

Engineering Statement

Purpose

The instant Form 349 has been prepared on behalf of California Lutheran University (“CLU”), licensee of FM translator station K209CE, San Luis Obispo, CA, Facility ID 81483.

The instant application is being filed as a minor change application to modify existing construction permit BPFT-20130214ADA. Specifically, CLU is proposing to change the transmitter location, increase the ERP and change the antenna from a single-bay to a two-bay model. Figure 1 shows the overlapping 60 dBu contours of the authorized CP and the proposed facilities.

Background

The FCC granted the assignment of K209CE to CLU on March 14, 2013. On May 6, 2013, notice of consummation was filed with the FCC that the acquisition was complete. An STA request was also filed for K209CE to remain silent while the primary station to be rebroadcast, co-owned KCLM, Santa Maria, CA (channel 209B), upgraded its facilities and to allow time for K209CE to modify its facilities, which includes a frequency change from 89.7 MHz to 92.1 MHz (see BLSTA-20130506ADJ). The change in frequency was necessary because of the predicted co-channel interference that would be caused to KCLM by the existing K209CE facility; a new channel in the reserved (non-commercial) band could not be found.

Because CLU specified a new frequency in the non-reserved band for K209CE, 74.1231(b) specifies that the programming to be rebroadcast by the translator must be received via direct off-air pickup. KCLM completed its upgrade and resumed broadcasting on June 18, 2013. Since that time, unsuccessful efforts have been made to receive KCLM at the existing/approved K209CE (K221FV¹) transmitting site on Cuesta Peak. The elevated RF noise floor and spurious emissions caused by the close proximity of high power FM stations at the site have made it impossible to receive a good quality signal from KCLM.

The existing K209CE (K221FV) transmitter site is located on Cuesta Peak in the mountains north of San Luis Obispo. The proposed new transmitter site is located 10.7 km south of the existing transmitter site on the south end of San Luis Obispo, and while significantly lower in elevation, initial tests have shown it will allow K209CE (K221FV) to receive a good quality off-air signal from KCLM while covering the majority of the population that would have been served by the higher elevation transmitter site on Cuesta Peak.

¹ Callsign K221FV has been reserved for (assigned to) K209CE due to the channel change from 89.7 MHz (channel 209) to 92.1 MHz (channel 221).

Interference Analysis

A spacing study was performed to identify stations requiring contour protection (see Table 1). Though FM translators stations (Class D) use contour protection methodology, for purposes of identifying potentially affected stations, the spacing study was run as a proposed Class A facility. As is shown in Table 1, the proposed facility protects all licensed and proposed stations on co-channel and 3rd adjacent channels. It is short-spaced as a full Class A station to 1st adjacent, non-commercial Class B station KCSB-FM, Santa Barbara on channel 220 by only 8.6 km; however, as a Class D station, there is no prohibited contour overlap (see Figure 2). Additionally, the proposed facility is fully spaced to stations on I.F. channels 274 (102.7 MHz) and 275 (102.9 MHz).

With respect to 2nd adjacent stations, the proposed facility is short-spaced to Class B station KKAL, Paso Robles on channel 223. K209CE (K221FV) is currently co-located with KKAL on Cuesta Peak, and since the proposed transmitter site is only 10.7 km away, the new site is fully within KKAL's protected 54 dBu contour.

Section 74.1204(d) states:

... In addition, an application otherwise precluded by this section will be accepted if it can be demonstrated that no actual interference will occur due to intervening terrain, lack of population or such other factors as may be applicable.

Using the Desired-to-Undesired protection ratios in 74.1204(a)(1), interference will be caused to a station operating on a 2nd or 3rd adjacent channel if the D/U ratio is less than -40 dB (i.e., the undesired signal has to be 40 dB or more stronger than the desired signal to cause interference).

