



ADDENDUM TO IP MOBILENET INC. TEST REPORT FC04-067

FOR THE

700/800 MHZ BASE STATION, B64700G25

FCC PART 90

COMPLIANCE

DATE OF ISSUE: NOVEMBER 3, 2004

PREPARED FOR:

IP MobileNet Inc.
16842 Von Karman
Irvine, CA 92606

P.O. No.: 003611-00
W.O. No.: 82622

PREPARED BY:

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5473A Clouds Rest
Mariposa, CA 95338

Date of test: October 11-16, 2004

Report No.: FC04-067A

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ADMINISTRATIVE INFORMATION

DATE OF TEST: October 11-16, 2004

DATE OF RECEIPT: October 11, 2004

PURPOSE OF TEST: To demonstrate the compliance of the 700/800 MHz Base Station, B64700G25 with the requirements for FCC Part 90 devices.
Addendum A is to revise the Frequency Stability data and add 90.543(e) data.

TEST METHOD: FCC Part 90

FREQUENCY RANGE TESTED: 4 MHz-8 GHz

MANUFACTURER: IP MobileNet Inc.
16842 Von Karman
Irvine, CA 92606

REPRESENTATIVE: Eric Tanner

TEST LOCATION: CKC Laboratories, Inc.
110 Olinda Place
Brea, CA 92621

SUMMARY OF RESULTS

As received, the IP MobileNet Inc. 700/800 MHz Base Station, B64700G25 was found to be fully compliant with the following standards and specifications:

United States

➤ FCC Part 90

CONDITIONS FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

APPROVALS

Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:

A handwritten signature in black ink, appearing to read "Joyce Walker", written over a horizontal line.

Joyce Walker, Quality Assurance Administrative Manager

TEST PERSONNEL:

A handwritten signature in black ink, appearing to read "Stuart Yamamoto", written over a horizontal line.

Stuart Yamamoto, EMC Engineer

A handwritten signature in black ink, appearing to read "Eddie Wong", written over a horizontal line.

Eddie Wong, EMC Engineer



EQUIPMENT UNDER TEST (EUT) DESCRIPTION

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

EQUIPMENT UNDER TEST

Base Data Radio

Manuf: IP MobileNet Inc.
Model: B64700G25
Serial: 04363367
FCC ID: MI7 (pending)

PERIPHERAL DEVICES

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

Laptop Computer

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

DC Power Supply

Manuf: Samplex America
Model: SEC 1223
Serial: 03061-0D01-0632

High Power Termination

Manuf: Weinschel Corporation
Model: 45-40-43
Serial: MN216

GPS Antenna

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

High Power Attenuator

Manuf: Weinschel Corporation
Model: 53-30-34
Serial: MG378

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

15K7F1D

FCC 2.1033 (c)(5) FREQUENCY RANGE

764-776 MHz

FCC 2.1033 (c)(6) OPERATING POWER

44.7 Watts

FCC 2.1033 (c)(7) MAXIMUM POWER RATING

500 Watts

FCC 2.1033 (c)(8) DC VOLTAGES

13.8 V

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

FSK

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

Test Conditions: The EUT was connected to a laptop computer via the serial interface. The laptop computer was used to command the EUT to begin transmitting or stop transmitting as well as to change the EUT from channel to channel. Also connected to the EUT was a GPS antenna. This GPS antenna was placed outside the room so that there was no obstructions to the sky. A separate DC power supply was used to provide 13.8 VDC 9A to the EUT. On the output of the EUT was placed a high power termination/attenuator which went to either a power meter or spectrum analyzer to measure the RF power, bandwidth, or frequency. The EUT was set to output the rated power of 40 watts. Bandwidth setting used: >1 MHz.

Limit is 500 Watts

Measured Values from the EUT (Model B64700G25):

Low Channel (764 MHz). Measured value was 38.0 Watts.

Middle Channel (770 MHz). Measured value was 42.7 Watts.

High Channel (776 MHz). Measured value was 44.7 Watts.

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
High Power 30 dB Attenuator	01578	Bird	25-A-MFN-30	(none)	*	*
High Power 30dB Attenuator	(none)	Weinschel	53-30-34	MG378	*	*

Note: *-Checks of both attenuators insertion loss was performed just prior to this test at the discrete frequencies used (764 MHz, 770 MHz, and 776 MHz).

FCC 90.541(b) RF POWER OUTPUT



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

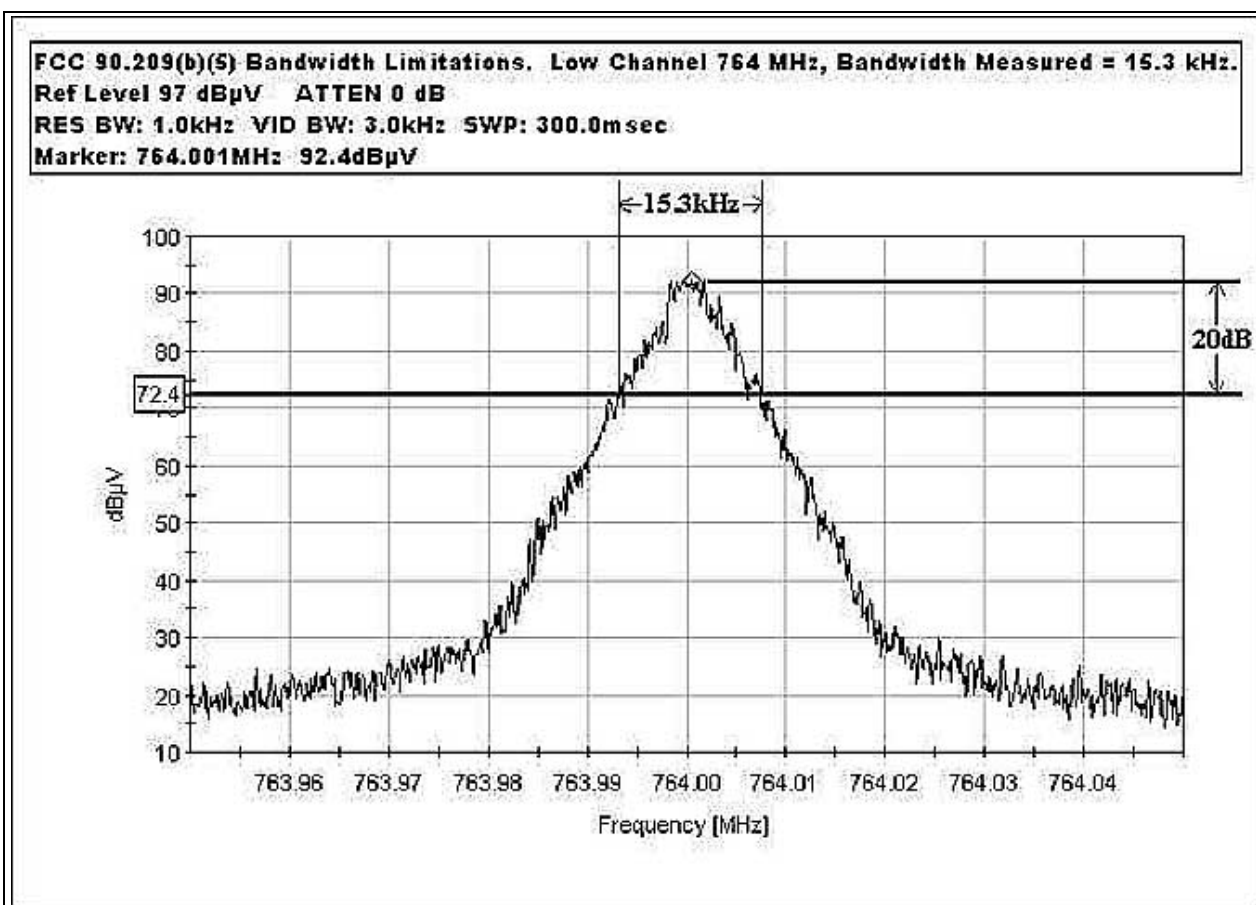
Not applicable to this unit.

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

Not applicable to this unit.

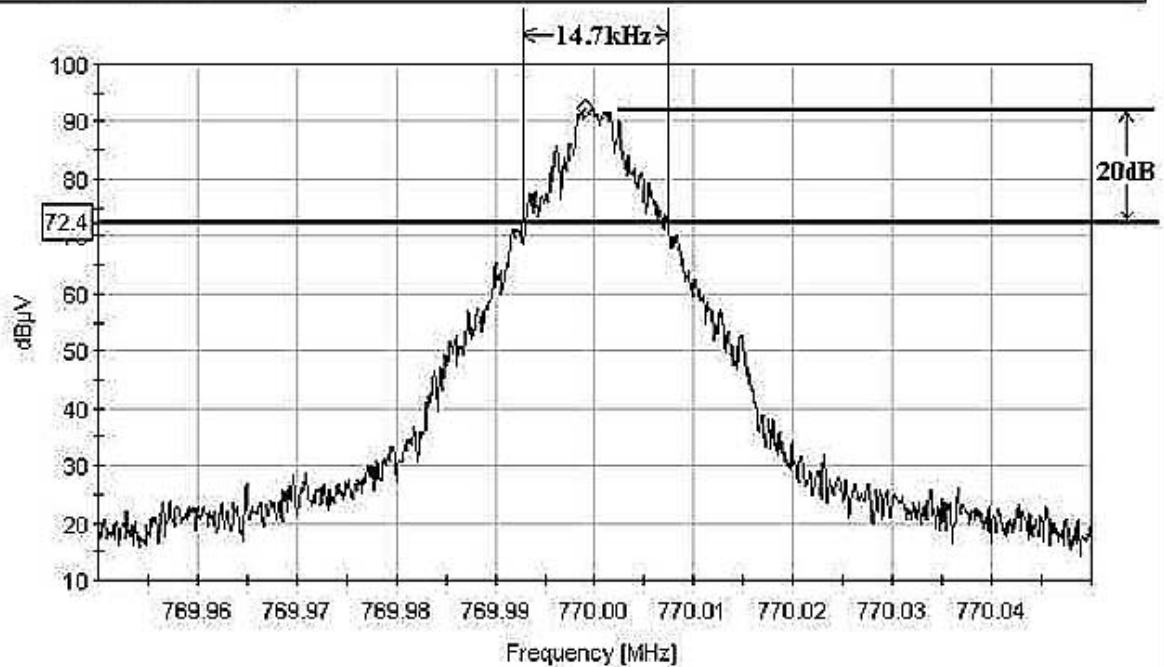
FCC 90.209(b)(5) BANDWIDTH LIMITATIONS LOW CHANNEL

Test Conditions: The EUT was connected to a laptop computer via the serial interface. The laptop computer was used to command the EUT to begin transmitting or stop transmitting as well as to change the EUT from channel to channel. Also connected to the EUT was a GPS antenna. This GPS antenna was placed outside the room so that there was no obstructions to the sky. A separate DC power supply was used to provide 13.8 VDC 9A to the EUT. On the output of the EUT was placed a high power termination/attenuator which went to either a power meter or spectrum analyzer to measure the RF power, bandwidth, or frequency. The EUT was set to output the rated power of 40 watts. Bandwidth setting used: 1 kHz.

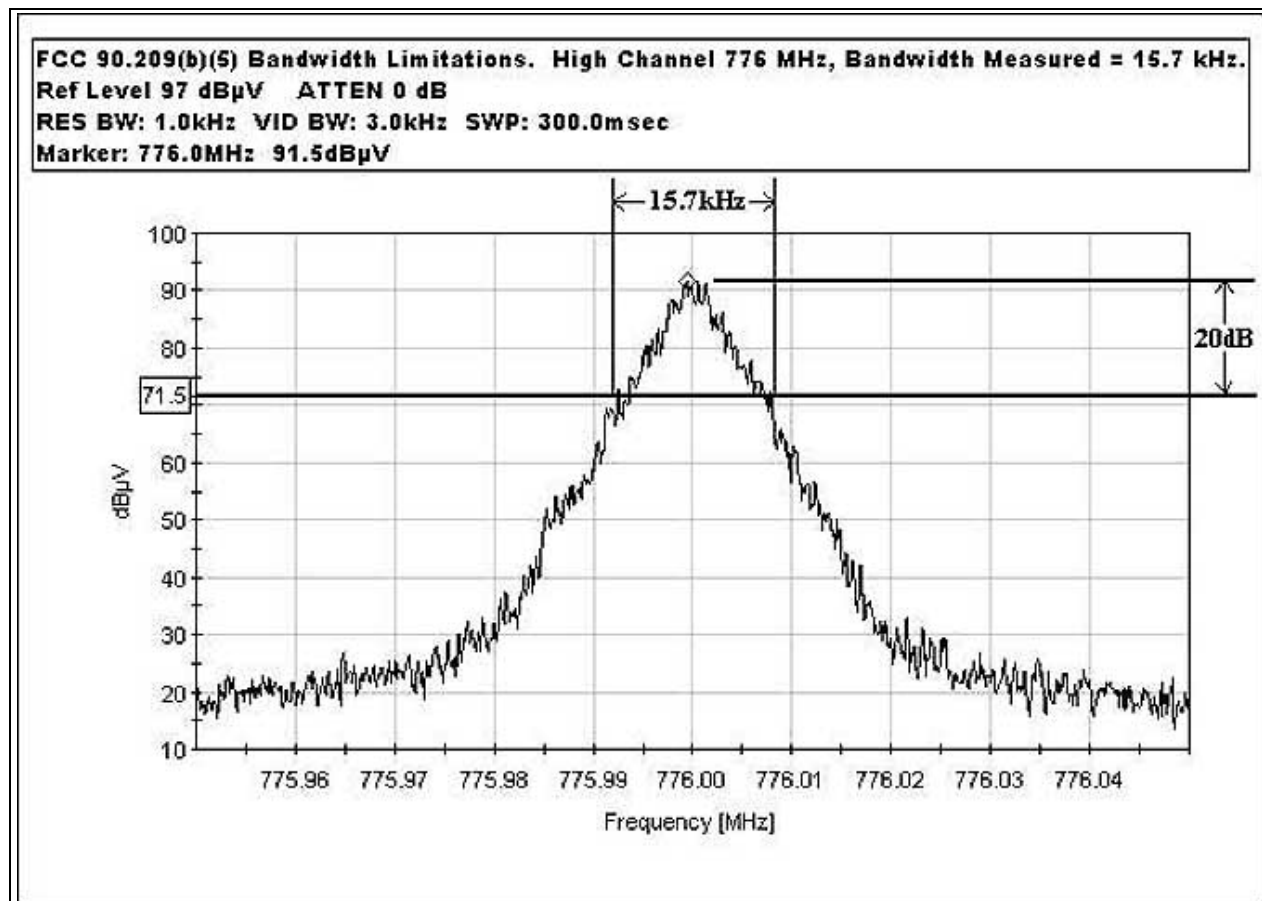


FCC 90.209(b)(5) BANDWIDTH LIMITATIONS MID CHANNEL

FCC 90.209(b)(5) Bandwidth Limitations. Mid Channel 770 MHz, Bandwidth Measured = 14.7 kHz.
Ref Level 97 dBµV ATTN 0 dB
RES BW: 1.0kHz VID BW: 3.0kHz SWP: 300.0msec
Marker: 769.999MHz 92.4dBµV



