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FCC ID: KRET70A

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GENERAL INFORMATION REQUIRED
FOR TYPE ACCEPTANCE

2.1033 (C) (1) (2) RF TECHNOLOGY PTY., LTD. will sell the FCC ID: KRET70A VHF transceiver in quantity, for use under FCC RULES PART 90.

RF TECHNOLOGY PTY., LTD.
Unit 10, 8 Leighton Place
HORNSBY NEW SOUTH WALES 2077
AUSTRALIA

2.1033 (C) TECHNICAL DESCRIPTION

(1) ALLOWED AUTHORIZED BANDWIDTH = 20.0KHz.
90.209(b)(5)

Bn = 2M + 2DK
M = 3000
D = 4.5 K (Peak Deviation)
K = 1
Bn = 2(3.0K) + 2(4.5K)(1) = 6.0K + 9.0K =15.0 K

Type of Emission: 15KOF3E

21033(C)(5) Frequency Range: 66-88 MHz

(6) Power Range and Controls: This UUT has a power output of 25 watts.

(7) 2,1033(c)(b) Maximum Output Power Rating: 25.0Watts into a 50 ohm resistive load.

(8) DC Voltages and Current into Final Amplifier:

POWER INPUT	FINAL AMPLIFIER ONLY
POWER OUT	25.4

Vce Volts	13.6v
Ice Amps	6.2

Pin Watts	83.0
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2.1033(c)(9) The tune-up procedure is included in the service manual.

2.1033(c)(10) Schematics are included as Exhibits 5A-5B.

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2.1033(c)(11) Photograph or drawing of the label showing the FCC ID and the location of the label are shown in Exhibits 1 and 2.

2.1033(c)(12) Photographs completely documenting the radio are included as exhibits 3A-3H.

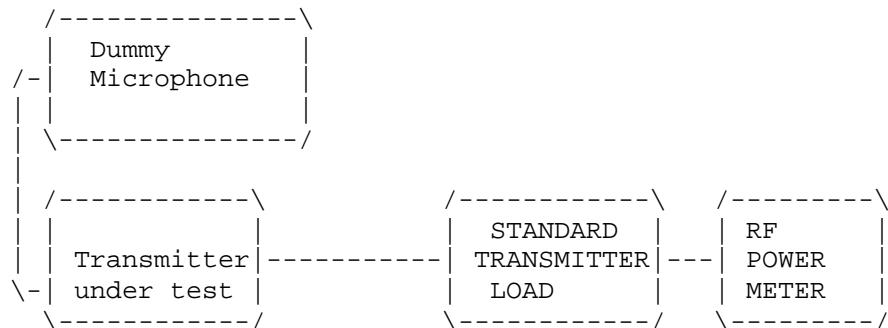
2.1033(c)(13) N/A This is for devices that use digital modulation.

2.1033(c)(14) The data required by 2.1046 through 2.1057 follows;

2.1046(a) RF power output. The test procedure used was TIA/EIA-603 S2.2.1. RF power is measured by connecting a 50 ohm, resistive wattmeter to the RF output connector. With a nominal battery voltage of 13.8V, and the transmitter properly adjusted the RF output measures:

INPUT POWER: $(13.4V)(6.2A) = 83.00\text{Watts}$
 OUTPUT POWER: 25.0Watts Efficiency: 30%

2.1046(a) RF power output. The test procedure used was TIA/EIA-603 S2.2.1.



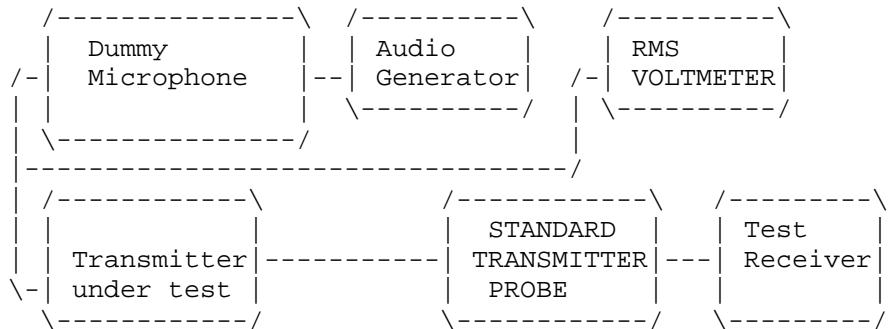
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2.1047(a) Modulation characteristics:

AUDIO FREQUENCY RESPONSE The audio frequency response was measured in accordance with TIA/EIA Specification TIA/EIA-603 S2.2.6.2.1. The audio frequency response curve is shown in Exhibit 9.

