

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 Translator Application Modification)

This engineering exhibit supports a minor change application, modifying a pending application (BPFT-20180517AEU) for FM translator W248CA (Facility ID 156011), St. Petersburg, FL. This application changes the antenna type and increases power slightly. No other modifications are being requested.

## **BACKGROUND**

This modification is being made in response to an informal objection by Hall Communications, Inc. (Hall) on behalf of WPCV, Facility ID # 25872. Hall's objection is based on a theoretical showing of possible interference from the proposed new facilities specified in BPFT-20180517AEU, as amended. Hall made their objection under 47CFR 74.1204(f) and presented evidence that up to 28 listeners may experience interference within the WPCV predicted 45dBu contour. WPCV reaches more than 2.7 million listeners within their 60dBu service contour, so they are required to find at least 25 affected listeners for their complaint to be valid.

NIA Broadcasting, the licensee of W248CA, opposed Hall's objection and submitted evidence that, based on the required -20dBu co-channel D/U margin, at least 23 of Hall's presumptively affected listeners should have already been experiencing interference, but had not complained of any. This lack of interference is empirical proof of either the model's limitations or that the listeners are not actually listening at the stated locations. NIA asserted that Hall cannot claim theoretical NEW interference in places where the model shows that the existing, licensed facilities should already be interfering. Hall presented no evidence at all that actual interference occurred within the predicted zone of interference from the licensed W248CA facility. Additionally, it is the continuing belief of NIA Broadcasting that absolute empirical evidence trumps the theoretical model. Additionally, NIA noted that many of Hall's listeners specified the same location, thus only qualifying as a single complaint. This alone disqualifies Hall's objection since it reduces the number of locations to only 17. Hall filed a reply in which they tried to discredit both the report and the author, but in so doing they made many mis-characterizations and errors and, apparently, failed to grasp how the required -20dBu ratio was used to create the various figures.

However, instead of wasting more time in pointing out the deficiencies of the Hall response, NIA would prefer to silence the objection by unilaterally modifying its pending application so that less than 25 listeners could be affected, thus rendering the argument moot. Therefore, this application employs a directional antenna that removes predicted interference to at least five presumptive listeners at four locations. By Hall's count, the number of affected listeners drops to 23, rendering Hall's objection invalid. Given that the remaining 23 listeners were already predicted to be receiving interference from the licensed W248CA facilities, but had not objected, there are actually no new interference claims possible. Further, since there were already only 17 unique interference locations, removing these five listeners reduces the number of affected locations to only 12, far below the threshold set in MB Docket 19-40<sup>1</sup>.

---

<sup>1</sup> MB Docket No. 19-40, Released: May 9, 2019, states in paragraph 15, in part:

.... 'Based upon the record, we are persuaded that translator interference claims must be based on "separate receivers at separate locations" and that multiple listener complaints from a single building (e.g., complaints from multiple dwellers of an apartment building or house) or workplace will not count beyond the first complaint toward the six-complaint minimum.'

## PROPOSED FACILITIES

This FM translator is a fill-in facility for Class B AM station, WTMP (Fac. ID # 74108), a class B AM radio station licensed to Egypt Lake, FL.

The proposed facility's 104.3dB $\mu$  contour is within the protected contour of 2<sup>nd</sup> adjacent station WSUN, Holiday, FL. WSUN's 64.3dB $\mu$  contour completely encompasses the new facility's proposed 104.3dB $\mu$  interfering contour. The W248CA proposed 100dB $\mu$  contour is also within the 80dB $\mu$  service contour of 2<sup>nd</sup> adjacent WXTB, Clearwater, FL. Since WSUN is the weaker signal, demonstrating no interference to WSUN also proves that no interference will occur to WXTB.

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 co-channel station WPCV. A directional antenna is used to protect WPCV's 60dB $\mu$  (and also 57.1dBu) contour(s).

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.

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 2 shows the proposed W248CA co-channel 37.1 dBu interfering contour vs the WPCV 57.1dBu "protected" contour along with the WPCV listener's claimed locations. Listeners 6, 8, 9, 25 & 26 have a better than -20dBu D/U ratio and are immune to interference from this proposal.

