

Calvary Chapel of the Finger Lakes, Inc.  
FM Translator W275BB -- Facility ID 151157  
January 2012 Application for Minor Change CP

Exhibit 12H – Second-Adjacent Interference Study

As shown in Exhibit 12B, the proposed W275BB site would remain within 54 dBu protected contours of two second-adjacent Class B stations; WTSS, Buffalo, NY and WEDG, Buffalo, NY. In accordance with 47 CFR 74.1204(d), the transmit antenna system has been designed to prevent this translator from causing objectionable interference to either second-adjacent station in a populated area.

Applicant proposes to side-mount the W275BB directional transmit antenna on an existing tower atop the "One HSBC Center" building, the tallest structure in downtown Buffalo, ASR #1236986. Two vertically-polarized log-periodic radiators, Kathrein/Scala Model CL-FM/VRM/50N, will be fed with equal power, skewed 105 degrees apart, and oriented at azimuths of 55 and 160 degrees clockwise from True North, providing the composite pattern shown in Exhibit 10B.

As shown in Exhibit 12D, a photograph taken at a point about 600 meters southeast of the building, the proposed radiation center elevation is 357 meters above mean sea level. According to building management (and verified by an inspection of the site), all portions of the structure above ceiling level of the 38th floor at 332.2 meters AMSL consist of a windowless "mechanical room" space housing HVAC equipment, water tanks, elevator motors, etc. Applicant has confirmed that the space above this level is not occupied by any office tenants, and that this area is off limits to the public. As shown in the photo, several unattended radio equipment shelters and antennas have been installed atop the main roof, which is also a restricted area. In this sense, the area is functionally equivalent to a typical ground-based, unattended communications facility considered "unpopulated" or "uninhabited" by the Commission.

The primary interference analysis is based on accepted "ratio methodology" as defined in the *Living Way Ministries* decision. As shown in the general contour study of Exhibit 12B and further defined in the USGS 7.5 minute topo quad excerpt of Exhibit 12C, WEDG has an F(50,50) field strength of 98.3 dBu at the proposed site, while WTSS has a lesser field strength of 83.1 dBu based on the same standard prediction method. Based on a U/D ratio of 40 db, second-adjacent interference is not expected to affect either station adversely beyond the 123.1 dBu free space contour of W275BB.

This equation is commonly used to determine field strength in free space:

$$\text{Field Strength } E_{(\text{dBu})} = 106.92 - 20 \log_{10} D_{(\text{km})} + P_{(\text{dBk})}$$

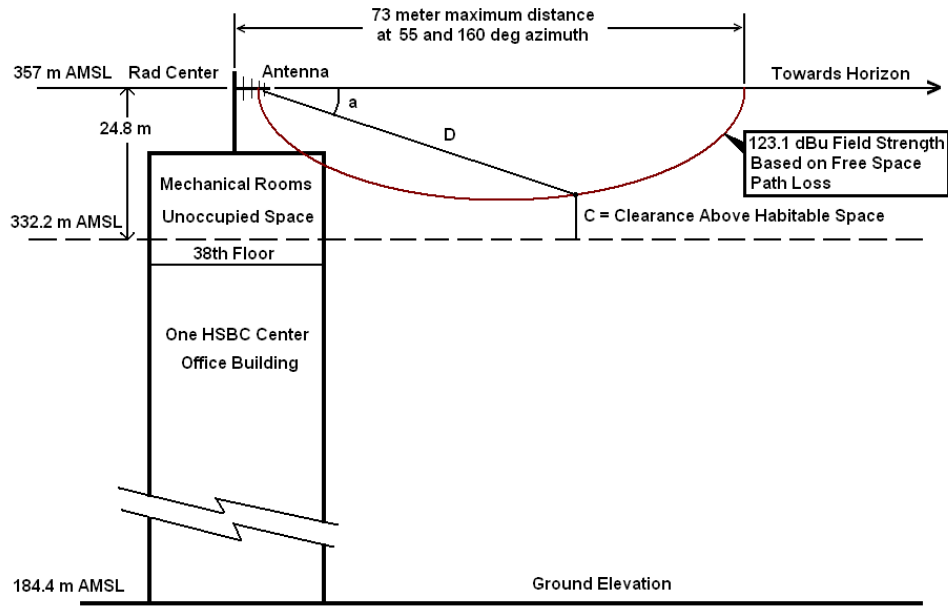
Maximum calculated distance to the 123.1 dBu contour *in the horizontal plane* is 73 meters (239 feet), as shown in this tabulation:

Azimuth Degrees T	Distance rounded to nearest meter	Azimuth Degrees T	Distance rounded to nearest meter	Azimuth Degrees T	Distance rounded to nearest meter
0	35	120	70	250	4
10	46	130	66	260	4
20	56	140	67	270	4
30	64	150	71	280	4
40	69	160	73	290	4
50	72	170	71	300	4
55	73	180	67	310	4
60	72	190	60	320	4
70	69	200	51	330	4
80	65	210	41	340	10
90	67	220	30	350	23
100	71	230	16		
110	71	240	6		

Ground elevation at the base of the supporting building is 184.4 meters (605 ft) AMSL, 172.6 meters below the proposed antenna elevation; therefore, the interfering contour would clear local streets, major highways, and the building plaza by a margin well above 50 meters -- even taking a most conservative assumption that maximum radiation is directed downwards.

