SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant: Jackson Radio Works, Inc.

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

☑ Station License ☐ Direct Measurement of Power

1. Facilities authorized in construction permit					
Call Sign	File No. of Construction Permit (if applicable)	Frequency (kHz)	Hours of Operation	Power in kilowatts	
				Night	Day
WKHM	BP-20160222AAN	970	UNLIMITED	1.0	1.0

2. Station location	
State	City or Town
MICHIGAN	JACKSON

3. Transmitter location			
State	County	City or Town	Street address (or other identification)
MI	JACKSON	JACKSON	1700 GLENSHIRE DR.

4. Main studio location			
State	County	City or Town	Street address (or other identification)
MI	JACKSON	JACKSON	1700 GLENSHIRE DR.

5. Remote control point location (specify only if authorized directional antenna)			
State	County	City or Town	Street address (or other identification)

6. Has type-approved stereo generating equipment been installed? ☐ Yes ☑ No

7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68? ☑ Yes ☐ No ☐ Not Applicable

Attach as an Exhibit a detailed description of the sampling system as installed. Exhibit No.

8. Operating constants:	
RF common point or antenna current (in amperes) without modulation for night system: 4.65 AMPS	RF common point or antenna current (in amperes) without modulation for day system: 4.65 AMPS
Measured antenna or common point resistance (in ohms) at operating frequency — Night: 50.0 Day: 50.0	Measured antenna or common point reactance (in ohms) at operating frequency — Night: J ZERO Day: J ZERO

Antenna indications for directional operation

Towers	Antenna monitor Phase reading(s) in degrees		Antenna monitor sample current ratio(s)		Antenna base currents	
	Night	Day	Night	Day	Night	Day
TOWER #1 N.	-161.0	-142.5	55.0	53.0		
TOWER #2 NC.	0.0	0.0	100	100		
TOWER #3 SC.	155.0	153.5	115.5	61.5		
TOWER #4 S.	-52.5	---	55.0	---		

Manufacturer and type of antenna monitor: POTOMAC AM-19 (204)

Note: FCC Numbers tower in Reverse order.

SECTION III - Page 2

9. Description of antenna system ((f directional antenna is used, the information requested below should be given for each element of the array. Use separate sheets if necessary.)

Type Radiator	Overall height in meters of radiator above base insulator, or above base, if grounded.	Overall height in meters above ground (without obstruction lighting)	Overall height in meters above ground (include obstruction lighting)	If antenna is either top loaded or sectionalized, describe fully in an Exhibit.
4 vertical uniform guyed cross section steel towers	73.0	73.8	74.7	Exhibit No. N/A

Excitation ☑ Series ☐ Shunt

T1 (N) ASR 1000965 T2 (NC) ASR 1000966
T3 (SC) ASR 1000967 T4 (S) ASR 1000968

Geographic coordinates to nearest second. For directional antenna give coordinates of center of array. For single vertical radiator give tower location.

North Latitude	West Longitude
42 ° 11 ' 34 "	084 ° 25 ' 44 "

If not fully described above, attach as an Exhibit further details and dimensions including any other antenna mounted on tower and associated isolation circuits. Feedline crosses base via Isocouplier. Exhibit No. EXHIBIT 5

Also, if necessary for a complete description, attach as an Exhibit a sketch of the details and dimensions of ground system. No changes to the ground system. Exhibit No. N/A

10. In what respect, if any, does the apparatus constructed differ from that described in the application for construction permit or in the permit?

FM Translator antenna installed on tower #2 impacting both day and night arrays. See Exhibit 5

11. Give reasons for the change in antenna or common point resistance.

No change.

I certify that I represent the applicant in the capacity indicated below and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief.

Name (Please Print or Type)	Signature (check appropriate box below)
Edmond R. Trombley	Edmond R. Trombley
Address (include ZIP Code)	Date
385 Airport Dr. POB 220 Coldwater, MI. 49036	June 17, 2016
	Telephone No. (Include Area Code) 517-278-7339 Ext. 105

☐ Technical Director
☐ Registered Professional Engineer
☐ Chief Operator
☑ Technical Consultant
☐ Other (specify)

ENGINEERING REPORT

PARTIAL PROOF OF PERFORMANCE

on

WKHM(AM) – Jackson, MI

In Response to the Recent Construction and Antenna Installation of FM Translator

W240DG previously W243BA
Facility ID 146888
BPFT-20160129ANS

June, 2016

MUNN–REESE, INC.
Broadcast Engineering Consultants
Coldwater, MI 49036

TABLE OF CONTENTS

CERTIFICATION OF ENGINEERS

The firm of Munn-Reese, Inc., 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.

