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MAJOR AMENDMENT TO A PENDING LOW POWER FM (LPFM) APPLICATION (BNPL-20131112CCA) TO CHANGE CHANNELS FROM 256 (99.1 MHZ) TO 264 (100.7 MHZ) TUCSON, AZ



Prepared For:

- LPFM Downtown Tucson
- 1 E. Toole Ave.
Tucson, AZ 85701

Prepared By:

William T. Godfrey, Jr.
Engineering Associate
Kessler & Gehman Associates
507 NW 60th Street, Suite C
Gainesville, FL 32607-2055
352-332-3157 Extension 4
bill@kesslerandgehman.com
www.kesslerandgehman.com

Prepared On:

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Proposed Parameters:

Channel:	264 (100.7 MHz)
ERP:	50 W
HAAT:	-42.2 m
Waiver:	Yes
Antenna:	Omni
Terrain:	3 Arc Second

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1.0 PURPOSE OF LPFM APPLICATION

The purpose of this major amendment of LPFM Downtown Tucson's pending LPFM application (BNPL-20131112CCA) is to change channels from the initially requested Channel 256 (99.1 MHz) to the newly proposed Channel 264 (100.7 MHz) in order to separate from MX Group #16 and become a singleton. The enclosed engineering demonstrates that the newly proposed channel meets all applicable requirements pursuant to FCC Rules and the application should therefore be granted so that LPFM Downtown Tucson can begin serving the community of Tucson.

2.0 STATION STUDIO & TRANSMITTER LOCATION

The proposed transmitter site shall consist of a rooftop mounted antenna on an existing building located at the following address and resulting site geographical coordinates.

2.1 Studio & Transmitter Site Physical Address:

1 E Toole Ave
Tucson, AZ 85701

2.2 Transmitter Site Geographic Coordinates (NAD27):

The following transmitter site coordinates were determined using a 7.5 minutes series U.S. Geological Survey topographic quadrangle map then checked for consistency using a GIS program:

N. Latitude 32° 13' 35.5"
W. Longitude 110° 58' 14.7"

See **Appendix A** (NAD83 to NAD27 Conversion)

2.3 Antenna Structure Registration (ASR):

The proposed structure consists of a 30 ft building with a 21 ft mast erected on the rooftop. The combined structure and mast height of the

roof mounted antenna system does not require an Antenna Structure Registration (ASR) since there are no airports within 8 kilometers (5 miles) of the proposed coordinates as demonstrated from the FCC's TOWAIR program depicted in **Appendix B** of this report.

3.0 ANTENNA AND SITE ELEVATIONS (Rounded in FCC Form 318)

The applicant proposes to use the studio rooftop to erect a mast in which to mount the LPFM antenna. The pertinent elevations are as described:

3.1 Height of Site Above Mean Sea Level (AMSL)
723.9 m (2,375.1 ft)

3.2 Overall Height of Support Structure (Building) Above Ground Level (AGL)
9.1 m (30.0 ft)

3.3 Overall Height of Mast above Rooftop
6.4 m (21.0 ft)

3.4 Overall Height of Mast (AGL)
15.5 m (51.0 ft)

3.5 Antenna Height above Rooftop
6.4 m (21.0 ft)

3.6 Antenna Height (AGL)
15.5 m (51.0 ft)

3.7 Antenna height (AMSL)
739.4 m (2,426.1 ft)

3.8 Antenna Height Above Average Terrain (HAAT)
-42.2 m (-138.5 ft)

Refer to **Appendix C** for HAAT Calculations

4.0 LPFM EFFECTIVE RADIATED POWER (ERP)

Pursuant to 47 C.F.R. Section 73.811(a) – Maximum Facilities: LPFM stations will be authorized to operate with maximum facilities of 100 Watts Effective Radiated Power (ERP) at an antenna Height Above Average Terrain (HAAT) of

30 meters. An LPFM station with an antenna HAAT that exceeds 30 meters will not be permitted to operate with an ERP greater than that which would result in an F(50,50) 60 dBuV/m contour of 5.6 km. In no event will an ERP less than one watt be authorized. No facility will be authorized in excess of one watt ERP at 450 meters HAAT.

Since the calculated HAAT is -42.2 m as demonstrated in **Appendix C** of this document, the applicant normally would employ a 100 Watt ERP (**Appendix D**) and be well within 47 C.F.R. Section 73.811(a) compliance; however, as demonstrated in Section 10 of this document, the proposed facility is 96 km from the Mexican border and thus 50 Watts shall be employed as the maximum ERP.

5.0 FREQUENCY SEARCH OVERVIEW- **SECOND ADJACENT WAIVER**

5.1 Channel Found With No Spacing Violations

The following table depicts fully-spaced channels which are available for the assignment of LPFM stations at the proposed location:

Channel	Comments
None	No channels at this location meet the minimum spacing requirements pursuant to 47 C.F.R. Section 73.807 of the FCC Rules.

5.2 Channel Found Requiring a **Second Adjacent Channel Waiver**

Pursuant to 47 C.F.R. Section 73.807(e)(1) (*Waiver of the Second-Adjacent Channel Separations*), the following table depicts the applicant's proposed channel which is available for the assignment of an LPFM station at the proposed location:

ERP	Channel	Comments
50 W	264	Channel 264 (100.7 MHz) meets the minimum spacing requirements pursuant to 47 C.F.R. Section 73.807(a)(1) of the FCC Rules for co-channel and first-adjacent channel stations. Channel 264 is short-spaced with one licensed second adjacent channel facility but meets the second-adjacent channel waiver requirements pursuant to 47 C.F.R. Section 73.807(e)(1) of the FCC Rules.

6.0 ALLOCATION ANALYSIS AND 2ND ADJACENT WAIVER REQUEST

As indicated in Section 5 of this document, the only channels available for an LPFM facility at the proposed site will require a waiver of second adjacent channel separations as permitted pursuant to Section 73.807(e)(1) of the FCC Rules.

