

TECHNICAL EXHIBIT
DTV MAXIMIZATION APPLICATION FOR
STATION KHNL-DT (FACILITY ID 34867)
HONOLULU, HAWAII

DECEMBER 5, 2008

CH 35 25 KW (MAX-DA) 629 M

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HONOLULU, HAWAII
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Technical Narrative

This Technical Exhibit supports a maximization application for digital television (DTV) station KHNL at Honolulu, Hawaii.¹ This application requests a construction permit (CP) for a digital television operation on channel 35 at Honolulu with a directional antenna and an effective radiated power (ERP) of 25 kilowatts. KHNL(DT) intends to use a master, Dielectric TUA-BP3SP-6/18M-1-S directional transmitting antenna for digital operation.

Proposed Facilities

Station KHNL proposes to operate on DTV channel 35 from the KFVE analog transmitter site located at *Mauna Kapu*. The antenna height above average terrain for the channel 35 DTV operation is 629 meters. The proposed site location is:

21° 24' 03" North Latitude
158° 06' 10" West Longitude

A sketch of antenna and pertinent elevations are included as Figure 1. The Appendix contains the vertical and horizontal plane radiation pattern for the proposed antenna system.

Figure 2 is a map showing the DTV predicted coverage contour and the associated proposed *Appendix B* noise-limited coverage contour. The extent of the contour has been calculated using the normal FCC prediction method. The Honolulu city limits were derived from information contained in the 2000 U.S. Census of Population and Housing.

¹ See FCC File Number: BMPCDT-20080317AFY

FCC Monitoring Station

The proposed KHNL(DT) transmitter site is located 11.1 kilometers (6.9 miles) away from the *Waipahu, Hawaii* FCC monitoring station. The KHNL-DT facility is designed to provide the necessary protection to the monitoring station.

It has been noted in the applications for KGMB(DT) and KFVE(DT) that the maximum permitted field at the *Waipahu* monitoring station for their channels is 69.57 mV/m, or 96.8 dBu. The proposed KHNL(DT) maximum effective radiated power is 1.7 kilowatts toward the monitoring station, 102.5 degrees azimuth true at a horizontal plane depression angle of 4.1 degrees. Using the free-space propagation model, the predicted KHNL-DT field strength at the monitoring station is 88 dBu. Since this is more than 8 dB below the maximum permitted field strength for channels 22/23, it is believed that the KHNL(DT) operation is in compliance.

Post-Transition Allocation Considerations

The proposed KHNL(DT) operation meets the FCC's interference standards to pertinent DTV Appendix B allotments using the procedures outlined in the FCC's OET-69 Bulletin and a 2 kilometer grid cell size as shown by the analysis provided in Figure 3.

Population Served

The herein proposed KHNL(DT) facility is predicted to serve 778,000 persons, post-transition based upon the 2000 Census. KHNL(DT)'s associated proposed Appendix B facility is predicted to serve 759,000 persons. Therefore, the herein proposed KHNL(DT) facility would serve greater than 100% of KGMB(DT)'s Appendix B population. The OET-69 studies were conducted using a standard cell size of 2.0 km/side and distance increments for Longley-Rice analysis of 1.0 km.

Radiofrequency Electromagnetic Field Exposure

The proposed KHNL(DT) facilities were evaluated in terms of potential radio frequency (RF) energy exposure at ground level to workers and the general public. The radiation center for the proposed DTV antenna is located 49 meters above ground level with a maximum ERP of 25 kW. A conservative relative field value of 0.5 was assumed for the calculation. The calculated power density at a point 2 meters above ground level will not exceed 0.0152 mW/cm^2 . This is less than 5% of the FCC's recommended limit of 0.40 mW/cm^2 for channel 35 for an "uncontrolled" environment.

Access to the transmitting site will be restricted and appropriately marked with warning signs. As this is a multi-user site an agreement will control site access. In the event that workers or other authorized personnel enter restricted areas or climb the tower, 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. The proposed KHNL(DT) operation appears to be otherwise categorically excluded from environmental processing.

It is noted that this statement only addresses the potential for radiofrequency electromagnetic field exposure. All other aspects of the environmental processing analysis will be or already have been provided to the FCC by the tower owner.

