



Antenna Model: **THV-5A12/VP-R C170**

Proposal Number: **C-70800-3**  
Date: **10-Oct-17**  
Customer:  
Location: **Anaheim, CA**

#### Electrical Specifications

Polarization: **Elliptical**  
Azimuth Pattern: **Directional**  
Antenna Input: **3-1/8"** **50 Ohm** **EIA/DCA**  
VSWR: **Channel** **1.10 : 1**  
Bandwidth: **6 MHz**  
Rated Input Power: **18 kW** **(12.55 dBk)** **Maximum Average Power**

#### Mechanical Specifications

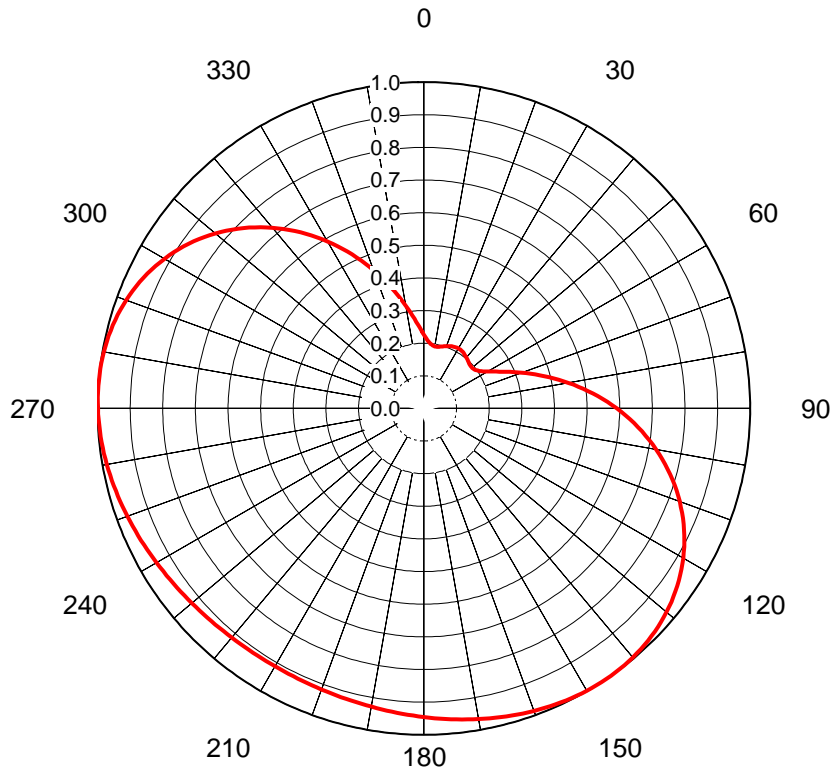
Mounting: **Top Mounted**  
Environmental Protection: **Full Radome**  
Height: **33.1 ft (10.1m)** less Lightning Protector **37.1 ft (11.3m)** with Lightning Protector  
Weight: **8500 lb (3.9t)**  
Effective Projected Area: **52.4 ft² (4.9m²)** **TIA-222-G** Basic Wind Speed: **100 m/h (160.9 km/h)**

#### Channel Specifications

Call	CH	Freq	Hpol ERP	Vpol ERP	TPO	Peak Main Lobe Hpol Gain	Peak Main Lobe Vpol Gain	Peak at Horizontal Hpol Gain	Peak at Horizontal Vpol Gain
KDOC	12	207 MHz	110 kW (20.41 dBk)	91.3 kW (19.60 dBk)	24.1 kW (13.82 dBk)	5.45 (7.36dB)	4.52 (6.55dB)	5.32 (7.26dB)	4.41 (6.45dB)

## AZIMUTH PATTERN Horizontal Polarization

Proposal No. **C-70800-3**  
 Date **10-Oct-17**  
 Call Letters **KDOC**  
 Channel **12**  
 Frequency **207 MHz**  
 Antenna Type **THV-5A12/VP-R C170**  
 Gain **1.68 (2.25dB)**  
 Calculated