KKAL operates with a non-directional ERP of 4.8 kW at an HAAT of 453m. The proposed K209CE (K221FV) facility will operate with a non-directional ERP of 0.25 kW at an HAAT of -102m. KKAL has a predicted F(50,50) signal strength of 90.4 dBu at the proposed K209CE (K221FV) transmitter site (see Figure 3a). The interfering K209CE (K221FV) signal strength is therefore the 130.4 dBu F(50,10) contour. The K209CE (K221FV) 130.4 dBu contour extends only 34 meters from the antenna.² As can be seen in Figure 3b, there are no homes or other occupied structures within the immediate vicinity of the transmitter site; therefore, no interference is predicted to be caused to KKAL.

Environmental Considerations

The proposed antenna is an Electronics Research, Inc. ("ERI") model 100A-2F, a two-bay, full-wave spaced, circularly polarized antenna. The antenna will be mounted atop a wooden monopole with the center of radiation 7 meters above the ground. Access to the site is restricted by means of locked gates.

² Due to the small distance involved, the F(50,10) and F(50,50) contour graphs could not be used; the FCC's free-space formula was used to compute the distance.

Following the procedures outlined in OET-65 using an ERP of 0.25 kW in both the horizontal and vertical polarities (0.5 kW total) and using the downward relative field value of 0.53 (see Figure 4), a calculated maximum RF exposure level of 0.111 mW/cm² at 2 meters above ground level is obtained at a distance approximately 4 meters from the base of the wooden monopole. This represents 11.1% for a Controlled/Worker environment or 55.5% for an Uncontrolled/General Population environment.

There are two other FM translator stations located at this site atop an adjacent 46m tower: K293AW, San Luis Obispo and KPYG-FM1, San Luis Obispo. K293AW operates with an ERP of 0.25 kW using an ERI model 100A-2F, a two-bay, full-wave spaced, circularly polarized antenna, while KPYG-FM1 operates with an ERP of 0.90 kW using a Scala model FMVMP-3, a three-bay, full-wave spaced, vertically polarized antenna. Together, these two stations contribute no more than 1% to the Controlled/Worker exposure level or less than 5% to the Uncontrolled/General Population exposure level. Therefore, in aggregate, the site is determined to be in compliance with the RFR standards.

As this is a multi-user site, CLU agrees to reduce power or cease transmission as may be necessary to protect persons needing access to the monopole or adjacent tower structure.

AFFIDAVIT

I, Timothy P. Schultz, do hereby certify that this Engineering Statement, the accompanying figures and tables, and all technical portions of this application were prepared by me personally. All facts herein are known to be true based on fact, belief and personal experience.

I have been gainfully employed in the broadcast engineering field since 1977, working in all phases of AM, FM and Television engineering. I have prepared several engineering applications for the Commission and have a working knowledge of current FCC Rules and Regulations. I hold valid FCC License PG-11-27583 and am Professionally Certified by the Society of Broadcast Engineers.

