

## **Proposed New Channel 266 Translator at Weymouth, MA**

### **Facility ID 202403**

### **Long Form Technical Statement**

#### **Section 74.1204 Study**

The following facilities were considered:

Call Sign	C	ST	City	Freq. ▼	ERP	Class	Status	D
WZLX	1	MA	BOSTON	100.7	21500.0	B	LIC	19.02
W247CB	1	MA	BROCKTON	101.1	220.0	D	CP	22.26
Proposed	5	MA	WEYMOUTH	101.1	250.0	D	APP	0.00
WHYA	1	MA	MASHPEE	101.1	2900.0	A	LIC	76.23
WGIR-FM	1	NH	MANCHESTER	101.1	11500.0	B	LIC	100.40
W267CE	1	MA	CAMBRIDGE	101.3	250.0	D	LIC	25.40
WBWL	1	MA	LYNN	101.7	13500.0	B1	LIC	26.79
WMEX(AM)	1	MA	BOSTON	1510	50000	B	LIC	29.08

Figures 1 and 2 illustrate the absence of prohibited overlap between the proposed translator contours and the pertinent contours of each of these facilities. (Key: same colors may not overlap.)

The site lies within the service contours of WZLX and WBWL. Therefore, the applicant respectfully requests a waiver pursuant to 74.1204(d) as described below.

WZLX places an 80.4 dBu service contour, and WBWL places a 68.2 dBu service contour over the proposed site (blue contours in Figure 1.) The Commission has generally considered overlap from a proposed translator interfering contour to be acceptable where the ratio of undesired to desired signal (U/D) does not exceed 40 dB i.e. where in this case the proposed translator F(50,10) interfering signal does not exceed 108.2 dBu.

#### **Interference Protection On The Ground**

The proposed translator facility will operate with an ERP of 0.250 kW. For an ERP of 0.250 kW, the distance to the 108.2 dBu F(50,10) contour in free space is 431 meters. The nearest occupied structure is a residence 131 meters from base of antenna mounting structure, as shown in Figure 3.

The proposed antenna is a four bay array of Scala CA-2CP antennas 0.8 wavelength spaced with the center of radiation at 41 meters AGL. The array produces a vertical radiation pattern that prevents the 108.2 dBu F(50,10) interfering contour from reaching the ground anywhere between 131 meters and 431 meters from the antenna site.

Based on the actual distance in space from the antenna center of radiation to points on the ground between 131 and 431 meters of the antenna site, the table in Figure 4 provides calculations of the interference protection at each point in order to establish that the 108.2 dBu interfering contour does not reach the ground.

The antenna vertical pattern is illustrated and field values tabulated in Figures 5 and 6.

For each point, the downward or depression angle and actual distance in space from the proposed antenna CR is shown together with the maximum allowable ERP, and the corresponding maximum allowable antenna field. This is compared with the actual antenna field at the pertinent downward or depression angle. The comparison is shown as a safety margin in dB. As shown in Figure 4, a margin of safety exists at every point.

The applicant therefore believes its application meets the requirements of Section 74.1204(d) with respect to “other factors” insuring no actual interference to WZLX and WBWL. Should any actual interference occur, the applicant will take the required steps to eliminate it.

### **Environmental Considerations**

No physical changes are proposed. The proposed antenna will be mounted on an existing structure that is inaccessible to the general public and marked with appropriate RFR warning signs. RFR compliance was determined through the use of the RF worksheets in Appendix A. The applicant will cease operation or reduce power as necessary, in order to prevent uncontrolled or controlled exposure in excess of the guidelines of OET-65.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Dennis Jackson', with a stylized, flowing script.

