



IP MOBILENET TEST REPORT

FOR THE

BASE STATION DATA RADIO, B32450-25

FCC PART 90

COMPLIANCE

DATE OF ISSUE: JANUARY 21, 2004

PREPARED FOR:

IP MobileNet
16842 Von Karman Avenue
Irvine, CA 92606

P.O. No.: 003041-00
W.O. No.: 81737

PREPARED BY:

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

Date of test: January 14-19, 2004

Report No.: FC04-009

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ADMINISTRATIVE INFORMATION

DATE OF TEST: January 14-19, 2004

DATE OF RECEIPT: January 14, 2004

PURPOSE OF TEST: To demonstrate the compliance of the Base Station Data Radio, B32450-25 with the requirements for FCC Part 90 devices.

TEST METHOD: FCC Part 90

FREQUENCY RANGE TESTED: 5 MHz - 5000 MHz

MANUFACTURER: IP MobileNet
16842 Von Karman Avenue
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 Base Station Data Radio, B32450-25 was found to be fully compliant with the following standards and specifications:

United States

➤ FCC Part 90

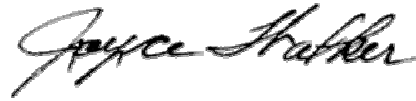
CONDITIONS FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

APPROVALS

Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:

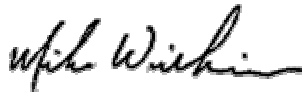


Joyce Walker, Quality Assurance Administrative Manager

TEST PERSONNEL:



Randy Clark, EMC Engineer



Mike Wilkinson, Lab Manager

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: B32450-25
Serial: 04020176
FCC ID: Pending

PERIPHERAL DEVICES

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

Laptop Computer

Manuf: Compaq
Model: 1456VQLIN
Serial: 1V96CLS8W8PV
FCC ID: DoC

Mouse

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

Laptop Power Supply

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

Power Supply

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

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

15K0F1D.

FCC 2.1033 (c)(5) FREQUENCY RANGE

450 MHz & 465 MHz.

FCC 2.1033 (c)(6) OPERATING POWER

45.71 Watts.

FCC 2.1033 (c)(7) MAXIMUM POWER RATING

Subject to secondary site licensing. See FCC Part 90.205.

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

The necessary information is contained in a separate document.

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

Frequency (MHz)	RF Power Output (Watts)
450	39.81
465	45.71

EUT is a data radio for Fixed/Base use in the UHF 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 power meter.

Temperature: 22°C

Humidity: 38%

Test Equipment

Description	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Attenuator, 40dB		Pasternack	PE7021-40		10/20/03	10/19/05
Power Meter	00613	HP	435B	2702A16632	8/12/02	8/11/04
Power Sensor	02392	HP	8482A	2652A16108	1/31/03	1/30/05

PHOTOGRAPH SHOWING DIRECT CONNECT EMISSIONS



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

Not applicable to this unit.

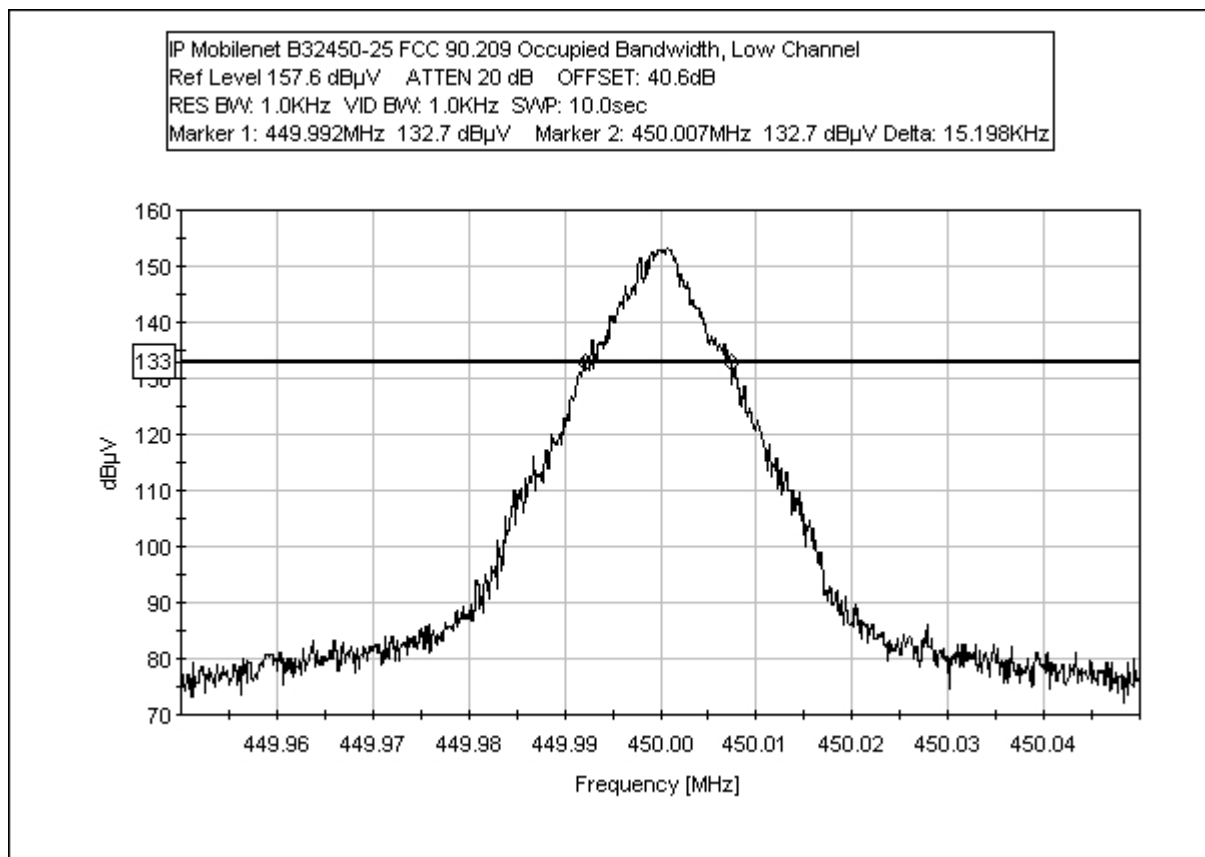
**FCC 2.1033(c)(14)/2.1047(b) MODULATION CHARACTERISTICS– Modulation
Limiting Response**

Not applicable to this unit.

