

MFA **M. Flom Associates, Inc. - Global Compliance Center**
3356 North San Marcos Place, Suite 107, Chandler, Arizona 85225-7176
www.mflom.com general@mflom.com (480) 926-3100, FAX: 926-3598

Date: July 23, 2001

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

Applicant: Galtronics USA Inc.
Equipment: WNG-USB-102
FCC ID: PO3WNGUSB102
FCC Rules: 15.247

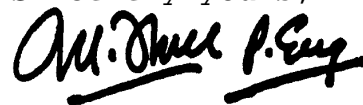
Gentlemen:

On behalf of the Applicant, enclosed please find Application Form 731, Engineering Test Report and all pertinent documentation, the whole for approval of the referenced equipment as shown.

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,



Morton Flom, P. Eng.

enclosure(s)
cc: Applicant
MF/cvr

LIST OF EXHIBITS
(FCC **CERTIFICATION** (TRANSMITTERS) - REVISED 9/28/98)

APPLICANT: Galtronics USA Inc.

FCC ID: PO3WNGUSB102

BY APPLICANT:

1. LETTER OF AUTHORIZATION
2. IDENTIFICATION DRAWINGS
 - ___ ID LABEL
 - ___ LOCATION INFO
 - ___ ATTESTATION STATEMENT(S)
 - ___ LOCATION OF COMPLIANCE STATEMENT
3. DOCUMENTATION: 2.1033(b)
 - (3) USER MANUAL(S)
 - (4) OPERATIONAL DESCRIPTION
 - (5) BLOCK DIAGRAM
 - (5) SCHEMATIC DIAGRAM
 - (7) EXTERNAL PHOTOGRAPHS
 - INTERNAL PHOTOGRAPHS
 - PARTS LIST
 - TUNE UP INFO
 - ACTIVE DEVICES
4. DRAFT SPECIFICATION INFORMATION

BY M.F.A. INC.

- A. TESTIMONIAL & STATEMENT OF CERTIFICATION
- B. STATEMENT OF QUALIFICATIONS

MFA **M. Flom Associates, Inc. - Global Compliance Center**
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T R A N S M I T T E R C E R T I F I C A T I O N

of

FCC ID: PO3WNGUSB102
MODEL: WNG-USB-102

to

FEDERAL COMMUNICATIONS COMMISSION

Rule Part(s) 15.247

DATE OF REPORT: July 23, 2001

ON THE BEHALF OF THE APPLICANT:

Galtronics USA Inc.

AT THE REQUEST OF:

P.O. Deposit

Galtronics USA Inc.
4645 E. Cotton Center Blvd., Bldg 2
Phoenix, AZ 85040

Attention of:

Scott Miller, Antenna Systems Development Mgr.
(602) 659-3011; (602) 453-0259
Email: scottmiller@galtronics.com
and/or Mike Hill, New Products Development Mgr.
(602) 659-3064; (602) 453-0259
Email: mikehill@galtronics.com

SUPERVISED BY:



Morton Flom, P. Eng.

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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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: d0170031
- d) Client: Galtronics USA Inc.
4645 E. Cotton Center Blvd., Bldg 2
Phoenix, AZ 85040
- e) Identification: WNG-USB-102
FCC ID: PO3WNGUSB102
Description: Wireless Ethernet USB Adaptor
- f) EUT Condition: Not required unless specified in individual tests.
- g) Report Date: July 23, 2001
EUT Received: June 29, 2001
- 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: 
Morton Flom, P. Eng.
- 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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LIST OF GENERAL INFORMATION REQUIRED FOR CERTIFICATIONIN ACCORDANCE WITH FCC RULES AND REGULATIONS,
VOLUME II, PART 2 AND TO

15.247

Sub-part 2.1033(c)(1): NAME AND ADDRESS OF APPLICANT:Galtronics USA Inc.
4645 E. Cotton Center Blvd., Bldg 2
Phoenix, AZ 85040MANUFACTURER:

Applicant

(c)(2): FCC ID: PO3WNGUSB102MODEL NO: WNG-USB-102(c)(3): INSTRUCTION MANUAL(S):

PLEASE SEE ATTACHED EXHIBITS

(c)(4): TYPE OF EMISSION: DSSS(c)(5): FREQUENCY RANGE, MHz: 2400 to 2483.5(c)(6): POWER RATING, Watts: 0.01937 EIRP
 Switchable Variable x N/A(c)(7): MAXIMUM POWER RATING, Watts: 115.203: ANTENNA REQUIREMENT: The antenna is permanently attached to the EUT
 The antenna uses a unique coupling
 The EUT must be professionally installed
 x The antenna requirement does not apply

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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 = per manual

(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

M. Flom Associates, Inc. is accredited by the American Association for Laboratory Association (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 17025 - 1999 "General Requirements for the Competence of Testing and Calibration Laboratories" and any additional program requirements in the identified field of testing. Testing and calibration laboratories that comply with this International Standard also operate in accordance with ISO 9001 or ISO 9002.

Presented this 2nd day of March, 2001.



Peter Mlynek
President
For the Accreditation Council
Certificate Number 1008.01
Valid to December 31, 2002

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 17025-1999


M. FLOM ASSOCIATES, INC.
Electronic Testing Laboratory
3356 North San Marcos Place, Suite 107
Chandler, AZ 85223
Morton Flom Phone: 480 926 3100

ELECTRICAL (EMC)

Valid to: December 31, 2002 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; ICES-003; AS/NZS 1044; AS/NZS 1053; AS/NZS 3548; AS/NZS 4251.1; CNS 13438
Harmonic Currents	EN 61000-3-2
Fluctuation and Flicker	EN 61000-3-3
RF Immunity	EN: 50082-1, 50082-2 (both excluding "Power Frequency Magnetic Field Immunity" and "Voltage Dips, Short Interruptions, and Line Voltage Variations"); AS/NZS 4251.1
Radiated Susceptibility	EN 61000-4-3; ENV 50140; ENV 50204; IEC 1000-4-3; IEC 801-3
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



5301 Buckeystown Pike, Suite 350 • Frederick, MD 21704-8373 • Phone: 301-644 3248 • 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 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 C63.4-1992/2000, 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.

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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 = 1.0
 PEAK OUTPUT POWER, Watts = 1
 WORST CASE FOR ALL CHANNELS

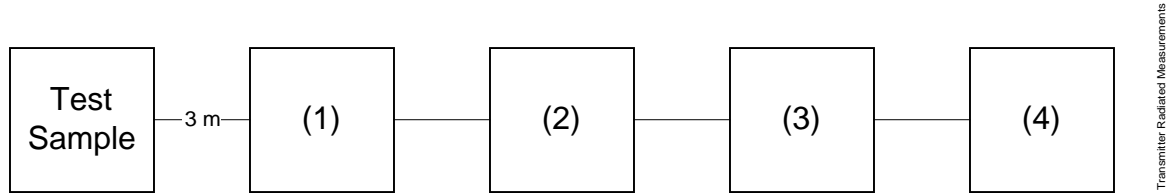
Fundamentals
 g0170157: 2001-Jul-09 Mon 10:33:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER CF, dB	dBuV	uV/m @ 3m	EIRP, dBm	EIRP, Watts
2412.000000	2411.800000	66.76	41.3	252929.8	12.8	≤0.01937
2437.000000	2436.800000	66	41.47	236319.74	12.2	≤0.01937
2462.000000	2461.800000	62.01	45.58	239607.27	12.4	≤0.01937



SUPERVISED BY: Doug Noble, B.A.S. E.E.T.

TRANSMITTER RADIATED MEASUREMENTS



Asset Description (as applicable)	s/n
<u>(1) TRANSDUCER</u>	
i00091 Emco 3115	001469
i00089 Aprel Log Periodic	001500
i00088 EMCO 3301-B Biconical	2336
<u>(2) HIGH PASS FILTER</u>	
i00 Narda μ PAD (In-Band Only)	
i00 Trilithic (Out-Of-Band Only)	
<u>(3) PREAMP</u>	
i00028 HP 8449 (+30 dB)	2749A00121
<u>(4) SPECTRUM ANALYZER</u>	
i00048 HP 8566B	2511A01467
i00057 HP 8557A	1531A00191
i00029 HP 8563E	3213A00104

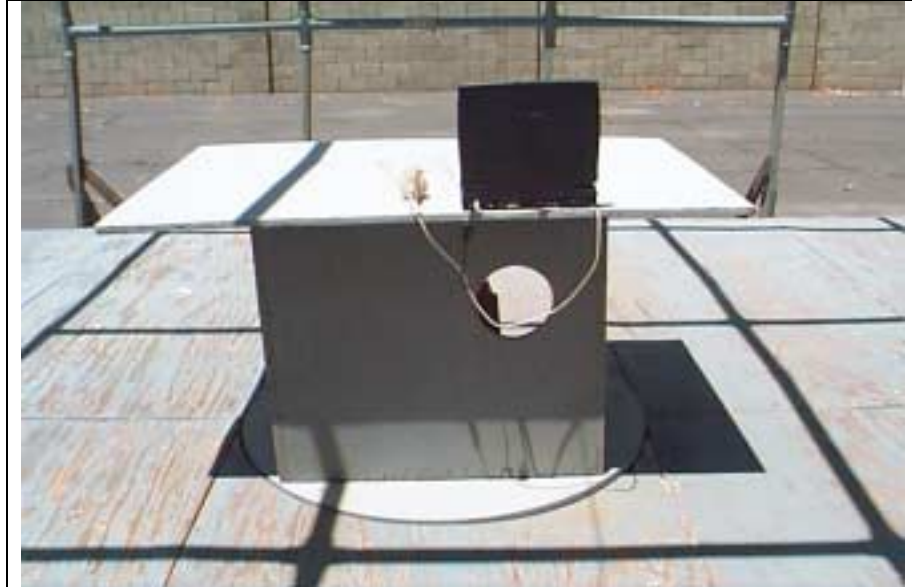
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TEST SETUP: Radiated Emissions
g0170154: 2001-Jul-16 Mon 11:48:05
STATE: 0:General



TEST SETUP: Radiated Emissions
g0170155: 2001-Jul-16 Mon 11:48:05
STATE: 0:General



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NAME OF TEST: Radiated Spurious Emissions
 g0170222: 2001-Jul-13 Fri 08:22:00
 11 MB/sec

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	CF, dB	uV/m @ 3m	EIRP, dBm	MARGIN dB
2412.000000	4825.966667	27.67	8.88	67.22	-58.7	-45.7
2437.000000	4874.000000	22.83	8.98	38.95	-63.4	-50.4
2462.000000	4924.000000	24.5	9.07	47.7	-61.7	-48.6
2412.000000	7236.000000	22.33	13.05	58.75	-59.8	-46.8
2437.000000	7311.000000	24.83	13.17	79.43	-57.2	-44.2
2462.000000	7386.000000	23.5	13.29	69.1	-58.4	-45.4
2412.000000	9648.000000	23.5	15.71	91.31	-56	-43
2437.000000	9748.000000	22.67	15.79	83.75	-56.8	-43.7
2462.000000	9848.000000	22.33	15.87	81.28	-57	-44
2412.000000	12060.000000	23.67	17.43	113.5	-54.1	-41.1
2437.000000	12185.000000	22.33	17.08	93.43	-55.8	-42.8
2462.000000	12310.000000	22.17	16.73	88.1	-56.3	-43.3
2412.000000	14472.000000	23	18.42	117.76	-53.8	-40.8
2437.000000	14622.000000	23.5	18.36	123.88	-53.4	-40.3
2462.000000	14772.000000	25.83	18.31	161.06	-51.1	-38.1
2412.000000	16884.000000	24.33	19.58	156.86	-51.3	-38.3
2437.000000	17059.000000	23.83	19.96	154.7	-51.4	-38.4
2462.000000	17234.000000	23.83	20.43	163.31	-51	-37.9

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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, T₁T₂T₃
 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

