



ADDENDUM TO IP MOBILENET TEST REPORT FC03-075A

FOR THE

DATA MOBILE RADIO, M32150-25

FCC PART 90

COMPLIANCE

DATE OF ISSUE: SEPTEMBER 8, 2004

PREPARED FOR:

IP Mobilenet
16842 Von Karman Avenue
Irvine, CA 92606

P.O. No.: 003500-00
W.O. No.: 81579

PREPARED BY:

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

Date of test: June 24 – July 22, 2004

Report No.: FC03-075B

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ADMINISTRATIVE INFORMATION

DATE OF TEST: June 24 – July 22, 2004

DATE OF RECEIPT: June 24, 2004

PURPOSE OF TEST: To demonstrate the compliance of the Mobile Station Data Radio, M32150-25 with the requirements for FCC Part 90 devices.
Addendum A is to demonstrate the compliance of the Data Mobile Radio, M32150-25 with the requirements for FCC Part 90 devices after the frequency range was extended.
Addendum B is to revise the emissions designator to match the new bandwidth testing.

TEST METHOD: FCC Part 90

FREQUENCY RANGE TESTED: 5 MHz-2 GHz

MANUFACTURER: IP Mobilenet
16842 Von Karman Avenue
Irvine, CA 92606

REPRESENTATIVE: Jim Lukes

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

SUMMARY OF RESULTS

As received, the IP Mobilenet Data Mobile Radio, M32150-25 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:



Stuart Yamamoto, EMC Engineer



Mike Wilkinson, Lab Manager

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The EUT tested by CKC Laboratories was a production unit

EQUIPMENT UNDER TEST

Data Mobile Radio

Manuf: IP Mobilenet
Model: M32150-25
Serial: 04242381
FCC ID: MI7-M32150-25

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 Computer

Manuf: Panasonic
Model: CF-27
Serial: CF-27EB6GCEM
FCC ID: DoC

High Power Termination

Manuf: Pasternack
Model: PE7021-40
Serial: NA
FCC ID: DoC

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

151-170 MHz

FCC 2.1033 (c)(6) OPERATING POWER

59.9 Watts

FCC 2.1033 (c)(7) MAXIMUM POWER RATING

Subject to secondary licensing.

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

FSK

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

Frequency (MHz)	RF Power Output (Watts)
151	59.9
157	58.5
170	53.7

Test Conditions : EUT is a data radio for mobile 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 power meter. Temperature: 21°C, Humidity: 51%.

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
RF Power meter	02082	HP	435B	2445A11881	061704	061706
Power Sensor	02036	HP	8482A	1551A01004	061806	061806

PHOTOGRAPH SHOWING RF POWER TEST SETUP



Note: The model name in the placard is incorrect. It should read M32150-25.

