

T Z SAWYER TECHNICAL CONSULTANTS

2130 HUTCHISON GROVE COURT, SUITE 100
FALLS CHURCH, VIRGINIA 22043
TELEPHONE (703) 848-2130 / (202) 642-2130

APPLICATION FOR DIGITAL LOW POWER TELEVISION STATION MODIFICATION OF CONSTRUCTION PERMIT

MINOR CHANGE DISPLACEMENT APPLICATION

VAL VISTA RV PARK, LLC

W38FO, Digital Channel 38, BNPDTL-20100223AEB

FACILITY ID: 184943

ELMHURST, MI

APRIL 2021

Engineering Statement - Narrative

W38FO, a low power television facility (existing digital construction permit) has been displaced as a result of the incentive auction television channel repack assignments, and qualifies for filing a minor change displacement application.

W38FO Channel Displacement Relief is Sought

W38FO holds a digital construction permit for operation on Television Channel 38. Television Channel 38 is an “out of core” channel. Core television channels are 2 to 36, therefore, it is automatically DISPLACED as a result of the television channel repack and no further demonstration of interference to or from the Channel 38 facility need be presented to justify its displaced status.

Proposed Technical Facility:

The proposed Channel 31 (572-578 MHZ) operation will employ a full-service RF emission mask and a nondirectional antenna system (ERI ALP-0), with an effective radiated power (ERP) of 15-Kilowatts, and an antenna radiation center above mean sea level (RCAMSL) of 484.9 meters and 110.0 meters above ground level (AGL).

Figure 1, is the proposed site location, as listed in FCC Tower ASR# 1000703.

Figure 2, is a map showing the predicted f(50,90) 51 dBu service contour (present and proposed.)

Figure 3, contains the summary printout from the FCC TV Study program.

Figure 4, is a printout of the directional antenna pattern and its vertical elevation characteristics.

Modification Compliance:

Pursuant to 47 CFR §74.787(b) the instant application is considered a “minor” change because;

- The change in frequency (channel) is related to displacement relief as outlined above.
- There is no change in transmitting antenna location such that the protected contour resulting from the change does not overlap some portion of the protected contour of the authorized facilities of the existing station as illustrated in Figure 2, Present & Proposed Service Contours.
- There is no change in transmitting antenna location greater than 30 miles (48km) from the reference coordinates of the existing station’s antenna location, as noted below:

CALCULATED DISTANCE BETWEEN EXISTING AND PROPOSED SITES

SITE	LAT (NAD83)	LON (NAD83)	(KM)	(MI)
CURRENT/EXISTING	45-33-38.6 N	84-36-55.4 W	34.3	21.3
PROPOSED	45-30-05.2 N	85-01-48.9 W		

Interference Analysis to other facilities:

An interference analysis to other television facilities is provided as Figure 3, FCC TV Study Results.

Contingent Application Rule:

No waiver is required. Operation is not dependent on spectrum to be vacated.

AM Facilities/International Coordination:

There are no authorized AM stations within 3.2 kilometers of the site. The nearest point to the border with Canada is 103.7 km. The proposed 25.42 dBu contour CROSSES the border, therefore, international coordination with Canada WILL BE required. No interference occurs to any (known) Canadian facility of concern.

Environmental Considerations:

Any changes in equipment or additions will not trigger any event with regards to Section 106 of the National Historical Preservation Act (NHPA). This is an existing developed communications site.

The proposal does not meet any of the criteria specified in Section 1.1307 of the FCC Rules. More specifically, the proposed facilities are not known to fall within any of the categories enumerated in Sections 1.1307(a)(1)-(7) and will not involve the use of high intensity white lights.

Furthermore, operation of the proposed facility will not involve the exposure of workers or the general public to levels of radio frequency electromagnetic fields exceeding guidelines adopted by the Federal Communications Commission. (The current FCC guidelines are based upon criteria contained in the National Council of Radiation Protection and Measurements (NCRP) Report No.86 (1986) and ANSI/IEEE C95.1-1992.)

CALCULATED POWER DENSITY AT 2 METERS AGL (0.5 ANTENNA RELATIVE FIELD VALUE)

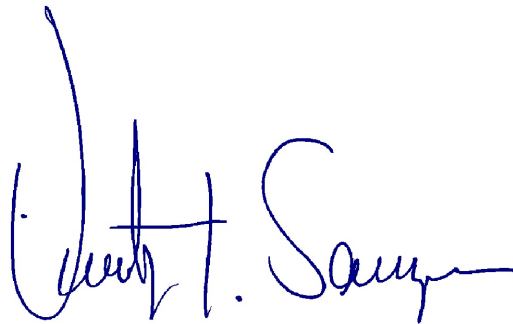
	MPE (MW/CM ²)	CALCULATED VALUE	% OF MPE	PASS/FAIL
CONTROLLED AREA	1.9167	0.010738	0.56%	PASS
PUBLIC AREA	0.3833	0.010738	2.80%	PASS

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs are posted at the site. The applicant will coordinate exposure procedures with any co-located facilities and will reduce power or cease operation as necessary to protect persons having access to the site, tower, or antenna from RF electromagnetic field exposure in excess of FCC guidelines.

