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Engineering Statement
Engineering STA Facilities for KUVE-CD
On Repack Channel 36
Tucson, AZ
September 2018

Expansion Application

This Engineering Statement has been prepared on behalf of Univision Tucson LLC, licensee of digital Class A television station KUVE-CD at Tucson, Arizona. KUVE-CD presently operates on Channel 42. The Commission's *Channel Reassignment Public Notice* (DA 17-314), released on April 13, 2017, specified the station's post-auction facilities on Channel 36. KUVE-CD holds a repack construction permit No. 0000034324.

This application requests an engineering STA to operate KUVE-CD on its repack Channel 36, using an interim antenna system. Grant of this STA is in the public interest as it will allow KUVE-CD to commence operation on its repack channel by the Phase 1 completion deadline, minimizing disruption to viewers while the main antenna is replaced. As demonstrated on the attached map exhibit, the 40.9 dBu F(50,90) contour of the proposed STA facility is completely encompassed by the corresponding contour of the authorized KUVE-CD Channel 36 repack facility.

Interference Study

Out of an abundance of caution, an interference study has also been conducted using the Commission's TVStudy software. The results of the study demonstrate that this proposal will have no additional interference impact on other stations.

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Study created: 2018.09.27 13:27:40

Study build station data: LMS TV 2018-09-23 (151)

    Proposal: KUVE-CD D36 DC STA TUCSON, AZ
 File number: KUVECD-STA-14KW
 Facility ID: 78036
Station data: User record
   Record ID: 759
     Country: U.S.

Build options:
Protect LPTV records from Class A

Stations potentially affected by proposal:

IX   Call      Chan       Svc Status  City, State              File Number             Distance
No   K21GC     N21-       TX  LIC     SAFFORD, AZ              BLTT20060215AAV         127.0 km
No   K22JD-D   N22-       TX  LIC     MADERA PEAK, AZ          BLTT20091029ABD         123.4
No   KPCE-LP   N29-       TX  LIC     TUCSON, AZ               BLTTL20080605AAT          0.0
No   KFPH-CD   D35        DC  LIC     PHOENIX, AZ              BLDTA20110405AAY        149.5
Yes  K21CX-D   D35        LD  APP     TUCSON, AZ               BLANK0000054022          41.9
No   K36AE-D   D36        LD  LIC     CLARKDALE, AZ            BLDTT20130718AAQ        286.4
Yes  KFTU-DT   D36        DT  LIC     DOUGLAS, AZ              BLCDT20090616ABO        138.6
Yes  KAZT-CD   D36        DC  LIC     PHOENIX, AZ              BLDTA20100120ACL        149.4
Yes  NEW       D36        LD  APP     SIERRA VISTA, AZ         BDCCDTL20061003AFJ      138.6
No   KAJB      D36        DT  LIC     CALIPATRIA, CA           BLCDT20090320AAI        358.5

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

    Channel: D36
       Mask: Stringent
   Latitude:  32 14 57.00 N (NAD83)
  Longitude: 111  7  0.90 W
Height AMSL: 1366.9 m
       HAAT: 0.0 m
   Peak ERP: 14.0 kW
    Antenna: DIE-TUA-C2-5/10H-1-S 74.0 deg
Elev Pattrn: Generic
  Elec Tilt: 1.50

50.9 dBu contour:
Azimuth      ERP       HAAT   Distance
  0.0 deg   6.30 kW   647.7 m   63.1 km
 45.0       10.1      644.9     66.1
 90.0       7.00      623.5     63.2
135.0       10.3      534.3     63.2
180.0      0.738      578.6     48.1
225.0      0.128      631.4     38.1
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270.0      0.058      608.2     33.0
315.0      0.172      543.0     38.5

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m   Computed HAAT: 601 m

Distance to Canadian border: 1861.6 km

**Proposal is within coordination distance of Mexican border
Distance to Mexican border: 93.9 km

Conditions at FCC monitoring station: Douglas AZ
Bearing: 120.7 degrees   Distance: 161.2 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 29.3 degrees   Distance: 1020.0 km


Study cell size: 1.00 km
Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%
Maximum new IX to LPTV: 2.00%

No IX check failures found.
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Facilities Proposed

The proposed operation will be on Channel 36 with a maximum lobe effective radiated power of 14 kilowatts (H pol). Operation is proposed with a Dielectric TUA-C2-5/10H-1-S broadband panel antenna array, mounted on an existing tower at the Tucson Mountain communications site, with FCC Antenna Structure Registration Number 1218276.

RF Exposure Calculations

OET Bulletin 65 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01) states in part that:

> When performing an evaluation for compliance with the FCC's RF guidelines all significant contributors to the ambient RF environment should be considered. . .For purposes of such consideration, significance can be taken to mean any transmitter producing more than 5% of the applicable exposure limit (in terms of power density or the square of the electric or magnetic field strength) at accessible locations.

As will be demonstrated below, the proposed operation will produce less than 5% of the applicable exposure limit for both controlled and uncontrolled environments. Thus, the proposed facility is categorically excluded from the requirement of further study. Therefore, pursuant to §1.1307(b)(3) of the Commission's Rules no calculations are required for the other FM and TV facilities in the vicinity, and precise calculations are made only with regard to the levels from this proposal.

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.

