TRANSMITTER POWER OUTPUT

The transmitter power output of 7.4 kilowatts specified in the instant application is based on the data and calculations that follow.

The main transmission line is 401 meters of Andrew HJ8-50B 3-inch semi-rigid air-dielectric coaxial cable. This transmission line has a loss of 0.447 dB per 100m at 90.1 MHz[1] for a net loss of 1.792 dB for 401 meters. In addition, 21 meters of Myat 301-001 3-1/8" air-dielectric rigid transmission line connects the feedline to the antenna and to the transmitter at the top and bottom of the main feedline run respectively. This transmission line has a loss of 0.289 dB per 100m at 90.1 MHz[2], for a net loss of 0.061 dB. The total transmission line loss is thus 1.853 dB, for a net efficiency of 65.27%.

WRTI transmits with an Electronics Research, Inc. (ERI) model 1084-2CP-DA directional antenna. The antenna yields a maximum power gain of 2.045 dB (1.602)[3]. The authorized effective radiated power is 7.7 kilowatts in the vertical and horizontal polarization planes. The transmitter power output (TPO) required to yield the authorized effective radiated power in the vertical and horizontal polarization planes is 7.364 kilowatts as shown below:

Transmitter Power Output (kW):	7.364
Transmission Line Efficiency:	× 0.6527
Antenna Gain:	× 1.602
Authorized ERP (kW):	7.700

When 7.364 kilowatts is rounded to the nearest 0.1-kilowatt increment as required per 47 CFR §73.212(a), **the licensed transmitter output power becomes 7.4 kilowatts** as specified in the instant application.

The WRTI transmitter, a Nautel model NV15, is certificated for operation at this power level.

[1] Manufacturer's specification

[2] Manufacturer's specification

[3] Manufacturer's specification; see proof-of-performance report