November 2019
KQPM(FM)   Channel 290B
Ukiah, California
Coordinate Correction Allocation Study

Background

It has recently been determined that the licensed transmitter site coordinates for KQPM require correction to match the actual location of the tower (ASR 1014622) on which the antenna is installed. Since the tower site elevation must also be corrected, this correction requires the filing of a Form 301 application for construction permit, followed by a Form 302-FM application for license.[1]

Spacing Study

The attached spacing study shows that the proposed operation meets the co-channel and adjacent channel spacing requirements for Class B stations as prescribed in §73.207 of the Commission's Rules, with one exception as discussed below.

The spacing study lists a short-spacing to the licensed operation of KPQW on Channel 292A at Willows. This short-spacing was created by KPQW when it requested §73.215 processing with respect to KQPM. The coordinate correction "moves" KQPM 0.01 km farther from KVYN.

Correction of the KQPM transmitter site coordinates will not worsen the short-spacing. Specifically, when rounded to the nearest kilometer the distance between the licensed transmitter site coordinates of the two stations is 66 kilometers. Likewise, the corrected distance between the two transmitter sites is also 66 kilometers.[2] Therefore, it is not necessary for KQPM to request processing pursuant to §73.215 with respect to the KPQW license.[3]

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[1] By separate application, Bicoastal's station KNTI 258B Lakeport, which is also on this tower, is also seeking a coordinate correction.

[2] §73.208(c)(8) of the Commission's Rules provides that distances between transmitter sites shall be rounded to the nearest kilometer.

[3] See also *Letter to Calvary Chapel of Costa Mesa, Inc.*, DA 12-122, February 2, 2012. "We find that, in measuring distances to determine whether short spacing is exacerbated under Section 73.1690(c)(11), the measurement methodology set forth in Section 73.208(c) is appropriate, including the rounding provisions."

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FMSTUDY.EXE     Copyright 2016, Hatfield & Dawson, LLC        Version 4.01
===============================================================================
SEARCH PARAMETERS                              FM Database Date: 190924
       Channel: 290B   105.9 MHz                            Page   1
       Latitude:  39  7 51.3 (NAD27)
       Longitude: 123  4 32.8
     Safety Zone:  32 km
      Job Title: KQPM 290B COORDINATE CORRECTION


Call    City           Channel ERP(kW)    Latitude Bearing    Dist   Req
Status   St  FCC File No.   Freq. HAAT(m)    Longitude deg-True   (km)  (km)
===============================================================================
KSAC-FM DUNNIGAN         288B1   2.550 DA  38-47-17  114.3   91.61    71
 LIC    CA  BLH-961113KA  105.5   308.0     122-06-52    SS   20.61 CLEAR

K289AS  COTATI           289D   0.010 DA  38-19-56  154.7   98.04     0
 CP     CA  BPFT-70103AAP  105.7   548.0     122-35-40          0.00 TRANS

K289AS  COTATI           289D   0.250 DA  38-19-56  154.7   98.04     0
 LIC    CA  BLFT-50109AAS  105.7   548.0     122-35-40          0.00 TRANS

K227AH  ELK GROVE        290D   0.250 DA  38-27-12  116.2  167.86     0
 CP     CA  BPFT-60729ALZ  105.9    99.0     121-20-55          0.00 TRANS

K290BZ  KNEELAND         290D   0.250     40-47-28  333.3  207.12     0
 LIC    CA  BLFT-50828AAI  105.9    43.0     124-10-52          0.00 TRANS

K290AG  STOCKTON         290D   0.250 DA  37-57-30  129.3  203.47     0
 LIC    CA  BLFT-40306AAE  105.9   104.0     121-16-55          0.00 TRANS

KQPM    UKIAH            290B   1.900     39-07-50  154.5    0.04   241
 LIC    CA  BLH-890324KB  105.9   615.0     123-04-32       -240.96 SHORT

