

**M. Flom Associates, Inc. - Global Compliance Center**

3356 North San Marcos Place, Suite 107, Chandler, Arizona 85225-7176

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Date: September 27, 1999

Federal Communications Commission  
EQUIPMENT APPROVAL SERVICES  
P.O. Box 358315  
Pittsburgh, PA 15251-5315

Attention: Authorization &amp; Evaluation Division

Applicant: Aironet Wireless Communications, Inc.  
Equipment: LM4800B (Without Antenna)  
PC4800B (With Antenna)  
FCC ID: LOZ102038  
FCC Rules: 15.247  
Subject: Class II Permissive Change

Gentlemen:

On behalf of the Applicant, enclosed please find Application Form 731, Engineering Test Report, the whole in support of the referenced subject. All documentation has been submitted with the original application which is still pending under the above FCC ID, EA949234 (7/23/99).

Filing fees are attached.

We trust the same is in order. Should you need any further information, kindly contact the writer who is authorized to act as agent.

Sincerely yours,

A handwritten signature in black ink, appearing to read "William H. Graff".

William H. Graff, Director  
of Engineeringenclosure(s)  
Electronic Filing  
cc: Applicant  
WHG/cvr



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Sub-part  
2.1033(c):

EQUIPMENT IDENTIFICATION

FCC ID: LOZ102038

NAMEPLATE DRAWING

ATTACHED, EXHIBIT 1.

LOCATION

AS PER LABEL DRAWING(S)

DATE OF REPORT

September 27, 1999

SUPERVISED BY:

A handwritten signature in black ink, appearing to read 'William H. Graff'.

William H. Graff, Director  
of Engineering

THE APPLICANT HAS BEEN CAUTIONED AS TO THE FOLLOWING:

15.21 INFORMATION TO USER.

The users manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.27(a) SPECIAL ACCESSORIES.

Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator, the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer, without additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

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| 15.247(c) | Out of Band Emissions                              | 10   |

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*Required information per ISO/IEC Guide 25-1990, paragraph 13.2:*

a) TEST REPORT

b) Laboratory: M. Flom Associates, Inc.  
(FCC: 31040/SIT) 3356 N. San Marcos Place, Suite 107  
(Canada: IC 2044) Chandler, AZ 85225

c) Report Number: d9990066

d) Client: Aironet Wireless Communications, Inc.  
P.O. Box 5292  
Fairlawn, OH 44334-0292

e) Identification: LM4800B (Without Antenna); PC4800B (With Antenna)  
FCC ID: LOZ102038  
Description: DSSS PCMCIA LAN Card

f) EUT Condition: Not required unless specified in individual tests.

g) Report Date: September 27, 1999  
EUT Received: August 25, 1999

h, j, k): As indicated in individual tests.

i) Sampling method: No sampling procedure used.

l) Uncertainty: In accordance with MFA internal quality manual.

m) Supervised by:



William H. Graff, Director  
of Engineering

n) Results: The results presented in this report relate only to the item tested.

o) Reproduction: This report must not be reproduced, except in full, without written permission from this laboratory.

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EXPOSITORY STATEMENT  
PERMISSIVE CHANGE

APPLICANT: Aironet Wireless Communications, Inc.

FCC ID: LOZ102038

The applicant has made design changes/improvements to the application pending.

Data contained herein confirms that a Permissive Change to the unit has been effected and that the performance of the unit is at or better than the levels originally reported to the commission.

The following changes/improvements have been made:

- 1 The board had the latest version of the Harris Prsim 2 Chip set.
- 2 The PC version tested this time included the molded-in antenna versus the unique connectors of the LM version tested earlier.
- 3 The model number has changed from the PC4850 to the PC4800B (LM4800B for the LM version)
- 4 The system used a lower power output 30mW EIRP (the 100mW still valid for maximum power output though radios will be configured for 30mW normally for the LM and PC version).

The 30mW power is the maximum power output when operating at 3.3 volt DC input.