FCC 90.209(b)(5) BANDWIDTH LIMITATIONS HIGH CHANNEL



Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer RF Section	00989A	HP	8568A	2049A01287	070204	070206
Spectrum Analyzer Display Section	00034	HP	85662A	2349A06091	070204	070206
Quasi Peak Adapter	00200	HP	85650A	2043A00221	070204	070206
High Power 30 dB Attenuator	01578	Bird	25-A-MFN-30	(none)	*	*
High Power 30dB Attenuator	(none)	Weinschel	53-30-34	MG378	*	*

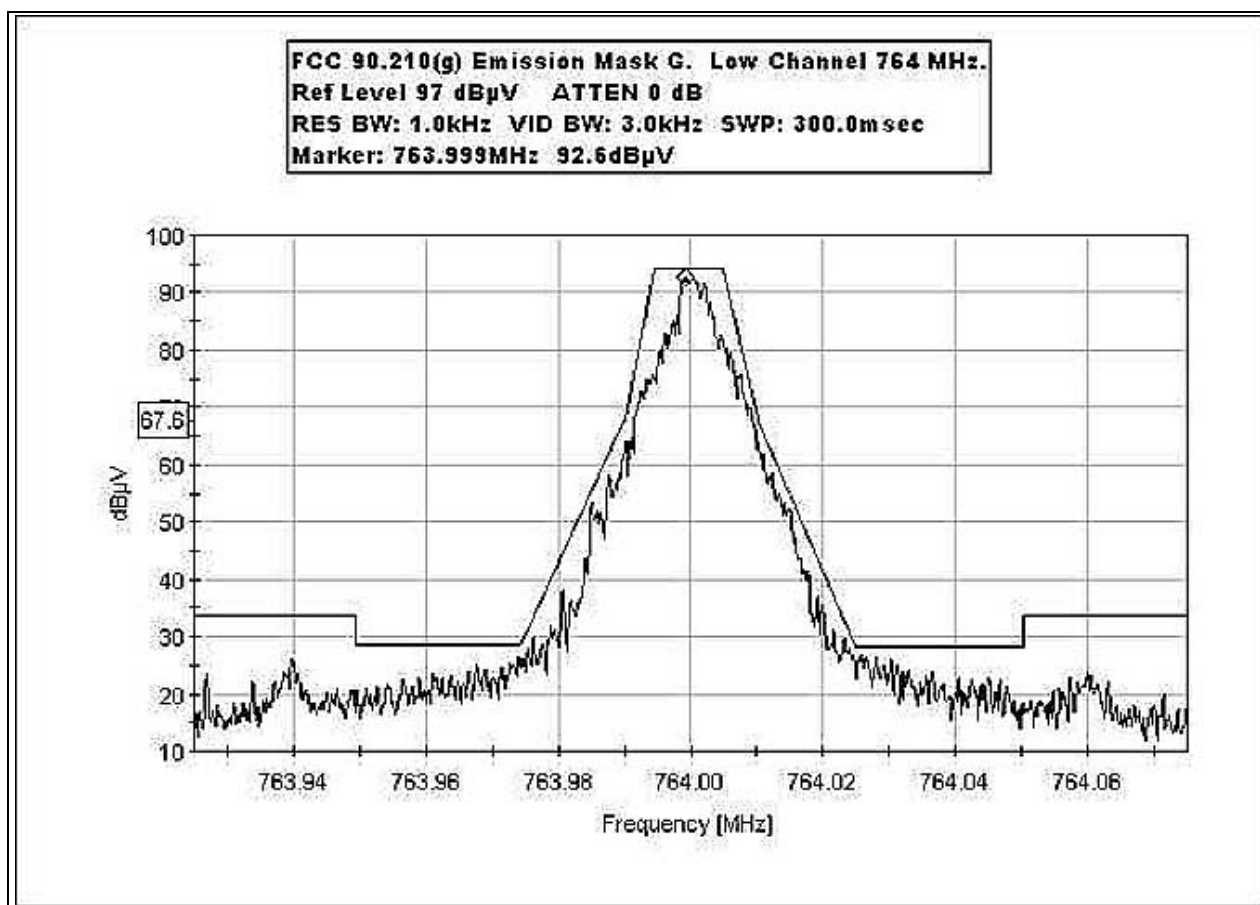
Note: *-Checks of both attenuators insertion loss was performed just prior to this test at the discrete frequencies used (764 MHz, 770 MHz, and 776 MHz).

PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP

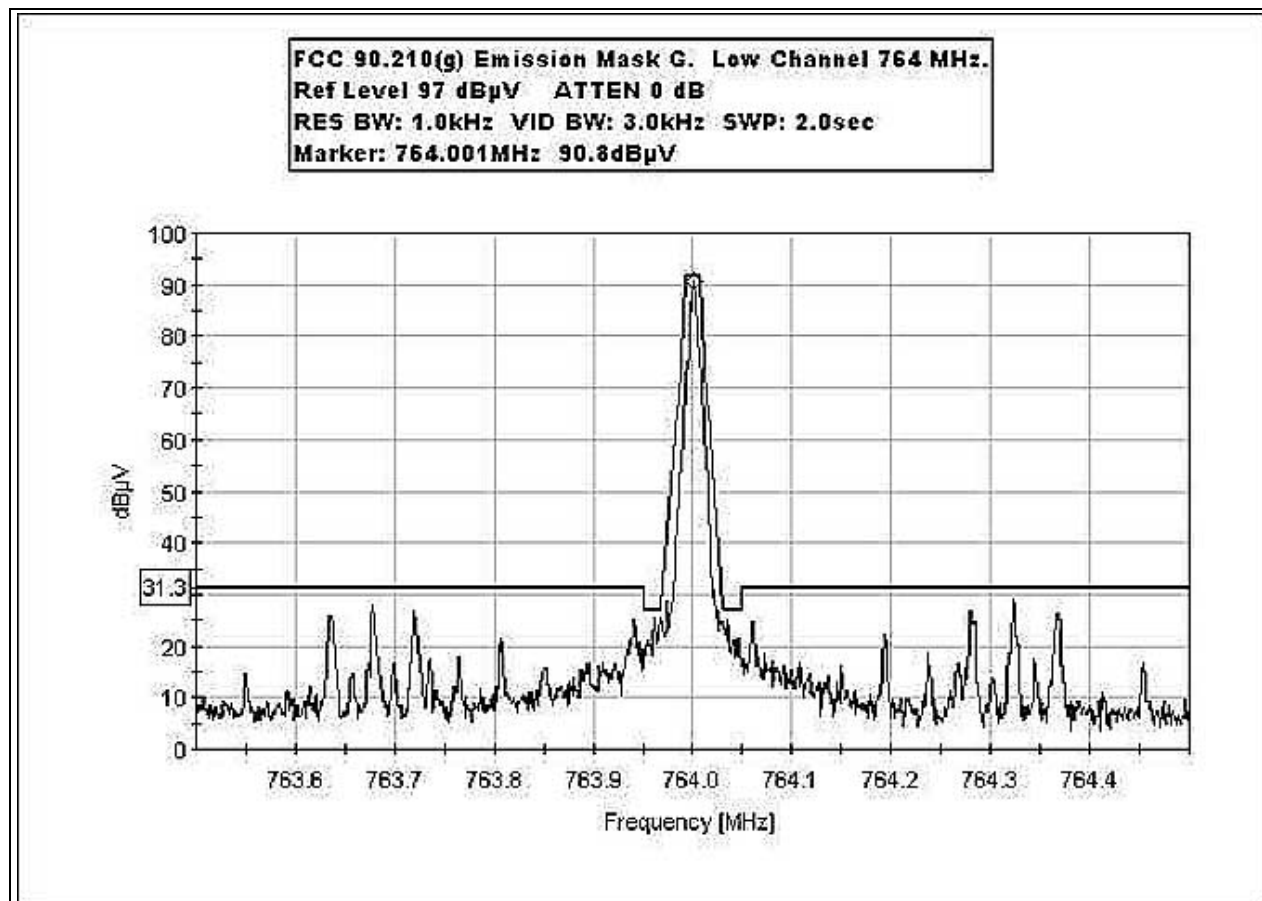


FCC 90.210(g) EMISSIONS MASK LOW CHANNEL SMALL SPAN

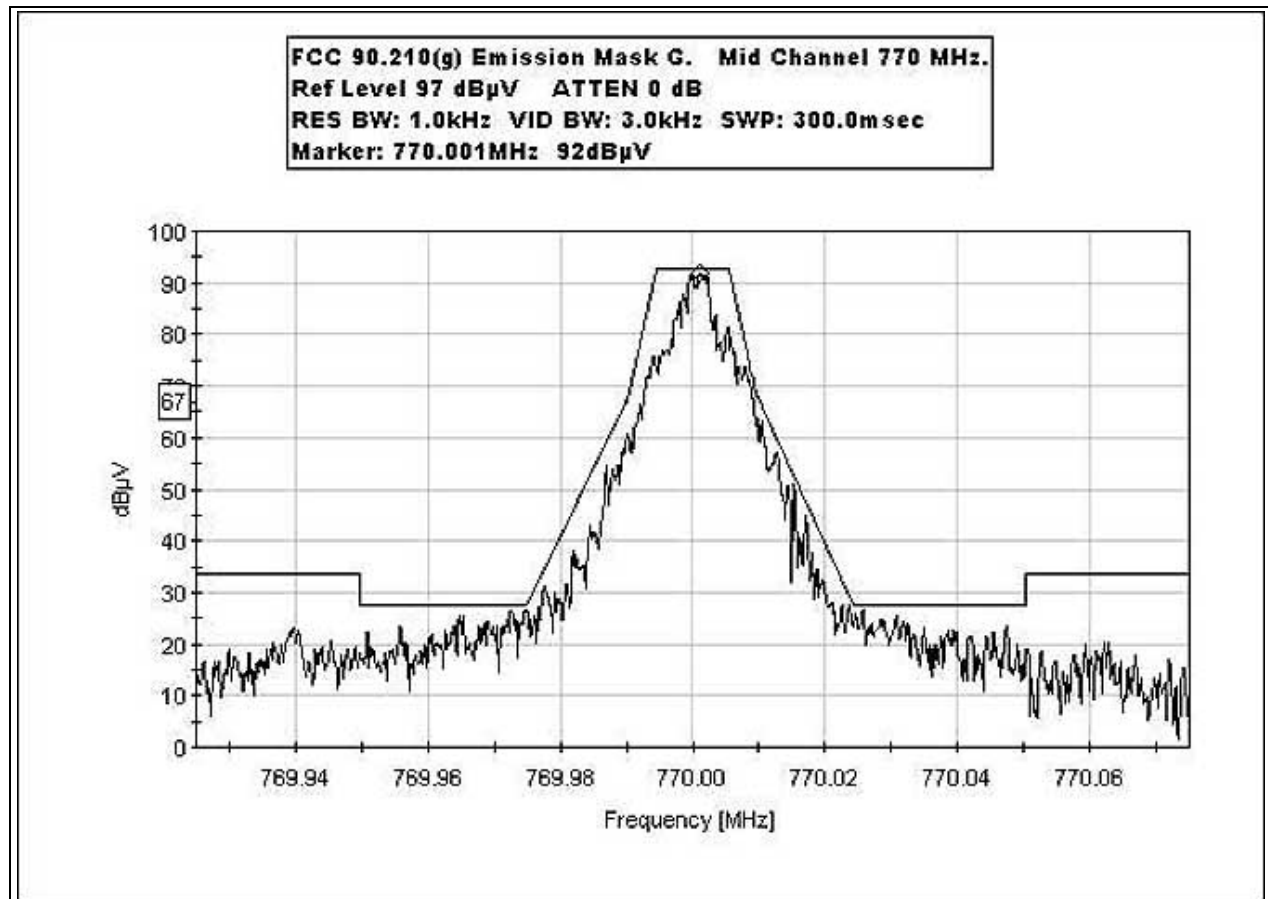
Test Conditions: The EUT was connected to a laptop computer via the serial interface. The laptop computer was used to command the EUT to begin transmitting or stop transmitting as well as to change the EUT from channel to channel. Also connected to the EUT was a GPS antenna. This GPS antenna was placed outside the room so that there was no obstructions to the sky. A separate DC power supply was used to provide 13.8 VDC 9A to the EUT. On the output of the EUT was placed a high power termination/attenuator which went to either a power meter or spectrum analyzer to measure the RF power, bandwidth, or frequency. The EUT was set to output the rated power of 40 watts. Bandwidth setting used: 1 kHz.



