

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
(Minor Mod of an FM Translator C. P.)

This engineering exhibit supports an application for minor change to FM translator W284CT (FID # 156649). W284CT has received some interference complaints from LPFM station WAYG-LP (FID # 194871). The applicant proposes to switch channels to channel 292 in order to eliminate these complaints. The proposed antenna is a one bay Scala CA-5FM/CP antenna. This application changes the channel and antenna orientation. The proposed facility utilizes a directional antenna to protect co-channel stations WIPU-LP (FID# 194255) and WRAZ-FM (FID# 61646).

The proposed 124.2dB μ contour is within the 84.2 dB μ contour of 2nd adjacent stations, WXDJ Boca Raton, FL (FID # 66376) and WBGG-FM, Ft Lauderdale, FL (FID # 11965). WXDJ is the weaker signal. 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) and a "Living Way" waiver is hereby requested.

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 WSUA, an AM radio station licensed to Miami, FL. The maximum ERP is limited by interference.

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

Figure 2 supports a request for a "living Way" waiver to 2nd adjacent stations WXDJ and WBGG.

Figure 3 shows the proposed 1mV service contour of this application compared with the 2mV/m service contour of WSUA. Since this application proposes to use the same transmitting location as the previous CP, there is 60dB μ overlap to the currently authorized signal.

Appendix A (attached separately) demonstrates that no harmful interference will occur to adjacent station WXDJ.

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 pursuant to FCC Public notice DA-19-741A1 regarding MB Docket No. 18-119. Under the rules that are now in effect, translators may change their frequency to non-adjacent channels upon a showing of interference reduction. This instant application includes an exhibit showing that interference will be reduced as a result of the requested channel change (figs 4, 5 & 6). W284CT has received complaints from listeners of WAYG-LP and is currently voluntarily silent as a result.

Respectfully submitted,

Kyle Magrill, Consultant
352-335-6555

Figures:

Figure 1: Contour analysis of Ch292, Miami, 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 = Interfering 40dB μ vs Protected (Co-chan)

Blue or cyan = Interfering 54dB μ vs Protected (1st Adj)

Violet = Interfering 100dB μ vs Protected (2nd/3rd adj)

Proposed power = 0.07kW (70 Watts).