6.1 LPFM Short Space Study - 3 Second Terrain Data Used

An LPFM station will not be authorized initially unless the minimum distance separations pursuant to Section 73.807 of the FCC Rules are met. **Appendix E** in this report depicts the results of a channel spacing study which demonstrates that the proposed LPFM facility is short-spaced with the following second adjacent channel licensed facility:

- KKYZ-FM FCC File No.: BLH-19941005KC

****3 second terrain data was used for calculations****

6.2 Second Adjacent Channel Short Spacing - Waiver Required

Pursuant to Section 73.807(e)(1) of the FCC Rules, the FCC requires an LPFM station to establish that its proposed operations will not result in interference to any authorized radio service. An LPFM station may do so by demonstrating that no actual interference will occur due to intervening terrain or lack of population. An LPFM station may use the undesired to desired signal strength ratio methodology to define areas of potential interference. Accordingly, LPFM Downtown Tucson hereby requests processing based on the “undesired-to-desired signal ratio method.” Based on the undesired-to-desired signal ratio method, when contour overlap is caused to a second adjacent frequency, “interference is predicted to occur where the LPFM’s undesired signal exceeds the protection station’s desired signal by 40 dB or more.”

The detailed engineering provided in **Appendix F** demonstrates that no population will be subject to interference from the proposed Channel 264 LPFM station according to the undesired-to-desired ratio method. **As such, a wavier is respectfully requested for the proposed LPFM second-adjacent channel short-spacing with KKYZ-FM.** KKYZ-FM does not offer a Radio Reading Service.

7.0 INTERFERENCE TO TRANSLATOR OR BOOSTER INPUT SIGNALS

Pursuant to the requirements of 47 C.F.R. Section 73.827(a), **Appendix G** lists the following FM booster and FM translator stations that are located within 10 km of the proposed LPFM site and are subject to potential third adjacent-channel interference from the proposed LPFM facility to the received input channel delivered from the parent station:

FM Boosters

- KTGv-FM1 FCC File No: BLFTB-20101129AOK
Primary Station: KTGv (FM)
Input Channel: 292 (106.3 MHz)
3rd Adjacent: **No**

FM Translators

- K209AF FCC File No: BLFT-20140317ACM
Primary Station: KUAT (FM)
Input Channel: 213 (90.5 MHz)
3rd Adjacent: **No**
- K223CI FCC File No: BNPFT-20130822AFP
Primary Station: KVGy (AM)
Input Channel: 1080 kHz
3rd Adjacent: **No**
- K274AQ FCC File No: BLFT-19981006TA
Primary Station: KNOG (FM)
Input Channel: 219 (91.7 MHz)
3rd Adjacent: **No**

- K277CV FCC File No: BNPFT-20130228ASA
Primary Station: KLTU (FM)
Input Channel: 201 (88.1 MHz)
3rd Adjacent: **No**

- K85DL FCC File No: BLFT-20011115AAB
Primary Station: KFFN (AM)
Input Channel: 1490 kHz
3rd Adjacent: **No**

- K65CW FCC File No: BPFT-20130228AFI
Primary Station: KLVA (FM)
Input Channel: 288 (105.5 MHz)
3rd Adjacent: **No**

There are no FM translator stations or FM Booster stations within 10 km of the proposed LPFM transmitter site with input channels that are third-adjacent (CH 261 or CH 267) to the proposed LPFM facility (CH 264); therefore, the proposed LPFM facility will not cause interference to the input signals of surrounding FM translator and/or FM booster stations.

8.0 TELEVISION CHANNEL 6 (TV6) STATIONS

Channel 6 interference is not a factor for LPFM stations operating on channels 221 – 300 and therefore is not applicable to the application for further analysis.

9.0 AM STATION PROXIMITY

Pursuant to 47 C.F.R. Section 1.30002(e), the addition of an antenna-supporting structure shall be considered construction subject to the analysis and notification requirement only if the height of the antenna-supporting structure ALONE exceeds the 60 and 36 electrical degree threshold in Section 1.30002(a) and 1.30002(b) for a non-direction and directional AM facility respectively.

The proposed support structure in this instance extends 15.5 meters above ground level. A worst case proposed support structure height in electrical degrees shall be calculated using the highest frequency on the AM band of 1600 kHz which subsequently has the highest wavelength and thus is the most prone to vertical radiators. As such the worst case proposed structure height in electrical degrees is as follows:

- AM Wavelength = $300/1.6 = 187.5$ meters
- Prop. Support Structure. Ht. in elec. Deg. = $(15.5/187.5)(360) = 28.8$ electrical degrees

As demonstrated, the calculated height in electrical degrees is well below the 60 electrical degree threshold for non-directional 36 electrical degree threshold for directional AM facilities respectively. As such, the proposed LPFM facility and its support structure are not subject to the moment method analysis and 30 day advance notification of the commencement of construction of the proposed support structure.

10.0 INTERNATIONAL COORDINATION

The proposed facility is 96 km from the Mexican border and lies with the 0 km – 125 km border zone. Pursuant to the US and Mexican International Agreement, the proposed facility will not:

- Specify an ERP exceeding 50 Watts
- Have an interfering (34 dBu) contour exceeding 32 km

Radials 95 through 280 from the proposed LPFM station run through the Mexican border. The worst case 34 dBu contour distance for any radial toward Mexico is 30.5 km using 3 arc second terrain data and is thus well within compliance of the 32 km threshold.

11.0 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

11.1 General Environmental Requirements

The proposed support structure and antenna will not:

- Require high intensity white lighting.
- Is not located in an official designated wilderness area or wildlife preserve.
- Does not threaten the existence or habitat of endangered species.
- Does not affect districts, sites, buildings, structures or objects significant in American history, architecture, archaeology, engineering or culture that are listed in the National Register of Historic Places or are eligible for listing.
- Does not affect Indian religious sites.
- Is not located in a floodplain
- Does not require construction that involves significant changes in surface features (e.g., wetland fill, deforestation or water diversion).

11.2 Radio Frequency Radiation (RFR) Compliance

The proposed Channel 264 (100.7 MHz) LPFM facility will not have a significant environmental impact and complies with the maximum permissible radio frequency electromagnetic exposure limits for controlled and uncontrolled environments pursuant to §1.1307 of the FCC Rules and the FCC's Office of Engineering and Technology Bulletin 65, Edition 97-01 (OET-65).

