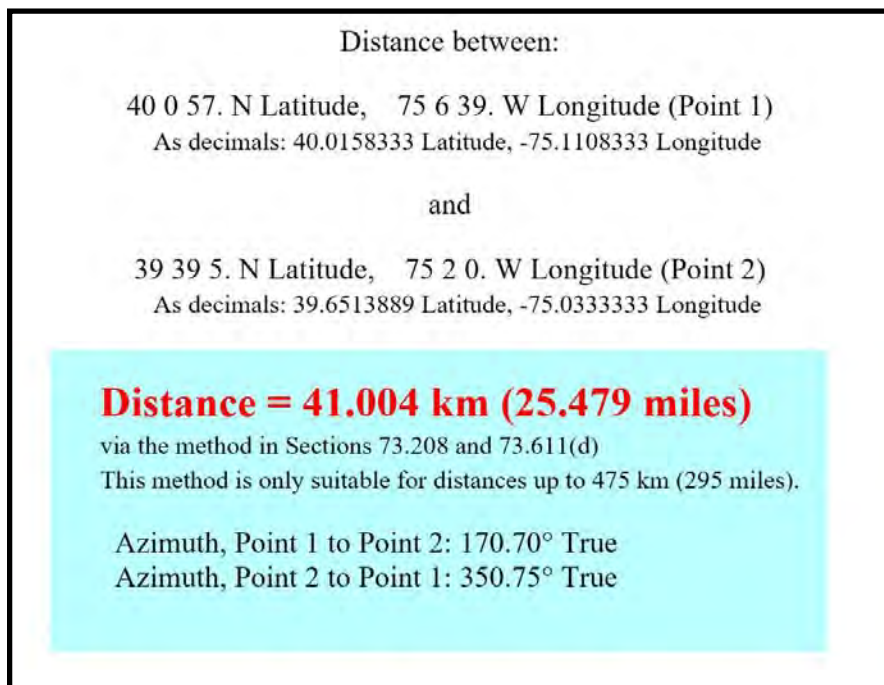


**W221DS (#151789)
MINOR MODIFICATION OF CP
TO NON-ADJACENT FREQUENCY
PER AM REVITALIZATION 2ND REPORT AND ORDER
MB DOCKET NO. 13-249, FOOTNOTE 22**

W221DS as modified to channel 260 (99.9 mHz) will continue to rebroadcast class C AM facility WHAT (facility ID # 33686) at Philadelphia, PA. This CP was a 250 mile window grant and the modification continues to be located only 25.5 miles from the original W273CM CP location.



Allocation discussion:

All exhibits utilize the USGS 3 second terrain database.

- E1 Channel study
- E1A Interference plot to WODE
- E1B Interference analysis to WRNB
- E1B Interference analysis to WJBR-FM
- E1C Aerial photograph and street views of site
- E1D DA and vertical elevation pattern
- E2 60 dBu and 2 mV/m contours
- E3 ASR

A channel study is included as E1 demonstrating compliance with §74.1204 with the exception of 2nd adjacent stations WRNB and WJBR-FM. A plot of the proposed 60 dBu contour is provided as E2 showing that it is entirely contained within primary station WHAT(AM)'s 2 mV/m and 40 km radius and that it overlaps the CP's 60 dBu.

WRNB analysis (E1B):

The proposed facility will be located inside the protected contours of 2nd adjacent channel WRNB on 262B. Interference analyses have been conducted based on the U/D ratio of +40 dB at the proposed site and are included as E1B. WRNB places an 82.26 (50:50) dBu at the site resulting in an interference contour of 122.26 dBu (50:10) which clears the ground by at least 50.9 meters.

WJBR-FM analysis:

The proposed facility will be located inside the protected contours of 2nd adjacent channel WJBR on 258B. Interference analyses have been conducted based on the U/D ratio of +40 dB at the proposed site and are included as E1C. WJBR-FM places a 66.3 (50:50) dBu at the site resulting in an interference contour of 106.3 dBu (50:10) which clears the ground by at least 12.9 meters. The buildings within the interference contour are only two stories or six meters maximum (see E1C).

It is clear from E1B, E1C and E1D that the interference contours will not reach any occupied/populated area or any major highways. Based on this showing, a waiver of Section 74.1204 is requested in accordance with *Living Way Ministries, Inc.* (FCC 08-242).

RF Exposure Calculation:

The proposed facility will utilize a six bay 0.75 wavelength spaced PSI FML circularly polarized antenna. The RF contribution of the proposed translator was calculated using the formula included below and a worst case F factor of 1.0 to be 5.3 μ Watts/cm² or 2.7 % of the maximum permissible 200 microwatts/cm² exposure for general population/uncontrolled

exposure, and well below the 5% of that limit which requires consideration.

$$S \text{ (RF in } \mu\text{Watts/cm}^2\text{)} = \frac{33.4 (F^2 \text{ Vertical Factor}) X (H \text{ ERP} + V \text{ ERP in Watts})}{R^2 \text{ (distance to radiation center in meters} - 2 \text{ m)}}$$

Charles M. Anderson April 7, 2017

E1 CHANNEL STUDY

| | | | | | | | | | | | |
|---------------|---------|---|-----|-------|----------------|------------|---------|---------|----------------------------|-----------------|--------|
| REFERENCE | | CH# 260D - 99.9 MHz, Pwr= 0.25 kW DA, HAAT= 45.7 M, COR= 81 M | | | | | | | | DISPLAY DATES | |
| 40 00 57.0 N. | | Average Protected F(50-50)= 8.81 km | | | | | | | | DATA 04-06-17 | |
| 75 06 39.0 W. | | Standard Directional | | | | | | | | SEARCH 04-06-17 | |
| CH | CALL | TYPE | ANT | AZI | DIST | LAT | PWR(kw) | INT(km) | PRO(km) | *IN* | *OUT* |
| CITY | | STATE | | <-- | FILE # | LNG | HAAT(M) | COR(M) | LICENSEE | (Overlap | in km) |
| 260B | WODE-FM | LIC _CN | | 353.4 | 77.51 | 40 42 30.0 | 50.000 | 141.9 | 67.8 | -67.0* | 0.5 |
| Easton | | PA | | 173.3 | BMLH19960709KC | 75 13 00.0 | 137 | 268 | Connoisseur Media Licenses | | |
| 262B | WRNB | LIC ZCX | | 285.3 | 11.61 | 40 02 36.0 | 17.000 | 3.1 | 51.4 | 5.7 | -40.1* |
| Media | | PA | | 105.2 | BLH20030424ABN | 75 14 33.0 | 263 | 329 | Radio One Licenses, Llc | | |

See E1B and E1D for disproval of interference per *Living Way*.