The proposed operation is fully in compliance with all areas of the Commission's rules and applicable international agreements.

April 12, 2021

Timothy Z. Sawyer, Technical Consultant
T Z Sawyer Technical Consultants
2130 Hutchison Grove Court, Suite 100
Falls Church, Virginia 22043
Telephone: (703) 848-2130
e Mail to: tzsawyer@tzsawyer.com

A handwritten signature in blue ink, appearing to read "Timothy Z. Sawyer". The signature is stylized with a large initial "T" and a long, sweeping underline.

Existing Communications Tower (No change in existing tower height is proposed)

Registration Detail			
Reg Number	1000703	Status	Constructed
File Number	A0748906	Constructed	01/01/1987
EMI	No	Dismantled	
NEPA	No		
Antenna Structure			
Structure Type	TOWER - Free standing or Guyed Structure used for Commu		
Location (in NAD83 Coordinates)			
Lat/Long	45-30-05.2 N 085-01-48.9 W	Address	3399 WRESSEL RD
City, State	HARBOR SPRINGS , MI		
Zip	49740	County	EMMET
Center of AM Array		Position of Tower in Array	
Heights (meters)			
Elevation of Site Above Mean Sea Level		Overall Height Above Ground (AGL)	
374.9		201.2	
Overall Height Above Mean Sea Level		Overall Height Above Ground w/o Appurtenances	
576.1		200.3	
Painting and Lighting Specifications			
FAA Chapters 3, 4, 5, 9 Paint and Light in Accordance with FAA Circular Number 70/7460-1G			
FAA Notification			
FAA Study	2011-AGL-6373-OE	FAA Issue Date	12/14/2011

