



IP MOBILENET TEST REPORT

FOR THE

IPSERIES IPM4 MOBILE RADIO

**FCC PART 90 AND PART 15 SUBPART B SECTIONS 15.107,
15.109 AND 15.111 CLASS B**

COMPLIANCE

DATE OF ISSUE: JANUARY 6, 2003

PREPARED FOR:

IP MobileNet
16842 Von Karman Ave., Suite 200
Irvine, CA 92606

P.O. No.: 002400-00
W.O. No.: 79904

PREPARED BY:

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5473A Clouds Rest
Mariposa, CA 95338

Date of test: November 21 - December 20, 2002

Report No.: FC03-001

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ADMINISTRATIVE INFORMATION

DATE OF TEST: November 21 - December 20, 2002

DATE OF RECEIPT: November 21, 2002

PURPOSE OF TEST: To demonstrate the compliance of the *IP*Series IPM4 Mobile Radio with the requirements for FCC Part 90 and Part 15 Subpart B Sections 15.107, 15.109 and 15.111 Class B devices.

TEST METHOD: ANSI C63.4 (1992) and FCC Part 90

FREQUENCY RANGE TESTED: 150 kHz - 6000 MHz

MANUFACTURER: IP MobileNet
16842 Von Karman Ave., Suite 200
Irvine, CA 92606

REPRESENTATIVE: Jim Lukes

TEST LOCATION: CKC Laboratories, Inc.
5473A Clouds Rest
Mariposa, CA 95338

SUMMARY OF RESULTS

As received, the IP MobileNet *IP*Series IPM4 Mobile Radio was found to be fully compliant with the following standards and specifications:

<p><u>United States</u></p> <ul style="list-style-type: none"> ➤ FCC Part 90 and Part 15 Subpart B Sections 15.107, 15.109 and 15.111 Class B using: ➤ ANSI C63.4 (1992) and FCC Part 90 method 	<p><u>Canada</u></p> <p>RSS-119 using:</p> <ul style="list-style-type: none"> ➤ FCC Part 90 and Part 15 Subpart B Sections 15.107, 15.109 and 15.111 Class B using: ➤ ANSI C63.4 (1992) and FCC Part 90 method
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CONDITIONS FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

APPROVALS

QUALITY ASSURANCE:



Steve Behm, Director of Engineering Services and Quality Assurance



Joyce Walker, Quality Assurance Administrative Manager



Septimiu Apahidean, Lab Manager



Chuck Kendall, Lab Manager

TEST PERSONNEL:



Eddie Wong, EMC Engineer



Monika Brandle, EMC Test Engineer

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

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

The following model has been tested by CKC Laboratories: **IP4HPV-GPS**

The following additional model is identical electrically to the one, which was tested, or any differences between them do not affect their EMC characteristics, and therefore complies to the level of testing equivalent to the tested model. **IPSeries IPM4 Mobile Radio**

EQUIPMENT UNDER TEST

IPSeries Mobile Radio

Manuf: IP MobileNet
Model: IPM4
Serial: IP40211234, IP40211215 & IP40211321
FCC ID: pending

PERIPHERAL DEVICES

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

Laptop

Manuf: Compaq
Model: Presario
Serial: 1V02DCH2E2T0
FCC ID: DoC

Power Supply

Manuf: Topward
Model: 6306D
Serial: 988614
FCC ID: NA

Power Supply

Manuf: Trip
Model: PR-7B
Serial: OQ44
FCC ID: NA

Power Supply

Manuf: Samplex America
Model: Sec121222510
Serial: 03051-0F03-0322
FCC ID: NA

Laptop

Manuf: Panasonic
Model: CF-27 Inspiron 2500
Serial: CF27EB6GCEM
FCC ID: DoC

MEASUREMENT UNCERTAINTY

TEST	HIGHEST UNCERTAINTY
Radiated Emissions	+/- 2.94 dB
Conducted Emissions	+/- 1.56 dB

Note: Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Statements of compliance are based on the nominal values only.

TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within +15°C and + 35°C.

The relative humidity was between 20% and 75%.

2.1033(c)(3) USER'S MANUAL

The necessary information is contained in a separate document.

2.1033 (c)(4) TYPE OF EMISSIONS

20K0F1D

2.1033(c)(5) FREQUENCY RANGE

450-469 MHz

2.1033(c)(6) OPERATING POWER

32 & 38 Watts

2.1033(c)(7) MAXIMUM POWER RATING

40 Watts

2.1033(c)(8) DC VOLTAGES

EUT obtains DC power from a 13.8 VDC power supply.

2.1033(c)(9) TUNE-UP PROCEDURE

The necessary information is contained in a separate document.

2.1033(c)(10) SCHEMATICS AND CIRCUITRY DESCRIPTION

The necessary information is contained in a separate document.

2.1033(c)(11) LABEL AND PLACEMENT

The necessary information is contained in a separate document.

2.1033(c)(12) SUBMITTAL PHOTOS

The necessary information is contained in a separate document.

2.1033(c)(13) MODULATION INFORMATION

FSK

2.1033(c)(14)/2.1046/90.205(h) - RF POWER OUTPUT

(1) The maximum allowable station effective radiated power (ERP) is dependent upon the station's antenna HAAT and required service area and will be authorized in accordance with Table 2. Applicants requesting an ERP in excess of that listed in Table 2 must submit an engineering analysis based upon generally accepted engineering practices and standards that includes coverage contours to demonstrate that the requested station parameters will not produce coverage in excess of that which the applicant requires.

(2) Applications for stations where special circumstances exist that make it necessary to deviate from the ERP and antenna heights in Table 2 will be submitted to the frequency coordinator accompanied by a technical analysis, based upon generally accepted engineering practices and standards, that demonstrates that the requested station parameters will not produce a signal strength in excess of 39 dBu at any point along the edge of the requested service area. The coordinator may then recommend any ERP appropriate to meet this condition.

(3) An applicant for a station with a service area radius greater than 32 km (20 mi) must justify the requested service area radius, which may be authorized only in accordance with Table 2, note 4. For base stations with service areas greater than 80 km, all operations 80 km or less from the base station will be on a primary basis and all operations outside of 80 km from the base station will be on a secondary basis and will be entitled to no protection from primary operations.

Table 2 -450-470 MHz - Maximum ERP/Reference HAAT for a Specific Service Area Radius

Service area radius (km)	3	8	13	16	24	32	404	484	644	804	
Maximum ERP (w)1	2	100	5002	5002	5002	5002	5002	5002	5002	5002	
Up to reference HAAT (m)	3	15	15	15	27	63	125	250	410	950	2700

The transmitting antenna will not be provided by the manufacturer for sale with the device. The installer will be the responsible party for the filing/measurement/ calculation involving EIRP and HAAT.



Antenna Terminal 2

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

Not applicable to this unit.

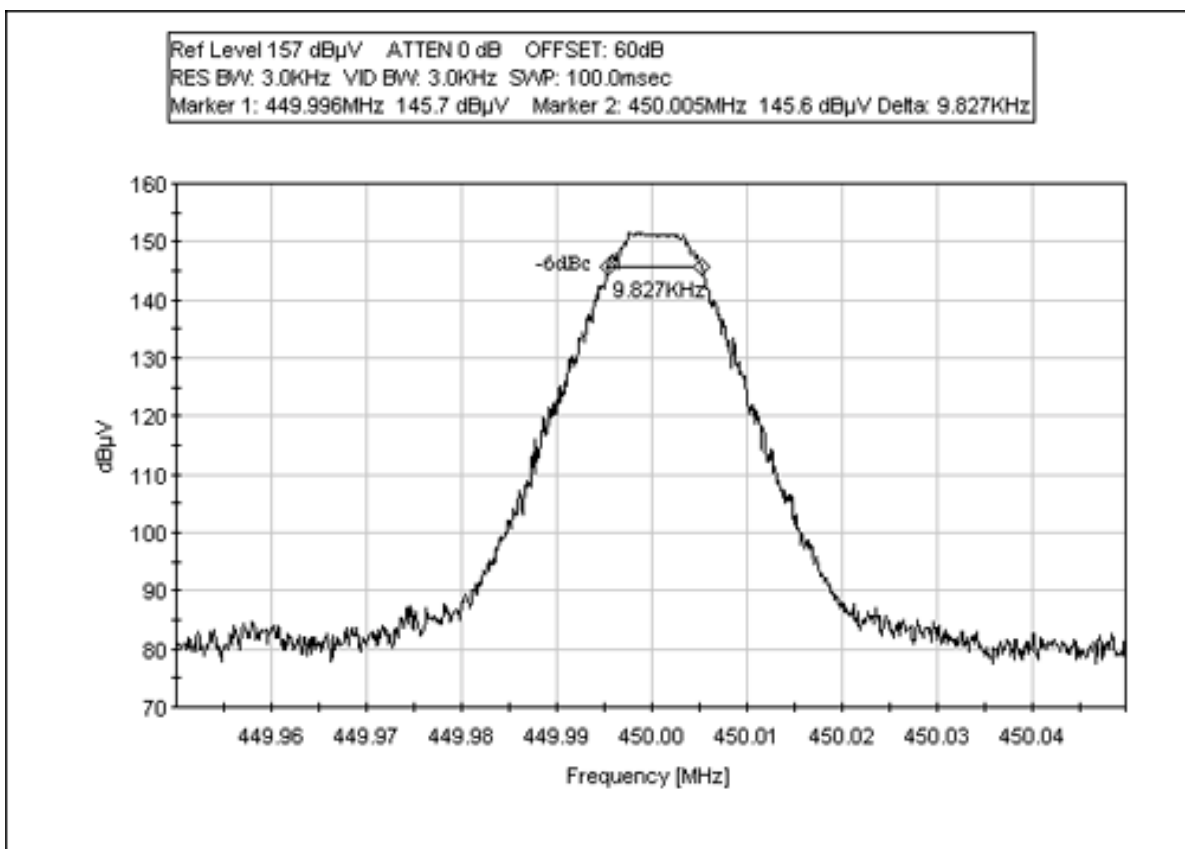
2.1033(c)(14)/2.1047(b) MODULATION CHARACTERISTICS – MODULATION LIMITING RESPONSE

Not applicable to this unit.

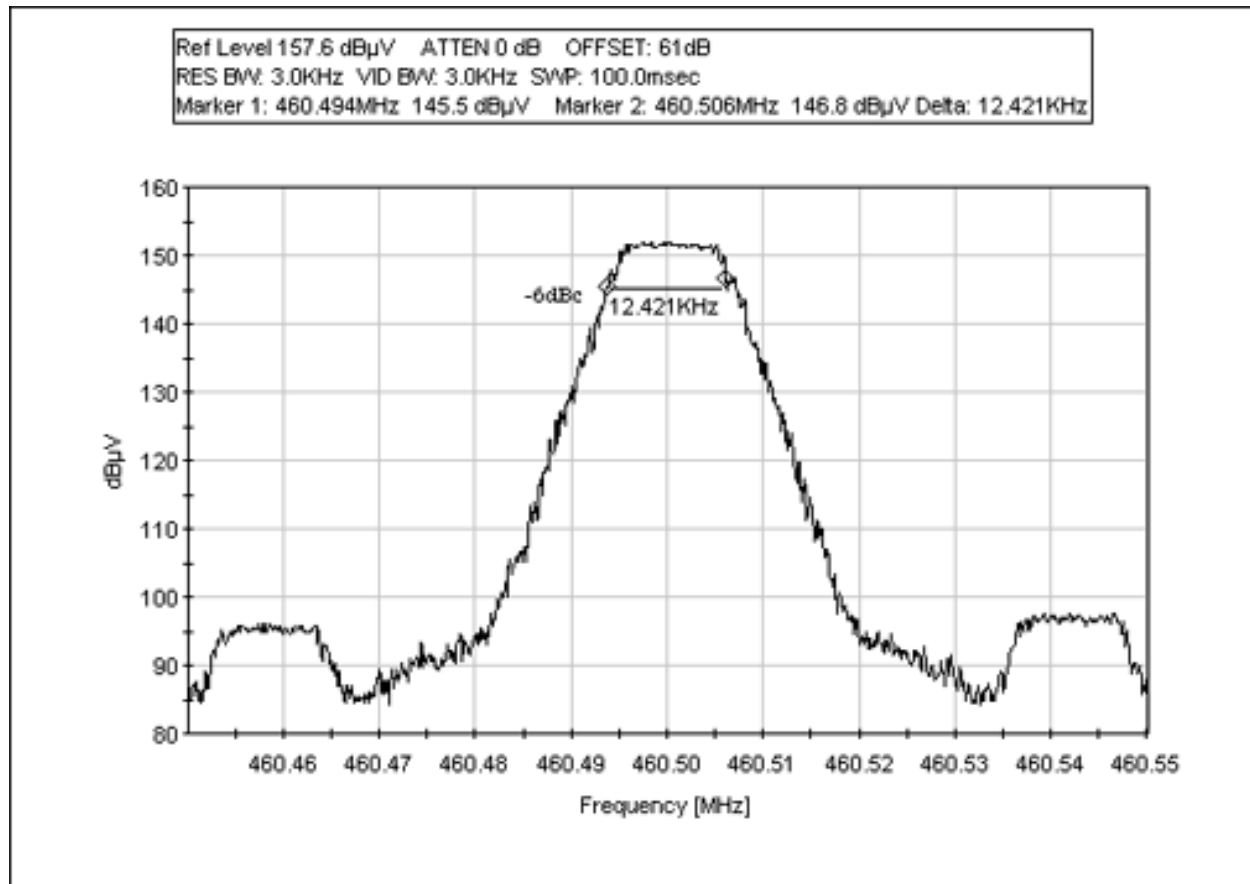
2.1033(c)(14)/2.1049(i)/90.209/90.210 - OCCUPIED BANDWIDTH

Test Conditions: BW limitation measurement is performed with a spectrum analyzer connected to the TX antenna port of the EUT via a 40dB attenuator and a step attenuator. RS232 Port is connected to a laptop, GPS antenna port and ethernet port are left unpopulated. EUT obtains DC power from a 13.8 VDC power supply.

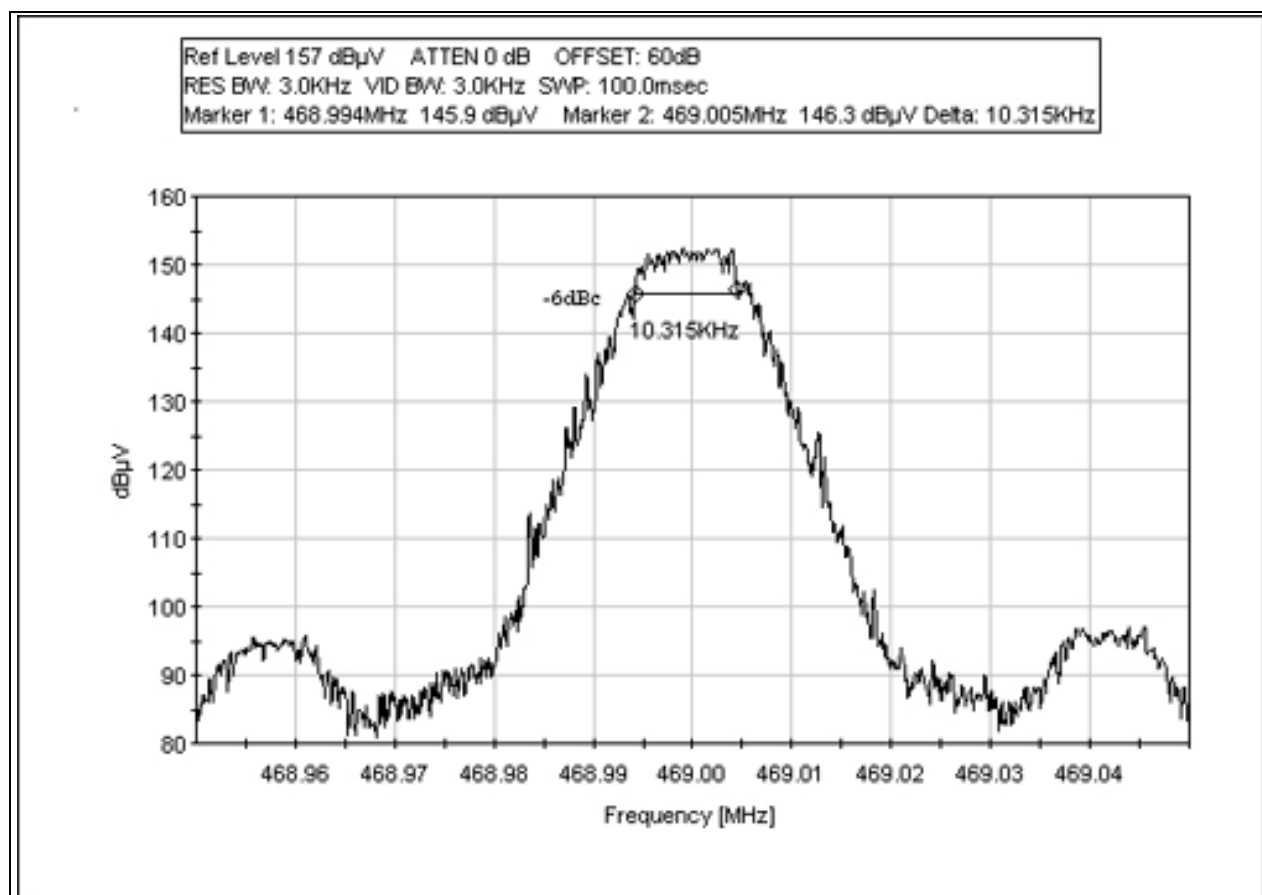
BANDWIDTH PLOT - 450 MHz



BANDWIDTH PLOT - 460 MHz



BANDWIDTH PLOT - 469 MHz

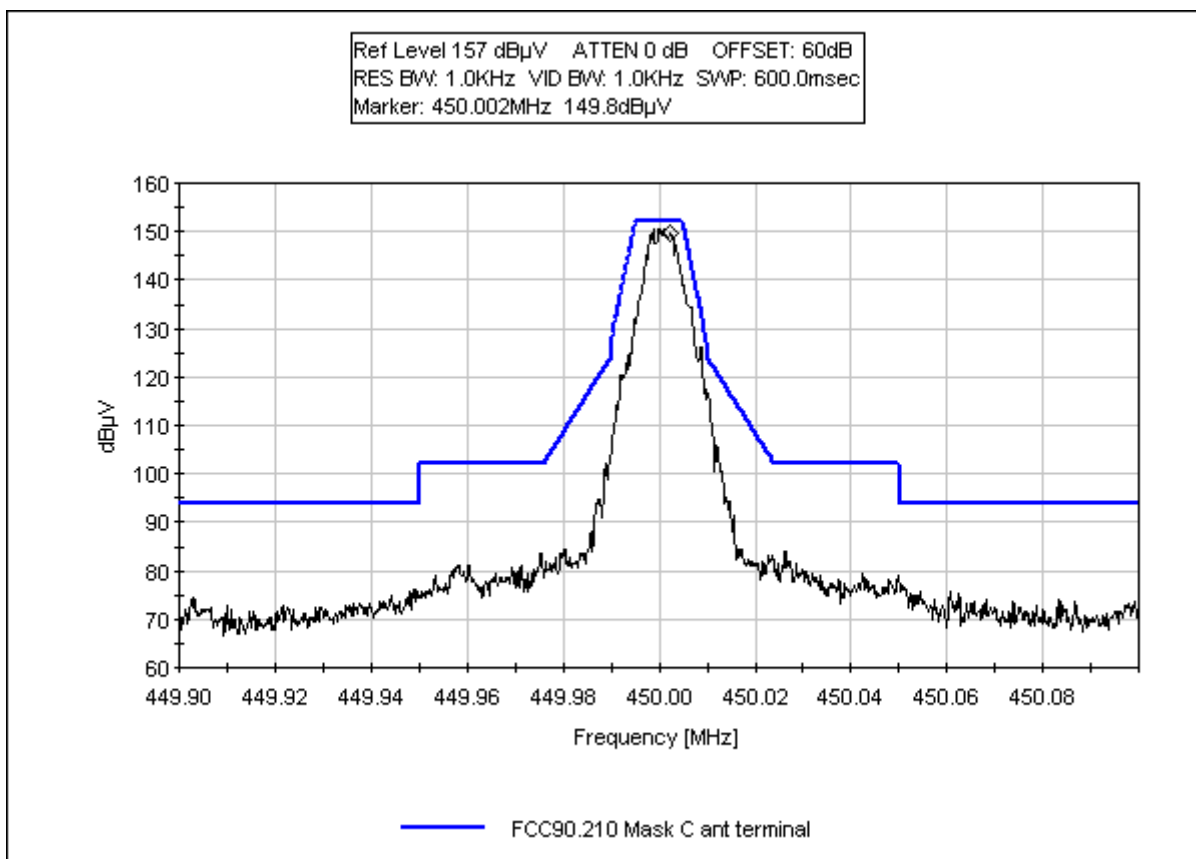




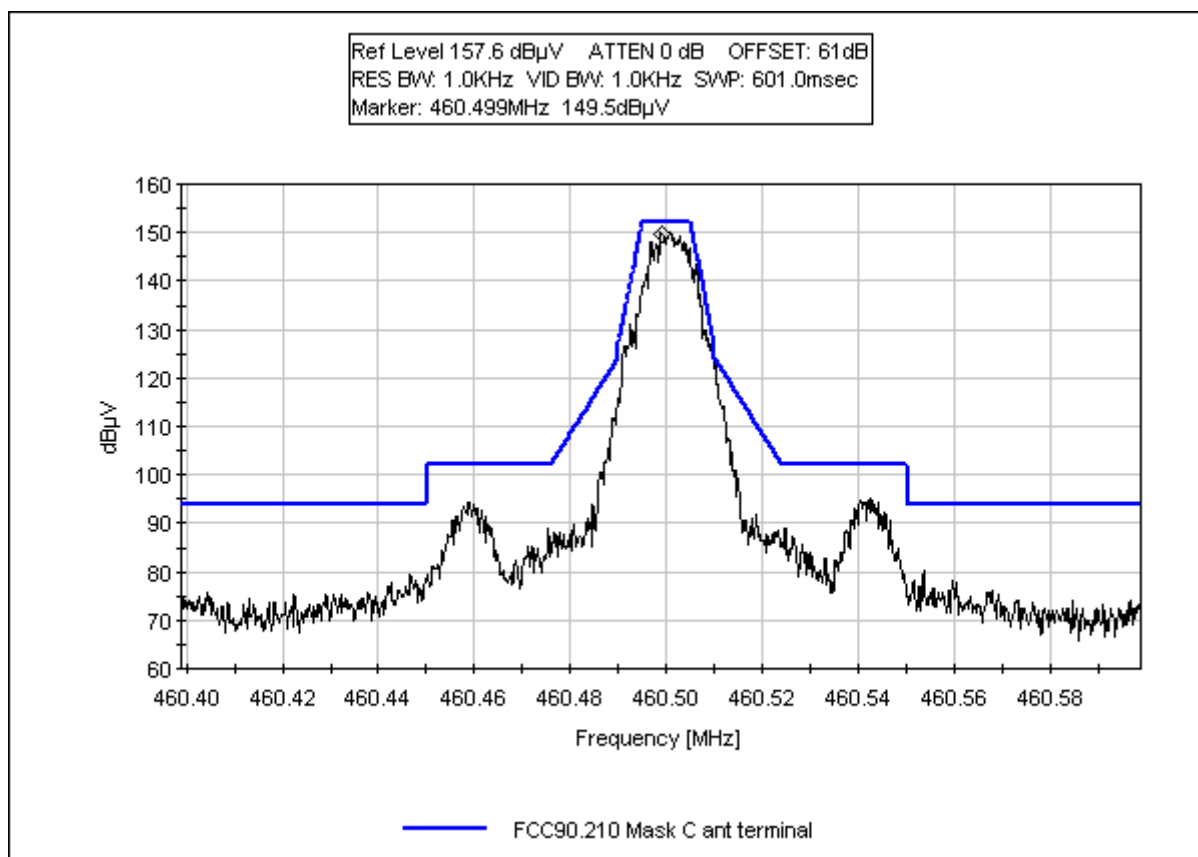
Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
4MHz-1.5 GHz						
Spectrum Analyzer	01865	HP	8566B	2532A02509	092702	092703
QP Adapter	01437	HP	85650A	3303A01884	092702	092703
1/4" Helix Coaxial Cable	NA	Andrew	FSJ-50A-4	Cable#7 (6 ft)	071502	071503
Ave Power Meter	02082	HP	435B	2445A11881	093002	093003
1.5 GHz-6 GHz						
1.5 GHz HPF	2116	HP	84300-80037	3643A00027	062502	062503

90.210 EMISSIONS MASK - 450 MHz

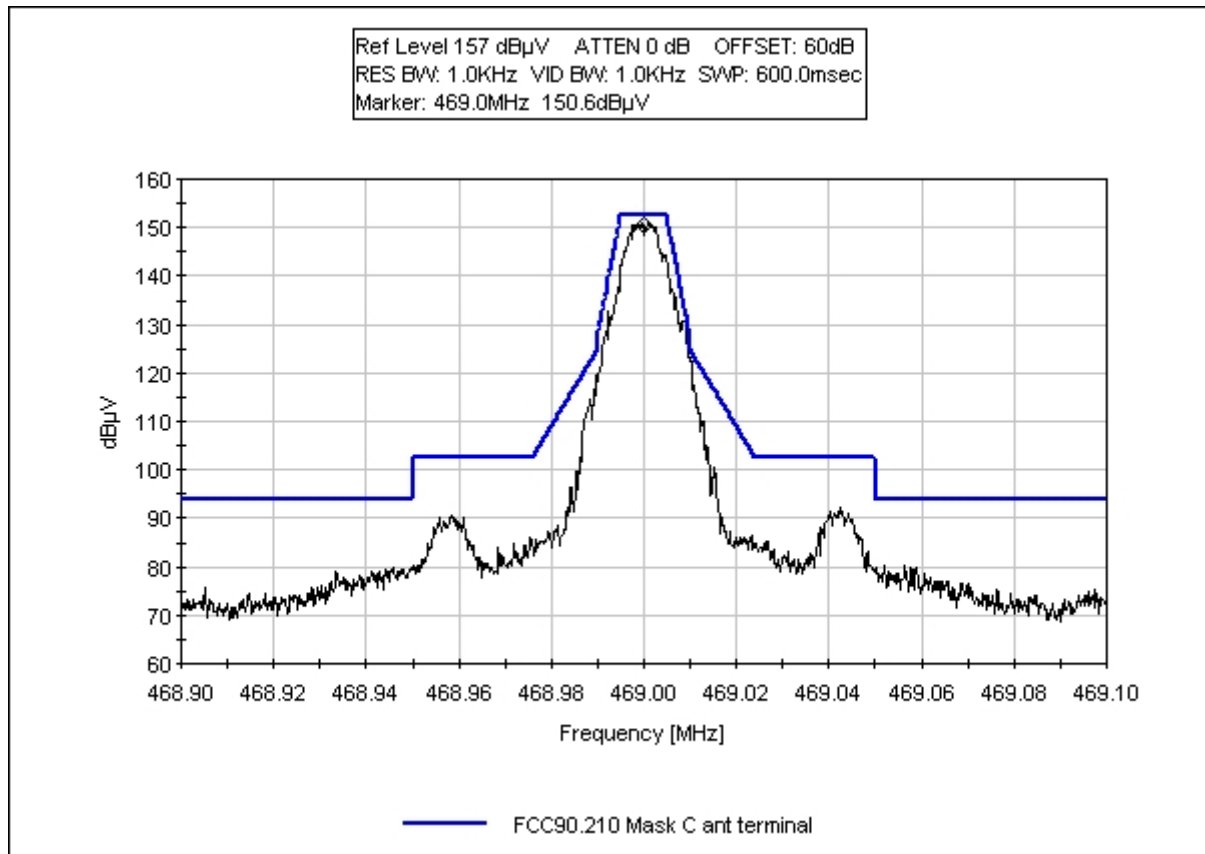
Test Conditions: BW limitation measurement is performed with a spectrum analyzer connected to the TX antenna port of the EUT via a 40dB attenuator and a step attenuator. RS232 Port is connected to a laptop, GPS antenna port and ethernet port are left unpopulated. EUT obtains DC power from a 13.8 VDC power supply.



