



M. Flom Associates, Inc. - Global Compliance Center

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Date: February 27, 2001
Submitted: April 12, 2001

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

Applicant: Cam Lite Electronics Inc.
Equipment: FC2000TX
FCC ID: 094FC2000TX
FCC Rules: 15.249

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,

A handwritten signature in black ink, appearing to read 'M. Flom P. Eng.', with a horizontal line drawn underneath the signature.

Morton Flom, P. Eng.

enclosure(s)
cc: Applicant
MF/cvr

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

APPLICANT: Cam Lite Electronics Inc.

FCC ID: 094FC2000TX

BY APPLICANT:

- | | |
|---|---|
| 1. LETTER OF AUTHORIZATION | X |
| 2. IDENTIFICATION DRAWINGS | |
| <u> X </u> LABEL | |
| <u> X </u> LOCATION OF LABEL | |
| <u> X </u> COMPLIANCE STATEMENT | |
| <u> X </u> LOCATION OF COMPLIANCE STATEMENT | |
| 3. DOCUMENTATION: 2.1033(b) | |
| (3) USER MANUAL | X |
| (4) OPERATIONAL DESCRIPTION | X |
| (5) BLOCK DIAGRAM | X |
| (5) SCHEMATIC DIAGRAM | X |
| (7) PHOTOGRAPHS | X |
| BLOCK DIAGRAM | X |
| PARTS LIST | X |
| ACTIVE DEVICES | X |
| 5. PARTS LIST | |

BY M.F.A. INC.

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



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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: O94FC2000TX

MODEL: FC2000TX

to

FEDERAL COMMUNICATIONS COMMISSION

Rule Part(s) 15.249

DATE OF REPORT: February 27, 2001

ON THE BEHALF OF THE APPLICANT:

Cam Lite Electronics Inc.

AT THE REQUEST OF:

P.O. 02072

Cam Lite Electronics Inc.
P.O. Box 400
Snowflake, AZ 85937

Attention of:

(877) 226-5483; (520) 536-3432;
FAX: -5355 or -2133
Don Gonsalves, President
Mike Sutton, Vice President

SUPERVISED BY:

A handwritten signature in black ink, reading 'Morton Flom P. Eng.', is positioned above the printed name.

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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	Standard Test Conditions and Engineering Practices	6
2.1053(a)	Field Strength of Spurious Radiation	7
2.1049(c)(1)	Emission Masks (Occupied Bandwidth)	14

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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: d0120017

d) Client: Cam Lite Electronics Inc.
P.O. Box 400
Snowflake, AZ 85937

e) Identification: FC2000TX
FCC ID: 094FC2000TX
Description: A/V Short Range Transmitter

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

g) Report Date: February 27, 2001
EUT Received: June 1, 2000

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

15.249

Sub-part 2.1033

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

Cam Lite Electronics Inc.
P.O. Box 400
Snowflake, AZ 85937

MANUFACTURER:

Applicant

(c)(2): FCC ID: O94FC2000TX

MODEL NO: FC2000TX

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

PLEASE SEE ATTACHED EXHIBITS

(c)(4): TYPE OF EMISSION: N/A

(c)(5): FREQUENCY RANGE, MHz: 902 to 928

(c)(6): POWER RATING, Watts: 50 mV per meter @3 meters
 Switchable Variable x N/A

(c)(7): MAXIMUM POWER RATING, Watts: 50 x 10⁻³ V/meter @ 3 m

15.203: ANTENNA REQUIREMENT:

 x The antenna is permanently attached to the EUT
 The antenna uses a unique coupling
 The EUT must be professionally installed
 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 = 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

