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## FCC PART 15 AND IC RSS-215 SCANNING RECEIVER TEST REPORT

Applicant	VERTEX STANDARD CO., LTD.
Address	4-8-8 NAKAMEGURO, MEGURO-KU TOKYO 153-8644 JAPAN
FCC ID:	K6620295X20
IC Certification:	511B-20295X20
Model Number	VX-8R
Product Description	AMATEUR RADIO WITH SCANNING RECEIVER
Date Sample Received	5/30/2008
Date Tested	6/19/2008
Tested By	NAM NGUYEN
Approved By	MARIO DE ARANZETA
Report Number	1142AUT8TestReport.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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APPLICANT: VERTEX STANDARD CO., LTD.

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## GENERAL REMARKS

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

## 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:** 6/25/2008

APPLICANT: VERTEX STANDARD CO., LTD.

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**GENERAL INFORMATION**

The test results relate only to the items tested.	
<b>DUT Description</b>	AMATEUR RADIO WITH SCANNING RECEIVER
<b>FCC ID</b>	K6620295X20
<b>IC Certification</b>	511B-20295X20
<b>Model Number</b>	VX-8R
<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 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, Industry Canada RSS-215 Issue 1, Provisional

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## TEST EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
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 1/11/06	1/10/09
Antenna: Biconnical	Eaton	94455-1	1057	CAL 1/15/08	1/15/10
Antenna: Biconnical	Eaton	94455-1	1096	CAL 10/11/06	10/11/08
Antenna: Biconnical	Electro-Metrics	BIA-25	1171	CAL 7/18/07	7/18/09
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	8568B Opt 462	3138A07786 3144A20661	CAL 11/30/07	11/30/09
Analuzer Tan Tower Preamplifier	HP	8449B- H02	3008A00372	CAL 33/30/07	11/30/09
LISN	Electro-Metrics	ANS-25/2	2604	CAL 10/5/06	10/5/08
LISN	Electro-Metrics	EM-7820	2682	CAL 7/23/07	7/23/09
Antenna: Log- Periodic	Eaton	96005	1243	CAL 12/13/07	12/13/09

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**TEST PROCEDURE**

**General:** This report shall NOT be reproduced except in full without the written approval of TIMCO ENGINEERING, INC.

**Radiation Interference:** The test procedure used was ANSI Standard C63.4-2003 using a spectrum analyzer with a preselector. 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 dBuV) to the antenna correction factor supplied by the antenna manufacturer plus the coax loss. 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:**

Freq (MHz)	Meter Reading	+ ACF	+CL	= FS
33	20 dBuV	+ 10.36 dB/m	+0.40 dB	=30.36 dBuV/m
@ 3m				

**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 1mby 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 verticals 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, RSS-215 Issue 1 Provisional

### 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. Spurious emissions were searched from the lowest frequency internally generated or used in the receiver or 30 MHz, whichever is the higher, to at least 3 times the highest tunable or local oscillator frequency, whichever is the higher frequency without exceeding 40 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 when necessary.

### 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
30.0	77.25	4.0	H	0.59	6.47	11.06	28.94
30.0	77.25	4.3	V	0.59	7.45	12.34	27.66
45.0	92.25	3.5	H	0.63	8.69	12.82	30.68
45.0	92.25	3.8	V	0.63	9.73	14.16	29.34
59.0	106.25	3.4	V	0.66	12.70	16.76	26.74
59.0	106.25	3.8	H	0.66	11.95	16.41	27.09
70.0	117.25	3.9	H	0.67	13.97	18.54	24.96
70.0	117.25	4.1	V	0.67	14.13	18.90	24.60
108.0	155.25	3.6	H	0.72	13.62	17.94	25.56
108.0	155.25	5.3	V	0.72	14.52	20.54	22.96
122.5	169.75	3.2	H	0.78	14.97	18.95	24.55
122.5	169.75	4.2	V	0.78	16.07	21.05	22.45
137.0	184.25	3.1	H	0.84	16.83	20.77	22.73
137.0	184.25	3.7	V	0.84	17.37	21.91	21.59
155.0	202.25	3.4	V	0.90	11.70	16.00	27.50
155.0	202.25	3.6	H	0.90	12.06	16.56	26.94
174.0	128.20	3.5	H	0.68	12.90	17.08	26.42
174.0	128.20	3.7	V	0.68	12.84	17.22	26.28
198.0	152.20	3.9	H	0.71	13.77	18.38	25.12
198.0	152.20	4.9	V	0.71	14.39	20.00	23.50
222.0	174.75	3.6	V	0.80	16.67	21.07	22.43
222.0	174.75	4.2	H	0.80	15.67	20.67	22.83

