



## 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 Census<sup>1</sup>.

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<sup>1</sup> 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](mailto: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.<sup>2</sup>

## **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”<sup>3</sup> 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).

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<sup>2</sup> [https://en.wikipedia.org/wiki/Kearny,\\_Arizona](https://en.wikipedia.org/wiki/Kearny,_Arizona)

<sup>3</sup> <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

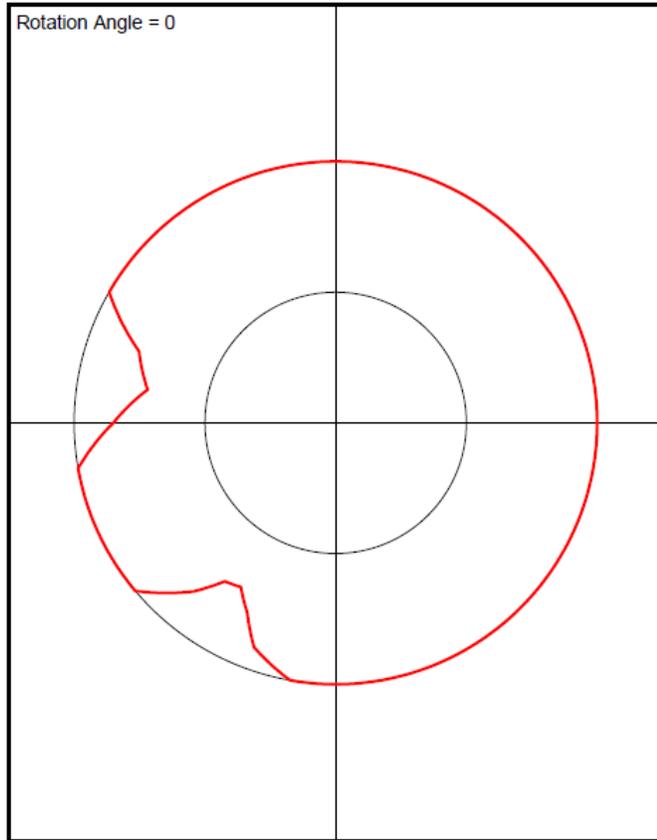
A handwritten signature in cursive script that reads "Bert Goldman". The signature is written in black ink and is positioned above the printed name.

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

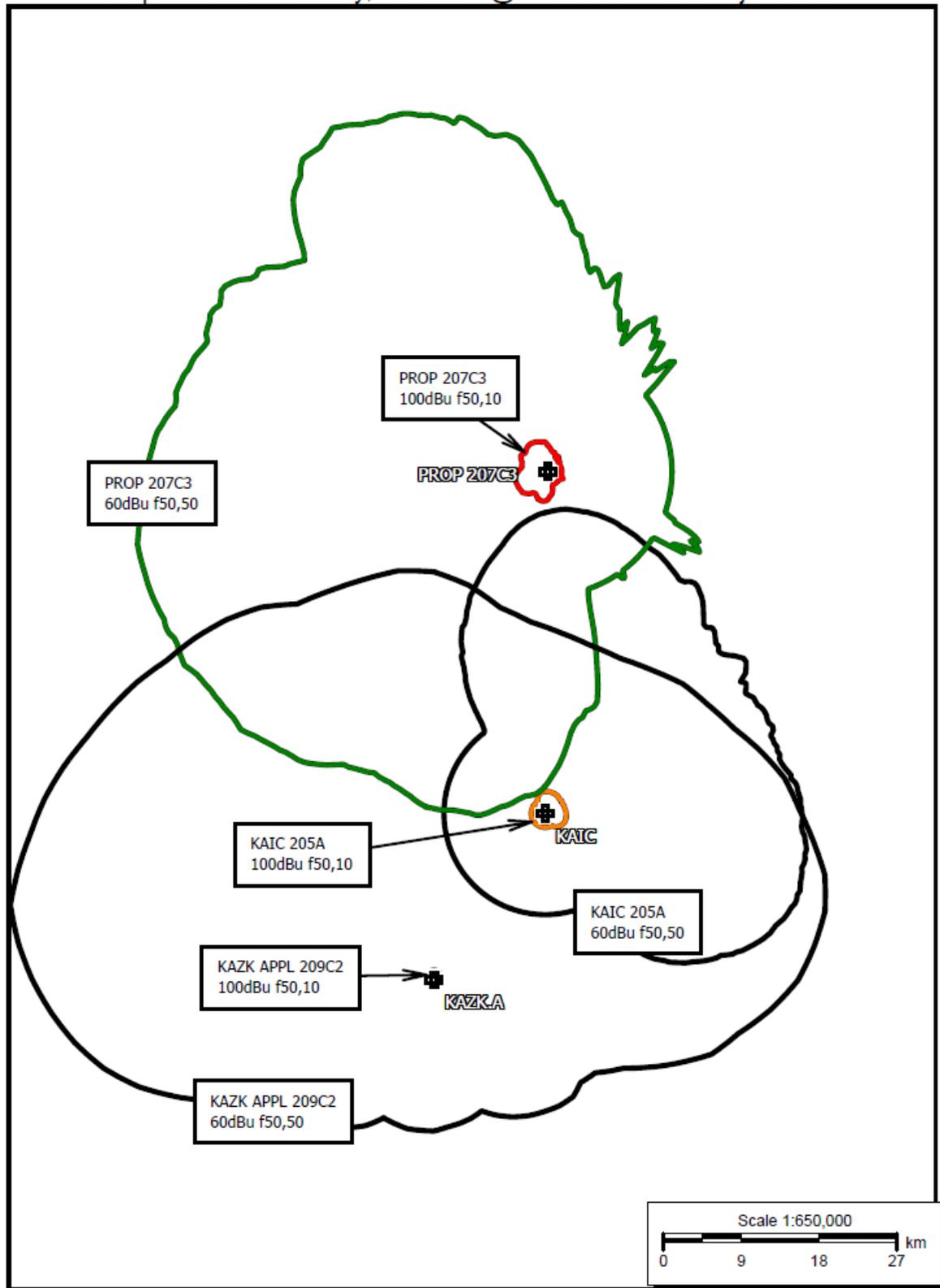
ComStudy 2.2 search of channel 207 (89.3 MHz Class C3) at 32-58-21.3 N,110-38-26.9 W.

