

Engineering Statement – Construction Permit Modification

CBS Broadcasting Inc.

KCBS-TV(Aux) Los Angeles, California
Facility ID 9628
Ch. 31 209 kW (Max-DA) 951.8 m

CBS Broadcasting Inc. (“ViacomCBS”) herein proposes to modify the pending KCBS-TV Los Angeles, California auxiliary antenna construction permit.¹ The proposed facility will operate as originally proposed with a directional antenna height of 951.8 meters above average terrain (HAAT) and an effective radiated power (ERP) of 209 kW. The proposed changes specify mechanical beam tilt, provide a correction to electrical beam tilt, and show and include an updated directional antenna pattern.

The existing KCBS-TV antenna utilizes one-degree of downward mechanical beam tilt oriented to 217 degrees with respect to true North. According to information from the antenna manufacturer, the antenna also has 1.65-degrees of electrical beam tilt on channel 31. Pursuant to FCC Rule §73.625(c)(3)(ii), the provided horizontal plane pattern reflects the effects of beam tilt. Calculations are provided on the following page.

Coverage map **Figure 1** has been updated to show predicted coverage with the updated pattern and calculated relative field values. With one minor exception, the proposed service contour does not extend beyond that of the main KCBS-TV antenna² as required by FCC Rule §73.1675.³ The exception is near the 220-degree radial where the proposed contour extension encompasses no land area. It is understood that Media Bureau policy generally allows such overlaps. However, if a waiver of §73.1675 is required in this case, one is hereby requested. As all other statements in the prior Construction Permit application remain accurate, it is believed that the modified facility satisfies all allocation matters.

¹ Please see LMS file number 0000068231.

² ViacomCBS is licensed (LMS file 0000071647) for a KCBS-TV facility on Channel 31.

³ §73.1675 specifies an analysis of Grade B contours. Because “Grade B” is not defined in a digital television context, Figure 1 provides dipole-corrected 41 dB μ contours instead.

