TECHNICAL ATTACHMENT
NEW LFPM FOR TOCCOA, GA

PARAMETERS

Channel	253	(98.5 MHz)	
New Location:	34° 34' 32.3" N 83° 18' 40.8" W -- NAD 83		
Antenna AGL	57 ft =	17.4 m	
Tower Total		21.3 m	(Tree is being used)
Antenna Ground	1012 ft =	308.5 m	(See Figure 1 below)
Antenna COR		325.9 m	
HAAT		19 m	(See Figure 2 below)
Power		100 w	

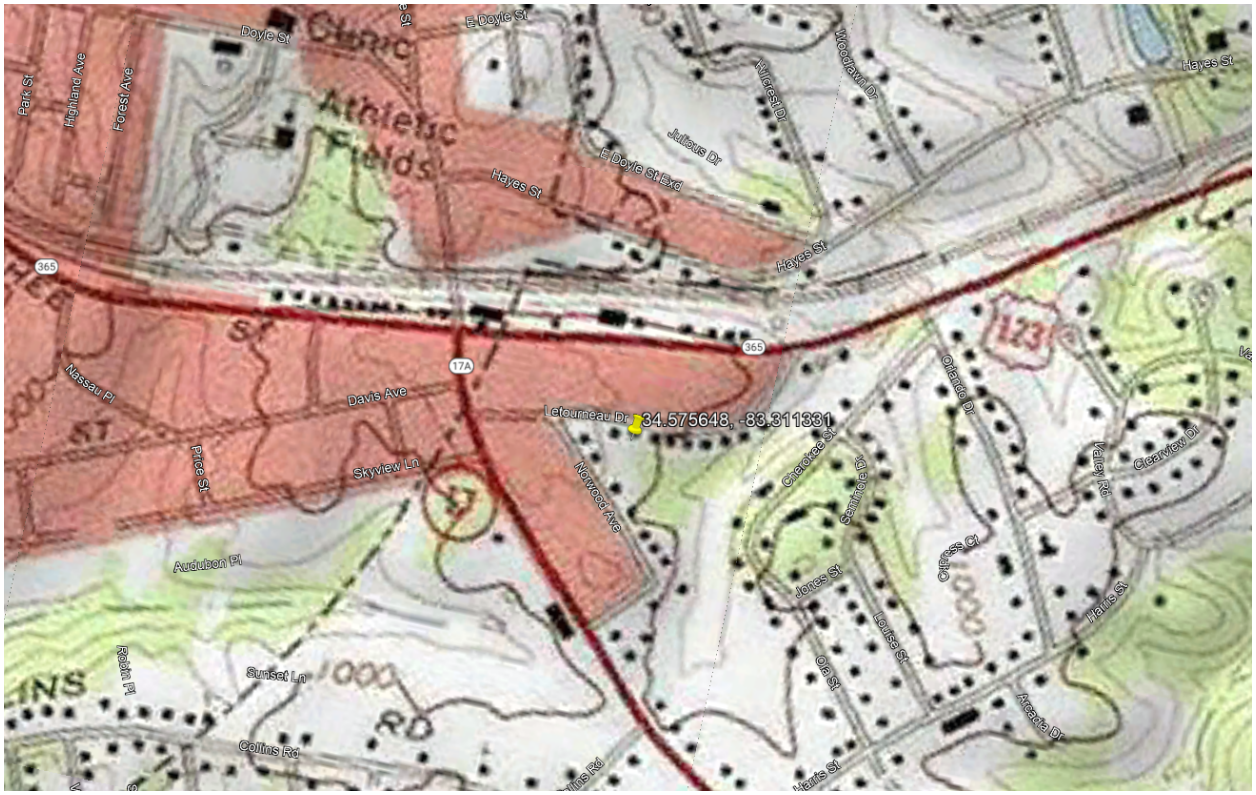


Figure 1: Topo Map - Location

Antenna Height Above Average Terrain Calculations -- Results

Input Data

Latitude **34° 34' 32.3"** North
Longitude **83° 18' 40.8"** West (NAD 83)

Height of antenna radiation center above mean sea level: **325.9** meters AMSL

Number of Evenly Spaced Radials = **8** 0° is referenced to True North

Results

Calculated HAAT = **19 meters**

Antenna Height Above Average Terrain calculated
using 1 km GLOBE terrain data

Individual "Radial HAAT" Values, in meters

0°	19.5 m
45°	86.6 m
90°	74.4 m
135°	54.6 m
180°	64.8 m
225°	25.5 m
270°	-84.0 m
315°	-87.6 m

Figure 2: HAAT Calculation

TOWAIR (PASS)

