

April 2022
FM Translator K239CP
Grand Junction, Colorado Channel 239D
Allocation Study

Background

This application proposes to change K239CP from directional to non-directional operation, along with a move to an adjacent tower.

Allocation Study

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.

Second- and Third-Adjacent Channel Stations

The proposed translator transmitter site is located within the 60 dBu protected contours of two second- or third-adjacent channel stations. The following calculation, performed using the *Living Way* methodology, demonstrates interference protection to those stations.

Protected Station	Distance & Bearing to Proposal	Station ERP and HAAT on that azimuth	Station Field Strength at Proposal	Corresponding Translator Interfering Contour	Distance to Translator Interfering Contour
KKNN 236C0	49.68 km 295 deg True	100 kW 646 meters	78.5 dBu F(50,50)	118.5 dBu	132 meters Free Space
KSTR-FM 241C0	49.61 km 295 deg True	100 kW 676 meters	79.0 dBu F(50,50)	119.0 dBu	124 meters Free Space

The attached map of the proposed transmitter site depicts the “worst case” 118.5 dBu contour from the proposed facility, which extends just 132 meters from the antenna (see black circle). There is no population within this contour. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KKNN and KSTR-FM.

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SEARCH PARAMETERS

FM Database Date: 20220404

Channel: 239A 95.7 MHz

Page 1

Latitude: 39 3 59.7 (NAD83)

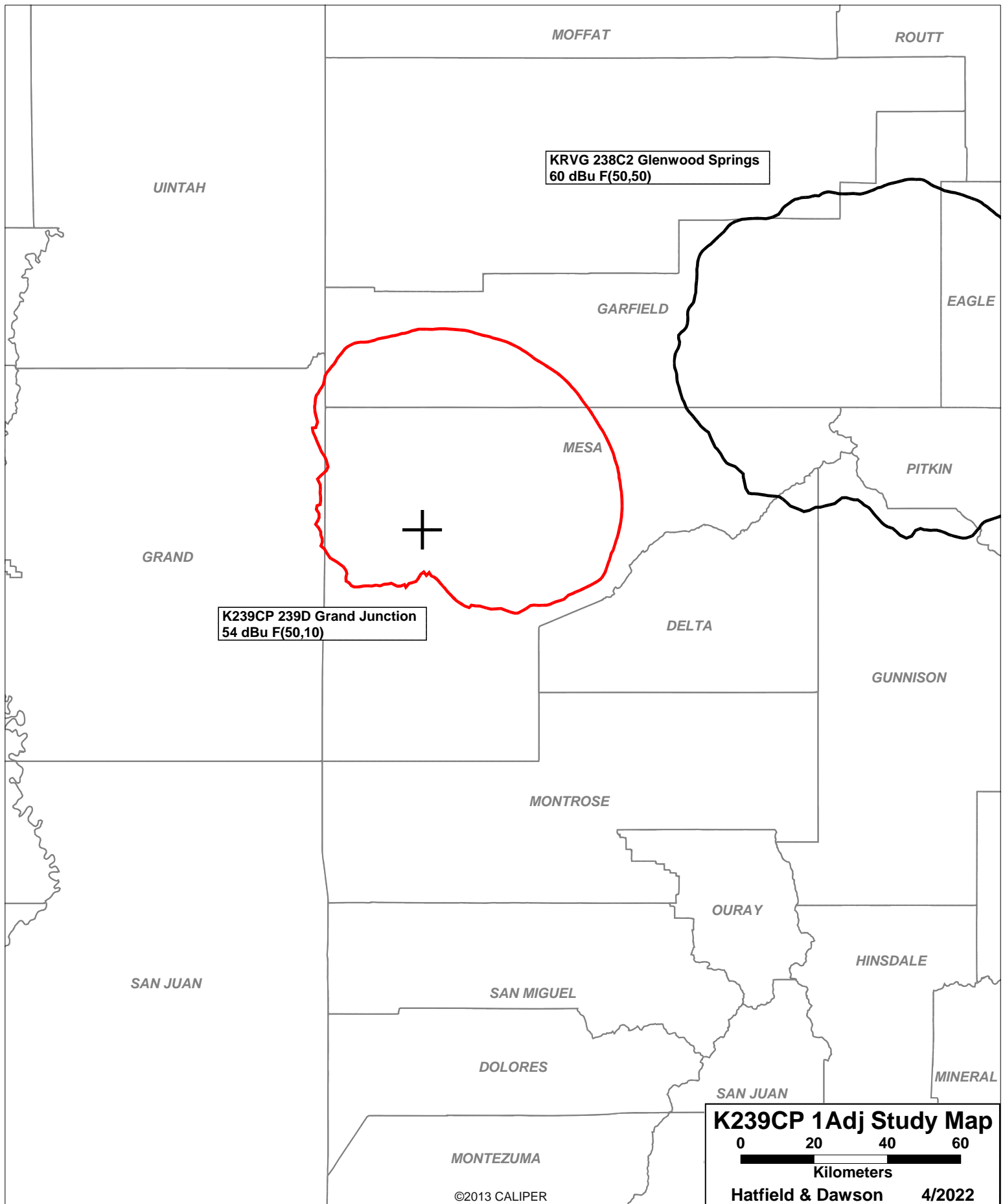
Longitude: 108 44 43.1

Safety Zone: 50 km

Job Title: K239CP GRAND JUNCTION

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KKNN	DELTA		236C0	100.000	38 52 39.9	114.9	49.68	86
LIC	CO	BMLH-19870227PC	95.1	434.0	108 13 32.2		-36.32	SHORT
KRVG	GLENWOOD SPRINGS		238C2	1.200	39 25 7.0	71.3	125.09	106
LIC	CO	0000129941	95.5	766.0	107 22 8.0		19.09	CLEAR
K239CP	GRAND JUNCTION		239D	0.250	DA 39 3 58.9	196.2	0.03	0
LIC	CO	BLFT-20171102AAA	95.7	0.0	108 44 43.4		0.00	TRANS
KSTR-FM	MONTROSE		241C0	100.000	38 52 39.9	114.9	49.61	86
LIC	CO	BMLH-20121127AWU	96.1	335.0	108 13 35.2		-36.39	SHORT