KCBS-TV(Aux) Los Angeles, California

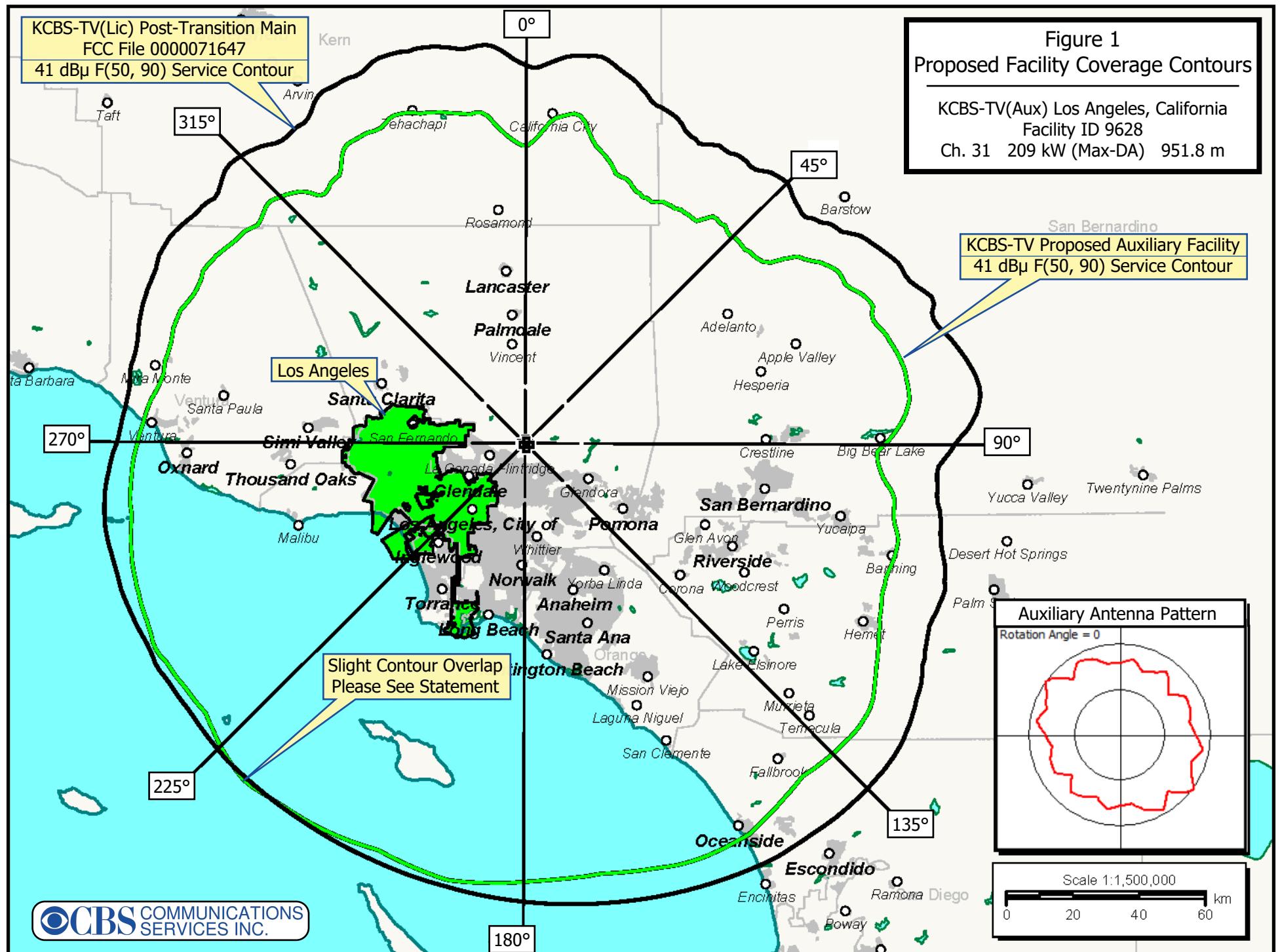
Beam Tilt Relative Field Values

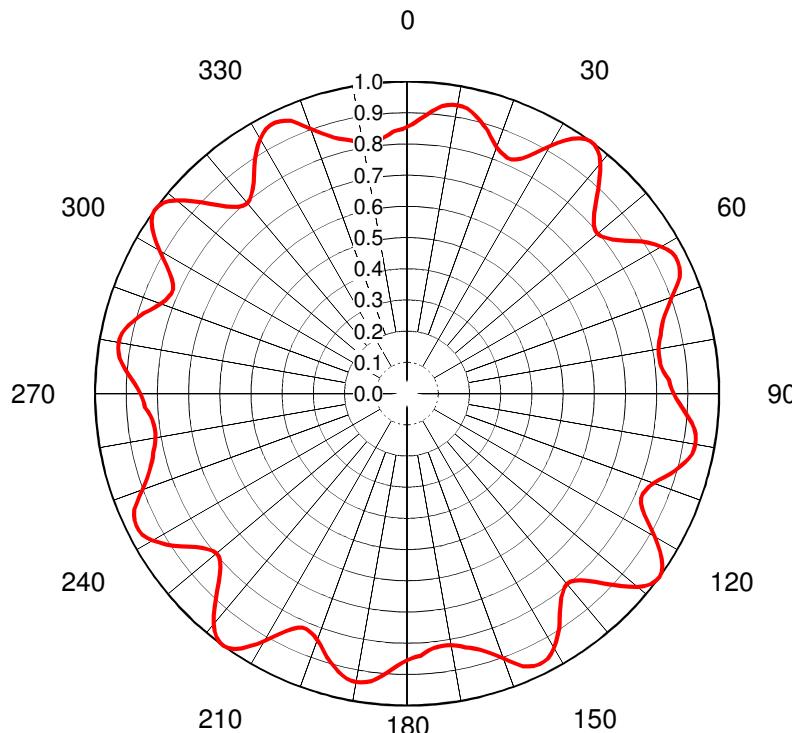
Azimuth (degrees)	Mechanical Tilt (degrees)	Effective Tilt (degrees)	Tilted Vertical		Untilted Horizontal		Composite Relative Field	Normalized Relative Field
			Plane	Relative Field	Plane	Relative Field		
0	-0.799	0.851		0.889		0.855	0.760	0.788
5	-0.848	0.802		0.873		0.907	0.792	0.821
10	-0.891	0.759		0.859		0.938	0.806	0.835
15	-0.927	0.723		0.848		0.905	0.767	0.795
20	-0.956	0.694		0.839		0.840	0.705	0.731
25	-0.978	0.672		0.832		0.828	0.689	0.714
30	-0.993	0.657		0.827		0.916	0.758	0.785
35	-0.999	0.651		0.825		0.996	0.822	0.852
36	-1.000	0.650		0.825		1.000	0.825	0.855
40	-0.999	0.651		0.825		0.964	0.795	0.824
45	-0.990	0.660		0.828		0.854	0.707	0.733
50	-0.974	0.676		0.833		0.797	0.664	0.688
55	-0.951	0.699		0.840		0.855	0.718	0.744
60	-0.921	0.729		0.850		0.941	0.800	0.829
65	-0.883	0.767		0.862		0.963	0.830	0.860
70	-0.839	0.811		0.876		0.903	0.791	0.820
75	-0.788	0.862		0.892		0.846	0.755	0.782
80	-0.731	0.919		0.910		0.819	0.745	0.772
85	-0.669	0.981		0.930		0.825	0.767	0.795
90	-0.602	1.048		0.938		0.855	0.802	0.831
95	-0.530	1.120		0.941		0.907	0.853	0.884
100	-0.454	1.196		0.944		0.938	0.885	0.917
