June 2022
KLCA(FM) Channel 243C1
Tahoe City, CA
Auxiliary Antenna License Application
Section 73.1690 Exhibit

Facilities Proposed

This license application is filed to cover construction permit BXPH-20190708AAY for modification of the KLCA auxiliary antenna facility. The construction permit authorized moving the antenna an additional 30 meters up the tower with a maximum lobe effective radiated power of 2.5 kilowatts. The 1-element vertically-polarized log periodic antenna is side-mounted on an existing tower located in the Steamboat Hills, having FCC Antenna Structure Registration Number 1059085.

Two permissible changes from the licensed parameters are incorporated herein:

1) The transmitter site coordinates are slightly revised, in order to match the NAD83 coordinates of the registered tower. The construction permit was granted with NAD27 coordinates rounded to the nearest whole second. When the FCC transferred CDBS database records over to the LMS database, those whole-second NAD27 coordinates were converted to NAD83 coordinates rounded to the nearest tenth of a second, introducing some error. The registered NAD83 coordinates of ASR 1050985 are 39-22-04.0 x 119-47-11.0
2) The ERP of the auxiliary facility has been increased to 3 kW.[1] An updated contour map and RF exposure calculations are included in this exhibit.

Statement re Directional Antenna Pattern

While the proposed auxiliary antenna facility will operate with a directional antenna, it is not believed necessary to require proof-of-performance antenna pattern measurements on the Scala CL-FMV antenna. As is depicted on the attached contour map, the ERP of the proposed facility has been designed so that even if the auxiliary antenna were to operate omnidirectionally, the

[1] This requires a TPO of 1000 watts. While the Scala CL-FM antenna is normally limited to a maximum input power of 500 watts, this particular antenna was built with a 7/8 EIA flange connector, rather than the standard N connector.

auxiliary 60 dBu contour would not exceed the main 60 dBu contour at any azimuth.[2] The underlying KLCA construction permit for 2.5 kW ERP was granted without such a condition, based on this same reasoning.

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.

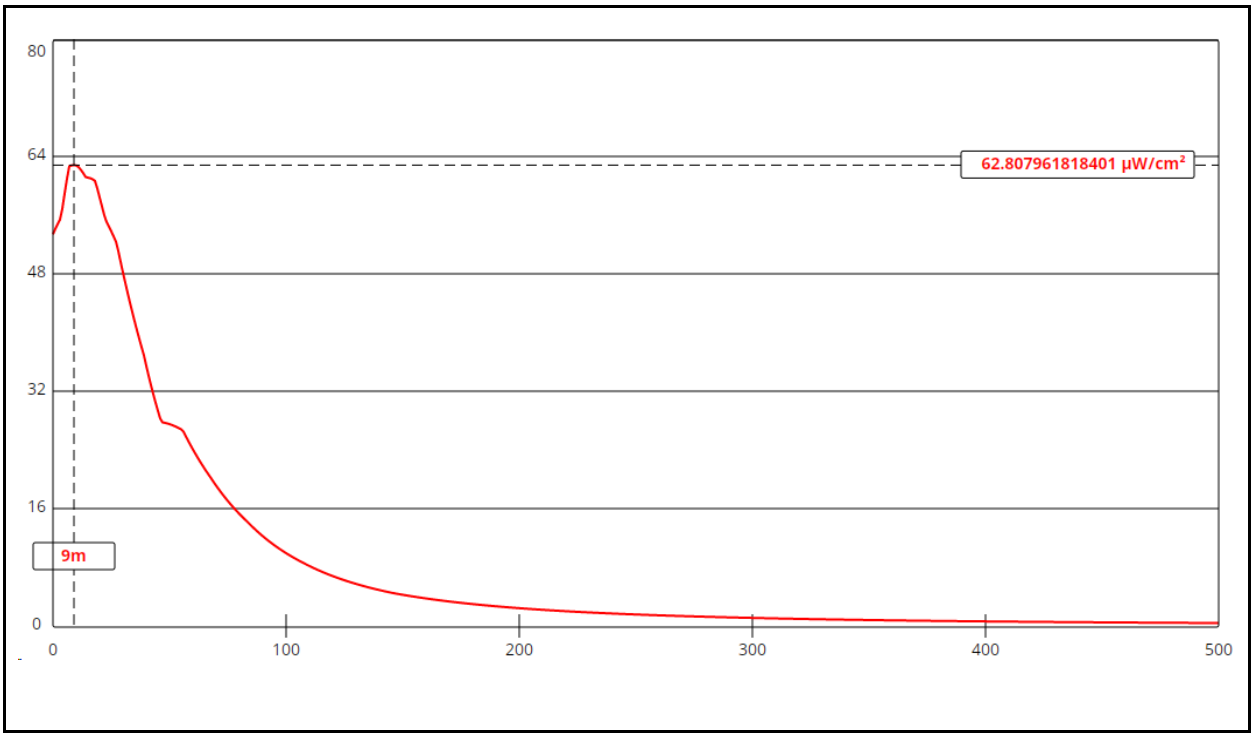
The Commission's FMModel software does not include an element model for the Scala CL-FMV antenna. Therefore, calculations of the power density produced by the proposed auxiliary antenna system made using the "worst case" element pattern for a vertical dipole antenna (i.e. Type 1) would suggest that the highest calculated ground level power density from the proposed facility occurs at a distance of 9 meters from the base of the antenna support structure and reaches 62.8 μW/cm².