The LPFM transmitter, transmission line and antenna system shall produce an ERP of 50 W (circular polarization). Assuming the maximum lobe of radiation were oriented directly toward the ground, the proposed LPFM facility's power density six feet above the ground would be 0.018 mW/cm². A power density of 0.018 mW/cm² equates to 1.83% of the Maximum Permissible Exposure (MPE) limits for Occupational/Controlled Exposure and 9.17% of the MPE limits for General Population/Uncontrolled Exposure authorized by the American National Standards Institute (ANSI). Based on the proposed LPFM facility's FM antenna being oriented directly toward the ground (worst case study), the proposed

facility would be considered a “contributor” to the RF exposure environment pursuant to OET Bulletin 65, Edition 97-01 since the operation of the proposed facility would exceed 5.0% of the MPE limit for Occupational/Controlled Exposure or General Population/Uncontrolled Exposure directly toward the ground. Therefore, all antennas on the Proposed LPFM structure must be analyzed and a composite study is required to demonstrate that the total power density of all antennas on the structure will not exceed 100% of the MPE allowable.

Since no other antennas will be located on or near the support structure, the combined exposure from all antennas is predicted to be 1.83% of the MPE limits for Occupational/Controlled Exposure and 9.17% of the MPE limits for General Population/Uncontrolled Exposure. Accordingly, the combined exposure will result in exposure levels well below the allowable exposure threshold authorized by the ANSI and the FCC. It is safe to conclude that the emissions will be insignificant and well within the maximum allowable requirements.

12.0 RADIO READING SERVICE

LPFM stations must satisfy the second-adjacent channel minimum distance separation requirements with respect to any third-adjacent channel FM station that, as of September 20, 2000, broadcasts a radio reading service via a subcarrier frequency pursuant to Section 73.807(a)(2) of the FCC Rules. Referring to **Appendix E** in this document, it can be seen that the proposed LPFM station satisfies the third-adjacent channel Radio Reading requirements pursuant to Section 73.807(a)(2) of the FCC Rules.

13.0 NOTIFICATIONS

The proposed facility is not within the affected areas of the following installations and stations pursuant to 73.1030 of the FCC Rules.

- 73.1030(a) National Radio Astronomy Observatory Quite Zone at Green Bank, WV.....**Okay**

- 73.1030(a) Arecibo Observatory, Puerto Rico, Radio Astronomy Coordination Zone.....**Okay**
- 73.1030(b) Table Mountain Quiet Zone, Boulder, CO.....**Okay**
- 73.1030 (c) Monitoring Station at ALLEGAN, MI.....**Okay**
- 73.1030 (c) Monitoring Station at ANCHORAGE, AK.....**Okay**
- 73.1030 (c) Monitoring Station at BELFAST, ME.....**Okay**
- 73.1030 (c) Monitoring Station at CANANDAIGUA, NY.....**Okay**
- 73.1030 (c) Monitoring Station at DOUGLAS, AZ.....**Okay**
- 73.1030 (c) Monitoring Station at FERNDALE, WA.....**Okay**
- 73.1030 (c) Monitoring Station at VERO BEACH, FL.....**Okay**
- 73.1030 (c) Monitoring Station at GRAND ISLAND, NE.....**Okay**
- 73.1030 (c) Monitoring Station at KINGSVILLE, TX.....**Okay**
- 73.1030 (c) Monitoring Station at LAUREL, MD.....**Okay**
- 73.1030 (c) Monitoring Station at LIVERMORE, CA.....**Okay**
- 73.1030 (c) Monitoring Station at POWDER SPRINGS, GA.....**Okay**
- 73.1030 (c) Monitoring Station at SANTA ISABEL, PR.....**Okay**
- 73.1030 (c) Monitoring Station at HONOLULU, OAHU, HI.....**Okay**

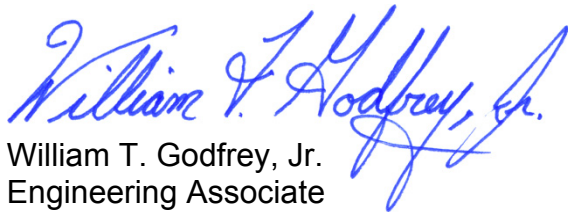
14.0 CONCLUSION

The engineering conducted and discussed in this report demonstrates that Channel 264 (100.7 MHz) is available for the proposed LPFM facility. The proposed LPFM facility is well within compliance on all regulatory matters and a construction permit should therefore be issued to LPFM Downtown Tucson.

15.0 CERTIFICATION

This technical statement was prepared by William T. Godfrey, Jr., Engineering Associate with the firm Kessler and Gehman Associates, Inc. having offices in Gainesville, Florida, and has been working with the firm in the field of radio and television broadcast consulting since 1998. Mr. Godfrey was a graduate from the

University of North Florida and a Distinguished Military Graduate from the University of Florida. As a Professional in the field of Telecommunications he states under penalty of perjury that the information contained in this report is true and correct to the best of his knowledge and belief.



William T. Godfrey, Jr.
Engineering Associate
Kessler and Gehman Associates, Inc.



APPENDIX A – NAD83 TO NAD27 CONVERSION

Antenna Location Coordinates. The proposed antenna site must be specified using North American Datum 27 (NAD 27) coordinates. The latitude and longitude Coordinates for all points in the United States for this LPFM service are based upon the 1927 North American Datum (NAD 27). The National Geodetic Survey is in the process of replacing NAD 27 with the more accurate 1983 North American Datum (NAD 83) and updating current topographic maps. In addition, coordinates determined by use of the satellite-based Global Positioning System already reflect the NAD 83 datum. To prevent intermixing of data from these two sources, the Commission has announced that, until further notice, all LPFM applicants are to furnish coordinates based on NAD 27 datum on all submissions and the Commission will continue to specify NAD 27 coordinates in its data bases and authorizations

Output from NADCON for station LPFM

North American Datum Conversion

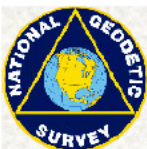
NAD 27 to NAD 83

NADCON Program Version 2.11

=====

Transformation #: 1 Region: Conus

	Latitude	Longitude
NAD 27 datum values:	32 13 35.50000	110 58 14.70000
NAD 83 datum values:	32 13 35.77380	110 58 17.03076
NAD 83 - NAD 27 shift values:	0.27380	2.33076 (secs.)
	8.434	61.027 (meters)
Magnitude of total shift:		61.607 (meters)

