

T Z SAWYER TECHNICAL CONSULTANTS

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FALLS CHURCH, VIRGINIA 22043
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APPLICATION FOR DIGITAL LOW POWER TELEVISION STATION MODIFICATION OF CONSTRUCTION PERMIT

MINOR CHANGE APPLICATION

VAL VISTA RV PARK, LLC

W20DT, Digital Channel 20, BNPDTL-20100223ADM

FACILITY ID: 184928

VANDERBILT, MI

APRIL 2021

Engineering Statement - Narrative

W20DT, a low power television facility (existing digital construction permit) seeks to change its transmitter site location and antenna type and height.

Proposed Technical Facility:

The proposed Channel 20 (506-512 MHZ) operation will employ a full-service RF emission mask and directional antenna system (ERI ALP-MRE) rotated to 25 degrees true, with an effective radiated power (ERP) of 15-Kilowatts, and an antenna radiation center above mean sea level (RCAMSL) of 589.0 meters and 121.4 meters above ground level (AGL).

Figure 1, is the proposed site location, as listed in FCC Tower ASR# 1000438

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;

- 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	45-12-36.3 N	84-37-22.8 W	11.0	6.8
PROPOSED	45-10-12.0 N	84-45-04.0 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 kilometers of the site. The nearest point to the border with Canada is 115.4 km, the proposed 24.36 dBu contour does cross the border. Therefore, it is believed that international coordination with Canada WILL BE required.

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)

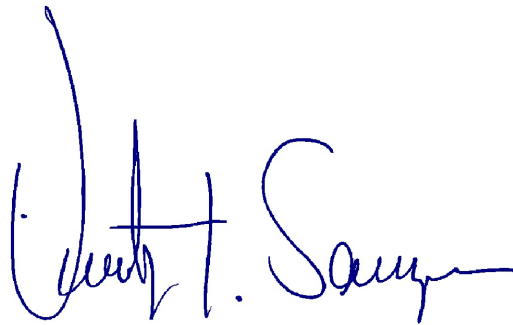
	MPE (MW/CM ²)	CALCULATED VALUE	% OF MPE	PASS/FAIL
CONTROLLED AREA	1.6767	0.008786	0.52%	PASS
PUBLIC AREA	0.3353	0.008786	2.62%	PASS

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
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Falls Church, Virginia 22043
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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 horizontal stroke at the end.

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

Registration Detail			
Reg Number	1000438	Status	Constructed
File Number	A0594795	Constructed	08/28/1996
EMI	No	Dismantled	
NEPA	No		
Antenna Structure			
Structure Type	TOWER - Free standing or Guyed Structure used for Commu		
Location (in NAD83 Coordinates)			
Lat/Long	45-10-12.0 N 084-45-04.0 W	Address	02132 TOWER RD
City, State	VANDERBILT , MI		
Zip	49713	County	CHARLEVOIX
Center of AM Array		Position of Tower in Array	
Heights (meters)			
Elevation of Site Above Mean Sea Level		Overall Height Above Ground (AGL)	
467.6		193.0	
Overall Height Above Mean Sea Level		Overall Height Above Ground w/o Appurtenances	
660.6		192.0	
Painting and Lighting Specifications			
FAA Chapters 3, 4, 8, 13 Paint and Light in Accordance with FAA Circular Number 70/7460-1J			
FAA Notification			
FAA Study	96-AGL-0264-OE	FAA Issue Date	03/25/1996

