

**Exhibit EE-1: Engineering Statement in support of  
FCC FORM 2100, Schedule 349  
APPLICATION FOR AUTHORITY TO CONSTRUCT OR MAKE CHANGES IN AN FM TRANSLATOR OR FM BOOSTER STATION  
(For a Minor Change Application of an FM Translator)**

This engineering exhibit supports an application for minor change to FM translator W270DU (FID # 203278). The existing W270DU channel has six nearby signals on the co-channel or 1<sup>st</sup> adjacent channels. W270DU both causes to and receives interference from these nearby facilities. By moving from channel 270 to channel 242, W270DU will reduce the number of nearby signals. While not a perfect solution, this does reduce interference while allowing for an expanded coverage area. Additionally, W270DU receives serious interference from class C station WQMP. Channel 242 has no full powered stations close enough to cause interference, thus also completely eliminating a significant source of interference to W270DU.

This application changes the channel and antenna pattern and antenna height. The proposed facility utilizes a directional antenna to protect various co-channel and first adjacent stations as shown in figure 1.

The proposed 123.7dB $\mu$  contour is within the 83.7 dB $\mu$  contour of 3<sup>rd</sup> adjacent station, WBTP and within the 100dB $\mu$  contour of 2<sup>nd</sup> adjacent (and co-located) W244EG. WBTP is the weakest of the 2<sup>nd</sup>/3<sup>rd</sup> adjacent signals. A D/U analysis shows that no interference reaches any occupied locations or elevated roadways. Therefore this proposal should be acceptable under 74.1204(d).

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 continue to operate as a fill-in facility for WMGG, Fac. ID: 67135, an AM station licensed to Egypt Lake, FL.

Attached as Figure 1 is a color coded map showing the protected contours and interfering contours of all relevant FM facilities.

Figure 2 supports the 74.1204(d) analysis to adjacent stations WBTP & W244EG.

The proposed modification will operate from the same location as the primary station, WMGG, therefore the proposed 1mV/m service contour of this application is entirely within the 2mV/m service contour of WMGG and within the 25 mile ring, as shown in Figure 3.

Appendix A (attached separately) demonstrates that no harmful interference will occur to adjacent stations WBTP or W244EG.

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

This application specifies a non-adjacent channel change and it includes exhibits showing that interference will be reduced as a result of the requested channel change (figs 4, 5 and 6).

Respectfully submitted,

Kyle Magrill, Consultant

352-335-6555

**Figure 1:** Contour analysis of Ch242, Egypt Lake, FL.

Colors are referenced to the proposed facility.

Other facilities' colors should not overlap the same colors from this proposal. Overlapping colors from one affected station to another is okay.

Key:

Amber or Brown= Interfering vs Protected (Co-chan)

Cyan & Lt Blue = Interfering vs Protected (1<sup>st</sup> Adj)

Violet = Interfering vs Protected (2<sup>nd</sup>/3<sup>rd</sup> adj)

Proposed power = 0.25kW (250 Watts).

