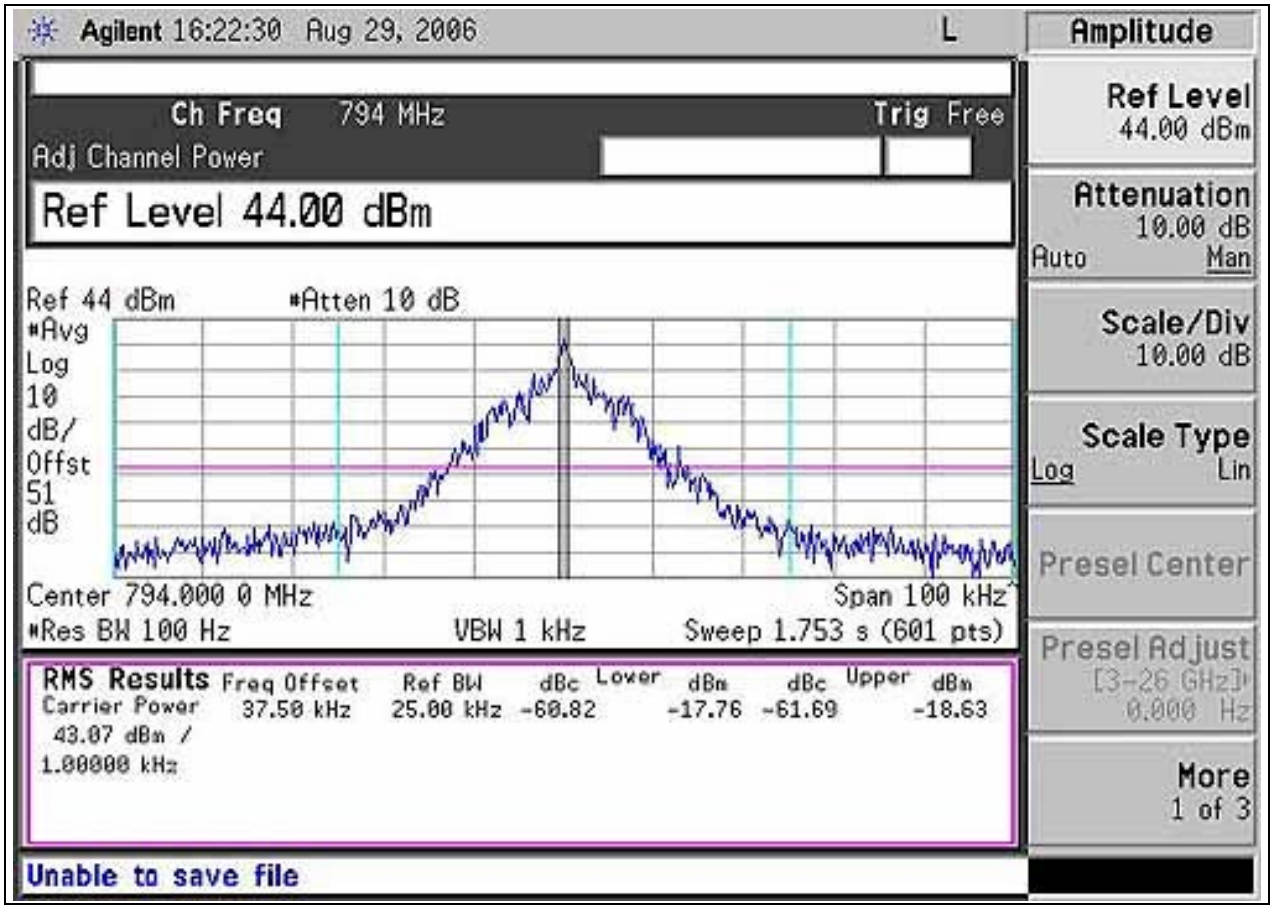
ADJACENT CHANNEL POWER - CONDITION 1 & 2 MIDDLE CHANNEL



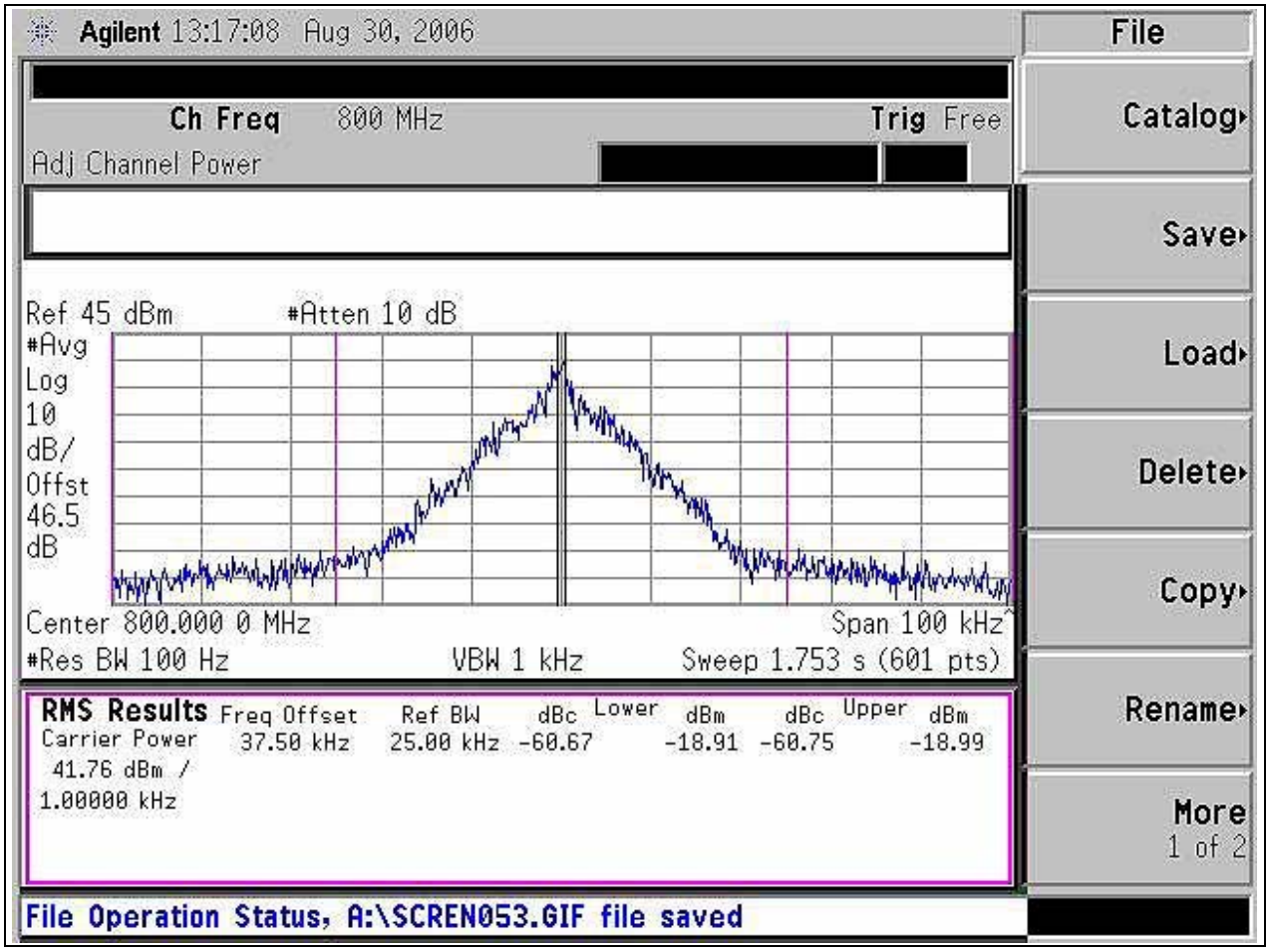
ADJACENT CHANNEL POWER - CONDITION 1 & 2 HIGH CHANNEL



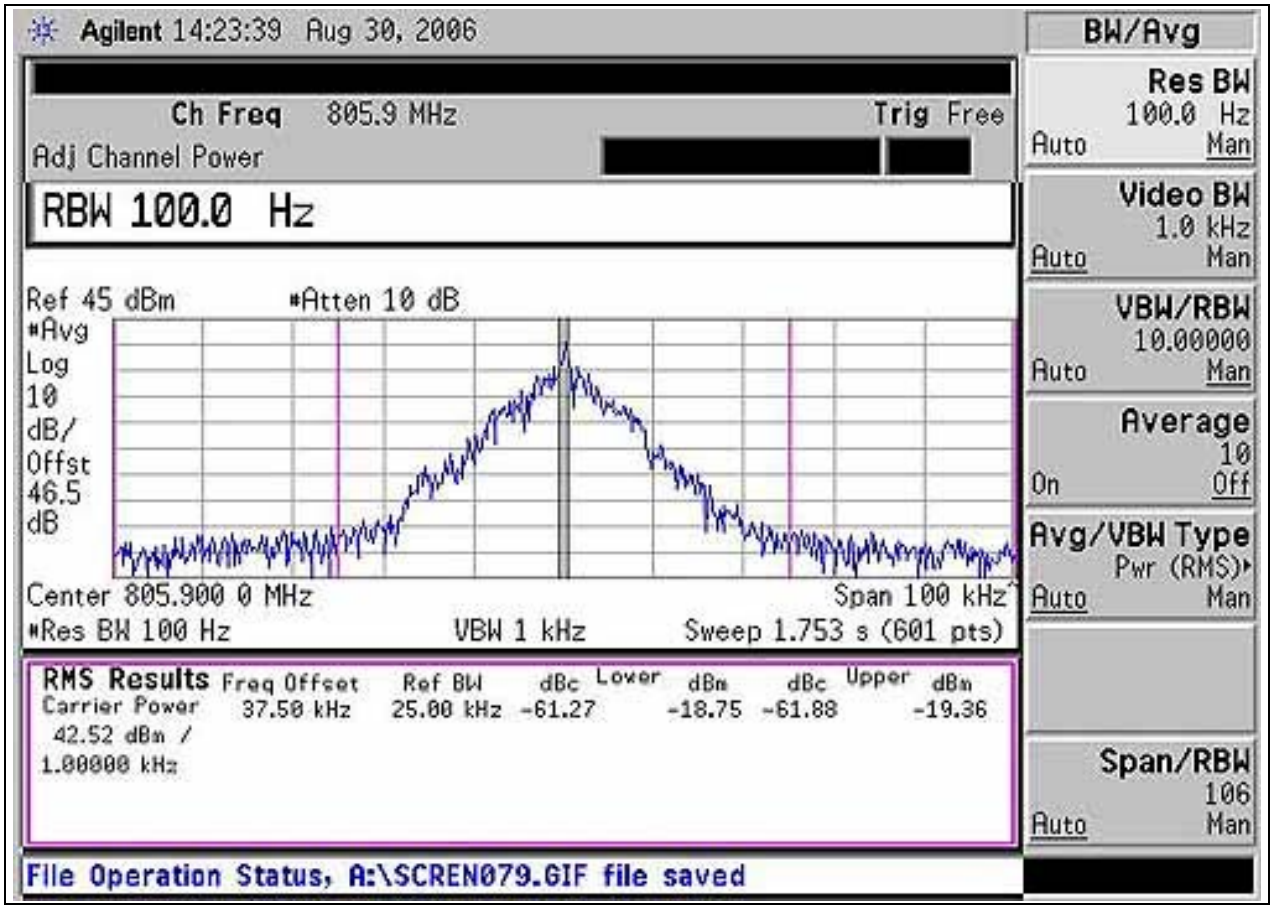
ADJACENT CHANNEL POWER - CONDITION 3 LOW CHANNEL



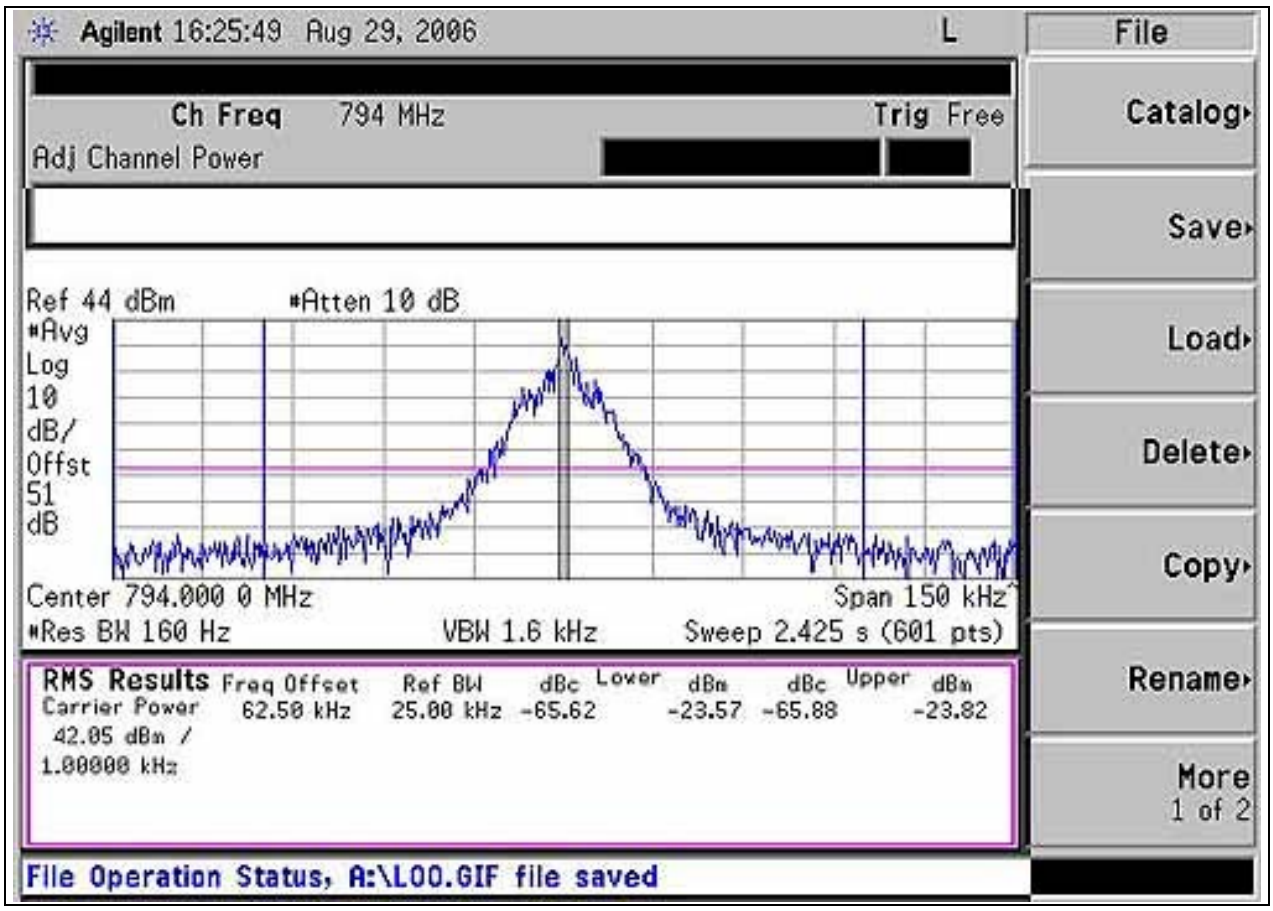
ADJACENT CHANNEL POWER - CONDITION 3 MIDDLE CHANNEL



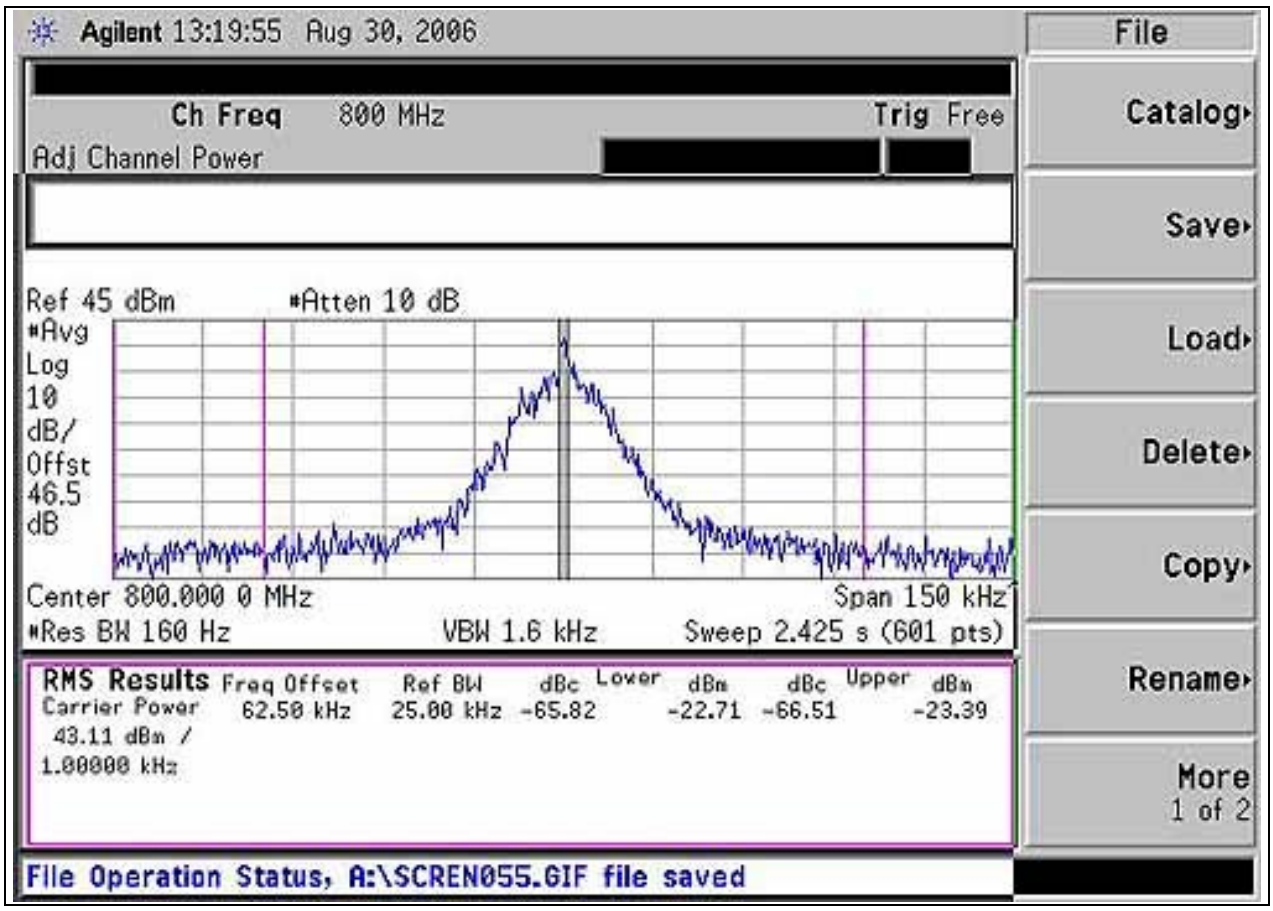
ADJACENT CHANNEL POWER - CONDITION 3 HIGH CHANNEL



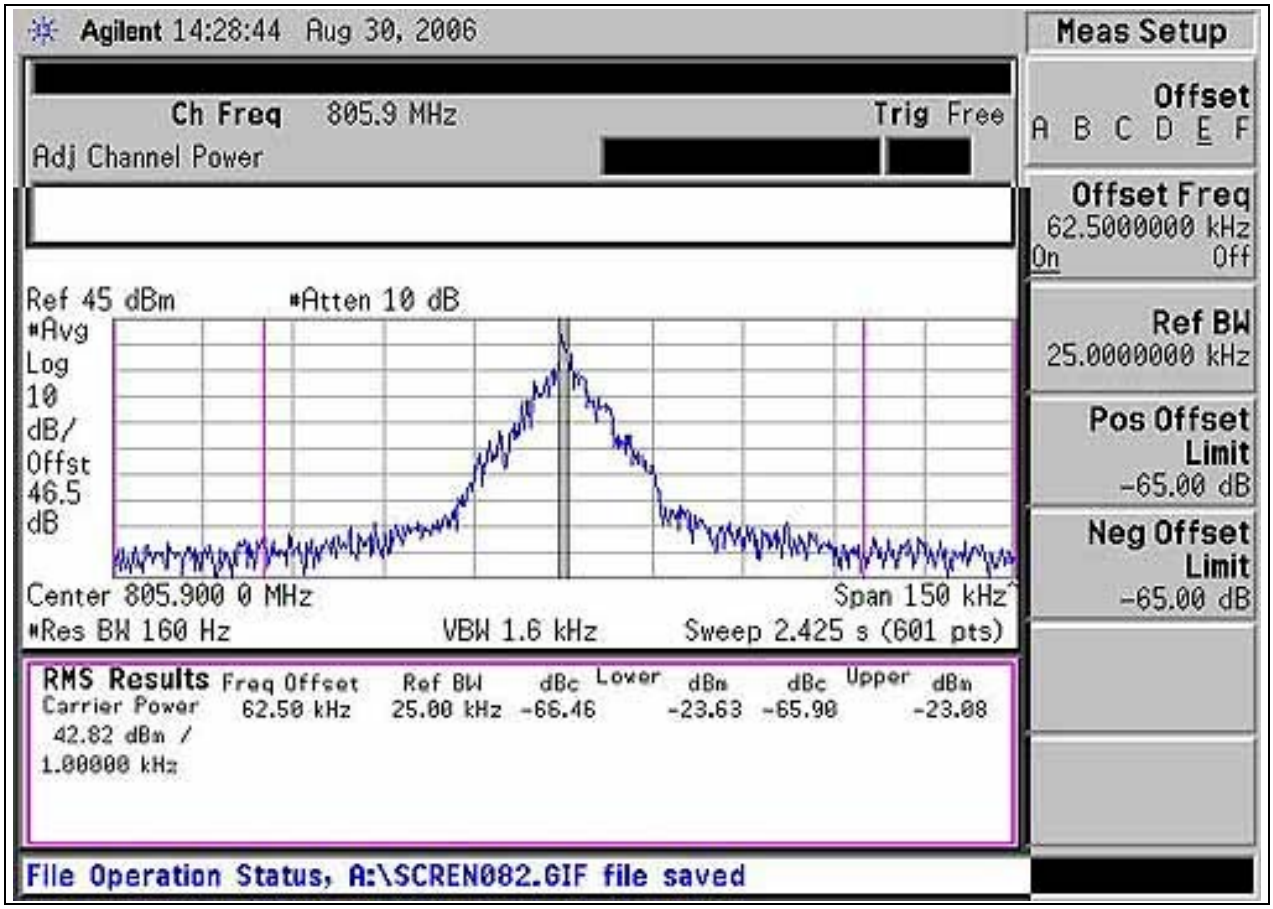
ADJACENT CHANNEL POWER - CONDITION 4 LOW CHANNEL



