

Exhibit EE-1: Engineering Statement in support of  
FCC FORM 349  
APPLICATION FOR AUTHORITY TO CONSTRUCT OR MAKE CHANGES IN AN FM TRANSLATOR OR FM BOOSTER STATION  
(For a New Auction 100 FM Translator [long form])

This engineering exhibit supports a long form application for an FM translator (Facility ID 203278), Tampa, FL. File number BNPFT-20180131AIE. This FM translator will be used as a fill-in facility for Class B AM station, WMGG (Fac. ID # 67135). Channel 270 is requested.

The proposed facility's 106.2dB $\mu$  contour is within the protected contour of 3<sup>rd</sup> adjacent station WHPT, Sarasota, FL. It is also within the 83dB $\mu$  protected contour of 2<sup>nd</sup> adjacent station WPOI. Since WHPT is the weaker adjacent signal, demonstrating no interference to WHPT also demonstrates no interference to WPOI. WHPT's 66.2dB $\mu$  contour completely encompasses the new facility's proposed 106.2dB $\mu$  interfering contour. A D/U analysis shows that no interference reaches or approaches the ground nor any occupied structure or elevated roadway. Therefore this proposal should be acceptable under 74.1204(d) and a "Living Way" waiver is hereby requested.

The proposed facility protects LPFM stations WPBW-LP, WSDX-LP, WPHX-LP, WWFH-LP, FM translator W270DH and FM translator application BNPFT-20180125ACR. WSDX, WPHX and W270DH are co-channel facilities, while WPBW, WWFH and BNPFT-20180125ACR are 1<sup>st</sup> adjacencies. Limited power and a directional antenna are used to protect each of these facilities. Appendix B is the proposed directional antenna pattern. NIA Broadcasting is also filing a long form application for BNPFT-20180125ACR in coordination with this application.

The proposed facility is in compliance with 47 C.F.R. Section 1.1306 with regards to radio-frequency electromagnetic exposure in that the contribution to the rf environment is less than 5% of the maximum public exposure.

This application was prepared using FCC 30-arc-second terrain data.

This translator will operate as a fill-in facility for WMGG, an AM radio station licensed to Largo, FL. The maximum ERP is limited by interference and the class maximum of 250W.

Attached as Figure 1 is a color coded map showing the protected contours of all relevant FM facilities and the associated interfering contours from the proposed facility. Figure 1a is a close-up view of protected and interfering contours that are close, but do not overlap.

Figure 2 shows the proposed 1mV service contour of this application compared with the 2mV service contour for WMGG. Figure 3 demonstrates that there is 60dB $\mu$  overlap between the short form and long form applications. Figure 4, Study 1 and Appendix A demonstrate that no harmful interference will occur to 3<sup>rd</sup> adjacent channel station WHPT.

The proposal is sufficiently distant from all facilities mentioned in 73.1030(a), (b) & (c) so that notification under 73.1030 is not required.

Respectfully submitted

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## Analysis:

The proposed facility is inside the Tampa, FL radio market. This application changes antenna type, tower within the AM array and height, but all other parameters are unchanged from the short form.

Figure 1: Contour analysis of Ch270, Tampa, FL.  
 Colors are referenced to proposed 'NEW'.  
 Other facilities' colors should not overlap the same (similar) colors from NEW. Overlapping colors from one affected station to another is okay.  
 Key:  
 Amber & Brown = Interfering 40dBμ vs Protected (Co-chan)  
 Blue or cyan = Interfering 54dBμ vs Protected (1st Adj)  
 Violet = Interfering 106.2dBμ vs Protected (2nd/3rd adj)  
 Proposed power = 0.25kW (250 Watts).  
 Proposed antenna type: PSI FML-3-DA, directional (or equiv).