Proposed antenna type: PSI FML-DA , 1-bay, directional

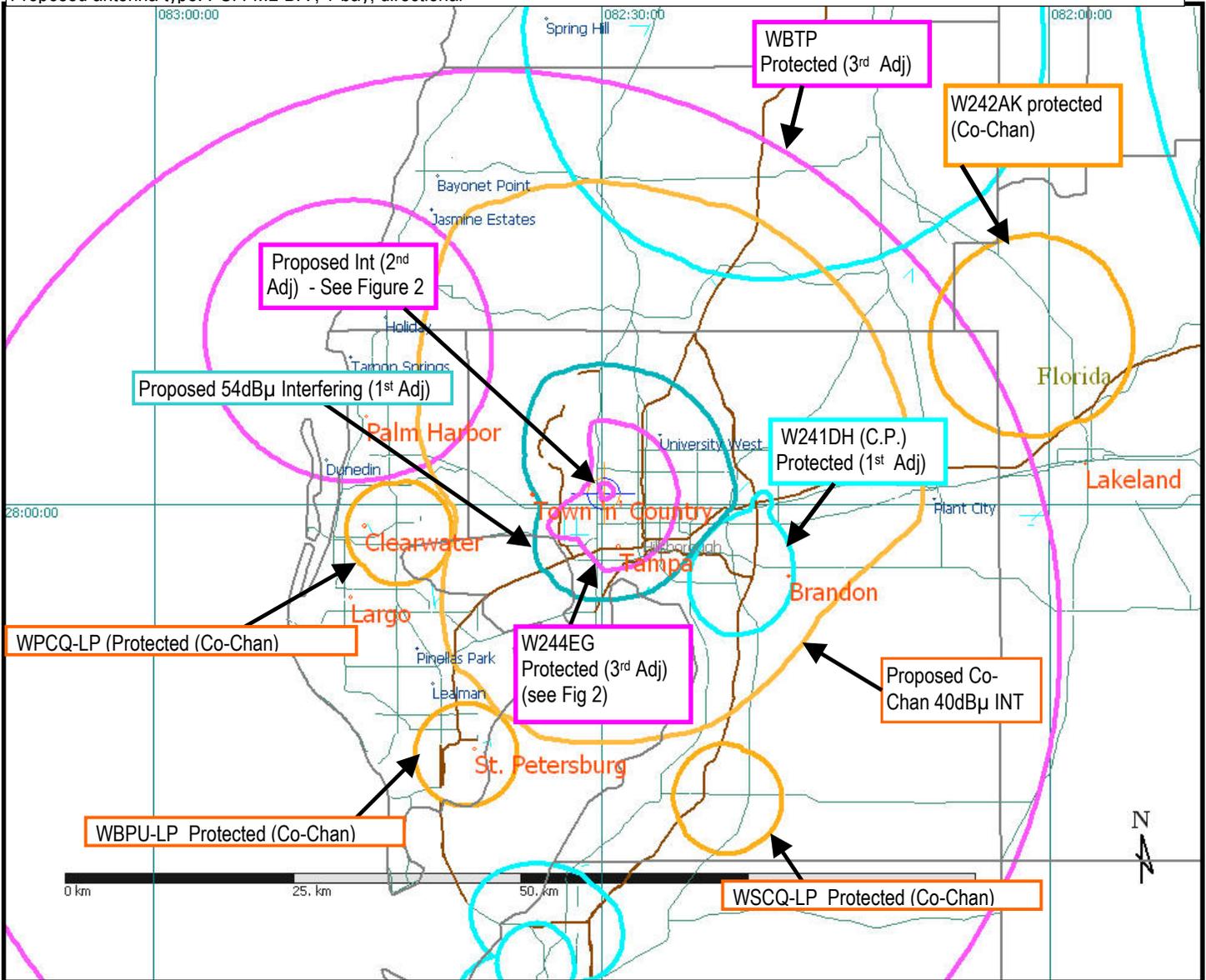
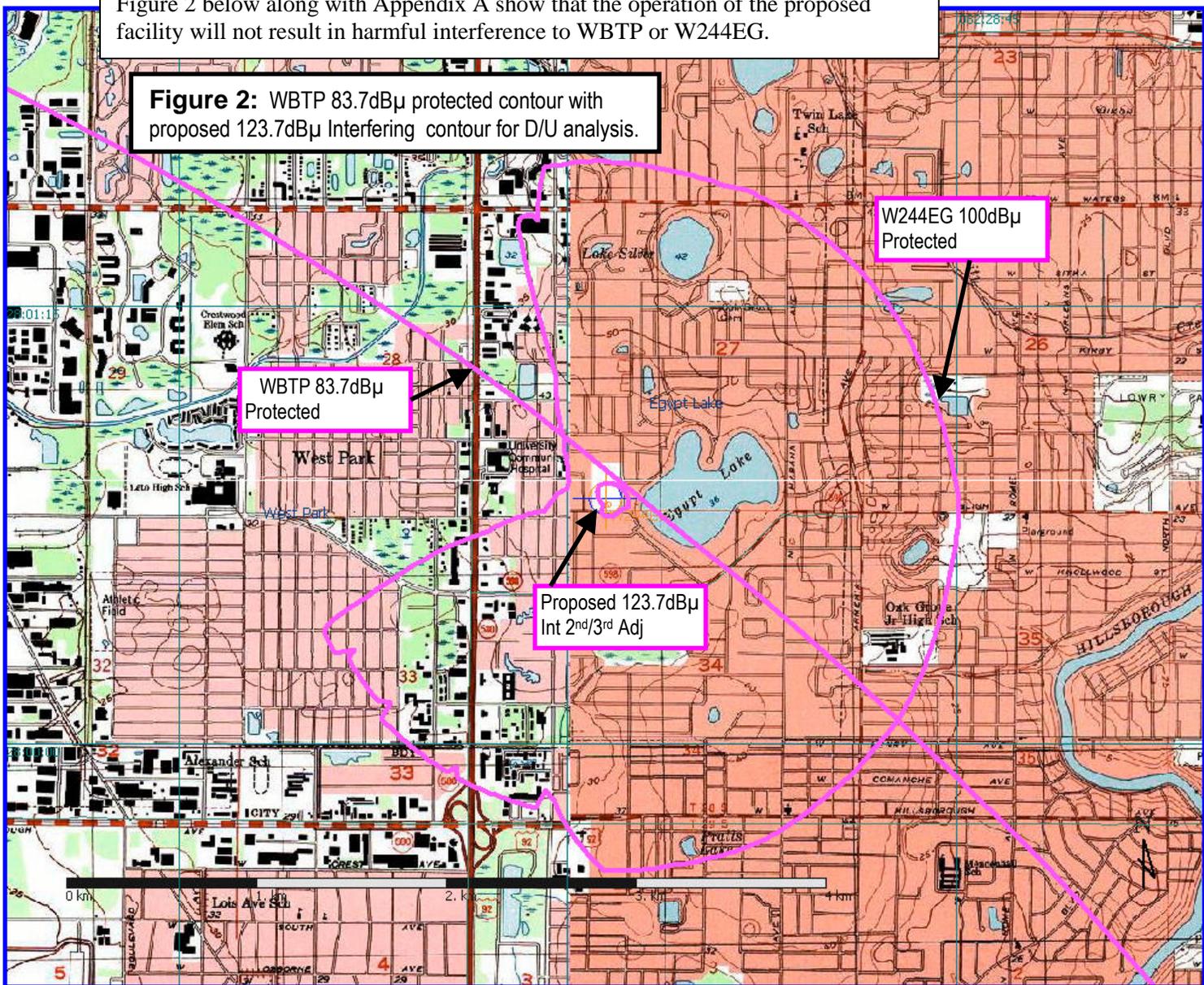