June 17, 2016

By _____

Edmond R. Trombley, Filed Engineer
MUNN-REESE, INC.
Broadcast Engineering Consultants
COLDWATER, MI 49036-0220
517-278-7339 (x105)
et@munn-reese.com

DISCUSSION

The firm of Munn-Reese, Inc. was retained to prepare this report detailing a Daytime and Nighttime Partial Proof of Performance on AM Radio Station WKHM(AM) - Jackson, MI. facility ID No. 9246. WKHM(AM) operates with 1.0 kW of daytime directional power using a three tower directional array and 1.0 kW of nighttime power utilizing a four tower directional antenna array.

This Partial Proof was conducted on the daytime and nighttime WKHM(AM) directional patterns in response to special condition(s)/restriction(s) on FM Translator Construction Permit W240DG BPFT-20160129ANS. The translator feedline crosses the base pier and insulator of tower number two of both day and night arrays via a Kintronics FMC 1.5 FM Iso-coupler.

Partial proof measurements were made after the translator antenna was installed and compared against the WKHM(AM) full 1951 proof of performance. The most current license for WKHM(AM) is BZ-19821222AI which includes updated monitor point descriptions because the roads have changed on the south side of Jackson since 1951.

The results indicate the WKHM(AM) daytime and nighttime directional operations remains wholly within the daytime and nighttime standard patterns as presently authorized.

DISCUSSION (continued)

Field strength measurements on both patterns were conducted by Mr. Edmond Trombley of this office, who is also very familiar with the WKHM day and night directional arrays. The field measurement data was recorded using a Potomac Instruments Field Intensity Meter, Model #FIM-41, S/N 1149 last calibrated May 4, 2016.

Measurements were taken on the five daytime monitor point radials meeting the requirements of 47 C.F.R. §73.154(a) of the FCC Rules. Field strength data was taken on the dates and times indicated in the respective Tabulations of Field Strength Measurements, shown as Exhibits(s) 1.1, 1.2 and 1.3 for the daytime operation.

As well, measurements were taken on the seven nighttime monitor point radials meeting the requirements of 47 C.F.R. §73.154(a) of the FCC Rules. Field strength data was taken on the dates and times indicated in the respective Tabulations of Field Strength Measurements, shown as Exhibits(s) 3.1, 3.2 and 3.3 for the nighttime operation.

The tabulation sheets show the distance from the transmitter site to each point in units of miles and kilometers. The locations and point numbers were derived from the original 1951 WKHM(AM) Proof of Performance report. To maintain consistency in the June 2016 data to the 1951 Proof comparison, measurement

data compared to GPS hardware and computer mapping assisted in confirmation of point locations.

A tabulation of the Daytime operating specifications, as well as the field strength values measured at each of the monitoring points, are shown in Exhibit(s) 2.1 and 2.2. Direct and Log ratios tabulations between the present measurements and the corresponding 1951 original Daytime Directional Proof-of-Performance values are included.

A tabulation of the Nighttime operating specifications, as well as the field strength data measured at each of the monitoring points, are shown in Exhibit(s) 4.1 and 4.2. Direct and Log ratio tabulations between the present measurements and the corresponding 1951 original Nighttime Directional Proof-of-Performance values included.

Stated again, the resulting WKHM(AM) daytime and nighttime operation remains wholly within the respective authorized standard patterns.

In light of the measurements taken and uniform results obtained, the recent FM Translator construction for W240DG - BPFT-20160129ANS is believed to have had a negligible effect on the WKHM(AM) operation.

Note: The current license BZ-19821222AI displays an error on Page 5, Monitor Points, Day Operation, 240°. The distance 2.32 Km should read 3.57 KM.

