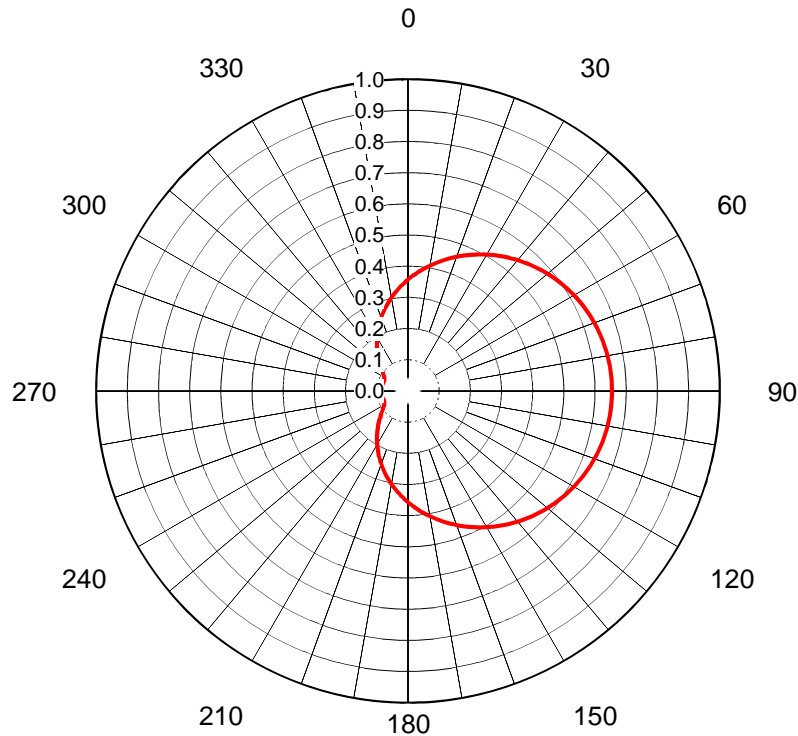


## AZIMUTH PATTERN Horizontal Polarization

Proposal No. **C-70023**  
 Date **11-Feb-17**  
 Call Letters **WJAC 35**  
 Frequency **599 MHz**  
 Antenna Type **TFU-24DSC/VP-R C170**  
  
