

May 2020
FM Translator K265CW
Tucson, Arizona Channel 289D
Request for Waiver Due to Displacement

By this application, it is respectfully requested that the Commission waive §74.1233(a)(1) which defines a minor change application by an FM translator station as “changes to first, second or third adjacent channels, or intermediate frequency channels”.

The licensed K265CW operation is being displaced by FM station KKYZ, which has been authorized to operate on Channel 266C3 at Catalina Foothills (see FCC File No. 0000088153), in the Tucson market where K265CW operates. Once KKYZ begins operations on Channel 266C3 at Catalina Foothills, K265CW will need to be taken silent due to the first-adjacent-channel interference which would otherwise result.

Study of the adjacent and IF channels reveals that none of these are available to K265CW, owing to interference conflicts with other stations.

Channel	Major Conflicts
211 (IF)	reserved channel, not available to this commercial translator
212 (IF)	reserved channel, not available to this commercial translator
262	KPYT-LP 262L1 Tucson (45 km distant) cochannel (also serves Tucson)
263	KPYT-LP 262L1 Tucson (45 km distant) first-adjacent (also serves Tucson)
264	KPYU-LP 264L1 Old Pascua Village (29 km distant) cochan (also serves Tucson)
265	KKYZ 266C3 Catalina Foothills (35 km distant) first-adjacent (also serves Tucson)
266	KKYZ 266C3 Catalina Foothills (35 km distant) cochannel (also serves Tucson)
267	KKYZ 266C3 Catalina Foothills (35 km distant) first-adjacent (also serves Tucson)
268	K269FV Oro Valley (38 km distant) first-adjacent (also serves Tucson)

Distances indicated are from the licensed K265CW transmitter site on Mount Lemmon, where K265CW currently operates with an ERP of 47 watts at 213 degrees True. We now find that Channel 289 is available for use as a displacement channel. With the full current ERP of K265CW

at the licensed site on Mount Lemmon, however, the resulting 54 dBu F(50,10) interfering contour would overlap the 92 kilometer protected service radius of the Mexican allotment on Channel 290C at Nogales, Sonora.

K265CW would need to drop to about 10 watts ERP in order to provide protection to the Nogales protected service radius. This 7 dB power reduction would have a significant negative impact on the service which K265CW provides into Tucson. Therefore, this application also incorporates a transmitter site change to an existing tower site at Tucson Mountain, on the south side of Tucson rather than on the north side. With the change in azimuth towards the population center, the proposed facility is thus able to provide protection to the Nogales allotment using a directional antenna while also maintaining reliable service to the public in Tucson.

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Allocation Study

The attached spacing study shows the spacing between the proposed translator site and the location of cochannel and adjacent channel stations and proposals. This study was made with the Commission's Class A spacing requirements, and individual situations were examined to determine the lack of prohibited contour overlap per the requirements of §74.1204 of the Rules. The attached allocation study map demonstrates compliance with the Commission's Rules for protection of FM broadcast stations and FM translators as outlined in §74.1204, including protection of the first-adjacent-channel Mexican allotment on Channel 290C at Nogales, Sonora.

ERP is limited to 99 watts. Therefore there are no spacing requirements to stations on the IF channels.

Protection of KZLZ: The proposed translator transmitter site is located within the 60 dBu protected contour of second-adjacent channel station KZLZ 287C3 Casas Adobes. The 100 dBu interfering contour extends at most 698 meters from the proposed facility according to a Free Space calculation. There is no population within this contour. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KZLZ.

Protection of KTGTV: The proposed translator transmitter site is located within the 60 dBu protected contour of third-adjacent channel station KTGTV 292C2 Oracle. The 100 dBu interfering contour extends at most 698 meters from the proposed facility according to a Free Space calculation. There is no population within this contour. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KTGTV.

Protection of KTGTV-FM1: The proposed translator transmitter site is located within the 60 dBu protected contour of third-adjacent channel FM booster station KTGTV-FM1 292D Tucson. The 100 dBu interfering contour extends at most 698 meters from the proposed facility according to a Free Space calculation. There is no population within this contour. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KTGTV-FM1.