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LIST OF GENERAL INFORMATION REQUIRED FOR CERTIFICATION

IN ACCORDANCE WITH FCC RULES AND REGULATIONS,  
VOLUME II, PART 2 AND TO

15.247, Confidentiality

Sub-part 2.1033

(c)(1): NAME AND ADDRESS OF APPLICANT:

Aironet Wireless Communications, Inc.  
3875 Embassy Parkway  
Akron, OH 44333

MANUFACTURER:

Applicant

(c)(2): FCC ID: LOZ102038

MODEL NO: LM4800B (Without Antenna);  
PC4800B (With Antenna)

(c)(3): INSTRUCTION MANUAL(S):

PLEASE SEE ATTACHED EXHIBITS

(c)(4): TYPE OF EMISSION:

(c)(5): FREQUENCY RANGE, MHz: 2412 to 2462

(c)(6): POWER RATING, Watts: 0.1  
Switchable Variable x N/A

(c)(7): MAXIMUM POWER RATING, Watts: 50 mv/m @ 3m

15.203: ANTENNA REQUIREMENT:

   The antenna is permanently attached to the EUT  
  x   The antenna uses a unique coupling  
   The EUT must be professionally installed  
   The antenna requirement does not apply

PAGE NO. 4 of 16.

Subpart 2.1033 (continued)

(c)(8): VOLTAGES & CURRENTS IN ALL ELEMENTS IN FINAL R. F. STAGE,  
INCLUDING FINAL TRANSISTOR OR SOLID STATE DEVICE:

COLLECTOR CURRENT, A = per manual  
COLLECTOR VOLTAGE, Vdc = per manual  
SUPPLY VOLTAGE, Vdc = 5

(c)(9): TUNE-UP PROCEDURE:

PLEASE SEE ATTACHED EXHIBITS

(c)(10): CIRCUIT DIAGRAM/CIRCUIT DESCRIPTION:

Including description of circuitry & devices provided for  
determining and stabilizing frequency, for suppression of  
spurious radiation, for limiting modulation and limiting  
power.

PLEASE SEE ATTACHED EXHIBITS

(c)(11): LABEL INFORMATION:

PLEASE SEE ATTACHED EXHIBITS

(c)(12): PHOTOGRAPHS:

PLEASE SEE ATTACHED EXHIBITS

(c)(13): DIGITAL MODULATION DESCRIPTION:

     ATTACHED EXHIBITS  
  X   N/A

(c)(14): TEST AND MEASUREMENT DATA:

FOLLOWS

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M. Flom Associates, Inc. is accredited by the American Association for Laboratory Accreditation (A2LA) as shown in the scope below.



**THE AMERICAN  
ASSOCIATION  
FOR LABORATORY  
ACCREDITATION**

**ACCREDITED LABORATORY**

A2LA has accredited

**M. FLOM ASSOCIATES, INC.**  
**Chandler, AZ**

for technical competence in the field of

**Electrical (EMC) Testing**

The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC Guide 25-1990 "General Requirements for the Competence of Calibration and Testing Laboratories" (equivalent to relevant requirements of the ISO 9000 series of standards) and any additional program requirements in the identified field of testing.

Presented this 24<sup>th</sup> day of November, 1998.



*Peter M. Meyer*  
President  
For the Accreditation Council  
Certificate Number 1008.01  
Valid to December 31, 2000

For tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical (EMC) Scope of Accreditation



**American Association for Laboratory Accreditation**

**SCOPE OF ACCREDITATION TO ISO/IEC GUIDE 25-1990 AND EN 45001**

M. FLOM ASSOCIATES, INC.  
Electronic Testing Laboratory  
3356 North San Marcos Place, Suite 107  
Chandler, AZ 85224-1571  
Morton Flom Phone: 602 926 3100

