Charles M. Anderson Associates

Broadcast Consultants
1519 Euclid Avenue
Bowling Green, KY 42103

Telephone 270-782-0246
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# TECHNICAL REPORT
# MINOR MODIFICATION TO
# W298BB

This technical report has been developed in support of a minor modification an existing translator construction permit W298BB at Zionsville, IN, FCC file no. BNPFT-20030829BCU. The application proposes to modify the directional antenna for the FM fill-in translator at its existing tower site, ASR#1028898, in order to rebroadcast the primary broadcast signal for WSHW 259B at Frankfort, IN.

The data for all terrain utilized in this report and application exhibits were obtained from the V-Soft Probe 3 computer program, which utilizes the V-Soft 30 second terrain database. The proposed service (50,50) contours were calculated utilizing the same program, which is based on the Commission's own F5050 program and data points, and produces contours congruent with Section 73.333 propagation curves.

Allocation exhibits are provided as required by FCC form 349 are as follows:

E-1 Channel Overlap Study
E-2 54 dBu contours
E-3 Interference analysis
E-4 HAAT tabulation
E-5 Antenna elevation plot and tabulation
E-5A Horizontal DA Pattern
E-6 Topographic map and aerial photograph of proposed site and interference contour
E-7 W298BB ASR

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**WNTR Interference Calculation:**

The W298BB facility is well inside the WNTR 300B 54 dBu contour. Therefore, the interference ratio is utilized to determine the actual W2989BB interference contour in accordance with FCC-02-244 paragraph 12. Exhibit E-3 shows that WNTR places a 93.3 dBu contour at the W298BB site. Adding the 40 dBu 2nd adjacent channel interference ratio yields an interfering contour of 133.3 dBu. Since this results in a contour very close to the tower, the use of the vertical elevation pattern shown in exhibit E-5 of the proposed two bay, 0.75 wavelength spaced PSI FML-2 antenna, was utilized to determine the actual interfering contour. As demonstrated in the calculations included below, the vertical pattern for -24 degrees to -90 degrees produces a maximum ERP of 0.064 kW. The 133.3 dBu calculated from this reduced vertical ERP is 0.0124 km. Exhibit E-3 shows that this contour does not encompass any buildings, roads, or population, and therefore does not cause any potential interference to potential listeners, as shown in exhibit E-6. In fact, when the line of sight distance and vertical angles are taken into cosideration, the interfering contour does not actually reach the ground. A waiver of section 74.1204 is requested in accordance with well- established Commission precedent.

| **Interfering Contour** | **Distance to Interfering Contour** | **Vertical Depression Angle** | **Maximum Vertical Factor (F) below 57 Degrees** | **$F^2$ x ERP -KW** | **Distance to 133.3 dBu** |
|---|---|---|---|---|---|
| **133.3 dBu** | **0.03985 km** | **24.6 Deg** | **0.5058** | **0.064kW** | **0.0124 km** |

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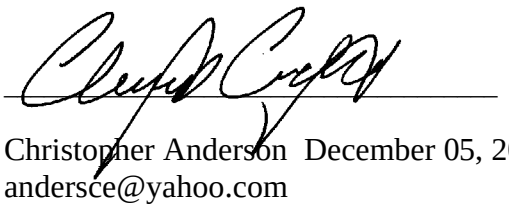
**RF Exposure Calculation:**

The RF exposure from the 0.250 kW facility was evaluated using the Commission's FMMODEL program for the two bay 0.75 wavelength spaced PSI FML-2. It was determined that the RF level at two meters above ground will be 9.58 µWatts/$cm^2$ at 25.0 meters from the tower, which is less than the 5% of the 200 µWatts/$cm^2$ permissible for general public exposure and may excluded from consideration.

**Conclusion:**

It is concluded that the minor modification of the W298BB CP complies with all Commission policies and rules.



