

[Exhibit 12]

## **Non-Interference Compliance**

Regarding FCC File Number: BNPFT-20030317IMM

### **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).

## 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:

- 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 0.14kW at 85 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 113.7dBu 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 31.7 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:** SWR

**Maximum ERP:** 140 watts

**Antenna Model Number:** 2FM1-0.5

**CORAGL:** 85 m

**F(50,10) Contour:** 113.7 dBu

Depression Angle (from COR)	Antenna Relative Field	ERP (watts)	Distance to F(50,10) Interfering Contour from Antenna (m)	Horizontal Distance of F(50,10) Interfering Contour from Tower (m)	Vert. Clearance of F(50,10) Interfering Contour above TGL (m)
5	0.987	136.38	169.2	168.5	70.3
10	0.95	126.35	162.9	160.4	56.7
15	0.89	110.89	152.6	147.4	45.5
20	0.812	92.31	139.2	130.8	37.4
25	0.721	72.78	123.6	112.0	32.8
30	0.622	54.16	106.6	92.3	31.7
35	0.52	37.86	89.1	73.0	33.9
40	0.42	24.70	72.0	55.2	38.7
45	0.327	14.97	56.1	39.6	45.4
50	0.244	8.34	41.8	26.9	53.0
55	0.173	4.19	29.7	17.0	60.7
60	0.115	1.85	19.7	9.9	67.9
65	0.07	0.69	12.0	5.1	74.1
70	0.039	0.21	6.7	2.3	78.7
75	0.018	0.05	3.1	0.8	82.0
80	0.006	0.01	1.0	0.2	84.0
85	0.001	0.00	0.2	0.0	84.8
90	0.001	0.00	0.2	0.0	84.8

Minimum F(50,10) Clearance above TGL **31.7 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
BLH19900727KA	KTXY	85.4dBu	84.7dBu
BLH19981125KG	KOQL	74.2dBu	73.7dBu
Minimum F(50,50) Protected Contour of Adjacent Station Within Proposed Application's Standard F(50,10) Contour:			<b>73.7dBu</b>

## Frequency Finder Results

Callsign	State	City	Channel	ERP_w	Licensee	ARN	Class	Status	Distance_km	Clr	Facility_id
KTXY	MO	JEFFERSON CITY	295	96000	ZIMMER RADIO OF MID-MISSOURI, INC.	BLH19900727KA	C	LIC	26	-26.03 dB	9929
KOQL	MO	ASHLAND	291	69000	MID-MISSOURI BROADCASTING, INC.	BLH19981125KG	C1	LIC	39.05	-14.78 dB	60731
KTXY	MO	JEFFERSON CITY	295	0	ZIMMER RADIO OF MID-MISSOURI, INC.		C	USE	4.82	-10.82 dB	9929
NEW	MO	COLUMBIA	293	19	RADIO ASSIST MINISTRY INC.	BNPFT20030317IMH	D	APP	59.52	2.06 dB	154581
NEW	MO	FORT LEONARD WOOD	293	75	RADIO ASSIST MINISTRY INC.	BNPFT20030317IMJ	D	APP	73.94	6.58 dB	154597
NEW	MO	ST. ROBERT	293	205	COMMUNITY BROADCASTING, INC.	BNPFT20030312AWL	D	APP	75.45	6.58 dB	138459
NEW	MO	LEBANON	293	62	RADIO ASSIST MINISTRY INC.	BNPFT20030317IMU	D	APP	93.4	14.06 dB	154687
NEW	MO	MOBERLY	293	250	FM 105, INC.	BNPFT20030317KPS	D	APP	104.66	16.12 dB	157058
WSSM	IL	GRANITE CITY	293	90000	BONNEVILLE HOLDING COMPANY	BLH19890509KC	C1	LIC	170.32	18.58 dB	74577
NEW	MO	ROLLA	292	140	COMMUNITY BROADCASTING, INC.	BNPFT20030312AWJ	D	APP	71.97	20.17 dB	138457
NEW	MO	SHELBINA	293	250	COVENANT NETWORK INC.	BNPFT20030314CBR	D	APP	136.26	23.08 dB	143873
NEW	MO	SHELBINA	293	250	COVENANT NETWORK	BNPFT20030317BTC	D	APP	136.26	23.08 dB	154835
KCIY	MO	LIBERTY	293	100000	ENTERCOM KANSAS CITY LICENSE, LLC	BLH19930218KE	C1	LIC	203.14	25.76 dB	8609
KCIY	MO	LIBERTY	293	68000	ENTERCOM KANSAS CITY LICENSE, LLC	BLH19930625KA	C1	LIC	203.14	30.43 dB	8609
WSSM	IL	GRANITE CITY	293	0	BONNEVILLE HOLDING COMPANY		C1	USE	170.57	32.85 dB	74577
NEW	MO	VANDALIA	292	250	COVENANT NETWORK INC.	BNPFT20030314BSR	D	APP	113.73	33.11 dB	143548
KGBX-FM	MO	NIXA	290	38000	CLEAR CHANNEL BROADCASTING LICENSES, INC.	BLH19940408KA	C2	LIC	152.4	33.57 dB	63887
NEW	MO	KIRKSVILLE	293	92	RADIO ASSIST MINISTRY INC.	BNPFT20030317IMP	D	APP	191.02	33.76 dB	154634
NEW	MO	VANDALIA	292	250	COVENANT NETWORK	BNPFT20030317BJK	D	APP	113.73	33.11 dB	153991
KCIY	MO	LIBERTY	293	19500	ENTERCOM KANSAS CITY LICENSE, LLC	BXLH20010411AAQ	C1	LIC	218.3	33.91 dB	8609
880219MA	MO	ASHLAND	291	0	ASHMO RADIO, INC.		C1	USE	44.7	35.19 dB	2943
NEW	MO	NEVADA	293	100	FULL SMILE, INC.	BNPFT20030310BGD	D	APP	192.61	35.92 dB	140761
970404MO	AR	HORSESHOE BEND	293	12000	W R D ENTERTAINMENT INC	BPH19970404MO	C3	CP	248.57	38.67 dB	86169
KCIY	MO	LIBERTY	293	0	ENTERCOM KANSAS CITY LICENSE, LLC		C1	USE	203.13	38.55 dB	8609
WPWQ	IL	MOUNT STERLING	294	25000	WPW BROADCASTING, INC.	BMLH19990429KB	B1	LIC	198.17	38.45 dB	39624

Topographic map of a region in Brazil, showing terrain, roads, and a highlighted area. The map includes a grid with coordinates (R 13 W, 17° 30' N, 562 to 564, 92° 15' W, 27° 30' S). A blue circle highlights a specific location, and a red circle highlights another. The map is labeled with "ARN: BNPFT-20030317IMM F(50,10)".

'Brazito; MO'; Scale: 1" = 0.379Mi 610Mt 2,000Ft, 1 Mi = 2.640", 1 cm = 240Mt