KPCW Transmission System

Transmitter Power Output Calculations

The KPCW Transmission System includes a NiCom FBP800 Bandpass Filter, 26 meters of Andrew LDF 4.5 Heliax Cable, and an ERI 100-2-HW antenna. The Construction Permit authorizes KPCW to utilize an Effective Radiated Power of .25 kW. The following information was used to calculate the Transmitter Power Output for KPCW:

Feed System Efficiency:

In calculating the Feed System Efficiency, the following values were used based on the insertion loss data provided by each manufacturer.

NiCom FSP800 Bandpass Filter
Measured Insertion Loss = .7 db

Andrew LDF 4.5 Heliax (26 meters)
Insertion Loss = .42 dB

Total Insertion Loss: 1.12 dB

Feed System Efficiency: 77.27%

Antenna Gain:

In calculating the Antenna Gain, the following value was used based on data provided by the manufacturer:

Shively 6812-2R-.5SS antenna
Power Gain = .701

TPO Calculations:

$$\frac{\text{Effective Radiated Power}}{\text{Antenna Power Gain} * \text{Feed System Efficiency}} = \text{Transmitter Power Output}$$

$$\frac{.25 \text{ kW}}{.701 * .7727} = \textbf{.4615 kW TPO}$$