

## Supplemental Exhibit

### **Details on 100 dBu interference contour vs 3<sup>rd</sup> adjacent 60 dBu contour**

Supplemental data is provided for proposed modification of KBCC. This exhibit demonstrates no overlap of the 100 dBu f(50,10) contour onto the 60 dBu contour of 3<sup>rd</sup> adjacent station KYCC.

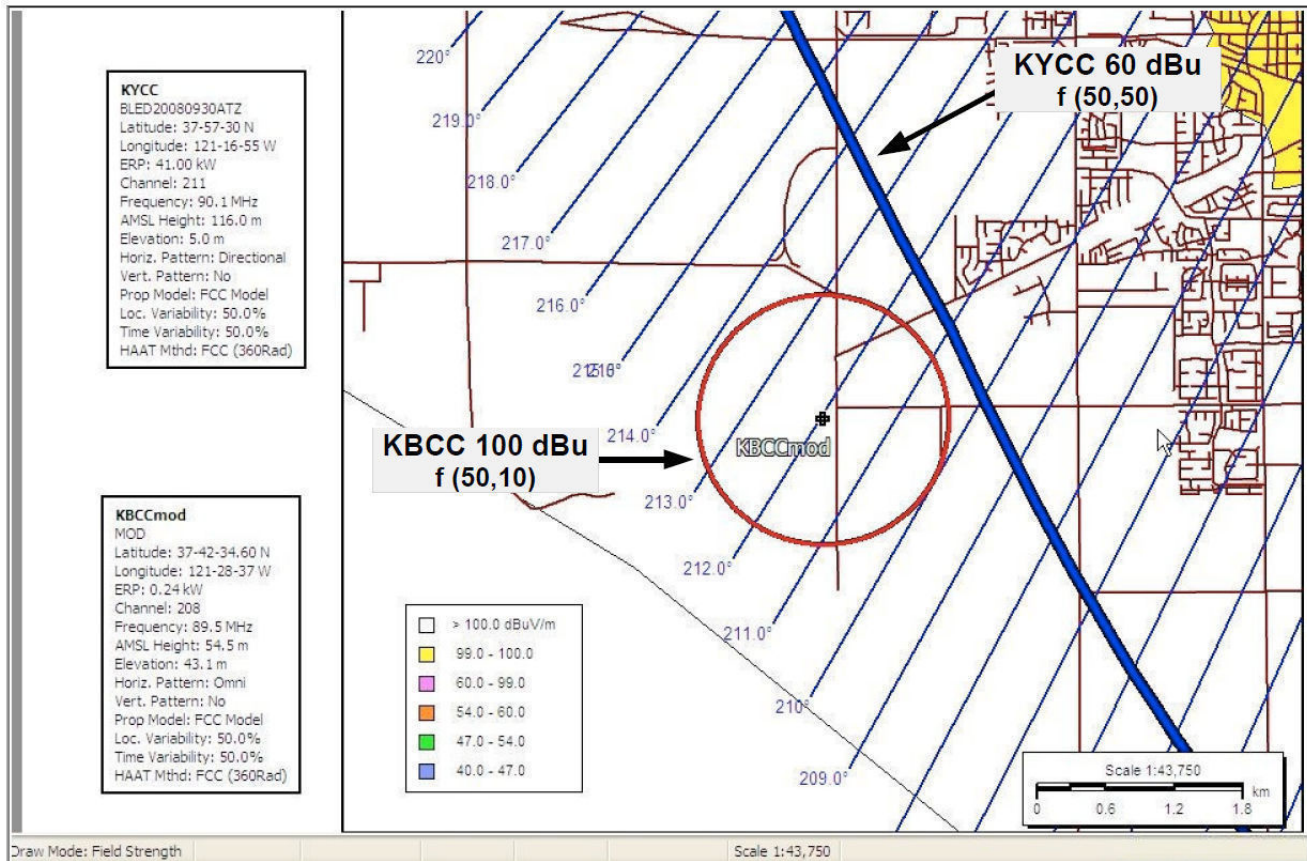
Calculations from the FCC 30 second terrain database confirm KYCC's authorization with 107 meters HAAT at 116 m AMSL, and KBCC's proposed facility at -81 meters HAAT.

