

**Translator K296HA Washington MO**  
**FACID 141993**  
**License LMS- 0000090361**

**Purpose of Application & Technical Statement**

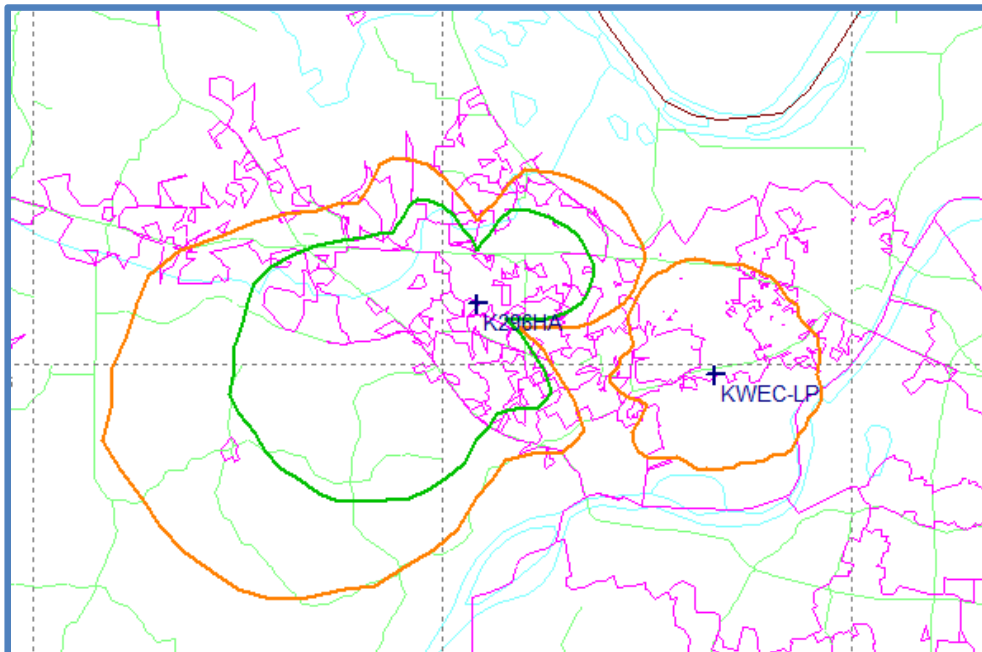
This minor change to the licensed facility requests an alternate operating channel with the authorized antenna pattern at the authorized location and elevation. The proposal will continue to be used as fill-in service for AM station KRAP (AM) Washington MO which is common ownership of the translator herein. This application requests a non-adjacent channel change based on reduction of interference on the current channel.

**FILL-IN STATUS**

Applicant certifies that the proposal is for a fill-in translator entirely within the primary AM station's 2mV/m Daytime contour limit. The attached Contour Map has the primary station contour noted thereon and demonstrates compliance.

**NON-ADJACENT CHANNEL REQUEST**

The applicant seeks relief from first-adjacent channel LPFM facility KWEC-LP Ch295-LP100. Both facilities have reported signal interference from the other from each respective station's listeners. This map shows the landscape of the contour protection between the 2 facilities:



An engineering review indicates that the clearance between the facilities is 0.07dB for first adjacent contour protection, thus the myriad of reports from listeners is substantiated by this analysis. With resources limited for the LPFM licensee, this commercial translator licensee has elected to remedy the mutual interference by making a change from channel 296 to channel 258.

## OVERLAP REQUIREMENTS

The attached map of contours depicts the proposed allocation situation with respect to all pertinent co and adjacent facilities. All facilities have been depicted utilizing either the maximum ERP or directional pattern data as on file with the commission and 1 degree radial intervals on close in contours in the interest of accuracy. AAT data for the proposed facility was derived from the FCC's 30 second database, *Comstudy*.

