


PAGE NO. 1 of 27.

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 85224
- c) Report Number: d9970022
- d) Client: Edmo Distributors Inc.  
5505 E. Rutter Ave.  
Spokane, WA 99212
- e) Identification: JHP-500  
FCC ID: CKEJHP-500  
Description: VHF Aviation Band Transceiver
- f) EUT Condition: Not required unless specified in individual tests.
- g) Report Date: July 14, 1999  
EUT Received: June 29, 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:   
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 CERTIFICATION

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

87

Sub-part 2.1033

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

Japan Radio Co., Ltd.  
Akasaka Twin Tower Main Bldg.  
Fl/5&6 17-22 Akasaka 2-chome  
Minato-ku Tokyo 107 Japan

MANUFACTURER:

Applicant

(c) (2): FCC ID: CKEJHP-500

MODEL NO: JHP-500

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

PLEASE SEE ATTACHED EXHIBITS


(c) (4): TYPE OF EMISSION: 6K0A3E

(c) (5): FREQUENCY RANGE, MHz: 118 to 136.975

(c) (6): POWER RATING, Watts: 5 PEP  
 \_\_\_ Switchable \_\_\_ Variable x N/A

(c) (7): MAXIMUM POWER RATING, Watts: 10 W

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

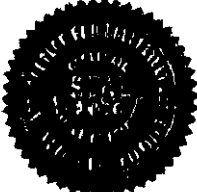
**M. FLOM ASSOCIATES, INC.**  
Chandler, AZ

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 Abney*  
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  
3156 North San Marcos Place, Suite 107  
Chandler, AZ 85226-1571  
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	Standards
RF Emission	FCC Part 15 (Subparts B and C) using ANSI C63.4-1992; CISPR 11; CISPR 11; CISPR 14; CISPR 12; EN 55011; EN 55013; EN 55014; EN 55022; EN 50618-1; EN 50618-2; FCC Part 18; ICES-001; AS/NZS 1044; AS/NZS 1453; AS/NZS 3544; 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 Abney*

5301 Buckeystown Pike, Suite 350 • Frederick, MD 21704-6307 • Phone: 301 664 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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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 = 12

(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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Sub-part

2.1033(c) (14):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 2.947, 2.1033(c), 2.1041, 2.1046, 2.1047, 2.1079, 2.1051, 2.1053, 2.1055, 2.1057 and the following individual Parts:

- \_\_\_\_\_ 21 - Domestic Public Fixed Radio Services
- \_\_\_\_\_ 22 - Public Mobile Services
- \_\_\_\_\_ 22 Subpart H - Cellular Radiotelephone Service
- \_\_\_\_\_ 22.901(d) - Alternative technologies and auxiliary services
- \_\_\_\_\_ 23 - International Fixed Public Radiocommunication services
- \_\_\_\_\_ 24 - Personal Communications Services
- \_\_\_\_\_ 74 Subpart H - Low Power Auxiliary Stations
- \_\_\_\_\_ 80 - Stations in the Maritime Services
- \_\_\_\_\_ 80 Subpart E - General Technical Standards
- \_\_\_\_\_ 80 Subpart F - Equipment Authorization for Compulsory Ships
- \_\_\_\_\_ 80 Subpart K - Private Coast Stations and Marine Utility Stations
- \_\_\_\_\_ 80 Subpart S - Compulsory Radiotelephone Installations for Small Passenger Boats
- \_\_\_\_\_ 80 Subpart T - Radiotelephone Installation Required for Vessels on the Great Lakes
- \_\_\_\_\_ 80 Subpart U - Radiotelephone Installations Required by the Bridge-to-Bridge Act
- \_\_\_\_\_ 80 Subpart V - Emergency Position Indicating Radiobeacons (EPIRB'S)
- \_\_\_\_\_ 80 Subpart W - Global Maritime Distress and Safety System (GMDSS)
- \_\_\_\_\_ 80 Subpart X - Voluntary Radio Installations
- x\_\_\_\_\_ 87 - Aviation Services
- \_\_\_\_\_ 90 - Private Land Mobile Radio Services
- \_\_\_\_\_ 94 - Private Operational-Fixed Microwave Service
- \_\_\_\_\_ 95 Subpart A - General Mobile Radio Service (GMRS)
- \_\_\_\_\_ 95 Subpart C - Radio Control (R/C) Radio Service
- \_\_\_\_\_ 95 Subpart D - Citizens Band (CB) Radio Service
- \_\_\_\_\_ 95 Subpart E - Family Radio Service
- \_\_\_\_\_ 95 Subpart F - Interactive Video and Data Service (IVDS)
- \_\_\_\_\_ 101 - Fixed Microwave Services

