

Engineering Statement

University of New Mexico

KRRT

As the engineering staff of KRRT was moving to the new site authorized on their construction permit (BLED-20080328AAK), the station was informed by the Forestry Service that the maximum output power allowed was 1,000 watts. The available vertical tower space at the site does not allow for the number antenna bays needed to provide the gain to reach the authorized ERP of 6 kW. Using the maximum TPO of 1,000 watts and the station's new directional antenna, the maximum ERP will be only 2.68 kilowatts. KRRT is currently operating on an STA while it attempts to resolve this issue.

Our engineering analysis provides documentation that with an ERP of 2.68 kW, using the proposed directional antenna from the currently authorized antenna height; KRRT will properly serve its community of license, Arroyo Seco. The map found in attachment A shows the FCC F(50-50) 60 dBu contour (orange dashed) falls just short of the Arroyo Seco, post office based, city marker. Arroyo Seco is an unincorporated place, recognized by the U.S. census and recognized as a "city/town" by the U.S. Geological Service. The Arroyo Seco neighborhood association has provided the boundaries seen on the map.

The land between the authorized KRRT transmitter and Arroyo Seco is flat except for a small rise immediately before the Arroyo Seco post office. One of the Commission's tests for using Longley-Rice analysis to show community of license coverage is if the alternative method produces a contour that is at least 10% larger than the FCC 60 dBu contour. Attachment A is a Longley-Rice analysis map, which conservatively uses the 'first-occurrence' of the 60 dBu. This study shows that on 96.1 percent of the pertinent radials toward the association's boundaries the Longley-Rice first-occurrence, calculated, 60 dBu contour travels more than 10% farther. Attachment B shows the percent difference between the Longley-Rice 60 dBu calculated contour and the FCC contour.

The red colored Longley-Rice, first-occurrence, 60 dBu, calculated contour is shown on the map covering 83.5 percent of the Arroyo Seco association boundary and 100 percent of the population. For a non-commercial FM station the Commission requires that at least 50% of the population or 50% of the community of license area is covered by the 60 dBu. The study shows that these conditions are both met.

Attachment C is a Longley-Rice distance-to-contour table showing the distances to the calculated Longley-Rice contour along pertinent radials.

Attachment D is a PTP, Version 2, distance-to-contour table. The map in Attachment A shows the 60 dBu, PTP, Version 2, contour in blue. It should be noted that this propagation method also produced a contour that covers 100 percent of the population and nearly 83 percent of the community.

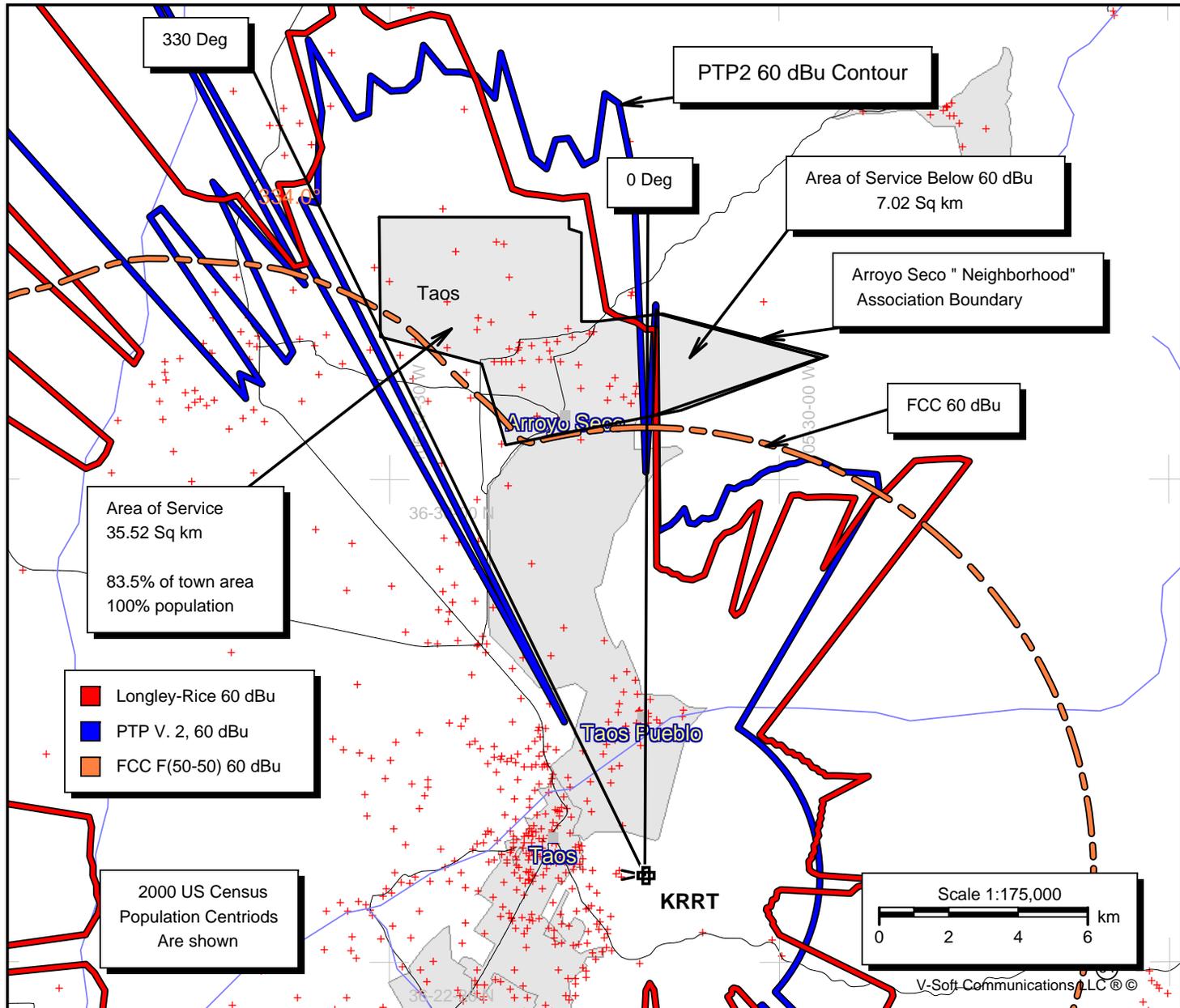
Attachment E is a distance-to-contour table of the FCC 60 dBu.

