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**ENGINEERING REPORT**

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**Eagle Lake, TX, Channel 237C3 FM Application**

**EXHIBIT 28 –ENGINEERING STATEMENT REGARDING SECTION 73.315**

When the terrain from the transmitter site to the community of license departs significantly from the average terrain, the FCC Rules permit use of an alternative or supplemental coverage showing (see Section 73.313). The FCC has established that such an alternative showing is permitted “Where  $\Delta h$  is used as the sole determinant that the terrain along a radial widely departs from the 50 meter standard, a  $\Delta h$  value of 20 meters or less, or 100 meters or more”<sup>1</sup>.

Figure E28-1, attached, is the radial 78 degrees True terrain profile that intersects with the community of license.

Figure E28-2, attached, is a map showing the calculated 70 dBu F50,50 Service Contour and the results of a Longley-Rice alternative propagation model<sup>2</sup>. The alternative study was conducted for 360 equally-spaced radials.

Also shown on the E28-2 map is the re-defined 70 dBu F50,50 Service Contour based on Longley-Rice in the direction of the community of license. The re-defined 70 dBu F50,50 Service Contour distances are as follows:

For 76 degrees True:	31.9 km (an increase of 39 percent);
For 78 degrees True:	33.1 km (an increase of 43 percent);
For 80 degrees True:	33.9 km (an increase of 47 percent).

The 70 dBu service contour is extended by much more than 10% than the standard 70 dBu F50,50 service contour. Furthermore, the re-defined 70 dBu service

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<sup>1</sup>  $\Delta h$  “delta h” is terrain roughness as defined in Section 73.313 of the FCC Rules. Three arc-second USGS terrain data is used. Also, see Woodstock and Broadway, Virginia, 2 FCC Rcd 6398 (1988). *Current FCC Policy apparently no longer requires a delta h test in order for a supplemental showing to be used. The delta h qualification is herein made out of an abundance of caution.*

<sup>2</sup> Longley-Rice version 1.2.2 determined using EDX Engineering, Inc. SignalPro™ software and a 30 arc-second USGS terrain database is used. A receive antenna height of 9.1 meters AGL is also used.

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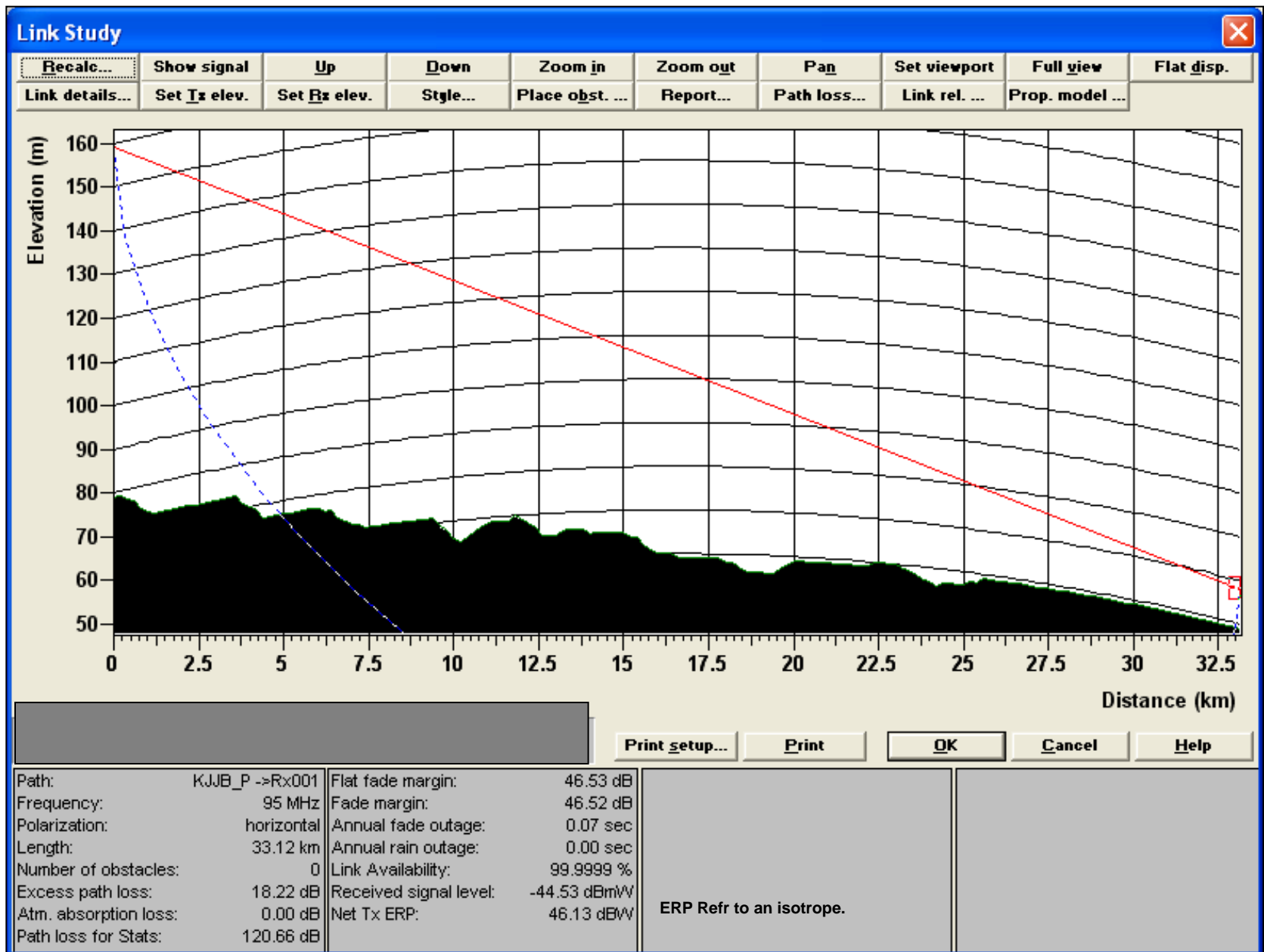
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contour does not extend beyond the predicted 60 dBu F50,50 service contour. Both the 10% increase and the 60 dBu contour limit are conditions set by the FCC for use of the supplemental showing when it is used in order to establish community of license service.

**The re-defined 70 dBu F50,50 Service contour serves more than 80 percent of Eagle Lake.**

Further information regarding the use of the alternative model will be provided upon request. As a sample calculation, the free space loss to the end point of the 78 degree profile (a point located 33.1 kilometers from the proposed transmitter site) is 102.4 dB between isotropic antennas. The excessive loss (due to the Longley-Rice prediction model) is 18.2 dB. An additional 2 dB of loss is added for a ground-cover adjustment (per the FCC). Subtracting the free space loss and excessive loss values from the ERPi (77.3 dBmW) yields a received power of minus 42.4 dBmW (using a 2.15 dBi receive antenna gain). This converts to a received signal strength of 70 dBuV/m. (Note that the terrain profile provides values referenced to isotropic source and receiver.) 1000 percent of the population and area of Eagle Lake is covered by the adjusted 70 dBu service contour.

**FIGURE E28-1: TERRAIN PROFILE AT 78 DEGREES TRUE**



**FIGURE E28-2: SECTION 73.315 MAP SUPPORT WITH LONGLEY-RICE RESULTS**

