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FCC ID: AMWUT873

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GENERAL INFORMATION REQUIRED

FOR TYPE ACCEPTANCE

2.1033 (a,b,c) UNIDEN AMERICA CORPORATION will manufacture the
FCCID: AMWUT873 FAMILY RADIO SERVICES 14 CHANNEL
TRANSCIVER in quantity, for use under FCC RULES
PART 95.

2.1033 (c) TECHNICAL DESCRIPTION

2.1033(b) (4) Type of Emission: 11K0F3E
95.631

Bn = 2M + 2DK

M = 3000

DK = 2200

Bn = 2(3.0)+2(2.2) = 10.4 K (Rounded up to 11.0K)

Authorized Bandwidth 12.5KHz

2.1033(c) (5) Frequency Range: 1. 462.5625 8. 467.5625
95.629(d) 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

2.1033(c)(6) Power Output shall not exceed 0.500 Watts effective
95.639(d) radiated power. There can be no provisions for
95.647 increasing the power.

2.1033(c)(7) Maximum Output Power Rating: 500 milliWatts
95.639(d) effective radiated power.

95.647 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.

2.1033(c)(8) 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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2.1033(c)(9) Tune-up procedure. The tune-up procedure is included

2.1033(c)(10) Complete Circuit Diagrams: The circuit diagram is included. The block diagrams are included.

2.1033(c)(11) Photograph or Drawing of Label: Included

2.1033(c)(12) Photos of Equipment: Included

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

2.1033(7) RF power output.

95.639 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

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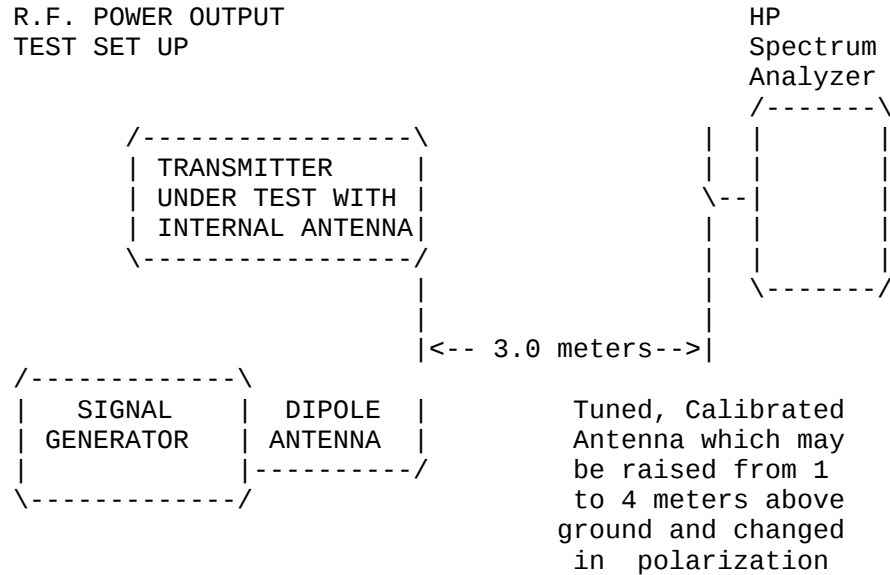
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R.F. POWER OUTPUT
TEST SET UP



Equipment placed 1 meter above ground
on a rotatable platform.

2.1047(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.

2.1047(b) Audio input versus modulation

The audio input level needed for a particular 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.

95.637(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 than the attenuation at 1KHz. see the proceeding page.

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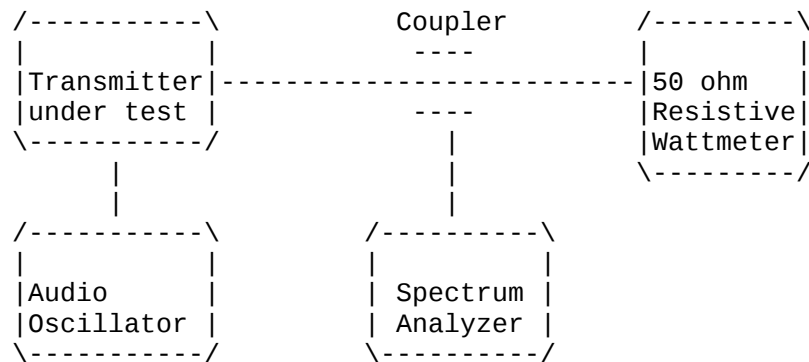
2.1049 EMISSION BANDWIDTH:
95.635(b)(1)(3)(7)

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 $43 + \log_{10}(TP)$. 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



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2.1051 Not Applicable, no antenna terminal allowed.

2.1053(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:

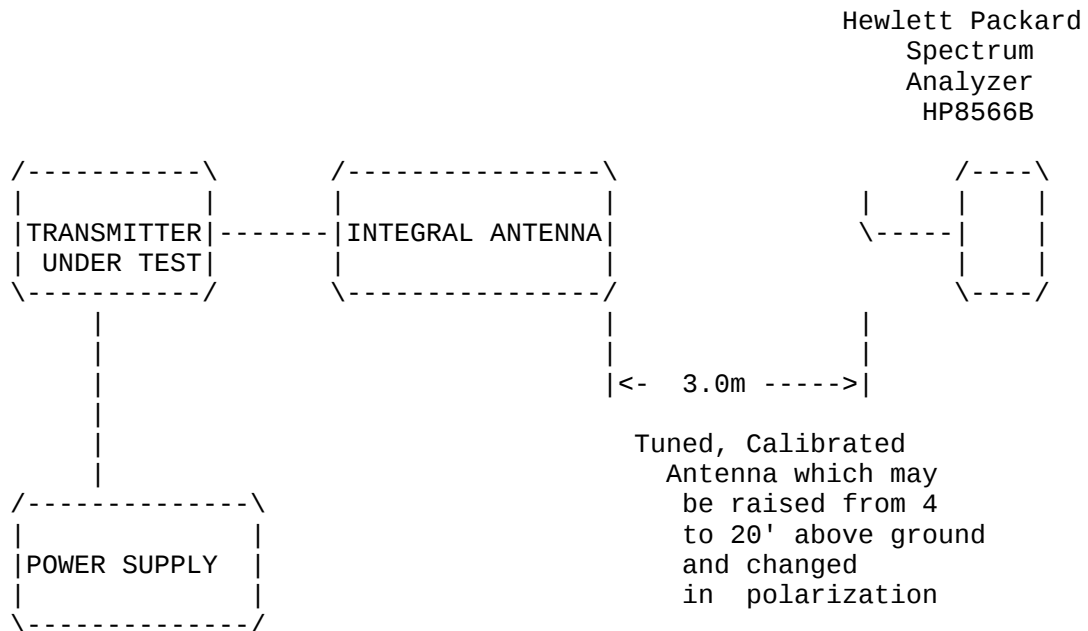
EMISSION FREQUENCY MHz	METER READING @ 3m dBuV	COAX LOSS dB	ACF dB	FIELD STRENGTH dBuV/m	FCC LIMIT dB	MARGIN ANT.	
467.71	103.40	1.60	18.56	123.56	124.37	0.81	V
935.42	40.00	2.90	24.18	67.08	40.00	27.08	H
1403.13R	37.90	1.00	25.61	64.51	40.00	24.51	H
1870.84	29.30	1.01	27.48	57.79	40.00	27.79	V
2338.55R	28.00	1.08	28.85	57.93	40.00	27.93	H
2806.26R	36.20	1.15	30.02	67.37	40.00	27.37	V
3273.97	38.70	1.22	31.18	71.11	40.00	27.11	V
3741.68R	43.10	1.29	32.35	76.75	40.00	36.75	V
4209.39R	29.10	1.36	33.24	63.70	40.00	23.70	H
4677.10R	26.20	1.43	33.76	61.39	40.00	21.39	H

METHOD OF MEASUREMENT: The procedure used was C63.4-1992 with the the unit was operating into its permanently attached antenna at a height of 0.8 meters. 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 & RGA 180. Measurements were made at the open field test site of TIMCO ENGINEERING INC. located at 849 NW State Road 45 Newberry, FL 32669.

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2.1053(a)(b) UNWANTED RADIATION:
95.635(b)

Method of Measuring Radiated Spurious Emissions



Equipment placed 0.8 meters above ground
on a rotatable platform.

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2.1055(a)(2) 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 4.5 VDC.

MEASUREMENT DATA:

Assigned Frequency (Ref. Frequency): 467.712 500

TEMPERATURE oC	FREQUENCY MHz	PPM
REFERENCE_____	467.712 500	00.00
-20_____	467.711 836	-1.42
-10_____	467.712 102	-0.85
0_____	467.712 450	-0.10
+10_____	467.712 550	+0.10
+20_____	467.712 590	+0.20
+30_____	467.712 210	-0.62
+40_____	467.711 960	-1.15
+50_____	467.712 060	-0.95

20c BATT. End-Point 4.5V/dc 467.712 550 +0.10

RESULTS OF MEASUREMENTS: The maximum frequency variation over the temperature range was -1.42 to +0.20 ppm. The maximum frequency variation with voltage was +0.28ppm.

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TEST EQUIPMENT LIST

1. ☒ 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. ☒ Signal Generator: HP 8640B, S/N 2308A21464 Cal. 9/23/99
3. ☐ Signal Generator: HP 8614A, S/N 2015A07428 Cal. 5/29/99
4. ☐ Passive Loop Antenna: EMC0 Model 6512, 9KHz to 30MHz, S/N 9706-1211 Cal. 6/23/97
5. ☒ Biconnical Antenna: Eaton Model 94455-1, S/N 1057
6. ☒ Log-Periodic Antenna: Electro-Metrics Model EM-6950, S/N 632
7. ☐ Dipole Antenna Kit: Electro-Metrics Model TDA-30/1-4, S/N 153 Cal. 11/24/99
8. ☒ Double-Ridged Horn Antenna: Electro-Metrics Model RGA-180, 1-18 GHz, S/N 2319 Cal. 4/27/99
9. ☐ Horn 40-60GHz: ATM Part #19-443-6R
10. ☐ Line Impedance Stabilization Network: Electro-Metrics Model ANS-25/2, S/N 2604 Cal. 11/30/99
11. ☐ Line Impedance Stabilization Network: Electro-Metrics Model EM-7820, S/N 2682 Cal. 12/1/99
12. ☒ Temperature Chamber: Tenney Engineering Model TTRC, S/N 11717-7
13. ☒ AC Voltmeter: HP Model 400FL, S/N 2213A14499 Cal. 9/21/99
14. ☐ Digital Multimeter: Fluke Model 8012A, S/N 4810047 Cal 9/21/99
15. ☒ Digital Multimeter: Fluke Model 77, S/N 43850817 Cal 9/21/99
16. ☐ Oscilloscope: Tektronix Model 2230, S/N 300572 Cal 9/23/99
17. ☐ Frequency Counter: HP Model 5385A, S/N 3242A07460 Cal 10/6/99
18. ☒ Special low loss cable was used above 1 GHz

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