

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
W27DU, Digital Channel 27
FACILITY ID: 186364
TRAVERSE CITY, MI

APRIL 2022

MINOR CHANGE APPLICATION TO CORRECT ANTENNA TYPE AND MODEL
FOR USE OF A COMMON ANTENNA WITH W27DU TRAVERSE CITY MI

REQUEST PROFILE SPACING OF 0.1 KM TO BE USED WITH TVSTUDY PROGRAM

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.

W27DU, 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 TUL-C3-4/12M-1	489.9 meters

Figure 3 Antenna Relative Field Details:

A relative field tabulation and graphical plot of the horizontal radiation pattern, is 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, 6.43-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 W16DN. Note: The W16DN's construction permit is being modified in a similar manner to specify the common antenna usage (i.e., change of antenna make/model for W16DN 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.

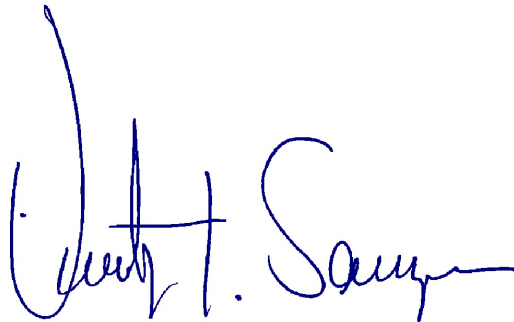
Applicant requests that 1.0 kilometer cell size, and 0.1 kilometer profile spacing be used with TVStudy program, due to intervening terrain in the area a profile spacing of 0.1 kilometer is appropriate.

With Regards to Canada, the FCC TVStudy summary report indicates that the interference contour from this proposal does not cross the US/Canadian Border.

Respectfully submitted on

April 7, 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." in the middle.

W27DU COMMON CP MOD ANT MOD

THIS APPLICATION

FCC Facility ID: 186364

NAD 83 Latitude: 44-45-37 N

NAD 83 Longitude: 085-40-58 W

ERP: 15.00 kW

Channel: 27

Frequency: 551.0 MHz

Ant. RCAMSL Height: 489.9 m

Horiz. Pattern: Directional

FCC 51 DBU F(50,90)

LPTV UHF SERVICE CONTOURS

FINAL ANTENNA DESIGN DIELECTRIC PATTERN

W27DU TV DIGITAL CHANNEL 27

ANTENNA RCAGL 158.6 m

ANTENNA RCAMSL 489.9 m

ERP 15KW DIRECTIONAL UHF PANEL ANTENNA
PREDICTED SERVICE MAP

MINOR CHANGE ANTENNA PATTERN
FOR COMMON ANTENNA (DIPLEX) OPERATION
WITH CO-OWNED W16DN

FIGURE 1

W27DU CURRENT CP

0000143606

FCC Facility ID: 186364

NAD 83 Latitude: 44-45-37 N

NAD 83 Longitude: 085-40-58 W

ERP: 15.00 kW

Channel: 27

Frequency: 551.0 MHz

Ant. RCAMSL Height: 401.3 m

Horiz. Pattern: Directional

W27DU ORIGINAL CP

BNPDTL-20100510AGO

FCC Facility ID: 186364

NAD 83 Latitude: 44-45-30.90 N

NAD 83 Longitude: 085-41-36.90 W

ERP: 1.00 kW

Channel: 27

Frequency: 551.0 MHz

Ant. RCAMSL Height: 348.8 m

Horiz. Pattern: Directional

FCC 30-MILE
MINOR SITE CHANGE RADIUS

BLACK CONTOUR EXISTING CP
RED CONTOUR - PROPOSED MOD

TZSTC

2022

APRIL

Scale 1:750,000

0 10 20 30 km

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TRAVERSE CITY, MI

APRIL 2022

REVISED TO ADD VERTICAL POLARIZATION VALUE & HEIGHT

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: 158.6 m ERP (H): 15.0 KW ERP (V): 6.43 KW	MPE $\mu\text{W}/\text{cm}^2$	CALCULATED VALUE $\mu\text{W}/\text{cm}^2$	% OF MPE	PASS/FAIL
CONTROLLED AREA	1836.7	7.3034	0.40%	PASS
PUBLIC AREA	367.3		1.99%	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 7, 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



FIGURE 2 - TV STUDY RESULTS W27DU

REQUEST PROFILE INTERVAL OF 0.1 KM TO BE USED

Study cell size: 1.00 km
Profile point spacing: 0.10 km

Proposal: W27DU-D D27 LD APP TRAVERSE CITY, MI
File number: TRAVERSE CITY W27DU FINAL
Facility ID: 186364
Station data: User record
Record ID: 608
Country: U.S.

