

## Exhibit 12.1 - Copy of Existing Antenna Structure Registration

### Registration Detail

|                |               |             |             |
|----------------|---------------|-------------|-------------|
| Reg Number     | 1028013       | Status      | Constructed |
| File Number    | A0033239      | Constructed | 05/21/1997  |
| FAA Study      | 94-ANE-061-OE | EMI         | No          |
| FAA Issue Date | 03/21/1994    | NEPA        | No          |

### Antenna Structure

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

Location (in NAD83 Coordinates)

Lat/Long 42-21-49.0 N 072-25-22.0 W SUMMIT OF MOUNT LINCOLN

City, State PELHAM , MA

Center of  
AM Array

### Heights (meters)

|  |   |
|--|---|
| Elevation of Site Above Mean Sea Level | Overall Height Above Ground (AGL)             |
| 377.3                                  | 106.4   |
| Overall Height Above Mean Sea Level    | Overall Height Above Ground w/o Appurtenances |
| 483.7                                  | 105.5   |

### Painting and Lighting Specifications

FAA Chapters 3, 4, 5, 13

Paint and Light in Accordance with FAA Circular Number 70/7460-1H

.

### Owner & Contact Information

FRN

Licensee ID

Owner

UNIVERSITY OF MASSACHUSETTS DBA = WFCR  
Attention To: MARTIN MILLER  
HAMPSHIRE HOUSE  
AMHERST , MA 01003-3630

P: (413)545-0100  
E:

Contact

P:  
E:

.

### Last Action Status

|         |             |          |            |
|---------|-------------|----------|------------|
| Status  | Constructed | Received | 08/20/1997 |
| Purpose | New         | Entered  | 08/20/1997 |
| Mode    | Interactive |          |            |

### Related Applications

08/20/1997 A0033239 - New (NE)

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### Comments

Comments

None

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### Automated Letters

None



## Exhibit 12.2

### Vertical Plan of Antenna System

The site is located at the summit of Mount Lincoln,  
the city of Pelham, Hampshire County, Massachusetts.

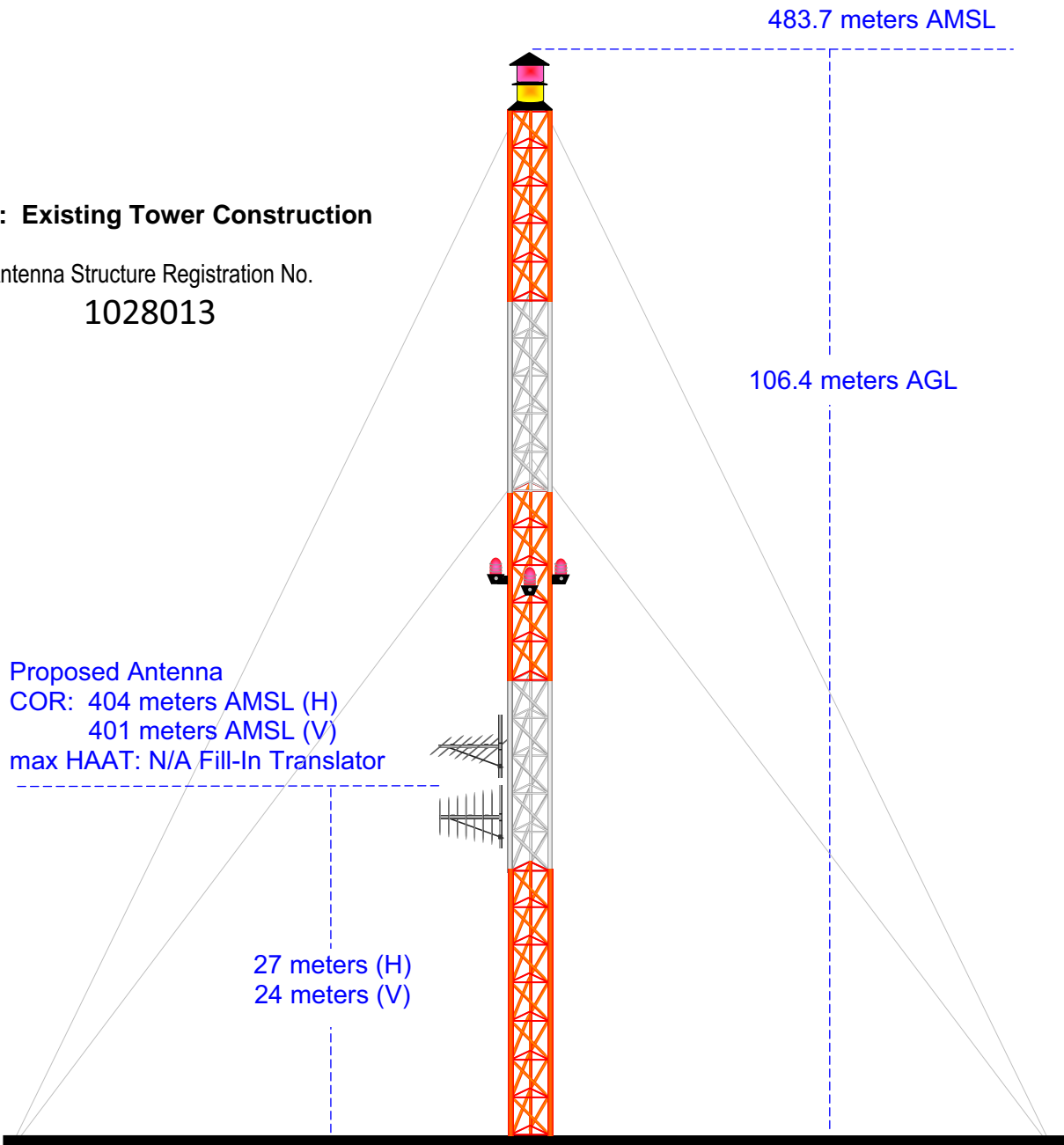
#### Site Location (NAD 27)

NL: 42° 21' 49"

WL: 72° 25' 24"