**T Z SAWYER TECHNICAL
CONSULTANTS**

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**FCC TOWER ASR REGISTRATION # 1000438
FAA NOTICE NOT REQUIRED**

W20DT
LOW POWER DIGITAL TELEVISION
VANDERBILT, MI

**FIGURE
1**

FALL CHURCH, VIRGINIA 22043-2555

SIZE

A

CAGE NO

N/A

DWG NO

20210412W20DT-F1

REV

(c) 2021, ALL RIGHTS RESERVED

SCALE

N/A

APRIL 2021

SHEET

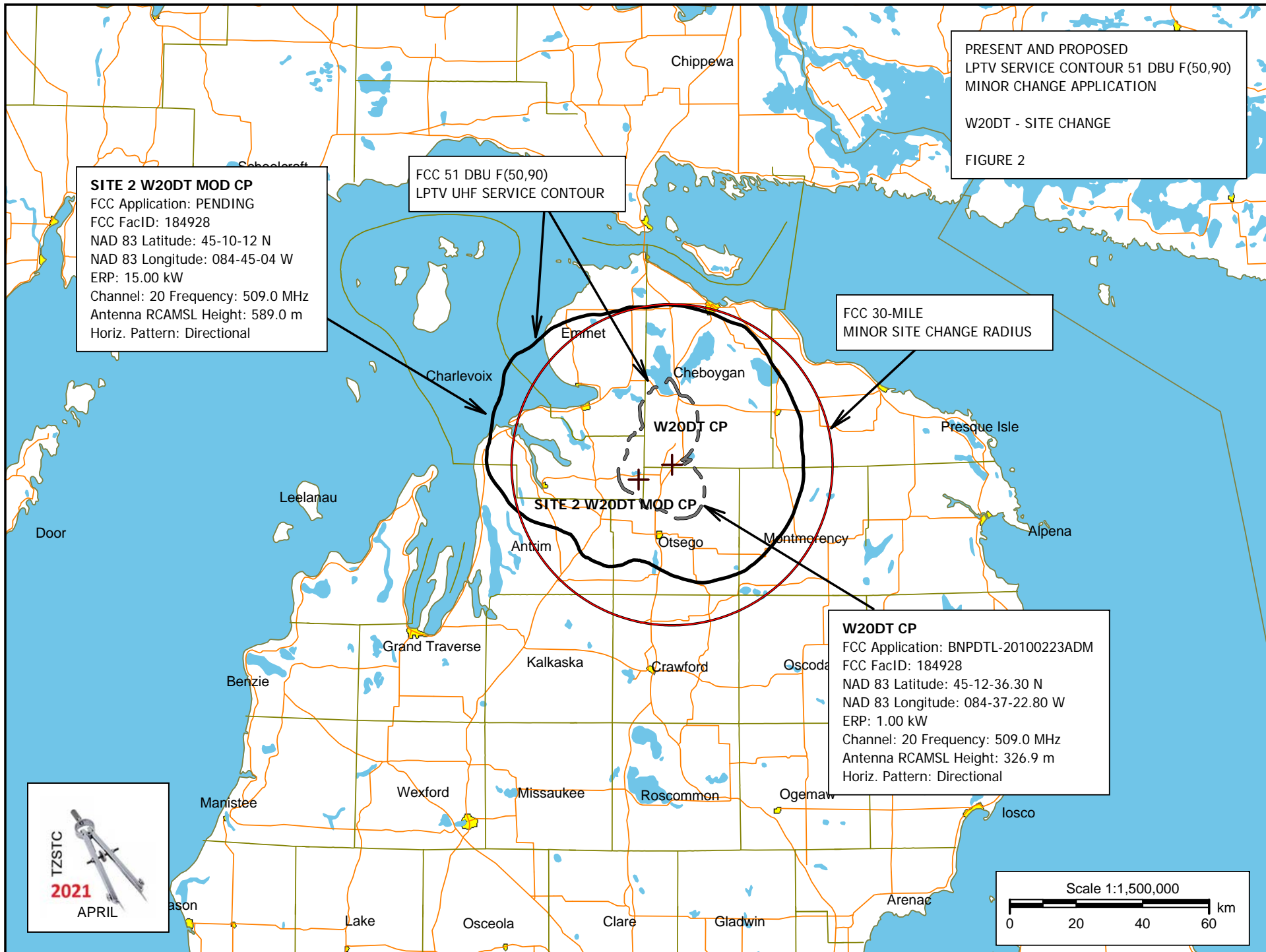


FIGURE 3 - FCC TV STUDY SUMMARY OR FULL REPORT

tvstudy v2.2.5 (4uoc83)

Database: localhost, Study: W20DT FINAL SITE 2, Model: Longley-Rice

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

Proposal: W20DT-D D20 LD APP VANDERBILT, MI
 File number: W20DT FINAL SITE 2
 Facility ID: 184928
 Station data: User record
 Record ID: 350
 Country: U.S.

