

ENGINEERING STATEMENT

The engineering data contained herein have been prepared on behalf of TCT OF MICHIGAN, INC., licensee of full-power digital television station WAQP-DT, Channel 48 in Saginaw, Michigan, in support of its application for modification of Construction Permit 0000028088, which authorizes operation on its post-repack channel, Channel 36. It is proposed herein to increase the effective radiated power of the station. No change in transmitter site location, antenna radiation pattern or antenna height is proposed herein.

It is still proposed to mount an ERI directional, elliptically-polarized, slotted cylinder antenna at the 294-meter level of the existing 301-meter WAQP-DT tower. The proposed effective radiated power for the facility is 1000 kW in horizontal plane. Exhibit B is a map upon which the predicted service contours are plotted. As shown, the community of Saginaw, Michigan, is completely encompassed by the proposed 48 dBu city-grade service contour.

Elevation and azimuth pattern information for the proposed antenna are provided in Exhibit C. Exhibit D contains the summary results from a TVStudy interference study, which was conducted using a cell size of 2 kilometers and increment spacing of 1.0 kilometer. It concludes that the proposed WAQP-DT facility meets the Commission's de minimis interference criteria to all co-channel and adjacent-channel post-repack full-power and Class A facilities. A power density calculation appears as Exhibit E.

Since no change in the overall height or location of the existing WAQP-DT tower is proposed herein, the Federal Aviation Administration has not been notified of this application. In addition, the FCC issued Antenna Structure Registration Number 1002081 to this tower.

EXHIBIT A

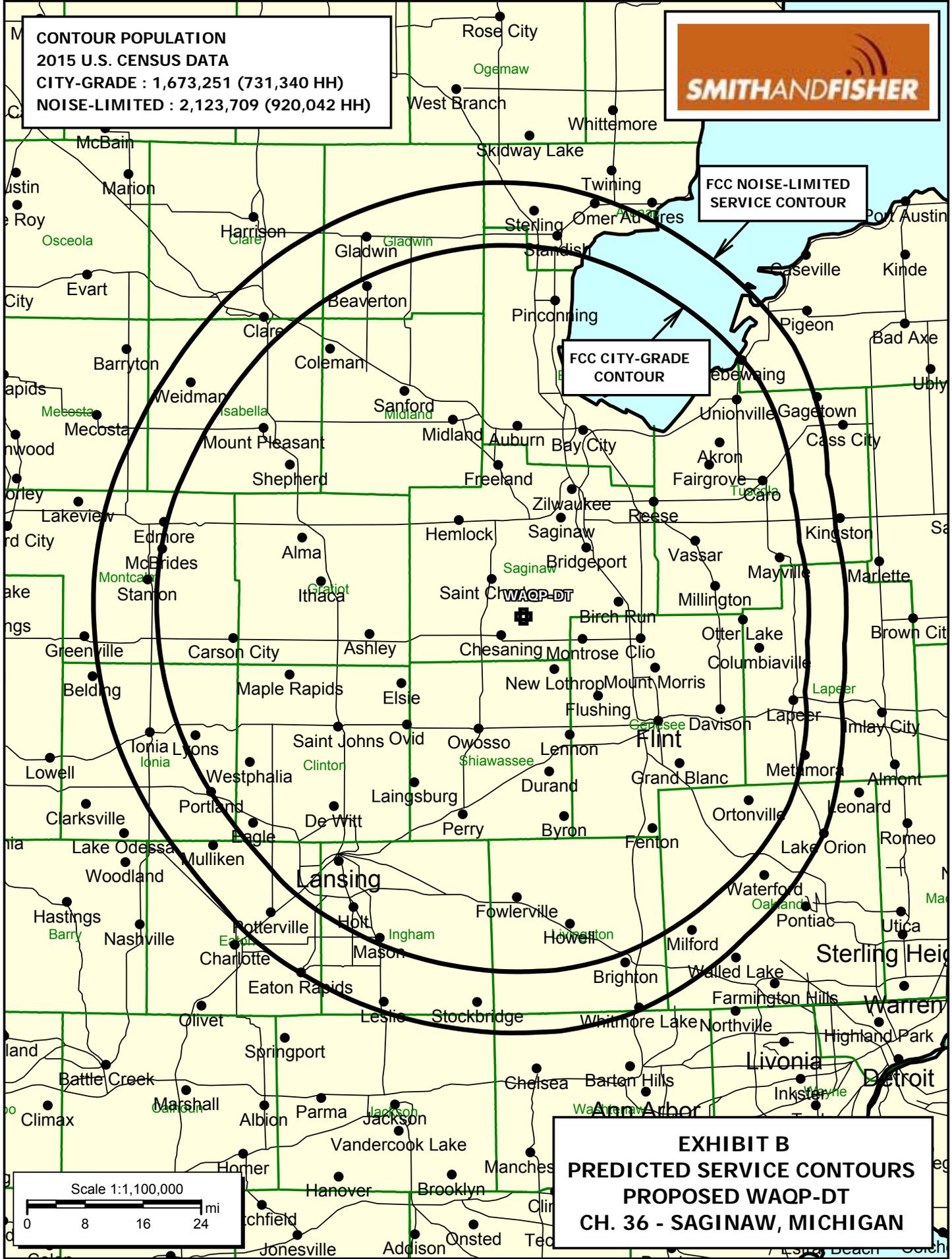
I declare under penalty of perjury that the foregoing statements and the attached exhibits, which were prepared by me or under my immediate supervision, are true and correct to the best of my knowledge and belief.

