

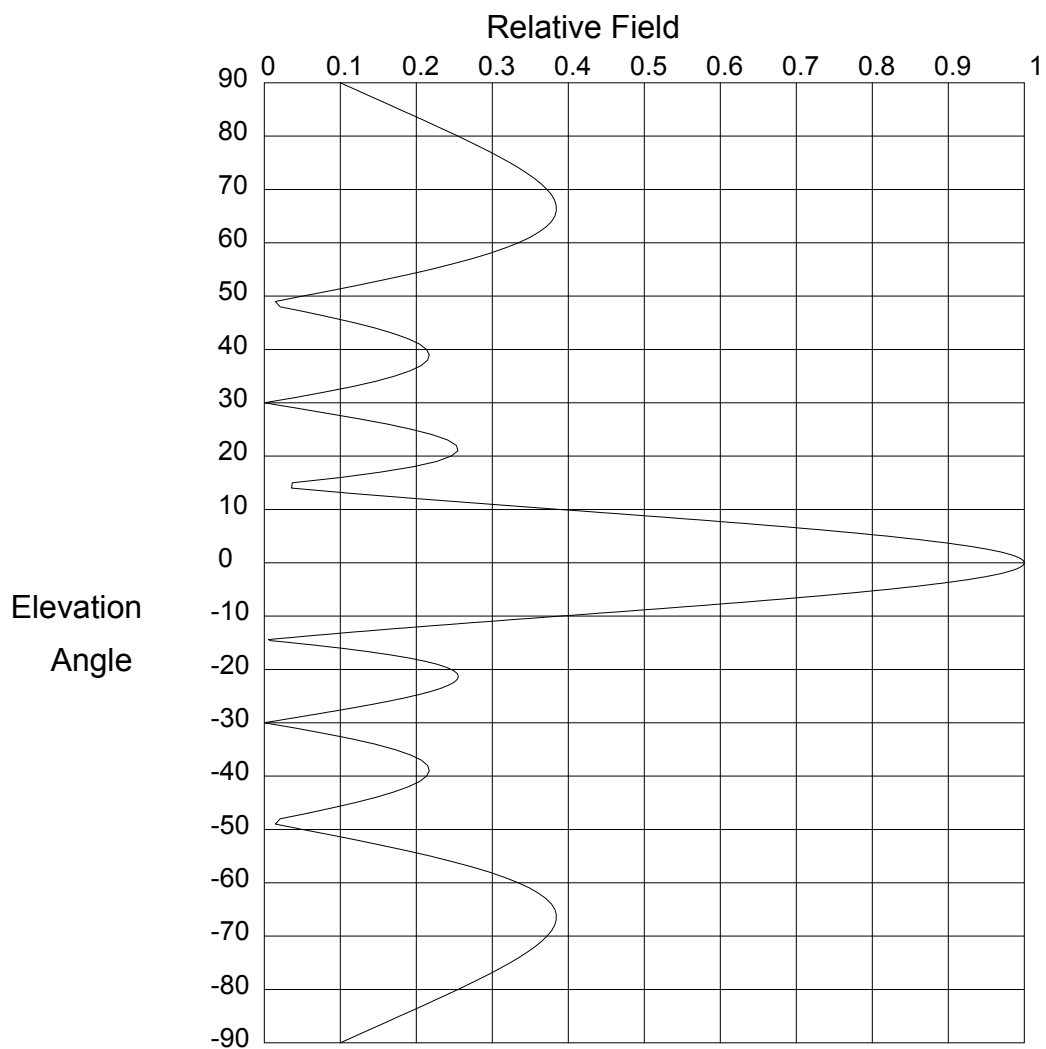
The Church in Simpsonville Second-Adjacent Waiver Request Simpsonville, SC

This Proposal is for the purpose of correcting the transmitter coordinates of WYCJ-LP original construction permit filed for in January of 2001 (BNPL-20010119ACC).

