TIMCO ENGINEERING INC.
849 NW State Road 45
Newberry, Florida 32669
http://www.timcoengr.com
888.472.2424 F 352.472.2030 email: sid@timcoengr.com

Test Report

Product Name: FM EXCITER TRANSMITTER

FCC ID: RMYNT150FP03

Applicant:

NiCOM USA, INC.
2626 SOUTHPORT WAY
SUITE B
NATIONAL CITY, CA 91950

Date Receipt: DECEMBER 29, 2003

Date Tested: JANUARY 8, 2004

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APPLICANT: NiCOM USA, INC.

FCC ID: RMYNT150FP03

TABLE OF CONTENTS LIST

TEST REPORT CONTAINING:

EXHIBITS INCLUDING:

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GENERAL INFORMATION REQUIRED FOR TYPE ACCEPTANCE

2.1033 NiCOM USA, INC. will manufacture the FCC ID: RMYNT150FP03 in quantity, for use under FCC RULES PART 74.801, LOW POWER AUXILIARY STATIONS.

2.1033(c)(4) TECHNICAL DESCRIPTION

Type of Emission: 84KF3E

Bn = 2M + 2DK
M = 20000
D = 22KHz (Peak Deviation)
K = 1
Bn = 2(20K) + 2(22K)(1) = 84K

ALLOWED AUTHORIZED BANDWIDTH = 200KHz.

2.1033 (c)(5) Frequency Range: 88 - 108MHz

2.1033 (c)(6) Power Range and Controls: The EUT can be adjusted from 2 Watt up to the maximum of the rated power.

2.1033 (c)(7) Maximum Output Power Rating: 150 Watts into 50 ohms resistive load.

2.1033 (c)(8) DC Voltages and Current into Final Amplifier:

FINAL AMPLIFIER ONLY

INPUT POWER: 48(V) @ 6(A)= 288 Watts

2.1033 (c)(9) Tune-up procedure. The tune-up procedure is given in the Exhibits.

2.1033(c)(10) Complete Circuit Diagrams: The circuit diagram and the block diagrams are included as part of the attached exhibits.

2.1033(c)(11) Photographs or drawings of the identification label and its location are included as part of the exhibits.

2.1033(c)(12) Photographs of both the externals & internals are included as part of the exhibits.

2.1033(c)(13) Digital Modulation is NOT used in this EUT.

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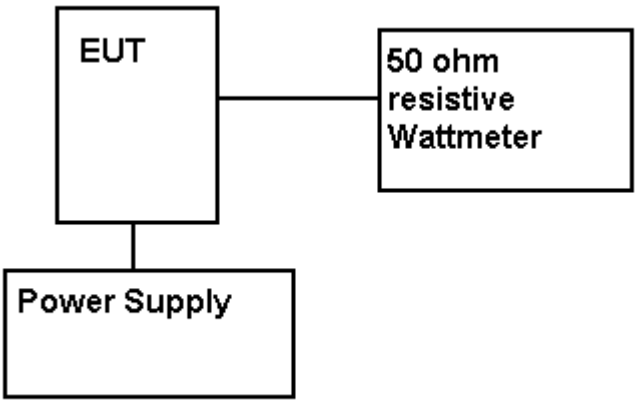
2.1033(c)(14) Data required by ¶ 2.1046 through ¶ 2.1057 is submitted below.

2.1046
73.267 (b)(2) RF_power_output.

RF power is measured by Direct Method power using TIA/EIA STANDARD 603.

OUTPUT POWER: HIGH: 150 Watts Conducted
LOW: 4.2 Watts Conducted



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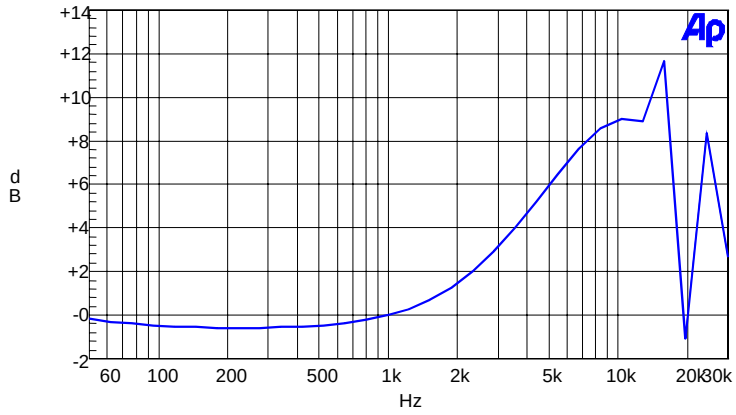
2.1047(a)(b) Modulation_characteristics:

