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**CP Modification for FM Translator K281CV  
Channel 281D at Fort Bragg, CA  
To Rebroadcast KDAC(AM) 1230 kHz Fort Bragg, CA  
June 2021**

**Allocation Study**

The instant application proposes modification of the K281CV construction permit. In order to facilitate a construction before the expiration of the original CP, it is proposed to install an antenna on an existing wooden pole at the KDAC(AM) antenna site (rather than high on the KDAC tower as currently authorized).

The attached spacing study shows the spacing between the proposed translator site and the location of cochannel and adjacent channel stations and proposals. This study was made with the Commission's Class A spacing requirements, and individual situations were examined to determine the lack of prohibited contour overlap per the requirements of §74.1204 of the Rules. The attached allocation study map demonstrates compliance with the Commission's Rules for protection of FM broadcast stations and FM translators as outlined in §74.1204.

The attached spacing study demonstrates compliance with §73.207 of the Commission's Rules regarding spacing restrictions to stations which are 53 or 54 channels removed from the proposed operation.

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SEARCH PARAMETERS FM Database Date: 20210608

Channel: 281A 104.1 MHz Page 1

Latitude: 39 26 33.6 (NAD83)

Longitude: 123 46 51.4

Safety Zone: 50 km

Job Title: K281CV FORT BRAGG

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KMKX LIC	WILLITS CA	BLH-19991118AAU	228B 93.5	0.890 876.0	39 30 58.5 123 5 25.0	81.9	59.98 44.98	15 CLEAR
KLVG ALC	GARBERVILLE CA		279C0 103.7	0.000 0.0	40 17 52.5 124 12 43.2	339.0	101.87 15.87	86 CLEAR
KLVG LIC	GARBERVILLE CA	0000133948	279C0 103.7	11.000 716.0	40 20 4.4 124 6 36.1	344.3 SS	102.95 16.95	86 CLEAR
KJOR LIC	WINDSOR CA	BLH-20070110ABL	281A 104.1	0.900 93.0	38 32 27.6 122 54 8.9	142.6 SS	125.75 10.75	115 CLEAR
K281CV CP	FORT BRAGG CA	BNPFT-20171201AJ	281D 104.1	0.250 0.0	39 26 34.6 123 46 52.1	331.6	0.04 0.00	0 TRANS
K282CC CP	UKIAH CA	BNPFT-20180502AC	282D 104.3	0.100 0.0	39 19 34.5 123 16 15.0	106.3	45.81 0.00	0 TRANS
KSHA LIC	REDDING CA	BLH-19921102KC	282C 104.3	100.000 475.0	40 39 13.5 122 31 16.0	38.1	172.16 7.16	165 CLOSE

===== END OF FM SPACING STUDY FOR CHANNEL 281 =====

K281CV 281D Fort Bragg  
54 dBu F(50,10)

K282CC 282D Ukiah  
60 dBu F(50,50)

MENDOCINO

LAKE

# K281CV Fort Bragg 1Adj Study Map

0 10 20 30

Kilometers

Hatfield & Dawson

6/2021

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## Facilities Proposed

The proposed operation will be on Channel 281D (104.1 MHz) with an effective radiated power of 0.170 kilowatts. Operation is proposed with a 2-element circularly-polarized omnidirectional antenna. The antenna will be side-mounted on an existing wooden pole on the site of the KDAC(AM) tower.

The proposed antenna support structure will 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.

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	39-26-33.6 north
Longitude	123-46-51.4 west
Measurements (Meters)	
Overall Structure Height (AGL)	8.2
Support Structure Height (AGL)	8.2
Site Elevation (AMSL)	50.3
Structure Type	
POLE - Any type of Pole	

## 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 power density produced by the proposed AAT model ANT-FM-IV-CP-BB-2 half-wave antenna system assume a Type 1 element pattern, which is the “worst case” element pattern in FMModel. Under this worst-case calculation, the highest calculated ground level power density occurs at a distance of 8 meters from the base of the antenna support structure. At this point the power density is calculated to be  $54.3 \mu\text{W}/\text{cm}^2$ , which is 27.2% of  $200 \mu\text{W}/\text{cm}^2$  (the FCC standard for uncontrolled environments).

The proposed FM translator antenna will be located 105 feet (32 meters) from the two-story transmitter building, with the antenna approximately at the height of a person on the second floor or rooftop. Based on a straight-line calculation using the formula above, assuming a distance of 32 meters, the worst-case calculated power density for a person in or on the building would be  $11.1 \mu\text{W}/\text{cm}^2$ , which is 5.6% of  $200 \mu\text{W}/\text{cm}^2$  (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.