KRYC-LP YUBA CITY        290L1  0.100     39-07-32   89.8  125.86     0
 LIC    CA  BLL-60510ABU  105.9    12.8     121-37-13          0.00 LPFM

KRRX    BURNEY           291C 100.000     40-54-21   27.9  224.05   217
 LIC    CA  BLH-850626KH  106.1   600.0     121-49-38          7.05 CLOSE

KMEL    SAN FRANCISCO    291B  69.000     37-41-24  160.6  169.40   169
 LIC    CA  BMLH-10805AAO  106.1   393.0     122-26-13          0.40 CLOSE

KBBL    CAZADERO         292A   1.620 DA  38-29-20  176.9   71.38    69
 LIC    CA  BLH-70924AVJ  106.3   194.0     123-01-53    SS    2.38 CLOSE

KPQW    WILLOWS          292A   1.750     39-17-17   74.5   66.41    69
 LIC    CA  BLH-50803AAH  106.3   190.0     122-20-02    SS   -2.59 SHORT
 ABSOLUTE MINIMUM 73.215 SPACING = 63 KM

KSHC-LP ST. HELENA       293L1  0.002     38-32-28  140.4   84.90     0
 LIC    CA  BLL-21113AAA  106.5   244.8     122-27-12          0.00  LPFM

         =====  END OF FM SPACING STUDY FOR CHANNEL 290  =====
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Facilities Proposed

KNTI: The proposed operation will be on Channel 258B (99.5 MHz) with an effective radiated power of 2.45 kilowatts. Continued operation is proposed with the existing 2-element circularly-polarized omni-directional antenna.

KQPM: The proposed operation will be on Channel 290B (105.9 MHz) with an effective radiated power of 1.9 kilowatts. Continued operation is proposed with the existing 2-element circularly-polarized half-wave-spaced omni-directional antenna.

Both the KNTI and KQPM antennas are side-mounted on an existing tower located atop Cow Mountain, with FCC Antenna Structure Registration Number 1014622.

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.
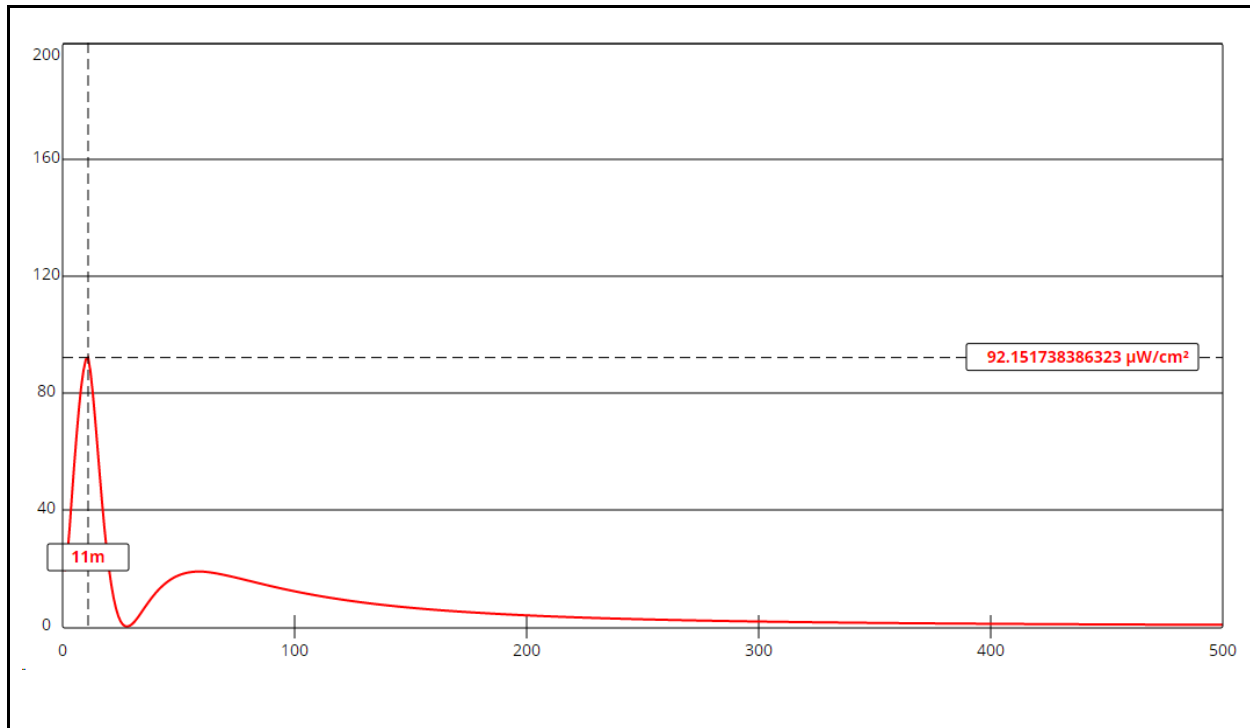
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Calculations of the power density produced by the KNTI antenna system assume a Type 3 element pattern, which is the element pattern for the Harris/ERI FMXL-2E antenna proposed for use. (This is a Harris-branded antenna, manufactured by ERI and the same as their LPX model.) The highest calculated ground level power density from KNTI alone occurs at a distance of 11 meters from the base of the antenna support structure. At this point the power density is calculated to be 92.2 μW/cm².

