CKC LABORATORIES, INC. Testing the Future

ADDENDUM TO IP MOBILENET TEST REPORT FC03-067

FOR THE

BASE STATION DATA RADIO TRANSCEIVER, B09150-12

FCC PART 90

COMPLIANCE

DATE OF ISSUE: JANUARY 5, 2003

PREPARED FOR:

IP MobileNet
16842 Von Karman Avenue
Irvine, CA 92606

P.O. No.: 003041-00
W.O. No.: 81317

PREPARED BY:

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

Date of test: October 20-30, 2003

Report No.: FC03-067A

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ADMINISTRATIVE INFORMATION

DATE OF TEST:	October 20-30, 2003
DATE OF RECEIPT:	October 20, 2003
PURPOSE OF TEST:	To demonstrate the compliance of the Base Station Data Radio Transceiver, B09150-12 with the requirements for FCC Part 90 devices. **Addendum A** is to correct the emission designator, correct the testing location and add emission mask plots.
TEST METHOD:	FCC Part 90
FREQUENCY RANGE TESTED:	10 MHz – 2 GHz
MANUFACTURER:	IP MobileNet 16842 Von Karman Avenue Irvine, CA 92606
REPRESENTATIVE:	Jim Lukes
TEST LOCATION:	CKC Laboratories, Inc. 5476A Clouds Rest Mariposa, CA 95338

SUMMARY OF RESULTS

As received, the IP MobileNet Base Station Data Radio Transceiver, B09150-12 was found to be fully compliant with the following standards and specifications:

Canadian Standard	Canadian Section	FCC Standard	FCC Section	Test Description
RSS119	5.5	90	90.209	Bandwidth Limitations
RSS119	5.5.1	NA	NA	Specific Requirements for Channel BW > 12.5kHz
RSS119	5.5.7	90	90.217	Exemption from technical standards
RSS119	5.7	90	90.207	Authorized Modulation Types
RSS119	5.8	NA	NA	Equivalent Channels (>12.5kHz)
RSS119	6.2	90	90.215	Power Output
RSS119	6.3	90	90.210	Spurious Emissions OATS
RSS119	6.3	90	90.210	Spurious Emissions Ant Terminal
RSS119	6.4	90	90.210	Emissions Mask
RSS119	6.5	90	90.214	Transient Freq Behavior
RSS119	6.6	2	2.1047	Modulation Limiting
RSS119	6.9	NA	NA	Data Modem Requirements
RSS119	7	90	90.213	Frequency Stability
RSS119	8	15	Subpart B	Receiver Requirements
RSS119	9	OET	65 Sup. C	RF Exposure Requirements
IC 3082-B		90477		Site No.

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

APPROVALS

Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:

Joyce Walker, Quality Assurance Administrative Manager

TEST PERSONNEL:

Randy Clark, EMC Engineer

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The EUT tested by CKC Laboratories was a production unit

EQUIPMENT UNDER TEST

Base Station Data Radio
Manuf: IP Mobilenet
Model: B09150-12
Serial: 03402484
FCC ID: MI7- (pending)

PERIPHERAL DEVICES

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

Power Supply
Manuf: Samlex America
Model: SEC 1223
Serial: 03061-2G04-00695
FCC ID: NA

Laptop Power Supply
Manuf: Go Forward Enterprise Corp.
Model: NT24-1S1220
Serial: NA
FCC ID: NA

Mouse
Manuf: Microsoft
Model: 93633
Serial: 02608451
FCC ID: DoC

Laptop Computer
Manuf: Compaq
Model: 1456VQLIN
Serial: 1V96CLS8W8PV
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%.

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

FCC 2.1033(c)(4) TYPE OF EMISSIONS
7K6F1D

FCC 2.1033(c)(5) FREQUENCY RANGE
163 MHz and 175 MHz

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

FCC 2.1033(c)(7) MAXIMUM POWER RATING
Max power rating is listed per antenna height and is subject to secondary licensing requirements. For max power rating see 90.205(d) Table 1.

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

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

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

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

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

FCC 2.1033 (c)(13) MODULATION INFORMATION
4 level FSK

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

Test Conditions: EUT is a data radio for fixed use in the VHF frequency range. Equipment is DC powered by support power supply. Support laptop is used for configuration and testing purposes only. Output of antenna port is fed through suitable external attenuation to a spectrum analyzer.

Temperature: 22ºC
Humidity: 45%

Frequency Range Investigated: Fundamental

Peak Measurement Bandwidth Settings: RBW=VBW=100kHz
Average Measurement performed using a power meter.

Frequency (MHz)	RF Power Output (Watts)
163	59.9
175	60.0

Description	*Asset #*	*Manufacturer*	*Model #*	*Serial #*	*Cal Date*	*Cal Due*
Attenuator	P02229	Pasternack	PE7010-10	NA	9/5/03	9/4/05
Attenuator	P01630	JFW	50FHC-014-20	NA	5/9/03	5/8/04
Attenuator		Pasternack	PE7021-40	NA	10/20/03	10/20/04
Cable #5 (20')	P04275	Andrew	FSJ1-50A	HF-005-20	6/3/03	6/2/05
Power Meter	00613	HP	435B	2702A16632	8/12/02	8/11/04
Power Sensor	02392	HP	8482A	2652A16108	1/31/03	1/30/05
Spectrum Analyzer 100Hz - 22.5GHz	00490	HP	8566B	2209A01404	2/26/03	2/26/04
Spectrum Analyzer Display	00489	HP	8566B	2403A08241	2/26/03	2/26/04
Spectrum Analyzer QP Adapter	00478	HP	85650A	2811A01267	2/26/03	2/26/04

