

# 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](mailto:sid@timcoengr.com)



## Test Report

Product Name: 500 WATT BROADCAST AMPLIFIER

FCC ID: RMYNA501RP05

Applicant:

NiCOM USA, INC.  
2626 Southport Way Suite B  
National City CA. 91950  
USA

Date Receipt: 7/22/2005

Date Tested: 7/22/2005

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REPORT #: N\Nicom\1548UT5\1548UT5TestReport.doc

COVER SHEET

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### EXHIBITS INCLUDING:

BLOCK DIAGRAM  
SCHEMATIC  
PARTS LIST  
USERS MANUAL  
LABEL SAMPLE  
LABEL LOCATION  
EXTERNAL PHOTOGRAPHS  
INTERNAL PHOTOGRAPHS  
TUNING PROCEDURE  
OPERATIONAL DESCRIPTION  
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## GENERAL INFORMATION REQUIRED FOR TYPE ACCEPTANCE

2.1033 NiCOM USA, INC. will manufacture the FCC ID:  
RMYNA501RP05 in quantity,  
for use under FCC RULES PART 73, AMPLIFIER

2.1033(c)(4) TECHNICAL DESCRIPTION

Type of Emission: 300KF8E

Bn = 2M + 2DK

M = 100000

D = 50000 kHz(Peak Deviation)

K = 1

Bn = 2(1000000K) + 2(50K)(1) = 300K For 20K Hz

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  
50 Watt up to the maximum of the rated power.

2.1033 (c)(7) Maximum Output Power Rating: 500 Watts into 50  
ohms resistive load.

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

FINAL AMPLIFIER ONLY

48V BATTERY

Vce = 26 Volts

Ice = 1248 W

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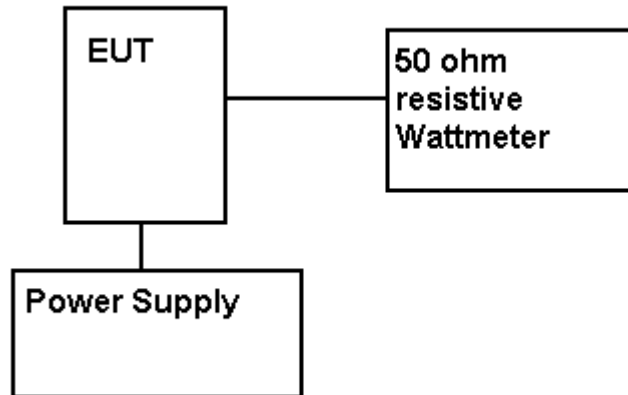
2.1033(c)(14) Data required by ¶ 2.1046 Through ¶ 2.1057 is submitted below.

2.1046 RF\_power\_output.

73.267 (b)(2)

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

OUTPUT POWER: 500 Watts



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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.

2.1047(a)(b) AUDIO\_LOW\_PASS\_FILTER

The audio low pass filter is NA for this EUT.

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2.1051  
73.371

## 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.

$$43+10(\log)(500) = 70\text{dB}$$

EF	dB below carrier	EF	dB below carrier	EF	dB below carrier
88.1	0	98.1	0	107.9	0
176.2	71.9	196.2	71.6	215.8	78.9
264.3	88.4	294.3	81.3	323.7	78.6
352.4	98.2	392.4	107.7	431.6	107.5
440.5	94.7	490.5	96.8	539.5	97.2
528.6	99	588.6	93.4	647.4	108.8
616.7	104.8	686.7	106.5	755.3	109.4
704.8	108.8	784.8	110.4	863.2	106.8
792.9	107.7	882.9	98.8	971.1	106.8
881	98.1	981.1	100.4	1079	96.8

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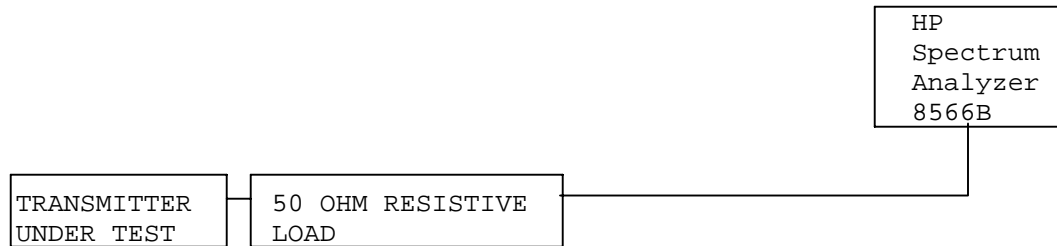
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2.1051

## 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  $43 + 10\log(P)$  dB below the level of the unmodulated carrier, or 80 dB, whichever is the lesser attenuation.