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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. 7 of 27.  
NAME OF TEST: Carrier Output Power (Conducted)  
SPECIFICATION: 47 CFR 2.1046(a)  
GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.1  
TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE

1. The EUT was connected to a resistive coaxial attenuator of normal load impedance, and the unmodulated output power was measured by means of an R. F. Power Meter.
2. Measurement accuracy is  $\pm 3\%$ .

MEASUREMENT RESULTS  
(Worst case)

FREQUENCY OF CARRIER, MHz = 121.5, 118.0, 136.975

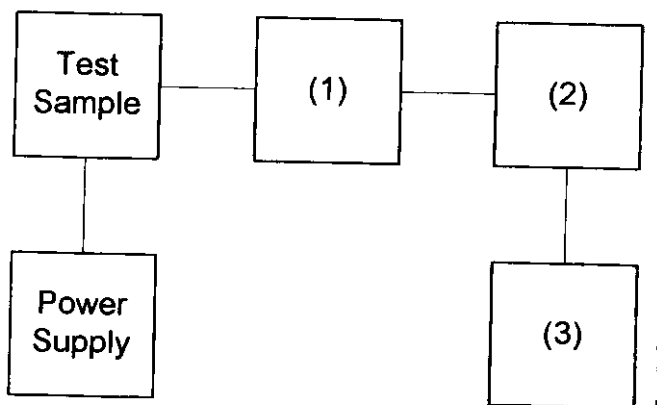
POWER SETTING	R. F. POWER, WATTS
High	5 PEP

SUPERVISED BY:

  
Morton Flom, P. Eng.

TRANSMITTER POWER CONDUCTED MEASUREMENTS

TEST 1: R. F. POWER OUTPUT  
 TEST 2: FREQUENCY STABILITY



Asset	Description	s/n
(1)	<u>COAXIAL ATTENUATOR</u>	
___	i00122 Narda 766-10	7802
___	i00123 Narda 766-10	7802A
___	i00069 Bird 8329 (30 dB)	1006
<u>x</u>	i00113 Sierra 661A-3D	1059
(2)	<u>POWER METERS</u>	
___	i00014 HP 435A	1733A05836
<u>x</u>	i00039 HP 436A	2709A26776
<u>x</u>	i00020 HP 8901A POWER MODE	2105A01087
(3)	<u>FREQUENCY COUNTER</u>	
___	i00042 HP 5383A	1628A00959
<u>x</u>	i00019 HP 5334B	2704A00347
<u>x</u>	i00020 HP 8901A FREQUENCY MODE	2105A01087



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NAME OF TEST: Unwanted Emissions (Transmitter Conducted)

SPECIFICATION: 47 CFR 2.1051

GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.13

TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE

1. The emissions were measured for the worst case as follows:
  - (a): within a band of frequencies defined by the carrier frequency plus and minus one channel.
  - (b): from the lowest frequency generated in the EUT and to at least the 10th harmonic of the carrier frequency, or 40 GHz, whichever is lower.
2. The magnitude of spurious emissions that are attenuated more than 20 dB below the permissible value need not be specified.