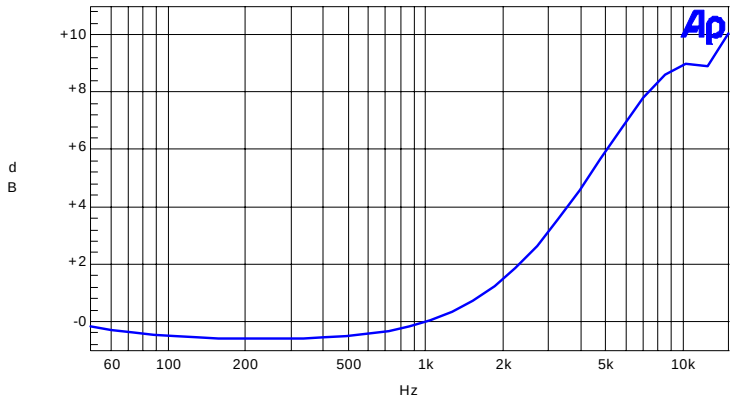
AUDIO_FREQUENCY_RESPONSE

The audio frequency response was measured in accordance with TIA/EIA Specification 603. The audio frequency response curve is shown below.

Audio Frequency Response



Audio Frequency Response



Color	Line Style	Thick	Data	Axis
Blue	Solid	2	Anlr.Level A!Normalize	Left

MaxFreq.at1

AUDIO_LOW_PASS_FILTER

The audio low pass filter is not required in this unit.

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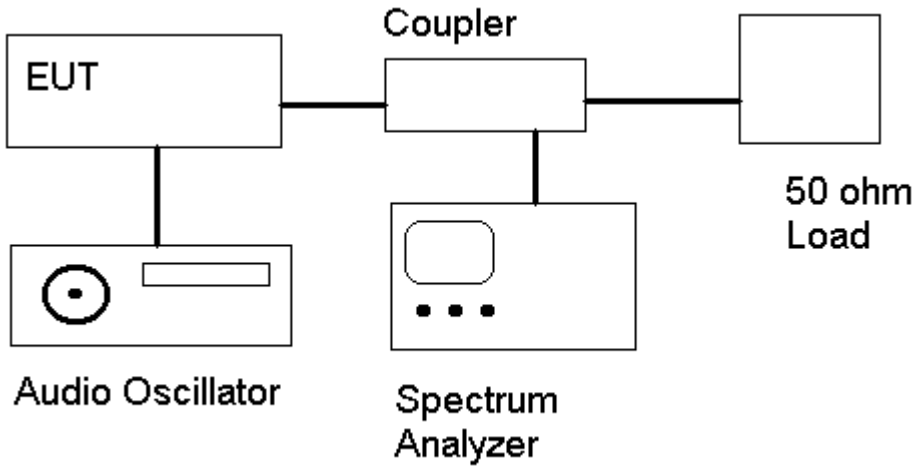
2.1049 **OCCUPIED BANDWIDTH:**

73.317(b-d) Any emission appearing on the frequency removed from the carrier between 120kHz and 240kHz inclusive must be attenuated at least 25 dB below the level of the un-modulated carrier. Compliance with this requirement will be deemed to show occupied bandwidth to be 240kHz or less. Any emission appearing on the frequency removed from the carrier by more than 240 kHz and up to and including 600 kHz must be attenuated at least 35 dB below the level of the un-modulated carrier. Any emission appearing on the frequency removed from the carrier by more than 600 kHz must be attenuated at least 43 + 10 Log(P) dB below the level of the un-modulated carrier, or 80 dB, whichever is the lesser attenuation.

OCCUPIED BANDWIDTH MEASUREMENT



REQUIREMENT: PART 73: 200kHz EMISSION BANDWIDTH.