PHOTOGRAPH SHOWING DIRECT CONNECT EMISSIONS

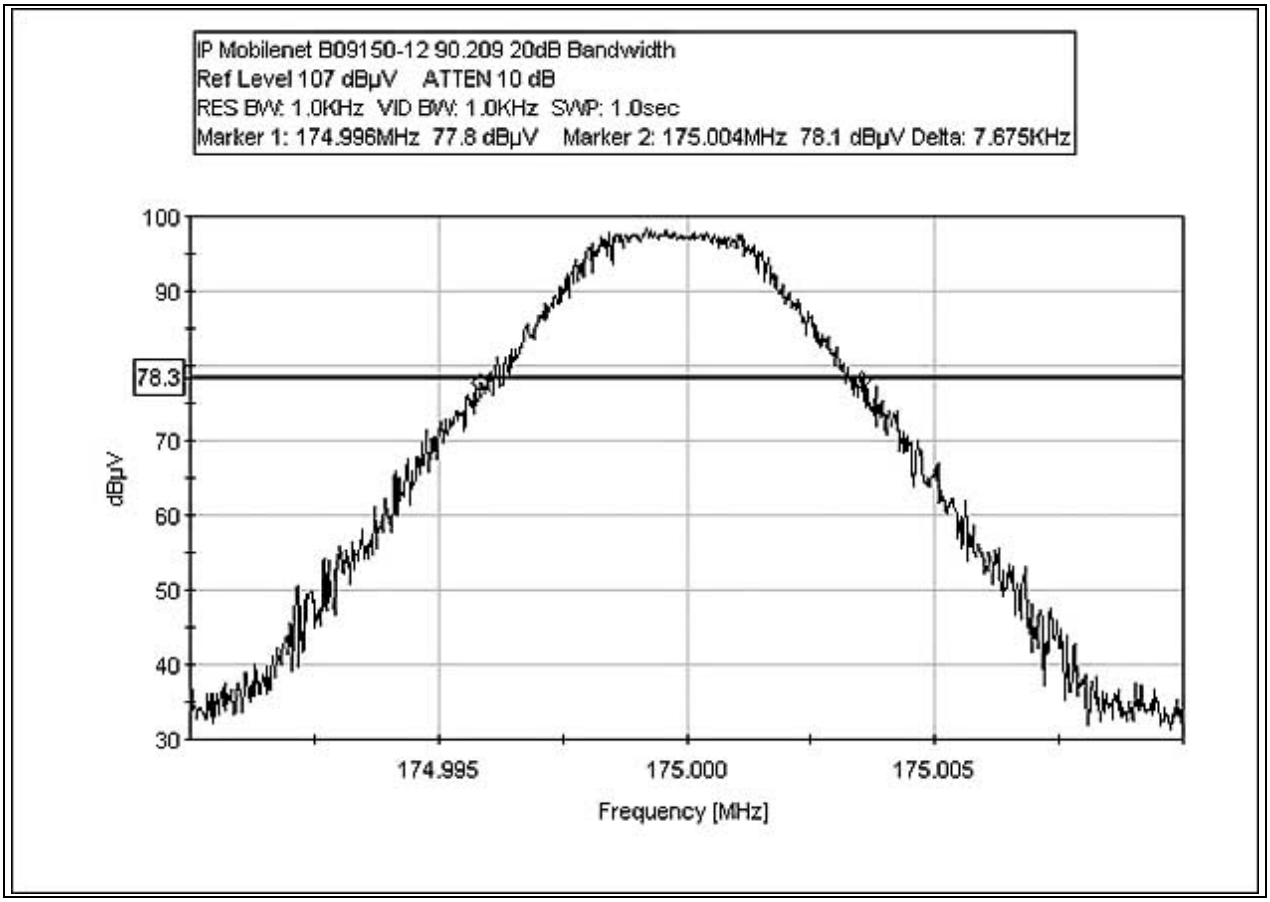
FCC 2.1033(c)(14)/2.1047(a) - MODULATION CHARACTERISTICS - AUDIO FREQUENCY RESPONSE

Not applicable to this unit.

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

Not applicable to this unit.

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



PHOTOGRAPH SHOWING DIRECT CONNECT EMISSIONS

Setup for Mask D

EUT is a data radio for fixed use in the VHF frequency range. Equipment is DC powered by support power supply. Support laptop is used for configuration and testing purposes only. Output of antenna port is fed through suitable external attenuation to a spectrum analyzer.

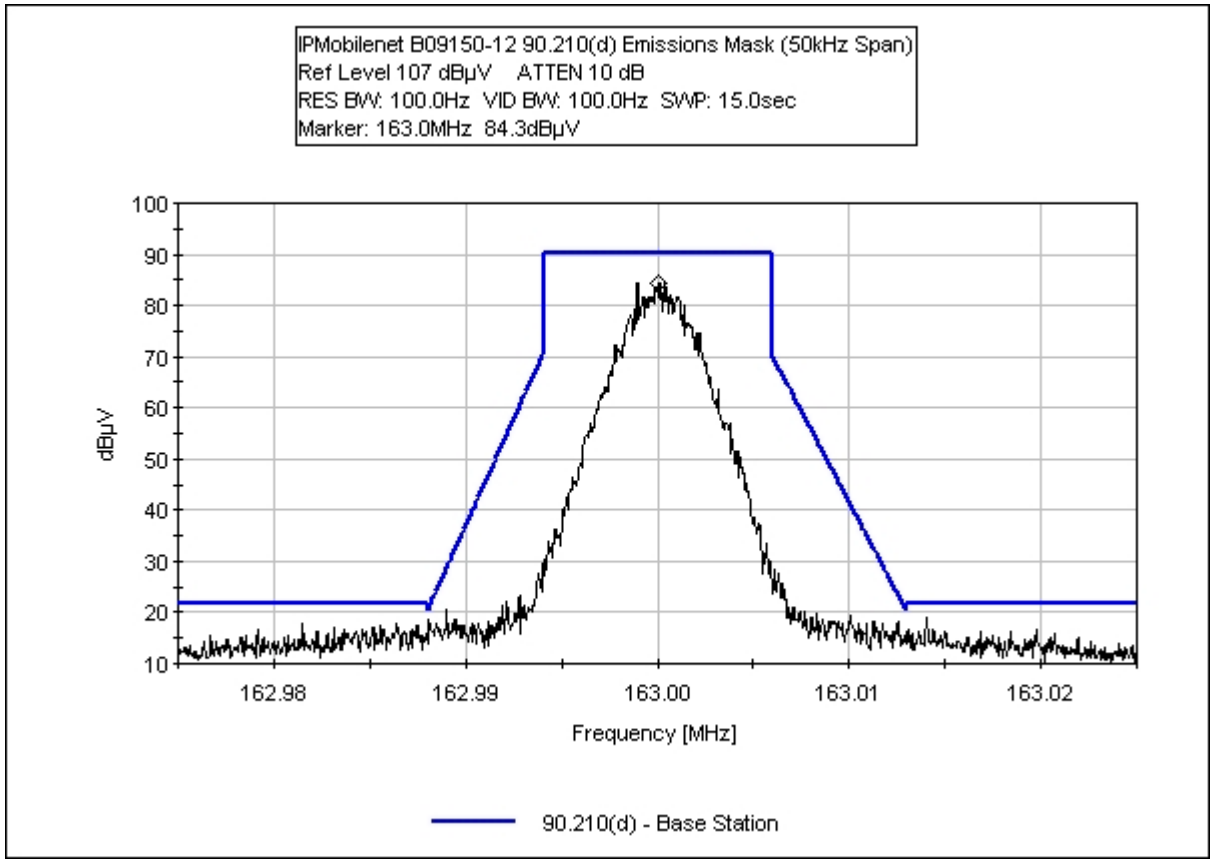
Transmit Frequency: 163 MHz
Temperature: 22ºC
Humidity: 45%