#### **NOTE: Existing Tower Construction**

Antenna Structure Registration No.  
**1028013**



Ground Elevation = 377.3 m AMSL  
Drawing is not to Scale

**MUNN-REESE, INC.**  
Broadcast Engineering Consultants  
Coldwater, MI 49036

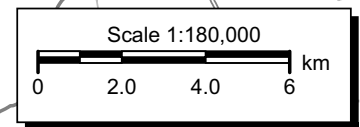
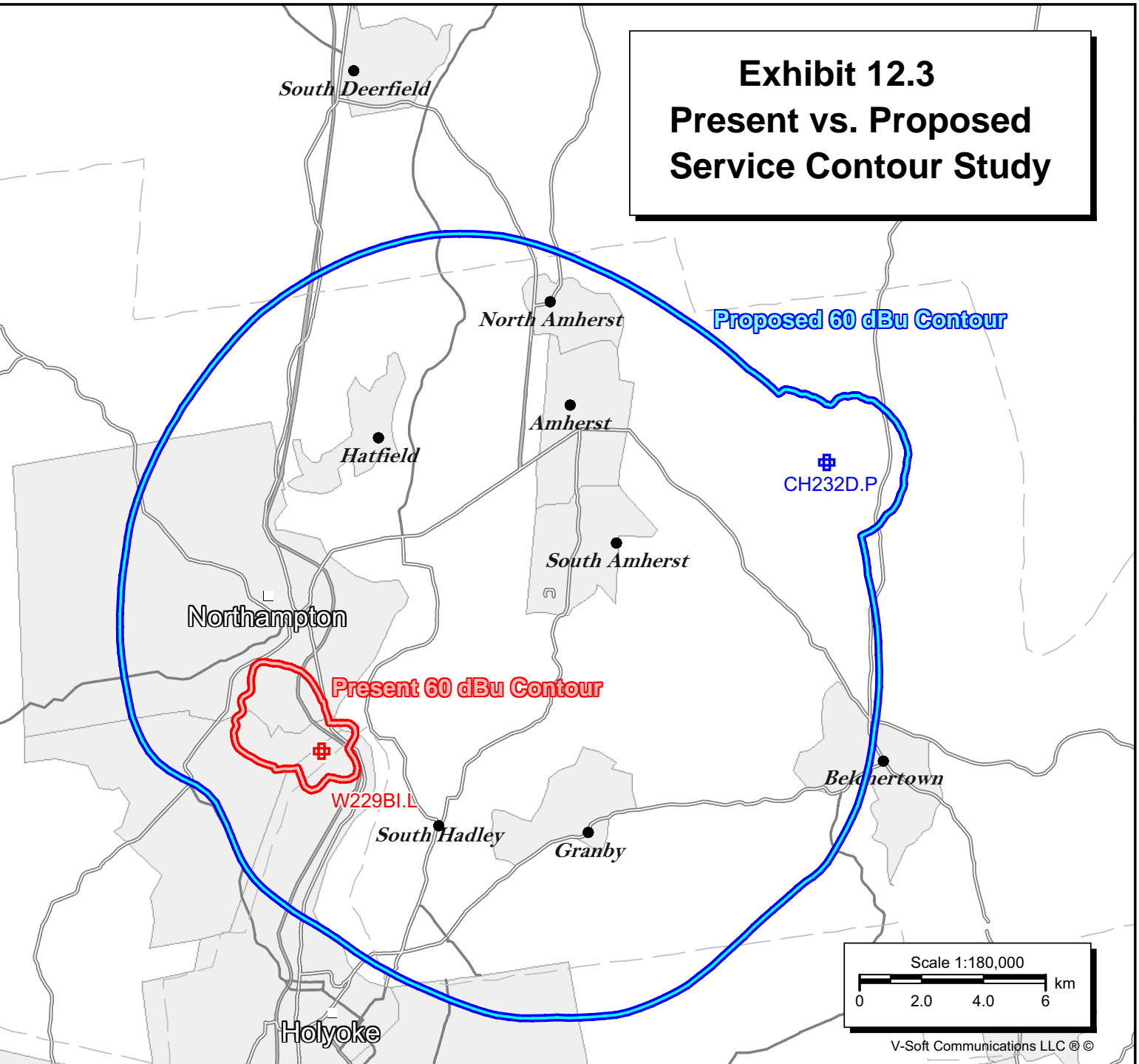
## Exhibit 12.3 Present vs. Proposed Service Contour Study

**CH232D.P**  
Proposed Operation  
Latitude: 42-21-49 N  
Longitude: 072-25-24 W  
ERP: 0.25 kW  
Channel: 232  
Frequency: 94.3 MHz  
AMSL Height: 404.0 m  
Horiz. Pattern: Directional  
Vert. Pattern: No  
Prop Model:

60 dBu Contour  
Total Population: 107,474  
Total Area: 478.36 sq. km

**W229BI.L**  
BLFT-20090331AAR  
Latitude: 42-16-48 N  
Longitude: 072-37-15 W  
ERP: 0.001 kW  
Channel: 229  
Frequency: 93.7 MHz  
AMSL Height: 262.0 m  
Horiz. Pattern: Directional  
Vert. Pattern: No  
Prop Model:

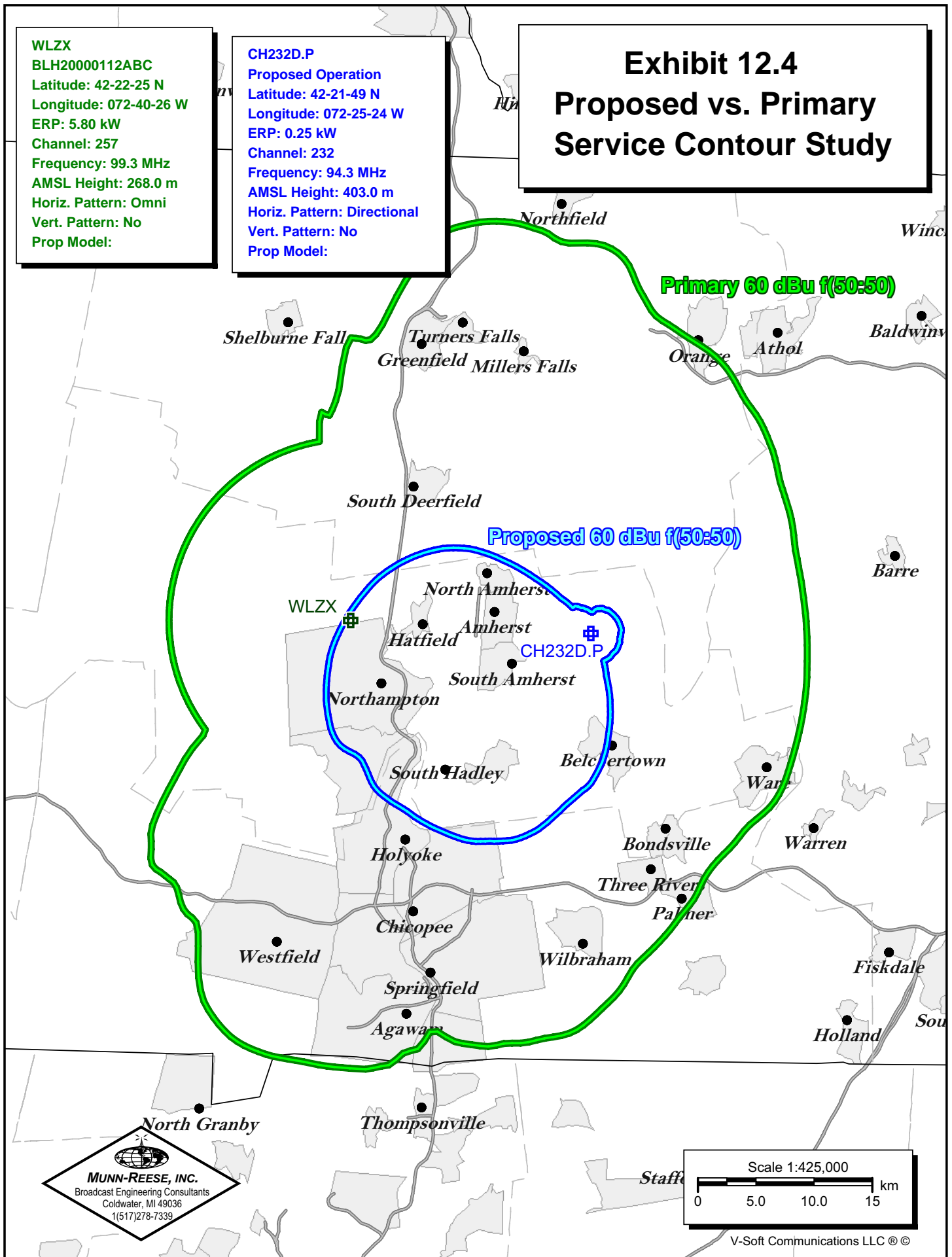
60 dBu Contour  
Total Population: 845  
Total Area: 10.23 sq. km



