July 2017
KBAE(FM) Channel 238C3
Trinidad, CA
Auxiliary Antenna Engineering

Auxiliary Antenna Facilities Proposed

The proposed KBAE auxiliary operation will be on 95.5 MHz with an effective radiated power of 100 watts. Operation is proposed with a 1-element circularly-polarized omni-directional antenna, mounted 10 feet above a building rooftop, at a site which is currently used by an LPFM station. While the coordinates (in whole seconds, NAD27) are the same as those of LPFM station KRFH-LP, the two stations will operate via separate antennas with sufficient physical separation.

The antenna support structure does not exceed 60.96 meters (200 feet) above ground and does not require notification to the Federal Aviation Administration. Therefore, this structure does not require an Antenna Structure Registration Number.

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 ground-level power density produced by the proposed KBAE auxiliary antenna system assume a Type 1 element pattern, which is the element pattern for the Shively SLV-1

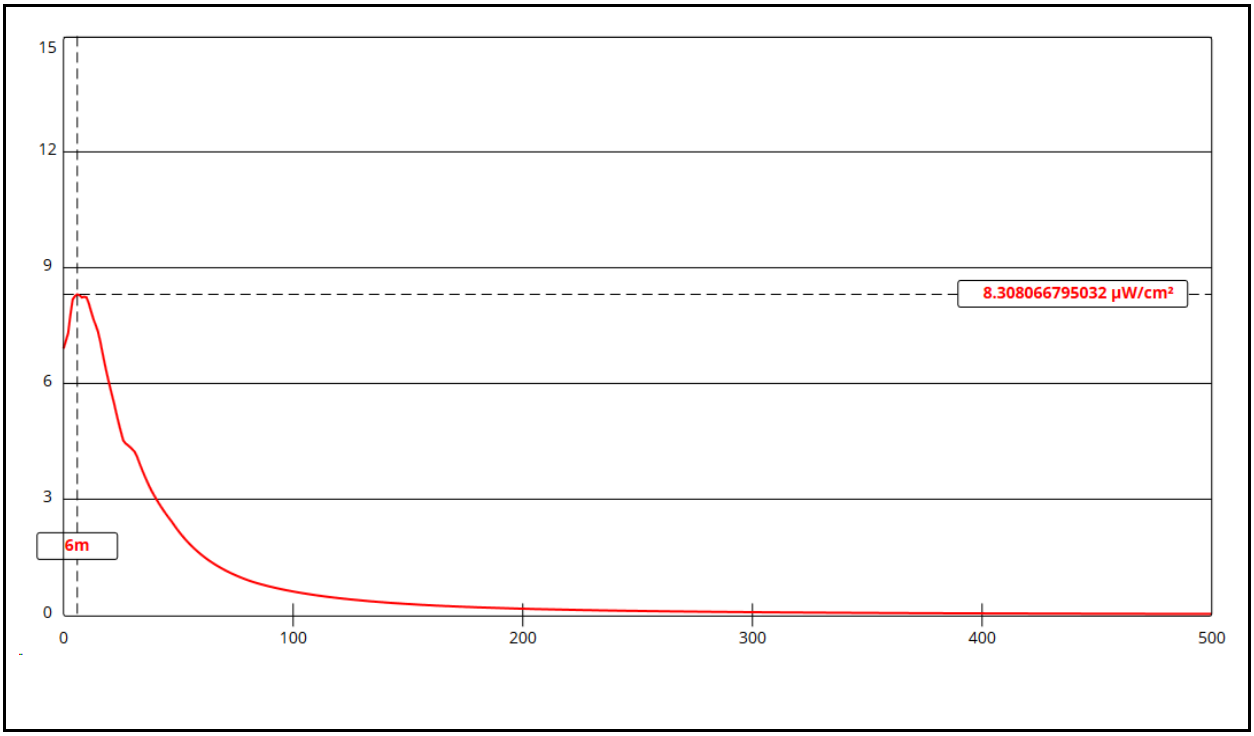
antenna proposed for use. The highest calculated ground level power density occurs at a distance of 6 meters from the base of the antenna support structure. At this point the power density is calculated to be 8.3 μW/cm², which is 4.2% of 200 μW/cm² (the FCC standard for uncontrolled environments). These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of the KBAE auxiliary 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, as regards the ground-level exposure.

The building on which the antenna will be installed has two roof levels.

