

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 TRANSMITTER

FCC ID: RMYNT350FP07

Applicant:

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

Date Receipt: 2/6/2007

Date Tested: 2/22/2007

APPLICANT: NiCOM USA, INC.

FCC ID: RMYNT350FP07

REPORT #: N\Nicom\352AUT7\352AUT7TestReport.doc

COVER SHEET

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EXHIBITS INCLUDING:

BLOCK DIAGRAM
SCHEMATICS
PARTS LIST
USERS MANUAL
LABEL SAMPLE
LABEL LOCATION
EXTERNAL PHOTOGRAPHS
INTERNAL PHOTOGRAPHS
TUNING PROCEDURE
OPERATIONAL DESCRIPTION
TEST SET UP PHOTOGRAPHS

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GENERAL INFORMATION REQUIRED FOR TYPE ACCEPTANCE

2.1033 NiCOM USA, INC. will manufacture the FCC ID: RMYNT350FP07 in quantity, for use under FCC RULES PART 73.801, LOW POWER FM BROADCAST STATIONS (LPFM).

2.1033(c)(4) TECHNICAL_DESCRIPTION

Type of Emission: 74KF3E

$B_n = 2M + 2DK$

$M = 15000$

$D = 22\text{KHz}$ (Peak Deviation)

$K = 1$

$B_n = 2(15K) + 2(22K)(1) = 74K$

ALLOWED AUTHORIZED BANDWIDTH = 200 kHz.

2.1033 (c)(5) Frequency Range: 87.5 - 108 MHz

2.1033 (c)(6) Power Range and Controls: The EUT can be adjusted from 5 Watts up to the maximum of the rated power.

2.1033 (c)(7) Maximum Output Power Rating: 350 Watts into 50 ohms resistive load.

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

FINAL AMPLIFIER ONLY

$V_{ce} = 48.0$ Volts

$I_{ce} = 12.0$ A.

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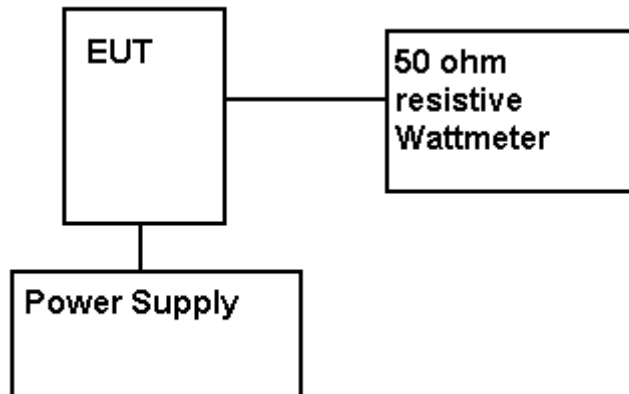
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2.1033(c)(14) Data required by ¶ 2.1046 Through ¶ 2.1057 is submitted below.

2.1046 **RF power output.**
73.267 (b)(2)

RF power is measured by Direct Method power using TIA/EIA 603-C: 2004.

OUTPUT POWER: 350W



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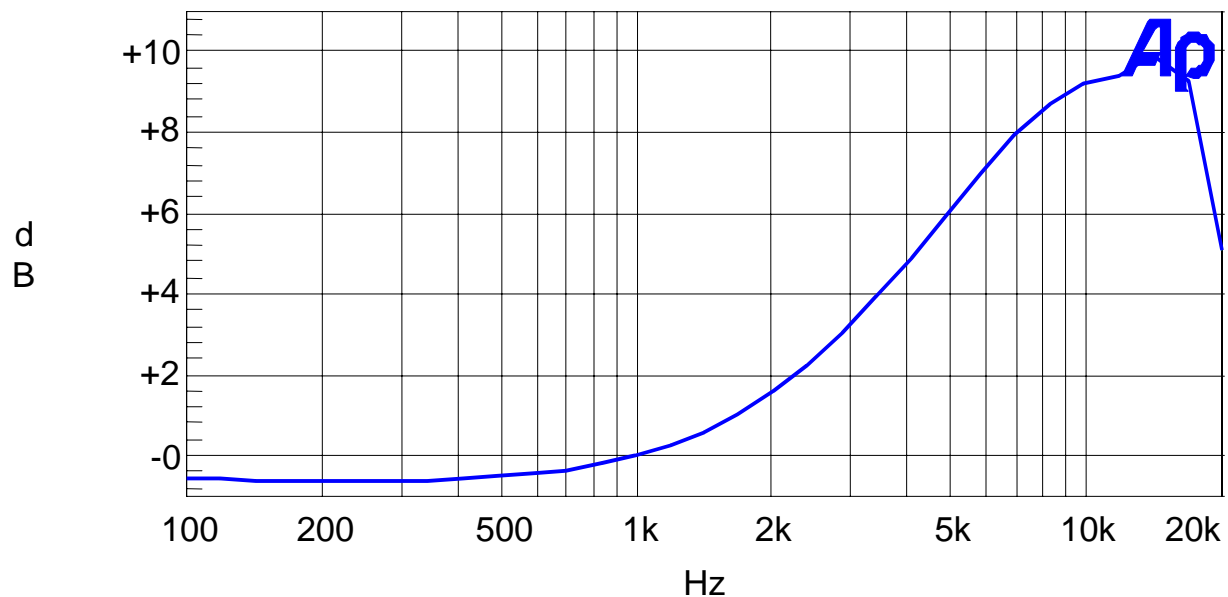
2.1047(a)(b)

