

**Technical Exhibit**

ST. PAUL BIBLE COLLEGE  
Technical Exhibits in Support of

**Minor Amendment  
To Application for NCE-FM Construction Permit**

**BNPED-20071022BMB**

CHANNEL 211 A  
3 kW ERP (directional antenna)  
-112 meters HAAT (FCC/NGDC 30 Second Terrain)  
1647 meters COR AMSL  
13 meters COR AGL

ASR# 1245869

34 32 37 N x 112 27 56 W (NAD 27)  
PRESCOTT, AZ

December 18, 2007

**INDEX OF FIGURES AND TABLES**

- Figure 1:** Co-Channel Study Analysis  
**Figure 2:** 1<sup>st</sup> Adjacent Channel Study Analysis  
**Figure 3:** 2<sup>nd</sup> and 3<sup>rd</sup> Adjacent Channel Study Analysis  
**Figure 4:** TV Channel 6 Interference Analysis  
**Figure 5:** Community of License Coverage
- Table 1:** Channel Study  
**Table 2:** Radiofrequency Electromagnetic Exposure Analysis  
**Table 3:** Spacing with respect to Mexican facilities (Section 73.507 spacing)

ST. PAUL BIBLE COLLEGE  
Technical Exhibits in Support of Application for NCE-FM Construction Permit

**NEW NCE-FM CH211A – 90.1MHz – 3 kW -112 M HAAT – PRESCOTT, AZ**

This Exhibit is in support of the Minor Amendment to Application for NCE-FM Construction Permit by ST. PAUL BIBLE COLLEGE (herein “Applicant”) for a new NCE-FM radio station (herein “NEW-FM”) to serve Prescott, Arizona. Specifically, this amendment corrects a previous error in elevation, which increases HAAT, decreases ERP, changes class, and adjusts the directional antenna pattern slightly.

**Interference Compliance**

Contour protection, as required by C.F.R. Section 73.509 to co-channel, first, second and third adjacent channels is shown herein and is 100% (Figures 1 - 3). Required spacing with respect to facilities operating on I.F. frequencies is fully compliant with C.F.R. Section 73.207 of the Commission’s Rules (Table 1).

**International Borders (Mexico)**

The proposed facility is located approximately 288 km from the Mexican border (located within the 320 km Mexican Border Zone). Required spacing with respect to Mexican facilities operating on co-channel, first, second and third adjacent I.F. frequencies is fully compliant with C.F.R. Section 73.507 of the Commission’s Rules (Table 3).

**Television Channel 6 Protection (Figure 4)**

Section 73.525 of the Commission’s rules designates TV Channel 6 stations within 196 km of FM stations that operate on channel 211 to be “affected” TV Channel 6 stations. The following TV Channel 6 stations would be considered affected:

Facility	Service	Status	City	State	Distance (km)
KTVW-CA	CA	LIC	FLAGSTAFF/DONEY PARK	AZ	110.84
NEW	LD	APP	PHOENIX	AZ	139.28
KMOH-TV	TV	LIC	KINGMAN	AZ	182.16

In the “worst case,” the protected TV Channel 6 contour is the Grade B, 47 dBu F(50,50) contour. For NCE-FM stations operating on Channel 211, FCC Chart 73.599 Figure 1, designates the corresponding FM interfering contour to be the 67.3 dBu F(50,10) contour (47 dBu TV + 20.3 dBu FM = 67.3 dBu). No contour overlap occurs with any of the affected TV Channel 6 facilities (see Figure 4).

With respect to the LD application in Phoenix, AZ, the proposed TV station’s 47 dBu contour extends 22.3 km. The proposed NEW-FM 67.3 dBu F(50,10) contour extends 5.42 km. Since there is 139.28 km separation, the FM interfering contour clears the protected TV contour by at least 111.56 km.

Therefore, this proposal is fully compliant with Section 73.525 of the Commission's rules.

**Environmental Protection Act / RF Radiation Compliance (Table 2)**

The Rules require that an addition to any multiple use site must not contribute non-ionizing RF Radiation in excess of the total limits for each class of service in either of the two selected environments.

In the case of FM, this limit is 1,000 microwatts for the controlled, or worker environment, or 200 microwatts for the uncontrolled, or public, environment per square centimeter at 2 meters above ground level.

NEW-FM proposes to use a SHIVELY 6810-3-HW located at 13 meters AGL.

