

COMPREHENSIVE TECHNICAL EXHIBIT

Discussion

Applicant seeks an LPFM Construction Permit for:

Holland, MI

Channel 236 (95.1 Mhz), See **Figure 3** Channel Study

ERP = .098 kW (See **Figure 2**)

Ground Elevation = 187meters

RCAGL = 19.7 meters

RCAMSL = 206.7 meters

HAAT = 12.0 (Globe terrain data) (See **Figure 1**)

Overall Mast Height = 19.8 meters

FAA (TOWAIR study), See **Figure 4**

NAD83 Latitude: 42 47 07.9N; Longitude: 86 06 24.0W

No AM station notifications required: Closest AM Facility is WHTC, HOLLAND, MI, L, ND1 at 2.5° at a distance of 1.0 km

Facility is okay with respect to FCC monitoring stations.

Closest FCC Monitoring Station is 23.5 km= Allegan, MI

Facility is okay toward West Virginia Quiet Zone. Distance to center = 743.5 km

Facility is okay toward Table Mountain. Distance to Center = 1625.4 km, Azimuth = 266.0 Degrees True

HAAT CALCULATION (FCC HAAT Calculator)

[Antenna Height Above Average Terrain Calculations -- Results](#)

Input Data

Latitude **42° 47' 7.9"** North

Longitude **86° 6' 24"** West (NAD 83)

Height of antenna radiation center above mean sea level: **206.7** meters AMSL

Number of Evenly Spaced Radials = **360** 0° is referenced to True North

Results

Calculated HAAT = **12 meters**

Antenna Height Above Average Terrain calculated
using 1 km [GLOBE terrain data](#)

FIGURE 1

ERP CALCULATION (FCC FMPower Calculator)

Choose a U.S. State or Possession:

MI - Michigan

Station Class:

100 watt LPFM

12

meters Antenna Height Above Average Terrain (HAAT)

Results:

Calculated ERP (rounded per Section 73.212) = **0.098 kW**

Unrounded ERP = 0.097675 kW

FIGURE 2

CHANNEL STUDY

Channel 236 Study

REFERENCE
 42 47 07.90 N.
 86 06 24.00 W.

CLASS = L1 Int =
 Current Spacings to 2nd Adj.
 Channel 236 - 95.1 MHz

DISPLAY DATES
 DATA 10-30-23
 SEARCH 10-30-23

Call	Channel	Location	Azi	Dist	FCC	Margin
W235CM	LIC 235D	Grand Haven	MI 340.5	29.94	20.5	9.4
WGVS-FM	LIC 237A	Whitehall	MI 344.2	65.64	55.5	10.1
W237CZ	LIC-D 237D	Grand Rapids	MI 66.0	37.62	20.5	17.1
W235BN	LIC-D 235D	Grand Rapids	MI 60.5	38.21	20.5	17.7
WSJM-FM	LIC-N 235A	Benton Harbor	MI 195.4	82.18	55.5	26.7
WMMQ	LIC 235B	East Lansing	MI 96.5	127.60	96.5	31.1
WIIL	LIC 236B	Union Grove	WI 260.6	148.78	111.5	37.3
WBCK	LIC 237A	Battle Creek	MI 125.3	95.07	55.5	39.6
WTRC-FM	LIC-N 237A	Niles	MI 185.9	116.99	55.5	61.5
W238AL	LIC 238D	Portage	MI 144.4	74.87	7.5	67.4
WKZC	LIC 235C3	Scottville	MI 350.1	143.52	66.5	77.0
WAJI	LIC 236B	Fort Wayne	IN 157.6	201.64	111.5	90.1
WFBE	LIC-D 236B	Flint	MI 83.2	201.78	111.5	90.3
WCHI-FM	LIC 238B	Chicago	IL 232.2	159.10	66.5	92.6
WCFX	LIC 237A	Clare	MI 44.3	149.89	55.5	94.4
WLS-FM	LIC 234B	Chicago	IL 231.8	161.31	66.5	94.8

 All separation margins include rounding

FIGURE 3

Input protection of any relevant FM Translators or Boosters

There are two (2) FM translator authorizations within 10 km of the proposed LPFM transmitter site (see **Figure 4**), however, the proposed frequency (channel 236) does not occupy the 3rd adjacent channel to the primary station off-air input of any of the nearby translators. Thus the Application complies with the provisions of 73.827(a).

HOLLAND, MI FM TRANSLATORS/BOOSTERS WITHIN 10 KM OF PROPOSED CHANNEL 236

FCC ID	DISTANCE (km)	Translator INPUT	Primary CHANNEL
W255DI	5.92	Other	AM
W259CO	0.99	Other	AM

FIGURE 4

TOWAIR study

DETERMINATION Results

Structure does not require registration. The structure meets the 6.10-meter (20-foot) Rule criteria.