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

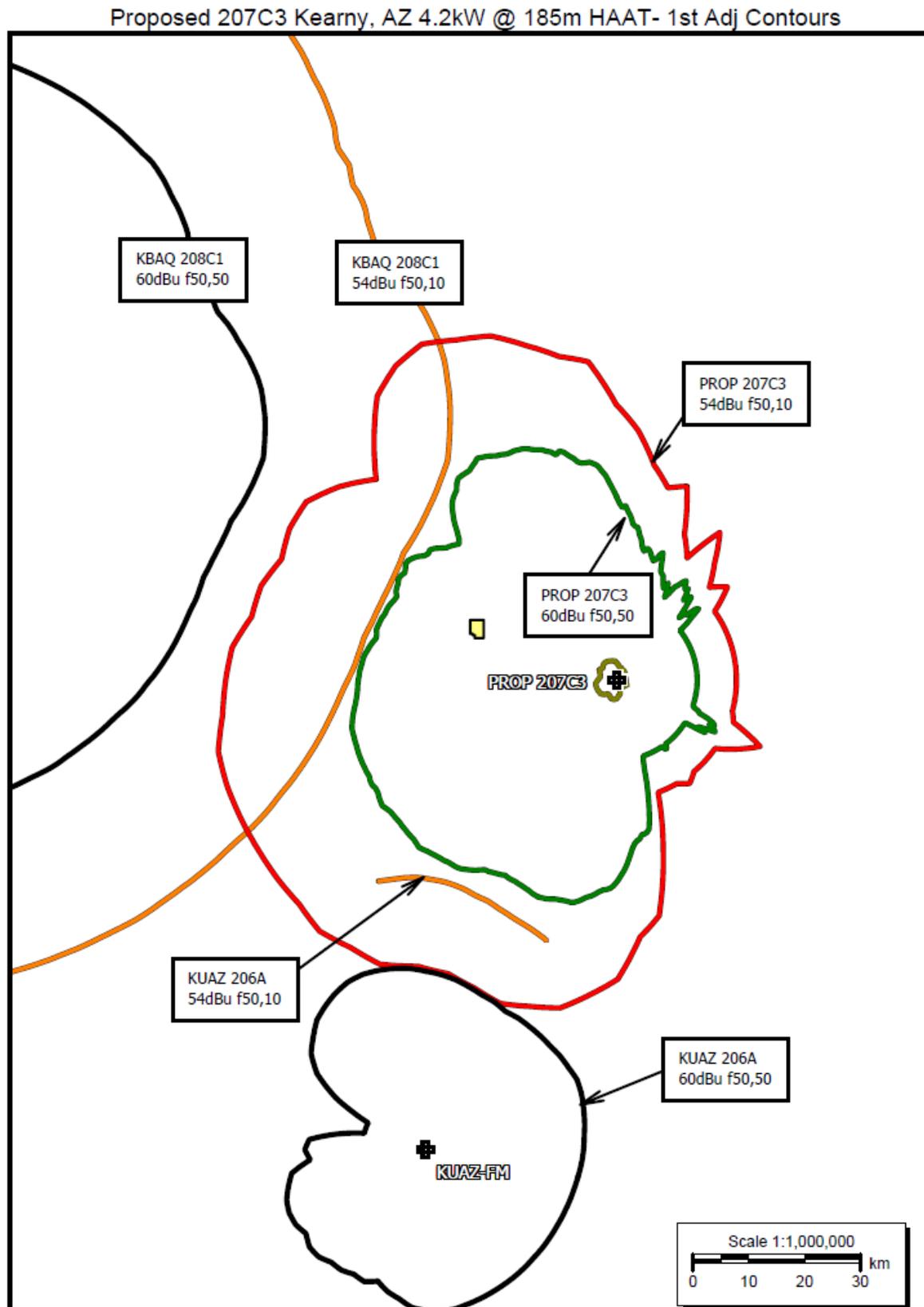
LMS/ CDBS as of 10/22/2021

# EXHIBIT B1 Pertinent 