MFA M. Flom Associates, Inc. - Global Compliance Center
3356 North San Marcos Place, Suite 107, Chandler, Arizona 85225-7176
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ENVIRONMENTAL ASSESSMENT

for

MOBILES

for

FCC ID: FCC ID: K66VX-4000VE
Model:VX-4000V Type A and C

to

FEDERAL COMMUNICATIONS COMMISSION

47 CFR 1.1310 (MPE)
Radiofrequency Radiation Exposure Limits

DATE OF REPORT: December 22, 2000

ON THE BEHALF OF THE APPLICANT:

Vertex Standard Co., Ltd.

AT THE REQUEST OF: P.O. Email of 12/20/2000

Vertex Standard USA Inc.
17210 Edwards Rd.
Cerritos, CA 90703

Attention of: Mikio Maruya, Executive Vice President
(800) 255-9237; FAX: (800) 477-9237
(562) 404-2700, x280; FAX: -1210
mmaruya@yaesuusa.com

SUPERVISED BY: Morton Flom, P. Eng.

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

a) TEST REPORT (SUPPLEMENTAL)

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: d00c0029

d) Client: Vertex Standard USA Inc.
17210 Edwards Rd.
Cerritos, CA 90703

e) Identification: VX-4000V and VX-4000VA
FCC ID: K66VX-4000VE
Description: VHF FM Mobile Transceiver

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

g) Report Date: December 22, 2000
EUT Received: July 20, 2000

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.

IDENTIFICATION OF THE EQUIPMENT UNDER TEST (EUT)

NAME AND ADDRESS OF APPLICANT:

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

MANUFACTURER:

Applicant

FCC ID:	K66VX-4000VE
MODEL NO:	VX-4000V Type A (136-160 MHz) VX-4000V Type C (148-174 MHz)
DESCRIPTION:	VHF FM Mobile Transceiver
TYPE OF EMISSION:	16K0F3E, 11K0F3E
FREQUENCY RANGE, MHz:	134 to 160, 148 to 174
POWER RATING, Watts:	5 to 50

___ Switchable x Variable ___ N/A

MODULATION:

____ AMPS
____ TDMA
____ CDMA
_x_ F3E

ANTENNA:

____ HELICAL
____ MONOPOLE
____ WHIP
_x_ OTHER

NOTE: For RF Safety test antenna gain taken at the upper range of expected gain (i.e. 0 dBd) and RF Power set to highest nominal power across all channels.

M. Flom Associates, Inc. is accredited by the American Association for Laboratory Association (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 Guide 25-1990 "General Requirements for the Competence of Calibration and Testing Laboratories" (equivalent to relevant requirements of the ISO 9000 series of standards) and any additional program requirements in the identified field of testing.

Presented this 24th day of November, 1998.

President
For the Accreditation Council
Certificate Number 1008.01
Valid to December 31, 2000

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

SCOPE OF ACCREDITATION TO ISO/IEC GUIDE 25-1990 AND EN 45001

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, 2000 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 electromagnetic compatibility tests:

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; FCC Part 18; ICES-003; AS/NZS 1044; AS/NZS 1053; AS/NZS 3548; AS/NZS 4251.1; CNS 13438
RF Immunity	EN 50082-1; EN 50082-2; AS/NZS 4251.1
Radiated Susceptibility	EN 61000-4-3; ENV 50140; ENV 50204; IEC 1000-4-3; IEC 801-3
ESD	EN 61000-4-2; IEC 1000-4-2; IEC 801-2
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
47 CFR (FCC)	2, 21, 22, 23, 24, 74, 80, 87, 90, 95, 97

Revised 2/2/2000

5301 Buckeystown Pike, Suite 350 • Frederick, MD 21704-8370 • Phone: 301 644 3248 • Fax: 301 662 2974

"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.

STANDARD TEST CONDITIONS and ENGINEERING PRACTICES

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI C63.4-1992/2000, section 6.1.9, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104 °F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Prior to testing, the EUT was tuned up in accordance with the manufacturer's alignment procedures. All external gain controls were maintained at the position of maximum and/or optimum gain throughout the testing.

Measurement results, unless otherwise noted, are worst case measurements.

