



M. Flom Associates, Inc. - Global Compliance Center

3356 North San Marcos Place, Suite 107, Chandler, Arizona 85225-7176

www.mflom.com general@mflom.com (480) 926-3100, FAX: 926-3598

C E R T I F I C A T I O N

of

RECEIVER MODEL: VX-2R

FCC ID: K66VX-2R

to

FEDERAL COMMUNICATIONS COMMISSION

Part 15.121
(New)

DATE OF REPORT: March 27, 2003

ON THE BEHALF OF THE APPLICANT:

Vertex Standard Co., Ltd.

AT THE REQUEST OF:

P.O. UPS 3/11/2003

Vertex Standard USA Inc.
10900 Walker Street
Cypress, CA 90630

Attention of:

Mikio Maruya, Executive Vice President
(800) 255-9237; FAX: (800) 477-9237
(714) 827-7600; FAX: -8100
m.maruya@vxstdusa.com

SUPERVISED BY:

A handwritten signature in black ink, reading 'M. Flom P. Eng.', is positioned above the printed name of the supervisor.

Morton Flom, P. Eng.

TABLE OF CONTENTS

<u>RULE</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
2.948	Description of Measurement Facilities	1
15.109	Receiver Spurious Emissions (Radiated)	6
15.121 (b)	Scanning Receiver	13

PAGE NO. 1 of 15.

Required information per ISO/IEC Guide 25-1990, paragraph 13.2:

a) TEST REPORT

b) Laboratory: M. Flom Associates, Inc.
(FCC: 31040/SIT) 3356 N. San Marcos Place, Suite 107
(Canada: IC 2044) Chandler, AZ 85225

c) Report Number: d0330052

d) Client: Vertex Standard USA Inc.
10900 Walker Street
Cypress, CA 90630

e) Identification: VX-2R
Description: FCC ID: K66VX-2R
Scanning Receiver

f) EUT Condition: Not required unless specified in individual tests.

g) Report Date: March 27, 2003
EUT Received: March 11, 2003

h, j, k): As indicated in individual tests.

i) Sampling method: No sampling procedure used.

l) Uncertainty: In accordance with MFA internal quality manual.

m) Supervised by:



Morton Flom, P. Eng.

n) Results: The results presented in this report relate only to the item tested.

o) Reproduction: This report must not be reproduced, except in full, without written permission from this laboratory.

PAGE NO.

2 of 15.

M. Flom Associates, Inc. is accredited by the American Association for Laboratory Accreditation (A2LA) as shown in the scope below.

 THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION ACCREDITED LABORATORY A2LA has accredited M. FLOM ASSOCIATES, INC. Chandler, AZ for technical competence in the field of Electrical (EMC) Testing The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC 17025 - 1999 "General Requirements for the Competence of Testing and Calibration Laboratories" and any additional program requirements in the identified field of testing. Testing and calibration laboratories that comply with this International Standard also operate in accordance with ISO 9001 or ISO 9002. Presented this 2nd day of March, 2001.  Peter M. Robinson President For the Accreditation Council Certificate Number 1008.01 Valid to December 31, 2002 For tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical (EMC) Scope of Accreditation	 American Association for Laboratory Accreditation <u>SCOPE OF ACCREDITATION TO ISO/IEC 17025-1999</u> M. FLOM ASSOCIATES, INC. Electronic Testing Laboratory 3356 North San Marcos Place, Suite 107 Chandler, AZ 85225 Morton Flom Phone: 480 926 3100 ELECTRICAL (EMC) Valid to: December 31, 2002 Certificate Number: 1008-01 In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following <u>electromagnetic compatibility tests</u>: <table border="0"> <thead> <tr> <th>Tests</th> <th>Standard(s)</th> </tr> </thead> <tbody> <tr> <td>RF Emissions</td> <td>FCC Part 15 (Subparts B and C) using ANSI C63.4-1992, CISPR 11; CISPR 13; CISPR 14; CISPR 22; EN 55011; EN 55013; EN 55014; EN 55022; EN 50081-1; EN 50081-2; ICES-003; AS/NZS 1044; AS/NZS 1053; AS/NZS 3548; AS/NZS 4251.1; CNS 13438</td> </tr> <tr> <td>Harmonic Currents</td> <td>EN 61000-3-2</td> </tr> <tr> <td>Fluctuation and Flicker</td> <td>EN 61000-3-3</td> </tr> <tr> <td>RF Immunity</td> <td>EN: 50082-1, 50082-2 (both excluding "Power Frequency Magnetic Field Immunity"), 55024 (excluding Power Frequency Magnetic Field and Conducted Immunity); AS/NZS 4251.1</td> </tr> <tr> <td>Electrostatic Discharge (ESD)</td> <td>EN 61000-4-2</td> </tr> <tr> <td>Radiated Susceptibility</td> <td>EN 61000-4-3; ENV 50140; ENV 50204; IEC 1000-4-3; IEC 801-3</td> </tr> <tr> <td>EFT</td> <td>EN 61000-4-4; IEC 1000-4-4; IEC 801-4</td> </tr> <tr> <td>Surge</td> <td>EN 61000-4-5; ENV 50142; IEC 1000-4-5; IEC 801-5</td> </tr> <tr> <td>Voltage Dips, Short Interruptions, and Line Voltage Variations</td> <td>EN 61000-4-11</td> </tr> <tr> <td>47 CFR (FCC)</td> <td>Part: 2, 18, 21, 22, 23, 24, 25, 26, 27, 74, 80, 87, 90, 95, 97, 101 (excluding SAR Testing)</td> </tr> </tbody> </table> (A2LA Cert. No. 1008.01) 05/10/02 5301 Buckeystown Pike, Suite 350 • Frederick, MD 21704-8373 • Phone: 301-644 3248 • Fax: 301-662 2974 Page 1 of 1	Tests	Standard(s)	RF Emissions	FCC Part 15 (Subparts B and C) using ANSI C63.4-1992, CISPR 11; CISPR 13; CISPR 14; CISPR 22; EN 55011; EN 55013; EN 55014; EN 55022; EN 50081-1; EN 50081-2; ICES-003; AS/NZS 1044; AS/NZS 1053; AS/NZS 3548; AS/NZS 4251.1; CNS 13438	Harmonic Currents	EN 61000-3-2	Fluctuation and Flicker	EN 61000-3-3	RF Immunity	EN: 50082-1, 50082-2 (both excluding "Power Frequency Magnetic Field Immunity"), 55024 (excluding Power Frequency Magnetic Field and Conducted Immunity); AS/NZS 4251.1	Electrostatic Discharge (ESD)	EN 61000-4-2	Radiated Susceptibility	EN 61000-4-3; ENV 50140; ENV 50204; IEC 1000-4-3; IEC 801-3	EFT	EN 61000-4-4; IEC 1000-4-4; IEC 801-4	Surge	EN 61000-4-5; ENV 50142; IEC 1000-4-5; IEC 801-5	Voltage Dips, Short Interruptions, and Line Voltage Variations	EN 61000-4-11	47 CFR (FCC)	Part: 2, 18, 21, 22, 23, 24, 25, 26, 27, 74, 80, 87, 90, 95, 97, 101 (excluding SAR Testing)
Tests	Standard(s)																						
RF Emissions	FCC Part 15 (Subparts B and C) using ANSI C63.4-1992, CISPR 11; CISPR 13; CISPR 14; CISPR 22; EN 55011; EN 55013; EN 55014; EN 55022; EN 50081-1; EN 50081-2; ICES-003; AS/NZS 1044; AS/NZS 1053; AS/NZS 3548; AS/NZS 4251.1; CNS 13438																						
Harmonic Currents	EN 61000-3-2																						
Fluctuation and Flicker	EN 61000-3-3																						
RF Immunity	EN: 50082-1, 50082-2 (both excluding "Power Frequency Magnetic Field Immunity"), 55024 (excluding Power Frequency Magnetic Field and Conducted Immunity); AS/NZS 4251.1																						
Electrostatic Discharge (ESD)	EN 61000-4-2																						
Radiated Susceptibility	EN 61000-4-3; ENV 50140; ENV 50204; IEC 1000-4-3; IEC 801-3																						
EFT	EN 61000-4-4; IEC 1000-4-4; IEC 801-4																						
Surge	EN 61000-4-5; ENV 50142; IEC 1000-4-5; IEC 801-5																						
Voltage Dips, Short Interruptions, and Line Voltage Variations	EN 61000-4-11																						
47 CFR (FCC)	Part: 2, 18, 21, 22, 23, 24, 25, 26, 27, 74, 80, 87, 90, 95, 97, 101 (excluding SAR Testing)																						

"This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this report have been determined in accordance with the laboratory's terms of accreditation unless stated otherwise in the report."