The attached Radiofrequency Electromagnetic Exposure Analysis (Table 2) specifically lists all potential sources of radiation and estimates the power density expected to occur at a distance of 10 meters from the base of the tower, the maximum power density expected from each source, the maximum distance from the base of the tower to the point of maximum power density for each source, and the total worst case (sum of all maximum power densities, from all sources, at the most distant maximum occurring power density). The power density values are in units of microwatts per square meter at a height of 2 meters above ground level. These levels are also expressed relative to the maximum allowable limit of each of the two environments (see Table 2).

Considering all existing and proposed sources, the total contribution of all potential sources of radiation within 10 meters from the base of the tower (controlled environment) is 19.1 microwatts per square centimeter at 2 meters above ground level which is 1.9% of the ANSI limit for the controlled environment.

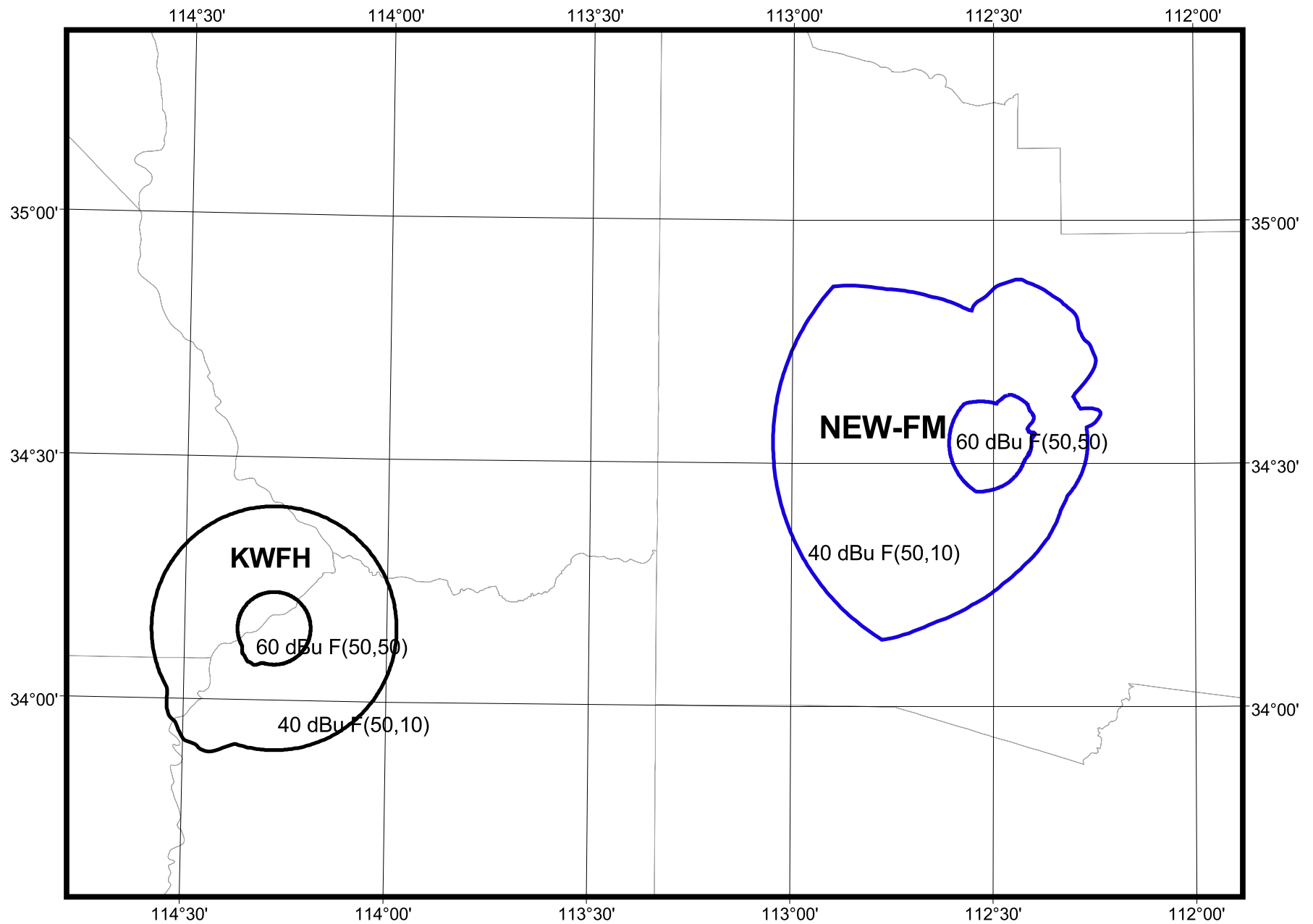
For the uncontrolled environment, the sum of all individual source maximum power densities is 68.5 microwatts per square centimeter at 2 meters above ground level. The maximum power density value extends no farther than 32.2 meters from the base of the tower. This represents a "worst case" power density level which is only 34.25% of the ANSI limit for the uncontrolled environment.