 Gain **1.7 (2.31dB)**  
**Calculated**  
  
 Directional  
 Drawing # **TFU-C170**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.940	36	0.973	72	0.904	108	0.904	144	0.973	180	0.940	216	0.497	252	0.211	288	0.211
1	0.946	37	0.971	73	0.903	109	0.905	145	0.976	181	0.933	217	0.482	253	0.214	289	0.209
2	0.952	38	0.968	74	0.903	110	0.905	146	0.978	182	0.925	218	0.466	254	0.216	290	0.207
3	0.958	39	0.965	75	0.902	111	0.906	147	0.981	183	0.918	219	0.451	255	0.219	291	0.206
4	0.963	40	0.963	76	0.902	112	0.907	148	0.983	184	0.910	220	0.437	256	0.222	292	0.205
5	0.968	41	0.960	77	0.901	113	0.908	149	0.986	185	0.901	221	0.422	257	0.224	293	0.204
6	0.973	42	0.957	78	0.901	114	0.909	150	0.988	186	0.893	222	0.407	258	0.227	294	0.204
7	0.977	43	0.954	79	0.901	115	0.910	151	0.990	187	0.883	223	0.393	259	0.229	295	0.204
8	0.981	44	0.952	80	0.900	116	0.911	152	0.992	188	0.874	224	0.379	260	0.232	296	0.206
9	0.984	45	0.949	81	0.900	117	0.912	153	0.993	189	0.864	225	0.365	261	0.234	297	0.207
10	0.987	46	0.946	82	0.900	118	0.914	154	0.995	190	0.854	226	0.352	262	0.236	298	0.210
11	0.990	47	0.944	83	0.900	119	0.915	155	0.996	191	0.843	227	0.338	263	0.238	299	0.214
12	0.992	48	0.941	84	0.900	120	0.917	156	0.997	192	0.832	228	0.326	264	0.240	300	0.218
13	0.994	49	0.939	85	0.900	121	0.918	157	0.998	193	0.821	229	0.313	265	0.241	301	0.223
14	0.996	50	0.936	86	0.899	122	0.920	158	0.999	194	0.809	230	0.302	266	0.242	302	0.229
15	0.997	51	0.934	87	0.899	123	0.922	159	1.000	195	0.797	231	0.290	267	0.243	303	0.235
16	0.998	52	0.932	88	0.899	124	0.924	160	1.000	196	0.785	232	0.280	268	0.244	304	0.243
17	0.999	53	0.930	89	0.899	125	0.926	161	1.000	197	0.773	233	0.269	269	0.244	305	0.251
18	1.000	54	0.928	90	0.899	126	0.928	162	1.000	198	0.760	234	0.260	270	0.245	306	0.260
19	1.000	55	0.926	91	0.899	127	0.930	163	0.999	199	0.747	235	0.251	271	0.244	307	0.269
20	1.000	56	0.924	92	0.899	128	0.932	164	0.998	200	0.733	236	0.243	272	0.244	308	0.280
21	1.000	57	0.922	93	0.899	129	0.934	165	0.997	201	0.720	237	0.235	273	0.243	309	0.290
22	0.999	58	0.920	94	0.899	130	0.936	166	0.996	202	0.706	238	0.229	274	0.242	310	0.302
23	0.998	59	0.918	95	0.900	131	0.939	167	0.994	203	0.692	239	0.223	275	0.241	311	0.313
24	0.997	60	0.917	96	0.900	132	0.941	168	0.992	204	0.677	240	0.218	276	0.240	312	0.326
25	0.996	61	0.915	97	0.900	133	0.944	169	0.990	205	0.663	241	0.214	277	0.238	313	0.338
26	0.995	62	0.914	98	0.900	134	0.946	170	0.987	206	0.648	242	0.210	278	0.236	314	0.352
27	0.993	63	0.912	99	0.900	135	0.949	171	0.984	207	0.634	243	0.207	279	0.234	315	0.365
28	0.992	64	0.911	100	0.900	136	0.952	172	0.981	208	0.619	244	0.206	280	0.232	316	0.379
29	0.990	65	0.910	101	0.901	137	0.954	173	0.977	209	0.604	245	0.204	281	0.229	317	0.393
30	0.988	66	0.909	102	0.901	138	0.957	174	0.973	210	0.588	246	0.204	282	0.227	318	0.407
31	0.986	67	0.908	103	0.901	139	0.960	175	0.968	211	0.573	247	0.204	283	0.224	319	0.422
32	0.983	68	0.907	104	0.902	140	0.963	176	0.963	212	0.558	248	0.205	284	0.222	320	0.437
33	0.981	69	0.906	105	0.902	141	0.965	177	0.958	213	0.543	249	0.206	285	0.219	321	0.451
34	0.978	70	0.905	106	0.903	142	0.968	178	0.952	214	0.527	250	0.207	286	0.216	322	0.466
35	0.976	71	0.905	107	0.903	143	0.971	179	0.946	215	0.512	251	0.209	287	0.214	323	0.482

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## AZIMUTH PATTERN Vertical Polarization

Proposal No. **C-70023**  
 Date **11-Feb-17**  
 Call Letters **WJAC 35**  
 Frequency **599 MHz**  
 Antenna Type **TFU-24DSC/VP-R C170**