Figure 1 above demonstrates that no prohibited overlap exists on the co-channel, 1<sup>st</sup> adjacency or the i.f. channels. Prohibited overlap occurs on a 2<sup>nd</sup> adjacent channel, but is acceptable under 74.1204(d) due to a lack of affected population.

Figure 2 below along with Appendix A show that the operation of the proposed facility will not result in harmful interference to WBTP or W244EG.

**Figure 2:** WBTP 83.7dB $\mu$  protected contour with proposed 123.7dB $\mu$  Interfering contour for D/U analysis.

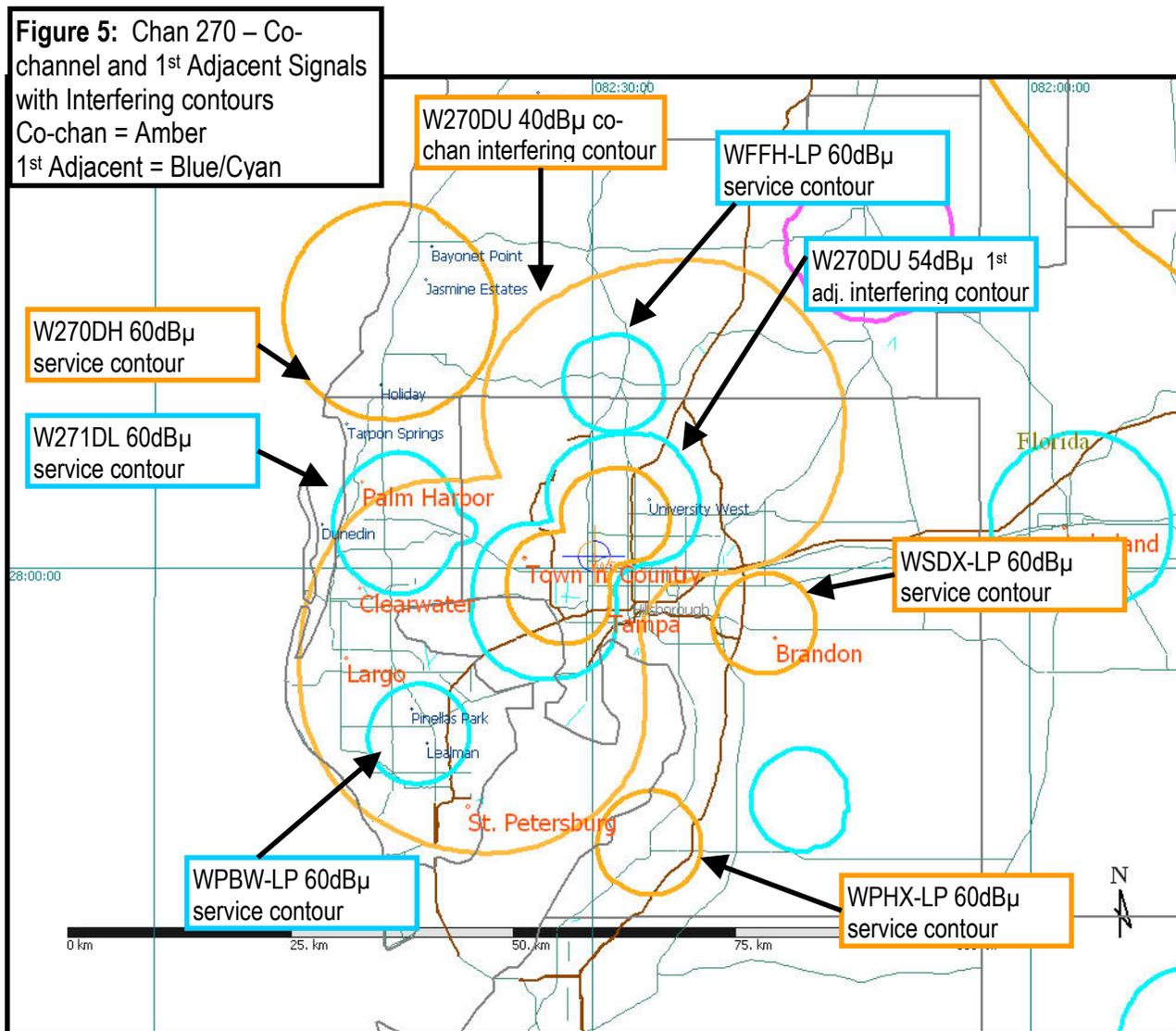






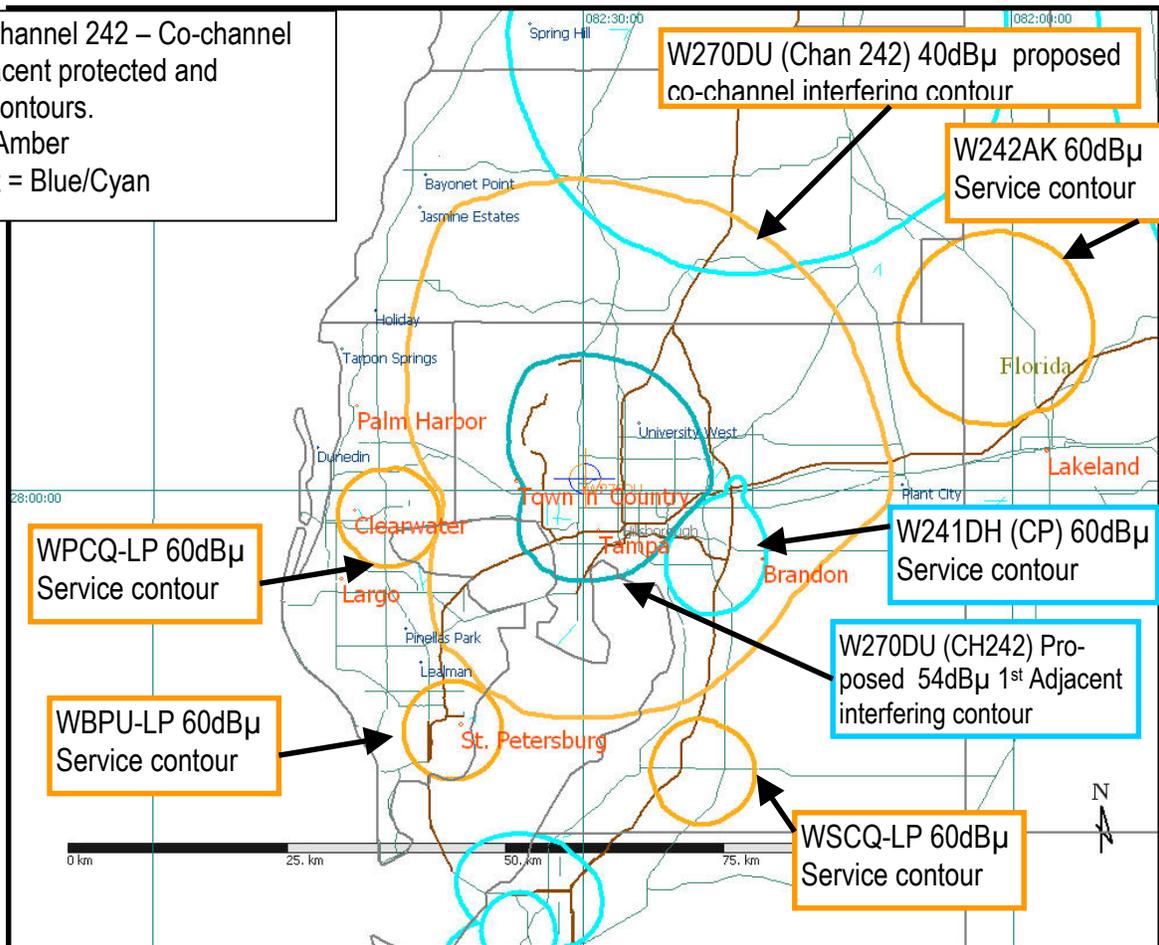
The proposed channel change solves two interference problems. First, W270DH receives interference from co-channel station WQMP FID # 73137 (Figure 4). There is no nearby full power station on channel 242, thus eliminating a major interference source for W270DH.

As shown in Figure 5, W270DU's co-channel interfering contour is in close proximity to three nearby co-channel facilities: WSDX-LP, WPHX-LP and W270DH. W270DH has privately contacted NIA broadcasting about interference within the W270DH 45dB $\mu$  contour. Additionally, W270DU's 1<sup>st</sup> adjacent interfering contour is within close proximity to WFFH-LP and W271DL and near to WPBW-LP.



NIA Broadcasting proposes to remedy the interference to W270DH by moving to channel 242. As shown in figure 6, there are currently three operating signal nearby on channel 242, WPCQ-LP, WBPU-LP & WSCQ-LP. Co-channel FM translator W242AK is somewhat further away. The only