**ELECTRICAL (EMC)**

Valid to: December 31, 2000 Certificate Number: 1008-01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following electromagnetic compatibility tests:

| Tests                   | Standard(s)                                                                                                                                                                                                                               |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RF Emissions            | FCC Part 15 (Subparts B and C) using ANSI C63.4-1992; CISPR 11; CISPR 13; CISPR 14; CISPR 22; EN 55011; EN 55013; EN 55014; EN 55022; EN 50081-1; EN 50081-2; FCC Part 18; ICES-003; AS/NZS 1044; AS/NZS 1053; AS/NZS 3548; AS/NZS 4251.1 |
| RF Immunity             | EN 50082-1; EN 50082-2; AS/NZS 4251.1                                                                                                                                                                                                     |
| Radiated Susceptibility | EN 61000-4-3; ENV 50140; ENV 50204; IEC 1000-4-3; IEC 801-3                                                                                                                                                                               |
| ESD                     | EN 61000-4-2; IEC 1000-4-2; IEC 801-2                                                                                                                                                                                                     |
| EFT                     | EN 61000-4-4; IEC 1000-4-4; IEC 801-4                                                                                                                                                                                                     |
| Surge                   | EN 61000-4-5; ENV 50142; IEC 1000-4-5; IEC 801-5                                                                                                                                                                                          |
| 47 CFR (FCC)            | 2, 21, 22, 23, 24, 74, 80, 87, 90, 95, 97                                                                                                                                                                                                 |

*Peter M. Meyer*

5301 Buckeystown Pike, Suite 350 • Frederick, MD 21704-8307 • Phone: 301 644 3200 • Fax: 301 662 2974

"This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this report have been determined in accordance with the laboratory's terms of accreditation unless stated otherwise in the report."

Should this report contain any data for tests for which we are not accredited, or which have been undertaken by a subcontractor that is not A2LA accredited, such data would not be covered by this laboratory's A2LA accreditation.

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Sub-part  
2.1033(b):TEST AND MEASUREMENT DATA

All tests and measurement data shown were performed in accordance with FCC Rules and Regulations, Volume II; Part 2, Sub-part J, Sections 2.1031, 2.1033, 2.1035, 2.1041, 2.1043, 2.1045, and the following individual Parts:

- \_\_\_\_\_ 15.209 Radiated emission limits; general requirements
- \_\_\_\_\_ 15.211 Tunnel radio systems
- \_\_\_\_\_ 15.213 Cable locating equipment
- \_\_\_\_\_ 15.214 Cordless telephones
- \_\_\_\_\_ 15.217 Operation in the band 160-190 kHz
- \_\_\_\_\_ 15.219 Operation in the band 510-1705 kHz
- \_\_\_\_\_ 15.221 Operation in the band 525-1705 kHz (leaky coax)
- \_\_\_\_\_ 15.223 Operation in the band 1.705-10 MHz
- \_\_\_\_\_ 15.225 Operation in the band 13.553-13.567 MHz
- \_\_\_\_\_ 15.227 Operation in the band 26-27.28 MHz (remote control)
- \_\_\_\_\_ 15.229 Operation in the band 40.66-40.70 MHz
- \_\_\_\_\_ 15.231 Periodic operation in the band 40.66-40.70 MHz and above 70 MHz
- \_\_\_\_\_ 15.233 Operation within the bands 43.71-44.49, 46.60-46.98 MHz 48.75-49.51 MHz and 49.66-50.0 MHz
- \_\_\_\_\_ 15.235 Operation within the band 49.82-49.90 MHz
- \_\_\_\_\_ 15.237 Operation within the bands 72.0-73.0 MHz, 74.6-74.8 MHz and 75.2-76.0 MHz (auditory assistance)
- \_\_\_\_\_ 15.239 Operation in band 88-108 MHz
- \_\_\_\_\_ 15.241 Operation in the band 174-216 MHz (biomedical)
- \_\_\_\_\_ 15.243 Operation in the band 890-940 MHz (materials)
- \_\_\_\_\_ 15.245 Operation within the bands 902-928 MHz, 2435-2465 MHz, 5785-5815 MHz, 10500-10550 MHz, and 24075-24175 MHz (filed disturbance sensors)
- x \_\_\_\_\_ 15.247 Operation within bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz (spread spectrum)
- \_\_\_\_\_ 15.249 Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz
- \_\_\_\_\_ 15.251 Operation within the bands 2.9-3.26 GHz, 3.267-3.332 GHz, 3.339-3.3458 GHz, and 3.358-3.6 GHz (vehicle identification systems)
- \_\_\_\_\_ 15.321 Specific requirements for asynchronous devices operating in the 1910-1920 MHz and 2390-2400 MHz bands (Unlicensed PCS)
- \_\_\_\_\_ 15.323 Specific requirements for isochronous devices operating in the 1920-1930 MHz sub-band (Unlicensed PCS)

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STANDARD TEST CONDITIONS  
and  
ENGINEERING PRACTICES

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI C63.4-1992, section 6.1.9, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104 °F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Prior to testing, the EUT was tuned up in accordance with the manufacturer's alignment procedures. All external gain controls were maintained at the position of maximum and/or optimum gain throughout the testing.