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**TEST DATA CONTD.**

<b>Tuned Frequency MHz</b>	<b>Emission Frequency MHz</b>	<b>Meter Reading dBuV</b>	<b>Ant. Pol</b>	<b>Coax Loss dB</b>	<b>Correction Factor dB/m</b>	<b>Field Strength dBuV/m</b>	<b>Margin dB</b>
225.0	177.75	3.5	V	0.81	16.98	21.29	22.21
225.0	177.75	4.5	H	0.81	16.09	21.40	22.10
322.5	369.75	4.3	V	1.17	15.09	20.56	25.44
322.5	369.75	5.2	H	1.17	15.20	21.57	24.43
420.0	372.75	4.6	V	1.17	15.16	20.93	25.07
420.0	372.75	5.4	H	1.17	15.26	21.83	24.17
420.0	765.50	6.0	V	1.83	20.76	28.59	17.41
420.0	765.50	7.0	H	1.83	21.55	30.38	15.62
450.0	402.75	5.9	H	1.20	16.13	23.23	22.77
450.0	402.75	7.4	V	1.20	15.76	24.36	21.64
450.0	805.50	6.7	V	1.90	21.06	29.66	16.34
450.0	805.50	6.8	H	1.90	21.66	30.36	15.64
470.0	422.75	4.9	H	1.22	16.28	22.40	23.60
470.0	422.75	9.7	V	1.22	16.03	26.95	19.05
470.0	845.50	5.4	H	1.92	22.56	29.88	16.12
470.0	845.50	7.7	V	1.92	21.88	31.50	14.50
650.0	697.25	4.6	V	1.70	20.57	26.87	19.13
650.0	697.25	5.4	H	1.70	21.00	28.10	17.90
720.0	767.25	4.6	V	1.83	20.77	27.20	18.80
720.0	767.25	5.9	H	1.83	21.53	29.26	16.74
850.0	802.75	5.6	V	1.90	21.03	28.53	17.47
850.0	802.75	5.8	H	1.90	21.63	29.33	16.67
950.0	902.75	5.5	V	1.95	22.67	30.12	15.88
950.0	902.75	6.4	H	1.95	23.33	31.68	14.32
999.0	951.75	6.2	H	2.03	23.35	31.58	14.42
999.0	951.75	7.6	V	2.03	22.55	32.18	13.82

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## POWER LINE CONDUCTED INTERFERENCE

**Rules Part No.:** Part 15.107, RSS-215 Issue 1, Provisional

**Requirements:**

Frequency (MHz)	Quasi Peak Limits (dBuV)	Average Limits (dBuV)
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 following plots represent the emissions read for power line conducted. Both lines were observed.