Modulation characteristics:

AUDIO FREQUENCY RESPONSE

The audio frequency response was measured in accordance with ANSI/TIA-603-C-2004. The audio frequency response curve is shown below.

Audio Frequency Response



2.1047(a)(b)

AUDIO LOW PASS FILTER

The audio low pass filter is NA for this EUT.

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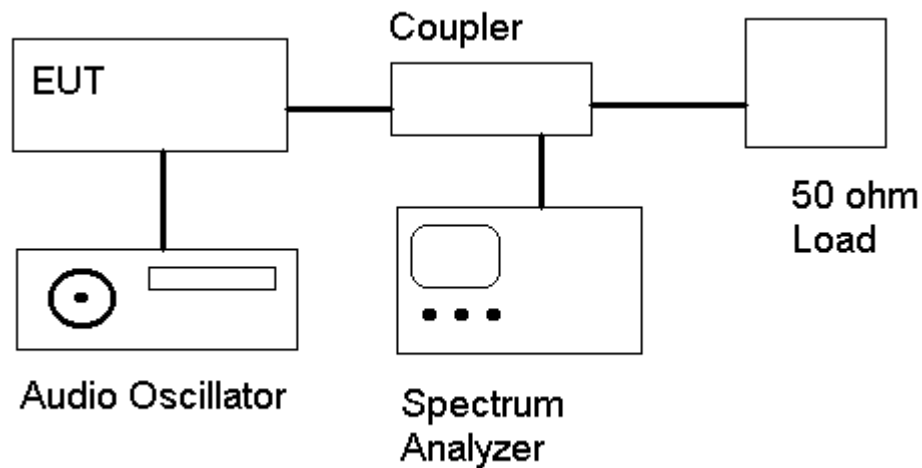
2.1049

73.317(b-d)

OCCUPIED BANDWIDTH:

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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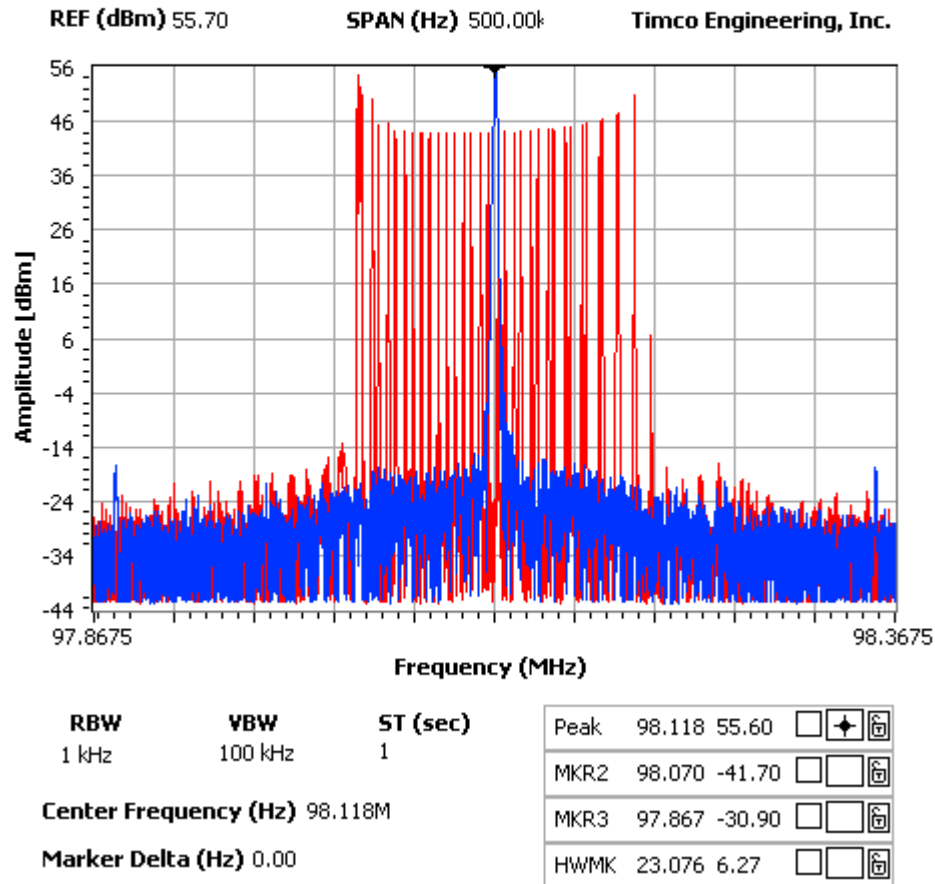
2.1049

OCCUPIED BANDWIDTH PLOT (50 Hz)

NOTES:

NICOM USA, INC. -- FCC ID: RMYNT350

OCCUPIED BANDWIDTH PLOT (50Hz)



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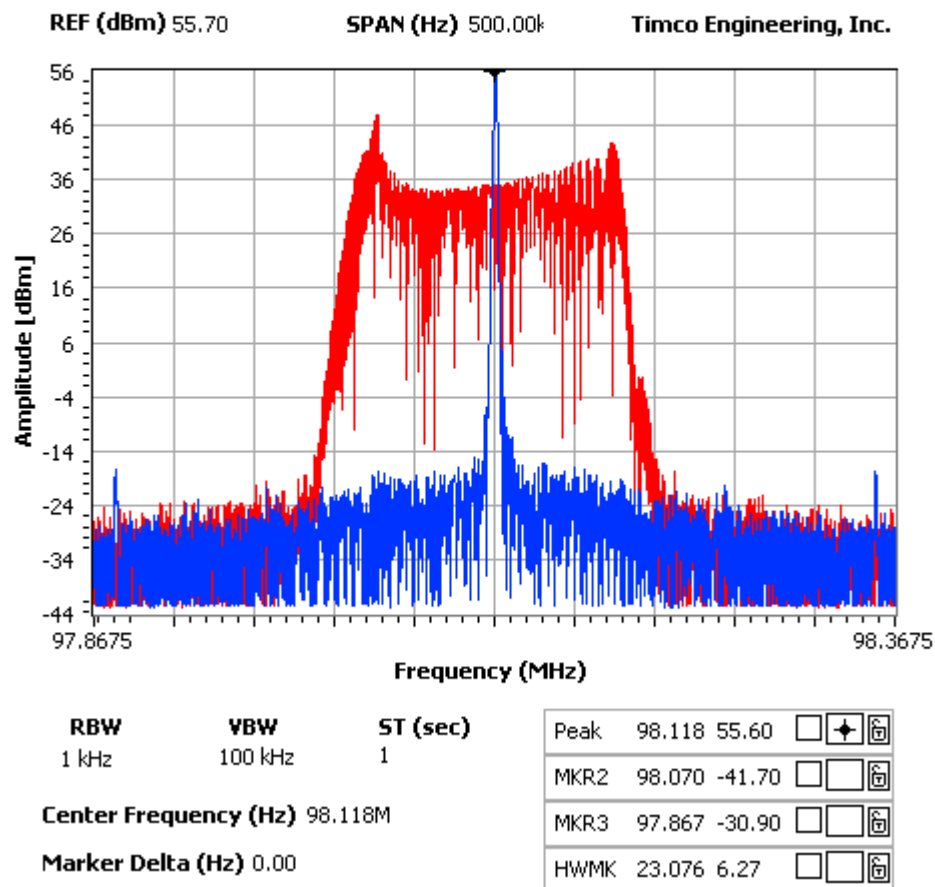
2.1049