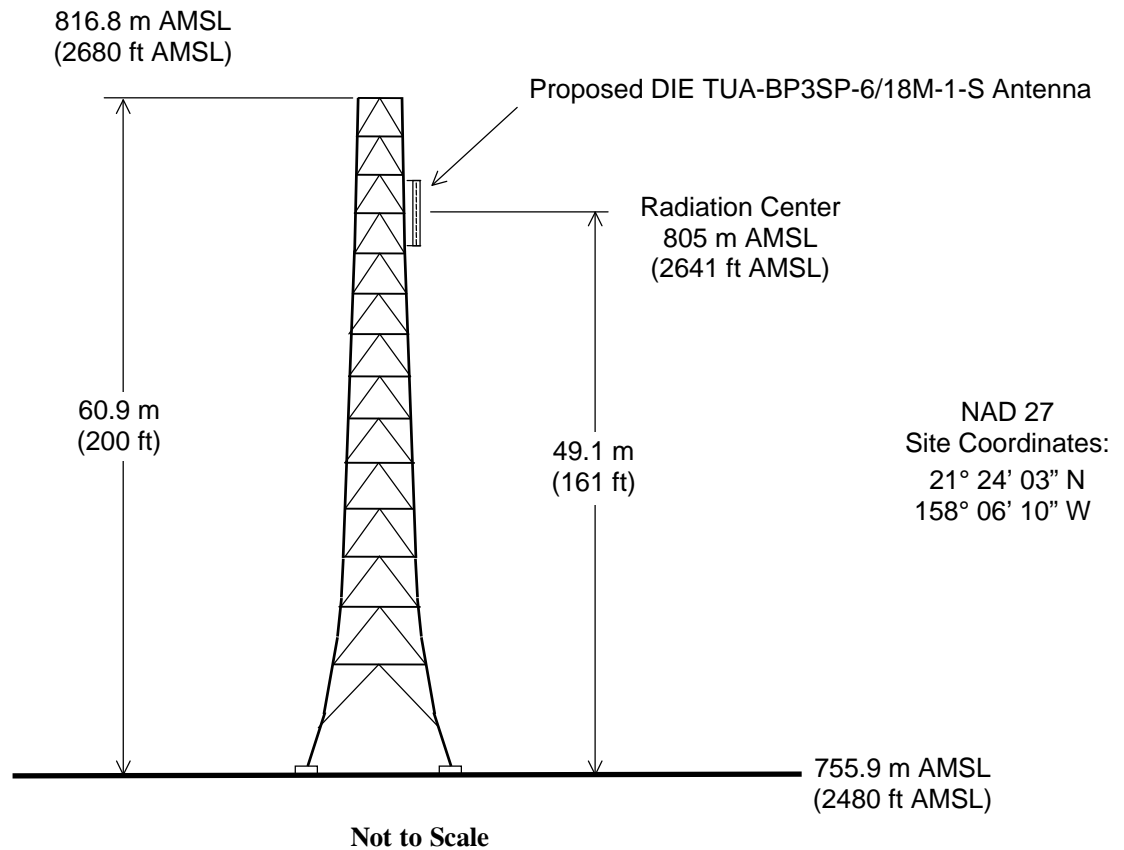


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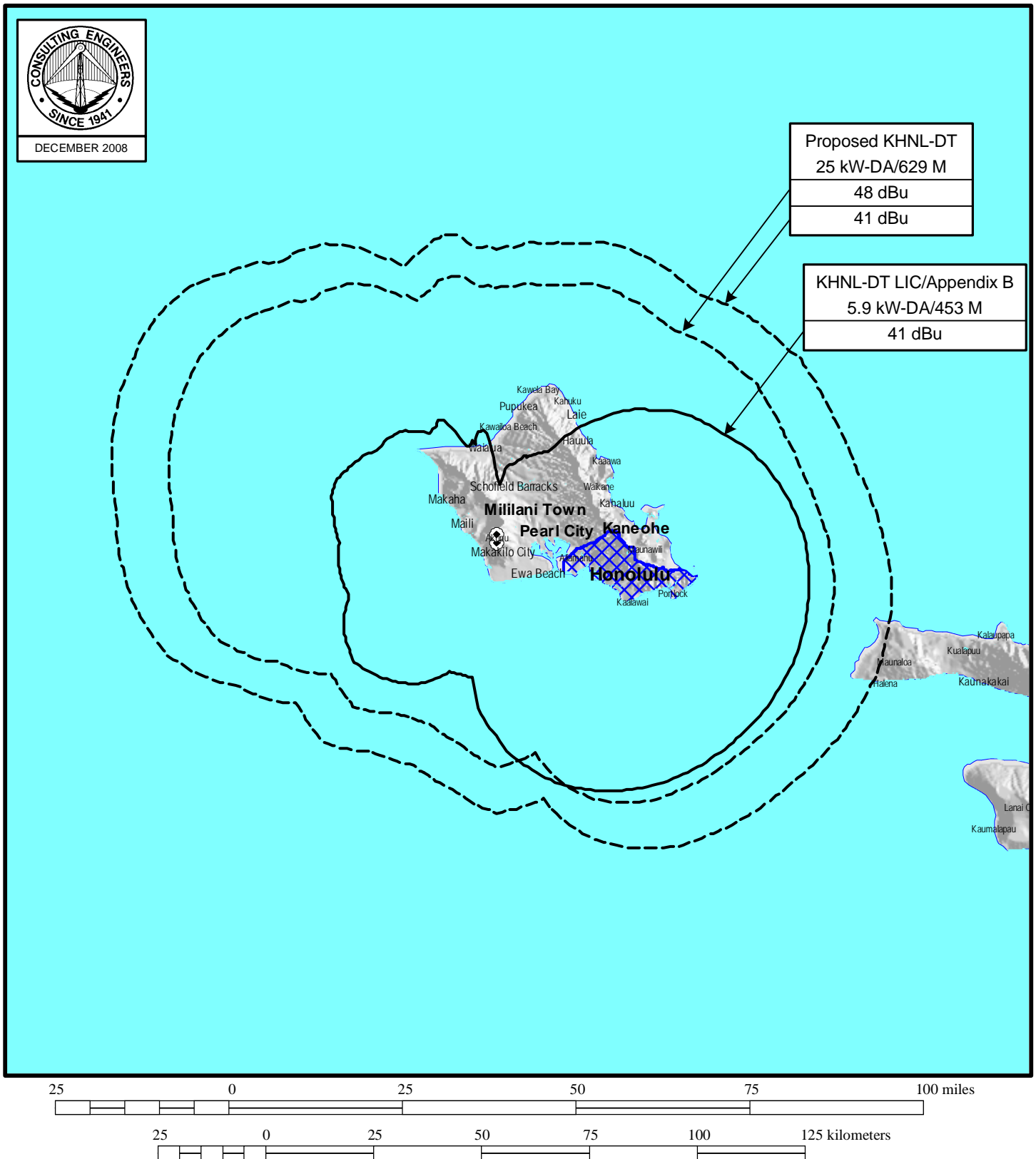
PROPOSED ANTENNA AND SUPPORTING STRUCTURE

STATION KHNL(DT)

HONOLULU, HAWAII

CH 35 25 KW (MAX-DA) 629 M

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



PREDICTED COVERAGE CONTOURS

STATION KHNL(DT)

HONOLULU, HAWAII

CH 35 25 kW (MAX-DA) 629

du Treil, Lundin & Rackley, Inc Sarasota, Florida

TW Census data selected 2000
Post Transition Data Base Selected /export/home/cdbb/pt_tvdb.sff

TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 12-05-2008 Time: 12:03:51

Record Selected for Analysis

KHNL USERRECORD-01 HONOLULU HI US
Channel 35 ERP 25. kW HAAT 666. m RCAMSL 00805 m
Latitude 021-24-03 Longitude 0158-06-10
Status APP Zone 2 Border
Dir Antenna Make usr Model 00000000KHNL35 Beam tilt N Ref Azimuth 0.
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	5.808	360.5	66.1
45.0	5.724	559.8	75.2
90.0	17.629	725.1	89.5
135.0	13.646	761.8	88.4
180.0	0.600	749.0	64.7
225.0	0.359	766.8	61.6
270.0	12.711	772.8	88.1
315.0	17.787	631.2	86.7

