



ENGINEERING STUDY

NEW 207C3

Kearny, Arizona

ARIZONA BOARD OF REGENTS
FOR BENEFIT OF UNIVERSITY OF ARIZ.
(Arizona Public Media)

Requesting a New facility
Pursuant to MB Docket No. 20-343, DA No. 21-463 (April 21, 2021)

November, 2021

NEW 207C3
Kearny, Arizona
November, 2021

TECHNICAL STATEMENT

This technical statement and attached exhibits were prepared on behalf of the ARIZONA BOARD OF REGENTS FOR BENEFIT OF UNIVERSITY OF ARIZONA ("AZPM"), in support of a NEW NCE FM radio station on Channel 207C3 to be licensed to the community of Kearny, AZ.

TECHNICAL PARAMETERS

| Facilities Proposed | |
|----------------------------|--|
| Location (NAD83) | 32° 58' 21.3" N Latitude, 110° 38' 26.9" W Longitude |
| Channel | 207C3 (89.3MHz) |
| Tower Overall AGL Height- | 68.6m |
| Tower ASR | 1008966 |
| Proposed Antenna | ERI LPX-3E-DA (EXHIBIT A) |
| Antenna AGL Height- | 64m |
| Site AMSL Height- | 1,057.3m |
| COR AMSL Height | 1,121.3m |
| HAAT | 186m |
| ERP | 4.2 kW DIRECTIONAL |

The proposed NCE facility will encompass 3,523 sq. km. and a total of 7,351 people.

BASIS OF CALCULATIONS

All exhibits and calculations in this application were prepared using the USGS National Elevation Dataset (NED) 3 Second US Terrain database unless otherwise noted. All population calculations were based on the 2010 *Census Block Data* from the US Bureau of Census¹.

¹ As specified in FCC MB DA 21-885, Page 5, 6.

47 CFR § 73.509 COMPLIANCE

As demonstrated in Exhibits B, B1, and B2, the proposed NCE facility will utilize a directional antenna and will meet all contour protection requirements toward other stations as specified in 47 CFR § 73.509. Exhibit F includes Distance-to-Contour tables for pertinent close protection contours.

MEXICAN COMPLIANCE

The proposed facility is approximately 180km from the Mexican border. As such, it must protect Mexican stations and Vacant allotments. The Mexican allotment to 208C at Nogales, Sonora is pertinent. Based upon the US Mexican treaty, for first Adjacent stations, C3 to C, the minimum spacing is 193km. The proposed facility is 184.2km. While this facility will be technically short-spaced to the vacant allotment, as shown in Exhibit C, there will be no overlap of any protected contours, either incoming or outgoing. It is, therefore considered that the instant application will be compliant with protection requirements to and from Mexican facilities.

SECTION 307(b) FAIR DISTRIBUTION OF SERVICE ANALYSIS.

As shown in Exhibit D, the proposed facility will provide the second noncommercial educational aural service to 5.1% of the people residing within the station's 60dBu contour and to 369 people. There is no "White Area" being served by the proposed facility.

TV CHANNEL 6 PROTECTION

There are no full power channel 6 TV stations currently licensed to operate within 196km of the proposed transmitter site.

REASONABLE ASSURANCE

Reasonable assurance was received by Tiffany Yu, authorized representative of American Tower Corporation Broadcast Business Development at (781) 926-7820 or tiffany.yu@americantower.com

COMMUNITY COVERAGE

As demonstrated in Exhibit E, the proposed facility will cover 100% of Kearney, Arizona in area and population with the 60dBu signal. Kearny comprises 7.1 sq km and as of the 2010 Census the population of the city was 1,860.²

ENVIRONMENTAL CONSIDERATIONS

The proposed antenna will be attached to an existing tower. The tower is owned by American Tower Corp.

The attachment of the proposed antenna will not alter the existing proposed tower structure for purposes of the Nationwide Programmatic Agreement and the NHPA Section 106. There is one other non-excluded RF source located on the tower supporting the proposed AZPM antenna.