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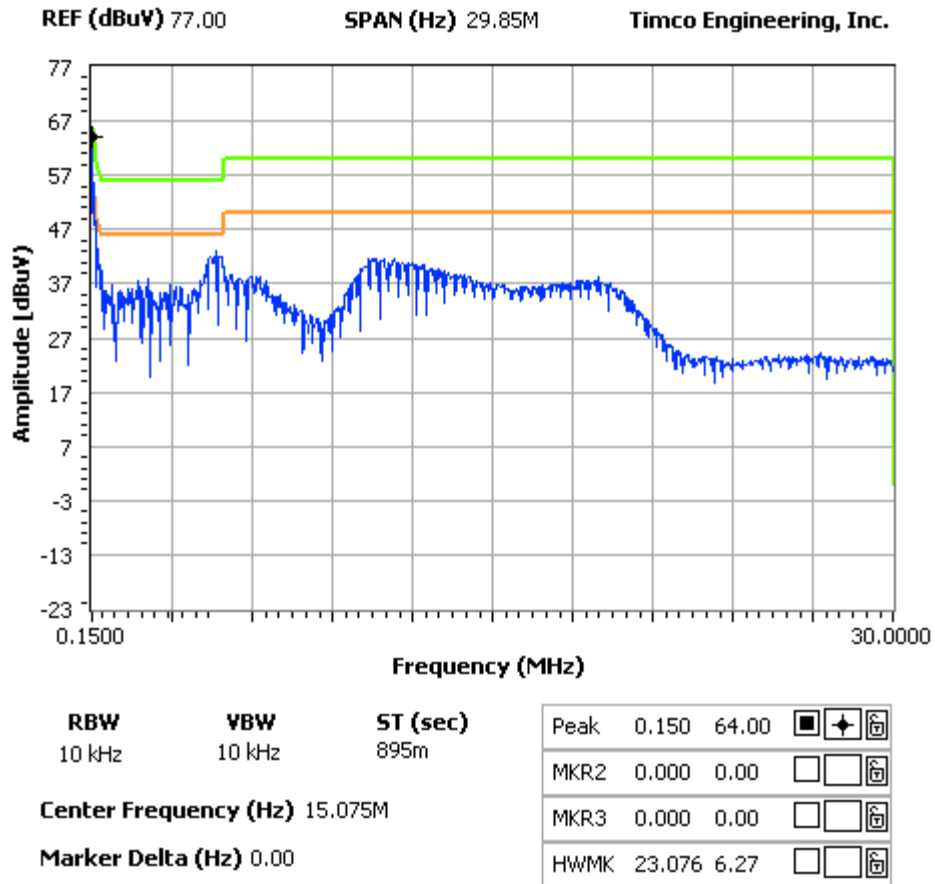
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**NOTES:**

