

TPO Calculation Summary

Main Antenna Operation

Call letters: WCMU-FM
City of License: Mount Pleasant, MI
Frequency: CH208C1 (89.5 MHz)
File No: BPED-20130710ABF
Facility ID: 9918
Applicant: Central Michigan University Board of Trustees

Operating Effective Radiated Power (ERP): 100.000 kW

Antenna Make: Harris
Antenna Model: SKM-12C (Skytiller)
No of Elements: Twelve (12)
Antenna COR AGL: 128 meters AGL
Antenna COR AMSL: 371 meters AMSL
Power Gain: 6.614
 $\text{Log}[\text{power gain}] * 10 = \text{Antenna Gain: } 8.205 \text{ dB}$
Calculated Antenna Input Power: 15.119 kW

System Loss Info:

<u>Description</u>	<u>Component Make/Model</u>	<u>Length</u>	<u>Loss</u>
Main Antenna Feedline (Tower)	Andrew 3" HJ8-50B (Air) (0.136 dB/100 ft)	475 ft	-0.646 dB
Main Antenna Feedline (Ground)	Andrew 3 1/8" Rigid (#562A) (0.097 dB/100 ft)	18 ft	-0.017 dB
3 Inch End Connector(s)	Generic (2@0.01 dB each)		-0.020 dB
3 Inch End Elbow(s)	Generic (13@0.01 dB each)		-0.130 dB
Hairpin Patch Coupler(s)	Generic (2@0.01 dB each)		-0.020 dB
High-Level IBOC Combiner	Dielectric Part Number R99955		-0.460 dB

TOTAL SYSTEM GAIN/LOSS: 6.911 dB
 $1 / [10^{(dB/10)/ERP}] = \text{CALCULATED TRANSMITTER POWER OUTPUT: } 20.365 \text{ kW}$