The proposed AZPM antenna will operate at a maximum power level of 4kW ERP and will operate at 64m AGL. AZPM proposes to operate with a 3-bay, full-wave spaced ERI MPX directional antenna. Based upon the FCC “FM Model”³ Power Density vs. Distance calculator using a “EPA Type 3, Opposed U Dipole” type antenna setting, the maximum power density at 2m AGL contributed by the proposed AZPM antenna is expected to be 7.3 $\mu\text{W}/\text{cm}^2$ or 3.7% of the permitted 200 $\mu\text{W}/\text{cm}^2$ limit for uncontrolled exposure. There are no tall buildings within 1,000m of the tower.

Because the maximum contribution of the proposed AZPM antenna for the uncontrolled environment is less than the 10 $\mu\text{W}/\text{cm}^2$ (5.0%) limit as set forth by §1.1307(b)(3), the facility will be in compliance with FCC guidelines. There are no other non-excluded facilities on the tower. It is believed the impact of the proposed operation should not be a factor at ground level as defined under §1.1307(b)(3).

² https://en.wikipedia.org/wiki/Kearny,_Arizona

³ <https://www.fcc.gov/general/fm-model>

Based upon the preceding evaluation, the proposed antenna will not cause the RF density at the tower site to exceed public exposure limits and is excluded from further Environmental Assessment under 47CFR 1.1306 and 1.1307.

The proposed FM station along with other users at the site will maintain an occupational safety policy and agrees to reduce power or cease operation during periods of maintenance to avoid potentially harmful exposure of personnel to non-ionizing RF radiation.

Respectfully Submitted

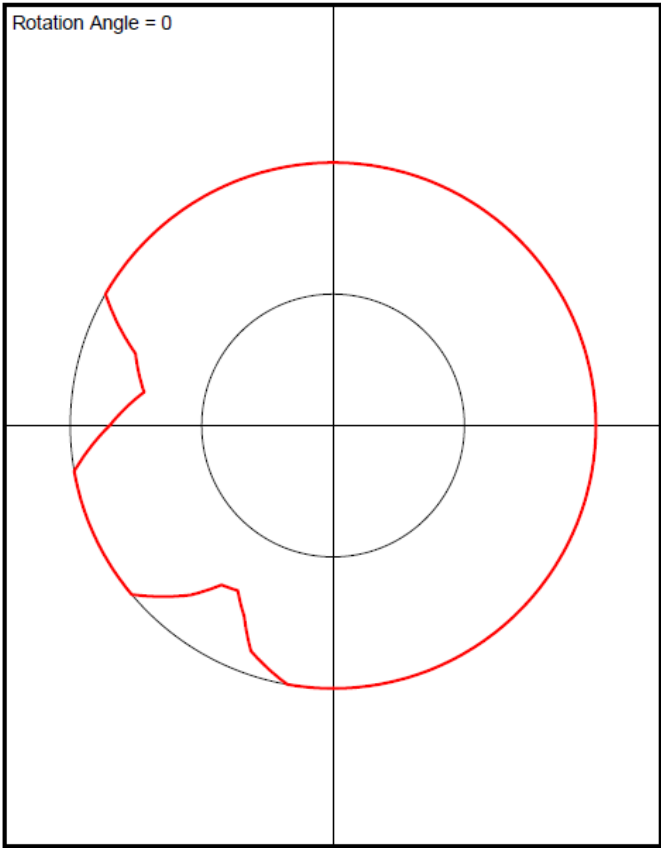
A handwritten signature in black ink, appearing to read "Bert Goldman", with a long, sweeping horizontal line extending to the right.

Bert Goldman
Technical Consultant

EXHIBIT A- ANTENNA PATTERN

PROP 207C3 Antenna Pattern
Pre-Rotation Antenna Pattern....