Calculations of the power density produced by KNTI, KQPM, and the other stations at this transmitter site are summarized in the following table:

Call	Avg or Peak ERP Antenna Model	Relative Field	Height AGL	Calculated Max Exposure	Gen Pop FCC Limit	% of Limit
KNTI 258B	2.45 kW H 2.45 kW V Harris FMXL-2E (ERI LPX-2E) 2-bay full-wave	FMModel Type 3	18 m	92.2 μW/cm²	200 μW/cm²	46.1%
KQPM 290B	1.9 kW H 1.9 kW V JAM JMPC-2R/S 2-bay 0.5 wave	FMModel Type 2	52 m	5.3 μW/cm²	200 μW/cm²	2.65%
KWNE 223B	2.2 kW H 2.2 kW V JAM JMPC-2 2-bay full wave	FMModel Type 2	61 m	7.9 μW/cm²	200 μW/cm²	3.95%
KULV 246A	0.13 kW H 0.13 kW V RFS ECFM-1	FMModel Type 1	46 m	2.7 μW/cm²	200 μW/cm²	1.35%
K296ES	0.24 kW H 0.24 kW V Scala CA5-150/CP	Manf	9 m	43.9 μW/cm²	200 μW/cm²	21.95%
K267BA	0.010 kW H 0.010 kW V ERI LPX-1E	FMModel Type 3	24 m	0.3 μW/cm²	200 μW/cm²	0.15%

These calculations show that the maximum calculated power density produced at two meters above ground level by KNTI, KQPM, and the other stations at this site (were their maxima to coincide, which they do not) is 152.3 μW/cm², which is 76.2% of 200 μW/cm² (the FCC standard for uncontrolled environments).

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.

