TYPE OF EXHIBIT:	RF WARNING STATEMENT
FCC PART:	1.1310
MANUFACTURER:	RITRON, INC. 505 West Carmel Drive Carmel, IN 46032
FCC ID:	AIERIT18-456
MODELS:	RQX-456, RQX-456-XT
DATE:	February 20, 2004

IC STANDARDS:	RSS-119, Issue 6, Section 9.0
INDUSTRY CANADA:	1084A-RIT18456
MODELS:	RQX-456-CANADA, RQX-456-XT-CANADA

PLEASE NOTE THE FOLLOWING WITH REGARD TO RF EXPOSURE FOR THIS PRODUCT:

1. The User's Manual contains the following text:

EXPOSURE TO RADIO FREQUENCY ENERGY:

RQX-456: This product generates radio frequency (RF) energy when the ON/PTT button on the front of the unit is depressed. This product has been evaluated for compliance with the maximum permissible exposure limits for RF energy at the maximum power rating of the unit when using antennas available from RITRON.

For both the AFB-1545 and RAM-1545 antennas, at the 20 cm (7.9 inches) minimum expected separation distance and greater, the maximum RF exposure is well below the General Population/Uncontrolled limits. Antennas other than those available from RITRON have not been tested for compliance and may or may not meet the exposure limits at the distances given. Higher gain antennas are capable of generating higher fields in the strongest part of their field and would, therefore, require a greater separation from the antenna. This product is not to be used by the general public in an uncontrolled environment unless compliance with the Uncontrolled/General Population limits for RF exposure can be assured.

To limit exposure to RF energy to levels below the limit, please observe the following:

- Use only the antenna(s) available from RITRON for these models. **DO NOT** operate the radio without an antenna.
- Keep talk times as short and infrequent as possible. **DO NOT** depress the ON/PTT button when not actually wishing to transmit. These radios are equipped with an internal timer to limit continuous transmit times.
- When transmitting, make certain that the distance limits for the particular model in use are observed.
- **DO NOT** allow children to operate the radio.

When used as directed, this series of radios is designed to comply with the FCC's RF exposure limits for "Uncontrolled/General Population". In addition, they are designed to comply with the following Standards and Guidelines:

- FCC OET Bulletin 65, Edition 97-01, Supplement C, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
- American National Standards Institute (C95.1-1992), IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
- American National Standards Institute (C95.3-1992), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields-RF and Microwave.

TYPE OF EXHIBIT:	TRANSMITTER EFFECTIVE RADIATED POWER
FCC PART:	1.1310
MANUFACTURER:	RITRON, INC. 505 West Carmel Drive Carmel, IN 46032
FCC ID:	AIERIT18-456
MODELS:	RQX-456, RQX-456-XT
DATE:	October 29, 2003

IC STANDARDS:	RSS-119, Issue 6, Section 9.0
INDUSTRY CANADA:	1084A-RIT18456
MODELS:	RQX-456-CANADA, RQX-456-XT-CANADA

PROCEDURE:

1. The measurement for effective radiated power was taken at the RITRON, Inc. 3-meter test site, details of which are on file with the FCC.

2. The RQX-456 was aligned for transmitter operation on 460.050 MHz at the 2.0 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 antennas sold with this product. (The user can connect other antennas, however.)

3. All ERP measurements were made with a Hewlett-Packard Model 8560E Spectrum Analyzer and an Electro-Metrics LP-25 Log Periodic Antenna.

4. The height of the field strength measurement antenna and orientation of the RQX-456 were varied to provide maximum field strength at the receiving antenna.

5. A substitution antenna, a calibrated ½-wave dipole, was substituted for the RQX-456 at the RQX-456's location. An RF signal generator was set for the frequency of the RQX-456 with the level at the substitution antenna noted.

6. The height of the field strength antenna was adjusted for maximum signal strength at the field strength measuring antenna. The level at the field strength antenna was noted.

TYPE OF EXHIBIT:	TRANSMITTER EFFECTIVE RADIATED POWER
FCC PART:	1.1310
MANUFACTURER:	RITRON, INC. 505 West Carmel Drive Carmel, IN 46032
FCC ID:	AIERIT18-456
MODELS:	RQX-456, RQX-456-XT
DATE:	October 29, 2003

IC STANDARDS:	RSS-119, Issue 6, Section 9.0
INDUSTRY CANADA:	1084A-RIT18456
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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 (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) = $\text{antilog}_{10}((\text{ERP(dBm)} - 30)/10)$

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RESULTS:

Antenna	Pr (dBm)	Pgen (dBm)	Ps (dBm)	Ga (dBd)	ERP (dBm)	ERP (watts)
Nearson AFB-1545	+1.0	0.0	-29.7	0.2	+30.5	1.12
Nearson RAM-1545	-6.7	0.0	-30.1	0.2	+23.2	0.21

Certifying Engineer: Michael A. Pickard

Michael Pickard - Project Engineer

TYPE OF EXHIBIT:	MAXIMUM PERMISSIBLE EXPOSURE EVALUATION
FCC PART:	2.1091(d)(4)
MANUFACTURER:	RITRON, INC. 505 West Carmel Drive Carmel, IN 46032
FCC ID:	AIERIT18-456
MODELS:	RQX-456, RQX-456-XT
DATE:	October 29, 2003

IC STANDARDS:	RSS-119, Issue 6, Section 9.0
INDUSTRY CANADA:	1084A-RIT18456
MODELS:	RQX-456-CANADA, RQX-456-XT-CANADA

PROCEDURE AND EQUATIONS:

The ERP values previously calculated will be used to determine the minimum safe distance from the antenna supplied by RITRON in order not to exceed the General Population/Uncontrolled Limits of RF exposure.

The ERP must be converted to EIRP to simulate an isotropic radiator. This devise is a transceiver; it does not and cannot transmit and receive simultaneously. Typical transmit duty cycles are between 5% and 10%. Over the 30 minute averaging period for General Population/Uncontrolled MPE limits, a 50% maximum duty cycle is reasonable, and will be used in the MPE calculations for this device. Since the unit is categorized as a mobile device, a 50% duty cycle may be used, therefore:

EIRP = 1.64 (ERP/2) For the RQX-456 w/AFB-1545: EIRP = 0.92 W
For the RQX-456 w/RAM-1545: EIRP = 0.17 W

Power density is related to EIRP:

$S(W/m^2) = EIRP(W)/4\pi r^2$ where r is the distance from the source in meters. Rearranging for distance:

$r = SQRT (EIRP/4\pi S)$.

The MPE limit for this device operating in a General Population/Uncontrolled environment is F (MHz)/1500 mW/cm^2, which for this product at the upper band edge is 0.31 mW/ cm^2

For the equation above, mW/cm^2 must be converted to W/m^2. Since 1 $mW/cm^2 = 10 W/m^2$, the FCC limit is 3.1 W/m^2.

Substituting and solving for distance:

Antenna Model	Distance for MPE (in. / cm)
AFB-1545	6.1 / 15.4
RAM-1545	2.6 / 6.6

With the antennas available from RITRON for use with this product, users must remain more than 6.1 inches (15.4 cm) from the AFB-1545 antenna while the unit is transmitting. When using the RAM-1545 antenna, users must remain more than 2.6 inches (6.6 cm) from the AFB-1545 antenna while the unit is transmitting.

For both the AFB-1545 and RAM-1545 antenna, the minimum expected separation of 20 cm (7.9 inches) results in RF exposure levels well below the General Population/Uncontrolled MPE limits. Other antenna may require lesser or greater distances depending upon their gain relative to that available from RITRON.