MFA 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: FT-8900R

FCC ID: K66FT-8900R

to

FEDERAL COMMUNICATIONS COMMISSION

Part 15(B)
(New)

DATE OF REPORT: May 30, 2002

ON THE BEHALF OF THE APPLICANT:

Vertex Standard Co., Ltd.

AT THE REQUEST OF: P.O. UPS 5/21/2002

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: Morton Flom, P. Eng.

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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: d0250071

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

e) Identification: FT-8900M
FCC ID: K66FT-8900M
Description: Scanning Receiver

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

g) Report Date: May 30, 2002
EUT Received: April 24, 2002

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.

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

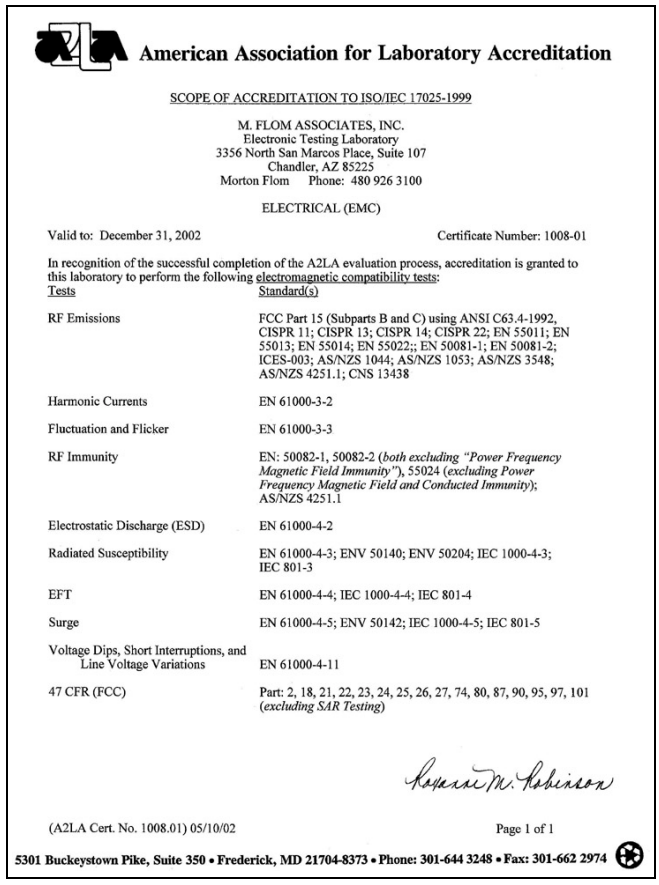
Electrical (EMC) Testing

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 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.

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

SCOPE OF ACCREDITATION TO ISO/IEC 17025-1999

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 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; 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*)

(A2LA Cert. No. 1008.01) 05/10/02 Page 1 of 1

5301 Buckeystown Pike, Suite 350 • Frederick, MD 21704-8373 • 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.

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GENERAL INFORMATION

Part 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

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2.911:
2.1033(b)(6)

TECHNICAL REPORT

MANUFACTURER:

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

FCC ID:

K66FT-8900M

MODEL NO:

FT-8900M

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.”

EXPOSITORY STATEMENT

1.	NUMBER OF BANDS	= 6
2.	NUMBER OF CHANNELS	= 18
3.	TUNING RANGE, MHz	= 20 to 39.0 40 to 90 100 to 190 300 to 400 400 to 520 700 to 1,000
4.	OSCILLATOR RANGE, MHz	= 65.05 to 84.05 85.05 to 113.125 145.05 to 235.05 345.05 to 445.045 354.95 to 474.4 654.95 to 949.09
5.	I.F., MHz	= 45.05
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
_x_ The antenna requirement does not apply

SUPERVISED BY: Morton Flom, P. Eng.

