TECHNICAL SUMMARY
SPECIAL DISPLACEMENT WINDOW
APPLICATION FOR CONSTRUCTION PERMIT
LOW POWER DIGITAL STATION K45CT-D
HILO, HAWAII
CHANNEL 20 13.5 KW (DA)

1. Application Purpose: The instant application is a special displacement window application for K45CT-D currently on channel 45 at Hilo, Hawaii (FCC File No. BLDTT-20150219AAV).[1] As detailed below, K45CT-D is eligible for displacement Therefore, it is proposed to operate K45CT-D on "in core" channel 20 with a directional antenna maximum effective radiated power (ERP) of 13.5 kW using a Dielectric model TUA-TU-02/02L-T horizontally polarized directional antenna. The antenna radiation center height will be 2504 m AMSL. There will be no change in the overall structure height (no ASRN).

2. Eligibility to File in Special Displacement Window: Station K45CT-D is eligible to file in the special displacement window as (1) it was operating with its currently licensed facilities (FCC File No. BLDTT-20150219AAV) prior to April 13, 2017 – the release date of the *Closing and Channel Reassignment Public Notice*[2] and (2) it operates on digital channel 45 which has been repurposed for new, flexible 600 MHz Band wireless service.[3]

3. Interference Compliance: As indicated in the attached *TVStudy* analysis, K45CT-D's proposed channel 20 displacement operation meets the FCC's interference protection requirements with respect to all protected facilities based on both the pre-transition and post-transition allocation environments. A cell size of 1.0 km and a profile resolution of 1.0 points/km were utilized for the *TVStudy* analysis.

---

[1] See FCC Public Notice dated February 9, 2018 entitled "*Incentive Auction Task Force and Media Bureau Announce Post-Incentive Auction Special Displacement Window April 10, 2018 through May 15, 2018 and Make Location and Channel Data Available*" (DA 18-124, MB Docket No. 16-306, GN Docket No. 12-268) ("FCC Special Displacement Window PN").

[2] See *Media Bureau Announces Date by Which LPTV and TV Translator Stations Must Be "Operating" In Order to Participate In Post-Incentive Auction Special Displacement Window, Public Notice,* 31 FCC Rcd 5383 (MB 2016).

[3] See *The Incentive Auction Task Force and Media Bureau Announce Procedures for Low Power Television, Television Translator and Replacement Translator Stations During the Post-Incentive Auction Transition*, Public Notice, at Section III paragraph 8 (DA 17-442, Released May 12, 2017 ).

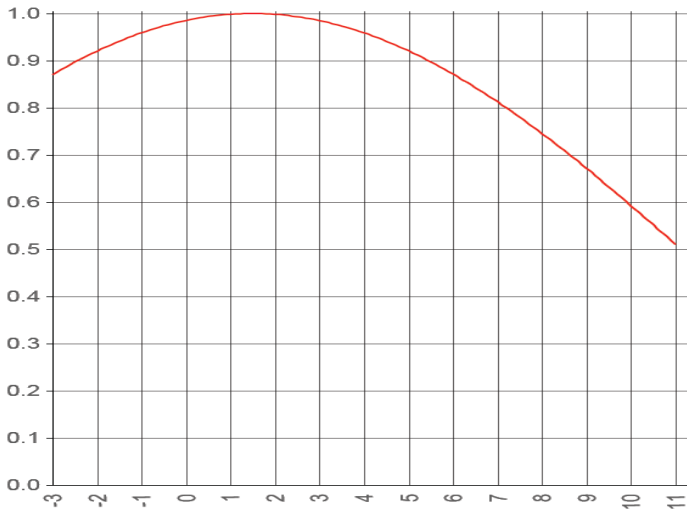
4. RFR Compliance: The proposed facilities were evaluated in terms of potential radiofrequency radiation (RFR) exposure at ground level to workers and the general public. The radiation center for the proposed DTV antenna will be located 14 meters above ground level. The total DTV ERP is 13.5 (horizontal polarization). A greater than expected vertical plane relative field value of 0.06 is presumed for the antenna's downward radiation (-60° to -90° elevation, see antenna information attached). The calculated power density at a point 2 meters above ground level is 11.3 uW/cm$^2$ which is 3.3% of the FCC's recommended limit of 339.3 uW/cm$^2$ for channel 20 for an uncontrolled environment. Thus, as this is less than the 5% threshold value, it is believed that the K45CT-D facility is in full compliance with the FCC's requirements with regard to radio frequency radiation exposure.

Access to the transmitting site will be restricted and appropriately markets with RFR warning signs. Furthermore, as this is a multi-user site, a formal RFR protection protocol is in effect in the event that workers or other authorized personnel enter the restricted area or climb the tower to ensure that appropriate measure will be taken to assure worker safety with respect to RFR exposure. Such measures include limiting the exposure time, wearing protective clothing, reducing power to an acceptable level or termination of transmitter output power all together until workers leave the restricted area.