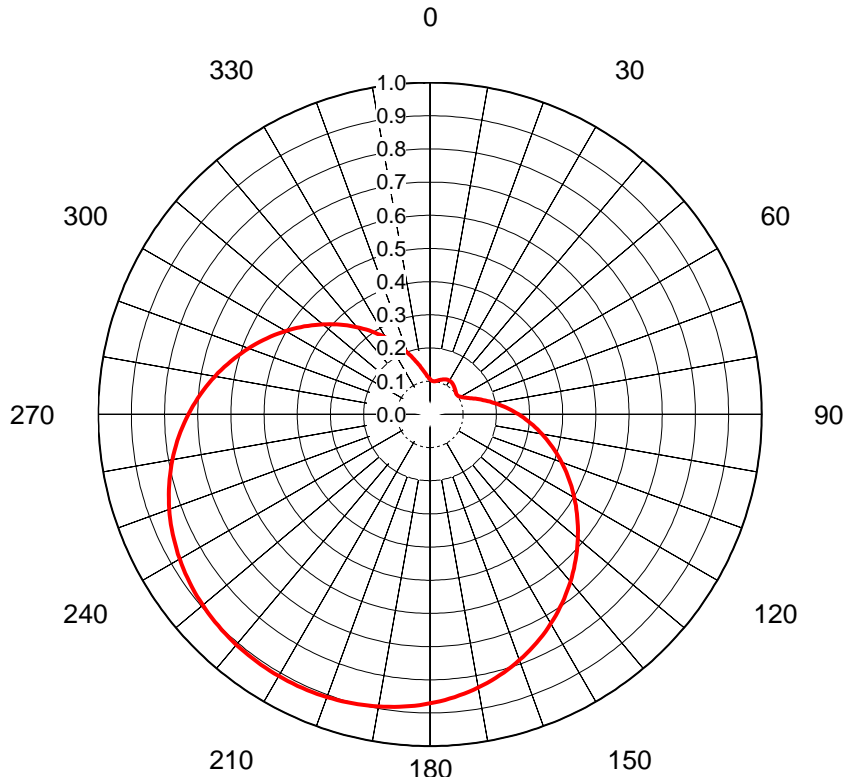


Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.226	36	0.209	72	0.344	108	0.814	144	1.000	180	0.946	216	0.914	252	0.971	288	0.978	324	0.672
1	0.220	37	0.207	73	0.357	109	0.824	145	1.000	181	0.944	217	0.915	253	0.973	289	0.974	325	0.659
2	0.214	38	0.206	74	0.369	110	0.834	146	1.000	182	0.942	218	0.915	254	0.975	290	0.971	326	0.646
3	0.210	39	0.205	75	0.383	111	0.844	147	1.000	183	0.940	219	0.916	255	0.977	291	0.967	327	0.632
4	0.205	40	0.203	76	0.396	112	0.853	148	1.000	184	0.938	220	0.917	256	0.979	292	0.963	328	0.618
5	0.202	41	0.202	77	0.409	113	0.862	149	0.999	185	0.936	221	0.917	257	0.981	293	0.958	329	0.605
6	0.199	42	0.200	78	0.423	114	0.871	150	0.999	186	0.935	222	0.918	258	0.983	294	0.953	330	0.591
7	0.197	43	0.199	79	0.437	115	0.880	151	0.998	187	0.933	223	0.919	259	0.985	295	0.948	331	0.577
8	0.195	44	0.197	80	0.450	116	0.888	152	0.997	188	0.931	224	0.920	260	0.987	296	0.943	332	0.563
9	0.194	45	0.196	81	0.464	117	0.896	153	0.996	189	0.930	225	0.921	261	0.988	297	0.937	333	0.549
10	0.193	46	0.195	82	0.478	118	0.904	154	0.995	190	0.928	226	0.923	262	0.990	298	0.931	334	0.535
11	0.193	47	0.194	83	0.492	119	0.911	155	0.994	191	0.927	227	0.924	263	0.991	299	0.924	335	0.521
12	0.193	48	0.193	84	0.507	120	0.918	156	0.993	192	0.925	228	0.925	264	0.993	300	0.918	336	0.507
13	0.194	49	0.193	85	0.521	121	0.924	157	0.991	193	0.924	229	0.927	265	0.994	301	0.911	337	0.492
14	0.195	50	0.193	86	0.535	122	0.931	158	0.990	194	0.923	230	0.928	266	0.995	302	0.904	338	0.478
15	0.196	51	0.194	87	0.549	123	0.937	159	0.988	195	0.921	231	0.930	267	0.996	303	0.896	339	0.464
16	0.197	52	0.195	88	0.563	124	0.943	160	0.987	196	0.920	232	0.931	268	0.997	304	0.888	340	0.450
17	0.199	53	0.197	89	0.577	125	0.948	161	0.985	197	0.919	233	0.933	269	0.998	305	0.880	341	0.437
18	0.200	54	0.199	90	0.591	126	0.953	162	0.983	198	0.918	234	0.935	270	0.999	306	0.871	342	0.423