**T Z SAWYER TECHNICAL
CONSULTANTS**

Tel.: (703) 848-2130
www.tzsawyer.com

**FCC TOWER ASR REGISTRATION # 1000703
FAA NOTICE NOT REQUIRED**

W38FO
LOW POWER DIGITAL TELEVISION
ELMHURST, MI

**FIGURE
1**

FALL CHURCH, VIRGINIA 22043-2555

SIZE

A

CAGE NO

N/A

DWG NO

20210412W38FO-F1

REV

(c) 2021, ALL RIGHTS RESERVED

SCALE

N/A

APRIL 2021

SHEET

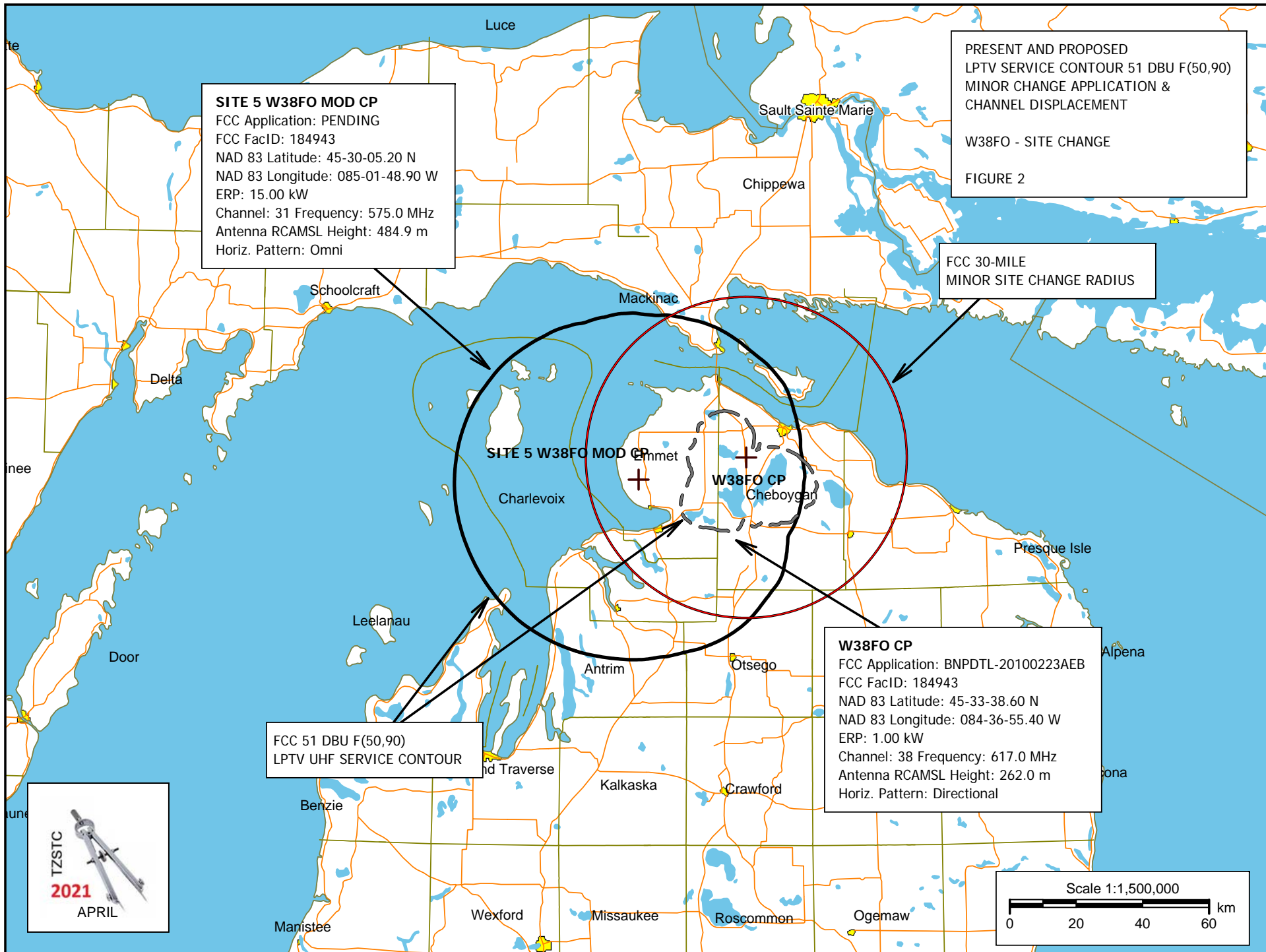


FIGURE 3 FCC TV STUDY SUMMARY OR FULL REPORT

tvstudy v2.2.5 (4uoc83)

Database: localhost, Study: W38FO SITE 5 FINAL REPACK, Model: Longley-Rice

Study build station data: LMS TV 2021-04-10

Proposal: W38FO D31 LD APP ELMHURST, MI
 File number: REPACK
 Facility ID: 184943
 Station data: User record
 Record ID: 303
 Country: U.S.

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

Search options:
 Non-U.S. records included

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	WNEM-TV	D30	DT	LIC	BAY CITY, MI	BLANK0000113433	244.6 km
No	WXII-LP	D30+	LD	CP	CEDAR, MI	BLANK0000071863	97.2
No	W30DQ-D	D30	LD	CP	CHARLES, MI	BNPDTL20100223ADV	73.8
No	W18BT	D30-	LD	LIC	Flint, MI	BLANK0000121598	94.5
No	WFLD	D31	DT	LIC	CHICAGO, IL	BLANK0000055195	453.8
No	WNIT	D31	DT	LIC	SOUTH BEND, IN	BLANK0000087078	442.1
No	WMYD	D31	DT	LIC	DETROIT, MI	BLANK0000125639	370.5
No	WMKG-CD	D31	DC	LIC	MUSKEGON, MI	BLANK0000107817	275.0
No	WITI	D31	DT	LIC	MILWAUKEE, WI	BLANK0000086971	351.8
No	W31EV-D	D31	LD	CP	WAUSAU, WI	BLANK0000071942	362.4
No	WFQX-TV	D32	DT	LIC	CADILLAC, MI	BLCDT20091217ACU	153.7
No	WFQX-TV	D32	DT	CP	CADILLAC, MI	BLANK0000035809	153.7
No	WJMN-TV	D32	DT	LIC	ESCANABA, MI	BLANK0000063727	164.4
No	W32EL-D	D32	LD	CP	ST. IGNACE, MI	BNPDTL20100223ADT	44.1
No	CICI-TV-1	D30	DT	LIC	ELLIOT LAKE, ON	BLANKCANADA171	209.6

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D31
 Mask: Full Service
 Latitude: 45 30 5.20 N (NAD83)
 Longitude: 85 1 48.90 W
 Height AMSL: 484.9 m
 HAAT: 0.0 m
 Peak ERP: 15.0 kW
 Antenna: Omnidirectional
 Elev Pattn: Generic
 Elec Tilt: 0.75

50.4 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	15.0 kW	202.5 m	50.6 km
45.0	15.0	231.4	52.3
90.0	15.0	203.1	50.6
135.0	15.0	255.8	53.6
180.0	15.0	274.8	54.7
225.0	15.0	299.2	56.1
270.0	15.0	297.3	56.0
315.0	15.0	255.8	53.6