Figure 3 shows the W248CA *licensed* interfering contour compared to the *proposed* interfering contour relative to the reported listeners. A -20dBu ratio was used to predict interference in both cases. Figure 3 illustrates that no new listeners will receive interference under the proposal. Only listener locations that are already receiving interference could still be subject to interference. Specific listener locations were individually tested and the worst case is shown. All listener locations except 6, 8, 9, 25 & 26 already experience interference based on the FCC model.

Figure 4 shows the proposed 1mV service contour of this application compared with the 2mV service contour for WTMP.

Figure 5, Study 1 and Appendix A demonstrate that no harmful interference will occur to 2<sup>nd</sup> adjacent channel station WSUN. No interference will occur to WXTB, a 2<sup>nd</sup> adjacent signal that is stronger than WSUN.

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

/S/

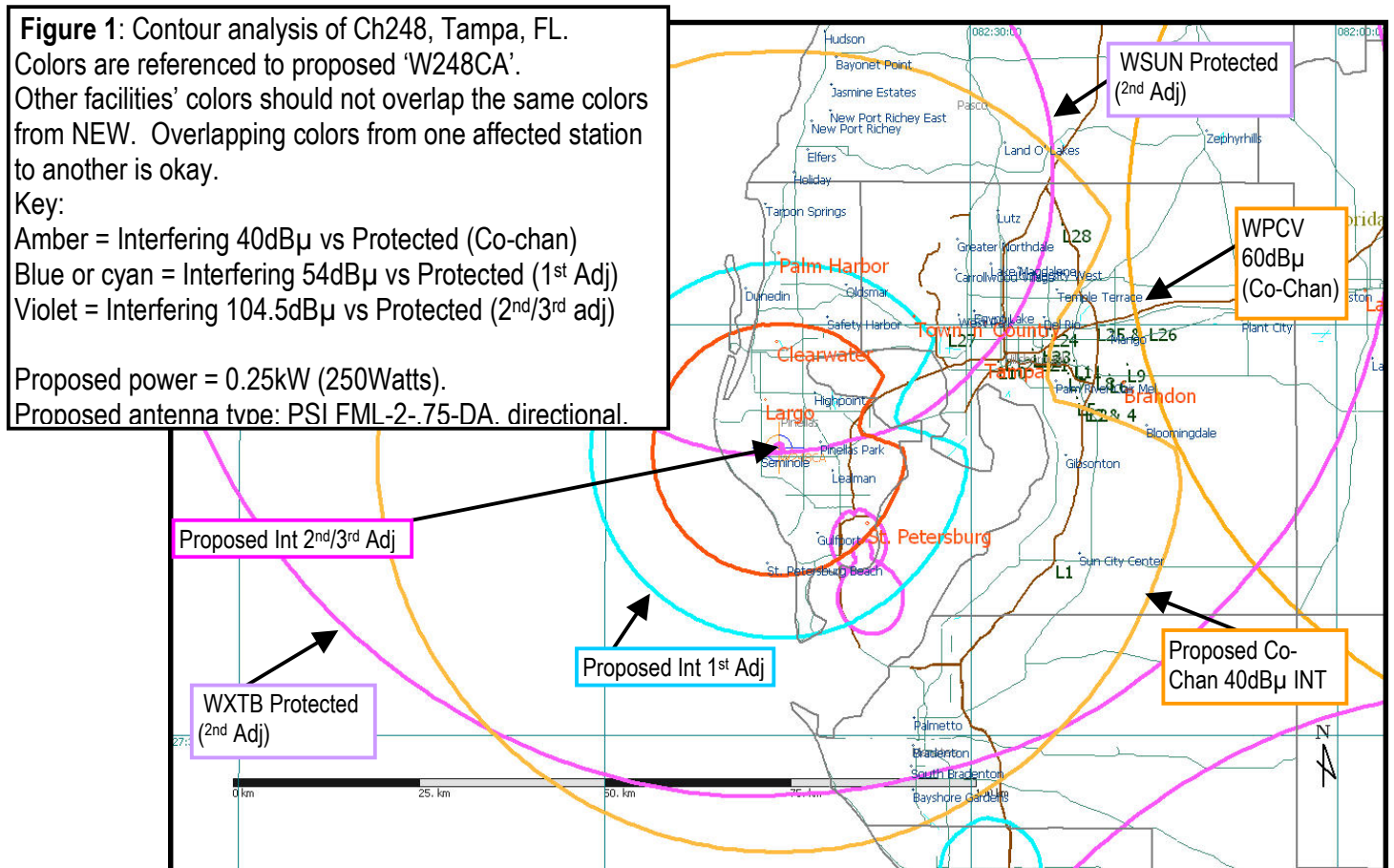
Kyle Magrill, Consultant  
16 April, 2020