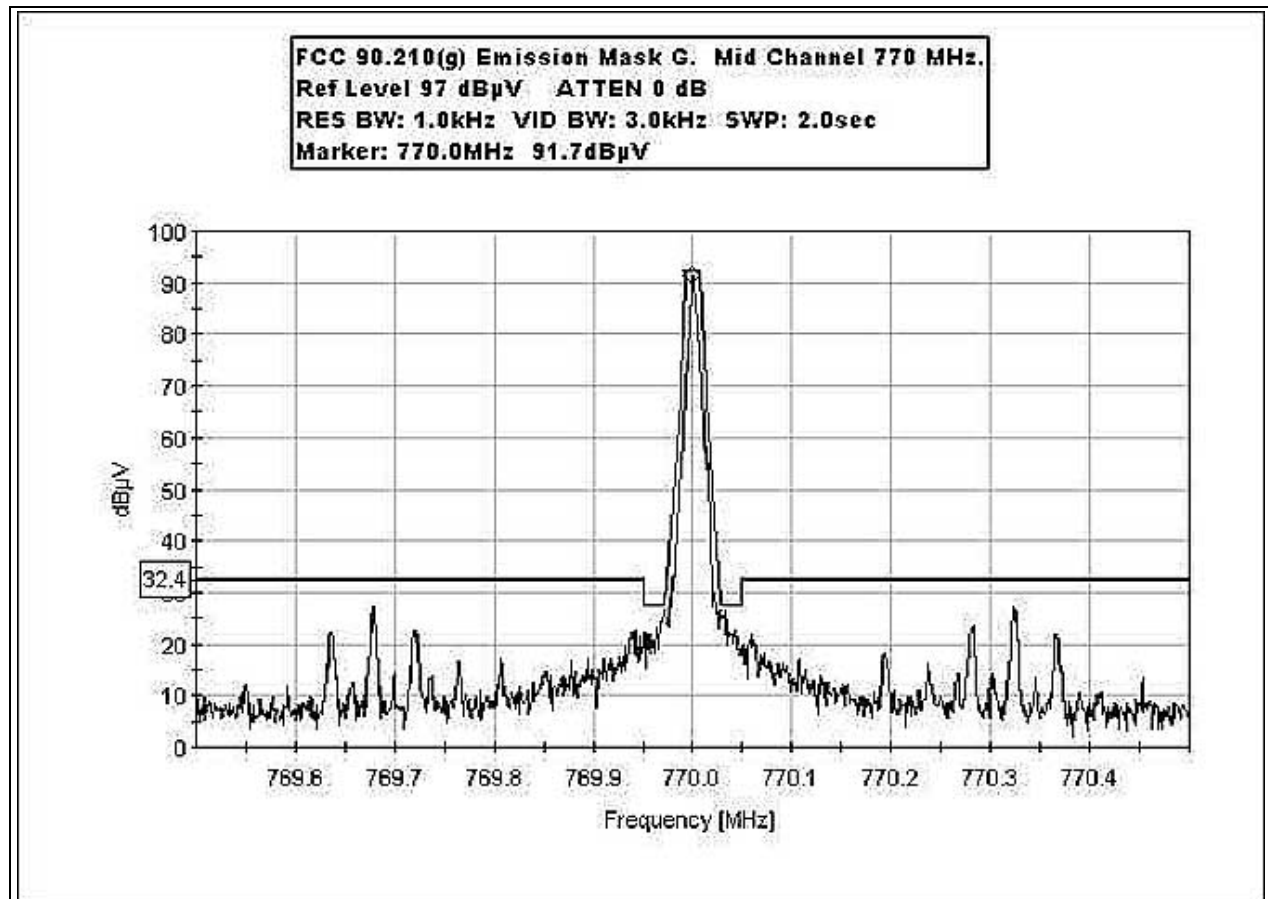
FCC 90.210(g) EMISSIONS MASK LOW CHANNEL LARGE SPAN



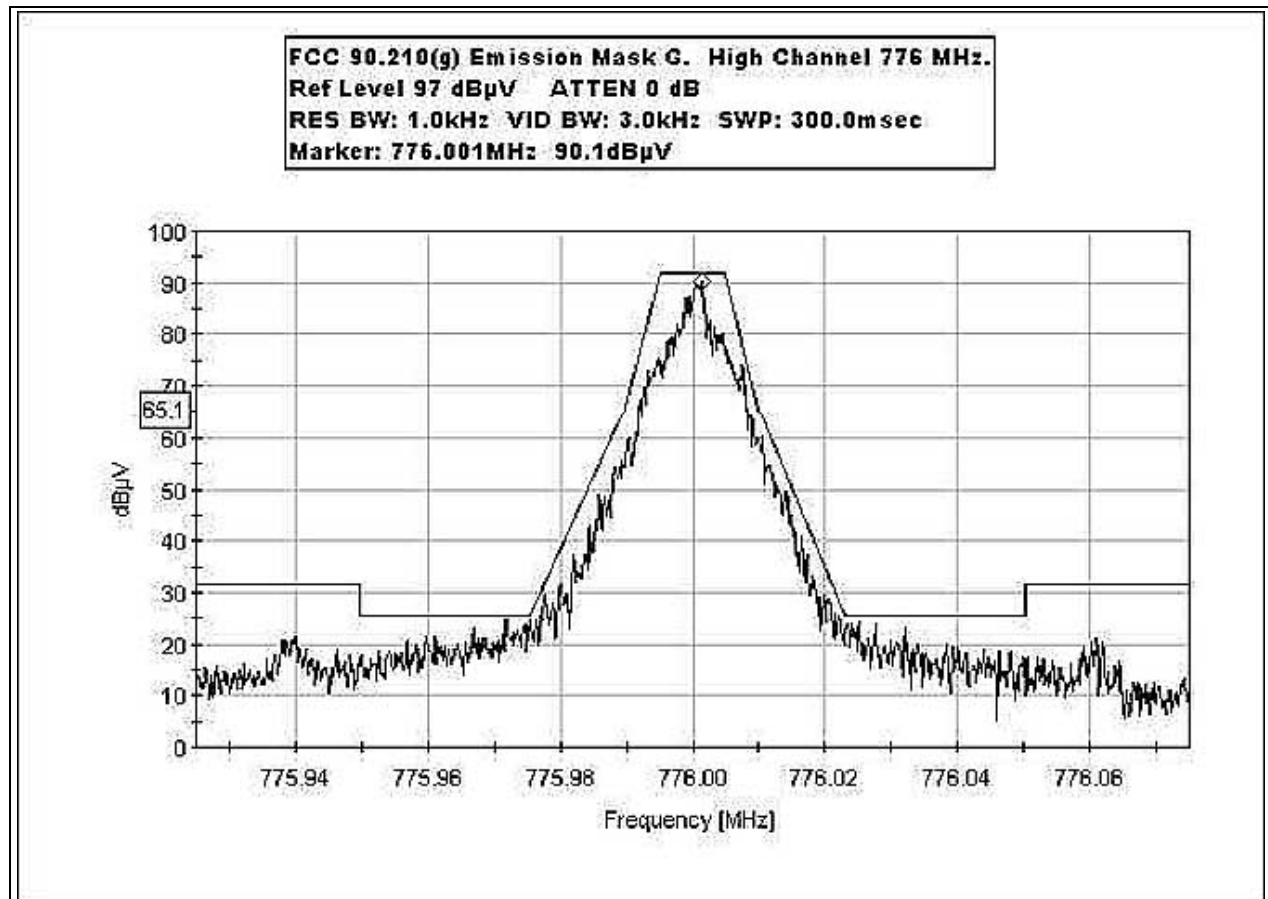
FCC 90.210(g) EMISSIONS MASK MID CHANNEL SMALL SPAN



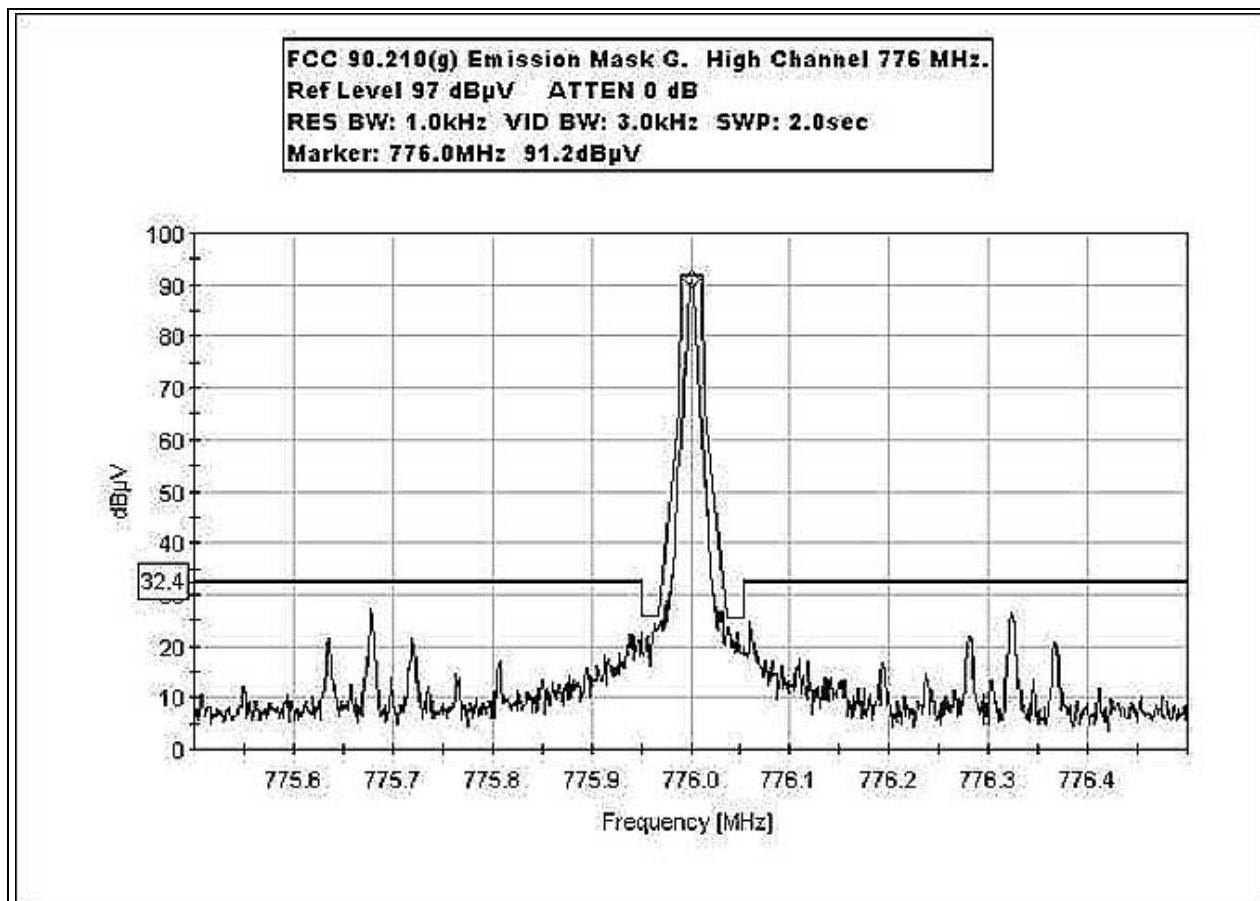
FCC 90.210(g) EMISSIONS MASK MID CHANNEL LARGE SPAN



FCC 90.210(g) EMISSIONS MASK HIGH CHANNEL SMALL SPAN



FCC 90.210(g) EMISSIONS MASK HIGH CHANNEL LARGE SPAN



Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer RF Section	00989A	HP	8568A	2049A01287	070204	070206
Spectrum Analyzer Display Section	00034	HP	85662A	2349A06091	070204	070206
Quasi Peak Adapter	00200	HP	85650A	2043A00221	070204	070206
High Power 30 dB Attenuator	01578	Bird	25-A-MFN-30	(none)	*	*
High Power 30dB Attenuator	(none)	Weinschel	53-30-34	MG378	*	*

Note: *-Checks of both attenuators insertion loss was performed just prior to this test at the discrete frequencies used (764 MHz, 770 MHz, and 776 MHz).

PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP



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

ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	8 GHz	1 MHz

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

Customer: **IP MobileNet**
 Specification: **FCC 90.210G Spurious ANTENNA**
 Work Order #: **82622** Date: 10/14/2004
 Test Type: **Maximized Emissions** Time: 09:55:43
 Equipment: **Base Data Radio** Sequence#: 1
 Manufacturer: IP MobileNet Tested By: Stuart Yamamoto
 Model: B64700G25
 S/N: 04363367

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Base Data Radio*	IP MobileNet	B64700G25	04363367

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop Computer	Dell Corporation	PP02L Inspiron I2500	5TZ6611
DC Power Supply	Samlex America	SEC 1223	03061-0D01-0632
GPS Antenna	Trimble	40767-40	23N20247
High Power Attenuator	Weinschel Corporation	53-30-34	MG378
High Power Termination	Bird Electronics	25-A-MFN-30	

Test Conditions / Notes:

The EUT, support equipment, and the test equipment are located on the tabletop. Connected to the EUT Tx port are high powered attenuators and then coaxial cable to the spectrum analyzer. Connected to the EUT serial port is a laptop computer. Connected to the EUT GPS port is a standard GPS antenna with 5 meter long coaxial 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: 21°C, Humidity: 57%, Pressure: 100kPa. Frequency range scanned and maximized, 4 MHz to 8000 MHz. This data sheet is for the EUT operating on Low (764 MHz), Mid (770MHz), and High (776 MHz) channels.

Transducer Legend:

T1=30dB Attenuator Bird	T2=30dB Attenuator Weinschel
-------------------------	------------------------------

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	759.305M	27.9	+30.0	+29.8			+0.0	87.7	94.0	-6.3	None

2	765.307M	26.1	+30.0	+29.8	+0.0	85.9	94.0	-8.1	None
3	753.305M	25.5	+30.0	+29.8	+0.0	85.3	94.0	-8.7	None
4	2309.940M Ave	19.9	+30.0	+29.7	+0.0	79.6	94.0	-14.4	None
^	2310.013M	28.9	+30.0	+29.7	+0.0	88.6	94.0	-5.4	None
6	2327.993M Ave	19.7	+30.0	+29.7	+0.0	79.4	94.0	-14.6	None
^	2328.000M	28.5	+30.0	+29.7	+0.0	88.2	94.0	-5.8	None
8	3056.009M Ave	19.4	+30.0	+29.7	+0.0	79.1	94.0	-14.9	None
^	3056.000M	28.8	+30.0	+29.7	+0.0	88.5	94.0	-5.5	None
10	3080.002M Ave	19.4	+30.0	+29.7	+0.0	79.1	94.0	-14.9	None
^	3080.000M	29.5	+30.0	+29.7	+0.0	89.2	94.0	-4.8	None
12	3103.908M Ave	19.3	+30.0	+29.7	+0.0	79.0	94.0	-15.0	None
^	3104.000M	29.3	+30.0	+29.7	+0.0	89.0	94.0	-5.0	None
14	2291.940M Ave	19.2	+30.0	+29.7	+0.0	78.9	94.0	-15.1	None
^	2292.005M	29.1	+30.0	+29.7	+0.0	88.8	94.0	-5.2	None
16	1528.035M Ave	19.3	+30.0	+29.6	+0.0	78.9	94.0	-15.1	None
^	1528.002M	30.2	+30.0	+29.6	+0.0	89.8	94.0	-4.2	None
18	1551.995M Ave	19.1	+30.0	+29.6	+0.0	78.7	94.0	-15.3	None
^	1552.000M	29.8	+30.0	+29.6	+0.0	89.4	94.0	-4.6	None
20	1540.011M Ave	19.0	+30.0	+29.6	+0.0	78.6	94.0	-15.4	None
^	1540.001M	28.2	+30.0	+29.6	+0.0	87.8	94.0	-6.2	None
22	3819.971M Ave	18.2	+30.0	+29.8	+0.0	78.0	94.0	-16.0	None
^	3820.011M	28.3	+30.0	+29.8	+0.0	88.1	94.0	-5.9	None

24	3850.061M Ave	18.2	+30.0	+29.8	+0.0	78.0	94.0	-16.0	None
^	3849.998M	27.8	+30.0	+29.8	+0.0	87.6	94.0	-6.4	None
26	3879.972M Ave	16.5	+30.0	+29.8	+0.0	76.3	94.0	-17.7	None
^	3880.000M	29.8	+30.0	+29.8	+0.0	89.6	94.0	-4.4	None

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	00784	HP	8596E	3346A00209	011903	011905
24" SMA Cable	2604	Argosy	UFA147A	0-0360-200200	012304	012305

PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP



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

ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	8 GHz	1 MHz

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

Customer: **IP MobileNet**
 Specification: **FCC 90.210G Spurious OATS**
 Work Order #: **82622** Date: 10/14/2004
 Test Type: **Maximized Emissions** Time: 19:50:03
 Equipment: **Base Data Radio** Sequence#: 2
 Manufacturer: IP MobileNet Tested By: Stuart Yamamoto
 Model: B64700G25
 S/N: 04363367

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Base Data Radio*	IP MobileNet	B64700G25	04363367

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop Computer	Dell Corporation	PP02L Inspiron I2500	5TZ6611
DC Power Supply	Samlex America	SEC 1223	03061-0D01-0632
High Power Termination	Weinschel Corporation	45-40-43	MN216
GPS Antenna	San Jose Navigation, Inc.	SM-25	2569790

Test Conditions / Notes:

The EUT is stand alone on the tabletop. Connected to the EUT Tx port is a high power load/termination. Connected to the EUT three Rx ports are unterminated two meter long coaxial cable. Connected to the EUT serial port is a remotely located laptop computer ten meters away in the control room. Connected to the EUT GPS port is a standard GPS antenna with 5 meter long coaxial cable. Connected to the EUT ethernet port is an unterminated cat. 5 UTP cable. Connected to the other two remaining ports (bnc and DB-9) are unterminated shielded cables. Power to the EUT is supplied by a DC Power supply located beneath the wooden table. The remote 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: 21°C, Humidity: 54%, Pressure: 100kPa. Frequency range scanned and maximized, 4 MHz to 8 GHz. This data sheet is for the EUT operating on Low (764 MHz), Mid (770 MHz), and High (776 MHz) channels.

Operating Frequency: 764 MHz - 776 MHz
Channels: Low, Mid and High
Highest Measured Output Power: 46.50 ERP(dBm)= 44.7 ERP(Watts)
Distance: 3 meters
Limit: $43+10\log(P)$ 59.50 dBc

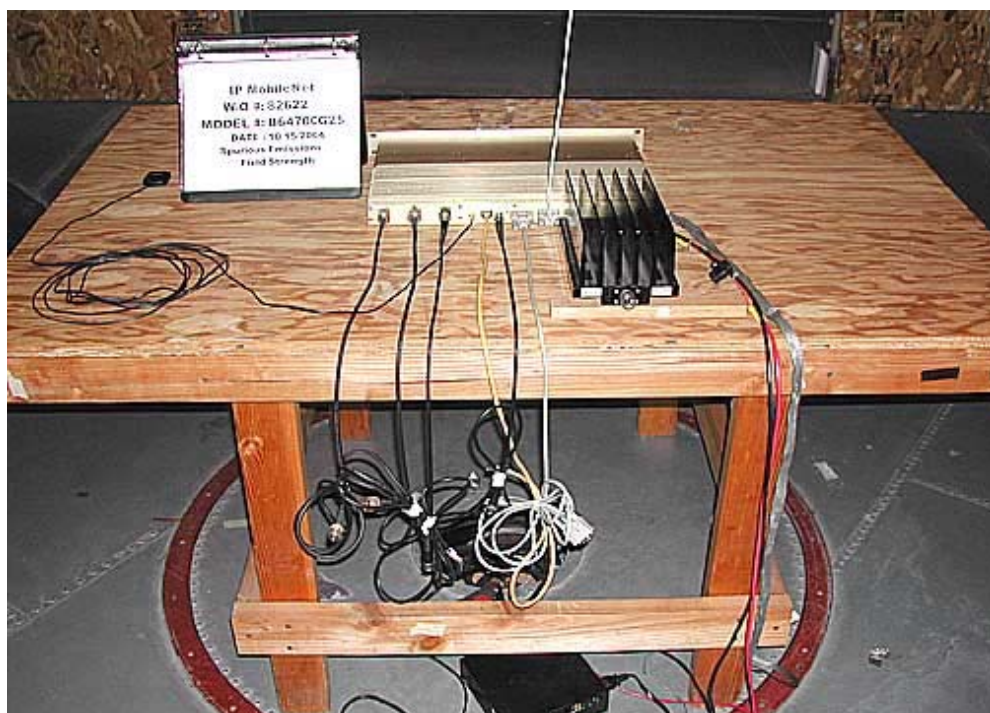
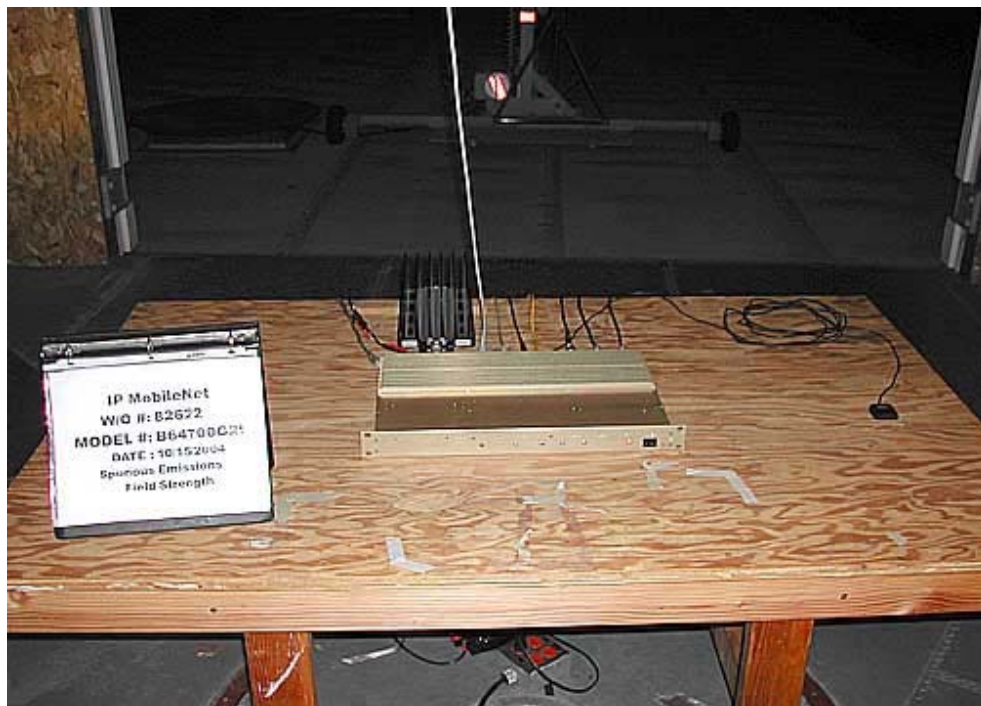
Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
1,540.03	-17.4	Horiz	63.90
1,540.01	-17.4	Horiz	63.90
3,849.98	-17.6	Horiz	64.10
3,850.00	-17.3	Horiz	63.80
2,292.00	-17.7	Horiz	64.20
2,292.02	-17.2	Horiz	63.70
5,347.96	-17.8	Vert	64.30
5,348.00	-17.4	Vert	63.90
2,291.99	-17.9	Vert	64.40
2,292.00	-17.3	Vert	63.80
4,620.01	-18.4	Vert	64.90
4,620.01	-17.5	Vert	64.00
4,583.99	-18.4	Vert	64.90
4,584.00	-18.2	Vert	64.70
1,551.99	-18.5	Vert	65.00
1,551.97	-18.4	Vert	64.90
1,528.00	-18.5	Horiz	65.00
1,527.96	-17.7	Horiz	64.20
3,819.96	-18.7	Vert	65.20
3,820.00	-18.5	Vert	65.00
1,528.00	-18.8	Vert	65.30
1,528.00	-18.6	Vert	65.10
1,552.02	-19	Horiz	65.50
1,552.04	-18.5	Horiz	65.00
1,540.01	-19	Vert	65.50
1,540.01	-18.6	Vert	65.10
3,849.96	-19.1	Vert	65.60
3,850.01	-18.8	Vert	65.30
3,055.98	-19.2	Vert	65.70
3,056.00	-18.9	Vert	65.40
2,328.01	-19.4	Horiz	65.90
2,328.00	-18	Horiz	64.50
2,328.04	-19.4	Vert	65.90
2,327.96	-18.9	Vert	65.40
5,389.97	-19.7	Vert	66.20
5,389.99	-19.1	Vert	65.60
3,820.01	-20	Horiz	66.50
4,619.99	-20.1	Horiz	66.60
4,584.01	-20.1	Horiz	66.60
3,880.01	-20.4	Vert	66.90