Frequency Range Investigated: Fundamental

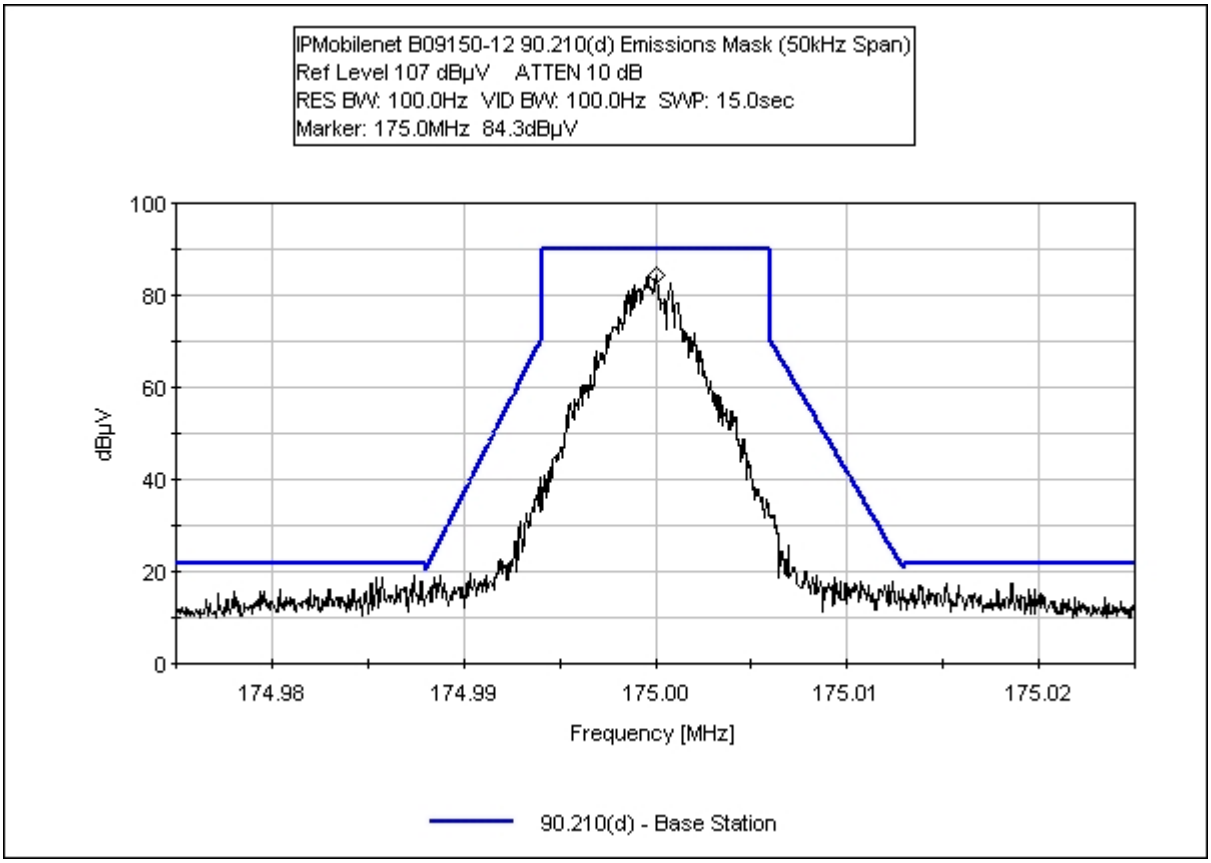
Bandwidth Settings: RBW=VBW=100Hz

Description	*Asset #*	*Manufacturer*	*Model #*	*Serial #*	*Cal Date*	*Cal Due*
Attenuator	P02229	Pasternack	PE7010-10	NA	9/5/03	9/4/05
Attenuator	P01630	JFW	50FHC-014-20	NA	5/9/03	5/8/04
Attenuator		Pasternack	PE7021-40	NA	10/20/03	10/20/04
Preselector	00484	HP	85685A	2510A00167	2/24/03	2/24/04
Spectrum Analyzer 100Hz - 22.5GHz	00490	HP	8566B	2209A01404	2/26/03	2/26/04
Spectrum Analyzer Display	00489	HP	8566B	2403A08241	2/26/03	2/26/04
Spectrum Analyzer QP Adapter	00478	HP	85650A	2811A01267	2/26/03	2/26/04
Cable #5 (20')	P04275	Andrew	FSJ1-50A	HF-005-20	6/3/03	6/2/05

FCC 2.1033(c)(14)/2.1049(i)/90.210- EMISSIONS MASK – 163 MHz



FCC 2.1033(c)(14)/2.1049(i)/90.210- EMISSIONS MASK – 175 MHz



47 CFR 90.210(d)
Calculation of Spurious Emissions Mask

Carrier Frequency:	163.000	MHz
Authorized Bandwidth:	12.5	kHz
Peak Modulated Power Output:	48.4000	dBm
Peak Modulated Power Output:	69.1831	Watts

Note: EUT is incapable of producing an unmodulated carrier.

Calculation of Attenuation Requirements:
P is the peak unmodulated carrier output power in Watts, and fd is the displacement frequency from the center of the authorized bandwidth in kHz.

NOTE: Only the endpoints are calculated. The limit line is linearly interpolated between the two points on a LOG - Linear scale.

90.210(d)(1)
On any frequency from the center of the authorized bandwidth f0 to 5.625 kHz removed from f0 : Zero dB.

90.210(d)(2)
On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 5.625 kHz but no more than 12.5 kHz: At least 7.27(fd - 2.88 kHz) dB

F(fd) = 7.27 * (fd - 2.88kHz)

F(5.625) =	20.0	dBc
F(12.5) =	69.9	dBc

90.210(g)(3)
On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 12.5 kHz: At least 50 + 10 log (P) dB or 70 dB, whichever is the lesser attenuation.

50 + 10*LOG(P) =	68.4
Lesser Attenuation is:	50+10*LOG(P)

47 CFR 90.210(d)
Calculation of Spurious Emissions Mask

Carrier Frequency:	175.000	MHz
Authorized Bandwidth:	12.5	kHz
Peak Modulated Power Output:	48.4000	dBm
Peak Modulated Power Output:	69.1831	Watts

Note: EUT is incapable of producing an unmodulated carrier.

Calculation of Attenuation Requirements:
P is the peak unmodulated carrier output power in Watts, and fd is the displacement frequency from the center of the authorized bandwidth in kHz.

NOTE: Only the endpoints are calculated. The limit line is linearly interpolated between the two points on a LOG - Linear scale.

90.210(d)(1)
On any frequency from the center of the authorized bandwidth f0 to 5.625 kHz removed from f0 : Zero dB.

90.210(d)(2)
On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 5.625 kHz but no more than 12.5 kHz: At least 7.27(fd - 2.88 kHz) dB

F(fd) = 7.27 * (fd - 2.88kHz)

F(5.625) =	20.0	dBc
F(12.5) =	69.9	dBc

90.210(g)(3)
On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 12.5 kHz: At least 50 + 10 log (P) dB or 70 dB, whichever is the lesser attenuation.

50 + 10*LOG(P) =	68.4
Lesser Attenuation is:	50+10*LOG(P)

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

Setup for Antenna conducted spurs:
EUT is a data radio for fixed use in the VHF frequency range. Equipment is DC powered by support power supply. Support laptop is used for configuration and testing purposes only. Output of antenna port is fed through suitable external attenuation to a spectrum analyzer.