90.210 EMISSIONS MASK - 460 MHz



90.210 EMISSIONS MASK - 469 MHz



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

Limit line for Spurious Conducted Emission

$$\text{Required Attenuation} = 43 + 10 \log P \text{ dB}$$

$$\text{Limit line (dBuV)} = V_{\text{dBuV}} - \text{Attenuation}$$

$$\begin{aligned} V_{\text{dBuV}} &= 20 \log \frac{V}{1 \times 10^{-6}} \\ &= 20 (\log V - \log 1 \times 10^{-6}) \\ &= 20 \log V - 20 \log 1 \times 10^{-6} \\ &= 20 \log V - 20 (-6) \\ &= 20 \log V + 120 \end{aligned}$$

$$\begin{aligned} \text{Attenuation} &= 43 + 10 \log P \\ &= 43 + 10 \log \frac{V^2}{R} \\ &= 43 + 10 (\log V^2 - \log R) \\ &= 43 + 10 (2 \log V - \log R) \\ &= 43 + 20 \log V - 10 \log R \end{aligned}$$

$$\begin{aligned} \text{Limit line} &= V_{\text{dBuV}} - \text{Attenuation} \\ &= 20 \log V + 120 - (43 + 20 \log V - 10 \log R) \\ &= 20 \log V + 120 - 43 - 20 \log V + 10 \log R \\ &= 20 \log V + 120 - 43 - 20 \log V + 10 \log R \\ &= 120 - 43 + 10 \log 50 \quad \text{Note : } R = 50 \Omega \\ &= 120 - 43 + 16.897 \\ &= 94 \text{ dBuV at any power level} \end{aligned}$$

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

Customer: **IP MobileNet**
 Specification: **FCC90.210 Conducted Spurious Emission**
 Work Order #: **79904** Date: 12/19/2002
 Test Type: **Conducted Emissions** Time: 18:43:34
 Equipment: **Land Mobile Transceiver** Sequence#: 5
 Manufacturer: IP MobileNet Tested By: Eddie Wong
 Model: IP4HPV-GPS 110V 60Hz
 S/N: IP40211234

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211234

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	Sec121222510	03051-0F03-0322
Laptop	Compaq	Presario	1V02DCH2E2T0

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 ohm load. RS232 Port is connected to a remote laptop, GPS antenna port is connected to a GPS antenna, the ethernet port is unpopulated. EUT obtains DC power from a 13.8 VDC power supply. Mode: Transmitting Tx 450 MHz, Rx 448 MHz, Inj 493 MHz. Required attenuation = -43+10 Log P = 94 dBuV. Freq range: 4 MHz - 6 GHz. Frequency range of measurement = 4 MHz - 6 GHz. Frequency 4 MHz - 30 MHz, RBW=9kHz, VBW=9 kHz; 30 MHz - 1000 MHz, RBW=120 kHz, VBW=120 kHz; 1000 MHz - 6000 MHz, RBW=1 MHz, VBW=1 MHz. 13.8 VDC (110VAC, 60 Hz) 19°C, 35% relative humidity.

Transducer Legend:

T1=Brea Cable: 6' 1/4" Helix - Brea # 7.	T2=1.5 GHz HPF AN 2116
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Measurement Data: Reading listed by margin. Test Lead: Antenna Terminal

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	Dist dB	Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	2250.000M	88.0	+0.7	+0.7		+0.0	89.4	94.0	-4.6	Anten
2	1350.080M	85.4	+0.5			+0.0	85.9	94.0	-8.1	Anten
	Ave									
^	1350.080M	90.8	+0.5			+0.0	91.3	94.0	-2.7	Anten
4	900.120M	85.5	+0.0			+0.0	85.5	94.0	-8.5	Anten
5	1799.944M	76.0	+0.6	+0.7		+0.0	77.3	94.0	-16.7	Anten
6	3600.000M	72.9	+1.0	+0.5		+0.0	74.4	94.0	-19.6	Anten
7	3150.300M	71.8	+1.1	+0.5		+0.0	73.4	94.0	-20.6	Anten
8	2240.000M	71.4	+0.7	+0.7		+0.0	72.8	94.0	-21.2	Anten

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

Customer: **IP MobileNet**
 Specification: **FCC90.210 Conducted Spurious Emission**
 Work Order #: **79904** Date: 11/21/2002
 Test Type: **Conducted Emissions** Time: 17:03:50
 Equipment: **Land Mobile Transceiver** Sequence#: 1
 Manufacturer: IP MobileNet Tested By: Eddie Wong
 Model: IP4HPV-GPS 120V 60Hz
 S/N: IP40211215

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211215

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	Sec121222510	03051-0F03-0322

Test Conditions / Notes:

The Tx port of the EUT is connected to a spectrum analyzer via a 40 dB attenuator and a step attenuator. RS232 Port is connected to a laptop, GPS antenna port and ethernet port are left unpopulated. EUT obtains DC power from a 13.8 VDC power supply. The laptop is running test program to exercise the EUT. Mode: Transmitting Tx 460.5 MHz, Rx 463.5 MHz, Inj 508.5 MHz. Freq range: 4 MHz - 6 GHz. Required attenuation = -43 + 10 Log P = 94 dBuV at antenna terminal Frequency range of measurement = 4 MHz - 6 GHz. Frequency 4 MHz - 30 MHz, RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz, RBW=120 kHz, VBW=120 kHz; 1000 MHz - 6000MHz, RBW=1 MHz, VBW=1 MHz. 13.8 VDC (110VAC, 60 Hz) 24°C, 24% relative humidity. External attenuation of 60.6 dB is compensated for.

Transducer Legend:

T1=Brea Cable: 6' 1/4" Helix - Brea # 7.	T2=1.5 GHz HPF AN 2116
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Measurement Data:		Reading listed by margin.				Test Lead: Antenna Terminal					
#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	1381.440M	82.7	+0.5	+2.6			+0.0	85.8	94.0	-8.2	Anten
2	921.160M	85.1	+0.0	+0.0			+0.0	85.1	94.0	-8.9	Anten
	Ave										
^	921.160M	92.3	+0.0	+0.0			+0.0	92.3	94.0	-1.7	Anten
4	2302.468M	80.9	+0.7	+0.7			+0.0	82.3	94.0	-11.7	Anten
5	921.600M	75.5	+0.0	+0.0			+0.0	75.5	94.0	-18.5	Anten
	QP										
6	3223.560M	70.5	+1.0	+0.5			+0.0	72.0	94.0	-22.0	Anten

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112
 Customer: **IP MobileNet**
 Specification: **FCC90.210 Conducted Spurious Emission**
 Work Order #: **79904** Date: 12/12/2002
 Test Type: **Conducted Emissions** Time: 11:06:16
 Equipment: **Land Mobile Transceiver** Sequence#: 6
 Manufacturer: IP MobileNet Tested By: Eddie Wong
 Model: IP4HPV-GPS 110V 60Hz
 S/N: IP40211321

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211321

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	Sec121222510	03051-0F03-0322

Test Conditions / Notes:

The TX port of the EUT is connected to a spectrum analyzer via a 40 dB attenuator and a step attenuator. RS232 Port is connected to a laptop, GPS antenna port and ethernet port are left unpopulated. EUT obtains DC power from a 13.8 VDC power supply. The laptop is running test program to exercise the EUT. Frequency range: 4 MHz - 6 GHz. Frequency range of measurement = 4 MHz - 6 GHz. Frequency 4 MHz - 30 MHz, RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz, RBW=120 kHz, VBW=120 kHz; 1000 MHz - 6000 MHz. RBW=1 MHz, VBW=1 MHz. 13.8 VDC (110VAC, 60 Hz) 24°C, 24% relative humidity. External attenuation of 60 dB is compensated for.

Transducer Legend:

T1=Brea Cable: 6' 1/4" Helix - Brea # 7.	T2=1.5 GHz HPF AN 2116
--	------------------------

Measurement Data:		Reading listed by margin.					Test Lead: Antenna Terminal				
#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	937.968M	91.2	+0.0				+0.0	91.2	94.0	-2.8	Anten
2	1407.020M	88.9	+0.5				+0.0	89.4	94.0	-4.6	Anten
3	1876.000M	87.2	+0.7	+0.3			+0.0	88.2	94.0	-5.8	Anten
4	1407.100M	82.2	+0.5	+1.4			+0.0	84.1	94.0	-9.9	Anten
5	1407.100M	82.1	+0.5	+1.4			+0.0	84.0	94.0	-10.0	Anten
6	2345.100M	78.7	+0.8	+0.7			+0.0	80.2	94.0	-13.8	Anten
7	429.400M	79.5	+0.0				+0.0	79.5	94.0	-14.5	Anten
8	509.200M	78.2	+0.0				+0.0	78.2	94.0	-15.8	Anten
9	3282.900M	71.7	+0.9	+0.5			+0.0	73.1	94.0	-20.9	Anten
10	3752.300M	69.2	+1.1	+0.5			+0.0	70.8	94.0	-23.2	Anten
11	2813.700M	69.0	+1.1	+0.5			+0.0	70.6	94.0	-23.4	Anten



Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
4MHz-1.5 GHz						
Spectrum Analyzer	01865	HP	8566B	2532A02509	092702	092703
QP Adapter	01437	HP	85650A	3303A01884	092702	092703
¼" Helix Coaxial Cable	NA	Andrew	FSJ-50A-4	Cable#7 (6 ft)	071502	071503
Ave Power Meter	02082	HP	435B	2445A11881	093002	093003
1.5 GHz-6 GHz						
1.5 GHz HPF	2116	HP	84300-80037	3643A00027	062502	062503

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

Test Conditions: The Tx port of the EUT is connected to 50ohm load. RS232 Port is connected to a remote laptop, GPS antenna port and the ethernet port is unpopulated. EUT obtains DC power from a 13.8 VDC power supply. The laptop is running test program to exercise the EUT. Mode: Transmitting Tx 469 MHz, Rx 463.5 MHz, Inj 509 MHz. Mode: Transmitting Tx 450 MHz, Rx 448 MHz, Inj 493 MHz. Required attenuation = $-43+10 \log P = 82.3$ dBuV/m at 3 meters. Mode: Receive Tx 460.5 MHz, Rx 463.5 MHz, Inj 508.5 MHz. Frequency range: 4 MHz - 6 GHz. Frequency range of measurement = 4 MHz - 6 GHz. Frequency 4 MHz - 30 MHz, RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz, RBW=120 kHz, VBW=120 kHz; 1000 MHz - 6000 MHz, RBW=1 MHz, VBW=1 MHz. 13.8 VDC (110 VAC, 60 Hz) 24°C, 24% relative humidity.

Operating Frequency: 450 MHz

Channels: Low

Highest Measured Output Power: 45.05 ERP(dBm)= 32 ERP(Watts)

Distance: 3 meters

Limit: $43+10\log(P)$ 58.05 dBc

Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
2,250.03	-32.00	Horiz	77.05
3,150.14	-34.40	Vert	79.45
1,350.08	-37.80	Vert	82.85
1,350.07	-38.40	Vert	83.45
3,149.93	-41.50	Horiz	86.55
1,350.15	-42.00	Horiz	87.05
3,600.04	-42.30	Horiz	87.35
3,599.89	-42.50	Vert	87.55
2,700.02	-42.80	Vert	87.85
900.11	-44.00	Horiz	89.05
4,050.01	-45.00	Vert	90.05
1,800.00	-49.50	Vert	94.55
900.07	-49.50	Vert	94.55
4,049.81	-50.70	Horiz	95.75
2,700.07	-52.10	Horiz	97.15
4,499.30	-53.40	Horiz	98.45
987.31	-55.80	Horiz	100.85

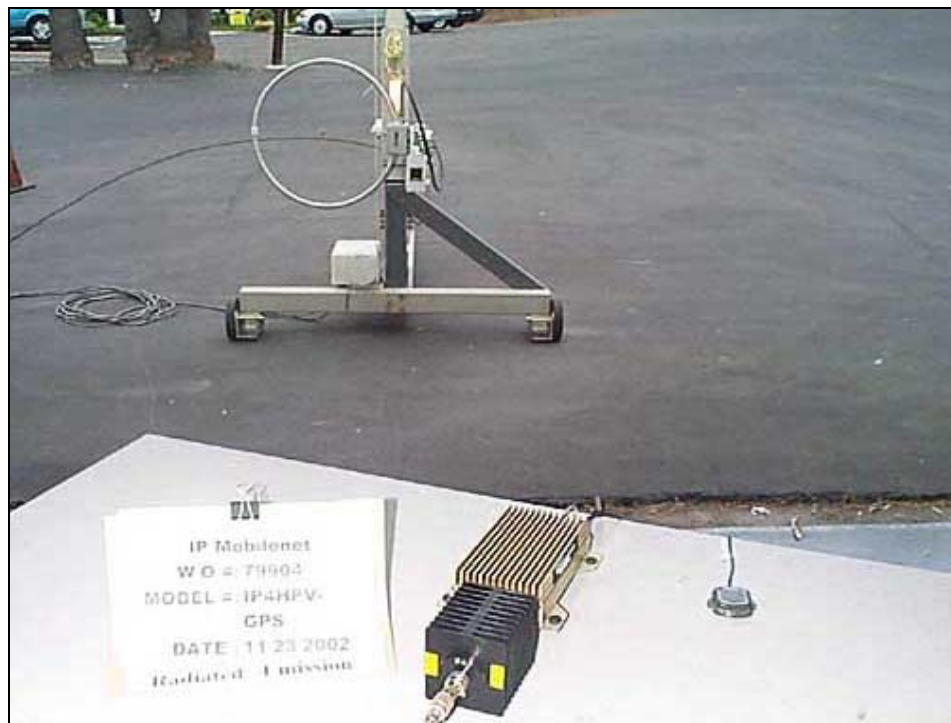
Operating Frequency: 460 MHz
Channels: Middle
Highest Measured Output Power: 45.05 ERP(dBm)= 32 ERP(Watts)
Distance: 3 meters
Limit: $43+10\log(P)$ 58.05 dBc

Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
1,842.01	-23.40	Vert	68.45
2,302.45	-26.50	Horiz	71.55
1,842.00	-26.50	Horiz	71.55
921.04	-32.70	Horiz	77.75
921.05	-36.20	Vert	81.25
1,381.63	-38.20	Horiz	83.25
3,223.48	-44.60	Vert	89.65
5,065.64	-45.10	Vert	90.15
4,144.54	-45.50	Vert	90.55
1,380.70	-46.50	Vert	91.55
3,223.66	-46.80	Horiz	91.85
2,762.99	-46.80	Vert	91.85
5,065.60	-47.40	Horiz	92.45
4,144.49	-50.10	Horiz	95.15
3,684.00	-50.70	Horiz	95.75
197.98	-62.00	Horiz	107.05
111.51	-62.80	Horiz	107.85

Operating Frequency: 469 MHz
Channels: High
Highest Measured Output Power: 45.80 ERP(dBm)= 38 ERP(Watts)
Distance: 3 meters
Limit: $43+10\log(P)$ 58.80 dBc

Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
1,876.00	-27.80	Vert	73.60
2,344.92	-33.80	Vert	79.60
1,876.01	-34.40	Horiz	80.20
938.05	-35.30	Horiz	81.10
1,407.03	-38.70	Vert	84.50
1,407.04	-41.90	Horiz	87.70
2,345.03	-43.80	Horiz	89.60
3,282.90	-47.60	Vert	93.40
3,282.97	-48.70	Horiz	94.50
4,221.10	-49.80	Vert	95.60
3,753.00	-50.40	Horiz	96.20





Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	01865	HP	8566B	2532A02509	092702	092703
QP Adapter	01437	HP	85650A	3303A01884	092702	092703
4Hz-30MHz						
Loop Antenna	00314	EMCO	6502	2014	072302	072303
30 MHz-1000MHz						
Bicon Antenna	306	AH	SAS200/540	220	092302	092303
Log Periodic Antenna	300	AH	SAS 00/516	331	092302	092303
Pre-amp	00309	HP	8447D	1937A02548	082302	082303
Pre-amp to SA cable	NA	Harbour	RG223/U	Cable#10	070802	070803
1000-6000MHz						
Horn Antenna	0849	EMCO	3115	6246	091002	091003
Microwave Pre-amp	00786	HP	83017A	3123A00281	091102	091103
¼" Helix Coaxial Cable	NA	Andrew	FSJ-50A-4	Cable#7 (6 ft)	071502	071503
Antenna cable (from bulkhead to antenna, high frequency hardline) (25ft)	NA	Andrew	FSJ1-50A	Cable#13	071502	071503
1.5 GHz HPF	2116	HP	84300-80037	3643A00027	062502	062503

2.1033(c)(14)/2.1055/90.213- FREQUENCY STABILITY

Test Conditions: EUT is transmitting on low, mid and high channels. Laptop computer is connected via an RS232 cable to EUT. Laptop is programmed to send signal to EUT. EUT is powered via 13.8VDC.

RBW/VBW = 30kHz

Span = 100kHz

SWP = 20msec

REF 127dBuV

Atten 30dB

External Atten 40dB

Frequency Stability

Customer: IP Mobilenet
WO#: 79904
Test Engineer: Monika Brandle

Device Model #: IP4HPV-GPS
Operating Voltage: 13.8 VDC
Frequency Limit: 2.5 PPM/%

Temperature Variations

		Channel 1 (MHz) Dev. (MHz)	
Channel Frequency:		449.9968	
Temp (C) Voltage			
-30	13.8	449.99600	0.00080
-20	13.8	449.99730	0.00050
-10	13.8	449.99750	0.00070
0	13.8	449.99700	0.00020
10	13.8	449.99660	0.00020
20	13.8	449.99660	0.00020
30	13.8	449.99580	0.00100
40	13.8	449.99580	0.00100
50	13.8	449.99720	0.00040

Voltage Variations ($\pm 15\%$)

20	11.7	449.99680	0.00000
20	13.8	449.99680	0.00000
20	15.9	449.99680	0.00000

Max Deviation (MHz)		0.00100
Max Deviation (PPM)		2.22224
		PASS

Frequency Stability

Customer: IP Mobilenet
WO#: 79904
Test Engineer: Monika Brandle

Device Model #: IP4HPV-GPS
Operating Voltage: 13.8 VDC
Frequency Limit: 2.5 PPM/%
RBW=3kHz, VBW=3Hz, Span 75kHz

Temperature Variations

	Channel 1 (MHz)	Dev. (MHz)
Channel Frequency:	460.49842	
Temp (C) Voltage		
-30 13.8	460.49917	0.00075
-20 13.8	460.49947	0.00105
-10 13.8	460.49947	0.00105
0 13.8	460.49940	0.00098
10 13.8	460.49925	0.00083
20 13.8	460.49918	0.00076
30 13.8	460.49918	0.00076
40 13.8	460.49948	0.00106
50 13.8	460.49925	0.00083

Voltage Variations ($\pm 15\%$)

20	11.7	460.49895	0.00053
20	13.8	460.49842	0.00000
20	15.9	460.49842	0.00000

Max Deviation (MHz)	0.00106
Max Deviation (PPM)	2.30185
	PASS

Frequency Stability

Customer: IP Mobilenet
WO#: 79904
Test Engineer: Monika Brandle

Device Model #: IP4HPV-GPS
Operating Voltage: 13.8 VDC
Frequency Limit: 2.5 PPM/%

Temperature Variations

		Channel 1 (MHz) Dev. (MHz)	
Channel Frequency:		468.9963	
Temp (C) Voltage			
-30	13.8	468.99610	0.00020
-20	13.8	468.99610	0.00020
-10	13.8	468.99740	0.00110
0	13.8	468.99700	0.00070
10	13.8	468.99560	0.00070
20	13.8	468.99660	0.00030
30	13.8	468.99660	0.00030
40	13.8	468.99670	0.00040
50	13.8	468.99680	0.00050

Voltage Variations ($\pm 15\%$)

20	11.7	468.99630	0.00000
20	13.8	468.99630	0.00000
20	15.9	468.99520	0.00110

Max Deviation (MHz)		0.00110
Max Deviation (PPM)		2.34543
		PASS





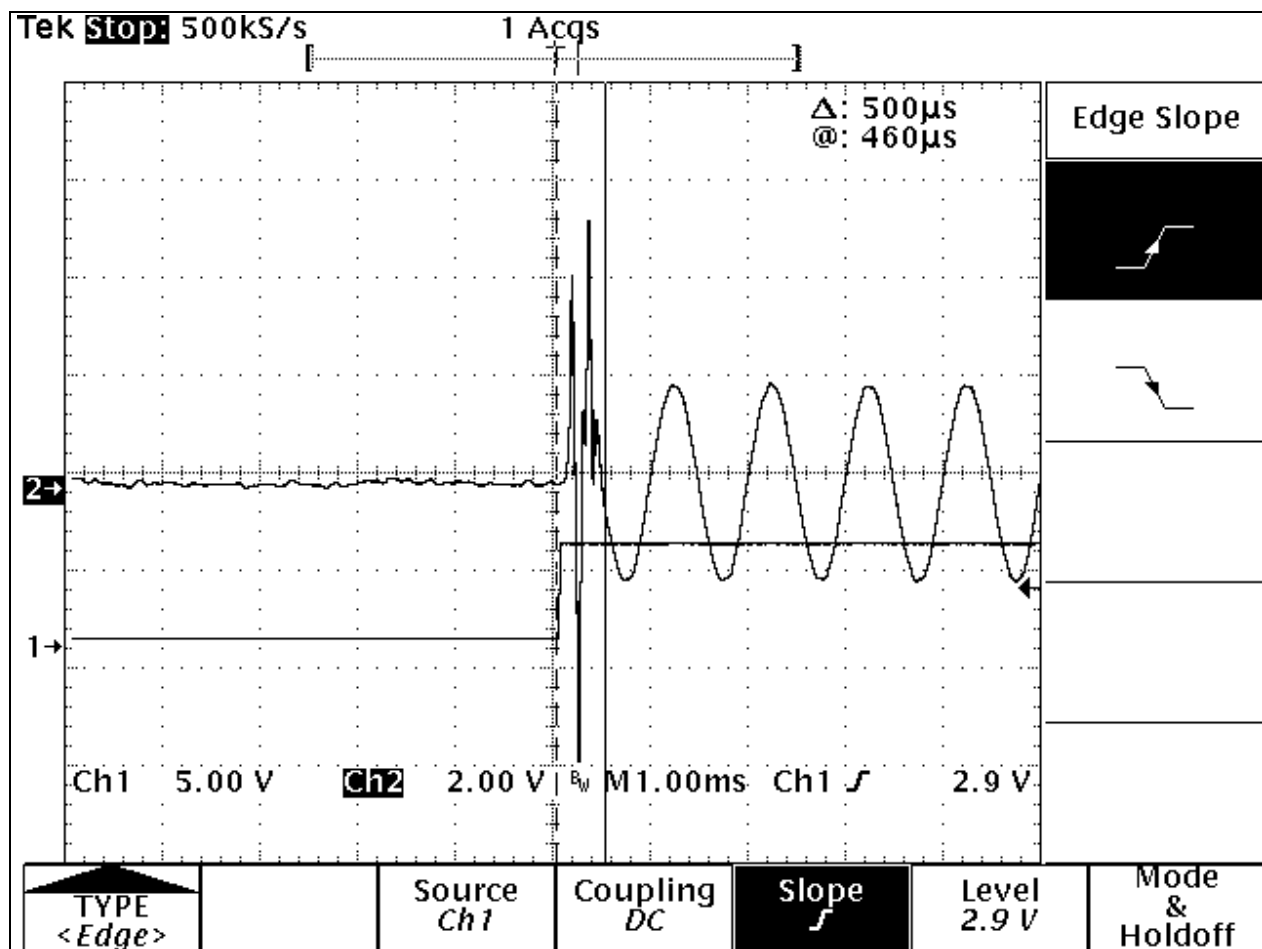
<i>Description</i>	<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Asset #</i>	<i>Cal Date</i>	<i>Cal Due</i>
Temp Chamber	Thermotron	S-1.2 MiniMax	11899	01879	2/7/02	2/7/2003
Thermometer	Omega	HH-26K	T-202884	02242	8/30/02	8/30/2003
Power Supply, DC	Sorensen	DCR-60-30B	176	00765	7/17/02	7/17/2003
Digital Multimeter	Radio Shack	22-183	NA	01241	9/3/02	9/3/2003
Spectrum Analyzer RF Section	HP	8566B	2235A02425	00092	10/23/02	10/23/03
Spectrum Analyzer Display	HP	8568B	2237A04323	00091	10/23/02	10/23/03
Spectrum Analyzer QP Adapter	HP	85650A	2521A00904	02495	3/4/02	3/4/03

