

**February 2014  
KKRV(FM) Channel 284C2  
Wenatchee, WA  
Engineering Statement**

The instant application proposes to convert the former licensed KKRK main facility to an auxiliary. The former main facility which the licensee proposes to so convert was licensed on July 6, 1976 as BLH-7054, and the antenna has been installed since that time on a tower which is located 30 feet from the tower supporting the current licensed KKRK main antenna.

CDBS does not recognize BLH-7054 as a valid file number, likely owing to the age of that license. Many older licenses are not included in the current Commission databases. Therefore this Form 302-FM application has been initiated in CDBS utilizing the former main license BLH-19910626KB. A copy of the 1976 license is attached to this Engineering Statement, and the relevant technical data is listed below. It is respectfully requested that the Audio Division staff utilize the following technical data in granting the instant application.

Channel:	284C2 <sup>1</sup>	
Coordinates:	47-28-44 x 120-12-49	
Site Elevation:	1050 meters AMSL	
Tower O/A:	18 meters AGL <sup>2</sup>	(no ASR required)
Antenna:	17 meters AGL 1067 meters AMSL 405 meters AGL	
ERP:	1.8 kW	
TPO:	4.07 kW	

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<sup>1</sup> The former licensed main for KKRK operated on Channel 285C2, but KKRK moved to Channel 284C2 in 2002 as a change triggered by the Report & Order in MM Docket No. 98-74.

<sup>2</sup> Note that this is a separate tower from the one supporting the KKRK main antenna, despite the fact that the rounded coordinates are the same.

FM BROADCAST STATION LICENSE

Official Number 3197

Subject to the provisions of the Communications Act of 1934, as amended, treaties, and Commission Rules, and further subject to conditions set forth in this license, the LICENSEE

BETHESDA CHRISTIAN TEMPLE

is hereby authorized to use and operate the radio transmitting apparatus hereinafter described for the purpose of broadcasting for the term ending 3 a.m. Local Time: February 1, 1978

The licensee shall use and operate said apparatus only in accordance with the following terms:

1. Frequency (MHz) .....: 104.9
2. Transmitter output power .....: 240 watts
3. Effective radiated power .....: 105 watts (H&V)
4. Antenna height above  
average terrain (feet) .....: 1330 ft. (H&V)
5. Hours of operation .....: Unlimited
6. Station location .....: Wenatchee, Washington
7. Main studio location .....: 19 North Wenatchee Avenue  
Wenatchee, Washington
8. Remote Control point .....: 19 North Wenatchee Avenue  
Wenatchee, Washington

9. Antenna & supporting structure: North Latitude: 47° 28' 44"  
West Longitude: 120° 12' 49"

Jampro, Type JSCP-1, single section, circularly polarized, side-mounted near the top of a triangular steel tower. Overall height above ground: 58 feet.

10. Transmitter location .....: Badger Mountain Road,  
One Mile South of Intersection of  
Badger Mtn. and Clark Road,  
Six Miles NE of  
Wenatchee, Washington
11. Transmitter(s) .....: Sparta, 600B

12. Obstruction markings specifications in accordance with the following paragraphs of FCC Form 715: None required
13. Conditions:

The Commission reserves the right during said license period of terminating this license or making effective any changes or modification of this license which may be necessary to comply with any decision of the Commission rendered as a result of any hearing held under the rules of the Commission prior to the commencement of this license period or any decision rendered as a result of any such hearing which has been designated but not held, prior to the commencement of this license period.

This license is issued on the licensee's representation that the statements contained in licensee's application are true and that the undertakings therein contained so far as they are consistent herewith, will be carried out in good faith. The licensee shall, during the term of this license, render such broadcasting service as will serve public interest, convenience, or necessity to the full extent of the privileges herein conferred.

This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequency designated in the license beyond the term hereof, nor in any other manner than authorized herein. Neither the license nor the right granted hereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934. This license is subject to the right of use or control by the Government of the United States conferred by section 606 of the Communications Act of 1934.

✓ This license consists of this page and pages 000

Dated: July 6, 1976  
hlc

FEDERAL  
COMMUNICATIONS  
COMMISSION



34

**February 2014  
KKRV(FM) Channel 284C2  
Wenatchee, WA  
RF Exposure Study**

**Facilities Proposed**

The proposed auxiliary operation will be on Channel 284C2 (104.7 MHz) with an effective radiated power of 1.8 kilowatts. Operation is proposed with a 1-element circularly-polarized omni-directional antenna. The antenna is side-mounted on an existing tower located at Badger Mountain, where it has been since the original licensing in 1976.

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.

