

## **Technical Report W247BL Minor Modification**

As the Commission's rules now allow translators to serve as fill-ins for primary AM facilities, this technical report is submitted for a minor modification to W247BL at Crestline, OH, FCC file no. BLFT-20090921ACQ. A change in ERP and antenna orientation is requested for the translator to serve as a fill-in to rebroadcast the primary signal of WRGM(AM) 1440kHz at Ontario, OH, FCC facility I.D. 25476.

The following exhibits are provided to support the FCC form 349 application:

- E-1 W247BL Overlap Study
- E-2 60 dBu Contour within the Daytime 2.0 mV/m WRGM(AM) Contour
- E-3 Interference Plot to WLRD(FM) 245A
- E-4 Tabulation of Interference Contour to WLRD 245A
- E-5 Scala CA5-FM Horizontal Pattern
- E-6 Scala CA5-FM/CP/RM Vertical Elevation Pattern and Tabulation
- E-7 Tower Site Aerial Photo
- E-8 ASR1013230

### **W247BL.CP Modification Analysis:**

Exhibit E-1 shows the W247BL modified facility is inside the 2nd adjacent WLRD(FM) 245A 60 dBu protected contour. Therefore, the interference ratio is utilized to determine the interference contour in accordance with FCC-02-244, paragraph 12.

Exhibit E-3 shows the F(50-50) contour from WLRD(FM) to the new tower site for W247BL is 62.17 dBu. Adding the +40 dBu yields an F(50-10) interfering contour of 102.17 dBu. Since the facility is to be located within an area that might receive

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interference, the vertical elevation pattern of the Scala two bay CA5-FM/CP/RM antenna was used to determine the actual line of sight reduced ERP to the interfering contour.

Exhibit E-4 shows a tabulation of the actual line of sight distance at each degree, starting from a depression angle of 9 degrees, which demonstrates the actual interfering contour will not exceed the +40 102.17 dBu F(50-10) contour calculated using the V-Soft CONTOUR program at a plane located 9 meters above ground including the buildings and roads located nearby. The 102.17 dBu F(50-10) contour was calculated at each additional degree of depression through 90 degrees. The closest point was located at a depression angle of 17 degrees below the horizon where the (50,10) contour was calculated to be 102.01 dBu. The actual 102.17 dBu contour occurs at 395.1 meters along the line of sight path. This point is actually 11.22 meters vertically above ground, and defines a plane of at least 11.22 meters above ground for the interfering contour along the entire area within the contour. Clearly, the 102.17 dBu (50,10) interfering contour will not reach any potential population, roads, or buildings. Consequently, a waiver of Section 74.1204 is requested.

## **Antenna System:**

W247BL.CP is to remain at its current tower, ASR #1013230, at coordinates:

**40 45 50N 82 37 04W NAD 27.**

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The facility will operate at a COR AGL of 120 meters and 0.120 kW ERP using a Scala CA5-FM/CP/RM 2 bay 0.87 wavelength directional antenna stack rotated at an azimuth of 140 degrees.

## **RF Exposure Calculation:**

The RF contribution of the facility was calculated using the formula from the OET Bulletin 65:

$$S \text{ (RF in microwatts/cm}^2\text{)} = \frac{33.4 \times F^2 \times (H \text{ ERP} + V \text{ ERP in watts})}{R^2 \text{ (distance to radiation center in meters -2m)}}$$

Using the worst-case vertical (F) factor of 0.164, specified by Scala for the CA5-FM/CP stacked antenna, yields an RF value of 0.015  $\mu\text{W}/\text{cm}^2$  to the ground, which is well below 5% of the 200  $\mu\text{W}/\text{cm}^2$  maximum permissible for general public exposure, allowing exclusion from consideration.

## **Conclusion:**

It is concluded that the modification of W247BL complies with all Commission rules and policies.

## E-1 W247BL Overlap Study

REFERENCE  
40 45 50.0 N.  
82 37 04.0 W.

CH# 247D - 97.3 MHz, Pwr= 0.12 kW, HAAT= 161.0 M, COR= 541 M  
Average Protected F(50-50)= 13.66 km  
Standard Directional

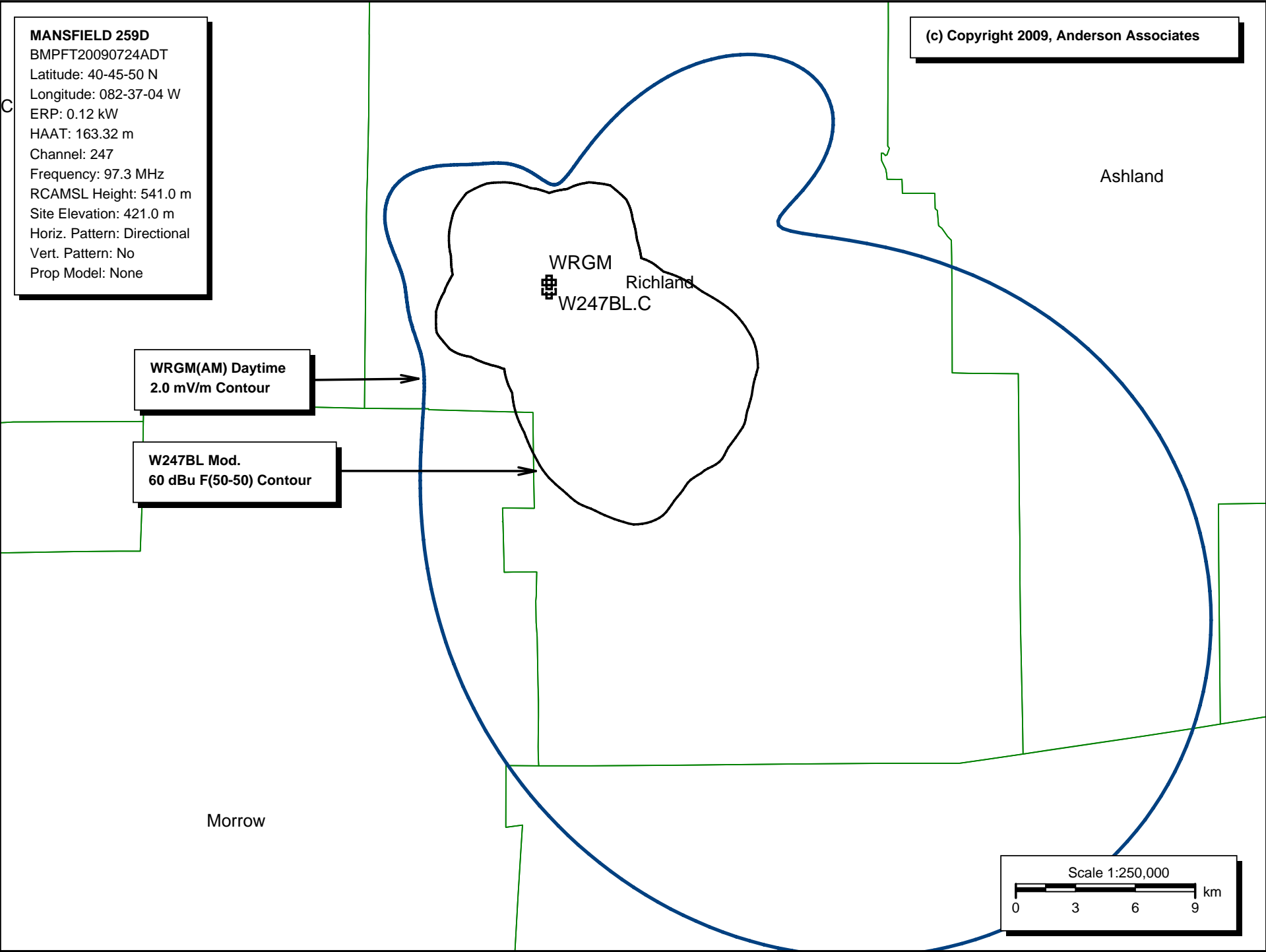
DISPLAY DATES  
DATA 09-26-09  
SEARCH 10-02-09