Proposed antenna type: Scala CA-5CP, directional

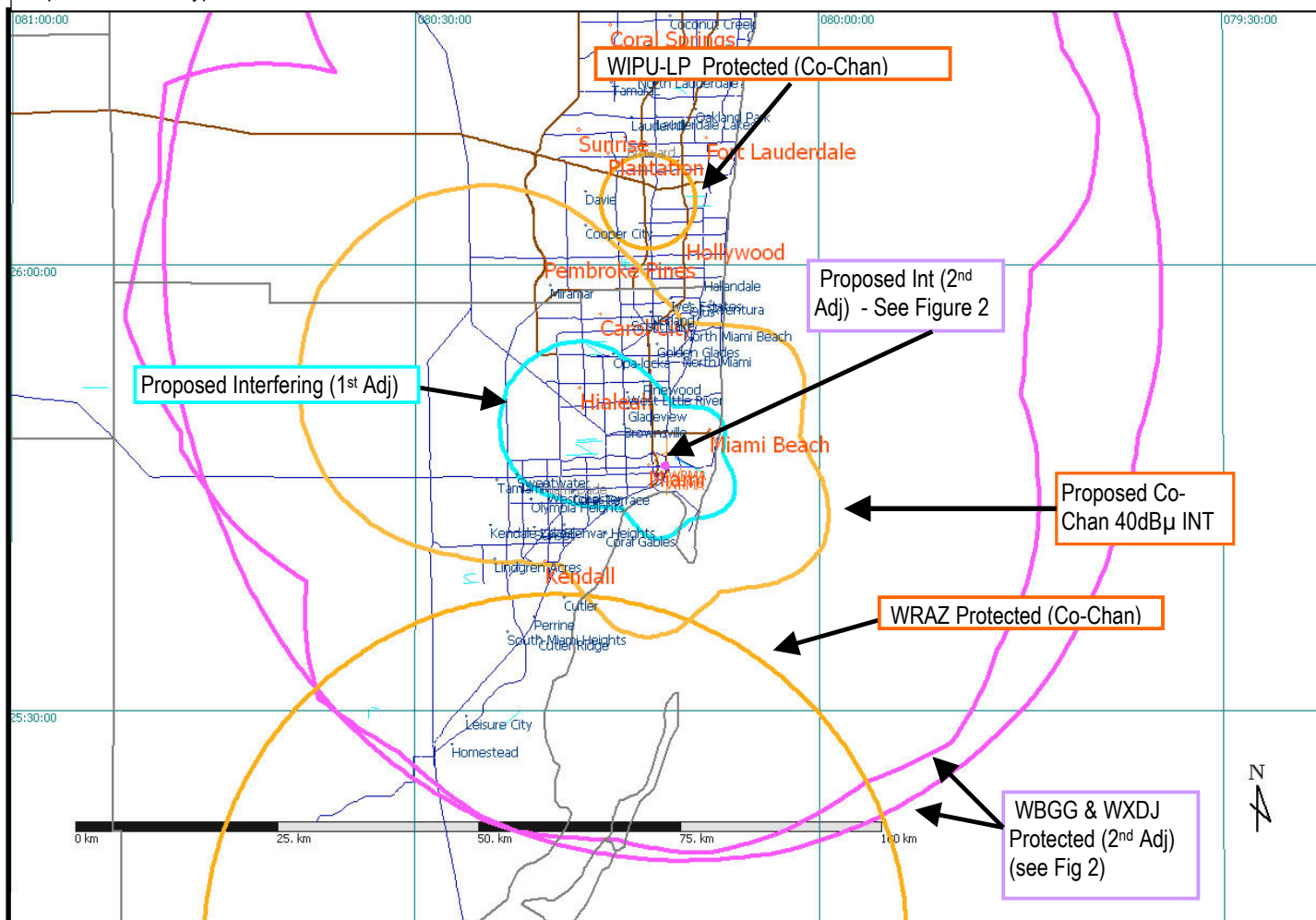


Figure 1 above demonstrates that no prohibited overlap exists on 1st adjacency or the i.f. channels.

Prohibited overlap occurs on two 2nd adjacent channels, but is acceptable under 74.1204(d) due to a lack of affected population.

Overlap also exists on the Co-channel but this occurs over Biscayne Bay and is acceptable due to no affected population, as shown in Figure 1a.

Figure 1a: (Inset) W284CT proposed co-chan Interfering vs WRAZ Protected. An area of interference occurs over Biscayne Bay. No population is affected.



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

Figure 2: WXDJ 84.2dBμ protected contour with proposed 124.2dBμ Interfering contour for D/U analysis.