Evaluation toward Class A Stations

No Spacing violations or contour overlap to Class A stations

Class A Evaluation Complete

Proposed facility is 11.1km from FCC Monitoring station at
Waipahu HI
Bearing: 102.5 degrees ERP: 23.95 kW HAAT: 764.2 m
Field = 70.9 mV/m

Proposed facility OK toward West Virginia quiet 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	Call	City/State	ARN
35	KHNL	HONOLULU HI	USERRECORD01

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application Ref. No.
------	------	------------	----------	--------	----------------------

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Analysis of Interference to Affected Station 1

Analysis of current record

Channel	Call	City/State	Application Ref. No.
35	KHNL	HONOLULU HI	USERRECORD-01

Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application Ref. No.
------	------	------------	----------	--------	----------------------

Total scenarios = 1

Result key: 1
Scenario 1 Affected station 1
Before Analysis

Results for: 35A HI HONOLULU USERRECORD01 APP
HAAT 666.0 m, ATV ERP 25.0 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	876271	19695.4
not affected by terrain losses	778082	15523.7
lost to NTSC IX	0	0.0
lost to additional IX by ATV	0	0.0
lost to ATV IX only	0	0.0
lost to all IX	0	0.0

Potential Interfering Stations Included in above Scenario 1

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FINISHED FINISHED FINISHED FINISHED FINISHED FINISHED

APPENDIX

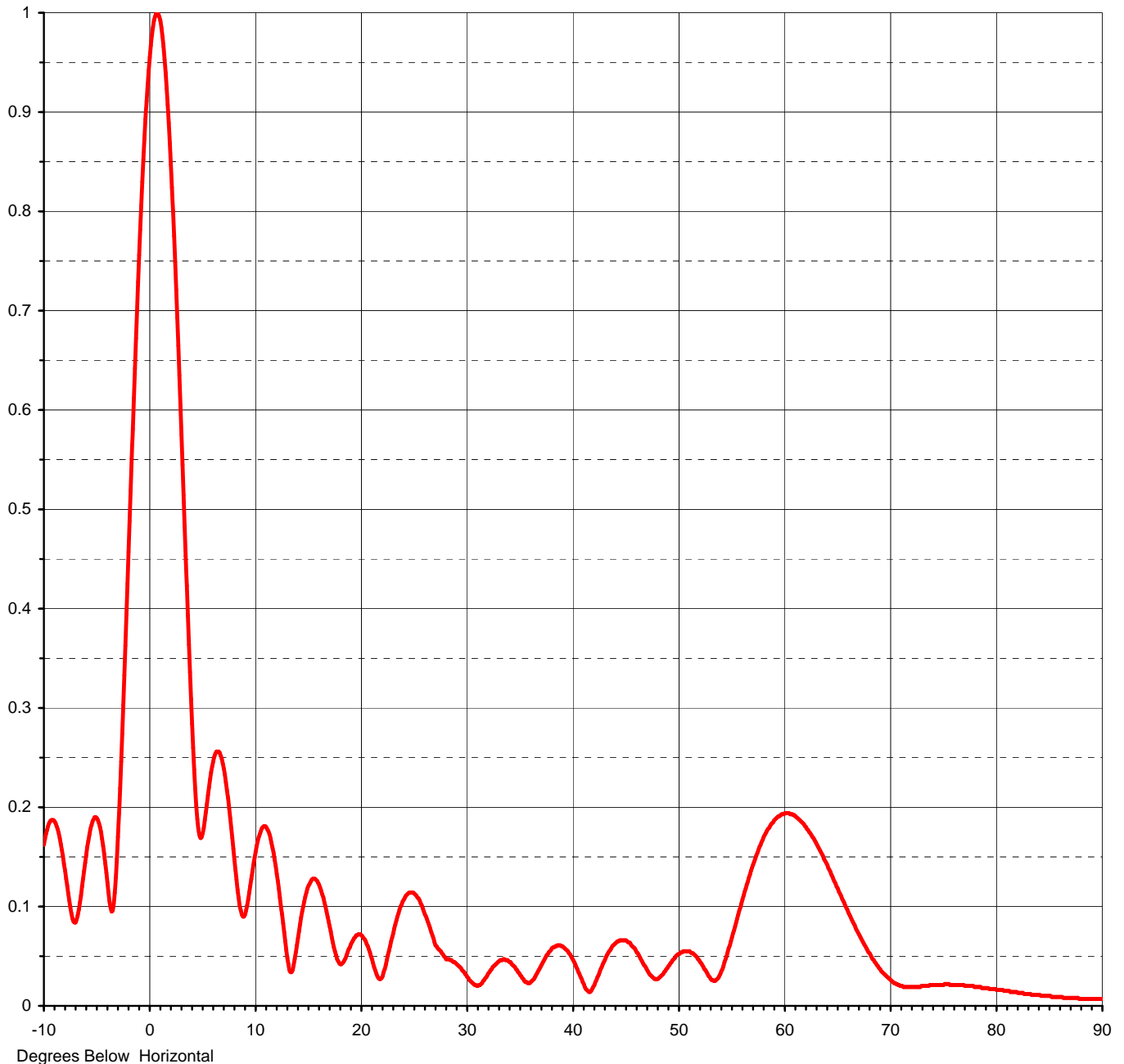
TRANSMITTING ANTENNA VERTICAL AND HORIZONTAL PLANE PATTERN



Proposal Number	C-02093	Revision:	1
Date	29-Sep-08		
Call Letters	KHNL	Channel	35
Location	Oahu, HI		
Customer			
Antenna Type	TUA-BP3SP-6/18M-1-S		

ELEVATION PATTERN

RMS Gain at Main Lobe	13.10 (11.17 dB)	Beam Tilt	0.75 deg
RMS Gain at Horizontal	11.90 (10.76 dB)	Frequency	599.00 MHz
Calculated / Measured	Calculated	Drawing #	06U131075-90





Proposal Number **C-02093** Revision: **1**
Date **29-Sep-08**
Call Letters **KHNL** Channel **35**
Location **Oahu, HI**
Customer
Antenna Type **TUA-BP3SP-6/18M-1-S**

TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **06U131075-90**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.162	2.4	0.749	10.6	0.176	30.5	0.024	51.0	0.055	71.5	0.019
-9.5	0.184	2.6	0.693	10.8	0.180	31.0	0.020	51.5	0.052	72.0	0.019
-9.0	0.186	2.8	0.635	11.0	0.181	31.5	0.023	52.0	0.046	72.5	0.019
-8.5	0.169	3.0	0.575	11.5	0.169	32.0	0.031	52.5	0.037	73.0	0.020
-8.0	0.136	3.2	0.514	12.0	0.141	32.5	0.039	53.0	0.029	73.5	0.020
-7.5	0.099	3.4	0.453	12.5	0.100	33.0	0.044	53.5	0.025	74.0	0.021
-7.0	0.084	3.6	0.393	13.0	0.056	33.5	0.047	54.0	0.032	74.5	0.021
-6.5	0.111	3.8	0.336	13.5	0.034	34.0	0.045	54.5	0.047	75.0	0.021
-6.0	0.152	4.0	0.284	14.0	0.061	34.5	0.040	55.0	0.065	75.5	0.022
-5.5	0.182	4.2	0.238	14.5	0.095	35.0	0.033	55.5	0.084	76.0	0.021
-5.0	0.189	4.4	0.201	15.0	0.118	35.5	0.025	56.0	0.103	76.5	0.021
-4.5	0.168	4.6	0.178	15.5	0.128	36.0	0.023	56.5	0.122	77.0	0.020
-4.0	0.124	4.8	0.169	16.0	0.124	36.5	0.029	57.0	0.139	77.5	0.020
-3.5	0.096	5.0	0.174	16.5	0.109	37.0	0.039	57.5	0.154	78.0	0.019
-3.0	0.170	5.2	0.187	17.0	0.085	37.5	0.049	58.0	0.167	78.5	0.019
-2.8	0.219	5.4	0.203	17.5	0.059	38.0	0.056	58.5	0.178	79.0	0.018
-2.6	0.274	5.6	0.220	18.0	0.043	38.5	0.060	59.0	0.185	79.5	0.017
-2.4	0.333	5.8	0.235	18.5	0.046	39.0	0.060	59.5	0.191	80.0	0.016
-2.2	0.394	6.0	0.246	19.0	0.059	39.5	0.056	60.0	0.193	80.5	0.016
-2.0	0.457	6.2	0.254	19.5	0.069	40.0	0.048	60.5	0.194	81.0	0.015
-1.8	0.519	6.4	0.256	20.0	0.072	40.5	0.037	61.0	0.192	81.5	0.014
-1.6	0.581	6.6	0.255	20.5	0.065	41.0	0.024	61.5	0.187	82.0	0.013
-1.4	0.642	6.8	0.249	21.0	0.050	41.5	0.015	62.0	0.181	82.5	0.013
-1.2	0.700	7.0	0.239	21.5	0.033	42.0	0.019	62.5	0.174	83.0	0.012
-1.0	0.756	7.2	0.225	22.0	0.028	42.5	0.031	63.0	0.165	83.5	0.011
-0.8	0.806	7.4	0.209	22.5	0.046	43.0	0.044	63.5	0.155	84.0	0.011
-0.6	0.852	7.6	0.189	23.0	0.069	43.5	0.055	64.0	0.144	84.5	0.010
-0.4	0.893	7.8	0.169	23.5	0.090	44.0	0.062	64.5	0.130	85.0	0.010
-0.2	0.927	8.0	0.147	24.0	0.105	44.5	0.066	65.0	0.118	85.5	0.009
0.0	0.955	8.2	0.127	24.5	0.113	45.0	0.066	65.5	0.106	86.0	0.009
0.2	0.977	8.4	0.109	25.0	0.114	45.5	0.063	66.0	0.094	86.5	0.008
0.4	0.992	8.6	0.096	25.5	0.108	46.0	0.056	66.5	0.083	87.0	0.008
0.6	0.999	8.8	0.090	26.0	0.095	46.5	0.047	67.0	0.072	87.5	0.008
0.8	0.999	9.0	0.092	26.5	0.081	47.0	0.038	67.5	0.062	88.0	0.007
1.0	0.992	9.2	0.101	27.0	0.064	47.5	0.030	68.0	0.053	88.5	0.007
1.2	0.976	9.4	0.114	27.5	0.056	48.0	0.027	68.5	0.044	89.0	0.007
1.4	0.953	9.6	0.128	28.0	0.049	48.5	0.031	69.0	0.037	89.5	0.007
1.6	0.924	9.8	0.135	28.5	0.046	49.0	0.038	69.5	0.031	90.0	0.007
1.8	0.889	10.0	0.149	29.0	0.043	49.5	0.046	70.0	0.026		
2.0	0.847	10.2	0.161	29.5	0.038	50.0	0.052	70.5	0.022		
2.2	0.800	10.4	0.170	30.0	0.031	50.5	0.055	71.0	0.020		

