

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
W19EZ, Digital Channel 19
FACILITY ID: 184807
HOUGHTON LAKE, 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. Applicant is ready to file a license to cover upon grant.

W19EZ, 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)	TUL-C3SP-4/12M-1	629.2 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, 6.4 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 W15DF. Note: The W15DF construction permit is being modified in a similar manner to specify the common antenna usage (change of antenna make/model for W15DF as well). As shown on the service map (Figure 1) the proposal meets the minor change criteria for low-power television facilities.

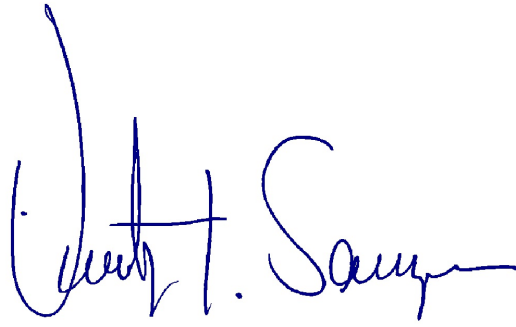
Figure 2 FCC TVStudy Summary Report:

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 not enter/cross the US/Canadian Border.

Respectfully submitted on
April 4, 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, reading "Timothy Z. Sawyer". The signature is fluid and cursive, with the first name "Timothy" and last name "Sawyer" clearly legible, and "Z." as a middle initial.

W19EZ-COMMON

THIS APPLICATION - MINOR CHANGE
FCC Facility ID: 184807
NAD 83 Latitude: 44-08-12 N
NAD 83 Longitude: 085-20-33 W
ERP: 15.00 kW
Channel: 19
Frequency: 503.0 MHz
Ant. RCAMSL Height: 629.2 m
Horiz. Pattern: Directional

FINAL ANTENNA DESIGN DIELECTRIC PATTERN
W19EZ TV DIGITAL CHANNEL 19
ANTENNA AGL 109.7 METERS
ANTENNA AMSL 629.2 METERS

ERP 15KW DIRECTIONAL PANEL ANTENNA
PREDICTED SERVICE MAP

MINOR CHANGE ANTENNA PATTERN
FOR COMMON ANTENNA (DIPLEX) OPERATION
WITH W15DF

FIGURE 1

FCC 51 DBU F(50,90)

ORIGINAL CP 51 DBU CONTOUR
BNPDTL-20100223AAK

W38EZ-D.C
BNPDTL-20100223AAK
FCC Facility ID: 184807
NAD 83 Latitude: 44-19-47.80 N
NAD 83 Longitude: 084-48-52.90 W
ERP: 1.00 kW
Channel: 38
Frequency: 617.0 MHz
Ant. RCAMSL Height: 382.3 m
Horiz. Pattern: Omni