A handwritten signature in blue ink, appearing to read "K. T. Fisher". The signature is stylized with a large "K" and "F" and a smaller "T".

KEVIN T. FISHER

November 1, 2017

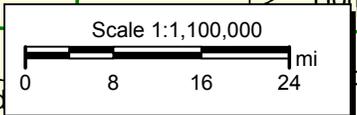
CONTOUR POPULATION
2015 U.S. CENSUS DATA
CITY-GRADE : 1,673,251 (731,340 HH)
NOISE-LIMITED : 2,123,709 (920,042 HH)



FCC NOISE-LIMITED SERVICE CONTOUR

FCC CITY-GRADE CONTOUR

EXHIBIT B
PREDICTED SERVICE CONTOURS
PROPOSED WAQP-DT
CH. 36 - SAGINAW, MICHIGAN



AZIMUTH PATTERN

Type: ATW-C1

Numeric	dBd
<u>1.52</u>	<u>1.82</u>

Directivity: 1.52

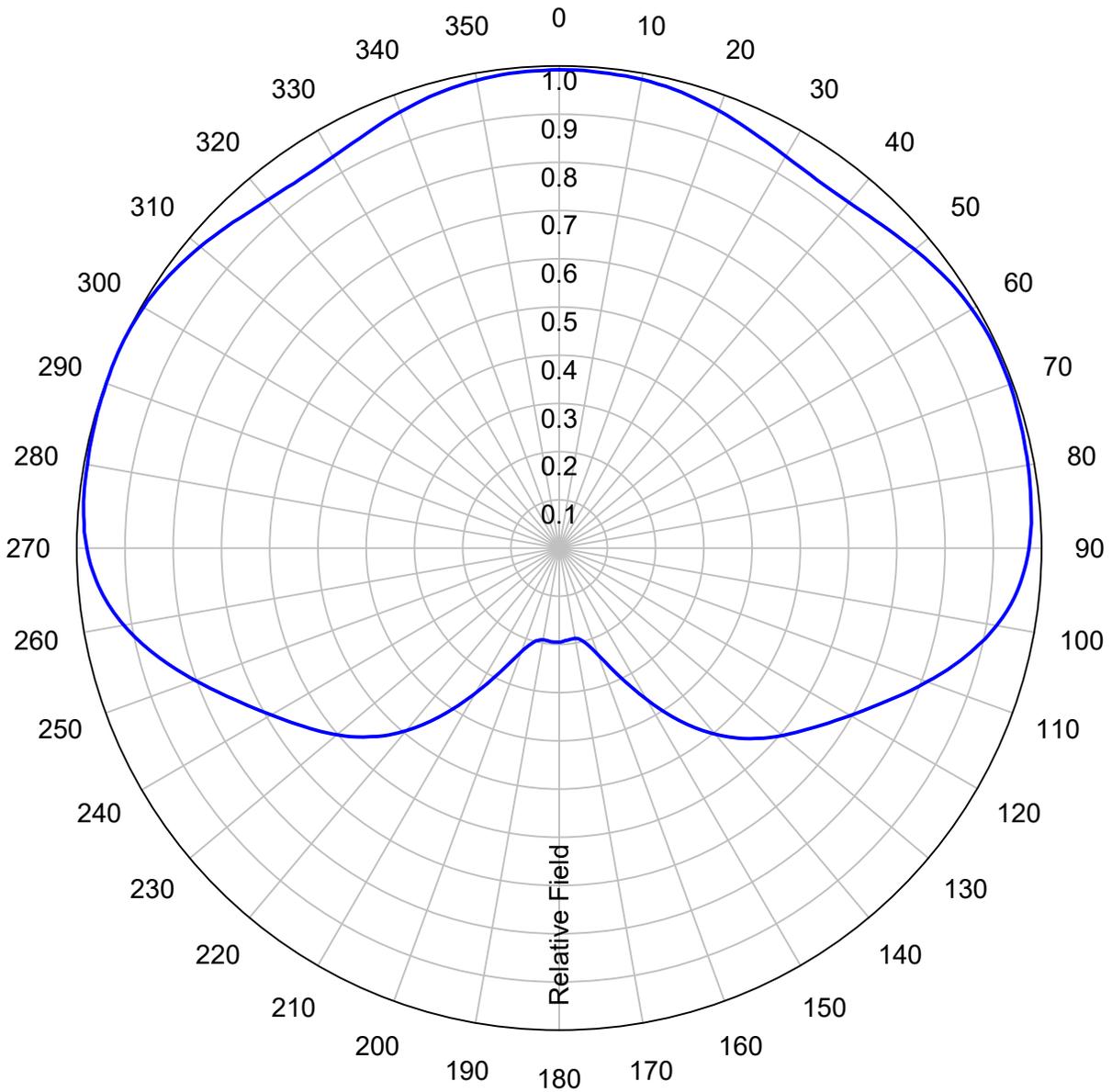
Peak(s) at:

Channel: 36

Location:

Polarization: Horizontal

Note: Pattern shape and directivity may vary with channel and mouting configuration.



Preliminary, subject to final design and review.

