



849 NW STATE ROAD 45  
NEWBERRY, FL 32669 USA  
PH: 888.472.2424 OR 352.472.5500  
FAX: 352.472.2030  
EMAIL: [INFO@TIMCOENGR.COM](mailto:INFO@TIMCOENGR.COM)  
[HTTP://WWW.TIMCOENGR.COM](http://WWW.TIMCOENGR.COM)

## FCC PT 90

### TEST REPORT

APPLICANT	INTERNATIONAL TECHNICAL MKTG. INC.
ADDRESS	P.O. BOX 23159 FEDERAL WAY, WA 98093 USA
FCC ID	XLTKTUS-1L
TESTED MODEL	KTUS-1
FAMILY MODEL(S)	N/A
PRODUCT DESCRIPTION	RADIO BUOY
DATE SAMPLE RECEIVED	5/7/2009
DATE TESTED	5/10/2009
TESTED BY	Nam Nguyen
APPROVED BY	Mario de Aranzeta
TIMCO REPORT NO.	986AUT9TestReport.doc
TEST RESULTS	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.





ATTESTATION .....	3
REPORT SUMMARY .....	4
TEST ENVIRONMENT AND TEST SETUP .....	4
TECHNICAL SUMMARY .....	5
DUT SPECIFICATION .....	5
TEST EQUIPMENT .....	6
TEST PROCEDURE .....	7
TEST RESULT .....	9
RF POWER OUTPUT .....	9
MODULATION CHARACTERISTICS .....	10
OCCUPIED BANDWIDTH .....	11
SPURIOUS EMISSIONS AT ANTENNA TERMINALS (CONDUCTED) .....	12
FIELD STRENGTH OF SPURIOUS EMISSIONS (RADIATED) .....	13
FREQUENCY STABILITY .....	14
POWER LINE CONDUCTED INTERFERENCE .....	15



## ATTESTATION

This equipment has been tested in accordance with the standards identified in the referenced test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

The test results relate only to the items tested.



Test Certificate #0955-01

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025:2005 requirements.

I attest that the necessary measurements were made by me or under my supervision, at Timco Engineering, Inc. located at 849 N.W. State Road 45, Newberry, Florida 32669 USA.

**Authorized by:** Mario de Aranzeta



**Signature:**

**Function:** Test Lab Supervisor / Engineer

**Date:** 6/20/2009

Applicant: INTERNATIONAL TECHNICAL MKTG. INC.  
FCC ID: XLTKTUS-1L  
Report: I\ITM MARINE\986AUT9\986AUT9TestReport.doc

## REPORT SUMMARY

Disclaimer	The test results related only to the items tested.
Purpose of Test	To show the DUT in compliance with FCC CFR 47 Part 90
Test Procedures	ANSI/TIA 603-C: 2004, FCC CFR 47 Part 90, ANSI C63.4: 2003
Related Approval(s)/ Report(s)	N/A

## TEST ENVIRONMENT AND TEST SETUP

Test Facility	All tests were conducted by Timco Engineering Inc. located at 849 NW State Road 45, Newberry, FL 32669 USA
Laboratory Test Condition	Temperature: 26°C Relative humidity: 50%.
Deviation from the standards	No deviation
Modification to the DUT	No modification was made.
Test Exercise (software etc.)	The DUT was placed in continuous transmitting mode of operation.
System Setup	No testing accessories. The DUT is a stand alone device.

## TECHNICAL SUMMARY

### DUT SPECIFICATION

<b>DUT Description</b>	Radio Buoy
<b>Model Number</b>	KTUS-1L
<b>Trade Name</b>	INTERNATIONAL TECHNICAL MKTG. INC.
<b>DUT Power Source</b>	<input type="checkbox"/> 110-120Vac/50- 60Hz <input type="checkbox"/> DC Power <input checked="" type="checkbox"/> Battery Operated Exclusively
<b>Test Item</b>	<input type="checkbox"/> Prototype <input type="checkbox"/> Pre-Production <input checked="" type="checkbox"/> Production
<b>Type of Equipment</b>	<input type="checkbox"/> Fixed <input checked="" type="checkbox"/> Mobile <input type="checkbox"/> Portable
<b>Laboratory</b>	Temperature: 26°C
<b>Test Conditions</b>	Humidity: 55%
<b>Modifications to DUT:</b>	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (explanation below)