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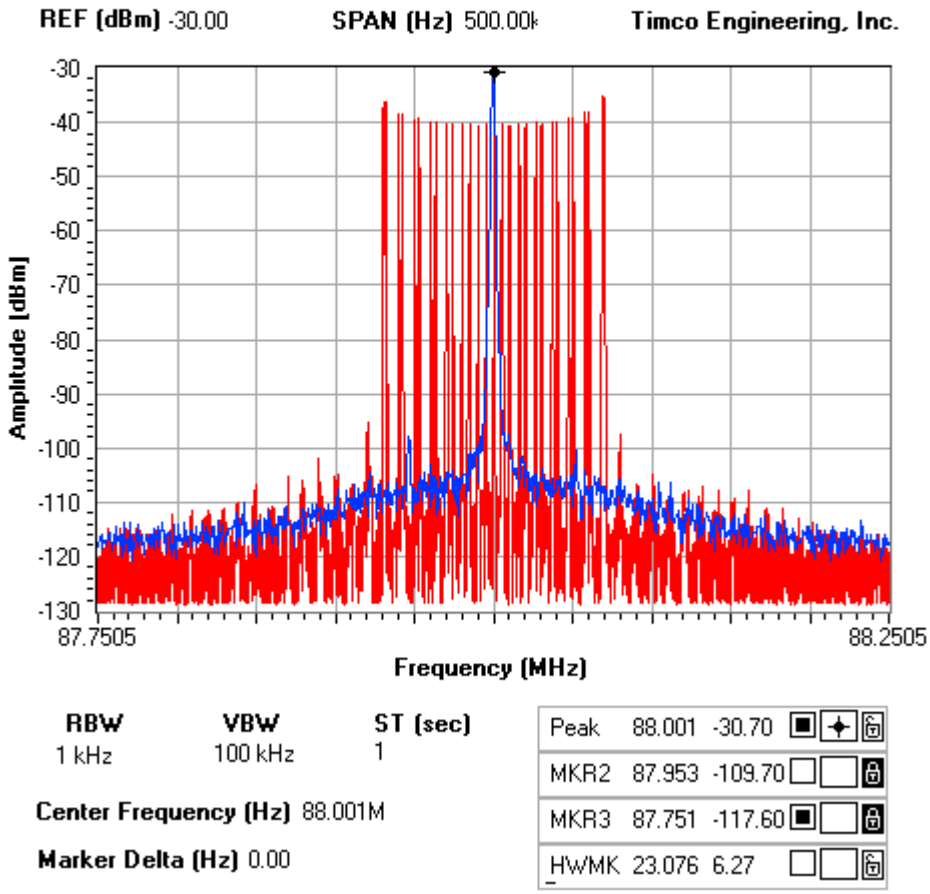
2.1049 **OCCUPIED BANDWIDTH PLOT (50 Hz)**

NOTES:
NiCOM USA, INC. - FCC ID: RMYNT 30
OCCUPIED BANDWIDTH PLOT (50Hz)