Ground-Level RF Exposure   **OET FMModel**
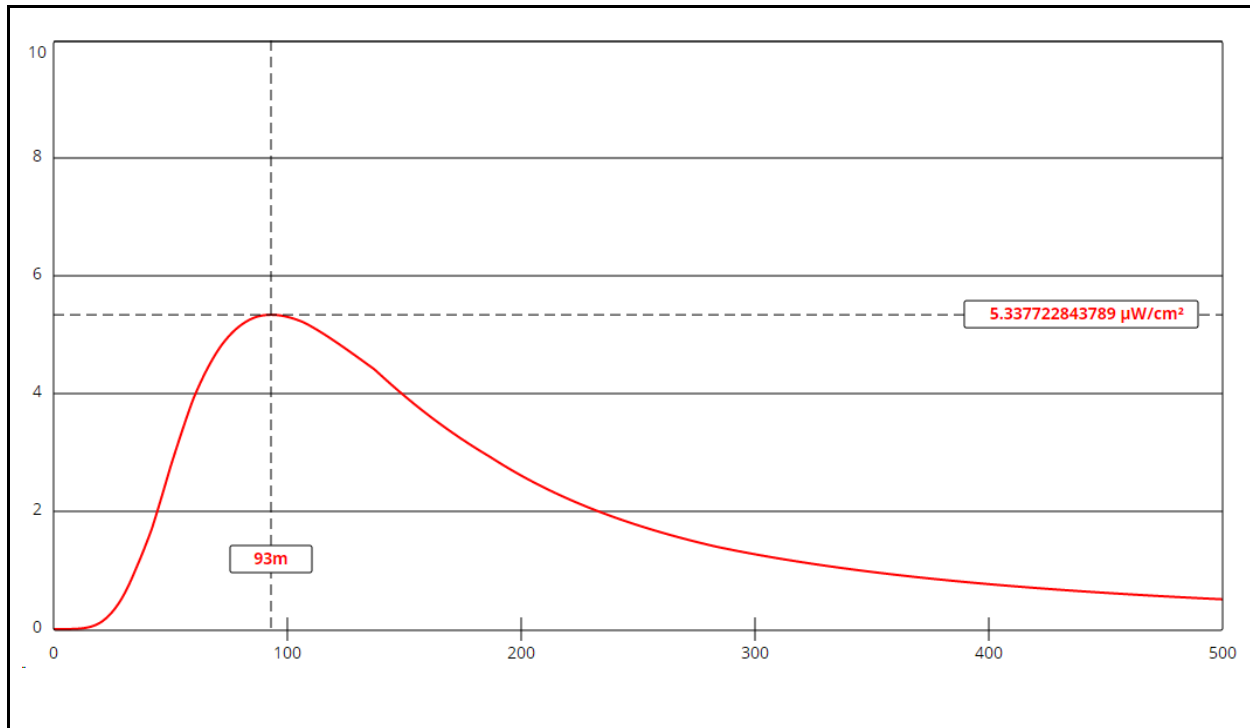
KNTI 258B Lakeport
Antenna Type: Harris FMXL-2E (ERI LPX) (Type 3)
No. of Elements: 2
Element Spacing: 1.0 wavelength

Distance: 500 meters
Horizontal ERP: 2.45 kW
Vertical ERP: 2.45 kW

Antenna Height: 18 meters AGL

Maximum Calculated Power Density is 92.2 $\mu W/cm^2$ at 11 meters from the antenna structure.