Adjusting ERP to 240 watts, KBCC's 100 dBu f(50,10) contour measured to 1.1km radius is sufficiently cleared of KYCC's 60 dBu f(50,50) contour.

Parameters used to determine distance, propagation, and HAAT calculations from FCC 30 second terrain database are provided below to confirm ERP values at the critical radials (211° & 212° ) from KYCC's directional antenna.

Included with this exhibit:

- KYCC - FCC Engineering Authorization ( Eng Details FM )
- Calculations – HAAT, Distance, ERP, and Field Strength at critical radials (KYCC 211° & 212° degrees)
- KYCC Directional Antenna - Relative Field at each azimuth (360° degrees)
- KYCC HAAT calculations: 107 meters (FCC 30 second terrain database)



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**Callsign:** **KYCC** **Service:** FM **Community:** STOCKTON, CA, US

**Licensee:** YOUR CHRISTIAN COMPANION NETWORK, INC.

**Class:** B **Channel:** 211 **Freq:** 90.1 MHZ

**File No.:** BLED-20080930ATZ **Dom. Status:** LIC **Main/Aux:**
**Rule 73\_215:** N **Cutoff Date:** **Docket Number:**
**Facility ID:** 63464 **Application ID:** 1268828 **ASRN:** 1064433

**Latitude:** N 37° 57 ' 30 "

**Longitude:** W 121° 16 ' 55 "

	Horizontal	Vertical
<b>ERP:</b>	41	41 kw
<b>HAAT:</b>	107	107 m
<b>RCAMSL:</b>	116	116 m
<b>RCAGL:</b>	111	111 m

Not in a Border Zone

**Antenna:**

Directional No beam tilt

**Rotation:** 1

**Antenna ID:** 72584 **Make:** ODD **Model:** ODD971007IG

**Antenna Pattern for the Directional Antenna:**

Directional antenna relative field values do not include clockwise rotation, if shown above.

0°	1	10°	1	20°	1	30°	1	40°	1	50°	1
60°	1	70°	1	80°	1	90°	1	100°	1	110°	1
120°	1	130°	1	140°	1	150°	1	160°	1	170°	1
180°	0.891	190°	0.708	200°	0.562	210°	0.447	220°	0.355	230°	0.282
240°	0.316	250°	0.398	260°	0.501	270°	0.631	280°	0.794	290°	1
300°	1	310°	0.794	320°	0.631	330°	0.562	340°	0.708	350°	0.891

Additional Azimuths:

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 Federal Communications Commission  
 445 12th Street SW  
 Washington, DC 20554  
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Calculations: KYCC – 60 dBu f(50,50) at **211°** degree radial (ERP = 7.858 kW) & 106.0 HAAT

### Relative Field Values for Directional Pattern

<https://www.fcc.gov/media/radio/findvalues#RELATIVEFIELD>

Relative Field Values for Directional Pattern

Enter the maximum ERP, in kW

Enter the radial ERP in kW, or relative field value (0.000 to 1.000)

Select Relative Field or Radial ERP  Find Radial ERP

Result:

Radial ERP = (Maximum ERP) \* (relative field) <sup>2</sup>

### FM and TV Propagation Curves

<https://www.fcc.gov/media/radio/fm-and-tv-propagation-curves>

Select Contour Type:

Select Channel Range:

Find This:

ERP (kW)  HAAT (meters)  Field (dBu)  Distance (km)

Results:

**Calculated Distance = 30.943 km**

## Distance and Azimuths Between Two Sets of Coordinates

<https://www.fcc.gov/media/radio/distance-and-azimuths>

**37 57 29.73 N Latitude, 121 16 58.81 W Longitude (Point 1)**

As decimals: 37.9582583 Latitude, -121.2830028 Longitude

and

**37 43 9.85 N Latitude, 121 27 51.43 W Longitude (Point 2)**

As decimals: 37.7194028 Latitude, -121.4642861 Longitude

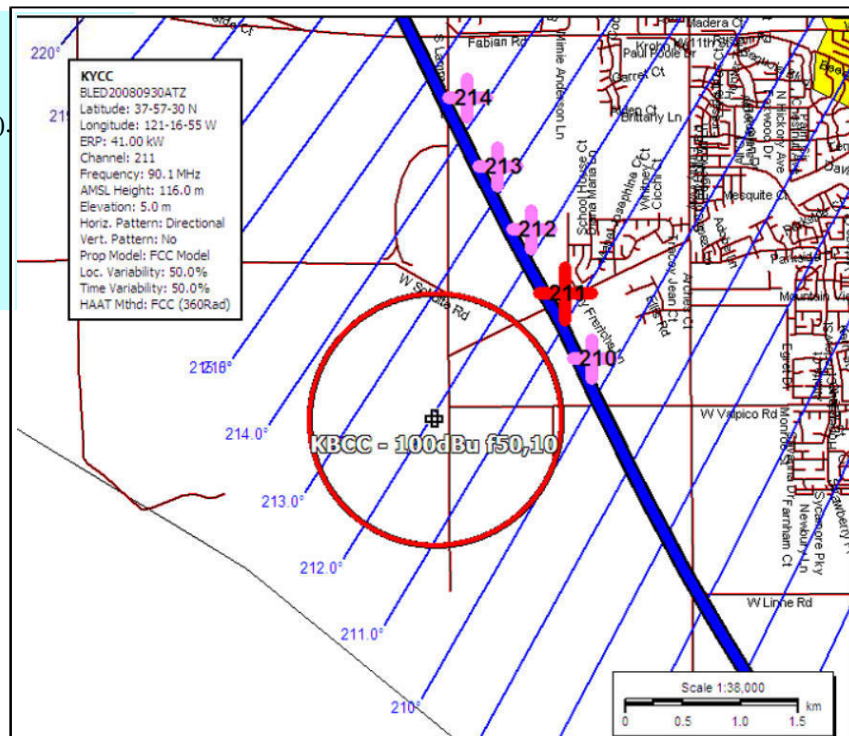
**Distance = 30.943 km (19.227 miles)**

via the method in Sections 73.208 and 73.611(d)

This method is only suitable for distances up to 475 km (295 miles).

Azimuth, Point 1 to Point 2: 210.99° True

Azimuth, Point 2 to Point 1: 30.88 ° True



Calculations: KYCC – 60 dBu f(50,50) at 212° degree radial (ERP = 7.531 kW) & 106.0 HAAT

### Relative Field Values for Directional Pattern

<https://www.fcc.gov/media/radio/findvalues#RELATIVEFIELD>

#### Relative Field Values for Directional Pattern

Enter the maximum ERP, in kW

41

Enter the radial ERP in kW,  
or relative field value (0.000 to 1.000)

0.4286

Select Relative Field or Radial ERP

Find Radial ERP

Find Radial ERP Value

Result: 7.531 kW

Clear Values

Radial ERP = (Maximum ERP) \* (relative field)<sup>2</sup>

### FM and TV Propagation Curves

<https://www.fcc.gov/media/radio/fm-and-tv-propagation-curves>

Select Contour Type:

F(50,50) Service Contour -- FM and NTSC (analog) TV  
F(50,10) Interfering Contour  
F(50,90) Digital TV Service Contour

Select Channel

Range:  
(not TV Virtual Channel)

FM Radio or TV Transmit Channels 2-6  
TV Transmit Channels 7-13  
TV Transmit Channels 14-69

Find This:

Field Strength, given a Distance (in km)  
Distance, Given a Field Strength (in dBu)  
FM ERP, given Distance and Field Strength [F(50,50) Service Contour]

7.531

ERP (kW)

Distance (km)

106

HAAT (meters)

60

Field (dBu)

Find Result

Clear Form

Results:

**Calculated Distance = 30.636 km**

### Distance and Azimuths Between Two Sets of Coordinates

<https://www.fcc.gov/media/radio/distance-and-azimuths>

**37 57 29.73 N Latitude, 121 16 58.81 W Longitude (Point 1)**

As decimals: 37.9582583 Latitude, -121.2830028 Longitude

and

**37 43 27.51 N Latitude, 121 28 3.72 W Longitude (Point 2)**

As decimals: 37.7243083 Latitude, -121.4677000 Longitude

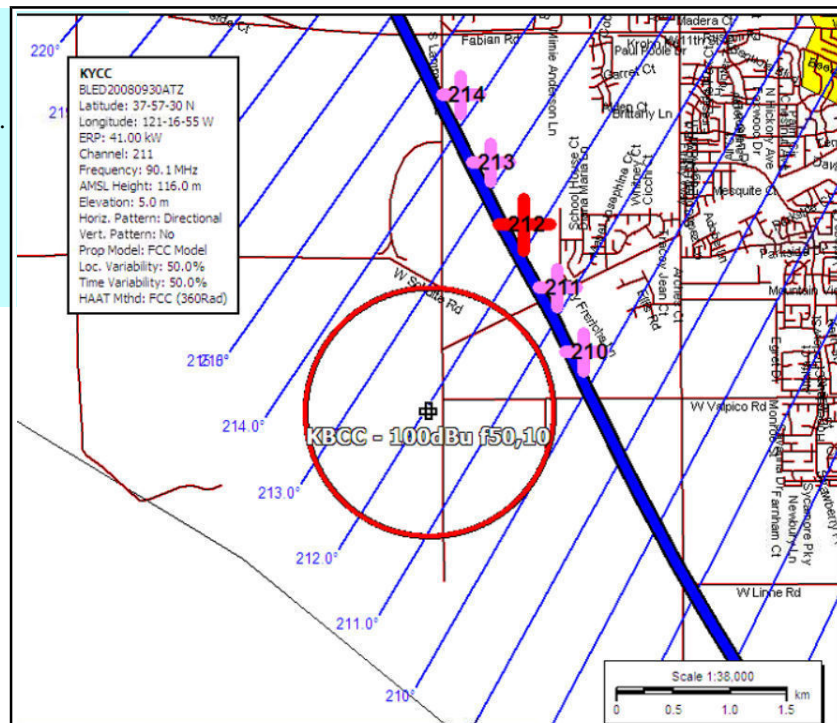
**Distance = 30.636 km (19.036 miles)**

via the method in Sections 73.208 and 73.611(d)

This method is only suitable for distances up to 475 km (295 miles).

Azimuth, Point 1 to Point 2: 212.00° True

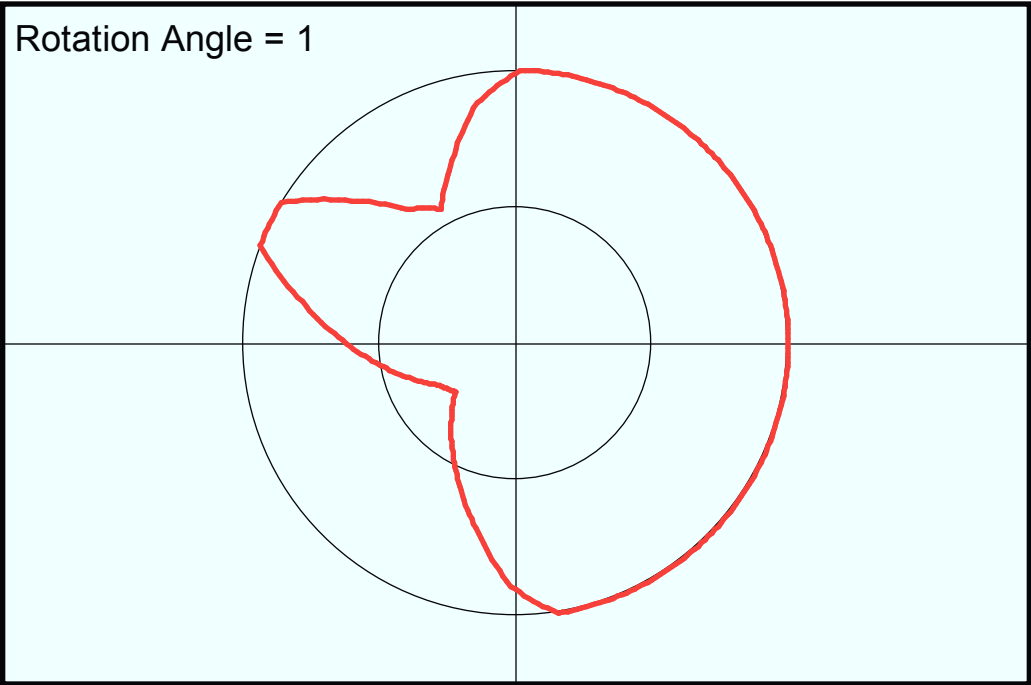
Azimuth, Point 2 to Point 1: 31.89° True



Antenna Pattern - KYCC

Pre-Rotation Antenna Pattern....