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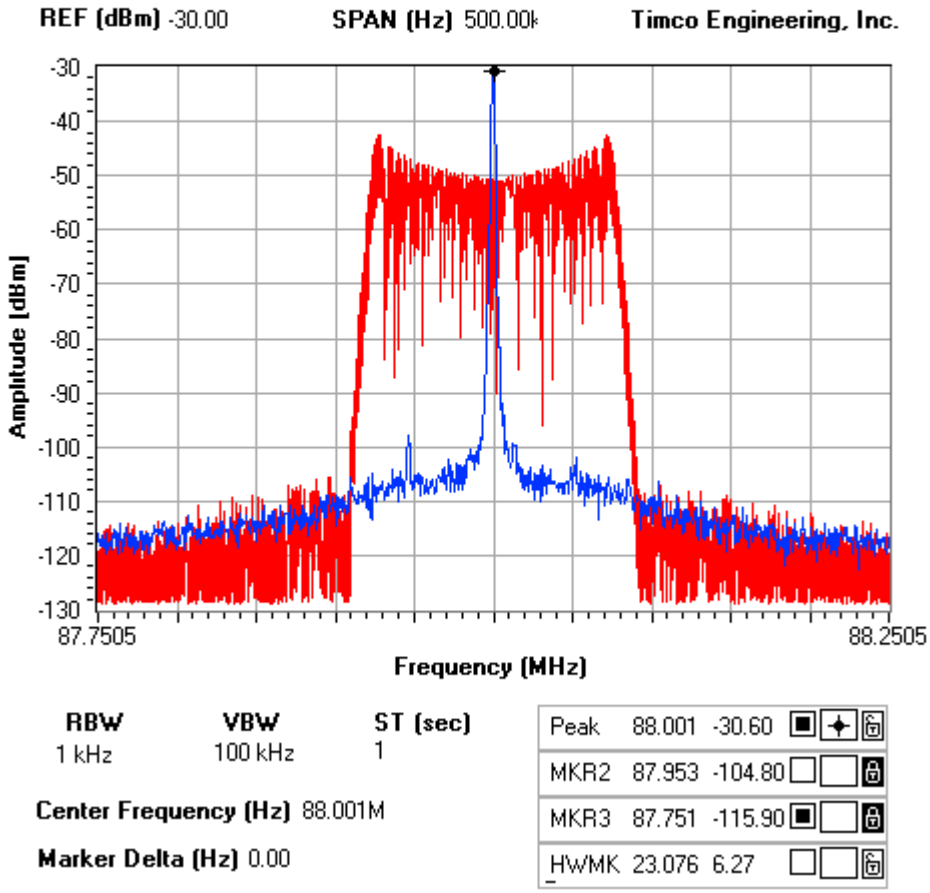
2.1049 **OCCUPIED BANDWIDTH PLOT (1 kHz)**

NOTES:
NiCOM USA, INC. - FCC ID: RMYNT 30
OCCUPIED BANDWIDTH PLOT (1KHz)



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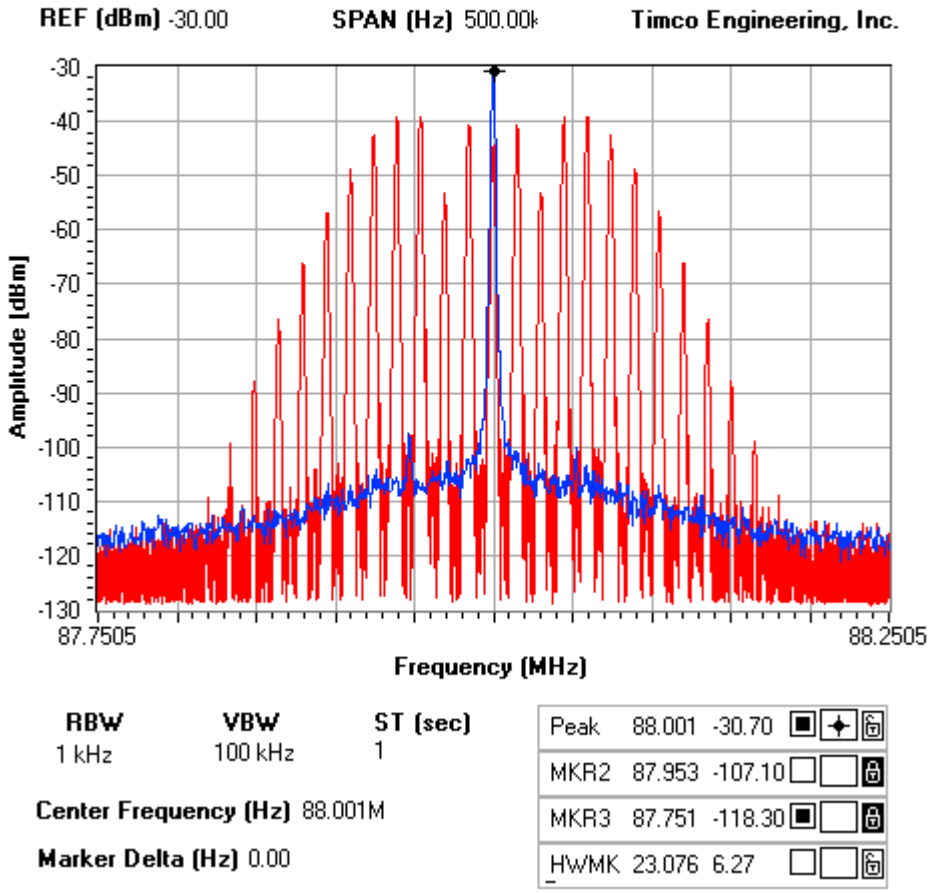
2.1049 **OCCUPIED BANDWIDTH PLOT (15 kHz)**

NOTES:
NiCOM USA, INC. - FCC ID: RMYNT 30
OCCUPIED BANDWIDTH PLOT (15KHz)



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2.1051 Spurious emissions at antenna terminals (conducted):

Data on the following page shows the level of conducted spurious responses. The carrier was modulated 100% using 2500Hz tone. The spectrum was scanned from 0.4 to at least the 10th harmonic of the fundamental. The measurements were made in accordance with standard TIA/EIA-603.

