

TECHNICAL EXHIBIT  
APPLICATION FOR  
MODIFICATION OF CONSTRUCTION PERMIT  
LOW POWER TV STATION KOHA-LP  
FCC FILE NO. BPTTL-19990702JC  
FACILITY ID 33144  
OMAHA, NEBRASKA  
CH 48 150 KW (MAX-DA)

Technical Narrative

The technical exhibit of which this narrative is part was prepared in support of an application for modification of the construction permit for Low Power TV station at Omaha, Nebraska (Facility ID: 33144; File No. BPTTL-19990702JC). Station KOHA-LP is licensed (BLTTL-19961107JD) to operate on channel 65 and is authorized by outstanding construction permit (BPTTL-19990702JC) to operate channel 59. Thus, both KOHA-LP's licensed and authorized channels are located in that portion of the TV band (channels 52-69) which has been reallocated for other services. Pursuant to Section 73.3572(a)(4)(ii), KOHA-LP is considered to be displaced and permitted to file a displacement relief application at any time. Therefore, it is proposed to operate KOHA-LP on channel 48 from a new transmitter site location. The instant application is considered a "minor change" in facilities pursuant to Section 73.3572(a)(4)(ii).

Proposed Facilities

It is proposed to operate KOHA-LP on channel 48 (674-680 MHz) with a "plus" carrier frequency offset using an Andrew model ALP16L2-HSE "off-the-shelf" directional antenna oriented at 125° true (antenna ID 16523). The maximum effective radiated power (ERP) will be 150 kW. The antenna radiation center height above mean sea level will be 500 meters.

Minor Change Application

Figure 1 depicts the licensed, authorized and herein proposed 74 dBu contours for KOHA-LP. As indicated, the proposed 74 dBu contour encompasses the entire licensed and authorized 74

dBu contours. Therefore, the proposed modification is considered a "minor" change in facilities pursuant to Section 73.3572.

Response to Paragraph 13(a) - TV Broadcast Analog Protection

A study has been conducted using the provisions of Section 74.705 which indicates that the proposed KOHA-LP operation will not create prohibited interference to other existing, authorized or proposed NTSC full-power stations.

Response to Paragraph 13(b) - DTV Station Protection

Calculations based on OET Bulletin No. 69 indicate that the proposed KOHA-LP operation on channel 48 complies with the FCC's 0.5% interference threshold criteria to all allotted, proposed or actual DTV operating facilities on channels 47, 48 and 49. Figure 2 provides the output of study based on OET-69 Bulletin which demonstrates that the proposed KOHA-LP operation complies with the FCC's DTV interference criteria.

Response to Paragraph 13(c) - LPTV/TV Translator/Class A TV Protection

A study has been conducted which indicates that the KOHA-LP proposal will not create prohibited interference to other existing, authorized or proposed LPTV stations with the exception of the licensed (BLTTL-20011217ADE) facilities of K48FZ on channel 48 at Ames, Iowa. The output of the OET-69 interference analysis computer program is attached as Figure 2 and, as indicated, the proposed KOHA-LP operation does not cause any (0 persons) interference to K48FZ's licensed operation.

Response to Paragraph 14 - Environmental Protection Act

The proposed KOHA-LP LPTV facilities were evaluated in terms of potential radiofrequency radiation exposure at ground level in accordance with OST Bulletin No. 65, "Evaluating Compliance With FCC-Specified Guidelines for Human Exposure to Radiofrequency Radiation." The calculated power density at the base of the tower was calculated using the appropriate equation on Page 13 of the Bulletin. Using a greater than expected vertical relative field value of 0.2 towards the tower base (see

vertical plane relative field pattern attached as Figure 3), a maximum visual effective radiated power of 150 kilowatts and 22 percent aural power, the calculated power density at 2 meters above ground level at the base of the tower is 0.0069 milliwatt per square centimeter ( $\text{mW}/\text{cm}^2$ ), or 1.53 percent of the Commission's recommended limit applicable to general population/uncontrolled exposure areas ( $0.45 \text{ mW}/\text{cm}^2$  for TV channel 48). Therefore, based on the responsibility threshold of 5%, the proposal will comply with the FCC's RF emission rules.

Access to the transmitting site will be restricted and appropriately marked with warning signs. Furthermore, as this is a multi-user site, an agreement will be in effect in the event that workers or other authorized personnel enter the restricted area or climb the tower to ensure that appropriate measures will be taken to assure worker safety with respect to radio frequency radiation exposure. Such measures include reducing the average exposure by spreading out the work over a longer period of time, wearing "accepted" RFR protective clothing and/or RFR exposure monitors or scheduling work when the stations are at reduced power or shut down.