Dennis Jackson

April 26, 2018

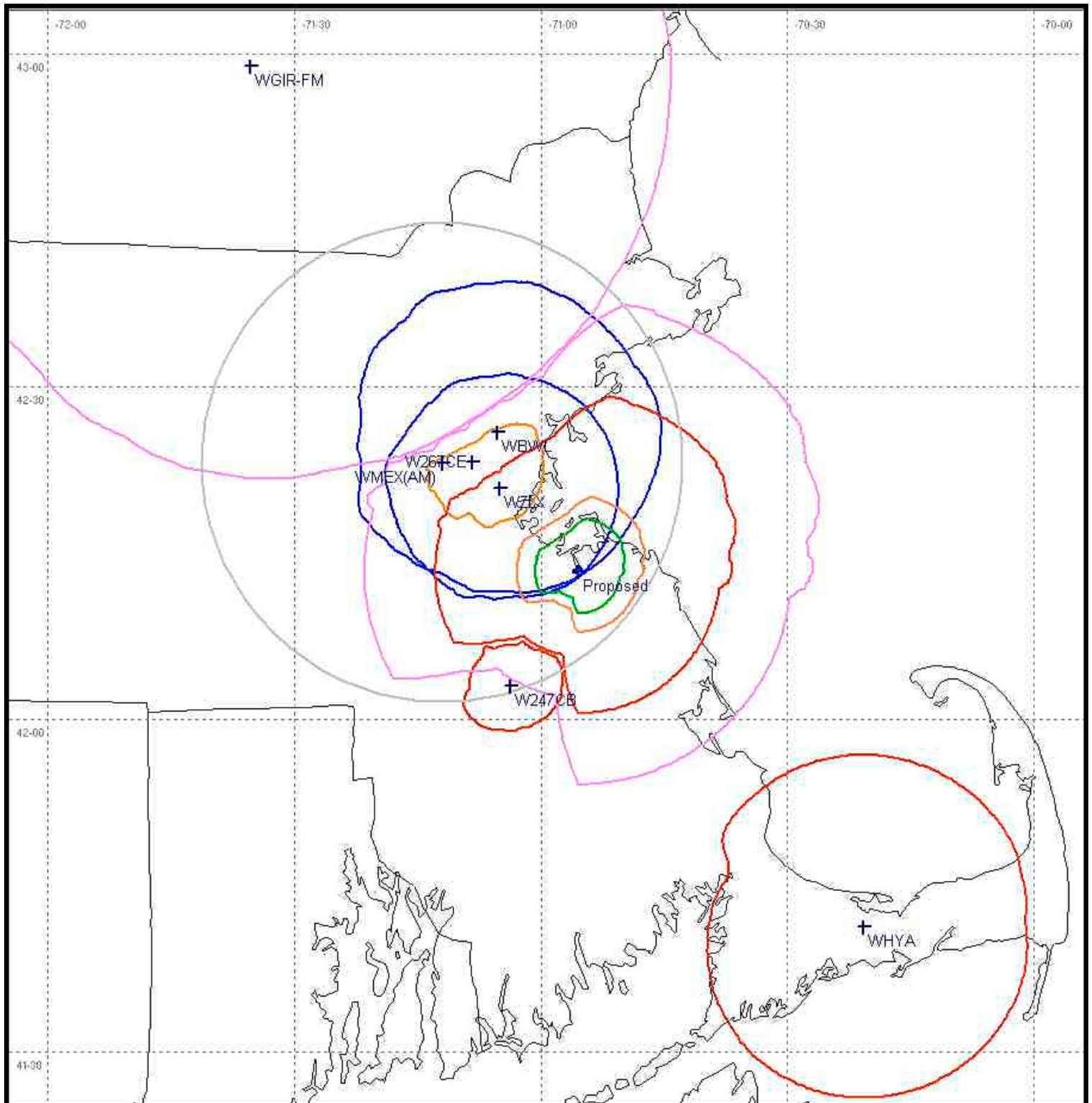
**Figure 1 – Section 74.1204 Study and Fill-In Status**