2<sup>nd</sup> Adjacent Protection Contours

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

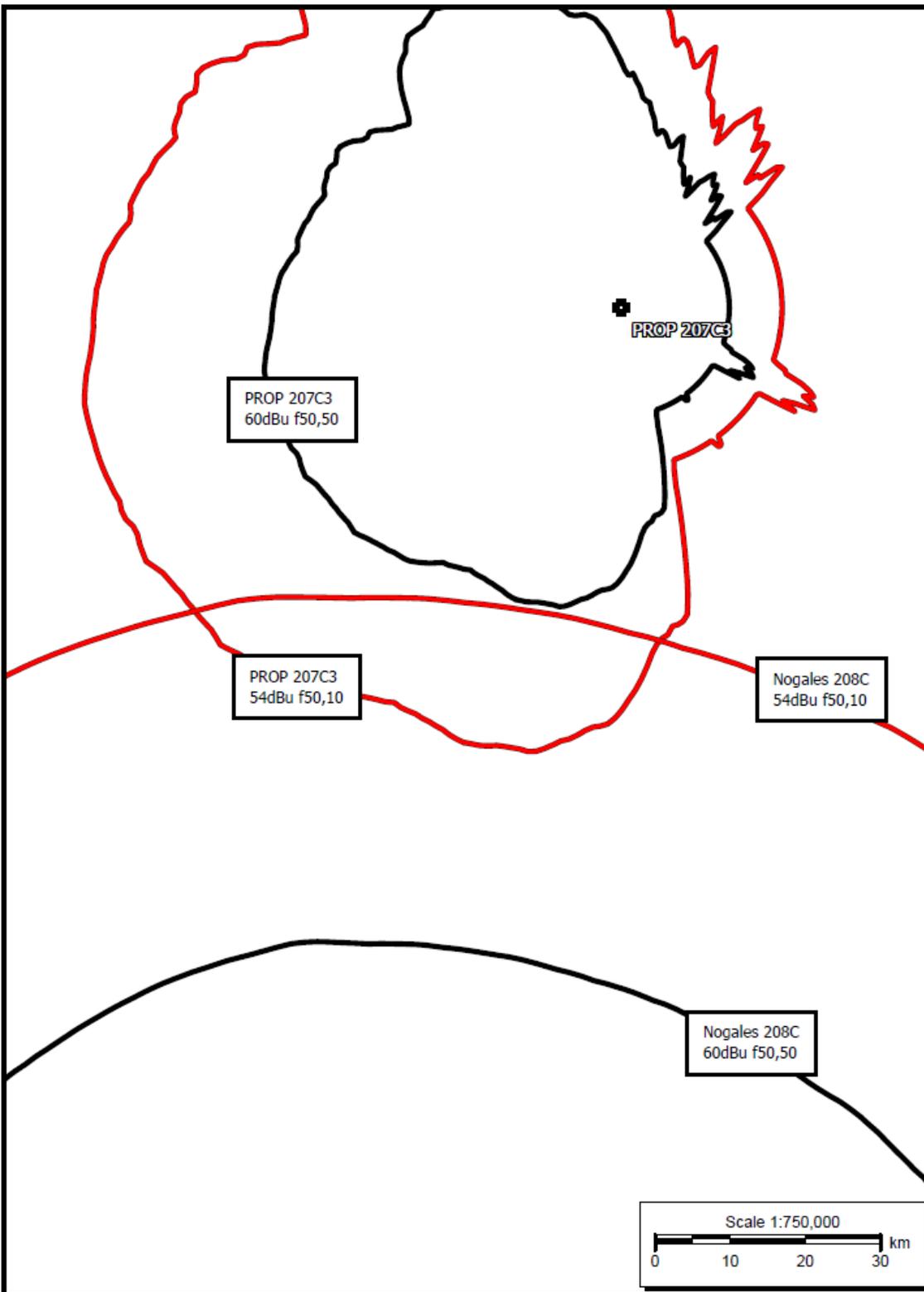


