

Antenna Model:

TLP-8O/VP-R

Reference Number: **KNPB (DRT)-1**

Date: **17-Sep-19**

Customer: **Ch 5 Public Broadcasting, Inc.**

Location: **Reno, NV**

Electrical Specifications

Polarization: **Elliptical / Circular**

Azimuth Pattern: **O**

Antenna Input: **1-5/8" 50 Ohm**

VSWR: Channel **1.08 : 1**

Bandwidth: **6 MHz**

Rated Input Power: **5.0 kW** **Maximum Average Power**

Mechanical Specifications

Mounting: **Side Mounted**

Environmental Protection: **Full Radome**

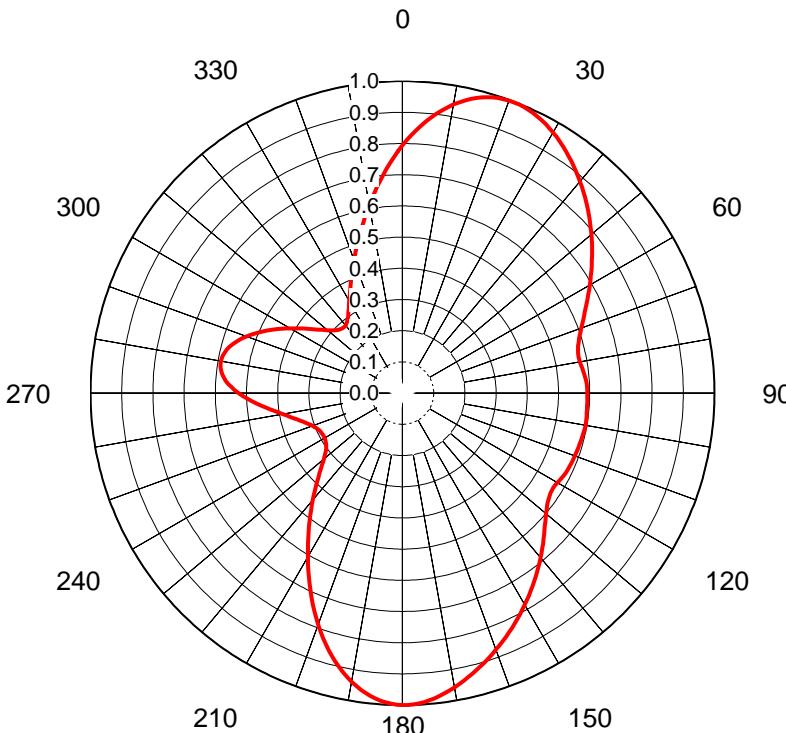
Height: **14.8 ft (4.5m)**

Weight: Excludes Mounts

Effective Projected Area: Basic Wind Speed: **mph (0 km/h)**

Channel Specifications

Call	Ch	Freq	Hpol ERP	Vpol ERP	TPO	Peak Gain	Peak Gain	Peak Gain	Peak Gain
						Main Lobe Hpol	Main Lobe Vpol	at Horizontal Hpol	at Horizontal Vpol
KNPB (DRT)	36	605	1.20 kW (0.79 dBk)	0.360 kW -(4.44 dBk)	0.103 kW -(9.87 dBk)	13.91 (11.43dB)	4.17 (6.21dB)	12.96 (11.12dB)	3.89 (5.90dB)