Christopher Anderson December 05, 2006
andersce@yahoo.com

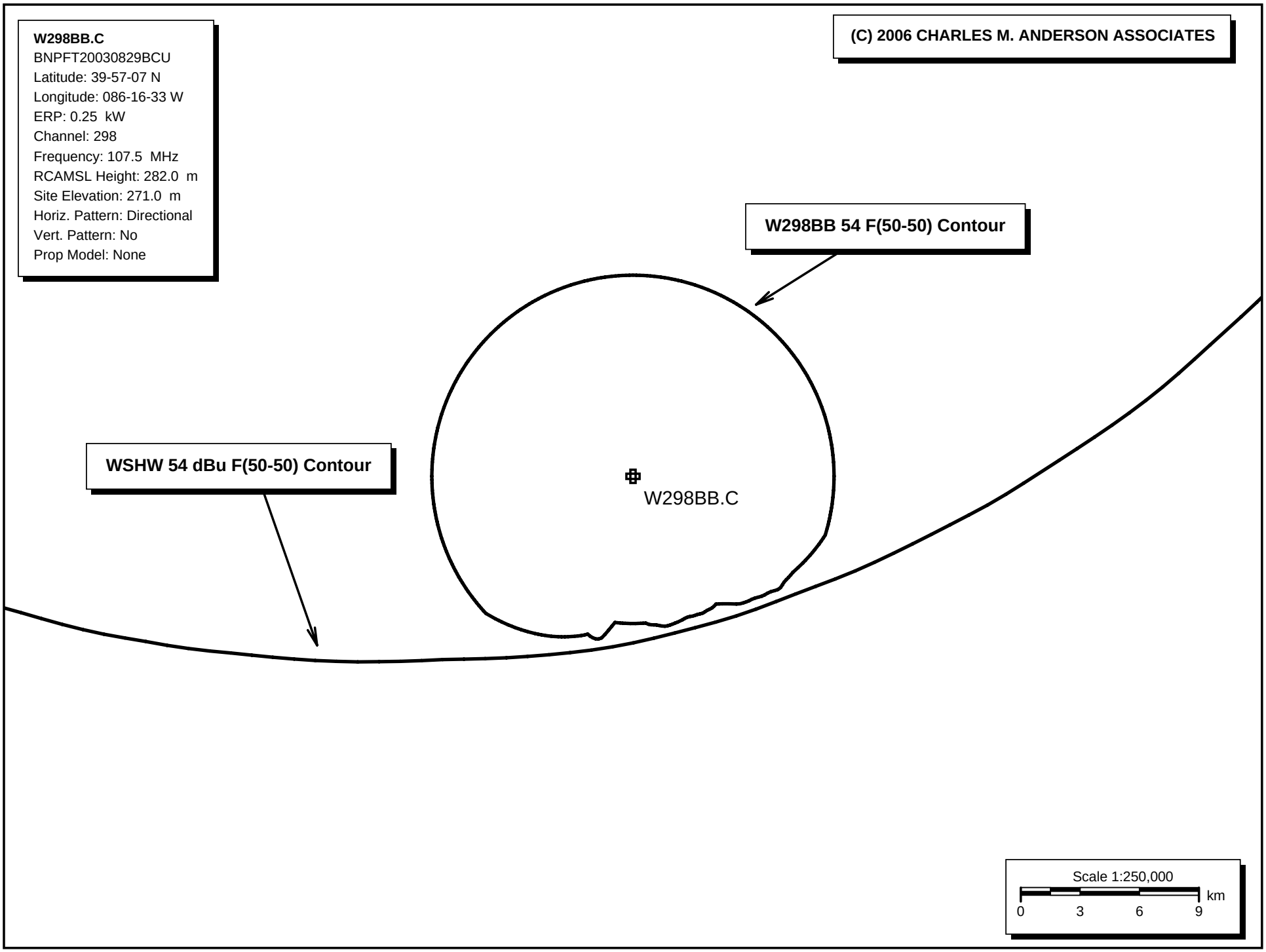
# E-1 W298BB Overlap Study

REFERENCE CH# 298D - 107.5 MHz, Pwr= 0.25 kW, HAAT=13.0M, COR= 281.9 M DISPLAY DATES
39 57 07.0 N. Average Protected F(50-50)= 7.1 km DATA 12-01-06
86 16 33.0 W. SEARCH 12-04-06