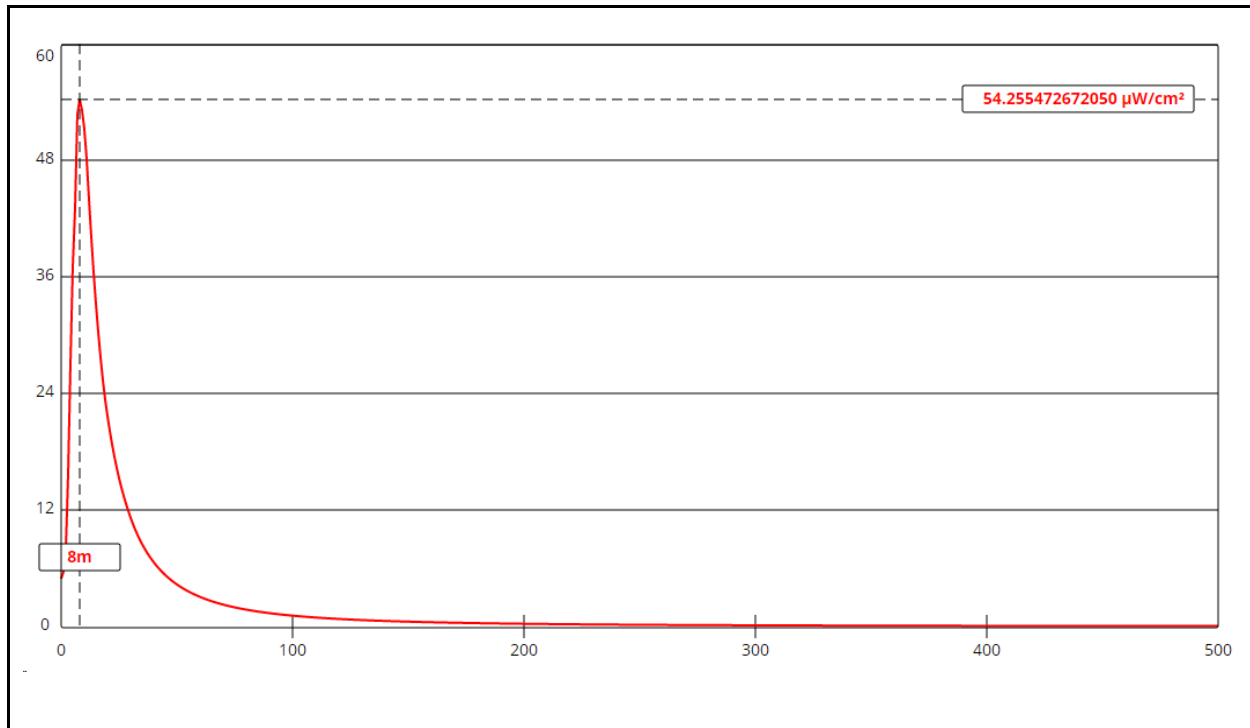
### **AM Station KDAC**

The translator antenna will be installed near the tower used by AM station KDAC 1230 kHz. KDAC operates with 1 kilowatt nondirectional daytime and nighttime. The KDAC radiator is 180.1 electrical degrees tall, or 50% of the station wavelength. Using Tables 1-4 in OET Bulletin No. 65, the fencing distance requirement for this station is 2 meters from the tower base. The tower is fenced to at least 2 meters from the tower base. In addition, the entire parcel is fenced to prevent trespass on the property.

The proposed antenna support structure will be significantly less than 60 electrical degrees tall at the wavelength of nondirectional KDAC. Therefore this proposal is presumed to have no significant effect on the AM station.



