

[Exhibit 12]

## **Non-Interference Compliance**

Regarding FCC File Number: BNPFT-20030317FQM

Channel: 273

### **Description of Exhibit 12 Contents**

This exhibit demonstrates that the proposed facility complies with contour overlap and interference protection provisions in all the applicable rule sections and that this application for a construction permit is in full compliance with 47 CFR 74.1204.

Page 2 of this exhibit is an explanation of the tabulated data, which is included as evidence on page 5 of this exhibit.

Pages 3 and 4 of this exhibit contain an explanation of the method used to demonstrate compliance with contour overlap and interference protection provisions based on 47 CFR 74.1204(d), which states:

*"an application otherwise precluded by this section will be accepted if it can be demonstrated that no actual interference will occur due to intervening terrain, lack of population or such other factors as may be applicable."*

In addition, page 4 includes a tabulation of the second and third adjacent stations which this application is required to protect and the field strengths of those stations in the vicinity of the proposed translator. The field strengths given were based on contours predicted using FCC contour algorithms and 3 arc second terrain data.

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

Page 5 of this exhibit is the tabulated data from the interference analysis, which shows all stations that this application had to consider for contour protection. These tabulated values were generated using high resolution 3 arc second terrain data for the best possible accuracy.

Page 6 of this exhibit is a portion of a USGS 1:24,000 scale 7.5 min quadrangle at full scale with the calculated area of interference overlayed. The sheet includes the quadrangle name and measurement scale at the bottom-left corner (note: "Mt" refers to meters). The area of interference was calculated using a free-space calculation (see FCC 98-117, Appendix A, pg. 41 for reference to the equation used).

Since the proposed translator is 259 km from the Canadian border, 47 CFR 74.1235(d) has been taken into account and this applicant certifies that in no direction does the 34 dBu F(50,10) extend beyond 60 km, and this application is therefore in full compliance with 47 CFR 74.1235(d)(3), which states that "the distance to the 34 dBu interfering contour may not exceed 60 km in any direction," and hence in compliance with 47 CFR 74.1204(h).

## Explanation of Frequency Finder Results

The interference analysis for this application was performed using the "Frequency Finder" module in RadioSoft's Comstudy, version 2.2.

Frequency Finder analyzes data taken directly from the FCC's FM database and looks for prohibited overlap with contours of adjacent stations and prohibited proximity to stations 53 or 54 channels from the proposed station (IF) using 3 arc second terrain data and the FCC's contour algorithms. The results tabulated are the stations returned from that analysis. (Note: Because Comstudy was looking at the FCC's FM database, it took into account the proposed translator when doing the analysis and returned it in the tabulated results. For the sake of simplicity, that record has been deleted from all tabulated results.)

The first several columns of the table are self-explanatory. They give various data on the stations in question. The column labeled "Clr" gives the proposed translator's "clearance" with respect to the tabulated station, either in dB or km. The values listed with no units are given in km and are for stations located on an IF to the proposed site's channel.

**A negative value in the "Clr" column does NOT necessarily represent prohibited contour overlap, as explained below.**

A negative value listed in the "Clr" column would indicate either overlap of interference and protected contours or prohibited proximity to an IF station except in the following situations:

- Since the proposed station's Effective Radiated Power (ERP) is 2 watts, a negative value in km (no units listed in the table) does not represent a violation of the CFR, according to 47 CFR 1204(g), which states that "FM translator stations and booster stations operating with less than 100 watts ERP will be treated as class D stations and will not be subject to intermediate frequency separation requirements."

- A second or third adjacent LP100 station cannot represent a violation of the CFR, as 47 CFR 74.1204(a)(4) requires protection of only co-channel and first adjacent LP100 stations.

- 47 CFR 74.1204(a) requires only the protection of "AUTHORIZED commercial or noncommercial educational FM broadcast stations, FM translators, ..." Any entry with a status listed as "RSV," "USE" or "APP" does not represent an authorized station and therefore is not protected under 47 CFR 74.1204. The one exception is the case of LP100 applications. The note to 47 CFR 74.1204(a)(4) states that "LPFM applications and permits that have not yet been licensed must be considered as operating with the maximum permitted facilities." Therefore, any first adjacent or co-channel LP100 station, no matter the status, is protected.