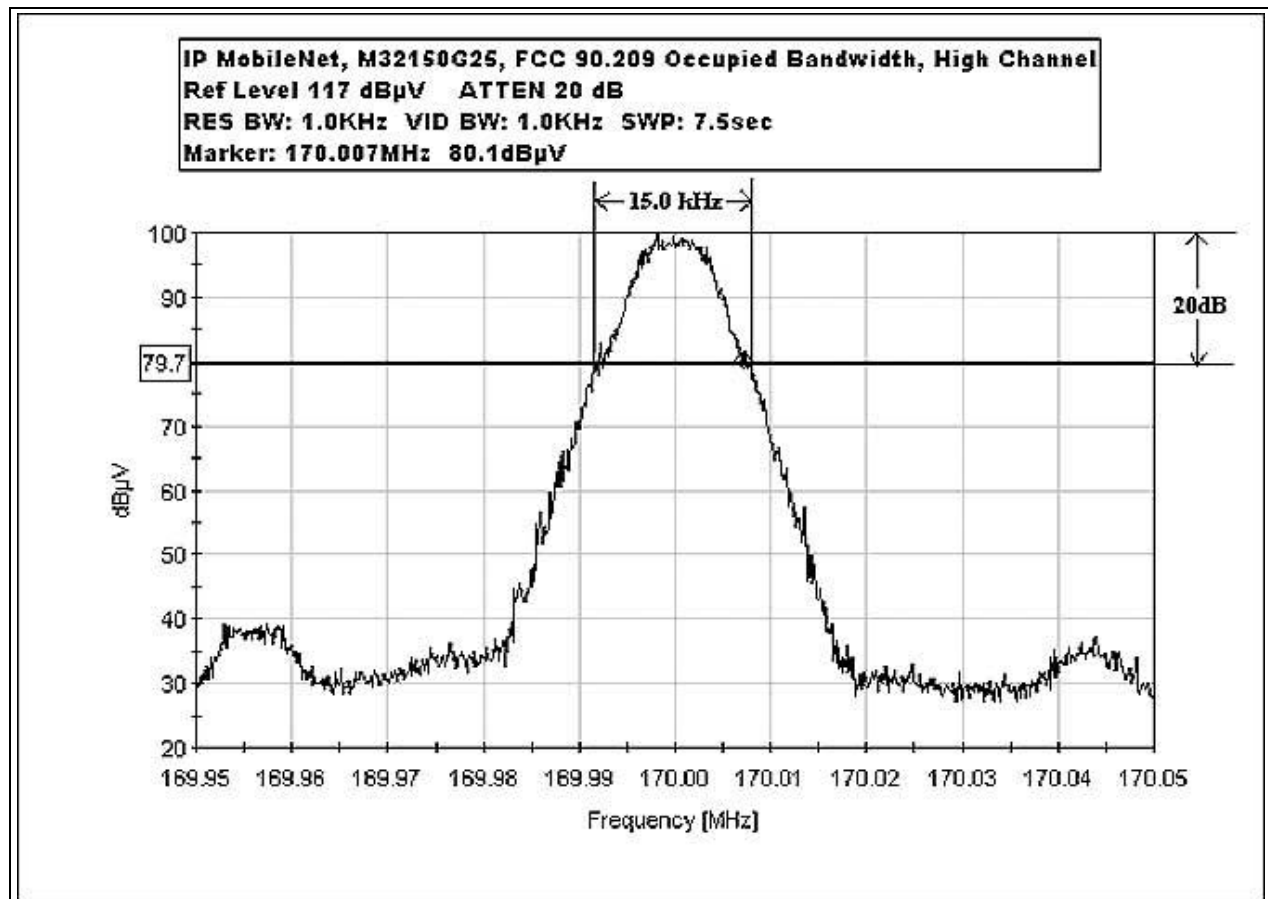
**FCC 2.1033(c)(14)/2.1047(a) - MODULATION CHARACTERISTICS - AUDIO
FREQUENCY RESPONSE**

Not applicable to this unit.

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

Not applicable to this unit.