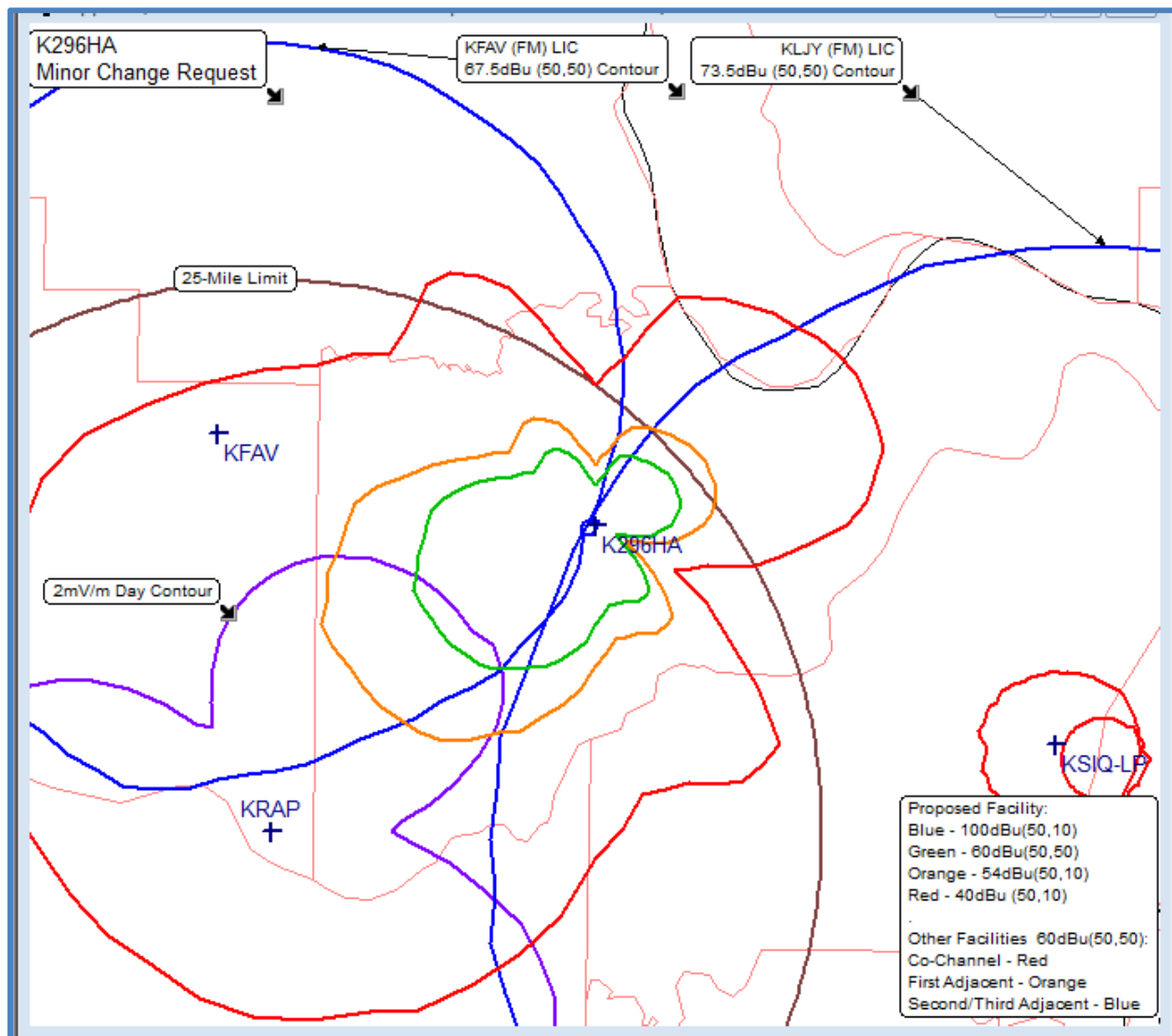
As seen on the attached maps of contours, channel 258-D is operable at the proposed location with the following facility notes:

- In compliance with 47 CFR 74.1204(g) the proposed facility operates at an effective radiated power which is over 100 watts, therefore protection to intermediate frequency facilities has been calculated and meets all mileage separation requirements.
- The proposed location is within the protected 60dbu (50,50) contour of second-adjacent station KLJY(FM) channel 256-C0 located 41.8 km away. Therefore, an interference analysis has been conducted based on the u/d ratio of +40 dB at the proposed site. The signal of KLJY(FM) at the proposed location is 73.5 dBu (50,50) making the relevant interfering contour of the proposed facility 113.5 dBu (50,10). The free space distance to this contour in a worse-case scenario utilizing a single dipole antenna is 234 meters.
- The proposed location is within the protected 60dbu (50,50) contour of second-adjacent station KFAV(FM) channel 260-C3 located 28.2 km away. Therefore, an interference analysis has been conducted based on the u/d ratio of +40 dB at the proposed site. The signal of KLJY(FM) at the proposed location is 67.5 dBu (50,50) making the relevant interfering contour of the proposed facility 107.5 dBu (50,10). The free space distance to this contour in a worse-case scenario utilizing a single dipole antenna is 467 meters.
- Utilizing the lesser of those 2 adjacent contours – the 107.5dBu – the applicant has calculated the vertical radiation characteristics of the proposed antenna, a Scala HDCA5-CP directional one-bay circular model. The antenna elevation is 115 meters above ground, and the calculations demonstrate that the interfering contour does not reach a point closer than 22 meters above ground at any depression angle. Thus, the interfering contour is incapable of reaching the general public at any point.

Based on this showing, a waiver of section 74.1204 is requested in accordance with *Living Way Ministries, Inc.* (FCC 08-242) on the basis of zero population in the area of interference.