Transmit Frequency: 163 MHz
Temperature: 22ºC
Humidity: 45%

Frequency Range Investigated: 10 MHz to 2.0 GHz

Plot Bandwidth Settings:
10MHz to 2000MHz - RBW=VBW=1kHz

Measurement Bandwidth Settings:
10 MHz to 1000 MHz - RBW=VBW=10kHz
1000 MHz to 2000 MHz - RBW=VBW=1MHz

Note: Plot indicates preliminary investigation, tabular data reflect proper measurement bandwidth settings.

Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer:	**IP Mobilenet**		
Specification:	**90.210(d) - Base Station**		
Work Order #:	**81317**	Date:	10/21/2003
Test Type:	**Antenna Terminals**	Time:	15:16:02
Equipment:	**Base Station Data Radio**	Sequence#:	4
Manufacturer:	IP Mobilenet	Tested By:	Randal Clark
Model:	B09150-12		
S/N:	03402485		

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

Function	Manufacturer	Model #	S/N
Base Station Data Radio	IP Mobilenet	B09150-12	03402485

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	SEC 1223	03061-2G04-00695
Laptop Power Supply	Go Forward Enterprise Corp.	NT24-1S1220	NA
Mouse	Microsoft	93633	02608451
Laptop Computer	Compaq	1456VQLIN	1V96CLS8W8PV

Test Conditions / Notes:

EUT is a data radio for fixed use in the VHF frequency range. Equipment is DC powered by support power supply. Support laptop is used for configuration and testing purposes only. Output of antenna port is fed through suitable external attenuation to a spectrum analyzer. Transmit Frequency: 163 MHz Temperature: 22ºC, Humidity: 45%. Frequency Range Investigated: 10 MHz to 2.0 GHz. Plot Bandwidth Settings: 10MHz to 2000MHz - RBW=VBW=1kHz. Measurement Bandwidth Settings: 10 MHz to 1000 MHz - RBW=VBW=10kHz, 1000 MHz to 2000 MHz - RBW=VBW=1MHz. Note: Plot indicates preliminary investigation, tabular data reflect proper measurement bandwidth settings.

Transducer Legend:

T1=10dB Attenuation	T2=14 dB Atten
T3=20' Cable	T4=40dB Atten

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	326.002M	20.1	+10.0	+14.2	+0.6	+40.6	+0.0	85.5	87.0	-1.5	None
2	163.000M	85.0	+10.0	+14.2	+0.4	+40.6	+0.0	150.2	155.4 Fundamental	-5.2	None
3	815.007M	14.3	+10.0	+14.2	+1.0	+40.7	+0.0	80.2	87.0	-6.8	None
4	489.004M	11.6	+10.0	+14.1	+0.8	+40.6	+0.0	77.1	87.0	-9.9	None
5	181.994M	9.9	+10.0	+14.1	+0.5	+40.6	+0.0	75.1	87.0	-11.9	None
6	182.123M	9.5	+10.0	+14.1	+0.5	+40.6	+0.0	74.7	87.0	-12.3	None
7	326.290M	8.2	+10.0	+14.2	+0.6	+40.6	+0.0	73.6	87.0	-13.4	None
8	206.171M	8.0	+10.0	+14.1	+0.5	+40.6	+0.0	73.2	87.0	-13.8	None
9	143.993M	7.2	+10.0	+14.2	+0.4	+40.6	+0.0	72.4	87.0	-14.6	None
10	19.006M	7.4	+10.0	+14.1	+0.2	+40.6	+0.0	72.3	87.0	-14.7	None
11	156.131M	6.6	+10.0	+14.2	+0.4	+40.6	+0.0	71.8	87.0	-15.2	None
12	67.048M	6.5	+10.0	+14.2	+0.3	+40.6	+0.0	71.6	87.0	-15.4	None
13	120.088M	6.4	+10.0	+14.2	+0.3	+40.6	+0.0	71.5	87.0	-15.5	None
14	96.052M	6.0	+10.0	+14.2	+0.3	+40.6	+0.0	71.1	87.0	-15.9	None
15	977.999M	4.9	+10.0	+14.2	+1.2	+40.7	+0.0	71.0	87.0	-16.0	None
16	42.986M	5.6	+10.0	+14.2	+0.3	+40.6	+0.0	70.7	87.0	-16.3	None
17	18.985M	5.3	+10.0	+14.1	+0.2	+40.6	+0.0	70.2	87.0	-16.8	None

18	132.071M	4.7	+10.0	+14.2	+0.4	+40.6	+0.0	69.9	87.0	-17.1	None
19	168.098M	4.5	+10.0	+14.2	+0.4	+40.6	+0.0	69.7	87.0	-17.3	None
20	119.956M	4.5	+10.0	+14.2	+0.3	+40.6	+0.0	69.6	87.0	-17.4	None
21	163.637M	4.2	+10.0	+14.2	+0.4	+40.6	+0.0	69.4	87.0	-17.6	None
22	194.150M	3.9	+10.0	+14.1	+0.5	+40.6	+0.0	69.1	87.0	-17.9	None

Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **IP Mobilenet**
Specification: **90.210(d) - Base Station**
Work Order #: **81317** Date: 10/21/2003
Test Type: **Antenna Terminals** Time: 14:49:31
Equipment: **Base Station Data Radio** Sequence#: 5
Manufacturer: IP Mobilenet Tested By: Randal Clark
Model: B09150-12
S/N: 03402484

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

Function	Manufacturer	Model #	S/N
Base Station Data Radio	IP Mobilenet	B09150-12	03402484

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	SEC 1223	03061-2G04-00695
Laptop Power Supply	Go Forward Enterprise Corp.	NT24-1S1220	NA
Mouse	Microsoft	93633	02608451
Laptop Computer	Compaq	1456VQLIN	1V96CLS8W8PV

Test Conditions / Notes:

EUT is a data radio for fixed use in the VHF frequency range. Equipment is DC powered by support power supply. Support laptop is used for configuration and testing purposes only. Output of antenna port is fed through suitable external attenuation to a spectrum analyzer. Transmit Frequency: 175 MHz. Temperature: 22ºC, Humidity: 45%. Frequency Range Investigated: 10 MHz to 2.0 GHz. Plot Bandwidth Settings: 10MHz to 2000MHz - RBW=VBW=1kHz. Measurement Bandwidth Settings: 10 MHz to 1000 MHz - RBW=VBW=10kHz, 1000 MHz to 2000 MHz - RBW=VBW=1MHz. Note: Plot indicates preliminary investigation, tabular data reflect proper measurement bandwidth settings.