*Pole location with respect to the KDAC(AM) tower and the transmitter building (white roof to the south)*



## Ground-Level RF Exposure

OET FMModel

### K281CV Fort Bragg

Antenna Type: AAT ANT-FM-IV-CP-BB-2 (Type 1)

No. of Elements: 2

Element Spacing: 0.5 wavelength

Distance: 500 meters

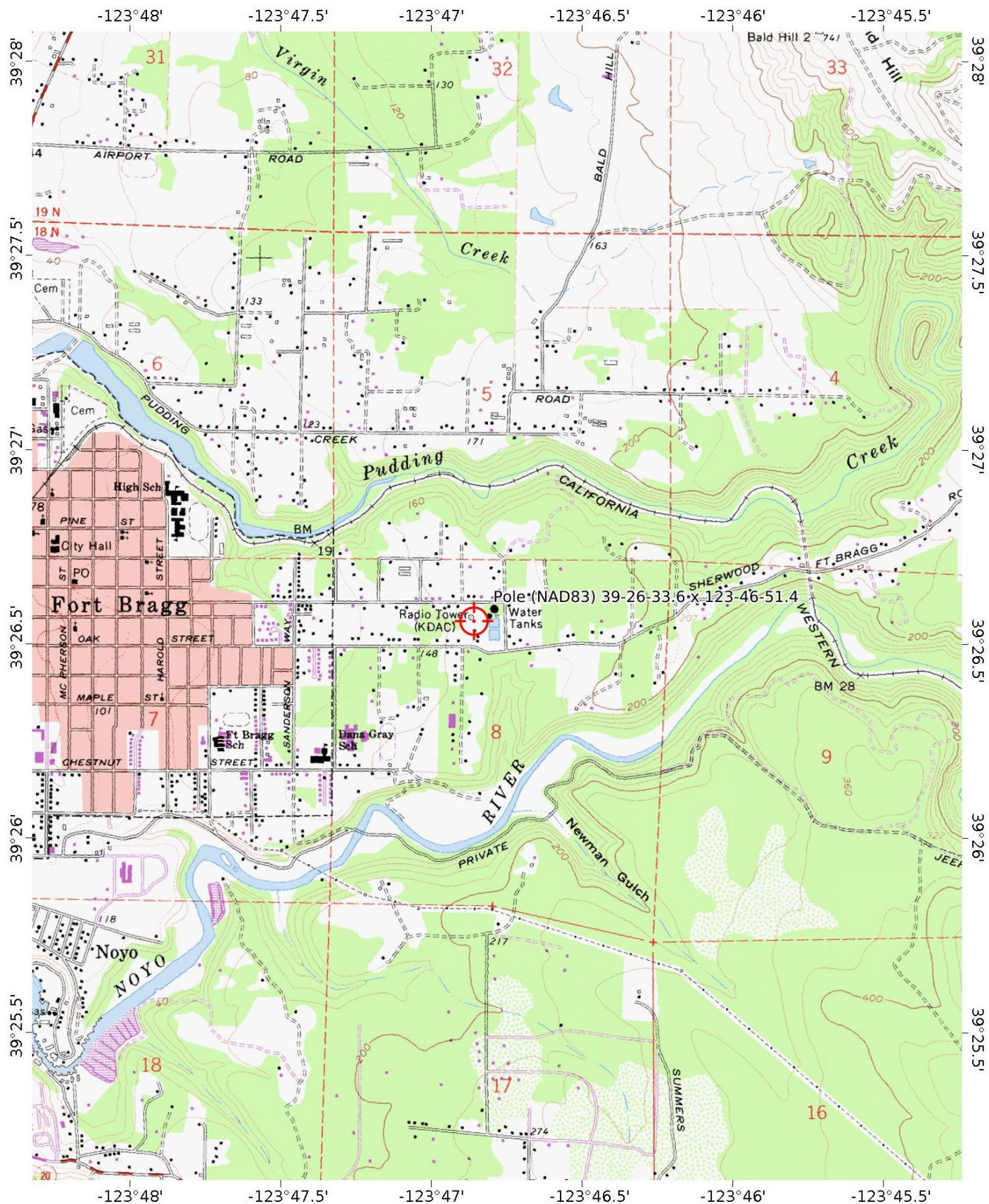
Horizontal ERP: 170 watts

Vertical ERP: 170 watts

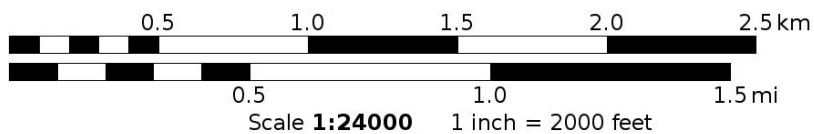
Antenna Height: 7.0 meters AGL

Maximum Calculated Power Density is 54.3  $\mu\text{W}/\text{cm}^2$  at 8 meters from the antenna structure.





Mercator Projection  
WGS84  
USNG Zone 10SDJ  
 CALTOPO



Hatfield & Dawson Consulting Engineers



