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Engineering Statement Minor Modification of K03IM-D Channel 3 at Eugene, OR December 2021

I. Background

This Engineering Statement has been prepared on behalf of 5Nines, LLC ("5Nines"), permittee of unbuilt low-power digital station K03IM-D. This material has been prepared in connection with an application for minor modification.

II. Interference Study

Study has been made of all cochannel and adjacent-channel facilities in the vicinity of the proposed operation, including a detailed Longley-Rice interference study to demonstrate that the proposed operation will not cause interference to any authorized or pending proposed facilities. This study was performed using the Commission's TVStudy software.

The results of this study indicate that the proposed facility is predicted to cause zero additional interference to any of the listed stations, beyond the allowed values of 0.5% to full-power and Class A stations, and 2.0% to low-power stations. Based on the foregoing interference study, it is believed that the proposed facility can operate without risk of interference to other stations.

Study created: 2021.12.28 12:56:57 Study build station data: LMS TV 2021-12-19 Proposal: K03IM-D D3 LD APP EUGENE, OR File number: K03IM-230W Facility ID: 185855 Station data: User record Record ID: 1336 Country: U.S. Build options: Protect pre-transition records not on baseline channel Stations potentially affected by proposal: ТΧ Call Chan Svc Status City, State File Number Distance LA PINE, OR K23PN-D TX LIC LD LIC BLTTV19790205JH No N2 140.3 km BLDTV20111103AKU K02JG-D D2 PROPSECT, OR 147.3 No D3 LD LIC DT LIC No K03HX-D ETNA, CA BLDTV20081001ACJ 282.1 KIEM-TV D3 EUREKA, CA BLCDT20090622AGO 370.0 Yes TX APP NЗ No DDK03FU MOUNTAIN GATE, ETC., CA BLTTV19810713IN 367.5 D3 N3 LD APP TX LIC DDK03FU MOUNTAIN GATE, ETC., CA BDFCDTV20110812ACW No 367.3 No K28NO-D ROGUE RIVER, OR BLTTV4263 172.6 No K14QH-D N4 TX LIC BUTTE FALLS, OR BLTTV19800702IC 164.6 BLANK0000016525 No K04JZ D4 LD LIC GOLD HILL, OR 175.1 TX LIC GOLD HILL, OR BLTTV19810526ID 175.1 K04JZ N4 No K04BJ-D D4 K04BJ-D D4 BPDTV20140522AEM LD CP LA PINE, OR 133.9 No No LD LIC LA PINE, OR BLDTV20090821ABK 140.3 No K04OS-D D4 LD LIC REEDSPORT, OR BLDTV20100210AAB 84.6 No non-directional AM stations found within 0.8 km No directional AM stations found within 3.2 km Record parameters as studied: Channel: D3 Mask: Stringent Latitude: 44 0 3.00 N (NAD83) Longitude: 123 6 49.00 W Height AMSL: 425.5 m HAAT: 0.0 m Peak ERP: 0.230 kW Antenna: Omnidirectional Elev Pattrn: Generic 43.0 dBu contour: Azimuth ERP HAAT Distance 0.0 deg 0.230 kW 305.6 m 46.4 km 0.230 45.0 248.9 43.2 90.0 0.230 215.9 41.4 135.0 0.230 226.5 42.0 180.0 0.230 107.4 31.6 225.0 0.230 186.4 39.7 270.0 0.230 269.1 44.3 315.0 0.230 292.5 45.7 Database HAAT does not agree with computed HAAT Database HAAT: 0 m Computed HAAT: 232 m Distance to Canadian border: 470.6 km Distance to Mexican border: 1359.9 km Conditions at FCC monitoring station: Ferndale WA Bearing: 4.2 degrees Distance: 552.4 km Proposal is not within the West Virginia quiet zone area

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Conditions at Table Mountain receiving zone:
Bearing: 100.0 degrees Distance: 1530.8 km
Study cell size: 1.00 km
Profile point spacing: 1.00 km
Maximum new IX to full-service and Class A: 0.50%
Maximum new IX to LPTV: 2.00%
No IX check failures found.
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III. RF Exposure Study

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 K03IM-D facility were calculated for an elevation of 2 meters above ground using the manufacturer's vertical plane pattern for the horizontally-polarized AAT model TV H-DP-1 dipole antenna proposed in this application. The highest calculated ground-level power density from the proposed antenna alone occurs at a point 0 meters from the base of the antenna support structure. At this point the power density from the proposed facility is calculated to be 9.5 μ W/cm², which is 4.75% of 200 μ W/cm² (the FCC maximum for uncontrolled environments at the Channel 3 frequency).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of K03IM-D 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 of the Commission's Rules exempts applications for new facilities or

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modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicant's 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.

December 28, 2021

Erik C. Swanson, P.E.