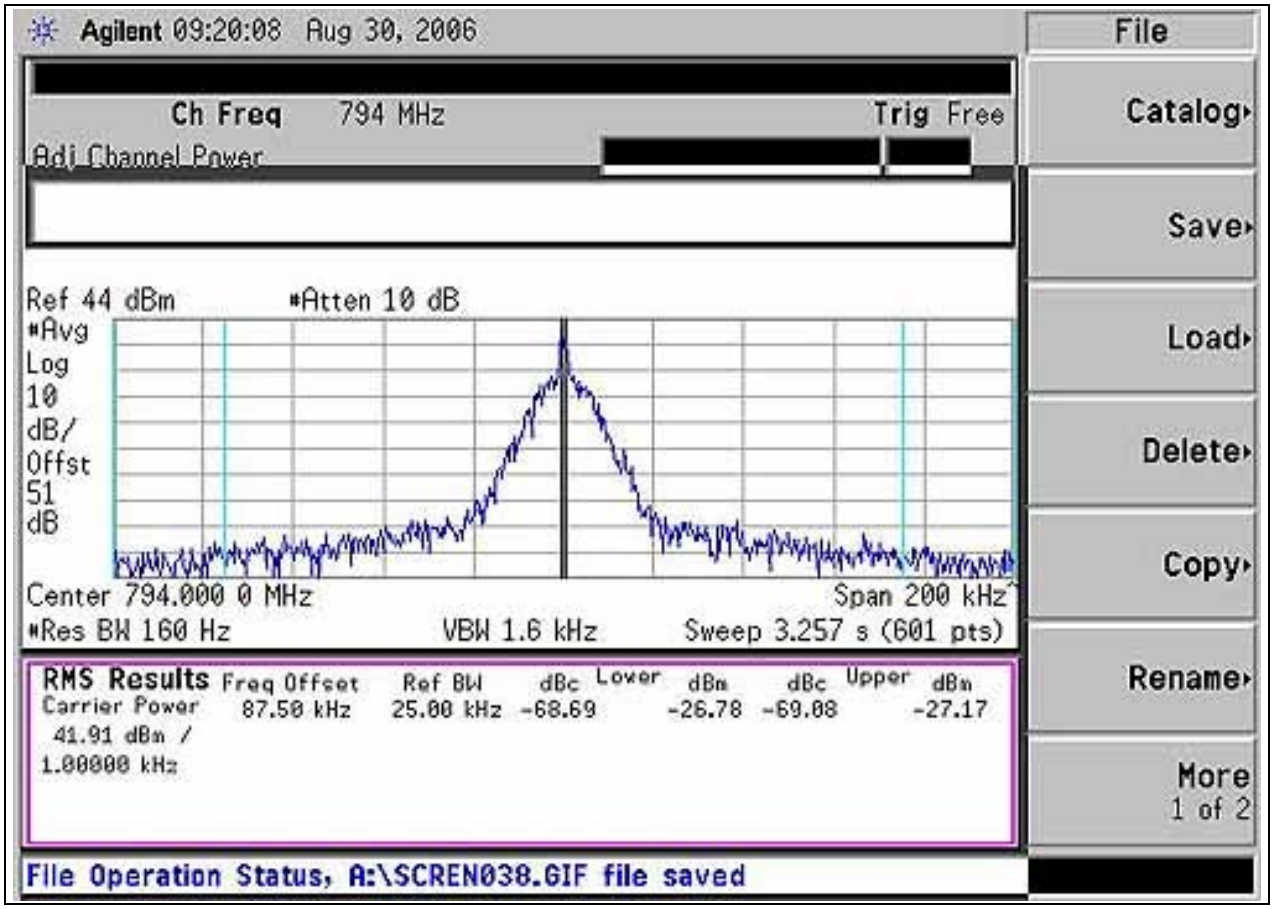
ADJACENT CHANNEL POWER - CONDITION 4 MIDDLE CHANNEL



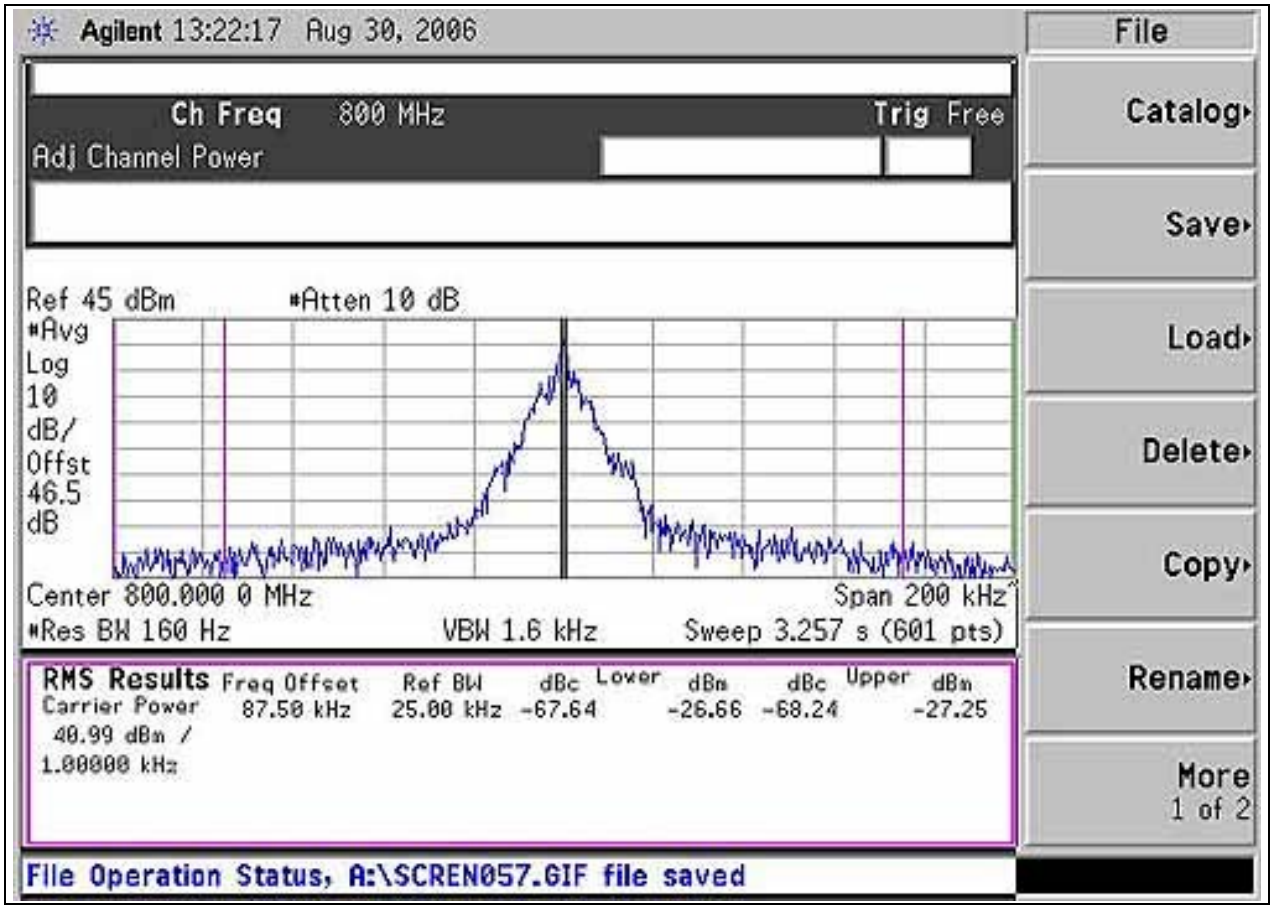
ADJACENT CHANNEL POWER - CONDITION 4 HIGH CHANNEL



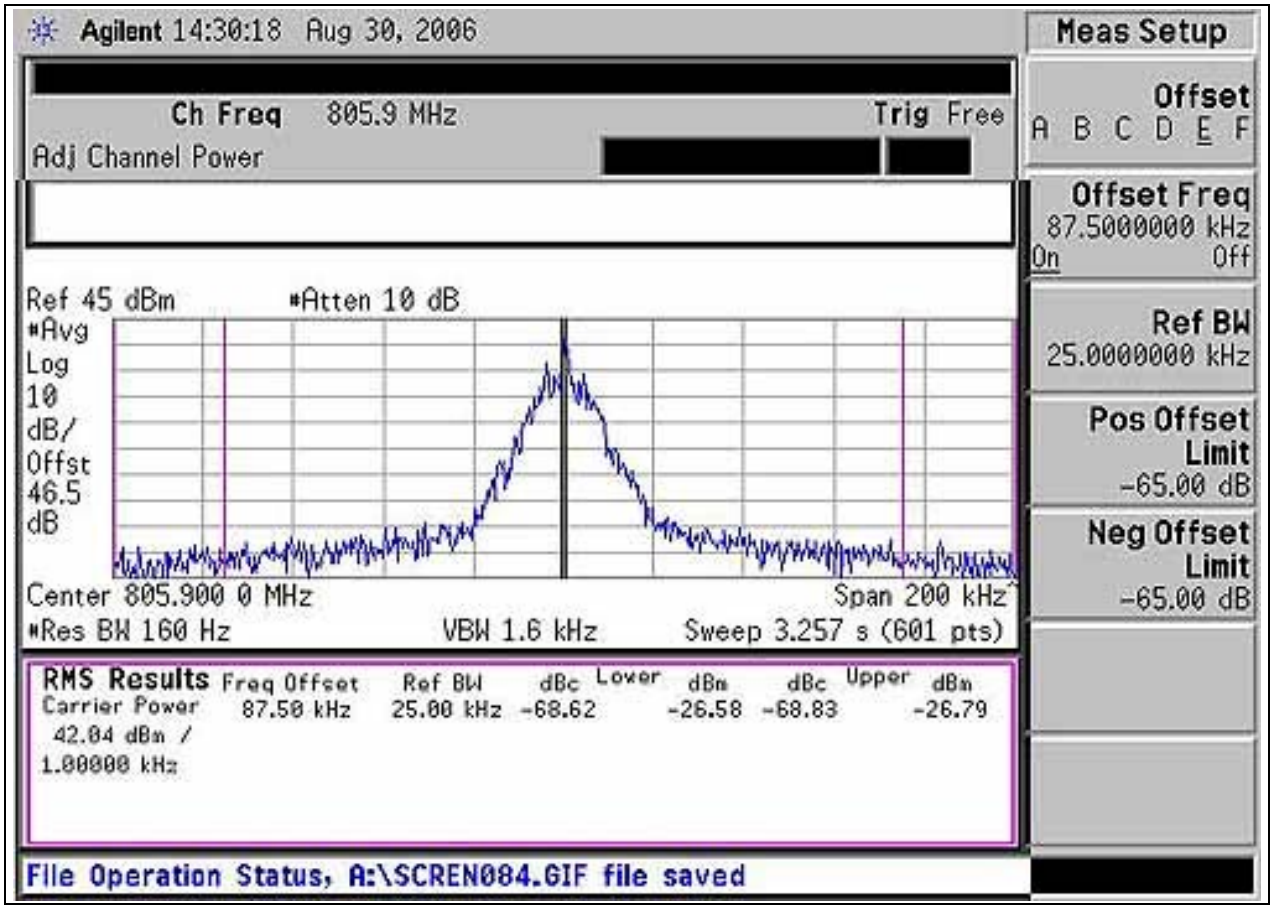
ADJACENT CHANNEL POWER - CONDITION 5 LOW CHANNEL



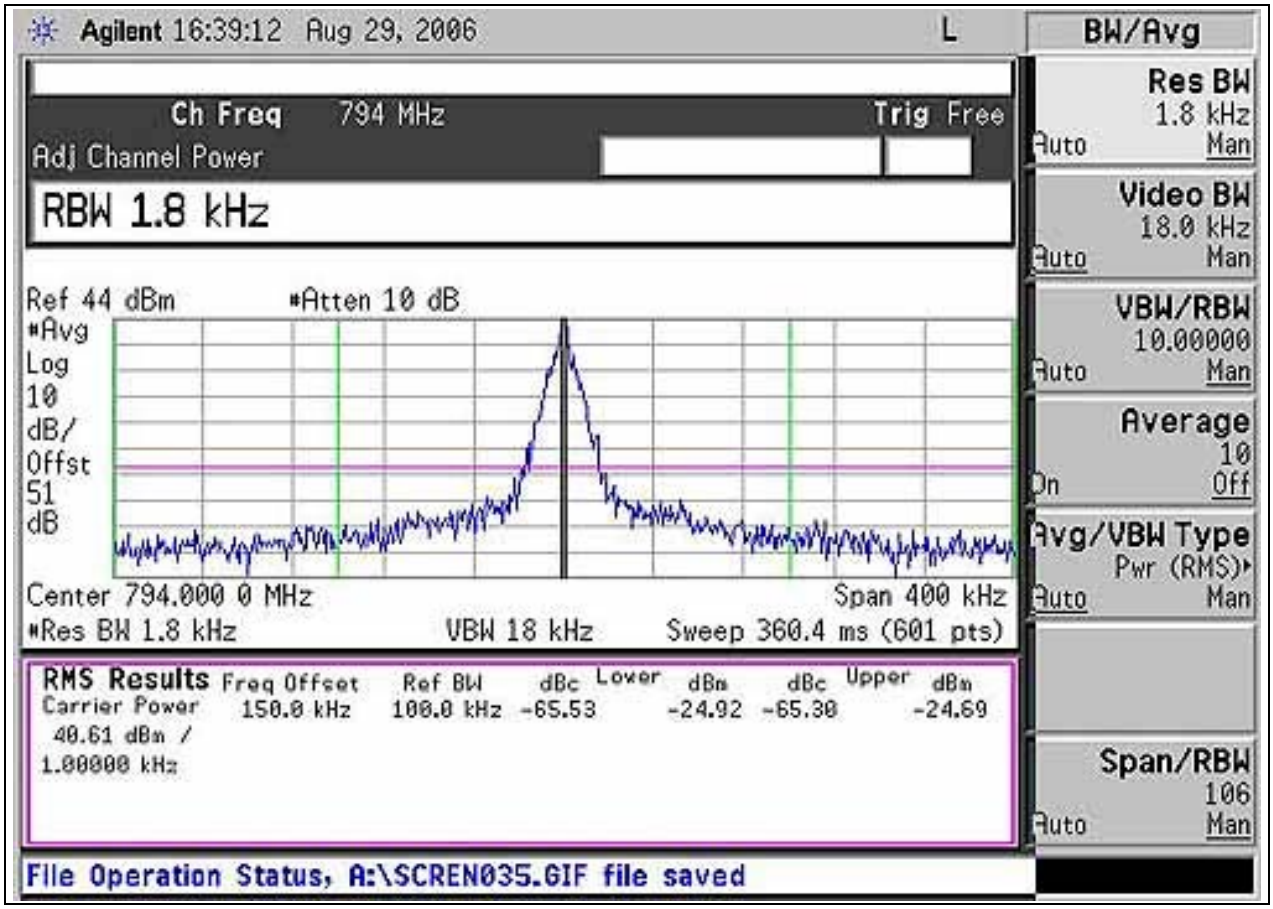
ADJACENT CHANNEL POWER - CONDITION 5 MIDDLE CHANNEL



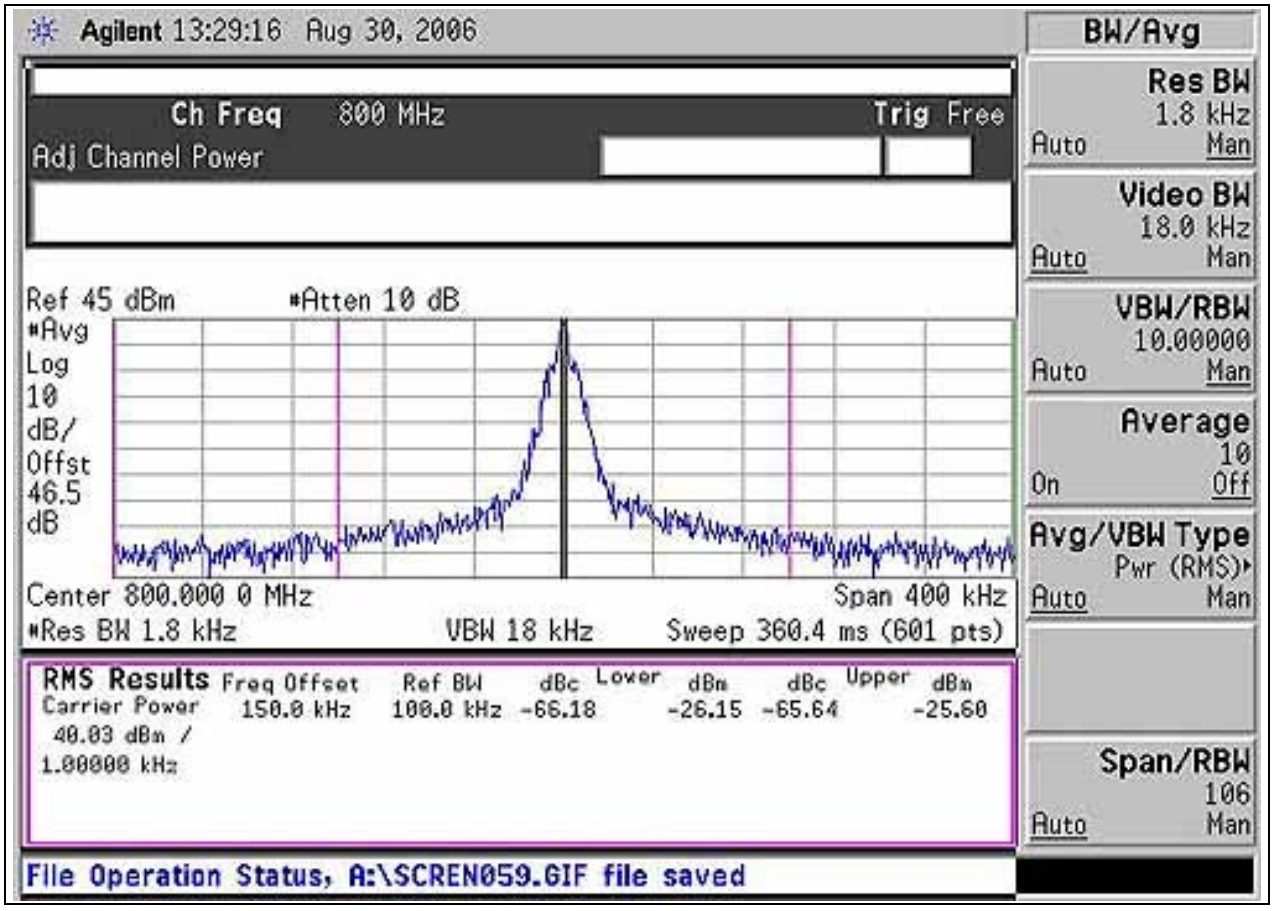
ADJACENT CHANNEL POWER - CONDITION 5 HIGH CHANNEL



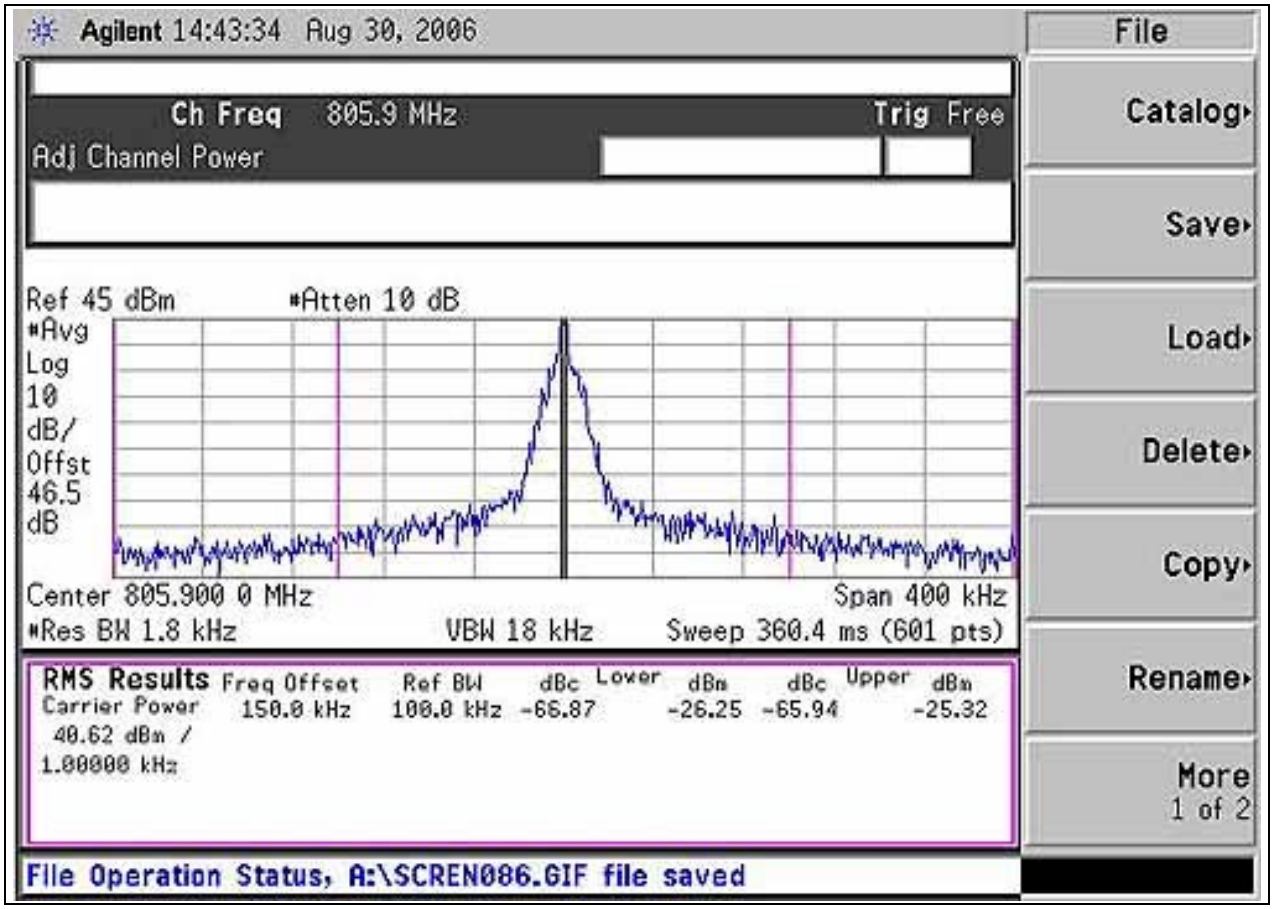
ADJACENT CHANNEL POWER - CONDITION 6 LOW CHANNEL



