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**Engineering Statement
Minor Modification of KTNL-TV
Channel 7 at Sitka, Alaska
July 2022**

This Engineering Statement has been prepared on behalf of Ketchikan TV, LLC, licensee of digital television station KTNL-TV at Sitka, Alaska. This application specifies a minor modification of the licensed KTNL-TV facility, to implement a change in the licensed antenna system, by adding a second CL-713 antenna. There will also be a change in TPO and ERP, as well as a correction of the site coordinates.

I. Allocation Study

An interference study has been conducted using the Commission's TVStudy software. The results of the study demonstrate that this proposal will have no additional interference impact on other stations (licenses, permits, and applications) beyond the nominal 0.5% value as permitted by the FCC Rules.

Study created: 2022.07.11 12:00:17

Study build station data: LMS TV 2022-07-07

Proposal: KTNL-TV D7 DT APP SITKA, AK
 File number: KTNL-MOD
 Facility ID: 60519
 Station data: User record
 Record ID: 1399
 Country: U.S.
 Zone: II

No protected stations found.

Non-directional AM stations within 0.8 km:
 KIFW 1230 L ND1 U SITKA, AK BL19850826AI

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D7
 Latitude: 57 3 1.00 N (NAD83)
 Longitude: 135 20 7.90 W
 Height AMSL: 46.2 m
 HAAT: -216.0 m
 Peak ERP: 0.650 kW
 Antenna: SCA-(2)CL-713 0.0 deg
 Elev Pattn: Generic

36.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.153 kW	-265.6 m	27.8 km
45.0	0.000	-495.4	6.0
90.0	0.500	-453.6	34.2
135.0	0.246	-286.1	30.3
180.0	0.000	-61.9	7.8
225.0	0.000	46.2	7.4
270.0	0.000	46.2	10.4
315.0	0.577	40.9	38.9

Database HAAT does not agree with computed HAAT
 Database HAAT: -216 m Computed HAAT: -179 m

**Proposal is within coordination distance of Canadian border
 Distance to Canadian border: 170.7 km

Distance to Mexican border: 3041.1 km

Conditions at FCC monitoring station: Kenai AK
 Bearing: 300.7 degrees Distance: 1002.4 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
 Bearing: 118.1 degrees Distance: 2860.1 km

Study cell size: 2.00 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.

II. Facilities Proposed

The proposed operation will be on Channel 7 with a maximum lobe effective radiated power of 0.650 kilowatts. Operation is proposed with a Scala CL-713 log periodic antenna array, which will be mounted on pipes atop an existing building in Sitka.

The proposed antenna support structure will extend less than 20 feet above the top of an existing building and therefore does not require notification to the Federal Aviation Administration. Therefore, this structure does not require an Antenna Structure Registration Number.

DETERMINATION Results	
Structure does not require registration. The structure meets the 6.10-meter (20-foot) Rule criteria.	
Your Specifications	
NAD83 Coordinates	
Latitude	57-03-01.0 north
Longitude	135-20-07.9 west
Measurements (Meters)	
Overall Structure Height (AGL)	27.7
Support Structure Height (AGL)	24.4
Site Elevation (AMSL)	12.2
Structure Type	
BPIPE - Building with Pipe	

III. 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 Calculation

Ground level power density levels produced by the proposed facility were calculated for an elevation of 2 meters above ground, using the manufacturer's vertical plane pattern for the horizontally-polarized Scala CL-713 antenna array proposed in this application. The highest calculated power density from the proposed antenna alone occurs at a point 51 meters the base of the antenna support structure (building). At this point the power density is calculated to be 2.4 $\mu W/cm^2$, which is 1.2% of 200 $\mu W/cm^2$ (the FCC maximum for uncontrolled environments at the Channel 7 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 of the Commission's Rules exempts 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.

Rooftop Level Calculation

The antenna array is proposed to be mounted on a pipe extending 11 feet above the penthouse rooftop, and 21 feet above the main roof level, of an eight-story building. Access to the penthouse

roof is reported to be restricted, with no permanently installed ladder, and so the general population would not have access to that area.

Rooftop level power density levels produced by the proposed facility were calculated for an elevation of 2 meters above the main rooftop (antenna height of 6.4 meters above the rooftop), using the manufacturer's vertical plane pattern for the horizontally-polarized Scala CL-713 antenna array proposed in this application. The highest calculated power density from the proposed antenna alone occurs at a point 9 meters the base of the antenna support structure. At this point the power density is calculated to be $83.5 \mu\text{W}/\text{cm}^2$.