VERTEX STANDARD USA, INC. - FCC ID: K6620295X20  
 POWER LINES CONDUCTED PLOT - LINE 1

**FCC 15.107 Mask Class B**

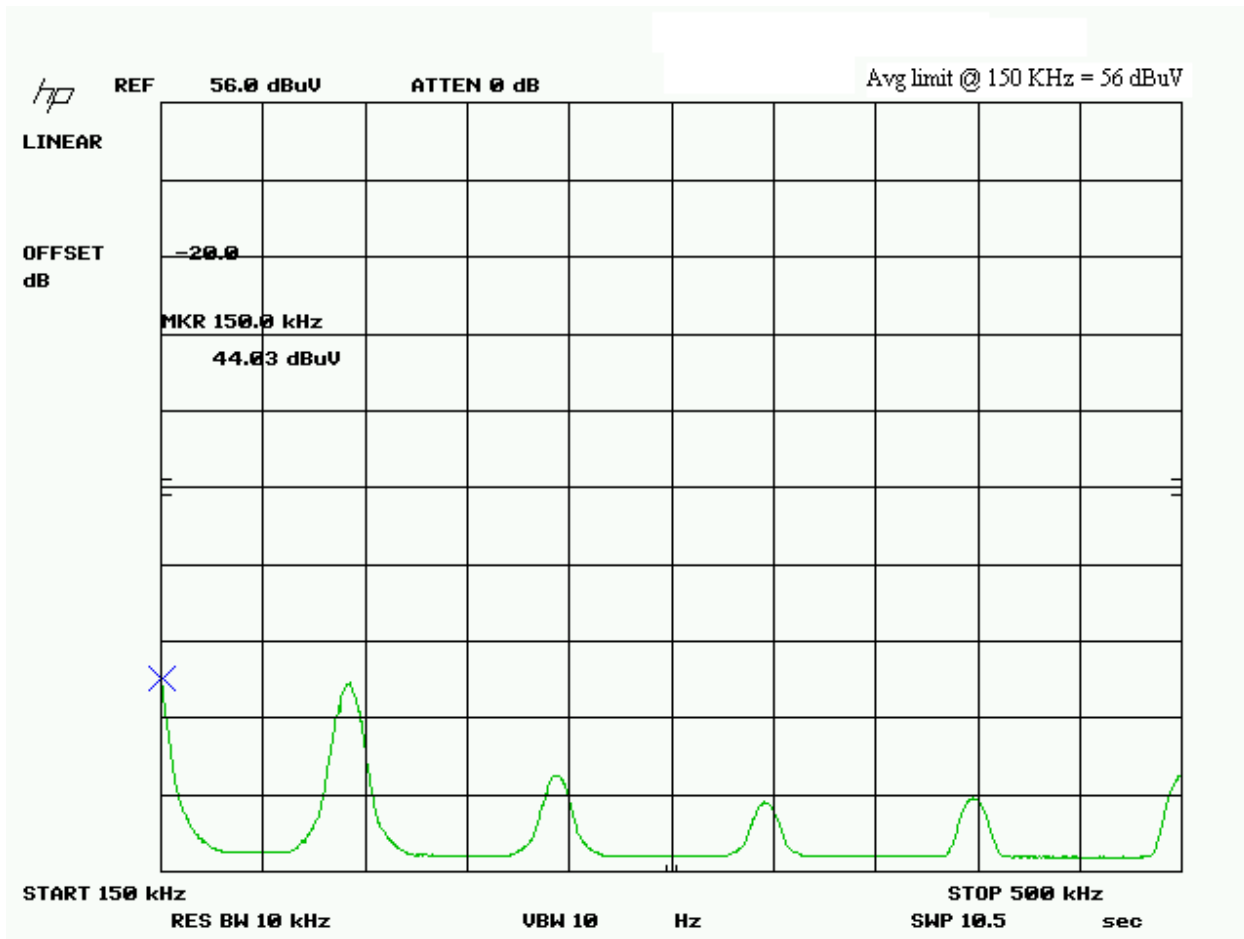


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**AVERAGE - LINE 1**

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**QUASI PEAK - LINE 1**

APPLICANT: VERTEX STANDARD CO., LTD.