DETERMINATION Results	
Structure does not require registration. The structure meets the 6.10-meter (20-foot) Rule criteria.	
Your Specifications	
NAD83 Coordinates	
Latitude	34-34-32.3 north
Longitude	083-18-40.8 west
Measurements (Meters)	
Overall Structure Height (AGL)	21.3
Support Structure Height (AGL)	21.3
Site Elevation (AMSL)	308.5
Structure Type	
TREE - When used as a support for an antenna	

CHANNEL SPACING

REFERENCE — DISPLAY DATES

34 34 32.30 N. — CLASS = L1 — DATA 09-04-23

83 18 40.80 W. — Current Spacings to 2nd Adj. — SEARCH 10-13-23

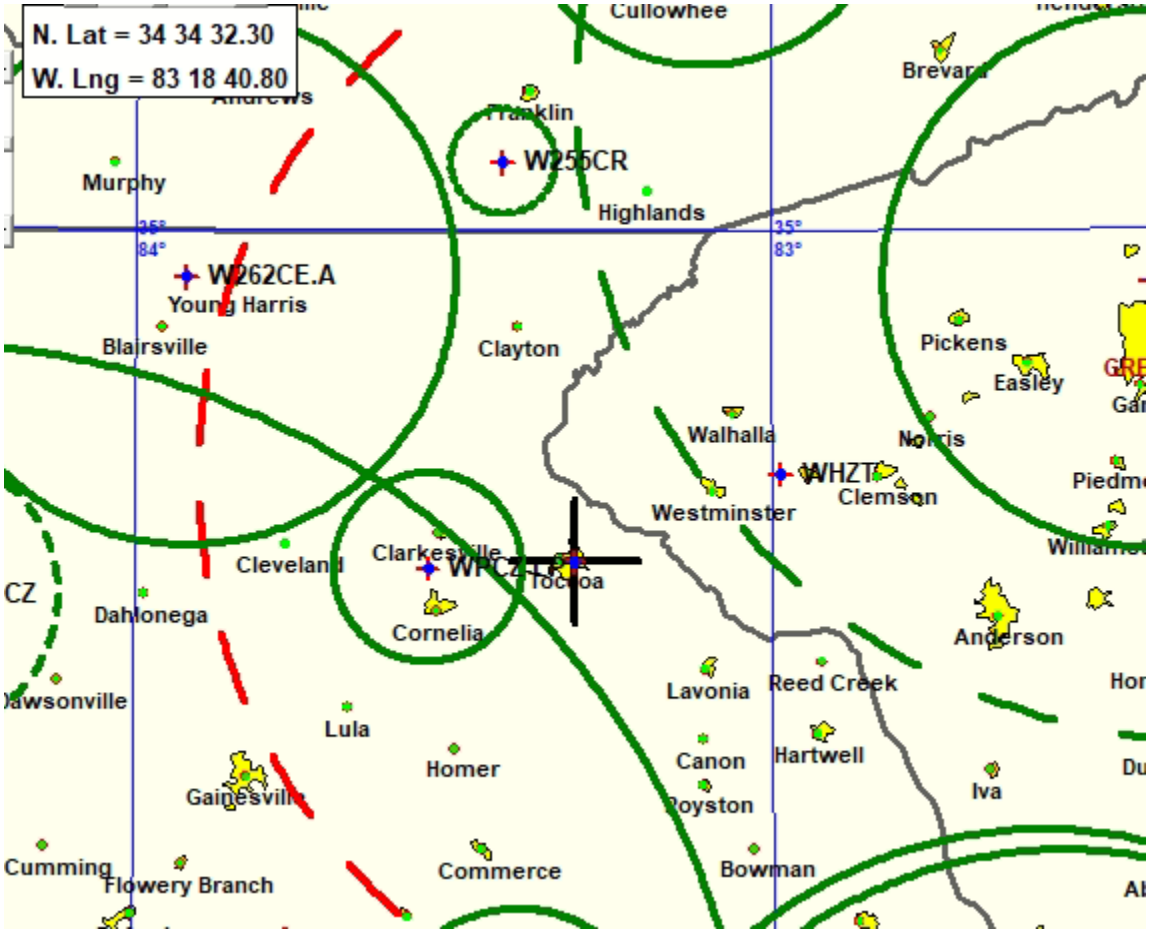
---------- Channel 253 - 98.5 MHz ----------