| CH<br>CITY            | CALL    | TYPE<br>STATE | ANT<br>STATE | AZI<br><--     | DI ST<br>FILE #         | LAT<br>LNG               | PWR(kW)<br>HAAT(M) | INT(km)<br>COR(M) | PRO(km)<br>LICENSEE                 | *IN*<br>(Overlap in km) | *OUT*<br>(km) |
|-----------------------|---------|---------------|--------------|----------------|-------------------------|--------------------------|--------------------|-------------------|-------------------------------------|-------------------------|---------------|
| 247D<br>Crestline     | W247BL  | LIC           | DC_          | 0.0<br>0.0     | 0.0<br>BLFT20090921ACQ  | 40 45 50.0<br>82 37 04.0 | 0.120              | 18.5<br>541       | 5.4<br>Gsm Media Corporation        | -23.5*                  | -22.3*        |
| 245A<br>Willard       | WLRD    | LIC           | _CX          | 359.3<br>179.3 | 21.8<br>BMLH20030711AAD | 40 57 36.0<br>82 37 16.0 | 6.000<br>100       | 2.4<br>422        | 24.4<br>Christian Faith Broadcast,  | 14.4                    | -2.7*<(1)     |
| 247A<br>Oak Harbor    | WJZE    | LIC           | ZCX          | 319.8<br>139.3 | 103.4<br>BLH20061207AAU | 41 28 19.0<br>83 25 05.0 | 4.300<br>118       | 83.1<br>307       | 27.4<br>Urban Radio Licenses, Llc   | 14.0                    | 54.3          |
| 246B<br>Col umbus     | WBNS-FM | LIC           | _CN          | 201.6<br>21.4  | 94.7<br>BLH19850125LM   | 39 58 16.0<br>83 01 40.0 | 20.500<br>238      | 75.3<br>484       | 63.8<br>Radi ohio, Incorporated     | 14.1                    | 20.4          |
| 248B<br>Akron         | WONE-FM | LIC           | _C_          | 68.6<br>249.3  | 93.4<br>BLH20010810AAQ  | 41 03 53.0<br>81 34 59.0 | 12.000<br>271      | 71.6<br>589       | 61.2<br>Rubber Ci ty Radio Group, I | 16.8                    | 21.9          |
| 250B<br>Col umbus     | WNCI    | LIC           | DEX          | 200.4<br>20.1  | 94.1<br>BMLH20080128AAW | 39 58 10.0<br>83 00 10.0 | 175.000<br>171     | 7.0<br>418        | 71.2<br>Citi casters Licenses, Inc. | 81.7                    | 22.6          |
| 248L1<br>Mari on      | WDCM-LP | LIC           | ___          | 248.9<br>68.6  | 46.4<br>BLL20050429AEM  | 40 36 46.0<br>83 07 48.0 | 0.045<br>44        | 6.6<br>327        | 4.6<br>The U. s. Open Junior Drum   | 33.9                    | 33.3          |
| 247B<br>Wheel ing     | WKWK-FM | LIC           | _CN          | 113.9<br>295.2 | 178.7<br>BLH19801203AF  | 40 05 49.0<br>80 42 06.0 | 50.000<br>128      | 131.6<br>456      | 58.2<br>Capstar Tx Limited Partner  | 35.8                    | 68.2          |
| 244B1<br>Frazey sburg | WKOV-FM | CP            | _CX          | 155.4<br>335.7 | 90.0<br>BPH20070405ABF  | 40 01 36.0<br>82 10 38.0 | 11.500<br>147      | 4.0<br>427        | 45.5<br>Jackson County Broadcastin  | 73.3                    | 43.5          |
| 249A<br>Castalia      | WGGN    | LIC           | _CN          | 348.3<br>168.2 | 71.8<br>BLH19860724KB   | 41 23 48.0<br>82 47 31.0 | 0.640<br>221       | 1.6<br>416        | 23.0<br>Christian Fai th Broadcast, | 64.9                    | 48.7          |
| 244C1<br>Leamington   | CHYR-FM |               | _C_          | 1.9<br>181.9   | 138.4                   | 42 00 35.0<br>82 33 45.0 | 100.000<br>299     | 10.2<br>475       | 86.8<br>123.3                       |                         | 51.4          |
| 300A<br>Westerville   | WVMX    | LIC           | _CX          | 204.7<br>24.5  | 63.4<br>BLH20090511ASY  | 40 14 41.5<br>82 55 49.1 | 3.000<br>143       | 0.0<br>439        | 0.0<br>Franklin Communications, I   | 9.5R                    | 53.9M         |

(1) See technical report for interference calculations showing that no actual interference occurs to WLRD.