Exhibit 12E is a recent aerial photo downloaded from the New York State Orthography website showing the general area surrounding the proposed antenna site. Exhibit 12F is an enlarged view with a horizontal plane 123.1 dBu contour plot superimposed above the imagery. Please note that this contour clears all adjacent buildings -- the only potentially-affected structure beneath it is One HSBC Center itself.

As illustrated in the following diagram, all population within the building is below the predicted range of interference. The tabulation of calculated distances to the proposed 123.1 dbu contour at various angles below the horizontal plane is based on free-space propagation and assumes the full ERP of 0.22 kilowatt in the main lobe. Relative field values are taken from Kathrein/Scala elevation pattern data for a single model CL-FM/HRM/50N antenna bay, as shown in Exhibit 12G.



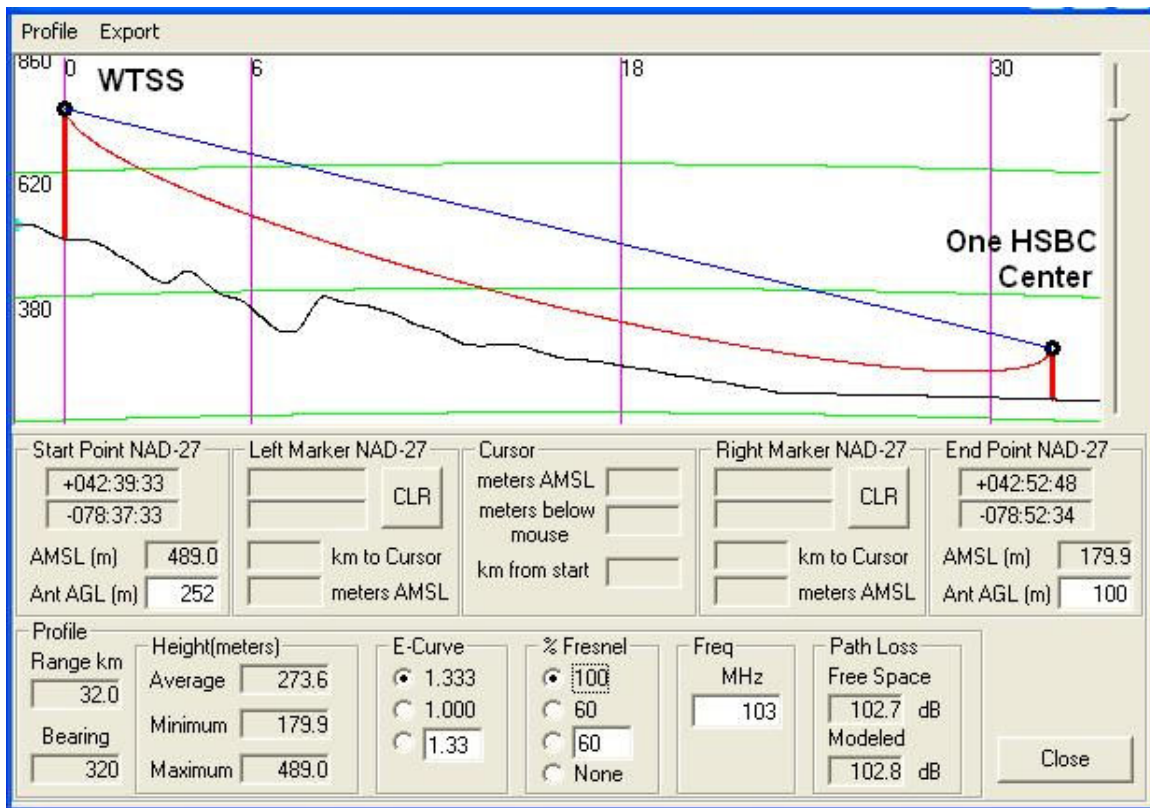
Drawing is not to scale

Depression Angle "a" (degrees)	Relative Field	Slant Distance "D" from Antenna to Contour (m)	Clearance "C" Above 332.2 m AMSL Plane (m)
0	1.000	72.8	24.8
5	0.980	71.4	18.6
10	0.950	69.2	12.8
15	0.895	65.2	7.9
20	0.820	59.7	4.4
25	0.735	53.5	2.2
30	0.645	47.0	1.3
35	0.562	40.9	1.3 *
40	0.470	34.2	2.8
45	0.360	26.2	6.3
50	0.250	18.2	8.9
55	0.155	11.3	15.6
60	0.085	6.2	19.4
65	0.045	3.3	21.8
70	0.020	1.5	23.4
75	0.010	0.7	24.1
80	0.010	0.7	24.1
85	0.010	0.7	24.1
90	0.010	0.7	24.1