OCCUPIED BANDWIDTH PLOT (1 kHz)

NOTES:

NiCOM USA, INC. -- FCC ID: RMYNT350

OCCUPIED BANDWIDTH PLOT (1kHz)



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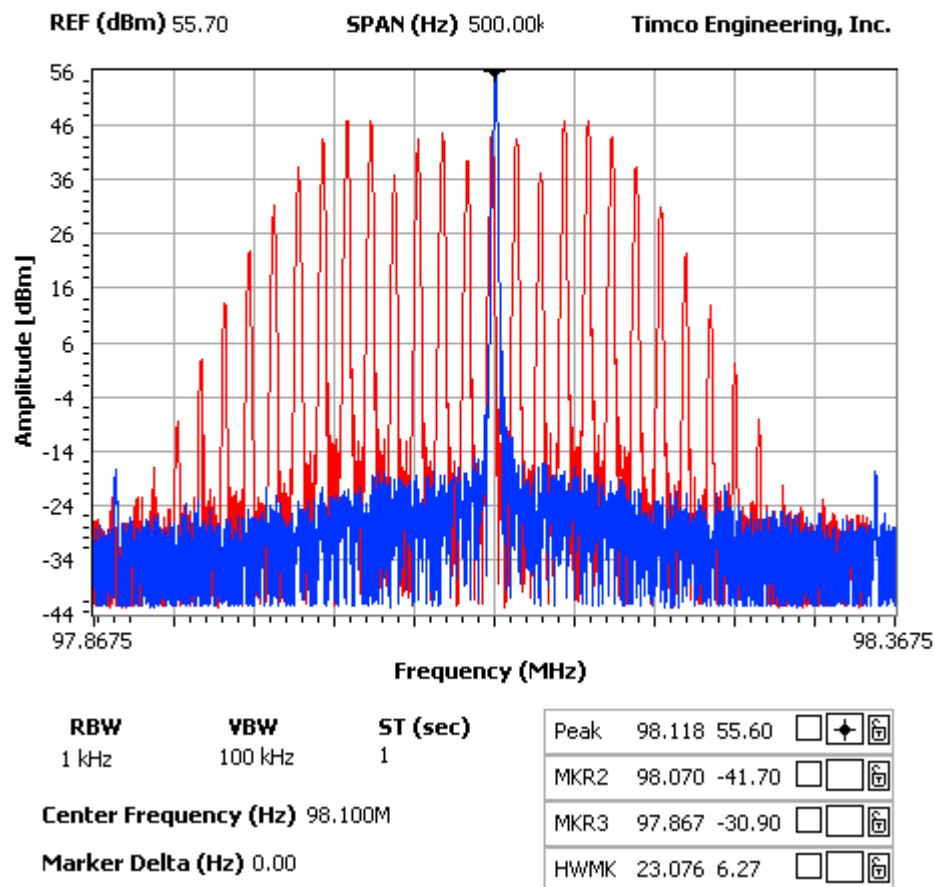
2.1049

OCCUPIED BANDWIDTH PLOT (15 kHz)

NOTES:

NiCOM USA, INC. -- FCC ID: RMYNT350

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 ANSI/TIA-603-C-2004.

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

$$43 + 10\log(350) = 68.44 \text{ dB}$$

TF HIGH POWER	EF	dB below carrier		TF LOW POWER	EF	dB below carrier
88.1	88.1	0.0		98.1	98.1	0.0
	176.2	78.9			196.2	84.1
	264.3	87.2			294.3	92.9
	352.4	100.3			392.4	104.0
	440.5	96.8			490.5	97.1
	528.6	102.8			588.6	102.5
	616.7	104.1			686.7	103.7
	704.8	104.1			784.8	103.9
	792.9	103.5			882.9	103.8
	881.0	104.1			981.0	102.2

TF HIGH POWER	EF	dB below carrier
107.9	107.9	0.0
	215.8	85.0
	323.7	85.8
	431.6	102.7
	539.5	97.4
	647.4	102.7
	755.3	102.4
	863.2	102.9
	971.1	103.9
	1079.0	104.0