1 MB/sec Upper bandedge g0170165: 2001-Jul-09 Mon 14:23:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	CF, dB	uV/m @ 3m	EIRP, dBm	*PEAK AVERAGE
2462.000000	2483.500000	-5.69	45.72	100.35	-55.2	AVERAGE
2462.000000	2483.500000	4.1	45.72	309.74	-45.4	PEAK
2462.000000	2485.400000	4.29	45.73	316.96	-45.2	PEAK
2462.000000	2485.400000	-5.84	45.73	98.74	-55.3	AVERAGE
2462.000000	2487.500000	-5.89	45.75	98.4	-55.4	AVERAGE
2462.000000	2487.500000	4.59	45.75	328.85	-44.9	PEAK
2462.000000	2489.200000	-5.82	45.75	99.2	-55.3	AVERAGE
2462.000000	2489.400000	4.25	45.75	316.23	-45.2	PEAK
2462.000000	2491.400000	5.9	45.77	383.27	-43.6	PEAK
2462.000000	2491.500000	-5.84	45.77	99.2	-55.3	AVERAGE
2462.000000	2493.500000	-5.82	45.79	99.66	-55.3	AVERAGE
2462.000000	2493.700000	2.99	45.79	274.79	-46.4	PEAK
2462.000000	2495.500000	4.99	45.79	345.94	-44.4	PEAK
2462.000000	2495.600000	-5.89	45.79	98.86	-55.3	AVERAGE
2462.000000	2497.600000	-5.75	45.81	100.69	-55.2	AVERAGE
2462.000000	2497.900000	5.9	45.81	385.03	-43.5	PEAK
2462.000000	2499.500000	-5.77	45.82	100.58	-55.2	AVERAGE
2462.000000	2499.500000	4.02	45.82	310.46	-45.4	PEAK
2462.000000	2501.500000	5.67	45.83	375.84	-43.7	PEAK
2462.000000	2501.800000	-5.89	45.83	99.31	-55.3	AVERAGE

1 MB/sec Lower bandedge g0170175:2001-Jul-10 Tue 13:27:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	CF, dB	uV/m @ 3m	EIRP, dBm	*PEAK AVERAGE
2412.000000	2371.600000	5.6	41.04	214.78	-48.6	PEAK
2412.000000	2371.800000	-5.63	41.04	58.95	-59.8	AVERAGE
2412.000000	2374.000000	6.14	41.06	229.09	-48	PEAK
2412.000000	2374.000000	-5.65	41.06	58.95	-59.8	AVERAGE
2412.000000	2376.100000	5.45	41.06	211.59	-48.7	PEAK
2412.000000	2376.300000	-5.64	41.06	59.02	-59.8	AVERAGE
2412.000000	2378.000000	5.56	41.08	214.78	-48.6	PEAK
2412.000000	2378.000000	-5.53	41.08	59.91	-59.7	AVERAGE
2412.000000	2380.000000	-5.73	41.1	58.68	-59.9	AVERAGE
2412.000000	2380.000000	4.11	41.1	182.18	-50	PEAK
2412.000000	2382.000000	5.44	41.1	212.32	-48.7	PEAK
2412.000000	2382.000000	-5.74	41.1	58.61	-59.9	AVERAGE
2412.000000	2384.100000	-5.68	41.12	59.16	-59.8	AVERAGE
2412.000000	2384.100000	4.92	41.12	200.45	-49.2	PEAK
2412.000000	2386.000000	4.6	41.14	193.64	-49.5	PEAK
2412.000000	2386.000000	-5.76	41.14	58.75	-59.8	AVERAGE
2412.000000	2387.900000	-5.7	41.14	59.16	-59.8	AVERAGE
2412.000000	2388.000000	6.07	41.14	229.35	-48	PEAK
2412.000000	2390.000000	5.33	41.16	211.11	-48.7	PEAK
2412.000000	2390.000000	-5.68	41.16	59.43	-59.7	AVERAGE

*PEAK AND AVERAGE VALUES

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NAME OF TEST: Out of Band Emissions

2 MB/sec Upper bandedge g0170162:2001-Jul-09 Mon 12:22:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	CF, dB	uV/m @ 3m	EIRP, dBm	*PEAK AVERAGE
2462.000000	2483.500000	3.82	45.72	299.92	-45.7	PEAK
2462.000000	2483.500000	-5.76	45.72	99.54	-55.3	AVERAGE
2462.000000	2485.200000	-5.77	45.73	99.54	-55.3	AVERAGE
2462.000000	2485.600000	5.18	45.73	351.16	-44.3	PEAK
2462.000000	2487.500000	4.57	45.75	328.1	-44.9	PEAK
2462.000000	2487.500000	-5.84	45.75	98.97	-55.3	AVERAGE
2462.000000	2489.500000	-5.75	45.75	100	-55.2	AVERAGE
2462.000000	2489.800000	5.83	45.76	379.75	-43.6	PEAK
2462.000000	2491.500000	5.53	45.77	367.28	-43.9	PEAK
2462.000000	2491.500000	-5.75	45.77	100.23	-55.2	AVERAGE
2462.000000	2493.500000	-5.82	45.79	99.66	-55.3	AVERAGE
2462.000000	2494.100000	5.93	45.79	385.48	-43.5	PEAK
2462.000000	2495.500000	4.02	45.79	309.39	-45.4	PEAK
2462.000000	2495.500000	-5.84	45.79	99.43	-55.3	AVERAGE
2462.000000	2497.300000	-5.75	45.81	100.69	-55.2	AVERAGE
2462.000000	2497.500000	6.02	45.81	390.39	-43.4	PEAK
2462.000000	2499.500000	5.08	45.82	350.75	-44.3	PEAK
2462.000000	2499.600000	-5.79	45.83	100.46	-55.2	AVERAGE
2462.000000	2501.600000	-5.79	45.83	100.46	-55.2	AVERAGE
2462.000000	2501.600000	5.53	45.83	369.83	-43.9	PEAK

2 MB/sec Lower bandedge g0170178:2001-Jul-10 Tue 13:57:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	CF, dB	uV/m @ 3m	EIRP, dBm	*PEAK AVERAGE
2412.000000	2371.700000	-5.7	41.04	58.48	-59.9	AVERAGE
2412.000000	2372.000000	5.26	41.04	206.54	-48.9	PEAK
2412.000000	2374.000000	-5.7	41.06	58.61	-59.9	AVERAGE
2412.000000	2374.100000	4.23	41.06	183.87	-49.9	PEAK
2412.000000	2375.900000	5.61	41.06	215.53	-48.6	PEAK
2412.000000	2376.200000	-5.64	41.06	59.02	-59.8	AVERAGE
2412.000000	2378.000000	4.99	41.08	201.14	-49.2	PEAK
2412.000000	2378.000000	-5.6	41.08	59.43	-59.7	AVERAGE
2412.000000	2380.000000	-5.68	41.1	59.02	-59.8	AVERAGE
2412.000000	2380.300000	3.45	41.1	168.85	-50.7	PEAK
2412.000000	2382.000000	4.17	41.1	183.44	-50	PEAK
2412.000000	2382.000000	-5.69	41.1	58.95	-59.8	AVERAGE
2412.000000	2384.100000	-5.77	41.12	58.55	-59.9	AVERAGE
2412.000000	2384.100000	4.96	41.12	201.37	-49.1	PEAK
2412.000000	2386.000000	5.05	41.14	203.94	-49	PEAK
2412.000000	2386.000000	-5.69	41.14	59.22	-59.8	AVERAGE
2412.000000	2388.000000	-5.65	41.14	59.5	-59.7	AVERAGE
2412.000000	2388.000000	4.18	41.14	184.5	-49.9	PEAK
2412.000000	2390.000000	4.4	41.16	189.67	-49.7	PEAK
2412.000000	2390.000000	-5.61	41.16	59.91	-59.7	AVERAGE

*PEAK AND AVERAGE VALUES

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NAME OF TEST: Out of Band Emissions

5.5 MB/sec Upper bandedge g0170159: 2001-Jul-09 Mon 11:51:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	CF, dB	uV/m @ 3m	EIRP, dBm	*PEAK AVERAGE
2462.000000	2483.500000	5.7	45.72	372.39	-43.8	PEAK
2462.000000	2483.500000	-5.76	45.72	99.54	-55.3	AVERAGE
2462.000000	2485.600000	-5.84	45.73	98.74	-55.3	AVERAGE
2462.000000	2486.000000	5.79	45.73	376.7	-43.7	PEAK
2462.000000	2487.500000	4.8	45.75	336.9	-44.7	PEAK
2462.000000	2487.500000	-5.79	45.75	99.54	-55.3	AVERAGE
2462.000000	2489.500000	-5.79	45.75	99.54	-55.3	AVERAGE
2462.000000	2489.600000	4.04	45.76	309.03	-45.4	PEAK
2462.000000	2491.500000	4.89	45.77	341.19	-44.6	PEAK
2462.000000	2491.500000	-5.89	45.77	98.63	-55.3	AVERAGE
2462.000000	2493.400000	-5.79	45.79	100	-55.2	AVERAGE
2462.000000	2493.400000	4.54	45.79	328.47	-44.9	PEAK
2462.000000	2495.500000	5.48	45.79	366.02	-44	PEAK
2462.000000	2495.500000	-5.77	45.79	100.23	-55.2	AVERAGE
2462.000000	2497.500000	-5.84	45.81	99.66	-55.3	AVERAGE
2462.000000	2497.700000	4.66	45.81	333.81	-44.8	PEAK
2462.000000	2499.400000	4.43	45.81	325.09	-45	PEAK
2462.000000	2499.500000	-5.79	45.82	100.35	-55.2	AVERAGE
2462.000000	2501.400000	-5.77	45.83	100.69	-55.2	AVERAGE
2462.000000	2501.800000	5.15	45.83	354	-44.2	PEAK

5.5 MB/sec Lower bandedge g0170181: 2001-Jul-10 Tue 14:36:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	CF, dB	uV/m @ 3m	EIRP, dBm	*PEAK AVERAGE
2412.000000	2372.100000	-5.59	41.04	59.22	-59.8	AVERAGE
2412.000000	2372.300000	5.73	41.04	218.02	-48.5	PEAK
2412.000000	2374.000000	-5.53	41.06	59.77	-59.7	AVERAGE
2412.000000	2374.100000	5.79	41.06	220.04	-48.4	PEAK
2412.000000	2375.900000	4.68	41.06	193.64	-49.5	PEAK
2412.000000	2376.300000	-5.64	41.06	59.02	-59.8	AVERAGE
2412.000000	2377.900000	-5.58	41.08	59.57	-59.7	AVERAGE
2412.000000	2378.000000	4.09	41.08	181.34	-50.1	PEAK
2412.000000	2380.100000	-5.59	41.1	59.63	-59.7	AVERAGE
2412.000000	2380.400000	5.15	41.1	205.35	-49	PEAK
2412.000000	2382.000000	5.26	41.1	207.97	-48.9	PEAK
2412.000000	2382.000000	-5.62	41.1	59.43	-59.7	AVERAGE
2412.000000	2383.600000	-5.56	41.12	59.98	-59.7	AVERAGE
2412.000000	2383.900000	4.85	41.12	198.84	-49.3	PEAK
2412.000000	2386.000000	5.26	41.14	208.93	-48.8	PEAK
2412.000000	2386.000000	-5.64	41.14	59.57	-59.7	AVERAGE
2412.000000	2387.700000	-5.7	41.14	59.16	-59.8	AVERAGE
2412.000000	2388.000000	5.44	41.14	213.3	-48.6	PEAK
2412.000000	2390.000000	4.79	41.16	198.38	-49.3	PEAK
2412.000000	2390.000000	-5.57	41.16	60.19	-59.6	AVERAGE

*PEAK AND AVERAGE VALUES

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NAME OF TEST: Out of Band Emissions

