

TECHNICAL EXHIBIT
APPLICATION FOR MODIFICATION OF
CONSTRUCTION PERMIT
TELEVISION STATION KIEM-DT
EUREKA, CALIFORNIA

April 20, 2006

CHANNEL 16 18.5 KW 432 M

TECHNICAL EXHIBIT
APPLICATION FOR MODIFICATION OF CONSTRUCTION PERMIT
TELEVISION STATION KIEM-DT
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TECHNICAL EXHIBIT
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Technical Statement

This Technical Exhibit was prepared on behalf of digital television broadcast station KIEM-DT, Eureka, California, in support of an application for modification of construction permit. KIEM-DT is paired with analog NTSC TV station KIEM-TV, Channel 3. Pursuant to the FCC *Sixth Report and Order* concerning digital television, KIEM-DT was allotted Channel 16, with a maximum effective radiated power (ERP) of 1000 kW and antenna height above average terrain (HAAT) of 503 m, as its transitional DTV allotment channel.* KIEM-DT is authorized for operation on Channel 16 with a maximum directional ERP of 1000 kW with an HAAT of 484 m.† The instant application proposes operation of the KIEM-DT facility at the existing KIEM-TV transmitter site, but using a different antenna pattern with a decrease in ERP and HAAT. Also, the coordinates of the transmitter site were corrected to harmonize with the antenna structure registration data. The proposal complies with the DTV application “checklist” filing requirements‡ and the requirements the FCC Filing Freeze for television stations.§ The proposed KIEM-DT facility meets the FCC’s 80% “use-it-or-lose-it” criteria adopted in the Report and Order in the Second Periodic Review of digital television (September 2004). This is demonstrated in Appendix 3 herein.

* See DTV Table of Allotments, *Second Memorandum Opinion and Order on Reconsideration of the Fifth and Sixth Report and Orders*, 14 FCC Rcd 1348, at Appendix B.

† See FCC File No. BPCDT-19991027ABI.

‡ See FCC *Public Notice*, “Commission Details Application Filing Procedures Digital Television (DTV)”, Released: October 16, 1997; and, FCC *Public Notice*, “Additional Application Processing Guidelines for Digital Television (DTV)”, Released: August 10, 1998.

§ See *August 2004 Filing Freeze PN*, DA 04-2446 (MB rel. Aug. 3, 2004).

Proposed Facilities

The proposed facility will employ a Dielectric model TLP-12I transmitting antenna oriented at 270°True. The antenna is to be mounted with a center of radiation at 16 m above ground level and 869 m above mean sea level. The antenna radiation center HAAT is calculated to be 432 m based on the U.S.G.S. 3-second computer database. Technical specifications for the proposed operation are included herein as Figure 1.

The proposed facility provides minimum 48 dBu, f(50,90), coverage of Eureka in compliance with Section 73.625(a)(1) of the FCC Rules. Figure 2 herein is a map depicting the predicted coverage contours of the proposed facility.

The proposed KIEM-DT facility meets the requirements of Section 73.622(f)(3) of the FCC Rules concerning the maximum permissible ERP for DTV stations with a decrease in HAAT relative to the DTV Allotment facility in Appendix B.**

As illustrated on the coverage map at Figure 2, the proposed 41 dBu, f(50,90) contour of the proposed KIEM-DT facility will not extend beyond that of the KIEM-DT allotment facility.

The proposed transmitter is located beyond the coordination zone with either Canada or Mexico. The closest FCC Monitoring station is located at Livermore, California at a distance of 384 km at a bearing of 150°True. The facility is located more than 1000 km from the National Radio Quiet Zones in West Virginia and Colorado. The proposal is located more than 3.2 km from the closest AM broadcast facility.

** See DTV Table of Allotments, *Second Memorandum Opinion and Order on Reconsideration of the Fifth and Sixth Report and Orders*, 14 FCC Rcd 1348, at Appendix B. The FCC DTV Allotment Pattern for Channel 16 is included herein at Appendix 1.

No adverse electromagnetic impact is expected as a result of the proposed operation. However, the applicant recognizes its responsibility to correct objectionable electromagnetic interference problems that result from its proposed operation.

Tower Registration

The existing antenna structure is registered with the FCC. The FCC antenna structure registration number is 1048503. There will be no change in the overall height of the antenna structure as a result of the instant proposal.

Allocation Considerations

The proposed KIEM-DT facility meets the criteria of Section 73.622(f)(2) of the FCC Rules. Therefore, pursuant to that section, the application shall not be subject to further consideration of electromagnetic interference to other DTV or analog TV broadcast stations.

