

TYPE OF TEST: TRANSMITTER EFFECTIVE RADIATED POWER

FCC PART: 2.993 (b)

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

MODEL: SST-444

TYPE OF UNIT: UHF-FM Handheld Transceiver

FCC ID: AIERIT13-450

DATE: September 13, 2000

PROCEDURE:

1. The following measurements were taken at the RITRON, Inc. 3 meter test site. Measurements were made in accordance with FCC Rules & Regulations Part 2.947, using the procedures of IEC Publication 106.
2. The SST-444 was aligned for transmitter operation on 465.0125 MHz at full rated power per the tune-up procedure outlined in the Preliminary Maintenance Manual. The unit was then terminated at the antenna port with the two antennas sold for use with this product.
3. All field strength measurements were made with the Hewlett-Packard Model 8559A Spectrum Analyzer and an Electro-Metrics LP-25 Log Periodic Antenna.
4. The height and polarization of the field strength measuring antenna and orientation of the SST-444 were varied to provide maximum field strength.
5. A substitution antenna, an Electro-Metrics EM-6924 adjustable dipole, was substituted for the SST-444 at the SST-444's location. An RF signal generator was set for the frequency of the SST-444 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 ERP is found from:

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

Where:

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

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

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:

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

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RESULTS:

Radio's Antenna	Pr (dBm)	Pgen (dBm)	Ps (dBm)	Ga (dBd)	ERP (dBm)
AF-450	6.5	0	-27.5	-0.7	34.7
AF-450-S	5.5	0	-27.5	-0.7	33.7

	ERP (watts)
AF-450	3.0
AF-450-S	2.3

TYPE OF TEST: ANTENNA GAIN

FCC PART:

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

MODEL: SST-444

TYPE OF UNIT: UHF-FM Handheld Transceiver

FCC ID: AIERIT13-450

DATE: September 13, 2000

PROCEDURE:

The antenna gain of the antennas available for this product was determined by measuring the conducted output power and the ERP measured via the substitution method.

EQUATION:

$$Ga \text{ (dBd)} = ERP \text{ (dBm)} - Po \text{ (dBm)}$$

RESULTS:

Antenna	ERP (dBm)	Po (dBm)	Ga (dBd)
AF-450	34.7	34.8	-0.1
AF-450-S	33.7	34.8	-1.1