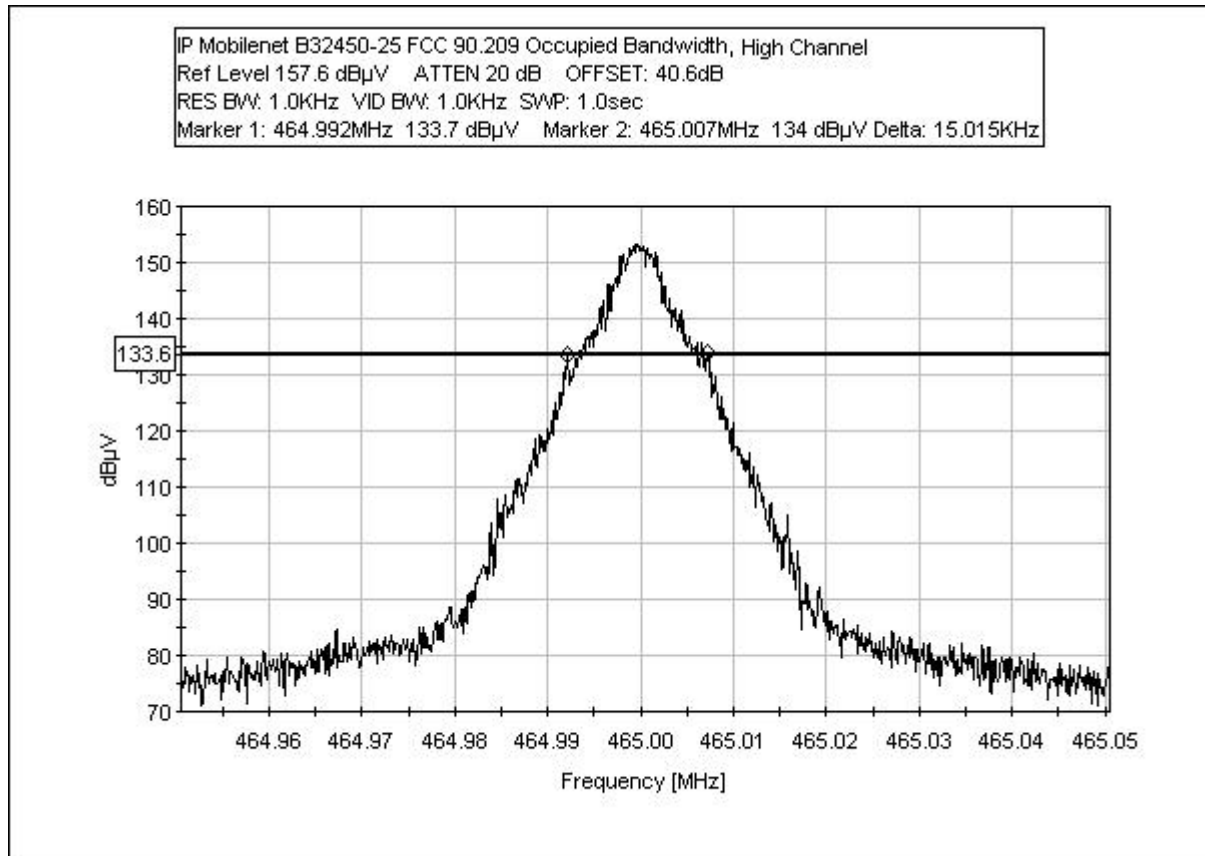
FCC 2.1033(c)(14)/2.1049(i)/90.209- OCCUPIED BANDWIDTH

Test Conditions: EUT is a data radio for Fixed/Base use in the UHF 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: 21°C, Humidity: 35%. Frequency Range Investigated: Carrier.

FCC 90.209 20dB OCCUPIED BANDWIDTH, LOW CHANNEL



FCC 90.209 20dB OCCUPIED BANDWIDTH, HIGH CHANNEL



47 CFR 90.210(c)
Calculation of Spurious Emissions Mask

Carrier Frequency:	450.000	MHz
Authorized Bandwidth:	25.0	kHz
Peak Unmodulated Power Output:	46.0000	dBm
Peak Unmodulated Power Output:	39.8107	Watts

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(c)(1)

On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 5 kHz, but not more than 10 kHz: At least $83 \log (fd/5)$ dB;

$$F(fd) = 83 * \text{LOG}(fd/5)$$

F(5) =	0.0	dBc
F(10) =	25.0	dBc

90.210(c)(2)

On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 10 kHz, but not more than 250 percent of the authorized bandwidth: At least $29 \log (fd^2/11)$ dB or 50 dB, whichever is the lesser attenuation;