KSCT-LD Ch5 is also located on this rooftop, at the same antenna height. Rooftop level power density levels produced by the licensed KSCT-LD facility were calculated for an elevation of 2 meters above the main rooftop (antenna height of 6.4 meters above the rooftop), using the manufacturer's vertical plane pattern for the horizontally-polarized Scala CL-46 antenna used by that station. The highest calculated power density from the KSCT-LD antenna alone occurs at a point 7 meters the base of the antenna support structure. At this point the power density is calculated to be $115.0 \mu\text{W}/\text{cm}^2$.

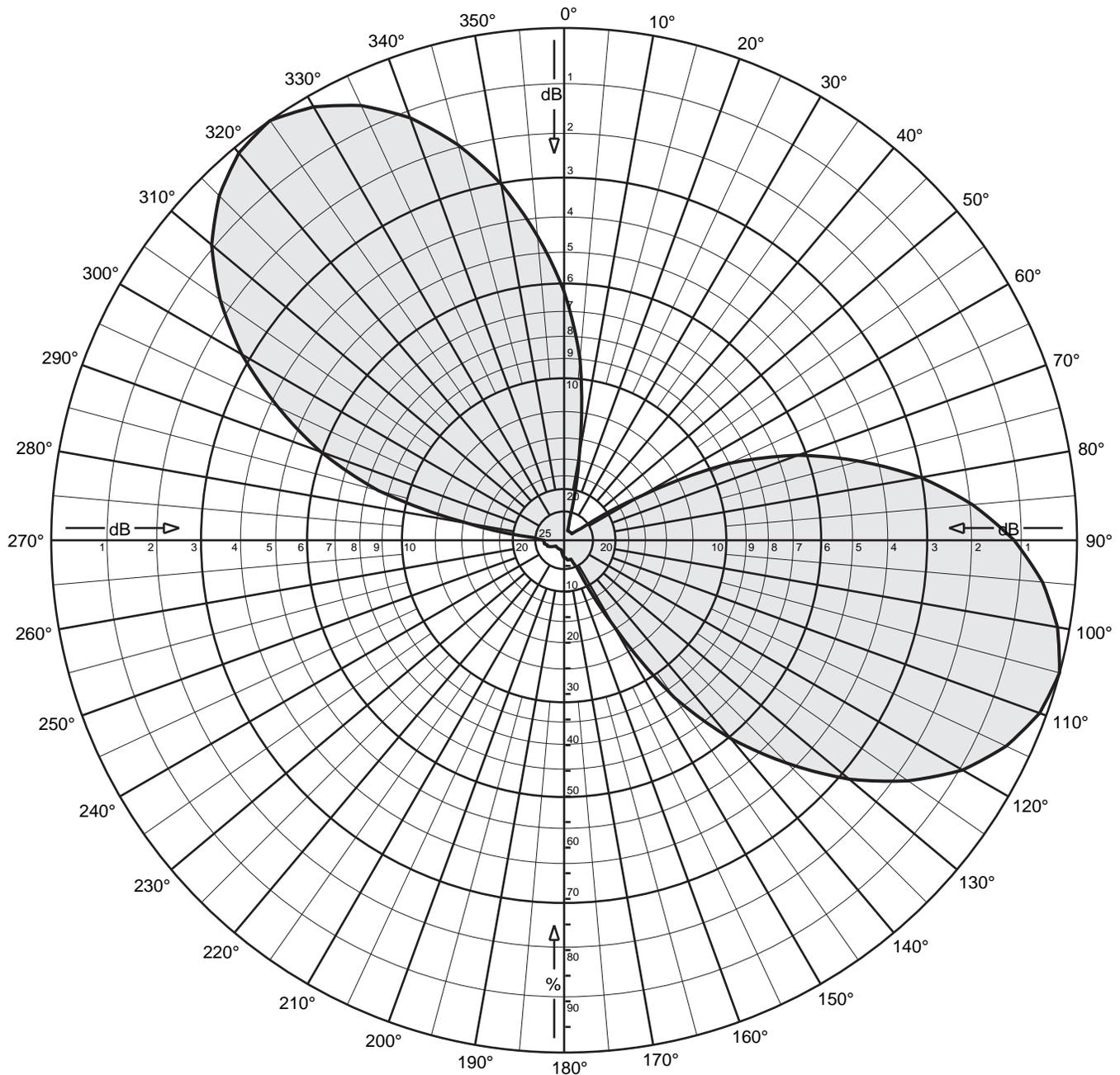
These calculations demonstrate that the maximum calculated roof top power density from the combined operations of KTNL-TV and KSCT-LD (were their maxima to coincide, which they do not) is $198.5 \mu\text{W}/\text{cm}^2$, which is 99.3% of $200 \mu\text{W}/\text{cm}^2$ (the FCC maximum for uncontrolled environments at VHF frequencies).

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 or rooftop, 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.