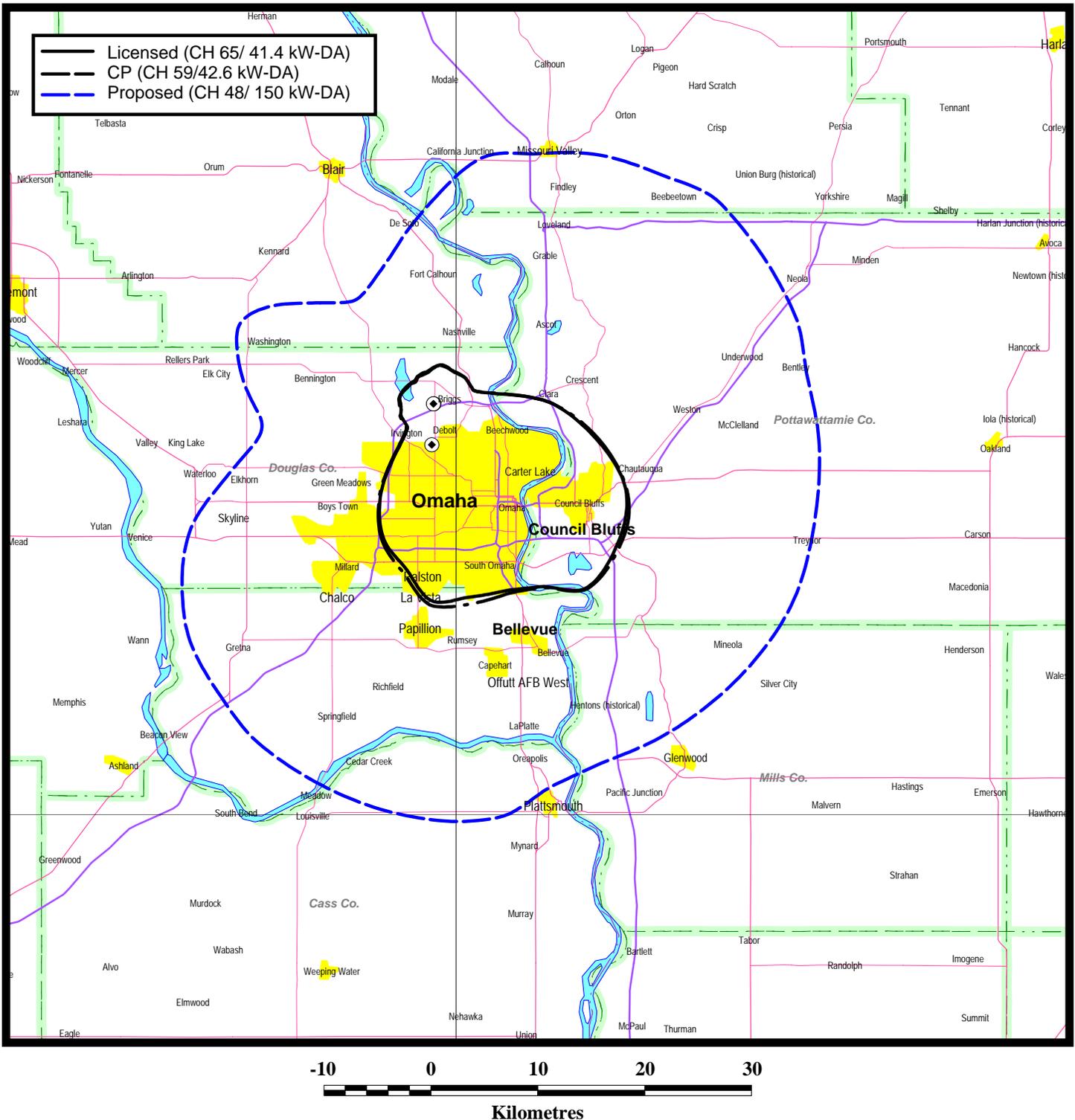
Finally, it is noted that this technical exhibit only addresses the potential for radiofrequency electromagnetic field exposure. All other aspects of the environmental processing analysis will be or already has been provided to the FCC by the tower owner as part of the tower registration process.