Should this report contain any data for tests for which we are not accredited, or which have been undertaken by a subcontractor that is not A2LA accredited, such data would not covered by this laboratory's A2LA accreditation.

PAGE NO.

3 of 15.

GENERAL INFORMATIONPart 2.948:(a) (b) DESCRIPTION OF MEASUREMENT FACILITIES:

FILE: 31040/SIT

A description of the measurement facilities was filed with the Commission and was found to be in compliance with the requirements of Section 2.948, by letter dated March 13, 2000. All pertinent changes will be reported to the Commission by up-date prior to March 2003.

(b) (4) SUPPORTING STRUCTURES:

SKETCH - ATTACHED EXHIBITS

(b) (5) (6) TEST INSTRUMENTATION:

LIST - SEE EXHIBITS

2.925: IDENTIFICATION OF AN AUTHORIZED DEVICE:

DRAWING - SEE EXHIBITS

LOCATION OF LABEL - SEE PHOTOS

NAME AND ADDRESS OF APPLICANT:

Vertex Standard Co., Ltd.
4-8-8 Nakameguro, Meguro-Ku
Tokyo 153-8644 Japan

PAGE NO. 4 of 15.
2.911:
2.1033(b) (6)

TECHNICAL REPORT

MANUFACTURER:

Vertex Standard Co., Ltd.
4-8-8 Nakameguro, Meguro-Ku
Tokyo 153-8644 Japan

TRADE NAME:

Vertex

FCC ID:

K66VX-2R

MODEL NO:

VX-2R

PHOTOGRAPHS:

SEE LIST OF EXHIBITS

DUT DESCRIPTION:

This unit Passes

15.31: MEASUREMENT STANDARD & PROCEDURE:

- ___ IEEE STANDARD 187 WAS USED AS A GUIDE.
- ___ FCC MEASUREMENT PROCEDURE MP-1
- x ANSI 63.4 (1992/2000) "Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz."
- ___

PAGE NO.

5 of 15.

EXPOSITORY STATEMENT

1. NUMBER OF BANDS = 12
2. NUMBER OF CHANNELS = 5000+
3. TUNING RANGE, MHz = 0.5 to 1.8
1.8 to 30
30 to 59
59 to 108
108 to 137
137 to 174
174 to 222
222 to 225
225 to 420
420 to 470
470 to 729
800 to 999
4. OSCILLATOR RANGE, MHz = 47.750 to 49.300
49.3 to 77.250
77.250 to 106.250
106.250 to 155.250
155.250 to 184.25
184.25 to 221.25
126.75 to 174.75
174.75 to 177.75
275.25 to 467.25
372.75 to 422.75
422.75 to 776.25
752.75 to 951.75
5. I.F., MHz = 47.250
6. BLOCK DIAGRAM = ATTACHED
7. For cellular receiver only, the radio transceiver meets the requirements of FCC Bulletin OET 53 ("Cellular System Mobile Stations-Land-System Compatibility Specification."). See attached affidavit.

15.203: ANTENNA REQUIREMENT:

- ☐ The antenna is permanently attached to the EUT
- ☒ The antenna uses a unique coupling
- ☐ The EUT must be professionally installed
- ☐ The antenna requirement does not apply



SUPERVISED BY:

Morton Flom, P. Eng.

PAGE NO. 6 of 15.

NAME OF TEST: Receiver Spurious Emissions (Radiated)

SPECIFICATION:

15.109: Radiated Interference Limits
 15.33: Frequency Range of Radiated Measurements
 80.217: Suppression of Interference Aboard Ships

GUIDE: See measurement procedure below

TEST CONDITIONS: Standard Temperature & Humidity

TEST EQUIPMENT: As per attached page

SEARCH ANTENNAS:

100 Hz - 50 MHz: Emco 3301B Active Rod
 10 kHz - 32 MHz: Singer 94593-1 Loop
 25 MHz - 300 MHz: Emco 3109 Biconical
 200 MHz - 1 GHz: Aprel 2001 Log Periodic
 1 GHz - 18 GHz: Emco 3115 Horn
 10 GHz - 40 GHz: Emco 3116 Horn with HP11970A Mixer

