

T Z SAWYER TECHNICAL CONSULTANTS

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

VAL VISTA RV PARK, LLC
W20DT, Digital Channel 20
FACILITY ID: 184928
VANDERBILT, MI

APRIL 2022

MINOR CHANGE APPLICATION TO CORRECT ANTENNA TYPE AND MODEL

Engineering Statement

Executive Summary:

EXPEDITED PROCESSING IS REQUESTED - The underlying construction permit expires on April 8, 2022. A tolling request has been filed to extend the construction permit an additional 20-days.

W20DT, seeks to make minor changes to the antenna type (manufacturer and model) previously specified in its construction permit to specify the following antenna:

Antenna Pattern Details:

Antenna Manufacturer	Model/Type	RCAMSL
Dielectric (DIE)	DIE TLP-8W/VP-R OS	601.7 meters

Figure 3 Antenna Relative Field Details:

A relative field tabulation and graphical plot of the horizontal radiation pattern, as well as a tabulation of the vertical elevation field and its associated graphical plot are included as Figure 3. Elliptical polarization is proposed.

The vertical polarized signal does not exceed or extend beyond the horizontally polarized signal in any azimuth. Maximum Effective Radiated Values for elliptical operation: 15-kw horizontal, 3.3 kw vertical.

Figure 1 Service Map:

A service map is included herein as Figure 1. No change in site or channel is proposed. This is simply a slight modification of the radiated pattern, due to use of a common antenna system with co-owned W22EL. Note: The W22EL's construction permit is being modified in a similar manner to specify the common antenna usage (i.e., change of antenna make/model for W22EL as well). As shown on the service map (Figure 1) the proposal meets the minor change criteria for low-power television facilities.

Figure 2 FCC TVStudy Summary Report:

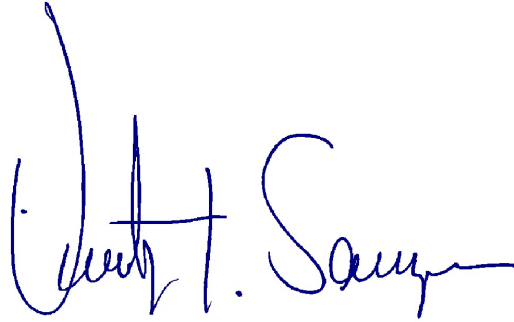
The summary report from the FCC TVStudy analysis, indicates no interference failures to other facilities. Applicant accepts all incoming interference from licensed or pending applications.

With Regards to Canada, the FCC TVStudy summary report indicates that the interference contour from this proposal does cross the US/Canadian Border.

HOWEVER, this minor change in antenna type does not increase interference to any known Canadian facilities. No change in site location or channel is proposed. The nearest Canadian Facility is CBLT-DT, Toronto, ON is located 458 kilometers away. As this facility has already been notified to Canada, no further coordination is thought to be required. There is no impact on facilities located within Canada.

Respectfully submitted on
April 5, 2022

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 fluid and cursive, with a large initial "T" and "S".

W20DT- COMMON ANT MOD
THIS APPLICATION
FCC Facility ID: 184928
NAD 83 Latitude: 45-10-12 N
NAD 83 Longitude: 084-45-04 W
ERP: 15.00 kW
Channel: 20
Frequency: 509.0 MHz
Ant. RCMSL Height: 601.7 m
Horiz. Pattern: Directional

FCC 51 DBU F(50,90)
LPTV UHF SERVICE CONTOURS

W20DT CP ORIGINAL
BNPDTL-20100223ADM
FCC Facility ID: 184928
NAD 83 Latitude: 45-12-36.30 N
NAD 83 Longitude: 084-37-22.80 W
ERP: 1.00 kW
Channel: 20
Frequency: 509.0 MHz
Ant. RCMSL Height: 326.9 m
Horiz. Pattern: Directional