**TEST EQUIPMENT**

<b>Device</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial Number</b>	<b>Cal/Char Date</b>	<b>Due Date</b>
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/20/07	3/19/10
3-Meter OATS	TEI	N/A	N/A	Listed 2/5/09	2/5/12
3-Meter Semi-Anechoic Chamber	Panashield	N/A	N/A	Listed 5/11/07	5/11/10
Analyzer Tan Tower Quasi-Peak Adapter	HP	85650A	3303A01690	CAL 11/30/07	11/30/09
Analyzer Tan Tower RF Preselector	HP	85685A	3221A01400	CAL 11/30/07	11/30/09
Analyzer Tan Tower Spectrum Analyzer	HP	8566B Opt 462	3138A07786 3144A20661	CAL 11/30/07	11/30/09
Analyzer Tan Tower Preamplifier	HP	8449B-H02	3008A00372	CAL 11/30/07	11/30/09
Frequency Counter	HP	5385A	2730A03025	CAL 7/6/07	7/6/09
Hygro-Thermometer	Extech	445703	0602	CAL 11/15/07	11/15/09
Antenna: Log-Periodic	Electro-Metrics	LPA-30	409	CAL 7/18/08	7/18/09
Measuring Tape-7.5M	Kraftixx	7.5M PROFI		CHAR 11/13/07	11/13/09
System One	Audio Precision	System One	SYS1-45868	CHAR 2/27/08	2/27/10
Temperature Chamber	Tenney Engineering	TTRC	11717-7	CHAR 4/25/08	4/25/10

Applicant: INTERNATIONAL TECHNICAL MKTG. INC.

FCC ID: XLTKTUS-1L

Report: I\ITM MARINE\986AUT9\986AUT9TestReport.doc

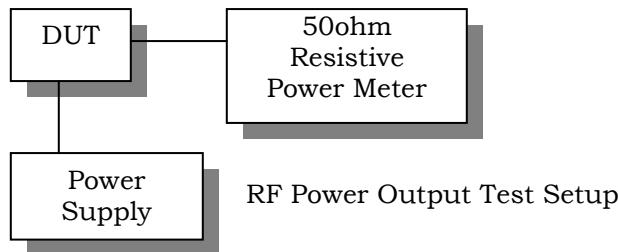
## TEST PROCEDURE

### Power Line Conducted Interference

The procedure used was ANSI 63.4-2003 using a 50uH LISN. Both lines were observed with the DUT transmitting. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

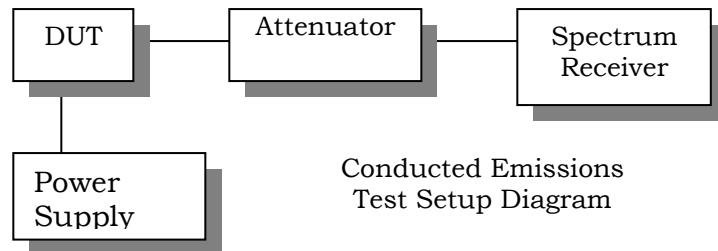
### RF Power Output

The RF power output was measured at the antenna feed point using a peak power meter. A 50-ohm, resistive wattmeter was connected to the RF output connector. With a nominal battery voltage, and the transmitter properly adjusted the RF output measures:



### Spurious Emissions At Antenna Terminals (Conducted)

The carrier was modulated 100%. The spectrum was scanned from 0.4 to at least the 10th harmonic of the fundamental. Above 1 GHz the resolution bandwidth was 1 MHz and the VBW = 3 MHz and the span to 50 MHz. The measurements were made in accordance with standard ANSI/TIA-603-C: 2004



### Radiation Interference

The test procedure used was ANSI/TIA-603-C: 2004 and ANSI C63.4-2003 using an Agilent spectrum receiver with pre-selector. The bandwidth (RBW) of the spectrum receiver was 100 kHz up to 1 GHz and 1 MHz above 1 GHz with an appropriate sweep speed. The VBW above 1 GHz was 3 MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

## **Modulation Characteristic**

### Audio frequency response

The audio frequency response was measured in accordance with ANSI/TIA 603-C: 2004.

### Audio Low Pass Filter

The audio low pass filter for voice-modulated equipment was measured in accordance with ANSI/TIA 603-C: 2004.