REQUIREMENTS: Emissions must be 43 +10log(Po) dB below the mean power output of the transmitter.

43 + 10log(150) = 64.8 dB **43 + 10log(4.2) = 49.2 dB**

TF HIGH POWER	EF	dB below carrier	TF LOW POWER	EF	dB below carrier
88.1	88.1	0.0	88.1	88.1	0.0
	176.2	83.5		176.2	73.3
	264.3	75.9		264.3	73.9
	352.4	98.3		352.4	94.5
	440.5	81.3		440.5	78.0
	528.6	97.9		528.6	93.4
	616.7	96.3		616.7	100.0
	704.8	104.8		704.8	102.2
	792.9	108.6		792.9	99.2
	881.0	114.1		881.0	102.2

TF HIGH POWER	EF	dB below carrier	TF LOW POWER	EF	dB below carrier
100.1	100.1	0.0	100.1	100.1	0.0
	200.2	88.0		200.2	77.9
	300.3	92.8		300.3	90.2
	400.4	96.3		400.4	98.2
	500.5	87.7		500.5	103.7
	600.6	90.0		600.6	102.6
	700.7	97.8		700.7	104.2
	800.8	104.0		800.8	109.6
	900.9	107.8		900.9	109.1
	1001.0	112.4		1001.0	108.2

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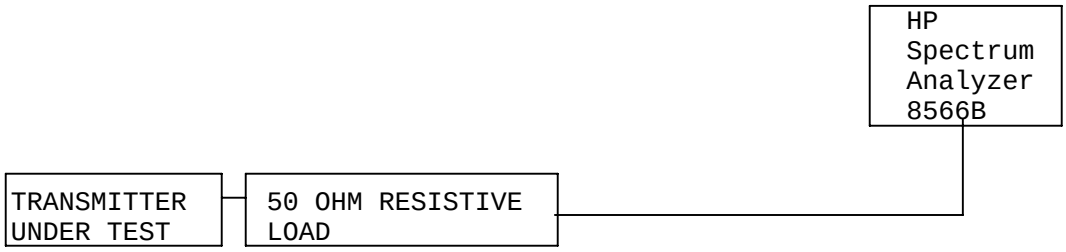
2.1051 Spurious emissions at antenna terminals (conducted)(cont):

REQUIREMENTS: Emissions must be 43 +10log(Po) dB below the mean power output of the transmitter.

43 + 10log(150) = 64.8 dB **43 + 10log(4.2) = 49.2 dB**

TF LOW POWER	EF	dB below carrier	TF HIGH POWER	EF	dB below carrier
107.9	107.9	0.0	107.9	107.9	0.0
	215.8	81.4		215.8	76.1
	323.7	84.2		323.7	90.8
	431.6	87.9		431.6	95.8
	539.5	105.4		539.5	91.2
	647.4	90.3		647.4	104.2
	755.3	99.5		755.3	110.4
	863.2	103.5		863.2	109.4
	971.1	108.4		971.1	108.4
	1079.0	113.1		1079.0	

2.1051 **Method of Measuring Conducted Spurious Emissions**



METHOD OF MEASUREMENT: The procedure used was TIA/EIA-603 STANDARD without any exceptions. An audio generator was connected to the UUT through a dummy microphone circuit and the output of the transmitter connected to a standard load and from the standard load through a pre-selector filter of the spectrum analyzer. The spectrum was scanned from 400 kHz to at least the tenth harmonic of the fundamental using a HP model 8566B spectrum analyzer. The measurements were made using the shielded room located at TIMCO ENGINEERING INC. 849 N.W. State Road 45, Newberry, Florida 32669.