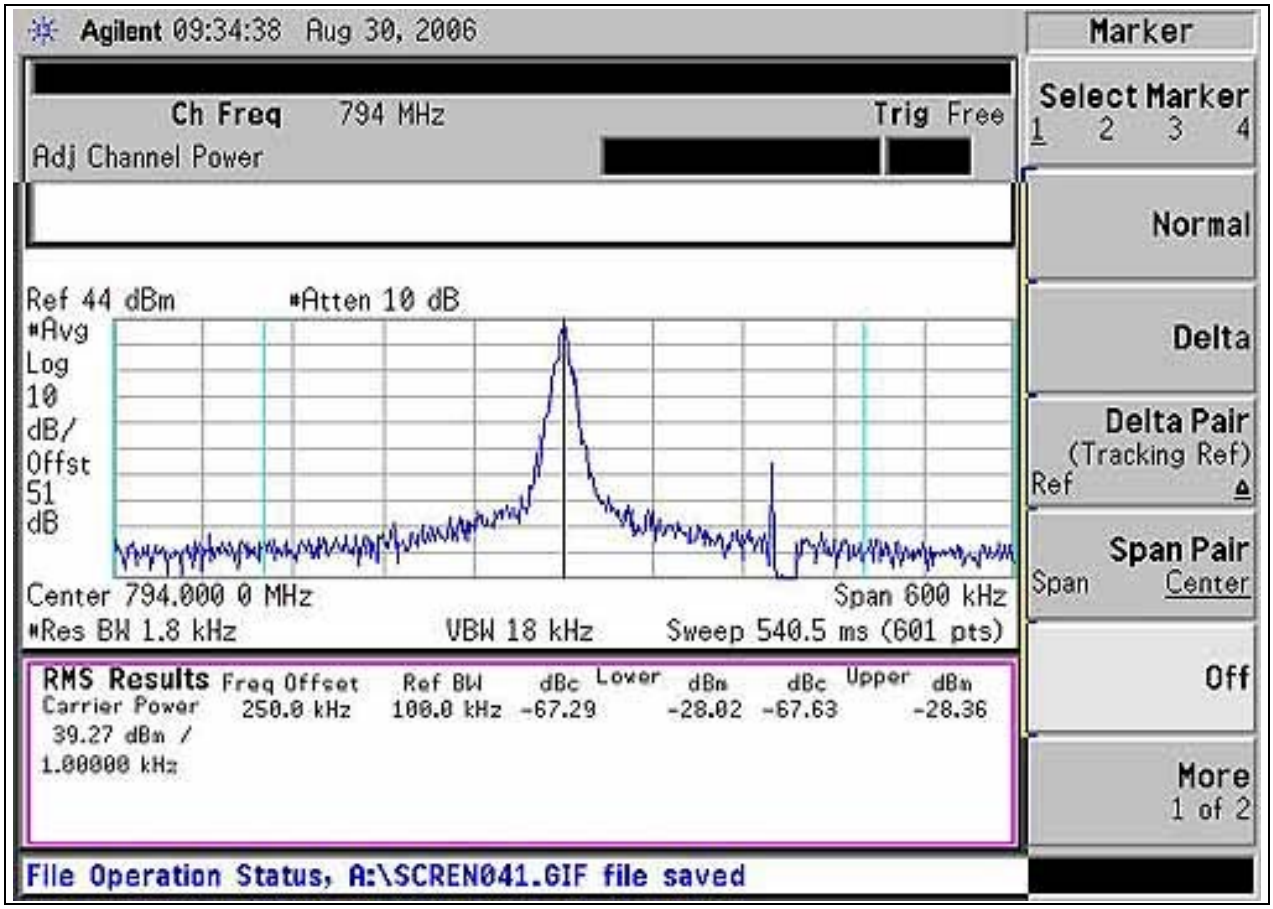
ADJACENT CHANNEL POWER - CONDITION 6 MIDDLE CHANNEL



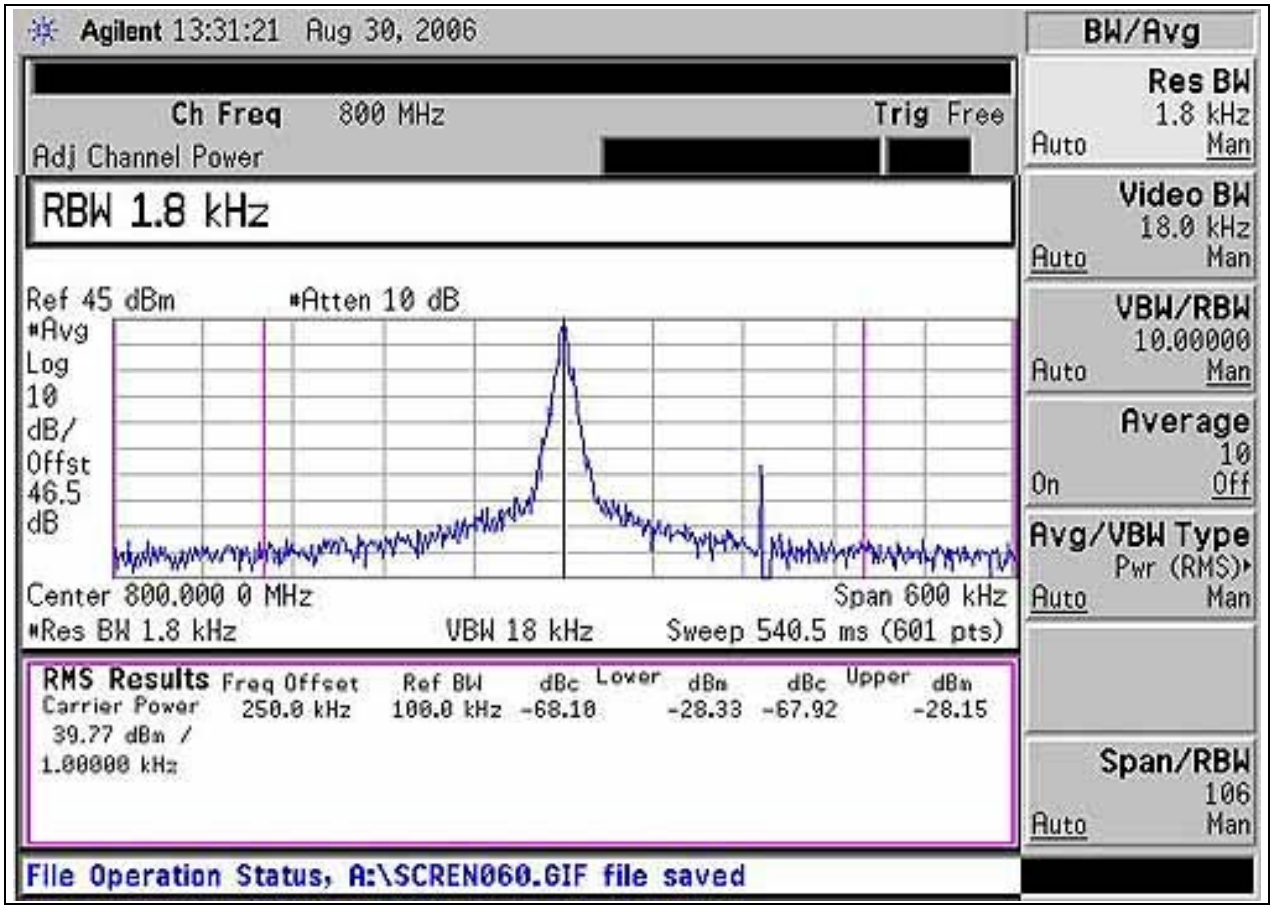
ADJACENT CHANNEL POWER - CONDITION 6 HIGH CHANNEL



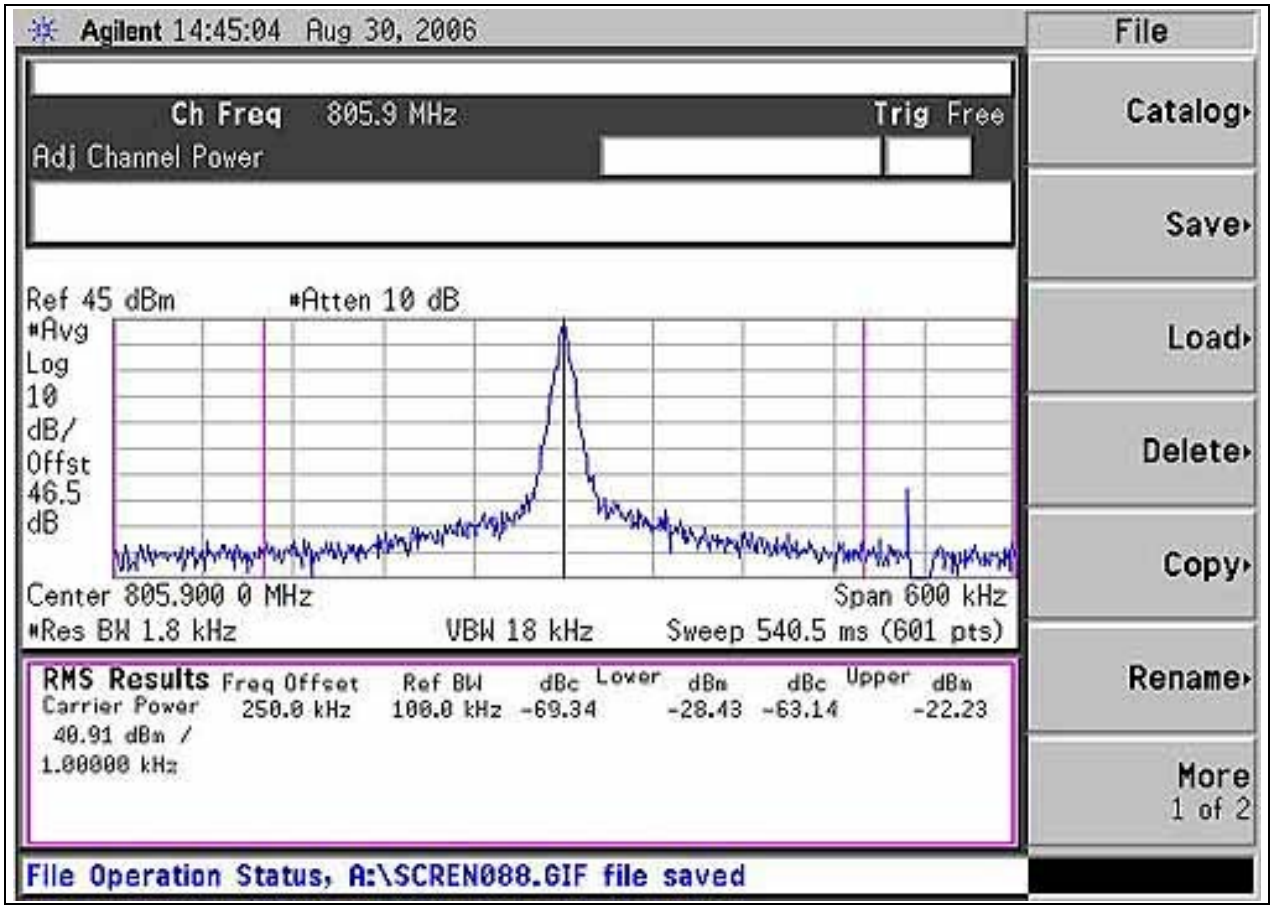
ADJACENT CHANNEL POWER - CONDITION 7 LOWER LOW CHANNEL



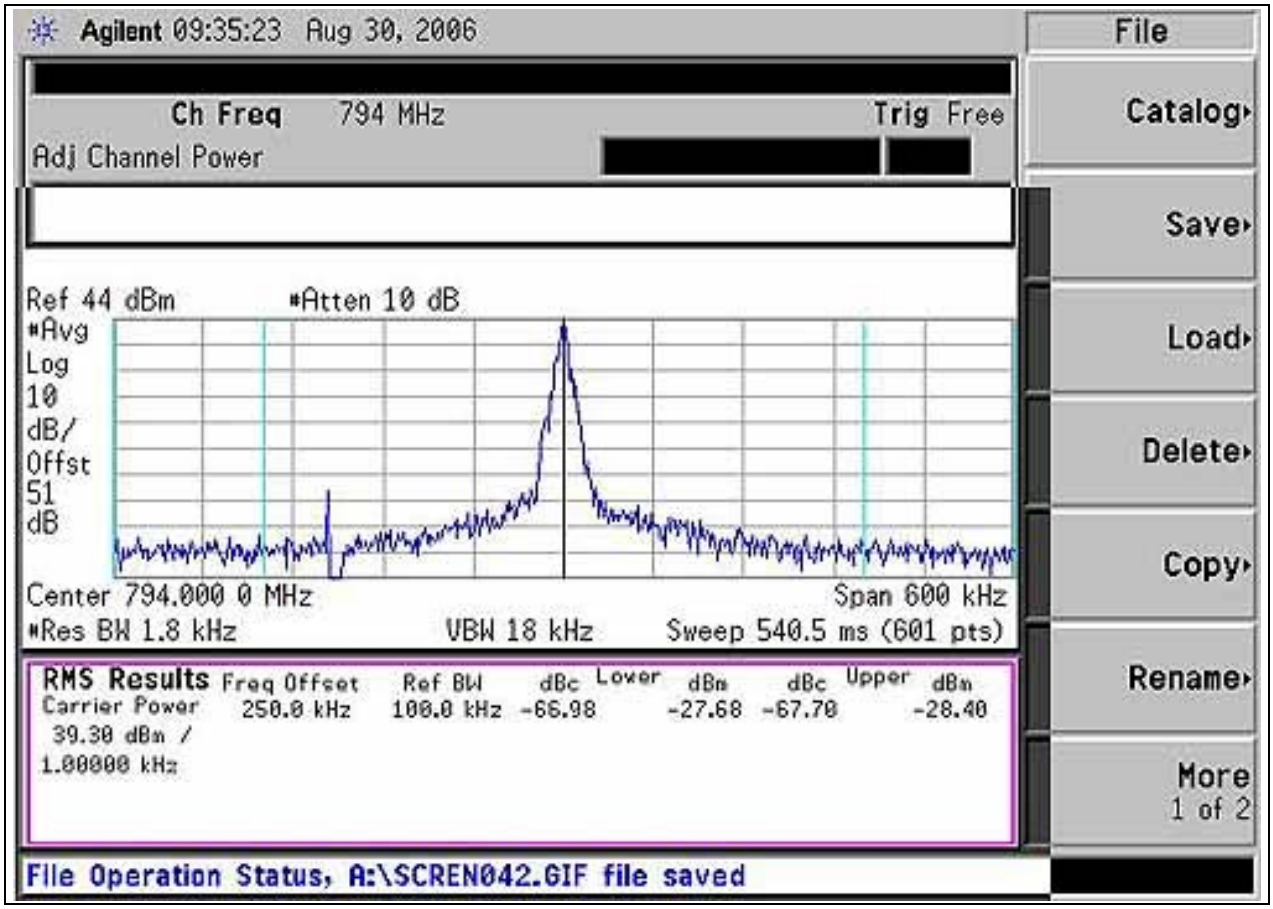
ADJACENT CHANNEL POWER - CONDITION 7 LOWER MIDDLE CHANNEL



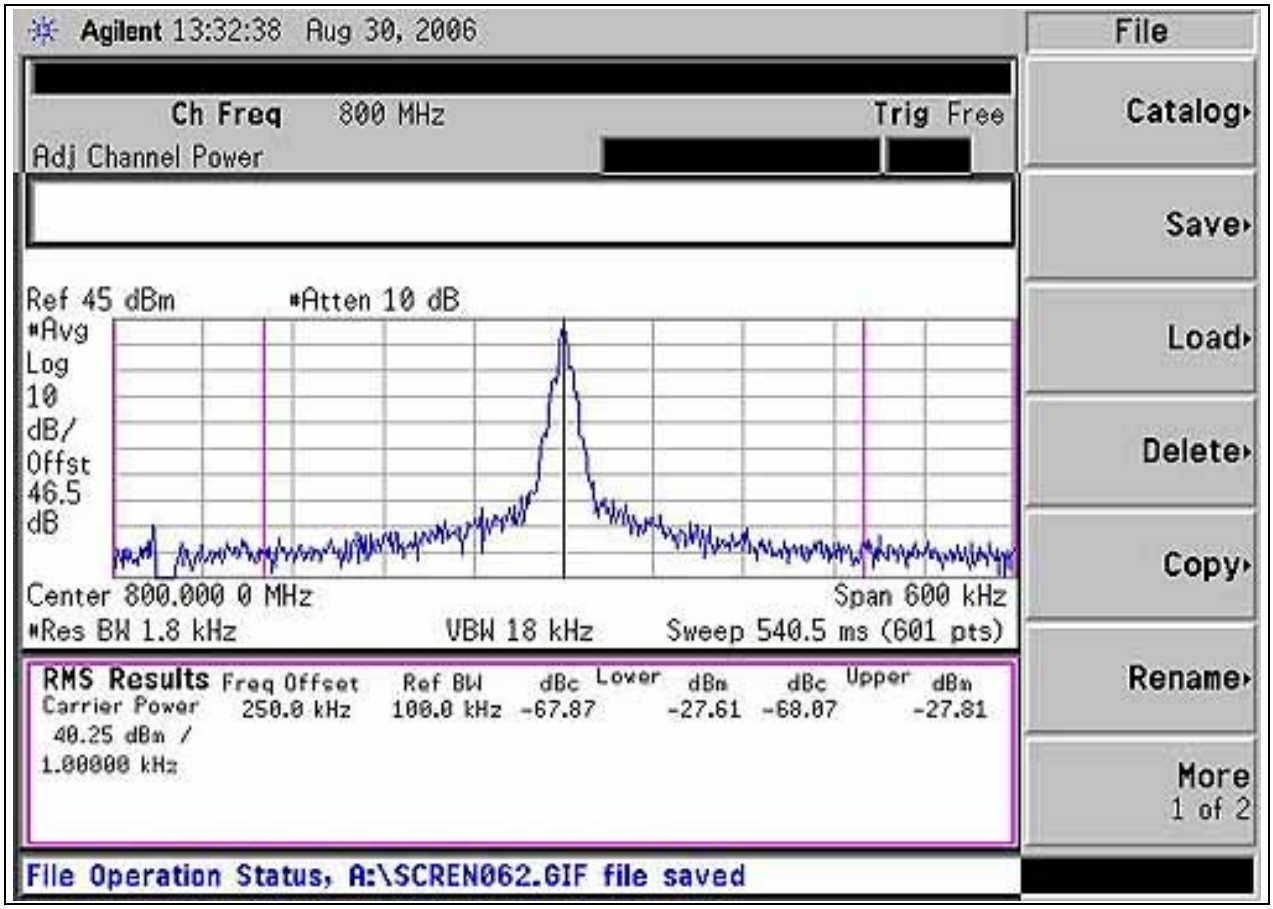
