IP MOBILENET, INC. ADDENDUM TO FC01-064

FOR THE

VHF LAND MOBILE TRANSCEIVER, IP1

FCC PART 90 SUBPART I AND
FCC PART 15 SUBPART B SECTIONS 15.109 CLASS B & 15.111

COMPLIANCE

DATE OF ISSUE: OCTOBER 15, 2001

PREPARED FOR:

IP MobileNet, Inc.
11909 E. Telegraph Rd.
Santa Fe Springs, CA 90670

P.O. No.: 001286-00
W.O. No.: 77374

PREPARED BY:

Joyce Walker
CKC Laboratories, Inc.
5473A Clouds Rest
Mariposa, CA 95338

Date of test: August 7-28 and October 3, 2001

Report No.: FC01-064A

TABLE OF CONTENTS

ADMINISTRATIVE INFORMATION

DATE OF TEST:	August 7-28 and October 3, 2001
DATE OF RECEIPT:	August 7, 2001
PURPOSE OF TEST:	To demonstrate the compliance of the VHF Land Mobile Transceiver, IP1 with the requirements for FCC Part 90 Subpart I and FCC Part 15 Subpart B Sections 15.109 Class B & 15.111 devices. The addendum is to remove "/m" in the spec & correction headers and correct the test type on the data sheet on page 8.
TEST METHOD:	Part 90, TIA/EIA 603 and ANSI C63.4 (1992)
MANUFACTURER:	IP MobileNet, Inc. 11909 E. Telegraph Rd. Santa Fe Springs, CA 90670
REPRESENTATIVE:	Jim Jesse
TEST LOCATION:	CKC Laboratories, Inc. 5473A Clouds Rest Mariposa, CA 95338 110 Olinda Place Brea, CA 92621

SUMMARY OF RESULTS

As received, the IP MobileNet, Inc. VHF Land Mobile Transceiver, IP1 was found to be fully compliant with the following standards and specifications:

United States

- FCC Part 90 Subpart I
  - TIA/EIA 603
- FCC Part 15 Subpart B Sections 15.109 Class B & 15.111
  - ANSI C63.4 (1992) method

The results in this report apply only to the items tested, as identified herein.

MODIFICATIONS REQUIRED FOR COMPLIANCE

No modifications were required for compliance.

APPROVALS

QUALITY ASSURANCE:

Dennis Ward, Quality Manager

Septimiu Apahidean, EMC/Lab Manager

Chuck Kendall, EMC/Lab Manager

TEST PERSONNEL:

Eddie Wong, EMC Engineer

Randy Clark, EMC Engineer

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

Land mobile transceiver operating in the 150 to 174 MHz frequency range, including a non-broadcast transmitter with maximum power output of 60 W, was a production unit.

The following model has been tested by CKC Laboratories:

IPV

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 they comply to the level of testing equivalent to the tested models.

IP1

EQUIPMENT UNDER TEST

VHF Land Mobile Transceiver

Manuf:	IP MobileNet
Model:	IPI
Serial:	Radio#1
FCC ID:	MI7-IPMNIP1 (pending)

PERIPHERAL DEVICES

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

Laptop

Manuf:	CTX
Model:	EZBook700E
Serial:	V92A266-8100028
FCC ID:	DoC

DC Power Supply

Manuf:	Samplex
Model:	Sec1223
Serial:	03061-0D01-0631
FCC ID:	DoC

2.1033(c)(3) USER'S MANUAL

The necessary information is contained in a separate document.

2.1033(c)(4) TYPE OF EMISSIONS

The emissions designator for this product is 20K0F1D

2.1033(c)(5) FREQUENCY RANGE

The lowest frequency is 150 MHz and the highest is 174 MHz.

2.1033(c)(6) OPERATING POWER

60 watts maximum.

2.1033(c)(7) MAXIMUM POWER RATING

The limit is 178Watts, or 160dBuV.

2.1033(c)(8) DC VOLTAGES

The necessary information is contained in a separate document.

2.1033(c)(9) TUNE-UP PROCEDURE

There is no tune procedure required over the power range or at specific operating power levels because the unit is software controlled.

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

The necessary information is contained in a separate document.

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

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

Customer: **IP Mobilenet**
Specification: **FCC Part 90.205(d)**
Work Order #: **77374** Date: 08/07/2001
Test Type: **Power Output** Time: 11:41:41
Equipment: **VHF Land Mobile Transceiver** Sequence#: 1
Manufacturer: IP Mobilenet Tested By: Eddie Wong
Model: IPV
S/N: Radio#1

***Test Equipment*:**

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02462	HP	8568B	2928A04874	032901	032902
Directional Coupler	00714	Werlatone	C2630	3806	020901	020902
Attenuator	01705	HP	8496B	1350A01241	020901	020902

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

Function	Manufacturer	Model #	S/N
VHF Land Mobile Transceiver*	IP Mobilenet	IPV	Radio#1

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Samplex	Sec1223	03061-0D01-0631
Laptop	CTX	EZBook700E	V92A266-8100028

Test Conditions / Notes:

EUT placed on the test bench. RS 232 port connected to RS232 port of a laptop. Antenna port is connected to a 50 Ohm load via a directional coupler. DC input port is connected to a DC power supply. Receiver port 2 and programming port are left unconnected. Limit is 178Watts, or 160dBuV. Test program sends command to the EUT to turn on transmission. 15 Seconds of data burst per command sent. The Directional coupler has a 40 dB attenuation, and external attenuator is set at 20 dB. Total attenuation between the load and the measuring instrument = 60 dB. (attenuation is compensated). 12VDC

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

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	152.990M	154.8					+0.0	154.8	160.0	-5.2	Anten
2	150.015M	154.7					+0.0	154.7	160.0	-5.3	Anten
3	156.005M	154.4					+0.0	154.4	160.0	-5.6	Anten

Front View of Test Setup

Back View of Test Setup

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

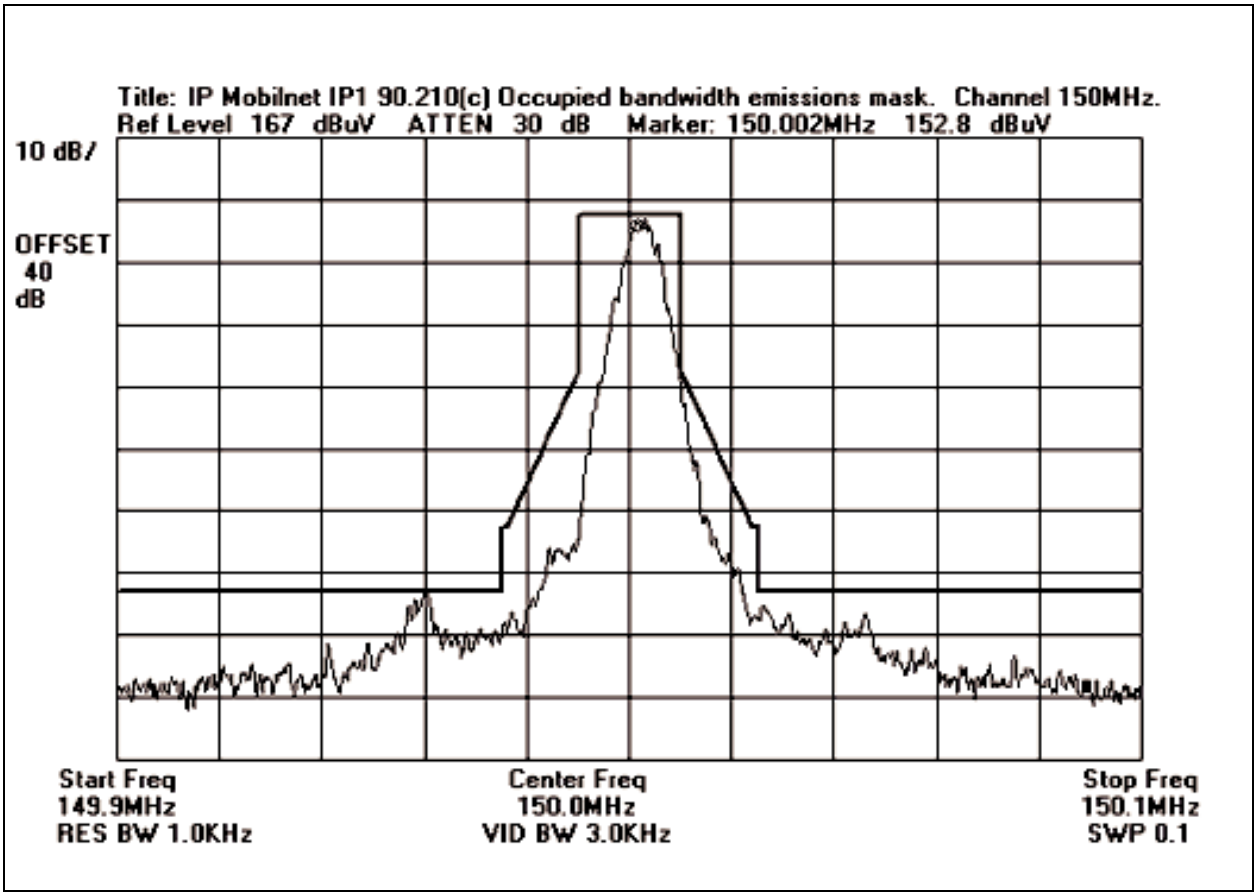
Not applicable to this unit.

