

May 2021
KZJH(FM) Channel 237C1
Jackson, Wyoming
Allocation Study

The instant application proposes a same-channel one-step downgrade of KZJH from Channel 237C to Channel 237C1 at Jackson, Wyoming. The attached spacing study shows that the proposed operation meets the co-channel and adjacent channel spacing requirements for Class C1 stations as prescribed in §73.207 of the Commission's Rules.

Hatfield & Dawson Consulting Engineers

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Channel: 237C1 95.3 MHz

Latitude: 43 27 42.3 (NAD83)

Longitude: 110 45 12.7

Safety Zone: 32 km

Job Title: KZJH 237C1 JACKSON

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
K234CB LIC	ALPINE WY	BLFT-20160419AAK	234D 94.7	0.035 0.0	43 6 17.7 111 7 21.7	217.1	49.69 0.00	0 TRANS
KZJH LIC	JACKSON WY	BLH-19890714KA	237C 95.3	100.000 322.0	43 27 39.7 110 45 11.7	164.4	0.08 -269.92	270 SHORT
K237CP LIC	LANDER WY	BLFT-19890210TG	237D 95.3	0.076 0.0	42 49 3.8 108 43 40.4	112.8	179.66 0.00	0 TRANS
K237FA LIC	POCATELLO ID	BLFT-20160406ABU	237D 95.3	0.250 0.0	DA 42 52 25.6 112 30 50.9	246.0	157.37 0.00	0 TRANS
K239BN LIC	IDAHO FALLS ID	BLFT-20171010AEB	239D 95.7	0.102 0.0	DA 43 21 5.6 112 0 31.8	263.5	102.42 0.00	0 TRANS
K239AU LIC	DRIGGS ID	BLFT-20070822ADX	239D 95.7	0.100 0.0	DA 43 42 41.6 111 20 59.8	300.2	55.59 0.00	0 TRANS
K240EK LIC	JACKSON WY	BLFT-20161228AAK	240D 95.9	0.013 0.0	43 27 44.7 110 45 5.7	64.7	0.17 0.00	0 TRANS
K290BT LIC	JACKSON WY	BLFT-20130624AAT	290D 105.9	0.010 0.0	43 29 27.7 110 57 20.7	281.4	16.68 0.00	0 TRANS

===== END OF FM SPACING STUDY FOR CHANNEL 237 =====

May 2021
KZJH(FM) Channel 237C1
Jackson, Wyoming
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 237C1 (95.3 MHz) with an effective radiated power of 12.6 kilowatts. Operation is proposed with a 3-element circularly-polarized omni-directional half-wave-spaced antenna, which will be side-mounted on a uniform cross-section guyed tower located at the Snow King Mountain communications site.

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.

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 antenna system assume a Type 2 element pattern, which is the element pattern for the "double V" antenna proposed for use. The highest calculated ground level power density occurs at a distance of 53 meters from the base of

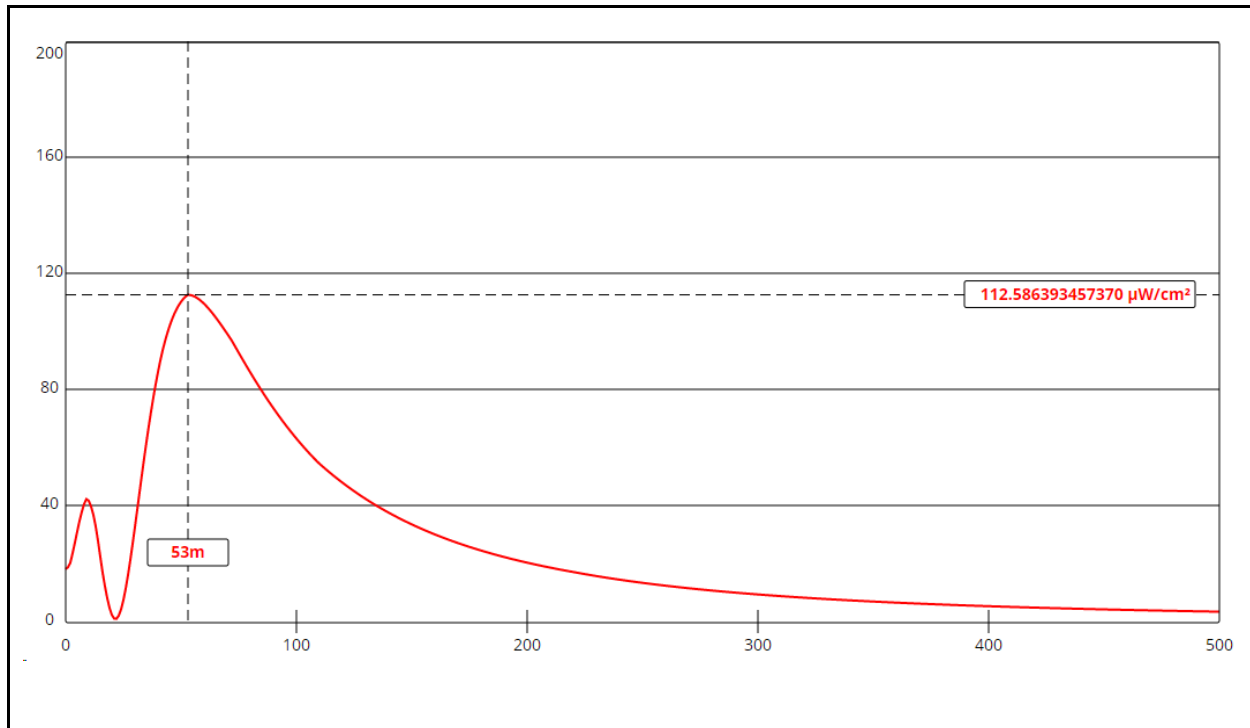
the antenna support structure. At this point the power density is calculated to be $112.6 \mu\text{W}/\text{cm}^2$, which is 56.3% of $200 \mu\text{W}/\text{cm}^2$ (the FCC standard for uncontrolled environments).

The Snow King Mountain communications site encompasses several towers which host more than a dozen FM and TV broadcast facilities. Simple summation of the calculated maxima from each of these stations would result in a figure which exceeds the FCC standard for uncontrolled environments. However, since these towers are spread out over an area ranging about 130 meters north-to-south, in reality the maxima do not coincide, and consequently that simplistic method dramatically overstates the total exposure levels at the site.

Additionally, the proposed KZJH facility is calculated to produce a ground-level maximum which is less than half that of the licensed KZJH facility (100 kW ERP, 42 meters AGL, ERI 8-bay "type 3" rototiller, producing a calculated maximum of $245.1 \mu\text{W}/\text{cm}^2$.)

Should the Commission require the performance of post-construction RF exposure measurements as a condition of licensing this KZJH facility, the licensee will perform those measurements and submit a report with the application for license.

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

KZJH 237C1 Jackson

Antenna Type: Type 2
No. of Elements: 3
Element Spacing: 0.5 wavelength

Distance: 500 meters
Horizontal ERP: 12.6 kW
Vertical ERP: 12.6 kW

Antenna Height: 60 meters AGL

Maximum Calculated Power Density is 112.6 $\mu\text{W}/\text{cm}^2$ at 53 meters from the antenna structure.

