

**TECHNICAL STATEMENT
RE: CONSTRUCTION PERMIT CERTIFICATIONS
WAOW 96.3 KW-ND 368 M CH. 9
WAUSAU, WISCONSIN**

INTRODUCTION

Wausau TV License Company, LLC (the “Applicant”), the licensee of television (TV) broadcast station WAOW, Facility ID No. 64546, proposes a minor modification to increase WAOW’s noise-limited contour beyond the station’s licensed parameters.¹ More specifically, the Applicant seeks to expand the contour through a power increase using the station’s existing antenna. No other change to WAOW’s existing facility is proposed.

All calculations, elevations and other technical data provided herein have been determined in accordance with the technical standards of the Federal Communications Commission (FCC), unless specifically stated otherwise.

BROADCAST FACILITY MODIFICATION

The Applicant seeks to expand WAOW’s contour by increasing effective radiated power (ERP) to 96.3 kW. The station will continued to utilize its existing nondirectional antenna, which is a horizontally polarized Dielectric Model TW-9B9-R(S) with 0.75 degrees electrical beam tilt. This antenna is top-mounted on an existing guyed tower at a radiation center height of 175 meters above ground level (AGL) or 754.1 meter above mean sea level (AMSL). Accordingly, the antenna structure is registered with the FCC.²

¹ See BLCDDT-20120627ABL – The current station license specifies 63.2 kW ERP.

² The antenna structure registration (ASR) number is 1066073.



Because the power increase proposed for WAOW does not constitute a major modification, this application is eligible for processing under the normal procedures governing minor changes to TV stations.³

INTERFERENCE PROTECTION

A detailed *TVStudy* analysis has been performed and the results indicate no interference check failures were found.⁴ A copy of the analysis summary is provided in [Figure 1](#). This analysis confirms that a grant of this application will not result in any new interference to other prior authorized stations in accordance with the requirements in 47 C.F.R. §§ 73.616, 73.622(j), 73.623(e), 73.625 and 73.1030. The aforementioned summary further reflects that the following analysis settings have been used:⁵

Study cell size: 0.5 kilometer
Profile point spacing: 0.05 kilometer

ENVIRONMENTAL IMPACT

The specified FCC registered structure is an existing guyed tower that was constructed before March 16, 2001.⁶ Given that the existing collocation of WAOW's antenna will not result in any physical changes to the structure, the criteria outlined in 47 CFR § 1.1307(a) for certain

³ See 47 CFR § 73.3572(a)(3) – Applications for changes in the facilities of authorized TV stations that are considered minor.

⁴ *TVStudy* Program - Version 2.2.5 was utilized to evaluate this proposal based on the default Interference Check template normally used for application processing. The following analysis settings were used: cell size = 0.5 km; terrain profile resolution = 0.05 km increments (20 points / km).

⁵ 47 CFR § 73.616(d)(1) indicates an applicant may use one of the following three cell sizes: 2.0 km per side, 1.0 km per side or 0.5 km per side. Although the rules do not specifically limit the terrain profile resolution setting, the FCC Video Division staff has advised the undersigned that they will typically accept a profile increment between 1.0 km and 0.05 km.

⁶ See 47 CFR Part 1, App. B, § III.A. An antenna may be mounted on an existing tower constructed on or before March 16, 2001 without such collocation being reviewed through the Section 106 process set forth in the NPA, unless (1) the mounting of the new antenna will result in a substantial increase in the size of the tower as defined in Stipulation I.E.; (2) the tower has been determined by the FCC to have an adverse effect on one or more historic properties; (3) the tower is the subject of a pending environmental review or related proceeding before the FCC involving compliance with Section 106; or, (4) the tower owner has received written or electronic notification that the FCC is in receipt of a complaint from that the collocation has an adverse effect on one or more historic properties.



types of facilities that may significantly affect the environment do not apply. With regard to the rules for limiting human exposure to radio-frequency (RF) energy in 47 CFR § 1.1307(b), this application seeks authority for WAOW to operate with additional power in full compliance with those guidelines, which is described in more detail below. The following technical specifications are proposed:

Frequency:	186 - 192 MHz (VHF Channel 9)
ERP:	96.3 kW
Antenna Type:	Nondirectional, Dielectric Model TW-9B9-R(S)
Antenna Polarization:	Horizontal
Antenna Height:	175 meters AGL
Location coordinates:	44-55-14.2 NL, 89-41-28.7 WL (NAD83)
Site elevation:	579.1 meters AMSL
FCC ASRN:	1066073, Constructed on 11/06/2000

Using the methodology for predicting power density levels for TV broadcast antennas outlined in OET-65, the above parameters are estimated to produce a maximum power density of 4.3 $\mu\text{W}/\text{cm}^2$ at points 2 meters above ground (approximate human head height).⁷ This power density calculation was derived from OET-65 Equation 10 shown below.