MEASUREMENT PROCEDURE

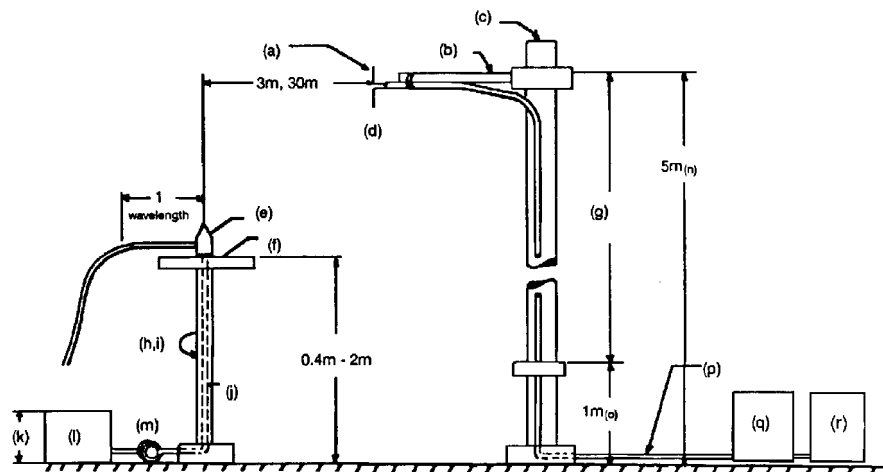
1. At first, bench tests were performed to locate the spurious emissions at the antenna terminals.
2. In the field, tests were conducted over the range shown, The test sample was set up on a wooden turntable above ground, and at a distance of three meters from the antenna connected tot he Spectrum Analyzer.
3. In order to obtain the maximum response at each frequency, the turntable was rotated, and the search antenna was raised and lowered. The EUT was also adjusted for maximum response. Tests were conducted in Horizontal & Vertical polarization modes.
4. The field strength was calculated from:

$$E \text{ } \mu\text{V/m @ 3 m} = \text{Log}_{10}^{-1} \left(\frac{\text{dB}\mu\text{V} + \text{A.F.} + \text{C.L.}}{20} \right)$$

5. MEASUREMENT RESULTS: Attached for "Worst Case" conditions.

PAGE NO.

7 of 15.

RADIATED TEST SETUP

NOTES:

- (a) Search Antenna - Rotatable on boom
 (b) Non-metallic boom
 (c) Non-metallic mast
 (d) Adjustable horizontally
 (e) Equipment Under Test
 (f) Turntable
 (g) Boom adjustable in height.
 (h) External control cables routed horizontally at least one wavelength.
 (i) Rotatable
 (j) Cables routed through hollow turntable center
 (k) 30 cm or less
 (l) External power source
 (m) 10 cm diameter coil of excess cable
 (n) 25 cm (V), 1 m-7 m (V, H)
 (o) 25 cm from bottom end of 'V', 1m normally
 (p) Calibrated Cable at least 10m in length
 (q) Amplifier (optional)
 (r) Spectrum Analyzer

Asset Description (as applicable)	s/n	Cycle	Last Cal
Per ANSI C63.4-1992/2000 Draft, 10.1.4			
<u>TRANSDUCER</u>			
i00088 EMCO 3109-B 25MHz-300MHz	2336	12 mo.	Sep-02
i00089 Aprel 2001 200MHz-1GHz	001500	12 mo.	Sep-02
i00103 EMCO 3115 1GHz-18GHz	9208-3925	12 mo.	Sep-02
i00065 EMCO 3301-B Active Monopole	2635	12 mo.	Sep-02
<u>AMPLIFIER</u>			
i00028 HP 8449A	2749A00121	12 mo.	Mar-03
<u>SPECTRUM ANALYZER</u>			
i00029 HP 8563E	3213A00104	12 mo.	Jan-03
i00033 HP 85462A	3625A00357	12 mo.	Jan-03
i00048 HP 8566B	2511AD1467	6 mo.	Jan-03
<u>MISCELLANEOUS</u>			
Microphone	_____		
Antenna	_____		
All Ports Terminated	_____		

PAGE NO.

8 of 15.

TEST SETUP:

Radiated Emissions



PAGE NO. 9 of 15.

NAME OF TEST: Receiver Spurious Emissions (Radiated)

MEASUREMENT DETAILS

SITE REFERENCE	=	31040/SIT
SPECTRUM SEARCHED	=	0 to 10 x F _R
WORST CASE	=	V
LIMITS	=	15.109(a) (Attached)
ALL OTHER EMISSIONS	=	20 dB OR MORE BELOW LIMIT

TESTS WERE CONDUCTED WITH:

- a. All controls and switches operated.
- b. Half-wave dipole antenna or manufacturer/applicant supplied antenna.