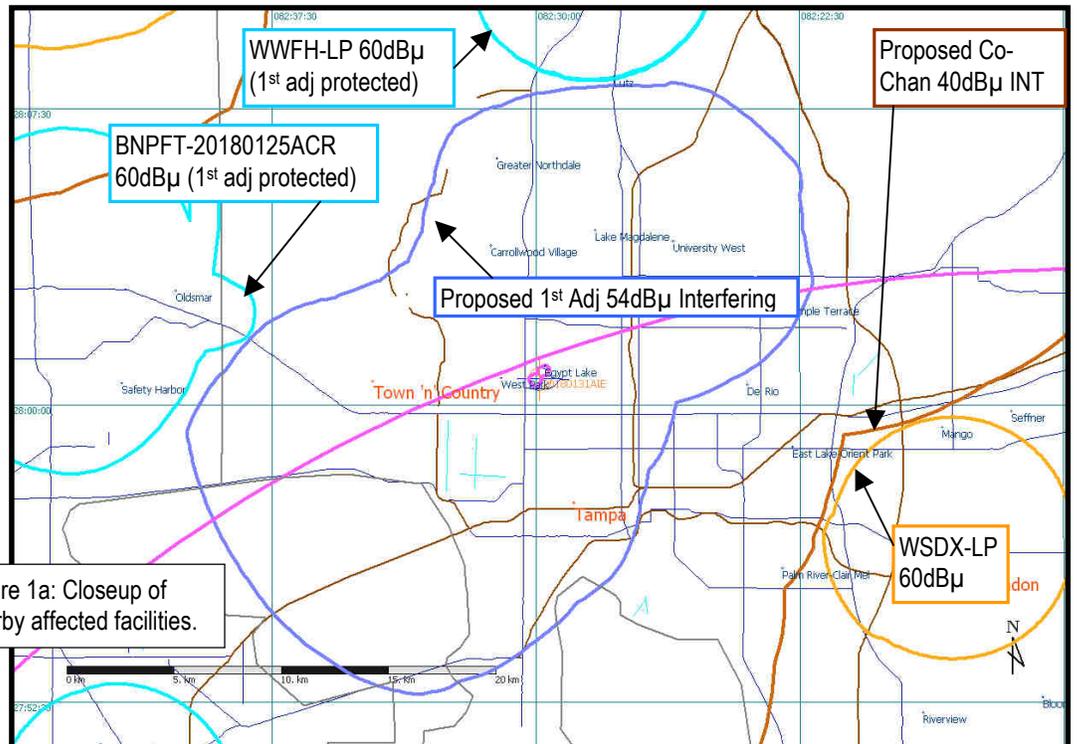
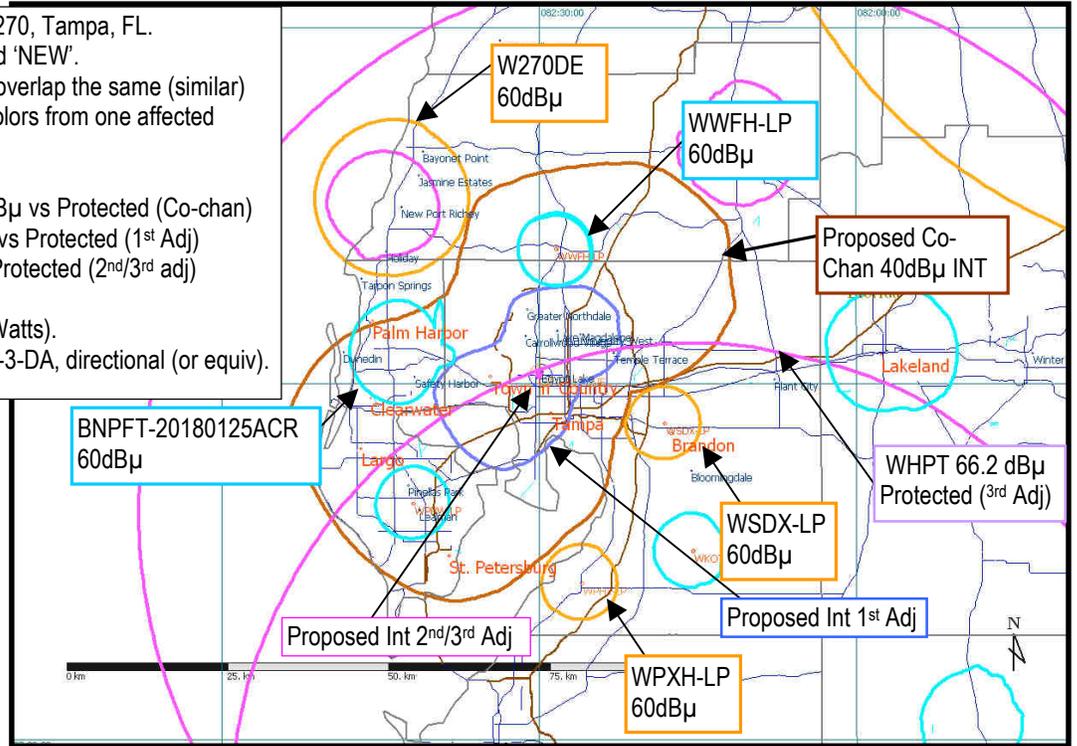


Figure 1a: Closeup of nearby affected facilities.