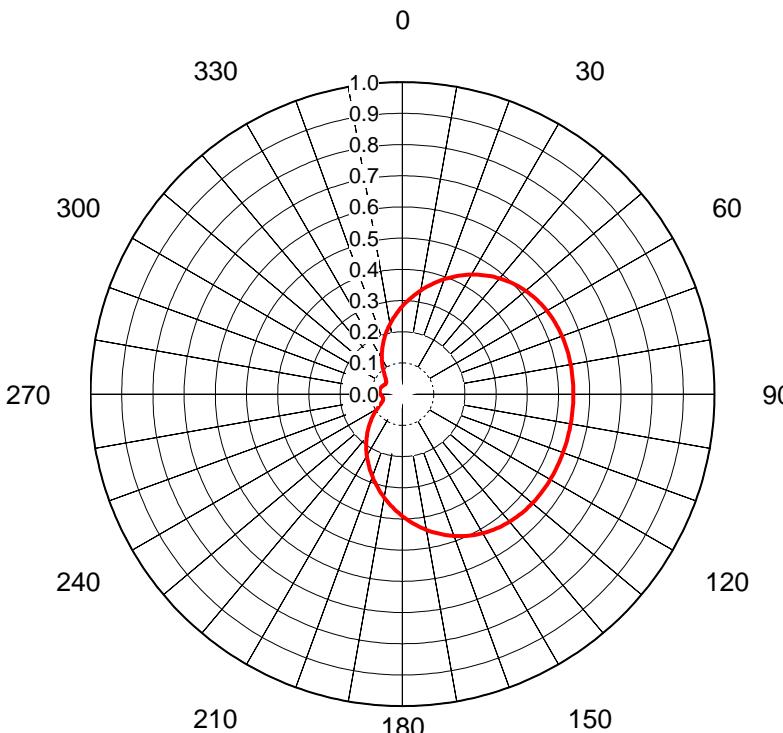
AZIMUTH PATTERN Horizontal Polarization

Proposal No. KNPB (DRT)-1
 Date 17-Sep-19
 Call Letters KNPB (DR1)
 Channel 36
 Frequency 605 MHz
 Antenna Type TLP-8O/VP-R
 Gain 2.25 (3.52dB)
 Calculated

Pattern Number TLP-O-36 Hpol

Deg	Value																		
0	0.794	36	0.920	72	0.597	108	0.590	144	0.727	180	1.000	216	0.507	252	0.318	288	0.551	324	0.298
1	0.811	37	0.911	73	0.592	109	0.589	145	0.736	181	0.999	217	0.491	253	0.325	289	0.541	325	0.304
2	0.828	38	0.903	74	0.587	110	0.588	146	0.746	182	0.997	218	0.476	254	0.332	290	0.532	326	0.310
3	0.845	39	0.894	75	0.583	111	0.587	147	0.755	183	0.993	219	0.462	255	0.340	291	0.521	327	0.317
4	0.860	40	0.885	76	0.580	112	0.587	148	0.765	184	0.989	220	0.447	256	0.348	292	0.510	328	0.325
5	0.875	41	0.876	77	0.578	113	0.586	149	0.774	185	0.983	221	0.433	257	0.358	293	0.499	329	0.333
6	0.890	42	0.867	78	0.577	114	0.585	150	0.784	186	0.976	222	0.420	258	0.368	294	0.487	330	0.341
7	0.903	43	0.858	79	0.577	115	0.584	151	0.793	187	0.969	223	0.406	259	0.378	295	0.476	331	0.351
8	0.916	44	0.849	80	0.578	116	0.582	152	0.802	188	0.960	224	0.394	260	0.389	296	0.463	332	0.360
9	0.928	45	0.839	81	0.579	117	0.580	153	0.812	189	0.950	225	0.381	261	0.401	297	0.451	333	0.370
10	0.939	46	0.830	82	0.581	118	0.578	154	0.821	190	0.939	226	0.370	262	0.414	298	0.439	334	0.381
11	0.949	47	0.820	83	0.583	119	0.576	155	0.830	191	0.928	227	0.358	263	0.427	299	0.427	335	0.392
12	0.959	48	0.810	84	0.586	120	0.574	156	0.839	192	0.915	228	0.348	264	0.441	300	0.415	336	0.404
13	0.967	49	0.800	85	0.588	121	0.572	157	0.849	193	0.902	229	0.338	265	0.455	301	0.403	337	0.416
14	0.975	50	0.791	86	0.589	122	0.571	158	0.858	194	0.888	230	0.329	266	0.470	302	0.391	338	0.428
15	0.981	51	0.781	87	0.591	123	0.571	159	0.867	195	0.873	231	0.321	267	0.484	303	0.380	339	0.441
16	0.986	52	0.771	88	0.592	124	0.573	160	0.876	196	0.858	232	0.314	268	0.499	304	0.369	340	0.455