| | | | | | | | | | | |
|--------------------|---------|---------------|---------------|--------------------------|--------------------------|---------------|------------|----------------------------------|------|--------|
| 258B Wilmington | WJBR-FM | LIC _CX DE | 240.3 60.0 | 40.63 BMLH20080516AAX | 39 50 02.0 75 31 27.0 | 50.000 152 | 6.1 221 | 66.2 Beasley Media Group, Llc | 25.1 | -25.9* |
|--------------------|---------|---------------|---------------|--------------------------|--------------------------|---------------|------------|----------------------------------|------|--------|

See E1C and E1D for disproval of interference per *Living Way*.

| | | | | | | | | | | |
|-------------------------|--------|---------------|----------------|--------------------------|--------------------------|-------------|-------------|------------------------------------|-------|-------|
| 260D Havertown | WHHS | LIC _CX PA | 257.5 77.4 | 16.74 BLED20051007ABO | 39 58 59.0 75 18 10.0 | 0.010 49 | 18.1 113 | 4.7 School District Of Haverfo | -6.8* | 1.2 |
| 206A Villanova | WXVU | LIC DVN PA | 275.6 95.5 | 19.44 BLED19970211KA | 40 01 58.0 75 20 15.0 | 0.100 85 | 27.3 162 | 8.2 Villanova University | 9.5R | 9.9M |
| 207A Warminster | WRDV | LIC DEX PA | 0.8 180.8 | 21.03 BLED20131105AAM | 40 12 19.0 75 06 27.0 | 1.600 36 | 27.3 116 | 8.2 Bux-mont Educational Radio | 9.5R | 11.5M |
| 260D Bridgeton | W260BW | LIC _C_ NJ | 187.3 7.2 | 62.45 BLFT20160629AAZ | 39 27 31.0 75 12 12.0 | 0.080 | 39.1 173 | 11.6 Quinn Communications And M | 11.9 | 11.7 |
| 206A Radnor Township | WYBF | LIC DVN PA | 281.3 101.2 | 22.98 BLED19910422KC | 40 03 22.0 75 22 30.0 | 0.700 68 | 27.3 151 | 8.2 Cabrinini College | 9.5R | 13.5M |

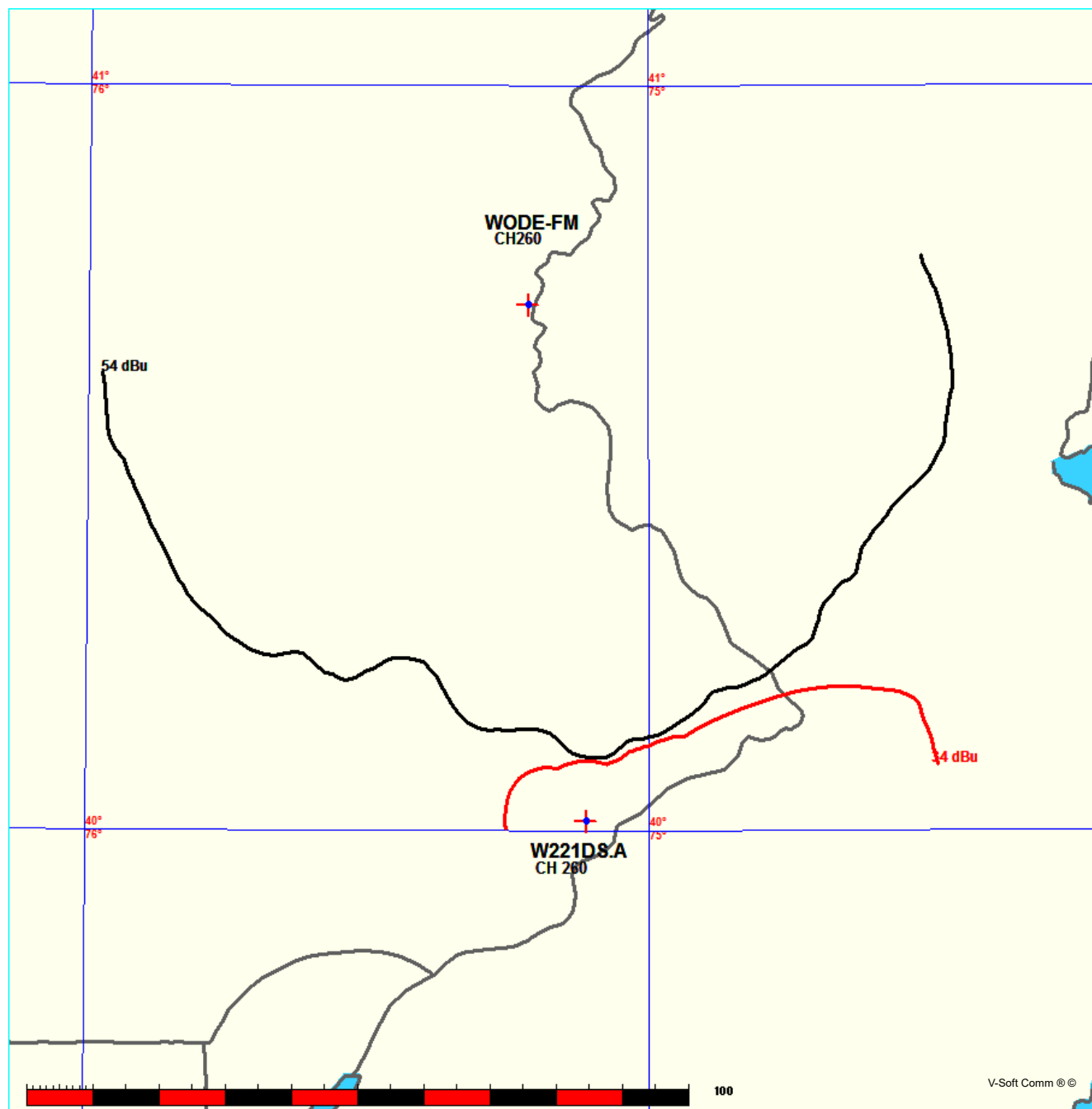
Terrain database is USGS 03 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
In & Out distances between contours are shown at closest points. Reference zone= East Zone, Co to 3rd adjacent.
All separation margins (if shown) include rounding.
Ant Column: (D= DA Standard, 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 restricted contour.