Given that access within 10 meters to the site is restricted by a locked fence, and given that no more than 68.5 microwatts per square centimeter at 2 meters above ground level (34.25% of the ANSI limit) is predicted to occur at any point beyond 32.2 meters from the base of the tower, the total radiation contributed by NEW-FM would be less than the ANSI limit for all points in both the controlled and the uncontrolled environments. Therefore, this proposal is fully compliant with the provisions of OET Bulletin #65 as recently amended.

The contribution of NEW-FM was calculated using FCC FM Model v2.10 Beta. Further to the requirements and intentions of the FCC, Applicant will post appropriate signs at

entrances to the property, on the walls and doors of buildings containing transmitters, and on fences warning the public and workers of the potential hazard.

Applicant will require that the power to the antenna be reduced as necessary to accommodate workers or will discontinue operation, if necessary, for this purpose.

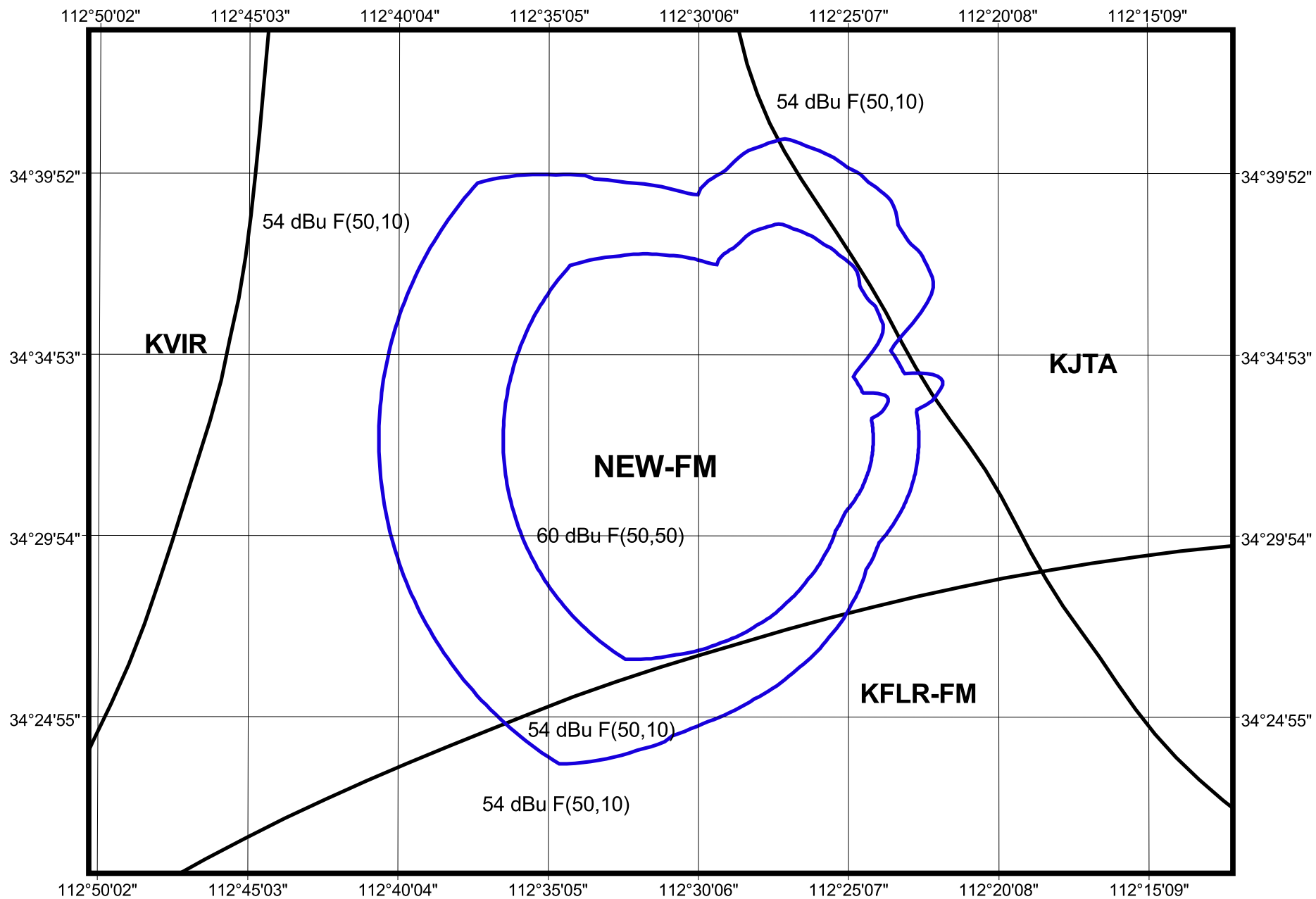


**Figure 1**

**NEW-FM, Prescott, AZ: MINOR AMENDMENT TO APPLICATION FOR NEW NCE-FM  
Co-Channel Study**

**Radio Data Services**

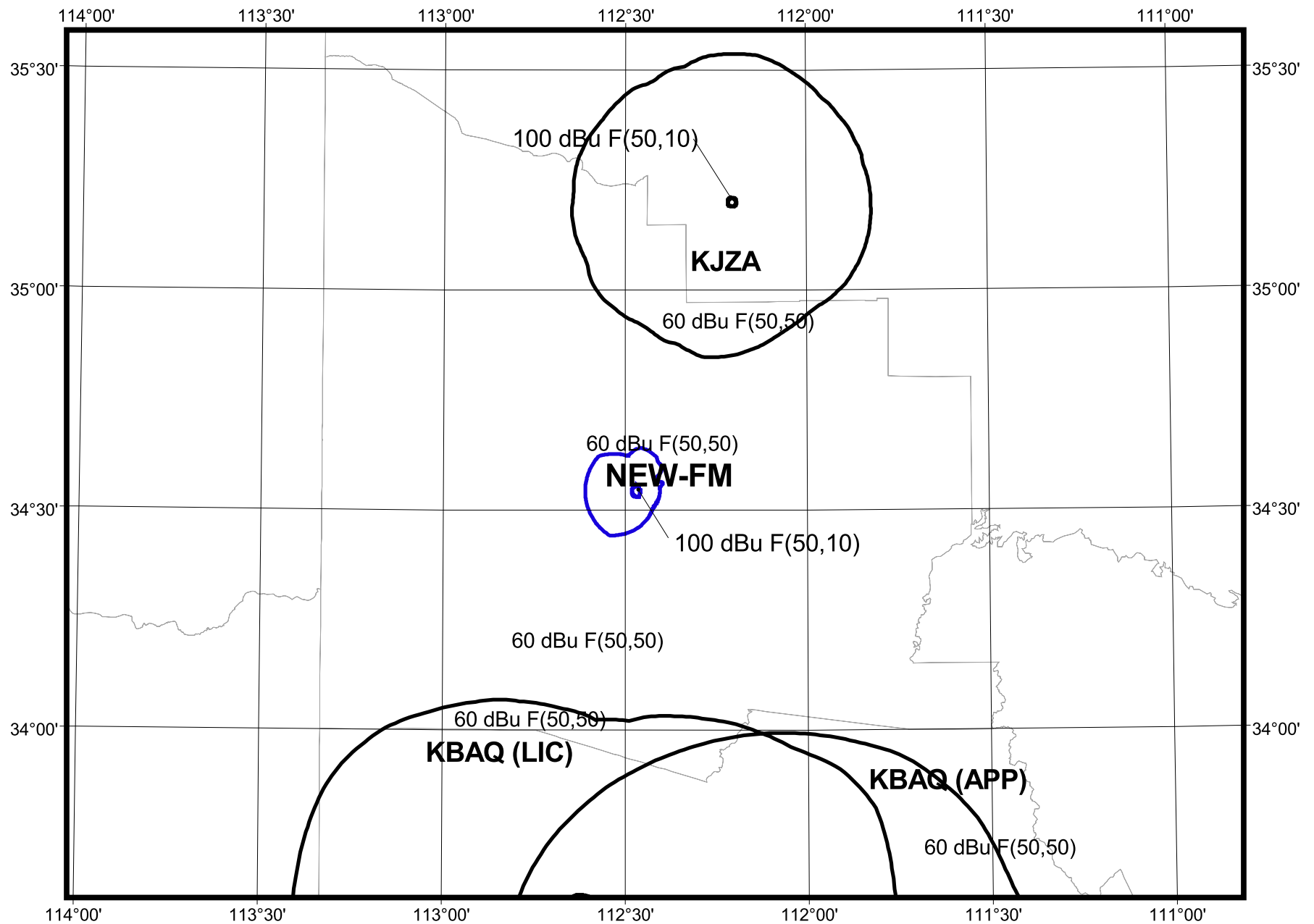




0 8 Kilometers

Figure 2

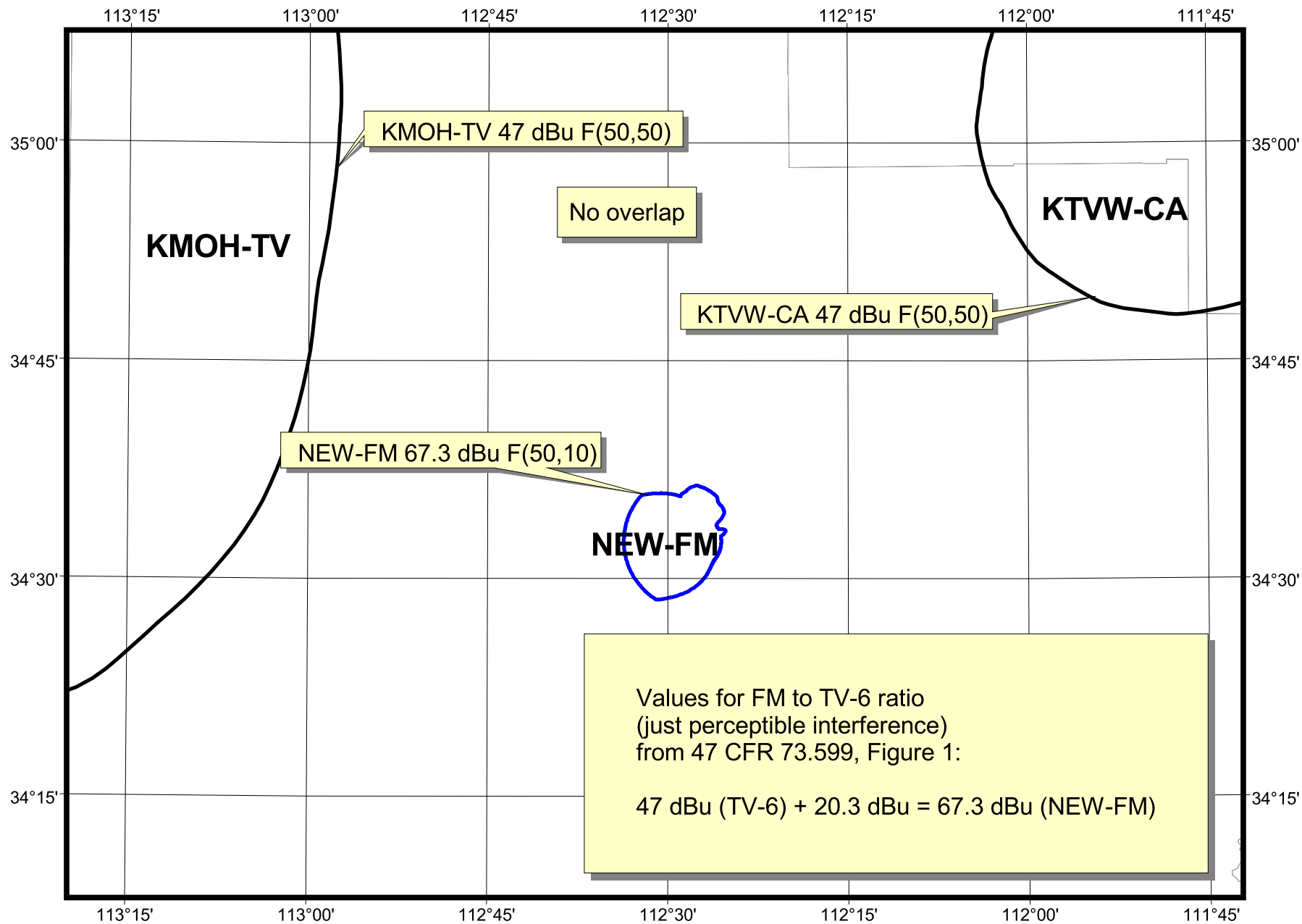




**Figure 3**

0 40 Kilometers



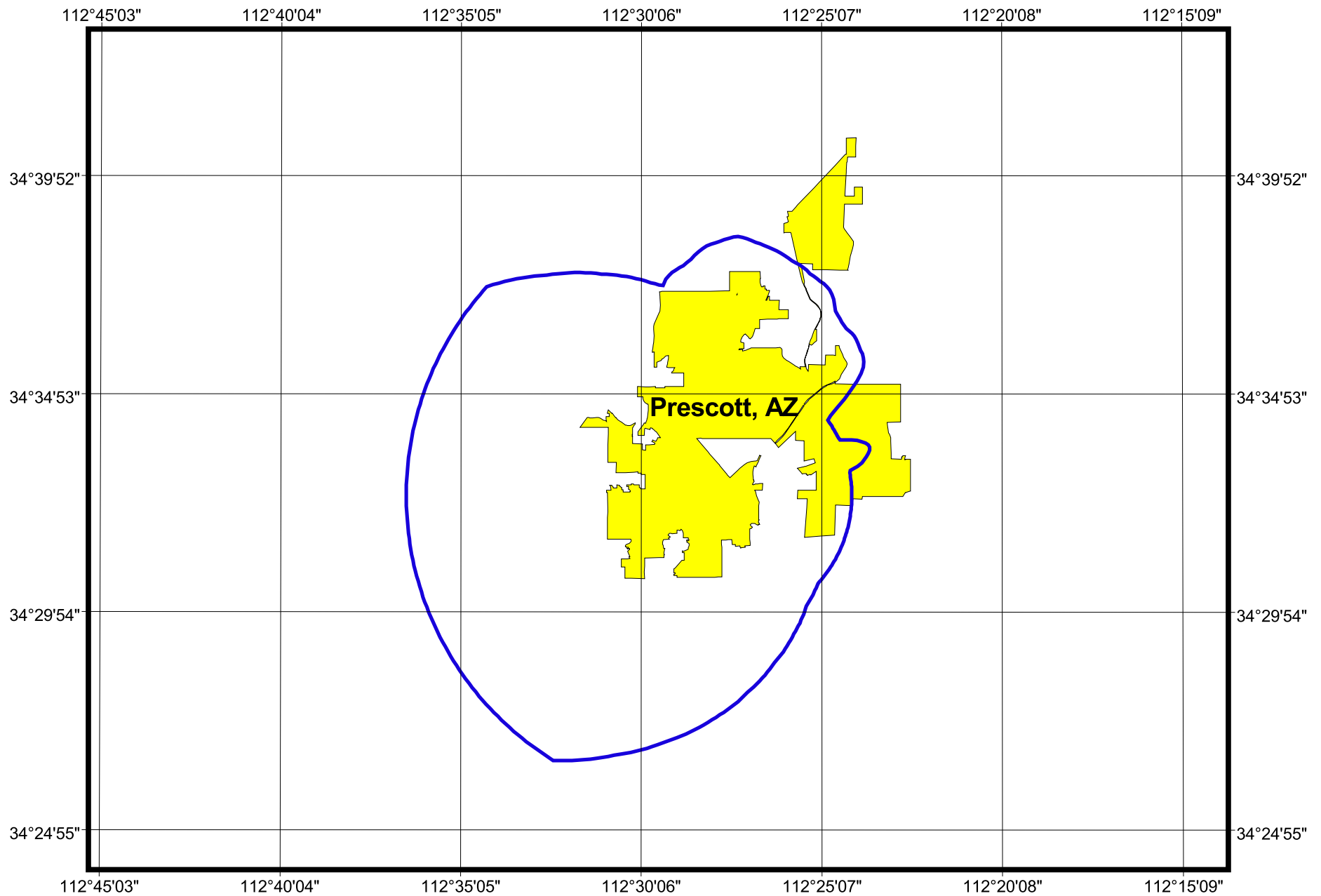


0 20 Kilometers

**Figure 4**







0 7 Kilometers

Figure 5

**NEW-FM, Prescott, AZ: MINOR AMENDMENT TO APPLICATION FOR NEW NCE-FM**  
**Community Coverage: Prescott, Arizona**

Radio Data Services



**Table 1**

**NEW-FM Application for NCE-FM Construction Permit  
Channel Study**

