December 2014
KNHK-FM Auxiliary Antenna
Newport, Washington Channel 283C1
RF Exposure Study

Facilities Proposed

The proposed auxiliary operation will be on Channel 283C1 (104.5 MHz) with an effective radiated power of 365 watts. Operation is proposed with an antenna mounted on a tower extending above the top of an existing building. This is the antenna already authorized (license application pending) for FM booster KNHK-FM1. The purpose of this filing is to enable the use of the booster facility as an auxiliary antenna in accordance with §73.1675 of the Commission's Rules.

The antenna support structure does not exceed 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 1000 meters. Values past this point are increasingly negligible.

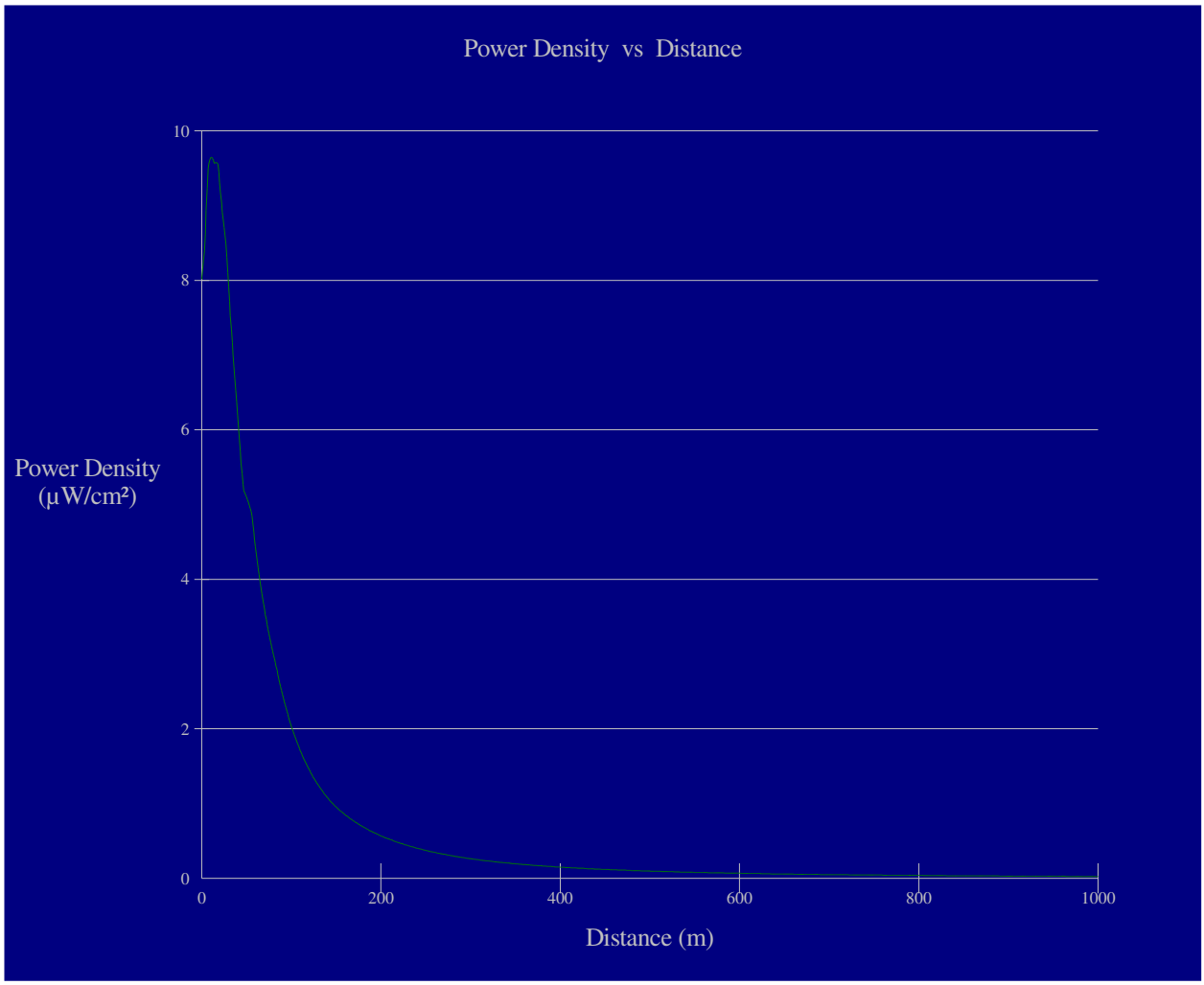
Since the Commission does not recognize the Nicom BKG-77 antenna as a "Type 2" antenna for use with FMModel, calculations of the power density produced by the proposed booster antenna system have been made using the "worst case" element pattern for a "ring stub" antenna.

The highest calculated ground level power density from the booster occurs at a distance of 11 meters from the base of the antenna support structure. At this point the power density is calculated to be 9.6 μW/cm², which is 4.8% of 200 μW/cm² (the FCC standard for uncontrolled environments).