TABULATED DATA FOR AZIMUTH PATTERN

Type: ATW-C1

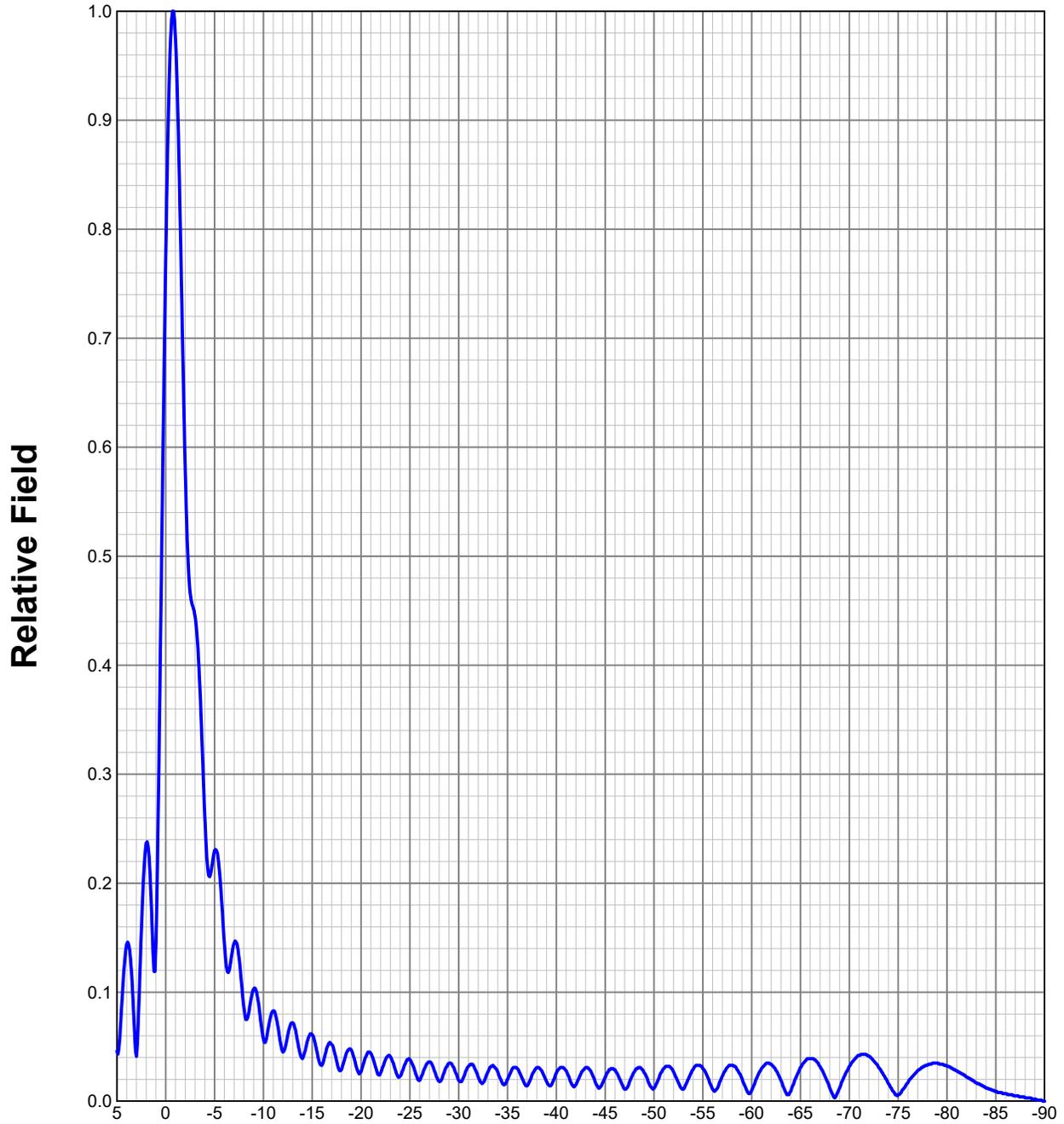
Polarization Horizontal

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
0	0.992	-0.07	92	0.968	-0.28	184	0.195	-14.20	276	0.991	-0.08
2	0.992	-0.07	94	0.960	-0.35	186	0.194	-14.24	278	0.992	-0.07
4	0.991	-0.08	96	0.950	-0.45	188	0.193	-14.29	280	0.993	-0.06
6	0.990	-0.09	98	0.937	-0.57	190	0.193	-14.29	282	0.995	-0.04
8	0.989	-0.10	100	0.921	-0.71	192	0.195	-14.20	284	0.996	-0.03
10	0.987	-0.11	102	0.903	-0.89	194	0.198	-14.07	286	0.997	-0.03
12	0.984	-0.14	104	0.882	-1.09	196	0.205	-13.76	288	0.998	-0.02
14	0.981	-0.17	106	0.860	-1.31	198	0.215	-13.35	290	0.999	-0.01
16	0.976	-0.21	108	0.836	-1.56	200	0.228	-12.84	292	1.000	0.00
18	0.971	-0.26	110	0.811	-1.82	202	0.246	-12.18	294	1.000	0.00
20	0.966	-0.30	112	0.787	-2.08	204	0.267	-11.47	296	1.000	0.00
22	0.960	-0.35	114	0.762	-2.36	206	0.291	-10.72	298	0.998	-0.02
24	0.954	-0.41	116	0.738	-2.64	208	0.318	-9.95	300	0.996	-0.03
26	0.948	-0.46	118	0.716	-2.90	210	0.348	-9.17	302	0.993	-0.06
28	0.943	-0.51	120	0.695	-3.16	212	0.378	-8.45	304	0.989	-0.10
30	0.938	-0.56	122	0.675	-3.41	214	0.408	-7.79	306	0.984	-0.14
32	0.935	-0.58	124	0.656	-3.66	216	0.438	-7.17	308	0.978	-0.19
34	0.933	-0.60	126	0.638	-3.90	218	0.467	-6.61	310	0.972	-0.25
36	0.932	-0.61	128	0.621	-4.14	220	0.495	-6.11	312	0.965	-0.31
38	0.933	-0.60	130	0.604	-4.38	222	0.520	-5.68	314	0.959	-0.36
40	0.935	-0.58	132	0.587	-4.63	224	0.543	-5.30	316	0.952	-0.43
42	0.939	-0.55	134	0.568	-4.91	226	0.564	-4.97	318	0.946	-0.48