The proposed LPFM station will broadcast on channel 283, which is within the 40 kilometers, second-adjacent minimum distance separation of station WROO on channel 285. The WROO interfering contour at the LPFM tower site is 66.8 dBμ F(50,50). Using the ratio of 100:1 (LPFM to WROO) on the second-adjacent channel, the population within the proposed LPFM 106.8 dBμ contour is zero. Applying the antenna manufacturer's vertical radiation pattern the area of interference can be more accurately calculated geometrically, rather than just by using the free space equation alone. This particular antenna is a four bay full wave spaced SWR FM1 antenna. It was determined from the manufacturer's vertical plan that beginning at 35 degrees below horizontal interference would reach the ground and extend up to 43.5 meters horizontally. There are no occupied structures or elevated roadways within the interference area. Therefore, the application is in compliance with §73.807(e)(1) *Waiver of the second-adjacent channel separations*.

Figure 1
Minimum Ground Clearance

Depression Angle Below Horizontal	Antenna Relative Field	ERP (Watts)	Distance to interfering Contour from Antenna (m)	Horizontal Distance of Interfering contour from tower (m)	Vertical Clearance of Interfering contour above TGL (m)
5	0.819	44.3	213	21.2	5.4
10	0.389	10.0	101	99.5	6.5
15	0.037	0.1	10	9.7	21.4
20	0.246	4.0	64	60.1	2.1
25	0.195	2.5	51	46.2	2.4
30	0.000	0.0	0	0.0	24.0
35	0.172	2.0	45	36.9	-1.8
40	0.214	3.0	56	42.9	-12.0
45	0.119	0.9	30	21.2	2.8
50	0.051	0.2	14	9.0	13.3
55	0.219	3.2	57	32.7	-22.7
60	0.334	7.4	87	43.5	-51.3
65	0.382	9.6	99	41.8	-65.7
70	0.372	9.1	97	33.2	-67.2
75	0.323	6.9	84	21.7	-57.1
80	0.255	4.3	66	11.5	-41.0
85	0.178	2.1	46	4.0	-21.8
90	0.100	0.7	27	0.0	-3.0
Minimum Clearance above TGL:					-67.2