FINAL ANTENNA DESIGN DIELECTRIC PATTERN
W20DT TV DIGIAL CHANNEL 20
ANTENNA RCAGL 134.1 METERS
AMTENNA RCMSL 601.7

ERP 15KW DIRECTIONAL UHF SLOT ANTENNA
PREDICTED SERVICE MAP

MINOR CHANGE ANTENNA PATTERN
FOR COMMON ANTENNA (DIPLEX) OPERATION
WITH W22EL

FIGURE 1

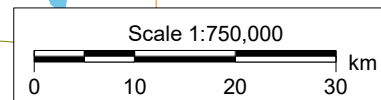
W20DT- CURRENT CP
0000143604
FCC Facility ID: 184928
NAD 83 Latitude: 45-10-12 N
NAD 83 Longitude: 084-45-04 W
ERP: 15.00 kW
Channel: 20
Frequency: 509.0 MHz
Ant. RCMSL Height: 589.0 m
Horiz. Pattern: Directional

W20DT- COMMON
W20DT- CURRENT CP

W20DT CP ORIGINAL

BLACK CONTOUR EXISTING CP
RED CONTOUR - PROPOSED MOD

FCC 30-MILE
MINOR SITE CHANGE RADIUS



TZSTC
2022
APRIL

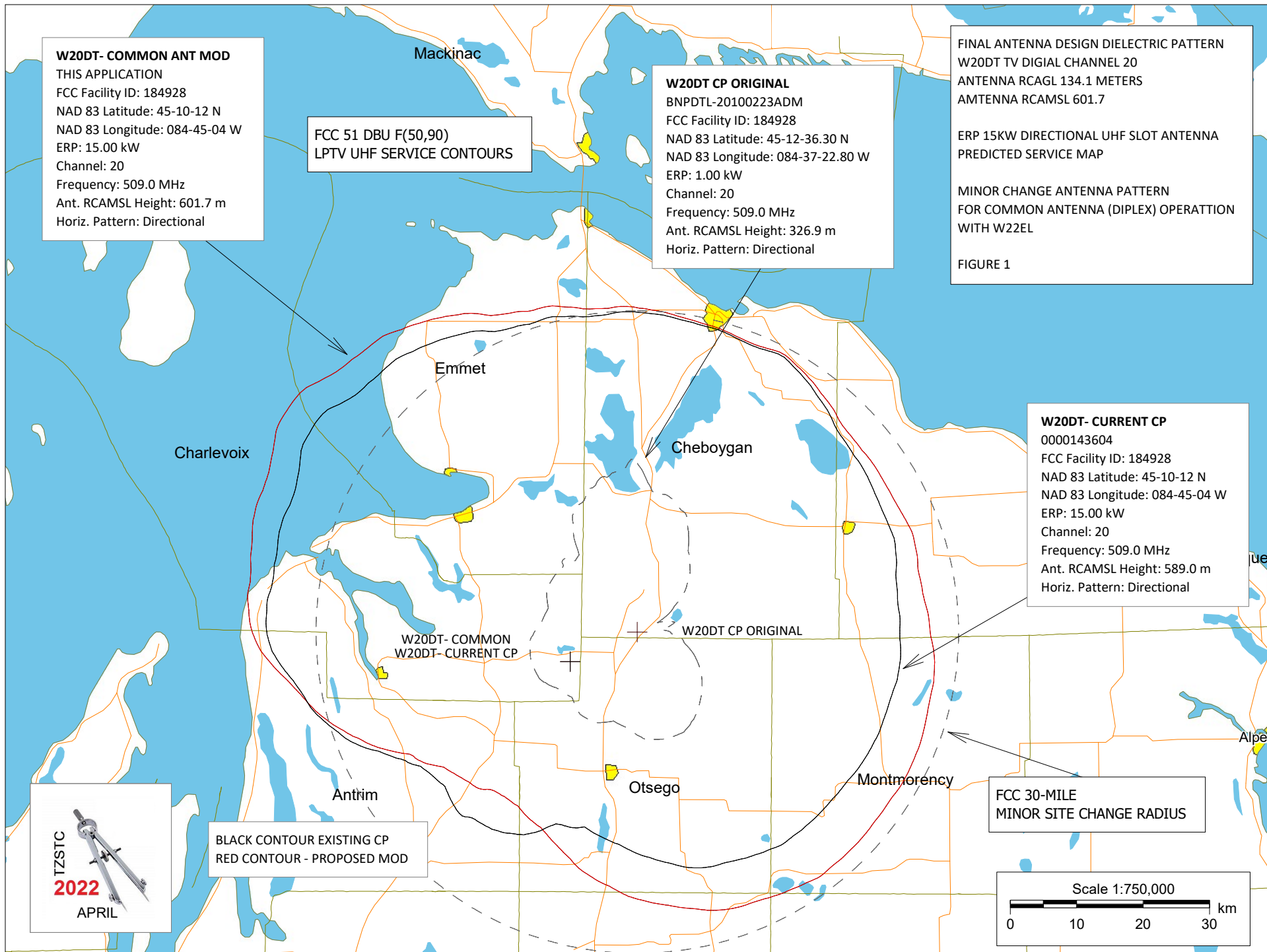


FIGURE 2 - FCC TVSTUDY SUMMARY REPORT

Proposal: W20DT-D D20 LD APP VANDERBILT, MI
 File number: VANDERBILT CH20 FINAL
 Facility ID: 184928
 Station data: User record
 Record ID: 601
 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	W30ET-D	N18-	TX	LIC	FLINT, MI	BLTTTL19981113JB	100.6 km
No	W19EZ-D	D19	LD	CP	HOUGHTON LAKE, MI	BLANK0000143600	124.0
No	W19EZ-D	D19	LD	APP	HOUGHTON LAKE, MI	BLANK0000188858	124.0
No	WZMQ	D19	DT	CP	MARQUETTE, MI	BLANK0000036114	268.8