Environmental Considerations

With respect to the potential for human exposure to radio frequency (RF) radiation, calculations prepared in accordance with FCC Bulletin OET-65 (Edition 97-01) indicate that the proposal will not result in human exposure to RF radiation at ground level in excess of FCC standards. Power density calculations were conducted at 2-m above ground^{††} based on the following conservative assumptions, with the following results:

^{††} The radiation center height above ground for KIEM-DT is 16 m; for KIEM-TV, 69 m; for KKHB(FM), 49 m; and for KMUE(FM), 26 m.

Call Sign	Channel	Peak Visual or Average ERP (kW)	Relative Field Factor ^{††}	FCC Limit ^{§§} (mW/cm ²)	Percentage of Limit
KMUE(FM)	202C2	2.5	0.50	0.2000	18.1%
KKHB(FM)	288C1	56	0.35	0.2000	51.9%
KIEM-TV	3	100	0.30	0.2000	16.7%
KIEM-DT	16	18.5	0.10	0.3233	9.8%
Total					96.5%

As indicated above, the total exposure to RF radiation at 2-m above ground level will not exceed 96.5% of the FCC limit for general population / uncontrolled exposure. Therefore, the proposal complies with the FCC limits for human exposure to RF radiation and it is categorically excluded from environmental processing. The applicant, in coordination with any other users of the transmission facility, shall reduce power or cease operation as necessary to protect persons having access to the tower or antenna from radio frequency radiation in excess of the FCC guidelines.



Louis Robert du Treil, Jr.

du Treil, Lundin & Rackley, Inc.
201 Fletcher Ave.
Sarasota, FL 34237

April 20, 2006

†† This is a conservative estimate of the relative field factor in the downward direction.
§§ for general population/uncontrolled environments