3. MEASUREMENT RESULTS: ATTACHED FOR WORST CASE


FREQUENCY OF CARRIER, MHz = 121.5, 118.0, 136.975

SPECTRUM SEARCHED, GHz = 0 to 10 x F<sub>c</sub>

ALL OTHER EMISSIONS = ≥ 20 dB BELOW LIMIT

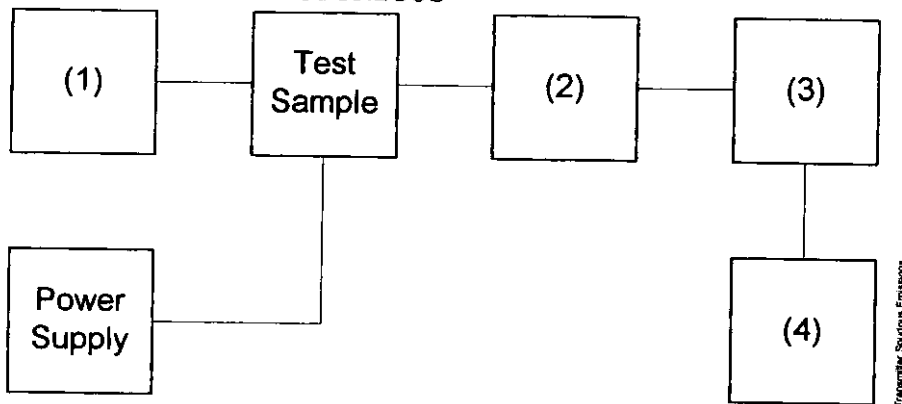
LIMIT(S), dBc  
 -(50+10xLOG P) = -57 (5 Watts)

SUPERVISED BY:

  
 Morton Flom, P. Eng.

TRANSMITTER SPURIOUS EMISSION

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



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

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NAME OF TEST: Unwanted Emissions (Transmitter Conducted)  
 g9970053: 1999-Jul-10 Sat 15:54:00  
 STATE: 2:High Power

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBm	LEVEL, dBc	MARGIN, dB
118.000000	54.320000	-31.7	-66.7	-18.7
118.000000	59.110000	-26.3	-61.3	-13.3
121.500000	60.870000	-33.1	-68.1	-20.1
136.975000	68.620000	-32.2	-67.2	-19.2
121.500000	100.580000	-29.5	-64.5	-16.5
136.975000	115.870000	-33.8	-68.8	-20.8
118.000000	139.520000	-30.3	-65.3	-17.3
121.500000	143.040000	-30.5	-65.5	-17.5
118.000000	172.420000	-31.3	-66.3	-18.3
118.000000	177.200000	-25.5	-60.5	-12.5
121.500000	182.540000	-33.8	-68.8	-20.8
118.000000	235.999000	-27.3	-62.3	-14.3
121.500000	243.001000	-25.2	-60.2	-12.2
136.975000	273.944000	-31.5	-66.5	-18.5
118.000000	353.992000	-27.4	-62.4	-14.4
121.500000	364.500000	-26.8	-61.8	-13.8
136.975000	410.923000	-31.1	-66.1	-18.1
118.000000	471.990000	-32.1	-67.1	-19.1
121.500000	486.005000	-32.6	-67.6	-19.6
136.975000	547.892000	-36.8	-71.8	-23.8
118.000000	589.990000	-41	-76	-28
121.500000	607.512000	-41	-76	-28
136.975000	684.884000	-40.1	-75.1	-27.1
118.000000	708.406000	-44.2	-79.2	-31.2
121.500000	728.999000	-43.9	-78.9	-30.9
136.975000	821.470000	-44	-79	-31
118.000000	825.950000	-43.9	-78.9	-30.9
121.500000	850.591000	-42.6	-77.6	-29.6
118.000000	944.171000	-44.7	-79.7	-31.7
136.975000	958.446000	-43.8	-78.8	-30.8
121.500000	972.445000	-44.1	-79.1	-31.1
118.000000	1062.281000	-43.6	-78.6	-30.6
121.500000	1093.523000	-43.8	-78.8	-30.8
136.975000	1095.690000	-44	-79	-31
118.000000	1180.325000	-43.8	-78.8	-30.8
121.500000	1214.843000	-44.2	-79.2	-31.2
136.975000	1232.591000	-43.4	-78.4	-30.4
118.000000	1297.527000	-44.3	-79.3	-31.3
121.500000	1336.686000	-43.3	-78.3	-30.3
136.975000	1369.967000	-43.9	-78.9	-30.9
118.000000	1415.868000	-43.3	-78.3	-30.3
121.500000	1458.102000	-43.8	-78.8	-30.8
136.975000	1506.690000	-43	-78	-30
118.000000	1534.294000	-43.4	-78.4	-30.4
121.500000	1579.535000	-41.6	-76.6	-28.6
136.975000	1643.691000	-43.7	-78.7	-30.7

