



ENGINEERING STUDY
LICENSE MODIFICATION APPLICATION
K233CM

TECHNICAL STATEMENT

This technical statement and attached exhibits were prepared on behalf of Amaturro Sonoma Media Group, LLC. licensee of translator K233CM, Facility ID #152120, fill-in translator for AM radio station KSRO, 1350 kHz, Santa Rosa, CA. Facility ID #22881. This application seeks to modify the currently licensed facility. Concurrently filed with this application is a license modification for KDHT-FM2. Amaturro proposes to combine K233CM with the modified KDHT-FM2 facility.

Facilities Proposed

| | |
|---------------------------|--|
| Location (NAD83) | 38° 20' 10.0" N Latitude, 122° 32' 07" W Longitude |
| Channel | 233D (94.5MHz) |
| Tower Overall AGL Height- | 20m |
| Tower ASR | N/A |
| Proposed Antenna | Scala 3X CL-FM-V (option 67) |
| Antenna AGL Height- | 18m |
| Site AMSL Height- | 266m |
| ERP | 57 Watts-DIRECTIONAL- EXHIBIT A |

COMPLIANCE WITH 74.1204(a) [contour overlap]

The modified translator on channel 233D will be fully compliant with 74.1204(a). A table showing the allocation is attached as Exhibit B and a map depicting the closest pertinent facilities is attached as Exhibit C.

COMPLIANCE WITH 74.1204(d) [2nd Adjacent Interference]

The proposed translator is located inside the 54dBu protected contour of two class B stations, KPFA, 231B and KYLD, 235B. Both 2nd adjacent stations originate from the same general direction and KYLD places less signal at the proposed translator location than KPFA, so it is assumed that if the proposed translator is compliant with 74.1204(d) with respect to KYLD, it will also be compliant with respect to KPFA.

The proposed tower site is located on a mountain and is sparsely populated, however, several nearby residences were identified and as demonstrated in Exhibit D, there will be no actual interference predicted to either KYLD or KPFA at any residential location.

COMPLIANCE WITH 74.1201(g) [AM fill-in], 74.1233(a) [Minor Change]

Exhibit E demonstrates that the proposed translator will be entirely contained within 25 miles of the KSRO transmitter in accordance with 74.1201(g) and the proposed translator will serve some portion of the existing CP 60dBu service area in accordance with 74.1233(a).

The proposed facility is not within 320km of the common border between the US and Canada or Mexico.

ENVIRONMENTAL EXHIBIT

The proposed translator facility will utilize a directional antenna located on an existing non-registered tower. The existing tower was checked and passes the TOWAIR determination. Those results are attached as Exhibit G. The attachment of the proposed translator antenna will not alter the existing proposed tower structure for purposes of the Nationwide Programmatic Agreement and the NHPA Section 106.

The tower is currently being used to support a booster antenna for co-owned KDHT, (KDHT-FM2). An application will be filed concurrently with this application to modify the KDHT-FM2 booster such that K233CM and KDHT-FM2 will be combined on the same antenna.

The RF density near the tower was calculated using an EPA Type 1 “Ring and stub” antenna setting at 57 watts vertical, using the proposed Scala antenna.

Using the FCC program “FM Model for Windows”, it was calculated that the proposed antenna contributes approximately $0.58\mu\text{W}/\text{cm}^2$ or 0.3 % of the total allowable $200\mu\text{W}/\text{cm}^2$. The maximum was found to be 12 meters from the base of the tower. The FCC calculator output is shown as Exhibit F. There are no tall buildings within 500m of the proposed tower.

Based upon the above evaluation, the proposed antenna will not cause the RF density at the tower site to exceed public exposure limits and contributes less than 5% of the MPE at ground level. Based upon the preceding, this proposed facility is excluded from further Environmental Assessment under 47CFR 1.1306 and 1.1307.

The proposed new FM translator along with other users at the site will maintain an occupational safety policy and agrees to reduce power or cease operation during periods of maintenance to avoid potentially harmful exposure of personnel to non-ionizing RF radiation.

Respectfully Submitted

A handwritten signature in cursive script that reads "Bert Goldman". The signature is written in black ink and is positioned above the printed name and title.