**EXHIBIT B2 Pertinent 1<sup>st</sup> Adjacent-Channel Protection Contours**



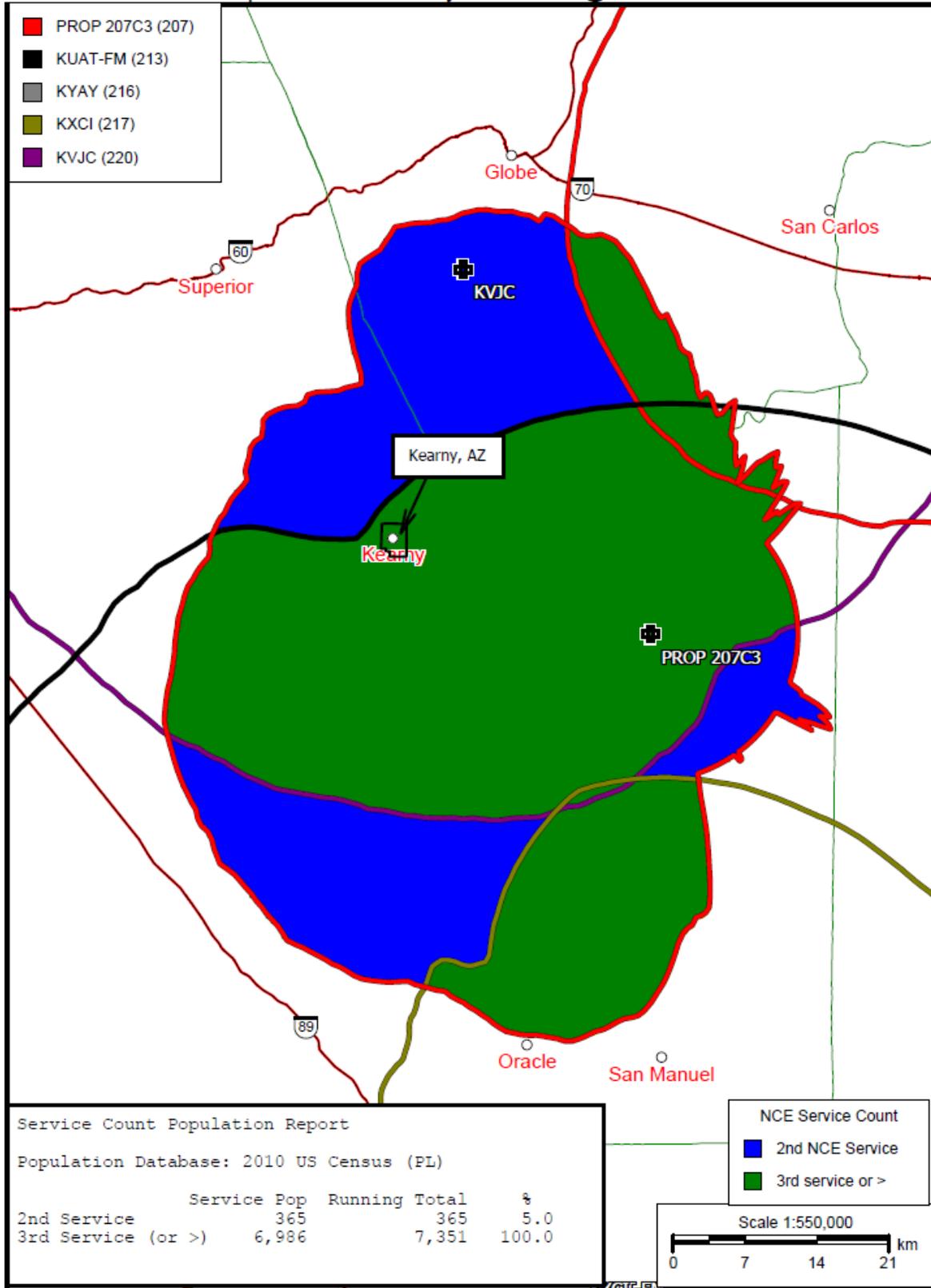
**EXHIBIT C- Mexican Compliance- Nogales, 208C**

