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APPLICANT: KACE ELECTRONICS (ASIA) INC.

FCC ID: MUDFR-140

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GENERAL INFORMATION REQUIRED  
FOR TYPE ACCEPTANCE

2.983 (a,b,c) KACE ELECTRONICS (ASIA) INC. will manufacture the  
FCCID: MUDFR-140 FAMILY RADIO SERVICES 14 CHANNEL  
TRANSCIVER in quantity, for use under FCC RULES  
PART 95.

2.983 (d) TECHNICAL DESCRIPTION

2.983 (d) (1) Type of Emission: 8K8F3E  
95.629

Bn = 2M + 2DK

M = 3000

D = 2.2K

Bn = 2(3.0)+2(1.4) = 8.80K

Authorized Bandwidth 12.5KHz

2.983 (d) (2) Frequency Range: 1. 462.5625 8. 467.5625  
95.627 2. 462.5875 9. 467.5875  
3. 462.6125 10. 467.6125  
4. 462.6375 11. 467.6375  
5. 462.6625 12. 467.6625  
6. 462.6875 13. 467.6875  
7. 462.7125 14. 467.7125 MHz

2.983 (d) (3) Power Output shall not exceed 0.500Watts effective  
95.637 radiated power. There can be no provisions for  
95.647 increasing the power.

2.983 (d) (4) Maximum Output Power Rating: 500 milliWatts  
95.637 effective radiated power.

95.645 The antenna is an intergral part to the unit, it cannot  
be removed without rendering the unit inoperative. In  
order to remove the antenna the case must unscrewed,  
then the PCB assemblies must be removed then the  
antenna can be removed.

2.983 (d) (5) DC Voltages and Current into Final Amplifier:

FINAL AMPLIFIER ONLY

Vce = 4.5 Volts DC Ice = 0.31A.

Pin = 1.42 Watts

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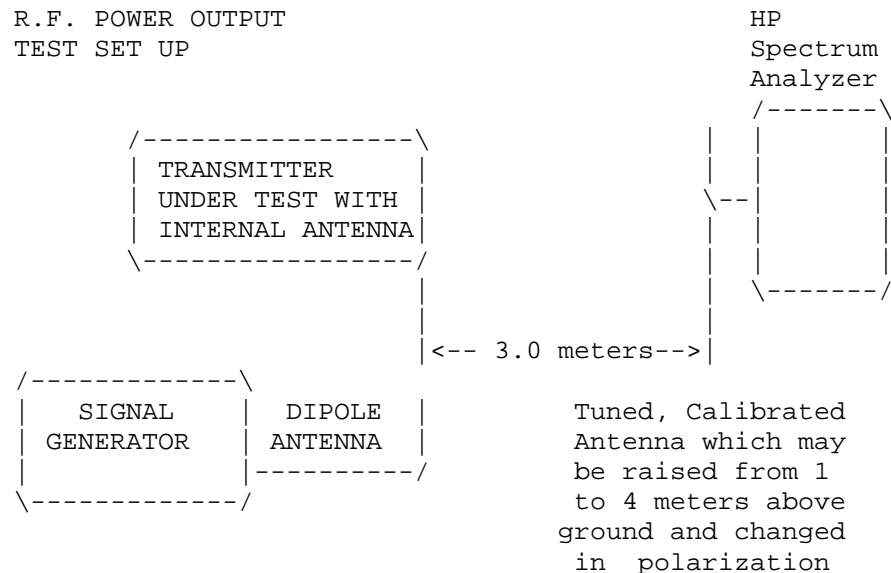
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2.985(a) RF power output.

95.637 RF power is measured by measuring the radiated power at 3 meters and then replacing the transmitter with a signal generator to determine the effective radiated power. The ERP shall not exceed 0.500 Watts.

MEASURED POWER OUTPUT = 500 milliWatts ERP

R.F. POWER OUTPUT  
TEST SET UP



Equipment placed 1 meter above ground on a rotatable platform.

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2.991 Not Applicable, no antenna terminal allowed.

2.993(a)(b) UNWANTED RADIATION:  
95.635(b)(7)

REQUIREMENTS: Emissions must be attenuated by at least the following below the output of the transmitter.

$$43 + 10\log(TP) = 43 + 10\log(0.5) = 40.00\text{dB}$$

TEST DATA:

EMISSION FREQ. MHz	METER READING @ 3m dBuV	COAX LOSS dB	ACF dB	FIELD STRNGTH dBuV/m	ATT. dBuV/m	MARGIN dB	ANT.
462.56	102.00	1.60	18.44	122.04	0.00	0.00	V
925.10	42.00	2.90	24.10	69.00	53.04	13.05	V
1387.70	41.00	1.00	25.55	67.55	54.49	14.50	V
1850.00	45.50	1.01	27.40	73.91	48.13	8.14	V
2312.80	48.50	1.08	28.78	78.36	43.68	3.69	V
2775.40	31.50	1.15	29.94	62.58	59.45	19.46	V
3237.90	28.40	1.22	31.09	60.71	61.33	21.34	H
3700.50	27.00	1.29	32.25	60.54	61.50	21.51	H
4163.00	28.90	1.35	33.18	63.44	58.60	18.61	V
4625.00	23.80	1.42	33.70	58.93	63.11	23.12	H