**Second adjacent WZLX places an 80.4 dBu service contour over site, and**

**Third adjacent WBWL places a 68.2 dBu service contour over site (both blue.)**

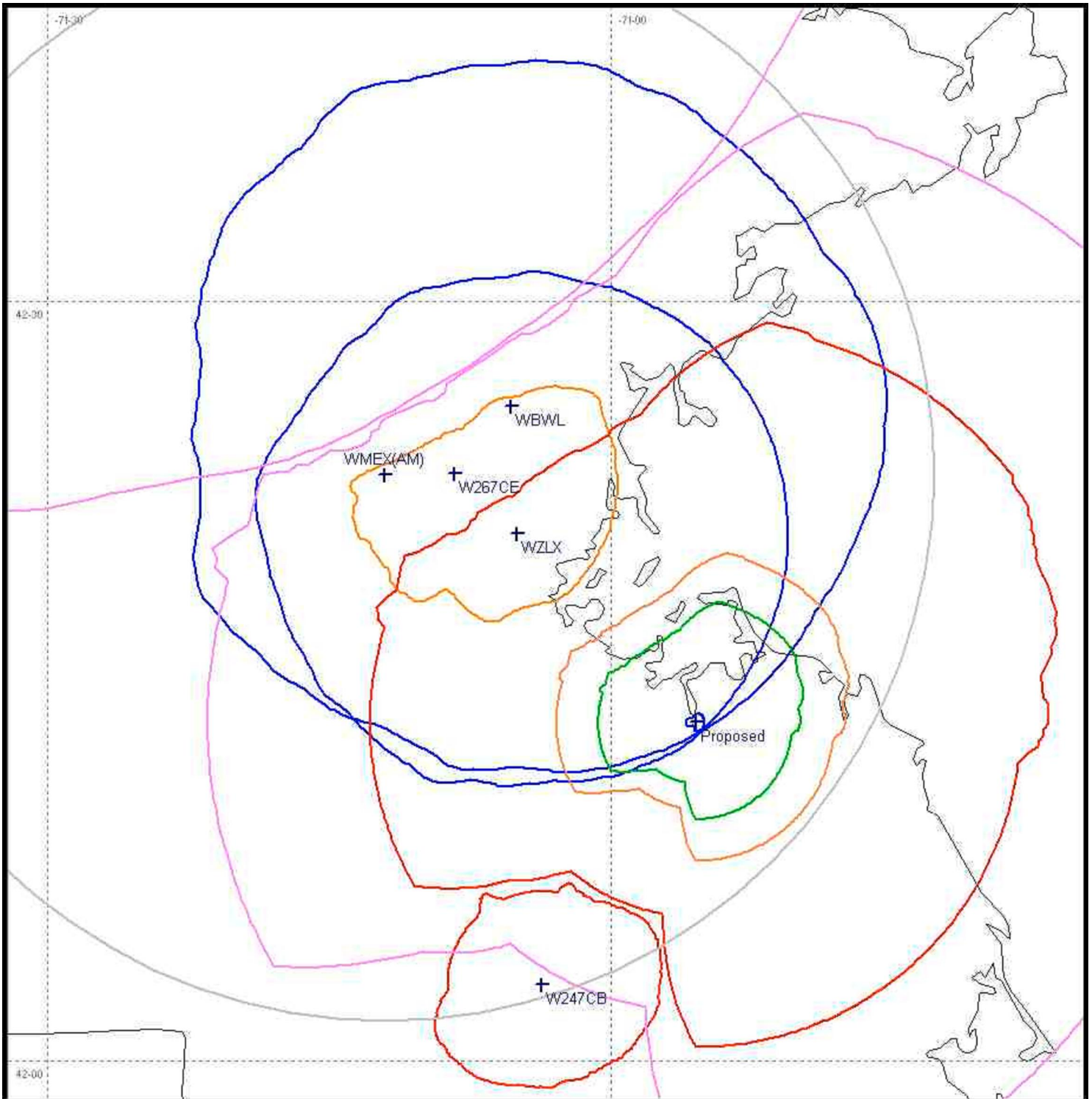
**No other prohibited overlap is created. (Key: Same colors may not overlap.)**

**Proposed service contour (green) does not exceed 25 miles (gray circle) from AM site.**



**Figure 2 – Section 74.1204 Closeup**

Second adjacent WZLX places an 80.4 dBu service contour over site, and  
Third adjacent WBWL places an 68.2 dBu service contour over site (both blue.)  
No prohibited overlap is created. (Key: Same colors may not overlap.)  
Proposed service contour (green) does not exceed 25 miles (gray circle) from AM site.