3,880.08	-17.8	Vert	64.30
5,347.97	-20.5	Horiz	67.00
3,879.91	-21.2	Horiz	67.70
2,310.02	-21.3	Vert	67.80
4,656.02	-22.2	Vert	68.70
4,656.05	-19.1	Vert	65.60
3,056.01	-22.3	Horiz	68.80
6,112.00	-22.5	Vert	69.00
7,699.92	-22.9	Vert	69.40
2,310.01	-23.7	Horiz	70.20
7,640.00	-23.9	Vert	70.40
6,111.96	-24.1	Horiz	70.60
5,390.01	-24.3	Horiz	70.80
7,640.00	-24.3	Horiz	70.80
3,080.01	-25.7	Vert	72.20
3,079.96	-25.8	Horiz	72.30
3,103.97	-27.6	Horiz	74.10
5,432.10	-28.3	Horiz	74.80
4,655.96	-28.5	Horiz	75.00
5,432.01	-28.6	Vert	75.10
3,104.03	-29	Vert	75.50
6,929.98	-29.2	Vert	75.70
7,700.00	-30.2	Horiz	76.70
6,929.99	-30.7	Horiz	77.20
6,159.99	-31.2	Vert	77.70
6,983.93	-31.6	Vert	78.10
6,876.09	-32	Horiz	78.50
7,759.90	-32.3	Vert	78.80
6,160.00	-33.8	Horiz	80.30
7,759.96	-35	Horiz	81.50
6,876.00	-35	Vert	81.50
6,983.95	-35.4	Horiz	81.90
6,207.97	-38.1	Vert	84.60
6,208.04	-38.9	Horiz	85.40

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer RF Section	00989A	HP	8568A	2049A01287	070204	070206
Spectrum Analyzer Display Section	00034	HP	85662A	2349A06091	070204	070206
Quasi Peak Adapter	00200	HP	85650A	2043A00221	070204	070206
Bilog Antenna	00851	Schaffner- Chase EMC	CBL6111C	2629	031604	031606
Antenna cable (10 meter site D)	NA	Andrew	LDF1-50	Cable#17	100204	100205
Antenna cable from bulkhead to antenna	N/A	Pasternack	RG-214/U	Cable #33	032904	032905
Preamp to SA Cable (3 feet)	NA	Pasternack	E100316-I	Cable #22	080904	080905
Pre-amp	00010	HP	8447D	2727A05392	070204	070206
Loop Antenna	00314	EMCO	6502	2014	062804	062806
Antenna cable (Helix)	NA	Andrew	LDF1-50	Cable#20	091604	091605
Horn Antenna	01646	EMCO	3115	9603-4683	042503	042505
Microwave Pre-amp	00787	HP	83017A	3123A00282	042303	042305
Magnetic Loop Antenna	00314	Emco	6502	2014	072804	072806
Spectrum Analyzer	02467	Agilent	E7405A	US40240225	033103	033105
Spectrum Analyzer	00784	HP	8596E	3346A00209	011903	011905
24" SMA Cable	2604	Argosy	UFA147A	0-0360-200200	012304	012305
1.5 GHz HPF	02116	HP	84300- 80037	3643A00027	060603	060605

PHOTOGRAPH SHOWING RADIATED EMISSIONS



FCC 2.1033(c)(14)/2.1055/90.539- FREQUENCY STABILITY

Test Conditions: The EUT is placed in the temperature chamber. RF signal is monitored from the antenna port. A spectrum analyzer is employed to measure the frequency stability of the EUT. Bandwidth setting used: 300 Hz.

Note: Middle Channel is in wide band segment; hence, the limit complies to PPM instead of PPB as required for narrow band segment (Low and High Channel).

Customer: IPMobileNet
WO#:
Date: 15-Oct-04
Test Engineer:

Device Model #: EUT
Operating Voltage: 13.8 Vdc

Frequency Limit: 1.00E+02 PPB 1 PPM 1.00E+02 PPB

Temperature Variations

Channel Frequency:		Channel 1 (MHz)	Dev (ppb)	Channel 2 (MHz)	Dev (ppm)	Channel 3 (MHz)	Dev (ppb)
Temp (C) Voltage		764.000000000		770.000000000		776.000000	
-30	13.8	763.999975000	32.722513	769.999975000	0.032468	775.999975	32.216495
-20	13.8	763.999975000	32.722513	769.999975000	0.032468	776.000005	-6.443299
-10	13.8	764.000005000	-6.544503	770.000000000	0.000000	775.999975	32.216495
0	13.8	763.999975000	32.722513	769.999975000	0.032468	775.999975000	32.216495
10	13.8	763.999975000	32.722513	769.999975000	0.032468	776.000000000	0.000000
20	13.8	764.000000000	0.000000	770.000000000	0.000000	776.000000	0.000000
30	13.8	764.000025000	-32.722513	770.000000000	0.000000	776.000025000	-32.216495
40	13.8	764.000025000	-32.722513	770.000005000	-0.006494	776.000000000	0.000000
50	13.8	764.000000000	0.000000	770.000025000	-0.032468	775.999975000	32.216495

Voltage Variations (±15%)

Temp (C) Voltage	Channel 1 (MHz)	Dev. (ppb)	Channel 2 (MHz)	Dev. (ppm)	Channel 3 (MHz)	Dev. (ppb)
20 11.7	763.999950000	65.445026	769.999950000	0.064935	775.999950	64.432990
20 13.8	764.000000000	0.000000	770.000000000	0.000000	776.000000	0.000000
20 15.9	764.000000000	0.000000	770.000000000	0.000000	776.000000	0.000000

Max Deviation	+	65.44503
Max Deviation	-	32.72251
PASS		

	+	0.06494
	-	0.03247
PASS		

	+	64.43299
	-	32.21649
PASS		

Test Equipment

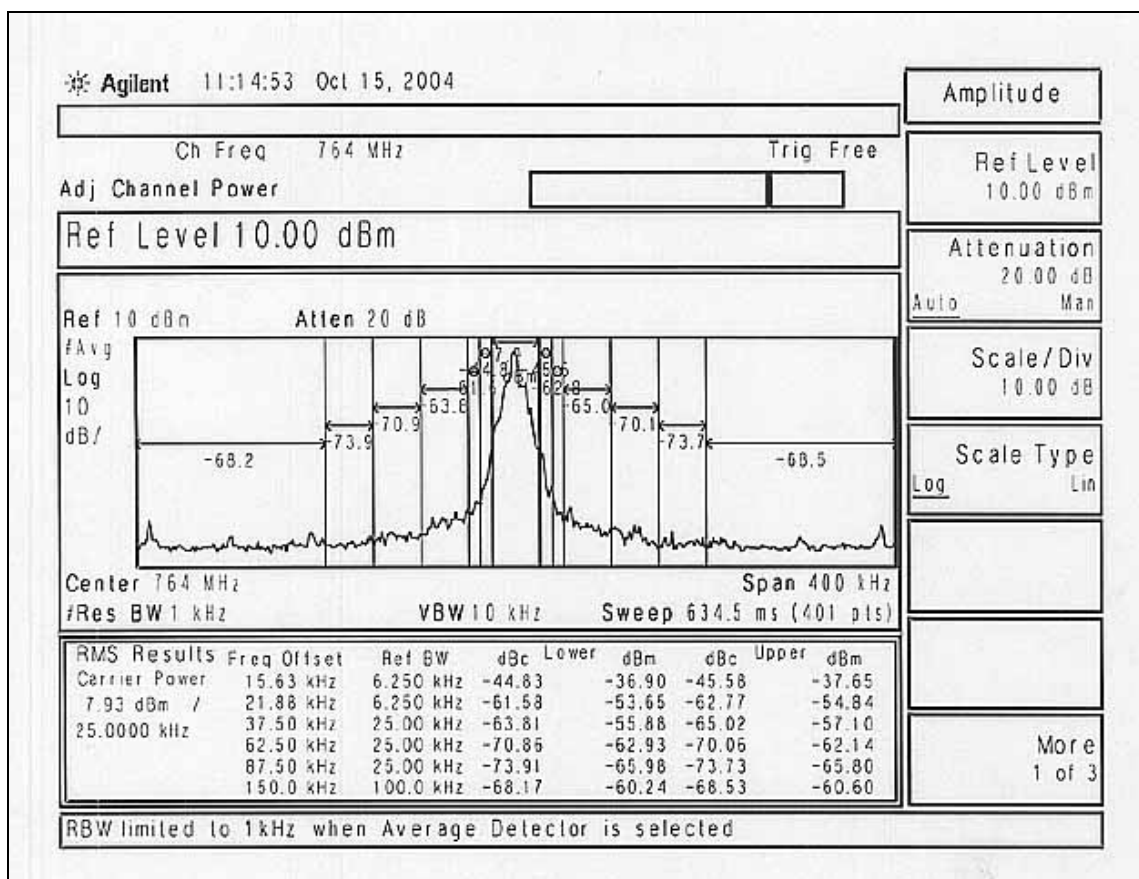
Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02467	Agilent	E7405A	US40240225	033103	033105
Temp chamber	NA	Tempquity	NA	NA	NA	NA
Data Logger	02549	Agilent	34970A	US37031892	050404	050405