WLZX  
BLH20000112ABC  
Latitude: 42-22-25 N  
Longitude: 072-40-26 W  
ERP: 5.80 kW  
Channel: 257  
Frequency: 99.3 MHz  
AMSL Height: 268.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model:

CH232D.P  
Proposed Operation  
Latitude: 42-21-49 N  
Longitude: 072-25-24 W  
ERP: 0.25 kW  
Channel: 232  
Frequency: 94.3 MHz  
AMSL Height: 403.0 m  
Horiz. Pattern: Directional  
Vert. Pattern: No  
Prop Model:

## Exhibit 12.4 Proposed vs. Primary Service Contour Study



# Exhibit 12.5

## Tabulation of Proposed Allocation

Saga Communications Of New England, Llc

| REFERENCE                               |         | CH# 232D - 94.3 MHz, Pwr= 0.25 kW, HAAT= 229.0 M, COR= 404 M |                |                          |                |                          |                    |                   |                                    | DISPLAY DATES           |         |
|---|---------|--|----------------|--------------------------|----------------|--------------------------|--------------------|-------------------|------------------------------------|-------------------------|---------|
| 42 21 49.0 N.                           |         | Average Protected F(50-50)= 19.81 km                         |                |                          |                |                          |                    |                   |                                    | DATA 04-04-09           |         |
| 72 25 24.0 W.                           |         | Standard Directional   |                |                          |                |                          |                    |                   |                                    | SEARCH 04-09-09         |         |
| CH<br>CITY                              | CALL    | TYPE<br>STATE  | ANT<br>--      | AZI<br>FILE #            | DIST<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*   |
| 234B<br>Springfield                     | WMAS-FM | LIC _CN<br>MA  | 208.8<br>28.7  | 32.3<br>BLH19801010AD    |                | 42 06 32.0<br>72 36 44.0 | 50.000<br>59       | 3.7<br>121        | 47.0<br>Citadel Broadcasting Compa | 8.2                     | -16.4*< |
| 230A<br>Turners Falls                   | WRSI    | LIC _CN<br>MA  | 323.7<br>143.6 | 23.5<br>BLH19951018KB    |                | 42 32 01.0<br>72 35 34.0 | 2.500<br>109       | 2.4<br>284        | 27.1<br>Saga Communications Of Ne  | 18.0                    | -3.6*<  |
| 233B<br>Boston                          | WJMN    | LIC _CX<br>MA  | 93.2<br>274.0  | 99.0<br>BLH20031201AWA   |                | 42 18 27.0<br>71 13 27.0 | 9.200<br>353       | 77.2<br>394       | 65.6<br>Amfm Radio Licenses, L.l.c | 19.3                    | 27.4    |
| 232A<br>New Haven                       | WYBC-FM | LIC DE_<br>CT  | 202.2<br>21.8  | 121.5<br>BLH20010918AAT  |                | 41 20 59.0<br>72 58 23.0 | 3.000<br>144       | 79.8<br>215       | 26.5<br>Yale Broadcasting Company, | 22.5                    | 34.8    |
| 229B<br>Hartford                        | WZMX    | LIC _CX<br>CT  | 201.5<br>21.2  | 95.6<br>BMLH20080306AAR  |                | 41 33 44.0<br>72 50 42.0 | 17.000<br>259      | 5.7<br>359        | 66.1<br>Cbs Radio Stations Inc.    | 70.8                    | 27.9    |
| 232A<br>Bennington                      | WBTN-FM | CP NCX<br>VT   | 316.8<br>136.3 | 89.6<br>BPED20081118AGS  |                | 42 56 52.9<br>73 10 33.9 | 3.000<br>34        | 53.3<br>474       | 13.2<br>Vermont Public Radio       | 30.6                    | 56.1    |
| 232A<br>Bennington                      | WBTN-FM | LIC _CX<br>VT  | 316.8<br>136.3 | 89.6<br>BMLED20070221ADA |                | 42 56 53.0<br>73 10 35.0 | 3.000<br>34        | 53.3<br>475       | 13.2<br>Vermont Public Radio       | 30.6                    | 56.1    |
| 231B<br>Providence                      | WHJY    | LIC _C_<br>RI  | 124.1<br>304.8 | 105.6<br>BLH20000915ALB  |                | 41 49 40.0<br>71 22 09.0 | 50.000<br>139      | 71.8<br>170       | 59.1<br>Capstar Tx Limited Partner | 31.2                    | 40.2    |
| 232A<br>Kingston                        | WKXP    | LIC _CX<br>NY  | 248.6<br>67.6  | 139.8<br>BLH20040120ADV  |                | 41 53 44.0<br>73 59 32.0 | 2.250<br>166       | 81.8<br>260       | 28.2<br>Cumulus Licensing Llc      | 34.2                    | 40.1    |
| 285A<br>Hinsdale                        | WYRY    | LIC DC_<br>NH  | 356.8<br>176.8 | 45.9<br>BLH20010402AAV   |                | 42 46 33.0<br>72 27 17.0 | 4.100<br>122       | 0.0<br>344        | 0.0<br>Tri-valley Broadcasting Co  | 9.5R                    | 36.4M   |
| 235D<br>Tatnuck                         | W235AV  | LIC DC_<br>MA  | 97.9<br>278.2  | 43.3<br>BLFT20070725AAR  |                | 42 18 34.0<br>71 54 13.0 | 0.230<br>474       | 0.2<br>474        | 6.7<br>Amfm Radio Licenses, L.l.c  | 40.6                    | 36.5    |
| 232D<br>Greenville, Etc.                | W232AJ  | LIC DCN<br>NH  | 38.7<br>219.1  | 70.6<br>BLFT19881108TI   |                | 42 51 28.0<br>71 52 53.0 | 0.005<br>416       | 31.0<br>713       | 9.1<br>Harvest Broadcasting Assn.  | 37.1                    | 52.2    |
| TRANSLATOR FOR WBFL, BELLOWS FALLS, VT. |         |  |                |                          |                |                          |                    |                   |                                    |                         |         |
| 231D<br>Great Barrington                | W231AK  | LIC DCN<br>MA  | 256.5<br>75.9  | 80.6<br>BLFT19980522TE   |                | 42 11 27.0<br>73 22 20.0 | 0.035<br>-55       | 3.0<br>276        | 2.2<br>Northeast Airchecks, Llc    | 54.2                    | 43.2    |
| Translator for WBECFM, Pittsfield, MA   |         |  |                |                          |                |                          |                    |                   |                                    |                         |         |
| 233D<br>Brattleboro                     | W233AR  | LIC _C_<br>VT  | 344.6<br>164.5 | 53.6<br>BLFT20041215ABH  |                | 42 49 44.0<br>72 35 52.0 | 0.010<br>307       | 7.3<br>307        | 5.2<br>Vermont Public Radio        | 44.1                    | 45.0    |
| 231D<br>Keene                           | 637124  | APP _C_<br>NH  | 7.1<br>187.1   | 61.8<br>BNPFT20030317BLE |                | 42 54 57.0<br>72 19 48.0 | 0.010<br>437       | 12.3<br>437       | 8.7<br>Educational Media Foundati  | 47.6                    | 50.3    |