Signed: Timothy P. Schultz

Dated: 7-21-13

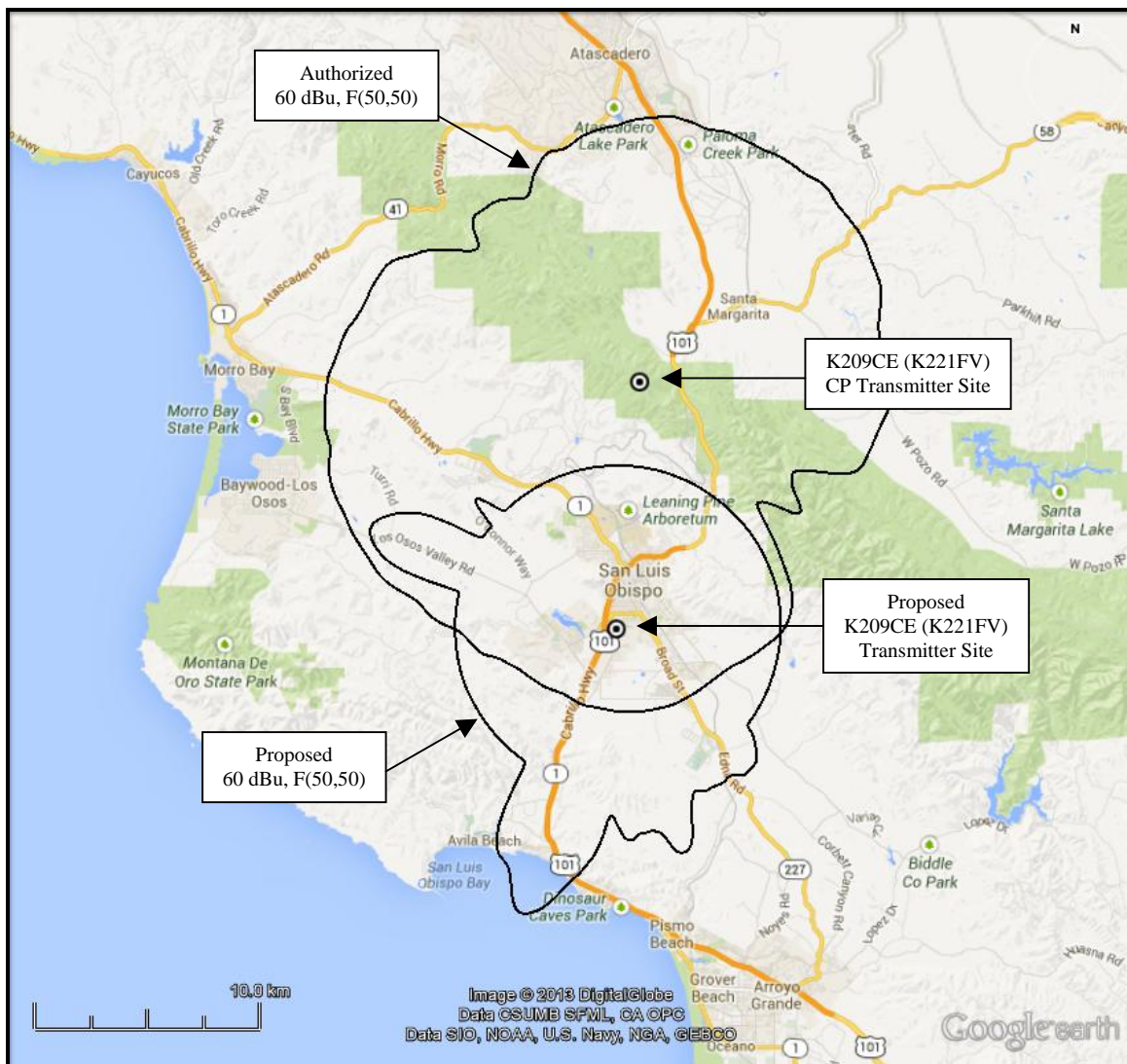
Timothy P. Schultz, CPBE
7007 Arizona Avenue
Los Angeles, CA 90045

Table 1

California Lutheran University - K209CE, San Luis Obispo, CA
Channel 221A (92.1 MHz)
35-15-50 / 120-39-59
FCC Database: 7/17/13