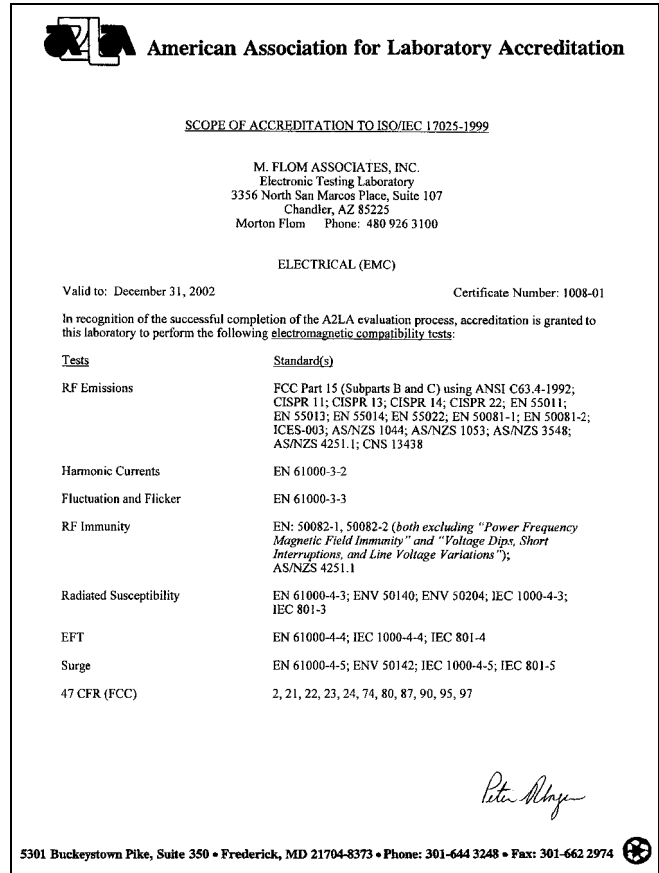
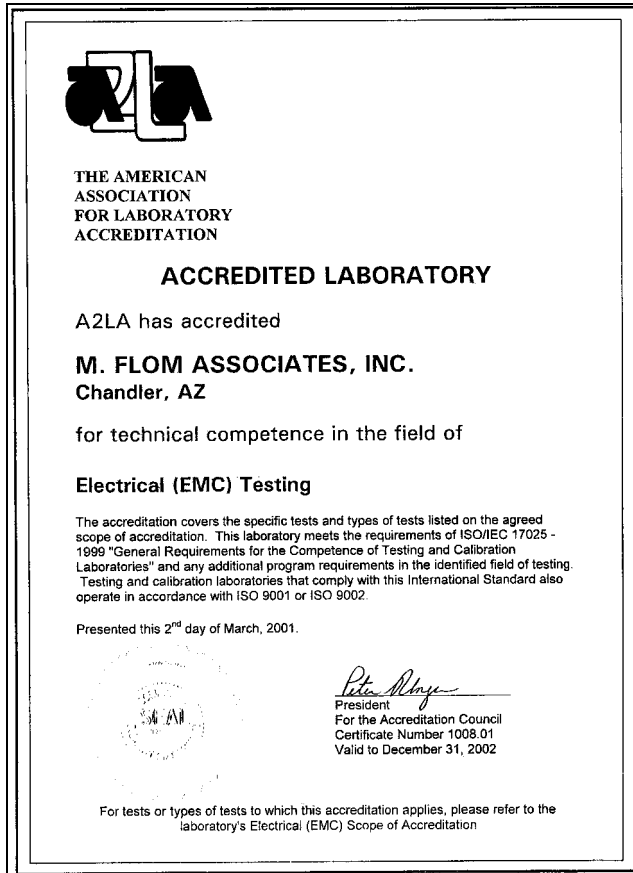
(c)(14): TEST AND MEASUREMENT DATA:

FOLLOWS

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



"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)
- _____ 15.247 Operation within bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz (spread spectrum)
- x _____ 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 ANSIC63.4-1992/2000 Draft, 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: Field Strength of Spurious Radiation

SPECIFICATION: 47 CFR 2.1053(a)

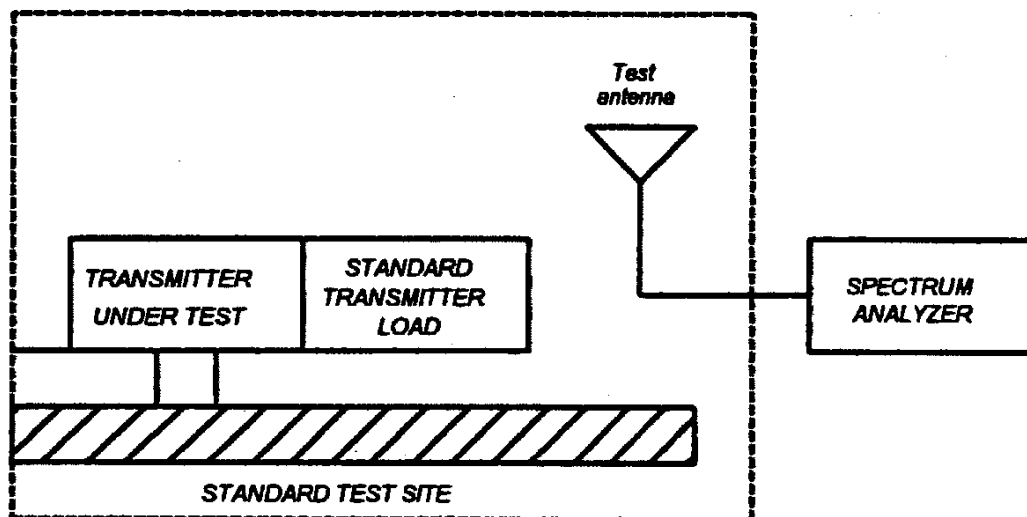
GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 1.2.12