Your Specifications

NAD83 Coordinates

Latitude	42-47-07.9 north
Longitude	086-06-24.0 west

Measurements (Meters)

Overall Structure Height (AGL)	19.8
Support Structure Height (AGL)	13.7
Site Elevation (AMSL)	187

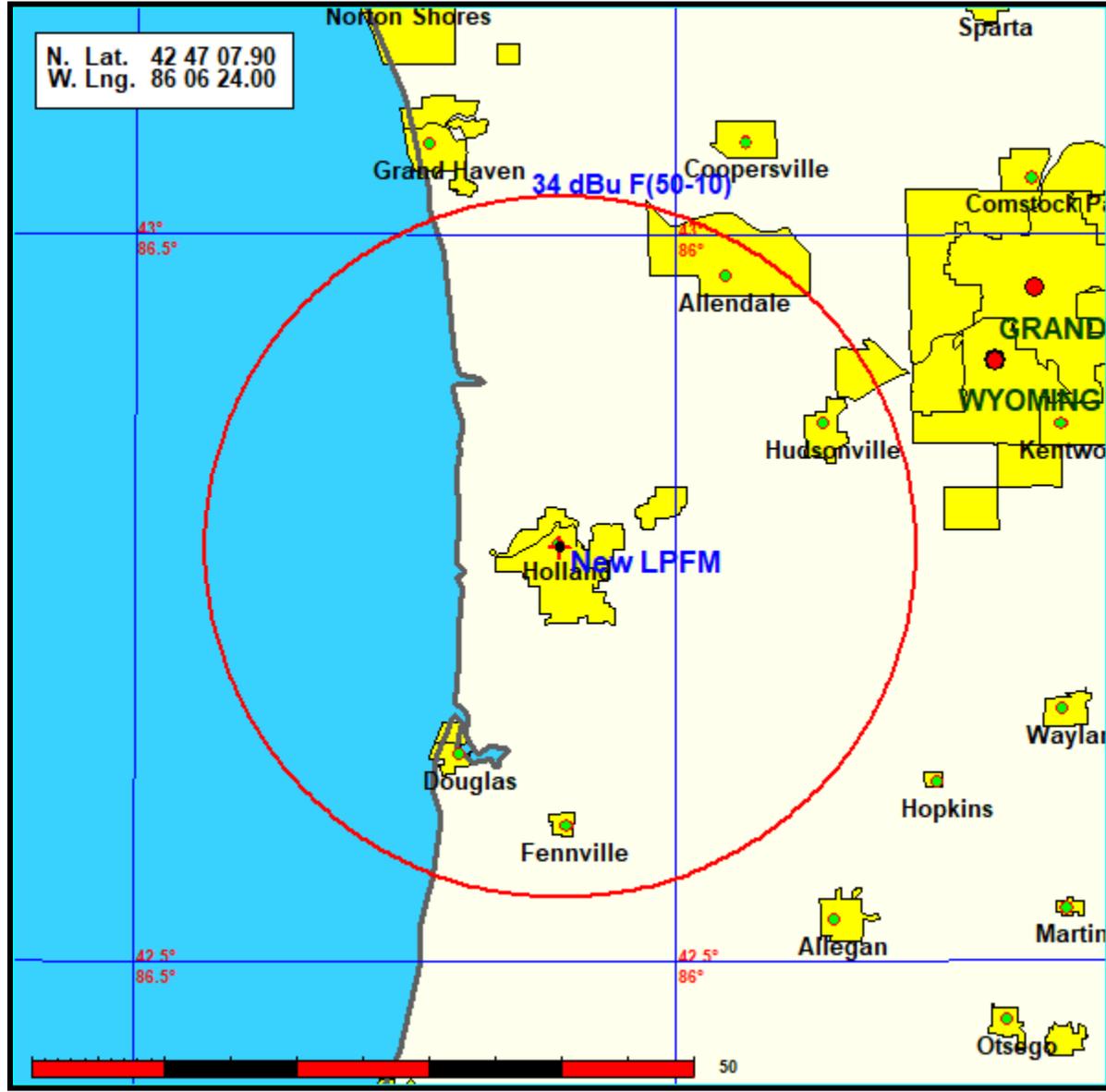
Structure Type

BMAST - Building with Mast

Figure 5

With Respect to Canada

The proposed LPFM transmitter site is located 252.4 km from the Canadian border, however, the proposed 34 dBu F(50,10) interfering contour does not extend more than 60 km and does not cross any Canadian territorial boundary (see **FIGURE 6**).



34 dBu F(50,10) Contour of the Proposed LPFM
FIGURE 6

RF EXPOSURE

The proposed single bay Type 2 antenna will be mounted 19.7 meters above ground level on a 6.1 meter mast atop a 13.7 meter roof, radiating 98 watts H & V. FMModel predicts a maximum ground level exposure of 5.75 $\mu\text{W}/\text{cm}^2$ at ground level, 18.2 meters horizontally from the base of the mast (107.6 $\mu\text{W}/\text{cm}^2$ at 4.2 meters from the mast base at roof level), well within limits for uncontrolled access. Access to the roof is restricted.