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## FCC PART 15

### SCANNING RECEIVER

Applicant	VERTEX STANDARD CO., LTD.	
Address	4-8-8 NAKAMEGURO, MEGURO-KU	
	TOKYO 153-8644 JAPAN	
FCC ID:	K6620233X40	
Model Number	FT-1802M, FT-1900R	
Product Description	SCANNING RECEIVER	
Date Sample Received	4/23/2009	
Date Tested	4/30/2009	
Tested By	Joe Scoglio	
Approved By	Mario de Aranzeta	
Report Number	854AUT9TestReport.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



## TABLE OF CONTENTS

GENERAL REMARKS.....	3
GENERAL INFORMATION.....	4
TEST EQUIPMENT LIST.....	5
TEST PROCEDURE.....	6
RADIATED SPURIOUS EMISSIONS .....	7
POWER LINE CONDUCTED INTERFERENCE .....	8

APPLICANT: VERTEX STANDARD CO., LTD.

FCC ID: K6620233X40

REPORT #: V\VERTEX\_STANDARD\854AUT9\854AUT9TestReport.doc

## **GENERAL REMARKS**

The attached report shall not be reproduced except in full without the written permission of Timco Engineering Inc.

This is a request for a Class II Permissive change. With the change, the model number becomes FT-1900R. Radiated emissions testing was completed and there is no degradation from previously reported data.

### **Summary**

The device under test does:

- fulfill the general approval requirements as identified in this test report
- not fulfill the general approval requirements as identified in this test report

### **Attestations**

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

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



Testing Certificate # 0955-01

I attest that the necessary measurements were made, under my supervision, at:

Timco Engineering Inc.  
849 NW State Road 45  
Newberry, FL 32669



### **Authorized Signatory Name:**

Mario de Aranzeta C.E.T.  
Compliance Engineer / Lab. Supervisor

**Date:** 4/30/2009

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**GENERAL INFORMATION**

The test results relate only to the items tested.	
<b>DUT Description</b>	SCANNING RECEIVER
<b>FCC ID</b>	K6620233X40
<b>Model Number</b>	FT-1802M and FT-1900R
<b>DUT Power Source</b>	<input type="checkbox"/> 110-120Vac/50- 60Hz <input checked="" type="checkbox"/> DC Power <input type="checkbox"/> Battery Operated Exclusively
<b>Test Item</b>	<input type="checkbox"/> Prototype <input checked="" type="checkbox"/> Pre-Production <input type="checkbox"/> Production
<b>Modifications to DUT</b>	None
<b>Test Standards</b>	FCC Part 15, Subpart B, ANSI C63.4-2003

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**TEST EQUIPMENT LIST**

<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
Measuring Tape-7.5M	Kraftixx	7.5M PROFI		CHAR 11/13/07	11/13/09
Modulation Analyzer	HP	8901A	3435A06868	CAL 5/9/07	5/9/09
Digital Multimeter	Fluke	FLUKE-77-3	79510405	CAL 5/14/07	5/14/09
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

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## TEST PROCEDURE

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**Radiation Interference:** The test procedure used was ANSI Standard C63.4-2003 using a spectrum analyzer with a pre-selector. The bandwidth of the spectrum analyzer was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The video bandwidth was always greater than or equal to the RBW.

**Formula Of Conversion Factors:** The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dB $\mu$ V) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

**Example:**

$$\begin{array}{lllll}
 \text{Freq (MHz)} & \text{Meter Reading} & + \text{ACF} & + \text{CL} & = \text{FS} \\
 33 & 20 \text{ dB}\mu\text{V} & + 10.36 \text{ dB/m} & + 0.40 \text{ dB} & = 30.36 \text{ dB}\mu\text{V/m} \\
 @ 3\text{m} & & & & 
 \end{array}$$

**ANSI C63.4-2003 Section 10.1.7 Measurement Procedures:** The unit under test was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The table used for radiated measurements is capable of continuous rotation. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

If powerline conducted testing was required for this device, the situation was similar for the conducted measurement except that the table did not rotate. The EUT was setup as described in ANSI C63.4-2003 with the EUT 40 cm from the vertical ground wall.

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## RADIATED SPURIOUS EMISSIONS

Rules Part No.: 15.109

**Requirements:**

Frequency	Limits
30 – 88	40.0 dB $\mu$ V/m measured @ 3 meters
80 – 216	43.5 dB $\mu$ V/m measured @ 3 meters
216 – 960	46.0 dB $\mu$ V/m measured @ 3 meters
Above 960	54.0 dB $\mu$ V/m measured @ 3 meters

**Test Procedure:** The procedure used was ANSI C63.4-2003. The frequency was scanned from 30 MHz to 1.0 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. The DUT was measured in three (3) orthogonal planes.

**Test Data:**

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dB $\mu$ V	Ant. Pol	Coax Loss dB	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Margin dB
137.5	115.80	2.4	V	0.67	14.56	17.63	25.87
137.5	115.80	6.0	H	0.67	14.38	21.05	22.45
155.0	133.30	6.1	H	0.68	12.90	19.68	23.82
155.0	133.30	6.3	V	0.68	12.73	19.71	23.79
173.5	151.80	5.2	V	0.71	14.37	20.28	23.22
173.5	151.80	6.6	H	0.71	13.79	21.10	22.40
173.5	303.60	3.4	V	1.10	14.65	19.15	26.85
173.5	759.00	6.1	V	1.82	20.69	28.61	17.39
173.5	759.00	7.1	H	1.82	21.60	30.52	15.48

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## POWER LINE CONDUCTED INTERFERENCE

**Rules Part No.:** Part 15.107

**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

**Test Procedure:** ANSI Standard C63.4-2003. The spectrum was scanned from 0.15 to 30 MHz

**Test Data:** The attached graphs represent the emissions read for power line conducted. Both lines were observed.

NOTE DUT DC POWERED MOBILE UNIT

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