Exhibit 1.1

Tabulation of Daytime Field Strength Measurements – 105° T & 116° T

Call:	WKHM			Frequency (kHz):		970			Power (kW):	1.00
				Bearing (°T):		105°				
Point	1951 Day Directional			June 2016 Day Directional			Distance	Distance	Direct	
#	mV/m	Time	Date	mV/m	Time	Date	Miles	km	Ratio	Remarks
25 MP	9.10			6.60	1201	6/13/2016	2.56	4.12	0.7253	**MP**
2	5.50			2.40	1215	6/13/2016	3.42	5.50	0.4364	
4	3.45			1.80	1230	6/13/2016	4.00	6.44	0.5217	
5	2.45			2.20	1236	6/13/2016	4.35	7.00	0.8980	
9	2.40			2.10	1300	6/13/2016	6.50	10.46	0.8750	
10	1.65			1.10	1310	6/13/2016	8.25	13.28	0.6667	
11	0.90			1.00	1315	6/13/2016	8.85	14.24	1.1111	
12	1.13			0.95	1324	6/13/2016	9.60	15.45	0.8407	
13	1.00			0.90	1328	6/13/2016	10.80	17.38	0.9000	
14	0.64			0.60	1335	6/13/2016	11.70	18.83	0.9375	
								Arithmetic Ratio:	0.7912	
								Log Ratio:	0.7645	

Call:	WKHM			Frequency (kHz):		970			Power (kW):	1.00
				Bearing (°T):		116°				
Point	1951 Day Directional			June 2016 Day Directional			Distance	Distance	Direct	
#	mV/m	Time	Date	mV/m	Time	Date	Miles	km	Ratio	Remarks
8	15.5			13.00	1419	6/13/2016	2.11	3.40	0.8387	
10	10.5			9.80	1428	6/13/2016	2.58	4.15	0.9333	
13 MP	9.6			7.60	1436	6/13/2016	3.73	6.00	0.7917	**MP**
14	7.7			5.00	1440	6/13/2016	4.10	6.60	0.6494	
15	5.7			4.00	1445	6/13/2016	5.16	8.30	0.7018	
16	4.3			3.70	1451	6/13/2016	5.90	9.50	0.8605	
17	3.7			3.20	1506	6/13/2016	9.00	14.48	0.8767	
18	3.75			2.80	1515	6/13/2016	7.40	11.91	0.7467	
19	3.20			2.70	1530	6/13/2016	8.68	13.97	0.8438	
20	2.55			2.40	1548	6/13/2016	9.25	14.89	0.9412	
								Arithmetic Ratio:	0.8184	
								Log Ratio:	0.8131	

Exhibit 1.2

Tabulation of Daytime Field Strength Measurements – 141° T & 195° T

Call:	WKHM			Frequency (kHz):		970			Power (kW):	1.00
				Bearing (°T):		141°				
Point	1951 Day Directional			June 2016 Day Directional			Distance	Distance	Direct	
#	mV/m	Time	Date	mV/m	Time	Date	Miles	km	Ratio	Remarks
10	10.0			14.80	1600	6/13/2016	2.04	3.28	1.4800	
11 MP	10.0			14.20	1610	6/13/2016	2.25	3.62	1.4200	MP
12	9.0			13.10	1620	6/13/2016	2.44	3.93	1.4556	
14	6.6			10.80	1628	6/13/2016	2.89	4.65	1.6364	
30	4.9			8.55	1635	6/13/2016	3.34	5.38	1.7449	
29	4.7			10.35	1640	6/13/2016	3.51	5.65	2.2258	
28	2.8			1.25	1705	6/13/2016	5.11	8.22	0.4545	
26	2.00			4.40	1716	6/13/2016	6.93	11.15	2.2000	
25	1.40			3.15	1728	6/13/2016	9.25	14.89	2.2500	
24	1.25			2.80	1735	6/13/2016	9.50	15.29	2.2400	
								Arithmetic Ratio:	1.7107	
								Log Ratio:	1.5817	