nearby 1<sup>st</sup> adjacent signal is a CP for W241DH, which has not been built and may not be. By changing the number of affected stations from six to four (five counting un-built W241DH), this move reduces interference. Further, there is no full power co-channel interfering signal close enough to show on a map. Therefore, the requested channel change eliminates a major source of severe interference to the W270DH signal, thus also qualifying as reducing interference. Additionally, the change allows expanded coverage for W270DH from approximately 275,000 to 355,000 persons, which is in the public interest.

**Figure 6:** Channel 242 – Co-channel and 1<sup>st</sup> Adjacent protected and interfering contours.  
 Co-chan = Amber  
 1<sup>st</sup> Adjacent = Blue/Cyan



## **Desired to Undesired ratio (D/U) studies of the proposed facility vs WBTP Methodology:**

The proposed facility's 123.7 dB $\mu$  interfering contour is within the protected contour of adjacent class C1 station WBTP (Facility ID: 41382). It is also within the protected contours of translator W244EG (Facility ID: 203286), which is located at the same tower farm. WBTP is the weaker signal, so preventing interference to WBTP demonstrates that no interference will occur to W244EG as a result of this application. The WBTP 83.7dB $\mu$  contour encompasses the proposed facility's 123.7dB $\mu$  contour. A D/U analysis (attached as Appendix A) shows that no prohibited interference approaches the ground and no multi-story buildings are believed to be in the area.