Azimuth (deg)	Relative Field
0.0	1.0
1.0	1.0
2.0	1.0
3.0	1.0
4.0	1.0
5.0	1.0
6.0	1.0
7.0	1.0
8.0	1.0
9.0	1.0
10.0	1.0
11.0	1.0
12.0	1.0
13.0	1.0
14.0	1.0
15.0	1.0
16.0	1.0
17.0	1.0
18.0	1.0
19.0	1.0
20.0	1.0
21.0	1.0
22.0	1.0
23.0	1.0
24.0	1.0
25.0	1.0



Azimuth (deg)    Relative Field

26.0	1.0
27.0	1.0
28.0	1.0
29.0	1.0
30.0	1.0
31.0	1.0
32.0	1.0
33.0	1.0
34.0	1.0
35.0	1.0
36.0	1.0
37.0	1.0
38.0	1.0
39.0	1.0
40.0	1.0
41.0	1.0
42.0	1.0
43.0	1.0
44.0	1.0
45.0	1.0
46.0	1.0
47.0	1.0
48.0	1.0
49.0	1.0
50.0	1.0
51.0	1.0
52.0	1.0
53.0	1.0
54.0	1.0
55.0	1.0

Azimuth (deg)    Relative Field

56.0	1.0
57.0	1.0
58.0	1.0
59.0	1.0
60.0	1.0
61.0	1.0
62.0	1.0
63.0	1.0
64.0	1.0
65.0	1.0
66.0	1.0
67.0	1.0
68.0	1.0
69.0	1.0
70.0	1.0
71.0	1.0
72.0	1.0
73.0	1.0
74.0	1.0
75.0	1.0
76.0	1.0
77.0	1.0
78.0	1.0
79.0	1.0
80.0	1.0
81.0	1.0
82.0	1.0
83.0	1.0
84.0	1.0
85.0	1.0

Azimuth (deg)    Relative Field

86.0	1.0
87.0	1.0
88.0	1.0
89.0	1.0
90.0	1.0
91.0	1.0
92.0	1.0
93.0	1.0
94.0	1.0
95.0	1.0
96.0	1.0
97.0	1.0
98.0	1.0
99.0	1.0
100.0	1.0
101.0	1.0
102.0	1.0
103.0	1.0
104.0	1.0
105.0	1.0
106.0	1.0
107.0	1.0
108.0	1.0
109.0	1.0
110.0	1.0
111.0	1.0
112.0	1.0
113.0	1.0
114.0	1.0
115.0	1.0

Azimuth (deg) Relative Field

116.0	1.0
117.0	1.0
118.0	1.0
119.0	1.0
120.0	1.0
121.0	1.0
122.0	1.0
123.0	1.0
124.0	1.0
125.0	1.0
126.0	1.0
127.0	1.0
128.0	1.0
129.0	1.0
130.0	1.0
131.0	1.0
132.0	1.0
133.0	1.0
134.0	1.0
135.0	1.0
136.0	1.0
137.0	1.0
138.0	1.0
139.0	1.0
140.0	1.0
141.0	1.0
142.0	1.0
143.0	1.0
144.0	1.0
145.0	1.0

Azimuth (deg) Relative Field

146.0	1.0
147.0	1.0
148.0	1.0
149.0	1.0
150.0	1.0
151.0	1.0
152.0	1.0
153.0	1.0
154.0	1.0
155.0	1.0
156.0	1.0
157.0	1.0
158.0	1.0
159.0	1.0
160.0	1.0
161.0	1.0
162.0	1.0
163.0	1.0
164.0	1.0
165.0	1.0
166.0	1.0
167.0	1.0
168.0	1.0
169.0	1.0
170.0	1.0
171.0	0.9891
172.0	0.9782
173.0	0.9673
174.0	0.9564
175.0	0.9455

Azimuth (deg) Relative Field

176.0	0.9346
177.0	0.9237
178.0	0.9128
179.0	0.9019
180.0	0.891
181.0	0.8727
182.0	0.8544
183.0	0.8361
184.0	0.8178
185.0	0.7995
186.0	0.7812
187.0	0.7629
188.0	0.7446
189.0	0.7263
190.0	0.708
191.0	0.6934
192.0	0.6788
193.0	0.6642
194.0	0.6496
195.0	0.635
196.0	0.6204
197.0	0.6058
198.0	0.5912
199.0	0.5766
200.0	0.562
201.0	0.5505
202.0	0.539
203.0	0.5275
204.0	0.516
205.0	0.5045



