

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 Licensed Translator)

This engineering exhibit supports a minor change application for FM translator W248CA (Facility ID 156011), St. Petersburg, FL.

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 104.2dB $\mu$  contour is within the protected contour of 2<sup>nd</sup> adjacent station WSUN, Holiday, FL. WSUN's 64.2dB $\mu$  contour completely encompasses the new facility's proposed 104.2dB $\mu$  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 54dB $\mu$  contours. Appendix B is the proposed directional antenna pattern.

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 1mV service contour of this application compared with the 2mV service contour for WTMP.

Figure 3, 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

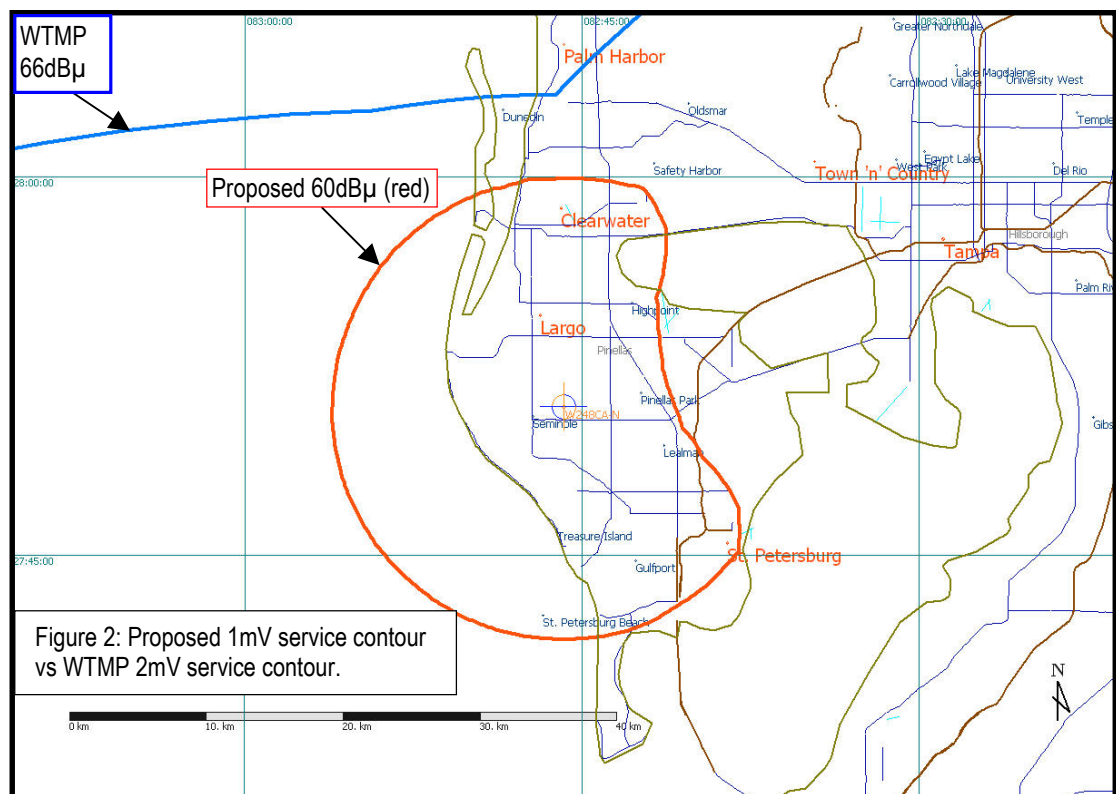
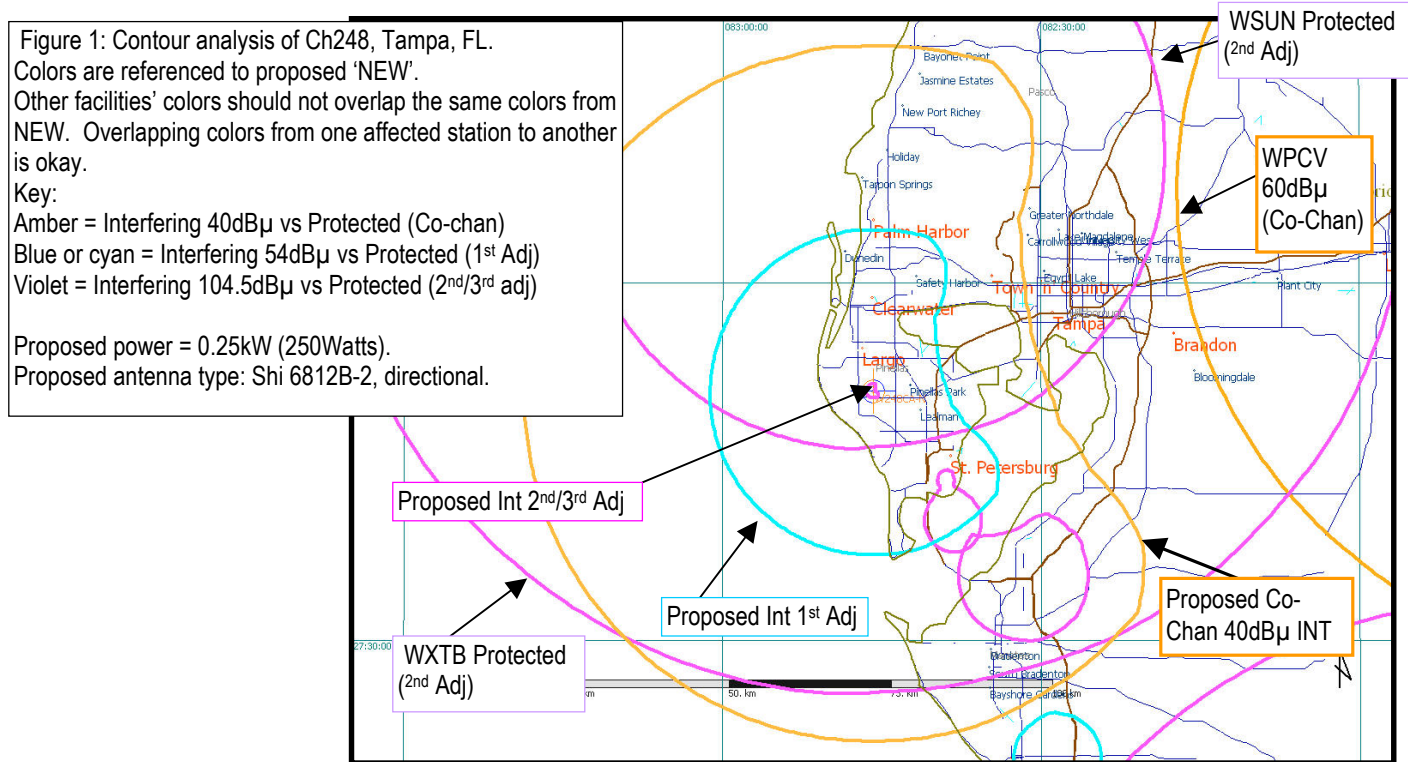
/S/