MINOR CHANGE
CONTOUR OVERLAP

BLACK CONTOUR - EXISTING CP
RED CONTOUR - PROPOSED

30-MILE RADIUS

TZSTC
2022
APRIL

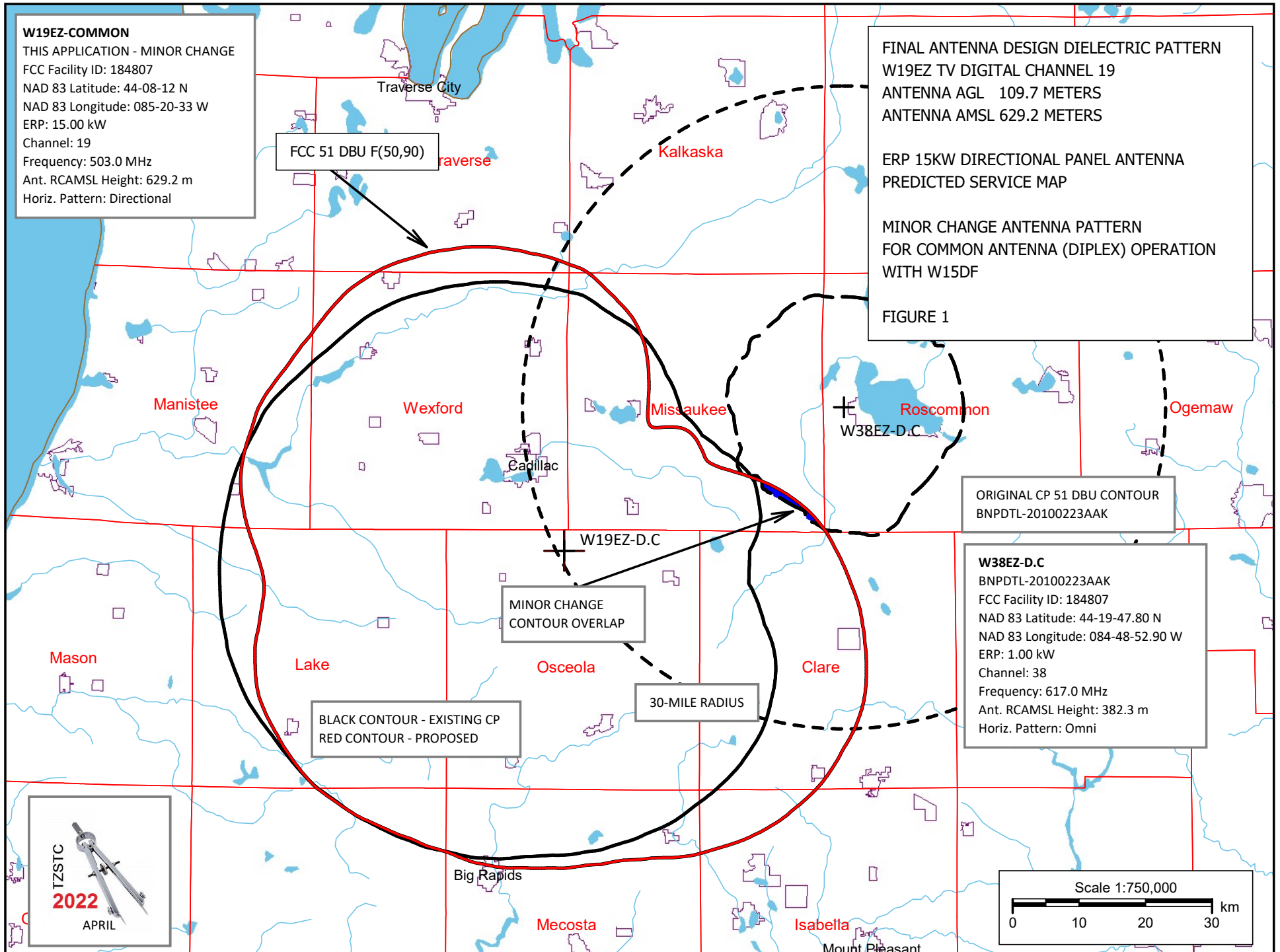
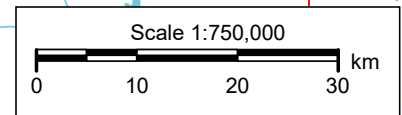


FIGURE 2 - TVSTUDY SUMMARY REPORT

NO PREDICTED INTERFERENCE TO OTHER FACILITIES

INTERFERENCE CONTOUR DOES NOT CROSS INTERNATIONAL BORDER WITH
CANADA - THIS IS A PREVIOUSLY COORDINATED FACILITY OR COORDINATION
NOT REQUIRED