E1A WODE INTERFERENCE PLOT

FMCommander Single Allocation Study - 04-06-2017 - USGS 03 SEC
W221DS.A's Overlaps (In= -67.02 km, Out= 0.53 km)

W221DS.A CH 260 D DA
Lat= 40 00 57.0, Lng= 75 06 39.0
0.25 kW 45.7 m HAAT, 81 m COR
Prot.= 60 dBu, Intef.= 34 dBu

WODE-FM CH 260 B BMLH19960709KC
Lat= 40 42 30.0, Lng= 75 13 00.0
50.0 kW 137 m HAAT, 268 m COR
Prot.= 54 dBu, Intef.= 40 dBu



E1A WODE FMOVER ANALYSIS

04-06-2017 Terrain Data: USGS 03 SEC FMOver Analysis

WODE-FM BMLH19960709KC

W221DS.A

Channel = 260B
Max ERP = 50 kW
RCAMSL = 268 m
N. Lat. 40 42 30.0
W. Lng. 75 13 00.0
Protected
54 dBu

Channel = 260D
Max ERP = 0.25 kW
RCAMSL = 81 m
N. Lat. 40 00 57.0
W. Lng. 75 06 39.0
Interfering
34 dBu

| Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Azimuth (degrees) | ERP (kW) | HAAT (m) | Dist (km) | Actual (dBu) | IX (km) |
|----------------------|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|-----------------|------------|
| 140.0 | 050.0000 | 0157.3 | 066.0 | 051.7 | 000.0206 | 0050.3 | 042.6 | 24.54 | |
| 141.0 | 050.0000 | 0155.5 | 065.8 | 051.5 | 000.0186 | 0050.4 | 041.4 | 24.51 | |
| 142.0 | 050.0000 | 0153.9 | 065.6 | 051.2 | 000.0167 | 0050.4 | 040.3 | 24.45 | |
| 143.0 | 050.0000 | 0154.3 | 065.6 | 051.2 | 000.0169 | 0050.4 | 039.2 | 24.93 | |
| 144.0 | 050.0000 | 0155.7 | 065.8 | 051.4 | 000.0182 | 0050.4 | 038.0 | 25.66 | |
| 145.0 | 050.0000 | 0156.4 | 065.9 | 051.4 | 000.0185 | 0050.4 | 036.8 | 26.18 | |
| 146.0 | 050.0000 | 0156.2 | 065.9 | 051.3 | 000.0173 | 0050.4 | 035.7 | 26.36 | |
| 147.0 | 050.0000 | 0156.7 | 065.9 | 051.2 | 000.0169 | 0050.4 | 034.6 | 26.70 | |
| 148.0 | 050.0000 | 0156.2 | 065.9 | 050.9 | 000.0148 | 0050.4 | 033.4 | 26.60 | |
| 149.0 | 050.0000 | 0154.8 | 065.7 | 050.3 | 000.0115 | 0050.3 | 032.3 | 25.95 | |
| 150.0 | 050.0000 | 0154.1 | 065.6 | 049.8 | 000.0099 | 0050.0 | 031.2 | 25.75 | |
| 151.0 | 050.0000 | 0152.4 | 065.4 | 049.0 | 000.0095 | 0049.6 | 030.1 | 26.03 | |
| 152.0 | 050.0000 | 0148.6 | 064.9 | 047.5 | 000.0088 | 0049.2 | 029.1 | 26.15 | |
| 153.0 | 050.0000 | 0146.7 | 064.6 | 046.4 | 000.0083 | 0048.4 | 028.1 | 26.35 | |
| 154.0 | 050.0000 | 0144.7 | 064.3 | 045.1 | 000.0077 | 0047.1 | 027.1 | 26.40 | |
| 155.0 | 050.0000 | 0148.4 | 064.8 | 045.3 | 000.0078 | 0047.4 | 025.9 | 27.31 | |
| 156.0 | 050.0000 | 0152.8 | 065.4 | 045.7 | 000.0080 | 0047.7 | 024.6 | 28.36 | |
| 157.0 | 050.0000 | 0155.9 | 065.8 | 045.6 | 000.0079 | 0047.7 | 023.4 | 29.21 | |
| 158.0 | 050.0000 | 0158.0 | 066.1 | 045.2 | 000.0077 | 0047.2 | 022.2 | 29.89 | |
| 159.0 | 050.0000 | 0160.1 | 066.4 | 044.6 | 000.0075 | 0046.5 | 021.1 | 30.52 | |
| 160.0 | 050.0000 | 0162.2 | 066.6 | 043.8 | 000.0072 | 0045.6 | 019.9 | 31.08 | |
| 161.0 | 050.0000 | 0164.3 | 066.9 | 042.9 | 000.0068 | 0044.6 | 018.8 | 31.59 | |
| 162.0 | 050.0000 | 0166.6 | 067.1 | 041.8 | 000.0063 | 0043.6 | 017.6 | 32.05 | |
| 163.0 | 050.0000 | 0168.2 | 067.3 | 040.3 | 000.0057 | 0042.2 | 016.5 | 32.26 | 34 dBu max |
| 164.0 | 050.0000 | 0167.5 | 067.2 | 037.7 | 000.0048 | 0040.2 | 015.6 | 31.83 | |
| 165.0 | 050.0000 | 0167.0 | 067.2 | 034.8 | 000.0038 | 0039.0 | 014.7 | 31.30 | |
| 166.0 | 050.0000 | 0164.4 | 066.9 | 030.7 | 000.0027 | 0035.5 | 014.1 | 29.73 | |
| 167.0 | 050.0000 | 0166.0 | 067.1 | 027.6 | 000.0022 | 0030.0 | 013.1 | 28.80 | |
| 168.0 | 050.0000 | 0171.6 | 067.7 | 025.2 | 000.0019 | 0027.7 | 011.9 | 30.02 | |
| 169.0 | 050.0000 | 0178.1 | 068.4 | 022.3 | 000.0016 | 0025.5 | 010.7 | 31.28 | |
| 170.0 | 050.0000 | 0181.6 | 068.7 | 017.5 | 000.0014 | 0023.7 | 009.8 | 32.20 | |
| 171.0 | 050.0000 | 0180.3 | 068.6 | 010.6 | 000.0014 | 0025.6 | 009.4 | 32.85 | |
| 172.0 | 050.0000 | 0178.0 | 068.4 | 003.2 | 000.0014 | 0014.6 | 009.3 | 33.02 | |
| 173.0 | 050.0000 | 0173.9 | 067.9 | 355.7 | 000.0014 | 0006.9 | 009.6 | 32.51 | |
| 174.0 | 050.0000 | 0169.3 | 067.4 | 348.9 | 000.0014 | 0005.3 | 010.1 | 31.57 | |
| 175.0 | 050.0000 | 0160.8 | 066.4 | 343.5 | 000.0014 | 0004.8 | 011.3 | 29.63 | |
| 176.0 | 050.0000 | 0150.4 | 065.1 | 339.7 | 000.0014 | 0002.8 | 012.8 | 27.25 | |
| 177.0 | 050.0000 | 0143.8 | 064.2 | 336.4 | 000.0014 | 0003.7 | 014.1 | 25.60 | |
| 178.0 | 050.0000 | 0139.8 | 063.6 | 333.2 | 000.0014 | 0003.7 | 015.0 | 24.48 | |
| 179.0 | 050.0000 | 0138.4 | 063.4 | 329.8 | 000.0014 | 0003.8 | 015.7 | 23.93 | |
| 180.0 | 050.0000 | 0138.4 | 063.4 | 326.5 | 000.0018 | 0004.5 | 016.3 | 24.37 | |

