

**TYPE OF EXHIBIT:** TRANSMITTER EFFECTIVE RADIATED POWER

**FCC PART:** 95.639

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

**MODEL:** JMX-141

**TYPE OF UNIT:** VHF-FM Transceiver

**FCC ID:** AIERIT14-141

**DATE:** March 23, 2001

**PROCEDURE:**

1. The measurement for effective radiated power was taken at the RITRON, Inc. 3 meter test site. The measurement was made in accordance with FCC Rules & Regulations Part 2.947 using the procedures of IEC Publication 106.
2. The JMX-141 was aligned for transmitter operation on 153.50 MHz at the 1.9 watt maximum obtainable from the unit per the tune-up procedure outlined in the Preliminary Maintenance Manual. The unit was then terminated at the antenna port with the only antenna sold with this product.
3. All field strength measurements were made with the Hewlett-Packard Model 8559A Spectrum Analyzer and an Electro-Metrics EM-6924 adjustable dipole antenna.
4. The height and polarization of the field strength measurement antenna and orientation of the JMX-141 were varied to provide maximum field strength.
5. A substitution antenna, an Electro-Metrics EM-6924 adjustable dipole, was substituted for the JMX-141 at the JMX-141's location. An RF signal generator was set for the frequency of the JMX-141 with the level at the substitution antenna noted.
6. The polarization of the substitution antenna was adjusted for maximum signal strength at the field strength measuring antenna. The level at the field strength antenna was noted.

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**EQUATIONS:**

The substitution antenna is specified from the manufacturer in terms of antenna factor rather than antenna gain. The conversion is:

$$Ga(dbd) = 20 \log f \text{ (MHz)} - AF(dB) - 31.9$$

The effective radiated power (ERP) is then:

$$ERP(dBm) = Pr(dBm) + Pgen(dBm) - Ps(dBm) - Ga(dBd)$$

Where:

Pr is the power level of the radio's emission at the receiving antenna output.

Pgen is the RF signal generator level at the substitution antenna output.

Ps is the power level of the substitution antenna emission at the receiving antenna output.

Ga is the gain of the substitution antenna.

The ERP is converted to watts from dBm by:

$$ERP(watts) = \text{antilog}_{10}((ERP(dBm) - 30)/10)$$

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**RESULTS:**

| Pr<br>(dBm) | Pgen<br>(dBm) | Ps<br>(dBm) | Ga<br>(dBd) | ERP<br>(dBm) | ERP<br>(watts) |
|-------------|---------------|-------------|-------------|--------------|----------------|
| -35.8       | 0.0           | -64         | 0.3         | +28.0        | 0.62           |