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NAME OF TEST: Unwanted Emissions (Transmitter Conducted)  
g9970053: 1999-Jul-10 Sat 15:54:00  
STATE: 2:High Power

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBm	LEVEL, dBc	MARGIN, dB
118.000000	1652.125000	-42.5	-77.5	-29.5
121.500000	1700.789000	-43.7	-78.7	-30.7
118.000000	1769.713000	-43.2	-78.2	-30.2
136.975000	1780.560000	-42.6	-77.6	-29.6
121.500000	1822.353000	-42.2	-77.2	-29.2
136.975000	1917.650000	-42.8	-77.8	-29.8
136.975000	2055.041000	-43	-78	-30

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NAME OF TEST: Field Strength of Spurious Radiation

SPECIFICATION: 47 CFR 2.1053(a)

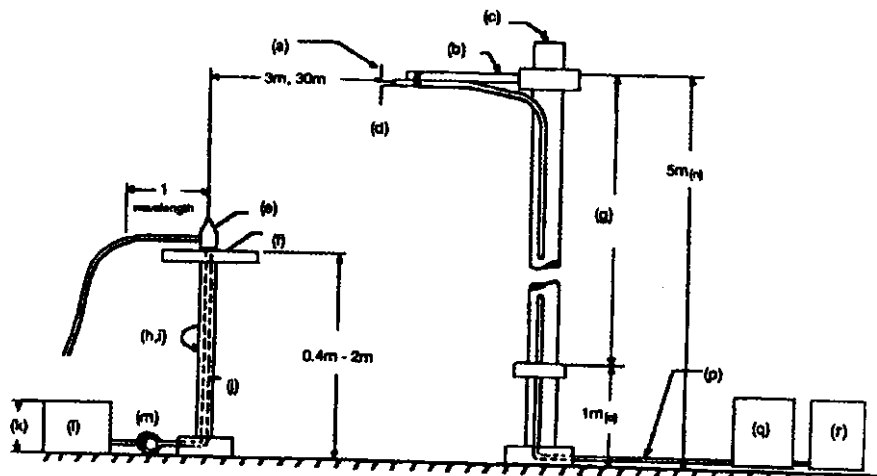
GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.12

TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE

1. A description of the measurement facilities was filed with the FCC and was found to be in compliance with the requirements of Section 2.948, by letter from the FCC dated March 3, 1997, FILE 31040/SIT. All pertinent changes will be reported to the Commission by up-date prior to March 2000.
2. At first, in order to locate all spurious frequencies and approximate amplitudes, and to determine proper equipment functioning, the test sample was set up at a distance of three meters from the test instrument. Valid spurious signals were determined by switching the power on and off.
3. In the field, the test sample was placed on a wooden turntable above ground at three (or thirty) meters away from the search antenna. Excess power leads were coiled near the power supply.  
The cables were oriented in order to obtain the maximum response. At each emission frequency, the turntable was rotated and the search antennas were raised and lowered vertically.
4. The emission was observed with both a vertically polarized and a horizontally polarized search antenna and the worst case was used.
6. The field strength of each emission within 20 dB of the limit was recorded and corrected with the appropriate cable and transducer factors.
7. The worst case for all channels is shown.
8. Measurement results: ATTACHED FOR WORST CASE

RADIATED TEST SETUP



NOTES:

- (a) Search Antenna - Rotatable on boom
- (b) Non-metallic boom
- (c) Non-metallic mast
- (d) Adjustable horizontally
- (e) Equipment Under Test
- (f) Turntable
- (g) Boom adjustable in height.
- (h) External control cables routed horizontally at least one wavelength.
- (i) Rotatable
- (j) Cables routed through hollow turntable center
- (k) 30 cm or less
- (l) External power source
- (m) 10 cm diameter coil of excess cable
- (n) 25 cm (V), 1 m-7 m (V, H)
- (o) 25 cm from bottom end of 'V', 1m normally
- (p) Calibrated Cable at least 10m in length
- (q) Amplifier (optional)
- (r) Spectrum Analyzer