Call	Channel	Location		Azi	Dist	FCC	Margin
WHZT	LIC 251C0	Williamston	SC	67.2	32.24	83.5	-51.3
WPCZ-LP	LIC 254L1	Demorest	GA	267.4	20.94	13.5	7.4
WSB-FM	LIC 253C0	Atlanta	GA	226.3	130.77	121.5	9.3
WYRD-FM	LIC 255C	Spartanburg	SC	54.3	114.23	92.5	21.7
W262CE	APP 253D	Murphy	NC	306.4	68.79	38.5	30.3
W254CJ	LIC-D 254D	Athens	GA	186.5	70.82	20.5	50.3
W255CR	LIC-D 255D	Franklin	NC	349.9	58.05	7.5	50.6
W253BG	LIC 253D	Arial	SC	64.0	92.11	38.5	53.6
WLCZ	RSV-A 254C3	Lincolnton	GA	147.4	124.65	66.5	58.2
WLCZ	LIC-N 254C3	Lincolnton	GA	147.0	128.68	66.5	62.2
W252DN	LIC-D 252D	Balsam	NC	10.6	100.08	27.5	72.6
W251CZ	LIC-D 251D	Jasper	GA	267.2	94.53	20.5	74.0

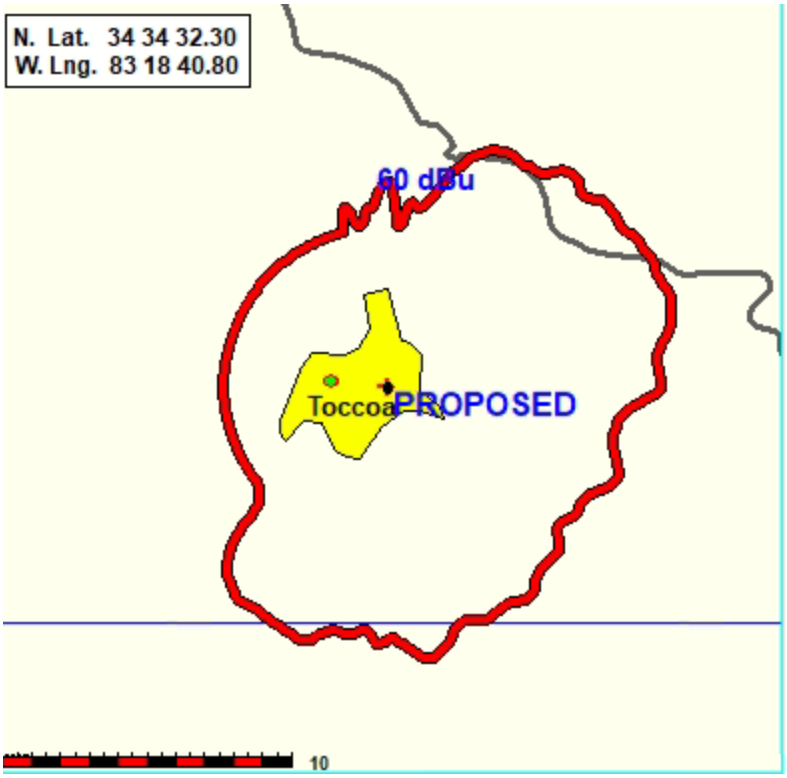
RSV-R = reserved - needs protection, RSV-A = allocation.

All separation margins include rounding

CHANNEL SPACING DIAGRAM



Short to Second Adj WHZT



PROPOSED F(50,50) 60 dBu

SECOND ADJACENT WAIVER REQUEST

WHZT is the second adjacent channel the facility is short spaced to.

License respectfully requests a "second adjacent channel waiver" with regards to Section 47 C.F.R. Section 73.807 of the FCC rules based upon the "Living Way" precedence (Living Way Ministries, Inc., Memorandum Opinion and Order, 17 FCC Red 17054, 17056, ¶ 5 (2002), recon. denied 23 FCC Red 15070 (2008)). This will be accomplished by used Free Space methodology of calculation.

Using U/D methodology, at the proposed transmitter location WHZT has a signal strength of 79.4 dBu. Interference will occur when the interfering signal exceeds the desired signal by 40 dbu. So the area of predicted interference would then be bounded by the 119.4 dBu contour.

The distance to this contour, using free space method:

$D = (7.01*P^{1/2})/E$,
where P is power (watts), E is field strength (v/m), and D is distance to contour (meters):

P = 100 w, E = 119.4 dBu D = 79.1 meters

However, the field strength of the proposed LPFM's antenna system falls quickly at depression angles below the horizon. Using elevation pattern data provided by Shively (2 Bay 6812 ½ wave spaced) the distance to the 119.4 dBu contour at various depression angles is tabulated below. The data shows that the lowest point at which the signal strength rises to 119.4 dBu is 9.8 meters below the center of radiation of the antenna system, or 2.9 meters above the ground. Therefore, this is sufficient clearance of the one-story structures, and the interference area encompasses zero population. The table below shows that the lowest elevation point of the 119.4 interfering contour is 2.9 meters above ground. Tree is adjacent to a one-story building

Due to zero population within this radiation radius, this meets the "Living Way" Criteria to qualify for a Waiver of 47 C.F.R. Section 73.807.