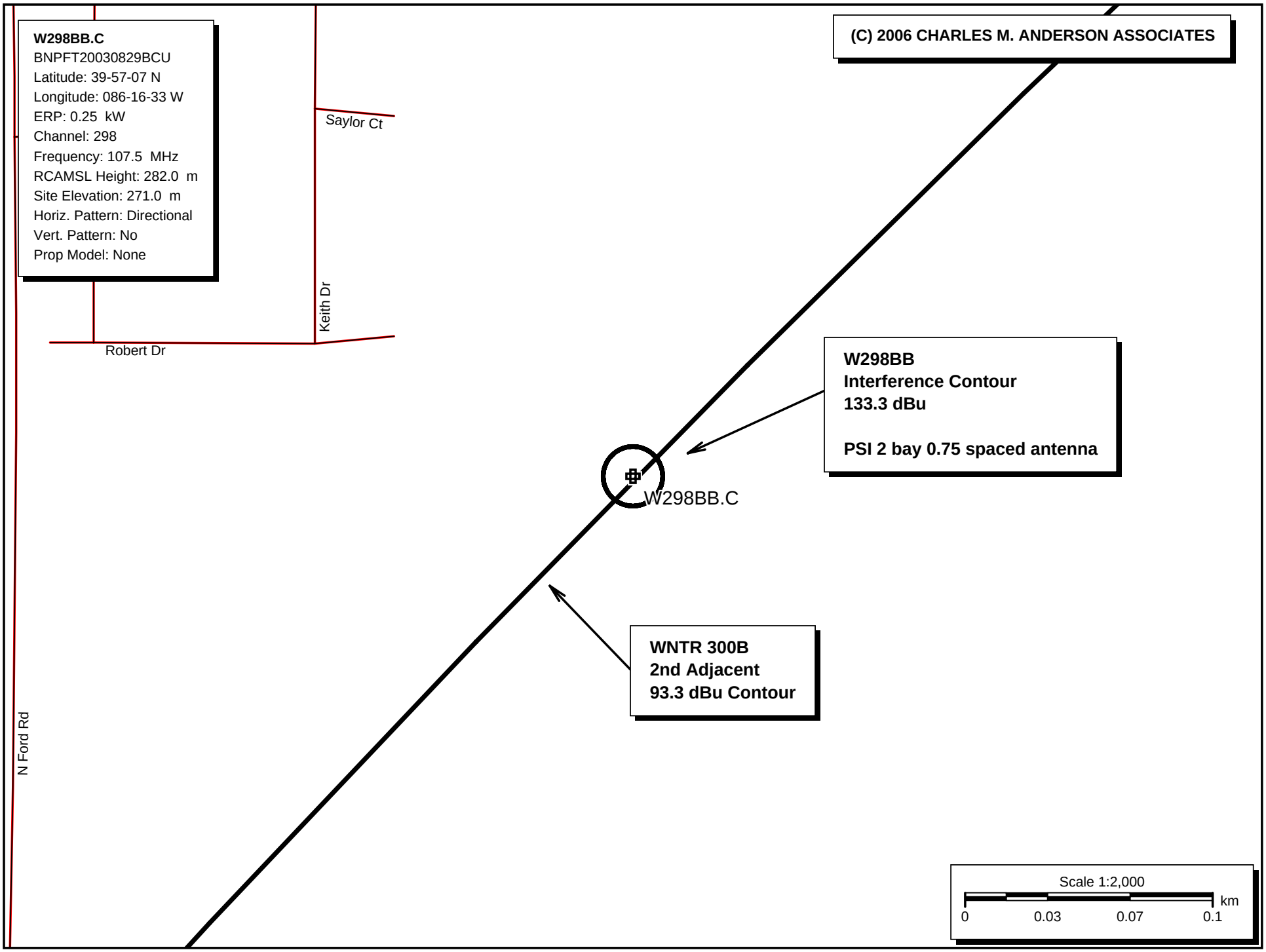
| CH CALL TYPE AZI. DIST LAT. Pwr(kW) INT(km) PRO(km) *IN* *OUT* | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CITY STATE <-- FILE # LNG. HAAT(M) COR(M) LICENSEE (Overlap in km) | | | | | | | | | | | |
| 298D | W298BB | CP | DC | 0.0 | 0.00 | 39 57 07.0 | 0.218 | 22.9 | 6.8 | -30.01* | -30.61* |
| Zionsville | | | IN | 0.0 | BNPFT20030829BCU | 86 16 33.0 | 13 | 282 | Kaspar Broadcasting Co, In | | |
| 300B | WNTR | LIC | CN | 134.7 | 8.97 | 39 53 43.0 | 22.000 | 5.6 | 64.1 | -2.39 | -56.51* |
| Indianapolis | | | IN | 314.7 | BLH19841009CB | 86 12 04.0 | 217 | 489 | Entercom Indianapolis Lice | | |
| 298B | AP8277 | APP | CX | 246.9 | 112.08 | 39 33 01.0 | 50.000 | 138.8 | 66.1 | -33.78 | 10.42 |
| Terre Haute | | | IN | 66.1 | BIPH20010724ACY | 87 28 32.0 | 158 | 316 | Word Power, Inc. | | |
| 298B | AP6275 | APP | CX | 246.9 | 112.08 | 39 33 01.0 | 50.000 | 138.8 | 66.1 | -33.78 | 10.42 |
| Terre Haute | | | IN | 66.1 | BIPH20010724ACY | 87 28 32.0 | 158 | 316 | Word Power Inc | | |
| 298B | AP8786 | APP | CX | 241.6 | 120.21 | 39 25 55.0 | 50.000 | 136.5 | 63.8 | -23.41 | 20.77 |
| Terre Haute | | | IN | 60.8 | BIPH20010724ACP | 87 30 18.0 | 141 | 291 | Missouri Indiana Broadcast | | |
| 298B | DWZZQ | VAC | N | 243.9 | 111.80 | 39 30 14.0 | 50.000 | 115.0 | 36.1 | -10.32 | 40.09 |
| Terre Haute | | | IN | 63.1 | | 87 26 37.0 | -159 | 0 | | | |
| 296A | WEDJ | LIC | CN | 236.7 | 30.43 | 39 48 06.0 | 1.800 | 2.3 | 27.6 | 21.02 | 1.73 |
| Danville | | | IN | 56.6 | BMLH19990607KB | 86 34 24.0 | 175 | 462 | Continental Broadcast Grou | | |
| 295B | WXXC | LIC | CN | 36.0 | 89.01 | 40 35 52.0 | 50.000 | 6.0 | 65.5 | 75.89 | 21.89 |
| Marion | | | IN | 216.4 | BLH19830418AS | 85 39 21.0 | 153 | 408 | Mid-america Radio Of India | | |
| 296D | AP5986 | APP | C | 108.0 | 28.70 | 39 52 19.0 | 0.010 | 0.2 | 3.7 | 22.06 | 24.10 |
| Oaklandon | | | IN | 288.2 | BNPFT20030312AZT | 85 57 24.0 | 41 | 283 | Indiana Community Radio Co | | |
| 297D | W297AU | CP | C | 52.6 | 36.24 | 40 08 57.0 | 0.010 | 4.4 | 3.2 | 24.71 | 22.94 |
| Arcadia | | | IN | 232.8 | BNPFT20030707AAI | 85 56 15.0 | 18 | 265 | Indiana Community Radio Co | | |
| 297B1 | WRZQ-FM | LIC | NCN | 150.5 | 92.51 | 39 13 35.0 | 10.500 | 58.3 | 45.0 | 28.54 | 37.81 |
| Greensburg | | | IN | 330.8 | BLH19971030KB | 85 44 47.0 | 154 | 367 | Reising Radio Partners Inc | | |
| 244D | W244BZ | CP | C | 149.1 | 32.82 | 39 41 54.0 | 26.500 | 70.5 | 59.9 | 3.0R | 29.8M |