Upper Rooftop: The antenna will be installed on a pole or tower extending 10 feet above the building's upper rooftop. Access to the upper rooftop is strictly controlled and locked. Signage will be placed at any access point to the roof warning of the potential RF hazard, so that the auxiliary antenna can be deactivated should authorized personnel require access to the upper rooftop while it is operating.

Lower Rooftop: The antenna will be installed 13 meters above the building's lower rooftop. The highest calculated lower-rooftop-level power density occurs at a distance of 3 meters from the base of the antenna support structure. At this point the power density is calculated to be 33.2 μW/cm², which is 16.6% of 200 μW/cm² (the FCC standard for uncontrolled environments). The same worst-case calculated value would pertain to co-located LPFM station KRFH-LP, for a total summed exposure of 66.4 μW/cm² or 33.2% 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.

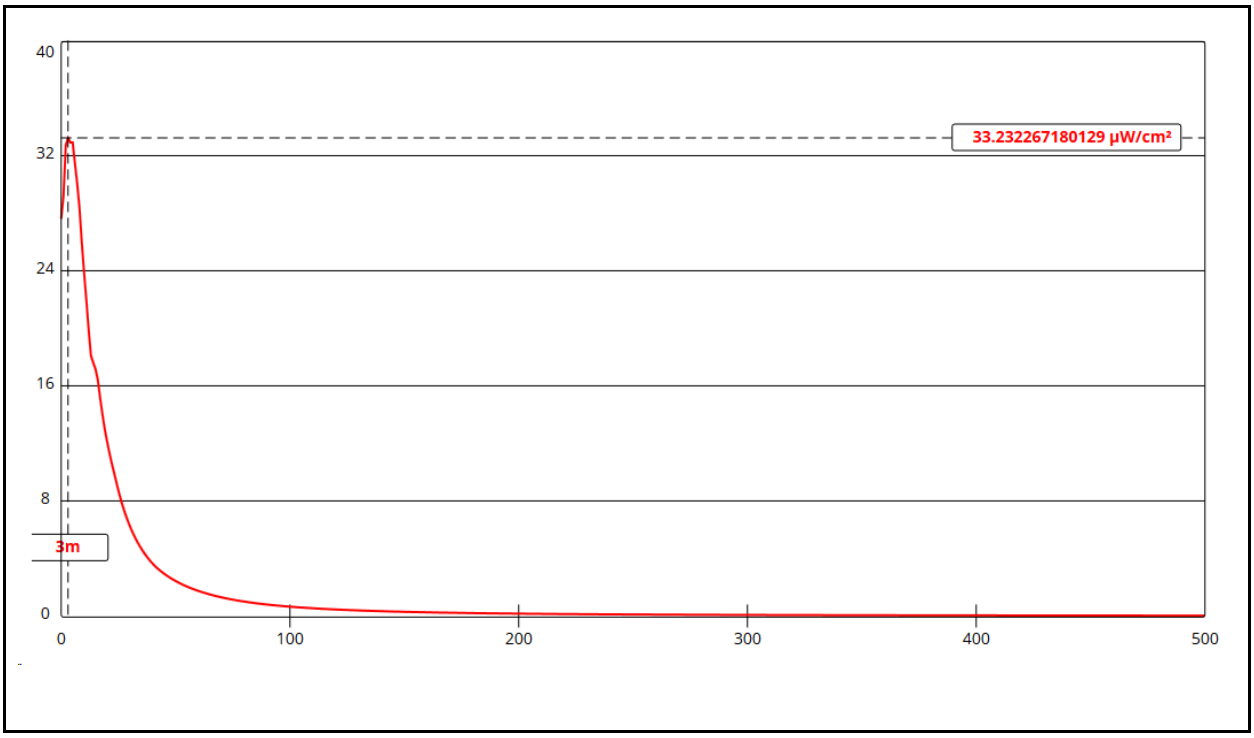


Ground-Level RF Exposure **OET FMModel**

KBAE Auxiliary Facility

Antenna Type:	Shively SLV-1 (Type 1)
No. of Elements:	1
Element Spacing:	1.0 wavelength
Distance:	500 meters
Horizontal ERP:	100 W
Vertical ERP:	100 W
Antenna Height:	24 meters AGL

Maximum Calculated Power Density is 8.3 µW/cm^2 at 6 meters from the antenna structure.