E1B WRNB ANALYSIS

W221DS Philadelphia, PA

74.1204(d) Showing

Translator or LPFM Maximum Licensed ERP = 0.25

Translator or LPFM Antenna Height AG = 58 Meters

W221DS Antenna Model = PSI FML-6-75% SPACING

Protected Station's Contour = 82.25628 dBu

Translator's or LPFM's full Interference contour 122.25628

Review Azimuth = 0 Degrees True

Relative Field on the horizon at Review Azimuth = 1.000

Translator/LPFM ERP on the horizon at Review Azimuth = 0.25 kW

Distance between stations = 11.6 km

Protected Station= WRNB, 17 kW, 329 M Meters COR AMSL

| Depression Angle From Horizon(Deg) | Vertical Relative Field | Horizontal Relative Field | ERP (kw) | Dist to IX Contour Along Dep. Angle(m) | Dist to IX Contour From Tower Base(m) | Height IX Above Ground (m) |
|--|-------------------------------|---------------------------------|----------|--|---|----------------------------------|
| 00.00 | 1.00 | 1.0 | 0.2500 | 085.5374 | 085.5374 | 058.000 |
| 05.00 | 0.768 | 1.0 | 0.1475 | 065.6927 | 065.4427 | 052.275 |
| 10.00 | 0.261 | 1.0 | 0.0170 | 022.3253 | 021.9861 | 054.123 |
| 15.00 | 0.14 | 1.0 | 0.0049 | 011.9752 | 011.5672 | 054.901 |
| 20.00 | 0.215 | 1.0 | 0.0116 | 018.3905 | 017.2815 | 051.710 |
| 25.00 | 0.054 | 1.0 | 0.0007 | 004.6190 | 004.1863 | 056.048 |
| 30.00 | 0.111 | 1.0 | 0.0031 | 009.4947 | 008.2226 | 053.253 |
| 35.00 | 0.135 | 1.0 | 0.0046 | 011.5475 | 009.4592 | 051.377 |
| 40.00 | 0.041 | 1.0 | 0.0004 | 003.5070 | 002.6865 | 055.746 |
| 45.00 | 0.065 | 1.0 | 0.0011 | 005.5599 | 003.9315 | 054.069 |
| 50.00 | 0.109 | 1.0 | 0.0030 | 009.3236 | 005.9931 | 050.858 |
| 55.00 | 0.085 | 1.0 | 0.0018 | 007.2707 | 004.1703 | 052.044 |
| 60.00 | 0.029 | 1.0 | 0.0002 | 002.4806 | 001.2403 | 055.852 |
| 65.00 | 0.021 | 1.0 | 0.0001 | 001.7963 | 000.7591 | 056.372 |
| 70.00 | 0.047 | 1.0 | 0.0006 | 004.0203 | 001.3750 | 054.222 |
| 75.00 | 0.05 | 1.0 | 0.0006 | 004.2769 | 001.1069 | 053.869 |
| 80.00 | 0.039 | 1.0 | 0.0004 | 003.3360 | 000.5793 | 054.715 |
| 85.00 | 0.02 | 1.0 | 0.0001 | 001.7107 | 000.1491 | 056.296 |
| 90.00 | 0.0 | 1.0 | 0.0000 | 000.0086 | 000.0000 | 057.991 |

E1C WJBR-FM ANALYSIS

W221DS Philadelphia, PA

74.1204(d) Showing

Translator or LPFM Maximum Licensed ERP = 0.25

Translator or LPFM Antenna Height AG = 58 Meters

W221DS Antenna Model = PSI FML-6-75% SPACING

Protected Station's Contour = 66.29767 dBu

Translator's or LPFM's full Interference contour 106.29767

Review Azimuth = 0 Degrees True

Relative Field on the horizon at Review Azimuth = 1.000

Translator/LPFM ERP on the horizon at Review Azimuth = 0.25 kW

Distance between stations = 40.6 km

Protected Station= WJBR-F, 50 kW, 221 M Meters COR AMSL

| Depression Angle From Horizon(Deg) | Vertical Relative Field | Horizontal Relative Field | ERP (kw) | Dist to IX Contour Along Dep. Angle(m) | Dist to IX Contour From Tower Base(m) | Height IX Above Ground (m) |
|--|-------------------------------|---------------------------------|----------|--|---|----------------------------------|
| 00.00 | 1.00 | 1.0 | 0.2500 | 537.1388 | 537.1388 | 058.000 |
| 01.00 | 0.99 | 1.0 | 0.2450 | 531.7674 | 531.6864 | 048.719 |
| 02.00 | 0.96 | 1.0 | 0.2304 | 515.6532 | 515.3391 | 040.004 |
| 03.00 | 0.912 | 1.0 | 0.2079 | 489.8706 | 489.1992 | 032.362 |
| 04.00 | 0.847 | 1.0 | 0.1794 | 454.9565 | 453.8483 | 026.264 |
| 05.00 | 0.768 | 1.0 | 0.1475 | 412.5226 | 410.9528 | 022.046 |
| 06.00 | 0.677 | 1.0 | 0.1146 | 363.6429 | 361.6509 | 019.989 (1) |
| 07.00 | 0.577 | 1.0 | 0.0832 | 309.9291 | 307.6189 | 020.229 |
| 08.00 | 0.472 | 1.0 | 0.0557 | 253.5295 | 251.0622 | 022.716 |
| 09.00 | 0.365 | 1.0 | 0.0333 | 196.0557 | 193.6419 | 027.330 |
| 10.00 | 0.261 | 1.0 | 0.0170 | 140.1932 | 138.0634 | 033.656 |
| 11.00 | 0.161 | 1.0 | 0.0065 | 086.4793 | 084.8905 | 041.499 |
| 12.00 | 0.069 | 1.0 | 0.0012 | 037.0626 | 036.2527 | 050.294 |
| 13.00 | 0.013 | 1.0 | 0.0000 | 006.9828 | 006.8038 | 056.429 |
| 14.00 | 0.083 | 1.0 | 0.0017 | 044.5825 | 043.2582 | 047.215 |
| 15.00 | 0.14 | 1.0 | 0.0049 | 075.1994 | 072.6371 | 038.537 |
| 16.00 | 0.182 | 1.0 | 0.0083 | 097.7593 | 093.9722 | 031.054 |
| 17.00 | 0.21 | 1.0 | 0.0110 | 112.7991 | 107.8704 | 025.021 |
| 18.00 | 0.224 | 1.0 | 0.0125 | 120.3191 | 114.4303 | 020.819 |
| 19.00 | 0.226 | 1.0 | 0.0128 | 121.3934 | 114.7797 | 018.478 |
| 20.00 | 0.215 | 1.0 | 0.0116 | 115.4848 | 108.5203 | 018.502 |
| 21.00 | 0.195 | 1.0 | 0.0095 | 104.7421 | 097.7851 | 020.464 |
| 22.00 | 0.166 | 1.0 | 0.0069 | 089.1650 | 082.6724 | 024.598 |
| 23.00 | 0.132 | 1.0 | 0.0044 | 070.9023 | 065.2659 | 030.296 |
| 24.00 | 0.094 | 1.0 | 0.0022 | 050.4910 | 046.1259 | 037.463 |
| 25.00 | 0.054 | 1.0 | 0.0007 | 029.0055 | 026.2879 | 045.742 |
| 26.00 | 0.014 | 1.0 | 0.0000 | 007.5199 | 006.7589 | 054.703 |
| 27.00 | 0.023 | 1.0 | 0.0001 | 012.3542 | 011.0077 | 052.391 |
| 28.00 | 0.058 | 1.0 | 0.0008 | 031.1540 | 027.5074 | 043.374 |
| 29.00 | 0.087 | 1.0 | 0.0019 | 046.7311 | 040.8719 | 035.344 |
| 30.00 | 0.111 | 1.0 | 0.0031 | 059.6224 | 051.6345 | 028.189 |
| 31.00 | 0.128 | 1.0 | 0.0041 | 068.7538 | 058.9335 | 022.589 |
| 32.00 | 0.14 | 1.0 | 0.0049 | 075.1994 | 063.7727 | 018.150 |
| 33.00 | 0.144 | 1.0 | 0.0052 | 077.3480 | 064.8695 | 015.873 |
| 34.00 | 0.142 | 1.0 | 0.0050 | 076.2737 | 063.2338 | 015.348 |
| 35.00 | 0.135 | 1.0 | 0.0046 | 072.5137 | 059.3998 | 016.408 |
| 36.00 | 0.123 | 1.0 | 0.0038 | 066.0681 | 053.4502 | 019.166 |
| 37.00 | 0.106 | 1.0 | 0.0028 | 056.9367 | 045.4717 | 023.735 |
| 38.00 | 0.087 | 1.0 | 0.0019 | 046.7311 | 036.8246 | 029.229 |
| 39.00 | 0.065 | 1.0 | 0.0011 | 034.9140 | 027.1333 | 036.028 |
| 40.00 | 0.041 | 1.0 | 0.0004 | 022.0227 | 016.8704 | 043.844 |
| 41.00 | 0.018 | 1.0 | 0.0001 | 009.6685 | 007.2969 | 051.657 |