Terrain database is 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.

Blue highlighted text denotes a §74.1204(d) Second Adjacent Channel Given Interference Waiver Request toward WMAS-FM, Springfield, MA and WRSI(FM) as included in **Exhibit 12.6**. Full protection will be afforded both facilities as the proposed interference area is void of population, housing or major roads as noted in the attached exhibit.



72°26'20"W

72°26'0"W

72°25'40"W

72°25'20"W

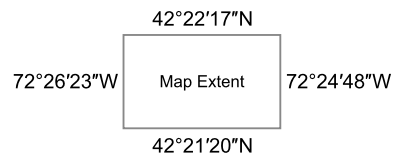
72°25'0"W

The actual Proposed Interference Contour has been calculated to be no less than the 101.7 dBu F(50:10) contour corresponding to the WMAS-FM, CH234B, Springfield, MA 61.7 dBu F(50:50) contour and WRSI(FM), CH230A, Turners Falls, MA 61.7 dBu F(50:50) contour. This represents the proposed interference contour which falls wholly within the 40:1 dBu ratio. As seen in the map, there is a lack of population and housing or major roads around the transmitter site.

## Exhibit 12.6 - §74.1204(d) Waiver Request Toward WMAS-FM - Springfield, MA WRSI(FM) - Turners Falls, MA

Proposed 101.7 dBu f(50:50)

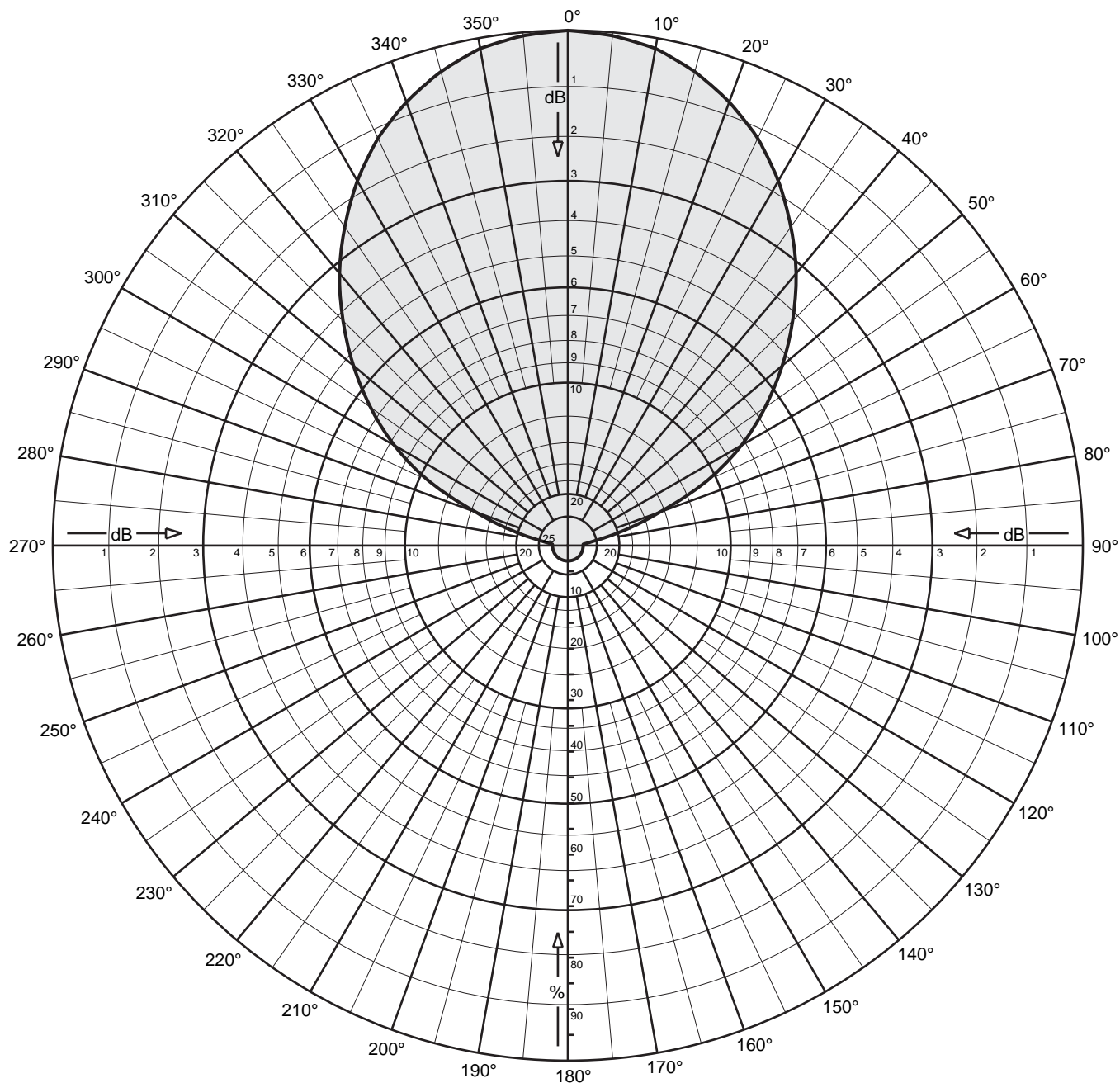
Existing Site  
42° 21' 49" NL  
72° 25' 24" WL  
NAD 1927



Geographic Coordinate System (WGS84)