Database HAAT does not agree with computed HAAT
 Database HAAT: 0 m Computed HAAT: 252 m

**Proposal 25.42 dBu contour crosses Canadian border, coordination required
Distance to Canadian border: 103.7 km

Distance to Mexican border: 2256.5 km

Conditions at FCC monitoring station: Allegan MI
Bearing: 193.3 degrees Distance: 330.2 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 257.3 degrees Distance: 1744.6 km

Study cell size: 1.00 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%

Interference to proposal scenario 1

Desired:	Call W38FO	Chan D31	Svc LD	Status APP	City, State ELMHURST, MI	File Number REPACK	Distance
Undesireds:	WFQX-TV	D32	DT	LIC	CADILLAC, MI	BLCDT20091217ACU	153.7 km
	W32EL-D	D32	LD	CP	ST. IGNACE, MI	BNPDTL20100223ADT	44.1
Service area		Terrain-limited		IX-free		Percent IX	
8943.9	95,870	8752.7		91,244	8745.7	90,896	0.08 0.38
Undesired				Total IX	Unique IX	Prcnt Unique IX	
W32EL-D D32 LD CP	7.0			348	7.0 348	0.08 0.38	

***PRELIMINARY SPECIFICATION FOR
ERI CARINA™ HORIZONTALLY POLARIZED
COAXIAL SLOTTED ARRAY ANTENNA***

*Prepared For
W38FO
Channel 31*

April 2021

**ANTENNA TYPE:
ALP8L3-HSO-31**

**SPECIFICATION NO:
FIGURE 4**



PRELIMINARY SPECIFICATION FOR ERI CARINA™ HORIZONTALLY POLARIZED COAXIAL SLOTTED ARRAY ANTENNA

MECHANICAL CHARACTERISTICS:

MOUNTING CONFIGURATION:

*(Tower Interface supplied and installed by others.)

Side Mount

HEIGHT OF ANTENNA:

18.8 feet

HEIGHT OF CENTER OF
RADIATION:

9.4 feet

OVERALL HEIGHT (A):

18.8 feet

DEICING:

Unpressurized Slot Cover Radome Enclosure

RADOME DIAMETER (C):

CONTACT ERI

RADOME COLOR:

TBA

CLIMBING DEVICE:

NOT APPLICABLE

CALCULATED WEIGHT¹:

120 lbs.

ANTENNA AREA³:

FRONT AREA:

$C_A A_C$: 6.7 square feet

A_C : 5.6 square feet

SIDE AREA:

$C_A A_C$: 9.7 square feet

A_C : 8.1 square feet

This antenna is designed to be supported by a structure that can resist the antenna base reactions and which provides a support that is rigid in the three translational and three rotational degrees of freedom.

¹ Calculated weight is based on the PRELIMINARY design of the antenna. The actual weight of the antenna will be within $\pm 10\%$ of the calculated weight. The actual weight will be given in the technical manual that accompanies the antenna.