MEASUREMENT PROCEDURE

1.2.12.1 Definition: Radiated spurious emissions are emissions from the equipment when transmitting into a non-radiating load on a frequency or frequencies which are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communications desired.

1.2.12.2 Method of Measurement

- A) Connect the equipment as illustrated
- B) Adjust the spectrum analyzer for the following settings:
 - 1) Resolution Bandwidth ≤ 3 kHz.
 - 2) Video Bandwidth ≥ 10 kHz
 - 3) Sweep Speed ≤ 2000 Hz/second
 - 4) Detector Mode = Positive Peak
- C) Place the transmitter to be tested on the turntable in the standard test site. The transmitter is transmitting into a non-radiating load which is placed on the turntable. The RF cable to this load should be of minimum length.

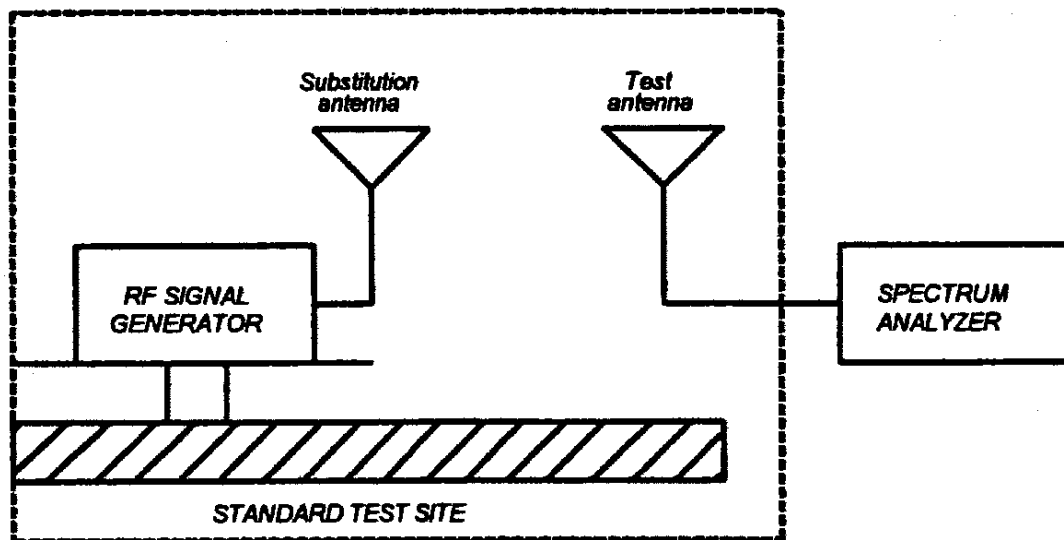


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NAME OF TEST: Field Strength of Spurious Radiation (Cont.)

- D) For each spurious measurement the test antenna should be adjusted to the correct length for the frequency involved. This length may be determined from a calibration ruler supplied with the equipment. Measurements shall be made from the lowest radio frequency generated in the equipment to the tenth harmonic of the carrier, except for the region close to the carrier equal to \pm the test bandwidth (see section 1.3.4.4).
- E) For each spurious frequency, raise and lower the test antenna from 1 m to 4 m to obtain a maximum reading on the spectrum analyzer with the test antenna at horizontal polarity. Repeat this procedure to obtain the highest possible reading. Record this maximum reading.
- F) Repeat step E) for each spurious frequency with the test antenna polarized vertically.



- G) Reconnect the equipment as illustrated.
- H) Keep the spectrum analyzer adjusted as in step B).
- I) Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter. At lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3 m above the ground.

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NAME OF TEST: Field Strength of Spurious Radiation (Cont.)