FCC 90.209 20dB OCCUPIED BANDWIDTH



Test Equipment

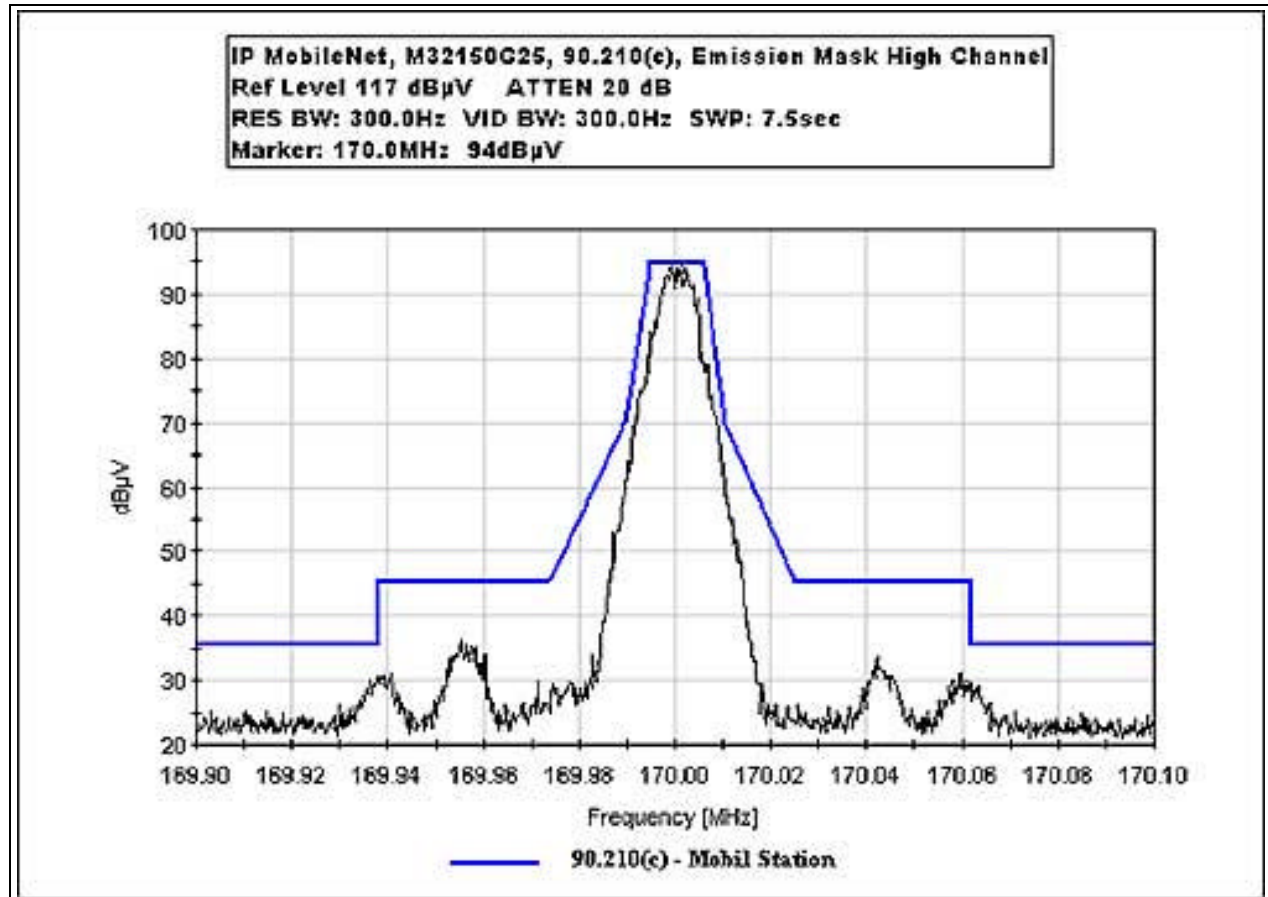
Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02467	Agilent	E7405A	US40240225	033103	033105
24" SMA Cable	2604	Argosy	UFA147A	0-0360-200200	012304	012305

PHOTOGRAPH SHOWING OCCUPIED BANDWIDTH TEST SETUP



Note: The model name in the placard is incorrect. It should read M32150-25.

FCC 90.210(c) EMISSIONS MASK



Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02467	Agilent	E7405A	US40240225	033103	033105
24" SMA Cable	2604	Argosy	UFA147A	0-0360-200200	012304	012305

PHOTOGRAPH SHOWING EMISSIONS MASK TEST SETUP



Note: The model name in the plackard is incorrect. It should read M32150-25.