ADJACENT CHANNEL POWER - CONDITION 7 LOWER HIGH CHANNEL



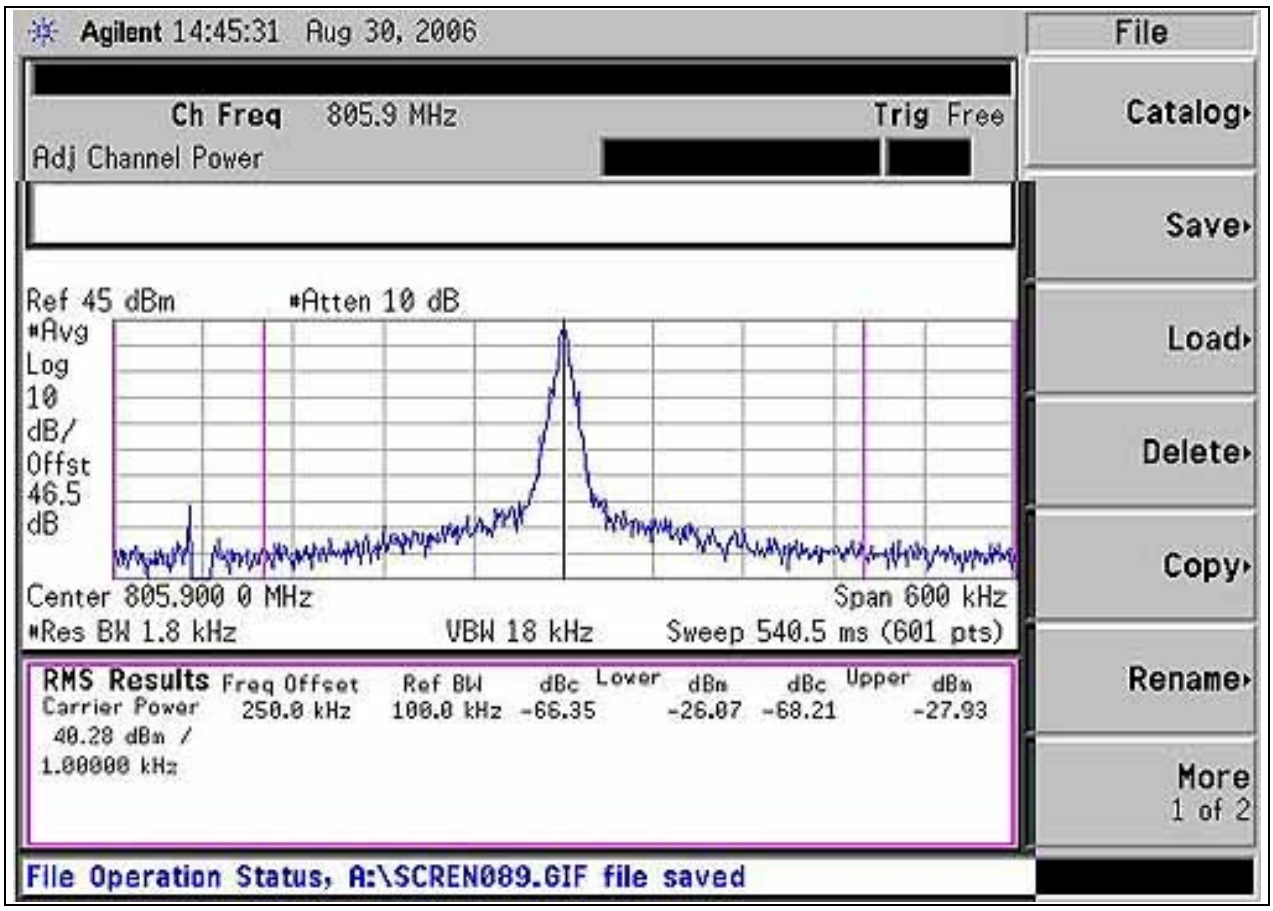
ADJACENT CHANNEL POWER - CONDITION 7 UPPER LOW CHANNEL



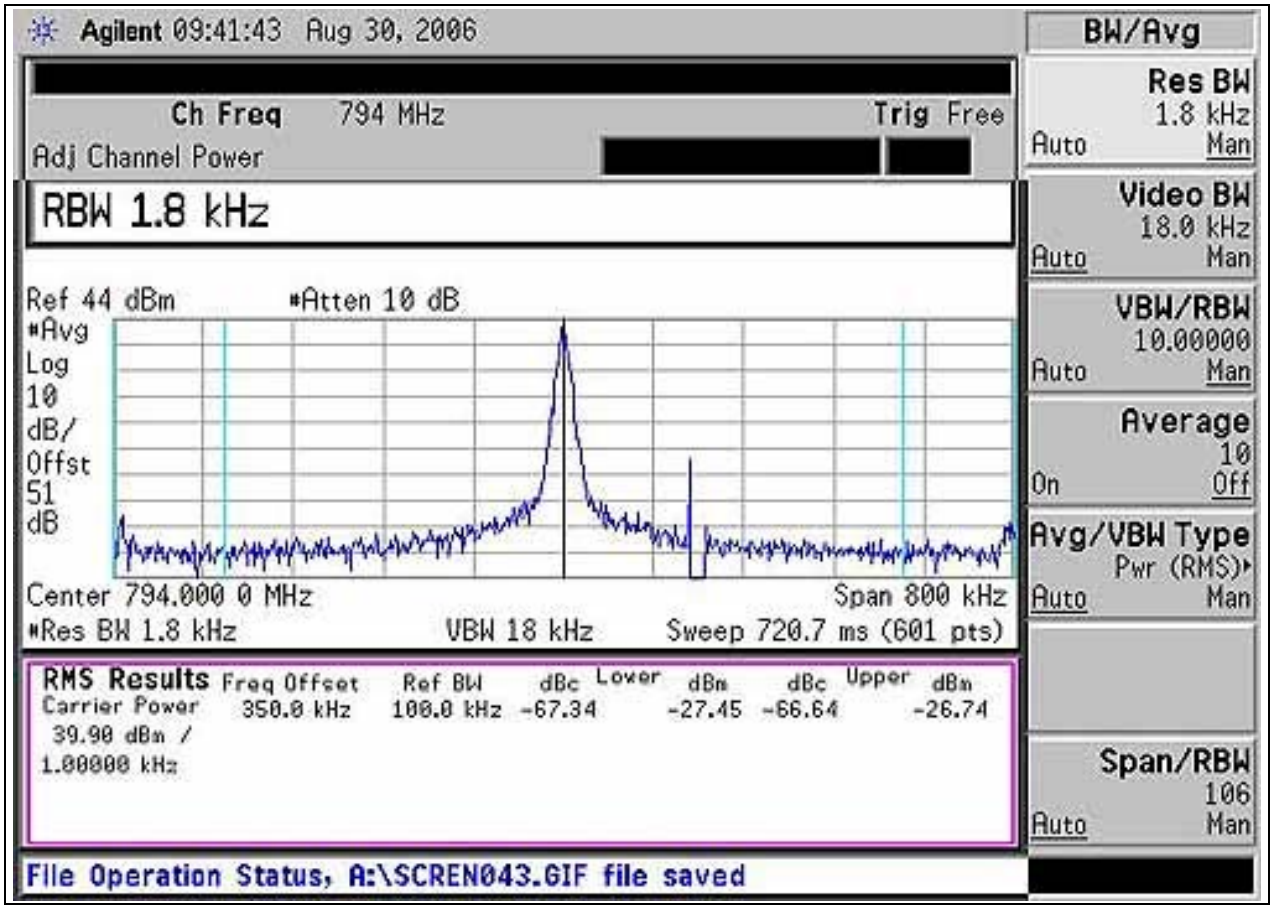
ADJACENT CHANNEL POWER - CONDITION 7 UPPER MIDDLE CHANNEL



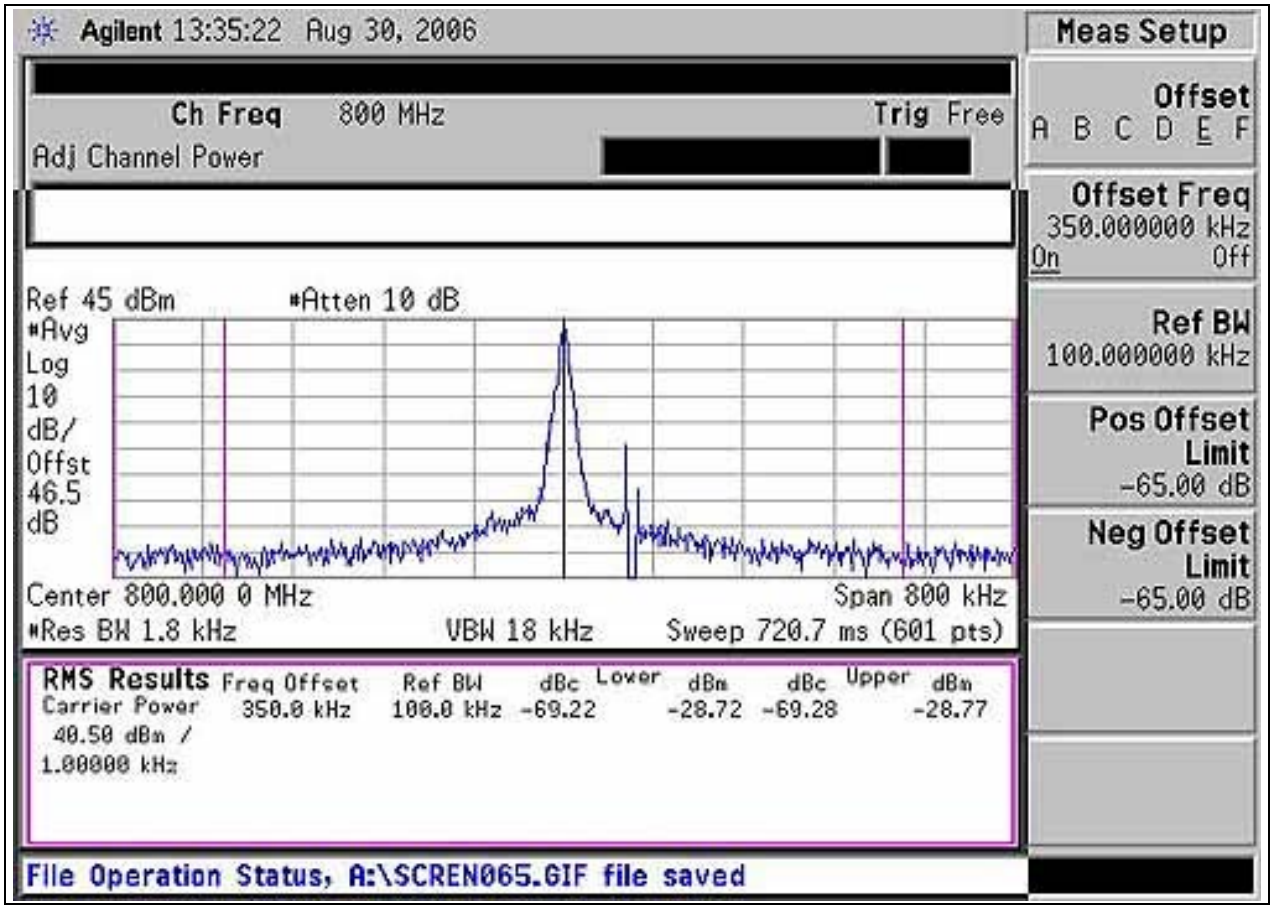
ADJACENT CHANNEL POWER - CONDITION 7 UPPER HIGH CHANNEL



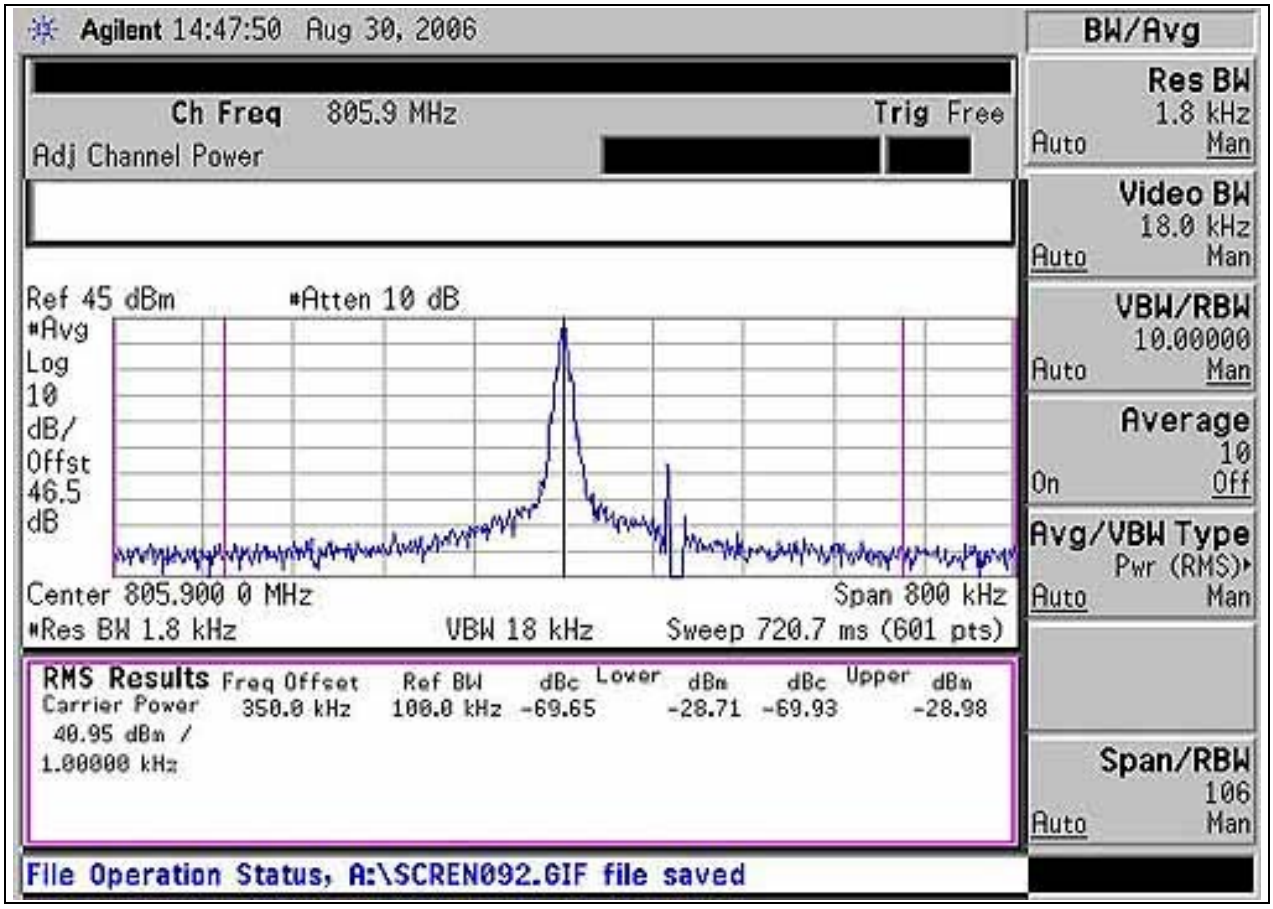
ADJACENT CHANNEL POWER - CONDITION 8 LOWER LOW CHANNEL