| University Heights | | | IN | 329.3 | BNPFT20030829ASU | 86 04 44.0 | 157 | 289 | Friends Of Christian Radio | | |
| 296D | AP9125 | APP | C | 330.1 | 43.21 | 40 17 19.0 | 0.250 | 1.1 | 7.1 | 35.01 | 35.01 |
| Frankfort | | | IN | 149.9 | BNPFT20030317GZD | 86 31 48.0 | 25 | 294 | Kaspar Broadcasting Co, In | | |
| 296D | AP5955 | APP | C | 127.7 | 41.80 | 39 43 18.0 | 0.010 | 0.2 | 3.3 | 35.65 | 37.80 |
| New Palestine | | | IN | 307.9 | BNPFT20030312AYV | 85 53 22.0 | 32 | 284 | Indiana Community Radio Co | | |
| 296D | AP1388 | APP | C | 113.9 | 48.99 | 39 46 21.0 | 0.170 | 0.9 | 7.6 | 41.89 | 40.52 |
| Greenfield | | | IN | 294.2 | BNPFT20030317KXI | 85 45 10.0 | 43 | 296 | Radio 74 Internationale | | |
| 244A | WHTI | LIC | C | 63.8 | 57.19 | 40 10 38.0 | 26.500 | 70.5 | 59.9 | 10.0R | 47.2M |
| Alexandria | | | IN | 244.2 | BLH19980921KB | 85 40 23.0 | 157 | 371 | Backyard Broadcasting Indi | | |
| 298L1 | WHHC-LP | LIC | | 92.2 | 77.52 | 39 55 20.0 | 0.100 | 20.6 | 6.2 | 49.94 | 47.86 |
| New Castle | | | IN | 272.7 | BLL20030423ABS | 85 22 11.0 | 37 | 344 | New Castle Broadcasting Se | | |
| 295D | AP3475 | APP | C | 192.3 | 57.57 | 39 26 43.0 | 0.010 | 0.2 | 4.6 | 50.57 | 52.10 |
| Martinsville | | | IN | 12.2 | BNPFT20030310AXL | 86 25 06.0 | 61 | 279 | Indiana Community Radio Co | | |
| 295D | AP3175 | APP | C | 196.0 | 59.31 | 39 26 18.0 | 0.070 | 0.6 | 7.4 | 52.16 | 50.98 |
| Martinsville | | | IN | 15.8 | BNPFT20030317EAR | 86 27 58.0 | 62 | 296 | Mid-america Radio Group, I | | |
| 296D | AP4567 | APP | C | 109.8 | 65.61 | 39 45 01.0 | 0.050 | 0.5 | 7.6 | 58.76 | 57.07 |
| Carthage | | | IN | 290.3 | BNPFT20030311APK | 85 33 19.0 | 79 | 354 | Indiana Community Radio Co | | |
| 299A | WMRS | LIC | ZCN | 336.1 | 87.24 | 40 40 08.0 | 0.154 | 22.5 | 14.9 | 57.61 | 62.15 |
| Monticello | | | IN | 155.8 | BLH19950804KB | 86 41 44.0 | 169 | 354 | Monticello Community Radio | | |
| 296D | AP7587 | APP | C | 109.8 | 65.61 | 39 45 01.0 | 0.050 | 0.5 | 6.6 | 58.76 | 58.08 |
| Carthage | | | IN | 290.3 | BNPFT20030310AHT | 85 33 19.0 | 59 | 334 | Indiana Community Radio Co | | |
| 296D | AP3945 | APP | C | 105.5 | 67.65 | 39 47 13.0 | 0.250 | 1.1 | 7.1 | 60.03 | 59.62 |
| Knightstown | | | IN | 286.0 | BNPFT20030317KYH | 85 30 53.0 | 19 | 309 | Radio 74 Internationale | | |
| 245D | AP8996 | APP | C | 314.4 | 69.87 | 40 23 24.0 | 26.500 | 70.5 | 59.9 | 3.0R | 66.9M |
| Lafayette | | | IN | 134.0 | BNPFT20030317GUL | 86 51 53.0 | 157 | 276 | Kaspar Broadcasting Co, In | | |