Measurement results, unless otherwise noted, are worst case measurements.

PAGE NO. 8 of 16.  
NAME OF TEST: Maximum Peak Output Power  
SPECIFICATION: 47 CFR 15.247(b)  
SPEC. LIMIT: = 1 Watt peak (0.25 if <50 Hopping Channels)  
TEST EQUIPMENT: Attached

MEASUREMENT DATA

ANTENNA GAIN, dBi = 0  
 PEAK OUTPUT POWER, Watts =  $12 \times 10^{-3}$   
 WORST CASE FOR  
 ALL CHANNELS

RADIATED:  
 g9980280: 1999-Aug-25 Wed 13:47:00

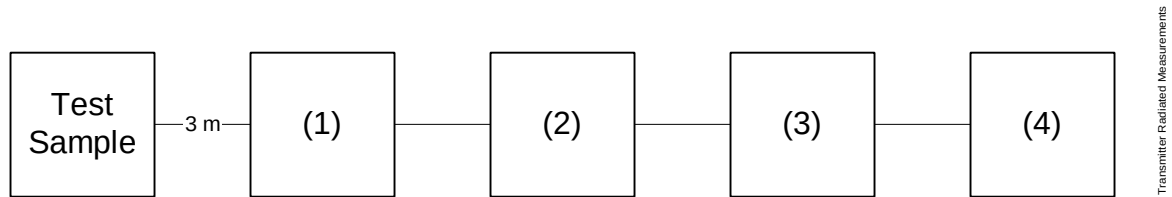
| FREQUENCY<br>TUNED, MHz | FREQUENCY<br>EMISSION, MHz | METER,<br>dBuV | CF, dB | uV/m @ 3m | EIRP,<br>dBm | EIRP,<br>mW |
|-------------------------|----------------------------|----------------|--------|-----------|--------------|-------------|
| 2412.000000             | 2414.980000                | 62.4           | 42.79  | 181760.71 | 10           | 10.0        |
| 2442.000000             | 2444.950000                | 63.02          | 43.02  | 200447.2  | 10.8         | 12.0        |
| 2462.000000             | 2465.050000                | 59.35          | 43.17  | 133659.55 | 7.3          | 5.4         |

SUPERVISED BY:

  
 William H. Graff, Director  
 of Engineering

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TRANSMITTER RADIATED MEASUREMENTS

| Asset                 | Description                               | s/n        |
|-----------------------|-------------------------------------------|------------|
| (1) TRANSDUCER        |                                           |            |
| <u>x</u>              | <u>i00091</u> Emco 3115                   | 001469     |
| <u>x</u>              | <u>i00089</u> Aprel Log Periodic          | 001500     |
| (2) HIGH PASS FILTER  |                                           |            |
| <u>x</u>              | <u>i00</u> Narda $\mu$ PAD (In-Band Only) |            |
| <u>x</u>              | <u>i00</u> Trilithic                      |            |
| —                     | (Out-Of-Band Only)                        |            |
| (3) PREAMP            |                                           |            |
| <u>x</u>              | <u>i00028</u> HP 8449 (+30 dB)            | 2749A00121 |
| (4) SPECTRUM ANALYZER |                                           |            |
| <u>x</u>              | <u>i00048</u> HP 8566B                    | 2511A01467 |
| —                     | <u>i00043</u> HP 8558B                    | 2004A02076 |
| —                     | <u>i00057</u> HP 8557A                    | 1531A00191 |
| <u>x</u>              | <u>i00029</u> HP 8563E                    | 3213A00104 |