Compliance with US-Mexico FM Agreement: The proposed facility is located less than 125 kilometers from the common border, and has been carefully designed to comply with the requirements of the US-Mexico FM Agreement. Please see attached map exhibits.

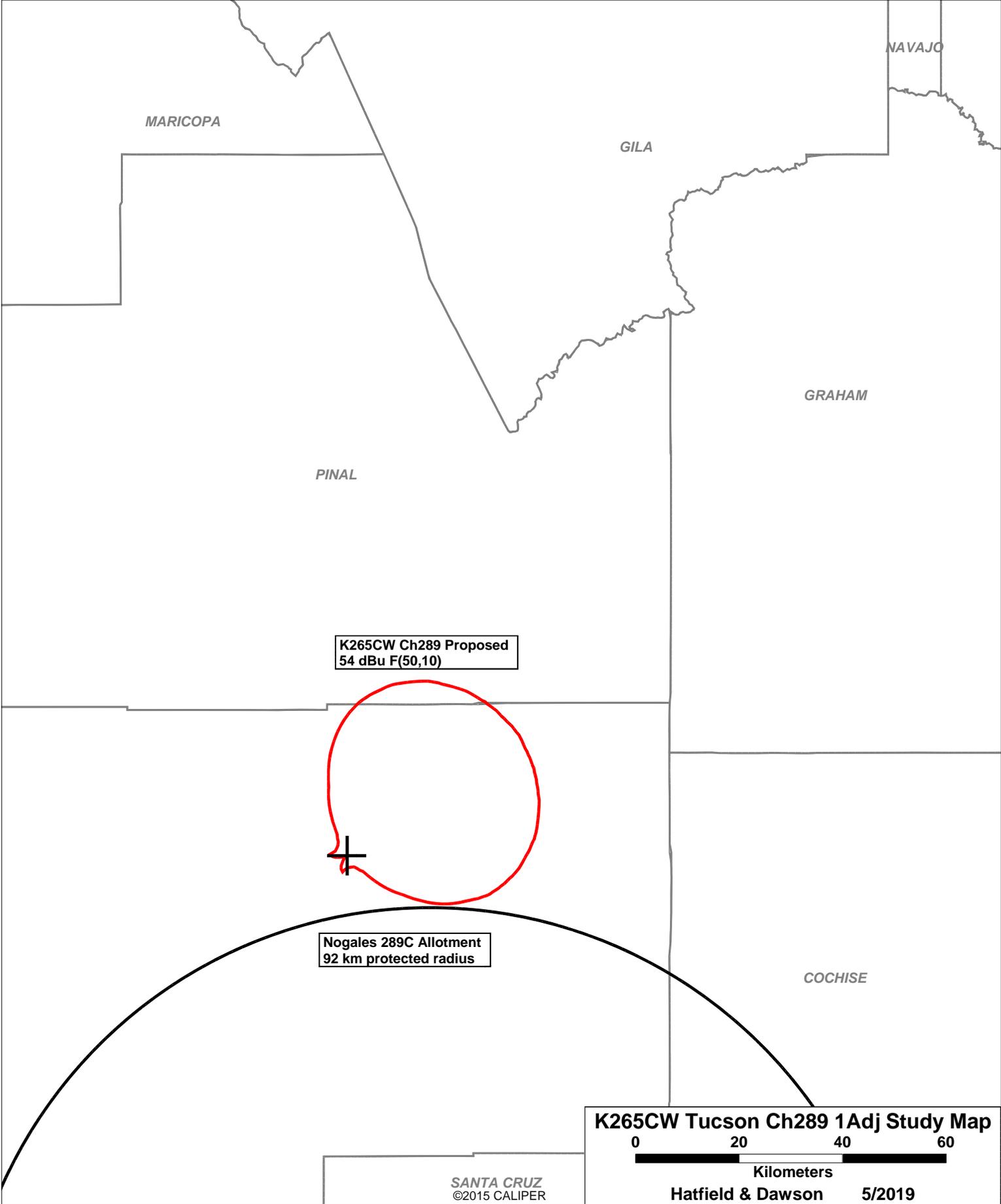
- a) The power has been limited to no more than 50 watts ERP in the direction of Mexico.
- b) The 60 dBu protected contour has been limited to no more than 8.7 kilometers in the direction of Mexico.
- c) The 34 dBu interfering contour has been limited to no more than 32 kilometers in the direction of Mexico.
- d) The 54 dBu interfering contour does not overlap the 60 dBu protected service radius of Channel 290C at Nogales, Sonora.