Elevation Pattern

Scale: Linear

Units: Field, Relative

Systems With Reliability

CLIENT: WYCJ-LP

Date: 06/23/2023

ANTENNA TYPE: FM1/4

FREQUENCY: 104.5 MHz

PATTERN POL.: Circular

DIRECTIVITY(Peak): 4.088/6.115 dBd

Beam Tilt (Deg.) : 0

DIRECTIVITY(Horiz): 4.088/6.115 dBd

Null Fill(s)(%) : 0, 0, 0

Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
90.0	.10 (-20)	52.0	.122 (-18.296)	14.0	.036 (-28.925)
89.0	.116 (-18.733)	51.0	.087 (-21.259)	13.0	.116 (-18.677)
88.0	.131 (-17.628)	50.0	.051 (-25.907)	12.0	.203 (-13.829)
87.0	.147 (-16.648)	49.0	.015 (-36.679)	11.0	.295 (-10.601)
86.0	.163 (-15.769)	48.0	.021 (-33.591)	10.0	.389 (-8.198)
85.0	.178 (-14.973)	47.0	.055 (-25.123)	9.8	.408 (-7.785)
84.0	.194 (-14.247)	46.0	.088 (-21.083)	9.6	.427 (-7.391)
83.0	.209 (-13.581)	45.0	.119 (-18.507)	9.4	.446 (-7.015)
82.0	.225 (-12.967)	44.0	.146 (-16.7)	9.2	.465 (-6.656)
81.0	.24 (-12.4)	43.0	.17 (-15.39)	9.0	.484 (-6.311)
80.0	.255 (-11.875)	42.0	.19 (-14.446)	8.8	.502 (-5.981)
79.0	.269 (-11.39)	41.0	.204 (-13.798)	8.6	.521 (-5.665)
78.0	.284 (-10.941)	40.0	.214 (-13.409)	8.4	.539 (-5.362)
77.0	.298 (-10.528)	39.0	.217 (-13.261)	8.2	.558 (-5.071)
76.0	.311 (-10.149)	38.0	.215 (-13.353)	8.0	.576 (-4.792)
75.0	.323 (-9.803)	37.0	.207 (-13.7)	7.8	.594 (-4.524)
74.0	.335 (-9.491)	36.0	.192 (-14.331)	7.6	.612 (-4.266)
73.0	.346 (-9.212)	35.0	.172 (-15.306)	7.4	.63 (-4.019)
72.0	.356 (-8.968)	34.0	.146 (-16.728)	7.2	.647 (-3.782)
71.0	.365 (-8.759)	33.0	.115 (-18.8)	7.0	.664 (-3.554)
70.0	.372 (-8.587)	32.0	.08 (-21.983)	6.8	.681 (-3.335)
69.0	.378 (-8.453)	31.0	.041 (-27.75)	6.6	.698 (-3.125)
68.0	.382 (-8.359)	30.0	.00 (-50)	6.4	.714 (-2.924)
67.0	.384 (-8.309)	29.0	.042 (-27.509)	6.2	.73 (-2.731)
66.0	.384 (-8.305)	28.0	.084 (-21.504)	6.0	.746 (-2.546)
65.0	.382 (-8.352)	27.0	.125 (-18.095)	5.8	.761 (-2.368)
64.0	.378 (-8.452)	26.0	.162 (-15.813)	5.6	.776 (-2.199)
63.0	.371 (-8.611)	25.0	.195 (-14.205)	5.4	.791 (-2.036)
62.0	.362 (-8.836)	24.0	.222 (-13.076)	5.2	.805 (-1.881)
61.0	.349 (-9.134)	23.0	.242 (-12.335)	5.0	.819 (-1.733)
60.0	.334 (-9.515)	22.0	.253 (-11.938)	4.8	.833 (-1.591)
59.0	.317 (-9.989)	21.0	.255 (-11.878)	4.6	.846 (-1.457)
58.0	.296 (-10.571)	20.0	.246 (-12.177)	4.4	.858 (-1.329)
57.0	.273 (-11.282)	19.0	.226 (-12.899)	4.2	.87 (-1.207)
56.0	.247 (-12.148)	18.0	.196 (-14.173)	4.0	.882 (-1.092)
55.0	.219 (-13.205)	17.0	.153 (-16.282)	3.8	.893 (-0.983)
54.0	.188 (-14.511)	16.0	.10 (-19.974)	3.6	.904 (-0.88)
53.0	.156 (-16.155)	15.0	.037 (-28.661)	3.4	.914 (-0.783)