Consequently, the applicant is confident its proposed ERP of 2.68 kW will provide 60 dBu service or better to Arroyo Seco, therefore meeting the Commission's requirements for community service.

Doug Vernier, October 14, 2008

Longley-Rice "First Occurrence" Analysis

KRRT
 BLED20080328AAK
 Latitude: 36-23-51 N
 Longitude: 105-32-34 W
 ERP: 2.68 kW
 Channel: 215
 Frequency: 90.9 MHz
 AMSL Height: 2269.0 m
 Elevation: 2255.6 m
 Horiz. Pattern: Directional
 Vert. Pattern: No
 Prop Model: Longley/Rice
 Climate: Cont temperate
 Conductivity: 0.0020
 Dielec Const: 15.0
 Refractivity: 290.0
 Receiver Ht AG: 9.2 m
 Receiver Gain: 0 dB
 Time Variability: 50.0%
 Sit. Variability: 50.0%
 ITM Mode: Broadcast
 Terrain: USGS 3 arc-sec



Call Letters: KRRT
 File Number: BLED20080328AAK
 Latitude: 36-23-51 N
 Longitude: 105-32-34 W
 ERP: 2.68 kW
 Channel: 215
 Frequency: 90.9 MHz
 AMSL Height: 2269.0 m
 Elevation: 2255.6 m
 Horiz. Antenna Pattern: Directional

Contour Comparison

Field Strength: 60.00 dBuV/m

Primary Terrain: V-Soft 3 Second USGS Terrain

Bearing (deg)	FM PTP V2 Distance (km)	Longley-Rice Distance (KM)	FCC Distance (KM)	Difference in Percent
334.0	21.5	22.2	18.3	21.3
335.0	22.3	22.5	17.9	25.7
336.0	23.1	22.9	17.4	31.6
337.0	23.8	26.3	16.9	55.6
338.0	25.9	26.1	16.2	61.1
339.0	23.3	26.2	15.5	69.0
340.0	23.3	26.3	14.9	76.5
341.0	24.3	29.5	14.4	104.9
342.0	23.7	26.1	13.5	88.9
344.0	23.8	25.5	13.0	96.2
345.0	24.7	25.5	12.9	97.7
346.0	23.8	25.5	12.9	97.7
347.0	23.7	25.3	12.9	96.1
348.0	23.5	25.3	12.9	96.1
349.0	22.8	20.1	12.9	55.8
350.0	24.0	19.9	12.9	54.3
351.0	20.9	19.8	12.9	53.5
352.0	20.5	19.7	12.9	52.7
353.0	21.3	19.6	12.9	51.9
354.0	21.3	10.6	12.9	-17.8
355.0	20.5	19.6	12.9	51.9
356.0	20.6	16.3	12.9	26.4
357.0	22.5	16.1	12.9	24.8
358.0	22.2	16.0	12.9	24.0
359.0	20.1	15.9	12.9	23.3
0.0	11.6	15.7	12.9	21.7