July 8, 2022

Hatfield & Dawson Consulting Engineers

Erik C. Swanson, P.E.
Consulting Engineer



KTNL 2xCL-713/HRM/HV ch 7 Array

One antenna skewed 105° w/ 50% power

One antenna skewed 325° w/ 50% power

Vertically stacked .67 wl CTC

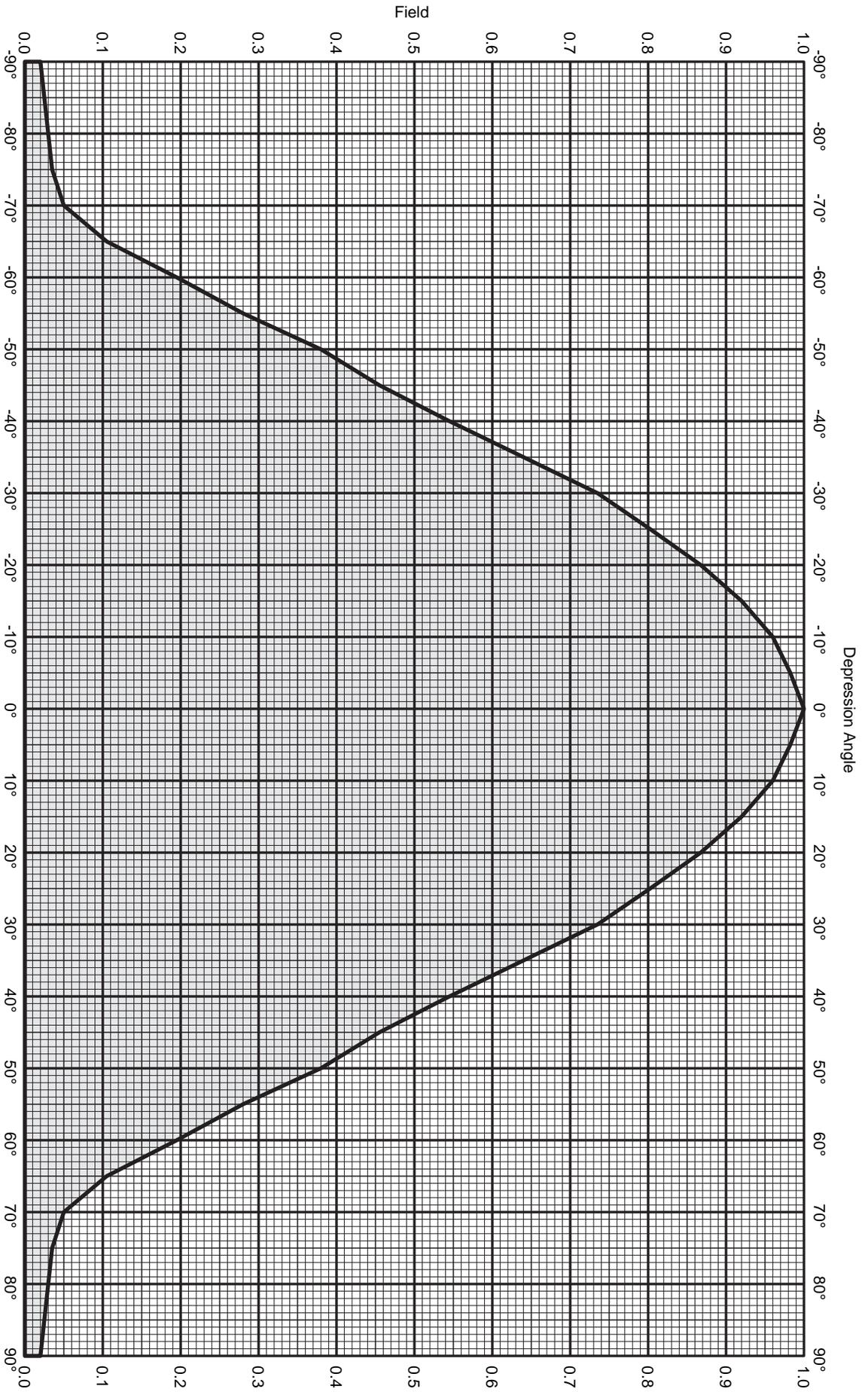
Max Gain: 5.6 dBd, Power-x: 3.63

Horizontal polarization

Horizontal plane pattern



A Kathrein Broadcast Brand



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KTNL 2xCL-713/HRM/HV ch 7 Array

One antenna skewed 105° w/ 50% power

One antenna skewed 325° w/ 50% power

Vertically stacked .67 w1 CTC

Max Gain: 5.6 dBd, Power-x: 3.63

Horizontal polarization

Vertical plane pattern

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