19	0.202	55	0.202	91	0.605	127	0.958	163	0.981	199	0.917	235	0.936	271	0.999	307	0.862	343	0.409
20	0.203	56	0.205	92	0.618	128	0.963	164	0.979	200	0.917	236	0.938	272	1.000	308	0.853	344	0.396
21	0.205	57	0.210	93	0.632	129	0.967	165	0.977	201	0.916	237	0.940	273	1.000	309	0.844	345	0.383
22	0.206	58	0.214	94	0.646	130	0.971	166	0.975	202	0.915	238	0.942	274	1.000	310	0.834	346	0.369
23	0.207	59	0.220	95	0.659	131	0.974	167	0.973	203	0.915	239	0.944	275	1.000	311	0.824	347	0.357
24	0.209	60	0.226	96	0.672	132	0.978	168	0.971	204	0.914	240	0.946	276	0.999	312	0.814	348	0.344
25	0.210	61	0.233	97	0.685	133	0.981	169	0.969	205	0.914	241	0.948	277	0.999	313	0.804	349	0.332
26	0.211	62	0.240	98	0.698	134	0.984	170	0.967	206	0.913	242	0.950	278	0.998	314	0.793	350	0.320
27	0.211	63	0.249	99	0.710	135	0.987	171	0.965	207	0.913	243	0.952	279	0.997	315	0.782	351	0.309
28	0.212	64	0.257	100	0.723	136	0.989	172	0.963	208	0.913	244	0.954	280	0.996	316	0.771	352	0.297
29	0.212	65	0.267	101	0.735	137	0.991	173	0.960	209	0.913	245	0.956	281	0.995	317	0.759	353	0.287
30	0.212	66	0.276	102	0.747	138	0.993	174	0.958	210	0.912	246	0.958	282	0.993	318	0.747	354	0.276
31	0.212	67	0.287	103	0.759	139	0.995	175	0.956	211	0.913	247	0.960	283	0.991	319	0.735	355	0.267
32	0.212	68	0.297	104	0.771	140	0.996	176	0.954	212	0.913	248	0.963	284	0.989	320	0.723	356	0.257
33	0.211	69	0.309	105	0.782	141	0.997	177	0.952	213	0.913	249	0.965	285	0.987	321	0.710	357	0.249
34	0.211	70	0.320	106	0.793	142	0.998	178	0.950	214	0.913	250	0.967	286	0.984	322	0.698	358	0.240
35	0.210	71	0.332	107	0.804	143	0.999	179	0.948	215	0.914	251	0.969	287	0.981	323	0.685	359	0.233

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.

## AZIMUTH PATTERN Vertical Polarization

Proposal No. **C-70800-3**  
 Date **10-Oct-17**  
 Call Letters **KDOC**  
 Channel **12**  
 Frequency **207 MHz**  
 Antenna Type **THV-5A12/VP-R C170**  
 Gain **2.43 (3.86dB)**  
 Calculated



Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.106	36	0.115	72	0.150	108	0.406	144	0.687	180	0.871	216	0.910	252	0.828	288	0.598
1	0.104	37	0.115	73	0.155	109	0.414	145	0.694	181	0.874	217	0.909	253	0.823	289	0.590
2	0.103	38	0.114	74	0.161	110	0.422	146	0.701	182	0.877	218	0.908	254	0.819	290	0.582
3	0.102	39	0.113	75	0.166	111	0.430	147	0.708	183	0.879	219	0.908	255	0.814	291	0.574
4	0.101	40	0.112	76	0.172	112	0.438	148	0.715	184	0.882	220	0.907	256	0.809	292	0.566
5	0.101	41	0.111	77	0.178	113	0.446	149	0.722	185	0.884	221	0.906	257	0.804	293	0.558
6	0.100	42	0.110	78	0.184	114	0.454	150	0.728	186	0.886	222	0.905	258	0.799	294	0.550
7	0.101	43	0.109	79	0.191	115	0.462	151	0.735	187	0.888	223	0.904	259	0.794	295	0.542
8	0.101	44	0.108	80	0.197	116	0.470	152	0.741	188	0.891	224	0.903	260	0.788	296	0.534
9	0.101	45	0.107	81	0.204	117	0.478	153	0.748	189	0.892	225	0.902	261	0.783	297	0.526
10	0.102	46	0.106	82	0.210	118	0.486	154	0.754	190	0.894	226	0.900	262	0.777	298	0.518
11	0.103	47	0.104	83	0.217	119	0.494	155	0.760	191	0.896	227	0.899	263	0.772	299	0.510
12	0.104	48	0.104	84	0.224	120	0.502	156	0.766	192	0.898	228	0.898	264	0.766	300	0.502
13	0.104	49	0.103	85	0.231	121	0.510	157	0.772	193	0.899	229	0.896	265	0.760	301	0.494
14	0.106	50	0.102	86	0.238	122	0.518	158	0.777	194	0.900	230	0.894	266	0.754	302	0.486
15	0.107	51	0.101	87	0.245	123	0.526	159	0.783	195	0.902	231	0.892	267	0.748	303	0.478
16	0.108	52	0.101	88	0.252	124	0.534	160	0.788	196	0.903	232	0.891	268	0.741	304	0.470
17	0.109	53	0.101	89	0.260	125	0.542	161	0.794	197	0.904	233	0.888	269	0.735	305	0.462
18	0.110	54	0.100	90	0.267	126	0.550	162	0.799	198	0.905	234	0.886	270	0.728	306	0.454
19	0.111	55	0.101	91	0.274	127	0.558	163	0.804	199	0.906	235	0.884	271	0.722	307	0.446
20	0.112	56	0.101	92	0.282	128	0.566	164	0.809	200	0.907	236	0.882	272	0.715	308	0.438
21	0.113	57	0.102	93	0.289	129	0.574	165	0.814	201	0.908	237	0.879	273	0.708	309	0.430
22	0.114	58	0.103	94	0.297	130	0.582	166	0.819	202	0.908	238	0.877	274	0.701	310	0.422
23	0.115	59	0.104	95	0.305	131	0.590	167	0.823	203	0.909	239	0.874	275	0.694	311	0.414
24	0.115	60	0.106	96	0.312	132	0.598	168	0.828	204	0.910	240	0.871	276	0.687	312	0.406
25	0.116	61	0.108	97	0.320	133	0.605	169	0.832	205	0.910	241	0.868	277	0.680	313	0.398
26	0.116	62	0.110	98	0.328	134	0.613	170	0.836	206	0.910	242	0.865	278	0.673	314	0.390
27	0.117	63	0.113	99	0.335	135	0.621	171	0.840	207	0.911	243	0.862	279	0.666	315	0.382
28	0.117	64	0.116	100	0.343	136	0.628	172	0.844	208	0.911	244	0.859	280	0.658	316	0.374
29	0.117	65	0.119	101	0.351	137	0.636	173	0.848	209	0.911	245	0.855	281	0.651	317	0.367
30	0.117	66	0.123	102	0.359	138	0.644	174	0.852	210	0.911	246	0.852	282	0.644	318	0.359
31	0.117	67	0.126	103	0.367	139	0.651	175	0.855	211	0.911	247	0.848	283	0.636	319	0.351
32	0.117	68	0.131	104	0.374	140	0.658	176	0.859	212	0.911	248	0.844	284	0.628	320	0.343
33	0.117	69	0.135	105	0.382	141	0.666	177	0.862	213	0.911	249	0.840	285	0.621	321	0.335
34	0.116	70	0.140	106	0.390	142	0.673	178	0.865	214	0.910	250	0.836	286	0.613	322	0.328
35	0.116	71	0.145	107	0.398	143	0.680	179	0.868	215	0.910	251	0.832	287	0.605	323	0.320