MARGIN = (Field strength of Fund - FS OF EMISSION)- 40dB

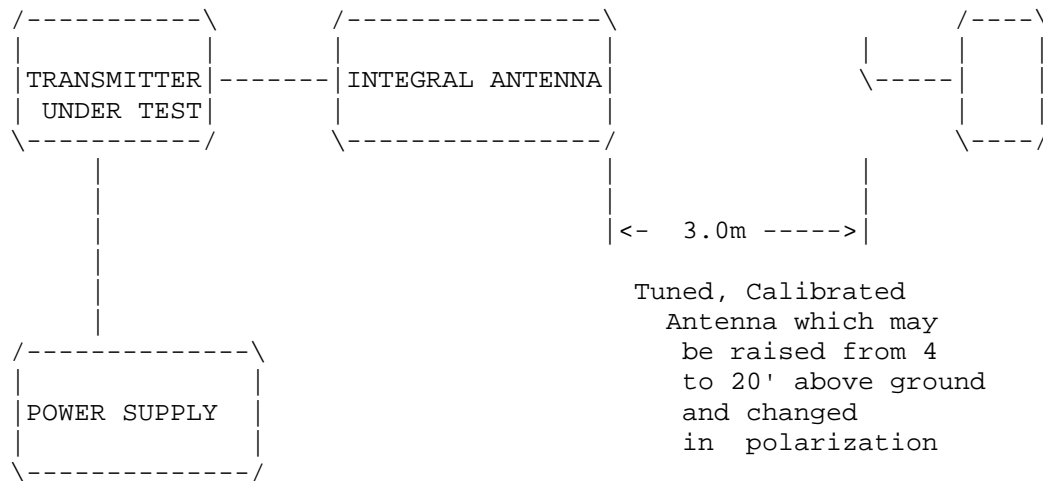
METHOD OF MEASUREMENT: The procedure used was C63.4-1992 for intentional radiators. The spectrum was scanned from 30 to at least the tenth harmonic of the fundamental using a HP model 8566B spectrum analyzer, an Eaton model 94455-1 Biconical Antenna, ElectroMetrics antennas models TDA, TDS-25-1, TDS-25-2 and RGA-180. Measurements were made at the open field test site of TIMCO ENGINEERING INC. located at 6051 N.W. 19th Lane, Gainesville, FL. 32605.

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2.993(a)(b) UNWANTED RADIATION:  
95.631(b)(8)(9)

Method of Measuring Radiated Spurious Emissions

Hewlett Packard  
Spectrum  
Analyzer  
HP8566B



Equipment placed 4' above ground  
on a rotatable platform.

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2.999 Measurement Procedures for Type Acceptance:  
  
Measurement techniques have been in accordance with EIA specifications and the FCC requirements.

2.909 Certification of Technical Data by Engineers

We, the undersigned, certify that the enclosed measurements and enclosed data are true and correct.

S.S. Sanders  
Engineer

LIST OF TEST EQUIPMENT

1. Spectrum Analyzer: Hewlett Packard 8566B - Opt 462, w/ preselector 85685A, & Quasi-Peak Adapter HP 85650A, & HP 8449B - OPT H02 Cal. 7/6/99
2. Signal Generator, Hewlett Packard 8640B, cal. 9/23/99
3. Signal Generator, HP 8614A Serial No. 2015A07428 cal. 5/27/99
3. Eaton Biconnical Antenna Model 94455-1  
20-200 MHz Serial No. 0997 Cal. 10/30/98
4. Electro-Metric Dipole Kit, 20-1000 MHz, Model TDA-30 10/31/98
5. Electro-Metric Horn 1-18 GHz, Model RGA-180, Cal. 4/27/99
6. Electro-Metric Antennas Model TDA-30/1-4, Cal. 10/15/98
7. Electro-Metric Line Impedance Stabilization Network Model No. EM-7821, Serial No. 101; 100KHz-30MHz 50uH. Cal. 11/19/98
8. Electro-Metric Line Impedance Stabilization Network Model No. EM-7820, Serial No. 2682; 10KHz-30MHz 50uH. Cal. 11/19/98
9. Special low loss cable was used above 1 GHz
10. Tenney Temperature Chamber
11. AC Voltmeter, HP 400FL, Serial No 2213A14499. Cal. 9/21/99
12. Digital Multimeter, Fluke 8010A/12A, Serial No. 4810047. Cal 9/21/99
13. Digital Multimeter, Fluke 77, Serial No. 43850817. Cal 9/21/99
14. Oscilloscope, Tektronix 2230, Serial No. 300572. Cal 9/23/99

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