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

[2] In similar circumstances and with the same type of showing, the directional antenna proof-of-performance condition was not placed on the construction permits for auxiliary facilities for KZTA (Facility ID No. 36006, see BXPH-20150106ABK), KXTA-FM (Facility ID No. 28218, see BXPH-20130926AZJ) and KPDA (Facility ID No. 72658, see BXPH-20130926AZE).

Call	Avg or Peak ERP Antenna Model	Relative Field	Height AGL	Calculated Max Exposure	Gen Pub FCC Limit	% of Limit
KLCA aux 243C1	3.0 kW V Scala CL-FMV	FMModel Type 1	41 m	62.8 μW/cm²	200 μW/cm²	31.40%
KRFN(FM) 265A	6 kW H 6 kW V Rototiller 5-bay full-wave	FMModel Type 3	52 m	12.1 μW/cm²	200 μW/cm²	6.05%

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of the KLCA auxiliary and the present operation of the other stations at this site (were their maxima to coincide, which they do not) is 37.45% of 200 $\mu W/cm^2$ (the FCC standard for uncontrolled environments).

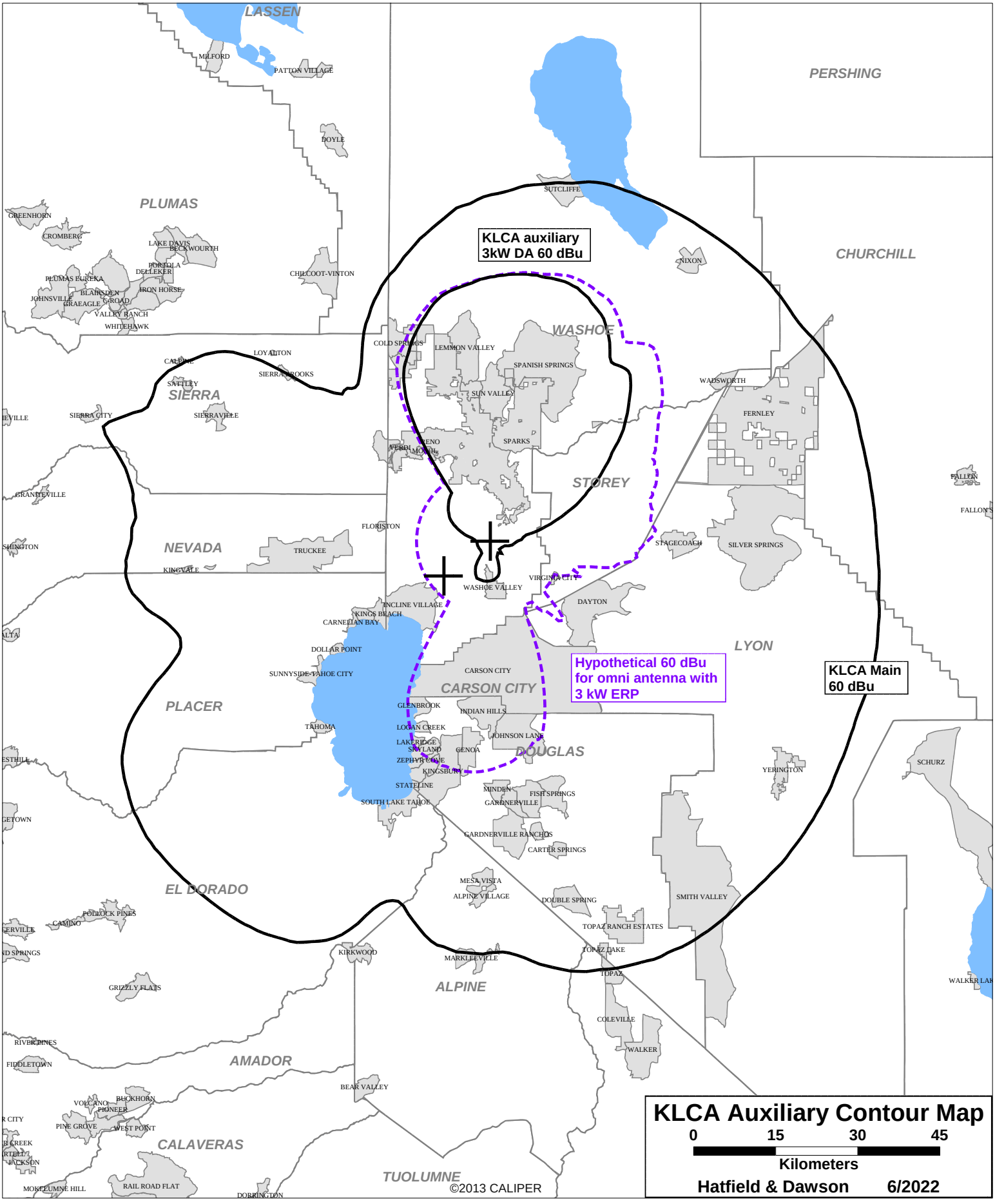


Ground-Level RF Exposure **OET FMModel**

KLCA 243C1 Auxiliary

Antenna Type:	Scala CL-FMV (Type 1 assumed)
No. of Elements:	1
Element Spacing:	1.0 wavelength
Distance:	500 meters
Horizontal ERP:	zero kW
Vertical ERP:	3 kW
Antenna Height:	41 meters AGL

Maximum Calculated Power Density is 62.8 µW/cm^2 at 9 meters from the antenna structure.


KLCA auxiliary
3kW DA 60 dBu