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SEARCH PARAMETERS                               FM Database Date: 20200504
Channel: 289A 105.7 MHz                        Page 1
Latitude: 32 14 56.8 (NAD83)
Longitude: 111 6 59.9
Safety Zone: 50 km
Job Title: TUCSON 289
    
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Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KMXZ-FM	TUCSON		235C	100.000	32 14 57.3	45.4	0.02	29
LIC	AZ	BLH-20141229AFR	94.9	572.4	111 6 59.3		-28.98	SHORT
ALC	NOGALES		286B	0.000	31 18 56.4	170.0	105.08	69
	SO		105.1	0.0	110 55 29.3		36.08	CLEAR
KZLZ	CASAS ADOBES		287C3	0.580	DA 32 14 56.3	220.2	0.02	42
CP	AZ	BPH-20180709AFI	105.3	581.0	111 7 0.4	SS	-41.98	SHORT
KZLZ	CASAS ADOBES		287C3	0.580	DA 32 14 56.3	220.2	0.02	42
LIC	AZ	BLH-20110322ABK	105.3	581.0	111 7 0.4		-41.98	SHORT
XHNESFM	NOGALES		290C	0.000	31 19 49.4	171.0	103.15	165
ALC	SO		105.9	0.0	110 56 44.3		-61.85	SHORT
XHNESFM	NOGALES		290C	0.000	31 19 7.4	171.7	104.24	165
LIC	SO		105.9	453.0	110 57 31.3		-60.76	SHORT
KURE-LP	ELOY		291L1	0.062	32 49 42.2	325.6	78.06	29
LIC	AZ	BLL-20170612ABK	106.1	28.0	111 35 19.4		49.06	CLEAR
KTGV	ORACLE		292C2	0.000	DA 32 26 26.2	55.4	37.58	55
LIC	AZ	BMLH-20110726AHI	106.3	1272.0	110 47 14.3	SS	-17.42	SHORT
KTGV-FM1	TUCSON		292D	10.000	DA 32 17 23.3	63.7	10.25	0
LIC	AZ	BLFTB-20101129AO	106.3	0.0	111 1 8.3		0.00	BOOST

===== END OF FM SPACING STUDY FOR CHANNEL 289 =====



K265CW Ch289 Proposed
54 dBu F(50,10)