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

Search options:
 Non-U.S. records included

Individual records excluded:
 20100223ADM W20DT-D D20 LD CP VANDERBILT, MI BNPDTL20100223ADM

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	W18BT	N18-	TX	LIC	Flint, MI	BLTTL19981113JB	100.6 km
No	WZMQ	D19	DT	CP	MARQUETTE, MI	BLANK0000036114	268.8
No	WZMQ	D19	DT	LIC	MARQUETTE, MI	BLCDT20100928AJX	268.8
No	W19EA-D	D19	LD	CP	ROSCOMMON, MI	BNPDTL20100223ACZ	70.1
No	WFFT-TV	D20	DT	LIC	FORT WAYNE, IN	BLANK0000086952	452.8
No	WTVS	D20	DT	LIC	DETROIT, MI	BLANK0000117036	328.0
No	WCMW	D20	DT	LIC	MANISTEE, MI	BLANK0000087364	175.3
Yes	W20DK-D	D20	LD	CP	ROSCOMMON, MI	BNPDTL20100223ACY	70.1
Yes	WUWB-LD	D20	LD	LIC	WEST BRANCH, MI	BLDTL20140708ABB	108.5
No	WHA-TV	D20	DT	LIC	MADISON, WI	BLANK0000089074	448.2
No	W20DN-D	D20	LD	CP	TOMAHAWK, WI	BNPDTL20100510AFG	388.8
Yes	W20DI-D	D20	LD	CP	TRAVERSE CITY, MI	BLANK0000036242	86.2
No	W21DQ-D	D21	LD	CP	MIDLAND, MI	BDISDTL20130430ACW	126.6
No	WFUP	D21	DT	LIC	VANDERBILT, MI	BLANK0000087814	0.0
No	CBLT-DT	D20	DT	LIC	TORONTO, ON	BLANKCANADA234	458.4

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D20
 Mask: Full Service
 Latitude: 45 10 12.00 N (NAD83)
 Longitude: 84 45 4.00 W
 Height AMSL: 589.0 m
 HAAT: 0.0 m
 Peak ERP: 15.0 kW
 Antenna: ERI-ALP-MRE 25.0 deg
 Elev Pattn: Generic
 Elec Tilt: 0.75

49.4 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	12.8 kW	252.1 m	53.9 km
45.0	13.5	288.0	56.2
90.0	6.57	276.7	51.7
135.0	1.92	227.2	42.7
180.0	0.135	179.2	26.4
225.0	0.150	217.3	28.9
270.0	1.56	319.0	46.2
315.0	5.88	344.7	54.8

Database HAAT does not agree with computed HAAT

Database HAAT: 0 m Computed HAAT: 263 m

**Proposal 24.36 dBu contour crosses Canadian border, coordination required

Distance to Canadian border: 115.4 km

Distance to Mexican border: 2246.2 km

Conditions at FCC monitoring station: Allegan MI

Bearing: 199.1 degrees Distance: 300.9 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:

Bearing: 258.7 degrees Distance: 1758.3 km

No land mobile station failures found

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 BNPDTL20100223ACY CP scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	W20DK-D	D20	LD	CP	ROSCOMMON, MI	BNPDTL20100223ACY	
Undesireds:	W20DT-D	D20	LD	APP	VANDERBILT, MI	W20DT FINAL SITE 2	70.1 km
	WTVS	D20	DT	LIC	DETROIT, MI	BLANK0000117036	264.3
	WCMW	D20	DT	LIC	MANISTEE, MI	BLANK0000087364	137.6
	WUWB-LD	D20	LD	LIC	WEST BRANCH, MI	BLDTL20140708ABB	54.9
	W20DI-D	D20	LD	CP	TRAVERSE CITY, WI	BLANK0000036242	78.5
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
1139.4	18,484	1121.4	18,466	1083.4	17,990	1082.4 17,990	0.09 0.00
Undesired		Total IX		Unique IX, before		Unique IX, after	
W20DT-D	D20 LD APP	5.0	0			1.0 0	
WTVS	D20 DT LIC	5.0	12	0.0	0	0.0 0	
WCMW	D20 DT LIC	26.0	448	17.0	448	17.0 448	
WUWB-LD	D20 LD LIC	21.0	28	10.0	16	10.0 16	
W20DI-D	D20 LD CP	2.0	0	0.0	0	0.0 0	

Interference to BLDTL20140708ABB LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WUWB-LD	D20	LD	LIC	WEST BRANCH, MI	BLDTL20140708ABB	
Undesireds:	W20DT-D	D20	LD	APP	VANDERBILT, MI	W20DT FINAL SITE 2	108.5 km
	WTVS	D20	DT	LIC	DETROIT, MI	BLANK0000117036	219.8
	W20DK-D	D20	LD	CP	ROSCOMMON, MI	BNPDTL20100223ACY	54.9
	W21DQ-D	D21	LD	CP	MIDLAND, MI	BDISDTL20130430ACW	34.3
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
5119.5	58,900	5021.6	58,719	4748.4	56,978	4743.4 56,978	0.11 0.00
Undesired		Total IX		Unique IX, before		Unique IX, after	
W20DT-D	D20 LD APP	8.0	0			5.0 0	
WTVS	D20 DT LIC	17.0	59	6.0	4	5.0 4	
W20DK-D	D20 LD CP	194.5	684	183.5	629	182.5 629	
W21DQ-D	D21 LD CP	72.7	1,053	72.7	1,053	72.7 1,053	

