

Hope Christian Church of Marlton, Inc.

Exhibit 12-1 - Compliance with CFR 47 §74.1204
NEW-T, Channel 269, 101.7 MHz, P19, Pottstown, PA

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.

Four stations have been identified with outgoing 2nd or 3rd adjacent contour overlaps from the proposed translator and are 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 these stations at the proposed site have been computed based upon the ERP and HAAT in the direction towards the proposed translator, as well as the distance, and have been found to be as follows:

Station	Power	ERP	HAAT	Distance	Protected F(50,50)	Allowable Interfering F(50,10)
WBEB	12 kW	12 kW	333 m	43.6 km	65.0 dBu	105.0 dBu
WBEB	14 kW	14 kW	311 m	44.0 km	64.8 dBu	104.8 dBu
WIOQ	27 kW	27 kW	227 m	43.3 km	65.2 dBu	105.2 dBu
WIOQ	32 kW	32 kW	195 m	43.3 km	64.7 dBu	104.7 dBu

A 40 dB ratio of undesired to desired signal strength gives an allowable interfering F(50,10) field strength of up to 104.7 dBu, based upon the worst case (lowest) of these signal strengths. An ERI Series 100 4-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 98.2 dBu. It also shows that the allowable interfering 104.7 dBu contour never comes any closer to the ground than 19.4 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.

*Freespace Interference Study based on Vertical Radiation Pattern
ERI Series 100 4-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	-78.86	37.00	56.70	2.5	54.20	0.00	0.11	36.89
85	0.002	0.000	-72.84	37.14	62.68	2.5	60.18	3.24	0.22	36.78
80	0.010	0.001	-58.86	37.57	76.56	2.5	74.06	6.52	1.10	35.91
75	0.021	0.006	-52.42	38.31	82.84	2.5	80.34	9.91	2.32	34.76
70	0.043	0.024	-46.19	39.37	88.82	2.5	86.32	13.47	4.75	32.54
65	0.073	0.069	-41.59	40.82	93.11	2.5	90.61	17.25	8.06	29.70
60	0.110	0.157	-38.03	42.72	96.27	2.5	93.77	21.36	12.14	26.48
55	0.150	0.293	-35.34	45.17	98.48	2.5	95.98	25.91	16.56	23.43
50	0.185	0.445	-33.52	48.30	99.72	2.5	97.22	31.05	20.42	21.35
45	0.200	0.520	-32.84	52.33	99.71	2.5	97.21	37.00	22.08	21.39
40	0.182	0.431	-33.66	57.56	98.06	2.5	95.56	44.09	20.09	24.08
35	0.115	0.172	-37.65	64.51	93.08	2.5	90.58	52.84	12.70	29.72
30	0.001	0.000	-78.86	74.00	50.67	2.5	48.17	64.09	0.11	36.94
25	0.177	0.407	-33.90	87.55	94.17	2.5	91.67	79.35	19.54	28.74
20	0.393	2.008	-26.97	108.18	99.26	2.5	96.76	101.66	43.39	22.16
15	0.615	4.917	-23.08	142.96	100.73	2.5	98.23	138.09	67.90	19.43
10	0.815	8.635	-20.64	213.07	99.71	2.5	97.21	209.84	89.98	21.38
5	0.952	11.782	-19.29	424.53	95.07	2.5	92.57	422.91	105.10	27.84

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

Maximum ERP	13 watts	Max dBu to Ground Level	98.23	Lowest Height of Interfering Contour	19.43
Radiation Center AG	37.00 m				
Radiation Center AG	121.39 ft.				
Maximum ERP	-18.86 dBk				
Protected dBu	64.70 dBu				
Interfering dBu	104.70 dBu				
Free Space Distance	147.22 m				

ELECTRONICS RESEARCH, INC.
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-----THEORETICAL-----
VERTICAL PLANE RELATIVE FIELD

3-5-98

4 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 1.307 IN THE HORIZONTAL PLANE(1.307 IN THE MAX.)