Transducer Legend:

T1=10dB Attenuation	T2=14 dB Atten
T3=20' Cable	T4=40dB Atten

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	349.999M	20.2	+10.0	+14.2	+0.7	+40.7	+0.0	85.8	87.0	-1.2	None
2	175.000M	86.4	+10.0	+14.1	+0.5	+40.6	+0.0	151.6	155.4 Fundamental	-3.8	None
3	700.005M	13.4	+10.0	+14.1	+1.0	+40.7	+0.0	79.2	87.0	-7.8	None
4	875.001M	10.8	+10.0	+14.2	+1.1	+40.7	+0.0	76.8	87.0	-10.2	None
5	156.003M	9.8	+10.0	+14.2	+0.4	+40.6	+0.0	75.0	87.0	-12.0	None
6	349.935M	9.0	+10.0	+14.2	+0.7	+40.7	+0.0	74.6	87.0	-12.4	None
7	350.220M	9.0	+10.0	+14.2	+0.7	+40.7	+0.0	74.6	87.0	-12.4	None

8	144.122M	9.2	+10.0	+14.2	+0.4	+40.6	+0.0	74.4	87.0	-12.6	None
9	524.998M	8.7	+10.0	+14.1	+0.8	+40.6	+0.0	74.2	87.0	-12.8	None
10	156.131M	8.4	+10.0	+14.2	+0.4	+40.6	+0.0	73.6	87.0	-13.4	None
11	168.098M	8.3	+10.0	+14.2	+0.4	+40.6	+0.0	73.5	87.0	-13.5	None
12	55.013M	8.1	+10.0	+14.2	+0.3	+40.6	+0.0	73.2	87.0	-13.8	None
13	96.102M	6.6	+10.0	+14.2	+0.3	+40.6	+0.0	71.7	87.0	-15.3	None
14	78.986M	6.0	+10.0	+14.2	+0.3	+40.6	+0.0	71.1	87.0	-15.9	None
15	167.969M	5.9	+10.0	+14.2	+0.4	+40.6	+0.0	71.1	87.0	-15.9	None
16	194.150M	5.9	+10.0	+14.1	+0.5	+40.6	+0.0	71.1	87.0	-15.9	None
17	182.080M	5.4	+10.0	+14.1	+0.5	+40.6	+0.0	70.6	87.0	-16.4	None
18	120.055M	5.4	+10.0	+14.2	+0.3	+40.6	+0.0	70.5	87.0	-16.5	None
19	79.064M	5.3	+10.0	+14.2	+0.3	+40.6	+0.0	70.4	87.0	-16.6	None
20	169.127M	5.0	+10.0	+14.1	+0.5	+40.6	+0.0	70.2	87.0	-16.8	None
21	175.346M	5.0	+10.0	+14.1	+0.5	+40.6	+0.0	70.2	87.0	-16.8	None
22	181.994M	4.9	+10.0	+14.1	+0.5	+40.6	+0.0	70.1	87.0	-16.9	None
23	119.956M	4.9	+10.0	+14.2	+0.3	+40.6	+0.0	70.0	87.0	-17.0	None

Description	***Asset #***	***Manufacturer***	***Model #***	***Serial #***	***Cal Date***	***Cal Due***
Attenuator	P02229	Pasternack	PE7010-10	NA	9/5/03	9/4/05
Attenuator	P01630	JFW	50FHC-014-20	NA	5/9/03	5/8/04
Attenuator		Pasternack	PE7021-40	NA	10/20/03	10/20/04
Preselector	00484	HP	85685A	2510A00167	2/24/03	2/24/04
Spectrum Analyzer 100Hz - 22.5GHz	00490	HP	8566B	2209A01404	2/26/03	2/26/04
Spectrum Analyzer Display	00489	HP	8566B	2403A08241	2/26/03	2/26/04
Spectrum Analyzer QP Adapter	00478	HP	85650A	2811A01267	2/26/03	2/26/04
Cable #5 (20')	P04275	Andrew	FSJ1-50A	HF-005-20	6/3/03	6/2/05

PHOTOGRAPH SHOWING DIRECT CONNECT EMISSIONS

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

Test Conditions: EUT is a data radio for fixed use in the VHF frequency range. Equipment is DC powered by support power supply. Support laptop is used for configuration and testing purposes only. Output of antenna port is fed through suitable external attenuation to a spectrum analyzer. Transmit Frequency: 163 and 175 MHz. Temperature: 22ºC, Humidity: 45%. Frequency Range Investigated: 10 MHz to 2.0 GHz. Measurement Bandwidth Settings: 10 MHz to 1000 MHz - RBW=VBW=10kHz, 1000 MHz to 2000 MHz - RBW=VBW=1MHz. **No EUT emissions detected within 20dB of the limit.**

Description	*Asset #*	*Manufacturer*	*Model #*	*Serial #*	*Cal Date*	*Cal Due*
Antenna, Biconilog	01991	Chase	CBL6111C	2456	12/13/02	12/12/04
Antenna, Loop	00226	EMCO	6502	1074	5/21/03	5/20/05
Antennna, Horn 18-26GHz	02046	ARA	MWH-1826/B	1005	7/1/03	6/30/04
Preamp	02010	HP	8449B	3008A00301	10/18/02	10/17/04
Preamp	00099	HP	8447D	1937A02604	3/7/03	3/6/04
Spectrum Analyzer 100Hz - 22.5GHz	00490	HP	8566B	2209A01404	2/26/03	2/26/04
Spectrum Analyzer Display	00489	HP	8566B	2403A08241	2/26/03	2/26/04
Spectrum Analyzer QP Adapter	00478	HP	85650A	2811A01267	2/26/03	2/26/04

PHOTOGRAPH SHOWING RADIATED EMISSIONS

Radiated Emissions - Front View

Radiated Emissions - Back View

FCC 2.1033(c)(14)/2.1055/90.213- FREQUENCY STABILITY AND VOLTAGE VARIATIONS

Test Conditions: EUT is a data radio for fixed use in the VHF frequency range. Equipment is DC powered by support power supply. Support laptop is used for configuration and testing purposes only. Output of antenna port is fed through suitable external attenuation to a spectrum analyzer. Input supply voltage is varied ±15% of nominal.

Customer: IP Mobilenet
WO#: 81317
Date: 27-Oct-03
Test Engineer: Randal Clark

Device Model #: B09150-12
Operating Voltage: 13.8 **VDC**
Frequency Limit: 2.5 **PPM**

Temperature Variations

Channel Frequency:		Channel 1 (MHz) 163	Dev. (MHz)	Channel 2 (MHz) 175	Dev. (MHz)
Temp (C)	Voltage				
-30	13.8	163.00026	0.00026	174.99971	0.00029
-20	13.8	163.00023	0.00023	174.99974	0.00027
-10	13.8	162.99996	0.00004	174.99968	0.00032
0	13.8	162.99993	0.00007	174.99968	0.00032
10	13.8	162.99988	0.00012	174.99967	0.00033
20	13.8	163.00004	0.00003	174.99984	0.00016
30	13.8	162.99992	0.00009	174.99984	0.00017
40	13.8	162.99996	0.00005	174.99980	0.00020
50	13.8	163.00004	0.00003	174.99975	0.00026

Voltage Variations (±15%)

20	11.7	163.00005	0.00005	174.99978	0.00023
20	13.8	163.00004	0.00003	174.99984	0.00016
20	15.9	163.00001	0.00001	174.99981	0.00019