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



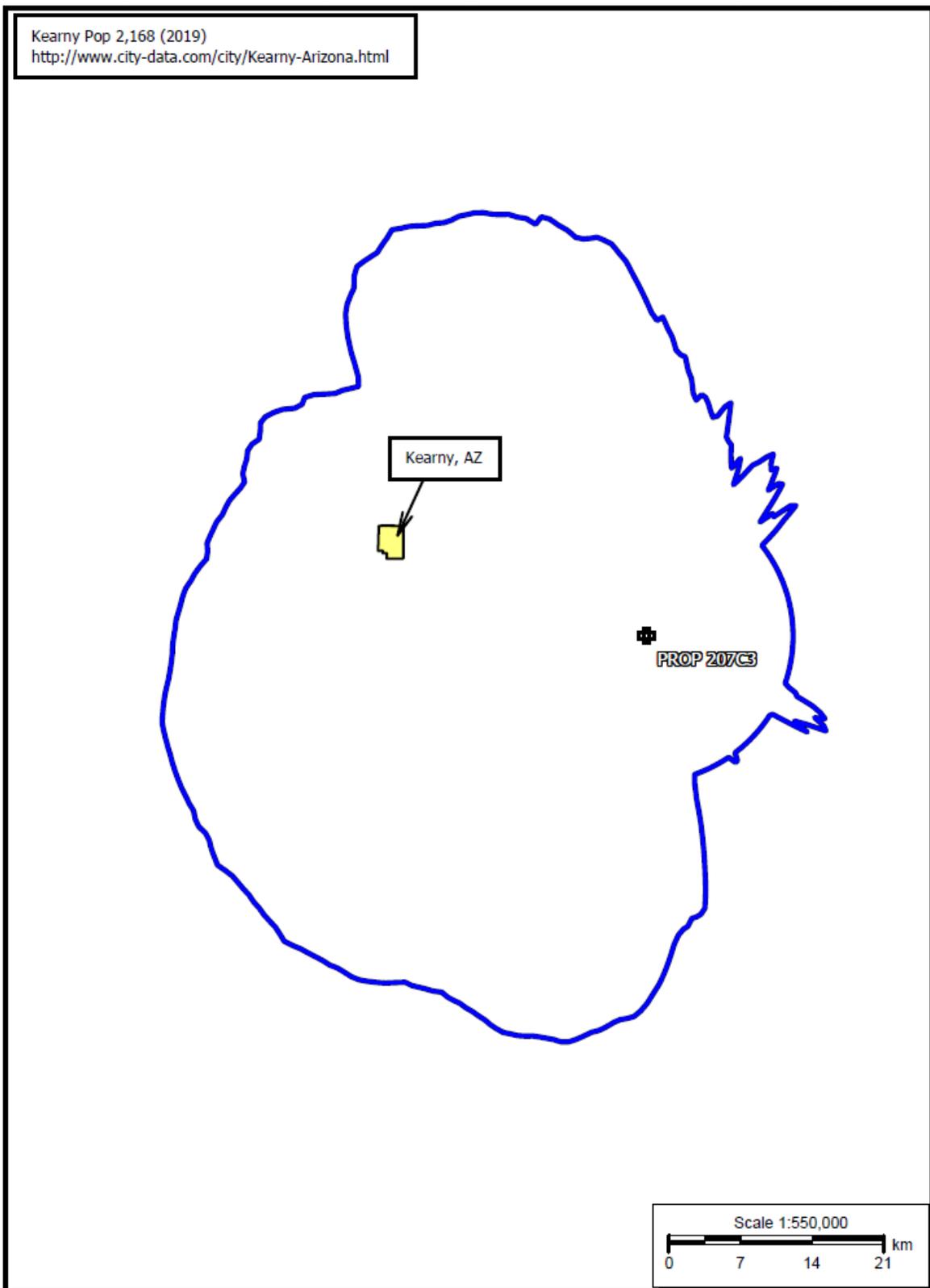
**EXHIBIT D Section 307(b) Analysis**

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



# EXHIBIT E Community Coverage

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



**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

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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  
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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

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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

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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

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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

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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

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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  
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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