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Engineering Statement

Displacement Application for K59EK

For Operation on Channel 25+

February 2006

This Engineering Statement has been prepared on behalf of KING Broadcasting Company, licensee of TV translator station K59EK at The Dalles, Oregon. K59EK presently operates on a channel which is outside the "core" television spectrum. This material has been prepared in connection with a displacement application to modify this translator to Ch. 25+.

I. Allocation Study

Cochannel

Study has been made of all cochannel operations within 400 km of the proposed Ch. 25+ operation. That study shows that there will be no prohibited contour overlap with any authorized cochannel facilities close enough to require detailed study, with the exception of KNDU-TV Ch. 25z Richland.

With regard to analog station KNDU-TV Ch. 25z Richland, as well as digital stations KVAL-DT Ch. 25 Eugene and KTWB-DT Ch. 25 Seattle, a detailed Longley-Rice interference study has been conducted to demonstrate that the proposed operation will not cause interference to those facilities.

The time-shared "HDTV" computer program offered by the National Telecommunications and Information Administration's *TA Services* in Boulder, Colorado was employed as the method for coverage and interference protection. The HDTV computer program has been developed in close coordination with the Commission's OET staff, and utilizes similar methodology as the computer program used by the Commission to develop the DTV Table of Allotments. Predictions included "clipping" the extent of protected coverage as specified under §73.623(c)(2) at the Grade B contour distance for analog stations, at the 74 dBu contour distance for UHF translators, and at the DTV coverage contour distance for DTV assignments per §73.625(b). It is believed that the HDTV program offered by *TA Services* is compliant with the FCC's OET Bulletin 69 Longley-Rice Methodology for Evaluating TV Coverage and Interference ("OET-69").

Study was made using the The Dalles Ch. 25 technical facility described herein, including the proposed horizontal pattern (in this case, omnidirectional). The vertical pattern used comports with the Commission's Report and Order in MB Docket No. 03-185, released on September 30, 2004.

The results indicate that the proposed The Dalles Ch. 25 facility is predicted to cause only de minimus interference to the digital television stations. Specifically, interference is predicted to zero of the population served by KVAL-DT and KTWB-DT, and to only 2 people served by KNDU-TV. Each of these interference figures is less than 0.5% of the population served by the affected facility and is therefore considered to round to zero per Commission policy.

First-Adjacent

There will be no prohibited contour overlap with any authorized first-adjacent-channel facilities close enough to require detailed study.

N+7

There are no analog television stations on Channel 32 within 100 km of the proposed translator. KWBP-TV Ch. 32 Salem is located 123 km distant, but there is no overlap of the proposed 70 dBu F(50,50) contour to the KWBP-TV Grade B contour.

N-14 and N-15

N-14 and N-15 channel protection requirements are inapplicable to Channel 25.

Based on the foregoing allocation and interference study, it is believed that the proposed The Dalles Ch. 25 facility can operate without risk of interference to other stations.

II. NIER 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.

$$S(\mu W/cm^2) = \frac{[(0.4)\,VERP + AERP] \times 1.64 \times 2.56 \times 100 \times F^2}{4 \times B \times (Distance)^2}$$

Where: VERP = total peak visual ERP in Watts
AERP = aural ERP in Watts
F = relative field factor in the downward direction
Distance = 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 The Dalles Ch. 25 antenna system have been performed using the manufacturer's vertical plane pattern for the Kathrein 771-304 antenna proposed for use. Power density levels were calculated for an elevation of 2 meters above ground level (16 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 0.2 at these angles. This relative field value yields a worst-case adjusted peak effective radiated power of 48 Watts at

depression angles between 45 and 90 degrees below the horizontal. Assuming a worst-case average effective radiated power of 24 Watts, and the shortest distance between the antenna radiation center and 2 meters above ground (i.e. straight down), the highest calculated ground level 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 3.1 $\mu W/cm^2$, which is less than 1% of 358 $\mu W/cm^2$ (the FCC standard for uncontrolled environments at the Channel 25 visual carrier 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 1000 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 non-ionizing radiation at this site is required in this application.

Public access to the site is restricted and the antenna tower is posted with warning signs. 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 radiation in excess of FCC guidelines.

February 16, 2006

Erik C. Swanson

KATHREIN
SCALA DIVISION

771-304

OMNIDIRECTIONAL ANTENNA

11 dBd gain

470–860 MHz

The Kathrein Scala Division 771-304 Superturnstile Antenna is designed for low to medium power NTSC and DTV transmit applications which require Omni-directional coverage. Due to the very wide bandwidth, the antenna is ideally suited for combining multiple transmitters.

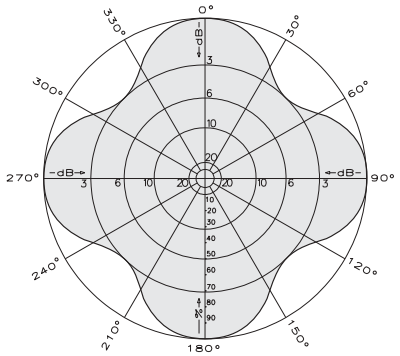
Performance under icing conditions is assured by the fiberglass (GRP) radome which covers the entire antenna. Lightning protection is provided by a large cross section conductor connecting the antenna's top cap to it's mounting bracket. These features make this antenna ideally suited for even the most adverse environmental conditions and difficult transmitter sites.