Asset	Description	s/n	Cycle	Last Cal
<small>Per ANSI C63.4-1992, 10.1.4</small>				
<u>TRANSDUCER</u>				
___	i00065 EMCO 3109B 100Hz-50MHz	2336	12 mo.	
___	i00033 Singer 94593-1 10kHz-32MHz	0219	12 mo.	
x	i00088 EMCO 3109-B 25MHz-300MHz	2336	12 mo.	Oct-98
x	i00089 Aprel 2001 200MHz-1GHz	001500	12 mo.	Oct-98
x	i00103 EMCO 3115 1GHz-18GHz	9208-3925	12 mo.	Oct-98
___	i00085 EMCO 3116 10GHz-40GHz	2076	12 mo.	
<u>AMPLIFIER</u>				
___	i00028 HP 8449A	2749A00121	12 mo.	Mar-99
<u>SPECTRUM ANALYZER</u>				
___	i00029 HP 8563E	3213A00104	12 mo.	Aug-98
x	i00033 HP 85462A	3625A00357	12 mo.	Dec-98
___	i00048 HP 8566B	2511AD1467	6 mo.	Dec-98

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NAME OF TEST: Field Strength of Spurious Radiation

ALL OTHER EMISSIONS =  $\geq 20$  dB BELOW LIMIT

<u>EMISSION, MHz/HARMONIC</u>	<u>SPURIOUS LEVEL, dBc</u> High
2nd to 10 <sup>th</sup>	<-60

SUPERVISED BY:



Morton Flom, P. Eng.

PAGE NO. 16 of 27.  
NAME OF TEST: Emission Masks (Occupied Bandwidth)  
SPECIFICATION: 47 CFR 2.1049(c) (1)  
GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.11  
TEST EQUIPMENT: As per previous page

MEASUREMENT PROCEDURE

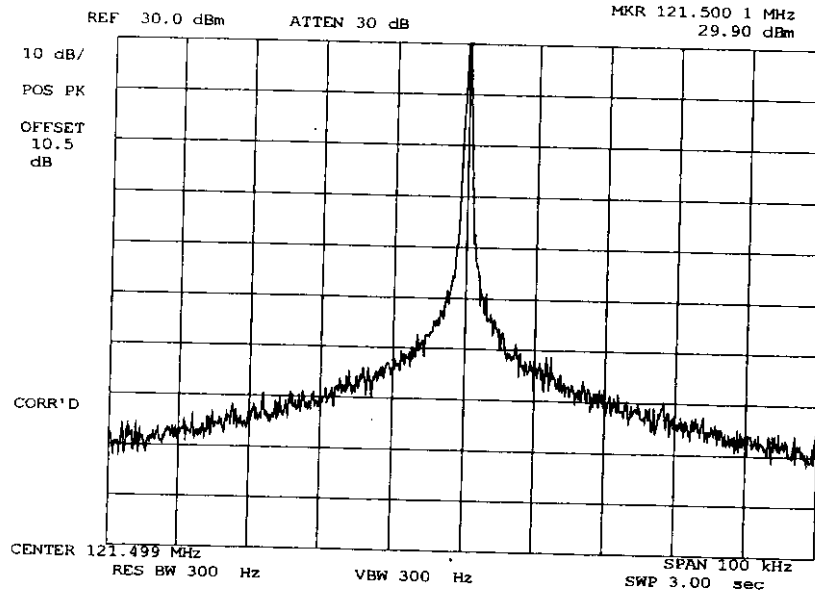
1. The EUT and test equipment were set up as shown on the following page, with the Spectrum Analyzer connected.
2. For EUTs supporting audio modulation, the audio signal generator was adjusted to the frequency of maximum response and with output level set for  $\pm 2.5$  kHz deviation (or 50% modulation). With level constant, the signal level was increased 16 dB.
3. For EUTs supporting digital modulation, the digital modulation mode was operated to its maximum extent.
4. The Occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown on the test results.
5. MEASUREMENT RESULTS: ATTACHED



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NAME OF TEST: Emission Masks (Occupied Bandwidth)  
g9970019: 1999-Jul-07 Wed 15:52:00  
STATE: 2:High Power