| Callsign City of License | Auth License | Licensee Name St FCC File No. | Chan Freq | HAAT HAMSL | ERP (kW) | Latitude Longitude | Bear (deg) | Dist (km) | Req (km) |
|-----------------------------|-----------------|--|----------------|---------------|--------------------|-----------------------|---------------|--------------|--------------|
| K218CP SANTA BARBARA | LIC | CALVARY CHAPEL OF TWIN FALLS, INC. CA BLFT-20090202AAE | 218 D 91.5 | 268 660 | 0 H 0.01 V | 34-27-57 119-40-38 | 134.2 | 126.6 | 31 CLEAR |
| KRQZ LOMPOC | LIC | SPIRIT COMMUNICATIONS, INC. CA BLED-20080821AAI | 218 B1 91.5 | 238 410 | 4 H 4 V | 34-50-08 120-24-06 | 153.1 | 53.3 | 48 CLOSE |
| K219AO FAIRMONT, ETC. | LIC | FAMILY STATIONS, INC. CA BLFT-19841207TH | 219 D 91.7 | 974 2453 | 0.089 H 0 V | 35-01-31 118-30-55 | 97.1 | 197.8 | 31 CLEAR |
| KNBX SAN ARDO | LIC | KCBX, INC. CA BLED-20010110AAB | 219 B 91.7 | 543 889 | 2.7 H 2.7 V | 35-57-06 121-00-03 | 338.5 | 82.1 | 69 CLEAR |
| KFHL WASCO | LIC | MARY V. HARRIS FOUNDATION CA BLED-20050815ADD | 219 A 91.7 | 73 180 | 6 H 6 V | 35-24-55 119-14-01 | 82.2 | 131.3 | 31 CLEAR |
| K219LL CHUALAR | LIC | ONE MINISTRIES, INC. CA BLFT-20110506ABG | 219 D 91.7 | 656 946 | 0.003 H 0.008 V | 36-45-23 121-30-05 | 335.9 | 181.9 | 31 CLEAR |
| K219LN KERNVILLE | LIC | CALVARY CHAPEL OF TWIN FALLS, INC. CA BLFT-20110516ABZ | 219 D 91.7 | 816 2182 | 0 H 0.01 V | 35-42-21 118-33-31 | 74.9 | 197.5 | 31 CLEAR |
| KCSB-FM SANTA BARBARA | LIC | UNIVERSITY OF CALIFORNIA CA BLED-19840928DF | 220 B 91.9 | 879 1239 | 0.62 H 0.62 V | 34-31-31 119-57-29 | 141.6 | 104.4 | 113 SHORT |
| K220GR LOS BANOS | LIC | PAULINO BERNAL EVANGELISM CA BLFT-19990511UE | 220 D 91.9 | -27 96 | 0.055 H 0.055 V | 36-59-32 120-54-17 | 353.7 | 193.0 | 72 CLEAR |
| KSPB PEBBLE BEACH | LIC | ROBERT LOUIS STEVENSON SCHOOL CA BMLD-19881216KF | 220 A 91.9 | 148 245 | 1 H 1 V | 36-35-11 121-55-21 | 322.8 | 185.4 | 72 CLEAR |
| KPSV-FM TULARE | CP | SOUTH VALLEY PEACE CENTER CA BNPED-20071022ANE | 220 B1 91.9 | 54 107 | 25 H 25 V | 36-01-31 119-32-06 | 50.0 | 139.8 | 96 CLEAR |
| KVMX BAKERSFIELD | LIC | LOTUS BAKERSFIELD CORP. CA BLH-20101028ABN | 221 A 92.1 | 121 493 | 4.2 H 4.2 V | 35-29-11 118-53-21 | 80.8 | 163.4 | 115 CLEAR |
| K209CE SAN LUIS OBISPO | CP | CALIFORNIA LUTHERAN UNIVERSITY CA BPFT-20130214ADA | 221 A 92.1 | 0 772 | 4.2 H 4.2 V | 35-29-11 118-53-21 | 5.1 | 10.7 | 115 SHORT |
| NEW SOLEDAD | APP | BROADCAST TOWERS, INC. CA BNPFT-20030317CVI | 222 D 92.3 | 0 59 | 0.019 H 0.019 V | 36-30-45 121-26-59 | 333.3 | 155.5 | 72 CLEAR |
| KKAL PASO ROBLES | LIC | AGM CALIFORNIA, INC. CA BLH-19961226KA | 223 B 92.5 | 453 790 | 4.8 H 4.8 V | 35-21-40 120-39-21 | 5.1 | 10.8 | 69 SHORT |
| NEW HANFORD | APP | ROBERT J. CONNELLY, JR. CA BNPFT-20030317FHX | 223 D 92.5 | 34 96 | 0.25 H 0.25 V | 36-19-16 119-40-03 | 39.5 | 139.1 | 31 CLEAR |
| KMYX-FM ARVIN | LIC | FARMWORKER EDUCATIONAL RADIO NETWORK CA BLH-20120105ABB | 223 A 92.5 | 312 1042 | 0.62 H 0.62 V | 35-11-41 118-42-16 | 91.9 | 178.8 | 31 CLEAR |
| KTOM-FM MARINA | LIC | CC LICENSES, LLC CA BMLH-19950908KF | 224 B1 92.7 | 189 421 | 6.9 H 6.9 V | 36-33-09 121-47-17 | 325.1 | 175.2 | 48 CLEAR |
| - KERMAN | VAC | LINDA A. DAVIDSON CA RM-10969 | 224 A 92.7 | - | H V | 36-40-37 120-12-08 | 14.7 | 162.3 | 31 CLEAR |