Azimuth (deg)    Relative Field

206.0	0.493
207.0	0.4815
208.0	0.47
209.0	0.4585
210.0	0.447
<b>211.0</b>	<b>0.4378</b>
<b>212.0</b>	<b>0.4286</b>
213.0	0.4194
214.0	0.4102
215.0	0.401
216.0	0.3918
217.0	0.3826
218.0	0.3734
219.0	0.3642
220.0	0.355
221.0	0.3477
222.0	0.3404
223.0	0.3331
224.0	0.3258
225.0	0.3185
226.0	0.3112
227.0	0.3039
228.0	0.2966
229.0	0.2893
230.0	0.282
231.0	0.2854
232.0	0.2888
233.0	0.2922
234.0	0.2956
235.0	0.299

Azimuth (deg)    Relative Field

236.0	0.3024
237.0	0.3058
238.0	0.3092
239.0	0.3126
240.0	0.316
241.0	0.3242
242.0	0.3324
243.0	0.3406
244.0	0.3488
245.0	0.357
246.0	0.3652
247.0	0.3734
248.0	0.3816
249.0	0.3898
250.0	0.398
251.0	0.4083
252.0	0.4186
253.0	0.4289
254.0	0.4392
255.0	0.4495
256.0	0.4598
257.0	0.4701
258.0	0.4804
259.0	0.4907
260.0	0.501
261.0	0.514
262.0	0.527
263.0	0.54
264.0	0.553
265.0	0.566

Azimuth (deg)    Relative Field

266.0	0.579
267.0	0.592
268.0	0.605
269.0	0.618
270.0	0.631
271.0	0.6473
272.0	0.6636
273.0	0.6799
274.0	0.6962
275.0	0.7125
276.0	0.7288
277.0	0.7451
278.0	0.7614
279.0	0.7777
280.0	0.794
281.0	0.8146
282.0	0.8352
283.0	0.8558
284.0	0.8764
285.0	0.897
286.0	0.9176
287.0	0.9382
288.0	0.9588
289.0	0.9794
290.0	1.0
291.0	1.0
292.0	1.0
293.0	1.0
294.0	1.0
295.0	1.0



Azimuth (deg)    Relative Field

296.0	1.0
297.0	1.0
298.0	1.0
299.0	1.0
300.0	1.0
301.0	0.9794
302.0	0.9588
303.0	0.9382
304.0	0.9176
305.0	0.897
306.0	0.8764
307.0	0.8558
308.0	0.8352
309.0	0.8146
310.0	0.794
311.0	0.7777
312.0	0.7614
313.0	0.7451
314.0	0.7288
315.0	0.7125
316.0	0.6962
317.0	0.6799
318.0	0.6636
319.0	0.6473
320.0	0.631
321.0	0.6241
322.0	0.6172
323.0	0.6103
324.0	0.6034
325.0	0.5965

Azimuth (deg)    Relative Field

326.0	0.5896
327.0	0.5827
328.0	0.5758
329.0	0.5689
330.0	0.562
331.0	0.5766
332.0	0.5912
333.0	0.6058
334.0	0.6204
335.0	0.635
336.0	0.6496
337.0	0.6642
338.0	0.6788
339.0	0.6934
340.0	0.708
341.0	0.7263
342.0	0.7446
343.0	0.7629
344.0	0.7812
345.0	0.7995
346.0	0.8178
347.0	0.8361
348.0	0.8544
349.0	0.8727
350.0	0.891
351.0	0.9019
352.0	0.9128
353.0	0.9237
354.0	0.9346
355.0	0.9455

Azimuth (deg)    Relative Field

356.0	0.9564
357.0	0.9673
358.0	0.9782
359.0	0.9891

KYCC

## Antenna Height Above Average Terrain Calculations -- Results

### Input Data

Latitude **37° 57' 30" North**  
Longitude **121° 16' 55" West** (NAD 27)

These coordinates convert to NAD 83 coordinates of  
37° 57' 29.73", North, 121° 16' 58.81" West (NAD 83).

