

ENGINEERING REPORT
PARTIAL PROOF OF PERFORMANCE
on
WMIC(AM) – Sandusky, MI
December, 2020

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MUNN-REESE
Broadcast Engineering Consultants
Coldwater, MI 49036

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CERTIFICATION OF ENGINEERS


The firm of Munn-Reese, Broadcast Engineering Consultants, with offices at 385 Airport Drive, Coldwater, Michigan, has been retained for the purpose of preparing the technical data forming this report.

The data utilized in this report is based on field measurements made by the undersigned, or others under the supervision of the undersigned, on the dates and times indicated in the report.

The report has been prepared by properly trained electronics specialists under the direction of the undersigned whose qualifications are a matter of record before the Federal Communications Commission.

I declare under penalty of perjury that the contents of this report are true and accurate to the best of my knowledge and belief.

December 14, 2020

By 
Edmond R. Trombley, Senior Engineer

DISCUSSION

The firm of Munn-Reese, was retained to prepare this report detailing a Daytime Directional Partial Proof of Performance on AM Radio Station WMIC(AM), for Sanilac Broadcasting, Sandusky, MI.

A partial proof was conducted after the installation of a translator antenna on the north tower of WMIC(AM). The call sign for the FM Translator is W237EQ(FX). The data contained herein is being submitted to show the WMIC operation remains essentially unchanged after the translator antenna was installed. The after measurements were compared back to the WMIC(AM), 1988, full proof.

Field strength measurements on the day pattern were conducted by Mr. Edmond Trombley, Engineer for Munn-Reese. Mr. Trombley made his measurements using a Potomac Instruments Field Intensity Meter, Model #FIM-41, S/N 1263, Calibration Date: 3/21/2019.

Measurements were taken on the two (2) daytime monitor point radials, meeting the requirements of 47 C.F.R. §73.154(a) of the FCC Rules. Field strength measurements were taken on the dates and at the times indicated

in the respective Tabulations of Field Strength Measurements, shown as *Figure 1* and *Figure 2* for the daytime operation. The tabulation sheets show the distance from the transmitter site to each point in units of kilometers. The locations and point numbers were derived from topographical maps used in a previous full proof.

Figure 3 indicates the tabulated ratios and averages of the direct and log ratios for the WMIC(AM) monitor point radials. As can be seen the 110°T and the 240°T radial have tracked each other very well.

As well *Figure 4*, a table of operating data for the WMIC(AM) directional array shows compliance with the FCC licensed array data.

**Figure 1 – Radials 110.0° Day Directional
Tabulation of Field Strength Measurements**

Call:	WMIC			Frequency (kHz): 660	Power (kW): 1.00				
				Bearing (°T): 110°					
Point	1988 Day Directional			2020 Day Directional			Distance	Direct	Log
#	mV/m	Time	Date	mV/m	Time	Date	km	Ratio	Ratio
19	24.5		1988	24.00	1410	12/10/2020	4.62	0.9796	MP -0.0206
20	22.4		1988	22.00	1415	12/10/2020	4.78	0.9843	-0.0158
21	19.5		1988	19.00	1423	12/10/2020	5.72	0.9744	-0.0260
22	14.8		1988	17.00	1429	12/10/2020	6.54	1.1486	0.1386
23	12.5		1988	16.00	1455	12/10/2020	7.80	1.2800	0.2469
24	10.9		1988	11.00	1530	12/10/2020	8.32	1.0092	0.0091
25	9.3		1988	9.20	1555	12/10/2020	10.00	0.9892	-0.0108
26	7.8		1988	7.20	1620	12/10/2020	11.93	0.9231	-0.0800
							Arithmetic Ratio:	1.0361	
							Log Ratio:	1.0306	

**Figure 2 - Radials 85.0° Day Directional
Tabulation of Field Strength Measurements**

Call:	WMIC			Frequency (kHz): 660	Power (kW): 1.00				
				Bearing (°T): 240°					
Point	1988 Day Directional			2020 Day Directional			Distance	Direct	Log
#	mV/m	Time	Date	mV/m	Time	Date	km	Ratio	Ratio
20	37.0		1988	38.00	1010	12/10/2020	4.62	1.0270	MP 0.0267
21	31.0		1988	29.00	1015	12/10/2020	4.78	0.9355	-0.0667
22	21.0		1988	21.00	1023	12/10/2020	5.72	1.0000	0.0000
23	14.2		1988	15.00	1030	12/10/2020	6.54	1.0563	0.0548
24	16.8		1988	16.50	1045	12/10/2020	7.80	0.9821	-0.0180
25	12.5		1988	13.20	1109	12/10/2020	8.32	1.0560	0.0545
26	10.5		1988	10.50	1115	12/10/2020	10.00	1.0000	0.0000
27	8.8		1988	9.00	1130	12/10/2020	11.93	1.0227	0.0225
							Arithmetic Ratio:	1.0100	
							Log Ratio:	1.0093	

Figure 3
Tabulation of Ratios

Radial	Arithmetic Ratio	Log Ratio
110°T	1.0361	1.0306
240.0°T	1.0100	1.0093
Average:	1.0230	1.0199

Figure 4
Directional Array Operating Data

Common Point measured at: 50 +J zero.

Common Point input Power: 1080 watts

Common Point Current: 4.65 Amps

Tower 1 phase: -142.5° Licensed Tower 1 phase: -142.0° Measured.

Tower 1 Ratio: 61.0 Licensed Tower 1 Ratio: 61.0 Measured.

Tower 2 phase: 0° Licensed Reference Tower.

Tower 2 Ratio : 100 Licensed Reference Tower.

110°T Licensed Monitor Point Limit: 27.1 mV/m. Measured at 24.0 mV/m.

240°T Licensed Monitor Point Limit: 39.2 mV/m. Measured at 38.0 mV/m.