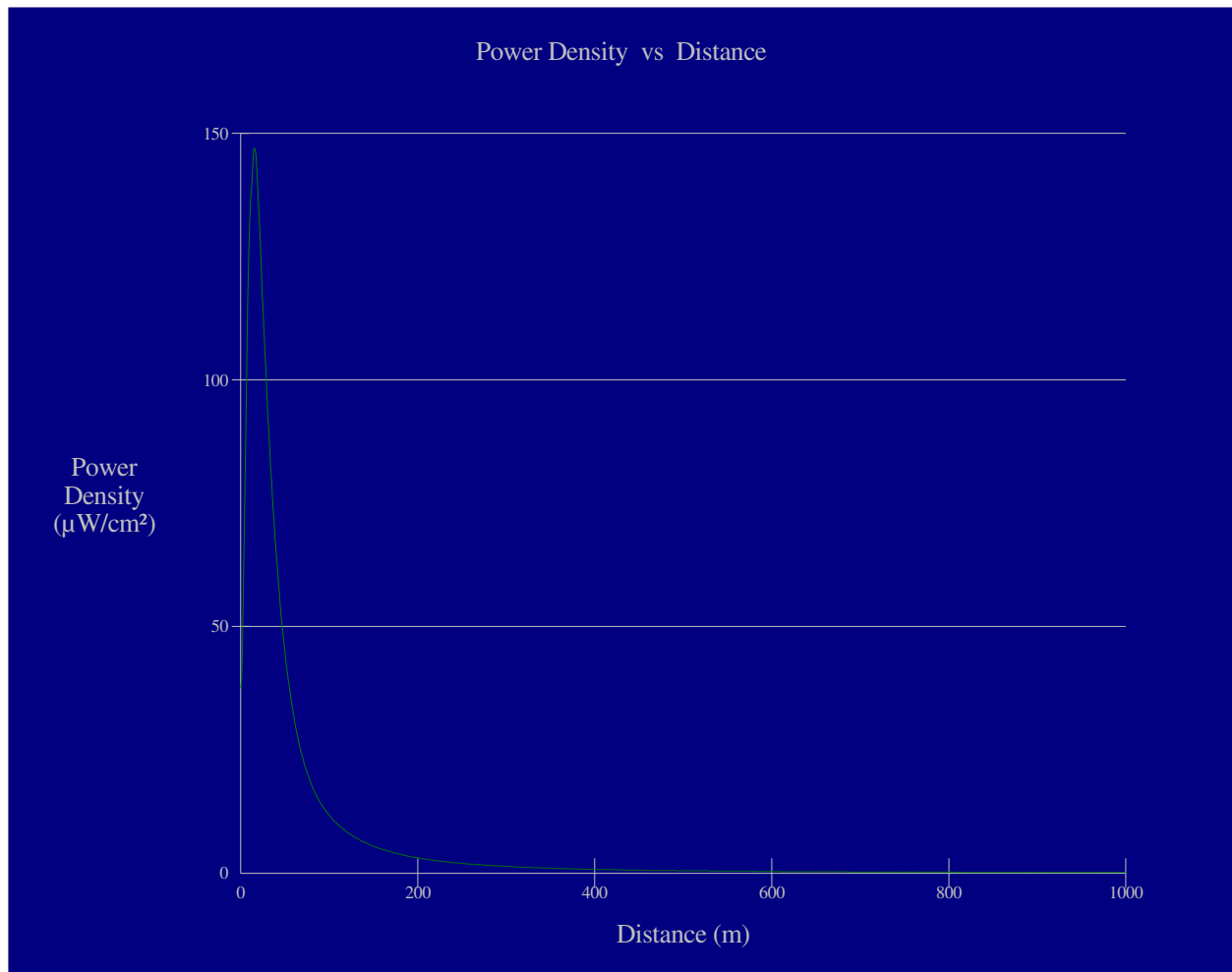
*D* is the distance in meters from the center of radiation to the calculation point.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 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 Jampro JSCP-1 antenna proposed for use. The highest calculated ground level power density occurs at a distance of 15 meters from the base

of the antenna support structure. At this point the power density is calculated to be  $147.0 \mu\text{W}/\text{cm}^2$ , which is 73.5% 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

#### KKRV Auxiliary Antenna

Antenna Type: Jampro JSCP-1

No. of Elements: 1

Element Spacing: 1.0 wavelength

Distance: 1000 meters

Horizontal ERP: 1.8 kW

Vertical ERP: 1.8 kW

Antenna Height: 17 meters AGL

Maximum Calculated Power Density is 147.0  $\mu\text{W}/\text{cm}^2$  at 15 meters from the antenna structure.

Hatfield & Dawson Consulting Engineers