



**EXHIBIT SHOWING NO INTERFERENCE TO  
FM TRANSLATOR W227DU, CH. 227D, WELCH, WV  
BASED ON THE LONGLEY-RICE METHOD AND THE  
ACTUAL ELEVATIONS IN THE INTERVENING TERRAIN**

**Proposed W227DS (93.3 MHz) Power Increase to 130 Watts  
Rural Retreat, Virginia**

The contour protection study conducted in connection to this request for increased power for W227DS in Rural Retreat, in accordance with §74.1204(a) of the FCC rules, shows that the proposed W227DS 40 dBu interference contour overlaps the W227DU in Welch 60 dBu service contour. However, the terrain between the two translator sites is so highly irregular that a contour-to-contour study under §74.1204(a) doesn't give a fair representation of the potential for interference by W227DS to W227DU. Shown in attached Figure 1 are three terrain profile maps along radials from the W227DS site towards the predicted W227DU 60 dBu service contour area, one from site-to-site and the other two 10.0 degrees azimuth on both sides.

As per §74.1204(d) of the FCC rules, a supplemental engineering study has been done to demonstrate that the FCC F(50,50) 60 dBu service contour of W227DU will be protected from interference from W227DS due to intervening terrain between the two stations. The V-Soft software program Probe 4 was used to conduct the study. The Longley-Rice method was selected as the basis of propagation and for the determination of the 40 dBu interference contour for W227DS. On attached Figure 2 are the parameters and assumptions used in the Longley-Rice study on W227DS.

In Probe 4, a signal coverage study was done on W227DS assuming 130 watts of effective radiated power. This study was based on the Longley-Rice method using a situation variability of 50% and a time variability of 10%, representing an interference signal. The area of calculation was set to a 90-kilometer radius (the distance between W227DS and W227DU is 74.6 kilometers). The signal coverage area is divided into small cells (0.1 kilometers squared). At each cell, the predicted average signal of W227DS at 130 watts ERP (again, using Longley-Rice and 10% time variability) is determined. Next, the W227DS interference contour is determined by calculating the location at each of 1.0-degree spaced radials at which the mean average of the calculated signal is 40 dBu, then plotting the contour through those points. The interference contour shown in the attached map is the result of the above-described process.

The attached map also shows the W227DU 60 dBu service contour based on the conventional method of contour calculations as prescribed by §74.1204(a). Contour distance calculations were



made in 1.0-degree intervals of azimuth and the terrain database used was the 3-second National Elevation Dataset (NED) from the USGS, the same database as was used for the analysis on W227DS. As can be seen, there is no overlap between the two contours.

Thus, it is this engineer's opinion that the requirement of §74.1204(d) is satisfied.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "B. Benjamin Evans", is written over a light blue circular background.

B. Benjamin Evans  
Communications Engineer

May 1, 2020

#### **ATTACHED FIGURES**

Figure 1 - - - - - Terrain Profile Graphs

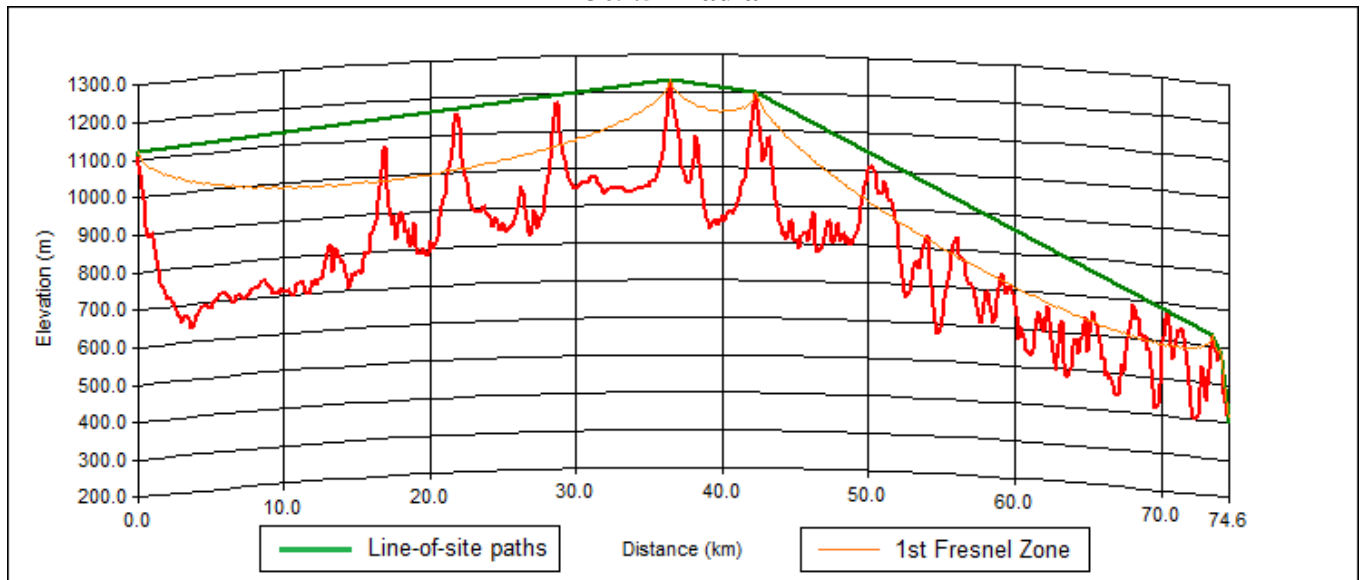
Figure 2 - - - - - Longley-Rice Study Parameters