44	0.944	-0.50	136	0.549	-5.21	228	0.584	-4.67	320	0.941	-0.53
46	0.950	-0.45	138	0.527	-5.56	230	0.602	-4.41	322	0.938	-0.56
48	0.956	-0.39	140	0.504	-5.95	232	0.620	-4.15	324	0.935	-0.58
50	0.963	-0.33	142	0.479	-6.39	234	0.637	-3.92	326	0.934	-0.59
52	0.969	-0.27	144	0.452	-6.90	236	0.654	-3.69	328	0.935	-0.58
54	0.975	-0.22	146	0.423	-7.47	238	0.672	-3.45	330	0.937	-0.57
56	0.981	-0.17	148	0.393	-8.11	240	0.691	-3.21	332	0.941	-0.53
58	0.985	-0.13	150	0.363	-8.80	242	0.711	-2.96	334	0.945	-0.49
60	0.989	-0.10	152	0.333	-9.55	244	0.732	-2.71	336	0.951	-0.44
62	0.992	-0.07	154	0.305	-10.31	246	0.755	-2.44	338	0.957	-0.38
64	0.994	-0.05	156	0.279	-11.09	248	0.778	-2.18	340	0.963	-0.33
66	0.994	-0.05	158	0.255	-11.87	250	0.803	-1.91	342	0.968	-0.28
68	0.994	-0.05	160	0.235	-12.58	252	0.827	-1.65	344	0.974	-0.23
70	0.994	-0.05	162	0.219	-13.19	254	0.852	-1.39	346	0.978	-0.19
72	0.993	-0.06	164	0.206	-13.72	256	0.875	-1.16	348	0.982	-0.16
74	0.991	-0.08	166	0.198	-14.07	258	0.897	-0.94	350	0.985	-0.13
76	0.990	-0.09	168	0.192	-14.33	260	0.917	-0.75	352	0.988	-0.10
78	0.988	-0.10	170	0.190	-14.42	262	0.935	-0.58	354	0.990	-0.09
80	0.987	-0.11	172	0.190	-14.42	264	0.950	-0.45	356	0.991	-0.08
82	0.985	-0.13	174	0.191	-14.38	266	0.962	-0.34	358	0.991	-0.08
84	0.983	-0.15	176	0.192	-14.33	268	0.972	-0.25	360	0.992	-0.07
86	0.981	-0.17	178	0.194	-14.24	270	0.979	-0.18			
88	0.978	-0.19	180	0.195	-14.20	272	0.985	-0.13			
90	0.974	-0.23	182	0.195	-14.20	274	0.988	-0.10			

Preliminary, subject to final design and review.