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December 23, 2003

Figure 1



## PREDICTED 74 DBU COVERAGE CONTOURS

LPTV STATION KOHA-LP  
OMAHA, NEBRASKA  
CH 48 150 KW (MAX-DA)

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

OET-69 DTV/CLASS A/LPTV/TV TRANSLATOR INTERFERENCE CAUSED STUDY

CELL SIZE : 2.00  
Using offset in determining thresholds

\*\*\*\*\*  
K48FZ 41-58-49 093-44-23 48(+) 3.000 kw 450 m 50.0 % 74.8 dBu  
AMES IA  
LIC BLTTL20011217ADE  
Using DEFAULT vertical antenna pattern

|                                | Area       | Pop   |
|--------------------------------|------------|-------|
| within Noise Limited Contour   | 456.837341 | 51504 |
| not affected by terrain losses | 456.837341 | 51504 |

\*\*\*\*\*  
KOHA-LP 41-18-40 096-01-37 48(+) 150.000 kw 500 m DA 10.0 % 74.8  
OMAHA NE  
PROPOSED

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 | 0.94 | 0.89 | 0.83 | 0.76 | 0.69 | 0.60 |
| 0.48 | 0.34 | 0.23 | 0.19 | 0.22 | 0.29 | 0.32 | 0.29 | 0.22 | 0.19 | 0.23 | 0.34 |
| 0.48 | 0.60 | 0.69 | 0.76 | 0.83 | 0.89 | 0.94 | 0.98 | 1.00 | 1.00 | 1.00 | 1.00 |

Ref Az: 125.0  
Using DEFAULT vertical antenna pattern

D/U Baseline: 45.00

| Interference | Area | Pop |
|--------------|------|-----|
|              | 0    | 0   |

\*\*\*\*\*  
DKTKAT 39-01-34 095-54-58 48(0) 120.800 kw 769 m DA 90.0 % 41.8 dBu  
TOPEKA KS 19798 477 DTVSERVICE: 477000 NTSCSERVICE: 444000  
DTVALT DTV ALLOTMENT

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 0.27 | 0.27 | 0.27 | 0.28 | 0.33 | 0.44 | 0.60 | 0.79 | 0.93 | 1.00 | 0.93 | 0.80 |
| 0.61 | 0.47 | 0.35 | 0.29 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.29 | 0.36 | 0.47 |
| 0.62 | 0.80 | 0.95 | 0.98 | 0.94 | 0.78 | 0.61 | 0.44 | 0.33 | 0.28 | 0.27 | 0.27 |

Ref Az: 0.0  
Using DEFAULT vertical antenna pattern

|                                | Area         | Pop    |
|--------------------------------|--------------|--------|
| within Noise Limited Contour   | 19925.894531 | 479917 |
| not affected by terrain losses | 19826.025391 | 479065 |

\*\*\*\*\*  
KOHA-LP 41-18-40 096-01-37 48(+) 150.000 kw 500 m DA 10.0 % 74.8  
OMAHA NE  
PROPOSED

|      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 | 0.94 | 0.89 | 0.83 | 0.76 | 0.69 | 0.60 |
| 0.48 | 0.34 | 0.23 | 0.19 | 0.22 | 0.29 | 0.32 | 0.29 | 0.22 | 0.19 | 0.23 | 0.34 |
| 0.48 | 0.60 | 0.69 | 0.76 | 0.83 | 0.89 | 0.94 | 0.98 | 1.00 | 1.00 | 1.00 | 1.00 |

Ref Az: 125.0  
Using DEFAULT vertical antenna pattern

D/U Baseline: 2.00

**Interference** **Area** **Pop**  
11.98 28(0.0%)

\*\*\*\*\*

KTCA-T 39-01-34 095-55-01 48(N) 25.000 kw 767.5 m DA 90.0 % 41.8 dBu  
TOPEKA KS 19798 477 DTVSERVICE: 477000 NTSCSERVICE: 444000  
CP BPCDT19991101AKF  
0.37 0.37 0.37 0.40 0.49 0.62 0.76 0.88 0.97 1.00 0.97 0.88  
0.76 0.62 0.49 0.40 0.37 0.37 0.37 0.37 0.37 0.40 0.49 0.62  
0.76 0.88 0.97 1.00 0.97 0.88 0.76 0.62 0.49 0.40 0.37 0.37  
Ref Az: 0.0

Using DEFAULT vertical antenna pattern

**Area** **Pop**  
within Noise Limited Contour 16370.184570 404954  
not affected by terrain losses 16262.328125 399889

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KOHA-LP 41-18-40 096-01-37 48(+) 150.000 kw 500 m DA 10.0 % 74.8  
OMAHA NE  
PROPOSED  
1.00 1.00 1.00 1.00 1.00 0.98 0.94 0.89 0.83 0.76 0.69 0.60  
0.48 0.34 0.23 0.19 0.22 0.29 0.32 0.29 0.22 0.19 0.23 0.34  
0.48 0.60 0.69 0.76 0.83 0.89 0.94 0.98 1.00 1.00 1.00 1.00  
Ref Az: 125.0