Nogales 289C Allotment
92 km protected radius

K265CW Tucson Ch289 1Adj Study Map

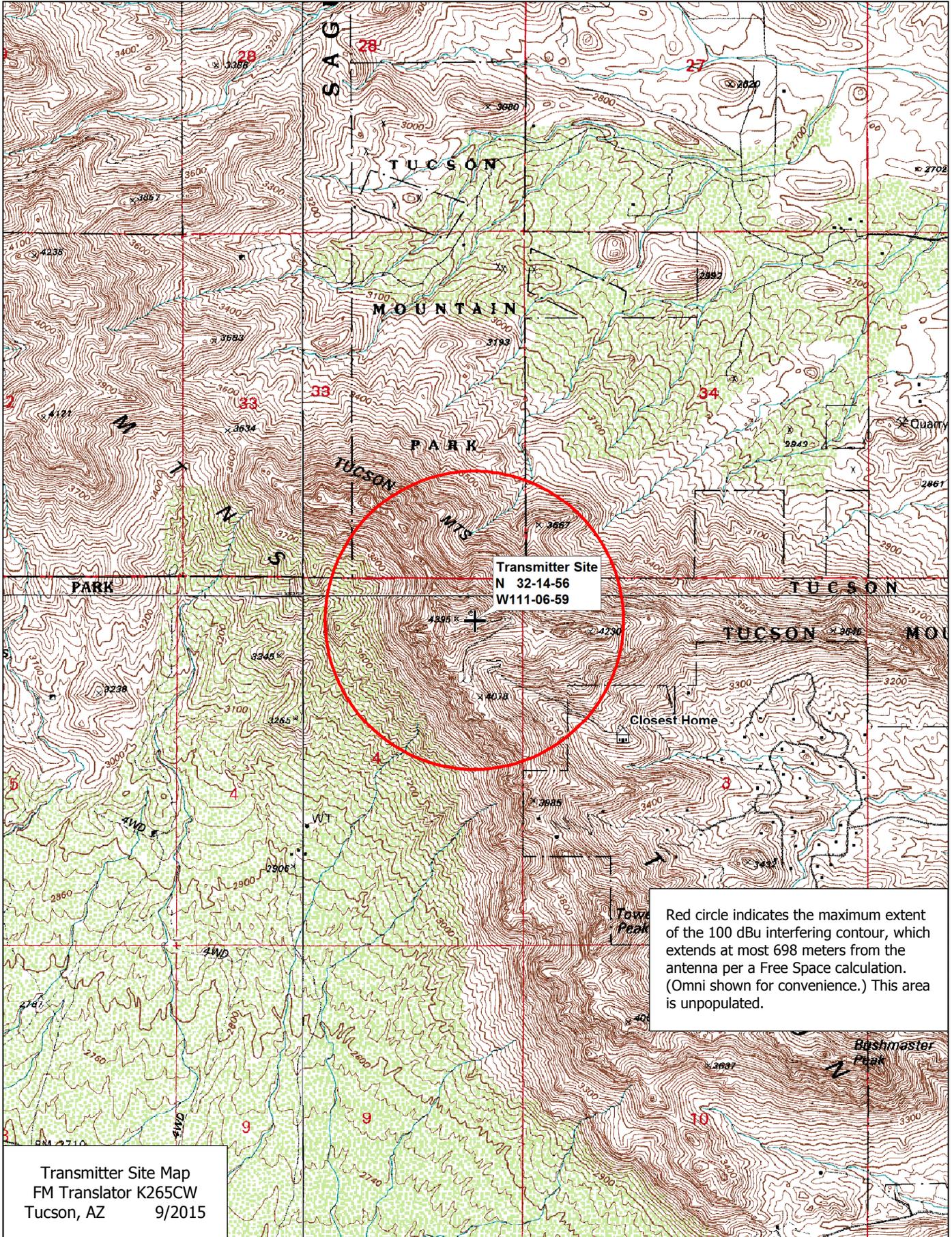
0 20 40 60



Kilometers

Hatfield & Dawson 5/2019

SANTA CRUZ
©2015 CALIPER

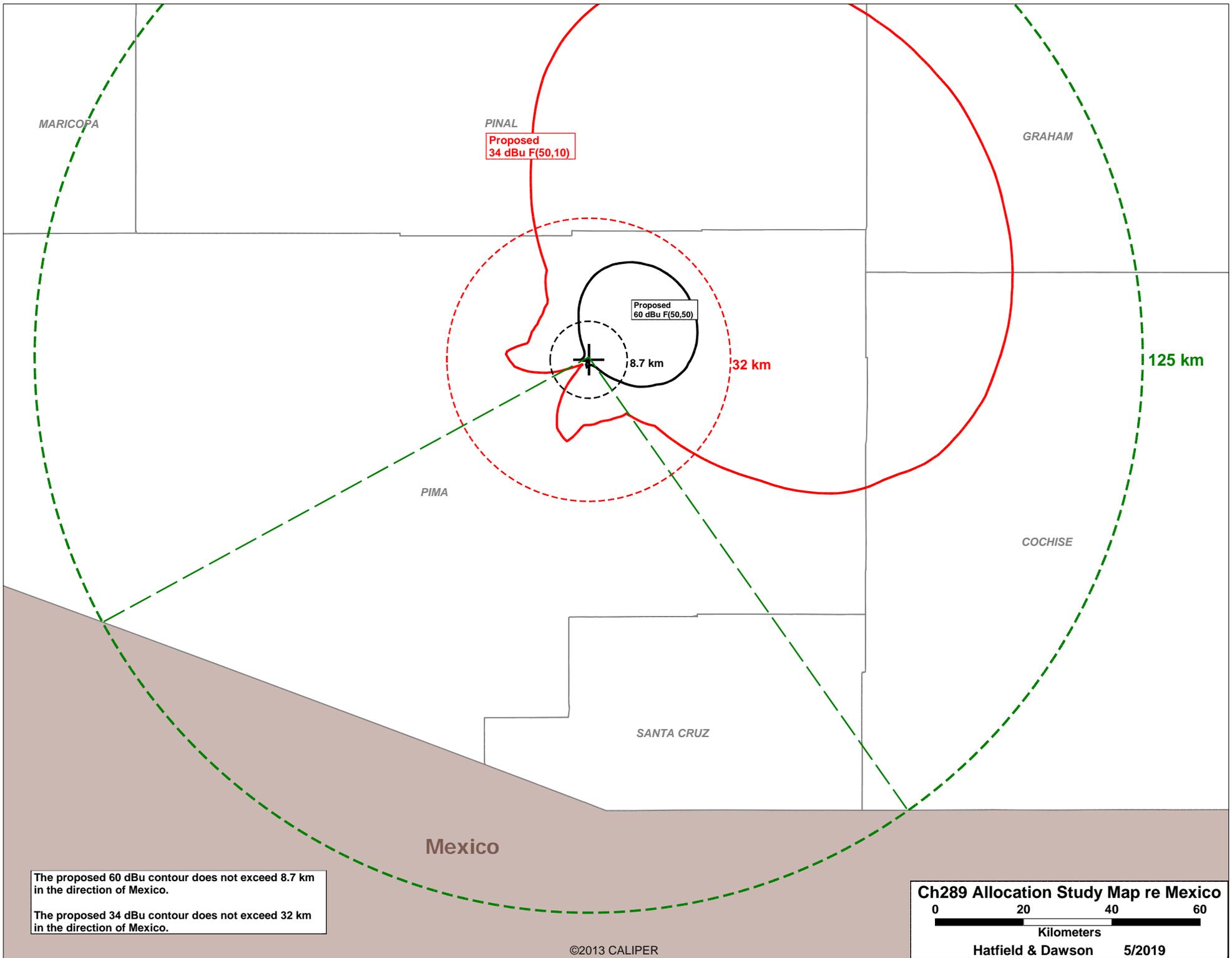


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The proposed 60 dBu contour does not exceed 8.7 km in the direction of Mexico.
 The proposed 34 dBu contour does not exceed 32 km in the direction of Mexico.

Ch289 Allocation Study Map re Mexico
 0 20 40 60
 Kilometers
 Hatfield & Dawson 5/2019

April 2019
FM Translator K265CW
Tucson, Arizona Channel 289D
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 289D (105.7 MHz) with a maximum lobe effective radiated power of 99 Watts. Operation is proposed with an antenna array to be mounted on an existing tower at Tucson Mountain with FCC Antenna Structure Registration Number 1218272.

Diplexed operation is proposed with K237FX and K250AN.