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

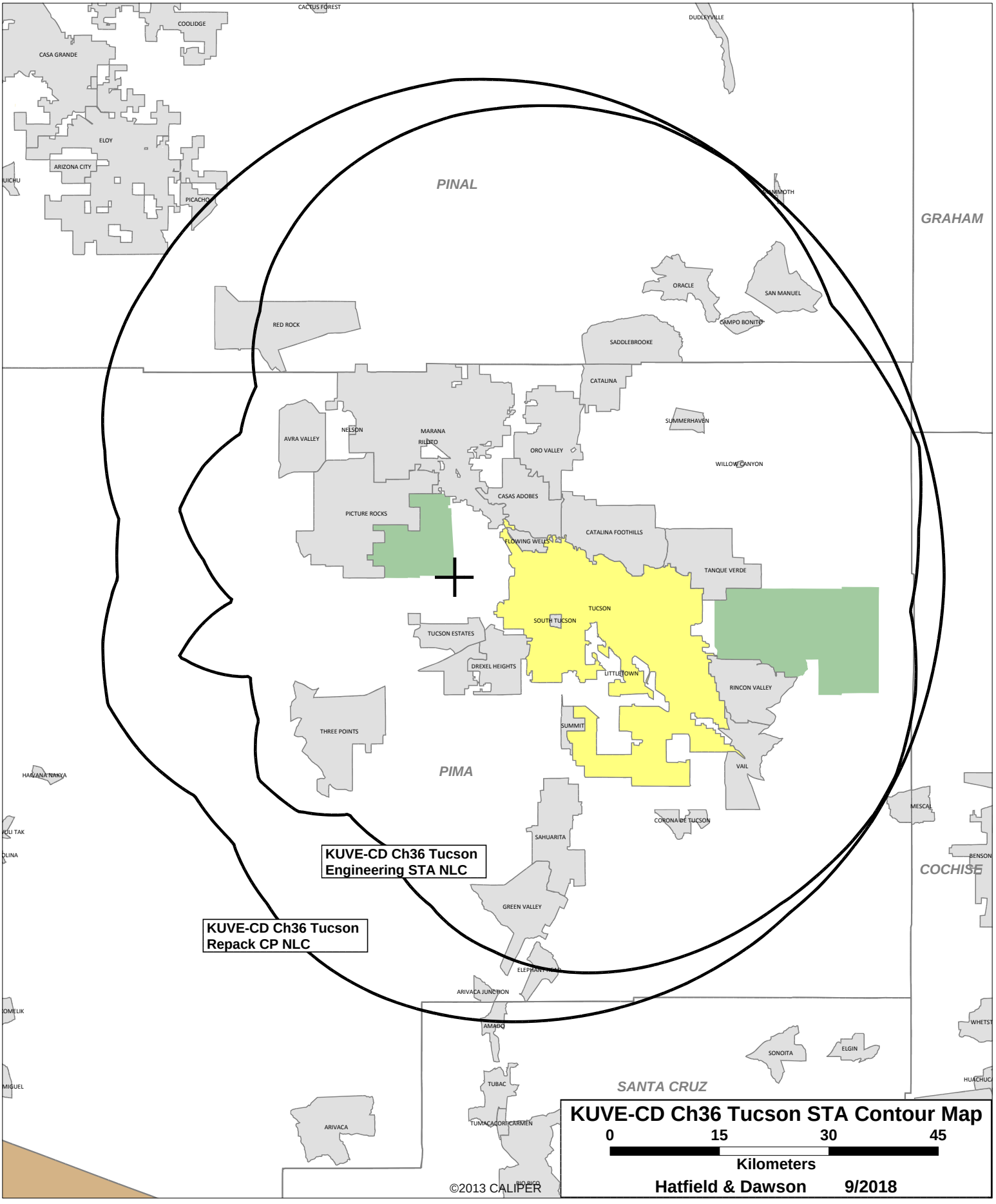
Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

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

Power density levels produced by the proposed facility were calculated for an elevation of 2 meters above ground (38.4 meters below the antenna radiation center). The worst case power density levels occur at depression angles between 45 and 90 degrees below the horizontal. The calculations in this report assume a worst-case relative field value of 0.225 at these angles, based on the manufacturer's vertical plane pattern for the horizontally-polarized Dielectric TUA-C2-5/10H-1-S antenna proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 708.75 watts at depression angles between 45 and 90 degrees below the horizontal. Assuming this power and the shortest distance between the antenna radiation center and 2 meters above ground level (i.e. straight down), the highest calculated power density from the proposed antenna alone occurs at the base of the antenna support structure. At this point the power density is calculated to be 16.0 $\mu W/cm^2$, which is 4% of 401.3 $\mu W/cm^2$ (the FCC maximum for uncontrolled environments at the Channel 36 frequency).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation 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 applicants 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.

The transmitter site on Tucson Mountain is remotely located atop a steep peak. Road access is restricted by locked gates. Advisory signs are posted throughout the site, on the transmitter buildings, at the tower bases, and along the access road. Pursuant to OET Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken. The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency exposure in excess of FCC guidelines.


KUVE-CD Ch36 Tucson
Engineering STA NLC
KUVE-CD Ch36 Tucson
Repack CP NLC
KUVE-CD Ch36 Tucson STA Contour Map
0
15
30
45
Kilometers
Hatfield & Dawson 9/2018
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COOLIDGE
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ARIZONA CITY
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DUDLEYVILLE
ORACLE
SAN MANUEL
CAMPO BONITO
RED ROCK
SADDLEBROOKE
CATALINA
SUMMERHAVEN
AVRA VALLEY
NELSON
MARANA
RILLITO
ORO VALLEY
WILLOW CANYON
CASAS ADOBES
PICTURE ROCKS
CATALINA FOOTHILLS
FLOWING WELLS
TANQUE VERDE
TUCSON
SOUTH TUCSON
TUCSON ESTATES
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