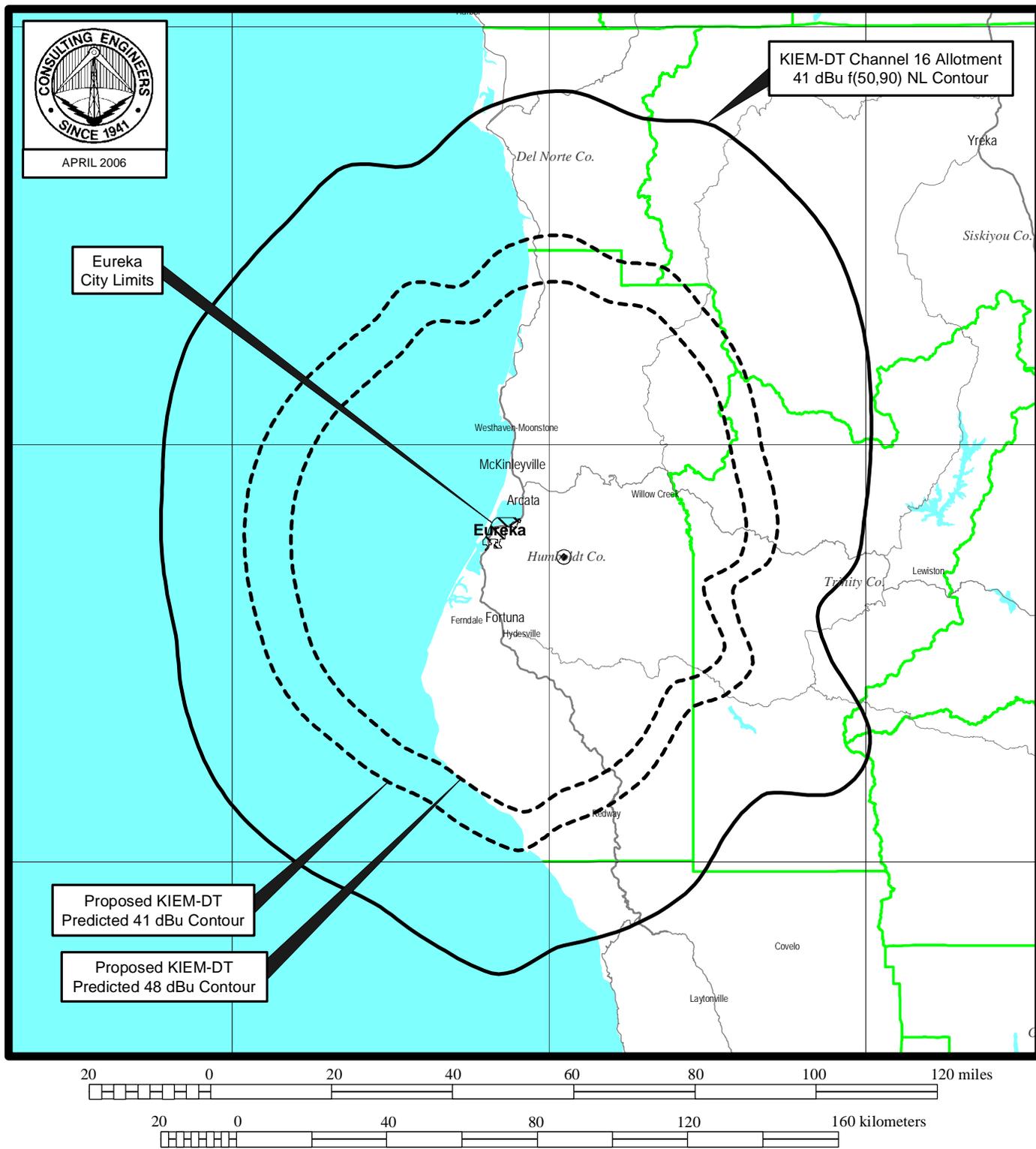
Figure 1

TECHNICAL EXHIBIT
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Technical Specifications

Channel / Frequency Band	16 / 482-488 MHz
Site Coordinates (NAD 27)	40°43'50" North Latitude 123°57'07" West Longitude
Site elevation	853 m AMSL
Average elevation of standard eight radials, 3 to 16 km	437 m AMSL
Overall height of existing structure	76 m AGL / 929 m AMSL
Height of antenna radiation center	16 m AGL / 869 m AMSL
Antenna radiation center HAAT	432 m
Antenna structure ASRN	1048503

Proposed Operation	
Parameter	DTV
Transmitter power output (output of mask filter)	-0.24 dBk (0.95 kW)
Transmission line loss (24-m, DCA, 1-5/8-inch, air, coax)	0.43 dB
Antenna input power	-0.67 dBk
Antenna RMS gain (DCA, model TLP-12I)	12.67 dBd
Maximum directional effective radiated power	12.67 dBk (18.5 kW)



PREDICTED COVERAGE CONTOURS

TELEVISION STATION KIEM-DT
EUREKA, CALIFORNIA
CHANNEL 16 18.5 KW 432 M

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

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FCC DTV Allotment Pattern for Channel 16

(one page follows)