E1C WJBR-FM continued

| | | | | | | |
|-------|-------|-----|--------|----------|----------|-------------|
| 42.00 | 0.005 | 1.0 | 0.0000 | 002.6857 | 001.9959 | 056.203 |
| 43.00 | 0.027 | 1.0 | 0.0002 | 014.5027 | 010.6066 | 048.109 |
| 44.00 | 0.047 | 1.0 | 0.0006 | 025.2455 | 018.1601 | 040.463 |
| 45.00 | 0.065 | 1.0 | 0.0011 | 034.9140 | 024.6879 | 033.312 |
| 46.00 | 0.08 | 1.0 | 0.0016 | 042.9711 | 029.8502 | 027.089 |
| 47.00 | 0.092 | 1.0 | 0.0021 | 049.4168 | 033.7022 | 021.859 |
| 48.00 | 0.1 | 1.0 | 0.0025 | 053.7139 | 035.9416 | 018.083 |
| 49.00 | 0.106 | 1.0 | 0.0028 | 056.9367 | 037.3538 | 015.029 |
| 50.00 | 0.109 | 1.0 | 0.0030 | 058.5481 | 037.6340 | 013.150 |
| 51.00 | 0.108 | 1.0 | 0.0029 | 058.0110 | 036.5075 | 012.917 (1) |
| 52.00 | 0.106 | 1.0 | 0.0028 | 056.9367 | 035.0537 | 013.133 |
| 53.00 | 0.1 | 1.0 | 0.0025 | 053.7139 | 032.3258 | 015.102 |
| 54.00 | 0.093 | 1.0 | 0.0022 | 049.9539 | 029.3622 | 017.586 |
| 55.00 | 0.085 | 1.0 | 0.0018 | 045.6568 | 026.1877 | 020.600 |
| 56.00 | 0.075 | 1.0 | 0.0014 | 040.2854 | 022.5273 | 024.602 |
| 57.00 | 0.064 | 1.0 | 0.0010 | 034.3769 | 018.7230 | 029.169 |
| 58.00 | 0.052 | 1.0 | 0.0007 | 027.9312 | 014.8013 | 034.313 |
| 59.00 | 0.04 | 1.0 | 0.0004 | 021.4856 | 011.0659 | 039.583 |
| 60.00 | 0.029 | 1.0 | 0.0002 | 015.5770 | 007.7885 | 044.510 |
| 61.00 | 0.017 | 1.0 | 0.0001 | 009.1314 | 004.4270 | 050.014 |
| 62.00 | 0.007 | 1.0 | 0.0000 | 003.7600 | 001.7652 | 054.680 |
| 63.00 | 0.003 | 1.0 | 0.0000 | 001.6114 | 000.7316 | 056.564 |
| 64.00 | 0.013 | 1.0 | 0.0000 | 006.9828 | 003.0611 | 051.724 |
| 65.00 | 0.021 | 1.0 | 0.0001 | 011.2799 | 004.7671 | 047.777 |
| 66.00 | 0.028 | 1.0 | 0.0002 | 015.0399 | 006.1173 | 044.260 |
| 67.00 | 0.035 | 1.0 | 0.0003 | 018.7999 | 007.3457 | 040.695 |
| 68.00 | 0.04 | 1.0 | 0.0004 | 021.4856 | 008.0486 | 038.079 |
| 69.00 | 0.044 | 1.0 | 0.0005 | 023.6341 | 008.4697 | 035.936 |
| 70.00 | 0.047 | 1.0 | 0.0006 | 025.2455 | 008.6345 | 034.277 |
| 71.00 | 0.05 | 1.0 | 0.0006 | 026.8569 | 008.7438 | 032.606 |
| 72.00 | 0.051 | 1.0 | 0.0007 | 027.3941 | 008.4652 | 031.947 |
| 73.00 | 0.052 | 1.0 | 0.0007 | 027.9312 | 008.1663 | 031.289 |
| 74.00 | 0.051 | 1.0 | 0.0007 | 027.3941 | 007.5508 | 031.667 |
| 75.00 | 0.05 | 1.0 | 0.0006 | 026.8569 | 006.9511 | 032.058 |
| 76.00 | 0.049 | 1.0 | 0.0006 | 026.3198 | 006.3673 | 032.462 |
| 77.00 | 0.047 | 1.0 | 0.0006 | 025.2455 | 005.6790 | 033.402 |
| 78.00 | 0.045 | 1.0 | 0.0005 | 024.1712 | 005.0255 | 034.357 |
| 79.00 | 0.042 | 1.0 | 0.0004 | 022.5598 | 004.3046 | 035.855 |
| 80.00 | 0.039 | 1.0 | 0.0004 | 020.9484 | 003.6377 | 037.370 |
| 81.00 | 0.035 | 1.0 | 0.0003 | 018.7999 | 002.9409 | 039.432 |
| 82.00 | 0.032 | 1.0 | 0.0003 | 017.1884 | 002.3922 | 040.979 |
| 83.00 | 0.028 | 1.0 | 0.0002 | 015.0399 | 001.8329 | 043.072 |
| 84.00 | 0.024 | 1.0 | 0.0001 | 012.8913 | 001.3475 | 045.179 |
| 85.00 | 0.02 | 1.0 | 0.0001 | 010.7428 | 000.9363 | 047.298 |
| 86.00 | 0.016 | 1.0 | 0.0001 | 008.5942 | 000.5995 | 049.427 |
| 87.00 | 0.012 | 1.0 | 0.0000 | 006.4457 | 000.3373 | 051.563 |
| 88.00 | 0.008 | 1.0 | 0.0000 | 004.2971 | 000.1500 | 053.706 |
| 89.00 | 0.004 | 1.0 | 0.0000 | 002.1486 | 000.0375 | 055.852 |
| 90.00 | 0.000 | 1.0 | 0.0000 | 000.0537 | 000.0000 | 057.946 |