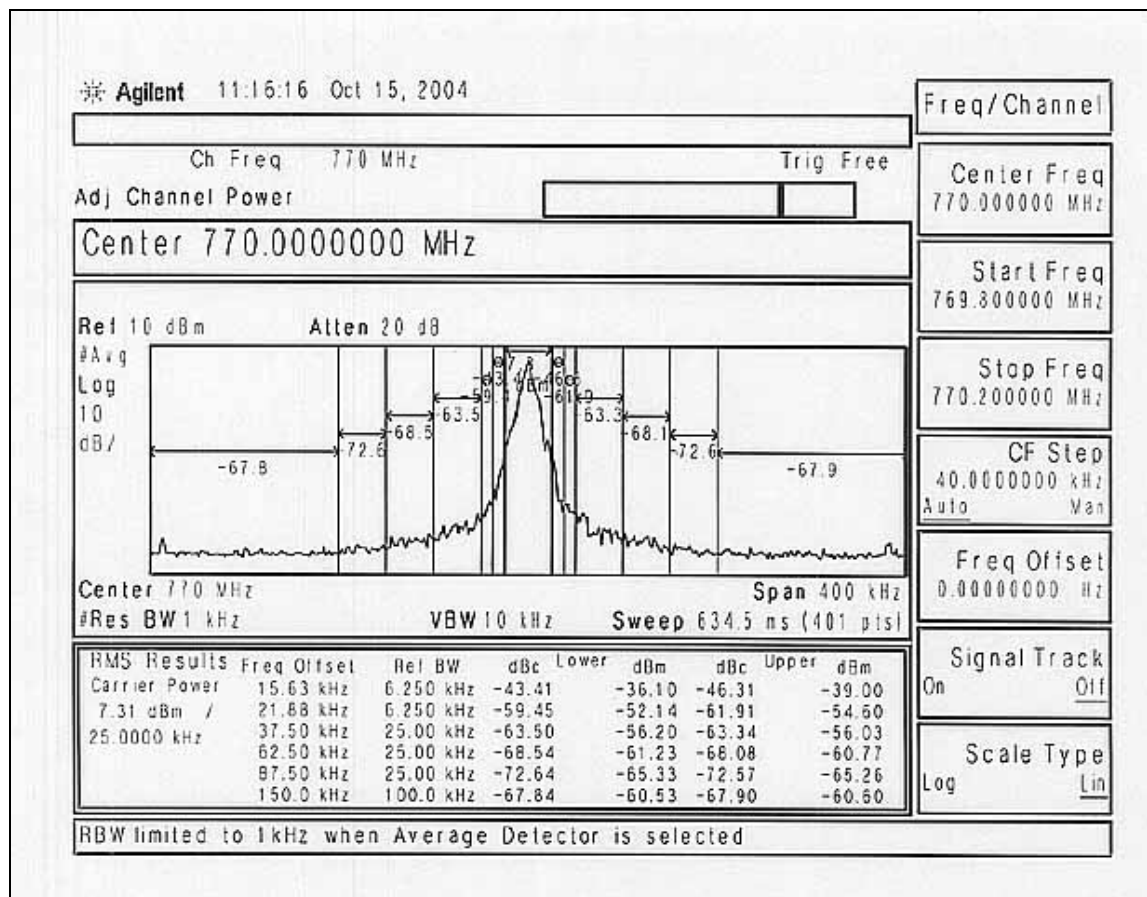
PHOTOGRAPH SHOWING TEMPERATURE TESTING

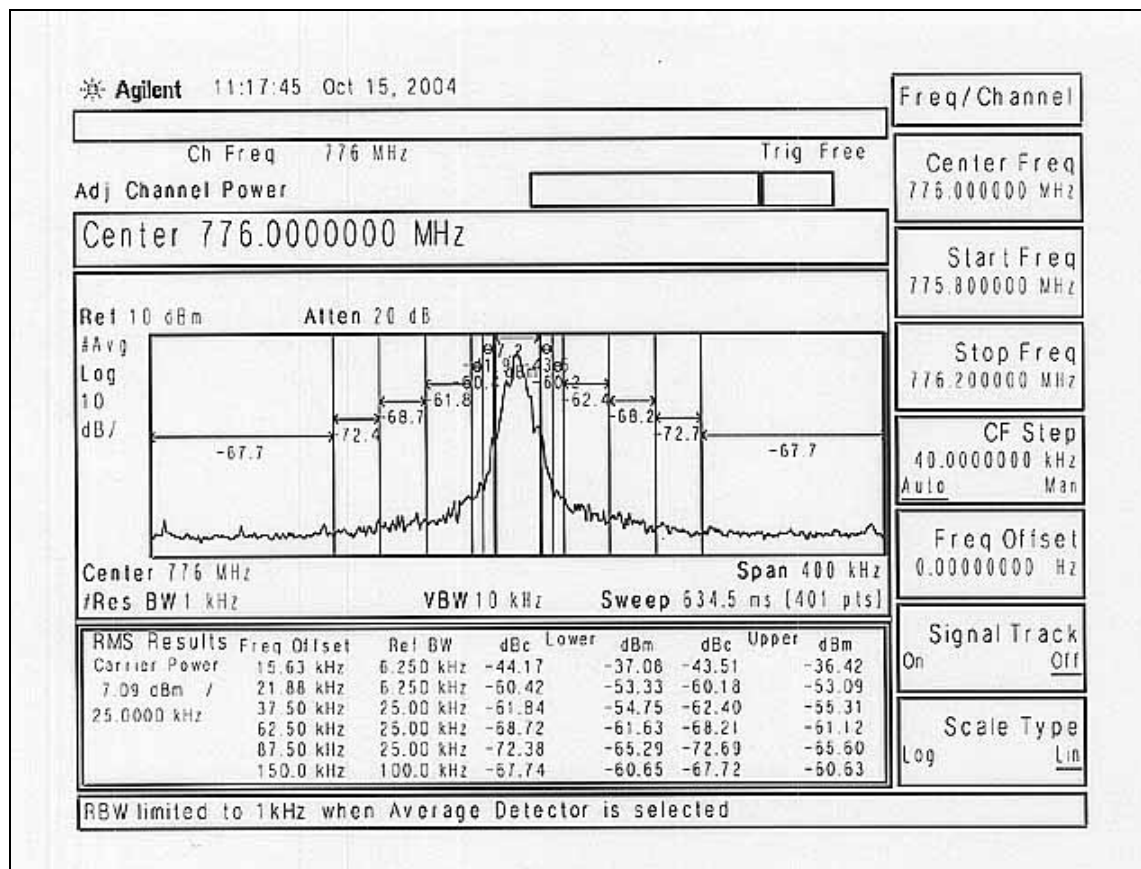


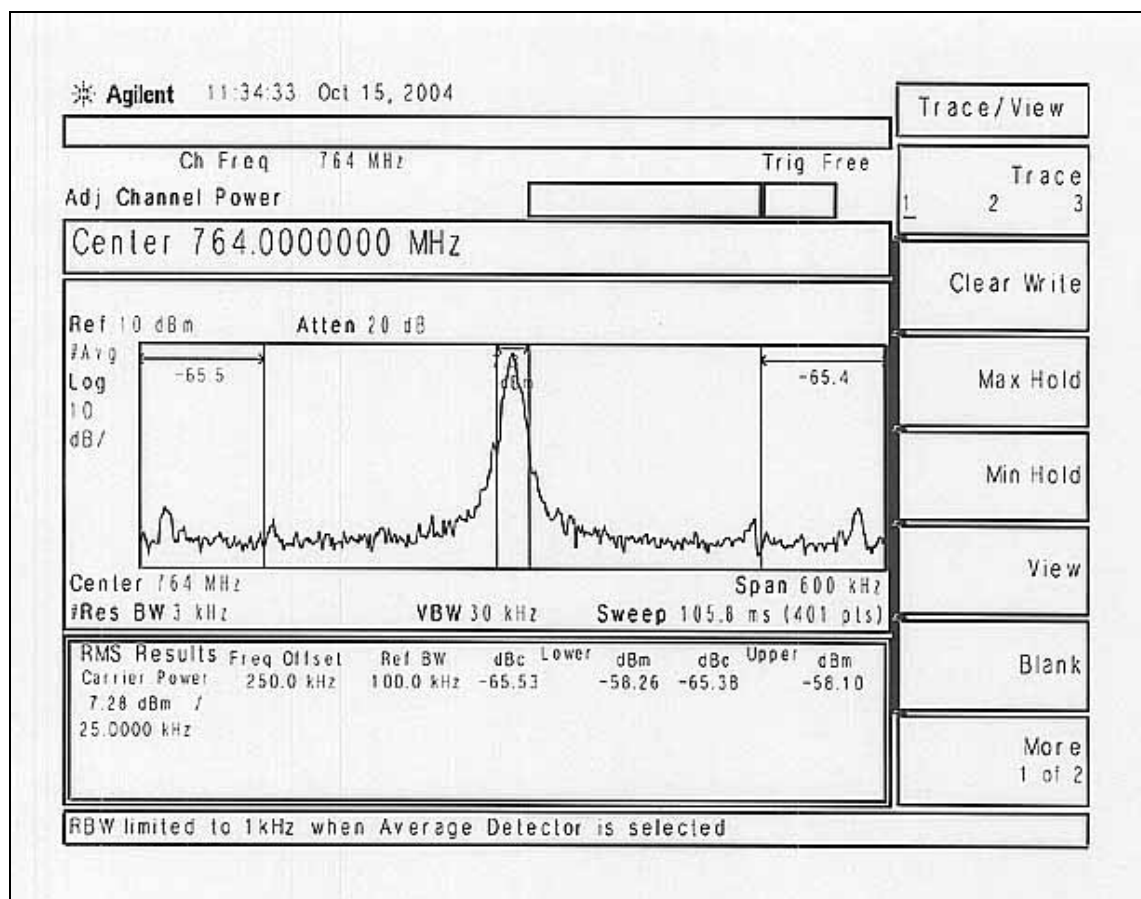
FCC 90.543 - ADJACENT CHANNEL POWER

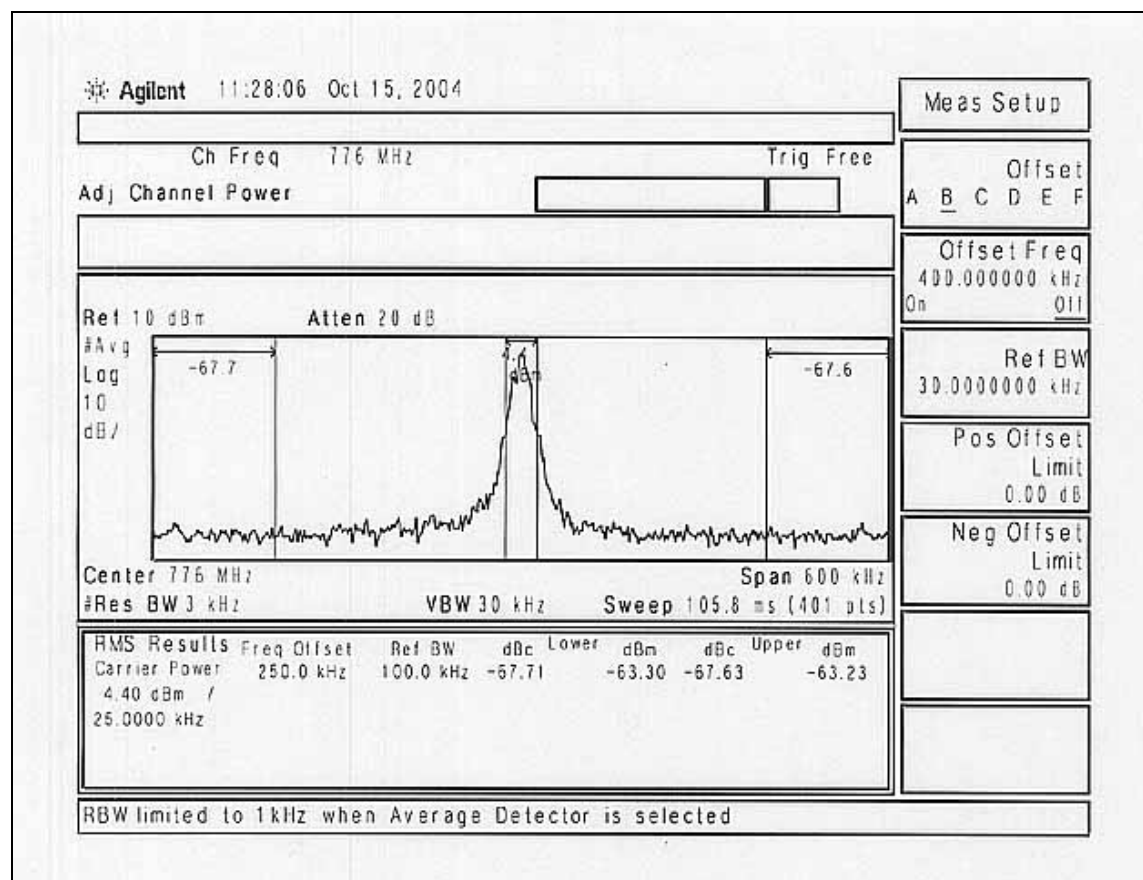
Test Conditions: The EUT was connected to a laptop computer via the serial interface. The laptop computer was used to command the EUT to begin transmitting or stop transmitting as well as to change the EUT from channel to channel. Also connected to the EUT was a GPS antenna. This GPS antenna was placed outside the room so that there was no obstructions to the sky. A separate DC power supply was used to provide 13.8 VDC 9A to the EUT. On the output of the EUT was placed a high power termination/attenuator which went to either a power meter or spectrum analyzer to measure the RF power, bandwidth, or frequency. The EUT was set to output the rated power of 40 watts. Bandwidth setting used: 1 kHz.