No	WZMQ	D19	DT	LIC	MARQUETTE, MI	BLCDT20100928AJX	268.8
No	W19FB-D	D19	LD	LIC	TRAVERSE CITY, MI	BLANK0000158694	87.1
No	WFFT-TV	D20	DT	LIC	FORT WAYNE, IN	BLANK0000086952	452.8
No	WTVS	D20	DT	LIC	DETROIT, MI	BLANK0000117036	328.0
No	W20EV-D	D20	LD	LIC	HOUGHTON LAKE, MI	BLANK0000158719	93.5
No	W20EV-D	D20	LD	CP	HOUGHTON LAKE, MI	BLANK0000158783	126.9
No	WCMW	D20	DT	LIC	MANISTEE, MI	BLANK0000087364	175.3
Yes	WUWB-LD	D20	LD	LIC	WEST BRANCH, MI	BLDTL20140708ABB	108.5
No	WHA-TV	D20	DT	LIC	MADISON, WI	BLANK0000089074	448.2
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: 601.7 m
 HAAT: 0.0 m
 Peak ERP: 15.0 kW
 Antenna: DIE TLP-8W/VP-R OS 0.0 deg
 Elev Patrn: Generic
 Elec Tilt: 1.30

49.4 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	14.4 kW	264.8 m	55.2 km
45.0	13.7	300.7	57.0
90.0	15.0	289.4	56.8
135.0	7.03	239.9	50.1
180.0	0.333	191.9	31.6
225.0	0.082	230.0	26.4
270.0	1.78	331.7	47.6
315.0	12.2	357.4	59.3

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m Computed HAAT: 276 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%

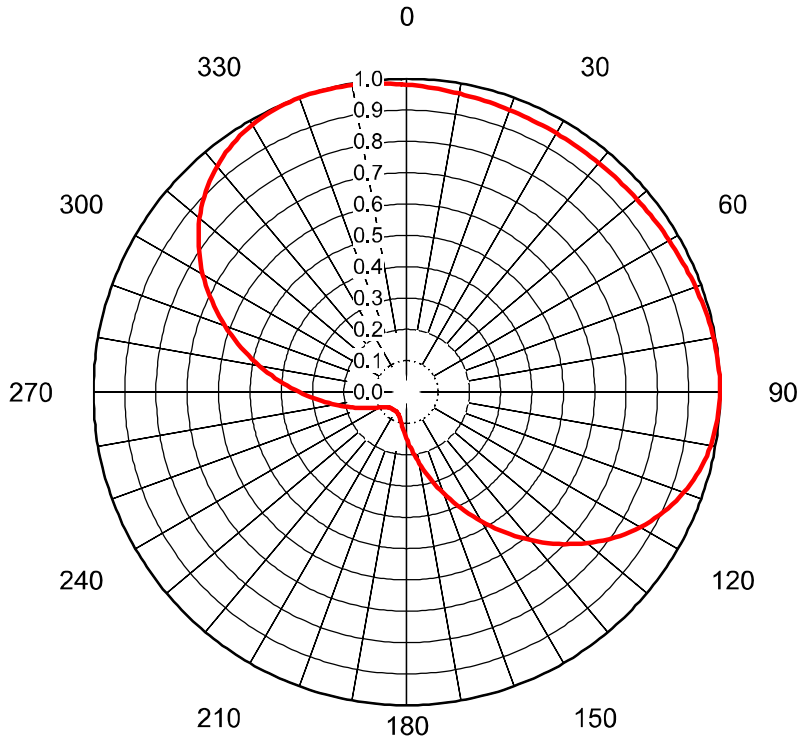
Proposal causes 0.20% interference to BLDTL20140708ABB LIC scenario 2