Call:	WKHM			Frequency (kHz):		970			Power (kW):	1.00
				Bearing (°T):		195°				
Point	1951 Day Directional			June 2016 Day Directional			Distance	Distance	Direct	
#	mV/m	Time	Date	mV/m	Time	Date	Miles	km	Ratio	Remarks
25 MP	33.0			36.00	0701	6/14/2016	2.31	3.72	1.0909	MP
4	17.5			22.00	0705	6/14/2016	3.39	5.46	1.2571	
6	12.5			11.00	0714	6/14/2016	4.42	7.11	0.8800	
7	11.0			12.50	0718	6/14/2016	4.92	7.92	1.1364	
8	9.3			10.00	0724	6/14/2016	5.42	8.72	1.0753	
9	8.3			9.20	0730	6/14/2016	6.18	9.95	1.1084	
13	5.3			5.30	0740	6/14/2016	8.25	13.28	1.0000	
14	4.65			6.50	0745	6/14/2016	9.03	14.53	1.3978	
15	4.00			3.55	0751	6/14/2016	9.53	15.34	0.8875	
16	3.35			2.90	0755	6/14/2016	10.00	16.09	0.8657	
								Arithmetic Ratio:	1.0699	
								Log Ratio:	1.0579	

Exhibit 1.3

Tabulation of Daytime Field Strength Measurements – 240° T

Call:	WKHM			Frequency (kHz):		970		Power (kW):		1.00
				Bearing (°T):		240°				
Point	1951 Day Directional			June 2016 Day Directional			Distance	Distance	Direct	
#	mV/m	Time	Date	mV/m	Time	Date	Miles	km	Ratio	Remarks
23	19.0			11.40	0810	6/14/2016	1.44	2.32	0.6000	
26 MP	12.0			10.95	0817	6/14/2016	2.22	3.57	0.9125	**MP**
3	6.3			7.50	0826	6/14/2016	3.44	5.54	1.1905	
4	4.5			4.10	0831	6/14/2016	4.17	6.71	0.9213	
5	3.6			3.00	0839	6/14/2016	5.20	8.37	0.8333	
6	2.7			2.30	0841	6/14/2016	6.40	10.30	0.8679	
7	2.3			2.50	0848	6/14/2016	6.73	10.83	1.0870	
8	1.00			1.10	0855	6/14/2016	7.50	12.07	1.1000	
9	1.80			1.50	0902	6/14/2016	7.80	12.55	0.8333	
10	1.60			1.10	0913	6/14/2016	8.65	13.92	0.6875	
							Arithmetic Ratio:		**0.9033**	
							Log Ratio:		**0.8858**	

Exhibit 2.1

Tabulation of Daytime Limits and Radiations

WKHM DAYTIME Summary of Limits and Radiations							
					Augmented		
	1951 DA-D			2016 DA-D	Standard	Standard	
Azimuth	Radiation			Radiation	Pattern	Pattern	Max Allowable
(° True)	(mV/m/mi)	(mV/m/km)	Log Ratio	(mV/m/km)	(mV/m/mi)	(mV/m/km)	Log Ratio
11°	380.0	611.6			436.5	702.5	
42°	320.0	515.0			375.6	604.5	
105°	**28.5**	**45.9**	**0.7645**	**35.1**	46.5	74.8	**1.6316**
116°	**49.0**	**78.9**	**0.8131**	**64.1**	57.0	91.7	**1.1633**
141°	**29.0**	**46.7**	**1.5817**	**73.8**	47.0	75.6	**1.6207**
195°	**102.0**	**164.2**	**1.0579**	**173.7**	120.7	194.2	**1.1833**
240°	**38.0**	**61.2**	**0.8858**	**54.2**	47.0	75.6	**1.2368**
260°	45.0	72.4			55.6	89.5	
289°	62.0	99.8			73.4	118.1	
330°	305.0	490.8			328.8	529.2	

Exhibit 2.2

Daytime Array Operating Parameters

WKHM Day Antenna Monitor			
Tower	Monitor	Field Ratio	Phase
1 N.	53.0	0.53	-142.5
2 C.	100.0	1.00	0.0
3 S.	61.5	0.615	153.5

Daytime Monitor Point Data

WKHM Day Monitor Points			
	1951 Day	2016 Day	Licensed
Azimuth	Directional	Directional	Limit
° True	(mV/m)	(mV/m)	(mV/m)
105°	9.1	6.6	14.7
116°	9.6	7.6	11.2
141°	10.0	14.2	16.2
195°	33.0	36.0	39.0
240°	12.0	11.0	23.5

Calculation of Daytime Power and Limits

		90%	100%	105%
Power	**Nominal**		**1000.0**	
	Corrected		**1080.0**	
	Watts	**972.0**	**1080.0**	**1134.0**
Resistance	**Ohms**		**50.0**	
Current	**Amps**	**4.41**	**4.65**	**4.76**

Daytime Common Point Resistance: 50.0 +j zero ohms
Daytime Common Point Current: 4.65 amps.