- Entries highlighted in red are those stations where there is overlap of predicted contours and lack of population has been demonstrated within the area of interference.

## Compliance with 47 CFR 74.1204(d)

The proposed translator's Maximum Effective Radiated Power (ERP) is 0.002kW at 45 meters above ground level. According to 47 CFR, 74.1204(a), the desired to undesired ratio between 2nd/3rd adjacent stations is 40dB, making the proposed translator's interfering contour 97.4dBu F(50,10). (See the next page for more discussion on the determination of the signal strength of the proposed translator's area of interference.)

Using a free-space calculation (equation referenced in FCC 98-117, Appendix A, pg. 41), the proposed translator's F(50,10) interference contour was calculated and the maximum horizontal plane was plotted on the pertinent portion of a USGS quadrangle (page 6 of this exhibit). However, the field strength of the proposed translator's antenna varies with angle of depression from horizontal. The antenna relative fields are tabulated below at 5 degree increments, starting at 5 degrees below horizontal. Antenna relative field strength data was provided and certified by the manufacturer of the proposed antenna. Using a free space calculation that neglects any loss due to reflection (equation referenced in FCC 98-117, Appendix A, pg. 41), the vertical ground clearance of the proposed application's F(50,10) interference contour at each angle has been tabulated. As shown below, the area of interference clears the ground by 9.5 meters at the lowest point. The applicant has taken into account USGS quadrangles and relevant aerial photography in stating that no structures, except possibly tower support structures, puncture the proposed area of interference. Hence, in accordance with 47 CFR 74.1204(d) and the clarification provided by the FCC in the decision Re: Living Way Ministries (FCC 02-244), there is a lack of population within the proposed area of interference and therefore this application is in full compliance with 47 CFR 74.1204.

**Antenna Manufacturer:** SCA

**Maximum ERP:** 2 watts

**Antenna Model Number:** 2CA5-FM/CP/RM-0.5

**CORAGL:** 45 m

**Antenna Rotation:** 0

**F(50,10) Contour:** 97.4 dBu

| Depression Angle<br>(from COR) | Antenna<br>Relative Field | ERP<br>(watts) | Distance to F(50,10)<br>Interfering Contour<br>from Antenna (m) | Horizontal Distance of<br>F(50,10) Interfering<br>Contour from Tower (m) | Vert. Clearance of<br>F(50,10) Interfering<br>Contour above TGL (m) |
|--------------------------------|---------------------------|----------------|---|--|---|
| 5                              | 0.973                     | 1.89           | 130.2   | 129.7  | 33.7  |
| 10                             | 0.917                     | 1.68           | 122.7   | 120.8  | 23.7  |
| 15                             | 0.84                      | 1.41           | 112.4   | 108.6  | 15.9  |
| 20                             | 0.744                     | 1.11           | 99.6  | 93.6   | 10.9  |
| 25                             | 0.627                     | 0.79           | 83.9  | 76.0   | 9.5   |
| 30                             | 0.508                     | 0.52           | 68.0  | 58.9   | 11.0  |
| 35                             | 0.39                      | 0.30           | 52.2  | 42.8   | 15.1  |
| 40                             | 0.281                     | 0.16           | 37.6  | 28.8   | 20.8  |
| 45                             | 0.188                     | 0.07           | 25.2  | 17.8   | 27.2  |
| 50                             | 0.118                     | 0.03           | 15.8  | 10.1   | 32.9  |
| 55                             | 0.069                     | 0.01           | 9.2   | 5.3  | 37.4  |
| 60                             | 0.04                      | 0.00           | 5.4   | 2.7  | 40.4  |
| 65                             | 0.021                     | 0.00           | 2.8   | 1.2  | 42.5  |
| 70                             | 0.013                     | 0.00           | 1.7   | 0.6  | 43.4  |
| 75                             | 0.01                      | 0.00           | 1.3   | 0.3  | 43.7  |
| 80                             | 0.01                      | 0.00           | 1.3   | 0.2  | 43.7  |
| 85                             | 0.01                      | 0.00           | 1.3   | 0.1  | 43.7  |
| 90                             | 0.01                      | 0.00           | 1.3   | 0.0  | 43.7  |