90.214 TRANSIENT FREQUENCY BEHAVIOR

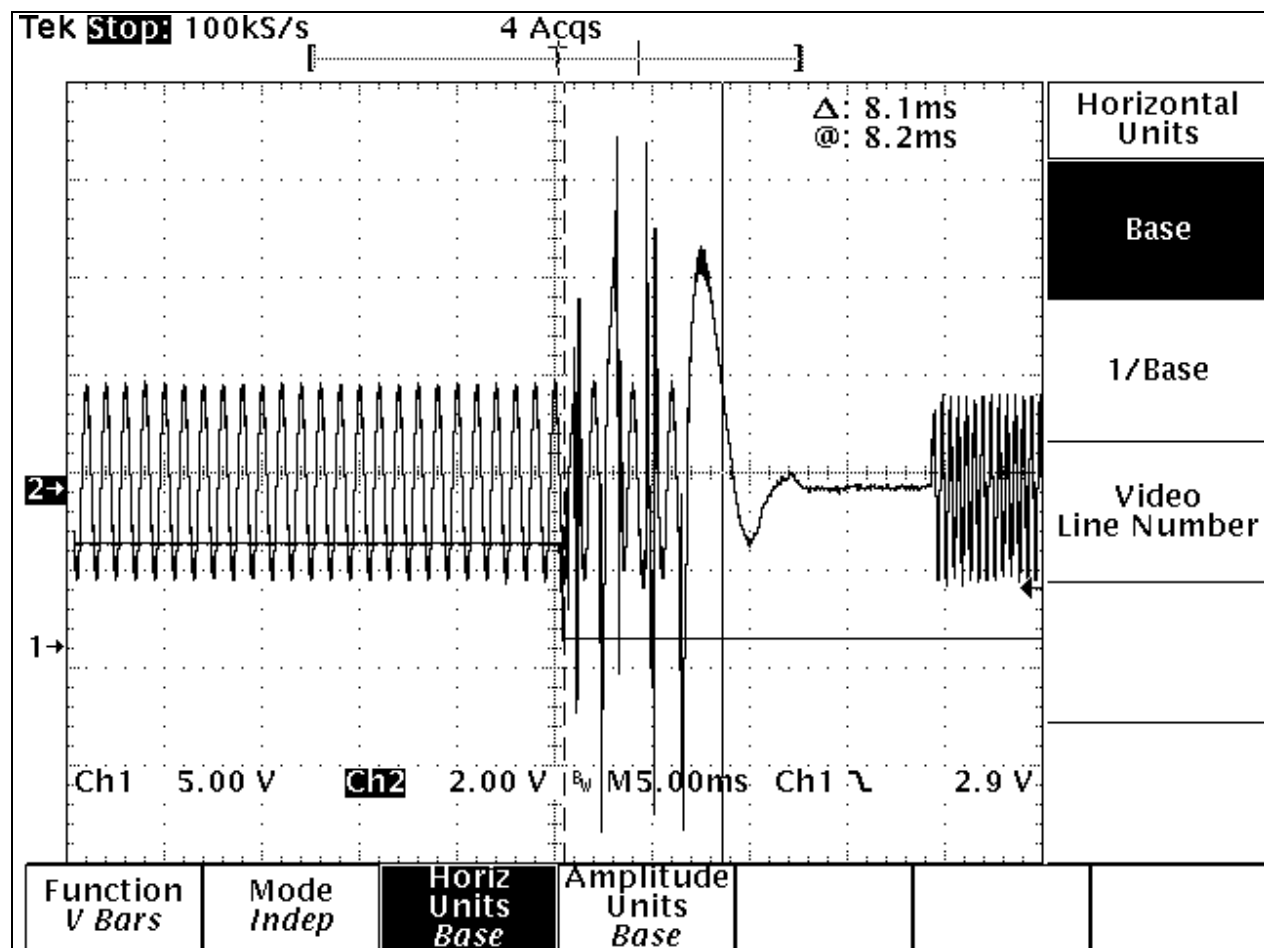
Test Conditions: The RF port of the EUT is connected to a combiner which combines a Audio signal (1 kHz, +- 5 kHz deviation) from a audio source. The combined signal is connected to the input port of a spectrum analyzer. The audio monitor output of the spectrum analyzer is connected to CH1 of an Oscilloscope. Channel 2 of the Oscilloscope is connected to the TX high test point of the EUT.

The transient time under investigation is be the transition time of the TX high to complete silence of the 1kHz tone (attack) and the transition time of the TX high to complete recovery of the 1kHz tone for release time.

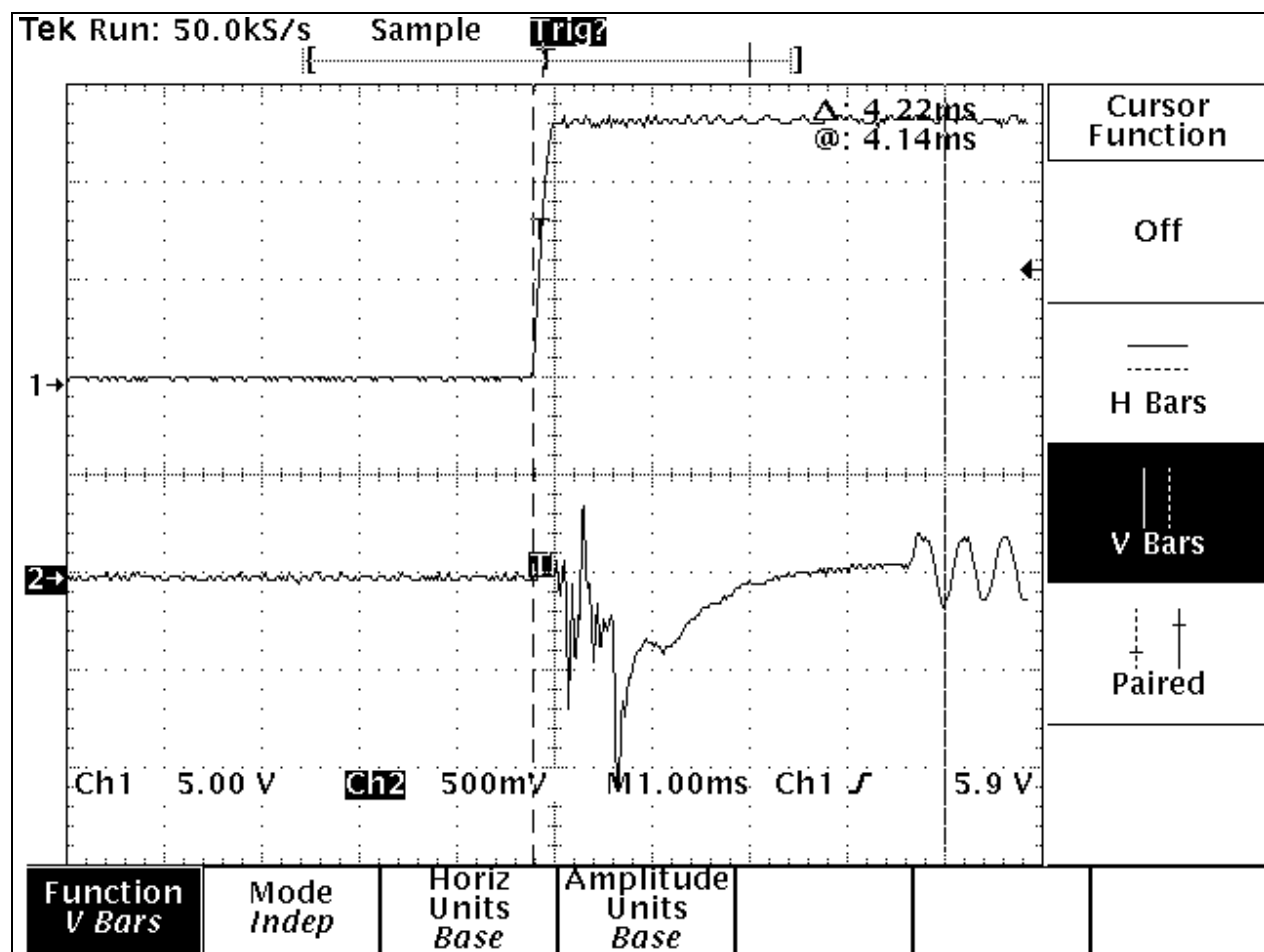
451 MHz – ATTACK TIME



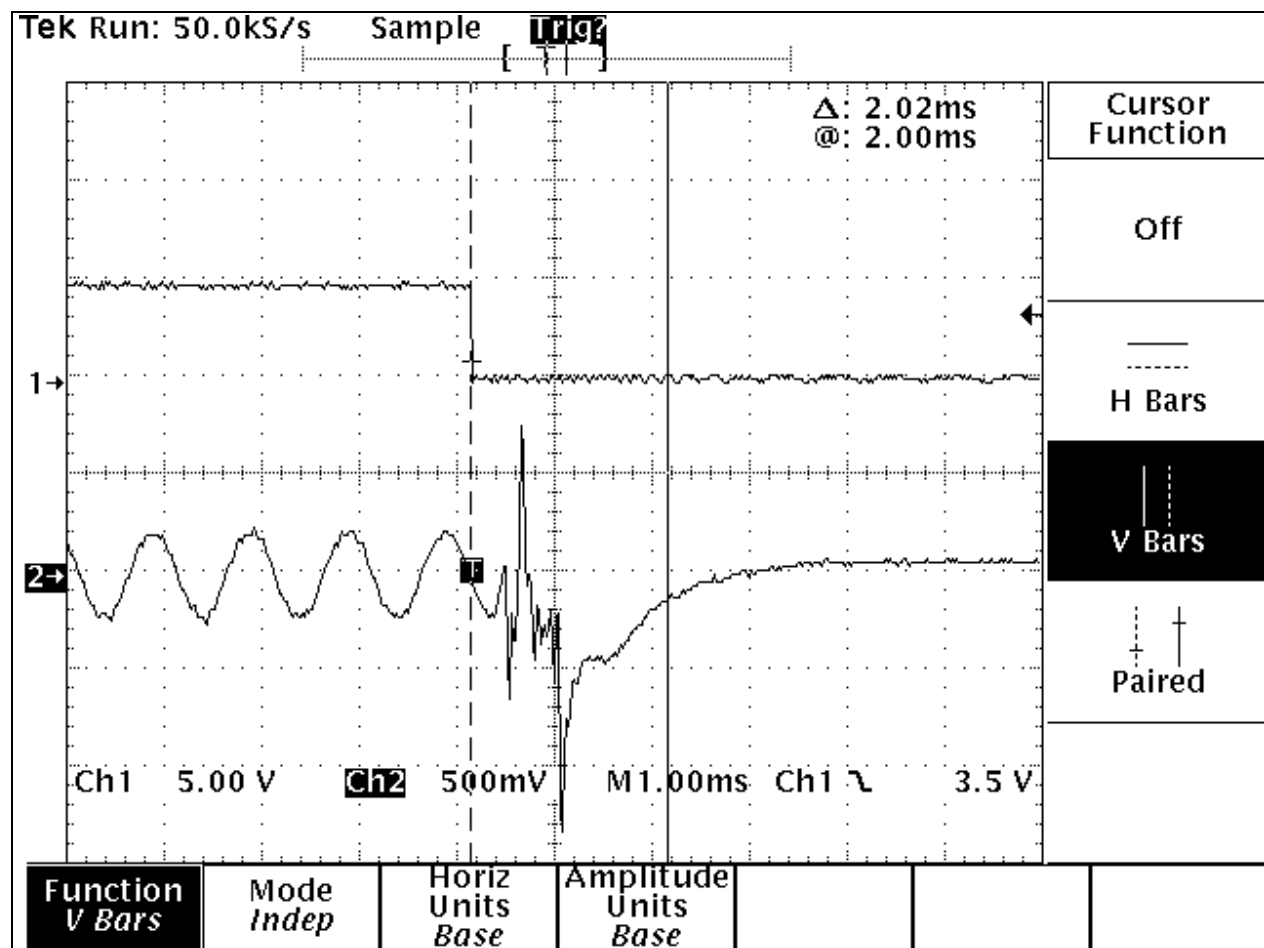
451 MHz – RELEASE TIME



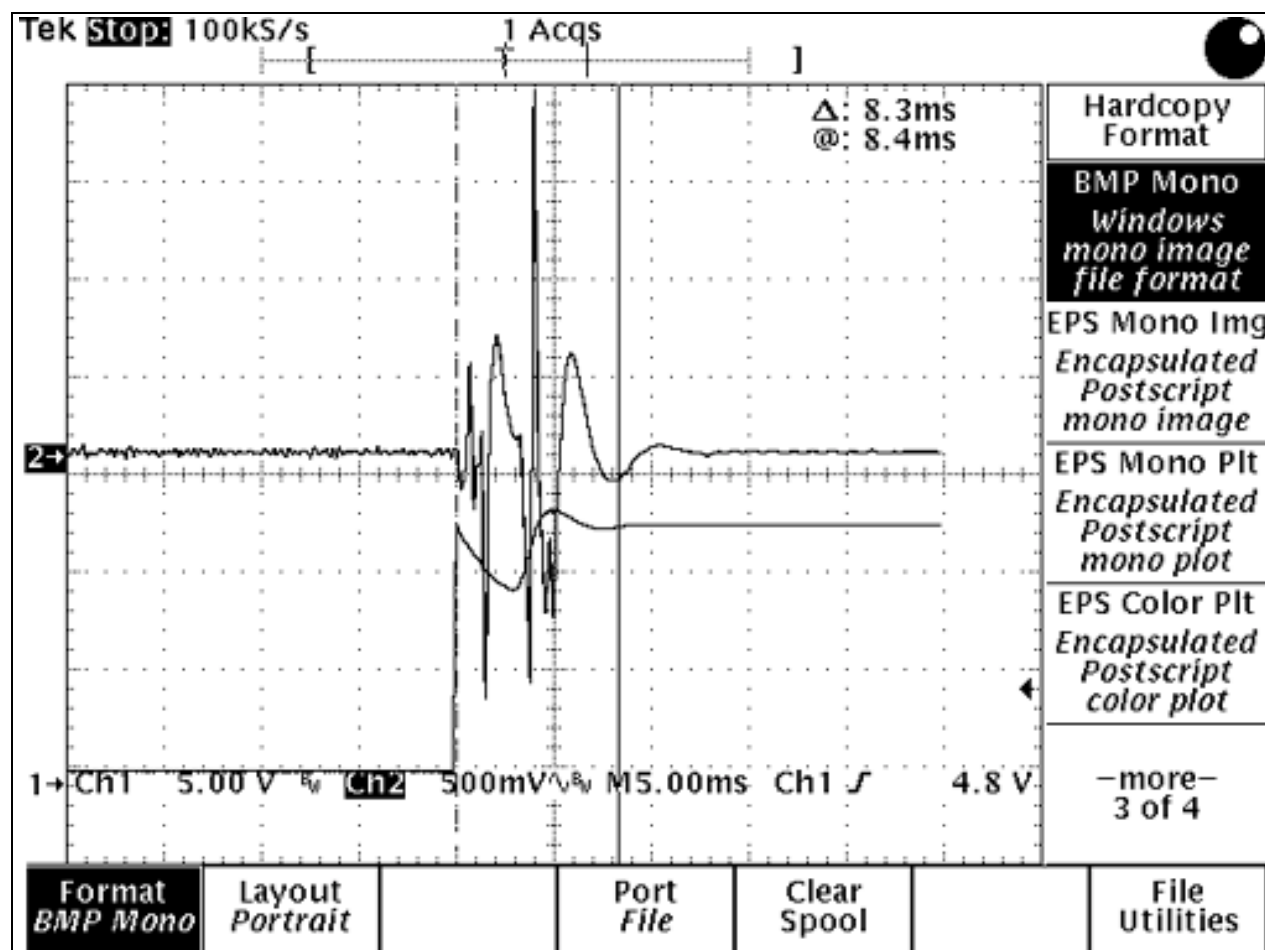
460 MHz- ATTACK TIME



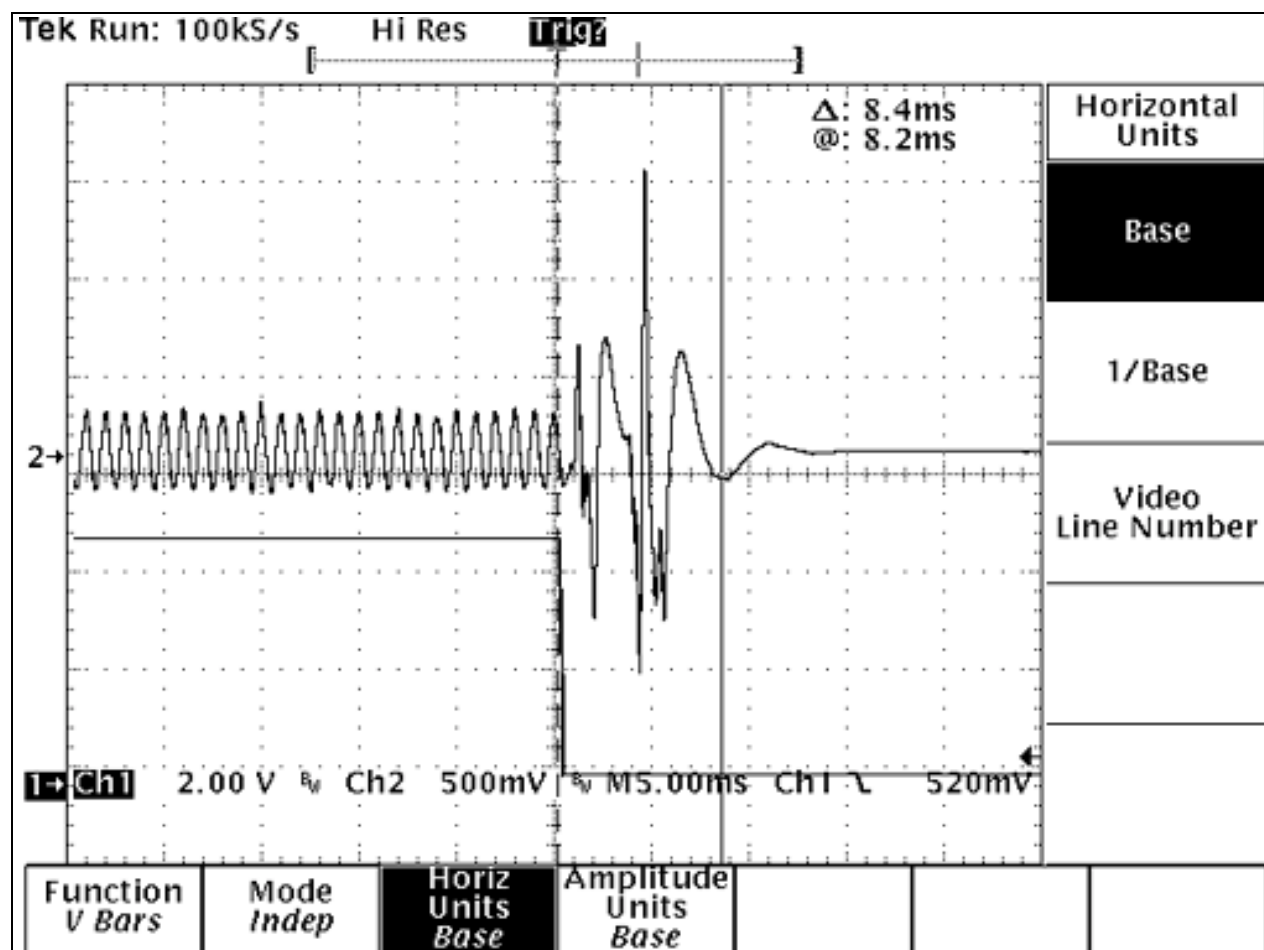
460 MHz – RELEASE TIME



469 MHz ATTACK TIME



469 MHz RELEASE TIME





Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	CUST	HP	8920B	US235180384	092302	092303
Oscilloscope	CUST	Tektronics	TDS480A	B010220	NA	NA
Signal Generator	02227	Marconi	2024	112282/515	080602	080603

Note: Customer's oscilloscope functional check against CKC's Signal Generator listed above

2.1091 – MPE CALCULATIONS

Maximum Permissible Exposure Calculations

Date of Report: December 19th, 2002

Calculations prepared for:

IP MobileNet

16842 Von Karman Avenue Suite 200

Irvine CA92606

Calculations prepared by:

Eddie Wong

110 N. Olinda Place

Brea, CA 9283

Model Number: IP4HPV-GPS

FCC Identification: NA

Fundamental Operating Frequency: 450 MHz

Maximum Rated Output Power: 32 watts

Measured Maximum Output Power: 32 watts

In accordance with 47CFR2.1093(d)(2), source based time averaging is allowed for this type of device:

$$\text{Source Based Time Averaging} = 20\text{LOG}(\text{ON time}/\text{TOTAL time})$$

$$= 20\text{LOG}(389\text{mS}/(389+310 = 699\text{mS}))$$

$$= -5.09\text{dB}$$

Therefore the Power Output = 45.05dBm (32.00W) - 5.09dB = **39.96dBm (9.911W)**

MPE limit in accordance with FCC part 1.1311, table 1

Limit for Maximum permissible exposure: (B) Limit for General population/uncontrolled Exposure.

For frequency range of 300-1500 MHz, the MPE is $f/1500$ (mW/cm²)

$$\text{MPE Limit for 450 MHz} = 450/1500 = 0.3 \text{ mW/cm}^2 (3 \text{ W/m}^2)$$

$$\text{Power Density (W/m}^2\text{)} = \frac{30 \times P_t \times G}{d^2 \times Z_0}$$

P_t = Power Delivered to the Antenna

d = Distance in meters

G = Antenna Gain

Z_0 = Impedance of Free Space (377 ohm)

The typical antennas to be used with the EUT are roof mount antenna for vehicular application which under normal operation placed at least 1 meter from human exposure. As can be seen from the MPE result, this device passes the limit specified in 1.1310 at a distance of 0.51 meter with an antenna gain of 0 dBi.

Calculation:

$$d = \sqrt{\frac{30 \times 9.911 \times 1}{3 \times 377}}$$

=0.51 m

Maximum Permissible Exposure Calculations

Date of Report: November 23rd, 2002

Calculations prepared for:

IP MobileNet

16842 Von Karman Avenue Suite 200

Irvine CA92606

Calculations prepared by:

Eddie Wong

110 N. Olinda Place

Brea, CA 9283

Model Number: IP4HPV_GPS

FCC Identification: NA

Fundamental Operating Frequency:

460.5 MHz

Maximum Rated Output Power:

32 watts

Measured Maximum Output Power:

32 watts

In accordance with 47CFR2.1093(d)(2), source based time averaging is allowed for this type of device:

Source Based Time Averaging = $20\text{LOG}(\text{ON time}/\text{TOTAL time})$

= $20\text{LOG}(389\text{ms}/(389+310 = 699\text{ms}))$

= -5.09dB

Therefore the Power Output = 45.05dBm (32.00W) - 5.09dB = **39.96dBm (9.908W)**

MPE limit in accordance with FCC part 1.1311, table 1

Limit for Maximum permissible exposure: (B) Limit for General population/uncontrolled Exposure.

For frequency range of 300-1500 MHz, the MPE is $f/1500$ (mW/cm²)

MPE Limit for 460.5 MHz = $460.5/1500 = 0.3070$ mW/cm² (3.070 W/m²)

$$\text{Power Density (W/m}^2\text{)} = \frac{30 \times P_t \times G}{d^2 \times Z_0}$$

P_t = Power Delivered to the Antenna

d = Distance in meters

G = Antenna Gain

Z_0 = Impedance of Free Space (377 ohm)

The typical antennas to be used with the EUT are roof mount antenna for vehicular application which under normal operation placed at least 1 meter from human exposure. As can be seen from the MPE result, this device passes the limit specified in 1.1310 at a distance of 0.5 meter with an antenna gain of 0 dBi.