Proposal: W19EZ-D D19 LD APP HOUGHTON LAKE, MI
File number: W19EZ-FINAL
Facility ID: 184807
Station data: User record
Record ID: 597
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	WUHO-LD	D18+	LD	CP	KALAMAZOO, MI	BLANK0000169853	203.7 km
No	W18ER-D	D18	LD	LIC	MUSKEGON, MI	BLANK0000068548	112.3
No	WURO-LD	D18	LD	LIC	ROSCOMMON, MI	BLDTL20141113AFT	83.4
No	WEYI-TV	D18	DT	LIC	SAGINAW, MI	BLANK0000185142	165.6
No	WPBN-TV	D18	LD	LIC	TRAVERSE CITY, MI	BLANK0000143297	76.1
No	WLUK-TV	D18	DT	CP	GREEN BAY, WI	BLANK0000150484	213.0
No	WGN-TV	D19	DT	LIC	CHICAGO, IL	BMLCDT20080201APP	312.6
No	WGN-TV	D19	DT	CP	CHICAGO, IL	BLANK0000187379	312.6
No	W19DT-D	D19	LD	CP	FORT WAYNE, IN	BNPDTL20091228AAW	346.7
No	WIPB	D19	DT	LIC	MUNCIE, IN	BLANK0000087336	449.4
Yes	WXMI	D19	DT	LIC	GRAND RAPIDS, MI	BLANK0000143294	161.8
No	WZMQ	D19	DT	CP	MARQUETTE, MI	BLANK0000036114	318.7
No	WZMQ	D19	DT	LIC	MARQUETTE, MI	BLCDT20100928AJX	318.7
Yes	W19FB-D	D19	LD	LIC	TRAVERSE CITY, MI	BLANK0000158694	74.5
No	WKYC	D19	DT	LIC	CLEVELAND, OH	BLANK0000087282	426.9
No	WFND-LD	D19	LD	LIC	FINDLAY, OH	BLANK0000055157	363.7
No	WTPX-TV	D19	DT	LIC	ANTIGO, WI	BLANK0000054113	339.8
No	WMTV	D19	DT	LIC	MADISON, WI	BLCDT20100413AAW	354.7
No	WLWK-CD	D19	DC	LIC	STURGEON BAY, WI	BLANK0000072454	181.8
No	WTVS	D20	DT	LIC	DETROIT, MI	BLANK0000117036	257.0
No	W20EV-D	D20	LD	LIC	HOUGHTON LAKE, MI	BLANK0000158719	47.2
Yes	W20EV-D	D20	LD	CP	HOUGHTON LAKE, MI	BLANK0000158783	11.6
Yes	WCMW	D20	DT	LIC	MANISTEE, MI	BLANK0000087364	79.4
No	W20DT-D	D20	LD	CP	VANDERBILT, MI	BLANK0000143604	124.0
No	WUWB-LD	D20	LD	LIC	WEST BRANCH, MI	BLDTL20140708ABB	98.4
No	CJMT-DT-1	D19	DT	LIC	LONDON, ON	BLANKCANADA187	347.0
No	CICO-DT-32D19		DT	LIC	WINDSOR, ON	BLANKCANADA244	293.5

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D19
Mask: Full Service
Latitude: 44 8 12.00 N (NAD83)

Longitude: 85 20 33.00 W
Height AMSL: 629.2 m
HAAT: 0.0 m
Peak ERP: 15.0 kW
Antenna: DIE TUL-C3SP-4/12M-1 0.0 deg
Elev Patrn: Generic
Elec Tilt: 1.00

49.3 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	4.13 kW	206.8 m	45.6 km
45.0	0.107	232.7	28.0
90.0	1.89	245.9	43.7
135.0	13.7	249.0	54.2
180.0	8.78	220.6	50.3
225.0	12.8	243.4	53.5
270.0	5.22	249.2	49.2
315.0	14.6	218.0	52.7

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m Computed HAAT: 233 m

Proposal 24.25 dBu contour does not cross Canadian border
Distance to Canadian border: 232.1 km

Distance to Mexican border: 2133.2 km

Conditions at FCC monitoring station: Allegan MI
Bearing: 196.4 degrees Distance: 177.2 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 261.7 degrees Distance: 1692.7 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%