Thus, the applicant requests a second adjacent waiver based upon evidence no interference is proposed.

MAX ERP	DEPRESSION ANGLE	RELATIVE FIELD	dB FROM RELATIVE	ERP	ANGULAR DISTANCE TO 119.4 dBu CONTOUR	VERTICAL DISTANCE (below antenna)	HORIZONTAL DISTANCE TO 119.4 dBu CONTOUR	CLEARANCE OF CONTOUR ABOVE GROUND
100	-90	0	-32.640	0.05	1.7	1.6	0	15.8
100	-89	0	-36.310	0.02	1.1	1	0	16.4
100	-88	0	-40.000	0.01	0.7	0.6	0	16.8
100	-87	0	-40.000	0.01	0.7	0.6	0	16.8
100	-86	0.001	-40.000	0.01	0.7	0.6	0	16.8
100	-85	0.001	-35.090	0.03	1.3	1.2	0.1	16.2

100	-84	0.001	-31.710	0.07	1.9	1.8	0.2	15.6
100	-83	0.002	-29.240	0.12	2.5	2.4	0.3	15
100	-82	0.003	-27.330	0.18	3.1	3	0.4	14.4
100	-81	0.004	-25.740	0.27	3.8	3.7	0.5	13.7
100	-80	0.005	-24.400	0.36	4.4	4.3	0.7	13.1
100	-79	0.007	-23.220	0.48	5.1	5	0.9	12.4
100	-78	0.008	-22.190	0.60	5.7	5.5	1.1	11.9
100	-77	0.011	-21.250	0.75	6.4	6.2	1.4	11.2
100	-76	0.013	-20.420	0.91	7	6.7	1.6	10.7
100	-75	0.016	-19.640	1.09	7.7	7.4	1.9	10
100	-74	0.019	-18.930	1.28	8.3	7.9	2.2	9.5
100	-73	0.022	-18.280	1.49	9	8.6	2.6	8.8
100	-72	0.026	-17.680	1.71	9.6	9.1	2.9	8.3
100	-71	0.03	-17.110	1.95	10.3	9.7	3.3	7.7
100	-70	0.035	-16.59	2.19	10.9	10.2	3.7	7.2
100	-69	0.04	-16.11	2.45	11.6	10.8	4.1	6.6
100	-68	0.046	-15.66	2.72	12.2	11.3	4.5	6.1
100	-67	0.052	-15.23	3.00	12.8	11.7	5	5.7
100	-66	0.059	-14.85	3.27	13.4	12.2	5.4	5.2
100	-65	0.066	-14.47	3.57	14	12.6	5.9	4.8
100	-64	0.073	-14.14	3.85	14.5	13	6.3	4.4
100	-63	0.082	-13.83	4.14	15.1	13.4	6.8	4
100	-62	0.09	-13.55	4.42	15.6	13.7	7.3	3.7
100	-61	0.099	-13.3	4.68	16	13.9	7.7	3.5
100	-60	0.109	-13.08	4.92	16.4	14.1	8.2	3.3
100	-59	0.119	-12.87	5.16	16.8	14.3	8.6	3.1
100	-58	0.13	-12.71	5.36	17.1	14.4	9	3
100	-57	0.142	-12.57	5.53	17.4	14.5	9.4	2.9
100	-56	0.154	-12.46	5.68	17.6	14.5	9.8	2.9
100	-55	0.166	-12.38	5.78	17.8	14.5	10.2	2.9
100	-54	0.179	-12.34	5.83	17.9	14.4	10.5	3
100	-53	0.193	-12.33	5.85	17.9	14.2	10.7	3.2
100	-52	0.207	-12.37	5.79	17.8	14	10.9	3.4
100	-51	0.222	-12.44	5.70	17.7	13.7	11.1	3.7
100	-50	0.237	-12.56	5.55	17.4	13.3	11.1	4.1

