

January 2021
FM Booster KEUB-FM1
Astoria, OR Channel 227D
Allocation Study

The instant application is being filed to modify the construction permit for FM booster KEUB-FM1 at Astoria, Oregon, for FM station KEUB. Contours in this application have been calculated using terrain data extracted from the 3-second terrain database.

The attached spacing study shows the spacing between the proposed booster 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. There are no first-adjacent channel stations or authorizations close enough to required detailed allocation study maps.

The proposed booster will operate with an ERP of less than 100 watts. Therefore there are no spacing restrictions to stations which are 53 or 54 channels removed from the proposed operation, and more specifically to station KVAS-FM 280C3 Ilwaco.

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SEARCH PARAMETERS                               FM Database Date: 20210104
Channel: 227A      93.3 MHz                      Page 1
Latitude: 46 11 15.2 (NAD83)
Longitude: 123 50 20.6
Safety Zone: 50 km
Job Title: KEUB-FM1 ASTORIA

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Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KAYN-LP LIC	BAY CITY OR	BLL-20170117AAG	225L1 92.9	0.100 0.0	45 31 31.6 123 53 21.9	183.1	73.70 44.70	29 CLEAR
KVNW CP	NAPAVINE WA	BNPH-20110630AHJ	225C3 92.9	2.650 304.6	46 33 15.4 123 3 30.5	55.5	72.59 30.59	42 CLEAR
K226AN LIC	MONTESANO WA	BLFT-20050513ABT	226D 93.1	0.250 0.0	46 57 30.3 123 35 22.5	12.5	87.80 0.00	0 TRANS
KRYP LIC	GLADSTONE OR	BLH-20060208AMG	226C3 93.1	1.600 387.0	45 29 19.4 122 41 44.3	130.8	118.00 29.00	89 CLEAR
KEUB-FM1 CP	ASTORIA OR	BNPFTB-20180226A	227D 93.3	0.099 0.0	DA 46 11 15.3 123 49 40.5	89.8	0.86 0.00	0 BOOST
KEUB LIC	GEARHART OR	BLH-20160930AHH	227C3 93.3	6.700 45.0	45 57 10.3 123 56 18.4	196.4	27.20 -114.80	142 SHORT
KKNU LIC	SPRINGFIELD-EUGENE OR	BLH-20060202ABA	227C0 93.3	100.000 395.0	44 0 3.4 123 6 49.3	166.6	249.62 34.62	215 CLEAR
KUBE LIC	SEATTLE WA	BLH-20010206AAA	227C0 93.3	100.000 387.0	47 32 39.4 122 6 30.4	40.5	200.40 -14.60	215 SHORT
K228FA LIC	LONGVIEW WA	BLFT-20131216DXC	228D 93.5	0.100 0.0	46 10 58.4 122 57 33.4	90.1	67.93 0.00	0 TRANS
K228EU LIC	PORTLAND OR	BLFT-20110118ABC	228D 93.5	0.099 0.0	DA 45 31 20.4 122 44 49.4	130.8	112.52 0.00	0 TRANS
K228DT LIC	HAPPY HOLLOW OR	BLFT-20000414ACQ	228D 93.5	0.010 0.0	DA 45 12 47.3 123 45 18.4	176.5	108.50 0.00	0 TRANS
KLSY LIC	BELFAIR WA	0000087167	229C0 93.7	28.000 718.0	DA 47 18 45.3 123 22 19.6	15.7	130.05 44.05	86 CLEAR
KLSY CP	BELFAIR WA	BPH-20181108AAQ	229C0 93.7	28.000 718.0	DA 47 18 45.3 123 22 19.6	15.7	130.05 44.05	86 CLEAR
KPDQ-FM LIC	PORTLAND OR	BLH-20060208AMF	230C1 93.9	52.000 387.0	45 29 19.4 122 41 44.3	130.8	118.00 43.00	75 CLEAR
KVAS-FM LIC	ILWACO WA	BLH-20060213ACC	280C3 103.9	11.000 151.0	46 10 55.4 123 48 13.5	102.7	2.79 -9.21	12 SHORT

===== END OF FM SPACING STUDY FOR CHANNEL 227 =====

**January 2021
FM Booster KEUB-FM1
Astoria, OR Channel 227D
RF Exposure Study**

Facilities Proposed

The proposed booster operation will be on Channel 227D (93.3 MHz) with a maximum lobe effective radiated power of 99 watts. Operation is proposed with a directional antenna to be mounted on an existing tower. There are no other broadcast users of this site.