Gain **2.51 (3.99dB)**  
**Calculated**

Directional  
 Drawing # **C170 VPOL ch 35**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.357	36	0.531	72	0.640	108	0.640	144	0.531	180	0.357	216	0.168	252	0.084	288	0.084
1	0.362	37	0.535	73	0.642	109	0.639	145	0.527	181	0.352	217	0.163	253	0.084	289	0.083
2	0.367	38	0.539	74	0.643	110	0.637	146	0.522	182	0.346	218	0.158	254	0.084	290	0.083
3	0.372	39	0.544	75	0.645	111	0.635	147	0.518	183	0.341	219	0.154	255	0.085	291	0.083
4	0.378	40	0.548	76	0.646	112	0.633	148	0.514	184	0.336	220	0.149	256	0.085	292	0.083
5	0.383	41	0.552	77	0.647	113	0.631	149	0.509	185	0.330	221	0.145	257	0.086	293	0.083
6	0.388	42	0.555	78	0.648	114	0.629	150	0.505	186	0.325	222	0.141	258	0.086	294	0.083
7	0.393	43	0.559	79	0.649	115	0.627	151	0.500	187	0.320	223	0.136	259	0.087	295	0.084
8	0.398	44	0.563	80	0.650	116	0.625	152	0.496	188	0.314	224	0.132	260	0.087	296	0.084
9	0.403	45	0.567	81	0.651	117	0.622	153	0.491	189	0.309	225	0.128	261	0.088	297	0.085
10	0.408	46	0.571	82	0.652	118	0.620	154	0.486	190	0.304	226	0.125	262	0.088	298	0.086
11	0.413	47	0.574	83	0.652	119	0.617	155	0.482	191	0.298	227	0.121	263	0.088	299	0.087
12	0.418	48	0.578	84	0.653	120	0.615	156	0.477	192	0.293	228	0.117	264	0.089	300	0.088
13	0.423	49	0.581	85	0.654	121	0.612	157	0.472	193	0.288	229	0.114	265	0.089	301	0.090
14	0.428	50	0.585	86	0.654	122	0.609	158	0.468	194	0.282	230	0.111	266	0.089	302	0.091
15	0.433	51	0.588	87	0.654	123	0.607	159	0.463	195	0.277	231	0.108	267	0.089	303	0.093
16	0.438	52	0.591	88	0.654	124	0.604	160	0.458	196	0.272	232	0.105	268	0.090	304	0.095
17	0.443	53	0.595	89	0.655	125	0.601	161	0.452	197	0.266	233	0.102	269	0.090	305	0.097
18	0.448	54	0.598	90	0.655	126	0.598	162	0.448	198	0.261	234	0.099	270	0.090	306	0.099
19	0.453	55	0.601	91	0.655	127	0.595	163	0.443	199	0.255	235	0.097	271	0.090	307	0.102
20	0.458	56	0.604	92	0.654	128	0.591	164	0.438	200	0.250	236	0.095	272	0.090	308	0.105
21	0.463	57	0.607	93	0.654	129	0.588	165	0.433	201	0.245	237	0.093	273	0.089	309	0.108
22	0.468	58	0.609	94	0.654	130	0.585	166	0.428	202	0.239	238	0.091	274	0.089	310	0.111
23	0.472	59	0.612	95	0.654	131	0.581	167	0.423	203	0.234	239	0.090	275	0.089	311	0.114
24	0.477	60	0.615	96	0.653	132	0.578	168	0.418	204	0.229	240	0.088	276	0.089	312	0.117
25	0.482	61	0.617	97	0.652	133	0.574	169	0.413	205	0.224	241	0.087	277	0.088	313	0.121
26	0.486	62	0.620	98	0.652	134	0.571	170	0.408	206	0.218	242	0.086	278	0.088	314	0.125
27	0.491	63	0.622	99	0.651	135	0.567	171	0.403	207	0.213	243	0.085	279	0.088	315	0.128
28	0.496	64	0.625	100	0.650	136	0.563	172	0.398	208	0.208	244	0.084	280	0.087	316	0.132
29	0.500	65	0.627	101	0.649	137	0.559	173	0.393	209	0.203	245	0.084	281	0.087	317	0.136
30	0.505	66	0.629	102	0.648	138	0.555	174	0.388	210	0.198	246	0.083	282	0.086	318	0.141
31	0.509	67	0.631	103	0.647	139	0.552	175	0.383	211	0.192	247	0.083	283	0.086	319	0.145
32	0.514	68	0.633	104	0.646	140	0.548	176	0.378	212	0.187	248	0.083	284	0.085	320	0.149
33	0.518	69	0.635	105	0.645	141	0.544	177	0.372	213	0.182	249	0.083	285	0.085	321	0.154
34	0.522	70	0.637	106	0.643	142	0.539	178	0.367	214	0.177	250	0.083	286	0.084	322	0.158
35	0.527	71	0.639	107	0.642	143	0.535	179	0.362	215	0.173	251	0.083	287	0.084	323	0.163