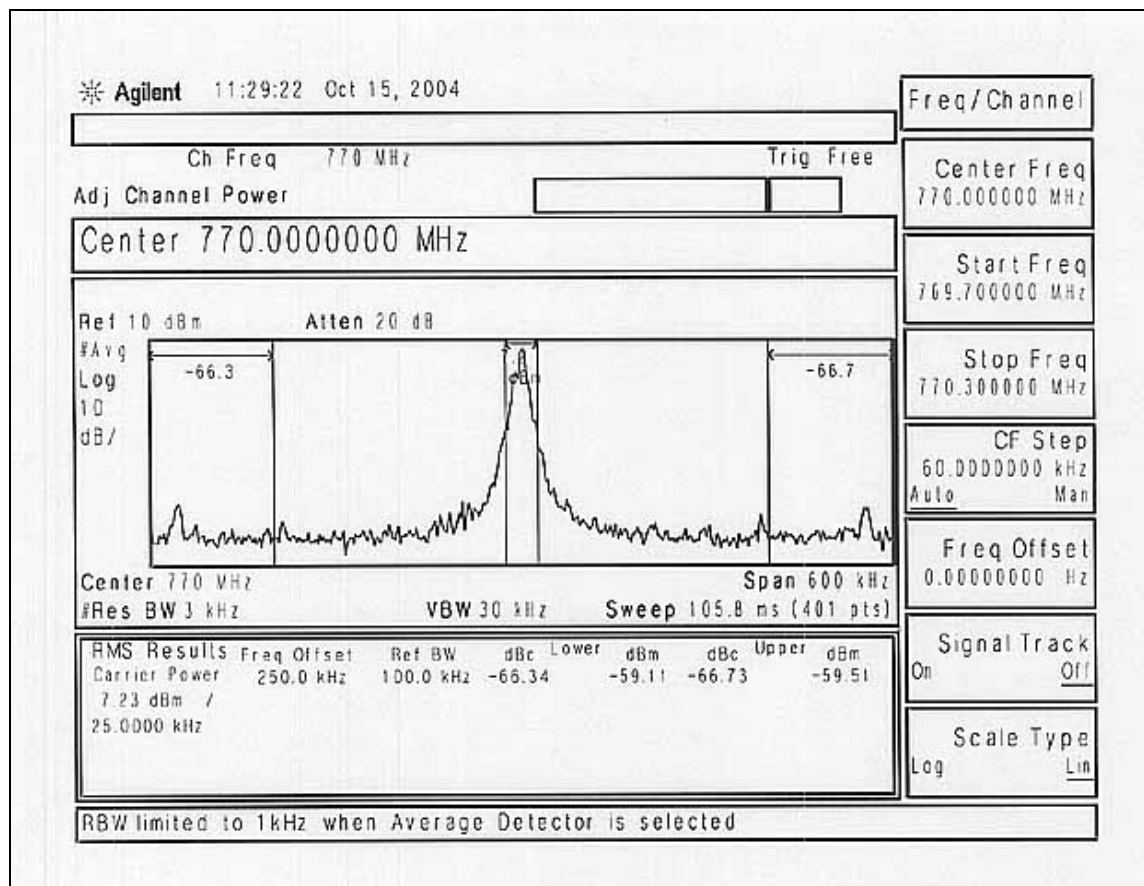


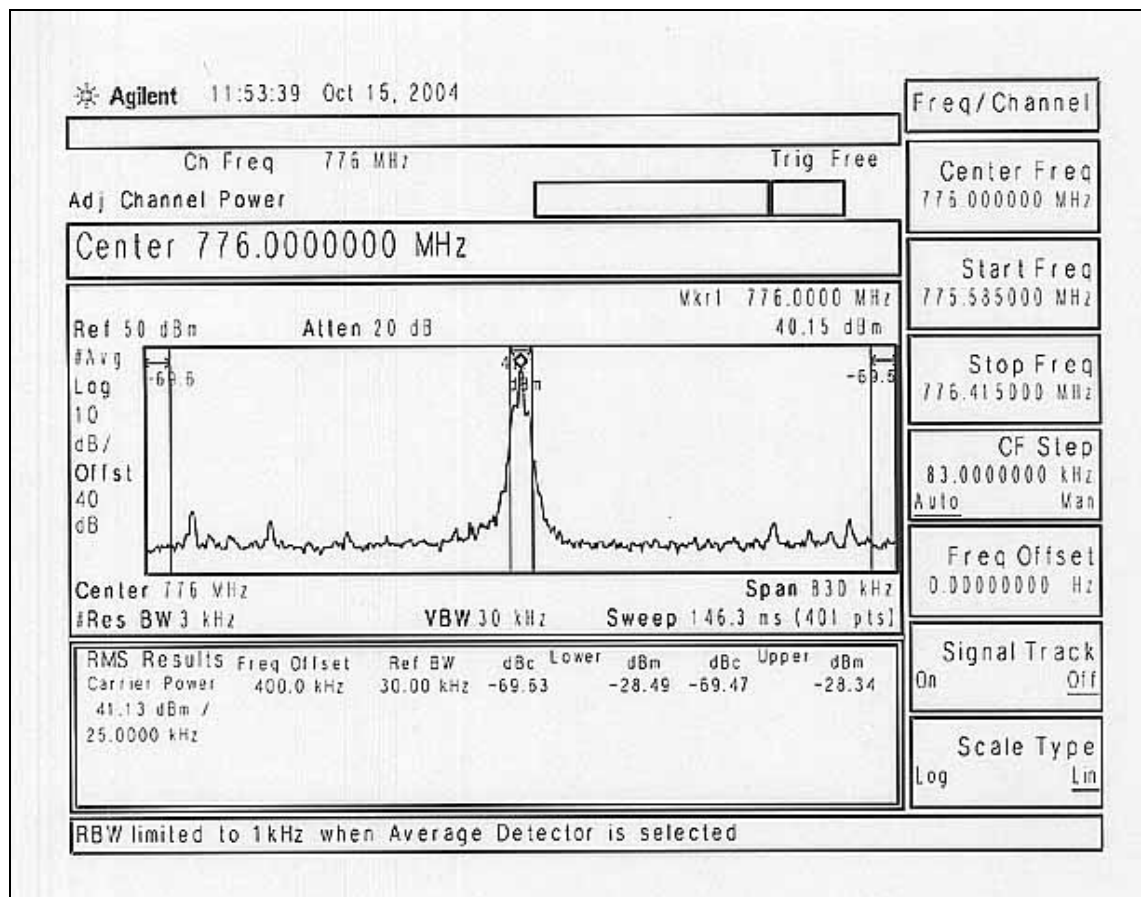












* Agilent 12:55:15 Oct 15, 2004

Ch Freq 806 MHz Trig Free

Adj Channel Power

Sweep Time 30.00 sRef 0 dBm #Atten 5 dB
$$\#A \vee q$$
Log10dB /0115140dB

1

Center 806 MHz#Res BW 1 kHzVBW 10 kHz

Span 200 kHz
fSweep 30 s (401 pts)

[illegible]SweepSweep Time30.00 \$Auto Man

Sweep

Single	Cont
--------	------

Auto Sweep

Coupling

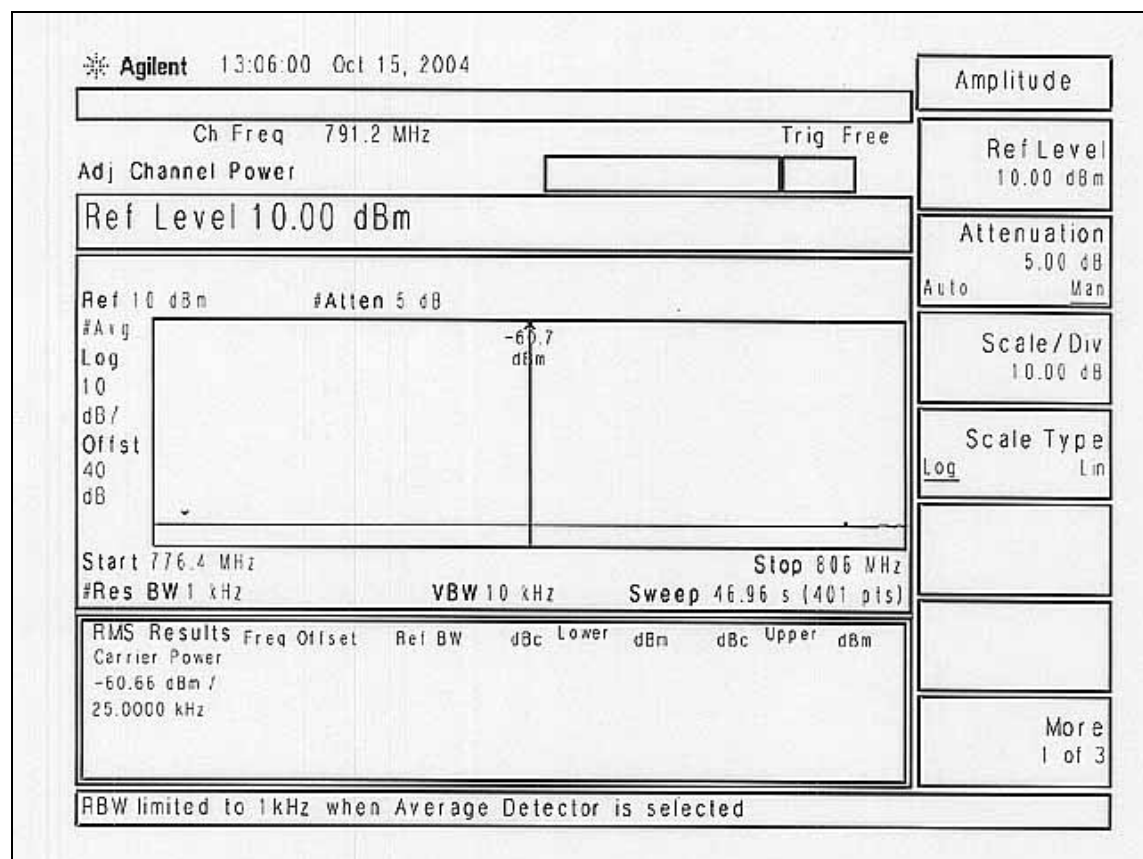
SR	SA
----	----

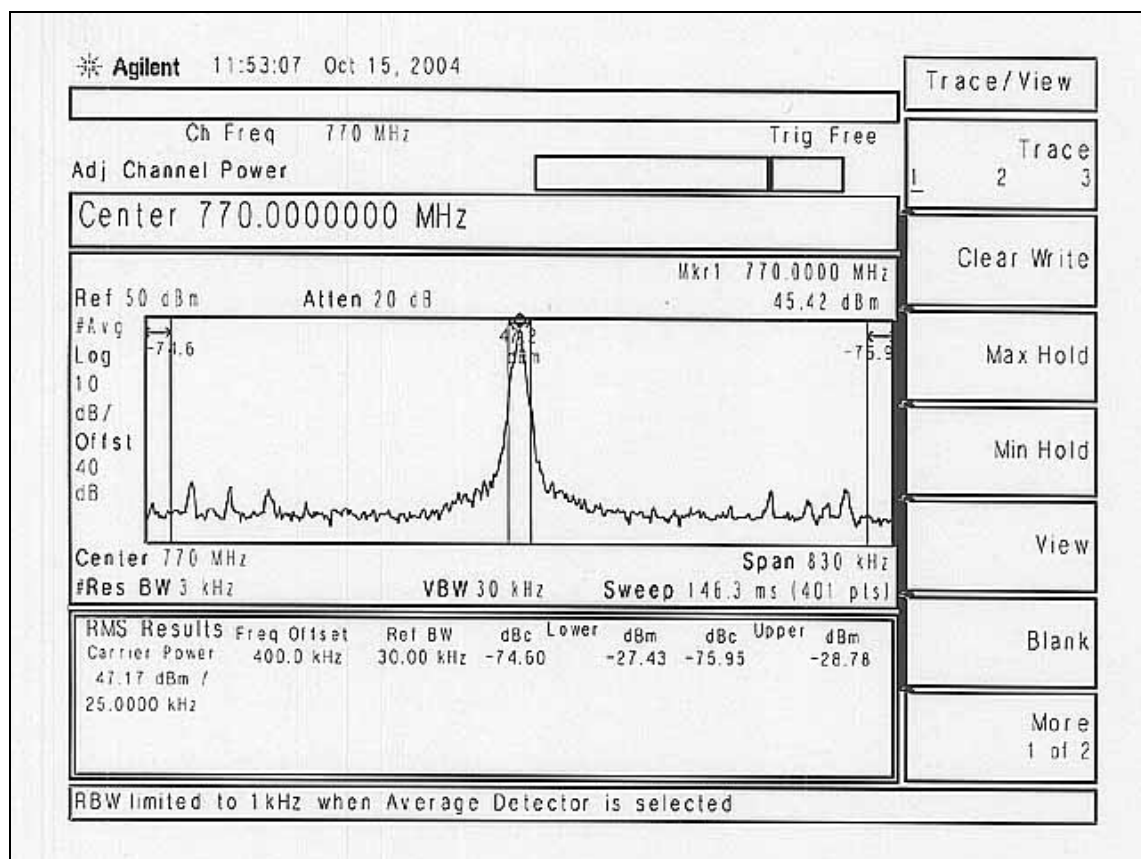
Gate.[011]