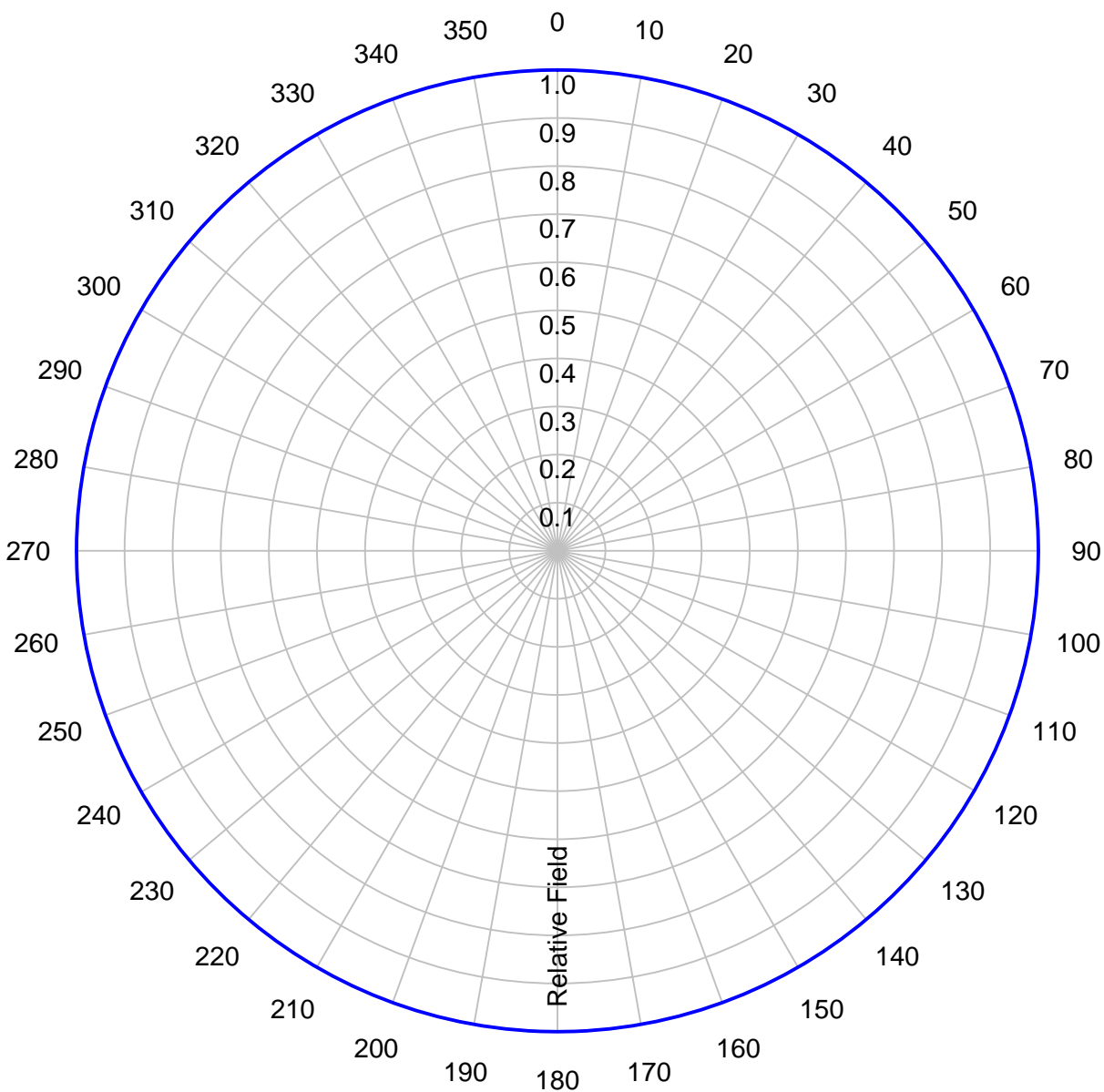
³ Antenna Area is calculated per EIA/TIA-RS222-F.

Note: Localized conditions may require higher wind speed specifications than TIA/EIA specifications. Check with local authorities to verify wind speed requirements.

Preliminary, subject to final design and review.

AZIMUTH PATTERN**Type:**ALP-O**Channel:**31**Directivity:**NumericdBd**Peak(s) at:**1.000.00**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: ALP-O