2.1049 AUDIO LOW PASS FILTER Transmitters utilizing analog emissions and meets the requirements of paragraph 90.210(c) therefore no low-pass filter response is included.

2.1049 AUDIO INPUT VERSUS MODULATION The audio frequency input versus deviation was measured in accordance with TIA/EIA Specification 603 S2.2.6.2.1. with the following exceptions; starting with 1000Hz the input was increased well beyond the deviation changing. This measurement was repeated for the band limits and any frequency deemed appropriate. See Exhibits 10A-10C.



1. The test receiver audio bandwidth was <50Hz to >20,000Hz.

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2.1049 Occupied bandwidth:

90.210 (c)

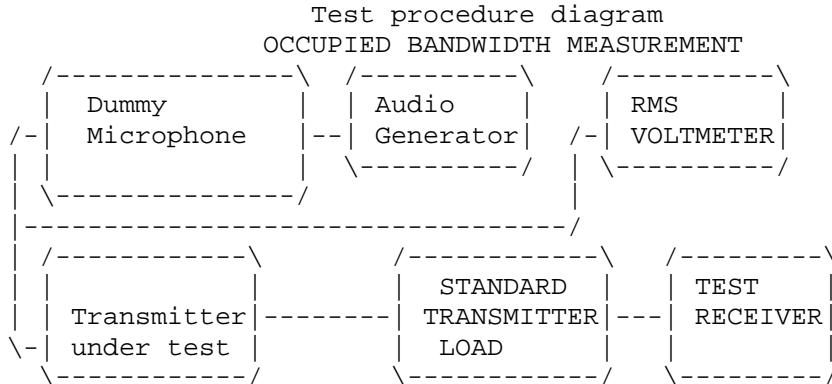
- (1) On any frequency removed from the center of the authorized bandwidth by a displacement of (fd in kHz) of more than 5kHz but not more than 10kHz At least $83\log(fd/5)$ dB.
- (2) On any frequency removed from the center of the authorized bandwidth by a displacement of (fd in kHz) of more than 10kHz but not more than 250% of the authorized bandwidth: At least $29\log(fd^2/11)$ dB.
- (3) On any frequency removed from the center of the authorized bandwidth by a displacement of (fd in kHz) of more than 250% of the authorized bandwidth: At least $43 + 10\log(P)$ dB.

See Exhibit 8A-8B.

2.1049 Occupied bandwidth: Using TIA/EIA 2.2.11 sideband Spectrum TIA/EIA-603 S2.2.11 was used to measure the occupied bandwidth. Plots were made of the highest frequency and at 2500Hz. Data in the plots show that all sidebands beyond the authorized bandwidth are less than 0.5% of the unmodulated carrier. The plots show the transmitter modulation with;

For 20.0KHz Channel spacing no modulation, 2500Hz

At each of the tone input was adjusted for 50% modulation plus 16 dB. The spectrum analyzer was set with the unmodulated carrier at the top of the screen. The test procedure diagram and occupied bandwidth plots follow.



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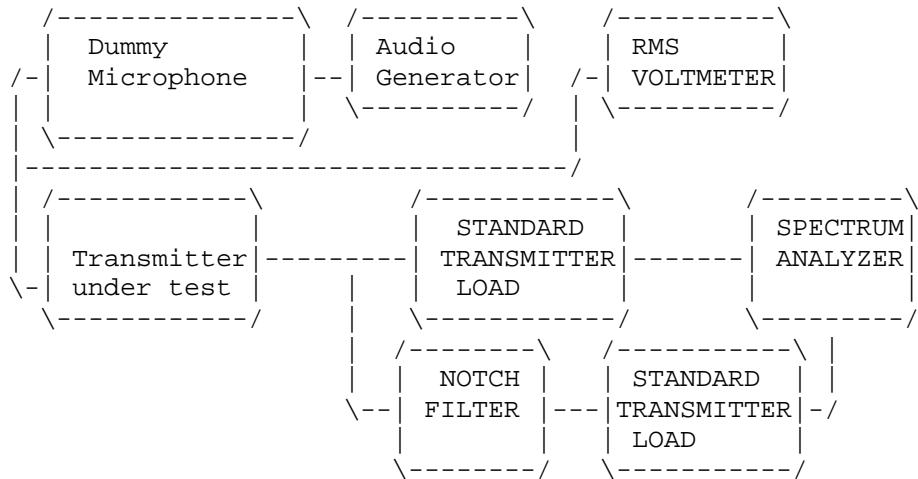
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2.1051