Exhibit 3.1

Tabulation of Nighttime Field Strength Measurements – 60.5° T & 97.5° T

Call:	WKHM			Frequency (kHz):		970		Power (kW):	1.00
				Bearing (°T):		60.5°			
Point	1951 Nighttime Directional			June 2016 Nighttime Directional			Distance	Distance	Direct	
#	mV/m	Time	Date	mV/m	Time	Date	Miles	km	Ratio	Remarks
26 MP	75.0			61.00	0945	6/14/2016	2.06	3.32	0.8133	MP
1	40.0			35.00	0950	6/14/2016	3.10	4.99	0.8750	
2	38.0			23.00	0956	6/14/2016	3.79	6.10	0.6053	
3	32.8			24.00	1000	6/14/2016	4.00	6.44	0.7317	
4	31.7			23.00	1005	6/14/2016	4.12	6.63	0.7256	
5	26.0			14.00	1011	6/14/2016	4.50	7.24	0.5385	
6	21.6			16.00	1019	6/14/2016	4.88	7.85	0.7407	
7	19.0			12.50	1024	6/14/2016	5.65	9.09	0.6579	
8	16.1			12.00	1029	6/14/2016	5.80	9.33	0.7453	
9	15.8			13.00	1033	6/14/2016	6.15	9.90	0.8228	
								Arithmetic Ratio:	0.7256	
								Log Ratio:	0.7188	

Call:	WKHM			Frequency (kHz):		970		Power (kW):	1.00
				Bearing (°T):		97.5°			
Point	1951 Nighttime Directional			June 2016 Nighttime Directional			Distance	Distance	Direct	
#	mV/m	Time	Date	mV/m	Time	Date	Miles	km	Ratio	Remarks
7 MP	15.5			12.5	1105	6/14/2016	2.35	3.78	0.8065	MP
8	14.0			10.0	1110	6/14/2016	2.55	4.10	0.7143	
10	12.1			7.00	1117	6/14/2016	3.12	5.02	0.5785	
12	9.10			4.20	1124	6/14/2016	4.45	7.16	0.4615	
13	5.90			2.90	1130	6/14/2016	5.32	8.56	0.4915	
15	3.40			1.20	1141	6/14/2016	7.23	11.64	0.3529	
16	2.47			1.10	1146	6/14/2016	7.80	12.55	0.4453	
17	2.40			0.85	1155	6/14/2016	8.60	13.84	0.3542	
18	1.92			0.73	1202	6/14/2016	9.55	15.37	0.3802	
19	2.22			1.10	1210	6/14/2016	10.30	16.58	0.4955	
								Arithmetic Ratio:	0.5080	
								Log Ratio:	0.4897	

Exhibit 3.2

Tabulation of Nighttime Field Strength Measurements – 116° T & 165° T

Call:	WKHM			Frequency (kHz):		970			Power (kW):	1.00
				Bearing (°T):		116°				
Point	1951 Nighttime Directional			June 2016 Nighttime Directional			Distance	Distance	Direct	
#	mV/m	Time	Date	mV/m	Time	Date	Miles	km	Ratio	Remarks
13 MP	4.90			2.40	1315	6/14/2016	3.73	6.00	0.4898	MP
14	3.00			1.80	1326	6/14/2016	4.10	6.60	0.6000	
15	2.50			1.90	1334	6/14/2016	5.16	8.30	0.7600	
16	1.70			1.60	1341	6/14/2016	5.90	9.50	0.9412	
17	2.40			1.50	1347	6/14/2016	7.00	11.27	0.6250	
18	1.75			1.45	1355	6/14/2016	7.40	11.91	0.8286	
19	1.55			1.40	1402	6/14/2016	8.68	13.97	0.9032	
20	1.60			1.10	1410	6/14/2016	9.25	14.89	0.6875	
22	1.03			0.95	1420	6/14/2016	10.30	16.58	0.9223	
23	1.03			1.00	1429	6/14/2016	11.70	18.83	0.9709	
								Arithmetic Ratio:	0.7728	
								Log Ratio:	0.7554	