POWER: HIGH  
MODULATION: NONE

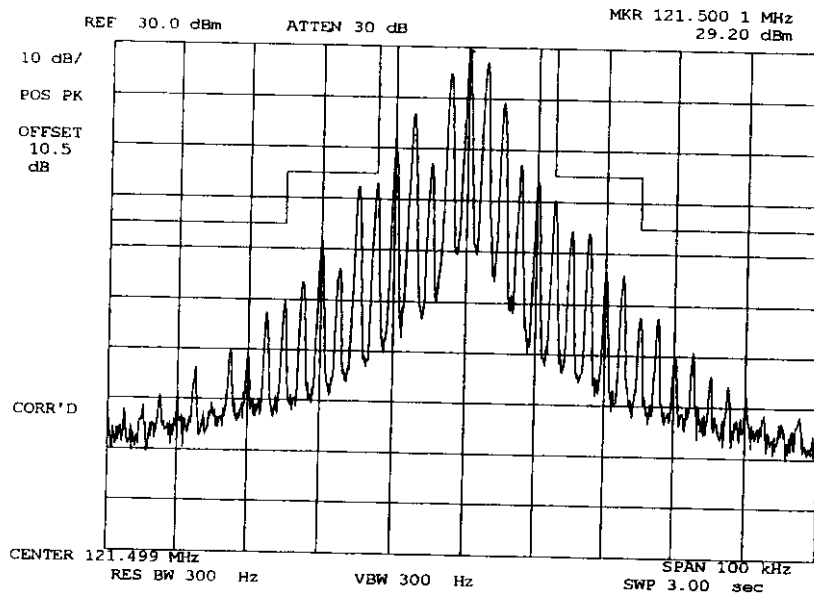
SUPERVISED BY:

Morton Flom, P. Eng.

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NAME OF TEST: Emission Masks (Occupied Bandwidth)  
g9970020: 1999-Jul-07 Wed 15:53:00  
STATE: 2:High Power



POWER:  
MODULATION:

HIGH  
VOICE: 2500 Hz SINE WAVE  
MASK: FCC, 87.139, AM,  
25kHz BW

SUPERVISED BY:

*Morton Flom P. Eng.*  
Morton Flom, P. Eng.

PAGE NO. 19 of 27.  
NAME OF TEST: Audio Frequency Response  
SPECIFICATION: 47 CFR 2.1047(a)  
GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.6  
TEST EQUIPMENT: As per previous page

MEASUREMENT PROCEDURE

1. The EUT and test equipment were set up as shown on the following page.
2. The audio signal generator was connected to the audio input circuit/microphone of the EUT.
3. The audio signal input was adjusted to obtain 20% modulation at 1 kHz, and this point was taken as the 0 dB reference level.
4. With input levels held constant and below limiting at all frequencies, the audio signal generator was varied from 100 Hz to 50 kHz.
5. The response in dB relative to 1 kHz was then measured, using the HP 8901A Modulation Analyzer.
6. MEASUREMENT RESULTS: ATTACHED

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NAME OF TEST:

Audio Frequency Response

<u>FREQUENCY</u>	<u>dbm</u>
100 hz	-24.1
200 Hz	-10.9
300 Hz	-5.6
400 Hz	-0.92
500 Hz	-0.7
700 Hz	-0.6
900 Hz	-0.5
1.0 kHz	-0.5
1.3 kHz	-0.5
1.5 kHz	-0.10
1.7 kHz	-0.18
1.9 kHz	-0.23
3.0 kHz	-2.5
3.3 kHz	-3.9
3.5 kHz	-4.8
3.7 kHz	-5.9
3.9 kHz	-6.9
4.0 kHz	-7.4
4.3 kHz	-10.0
4.5 kHz	-10.1
4.7 kHz	-12.1
4.9 kHz	-12.5
5.0 kHz	-12.5
5.3 kHz	-12.8
5.5 kHz	-14.9
5.7 kHz	-15.2
5.9 kHz	-15.8
6.0 kHz	-16.9
6.3 kHz	-18.3
6.5 kHz	-18.9
6.7 kHz	-19.8
6.9 kHz	-20.5
7.0 kHz	-20.6
7.3 kHz	-21.8
7.5 kHz	-22.3
7.7 kHz	-23.0
7.9 kHz	-23.6
8.0 kHz	-23.8
8.3 kHz	-24.6
8.5 kHz	-25.1
8.7 kHz	-25.4
8.9 kHz	-26.1
9.0 kHz	-26.3
9.3 kHz	-26.8
9.5 kHz	-27.4
9.7 kHz	-27.8
9.9 kHz	-28.3
10.0 kHz	-28.4