100	-49	0.253	-12.74	5.32	17.1	12.9	11.2	4.5
100	-48	0.269	-12.97	5.05	16.6	12.3	11.1	5.1
100	-47	0.286	-13.26	4.72	16.1	11.7	10.9	5.7
100	-46	0.303	-13.63	4.34	15.4	11	10.7	6.4
100	-45	0.32	-14.09	3.90	14.6	10.3	10.3	7.1
100	-44	0.338	-14.64	3.44	13.7	9.5	9.8	7.9
100	-43	0.357	-15.32	2.94	12.7	8.6	9.2	8.8
100	-42	0.375	-16.15	2.43	11.5	7.6	8.5	9.8
100	-41	0.394	-17.18	1.91	10.2	6.6	7.7	10.8
100	-40	0.414	-18.47	1.42	8.8	5.6	6.7	11.8
100	-39	0.433	-20.14	0.97	7.3	4.5	5.6	12.9
100	-38	0.453	-22.41	0.57	5.6	3.4	4.4	14
100	-37	0.473	-25.78	0.26	3.8	2.2	3	15.2
100	-36	0.494	-31.91	0.06	1.8	1	1.4	16.4
100	-35	0.514	-40	0.01	0.7	0.4	0.5	17
100	-34	0.535	-30.02	0.10	2.3	1.2	1.9	16.2
100	-33	0.555	-24.11	0.39	4.6	2.5	3.8	14.9
100	-32	0.576	-20.49	0.89	7	3.7	5.9	13.7
100	-31	0.597	-17.86	1.64	9.4	4.8	8	12.6
100	-30	0.617	-15.77	2.65	12	5.9	10.3	11.5
100	-29	0.638	-14.04	3.94	14.7	7.1	12.8	10.3
100	-28	0.658	-12.56	5.55	17.4	8.1	15.3	9.3
100	-27	0.678	-11.28	7.45	20.2	9.1	18	8.3
100	-26	0.698	-10.14	9.68	23.1	10.1	20.7	7.3
100	-25	0.718	-9.12	12.25	25.9	10.9	23.4	6.5
100	-24	0.737	-8.2	15.14	28.8	11.7	26.3	5.7
100	-23	0.756	-7.36	18.37	31.8	12.4	29.2	5
100	-22	0.774	-6.6	21.88	34.7	12.9	32.1	4.5
100	-21	0.792	-5.91	25.64	37.6	13.4	35.1	4
100	-20	0.81	-5.26	29.79	40.5	13.8	38	3.6
100	-19	0.827	-4.68	34.04	43.3	14	40.9	3.4
100	-18	0.843	-4.14	38.55	46.1	14.2	43.8	3.2
100	-17	0.859	-3.65	43.15	48.7	14.2	46.5	3.2
100	-16	0.874	-3.19	47.97	51.4	14.1	49.4	3.3
100	-15	0.889	-2.78	52.72	53.9	13.9	52	3.5