| Azimuth (deg) | Relative Field |
|---------------|----------------|
| 0.0 | 1.0 |
| 5.0 | 1.0 |
| 10.0 | 1.0 |
| 15.0 | 1.0 |
| 20.0 | 1.0 |
| 25.0 | 1.0 |
| 30.0 | 1.0 |
| 35.0 | 1.0 |
| 40.0 | 1.0 |
| 45.0 | 1.0 |
| 50.0 | 1.0 |
| 55.0 | 1.0 |
| 60.0 | 1.0 |
| 65.0 | 1.0 |
| 70.0 | 1.0 |
| 75.0 | 1.0 |
| 80.0 | 1.0 |
| 85.0 | 1.0 |
| 90.0 | 1.0 |
| 95.0 | 1.0 |
| 100.0 | 1.0 |
| 105.0 | 1.0 |
| 110.0 | 1.0 |
| 115.0 | 1.0 |
| 120.0 | 1.0 |
| 125.0 | 1.0 |
| 130.0 | 1.0 |
| 135.0 | 1.0 |
| 140.0 | 1.0 |
| 145.0 | 1.0 |
| 150.0 | 1.0 |
| 155.0 | 1.0 |
| 160.0 | 1.0 |
| 165.0 | 1.0 |
| 170.0 | 1.0 |
| 175.0 | 1.0 |
| 180.0 | 1.0 |
| 185.0 | 1.0 |
| 190.0 | 1.0 |
| 195.0 | 0.9565 |
| 200.0 | 0.913 |
| 205.0 | 0.8 |
| 210.0 | 0.725 |
| 215.0 | 0.74 |
| 220.0 | 0.841 |
| 225.0 | 0.9205 |
| 230.0 | 1.0 |
| 235.0 | 1.0 |
| 240.0 | 1.0 |
| 245.0 | 1.0 |
| 250.0 | 1.0 |
| 255.0 | 1.0 |
| 260.0 | 1.0 |
| 265.0 | 0.925 |
| 270.0 | 0.85 |
| 275.0 | 0.79 |
| 280.0 | 0.73 |
| 285.0 | 0.765 |
| 290.0 | 0.8 |
| 295.0 | 0.9 |
| 300.0 | 1.0 |
| 305.0 | 1.0 |
| 310.0 | 1.0 |
| 315.0 | 1.0 |



| | |
|-------|-----|
| 320.0 | 1.0 |
| 325.0 | 1.0 |
| 330.0 | 1.0 |
| 335.0 | 1.0 |
| 340.0 | 1.0 |
| 345.0 | 1.0 |
| 350.0 | 1.0 |
| 355.0 | 1.0 |

EXHIBIT B- ALLOCATION STUDY

ComStudy 2.2 search of channel 207 (89.3 MHz Class C3) at 32-58-21.3 N,110-38-26.9 W.

| CALL | CITY | ST CHN CL | DIST | SEP | BRNG | CLEARANCE |
|---------|------------------|-----------|--------|--------|-------|--------------------|
| KBAQ | PHOENIX | AZ 208 C1 | 138.83 | 133.00 | 287.2 | 0.50 dB Exhibit B2 |
| KAIC | TUCSON | AZ 205 A | 39.59 | 31.00 | 180.5 | 0.53 dB Exhibit B1 |
| KUAZ-FM | TUCSON | AZ 206 A | 90.78 | 72.00 | 202.2 | 0.03 dB Exhibit B2 |
| VACANT | NOGALES | SO 208 C | 184.24 | 193.00 | 189.0 | 0.04 dB Exhibit C |
| KAZK | CATALINA | AZ 209 C2 | 60.30 | 55.00 | 192.6 | 5.83 dB Exhibit B1 |
| KJPN | PAYSON | AZ 207 A | 154.62 | 115.00 | 340.9 | 5.47 dB |
| KLVK | FOUNTAIN HILLS | AZ 206 C0 | 193.37 | 152.00 | 291.4 | 6.92 dB |
| KLVA | SUPERIOR | AZ 210 C | 106.64 | 95.00 | 322.4 | 15.26 dB |
| KRCI | PINETOP-LAKESIDE | AZ 208 C3 | 150.06 | 89.00 | 24.0 | 20.03 dB |
| KNAQ | PRESCOTT | AZ 207 A | 243.11 | 115.00 | 314.5 | 23.53 dB |
| KURU | SILVER CITY | NM 206 C1 | 224.76 | 133.00 | 92.5 | 25.86 dB |
| KLVA | SUPERIOR | AZ 210 C | 109.57 | 95.00 | 302.1 | 27.62 dB |
| KPNG | CHANDLER | AZ 204 C3 | 125.41 | 42.00 | 272.0 | 31.20 dB |