Terrain database is FCC NGDC 30 Sec , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM  
Contour distances are on direct line to and from reference station. Reference zone = 1, Co to 3rd adjacent.  
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, \_= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)  
\*\*\*affixed to 'IN' or 'OUT' values = site inside protected contour.  
Reference station has protected zone issue: AM tower

E-2 W247BL Mod. Coverage Plot



# E-3 W247BL Mod. Interference Plot to WLRD(FM) 245A

## MANSFIELD 259D

BMPFT20090724ADT  
Latitude: 40-45-50 N  
Longitude: 082-37-04 W  
ERP: 0.0636 kW  
HAAT: 163.32 m  
Channel: 247  
Frequency: 97.3 MHz  
RCAMSL Height: 541.0 m  
Site Elevation: 421.0 m  
Horiz. Pattern: Directional  
Vert. Pattern: No  
Prop Model: None

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WRGM

WLRD(FM) 245A  
62.17 dBu F(50-50) Contour

W247BL.C

W247BL Mod.  
+40 = 102.17 dBu F(50-10) Contour

0 Population  
E-4 demonstrates that the reduced  
interfering signal calculated does  
not come close to reaching the ground,  
buildings or roads.

Scale 1:25,000

0 0.33 0.67 1.0 km

## E4 INTERFERENCE CALCULATION

| Depression Angle | Vertical F Factor | 120AGL(m)<br>- 9 meters | F2 X 0.120 kW<br>Reduced Vertical ERP | Line of Sight<br>Distance | Actual F(50,10)<br>Contour (dBu) | Distance to 102.17 dBu<br>F(50-10) Contour (km) |
|------------------|-------------------|-------------------------|---------------------------------------|---------------------------|----------------------------------|---|
| 9                | 0.872             | 111                     | 0.0912                                | 0.7096                    | 99.50                            | 0.5218  |
| 10               | 0.847             | 111                     | 0.0860                                | 0.6392                    | 100.15                           | 0.5067  |
| 11               | 0.819             | 111                     | 0.8050                                | 0.5817                    | 100.68                           | 0.4902  |
| 12               | 0.790             | 111                     | 0.0749                                | 0.5339                    | 101.12                           | 0.4723  |
| 13               | 0.759             | 111                     | 0.0691                                | 0.4934                    | 101.45                           | 0.4542  |
| 14               | 0.728             | 111                     | 0.0636                                | 0.4588                    | 101.72                           | 0.4357  |
| 15               | 0.695             | 111                     | 0.0580                                | 0.4289                    | 101.91*                          | 0.4161  |
| 16               | 0.660             | 111                     | 0.0523                                | 0.4027                    | 102.01*                          | 0.3951  |
| 17               | 0.624             | 111                     | 0.0467                                | 0.37965                   | 102.02*                          | 0.3734  |
| 18               | 0.588             | 111                     | 0.0415                                | 0.3592                    | 101.99*                          | 0.3520  |
| 19               | 0.551             | 111                     | 0.0364                                | 0.3409                    | 101.88                           | 0.3296  |
| 20               | 0.514             | 111                     | 0.0317                                | 0.3245                    | 101.71                           | 0.3076  |
| 21               | 0.475             | 111                     | 0.0271                                | 0.3097                    | 101.43                           | 0.2844  |
| 22               | 0.436             | 111                     | 0.0228                                | 0.2963                    | 101.07                           | 0.2609  |
| 23               | 0.397             | 111                     | 0.0189                                | 0.2841                    | 100.62                           | 0.2375  |
| 24               | 0.359             | 111                     | 0.0155                                | 0.2729                    | 100.10                           | 0.2151  |
| 25               | 0.321             | 111                     | 0.0124                                | 0.2626                    | 99.47                            | 0.1924  |
| 26               | 0.284             | 111                     | 0.0010                                | 0.2532                    | 98.85                            | 0.1728  |
| 27               | 0.248             | 111                     | 0.0074                                | 0.2445                    | 97.85                            | 0.1486  |
| 28               | 0.213             | 111                     | 0.0054                                | 0.2364                    | 96.78                            | 0.1270  |
| 29               | 0.179             | 111                     | 0.0038                                | 0.2290                    | 95.52                            | 0.1065  |
| 30               | 0.146             | 111                     | 0.0026                                | 0.2220                    | 94.14                            | 0.0881  |
| 31               | 0.114             | 111                     | 0.0016                                | 0.2155                    | 92.29                            | 0.0691  |
| 32               | 0.083             | 111                     | 0.0008                                | 0.2095                    | 89.53                            | 0.0489  |
| 33               | 0.055             | 111                     | 0.0004                                | 0.2038                    | 86.75                            | 0.0346  |
| 34               | 0.027             | 111                     | 0.0001                                | 0.1985                    | 80.97                            | 0.0173  |
| 35               | 0.010             | 111                     | 0.0000                                | 0.1935                    | 0.00                             | 0.0000  |
| 36               | 0.022             | 111                     | 0.0001                                | 0.1888                    | 81.40                            | 0.0173  |
| 37               | 0.044             | 111                     | 0.0002                                | 0.1844                    | 84.62                            | 0.0244  |
| 38               | 0.063             | 111                     | 0.0008                                | 0.1803                    | 90.83                            | 0.0489  |
| 39               | 0.082             | 111                     | 0.0008                                | 0.1764                    | 91.02                            | 0.0489  |
| 40               | 0.098             | 111                     | 0.0012                                | 0.1727                    | 92.97                            | 0.0599  |
| 41               | 0.112             | 111                     | 0.0015                                | 0.1692                    | 94.11                            | 0.0669  |
| 42               | 0.124             | 111                     | 0.0019                                | 0.1659                    | 95.31                            | 0.0753  |
| 43               | 0.134             | 111                     | 0.0022                                | 0.1628                    | 96.11                            | 0.0810  |
| 44               | 0.143             | 111                     | 0.0025                                | 0.1598                    | 96.83                            | 0.0864  |
| 45               | 0.150             | 111                     | 0.0027                                | 0.1598                    | 97.16                            | 0.0898  |
| 46               | 0.156             | 111                     | 0.0029                                | 0.1543                    | 97.78                            | 0.0930  |
| 47               | 0.160             | 111                     | 0.0031                                | 0.1518                    | 98.21                            | 0.0962  |
| 48               | 0.163             | 111                     | 0.0032                                | 0.1494                    | 98.49                            | 0.0978  |
| 49               | 0.164             | 111                     | 0.0032                                | 0.1494                    | 98.49                            | 0.0977  |
| 50               | 0.164             | 111                     | 0.0032                                | 0.1449                    | 98.75                            | 0.0977  |
| 51               | 0.164             | 111                     | 0.0032                                | 0.1428                    | 98.88                            | 0.0977  |
| 52               | 0.163             | 111                     | 0.0032                                | 0.1409                    | 98.99                            | 0.0977  |
| 53               | 0.161             | 111                     | 0.0031                                | 0.1390                    | 98.97                            | 0.0962  |
| 54               | 0.157             | 111                     | 0.0030                                | 0.1372                    | 98.94                            | 0.0946  |
| 55               | 0.153             | 111                     | 0.0028                                | 0.1355                    | 98.75                            | 0.0914  |
| 56               | 0.151             | 111                     | 0.0027                                | 0.1339                    | 98.70                            | 0.0898  |
| 57               | 0.148             | 111                     | 0.0026                                | 0.1325                    | 98.63                            | 0.0881  |
| 58               | 0.144             | 111                     | 0.0025                                | 0.1309                    | 98.56                            | 0.0864  |
| 59               | 0.140             | 111                     | 0.0024                                | 0.1295                    | 98.48                            | 0.0846  |

