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APPLICANT: MUSICAL ELECTRONICS LTD.

FCC ID: AUIFRS-100

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2.1033(c)(1)(2)MUSICAL ELECTRONICS LTD. will manufacture the
FCCID: AUIFRS-100 FAMILY RADIO SERVICES 14 CHANNEL
TRANSCEIVER in quantity, for use under FCC RULES
PART 95.

2.1033(c)(3) Instruction book. A draft copy of the instruction manual is included as EXHIBIT 8.

Authorized Bandwidth 12.5KHz

2.1033(c)(6)(7) Power Output shall not exceed 0.500Watts effective
95.637 radiated power. There can be no provisions for
95.647 increasing the power or varying the power. The Maximum
Output Power Rating: 500 milliWatts
effective radiated power.

2.1033(c)(8) DC Voltages and Current into Final Amplifier:

$$P_{in} = 0.54 \text{ Watts}$$

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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. See exhibit 9.

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. See Exhibit 10A-10C.

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 $60\log(f/3)$ greater than the attenuation at 1KHz. See exhibit 11.

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

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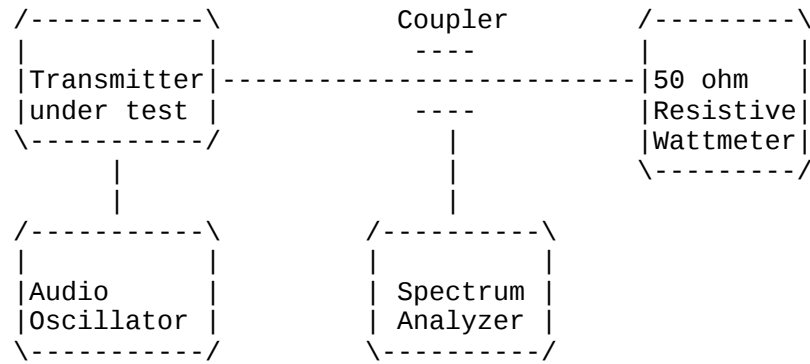
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Radiotelephone transmitter with modulation limiter.

Test procedure diagram

OCCUPIED BANDWIDTH MEASUREMENT



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2.1051 Not Applicable, no antenna terminal allowed.

2.1053 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.
462.69	104.00	1.60	18.44	124.04	0.0	0.33	V
925.34	54.40	2.90	24.10	81.40	42.64	12.64	V
1388.03R	50.80	1.00	25.55	77.35	46.69	16.69	V
1850.67	34.00	1.01	27.40	62.41	61.63	21.63	H
2313.33R	35.00	1.08	28.78	64.86	59.14	19.14	V
2775.97R	27.10	1.15	29.94	58.19	65.85	25.85	V
3238.64	19.80	1.22	31.10	52.11	71.93	31.93	V
3701.30R	24.50	1.29	32.25	58.04	66.00	26.00	V
4163.96R	23.30	1.35	33.18	57.84	66.20	26.20	V
4626.65R	20.10	1.42	33.70	55.23	68.81	28.81	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 849 N.W. State Road 45, Newberry, Florida 32669.

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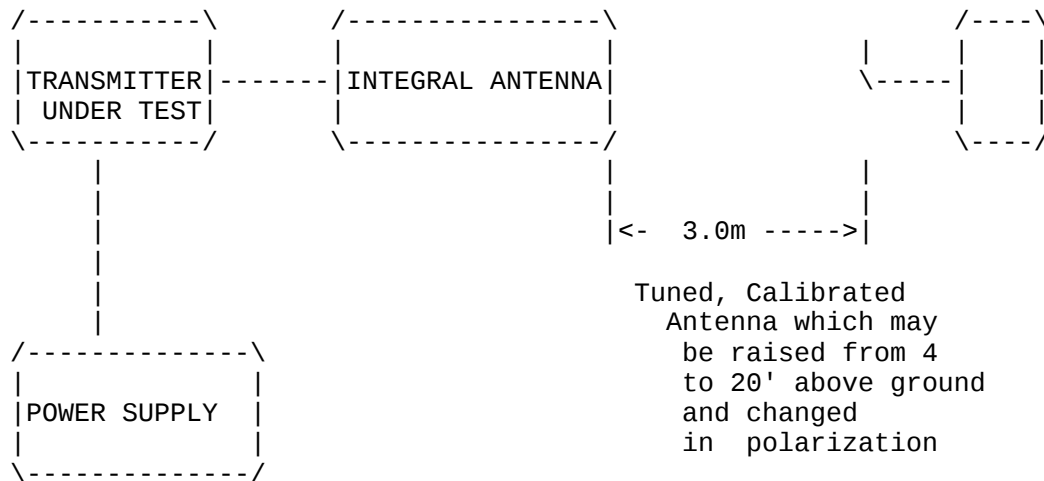
2.1053

UNWANTED_RADIATION:

95.631(b)(8)(9)

Method of Measuring Radiated Spurious Emissions

Hewlett Packard
Spectrum
Analyzer
HP8566B



Tuned, Calibrated
Antenna which may
be raised from 4
to 20' above ground
and changed
in polarization

Equipment placed 4' above ground
on a rotatable platform.

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2.1055

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): 462.562 090

TEMPERATURE_C	FREQUENCY_MHz	PPM
REFERENCE_____	462.562 090	00.00
-20_____	462.561 255	-1.81
-10_____	462.562 170	+0.17
0_____	462.562 570	+1.04
+10_____	462.562 582	+1.06
+20_____	462.562 405	+0.68
+30_____	462.562 110	+0.04
+40_____	462.562 136	+0.10
+50_____	462.562 588	+1.08

20c BATT. End-Point 4.5V/dc 462.562 800 +0.64

RESULTS OF MEASUREMENTS: The maximum frequency variation over the temperature range was -1.81 to +1.08 ppm. The maximum frequency variation with voltage was +0.64ppm.

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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.___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._X_Biconnical Antenna: Eaton Model 94455-1, S/N 1057
- 6._X_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._X_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._X_Temperature Chamber: Tenney Engineering Model TTRC, S/N 11717-7
- 13._X_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._X_Frequency Counter: HP Model 5385A, S/N 3242A07460 Cal 10/6/99

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