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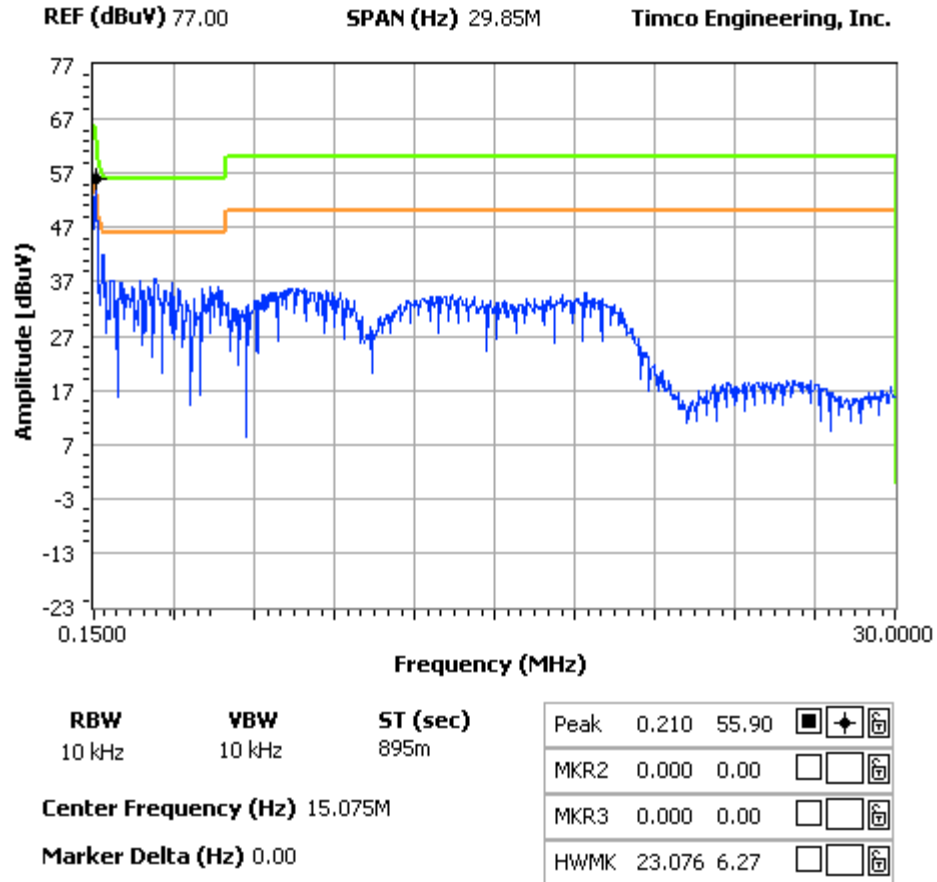
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**NOTES:**