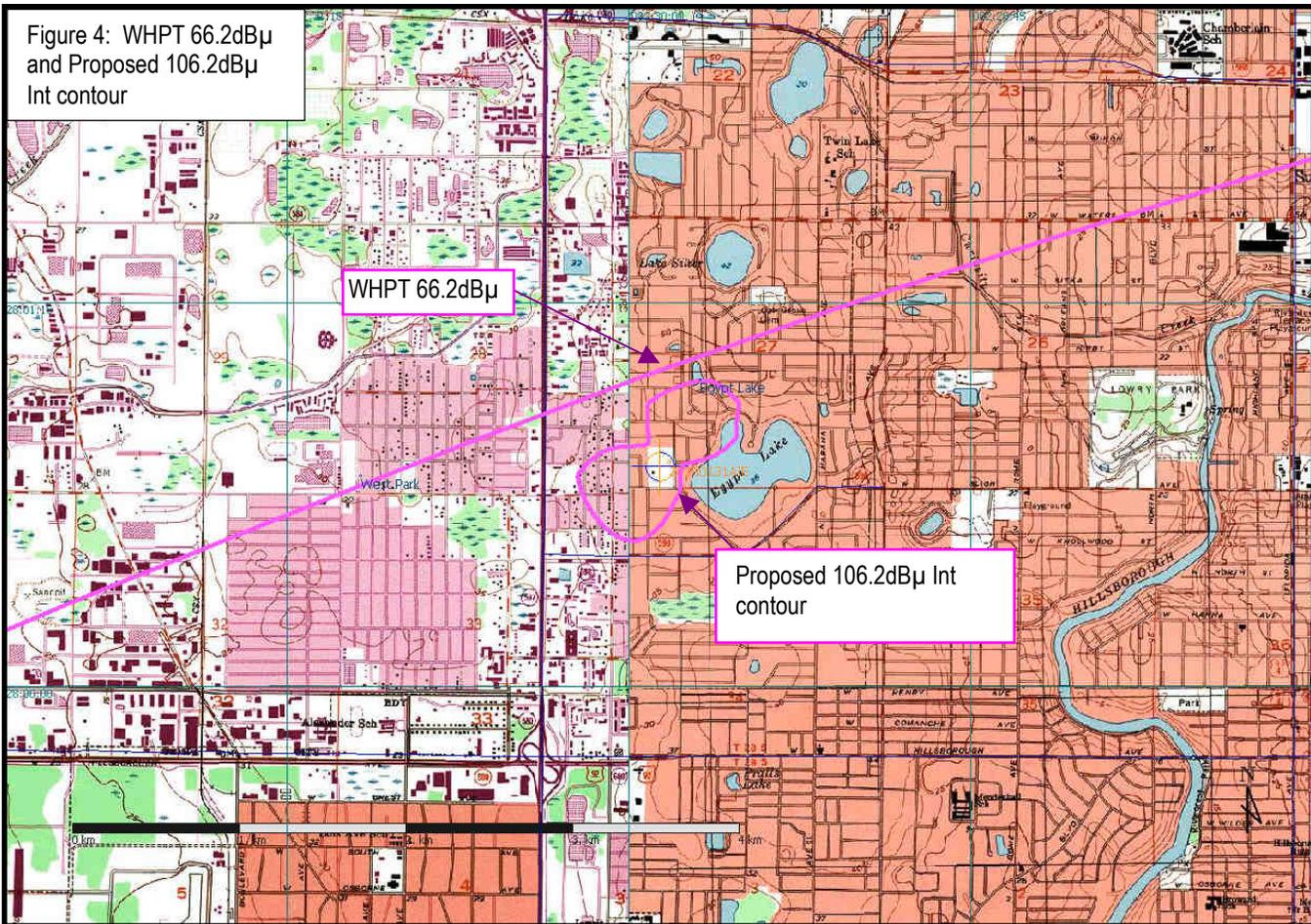


### Desired to Undesired ratio (D/U) studies of facility vs WHPT Methodology:

The WHPT 66.2dB $\mu$  contour encompasses the proposed facility's 106.2dB $\mu$  contour.

The proposed facility is located adjacent to housing and roads, but the tower is set away from the nearest occupied structure or road by 84 meters, therefore interfering signals can impact the ground as long as they do so within the 84 meter ring. It is necessary to prevent the interfering contour from reaching the ground starting at 84 meters from the tower base.

All of the affected areas are completely contained within the WHPT 66.2dB $\mu$  contour. Therefore the worst case scenario for interference is  $66.2\text{dB}\mu + 40\text{dB}\mu = 106.2\text{dB}\mu$ .



Spreadsheets were used to calculate the distance to the interfering contours and show the margins of clearance (in dB) at a point two meters AGL. Where the interfering contour reaches near the ground, the table indicates how far from the tower the interference will reach. In the case of facility, a four-bay directional antenna with an inter-bay spacing of 102 inches will be employed. The result is that the interfering contour does not reach any occupied structure or roadway. The spreadsheet output is attached as Appendix A.

# Interference Study 1:

## Terms and Methodology

Max ERP: The power specified in the application, expressed in kW.

Angle below the Horizon: The radiation angle below the antenna's horizontal plane.

Field at Angle: The field supplied by the antenna manufacturer for each Angle below the Horizon.