$$S = \frac{33.4 (F^2) ERP}{R^2}$$

Where: S = power density in $\mu\text{W}/\text{cm}^2$

F = relative field factor

ERP = power in watts

R = distance in meters

The above maximum power density was calculated using a worst-case antenna relative field factor of 0.2, which is generally considered to be a typical value for VHF antennas. Information provided by the antenna manufacturer in [Figure 2](#) further indicates the relative field is less than 20 percent at all angles greater than 12 degrees below the horizontal. The

⁷ FCC Office of Engineering and Technology, Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, OET Bulletin 65, Edition 97-01 (1997) (OET-65).



maximum exposure limits applicable to Channel 9, as set forth in 47 CFR § 1.1310 for uncontrolled and controlled situations, are 200 $\mu\text{W}/\text{cm}^2$ and 1,000 $\mu\text{W}/\text{cm}^2$ respectively. Because the worst-case exposure level determined for the proposed facility is not more than 5 percent of those guidelines and considering the requirements for signage and access control will be implemented as appropriate for compliance with the rules adopted in the *RF Report and Order*, no further showing of compliance with the RF exposure rules appears to be necessary.⁸ For all the reasons stated above, this minor change application has been found to comply with the criteria in 47 CFR § 1.1307(a) and (b) and thus further environmental processing is not required in accordance with 47 CFR § 1.1306.

Respectfully submitted,

Scott Turpie
Sr. Technical Consultant
LOHNES & CULVER, LLC
P.O. Box 16343
Alexandria, VA 22302
(301) 776-4488

October 25, 2023

Attachments

Figure 1 – *TVStudy* Analysis Summary
Figure 2 – Antenna Elevation Pattern

⁸ *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields; Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies*, ET Docket No. 19-226, Resolution of Notice of Inquiry, Second Report and Order, Notice of Proposed Rulemaking, and Memorandum Opinion and Order, 34 FCC Rcd 11687 (2019) (*RF Report and Order*).

FIGURE 1 Analysis Results Summary TVStudy Version 2.2.5.

Study created: 2023.10.25 13:22:59
Study build station data: LMS TV 2023-10-25

Proposal: WAOW D9 DT APP WAUSAU, WI
File number: WAOW 96300W-ND HALF-km 20pts
Facility ID: 64546
Station data: User record
Record ID: 899
Country: U.S.
Zone: 11

Build options:
Protect pre-transition records not on baseline channel

Search options:
Non-U.S. records included
Baseline record excluded if station has QP

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City	State	File Number	Distance
No	WMUW	D8	DT	LIC	MARQUETTE	MI	BLANK000117434	213.8 km
Yes	WKBT-DT	D8	DT	LIC	LA CROSSE	WI	BLANK000022842	159.8
No	WWSV	D8	DT	APP	MILWAUKEE	WI	BLANK000035791	248.0
No	WWSV	D8	DT	LIC	MILWAUKEE	WI	BLANK000040294	248.0
Yes	KGRG-TV	D9	DT	LIC	GEDAR RAPIDS	IA	BLANK000001351	337.9
Yes	WLSN	D9	DT	LIC	FREEPOR	IL	BLANK000221451	294.6
Yes	WMTV	D9	DT	LIC	CADILLAC	MI	BLGDT20091217AGZ	355.4
Yes	WMTV	D9	DT	CP	CADILLAC	MI	BLANK000035807	355.4
Yes	KMSP-TV	D9	DT	LIC	MINNEAPOLIS	MN	BLANK000218437	270.3
No	WRUP	D10	DT	LIC	ISHPEMING	MI	BLANK000004980	223.4
No	KTTC	D10	DT	LIC	ROCHESTER	MN	BLGDT20101102ACA	264.5
No	KTTC	D10	DT	CP	ROCHESTER	MN	BLANK000035728	264.5
No	C100-DT-9	D9	DT	LIC	THUNDER BAY	ON	BLANKANAD4228	404.9

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D9
Latitude: 44 55 14.20 N (NAD83)
Longitude: 89 41 28.70 W
Height AMSL: 754.1 m
HAAT: 368.0 m
Peak ERP: 96.3 kW
Antenna: Omnidirectional

Elev Pattn: Generic
Elec Tilt: 0.75

36.0 dBu contour:	ERP	HAAT	Distance
0.0 deg	96.3 kW	354.4 m	115.7 km
45.0	96.3	357.8	116.0
90.0	96.3	386.3	118.4
135.0	96.3	383.6	118.1
180.0	96.3	398.3	119.6
225.0	96.3	367.7	116.8
270.0	96.3	362.8	116.4
315.0	96.3	350.7	115.4

Database HAAT does not agree with computed HAAT
Database HAAT: 368 m Computed HAAT: 370 m

Proposal 21.00 dBu contour does not cross Canadian border
Distance to Canadian border: 340.5 km

Distance to Mexican border: 1971.7 km

Conditions at FCC monitoring station: Allegan MI
Bearing: 129.3 degrees Distance: 395.1 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 252.8 degrees Distance: 1375.4 km

Study cell size: 0.50 km
Profile point spacing: 0.05 km

Maximum new IX to full-service and Class A: 0.50%
Maximum new IX to LPTV: 2.00%

Below is IX received by proposal WAOW 96300W-ND HALF-km

Proposal receives 2.79% interference from scenario 1
Proposal receives 2.91% interference from scenario 2
No IX check failures found.