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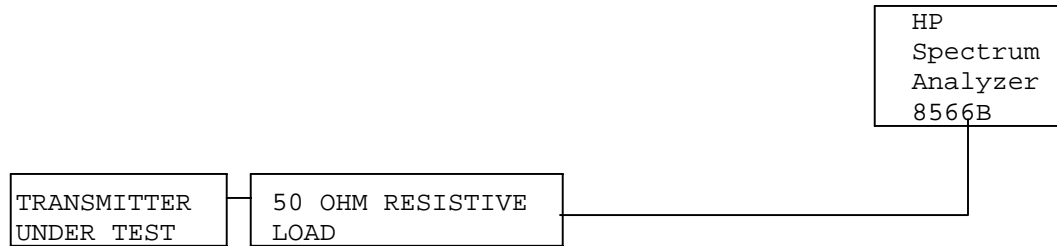
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2.1051

Method of Measuring Conducted Spurious Emissions



METHOD OF MEASUREMENT: The procedure used was ANSI/TIA-603-C-2004 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

REQUIREMENTS: Any emission appearing on a 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 unmodulated carrier, or 80 dB, whichever is the lesser attenuation.

$$43 + 10\log(350) = 68.44 \text{ dB}$$

TEST DATA:

Emission Frequency MHz	Ant. Polarity	dB Below Carrier (dBc)
88.10	0	0
176.20	H	123.35
264.30	H	117.53
352.40	V	127.47
440.50	V	125.93
528.60	H	126.8
616.70	V	123.63
704.80	H	118.32
792.90	V	112.99
881.00	V	115.65

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2.1053(a)(b)

Field strength of spurious emissions:

NAME OF TEST: RADIATED SPURIOUS EMISSIONS

Emission Frequency MHz	Ant. Polarity	dB Below Carrier (dBc)
98.10	0	0
196.20	H	118.85
294.30	H	119.44
392.40	V	127.13
490.50	V	123.89
588.60	H	124.84
686.70	V	121.05
784.80	H	115.3
882.90	V	116.63
981.00	V	115.73

Emission Frequency MHz	Ant. Polarity	dB Below Carrier (dBc)
107.90	0	0
215.80	H	117.63
323.70	H	114.39
431.60	V	125.86
539.50	V	124.55
647.40	H	123.8
755.30	H	121.44
863.20	V	115.38
971.10	V	115.27
1079.00	V	110.79

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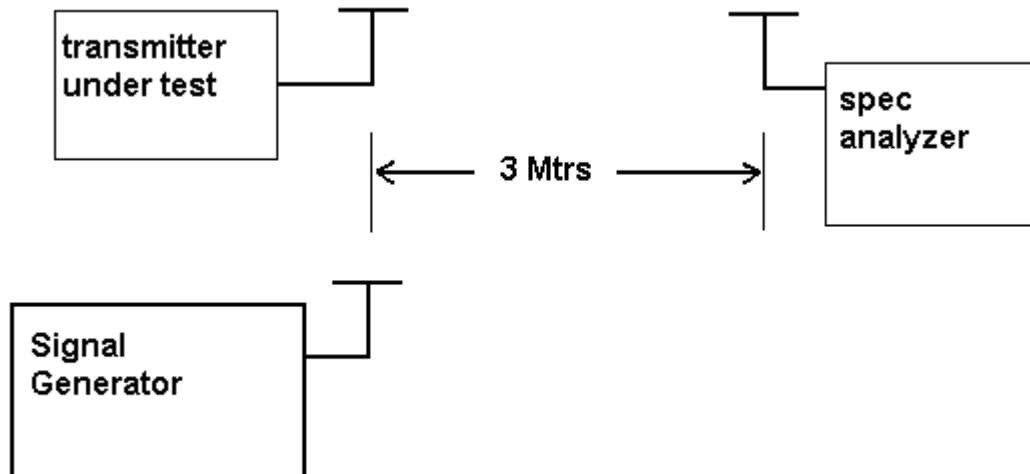
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2.1053(a)(b) Method of Measuring Radiated Spurious Emissions



METHOD OF MEASUREMENT: The tabulated data shows the results of the radiated field strength emissions test. The spectrum was scanned from 30 to at least the tenth harmonic of the fundamental. This test was conducted per ANSI/TIA-603-C-2004 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: RMYNT250FP03

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 C63.4-2003. 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.