LMS/ CDBS as of 10/22/2021

EXHIBIT B1 Pertinent 2nd Adjacent Protection Contours

Proposed 207C3 Kearny, AZ 4.2kW @ 185m HAAT- 2nd Adj Contours

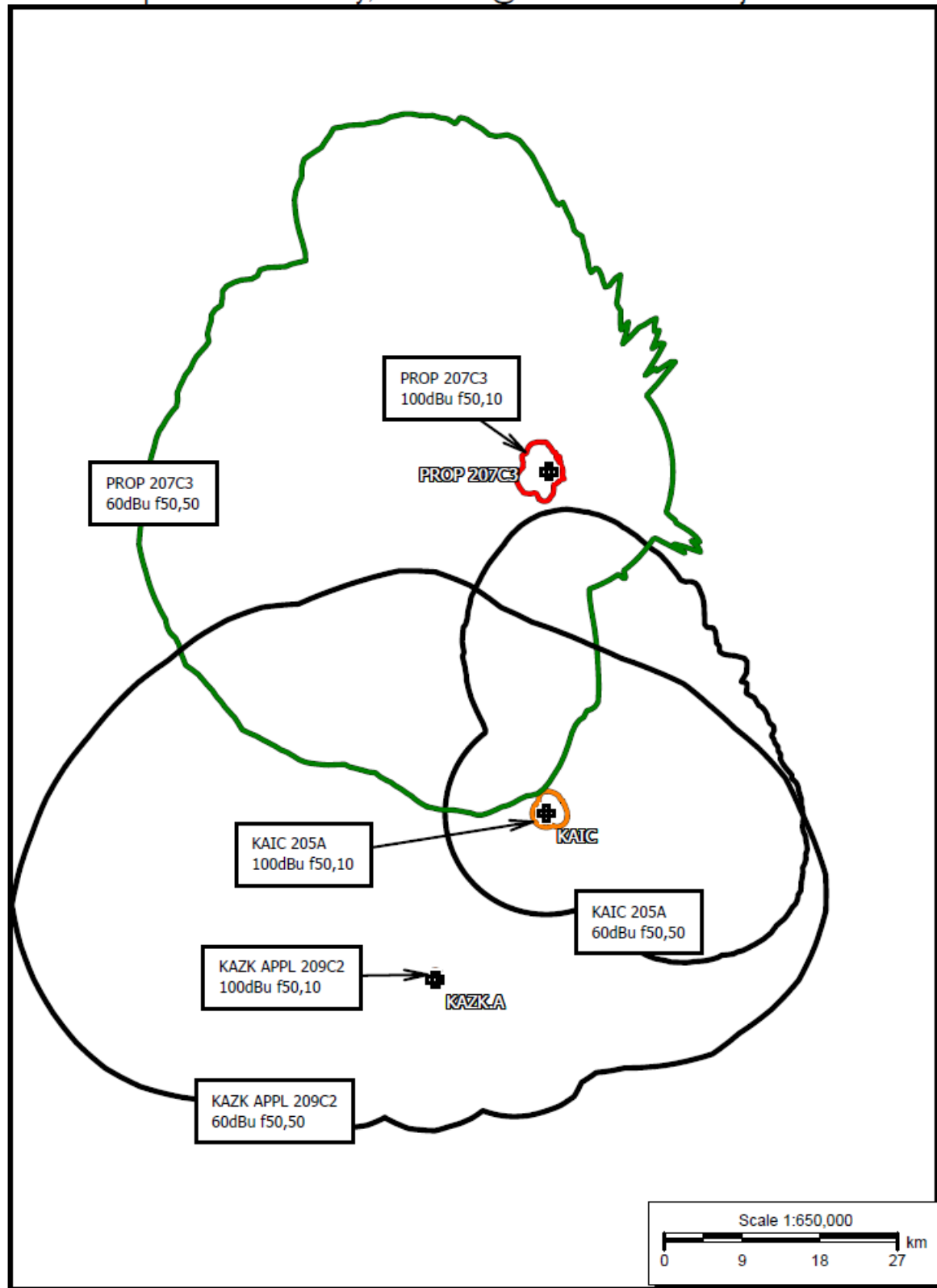


EXHIBIT B2 Pertinent 1st Adjacent-Channel Protection Contours

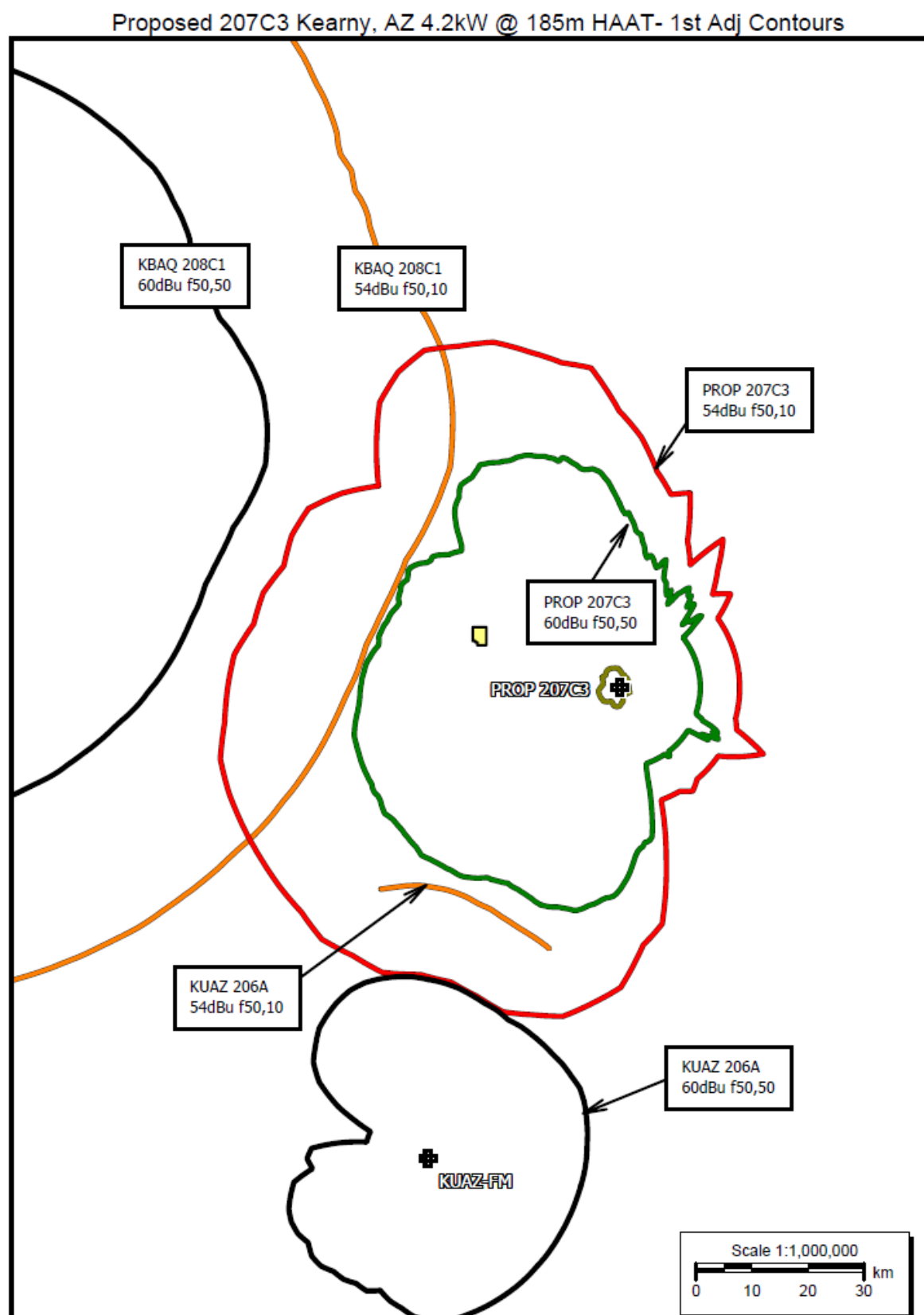


EXHIBIT C- Mexican Compliance- Nogales, 208C