# Exhibit 12.7 Tabulation of Proposed Directional Antenna (Antenna Rotation: 240.0°T)



CL-FM Log-periodic

FM

Maximum gain: 7.0 dBd

Vertical polarization

Horizontal radiation pattern

0 degree electrical downtilt



# Exhibit 12.7 Tabulation of Proposed Directional Antenna (Antenna Rotation: 240.0°T)



CL-FM Log-periodic

FM

Maximum gain: 7.0 dBd

Vertical polarization

Horizontal radiation pattern

0 degree electrical downtilt

| Angle | Field | Rel.dB | dBd  | PwrMult | Angle | Field | Rel.dB | dBd    | PwrMult |
|-------|-------|--------|------|---------|-------|-------|--------|--------|---------|
| 0     | 1.000 | 0.00   | 7.00 | 5.01    | 45    | 0.618 | -4.19  | 2.81   | 1.91    |
| 1     | 0.998 | -0.01  | 6.99 | 5.00    | 46    | 0.602 | -4.40  | 2.60   | 1.82    |
| 2     | 0.997 | -0.02  | 6.98 | 4.99    | 47    | 0.588 | -4.61  | 2.39   | 1.73    |
| 3     | 0.996 | -0.03  | 6.97 | 4.97    | 48    | 0.573 | -4.84  | 2.16   | 1.65    |
| 4     | 0.995 | -0.04  | 6.96 | 4.96    | 49    | 0.558 | -5.06  | 1.94   | 1.56    |
| 5     | 0.993 | -0.06  | 6.94 | 4.95    | 50    | 0.544 | -5.30  | 1.70   | 1.48    |
| 6     | 0.991 | -0.08  | 6.92 | 4.92    | 51    | 0.528 | -5.54  | 1.46   | 1.40    |
| 7     | 0.988 | -0.10  | 6.90 | 4.89    | 52    | 0.513 | -5.80  | 1.20   | 1.32    |
| 8     | 0.985 | -0.13  | 6.87 | 4.87    | 53    | 0.498 | -6.06  | 0.94   | 1.24    |
| 9     | 0.982 | -0.15  | 6.85 | 4.84    | 54    | 0.483 | -6.33  | 0.67   | 1.17    |
| 10    | 0.980 | -0.18  | 6.82 | 4.81    | 55    | 0.467 | -6.60  | 0.40   | 1.10    |
| 11    | 0.975 | -0.22  | 6.78 | 4.76    | 56    | 0.452 | -6.90  | 0.10   | 1.02    |
| 12    | 0.969 | -0.27  | 6.73 | 4.71    | 57    | 0.436 | -7.20  | -0.20  | 0.95    |
| 13    | 0.964 | -0.32  | 6.68 | 4.65    | 58    | 0.421 | -7.51  | -0.51  | 0.89    |
| 14    | 0.958 | -0.37  | 6.63 | 4.60    | 59    | 0.405 | -7.84  | -0.84  | 0.82    |
| 15    | 0.952 | -0.42  | 6.58 | 4.55    | 60    | 0.390 | -8.18  | -1.18  | 0.76    |
| 16    | 0.946 | -0.49  | 6.51 | 4.48    | 61    | 0.372 | -8.59  | -1.59  | 0.69    |
| 17    | 0.938 | -0.56  | 6.44 | 4.41    | 62    | 0.354 | -9.02  | -2.02  | 0.63    |
| 18    | 0.931 | -0.62  | 6.38 | 4.34    | 63    | 0.336 | -9.47  | -2.47  | 0.57    |
| 19    | 0.923 | -0.69  | 6.31 | 4.27    | 64    | 0.318 | -9.95  | -2.95  | 0.51    |
| 20    | 0.916 | -0.76  | 6.24 | 4.21    | 65    | 0.300 | -10.46 | -3.46  | 0.45    |
| 21    | 0.908 | -0.84  | 6.16 | 4.13    | 66    | 0.278 | -11.12 | -4.12  | 0.39    |
| 22    | 0.899 | -0.92  | 6.08 | 4.05    | 67    | 0.256 | -11.84 | -4.84  | 0.33    |
| 23    | 0.890 | -1.01  | 5.99 | 3.97    | 68    | 0.234 | -12.62 | -5.62  | 0.27    |
| 24    | 0.882 | -1.10  | 5.90 | 3.89    | 69    | 0.212 | -13.47 | -6.47  | 0.23    |
| 25    | 0.873 | -1.18  | 5.82 | 3.82    | 70    | 0.190 | -14.42 | -7.42  | 0.18    |
| 26    | 0.862 | -1.29  | 5.71 | 3.72    | 71    | 0.174 | -15.19 | -8.19  | 0.15    |
| 27    | 0.851 | -1.41  | 5.59 | 3.63    | 72    | 0.158 | -16.03 | -9.03  | 0.13    |
| 28    | 0.840 | -1.52  | 5.48 | 3.53    | 73    | 0.142 | -16.95 | -9.95  | 0.10    |
| 29    | 0.829 | -1.63  | 5.37 | 3.44    | 74    | 0.126 | -17.99 | -10.99 | 0.08    |
| 30    | 0.817 | -1.75  | 5.25 | 3.35    | 75    | 0.110 | -19.17 | -12.17 | 0.06    |
| 31    | 0.806 | -1.88  | 5.12 | 3.25    | 76    | 0.098 | -20.18 | -13.18 | 0.05    |
| 32    | 0.793 | -2.02  | 4.98 | 3.15    | 77    | 0.086 | -21.31 | -14.31 | 0.04    |
| 33    | 0.781 | -2.15  | 4.85 | 3.05    | 78    | 0.074 | -22.62 | -15.62 | 0.03    |
| 34    | 0.767 | -2.30  | 4.70 | 2.95    | 79    | 0.062 | -24.15 | -17.15 | 0.02    |
| 35    | 0.756 | -2.44  | 4.56 | 2.86    | 80    | 0.050 | -26.02 | -19.02 | 0.01    |
| 36    | 0.742 | -2.59  | 4.41 | 2.76    | 81    | 0.046 | -26.74 | -19.74 | 0.01    |
| 37    | 0.729 | -2.74  | 4.26 | 2.67    | 82    | 0.042 | -27.54 | -20.54 | 0.01    |
| 38    | 0.716 | -2.90  | 4.10 | 2.57    | 83    | 0.038 | -28.40 | -21.40 | 0.01    |
| 39    | 0.704 | -3.05  | 3.95 | 2.48    | 84    | 0.034 | -29.37 | -22.37 | 0.01    |
| 40    | 0.690 | -3.22  | 3.78 | 2.39    | 85    | 0.030 | -30.46 | -23.46 | 0.00    |
| 41    | 0.675 | -3.41  | 3.59 | 2.29    | 86    | 0.030 | -30.46 | -23.46 | 0.00    |
| 42    | 0.661 | -3.60  | 3.40 | 2.19    | 87    | 0.030 | -30.46 | -23.46 | 0.00    |
| 43    | 0.646 | -3.79  | 3.21 | 2.09    | 88    | 0.030 | -30.46 | -23.46 | 0.00    |
| 44    | 0.632 | -3.99  | 3.01 | 2.00    | 89    | 0.030 | -30.46 | -23.46 | 0.00    |