PAGE NO. 21 of 27.  
NAME OF TEST: Modulation Limiting  
SPECIFICATION: 47 CFR 2.1047(b)  
GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.3  
TEST EQUIPMENT: As per previous page

MEASUREMENT PROCEDURE

1. The signal generator was connected to the input of the EUT as for "Frequency Response of the Modulating Circuit."
2. The modulation response was measured for each of three frequencies (one of which was the frequency of maximum response), and the input voltage was varied and was observed on an HP 8901A Modulation Analyzer.
3. The input level was varied from 30% modulation ( $\pm 1.5$  kHz deviation) to at least 20 dB higher than the saturation point.
4. Measurements were performed for both negative and positive modulation and the respective results were recorded.
5. MEASUREMENT RESULTS: ATTACHED

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NAME OF TEST:

Modulation Limiting

ABSOLUTE	SCALE RELATIVE, dB	300 k	1 k	2.5 k
-70	-35	2.3%	3.6%	3.4
-65	-30	3.2	5.2	4.6
-60	-25	4.5	8.1	7.9
-55	-15	7.5	13.2	13.1
-50	-10	11.6	21.7	21.8
-45	-5	18.6	35.3	35.7
-40	0	33.6	<b>50%</b>	54.8
-35	+5	52.9	78.4	78.3
-30	+10	75.4	94.2	94.5
-25	+15	92.7	99.4	99.4
-20	+20	98.5	99.8	99.8
-15	+25	98.3	99.8	99.9

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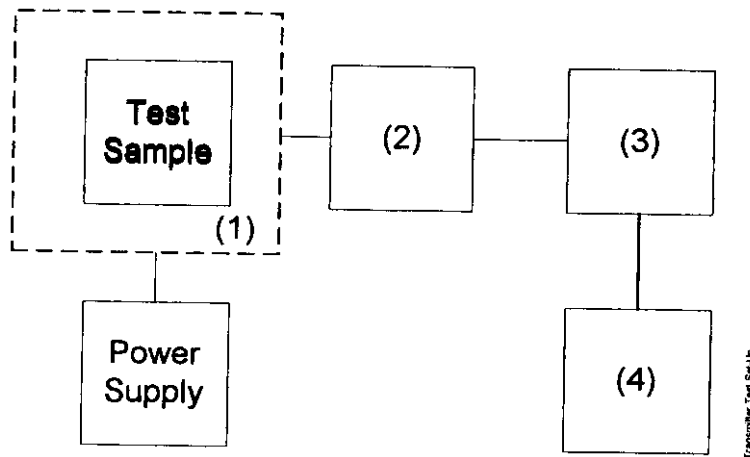
PAGE NO. 23 of 27.  
NAME OF TEST: Frequency Stability (Temperature Variation)  
SPECIFICATION: 47 CFR 2.1055(a) (1)  
GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.2  
TEST CONDITIONS: As Indicated  
TEST EQUIPMENT: As per previous page

MEASUREMENT PROCEDURE

1. The EUT and test equipment were set up as shown on the following page.
2. With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was noted within one minute.
3. With power OFF, the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.
4. The temperature tests were performed for the worst case.
5. MEASUREMENT RESULTS: ATTACHED

TRANSMITTER TEST SET-UP

- TEST A. OPERATIONAL STABILITY
- TEST B. CARRIER FREQUENCY STABILITY
- TEST C. OPERATIONAL PERFORMANCE STABILITY
- TEST D. HUMIDITY
- TEST E. VIBRATION
- TEST F. ENVIRONMENTAL TEMPERATURE
- TEST G. FREQUENCY STABILITY: TEMPERATURE VARIATION
- TEST H. FREQUENCY STABILITY: VOLTAGE VARIATION