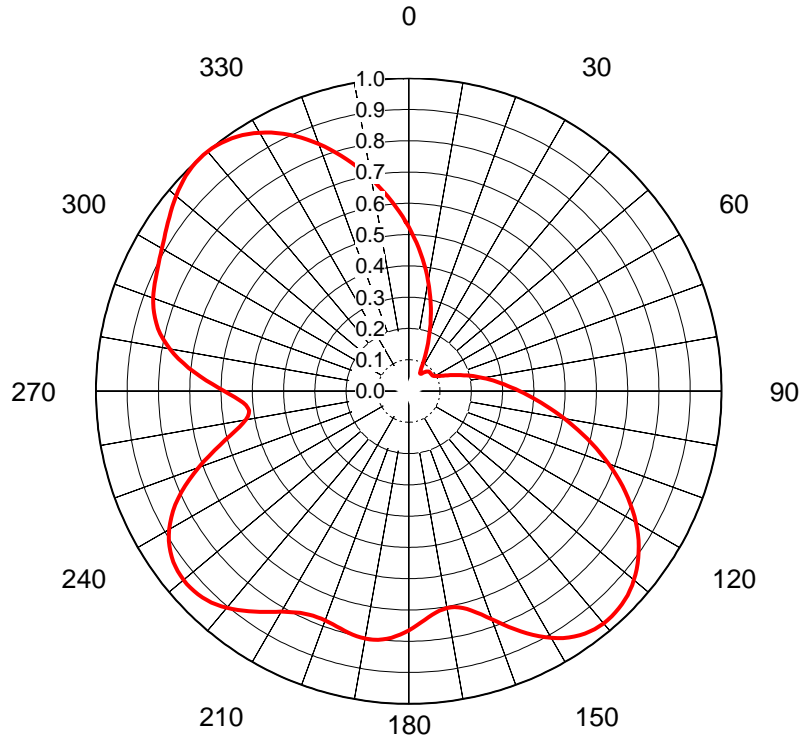
Proposal causes 0.45% interference to BLANK0000143294 LIC scenario 1
Proposal causes 1.00% interference to BLANK0000158694 LIC scenario 1
Proposal causes no interference to BLANK0000158783 CP
Proposal causes 0.36% interference to BLANK0000087364 LIC scenario 1

---- Below is IX received by proposal W19EZ - FINAL DIE ANT ----

APPLICANT ACCEPTS INCOMING INTERFERENCE FROM PENDING FULL-SERVICE APPLICATIONS

Proposal receives 6.18% interference from scenario 1

No IX check failures found.