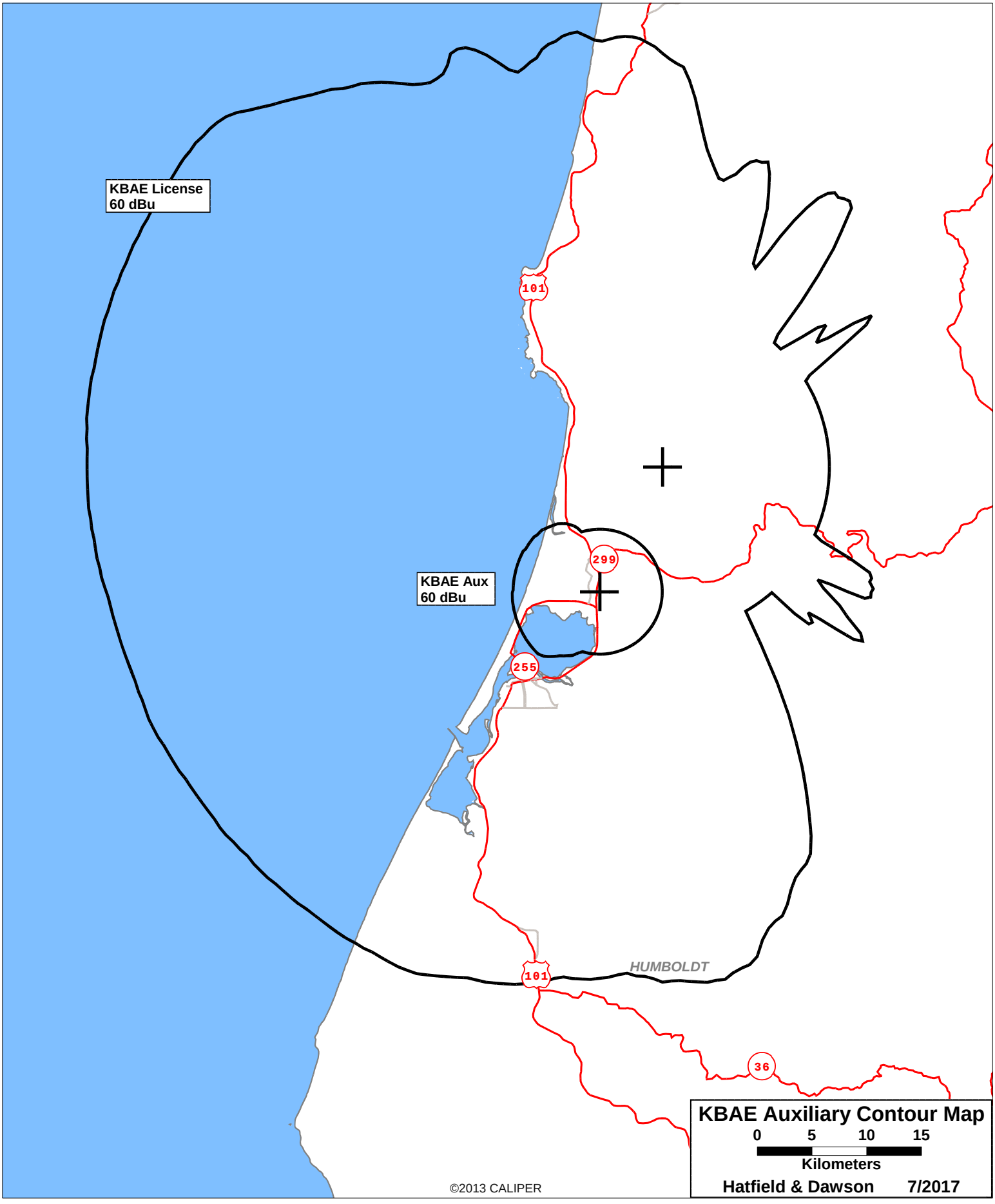


Lower-Rooftop-Level RF Exposure **OET FMModel**

KBAE Auxiliary Facility

Antenna Type:	Shively SLV-1 (Type 1)
No. of Elements:	1
Element Spacing:	1.0 wavelength
Distance:	500 meters
Horizontal ERP:	100 W
Vertical ERP:	100 W
Antenna Height:	13 meters AGL

Maximum Calculated Power Density is 33.2 µW/cm^2 at 3 meters from the antenna structure.


KBAE License
60 dBu
KBAE Aux
60 dBu
101
299
255
101
HUMBOLDT
36
KBAE Auxiliary Contour Map
0 5 10 15
Kilometers
Hatfield & Dawson 7/2017
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