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Name of test:	Environmental Assessment
Specification:	FCC: 47 CFR 1.1310
Measurement Guide:	ANSI/IEEE C95.1 1992
Test Equipment:	Maximum Permissible Exposure (MPE) measurement system, consisting of: Narda 8717-1174R, Radiation meter Narda 8761D, E-field probe (300 kHz – 3 GHz) (Calibrated Nov-98)
Measurement Procedure:	1. The following measurements were performed with a Narda probe using ANSI/IEEE C95.1 as a guide. 2. Prior to making any measurements, the measurements system was calibrated in accordance with the manufacturer's procedures. 3. The EUT's radiating element (antenna) was placed on a 1 m tall table for ease of testing. For equipment normally operated on a metal surface, a ground plane was used. 4. The remaining equipment necessary to operate the EUT was maintained at a distance from the measurement arrangement suitable to minimize interference with the measurements. 5. The minimum safe distance was calculated from the formula Power Density = EIRP / $4\pi R^2$ (Peak Watts/m^2). The calculation is shown with the measurement data. 6. With the EUT operating at maximum power, a search was initiated for worst case emissions with the probe raised and lowered over a range of 0.2 to 2 meters in height and over a horizontal plane of 0^o to 360^o. 7. Average values were calculated for the whole body (0.2-2.0m), lower body (0.2-0.8m) and upper body (1.0-2.0m).
Results:	Attached.

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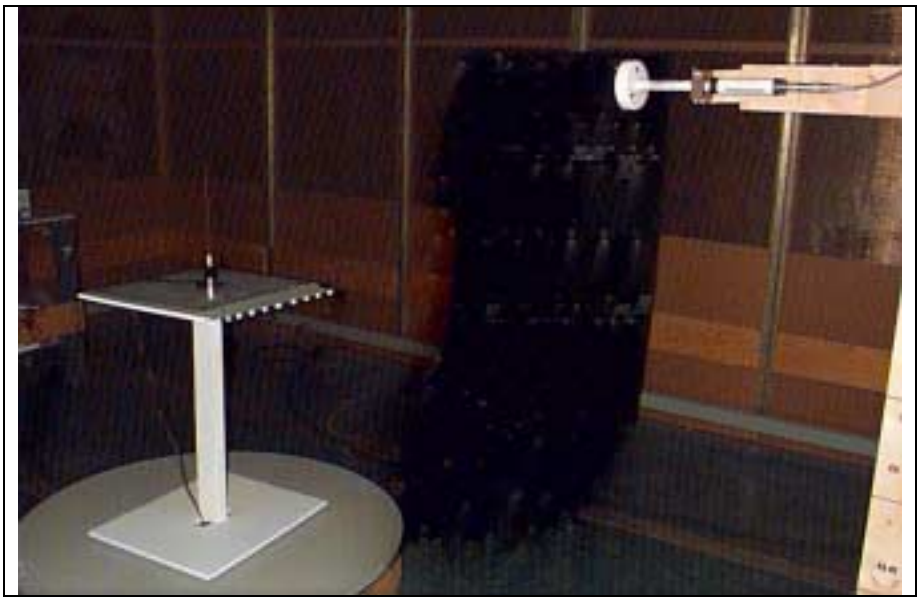
TEST SETUP: Maximum Permissible Exposure (MPE)
g0070629: 2000-Jul-25 Tue 15:11:10
STATE: 0:General



TEST SETUP: Maximum Permissible Exposure (MPE)
g0070630: 2000-Jul-25 Tue 15:11:10
STATE: 0:General