VERTEX STANDARD USA, INC. - FCC ID: K6620295X20  
 POWER LINES CONDUCTED PLOT - LINE 2

**FCC 15.107 Mask Class B**

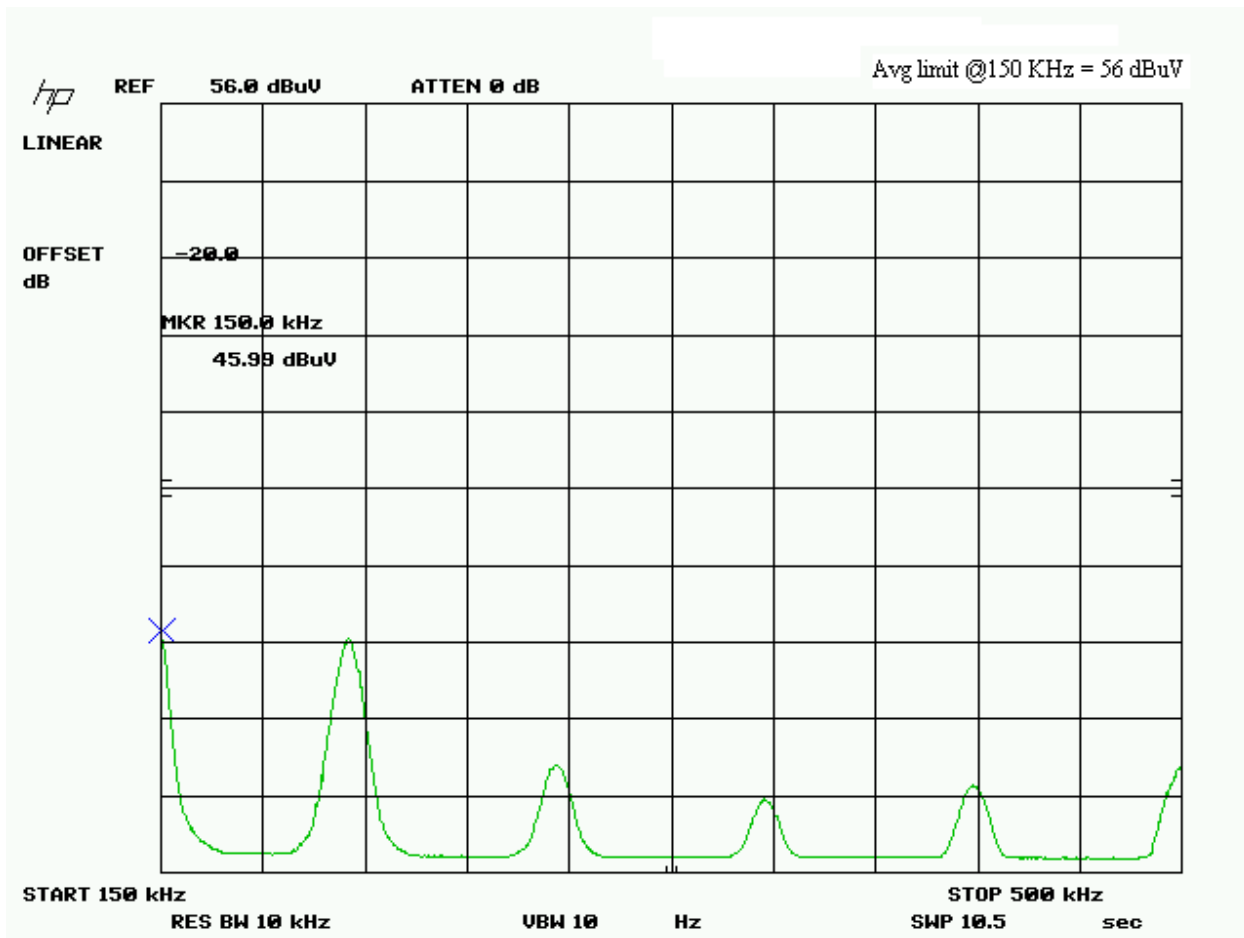


APPLICANT: VERTEX STANDARD CO., LTD.

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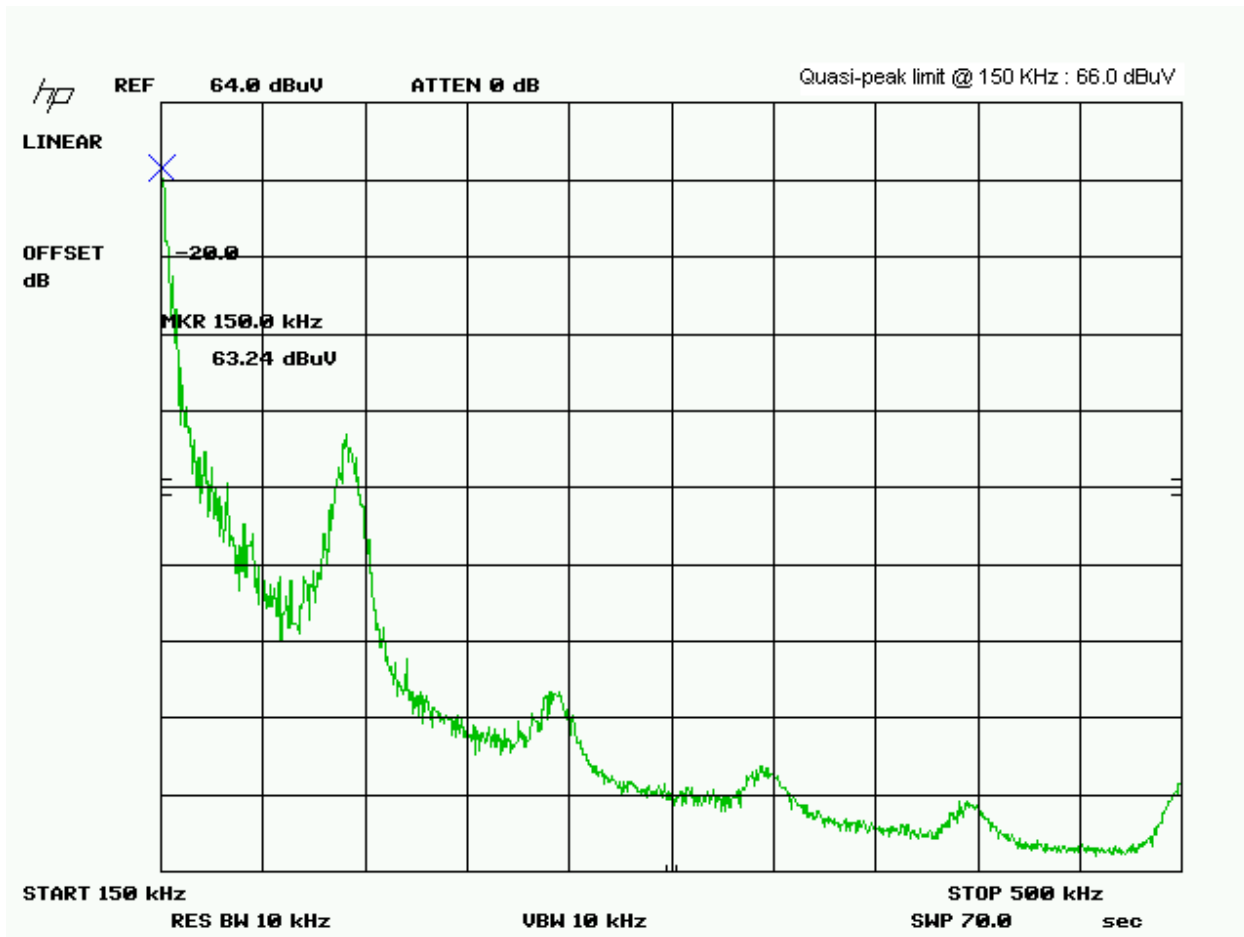
**AVERAGE - LINE 2**