Systems With Reliability

Page 1 of 3

CLIENT: WYCJ-LP

Date: 6/23/2023

ANTENNA TYPE: FM1/4

FREQUENCY: 104.5 MHz

PATTERN POL.: Circular

DIRECTIVITY(Peak): 4.088/6.115 dBd

Beam Tilt (Deg.) : 0

DIRECTIVITY(Horiz): 4.088/6.115 dBd

Null Fill(s)(%) : 0, 0, 0

Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
3.2	.923 (-0.692)	-4.4	.858 (-1.329)	-12.0	.203 (-13.829)
3.0	.933 (-0.607)	-4.6	.846 (-1.457)	-12.2	.186 (-14.626)
2.8	.941 (-0.528)	-4.8	.833 (-1.591)	-12.4	.168 (-15.493)
2.6	.949 (-0.454)	-5.0	.819 (-1.733)	-12.6	.151 (-16.444)
2.4	.956 (-0.386)	-5.2	.805 (-1.881)	-12.8	.133 (-17.497)
2.2	.963 (-0.324)	-5.4	.791 (-2.036)	-13.0	.116 (-18.677)
2.0	.97 (-0.268)	-5.6	.776 (-2.199)	-13.2	.10 (-20.021)
1.8	.975 (-0.216)	-5.8	.761 (-2.368)	-13.4	.083 (-21.584)
1.6	.981 (-0.171)	-6.0	.746 (-2.546)	-13.6	.067 (-23.455)
1.4	.985 (-0.131)	-6.2	.73 (-2.731)	-13.8	.051 (-25.792)
1.2	.989 (-0.096)	-6.4	.714 (-2.924)	-14.0	.036 (-28.925)
1.0	.992 (-0.067)	-6.6	.698 (-3.125)	-14.2	.021 (-33.736)
.8	.995 (-0.043)	-6.8	.681 (-3.335)	-14.4	.006 (-44.914)
.6	.997 (-0.024)	-7.0	.664 (-3.554)	-14.6	.009 (-41.043)
.4	.999 (-0.011)	-7.2	.647 (-3.782)	-14.8	.023 (-32.742)
.2	1.00 (-0.003)	-7.4	.63 (-4.019)	-15.0	.037 (-28.661)
.0	1.00 (0)	-7.6	.612 (-4.266)	-15.2	.05 (-25.959)
-.2	1.00 (-0.003)	-7.8	.594 (-4.524)	-15.4	.063 (-23.954)
-.4	.999 (-0.011)	-8.0	.576 (-4.792)	-15.6	.076 (-22.37)
-.6	.997 (-0.024)	-8.2	.558 (-5.071)	-15.8	.088 (-21.07)
-.8	.995 (-0.043)	-8.4	.539 (-5.362)	-16.0	.10 (-19.974)
-1.0	.992 (-0.067)	-8.6	.521 (-5.665)	-16.2	.112 (-19.034)
-1.2	.989 (-0.096)	-8.8	.502 (-5.981)	-16.4	.123 (-18.214)
-1.4	.985 (-0.131)	-9.0	.484 (-6.311)	-16.6	.133 (-17.493)
-1.6	.981 (-0.171)	-9.2	.465 (-6.656)	-16.8	.144 (-16.854)
-1.8	.975 (-0.216)	-9.4	.446 (-7.015)	-17.0	.153 (-16.282)
-2.0	.97 (-0.268)	-9.6	.427 (-7.391)	-17.2	.163 (-15.77)
-2.2	.963 (-0.324)	-9.8	.408 (-7.785)	-17.4	.172 (-15.308)
-2.4	.956 (-0.386)	-10.0	.389 (-8.198)	-17.6	.18 (-14.891)
-2.6	.949 (-0.454)	-10.2	.37 (-8.63)	-17.8	.188 (-14.514)
-2.8	.941 (-0.528)	-10.4	.351 (-9.085)	-18.0	.196 (-14.173)
-3.0	.933 (-0.607)	-10.6	.333 (-9.563)	-18.2	.203 (-13.864)
-3.2	.923 (-0.692)	-10.8	.314 (-10.068)	-18.4	.209 (-13.584)
-3.4	.914 (-0.783)	-11.0	.295 (-10.601)	-18.6	.215 (-13.331)
-3.6	.904 (-0.88)	-11.2	.276 (-11.166)	-18.8	.221 (-13.103)
-3.8	.893 (-0.983)	-11.4	.258 (-11.767)	-19.0	.226 (-12.899)
-4.0	.882 (-1.092)	-11.6	.24 (-12.407)	-19.2	.231 (-12.716)
-4.2	.87 (-1.207)	-11.8	.222 (-13.092)	-19.4	.236 (-12.553)