105	-0.375	1.275		0.948		0.905	0.858	0.889
110	-0.292	1.358		0.951		0.840	0.799	0.828
115	-0.208	1.442		0.955		0.828	0.791	0.820
120	-0.122	1.528		0.959		0.916	0.878	0.910
125	-0.035	1.615		0.962		0.996	0.958	0.993
126	-0.017	1.633		0.963		1.000	0.963	0.998
130	0.052	1.702		0.966		0.964	0.931	0.965
135	0.139	1.789		0.970		0.854	0.828	0.858
140	0.225	1.875		0.974		0.797	0.776	0.804
145	0.309	1.959		0.977		0.855	0.835	0.865
150	0.391	2.041		0.969		0.941	0.912	0.945
155	0.469	2.119		0.950		0.963	0.915	0.948
160	0.545	2.195		0.931		0.903	0.841	0.872
165	0.616	2.266		0.914		0.846	0.773	0.801
170	0.682	2.332		0.897		0.819	0.735	0.762
175	0.743	2.393		0.882		0.825	0.728	0.754
180	0.799	2.449		0.869		0.855	0.743	0.770
185	0.848	2.498		0.856		0.907	0.776	0.804
190	0.891	2.541		0.846		0.938	0.794	0.823
195	0.927	2.577		0.837		0.905	0.757	0.784
200	0.956	2.606		0.830		0.840	0.697	0.722
205	0.978	2.628		0.825		0.828	0.683	0.708

KCBS-TV(Aux) Los Angeles, California

Beam Tilt Relative Field Values

Azimuth (degrees)	Mechanical Tilt (degrees)	Effective Tilt (degrees)	Tilted Vertical		Untilted Horizontal		Composite	
			Plane	Relative Field	Plane	Relative Field	Relative Field	Normalized Relative Field
210	0.993	2.643		0.821		0.916	0.752	0.779
215	0.999	2.649		0.819		0.996	0.816	0.846