PAGE NO. 10 of 16.  
NAME OF TEST: Out of Band Emissions  
SPECIFICATION: 47 CFR 15.247(c), 15.209(a)  
SPEC. LIMIT: See Below  
TEST EQUIPMENT: As per previous page  
SEARCH ANTENNAS: 10 kHz - 32 MHz: LOOP 94598-1  
 32 MHz - 1 GHz: SINGER DM105, T<sub>1</sub>T<sub>2</sub>T<sub>3</sub>  
 1 GHz - 18 GHz: EMCO 3115

### LIMIT

In any 100 kHz bandwidth outside these frequency bands, radio frequency power that is produced by the modulation products of the spreading sequence, information sequence, and the carrier frequency shall be either

at least 20 dB below that in any 100 kHz bandwidth within the band that contains the highest level of the desired power

or

shall not exceed the general levels specified in 15.209(a),

whichever results in the lesser attenuation.

All other emissions outside these bands shall not exceed the general radiated emission limits specified in 15.209(a).

### MEASUREMENTS PROCEDURE:

At first, bench tests were performed to locate the emissions at the antenna terminals.

In the field, tests were conducted over the range shown. The test sample was set up on a wooden turntable above ground, and at a distance of three meters from the antenna connected to the spectrum analyzer.

In order to obtain the maximum response at each frequency, the turntable was rotated, and the search antenna was raised and lowered. The EUT was also adjusted for maximum response.

The field strength was calculated from:

$$E \text{ } \mu\text{V/m @ 3 m} = \text{LOG}_{10}^{-1}(\text{dBm} + 107 + \text{A.F.} + \text{C.L.})$$

The following results are worst case conditions. Tests were conducted in Horizontal and Vertical polarization modes.

MEASUREMENT RESULTS: ATTACHED

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NAME OF TEST: Out of Band Emissions  
 g9990008: 1999-Sep-01 Wed 11:15:00  
 STATE: 2:High Power