Point	fd (kHz)	$29\text{LOG}(fd^2/11)$	
1	10	27.8	50
2	24.1	50.0	50

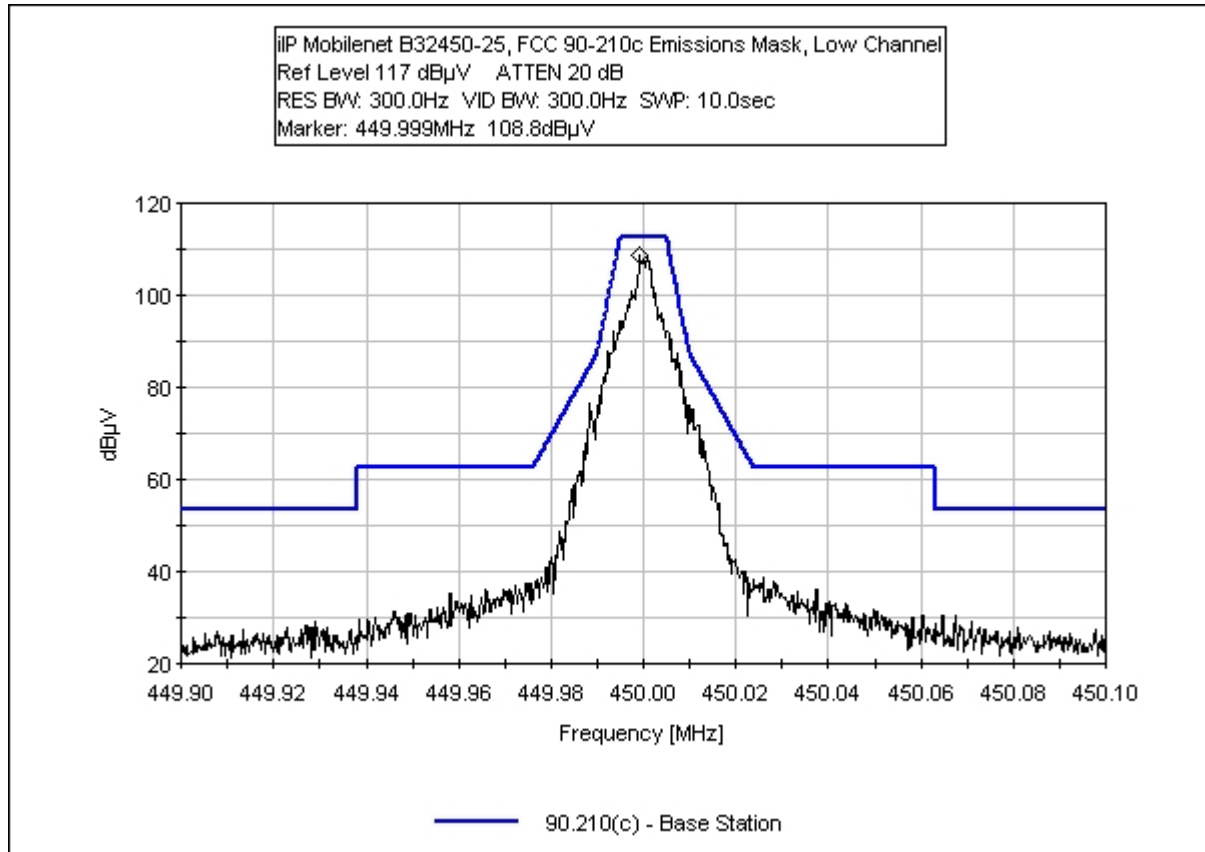
Point 2 is when $29\text{LOG}(fd^2/11)$ is equal to 50

90.210(c)(3)

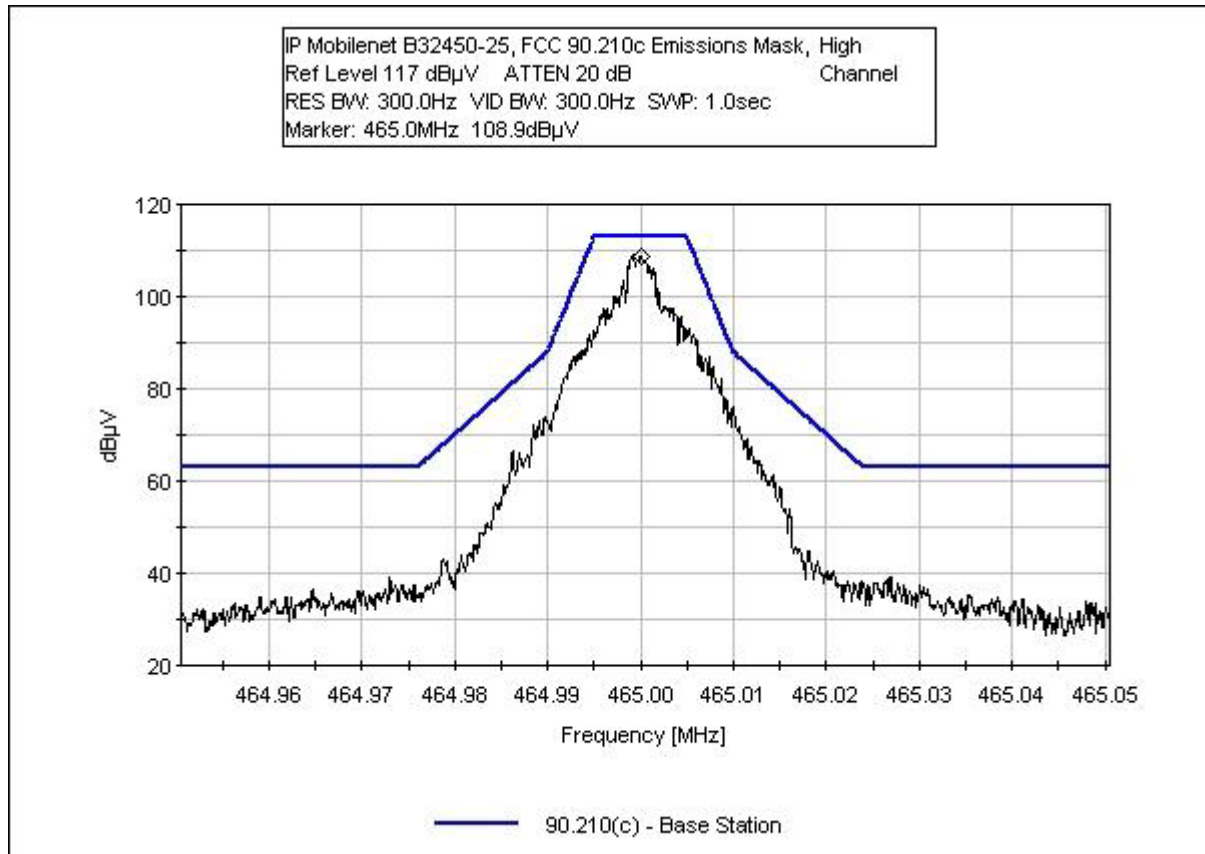
On any frequency removed from the center of the authorized bandwidth by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log (P)$ dB.