2805 NW 6<sup>th</sup> Street  
Gainesville, FL 32609

352-335-6555

## ANALYSIS & FIGURES:

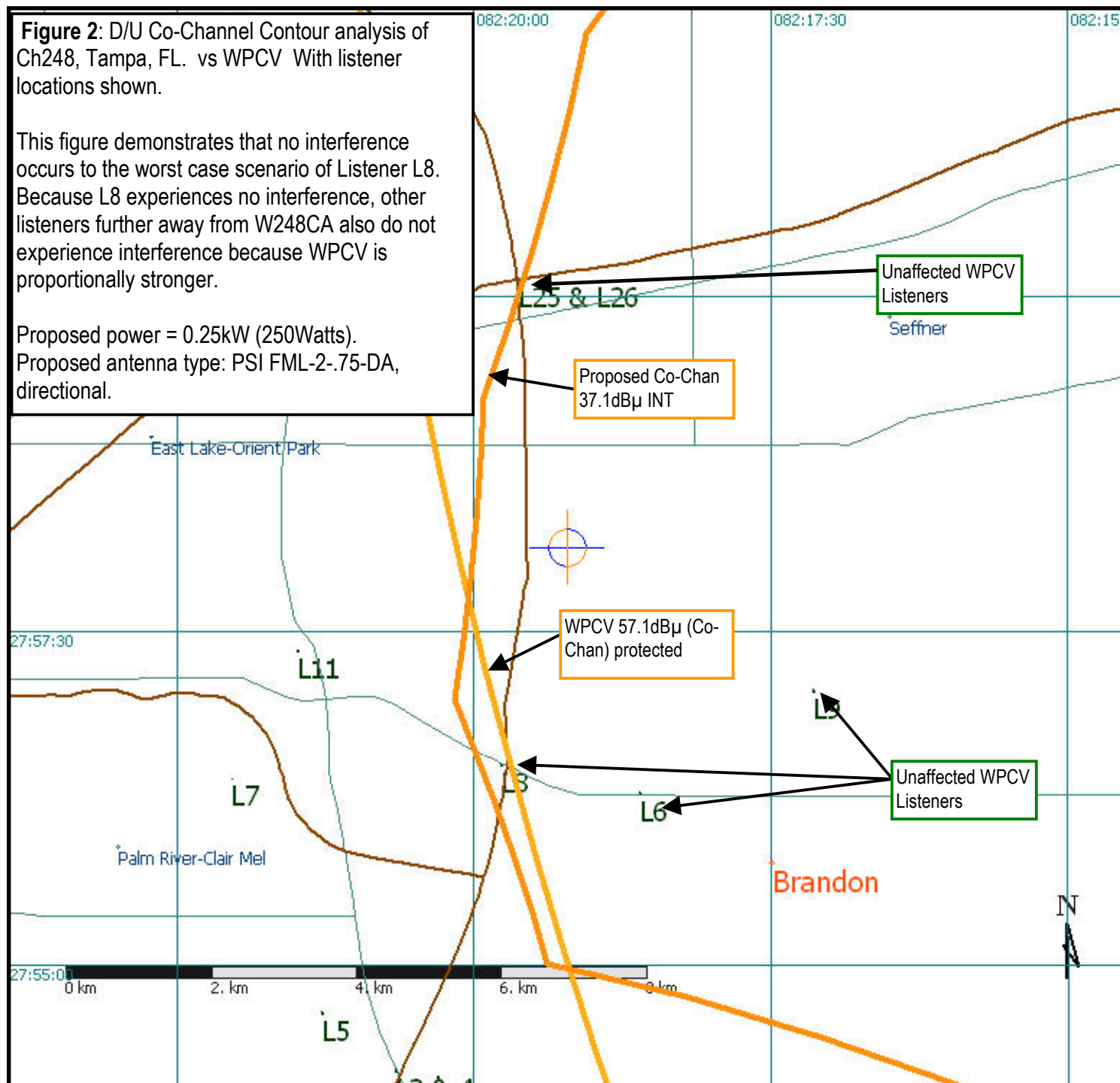
The proposed facility is inside the Tampa, FL radio market. This application modifies application BPFT-20180517AEU and changes antenna type and power.



