W212CC TPO Calculation

Antenna	**Gain (dB)**
BEXT TFC2K Single Bay (at 90.3 Mhz)	-4.0 dB (power = 0.400)
Transmission System parts	**Loss (dB)**
Main Coax Run 40' ½" LDF4-50A Heliax 45'	0.282 dB
Connectors at Top: Two 7/8" EIA	0.10
Bottom Jumpers: Four 8' RG214 w/Type-N Connectors	0.72
In rack: Polyphaser Lightning Arrestor IS-50NX-C2	0.10
In rack: Telewave T-1030 Isolator	0.65
In rack: Telewave TPRC-1005-1 Pass Cavity	1.00

At 90.3 MHz, LDF4-50A Heliax exhibits a loss of 0.627/100 ft.
LDF4-50A Loss: 0.627*45/100 = 0.282 dB

Each EIA 7/8" connector exhibits 0.05 dB of loss; Two EIA 7/8" Connectors loss = 0.10 dB

Transmission System parts Loss: .282 + .1 + .72 + .1 + .65 + 1.0 = 2.852 dB

Licensed ERP = 10 W

Power at antenna needed to achieve 10 W: 10/.4 = 25 W

Now take into account transmission system parts loss to get TPO:

dB = 10 Log P1/P2

Transmission System Loss = 10 log (TPO/Power at Antenna)

2.852 = 10 Log (TPO/25)

$10^{0.2852}$ = TPO/25

1.928= TPO/25

1.928 * 25

TPO = 48.20 W