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FCC ID: GOXTF460

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LAST ITEM.....USER'S MANUAL INCLUDING THEORY OF OPERATION

GENERAL INFORMATION REQUIRED FOR TYPE ACCEPTANCE

2.983 (a,b,c) TEKK INC. will manufacture the FCCID: GOXTF460 FAMILY RADIO SERVICES SINGLE CHANNEL TRANSCEIVER in quantity, for use under FCC RULES PART 95.

2.983 (d) TECHNICAL DESCRIPTION

2.983 (d) (1) Type of Emission: 10K4F3E
95.629

Bn = 2M + 2DK
M = 3000
D = 2.4K
Bn = 2(3.0)+2(2.2) = 10.4K

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: 200 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.

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

FINAL AMPLIFIER ONLY
Vce = 5.9 Volts DC Ice = 0.13A.
Pin = 0.79 Watts

2.983 (d) (6) Function of each electron tube or semiconductor device or other active circuit device: SEE PAGE 3A

2.983(d) (7) Complete Circuit Diagrams: The circuit diagram is included as PAGE 15 of this report. The block diagrams are included as PAGES 16 of this report.

2.983(d) (8) Instruction book. A draft copy of the instruction manual is included as LAST ITEM.

2.983 (d) (9) Tune-up procedure. The tune-up procedure is included INCLUDED IN USER'S MANUAL.

(10) Description of all circuitry and devices provided for determining and stabilizing frequency is given in INCLUDED IN USER'S MANUAL. The crystal specifications are included as PAGES NA.

2.983 (d)(11) Description of any circuits or devices employed for suppression of spurious radiation, for limiting modulation, and for limiting power will be INCLUDED IN USER'S MANUAL.

(12) Digital modulation. This unit does not use digital modulation.

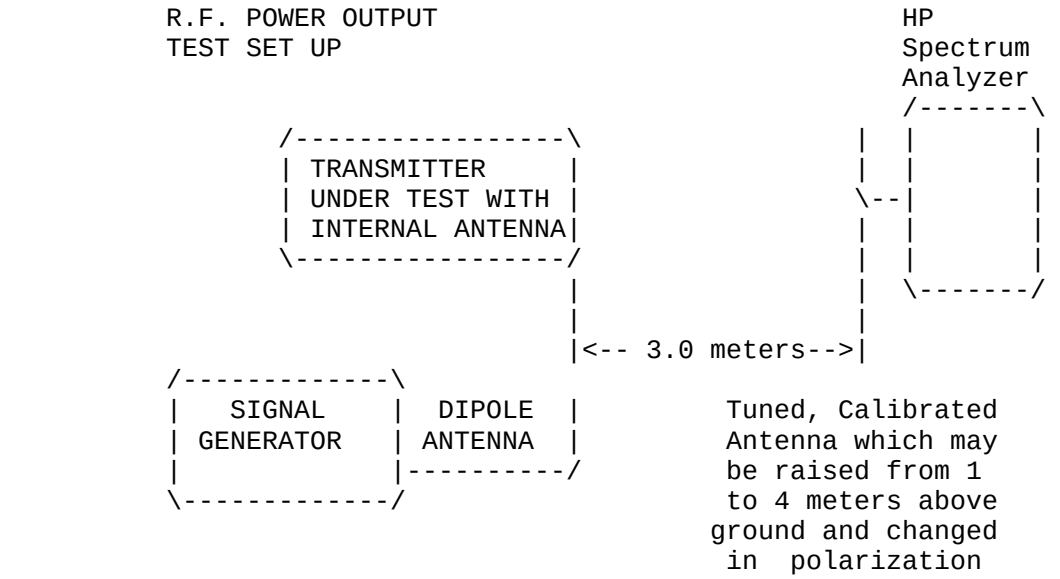
2.983(e) The data required by 2.985 through 2.997 is submitted below.

2.985(a) RF power output.

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

MEASURED POWER OUTPUT = 200 milliWatts ERP

R.F. POWER OUTPUT
TEST SET UP



Equipment placed 1 meter above ground
on a rotatable platform.

