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**Engineering Statement
Post-Auction Technical Facilities for KFTV-DT
Channel 21 at Hanford, CA
April 2017**

Repack Application

This Engineering Statement has been prepared on behalf of KFTV License Partnership, G.P. ("KFTV"), licensee of digital television station KFTV-DT at Hanford, California. KFTV-DT presently operates on Channel 20. The instant application is being filed in response to the Commission's *Channel Reassignment Public Notice* (DA 17-314), released on April 13, 2017, specifying the station's post-auction facilities on Channel 21.

The following table lists the KFTV-DT assigned post-auction facilities, as well as the requested facilities as proposed in this Form 2100 application:

	Technical Parameters from Post Auction Table	Technical Parameters from Proposed Form 2100
Channel	21	21
ERP	358 kW	358 kW
HAAT	580 meters	580 meters
Antenna	ID #29793 directional	ID #29793 directional Andrew ATW32H3-ESCXU-21S ¹
Coordinates (NAD83)	37-04-22 119-25-53	37-04-22 119-25-53

¹ This application proposes use of the existing dual-channel 20/21 antenna.

Expedited Processing

This application qualifies for expedited processing, in that it:

- (1) Does not seek to expand the coverage area, as defined by the technical parameters specified in the *Channel Reassignment Public Notice*, in any direction;
- (2) Seeks authorization for facilities that are no more than five percent smaller than those specified in the *Channel Reassignment Public Notice* with respect to predicted population service; and
- (3) Is filed within the 90-day deadline.

Interference Study

No interference study is necessary for the proposed technical facilities. KFTV-DT currently operates on Channel 20 using a Ch20/21 antenna. This technical proposal uses that same antenna with the exact technical facilities specified in the *Channel Reassignment Public Notice*, and therefore will have no additional interference impact on other stations.

Facilities Proposed

The proposed operation will be on Channel 21 with a maximum lobe effective radiated power of 358 kilowatts (H pol) and 89.5 kilowatts (V pol). Operation is proposed with an elliptically-polarized Andrew ATW32H3-ESCXU-21S antenna, which is side-mounted on an existing tower at the Meadow Lakes communications site. The FCC Antenna Structure Registration Number for this tower is 1047401.

RF Exposure Calculations

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.

Power density levels produced by the proposed facility were calculated for an elevation of 2 meters above ground (39 meters below the antenna radiation center). The worst case power density levels occur at depression angles between 45 and 90 degrees below the horizontal. The calculations in this report assume a worst-case relative field value of 0.040 at these angles, based on the manufacturer's vertical plane pattern for the elliptically-polarized Andrew ATW32H3-ESCXU-21S antenna proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 716 watts at depression angles between 45 and 90 degrees below the horizontal. Assuming this power and the shortest distance between the antenna radiation center and 2 meters above ground level (i.e. straight down), the highest calculated power density from the proposed antenna alone occurs at the base of the antenna support structure. At this point the power density is calculated to be 15.7 $\mu W/cm^2$, which is 4.6% of 341 $\mu W/cm^2$ (the FCC maximum for uncontrolled environments at the Channel 21 frequency).

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 500 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.

Pursuant to OET Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken. 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.