$$43 + 10\text{LOG}(P) = 59.0$$

FCC 2.1033(c)(14)/2.1049/90.210(c) EMISSIONS MASK, LOW CHANNEL



FCC 90.210(c) EMISSIONS MASK, HIGH CHANNEL



Test Equipment

<i>Description</i>	<i>Asset #</i>	<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Cal Date</i>	<i>Cal Due</i>
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
Attenuator, 40dB		Pasternack	PE7021-40		10/20/03	10/19/05

PHOTOGRAPH SHOWING DIRECT CONNECT EMISSIONS



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

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

Customer: **IP Mobilenet**

Specification: **90.210(c) - Base Station**

Work Order #: **81737**

Date: 01/14/2004

Test Type: **Antenna Terminals Conducted Emissions**

Time: 16:48:36

Equipment: **Base Station Data Radio**

Sequence#: 1

Manufacturer: IP Mobilenet

Tested By: Mike Wilkinson

Model: B32450-25

13.8 VDC

S/N: 04020176

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Base Station Data Radio*	IP Mobilenet	B32450-25	04020176

Support Devices:

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

Test Conditions / Notes:

EUT is a data radio for Fixed/Base use in the UHF 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: 450 MHz. Temperature: 21°C, Humidity: 35%. Frequency Range Investigated: 5 MHz to 5000 MHz. Measurement Bandwidth Settings: 10 MHz to 1000 MHz - RBW=VBW=10kHz, 1000 MHz to 2000 MHz - RBW=VBW=1MHz.

Transducer Legend:

T1=Pad 40dB Atten

Measurement Data:

Reading listed by margin.

Test Lead: RF Output

#	Freq MHz	Rdng dBμV	T1 dB	dB	dB	dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	449.997M	112.4	+40.6				+0.0	153.0	153.0	+0.0	RF Ou
									Carrier-Low Channel		
2	2700.003M	51.3	+40.8				+0.0	92.1	94.0	-1.9	RF Ou
3	3150.005M	50.4	+40.8				+0.0	91.2	94.0	-2.8	RF Ou
4	1799.995M	46.9	+40.8				+0.0	87.7	94.0	-6.3	RF Ou
5	4049.988M	45.2	+40.8				+0.0	86.0	94.0	-8.0	RF Ou

6	1349.998M	41.8	+40.8	+0.0	82.6	94.0	-11.4	RF Ou
7	439.600M	41.0	+40.7	+0.0	81.7	94.0	-12.3	RF Ou
8	900.001M	40.7	+40.7	+0.0	81.4	94.0	-12.6	RF Ou
9	900.000M	39.7	+40.7	+0.0	80.4	94.0	-13.6	RF Ou
10	4950.000M	37.8	+40.8	+0.0	78.6	94.0	-15.4	RF Ou
11	3599.991M	35.7	+40.8	+0.0	76.5	94.0	-17.5	RF Ou
12	480.200M	35.7	+40.6	+0.0	76.3	94.0	-17.7	RF Ou
13	2249.992M	34.7	+40.8	+0.0	75.5	94.0	-18.5	RF Ou
14	4500.003M	34.6	+40.8	+0.0	75.4	94.0	-18.6	RF Ou
15	420.200M	34.1	+40.7	+0.0	74.8	94.0	-19.2	RF Ou
16	470.200M	33.9	+40.6	+0.0	74.5	94.0	-19.5	RF Ou
17	490.100M	33.4	+40.6	+0.0	74.0	94.0	-20.0	RF Ou
18	460.200M	33.2	+40.6	+0.0	73.8	94.0	-20.2	RF Ou
19	275.400M	29.4	+40.6	+0.0	70.0	94.0	-24.0	RF Ou
20	91.390M	29.4	+40.6	+0.0	70.0	94.0	-24.0	RF Ou
21	20.640M	28.5	+40.6	+0.0	69.1	94.0	-24.9	RF Ou
22	4.750M	27.6	+40.6	+0.0	68.2	94.0	-25.8	RF Ou

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

Customer: **IP Mobilenet**

Specification: **90.210(c) - Base Station**

Work Order #: **81737**

Date: 01/15/2004

Test Type: **Antenna Terminals Conducted Emissions**

Time: 14:00:13

Equipment: **Base Station Data Radio**

Sequence#: 2

Manufacturer: IP Mobilenet

Tested By: Mike Wilkinson

Model: B32450-25

13.8 VDC

S/N: 03453045

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Base Station Data Radio*	IP Mobilenet	B32450-25	03453045

Support Devices:

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

Test Conditions / Notes:

EUT is a data radio for Fixed/Base use in the UHF 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: 465 MHz. Temperature: 21°C Humidity: 35%. Frequency Range Investigated: 5 MHz to 5000 MHz. Measurement Bandwidth Settings: 10 MHz to 1000 MHz - RBW=VBW=10kHz, 1000 MHz to 2000 MHz - RBW=VBW=1MHz.

Transducer Legend:

T1=Pad 40dB Atten

Measurement Data:

Reading listed by margin.

