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FCC PT 90 TEST REPORT

APPLICANT	WHITE WATER FISHING SUPPLY, INC.
ADDRESS	349 5th Ave
	New York NEW YORK 10016
FCC ID:	P5VKTR-18
TESTED MODEL	KTR-18
FAMILY MODEL(S)	N/A
PRODUCT DESCRIPTION	RADIO BUOY
DATE SAMPLE RECEIVED	9/7/2012
DATE TESTED	9/11/2012
TESTED BY	John A. Day
APPROVED BY	Mario R. de Aranzeta
TIMCO REPORT NO.	1648AUT12TestReport.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.**



Certificate #0955-01

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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: August/2/2012

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REPORT SUMMARY

Purpose of Test	To show the product meets the requirements of 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
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.

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TECHNICAL SUMMARY

DUT SPECIFICATION

DUT Description	Radio Buoy
Model Number	KTR-18
DUT Power Source	<input type="checkbox"/> 110–120Vac/50– 60Hz <input type="checkbox"/> DC Power <input checked="" type="checkbox"/> Battery Operated Exclusively
Test Item	<input type="checkbox"/> Prototype <input type="checkbox"/> Pre-Production <input checked="" type="checkbox"/> Production
Type of Equipment	<input type="checkbox"/> Fixed <input checked="" type="checkbox"/> Mobile <input type="checkbox"/> Portable
Laboratory Test Conditions	Temperature: 26°C Humidity: 55%
Modifications to DUT:	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes (explanation below)

Notes: Added test cable to antenna port

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TEST EQUIPMENT

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3/10-Meter OATS	TEI	N/A	N/A	12/31/11	12/31/13
3-Meter OATS	TEI	N/A	N/A	12/31/11	12/31/13
3-Meter Semi-Anechoic Chamber	Panashield	N/A	N/A	12/31/11	12/31/13
Analyzer Open-Frame Tower Preamplifier	HP	8449B	3008A01075	07/22/09	09/15/13
Analyzer Open-Frame Tower Quasi-Peak Adapter	HP	85650A	2043A00305	10/26/09	09/15/13
Analyzer Open-Frame Tower RF Preselector	HP	85685A	3107A01282	07/22/09	09/15/13
Analyzer Open-Frame Tower Spectrum Analyzer	HP	8566B/ 85662A	2627A03154/ 2648A14276	07/22/09	09/15/13
Analyzer Tan Tower Preamplifier	HP	8449B-H02	3008A00372	11/21/09	10/28/13
Analyzer Tan Tower Quasi-Peak Adapter	HP	85650A	3303A01690	11/22/09	10/28/13
Analyzer Tan Tower RF Preselector	HP	85685A	3221A01400	11/21/09	10/28/13
Analyzer Tan Tower Spectrum Analyzer	HP	8566B Opt 462	3138A07786 3144A20661	11/24/09	10/28/13
Antenna: Biconnical	Eaton	94455-1	1057	05/31/11	05/31/13
Antenna: Biconnical	Eaton	94455-1	1096	05/04/11	05/04/13
Antenna: Double-Ridged Horn	ETS Lindgren	3117	35923	12/7/2011	12/07/2013
Antenna: Log-Periodic	Electro-Metrics	LPA-25	1122	05/04/11	05/04/13
Power Line Coupling/Decoupling Network	Fischer Custom Communications	FCC-801-M2-16A	01048	01/04/11	01/04/13
Power Line Coupling/Decoupling Network	Fischer Custom Communications	FCC-801-M3-16A	01060	01/04/11	01/04/13

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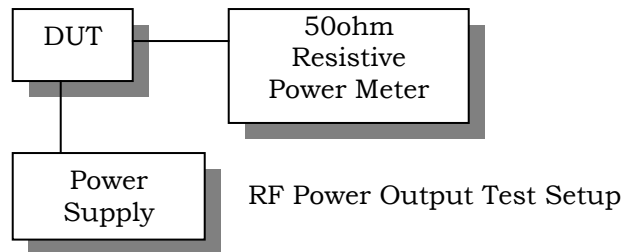
TEST PROCEDURE

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.