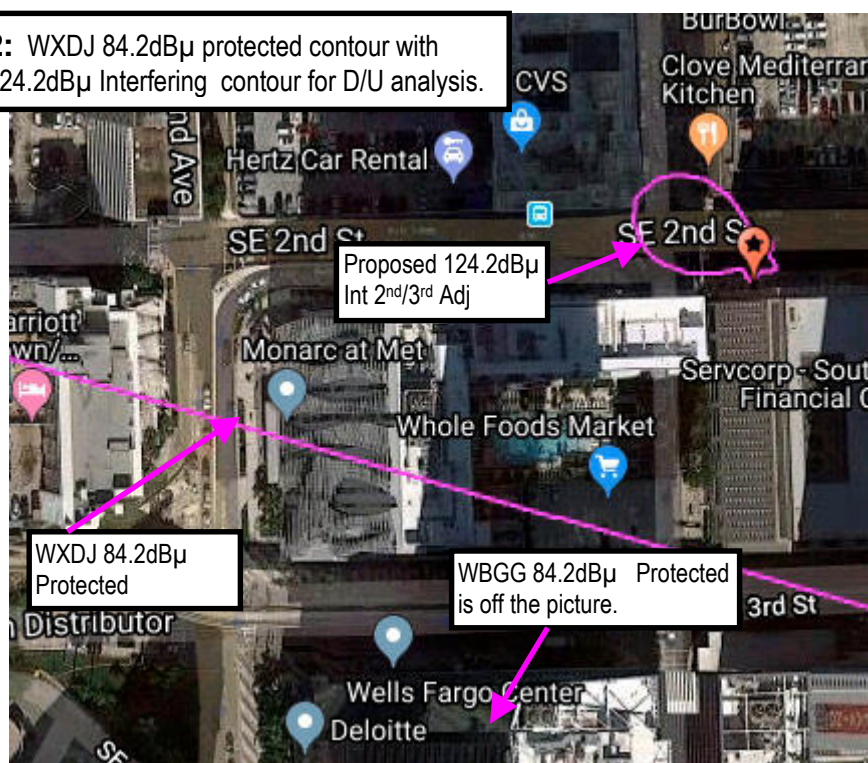
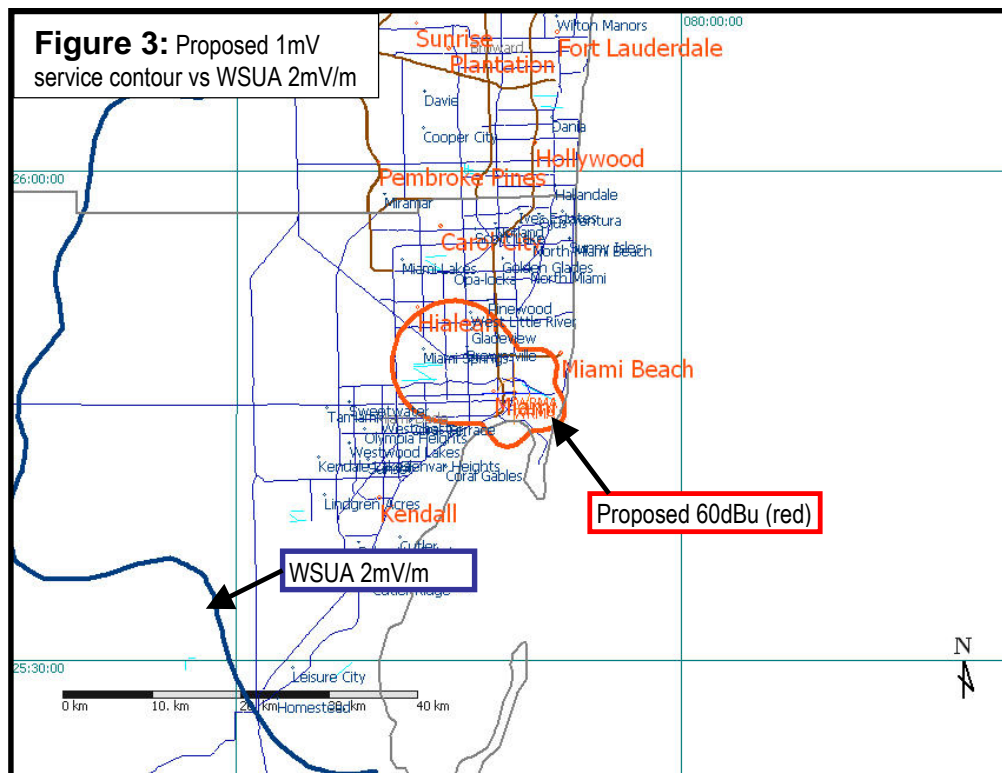
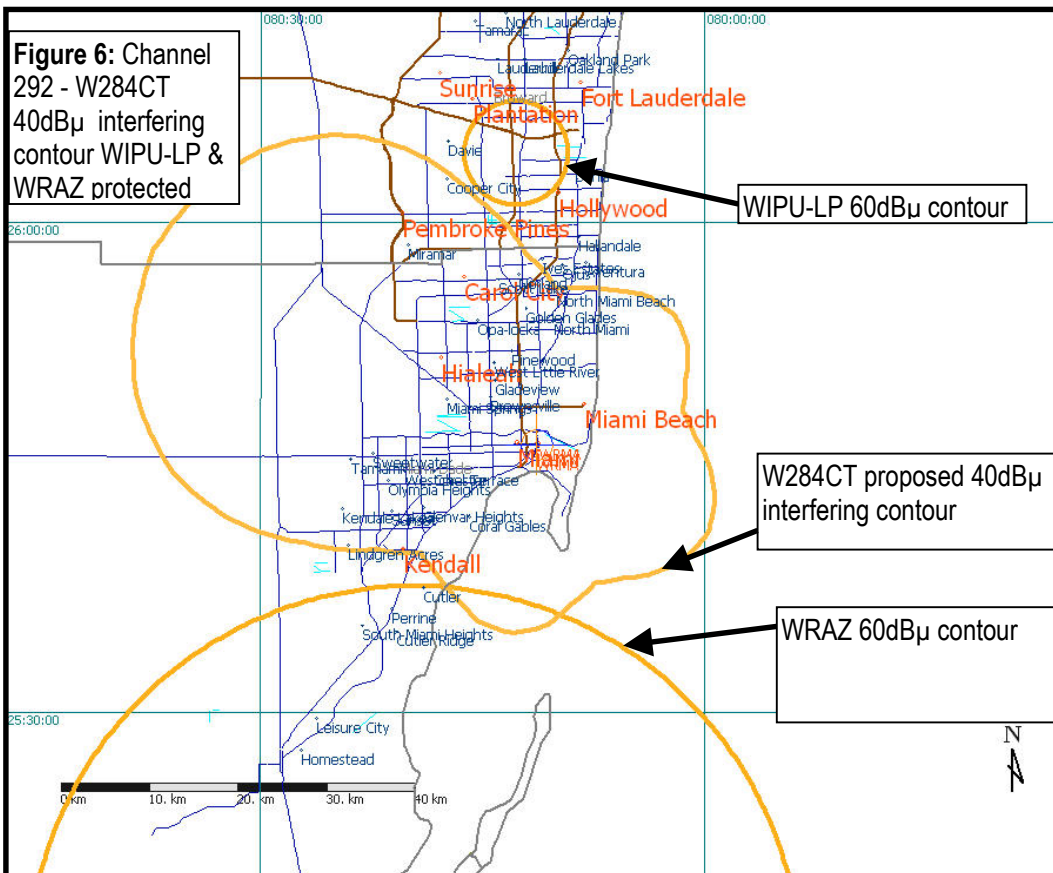