|    |       |     |        |        |       |        |
|----|-------|-----|--------|--------|-------|--------|
| 60 | 0.136 | 111 | 0.0022 | 0.1282 | 98.19 | 0.0810 |
| 61 | 0.132 | 111 | 0.0021 | 0.1269 | 98.07 | 0.0792 |
| 62 | 0.127 | 111 | 0.0019 | 0.1257 | 97.72 | 0.0753 |
| 63 | 0.122 | 111 | 0.0018 | 0.1246 | 97.56 | 0.0733 |
| 64 | 0.117 | 111 | 0.0016 | 0.1235 | 97.13 | 0.0691 |
| 65 | 0.112 | 111 | 0.0015 | 0.1225 | 96.92 | 0.0669 |
| 66 | 0.112 | 111 | 0.0015 | 0.1215 | 96.99 | 0.0669 |
| 67 | 0.112 | 111 | 0.0015 | 0.1206 | 97.05 | 0.0669 |
| 68 | 0.113 | 111 | 0.0015 | 0.1197 | 97.12 | 0.0669 |
| 69 | 0.113 | 111 | 0.0015 | 0.1189 | 97.18 | 0.0669 |
| 70 | 0.113 | 111 | 0.0015 | 0.1181 | 97.24 | 0.0669 |
| 71 | 0.114 | 111 | 0.0016 | 0.1174 | 97.57 | 0.0691 |
| 72 | 0.115 | 111 | 0.0016 | 0.1167 | 97.62 | 0.0691 |
| 73 | 0.116 | 111 | 0.0016 | 0.1161 | 97.66 | 0.0691 |
| 74 | 0.117 | 111 | 0.0016 | 0.1155 | 97.71 | 0.0691 |
| 75 | 0.118 | 111 | 0.0017 | 0.1149 | 98.02 | 0.0712 |
| 76 | 0.120 | 111 | 0.0017 | 0.1144 | 98.06 | 0.0712 |
| 77 | 0.122 | 111 | 0.0018 | 0.1139 | 98.34 | 0.0733 |
| 78 | 0.124 | 111 | 0.0019 | 0.1135 | 98.61 | 0.0753 |
| 79 | 0.126 | 111 | 0.0019 | 0.1131 | 98.64 | 0.0753 |
| 80 | 0.128 | 111 | 0.0020 | 0.1127 | 98.89 | 0.0773 |
| 81 | 0.130 | 111 | 0.0020 | 0.1124 | 98.92 | 0.0773 |
| 82 | 0.131 | 111 | 0.0021 | 0.1121 | 99.15 | 0.0792 |
| 83 | 0.133 | 111 | 0.0021 | 0.1118 | 99.17 | 0.0792 |
| 84 | 0.135 | 111 | 0.0022 | 0.1116 | 99.39 | 0.0810 |
| 85 | 0.137 | 111 | 0.0023 | 0.1114 | 99.60 | 0.0829 |
| 86 | 0.139 | 111 | 0.0023 | 0.1113 | 99.61 | 0.0829 |
| 87 | 0.140 | 111 | 0.0024 | 0.1112 | 99.80 | 0.0846 |
| 88 | 0.142 | 111 | 0.0024 | 0.1111 | 99.84 | 0.0846 |
| 89 | 0.143 | 111 | 0.0025 | 0.1110 | 99.99 | 0.0864 |
| 90 | 0.144 | 111 | 0.0025 | 0.1110 | 99.99 | 0.0864 |



## E4 Continued

- \* Closest points to 102.17 dBu (50,10) permitted at 9 meters above ground level. All other angles of depression are significantly below the permitted level.

