

# TPO Calculation Summary

## Main Antenna Operation

**Call letters:** KJOE(FM)  
**City of License:** Slayton, MN  
**Frequency:** CH291C2 (106.1 MHz)  
**File No:** BPH-20150922ACB  
**Facility ID:** 70736  
**Applicant:** Wallace Christensen

**Operating Effective Radiated Power (ERP):** 10.0 kW

**Antenna Make:** Dielectric (DIE)  
**Antenna Model:** DCRM-6-DC  
**No of Elements:** Six (6)  
**Antenna COR AGL:** 295 meters AGL  
**Antenna COR AMSL:** 851 meters AMSL  
**Max Input Power:** 40.0 kW  
**Power Gain:** 2.7

$\text{Log}[\text{power gain}] * 10 = \text{Antenna Gain: } 4.314 \text{ dBd}$   
**Calculated Antenna Input Power:** 3.704 kW

### System Loss Info:

<u>Description</u>	<u>Component Make/Model</u>	<u>Length</u>	<u>Loss</u>
6 1/8" to 4" Gas Barrier Flange-1	Andrew H11FB-602-S (6 1/8" Flange)		-0.020 dBd
Main Feedline (tower)	Dielectric 6 1/8" 50-ohm Hardline (0.055 dB/100 ft)	1010 ft	-0.556 dBd
6 1/8" to 4" Gas Barrier Flange-2	Andrew H11FB-602-S (6 1/8" Flange)		-0.020 dBd
Main Feedline (ground)	Andrew HJ11-50 4" (air line) (0.115 dB/100 ft)	45 ft	-0.052 dBd
Diplexer	Dielectric Model DFC24003BR2 Branch Combiner		-0.200 dBd
Motorized Switch	Dielectric Model 50000		-0.100 dBd
Transmitter Side Jumper 1	Andrew VXL7-50 Flex (or equivalent) (0.235 dB/100 ft)	7 ft	-0.016 dBd
Transmitter Side Jumper 2	Andrew VXL7-50 Flex (or equivalent) (0.235 dB/100 ft)	7 ft	-0.016 dBd
3 1/8" to 4" Coupler(s)	Generic (2@0.02 dB each)		-0.040 dBd
3 1/8" to 1 5/8" Coupler(s)	Generic (4@0.02 dB each)		-0.080 dBd
3 1/8" Elbow(s)	Generic (4@0.02 dB each)		-0.080 dBd
3 1/8" Coupler(s)	Generic (2@0.02 dB each)		-0.040 dBd
1 5/8" Coupler(s)	Generic (4@0.02 dB each)		-0.080 dBd

**TOTAL SYSTEM GAIN/LOSS:** 3.01 dBd  
 $1 / [10^{(3.01 \text{ dBd} / 10)} / \text{ERP}] = \text{CALCULATED TRANSMITTER POWER OUTPUT: } 4.996 \text{ kW}$