Date
Call Letters
Location
Peak ERP
Antenna Type

19-Apr-06

Channel 16

EUREKA, CA

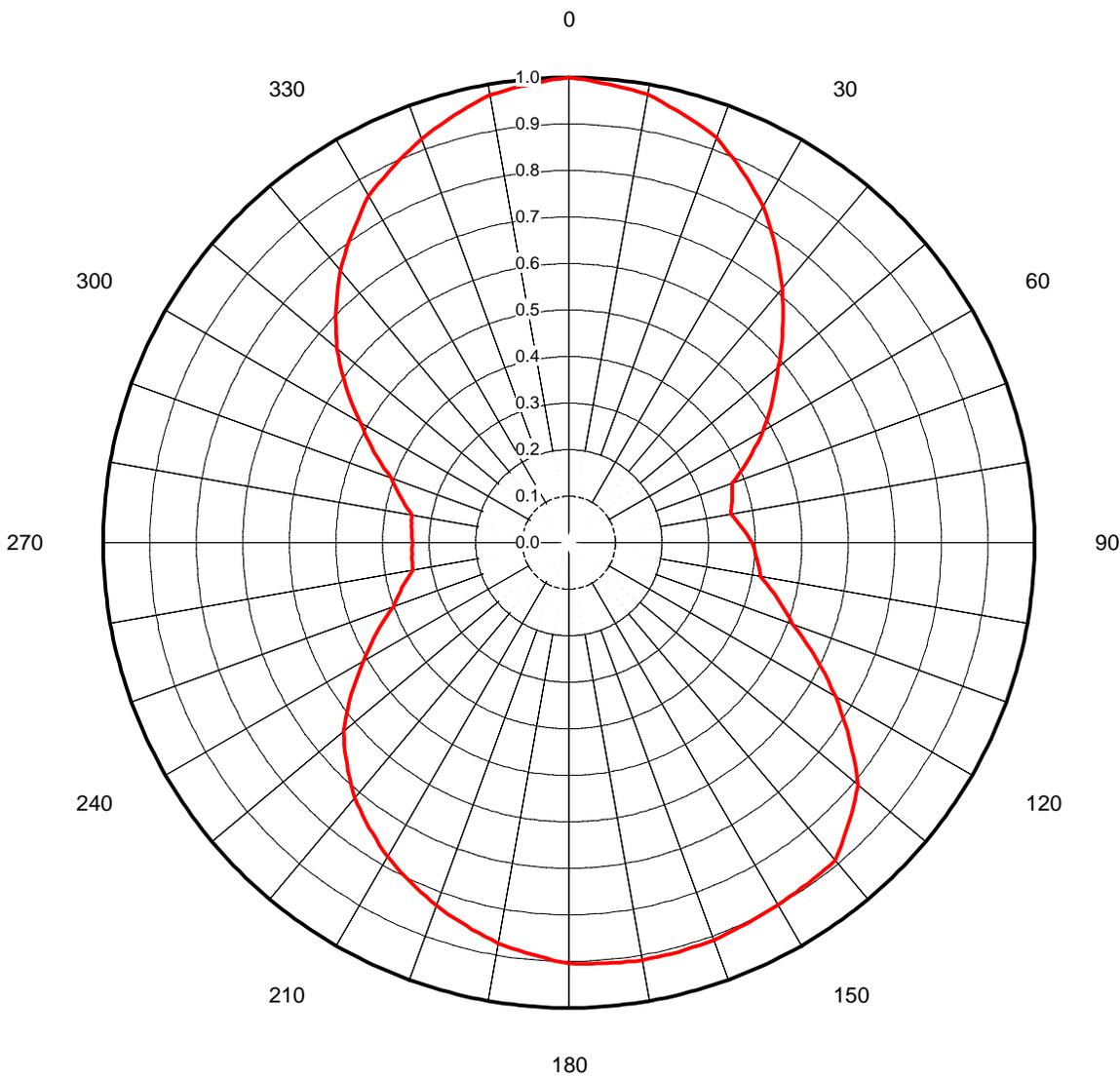
1000.0 kW

AZIMUTH PATTERN

Frequency
Drawing #

485.00 MHz

FCC-DT-16



AZ. (dgs)	ERP (kW)
0	1000.0
10	956.5
20	859.3
30	697.2
40	508.4
50	344.6
60	231.4
70	139.1
80	124.6
90	154.4
100	174.7
110	260.1
120	436.9
130	657.7
140	793.9
150	806.4
160	826.3
170	829.9
180	817.2
190	763.9
200	690.6
210	606.8
220	512.7
230	399.4
240	259.1
250	160.0
260	115.6
270	112.9
280	117.0
290	164.0
300	267.3
310	422.5
320	583.7
330	739.6
340	853.8
350	954.5

Remarks :

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Transmitting Antenna Manufacturer's Pattern Data

(four pages follow)



Exhibit No.