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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:

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

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

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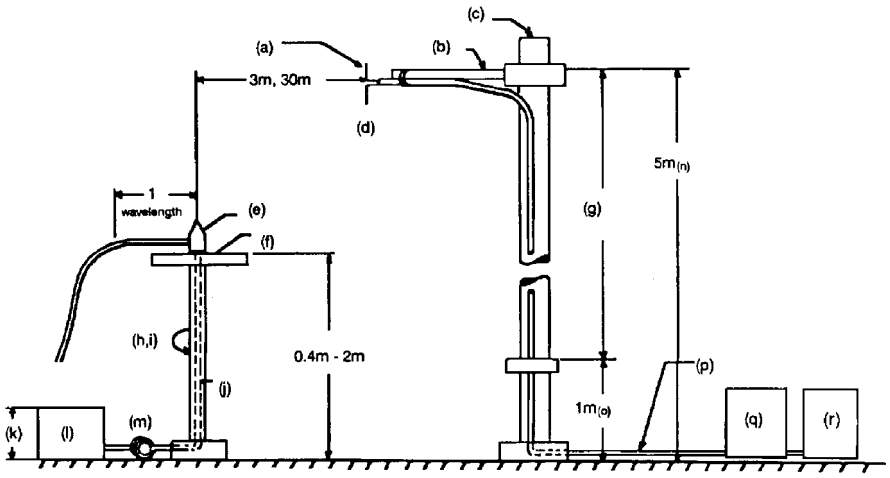
RADIATED TEST SETUP



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	
TRANSDUCER				
i00088	EMCO 3109-B 25MHz-300MHz	2336	12 mo.	Sep-01
i00089	Aprel 2001 200MHz-1GHz	001500	12 mo.	Sep-01
i00103	EMCO 3115 1GHz-18GHz	9208-3925	12 mo.	Sep-01
i00065	EMCO 3301-B Active Monopole	2635	12 mo.	Sep-01
AMPLIFIER				
i00028	HP 8449A	2749A00121	12 mo.	Mar-02
SPECTRUM ANALYZER				
i00029	HP 8563E	3213A00104	12 mo.	Jan-02
i00033	HP 85462A	3625A00357	12 mo.	Jan-02
i00048	HP 8566B	2511AD1467	6 mo.	Jan-02
MISCELLANEOUS				
	Microphone			
	Antenna			
	All Ports Terminated			

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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:

EMISSION FREQUENCY, MHz = 654.929300

LEVEL = $\text{Log}_{10}^{-1}\left(\frac{-7.8 + 30.61}{20}\right)$

LEVEL, μV/m @ 3m = 83.27

MEASUREMENT RESULTS = ATTACHED

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

PAGE NO. 10 of 13.

NAME OF TEST: Receiver Spurious Emissions (Radiated)

RULE 15.109(a) LIMITS:

FREQUENCY, MHz	FIELD STRENGTH μV/m	DISTANCE, m
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

g0250003: 2002-May-21 Tue 13:27:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@ m	C.F., dB	μV/m	@ m
20.000000	65.050000	13.27	3	13.4	21.55	3
29.050000	74.550000	17.64	3	11.79	29.61	3
39.000000	84.049900	11.35	3	11.6	14.04	3
20.000000	130.100000	5.16	3	16.7	12.39	3
29.500000	149.100000	8.96	3	17.28	20.51	3
39.000000	168.074900	13.21	3	17.73	35.24	3

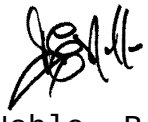
g0250004: 2002-May-21 Tue 15:48:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@ m	C.F., dB	μV/m	@ m
40.000000	85.050000	6.43	3	11.72	8.08	3
65.000000	110.047500	10.3	3	15.22	18.88	3
90.000000	113.137500	9.43	3	15.51	17.66	3
40.000000	170.100000	5.87	3	17.76	15.19	3
65.000000	220.100000	6.77	3	20.19	22.28	3
90.000000	226.100000	4.64	3	20.44	17.95	3

g0250005: 2002-May-22 Wed 10:33:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@ m	C.F., dB	μV/m	@ m
100.000000	145.050000	11.08	3	17.14	25.76	3
145.000000	190.051300	15.9	3	18.79	54.26	3
190.000000	235.041300	7.5	3	20.81	26.03	3
100.000000	290.100000	4.24	3	30.34	53.58	3
145.000000	380.107500	12.23	3	25.33	75.51	3
190.000000	470.112200	8.59	3	26.39	56.1	3

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



PERFORMED BY: Doug Noble, B.A.S. E.E.T.