# Exhibit 12.7 Tabulation of Proposed Directional Antenna (Antenna Rotation: 240.0°T)



CL-FM Log-periodic

FM

Maximum gain: 7.0 dBd

Vertical polarization

Horizontal radiation pattern

0 degree electrical downtilt

| Angle | Field | Rel.dB | dBd    | PwrMult | Angle | Field | Rel.dB | dBd    | PwrMult |
|-------|-------|--------|--------|---------|-------|-------|--------|--------|---------|
| 90    | 0.030 | -30.46 | -23.46 | 0.00    | 135   | 0.030 | -30.46 | -23.46 | 0.00    |
| 91    | 0.030 | -30.46 | -23.46 | 0.00    | 136   | 0.030 | -30.46 | -23.46 | 0.00    |
| 92    | 0.030 | -30.46 | -23.46 | 0.00    | 137   | 0.030 | -30.46 | -23.46 | 0.00    |
| 93    | 0.030 | -30.46 | -23.46 | 0.00    | 138   | 0.030 | -30.46 | -23.46 | 0.00    |
| 94    | 0.030 | -30.46 | -23.46 | 0.00    | 139   | 0.030 | -30.46 | -23.46 | 0.00    |
| 95    | 0.030 | -30.46 | -23.46 | 0.00    | 140   | 0.030 | -30.46 | -23.46 | 0.00    |
| 96    | 0.030 | -30.46 | -23.46 | 0.00    | 141   | 0.030 | -30.46 | -23.46 | 0.00    |
| 97    | 0.030 | -30.46 | -23.46 | 0.00    | 142   | 0.030 | -30.46 | -23.46 | 0.00    |
| 98    | 0.030 | -30.46 | -23.46 | 0.00    | 143   | 0.030 | -30.46 | -23.46 | 0.00    |
| 99    | 0.030 | -30.46 | -23.46 | 0.00    | 144   | 0.030 | -30.46 | -23.46 | 0.00    |
| 100   | 0.030 | -30.46 | -23.46 | 0.00    | 145   | 0.030 | -30.46 | -23.46 | 0.00    |
| 101   | 0.030 | -30.46 | -23.46 | 0.00    | 146   | 0.030 | -30.46 | -23.46 | 0.00    |
| 102   | 0.030 | -30.46 | -23.46 | 0.00    | 147   | 0.030 | -30.46 | -23.46 | 0.00    |
| 103   | 0.030 | -30.46 | -23.46 | 0.00    | 148   | 0.030 | -30.46 | -23.46 | 0.00    |
| 104   | 0.030 | -30.46 | -23.46 | 0.00    | 149   | 0.030 | -30.46 | -23.46 | 0.00    |
| 105   | 0.030 | -30.46 | -23.46 | 0.00    | 150   | 0.030 | -30.46 | -23.46 | 0.00    |
| 106   | 0.030 | -30.46 | -23.46 | 0.00    | 151   | 0.030 | -30.46 | -23.46 | 0.00    |
| 107   | 0.030 | -30.46 | -23.46 | 0.00    | 152   | 0.030 | -30.46 | -23.46 | 0.00    |
| 108   | 0.030 | -30.46 | -23.46 | 0.00    | 153   | 0.030 | -30.46 | -23.46 | 0.00    |
| 109   | 0.030 | -30.46 | -23.46 | 0.00    | 154   | 0.030 | -30.46 | -23.46 | 0.00    |
| 110   | 0.030 | -30.46 | -23.46 | 0.00    | 155   | 0.030 | -30.46 | -23.46 | 0.00    |
| 111   | 0.030 | -30.46 | -23.46 | 0.00    | 156   | 0.030 | -30.46 | -23.46 | 0.00    |
| 112   | 0.030 | -30.46 | -23.46 | 0.00    | 157   | 0.030 | -30.46 | -23.46 | 0.00    |
| 113   | 0.030 | -30.46 | -23.46 | 0.00    | 158   | 0.030 | -30.46 | -23.46 | 0.00    |
| 114   | 0.030 | -30.46 | -23.46 | 0.00    | 159   | 0.030 | -30.46 | -23.46 | 0.00    |
| 115   | 0.030 | -30.46 | -23.46 | 0.00    | 160   | 0.030 | -30.46 | -23.46 | 0.00    |
| 116   | 0.030 | -30.46 | -23.46 | 0.00    | 161   | 0.030 | -30.46 | -23.46 | 0.00    |
| 117   | 0.030 | -30.46 | -23.46 | 0.00    | 162   | 0.030 | -30.46 | -23.46 | 0.00    |
| 118   | 0.030 | -30.46 | -23.46 | 0.00    | 163   | 0.030 | -30.46 | -23.46 | 0.00    |
| 119   | 0.030 | -30.46 | -23.46 | 0.00    | 164   | 0.030 | -30.46 | -23.46 | 0.00    |
| 120   | 0.030 | -30.46 | -23.46 | 0.00    | 165   | 0.030 | -30.46 | -23.46 | 0.00    |
| 121   | 0.030 | -30.46 | -23.46 | 0.00    | 166   | 0.030 | -30.46 | -23.46 | 0.00    |
| 122   | 0.030 | -30.46 | -23.46 | 0.00    | 167   | 0.030 | -30.46 | -23.46 | 0.00    |
| 123   | 0.030 | -30.46 | -23.46 | 0.00    | 168   | 0.030 | -30.46 | -23.46 | 0.00    |
| 124   | 0.030 | -30.46 | -23.46 | 0.00    | 169   | 0.030 | -30.46 | -23.46 | 0.00    |
| 125   | 0.030 | -30.46 | -23.46 | 0.00    | 170   | 0.030 | -30.46 | -23.46 | 0.00    |
| 126   | 0.030 | -30.46 | -23.46 | 0.00    | 171   | 0.030 | -30.46 | -23.46 | 0.00    |
| 127   | 0.030 | -30.46 | -23.46 | 0.00    | 172   | 0.030 | -30.46 | -23.46 | 0.00    |
| 128   | 0.030 | -30.46 | -23.46 | 0.00    | 173   | 0.030 | -30.46 | -23.46 | 0.00    |
| 129   | 0.030 | -30.46 | -23.46 | 0.00    | 174   | 0.030 | -30.46 | -23.46 | 0.00    |
| 130   | 0.030 | -30.46 | -23.46 | 0.00    | 175   | 0.030 | -30.46 | -23.46 | 0.00    |
| 131   | 0.030 | -30.46 | -23.46 | 0.00    | 176   | 0.030 | -30.46 | -23.46 | 0.00    |
| 132   | 0.030 | -30.46 | -23.46 | 0.00    | 177   | 0.030 | -30.46 | -23.46 | 0.00    |
| 133   | 0.030 | -30.46 | -23.46 | 0.00    | 178   | 0.030 | -30.46 | -23.46 | 0.00    |
| 134   | 0.030 | -30.46 | -23.46 | 0.00    | 179   | 0.030 | -30.46 | -23.46 | 0.00    |