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2.1053(a)(b) Field_strength_of_spurious_emissions:

NAME OF TEST: RADIATED SPURIOUS EMISSIONS (88 MHz)

REQUIREMENTS: Any emission appearing on a frequency removed from the carrier by more than 600 kHz must be attenuated at least 43 + 10log(P) dB below the level of the un-modulated carrier, or 80 dB, whichever is the lesser attenuation.

HIGH: 43 + 10log(150) = 64.8 dB
LOW: 43 + 10log(4.2) = 49.2 dB

TEST DATA (HIGH):

Emission Frequency MHz	Ant. Polarity	dB Below Carrier (dBc)
88.10	V	0.00
264.30	H	112.21
440.50	V	111.05
792.90	H	115.89

TEST DATA (LOW):

Emission Frequency MHz	Ant. Polarity	dB Below Carrier (dBc)
88.10	H	0.00
264.30	V	106.71
440.50	H	102.25

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2.1053(a)(b) **Field_strength_of_spurious_emissions:**

NAME OF TEST: RADIATED SPURIOUS EMISSIONS (98 MHz)

REQUIREMENTS: Any emission appearing on a frequency removed from the carrier by more than 600 kHz must be attenuated at least 43 + 10log(P) dB below the level of the un-modulated carrier, or 80 dB, whichever is the lesser attenuation.

HIGH: 43 + 10log(150) = 64.8 dB
LOW: 43 + 10log(4.2) = 49.2 dB

TEST DATA (HIGH):

Emission Frequency MHz	Ant. Polarity	dB Below Carrier (dBc)
100.10	H	0.00
300.30	V	118.31
400.40	V	127.75
700.70	H	121.99
800.80	H	119.01

TEST DATA (LOW):

Emission Frequency MHz	Ant. Polarity	dB Below Carrier (dBc)
100.10	H	0.00
200.20	H	103.49
300.30	H	113.01

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2.1053(a)(b) **Field_strength_of_spurious_emissions:**

NAME OF TEST: RADIATED SPURIOUS EMISSIONS (108 MHz)

REQUIREMENTS: Any emission appearing on a frequency removed from the carrier by more than 600 kHz must be attenuated at least 43 + 10log(P) dB below the level of the un-modulated carrier, or 80 dB, whichever is the lesser attenuation.

HIGH: 43 + 10log(150) = 64.8 dB
LOW: 43 + 10log(4.2) = 49.2 dB

TEST DATA (HIGH):

Emission Frequency MHz	Ant. Polarity	dB Below Carrier (dBc)
107.90	H	0.00
323.70	H	128.09
647.40	H	106.54

TEST DATA (LOW):

Emission Frequency MHz	Ant. Polarity	dB Below Carrier (dBc)
107.90	H	0.00
323.70	V	95.19
647.40	H	102.34

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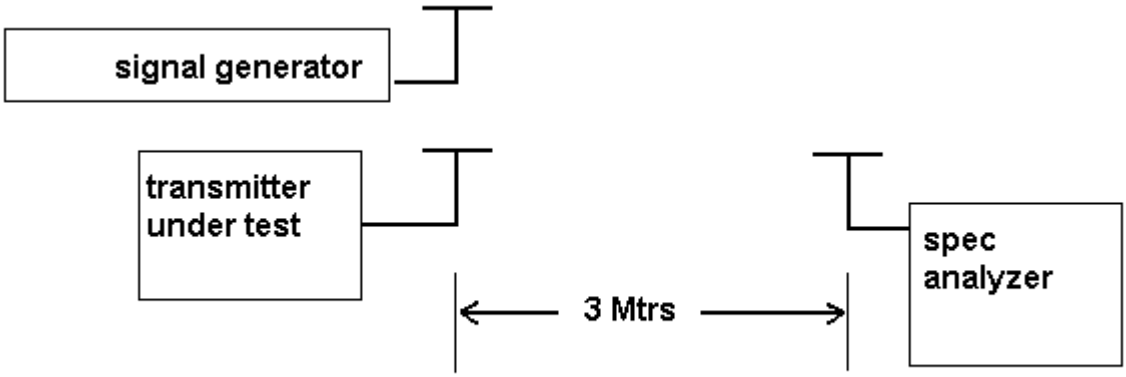
2.1053(a)(b) **Method of Measuring Radiated Spurious Emissions**



METHOD OF MEASUREMENT: The tabulated data shows the results of the radiated field strength emissions test. The spectrum was scanned from 30 MHz to at least the tenth harmonic of the fundamental. This test was conducted per TIA/EIA STANDARD 603 using the substitution method. Measurements were made at the open field test site of TIMCO ENGINEERING, INC. located at 849 N.W. State Road 45, Newberry, FL 32669.