NAME OF TEST: Receiver Spurious Emissions (Radiated)

300.0-399.995 MHz

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@m	CF, dB	CALC. dBuV/m	@m	CALC. uV/m
300.000	345.513	30.5	3	-1.7	28.8	3	27.5
350.000	392.193	33.2	3	-2.1	31.1	3	35.9
399.995	442.374	34.3	3	-4.0	30.3	3	32.7
300.000	687.444	41.5	3	-2.1	39.4	3	93.3
350.000	787.806	37.8	3	-1.4	36.4	3	66.1
399.995	888.168	40.3	3	-2.1	38.2	3	81.3

400.0-520.0 MHz

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@m	CF, dB	CALC. dBuV/m	@m	CALC. uV/m
400.000	351.348	27.2	3	-1.7	25.5	3	18.8
460.000	415.533	29.8	3	-1.7	28.1	3	25.4
520.000	472.716	30.7	3	-2.9	27.8	3	24.5
400.000	707.283	35.2	3	-1.7	33.5	3	47.3
460.000	827.484	33.8	3	-0.7	33.1	3	45.2
520.000	948.852	41.7	3	-0.6	41.1	3	113.5

800.0-999.99 MHz

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBuV	@m	CF, dB	CALC. dBuV/m	@m	CALC. uV/m
700.000	323.340	29.0	3	-3.5	25.5	3	18.8
800.000	373.521	34.5	3	-3.7	30.8	3	34.7
999.990	475.050	31.4	3	-2.9	28.5	3	26.6
700.000	652.434	34.2	3	-2.4	31.8	3	38.9
800.000	752.796	36.5	3	-1.0	35.5	3	59.6
999.990	953.520	41.8	3	-0.6	41.2	3	114.8

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

PLEASE NOTE: DATA SUPPLIED BY APPLICANT

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NAME OF TEST: Scanning Receivers Cellular Band Rejection

SPECIFICATION: FCC: 47 CFR 15.121(b)

TEST EQUIPMENT: As per attached page

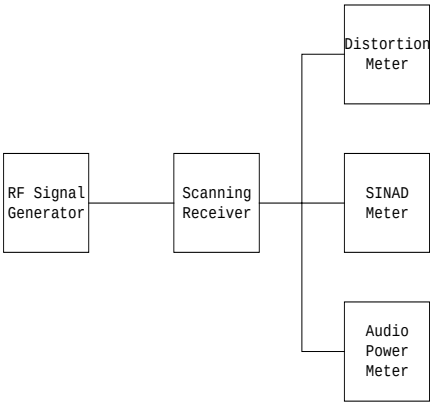
GUIDE: 47 CFR 15.121(b): Except as provided in paragraph (c) of this section, scanning receivers shall reject any signals from Cellular Radiotelephone Service frequency bands that are 38 dB or higher based upon a 12 dB SINAD measurement, which is considered the threshold where a signal can be clearly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



System Sensitivity measured in step 5 = 130 dBm

Frequency, MHz	Image Frequency, MHz	Level for 12 dB SINAD, dBm	Rejection, dB
20–39	848.97 836.4 824.04	-109	<-130
40-90	848.97 836.4 824.04	-109	<-130
100–190	848.97 836.4 824.04	-109	<-130
300-399.995	848.97 836.4 824.04	-109	<-130
400-520	848.97 836.4 824.04	-109	<-130
700-999.99	848.97 836.4 824.04	-109	<-130

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

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

'

Scanning receivers shall have a label permanently affixed to the product, and this label shall be readily visible to the purchaser at the time of purchase. The label shall read as follows:

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

"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: FT-8900M
K66FT-8900M

BY APPLICANT:

IF APPLICABLE: Subsection 2.1033

1. LETTER OF AUTHORIZATION x

2. ATTESTATION x

3. IDENTIFICATION LABEL DRAWING
   - x LABEL
   - x LOCATION OF LABEL
   - x COMPLIANCE STATEMENT
   - x 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

BY M.F.A. INC.

A. STATEMENT OF COMPLIANCE

B. STATEMENT OF QUALIFICATIONS