

# **ENGINEERING REPORT**

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

for

**W221CJ.C – Le Roy, IL**

Granted Construction Permit File No.  
BPFT-20090813AAQ

August, 2009

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**MUNN-REESE, INC.**  
Broadcast Engineering Consultants  
Coldwater, MI 49036

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Exhibit 16.1 - RF Compliance Study

(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 W221CJ.C, Champaign, IL BPFT-20090813AAQ (formerly W224BX.L Le Roy, IL, pending license BLFT-20090811AAI). W224BX presently operates on 92.7 MHz with 150 watts of non-directional power with an antenna COR of 244 meters AMSL. BPFT-20090813AAQ authorized operation on CH221D with 225 watts ERP at 322 meters AMSL with a circularly polarized, directional, two bay 0.9  $\lambda$  (wavelength) spaced antenna. Upon recent construction of BPFT-20090813AAQ, the applicant was notified the antenna was actually mounted at 8 meters higher on the tower than authorized due to tower aperture issues. As this mounting exceeds the +2 meter/-4 meter mounting window, This emergency Form 349 is being filed to request these parameters of variance including a reduction in power to adjust for increase in antenna height. Operation on CH221D with 195 watts ERP at 330 meters AMSL with a circularly polarized, directional, two bay 0.9  $\lambda$  (wavelength) spaced antenna is required to maintain all necessary allocation protections as noted here-in. The translator will continue to rebroadcast new FM station WIXY(FM), Champaign, IL, CH262B1, facility ID No. 58539 and be licensed to the new community of Champaign, IL.

The proposed tower is presently registered under Antenna Structure Registration 1247493. As this facility will not increase the overall tower height, it is believed the FAA need not be notified. A copy of the existing ASR has been included in **Exhibit 12.1**. A copy of the vertical antenna system has been included in **Exhibit 12.2**.

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 WCFF(FM) – CH223B1, Urbana, IL and WBGL(FM) – CH219B, Champaign, IL. General allocation details are found in **Exhibit 12.5**. There is one station close enough to merit additional contour protection study showings. An FMCommander™ map and tabulation toward WWGO(FM) – CH221A, Charleston, IL has been included in **Exhibit 12.6**. A §74.1204(d) Second Adjacent Channel Given Interference Waiver is requested toward WCFF(FM) and WBGL(FM) as demonstrated in **Exhibit 12.7**. The exhibit shows the calculated interference area will not reach the ground nor an artificial 7 meter AGL plane representing a standard second story house when taking into account the manufacturer supplied downward radiation characteristics for the proposed Nicom BKG77/2-DA two bay 0.9  $\lambda$  (wavelength) spaced antenna. A copy of the horizontal directional antenna pattern has also been included in **Exhibit 12.7**. It is believed sufficient clearance exists precluding the need for additional contour protection showings.

The applicant would like to note the use of the NED 03 second terrain database for all allocation protection studies as well as all contour and HAAT calculations employed in this Form 349 filing.

The proposed 57 dBu contour of the translator lies inside of the WIXY(FM) primary 57 dBu service contour therefore qualifying for “Fill-In” translator status . A map of the proposed service area in relation to the primary station service contour has been included in **Exhibit 12.4**.

Regarding protection of international concerns, the facility is and will remain more than 320 km from the common border between the United States and Canada or Mexico. As a result, no further international showings are required.

## Discussion (continued)

The proposed operating parameters have been changed from the licensed values, however the proposed 60 dBu service contour serves a portion of the present 60 dBu service area as seen in *Exhibit 12.3*.

**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 §1.1310 of the Commission's rules. *Exhibit 16.1* 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.

N. Lat. = 400735.0    W. Lng. = 881725.0 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	233.7	96.3	0.1903	-7.20	0.988	11.83
030	224.6	105.4	0.1880	-7.26	0.982	12.32
060	221.8	108.2	0.1880	-7.26	0.982	12.47
090	216.7	113.3	0.1923	-7.16	0.993	12.82
120	220.1	109.9	0.1805	-7.44	0.962	12.44
150	217.0	113.0	0.1350	-8.70	0.832	11.75
180	223.5	106.5	0.1045	-9.81	0.732	10.74
210	212.9	117.1	0.0964	-10.16	0.703	11.01
240	215.3	114.7	0.0964	-10.16	0.703	10.91
270	215.8	114.2	0.1162	-9.35	0.772	11.39
300	216.4	113.6	0.1611	-7.93	0.909	12.29
330	227.5	102.5	0.1880	-7.26	0.982	12.15
Ave El= 220.43 M    HAAT= 109.57 M    AMSL= 330						