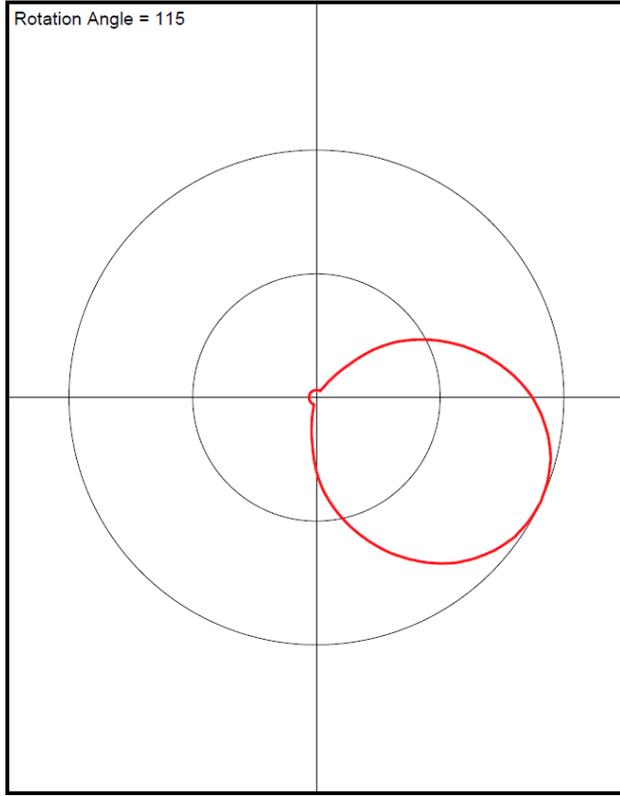
Bert Goldman
Technical Consultant

EXHIBIT A- ANTENNA PATTERN

K233CM PROP Antenna Pattern

Pre-Rotation Antenna Pattern....

| Azimuth (deg) | Relative Field |
|---------------|----------------|
| 0.0 | 1.0 |
| 5.0 | 0.993 |
| 10.0 | 0.98 |
| 15.0 | 0.952 |
| 20.0 | 0.916 |
| 25.0 | 0.873 |
| 30.0 | 0.817 |
| 35.0 | 0.756 |
| 40.0 | 0.69 |
| 45.0 | 0.618 |
| 50.0 | 0.544 |
| 55.0 | 0.467 |
| 60.0 | 0.39 |
| 65.0 | 0.3 |
| 70.0 | 0.19 |
| 75.0 | 0.11 |
| 80.0 | 0.05 |
| 85.0 | 0.03 |
| 90.0 | 0.03 |
| 95.0 | 0.03 |
| 100.0 | 0.03 |
| 105.0 | 0.03 |
| 110.0 | 0.03 |
| 115.0 | 0.03 |
| 120.0 | 0.03 |
| 125.0 | 0.03 |
| 130.0 | 0.03 |
| 135.0 | 0.03 |
| 140.0 | 0.03 |
| 145.0 | 0.03 |
| 150.0 | 0.03 |
| 155.0 | 0.03 |
| 160.0 | 0.03 |
| 165.0 | 0.03 |
| 170.0 | 0.03 |
| 175.0 | 0.03 |
| 180.0 | 0.03 |
| 185.0 | 0.03 |
| 190.0 | 0.03 |
| 195.0 | 0.03 |
| 200.0 | 0.03 |
| 205.0 | 0.03 |
| 210.0 | 0.03 |
| 215.0 | 0.03 |
| 220.0 | 0.03 |
| 225.0 | 0.03 |
| 230.0 | 0.03 |
| 235.0 | 0.03 |
| 240.0 | 0.03 |
| 245.0 | 0.03 |
| 250.0 | 0.03 |
| 255.0 | 0.03 |
| 260.0 | 0.03 |
| 265.0 | 0.03 |
| 270.0 | 0.03 |
| 275.0 | 0.03 |
| 280.0 | 0.05 |
| 285.0 | 0.11 |
| 290.0 | 0.19 |
| 295.0 | 0.3 |
| 300.0 | 0.39 |
| 305.0 | 0.467 |
| 310.0 | 0.544 |
| 315.0 | 0.618 |



| | |
|-------|-------|
| 320.0 | 0.69 |
| 325.0 | 0.756 |
| 330.0 | 0.817 |
| 335.0 | 0.873 |
| 340.0 | 0.916 |
| 345.0 | 0.952 |
| 350.0 | 0.98 |
| 355.0 | 0.993 |