Calculation:

$$d = \sqrt{\frac{30 \times 9.908 \times 1}{3.070 \times 377}}$$

=0.5 m

Maximum Permissible Exposure Calculations

Date of Report: December 12th, 2002

Calculations prepared for:
IP MobileNet
16842 Von Karman Avenue Suite 200
Irvine CA92606

Calculations prepared by:
Eddie Wong
110 N. Olinda Place
Brea, CA 9283

Model Number: IP4HPV_GPS
FCC Identification: NA

Fundamental Operating Frequency: 469 MHz

Maximum Rated Output Power: 38 watts

Measured Maximum Output Power: 38 watts

In accordance with 47CFR2.1093(d)(2), source based time averaging is allowed for this type of device:

$$\begin{aligned} \text{Source Based Time Averaging} &= 20\text{LOG}(\text{ON time}/\text{TOTAL time}) \\ &= 20\text{LOG}(389\text{mS}/(389+310 = 699\text{mS})) \\ &= -5.09\text{dB} \end{aligned}$$

Therefore the Power Output = 45.80dBm (38.00W) - 5.09dB = **40.71dBm (11.78W)**

MPE limit in accordance with FCC part 1.1311, table 1

Limit for Maximum permissible exposure: (B) Limit for General population/uncontrolled Exposure.

For frequency range of 300-1500 MHz, the MPE is $f / 1500$ (mW/cm²)

MPE Limit for 469 MHz = $469/1500 = 0.3127$ mW/cm² (3.127 W/m²)

$$\text{Power Density (W/m}^2\text{)} = \frac{30 \times P_t \times G}{d^2 \times Z_0}$$

P_t = Power Delivered to the Antenna
 d = Distance in meters

G = Antenna Gain
 Z_0 = Impedance of Free Space (377 ohm)

The typical antennas to be used with the EUT are roof mount antenna for vehicular application which under normal operation placed at least 1 meter from human exposure. As can be seen from the MPE result, this device passes the limit specified in 1.1310 at a distance of 0.55 meter with an antenna gain of 0 dBi.

Calculation:

$$d = \sqrt{\frac{30 \times 11.78 \times 1}{3.127 \times 377}}$$

=0.55 m

15.107 – AC CONDUCTED EMISSIONS

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

Customer: **IP MobileNet**
 Specification: **FCC 15.107 Class B COND [AVE]**
 Work Order #: **79904**
 Test Type: **Conducted Emissions**
 Equipment: **Land Mobile Transceiver**
 Manufacturer: **IP MobileNet**
 Model: **IP4HPV-GPS**
 S/N: **IP40211234**

Date: 12/14/2002
 Time: 14:40:31
 Sequence#: 4
 Tested By: Eddie Wong
 110V 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211234

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Compaq	Presario	1V02DCH2E2T0
Power Supply	Topward	6306D	988614

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 ohm load. RS232 Port is connected to a remote laptop, GPS antenna port is connected to a GPS antenna, the ethernet port is connected to a section of UTP and a loopback terminator. EUT obtains DC power from a 13.8 VDC power supply. Mode: Receiving Tx 451 MHz, Rx 448 MHz, Inj 493 MHz. Frequency range of measurement = 150 kHz – 30 MHz, RBW=9 kHz. 13.8 VDC (110 VAC, 60 Hz) 18°C, 38% relative humidity.

Transducer Legend:

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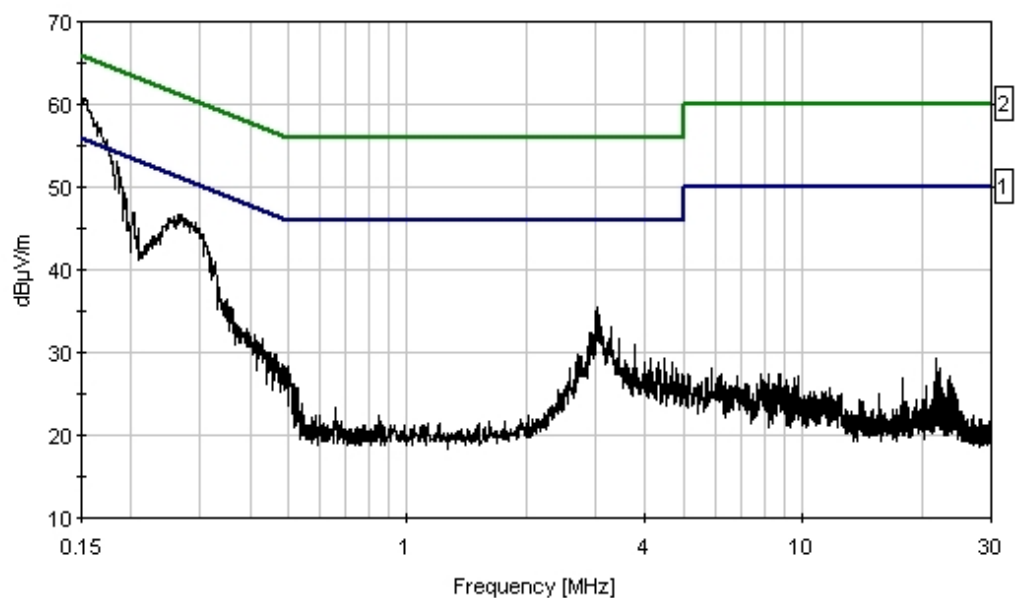
Measurement Data: Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dB μ V					Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	192.905k	49.3					+0.0	49.3	53.9	-4.6	Black
2	262.716k	46.7					+0.0	46.7	51.3	-4.6	Black
3	3.038M	35.5					+0.0	35.5	46.0	-10.5	Black
4	3.263M	33.0					+0.0	33.0	46.0	-13.0	Black
5	2.901M	32.5					+0.0	32.5	46.0	-13.5	Black
6	3.778M	30.9					+0.0	30.9	46.0	-15.1	Black
7	3.756M	30.5					+0.0	30.5	46.0	-15.5	Black

8	4.126M	29.4	+0.0	29.4	46.0	-16.6	Black
9	4.471M	29.2	+0.0	29.2	46.0	-16.8	Black
10	464.150k	29.7	+0.0	29.7	46.6	-16.9	Black
11	3.556M	29.0	+0.0	29.0	46.0	-17.0	Black
12	4.326M	28.7	+0.0	28.7	46.0	-17.3	Black
13	480.876k	28.5	+0.0	28.5	46.3	-17.8	Black
14	152.908k	21.9	+0.0	21.9	55.8	-33.9	Black
	Ave						
^	152.909k	60.7	+0.0	60.7	55.8	+4.9	Black
16	184.178k	16.4	+0.0	16.4	54.3	-37.9	Black
	Ave						
^	184.178k	53.2	+0.0	53.2	54.3	-1.1	Black

CKC Laboratories, Inc. Date: 12/14/2002 Time: 14:40:31 IP MobileNet WVO#: 79904
FCC 15.107 Class B COND [AVE] Test Lead: Black 110V 60Hz Sequence#: 4



— 1 - FCC 15.107 Class B COND [AVE] — 2 - FCC 15.107 Class B COND [QP]

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

Customer: **IP MobileNet**
 Specification: **FCC 15.107 Class B COND [AVE]**
 Work Order #: **79904**
 Test Type: **Conducted Emissions**
 Equipment: **Land Mobile Transceiver**
 Manufacturer: IP MobileNet
 Model: IP4HPV-GPS
 S/N: IP40211234

Date: 12/14/2002
 Time: 14:36:56
 Sequence#: 3
 Tested By: Eddie Wong
 110V 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211234

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Compaq	Presario	1V02DCH2E2T0
Power Supply	Topward	6306D	988614

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 ohm load. RS232 Port is connected to a remote laptop, GPS antenna port is connected to a GPS antenna, the ethernet port is connected to a section of UTP and a loopback terminator. EUT obtains DC power from a 13.8 VDC power supply. Mode: Receiving Tx 451 MHz, Rx 448 MHz, Inj 493 MHz. Frequency range of measurement = 150 kHz- 30 MHz, RBW=9 kHz. 13.8 VDC (110VAC, 60 Hz) 18°C, 38% relative humidity.

Transducer Legend:

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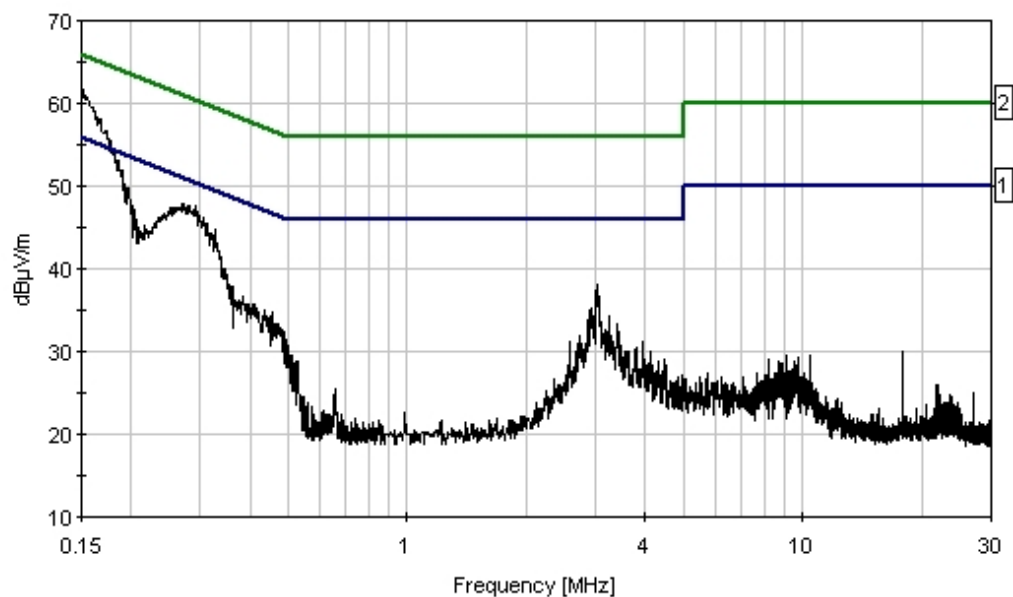
Measurement Data: Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dB μ V					Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	273.624k	47.9					+0.0	47.9	51.0	-3.1	White
2	204.540k	47.1					+0.0	47.1	53.4	-6.3	White
3	3.012M	38.1					+0.0	38.1	46.0	-7.9	White
4	2.910M	35.3					+0.0	35.3	46.0	-10.7	White
5	3.229M	34.4					+0.0	34.4	46.0	-11.6	White
6	3.378M	33.3					+0.0	33.3	46.0	-12.7	White
7	490.330k	32.3					+0.0	32.3	46.2	-13.9	White
8	3.931M	31.2					+0.0	31.2	46.0	-14.8	White
9	2.587M	31.1					+0.0	31.1	46.0	-14.9	White
10	3.812M	30.5					+0.0	30.5	46.0	-15.5	White

11	3.761M	30.3	+0.0	30.3	46.0	-15.7	White
12	4.471M	29.1	+0.0	29.1	46.0	-16.9	White
13	525.962k	28.7	+0.0	28.7	46.0	-17.3	White
14	517.963k	28.6	+0.0	28.6	46.0	-17.4	White
15	150.727k	22.6	+0.0	22.6	56.0	-33.4	White
Ave							
^	150.727k	61.7	+0.0	61.7	56.0	+5.7	White

CKC Laboratories, Inc. Date: 12/14/2002 Time: 14:36:56 IP MobileNet W/O#: 79904
FCC 15.107 Class B COND [AVE] Test Lead: White 110V 60Hz Sequence#: 3



1 - FCC 15.107 Class B COND [AVE] 2 - FCC 15.107 Class B COND [QP]

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

Customer: **IP MobileNet**
 Specification: **FCC 15.107 Class B COND [AVE]**
 Work Order #: **79904**
 Test Type: **Conducted Emissions**
 Equipment: **Land Mobile Transceiver**
 Manufacturer: IP MobileNet
 Model: IP4HPV-GPS
 S/N: IP40211234

Date: 12/14/2002
 Time: 14:28:12
 Sequence#: 1
 Tested By: Eddie Wong
 110V 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211234

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Compaq	Presario	1V02DCH2E2T0
Power Supply	Topward	6306D	988614

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 ohm load. RS232 Port is connected to a remote laptop, GPS antenna port is connected to a GPS antenna, the ethernet port is unpopulated. EUT obtains DC power from a 13.8 VDC power supply. The laptop is maintaining a RS232 link with the EUT. Mode: Receiving Tx 451 MHz, Rx 448 MHz, Inj 493 MHz. Frequency range of measurement = 150 kHz – 30 MHz, RBW=9 kHz. 13.8 VDC (110 VAC, 60 Hz) 18°C, 38% relative humidity.

Transducer Legend:

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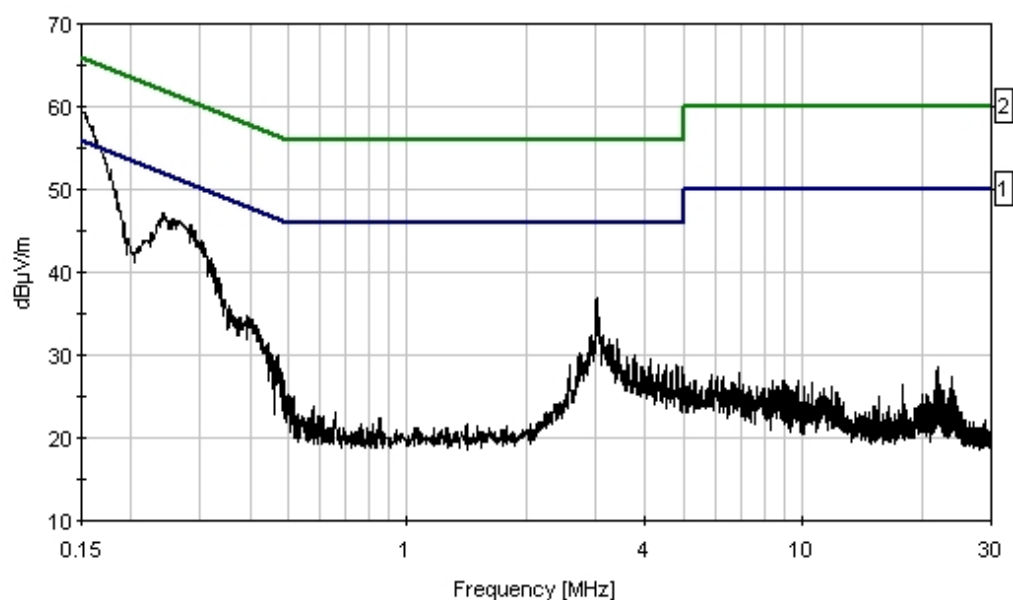
Measurement Data: Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dBμV	dB	dB	dB	dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	3.012M	37.0					+0.0	37.0	46.0	-9.0	Black
2	3.412M	32.0					+0.0	32.0	46.0	-14.0	Black
3	2.723M	30.3					+0.0	30.3	46.0	-15.7	Black
4	4.126M	29.6					+0.0	29.6	46.0	-16.4	Black
5	451.061k	30.3					+0.0	30.3	46.9	-16.6	Black
6	473.604k	29.9					+0.0	29.9	46.5	-16.6	Black
7	468.514k	29.8					+0.0	29.8	46.5	-16.7	Black
8	3.948M	28.6					+0.0	28.6	46.0	-17.4	Black
9	4.097M	28.6					+0.0	28.6	46.0	-17.4	Black
10	459.787k	29.2					+0.0	29.2	46.7	-17.5	Black

11	489.602k	26.8	+0.0	26.8	46.2	-19.4	Black
12	485.239k	26.5	+0.0	26.5	46.2	-19.7	Black
13	22.093M	28.5	+0.0	28.5	50.0	-21.5	Black
14	21.688M	28.1	+0.0	28.1	50.0	-21.9	Black
15	150.727k	22.0	+0.0	22.0	56.0	-34.0	Black
Ave							
^	150.727k	59.4	+0.0	59.4	56.0	+3.4	Black

CKC Laboratories, Inc. Date: 12/14/2002 Time: 14:28:12 IP MobileNet VVO#: 79904
FCC 15.107 Class B COND [AVE] Test Lead: Black 110V 60Hz Sequence#: 1



— 1 - FCC 15.107 Class B COND [AVE] — 2 - FCC 15.107 Class B COND [QP]

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

Customer: **IP MobileNet**
 Specification: **FCC 15.107 Class B COND [AVE]**
 Work Order #: **79904**
 Test Type: **Conducted Emissions**
 Equipment: **Land Mobile Transceiver**
 Manufacturer: IP MobileNet
 Model: IP4HPV-GPS
 S/N: IP40211234

Date: 12/14/2002
 Time: 14:32:55
 Sequence#: 2
 Tested By: Eddie Wong
 110V 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211234

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Compaq	Presario	1V02DCH2E2T0
Power Supply	Topward	6306D	988614

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 ohm load. RS232 Port is connected to a remote laptop, GPS antenna port is connected to a GPS antenna, the ethernet port is unpopulated. EUT obtains DC power from a 13.8 VDC power supply. The laptop is maintaining a RS232 link with the EUT. Mode: Receiving Tx 451 MHz, Rx 448 MHz, Inj 493 MHz. Frequency range of measurement = 150 kHz – 30 MHz, RBW=9 kHz. 13.8 VDC (110VAC, 60 Hz) 18°C, 38% relative humidity.

Transducer Legend:

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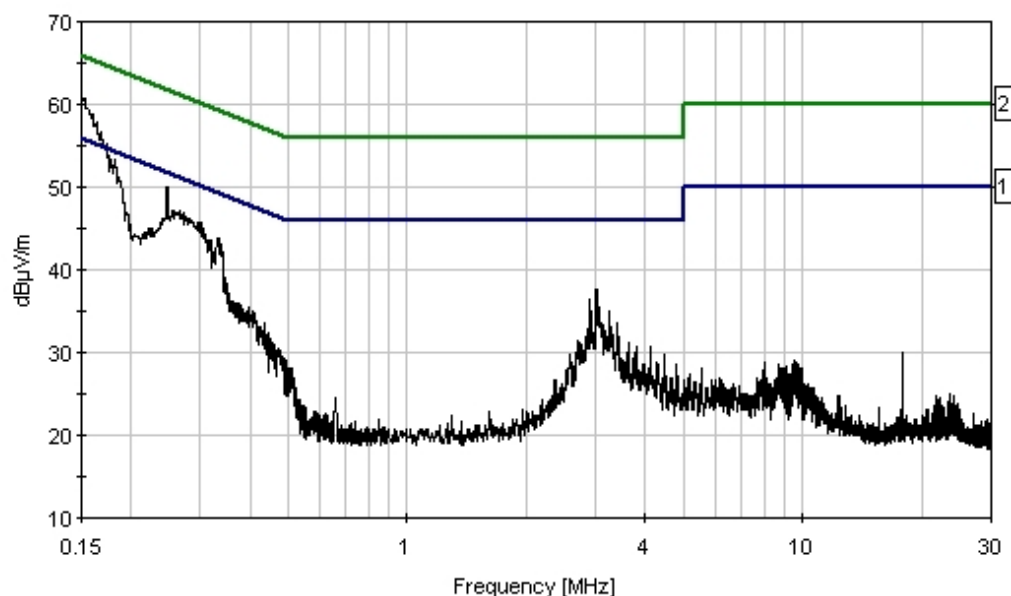
Measurement Data: Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dBμV					Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	330.346k	43.8					+0.0	43.8	49.4	-5.6	White
2	2.999M	37.6					+0.0	37.6	46.0	-8.4	White
3	2.893M	36.4					+0.0	36.4	46.0	-9.6	White
4	2.906M	34.9					+0.0	34.9	46.0	-11.1	White
5	3.246M	34.9					+0.0	34.9	46.0	-11.1	White
6	3.412M	33.6					+0.0	33.6	46.0	-12.4	White
7	3.620M	31.2					+0.0	31.2	46.0	-14.8	White
8	452.515k	31.7					+0.0	31.7	46.8	-15.1	White
9	3.803M	30.7					+0.0	30.7	46.0	-15.3	White
10	4.126M	30.7					+0.0	30.7	46.0	-15.3	White

11	470.695k	30.5	+0.0	30.5	46.5	-16.0	White
12	4.488M	29.8	+0.0	29.8	46.0	-16.2	White
13	4.811M	28.6	+0.0	28.6	46.0	-17.4	White
14	150.000k	22.3	+0.0	22.3	56.0	-33.7	White
Ave							
^	150.000k	60.7	+0.0	60.7	56.0	+4.7	White
16	246.717k	10.7	+0.0	10.7	51.9	-41.2	White
Ave							
^	246.718k	50.1	+0.0	50.1	51.9	-1.8	White

CKC Laboratories, Inc. Date: 12/14/2002 Time: 14:32:55 IP MobileNet W/O#: 79904
FCC 15.107 Class B COND [AVE] Test Lead: White 110V 60Hz Sequence#: 2



1 - FCC 15.107 Class B COND [AVE] 2 - FCC 15.107 Class B COND [QP]

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

Customer: **IP MobileNet**
Specification: **FCC 15.107 Class B**
Work Order #: **79904**

Test Type: **Conducted Emissions**
Equipment: **Land Mobile Transceiver**
Manufacturer: IP MobileNet
Model: IP4HPV-GPS
S/N: IP40211215

Date: 11/23/2002
Time: 3:38:29 PM
Sequence#: 5
Tested By: Eddie Wong
110V 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211215

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	Sec121222510	03051-0F03-0322

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 load via a 40 dB attenuator. RS232 Port is connected to a remote laptop, GPS antenna port is connected to the GPS antenna port and the ethernet port is connected to a section of UTP and a loop back terminator. EUT obtains DC power from a 13.8 VDC power supply. Mode : Receive Tx 460.5 MHz, Rx 463.5 MHz, Inj 508.5 MHz. Frequency range of measurement = 450 kHz - 30 MHz, RBW=9 kHz, VBW=9 kHz. 13.8 VDC (110 VAC, 60 Hz) 24°C, 24% relative humidity.

Transducer Legend:

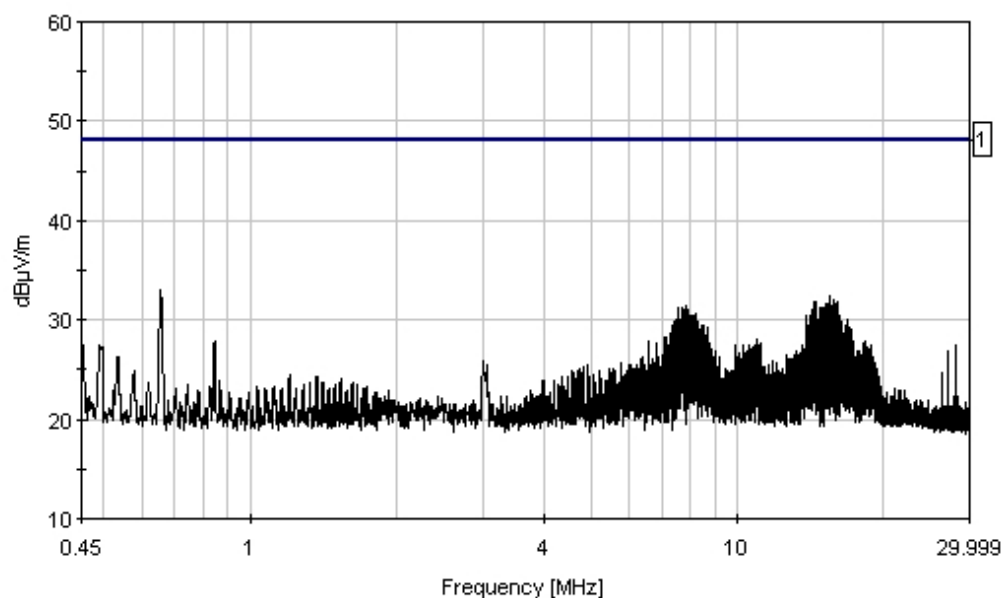
Measurement Data: Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dBμV	dB	dB	dB	dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	654.726k	33.1					+0.0	33.1	48.0	-14.9	Black
2	15.488M	32.5					+0.0	32.5	48.0	-15.5	Black
3	15.776M	32.1					+0.0	32.1	48.0	-15.9	Black
4	14.425M	31.9					+0.0	31.9	48.0	-16.1	Black
5	14.488M	31.8					+0.0	31.8	48.0	-16.2	Black
6	16.056M	31.8					+0.0	31.8	48.0	-16.2	Black
7	15.344M	31.7					+0.0	31.7	48.0	-16.3	Black
8	15.137M	31.6					+0.0	31.6	48.0	-16.4	Black
9	15.921M	31.6					+0.0	31.6	48.0	-16.4	Black
10	15.281M	31.5					+0.0	31.5	48.0	-16.5	Black

11	15.623M	31.5	+0.0	31.5	48.0	-16.5	Black
12	7.884M	31.4	+0.0	31.4	48.0	-16.6	Black
13	15.551M	31.4	+0.0	31.4	48.0	-16.6	Black
14	14.848M	31.3	+0.0	31.3	48.0	-16.7	Black
15	15.200M	31.3	+0.0	31.3	48.0	-16.7	Black

CKC Laboratories, Inc. Date: 11/23/2002 Time: 3:38:29 PM IP MobileNet WVO#: 79904
FCC 15.107 Class B Test Lead: Black 110V 60Hz Sequence#: 5



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

Customer: **IP MobileNet**
 Specification: **FCC 15.107 Class B**
 Work Order #: **79904**
 Test Type: **Conducted Emissions**
 Equipment: **Land Mobile Transceiver**
 Manufacturer: IP MobileNet
 Model: IP4HPV-GPS
 S/N: IP40211215

Date: 11/23/2002
 Time: 3:34:18 PM
 Sequence#: 4
 Tested By: Eddie Wong
 110V 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211215

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	Sec121222510	03051-0F03-0322

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 load via a 40 dB attenuator. RS232 Port is connected to a remote laptop, GPS antenna port is connected to the GPS antenna port and the ethernet port is connected to a section of UTP and a loop back terminator. EUT obtains DC power from a 13.8 VDC power supply. Mode: Receive Tx 460.5 MHz, Rx 463.5 MHz, Inj 508.5 MHz. Frequency range of measurement = 450 kHz - 30 MHz, RBW=9 kHz, VBW=9 kHz. 13.8 VDC (110 VAC, 60 Hz) 24°C, 24% relative humidity.