2.987(a)(b) Modulation characteristics:

AUDIO FREQUENCY RESPONSE

The audio frequency response was measured in accordance with TIA/EIA Specification 603. The audio frequency response curve is shown on the next page. The audio signal was fed into a dummy microphone circuit and into the microphone connector. The input required to produce 30 percent modulation level was measured.

2.987(b) 1 AUDIO INPUT VERSUS MODULATION

The audio input level needed for a particular per-percentage of modulation was measured in accordance with TIA/EIA Specification 603. The audio input curves versus modulation are on the following pages. Curves are provided for audio input frequencies of 300, 1000, and 3000 Hz.

95.635(b) POST LIMITER FILTER

The filter must be between the modulation limiter and the modulated stage. At any frequency between 3 & 20KHz the filter must have an attenuation of 60log (f/3) greater tha the attenuation at 1KHz. See the proceeding page.

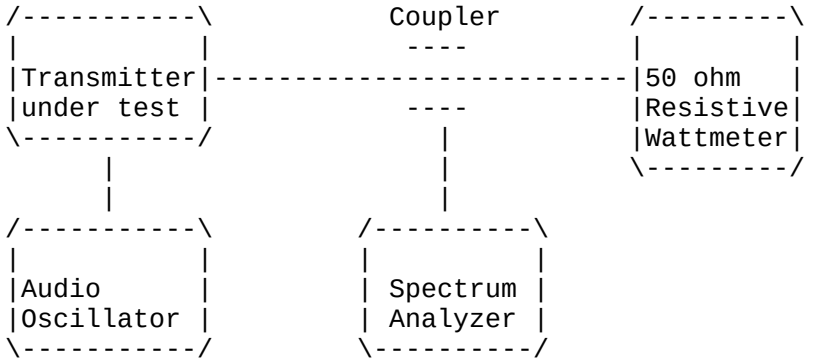
2.989(c) EMISSION BANDWIDTH:
95.633(b)(1)(3)(7)

Data in the plots shows that the sidebands from greater than 50% to 100% of the authorized bandwidth must be attenuated by at least 25dB and from 100 to 250% the sidebands must be attenuated by at least 35dB. Beyond 250% the sidebands must be attenuated by at least 43+log10(TP). The transmitter was modulated with 2500 Hz, 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.

Radiotelephone transmitter with modulation limiter.

Test procedure diagram

OCCUPIED BANDWIDTH MEASUREMENT



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 + 10log(TP) = 43 + 10log(0.5) = 40.00dB