Call:	WKHM			Frequency (kHz):		970			Power (kW):	1.00
				Bearing (°T):		165°				
Point	1951 Nighttime Directional			June 2016 Nighttime Directional			Distance	Distance	Direct	
#	mV/m	Time	Date	mV/m	Time	Date	Miles	km	Ratio	Remarks
22 MP	3.60			2.70	1500	6/14/2016	2.34	3.77	0.7500	MP
25	3.10			2.50	1510	6/14/2016	2.57	4.14	0.8065	
4	2.80			1.10	1519	6/14/2016	3.34	5.38	0.3929	
5	2.20			0.40	1524	6/14/2016	4.12	6.63	0.1818	
6	1.52			1.10	1536	6/14/2016	4.92	7.92	0.7237	
7	1.02			0.50	1544	6/14/2016	6.25	10.06	0.4902	
8	0.46			0.18	1551	6/14/2016	6.42	10.33	0.3913	
9	0.55			0.62	1610	6/14/2016	8.52	13.71	1.1273	
10	0.63			0.46	1615	6/14/2016	9.10	14.65	0.7302	
11	0.49			0.37	1619	6/14/2016	10.20	16.42	0.7551	
								Arithmetic Ratio:	0.6349	
								Log Ratio:	0.5717	

Exhibit 3.3

Tabulation of Nighttime Field Strength Measurements – 195° T & 289° T

Call:	WKHM			Frequency (kHz):		970			Power (kW):	1.00
				Bearing (°T):		195°				
Point	1951 Nighttime Directional			June 2016 Nighttime Directional			Distance	Distance	Direct	
#	mV/m	Time	Date	mV/m	Time	Date	Miles	km	Ratio	Remarks
25 MP	11.3			11.7	1640	6/14/2016	2.31	3.72	1.0354	MP
4	6.30			7.20	1644	6/14/2016	3.39	5.46	1.1429	
6	5.10			5.80	1655	6/14/2016	4.42	4.73	1.1373	
7	4.40			3.95	1703	6/14/2016	4.92	7.11	0.8977	
8	3.30			3.60	1710	6/14/2016	5.42	7.92	1.0909	
9	3.10			3.25	1719	6/14/2016	6.18	8.72	1.0484	
13	1.96			1.85	1749	6/14/2016	8.25	9.95	0.9439	
14	1.69			1.70	1755	6/14/2016	9.03	13.28	1.0059	
15	1.36			1.25	1801	6/14/2016	9.53	14.53	0.9191	
16	1.15			1.10	1815	6/14/2016	10.60	15.34	0.9565	
								Arithmetic Ratio:	1.0178	
								Log Ratio:	1.0144	

Call:	WKHM			Frequency (kHz):		970			Power (kW):	1.00
				Bearing (°T):		289°				
Point	1951 Nighttime Directional			June 2016 Nighttime Directional			Distance	Distance	Direct	
#	mV/m	Time	Date	mV/m	Time	Date	Miles	km	Ratio	Remarks
22 MP	26.0			22.00	0825	6/15/2016	1.37	2.20	0.8462	MP
26	16.2			8.50	0829	6/15/2016	2.07	3.33	0.5247	
4	3.40			3.70	0837	6/15/2016	4.78	7.69	1.0882	
5	3.80			2.20	0844	6/15/2016	5.02	8.08	0.5789	
6	3.75			2.00	0855	6/15/2016	5.42	8.72	0.5333	
7	3.50			2.45	0904	6/15/2016	6.02	9.69	0.7000	
8	2.58			3.60	0914	6/15/2016	7.03	11.31	1.3953	
9	2.52			2.10	0910	6/15/2016	7.85	12.63	0.8333	
10	1.24			1.10	0928	6/15/2016	8.45	13.60	0.8871	
11	1.82			1.60	0945	6/15/2016	9.05	14.56	0.8791	
								Arithmetic Ratio:	0.8266	
								Log Ratio:	0.7900	