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Ground-Level RF Exposure   **OET FMModel**
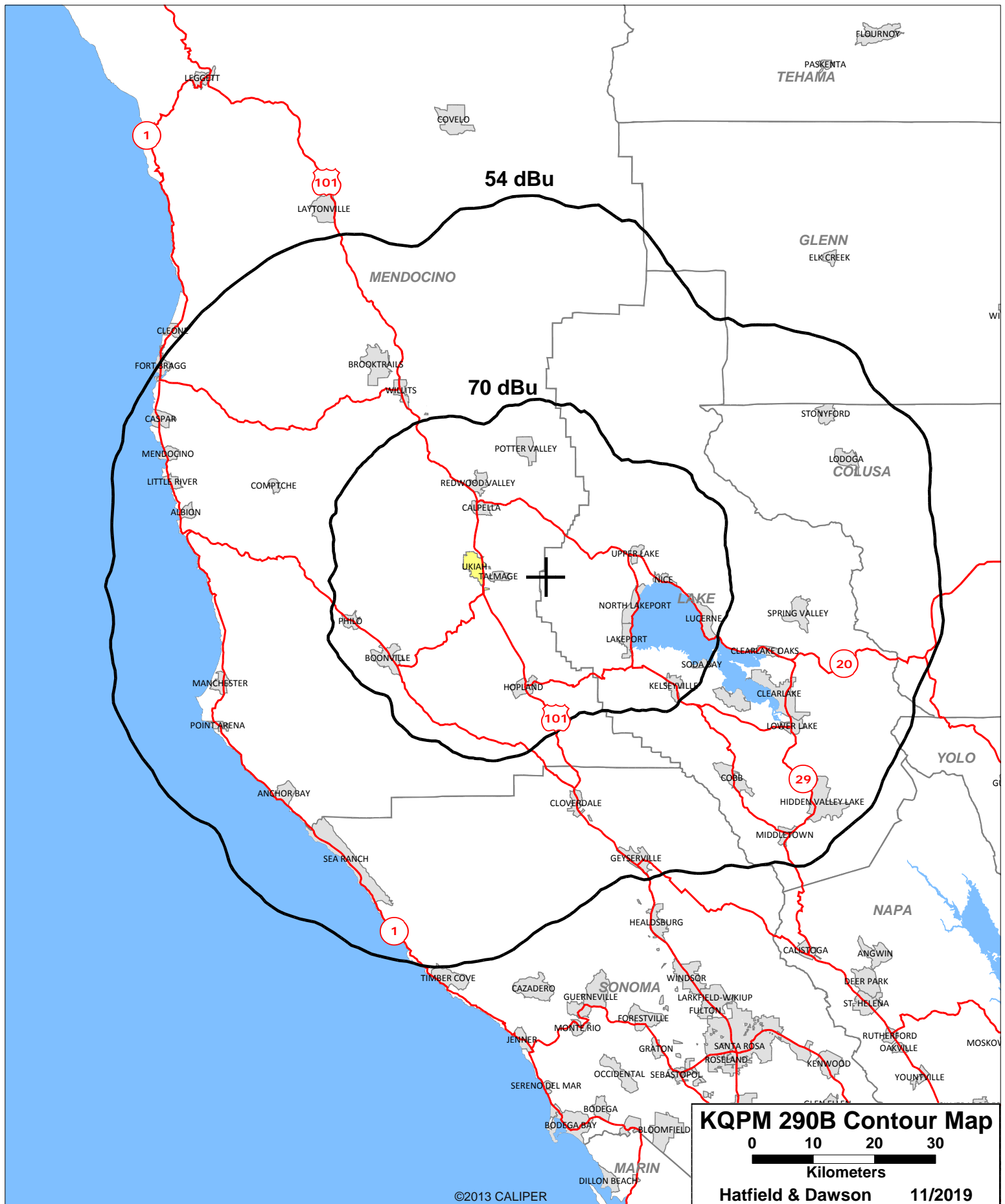
KQPM 290B Ukiah
Antenna Type: Jampro JMPC-2R/S (Type 2)
No. of Elements: 2
Element Spacing: 0.5 wavelength