17	0.991	53	0.761	89	0.592	125	0.575	161	0.885	197	0.841	233	0.308	269	0.512	305	0.358	341	0.469
18	0.994	54	0.751	90	0.592	126	0.579	162	0.893	198	0.825	234	0.303	270	0.526	306	0.348	342	0.483
19	0.996	55	0.741	91	0.593	127	0.583	163	0.902	199	0.807	235	0.298	271	0.538	307	0.339	343	0.498
20	0.998	56	0.731	92	0.593	128	0.588	164	0.910	200	0.790	236	0.295	272	0.549	308	0.330	344	0.513
21	0.998	57	0.722	93	0.593	129	0.594	165	0.919	201	0.772	237	0.292	273	0.559	309	0.321	345	0.528
22	0.997	58	0.712	94	0.593	130	0.601	166	0.927	202	0.754	238	0.290	274	0.568	310	0.314	346	0.544
23	0.996	59	0.702	95	0.593	131	0.608	167	0.935	203	0.735	239	0.289	275	0.575	311	0.307	347	0.561
24	0.994	60	0.693	96	0.594	132	0.616	168	0.943	204	0.716	240	0.288	276	0.581	312	0.301	348	0.577
25	0.990	61	0.684	97	0.594	133	0.624	169	0.950	205	0.698	241	0.288	277	0.586	313	0.296	349	0.595
26	0.987	62	0.675	98	0.595	134	0.633	170	0.958	206	0.679	242	0.288	278	0.589	314	0.291	350	0.612
27	0.982	63	0.666	99	0.596	135	0.642	171	0.965	207	0.661	243	0.288	279	0.591	315	0.288	351	0.630
28	0.977	64	0.657	100	0.596	136	0.651	172	0.972	208	0.643	244	0.289	280	0.591	316	0.285	352	0.648
29	0.971	65	0.648	101	0.595	137	0.660	173	0.978	209	0.625	245	0.290	281	0.590	317	0.283	353	0.666
30	0.965	66	0.640	102	0.594	138	0.670	174	0.983	210	0.607	246	0.292	282	0.588	318	0.283	354	0.685
31	0.958	67	0.632	103	0.594	139	0.679	175	0.988	211	0.589	247	0.295	283	0.584	319	0.283	355	0.703
32	0.951	68	0.624	104	0.593	140	0.689	176	0.993	212	0.572	248	0.298	284	0.579	320	0.284	356	0.722
33	0.944	69	0.617	105	0.592	141	0.698	177	0.996	213	0.555	249	0.302	285	0.574	321	0.286	357	0.740
34	0.936	70	0.610	106	0.591	142	0.708	178	0.998	214	0.539	250	0.307	286	0.567	322	0.289	358	0.759
35	0.928	71	0.603	107	0.590	143	0.717	179	1.000	215	0.523	251	0.312	287	0.559	323	0.293	359	0.777