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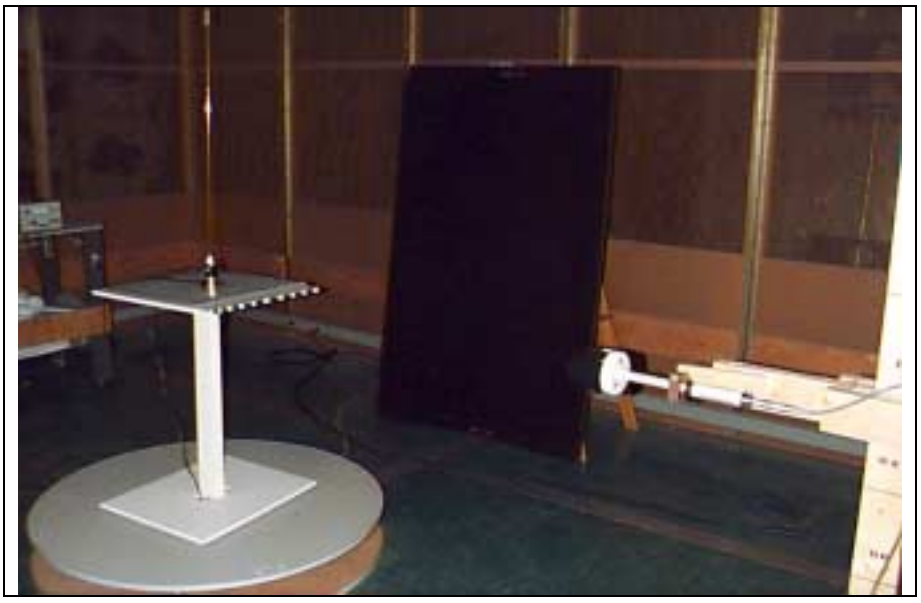
TEST SETUP: Maximum Permissible Exposure (MPE)
g0070695: 2000-Jul-27 Thu 11:35:21
STATE: 0:General



TEST SETUP: Maximum Permissible Exposure (MPE)
g0070696: 2000-Jul-27 Thu 11:35:21
STATE: 0:General

PAGE NO. 8 of 8.

Name of test: R.F. Radiation Exposure

FCC Rules: 1.1307, 1.1310, 1.1311, 2.1091
Description, EUT: See page 2 of Test Report

Test Frequency, MHz = 159.9
Antenna Gain = 0 dBd, 50% Duty Cycle
Antenna Model Mobile Gain Antenna

Rated Probe: Narda 8761D Probe = 10 $\mu W/cm^2$ to 20 mW/cm^2

LIMITS: 0.3-1.234 MHz: Limit [mW/cm^2] = 100
47 CFR 1.1310 1.34-30 MHz: Limit [mW/cm^2] = ($180/f^2$)
Table 1, (B) 30-300 MHz: Limit [mW/cm^2] = 0.2
300-1500 MHz Limit [mW/cm^2] = f/1500
1500-100,000 MHz: Limit [mW/cm^2] = 1.0

Power, Conducted, W = 50 Watts – 47 dBm
Power + Ant. Gain, W = 25 Watts – 44 dBm – 50% Duty Cycle

Tested Distance: 76 cm

Results: at tested distance

Probe Height, m	Power Density, mW/cm^2
2.0	0.18
1.8	0.28
1.6	0.29
1.4	0.36
1.2	0.25
1.0	0.21
0.8	0.10
0.6	0.09
0.4	0.05
0.2	0.05

Power Density Calculations: The measured power density readings were summed and the results divided by the number of readings to calculate the average.
For whole body: Average of 0.2 to 2.0 m, mW/cm^2 = 0.186
For lower body: Average of 0.2 to 0.8 m, mW/cm^2 = 0.073
For upper body: Average of 1.0 to 2.0 m, mW/cm^2 = 0.262

NOTE: Rule 1.1310 Table 1, B; Uncontrolled Exposure OET Bulletin 65 Supplement C
For 159.9 MHz, Limit = 0.2 mW/cm^2, whole body average
Test Result = 0.186 mW/cm^2, whole body average
Separation Distance = 76 cm

SUPERVISED BY: Morton Flom, P. Eng.
END OF TEST REPORT

MOBILE RADIO OPERATION and EME EXPOSURE

- Use only supplied or recommended antenna.
- Antenna gain must not exceed 0 dBd with respect to a dipole.
- Contact manufacturer/dealer if antenna is to be changed.
- User/Operator must ensure that persons must NOT be within safe separation distance when operating.

WARNING: To comply with FCC's R.F. Exposure limits, the antenna must be installed at or exceeding minimum safe distance shown below:

Minimum Safe Distance =	76 cm
Antenna Gain =	0 dB referenced to dipole
Maximum Duty Factor =	50%

TESTIMONIAL AND STATEMENT OF CERTIFICATION

THIS IS TO CERTIFY THAT:

1. THAT the application was prepared either by, or under the direct supervision of, the undersigned.

2. THAT the technical data supplied with the application was taken under my direction and supervision.

3. THAT the data was obtained on representative units, randomly selected.

4. THAT, to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct.

CERTIFYING ENGINEER: Morton Flom, P. Eng.