11 MB/sec Upper bandedge g0170170: 2001-Jul-10 Tue 12:34:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	CF, dB	uV/m @ 3m	EIRP, dBm	*PEAK AVERAGE
2462.000000	2483.500000	4.67	45.72	330.75	-44.8	PEAK
2462.000000	2483.500000	-5.76	45.72	99.54	-55.3	AVERAGE
2462.000000	2485.500000	-5.79	45.73	99.31	-55.3	AVERAGE
2462.000000	2485.700000	3.32	45.73	283.47	-46.2	PEAK
2462.000000	2487.500000	4.52	45.75	326.21	-45	PEAK
2462.000000	2487.500000	-5.84	45.75	98.97	-55.3	AVERAGE
2462.000000	2489.500000	-5.82	45.75	99.2	-55.3	AVERAGE
2462.000000	2489.800000	4.57	45.76	328.47	-44.9	PEAK
2462.000000	2491.500000	3.88	45.77	303.74	-45.6	PEAK
2462.000000	2491.500000	-5.84	45.77	99.2	-55.3	AVERAGE
2462.000000	2493.300000	5.04	45.78	347.54	-44.4	PEAK
2462.000000	2493.400000	-5.79	45.79	100	-55.2	AVERAGE
2462.000000	2495.500000	4.5	45.79	326.96	-44.9	PEAK
2462.000000	2495.500000	-5.86	45.79	99.2	-55.3	AVERAGE
2462.000000	2497.300000	4.13	45.81	314.05	-45.3	PEAK
2462.000000	2497.500000	-5.75	45.81	100.69	-55.2	AVERAGE
2462.000000	2499.500000	5.5	45.82	368.13	-43.9	PEAK
2462.000000	2499.500000	-5.79	45.82	100.35	-55.2	AVERAGE
2462.000000	2501.600000	4.09	45.83	313.33	-45.3	PEAK
2462.000000	2501.700000	-5.77	45.83	100.69	-55.2	AVERAGE

11 MB/sec Upper bandedge g0170184: 2001-Jul-10 Tue 15:06:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	CF, dB	uV/m @ 3m	EIRP, dBm	*PEAK AVERAGE
2412.000000	2372.000000	-5.59	41.04	59.22	-59.8	AVERAGE
2412.000000	2372.200000	5.61	41.04	215.03	-48.6	PEAK
2412.000000	2373.900000	4.25	41.06	184.29	-49.9	PEAK
2412.000000	2374.000000	-5.63	41.06	59.09	-59.8	AVERAGE
2412.000000	2376.000000	-5.54	41.06	59.7	-59.7	AVERAGE
2412.000000	2376.100000	4.06	41.06	180.3	-50.1	PEAK
2412.000000	2378.000000	4.5	41.08	190.11	-49.6	PEAK
2412.000000	2378.000000	-5.58	41.08	59.57	-59.7	AVERAGE
2412.000000	2380.000000	6.3	41.1	234.42	-47.8	PEAK
2412.000000	2380.200000	-5.66	41.1	59.16	-59.8	AVERAGE
2412.000000	2382.000000	6.19	41.1	231.47	-47.9	PEAK
2412.000000	2382.000000	-5.62	41.1	59.43	-59.7	AVERAGE
2412.000000	2383.900000	5.18	41.12	206.54	-48.9	PEAK
2412.000000	2384.100000	-5.56	41.12	59.98	-59.7	AVERAGE
2412.000000	2386.000000	4.88	41.14	199.99	-49.2	PEAK
2412.000000	2386.000000	-5.71	41.14	59.09	-59.8	AVERAGE
2412.000000	2387.500000	6.96	41.14	254.1	-47.1	PEAK
2412.000000	2388.000000	-5.6	41.14	59.84	-59.7	AVERAGE
2412.000000	2390.000000	5.5	41.16	215.28	-48.6	PEAK
2412.000000	2390.000000	-5.54	41.16	60.39	-59.6	AVERAGE

*PEAK AND AVERAGE VALUES

PAGE NO. 16 of 84.
NAME OF TEST: Restricted Bands of Operation
SPECIFICATION: 47 CFR 15.205
TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE

The EUT was set up on a three meter open field site according to the procedure on ANSI C63.4.

Sensitivity of system was measured:

Below 2 GHz:
 CISPR Bandwidths = 8 dB μ V
 1 MHz RBW, 1 MHz VBW = 12 dB μ V
 1 MHz RBW, 10 Hz VBW = 3 dB μ V
 Above 2 GHz:
 1 MHz RBW, 1 MHz VBW = 33 dB μ V
 1 MHz RBW, 10 Hz VBW = 22 dB μ V

Sensitivity of system with preamps:

Below 2 GHz:
 Preamps are not used in this range.
 Above 2 GHz:
 Peak = 3 dB μ V
 Average = -8 dB μ V

Cable Loss:

915 MHz = -0.8 dB μ V
 2450 MHz = -3 dB μ V

Note:


dB loss vs. frequency included in programmed software.

Reference Level Offset:

set @ 1 dB, accounts for cable and connector loss.

TEST RESULTS: No harmonic or spurious emissions were detected in the restricted bands in excess of the limits of 15.205. System measurement sensitivity was -130 dBm.

SUPERVISED BY:

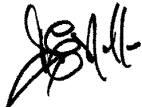

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PAGE NO. 17 of 84.
NAME OF TEST: Emissions At Band Edges
SPECIFICATION: 47 CFR
TEST EQUIPMENT: As for "Out of Band Emissions"

MEASUREMENT RESULTS

ATTACHED

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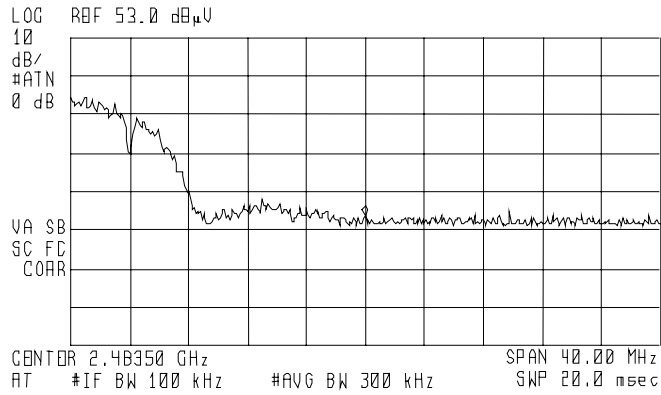

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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170167: 2001-Jul-10 Tue 11:45:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKA 2.48350 GHz
6.47 dBμV



POWER: HIGH
MODULATION: 1 MB/SEC PSUDEO RANDOM DATA
UPPER BANDEDGE CH.
2462/PEAK

SUPERVISED BY:

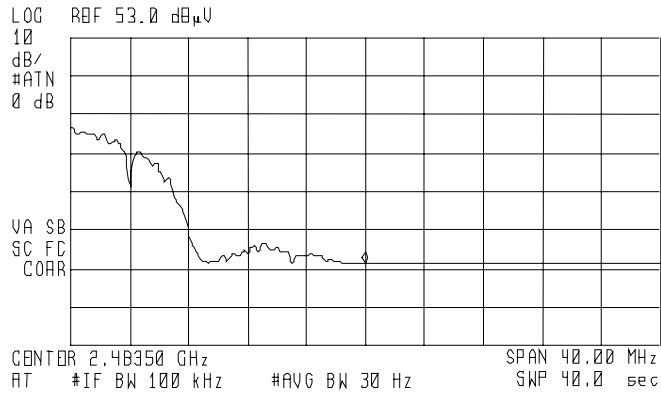
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PAGE NO. 19 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170166: 2001-Jul-10 Tue 11:44:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBAS DBT: PBAK QP AVG
MKA 2.48350 GHz
-5.74 dBμV



POWER: HIGH
MODULATION: 1 MB/SEC PSUDEO RANDOM DATA
UPPER BANDEDGE CH. 2462/AVG

SUPERVISED BY:

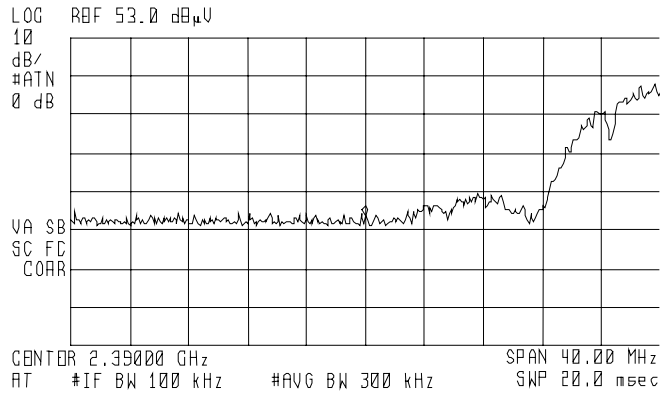
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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170177: 2001-Jul-10 Tue 13:56:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBAAS DBT: PBAK QP AVG
MKA 2.39000 GHz
6.55 dBμV



POWER: HIGH
MODULATION: 1 MB/SEC PSUDEO RANDOM DATA
LOWER BANDEDGE CH 2412/PEAK

SUPERVISED BY:

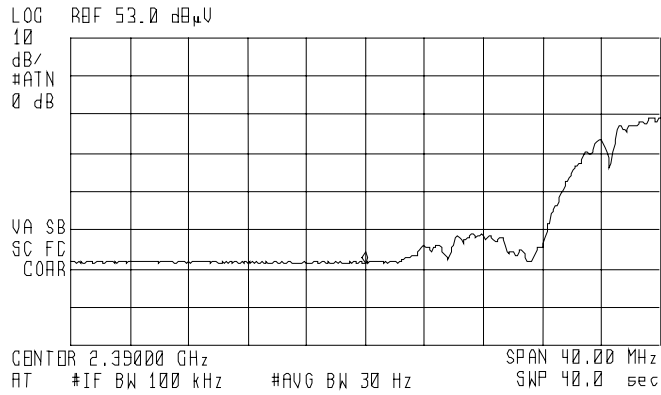
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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170176: 2001-Jul-10 Tue 13:55:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKA 2.39000 GHz
-5.58 dBμV



POWER: HIGH
MODULATION: 1 MB/SEC PSUDEO RANDOM DATA
LOWER BANDEDGE CH 2412/AVG

SUPERVISED BY:

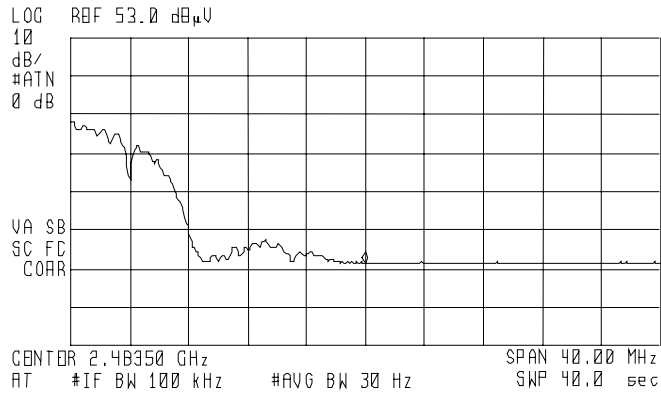
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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170168: 2001-Jul-10 Tue 12:32:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKA 2.48350 GHz
-5.76 dBμV



POWER: HIGH
MODULATION: 2 MB/SEC PSUDEO RANDOM DATA
UPPER BANDEDGE CH. 2462/AVG

SUPERVISED BY:

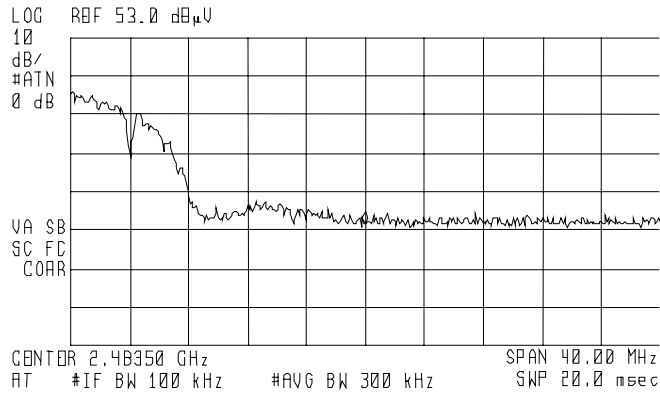
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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170169: 2001-Jul-10 Tue 12:32:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKA 2.48350 GHz
4.62 dBμV



POWER: HIGH
MODULATION: 2 MB/SEC PSUDEO RANDOM DATA
UPPER BANDEDGE CH.
2462/PEAK

SUPERVISED BY:

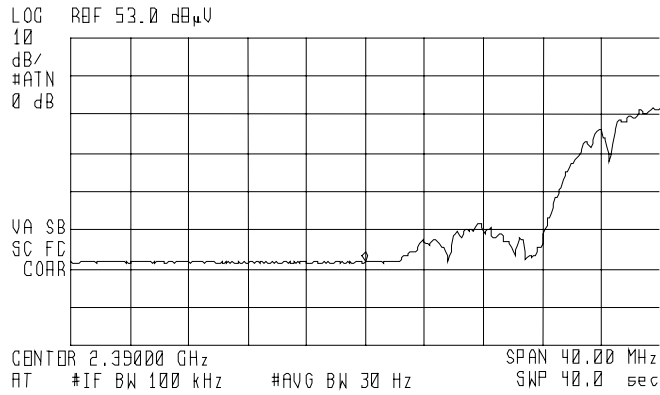
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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170179: 2001-Jul-10 Tue 14:34:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBAAS DBT: PBAK QP AVG
MKA 2.39000 GHz
-5.51 dBμV



