

# Hope Christian Church of Marlton, Inc.

Exhibit 12-1 - Compliance with CFR 47 §74.1204  
W248AO, Channel 248, 97.5 MHz, M10, Baltimore, MD

## Interference Analysis Overlap Requirements

According to CFR 47 §74.1204(a), translators are required to protect all existing FM stations from interference due to overlap of the protected contours of the existing stations with the interfering contours of the new translators.

One station has been identified with outgoing 2<sup>nd</sup> or 3<sup>rd</sup> adjacent contour overlap from the proposed translator and is listed below. According to CFR 47 §74.1204(d),

**“The provisions of this section concerning prohibited overlap will not apply where the area of such overlap lies entirely over water. In addition, an application otherwise precluded by this section will be accepted if it can be demonstrated that no actual interference will occur due to ... lack of population ... .”**

The F(50,50) signals from this station at the proposed site has been computed based upon the ERP and HAAT in the direction towards the proposed translator, as well as the distance, and has been found to be as follows:

Station	Power	ERP	HAAT	Distance	Protected F(50,50)	Allowable Interfering F(50,10)
WIYY	13.5 kW	13.5 kW	272 m	0.7 km	124.8 dBu	164.8 dBu
WASH	17.5 kW	17.5 kW	248 m	56.0 km	57.3 dBu	97.3 dBu

A 40 dB ratio of undesired to desired signal strength gives an allowable interfering F(50,10) field strength of up to 97.3 dBu, based upon the worst case (lowest) of these signal strengths. An ERI Series 100 2-bay ½-wave spaced antenna has been employed to reduce the signal strength that is radiated from all angles other than horizontal. Pages 2 and 3 of this waiver request consist of a spreadsheet based on the free-space equations that demonstrates that the maximum signal strength to reach the ground is 95.3 dBu. It also shows that the allowable interfering 97.3 dBu contour never comes any closer to the ground than 22.4 meters.

An analysis of a USGS 7.5' topographical map shows that there are no habitable buildings in the area of sufficient height to reach up and intersect these interfering contours. Hence CFR 47 §74.1204(d) applies, and the predicted area of interference is acceptable to the Commission.

# Hope Christian Church of Marlton, Inc. - Exhibit 12-2

# M10 Baltimore

*Freespace Interference Study based on Vertical Radiation Pattern*

*ERI Series 100 2-bay 1/2-wave spaced antenna*

Depression Angle from Antenna	Antenna Relative Field	ERP Watts	ERP dBk	Distance to Ground from Antenna (m)	Free Space Signal (dBu)	2.5 dB Loss for Reflection	Signal Strength at Ground (dBu)	Circular Distance From Tower (m)	Distance to Contour using Free Space (m)	Height of Contour above Ground (m)
90	0.001	0.000	-80.97	107.00	45.36	0.0	45.36	0.00	0.27	106.73
85	0.002	0.000	-74.95	107.41	51.35	0.0	51.35	9.36	0.54	106.46
80	0.009	0.001	-61.88	108.65	64.32	0.0	64.32	18.87	2.44	104.60
75	0.023	0.004	-53.73	110.77	72.30	0.0	72.30	28.67	6.23	100.99
70	0.049	0.019	-47.17	113.87	78.63	0.0	78.63	38.94	13.27	94.53
65	0.076	0.046	-43.35	118.06	82.13	0.0	82.13	49.89	20.58	88.35
60	0.120	0.115	-39.39	123.55	85.70	0.0	85.70	61.78	32.49	78.86
55	0.180	0.259	-35.86	130.62	88.74	0.0	88.74	74.92	48.73	67.08
50	0.250	0.500	-33.01	139.68	91.01	0.0	91.01	89.78	67.68	55.15
45	0.333	0.887	-30.52	151.32	92.80	0.0	92.80	107.00	90.15	43.25
40	0.425	1.445	-28.40	166.46	94.09	0.0	94.09	127.52	115.06	33.04
35	0.524	2.197	-26.58	186.55	94.92	0.0	94.92	152.81	141.87	25.63
30	0.625	3.125	-25.05	214.00	95.26	0.0	95.26	185.33	169.21	22.40
25	0.723	4.182	-23.79	253.18	95.06	0.0	95.06	229.46	195.74	24.28
20	0.815	5.314	-22.75	312.85	94.27	0.0	94.27	293.98	220.65	31.53
15	0.890	6.337	-21.98	413.42	92.61	0.0	92.61	399.33	240.95	44.64
10	0.950	7.220	-21.41	616.19	89.71	0.0	89.71	606.83	257.20	62.34
5	0.989	7.825	-21.07	1227.69	84.07	0.0	84.07	1223.02	267.76	83.66

Distance to Ground Level assumes flat ground or a site where the site level is above average terrain in all azimuths.

Maximum ERP	8 watts	Max dBu to Ground Level	95.26	Lowest Height of Interfering Contour	22.40
Radiation Center AG	107.00 m				
Radiation Center AG	351.05 ft.				
Maximum ERP	-20.97 dBk				
Protected dBu	57.30 dBu				
Interfering dBu	97.30 dBu				
Free Space Distance	270.74 m				

ELECTRONICS RESEARCH, INC.  
7777 GARDNER ROAD  
CHANDLER, IN. 47610

-----THEORETICAL-----  
VERTICAL PLANE RELATIVE FIELD

3-20-2002

FIGURE 1

2 ERI TYPE SHP, SHPX, LP, OR LPX ELEMENTS  
0 DEGREE(S) ELECTRICAL BEAM TILT  
0 PERCENT FIRST NULL FILL  
0 PERCENT SECOND NULL FILL

ELEMENT SPACING:  
0.5 WAVELENGTH

POWER GAIN IS .702 IN THE HORIZONTAL PLANE(.702 IN THE MAX.)