Proposal "before": W27DU-D D27 LD CP TRAVERSE CITY, MI
File number: BLANK0000143606
Facility ID: 186364
Station data: LMS TV 2022-04-07
Record ID: 25076ff3786138380178668b732f1003
Country: U.S.

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

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
Yes	WCMU-TV	D26	DT	LIC	MOUNT PLEASANT, MI	BLEDT20130710ABN	118.2 km
No	W27EB-D	D27	DC	LIC	SUGAR GROVE, IL	BLANK0000151822	354.6
No	WNDU-TV	D27	DT	LIC	SOUTH BEND, IN	BLANK0000116736	353.3
No	DDWFHD-LP	N27z	TX	APP	ANN ARBOR, MI	BLTT20000925AAY	317.1
Yes	W27DQ-D	D27	LD	CP	ELMHURST, MI	BLANK0000143603	97.0
No	W48CL	D27+	LD	CP	GRAND RAPIDS, MI	BLANK0000052038	193.9
Yes	W27ET-D	D27	LD	LIC	MAPLE VALLEY, MI	BLANK0000158765	106.6
No	WADL	D27	DT	LIC	MOUNT CLEMENS, MI	BLANK0000111708	332.6
No	WPNM-LD	D27z	LD	LIC	LIEPSIC, OH	BLANK0000090626	427.9
No	WVTV	D27	DT	LIC	MILWAUKEE, WI	BLANK0000121792	256.6
No	W27AU-D	D27	LD	LIC	WAUSAU, WI	BLDTL20110315ABH	313.2
No	W28EJ-D	D28	LD	CP	CHARLES, MI	BLANK0000143599	190.1
No	WSYM-TV	D28	DT	LIC	LANSING, MI	BLANK0000177429	268.0
No	WSYM-TV	D28	DT	APP	LANSING, MI	BLANK0000181141	268.0
No	WBWM-LD	D28	LD	LIC	MT PLEASANT, MI	BLANK0000152432	147.9
No	WBWM-LD	D28	LD	CP	MT PLEASANT, MI	BLANK0000163180	151.5
No	WISN-TV	D28	DT	LIC	MILWAUKEE, WI	BLANK0000089554	256.7

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D27
Mask: Full Service
Latitude: 44 45 37.00 N (NAD83)
Longitude: 85 40 58.00 W
Height AMSL: 489.9 m
HAAT: 0.0 m
Peak ERP: 15.0 kW
Antenna: DIE TUL-C3-4/12M-1 0.0 deg
Elev Pattn: Generic
Elec Tilt: 1.00

50.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	6.63 kW	252.0 m	49.6 km
45.0	0.117	306.5	30.5
90.0	3.05	303.9	48.2
135.0	15.0	248.4	53.6
180.0	14.5	218.3	51.8
225.0	10.8	224.4	50.6
270.0	13.6	218.2	51.5
315.0	13.9	267.0	54.3

Database HAAT does not agree with computed HAAT

Database HAAT: 0 m Computed HAAT: 255 m

Proposal 25.05 dBu contour does not cross Canadian border

Distance to Canadian border: 197.3 km

Distance to Mexican border: 2162.0 km

Conditions at FCC monitoring station: Allegan MI

Bearing: 185.3 degrees Distance: 240.5 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:

Bearing: 259.1 degrees Distance: 1677.6 km

Study cell size: 1.00 km

Profile point spacing: 0.10 km

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

Maximum new IX to LPTV: 2.00%

Proposal causes 0.02% interference to BLEDT20130710ABN LIC scenario 1

Proposal causes no interference to BLANK0000143603 CP

Proposal causes no interference to BLANK0000158765 LIC

---- Below is IX received by proposal TRAVERSE CITY W27DU FI ----

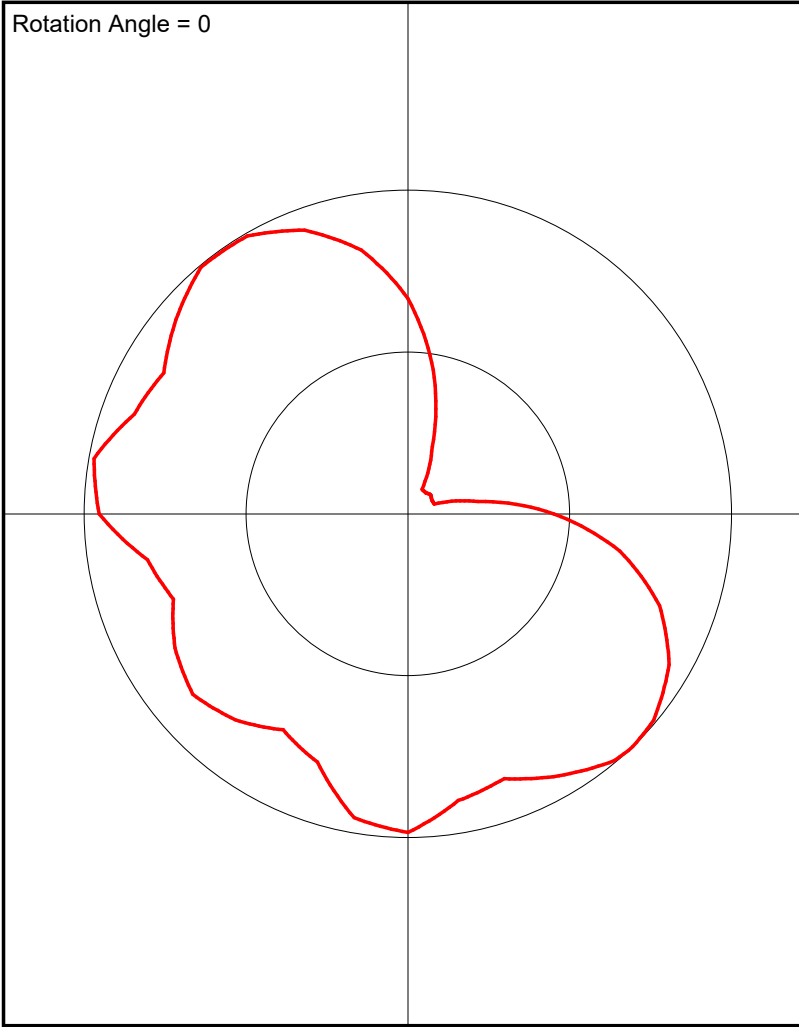
Proposal receives 0.29% interference from scenario 1

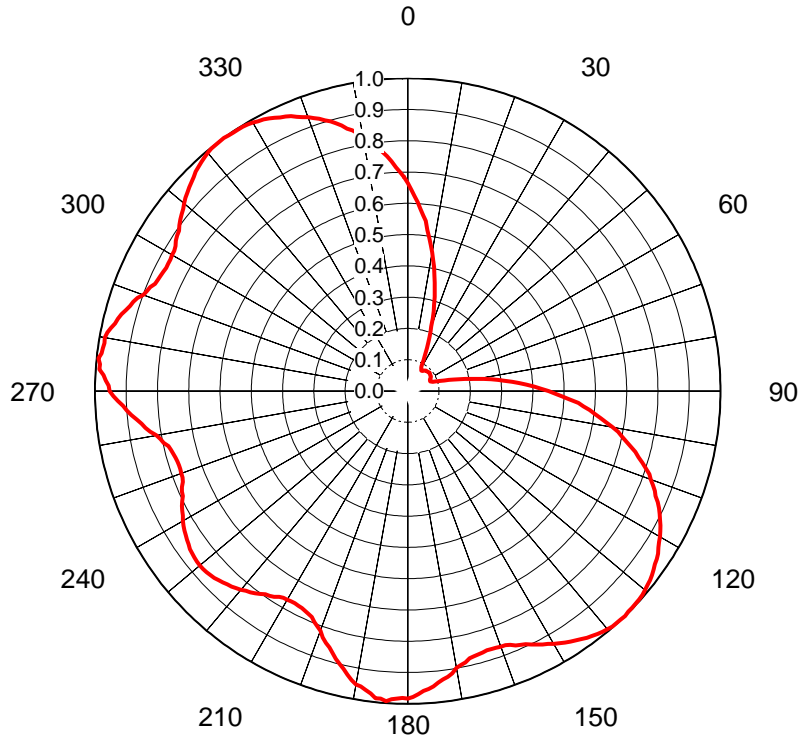
No IX check failures found.

DIE TUL-C3-4/12M-1 ANTENNA PATTERN W27DU

Pre-Rotation Antenna Pattern....