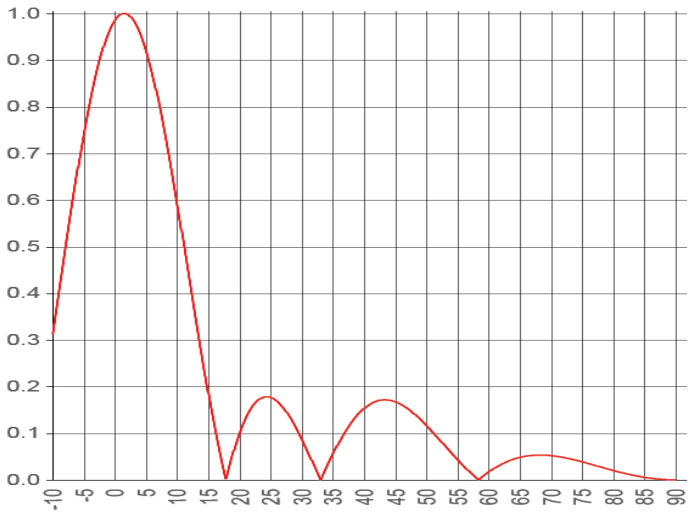
# ELEVATION PATTERN

| | |
|---|---|
| Exhibit No. | |
| Date | **30 Mar 2018** |
| Call Letters | **K45CT** |
| Channel | **20** |
| Antenna Type | **TUA-TU-02/02L-T** |
| Location | **Hilo HI** |
| Customer | **Raycom Media** |

| | | | |
|---|---|---|---|
| RMS Gain at Main Lobe | **4.2 (6.25 dB)** | Beam Tilt | **1.5 Degrees** |
| RMS Gain at Horizontal | **4.1 (6.12 dB)** | Drawing # | **02U043150** |
| | **Calculated** | | |




Degrees below horizontal




Degrees below horizontal

| Angle | Field | Angle | Field | Angle | Field | Angle | Field | Angle | Field |
|---|---|---|---|---|---|---|---|---|---|
| -10 | 0.312 | 10 | 0.592 | 30 | 0.087 | 50 | 0.117 | 70 | 0.052 |
| -9 | 0.402 | 11 | 0.510 | 31 | 0.059 | 51 | 0.102 | 71 | 0.050 |
| -8 | 0.491 | 12 | 0.427 | 32 | 0.030 | 52 | 0.088 | 72 | 0.048 |
| -7 | 0.578 | 13 | 0.344 | 33 | 0.000 | 53 | 0.073 | 73 | 0.045 |
| -6 | 0.662 | 14 | 0.264 | 34 | 0.028 | 54 | 0.058 | 74 | 0.042 |
| -5 | 0.739 | 15 | 0.187 | 35 | 0.056 | 55 | 0.043 | 75 | 0.039 |
| -4 | 0.809 | 16 | 0.115 | 36 | 0.081 | 56 | 0.029 | 76 | 0.035 |
| -3 | 0.870 | 17 | 0.050 | 37 | 0.104 | 57 | 0.016 | 77 | 0.031 |
| -2 | 0.920 | 18 | 0.008 | 38 | 0.124 | 58 | 0.004 | 78 | 0.028 |
| -1 | 0.959 | 19 | 0.058 | 39 | 0.140 | 59 | 0.007 | 79 | 0.024 |
| 0 | 0.985 | 20 | 0.100 | 40 | 0.153 | 60 | 0.017 | 80 | 0.020 |
| 1 | 0.998 | 21 | 0.132 | 41 | 0.163 | 61 | 0.026 | 81 | 0.017 |
| 2 | 0.998 | 22 | 0.156 | 42 | 0.169 | 62 | 0.033 | 82 | 0.013 |
| 3 | 0.985 | 23 | 0.171 | 43 | 0.171 | 63 | 0.039 | 83 | 0.010 |
| 4 | 0.959 | 24 | 0.178 | 44 | 0.171 | 64 | 0.044 | 84 | 0.008 |
| 5 | 0.921 | 25 | 0.177 | 45 | 0.167 | 65 | 0.048 | 85 | 0.005 |
| 6 | 0.872 | 26 | 0.169 | 46 | 0.161 | 66 | 0.051 | 86 | 0.004 |
| 7 | 0.813 | 27 | 0.155 | 47 | 0.153 | 67 | 0.053 | 87 | 0.002 |
| 8 | 0.745 | 28 | 0.136 | 48 | 0.142 | 68 | 0.053 | 88 | 0.001 |
| 9 | 0.671 | 29 | 0.113 | 49 | 0.130 | 69 | 0.053 | 89 | 0.000 |