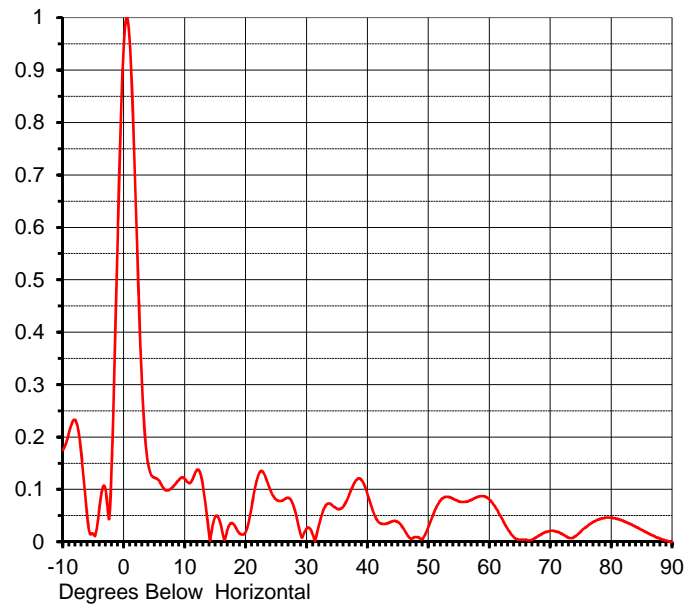
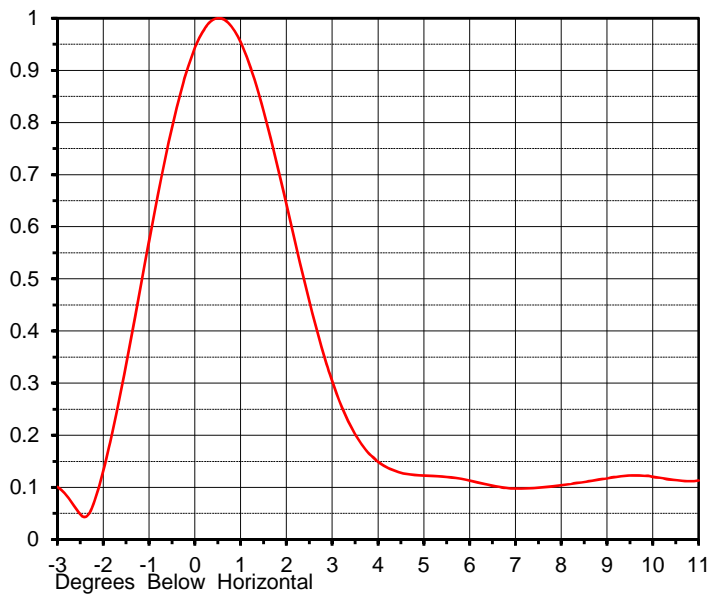
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## ELEVATION PATTERN

Proposal No. **C-70023**  
 Date **11-Feb-17**  
 Call Letters **WJAC 35**  
 Frequency **599 MHz**  
 Antenna Type **TFU-24DSC/VP-R C170**

RMS Directivity at Main Lobe **19.50 ( 12.90 dB )**  
 RMS Directivity at Horizontal **17.30 ( 12.38 dB )**  
**Calculated**

