

April 2017
KQFO(FM) Channel 261C2
Pasco, WA
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 261C2 (100.1 MHz) with a maximum lobe effective radiated power of 8.4 kilowatts. Operation is proposed with a 6-element circularly-polarized, half-wave-spaced antenna, side-mounted on an existing tower located at Jump Off Joe Butte.

The 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.

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.

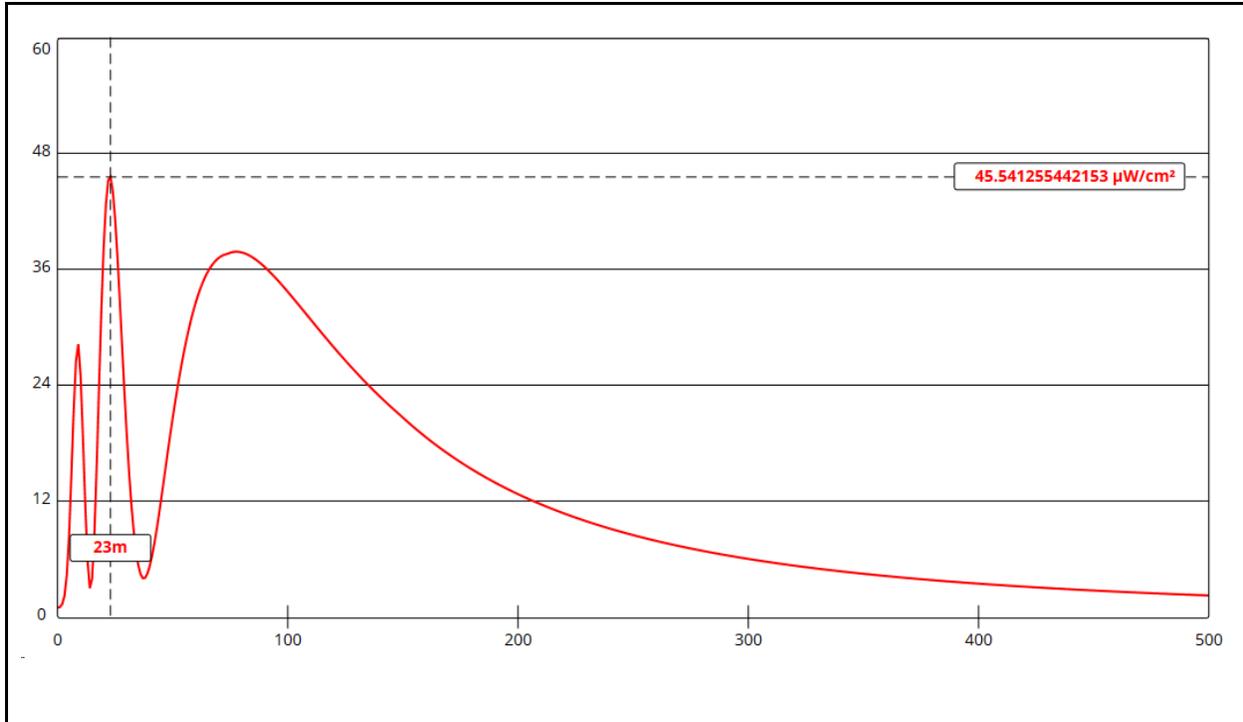
Calculations of the power density produced by the proposed "double V" antenna system assume Type 2 element pattern. The highest calculated ground level power density occurs at a distance of 23 meters from the base of the antenna support structure. At this point the power density is calculated to be 45.5 $\mu W/cm^2$, which is 22.8% of 200 $\mu W/cm^2$ (the FCC standard for uncontrolled

environments).

Calculations of the power density produced by KQFO and the other FM authorizations at this transmitter site are summarized in the following table:

Callsign	Avg or Peak ERP Antenna Model	Relative Field	Height AGL	Calculated Max Exposure	Gen Pop FCC Limit	% of Limit
KQFO 261C1	8.4 kW H 8.4 kW V 6-bay half-wave double V	FMModel Type 2	15 m	45.5 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	22.8%
K258CN	0.250 kW V SCA CLFMV	Manf Pattern	10 m	13.7 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	6.9%
K282AA	0.274 kW H 0.274 kW V ring stub assumed	FMModel Type 1	24 m	22.8 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	11.4%
K285FN	0.250 kW H 0.250 kW V NIC BKG77-1	FMModel Type 2	19 m	15.9 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	8.0%
Total						49.0%

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

KQFO 261C2 Pasco

Antenna Type: Double V (Type 2)
 No. of Elements: 6
 Element Spacing: 0.5 wavelength

Distance: 500 meters
 Horizontal ERP: 8.4 kW
 Vertical ERP: 8.4 kW

Antenna Height: 15 meters AGL

Maximum Calculated Power Density is 45.5 $\mu\text{W}/\text{cm}^2$ at 23 meters from the antenna structure.