Test Lead: RF Output

#	Freq MHz	Rdng dBμV	T1 dB				Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	465.000M	113.0	+40.6				+0.0	153.6	153.6	+0.0	RF Ou
									Carrier-Mid Channel		
2	1394.998M	50.0	+40.8				+0.0	90.8	94.0	-3.2	RF Ou
3	3255.005M	42.2	+40.8				+0.0	83.0	94.0	-11.0	RF Ou
4	2324.990M	38.4	+40.8				+0.0	79.2	94.0	-14.8	RF Ou
5	1859.997M	36.5	+40.8				+0.0	77.3	94.0	-16.7	RF Ou
6	930.003M	35.4	+40.7				+0.0	76.1	94.0	-17.9	RF Ou
7	4184.992M	35.2	+40.8				+0.0	76.0	94.0	-18.0	RF Ou

8	4650.024M	35.0	+40.8	+0.0	75.8	94.0	-18.2	RF Ou
9	3720.018M	32.4	+40.8	+0.0	73.2	94.0	-20.8	RF Ou
10	466.655M	30.7	+40.6	+0.0	71.3	94.0	-22.7	RF Ou
11	102.100M	25.7	+40.6	+0.0	66.3	94.0	-27.7	RF Ou
12	421.700M	23.4	+40.7	+0.0	64.1	94.0	-29.9	RF Ou
13	9.050M	20.4	+40.6	+0.0	61.0	94.0	-33.0	RF Ou

Test Equipment

<i>Description</i>	<i>Asset #</i>	<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Cal Date</i>	<i>Cal Due</i>
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
Attenuator, 40dB		Pasternack	PE7021-40		10/20/03	10/19/05

PHOTOGRAPH SHOWING DIRECT CONNECT EMISSIONS



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

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

Customer: **IP Mobilenet**

Specification: **FCC 90.210**

Work Order #: **81737**

Date: 01/16/2004

Test Type: **Maximized Emissions**

Time: 14:02:37

Equipment: **Base Station Data Radio**

Sequence#: 3

Manufacturer: IP Mobilenet

Tested By: Mike Wilkinson

Model: B32450-25

S/N: 04020176

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Base Station Data Radio*	IP Mobilenet	B32450-25	04020176

Support Devices:

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

Test Conditions / Notes:

EUT is a data radio for Fixed/Base use in the UHF 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 terminated with 50 Ohm termination through a 40 dB attenuator. Transmit Frequency 450.000 MHz, Low Channel. Temperature: 22°C, Humidity: 35%. Frequency Range Investigated: 5 MHz to 5000 MHz. 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.**

Transducer Legend:

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Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	dB	dB	dB	dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
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Test Location: CKC Laboratories • 5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **IP Mobilenet**

Specification: **FCC 90.210**

Work Order #: **81737**

Date: 01/16/2004

Test Type: **Maximized Emissions**

Time: 14:06:13

Equipment: **Base Station Data Radio**

Sequence#: 4

Manufacturer: IP Mobilenet

Tested By: Mike Wilkinson

Model: B32450-25

S/N: 04020176

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Base Station Data Radio	IP Mobilenet	B32450-25	03453045

Support Devices:

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

Test Conditions / Notes:

EUT is a data radio for Fixed/Base use in the UHF 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 terminated with 50 Ohm termination through a 40 dB attenuator. Transmit Frequency 465.000 MHz, Low Channel. Temperature: 22°C, Humidity: 35%. Frequency Range Investigated: 5 MHz to 5000 MHz. 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.**

Transducer Legend:

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

#	Freq MHz	Rdng dBμV					Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
---	-------------	--------------	--	--	--	--	---------------	--------------	--------------	--------------	--------------

Test Equipment

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
Antenna, Horn 1-18 GHz	00326	EMCO	3115	3413	4/25/03	4/25/05
Preamplifier	02010	HP	8449B	3008A00301	10/18/02	10/17/04
Preamplifier	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
50 Ohm Termination	P04243	JFW	50T-022	N/A	5/9/03	5/9/05
Attenuator, 40dB		Pasternack	PE7021-40		10/20/03	10/19/05

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View



Radiated Emissions - Back View

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

Test Conditions: EUT is a data radio for Fixed/Base use in the UHF frequency range. EUT is placed inside a temperature chamber with all support equipment exterior. 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: 21°C, Humidity: 35%.

Customer: IP Mobilenet
WO#: 81737
Date: 17-Jan-04
Test Engineer: Randal Clark

Device Model #: B32450-25
Operating Voltage: 13.8 VDC
Frequency Limit: 2.5 PPM

Temperature Variations

Channel Frequency:		Channel 1 (MHz)	Dev. (MHz)	Channel 2 (MHz)	Dev. (MHz)
		450.000		465.000	
Temp (C)	Voltage				
-30	13.8	450.00109	0.00109	465.00085	0.00085
-20	13.8	450.00090	0.00090	465.00074	0.00074
-10	13.8	450.00086	0.00086	465.00068	0.00068
0	13.8	450.00043	0.00043	465.00030	0.00029
10	13.8	450.00032	0.00032	465.00022	0.00022
20	13.8	450.00028	0.00027	465.00020	0.00020
30	13.8	450.00024	0.00023	465.00009	0.00009
40	13.8	450.00005	0.00005	464.99967	0.00033
50	13.8	449.99981	0.00019	464.99950	0.00050

Voltage Variations (±15%)

20	11.7	450.00024	0.00024	465.00024	0.00023
20	13.8	450.00026	0.00026	465.00020	0.00020
20	15.9	450.00022	0.00022	465.00022	0.00022
Max Deviation (MHz)		0.00109		0.00085	
Max Deviation (PPM)		2.42222		1.82796	
		PASS		PASS	

Test Equipment

<i>Description</i>	<i>Asset #</i>	<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Cal Date</i>	<i>Cal Due</i>
Digital Multimeter	01241	Radio Shack	22-183	NA		NR
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	1/31/05
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
Attenuator, 40dB		Pasternack	PE7021-40		10/20/03	10/19/05

NR = Not Required

PHOTOGRAPH SHOWING TEMPERATURE TESTING



FCC 2.1091 – MPE CALCULATIONS

Maximum Permissible Exposure Calculations

Date of Report: 1-15-04

Calculations prepared for:

IP Mobilenet

Calculations prepared by:

Mike Wilkinson

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

Model Number: B32450-25

Fundamental Operating Frequency: 450 - 480 MHz

Maximum Rated Output Power: 40 Watts

Measured Output Power: Low Channel, 39.81
450 MHz

Measured Output Power: High Channel, 45.71
465 MHz

MPE Limit in accordance with 1.1310(b): Limits for general population/uncontrolled exposure

$$\text{MPE Limit} = 0.3 \text{ (mW/cm}^2\text{)}$$

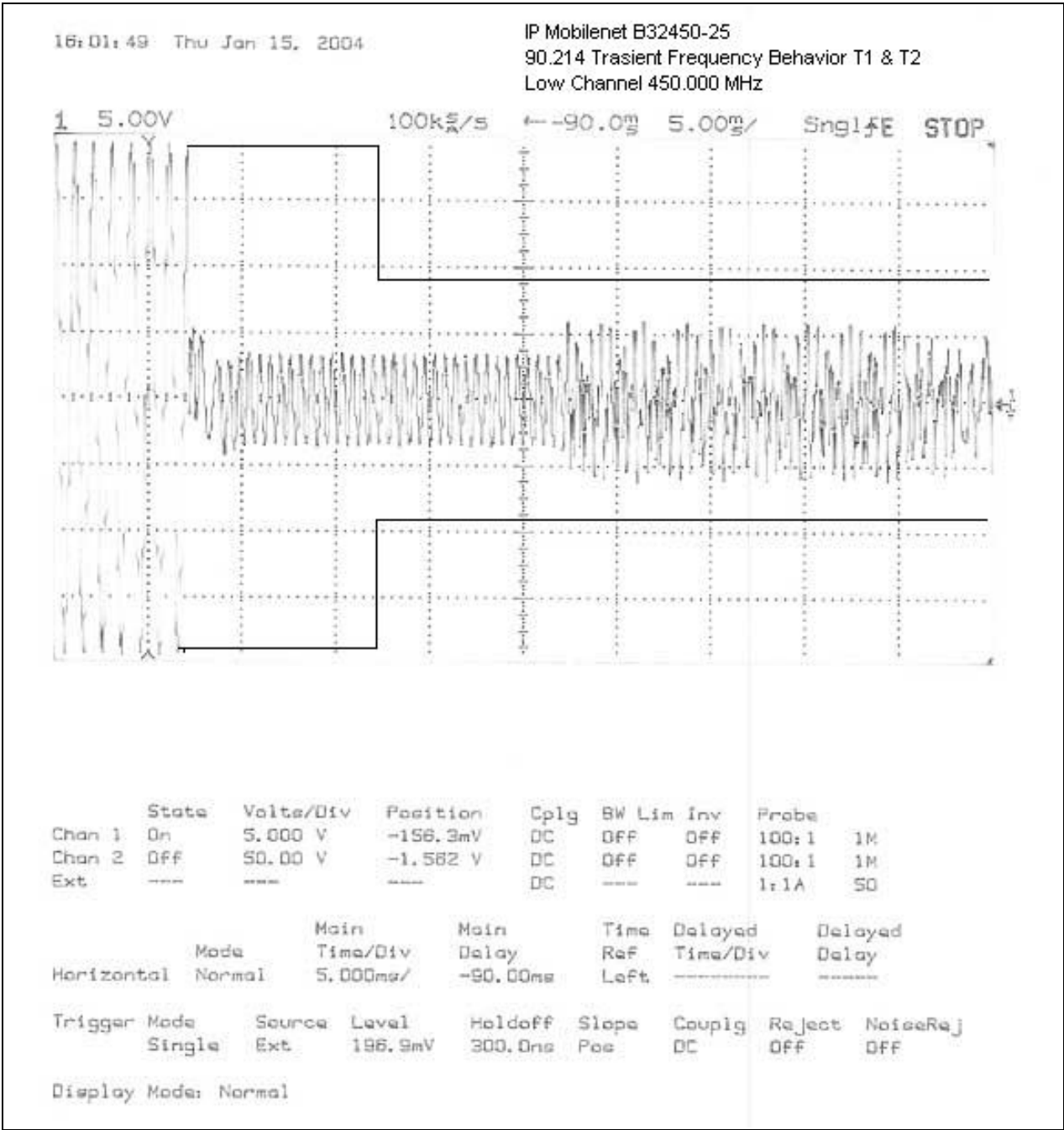
EIRP (mW)	Distance (meters)	Power Density (mW/cm ²)	Result
39810.72 (450MHz)	1.0276	0.3	Pass
45708.82 (465MHz)	1.1011	0.3	Pass

$$\text{PowerDensity(mW / cm}^2\text{)} = \frac{\text{EIRP}}{4\pi d^2} \quad \text{Given: EIRP in mW and d in cm}$$