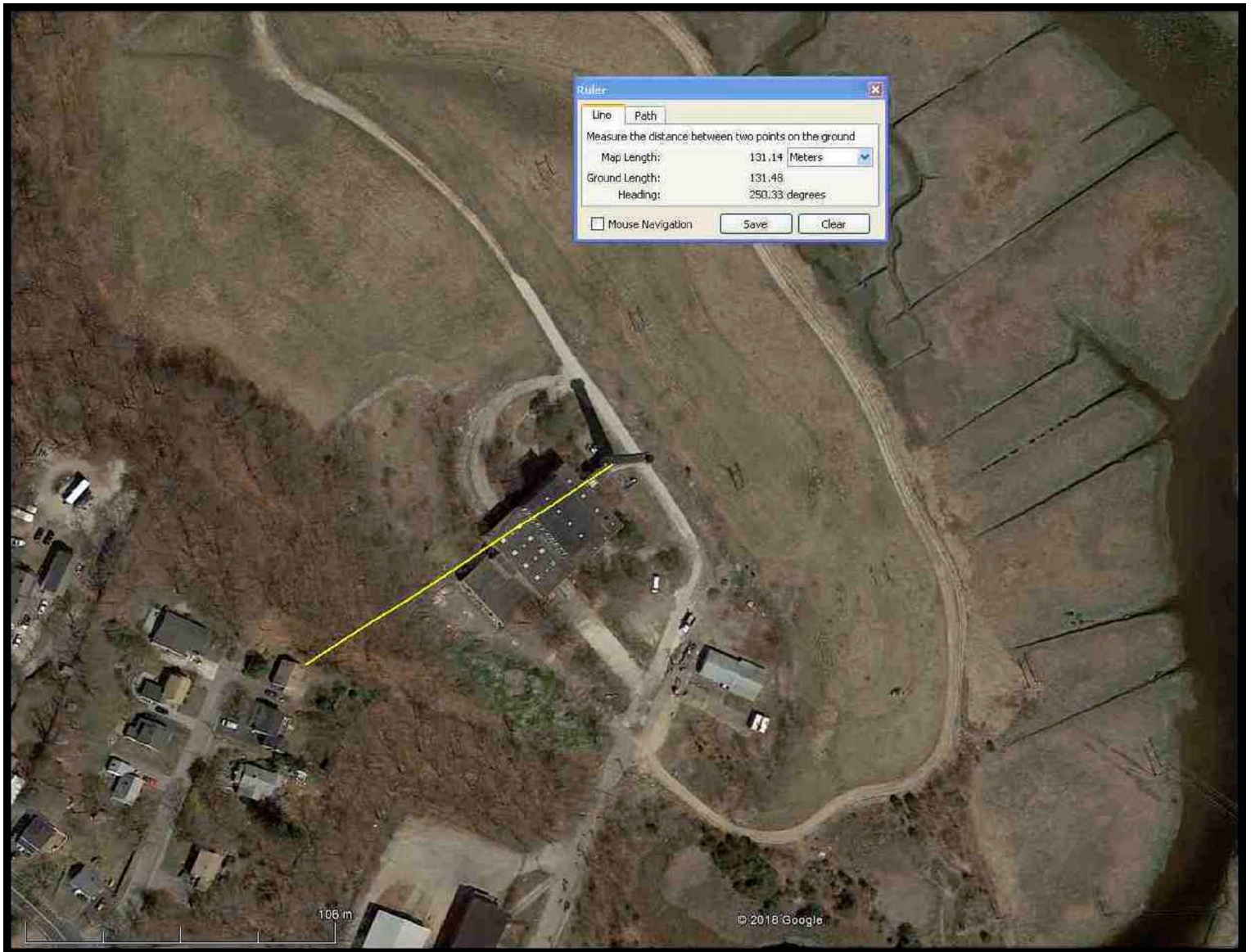




**Figure 3**

**Antenna Site Vicinity**

**Nearest occupied structure (residence) is 131 meters from antenna site.  
(Buildings near base of structure are unattended municipal storage facilities.)**