EXHIBIT B- ALLOCATION STUDY

ComStudy 2.2 search of channel 233 (94.5 MHz Class D) at 38-20-10 N, 122-32-07 W.

| CALL | CITY | ST CHN CL | DIST | SEP | BRNG | CLEARANCE |
|----------|---------------|-----------|--------|------|-------|---------------------|
| KPFA | BERKELEY | CA 231 B | 59.12 | 0.00 | 152.1 | -11.49 dB Exhibit D |
| KYLD | SAN FRANCISCO | CA 235 B | 72.30 | 0.00 | 173.1 | -2.84 dB Exhibit D |
| KBAY | GILROY | CA 233 B | 141.94 | 0.00 | 151.7 | 0.31 dB Exhibit C |
| KWNE | UKIAH | CA 233 B | 99.92 | 0.00 | 332.2 | 15.14 dB Exhibit C |
| KYLD-FM1 | PLEASANTON | CA 235 D | 73.97 | 0.00 | 132.9 | 20.51 dB |
| KKDO | FAIR OAKS | CA 234 B1 | 111.49 | 0.00 | 70.0 | 21.12 dB |
| K233CU | STOCKTON | CA 233 D | 117.60 | 0.00 | 110.6 | 23.02 dB |
| K234DD | SANTA ROSA | CA 234 D | 22.15 | 0.00 | 330.1 | 24.82 dB |
| KGRB | JACKSON | CA 232 B1 | 164.57 | 0.00 | 86.8 | 33.47 dB |
| KHOP | OAKDALE | CA 236 B | 186.95 | 0.00 | 108.3 | 33.23 dB |

LMS AS OF 4/2/2020

EXHIBIT C Pertinent Protection Contours (KWNE 233B, KBAY 233B)