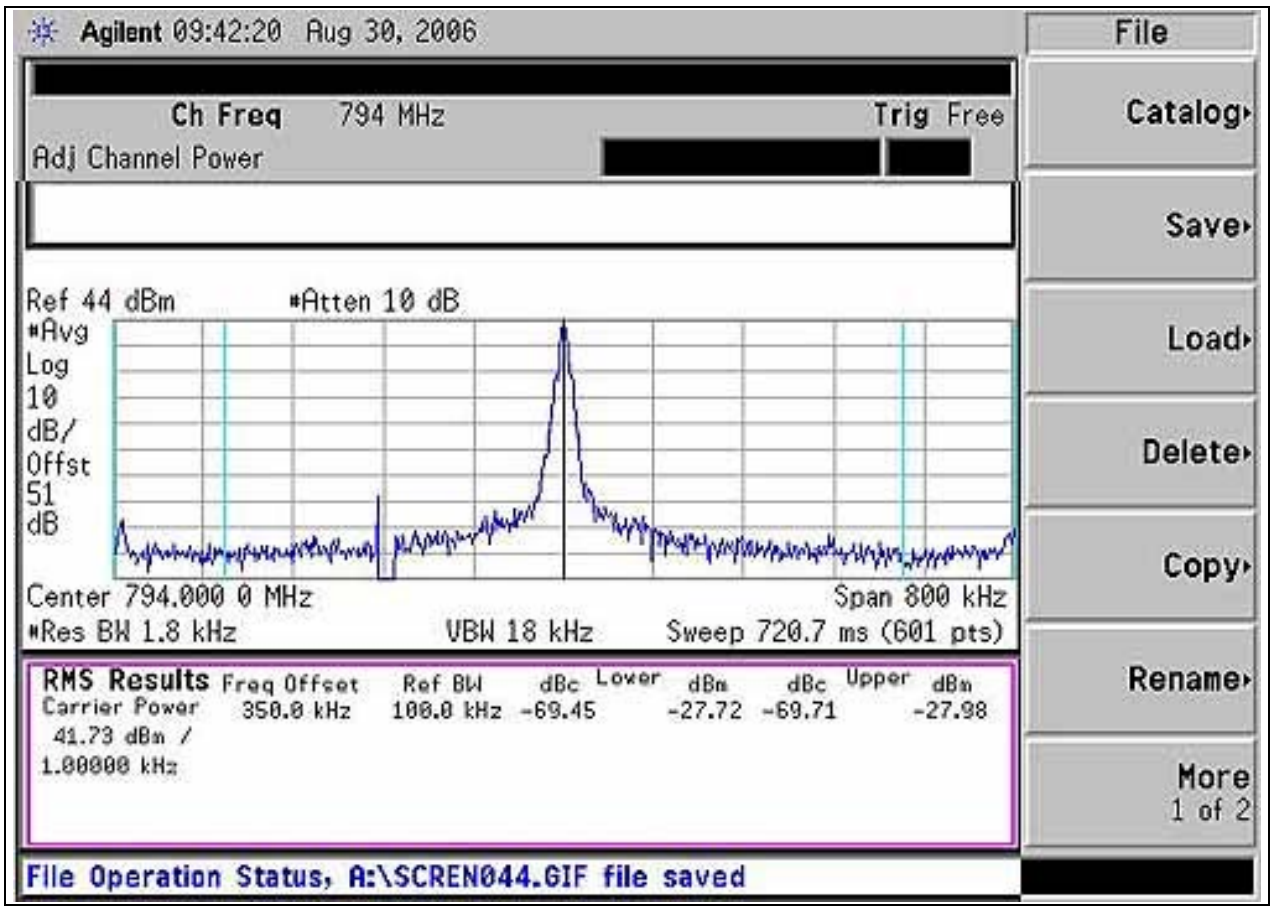
ADJACENT CHANNEL POWER - CONDITION 8 LOWER MIDDLE CHANNEL



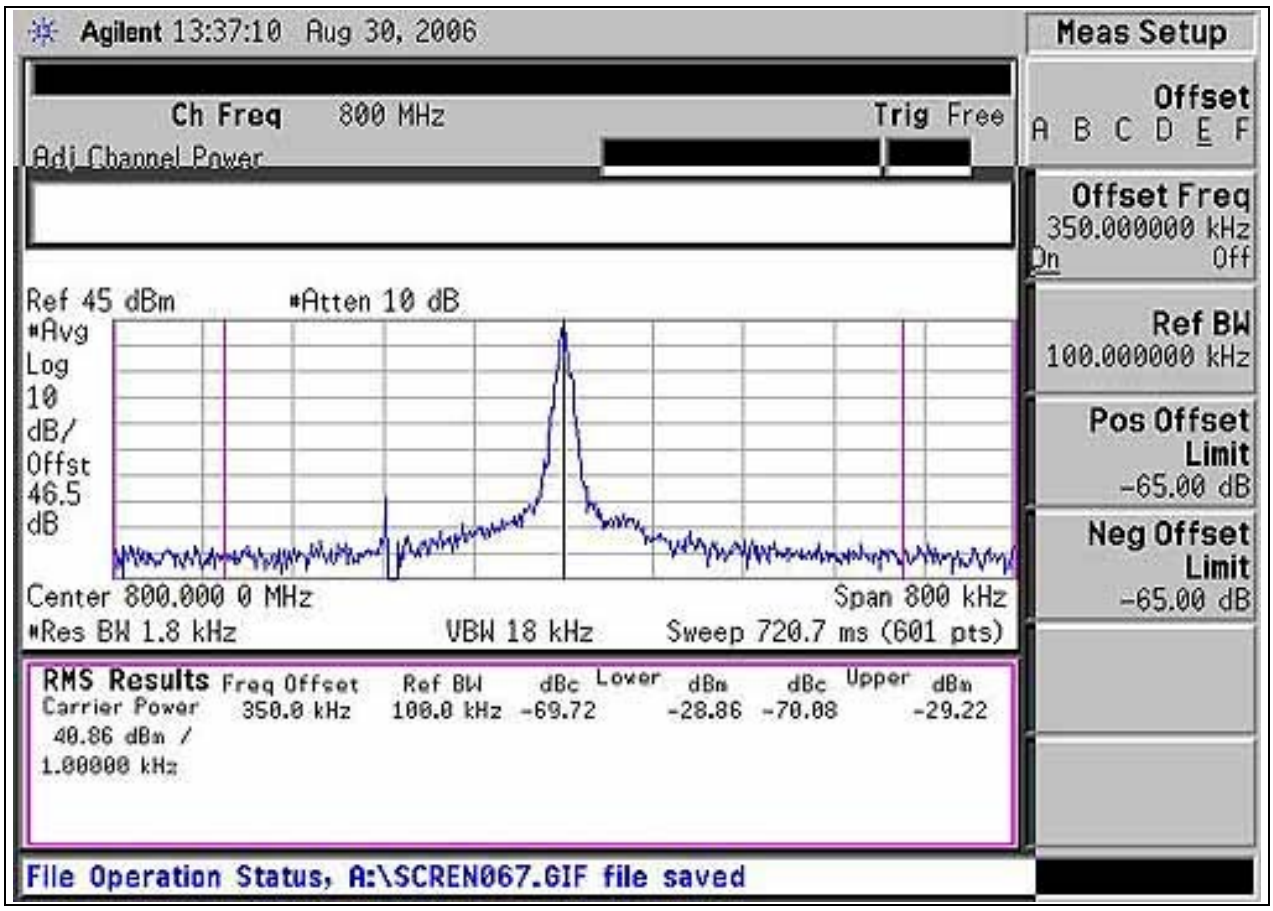
ADJACENT CHANNEL POWER - CONDITION 8 LOWER HIGH CHANNEL



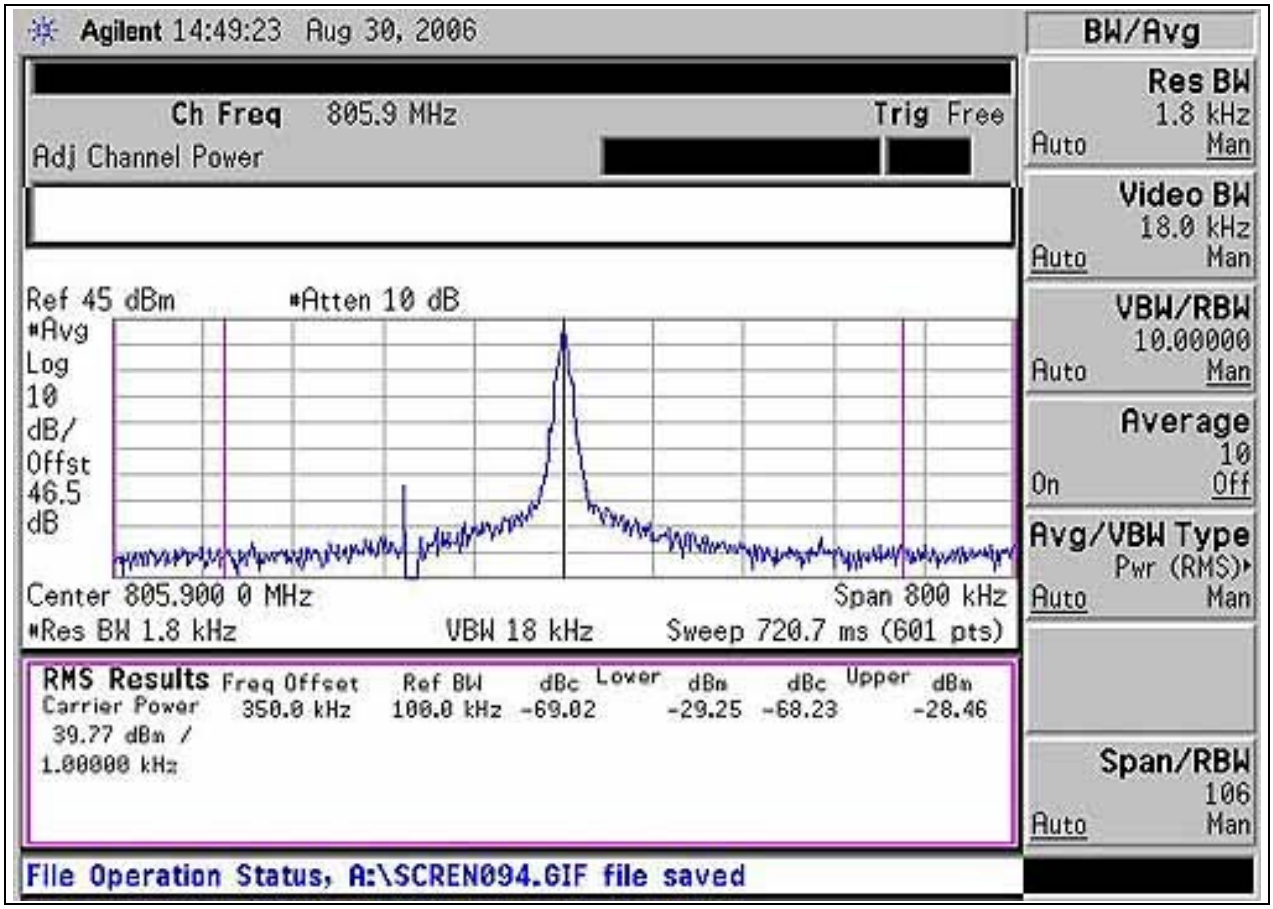
ADJACENT CHANNEL POWER - CONDITION 8 UPPER LOW CHANNEL



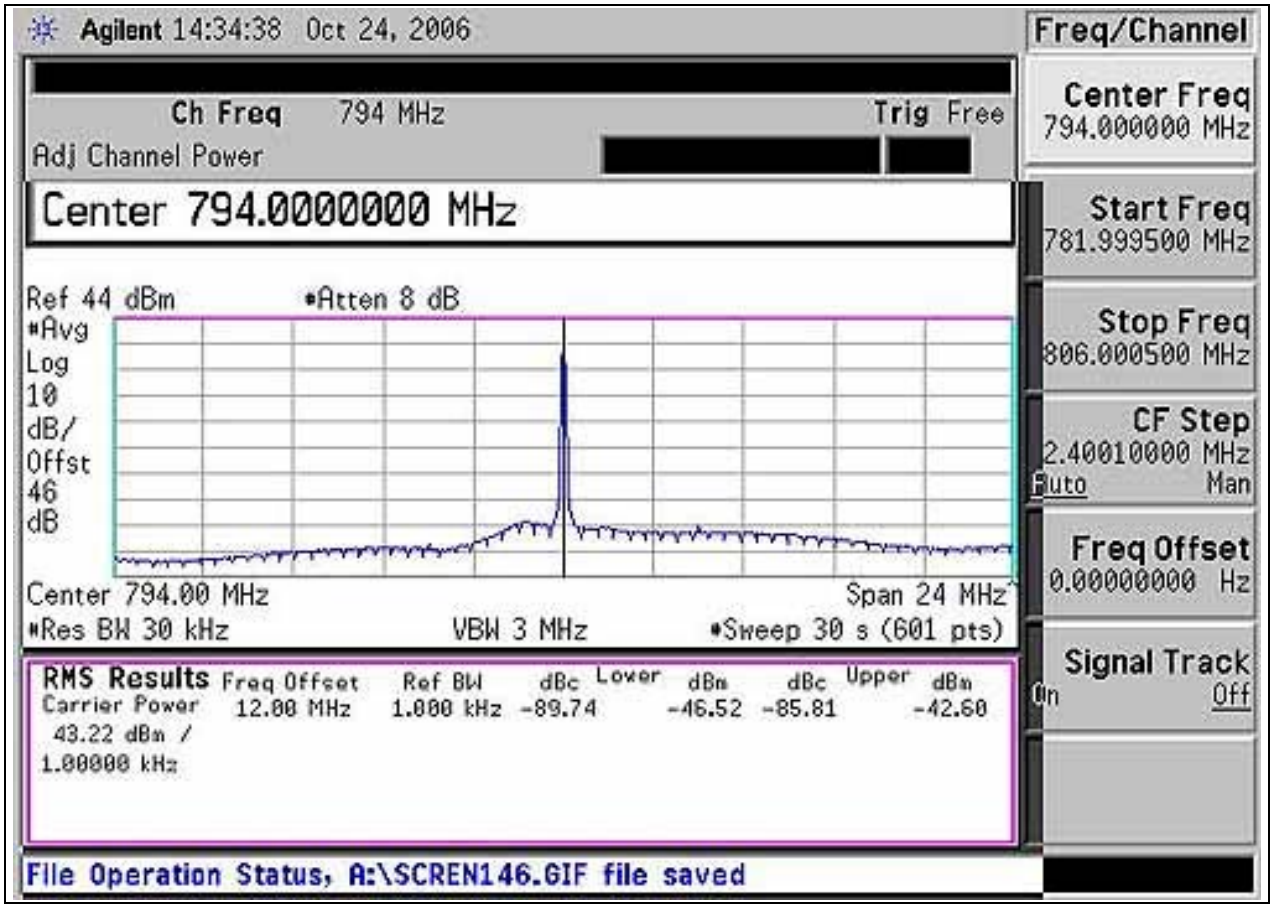
ADJACENT CHANNEL POWER - CONDITION 8 UPPER MIDDLE CHANNEL



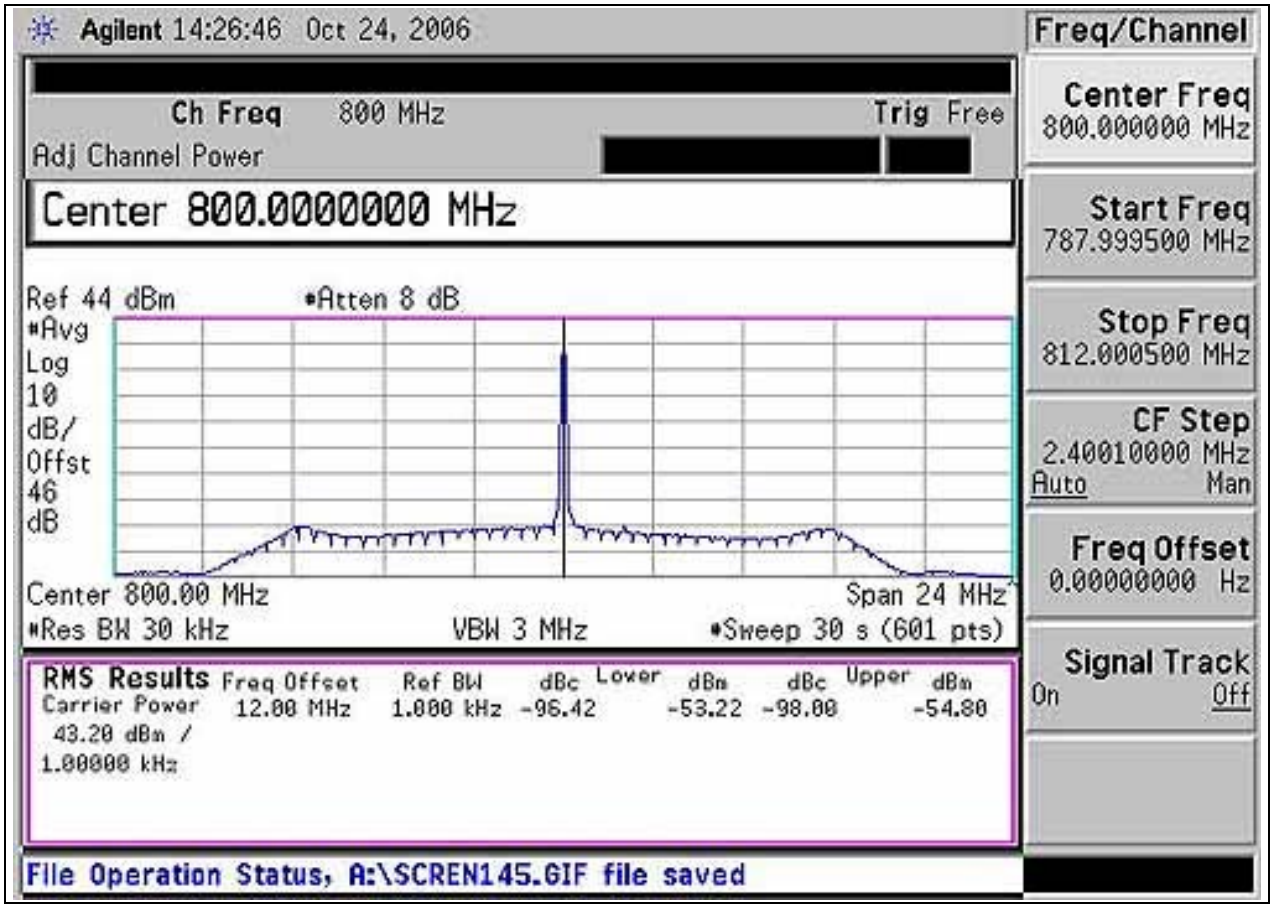