- J) Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non-radiating cable. With the antennas at both ends horizontally polarized and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.
- K) Repeat step J) with both antennas vertically polarized for each spurious frequency.
- L) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps J) and K) by the power loss in the cable between the generator and the antenna and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna.
- M) The levels recorded in step L) are absolute levels of radiated spurious emissions in dBm. The radiated spurious emissions in dB can be calculated by the following:

Radiated spurious emissions dB =
 $10\log_{10}(\text{TX power in watts}/0.001) - \text{the levels in step l)}$

NOTE: It is permissible that other antennas provided can be referenced to a dipole.

Test Equipment:

Asset Description (as applicable)	s/n	Cycle	Last Cal
<small>Per ANSI C63.4-1992/2000 Draft, 10.1.4</small>			
<u>TRANSDUCER</u>			
i00088 EMCO 3109-B 25MHz-300MHz	2336	12 mo.	Sep-00
i00065 EMCO 3301-B Active Monopole	2635	12 mo.	Sep-00
i00089 Aprel 2001 200MHz-1GHz	001500	12 mo.	Sep-00
i00103 EMCO 3115 1GHz-18GHz	9208-3925	12 mo.	Sep-00
<u>AMPLIFIER</u>			
i00028 HP 8449A	2749A00121	12 mo.	Mar-01
<u>SPECTRUM ANALYZER</u>			
i00029 HP 8563E	3213A00104	12 mo.	Aug-00
i00033 HP 85462A	3625A00357	12 mo.	May-00
i00048 HP 8566B	2511AD1467	6 mo.	Nov-00

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TEST SETUP: Radiated Emissions
g0140004: 2001-Apr-02 Mon 13:31:18
STATE: 0:General



TEST SETUP: Radiated Emissions
g0140005: 2001-Apr-02 Mon 13:31:18
STATE: 0:General



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NAME OF TEST: Field Strength of Spurious Radiation
 g0060018: 2000-Jun-01 Thu 09:18:00
 STATE: 2:Low Power

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	CF, dB	uV/m @ 3m	ERP, dBm	MARGIN, dB
910.100000	1815.645000	44.5	0.15	170.8	-52.7	-9.4
910.100000	2734.936667	42.67	3.93	213.8	-50.8	-7.4
910.100000	3647.400001	41.83	6.39	257.63	-49.2	-5.8
910.100000	4554.833334	39.67	8.33	251.19	-49.4	-6
910.100000	5454.970001	37	10.07	225.68	-50.3	-6.9
910.100000	6366.366668	36.17	11.66	246.32	-49.5	-6.2
910.100000	7286.800002	36.5	13.13	303.04	-47.7	-4.4
910.100000	8200.900002	33.5	14.39	248.03	-49.5	-6.1
910.100000	9110.666669	32.67	15.26	249.17	-49.4	-6.1

NAME OF TEST: Field Strength of Spurious Radiation
 g0060024: 2000-Jun-02 Fri 11:40:00
 STATE: 2:High Power

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	CF, dB	uV/m @ 3m	ERP, dBm	MARGIN, dB
914.000000	1817.700000	3.07	40.11	144.21	-54.2	-10.8
914.000000	1829.675000	43	0.21	144.71	-54.2	-10.8
914.000000	2745.450000	39	3.97	140.77	-54.4	-11
914.000000	3656.900000	-1.32	51.97	340.8	-46.7	-3.4
914.000000	3665.033334	44	6.42	331.89	-47	-3.6
914.000000	4579.325000	38	8.38	208.45	-51	-7.6
914.000000	5499.501668	36.5	10.16	215.28	-50.7	-7.3
914.000000	6415.975001	30.17	11.74	124.59	-55.5	-12.1
914.000000	7302.608334	27.33	13.16	105.8	-56.9	-13.5

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NAME OF TEST: Radiated Spurious Emissions (Non-Harmonic)

SPECIFICATION: 47 CFR 15.249(c)

GUIDE: ANSI/TIA/EIA-603-1992, Paragraph 2.2.1

TEST EQUIPMENT: As per previous page

15.249(c):

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emissions limits in § 15.209, whichever is the lesser attenuation.

General Radiated Emission limits per 15.209:

FREQUENCY, MHz	FIELD STRENGTH, $\mu\text{V}/\text{m}$ @ 3m
30 - 88	100
88 - 216	150
216 - 960	200
Above 960	300

MEASUREMENT RESULTS: ATTACHED

PAGE NO. 13 of 18.