Spurious emissions at antenna terminals (conducted):
The following data shows the level of conducted spurious responses at the antenna terminal. The test procedure used was TIA/EIA 603 S2.2.13 with the exception that the emissions were recorded in dBc. The spectrum was scanned from 0.4 to at least the 10th harmonic of the fundamental.



Method of Measuring Conducted Spurious Emissions

NAME OF TEST: SPURIOUS EMISSIONS AT ANTENNA TERMINALS

REQUIREMENTS: Emissions must be $43 + 10\log(P_o)$ dB below the mean power output of the transmitter.

POWER OUTPUT $43 + 10\log(22.0) = 57.0\text{dB}$

EMISSION FREQUENCY	dB BELOW CARRIER
MHz	
78.0	00.0
156.0	69.2
234.0	58.4
312.0	84.9
390.0	74.4
468.0	116.3
546.0	81.5
624.0	117.7
702.0	93.8
780.00	115.6

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2.1053 (b) Field strength of spurious emissions:

The tabulated Data shows the results of the radiated field strength emissions test. The spectrum was scanned from 30 to 4.7 GHz. This test was conducted per ANSI C63.4-1992 with the exception of briefly connecting the transmitter to a half wave dipole for the purpose of establishing a reference.

NAME OF TEST: RADIATED SPURIOUS EMISSIONS

REQUIREMENTS:

POWER OUTPUT 43 + 10log(25.0) = 57.0dB

TEST DATA:

EMISSION FREQUENCY MHz	ATT. LEVEL dB	MARGIN dB
78.00	0.0	
152.00	89.46	32.46
234.00	77.18	20.18
312.00	71.53	14.53
390.00	81.29	24.29
468.00	83.34	26.34
546.00	95.63	38.63
624.00	90.98	33.98
702.00	94.63	37.63
780.00	105.22	48.22

METHOD OF MEASUREMENT: The tabulated Data shows the results of the radiated field strength emissions test. The spectrum was scanned from 30 to 1.0GHz. This test was conducted per ANSI C63.4-1992 with the exception of briefly connecting the transmitter to a half wave dipole for the purpose of establishing a reference.

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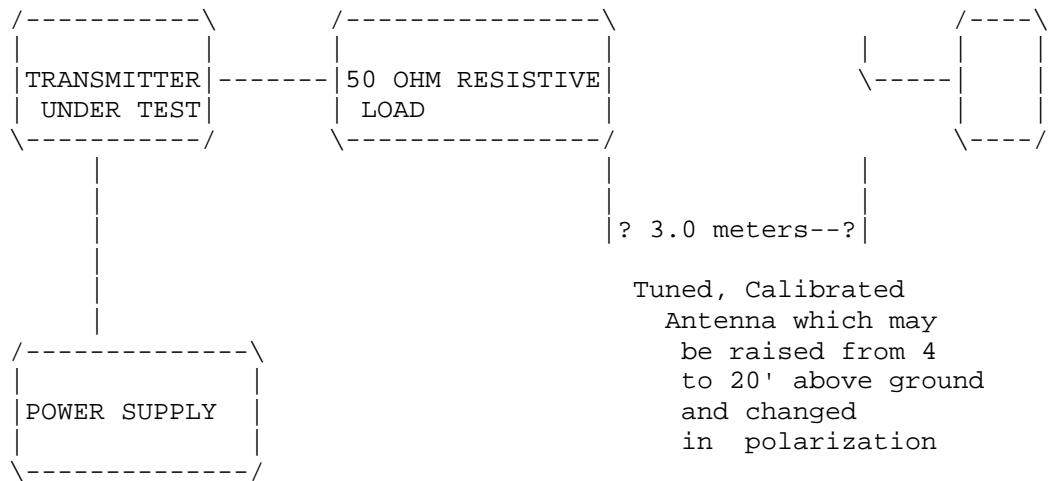
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Method of Measuring Radiated Spurious Emissions

Hewlett Packard
Spectrum
Analyzer
HP8566A



Equipment placed 4' above ground
on a rotatable platform.