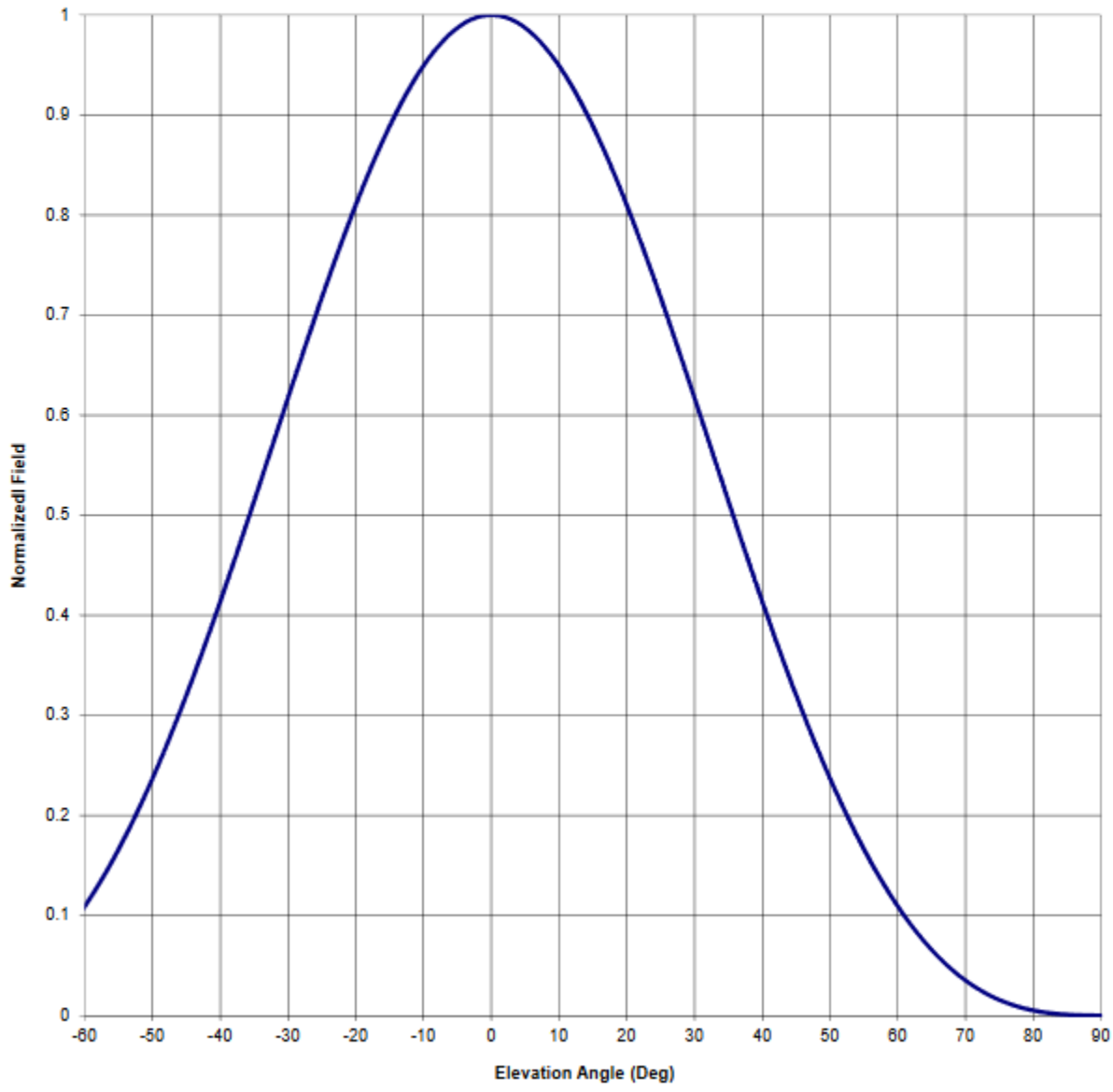
100	-14	0.903	-2.4	57.54	56.3	13.6	54.6	3.8
100	-13	0.915	-2.05	62.37	58.6	13.1	57	4.3
100	-12	0.928	-1.73	67.14	60.8	12.6	59.4	4.8
100	-11	0.939	-1.44	71.78	62.9	11.9	61.7	5.5
100	-10	0.949	-1.18	76.21	64.8	11.2	63.8	6.2
100	-9	0.959	-0.95	80.35	66.5	10.3	65.6	7.1
100	-8	0.967	-0.74	84.33	68.1	9.4	67.4	8
100	-7	0.975	-0.57	87.70	69.5	8.4	68.9	9
100	-6	0.981	-0.42	90.78	70.7	7.3	70.3	10.1
100	-5	0.987	-0.29	93.54	71.8	6.2	71.5	11.2
100	-4	0.992	-0.19	95.72	72.6	5	72.4	12.4
100	-3	0.995	-0.11	97.50	73.3	3.8	73.1	13.6
100	-2	0.998	-0.05	98.86	73.8	2.5	73.7	14.9
100	-1	0.999	-0.01	99.77	74.1	1.2	74	16.2
100	0	1	0	100.00	74.2	0	74.2	17.4
100	1	0.999	-0.01	99.77	74.1	1.2	74	16.2
100	2	0.998	-0.05	98.86	73.8	2.5	73.7	14.9
100	3	0.995	-0.11	97.50	73.3	3.8	73.1	13.6
100	4	0.992	-0.19	95.72	72.6	5	72.4	12.4
100	5	0.987	-0.29	93.54	71.8	6.2	71.5	11.2
100	6	0.981	-0.42	90.78	70.7	7.3	70.3	10.1
100	7	0.975	-0.57	87.70	69.5	8.4	68.9	9
100	8	0.967	-0.74	84.33	68.1	9.4	67.4	8
100	9	0.959	-0.95	80.35	66.5	10.3	65.6	7.1
100	10	0.949	-1.18	76.21	64.8	11.2	63.8	6.2
100	11	0.939	-1.44	71.78	62.9	11.9	61.7	5.5
100	12	0.928	-1.73	67.14	60.8	12.6	59.4	4.8
100	13	0.915	-2.05	62.37	58.6	13.1	57	4.3
100	14	0.903	-2.4	57.54	56.3	13.6	54.6	3.8
100	15	0.889	-2.78	52.72	53.9	13.9	52	3.5
100	16	0.874	-3.19	47.97	51.4	14.1	49.4	3.3
100	17	0.859	-3.65	43.15	48.7	14.2	46.5	3.2
100	18	0.843	-4.14	38.55	46.1	14.2	43.8	3.2
100	19	0.827	-4.68	34.04	43.3	14	40.9	3.4
100	20	0.81	-5.26	29.79	40.5	13.8	38	3.6