216	1.000	2.650		0.819		1.000	0.819	0.849
217	1.000	2.650		0.819		0.998	0.817	0.847
220	0.999	2.649		0.819		0.964	0.790	0.819
225	0.990	2.640		0.822		0.854	0.702	0.727
230	0.974	2.624		0.825		0.797	0.658	0.682
235	0.951	2.601		0.831		0.855	0.711	0.737
240	0.921	2.571		0.839		0.941	0.789	0.818
245	0.883	2.533		0.848		0.963	0.817	0.847
250	0.839	2.489		0.859		0.903	0.776	0.804
255	0.788	2.438		0.871		0.846	0.737	0.764
260	0.731	2.381		0.885		0.819	0.725	0.751
265	0.669	2.319		0.901		0.825	0.743	0.770
270	0.602	2.252		0.917		0.855	0.784	0.812
275	0.530	2.180		0.935		0.907	0.848	0.879
280	0.454	2.104		0.953		0.938	0.894	0.926
285	0.375	2.025		0.973		0.905	0.881	0.913
290	0.292	1.942		0.977		0.840	0.821	0.851
295	0.208	1.858		0.973		0.828	0.806	0.835
300	0.122	1.772		0.969		0.916	0.888	0.920
305	0.035	1.685		0.965		0.996	0.961	0.996
306	0.017	1.667		0.965		1.000	0.965	1.000
310	-0.052	1.598		0.962		0.964	0.927	0.961
315	-0.139	1.511		0.958		0.854	0.818	0.848
320	-0.225	1.425		0.954		0.797	0.760	0.788
325	-0.309	1.341		0.951		0.855	0.813	0.842
330	-0.391	1.259		0.947		0.941	0.891	0.923
335	-0.469	1.181		0.944		0.963	0.909	0.942
340	-0.545	1.105		0.941		0.903	0.850	0.881
345	-0.616	1.034		0.937		0.846	0.793	0.822
350	-0.682	0.968		0.926		0.819	0.758	0.785
355	-0.743	0.907		0.906		0.825	0.747	0.774