It should be noted that should any actual real world interference occur, the applicant acknowledges that it will promptly suspend operation of this translator in accordance with 47 CFR. 74.1203.

## MAP OF INTERFERING CONTOURS



## ANTENNA

The Proposed antenna is the currently authorized Scala Model HDCA-5CP. The orientation remains at 240 degrees and fully protects all facilities in the allocation landscape.

# SCALA

## 1 Bay Model HDCA5-CP RM Circularly Polarized FM Antenna



Frequency = 99.5 Mhz  
Interfering Contour 107.5 dBu (50,10)

ERP= 250 watts  
Height = 113 m AGL

| Depression Angle | Relative Field | Effective Power (w) | Distance to Contour (m) | Distance from Antenna to Ground (m) | Clearance (m) |
|------------------|----------------|---------------------|-------------------------|-------------------------------------|---------------|
| 1                | 0.997          | 248.5               | 466.30                  | 8,632.79                            | 8166          |
| 2                | 0.994          | 247.0               | 464.90                  | 4,317.05                            | 3852          |
| 3                | 0.991          | 245.5               | 463.49                  | 2,878.76                            | 2415          |
| 4                | 0.988          | 244.0               | 462.09                  | 2,159.84                            | 1698          |
| 5                | 0.985          | 242.6               | 460.69                  | 1,728.66                            | 1268          |
| 6                | 0.979          | 239.6               | 457.88                  | 1,441.36                            | 983           |
| 7                | 0.972          | 236.2               | 454.61                  | 1,236.27                            | 782           |
| 8                | 0.965          | 232.8               | 451.33                  | 1,082.56                            | 631           |
| 9                | 0.959          | 229.9               | 448.53                  | 963.11                              | 515           |
| 10               | 0.952          | 226.6               | 445.25                  | 867.63                              | 422           |
| 11               | 0.941          | 221.4               | 440.11                  | 789.60                              | 349           |
| 12               | 0.929          | 215.8               | 434.50                  | 724.65                              | 290           |
| 13               | 0.918          | 210.7               | 429.35                  | 669.76                              | 240           |
| 14               | 0.906          | 205.2               | 423.74                  | 622.77                              | 199           |
| 15               | 0.895          | 200.3               | 418.59                  | 582.12                              | 164           |
| 16               | 0.878          | 192.7               | 410.64                  | 546.60                              | 136           |
| 17               | 0.861          | 185.3               | 402.69                  | 515.31                              | 113           |
| 18               | 0.844          | 178.1               | 394.74                  | 487.56                              | 93            |
| 19               | 0.827          | 171.0               | 386.79                  | 462.77                              | 76            |
| 20               | 0.810          | 164.0               | 378.84                  | 440.51                              | 62            |
| 21               | 0.789          | 155.6               | 369.02                  | 420.41                              | 51            |
| 22               | 0.769          | 147.8               | 359.66                  | 402.19                              | 43            |
| 23               | 0.748          | 139.9               | 349.84                  | 385.59                              | 36            |
| 24               | 0.728          | 132.5               | 340.49                  | 370.42                              | 30            |
| 25               | 0.707          | 125.0               | 330.67                  | 356.50                              | 26            |
| 26               | 0.685          | 117.3               | 320.38                  | 343.69                              | 23            |
| 27               | 0.663          | 109.9               | 310.09                  | 331.86                              | 22            |
| 28               | 0.640          | 102.4               | 299.33                  | 320.92                              | 22            |
| 29               | 0.618          | 95.5                | 289.04                  | 310.77                              | 22            |
| 30               | 0.595          | 88.5                | 278.28                  | 301.33                              | 23            |
| 31               | 0.573          | 82.1                | 267.99                  | 292.53                              | 25            |
| 32               | 0.551          | 75.9                | 257.70                  | 284.31                              | 27            |
| 33               | 0.529          | 70.0                | 247.41                  | 276.63                              | 29            |
| 34               | 0.507          | 64.3                | 237.13                  | 269.43                              | 32            |
| 35               | 0.485          | 58.8                | 226.84                  | 262.67                              | 36            |
| 36               | 0.465          | 54.1                | 217.48                  | 256.32                              | 39            |
| 37               | 0.446          | 49.7                | 208.60                  | 250.35                              | 42            |
| 38               | 0.427          | 45.6                | 199.71                  | 244.72                              | 45            |
| 39               | 0.407          | 41.4                | 190.36                  | 239.41                              | 49            |
| 40               | 0.387          | 37.4                | 181.00                  | 234.39                              | 53            |
| 41               | 0.369          | 34.0                | 172.58                  | 229.65                              | 57            |
| 42               | 0.349          | 30.5                | 163.23                  | 225.16                              | 62            |
| 43               | 0.329          | 27.1                | 153.87                  | 220.91                              | 67            |
| 44               | 0.309          | 23.9                | 144.52                  | 216.89                              | 72            |
| 45               | 0.290          | 21.0                | 135.63                  | 213.07                              | 77            |