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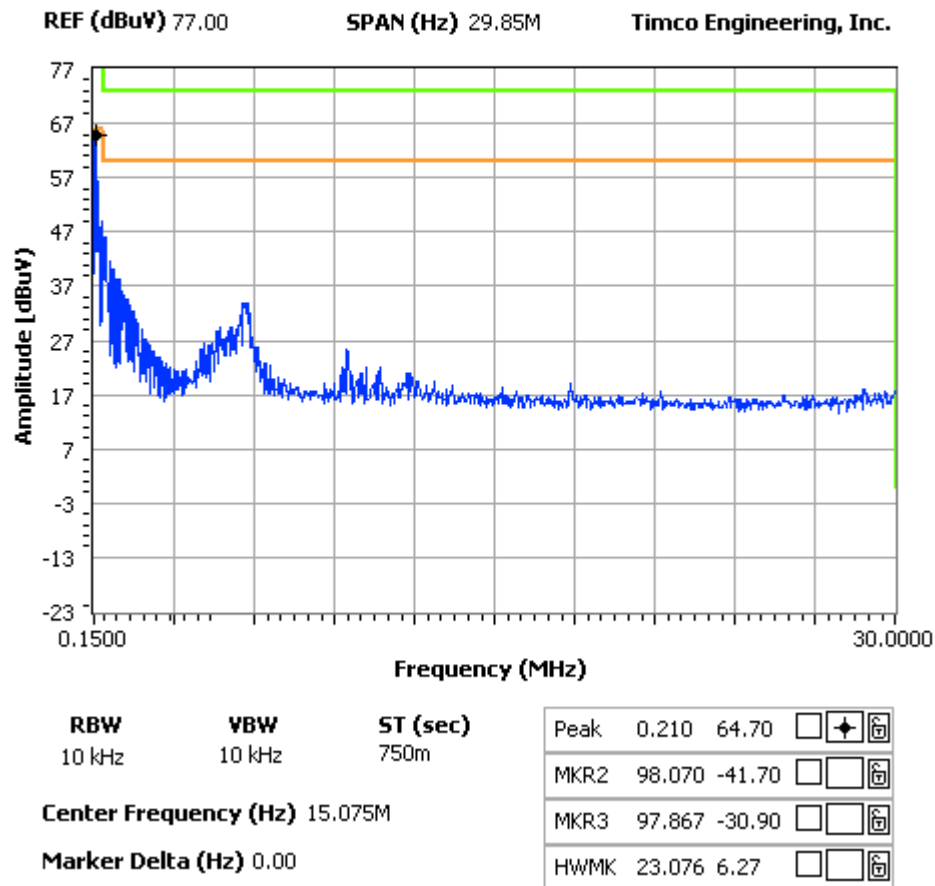
POWER LINE CONDUCTED LINE 1

NOTES:

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POWERLINE CONDUCTED -- LINE 1

FCC 15.107 Mask Class A



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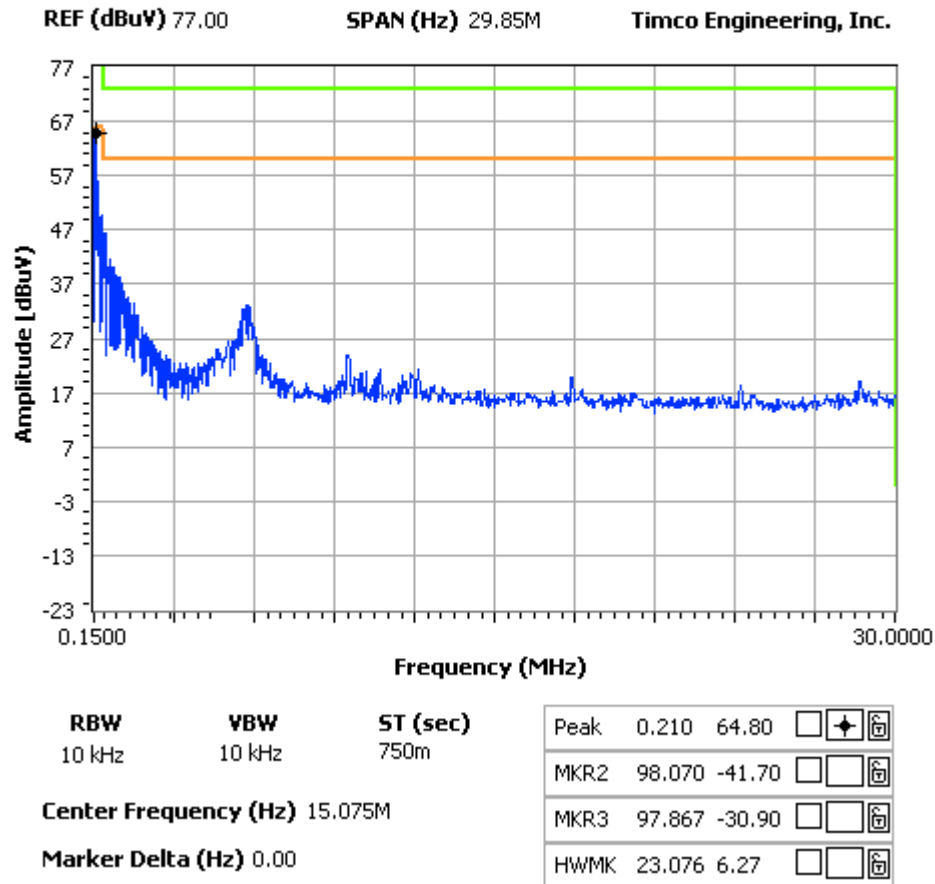
LINE 2