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Proposal No. KNPB (DRT)-1
 Date 17-Sep-19
 Call Letters KNPB (DR1)
 Channel 36
 Frequency 605 MHz
 Antenna Type TLP-80/VP-R
 Gain 2.16 (3.35dB)
 Calculated

Pattern Number TLP-O-36 Vpol

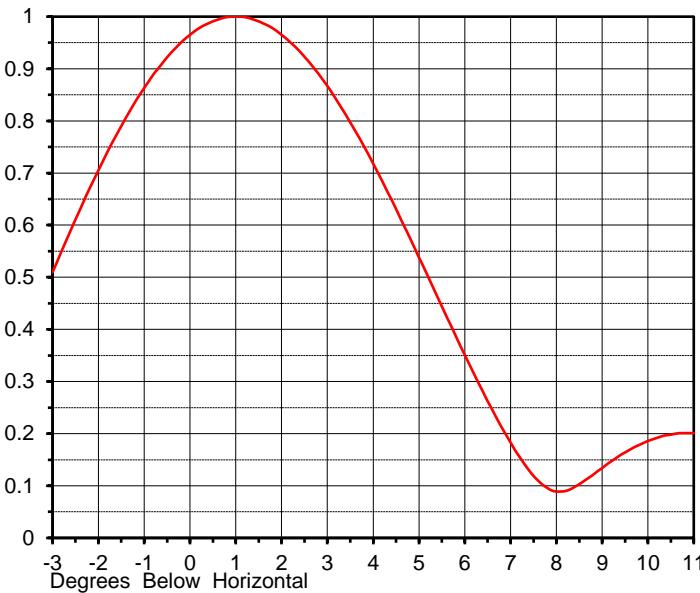
Deg	Value																		
0	0.282	36	0.469	72	0.545	108	0.547	144	0.527	180	0.391	216	0.198	252	0.066	288	0.072	324	0.108
1	0.287	37	0.473	73	0.546	109	0.548	145	0.526	181	0.386	217	0.193	253	0.065	289	0.071	325	0.112
2	0.293	38	0.477	74	0.546	110	0.548	146	0.524	182	0.381	218	0.188	254	0.064	290	0.070	326	0.116
3	0.298	39	0.481	75	0.546	111	0.548	147	0.521	183	0.375	219	0.183	255	0.064	291	0.070	327	0.120
4	0.304	40	0.484	76	0.547	112	0.548	148	0.519	184	0.370	220	0.178	256	0.063	292	0.069	328	0.124
5	0.310	41	0.488	77	0.547	113	0.548	149	0.517	185	0.364	221	0.173	257	0.063	293	0.068	329	0.128
6	0.315	42	0.491	78	0.547	114	0.548	150	0.514	186	0.359	222	0.169	258	0.063	294	0.068	330	0.133
7	0.321	43	0.495	79	0.547	115	0.547	151	0.512	187	0.353	223	0.164	259	0.064	295	0.067	331	0.137
8	0.326	44	0.498	80	0.547	116	0.547	152	0.509	188	0.348	224	0.159	260	0.064	296	0.066	332	0.141
9	0.332	45	0.501	81	0.547	117	0.547	153	0.506	189	0.342	225	0.155	261	0.064	297	0.066	333	0.146
10	0.337	46	0.504	82	0.548	118	0.547	154	0.503	190	0.337	226	0.150	262	0.065	298	0.065	334	0.150
11	0.343	47	0.507	83	0.548	119	0.547	155	0.500	191	0.331	227	0.146	263	0.065	299	0.064	335	0.155
12	0.348	48	0.510	84	0.548	120	0.547	156	0.497	192	0.326	228	0.141	264	0.066	300	0.064	336	0.160
13	0.354	49	0.513	85	0.548	121	0.547	157	0.494	193	0.320	229	0.137	265	0.067	301	0.064	337	0.164
14	0.359	50	0.515	86	0.548	122	0.547	158	0.491	194	0.314	230	0.132	266	0.068	302	0.064	338	0.169
15	0.365	51	0.518	87	0.548	123	0.547	159	0.487	195	0.309	231	0.128	267	0.068	303	0.063	339	0.174
16	0.370	52	0.520	88	0.548	124	0.546	160	0.484	196	0.303	232	0.124	268	0.069	304	0.064	340	0.179
17	0.376	53	0.522	89	0.548	125	0.546	161	0.480	197	0.298	233	0.120	269	0.070	305	0.064	341	0.184
18	0.381	54	0.524	90	0.548	126	0.546	162	0.476	198	0.292	234	0.116	270	0.070	306	0.064	342	0.188
19	0.387	55	0.526	91	0.548	127	0.545	163	0.472	199	0.287	235	0.112	271	0.071	307	0.065	343	0.193
20	0.392	56	0.528	92	0.548	128	0.545	164	0.468	200	0.281	236	0.108	272	0.072	308	0.066	344	0.198
21	0.397	57	0.530	93	0.548	129	0.544	165	0.464	201	0.276	237	0.104	273	0.072	309	0.067	345	0.203
22	0.403	58	0.531	94	0.548	130	0.544	166	0.460	202	0.271	238	0.100	274	0.073	310	0.069	346	0.208
23	0.408	59	0.533	95	0.548	131	0.543	167	0.455	203	0.265	239	0.097	275	0.073	311	0.070	347	0.213
24	0.413	60	0.534	96	0.547	132	0.542	168	0.451	204	0.260	240	0.093	276	0.074	312	0.072	348	0.218
25	0.418	61	0.536	97	0.547	133	0.542	169	0.446	205	0.254	241	0.090	277	0.074	313	0.074	349	0.224
26	0.423	62	0.537	98	0.547	134	0.541	170	0.442	206	0.249	242	0.087	278	0.074	314	0.076	350	0.229
27	0.428	63	0.538	99	0.547	135	0.540	171	0.437	207	0.244	243	0.084	279	0.074	315	0.079	351	0.234
28	0.433	64	0.539	100	0.547	136	0.539	172	0.432	208	0.239	244	0.081	280	0.074	316	0.082	352	0.239
29	0.438	65	0.540	101	0.547	137	0.538	173	0.427	209	0.233	245	0.079	281	0.074	317	0.084	353	0.244
30	0.442	66	0.541	102	0.547	138	0.536	174	0.422	210	0.228	246	0.076	282	0.074	318	0.087	354	0.250
31	0.447	67	0.542	103	0.547	139	0.535	175	0.417	211	0.223	247	0.074	283	0.074	319	0.090	355	0.255
32	0.452	68	0.543	104	0.547	140	0.534	176	0.412	212	0.218	248	0.072	284	0.074	320	0.094	356	0.260
33	0.456	69	0.543	105	0.547	141	0.532	177	0.407	213	0.213	249	0.070	285	0.073	321	0.097	357	0.266
34	0.460	70	0.544	106	0.547	142	0.531	178	0.402	214	0.208	250	0.068	286	0.073	322	0.101	358	0.271
35	0.465	71	0.545	107	0.547	143	0.529	179	0.397	215	0.203	251	0.067	287	0.072	323	0.104	359	0.277

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Note: Customer Requires 3.3 degree mechanical beam tilt at 190 degrees T which is not shown on the elevation patterns below.