Proposed K233CM - 57 Watts 74.1204a Compliance

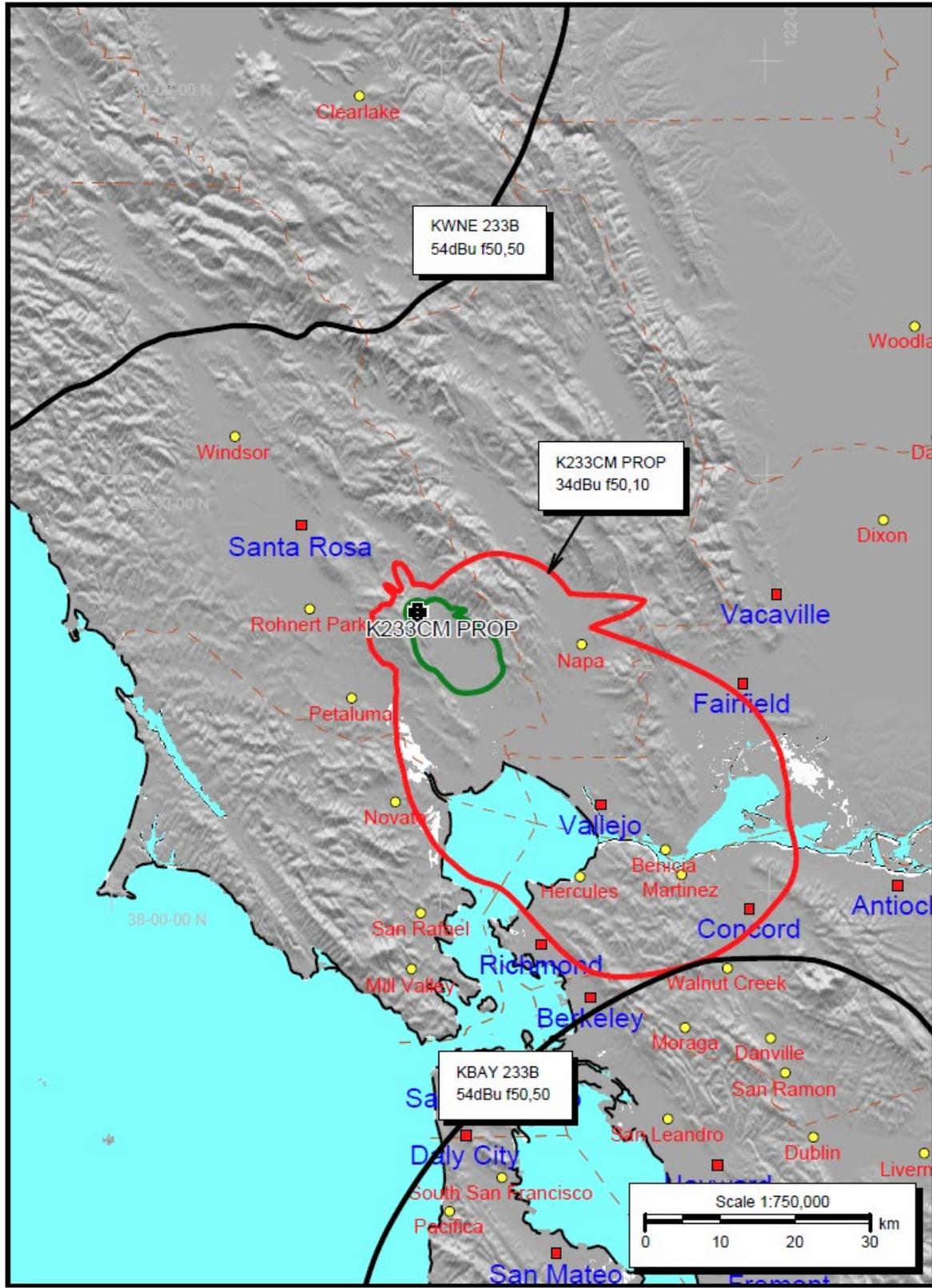
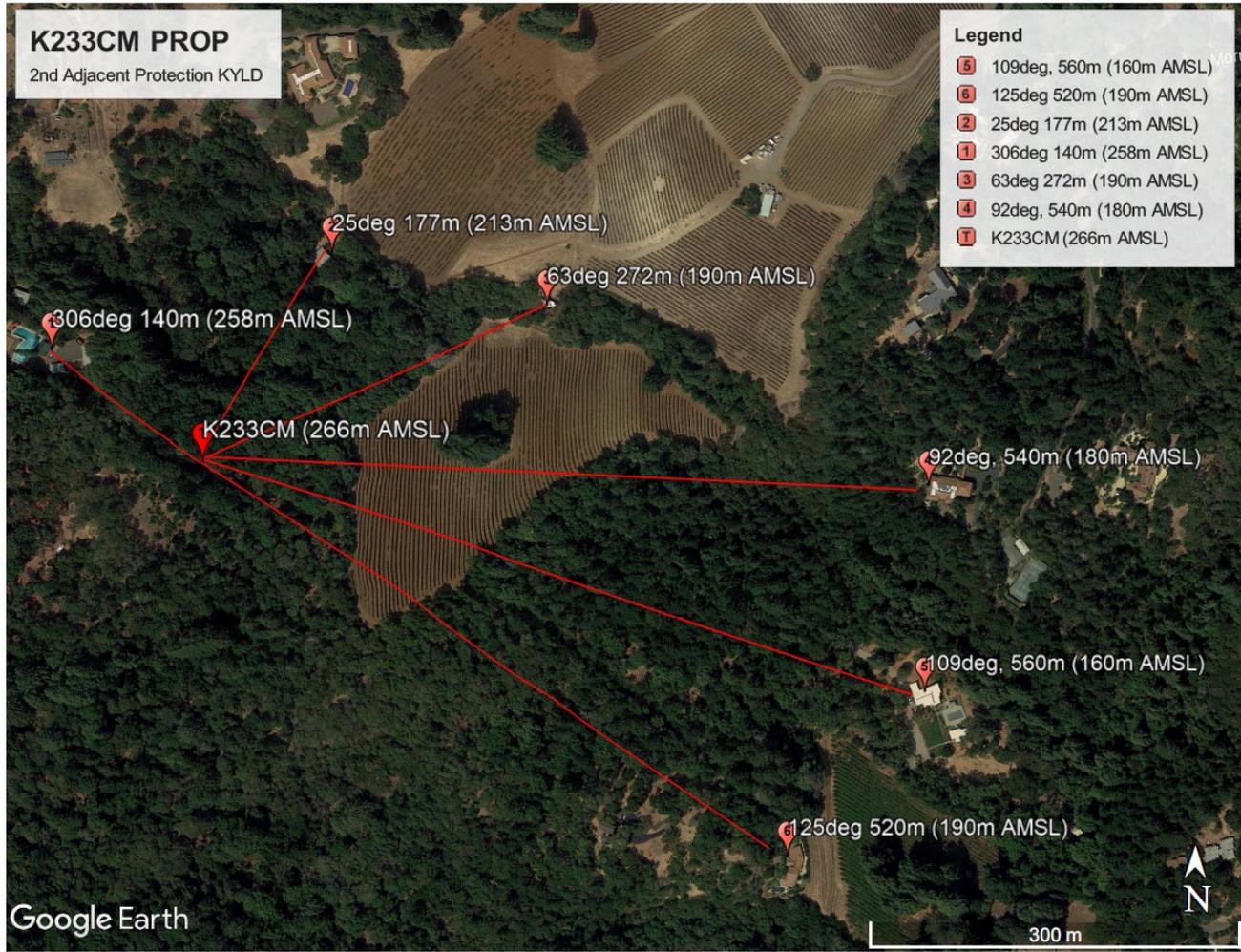