(1) An examination of the area within the interference contour using Google Street View reveals only two story buildings.

E1D AERIAL VIEW OF LOWEST INTERFERENCE CONTOUR - 106.3 DBU TO WJBR-FM



E1D STREET VIEW NEAREST TOWER SHOWING TALLEST BUILDING



E1D STREET VIEW SHOWING TALLEST BUILDING WITHIN 106.3 DBU CONTOUR



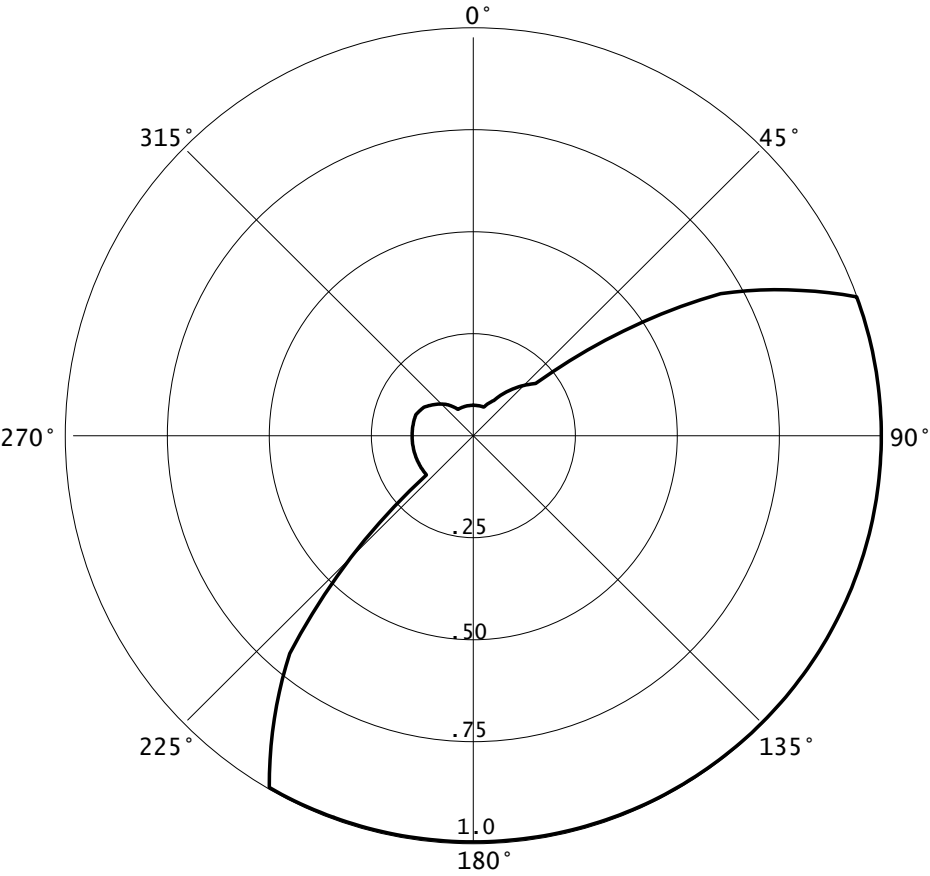
E1E DA TABULATION

04-06-2017

RMS(V)= .67

Graph is Relative Field

| Azi | Field | dBk | kw |
|-----|-------|---------|-------|
| 000 | 0.075 | -28.519 | 0.001 |
| 010 | 0.075 | -28.519 | 0.001 |
| 020 | 0.075 | -28.519 | 0.001 |
| 030 | 0.100 | -26.021 | 0.003 |
| 040 | 0.150 | -22.499 | 0.006 |
| 050 | 0.200 | -20.000 | 0.010 |
| 060 | 0.700 | -09.119 | 0.122 |
| 070 | 1.000 | -06.021 | 0.250 |
| 080 | 1.000 | -06.021 | 0.250 |
| 090 | 1.000 | -06.021 | 0.250 |
| 100 | 1.000 | -06.021 | 0.250 |
| 110 | 1.000 | -06.021 | 0.250 |
| 120 | 1.000 | -06.021 | 0.250 |
| 130 | 1.000 | -06.021 | 0.250 |
| 140 | 1.000 | -06.021 | 0.250 |
| 150 | 1.000 | -06.021 | 0.250 |
| 160 | 1.000 | -06.021 | 0.250 |
| 170 | 1.000 | -06.021 | 0.250 |
| 180 | 1.000 | -06.021 | 0.250 |
| 190 | 1.000 | -06.021 | 0.250 |
| 200 | 1.000 | -06.021 | 0.250 |
| 210 | 1.000 | -06.021 | 0.250 |
| 220 | 0.700 | -09.119 | 0.122 |
| 230 | 0.150 | -22.499 | 0.006 |
| 240 | 0.150 | -22.499 | 0.006 |
| 250 | 0.150 | -22.499 | 0.006 |
| 260 | 0.150 | -22.499 | 0.006 |
| 270 | 0.150 | -22.499 | 0.006 |
| 280 | 0.150 | -22.499 | 0.006 |
| 290 | 0.150 | -22.499 | 0.006 |
| 300 | 0.140 | -23.098 | 0.005 |
| 310 | 0.120 | -24.437 | 0.004 |
| 320 | 0.100 | -26.021 | 0.003 |
| 330 | 0.075 | -28.519 | 0.001 |
| 340 | 0.075 | -28.519 | 0.001 |
| 350 | 0.075 | -28.519 | 0.001 |



W221DS.A
BMPFT20160728AAW
Latitude: 40-00-57 N
Longitude: 075-06-39 W
ERP: 0.25 kW
Channel: 260
Frequency: 99.9 MHz
AMSL Height: 81.0 m
Elevation: 23.0 m
Horiz. Pattern: Directional

