

April 2015
KISN-LP Channel 236L1
Portland, Oregon
Allocation Study

Facilities Proposed

The proposed operation will be on Channel 236L1 (95.1 MHz) with an effective radiated power of 1.5 watts.¹ Operation is proposed with a 1-element circularly-polarized omni-directional antenna which will be installed on an existing tower atop Mount Scott.

The proposed 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.

Spacing Study

The attached spacing study shows that the proposed LPFM operation meets the co-channel and adjacent channel spacing requirements for Class L1 stations as prescribed in §73.207 of the Commission's Rules, with exception of two short-spacings to second-adjacent-channel stations as described below:

KNRK Channel 234C2 Camas: The proposed LPFM operation will be short-spaced to second-adjacent channel station KNRK on Channel 234C2 at Camas. The proposed LPFM transmitter site is located within the 60 dBu protected contour of KNRK, 11.92 km from the KNRK transmitter site at a bearing of 109 degrees True. However, given the KNRK antenna's 370 meter HAAT and 6.3 kW ERP along this radial, KNRK places an 86.9 dBu contour at the LPFM transmitter site. The corresponding interfering contour from the LPFM is $86.9 + 40 = 126.9$ dBu, which extends at most 3.9 meters from the LPFM transmitting antenna according to a Free Space calculation and will not reach ground level. Consistent with §73.807(e)(1) of the Commission's Rules, the applicant requests waiver of the second-adjacent channel spacing requirement since there is no population in the interference area.

¹ As determined per §73.313 given an antenna height above average terrain of 274 meters, for a maximum 60 dBu contour distance of 5.6 kilometers.

KBFF Channel 238C Portland (License): The proposed LPFM operation will be short-spaced to second-adjacent channel station KBFF on Channel 238C at Portland. The proposed LPFM transmitter site is located within the 60 dBu protected contour of KBFF, 11.92 km from the KBFF transmitter site at a bearing of 109 degrees True. However, given the KBFF antenna's 353 meter HAAT and 100 kW ERP along this radial, KBFF places a 98.5 dBu contour at the LPFM transmitter site. The corresponding interfering contour from the LPFM is $98.5 + 40 = 138.5$ dBu, which extends at most 1.0 meters from the LPFM transmitting antenna according to a Free Space calculation and will not reach ground level. Consistent with §73.807(e)(1) of the Commission's Rules, the applicant requests waiver of the second-adjacent channel spacing requirement since there is no population in the interference area.

KBFF Channel 238C Portland (CP): The proposed LPFM operation will be short-spaced to second-adjacent channel station KBFF on Channel 238C at Portland. The proposed LPFM transmitter site is located within the 60 dBu protected contour of KBFF, 11.92 km from the KBFF transmitter site at a bearing of 109 degrees True. However, given the KBFF antenna's 313 meter HAAT and 100 kW ERP along this radial, KBFF places a 97.5 dBu contour at the LPFM transmitter site. The corresponding interfering contour from the LPFM is $97.5 + 40 = 137.5$ dBu, which extends at most 1.1 meters from the LPFM transmitting antenna according to a Free Space calculation and will not reach ground level. Consistent with §73.807(e)(1) of the Commission's Rules, the applicant requests waiver of the second-adjacent channel spacing requirement since there is no population in the interference area.

SEARCH PARAMETERS

FM Database Date: 150424

Channel: 236L1 95.1 MHz
 Latitude: 45 27 17
 Longitude: 122 33 0
 Safety Zone: 32 km
 Job Title: KISN-LP PORTLAND

Page 1

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KNRK LIC	CAMAS WA	BLH-30326AIC	234C2 94.7	6.300 403.0	DA 45-29-20 122-41-40	288.7 SS	11.92 -41.08	53 SHORT
KNRKaux LIC	CAMAS WA	BXLH-11205AGQ	234C2 94.7	1.200 320.0	45-29-20 122-41-40	288.7	11.92 0.00	0 AUX
KNRKaux LIC	CAMAS WA	BXMLH-41207AAU	234C2 94.7	6.000 259.0	DA 45-27-08 122-32-47	134.6	0.40 0.00	0 AUX
KQRZ-LP CP	HILLSBORO OR	BPL-30904ABT	236L1 95.1	0.005 129.0	45-27-28 122-52-05	270.9	24.88 0.88	24 CLOSE
KSND LIC	MONMOUTH OR	BMLH-50705ADS	236C3 95.1	1.000 477.0	44-53-19 123-36-26	233.2	104.24 26.24	78 CLEAR
KISN-LP CP	PORTLAND OR	BNPL-31114AMN	236L1 95.1	0.002 248.8	45-27-17 122-33-00	0.0	0.00 -24.00	24 SHORT
KBFF LIC	PORTLAND OR	BLH-980901KC	238C 95.5	100.000 386.0	45-29-20 122-41-40	288.7	11.92 -81.08	93 SHORT
KBFFaux LIC	PORTLAND OR	BLH-981023KC	238C 95.5	40.000 309.0	45-29-20 122-41-40	288.7	11.92 0.00	0 AUX
KBFF CP	PORTLAND OR	BPH-50116AEE	238C0 95.5	100.000 346.0	45-29-20 122-41-40	288.7	11.92 -72.08	84 SHORT

==== END OF FM SPACING STUDY FOR CHANNEL 236 =====

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RF Exposure Study

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 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.

Calculations of the power density produced by the proposed antenna system have been made assuming that the antenna will radiate 100% power straight down to a point 2 meters above ground level at the base of the tower (41 meters below the antenna). Under this "worst case" assumption, the highest calculated ground level power density from the proposed LPFM station occurs at the

base of the antenna support structure. At this point the power density is calculated to be 0.06 $\mu\text{W}/\text{cm}^2$, which is 0.03% of 200 $\mu\text{W}/\text{cm}^2$ (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 alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 1000 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 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 radiation in excess of FCC guidelines.

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HAAT Calculation**

The HAAT for the proposed KISN-LP facility has been calculated using the 30-second terrain database.

Azimuth	3-16 km Average Elevation
0	75.4 m
45	84.0 m
90	186.7 m
135	102.0 m
180	98.4 m
225	88.4 m
270	94.0 m
315	65.2 m
Average	99 meters

Given the antenna height of 373 meters AMSL, the antenna HAAT is 274 meters.

At this height, the maximum ERP for an LP100 station is 1.5 watts, producing a 60 dBu contour at 5.53 kilometers.