| Callsign City of License | Auth License | Licensee Name St FCC File No. | Chan Freq | HAAT HMSL | ERP (kW) | Latitude Longitude | Bear (deg) | Dist (km) | Req (km) |
|-----------------------------|-----------------|---|-----------------|--------------|--------------------|-----------------------|---------------|--------------|-------------|
| - WASCO | VAC | LINDA A. DAVIDSON CA RM-11014 | 224 A 92.7 | - | H V | 35-35-37 119-20-35 | 72.6 | 125.6 | 31 CLEAR |
| KTOM-FM MARINA | LIC | CC LICENSES, LLC CA BXLH-20060515ABT | 224 B1 92.7 | 171 403 | 1 H 1 V | 36-33-09 121-47-17 | 325.1 | 175.2 | 48 CLEAR |
| KWVP-LP WASCO | LIC | ROSECORP TRUST CA BLL-20080303AJA | 224 L1 92.7 | 38 0 | 0.061 H 0.061 V | 35-35-33 119-20-01 | 72.8 | 126.4 | 31 CLEAR |
| NEW Kerman | APP | HISPANIC TARGET MEDIA INC. CA BSFH-20110202ADE | 224 A 92.7 | 0 0 | 0 H 0 V | 36-40-37 120-12-08 | 14.7 | 162.3 | 31 CLEAR |
| NEW Kerman | APP | HISPANIC TARGET MEDIA INC. CA BNPH-20110630AGU | 224 A 92.7 | 105 704 | 5.4 H 5.4 V | 36-21-21 120-27-41 | 8.6 | 122.6 | 31 CLEAR |
| NEW WASCO | APP | HISPANIC TARGET MEDIA INC. CA BSFH-20130206AEC | 224 A 92.7 | 0 0 | 0 H 0 V | 35-35-37 119-20-35 | 72.6 | 125.6 | 31 CLEAR |
| KIWI MCFARLAND | LIC | LOTUS BAKERSFIELD CORP. CA BLH-20020919AAY | 275 B1 102.9 | 98 628 | 25 H 25 V | 35-19-16 119-42-26 | 85.5 | 87.5 | 12 CLEAR |