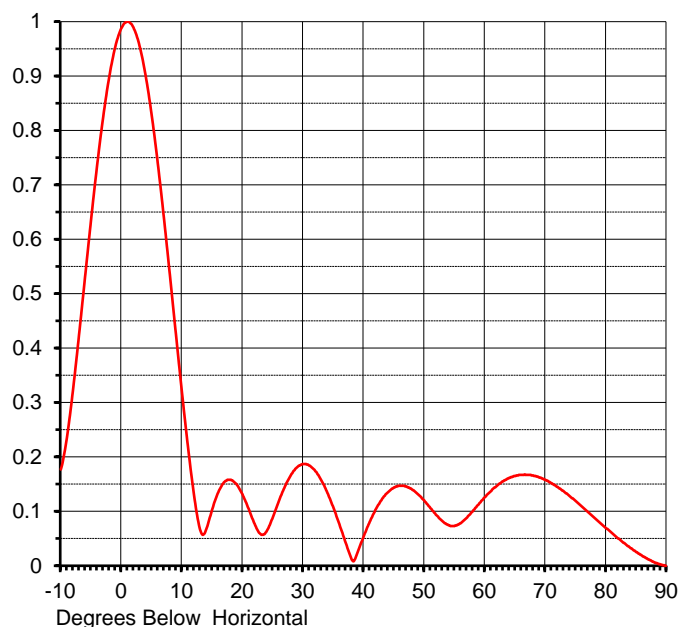
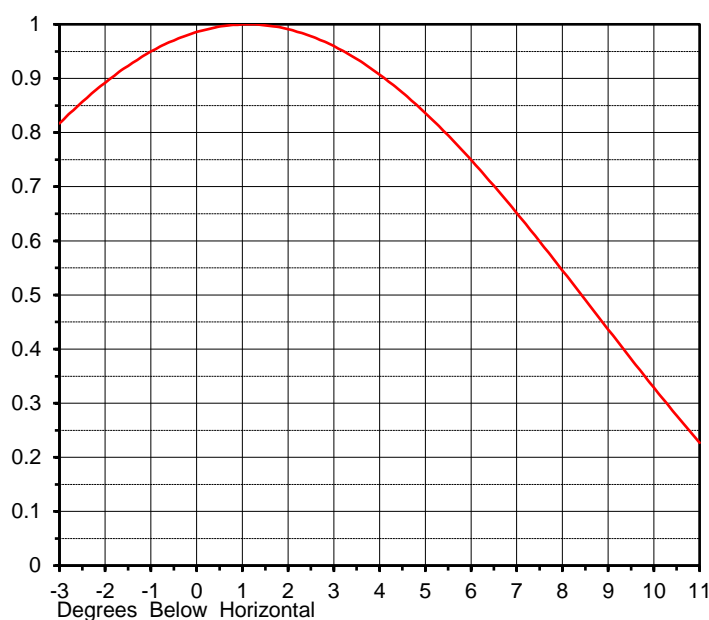
This document contains proprietary and confidential information of Dielectric. It is to be used solely for the purpose for which it is provided. No disclosure, reproduction, or use of this document or any part of it may be made without the written permission of Dielectric.