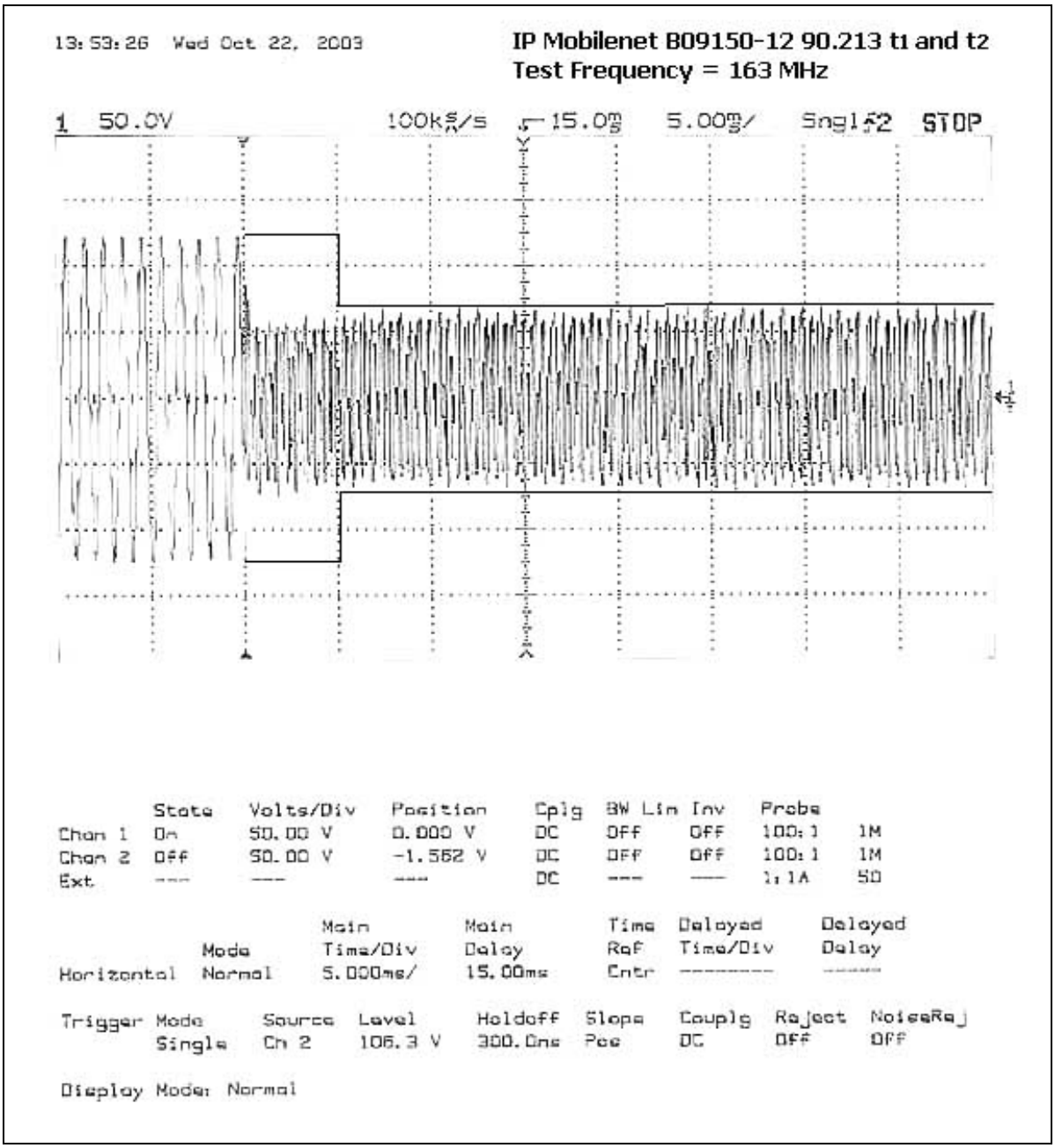
Max Deviation (MHz)	**0.00026**		**0.00033**
Max Deviation (PPM)	**1.56442**		**1.88571**
	PASS		**PASS**

Description	*Asset #*	*Manufacturer*	*Model #*	*Serial #*	*Cal Date*	*Cal Due*
Spectrum Analyzer 100Hz - 22.5GHz	00490	HP	8566B	2209A01404	2/26/03	2/26/04
Spectrum Analyzer Display	00489	HP	8566B	2403A08241	2/26/03	2/26/04
Spectrum Analyzer QP Adapter	00478	HP	85650A	2811A01267	2/26/03	2/26/04
Temp Chamber	01879	Thermotron	S-1.2 MiniMax	11899	1/31/03	1/31/04
Thermometer	02242	Omega	HH-26K	T-202884	8/15/03	8/14/05
Power Supply, DC	00765	Sorensen	DCR-60-30B	176	7/8/03	7/7/05