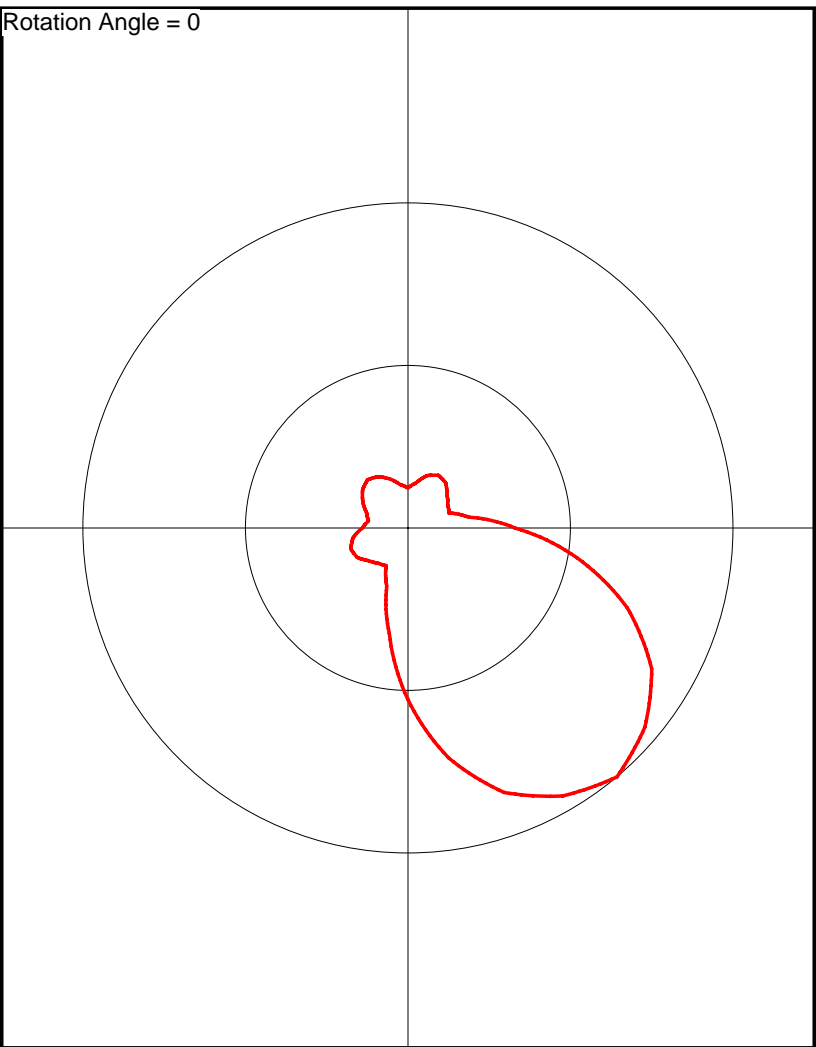
This table is based on the 102.17 dBu F(50-10) interfering contour calculated for WLRD 245A at the W247BL site. Starting from the 102.17 dBu F(50-10) contour, the line of sight distance was calculated at each degree geometrically, using 111 m AGL representing a plane at 9 meters above ground level for the actual 120 meter AGL radiation center. The resulting line of sight distance for each depression angle starting at 9 degrees was calculated along with the resulting F(50,10) at that point and the distance to the 102.17 dBu (50,10) maximum interfering contour. Contours were calculated using V-Soft's Contour program at each degree, and the vertical F factors were obtained from the antenna manufacturer's published data (attached).

It is clear that the proposed interfering contour does not reach 102.17 dBu level even at the 9 meter plane demonstrating that interference to radio reception will not occur at any point in a road, street, building or even pedestrian area. The interfering contour never reaches the ground or even a plane 9 meters above ground. The aerial photograph shows that all buildings in the area are no more than two stories.

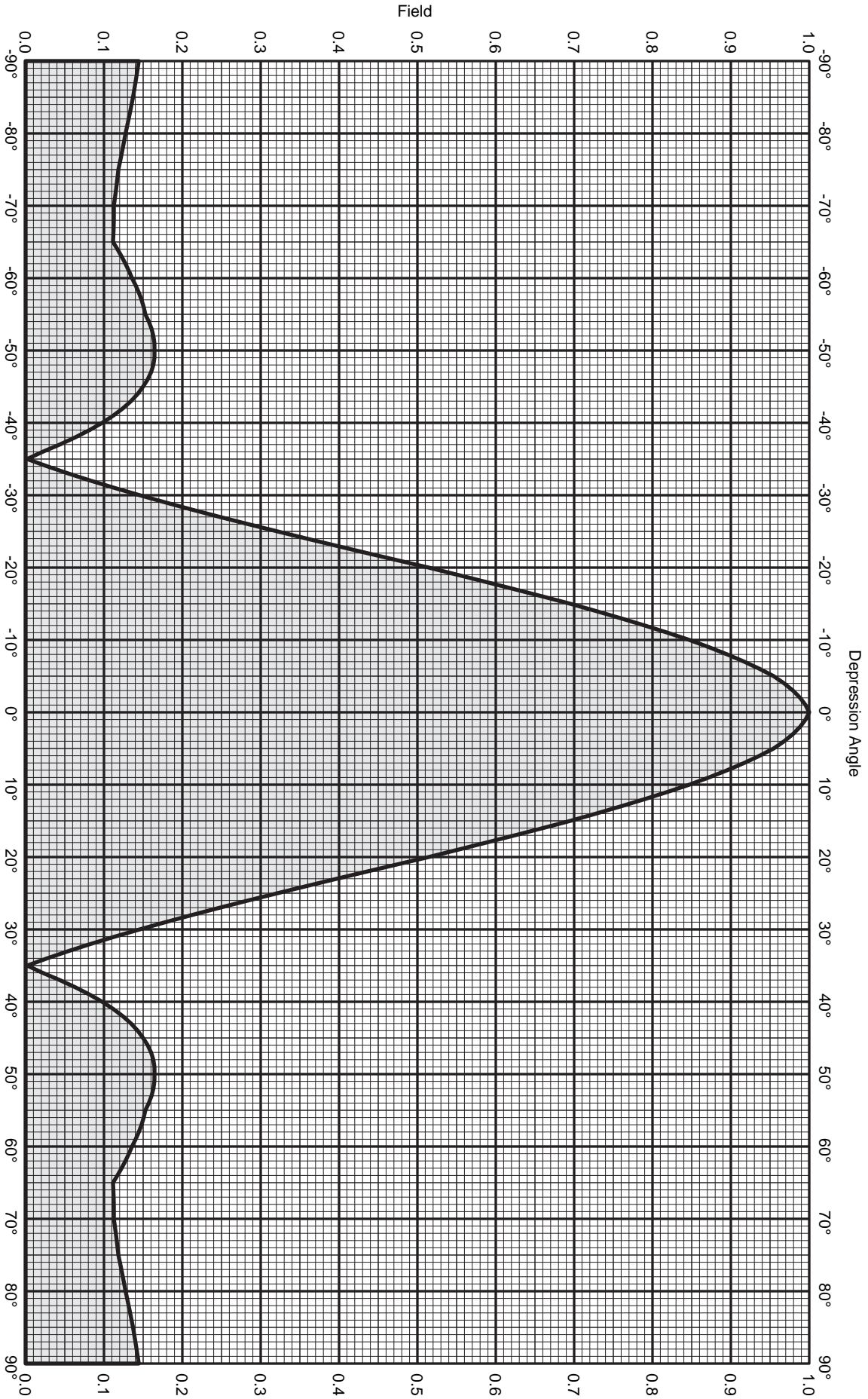
E-5 DA Antenna Pattern  
2-Scala CA5-FM 140 Degree Azimuth