Transducer Legend:

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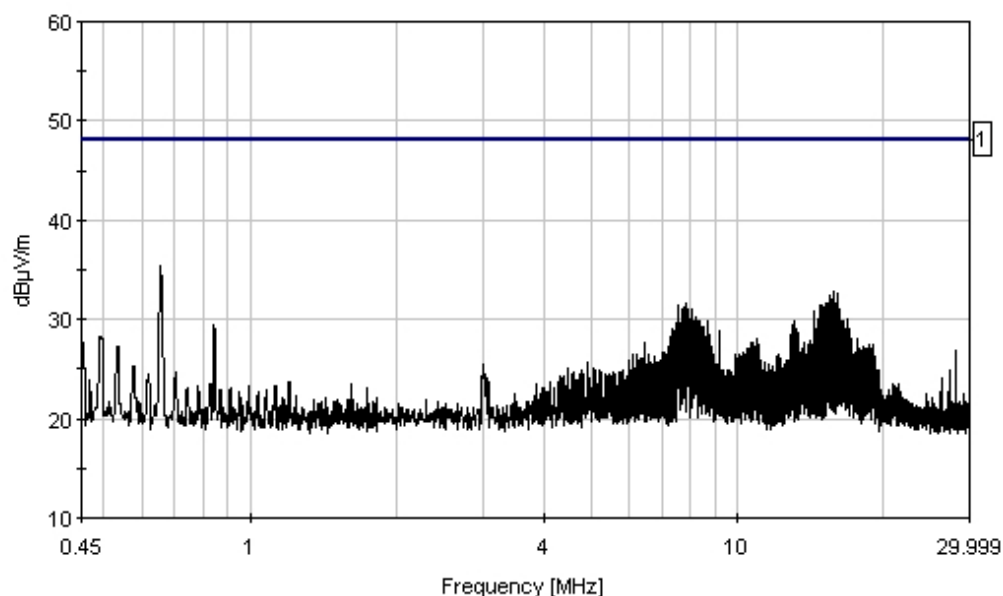
Measurement Data: Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dBμV	dB	dB	dB	dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	656.100k	35.3					+0.0	35.3	48.0	-12.7	White
2	15.767M	32.9					+0.0	32.9	48.0	-15.1	White
3	16.056M	32.7					+0.0	32.7	48.0	-15.3	White
4	15.488M	32.4					+0.0	32.4	48.0	-15.6	White
5	15.632M	32.0					+0.0	32.0	48.0	-16.0	White
6	15.912M	31.7					+0.0	31.7	48.0	-16.3	White
7	7.812M	31.6					+0.0	31.6	48.0	-16.4	White
8	15.272M	31.6					+0.0	31.6	48.0	-16.4	White
9	15.344M	31.6					+0.0	31.6	48.0	-16.4	White
10	15.551M	31.6					+0.0	31.6	48.0	-16.4	White

11	7.884M	31.4	+0.0	31.4	48.0	-16.6	White
12	14.848M	31.4	+0.0	31.4	48.0	-16.6	White
13	15.200M	31.4	+0.0	31.4	48.0	-16.6	White
14	15.704M	31.4	+0.0	31.4	48.0	-16.6	White

CKC Laboratories, Inc. Date: 11/23/2002 Time: 3:34:18 PM IP MobileNet VVO#: 79904
FCC 15.107 Class B Test Lead: White 110V 60Hz Sequence#: 4



— Sweep Data — 1 - FCC 15.107 Class B

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

Customer: **IP MobileNet**
 Specification: **FCC 15.107 Class B**
 Work Order #: **79904**
 Test Type: **Conducted Emissions**
 Equipment: **Land Mobile Transceiver**
 Manufacturer: IP MobileNet
 Model: IP4HPV-GPS
 S/N: IP40211215

Date: 11/23/2002
 Time: 3:18:33 PM
 Sequence#: 5
 Tested By: Eddie Wong
 110V 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211215

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	Sec121222510	03051-0F03-0322

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 ohm load via a 40 dB attenuator. RS232 Port is connected to a remote laptop, GPS antenna port is connected to the GPS antenna port and the ethernet port is unpopulated. EUT obtains DC power from a 13.8 VDC power supply. The laptop is maintaining a RS232 link with the EUT. Mode: Receive Tx 460.5 MHz, Rx 463.5 MHz, Inj 508.5 MHz. Frequency range of measurement = 450 kHz - 30 MHz, RBW=9 kHz, VBW=9 kHz. 13.8 VDC (110 VAC, 60 Hz) 24°C, 24% relative humidity.

Transducer Legend:

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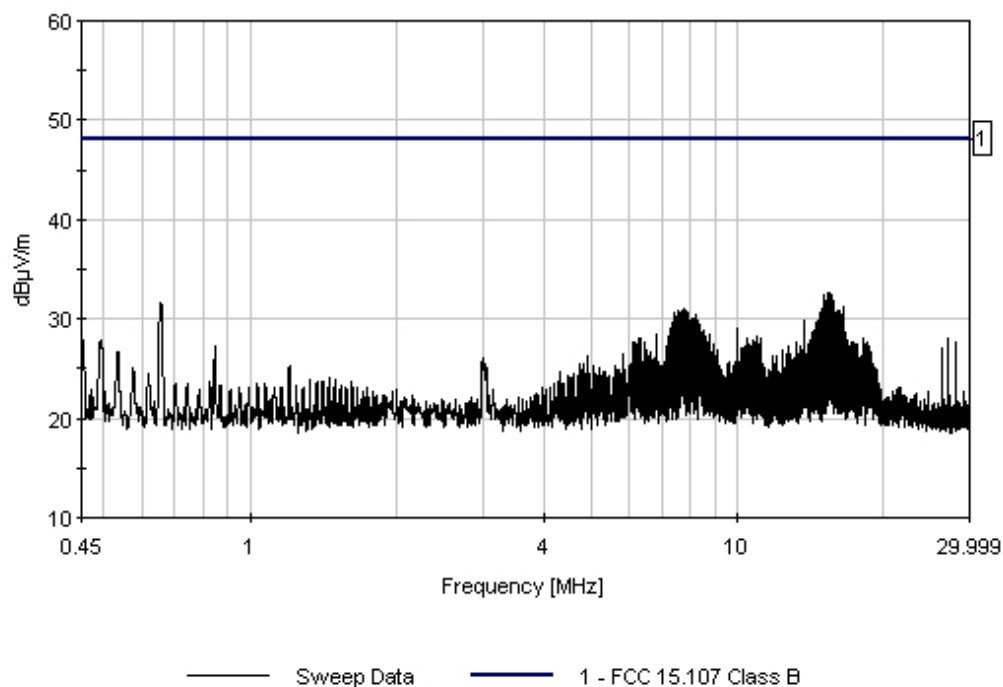
Measurement Data: Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dBμV	dB	dB	dB	dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	15.326M	32.6					+0.0	32.6	48.0	-15.4	Black
2	15.479M	32.6					+0.0	32.6	48.0	-15.4	Black
3	15.119M	32.5					+0.0	32.5	48.0	-15.5	Black
4	15.614M	32.5					+0.0	32.5	48.0	-15.5	Black
5	15.263M	31.9					+0.0	31.9	48.0	-16.1	Black
6	15.047M	31.8					+0.0	31.8	48.0	-16.2	Black
7	15.758M	31.8					+0.0	31.8	48.0	-16.2	Black
8	654.726k	31.7					+0.0	31.7	48.0	-16.3	Black
9	15.407M	31.7					+0.0	31.7	48.0	-16.3	Black
10	15.551M	31.6					+0.0	31.6	48.0	-16.4	Black

11	15.200M	31.5	+0.0	31.5	48.0	-16.5	Black
12	15.830M	31.2	+0.0	31.2	48.0	-16.8	Black
13	16.506M	31.2	+0.0	31.2	48.0	-16.8	Black
14	14.975M	31.1	+0.0	31.1	48.0	-16.9	Black
15	15.686M	31.1	+0.0	31.1	48.0	-16.9	Black

CKC Laboratories, Inc. Date: 11/23/2002 Time: 3:18:33 PM IP MobileNet W/O#: 79904
FCC 15.107 Class B Test Lead: Black 110V 60Hz Sequence#: 5



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

Customer: **IP MobileNet**
 Specification: **FCC 15.107 Class B**
 Work Order #: **79904**
 Test Type: **Conducted Emissions**
 Equipment: **Land Mobile Transceiver**
 Manufacturer: IP MobileNet
 Model: IP4HPV-GPS
 S/N: IP40211215

Date: 11/23/2002
 Time: 3:28:40 PM
 Sequence#: 7
 Tested By: Eddie Wong
 110V 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211215

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	Sec121222510	03051-0F03-0322

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 ohm load via a 40 dB attenuator. RS232 Port is connected to a remote laptop, GPS antenna port is connected to the GPS antenna port and the ethernet port is unpopulated. EUT obtains DC power from a 13.8 VDC power supply. The laptop is maintaining a RS232 link with the EUT. Mode: Receive Tx 460.5 MHz, Rx 463.5 MHz, Inj 508.5 MHz. Frequency range of measurement = 450 kHz - 30 MHz, RBW=9 kHz, VBW=9 kHz. 13.8 Vdc (110Vac, 60 Hz) 24°C, 24% relative humidity.

Transducer Legend:

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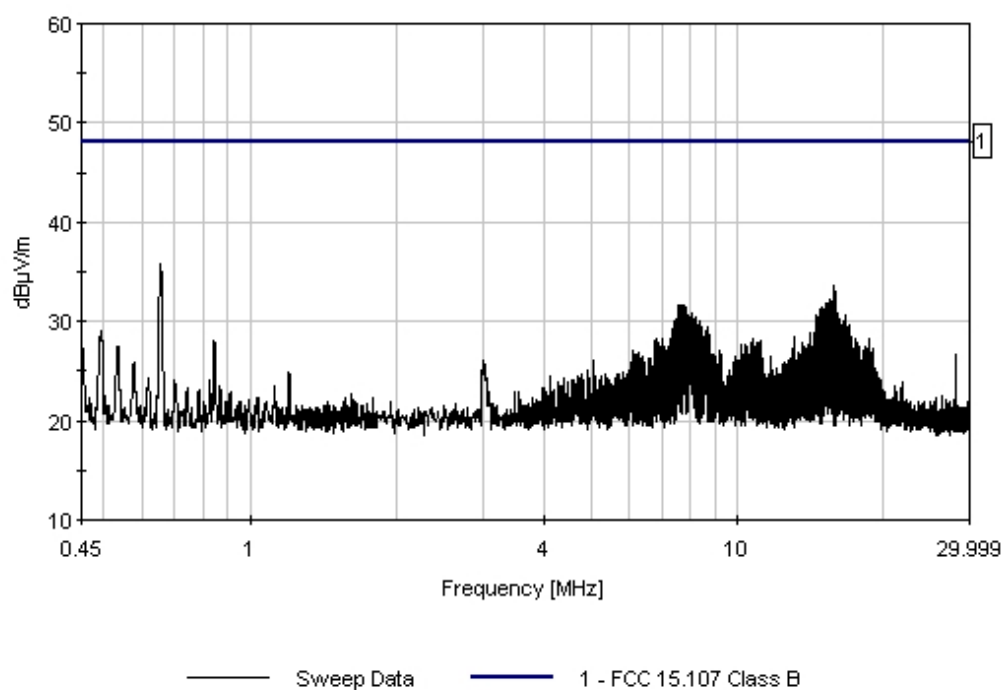
Measurement Data: Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dBμV	dB	dB	dB	dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	656.100k	35.7					+0.0	35.7	48.0	-12.3	White
2	15.767M	33.6					+0.0	33.6	48.0	-14.4	White
3	15.912M	33.1					+0.0	33.1	48.0	-14.9	White
4	15.470M	32.3					+0.0	32.3	48.0	-15.7	White
5	15.614M	32.1					+0.0	32.1	48.0	-15.9	White
6	15.254M	31.9					+0.0	31.9	48.0	-16.1	White
7	15.335M	31.9					+0.0	31.9	48.0	-16.1	White
8	15.407M	31.8					+0.0	31.8	48.0	-16.2	White
9	7.659M	31.7					+0.0	31.7	48.0	-16.3	White
10	7.731M	31.7					+0.0	31.7	48.0	-16.3	White

11	7.587M	31.6	+0.0	31.6	48.0	-16.4	White
12	15.191M	31.6	+0.0	31.6	48.0	-16.4	White
13	7.803M	31.5	+0.0	31.5	48.0	-16.5	White
14	14.984M	31.4	+0.0	31.4	48.0	-16.6	White
15	15.686M	31.4	+0.0	31.4	48.0	-16.6	White

CKC Laboratories, Inc. Date: 11/23/2002 Time: 3:28:40 PM IP MobileNet VVO#: 79904
FCC 15.107 Class B Test Lead: White 110V 60Hz Sequence#: 7



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

Customer: **IP MobileNet**
 Specification: **FCC 15.107 Class B COND [AVE]**
 Work Order #: **79904**
 Test Type: **Conducted Emissions**
 Equipment: **Land Mobile Transceiver**
 Manufacturer: IP MobileNet
 Model: IP4HPV-GPS
 S/N: IP40211321

Date: 12/10/2002
 Time: 16:02:23
 Sequence#: 14
 Tested By: Eddie Wong
 13.8Vdc

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211321

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Topward	6306D	988614

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 ohm load. RS232 Port is connected to a remote laptop, GPS antenna port is connected to a GPS antenna, the ethernet port is connected to a section of UTP and a loopback terminator. EUT obtains DC power from a 13.8 VDC power supply. Mode: Receiving Tx 469 MHz, Rx 463.5 MHz, Inj 509 MHz. Frequency range: 150 kHz - 30 MHz, RBW=9 kHz, VBW=9 kHz. 13.8 VDC (110VAC, 60 Hz) 24°C, 24% relative humidity.

Transducer Legend:

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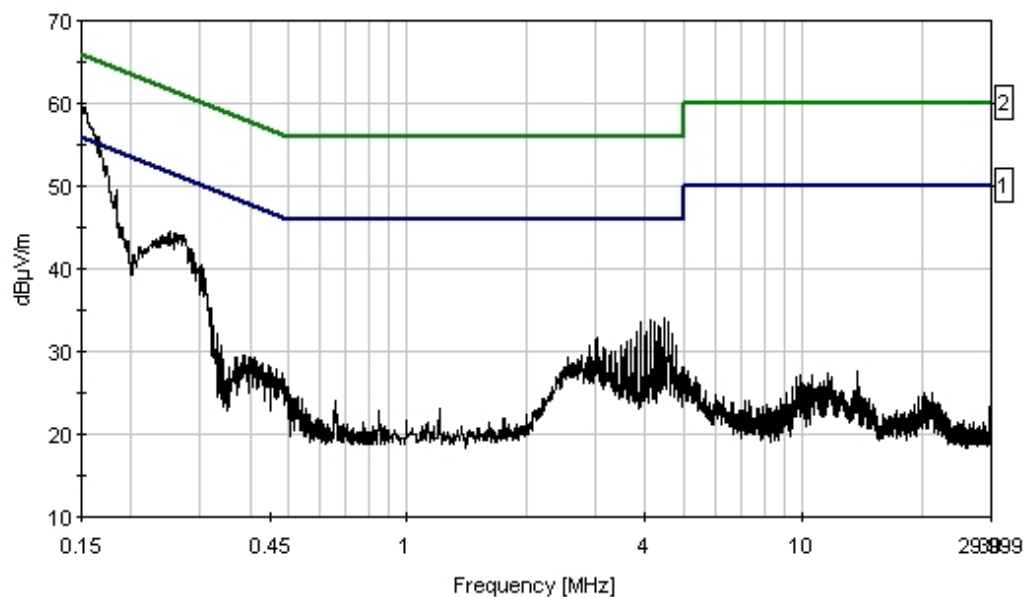
Measurement Data: Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dBμV	dB	dB	dB	dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	4.454M	34.1					+0.0	34.1	46.0	-11.9	Black
2	4.126M	33.7					+0.0	33.7	46.0	-12.3	Black
3	4.233M	33.6					+0.0	33.6	46.0	-12.4	Black
4	3.901M	33.5					+0.0	33.5	46.0	-12.5	Black
5	4.573M	33.5					+0.0	33.5	46.0	-12.5	Black
6	4.339M	33.2					+0.0	33.2	46.0	-12.8	Black
7	3.795M	32.3					+0.0	32.3	46.0	-13.7	Black
8	4.011M	32.3					+0.0	32.3	46.0	-13.7	Black
9	4.679M	32.2					+0.0	32.2	46.0	-13.8	Black
10	3.012M	31.6					+0.0	31.6	46.0	-14.4	Black

11	3.680M	31.4	+0.0	31.4	46.0	-14.6	Black
12	3.578M	31.1	+0.0	31.1	46.0	-14.9	Black
13	4.790M	30.8	+0.0	30.8	46.0	-15.2	Black
14	3.463M	30.7	+0.0	30.7	46.0	-15.3	Black
15	152.181k	21.5	+0.0	21.5	55.9	-34.4	Black
Ave							
^	152.182k	59.6	+0.0	59.6	55.9	+3.7	Black

CKC Laboratories, Inc. Date: 12/10/2002 Time: 16:02:23 IP MobileNet WVO#: 79904
FCC 15.107 Class B COND [AVE] Test Lead: Black 13.8Vdc Sequence#: 14



1 - FCC 15.107 Class B COND [AVE] 2 - FCC 15.107 Class B COND [QP]

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

Customer: **IP MobileNet**
 Specification: **FCC 15.107 Class B COND [AVE]**
 Work Order #: **79904**
 Test Type: **Conducted Emissions**
 Equipment: **Land Mobile Transceiver**
 Manufacturer: IP MobileNet
 Model: IP4HPV-GPS
 S/N: IP40211321

Date: 12/10/2002
 Time: 15:55:33
 Sequence#: 13
 Tested By: Eddie Wong
 13.8Vdc

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211321

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Topward	6306D	988614

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 ohm load. RS232 Port is connected to a remote laptop, GPS antenna port is connected to a GPS antenna, the ethernet port is connected to a section of UTP and a loopback terminator. EUT obtains DC power from a 13.8 VDC power supply. Mode: Receiving Tx 469 MHz, Rx 463.5 MHz, Inj 509 MHz. Frequency range: 150 kHz - 30 MHz, RBW=9 kHz, VBW=9 kHz. 13.8 VDC (110 VAC, 60 Hz) 24°C, 24% relative humidity.

Transducer Legend:

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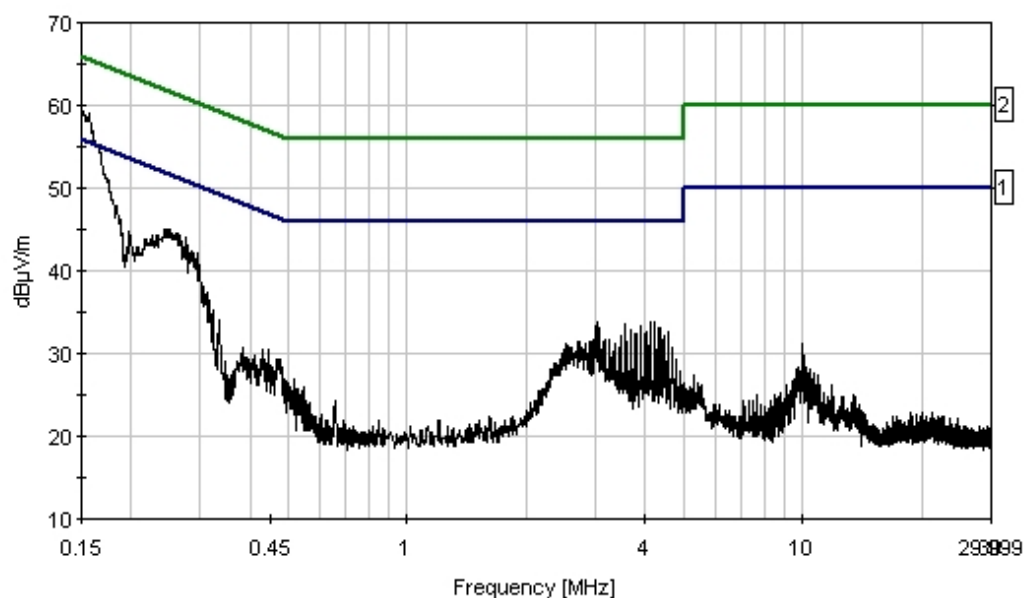
Measurement Data: Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dBμV	dB	dB	dB	dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	249.626k	45.1					+0.0	45.1	51.8	-6.7	White
2	197.995k	44.7					+0.0	44.7	53.7	-9.0	White
3	4.233M	33.8					+0.0	33.8	46.0	-12.2	White
4	3.016M	33.7					+0.0	33.7	46.0	-12.3	White
5	4.114M	33.7					+0.0	33.7	46.0	-12.3	White
6	3.573M	33.5					+0.0	33.5	46.0	-12.5	White
7	3.901M	33.4					+0.0	33.4	46.0	-12.6	White
8	3.055M	33.2					+0.0	33.2	46.0	-12.8	White
9	4.343M	33.2					+0.0	33.2	46.0	-12.8	White
10	3.667M	32.9					+0.0	32.9	46.0	-13.1	White

11	4.569M	32.7	+0.0	32.7	46.0	-13.3	White
12	4.011M	32.6	+0.0	32.6	46.0	-13.4	White
13	3.782M	32.5	+0.0	32.5	46.0	-13.5	White
14	4.445M	32.2	+0.0	32.2	46.0	-13.8	White
15	150.000k	22.3	+0.0	22.3	56.0	-33.7	White
Ave							
^	150.000k	59.5	+0.0	59.5	56.0	+3.5	White

CKC Laboratories, Inc. Date: 12/10/2002 Time: 15:55:33 IP MobileNet WVO#: 79904
FCC 15.107 Class B COND [AVE] Test Lead: White 13.8Vdc Sequence#: 13



1 - FCC 15.107 Class B COND [AVE]

2 - FCC 15.107 Class B COND [QP]

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

Customer: **IP MobileNet**
 Specification: **FCC 15.107 Class B COND [AVE]**
 Work Order #: **79904**
 Test Type: **Conducted Emissions**
 Equipment: **Land Mobile Transceiver**
 Manufacturer: IP MobileNet
 Model: IP4HPV-GPS
 S/N: IP40211321

Date: 12/10/2002
 Time: 15:37:35
 Sequence#: 9
 Tested By: Eddie Wong
 13.8Vdc

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211321

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Topward	6306D	988614

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 ohm load. RS232 Port is connected to a remote laptop, GPS antenna port is connected to a GPS antenna, the ethernet port is unpopulated. EUT obtains DC power from a 13.8 VDC power supply. The laptop is maintaining a RS232 link with the EUT. Mode: Receiving Tx 469 MHz, Rx 463.5 MHz, Inj 509 MHz. Frequency range: 150 kHz - 30 MHz, RBW=9 kHz, VBW=9 kHz. 13.8 VDC (110 VAC, 60 Hz) 24°C, 24% relative humidity.