APPLICANT: VERTEX STANDARD CO., LTD.

FCC ID: K6620295X20

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**QUASI PEAK - LINE 2**

APPLICANT: VERTEX STANDARD CO., LTD.

FCC ID: K6620295X20

REPORT #:

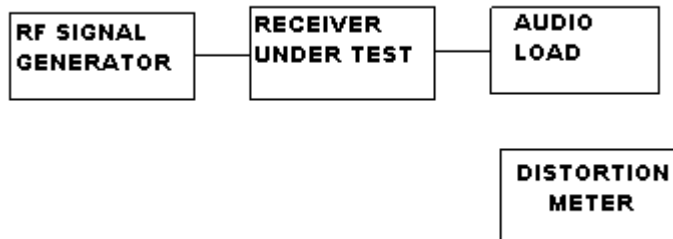
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## 38 Db REJECTION RADIO

**RULES PART NUMBER:** 15.121(b)

**REQUIREMENTS:** 38dB REJECTION RATIO TO SENSITIVITY OF THE RECEIVER.

**TEST SET-UP**



- a. Equipment connected as illustrated
- b. A standard signal was applied to the receiver input terminals.
- c. Receiver output audio output was adjusted for rated output.
- d. The RF Signal generator was adjusted to the lowest level to produce a 12dB SINAD without the audio output dropping more than 3dB. Make note of sensitivity level.
- e. This was done across the different bands to establish a reference level. The reference taken was the worse case sensitivity.
- f. The output of the signal generator was then adjusted to a level of 60dB above the reference level at a frequency of 824.5MHz.
- g. With the level set 60dB above the level measured in step e.
- h. Set squelch on receiver to threshold, the signal level required to open the squelch must be lower than the level measured in step d.
- i. Cause the receiver to scan or step-it through its complete range of frequencies.
- j. If receiver stops or unsquelches on any frequency, record the frequency and then adjust the level until a 12dB SINAD is produced. This level must be greater than 38dB above the level in step e.
- k. Repeat steps f through j for frequencies 836.0, 848.5, 869.1, 881.0, & 893.5MHz.

**TEST RESULTS:** The UUT meets the 38dB REJECTION RATIO.

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