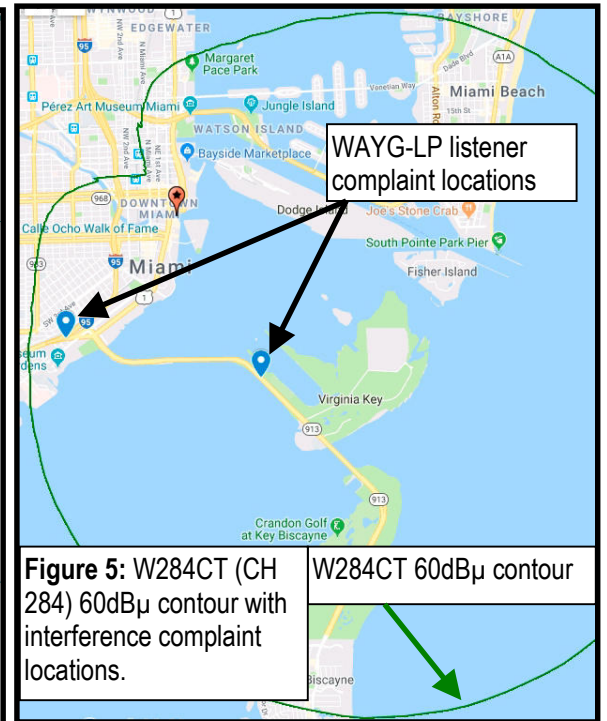
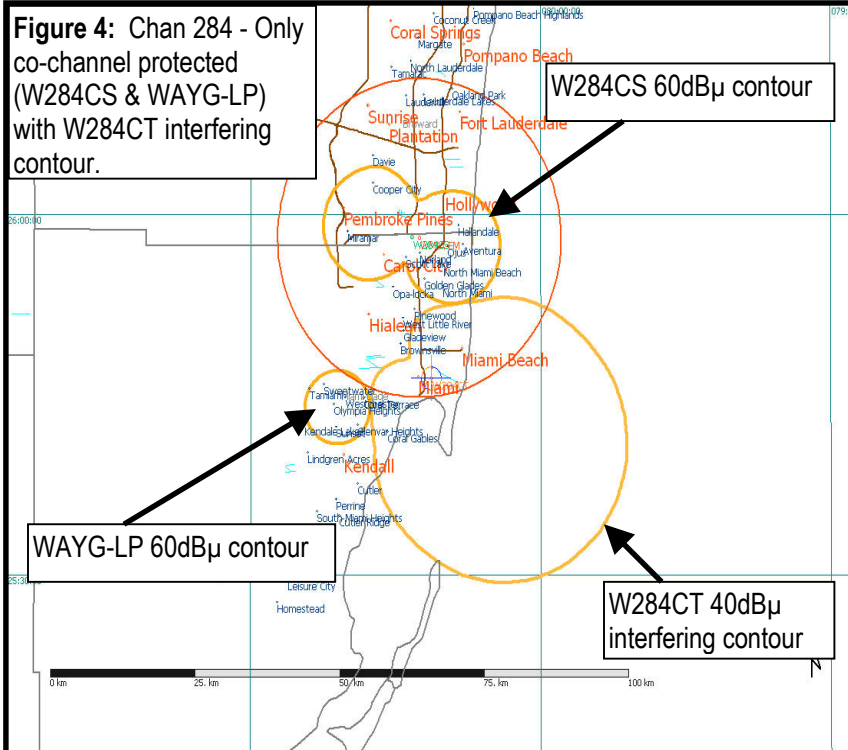