PolarizationHorizontal

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
0	1.000	0.00	92	1.000	0.00	184	1.000	0.00	276	1.000	0.00
2	1.000	0.00	94	1.000	0.00	186	1.000	0.00	278	1.000	0.00
4	1.000	0.00	96	1.000	0.00	188	1.000	0.00	280	1.000	0.00
6	1.000	0.00	98	1.000	0.00	190	1.000	0.00	282	1.000	0.00
8	1.000	0.00	100	1.000	0.00	192	1.000	0.00	284	1.000	0.00
10	1.000	0.00	102	1.000	0.00	194	1.000	0.00	286	1.000	0.00
12	1.000	0.00	104	1.000	0.00	196	1.000	0.00	288	1.000	0.00
14	1.000	0.00	106	1.000	0.00	198	1.000	0.00	290	1.000	0.00
16	1.000	0.00	108	1.000	0.00	200	1.000	0.00	292	1.000	0.00
18	1.000	0.00	110	1.000	0.00	202	1.000	0.00	294	1.000	0.00
20	1.000	0.00	112	1.000	0.00	204	1.000	0.00	296	1.000	0.00
22	1.000	0.00	114	1.000	0.00	206	1.000	0.00	298	1.000	0.00
24	1.000	0.00	116	1.000	0.00	208	1.000	0.00	300	1.000	0.00
26	1.000	0.00	118	1.000	0.00	210	1.000	0.00	302	1.000	0.00
28	1.000	0.00	120	1.000	0.00	212	1.000	0.00	304	1.000	0.00
30	1.000	0.00	122	1.000	0.00	214	1.000	0.00	306	1.000	0.00
32	1.000	0.00	124	1.000	0.00	216	1.000	0.00	308	1.000	0.00
34	1.000	0.00	126	1.000	0.00	218	1.000	0.00	310	1.000	0.00
36	1.000	0.00	128	1.000	0.00	220	1.000	0.00	312	1.000	0.00
38	1.000	0.00	130	1.000	0.00	222	1.000	0.00	314	1.000	0.00
40	1.000	0.00	132	1.000	0.00	224	1.000	0.00	316	1.000	0.00
42	1.000	0.00	134	1.000	0.00	226	1.000	0.00	318	1.000	0.00
44	1.000	0.00	136	1.000	0.00	228	1.000	0.00	320	1.000	0.00
46	1.000	0.00	138	1.000	0.00	230	1.000	0.00	322	1.000	0.00
48	1.000	0.00	140	1.000	0.00	232	1.000	0.00	324	1.000	0.00
50	1.000	0.00	142	1.000	0.00	234	1.000	0.00	326	1.000	0.00
52	1.000	0.00	144	1.000	0.00	236	1.000	0.00	328	1.000	0.00
54	1.000	0.00	146	1.000	0.00	238	1.000	0.00	330	1.000	0.00
56	1.000	0.00	148	1.000	0.00	240	1.000	0.00	332	1.000	0.00
58	1.000	0.00	150	1.000	0.00	242	1.000	0.00	334	1.000	0.00
60	1.000	0.00	152	1.000	0.00	244	1.000	0.00	336	1.000	0.00
62	1.000	0.00	154	1.000	0.00	246	1.000	0.00	338	1.000	0.00
64	1.000	0.00	156	1.000	0.00	248	1.000	0.00	340	1.000	0.00
66	1.000	0.00	158	1.000	0.00	250	1.000	0.00	342	1.000	0.00
68	1.000	0.00	160	1.000	0.00	252	1.000	0.00	344	1.000	0.00
70	1.000	0.00	162	1.000	0.00	254	1.000	0.00	346	1.000	0.00
72	1.000	0.00	164	1.000	0.00	256	1.000	0.00	348	1.000	0.00
74	1.000	0.00	166	1.000	0.00	258	1.000	0.00	350	1.000	0.00
76	1.000	0.00	168	1.000	0.00	260	1.000	0.00	352	1.000	0.00
78	1.000	0.00	170	1.000	0.00	262	1.000	0.00	354	1.000	0.00
80	1.000	0.00	172	1.000	0.00	264	1.000	0.00	356	1.000	0.00
82	1.000	0.00	174	1.000	0.00	266	1.000	0.00	358	1.000	0.00
84	1.000	0.00	176	1.000	0.00	268	1.000	0.00	360	1.000	0.00
86	1.000	0.00	178	1.000	0.00	270	1.000	0.00			
88	1.000	0.00	180	1.000	0.00	272	1.000	0.00			
90	1.000	0.00	182	1.000	0.00	274	1.000	0.00			

Preliminary, subject to final design and review.