**Figure 2:** D/U Co-Channel Contour analysis of Ch248, Tampa, FL. vs WPCV With listener locations shown.

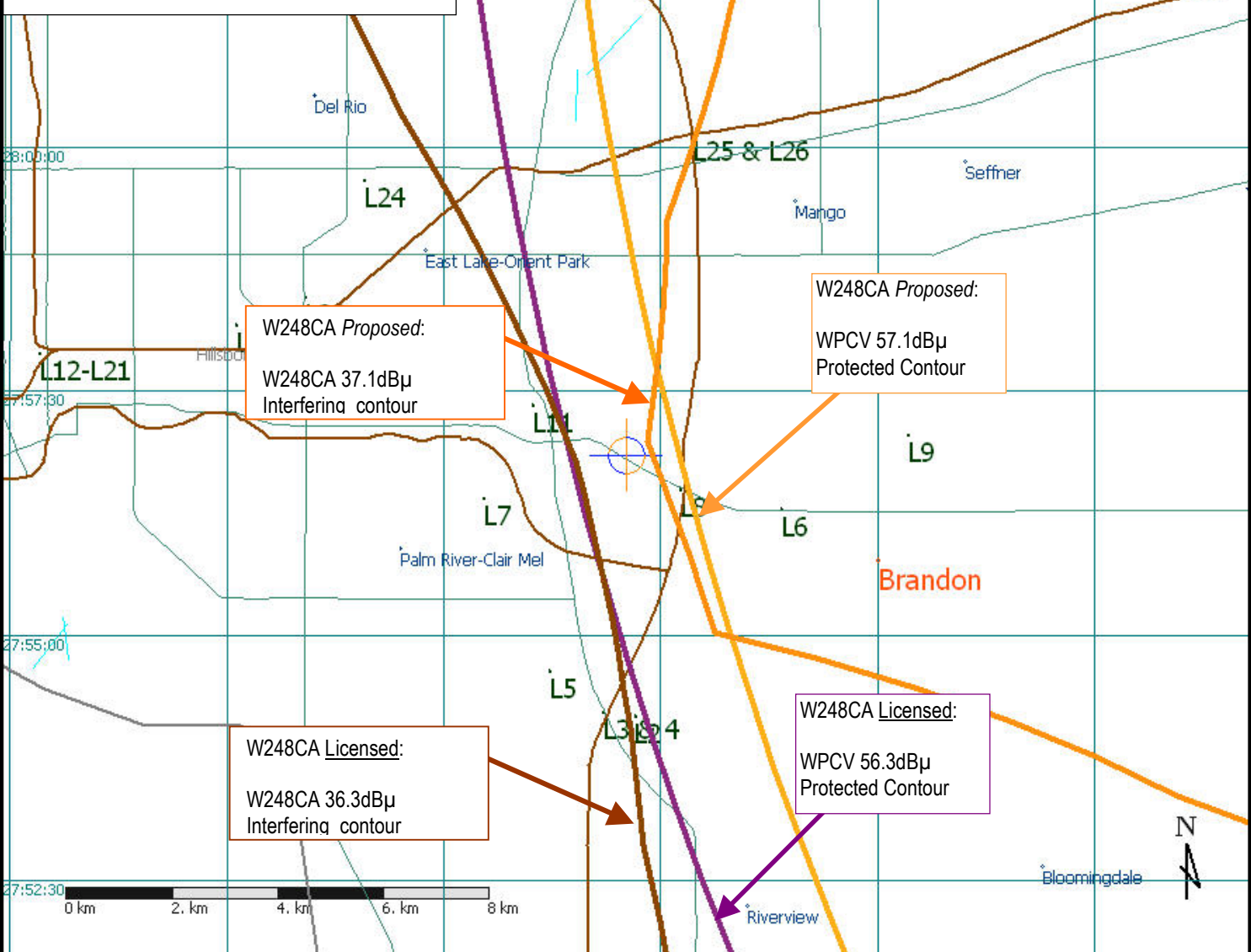
This figure demonstrates that no interference occurs to the worst case scenario of Listener L8. Because L8 experiences no interference, other listeners further away from W248CA also do not experience interference because WPCV is proportionally stronger.