100	21	0.792	-5.91	25.64	37.6	13.4	35.1	4
100	22	0.774	-6.6	21.88	34.7	12.9	32.1	4.5
100	23	0.756	-7.36	18.37	31.8	12.4	29.2	5
100	24	0.737	-8.2	15.14	28.8	11.7	26.3	5.7
100	25	0.718	-9.12	12.25	25.9	10.9	23.4	6.5
100	26	0.698	-10.14	9.68	23.1	10.1	20.7	7.3
100	27	0.678	-11.28	7.45	20.2	9.1	18	8.3
100	28	0.658	-12.56	5.55	17.4	8.1	15.3	9.3
100	29	0.638	-14.04	3.94	14.7	7.1	12.8	10.3
100	30	0.617	-15.77	2.65	12	5.9	10.3	11.5
100	31	0.597	-17.86	1.64	9.4	4.8	8	12.6
100	32	0.576	-20.49	0.89	7	3.7	5.9	13.7
100	33	0.555	-24.11	0.39	4.6	2.5	3.8	14.9
100	34	0.535	-30.02	0.10	2.3	1.2	1.9	16.2
100	35	0.514	-40	0.01	0.7	0.4	0.5	17
100	36	0.494	-31.91	0.06	1.8	1	1.4	16.4
100	37	0.473	-25.78	0.26	3.8	2.2	3	15.2
100	38	0.453	-22.41	0.57	5.6	3.4	4.4	14
100	39	0.433	-20.14	0.97	7.3	4.5	5.6	12.9
100	40	0.414	-18.47	1.42	8.8	5.6	6.7	11.8
100	41	0.394	-17.18	1.91	10.2	6.6	7.7	10.8
100	42	0.375	-16.15	2.43	11.5	7.6	8.5	9.8
100	43	0.357	-15.32	2.94	12.7	8.6	9.2	8.8
100	44	0.338	-14.64	3.44	13.7	9.5	9.8	7.9
100	45	0.32	-14.09	3.90	14.6	10.3	10.3	7.1
100	46	0.303	-13.63	4.34	15.4	11	10.7	6.4
100	47	0.286	-13.26	4.72	16.1	11.7	10.9	5.7
100	48	0.269	-12.97	5.05	16.6	12.3	11.1	5.1
100	49	0.253	-12.74	5.32	17.1	12.9	11.2	4.5
100	50	0.237	-12.56	5.55	17.4	13.3	11.1	4.1
100	51	0.222	-12.44	5.70	17.7	13.7	11.1	3.7
100	52	0.207	-12.37	5.79	17.8	14	10.9	3.4
100	53	0.193	-12.33	5.85	17.9	14.2	10.7	3.2
100	54	0.179	-12.34	5.83	17.9	14.4	10.5	3
100	55	0.166	-12.38	5.78	17.8	14.5	10.2	2.9

100	56	0.154	-12.46	5.68	17.6	14.5	9.8	2.9
100	57	0.142	-12.57	5.53	17.4	14.5	9.4	2.9
100	58	0.13	-12.71	5.36	17.1	14.4	9	3
100	59	0.119	-12.87	5.16	16.8	14.3	8.6	3.1
100	60	0.109	-13.08	4.92	16.4	14.1	8.2	3.3
100	61	0.099	-13.3	4.68	16	13.9	7.7	3.5
100	62	0.09	-13.55	4.42	15.6	13.7	7.3	3.7
100	63	0.082	-13.83	4.14	15.1	13.4	6.8	4
100	64	0.073	-14.14	3.85	14.5	13	6.3	4.4
100	65	0.066	-14.47	3.57	14	12.6	5.9	4.8
100	66	0.059	-14.85	3.27	13.4	12.2	5.4	5.2
100	67	0.052	-15.23	3.00	12.8	11.7	5	5.7
100	68	0.046	-15.66	2.72	12.2	11.3	4.5	6.1
100	69	0.04	-16.11	2.45	11.6	10.8	4.1	6.6
100	70	0.035	-16.59	2.19	10.9	10.2	3.7	7.2
100	71	0.03	-17.11	1.95	10.3	9.7	3.3	7.7
100	72	0.026	-17.69	1.70	9.6	9.1	2.9	8.3
100	73	0.022	-18.28	1.49	9	8.6	2.6	8.8
100	74	0.019	-18.93	1.28	8.3	7.9	2.2	9.5
100	75	0.016	-19.64	1.09	7.7	7.4	1.9	10
100	76	0.013	-20.42	0.91	7	6.7	1.6	10.7
100	77	0.011	-21.25	0.75	6.4	6.2	1.4	11.2
100	78	0.008	-22.19	0.60	5.7	5.5	1.1	11.9
100	79	0.007	-23.22	0.48	5.1	5	0.9	12.4
100	80	0.005	-24.4	0.36	4.4	4.3	0.7	13.1
100	81	0.004	-25.74	0.27	3.8	3.7	0.5	13.7
100	82	0.003	-27.33	0.18	3.1	3	0.4	14.4
100	83	0.002	-29.24	0.12	2.5	2.4	0.3	15
100	84	0.001	-31.71	0.07	1.9	1.8	0.2	15.6
100	85	0.001	-35.09	0.03	1.3	1.2	0.1	16.2
100	86	0.001	-40	0.01	0.7	0.6	0	16.8
100	87	0	-40	0.01	0.7	0.6	0	16.8
100	88	0	-40	0.01	0.7	0.6	0	16.8
100	89	0	-36.31	0.02	1.1	1	0	16.4
100	90	0	-32.64	0.05	1.7	1.6	0	15.8

