

# **ENGINEERING REPORT**

## **FM Translator Minor Construction Permit Modification Application**

**For**

**W242CH.C - Big Rapids, MI**  
File No. BNPFT-20130829AIF  
Facility ID No. 144400

Change in Site, Power,  
Directional Antenna  
& City of License

October, 2015

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(Exhibit numbering is in response to FCC Online Form 349, Section III-A)

## Discussion

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This firm has been retained to prepare the required engineering report in support of a Minor Construction Permit Modification Application for FM Translator W242CH.C - Big Rapids, MI (Facility ID: 144400), Permit File Number BNPFT-20130829AIF. W242CH.C is currently authorized to operate on Channel 242D (96.3 MHz) with 0.010 kW ERP at a center of radiation (COR) of 361 meters AMSL. A new site location, power and directional antenna are requested at this time. Continued operation on Channel 242D (96.3 MHz) with 0.046 kW ERP at a new COR of 362 meters AMSL is requested. The facility will operate with a new one (1) bay Nicom BKY3/P(Slant45) antenna. The translator will rebroadcast primary station WYBR(FM) - Big Rapids, MI (Facility ID: 71629) as a Fill-In Translator. The Translator will service the new community of Howard City, MI.

The Translator will be mounted on the existing tower bearing Antenna Structure Registration Number 1294693. A copy of the existing ASR has been included in **Exhibit 13.1**. The vertical antenna system has been plotted in **Exhibit 13.2**. As this proposal will not increase the overall height of the tower, notification to the FAA is not believed required.

It has been determined the Translator may be used in the area without interference to any existing FM broadcast station or facility with the exception of WLAV-FM - Grand Rapids, MI (CH245B) and WLHT-FM - Grand Rapids, MI (CH239B). General allocation details are found in **Exhibit 13.5**. A §74.1204(d) second/third adjacent channel given interference waiver request toward WLAV-FM and WLHT-FM has been included in **Exhibit 13.7(a-b)**. The portion of the §74.1204(d) Waiver from 235 meters to the extent of the worst case calculated 104.9 dB $\mu$  F(50:10) Interference Contour, corresponding to the worst case WLHT-FM 64.9 dB $\mu$  F(50:50) Protected Contour, has been demonstrated through a downward radiation study as included in **Exhibit 13.7a**. Full protection will be afforded each facility from 235 meters to the extent of the calculated 104.9 dB $\mu$  F(50:10) interference contour as this area will not reach the ground nor a five meter artificial plane representing a standard one and a half story home when taking into account the downward radiation characteristics of the antenna as supplied by the antenna manufacturer. A copy of the antenna manufacturer specifications has been included in **Exhibit 13.8**. The portion of the §74.1204(d) Waiver within 235 meters of the site is currently void of population, buildings (with the exception of the dedicated transmitter building) or major roads as noted in **Exhibit 13.7b**. There is one facility, existing or proposed, close enough to merit further study. Therefore a supplemental contour protection study has been provided toward WMAX-FM - Holland, MI as included in **Exhibit 13.6**. It is believed sufficient clearance exists precluding the need for additional contour protection showings.

The applicant would like to note the use of the USGS 03 SEC Terrain Database for all allocation, contour and HAAT calculations contained here-in.

The proposed operating parameters have been changed from the authorized values, however the proposed service contour serves a portion of the present service area as seen in **Exhibit 13.3**.

## Discussion (continued)

The proposed 60 dB $\mu$  contour of the Fill-In Translator lies wholly inside of the WYBR(FM) primary 60 dB $\mu$  service contour. A map of the proposed service area in relation to the primary station service contour has been included in **Exhibit 13.4**.

**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).

The FM Broadcast facility proposed in this application will not produce human exposure to radiofrequency radiation in excess of the applicable safety standards specified in §1.1307(b)(3) of the Commission's rules concerning RF contributors of less than 5%. **Exhibit 17.1** provides the details of the study that was made to demonstrate compliance. The facility is properly marked with signs, and entry is restricted by means of fencing with locked doors and/or gates. Any other means as may be required to protect employees and the general public will be employed.

***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 following tabulation of the distances to the proposed service contours results from calculations performed in accordance with §73.313(d) and §73.333 Figure 1 utilizing the USGS 03 second terrain database.

N. Lat. = 432342.0 W. Lng. = 853435.0 HAAT and Distance to Contour, FCC, FM 2-10 Mi, 51 pts Method - USGS 03 SEC						
Azi.	AV EL	HAAT	ERP kW	dBk	Field	60-F5
000	257.9	104.1	0.0460	-13.37	1.000	8.68
030	275.6	86.4	0.0460	-13.37	1.000	7.85
060	267.3	94.7	0.0460	-13.37	1.000	8.26
090	264.1	97.9	0.0460	-13.37	1.000	8.40
120	272.8	89.2	0.0460	-13.37	1.000	7.98
150	275.9	86.1	0.0134	-18.72	0.540	5.81
180	286.3	75.7	0.0047	-23.27	0.320	4.17
210	289.1	72.9	0.0063	-22.01	0.370	4.41
240	256.3	105.7	0.0115	-19.39	0.500	6.23
270	254.3	107.7	0.0460	-13.37	1.000	8.83
300	255.4	106.6	0.0460	-13.37	1.000	8.79
330	257.4	104.6	0.0460	-13.37	1.000	8.70
Ave El= 267.70 M HAAT= 94.30 M AMSL= 362						