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

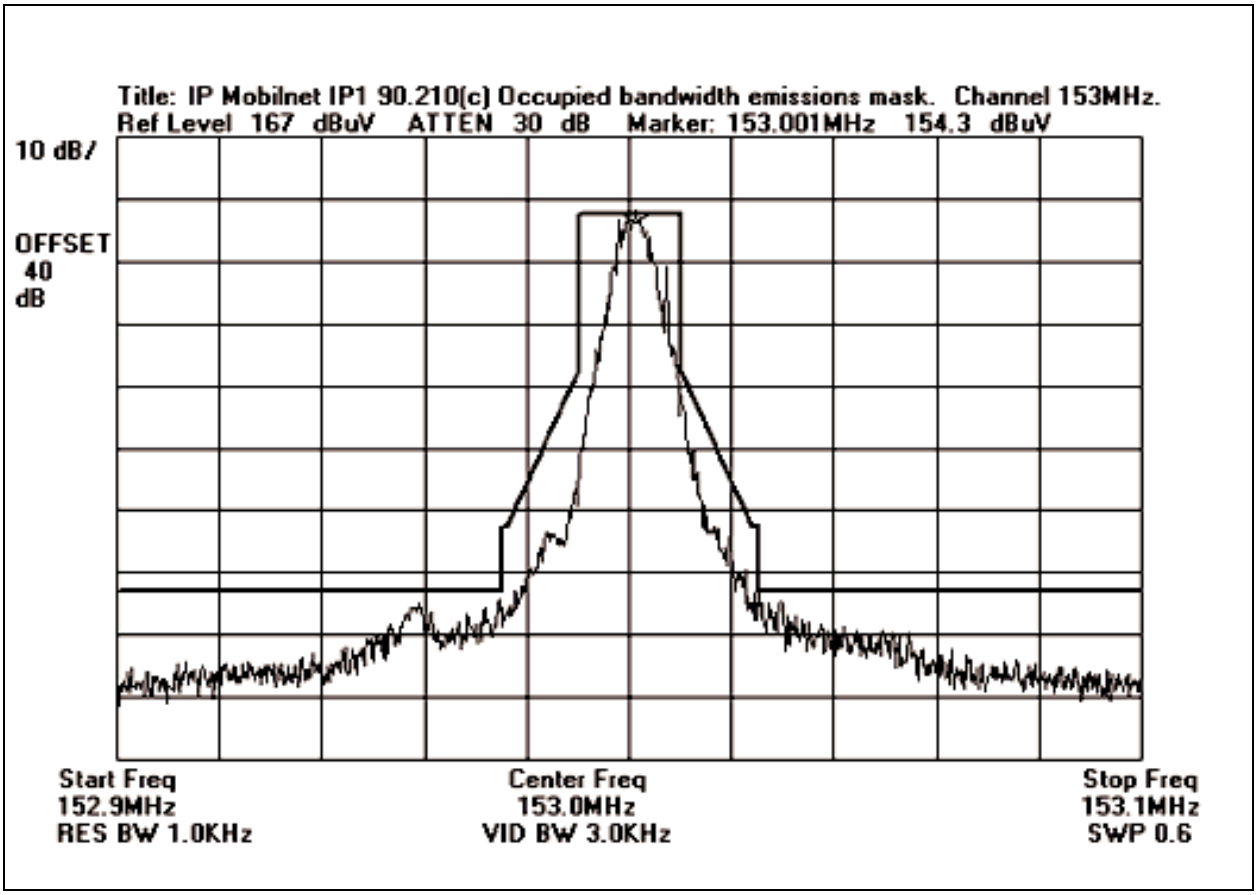
Test Equipment Used:

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02462	HP	8568B	2928A04874	032901	032902
Directional Coupler	00714	Werlatone	C2630	3806	020901	020902
Attenuator	01705	HP	8496B	1350A01241	020901	020902

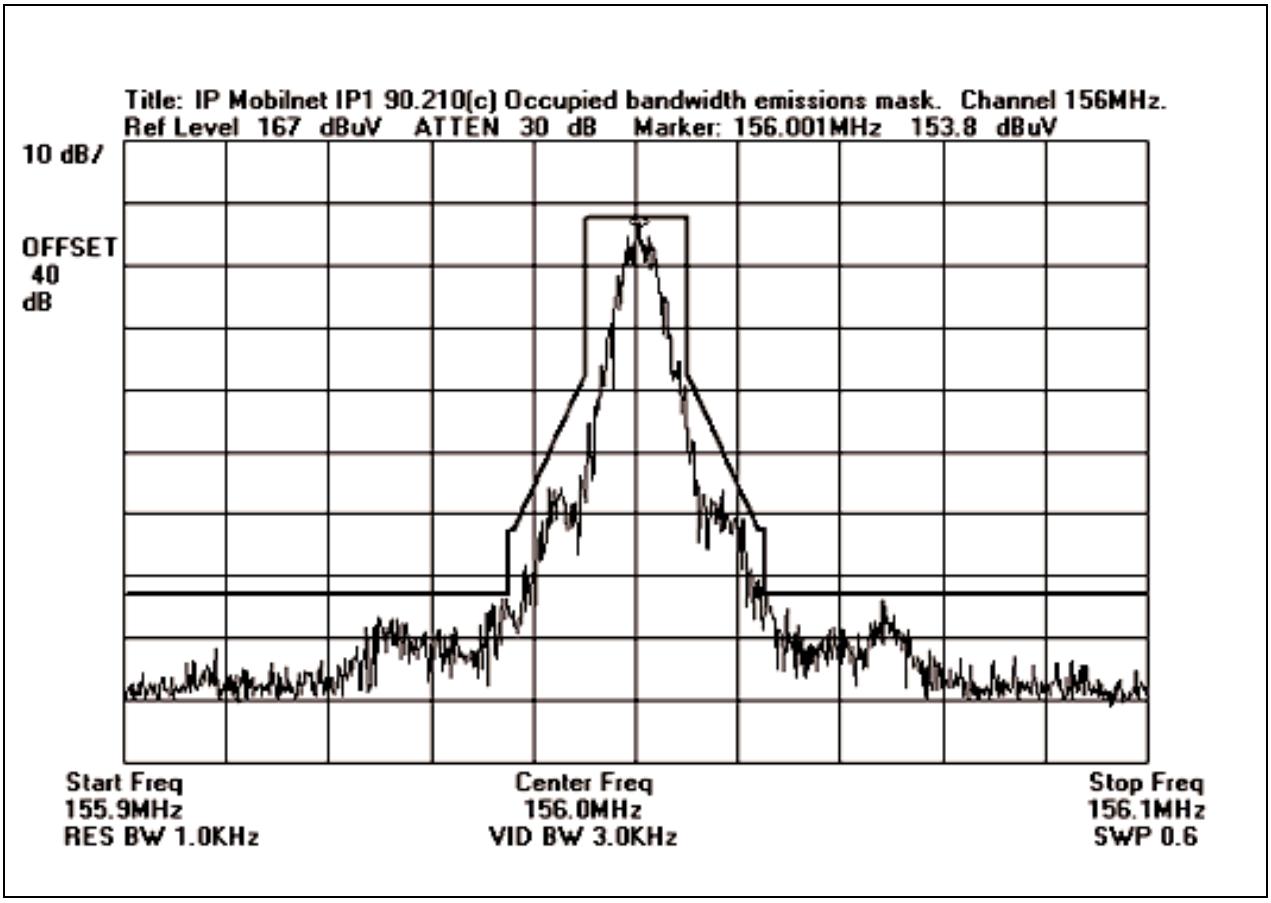
BANDWIDTH PLOT – CHANNEL 0



BANDWIDTH PLOT – CHANNEL 1



BANDWIDTH PLOT – CHANNEL 2



Part 90.210c
Mask C

Fundamental Frequency: 150.00 MHz
Corrected Measured Output: 154.50 dBuV (Direct Reading)
56.23 Watts (P)

Authorized Bandwidth

Start Freq.	149.990	MHz
Stop Freq.	150.010	MHz

Calculations:

250% of Authorized Bandwidth

Start Freq.	149.975	MHz
Stop Freq.	150.025	MHz

Frequency:	**Limit:**	**dBc Calculations:**		
5kHz - 10kHz:	83log (fd/5)	83Log(fd/5) =	25.0	dB @ 10 kHz removed
10kHz - 250%	the lesser of 29log (fd^2/11) or 50dB	29Log(fd^2/11) =	50.0	dB @ 24.14 kHz removed
>±250%	43+10log (P)	43+10Log(P) =	60.5	dB @ >250% of the authorized band

Turn point:
29 LOG (fd^2/11) = 50
fd(t) = SQRT(11*10^(50/29)
fd(t) = 24.14155877 kHz

Emissions Mask for EMITest:

MHz	dBuV	fd (MHz)	dBc	
0.009	94.00		60.5	
149.975	94.00		60.5	43+10Log(P)
149.975	104.50	(250%)	50.0	
149.976	104.50		50.0	
149.976	104.50	0.024	50.0	50dBc
149.990	129.51	0.010	25.0	
149.990	154.50		Fundamental	
150.010	154.50		Fundamental	
150.010	129.51	0.010	25.0	
150.024	104.50	0.024	50.0	50dBc
150.024	104.50		50.0	
150.025	104.50	(250%)	50.0	
150.025	94.00		60.5	43+10Log(P)
2000.000	94.00		60.5	

Part 90.210c
Mask C

Fundamental Frequency: 153.00 MHz
Corrected Measured Output: 154.50 dBuV (Direct Reading)
56.23 Watts (P)

Authorized Bandwidth

Start Freq.	152.990	MHz
Stop Freq.	153.010	MHz

Calculations:

250% of Authorized Bandwidth

Start Freq.	152.975	MHz
Stop Freq.	153.025	MHz

Frequency:	**Limit:**	**dBc Calculations:**		
5kHz - 10kHz:	83log (fd/5)	83Log(fd/5) =	25.0	dB @ 10 kHz removed
10kHz - 250%	the lesser of 29log (fd^2/11) or 50dB	29Log(fd^2/11) =	50.0	dB @ 24.14 kHz removed
>±250%	43+10log (P)	43+10Log(P) =	60.5	dB @ >250% of the authorized band

Turn point:
29 LOG (fd^2/11) = 50
fd(t) = SQRT(11*10^(50/29)
fd(t) = 24.14155877 kHz

Emissions Mask for EMITest:

MHz	dBuV	fd (MHz)	dBc	
0.009	94.00		60.5	
152.975	94.00		60.5	43+10Log(P)
152.975	104.50	(250%)	50.0	
152.976	104.50		50.0	
152.976	104.50	0.024	50.0	50dBc
152.990	129.51	0.010	25.0	
152.990	154.50		Fundamental	
153.010	154.50		Fundamental	
153.010	129.51	0.010	25.0	
153.024	104.50	0.024	50.0	50dBc
153.024	104.50		50.0	
153.025	104.50	(250%)	50.0	
153.025	94.00		60.5	43+10Log(P)
2000.000	94.00		60.5	

Part 90.210c
Mask C

Fundamental Frequency: 156.00 MHz
Corrected Measured Output: 154.50 dBuV (Direct Reading)
56.23 Watts (P)

Authorized Bandwidth

Start Freq.	155.990	MHz
Stop Freq.	156.010	MHz

Calculations:

250% of Authorized Bandwidth

Start Freq.	155.975	MHz
Stop Freq.	156.025	MHz

Frequency:	**Limit:**	**dBc Calculations:**	
5kHz - 10kHz:	83log (fd/5)	83Log(fd/5) =	25.0 dB @ 10 kHz removed
10kHz - 250%	the lesser of 29log (fd^2/11) or 50dB	29Log(fd^2/11) =	50.0 dB @ 24.14 kHz removed
>±250%	43+10log (P)	43+10Log(P) =	60.5 dB @ >250% of the authorized band

Turn point:
29 LOG (fd^2/11) = 50
fd(t) = SQRT(11*10^(50/29)
fd(t) = 24.14155877 kHz

Emissions Mask for EMITest:

MHz	dBuV	fd (MHz)	dBc	
0.009	94.00		60.5	
155.975	94.00		60.5	43+10Log(P)
155.975	104.50	(250%)	50.0	
155.976	104.50		50.0	
155.976	104.50	0.024	50.0	50dBc
155.990	129.51	0.010	25.0	
155.990	154.50		Fundamental	
156.010	154.50		Fundamental	
156.010	129.51	0.010	25.0	
156.024	104.50	0.024	50.0	50dBc
156.024	104.50		50.0	
156.025	104.50	(250%)	50.0	
156.025	94.00		60.5	43+10Log(P)
2000.000	94.00		60.5	

Test Setup of Bandwidth Plot Testing – Front View

Test Setup of Bandwidth Plot Testing – Back View

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

FCC CFR 47 Part 2.1051 & 90.210(C)

CFR 47 Part 2.1051 & 90.210(c) Measurements required: Spurious emission at Antenna terminal, Emission mask C

Spurious Emission acquired with:
RBW=30 KHz, VBW = 30 KHz for Freq < 1 GHz
RBW= 1 MHz , VBW = 1 MHz for Freq > 1 GHz

Channel : 0
Tx Frequency : 150 MHz

	Freq	Reading in	Reading in	Reading in	Spec Limit	Margin	Pass/Fail
	(MHz)	dBuV	V	Watts	Watts		
1	104	89.7	0.030549211	0.000018665	0.00005	-0.000031335	Pass
2	148.355	89.1	0.028510183	0.000016257	0.0006	-0.000583743	Pass
3	149.19	94.6	0.053703180	0.000057681	0.0006	-0.000542319	Pass
4	149.305	101.6	0.120226443	0.000289088	0.0006	-0.000310912	Pass
5	196.01	87.4	0.023442288	0.000010991	0.00005	-0.000039009	Pass
6	300.01	85	0.017782794	0.000006325	0.00005	-0.000043675	Pass
7	450.01	86.2	0.020417379	0.000008337	0.00005	-0.000041663	Pass
8	1199.997	87.4	0.023442288	0.000010991	0.00005	-0.000039009	Pass
9	1349.997	88.6	0.026915348	0.000014489	0.00005	-0.000035511	Pass
10	1499.997	88.6	0.026915348	0.000014489	0.00005	-0.000035511	Pass
11	1649.997	88.6	0.026915348	0.000014489	0.00005	-0.000035511	Pass
12	1799.997	88.6	0.026915348	0.000014489	0.00005	-0.000035511	Pass
13	1949.997	88.6	0.026915348	0.000014489	0.00005	-0.000035511	Pass

Note: See next page for calculations.

Calculation

Note: The data taken is the power level of each spurious emission with reference to the modulated carrier power output of the transmitter.

Spec limit

FCC Part 90.210 (c) (1), For 5 KHz < (fd = F-Fc) < 10 KHz,
Required attenuation = 83 Log (fd /5) dB

FCC Part 90.210 (c) (2) For fd < ±250% Authorized Bandwidth
Required attenuation = 29 Log (Fd^2/11) or 50 dB (whichever is lesser)
Spurious emission limit (dBW) = 10 Log P - 50 = 10 Log (60) -50 = -32.2 dBW
Spurious emission limit (W) = 10^(-32.2/10) = 0.000600

FCC Part 90.210 (c) (3) For Fd > ±250% Authorized bandwidth,
Required attenuation = 43 + 10 Log(Power) dB
Spurious Emissions Limit (dBW) = 10logP - (43+10logP) = 10 Log (60) - (43+10 Log 60)-43 dBW
Spurious Emissions Limit (W) = 10^(-43/10) = 50 * 10^-6 W.

Power Calculation

R = 50 Ohm
V = Measured antenna terminal voltage across a 50 Ohm load.
Power = V^2 / R

dB to Linear Conversion
V= 1 e-6 * 10 ^ (dBuV/20)

FCC CFR 47 Part 2.1051 & 90.210(C)

CFR 47 Part 2.1051 & 90.210(c) Measurements required: Spurious emission at Antenna terminal, emission mask C

Spurious Emission acquired with:
RBW=30 KHz, VBW = 30 KHz for Freq < 1 GHz
RBW= 1 MHz , VBW = 1 MHz for Freq > 1 GHz

Channel : 1
Tx Frequency : 153 MHz

	Freq	Reading in	Reading in	Reading in	Spec Limit	Margin	Pass/Fail
	(MHz)	dBuV	V	Watts	Watts		
1	107.009	89.3	0.029174270	0.000017023	0.00005	-0.000032977	Pass
2	198.998	89.1	0.028510183	0.000016257	0.00005	-0.000033743	Pass
3	306.006	86.9	0.022130947	0.000009796	0.00005	-0.000040204	Pass
4	458.994	88.8	0.027542287	0.000015172	0.00005	-0.000034828	Pass
5	1070.878	86.9	0.022130947	0.000009796	0.00005	-0.000040204	Pass
6	1223.905	88.4	0.026302680	0.000013837	0.00005	-0.000036163	Pass
7	1376.902	88.7	0.027227013	0.000014826	0.00005	-0.000035174	Pass
8	1529.902	86.5	0.021134890	0.000008934	0.00005	-0.000041066	Pass
9	1682.902	87.8	0.024547089	0.000012051	0.00005	-0.000037949	Pass
10	1835.902	87.8	0.024547089	0.000012051	0.00005	-0.000037949	Pass
11	1988.902	87.8	0.024547089	0.000012051	0.00005	-0.000037949	Pass

Note: See next page for calculations.

Calculation

Note: The data taken is the power level of each spurious emission with reference to the modulated carrier power output of the transmitter.

Spec limit

FCC Part 90.210 (c) (1), For 5 KHz < (fd = F-Fc) < 10 KHz,
Required attenuation = 83 Log (fd /5) dB

FCC Part 90.210 (c) (2) For fd < ±250% Authorized Bandwidth
Required attenuation = 29 Log (Fd^2/11) or 50 dB (whichever is lesser)
Spurious emission limit (dBW) = 10 Log P - 50 = 10 Log (60) -50 = -32.2 dBW
Spurious emission limit (W) = 10^(-32.2/10) = 0.000600

FCC Part 90.210 (c) (3) For Fd > ±250% Authorized bandwidth,
Required attenuation = 43 + 10 Log(Power) dB
Spurious Emissions Limit (dBW) = 10logP - (43+10logP) = 10 Log (60) - (43+10 Log 60)-43 dBW
Spurious Emissions Limit (W) = 10^(-43/10) = 50 * 10^-6 W.

Power Calculation

R = 50 Ohm
V = Measured antenna terminal voltage across a 50 Ohm load.
Power = V^2 / R

FCC CFR 47 Part 2.1051 & 90.210(C)

CFR 47 Part 2.1051 & 90.210(c) Measurements required: Spurious emission at Antenna terminal, emission mask C

Spurious Emission acquired with:
RBW=30 KHz, VBW = 30 KHz for Freq < 1 GHz
RBW= 1 MHz , VBW = 1 MHz for Freq > 1 GHz

Channel : 2
Tx Frequency : 156 MHz

	Freq	Reading in	Reading in	Reading in	Spec Limit	Margin	Pass/Fail
	(MHz)	dBuV	V	Watts	Watts		
1	110.001	90.2	0.032359366	0.000020943	0.00005	-0.000029057	Pass
2	148.021	92.6	0.042657952	0.000036394	0.00005	-0.000013606	Pass
3	202.005	88.9	0.027861212	0.000015525	0.00005	-0.000034475	Pass
4	312	87.9	0.024831331	0.000012332	0.00005	-0.000037668	Pass
5	468.002	90.3	0.032734069	0.000021430	0.00005	-0.000028570	Pass
6	779.997	75.5	0.005956621	0.000000710	0.00005	-0.000049290	Pass
7	935.997	75.1	0.005688529	0.000000647	0.00005	-0.000049353	Pass
8	1091.995	87.3	0.023173946	0.000010741	0.00005	-0.000039259	Pass
9	1247.999	88.4	0.026302680	0.000013837	0.00005	-0.000036163	Pass
10	1403.997	88.2	0.025703958	0.000013214	0.00005	-0.000036786	Pass
11	1559.991	88.1	0.025409727	0.000012913	0.00005	-0.000037087	Pass
12	1715.991	87	0.022387211	0.000010024	0.00005	-0.000039976	Pass
13	1871.991	89.4	0.029512092	0.000017419	0.00005	-0.000032581	Pass

Note: See next page for calculations.

Calculation

Note: The data taken is the power level of each spurious emission with reference to the modulated carrier power output of the transmitter.

Spec limit

FCC Part 90.210 (c) (1), For 5 KHz < (fd = F-Fc) < 10 KHz,
Required attenuation = 83 Log (fd /5) dB

FCC Part 90.210 (c) (2) For fd < ±250% Authorized Bandwidth
Required attenuation = 29 Log (Fd^2/11) or 50 dB (whichever is lesser)
Spurious emission limit (dBW) = 10 Log P - 50 = 10 Log (60) -50 = -32.2 dBW
Spurious emission limit (W) = 10^(-32.2/10) = 0.000600

FCC Part 90.210 (c) (3) For Fd > ±250% Authorized bandwidth,
Required attenuation = 43 + 10 Log(Power) dB
Spurious Emissions Limit (dBW) = 10logP - (43+10logP) = 10 Log (60) - (43+10 Log 60)-43 dBW
Spurious Emissions Limit (W) = 10^(-43/10) = 50 * 10^-6 W.

Power Calculation
R = 50 Ohm
V = Measured antenna terminal voltage across a 50 Ohm load.
Power = V^2 / R

dB to Linear Conversion
V= 1 e-6 * 10 ^ (dBuV/20)

VIDEO BANDWIDTH AND RESOLUTION BANDWIDTH SETTINGS:

BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
4 MHz	30 MHz	9 kHz
30 MHz	1000 MHz	120 kHz
1000 MHz	2 GHz	1 MHz

Test Equipment Used:

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02462	HP	8568B	2928A04874	032901	032902
Spectrum Analyzer	02467	HP	E7405A	US40240225	041001	041002
Directional Coupler	00714	Werlatone	C2630	3806	020901	020902
Attenuator	01705	HP	8496B	1350A01241	020901	020902

Front View of Test Setup

Back View of Test Setup

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

CFR 47 Part 2.1053 & 90.210(c) Measurements required: Radiated 90.210(c) emission mask C

Channel 0
Tx Frequency 150 MHz

These data represent the six highest readings.