# Exhibit 12.7 Tabulation of Proposed Directional Antenna (Antenna Rotation: 240.0°T)



CL-FM Log-periodic  
FM

Maximum gain: 7.0 dBd

Vertical polarization

Horizontal radiation pattern

0 degree electrical downtilt

| Angle | Field | Rel.dB | dBd    | PwrMult | Angle | Field | Rel.dB | dBd    | PwrMult |
|-------|-------|--------|--------|---------|-------|-------|--------|--------|---------|
| 180   | 0.030 | -30.46 | -23.46 | 0.00    | 225   | 0.030 | -30.46 | -23.46 | 0.00    |
| 181   | 0.030 | -30.46 | -23.46 | 0.00    | 226   | 0.030 | -30.46 | -23.46 | 0.00    |
| 182   | 0.030 | -30.46 | -23.46 | 0.00    | 227   | 0.030 | -30.46 | -23.46 | 0.00    |
| 183   | 0.030 | -30.46 | -23.46 | 0.00    | 228   | 0.030 | -30.46 | -23.46 | 0.00    |
| 184   | 0.030 | -30.46 | -23.46 | 0.00    | 229   | 0.030 | -30.46 | -23.46 | 0.00    |
| 185   | 0.030 | -30.46 | -23.46 | 0.00    | 230   | 0.030 | -30.46 | -23.46 | 0.00    |
| 186   | 0.030 | -30.46 | -23.46 | 0.00    | 231   | 0.030 | -30.46 | -23.46 | 0.00    |
| 187   | 0.030 | -30.46 | -23.46 | 0.00    | 232   | 0.030 | -30.46 | -23.46 | 0.00    |
| 188   | 0.030 | -30.46 | -23.46 | 0.00    | 233   | 0.030 | -30.46 | -23.46 | 0.00    |
| 189   | 0.030 | -30.46 | -23.46 | 0.00    | 234   | 0.030 | -30.46 | -23.46 | 0.00    |
| 190   | 0.030 | -30.46 | -23.46 | 0.00    | 235   | 0.030 | -30.46 | -23.46 | 0.00    |
| 191   | 0.030 | -30.46 | -23.46 | 0.00    | 236   | 0.030 | -30.46 | -23.46 | 0.00    |
| 192   | 0.030 | -30.46 | -23.46 | 0.00    | 237   | 0.030 | -30.46 | -23.46 | 0.00    |
| 193   | 0.030 | -30.46 | -23.46 | 0.00    | 238   | 0.030 | -30.46 | -23.46 | 0.00    |
| 194   | 0.030 | -30.46 | -23.46 | 0.00    | 239   | 0.030 | -30.46 | -23.46 | 0.00    |
| 195   | 0.030 | -30.46 | -23.46 | 0.00    | 240   | 0.030 | -30.46 | -23.46 | 0.00    |
| 196   | 0.030 | -30.46 | -23.46 | 0.00    | 241   | 0.030 | -30.46 | -23.46 | 0.00    |
| 197   | 0.030 | -30.46 | -23.46 | 0.00    | 242   | 0.030 | -30.46 | -23.46 | 0.00    |
| 198   | 0.030 | -30.46 | -23.46 | 0.00    | 243   | 0.030 | -30.46 | -23.46 | 0.00    |
| 199   | 0.030 | -30.46 | -23.46 | 0.00    | 244   | 0.030 | -30.46 | -23.46 | 0.00    |
| 200   | 0.030 | -30.46 | -23.46 | 0.00    | 245   | 0.030 | -30.46 | -23.46 | 0.00    |
| 201   | 0.030 | -30.46 | -23.46 | 0.00    | 246   | 0.030 | -30.46 | -23.46 | 0.00    |
| 202   | 0.030 | -30.46 | -23.46 | 0.00    | 247   | 0.030 | -30.46 | -23.46 | 0.00    |
| 203   | 0.030 | -30.46 | -23.46 | 0.00    | 248   | 0.030 | -30.46 | -23.46 | 0.00    |
| 204   | 0.030 | -30.46 | -23.46 | 0.00    | 249   | 0.030 | -30.46 | -23.46 | 0.00    |
| 205   | 0.030 | -30.46 | -23.46 | 0.00    | 250   | 0.030 | -30.46 | -23.46 | 0.00    |
| 206   | 0.030 | -30.46 | -23.46 | 0.00    | 251   | 0.030 | -30.46 | -23.46 | 0.00    |
| 207   | 0.030 | -30.46 | -23.46 | 0.00    | 252   | 0.030 | -30.46 | -23.46 | 0.00    |
| 208   | 0.030 | -30.46 | -23.46 | 0.00    | 253   | 0.030 | -30.46 | -23.46 | 0.00    |
| 209   | 0.030 | -30.46 | -23.46 | 0.00    | 254   | 0.030 | -30.46 | -23.46 | 0.00    |
| 210   | 0.030 | -30.46 | -23.46 | 0.00    | 255   | 0.030 | -30.46 | -23.46 | 0.00    |
| 211   | 0.030 | -30.46 | -23.46 | 0.00    | 256   | 0.030 | -30.46 | -23.46 | 0.00    |
| 212   | 0.030 | -30.46 | -23.46 | 0.00    | 257   | 0.030 | -30.46 | -23.46 | 0.00    |
| 213   | 0.030 | -30.46 | -23.46 | 0.00    | 258   | 0.030 | -30.46 | -23.46 | 0.00    |
| 214   | 0.030 | -30.46 | -23.46 | 0.00    | 259   | 0.030 | -30.46 | -23.46 | 0.00    |
| 215   | 0.030 | -30.46 | -23.46 | 0.00    | 260   | 0.030 | -30.46 | -23.46 | 0.00    |
| 216   | 0.030 | -30.46 | -23.46 | 0.00    | 261   | 0.030 | -30.46 | -23.46 | 0.00    |
| 217   | 0.030 | -30.46 | -23.46 | 0.00    | 262   | 0.030 | -30.46 | -23.46 | 0.00    |
| 218   | 0.030 | -30.46 | -23.46 | 0.00    | 263   | 0.030 | -30.46 | -23.46 | 0.00    |
| 219   | 0.030 | -30.46 | -23.46 | 0.00    | 264   | 0.030 | -30.46 | -23.46 | 0.00    |
| 220   | 0.030 | -30.46 | -23.46 | 0.00    | 265   | 0.030 | -30.46 | -23.46 | 0.00    |
| 221   | 0.030 | -30.46 | -23.46 | 0.00    | 266   | 0.030 | -30.46 | -23.46 | 0.00    |
| 222   | 0.030 | -30.46 | -23.46 | 0.00    | 267   | 0.030 | -30.46 | -23.46 | 0.00    |
| 223   | 0.030 | -30.46 | -23.46 | 0.00    | 268   | 0.030 | -30.46 | -23.46 | 0.00    |
| 224   | 0.030 | -30.46 | -23.46 | 0.00    | 269   | 0.030 | -30.46 | -23.46 | 0.00    |