ELEVATION PATTERN

Type:	ATW28H3H		Channel:	36
Directivity:	Numeric	dBd	Location:	
Main Lobe:	28.00	14.47	Beam Tilt:	-0.75
Horizontal:	16.77	12.25	Polarization:	Horizontal



Preliminary, subject to final design and review.

TVSTUDY INTERFERENCE ANALYSIS RESULTS
PROPOSED WAQP-DT
CHANNEL 36 – SAGINAW, MICHIGAN

Study created: 2017.11.01 04:46:28

Study build station data: LMS TV 2017-10-24 (1)

Proposal: WAQP D36 DT CP SAGINAW, MI
File number: BLANK0000028088
Facility ID: 67792
Station data: User record
Record ID: 83
Country: U.S.
Zone: I

Stations affected by proposal:

Call	Chan	Svc	Status	City, State	File Number	Distance
WPBN-TV	D35	DT	CP	TRAVERSE CITY, MI	BLANK0000027437	188.1 km
WPBN-TV	D35	DT	BL	TRAVERSE CITY, MI	DTVBL21253	188.1
WHME-TV	D36	DT	CP	SOUTH BEND, IN	BLANK0000025171	250.1
WHME-TV	D36	DT	BL	SOUTH BEND, IN	DTVBL36117	250.1

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D36
Latitude: 43 13 18.00 N (NAD83)
Longitude: 84 3 14.00 W
Height AMSL: 479.9 m
HAAT: 287.0 m
Peak ERP: 1000 kW
Antenna: ERI-ATW28H3-HTC1-36H (ID 1001772) 265.0 deg
Elev Patrn: Generic
Elec Tilt: 0.75

40.9 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	898 kW	301.4 m	96.3 km

45.0	254	299.5	84.9
90.0	37.6	287.2	72.0
135.0	362	276.7	84.4
180.0	972	267.5	92.2
225.0	885	279.2	93.2
270.0	979	290.7	95.8
315.0	927	298.5	96.3

Database HAAT does not agree with computed HAAT

Database HAAT: 287 m Computed HAAT: 288 m

**Proposal service area extends beyond baseline plus 1.0%

Proposal service area population is more than 95.0% of baseline

**Proposal is within coordination distance of Canadian border

Distance to Canadian border: 128.9 km

Distance to Mexican border: 2145.2 km

Conditions at FCC monitoring station: Allegan MI

Bearing: 246.8 degrees Distance: 169.3 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:

Bearing: 266.2 degrees Distance: 1785.1 km

Study cell size: 2.00 km

Profile point spacing: 1.00 km

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

Maximum new IX to LPTV: 2.00%

No IX check failures found.

POWER DENSITY CALCULATION

PROPOSED WAQP-DT
CHANNEL 36 – SAGINAW, MICHIGAN

[MODIFICATION OF CONSTRUCTION PERMIT 0000028088]

Since the FCC considers the possible biological effects of RF transmissions in its environmental determinations, we have studied the matter with respect to this Saginaw facility. Employing the methods set forth in *OET Bulletin No. 65* and considering a main-lobe effective radiated power of 1000 kW (H,V), an antenna radiation center 294 meters above ground, and the specific elevation pattern of the proposed ERI antenna, maximum power density two meters above ground of 0.00013 mW/cm^2 is calculated to occur 96 meters west of the base of the tower. Since this is only 0.3 percent of the 0.40 mW/cm^2 reference for uncontrolled environments (areas with public access) surrounding a facility operating on Channel 36 (602-608 MHz), a grant of this proposal may be considered a minor environmental action with respect to public exposure to non-ionizing electromagnetic radiation.

Further, the station owner will take whatever precautionary steps are necessary, such as reducing power or leaving the air temporarily, to ensure that workers operating in the vicinity of the antenna are not exposed to excessive non-ionizing radiation.