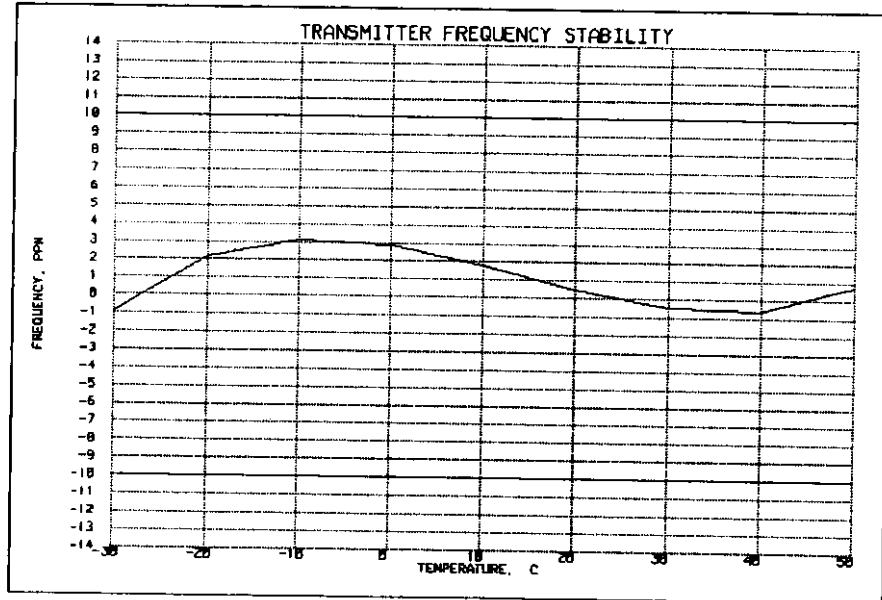
Asset	Description	s/n
<u>(1) TEMPERATURE, HUMIDITY, VIBRATION</u>		
x	i00027 Tenny Temp. Chamber	9083-765-234
___	i00 Weber Humidity Chamber	
___	i00 L.A.B. RVH 18-100	
<u>(2) COAXIAL ATTENUATOR</u>		
___	i00122 NARDA 766-10	7802
___	i00123 NARDA 766-10	7802A
x	i00113 SIERRA 661A-3D	1059
___	i00069 BIRD 8329 (30 dB)	10066
<u>(3) R.F. POWER</u>		
___	i00014 HP 435A POWER METER	1733A05839
x	i00039 HP 436A POWER METER	2709A26776
x	i00020 HP 8901A POWER MODE	2105A01087
<u>(4) FREQUENCY COUNTER</u>		
___	i00042 HP 5383A	1628A00959
x	i00019 HP 5334B	2704A00347
x	i00020 HP 8901A	2105A01087



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NAME OF TEST: Frequency Stability (Temperature Variation)  
g9970015: 1999-Jul-07 Wed 16:40:00  
STATE: 0:General



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PAGE NO. 26 of 27.  
NAME OF TEST: Frequency Stability (Voltage Variation)  
SPECIFICATION: 47 CFR 2.1055(b) (1)  
GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.2  
TEST EQUIPMENT: As per previous page

MEASUREMENT PROCEDURE

1. The EUT was placed in a temperature chamber at 25±5°C and connected as for "Frequency Stability - Temperature Variation" test.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

RESULTS: Frequency Stability (Voltage Variation)  
g9970021: 1999-Jul-07 Wed 16:00:05  
STATE: 0:General

LIMIT, ppm = 10  
LIMIT, Hz = 1215  
BATTERY END POINT (Voltage) = 7.7

% of STV	Voltage	Frequency, MHz	Change, Hz	Change, ppm
85	10.71	121.500000	0	0.00
100	12.6	121.500000	0	0.00
115	14.49	121.500010	10	0.08
61	7.7	121.499980	-20	-0.16

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NAME OF TEST: Necessary Bandwidth and Emission Bandwidth

SPECIFICATION: 47 CFR 2.202(g)

$$B_N = 2 M$$


MODULATION = 6K0A3E

NECESSARY BANDWIDTH CALCULATION:

$$\text{MAXIMUM MODULATION (M), kHz} = 3$$

$$\text{NECESSARY BANDWIDTH (B}_N\text{), kHz} = 6$$

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