| FREQUENCY<br>TUNED, MHz | FREQUENCY<br>EMISSION, MHz | METER,<br>dBuV | CF,<br>dB | uV/m @<br>3m | EIRP,<br>dBm | MARGIN,<br>dB |
|-------------------------|----------------------------|----------------|-----------|--------------|--------------|---------------|
| 2412.000000             | 2365.130000                | 6.12           | 35.55     | 121.2        | -53.6        | -12.3         |
| 2412.000000             | 2365.130000                | 17.21          | 35.55     | 434.51       | -42.5        | -1.2          |
| 2412.000000             | 2367.380000                | 16.39          | 35.55     | 395.37       | -43.3        | -2.1          |
| 2412.000000             | 2367.380000                | 6.11           | 35.55     | 121.06       | -53.6        | -12.3         |
| 2412.000000             | 2370.000000                | 6.12           | 35.56     | 121.34       | -53.5        | -12.3         |
| 2412.000000             | 2370.000000                | 16.61          | 35.56     | 405.98       | -43.1        | -1.8          |
| 2412.000000             | 2372.500000                | 16.43          | 35.57     | 398.11       | -43.2        | -2            |
| 2412.000000             | 2372.500000                | 6.1            | 35.57     | 121.2        | -53.6        | -12.3         |
| 2412.000000             | 2375.000000                | 6.09           | 35.58     | 121.2        | -53.6        | -12.3         |
| 2412.000000             | 2375.000000                | 16.56          | 35.58     | 404.58       | -43.1        | -1.9          |
| 2412.000000             | 2377.500000                | 16.61          | 35.59     | 407.38       | -43          | -1.8          |
| 2412.000000             | 2377.500000                | 6.07           | 35.59     | 121.06       | -53.6        | -12.3         |
| 2412.000000             | 2380.000000                | 6.04           | 35.6      | 120.78       | -53.6        | -12.4         |
| 2412.000000             | 2380.000000                | 17.11          | 35.6      | 432.02       | -42.5        | -1.3          |
| 2412.000000             | 2382.630000                | 16.78          | 35.6      | 415.91       | -42.8        | -1.6          |
| 2412.000000             | 2382.630000                | 6.05           | 35.6      | 120.92       | -53.6        | -12.4         |
| 2412.000000             | 2385.000000                | 6.05           | 35.62     | 121.2        | -53.6        | -12.3         |
| 2412.000000             | 2385.000000                | 17.06          | 35.62     | 430.53       | -42.5        | -1.3          |
| 2412.000000             | 2387.500000                | 15.88          | 35.63     | 376.27       | -43.7        | -2.5          |
| 2412.000000             | 2387.500000                | 6.04           | 35.63     | 121.2        | -53.6        | -12.3         |
| 2412.000000             | 2390.000000                | 6.13           | 35.63     | 122.46       | -53.5        | -12.2         |
| 2412.000000             | 2390.000000                | 16.67          | 35.63     | 412.1        | -42.9        | -1.7          |
| 2462.000000             | 2483.500000                | 6.5            | 36.31     | 138.2        | -52.4        | -11.2         |
| 2462.000000             | 2483.500000                | 16.25          | 36.31     | 424.62       | -42.7        | -1.4          |
| 2462.000000             | 2486.130000                | 15.64          | 36.33     | 396.73       | -43.3        | -2            |
| 2462.000000             | 2486.130000                | 6.47           | 36.33     | 138.04       | -52.4        | -11.2         |
| 2462.000000             | 2488.500000                | 6.47           | 36.34     | 138.2        | -52.4        | -11.2         |
| 2462.000000             | 2488.500000                | 15.98          | 36.34     | 413.05       | -42.9        | -1.7          |
| 2462.000000             | 2491.000000                | 16.19          | 36.37     | 424.62       | -42.7        | -1.4          |
| 2462.000000             | 2491.000000                | 6.49           | 36.37     | 139          | -52.4        | -11.1         |
| 2462.000000             | 2493.500000                | 6.47           | 36.38     | 138.84       | -52.4        | -11.2         |
| 2462.000000             | 2493.500000                | 15.67          | 36.38     | 400.41       | -43.2        | -2            |
| 2462.000000             | 2496.250000                | 16.19          | 36.4      | 426.09       | -42.6        | -1.4          |
| 2462.000000             | 2496.250000                | 6.49           | 36.4      | 139.48       | -52.3        | -11.1         |
| 2462.000000             | 2498.500000                | 6.47           | 36.42     | 139.48       | -52.3        | -11.1         |
| 2462.000000             | 2498.500000                | 16.35          | 36.42     | 435.01       | -42.5        | -1.2          |
| 2462.000000             | 2501.250000                | 16.14          | 36.43     | 425.11       | -42.7        | -1.4          |
| 2462.000000             | 2501.250000                | 6.49           | 36.43     | 139.96       | -52.3        | -11.1         |
| 2462.000000             | 2503.500000                | 6.54           | 36.44     | 140.93       | -52.2        | -11           |
| 2462.000000             | 2503.500000                | 15.89          | 36.44     | 413.52       | -42.9        | -1.7          |
| 2462.000000             | 2506.250000                | 15.89          | 36.46     | 414.48       | -42.9        | -1.7          |
| 2462.000000             | 2506.250000                | 6.47           | 36.46     | 140.12       | -52.3        | -11.1         |
| 2462.000000             | 2508.380000                | 6.48           | 36.46     | 140.28       | -52.3        | -11.1         |
| 2462.000000             | 2508.380000                | 16.25          | 36.46     | 432.02       | -42.5        | -1.3          |

PAGE NO. 12 of 16.  
NAME OF TEST: Emissions At Band Edges  
SPECIFICATION: 47 CFR  
TEST EQUIPMENT: As for "Out of Band Emissions"

MEASUREMENT RESULTS

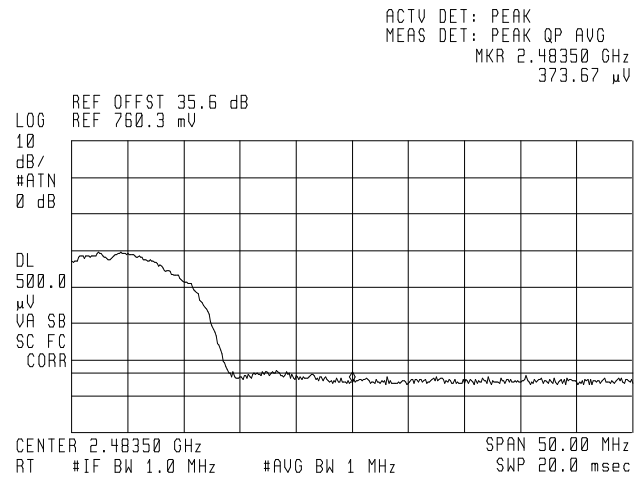
ATTACHED

SUPERVISED BY:

  
William H. Graff, Director  
of Engineering

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g9990009: 1999-Sep-01 Wed 12:42:00  
STATE: 0:General



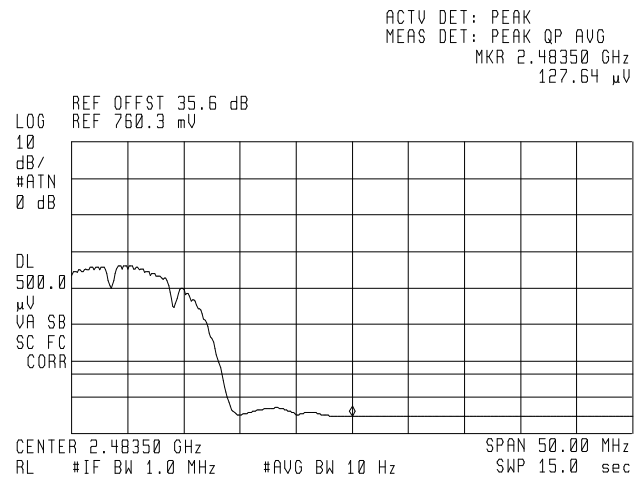
SUPERVISED BY:

William H. Graff, Director  
of Engineering

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STATE: 0:General



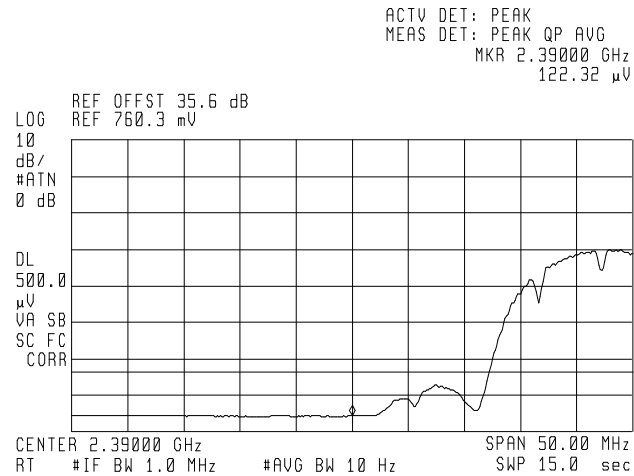
SUPERVISED BY:

William H. Graff, Director  
of Engineering

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g9990007: 1999-Sep-01 Wed 11:05:00  
STATE: 0:General



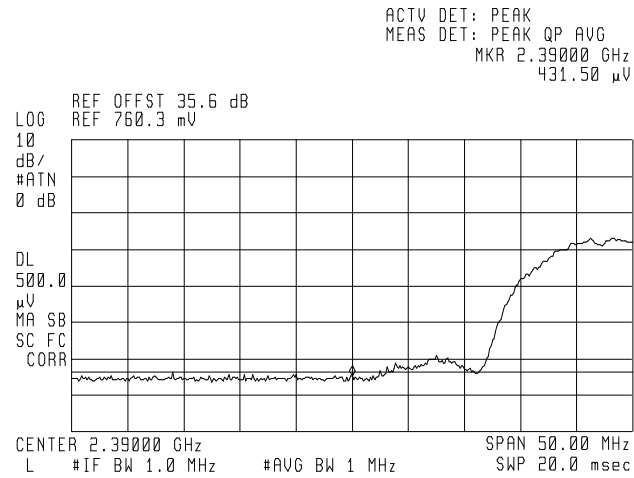
SUPERVISED BY:

William H. Graff, Director  
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RADIATED MEASUREMENTS  
FOR PART 15 TRANSMITTERS W/ INTEGRAL ANTENNAS