Using DEFAULT vertical antenna pattern

D/U Baseline: 2.00

**Interference** **Area** **Pop**  
11.98 28(0.0%)

\*\*\*\*\*

KPTH 42-35-12 096-13-18 49(N) 1000.000 kw 980 m DA 90.0 % 41.9 dBu  
SIOUX CITY IA 29824 360 DTVSERVICE: 360000 NTSCSERVICE: 352000  
CP BPCDT19991101AGW  
0.70 0.57 0.47 0.49 0.64 0.82 0.95 1.00 0.95 0.82 0.64 0.49  
0.47 0.57 0.70 0.79 0.82 0.79 0.70 0.57 0.47 0.49 0.64 0.82  
0.95 1.00 0.95 0.82 0.64 0.49 0.47 0.57 0.70 0.79 0.82 0.79  
Ref Az: 0.0

Using DEFAULT vertical antenna pattern

**Area** **Pop**  
within Noise Limited Contour 38854.484375 529574  
not affected by terrain losses 38497.171875 522384

\*\*\*\*\*

KOHA-LP 41-18-40 096-01-37 48(+) 150.000 kw 500 m DA 10.0 % 74.8  
OMAHA NE  
PROPOSED  
1.00 1.00 1.00 1.00 1.00 0.98 0.94 0.89 0.83 0.76 0.69 0.60  
0.48 0.34 0.23 0.19 0.22 0.29 0.32 0.29 0.22 0.19 0.23 0.34  
0.48 0.60 0.69 0.76 0.83 0.89 0.94 0.98 1.00 1.00 1.00 1.00  
Ref Az: 125.0

Using DEFAULT vertical antenna pattern

D/U Baseline: -48.00

| Interference   | Area<br>0 | Pop<br>0 |
|--|-----------|----------|
| *****  |           |          |
| DNEW 42-35-16 096-13-22 49(0) 226.400 kw 1000 m DA 90.0 % 41.9 dBu |           |          |
| SIOUX CITY IA 29824 360 DTVSERVICE: 360000 NTSCSERVICE: 352000     |           |          |
| DTVALT DTV ALLOTMENT   |           |          |
| 1.00 0.98 0.96 0.92 0.92 0.96 1.00 1.00 0.98 0.97 0.89 0.75        |           |          |
| 0.62 0.51 0.40 0.26 0.15 0.12 0.13 0.12 0.15 0.26 0.40 0.51        |           |          |
| 0.62 0.75 0.89 0.98 0.99 1.00 1.00 0.96 0.92 0.92 0.96 0.99        |           |          |
| Ref Az: 0.0  |           |          |
| Using DEFAULT vertical antenna pattern                             |           |          |

|                                | Area         | Pop    |
|--------------------------------|--------------|--------|
| within Noise Limited Contour   | 29976.541016 | 362503 |
| not affected by terrain losses | 29836.369141 | 360461 |

|   |                |                  |
|---|----------------|------------------|
| *****   |                |                  |
| KOHA-LP 41-18-40 096-01-37 48(+)                            | 150.000 kw 500 | m DA 10.0 % 74.8 |
| OMAHA NE  |                |                  |
| PROPOSED  |                |                  |
| 1.00 1.00 1.00 1.00 1.00 0.98 0.94 0.89 0.83 0.76 0.69 0.60 |                |                  |
| 0.48 0.34 0.23 0.19 0.22 0.29 0.32 0.29 0.22 0.19 0.23 0.34 |                |                  |
| 0.48 0.60 0.69 0.76 0.83 0.89 0.94 0.98 1.00 1.00 1.00 1.00 |                |                  |
| Ref Az: 125.0   |                |                  |
| Using DEFAULT vertical antenna pattern                      |                |                  |

D/U Baseline: -48.00

| Interference | Area<br>0 | Pop<br>0 |
|--------------|-----------|----------|
|--------------|-----------|----------|