TABULATED DATA FOR AZIMUTH PATTERN FCC FILING FORMAT

Type: ALP-O

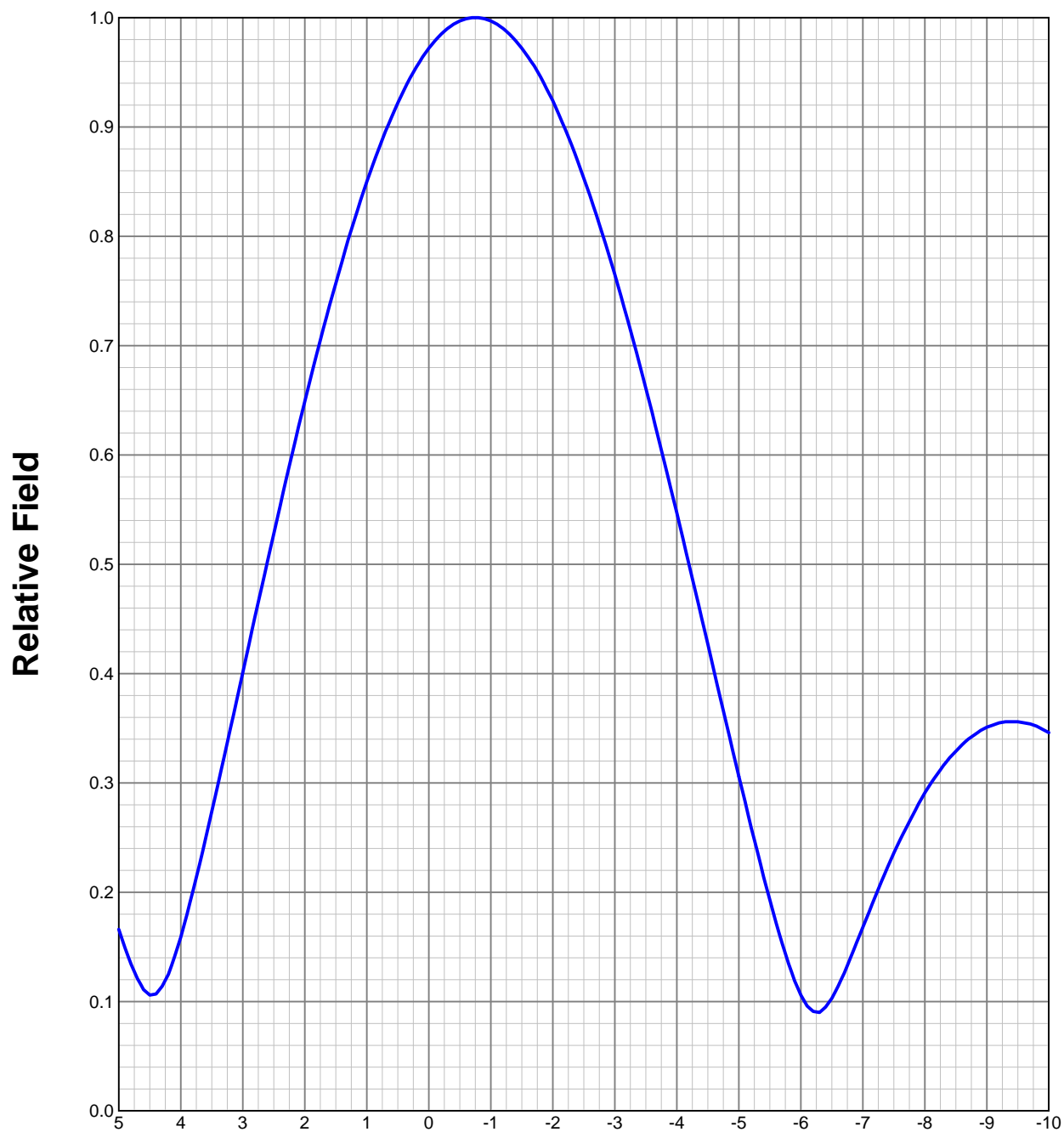
PolarizationHorizontal

ANGLE	FIELD	ERP (kW)	ERP (dBk)
0	1.000	15.000	11.761
10	1.000	15.000	11.761
20	1.000	15.000	11.761
30	1.000	15.000	11.761
40	1.000	15.000	11.761
50	1.000	15.000	11.761
60	1.000	15.000	11.761
70	1.000	15.000	11.761
80	1.000	15.000	11.761
90	1.000	15.000	11.761
100	1.000	15.000	11.761
110	1.000	15.000	11.761
120	1.000	15.000	11.761
130	1.000	15.000	11.761
140	1.000	15.000	11.761
150	1.000	15.000	11.761
160	1.000	15.000	11.761
170	1.000	15.000	11.761
180	1.000	15.000	11.761
190	1.000	15.000	11.761
200	1.000	15.000	11.761
210	1.000	15.000	11.761
220	1.000	15.000	11.761
230	1.000	15.000	11.761
240	1.000	15.000	11.761
250	1.000	15.000	11.761
260	1.000	15.000	11.761
270	1.000	15.000	11.761
280	1.000	15.000	11.761
290	1.000	15.000	11.761
300	1.000	15.000	11.761
310	1.000	15.000	11.761
320	1.000	15.000	11.761
330	1.000	15.000	11.761
340	1.000	15.000	11.761
350	1.000	15.000	11.761

Preliminary, subject to final design and review.

ELEVATION PATTERN

Type:	ALP8L3		Channel:	31
Directivity:	Numeric	dBd	Location:	
Main Lobe:	9.05	9.57	Beam Tilt:	-0.75
Horizontal:	8.55	9.32	Polarization:	Horizontal



Preliminary, subject to final design and review.