[NGS HOME PAGE](#)



APPENDIX B - FCC TOWAIR Study

Antenna Structure Registration (ASR) & FAA filing determination was calculated from the FCC's structure registration tool:

<http://wireless2.fcc.gov/UlsApp/AsrSearch/towairSearch.jsp>

Results: Structure does not require an ASR or an FAA study

TOWAIR Determination Results

 [New Search](#)  [Printable Page](#)

***** NOTICE *****

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results	
Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.	
Your Specifications	
NAD83 Coordinates	
Latitude	32-13-35.8 north
Longitude	110-58-17.0 west
Measurements (Meters)	
Overall Structure Height (AGL)	15.5
Support Structure Height (AGL)	9.1
Site Elevation (AMSL)	723.9
Structure Type	
BMAST - Building with Mast	

Tower Construction Notifications
Notify Tribes and Historic Preservation Officers of your plans to build a tower.

APPENDIX C – Height Above Average Terrain (HAAT) Calculation

The Height Above Average Terrain (HAAT) was calculated using a 3-arc second terrain database. Since the calculated HAAT is well below 30.0 m; the applicant requests to operate the LPFM facility at the maximum allowable ERP of 100 W. (See **Appendix D** for ERP calculation).

Results are as follows:

Latitude: 32-13-35.50 N	Broadcast Type:
Longitude: 110-58-14.70 W	<input type="radio"/> IV <input checked="" type="radio"/> FM
Number Of Radials: 8	<input type="button" value="Update Average Terrain"/>
Average Terrain: 781.548 m	
HAAT: -42.15 m	AMSL Height: 739.4 m

Transmitter		Antenna		Info	
Transmitter Parameters					
Identification: LPFM	Frequency: 100.7 MHz				
Latitude: 32-13-35.50 N	Channel: 264				
Longitude: 110-58-14.70 W	FM Broadcast Mode: Analog				
ERP: 0.05 kW	HAAT: -42.15 m	<input type="button" value="Calc HAAT"/>			
	<input type="button" value="Get Elevation"/>	<input type="checkbox"/> Auto			
	Base Elevation: 723.90 m				
	Antenna Height AG: 15.50 m	<input type="button" value="Calc CDR"/>			
<input type="button" value="Specify Xmitter Height AMSL"/>					
<input checked="" type="checkbox"/> To Ref <input type="checkbox"/> From Ref					
<input type="button" value="Load From FCC Database"/>					
Class: <input type="button" value="Max"/> L1					
Broadcast Type: <input type="radio"/> TV <input type="radio"/> DTV <input checked="" type="radio"/> FM <input type="radio"/> Other					
Propagation Model: <input type="button" value="Don't Calculate Signal"/>					
<input type="button" value="Print Transmitter Info"/>					
Property Files					
<input type="button" value="Import"/>					
<input type="button" value="Export"/>					

APPENDIX D – FM Propagation Curves Calculation

The Effective Radiated Power (ERP) was calculated from the FCC's FM Propagation Curves Calculator tool: <http://transition.fcc.gov/mb/audio/bickel/curves.html>

FM and TV Propagation Curves

This function uses the FM or TV television propagation curves to compute the distance to a service or interfering contour, or the corresponding field strength at a given contour distance. [More after the form.](#)

Screen 3 - Results

Results of Calculation

HAAT less than 30 meters
reset to 30 meters for calculations

Effective Radiated Power (ERP) = 0.100 kilowatts (kW)

Unrounded ERP = 0.100 kilowatts (kW)

Input Data from Screens 1 and 2

HAAT = -42.2 meters
Field Strength = 60.0 dBu = 1.0 mV/m
Distance to Contour = 5.6 kilometers

Distances are in meters and kilometers
Power is in kW (kilowatts)
Field Strength is in dBu
FM and NTSC TV Channels 2 through 6
F(50,50) for service contours selected
Find ERP, given a Field Strength and a Distance
[FM and F(50,50) Service contours only]

APPENDIX E – Channel Spacing Study**Short Spacing Study for Channel 264 (3 Second Terrain Data)**

<p style="text-align: center;">Kessler and Gehman Associates, Inc. Telecommunications Consulting Engineers LPFM Channel Spacing Study LPFM Downtown Tucson</p>							
REFERENCE				DISPLAY DATES			
32 13 35.5 N.				CLASS = L1 Int = L1			
110 58 14.7 W.				Current Spacings to 2nd Adj.			
-----				Channel 264 - 100.7 MHz			
-----				-----			
Call	Channel	Location	Azi	Dist	FCC	Margin	

KKYZ	CP -D 266C3	Tanque Verde	AZ 236.4	5.28	40.0	-34.7	
ALLO	USE 266C3	Sierra Vista	AZ 134.1	11.64	40.0	-28.4	
One Step Application							
K265CW	LIC-D 265D	Tucson	AZ 36.0	29.38	28.0	1.4	
K263AA	LIC-D 263D	Tucson	AZ 37.0	29.89	28.0	1.9	
K264BB	LIC 264D	Green Valley	AZ 184.2	33.06	26.0	7.1	
KQMR	LIC 262C	Globe	AZ 4.8	118.32	93.0	25.3	
ALLO	USE 262C	Globe	AZ 4.8	118.32	93.0	25.3	
Coordinates updated from LIC record			BLH881220KA				
KSLX-FM	LIC 264C	Scottsdale	AZ 320.6	159.64	130.0	29.6	
ALLO	USE 264C	Scottsdale	AZ 320.6	159.64	130.0	29.6	
Coordinates updated from LIC record			BLH790907AC				
AL5382	--- 266B	Sasabe	SO 213.0	99.85	66.0	33.9	
AL0119	--- 266B	Sasabe	SO 213.0	99.85	66.0	33.9	
AL9069	AL 266B	Sasabe	SO 213.0	100.50	66.0	34.5	
2/8/2008: By letter dated 12/21/04 (Corona de Tucson, AZ, 267B1), Mexico states that coordinates for 266B in Sasabe, SON. are: 31-28-19 N, 111-32-39 W.							
R10687	DEL 265A	Sierra Vista	AZ 138.8	100.11	56.0	44.1	
K2MK	LIC 265A	Sierra Vista	AZ 138.8	100.11	56.0	44.1	
ALLO	USE 265A	Sierra Vista	AZ 138.8	100.11	56.0	44.1	
Coordinates updated from LIC record			BLH7870				
KJIK	LIC-Z 264C1	Duncan	AZ 64.1	171.38	111.0	60.4	
KPUP-LP	LIC 263L1	Patagonia	AZ 163.9	77.04	14.0	63.0	
K266BO	CP 266D	Casa Grande	AZ 313.8	95.92	14.0	81.9	
ALLO	USE 264C1	Duncan	AZ 60.2	194.45	111.0	83.5	
AL1455	--- 263B	Magdalena	SO 182.8	177.80	76.0	101.8	
AL0787	AL 267B	Agua Prieta	SO 127.1	168.02	66.0	102.0	
AL0835	AL 267AA	Colonia Reforma	SO 250.5	166.00	29.0	137.0	
XHCBRFM	--- 261B	Caborca	SO 213.8	203.92	66.0	137.9	
Proposed by Mexico 960329-Accepted by Commission 960623							
XHCBRFM	OPE 261B	Caborca	SO 213.8	203.92	66.0	137.9	
Proposed by Mexico 960329-Accepted by Commission 960623							