Azimuth (deg)	Relative Field
0.0	0.665
10.0	0.451
20.0	0.22
30.0	0.087
40.0	0.085
50.0	0.092
60.0	0.085
70.0	0.087
80.0	0.22
90.0	0.451
100.0	0.665
110.0	0.827
120.0	0.932
130.0	0.991
136.0	1.0
140.0	0.994
150.0	0.934
160.0	0.87
170.0	0.899
180.0	0.984
190.0	0.953
200.0	0.816
210.0	0.77
220.0	0.83
230.0	0.867
240.0	0.83
250.0	0.77
260.0	0.816
270.0	0.953
280.0	0.984
290.0	0.899
300.0	0.87
310.0	0.934
320.0	0.994
330.0	0.991
340.0	0.932
350.0	0.827





AZIMUTH PATTERN Horizontal Polarization

In Free Space

Proposal No. **C-71717-2**
Date **2-Jul-21**
Call Letters **W27DU**
Channel **27**
Frequency **551 MHz**
Antenna Type **TUL-C3-4/12M-1**
Gain **1.66 (2.19dB)**
Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.665	36	0.079	72	0.101	108	0.801	144	0.976	180	0.984	216	0.802	252	0.769	288	0.922
1	0.643	37	0.080	73	0.110	109	0.817	145	0.968	181	0.981	217	0.810	253	0.770	289	0.914
2	0.624	38	0.082	74	0.122	110	0.827	146	0.961	182	0.984	218	0.816	254	0.772	290	0.899
3	0.604	39	0.084	75	0.136	111	0.840	147	0.955	183	0.987	219	0.822	255	0.776	291	0.893
4	0.584	40	0.085	76	0.151	112	0.852	148	0.948	184	0.994	220	0.830	256	0.780	292	0.887
5	0.564	41	0.087	77	0.169	113	0.860	149	0.941	185	0.988	221	0.836	257	0.785	293	0.877
6	0.547	42	0.087	78	0.188	114	0.874	150	0.934	186	0.988	222	0.841	258	0.797	294	0.875
7	0.518	43	0.088	79	0.203	115	0.886	151	0.924	187	0.974	223	0.846	259	0.806	295	0.872
8	0.495	44	0.087	80	0.220	116	0.897	152	0.918	188	0.966	224	0.851	260	0.816	296	0.870
9	0.471	45	0.088	81	0.245	117	0.905	153	0.910	189	0.956	225	0.855	261	0.834	297	0.867
10	0.451	46	0.089	82	0.269	118	0.915	154	0.902	190	0.953	226	0.860	262	0.846	298	0.867
11	0.427	47	0.089	83	0.290	119	0.923	155	0.893	191	0.941	227	0.863	263	0.857	299	0.868
12	0.405	48	0.089	84	0.312	120	0.932	156	0.889	192	0.927	228	0.865	264	0.871	300	0.870
13	0.380	49	0.091	85	0.335	121	0.937	157	0.883	193	0.911	229	0.867	265	0.887	301	0.871
14	0.357	50	0.092	86	0.357	122	0.945	158	0.875	194	0.900	230	0.867	266	0.900	302	0.875
15	0.335	51	0.091	87	0.380	123	0.955	159	0.871	195	0.887	231	0.867	267	0.911	303	0.883
16	0.312	52	0.089	88	0.405	124	0.961	160	0.870	196	0.871	232	0.865	268	0.927	304	0.889
17	0.290	53	0.089	89	0.427	125	0.965	161	0.868	197	0.857	233	0.863	269	0.941	305	0.893
18	0.269	54	0.089	90	0.451	126	0.972	162	0.867	198	0.846	234	0.860	270	0.953	306	0.902
19	0.245	55	0.088	91	0.471	127	0.978	163	0.867	199	0.834	235	0.855	271	0.956	307	0.910
20	0.220	56	0.087	92	0.495	128	0.983	164	0.870	200	0.816	236	0.851	272	0.966	308	0.918
21	0.203	57	0.088	93	0.518	129	0.986	165	0.872	201	0.806	237	0.846	273	0.974	309	0.924
22	0.188	58	0.087	94	0.547	130	0.991	166	0.875	202	0.797	238	0.841	274	0.988	310	0.934
23	0.169	59	0.087	95	0.564	131	0.994	167	0.877	203	0.785	239	0.836	275	0.988	311	0.941
24	0.151	60	0.085	96	0.584	132	0.996	168	0.887	204	0.780	240	0.830	276	0.994	312	0.948
25	0.136	61	0.084	97	0.604	133	0.997	169	0.893	205	0.776	241	0.822	277	0.987	313	0.955
26	0.122	62	0.082	98	0.624	134	0.997	170	0.899	206	0.772	242	0.816	278	0.984	314	0.961
27	0.110	63	0.080	99	0.643	135	0.998	171	0.914	207	0.770	243	0.810	279	0.981	315	0.968
28	0.101	64	0.079	100	0.665	136	1.000	172	0.922	208	0.769	244	0.802	280	0.984	316	0.976
29	0.092	65	0.079	101	0.685	137	0.999	173	0.929	209	0.769	245	0.793	281	0.978	317	0.980
30	0.087	66	0.078	102	0.700	138	0.998	174	0.938	210	0.770	246	0.790	282	0.970	318	0.985
31	0.083	67	0.079	103	0.716	139	0.998	175	0.948	211	0.771	247	0.785	283	0.960	319	0.990
32	0.082	68	0.082	104	0.736	140	0.994	176	0.955	212	0.776	248	0.776	284	0.955	320	0.994
33	0.079	69	0.083	105	0.753	141	0.990	177	0.960	213	0.785	249	0.771	285	0.948	321	0.998
34	0.078	70	0.087	106	0.768	142	0.985	178	0.970	214	0.790	250	0.770	286	0.938	322	0.998
35	0.079	71	0.092	107	0.784	143	0.980	179	0.978	215	0.793	251	0.769	287	0.929	323	0.999