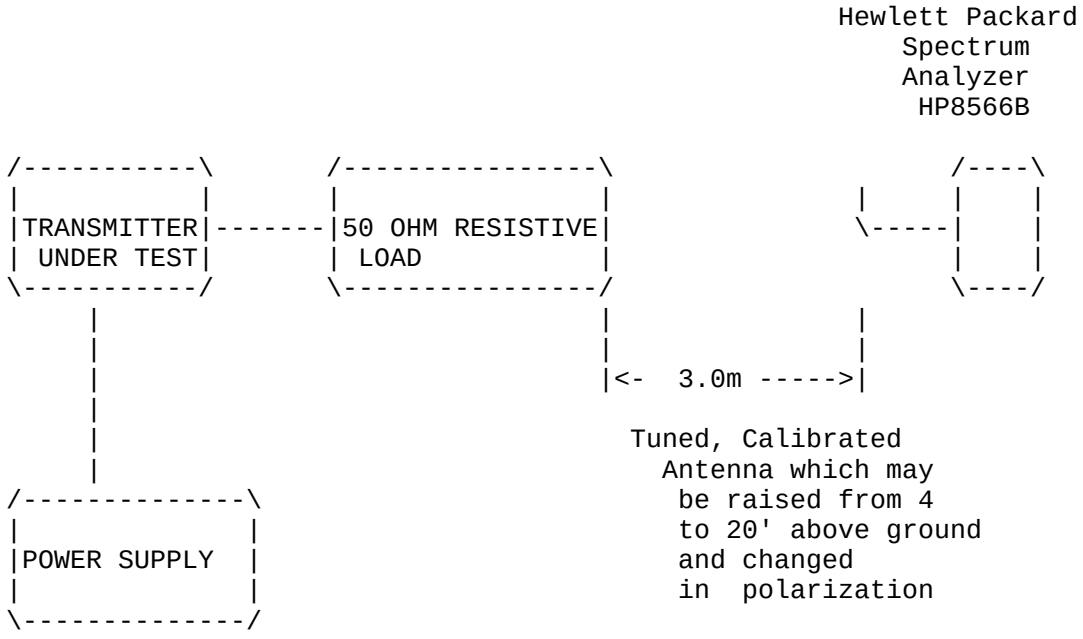
EMISSION FREQUENCY MHz	METER READING @3m dBuV	COAX LOSS dB	A.C.F. dB	AVERAGE FIELD STRENGTH dBuV/m@3m	ATT. dB	MARGIN dB	ANT.
462.56	99.90	1.60	18.44	119.94	0.00	0.00	V
925.16	41.30	2.90	24.10	68.30	50.74	10.74	V
1387.74	36.30	1.00	25.55	62.85	56.19	16.19	V
1850.28	29.80	1.01	27.40	58.21	60.83	20.83	V
2312.88	33.60	1.08	28.78	63.46	55.58	15.58	V
2775.38	41.50	1.15	29.94	72.58	46.45	6.45	V
3237.94	37.20	1.22	31.09	69.51	49.53	9.53	V
3700.54	36.10	1.29	32.25	69.64	49.40	9.40	V
4163.08	30.10	1.35	33.18	64.64	54.40	14.40	V
4625.66	23.10	1.42	33.70	58.23	60.81	20.81	V

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

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.

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

Method of Measuring Radiated Spurious Emissions



Equipment placed 4' above ground
on a rotatable platform.

2.995(a)(b)(d) Frequency stability:

Temperature and voltage tests were performed to verify that the frequency remains within the 0.00025%, 2.5 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 and minus 15% of the battery voltage of 6.0VDC.

MEASUREMENT DATA:

Assigned Frequency (Ref. Frequency): 462.562 500

	TEMPERATURE C	FREQUENCY MHz	PPM
	REFERENCE	462.562 500	00.00
	-20	462.561 670	-1.79
	-10	462.563 000	+1.08
	0	462.563 400	+1.95
	+10	462.563 220	+1.55
	+20	462.562 890	+0.84
	+30	462.562 200	-0.65
	+40	462.562 150	-0.76
	+50	462.561 890	-0.90
20c	BATT. End-Point 4.5V/dc	462.562 100	-0.86

RESULTS OF MEASUREMENTS: The maximum frequency variation over the temperature range was 1.95 to -1.79 ppm. The maximum frequency variation with voltage was -0.86ppm.

2.983(f) Photo or Drawing of Label:
See Page 17.

2.983(g) Photos of Equipment:
See Pages 18-23.

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. Frequency Counter - Hewlett Packard Model 5383A
   S/N 2338A06071

2. SPECTRUM ANALYZER - HP Model 8566B

3. RF PRE-SELECTOR - HP Model 85685A

4. QUASI-PEAK ADAPTER - HP 85650A

5. RF Power Meter - Bird Model 43 Serial 81398

6. RF Attenuators - Narda MOD 766-20

7. Audio Oscillator - Hewlett Packard Model 201C
   Serial 351-06107

8. Modulation meter - IFR MODEL AM/FM 500A.

9. Voltmeter - Hewlett Packard Model 427A
   Serial Number 731-0751

10. HP Distortion Analyzer Model No. 334A
    Serial Number 822-01817

11. Tenney Temperature Chamber

11. Eaton Biconical antenna Model 94455-1 antenna kit 20-200 MHz

12. Electro-Metric Dipole Kit 20-1000MHz, Model TDA 25

13. Electro-Metrics RGA-180 antenna kit 1- 18 GHz

14. HP broadband preamplifier model 8447D, serial no.
    1644A00978, 30 - 1000 MHz.