Rotation Angle = 0

| Azimuth (deg) | Effective Field |
|---------------|-----------------|
| 0.0           | 0.123           |
| 10.0          | 0.140           |
| 20.0          | 0.171           |
| 30.0          | 0.187           |
| 40.0          | 0.181           |
| 50.0          | 0.157           |
| 60.0          | 0.142           |
| 70.0          | 0.134           |
| 80.0          | 0.190           |
| 90.0          | 0.329           |
| 100.0         | 0.528           |
| 110.0         | 0.718           |
| 120.0         | 0.866           |
| 130.0         | 0.952           |
| 140.0         | 1.000           |
| 150.0         | 0.952           |
| 160.0         | 0.866           |
| 170.0         | 0.718           |
| 180.0         | 0.528           |
| 190.0         | 0.329           |
| 200.0         | 0.190           |
| 210.0         | 0.134           |
| 220.0         | 0.142           |
| 230.0         | 0.157           |
| 240.0         | 0.181           |
| 250.0         | 0.187           |
| 260.0         | 0.171           |
| 270.0         | 0.140           |
| 280.0         | 0.123           |
| 290.0         | 0.135           |
| 300.0         | 0.160           |
| 310.0         | 0.182           |
| 320.0         | 0.193           |
| 330.0         | 0.182           |
| 340.0         | 0.160           |
| 350.0         | 0.135           |



E-6 Scala CA5-FM/CP Vertical Elevation Pattern



Post Office Box 4580  
Medford, OR 97501 (USA)  
Phone: (541) 779-6500  
Fax: (541) 779-3991  
<http://www.kathrein-scala.com>

Two CA5-FM/CP/RM Yagis  
Oriented at horizon

Maximum array gain: 8.5 dBd

Vertical stack @ .87 wavelength

Circular polarization  
Elevation pattern



Two CA5-FM/CP/RM Yagis

Oriented at horizon

Maximum array gain: 8.5 dBd

Vertical stack @ .87 wavelength

Circular polarization

Elevation pattern

| Angle | Field | Rel.dB | dBd    | PwrMult | Angle | Field | Rel.dB | dBd    | PwrMult |
|-------|-------|--------|--------|---------|-------|-------|--------|--------|---------|
| -90   | 0.144 | -16.81 | -8.31  | 0.15    | -45   | 0.150 | -16.49 | -7.99  | 0.16    |
| -89   | 0.143 | -16.89 | -8.39  | 0.14    | -44   | 0.143 | -16.89 | -8.39  | 0.14    |
| -88   | 0.142 | -16.98 | -8.48  | 0.14    | -43   | 0.134 | -17.43 | -8.93  | 0.13    |
| -87   | 0.140 | -17.07 | -8.57  | 0.14    | -42   | 0.124 | -18.13 | -9.63  | 0.11    |
| -86   | 0.139 | -17.16 | -8.66  | 0.14    | -41   | 0.112 | -19.03 | -10.53 | 0.09    |
| -85   | 0.137 | -17.26 | -8.76  | 0.13    | -40   | 0.098 | -20.20 | -11.70 | 0.07    |
| -84   | 0.135 | -17.38 | -8.88  | 0.13    | -39   | 0.082 | -21.78 | -13.28 | 0.05    |
| -83   | 0.133 | -17.50 | -9.00  | 0.13    | -38   | 0.063 | -23.95 | -15.45 | 0.03    |
| -82   | 0.131 | -17.62 | -9.12  | 0.12    | -37   | 0.044 | -27.23 | -18.73 | 0.01    |
| -81   | 0.130 | -17.75 | -9.25  | 0.12    | -36   | 0.022 | -33.27 | -24.77 | 0.00    |
| -80   | 0.128 | -17.89 | -9.39  | 0.12    | -35   | 0.010 | -40.00 | -31.50 | 0.00    |
| -79   | 0.126 | -18.00 | -9.50  | 0.11    | -34   | 0.027 | -31.23 | -22.73 | 0.01    |
| -78   | 0.124 | -18.13 | -9.63  | 0.11    | -33   | 0.055 | -25.26 | -16.76 | 0.02    |
| -77   | 0.122 | -18.26 | -9.76  | 0.11    | -32   | 0.083 | -21.58 | -13.08 | 0.05    |
| -76   | 0.120 | -18.39 | -9.89  | 0.10    | -31   | 0.114 | -18.88 | -10.38 | 0.09    |
| -75   | 0.118 | -18.54 | -10.04 | 0.10    | -30   | 0.146 | -16.73 | -8.23  | 0.15    |
| -74   | 0.117 | -18.61 | -10.11 | 0.10    | -29   | 0.179 | -14.97 | -6.47  | 0.23    |
| -73   | 0.116 | -18.69 | -10.19 | 0.10    | -28   | 0.213 | -13.45 | -4.95  | 0.32    |
| -72   | 0.115 | -18.78 | -10.28 | 0.09    | -27   | 0.248 | -12.12 | -3.62  | 0.43    |
| -71   | 0.114 | -18.87 | -10.37 | 0.09    | -26   | 0.284 | -10.93 | -2.43  | 0.57    |
| -70   | 0.113 | -18.97 | -10.47 | 0.09    | -25   | 0.321 | -9.86  | -1.36  | 0.73    |
| -69   | 0.113 | -18.97 | -10.47 | 0.09    | -24   | 0.359 | -8.90  | -0.40  | 0.91    |
| -68   | 0.113 | -18.97 | -10.47 | 0.09    | -23   | 0.397 | -8.02  | 0.48   | 1.12    |
| -67   | 0.112 | -18.99 | -10.49 | 0.09    | -22   | 0.436 | -7.21  | 1.29   | 1.34    |
| -66   | 0.112 | -19.02 | -10.52 | 0.09    | -21   | 0.475 | -6.47  | 2.03   | 1.60    |
| -65   | 0.112 | -19.05 | -10.55 | 0.09    | -20   | 0.514 | -5.77  | 2.73   | 1.87    |
| -64   | 0.117 | -18.62 | -10.12 | 0.10    | -19   | 0.551 | -5.17  | 3.33   | 2.15    |
| -63   | 0.122 | -18.24 | -9.74  | 0.11    | -18   | 0.588 | -4.61  | 3.89   | 2.45    |
| -62   | 0.127 | -17.90 | -9.40  | 0.11    | -17   | 0.624 | -4.09  | 4.41   | 2.76    |
| -61   | 0.132 | -17.60 | -9.10  | 0.12    | -16   | 0.660 | -3.61  | 4.89   | 3.08    |
| -60   | 0.136 | -17.34 | -8.84  | 0.13    | -15   | 0.695 | -3.16  | 5.34   | 3.42    |
| -59   | 0.140 | -17.05 | -8.55  | 0.14    | -14   | 0.728 | -2.76  | 5.74   | 3.75    |
| -58   | 0.144 | -16.80 | -8.30  | 0.15    | -13   | 0.759 | -2.39  | 6.11   | 4.08    |
| -57   | 0.148 | -16.60 | -8.10  | 0.15    | -12   | 0.790 | -2.05  | 6.45   | 4.42    |
| -56   | 0.151 | -16.44 | -7.94  | 0.16    | -11   | 0.819 | -1.73  | 6.77   | 4.75    |
| -55   | 0.153 | -16.32 | -7.82  | 0.17    | -10   | 0.847 | -1.44  | 7.06   | 5.08    |
| -54   | 0.157 | -16.07 | -7.57  | 0.18    | -9    | 0.872 | -1.19  | 7.31   | 5.38    |
| -53   | 0.161 | -15.88 | -7.38  | 0.18    | -8    | 0.895 | -0.96  | 7.54   | 5.68    |
| -52   | 0.163 | -15.75 | -7.25  | 0.19    | -7    | 0.917 | -0.75  | 7.75   | 5.95    |
| -51   | 0.164 | -15.68 | -7.18  | 0.19    | -6    | 0.937 | -0.57  | 7.93   | 6.21    |
| -50   | 0.164 | -15.68 | -7.18  | 0.19    | -5    | 0.955 | -0.40  | 8.10   | 6.45    |
| -49   | 0.164 | -15.68 | -7.18  | 0.19    | -4    | 0.968 | -0.28  | 8.22   | 6.63    |
| -48   | 0.163 | -15.76 | -7.26  | 0.19    | -3    | 0.979 | -0.18  | 8.32   | 6.79    |
| -47   | 0.160 | -15.91 | -7.41  | 0.18    | -2    | 0.988 | -0.10  | 8.40   | 6.92    |
| -46   | 0.156 | -16.15 | -7.65  | 0.17    | -1    | 0.995 | -0.04  | 8.46   | 7.01    |
|       |       |        |        |         | 0     | 1.000 | 0.00   | 8.50   | 7.08    |