## ELEVATION PATTERN

Proposal No. **C-70800-3**  
 Date **10-Oct-17**  
 Call Letters **KDOC**  
 Channel **12**  
 Frequency **207 MHz**  
 Antenna Type **THV-5A12/VP-R C170**

RMS Directivity at Main Lobe **5.1 ( 7.08 dB )**  
 RMS Directivity at Horizontal **5.0 ( 6.99 dB )**  
**Calculated**

Beam Tilt **1.00 deg**  
 Pattern Number **05V051100**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.177	10.0	0.318	30.0	0.187	50.0	0.120	70.0	0.158
-9.0	0.235	11.0	0.218	31.0	0.184	51.0	0.106	71.0	0.152
-8.0	0.322	12.0	0.129	32.0	0.174	52.0	0.093	72.0	0.145
-7.0	0.424	13.0	0.066	33.0	0.157	53.0	0.082	73.0	0.137
-6.0	0.531	14.0	0.067	34.0	0.134	54.0	0.075	74.0	0.128
-5.0	0.637	15.0	0.104	35.0	0.107	55.0	0.073	75.0	0.119
-4.0	0.737	16.0	0.135	36.0	0.076	56.0	0.078	76.0	0.109
-3.0	0.825	17.0	0.154	37.0	0.043	57.0	0.088	77.0	0.099
-2.0	0.899	18.0	0.158	38.0	0.012	58.0	0.100	78.0	0.089
-1.0	0.954	19.0	0.150	39.0	0.025	59.0	0.113	79.0	0.079
0.0	0.988	20.0	0.131	40.0	0.054	60.0	0.126	80.0	0.069
1.0	1.000	21.0	0.105	41.0	0.081	61.0	0.137	81.0	0.060
2.0	0.989	22.0	0.077	42.0	0.104	62.0	0.147	82.0	0.050
3.0	0.955	23.0	0.058	43.0	0.122	63.0	0.155	83.0	0.042
4.0	0.901	24.0	0.064	44.0	0.135	64.0	0.161	84.0	0.033
5.0	0.828	25.0	0.089	45.0	0.144	65.0	0.165	85.0	0.025
6.0	0.740	26.0	0.119	46.0	0.147	66.0	0.167	86.0	0.018
7.0	0.641	27.0	0.146	47.0	0.146	67.0	0.167	87.0	0.012
8.0	0.535	28.0	0.167	48.0	0.140	68.0	0.166	88.0	0.006
9.0	0.426	29.0	0.181	49.0	0.131	69.0	0.162	89.0	0.002
								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.

## MECHANICAL SPECIFICATIONS

Proposal No. **C-70800-3**  
 Date **10-Oct-17**  
 Call Letters **KDOC**  
 Channel **12**  
 Frequency **207 MHz**  
 Antenna Type **THV-5A12/VP-R C170**