Like all Kathrein Scala Division antennas, the 771-304 is made of the finest materials using state of the art electrical and mechanical designs, resulting in superior performance and long service life. Please contact the Kathrein Scala Division Broadcast Sales department for further information and other gain options.

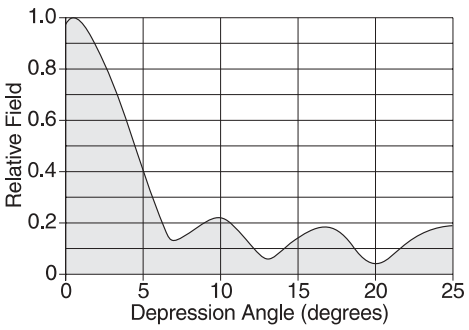
Specifications:

Frequency range	470–860 MHz (broadband)
Gain	11 dBd
Impedance	50 ohms
VSWR	<1.1:1 across the band
Polarization	Horizontal
Maximum input power	5 kW (at 50° C)
Azimuth pattern	Omni
Elevation pattern	5.5 degrees (half-power)
Connector	1⅝ inch EIA female flange
Weight	397 lb (180 kg)
Height	200.8 inches (5.1 m)
Radome diameter	11.8 inches (300 mm)
Equivalent flat plate area	14.48 ft² (1.345 m²)
Wind survival rating*	140 mph (225 kph)
Mounting	Mounts to an existing structure using an adapter. See mounting dimensions on reverse.

* Mechanical design is based on environmental conditions as stipulated in EIA-222-F (June 1996) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.



Azimuth pattern (E-plane)



Elevation pattern (H-plane)

TÜV MANAGEMENT SERVICE ISO 9001

10501-B

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Email: broadcast@kathrein.com Internet: www.kathrein-scala.com

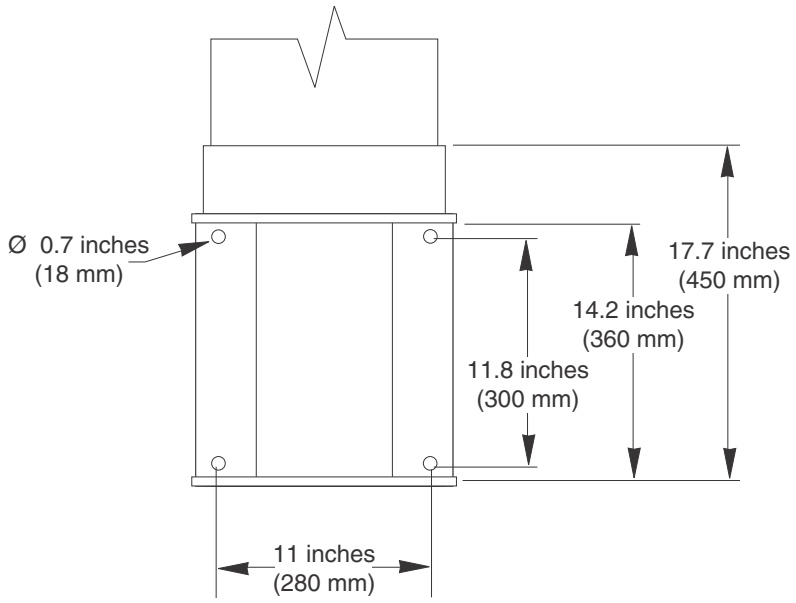
KATHREIN
SCALA DIVISION

771-304

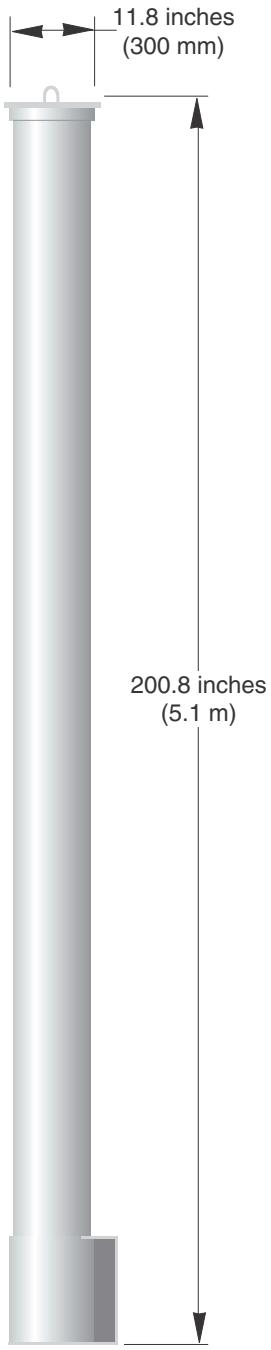
OMNIDIRECTIONAL ANTENNA

11 dBd gain

470–860 MHz



Mounting Flange



Order Information:

Model	Description
771-304	Antenna with 1⅝ inch EIA female flange connector

All specifications are subject to change without notice

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