Interference to BLANK0000036242 CP scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	W20DI-D	D20	LD	CP	TRAVERSE CITY, WI	BLANK0000036242	
Undesireds:	W20DT-D	D20	LD	APP	VANDERBILT, MI	W20DT FINAL SITE 2	86.2 km
	WCMW	D20	DT	LIC	MANISTEE, MI	BLANK0000087364	92.7
	WFUP	D21	DT	LIC	VANDERBILT, MI	BLANK0000087814	86.2
	Service area		Terrain-limited		IX-free, before	IX-free, after	Percent New IX
	2190.2	84,533	2110.1	82,708	2074.8	80,656	2055.6 80,580 0.93 0.09
Undesired				Total IX	Unique IX, before	Unique IX, after	
W20DT-D D20 LD APP				27.4	134	19.3	76
WCMW D20 DT LIC				35.3	2,052	27.2	1,994
WFUP D21 DT LIC				3.0	1	0.0	0

Interference to proposal scenario 1
13.81% interference received

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	W20DT-D	D20	LD	APP	VANDERBILT, MI	W20DT FINAL SITE 2	
Undesireds:	WCMW	D20	DT	LIC	MANISTEE, MI	BLANK0000087364	175.3 km
	W20DK-D	D20	LD	CP	ROSCOMMON, MI	BNPDTL20100223ACY	70.1
	WUWB-LD	D20	LD	LIC	WEST BRANCH, MI	BLDTL20140708ABB	108.5
	W20DI-D	D20	LD	CP	TRAVERSE CITY, WI	BLANK0000036242	86.2
	WFUP	D21	DT	LIC	VANDERBILT, MI	BLANK0000087814	0.0
	Service area		Terrain-limited		IX-free	Percent IX	
	6712.7	107,674	6498.8	105,102	5728.7	90,585	11.85 13.81
Undesired				Total IX	Unique IX	Prcnt Unique IX	
WCMW D20 DT LIC				6.1	110	1.0	10 0.02 0.01
W20DK-D D20 LD CP				1.0	0	0.0	0 0.00 0.00
WUWB-LD D20 LD LIC				11.1	16	7.0	9 0.11 0.01
W20DI-D D20 LD CP				212.4	2,297	90.9	1,362 1.40 1.30
WFUP D21 DT LIC				664.1	13,029	549.7	12,201 8.46 11.61

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

*Prepared For
W20DT
Channel 20*

April 2021

**ANTENNA TYPE:
ALP8L3-HSMR-20**

**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:

20.8 feet

HEIGHT OF CENTER OF
RADIATION:

10.4 feet

OVERALL HEIGHT (A):

20.8 feet

DEICING:

Unpressurized Slot Cover Radome Enclosure

RADOME DIAMETER (C):

CONTACT ERI

RADOME COLOR:

TBA

CLIMBING DEVICE:

NOT APPLICABLE

CALCULATED WEIGHT¹:

126 lbs.

ANTENNA AREA³:

FRONT AREA:

$C_A A_C$: 23.6 square feet

A_C : 19.7 square feet

SIDE AREA:

$C_A A_C$: 14.0 square feet

A_C : 11.7 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.