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 supporting structure the interference will reach.

The result is that the interfering contour does not reach the ground, nor any occupied structure or roadway. The spreadsheet outputs are attached as Appendix A.

# Interference Study:

## 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:

$$\text{Signal} = 106.92 - (20 * \text{Log}(\text{Dist}(\text{km}))) + (10 * \text{Log}(\text{ERP@Angle}(\text{kW})))$$

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 FMount 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:

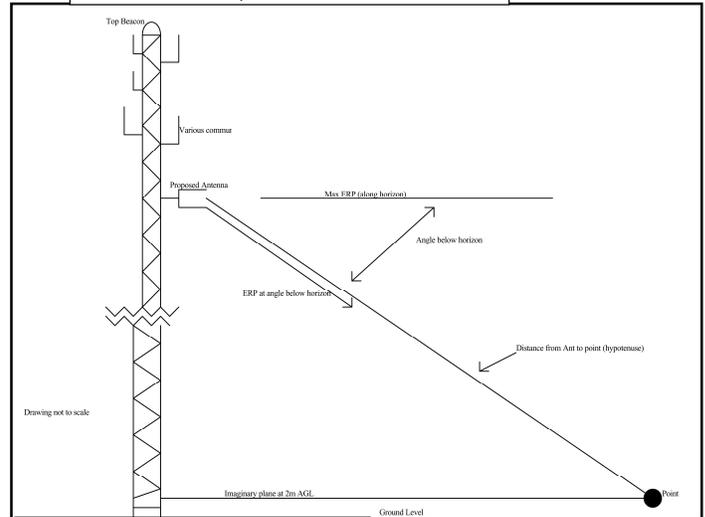
When finding a value for a point two meters above ground, then: DistToPoint = Antenna Rad Center in meters above the plane, not ground/(Cos(90° - Angle°)). Subtracting 2 meters from the antenna RC produces the desired result.

## Results:

Appendix A (separately attached to this application) shows the angle and distance to a point 2meters above the ground from the proposed antenna. The table portion of Appendix A also shows the distance to the interfering contour at 250W (0.250kW).

The field strength is calculated at each end point and compared to the worst case protected contour of WBTP (83.7dBμ). Using the manufacturer's specified field elevation data, Appendix A shows that, at 2 meters above the ground, the interference threshold of 123.7dBμ will not reach any occupied space or roadway. No occupied spaces or roads extend into the zone of interference on any radial. It can be concluded that no interference is predicted to occur to WBTP (nor W244EG) as a result of this proposal.

Exhibit EE-1, tower sketch



Note: The sketch is representative of a typical tower. The actual installation may vary.

**Engineering Data:**

Tech Box Data:

Channel: **242**Primary Station: **FID: 67135**  
**WMGG**  
**Egypt Lake, FL**Delivery Method: **Other**

Antenna Location Coordinates: (NAD83):

**28° 00' 42.97" N****82° 29' 52.04" W**Antenna Structure Registration: **1030544**Antenna Location Site Elevation Above Mean Sea Level: **13meters**Overall Tower Height Above Ground Level: **71 meters**Support Structure Height: **71 meters**Height of Radiation Center Above Ground Level: **70 meters (H & V) AGL**

ERP:

**0.250 kW (H)****0.250 kW (V)**Transmitting Antenna: Directional 1-bay **PSI FML-DA**Proposal Compliance:Fill-in Translator: **Yes** (see EE-1)Section 74.1204, 74.1205: **Yes**. See EE-1Unattended operation: **Yes**Multiple Translators: **Yes**Environmental Effect:

NEPA: **No**. This proposal is excluded from environmental processing: The modeled rf from the proposed translator at the closest occupied area is under  $5\mu\text{W}/\text{cm}^2$  which is less than 5% of the maximum public exposure level. The antenna is mounted on an existing structure. No changes to structure, lighting, land or water are proposed. Applicant will cease radiating if workers are near the antenna.

Kyle Magrill

Technical consultant

(352) 335-6555

[kyle@circuitwerkes.com](mailto:kyle@circuitwerkes.com)