Two CA5-FM/CP/RM Yagis

Oriented at horizon

Maximum array gain: 8.5 dBd

Vertical stack @ .87 wavelength

Circular polarization

Elevation pattern

| Angle | Field | Rel.dB | dBd    | PwrMult | Angle | Field | Rel.dB | dBd    | PwrMult |
|-------|-------|--------|--------|---------|-------|-------|--------|--------|---------|
| 0     | 1.000 | 0.00   | 8.50   | 7.08    | 45    | 0.150 | -16.49 | -7.99  | 0.16    |
| 1     | 0.995 | -0.04  | 8.46   | 7.01    | 46    | 0.156 | -16.15 | -7.65  | 0.17    |
| 2     | 0.988 | -0.10  | 8.40   | 6.92    | 47    | 0.160 | -15.91 | -7.41  | 0.18    |
| 3     | 0.979 | -0.18  | 8.32   | 6.79    | 48    | 0.163 | -15.76 | -7.26  | 0.19    |
| 4     | 0.968 | -0.28  | 8.22   | 6.63    | 49    | 0.164 | -15.68 | -7.18  | 0.19    |
| 5     | 0.955 | -0.40  | 8.10   | 6.45    | 50    | 0.164 | -15.68 | -7.18  | 0.19    |
| 6     | 0.937 | -0.57  | 7.93   | 6.21    | 51    | 0.164 | -15.68 | -7.18  | 0.19    |
| 7     | 0.917 | -0.75  | 7.75   | 5.95    | 52    | 0.163 | -15.75 | -7.25  | 0.19    |
| 8     | 0.895 | -0.96  | 7.54   | 5.68    | 53    | 0.161 | -15.88 | -7.38  | 0.18    |
| 9     | 0.872 | -1.19  | 7.31   | 5.38    | 54    | 0.157 | -16.07 | -7.57  | 0.18    |
| 10    | 0.847 | -1.44  | 7.06   | 5.08    | 55    | 0.153 | -16.32 | -7.82  | 0.17    |
| 11    | 0.819 | -1.73  | 6.77   | 4.75    | 56    | 0.151 | -16.44 | -7.94  | 0.16    |
| 12    | 0.790 | -2.05  | 6.45   | 4.42    | 57    | 0.148 | -16.60 | -8.10  | 0.15    |
| 13    | 0.759 | -2.39  | 6.11   | 4.08    | 58    | 0.144 | -16.80 | -8.30  | 0.15    |
| 14    | 0.728 | -2.76  | 5.74   | 3.75    | 59    | 0.140 | -17.05 | -8.55  | 0.14    |
| 15    | 0.695 | -3.16  | 5.34   | 3.42    | 60    | 0.136 | -17.34 | -8.84  | 0.13    |
| 16    | 0.660 | -3.61  | 4.89   | 3.08    | 61    | 0.132 | -17.60 | -9.10  | 0.12    |
| 17    | 0.624 | -4.09  | 4.41   | 2.76    | 62    | 0.127 | -17.90 | -9.40  | 0.11    |
| 18    | 0.588 | -4.61  | 3.89   | 2.45    | 63    | 0.122 | -18.24 | -9.74  | 0.11    |
| 19    | 0.551 | -5.17  | 3.33   | 2.15    | 64    | 0.117 | -18.62 | -10.12 | 0.10    |
| 20    | 0.514 | -5.77  | 2.73   | 1.87    | 65    | 0.112 | -19.05 | -10.55 | 0.09    |
| 21    | 0.475 | -6.47  | 2.03   | 1.60    | 66    | 0.112 | -19.02 | -10.52 | 0.09    |
| 22    | 0.436 | -7.21  | 1.29   | 1.34    | 67    | 0.112 | -18.99 | -10.49 | 0.09    |
| 23    | 0.397 | -8.02  | 0.48   | 1.12    | 68    | 0.113 | -18.97 | -10.47 | 0.09    |
| 24    | 0.359 | -8.90  | -0.40  | 0.91    | 69    | 0.113 | -18.97 | -10.47 | 0.09    |
| 25    | 0.321 | -9.86  | -1.36  | 0.73    | 70    | 0.113 | -18.97 | -10.47 | 0.09    |
| 26    | 0.284 | -10.93 | -2.43  | 0.57    | 71    | 0.114 | -18.87 | -10.37 | 0.09    |
| 27    | 0.248 | -12.12 | -3.62  | 0.43    | 72    | 0.115 | -18.78 | -10.28 | 0.09    |
| 28    | 0.213 | -13.45 | -4.95  | 0.32    | 73    | 0.116 | -18.69 | -10.19 | 0.10    |
| 29    | 0.179 | -14.96 | -6.46  | 0.23    | 74    | 0.117 | -18.61 | -10.11 | 0.10    |
| 30    | 0.146 | -16.73 | -8.23  | 0.15    | 75    | 0.118 | -18.54 | -10.04 | 0.10    |
| 31    | 0.114 | -18.88 | -10.38 | 0.09    | 76    | 0.120 | -18.39 | -9.89  | 0.10    |
| 32    | 0.083 | -21.58 | -13.08 | 0.05    | 77    | 0.122 | -18.26 | -9.76  | 0.11    |
| 33    | 0.055 | -25.26 | -16.76 | 0.02    | 78    | 0.124 | -18.13 | -9.63  | 0.11    |
| 34    | 0.027 | -31.23 | -22.73 | 0.01    | 79    | 0.126 | -18.00 | -9.50  | 0.11    |
| 35    | 0.010 | -40.00 | -31.50 | 0.00    | 80    | 0.128 | -17.89 | -9.39  | 0.12    |
| 36    | 0.022 | -33.27 | -24.77 | 0.00    | 81    | 0.130 | -17.75 | -9.25  | 0.12    |
| 37    | 0.044 | -27.23 | -18.73 | 0.01    | 82    | 0.131 | -17.62 | -9.12  | 0.12    |
| 38    | 0.063 | -23.95 | -15.45 | 0.03    | 83    | 0.133 | -17.50 | -9.00  | 0.13    |
| 39    | 0.082 | -21.78 | -13.28 | 0.05    | 84    | 0.135 | -17.38 | -8.88  | 0.13    |
| 40    | 0.098 | -20.20 | -11.70 | 0.07    | 85    | 0.137 | -17.26 | -8.76  | 0.13    |
| 41    | 0.112 | -19.03 | -10.53 | 0.09    | 86    | 0.139 | -17.16 | -8.66  | 0.14    |
| 42    | 0.124 | -18.13 | -9.63  | 0.11    | 87    | 0.140 | -17.07 | -8.57  | 0.14    |
| 43    | 0.134 | -17.43 | -8.93  | 0.13    | 88    | 0.142 | -16.98 | -8.48  | 0.14    |
| 44    | 0.143 | -16.89 | -8.39  | 0.14    | 89    | 0.143 | -16.89 | -8.39  | 0.14    |
|       |       |        |        |         | 90    | 0.144 | -16.81 | -8.31  | 0.15    |