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: **FCC 90.210**

Work Order #: **81579**

Date: 06/25/2004

Test Type: **Maximized Emissions**

Time: 08:32:42

Equipment: **Data Mobile Radio**

Sequence#: 2

Manufacturer: IP Mobilenet

Tested By: Stuart Yamamoto

Model: M32150-25

S/N: 04242381

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Data Mobile Radio*	IP Mobilenet	M32150-25	04242381

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	SEC 1223	03061-2G04-00695
Laptop Computer	Panasonic	CF-27	CF-27EB6GCEM
High Power Termination	Pasternack	PE7021-40	

Test Conditions / Notes:

The EUT is a data radio for mobile use in the VHF frequency range. The EUT is DC powered by support power supply. The support laptop is used for configuration and testing purposes only and is place remote from the test site. The EUT output antenna port is terminated with high power 50 Ohm termination. Transmit Frequency 170.000 MHz, High Channel. Temperature: 25°C, Humidity: 59%, Pressure: 100kPa. Frequency Range Investigated: 5 MHz to 2000 MHz. Measurement Bandwidth Settings: 5 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:

T1=SMA Cable 1-40GHz AN2604_012305	T2=10dB Attenuator
------------------------------------	--------------------

Measurement Data:

Reading listed by margin.

Test Distance: None

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	170.000M	101.1	+0.0	+10.0			+0.0	111.1	94.8	+16.3	Horiz
Fundamental											
2	339.998M	55.4	+0.0	+10.0			+0.0	65.4	94.8	-29.4	Horiz
3	1190.002M	44.5	+0.3	+10.0			+0.0	54.8	94.8	-40.0	Horiz
4	1020.002M	43.7	+0.3	+10.0			+0.0	54.0	94.8	-40.8	Horiz
5	509.989M	31.5	+0.0	+10.0			+0.0	41.5	94.8	-53.3	Horiz
6	679.985M	29.4	+0.0	+10.0			+0.0	39.4	94.8	-55.4	Horiz
7	850.002M	28.2	+0.0	+10.0			+0.0	38.2	94.8	-56.6	Horiz

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02467	Agilent	E7405A	US40240225	033103	033105
24" SMA Cable	2604	Argosy	UFA147A	0-0360-200200	012304	012305

PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP

Note: The model name in the placard is incorrect. It should read M32150-25.

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 90.210C OATS**

Work Order #: **81579**

Date: 06/24/2004

Test Type: **Maximized Emissions**

Time: 14:46:14

Equipment: **Data Mobile Radio**

Sequence#: 1

Manufacturer: IP Mobilenet

Tested By: Stuart Yamamoto

Model: M32150-25

S/N: 04242381

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Data Mobile Radio*	IP Mobilenet	M32150-25	04242381

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Samlex America	SEC 1223	03061-2G04-00695
Laptop Computer	Panasonic	CF-27	CF-27EB6GCEM
High Power Termination	Pasternack	PE7021-40	

Test Conditions / Notes:

The EUT is a data radio for mobile use in the VHF frequency range. The EUT is DC powered by support power supply. The support laptop is used for configuration and testing purposes only and is placed remote from the test site. The EUT output antenna port is terminated with high power 50 Ohm termination. Transmit Frequency 170.000 MHz, High Channel. Temperature: 25°C, Humidity: 59%, Pressure: 100kPa. Frequency Range Investigated: 5 MHz to 2000 MHz. Measurement Bandwidth Settings: 5 MHz to 1000 MHz - RBW=VBW=10kHz, 1000 MHz to 2000 MHz - RBW=VBW=1MHz. **No EUT emissions detected within 20dB of the limit.**

