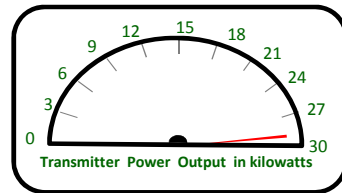
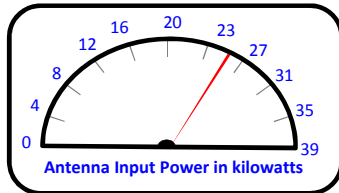


TPO Calculation Summary

Main Antenna Operation

Call letters: **KDNW(FM)**
 City of License: **Duluth, MN**
 Frequency: **CH247C1 - 97.3 MHz**
 File No: **License Modification**
 Facility ID: **49797**
 Applicant: **Northwestern College**



Operating Effective Radiated Power (ERP): **72.0 kW**

Antenna Make: **ERI**
 Antenna Model: **SHPX-5AC**
 No of Elements: **Five (5)**
 Antenna COR AGL: **99 meters AGL**
 Antenna COR AMSL: **474 meters AMSL**
 Max Input Power: **39.0 kW**
 Power Gain: **2.7154**

$\text{Log}[\text{power gain}] * 10 = \text{Antenna Gain: } 4.338 \text{ dB}$

Calculated Antenna Input Power: **26.515 kW**

Transmitter Make/Model: **TBD**

Transmitter Rated Power: **30.0 kW**

System Loss Info:

<u>Description</u>	<u>Component Make/Model</u>	<u>Length</u>	<u>Loss</u>
4 Inch End Connector	Generic (1@0.01 dB each)		-0.010 dB
Main Antenna Feedline	RFS 4" HCA400-50J (Air) (0.110 dB/100 ft)	342 ft	-0.376 dB
4 Inch End Connector	Generic (1@0.01 dB each)		-0.010 dB
Reducer (4" to 3 1/8")	Generic (1@0.02 dB each)		-0.010 dB

TOTAL SYSTEM GAIN/LOSS: **3.932 dB**

$1 / [10^{(3.932/10)}] \times \text{ERP} = \text{CALCULATED TRANSMITTER POWER OUTPUT: } 29.1 \text{ kW}$

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