Terrain database is NGDC 30 SEC
ERP and HAAT on direct-line with reference station.
"*"affixed to 'IN' or 'Out' values = site inside protected contour.

E-2 W298BB 54 dBu Plot



E-3 W298BB Interference Plot



**E-4 W298BB HAAT Calculation**

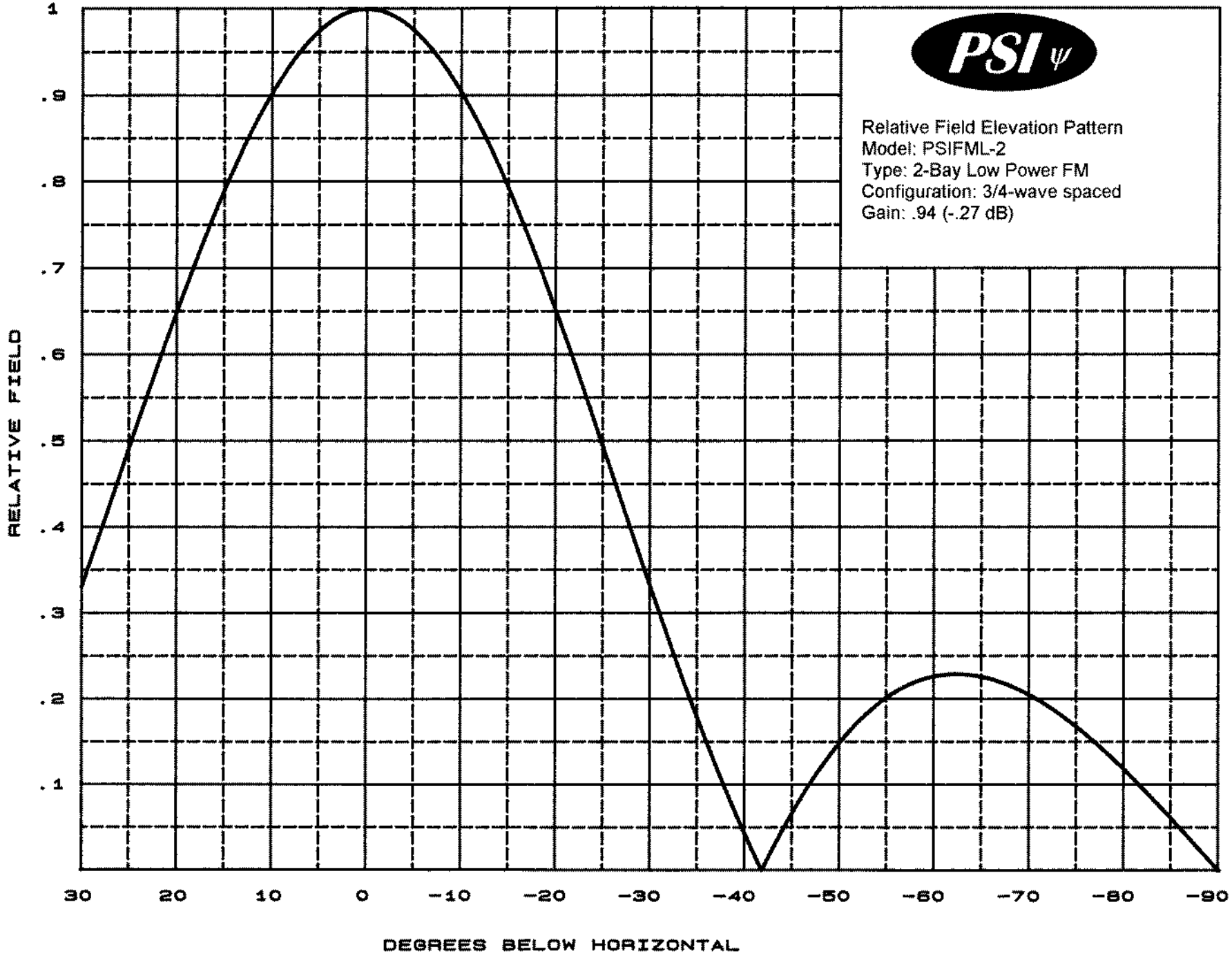
**N. Lat. = 39 57 07  W. Lng. = 86 16 33**
**HAAT and Distance to Contour - FCC Method - NGDC 30 SEC**