The antenna will be installed on a tower on a building rooftop, such that the antenna will be located 35 feet above the rooftop. The highest calculated rooftop level power density from the booster 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 197.6 μW/cm², which is 98.8% of 200 μW/cm² (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.

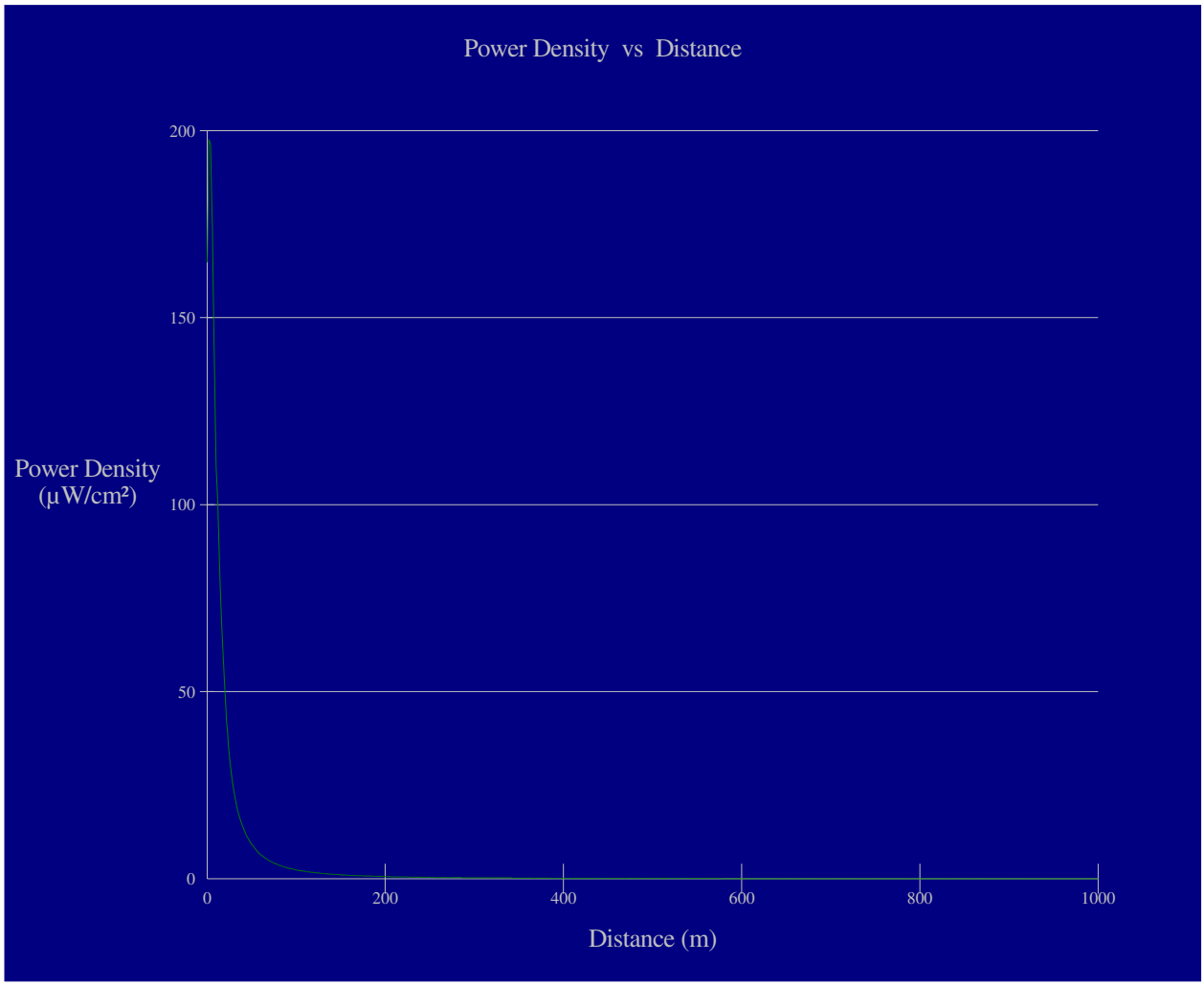


Ground-Level RF Exposure **OET FMModel**

KNHK-FM Auxiliary Antenna

Antenna Type:	Nicom BKG77-1
No. of Elements:	1
Element Spacing:	dna
Distance:	1000 meters
Horizontal ERP:	365 W
Vertical ERP:	365 W
Antenna Height:	41 meters AGL

Maximum Calculated Power Density is 9.6 µW/cm^2 at 11 meters from the antenna structure.



Rooftop-Level RF Exposure **OET FMModel**

KNHK-FM Auxiliary Antenna

Antenna Type:	Nicom BKG77-1
No. of Elements:	1
Element Spacing:	dna
Distance:	1000 meters
Horizontal ERP:	365 W
Vertical ERP:	365 W
Antenna Height:	10.6 meters (35 feet) above the rooftop

Maximum Calculated Power Density is 197.6 µW/cm^2 at 2 meters from the antenna structure.