===== END OF FM SPACING STUDY FOR CHANNEL 239 =====



K239CP 1Adj Study Map

0 20 40 60
Kilometers

Hatfield & Dawson 4/2022

April 2022
FM Translator K239CP
Grand Junction, Colorado Channel 239D
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 239D (95.7 MHz) with an effective radiated power of 250 watts. Operation is proposed with an antenna to be mounted on an existing tower on Black Ridge, with FCC Antenna Structure Registration Number 1022341.

RF Exposure Calculations

OET Bulletin 65 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01) states in part that:

When performing an evaluation for compliance with the FCC's RF guidelines all significant contributors to the ambient RF environment should be considered. . . For purposes of such consideration, significance can be taken to mean any transmitter producing more than 5% of the applicable exposure limit (in terms of power density or the square of the electric or magnetic field strength) at accessible locations.

As will be demonstrated below, the proposed operation of K239CP will produce less than 5% of the applicable exposure limit for both controlled and uncontrolled environments. Thus, the proposed facility is categorically excluded from the requirement of further study. Therefore, pursuant to §1.1307(b)(3) of the Commission's Rules no calculations are required for the other FM and TV facilities in the vicinity, and precise calculations are made only with regard to the levels from this proposal.

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.

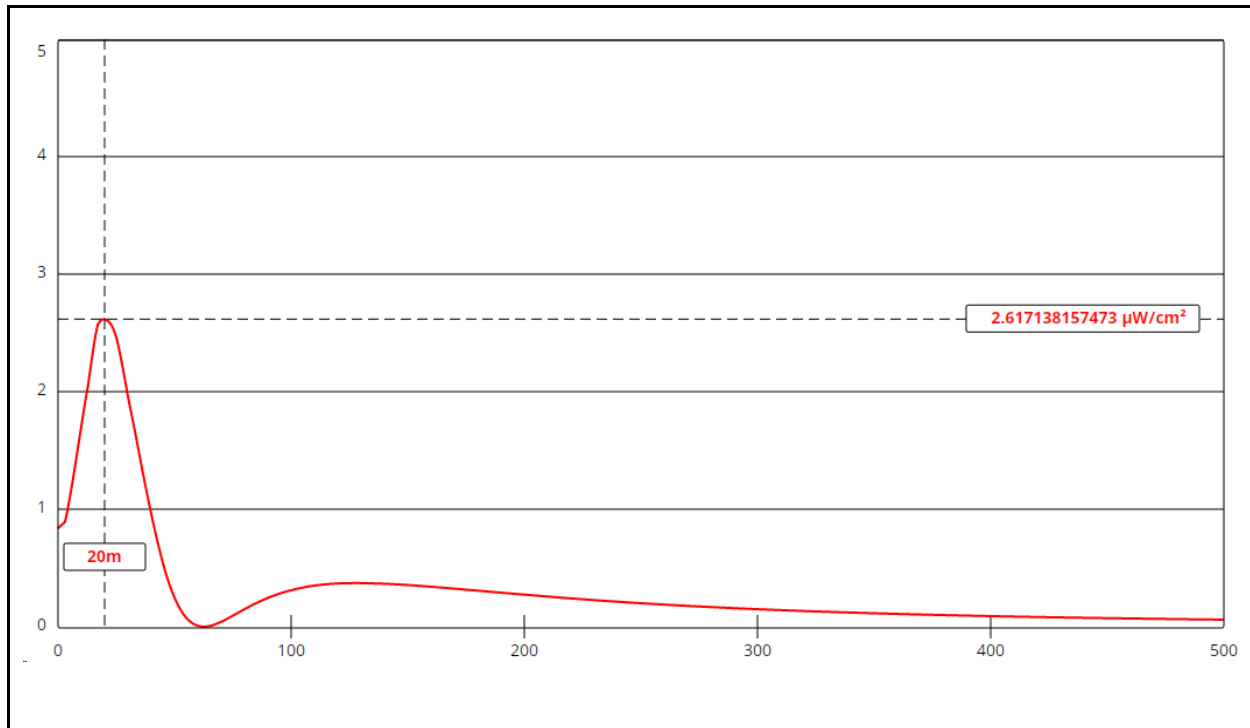
D is the distance in meters from the center of radiation to the calculation point.

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 antenna system assume a Type 4 element pattern, which is the element pattern for the Dielectric model DCR-T antenna proposed for use. The highest calculated ground level power density occurs at a distance of 20 meters from the base of the antenna support structure. At this point the power density is calculated to be 2.6 $\mu W/cm^2$, which is 1.3% of 200 $\mu W/cm^2$ (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 K239CP 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 of the Commission's Rules exempts applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicants 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.

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

K239CP Grand Junction

Antenna Type: Dielectric DCR-T-2 (Type 4)
No. of Elements: 2
Element Spacing: 1.0 wavelength

Distance: 500 meters
Horizontal ERP: 250 W
Vertical ERP: 250 W

Antenna Height: 38.1 meters AGL

Maximum Calculated Power Density is 2.6 $\mu\text{W}/\text{cm}^2$ at 20 meters from the antenna structure.