RMS Directivity at Main Lobe
RMS Directivity at Horizontal

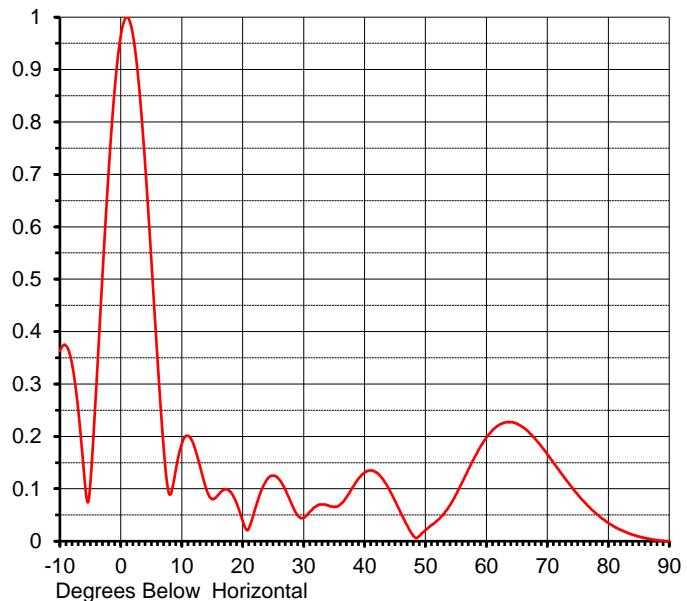
8.1 (9.10 dB)
7.6 (8.81 dB)
Calculated



Beam Tilt **1.00 deg**
Pattern Number **08L081100-36**

ELEVATION PATTERN

Proposal No. **KNPB (DRT)-1**
Date **17-Sep-19**
Call Letters **KNPB (DR1**
Channel **36**
Frequency **605 MHz**
Antenna Type **TLP-8O/VP-R**



Angle	Field								
-10.0	0.363	10.0	0.186	30.0	0.045	50.0	0.021	70.0	0.166
-9.0	0.373	11.0	0.201	31.0	0.056	51.0	0.031	71.0	0.150
-8.0	0.338	12.0	0.183	32.0	0.066	52.0	0.040	72.0	0.134
-7.0	0.252	13.0	0.143	33.0	0.070	53.0	0.052	73.0	0.118
-6.0	0.125	14.0	0.101	34.0	0.068	54.0	0.068	74.0	0.103
-5.0	0.110	15.0	0.080	35.0	0.065	55.0	0.089	75.0	0.089
-4.0	0.299	16.0	0.088	36.0	0.070	56.0	0.112	76.0	0.076
-3.0	0.510	17.0	0.099	37.0	0.083	57.0	0.136	77.0	0.064
-2.0	0.705	18.0	0.094	38.0	0.102	58.0	0.159	78.0	0.053
-1.0	0.863	19.0	0.073	39.0	0.119	59.0	0.180	79.0	0.043
0.0	0.965	20.0	0.039	40.0	0.131	60.0	0.198	80.0	0.035
1.0	1.000	21.0	0.024	41.0	0.135	61.0	0.212	81.0	0.028
2.0	0.965	22.0	0.060	42.0	0.131	62.0	0.221	82.0	0.022
3.0	0.867	23.0	0.095	43.0	0.118	63.0	0.226	83.0	0.017
4.0	0.718	24.0	0.118	44.0	0.100	64.0	0.227	84.0	0.012
5.0	0.538	25.0	0.125	45.0	0.077	65.0	0.224	85.0	0.009
6.0	0.351	26.0	0.118	46.0	0.053	66.0	0.217	86.0	0.006
7.0	0.183	27.0	0.098	47.0	0.030	67.0	0.208	87.0	0.004
8.0	0.089	28.0	0.072	48.0	0.010	68.0	0.195	88.0	0.002
9.0	0.134	29.0	0.049	49.0	0.010	69.0	0.181	89.0	0.001
								90.0	0.000

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Summary

Proposal No.	KNPB (DRT)-1
Date	17-Sep-19
Call Letters	KNPB (DRT)
Channel	36
Frequency	605 MHz
Antenna Type	TLP-8O/VP-R

Antenna

	Hpol	Vpol
ERP:	1.20 kW (0.79 dBk)	0.360 kW -(4.44 dBk)
Peak Gain	13.91 (11.43 dBd)	4.17 (6.21 dBd)

Antenna Input Power **0.086 kW -(10.64 dBk)**

Transmission Line

Type:	Flexline Air	Attenuation:	(0.77 dB)
Size:	7/8"	Efficiency:	83.7%
Impedance:	50 Ohm		
Length:	80 ft	24.4 m	

Transmitter Output

0.103 kW -(9.87 dBk)

Transmitter filter losses not included

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