Figure 3 - - - - - Map Showing Protected and Interference Contours

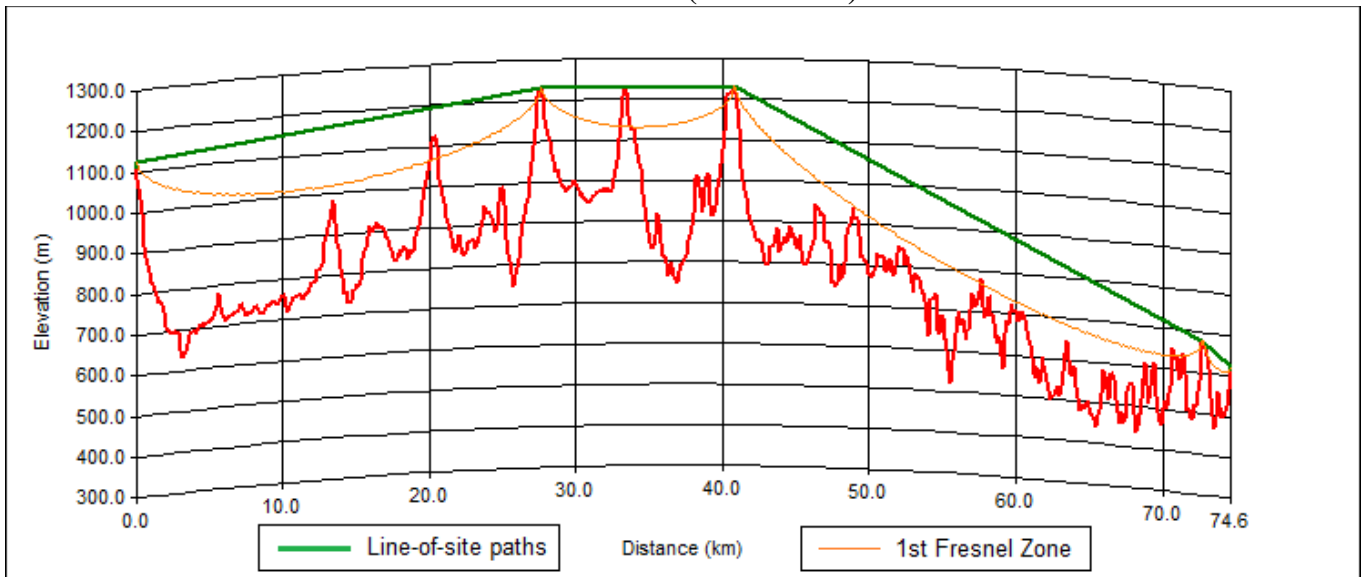
**Figure 1-A**

**TERRAIN PROFILE GRAPHS ALONG RADIALS FROM  
W227DS SITE TO W227DU 60 DBU SERVICE CONTOUR AREA**

**309.5° Radial**



**319.5° Radial (Site-to-Site)**



**Figure 1-B**

**TERRAIN PROFILE GRAPHS ALONG RADIALS FROM  
W227DS SITE TO W227DU 60 DBU SERVICE CONTOUR AREA**

**329.5° Radial**

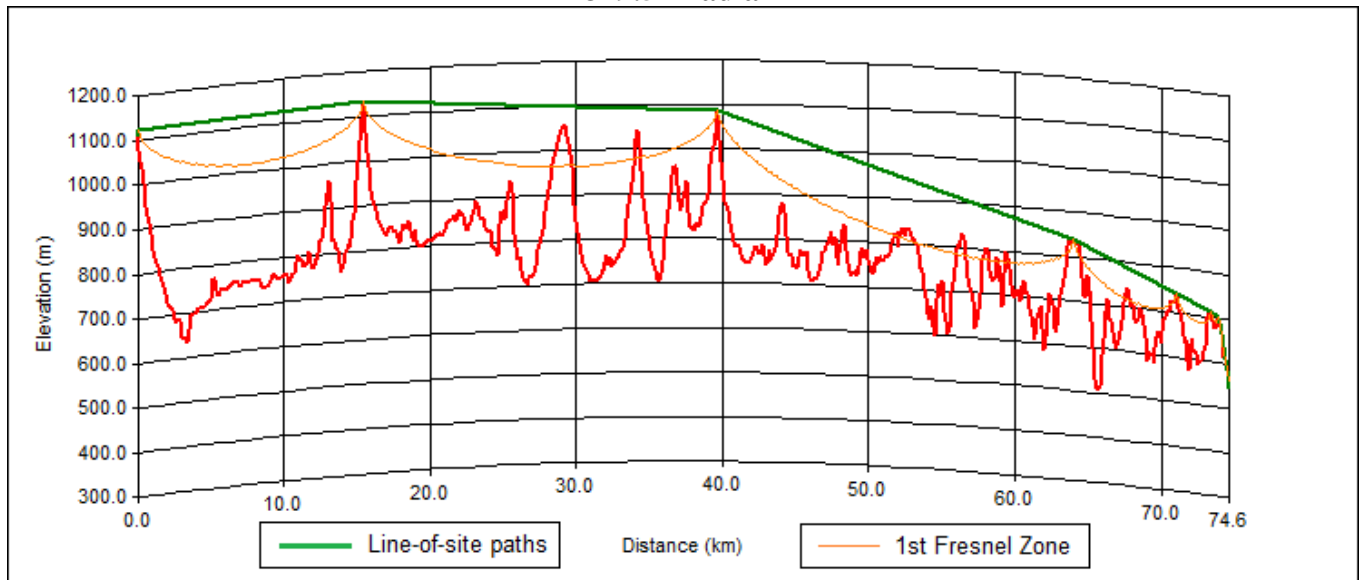




Figure 2

## **FM Interference Study Information W227DS Rural Retreat, VA**

Coverage Study  
Signal Resolution: 0.1 km

Study Date: 5/1/2020

Land Cover was not considered in this study.

Terrain: NED 3 Second US Terrain  
Coordinate System: NAD83/WGS84

Call Sign	Area of Calculation
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W227DS (227)	Circle: R = 90 km

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### Transmitter Information:

Call Letters: W227DS  
File Number: BPFT-20190417AAD  
Latitude: 36-54-27.20 N  
Longitude: 081-04-07.20 W  
ERP: 0.13 kW  
Channel: 227  
Frequency: 93.3 MHz  
AMSL Height: 1124.0 m  
Elevation: 1113.0 m  