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FCC ID: RMYNT150FP03

NAME OF TEST: POWER LINE CONDUCTED INTERFERENCE

REQUIREMENTS:

	QUASI-PEAK	**AVERAGE**
.15 – 0.5 MHz	66-56 dBuV	56-46 dBuV
0.5 – 5.0	56	46
5.0 – 30.	60	50

TEST PROCEDURE: ANSI STANDARD C63.4-1992. The spectrum was scanned from .15 to 30 MHz.

TEST DATA:

THE FOLLOWING GRAPHS REPRESENT THE EMISSIONS TAKEN FOR THIS DEVICE.

TEST RESULTS: Both lines were observed. The measurements indicate that the unit DOES appear to meet the FCC requirements for this class of equipment.

PERFORMED BY: JOE SCOGLIO DATE: JANUARY 8, 2004

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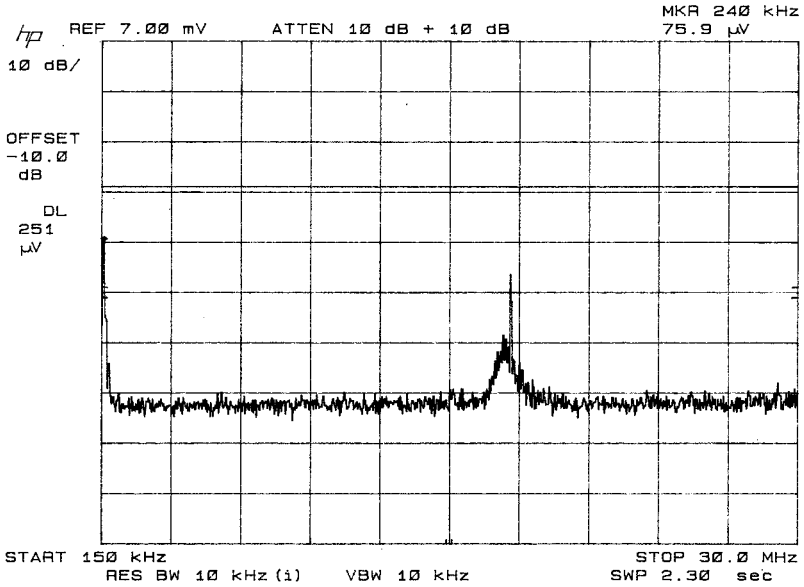
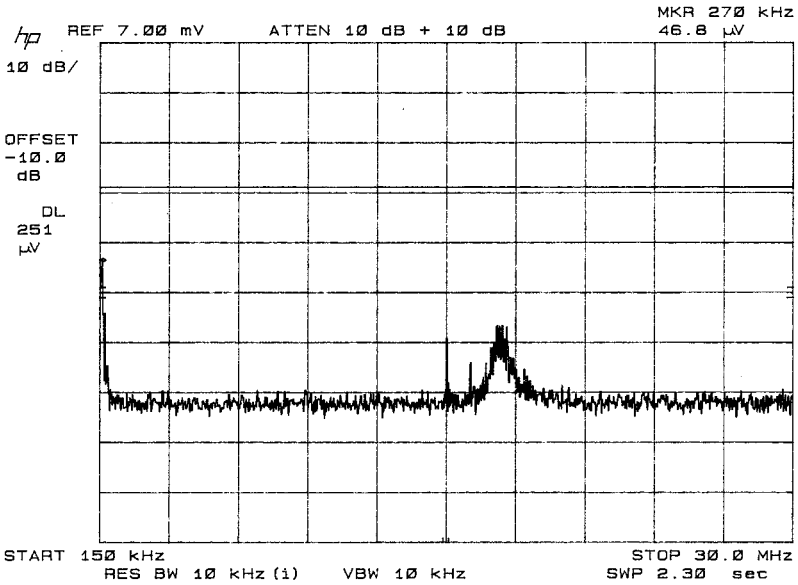
POWER LINE CONDUCTED
LINE 1



LINE 2



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2.1055 Frequency_stability:

Temperature and voltage tests were performed to verify that the frequency remains within the 2000Hz, specification limit.