Chan	Class	Call Letters	Type	Status	City	State	Country	Owner	Distance (km)	Bearing TO (deg)	Req. Dist. (km)	Clearance (km)
208	C3	KJZA	FM	LIC	DRAKE	AZ	US	ST. PAUL BIBLE COLLEGE	76.6	18.0	39.7	37.0
209	A		FA	VAC	WICKENBURG	AZ	US		68.4	201.0	31.0	37.4
210	C1	KJTA	FM	LIC	FLAGSTAFF	AZ	US	FAMILY LIFE BROADCASTING, I	99.5	61.4	96.1	3.4
210	C	KVIR	FM	CP	BULLHEAD CITY	AZ	US	CALVARY CHAPEL OF TWIN FAI	143.6	296.4	127.0	16.6
<b>211</b>	<b>C3</b>	<b>NEW</b>	<b>FM</b>	<b>APP</b>	<b>PRESCOTT</b>	<b>AZ</b>	<b>US</b>	<b>ST. PAUL BIBLE COLLEGE</b>	<b>0.0</b>	<b>0.0</b>	<b>46.0</b>	<b>-46.0</b>
211	A	981013MO	FA	VAC	KINGMAN	AZ	US		161.9	296.8	115.0	46.9
212	C	KFLR-FM	FM	LIC	PHOENIX	AZ	US	FAMILY LIFE BROADCASTING, I	139.3	164.4	137.5	1.8
212	C2	KFLR-FM	FA	USE	PHOENIX	AZ	US		139.3	164.4	106.0	33.3
212	C2	KFLR-FM	FM	LIC	PHOENIX	AZ	US	FAMILY LIFE BROADCASTING, I	139.3	164.4	87.5	51.7