Exhibit 3.4

Tabulation of Nighttime Field Strength Measurements – 301° T

Call:	WKHM			Frequency (kHz):		970		Power (kW):		1.00
				Bearing (°T):		301°				
Point	1951 Nighttime Directional			June 2016 Nighttime Directional			Distance	Distance	Direct	
#	mV/m	Time	Date	mV/m	Time	Date	Miles	km	Ratio	Remarks
17 MP	2.60			3.10	1010	6/15/2016	2.26	3.64	1.1923	MP
26	2.55			2.95	1015	6/15/2016	2.27	3.65	1.1569	
16	2.15			2.10	1020	6/15/2016	2.56	4.12	0.9767	
15	1.40			1.35	1025	6/15/2016	4.08	6.57	0.9643	
12	1.85			1.65	1037	6/15/2016	6.50	10.46	0.8919	
11	1.00			0.97	1045	6/15/2016	7.50	12.07	0.9700	
10	0.90			0.91	1057	6/15/2016	7.90	12.71	1.0111	
8	1.40			1.20	1105	6/15/2016	9.00	14.48	0.8571	
7	1.00			0.94	1115	6/15/2016	9.60	15.45	0.9400	
6	0.87			0.81	1137	6/15/2016	10.00	16.09	0.9310	
							Arithmetic Ratio:		0.9891	
							Log Ratio:		0.9842	

Exhibit 4.1

Tabulation of Nighttime Limits and Radiations

WKHM NIGHTTIME Summary of Limits and Radiations							
					Augmented		
	1951 DA-D			2016 DA-D	Standard	Standard	
Azimuth	Radiation			Radiation	Pattern	Pattern	Max Allowable
(° True)	(mV/m/mi)	(mV/m/km)	Log Ratio	(mV/m/km)	(mV/m/mi)	(mV/m/km)	Log Ratio
11°	470.0	756.4			512.9	825.4	
42°	340.0	547.2			398.3	641.0	
60.5°	**175.0**	281.6	**0.7188**	**202.4**	**203.0**	**326.7**	**1.1600**
82°	14.0	22.5			33.9	54.6	
97.5°	**53.0**	85.3	**0.4897**	**41.8**	**63.9**	**102.8**	**1.2057**
116°	**22.5**	36.2	**0.7554**	**27.4**	**28.5**	**45.9**	**1.2667**
141°	33.0	53.1			39.7	63.9	
165°	**10.0**	16.1	**0.5717**	**9.2**	**15.0**	**24.1**	**1.5000**
195°	**34.0**	54.7	**1.0144**	**55.5**	**38.7**	**62.3**	**1.1382**
216°	12.0	19.3			16.0	25.7	
240°	34.0	54.7			40.0	64.4	
260.0	13.0	20.9			32.9	52.9	
289.0	**46.0**	74.0	**0.7900**	**58.5**	**59.0**	**95.0**	**1.2826**
301°	**19.0**	30.6	**0.9842**	**30.1**	**36.5**	**58.7**	**1.9211**
330°	290.0	466.7			298.1	479.7	

Exhibit 4.2

Nighttime Array Operating Parameters

WKHM Nighttime Antenna Monitor			
Tower	Monitor	Field Ratio	Phase
1 N.	55.0	0.55	-161.0
2 NC.	100.0	1.00	0.0
3 SC.	115.5	1.155	155.0
4 S.	55.0	0.550	-52.5

Nighttime Monitor Point Data

WKHM Nighttime Monitor Points			
	1951 Day	2016 Day	Licensed
Azimuth	Directional	Directional	Limit
° True	(mV/m)	(mV/m)	(mV/m)
60.5°	75.0	61.0	85.0
15.5	15.5	12.5	16.1
116°	4.9	2.4	6.2
165°	3.6	2.7	5.3
195°	11.3	11.7	13.5
289°	26.0	22.0	33.3
301°	2.6	3.1	5.0