Transducer Legend:

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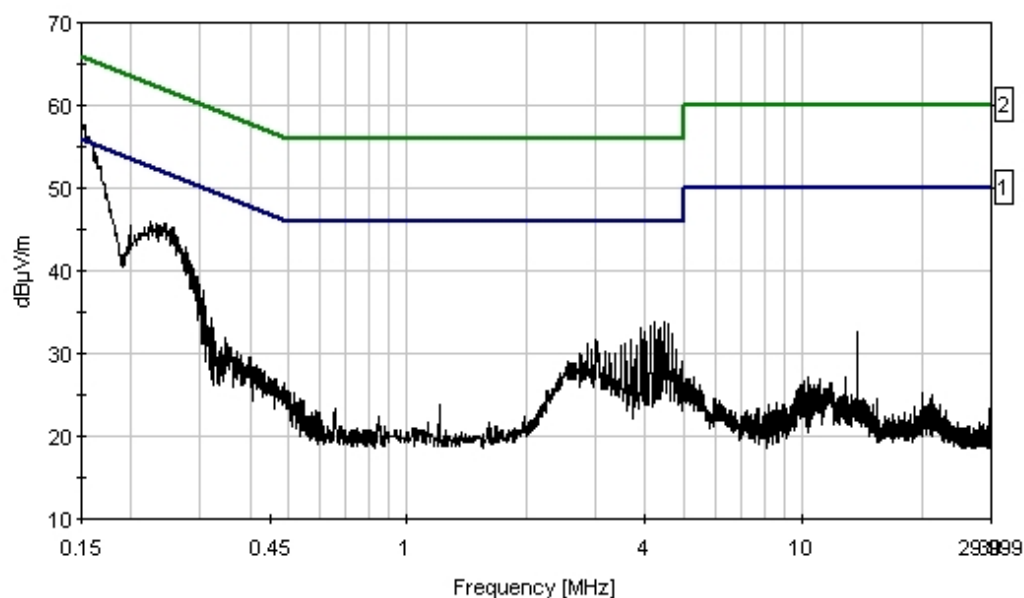
Measurement Data: Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dBμV	dB	dB	dB	dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	223.447k	46.0					+0.0	46.0	52.7	-6.7	Black
2	296.894k	38.3					+0.0	38.3	50.3	-12.0	Black
3	4.237M	33.8					+0.0	33.8	46.0	-12.2	Black
4	4.458M	33.8					+0.0	33.8	46.0	-12.2	Black
5	304.166k	37.6					+0.0	37.6	50.1	-12.5	Black
6	4.573M	33.5					+0.0	33.5	46.0	-12.5	Black
7	4.118M	33.3					+0.0	33.3	46.0	-12.7	Black
8	4.352M	33.1					+0.0	33.1	46.0	-12.9	Black
9	3.905M	33.0					+0.0	33.0	46.0	-13.0	Black
10	4.007M	32.6					+0.0	32.6	46.0	-13.4	Black

11	4.679M	32.3	+0.0	32.3	46.0	-13.7	Black
12	309.984k	35.6	+0.0	35.6	50.0	-14.4	Black
13	2.991M	31.6	+0.0	31.6	46.0	-14.4	Black
14	3.671M	31.6	+0.0	31.6	46.0	-14.4	Black
15	152.908k	20.4	+0.0	20.4	55.8	-35.4	Black
Ave							
^	152.909k	57.6	+0.0	57.6	55.8	+1.8	Black

CKC Laboratories, Inc. Date: 12/10/2002 Time: 15:37:35 IP MobileNet WVO#: 79904
FCC 15.107 Class B COND [AVE] Test Lead: Black 13.8Vdc Sequence#: 9



1 - FCC 15.107 Class B COND [AVE]

2 - FCC 15.107 Class B COND [QP]

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

Customer: **IP MobileNet**
 Specification: **FCC 15.107 Class B COND [AVE]**
 Work Order #: **79904**
 Test Type: **Conducted Emissions**
 Equipment: **Land Mobile Transceiver**
 Manufacturer: IP MobileNet
 Model: IP4HPV-GPS
 S/N: IP40211321

Date: 12/10/2002
 Time: 15:43:49
 Sequence#: 10
 Tested By: Eddie Wong
 13.8Vdc

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211321

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Topward	6306D	988614

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 ohm load. RS232 Port is connected to a remote laptop, GPS antenna port is connected to a GPS antenna, the ethernet port is unpopulated. EUT obtains DC power from a 13.8 VDC power supply. The laptop is maintaining a RS232 link with the EUT. Mode: Receiving Tx 469 MHz, Rx 463.5 MHz, Inj 509 MHz. Frequency range: 150 kHz - 30 MHz, RBW=9 kHz, VBW=9 kHz. 13.8 VDC (110 VAC, 60 Hz) 24°C, 24% relative humidity.

Transducer Legend:

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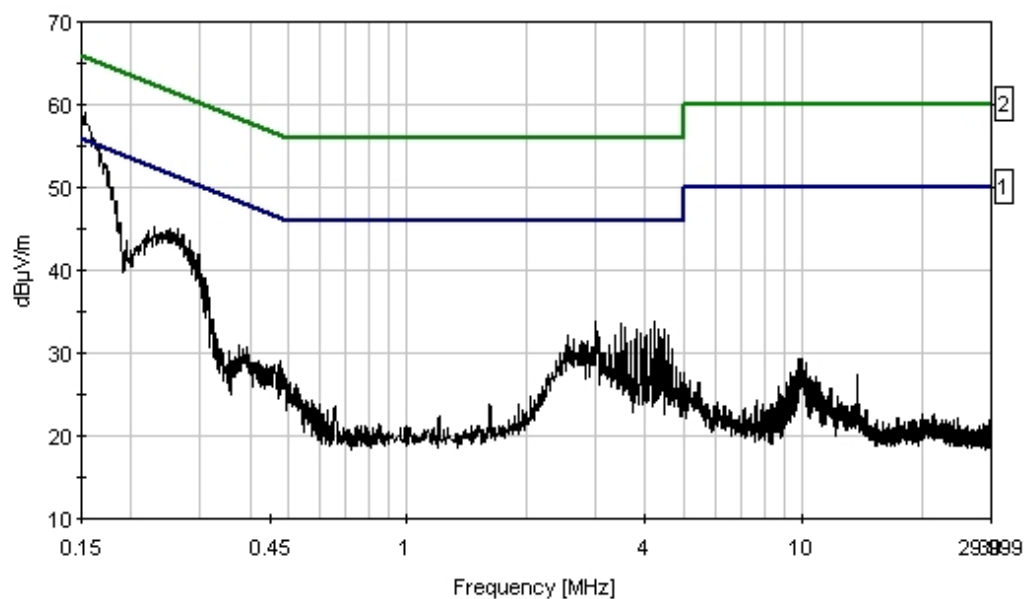
Measurement Data: Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dBμV	dB	dB	dB	dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	229.265k	45.2					+0.0	45.2	52.5	-7.3	White
2	308.530k	39.0					+0.0	39.0	50.0	-11.0	White
3	312.893k	38.1					+0.0	38.1	49.9	-11.8	White
4	2.995M	33.8					+0.0	33.8	46.0	-12.2	White
5	4.233M	33.7					+0.0	33.7	46.0	-12.3	White
6	3.463M	33.6					+0.0	33.6	46.0	-12.4	White
7	3.573M	33.0					+0.0	33.0	46.0	-13.0	White
8	4.118M	32.9					+0.0	32.9	46.0	-13.1	White
9	4.339M	32.9					+0.0	32.9	46.0	-13.1	White
10	4.454M	32.9					+0.0	32.9	46.0	-13.1	White

11	3.795M	32.8	+0.0	32.8	46.0	-13.2	White
12	3.901M	32.3	+0.0	32.3	46.0	-13.7	White
13	3.352M	32.2	+0.0	32.2	46.0	-13.8	White
14	4.569M	32.2	+0.0	32.2	46.0	-13.8	White
15	152.908k	25.7	+0.0	25.7	55.8	-30.1	White
Ave							
^	152.909k	59.0	+0.0	59.0	55.8	+3.2	White

CKC Laboratories, Inc. Date: 12/10/2002 Time: 15:43:49 IP MobileNet WVO#: 79904
FCC 15.107 Class B COND [AVE] Test Lead: White 13.8Vdc Sequence#: 10



1 - FCC 15.107 Class B COND [AVE] 2 - FCC 15.107 Class B COND [QP]

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	01865	HP	8566B	2532A02509	092702	092703
QP Adapter	01437	HP	85650A	3303A01884	092702	092703
LISN	02128	EMCO	3816/2NM	9809-1090	032002	032003
LISN	00847	EMCO	3816/2NM	1104	100902	100903



Mains Conducted Emissions - Front View - UTP



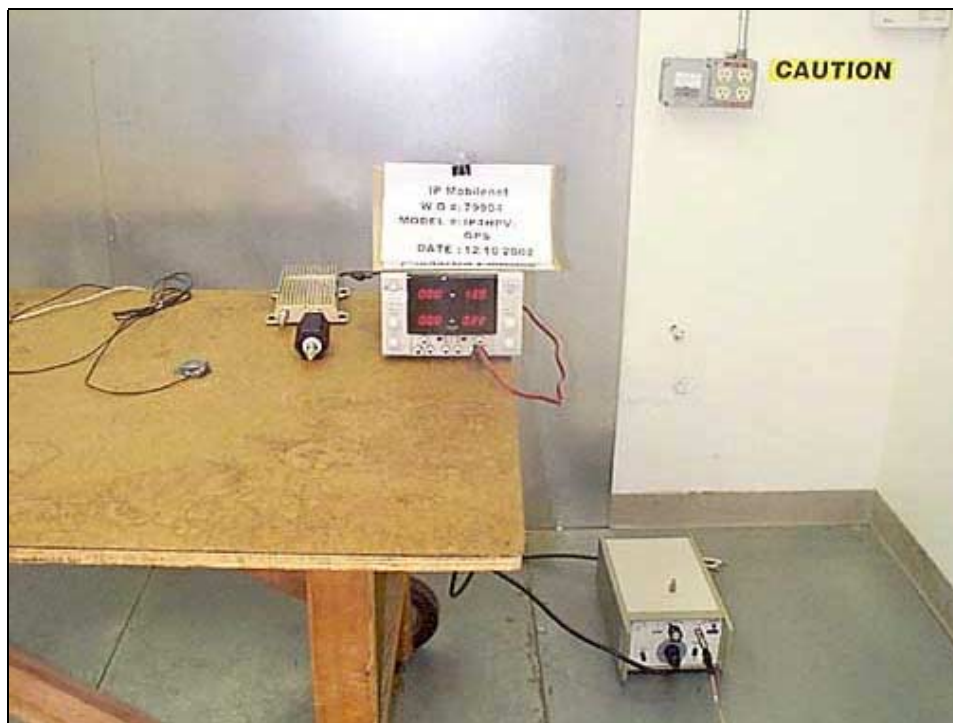
Mains Conducted Emissions - Side View - UTP



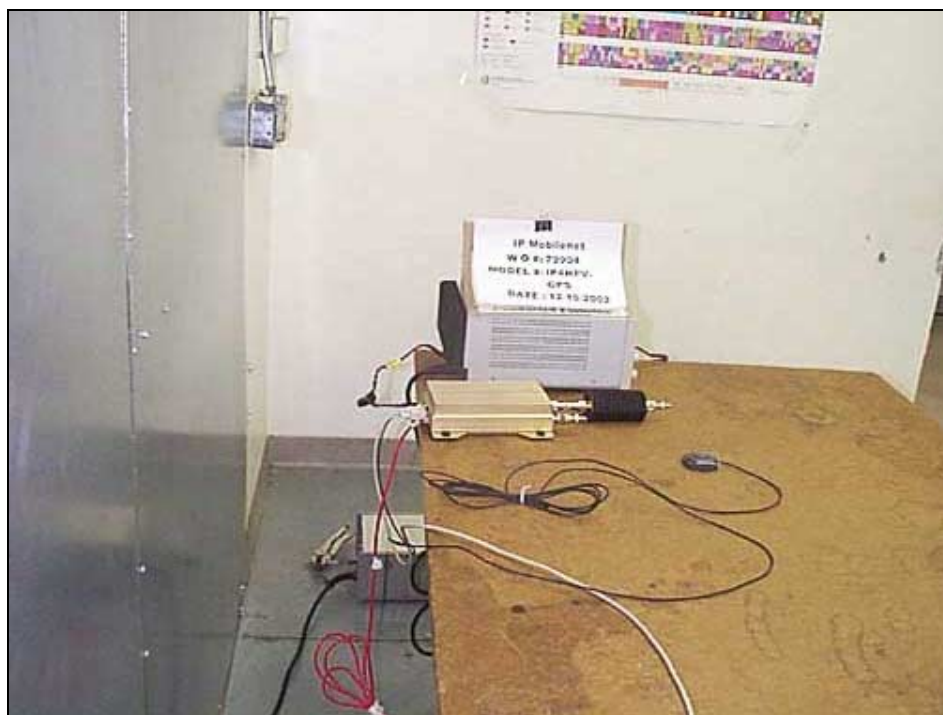
Mains Conducted Emissions - Front View - RS232



Mains Conducted Emissions - Side View - RS232



Mains Conducted Emissions - Front View - UTP2



Mains Conducted Emissions - Side View - UTP2

15.109 – RADIATED EMISSIONS

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

Customer: **IP MobileNet**
 Specification: **FCC 15.109 Class B**
 Work Order #: **79904** Date: 12/14/2002
 Test Type: **Maximized emission** Time: 11:59:14
 Equipment: **Land Mobile Transceiver** Sequence#: 1
 Manufacturer: IP MobileNet Tested By: Eddie Wong
 Model: IP4HPV-GPS
 S/N: IP40211234

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211234

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	Sec121222510	03051-0F03-0322
Laptop	Compaq	Presario	1V02DCH2E2T0

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 ohm load. RS232 Port is connected to a remote laptop, GPS antenna port is connected to a GPS antenna, the ethernet port is unpopulated. EUT obtains DC power from a 13.8 VDC power supply. The laptop is maintaining a RS232 link with the EUT. Mode: Receiving Tx 451 MHz, Rx 448 MHz, Inj 493 MHz. Frequency range: 30 MHz - 8 GHz. Frequency = 30 MHz - 1000 MHz, RBW=120 kHz, VBW=120 kHz; 1000 MHz – 8000 MHz, RBW=1 MHz, VBW=1 MHz. 13.8 VDC (110VAC, 60 Hz) 18°C, 38% relative humidity.

Transducer Legend:

T1=Log antenna, SN331 092303	T2=Bicon SN220 092303
T3=Cable #10 070803	T4=Cable #15 120903
T5=Preamp 8447D 082302	T6=Horn 6246_091003
T7=Brea Cable: 25' 1/4" Heliac - Brea # 13.	T8=Brea Cable: 6' 1/4" Heliac - Brea # 7.
T9=HP83017A Preamp 091103	

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	493.068M	48.5	+19.6 -28.1 +0.0	+0.0 +0.0	+0.4 +0.0	+4.2 +0.0	+0.0	44.6	46.0	-1.4	Horiz
QP											
^	493.068M	48.6	+19.6 -28.1 +0.0	+0.0 +0.0	+0.4 +0.0	+4.2 +0.0	+0.0	44.7	46.0	-1.3	Horiz
3	493.061M	44.1	+19.6 -28.1 +0.0	+0.0 +0.0	+0.4 +0.0	+4.2 +0.0	+0.0	40.2	46.0	-5.8	Vert

4	304.796M	41.2	+22.4 -28.3 +0.0	+0.0 +0.0	+0.3 +0.0	+3.2 +0.0	+0.0	38.8	46.0	-7.2	Horiz
5	301.816M	37.8	+22.6 -28.3 +0.0	+0.0 +0.0	+0.3 +0.0	+3.2 +0.0	+0.0	35.6	46.0	-10.4	Horiz
6	159.484M	39.5	+0.0 -28.4 +0.0	+18.4 +0.0	+0.2 +0.0	+2.3 +0.0	+0.0	32.0	43.5	-11.5	Horiz
7	312.681M	36.4	+21.9 -28.3 +0.0	+0.0 +0.0	+0.3 +0.0	+3.3 +0.0	+0.0	33.6	46.0	-12.4	Horiz
8	56.483M	44.9	+0.0 -28.4 +0.0	+9.7 +0.0	+0.1 +0.0	+1.3 +0.0	+0.0	27.6	40.0	-12.4	Vert
9	331.868M	37.0	+20.7 -28.3 +0.0	+0.0 +0.0	+0.3 +0.0	+3.4 +0.0	+0.0	33.1	46.0	-12.9	Vert
10	178.863M	37.8	+0.0 -28.4 +0.0	+18.5 +0.0	+0.2 +0.0	+2.5 +0.0	+0.0	30.6	43.5	-12.9	Horiz
11	68.063M	46.7	+0.0 -28.5 +0.0	+7.3 +0.0	+0.1 +0.0	+1.5 +0.0	+0.0	27.1	40.0	-12.9	Vert
12	322.866M	35.9	+21.2 -28.3 +0.0	+0.0 +0.0	+0.3 +0.0	+3.3 +0.0	+0.0	32.4	46.0	-13.6	Horiz
13	232.666M	38.9	+0.0 -28.3 +0.0	+18.4 +0.0	+0.2 +0.0	+2.9 +0.0	+0.0	32.1	46.0	-13.9	Vert
14	224.036M	38.7	+0.0 -28.3 +0.0	+18.2 +0.0	+0.2 +0.0	+2.8 +0.0	+0.0	31.6	46.0	-14.4	Vert
15	986.107M	35.3	+24.6 -27.5 +0.0	+0.0 +0.0	+0.5 +0.0	+6.4 +0.0	+0.0	39.3	54.0	-14.7	Horiz
16	155.160M	35.6	+0.0 -28.4 +0.0	+18.1 +0.0	+0.2 +0.0	+2.3 +0.0	+0.0	27.8	43.5	-15.7	Vert
17	153.871M	35.4	+0.0 -28.4 +0.0	+18.0 +0.0	+0.2 +0.0	+2.3 +0.0	+0.0	27.5	43.5	-16.0	Horiz
18	138.782M	36.2	+0.0 -28.4 +0.0	+17.1 +0.0	+0.2 +0.0	+2.2 +0.0	+0.0	27.3	43.5	-16.2	Horiz
19	140.656M	36.0	+0.0 -28.4 +0.0	+17.2 +0.0	+0.2 +0.0	+2.2 +0.0	+0.0	27.2	43.5	-16.3	Horiz
20	530.211M	32.9	+19.9 -28.0 +0.0	+0.0 +0.0	+0.4 +0.0	+4.4 +0.0	+0.0	29.6	46.0	-16.4	Horiz

21	110.700M	39.2	+0.0 -28.4 +0.0	+14.2 +0.0	+0.1 +0.0	+1.9 +0.0	+0.0	27.0	43.5	-16.5	Vert
22	241.754M	35.6	+0.0 -28.3 +0.0	+18.5 +0.0	+0.3 +0.0	+2.9 +0.0	+0.0	29.0	46.0	-17.0	Vert
23	986.095M	32.9	+24.6 -27.5 +0.0	+0.0 +0.0	+0.5 +0.0	+6.4 +0.0	+0.0	36.9	54.0	-17.1	Vert
24	448.174M	34.2	+18.4 -28.3 +0.0	+0.0 +0.0	+0.4 +0.0	+4.1 +0.0	+0.0	28.8	46.0	-17.2	Horiz
25	131.166M	35.7	+0.0 -28.3 +0.0	+16.6 +0.0	+0.2 +0.0	+2.1 +0.0	+0.0	26.3	43.5	-17.2	Vert
26	383.440M	35.0	+17.8 -28.2 +0.0	+0.0 +0.0	+0.3 +0.0	+3.7 +0.0	+0.0	28.6	46.0	-17.4	Horiz
27	127.046M	35.2	+0.0 -28.3 +0.0	+16.3 +0.0	+0.2 +0.0	+2.1 +0.0	+0.0	25.5	43.5	-18.0	Horiz
28	270.096M	32.1	+0.0 -28.2 +0.0	+20.5 +0.0	+0.3 +0.0	+3.1 +0.0	+0.0	27.8	46.0	-18.2	Vert
29	583.274M	30.3	+20.1 -27.8 +0.0	+0.0 +0.0	+0.4 +0.0	+4.7 +0.0	+0.0	27.7	46.0	-18.3	Horiz
30	412.984M	34.3	+17.3 -28.2 +0.0	+0.0 +0.0	+0.3 +0.0	+3.9 +0.0	+0.0	27.6	46.0	-18.4	Horiz
31	501.477M	31.3	+19.8 -28.1 +0.0	+0.0 +0.0	+0.4 +0.0	+4.2 +0.0	+0.0	27.6	46.0	-18.4	Vert
32	451.079M	31.4	+18.5 -28.3 +0.0	+0.0 +0.0	+0.4 +0.0	+4.1 +0.0	+0.0	26.1	46.0	-19.9	Vert
33	383.464M	32.1	+17.8 -28.2 +0.0	+0.0 +0.0	+0.3 +0.0	+3.7 +0.0	+0.0	25.7	46.0	-20.3	Vert
34	133.559M	32.2	+0.0 -28.3 +0.0	+16.8 +0.0	+0.2 +0.0	+2.1 +0.0	+0.0	23.0	43.5	-20.5	Vert
35	2024.700M	40.4	+0.0 +0.0 -38.9	+0.0 +28.0	+0.0 +2.3	+0.0 +0.6	+0.0	32.4	54.0	-21.6	Horiz
36	398.194M	31.1	+17.0 -28.2 +0.0	+0.0 +0.0	+0.3 +0.0	+3.8 +0.0	+0.0	24.0	46.0	-22.0	Vert

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

Customer: **IP MobileNet**
 Specification: **FCC 15.109 Class B**
 Work Order #: **79904**
 Test Type: **Maximized emission**
 Equipment: **Land Mobile Transceiver**
 Manufacturer: IP MobileNet
 Model: IP4HPV-GPS
 S/N: IP40211234

Date: 12/14/2002
 Time: 13:21:05
 Sequence#: 2
 Tested By: Eddie Wong

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211234

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	Sec121222510	03051-0F03-0322
Laptop	Compaq	Presario	1V02DCH2E2T0

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 ohm load. RS232 Port is connected to a remote laptop, GPS antenna port is connected to a GPS antenna, the ethernet port is connected to a section of UTP and a loopback terminator. EUT obtains DC power from a 13.8 VDC power supply. Mode: Receiving Tx 451 MHz, Rx 493 MHz, Inj 448 MHz. Frequency range: 30 MHz - 8 GHz. Frequency 30 MHz - 1000 MHz, RBW=120 kHz, VBW=120 kHz; 1000 MHz - 8000 MHz, RBW=1 MHz, VBW=1 MHz. 13.8 VDC (110 VAC, 60 Hz) 18°C, 38% relative humidity.

Transducer Legend:

T1=Log antenna, SN331 092303	T2=Bicon SN220 092303
T3=Cable #10 070803	T4=Cable #15 120903
T5=Preamp 8447D 082302	

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

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	493.059M QP	46.7	+19.6 -28.1	+0.0	+0.4	+4.2	+0.0	42.8	46.0	-3.2	Horiz
^	493.053M	46.8	+19.6 -28.1	+0.0	+0.4	+4.2	+0.0	42.9	46.0	-3.1	Horiz
3	493.083M	46.0	+19.6 -28.1	+0.0	+0.4	+4.2	+0.0	42.1	46.0	-3.9	Vert
4	280.066M	40.3	+0.0 -28.2	+21.3	+0.3	+3.1	+0.0	36.8	46.0	-9.2	Horiz
5	328.045M	40.0	+20.9 -28.3	+0.0	+0.3	+3.4	+0.0	36.3	46.0	-9.7	Vert
6	151.615M	40.9	+0.0 -28.4	+17.9	+0.2	+2.3	+0.0	32.9	43.5	-10.6	Horiz
7	316.060M	36.6	+21.6 -28.3	+0.0	+0.3	+3.3	+0.0	33.5	46.0	-12.5	Horiz
8	311.088M	36.2	+22.0 -28.3	+0.0	+0.3	+3.3	+0.0	33.5	46.0	-12.5	Horiz

9	325.048M	36.7	+21.1 -28.3	+0.0	+0.3	+3.4	+0.0	33.2	46.0	-12.8	Vert
10	986.065M	36.4	+24.6 -27.5	+0.0	+0.5	+6.4	+0.0	40.4	54.0	-13.6	Horiz
11	322.884M	35.7	+21.2 -28.3	+0.0	+0.3	+3.3	+0.0	32.2	46.0	-13.8	Horiz
12	533.401M	35.1	+19.9 -28.0	+0.0	+0.4	+4.4	+0.0	31.8	46.0	-14.2	Horiz
13	360.073M	36.9	+19.0 -28.3	+0.0	+0.3	+3.6	+0.0	31.5	46.0	-14.5	Vert
14	240.083M	35.9	+0.0 -28.3	+18.5	+0.3	+2.9	+0.0	29.3	46.0	-16.7	Vert
15	288.116M	31.9	+0.0 -28.3	+22.0	+0.3	+3.2	+0.0	29.1	46.0	-16.9	Vert
16	353.990M	33.5	+19.4 -28.3	+0.0	+0.3	+3.5	+0.0	28.4	46.0	-17.6	Horiz
17	444.506M	33.8	+18.3 -28.3	+0.0	+0.4	+4.1	+0.0	28.3	46.0	-17.7	Horiz
18	413.000M	34.1	+17.3 -28.2	+0.0	+0.3	+3.9	+0.0	27.4	46.0	-18.6	Horiz
19	383.466M	33.3	+17.8 -28.2	+0.0	+0.3	+3.7	+0.0	26.9	46.0	-19.1	Horiz
20	353.992M	31.5	+19.4 -28.3	+0.0	+0.3	+3.5	+0.0	26.4	46.0	-19.6	Vert
21	108.983M	36.5	+0.0 -28.4	+13.8	+0.1	+1.9	+0.0	23.9	43.5	-19.6	Horiz
22	398.780M	32.3	+17.0 -28.2	+0.0	+0.3	+3.8	+0.0	25.2	46.0	-20.8	Horiz
23	401.000M	32.1	+16.9 -28.2	+0.0	+0.3	+3.8	+0.0	24.9	46.0	-21.1	Vert

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

Customer: **IP MobileNet**
Specification: **FCC 15.109 Class B**
Work Order #: **79904**

Date: 12/10/2002

Test Type: **Maximized emission**
Equipment: **Land Mobile Transceiver**
Manufacturer: IP MobileNet
Model: IP4HPV-GPS
S/N: IP40211215

Time: 14:06:12

Sequence#: 5

Tested By: Eddie Wong

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211215

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	Sec121222510	03051-0F03-0322

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 ohm load. RS232 Port is connected to a remote laptop, GPS antenna port is connected to a GPS antenna, the ethernet port is unpopulated. EUT obtains DC power from a 13.8 VDC power supply. The laptop is maintaining a RS232 link with the EUT. Mode : Receiving Tx 469 MHz, Rx 463.5 MHz, Inj 509 MHz. Frequency range: 30 MHz - 8 GHz. Frequency range of measurement = 30 MHz - 1000 MHz, RBW=120 kHz, VBW=120 kHz; 1000 MHz - 8000 MHz, RBW=1 MHz, VBW=1 MHz. 13.8 VDC (110 VAC, 60 Hz) 24°C, 24% relative humidity.