Proposed power = 0.25kW (250Watts).  
Proposed antenna type: PSI FML-2-.75-DA, directional.



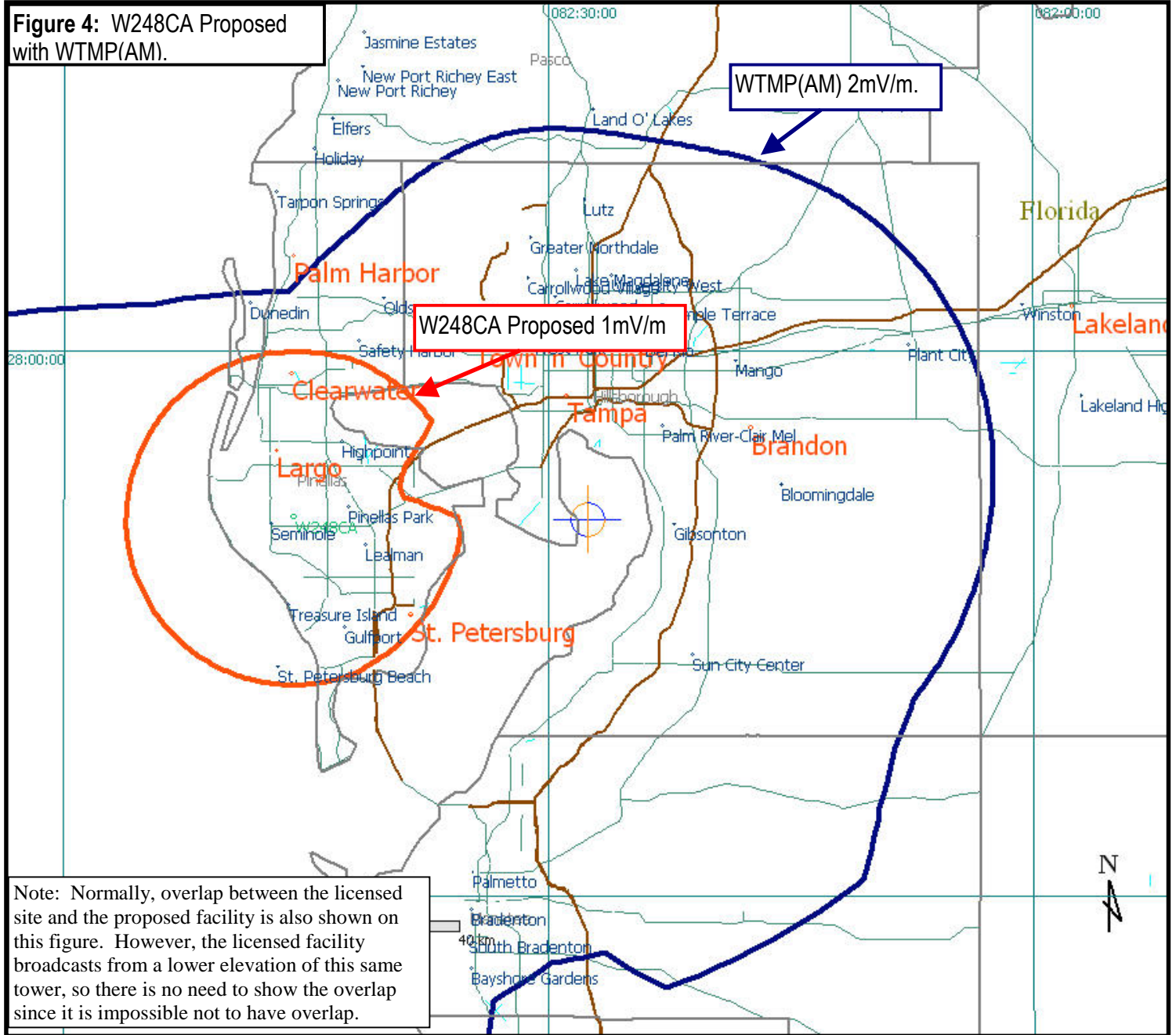
**Figure 3 :** W248CA licensed interfering contour compared to the proposed interfering contour relative to the reported listeners.