Figure 3: Proposed 1mV service contour vs WSUA 2mV/m



Showing of reduced interference by changing from channel 284 to channel 292

As shown in Figure 4, W284CT is required to protect co-channel facilities WAYG-LP and FM translator W284CS. Interference reports have been received from listeners of WAYG-LP. Some of these complaints occurred within the predicted 60dB μ contour of W284CT (Figure 5), so there is no chance of mitigating the interference received in those locations.



The licensee of W284CT proposes to remedy the interference by moving to channel 292. There are currently two operating signals on channel 292, however the interfering contour from the proposed facility is, generally, further from the protected signals of both stations.

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

The proposed facility's 100dBμ interfering contour is within the protected contour of 2nd adjacent stations WXDJ and WBGG. The two stations are similar in coverage but WXDJ is the weaker signal so demonstrating no interference to WXDJ also demonstrates no interference to WBGG. The WXDJ 84.2dBμ contour encompasses the proposed facility's 124.2dBμ contour. The proposed tower is located on a high rise office building's rooftop. However, the pattern is directed away from the building towards 2nd Avenue approximately 240 meters below. No interference approaches the ground or any other high rise office building.

The antenna will be mounted above a rooftop mechanical room and will be facing its main lobe directly out to the street away from the supporting building. The antenna is mounted 240meters above ground level. Although there is occupied space approximately 11 meters below the antenna, almost all radiation will be directed away from this space towards the street level.

