

ENGINEERING REPORT

**Requesting a Minor Construction
Permit Application for FM Station**

**WCBN-FM – Ann Arbor, MI
License Number BLED-19870202KB**

**Power Increase and
Directional Antenna Application**

June, 2012

COPYRIGHT 2012

Table of Contents

Discussion of Report

Main Studio Location

- Exhibit 15.1 - Copy of Antenna Structure Registration
- Exhibit 15.2 - Vertical Plan of Antenna System and Support Tower
- Exhibit 15.3 - Tabulation of Operating Conditions
- Exhibit 15.4 - Present and Proposed Contour Study

Interference Requirements

Contour Overlap Requirements

- Exhibit 18.1 - Non-Commercial Allocation Contour Study
- Exhibit 18.2-6 - Contour Protection Studies Toward Select Station(s)
- Exhibit 18.7 - Canadian Contour Protection Toward CIMX-FM
- Exhibit 18.8 - Directional Antenna Pattern Study

Spacing Requirements (none)

Grandfathered Short-Spaced Requirements (none)

Contour Protection Requirements (none)

TV Channel 6 Protection Requirements (none)

RF Radiation Study Requirement (See Discussion)

(Exhibit Numbering is in response to FCC Online Form 340, Section VII)

DISCUSSION OF REPORT

This firm was retained to prepare the required engineering report in support of this minor construction permit application for Non-Commercial FM station WCBN-FM, Ann Arbor, MI, License Number BLED-19870202KB. WCBN-FM presently operates on Channel 202A, 88.3 MHz with 0.2 kW at 318 meters AMSL utilizing a non-directional antenna. A new directional antenna pattern employing 3.0 kW at a COR of 315 meters AMSL from the same site location is requested. The facility will continue to operate on CH202A, 88.3 MHz, and continue to serve Ann Arbor, MI.

The applicant would like to note that WCBN-FM also holds authorized Construction Permit BPED-20090824AHH for a new directional antenna pattern utilizing operating parameters of 3.0 kW at 315 meters AMSL from the same site location; however BPED-20090824AHH will be surrendered prior to or simultaneous with the filing of this new Form 301-FM application.

The proposed site for the Class A operation will continue to meet all contour protection requirements towards other stations in the allocation. An FMCommander™ allocation study as supplied by V-Soft® Communications has been included in **Exhibit 18.1**. There are five (5) facilities, existing or proposed, close enough to merit further study. Contour protection maps and tabulations have been supplied for these five facilities as noted in **Exhibit(s) 18.2 to 18.7**. It is believed there is sufficient clearance to preclude the need for further study with respect to the other protected stations shown in the allocation study. The applicant would like to note that no protection has been afforded recently deleted DWAQQ.C - Onsted, MI (BPED-20040225ABJ). Due to its deleted status, it is believed this facility no longer requires protection.

The transmitter site is located within 320 km of the common border between the United States and Canada. Full protection is afforded all international facilities as noted in **Exhibit(s) 18.1**. The proposed facility is and will continue to remain short-spaced to CIMX-FM, Windsor, ON, Canada, however full protection towards CIMX-FM will be maintained as the proposed interference contour towards CIMX-FM never reaches Canadian soil. The CIMX-FM protection has also been demonstrated in **Exhibit 18.7**. Additional tabulations for each contour employed will be supplied to the FCC upon request.

The transmitter site proposed in this application is not located within the affected radius of any TV-6 facility as noted in the FCC CDBS database at the time of this filing, therefore no further TV-6 showings are believed required.

The proposed service contours have been calculated in accordance with the Rules, and the data obtained has been tabulated and plotted in this report. The plotted contours are found as **Exhibit 15.4** of this report. This exhibit shows the overall service that is provided by the 1.0 mV/m contour of the facility. The tabulation of the distances to the respective contours shown in this discussion is based on the use of the standard eight cardinal bearings, which were also used for the computation of the HAAT. However, the plotted contours shown in **Exhibit 15.4** are based on the use of a full 360 terrain radials and the NED 03 Second Terrain Database.

The antenna will be mounted on an existing tower located on the roof of the David M. Dennison Building on the campus of the University of Michigan. This building mounted tower is presently identified by existing Antenna Structure Registration 1271528. A copy of the existing ASR has been included in **Exhibit 15.1**. A vertical antenna plan depicting the placement of the antenna on the tower has been included in **Exhibit 15.2**. As this proposal will not increase the overall tower height, it is believed the FAA need not be notified.

DISCUSSION OF REPORT (continued)

The remainder of the information in this report and exhibit numbering is responsive to the Rules of the Commission, and provides the data for FCC Form 340.

RADIATION PROTECTION: The Commission requires an engineering study regarding compliance with the guidelines for human protection from radiofrequency radiation. This report section is in response to that provision of the Rules. The current Federal Communications Commission guidelines for RF radiation protection are set forth in OET Bulletin No. 65 (Edition 97-01), and the accompanying Supplement A, (Edition 97-01).

At the time of licensing and upon completion of construction and during the equipment test period, the applicant will make proper radiofrequency electromagnetic (RF) field strength measurements on the roof and throughout the building to determine if any areas exceed the FCC guidelines for human exposure to RF fields. At that time, the applicant will recertify that access to any areas found to exceed the recommended guidelines will be restricted and recertify that such areas remain clearly marked with appropriate visual warning signs describing the nature of the hazard. This conditional licensing requirement is similar to previously authorized WCBN-FM Construction Permit BPED-20090824AHH and also similar to RF Measurement Compliance Showings as submitted under recent License Renewal BRED-20120507AAR concerning this restricted access roof mounted antenna complex.

In the event work would be required in proximity to the antenna such that the person or persons working in the area would be potentially exposed to fields in excess of the guidelines set forth in OET Bulletin No. 65 (Edition 97-01), the transmitter power will be reduced or the station will cease operation during the critical period.

DISTANCES TO CONTOURS: The table below shows the distances to the 1.0 mV/m contour from the proposed facility using an ERP of 3.0 kW at an HAAT of 51 meters. These distances have been calculated based on the FCC F(50-50) curves.

N. Lat. = 421637.0 W. Lng. = 834407.0 HAAT and Distance to Contour, FCC, FM 2-10 Mi, 51 pts Method - NED 03 SEC						
Azi.	AV EL	HAAT	ERP kW	dBk	Field	60-F5
000	281.8	33.2	0.6769	-1.69	0.475	9.64
045	276.2	38.8	0.2203	-6.57	0.271	7.76
090	237.9	77.1	0.2506	-6.01	0.289	11.38
135	238.5	76.5	1.7810	2.51	0.771	18.69
180	249.8	65.2	2.1135	3.25	0.839	18.02
225	276.3	38.7	3.0000	4.77	1.000	14.87
270	274.8	40.2	3.0000	4.77	1.000	15.18
315	277.3	37.7	3.0000	4.77	1.000	14.66
Ave El= 264.08 M HAAT= 50.92 M AMSL= 315						