96.1% of radi al s > 10%

Call Letters: KRRT
 File Number: BLED20080328AAK
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 Channel: 215
 Frequency: 90.9 MHz
 AMSL Height: 2269.0 m
 Elevation: 2255.6 m
 Horiz. Antenna Pattern: Directional
 Vert. Elevation Pattern: No

Type of contour: Longley-Rice Signal Calculated
 Using the first occurrence method at 60.0 dBu

Bearing (deg)	Distance (km)	HAAT (m)
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334.0	22.2	59.2
335.0	22.5	56.4
336.0	22.9	53.9
337.0	26.3	50.9
338.0	26.1	47.5
339.0	26.2	43.9
340.0	26.3	41.1
341.0	29.5	38.9
342.0	26.1	36.6
343.0	25.5	33.7
344.0	25.5	30.8
345.0	25.5	27.2
346.0	25.5	22.5
347.0	25.3	17.7
348.0	23.3	12.9
349.0	20.1	8.5
350.0	19.9	3.3
351.0	19.8	-2.1
352.0	19.7	-6.8
353.0	19.6	-14.6
354.0	19.6	-24.4
355.0	19.6	-34.8
356.0	16.3	-49.1
357.0	16.1	-66.5
358.0	16.0	-80.8
359.0	15.9	-95.1
0.0	15.7	-111.7

Call Letters: KRRT
 File Number: BLED20080328AAK
 Latitude: 36-23-51 N
 Longitude: 105-32-34 W
 ERP: 2.68 kW
 Channel: 215
 Frequency: 90.9 MHz
 AMSL Height: 2269.0 m
 Elevation: 2255.6 m
 Horiz. Antenna Pattern: Directional
 Vert. Elevation Pattern: No

Type of contour: FMPTP v2
 Type of FMPTP Curve: Service
 # of Radials Calculated: 360
 Field Strength: 60.00 dBuV/m

Primary Terrain: V-Soft 3 Second US Terrain

Bearing (deg)	Distance (km)	HAAT (m)
334.0	21.5	60.0
335.0	22.3	57.5
336.0	23.1	55.1
337.0	23.8	52.1
338.0	25.9	48.6
339.0	23.3	45.0
340.0	23.3	42.2
341.0	24.3	40.0
342.0	23.7	37.6
343.0	23.6	34.8
344.0	23.8	31.8
345.0	24.7	28.5
346.0	23.8	24.1
347.0	23.7	19.5
348.0	23.5	14.8
349.0	22.8	10.2
350.0	24.0	5.4
351.0	20.9	0.1
352.0	20.5	-4.8
353.0	21.3	-12.2
354.0	21.3	-21.9
355.0	20.5	-32.6
356.0	20.6	-45.7
357.0	22.5	-61.3
358.0	22.2	-74.3
359.0	20.1	-87.1
0.0	11.6	-102.7

Call Letters: KRRT
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 Frequency: 90.9 MHz
 AMSL Height: 2269.0 m
 Elevation: 2255.6 m
 Horiz. Antenna Pattern: Directional
 Vert. Elevation Pattern: No

Type of contour: FCC Method
 Location Variability: 50.0 %
 Time Variability: 50.0 %
 FCC Matching HAAT Calculation Used
 Field Strength: 60.00 dBuV/m

Primary Terrain: V-Soft 3 Second US Terrain

Bearing (deg)	Distance (km)	HAAT (m)
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334.0	18.3	59.2
335.0	17.9	56.4
336.0	17.4	53.9
337.0	16.9	50.9
338.0	16.2	47.5
339.0	15.5	43.9
340.0	14.9	41.1
341.0	14.5	38.9
342.0	14.1	36.6
343.0	13.5	33.7
344.0	13.0	30.8
345.0	12.9	27.2
346.0	12.9	22.5
347.0	12.9	17.7
348.0	12.9	12.9
349.0	12.9	8.5
350.0	12.9	3.3
351.0	12.9	-2.1
352.0	12.9	-6.8
353.0	12.9	-14.6
354.0	12.9	-24.4
355.0	12.9	-34.8
356.0	12.9	-49.1
357.0	12.9	-66.5
358.0	12.9	-80.8
359.0	12.9	-95.1
0.0	12.9	-111.7