Height of antenna radiation center above mean sea level: **116 meters** AMSL

Number of Evenly Spaced Radials = **360** 0° is referenced to True North

### Results

Calculated HAAT = **107 meters**

Antenna Height Above Average Terrain calculated  
using FCC 30 second terrain database (continental USA only)

### Individual "Radial HAAT" Values, in meters

0°	106.6 m	120°	98.4 m	240°	114.7 m
1°	106.5 m	121°	98.4 m	241°	114.7 m
2°	106.4 m	122°	98.5 m	242°	114.8 m
3°	106.4 m	123°	98.5 m	243°	114.8 m
4°	106.3 m	124°	98.6 m	244°	114.8 m
5°	106.3 m	125°	98.6 m	245°	114.9 m
6°	106.2 m	126°	98.7 m	246°	114.9 m
7°	106.1 m	127°	98.7 m	247°	114.9 m
8°	106.1 m	128°	98.8 m	248°	115.0 m
9°	106.1 m	129°	99.0 m	249°	115.0 m
10°	106.1 m	130°	99.3 m	250°	115.0 m
11°	106.2 m	131°	99.6 m	251°	115.0 m
12°	106.4 m	132°	99.6 m	252°	115.0 m
13°	106.5 m	133°	99.5 m	253°	115.1 m
14°	106.3 m	134°	99.4 m	254°	115.1 m
15°	106.1 m	135°	99.4 m	255°	115.1 m
16°	106.1 m	136°	99.5 m	256°	115.1 m
17°	106.2 m	137°	99.6 m	257°	115.1 m
18°	106.2 m	138°	99.7 m	258°	115.1 m
19°	105.8 m	139°	99.9 m	259°	115.1 m
20°	105.5 m	140°	100.0 m	260°	115.2 m
21°	105.3 m	141°	100.2 m	261°	115.2 m
22°	105.2 m	142°	100.3 m	262°	115.2 m
23°	105.1 m	143°	100.5 m	263°	115.2 m
24°	104.9 m	144°	100.7 m	264°	115.2 m
25°	104.7 m	145°	100.8 m	265°	115.2 m
26°	104.5 m	146°	101.1 m	266°	115.2 m
27°	104.4 m	147°	101.3 m	267°	115.2 m
28°	104.2 m	148°	101.5 m	268°	115.2 m
29°	103.9 m	149°	101.8 m	269°	115.2 m
30°	103.6 m	150°	102.1 m	270°	115.2 m
31°	103.4 m	151°	102.4 m	271°	115.2 m
32°	103.3 m	152°	102.7 m	272°	115.2 m
33°	103.3 m	153°	102.8 m	273°	115.2 m
34°	103.2 m	154°	102.8 m	274°	115.2 m
35°	103.0 m	155°	102.9 m	275°	115.2 m
36°	103.0 m	156°	103.2 m	276°	115.2 m
37°	103.1 m	157°	103.6 m	277°	115.2 m
38°	103.1 m	158°	104.1 m	278°	115.3 m
39°	103.1 m	159°	104.7 m	279°	115.4 m
40°	103.0 m	160°	105.3 m	280°	115.6 m
41°	103.1 m	161°	105.9 m	281°	115.7 m
42°	103.2 m	162°	106.6 m	282°	115.5 m
43°	103.4 m	163°	107.2 m	283°	115.3 m