EXHIBIT D, 74.1204(d) Compliance

NOTE: IT IS ASSUMED THAT SINCE KPFA PLACES MORE SIGNAL INTO AREA, IT WILL ALSO BE COMPLIANT



Note- Description of points:

Six homes were determined to be of consequence for 2nd adjacent interference. All are compliant. The table below shows evaluation results using the X-Field program by V-Soft. Azimuth is direction to each home, Relative AGL is the height of the antenna over the home including AMSL difference. Distance is distance to the home, and Minimum Signal indicates the minimum signal above ground. Minimum location distance from the translator is also shown.

| POINT | AZIMUTH | RELATIVE AGL (m) | DISTANCE | MINIMUM SIGNAL AGL |
|-------|---------|------------------|----------|--------------------|
| 1 | 306 | 26m | 140m | 10.4m @ 88.7m * |
| 2 | 25 | 71m | 177m | 55.4m @ 88.7m |
| 3 | 63 | 94m | 272m | 29.3m @ |
| 4 | 92 | 104m | 540m | 19.0m @ 482m |
| 5 | 109 | 124m | 560m | 34m @ 509m |
| 6 | 125 | 94m | 520m | 4.6m @ 507m * |

*- The two closest clearance calculations (306deg and 125deg) are shown below

X-Field Output 306 deg

K233CM.C Sonoma, CA, Showing Protection to KYLD , Channel: 235
 Geographic Coordinates: N.38-20-10 W.122-32-07
 74.1204(d) Study - Using NED 03 SEC Terrain Database
 Translator or LPFM Maximum Licensed ERP = 0.057 kW, Channel: 233
 Translator or LPFM Antenna Height AG = 26 meters
 K233CM.C Antenna Model = 3-CL-FM V STACK 0PT67 WL SPC

Protected Station's Contour = 56.34708 dBu
 Translator's or LPFM's full Interference contour 96.34708

Review Azimuth = 306 Degrees True

Horizontal Relative Field at Review Azimuth = 0.030
 Translator/LPFM ERP on the horizontal at Review Azimuth = 0.0 kW
 Distance between stations = 72.4 km
 Protected Station= KYLD, 30 kW, 425 M meters COR AMSL