Radiated Measurements

| <u>RANGE OF MEASUREMENT</u> | <u>SPECIFICATION</u> | <u>RESOLUTION B/W</u> | <u>VIDEO B/A</u> |
|-----------------------------|----------------------|-----------------------|------------------|
| 30 to 1000 MHz              | CISPR                | =100 kHz              | =100 kHz         |
| >1000 MHz                   | FCC, 15.37(b)        | 1 MHz                 | =1 MHz           |
| (if averaging)              | FCC, 15.37(b)        | 1 MHz                 | 10 Hz            |

Measuring Equipment

a. ANTENNAS:

|                |                |
|----------------|----------------|
| EMCO 3109      | 20 - 300 MHz   |
| APREL AALP2001 | 200 - 1000 MHz |
| APREL AAB20200 | 20 - 200 MHz   |
| APREL AAH118   | 1 - 18 GHz     |

b. INSTRUMENTS:

|          |                                    |
|----------|------------------------------------|
| HP8566B  | Spectrum Analyzer                  |
| HP85685A | Preselector, w/ preamp below 2 GHz |
| HP85650A | Quasi Peak Adapter                 |
| HP8449   | Preamp, above 2 GHz                |

All test instrumentation is calibrated every January and every July. In addition, all test instrumentation is calibrated daily, or as required by the manufacturer. A Calibration Agreement is maintained with Hewlett Packard.

Occupied Bandwidth

Occupied Bandwidth is measured as a radiated signal without attenuators and/or filter. RBW, VBW and scan settings as shown were set to produce a meaningful result in accordance with ANSI C63.4, Section 13.1.7.

Part 15.21, Information to User

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly avoided by the party responsible for compliance could void the user's authority to operate the equipment.

## § 15.205 Restricted Bands of Operation

(a) Except as shown in paragraph (b) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz               | MHz                 | MHz           | GHz         |
|-------------------|---------------------|---------------|-------------|
| 0.090-0.110       | 16.42-16.423        | 399.9-410     | 4.5-5.25    |
| 0.495-0.505       | 16.69475-16.69625   | 608-614       | 5.35-5.46   |
| 2.1735-2.1905     | 16.80425-16.80475   | 960-1240      | 7.25-7.75   |
| 4.125-4.128       | 25.5-25.67          | 1300-1427     | 8.025-8.5   |
| 4.17725-4.17775   | 37.5-38.25          | 1435-1626.5   | 9.0-9.2     |
| 4.20725-4.20775   | 73-74.6             | 1645.5-1646.5 | 9.3-9.5     |
| 6.215-6.218       | 74.8-75.2           | 1660-1710     | 10.6-12.7   |
| 6.26775-6.26825   | 108-121.94          | 1718.8-1722.2 | 13.25-13.4  |
| 6.31175-6.31225   | 123-138             | 2200-2300     | 14.47-14.5  |
| 8.291-8.294       | 149.9-150.05        | 2310-2390     | 15.35-16.2  |
| 8.362-8.366       | 156.52475-156.52525 | 2483.5-2500   | 17.7-21.4   |
| 8.37625-8.38675   | 156.7-156.9         | 2655-2900     | 22.01-23.12 |
| 8.41425-8.41475   | 162.0125-167.17     | 3260-3267     | 23.6-24.0   |
| 12.29-12.293      | 167.72-173.2        | 3332-3339     | 31.2-31.8   |
| 12.51975-12.52025 | 240-285             | 3345.8-3358   | 36.43-36.5  |
| 12.57675-12.57725 | 322-339.4           | 3600-4400     | (2)         |
| 13.36-13.41       |                     |               |             |

Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz. Above 38.6

TESTIMONIAL  
AND  
STATEMENT OF CERTIFICATION

THIS IS TO CERTIFY THAT:

1. THAT the application was prepared either by, or under the direct supervision of, the undersigned.
2. THAT the technical data supplied with the application was taken under my direction and supervision.
3. THAT the data was obtained on representative units, randomly selected.
4. THAT, to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct.

CERTIFYING ENGINEER:



William H. Graff, Director  
of Engineering