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer RF Section	00312	HP	8568A	2049A01287	073102	073104
Spectrum Analyzer Display Section	00034	HP	85662A	2349A06091	081902	081904
Quasi Peak Adapter	02325	HP	85650A	2521A00932	073102	073104
Bilog Antenna	00851	Schaffner- Chase EMC	CBL6111C	2629	031604	031606
Antenna cable (10 meter site D)	NA	Andrew	LDF1-50	Cable#17	100203	100204
Antenna cable from bulkhead to antenna	N/A	Pasternack	RG-214/U	Cable #33	032904	032905
Preamp to SA Cable (3 feet)	NA	Pasternack	E100316-I	Cable #22	100603	100604
Pre-amp	00010	HP	8447D	2727A05392	071602	071604
Antenna cable (Helix)	NA	Andrew	LDF1-50	Cable#19	101303	101304
Horn Antenna	01646	EMCO	3115	9603-4683	042503	042505
24" SMA Cable	2604	Argosy	UFA147A	0-0360-200200	012304	012305
Microwave Pre-amp	00787	HP	83017A	3123A00282	042303	042305
Magnetic Loop Antenna	00314	Emco	6502	2014	072302	072304
Spectrum Analyzer	02467	Agilent	E7405A	US40240225	033103	033105

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View

Note: The model name in the placard is incorrect. It should read M32150-25.

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Back View

Note: The model name in the placard is incorrect. It should read M32150-25.

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

Customer: IP Mobilenet
WO#: 81579
Date: 05-Dec-03 06/28/2004
Test Engineer: Mike Wilkinson Stuart Yamamoto

Device Model #: M32150-25 M32150-25
Operating Voltage: 13.8 VDC
Frequency Limit: 5 PPM

Temperature Variations

Channel Frequency:		Channel 1 (MHz)	Dev. (MHz)	Channel 2 (MHz)	Dev. (MHz)
		151		170	
Temp (C)	Voltage				
-30	13.8	150.99963	0.00037	169.99939	0.00061
-20	13.8	150.99976	0.00024	169.99945	0.00055
-10	13.8	150.99990	0.00010	169.99972	0.00028
0	13.8	151.00036	0.00036	169.99981	0.00019
10	13.8	151.00036	0.00036	169.99995	0.00005
20	13.8	151.00036	0.00036	170.00001	0.00001
30	13.8	151.00036	0.00036	170.00001	0.00001
40	13.8	151.00036	0.00036	170.00001	0.00001
50	13.8	151.00036	0.00036	170.00001	0.00001

Voltage Variations (±15%)

20	11.7	151.00039	0.00039	170.00001	0.00001
20	13.8	151.00041	0.00041	170.00001	0.00001
20	15.9	151.00043	0.00043	170.00001	0.00001

Max Deviation (MHz)	0.00043
Max Deviation (PPM)	2.84768
	PASS

0.00061
3.58235
PASS

Note: EUT settings were changed as follows:

Txsync time=2000, was 20

Txtail time=50, was 5

Txquiet time=50, 10

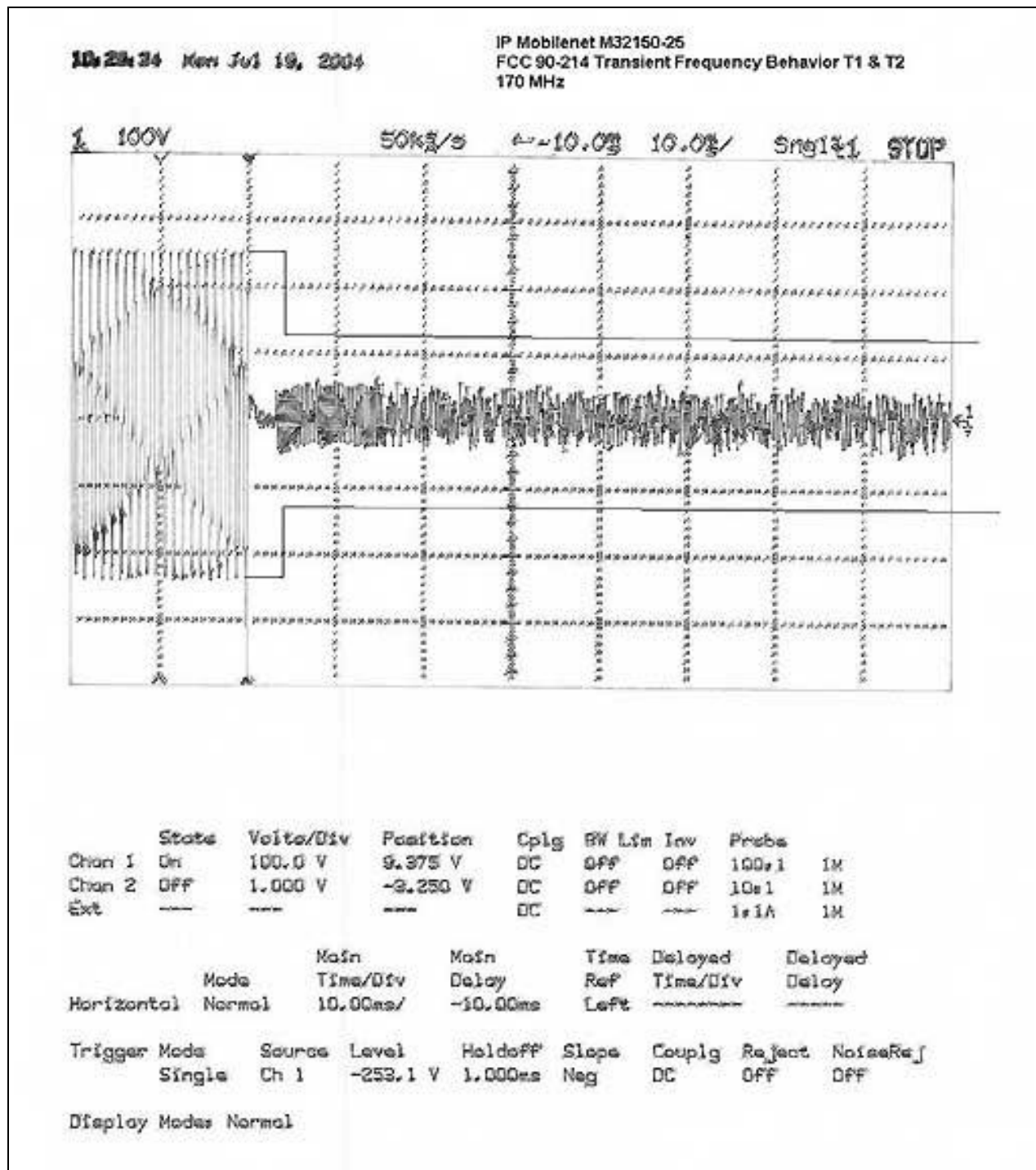
Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer RF Section	00312	HP	8568A	2049A01287	073102	073104
Spectrum Analyzer Display Section	00034	HP	85662A	2349A06091	081902	08190404
Quasi Peak Adapter	02325	HP	85650A	2521A00932	073102	073104
Digital Multimeter	01830	Fluke	45	6949042	12/12/04	12/12/04
Temperature Chamber	01878	Thermotron	S1.2 Mini	7470	080703	080704