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. The spreadsheet used in this model uses a point radiator that has full power in every elevation, which is the theoretical worst case scenario. Even using the point source model, the interfering contour is below the interfering threshold at just 20 meters from the antenna. The result is that the interfering contour does not reach any occupied floor, nearby high rise 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.

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

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.

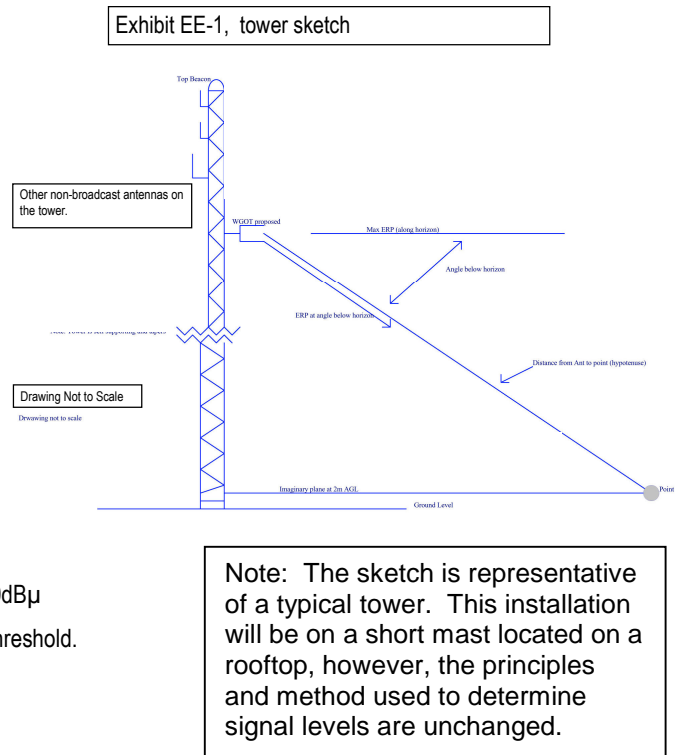
Notes:

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 above the occupied nearest floor from the proposed antenna. The table portion of Appendix A also shows the distance to the interfering contour at 70W (0.070kW).

The field strength is calculated at each end point and compared to the worst case protected contour of WXDJ (84.2dBμ). Using the manufacturer's specified field elevation data, Appendix A shows that, at 2 meters above the occupied floor, the interference threshold of 124.2dBμ 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 WBGG or WXDJ as a result of this proposal.



Engineering Data:

Tech Box Data:

Channel: **292**Primary Station: **FID: 55403****WSUA**
Miami, FL
1260kHzDelivery Method: **Other**

Antenna Location Coordinates: (NAD27):

25° 46' 20" N**80° 11' 20" W**Antenna Structure Registration: **1201468**Antenna Location Site Elevation Above Mean Sea Level: **3.3 meters**Overall Tower Height Above Ground Level: **243 meters**Height of Radiation Center Above Ground Level: **240 meters (H & V) AGL**

ERP:

0.070 kW (H)**0.070 kW (V)**Transmitting Antenna: Directional 1-bay **SCA CA-5CP Directional**Fill-in Translator: **Yes** (see EE-1)Interference: **Yes**Section 74.1204, **Checked**. See EE-1Section 74.1205, **Not Checked**.Unattended operation: **Yes**Multiple Translators: **Yes**

NEPA: **Yes**. This proposal is excluded from environmental processing: The antenna is located on a rooftop antenna farm with highly restricted access. RF exposure at 70W ERP has previously been measured and verified to be below the public exposure limit near the antenna. The closest occupied space is below two concrete and steel reinforced decks. The modeled rf at the closest occupied area is under 5uW/cm2 which is less than 5% of the maximum public exposure level Applicant already has a CP for this location and ERP using the same antenna. This application changes only the channel and antenna azimuth. 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