AZIMUTH PATTERN Horizontal Polarization

In Free Space

Proposal No. **C-71718-2**
Date **27-Jul-21**
Call Letters **W19EZ**
Channel **19**
Frequency **503 MHz**
Antenna Type **TUL-C3SP-4/12M-1**
Gain **1.98 (2.96dB)**
Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.525	36	0.068	72	0.165	108	0.645	144	0.959	180	0.765	216	0.870	252	0.671	288	0.858
1	0.508	37	0.071	73	0.174	109	0.662	145	0.953	181	0.772	217	0.880	253	0.650	289	0.864
2	0.492	38	0.073	74	0.183	110	0.680	146	0.947	182	0.779	218	0.889	254	0.628	290	0.869
3	0.475	39	0.076	75	0.192	111	0.697	147	0.940	183	0.785	219	0.897	255	0.607	291	0.874
4	0.458	40	0.079	76	0.202	112	0.715	148	0.931	184	0.791	220	0.905	256	0.588	292	0.878
5	0.442	41	0.081	77	0.211	113	0.731	149	0.922	185	0.795	221	0.912	257	0.570	293	0.882
6	0.425	42	0.083	78	0.221	114	0.748	150	0.912	186	0.799	222	0.919	258	0.553	294	0.886
7	0.408	43	0.085	79	0.231	115	0.764	151	0.900	187	0.802	223	0.924	259	0.540	295	0.890
8	0.391	44	0.087	80	0.241	116	0.780	152	0.888	188	0.803	224	0.929	260	0.528	296	0.894
9	0.374	45	0.088	81	0.251	117	0.795	153	0.875	189	0.804	225	0.933	261	0.520	297	0.897
10	0.357	46	0.089	82	0.262	118	0.810	154	0.862	190	0.804	226	0.936	262	0.516	298	0.902
11	0.341	47	0.090	83	0.272	119	0.825	155	0.848	191	0.803	227	0.938	263	0.514	299	0.906
12	0.324	48	0.090	84	0.283	120	0.838	156	0.834	192	0.801	228	0.940	264	0.517	300	0.911
13	0.307	49	0.090	85	0.294	121	0.851	157	0.819	193	0.799	229	0.940	265	0.522	301	0.916
14	0.290	50	0.090	86	0.306	122	0.864	158	0.805	194	0.796	230	0.940	266	0.531	302	0.922
15	0.274	51	0.090	87	0.317	123	0.876	159	0.791	195	0.793	231	0.938	267	0.543	303	0.927
16	0.257	52	0.090	88	0.329	124	0.887	160	0.777	196	0.790	232	0.937	268	0.557	304	0.933
17	0.241	53	0.090	89	0.342	125	0.898	161	0.764	197	0.787	233	0.934	269	0.573	305	0.940
18	0.225	54	0.090	90	0.355	126	0.908	162	0.751	198	0.785	234	0.930	270	0.590	306	0.946
19	0.209	55	0.090	91	0.368	127	0.917	163	0.740	199	0.783	235	0.925	271	0.609	307	0.952
20	0.194	56	0.090	92	0.381	128	0.925	164	0.730	200	0.781	236	0.919	272	0.628	308	0.959
21	0.179	57	0.091	93	0.395	129	0.933	165	0.722	201	0.780	237	0.912	273	0.648	309	0.965
22	0.164	58	0.092	94	0.410	130	0.940	166	0.715	202	0.780	238	0.904	274	0.668	310	0.971
23	0.150	59	0.093	95	0.424	131	0.946	167	0.710	203	0.781	239	0.895	275	0.688	311	0.976
24	0.137	60	0.096	96	0.440	132	0.952	168	0.706	204	0.783	240	0.885	276	0.707	312	0.981
25	0.124	61	0.098	97	0.455	133	0.957	169	0.705	205	0.785	241	0.873	277	0.726	313	0.986
26	0.112	62	0.101	98	0.471	134	0.961	170	0.705	206	0.789	242	0.860	278	0.743	314	0.990
27	0.102	63	0.105	99	0.487	135	0.964	171	0.706	207	0.794	243	0.846	279	0.760	315	0.994
28	0.092	64	0.110	100	0.504	136	0.967	172	0.709	208	0.800	244	0.830	280	0.776	316	0.996
29	0.084	65	0.115	101	0.521	137	0.969	173	0.714	209	0.807	245	0.813	281	0.790	317	0.998
30	0.077	66	0.121	102	0.538	138	0.970	174	0.720	210	0.815	246	0.796	282	0.803	318	1.000
31	0.072	67	0.127	103	0.556	139	0.970	175	0.726	211	0.823	247	0.777	283	0.815	319	1.000
32	0.068	68	0.134	104	0.573	140	0.970	176	0.733	212	0.832	248	0.757	284	0.826	320	1.000
33	0.066	69	0.141	105	0.591	141	0.968	177	0.741	213	0.842	249	0.736	285	0.835	321	0.998
34	0.066	70	0.149	106	0.609	142	0.966	178	0.749	214	0.851	250	0.715	286	0.844	322	0.997
35	0.067	71	0.157	107	0.627	143	0.963	179	0.757	215	0.861	251	0.693	287	0.851	323	0.994

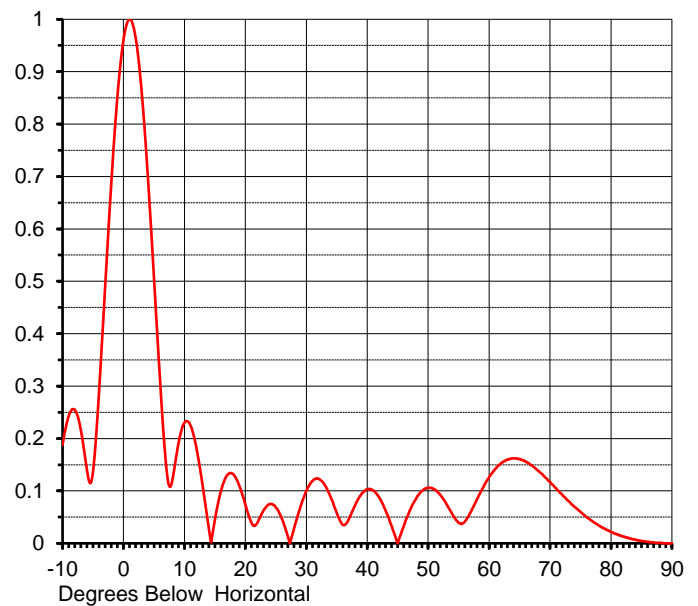
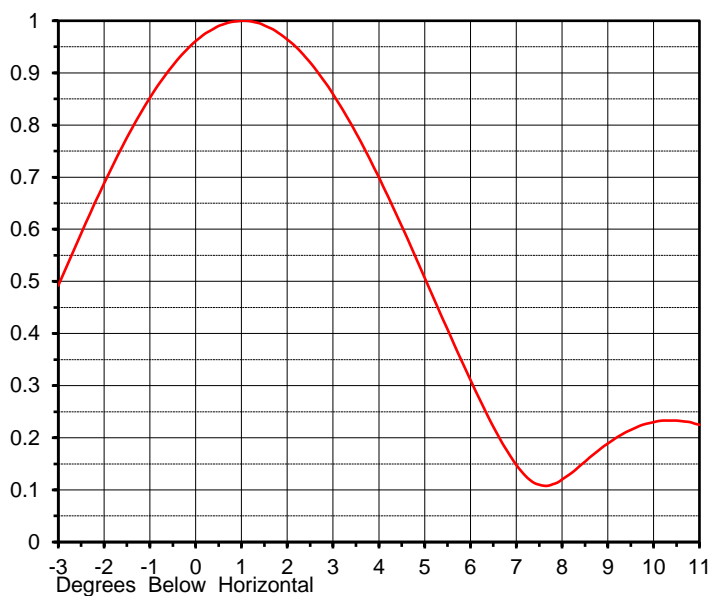
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ELEVATION PATTERN