AZIMUTH PATTERN Horizontal Polarization

Proposal No. C-70058
 Date 18-Mar-17
 Call Letters KCBS
 Channel 31
 Frequency 575 MHz
 Antenna Type TAD-16UDA-8/64
 Gain 1.27 (1.03dB)
 Calculated

Deg	Value																						
0	0.855	36	1.000	72	0.876	108	0.867	144	0.837	180	0.855	216	1.000	252	0.876	288	0.867	324	0.837				
1	0.863	37	0.998	73	0.865	109	0.852	145	0.855	181	0.863	217	0.998	253	0.865	289	0.852	325	0.855				
2	0.873	38	0.992	74	0.855	110	0.840	146	0.875	182	0.873	218	0.992	254	0.855	290	0.840	326	0.875				
3	0.884	39	0.980	75	0.846	111	0.831	147	0.896	183	0.884	219	0.980	255	0.846	291	0.831	327	0.896				
4	0.896	40	0.964	76	0.840	112	0.826	148	0.912	184	0.896	220	0.964	256	0.840	292	0.826	328	0.912				
5	0.907	41	0.944	77	0.835	113	0.821	149	0.928	185	0.907	221	0.944	257	0.835	293	0.821	329	0.928				
6	0.918	42	0.921	78	0.828	114	0.821	150	0.941	186	0.918	222	0.921	258	0.828	294	0.821	330	0.941				
7	0.928	43	0.899	79	0.822	115	0.828	151	0.953	187	0.928	223	0.899	259	0.822	295	0.828	331	0.953				
8	0.934	44	0.876	80	0.819	116	0.839	152	0.962	188	0.934	224	0.876	260	0.819	296	0.839	332	0.962				
9	0.937	45	0.854	81	0.817	117	0.854	153	0.965	189	0.937	225	0.854	261	0.817	297	0.854	333	0.965				
10	0.938	46	0.834	82	0.817	118	0.873	154	0.966	190	0.938	226	0.834	262	0.817	298	0.873	334	0.966				
11	0.937	47	0.818	83	0.817	119	0.894	155	0.963	191	0.937	227	0.818	263	0.817	299	0.894	335	0.963				
12	0.934	48	0.806	84	0.820	120	0.916	156	0.958	192	0.934	228	0.806	264	0.820	300	0.916	336	0.958				
13	0.926	49	0.799	85	0.825	121	0.937	157	0.950	193	0.926	229	0.799	265	0.825	301	0.937	337	0.950				
14	0.916	50	0.797	86	0.832	122	0.956	158	0.934	194	0.916	230	0.797	266	0.832	302	0.956	338	0.934				
15	0.905	51	0.801	87	0.841	123	0.974	159	0.918	195	0.905	231	0.801	267	0.841	303	0.974	339	0.918				
16	0.894	52	0.811	88	0.844	124	0.987	160	0.903	196	0.894	232	0.811	268	0.844	304	0.987	340	0.903				
17	0.882	53	0.821	89	0.848	125	0.996	161	0.889	197	0.882	233	0.821	269	0.848	305	0.996	341	0.889				
18	0.867	54	0.837	90	0.855	126	1.000	162	0.876	198	0.867	234	0.837	270	0.855	306	1.000	342	0.876				
19	0.852	55	0.855	91	0.863	127	0.998	163	0.865	199	0.852	235	0.855	271	0.863	307	0.998	343	0.865				
20	0.840	56	0.875	92	0.873	128	0.992	164	0.855	200	0.840	236	0.875	272	0.873	308	0.992	344	0.855				
21	0.831	57	0.896	93	0.884	129	0.980	165	0.846	201	0.831	237	0.896	273	0.884	309	0.980	345	0.846				
22	0.826	58	0.912	94	0.896	130	0.964	166	0.840	202	0.826	238	0.912	274	0.896	310	0.964	346	0.840				
23	0.821	59	0.928	95	0.907	131	0.944	167	0.835	203	0.821	239	0.928	275	0.907	311	0.944	347	0.835				
24	0.821	60	0.941	96	0.918	132	0.921	168	0.828	204	0.821	240	0.941	276	0.918	312	0.921	348	0.828				
25	0.828	61	0.953	97	0.928	133	0.899	169	0.822	205	0.828	241	0.953	277	0.928	313	0.899	349	0.822				
26	0.839	62	0.962	98	0.934	134	0.876	170	0.819	206	0.839	242	0.962	278	0.934	314	0.876	350	0.819				
27	0.854	63	0.965	99	0.937	135	0.854	171	0.817	207	0.854	243	0.965	279	0.937	315	0.854	351	0.817				
28	0.873	64	0.966	100	0.938	136	0.834	172	0.817	208	0.873	244	0.966	280	0.938	316	0.834	352	0.817				
29	0.894	65	0.963	101	0.937	137	0.818	173	0.817	209	0.894	245	0.963	281	0.937	317	0.818	353	0.817				
30	0.916	66	0.958	102	0.934	138	0.806	174	0.820	210	0.916	246	0.958	282	0.934	318	0.806	354	0.820				
31	0.937	67	0.950	103	0.926	139	0.799	175	0.825	211	0.937	247	0.950	283	0.926	319	0.799	355	0.825				
32	0.956	68	0.934	104	0.916	140	0.797	176	0.832	212	0.956	248	0.934	284	0.916	320	0.797	356	0.832				
33	0.974	69	0.918	105	0.905	141	0.801	177	0.841	213	0.974	249	0.918	285	0.905	321	0.801	357	0.841				
34	0.987	70	0.903	106	0.894	142	0.811	178	0.844	214	0.987	250	0.903	286	0.894	322	0.811	358	0.844				
35	0.996	71	0.889	107	0.882	143	0.821	179	0.848	215	0.996	251	0.889	287	0.882	323	0.821	359	0.848				