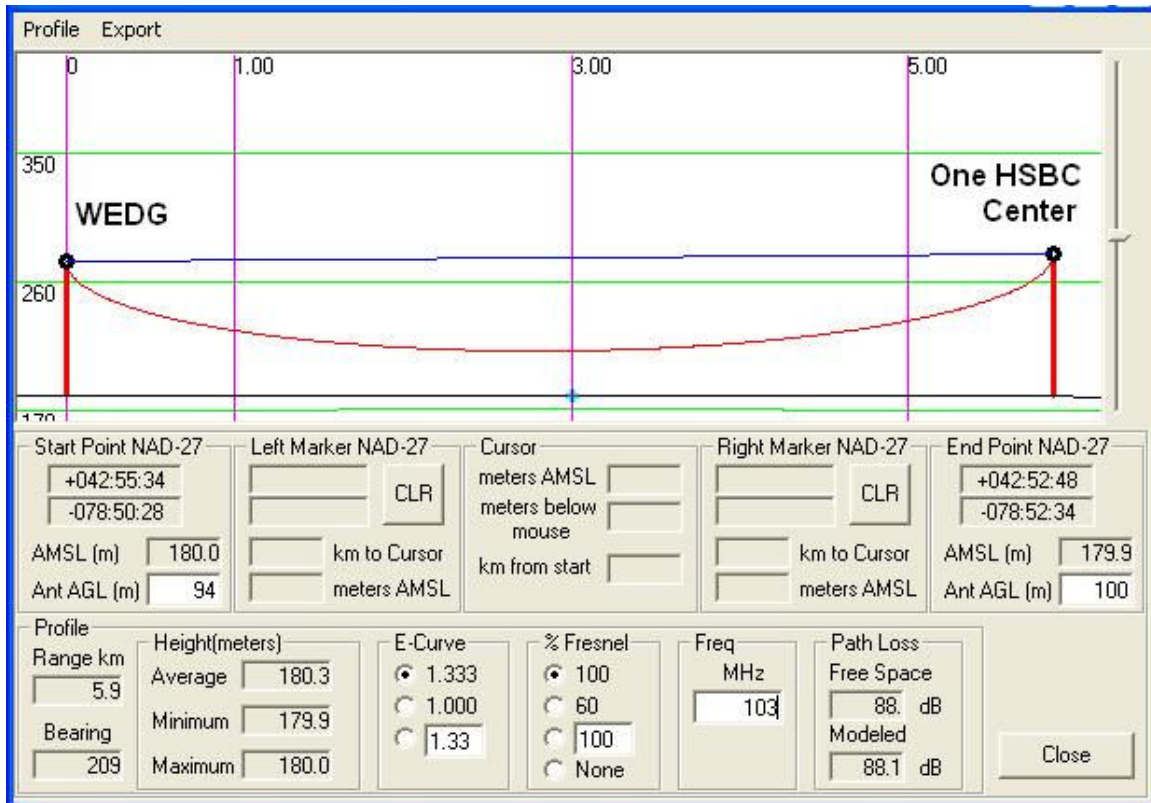
\* The minimum clearance of 1.3 meters above the 332.2 m plane would occur at azimuths of 55 and 160 degrees, at points beyond the exterior walls of the building.

The following supplemental analysis recognizes that most office floors of One HSBC Center are well above the standard 9 meter receive antenna height assumed in the FCC F(50,50) service contour prediction method.

These profile graphs (based on the NGDC 30 arc-second terrain database) illustrate "free space" paths from the respective antennas of WTSS and WEDG to a 100 meter elevation above ground at One HSBC Center. In both cases, these plots show ample clearance of the first Fresnel zone above intermediate terrain. Common obstructions such as buildings and trees as tall as 30 meters would not penetrate this Fresnel radius.



WTSS ERP = 110 kW  
Field Strength at proposed W275BB site at elevations above 100 m AGL = 97.1 dBu



WEDG ERP = 49 kW

Field Strength at proposed W275BB Site at elevations above 100 m AGL = 108.4 dBu

Path loss calculations based on the "free space" equation suggest that WTSS provides field strength in excess of 97 dBu at upper levels of One HSBC Center, while the field strength of WEDG is approximately 108 dBu. These values exceed the respective F(50,50) predictions by at least 10 dB -- in other words, using this supplemental method, the proposed W275BB facility would afford 10 dB greater interference protection to these stations than shown in the first analysis.

Please note also that the main radiation lobe of the composite antenna is directed towards the east, away from the center of the building. Further, the several layers of concrete and steel between this antenna and habitable floors of the building would likely attenuate the W275BB radiofrequency energy to a greater degree than rows of glass windows which freely admit signals of WTSS and WEDG to potential receivers within the office space.

These studies and associated exhibits clearly support applicant's determination that 'no actual interference will occur due to intervening terrain, lack of population or such other factors as may be applicable' with respect to second-adjacent stations WEDG and WTSS. Applicant recognizes its obligation to resolve any reported cases of actual interference.