---- Below is IX received by proposal VANDERBILT CH20 FINAL ----

Proposal receives 6.15% interference from scenario 1
No IX check failures found.

AZIMUTH PATTERN Horizontal Polarization

Proposal No. **C-71755-1**
Date **16-Sep-21**
Call Letters **W20DT**
Channel **20**
Frequency **509 MHz**
Antenna Type **TLP-8W/VP-R OS**
Gain **1.86 (2.68dB)**
Calculated



Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.981	36	0.953	72	0.984	108	0.952	144	0.561	180	0.149	216	0.070	252	0.163	288	0.589	324	0.963
1	0.980	37	0.954	73	0.985	109	0.947	145	0.547	181	0.143	217	0.070	253	0.171	289	0.603	325	0.967
2	0.978	38	0.954	74	0.987	110	0.941	146	0.533	182	0.137	218	0.070	254	0.178	290	0.617	326	0.971
3	0.977	39	0.954	75	0.988	111	0.935	147	0.519	183	0.131	219	0.070	255	0.186	291	0.631	327	0.975
4	0.975	40	0.954	76	0.990	112	0.928	148	0.505	184	0.125	220	0.071	256	0.195	292	0.645	328	0.979
5	0.974	41	0.954	77	0.991	113	0.921	149	0.491	185	0.120	221	0.071	257	0.204	293	0.659	329	0.982
6	0.973	42	0.955	78	0.992	114	0.914	150	0.477	186	0.115	222	0.071	258	0.213	294	0.673	330	0.985
7	0.971	43	0.955	79	0.993	115	0.906	151	0.463	187	0.111	223	0.072	259	0.222	295	0.686	331	0.988
8	0.970	44	0.955	80	0.995	116	0.898	152	0.449	188	0.106	224	0.072	260	0.232	296	0.699	332	0.990
9	0.969	45	0.956	81	0.996	117	0.889	153	0.435	189	0.102	225	0.072	261	0.242	297	0.712	333	0.992
10	0.968	46	0.956	82	0.997	118	0.881	154	0.422	190	0.099	226	0.073	262	0.252	298	0.725	334	0.994
11	0.966	47	0.957	83	0.998	119	0.871	155	0.408	191	0.095	227	0.074	263	0.262	299	0.738	335	0.996
12	0.965	48	0.957	84	0.998	120	0.862	156	0.395	192	0.092	228	0.075	264	0.273	300	0.751	336	0.997
13	0.964	49	0.958	85	0.999	121	0.852	157	0.382	193	0.090	229	0.075	265	0.284	301	0.763	337	0.998
14	0.963	50	0.958	86	0.999	122	0.842	158	0.369	194	0.087	230	0.077	266	0.296	302	0.775	338	0.999
15	0.962	51	0.959	87	1.000	123	0.832	159	0.356	195	0.085	231	0.078	267	0.307	303	0.787	339	0.999
16	0.961	52	0.960	88	1.000	124	0.821	160	0.344	196	0.083	232	0.079	268	0.319	304	0.799	340	1.000
17	0.961	53	0.961	89	1.000	125	0.810	161	0.331	197	0.081	233	0.081	269	0.331	305	0.810	341	1.000
18	0.960	54	0.961	90	1.000	126	0.799	162	0.319	198	0.079	234	0.083	270	0.344	306	0.821	342	1.000
19	0.959	55	0.962	91	0.999	127	0.787	163	0.308	199	0.078	235	0.085	271	0.356	307	0.831	343	1.000
20	0.958	56	0.963	92	0.999	128	0.775	164	0.296	200	0.077	236	0.087	272	0.369	308	0.842	344	0.999
21	0.958	57	0.964	93	0.998	129	0.763	165	0.285	201	0.075	237	0.090	273	0.382	309	0.852	345	0.999
22	0.957	58	0.965	94	0.997	130	0.751	166	0.273	202	0.075	238	0.092	274	0.395	310	0.862	346	0.998
23	0.957	59	0.966	95	0.996	131	0.738	167	0.263	203	0.074	239	0.095	275	0.408	311	0.871	347	0.998
24	0.956	60	0.968	96	0.994	132	0.726	168	0.252	204	0.073	240	0.099	276	0.421	312	0.880	348	0.997
25	0.956	61	0.969	97	0.992	133	0.713	169	0.242	205	0.072	241	0.102	277	0.435	313	0.889	349	0.996
26	0.955	62	0.970	98	0.990	134	0.700	170	0.232	206	0.072	242	0.106	278	0.449	314	0.898	350	0.995
27	0.955	63	0.971	99	0.988	135	0.686	171	0.222	207	0.072	243	0.111	279	0.463	315	0.906	351	0.993
28	0.955	64	0.973	100	0.985	136	0.673	172	0.213	208	0.071	244	0.115	280	0.476	316	0.913	352	0.992
29	0.954	65	0.974	101	0.982	137	0.659	173	0.204	209	0.071	245	0.120	281	0.490	317	0.921	353	0.991
30	0.954	66	0.975	102	0.979	138	0.645	174	0.195	210	0.071	246	0.125	282	0.504	318	0.928	354	0.990
31	0.954	67	0.977	103	0.975	139	0.632	175	0.187	211	0.070	247	0.131	283	0.519	319	0.934	355	0.988
32	0.954	68	0.978	104	0.972	140	0.618	176	0.179	212	0.070	248	0.137	284	0.533	320	0.941	356	0.987
33	0.954	69	0.980	105	0.967	141	0.604	177	0.171	213	0.070	249	0.143	285	0.547	321	0.947	357	0.985
34	0.953	70	0.981	106	0.963	142	0.590	178	0.163	214	0.070	250	0.149	286	0.561	322	0.952	358	0.984
35	0.953	71	0.983	107	0.958	143	0.575	179	0.156	215	0.070	251	0.156	287	0.575	323	0.958	359	0.983