### Audio Input versus modulation

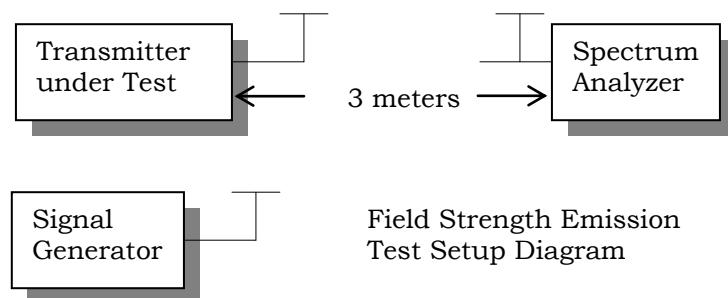
The audio input level needed for a particular percentage of modulation was measured in accordance with ANSI/TIA 603-C: 2004. Curves are provided for audio input frequencies of 300, 1000, and 3000 Hz.

## **Frequency Stability**

The frequency stability was measured per ANSI/TIA 603-C: 2004.

## **Field Strength of Spurious Emissions**

The spectrum was scanned from 30 MHz to at least the tenth harmonic of the fundamental. This test was conducted per ANSI/TIA 603-C: 2004 using the substitution method.





## TEST RESULT

### RF POWER OUTPUT

Rule Part No.: Pt 2.1046(a), Pt 90.103

Test Data:

Power output conducted = 8 Watt

DC power input= 24Vdc\*0.5 Amperes  
= 12.0 Watts

Applicant: INTERNATIONAL TECHNICAL MKTG. INC.  
FCC ID: XLTKTUS-1L  
Report: I\ITM MARINE\986AUT9\986AUT9TestReport.doc



## MODULATION CHARACTERISTICS

Rule Parts No.: Pt 2.1047(a)(b), Pt 90

Requirements: A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 – 5000Hz shall be submitted.

For voice modulated communication equipment, a curve or equivalent data showing audio low pass filter shall be submitted.

Audio input versus modulation cannot exceed 100%.

Test Data: This device uses On Off Keying modulation.

60HA1A

Bn=BK where K = 5 (fading channel)

B=12

Bn= 60 Hz

Applicant: INTERNATIONAL TECHNICAL MKTG. INC.  
FCC ID: XLTKTUS-1L  
Report: I\ITM MARINE\986AUT9\986AUT9TestReport.doc

## OCCUPIED BANDWIDTH

Rule Parts No: Pt 2.1049, Pt 90.210

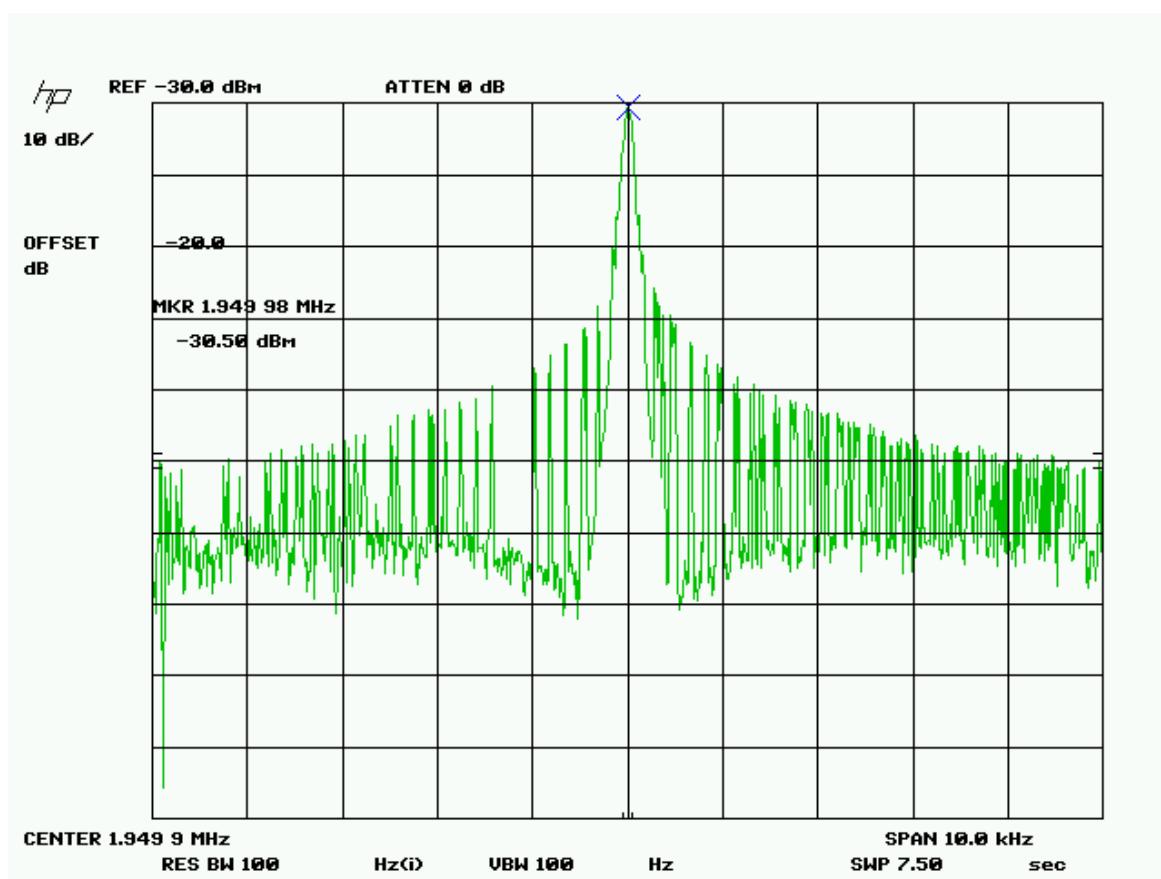
Test Requirement:

On any frequency removed from the assigned frequency by more than 50%, but not more than 100%: At least 25dB.

On any frequency removed from the assigned frequency by more than 100%, but not more than 250%: At least 35dB.

On any frequency removed from the assigned frequency by more than 250%, of the authorized bandwidth: At least  $43 + \log(P)$ dB.

Test Data:



Applicant: INTERNATIONAL TECHNICAL MKTG. INC.

FCC ID: XLTKTUS-1L

Report: I\ITM MARINE\986AUT9\986AUT9TestReport.doc

## **SPURIOUS EMISSIONS AT ANTENNA TERMINALS (CONDUCTED)**

Rule Part No.: Pt 2.1051(a), Pt 90)

Requirements:

$$43 + 10\log(P_0) = 43 + 10\log(8) = 52 \text{ dB}$$

Test Data:

TF POWER	EF	dB below carrier
1.95	3.90	52.6
	5.85	55.2
	7.80	57.8
	9.75	60.1
	11.69	68.5
	13.64	62.7
	15.59	69.4
	17.54	66.8
	19.49	67.9

Applicant: INTERNATIONAL TECHNICAL MKTG. INC.

FCC ID: XLTKTUS-1L

Report: I\ITM MARINE\986AUT9\986AUT9TestReport.doc



### **FIELD STRENGTH OF SPURIOUS EMISSIONS (RADIATED)**

Rule Parts. No.: Part 2.1053

Requirements: High Power:  $43 + 10\log(P_0) = 43 + 10\log(8) = 52 \text{ dB}$

Test Data: Not applicable

Applicant: INTERNATIONAL TECHNICAL MKTG. INC.  
FCC ID: XLTKTUS-1L  
Report: I\ITM MARINE\986AUT9\986AUT9TestReport.doc

## FREQUENCY STABILITY

Rule Parts. No.: Pt 2.1055, Pt 90.213

Requirements: Temperature range requirements: -30 to +50° C.  
Voltage Variation ±15%

±100.0 PPM or ±0.010%

Test Data:

Test Temperature [°C]	Frequency [MHz]	Unit [ppm]
-30	1.949990	-4.62
-20	1.949991	-4.10
-10	1.949998	-0.51
0	1.950000	0.51
10	1.950001	1.03
20	1.950000	0.51
30	1.949998	-0.51
40	1.949997	-1.03
50	1.949998	-0.51

115% Voltage, Frequency MHz		
20	1.949999	0.00

85% Voltage, Frequency MHz		
20	1.949999	0.00



## POWER LINE CONDUCTED INTERFERENCE

Rules Part No.: Part 15.207

Requirements:

Frequency (MHz)	Quasi Peak Limits (dB $\mu$ V)	Average Limits (dB $\mu$ V)
0.15 – 0.5	66 – 56 *	56 – 46 *
0.5 – 5.0	56	46
5.0 – 30	60	50

\* Decreases with logarithm of frequency

Test Data: N/A  
Battery operated device only.

Applicant: INTERNATIONAL TECHNICAL MKTG. INC.  
FCC ID: XLTKTUS-1L  
Report: I\ITM MARINE\986AUT9\986AUT9TestReport.doc