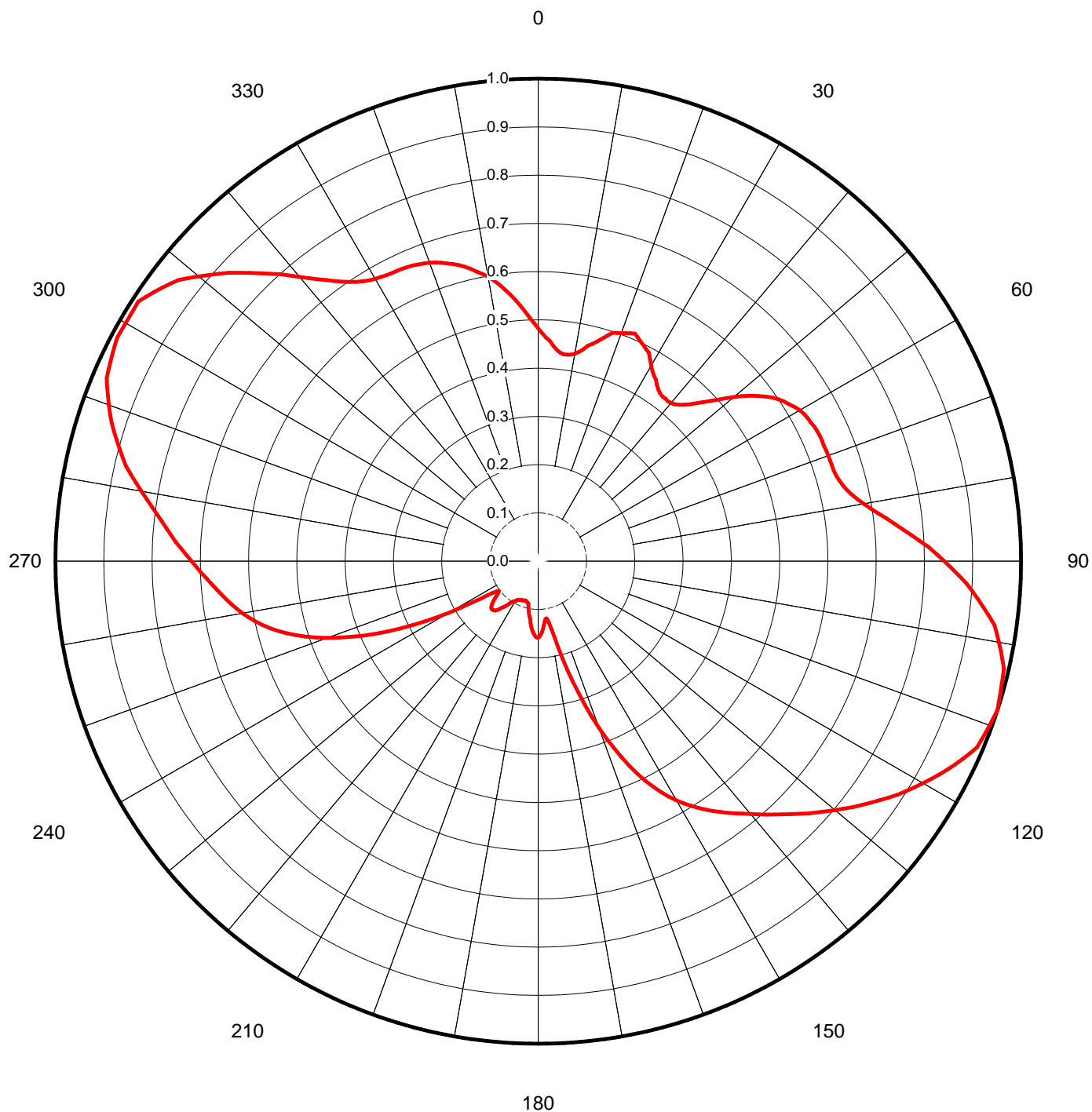
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Proposal Number	C-02093	Revision:	1
Date	29-Sep-08		
Call Letters	KHNL	Channel	35
Location	Oahu, HI		
Customer			
Antenna Type	TUA-BP3SP-6/18M-1-S		

AZIMUTH PATTERN

Gain **2.53** (4.03 dB)
Calculated / Measured **Calculated**

Frequency **599.00 MHz**
Drawing # **TUA-P3SP-5990**





Proposal Number	C-02093	Revision:	1
Date	29-Sep-08		
Call Letters	KHNL	Channel	35
Location	Oahu, HI		
Customer			
Antenna Type	TUA-BP3SP-6/18M-1-S		