NOTES:

NICOM USA, INC. -- FCC ID: RMYNT350

POWERLINE CONDUCTED -- LINE 2

FCC 15.107 Mask Class A



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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° C and allowed to stabilize for one hour. The temperature was then reduced to -30° 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° C.

MEASUREMENT DATA:

Assigned Frequency (Ref. Frequency):		98.000 044
0	98.099 950	- 0.96
10	98.099 953	- 0.93
20	98.099 963	- 0.83
30	98.100 012	- 0.33
40	98.100 023	- 0.21
50	98.099 946	- 1.00
102V	98.100 044	0.00
138V	98.100 044	0.00

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 3/27/04	3/26/07
3-Meter OATS	TEI	N/A	N/A	Listed 1/11/06	1/10/09
AC Voltmeter	HP	400FL	2213A14499	CAL 12/29/06	12/29/08
Coaxial Cable #64	Semflex Inc.	60637	Timco #64	CHAR 11/28/05	11/28/07
Antenna: Dipole Kit	Electro- Metrics	TDA-30/1-4	152	CAL 3/3/06	3/3/09
Frequency Counter	HP	5385A	2730A03025	CAL 4/15/05	4/15/07
Hygro- Thermometer	Extech	445703	0602	CAL 8/1/05	8/1/07
Antenna: Log-Periodic	Electro- Metrics	LPA-25	1122	CAL 12/1/06	12/1/08
Measuring Tape-7.5M	Kraftixx	7.5M PROFI		CHAR 12/16/05	12/16/07
Digital Multimeter	Fluke	FLUKE-77-3	79510405	CAL 4/15/05	4/15/07
Analyzer Open-Frame Tower	HP	8449B	3008A01075	CAL 8/8/05	8/8/07
Preamplifier Analyzer Silver Tower Quasi-Peak Adapter	HP	85650A	3303A01844	CAL 10/30/06	10/30/08

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Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Analyzer Silver Tower RF Preselector	HP	85685A	2620A00294	CAL 10/30/06	10/30/08
Analyzer Silver Tower Spectrum Analyzer System One	HP	8566B Opt 462	3552A22064 3638A08608	CAL 10/30/06	10/30/08
Analyzer Tan Tower Preamplifier	Audio Precision	System One	SYS1-45868	CHAR 3/27/06	3/27/08
Analyzer Tan Tower Quasi- Peak Adapter	HP	8449B-H02	3008A00372	CAL 12/8/05	12/8/07
Analyzer Tan Tower RF Preselector	HP	85650A	3303A01690	CAL 12/8/05	12/8/07
Analyzer Tan Tower Spectrum Analyzer	HP	85685A	3221A01400	CAL 12/7/05	12/7/07
Analyzer Tan Tower Spectrum Analyzer	HP	8566B Opt 462	3138A07786 3144A20661	CAL 12/7/05	12/7/07
Temperature Chamber	Tenney Engineering	TTRC	11717-7	CHAR 3/23/06	3/23/08

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