E2 CONTOURS

WHAT 2MV

PROPOSED 60 DBU

W221DS.A

WHAT

W221DS

W221DS CP 60 DBU

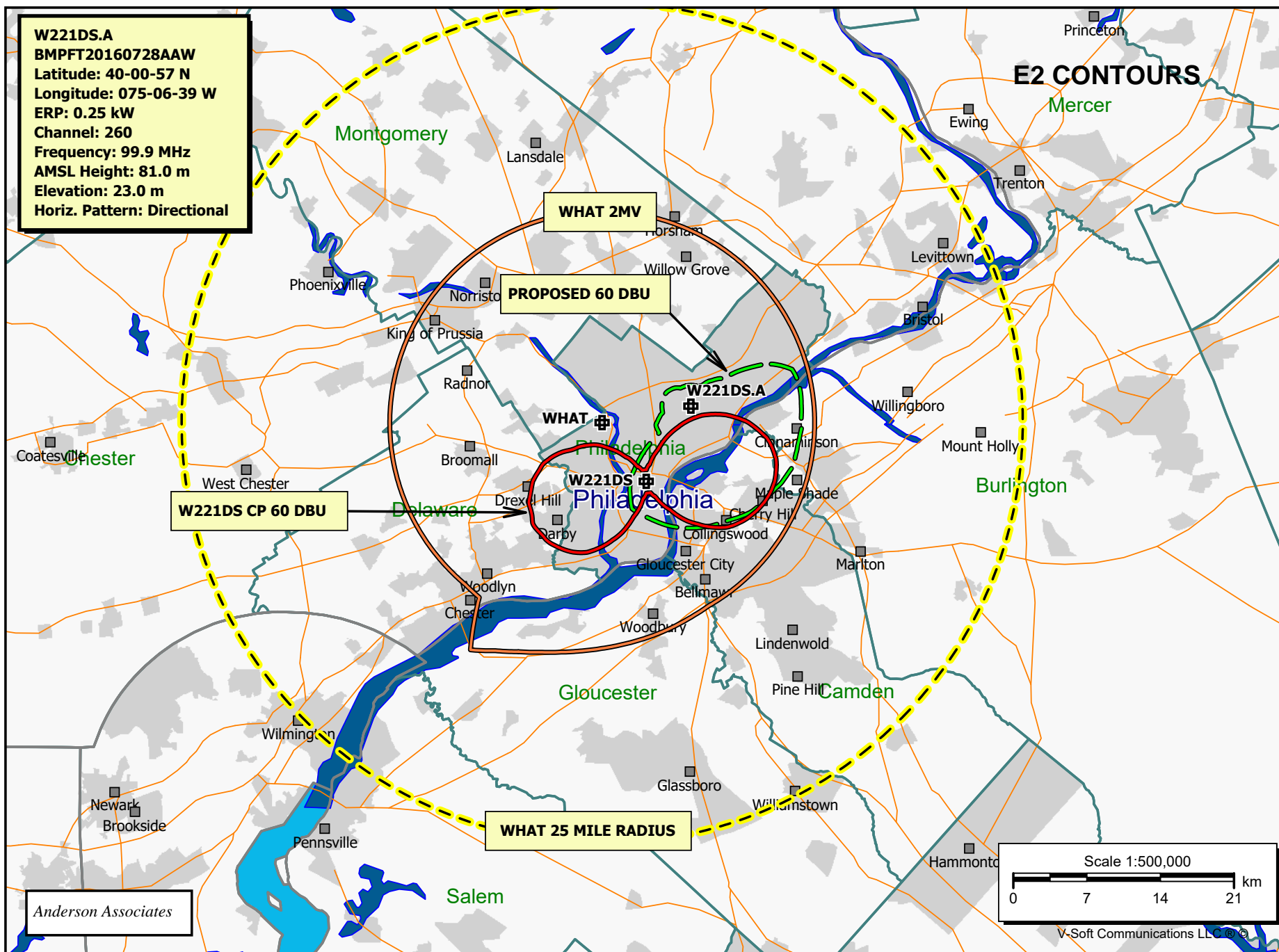
WHAT 25 MILE RADIUS

Scale 1:500,000

0 7 14 21 km

Anderson Associates

V-Soft Communications LLC © 2016



E3 Registration 1055890

 [Map Registration](#)

Registration Detail

| | | | |
|-------------|----------|-------------|-------------|
| Reg Number | 1055890 | Status | Constructed |
| File Number | A0819354 | Constructed | 12/30/1994 |
| EMI | No | Dismantled | |
| NEPA | No | | |

Antenna Structure

Structure Type TOWER - Free standing or Guyed Structure used for Commu

Location (in NAD83 Coordinates)

| | | | |
|-----------------------|----------------------------|-------------------------------|---------------------------------|
| Lat/Long | 40-00-57.1 N 075-06-37.8 W | Address | 811 East Cayuga Street (308374) |
| City, State | PHILADELPHIA , PA | | |
| Zip | 19124 | County | PHILADELPHIA |
| Center of AM Array | | Position of Tower in Array | |

Heights (meters)

| | |
|--|---|
| Elevation of Site Above Mean Sea Level | Overall Height Above Ground (AGL) |
| 22.5 | 79.8 |
| Overall Height Above Mean Sea Level | Overall Height Above Ground w/o Appurtenances |
| 102.3 | 76.5 |

Painting and Lighting Specifications

FAA Chapters 4, 8, 13
Paint and Light in Accordance with FAA Circular Number 70/7460-1H

FAA Notification

| | | | |
|-----------|------------------|----------------|------------|
| FAA Study | 2011-AEA-4832-OE | FAA Issue Date | 01/09/2012 |
|-----------|------------------|----------------|------------|

Owner & Contact Information

| | | | |
|--------------|------------|-------------------|---------------------------|
| FRN | 0011498342 | Owner Entity Type | Limited Liability Company |
| Assignor FRN | 0014348965 | Assignor ID | L00132178 |

Owner

| | |
|--|------------------------------|
| SpectraSite Communications, LLC. through American Towers, LLC. | P: (678)564-3236 |
| Attention To: Regulatory Compliance FAA FCC | F: |
| 10 Presidential Way | E: faa-fcc@americantower.com |
| Woburn , MA 01801 | |

Contact

| | |
|-----------------------|------------------------------|
| Attention To: FAA FCC | P: (678)564-3236 |
| 10 Presidential Way | F: |
| Woburn , MA 01801 | E: faa-fcc@americantower.com |

Last Action Status

| | | | |
|---------|--------------|----------|------------|
| Status | Constructed | Received | 01/15/2013 |
| Purpose | Change Owner | Entered | 01/15/2013 |
| Mode | Interactive | | |

Related Applications

| | | |
|------------|----------|---------------------|
| 01/15/2013 | A0819354 | - Change Owner (OC) |
| 01/16/2012 | A0747908 | - Modification (MD) |

Output from NADCON for station W221DS

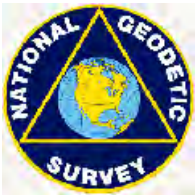
North American Datum Conversion
NAD 83 to NAD 27
NADCON Program Version 2.11

=====

Transformation #: 1 Region: Conus

| | Latitude | Longitude |
|-------------------------------|----------------|-----------------|
| NAD 27 datum values: | 40 00 56.69648 | 75 06 39.16983 |
| NAD 83 datum values: | 40 00 57.10000 | 75 06 37.80000 |
| NAD 27 - NAD 83 shift values: | -0.40352 | 1.36983(secs.) |
| | -12.446 | 32.486 (meters) |
| Magnitude of total shift: | | 34.788(meters) |

40-00-57 N 75-06-39 W NAD 27 Rounded



[NGS HOME PAGE](#)



Propagation Systems Inc.