**W298BB, Kaspar Broadcasting Co, Inc , BNPFT20030829BCU**

| Azi. | AV EL | HAAT | ERP kW | dBk | Field | 54-F5 |
|---|---|---|---|---|---|---|
| 000 | 268.7 | 13.3 | 0.2500 | -6.02 | 1.000 | 10.15 |
| 030 | 273.1 | 8.9 | 0.2500 | -6.02 | 1.000 | 10.15 |
| 060 | 272.7 | 9.3 | 0.2500 | -6.02 | 1.000 | 10.15 |
| 090 | 261.3 | 20.7 | 0.2500 | -6.02 | 1.000 | 10.15 |
| 120 | 252.2 | 29.8 | 0.1225 | -9.12 | 0.700 | 8.45 |
| 150 | 249.2 | 32.8 | 0.0900 | -10.46 | 0.600 | 8.11 |
| 180 | 253.5 | 28.5 | 0.1225 | -9.12 | 0.700 | 8.45 |
| 210 | 266.9 | 15.1 | 0.2500 | -6.02 | 1.000 | 10.15 |
| 240 | 278.7 | 3.3 | 0.2500 | -6.02 | 1.000 | 10.15 |
| 270 | 285.3 | -3.3 | 0.2500 | -6.02 | 1.000 | 10.15 |
| 300 | 285.8 | -3.8 | 0.2500 | -6.02 | 1.000 | 10.15 |
| 330 | 279.1 | 2.9 | 0.2500 | -6.02 | 1.000 | 10.15 |