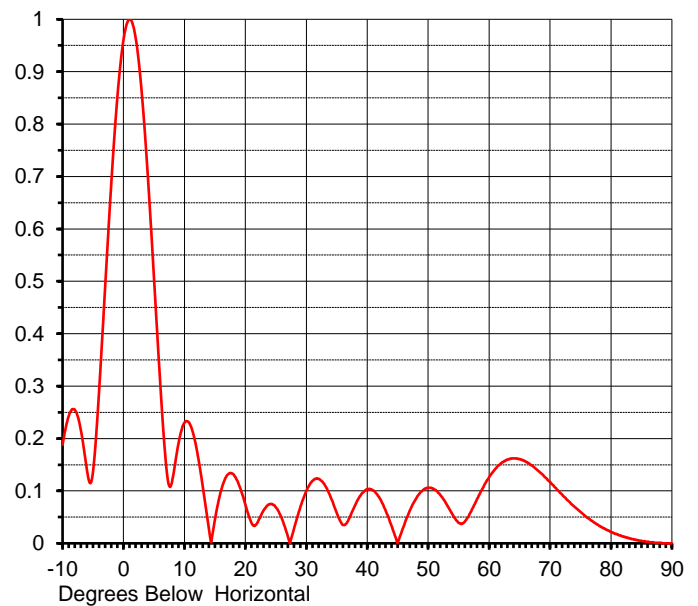
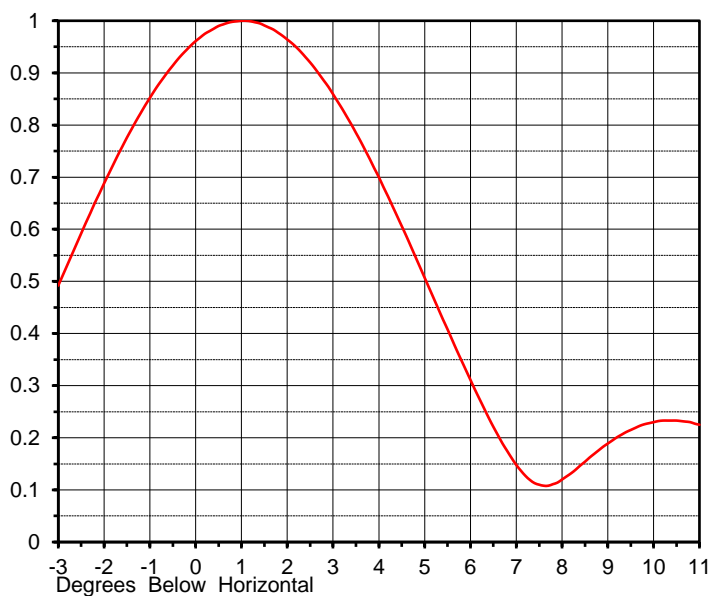
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ELEVATION PATTERN

Proposal No. **C-71717-2**
 Date **2-Jul-21**
 Call Letters **W27DU**
 Channel **27**
 Frequency **551 MHz**
 Antenna Type **TUL-C3-4/12M-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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