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2.1055 Frequency stability:
90.213

Temperature and voltage tests were performed to verify that the frequency remains within the .0005%, 5.0 ppm specification limit. The test was conducted as follows: The transmitter was placed in the temperature chamber at 25 degrees C and allowed to stabilize for one hour. The transmitter was keyed ON for one minute during which four frequency readings were recorded at 15 second intervals. The worse case number was taken for temperature plotting. The assigned channel frequency was considered to be the reference frequency. The temperature was then reduced to -30 degrees C after which the transmitter was again allowed to stabilize for one hour. The transmitter was keyed ON for one minute, and again frequency readings were noted at 15 second intervals. The worst case number was recorded for temperature plotting. This procedure was repeated in 10 degree increments up to + 50 degrees C.

Readings were also taken at plus & minus 15% of the supply voltage of 13.6VDC.

MEASUREMENT DATA:

Assigned Frequency (Ref. Frequency): 78.000 000 MHz

TEMPERATURE C	FREQUENCY MHz	PPM
REFERENCE	78.000 000	0.00
-30	77.999 608	-4.64
-20	77.999 740	-3.33
-10	77.999 995	-0.06
0	78.000 106	+1.36
+10	78.000 113	+1.45
+20	78.000 055	+0.71
+30	77.999 956	-0.56
+40	77.999 923	-0.99
+50	77.999 905	-1.22

The battery end point Voltage 10.20VDC 78.000031

RESULTS OF MEASUREMENTS: The maximum frequency variation over the temperature range was -4.64 to +1.45ppm. The maximum frequency variation over battery endpoint voltage range was +0.40 ppm.

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TEST EQUIPMENT LIST

1. X Spectrum Analyzer: HP 8566B-Opt 462, S/N 3138A07786, w/
preselector HP 85685A, S/N 3221A01400, Quasi-Peak Adapter
HP 85650A, S/N 3303A01690 & Preamplifier HP 8449B-OPT H02,
S/N 3008A00372 Cal. 10/17/99
2. X Biconnical Antenna: Eaton Model 94455-1, S/N 1057
3. X Log-Periodic Antenna: Electro-Metrics Model EM-6950, S/N 632
4. Double-Ridged Horn Antenna: Electro-Metrics Model RGA-180,
1-18 GHz, S/N 2319 Cal. 4/27/99
5. Horn 40-60GHz: ATM Part #19-443-6R
6. Line Impedance Stabilization Network: Electro-Metrics Model
ANS-25/2, S/N 2604 Cal. 2/9/00
7. X Temperature Chamber: Tenney Engineering Model TTRC, S/N 11717-7
8. X Frequency Counter: HP Model 5385A, S/N 3242A07460 Cal 10/6/99
9. Peak Power Meter: HP Model 8900C, S/N 2131A00545 Cal 7/19/99
10. X Open Area Test Site #1-3meters Cal. 12/22/99
11. Signal Generator: HP 8640B, S/N 2308A21464 Cal. 9/23/99
12. Signal Generator: HP 8614A, S/N 2015A07428 Cal. 5/29/99
13. Passive Loop Antenna: EMCO Model 6512, 9KHz to 30MHz, S/N
9706-1211 Cal. 6/23/97
14. Dipole Antenna Kit: Electro-Metrics Model TDA-30/1-4, S/N 153
Cal. 11/24/99
15. AC Voltmeter: HP Model 400FL, S/N 2213A14499 Cal. 9/21/99
16. Digital Multimeter: Fluke Model 8012A, S/N 4810047 Cal 9/21/99
17. Digital Multimeter: Fluke Model 77, S/N 43850817 Cal 9/21/99
18. Oscilloscope: Tektronix Model 2230, S/N 300572 Cal 9/23/99

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