The antenna will be mounted on an existing tower (constructed in June 1991) currently used for purposes not requiring a Federal site license, and so the tower has not been previously registered. Notice of the proposed construction has been filed with the Federal Aviation Administration on FAA Form 7460-1. Upon receipt of the FAA's determination of no hazard, FCC Antenna Structure Registration for the tower will be filed on Form 854, and the resulting Antenna Structure Registration Number will be promptly supplied to the Audio Division.

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.

$$S(\mu W / cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

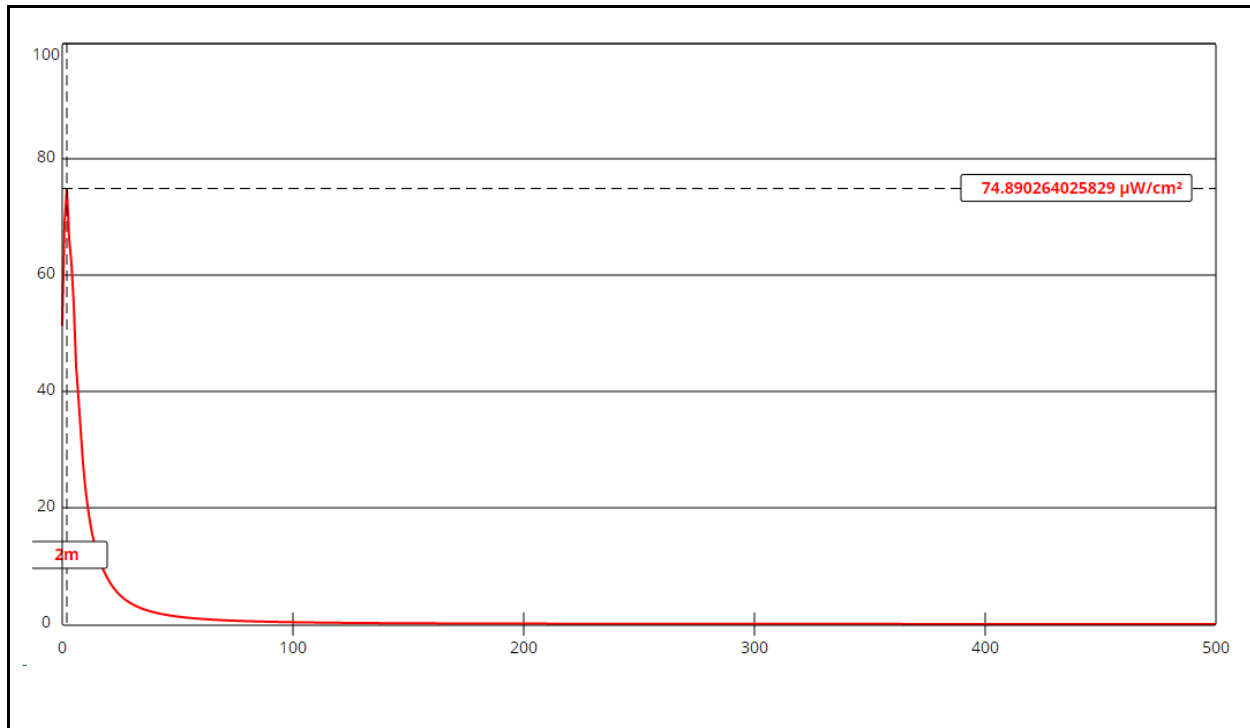
Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

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 1 element pattern, which is the “worst case” element pattern in the Commission’s FMModel software. The highest calculated ground level power density occurs at a distance of 2 meters from the base of the antenna support structure. At this point the power density is calculated to be $74.9 \mu\text{W}/\text{cm}^2$, which is 37.5% 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.



Ground-Level RF Exposure

OET FMModel

KEUB-FM1 Astoria

Antenna Type: Type 1
No. of Elements: 1
Element Spacing: 1.0 wavelength

Distance: 500 meters
Horizontal ERP: 99 W
Vertical ERP: zero W

Antenna Height: 5.5 meters AGL

Maximum Calculated Power Density is 74.9 $\mu\text{W}/\text{cm}^2$ at 2 meters from the antenna structure.

