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Engineering Statement
Minor Modification Displacement Application for K53GM
Channel 15 at Williams-Ashfork, AZ
January 2008

This Engineering Statement has been prepared on behalf of KTVK, Inc., licensee of TV translator station K53GM. K53GM presently operates on a channel which is outside the "core" television spectrum. This material has been prepared in connection with a displacement application to modify this translator to Ch 15.

I. Allocation Study

Study has been made of all cochannel and adjacent-channel facilities in the vicinity of the proposed operation, including a detailed Longley-Rice interference study to demonstrate that the proposed operation will not cause interference to any facilities with which contour overlap exists. This study was performed using the SunDTV program from V-Soft Communications and a 1 km grid spacing. The SunDTV program identically duplicates the FCC's OET-69 processing program.

The results of this study indicate that the proposed facility is predicted to cause zero additional interference to any of the listed stations. Based on the foregoing allocation and interference study, it is believed that the proposed facility can operate without risk of interference to other stations.

Summary Study

  1990 Census data selected
              TV INTERFERENCE and SPACING ANALYSIS PROGRAM

  Date: 12-28-2007   Time: 12:56:03

  Record Selected for Analysis

  K53GM   USERRECORD-01   WILLIAMS   AZ US
  Channel 15 ERP 1.   kW   HAAT 860. m RCAMSL 02827 m
  Latitude 035-12-01 Longitude 0112-12-15
  Status APP   Zone 2   Border   Offset Z
  Dir Antenna Make usr Model USRPAT01   Beam tilt N Ref Azimuth 315.
  Last update   Cutoff date   Docket
  Comments
  Applicant

  Cell Size for Service Analysis 1.0 km/side

  Distance Increments for Longley-Rice Analysis 1.00 km

  Not full service station

  Facility meets maximum power limit

    Azimuth   ERP   HAAT   74.0 dBu F(50,50)
     (Deg)   (kW)   (m)   (km)
      0.0   0.061   762.6   8.6
     45.0   0.025   665.3   5.9
     90.0   0.000   667.1   0.9
    135.0   0.000   657.0   0.9
    180.0   0.000   804.2   0.9
    225.0   0.024   843.6   6.1
    270.0   0.043   860.1   7.6
    315.0   0.071   781.0   9.2

      Contour Overlap Evaluation from LPTV Station to Full Service TV & DTV

 No Spacing violations or contour overlap from LPTV station

      Contour Overlap Evaluation from LPTV to Full Service TV & DTV Complete

         Contour Overlap Evaluation from LPTV Station to LPTV Stations

 No Spacing violations or contour overlap from LPTV station

         Contour Overlap Evaluation from LPTV to LPTV Stations Complete

         Contour Overlap to Proposed Station

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              Contour Overlap Evaluation to Proposed Station Complete


 Proposed facility OK to FCC Monitoring Stations

 Proposed facility OK toward West Virginia quite zone

 Proposed facility OK toward Table Mountian

 Proposed facility is beyond the Canadian coordination distance

 Proposed facility is beyond the Mexican coordination distance

 Proposed station is OK toward AM broadcast stations

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                   Start of Interference Analysis


               Proposed Station
Channel      Call        City/State              ARN
   15       K53GM     WILLIAMS AZ               USERRECORD01

      Stations Potentially Affected by Proposed Station

Chan    Call     City/State          Dist(km) Status  Application Ref. No.

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Study of this proposal found the following interference problem(s):

    NONE.
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II. NIER Study

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W/cm^2) = \frac{[(0.4)\ VERP + AERP] \times 33.40981 \times F^2}{(Distance)^2}$$

Where: VERP = total peak visual ERP in Watts
AERP = aural ERP in Watts
F = relative field factor in the downward direction
Distance = distance in meters from the center of radiation
to the calculation point.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the proposed Williams-Ashfork Ch. 15 antenna system have been performed using the manufacturer's vertical plane pattern for the Scala 4DR-16-2HW antenna proposed for use. Power density levels were calculated for an elevation of 2 meters above ground level (8 meters below the antenna radiation center). The worst-case power density levels occur at depression angles between 45 and 90 degrees below the horizontal. The calculations in this report assume a "worst case" relative field value of 0.1 at these angles. This relative field value yields a worst-case adjusted peak effective radiated power of 10 Watts at depression angles between 45 and 90 degrees below the horizontal. Assuming a worst-case average effective radiated power of 5 Watts, and the shortest distance between the antenna radiation center and 2 meters above ground (i.e. straight down), the highest calculated ground level power density from the proposed antenna alone occurs at the base of the antenna support structure. At this point the power density is calculated to be 2.61 $\mu W/cm^2$, which is less than 1%

of 318 µW/cm² (the FCC standard for uncontrolled environments at the Channel 15 visual carrier frequency).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 1000 meters from the base of the antenna support structure. Section 1.1307(b)(3) of the Commission's Rules excludes applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicants proposed facility are predicted to be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 et seq and no further analysis of non-ionizing radiation at this site is required in this application.

Public access to the site is restricted and the antenna tower is posted with warning signs. Pursuant to OET Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken.

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency radiation in excess of FCC guidelines.

Hatfield & Dawson Consulting Engineers