**Note:** "Proposed" is compared to "proposed" (amber vs amber) while "Licensed" is compared to "licensed" (purple vs brown). Proposed would not be compared to licensed.



**Note2:** Listeners L6, L8, L9, L25 & L26 are interference free from the licensed location. All other listeners were within the predicted interference area. Listeners L6, L8, L9, L25 & L26 are also interference free from the proposed facility.

**Figure 4: W248CA Proposed with WTMP(AM).**



Note: Normally, overlap between the licensed site and the proposed facility is also shown on this figure. However, the licensed facility broadcasts from a lower elevation of this same tower, so there is no need to show the overlap since it is impossible not to have overlap.

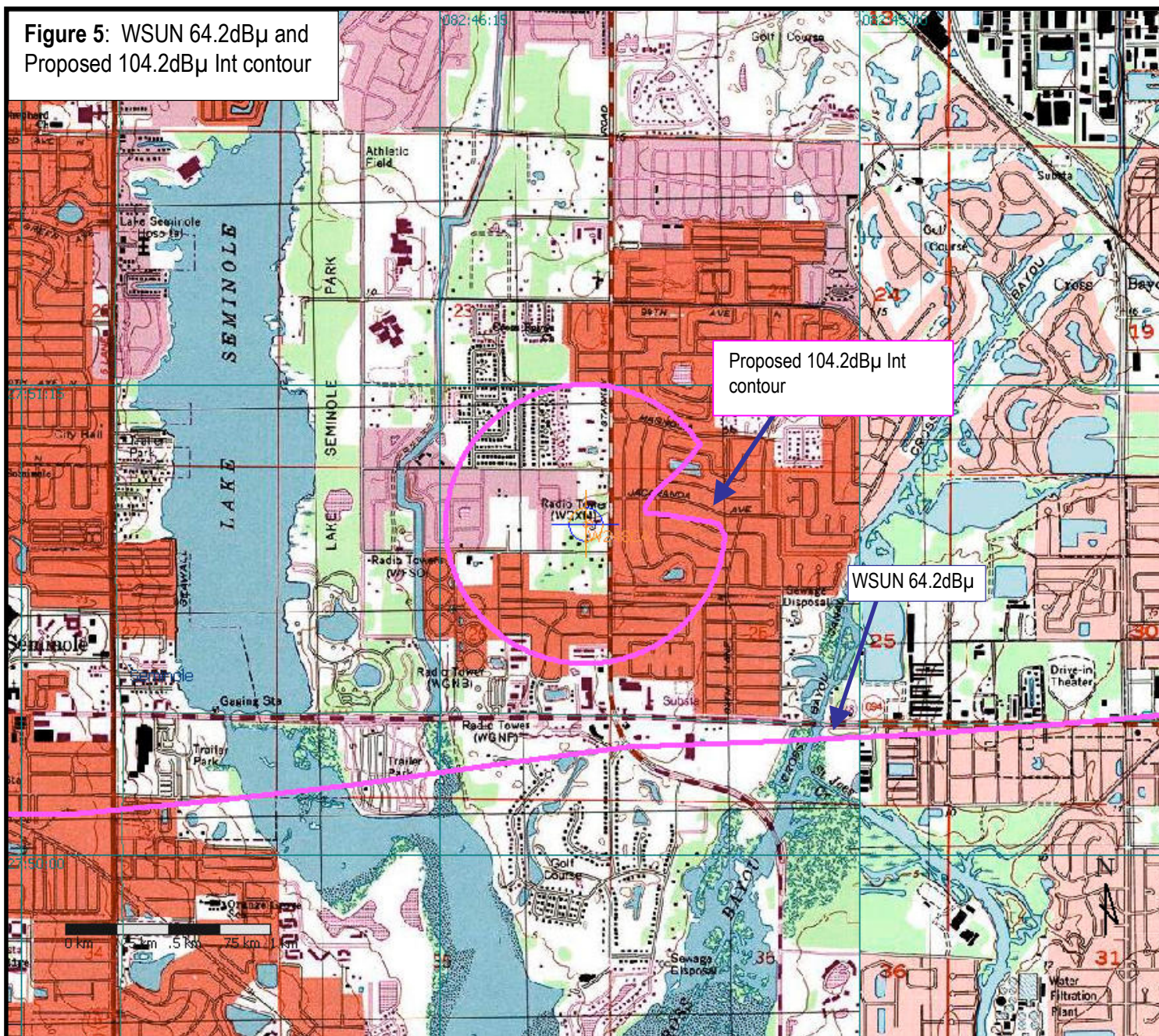


### Desired to Undesired ratio (D/U) studies of facility vs WSUN Methodology:

The WSUN 64.2dBμ contour encompasses the proposed facility's 104.2dBμ contour.

The proposed facility is located adjacent to housing and roads, therefore it is necessary to prevent the interfering contour from reaching the ground.

All of the affected areas are completely contained within the WSUN 64.2dBμ contour. Therefore the worst case scenario for interference is 64.2dBμ + 40dBμ = 104.2dBμ.





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 this facility, a two-bay antenna with a spacing of .75 will be employed. The result is that the interfering contour does not reach the ground and 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:

$$\text{Signal} = 104.52 - (20 * \text{Log}(\text{Dist}(\text{km}))) + (10 * \text{Log}(\text{ERP@Angle}(\text{kW})))$$