POWER: HIGH
MODULATION: 2 MB/SEC PSUDEO RANDOM DATA
LOWER BANDEDGE CH. 2412/AVG

SUPERVISED BY:

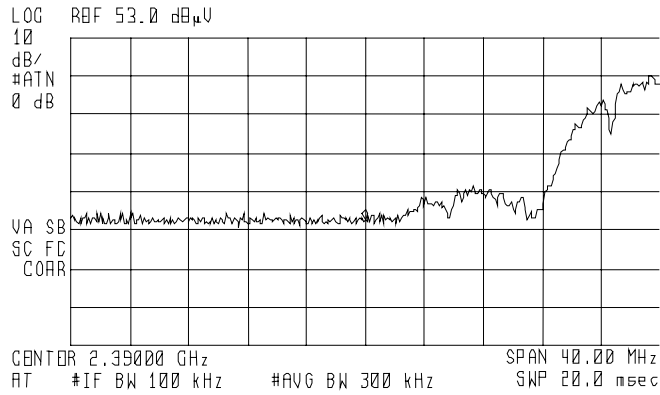
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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170180: 2001-Jul-10 Tue 14:36:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKA 2.39000 GHz
5.36 dBμV



POWER: HIGH
MODULATION: 2 MB/SEC PSUDEO RANDOM DATA
LOWER BANDEDGE CH.
2412/PEAK

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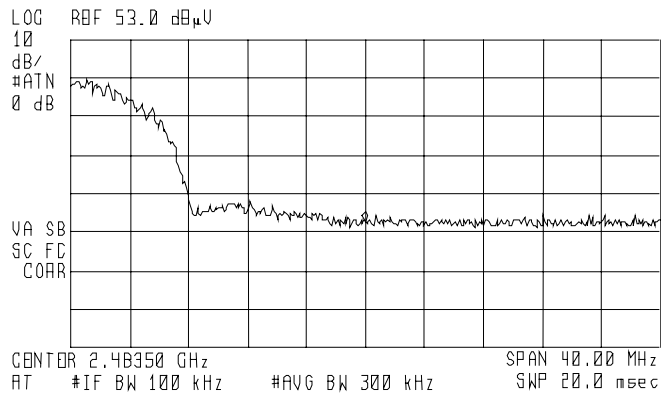
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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170172: 2001-Jul-10 Tue 12:59:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKA 2.48350 GHz
5.28 dBμV



POWER:	HIGH
MODULATION:	5.5 MB/SEC PSUDEO RANDOM DATA
	UPPER BANDEDGE CH.
	2462/PEAK

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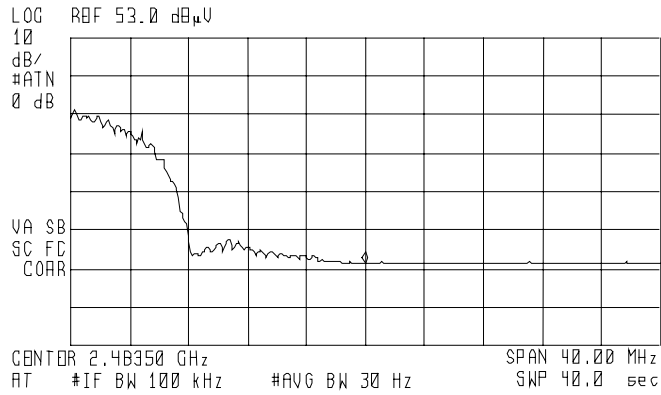
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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170171: 2001-Jul-10 Tue 12:58:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKA 2.48350 GHz
-5.76 dBμV



POWER:	HIGH
MODULATION:	5.5 MB/SEC PSUDEO RANDOM DATA
	UPPER BANDEDGE CH. 2462/AVG

SUPERVISED BY:

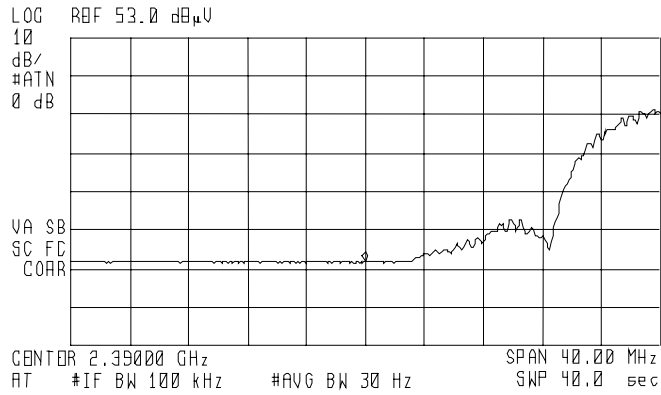
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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170182: 2001-Jul-10 Tue 15:05:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKA 2.39000 GHz
-5.57 dBμV



POWER:	HIGH
MODULATION:	5.5 MB/SEC PSUDEO RANDOM DATA
	LOWER BANDEDGE CH. 2412/AVG

SUPERVISED BY:

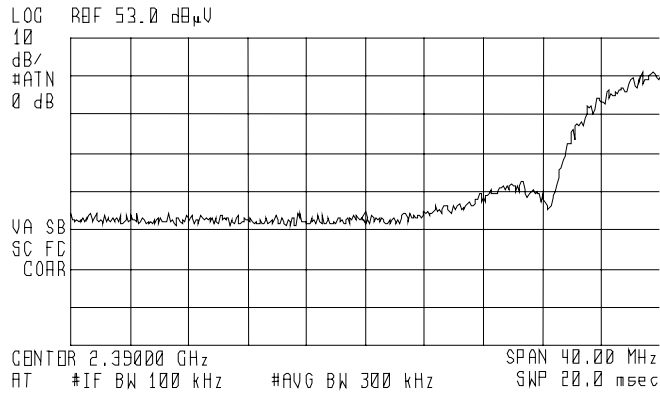
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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170183: 2001-Jul-10 Tue 15:06:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBAAS DBT: PBAK QP AVG
MKA 2.39000 GHz
4.62 dBμV



POWER: HIGH
MODULATION: 5.5 MB/SEC PSUDEO RANDOM
DATA
LOWER BANDEDGE CH.
2412/PEAK

SUPERVISED BY:

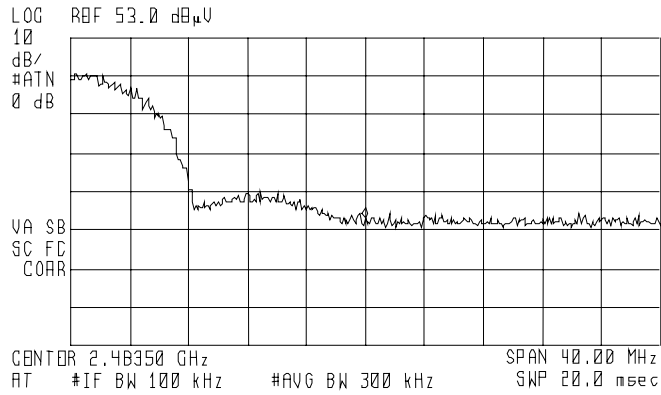
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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170174: 2001-Jul-10 Tue 13:25:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKA 2.48350 GHz
5.70 dBμV



POWER:	HIGH
MODULATION:	11 MB/SEC PSUDEO RANDOM DATA
	UPPER BANDEDGE CH.
	2462/PEAK

SUPERVISED BY:

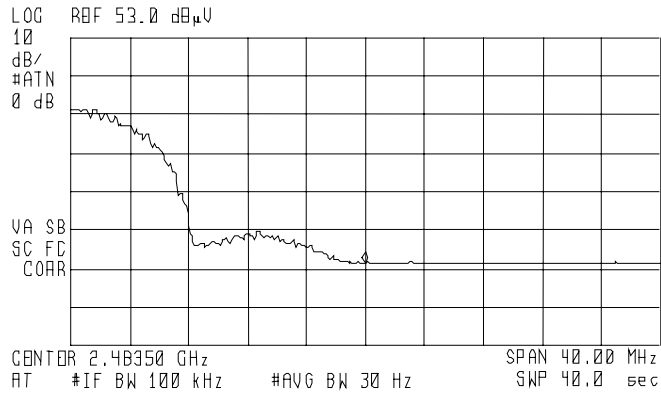
Doug Noble, B.A.S. E.E.T.

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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170173: 2001-Jul-10 Tue 13:24:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKA 2.48350 GHz
-5.76 dBμV



POWER:	HIGH
MODULATION:	11 MB/SEC PSUDEO RANDOM DATA
	UPPER BANDEDGE CH. 2462/AVG

SUPERVISED BY:

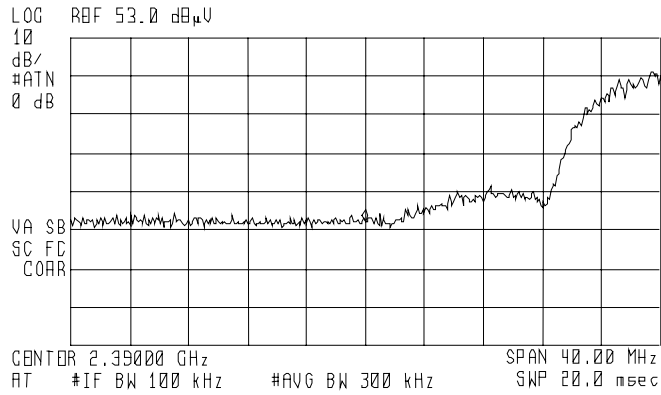
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NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170186: 2001-Jul-10 Tue 15:33:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKA 2.39000 GHz
5.24 dBμV



POWER:	HIGH
MODULATION:	11 MB/SEC PSUDEO RANDOM DATA
	LOWER BANDEDGE CH.
	2412/PEAK

SUPERVISED BY:

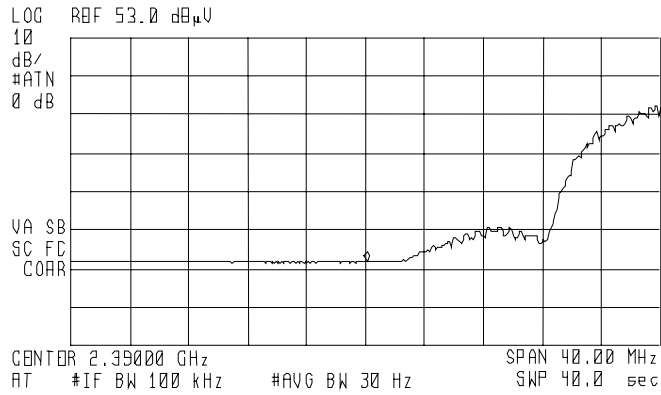
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PAGE NO. 33 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0170185: 2001-Jul-10 Tue 15:32:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKA 2.39010 GHz
-5.47 dBμV



POWER:	HIGH
MODULATION:	11 MB/SEC PSUDEO RANDOM DATA
	LOWER BANDEDGE CH. 2412/AVG

SUPERVISED BY:

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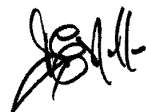
PAGE NO. 34 of 84.
NAME OF TEST: Allowed Occupied Bandwidth
SPECIFICATION: 47 CFR 15.247(a)(2)
TEST EQUIPMENT: As per attached page

LIMITS

<u>RULE</u>	<u>TYPE</u>	<u>BANDS (MHz)</u>	<u>LIMIT (kHz)</u>
15.247(a)(1)(i)	F.H.	902-928	20 dB BW ≤ 500
15.247(a)(1)(ii)	F.H.	2400-2483.5, 5725-5850	20 dB BW ≤ 1000
15.247(a)(2)	D.S.	ALL	6 dB BW ≥ 500