E-7 AERIAL PHOTO 82°37'30" 82°37'15" 82°37'0" 82°36'45" 82°36'30"

363000

363500

364000

40°46'15"

4514500

40°46'00"

4514000

40°45'45"

4513500

40°45'30"

4513000

40°45'15"

40°46'15"

4514500

40°46'00"

4514000

40°45'45"

4513500

40°45'30"

4513000

40°45'15"

N 40-45-50 W 82-37-04

82°37'30"

363000

82°37'15"

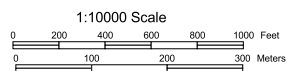
363500

82°37'0"

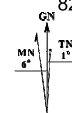
82°36'45"

364000

82°36'30"



Universal Transverse Mercator (UTM) Projection Zone17  
North American Datum of 1983 (NAD83)  
UTM Grid shown in Blue



Magnetic declination at center of map on  
September 17, 2009

E-8 W247BL ASR

ASR Registration Search

Registration 1013230

 [Map Registration](#)

Registration Detail

|                |               |             |             |
|----------------|---------------|-------------|-------------|
| Reg Number     | 1013230       | Status      | Constructed |
| File Number    | A0015853      | Constructed | 03/04/1990  |
| FAA Study      | 89-AGL-379-OE | EMI         | No          |
| FAA Issue Date | 08/21/1989    | NEPA        | No          |

Antenna Structure

Structure Type            TOWER - Free standing or Guyed Structure used for Communications Purposes

Location (in NAD83 Coordinates)

|                    |                            |                 |
|--------------------|----------------------------|-----------------|
| Lat/Long           | 40-45-50.0 N 082-37-04.0 W | 2900 PARK AVE W |
| City, State        | ONTARIO , OH               |                 |
| Center of AM Array |                            |                 |

Heights (meters)

|  |   |
|--|---|
| Elevation of Site Above Mean Sea Level | Overall Height Above Ground (AGL)             |
| 420.6                                  | 143.9   |
| Overall Height Above Mean Sea Level    | Overall Height Above Ground w/o Appurtenances |
| 564.5                                  | 143.9   |

Painting and Lighting Specifications

FAA Chapters 3, 4, 5, 9  
Paint and Light in Accordance with FAA Circular Number 70/7460-1G  
.

Owner & Contact Information

|                              |                  |
|------------------------------|------------------|
| FRN                          | Licensee ID      |
| Owner                        |                  |
| MID STATE TELEVISION INC     | P: (419)529-5900 |
| Attention To: GUNTHER MEISSE | E:               |
| 2900 PARK AVE W              |                  |
| MANSFIELD , OH 44906         |                  |
| Contact                      |                  |
|                              | P:               |
|                              | E:               |
| .                            |                  |

Last Action Status

|         |                  |          |            |
|---------|------------------|----------|------------|
| Status  | Constructed      | Received | 02/06/1997 |
| Purpose | New              | Entered  | 02/07/1997 |
| Mode    | Mail In (Manual) |          |            |

Related Applications

|            |                     |
|------------|---------------------|
| 02/06/1997 | A0015853 - New (NE) |
| .          |                     |

Comments

Comments

None

Automated Letters

None

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