Elevation Pattern Tabulation

Antenna: PSIFML-6A-75WS

Bay spacing: 3/4-wave

| Angle | Field | dB | Angle | Field | dB | Angle | Field | dB |
|-------|-------|---------|-------|-------|---------|-------|-------|---------|
| -90.0 | 0.001 | -60.000 | -50.0 | 0.109 | -19.280 | -10.0 | 0.261 | -11.665 |
| -89.0 | 0.004 | -47.764 | -49.0 | 0.106 | -19.501 | -9.0 | 0.366 | -8.736 |
| -88.0 | 0.008 | -41.743 | -48.0 | 0.100 | -19.987 | -8.0 | 0.472 | -6.516 |
| -87.0 | 0.012 | -38.221 | -47.0 | 0.091 | -20.799 | -7.0 | 0.577 | -4.777 |
| -86.0 | 0.016 | -35.803 | -46.0 | 0.079 | -22.021 | -6.0 | 0.677 | -3.393 |
| -85.0 | 0.020 | -33.849 | -45.0 | 0.064 | -23.844 | -5.0 | 0.768 | -2.296 |
| -84.0 | 0.024 | -32.308 | -44.0 | 0.047 | -26.648 | -4.0 | 0.847 | -1.441 |
| -83.0 | 0.028 | -31.047 | -43.0 | 0.027 | -31.530 | -3.0 | 0.912 | -0.799 |
| -82.0 | 0.032 | -29.988 | -42.0 | 0.005 | -46.848 | -2.0 | 0.960 | -0.352 |
| -81.0 | 0.035 | -29.044 | -41.0 | 0.018 | -34.735 | -1.0 | 0.990 | -0.089 |
| -80.0 | 0.039 | -28.260 | -40.0 | 0.042 | -27.541 | 0.0 | 1.000 | 0.000 |
| -79.0 | 0.042 | -27.604 | -39.0 | 0.065 | -23.722 | 1.0 | 0.990 | -0.087 |
| -78.0 | 0.044 | -27.054 | -38.0 | 0.087 | -21.213 | 2.0 | 0.960 | -0.352 |
| -77.0 | 0.047 | -26.592 | -37.0 | 0.107 | -19.452 | 3.0 | 0.912 | -0.798 |
| -76.0 | 0.049 | -26.234 | -36.0 | 0.123 | -18.200 | 4.0 | 0.847 | -1.440 |
| -75.0 | 0.050 | -25.968 | -35.0 | 0.135 | -17.384 | 5.0 | 0.768 | -2.294 |
| -74.0 | 0.051 | -25.838 | -34.0 | 0.142 | -16.928 | 6.0 | 0.677 | -3.391 |
| -73.0 | 0.051 | -25.813 | -33.0 | 0.144 | -16.836 | 7.0 | 0.577 | -4.775 |
| -72.0 | 0.051 | -25.890 | -32.0 | 0.139 | -17.115 | 8.0 | 0.472 | -6.513 |
| -71.0 | 0.049 | -26.127 | -31.0 | 0.128 | -17.843 | 9.0 | 0.366 | -8.729 |
| -70.0 | 0.047 | -26.564 | -30.0 | 0.111 | -19.124 | 10.0 | 0.261 | -11.660 |
| -69.0 | 0.044 | -27.173 | -29.0 | 0.087 | -21.228 | 11.0 | 0.161 | -15.844 |
| -68.0 | 0.040 | -28.058 | -28.0 | 0.057 | -24.841 | 12.0 | 0.069 | -23.193 |
| -67.0 | 0.034 | -29.309 | -27.0 | 0.023 | -32.754 | 13.0 | 0.013 | -38.009 |
| -66.0 | 0.028 | -31.095 | -26.0 | 0.015 | -36.745 | 14.0 | 0.083 | -21.663 |
| -65.0 | 0.021 | -33.720 | -25.0 | 0.054 | -25.313 | 15.0 | 0.139 | -17.134 |
| -64.0 | 0.012 | -38.329 | -24.0 | 0.094 | -20.515 | 16.0 | 0.182 | -14.814 |
| -63.0 | 0.003 | -50.816 | -23.0 | 0.132 | -17.571 | 17.0 | 0.210 | -13.562 |
| -62.0 | 0.007 | -42.949 | -22.0 | 0.167 | -15.563 | 18.0 | 0.224 | -12.986 |
| -61.0 | 0.018 | -34.880 | -21.0 | 0.195 | -14.199 | 19.0 | 0.226 | -12.933 |
| -60.0 | 0.029 | -30.680 | -20.0 | 0.215 | -13.339 | 20.0 | 0.215 | -13.339 |
| -59.0 | 0.041 | -27.764 | -19.0 | 0.226 | -12.933 | 21.0 | 0.195 | -14.199 |
| -58.0 | 0.053 | -25.584 | -18.0 | 0.224 | -12.986 | 22.0 | 0.167 | -15.563 |
| -57.0 | 0.064 | -23.864 | -17.0 | 0.210 | -13.562 | 23.0 | 0.132 | -17.561 |
| -56.0 | 0.075 | -22.499 | -16.0 | 0.182 | -14.814 | 24.0 | 0.094 | -20.515 |
| -55.0 | 0.085 | -21.427 | -15.0 | 0.139 | -17.125 | 25.0 | 0.054 | -25.313 |
| -54.0 | 0.094 | -20.571 | -14.0 | 0.083 | -21.663 | 26.0 | 0.015 | -36.745 |
| -53.0 | 0.101 | -19.948 | -13.0 | 0.013 | -37.905 | 27.0 | 0.023 | -32.754 |
| -52.0 | 0.106 | -19.514 | -12.0 | 0.069 | -23.193 | 28.0 | 0.057 | -24.841 |
| -51.0 | 0.108 | -19.293 | -11.0 | 0.161 | -15.852 | 29.0 | 0.087 | -21.243 |

file: FML 6-bay elevation tabulation

revision:

Date: 9/14/2011