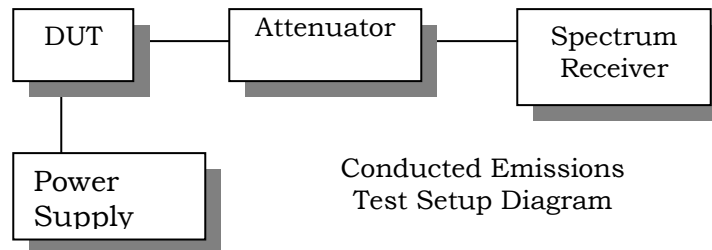
RF Power Output

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

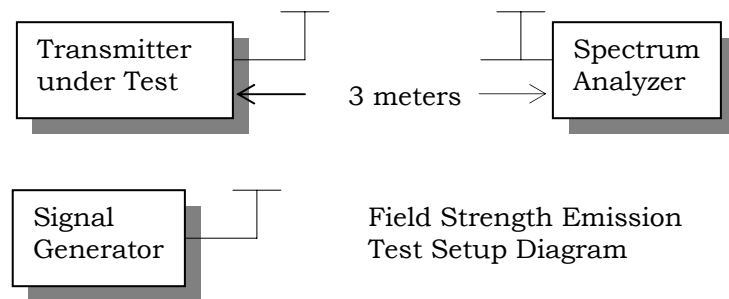
The audio input level needed for a particular percentage of modulation was measured in accordance with ANSI/TIA 603-C: 2004. Curves are provided for audio input frequencies of 300, 1000, and 3000 Hz.

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 = 4 W

DC power input= 19.4 Vdc and 0.72 Amperes
= 14.0 Watts

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.

60H0A1A

$B_n = BK$ where $K = 5$ (fading channel)