214	C2	DKEPT	FA	VAC	PRESCOTT	AZ	US		0.6	185.0	55.0	-54.4 (no facility)

**Table 2.**

## Radiofrequency Electromagnetic Exposure Analysis for NEW-FM

Source	Height AGL(m)	Antenna type	Bays	Horizontal ERP (kw)	Vertical ERP (kw)	Power Density $\mu\text{W}/\text{cm}^2$ at 2 meters AGL				
						Max. PD within 10 m distance	% controlled environment limit (1000 $\mu\text{W}/\text{cm}^2$ )	Max. PD beyond 10 m	% uncontrolled environment limit (200 $\mu\text{W}/\text{cm}^2$ )	Distance to max PD past 10 m (m)
<b>NEW-FM</b>	<b>13</b>	<b>SHI-6810-3HW</b>	<b>3</b>	<b>3.000</b>	<b>3.000</b>	<b>19.1</b>	<b>1.9100%</b>	<b>68.5</b>	<b>34.25%</b>	<b>32.2</b>
<b>TOTAL</b>						19.1	1.9100%	68.5	34.25%	32.2

**(proposed)**

The proposed facility is excluded from environmental processing under 47. C.F.R. Section 1.1306 (i.e., The facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments).

Calculations made using FCC FM Model v2.10 Beta

**Table 3****Sec. 73.507 Required Spacing with Respect to Mexican Facilities****NEW-FM Application for NCE-FM Construction Permit  
Channel Study**

Channel Study										Sec. 73.507			
Chan	Class	Call Letters	Type	Status	City	State	Country	Owner	Distance (km)	Bearing TO (deg)	Req. Dist. (km)	Clearance (km)	
208	B1	XHRCLFM	FR		SAN LUIS RIO COLOR	SO	MX		313.8	223.6	48.0	265.8	
208	B1		FA		SAN LUIS RIO COLOR	SO	MX		323.5	222.1	48.0	275.5	
208	B1		FA		SAN LUIS RIO COLOR	SO	MX		323.5	222.1	48.0	275.5	
208	B1		FA		SAN LUIS RIO COLOR	SO	MX		323.5	222.1	48.0	275.5	
208	A		FM		SAN LUIS RIO COLOR	SO	MX		313.1	223.9	25.0	288.1	
211	B		FA		SONOITA	SO	MX		299.7	187.0	163.0	136.7	
214	B		FA		CIUDAD MORELOS	BN	MX		306.4	226.8	65.0	241.4	