Proposal No. **C-71718-2**
 Date **27-Jul-21**
 Call Letters **W19EZ**
 Channel **19**
 Frequency **503 MHz**
 Antenna Type **TUL-C3SP-4/12M-1**

RMS Directivity at Main Lobe **9.0 (9.55 dB)**
 RMS Directivity at Horizontal **8.3 (9.19 dB)**
Calculated

Beam Tilt **1.00 deg**
 Pattern Number **04U091100**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.188	10.0	0.230	30.0	0.100	50.0	0.106	70.0	0.117
-9.0	0.242	11.0	0.225	31.0	0.119	51.0	0.103	71.0	0.105
-8.0	0.255	12.0	0.180	32.0	0.123	52.0	0.092	72.0	0.093
-7.0	0.216	13.0	0.109	33.0	0.112	53.0	0.075	73.0	0.081
-6.0	0.140	14.0	0.029	34.0	0.088	54.0	0.055	74.0	0.070
-5.0	0.137	15.0	0.045	35.0	0.058	55.0	0.039	75.0	0.060
-4.0	0.292	16.0	0.100	36.0	0.035	56.0	0.041	76.0	0.050
-3.0	0.492	17.0	0.130	37.0	0.047	57.0	0.060	77.0	0.042
-2.0	0.688	18.0	0.132	38.0	0.072	58.0	0.084	78.0	0.034
-1.0	0.852	19.0	0.110	39.0	0.093	59.0	0.106	79.0	0.028
0.0	0.961	20.0	0.074	40.0	0.103	60.0	0.126	80.0	0.022
1.0	1.000	21.0	0.039	41.0	0.101	61.0	0.142	81.0	0.017
2.0	0.964	22.0	0.040	42.0	0.087	62.0	0.153	82.0	0.013
3.0	0.859	23.0	0.063	43.0	0.063	63.0	0.160	83.0	0.010
4.0	0.700	24.0	0.075	44.0	0.033	64.0	0.162	84.0	0.007
5.0	0.507	25.0	0.069	45.0	0.000	65.0	0.161	85.0	0.005
6.0	0.311	26.0	0.047	46.0	0.033	66.0	0.156	86.0	0.003
7.0	0.148	27.0	0.012	47.0	0.063	67.0	0.149	87.0	0.002
8.0	0.120	28.0	0.029	48.0	0.085	68.0	0.139	88.0	0.001
9.0	0.189	29.0	0.068	49.0	0.100	69.0	0.128	89.0	0.000
								90.0	0.000

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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
W19EZ, Digital Channel 19
FACILITY ID: 184807
HOUGHTON LAKE, 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: 109.7 m ERP (H): 15.0 KW ERP (V): 6.42 KW	MPE $\mu\text{W}/\text{cm}^2$	CALCULATED VALUE $\mu\text{W}/\text{cm}^2$	% OF MPE	PASS/FAIL
CONTROLLED AREA	1676.7	15.441	0.92%	PASS
PUBLIC AREA	335.3		4.61%	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 4, 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