Date **19 Apr 2006**

Call Letters

Channel **16**

Location

Customer

Antenna Type **TLP-12I**

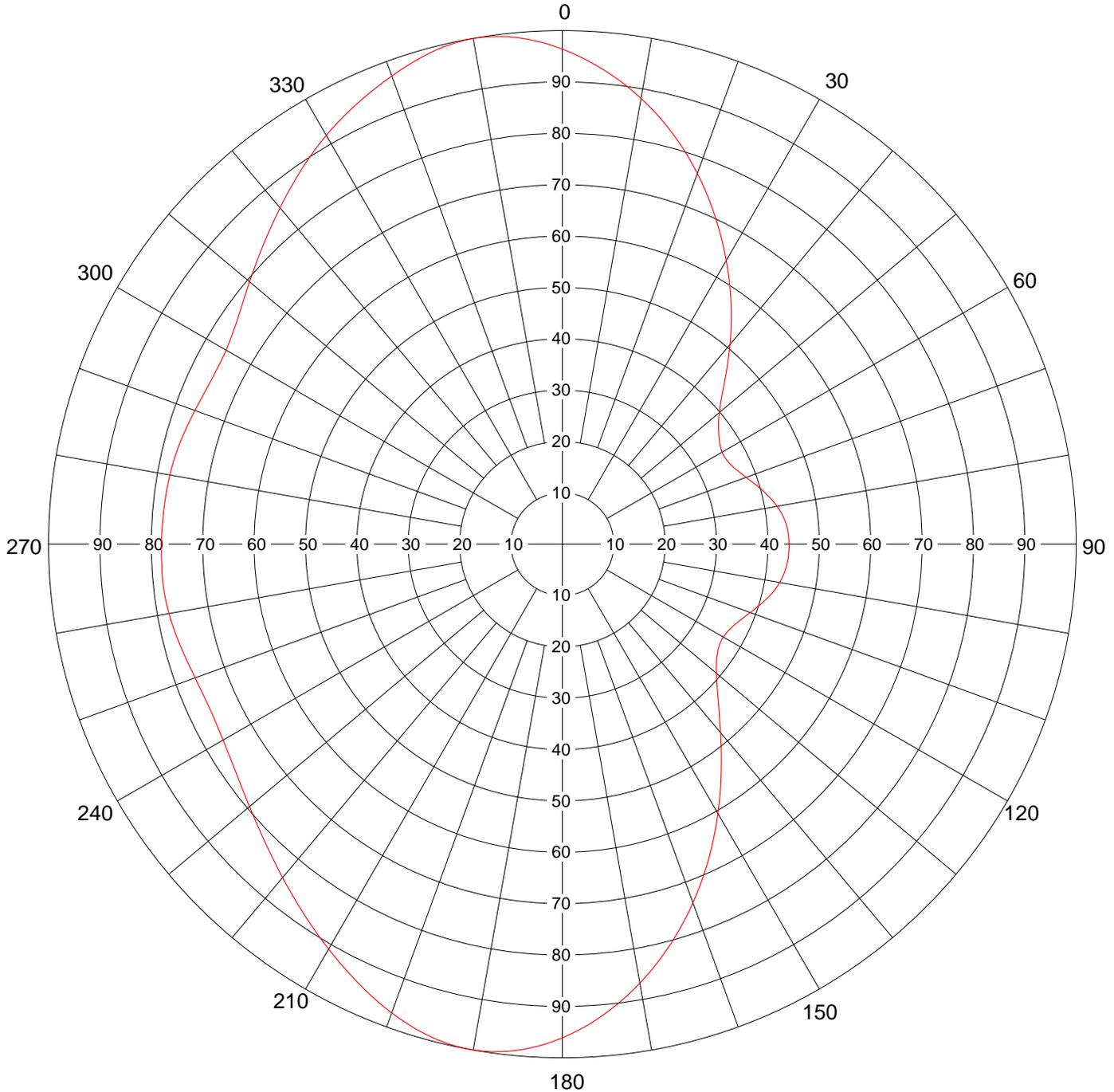
AZIMUTH PATTERN

Gain
Calculated / Measured

1.80 (2.55 dB)
Calculated

Frequency
Drawing #

485 MHz
TLP-I



Remarks:



Date **19 Apr 2006**
 Call Letters **Eureka CA**
 Location **Eureka CA**
 Customer
 Antenna Type **TLP-12I**
 Channel **16**

TABULATION OF AZIMUTH PATTERN

Azimuth Pattern Drawing # **TLP-I**

Angle	Field	ERP (kW)	ERP (dBk)
0	0.964	17.7	12.47
10	0.881	14.7	11.69
20	0.768	11.2	10.49
30	0.638	7.7	8.88
40	0.508	4.9	6.90
50	0.399	3.0	4.81
60	0.359	2.4	3.89
70	0.381	2.8	4.41
80	0.424	3.4	5.33
90	0.441	3.7	5.68
100	0.429	3.5	5.44
110	0.389	2.9	4.59
120	0.362	2.5	3.96
130	0.391	2.9	4.63
140	0.479	4.4	6.39
150	0.605	7.0	8.42
160	0.743	10.5	10.21
170	0.868	14.3	11.56
180	0.961	17.5	12.44
190	1.000	19.0	12.79
200	0.971	17.9	12.53
210	0.910	15.7	11.97
220	0.847	13.6	11.35
230	0.795	12.0	10.79
240	0.763	11.1	10.44
250	0.761	11.0	10.42
260	0.778	11.5	10.61
270	0.781	11.6	10.64
280	0.776	11.4	10.58
290	0.761	11.0	10.42
300	0.756	10.9	10.36
310	0.795	12.0	10.79
320	0.855	13.9	11.43
330	0.919	16.0	12.05
340	0.970	17.9	12.52
350	1.000	19.0	12.79

Maxima

Angle	Field	ERP (kW)	ERP (dBk)
0	0.964	17.7	12.47
90	0.441	3.7	5.68
190	1.000	19.0	12.79
265	0.781	11.6	10.64
270	0.781	11.6	10.64
350	1.000	19.0	12.79

Minima

Angle	Field	ERP (kW)	ERP (dBk)
61	0.358	2.4	3.87
120	0.362	2.5	3.96
245	0.757	10.9	10.37
269	0.781	11.6	10.64
297	0.754	10.8	10.33

Remarks:

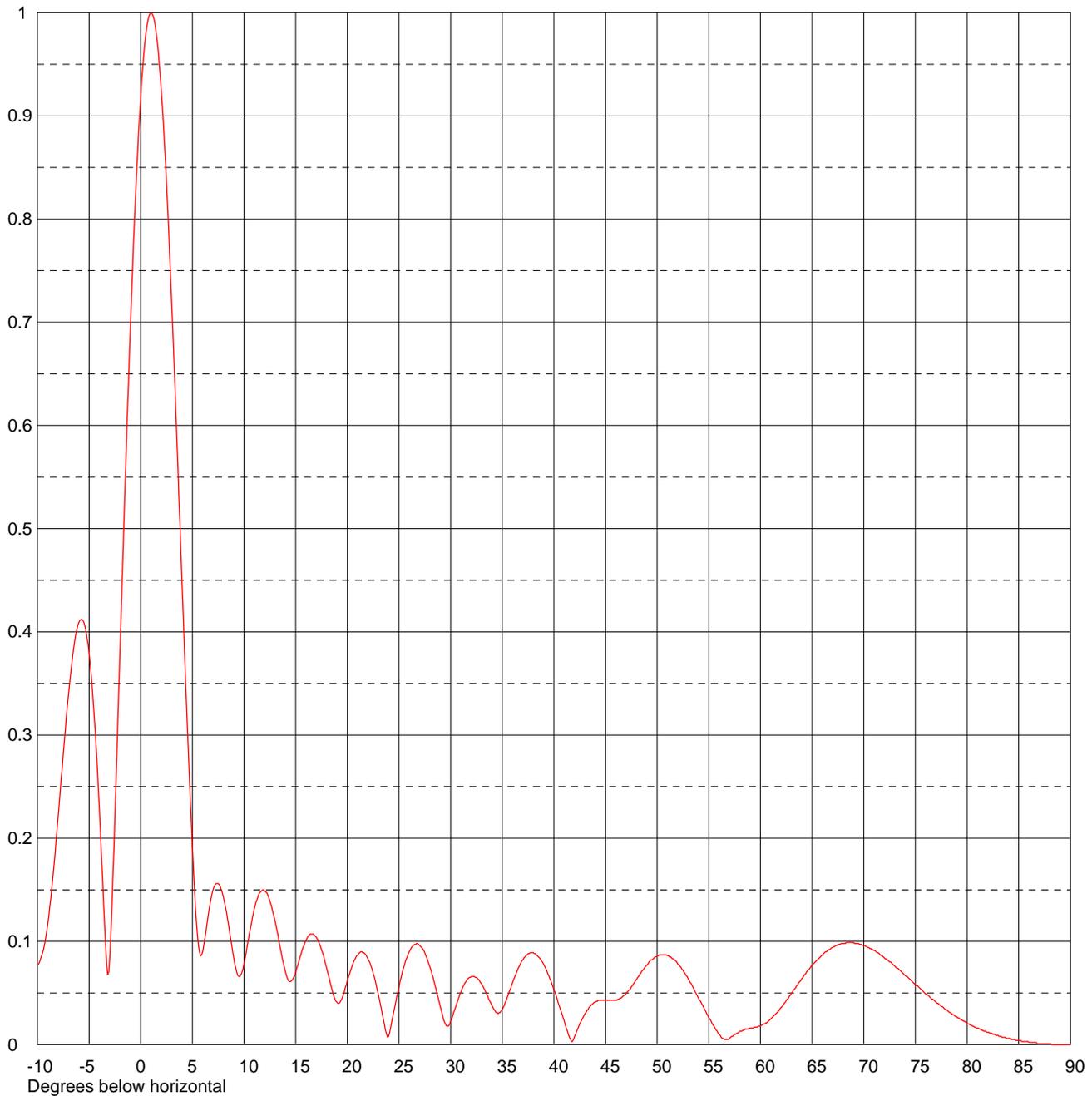


Date **19 Apr 2006**
 Call Letters
 Location **Eureka CA**
 Customer
 Antenna Type **TLP-12I**

Channel **16**

ELEVATION PATTERN

RMS Gain at Main Lobe	12.0 (10.79 dB)	Beam Tilt	1.00 Degrees
RMS Gain at Horizontal	10.1 (10.04 dB)	Frequency	485.00 MHz
Calculated / Measured	Calculated	Drawing #	12L120100-90



Remarks:



Date **19 Apr 2006**
 Call Letters
 Location **Eureka CA**
 Customer
 Antenna Type **TLP-12I**