TABULATED DATA FOR ELEVATION PATTERN

Type: ALP8L3

PolarizationHorizontal

ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB
5.00	0.166	-15.60	-6.75	0.133	-17.52	-27.00	0.053	-25.51	-50.50
4.75	0.128	-17.89	-7.00	0.168	-15.49	-27.50	0.034	-29.37	-51.00
4.50	0.106	-19.49	-7.25	0.203	-13.85	-28.00	0.018	-34.89	-51.50
4.25	0.119	-18.45	-7.50	0.236	-12.54	-28.50	0.008	-41.94	-52.00
4.00	0.159	-15.97	-7.75	0.265	-11.55	-29.00	0.006	-44.44	-52.50
3.75	0.214	-13.41	-8.00	0.291	-10.72	-29.50	0.004	-47.96	-53.00
3.50	0.274	-11.24	-8.25	0.312	-10.12	-30.00	0.000	-40.00	-53.50
3.25	0.337	-9.45	-8.50	0.329	-9.66	-30.50	0.009	-40.92	-54.00
3.00	0.401	-7.94	-8.75	0.342	-9.32	-31.00	0.021	-33.56	-54.50
2.75	0.466	-6.64	-9.00	0.351	-9.09	-31.50	0.037	-28.64	-55.00
2.50	0.528	-5.55	-9.25	0.355	-8.98	-32.00	0.054	-25.35	-55.50
2.25	0.590	-4.58	-9.50	0.356	-8.97	-32.50	0.074	-22.62	-56.00
2.00	0.649	-3.76	-9.75	0.353	-9.04	-33.00	0.093	-20.63	-56.50
1.75	0.705	-3.04	-10.00	0.346	-9.22	-33.50	0.112	-19.02	-57.00
1.50	0.757	-2.42	-10.50	0.323	-9.82	-34.00	0.129	-17.79	-57.50
1.25	0.806	-1.87	-11.00	0.289	-10.78	-34.50	0.144	-16.83	-58.00
1.00	0.850	-1.41	-11.50	0.247	-12.15	-35.00	0.156	-16.14	-58.50
0.75	0.889	-1.03	-12.00	0.201	-13.94	-35.50	0.165	-15.65	-59.00
0.50	0.922	-0.71	-12.50	0.153	-16.31	-36.00	0.169	-15.44	-59.50
0.25	0.950	-0.45	-13.00	0.107	-19.41	-36.50	0.170	-15.39	-60.00
0.00	0.972	-0.25	-13.50	0.064	-23.88	-37.00	0.166	-15.60	-60.50
-0.25	0.988	-0.11	-14.00	0.028	-31.06	-37.50	0.159	-15.97	-61.00
-0.50	0.997	-0.03	-14.50	0.001	-60.00	-38.00	0.148	-16.59	-61.50
-0.75	1.000	0.00	-15.00	0.021	-33.56	-38.50	0.134	-17.46	-62.00
-1.00	0.997	-0.03	-15.50	0.032	-29.90	-39.00	0.117	-18.64	-62.50
-1.25	0.988	-0.11	-16.00	0.033	-29.63	-39.50	0.098	-20.18	-63.00
-1.50	0.972	-0.25	-16.50	0.027	-31.37	-40.00	0.079	-22.05	-63.50
-1.75	0.951	-0.44	-17.00	0.020	-33.98	-40.50	0.059	-24.58	-64.00
-2.00	0.924	-0.69	-17.50	0.027	-31.37	-41.00	0.040	-27.96	-64.50
-2.25	0.891	-1.00	-18.00	0.051	-25.85	-41.50	0.025	-32.04	-65.00
-2.50	0.853	-1.38	-18.50	0.081	-21.83	-42.00	0.021	-33.56	-65.50
-2.75	0.811	-1.82	-19.00	0.112	-19.02	-42.50	0.029	-30.75	-66.00
-3.00	0.765	-2.33	-19.50	0.143	-16.89	-43.00	0.041	-27.74	-66.50
-3.25	0.714	-2.92	-20.00	0.172	-15.29	-43.50	0.051	-25.85	-67.00
-3.50	0.661	-3.60	-20.50	0.197	-14.11	-44.00	0.058	-24.73	-67.50
-3.75	0.605	-4.37	-21.00	0.217	-13.27	-44.50	0.063	-24.01	-68.00
-4.00	0.547	-5.24	-21.50	0.231	-12.73	-45.00	0.064	-23.88	-68.50
-4.25	0.487	-6.25	-22.00	0.238	-12.47	-45.50	0.063	-24.01	-69.00
-4.50	0.427	-7.39	-22.50	0.238	-12.47	-46.00	0.058	-24.73	-69.50
-4.75	0.366	-8.73	-23.00	0.232	-12.69	-46.50	0.051	-25.85	-70.00
-5.00	0.306	-10.29	-23.50	0.220	-13.15	-47.00	0.042	-27.54	-70.50
-5.25	0.248	-12.11	-24.00	0.202	-13.89	-47.50	0.030	-30.46	-71.00
-5.50	0.193	-14.29	-24.50	0.180	-14.89	-48.00	0.017	-35.39	-71.50
-5.75	0.144	-16.83	-25.00	0.155	-16.19	-48.50	0.003	-50.46	-72.00
-6.00	0.106	-19.49	-25.50	0.129	-17.79	-49.00	0.012	-38.42	-72.50
-6.25	0.090	-20.87	-26.00	0.102	-19.83	-49.50	0.027	-31.37	-73.00
-6.50	0.103	-19.74	-26.50	0.077	-22.27	-50.00	0.042	-27.54	-73.50

Preliminary, subject to final design and review.