44°	103.6 m	164°	107.6 m	284°	115.1 m
45°	103.7 m	165°	107.6 m	285°	115.0 m
46°	103.6 m	166°	107.6 m	286°	114.8 m
47°	103.5 m	167°	107.4 m	287°	114.9 m
48°	103.3 m	168°	107.1 m	288°	115.2 m
49°	103.1 m	169°	106.9 m	289°	115.8 m
50°	102.8 m	170°	106.6 m	290°	116.2 m
51°	102.5 m	171°	106.4 m	291°	116.3 m
52°	102.3 m	172°	106.2 m	292°	116.0 m
53°	102.0 m	173°	106.1 m	293°	115.8 m
54°	101.7 m	174°	105.8 m	294°	115.7 m
55°	101.4 m	175°	105.0 m	295°	115.8 m
56°	101.1 m	176°	103.7 m	296°	116.0 m
57°	100.9 m	177°	102.4 m	297°	116.2 m
58°	100.7 m	178°	102.4 m	298°	116.2 m
59°	100.5 m	179°	103.3 m	299°	116.2 m
60°	100.4 m	180°	104.1 m	300°	116.2 m
61°	100.2 m	181°	104.6 m	301°	116.2 m
62°	100.0 m	182°	104.6 m	302°	116.2 m
63°	99.8 m	183°	104.6 m	303°	116.2 m
64°	99.9 m	184°	105.0 m	304°	116.1 m
65°	100.1 m	185°	105.5 m	305°	115.9 m
66°	100.5 m	186°	106.0 m	306°	115.6 m
67°	100.9 m	187°	106.0 m	307°	115.2 m
68°	101.1 m	188°	106.0 m	308°	114.9 m
69°	101.0 m	189°	105.8 m	309°	114.7 m
70°	100.8 m	190°	105.3 m	310°	114.5 m
71°	100.5 m	191°	104.6 m	311°	114.4 m
72°	100.6 m	192°	104.2 m	312°	114.3 m
73°	101.0 m	193°	104.1 m	313°	114.1 m
74°	101.5 m	194°	104.2 m	314°	113.9 m
75°	101.9 m	195°	104.6 m	315°	113.8 m
76°	102.0 m	196°	105.2 m	316°	113.6 m
77°	102.0 m	197°	105.7 m	317°	113.6 m
78°	102.0 m	198°	105.9 m	318°	113.6 m
79°	101.7 m	199°	106.0 m	319°	113.7 m
80°	101.1 m	200°	106.0 m	320°	113.8 m
81°	100.6 m	201°	106.0 m	321°	113.8 m
82°	100.0 m	202°	106.0 m	322°	113.7 m
83°	99.7 m	203°	106.0 m	323°	113.6 m
84°	99.4 m	204°	106.0 m	324°	113.4 m
85°	99.3 m	205°	106.0 m	325°	113.1 m
86°	99.3 m	206°	106.0 m	326°	112.8 m
87°	99.3 m	207°	106.0 m	327°	112.5 m
88°	99.3 m	208°	106.0 m	328°	111.9 m
89°	99.3 m	209°	106.0 m	329°	110.8 m
90°	99.3 m	210°	106.0 m	330°	109.6 m
91°	99.3 m	211°	106.0 m	331°	108.5 m
92°	99.3 m	212°	106.0 m	332°	107.8 m
93°	99.3 m	213°	106.0 m	333°	107.2 m
94°	99.3 m	214°	106.0 m	334°	106.9 m
95°	99.3 m	215°	106.1 m	335°	106.7 m
96°	99.3 m	216°	106.3 m	336°	106.6 m
97°	99.2 m	217°	106.8 m	337°	106.6 m
98°	99.1 m	218°	107.4 m	338°	106.6 m
99°	99.0 m	219°	108.1 m	339°	106.5 m
100°	98.9 m	220°	108.7 m	340°	106.5 m
101°	98.8 m	221°	109.3 m	341°	106.5 m
102°	98.5 m	222°	109.9 m	342°	106.6 m
103°	98.2 m	223°	110.5 m	343°	106.6 m
104°	97.9 m	224°	111.0 m	344°	106.7 m
105°	97.9 m	225°	111.6 m	345°	106.8 m
106°	97.9 m	226°	112.3 m	346°	106.8 m
107°	97.9 m	227°	113.1 m	347°	106.8 m
108°	97.9 m	228°	113.7 m	348°	106.8 m
109°	98.0 m	229°	114.0 m	349°	106.8 m
110°	98.0 m	230°	114.1 m	350°	106.8 m
111°	98.0 m	231°	114.2 m	351°	106.8 m
112°	98.0 m	232°	114.3 m	352°	106.8 m
113°	98.1 m	233°	114.4 m	353°	106.8 m
114°	98.1 m	234°	114.5 m	354°	106.7 m
115°	98.1 m	235°	114.5 m	355°	106.7 m
116°	98.2 m	236°	114.5 m	356°	106.7 m
117°	98.2 m	237°	114.6 m	357°	106.7 m
118°	98.3 m	238°	114.6 m	358°	106.7 m
119°	98.3 m	239°	114.7 m	359°	106.6 m

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