TABULATION OF AZIMUTH PATTERN

Azimuth Pattern Drawing #: **TUA-P3SP-5990**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.482	45	0.462	90	0.841	135	0.741	180	0.158	225	0.138	270	0.718	315	0.845
1	0.472	46	0.474	91	0.857	136	0.729	181	0.158	226	0.135	271	0.729	316	0.829
2	0.464	47	0.487	92	0.873	137	0.718	182	0.156	227	0.131	272	0.740	317	0.815
3	0.457	48	0.500	93	0.889	138	0.707	183	0.153	228	0.126	273	0.752	318	0.800
4	0.447	49	0.515	94	0.902	139	0.695	184	0.149	229	0.120	274	0.762	319	0.784
5	0.440	50	0.529	95	0.915	140	0.684	185	0.144	230	0.114	275	0.773	320	0.769
6	0.434	51	0.543	96	0.928	141	0.673	186	0.137	231	0.109	276	0.784	321	0.755
7	0.432	52	0.557	97	0.941	142	0.663	187	0.129	232	0.104	277	0.796	322	0.741
8	0.432	53	0.569	98	0.954	143	0.653	188	0.121	233	0.102	278	0.808	323	0.729
9	0.433	54	0.581	99	0.962	144	0.643	189	0.116	234	0.106	279	0.821	324	0.717
10	0.436	55	0.591	100	0.969	145	0.632	190	0.110	235	0.114	280	0.835	325	0.707
11	0.442	56	0.600	101	0.976	146	0.621	191	0.104	236	0.127	281	0.848	326	0.698
12	0.449	57	0.607	102	0.983	147	0.610	192	0.097	237	0.143	282	0.862	327	0.690
13	0.458	58	0.613	103	0.990	148	0.598	193	0.090	238	0.162	283	0.876	328	0.684
14	0.464	59	0.620	104	0.992	149	0.586	194	0.089	239	0.187	284	0.887	329	0.679
15	0.471	60	0.625	105	0.993	150	0.573	195	0.088	240	0.214	285	0.898	330	0.676
16	0.479	61	0.629	106	0.996	151	0.558	196	0.087	241	0.240	286	0.908	331	0.673
17	0.488	62	0.632	107	0.998	152	0.542	197	0.086	242	0.266	287	0.919	332	0.671
18	0.498	63	0.633	108	1.000	153	0.525	198	0.085	243	0.292	288	0.929	333	0.669
19	0.500	64	0.636	109	0.997	154	0.507	199	0.086	244	0.319	289	0.938	334	0.669
20	0.503	65	0.638	110	0.995	155	0.486	200	0.087	245	0.346	290	0.946	335	0.668
21	0.506	66	0.639	111	0.992	156	0.465	201	0.087	246	0.371	291	0.955	336	0.667
22	0.509	67	0.639	112	0.990	157	0.441	202	0.088	247	0.395	292	0.963	337	0.665
23	0.512	68	0.638	113	0.987	158	0.416	203	0.088	248	0.418	293	0.971	338	0.663
24	0.507	69	0.639	114	0.979	159	0.393	204	0.088	249	0.442	294	0.974	339	0.661
25	0.502	70	0.639	115	0.970	160	0.367	205	0.089	250	0.465	295	0.978	340	0.658
26	0.497	71	0.639	116	0.961	161	0.341	206	0.090	251	0.486	296	0.981	341	0.655
27	0.493	72	0.640	117	0.951	162	0.314	207	0.090	252	0.506	297	0.984	342	0.650
28	0.489	73	0.640	118	0.941	163	0.286	208	0.091	253	0.525	298	0.988	343	0.645
29	0.478	74	0.642	119	0.931	164	0.260	209	0.093	254	0.542	299	0.987	344	0.640
30	0.468	75	0.646	120	0.920	165	0.234	210	0.095	255	0.558	300	0.987	345	0.635
31	0.459	76	0.650	121	0.910	166	0.208	211	0.097	256	0.573	301	0.987	346	0.629
32	0.453	77	0.656	122	0.899	167	0.183	212	0.099	257	0.587	302	0.987	347	0.622
33	0.448	78	0.664	123	0.888	168	0.160	213	0.101	258	0.599	303	0.988	348	0.613
34	0.440	79	0.673	124	0.876	169	0.143	214	0.106	259	0.611	304	0.980	349	0.607
35	0.434	80	0.684	125	0.864	170	0.131	215	0.110	260	0.622	305	0.972	350	0.598
36	0.429	81	0.697	126	0.852	171	0.123	216	0.115	261	0.632	306	0.964	351	0.589
37	0.427	82	0.711	127	0.840	172	0.120	217	0.119	262	0.642	307	0.955	352	0.579
38	0.428	83	0.727	128	0.828	173	0.121	218	0.123	263	0.651	308	0.946	353	0.567
39	0.427	84	0.742	129	0.815	174	0.127	219	0.128	264	0.660	309	0.932	354	0.556
40	0.428	85	0.758	130	0.802	175	0.134	220	0.132	265	0.669	310	0.918	355	0.544
41	0.431	86	0.775	131	0.790	176	0.141	221	0.136	266	0.678	311	0.904	356	0.531
42	0.436	87	0.792	132	0.778	177	0.147	222	0.137	267	0.688	312	0.890	357	0.518
43	0.443	88	0.810	133	0.766	178	0.152	223	0.138	268	0.698	313	0.876	358	0.505
44	0.452	89	0.825	134	0.754	179	0.156	224	0.139	269	0.708	314	0.860	359	0.493

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