60 dBu Contour Overlap Map

**K209CE (Proposed), San Luis Obispo, CA
Channel 221D (92.1 MHz)
0.250 kW – ND, -102m HAAT**

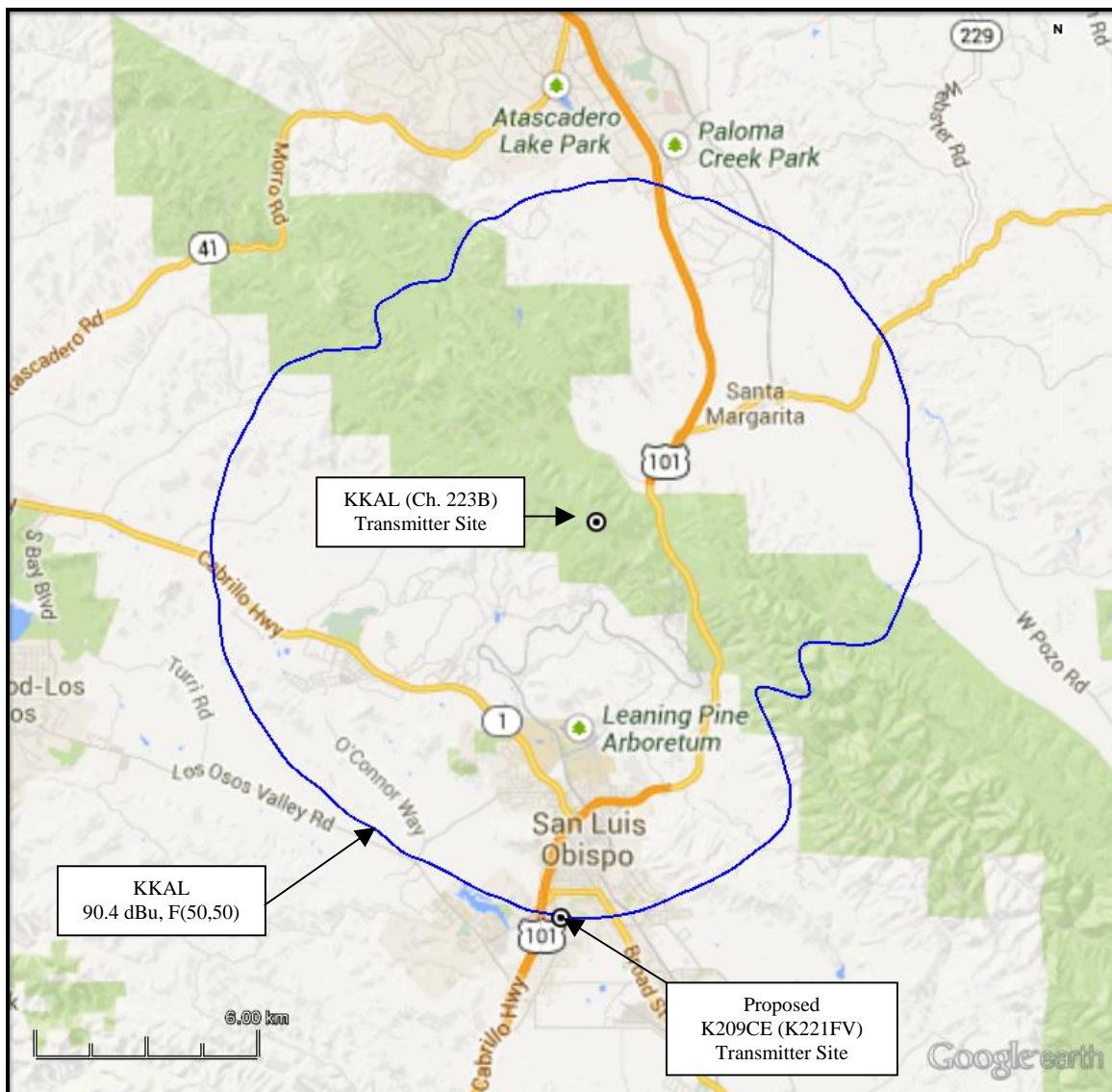
Figure 1



1st Adjacent Channel Protection Map

**K209CE (Proposed), San Luis Obispo, CA
Channel 221D (92.1 MHz)
0.250 kW – ND, -102m HAAT**

Figure 2



2nd Adjacent Contour Overlap Map

K209CE (Proposed), San Luis Obispo, CA
Channel 221D (92.1 MHz)
0.250 kW – ND, -102m HAAT

Figure 3a



2nd Adjacent Contour Overlap Map (Close-up)

**K209CE (Proposed), San Luis Obispo, CA
Channel 221D (92.1 MHz)
0.250 kW – ND, -102m HAAT**

Figure 3b

ELEVATION PATTERN**Type:****100A2****Channel:****Directivity:****Numeric****dBd****Location:****Main Lobe:****0.90****-0.47****Beam Tilt:****0.00****Horizontal:****0.90****-0.47****Polarization:****Circular**