	Freq	Reading in	Spec Limit	Pass/Fail
	(MHz)	Watts	Watts	
1	450.083	0.000000056	0.00005	Pass
2	600.075	0.000000053	0.00005	Pass
3	750.082	0.000000031	0.00005	Pass
4	300.082	0.000000015	0.00005	Pass
5	1559.898	0.000000002	0.00005	Pass
6	1715.942	0.000000002	0.00005	Pass

Calculations:

Power Caluculated from P=(E*D)^2/30G

90.210(c) Emissions Limit

43+10*LOG(P) = 0.00005 Watts

CFR 47 Part 2.1053 & 90.210(c) Measurements required: Radiated spurious emissions, 90.210(c) emission mask C

Channel 1
Tx Frequency 153 MHz

These data represent the six highest readings.

	Freq	Reading in	Spec Limit	Pass/Fail
	(MHz)	Watts	Watts	
1	765.086	0.000000085	0.00005	Pass
2	612.070	0.000000066	0.00005	Pass
3	459.092	0.000000035	0.00005	Pass
4	306.059	0.000000012	0.00005	Pass
5	1988.95	0.000000006	0.00005	Pass
6	918.085	0.000000002	0.00005	Pass

Calculations:

Power Caluculated from P=(E*D)^2/30G

90.210(c) Emissions Limit

43+10*LOG(P) = 0.00005 Watts

CFR 47 Part 2.1053 & 90.210(c) Measurements required: Radiated spurious emissions, 90.210(c) emission mask C

Channel 3
Tx Frequency 156 MHz

These data represent the six highest readings.

	Freq	Reading	Spec Limit	Pass/Fail
	(MHz)	Watts	Watts	
1	624.069	0.000000476	0.00005	Pass
2	780.069	0.000000301	0.00005	Pass
3	624.081	0.000000185	0.00005	Pass
4	468.069	0.000000041	0.00005	Pass
5	312.078	0.000000023	0.00005	Pass
6	936.129	0.000000005	0.00005	Pass

Calculations:

Power Caluculated from P=(E*D)^2/30G

90.210(c) Emissions Limit

43+10*LOG(P) = 0.00005 Watts

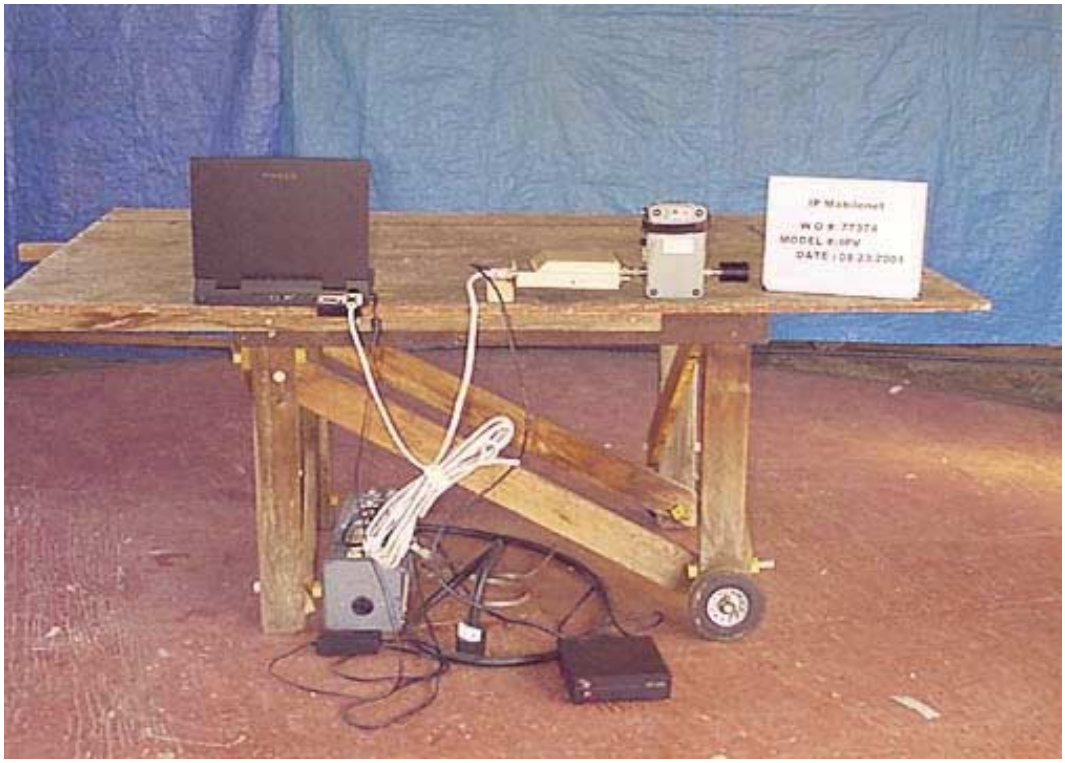
VIDEO BANDWIDTH AND RESOLUTION BANDWIDTH SETTINGS:

BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
4 MHz	30 MHz	9 kHz
30 MHz	1000 MHz	120 kHz
1000 MHz	2 GHz	1 MHz

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	01865	HP	8566B	2532A02509	102500	102501
QP Adapter	01437	HP	85650A	3303A01884	092600	092601
Bicon Antenna	00306	A.H. System	SAS-200/540	220	092000	092001
Log Periodic Antenna	00300	A.H. System	SAS-200/516	331	092000	092001
Pre-amp	00309	HP	8447D	1937A02548	091800	091801
Antenna cable	NA	NA	RG214	Cable#15	122000	122001
Pre-amp to SA cable	NA	Harbour	RG223/U	Cable#10	071601	071602
Horn Antenna	00849	EMCO	3115	6246	092500	092501
Microwave Pre-amp	00798	HP	83017A	3123A00281	101100	101101
¼" Heliax Coaxial Cable	NA	Andrew	FSJ-50A-4	Cable#7 (6 ft)	071701	071702
¼" Heliax Coaxial Cable	NA	Andrew	FSJ-50A-4	Cable#13 (25ft)	071800	071801
Active loop antenna	00314	EMCO	6502	2014	073101	073102

Test Setup Front View

Test Setup Close-up of Front View



Test Setup Back View

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

Customer:	IP Mobilenet
WO:	77374
Model:	IPV
FCC Part:	2.1055/90.213
Test Engineer:	R. Clark

Ambient Temperature:	70		21.1 ºC
Relative Humidity:	42%		
Authorized Band:	150-174	MHz	
CH1 Operating Frequency in MHz:	150.0		
CH2 Operating Frequency in MHz:	153.0		
CH3 Operating Frequency in MHz:	156.0		
CH1 Frequency Limit in Hz:	750	**5ppm**	
CH2 Frequency Limit in Hz:	765	**5ppm**	
CH3 Frequency Limit in Hz:	780	**5ppm**	
Nominal Operating Voltage:	14.00	VDC	
85% of Nominal (V-)	11.90	VDC	
115% of Nominal (V+)	16.10	VDC	

Channel 1

		Frequency MHz	Frequency Error Hz	Pass/Fail
-30º	V-	150.00040	400	PASS
	V	150.00031	310	PASS
	V+	150.00041	410	PASS
-20ºC	V-	150.00068	680	PASS
	V	150.00066	660	PASS
	V+	150.00064	640	PASS
-10ºC	V-	150.00061	610	PASS
	V	150.00066	660	PASS
	V+	150.00065	650	PASS
0ºC	V-	150.00062	620	PASS
	V	150.00054	540	PASS
	V+	150.00065	650	PASS
+10ºC	V-	150.00052	520	PASS
	V	150.00048	480	PASS
	V+	150.00056	560	PASS
20ºC	V-	150.00043	430	PASS
	V	150.00046	460	PASS
	V+	150.00036	360	PASS
+30ºC	V-	150.00042	420	PASS
	V	150.00032	320	PASS
	V+	150.00031	310	PASS
+40ºC	V-	150.00031	310	PASS
	V	150.00039	390	PASS
	V+	150.00030	300	PASS
+50ºC	V-	150.00032	320	PASS
	V	150.00029	290	PASS
	V+	150.00044	440	PASS

Channel 2

		Frequency MHz	Frequency Error Hz	Pass/Fail
-30°	V-	153.00044	440	PASS
	V	153.00058	580	PASS
	V+	153.00048	480	PASS
-20°C	V-	153.00063	630	PASS
	V	153.00059	590	PASS
	V+	153.00065	650	PASS
-10°C	V-	153.00059	590	PASS
	V	153.00060	600	PASS
	V+	153.00063	630	PASS
0°C	V-	153.00058	580	PASS
	V	153.00061	610	PASS
	V+	153.00055	550	PASS
+10°C	V-	153.00036	360	PASS
	V	153.00052	520	PASS
	V+	153.00046	460	PASS
20°C	V-	153.00038	380	PASS
	V	153.00050	500	PASS
	V+	153.00043	430	PASS
+30°C	V-	153.00031	310	PASS
	V	153.00033	330	PASS
	V+	153.00034	340	PASS
+40°C	V-	153.00039	390	PASS
	V	153.00029	290	PASS
	V+	153.00034	340	PASS
+50°C	V-	153.00054	540	PASS
	V	153.00035	350	PASS
	V+	153.00048	480	PASS

Channel 3

		Frequency MHz	Frequency Error Hz	Pass/Fail
-30°	V-	156.00044	440	PASS
	V	156.00055	550	PASS
	V+	156.00047	470	PASS
-20°C	V-	156.00066	660	PASS
	V	156.00067	670	PASS
	V+	156.00064	640	PASS
-10°C	V-	156.00063	630	PASS
	V	156.00060	600	PASS
	V+	156.00063	630	PASS
0°C	V-	156.00054	540	PASS
	V	156.00043	430	PASS
	V+	156.00058	580	PASS
+10°C	V-	156.00036	360	PASS
	V	156.00055	550	PASS
	V+	156.00052	520	PASS
20°C	V-	156.00038	380	PASS
	V	156.00032	320	PASS
	V+	156.00047	470	PASS
+30°C	V-	156.00030	300	PASS
	V	156.00035	350	PASS
	V+	156.00042	420	PASS
+40°C	V-	156.00029	290	PASS
	V	156.00035	350	PASS
	V+	156.00036	360	PASS
+50°C	V-	156.00035	350	PASS
	V	156.00043	430	PASS
	V+	156.00050	500	PASS

Test Equipment Used:

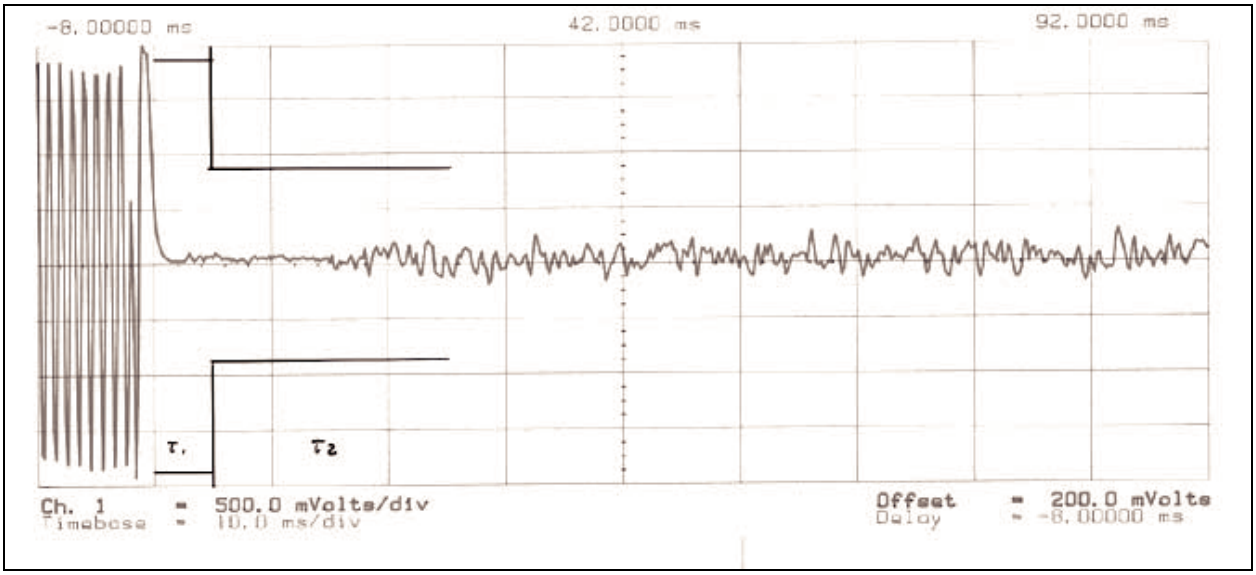
Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	00490	HP	8566B	2209A01404	11/3/00	11/3/01
SA Display	00489	HP	8566B	2403A08241	11/3/00	11/3/01
QP Adapter	00478	HP	85650A	2811A01267	11/03/00	11/3/01
Digital Multimeter	01241	Radio Shack	22-183	NA	08/30/00	8/30/01
Temp Chamber	01879	Thermotron	S-1.2 MiniMax	11899	3/29/2001	3/29/02
Power Supply, DC	00765	Sorensen	DCR-60-30B	176	7/17/01	7/17/02
Thermometer	02242	Omega	HH-26K	T-202884	7/26/01	7/26/02

Test Setup Photo

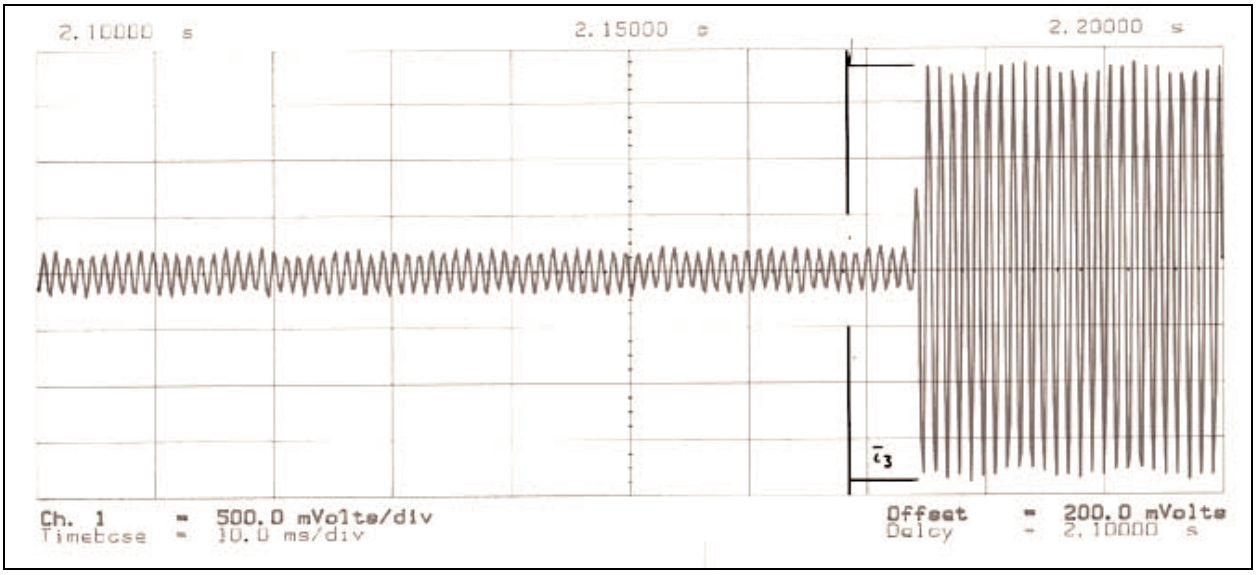
2.1033(c)(14)/2.1055/90.214– Transient Frequency Behavior

Testing was performed in accordance with TIA/EIA 603.