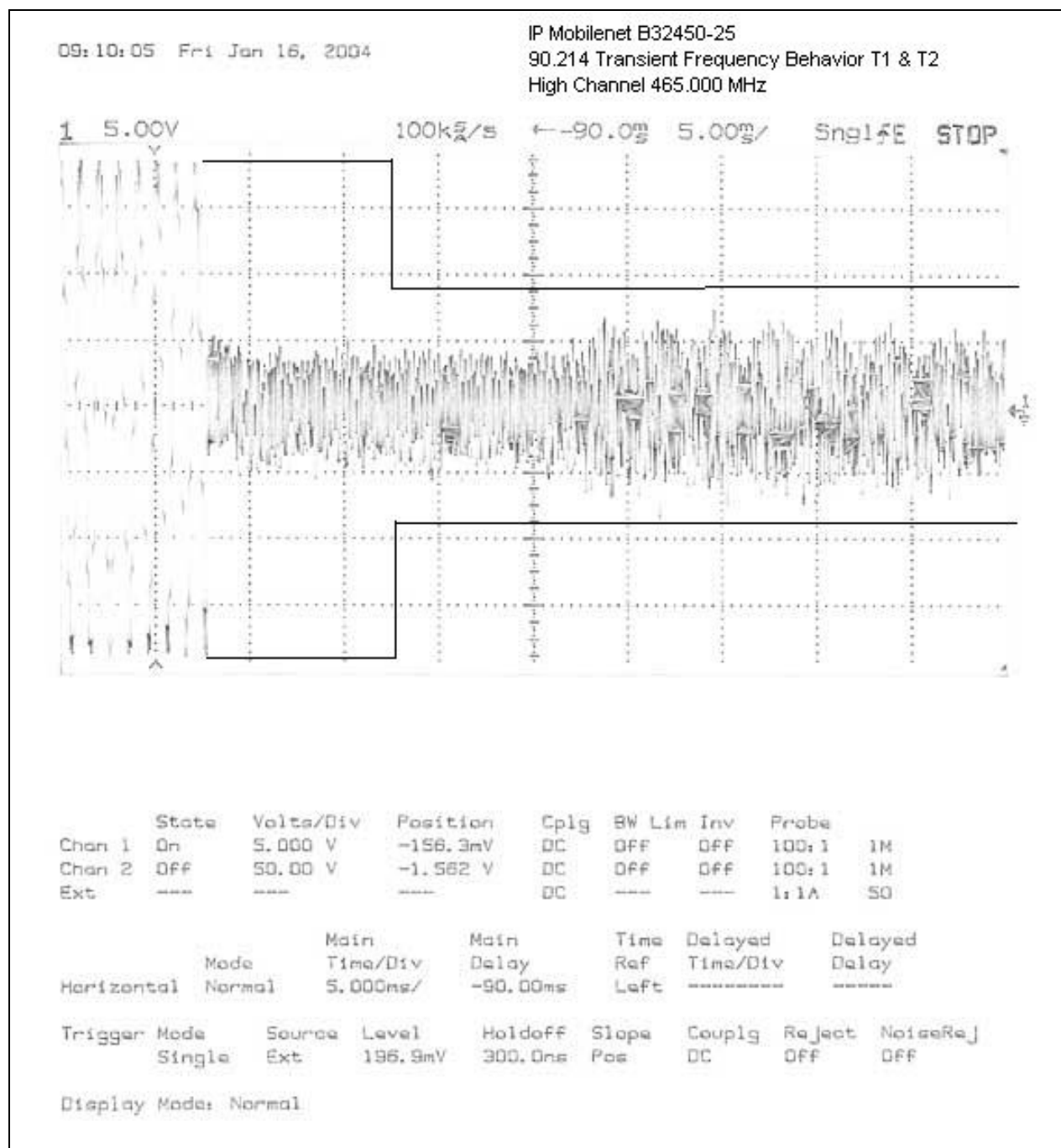
Note: Antennae are not sold with this equipment; EIRP is listed assuming a 0dBi gain antenna.

As can be seen from the MPE results, this device passes the limits specified in 1.1310 at a distance of 1.1011 meters and at a output power of 45.71 watts assuming a 0dBi gain antenna. Users and installers must be provided with appropriate antenna installation instructions and transmitter operating conditions, including antenna co-location requirements of §1.1307(b)(3), for satisfying RF exposure compliance.