MEASUREMENT RESULTS: Radiated Spurious Emissions (Non-Harmonic)

FREQUENCY OF CARRIER, MHz =
 SPECTRUM SEARCHED = 0 to 10 x F_c
 ALL OTHER EMISSIONS = ≥ 20 dB Below Limit
 LIMIT, μV /m @ 3m = 50 dBc or § 15.209

NAME OF TEST: Field Strength of Spurious Radiation

g0060025: 2000-Jun-02 Fri 14:27:00

Lower Bandedge Meets 15.209(a) per 15.247(c)

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	CF, dB	uV/m @ 3m	ERP, dBm	MARGIN, dB
914.000000	877.250000	12.49	29.72	128.97	-55.2	-3.8
914.000000	879.500000	10.69	29.73	104.95	-57	-5.6
914.000000	882.630000	8.21	29.74	78.98	-59.4	-8.1
914.000000	887.380000	9.31	29.75	89.74	-58.3	-6.9
914.000000	892.250000	7.19	29.76	70.39	-60.4	-9.1
914.000000	897.130000	5.66	29.78	59.16	-61.9	-10.6
914.000000	898.750000	7.11	29.77	69.82	-60.5	-9.1
914.000000	902.130000	13.43	29.98	148.08	-54	-50.6

NAME OF TEST: Field Strength of Spurious Radiation

g0060032: 2000-Jun-02 Fri 17:26:00

Upper Bandedge

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	METER, dBuV	CF, dB	uV/m @ 3m	ERP, dBm	MARGIN, dB
914.000000	928.000000	4.3	32.44	68.71	-60.6	-57.3
914.000000	930.500000	3.19	32.68	62.16	-61.5	-10.1
914.000000	933.130000	-1.07	32.92	39.13	-65.5	-14.2
914.000000	937.880000	-2.16	33.35	36.27	-66.2	-14.8
914.000000	942.750000	-3.01	33.81	34.67	-66.6	-15.2
914.000000	947.880000	-3.04	34.28	36.48	-66.1	-14.8
914.000000	952.630000	1.39	34.71	63.83	-61.3	-9.9

ALL SPURIOUS EMISSIONS WERE 20 dB OR MORE BELOW LIMIT

SYSTEM SENSITIVITY IS -130 dBm

ALL NON-HARMONIC SPURIOUS EMISSIONS WERE , -130 dBm



PERFORMED BY:

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

PAGE NO. 14 of 18.

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

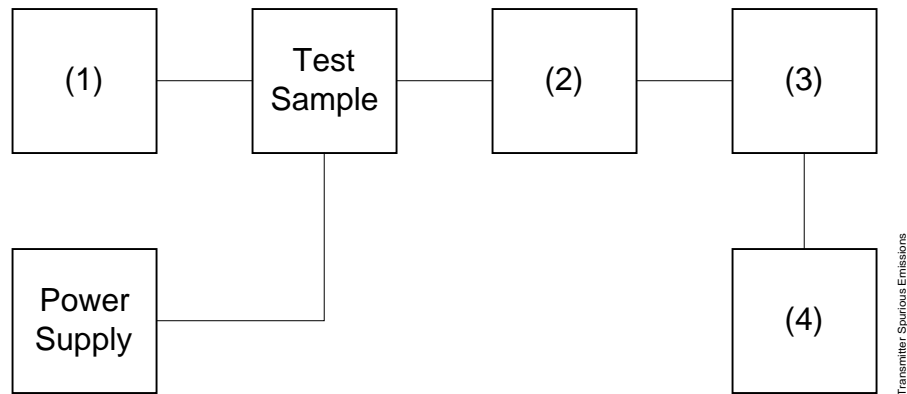
MEASUREMENT PROCEDURE

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 ± 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

PAGE NO.

TRANSMITTER SPURIOUS EMISSION

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



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

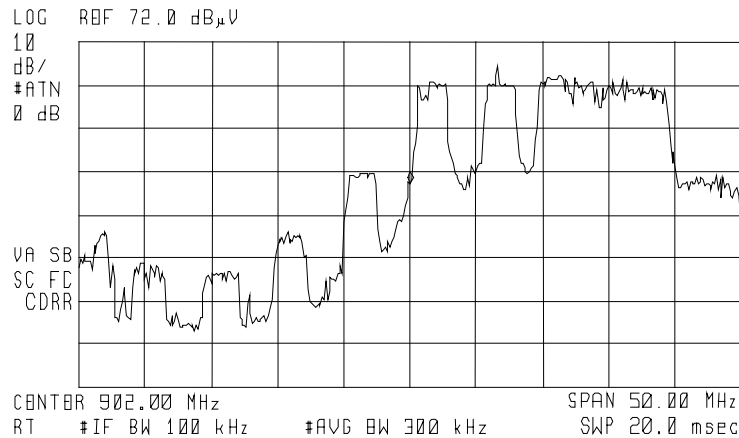
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NAME OF TEST: Emission Masks (Occupied Bandwidth)
 g0060027: 2000-Jun-02 Fri 17:16:00
 STATE: 2:High Power