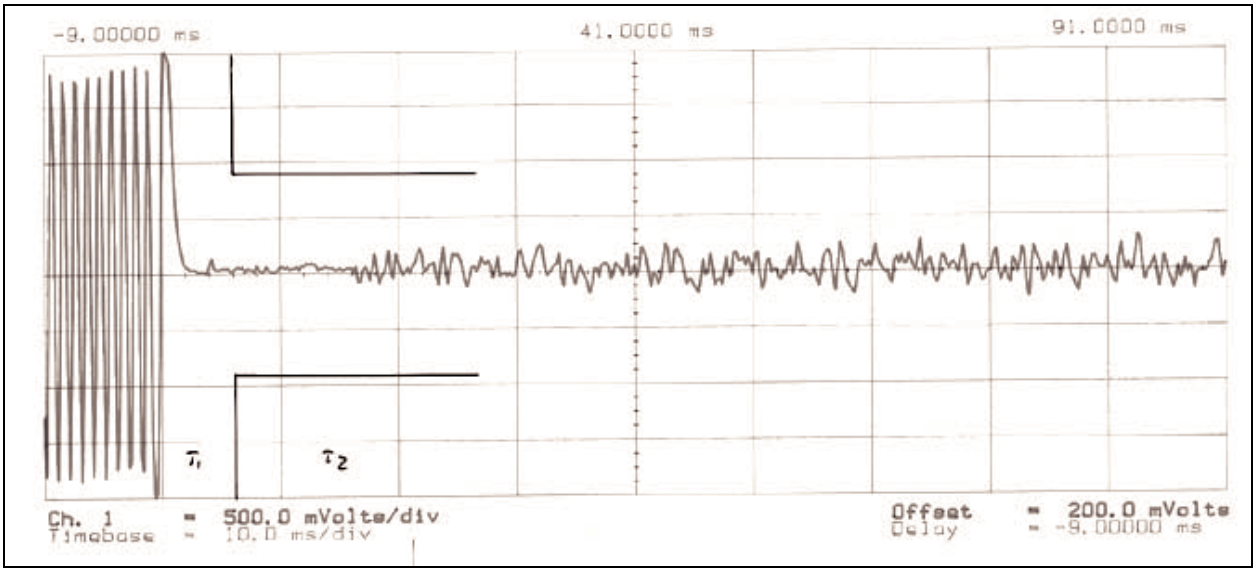
Channel 150 – T1 & T2



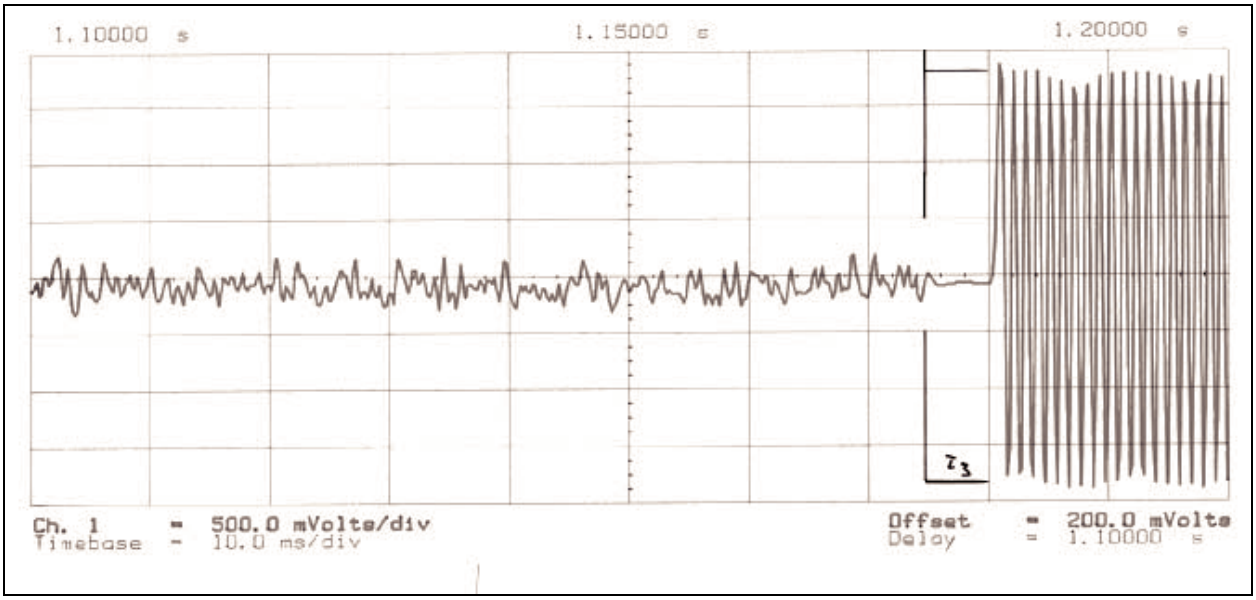
Channel 150 – T3



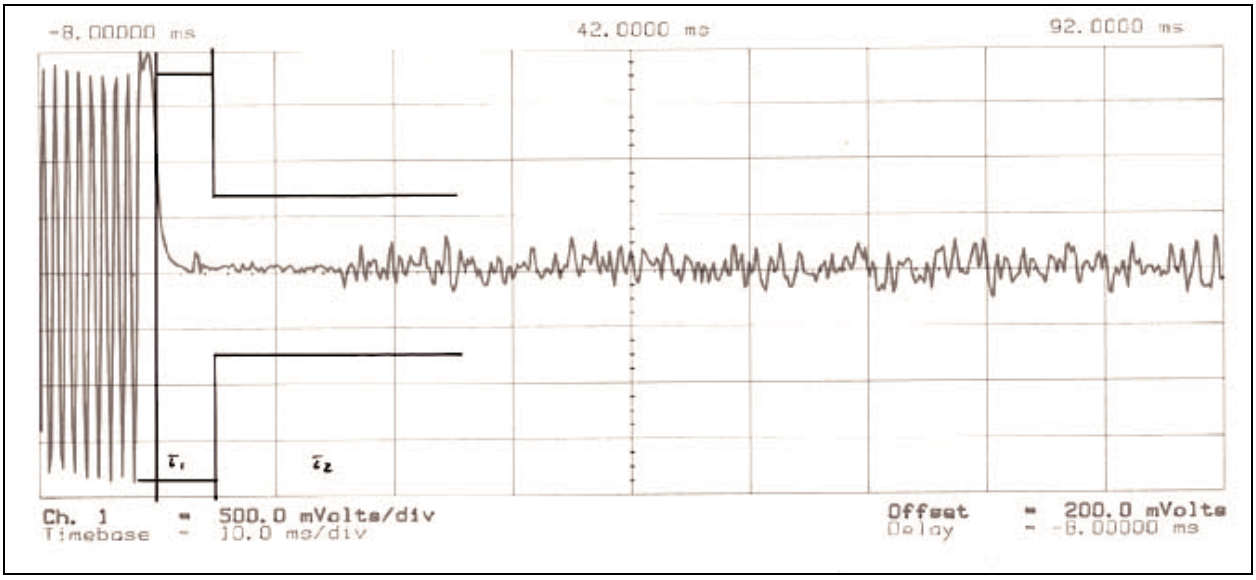
Channel 153 – T1 & T2



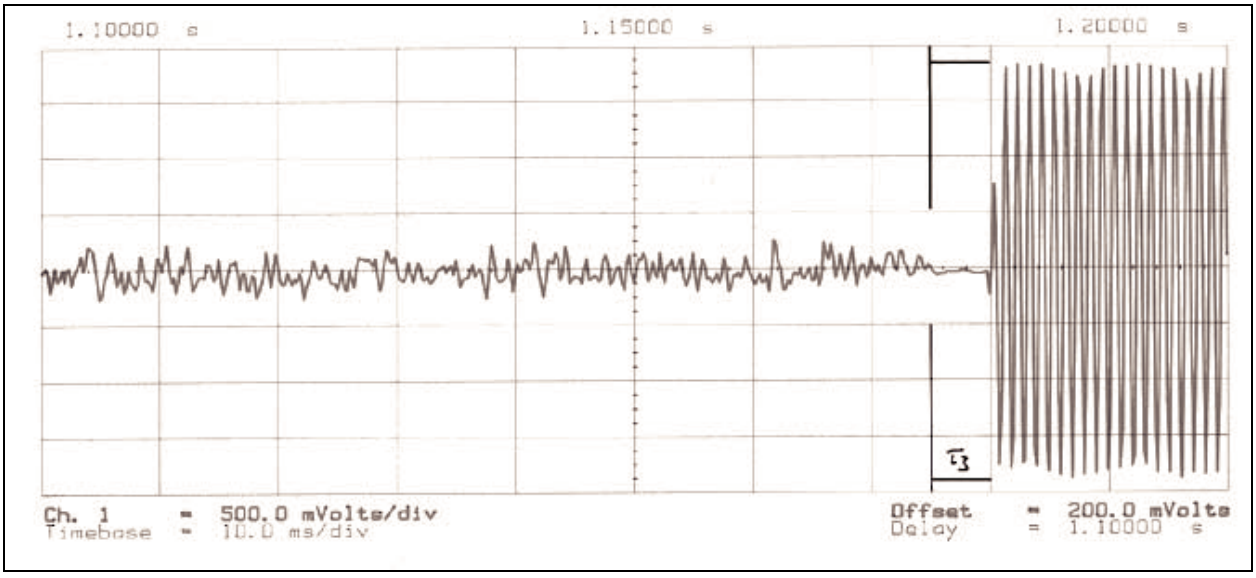
Channel 153 – T3



Channel 156 – T1 & T2



Channel 156 – T3



Equipment	Manufacturer	Model #	Serial #	Asset #	Cal Date	Cal Due
Directional Coupler	Werlatone	C2630	3805	00713	04/16/01	04/16/02
Generator, Signal,	Marconi	2022D	119259/016	01870	09/05/01	09/05/02
Modulation Analyzer	HP	8901A	2751A05181	02072	10/09/00	10/09/01
Oscilloscope, Digital	HP	54111D	3051A03191	02008	09/28/01	09/28/02
SA Display	HP	85662A	2237A04323	00091	02/26/01	02/26/02
Spectrum Anal (RF)	HP	8568B	2235A02425	00092	02/26/01	02/26/02

Setup Photo of Transient Behavior Testing

15.109 – RADIATED EMISSIONS – DIGITAL PORTION

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

Customer: **IP Mobilenet**
Specification: **FCC 15.109**
Work Order #: **77374** Date: 08/10/2001
Test Type: **Maximized Emissions** Time: 12:08:33
Equipment: **VHF Land Mobile Transceiver** Sequence#: 7
Manufacturer: IP Mobilenet Tested By: Eddie Wong
Model: IPV
S/N: Radio#1

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

Function	Manufacturer	Model #	S/N
VHF Land Mobile Transceiver*	IP Mobilenet	IPV	Radio#1

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Samplex	Sec1223	03061-0D01-0631
Laptop	CTX	EZBook700E	V92A266-8100028

Test Conditions / Notes:

EUT placed on the test bench. RS 232 port connected to RS232 port of a laptop. Antenna port is connected to a 50 Ohm load. A RF power meter is placed inline between the EUT and the 50 Ohm load for visual indication. DC input port is connected to a DC power supply. Receiver port 2 and programming port are left unconnected. Test program sent command to the EUT to setup Transmit channel. EUT tested in stand by mode. Channel 0, 150 MHz. 12VDC.

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

#	Freq MHz	Rdng dBµV	Log_3 Pream dB	Bicon dB	Cable dB	Cable dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	195.983M QP	52.6	+0.0 -28.6	+16.4	+0.3	+2.4	+0.0 258	43.1	43.5	-0.4	Horiz 137
^	196.011M	53.1	+0.0 -28.6	+16.4	+0.3	+2.4	+0.0 258	43.6	43.5	+0.1	Horiz 137
3	195.984M QP	47.5	+0.0 -28.6	+16.4	+0.3	+2.4	+0.0 360	38.0	43.5	-5.5	Vert 163
^	195.985M	47.8	+0.0 -28.6	+16.4	+0.3	+2.4	+0.0 360	38.3	43.5	-5.2	Vert 163
5	588.005M	38.5	+19.0 -28.0	+0.0	+0.4	+4.5	+0.0 360	34.4	46.0	-11.6	Vert 100
6	391.999M	43.2	+15.1 -28.1	+0.0	+0.4	+3.6	+0.0 326	34.2	46.0	-11.8	Horiz 117
7	59.997M	45.8	+0.0 -28.4	+8.2	+0.1	+1.3	+0.0 79	27.0	40.0	-13.0	Vert 163
8	600.025M	36.5	+19.2 -27.9	+0.0	+0.4	+4.5	+0.0	32.7	46.0	-13.3	Vert 100
9	599.975M QP	36.0	+19.2 -27.9	+0.0	+0.4	+4.5	+0.0 23	32.2	46.0	-13.8	Horiz 117
^	599.990M	38.3	+19.2 -27.9	+0.0	+0.4	+4.5	+0.0 338	34.5	46.0	-11.5	Horiz 100

11	449.977M	40.1	+16.1 -28.3	+0.0	+0.4	+3.9	+0.0 360	32.2	46.0	-13.8	Vert 156
12	851.030M	30.6	+22.5 -27.3	+0.0	+0.6	+5.4	+0.0 260	31.8	46.0	-14.2	Horiz 100
13	300.026M	33.6	+22.4 -28.3	+0.0	+0.3	+3.0	+0.0 114	31.0	46.0	-15.0	Horiz 117
14	599.971M	34.5	+19.2 -27.9	+0.0	+0.4	+4.5	+0.0 1	30.7	46.0	-15.3	Vert 100
15	193.537M	36.4	+0.0 -28.6	+16.4	+0.3	+2.4	+0.0 172	26.9	43.5	-16.6	Horiz 144
16	392.024M	38.2	+15.1 -28.1	+0.0	+0.4	+3.6	+0.0 133	29.2	46.0	-16.8	Vert 100
17	200.010M	36.4	+0.0 -28.6	+16.2	+0.3	+2.4	+0.0 261	26.7	43.5	-16.8	Horiz 138
18	284.874M	33.7	+0.0 -28.4	+20.0	+0.3	+2.9	+0.0 99	28.5	46.0	-17.5	Horiz 138
19	615.269M	31.5	+19.4 -27.9	+0.0	+0.4	+4.6	+0.0 227	28.0	46.0	-18.0	Vert 100
20	350.035M	37.7	+14.7 -28.2	+0.0	+0.3	+3.4	+0.0 14	27.9	46.0	-18.1	Horiz 117
21	49.985M	40.6	+0.0 -28.4	+8.3	+0.1	+1.2	+0.0 58	21.8	40.0	-18.2	Vert 163
22	239.973M	35.5	+0.0 -28.5	+16.9	+0.3	+2.6	+0.0 215	26.8	46.0	-19.2	Horiz 138
23	215.491M	33.7	+0.0 -28.6	+16.5	+0.3	+2.4	+0.0 358	24.3	43.5	-19.2	Horiz 138
24	179.999M	33.1	+0.0 -28.6	+17.0	+0.3	+2.3	+0.0 4	24.1	43.5	-19.4	Vert 163
25	226.530M	35.5	+0.0 -28.5	+16.7	+0.3	+2.4	+0.0 6	26.4	46.0	-19.6	Horiz 138
26	326.250M	32.5	+18.2 -28.2	+0.0	+0.3	+3.2	+0.0 172	26.0	46.0	-20.0	Horiz 117
27	190.422M	32.4	+0.0 -28.6	+16.6	+0.3	+2.4	+0.0 140	23.1	43.5	-20.4	Horiz 144
28	239.987M	33.3	+0.0 -28.5	+16.9	+0.3	+2.6	+0.0 224	24.6	46.0	-21.4	Vert 163
29	432.000M	32.6	+15.8 -28.2	+0.0	+0.4	+3.8	+0.0 290	24.4	46.0	-21.6	Vert 100
30	149.990M	30.9	+0.0 -28.6	+17.2	+0.2	+2.1	+0.0 79	21.8	43.5	-21.7	Vert 100
31	150.190M	30.3	+0.0 -28.6	+17.2	+0.2	+2.1	+0.0 282	21.2	43.5	-22.3	Vert 163
32	279.993M	28.8	+0.0 -28.4	+19.6	+0.3	+2.9	+0.0 270	23.2	46.0	-22.8	Vert 163