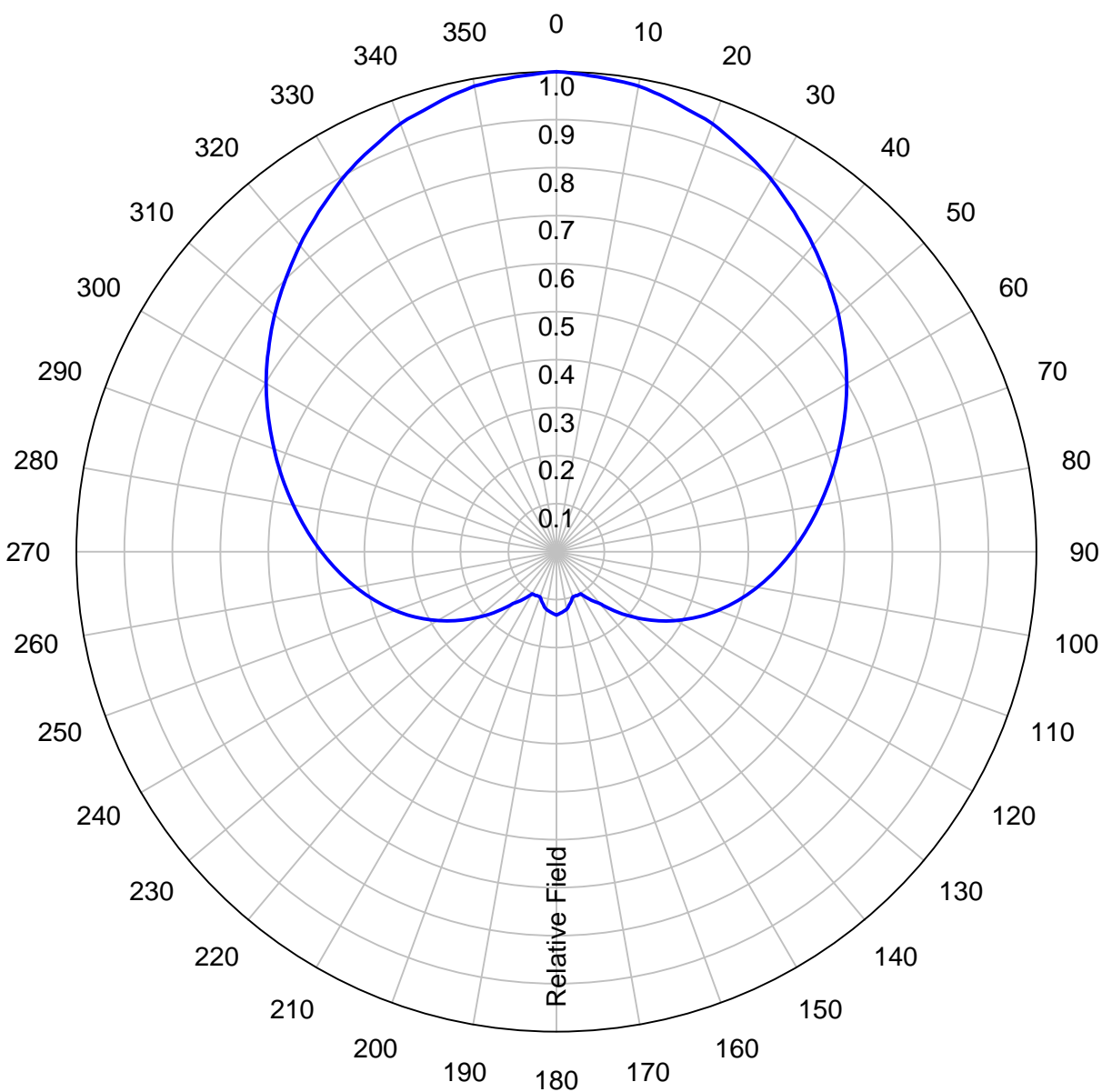
³ Antenna Area is calculated per EIA/TIA-RS222-F.

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 PRE- ROTATED**Type:**ALP-MRE**Channel:**20**Directivity:**NumericdBd2.824.50**Peak(s) at:****Location:****Polarization:**Horizontal