SAMPLE CALCULATION:

$$\begin{aligned}
 \text{EMISSION FREQUENCY, MHz} &= 755.750000 \\
 \text{LEVEL} &= \text{Log}_{10}^{-1} \left(\frac{7.6 + 32.04}{20} \right) \\
 \text{LEVEL, } \mu\text{V/m @ 3m} &= 95.94
 \end{aligned}$$

MEASUREMENT RESULTS = ATTACHED

NOTE: WORST CASE OF SCAN AND NON-SCAN MODES REPORTED.

PAGE NO. 10 of 15.

NAME OF TEST: Receiver Spurious Emissions (Radiated)

RULE 15.109(a) LIMITS:

FREQUENCY, MHz	FIELD STRENGTH $\mu\text{V/m}$	DISTANCE, m
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

0.510-1.79MHz AM g0330111: 2003-Mar-21 Fri 14:33:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@ m	C.F., dB	$\mu\text{V/m}$	@ m
0.510000	47.760000	9.56	3	15.17	17.24	3
1.790000	49.040000	12.4	3	14.84	23.01	3
0.510000	95.519250	9.29	3	13.37	13.58	3
1.790000	98.080000	15.15	3	13.85	28.18	3

1.8-29.99 MHz WFM g0330107: 2003-Mar-21 Fri 08:44:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@ m	C.F., dB	$\mu\text{V/m}$	@ m
1.800000	47.600000	14.37	3	15.21	30.13	3
15.900000	61.693000	9.63	3	14.13	15.42	3
30.000000	75.800000	17.16	3	11.63	27.51	3
1.800000	95.200000	11.44	3	13.32	17.3	3
15.900000	123.400000	3.04	3	16.43	9.41	3
30.000000	151.580000	8.64	3	17.35	19.93	3

30-58.99 MHz FM g0330108: 2003-Mar-21 Fri 10:29:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@ m	C.F., dB	$\mu\text{V/m}$	@ m
30.000000	77.250000	15.19	3	11.44	21.45	3
44.500000	91.750500	10.8	3	12.65	14.88	3
58.990000	106.245000	6.06	3	14.84	11.09	3
30.000000	154.500000	5.03	3	17.44	13.29	3
44.500000	183.500000	17.2	3	18.43	60.46	3
58.990000	212.480000	5.14	3	19.86	17.78	3

59-107.9 MHz g0330109: 2003-Mar-21 Fri 11:39:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@ m	C.F., dB	$\mu\text{V/m}$	@ m
59.000000	104.801500	12.28	3	14.7	22.34	3
83.500000	129.283000	8.88	3	16.67	18.95	3
107.900000	153.695000	11.81	3	17.41	28.91	3
59.000000	209.600000	5.69	3	19.74	18.69	3
83.500000	258.600000	4.79	3	23.42	25.73	3
107.900000	307.404000	9.68	3	20.75	33.23	3

PAGE NO.

11 of 15.

NAME OF TEST: Receiver Spurious Emissions (Radiated) (Cont'd)

108-136.9 MHz FM g0330110: 2003-Mar-21 Fri 13:03:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@ m	C.F., dB	μV/m	@ m
108.000000	155.250000	9.79	3	17.46	23.04	3
122.500000	169.750000	11.96	3	17.76	30.62	3
136.900000	184.151300	13.27	3	18.47	38.64	3
108.000000	310.500000	7.84	3	20.98	27.61	3
122.500000	339.483800	7.58	3	22.98	33.73	3
136.900000	368.302500	8.02	3	24.72	43.35	3

137-173.9 MHz g0330112: 2003-Mar-21 Fri 14:47:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@ m	C.F., dB	μV/m	@ m
137.000000	184.250000	13.38	3	18.48	39.17	3
155.500000	202.750000	5.86	3	19.43	18.39	3
173.900000	221.150000	11.69	3	20.23	39.45	3
137.000000	368.482500	5.46	3	24.73	32.32	3
155.500000	405.502500	11.58	3	26.31	78.43	3
173.900000	442.300000	19.59	3	26.37	198.61	3

222-224.9 MHz FM g0330113: 2003-Mar-21 Fri 15:43:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@ m	C.F., dB	μV/m	@ m
222.000000	174.750000	6.72	3	17.85	16.92	3
224.900000	177.650000	11.45	3	18.06	29.89	3
222.000000	349.500000	2.68	3	23.63	20.68	3
224.900000	355.300000	2.4	3	23.98	20.84	3