ADJACENT CHANNEL POWER - CONDITION 8 UPPER HIGH CHANNEL



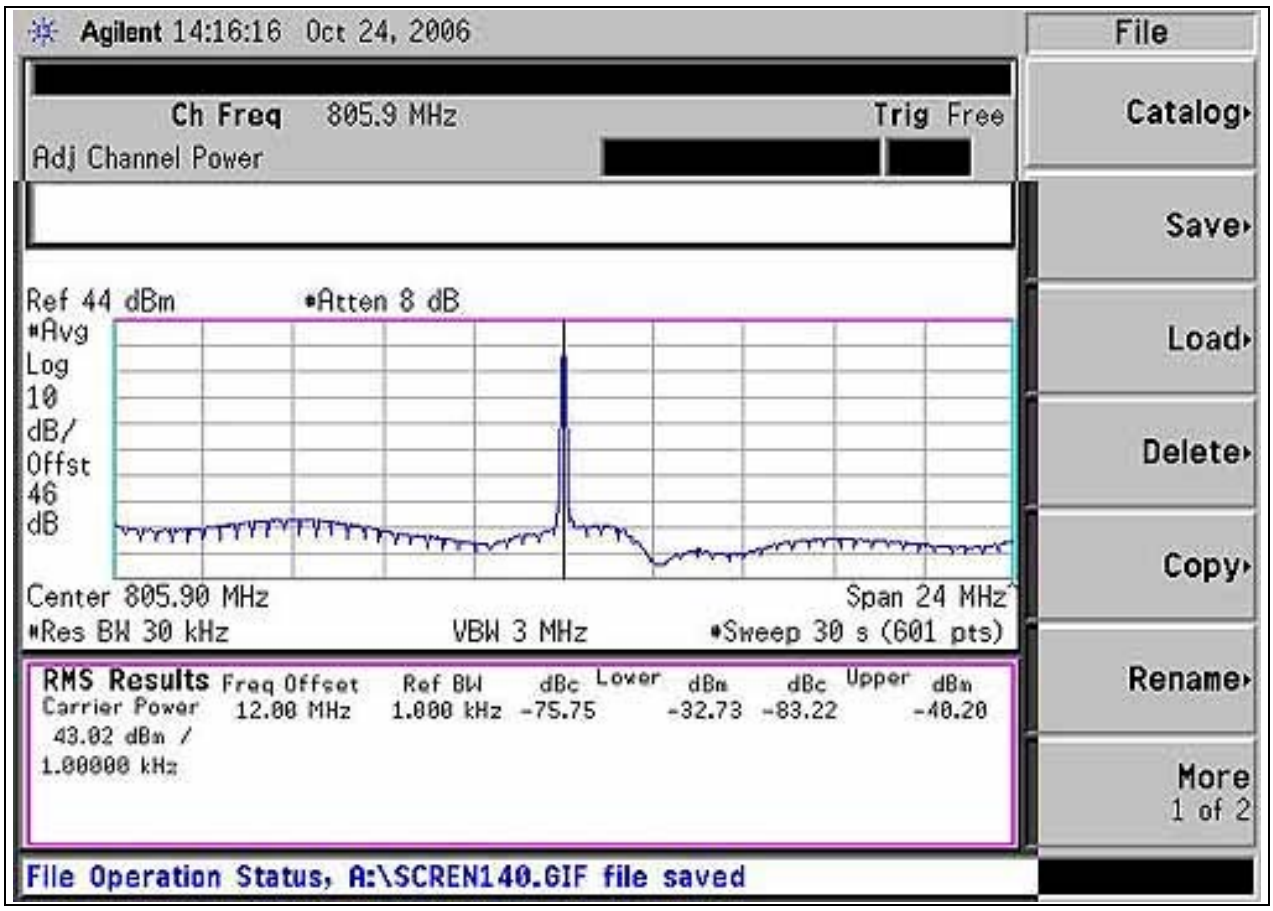
ADJACENT CHANNEL POWER - CONDITION 9 LOW CHANNEL



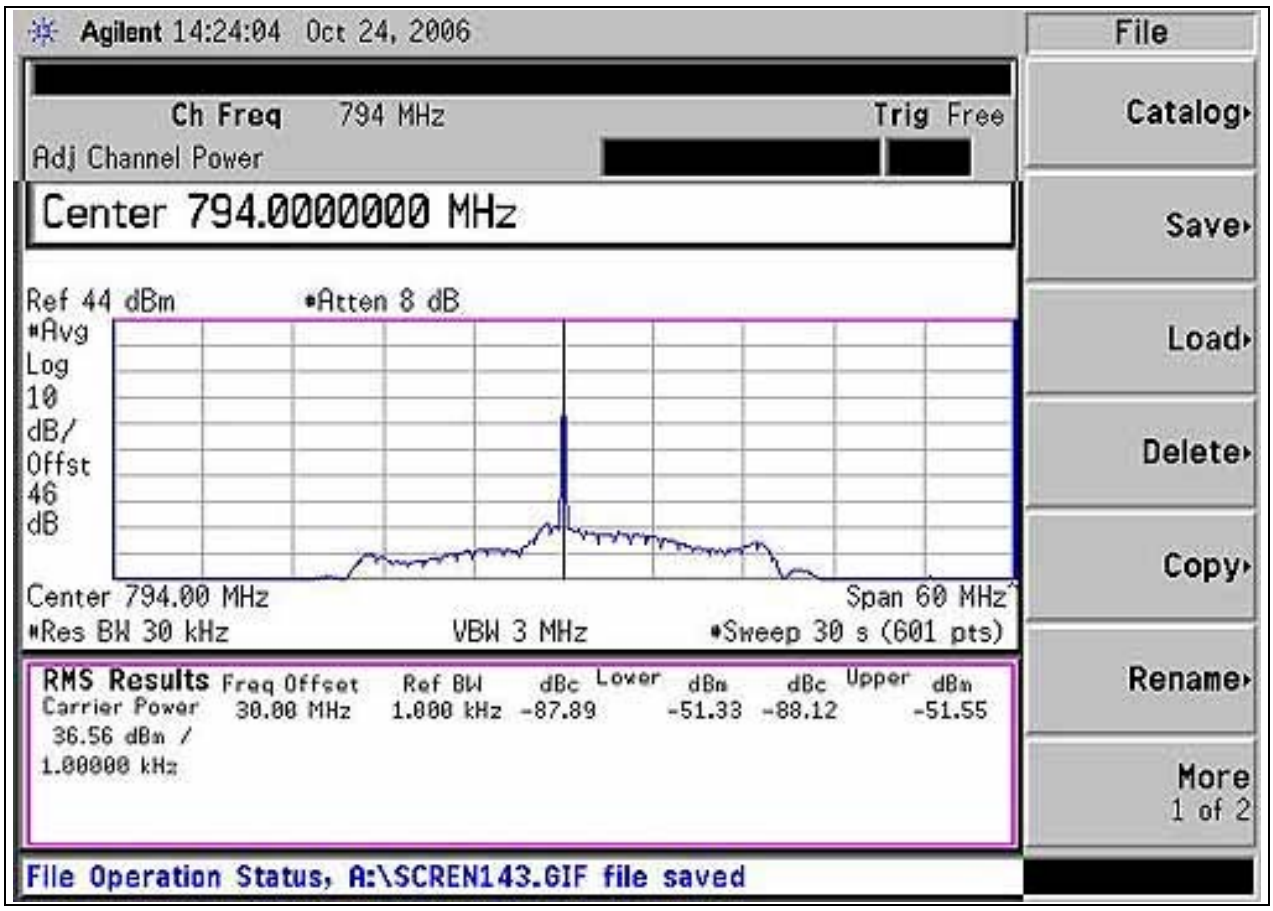
ADJACENT CHANNEL POWER - CONDITION 9 MIDDLE CHANNEL



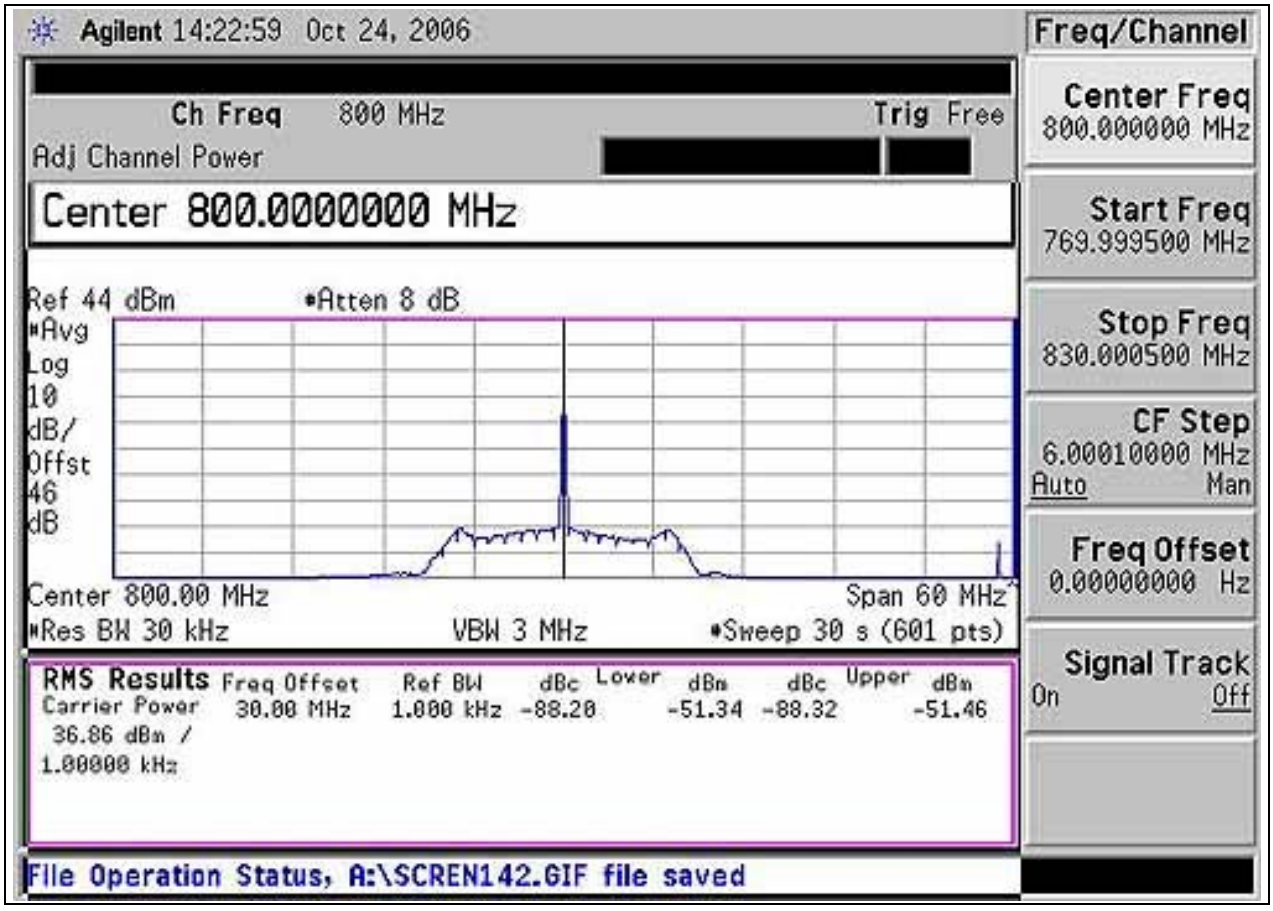
ADJACENT CHANNEL POWER - CONDITION 9 HIGH CHANNEL



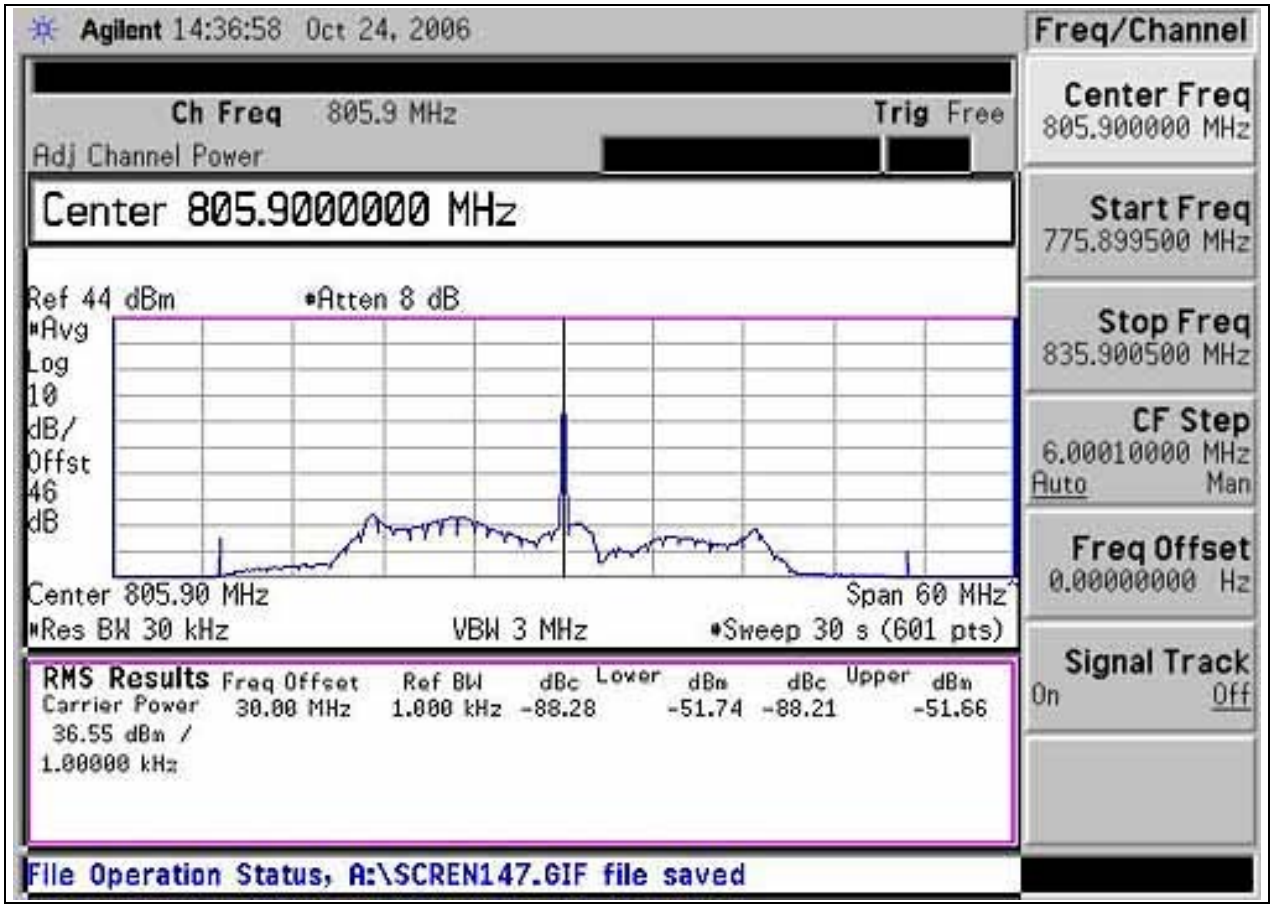
ADJACENT CHANNEL POWER - CONDITION 10 LOW CHANNEL