ACTV DET: PBAK
 MEAS DET: PBAK QP AVG
 MKR 902.00 MHz
 39.09 dBμV



POWER:
 MODULATION:

HIGH
 WIDE BAND FM AUDIO VIDEO
 LOWER BANDEDGE: Meets
 15.209 lesser alteration
 per 15.249(c). See
 transmitter Emissions for
 Lower Band Edge.

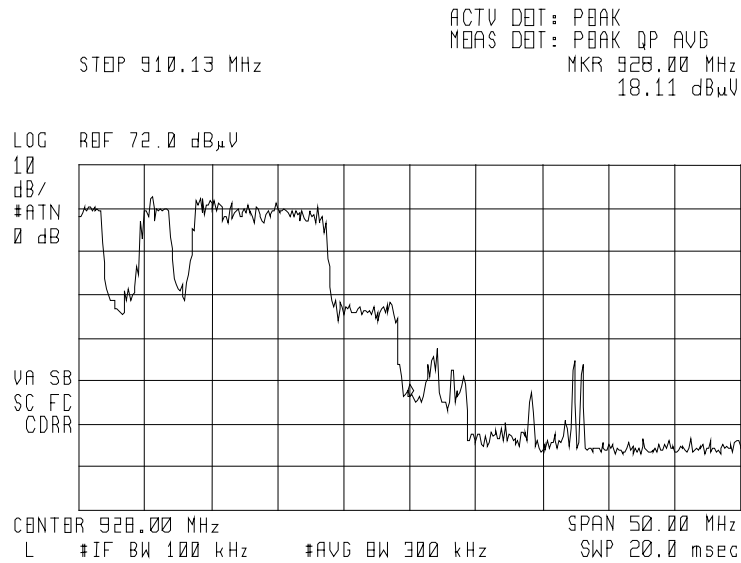
PERFORMED BY:

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

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NAME OF TEST: Emission Masks (Occupied Bandwidth)
 g0060028: 2000-Jun-02 Fri 17:17:00
 STATE: 2:High Power



POWER:

HIGH

MODULATION:

WIDE BAND FM AUDIO VIDEO

UPPER BANDEDGE

Off Air ≈928-943 MHz

Off Air Emissions above 928 MHz

PERFORMED BY:

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

PAGE NO.

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NAME OF TEST: Emission Masks (Occupied Bandwidth)
 g0060030: 2000-Jun-02 Fri 17:21:00
 STATE: 2:High Power

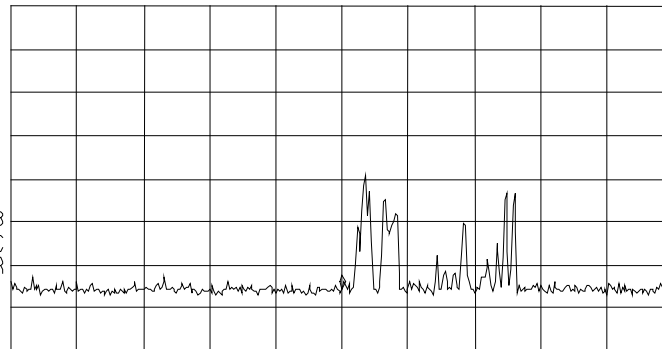


ACTV DET: PBAK
 MEAS DET: PBAK QP AVG
 MKR 928.00 MHz
 6.58 dBμV

LOG REF 72.0 dBμV

10
 dB/
 #ATTN
 0 dB

VA SB
 SC FC
 CDRR



CENTAR 928.00 MHz

SPAN 50.00 MHz

RT #IF BW 100 kHz

#AVG BW 300 kHz

SWP 20.0 msec

POWER:

HIGH

MODULATION:

WIDE BAND FM AUDIO VIDEO

UPPER BANDEDGE

Off Air Emissions above 928
 MHz - EUT POWER OFF

PERFORMED BY:

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

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:

A handwritten signature in black ink, appearing to read "M. Flom P. Eng.", with a horizontal line drawn underneath the signature.

Morton Flom, P. Eng.