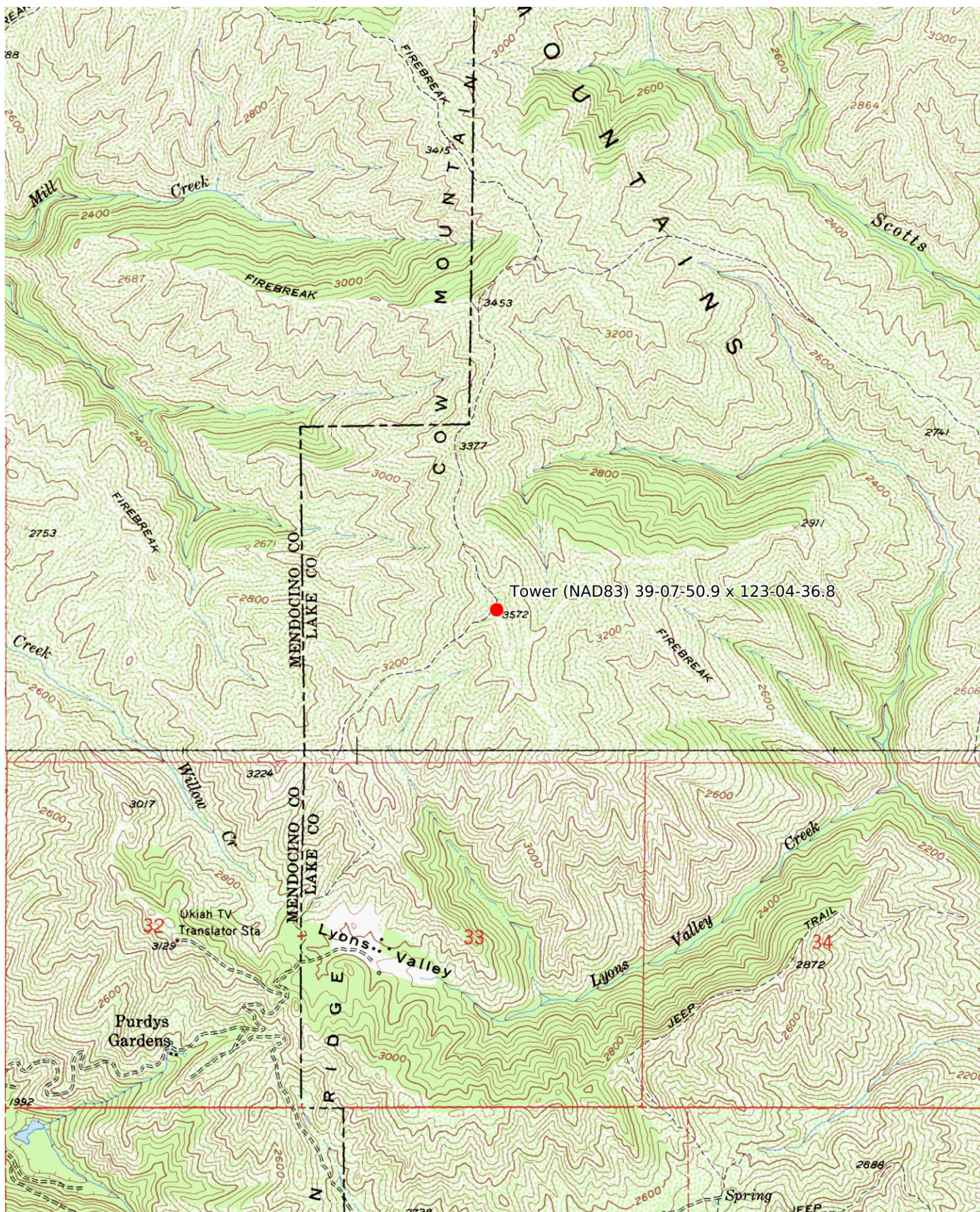Distance: 500 meters
Horizontal ERP: 1.9 kW
Vertical ERP: 1.9 kW

Antenna Height: 52 meters AGL

Maximum Calculated Power Density is 5.3 µW/cm² at 93 meters from the antenna structure.

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KQPM 290B Contour Map

54 dBu

70 dBu

Kilometers

0 10 20 30

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Tower (NAD83) 39-07-50.9 x 123-04-36.8

COW MOUNTAIN

MOUNTAINS

Scotts

Mill Creek

FIREBREAK

FIREBREAK

FIREBREAK

FIREBREAK

Creek

MENDOCINO CO
LAKE CO

MENDOCINO CO
LAKE CO

Willow Cr

RIDGE

Ukiah TV
Translator Sta

Lyons Valley

Lyons Valley Creek

TRAIL

JEEP

JEEP

Purdys
Gardens

Spring

32   33   34

3488
2687
2753
2671
2800
2911
3453
3415
3377
3572
3224
3017
3129
1992
2864
2741
2606
2872
2688
2928

Mercator Projection
WGS84
USNG Zone 10SDJ

CalTopo

0.5   1.0   1.5   2.0   2.5 km

0.5   1.0   1.5 mi

Scale **1:24000**   1 inch = 2000 feet

N
MN
14°