

Win Radio Broadcasting Corporation
FM Translator CH 232 -- Facility ID 141566
Application for Minor Change CP
Exhibit 12-B-1 – Detailed Second-Adjacent Interference Study
And comments regarding other required clearances

All studies utilized FCC CDBS data from June 27, 2016. All contours were derived using the 3 second database. We request processing utilizing 3 sec database. As shown in Exhibits 12-1a and 12-3, the proposed CH 232 site is within the 54 dBu protected contour of second-adjacent Class B stations; WKYS, CH 230 and WIAD, CH 234. In accordance with 47 CFR 74.1204(d), the transmit antenna system has been designed to prevent this translator from causing objectionable interference to both second-adjacent stations in a populated area.

Applicant proposes to side-mount the CH 232 directional transmit antenna on the existing WCTN NW tower. A 2 element full wave spaced Shively Model 6810-2 directional circularly polarized antenna is to be located with CR located 56 meters above ground. From USGS topographic maps, the ground elevation at the base of the tower is shown as 349 feet or 107 meters AMSL. Tables 2-1 and 3-1 both show the tabulation of the elevation pattern data for the proposed transmitting antenna. Figure 12-4 shows the required protections with respect to NEW co-channel L-1 station CP. Figure 12-8 shows that the proposed translator 60 dBu contour will be totally contained within the WCTN 2 mV AM daytime service contour.

PROTECTION OF WKYS

The primary interference analysis is based on accepted "ratio methodology" as defined in the Living Way Ministries decision. As shown in Figure 12-1a, WKYS has an FCC F(50,50) field strength of 83.5 dBu at the proposed site. Based on a U/D ratio of 40 db over the entire area of the proposed translator interfering contour, second-adjacent interference is not expected to affect WKYS adversely beyond the 123.0 dBu free space contour of CH232 operating as proposed herein. Contours greater than approximately 99 dBu F(50,10) fall of the standard FCC F(50,10) chart requiring that the Free Space equation be utilized for determining the distance to the proposed CH232 interference contour.

As shown in Table 2-1, the maximum calculated distance to the CH232 123 dBu contour in the horizontal plane is 76 meters rounded to the nearest meter. The maximum distance to the 123.0 dBu contour in the vertical direction (90 degrees depression) is 0.3 meters. The maximum distance to the 123.0 dBu contour at -60 degrees (depression) is 32.4 meters. Table 2-1 of Exhibit 12 shows all calculations of values from 0 thru -90 degrees.

Thus the area of excessive 2nd adjacent U/D ratio is contained to locations at least greater than 32.4 meters above ground level (30.4 meters above head height).

This equation is commonly used to determine field strength in free space:

$$\text{Field Strength E (dBu)} = 106.92 - 20 \log 10D(\text{km}) + P(\text{dBk})$$

PROTECTION OF WIAD

As shown in Figure 12-3, WIAD has an F(50,50) field strength of 88.0 dBu at the proposed site. Based on a U/D ratio of 40 db over the entire area of the CH232 interfering contour, second-adjacent interference is not expected to affect WIAD adversely beyond the 127.5 dBu free space contour of CH232 operating as proposed herein. Once again, contours greater than approximately 99 dBu F(50,10) fall of the standard FCC F(50,10) chart requiring that the Free Space equation be utilized for determining the distance to the proposed CH232 interference contour.

As shown in Table 3-1, the maximum calculated distance to the CH232 127.5 dBu contour in the horizontal plane is 47 meters rounded to the nearest meter. The maximum distance to the 127.5 dBu contour in the vertical direction (90 degrees depression) is 0.3 meters. The maximum distance to the 127.5 dBu contour at -60 degrees (depression) is 16.2 meters. Table 3-1 of Exhibit 12 shows all calculations of values from 0 thru -90 degrees.

Thus the area of excessive 2nd adjacent U/D ratio is contained to locations at least greater than 41.9 meters above ground level (39.9 meters above head height). The clearance easily fully protects all mobile receivers but also any other nearby buildings located approximately 155 meters due north of the CH232 antenna building. No other structures are impacted by an undesired U/D ratio.

In the event actual 2nd adjacent interference occurs, WIN Radio understands its obligation to take what ever action, including a power reduction, is necessary to eliminate any such caused interference and will insure its obligations are met.

IF PROTECTION

The proposed operation of the NEW CH232 translator at the coordinates specified in the instant application fully protects FM IF station WAVA-FM, CH 285B, Arlington, VA per Table 1 of 73.207 A-B OF 15 KILOMETERS. The WAVA main transmitter site is 17.11

km from proposed CH 232 exceeding the required spacing by 2.11 kilometers. There are no other IF stations needing consideration for this application.

CO-CHANNEL, FIRST ADJACENT AND 3RD ADJACENT PROTECTION

For co-channel considerations, there are two stations of interest. The first is WWXX located 63.91 kilometers SSW of the proposed translator. As shown in Figure 12-5, the 40 dBu contour of the proposed CH 232 translator does not overlap the 60 dBu contour of WWXX. Also, there is a proposed new class L-1 station in Bowie, Maryland 40.04 km distant which also does not result in prohibited overlap. There are no other facilities on these channels that are impacted by this proposal. Likewise no first adjacent or third adjacent stations are close enough for consideration.

AM STATION PROTECTION

There are no other AM stations needing consideration for this application. WIN RADIO understands that the installation of an FM antenna on a tower of a directional AM station will require performing a partial proof of performance to determine if the station operating parameters are still within the License limits.