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.**

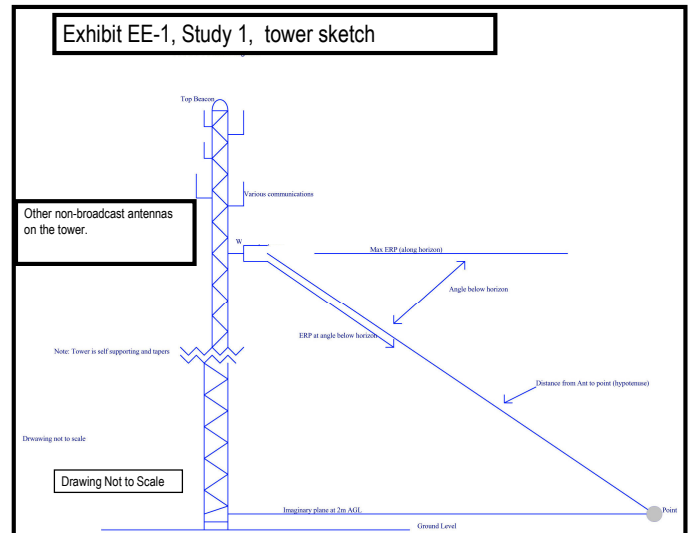
Notes:

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 WSUN (64.2dBμ). Using the manufacturer's specified field elevation data, Appendix A shows that, at 2 meters above the ground, the interference threshold of 104.2dBμ does not reach the ground. It does not reach any occupied structure or roadway. 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 WSUN or WXTB as a result of this proposal.





**Engineering Data:**

## Tech Box Data:

1. Channel: **248**Primary Station: **FID: 74108****WTMP****Egypt Lake, FL****1150 kHz**Delivery Method: **Other**

Antenna Location Coordinates: (NAD27):

**27° 50' 51.8" N****82° 45' 49.8" W**Antenna Structure Registration: **1037654**Antenna Location Site Elevation Above Mean Sea Level: **3 meters**Overall Tower Height Above Ground Level: **195 meters**Height of Radiation Center Above Ground Level: **167 meters**

ERP:

**0.25 kW (H)****0.25 kW (V)**Transmitting Antenna: **PSI FML-2-.75-DA (or equiv) Directional.**Fill-in Translator: **Yes** (see EE-1, Figure 2)Interference: **Yes**Section 74.1204, **Checked**. See EE-1, Figure 1Section 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" (from the FCC website) using a 2-element antenna at a height of 165m. The modeled maximum rf near the base of the tower is less than  $1 \mu\text{W}/\text{cm}^2$  which is well 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/

Kyle Magrill

Technical consultant

(352) 335-6555

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