Channel **16**

TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing # **12L120100-90**

Angle	Field										
-10.0	0.076	2.4	0.854	10.6	0.112	30.5	0.037	51.0	0.086	71.5	0.088
-9.5	0.089	2.6	0.812	10.8	0.123	31.0	0.051	51.5	0.083	72.0	0.084
-9.0	0.117	2.8	0.767	11.0	0.132	31.5	0.061	52.0	0.078	72.5	0.080
-8.5	0.163	3.0	0.718	11.5	0.147	32.0	0.066	52.5	0.072	73.0	0.076
-8.0	0.221	3.2	0.667	12.0	0.149	32.5	0.065	53.0	0.064	73.5	0.072
-7.5	0.282	3.4	0.614	12.5	0.139	33.0	0.059	53.5	0.055	74.0	0.067
-7.0	0.339	3.6	0.559	13.0	0.120	33.5	0.049	54.0	0.045	74.5	0.063
-6.5	0.384	3.8	0.503	13.5	0.094	34.0	0.038	54.5	0.036	75.0	0.058
-6.0	0.409	4.0	0.447	14.0	0.071	34.5	0.031	55.0	0.026	75.5	0.054
-5.5	0.409	4.2	0.392	14.5	0.061	35.0	0.034	55.5	0.018	76.0	0.049
-5.0	0.379	4.4	0.338	15.0	0.070	35.5	0.046	56.0	0.010	76.5	0.045
-4.5	0.317	4.6	0.286	15.5	0.087	36.0	0.060	56.5	0.005	77.0	0.041
-4.0	0.227	4.8	0.237	16.0	0.101	36.5	0.073	57.0	0.006	77.5	0.037
-3.5	0.116	5.0	0.192	16.5	0.107	37.0	0.082	57.5	0.010	78.0	0.034
-3.0	0.084	5.2	0.151	17.0	0.104	37.5	0.088	58.0	0.013	78.5	0.030
-2.8	0.132	5.4	0.118	17.5	0.092	38.0	0.089	58.5	0.015	79.0	0.027
-2.6	0.191	5.6	0.095	18.0	0.074	38.5	0.085	59.0	0.016	79.5	0.024
-2.4	0.254	5.8	0.086	18.5	0.054	39.0	0.078	59.5	0.017	80.0	0.021
-2.2	0.319	6.0	0.090	19.0	0.041	39.5	0.067	60.0	0.018	80.5	0.018
-2.0	0.385	6.2	0.102	19.5	0.045	40.0	0.053	60.5	0.021	81.0	0.016
-1.8	0.451	6.4	0.116	20.0	0.062	40.5	0.038	61.0	0.025	81.5	0.014
-1.6	0.515	6.6	0.130	20.5	0.077	41.0	0.023	61.5	0.030	82.0	0.012
-1.4	0.578	6.8	0.141	21.0	0.087	41.5	0.007	62.0	0.036	82.5	0.010
-1.2	0.639	7.0	0.150	21.5	0.089	42.0	0.008	62.5	0.043	83.0	0.009
-1.0	0.696	7.2	0.155	22.0	0.083	42.5	0.020	63.0	0.050	83.5	0.007
-0.8	0.750	7.4	0.156	22.5	0.069	43.0	0.030	63.5	0.057	84.0	0.006
-0.6	0.800	7.6	0.155	23.0	0.049	43.5	0.037	64.0	0.064	84.5	0.005
-0.4	0.845	7.8	0.150	23.5	0.024	44.0	0.041	64.5	0.071	85.0	0.004
-0.2	0.885	8.0	0.143	24.0	0.008	44.5	0.043	65.0	0.077	85.5	0.003
0.0	0.919	8.2	0.133	24.5	0.032	45.0	0.043	65.5	0.082	86.0	0.002
0.2	0.948	8.4	0.122	25.0	0.056	45.5	0.043	66.0	0.087	86.5	0.002
0.4	0.971	8.6	0.109	25.5	0.076	46.0	0.043	66.5	0.091	87.0	0.001
0.6	0.987	8.8	0.096	26.0	0.090	46.5	0.045	67.0	0.094	87.5	0.001
0.8	0.997	9.0	0.084	26.5	0.097	47.0	0.050	67.5	0.097	88.0	0.001
1.0	1.000	9.2	0.074	27.0	0.096	47.5	0.056	68.0	0.098	88.5	0.000
1.2	0.997	9.4	0.067	27.5	0.089	48.0	0.063	68.5	0.099	89.0	0.000
1.4	0.988	9.6	0.066	28.0	0.075	48.5	0.071	69.0	0.099	89.5	0.000
1.6	0.972	9.8	0.070	28.5	0.057	49.0	0.077	69.5	0.098	90.0	0.000
1.8	0.950	10.0	0.079	29.0	0.037	49.5	0.082	70.0	0.096		
2.0	0.923	10.2	0.089	29.5	0.020	50.0	0.086	70.5	0.094		
2.2	0.891	10.4	0.101	30.0	0.022	50.5	0.087	71.0	0.091		

Remarks:

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Calculation of Compliance with FCC 80% Use-It-Or-Lose-It
Criteria Using FCC OET Bulletin No. 69 Methodology

(four pages follow)

Summary of analysis:

FCC Baseline Data for KIEM-DT from Public Notice, "DTV Channel Election Information and First Round Election Filing Deadline," Released: December 21, 2004, DA 04-3922, Table II.