PROP 207C3, Kearny, AZ, Mexican Compliance to Vacant Nogales, Sonora 208C



EXHIBIT D Section 307(b) Analysis

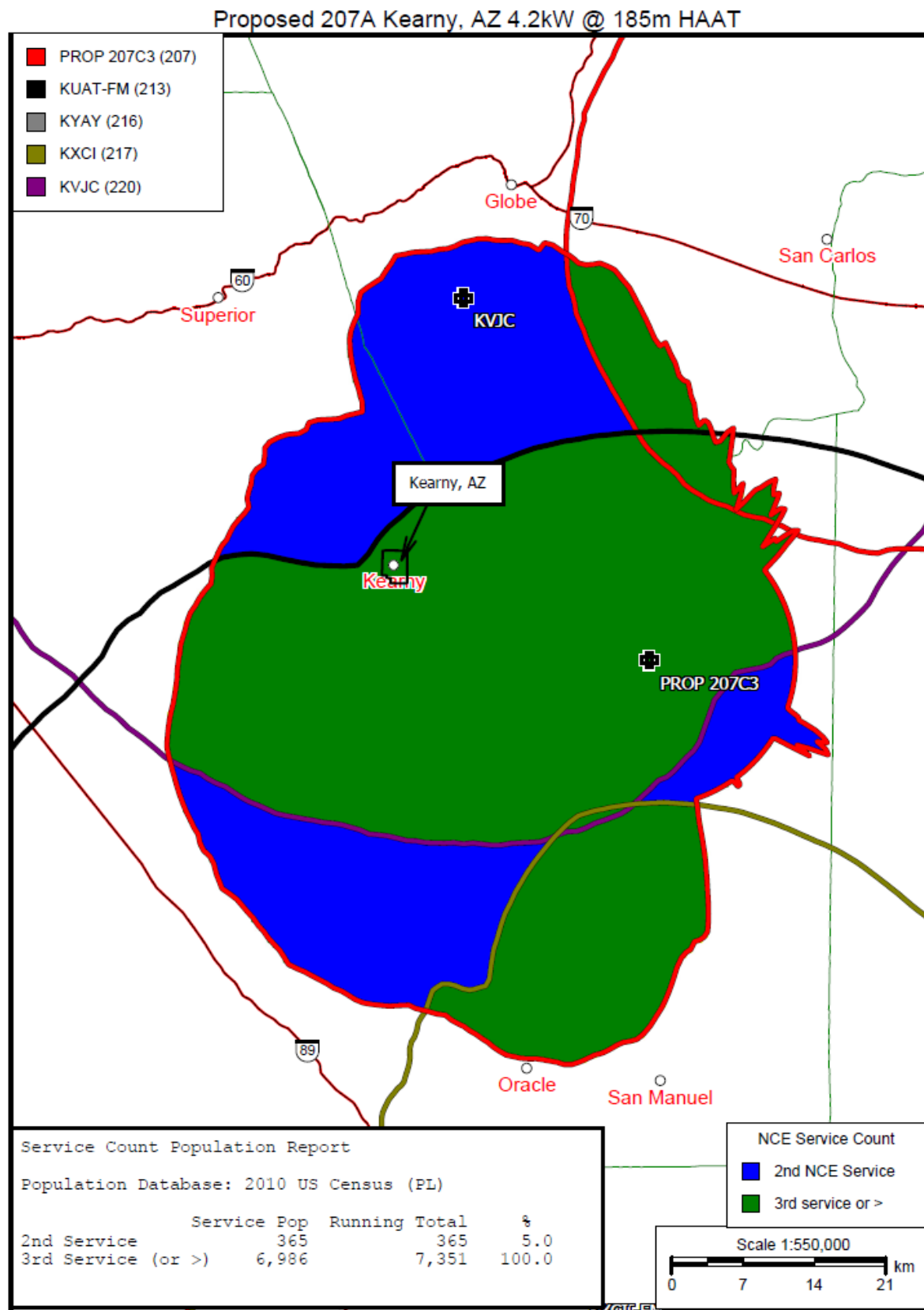


EXHIBIT E Community Coverage

Proposed 207A Kearny, AZ 4.2kW @ 185m HAAT Community Coverage

Kearny Pop 2,168 (2019)
<http://www.city-data.com/city/Kearny-Arizona.html>



EXHIBIT F – Pertinent Distance to Contour Calculations

Distance to Contour Report

PROPOSED 207C3- 60DBU F50,50

Type of contour: FCC

Location Variability: 50.0 %

Time Variability: 50.0 %

of Radials Calculated: 360

FCC Matching HAAT Calculation Used

Field Strength: 60.00 dBuV/m

Primary Terrain: NED 3 Second US Terrain

Secondary Terrain: FCC 30 Second US Database

Transmitter Information:

Call Letters: PROP 207C3

Latitude: 32-58-21.30 N

Longitude: 110-38-27 W

ERP: 4.20 kW

Channel: 207

Frequency: 89.3 MHz

AMSL Height: 1121.0 m

Elevation: 1057.0 m

Horiz. Antenna Pattern: Directional

Vert. Elevation Pattern: No

| Azimuth (deg) | Distance (km) |
|---------------|---------------|
| ----- | ----- |
| 0.0 | 32.89 |
| 5.0 | 29.39 |
| 10.0 | 25.56 |
| 15.0 | 23.55 |
| 20.0 | 24.29 |
| 25.0 | 19.63 |
| 30.0 | 17.07 |
| 35.0 | 21.71 |
| 40.0 | 18.58 |
| 45.0 | 15.74 |
| 50.0 | 17.57 |
| 55.0 | 14.36 |
| 60.0 | 14.36 |
| 65.0 | 14.36 |
| 70.0 | 14.36 |
| 75.0 | 14.36 |
| 80.0 | 14.36 |
| 85.0 | 14.36 |
| 90.0 | 14.36 |
| 95.0 | 14.36 |
| 100.0 | 14.36 |
| 105.0 | 14.36 |

| | |
|-------|-------|
| 110.0 | 14.84 |
| 115.0 | 19.28 |
| 120.0 | 16.73 |
| 125.0 | 14.36 |
| 130.0 | 14.36 |
| 135.0 | 14.36 |
| 140.0 | 14.36 |
| 145.0 | 15.16 |
| 150.0 | 14.36 |
| 155.0 | 14.36 |
| 160.0 | 14.36 |
| 165.0 | 21.41 |
| 170.0 | 27.96 |
| 175.0 | 30.34 |
| 180.0 | 35.97 |
| 185.0 | 38.02 |
| 190.0 | 40.12 |
| 195.0 | 40.65 |
| 200.0 | 41.30 |
| 205.0 | 40.55 |
| 210.0 | 40.25 |
| 215.0 | 41.35 |
| 220.0 | 43.91 |
| 225.0 | 44.91 |
| 230.0 | 46.42 |
| 235.0 | 46.38 |
| 240.0 | 46.90 |
| 245.0 | 47.30 |
| 250.0 | 47.73 |
| 255.0 | 48.09 |
| 260.0 | 48.21 |
| 265.0 | 47.01 |
| 270.0 | 46.33 |
| 275.0 | 45.61 |
| 280.0 | 43.78 |
| 285.0 | 43.56 |
| 290.0 | 42.37 |
| 295.0 | 43.09 |
| 300.0 | 43.06 |
| 305.0 | 40.82 |
| 310.0 | 37.79 |
| 315.0 | 41.29 |
| 320.0 | 44.51 |
| 325.0 | 45.89 |
| 330.0 | 46.36 |
| 335.0 | 44.97 |
| 340.0 | 43.97 |
| 345.0 | 41.75 |
| 350.0 | 39.65 |
| 355.0 | 38.53 |

Distance to Contour Report
PROPOSED 207C3- 54DBU F50,10
180-340 DEG

Type of contour: FCC
Location Variability: 50.0 %
Time Variability: 10.0 %
of Radials Calculated: 72
FCC Matching HAAT Calculation Used
Field Strength: 54.00 dBuV/m

Primary Terrain: NED 3 Second US Terrain

Transmitter Information:

Call Letters: PROP 207C3
Latitude: 32-58-21.30 N
Longitude: 110-38-27 W
ERP: 4.20 kW
Channel: 207
AMSL Height: 1121.0 m
Elevation: 1057.0 m
Horiz. Antenna Pattern: Directional

| Azimuth (deg) | Distance (km) |
|---------------|---------------|
| ----- | ----- |
| 180.0 | 53.52 |
| 185.0 | 56.49 |
| 190.0 | 59.56 |
| 195.0 | 60.43 |
| 200.0 | 61.53 |
| 205.0 | 60.73 |
| 210.0 | 60.60 |
| 215.0 | 62.40 |
| 220.0 | 66.24 |
| 225.0 | 67.55 |
| 230.0 | 69.67 |
| 235.0 | 69.60 |
| 240.0 | 70.43 |
| 245.0 | 71.07 |
| 250.0 | 71.74 |
| 255.0 | 72.32 |
| 260.0 | 72.51 |
| 265.0 | 70.90 |
| 270.0 | 70.08 |
| 275.0 | 69.14 |
| 280.0 | 66.39 |
| 285.0 | 65.91 |
| 290.0 | 63.84 |
| 295.0 | 64.60 |
| 300.0 | 64.14 |
| 305.0 | 60.62 |
| 310.0 | 56.15 |
| 315.0 | 61.34 |
| 320.0 | 66.55 |
| 325.0 | 68.81 |
| 330.0 | 69.57 |
| 335.0 | 67.31 |
| 340.0 | 65.64 |

Distance to Contour Report

KUAZ-FM 206A 60DBU F50,50

340DEG - 60DEG

Type of contour: FCC

Location Variability: 50.0 %

Time Variability: 50.0 %

of Radials Calculated: 72

FCC Matching HAAT Calculation Used

Field Strength: 60.00 dBuV/m

Primary Terrain: NED 3 Second US Terrain

Secondary Terrain: FCC 30 Second US Database

Transmitter Information:

Call Letters: KUAZ-FM

File Number: BLED20051028ABV

Latitude: 32-12-53.20 N

Longitude: 111-00-23.30 W

ERP: 1.60 kW

Channel: 206

Frequency: 89.1 MHz

AMSL Height: 963.0 m

Elevation: 944.0 m

Horiz. Antenna Pattern: Omni

Vert. Elevation Pattern: No

| Azimuth (deg) | Distance (km) |
|---------------|---------------|
| ----- | ----- |
| 340.0 | 33.36 |
| 345.0 | 33.21 |
| 350.0 | 32.93 |
| 355.0 | 32.56 |
| 0.0 | 31.97 |
| 5.0 | 31.47 |
| 10.0 | 30.89 |
| 15.0 | 30.14 |
| 20.0 | 29.48 |
| 25.0 | 29.16 |
| 30.0 | 28.58 |
| 35.0 | 28.79 |
| 40.0 | 28.83 |
| 45.0 | 28.92 |
| 50.0 | 29.00 |
| 55.0 | 29.32 |
| 60.0 | 29.50 |

Distance to Contour Report

**KBAQ 208C1 54DBU F50,10
80-170DEG**

Type of contour: FCC
Location Variability: 50.0 %
Time Variability: 10.0 %
of Radials Calculated: 360
FCC Matching HAAT Calculation Used
Field Strength: 54.00 dBuV/m

Primary Terrain: NED 3 Second US Terrain
Secondary Terrain: FCC 30 Second US Database

Transmitter Information:

Call Letters: KBAQ
File Number: BMLED20181213ACI
Latitude: 33-19-57.60 N
Longitude: 112-03-57.70 W
ERP: 30.00 kW
Channel: 208
Frequency: 89.5 MHz
AMSL Height: 841.0 m
Elevation: 797.0 m
Horiz. Antenna Pattern: Directional
Vert. Elevation Pattern: No

| Azimuth (deg) | Distance (km) |
|---------------|---------------|
| ----- | ----- |
| 80.0 | 103.25 |
| 85.0 | 103.23 |
| 90.0 | 102.49 |
| 95.0 | 99.54 |
| 100.0 | 96.23 |
| 105.0 | 94.61 |
| 110.0 | 93.47 |
| 115.0 | 93.78 |
| 120.0 | 94.18 |
| 125.0 | 94.62 |
| 130.0 | 94.76 |
| 135.0 | 94.91 |
| 140.0 | 95.00 |
| 145.0 | 95.15 |
| 150.0 | 95.54 |
| 155.0 | 95.53 |
| 160.0 | 95.73 |
| 165.0 | 95.86 |
| 170.0 | 95.97 |