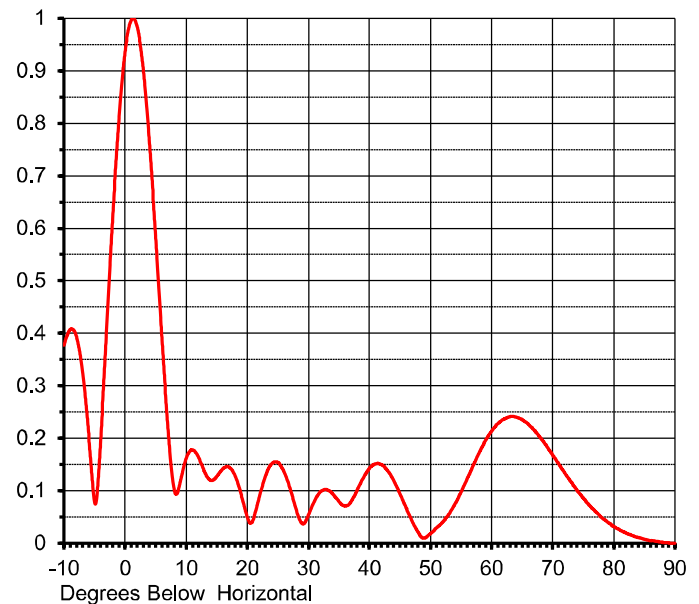
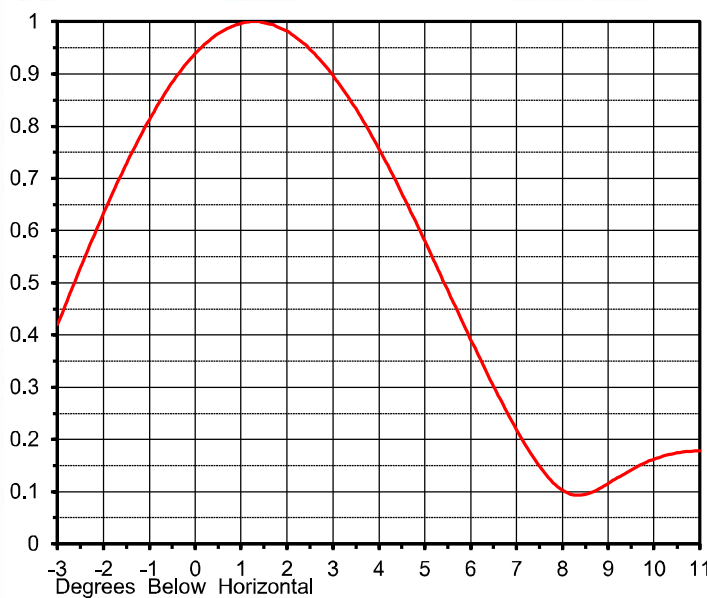
This document contains proprietary and confidential information of Dielectric. It is to be used solely for the purpose for which it is provided. No disclosure, reproduction, or use of this document or any part of it may be made without the written permission of Dielectric.