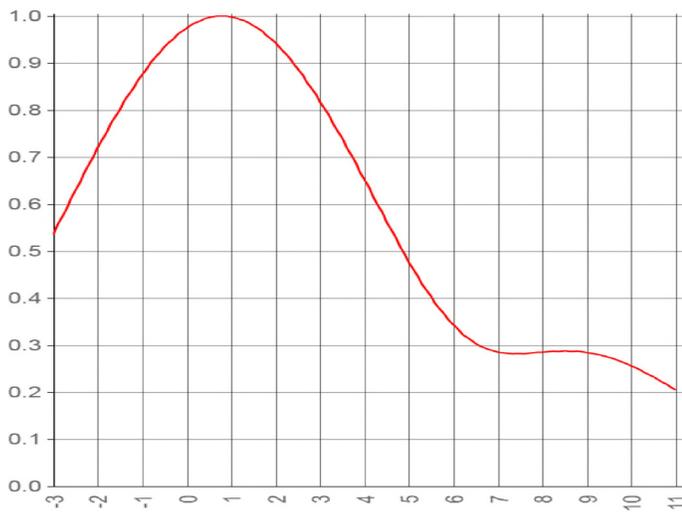
ELEVATION PATTERN

Exhibit No. **FIGURE 2**
 Date **25 Oct 2023**
 Call Letters **WAOW**
 Channel **9**
 Antenna Type **TW-9B9**
 Location **Wausau, WI**
 Customer **Wausau TV License Company, LLC**

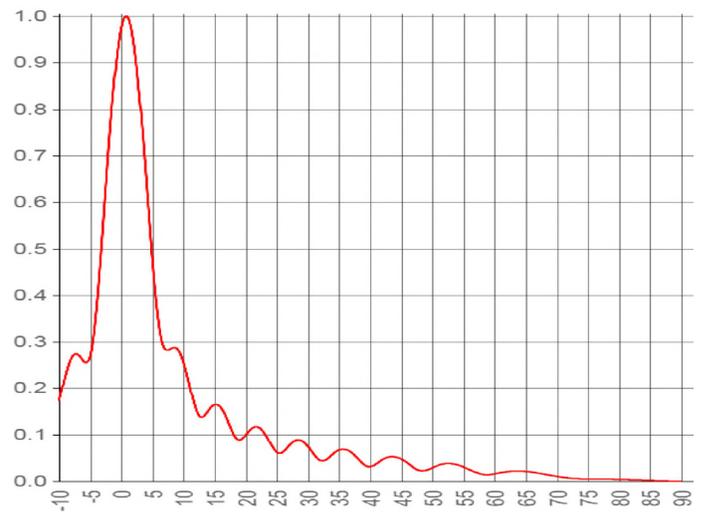
Future fill is available!

RMS Gain at Main Lobe **9.0 (9.54 dB)**
 RMS Gain at Horizontal **8.6 (9.32 dB)**
Calculated

Beam Tilt **0.75 Degrees**
 Drawing # **19W090075**



Degrees below horizontal



Degrees below horizontal

Angle	Field								
-10	0.173	10	0.256	30	0.075	50	0.029	70	0.011
-9	0.226	11	0.205	31	0.057	51	0.034	71	0.009
-8	0.265	12	0.155	32	0.044	52	0.037	72	0.007
-7	0.273	13	0.138	33	0.047	53	0.038	73	0.006
-6	0.258	14	0.152	34	0.058	54	0.035	74	0.005
-5	0.270	15	0.165	35	0.067	55	0.031	75	0.005
-4	0.369	16	0.158	36	0.068	56	0.025	76	0.005
-3	0.536	17	0.133	37	0.061	57	0.019	77	0.005
-2	0.719	18	0.102	38	0.049	58	0.015	78	0.005
-1	0.876	19	0.088	39	0.036	59	0.014	79	0.005
0	0.975	20	0.099	40	0.031	60	0.016	80	0.004
1	0.998	21	0.114	41	0.038	61	0.019	81	0.004
2	0.942	22	0.116	42	0.046	62	0.021	82	0.003
3	0.818	23	0.103	43	0.052	63	0.022	83	0.003
4	0.651	24	0.081	44	0.052	64	0.022	84	0.002
5	0.477	25	0.062	45	0.047	65	0.021	85	0.002
6	0.343	26	0.063	46	0.039	66	0.020	86	0.001
7	0.285	27	0.077	47	0.029	67	0.018	87	0.001
8	0.285	28	0.087	48	0.023	68	0.015	88	0.000
9	0.284	29	0.086	49	0.024	69	0.013	89	0.000

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