

Diversified Communications Systems
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ENGINEERING STATEMENT OF RICHARD C. POGSON, CSRE

Prepared for: Erie Christian Broadcasting, Inc.

Regarding: WXNM-LP Construction Permit

This engineering statement is prepared in representation of WXNM-LP, which is operated by Erie Christian Broadcasting, Inc. WXNM-LP is located in Erie, PA. Erie Christian Broadcasting, Inc. is the permittee for a Low Power FM Construction Permit, FCC File Number BMPL-20050404AAI. The purpose of this engineering statement is to address the potential effect on the directional radiation patterns of WRIE(AM), which is located within 3.2 kilometers of the WXNM-LP antenna structure.

The construction permit for WXNM-LP contains the following special operating conditions or restrictions as detailed in paragraph 1:

“Prior to the construction of the tower authorized herein, permittee shall notify AM Station(s) listed below so that, if necessary, the AM station may determine operating power by the indirect method and request temporary authority from the Commission in Washington, DC to operate with parameters at variance in order to maintain monitoring field strengths within authorized limits”.

The condition continues, “Permittee shall be responsible for the installation and continued maintenance of the detuning apparatus necessary to prevent adverse affects upon the radiation pattern of the AM station(s). Both prior to construction of the tower and subsequent to the installation of all appurtenances thereon a partial proof of performance, as defined by Section 73.154(a) of the Commission’s Rules, shall be conducted to establish that the AM array has not been adversely affected and, prior to or simultaneous with the filing of the application for license to cover this permit, the results submitted to the Commission”.

WRIE (AM) , Erie, PA

The distance to the WRIE(AM) antenna array is 2.91 kilometers at a bearing of 167 degrees. WRIE(AM) is a DA-2 directional AM broadcast station licensed to Erie, PA. WRIE (AM) operates at a frequency of 1260 KHz with daytime and nighttime facilities of 5 kilowatts. WRIE (AM) has been notified of the construction of the WXNM-LP tower structure and is currently determining operating power by the direct method and has not requested temporary authority to operate with parameters at variance.

The WXNM-LP antenna system consists of a single bay FM antenna mounted at 14.3 meters above ground level on a steel tower. Overall height of the structure is 15 meters above ground level. The tower structure is grounded and attached to the side of an adjacent building.

In evaluating the potential effect of the above-described installation on the WRIE (AM) directional radiation patterns the following facts were considered.

The wavelength of the 15-meter tower structure is .063 or 22.7 degrees at 1260 Khz. At this miniscule fraction of a full wavelength the potential for re-radiation and subsequent distortion of the WRIE(AM) pattern is minimal.

At 2.91 kilometers, the WXNM-LP tower structure is located at a significant distance from the WRIE (AM) antenna array.

Based on the above, a study was conducted to determine the effect of the WXNM-LP tower structure on the daytime and nighttime directional radiation patterns of WRIE (AM).

Initially considered was the potential effect on the WRIE (AM) daytime directional pattern. A “worst case” study was performed in that a perfectly conducting ground is assumed at the WXNM-LP site. The antenna structure base resistance was calculated to be 2 ohms at 1260 KHz and the induced current from the reception of the daytime WRIE (AM) field strength was calculated as .016 amperes. The re-radiation from the antenna structure is then calculated at .0005 watts.

Based on Figure 8 of FCC 47 C.F.R Section 73.190 a radiator of .063 wavelengths will produce effective field strength of 230 mV/m at 1 kilometer. Utilizing this information the calculated inverse field re-radiated from the WXNM-LP antenna structure is .163 mV/m at 1 kilometer.

The potential effect on the WRIE (AM) nighttime directional pattern was then considered. As above a perfectly conducting ground was assumed and an antenna structure base resistance of 2 ohms was utilized in the calculations. The induced current from the reception of the WRIE (AM) nighttime field strength was calculated as .023 amperes. The re-radiation from the antenna structure is therefore calculated at .001 watts. The calculated inverse field re-radiated from the WXNM-LP antenna structure is .23 mV/m at 1 kilometer.

Based on the above calculations it can be concluded that the construction of the WXNM-LP antenna system has not had a measurable impact on the WRIE(AM) radiated pattern. Also attached is tabulation of monitor point readings taken by the undersigned before and after the construction of the WXNM-LP antenna structure that demonstrates no significant change in parameters. Therefore, de-tuning of the tower structure and a subsequent partial proof of performance would not be necessary in this situation.

Respectfully Submitted By,
Richard C. Pogson, CSRE
Diversified Communications Systems

WRIE-AM Monitor Point Readings (Day)

RADIAL°	DATE	TIME	MEASURED	MAXIMUM
170	5/6/05	1005	75.0 mv/m	146.8 mv/m
245	5/6/05	1015	5.8 mv/m	13.61 mv/m
170	7/16/07	1024	87.0 mv/m	146.8 mv/m
245	7/16/07	1010	7.7 mv/m	13.61 mv/m

WRIE-AM Monitor Point Readings (Night)

82	5/6/05	1134	6.4 mv/m	17.3 mv/m
135	5/6/05	1146	6.2 mv/m	6.8 mv/m
170	5/6/05	1121	29.5 mv/m	36.0 mv/m
205	5/6/05	1114	17.5 mv/m	25.1 mv/m
245	5/6/05	1105	4.2 mv/m	6.75 mv/m
82	7/16/07	1124	7.2 mv/m	17.3 mv/m
135	7/16/07	1135	6.6 mv/m	6.8 mv/m
170	7/16/07	1111	31.0 mv/m	36.0 mv/m
205	7/16/07	1104	21.0 mv/m	25.1 mv/m
245	7/16/07	1055	3.7 mv/m	6.75 mv/m