225-420 MHz g0330114: 2003-Mar-21 Fri 16:04:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@ m	C.F., dB	μV/m	@ m
225.000000	177.750000	-0.1	3	5.28	1.82	3
225.000000	355.500000	-3.62	3	24	10.45	3
322.500000	369.750000	5.94	3	24.8	34.43	3
419.900000	372.650000	8.5	3	24.94	46.99	3
322.500000	739.500000	7.34	3	31.79	90.47	3
419.900000	745.300000	6.47	3	31.88	82.7	3

420-470 MHz g0330115: 2003-Mar-26 Wed 10:27:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@ m	C.F., dB	μV/m	@ m
420.000000	372.750000	10.06	3	24.95	56.3	3
445.000000	397.750000	9.23	3	26.19	59.02	3
469.975000	422.725000	14.7	3	26.34	112.72	3
469.975000	517.225000	6.7	3	27.01	48.47	3
420.000000	745.500000	3.6	3	31.89	59.5	3
445.000000	795.500000	11.04	3	32.54	151.01	3
469.975000	845.450000	4.31	3	32.46	68.94	3
469.975000	1034.450000	-9.48	3	36.04	21.28	3

PAGE NO.

12 of 15.

NAME OF TEST:

Receiver Spurious Emissions (Radiated) (Cont'd)

470-600 MHz g0330116: 2003-Mar-26 Wed 11:09:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@ m	C.F., dB	μ V/m	@ m
470.000000	422.750000	4.64	3	26.34	35.4	3
470.000000	517.250000	8.24	3	27.01	57.88	3
599.500000	552.250000	5.39	3	28.21	47.86	3
599.500000	646.750000	3.06	3	30.53	47.81	3
728.990000	681.740000	-2.34	3	30.9	26.79	3
728.990000	776.240000	-2.32	3	32.3	31.55	3
470.000000	845.500000	4.64	3	32.46	71.61	3
470.000000	1034.500000	-3.32	3	36.04	43.25	3
599.500000	1104.500000	-2.03	3	36.89	55.34	3
599.500000	1293.500000	-2.84	3	38.92	63.68	3

758-773.990 MHz g0330117: 2003-Mar-26 Wed 12:13:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@ m	C.F., dB	μ V/m	@ m
758.000000	710.750000	-1.62	3	31.29	30.44	3
758.000000	805.250000	0.34	3	32.58	44.26	3
773.990000	821.240000	0.75	3	32.53	46.13	3
758.000000	1421.500000	1.1	3	40.12	115.08	3
758.000000	1453.480000	3.11	3	40.4	149.8	3
901.000000	1642.480000	-0.43	3	41.68	115.48	3

803-999 MHz g0330118: 2003-Mar-26 Wed 14:24:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@ m	C.F., dB	μ V/m	@ m
803.000000	755.750000	7.6	3	32.04	95.94	3
901.000000	853.750000	9.93	3	32.46	131.67	3
998.987500	951.737500	5.01	3	37.78	137.88	3
998.987500	1511.500000	-9.5	3	40.87	37.03	3
901.000000	1707.500000	2.32	3	42.05	165.39	3
998.987500	1903.475000	2.08	3	44.02	201.84	3

All other emissions in the required measurement range were more than 20 dB below the required limits.



PERFORMED BY:

Morton Flom, P. Eng.

PAGE NO. 13 of 15.

NAME OF TEST: Scanning Receivers Cellular Band Rejection

SPECIFICATION: FCC: 47 CFR 15.121(b)