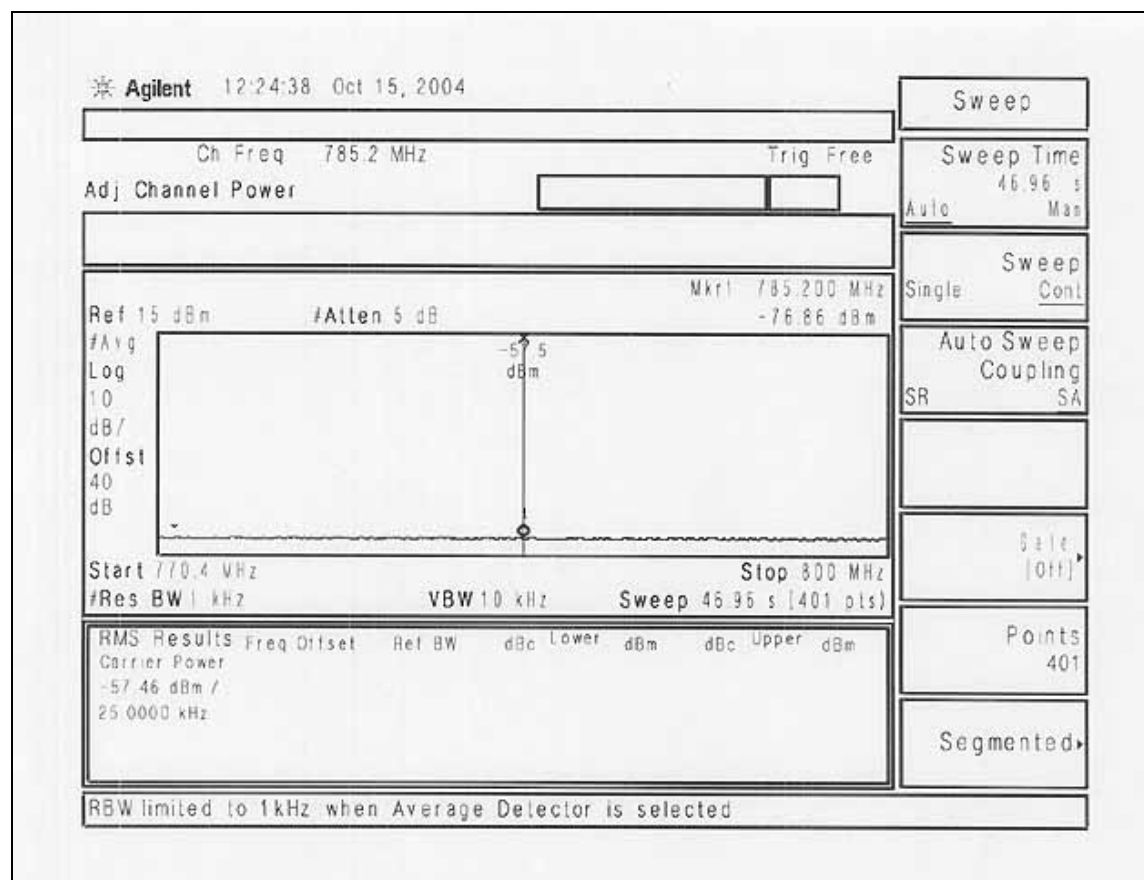
Points

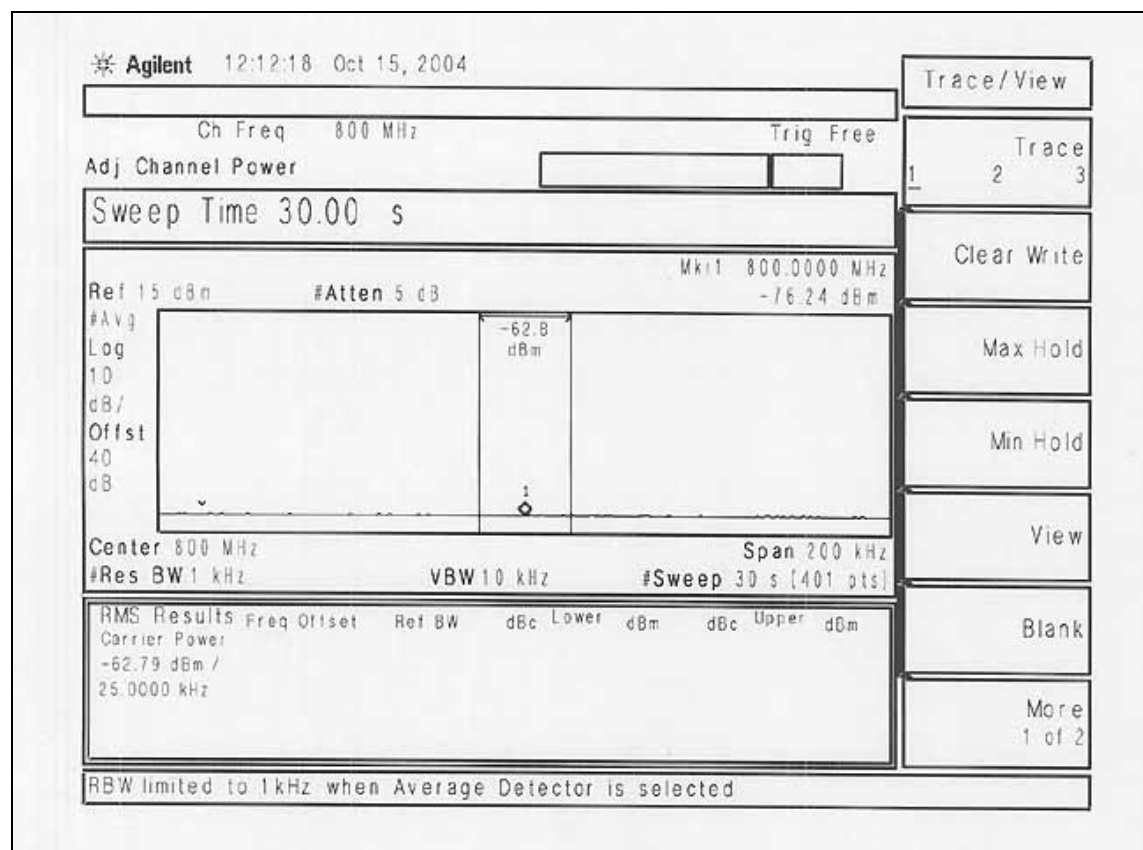
401Segmented,

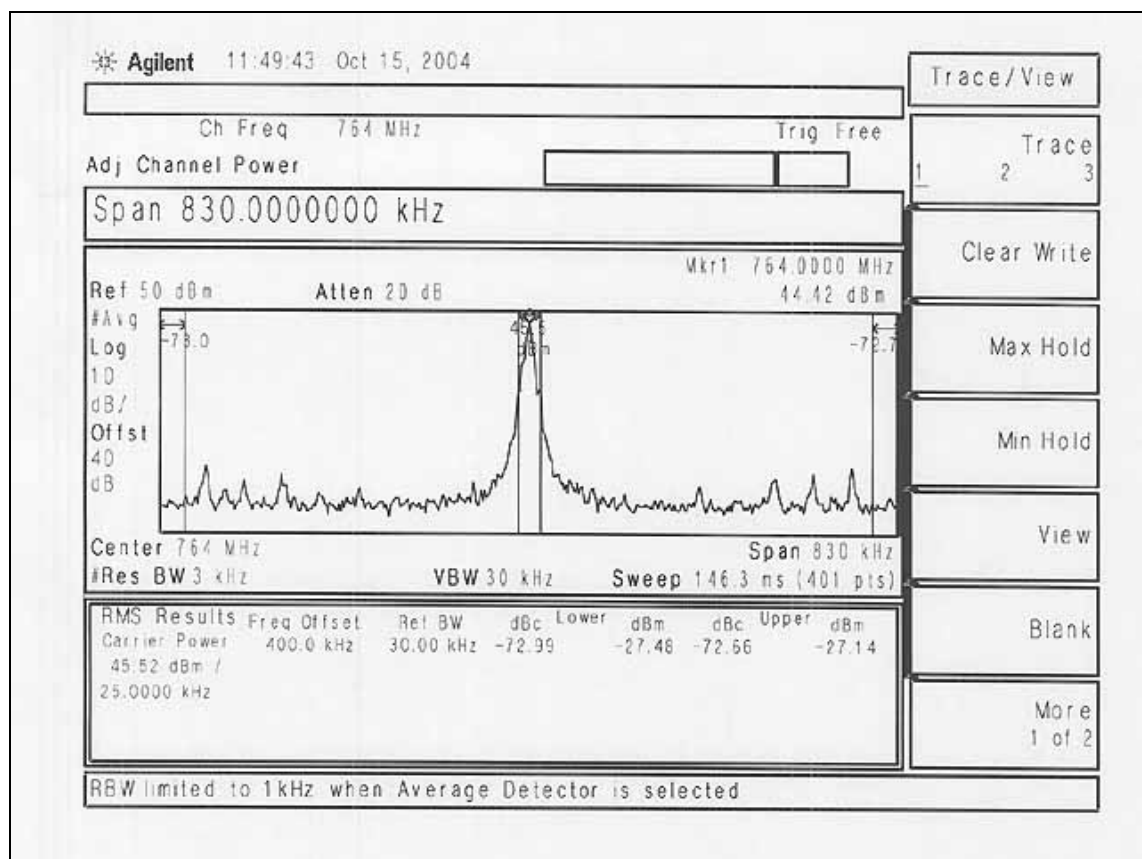
RBW limited to 1kHz when Average Detector is selected

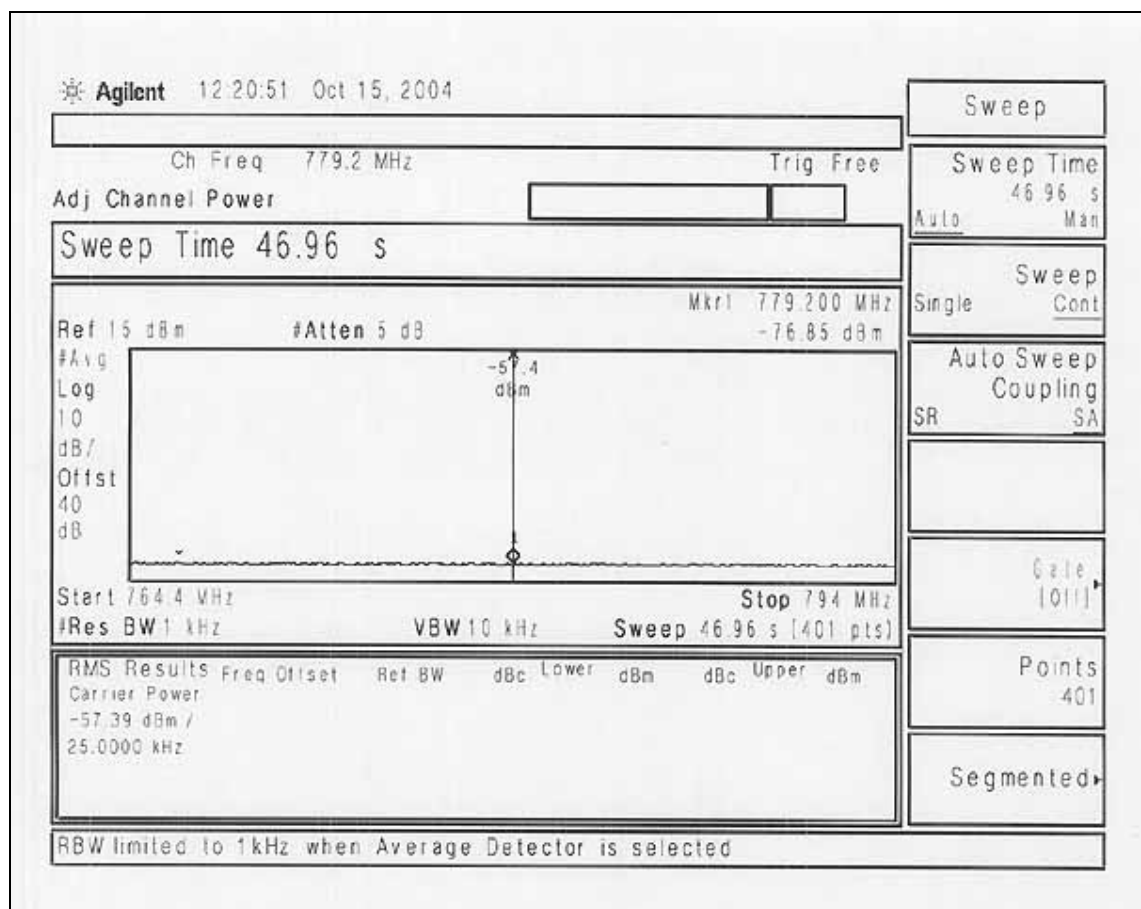


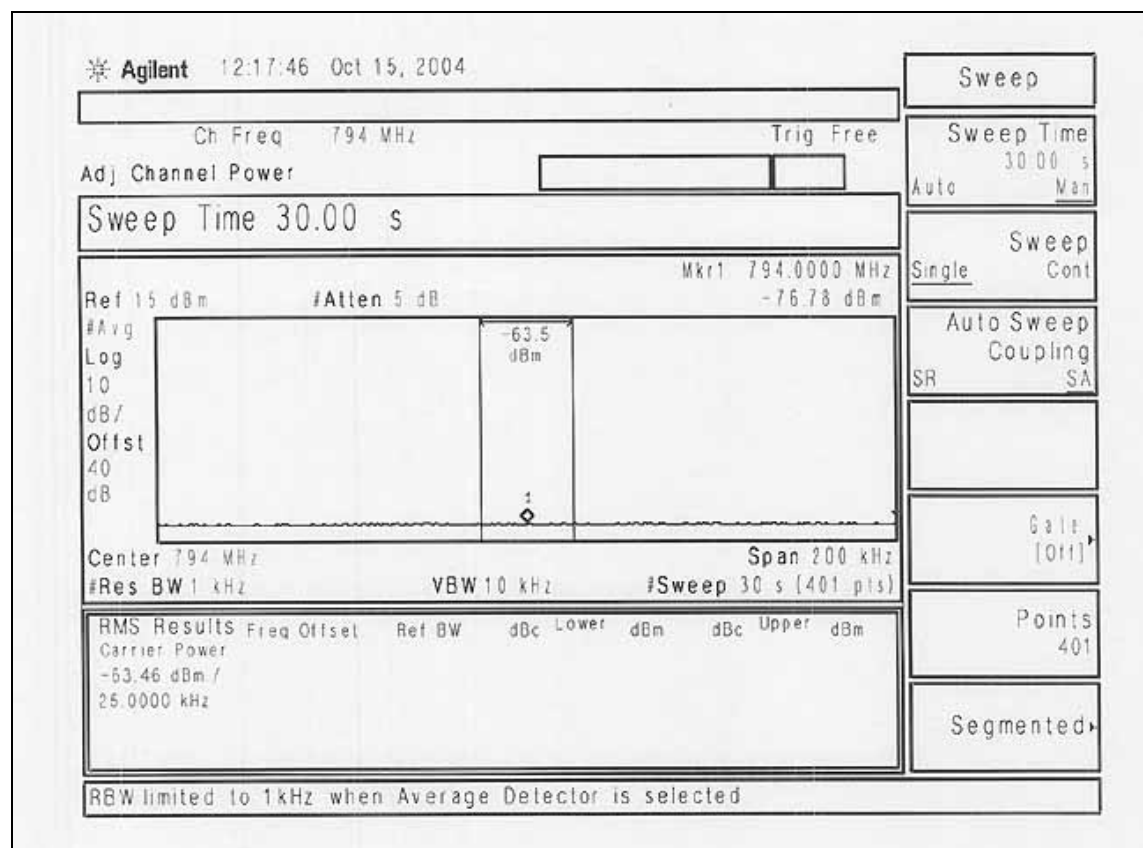












Test Equipment

Equipment	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	HP	E4402B	US 39010181	8/25/04	8/25/05

PHOTOGRAPH SHOWING ADJACENT CHANNEL POWER



FCC 90.543(e)

90.543(e) Setup

The EUT is stand alone on the tabletop. Connected to the EUT Tx port is a high power load/termination. Connected to the EUT three Rx ports are unterminated two meter long coaxial cable. Connected to the EUT serial port is a remotely located laptop computer ten meters away in the control room. Connect to the EUT GPS port is a standard GPS antenna with 5 meter long coaxial cable. Connected to the EUT ethernet port is an unterminated cat. 5 UTP cable. Connected to the other two remaining ports (bnc and DB-9) are unterminated shielded cables. Power to the EUT is supplied by a DC Power supply located beneath the wooden table. The remote laptop computer is used to check the status of the EUT, change channels of the EUT, and send command to the EUT and have it transmit continuously.

90.543(e) Test Conditions

The EUT was configured to transmit at the nominal rated power of 40W for the low (764 MHz), middle (770 MHz), and high (776 MHz) channels. For each of these three channels, the frequency band of 1559 MHz to 1610 MHz was scanned, detection was performed with a reduced resolution bandwidth and with the aid of a high pass filter at the required resolution bandwidth. There were no emissions in this frequency band within 50dB of the limit. Voltage to the EUT is 13.8 Vdc. Temperature: 21C, Humidity: 54%, Pressure: 100kPa.

Results

The EUT passes section 90.543(e).

Test Equipment List

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Antenna cable (10 meter site D)	NA	Andrew	LDF1-50	Cable#17	100204	100205
Antenna cable (Helix)	NA	Andrew	LDF1-50	Cable#19	101304	101305
Horn Antenna	01646	EMCO	3115	9603-4683	042503	042505
Microwave Pre-amp	00787	HP	83017A	3123A00282	042303	042305
Spectrum Analyzer	02467	Agilent	E7405A	US40240225	033103	033105
24" SMA Cable	2604	Argosy	UFA147A	0-0360-200200	012304	012305
1.5 GHz HPF	02116	HP	84300-80037	3643A00027	060603	060605