**Ave El= 268.87 M  HAAT= 13.13 M  AMSL= 282 M**

E-5 W298BB Antenna Pattern



**Propagation Systems Inc.**

Elevation Pattern Tabulation

Antenna: PSIFML-2 Special

Bay spacing: 3/4 wave

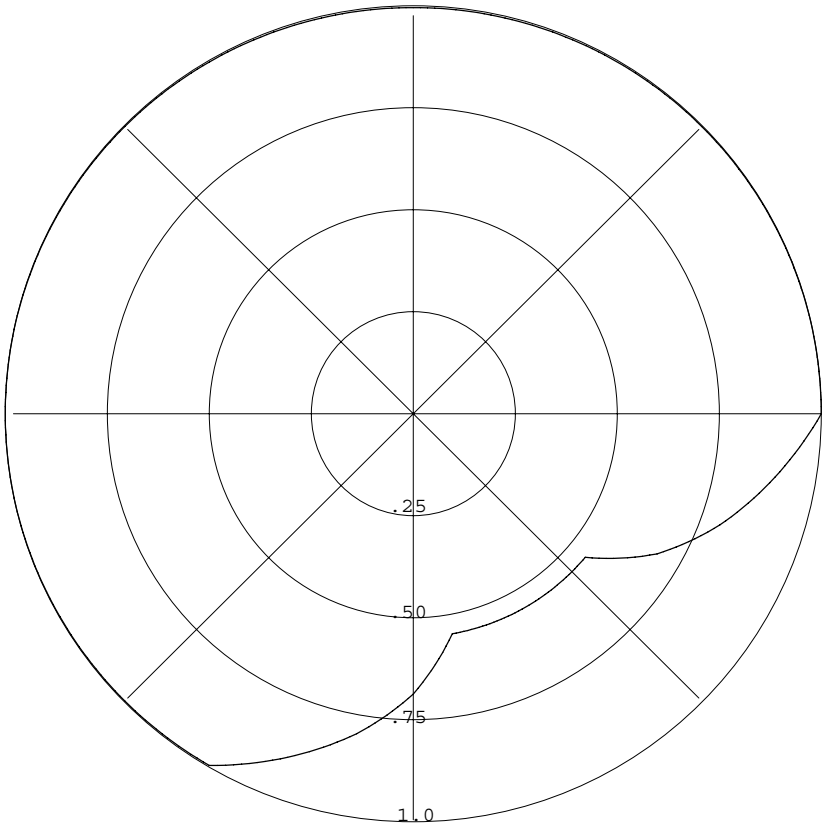
| Angle | Field | dB | Angle | Field | dB | Angle | Field | dB |
|---|---|---|---|---|---|---|---|---|
| -90.00 | 0.001 | -60.000 | -50.00 | 0.149 | -16.513 | -10.00 | 0.903 | -0.883 |
| -89.00 | 0.012 | -38.221 | -49.00 | 0.135 | -17.364 | -9.00 | 0.921 | -0.713 |
| -88.00 | 0.025 | -32.201 | -48.00 | 0.120 | -18.405 | -8.00 | 0.937 | -0.561 |
| -87.00 | 0.037 | -28.679 | -47.00 | 0.104 | -19.677 | -7.00 | 0.952 | -0.429 |
| -86.00 | 0.049 | -26.207 | -46.00 | 0.086 | -21.289 | -6.00 | 0.964 | -0.315 |
| -85.00 | 0.061 | -24.285 | -45.00 | 0.068 | -23.404 | -5.00 | 0.975 | -0.219 |
| -84.00 | 0.073 | -22.748 | -44.00 | 0.048 | -26.425 | -4.00 | 0.984 | -0.139 |
| -83.00 | 0.085 | -21.443 | -43.00 | 0.027 | -31.481 | -3.00 | 0.991 | -0.079 |
| -82.00 | 0.096 | -20.349 | -42.00 | 0.005 | -46.848 | -2.00 | 0.996 | -0.036 |
| -81.00 | 0.107 | -19.378 | -41.00 | 0.018 | -34.664 | -1.00 | 0.999 | -0.009 |
| -80.00 | 0.118 | -18.538 | -40.00 | 0.043 | -27.417 | 0.00 | 1.000 | 0.000 |
| -79.00 | 0.129 | -17.792 | -39.00 | 0.068 | -23.365 | 1.00 | 0.999 | -0.009 |
| -78.00 | 0.139 | -17.125 | -38.00 | 0.094 | -20.529 | 2.00 | 0.996 | -0.036 |
| -77.00 | 0.149 | -16.522 | -37.00 | 0.121 | -18.329 | 3.00 | 0.991 | -0.079 |
| -76.00 | 0.159 | -15.984 | -36.00 | 0.149 | -16.531 | 4.00 | 0.984 | -0.139 |
| -75.00 | 0.168 | -15.508 | -35.00 | 0.178 | -14.998 | 5.00 | 0.975 | -0.219 |
| -74.00 | 0.176 | -15.072 | -34.00 | 0.207 | -13.669 | 6.00 | 0.964 | -0.315 |
| -73.00 | 0.184 | -14.685 | -33.00 | 0.237 | -12.489 | 7.00 | 0.952 | -0.429 |
| -72.00 | 0.192 | -14.335 | -32.00 | 0.268 | -11.431 | 8.00 | 0.937 | -0.561 |
| -71.00 | 0.199 | -14.026 | -31.00 | 0.299 | -10.475 | 9.00 | 0.921 | -0.713 |
| -70.00 | 0.205 | -13.752 | -30.00 | 0.331 | -9.602 | 10.00 | 0.903 | -0.882 |
| -69.00 | 0.211 | -13.518 | -29.00 | 0.363 | -8.801 | 11.00 | 0.884 | -1.072 |
| -68.00 | 0.216 | -13.315 | -28.00 | 0.395 | -8.061 | 12.00 | 0.863 | -1.279 |
| -67.00 | 0.220 | -13.146 | -27.00 | 0.428 | -7.377 | 13.00 | 0.841 | -1.508 |
| -66.00 | 0.224 | -13.009 | -26.00 | 0.460 | -6.742 | 14.00 | 0.817 | -1.757 |
| -65.00 | 0.226 | -12.904 | -25.00 | 0.493 | -6.151 | 15.00 | 0.792 | -2.029 |
| -64.00 | 0.228 | -12.834 | -24.00 | 0.525 | -5.599 | 16.00 | 0.765 | -2.322 |
| -63.00 | 0.229 | -12.800 | -23.00 | 0.557 | -5.083 | 17.00 | 0.738 | -2.639 |
| -62.00 | 0.229 | -12.794 | -22.00 | 0.589 | -4.603 | 18.00 | 0.710 | -2.979 |
| -61.00 | 0.228 | -12.829 | -21.00 | 0.620 | -4.154 | 19.00 | 0.680 | -3.344 |
| -60.00 | 0.227 | -12.898 | -20.00 | 0.650 | -3.736 | 20.00 | 0.650 | -3.736 |
| -59.00 | 0.224 | -13.009 | -19.00 | 0.680 | -3.344 | 21.00 | 0.620 | -4.154 |
| -58.00 | 0.220 | -13.158 | -18.00 | 0.710 | -2.979 | 22.00 | 0.589 | -4.603 |
| -57.00 | 0.215 | -13.351 | -17.00 | 0.738 | -2.639 | 23.00 | 0.557 | -5.083 |
| -56.00 | 0.209 | -13.600 | -16.00 | 0.765 | -2.323 | 24.00 | 0.525 | -5.599 |
| -55.00 | 0.202 | -13.894 | -15.00 | 0.792 | -2.029 | 25.00 | 0.493 | -6.151 |
| -54.00 | 0.194 | -14.260 | -14.00 | 0.817 | -1.759 | 26.00 | 0.460 | -6.742 |
| -53.00 | 0.184 | -14.685 | -13.00 | 0.840 | -1.510 | 27.00 | 0.428 | -7.377 |
| -52.00 | 0.174 | -15.192 | -12.00 | 0.863 | -1.281 | 28.00 | 0.395 | -8.061 |
| -51.00 | 0.162 | -15.795 | -11.00 | 0.884 | -1.072 | 29.00 | 0.363 | -8.801 |
| | | | | | | 30.00 | 0.331 | -9.602 |