Minimum F(50,10) Clearance above TGL **9.5 m**

The F(50,50) signal strength of all relevant second and third adjacent stations have been examined, and are tabulated below. Column three shows the station's signal level at the proposed translator's tower site, and column four gives the minimum value within the entire proposed translator's standard F(50,10) contour (100 dBu for most classes, 94 dBu for class B's, 97 dBu for class B1's). For signal levels too great to determine, 999 was entered. The minimum F(50,50) contour within the proposed translator's standard F(50,10) contour was used to calculate the proposed translator's interference contour, thereby assuring a minimum undesired-to-desired ratio of 40dB for all relevant adjacent stations, as required in 47 CFR, 74.1204(a).

| FCC File Number   | Call Sign | F(50,50) Contour at Tower | Min. F(50,50) Contour |
|---|-----------|---------------------------|-----------------------|
| BLH5990   | WMUK      | 57.55dBu                  | 57.4dBu               |
| Minimum F(50,50) Protected Contour of Adjacent Station<br>Within Proposed Translator's standard F(50,10) Contour: |           |                           | <b>57.4dBu</b>        |

| Callsign | State | City             | Channel | ERP_w | Licensee                              | ARN              | Class | Status | Distance_km | Clr      | Facility_id |
|----------|-------|------------------|---------|-------|---------------------------------------|------------------|-------|--------|-------------|----------|-------------|
| WMUK     | MI    | KALAMAZOO        | 271     | 50000 | WESTERN MICHIGAN UNIVERSITY           | BLH5990          | B     | LIC    | 60.42       | -3.55 dB | 71874       |
| WFUR-FM  | MI    | GRAND RAPIDS     | 275     | 50000 | FURNITURE CITY BROADCASTING CORP.     | BLH19890911KD    | B     | LIC    | 79.29       | 5.18 dB  | 22918       |
| NEW      | MI    | PAW PAW          | 273     | 19    | EDGEWATER BROADCASTING INC.           | BNPFT20030317FPE | D     | APP    | 36.56       | 6.72 dB  | 148903      |
| NEW      | MI    | ALLEGAN          | 273     | 10    | EDGEWATER BROADCASTING INC.           | BNPFT20030317FJC | D     | APP    | 36.43       | 6.83 dB  | 148889      |
| NEW      | MI    | BENTON HARBOR    | 273     | 55    | FRIENDS OF CHRISTIAN RADIO, INC.      | BNPFT20030314AME | D     | APP    | 31.36       | 8.65 dB  | 145269      |
| NEW      | MI    | HOLLAND          | 273     | 38    | EDGEWATER BROADCASTING INC.           | BNPFT20030317FND | D     | APP    | 47.69       | 14.68 dB | 148897      |
| NEW      | MI    | VICKSBURG        | 273     | 38    | EDGEWATER BROADCASTING INC.           | BNPFT20030317FSW | D     | APP    | 67.41       | 18.75 dB | 148908      |
| NEW      | MI    | GRAND RAPIDS     | 273     | 80    | EDGEWATER BROADCASTING INC.           | BNPFT20030317FMM | D     | APP    | 73.86       | 19.06 dB | 148895      |
| NEW      | MI    | HOLLAND          | 273     | 10    | CALVARY CHAPEL OF TWIN FALLS, INC.    | BNPFT20030310BBR | D     | APP    | 55.12       | 19.78 dB | 138660      |
| NEW      | MI    | KALAMAZOO        | 273     | 13    | EDGEWATER BROADCASTING INC.           | BNPFT20030317FNW | D     | APP    | 61.09       | 19.67 dB | 148901      |