| Depression Angle | Relative Field | Effective Power (w) | Distance to Contour (m) | Distance from Antenna to Ground (m) | Clearance (m) |
|------------------|----------------|---------------------|-------------------------|-------------------------------------|---------------|
| 46               | 0.269          | 18.1                | 125.81                  | 209.45                              | 84            |
| 47               | 0.248          | 15.4                | 115.99                  | 206.01                              | 90            |
| 48               | 0.227          | 12.9                | 106.17                  | 202.74                              | 97            |
| 49               | 0.206          | 10.6                | 96.35                   | 199.63                              | 103           |
| 50               | 0.185          | 8.6                 | 86.53                   | 196.68                              | 110           |
| 51               | 0.169          | 7.1                 | 79.04                   | 193.87                              | 115           |
| 52               | 0.153          | 5.9                 | 71.56                   | 191.19                              | 120           |
| 53               | 0.137          | 4.7                 | 64.08                   | 188.65                              | 125           |
| 54               | 0.121          | 3.7                 | 56.59                   | 186.23                              | 130           |
| 55               | 0.105          | 2.8                 | 49.11                   | 183.93                              | 135           |
| 56               | 0.105          | 2.8                 | 49.11                   | 181.73                              | 133           |
| 57               | 0.106          | 2.8                 | 49.58                   | 179.64                              | 130           |
| 58               | 0.106          | 2.8                 | 49.58                   | 177.66                              | 128           |
| 59               | 0.107          | 2.9                 | 50.04                   | 175.77                              | 126           |
| 60               | 0.108          | 2.9                 | 50.51                   | 173.97                              | 123           |
| 61               | 0.109          | 3.0                 | 50.98                   | 172.26                              | 121           |
| 62               | 0.111          | 3.1                 | 51.92                   | 170.64                              | 119           |
| 63               | 0.114          | 3.2                 | 53.32                   | 169.09                              | 116           |
| 64               | 0.116          | 3.4                 | 54.25                   | 167.63                              | 113           |
| 65               | 0.117          | 3.4                 | 54.72                   | 166.24                              | 112           |
| 66               | 0.122          | 3.7                 | 57.06                   | 164.92                              | 108           |
| 67               | 0.126          | 4.0                 | 58.93                   | 163.67                              | 105           |
| 68               | 0.131          | 4.3                 | 61.27                   | 162.50                              | 101           |
| 69               | 0.136          | 4.6                 | 63.61                   | 161.38                              | 98            |
| 70               | 0.140          | 4.9                 | 65.48                   | 160.33                              | 95            |
| 71               | 0.146          | 5.3                 | 68.28                   | 159.34                              | 91            |
| 72               | 0.152          | 5.8                 | 71.09                   | 158.42                              | 87            |
| 73               | 0.158          | 6.2                 | 73.90                   | 157.55                              | 84            |
| 74               | 0.164          | 6.7                 | 76.70                   | 156.73                              | 80            |
| 75               | 0.170          | 7.2                 | 79.51                   | 155.98                              | 76            |
| 76               | 0.176          | 7.7                 | 82.32                   | 155.28                              | 73            |
| 77               | 0.182          | 8.3                 | 85.12                   | 154.63                              | 70            |
| 78               | 0.188          | 8.8                 | 87.93                   | 154.03                              | 66            |
| 79               | 0.194          | 9.4                 | 90.73                   | 153.48                              | 63            |
| 80               | 0.200          | 10.0                | 93.54                   | 152.99                              | 59            |
| 81               | 0.197          | 9.7                 | 92.14                   | 152.54                              | 60            |
| 82               | 0.194          | 9.4                 | 90.73                   | 152.14                              | 61            |
| 83               | 0.191          | 9.1                 | 89.33                   | 151.79                              | 62            |
| 84               | 0.188          | 8.8                 | 87.93                   | 151.49                              | 64            |
| 85               | 0.185          | 8.6                 | 86.53                   | 151.24                              | 65            |
| 86               | 0.175          | 7.7                 | 81.85                   | 151.03                              | 69            |
| 87               | 0.165          | 6.8                 | 77.17                   | 150.87                              | 74            |
| 88               | 0.155          | 6.0                 | 72.49                   | 150.75                              | 78            |
| 89               | 0.145          | 5.3                 | 67.82                   | 150.69                              | 83            |
| 90               | 0.135          | 4.6                 | 0.00                    | 150.66                              | 151           |

### NOTES:

- HEIGHT HAS BEEN REDUCED BY 2 METERS TO ALLOW FOR HUMAN EXPOSURE
- DISTANCE FROM ANTENNA TO GROUND IS ACTUALLY TO A POINT 2 METERS ABOVE GROUND