Radio Reading Service study for Channel 296 (3 Second Terrain Data)

LPFM stations must satisfy the second-adjacent channel minimum distance separation requirements with respect to any third-adjacent channel FM station that, as of September

APPLICATION FOR A NEW LPFM BROADCAST STATION TO SERVE TUCSON, AZ

LPFM Downtown Tucson

June 27, 2014

20, 2000, broadcasts a Radio Reading Service (RRS) via a subcarrier frequency. The proposed LPFM station is not short-spaced with any third-adjacent stations providing a Radio Reading Service. The third-adjacent short-spacing with the K267AF FM translator is not applicable since LPFM stations need not satisfy the third-adjacent channel separations pursuant to Section 73.807 of the FCC Rules.

Kessler and Gehman Associates, Inc. Telecommunications Consulting Engineers Radio Reading Channel Spacing Study LPFM Downtown Tucson							
REFERENCE				DISPLAY DATES			
32 13 35.5 N.				CLASS = L1 Int = L1			
110 58 14.7 W.				Current Spacings to 3rd Adj.			
----- Channel 264 - 100.7 MHz -----				DATA 06-26-14			
				SEARCH 06-26-14			
Call	Channel	Location		Azi	Dist	FCC	Margin
KKYZ	CP -D 266C3	Tanque Verde	AZ	236.4	5.28	40.0	-34.7
ALLO	USE 266C3	Sierra Vista	AZ	134.1	11.64	40.0	-28.4
One Step Application							
K267AF	LIC-D 267D	Tucson	AZ	280.2	13.89	21.0	-7.1
K265CW	LIC-D 265D	Tucson	AZ	36.0	29.38	28.0	1.4
K263AA	LIC-D 263D	Tucson	AZ	37.0	29.89	28.0	1.9
K264BB	LIC 264D	Green Valley	AZ	184.2	33.06	26.0	7.1
K261CK	LIC-D 261D	San Xavier	AZ	210.6	45.08	21.0	24.1
Translator for KNOGFM, Nogales, AZ							
KQMR	LIC 262C	Globe	AZ	4.8	118.32	93.0	25.3
ALLO	USE 262C	Globe	AZ	4.8	118.32	93.0	25.3
Coordinates updated from LIC record				BLH881220KA			
KSLX-FM	LIC 264C	Scottsdale	AZ	320.6	159.64	130.0	29.6
ALLO	USE 264C	Scottsdale	AZ	320.6	159.64	130.0	29.6
Coordinates updated from LIC record				BLH790907AC			
AL0119	--- 266B	Sasabe	SO	213.0	99.85	66.0	33.9
AL5382	--- 266B	Sasabe	SO	213.0	99.85	66.0	33.9
AL9069	AL 266B	Sasabe	SO	213.0	100.50	66.0	34.5
2/8/2008: By letter dated 12/21/04 (Corona de Tucson, AZ, 267B1), Mexico states that coordinates for 266B in Sasabe, SON. are: 31-28-19 N, 111-32-39 W.							
ALLO	USE 265A	Sierra Vista	AZ	138.8	100.11	56.0	44.1
Coordinates updated from LIC record				BLH7870			
KZMK	LIC 265A	Sierra Vista	AZ	138.8	100.11	56.0	44.1
R10687	DEL 265A	Sierra Vista	AZ	138.8	100.11	56.0	44.1
KJIK	LIC-Z 264C1	Duncan	AZ	64.1	171.38	111.0	60.4
KPUP-LP	LIC 263L1	Patagonia	AZ	163.9	77.04	14.0	63.0
K266BO	CP 266D	Casa Grande	AZ	313.8	95.92	14.0	81.9
ALLO	USE 264C1	Duncan	AZ	60.2	194.45	111.0	83.5
AL1455	--- 263B	Magdalena	SO	182.8	177.80	76.0	101.8
AL0787	AL 267B	Agua Prieta	SO	127.1	168.02	66.0	102.0
AL0835	AL 267AA	Colonia Reforma	SO	250.5	166.00	29.0	137.0
XHCBRFM	OPE 261B	Caborca	SO	213.8	203.92	66.0	137.9
Proposed by Mexico 960329-Accepted by Commission 960623							
XHCBRFM	--- 261B	Caborca	SO	213.8	203.92	66.0	137.9
Proposed by Mexico 960329-Accepted by Commission 960623							

APPENDIX F - SHORT SPACING WAIVER CALCULATIONS

Short Spacing Undesired-to-Desired Ratio Calculation to second-adjacent channel facility:

*** 3 second terrain data was used for calculations ***

KKYZ-FM (CP) FCC File No.: BPH-20130306AAP

Undesired-to-Desired Ratio Method:

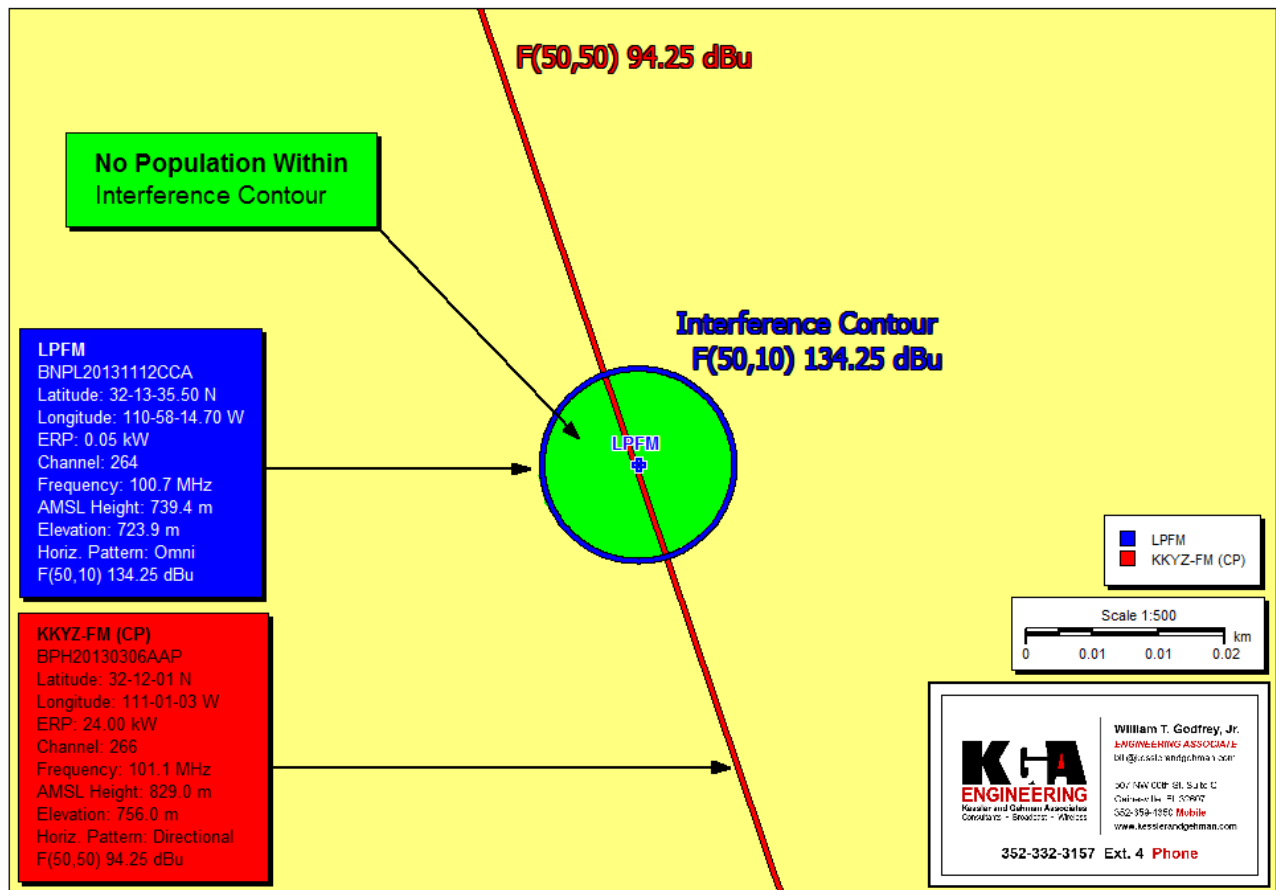
F(50,50) Service Contour at proposed LPFM site:..... **94.25 dBu**

Second-adjacent protection:..... **40 dB**

Interference-zone boundary:..... **134.25 dBu**

Distance to F(50,10) 124.714 dBu:**9.6 m**

ERP:.....**0.05 kW**



Zero Population Within F(50,10) 134.25 dBu Interfering Contour

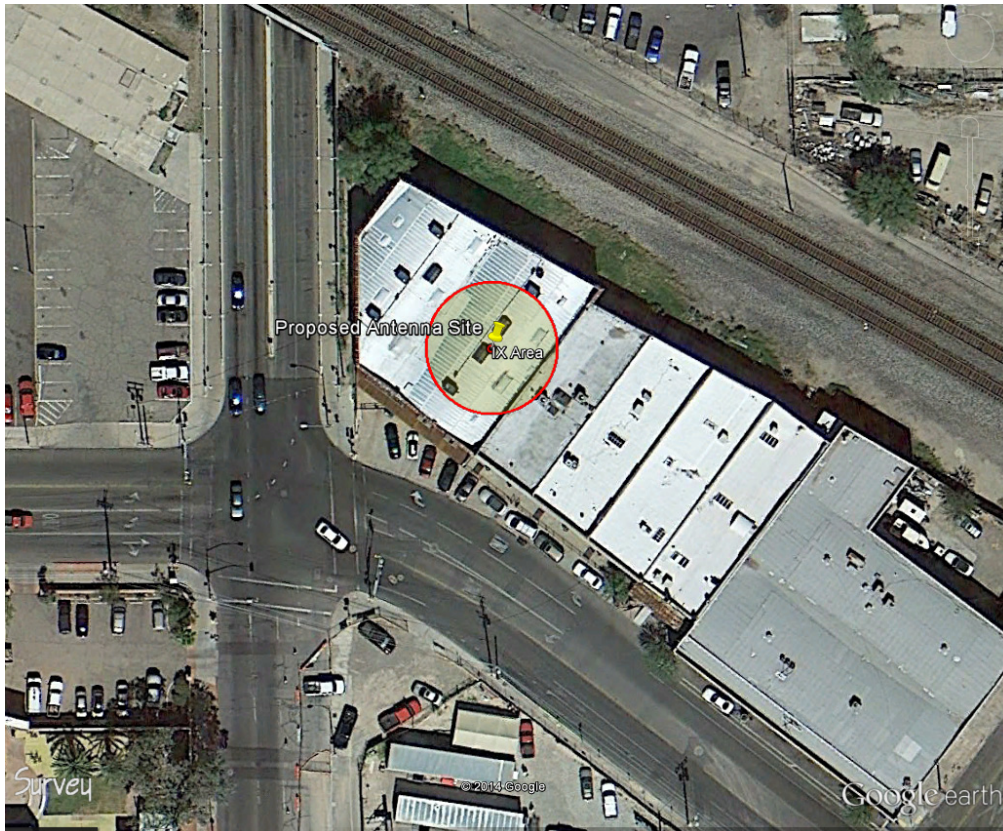
Population Report	
Contour Parameters:	
Type: FCC Contour	
F(50-10) FS: 134.25 dBu	
Population Database: 2010 US Census (PL)	
Primary Terrain: 3 Second US Terrain	