Hypothetical 60 dBu
for omni antenna with
3 kW ERP
KLCA Main
60 dBu
LASSEN
PERSHING
PLUMAS
CHURCHILL
WASHOE
SIERRA
NEVADA
STOREY
LYON
PLACER
CARSON CITY
DOUGLAS
EL DORADO
ALPINE
AMADOR
CALAVERAS
TUOLUMNE
MILFORD
PATTON VILLAGE
DOYLE
SUTCLIFFE
NIXON
GREENHORN
CROMBERG
LAKE DAVIS
BECKWOURTH
PORTOLA
DELLEKER
CHILCOOT-VINTON
PLUMAS EUREKA
BLAIRSDEN
IRON HORSE
JOHNSVILLE
GRAEAGLE
CROAD
VALLEY RANCH
WHITEHAWK
COLD SPRINGS
LEMMON VALLEY
SPANISH SPRINGS
SUN VALLEY
WADSWORTH
FERNLEY
RENO
SPARKS
VERDI
MOGUL
LOYALTON
CALPINE
SATTLEY
SIERRA BROOKS
SIERRA CITY
SIERRAVILLE
GRANITEVILLE
FLORISTON
TRUCKEE
KINGVALE
WASHOE VALLEY
VIRGINIA CITY
DAYTON
STAGECOACH
SILVER SPRINGS
FALLON
FALLON NAS
INCLINE VILLAGE
KINGS BEACH
CARNELIAN BAY
DOLLAR POINT
SUNNYSIDE-TAHOE CITY
CARSON CITY
GLENBROOK
INDIAN HILLS
TAHOMA
LOGAN CREEK
LAKERIDGE
SKYLAND
GENOA
ZEPHYR COVE
KINGSBURY
STATELINE
SOUTH LAKE TAHOE
JOHNSON LANE
MINDEN
FISH SPRINGS
GARDNERVILLE
GARDNERVILLE RANCHOS
CARTER SPRINGS
YERINGTON
SCHURZ
WALKER LAKE
MESA VISTA
ALPINE VILLAGE
DOUBLE SPRING
SMITH VALLEY
TOPAZ RANCH ESTATES
TOPAZ LAKE
TOPAZ
COLEVILLE
WALKER
KIRKWOOD
MARKLEEVILLE
POLLOCK PINES
CAMINO
GRIZZLY FLATS
RIVER PINES
FIDDLETOWN
BEAR VALLEY
VOLCANO
BUCKHORN
PIONEER
PINE GROVE
WEST POINT
MOKELUMNE HILL
RAIL ROAD FLAT
DORRINGTON
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KLCA Auxiliary Contour Map
0 15 30 45
Kilometers
Hatfield & Dawson 6/2022