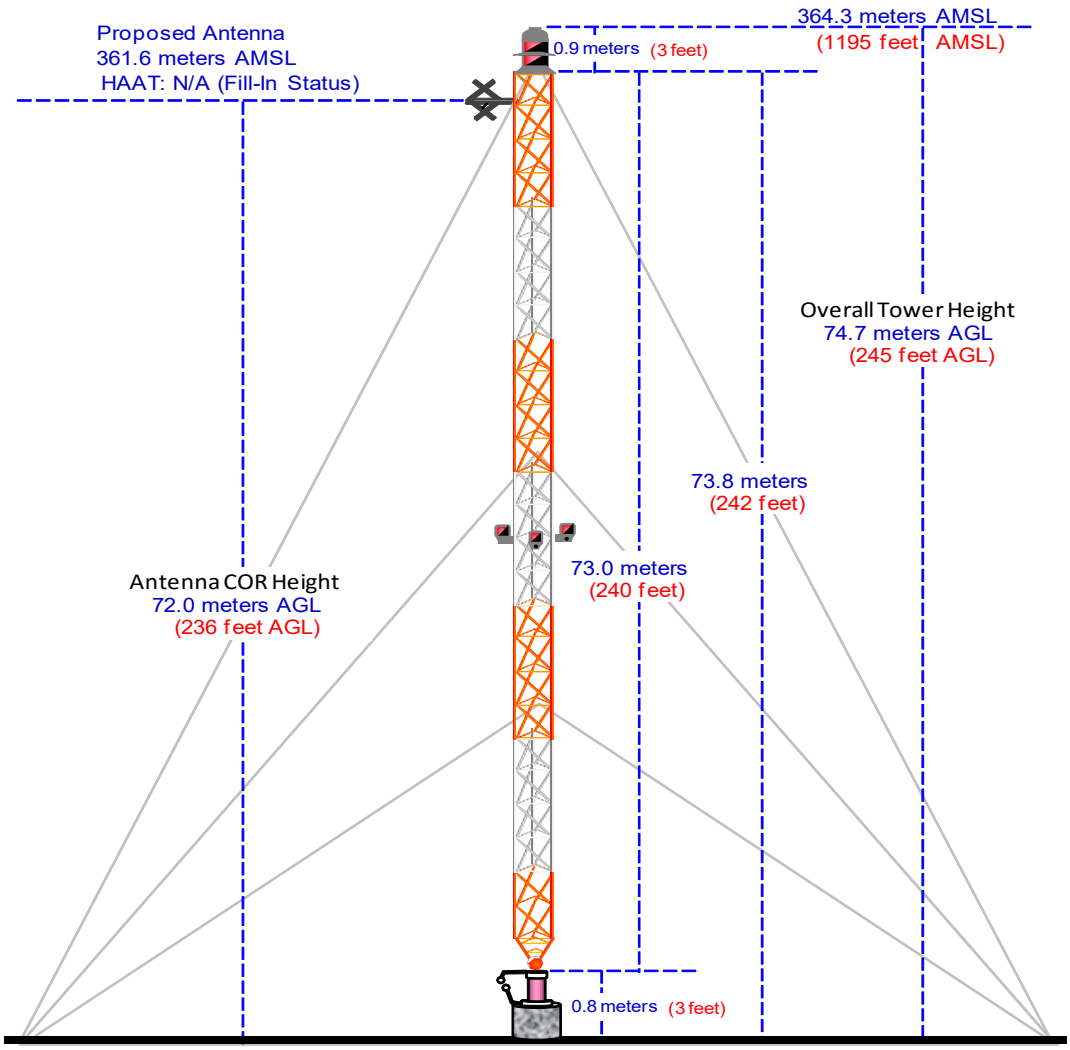
Calculation of Nighttime Power and Limits

		90%	100%	105%
Power	**Nominal**		**1000.0**	
	Corrected		**1080.0**	
	Watts	**972.0**	**1080.0**	**1134.0**
Resistance	**Ohms**		**50.0**	
Current	**Amps**	**4.41**	**4.65**	**4.76**

Nighttime Common Point Resistance: 50.0 +j zero ohms
Nighttime Common Point Current: 4.65 amps.

Exhibit 5.0
Vertical Plan of Tower # 2 Supporting the FM Translator Antenna

THE SITE IS LOCATED AT 1700 GLENSHIRE DRIVE; THE CITY OF JACKSON; JACKSON COUNTY; THE STATE OF MICHIGAN.	
Antenna Structure Registration No. **1000966**	**Latitude (D M S)** **Longitude (D M S)** NAD 27 datum values: 42 11 35.16413 84 25 44.05974 NAD 83 datum values: 42 11 35.30000 84 25 43.90000



Ground Elevation = 289.6 meters AMSL (950 feet AMSL)

Drawing is not to Scale

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