# Exhibit 12.7 Tabulation of Proposed Directional Antenna (Antenna Rotation: 240.0°T)



CL-FM Log-periodic

FM

Maximum gain: 7.0 dBd

Vertical polarization

Horizontal radiation pattern

0 degree electrical downtilt

| Angle | Field | Rel.dB | dBd    | PwrMult | Angle | Field | Rel.dB | dBd  | PwrMult |
|-------|-------|--------|--------|---------|-------|-------|--------|------|---------|
| 270   | 0.030 | -30.46 | -23.46 | 0.00    | 315   | 0.618 | -4.19  | 2.81 | 1.91    |
| 271   | 0.030 | -30.46 | -23.46 | 0.00    | 316   | 0.632 | -3.99  | 3.01 | 2.00    |
| 272   | 0.030 | -30.46 | -23.46 | 0.00    | 317   | 0.646 | -3.79  | 3.21 | 2.09    |
| 273   | 0.030 | -30.46 | -23.46 | 0.00    | 318   | 0.661 | -3.60  | 3.40 | 2.19    |
| 274   | 0.030 | -30.46 | -23.46 | 0.00    | 319   | 0.675 | -3.41  | 3.59 | 2.29    |
| 275   | 0.030 | -30.46 | -23.46 | 0.00    | 320   | 0.690 | -3.22  | 3.78 | 2.39    |
| 276   | 0.034 | -29.37 | -22.37 | 0.01    | 321   | 0.704 | -3.05  | 3.95 | 2.48    |
| 277   | 0.038 | -28.40 | -21.40 | 0.01    | 322   | 0.716 | -2.90  | 4.10 | 2.57    |
| 278   | 0.042 | -27.54 | -20.54 | 0.01    | 323   | 0.729 | -2.74  | 4.26 | 2.67    |
| 279   | 0.046 | -26.74 | -19.74 | 0.01    | 324   | 0.742 | -2.59  | 4.41 | 2.76    |
| 280   | 0.050 | -26.02 | -19.02 | 0.01    | 325   | 0.756 | -2.44  | 4.56 | 2.86    |
| 281   | 0.062 | -24.15 | -17.15 | 0.02    | 326   | 0.767 | -2.30  | 4.70 | 2.95    |
| 282   | 0.074 | -22.62 | -15.62 | 0.03    | 327   | 0.781 | -2.15  | 4.85 | 3.05    |
| 283   | 0.086 | -21.31 | -14.31 | 0.04    | 328   | 0.793 | -2.02  | 4.98 | 3.15    |
| 284   | 0.098 | -20.18 | -13.18 | 0.05    | 329   | 0.806 | -1.88  | 5.12 | 3.25    |
| 285   | 0.110 | -19.17 | -12.17 | 0.06    | 330   | 0.817 | -1.75  | 5.25 | 3.35    |
| 286   | 0.126 | -17.99 | -10.99 | 0.08    | 331   | 0.829 | -1.63  | 5.37 | 3.44    |
| 287   | 0.142 | -16.95 | -9.95  | 0.10    | 332   | 0.840 | -1.52  | 5.48 | 3.53    |
| 288   | 0.158 | -16.03 | -9.03  | 0.13    | 333   | 0.851 | -1.41  | 5.59 | 3.63    |
| 289   | 0.174 | -15.19 | -8.19  | 0.15    | 334   | 0.862 | -1.29  | 5.71 | 3.72    |
| 290   | 0.190 | -14.42 | -7.42  | 0.18    | 335   | 0.873 | -1.18  | 5.82 | 3.82    |
| 291   | 0.212 | -13.47 | -6.47  | 0.23    | 336   | 0.882 | -1.10  | 5.90 | 3.89    |
| 292   | 0.234 | -12.62 | -5.62  | 0.27    | 337   | 0.890 | -1.01  | 5.99 | 3.97    |
| 293   | 0.256 | -11.84 | -4.84  | 0.33    | 338   | 0.899 | -0.92  | 6.08 | 4.05    |
| 294   | 0.278 | -11.12 | -4.12  | 0.39    | 339   | 0.908 | -0.84  | 6.16 | 4.13    |
| 295   | 0.300 | -10.46 | -3.46  | 0.45    | 340   | 0.916 | -0.76  | 6.24 | 4.21    |
| 296   | 0.318 | -9.95  | -2.95  | 0.51    | 341   | 0.923 | -0.69  | 6.31 | 4.27    |
| 297   | 0.336 | -9.47  | -2.47  | 0.57    | 342   | 0.931 | -0.62  | 6.38 | 4.34    |
| 298   | 0.354 | -9.02  | -2.02  | 0.63    | 343   | 0.938 | -0.56  | 6.44 | 4.41    |
| 299   | 0.372 | -8.59  | -1.59  | 0.69    | 344   | 0.946 | -0.49  | 6.51 | 4.48    |
| 300   | 0.390 | -8.18  | -1.18  | 0.76    | 345   | 0.952 | -0.42  | 6.58 | 4.55    |
| 301   | 0.405 | -7.84  | -0.84  | 0.82    | 346   | 0.958 | -0.37  | 6.63 | 4.60    |
| 302   | 0.421 | -7.51  | -0.51  | 0.89    | 347   | 0.964 | -0.32  | 6.68 | 4.65    |
| 303   | 0.436 | -7.20  | -0.20  | 0.95    | 348   | 0.969 | -0.27  | 6.73 | 4.71    |
| 304   | 0.452 | -6.90  | 0.10   | 1.02    | 349   | 0.975 | -0.22  | 6.78 | 4.76    |
| 305   | 0.467 | -6.60  | 0.40   | 1.10    | 350   | 0.980 | -0.18  | 6.82 | 4.81    |
| 306   | 0.483 | -6.33  | 0.67   | 1.17    | 351   | 0.982 | -0.15  | 6.85 | 4.84    |
| 307   | 0.498 | -6.06  | 0.94   | 1.24    | 352   | 0.985 | -0.13  | 6.87 | 4.87    |
| 308   | 0.513 | -5.80  | 1.20   | 1.32    | 353   | 0.988 | -0.10  | 6.90 | 4.89    |
| 309   | 0.528 | -5.54  | 1.46   | 1.40    | 354   | 0.991 | -0.08  | 6.92 | 4.92    |
| 310   | 0.544 | -5.30  | 1.70   | 1.48    | 355   | 0.993 | -0.06  | 6.94 | 4.95    |
| 311   | 0.558 | -5.06  | 1.94   | 1.56    | 356   | 0.995 | -0.04  | 6.96 | 4.96    |
| 312   | 0.573 | -4.84  | 2.16   | 1.65    | 357   | 0.996 | -0.03  | 6.97 | 4.97    |
| 313   | 0.588 | -4.61  | 2.39   | 1.73    | 358   | 0.997 | -0.02  | 6.98 | 4.99    |
| 314   | 0.602 | -4.40  | 2.60   | 1.82    | 359   | 0.998 | -0.01  | 6.99 | 5.00    |