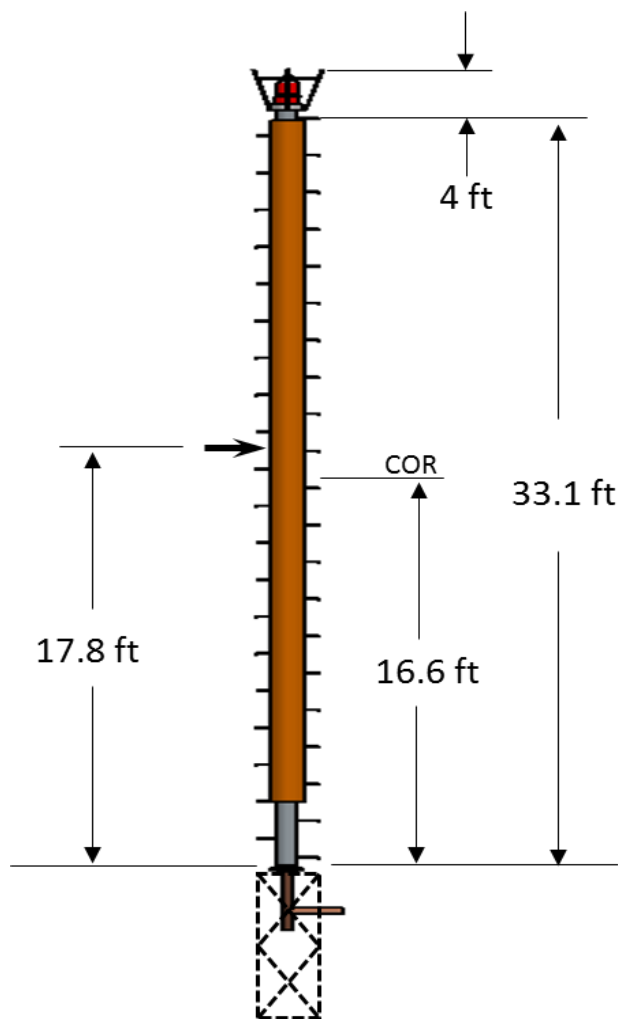
### Preliminary Specifications

#### Top Mounted

##### Without ice TIA-222-G

Height AGL(z) 500 ft (152.4 m)  
 Basic Wind Speed 100 m/h (160.9 km/h)

Structure Class II  
 Exposure Category C  
 Topography Category 1



#### Mechanical Specifications

Height with Lightning Protector	H4	37.1 ft (11.3m)
Height less Lightning Protector	H2	33.1 ft (10.1m)
Height of Center of Radiation	H3	16.55 ft (5m)
Effective Projected Area	(EPA) <sub>S</sub>	52.4 ft² (4.9m²)
Moment Arm	D1	17.8 ft (5.4m)

Weight	W	8500 lb (3.9t)
--------	---	----------------

Antenna designed in accordance with AISC specifications for design of structural steel as prescribed by TIA-222-G

Prepared by: KLP  
 Rev. No.3 by: JBC

Date: 10-Oct-17  
 Date: 10-Oct-17

ME: EE:

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. Mechanical data is based on listed criteria and should be verified by the tower engineer.

## Summary

Proposal No.	<b>C-70800-3</b>
Date	<b>10-Oct-17</b>
Call Letters	<b>KDOC</b>
Channel	<b>12</b>
Frequency	<b>207 MHz</b>
Antenna Type	<b>THV-5A12/VP-R C170</b>

## Antenna

	Hpol		Vpol	
ERP:	<b>110 kW</b>	<b>( 20.41 dBk )</b>	<b>91.3 kW</b>	<b>( 19.60 dBk )</b>
Peak Gain*	5.45	( 7.36 dB )	4.52	( 6.55 dB )

<b>Antenna Input Power</b>	<b>20.2 kW</b>	<b>( 13.05 dBk )</b>
----------------------------	----------------	----------------------

## Transmission Line

Type:	<b>Rigid</b>	Attenuation:	<b>( 0.77 dB )</b>
Size:	<b>6-1/8"</b>	Efficiency:	<b>83.7%</b>
Impedance:	<b>75 Ohm</b>		
Length:	<b>1150 ft</b>	<b>350.5 m</b>	

## Transmitter Output

<b>24.1 kW</b>	<b>( 13.82 dBk )</b>
----------------	----------------------

Transmitter filter losses not included

\* Directivity and Gain are with respect to half wave dipole. The gain includes feed system losses

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.

## Summary

Proposal No.	<b>C-70800-3</b>
Date	<b>10-Oct-17</b>
Call Letters	<b>KDOC</b>
Channel	<b>12</b>
Frequency	<b>207 MHz</b>
Antenna Type	<b>THV-5A12/VP-R C170</b>

## Antenna

	Hpol		Vpol	
ERP:	<b>110 kW</b>	<b>( 20.41 dBk )</b>	<b>91.3 kW</b>	<b>( 19.60 dBk )</b>
Peak Gain*	5.45	( 7.36 dB )	4.52	( 6.55 dB )

<b>Antenna Input Power</b>	<b>20.2 kW</b>	<b>( 13.05 dBk )</b>
----------------------------	----------------	----------------------

## Transmission Line

Type:	<b>Rigid</b>	Attenuation:	<b>( 1.11 dB )</b>
Size:	<b>4-1/16"</b>	Efficiency:	<b>77.5%</b>
Impedance:	<b>50 Ohm</b>		
Length:	<b>1150 ft</b>	<b>350.5 m</b>	

## Transmitter Output

<b>26.1 kW</b>	<b>( 14.16 dBk )</b>
----------------	----------------------

Transmitter filter losses not included

\* Directivity and Gain are with respect to half wave dipole. The gain includes feed system losses

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.