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



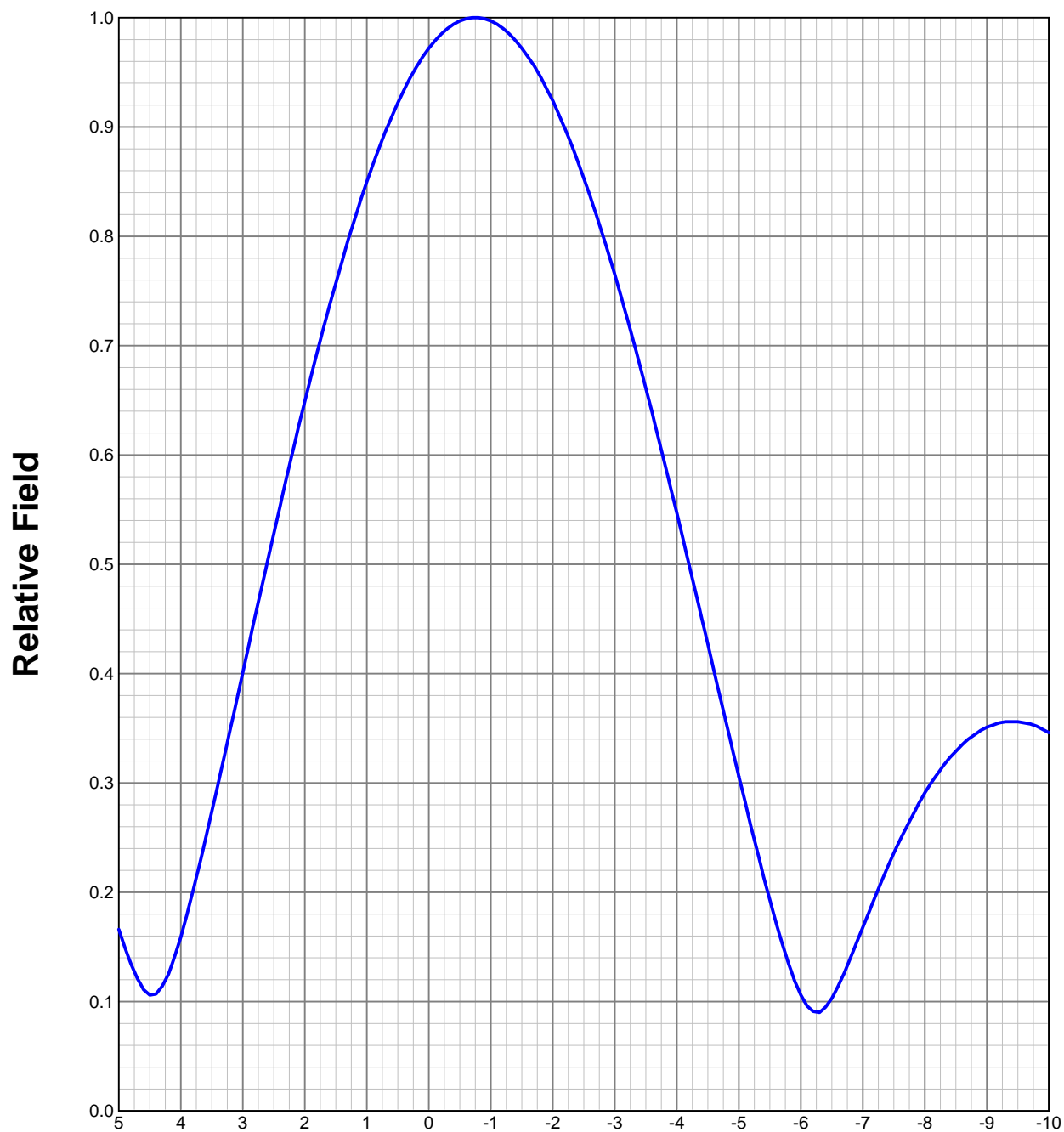
Preliminary, subject to final design and review.

TABULATED DATA FOR AZIMUTH PATTERN FCC FILING FORMAT PRE - ROTATION

Type: ALP-MRE PATTERN TO BE ROTATED 25 DEGREES
Polarization Horizontal

ANGLE	FIELD	ERP (kW)	ERP (dBk)
0	1.000	15.000	11.761
10	0.985	14.553	11.630
20	0.949	13.509	11.306
30	0.895	12.015	10.797
40	0.832	10.383	10.163
50	0.767	8.824	9.457
60	0.698	7.308	8.638
70	0.626	5.878	7.692
80	0.556	4.637	6.662
90	0.490	3.601	5.565
100	0.425	2.709	4.329
110	0.358	1.922	2.839
120	0.287	1.236	0.919
130	0.212	0.674	-1.712
140	0.141	0.298	-5.255
150	0.101	0.153	-8.153
160	0.100	0.150	-8.239
170	0.122	0.223	-6.512
180	0.132	0.261	-5.828
190	0.122	0.223	-6.512
200	0.100	0.150	-8.239
210	0.101	0.153	-8.153
220	0.141	0.298	-5.255
230	0.212	0.674	-1.712
240	0.287	1.236	0.919
250	0.358	1.922	2.839
260	0.425	2.709	4.329
270	0.490	3.601	5.565
280	0.556	4.637	6.662
290	0.626	5.878	7.692
300	0.698	7.308	8.638
310	0.767	8.824	9.457
320	0.832	10.383	10.163
330	0.895	12.015	10.797
340	0.949	13.509	11.306
350	0.985	14.553	11.630

Preliminary, subject to final design and review.

ELEVATION PATTERN**Type:****ALP8L3****Channel:****20****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.