MEASUREMENT DATA

MEASURED BANDWIDTH, kHz = 16,200
 RESULTS = ATTACHED

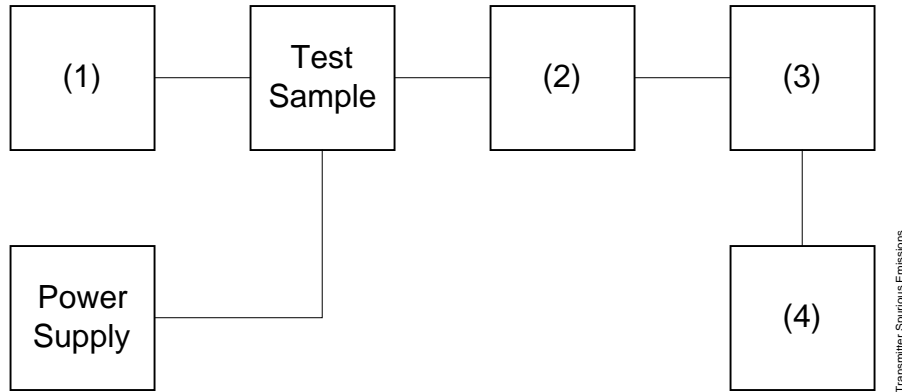


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TRANSMITTER SPURIOUS EMISSION

TEST A. OCCUPIED BANDWIDTH (IN-BAND SPURIOUS)
 TEST B. OUT-OF-BAND SPURIOUS



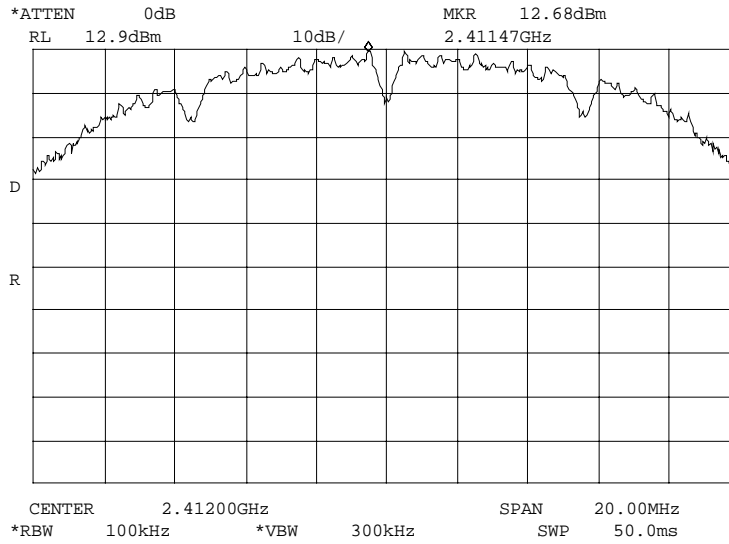
Asset Description (as applicable)	s/n
<u>(1) AUDIO OSCILLATOR/GENERATOR</u>	
i00010 HP 204D	1105A04683
i00017 HP 8903A	2216A01753
i00012 HP 3312A	1432A11250
<u>(2) COAXIAL ATTENUATOR</u>	
i00122 Narda 766-10	7802
i00123 Narda 766-10	7802A
i00069 Bird 8329 (30 dB)	1006
i00113 Sierra 661A-3D	1059
<u>(3) FILTERS; NOTCH, HP, LP, BP</u>	
i00126 Eagle TNF-1	100-250
i00125 Eagle TNF-1	50-60
i00124 Eagle TNF-1	250-850
<u>(4) SPECTRUM ANALYZER</u>	
i00048 HP 8566B	2511A01467
i00029 HP 8563E	3213A00104

PAGE NO. 36 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170193: 2001-Jul-12 Thu 10:32:00

STATE: 2:High Power



POWER: HIGH
 MODULATION: FUNDAMENTAL
 1 MB/SEC CH. 2412

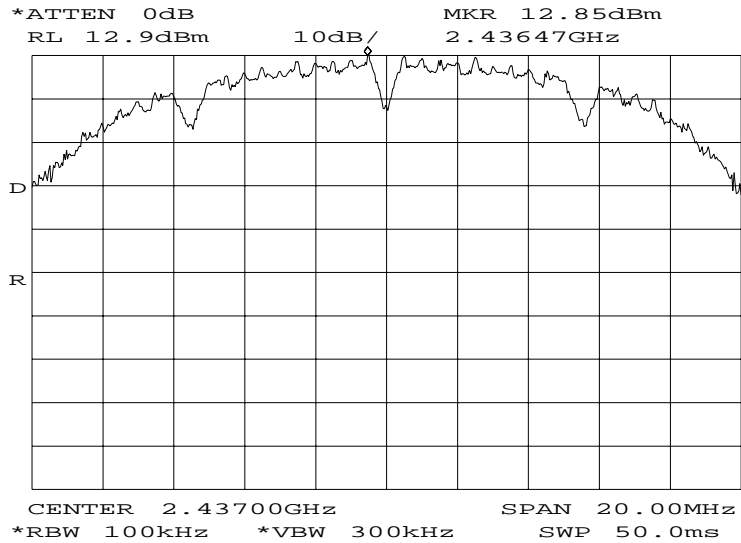
SUPERVISED BY:

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PAGE NO. 37 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170194: 2001-Jul-12 Thu 10:35:00
 STATE: 2:High Power



POWER: HIGH
 MODULATION: FUNDAMENTAL
 1 MB/SEC CH. 2437

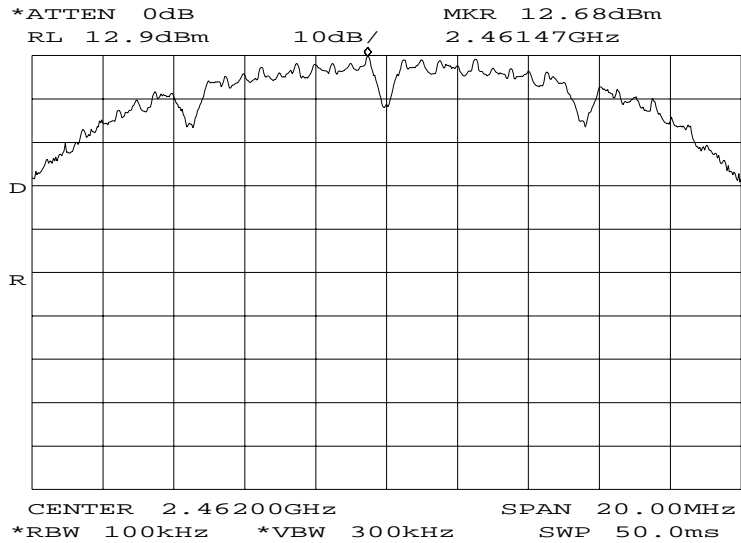
SUPERVISED BY:

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PAGE NO. 38 of 84.

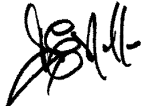
NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170199: 2001-Jul-12 Thu 10:51:00
STATE: 2:High Power



POWER: HIGH
MODULATION: FUNDAMENTAL
1 MB/SEC CH. 2462

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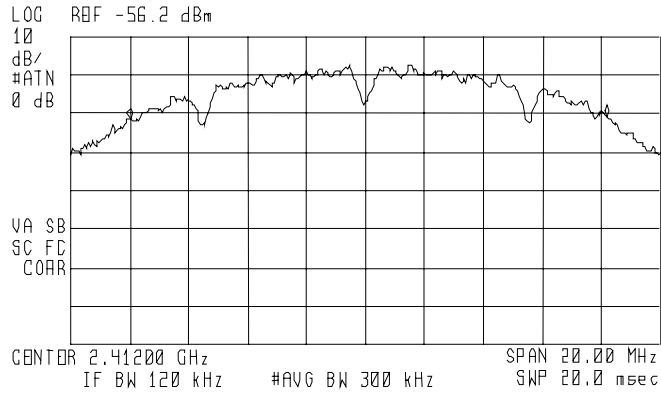
PAGE NO. 42 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170233: 2001-Jul-13 Fri 12:28:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBAAS DBT: PBAK QP AVG
MKRA 16.20 MHz
.50 dB



POWER: HIGH
MODULATION: 99% POWER BANDWIDTH
1 MB/SEC CH. 2412

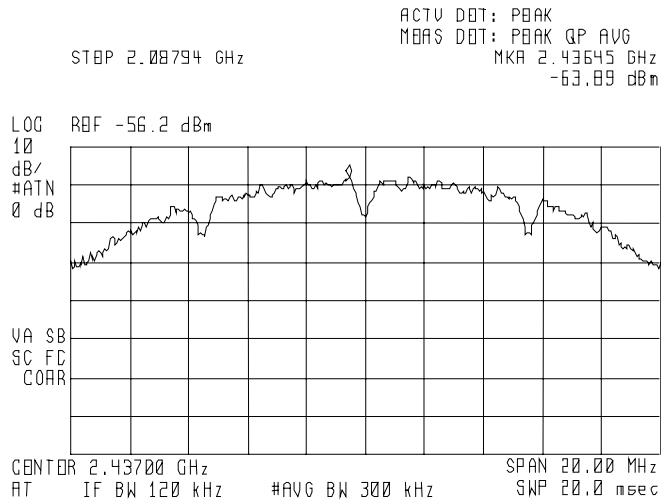
SUPERVISED BY:

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PAGE NO. 43 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170231: 2001-Jul-13 Fri 11:41:00
STATE: 2:High Power



POWER: HIGH
MODULATION: 99% POWER BANDWIDTH
1 MB/SEC CH. 2437

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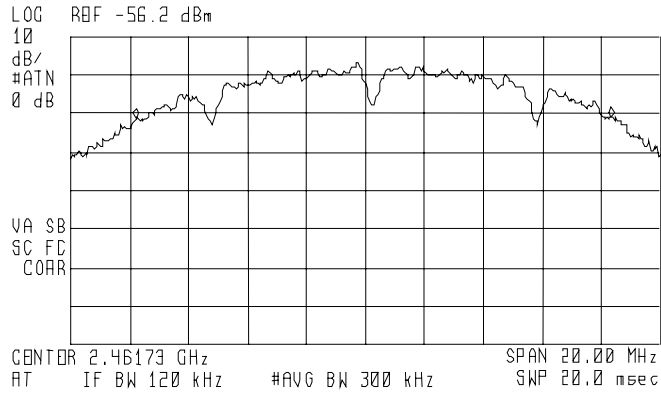
PAGE NO. 44 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170220: 2001-Jul-12 Thu 15:43:00
STATE: 2:High Power



ACTV DBT: PBAK
MBAAS DBT: PBAK QP AVG
MKRA 16.15 MHz
.40 dB



POWER: HIGH
MODULATION: 99% POWER BANDWIDTH
1 MB/SEC CH. 2462

SUPERVISED BY:

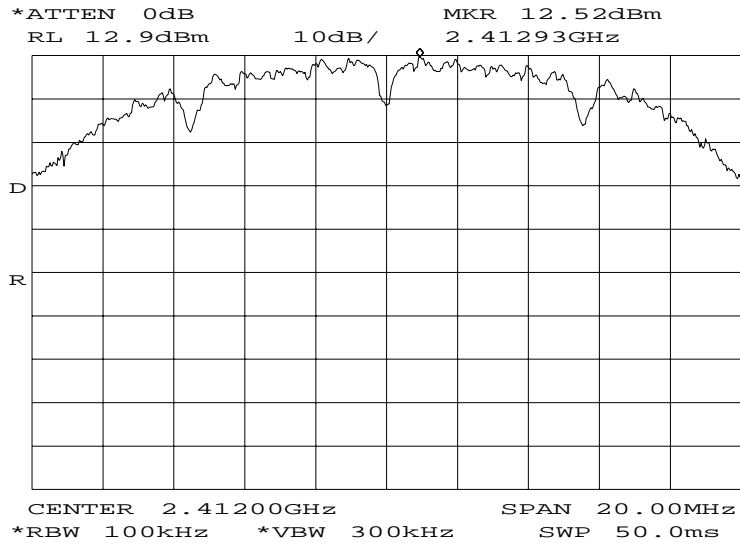
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PAGE NO. 45 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170192: 2001-Jul-12 Thu 10:30:00

STATE: 2:High Power



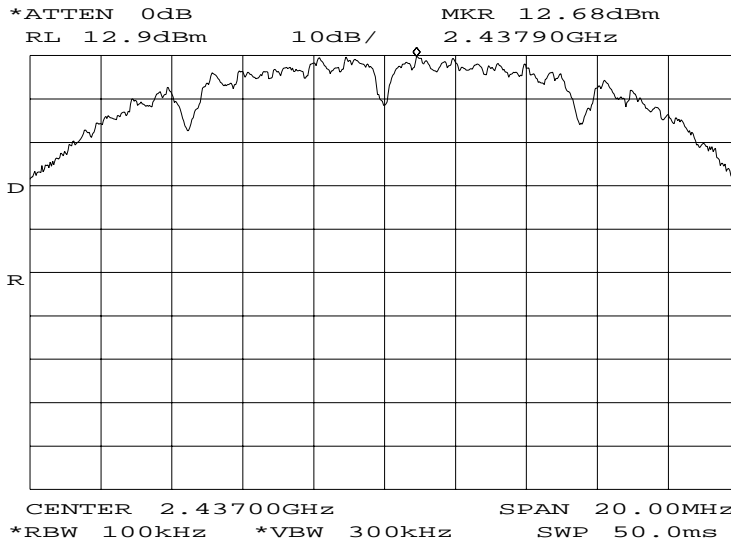
POWER:	HIGH
MODULATION:	FUNDAMENTAL
	2 MB/SEC CH. 2412

SUPERVISED BY: Doug Noble, B.A.S. E.E.T.