Transducer Legend:

T1=Log antenna, SN331 092303	T2=Bicon SN220 092303
T3=Cable #10 070803	T4=Cable #15 120903
T5=Preamp 8447D 082302	T6=Horn 6246_091003
T7=12' SMA Gore cable #1337 121802	T8=Brea Cable: 25' 1/4" Helix - Brea # 13.
T9=Brea Cable: 6' 1/4" Helix - Brea # 7.	T10=HP83017A Preamp 091103

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
	MHz	dBμV	T9	T10			Table	dBμV/m	dBμV/m	dB	Ant
1	509.057M	46.5	+19.8	+0.0	+0.4	+4.3	+0.0	42.9	46.0	-3.1	Horiz
	QP		-28.1	+0.0	+0.0	+0.0					
			+0.0	+0.0							
^	509.061M	46.6	+19.8	+0.0	+0.4	+4.3	+0.0	43.0	46.0	-3.0	Horiz
			-28.1	+0.0	+0.0	+0.0					
			+0.0	+0.0							
3	509.056M	42.5	+19.8	+0.0	+0.4	+4.3	+0.0	38.9	46.0	-7.1	Vert
			-28.1	+0.0	+0.0	+0.0					
			+0.0	+0.0							
4	72.070M	46.7	+0.0	+7.0	+0.1	+1.5	+0.0	26.8	40.0	-13.2	Vert
			-28.5	+0.0	+0.0	+0.0					
			+0.0	+0.0							

5	324.020M	35.5	+21.1 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.3 +0.0 +0.0	+0.0	31.9	46.0	-14.1	Horiz
6	1759.712M	46.9	+0.0 +0.0 +0.6	+0.0 +26.7 -38.2	+0.0 +1.6 +2.1	+0.0 +0.0 +0.0	+0.0	39.7	54.0	-14.3	Vert
7	268.873M	35.9	+0.0 -28.2 +0.0	+20.4 +0.0 +0.0	+0.3 +0.0 +0.0	+3.1 +0.0 +0.0	+0.0	31.5	46.0	-14.5	Horiz
8	468.189M	35.4	+18.9 -28.2 +0.0	+0.0 +0.0 +0.0	+0.4 +0.0 +0.0	+4.1 +0.0 +0.0	+0.0	30.6	46.0	-15.4	Horiz
9	318.020M	33.1	+21.5 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.3 +0.0 +0.0	+0.0	29.9	46.0	-16.1	Horiz
10	188.960M	34.7	+0.0 -28.4 +0.0	+18.1 +0.0 +0.0	+0.2 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	27.1	43.5	-16.4	Horiz
11	274.873M	33.4	+0.0 -28.2 +0.0	+20.9 +0.0 +0.0	+0.3 +0.0 +0.0	+3.1 +0.0 +0.0	+0.0	29.5	46.0	-16.5	Horiz
12	290.510M	32.0	+0.0 -28.3 +0.0	+22.2 +0.0 +0.0	+0.3 +0.0 +0.0	+3.2 +0.0 +0.0	+0.0	29.4	46.0	-16.6	Vert
13	469.083M	33.8	+19.0 -28.2 +0.0	+0.0 +0.0 +0.0	+0.4 +0.0 +0.0	+4.1 +0.0 +0.0	+0.0	29.1	46.0	-16.9	Vert
14	178.460M	33.8	+0.0 -28.4 +0.0	+18.5 +0.0 +0.0	+0.2 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	26.6	43.5	-16.9	Horiz
15	1018.010M	48.6	+0.0 +0.0 +0.4	+0.0 +25.6 -40.8	+0.0 +1.5 +1.6	+0.0 +0.0 +0.0	+0.0	36.9	54.0	-17.1	Vert
16	253.123M	34.8	+0.0 -28.3 +0.0	+19.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.0 +0.0 +0.0	+0.0	28.8	46.0	-17.2	Horiz
17	241.873M	34.4	+0.0 -28.3 +0.0	+18.6 +0.0 +0.0	+0.3 +0.0 +0.0	+2.9 +0.0 +0.0	+0.0	27.9	46.0	-18.1	Horiz
18	412.952M	33.6	+17.3 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.9 +0.0 +0.0	+0.0	26.9	46.0	-19.1	Horiz
19	64.460M	39.7	+0.0 -28.4 +0.0	+8.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.4 +0.0 +0.0	+0.0	20.8	40.0	-19.2	Horiz
20	445.507M	31.8	+18.3 -28.3 +0.0	+0.0 +0.0 +0.0	+0.4 +0.0 +0.0	+4.1 +0.0 +0.0	+0.0	26.3	46.0	-19.7	Vert
21	398.214M	32.5	+17.0 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.8 +0.0 +0.0	+0.0	25.4	46.0	-20.6	Horiz

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

Customer: **IP MobileNet**
Specification: **FCC 15.109 Class B**
Work Order #: **79904**

Date: 12/10/2002

Test Type: **Maximized emission**
Equipment: **Land Mobile Transceiver**

Time: 14:28:05

Manufacturer: IP MobileNet

Sequence#: 6

Model: IP4HPV-GPS

Tested By: Eddie Wong

S/N: IP40211215

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211215

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	Sec121222510	03051-0F03-0322

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 ohm load. RS232 Port is connected to a remote laptop, GPS antenna port is connected to a GPS antenna, the ethernet port is connected to a section of UTP and a loopback terminator. EUT obtains DC power from a 13.8 VDC power supply. Mode: Receiving Tx 469 MHz, Rx 463.5 MHz, Inj 509 MHz. Frequency range: 30 MHz - 8 GHz. Frequency 30 MHz - 1000 MHz, RBW=120 kHz, VBW=120 kHz; 1000 MHz - 8000 MHz, RBW=1 MHz, VBW=1 MHz. 13.8 VDC (110 VAC, 60 Hz) 24°C, 24% relative humidity.

Transducer Legend:

T1=Log antenna, SN331 092303	T2=Bicon SN220 092303
T3=Cable #10 070803	T4=Cable #15 120903
T5=Preamp 8447D 082302	T6=Horn 6246_091003
T7=12' SMA Gore cable #1337 121802	T8=Brea Cable: 25' 1/4" Helix - Brea # 13.
T9=Brea Cable: 6' 1/4" Helix - Brea # 7.	T10=HP83017A Preamp 091103

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
	MHz	dBμV	T9	T10			Table	dBμV/m	dBμV/m	dB	Ant
1	509.056M	47.6	+19.8	+0.0	+0.4	+4.3	+0.0	44.0	46.0	-2.0	Horiz
	QP		-28.1	+0.0	+0.0	+0.0					
			+0.0	+0.0							
^	509.061M	47.7	+19.8	+0.0	+0.4	+4.3	+0.0	44.1	46.0	-1.9	Horiz
			-28.1	+0.0	+0.0	+0.0					
			+0.0	+0.0							
3	509.070M	43.7	+19.8	+0.0	+0.4	+4.3	+0.0	40.1	46.0	-5.9	Vert
			-28.1	+0.0	+0.0	+0.0					
			+0.0	+0.0							
4	33.600M	41.9	+0.0	+17.0	+0.1	+1.0	+0.0	31.6	40.0	-8.4	Horiz
			-28.4	+0.0	+0.0	+0.0					
			+0.0	+0.0							

5	276.014M	36.8	+0.0 -28.2 +0.0	+21.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.1 +0.0 +0.0	+0.0	33.0	46.0	-13.0	Horiz
6	320.096M	36.0	+21.4 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.3 +0.0 +0.0	+0.0	32.7	46.0	-13.3	Horiz
7	288.014M	35.1	+0.0 -28.3 +0.0	+22.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.2 +0.0 +0.0	+0.0	32.3	46.0	-13.7	Horiz
8	1759.890M	46.4	+0.0 +0.0 +0.6	+0.0 +26.7 -38.2	+0.0 +1.6 +2.1	+0.0 +0.0 +0.0	+0.0	39.2	54.0	-14.8	Horiz
9	1537.340M	47.8	+0.0 +0.0 +0.5	+0.0 +25.3 -38.2	+0.0 +1.7 +1.9	+0.0 +0.0 +0.0	+0.0	39.0	54.0	-15.0	Horiz
10	339.236M	35.1	+20.2 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	30.7	46.0	-15.3	Horiz
11	219.600M	37.5	+0.0 -28.3 +0.0	+18.1 +0.0 +0.0	+0.2 +0.0 +0.0	+2.8 +0.0 +0.0	+0.0	30.3	46.0	-15.7	Horiz
12	190.350M	34.7	+0.0 -28.4 +0.0	+18.1 +0.0 +0.0	+0.2 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	27.1	43.5	-16.4	Horiz
13	1018.060M	48.2	+0.0 +0.0 +0.4	+0.0 +25.6 -40.8	+0.0 +1.5 +1.6	+0.0 +0.0 +0.0	+0.0	36.5	54.0	-17.5	Horiz
14	209.100M	29.9	+0.0 -28.4 +0.0	+17.9 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	22.3	43.5	-21.2	Horiz
15	412.966M	31.4	+17.3 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.9 +0.0 +0.0	+0.0	24.7	46.0	-21.3	Vert
16	383.449M	30.2	+17.8 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.7 +0.0 +0.0	+0.0	23.8	46.0	-22.2	Vert
17	380.264M	24.5	+17.9 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.7 +0.0 +0.0	+0.0	18.2	46.0	-27.8	Vert

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

Customer: **IP MobileNet**
Specification: **FCC 15.109 Class B**
Work Order #: **79904**

Date: 11/23/2002

Test Type: **Maximized emission**
Equipment: **Land Mobile Transceiver**
Manufacturer: IP MobileNet
Model: IP4HPV-GPS
S/N: IP40211215

Time: 10:52:41

Sequence#: 2

Tested By: Eddie Wong

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211215

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	Sec121222510	03051-0F03-0322

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 ohm load via a 40 dB attenuator. RS232 Port is connected to a remote laptop, GPS antenna port is connected to the GPS antenna port and the ethernet port is unpopulated. EUT obtains DC power from a 13.8 VDC power supply. The laptop is maintaining a RS232 link with the EUT. Mode: Receive Tx 460.5 MHz, Rx 463.5 MHz, Inj 508.5 MHz. Frequency range of measurement = 30 MHz - 1000 MHz, RBW=120 kHz, VBW=120 kHz; 1000 MHz – 8000 MHz. RBW=1 MHz, VBW=1 MHz. 13.8 VDC (110 VAC, 60 Hz) 24°C, 24% relative humidity.

Transducer Legend:

T1=Log antenna, SN331 092303	T2=Bicon SN220 092303
T3=Cable #10 070803	T4=Cable #15 120602
T5=Preamp 8447D 082302	T6=Horn 6246_091003
T7=12' SMA Gore cable #1337 121802	T8=Brea Cable: 25' 1/4" Helix - Brea # 13.
T9=Brea Cable: 6' 1/4" Helix - Brea # 7.	T10=HP83017A Preamp 091103

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

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
	MHz	dBμV	T9	T10			Table	dBμV/m	dBμV/m	dB	Ant
1	218.753M	47.5	+0.0	+18.1	+0.2	+2.7	+0.0	40.2	46.0	-5.8	Horiz
			-28.3	+0.0	+0.0	+0.0					
			+0.0	+0.0							
2	192.614M	44.9	+0.0	+18.0	+0.2	+2.5	+0.0	37.2	43.5	-6.3	Horiz
			-28.4	+0.0	+0.0	+0.0					
			+0.0	+0.0							
3	300.725M	41.4	+22.7	+0.0	+0.3	+3.3	+0.0	39.4	46.0	-6.6	Vert
			-28.3	+0.0	+0.0	+0.0					
			+0.0	+0.0							
4	215.295M	43.8	+0.0	+18.0	+0.2	+2.7	+0.0	36.4	43.5	-7.1	Horiz
			-28.3	+0.0	+0.0	+0.0					
			+0.0	+0.0							

5	272.472M	42.6	+0.0 -28.2 +0.0	+20.7 +0.0 +0.0	+0.3 +0.0 +0.0	+3.1 +0.0 +0.0	+0.0	38.5	46.0	-7.5	Horiz
6	936.697M	35.0	+24.3 -27.5 +0.0	+0.0 +0.0 +0.0	+0.5 +0.0 +0.0	+6.1 +0.0 +0.0	+0.0	38.4	46.0	-7.6	Horiz
7	324.481M	41.5	+21.1 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	38.0	46.0	-8.0	Horiz
8	217.469M	45.2	+0.0 -28.3 +0.0	+18.1 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	37.9	46.0	-8.1	Horiz
9	268.452M	42.4	+0.0 -28.2 +0.0	+20.3 +0.0 +0.0	+0.3 +0.0 +0.0	+3.0 +0.0 +0.0	+0.0	37.8	46.0	-8.2	Horiz
10	189.974M	42.6	+0.0 -28.4 +0.0	+18.1 +0.0 +0.0	+0.2 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	35.0	43.5	-8.5	Horiz
11	704.394M	37.6	+21.6 -27.4 +0.0	+0.0 +0.0 +0.0	+0.4 +0.0 +0.0	+5.2 +0.0 +0.0	+0.0	37.4	46.0	-8.6	Horiz
12	221.597M	44.6	+0.0 -28.3 +0.0	+18.2 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	37.4	46.0	-8.6	Horiz
13	320.210M	40.3	+21.4 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	37.1	46.0	-8.9	Horiz
14	218.802M	44.4	+0.0 -28.3 +0.0	+18.1 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	37.1	46.0	-8.9	Vert
15	197.825M	42.3	+0.0 -28.4 +0.0	+17.8 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	34.5	43.5	-9.0	Horiz
16	221.902M	43.6	+0.0 -28.3 +0.0	+18.2 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	36.4	46.0	-9.6	Horiz
17	318.958M	39.4	+21.5 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	36.3	46.0	-9.7	Vert
18	205.306M	41.3	+0.0 -28.4 +0.0	+17.8 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	33.5	43.5	-10.0	Horiz
19	199.855M	41.2	+0.0 -28.4 +0.0	+17.7 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	33.3	43.5	-10.2	Horiz
20	271.697M	40.0	+0.0 -28.2 +0.0	+20.6 +0.0 +0.0	+0.3 +0.0 +0.0	+3.1 +0.0 +0.0	+0.0	35.8	46.0	-10.2	Vert
21	280.256M	39.2	+0.0 -28.2 +0.0	+21.3 +0.0 +0.0	+0.3 +0.0 +0.0	+3.1 +0.0 +0.0	+0.0	35.7	46.0	-10.3	Horiz

22	194.717M	40.8	+0.0 -28.4 +0.0	+17.9 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	33.1	43.5	-10.4	Vert
23	327.216M	39.2	+20.9 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	35.5	46.0	-10.5	Horiz
24	185.794M	40.3	+0.0 -28.4 +0.0	+18.3 +0.0 +0.0	+0.2 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	32.9	43.5	-10.6	Vert
25	305.506M	37.7	+22.3 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.3 +0.0 +0.0	+0.0	35.3	46.0	-10.7	Vert
26	186.116M	40.3	+0.0 -28.4 +0.0	+18.2 +0.0 +0.0	+0.2 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	32.8	43.5	-10.7	Horiz
27	212.253M	40.1	+0.0 -28.3 +0.0	+18.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	32.7	43.5	-10.8	Horiz
28	309.540M	37.7	+22.1 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.3 +0.0 +0.0	+0.0	35.1	46.0	-10.9	Vert
29	221.986M	42.3	+0.0 -28.3 +0.0	+18.2 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	35.1	46.0	-10.9	Vert
30	328.600M	38.5	+20.9 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	34.8	46.0	-11.2	Horiz
31	316.129M	37.7	+21.6 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	34.7	46.0	-11.3	Vert
32	307.448M	36.7	+22.2 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.3 +0.0 +0.0	+0.0	34.2	46.0	-11.8	Vert
33	206.968M	39.4	+0.0 -28.4 +0.0	+17.9 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	31.7	43.5	-11.8	Horiz
34	321.306M	37.3	+21.3 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	34.0	46.0	-12.0	Horiz
35	268.452M	38.4	+0.0 -28.2 +0.0	+20.3 +0.0 +0.0	+0.3 +0.0 +0.0	+3.0 +0.0 +0.0	+0.0	33.8	46.0	-12.2	Vert
36	201.226M	38.9	+0.0 -28.4 +0.0	+17.7 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	31.0	43.5	-12.5	Vert
37	331.871M	37.3	+20.7 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	33.4	46.0	-12.6	Horiz
38	276.203M	36.9	+0.0 -28.2 +0.0	+21.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.1 +0.0 +0.0	+0.0	33.1	46.0	-12.9	Vert

39	64.495M	46.0	+0.0 -28.4 +0.0	+8.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.4 +0.0 +0.0	+0.0	27.1	40.0	-12.9	Vert
40	334.328M	36.9	+20.5 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	32.8	46.0	-13.2	Horiz
41	326.210M	36.3	+21.0 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	32.7	46.0	-13.3	Vert
42	190.496M	37.8	+0.0 -28.4 +0.0	+18.1 +0.0 +0.0	+0.2 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	30.2	43.5	-13.3	Vert
43	335.920M	36.7	+20.4 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	32.5	46.0	-13.5	Vert
44	192.930M	37.7	+0.0 -28.4 +0.0	+18.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	30.0	43.5	-13.5	Vert
45	205.840M	37.5	+0.0 -28.4 +0.0	+17.8 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	29.7	43.5	-13.8	Vert
46	188.936M	37.2	+0.0 -28.4 +0.0	+18.1 +0.0 +0.0	+0.2 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	29.6	43.5	-13.9	Vert
47	206.536M	37.2	+0.0 -28.4 +0.0	+17.8 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	29.4	43.5	-14.1	Vert
48	339.626M	36.1	+20.2 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.5 +0.0 +0.0	+0.0	31.8	46.0	-14.2	Horiz
49	181.540M	36.6	+0.0 -28.4 +0.0	+18.4 +0.0 +0.0	+0.2 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	29.3	43.5	-14.2	Horiz
50	330.086M	35.5	+20.8 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	31.7	46.0	-14.3	Horiz
51	339.662M	35.9	+20.2 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.5 +0.0 +0.0	+0.0	31.6	46.0	-14.4	Horiz
52	207.292M	36.8	+0.0 -28.4 +0.0	+17.9 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	29.1	43.5	-14.4	Vert
53	209.998M	36.5	+0.0 -28.4 +0.0	+17.9 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	28.8	43.5	-14.7	Horiz
54	212.224M	36.1	+0.0 -28.3 +0.0	+18.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	28.7	43.5	-14.8	Vert
55	292.718M	33.6	+0.0 -28.3 +0.0	+22.3 +0.0 +0.0	+0.3 +0.0 +0.0	+3.2 +0.0 +0.0	+0.0	31.1	46.0	-14.9	Vert

56	264.104M	35.9	+0.0 -28.2 +0.0	+20.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.0 +0.0 +0.0	+0.0	31.0	46.0	-15.0	Vert
57	204.072M	36.2	+0.0 -28.4 +0.0	+17.8 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	28.4	43.5	-15.1	Vert
58	530.944M	33.9	+19.9 -28.0 +0.0	+0.0 +0.0 +0.0	+0.4 +0.0 +0.0	+4.5 +0.0 +0.0	+0.0	30.7	46.0	-15.3	Horiz
59	262.186M	35.9	+0.0 -28.3 +0.0	+19.8 +0.0 +0.0	+0.3 +0.0 +0.0	+3.0 +0.0 +0.0	+0.0	30.7	46.0	-15.3	Horiz
60	666.758M	30.9	+21.2 -27.5 +0.0	+0.0 +0.0 +0.0	+0.4 +0.0 +0.0	+5.1 +0.0 +0.0	+0.0	30.1	46.0	-15.9	Horiz
61	447.142M	35.7	+18.3 -28.3 +0.0	+0.0 +0.0 +0.0	+0.4 +0.0 +0.0	+4.0 +0.0 +0.0	+0.0	30.1	46.0	-15.9	Horiz
62	110.936M	39.5	+0.0 -28.4 +0.0	+14.2 +0.0 +0.0	+0.1 +0.0 +0.0	+1.9 +0.0 +0.0	+0.0	27.3	43.5	-16.2	Horiz
63	109.380M	39.1	+0.0 -28.4 +0.0	+13.9 +0.0 +0.0	+0.1 +0.0 +0.0	+1.9 +0.0 +0.0	+0.0	26.6	43.5	-16.9	Horiz
64	383.453M	35.4	+17.8 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.7 +0.0 +0.0	+0.0	29.0	46.0	-17.0	Horiz
65	259.897M	34.3	+0.0 -28.3 +0.0	+19.6 +0.0 +0.0	+0.3 +0.0 +0.0	+3.0 +0.0 +0.0	+0.0	28.9	46.0	-17.1	Vert
66	80.089M	41.9	+0.0 -28.5 +0.0	+7.5 +0.0 +0.0	+0.1 +0.0 +0.0	+1.6 +0.0 +0.0	+0.0	22.6	40.0	-17.4	Vert
67	225.428M	35.6	+0.0 -28.3 +0.0	+18.2 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	28.4	46.0	-17.6	Vert
68	256.926M	33.8	+0.0 -28.3 +0.0	+19.3 +0.0 +0.0	+0.3 +0.0 +0.0	+3.0 +0.0 +0.0	+0.0	28.1	46.0	-17.9	Horiz
69	1525.587M	44.9	+0.0 +0.0 +0.5	+0.0 +25.3 -38.3	+0.0 +1.7 +1.9	+0.0 +1.9 +1.9	+0.0	36.0	54.0	-18.0	Vert
70	400.080M	35.1	+16.9 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.8 +0.0 +0.0	+0.0	27.9	46.0	-18.1	Horiz
71	400.080M	35.1	+16.9 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.8 +0.0 +0.0	+0.0	27.9	46.0	-18.1	Horiz
72	444.500M	32.7	+18.3 -28.3 +0.0	+0.0 +0.0 +0.0	+0.4 +0.0 +0.0	+4.0 +0.0 +0.0	+0.0	27.1	46.0	-18.9	Horiz

73	8060.750M	22.6	+0.0 +0.0 +1.5	+0.0 +36.7 -36.8	+0.0 +3.9	+0.0 +4.9	+0.0	32.8	54.0	-21.2	Horiz
74	412.944M	31.3	+17.3 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0	+3.9 +0.0	+0.0	24.6	46.0	-21.4	Horiz
75	113.942M	33.3	+0.0 -28.3 +0.0	+14.7 +0.0 +0.0	+0.2 +0.0	+1.9 +0.0	+0.0	21.8	43.5	-21.7	Horiz
76	2799.700M	32.4	+0.0 +0.0 +1.2	+0.0 +30.0 -38.9	+0.0 +2.2	+0.0 +2.7	+0.0	29.6	54.0	-24.4	Vert

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

Customer: **IP MobileNet**
Specification: **FCC 15.109 Class B**
Work Order #: **79904**

Date: 11/23/2002

Test Type: **Maximized emission**
Equipment: **Land Mobile Transceiver**

Time: 11:00:46

Manufacturer: IP MobileNet

Sequence#: 3

Model: IP4HPV-GPS

Tested By: Eddie Wong

S/N: IP40211215

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211215

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	Sec121222510	03051-0F03-0322

Test Conditions / Notes:

The Tx port of the EUT is connected to 50 load via a 40 dB attenuator. RS232 Port is connected to a remote laptop, GPS antenna port is connected to the GPS antenna port and the ethernet port is connected to a section of UTP and a loop back terminator. EUT obtains DC power from a 13.8 VDC power supply. Mode: Receive Tx 460.5 MHz, Rx 463.5 MHz, Inj 508.5 MHz. Frequency range of measurement = 4 MHz - 8 GHz. Frequency 30 MHz - 1000 MHz, RBW=120 kHz, VBW=120 kHz; 1000 MHz - 8000 MHz. RBW=1 MHz, VBW=1 MHz. 13.8 VDC (110 VAC, 60 Hz) 24°C, 24% relative humidity.