file: FM elevation tabulation

**E-5A W298BB DA Pattern 12-05-2006** RMS(V)= .918

| Bearing | Field % Voltage |
|---|---|
| 000 | = 1 |
| 010 | = 1 |
| 020 | = 1 |
| 030 | = 1 |
| 040 | = 1 |
| 050 | = 1 |
| 060 | = 1 |
| 070 | = 1 |
| 080 | = 1 |
| 090 | = 1 |
| 100 | = .9 |
| 110 | = .8 |
| 120 | = .69 |
| 130 | = .55 |
| 140 | = .55 |
| 150 | = .55 |
| 160 | = .55 |
| 170 | = .55 |
| 180 | = .69 |
| 190 | = .8 |
| 200 | = .9 |
| 210 | = 1 |
| 220 | = 1 |
| 230 | = 1 |
| 240 | = 1 |
| 250 | = 1 |
| 260 | = 1 |
| 270 | = 1 |
| 280 | = 1 |
| 290 | = 1 |
| 300 | = 1 |
| 310 | = 1 |
| 320 | = 1 |
| 330 | = 1 |
| 340 | = 1 |
| 350 | = 1 |

Graph is Percent Relative Field Voltage



E-6 W298BB Arial Photo


0 0.07 0.14 0.21 0.28 0.35 km

0 0.04 0.08 0.12 0.16 0.2 mi

39° 57' 07"N, 86° 16' 33"W (NAD27)

**USGS Zionsville (IN) Quadrangle**

Projection is UTM Zone 16 NAD83 Datum

M=-3.836

G=0.465

ASR Registration Search

# Registration 1028898

Reference Copy  Map Registration

### Registration Detail

| | | | |
|---|---|---|---|
| Reg Number | 1028898 | Status | Constructed |
| File Number | A0289615 | Constructed | 12/06/1989 |
| FAA Study | 92-AGL-2270-OE | EMI | No |
| FAA Issue Date | 02/08/1993 | NEPA | No |

### Antenna Structure

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

**Location** (in NAD83 Coordinates)

| | | |
|---|---|---|
| Lat/Long | 39-57-07.0 N 086-16-33.0 W | 1238 W OAK ST |
| City, State | ZIONSVILLE , IN | |

Center of AM Array

**Heights (meters)**

| Elevation of Site Above Mean Sea Level | Overall Height Above Ground (AGL) |
|---|---|
| 271.2 | 60.6 |
| **Overall Height Above Mean Sea Level** | **Overall Height Above Ground w/o Appurtenances** |
| 331.8 | 56.3 |

**Painting and Lighting Specifications**

None

### Owner & Contact Information

FRN 0005793682 Licensee ID L00220201

**Owner**

CROWN CASTLE GT COMPANY LLC
Attention To: REGULATORY DEPARTMENT
2000 Corporate Drive
Canonsburg , PA 15317

P: (724)416-2000
E: Monica.Gambino@Crowncastle.com

**Contact**

Gambino , Monica G
2000 Corporate Drive
Canonsburg , PA 15317

P: (724)416-2516
E: Monica.Gambino@Crowncastle.com

### Last Action Status

| | | | |
|---|---|---|---|
| Status | Constructed | Received | 11/10/2002 |
| Purpose | Admin Update | Entered | 11/10/2002 |
| Mode | Interactive | | |

### Related Applications

| | |
|---|---|
| 11/10/2002 | A0289615 - Admin Update (AU) |
| 11/28/2001 | A0228030 - Admin Update (AU) |
| 07/05/2000 | A0130777 - Change Owner (OC) |
| | Related applications (5) |

### Comments

**Comments**

09/15/1997 NOTE: THE FAA/FCC EMI CONDITIONAL STATEMENT MUST BE PLACED ON THE CP/LICENSE.

### Automated Letters

11/13/2002 Authorization, Reference 245097