PAGE NO. 46 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170195: 2001-Jul-12 Thu 10:37:00
STATE: 2:High Power



POWER: HIGH
MODULATION: FUNDAMENTAL
2 MB/SEC CH. 2437

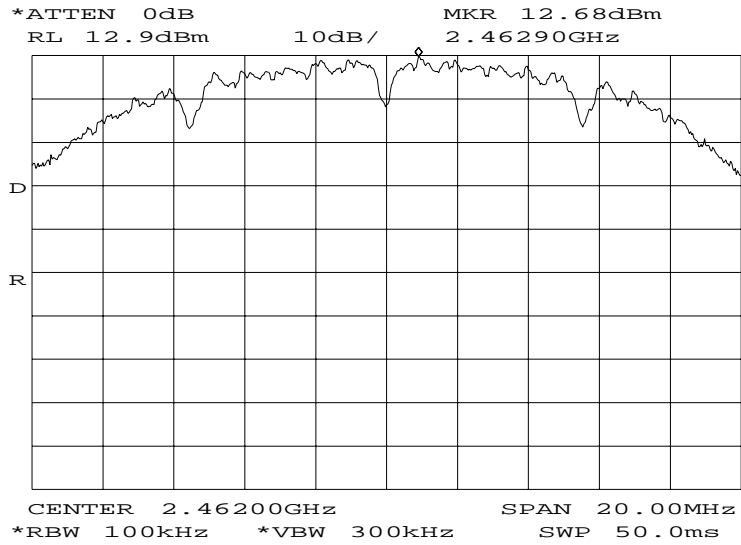
SUPERVISED BY:

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PAGE NO. 47 of 84.

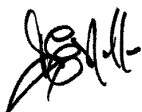
NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170198: 2001-Jul-12 Thu 10:49:00
STATE: 2:High Power



POWER: HIGH
MODULATION: FUNDAMENTAL
2 MB/SEC CH. 2462

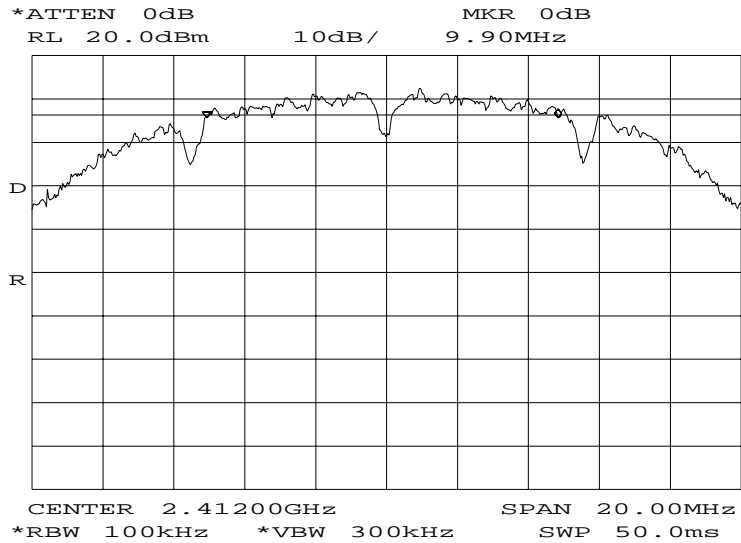
SUPERVISED BY:


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PAGE NO. 48 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170211: 2001-Jul-12 Thu 11:53:00
 STATE: 2:High Power



POWER: HIGH
 MODULATION: 2 MB/SEC PSUDEO RANDOM DATA
 6 DB BANDWIDTH CH. 2412

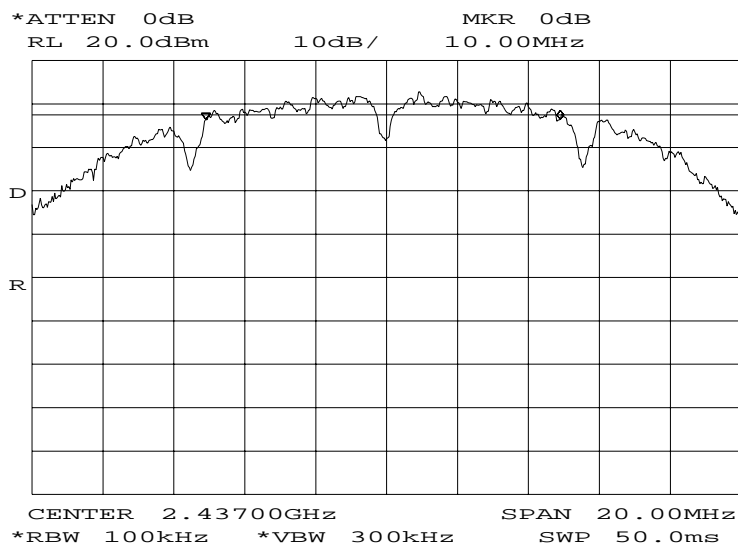
SUPERVISED BY: Doug Noble, B.A.S. E.E.T.

PAGE NO. 49 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)


g0170206: 2001-Jul-12 Thu 11:39:00

STATE: 2:High Power



POWER: HIGH
MODULATION: 2 MB/SEC PSEUDO RANDOM DATA
6 DB BANDWIDTH CH. 2437

SUPERVISED BY:

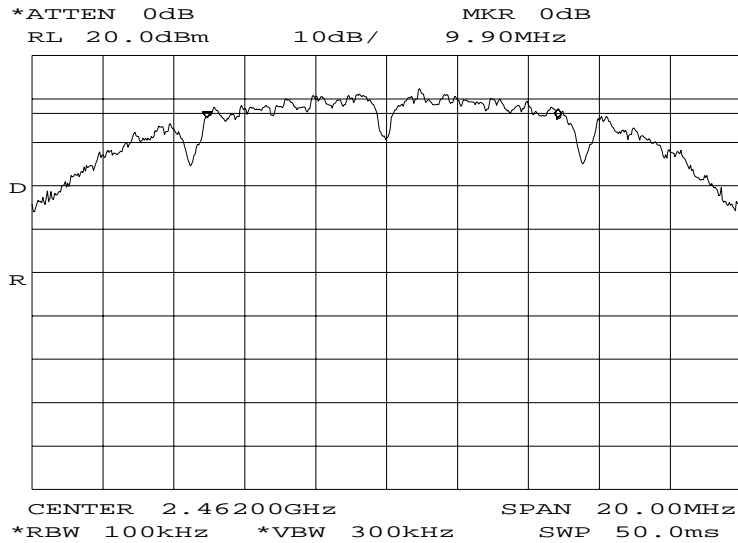

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PAGE NO. 50 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

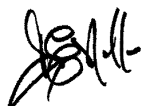
g0170204: 2001-Jul-12 Thu 11:32:00

STATE: 2:High Power



POWER: HIGH
MODULATION: 2 MB/SEC PSUDEO RANDOM DATA
6 DB BANDWIDTH CH. 2462

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PAGE NO. 51 of 84.

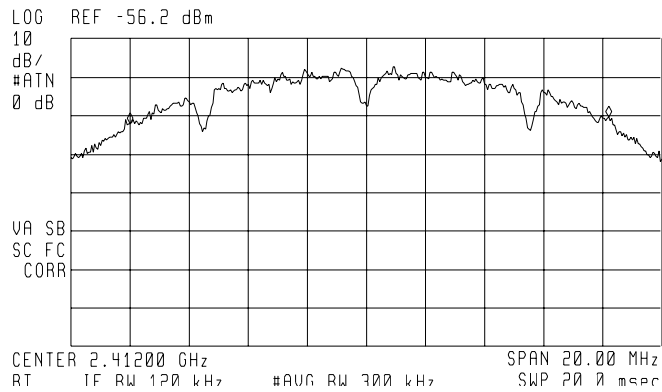
NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170230: 2001-Jul-13 Fri 11:31:00

STATE: 2:High Power



ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKRΔ 16.20 MHz
1.94 dB



POWER: HIGH
 MODULATION: 99% POWER BANDWIDTH
 2 MB/SEC CH. 2412

SUPERVISED BY:

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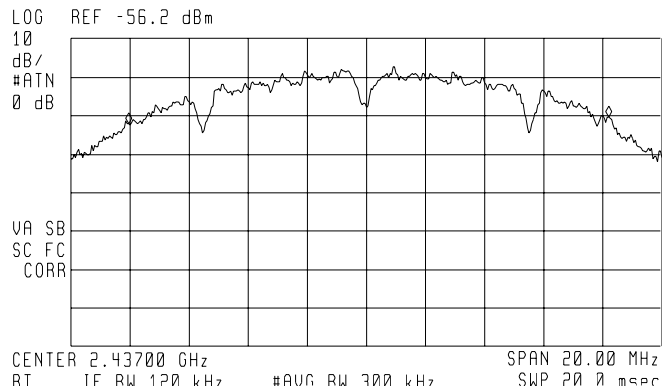
NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170227: 2001-Jul-13 Fri 11:12:00

STATE: 2:High Power



ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKRΔ 16.25 MHz
1.83 dB



POWER: HIGH
 MODULATION: 99% POWER BANDWIDTH
 2 MB/SEC CH. 2437

SUPERVISED BY:

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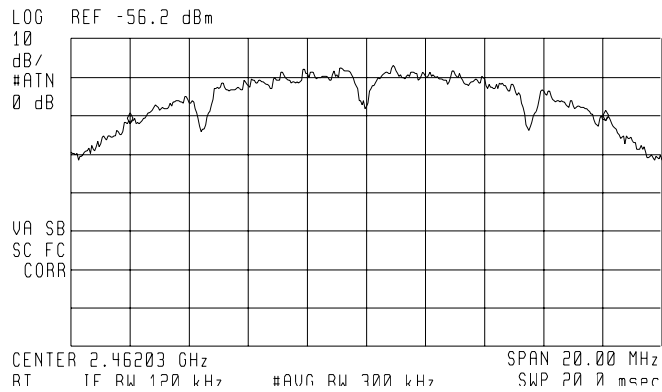
PAGE NO. 53 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170218: 2001-Jul-12 Thu 15:28:00
STATE: 2:High Power



ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKRΔ 16.10 MHz
.65 dB



POWER: HIGH
MODULATION: 99% POWER BANDWIDTH
2 MB/SEC CH. 2462

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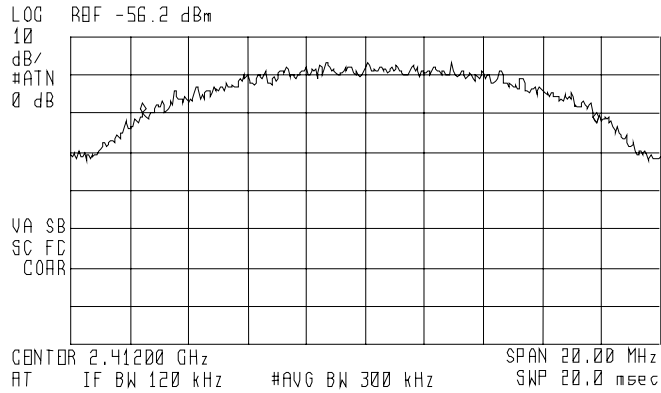
PAGE NO. 60 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170236: 2001-Jul-13 Fri 12:51:00
STATE: 2:High Power



ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKR Δ 15.40 MHz
-2.19 dB



POWER: HIGH
MODULATION: 99% POWER BANDWIDTH
5.5 MB/SEC CH. 2412

SUPERVISED BY:

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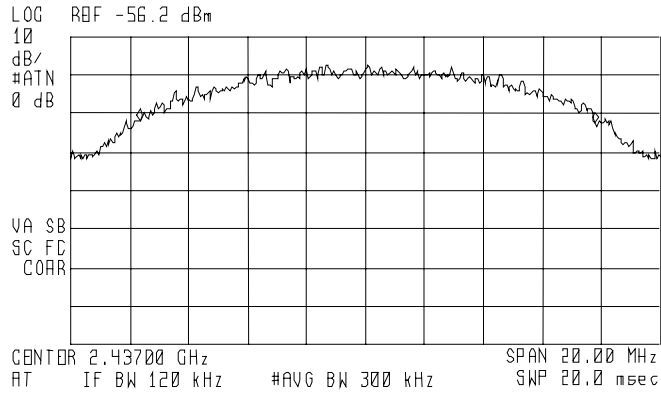
PAGE NO. 61 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170226: 2001-Jul-13 Fri 11:09:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBAAS DBT: PBAK QP AVG
MKRA 15.45 MHz
-.97 dB



POWER: HIGH
MODULATION: 99% POWER BANDWIDTH
5.5 MB/SEC CH. 2437

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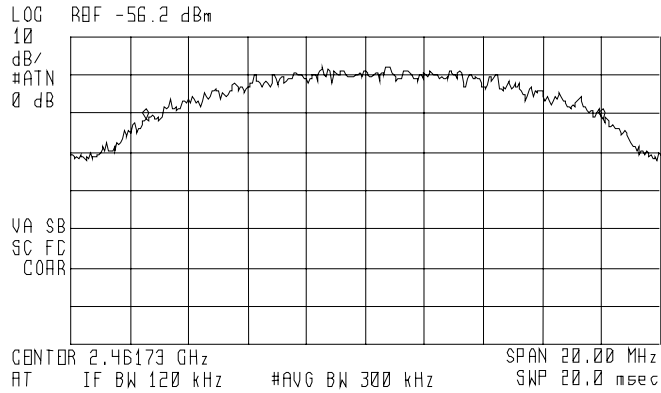
PAGE NO. 62 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170216: 2001-Jul-12 Thu 15:15:00
STATE: 2:High Power



ACTV DBT: PBAK
MBAAS DBT: PBAK QP AVG
MKRA 15.50 MHz
.01 dB



POWER: HIGH
MODULATION: 99% POWER BANDWIDTH
5.5 MB/SEC CH. 2462

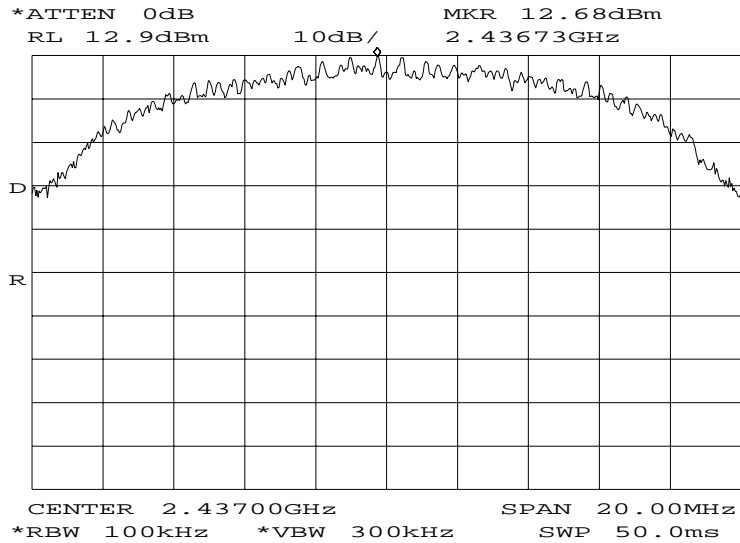
SUPERVISED BY:

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NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170189: 2001-Jul-12 Thu 10:01:00
STATE: 2:High Power



POWER: HIGH
MODULATION: FUNDAMENTAL
11 MB/SEC CH. 2437

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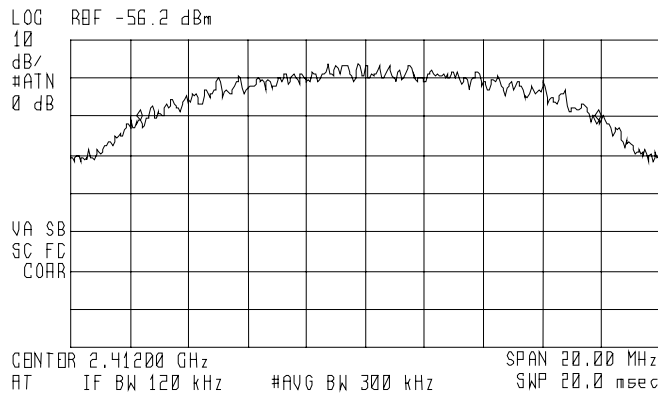
PAGE NO. 69 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170237: 2001-Jul-13 Fri 12:52:00
STATE: 2:High Power



ACTV DBT: PBAK
MBAAS DBT: PBAK QP AVG
MKRA 15.55 MHz
.15 dB



POWER: HIGH
MODULATION: 99% POWER BANDWIDTH
11 MB/SEC CH. 2412

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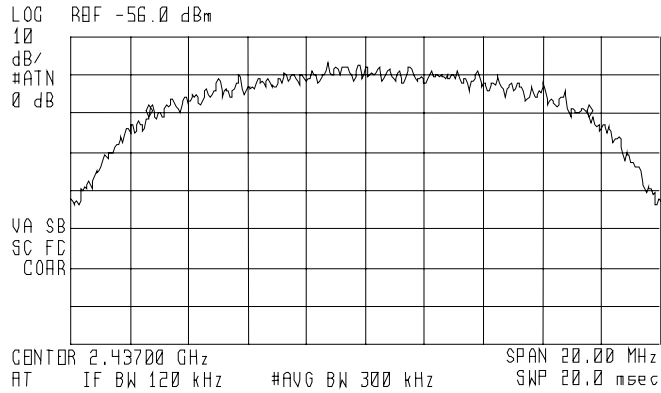
PAGE NO. 70 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170223: 2001-Jul-13 Fri 10:46:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBAAS DBT: PBAK QP AVG
MKRA 14.95 MHz
.10 dB



POWER: HIGH
MODULATION: 99% POWER BANDWIDTH
11 MB/SEC CH. 2437

SUPERVISED BY:

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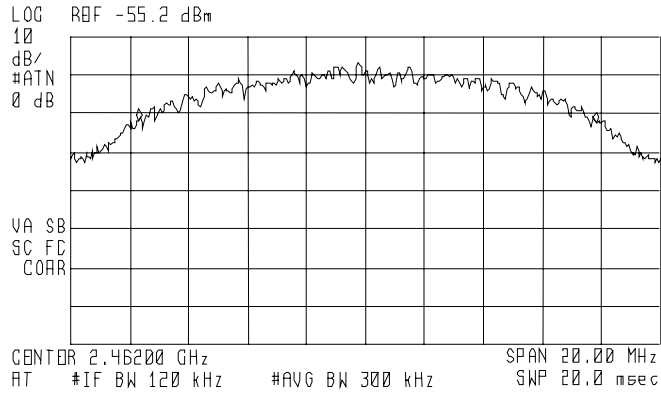
PAGE NO. 71 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170214: 2001-Jul-12 Thu 14:53:00
STATE: 2:High Power



ACTV DBT: PBAK
MBAAS DBT: PBAK QP AVG
MKRA 15.55 MHz
-51 dB



POWER: HIGH
MODULATION: 99% POWER BANDWDITH
11 MB/SEC CH. 2462

SUPERVISED BY:

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PAGE NO. 72 of 84.

NAME OF TEST: Spread Spectrum Technology
Direct Sequence Systems

15.247(a)(2) Minimum 6 dB Bandwidth

RESULTS: Please see results for "Allowed Occupied Bandwidth"

15.247(d) Transmitter Power Density

LIMIT: The transmitter power density peak over any 1 second interval shall not be greater than 8 dBm in any 3 kHz Bandwidth within these bands.

RESULTS: Please see attached plots.
Transmitter Power Density, dBm = ≥ -0.26

15.247(e) Processing Gain

LIMIT: The processing gain shall be ≥ 10 dB

RESULTS: See Applicant's statement
Processing Gain, dB SEE FCC ID: MXF-WL280

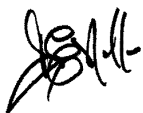
Pseudorandom Sequence Description

RESULTS: See Applicant's statement

Chip Rate

RESULTS: See Applicant's statement
Chip Rate, MHz SEE FCC ID: MXF-WL280

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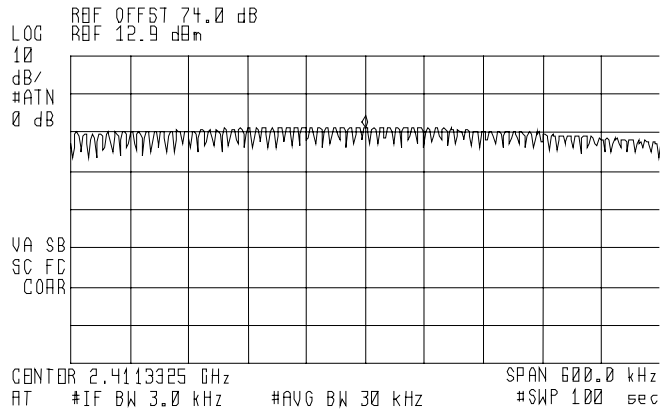
PAGE NO. 73 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170234: 2001-Jul-13 Fri 12:35:00
STATE: 2:High Power



ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKR 2.4113325 GHz
-5.6B dBm



POWER: HIGH
MODULATION: 1 MB/SEC CH. 2412
SPECTRAL POWER DENSITY

SUPERVISED BY:

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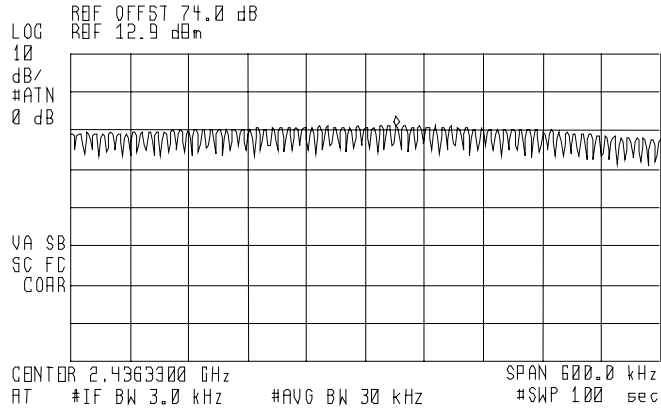
PAGE NO. 74 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170232: 2001-Jul-13 Fri 11:53:00
STATE: 2:High Power



ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKR 2.4363615 GHz
-6.08 dBm



POWER: HIGH
MODULATION: 1 MB/SEC
SPECTRAL POWER DENSITY

SUPERVISED BY:

Doug Noble, B.A.S. E.E.T.

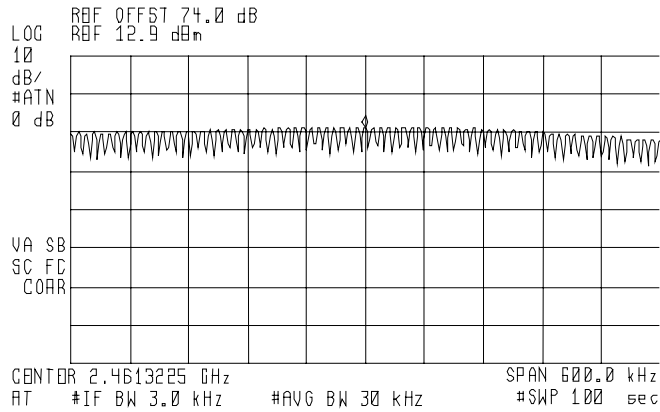
PAGE NO. 75 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170221: 2001-Jul-12 Thu 15:54:00
STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBAS DBT: PBAK QP AVG
MKR 2.4613225 GHz
-5.7B dBm



POWER: HIGH
MODULATION: 1 MB/SEC
SPECTRAL POWER DENSITY

SUPERVISED BY:

Doug Noble, B.A.S. E.E.T.