Transducer Legend:

T1=Log antenna, SN331 092303	T2=Bicon SN220 092303
T3=Cable #10 070803	T4=Cable #15 120602
T5=Preamp 8447D 082302	T6=Horn 6246_091003
T7=12' SMA Gore cable #1337 121802	T8=Brea Cable: 25' 1/4" Helix - Brea # 13.
T9=Brea Cable: 6' 1/4" Helix - Brea # 7.	T10=HP83017A Preamp 091103

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

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
	MHz	dBμV	T9	T10			Table	dBμV/m	dBμV/m	dB	Ant
1	268.452M	45.5	+0.0	+20.3	+0.3	+3.0	+0.0	40.9	46.0	-5.1	Horiz
			-28.2	+0.0	+0.0	+0.0					
			+0.0	+0.0							
2	272.469M	44.3	+0.0	+20.7	+0.3	+3.1	+0.0	40.2	46.0	-5.8	Horiz
			-28.2	+0.0	+0.0	+0.0					
			+0.0	+0.0							
3	192.565M	44.1	+0.0	+18.0	+0.2	+2.5	+0.0	36.4	43.5	-7.1	Horiz
			-28.4	+0.0	+0.0	+0.0					
			+0.0	+0.0							
4	189.974M	43.8	+0.0	+18.1	+0.2	+2.5	+0.0	36.2	43.5	-7.3	Horiz
			-28.4	+0.0	+0.0	+0.0					
			+0.0	+0.0							

5	936.709M	35.2	+24.3 -27.5 +0.0	+0.0 +0.0 +0.0	+0.5 +0.0 +0.0	+6.1 +0.0 +0.0	+0.0	38.6	46.0	-7.4	Horiz
6	221.597M	45.7	+0.0 -28.3 +0.0	+18.2 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	38.5	46.0	-7.5	Horiz
7	300.843M	40.2	+22.6 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.3 +0.0 +0.0	+0.0	38.1	46.0	-7.9	Horiz
8	704.390M	38.0	+21.6 -27.4 +0.0	+0.0 +0.0 +0.0	+0.4 +0.0 +0.0	+5.2 +0.0 +0.0	+0.0	37.8	46.0	-8.2	Horiz
9	221.920M	44.9	+0.0 -28.3 +0.0	+18.2 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	37.7	46.0	-8.3	Horiz
10	324.477M	40.8	+21.1 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	37.3	46.0	-8.7	Horiz
11	218.746M	44.4	+0.0 -28.3 +0.0	+18.1 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	37.1	46.0	-8.9	Horiz
12	217.469M	43.7	+0.0 -28.3 +0.0	+18.1 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	36.4	46.0	-9.6	Horiz
13	320.184M	39.6	+21.4 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	36.4	46.0	-9.6	Horiz
14	215.246M	41.2	+0.0 -28.3 +0.0	+18.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	33.8	43.5	-9.7	Horiz
15	197.825M	41.5	+0.0 -28.4 +0.0	+17.8 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	33.7	43.5	-9.8	Horiz
16	205.306M	41.3	+0.0 -28.4 +0.0	+17.8 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	33.5	43.5	-10.0	Horiz
17	199.855M	41.2	+0.0 -28.4 +0.0	+17.7 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	33.3	43.5	-10.2	Horiz
18	271.697M	40.0	+0.0 -28.2 +0.0	+20.6 +0.0 +0.0	+0.3 +0.0 +0.0	+3.1 +0.0 +0.0	+0.0	35.8	46.0	-10.2	Vert
19	280.256M	39.2	+0.0 -28.2 +0.0	+21.3 +0.0 +0.0	+0.3 +0.0 +0.0	+3.1 +0.0 +0.0	+0.0	35.7	46.0	-10.3	Horiz
20	194.717M	40.8	+0.0 -28.4 +0.0	+17.9 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	33.1	43.5	-10.4	Vert
21	327.216M	39.2	+20.9 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	35.5	46.0	-10.5	Horiz

22	185.794M	40.3	+0.0 -28.4 +0.0	+18.3 +0.0 +0.0	+0.2 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	32.9	43.5	-10.6	Vert
23	305.506M	37.7	+22.3 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.3 +0.0 +0.0	+0.0	35.3	46.0	-10.7	Vert
24	186.116M	40.3	+0.0 -28.4 +0.0	+18.2 +0.0 +0.0	+0.2 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	32.8	43.5	-10.7	Horiz
25	212.253M	40.1	+0.0 -28.3 +0.0	+18.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	32.7	43.5	-10.8	Horiz
26	309.540M	37.7	+22.1 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.3 +0.0 +0.0	+0.0	35.1	46.0	-10.9	Vert
27	221.986M	42.3	+0.0 -28.3 +0.0	+18.2 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	35.1	46.0	-10.9	Vert
28	328.600M	38.5	+20.9 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	34.8	46.0	-11.2	Horiz
29	316.129M	37.7	+21.6 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	34.7	46.0	-11.3	Vert
30	307.448M	36.7	+22.2 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.3 +0.0 +0.0	+0.0	34.2	46.0	-11.8	Vert
31	206.968M	39.4	+0.0 -28.4 +0.0	+17.9 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	31.7	43.5	-11.8	Horiz
32	321.306M	37.3	+21.3 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	34.0	46.0	-12.0	Horiz
33	268.452M	38.4	+0.0 -28.2 +0.0	+20.3 +0.0 +0.0	+0.3 +0.0 +0.0	+3.0 +0.0 +0.0	+0.0	33.8	46.0	-12.2	Vert
34	201.226M	38.9	+0.0 -28.4 +0.0	+17.7 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	31.0	43.5	-12.5	Vert
35	331.871M	37.3	+20.7 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	33.4	46.0	-12.6	Horiz
36	276.203M	36.9	+0.0 -28.2 +0.0	+21.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.1 +0.0 +0.0	+0.0	33.1	46.0	-12.9	Vert
37	64.495M	46.0	+0.0 -28.4 +0.0	+8.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.4 +0.0 +0.0	+0.0	27.1	40.0	-12.9	Vert
38	334.328M	36.9	+20.5 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	32.8	46.0	-13.2	Horiz

39	326.210M	36.3	+21.0 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	32.7	46.0	-13.3	Vert
40	190.496M	37.8	+0.0 -28.4 +0.0	+18.1 +0.0 +0.0	+0.2 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	30.2	43.5	-13.3	Vert
41	335.920M	36.7	+20.4 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	32.5	46.0	-13.5	Vert
42	192.930M	37.7	+0.0 -28.4 +0.0	+18.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	30.0	43.5	-13.5	Vert
43	205.840M	37.5	+0.0 -28.4 +0.0	+17.8 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	29.7	43.5	-13.8	Vert
44	188.936M	37.2	+0.0 -28.4 +0.0	+18.1 +0.0 +0.0	+0.2 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	29.6	43.5	-13.9	Vert
45	218.796M	39.2	+0.0 -28.3 +0.0	+18.1 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	31.9	46.0	-14.1	Vert
46	206.536M	37.2	+0.0 -28.4 +0.0	+17.8 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	29.4	43.5	-14.1	Vert
47	339.626M	36.1	+20.2 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.5 +0.0 +0.0	+0.0	31.8	46.0	-14.2	Horiz
48	181.540M	36.6	+0.0 -28.4 +0.0	+18.4 +0.0 +0.0	+0.2 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	29.3	43.5	-14.2	Horiz
49	330.086M	35.5	+20.8 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	31.7	46.0	-14.3	Horiz
50	339.662M	35.9	+20.2 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.5 +0.0 +0.0	+0.0	31.6	46.0	-14.4	Horiz
51	207.292M	36.8	+0.0 -28.4 +0.0	+17.9 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	29.1	43.5	-14.4	Vert
52	209.998M	36.5	+0.0 -28.4 +0.0	+17.9 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	28.8	43.5	-14.7	Horiz
53	212.224M	36.1	+0.0 -28.3 +0.0	+18.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	28.7	43.5	-14.8	Vert
54	292.718M	33.6	+0.0 -28.3 +0.0	+22.3 +0.0 +0.0	+0.3 +0.0 +0.0	+3.2 +0.0 +0.0	+0.0	31.1	46.0	-14.9	Vert
55	264.104M	35.9	+0.0 -28.2 +0.0	+20.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.0 +0.0 +0.0	+0.0	31.0	46.0	-15.0	Vert

56	204.072M	36.2	+0.0 -28.4 +0.0	+17.8 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	28.4	43.5	-15.1	Vert
57	268.452M	35.4	+0.0 -28.2 +0.0	+20.3 +0.0 +0.0	+0.3 +0.0 +0.0	+3.0 +0.0 +0.0	+0.0	30.8	46.0	-15.2	Horiz
58	530.944M	33.9	+19.9 -28.0 +0.0	+0.0 +0.0 +0.0	+0.4 +0.0 +0.0	+4.5 +0.0 +0.0	+0.0	30.7	46.0	-15.3	Horiz
59	262.186M	35.9	+0.0 -28.3 +0.0	+19.8 +0.0 +0.0	+0.3 +0.0 +0.0	+3.0 +0.0 +0.0	+0.0	30.7	46.0	-15.3	Horiz
60	666.758M	30.9	+21.2 -27.5 +0.0	+0.0 +0.0 +0.0	+0.4 +0.0 +0.0	+5.1 +0.0 +0.0	+0.0	30.1	46.0	-15.9	Horiz
61	447.142M	35.7	+18.3 -28.3 +0.0	+0.0 +0.0 +0.0	+0.4 +0.0 +0.0	+4.0 +0.0 +0.0	+0.0	30.1	46.0	-15.9	Horiz
62	110.936M	39.5	+0.0 -28.4 +0.0	+14.2 +0.0 +0.0	+0.1 +0.0 +0.0	+1.9 +0.0 +0.0	+0.0	27.3	43.5	-16.2	Horiz
63	525.079M	32.7	+19.9 -28.0 +0.0	+0.0 +0.0 +0.0	+0.4 +0.0 +0.0	+4.5 +0.0 +0.0	+0.0	29.5	46.0	-16.5	Horiz
64	109.380M	39.1	+0.0 -28.4 +0.0	+13.9 +0.0 +0.0	+0.1 +0.0 +0.0	+1.9 +0.0 +0.0	+0.0	26.6	43.5	-16.9	Horiz
65	383.453M	35.4	+17.8 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.7 +0.0 +0.0	+0.0	29.0	46.0	-17.0	Horiz
66	318.941M	32.0	+21.5 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.4 +0.0 +0.0	+0.0	28.9	46.0	-17.1	Horiz
67	259.897M	34.3	+0.0 -28.3 +0.0	+19.6 +0.0 +0.0	+0.3 +0.0 +0.0	+3.0 +0.0 +0.0	+0.0	28.9	46.0	-17.1	Vert
68	400.088M	35.8	+16.9 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.8 +0.0 +0.0	+0.0	28.6	46.0	-17.4	Horiz
69	80.089M	41.9	+0.0 -28.5 +0.0	+7.5 +0.0 +0.0	+0.1 +0.0 +0.0	+1.6 +0.0 +0.0	+0.0	22.6	40.0	-17.4	Vert
70	225.428M	35.6	+0.0 -28.3 +0.0	+18.2 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	28.4	46.0	-17.6	Vert
71	256.926M	33.8	+0.0 -28.3 +0.0	+19.3 +0.0 +0.0	+0.3 +0.0 +0.0	+3.0 +0.0 +0.0	+0.0	28.1	46.0	-17.9	Horiz
72	400.080M	35.1	+16.9 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.8 +0.0 +0.0	+0.0	27.9	46.0	-18.1	Horiz

73	400.080M	35.1	+16.9 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.8 +0.0 +0.0	+0.0	27.9	46.0	-18.1	Horiz
74	375.050M	33.8	+18.2 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.7 +0.0 +0.0	+0.0	27.8	46.0	-18.2	Horiz
75	1525.554M	44.3	+0.0 +0.0 +0.5	+0.0 +25.3 -38.3	+0.0 +1.7 +1.9	+0.0 +0.0 +0.0	+0.0	35.4	54.0	-18.6	Horiz
76	444.500M	32.7	+18.3 -28.3 +0.0	+0.0 +0.0 +0.0	+0.4 +0.0 +0.0	+4.0 +0.0 +0.0	+0.0	27.1	46.0	-18.9	Horiz
77	450.068M	30.9	+18.4 -28.3 +0.0	+0.0 +0.0 +0.0	+0.4 +0.0 +0.0	+4.0 +0.0 +0.0	+0.0	25.4	46.0	-20.6	Horiz
78	125.001M	32.5	+0.0 -28.3 +0.0	+16.2 +0.0 +0.0	+0.2 +0.0 +0.0	+2.0 +0.0 +0.0	+0.0	22.6	43.5	-20.9	Horiz
79	412.944M	31.3	+17.3 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+3.9 +0.0 +0.0	+0.0	24.6	46.0	-21.4	Horiz
80	113.942M	33.3	+0.0 -28.3 +0.0	+14.7 +0.0 +0.0	+0.2 +0.0 +0.0	+1.9 +0.0 +0.0	+0.0	21.8	43.5	-21.7	Horiz





Radiated Emissions - Side View - UTP



Radiated Emissions - Back View – UTP

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	01865	HP	8566B	2532A02509	092702	092703
QP Adapter	01437	HP	85650A	3303A01884	092702	092703
4Hz-30MHz						
Loop Antenna	00314	EMCO	6502	2014	72302	72303
30 MHz-1000MHz						
Bicon Antenna	306	AH	SAS200/540	220	092302	092303
Log Periodic Antenna	300	AH	SAS 00/516	331	092302	092303
Pre-amp	00309	HP	8447D	1937A02548	082302	082303
Pre-amp to SA cable	NA	Harbour	RG223/U	Cable#10	070802	070803
1000-6000MHz						
Horn Antenna	0849	EMCO	3115	6246	091002	091003
Microwave Pre-amp	00786	HP	83017A	3123A00281	091102	091103
¼" Helix Coaxial Cable	NA	Andrew	FSJ-50A-4	Cable#7 (6 ft)	071502	071503
Antenna cable (from bulkhead to antenna, high frequency hardline) (25ft)	NA	Andrew	FSJ1-50A	Cable#13	071502	071503
1.5 GHz HPF	2116	HP	84300-80037	3643A00027	062502	062503

15.111 – ANTENNA POWER CONDUCTED EMISSIONS

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

Customer: **IP MobileNet**
 Specification: **FCC15.111 Antenna Power Conduction limits for Receiver**
 Work Order #: **79904** Date: 11/22/2002
 Test Type: **Conducted Emissions** Time: 09:36:33
 Equipment: **Land Mobile Transceiver** Sequence#: 2
 Manufacturer: IP MobileNet Tested By: Eddie Wong
 Model: IP4HPV-GPS 120V 60Hz
 S/N: IP40211215

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211215

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	Sec121222510	03051-0F03-0322

Test Conditions / Notes:

The Rx antenna port of the EUT is connected to a spectrum analyzer . RS232 Port is connected to a laptop, GPS antenna port and ethernet port are left unpopulated. EUT obtains DC power from a 13.8 VDC power supply. The laptop is running test program to exercise the EUT. Mode: Receive Tx 460.5 MHz, Rx 463.5 MHz, Inj 508.5 MHz. Frequency range: 4 MHz - 6 GHz emission limit = 2 nwatt= 50 dBuV at Rx antenna port. Frequency range of measurement = 4 MHz - 6 GHz. Frequency 4 MHz - 30 MHz, RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz, RBW=120 kHz, VBW=120 kHz; 1000 MHz - 6000 MHz. RBW=1 MHz, VBW=1 MHz. 13.8 VDC (110 VAC, 60 Hz) 24°C, 24% relative humidity.

Transducer Legend:

T1=Brea Cable: 6' 1/4" Helix - Brea # 7.

Measurement Data: Reading listed by margin.

#	Freq MHz	Rdng dBμV	T1 dB	Test Lead: Antenna Terminal				Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
				dB	dB	dB	dB					
1	3278.300M	44.9	+1.0					+0.0	45.9	50.0	-4.1	Anten
2	2542.490M	43.1	+0.9					+0.0	44.0	50.0	-6.0	Anten
3	3746.630M	41.7	+1.1					+0.0	42.8	50.0	-7.2	Anten
4	4214.930M	41.4	+1.1					+0.0	42.5	50.0	-7.5	Anten
5	2341.550M	40.6	+0.8					+0.0	41.4	50.0	-8.6	Anten
6	2810.000M	38.6	+1.2					+0.0	39.8	50.0	-10.2	Anten
7	508.557M	39.7	+0.0					+0.0	39.7	50.0	-10.3	Anten
8	5151.400M	38.6	+1.0					+0.0	39.6	50.0	-10.4	Anten

9	4576.720M	38.4	+1.0	+0.0	39.4	50.0	-10.6	Anten
10	3559.640M	38.5	+0.9	+0.0	39.4	50.0	-10.6	Anten
11	4683.400M	36.7	+1.0	+0.0	37.7	50.0	-12.3	Anten
12	5085.000M	36.3	+1.0	+0.0	37.3	50.0	-12.7	Anten
13	4068.080M	36.0	+1.0	+0.0	37.0	50.0	-13.0	Anten
14	3051.180M	34.3	+1.0	+0.0	35.3	50.0	-14.7	Anten
15	5619.980M	32.0	+1.3	+0.0	33.3	50.0	-16.7	Anten
16	5593.560M	30.9	+1.3	+0.0	32.2	50.0	-17.8	Anten
17	1405.100M	31.4	+0.5	+0.0	31.9	50.0	-18.1	Anten
18	1525.300M	31.2	+0.5	+0.0	31.7	50.0	-18.3	Anten
19	1017.340M	29.2	+0.4	+0.0	29.6	50.0	-20.4	Anten
20	4295.350M	28.2	+1.1	+0.0	29.3	50.0	-20.7	Anten
21	468.404M	29.0	+0.0	+0.0	29.0	50.0	-21.0	Anten
22	3867.100M	27.7	+1.0	+0.0	28.7	50.0	-21.3	Anten

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

Customer: **IP MobileNet**
 Specification: **FCC15.111 Antenna Power Conduction limits for Receiver**
 Work Order #: **79904** Date: 12/14/2002
 Test Type: **Conducted Emissions** Time: 15:05:57
 Equipment: **Land Mobile Transceiver** Sequence#: 4
 Manufacturer: IP MobileNet Tested By: Eddie Wong
 Model: IP4HPV-GPS 110V 60Hz
 S/N: IP40211234

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211234

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	Sec121222510	03051-0F03-0322
Laptop	Compaq	Presario	1V02DCH2E2T0

Test Conditions / Notes:

The Rx antenna port of the EUT is connected to a spectrum analyzer. RS232 Port is connected to a laptop, GPS antenna port and ethernet port are left unpopulated. EUT obtains DC power from a 13.8 VDC power supply. The laptop is running test program to exercise the EUT. Mode: Receive Tx 451 MHz, Rx 448 MHz, Inj 493 MHz. emission limit = 2 nwatt= 50 dBuV at Rx antenna port. Frequency range of measurement = 4 MHz - 2 GHz. Frequency 4 MHz - 30 MHz, RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz, RBW=120 kHz, VBW=120 kHz; 1000 MHz - 2000 MHz, RBW=1 MHz, VBW=1 MHz. 13.8 VDC (110 VAC, 60 Hz, 20°C, 35% relative humidity).

Transducer Legend:

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

#	Freq MHz	Rdng dBμV	dB	dB	dB	dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	493.055M	45.1					+0.0	45.1	50.0	-4.9	Anten
2	986.063M	33.6					+0.0	33.6	50.0	-16.4	Anten
3	451.080M	33.0					+0.0	33.0	50.0	-17.0	Anten
4	902.060M	31.5					+0.0	31.5	50.0	-18.5	Anten

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

Customer: **IP MobileNet**
 Specification: **FCC15.111 Antenna Power Conduction limits for Receiver**
 Work Order #: **79904** Date: 12/09/2002
 Test Type: **Conducted Emissions** Time: 10:32:15
 Equipment: **Land Mobile Transceiver** Sequence#: 5
 Manufacturer: IP MobileNet Tested By: Eddie Wong
 Model: IP4HPV-GPS 120V 60Hz
 S/N: IP40211321

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Trip	PR-7B	OQ44
Laptop	Panasonic	CF-27Inspiron 2500	CF27EB6GCEM

Test Conditions / Notes:

The Rx antenna port of the EUT is connected to a spectrum analyzer . RS232 Port is connected to a laptop, GPS antenna port and ethernet port are left unpopulated. EUT obtains DC power from a 13.8 VDC power supply. The laptop is running test program to exercise the EUT. Mode: Receive Rx 469 MHz, Tx 463.5 MHz, Inj 509 MHz. Frequency range: 4 MHz - 6 GHz emission limit = 2 nwatt= 50 dBuV at Rx antenna port. Frequency range of measurement = 4 MHz - 6 GHz. Frequency 4 MHz - 30 MHz, RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz, RBW=120 kHz, VBW=120 kHz; 1000 MHz - 6000 MHz, RBW=1 MHz, VBW=1 MHz. 13.8 VDC (110VAC, 60 Hz) 20°C, 36% relative humidity.

Transducer Legend:

T1=Brea Cable: 6' 1/4" Heliac - Brea # 7.

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

#	Freq MHz	Rdng dBμV	T1 dB	dB	dB	dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	3283.050M	42.4	+0.9				+0.0	43.3	50.0	-6.7	Anten
2	3563.050M	41.3	+1.0				+0.0	42.3	50.0	-7.7	Anten
3	509.120M	41.7	+0.0				+0.0	41.7	50.0	-8.3	Anten
4	2344.950M	40.6	+0.8				+0.0	41.4	50.0	-8.6	Anten
5	3054.000M	38.8	+1.0				+0.0	39.8	50.0	-10.2	Anten
6	4581.000M	34.5	+1.0				+0.0	35.5	50.0	-14.5	Anten
7	2544.800M	33.6	+0.9				+0.0	34.5	50.0	-15.5	Anten
8	4690.200M	33.1	+1.1				+0.0	34.2	50.0	-15.8	Anten
9	1527.000M	33.4	+0.5				+0.0	33.9	50.0	-16.1	Anten
10	5598.900M	32.1	+1.3				+0.0	33.4	50.0	-16.6	Anten

11	1407.200M	32.9	+0.5	+0.0	33.4	50.0	-16.6	Anten
12	4221.100M	31.8	+1.1	+0.0	32.9	50.0	-17.1	Anten
13	3752.100M	31.5	+1.1	+0.0	32.6	50.0	-17.4	Anten
14	2814.100M	31.1	+1.1	+0.0	32.2	50.0	-17.8	Anten
15	5090.200M	31.1	+1.0	+0.0	32.1	50.0	-17.9	Anten
16	5159.000M	31.0	+1.0	+0.0	32.0	50.0	-18.0	Anten
17	4071.800M	30.7	+1.0	+0.0	31.7	50.0	-18.3	Anten
18	1876.800M	30.1	+0.7	+0.0	30.8	50.0	-19.2	Anten
19	469.100M	30.2	+0.0	+0.0	30.2	50.0	-19.8	Anten
20	1018.060M	25.8	+0.4	+0.0	26.2	50.0	-23.8	Anten
21	938.060M	24.5	+0.0	+0.0	24.5	50.0	-25.5	Anten
22	178.320M	23.6	+0.0	+0.0	23.6	50.0	-26.4	Anten

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112
 Customer: **IP MobileNet**
 Specification: **FCC15.111 Antenna Power Conduction limits for Receiver**
 Work Order #: **79904** Date: 11/22/2002
 Test Type: **Conducted Emissions** Time: 10:13:23
 Equipment: **Land Mobile Transceiver** Sequence#: 3
 Manufacturer: IP MobileNet Tested By: Eddie Wong
 Model: IP4HPV-GPS 120V 60Hz
 S/N: IP40211215

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Land Mobile Transceiver*	IP MobileNet	IP4HPV-GPS	IP40211215

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	Sec121222510	03051-0F03-0322

Test Conditions / Notes:

The GPS antenna port of the EUT is connected to a spectrum analyzer . RS232 Port is connected to a laptop, RX antenna port and ethernet port are left unpopulated. EUT obtains DC power from a 13.8 VDC power supply. The laptop is running test program to exercise the EUT. Mode: Receive Tx 460.5 MHz, Rx 463.5 MHz, Inj 508.5 MHz. Frequency range: 4 MHz - 6 GHz emission limit = 2 nwatt= 50 dBuV at Rx antenna port. Frequency range of measurement = 4 MHz - 6 GHz. Frequency 4 MHz - 30 MHz, RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz, RBW=120 kHz, VBW=120 kHz; 1000 MHz – 6000 MHz, RBW=1 MHz, VBW=1 MHz. 13.8 VDC (110 VAC, 60 Hz) 24°C, 24% relative humidity.

Transducer Legend:

T1=Brea Cable: 6' 1/4" Helix - Brea # 7.
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Measurement Data: Reading listed by margin. Test Lead: Antenna Terminal

#	Freq MHz	Rdng dBμV	T1 dB	dB	dB	dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	9.572M	65.3	+0.0				+0.0	65.3	50.0	+15.3	Anten
2	2800.930M	56.7	+1.2				+0.0	57.9	50.0	+7.9	Anten
3	7.835M	57.2	+0.0				+0.0	57.2	50.0	+7.2	Anten
4	5601.690M	48.4	+1.3				+0.0	49.7	50.0	-0.3	Anten
5	6.477M	45.5	+0.0				+0.0	45.5	50.0	-4.5	Anten
6	4201.400M	38.2	+1.1				+0.0	39.3	50.0	-10.7	Anten
7	9.070M	38.9	+0.0				+0.0	38.9	50.0	-11.1	Anten
8	5.400M	38.4	+0.0				+0.0	38.4	50.0	-11.6	Anten
9	8.207M	29.8	+0.0				+0.0	29.8	50.0	-20.2	Anten
10	4.917M	25.5	+0.0				+0.0	25.5	50.0	-24.5	Anten



Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
4 MHz-1.5 GHz						
Spectrum Analyzer	01865	HP	8566B	2532A02509	092702	092703
QP Adapter	01437	HP	85650A	3303A01884	092702	092703
1/4" Helix Coaxial Cable	NA	Andrew	FSJ-50A-4	Cable#7 (6 ft)	071502	071503
Ave Power Meter	02082	HP	435B	2445A11881	093002	093003
1.5 GHz-6 GHz						
1.5 GHz HPF	2116	HP	84300-80037	3643A00027	062502	062503