



**Antenna Site Plan**

64 Standard Length Radials (54.7 m)  
56 Shortened Radials  
 120 Total Radials  
 Average Radial Length is 49.29 m

**WGIV (AM)**  
**1370 kHz**  
**5 kW Daytime / 0.067 kW Nighttime**  
 Pineville, North Carolina  
 August 2019

**BROMO** BROADCAST  
 TECHNICAL CONSULTANTS  
**COMMUNICATIONS**

**Ground System Description**  
**WGIV (AM)**  
**1370 kHz**  
**5 kW Daytime / 0.067 kW Nighttime**  
**Pineville, North Carolina**  
August 2019

WGIV (AM) proposes to utilize 120 buried copper radials. Due to property constraints, 64 radials are full quarter wavelength long while 56 radials are shortened by property boundaries. A property map provided by the local zoning office was used to lay out the ground system on the Antenna Site Plan exhibit. Mathematical ratio and proportion was used to determine the length of each of the short radials. Below is a tabulation of the shortened radial lengths. Radial number 1 corresponds to the radial nearest the bottom of the Antenna Site Plan. Radial 56 is the radial running toward the top of the Antenna Site Plan.

<u>Radial Number</u>	<u>Length in meters</u>
1	53.77
2	51.53
3	48.79
4	46.93
5	45.13
6	43.76
7	42.39
8	41.03
9	40.09
10	39.22
11	38.73
12	38.29
13	37.36
14	37.36
15	37.36
16	36.92
17	36.92
18	37.36
19	37.36
20	37.85
21	38.29
22	38.73
23	39.66
24	40.09
25	41.03
26	42.39

27	43.76
28	45.13
29	46.93
30	49.67
31	51.04
32	49.23
33	47.42
34	46.06
35	44.69
36	44.20
37	42.83
38	42.39
39	41.96
40	41.46
41	41.03
42	41.03
43	41.03
44	41.03
45	41.46
46	41.96
47	41.96
48	42.83
49	42.83
50	44.20
51	45.56
52	46.49
53	47.86
54	48.30
55	49.67
56	<u>54.53</u>

2413.88 meters of shortened radials

The full quarter wavelength radial on 1370 kHz is 54.7 meters. Having 64 standard radials,  $54.7 \times 64 = 3500.8$  meters of standard radials. There are 56 shortened radials. From the tabulation above, it can be seen that there are 2413.88 meters of shortened radials.

3500.8 meters of standard radials

2413.88 meters of shortened radials

5914.68 meters total length of all 120 radials

$5914.68 \div 120$  radials = **49.29 meters length of the average radial**

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Next, the FCC Figure 8 was consulted. The following values were used:

1370 kHz = Frequency

Meters and Kilometers = Unit of Measurement

30.48 Meters = Tower Height above base insulator

5 kW = Effective Radiated Power

49.29 Meters = Average Length of Ground Radials

120 = Number of Ground Radials

After supplying the above data to the FCC's computerized Figure 8, the site calculated the corrected field to be **273.083 mV/m per kW at 1 km.**