

**ENGINEERING REPORT**  
**LPFM (Low Power FM)**  
**Original Construction Permit**  
**Application**

**NEW227L1 – Gobles, MI**  
**(93.3 MHz)**

Form 318 – “New Station”  
Filing Pursuant to  
FCC Public Notice, DA 13-1385  
(Released June 17, 2013)

November, 2013

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## **RF Radiation Study Requirement**

Exhibit 14.1 - RF Compliance Study

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

## Discussion

This firm has been retained to prepare the required engineering report in support of an Original Construction Permit Application for a Form 318 "New Station" LPFM facility. This Filing is in response to FCC Public Notice DA 13-1385 (Released June 17, 2013) announcing the upcoming October 15 – October 29, 2013 Low Power Filing Window. Original operating parameters will be requested in this "New Station" Form 318 Filing. Operation on Channel CH227L1 (93.3 MHz) is requested with a power of 0.068 kW ERP at 36.6 meters HAAT. A circularly polarized non-directional antenna will be utilized at the antenna COR height of 263.7 meters AMSL. The new LPFM facility will serve the community of Gobles, MI.

The facility will be located on a new 19.8 meter (65 ft) communications tower. A USGS Topographic Photo-Map of the proposed tower site has been included in **Exhibit 11.1**. The vertical antenna system has been plotted in **Exhibit 11.2**. FCC TOWAIR has been consulted and FAA Notification is not required, therefore no Antenna Structure Registration is required for this proposed tower construction.

It has been determined the proposed LPFM facility meets all §73.807(a) spacing requirements toward all other existing or proposed concerns with the exception of WBCT(FM) – Grand Rapids, MI (CH229B). General allocation details are found in **Exhibit 11.4**. A §73.807(e)(1) Second Adjacent Channel Separation Waiver is requested toward WBCT(FM) as included in **Exhibit 11.5**. Full protection will be afforded the facility as the calculated interference area will not reach the ground nor a 3 meter artificial plane representing the unpopulated threshold of the elevated stage of the single floor (cathedral ceiling) church building or single story gymnasium when taking into account the downward radiation characteristics of the antenna as supplied by the antenna manufacturer. The antenna manufacturer's vertical radiation pattern documentation has been included in **Exhibit 11.6**. It is believed sufficient clearance exists precluding the need for additional allocation showings.

The proposed LPFM facility will be located within 320 km of the common border between the United States and Canada. However, full protection has been afforded all Canadian spacing concerns as noted in **Exhibit 11.4**. Additional International compliance showings will be supplied upon request.

The proposed LPFM facility will remain in compliance with §73.827(a). There are no existing or proposed FM Translator or FM Booster facilities located within the worst case 10 km radius of the proposed LPFM site. A listing of the FM domestic concerns within the radius is as follows:

ID Stations Study at 42 23 52 N, 85 51 50 W, Search Distance = 10.1 km										
Call	Srv	City	ST	CH	Power	Coordinates	Dist	Azi	File Number	
none	---	-----	--	---	-----	-----	---	---	-----	

The applicant would like to note the use of the NGDC 30 second terrain database for all allocation, contour and HAAT calculations contained here-in.

The proposed 60 dBμ F(50:50) Service Contour has been noted in **Exhibit 11.3**.

## Discussion (continued)

**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 14.1*** 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 §73.813 & §73.313(d) and §73.333 Figure 1 utilizing the NGDC 30 second terrain database.

N. Lat. = 422352 W. Lng. = 855150						
HAAT and Distance to Contour,						
FCC, FM 2-10 Mi, 51 pts Method - NGDC 30 SEC						
Azi.	AV EL	HAAT	ERP kW	dBk	Field	60-F5
000	218.8	44.9	0.0680	-11.67	1.000	6.23
045	230.5	33.2	0.0680	-11.67	1.000	5.36
090	233.4	30.3	0.0680	-11.67	1.000	5.13
135	240.7	23.0	0.0680	-11.67	1.000	5.11
180	230.6	33.1	0.0680	-11.67	1.000	5.35
225	228.6	35.1	0.0680	-11.67	1.000	5.50
270	217.0	46.7	0.0680	-11.67	1.000	6.35
315	217.3	46.4	0.0680	-11.67	1.000	6.33
Ave El= 227.12 M HAAT= 36.58 M AMSL= 263.7 M						