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15 May, 2018

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## Analysis:

The proposed facility is inside the Tampa, FL radio market. This application changes antenna type, height and power.

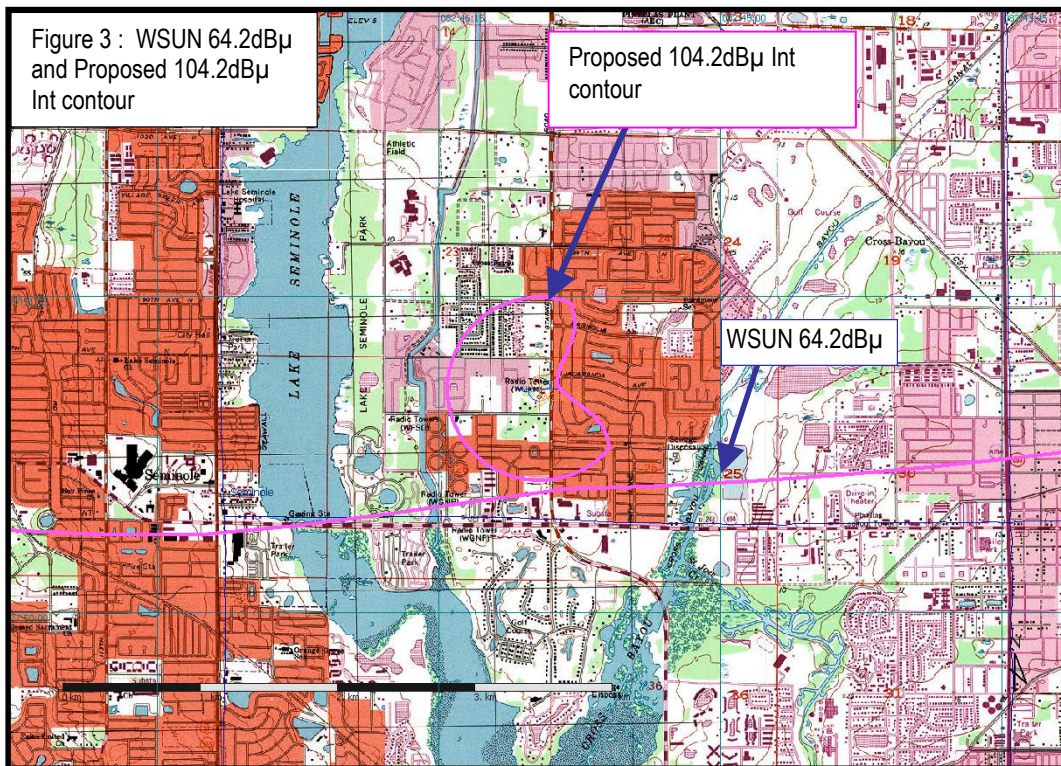


### Desired to Undesired ratio (D/U) studies of facility vs WSUN Methodology:

The WSUN 64.2dB $\mu$  contour encompasses the proposed facility's 104.2dB $\mu$  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 64.2dB $\mu$  contour. Therefore the worst case scenario for interference is  $64.2\text{dB}\mu + 40\text{dB}\mu = 104.2\text{dB}\mu$ .



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 this facility, a two-bay directional antenna with a spacing of .76 will be employed. The result is that the interfering contour is greater than 15 meters above 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.

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

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

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

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.**

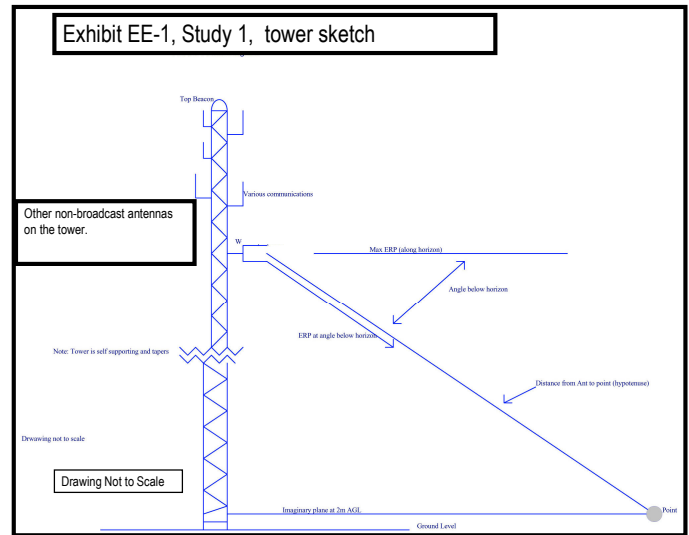
Notes:

When finding a value for a point two meters above ground, then:  $\text{DistToPoint} = \text{Antenna Rad Center in meters above the plane, not ground} / (\cos(90^\circ - \text{Angle}^\circ))$ . 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.



## Section VII 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: **Shi 6812-2 (or equiv) 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" (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/

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