PROPOSED ANTENNA: ELEVATION PROFILE

Antenna Mfg.:	Shively Labs			Date: 11/3/2020
Antenna Type:	6812B-HW-2			
Station:	0	Beam Tilt	0	
Frequency:	98.1	Gain (Max)	0.707	-1.507 dB
Channel #:	251	Gain (Horizon)	0.707	-1.507 dB
Figure:	Figure 3			



Antenna Mfg.: Shively Labs
Antenna Type: 6812B-HW-2
Station: 0
Frequency: 98.1
Channel #: 251
Figure: Figure 3

Date: 11/3/2020

Beam Tilt	**0**	
Gain (Max)	**0.707**	**-1.507 dB**
Gain (Horizon)	**0.707**	**-1.507 dB**

Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field
-90	0.000	-44	0.338	0	1.000	46	0.303
-89	0.000	-43	0.357	1	0.999	47	0.286
-88	0.000	-42	0.375	2	0.998	48	0.269
-87	0.000	-41	0.394	3	0.995	49	0.253
-86	0.001	-40	0.414	4	0.992	50	0.237
-85	0.001	-39	0.433	5	0.987	51	0.222
-84	0.001	-38	0.453	6	0.981	52	0.207
-83	0.002	-37	0.473	7	0.975	53	0.193
-82	0.003	-36	0.494	8	0.967	54	0.179
-81	0.004	-35	0.514	9	0.959	55	0.166
-80	0.005	-34	0.535	10	0.949	56	0.154
-79	0.007	-33	0.555	11	0.939	57	0.142
-78	0.008	-32	0.576	12	0.928	58	0.130
-77	0.011	-31	0.597	13	0.915	59	0.119
-76	0.013	-30	0.617	14	0.903	60	0.109
-75	0.016	-29	0.638	15	0.889	61	0.099
-74	0.019	-28	0.658	16	0.874	62	0.090
-73	0.022	-27	0.678	17	0.859	63	0.082
-72	0.026	-26	0.698	18	0.843	64	0.073
-71	0.030	-25	0.718	19	0.827	65	0.066
-70	0.035	-24	0.737	20	0.810	66	0.059
-69	0.040	-23	0.756	21	0.792	67	0.052
-68	0.046	-22	0.774	22	0.774	68	0.046
-67	0.052	-21	0.792	23	0.756	69	0.040
-66	0.059	-20	0.810	24	0.737	70	0.035
-65	0.066	-19	0.827	25	0.718	71	0.030
-64	0.073	-18	0.843	26	0.698	72	0.026
-63	0.082	-17	0.859	27	0.678	73	0.022
-62	0.090	-16	0.874	28	0.658	74	0.019
-61	0.099	-15	0.889	29	0.638	75	0.016
-60	0.109	-14	0.903	30	0.617	76	0.013
-59	0.119	-13	0.915	31	0.597	77	0.011
-58	0.130	-12	0.928	32	0.576	78	0.008
-57	0.142	-11	0.939	33	0.555	79	0.007
-56	0.154	-10	0.949	34	0.535	80	0.005
-55	0.166	-9	0.959	35	0.514	81	0.004
-54	0.179	-8	0.967	36	0.494	82	0.003
-53	0.193	-7	0.975	37	0.473	83	0.002
-52	0.207	-6	0.981	38	0.453	84	0.001
-51	0.222	-5	0.987	39	0.433	85	0.001
-50	0.237	-4	0.992	40	0.414	86	0.001
-49	0.253	-3	0.995	41	0.394	87	0.000
-48	0.269	-2	0.998	42	0.375	88	0.000
-47	0.286	-1	0.999	43	0.357	89	0.000
-46	0.303	0	1.000	44	0.338	90	0.000
-45	0.320			45	0.320		