| Depression Angle From Degree(Deg) | Vertical Relative Field | Horizontal Relative Field | ERP (kw) | Dist to IX Contour Along Dep. Angle(m) | Dist to IX Contour From Tower Base(m) | Height IX Above Ground (m) |
|---|-------------------------------|---------------------------------|----------|--|---|----------------------------------|
| 00.00 | 1.0 | 0.03 | 0.0017 | 139.6832 | 139.6832 | 026.000 |
| 05.00 | 0.823 | 0.03 | 0.0012 | 114.8894 | 114.4522 | 015.987 |
| 10.00 | 0.645 | 0.03 | 0.0007 | 090.0956 | 088.7269 | 010.355 |
| 15.00 | 0.341 | 0.03 | 0.0002 | 047.5621 | 045.9415 | 013.690 |
| 20.00 | 0.036 | 0.03 | 0.0000 | 005.0286 | 004.7253 | 024.280 |
| 25.00 | 0.122 | 0.03 | 0.0000 | 016.9715 | 015.3814 | 018.828 |
| 30.00 | 0.207 | 0.03 | 0.0001 | 028.9144 | 025.0406 | 011.543 |
| 35.00 | 0.162 | 0.03 | 0.0000 | 022.6287 | 018.5363 | 013.021 |
| 40.00 | 0.092 | 0.03 | 0.0000 | 012.8509 | 009.8443 | 017.740 |
| 45.00 | 0.01 | 0.03 | 0.0000 | 001.3968 | 000.9877 | 025.012 |
| 50.00 | 0.052 | 0.03 | 0.0000 | 007.2635 | 004.6689 | 020.436 |
| 55.00 | 0.064 | 0.03 | 0.0000 | 008.8699 | 005.0876 | 018.734 |
| 60.00 | 0.051 | 0.03 | 0.0000 | 007.1238 | 003.5619 | 019.831 |
| 65.00 | 0.034 | 0.03 | 0.0000 | 004.7492 | 002.0071 | 021.696 |
| 70.00 | 0.017 | 0.03 | 0.0000 | 002.3746 | 000.8122 | 023.769 |
| 75.00 | 0.014 | 0.03 | 0.0000 | 001.8857 | 000.4881 | 024.179 |
| 80.00 | 0.01 | 0.03 | 0.0000 | 001.3968 | 000.2426 | 024.624 |
| 85.00 | 0.01 | 0.03 | 0.0000 | 001.3968 | 000.1217 | 024.608 |
| 90.00 | 0.01 | 0.03 | 0.0000 | 001.3968 | 000.0000 | 024.603 |

X-Field Output 125 deg

K233CM.C Sonoma, CA, Showing Protection to KYLD , Channel: 235
 Geographic Coordinates: N.38-20-10 W.122-32-07
 74.1204(d) Study - Using NED 03 SEC Terrain Database
 Translator or LPFM Maximum Licensed ERP = 0.057 kW, Channel: 233
 Translator or LPFM Antenna Height AG = 94 meters
 K233CM.C Antenna Model = 3-CL-FM V STACK OPT67 WL SPC

Protected Station's Contour = 56.34708 dBu
 Translator's or LPFM's full Interference contour 96.34708

Review Azimuth = 125 Degrees True

Horizontal Relative Field at Review Azimuth = 0.980
 Translator/LPFM ERP on the horizontal at Review Azimuth = 0.055 kW
 Distance between stations = 72.4 km
 Protected Station= KYLD, 30 kW, 425 M meters COR AMSL

| Depression Angle From Degree(Deg) | Vertical Relative Field | Horizontal Relative Field | ERP (kw) | Dist to IX Contour Along Dep. Angle(m) | Dist to IX Contour From Tower Base(m) | Height IX Above Ground (m) |
|---|-------------------------------|---------------------------------|----------|--|---|----------------------------------|
| 00.00 | 1.0 | 0.98 | 0.0559 | 798.3558 | 798.3558 | 094.000 |
| 05.00 | 0.823 | 0.98 | 0.0378 | 656.6476 | 654.1489 | 036.769 |
| 10.00 | 0.645 | 0.98 | 0.0232 | 514.9395 | 507.1164 | 004.582 |
| 15.00 | 0.341 | 0.98 | 0.0065 | 271.8401 | 262.5774 | 023.643 |
| 20.00 | 0.036 | 0.98 | 0.0001 | 028.7408 | 027.0075 | 084.170 |
| 25.00 | 0.122 | 0.98 | 0.0008 | 097.0002 | 087.9121 | 053.006 |
| 30.00 | 0.207 | 0.98 | 0.0024 | 165.2596 | 143.1191 | 011.370 |
| 35.00 | 0.162 | 0.98 | 0.0015 | 129.3336 | 105.9439 | 019.817 |
| 40.00 | 0.092 | 0.98 | 0.0005 | 073.4487 | 056.2650 | 046.788 |
| 45.00 | 0.01 | 0.98 | 0.0000 | 007.9836 | 005.6452 | 088.355 |
| 50.00 | 0.052 | 0.98 | 0.0002 | 041.5145 | 026.6850 | 062.198 |
| 55.00 | 0.064 | 0.98 | 0.0002 | 050.6956 | 029.0778 | 052.473 |
| 60.00 | 0.051 | 0.98 | 0.0001 | 040.7161 | 020.3581 | 058.739 |
| 65.00 | 0.034 | 0.98 | 0.0001 | 027.1441 | 011.4716 | 069.399 |
| 70.00 | 0.017 | 0.98 | 0.0000 | 013.5720 | 004.6419 | 081.246 |
| 75.00 | 0.014 | 0.98 | 0.0000 | 010.7778 | 002.7895 | 083.589 |
| 80.00 | 0.01 | 0.98 | 0.0000 | 007.9836 | 001.3863 | 086.138 |
| 85.00 | 0.01 | 0.98 | 0.0000 | 007.9836 | 000.6958 | 086.047 |
| 90.00 | 0.01 | 0.98 | 0.0000 | 007.9836 | 000.0000 | 086.016 |