**Figure 4 - Calculation of Protection to WBWL Illustrating Margin of Safety**

**Maximum Allowable Field At Pertinent Distances and Angles  
Compared to Actual Antenna Field Values**

**A positive margin of safety exists at any point within  
the 108.2 dBu F(50,10) interfering contour distance in free space (431 meters.)**

**Notes:**

**Antenna Center of Radiation is at 41 meters AGL.**

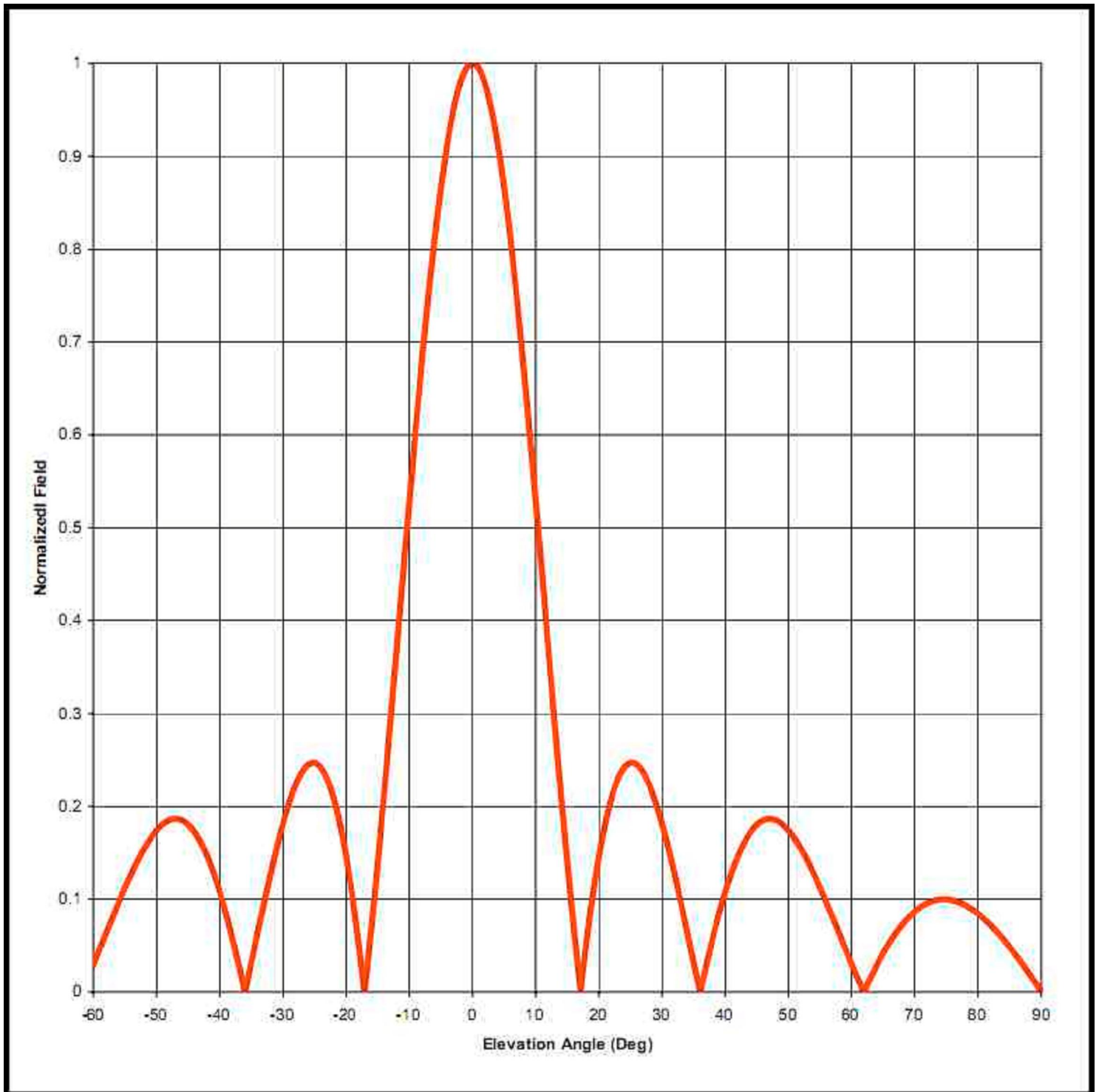
**For each point, the following is shown:**