Eureka, CA, KIEM-TV, NTSC = 148,335, DTV = 143,214.

Using lesser of the NTSC and DTV Baselines, baseline population = 143,214.

From OET-69 Analysis, net service of KIEM-DT proposed facility = 117,016 – 1,166 = 115,850.

Calculated percentage of service = $115,850 / 143,214 \times 100\% = \underline{80.9\%}$

2000 Census data selected
TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Record Selected for Analysis

KIEM-DT USERRECORD-01 EUREKA CA US
Channel 16 ERP 18.5 kW HAAT 432. m RCAMSL 00869 m
Latitude 040-43-50 Longitude 0123-57-07
Status APP Zone 2 Border
Dir Antenna Make CDB Model 00000000065517 Beam tilt N Ref Azimuth 270.
Last update Cutoff date Docket
Comments
Applicant

Cell Size for Service Analysis 2.0 km/side

Distance Increments for Longley-Rice Analysis 1.00 km

Facility meets maximum height/power limits

Azimuth (Deg)	ERP (kW)	HAAT (m)	41.0 dBu F(50,90) (km)
0.0	17.192	606.9	85.6
45.0	3.805	443.3	68.3
90.0	3.598	205.7	54.5
135.0	3.501	160.2	51.6
180.0	17.085	339.4	71.2
225.0	12.470	470.1	77.0
270.0	11.284	688.0	84.7
315.0	12.592	544.1	80.3

Evaluation toward Class A Stations

No Spacing violations or contour overlap to Class A stations

Class A Evaluation Complete

Proposed facility OK to FCC Monitoring Stations

Proposed facility OK toward West Virginia quite zone

Proposed facility OK toward Table Mountain

Proposed facility is beyond the Canadian coordination distance

Proposed facility is beyond the Mexican coordination distance

Proposed station is OK toward AM broadcast stations

Start of Interference Analysis

Channel	Proposed Station Call	City/State	ARN
16	KIEM-DT	EUREKA CA	USERRECORD01

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
15	KFWU-DT	FORT BRAGG CA	119.5	PLN	DTVPLN	-DTVP0160
15	KUNO-TV	FORT BRAGG CA	119.5	CP	BPCDT	-19991019ABW
15	KOBI-DT	MEDFORD OR	226.7	PLN	DTVPLN	-DTVP0187
16	960920WN	REDDING CA	118.2	APP	BPET	-19960920WN
16	KMTR	EUGENE OR	384.3	LIC	BLCT	-19821013KF
17	KVIQ-DT	EUREKA CA	1.7	PLN	DTVPLN	-DTVP0251
23	KAEF	ARCATA CA	1.7	LIC	BLCT	-19870811KH
17	KVIQ-DT	EUREKA CA	1.7	APP	USERRECORD-02	

%%%

Analysis of Interference to Affected Station 9

DTV Baseline Analysis

Channel	Call	City/State	Application	Ref. No.
16	KIEM-DT	EUREKA CA	DTVPLN	-DTVP0206

Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
15	KFWU-DT	FORT BRAGG CA	119.6	PLN	DTVPLN	-DTVP0160
15	KOBI-DT	MEDFORD OR	226.6	PLN	DTVPLN	-DTVP0187
16	KMTR	EUGENE OR	384.2	PLN	DTVPLN	-NPLN0961
17	KVIQ-DT	EUREKA CA	1.8	PLN	DTVPLN	-DTVP0251

Results for: 16A CA EUREKA DTVPLN DTVP0206 PLN

HAAT 503.0 m, ATV ERP 1000.0 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	158802	38251.4
not affected by terrain losses	143985	32174.5
lost to NTSC IX	19	20.2
lost to additional IX by ATV	752	782.3
lost to ATV IX only	752	782.3
lost to all IX	771	802.4

NTSC Baseline Analysis

Channel	Call	City/State	Application	Ref. No.
03	KIEMTV	EUREKA CA	DTVPLN	-NPLN0211

Stations Potentially Affecting This Station

----- INPUT FILE -----

DT
16
18.5000
869.000
040,43,50
0123,57,07
Y
CDB
00000000065517
270.000

EUREKA
CA
2
KIEM-DT

Y
DT
17
30.0000
936.000
040,43,39
0123,58,17
Y
CDB
00000000044483
270.000

EUREKA
CA
2
KVIQ-DT
N