Transmitter Information:	
Call Letters: LPFM	
File Number: BNPL-20131112CCA	
Latitude: 32-13-35.50 N	
Longitude: 110-58-14.70 W	
ERP: 0.05 kW	
Channel: 264	
Frequency: 100.7 MHz	
AMSL Height: 739.4 m	
Elevation: 723.9 m	
HAAT: -42.15 m	
Horiz. Antenna Pattern: Omni	
Vert. Elevation Pattern: No	

Total Population Within Contour: 0	NO INTERFERENCE
Total Housing Units Within Contour: 0	
Total Area Within Contour: 0.00 sq. km	

The KKYZ-FM Channel 266 Class C3 construction permit (BPH-20130306AAP), authorized to serve Tanque Verde, AZ, is second adjacent to the proposed Channel 264 LPFM facility and is located only 5.28 km southwest (236.5 degrees) of the proposed LPFM transmitter site and its F(50,50) 60 dBu service contour extends well beyond the proposed LPFM facility's transmitter site. The KKYZ-FM facility's F(50,50) signal strength at the proposed LPFM facility's transmitter site is 94.25 dBu. The second-adjacent channel protection is an undesired-to-desired (U/D) signal strength ratio of 40:1 and in the case of second adjacent stations; interference is predicted to occur where the LPFM facility's undesired signal exceeds the protected station's desired

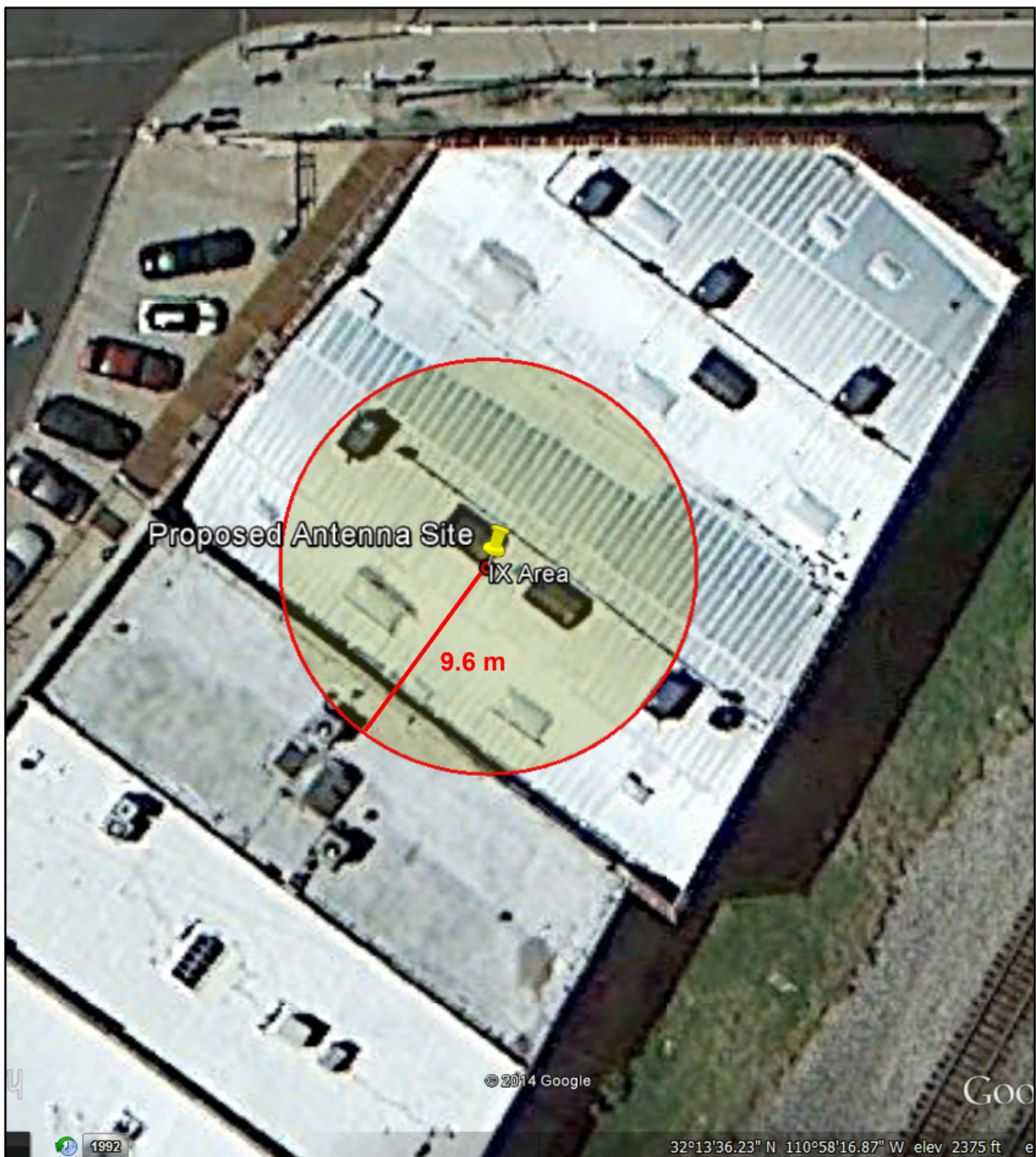
signal by more than 40 dB. Therefore, interference to the KKYZ-FM facility from the proposed LPFM facility is predicted to occur wherever the strength of the LPFM signal exceeds 134.25 dBu ($94.25 + 40$). With an ERP of 50 W, the proposed LPFM facility's F(50,10) 134.25 dBu interference contour will extend 9.6 m (31.5 ft) from the antenna. The antenna shall be mounted on a roof-mounted mast 21 ft above the roof on a single-story 30-foot building with no roof access. The antenna will be 51 ft (15.5 m) above the ground and the 134.25 dBu interfering signal (and above) will only extend 31.5 ft (9.6 m) from the antenna; therefore, the interfering signal will never come within 19.5 ft (5.9 m) of the ground which is well above the 6 ft threshold with respect to the height of an average person. Accordingly, it has been demonstrated that the proposed LPFM facility's operations will not result in interference to any authorized radio service pursuant to Section 73.807(e)(1) of the FCC Rules.