33	444.022M	30.3	+16.0 -28.3	+0.0	+0.4	+3.9	+0.0 70	22.3	46.0	-23.7	Vert 100
34	112.478M	32.0	+0.0 -28.5	+13.8	+0.2	+1.8	+0.0 170	19.3	43.5	-24.2	Vert 100
35	110.878M	31.8	+0.0 -28.5	+13.6	+0.2	+1.8	+0.0 67	18.9	43.5	-24.6	Horiz 144
36	65.250M	35.0	+0.0 -28.5	+7.3	+0.1	+1.4	+0.0 19	15.3	40.0	-24.7	Vert 100

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

Customer: **IP Mobilenet**
Specification: **FCC 15.109**
Work Order #: **77374** Date: 08/10/2001
Test Type: **Maximized Emissions** Time: 15:01:24
Equipment: **VHF Land Mobile Transceiver** Sequence#: 8
Manufacturer: IP Mobilenet Tested By: Eddie Wong
Model: IPV
S/N: Radio#1

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

Function	Manufacturer	Model #	S/N
VHF Land Mobile Transceiver*	IP Mobilenet	IPV	Radio#1

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Samplex	Sec1223	03061-0D01-0631
Laptop	CTX	EZBook700E	V92A266-8100028

Test Conditions / Notes:

EUT placed on the test bench. RS 232 port connected to RS232 port of a laptop. Antenna port is connected to a 50 Ohm load. A RF power meter is placed inline between the EUT and the 50 Ohm load for visual indication. DC input port is connected to a DC power supply. Receiver port 2 and programming port are left unconnected. Test program sent command to the EUT to set transmit channel. EUT tested in stand by mode. Channel 1, 153 MHz. 12VDC.

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

#	Freq	Rdng	Log_3 Pream	Bicon	Cable	Cable	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	199.023M	52.3	+0.0	+16.2	+0.3	+2.4	+0.0	42.6	43.5	-0.9	Horiz
	QP		-28.6				257				151
^	199.039M	53.4	+0.0	+16.2	+0.3	+2.4	+0.0	43.7	43.5	+0.2	Horiz
			-28.6				257				151
3	198.990M	47.1	+0.0	+16.2	+0.3	+2.4	+0.0	37.4	43.5	-6.1	Vert
			-28.6				222				209
4	397.986M	46.7	+15.2	+0.0	+0.4	+3.6	+0.0	37.8	46.0	-8.2	Vert
			-28.1				308				173
5	398.030M	42.1	+15.2	+0.0	+0.4	+3.6	+0.0	33.2	46.0	-12.8	Horiz
			-28.1				338				205
6	323.966M	37.6	+18.6	+0.0	+0.3	+3.2	+0.0	31.4	46.0	-14.6	Horiz
			-28.3				100				139
7	305.996M	33.3	+21.4	+0.0	+0.3	+3.1	+0.0	29.8	46.0	-16.2	Horiz
			-28.3				60				139
8	300.020M	32.4	+22.4	+0.0	+0.3	+3.0	+0.0	29.8	46.0	-16.2	Horiz
			-28.3				101				139
9	323.990M	35.7	+18.6	+0.0	+0.3	+3.2	+0.0	29.5	46.0	-16.5	Vert
			-28.3				30				100

10	305.997M	32.2	+21.4 -28.3	+0.0	+0.3	+3.1	+0.0 310	28.7	46.0	-17.3	Vert 100
11	349.968M	38.3	+14.7 -28.2	+0.0	+0.3	+3.4	+0.0 7	28.5	46.0	-17.5	Horiz 139
12	360.016M	38.2	+14.8 -28.2	+0.0	+0.3	+3.4	+0.0 259	28.5	46.0	-17.5	Vert 100
13	500.015M	32.8	+16.9 -28.0	+0.0	+0.4	+4.1	+0.0 88	26.2	46.0	-19.8	Horiz 124
14	233.988M	32.4	+0.0 -28.5	+16.8	+0.3	+2.5	+0.0 116	23.5	46.0	-22.5	Vert 100

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

Customer: **IP Mobilenet**
Specification: **FCC 15.109**
Work Order #: **77374** Date: 08/10/2001
Test Type: **Maximized Emissions** Time: 16:36:04
Equipment: **VHF Land Mobile Transceiver** Sequence#: 9
Manufacturer: IP Mobilenet Tested By: Eddie Wong
Model: IPV
S/N: Radio#1

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

Function	Manufacturer	Model #	S/N
VHF Land Mobile Transceiver*	IP Mobilenet	IPV	Radio#1

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Samplex	Sec1223	03061-0D01-0631
Laptop	CTX	EZBook700E	V92A266-8100028

Test Conditions / Notes:

EUT placed on the test bench. RS 232 port connected to RS232 port of a laptop. Antenna port is connected to a 50 Ohm load. A RF power meter is placed inline between the EUT and the 50 Ohm load for visual indication. DC input port is connected to a DC power supply. Receiver port 2 and programming port are left unconnected. Test program sent command to the EUT to set transmit channel. EUT tested in stand by mode. Channel 2, 156 MHz. 12VDC.

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

#	Freq	Rdng	Log_3 Pream	Bicon	Cable	Cable	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	467.982M	51.6	+16.4	+0.0	+0.4	+4.0	+0.0	44.2	46.0	-1.8	Horiz
	QP		-28.2				325				100
^	467.994M	52.2	+16.4	+0.0	+0.4	+4.0	+0.0	44.8	46.0	-1.2	Horiz
			-28.2				325				100
3	467.985M	50.1	+16.4	+0.0	+0.4	+4.0	+0.0	42.7	46.0	-3.3	Vert
	QP		-28.2				360				100
^	468.002M	50.3	+16.4	+0.0	+0.4	+4.0	+0.0	42.9	46.0	-3.1	Vert
			-28.2				360				100
5	201.980M	48.8	+0.0	+16.2	+0.3	+2.4	+0.0	39.1	43.5	-4.4	Vert
	QP		-28.6				245				101
^	201.976M	49.6	+0.0	+16.2	+0.3	+2.4	+0.0	39.9	43.5	-3.6	Vert
			-28.6				245				101
7	201.982M	48.7	+0.0	+16.2	+0.3	+2.4	+0.0	39.0	43.5	-4.5	Horiz
	QP		-28.6				137				164
^	201.988M	49.6	+0.0	+16.2	+0.3	+2.4	+0.0	39.9	43.5	-3.6	Horiz
			-28.6				137				164
9	404.016M	44.1	+15.3	+0.0	+0.4	+3.6	+0.0	35.3	46.0	-10.7	Vert
			-28.1				320				182
10	404.013M	42.9	+15.3	+0.0	+0.4	+3.6	+0.0	34.1	46.0	-11.9	Horiz
			-28.1				312				110
11	624.004M	36.5	+19.4	+0.0	+0.4	+4.6	+0.0	33.0	46.0	-13.0	Horiz
			-27.9				18				113

12	623.988M	36.2	+19.4 -27.9	+0.0	+0.4	+4.6	+0.0 231	32.7	46.0	-13.3	Vert 100
13	179.992M	37.8	+0.0 -28.6	+17.0	+0.3	+2.3	+0.0 185	28.8	43.5	-14.7	Vert 113
14	200.010M	36.2	+0.0 -28.6	+16.2	+0.3	+2.4	+0.0 244	26.5	43.5	-17.0	Horiz 136
15	155.984M	34.4	+0.0 -28.6	+17.4	+0.2	+2.2	+0.0 247	25.6	43.5	-17.9	Horiz 136
16	159.019M	32.1	+0.0 -28.6	+17.7	+0.2	+2.2	+0.0 127	23.6	43.5	-19.9	Vert 113
17	229.493M	34.8	+0.0 -28.5	+16.8	+0.3	+2.5	+0.0 80	25.9	46.0	-20.1	Vert 113
18	350.005M	34.6	+14.7 -28.2	+0.0	+0.3	+3.4	+0.0 20	24.8	46.0	-21.2	Vert 100

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **IP Mobilenet**
Specification: **15.109 CLASS B**
Work Order #: **77374** Date: 08/28/2001
Test Type: **Maximized Emissions** Time: 09:10:24
Equipment: **VHF Land Mobile Transceiver** Sequence#: 17
Manufacturer: IP Mobilenet Tested By: Randal Clark
Model: IPV
S/N: Radio#1

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

Function	Manufacturer	Model #	S/N
VHF Land Mobile Transceiver*	IP Mobilenet	IPV	Radio#1

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Samplex	Sec1223	03061-0D01-0631
Laptop	CTX	EZBook700E	V92A266-8100028

Test Conditions / Notes:

EUT is a transmitter operating on 150-156MHz and is terminated in a shielded dummy load. EUT is set to the indicated channel, but is not transmitting. RS 232 port is connected to the laptop. EUT is powered by 14VDC from the DC power supply. Frequency Range Tested: 1-2GHz.

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

#	Freq MHz	Rdng dBµV	Amp Cable dB	Horn dB	Cable dB	Cable dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	1248.042M	50.1	-35.3 +1.7	+25.0	+0.2	+3.5	+0.0	45.2	54.0 Channel 156	-8.8	Horiz
2	1050.090M	50.2	-35.6 +1.5	+24.4	+0.1	+3.3	+0.0	43.9	54.0 Channel 150	-10.1	Horiz
3	1199.940M	48.8	-35.4 +1.7	+25.0	+0.1	+3.5	+0.0	43.7	54.0 Channel 150	-10.3	Horiz
4	1223.990M	48.5	-35.4 +1.7	+25.0	+0.1	+3.5	+0.0	43.4	54.0 Channel 153	-10.6	Horiz
5	1071.290M	49.5	-35.6 +1.6	+24.4	+0.1	+3.3	+0.0	43.3	54.0 Channel 153	-10.7	Horiz
6	1223.960M	47.4	-35.4 +1.7	+25.0	+0.1	+3.5	+0.0	42.3	54.0 Channel 153	-11.7	Vert
7	1199.770M	46.9	-35.4 +1.7	+25.0	+0.1	+3.5	+0.0	41.8	54.0 Channel 150	-12.2	Vert
8	1092.002M	47.6	-35.5 +1.6	+24.5	+0.1	+3.3	+0.0	41.6	54.0 Channel 156	-12.4	Horiz
9	1050.250M	47.4	-35.6 +1.5	+24.4	+0.1	+3.3	+0.0	41.1	54.0 Channel 150	-12.9	Vert