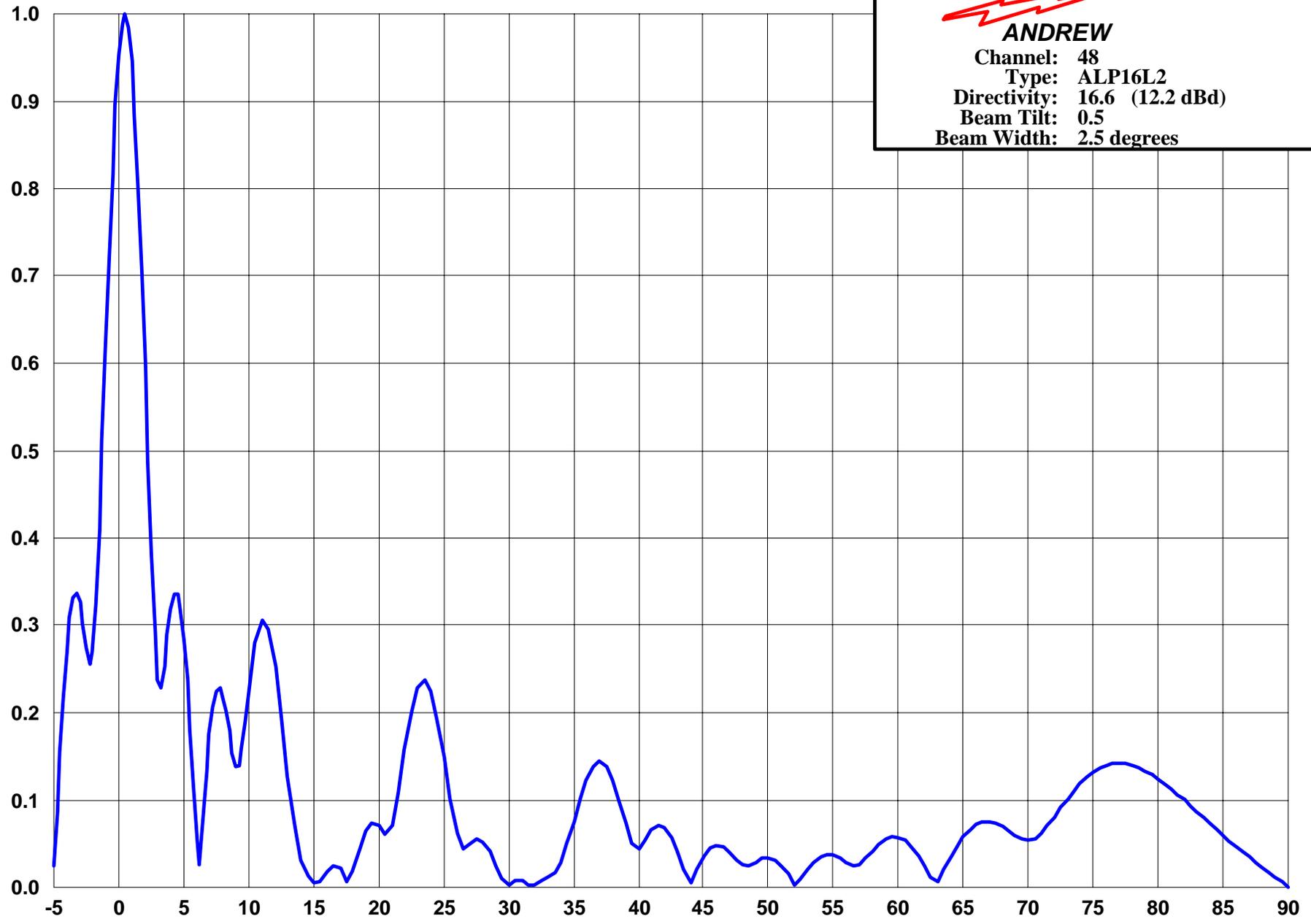
Summary of Calculations

| Facility             | Channel | Type | Baseline | Permissible | IX | %Base |
|----------------------|---------|------|----------|-------------|----|-------|
| K48FZ, AMES, IA      | 48      | TV   | 51504    | 2.0         | 0  | 0.00  |
| DGTKAT, TOPEKA, KS   | 48      | DTV  | 479917   | 2.0         | 28 | 0.00  |
| KTKA-T, TOPEKA, KS   | 48      | DTV  | 444000   | 2.0         | 28 | 0.00  |
| KPTH, SIOUX CITY, IA | 49      | DTV  | 529574   | 2.0         | 0  | 0.00  |
| DNEW, SIOUX CITY, IA | 49      | DTV  | 362503   | 2.0         | 0  | 0.00  |



**ANDREW**

Channel: 48  
Type: ALP16L2  
Directivity: 16.6 (12.2 dBd)  
Beam Tilt: 0.5  
Beam Width: 2.5 degrees



ANDREW CORPORATION  
10500 W. 153rd Street  
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Figure 3