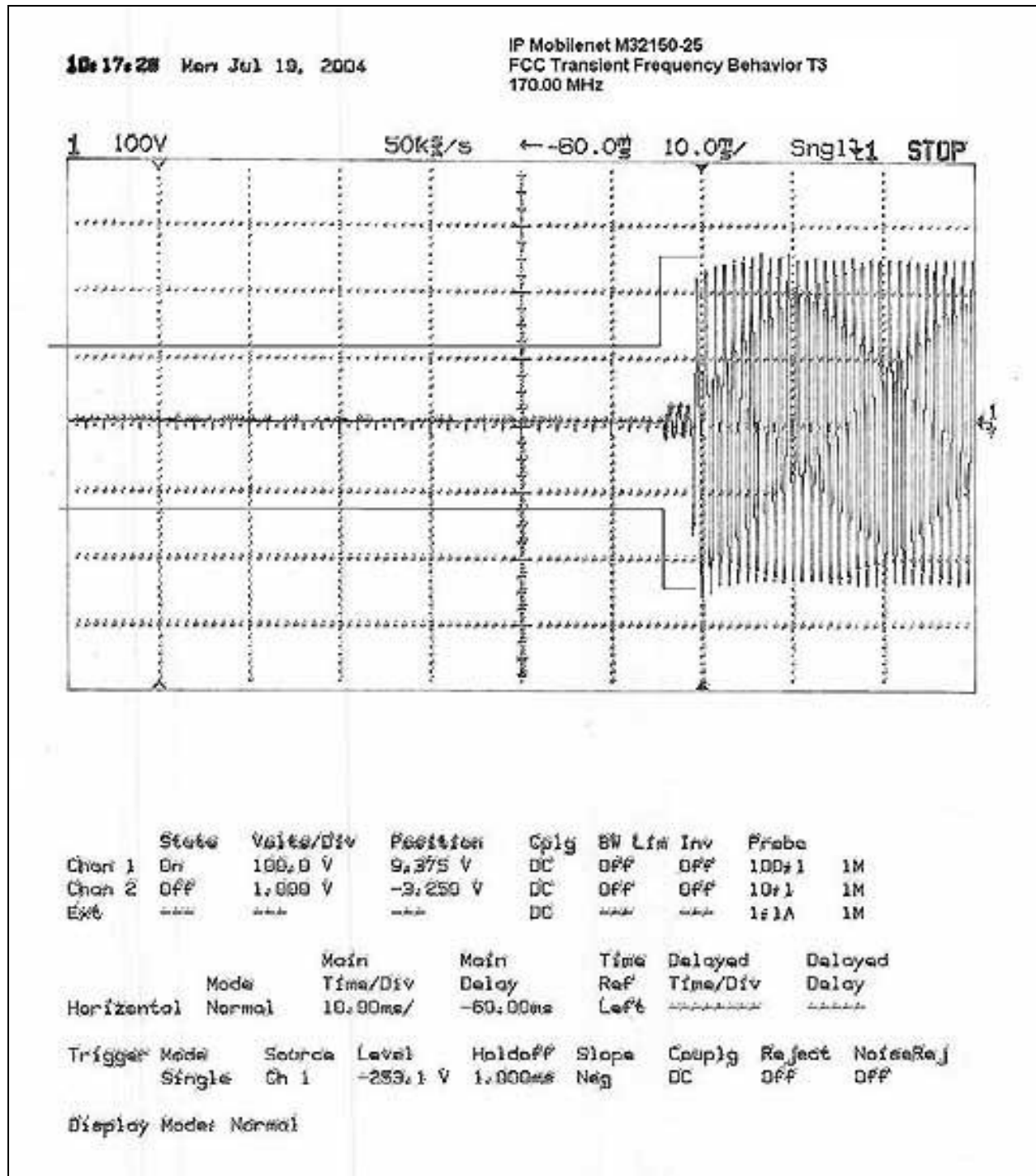
PHOTOGRAPH SHOWING TEMPERATURE TESTING

Note: The model name in the placard is incorrect. It should read M32150-25.

FCC 90.214 TRANSIENT FREQUENCY BEHAVIOR T1 & T2



FCC 90.214 TRANSIENT FREQUENCY BEHAVIOR T3



Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer RF Section	00312	HP	8568A	2049A01287	073102	073104
Spectrum Analyzer Display Section	00034	HP	85662A	2349A06091	081902	081904
Quasi Peak Adapter	02325	HP	85650A	2521A00932	073102	073104
Digital Multimeter	01830	Fluke	45	6949042	12/12/04	12/12/04

PHOTOGRAPH SHOWING TRANSIENT FREQUENCY BEHAVIOR



Note: The model name in the placard is incorrect. It should read M32150-25.