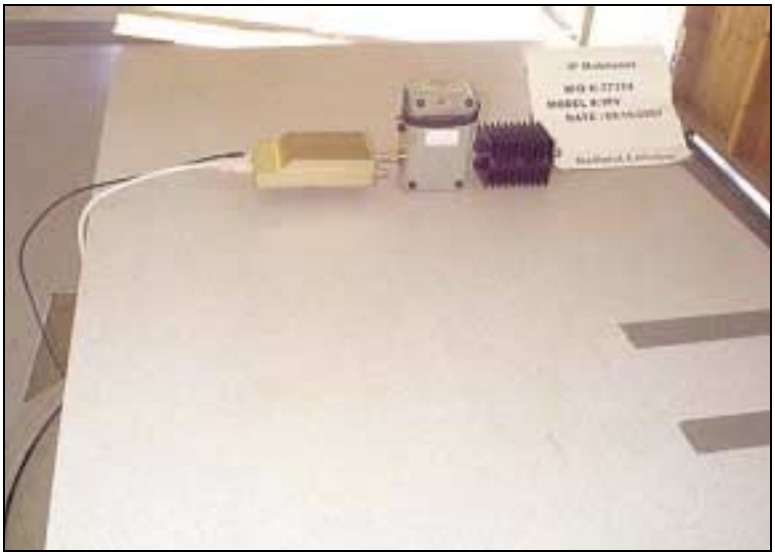
Test Equipment Used:

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	00490	HP	8566B	2209A01404	11/3/00	11/3/01
SA Display	00489	HP	8566B	2403A08241	11/3/00	11/3/01
QP Adapter	00478	HP	85650A	2811A01267	11/03/00	11/3/01
Preamp	00099	HP	8447D	1937A02604	03/29/01	3/29/02
Preamp	02010	HP	8449B	3008A00301	10/13/00	10/13/01
Cable #4 (50')	N/A	Andrew	FSJ1-50A	N/A	4/16/01	4/16/02
Cable #2 (2')	N/A	Andrew	FSJ1-50A	N/A	4/16/01	4/16/02
Cable #7 (25')	N/A	Andrew	FSJ1-50A	N/A	4/16/01	4/16/02
Antenna, Horn	00656	EMCO	3115	4085	02/28/01	2/28/02

VIDEO BANDWIDTH AND RESOLUTION BANDWIDTH SETTINGS:

BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
30 MHz	1000 MHz	120 kHz
1000 MHz	2 GHz	1 MHz

Test Setup Photo – Front View



Test Setup Photo – Back View

15.111 – ANTENNA POWER CONDUCTED - RECEIVER

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **IP Mobilenet**
Specification: **FCC 15.111**
Work Order #: **77374** Date: 10/03/2001
Test Type: **Maximized Emissions** Time: 2:01:59 PM
Equipment: **VHF Land Mobile Transceiver** Sequence#: 18
Manufacturer: IP Mobilenet Tested By: Randal Clark
Model: IPV
S/N: Radio#1

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

Function	Manufacturer	Model #	S/N
VHF Land Mobile Transceiver*	IP Mobilenet	IPV	Radio#1

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Samplex	Sec1223	03061-0D01-0631
Laptop	CTX	EZBook700E	V92A266-8100028

Test Conditions / Notes:

EUT is a transmitter operating on 150-156MHz and is terminated in a shielded dummy load. EUT is set to channel 0 (150MHz). RS 232 port is connected to the laptop. EUT is powered by 14VDC from the DC power supply. Spectrum analyzer is connected to the receiver port. Frequency Range Tested: 30MHz - 2000MHz.

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

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	1567.883M	38.0					+0.0	38.0	50.0	-12.0	Recei
2	1799.717M	35.0					+0.0	35.0	50.0	-15.0	Recei
3	1371.716M	33.9					+0.0	33.9	50.0	-16.1	Recei
4	1764.050M	30.8					+0.0	30.8	50.0	-19.2	Recei
5	196.052M	29.7					+0.0	29.7	50.0	-20.3	Recei
6	1499.979M	29.3					+0.0	29.3	50.0	-20.7	Recei
7	1949.243M	25.0					+0.0	25.0	50.0	-25.0	Recei
8	178.244M	23.9					+0.0	23.9	50.0	-26.1	Recei
9	133.566M	23.7					+0.0	23.7	50.0	-26.3	Recei
10	1175.284M	22.3					+0.0	22.3	50.0	-27.7	Recei
11	979.681M	22.0					+0.0	22.0	50.0	-28.0	Recei

12	1650.191M	21.8	+0.0	21.8	50.0	-28.2	Recei
13	1350.453M	21.7	+0.0	21.7	50.0	-28.3	Recei
14	222.764M	21.3	+0.0	21.3	50.0	-28.7	Recei
15	1727.012M	21.1	+0.0	21.1	50.0	-28.9	Recei
16	1621.383M	21.1	+0.0	21.1	50.0	-28.9	Recei
17	1661.165M	20.9	+0.0	20.9	50.0	-29.1	Recei
18	44.555M	20.7	+0.0	20.7	50.0	-29.3	Recei
19	317.107M	20.6	+0.0	20.6	50.0	-29.4	Recei
20	169.676M	20.6	+0.0	20.6	50.0	-29.4	Recei

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **IP Mobilenet**
Specification: **FCC 15.111**
Work Order #: **77374** Date: 10/03/2001
Test Type: **Maximized Emissions** Time: 2:16:09 PM
Equipment: **VHF Land Mobile Transceiver** Sequence#: 19
Manufacturer: IP Mobilenet Tested By: Randal Clark
Model: IPV
S/N: Radio#1

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

Function	Manufacturer	Model #	S/N
VHF Land Mobile Transceiver*	IP Mobilenet	IPV	Radio#1

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Samplex	Sec1223	03061-0D01-0631
Laptop	CTX	EZBook700E	V92A266-8100028

Test Conditions / Notes:

EUT is a transmitter operating on 150-156MHz and is terminated in a shielded dummy load. EUT is set to channel 1 (153MHz). RS 232 port is connected to the laptop. EUT is powered by 14VDC from the DC power supply. Spectrum analyzer is connected to the receiver port. Frequency Range Tested: 30MHz - 2000MHz.

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

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	1835.384M	36.8					+0.0	36.8	50.0	-13.2	Recei
2	1592.575M	36.1					+0.0	36.1	50.0	-13.9	Recei
3	1393.664M	34.3					+0.0	34.3	50.0	-15.7	Recei
4	1790.115M	31.6					+0.0	31.6	50.0	-18.4	Recei
5	1529.473M	30.4					+0.0	30.4	50.0	-19.6	Recei
6	199.076M	30.1					+0.0	30.1	50.0	-19.9	Recei
7	1987.654M	24.6					+0.0	24.6	50.0	-25.4	Recei
8	1683.114M	23.6					+0.0	23.6	50.0	-26.4	Recei
9	178.244M	23.4					+0.0	23.4	50.0	-26.6	Recei
10	154.759M	23.0					+0.0	23.0	50.0	-27.0	Recei
11	133.566M	23.0					+0.0	23.0	50.0	-27.0	Recei
12	1193.312M	22.8					+0.0	22.8	50.0	-27.2	Recei

13	995.004M	22.3	+0.0	22.3	50.0	-27.7	Recei
14	222.764M	21.2	+0.0	21.2	50.0	-28.8	Recei
15	161.612M	21.0	+0.0	21.0	50.0	-29.0	Recei
16	39.953M	21.0	+0.0	21.0	50.0	-29.0	Recei
17	1500.665M	20.9	+0.0	20.9	50.0	-29.1	Recei
18	1943.756M	20.7	+0.0	20.7	50.0	-29.3	Recei
19	1651.563M	20.7	+0.0	20.7	50.0	-29.3	Recei
20	1377.203M	20.7	+0.0	20.7	50.0	-29.3	Recei

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **IP Mobilenet**
Specification: **FCC 15.111**
Work Order #: **77374** Date: 10/03/2001
Test Type: **Maximized Emissions** Time: 2:21:43 PM
Equipment: **VHF Land Mobile Transceiver** Sequence#: 20
Manufacturer: IP Mobilenet Tested By: Randal Clark
Model: IPV
S/N: Radio#1

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

Function	Manufacturer	Model #	S/N
VHF Land Mobile Transceiver*	IP Mobilenet	IPV	Radio#1

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Samplex	Sec1223	03061-0D01-0631
Laptop	CTX	EZBook700E	V92A266-8100028

Test Conditions / Notes:

EUT is a transmitter operating on 150-156MHz and is terminated in a shielded dummy load. EUT is set to channel 2 (156MHz). RS 232 port is connected to the laptop. EUT is powered by 14VDC from the DC power supply. Spectrum analyzer is connected to the receiver port. Frequency Range Tested: 30MHz - 2000MHz.

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

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	1871.051M	36.7					+0.0	36.7	50.0	-13.3	Recei
2	1414.241M	35.4					+0.0	35.4	50.0	-14.6	Recei
3	1817.551M	32.1					+0.0	32.1	50.0	-17.9	Recei
4	1615.896M	30.9					+0.0	30.9	50.0	-19.1	Recei
5	202.100M	30.7					+0.0	30.7	50.0	-19.3	Recei
6	1559.652M	27.6					+0.0	27.6	50.0	-22.4	Recei
7	1715.351M	26.2					+0.0	26.2	50.0	-23.8	Recei
8	1211.340M	24.7					+0.0	24.7	50.0	-25.3	Recei
9	178.244M	23.8					+0.0	23.8	50.0	-26.2	Recei
10	133.566M	23.3					+0.0	23.3	50.0	-26.7	Recei
11	1009.427M	23.0					+0.0	23.0	50.0	-27.0	Recei
12	222.764M	21.5					+0.0	21.5	50.0	-28.5	Recei

13	445.870M	21.4	+0.0	21.4	50.0	-28.6	Recei
14	1972.564M	21.0	+0.0	21.0	50.0	-29.0	Recei
15	1799.717M	20.9	+0.0	20.9	50.0	-29.1	Recei
16	682.779M	20.9	+0.0	20.9	50.0	-29.1	Recei
17	55.611M	20.9	+0.0	20.9	50.0	-29.1	Recei
18	32.254M	20.9	+0.0	20.9	50.0	-29.1	Recei
19	1548.678M	20.8	+0.0	20.8	50.0	-29.2	Recei
20	77.677M	20.7	+0.0	20.7	50.0	-29.3	Recei

Test Equipment Used:

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	00490	HP	8566B	2209A01404	11/3/00	11/3/01
SA Display	00489	HP	8566B	2403A08241	11/3/00	11/3/01
QP Adapter	00478	HP	85650A	2811A01267	11/03/00	11/3/01

VIDEO BANDWIDTH AND RESOLUTION BANDWIDTH SETTINGS:

BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
30 MHz	1000 MHz	120 kHz
1000 MHz	2 GHz	1 MHz

Test Setup of Antenna Conducted - Receiver