This document contains proprietary and confidential information of Dielectric. It is to be used solely for the purpose for which it is provided. No disclosure, reproduction, or use of this document or any part of it may be made without the written permission of Dielectric.

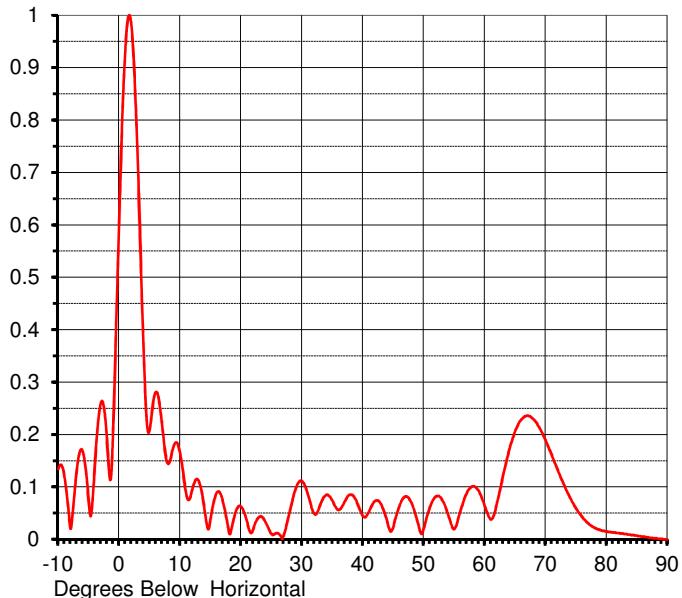
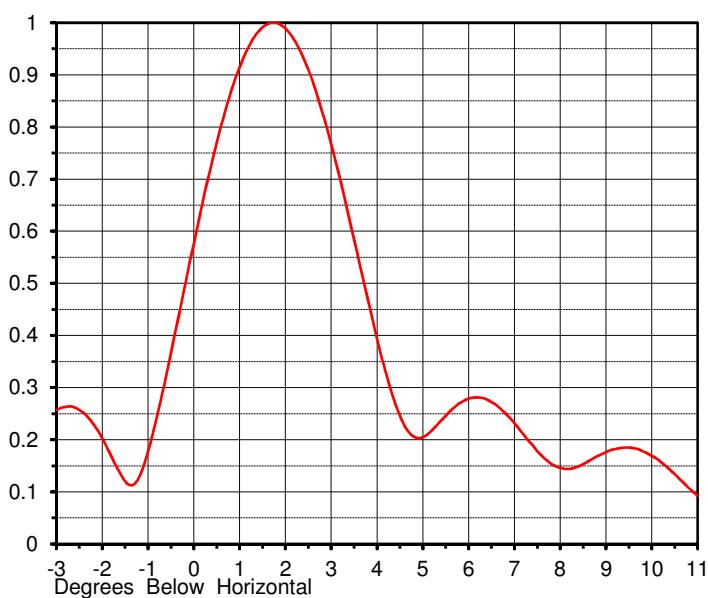
ELEVATION PATTERN

Proposal No. **C-70058**
 Date **18-Mar-17**
 Call Letters **KCBS**
 Channel **31**
 Frequency **575 MHz**
 Antenna Type **TAD-16UDA-8/64**

RMS Directivity at Main Lobe
 RMS Directivity at Horizontal

15.0 (11.76 dB)
5.0 (6.99 dB)
Calculated

Beam Tilt **1.65 deg**
 Pattern Number **16P150165**



Angle	Field								
-10.0	0.134	10.0	0.164	30.0	0.111	50.0	0.022	70.0	0.188
-9.0	0.120	11.0	0.086	31.0	0.084	51.0	0.062	71.0	0.160
-8.0	0.020	12.0	0.095	32.0	0.049	52.0	0.082	72.0	0.131
-7.0	0.129	13.0	0.112	33.0	0.066	53.0	0.075	73.0	0.104
-6.0	0.168	14.0	0.057	34.0	0.085	54.0	0.046	74.0	0.079
-5.0	0.071	15.0	0.039	35.0	0.073	55.0	0.020	75.0	0.058
-4.0	0.142	16.0	0.089	36.0	0.056	56.0	0.054	76.0	0.042
-3.0	0.261	17.0	0.073	37.0	0.072	57.0	0.087	77.0	0.030
-2.0	0.186	18.0	0.014	38.0	0.085	58.0	0.101	78.0	0.022
-1.0	0.210	19.0	0.049	39.0	0.071	59.0	0.092	79.0	0.017
0.0	0.618	20.0	0.062	40.0	0.044	60.0	0.063	80.0	0.015
1.0	0.936	21.0	0.032	41.0	0.053	61.0	0.038	81.0	0.013
2.0	0.979	22.0	0.020	42.0	0.073	62.0	0.069	82.0	0.012
3.0	0.733	23.0	0.043	43.0	0.066	63.0	0.122	83.0	0.010
4.0	0.359	24.0	0.033	44.0	0.032	64.0	0.170	84.0	0.008
5.0	0.210	25.0	0.010	45.0	0.025	65.0	0.207	85.0	0.007
6.0	0.281	26.0	0.012	46.0	0.064	66.0	0.229	86.0	0.005
7.0	0.221	27.0	0.008	47.0	0.082	67.0	0.236	87.0	0.003
8.0	0.144	28.0	0.054	48.0	0.068	68.0	0.229	88.0	0.002
9.0	0.180	29.0	0.098	49.0	0.031	69.0	0.212	89.0	0.001
								90.0	0.000

This document contains proprietary and confidential information of Dielectric. It is to be used solely for the purpose for which it is provided. No disclosure, reproduction, or use of this document or any part of it may be made without the written permission of Dielectric.