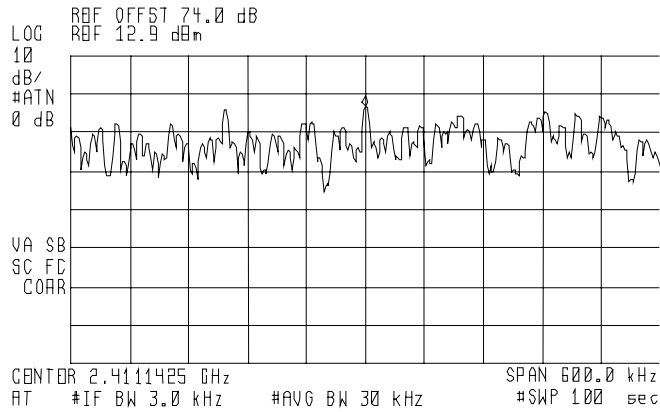
PAGE NO. 76 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170229: 2001-Jul-13 Fri 11:29:00
STATE: 2:High Power



ACTV DBT: PBAK
MBAS DBT: PBAK QP AVG
MKR 2.4111425 GHz
-.56 dBm



POWER: HIGH
MODULATION: 2 MB/SEC
SPECTRAL POWER DENSITY

SUPERVISED BY:

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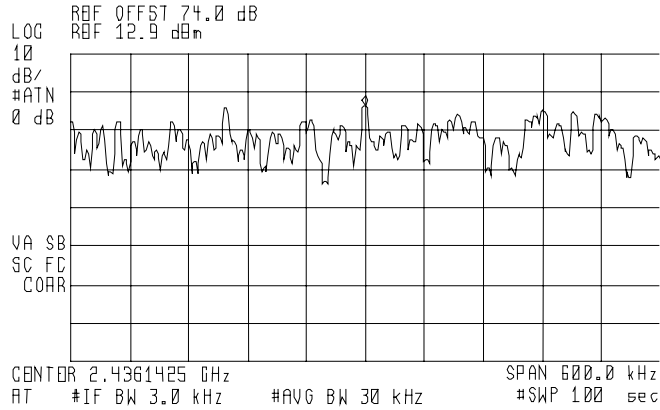
PAGE NO. 77 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170228: 2001-Jul-13 Fri 11:19:00
STATE: 2:High Power



ACTV DBT: PBAK
MBA5 DBT: PBAK QP AV6
MKR 2.4361425 GHz
-.75 dBm



POWER: HIGH
MODULATION: 2 MB/SEC
SPECTRAL POWER DENSITY

SUPERVISED BY:

Doug Noble, B.A.S. E.E.T.

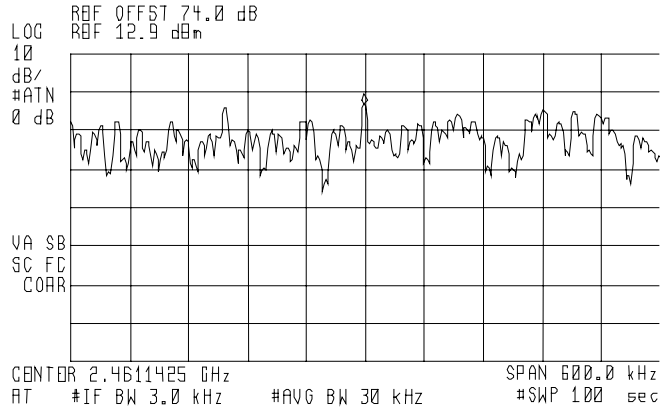
PAGE NO. 78 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170219: 2001-Jul-12 Thu 15:36:00
STATE: 2:High Power



ACTV DBT: PBAK
MBAS DBT: PBAK QP AVG
MKR 2.4611410 GHz
-.59 dBm



POWER: HIGH
MODULATION: 2 MB/SEC
SPECTRAL POWER DENSITY

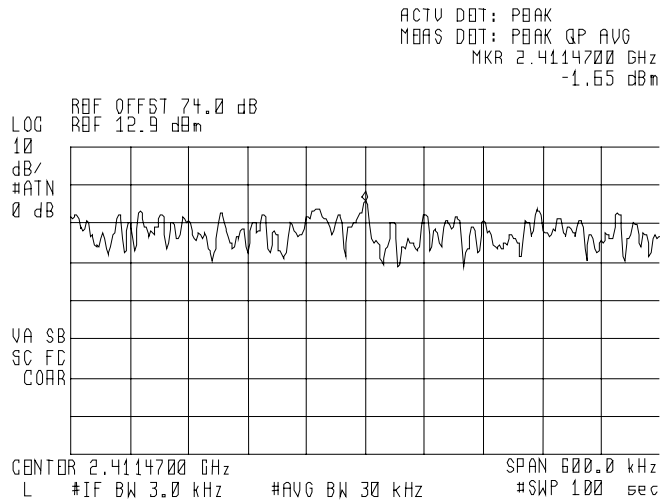
SUPERVISED BY:

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PAGE NO. 79 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170235: 2001-Jul-13 Fri 12:49:00
STATE: 2:High Power



POWER: HIGH
 MODULATION: 5.5 MB/SEC CH. 2412
 SPECTRAL POWER DENSITY

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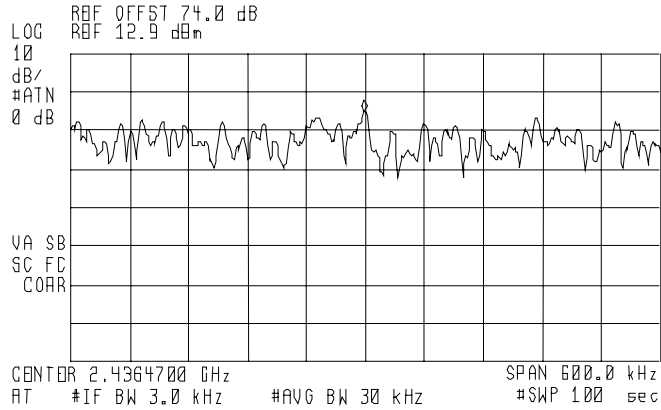
NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170225: 2001-Jul-13 Fri 11:06:00

STATE: 2:High Power

(2)

ACTV DBT: PBAK
MBAAS DBT: PBAK QP AVG
MKR 2.4364685 GHz
-2.44 dBm



POWER: HIGH
MODULATION: 5.5 MB/SEC
SPECTRAL POWER DENSITY

SUPERVISED BY:

Doug Noble, B.A.S. E.E.T.

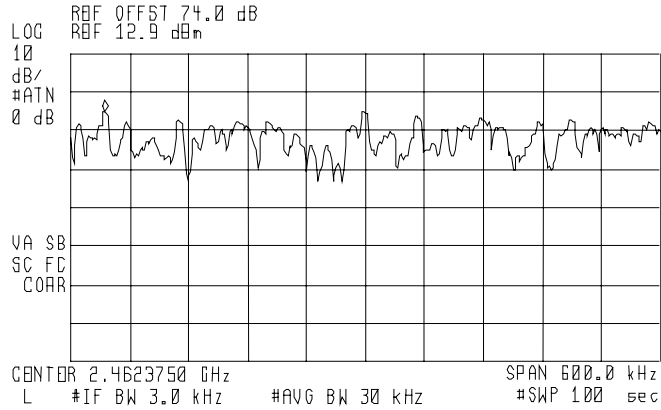
PAGE NO. 81 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170217: 2001-Jul-12 Thu 15:24:00
STATE: 2:High Power



ACTV DBT: PBAK
MBAAS DBT: PBAK QP AVG
MKR 2.4621095 GHz
-2.11 dBm



POWER: HIGH
MODULATION: 5.5 MB/SEC
SPECTRAL POWER DENSITY

SUPERVISED BY:

Doug Noble, B.A.S. E.E.T.

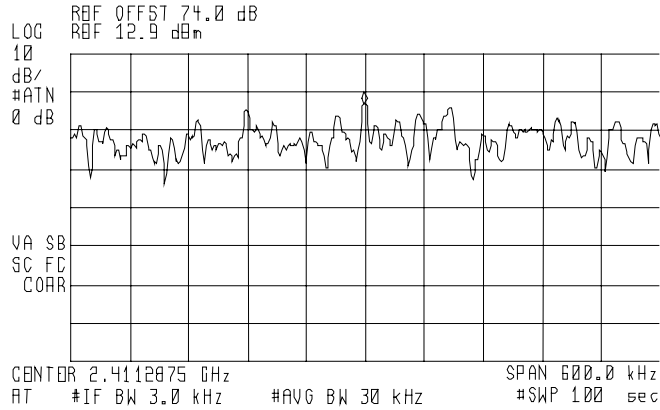
PAGE NO. 82 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170238: 2001-Jul-13 Fri 13:03:00
STATE: 2:High Power



ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKR 2.4112860 GHz
-.25 dBm



POWER: HIGH
MODULATION: 11 MB/SEC
SPECTRAL POWER DENSITY

SUPERVISED BY:

Doug Noble, B.A.S. E.E.T.

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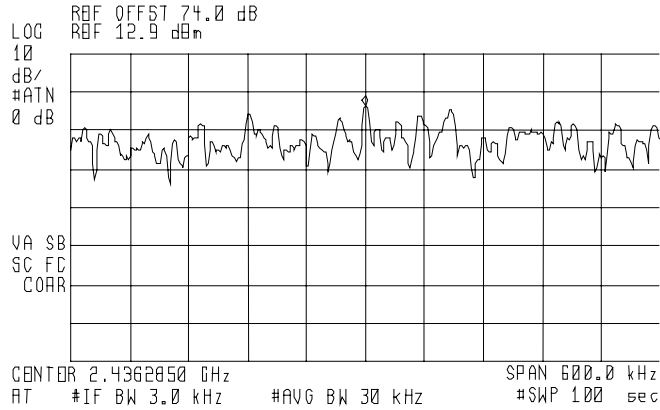
NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170224: 2001-Jul-13 Fri 10:59:00

STATE: 2:High Power



ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKR 2.4362850 GHz
-1.00 dBm



POWER: HIGH
MODULATION: 11 MB/SEC
SPECTRAL POWER DENSITY

SUPERVISED BY:

Doug Noble, B.A.S. E.E.T.

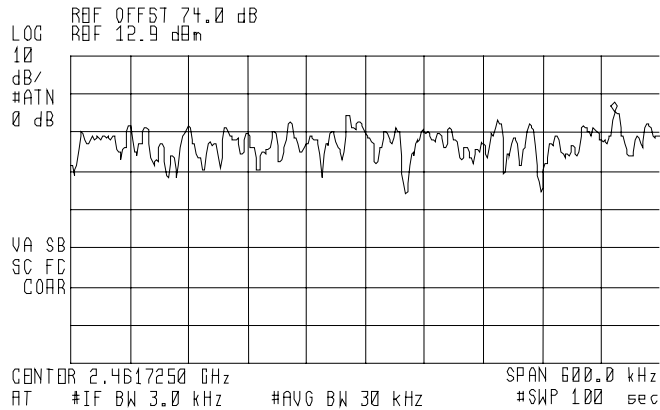
PAGE NO. 84 of 84.

NAME OF TEST: Emission Masks (Occupied Bandwidth)

g0170215: 2001-Jul-12 Thu 15:09:00
STATE: 2:High Power



ACTV DBT: PBAK
MBA5 DBT: PBAK QP AVG
MKR 2.4619785 GHz
-2.04 dBm



POWER: HIGH
MODULATION: 11 MB/SEC
SPECTRAL POWER DENSITY

SUPERVISED BY: Doug Noble, B.A.S. E.E.T.
END OF TEST REPORT

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
HP8563E	Spectrum Analyzer, 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:



Morton Flom, P. Eng.