- A. Horizontal distance from antenna tower base to point on the ground**
- B. Downward or depression angle from antenna CR to point on the ground**
- C. Actual distance in space from antenna CR to point on the ground**
- D. ERP at which 108.2 dBu interfering contour extends actual distance in space.**
- E. Corresponding antenna field limit (250 Watts = 1.000 field value)**
- F. Actual antenna vertical field at downward or depression angle**
- G. Margin of safety in dB**

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>
<b>Horizontal Distance From Site (meters)</b>	<b>Downward Vertical Angle (degrees)</b>	<b>Actual Distance in Space (meters)</b>	<b>Power Limit (Watts)</b>	<b>Corresponding Antenna Field Limit</b>	<b>Antenna Vertical Field at Angle</b>	<b>Margin of Safety (dB)</b>
130	17.5	136.3	24.9	0.316	0.028	21.04
150	15.3	155.5	32.5	0.361	0.119	9.63
175	13.2	179.7	43.3	0.416	0.276	3.57
200	11.6	204.2	56.0	0.473	0.418	1.08
225	10.3	228.7	70.3	0.530	0.505	0.42
250	9.3	253.3	86.2	0.587	0.585	0.03
275	8.5	278.0	103.9	0.645	0.642	0.04
300	7.8	302.8	123.0	0.701	0.694	0.09
350	6.7	352.4	166.8	0.817	0.767	0.55
400	5.9	402.1	217.0	0.932	0.817	1.14
430	5.4	432.0	250.0	1.000	0.844	1.47

**Figure 5**

**4-Bay 0.8 Wavelength Spaced Antenna Vertical Radiation Profile**



**Figure 6**

**2-Bay 0.8 Wavelength Spaced Antenna Vertical Profile Field Values**

<b>ELEVATION PATTERN TABULATION</b>			
<b>Degrees</b>	<b>Relative Field</b>	<b>Degrees</b>	<b>Relative Field</b>
1	0.994	46	0.185
2	0.978	47	0.186
3	0.951	48	0.185
4	0.913	49	0.181
5	0.866	50	0.174
6	0.811	51	0.165
7	0.748	52	0.154
8	0.680	53	0.142
9	0.606	54	0.127
10	0.529	55	0.112
11	0.450	56	0.096
12	0.370	57	0.080
13	0.291	58	0.063
14	0.214	59	0.047
15	0.140	60	0.030
16	0.070	61	0.014
17	0.006	62	0.001
18	0.051	63	0.016
19	0.102	64	0.029
20	0.146	65	0.042
21	0.181	66	0.053
22	0.209	67	0.064
23	0.229	68	0.073
24	0.242	69	0.080
25	0.247	70	0.087
26	0.245	71	0.092
27	0.237	72	0.096
28	0.223	73	0.098
29	0.204	74	0.100
30	0.181	75	0.100
31	0.155	76	0.099
32	0.126	77	0.097
33	0.096	78	0.093
34	0.064	79	0.089
35	0.032	80	0.084
36	0.001	81	0.079
37	0.029	82	0.072
38	0.057	83	0.065
39	0.084	84	0.057
40	0.108	85	0.049
41	0.128	86	0.040
42	0.146	87	0.030
43	0.161	88	0.021
44	0.172	89	0.011
45	0.180	90	0.000