ELEVATION PATTERN

Proposal No. **C-71755-1**
 Date **16-Sep-21**
 Call Letters **W20DT**
 Channel **20**
 Frequency **509 MHz**
 Antenna Type **TLP-8W/VP-R OS**

RMS Directivity at Main Lobe **7.7 (8.86 dB)**
 RMS Directivity at Horizontal **6.8 (8.33 dB)**
Calculated

Beam Tilt **1.30 deg**
 Pattern Number **08L077130**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.377	10.0	0.162	30.0	0.053	50.0	0.018	70.0	0.168
-9.0	0.407	11.0	0.178	31.0	0.080	51.0	0.029	71.0	0.151
-8.0	0.393	12.0	0.163	32.0	0.098	52.0	0.040	72.0	0.134
-7.0	0.327	13.0	0.136	33.0	0.102	53.0	0.055	73.0	0.117
-6.0	0.208	14.0	0.119	34.0	0.094	54.0	0.074	74.0	0.101
-5.0	0.077	15.0	0.127	35.0	0.079	55.0	0.097	75.0	0.086
-4.0	0.203	16.0	0.142	36.0	0.070	56.0	0.122	76.0	0.072
-3.0	0.420	17.0	0.145	37.0	0.079	57.0	0.148	77.0	0.060
-2.0	0.633	18.0	0.128	38.0	0.101	58.0	0.173	78.0	0.049
-1.0	0.813	19.0	0.092	39.0	0.124	59.0	0.195	79.0	0.040
0.0	0.939	20.0	0.049	40.0	0.142	60.0	0.213	80.0	0.032
1.0	0.997	21.0	0.046	41.0	0.151	61.0	0.227	81.0	0.025
2.0	0.982	22.0	0.089	42.0	0.149	62.0	0.236	82.0	0.019
3.0	0.897	23.0	0.129	43.0	0.138	63.0	0.240	83.0	0.014
4.0	0.757	24.0	0.151	44.0	0.118	64.0	0.240	84.0	0.011
5.0	0.581	25.0	0.154	45.0	0.094	65.0	0.235	85.0	0.007
6.0	0.392	26.0	0.136	46.0	0.087	66.0	0.227	86.0	0.005
7.0	0.219	27.0	0.104	47.0	0.042	67.0	0.215	87.0	0.003
8.0	0.103	28.0	0.064	48.0	0.020	68.0	0.201	88.0	0.002
9.0	0.115	29.0	0.037	49.0	0.009	69.0	0.185	89.0	0.001
								90.0	0.000

This document contains proprietary and confidential information of Dielectric. It is to be used solely for the purpose for which it is provided. No disclosure, reproduction, or use of this document or any part of it may be made without the written permission of Dielectric.

T Z SAWYER TECHNICAL CONSULTANTS

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

VAL VISTA RV PARK, LLC
W20DT, Digital Channel 20
FACILITY ID: 184928
VANDERBILT, MI

APRIL 2022

REVISED FOR CHANGE IN MOUNTING ELEVATION AGL

Environmental Considerations as proposed in the application

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)

RCAGL: 134.1 m ERP (H): 15.0 KW ERP (V): 3.3 KW	MPE $\mu\text{W}/\text{cm}^2$	CALCULATED VALUE $\mu\text{W}/\text{cm}^2$	% OF MPE	PASS/FAIL
CONTROLLED AREA	1696.7	8.9718	0.53%	PASS
PUBLIC AREA	339.3		2.64%	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.

April 5, 2022

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