View #1 – Top View

View #2 – Top View



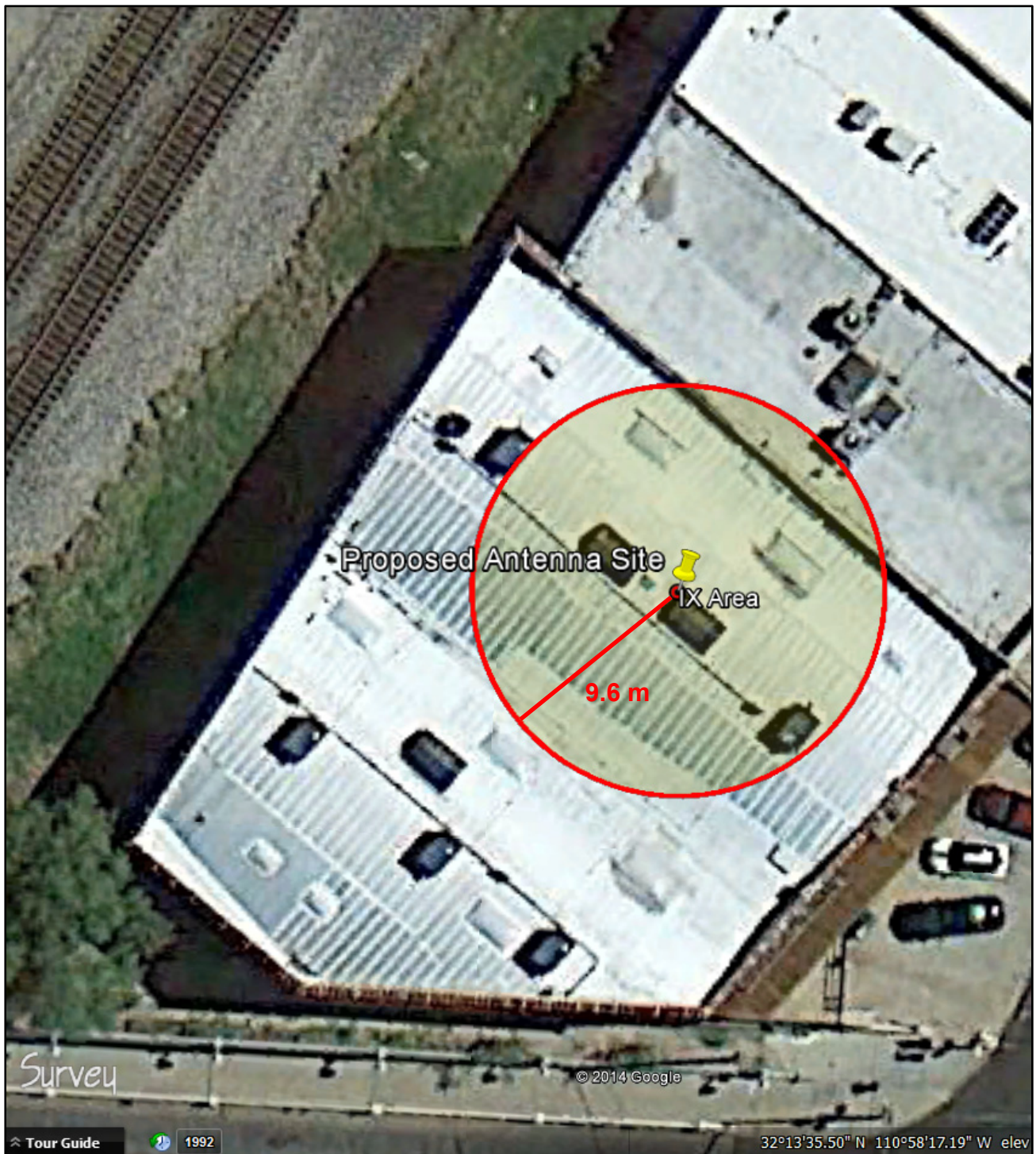
View #3 – Top View



View #4 – Top View



View #5 – Top View



View #6 – South Street View



View #7 – West Street View



APPENDIX G – TRANSLATOR AND BOOSTER PROXIMITY

The proposed transmitter site proximity to FM boosters and translators was determined using the FCC's FMQuery tool:

<http://www.fcc.gov/encyclopedia/fm-query-broadcast-station-search>

Results are as follows:

Boosters within 10km of the proposed LPFM transmitter site: 1

Thu Jun 26 16:56:03 2014 Eastern time

Search Parameters

Service:	FB
Search radius:	10.00 km
Center lat / lon:	N 32 13 35.50 W 110 58 14.70
Lower Channel	200
Upper Channel	300

KTGV-FM1 292 D FB 106.3 MHz LIC TUCSON AZ US

*** 1 FM Records within 10.00 km distance of 32° 13' 35.50" N, 110° 58' 14.70" W ***

Translators within 10km of the proposed LPFM transmitter site: 6

Thu Jun 26 16:59:52 2014 Eastern time						
Search Parameters						
Service:	FX					
Search radius:	10.00 km					
Center lat / lon:	N 32 13 35.50 W 110 58 14.70					
Lower Channel	200					
Upper Channel	300					
K209AF	209	D	FX	89.7 MHz LIC	TUCSON	AZ US
K223CI	223	D	FX	92.5 MHz CP	TUCSON	AZ US
K274AQ	274	D	FX	102.7 MHz LIC	TUCSON	AZ US
K277CV	277	D	FX	103.3 MHz CP	TUCSON	AZ US
K285DL	285	D	FX	104.9 MHz LIC	TUCSON	AZ US
K265CW	289	D	FX	105.7 MHz CP	TUCSON	AZ US
*** 6 FM Records within 10.00 km distance of 32° 13' 35.50" N, 110° 58' 14.70" W ***						