Systems With Reliability

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CLIENT: WYCJ-LP

Date: 6/23/2023

ANTENNA TYPE: FM1/4

FREQUENCY: 104.5 MHz

PATTERN POL.: Circular

DIRECTIVITY(Peak): 4.088/6.115 dBd

Beam Tilt (Deg.) : 0

DIRECTIVITY(Horiz): 4.088/6.115 dBd

Null Fill(s)(%) : 0, 0, 0

Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
-19.6	.24 (-12.41)	-27.2	.117 (-18.664)	-54.0	.188 (-14.511)
-19.8	.243 (-12.285)	-27.4	.109 (-19.281)	-55.0	.219 (-13.205)
-20.0	.246 (-12.177)	-27.6	.101 (-19.954)	-56.0	.247 (-12.148)
-20.2	.249 (-12.086)	-27.8	.092 (-20.691)	-57.0	.273 (-11.282)
-20.4	.251 (-12.012)	-28.0	.084 (-21.504)	-58.0	.296 (-10.571)
-20.6	.253 (-11.952)	-28.2	.076 (-22.408)	-59.0	.317 (-9.989)
-20.8	.254 (-11.908)	-28.4	.067 (-23.424)	-60.0	.334 (-9.515)
-21.0	.255 (-11.878)	-28.6	.059 (-24.581)	-61.0	.349 (-9.134)
-21.2	.255 (-11.862)	-28.8	.051 (-25.921)	-62.0	.362 (-8.836)
-21.4	.255 (-11.861)	-29.0	.042 (-27.509)	-63.0	.371 (-8.611)
-21.6	.255 (-11.873)	-29.2	.034 (-29.455)	-64.0	.378 (-8.452)
-21.8	.254 (-11.899)	-29.4	.025 (-31.965)	-65.0	.382 (-8.352)
-22.0	.253 (-11.938)	-29.6	.017 (-35.502)	-66.0	.384 (-8.305)
-22.2	.251 (-11.99)	-29.8	.008 (-41.542)	-67.0	.384 (-8.309)
-22.4	.25 (-12.056)	-30.0	.00 (-50)	-68.0	.382 (-8.359)
-22.6	.247 (-12.136)	-31.0	.041 (-27.75)	-69.0	.378 (-8.453)
-22.8	.245 (-12.228)	-32.0	.08 (-21.983)	-70.0	.372 (-8.587)
-23.0	.242 (-12.335)	-33.0	.115 (-18.8)	-71.0	.365 (-8.759)
-23.2	.238 (-12.455)	-34.0	.146 (-16.728)	-72.0	.356 (-8.968)
-23.4	.235 (-12.588)	-35.0	.172 (-15.306)	-73.0	.346 (-9.212)
-23.6	.231 (-12.736)	-36.0	.192 (-14.331)	-74.0	.335 (-9.491)
-23.8	.226 (-12.899)	-37.0	.207 (-13.7)	-75.0	.323 (-9.803)
-24.0	.222 (-13.076)	-38.0	.215 (-13.353)	-76.0	.311 (-10.149)
-24.2	.217 (-13.269)	-39.0	.217 (-13.261)	-77.0	.298 (-10.528)
-24.4	.212 (-13.478)	-40.0	.214 (-13.409)	-78.0	.284 (-10.941)
-24.6	.206 (-13.703)	-41.0	.204 (-13.798)	-79.0	.269 (-11.39)
-24.8	.201 (-13.945)	-42.0	.19 (-14.446)	-80.0	.255 (-11.875)
-25.0	.195 (-14.205)	-43.0	.17 (-15.39)	-81.0	.24 (-12.4)
-25.2	.189 (-14.484)	-44.0	.146 (-16.7)	-82.0	.225 (-12.967)
-25.4	.182 (-14.783)	-45.0	.119 (-18.507)	-83.0	.209 (-13.581)
-25.6	.176 (-15.103)	-46.0	.088 (-21.083)	-84.0	.194 (-14.247)
-25.8	.169 (-15.446)	-47.0	.055 (-25.123)	-85.0	.178 (-14.973)
-26.0	.162 (-15.813)	-48.0	.021 (-33.591)	-86.0	.163 (-15.769)
-26.2	.155 (-16.207)	-49.0	.015 (-36.679)	-87.0	.147 (-16.648)
-26.4	.147 (-16.629)	-50.0	.051 (-25.907)	-88.0	.131 (-17.628)
-26.6	.14 (-17.082)	-51.0	.087 (-21.259)	-89.0	.116 (-18.733)
-26.8	.132 (-17.569)	-52.0	.122 (-18.296)	-90.0	.10 (-20)
-27.0	.125 (-18.095)	-53.0	.156 (-16.155)	90.0	.00 (-50)

Systems With Reliability

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CLIENT: WYCJ-LP

Date: 6/23/2023

ANTENNA TYPE: FM1/4

FREQUENCY: 104.5 MHz

PATTERN POL.: Circular

DIRECTIVITY(Peak): 4.088/6.115 dBd

Beam Tilt (Deg.) : 0

DIRECTIVITY(Horiz): 4.088/6.115 dBd

Null Fill(s)(%) : 0, 0, 0

Antenna Height Above Average Terrain Calculations -- Results

Input Data

Latitude **34° 45' 23.3"** North
Longitude **82° 12' 22.4"** West (NAD 83)

Height of antenna radiation center above mean sea level: **293** meters ~~AMSL~~

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

Results

Calculated HAAT = **37 meters**

Antenna Height Above Average Terrain calculated
using 1 km [GLOBE terrain data](#)

Individual "Radial HAAT" Values, in meters

0°	31.5 m
45°	47.0 m
90°	55.2 m
135°	54.4 m
180°	38.9 m
225°	48.9 m
270°	21.8 m
315°	0.4 m

Print Results?

New Calculation?

Figure 4
Aerial Photo of the 43.5 Meter Vicinity Surrounding the Proposed Tower Site



Figure 4
USGS Quadrangle Photo of the 43.5 Meter Vicinity Surrounding the Proposed Tower Site