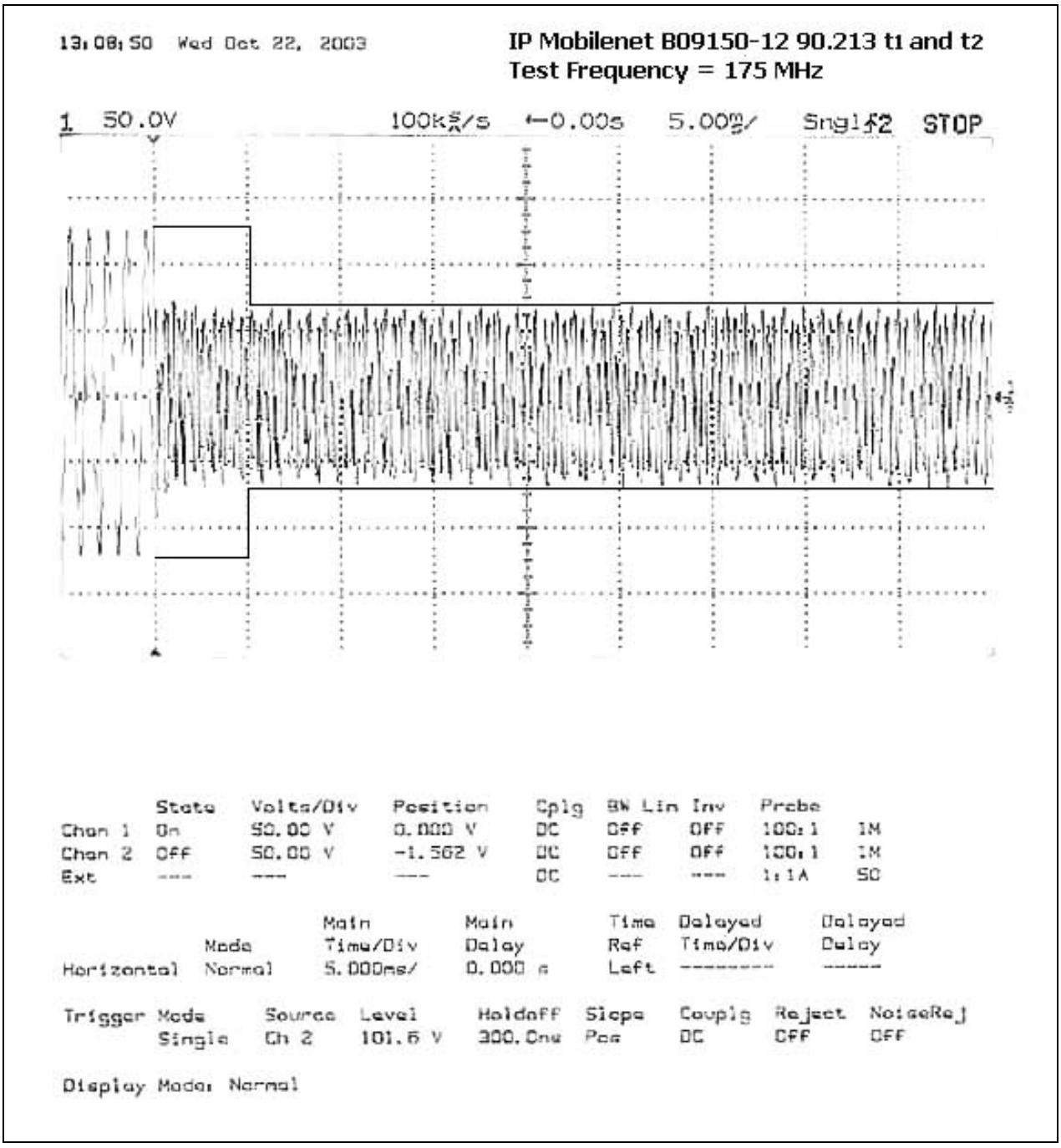
PHOTOGRAPH SHOWING TEMPERATURE TESTING

FCC 90.214 TRANSIENT FREQUENCY BEHAVIOR
T1&T2 - 163 MHz

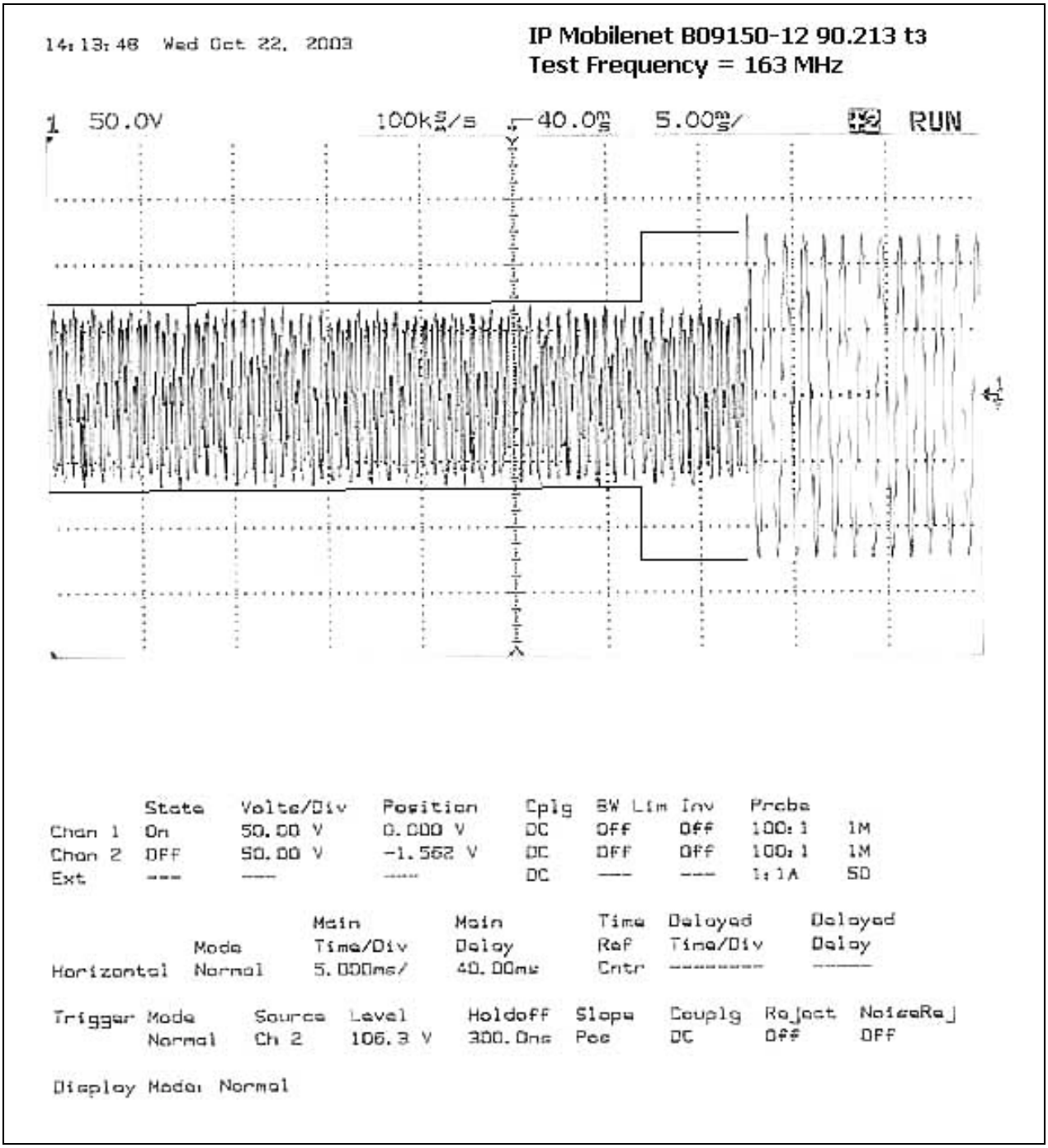
Test Conditions: EUT is a data radio for fixed use in the VHF frequency range. Equipment is DC powered by support power supply. Support laptop is used for configuration and testing purposes only. Test setup in accordance with TIA 603.