RF Exposure Calculations

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W / cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

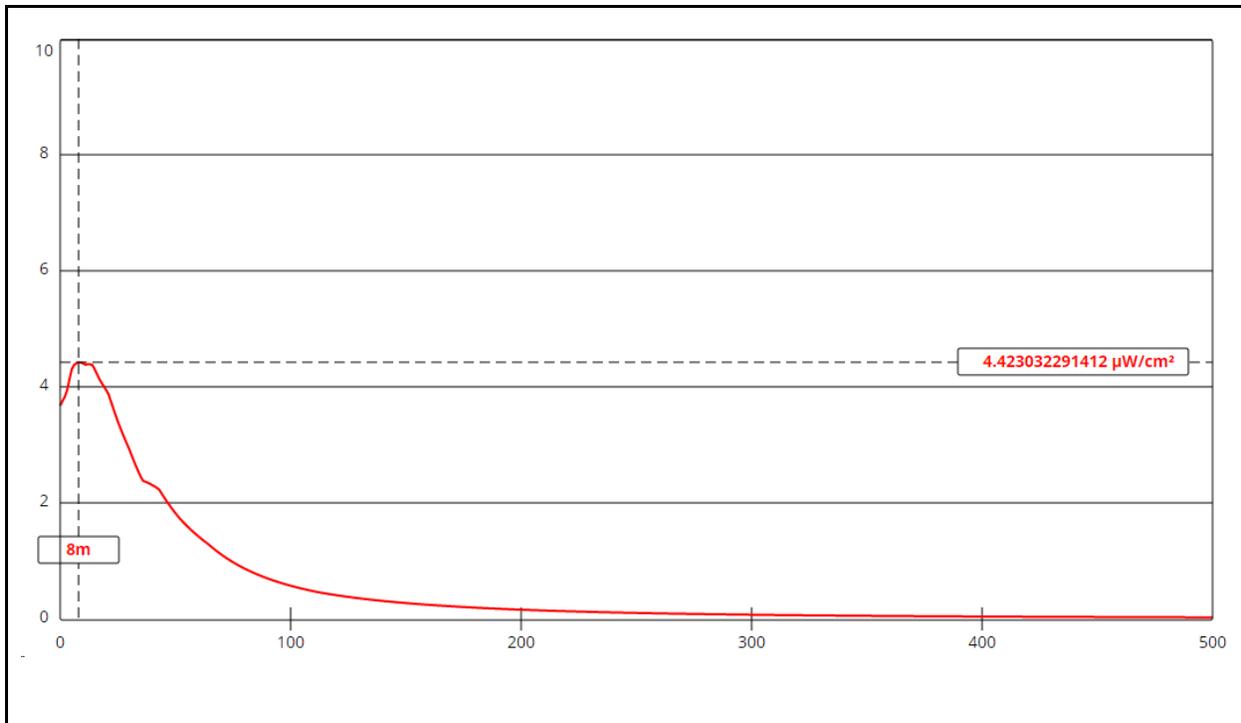
D is the distance in meters from the center of radiation to the calculation point.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 500 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the proposed antenna system assume a Type 1 element pattern, which is the "worst case" element pattern. The highest calculated ground level power density occurs at a distance of 8 meters from the base of the antenna support structure. At this point the power density is calculated to be 4.4 $\mu W/cm^2$, which is 2.2% of 200 $\mu W/cm^2$ (the FCC standard for uncontrolled environments).

Hatfield & Dawson Consulting Engineers

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of the translator alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 500 meters from the base of the antenna support structure. Section 1.1307(b)(3) of the Commission's Rules excludes applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicant's proposed facility are predicted to be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 *et seq* and no further analysis of RF exposure at this site is required in this application.



Ground-Level RF Exposure

OET FMModel

K265CW Tucson Ch289

Antenna Type: "ring stub" assumed (Type 1)
 No. of Elements: 1
 Element Spacing: 1.0 wavelength

Distance: 1000 meters
 Horizontal ERP: 99 W
 Vertical ERP: 99 W

Antenna Height: 32 meters AGL

Maximum Calculated Power Density is 4.4 $\mu\text{W}/\text{cm}^2$ at 8 meters from the antenna structure.