EXHIBIT E - 74.1201(g), 74.1233(a) Compliance

Proposed K233CM - 57 Watts 74.1201(g), 74.1233(a) Compliance

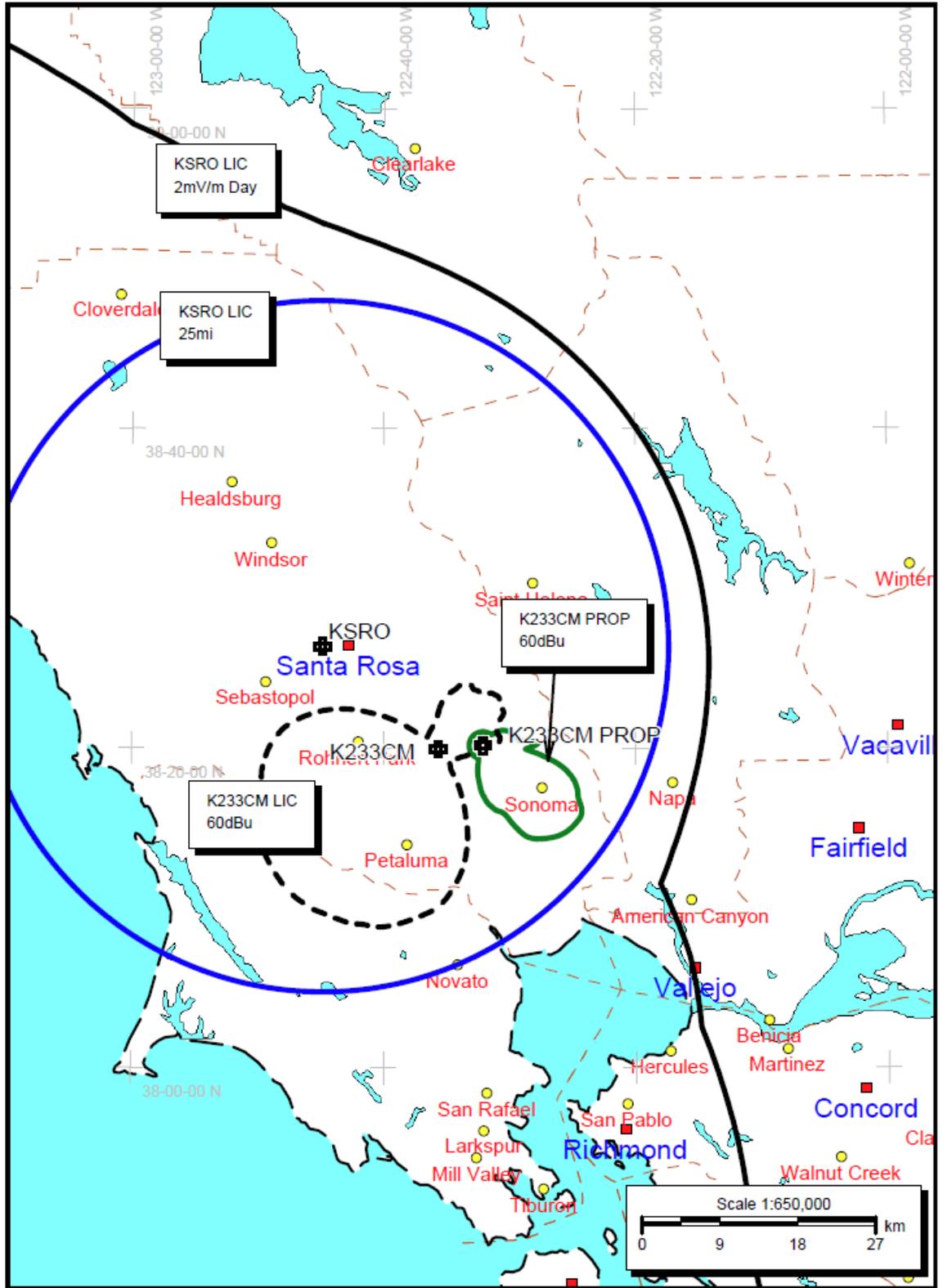
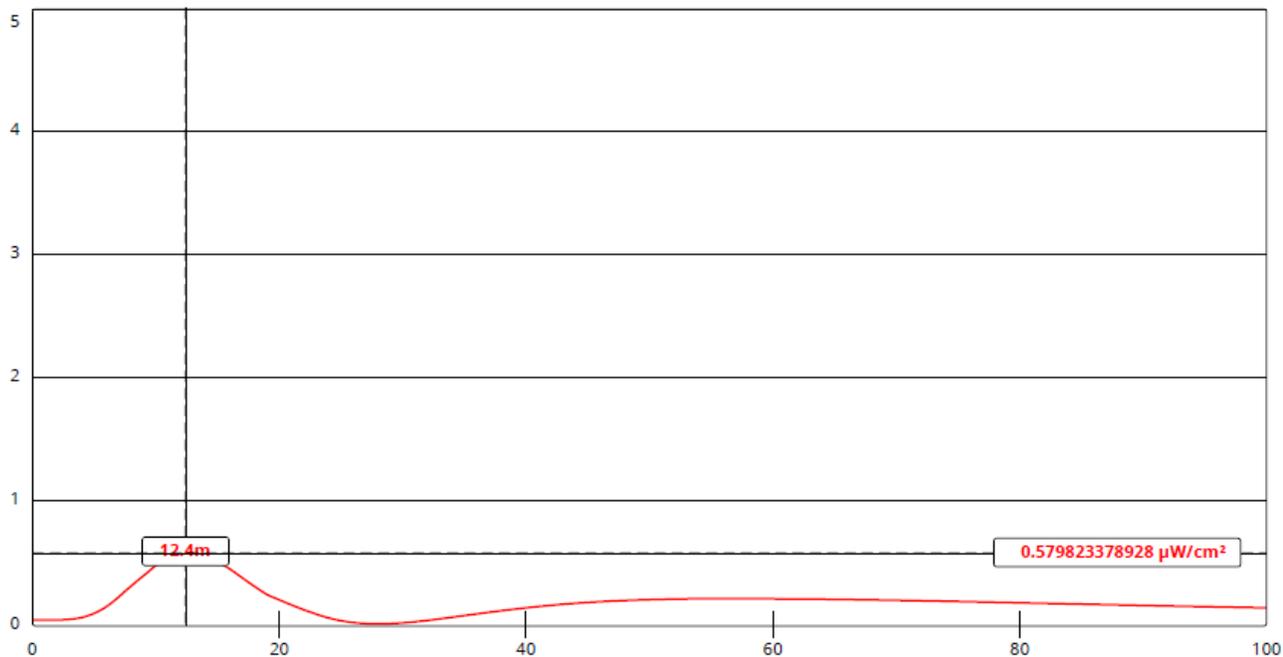


EXHIBIT F- FCC “FM Model” RFR Calculation



[View Tabular Results +](#)

| | | | |
|--------------------------------|--|-------------------------------|-----------------------------------|
| Channel Selection | Channel 233 (94.5 MHz) ▾ | | |
| Antenna Type + | EPA Type 1: Ring-and-Stub or "Other" ▾ | | |
| Height (m) | <input type="text" value="18"/> | Distance (m) | <input type="text" value="100"/> |
| ERP-H (W) | <input type="text" value="0"/> | ERP-V (W) | <input type="text" value="57"/> |
| Num of Elements | <input type="text" value="3"/> | Element Spacing (λ) | <input type="text" value="0.67"/> |
| Num of Points | <input type="text" value="500"/> | Apply | |

EXHIBIT G- TOWAIR Determination

TOWAIR Determination Results

***** 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 | 38-20-10.0 north |
| Longitude | 122-32-07.0 west |

Measurements (Meters)

| | |
|--------------------------------|-----|
| Overall Structure Height (AGL) | 19 |
| Support Structure Height (AGL) | 1 |
| Site Elevation (AMSL) | 266 |

Structure Type

POLE - Any type of Pole

Tower Construction Notifications

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