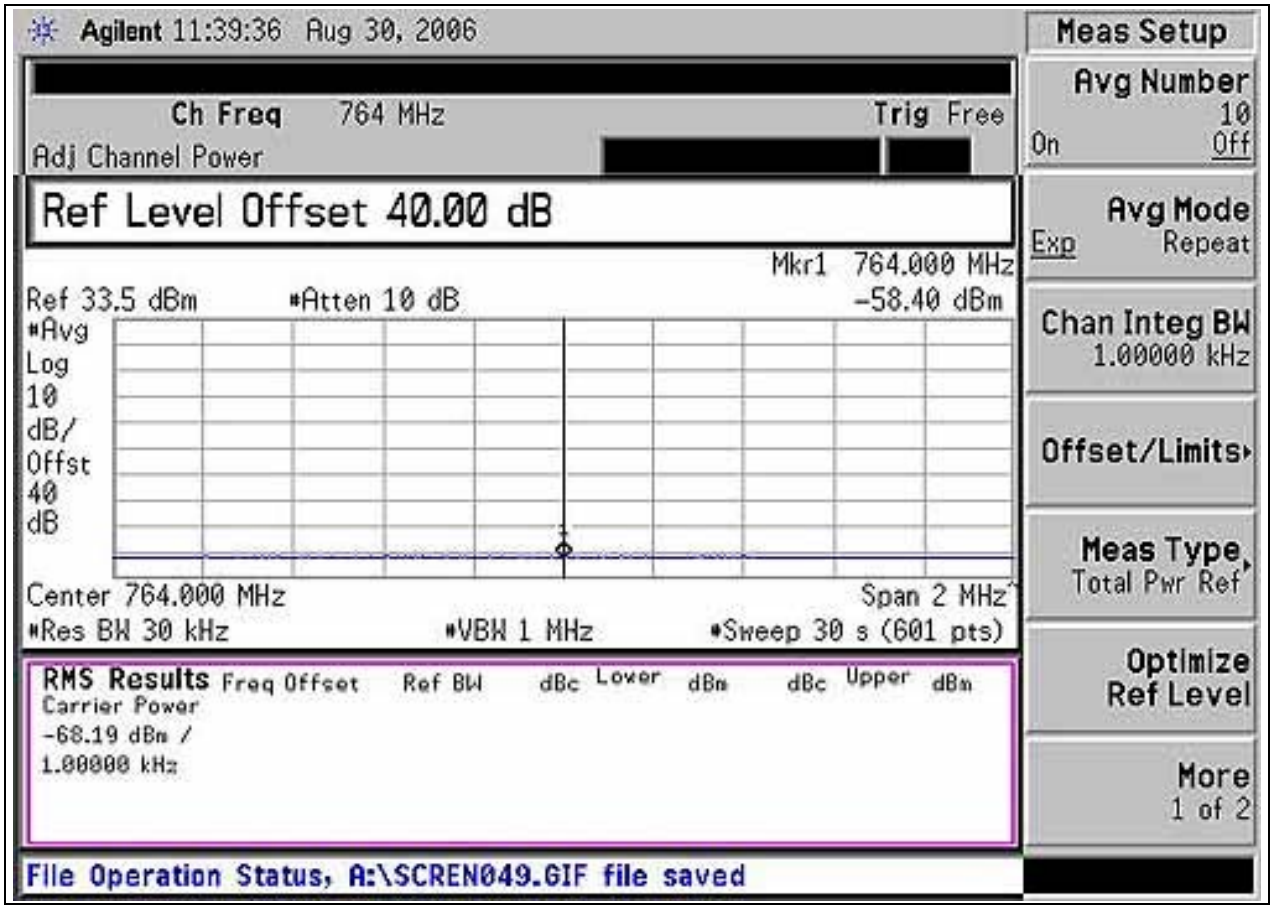
ADJACENT CHANNEL POWER - CONDITION 10 MIDDLE CHANNEL



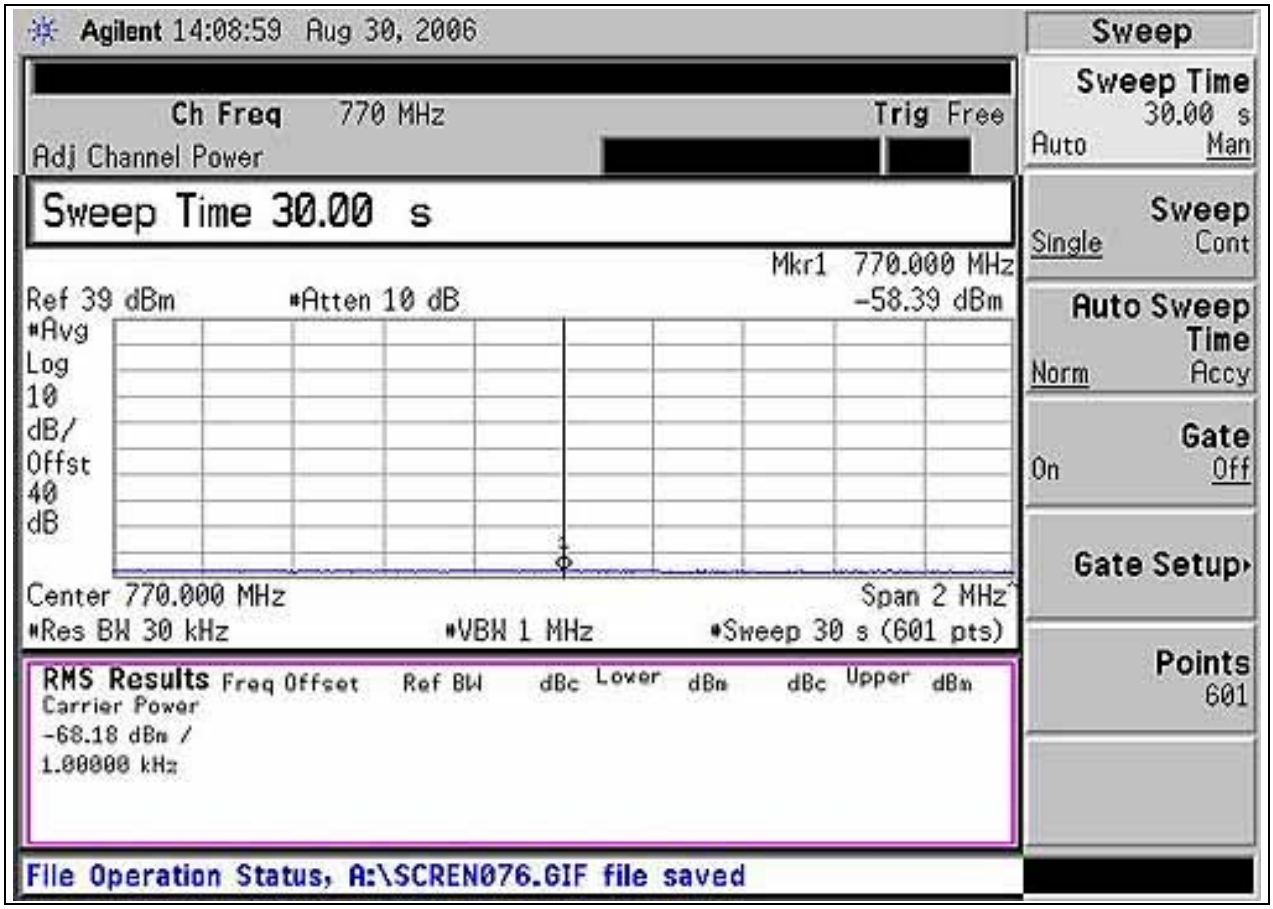
ADJACENT CHANNEL POWER - CONDITION 10 HIGH CHANNEL



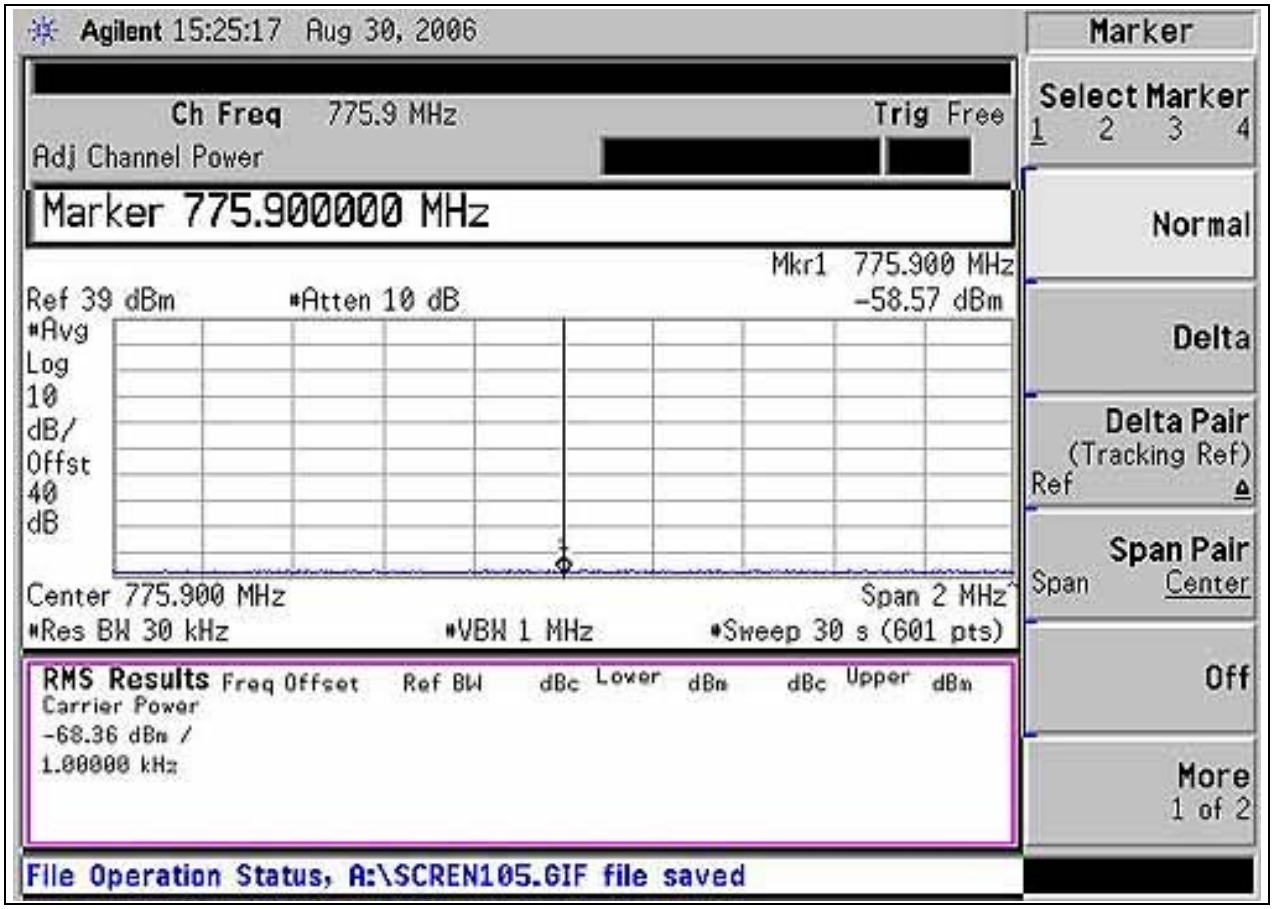
ADJACENT CHANNEL POWER - CONDITION 11 INBAND LOW CHANNEL



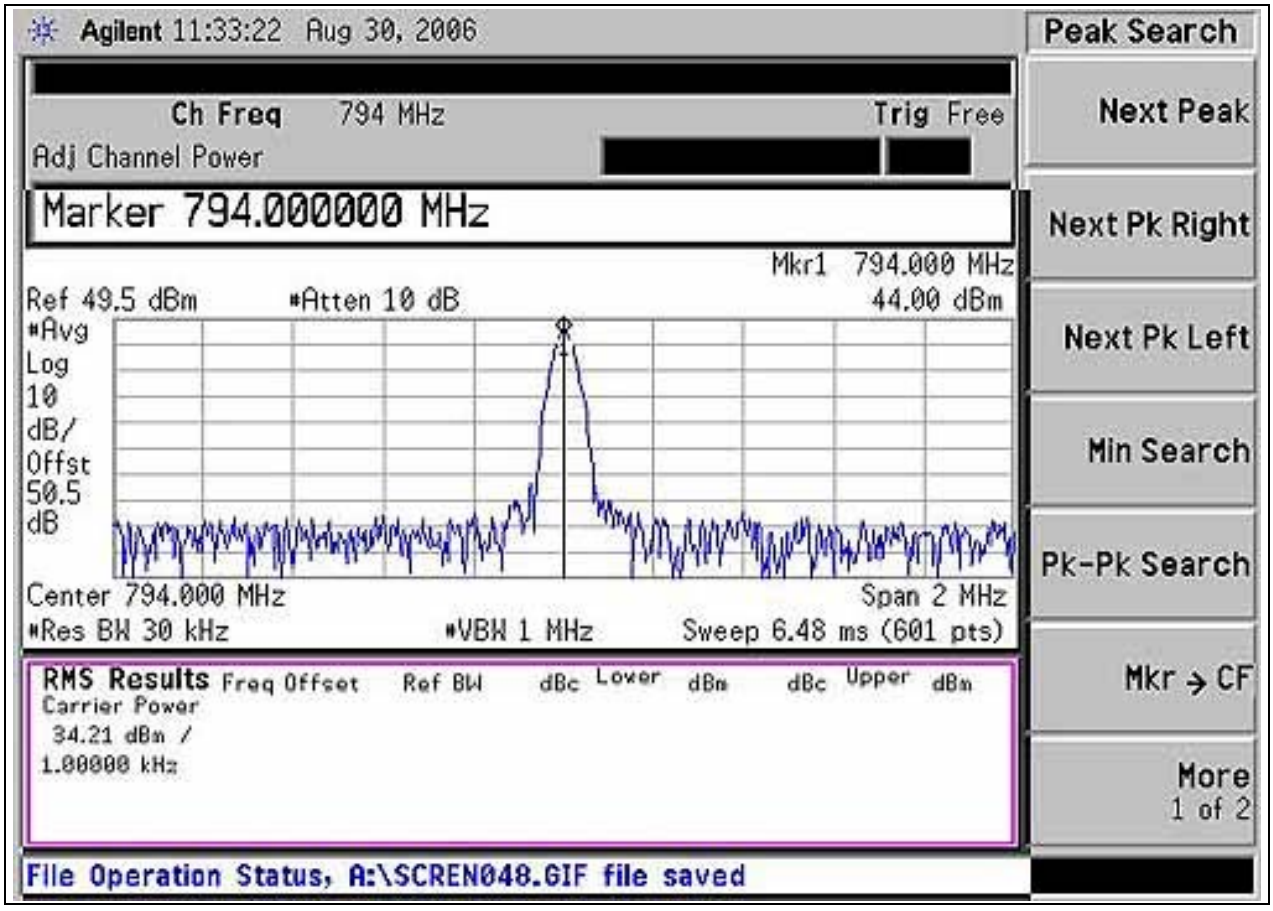
ADJACENT CHANNEL POWER - CONDITION 11 INBAND MIDDLE CHANNEL



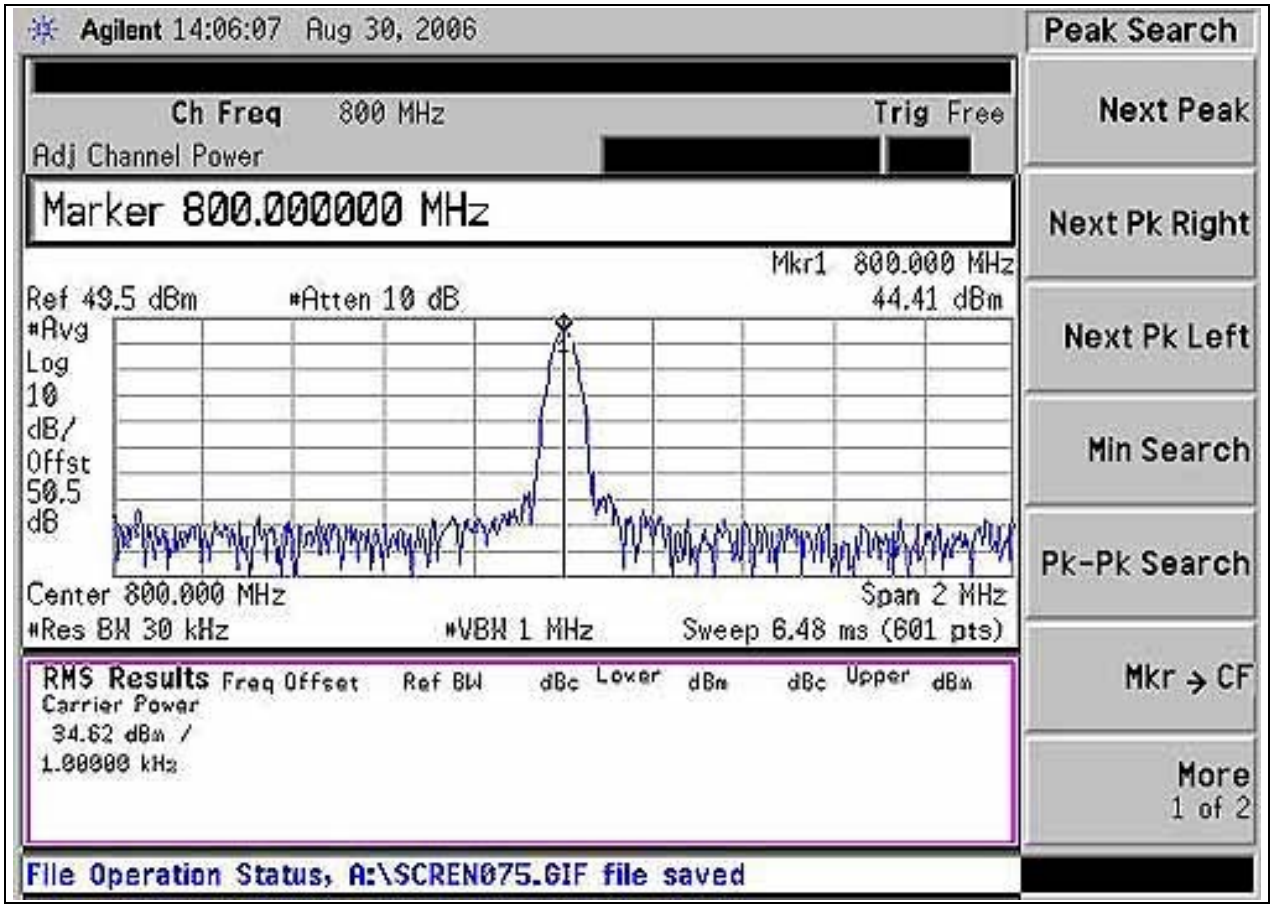
ADJACENT CHANNEL POWER - CONDITION 11 INBAND HIGH CHANNEL



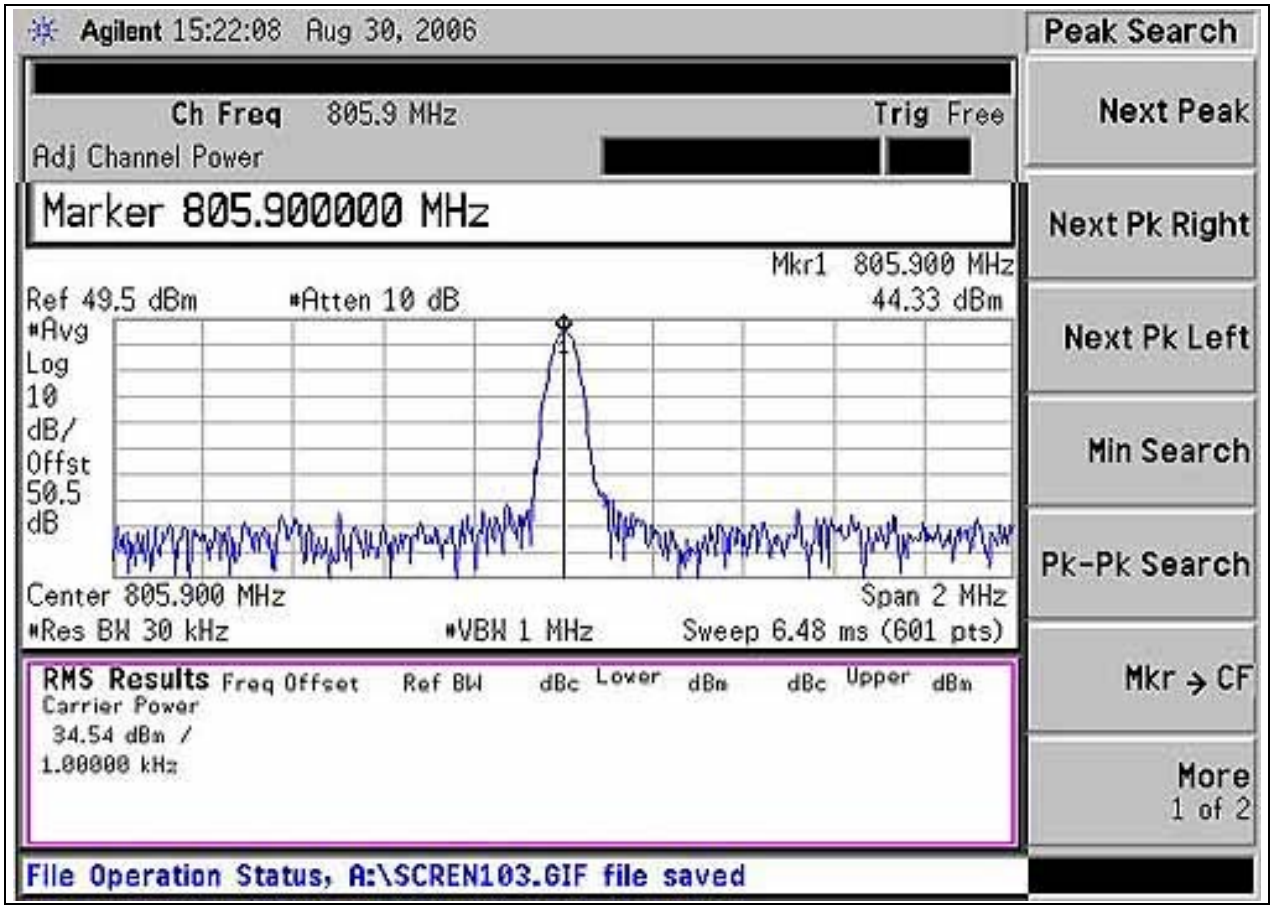
ADJACENT CHANNEL POWER - CONDITION 11 REFERENCE LOW CHANNEL



ADJACENT CHANNEL POWER - CONDITION 11 REFERENCE MIDDLE CHANNEL



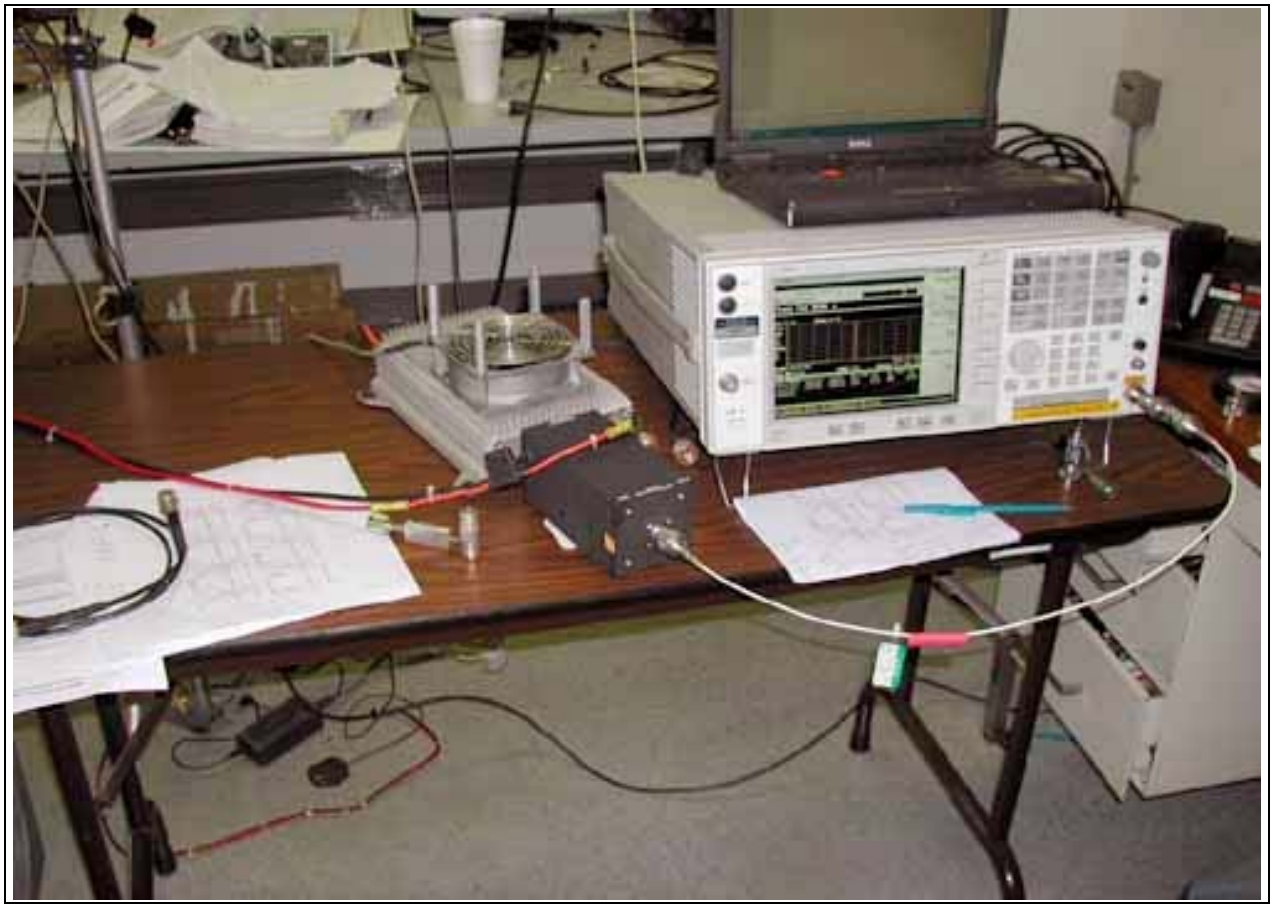
ADJACENT CHANNEL POWER - CONDITION 11 REFERENCE HIGH CHANNEL



Test Equipment

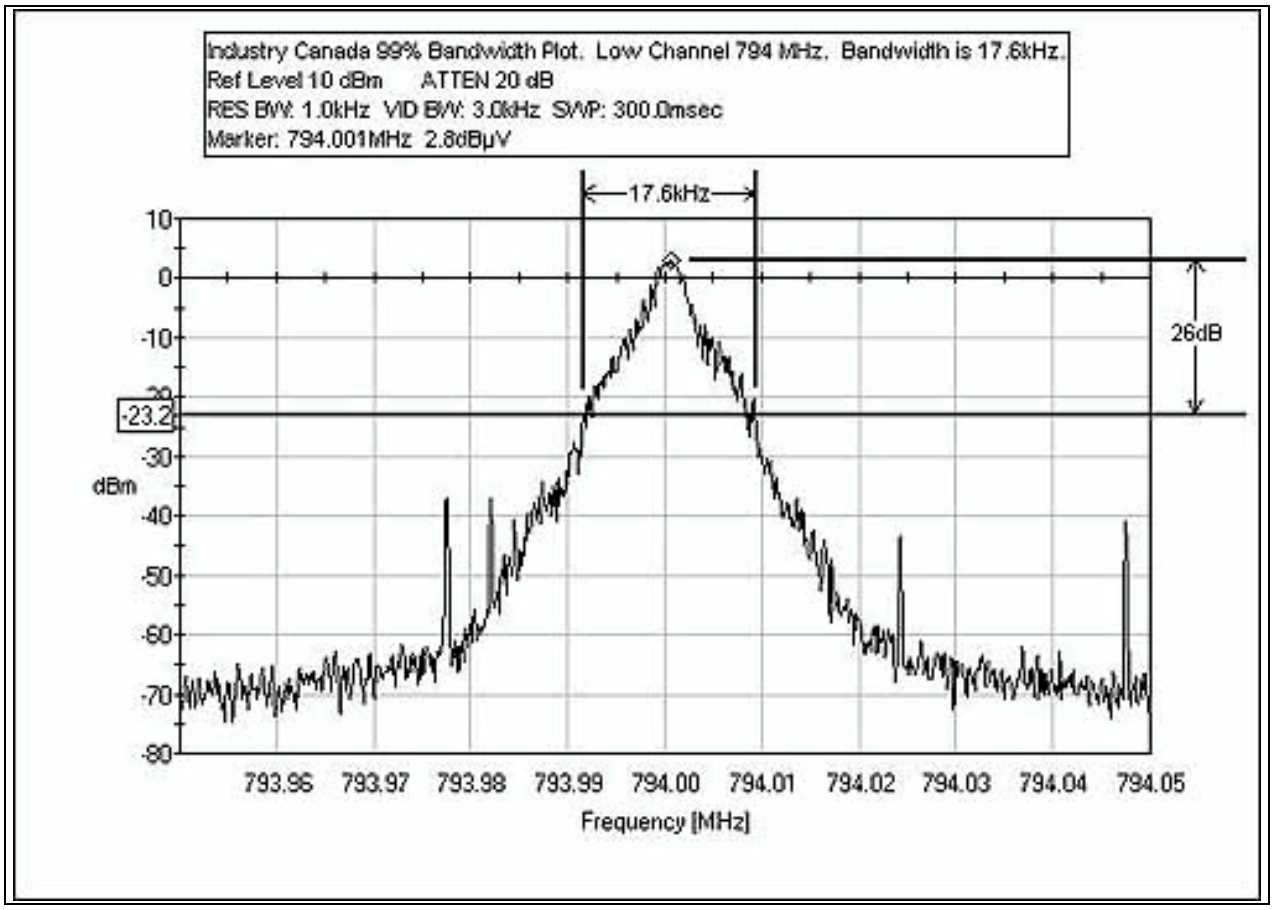
Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	011405	011407

PHOTOGRAPH SHOWING ADJACENT CHANNEL POWER

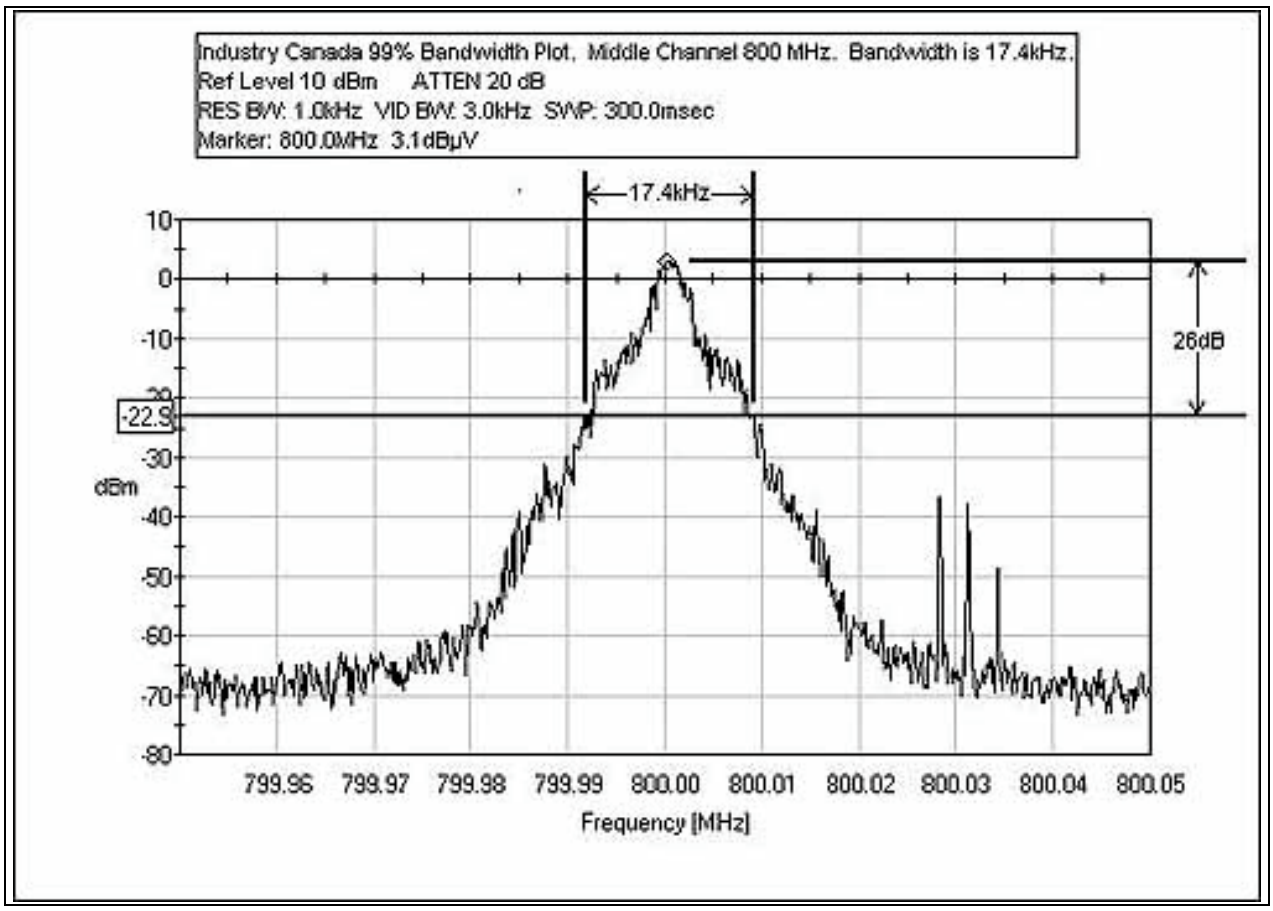


RSS-119 99% BANDWIDTH - LOW CHANNEL 794 MHz

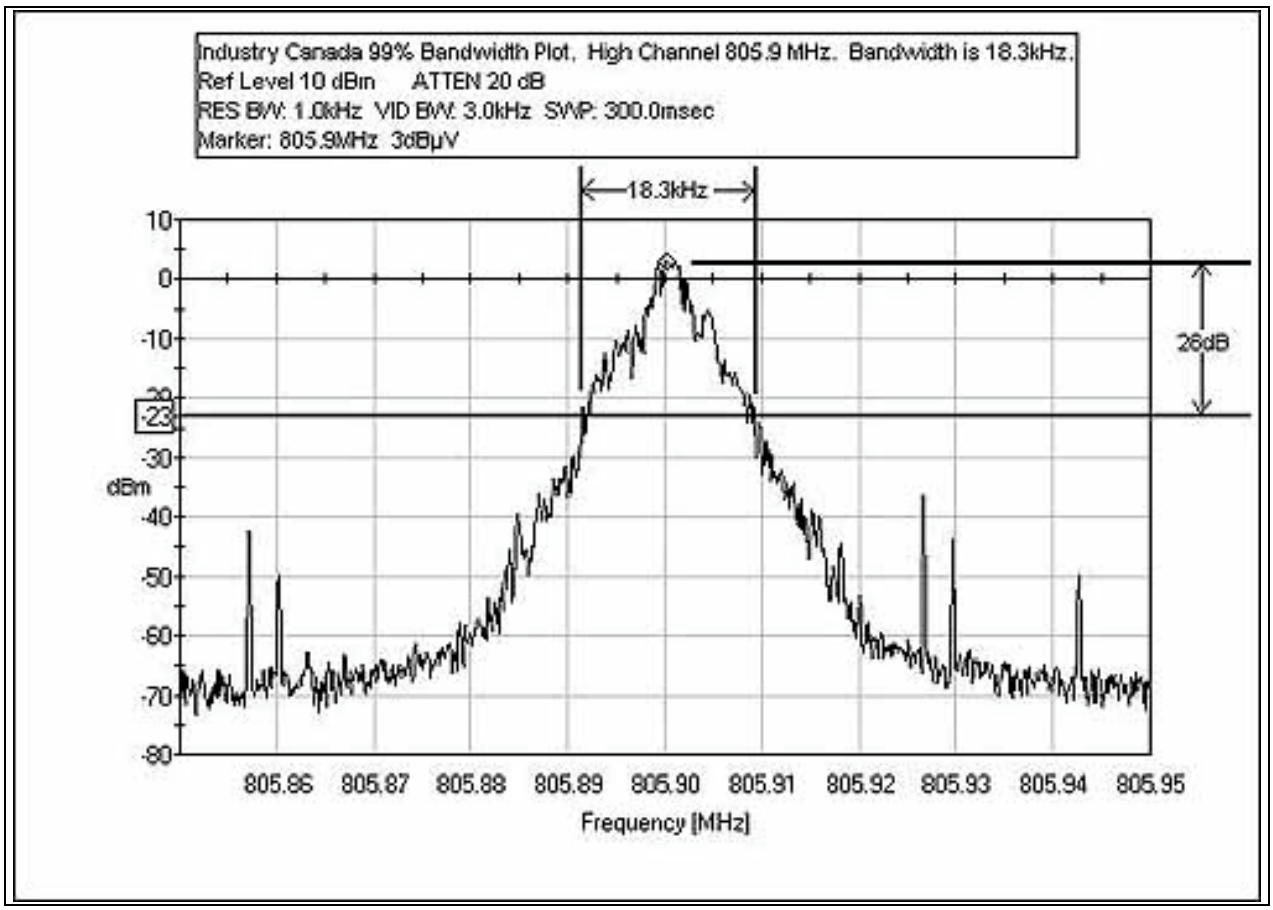
Test Conditions: The EUT and its support equipment are located adjacent to each other on the table top. Connected to the EUT RX1/TX port is one high powered attenuator and then a coaxial cable to the spectrum analyzer. Connected to the EUT serial port is an unterminated shielded serial cable. Connected to the EUT Rx2 port is a termination. Connect to the EUT GPS port is a standard GPS antenna with 5 meter long coaxial cable. The EUT ethernet port is connected to the laptop computer using an unshielded cat. 6 crossover cable. Power to the EUT is supplied by an external DC Power supply. The laptop computer is used to check the status of the EUT as well as send commands to have it transmit continuously or to change channels. Voltage to the EUT is 13.8 VDC. RBW=1kHz, VBW=3kHz. Low Channel, 794 MHz. 20dBc BW is 15.4 kHz. Middle Channel, 800 MHz. 20dBc BW is 15.4 kHz. High Channel, 805.9 MHz. 20dBc BW is 16.2 kHz.



RSS-119 99% BANDWIDTH - MIDDLE CHANNEL 800 MHz



RSS-119 99% BANDWIDTH - HIGH CHANNEL 805.9 MHz



Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
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