$$43 + 10(\log)(500) = 70\text{dB}$$

### TEST DATA:

Emission Frequency MHz	Ant. Polarity	ERP (dBm)	dB Below Carrier (dBc)	Emission Frequency MHz	Ant. Polarity	ERP (dBm)	dB Below Carrier (dBc)
88.00		56.99	0	98.10		56.99	0
176.20	V	-36.80	93.79	196.20	H	-36.94	93.93
264.30	H	-44.23	101.22	294.30	H	-48.44	105.43
352.40	H	-38.11	95.10	392.40	H	-54.01	111.00
440.50	H	-52.22	109.21	490.50	H	-40.49	97.48
528.60	H	-41.63	98.62	588.60	H	-31.15	88.14
616.70	H	-50.32	107.31	686.70	H	-59.82	116.81
704.80	H	-59.11	116.10	784.80	H	-53.02	110.01
792.90	H	-53.85	110.84	882.90	H	-43.33	100.32
881.00	H	-42.35	99.34	981.00	H	-39.25	96.24

Emission Frequency MHz	Ant. Polarity	ERP (dBm)	dB Below Carrier (dBc)
107.90		56.99	0
215.80	H	-37.28	94.27
323.70	H	-42.36	99.35
431.60	H	-47.52	104.51
539.50	H	-35.24	92.23
647.40	H	-56.86	113.85
755.30	V	-56.87	113.86
863.20	V	-56.56	113.55
971.10	V	-50.79	107.78
1079.00	V	-37.17	94.16

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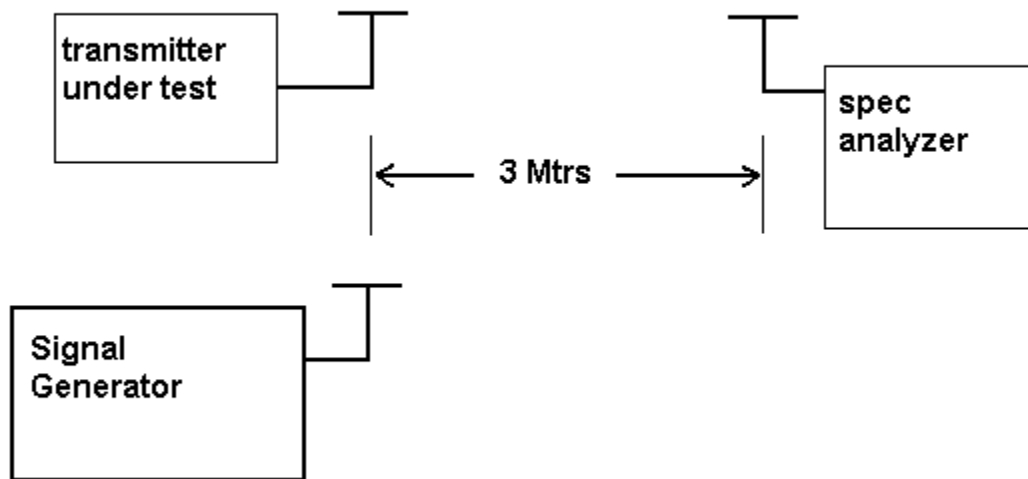
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## 2.1053(a)(b) Method of Measuring Radiated Spurious Emissions



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 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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## 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 1/13/03	1/12/06
AC Voltmeter	HP	400FL	2213A14499	CAL 7/19/04	7/19/06
Blue Tower	HP	85650A	2811A01279	CAL 4/13/05	4/13/07
Quasi-Peak Adapter					
Blue Tower	HP	85685A	2926A00983	CAL 4/13/05	4/13/07
RF					
Preselector					
Blue Tower	HP	8568B	2928A04729	CAL 4/13/05	4/13/07
Spectrum Analyzer			2848A18049		
Coaxial Cable #64	Semflex Inc.	60637	Timco #64	CHAR 1/24/02	1/24/04
Dipole	Electro-Metrics	TDA-30/1-4	152	CAL 3/21/01	3/21/04
Antenna Kit					
Dipole	Electro-Metrics	TDA-30/1-4	153	CAL 9/26/02	9/26/05
Antenna Kit					
Frequency Counter	HP	5385A	2730A03025	CAL 4/15/05	4/15/07
Hygro-Thermometer	Extech	445703	0602	CAL 10/4/02	10/4/04
Log-Periodic Antenna	Electro-Metrics	LPA-25	1122	CAL 8/26/04	8/26/06
Measuring Tape-7.5M	Kraftixx	7.5M PROFIT		CHAR 2/1/02	2/1/04
Modulation Analyzer	HP	8901A	3435A06868	CAL 11/4/04	11/4/06
Multimeter	Fluke	FLUKE-77-3	79510405	CAL 4/15/05	4/15/07
Silver Tower	HP	8449B	3008A01075	CAL 3/22/04	3/22/06
Preamplifier					
Silver Tower	HP	85650A	3303A01844	CAL 12/8/04	12/8/06
Quasi-Peak Adapter					
Silver Tower	HP	85685A	2620A00294	CAL 4/27/04	4/27/06
RF					
Preselector					
Silver Tower	HP	8566B Opt 462	3552A22064	CAL 12/8/04	12/8/06
Spectrum Analyzer			3638A08608		
System One	Audio Precision	System One	SYS1-45868	CHAR 4/25/02	4/25/04

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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

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