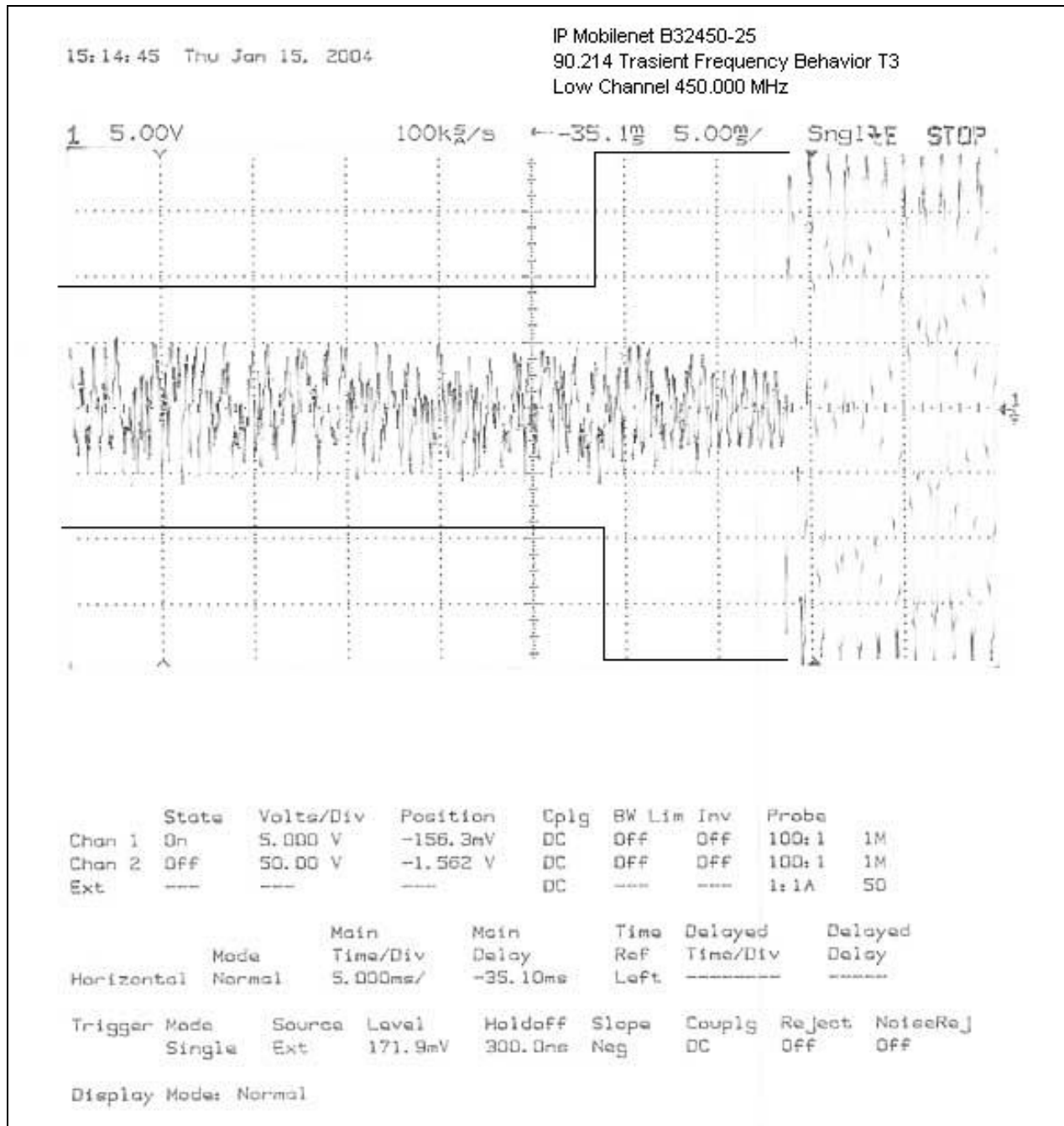
FCC 90.214 TRANSIENT FREQUENCY BEHAVIOR, T1-T2 LOW CHANNEL



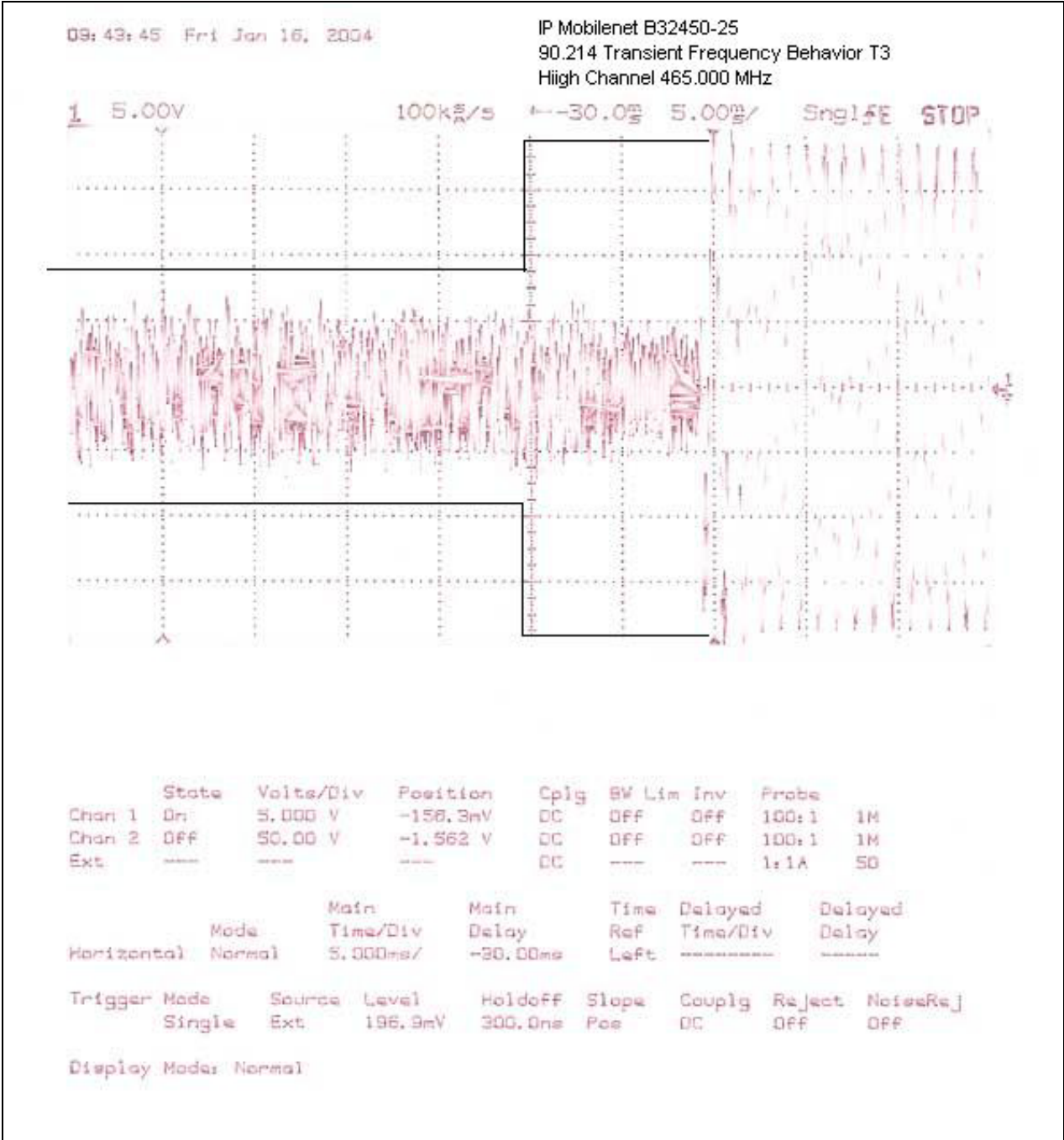
FCC 90.214 TRANSIENT FREQUENCY BEHAVIOR, T1-T2 HIGH CHANNEL



FCC 90.214 TRANSIENT FREQUENCY BEHAVIOR, T3 LOW CHANNEL



FCC 90.214 TRANSIENT FREQUENCY BEHAVIOR, T3 HIGH CHANNEL



Test Equipment

<i>Description</i>	<i>Asset #</i>	<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Cal Date</i>	<i>Cal Due</i>
Analyzer, Modulation	02072	HP	8901A	2751A05181	11/27/02	11/26/04
Oscilloscope	02313	HP	84615B	US373340347	1/2/03	1/20/05
Power Meter	00613	HP	435B	2702A16632	8/12/02	8/11/04
Power Sensor	02392	HP	8482A	2652A16108	1/31/03	1/30/05
Generator, Signal	01469	HP	8673C	2822A00551	9/13/02	9/12/04

FCC 90.214 TRANSIENT FREQUENCY BEHAVIOR SETUP