TEST EQUIPMENT: As per attached page

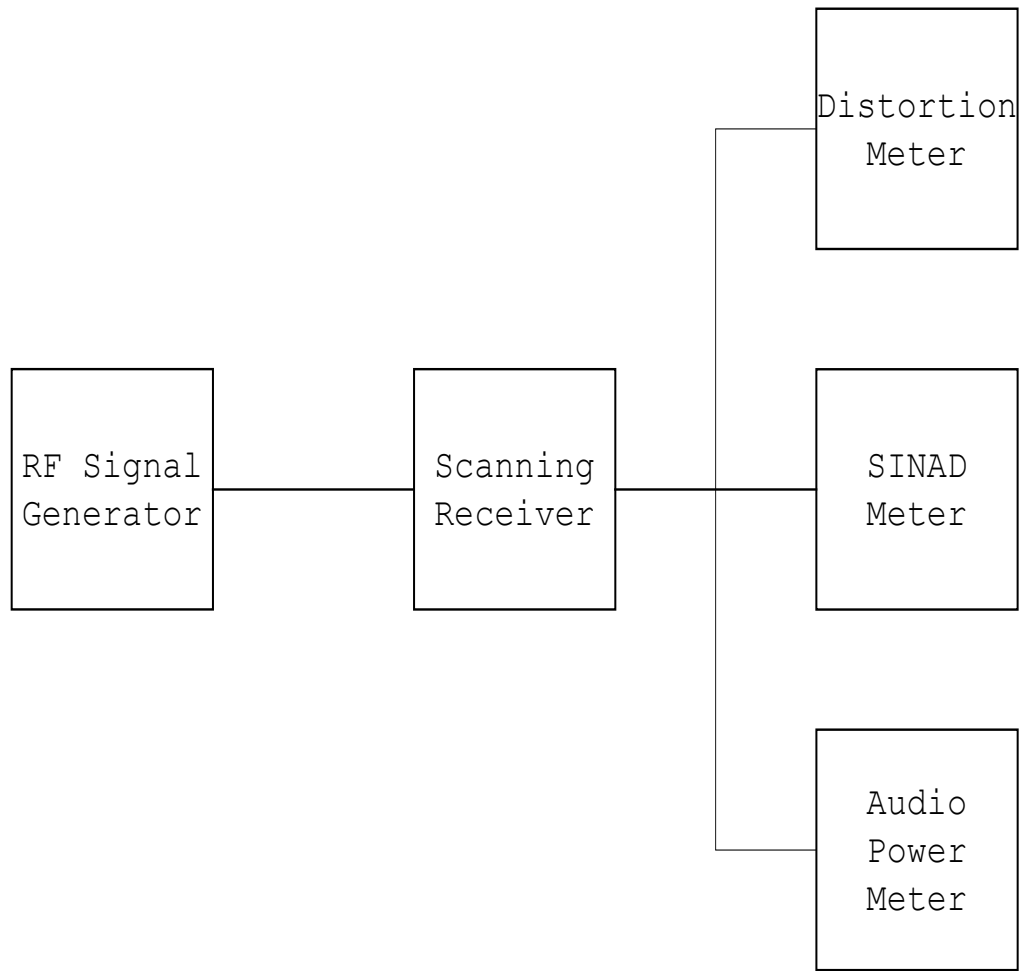
GUIDE: 47 CFR 15.121(b): Except as provided in paragraph (c) of this section, scanning receivers shall reject any signals from Cellular Radiotelephone Service frequency bands that are 38 dB or higher based upon a 12 dB SINAD measurement, which is considered the threshold where a signal can be clearly discerned from any interference that may be present.

WARNING: MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.

MEASUREMENT PROCEDURE

1. Equipment was connected as illustrated in the block diagram.
2. A standard signal was applied to the receiver input terminals.
3. Receiver output audio output was adjusted for rated output and with distortion no greater than 10%.
4. The RF Signal generator was adjusted to produce 12dB SINAD without the audio output power dropping by more than 3dB.
5. This was repeated at three frequencies across all bands to establish a reference sensitivity level. The reference sensitivity taken was the lowest, or worst-case sensitivity for all of the bands.
6. The output of the signal generator was then adjusted to a level of +60dB above the reference level sensitivity established in step 5 and set to the first of three frequencies in the cellular subscriber transmit band.
7. Receiver squelch threshold, the signal level required to open the squelch, should be set to open no greater than +20dB above the reference sensitivity.
8. The receiver was then put in the scanning mode and allowed to scan across it's complete receive range.
9. If the receiver unsquelched or stopped on any frequency, the displayed frequency was recorded. The signal generator was then adjusted in output level until a 12dB SINAD from the receiver was produced. The signal generator level associated with this response was also noted.
10. This procedure was repeated for three frequencies in the cellular base station transmit band.
11. The difference in between the signal generator output for any response recorded and the reference sensitivity is the rejection ratio.

SCANNING RECEIVER TEST SET UP:



PAGE NO.

15 of 15.