ERP at Angle: The ERP for an Angle given Max ERP & Field:

$$\text{ERP@Angle} = \text{Max ERP} * \text{Field}^2$$

Signal at Point: The predicted signal level assuming Free Space attenuation at a point:

$$\text{Signal} = 106.22 - (20 * \text{Log}(\text{Dist}(\text{km}))) + (10 * \text{Log}(\text{ERP@Angle}(\text{kW})))$$

Distance to Point: The radiation path distance from the antenna to a point.

$$\text{DistToPoint} = \text{Antenna Rad Center in meters AGL} / (\text{Cos}(90^\circ - \text{Angle}^\circ))$$

Distance From Tower: The distance from the tower base to a point.

$$\text{DistToPoint} * \text{Sin}(90^\circ - \text{Angle}^\circ)$$

Interference Threshold = Protected station's predicted contour value at a point +40dBμ

Over Threshold: The amount that the Proposal's signal exceeds the interference threshold.

$$\text{OverThresh} = \text{Signal} - \text{Interference Threshold value}$$

**A negative Over Threshold value indicates no interference.**

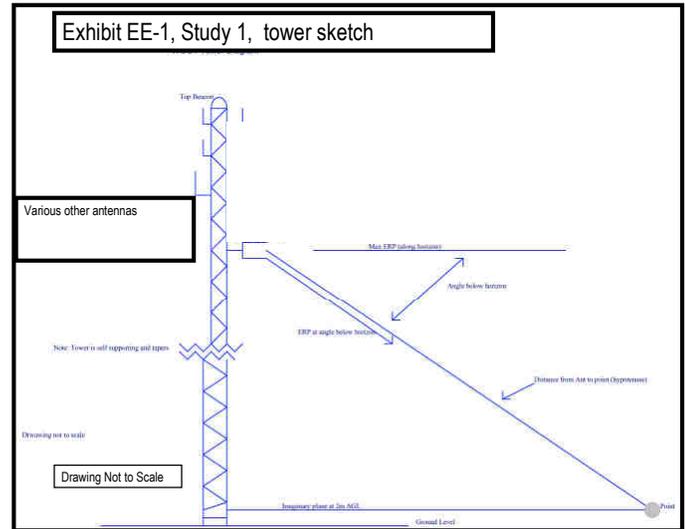
Notes:

When finding a value for a point two meters above ground, then:  $\text{DistToPoint} = \text{Antenna Rad Center in meters above the plane, not ground} / (\text{Cos}(90^\circ - \text{Angle}^\circ)$ . Subtracting 2 meters from the antenna RC produces the desired result.

## Results:

Appendix A (separately attached to this application) shows the angle and distance to a point 2meters AGL from the proposed antenna. The Appendix A table also shows the distance to the interfering contour at 250W (.25kW).

The field strength is calculated at each end point and compared to the worst case protected contour of WHPT (66.2dBμ). Using the manufacturer's specified field elevation data, Appendix A shows that, at 2 meters above the ground, the interference threshold of 106.2dBμ does reach the ground, but only within 75 meters of the tower. The furthest that the interfering contour reaches the 2m above ground point is at 74meters from the tower base. It does not reach any occupied structure or roadway. There are two story buildings about 100m from the tower, but the interfering field at those locations is about 10m AGL. No elevated public roads or occupied multi-story buildings extend into the zone of interference on any radial. It can be concluded that no interference is predicted to occur to WHPT (or the stronger WPOI) as a result of this proposal.



## Section VII Engineering Data:

Tech Box Data:

1. Channel: **270**

Primary Station: **FID: 67135**

**WMGG**

**Egypt Lake, FL**

**1470 kHz**

Delivery Method: **Other**

Antenna Location Coordinates: (NAD27):

**28° 00' 41.9" N**

**82° 29' 52.7" W**

Antenna Structure Registration: **1030544**

Antenna Location Site Elevation Above Mean Sea Level: **13 meters**

Overall Tower Height Above Ground Level: **71 meters**

Height of Radiation Center Above Ground Level: **67 meters**

ERP:

**0.25 kW (H)**

**0.25 kW (V)**

Transmitting Antenna: **PSI FML-4-DA, Directional.**

Fill-in Translator: **Yes** (see EE-1, Figure 2)

Interference: **Yes**

Section 74.1204, **Checked**. See EE-1, Figure 1

Section 74.1205, **Not Checked**.

Unattended operation: **Yes**

Multiple Translators: **Yes**

NEPA: **Yes**. This proposal is excluded from environmental processing: The rf exposure was modeled using "FM Model" for windows (from the FCC website) using a 1-element antenna at a height of 67m. The modeled maximum rf near the base of the tower is below 5% of the uncontrolled public exposure limit, so no further processing is required. No changes to structure, lighting, land or water are proposed. Applicant will cease radiating if workers are near the antenna.

/S/

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