| NEW      | MI    | GRAND HAVEN      | 273     | 27    | EDGEWATER BROADCASTING INC.           | BNPFT20030317FMJ | D     | APP    | 75.82       | 20.61 dB | 148894      |
| WVAZ     | IL    | OAK PARK         | 274     | 4000  | AMFM RADIO LICENSES, L.L.C.           | BXPH20010427AAE  | B     | CP     | 124.19      | 23.40 dB | 6588        |
| WTMX     | IL    | SKOKIE           | 270     | 4200  | BONNEVILLE HOLDING COMPANY            | BLH20020722ABF   | B     | LIC    | 126.1       | 23.07 dB | 6377        |
| NEW      | MI    | CASCADE TOWNSHIP | 273     | 10    | MICHIGAN COMMUNITY RADIO              | BNPFT20030317MVV | D     | APP    | 85.96       | 23.04 dB | 158602      |
| WVAZ     | IL    | OAK PARK         | 274     | 6000  | AMFM RADIO LICENSES, L.L.C.           | BLH5595          | B     | LIC    | 124.19      | 23.62 dB | 6588        |
| WWLV     | IN    | NEW CARLISLE     | 272     | 2000  | ARTISTIC MEDIA PARTNERS, INC.         | BLH19890810KB    | A     | LIC    | 72.85       | 24.38 dB | 63772       |
| WVAZ     | IL    | OAK PARK         | 274     | 35000 | AMFM RADIO LICENSES, L.L.C.           | BXLH20001113AAF  | B     | LIC    | 130.79      | 26.15 dB | 6588        |
| WVAZ     | IL    | OAK PARK         | 274     | 35000 | AMFM RADIO LICENSES, L.L.C.           | BXPH20030605AEB  | B     | APP    | 130.79      | 26.15 dB | 6588        |
| WLZR     | WI    | MILWAUKEE        | 275     | 50000 | LAKEFRONT COMMUNICATIONS, INC         | BLH19890921KA    | B     | LIC    | 159.34      | 27.99 dB | 36372       |
| WLZR     | WI    | MILWAUKEE        | 275     | 50000 | LAKEFRONT COMMUNICATIONS, INC         | BPH19990624IC    | B     | CP     | 159.34      | 28.06 dB | 36372       |
| WHME     | IN    | SOUTH BEND       | 276     | 3000  | LESEA BROADCASTING CORPORATION        | BLH19831005AD    | A     | LIC    | 85.74       | 29.35 dB | 37149       |
| WMUK     | MI    | KALAMAZOO        | 271     | 0     | WESTERN MICHIGAN UNIVERSITY           |                  | B     | USE    | 60.42       | 32.29 dB | 71874       |
| WIOG     | MI    | BAY CITY         | 273     | 86000 | CITADEL BROADCASTING COMPANY          | BLH19850207KK    | B     | LIC    | 232.19      | 34.35 dB | 22675       |
| WLUM-FM  | WI    | MILWAUKEE        | 271     | 20000 | MILWAUKEE RADIO ALLIANCE, LLC         | BLH19900523KA    | B     | LIC    | 156.59      | 35.09 dB | 63595       |
| NEW      | MI    | BATTLE CREEK     | 274     | 38    | CSN INTERNATIONAL                     | BNPFT20030317KIR | D     | APP    | 83.2        | 36.37 dB | 157034      |
| WWWV     | MI    | ANN ARBOR        | 275     | 49000 | CAPSTAR TX LIMITED PARTNERSHIP        | BLH19871110KA    | B     | LIC    | 202.91      | 36.66 dB | 41080       |
| WIOG     | MI    | BAY CITY         | 273     | 34000 | CITADEL BROADCASTING COMPANY          | BLH19941104KC    | B     | LIC    | 232.19      | 38.83 dB | 22675       |
| WLEG     | IN    | LIGONIER         | 274     | 2000  | PATHFINDER COMMUNICATIONS CORPORATION | BLH20011129ABR   | A     | LIC    | 109.83      | 38.06 dB | 63773       |
| WVIV-FM  | IL    | HIGHLAND PARK    | 276     | 3400  | BIG CITY RADIO-CHI, L.L.C.            | BPH20030204ABU   | A     | APP    | 125.34      | 39.87 dB | 74177       |

3768 1 NW  
(LACOTA)

HOLLAND 29 MI.  
SOUTH HAVEN 2.1 MI.