SCANNING RECEIVER TEST RESULTS:

Reference Level Sensitivity measured in step 5 = 130 dBm

RF Signal Generator, MHz	Displayed Frequency, MHz	Level for 12 dB SINAD, dBm	Rejection, dB
0.100 to 0.5	868.97 836.40 824.04	<-103	<-41
30 to 50	868.97 836.40 824.04	<-103	<-41
30 to 54	868.97 836.40 824.04	<-103	<-41
54 to 76	868.97 836.40 824.04	<-103	<-41
108 to 137	868.97 836.40 824.04	<-103	<-41
137 to 150	868.97 836.40 824.04	<-103	<-41
150 to 174	868.97 836.40 824.04	<-103	<-41
174 to 225	868.97 836.40 824.04	<-103	<-41
200 to 400	868.97 836.40 824.04	<-103	<-41
400 to 470	868.97 836.40 824.04	<-103	<-41
470 to 540	868.97 836.40 824.04	<-103	<-41
540 to 800	868.97 836.40 824.04	<-103	<-41
800 to 999	868.97 836.40 824.04	<-103	<-41



Morton Flom, P. Eng.

PERFORMED BY:
END OF TEST REPORT

THE APPLICANT HAS BEEN CAUTIONED AS TO THE FOLLOWING:

15.21 INFORMATION TO USER.

The users manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.27(a) SPECIAL ACCESSORIES.

Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator, the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer, without additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

LABELLING OF SCANNING RECEIVERS**Rule 15,19(2) (3) 2-Part statement: CONSPICUOUS LOCATION ON UNIT**

'This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions (1) This device may not cause harmful interference; and (2) this device must accept any interference including interference that may cause undesired operation.'

Rule Part 15.121(f): PERMANENTLY AFFIXED TO UNIT MUST BE ON DEVICE:

'WARNING: Modification of this device to receive cellular radiotelephone service signals is prohibited under FCC Rules and Federal Law.'

Rule 15.21: CAN BE IN MANUAL. SHOW WHAT PAGE AND EXTRACT IT

'Information to User: The User's Manual or Instruction Manual for an intentional or unintentional radiator shall caution the User that changes or modifications not expressly approved by the party responsible for compliance could void the User's authority to operate the equipment.'

"Permanently affixed" means that the label is etched, engrave, stamped, silkscreened, indelibly printed or otherwise permanently marked on a permanently attached part of the equipment or on a nameplate of metal plastic or other material fastened to the equipment by welding, riveting, or permanent adhesive. The label shall be designed to last the expected lifetime of the equipment in the environment in which the equipment may be operated and must not be readily detachable. The label shall not be a stick-on, paper label.

STATEMENT OF COMPLIANCE

THIS IS TO CERTIFY:

THAT, ON THE BASIS OF THE MEASUREMENTS MADE, THE
EQUIPMENT TESTED IS CAPABLE OF COMPLYING WITH THE
REQUIREMENTS OF

FCC RULE PART 15, SUBPART B x

FCC RULE PART 15, SUBPART C

USING ANSI C63.4-1992/2000 Draft IN EFFECT AS OF THIS
DATE, UNDER NORMAL OPERATION, WITH THE USUAL MAINTENANCE.

THAT THE DATA CONTAINED HEREIN IS A SUMMARY (WORST CASE)
OF THAT OBTAINED ON SEVERAL RANDOMLY-SELECTED PRODUCTION
SAMPLES.

THAT THE EQUIPMENT MEETS OR EXCEEDS THE REQUIREMENTS OF
PART 15.

LIST OF EXHIBITS
(FCC **CERTIFICATION** (RECEIVERS) - REVISED 9/28/98)

APPLICANT: Vertex Standard Co., Ltd.

EQUIPMENT: VX-2R
K66VX-2R

BY APPLICANT:

IF APPLICABLE: Subsection 2.1033

- | | | |
|----|---|---|
| 1. | LETTER OF AUTHORIZATION | x |
| 2. | ATTESTATIONS | x |
| 3. | IDENTIFICATION LABEL DRAWING | |
| | <u> x </u> LABEL | |
| | <u> x </u> LOCATION OF LABEL | |
| | <u> x </u> COMPLIANCE STATEMENT | |
| | <u> x </u> LOCATION OF COMPLIANCE STATEMENT | |
| 4. | DOCUMENTATION: 2.1033 (b) | |
| | (3) USER MANUAL | x |
| | (4) OPERATIONAL DESCRIPTION | x |
| | (5) BLOCK DIAGRAM | x |
| | (5) SCHEMATIC DIAGRAM | x |
| | (7) PHOTOGRAPHS | x |
| 5. | REQUEST FOR CONFIDENTIALITY | x |

BY M.F.A. INC.

- A. STATEMENT OF COMPLIANCE
- B. STATEMENT OF QUALIFICATIONS