$B = 12$

$B_n = 60 \text{ Hz}$

OCCUPIED BANDWIDTH

Rule Parts No: Pt 2.1049, Pt 90.210

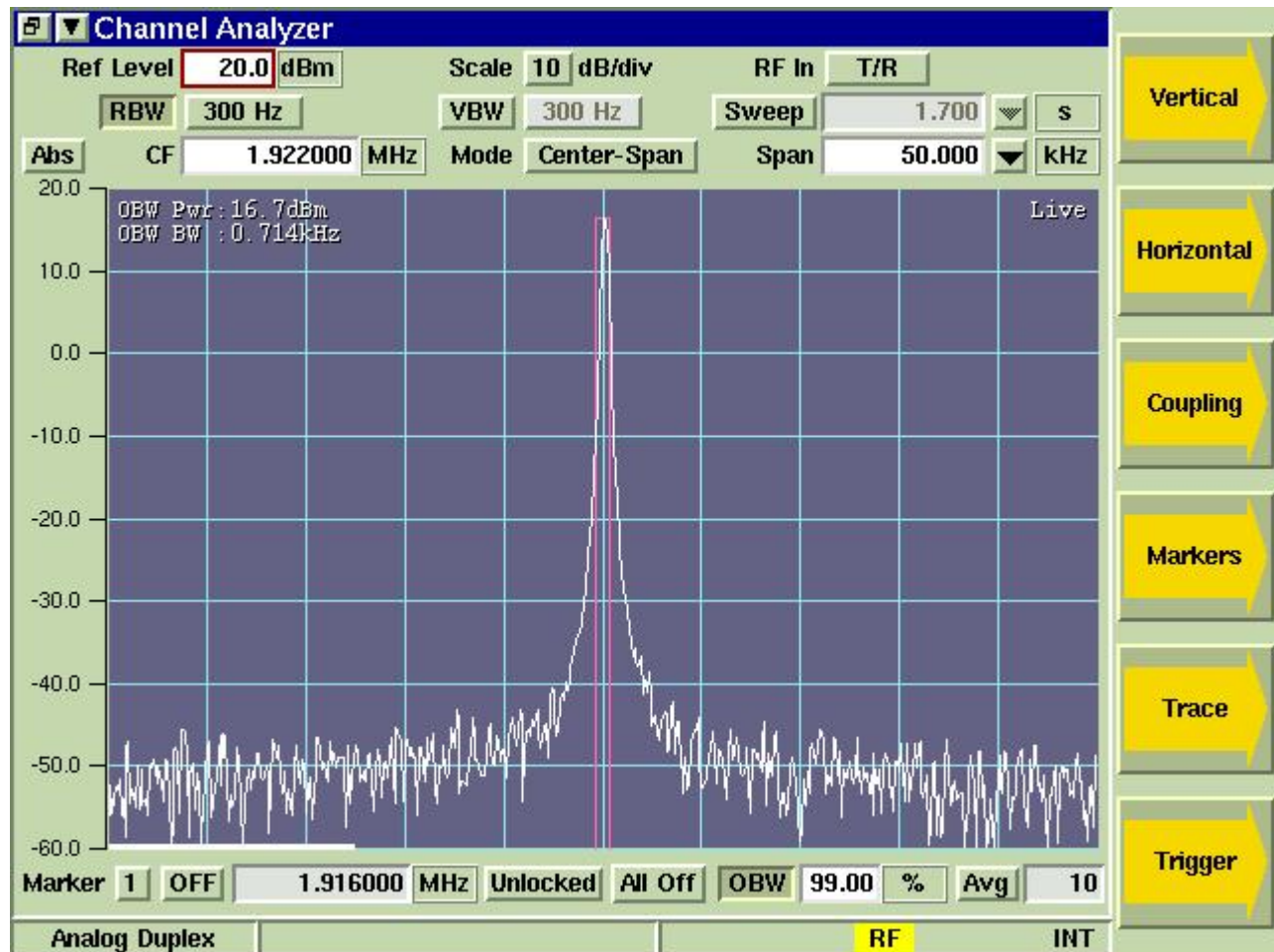
Test Requirement:

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:



NOTE: Add 20 dB to above power level for added attenuator.

36.7 dBm

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SPURIOUS EMISSIONS AT ANTENNA TERMINALS (CONDUCTED)

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

Requirements:

$$43 + 10\log(P_o) = 43 + 10\log(4) = 49 \text{ dB}$$

Test Data:

TF HIGH POWER	EF	dB BELOW CARRIER
1.922		0
	3846	59.4
	5768	60.2
	7690	61.1
	9612	61.9
	11534	63.4
	13456	64.2
	15376	68.3
	17299	64.3
	19224	63.3

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FIELD STRENGTH OF SPURIOUS EMISSIONS (RADIATED)

Rule Parts. No.: Part 2.1053

Requirements: High Power: $43 + 10\log(P_o) = 43 + 10\log(4) = 49$ dB

Test Data: Not applicable

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FREQUENCY STABILITY

Rule Parts. No.: Pt 2.1055, Pt 90.213

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

± 100.0 PPM or $\pm 0.010\%$

Test Data:

Test Temperature [°C]	Frequency [MHz]	Unit [ppm]
-30	1.91598526	7.82
-20	1.91599327	3.65
-10	1.91599988	0.52
0	1.91600162	0.52
10	1.91600055	0.00
20	1.91599831	1.04
30	1.91599562	2.60
40	1.91599397	3.65
50	1.91599497	3.13

115% Voltage, Frequency MHz		
20	1.91599653	2.08

85% Voltage, Frequency MHz		
20	1.91599630	2.08

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POWER LINE CONDUCTED INTERFERENCE

Rules Part No.: Part 15.207

Requirements:

Frequency (MHz)	Quasi Peak Limits (dB μ V)	Average Limits (dB μ 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.

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