The test was conducted as follows: The transmitter was placed in the temperature chamber at 25 degrees C and allowed to stabilize for one hour. The temperature was then reduced to -30 degrees C after which the transmitter was again allowed to stabilize for one hour. The transmitter was ON continuously because that is how it is used and again frequency readings were noted at 15 second intervals. The worst case number was recorded for temperature plotting. This procedure was repeated in 10 degree increments up to + 50 degrees C.

MEASUREMENT DATA:

Assigned Frequency (Ref. Frequency): 98.000 050

TEMPERATURE°C	FREQUENCY_MHz	PPM
-30	98.000 157	1.07
-20	97.999 993	-0.57
-10	98.000 013	-0.37
0	97.999 972	-0.78
10	98.000 023	-0.27
20	98.000 059	0.09
30	98.000 106	0.56
40	98.000 138	0.88
50	98.000 149	1.01

Test	**VOLTS**	**Dev: PPM**
-15%	102 VAC	-0.17

RESULTS OF MEASUREMENTS: The test results indicates that the EUT meets the requirements.

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EMC Equipment List

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/26/01	3/26/04
3-Meter OATS	TEI	N/A	N/A	Listed 1/13/03	1/13/06
AC Voltmeter	HP	400FL	2213A14499	CAL 10/9/01	10/9/03
Blue Tower Quasi-Peak Adapter	HP	85650A	2811A01279	CAL 4/15/03	4/15/05
Blue Tower RF Preselector	HP	85685A	2926A00983	CAL 4/15/03	4/15/05
Blue Tower Spectrum Analyzer	HP	8568B	2928A04729 2848A18049	CAL 4/15/03	4/15/05
Coaxial Cable #64	Semflex Inc.	60637	Timco #64	CHAR 1/24/02	1/24/04
Dipole Antenna Kit	Electro-Metrics	TDA-30/1-4	152	CAL 3/21/01	3/21/04
Dipole Antenna Kit	Electro-Metrics	TDA-30/1-4	153	CAL 9/26/02	9/26/05
Frequency Counter	HP	5385A	2730A03025	CAL 3/7/03	3/7/05
Hygro-Thermometer	Extech	445703	0602	CAL 10/4/02	10/4/04
Log-Periodic Antenna	Electro-Metrics	LPA-25	1122	CAL 10/2/01	10/2/03
Measuring Tape-7.5M	Kraftixx	7.5M PROFI		CHAR 2/1/02	2/1/04
Modulation Analyzer	HP	8901A	3435A06868	CAL 9/5/01	9/5/03
Multimeter	Fluke	FLUKE-77-3	79510405	CHAR 9/26/01	9/26/03
Silver Tower Preamplifier	HP	8449B	3008A01075	CHAR 1/28/02	1/28/04
Silver Tower Quasi-Peak Adapter	HP	85650A	3303A01844	CAL 10/14/02	10/14/04
Silver Tower RF Preselector	HP	85685A	2620A00294	CAL 10/14/02	10/14/04
Silver Tower Spectrum Analyzer	HP	8566B Opt 462	3552A22064 3638A08608	CAL 10/14/02	10/14/04
System One	Audio Precision	System One	SYS1-45868	CHAR 4/25/02	4/25/04

Tan Tower Preamplifier	**HP**	**8449B-H02**	**3008A00372**	**CAL 9/23/03**	**9/23/05**
Tan Tower Quasi-Peak Adapter	**HP**	**85650A**	**3303A01690**	**CAL 9/23/03**	**9/23/05**
Tan Tower RF Preselector	**HP**	**85685A**	**3221A01400**	**CAL 9/23/03**	**9/23/05**
Tan Tower Spectrum Analyzer	**HP**	**8566B Opt 462**	**3138A07786 3144A20661**	**CAL 9/23/03**	**9/23/05**
Temperature Chamber	**Tenney Engineering**	**TTRC**	**11717-7**	**CHAR 1/22/02**	**1/22/04**