TYPE OF TEST: Spurious Emissions at Antenna Terminals

FCC PART: 2.991; 90.210 (d) (3)

MANUFACTURER: RITRON, INC.
505 West Carmel Drive
Carmel, IN 46032

MODEL: RRX-452

TYPE OF UNIT: UHF-FM Voice and Data Full Duplex Repeater

FCC ID: AIERIT05-452

DATE: August 25, 1998

PROCEDURE:

The RRX-452 was aligned for transmitter operation at 464.600 MHz (Fo) per the tune-up procedure in the preliminary manual.

These tests were conducted as specified in 2.991 "under the conditions specified in 2.989 as appropriate" (i.e. "when modulated by a 2500 Hz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation... at the frequency of maximum response of the audio modulating circuit.").

A variable source of DC power was applied to the RRX-452 rear panel connector. This simulates the full range of operating voltages that may be applied to the unit via the external DC power input connector.

The RRX-452 transmitter module's output connector was connected to a 50 Ohm, 100 Watt, 30 dB attenuator. The output of the 30 dB attenuator was connected via a tunable notch filter to the input of the Hewlett Packard Model 8559A Spectrum Analyzer. This notch filter was tuned to 464.6 MHz and its attenuation through 1000 MHz was measured and is included with the 30 dB attenuator in the Correction Factor column. For frequencies above 1000 MHz, the notch filter was removed and the resulting Correction Factor is purely due to the 30 dB attenuator.

The spectrum was searched from 4 MHz (the microcontroller reference crystal which is the lowest frequency used in the unit) to the 10th harmonic of the operating frequency. All unreported emissions were more than 20 dB below the FCC limit of 50 + 10 log Power below the carrier or -60 dBW at 10 Watts or -20 dBm per 90.210 (d) (3).

The test data was obtained using a range of supply voltages and power control settings (R243).

TYPE OF TEST: Spurious Emissions at Antenna Terminals (page 2)
FCC ID: AIERIT05-452
TEST FREQUENCY: 464.600 MHz.

SUPPLY VOLTAGE: 12.6 VDC
POWER OUTPUT: 1.0 Watts (at Transmitter Module Output)

Emission Frequency (MHz.)	Measured Amplitude (dBm)	Correction Factor (dB)	Resultant Amplitude (dBm)	F.C.C. Limit (dBm)
431.8	-78	34	-44	-20
464.6	-42	71	28	n/a
497.4	-78	31	-47	-20
929.2	-70	34	-36	-20
1393.8	-78	30	-48	-20
1858.4	-78	30	-48	-20
2323.0	-78	30	-48	-20
2787.6	-78	30	-48	-20
3252.2	-78	30	-48	-20
3716.8	-75	30	-45	-20
4181.4	-74	30	-44	-20
4646.0	-65	30	-35	-20

SUPPLY VOLTAGE: 12.6 VDC
POWER OUTPUT: 2.0 Watts (at Transmitter Module Output)

Emission Frequency (MHz.)	Measured Amplitude (dBm)	Correction Factor (dB)	Resultant Amplitude (dBm)	F.C.C. Limit (dBm)
431.8	-79	34	-45	-20
464.6	-39	71	+32	n/a
485.82	-78	31	-47	-20
497.4	-75	31	-44	-20
929.2	-70	34	-36	-20
1393.8	-78	30	-48	-20
1858.4	-78	30	-48	-20
2323.0	-70	30	-40	-20
2787.6	-78	30	-48	-20
3252.2	-78	30	-48	-20
3716.8	-78	30	-48	-20
4181.4	-78	30	-48	-20
4646.0	-78	30	-48	-20

TYPE OF TEST: Spurious Emissions at Antenna Terminals (page 3)
FCC ID: AIERIT05-452
TEST FREQUENCY: 464.600 MHz.

SUPPLY VOLTAGE: 12.64 VDC
POWER OUTPUT: 8.0 Watts (at Transmitter Module Output)

Emission Frequency (MHz.)	Measured Amplitude (dBm)	Correction Factor (dB)	Resultant Amplitude (dBm)	F.C.C. Limit (dBm)
431.8	-72	34	-38	-20
464.6	-33.5	71	+37.5	n/a
485.82	-78	31	-47	-20
497.4	-69.5	31	-38.5	-20
929.2	-58	34	-24	-20
1393.8	-72.5	30	-42.5	-20
1858.4	-72.5	30	-42.5	-20
2323.0	-60.5	30	-30.5	-20
2787.6	-78	30	-48	-20
3252.2	-73	30	-43	-20
3716.8	-67.5	30	-37.5	-20
3977	-72.5	30	-42.5	-20
4181.4	-78	30	-48	-20
4646.0	-78	30	-48	-20

SUPPLY VOLTAGE: 13.34 VDC
POWER OUTPUT: 9.0 Watts (at Transmitter Module Output)

Emission Frequency (MHz.)	Measured Amplitude (dBm)	Correction Factor (dB)	Resultant Amplitude (dBm)	F.C.C. Limit (dBm)
431.8	-71	34	-37	-20
464.6	-32.5	71	+38.5	n/a
497.4	-70	31	-39	-20
929.2	-58.5	34	-24.5	-20
1393.8	-72	30	-42	-20
1415	-78	30	-48	-20
1858.4	-66.5	30	-36.5	-20
2323.0	-60	30	-30	-20
3716.8	-70	30	-40	-20

Certifying Engineer: Arnal Cook
Date: August 25, 1998