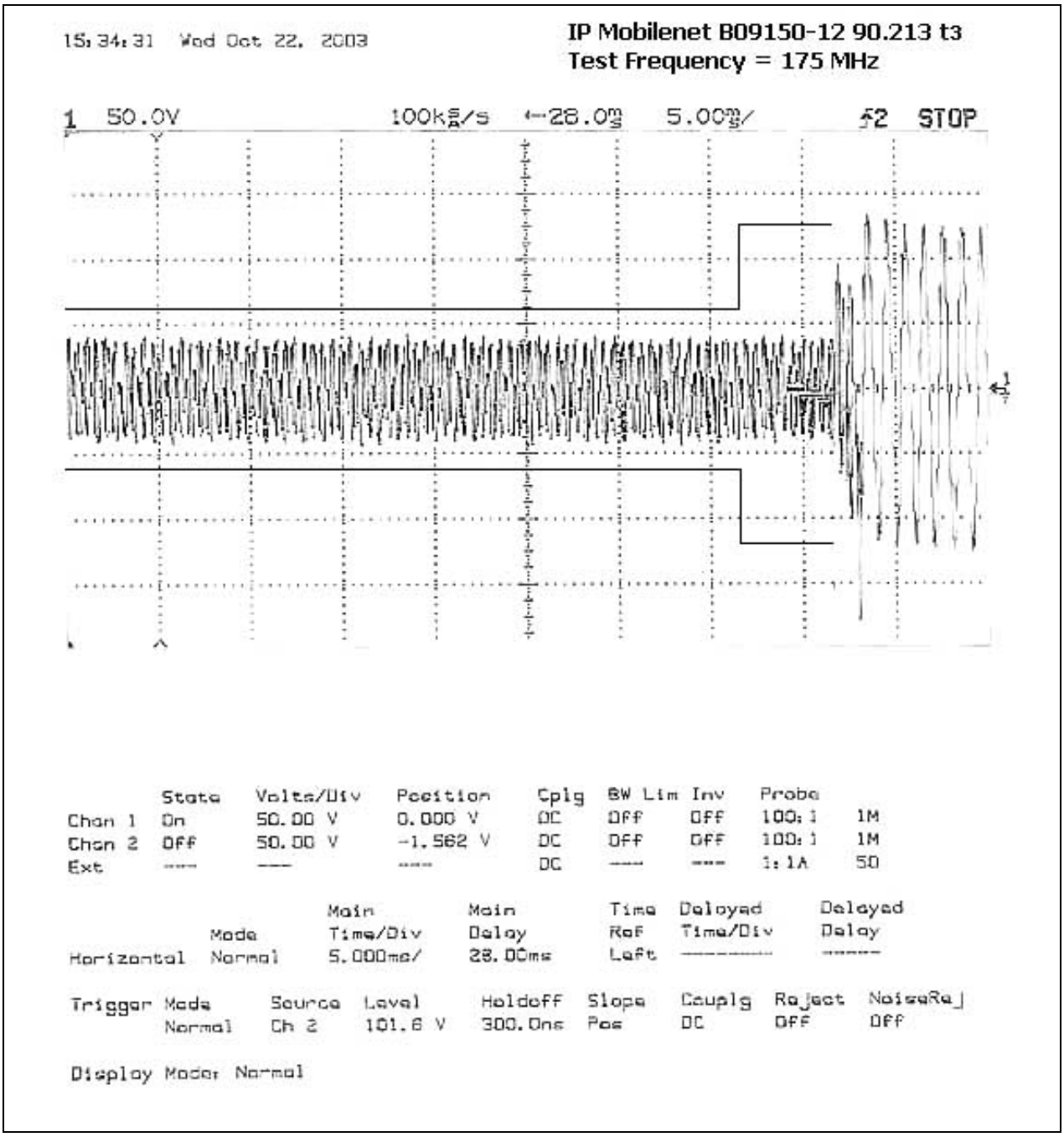
FCC 90.214 T1&T2 - 175 MHz



FCC 90.214 T3 - 163 MHz

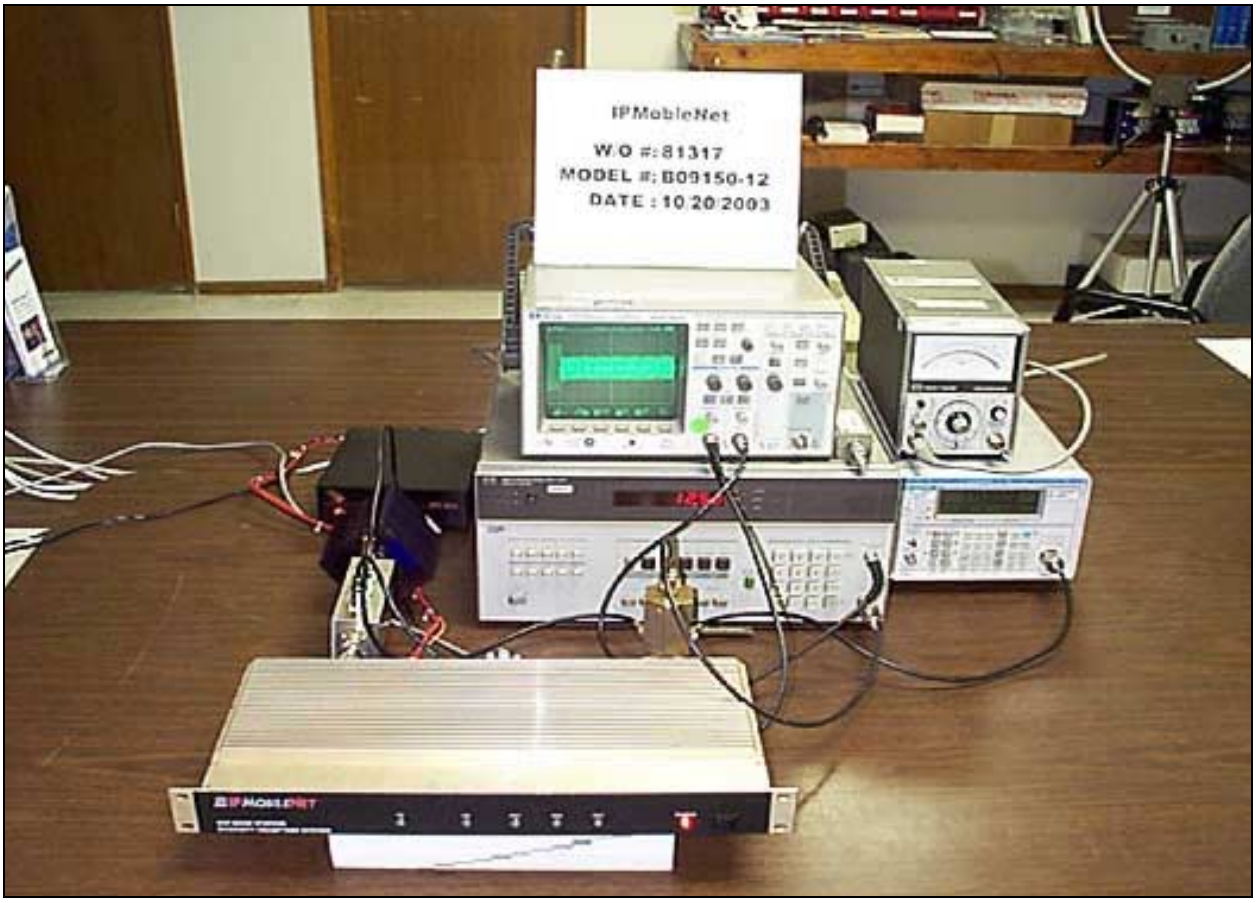


FCC 90.214 T3 - 175 MHz



Description	*Asset #*	*Manufacturer*	*Model #*	*Serial #*	*Cal Date*	*Cal Due*
Analyzer, Modulation	02072	HP	8901A	2751A05181	11/27/02	11/27/03
Oscilloscope	02313	HP	84615B	US373340347	1/2/03	1/2/04
Power Meter	00613	HP	435B	2702A16632	8/12/02	8/11/04
Directional Coupler	2576	Werlatone	C5571	11363	11/6/02	11/6/03
Generator, Signal	01870	Marconi	2022D	119259/016	9/5/02	9/4/04
Power Sensor	00774	HP	8481A	2349A41124	8/12/02	8/11/04

PHOTOGRAPH SHOWING TRANSIENT FREQUENCY BEHAVIOR



RSS 119 20dB BANDWIDTH