Horiz. Antenna Pattern: Omni  
Vert. Elevation Pattern: No  
Propagation Model: Longley-Rice  
Climate: Continental temperate  
Conductivity: 0.0050  
Dielectric Constant: 15.0  
Refractivity: 311.0  
Receiver Height AG: 9.1 m  
Receiver Gain: 0 dB  
Time Variability: 10.0%  
Situation Variability: 50.0%  
ITM Mode: Broadcast

Figure 3

**W227DS**

Rural Retreat, VA  
BPFT-20190417AAD  
Latitude: 36-54-27.20 N  
Longitude: 081-04-07.20 W  
ERP: 0.13 kW  
Channel: 227  
Frequency: 93.3 MHz  
AMSL Height: 1124.0 m  
Elevation: 1113.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: Longley-Rice  
Climate: Cont temperature  
Conductivity: 0.0050  
Dielec Const: 15.0  
Refractivity: 311.0  
Receiver Ht AG: 9.1 m  
Receiver Gain: 0 dB  
Time Variability: 10.0%  
Sit. Variability: 50.0%  
ITM Mode: Broadcast

**W227DU**

Welch, WV  
BNPFT-20180319BNO  
Latitude: 37-25-01.40 N  
Longitude: 081-36-57.40 W  
ERP: 0.25 kW  
Channel: 227  
Frequency: 93.3 MHz  
AMSL Height: 681.0 m  
Elevation: 616.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: FCC F(50,50)

FM Interference Contour Overlap Study - W227DS into W227DU