Beam Tilt **0.50 deg**  
 Drawing Number **24Q195050**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.175	10.0	0.120	30.0	0.025	50.0	0.028	70.0	0.021
-9.0	0.206	11.0	0.113	31.0	0.015	51.0	0.058	71.0	0.020
-8.0	0.233	12.0	0.137	32.0	0.029	52.0	0.079	72.0	0.015
-7.0	0.174	13.0	0.108	33.0	0.066	53.0	0.086	73.0	0.008
-6.0	0.051	14.0	0.017	34.0	0.072	54.0	0.083	74.0	0.010
-5.0	0.015	15.0	0.047	35.0	0.063	55.0	0.077	75.0	0.019
-4.0	0.062	16.0	0.029	36.0	0.067	56.0	0.076	76.0	0.029
-3.0	0.101	17.0	0.022	37.0	0.089	57.0	0.080	77.0	0.037
-2.0	0.131	18.0	0.034	38.0	0.115	58.0	0.085	78.0	0.043
-1.0	0.572	19.0	0.016	39.0	0.118	59.0	0.087	79.0	0.046
0.0	0.943	20.0	0.018	40.0	0.092	60.0	0.081	80.0	0.046
1.0	0.954	21.0	0.067	41.0	0.056	61.0	0.066	81.0	0.044
2.0	0.643	22.0	0.124	42.0	0.036	62.0	0.046	82.0	0.040
3.0	0.304	23.0	0.131	43.0	0.034	63.0	0.025	83.0	0.035
4.0	0.149	24.0	0.101	44.0	0.039	64.0	0.009	84.0	0.029
5.0	0.123	25.0	0.081	45.0	0.038	65.0	0.004	85.0	0.023
6.0	0.113	26.0	0.078	46.0	0.024	66.0	0.004	86.0	0.017
7.0	0.098	27.0	0.084	47.0	0.007	67.0	0.004	87.0	0.011
8.0	0.104	28.0	0.064	48.0	0.009	68.0	0.011	88.0	0.006
9.0	0.117	29.0	0.016	49.0	0.005	69.0	0.017	89.0	0.002
								90.0	0.000

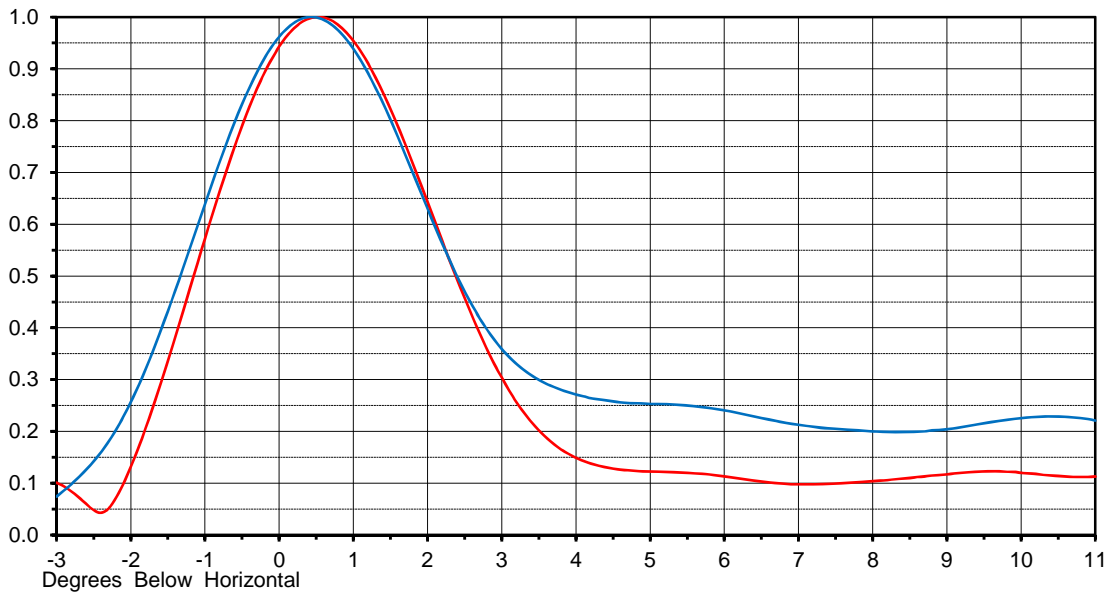
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**FutureFill** refers to the use of predetermined illuminations with broadband panels or limited bandwidth slotted coaxial antennas that can be modified in the field to provide the flexibility to customize the null structure at a future date.

## FutureFill OVERLAY

Proposal No. **C-70023**  
 Date **11-Feb-17**  
 Call Letters **WJAC 35**  
 Frequency **599 MHz**  
 Antenna Type **TFU-24DSC/VP-R C170**

RMS Directivity 19.50 (12.9 dB) Beam Tilt 0.50 Drawing No. 24Q195050 Red  
 RMS Directivity 16.41 (12.2 dB) Beam Tilt 0.45 Drawing No. Blue  
 Calculated



Tabulations for

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.210	10.0	0.226	30.0	0.028	50.0	0.028	70.0	0.005
-9.0	0.306	11.0	0.221	31.0	0.017	51.0	0.022	71.0	0.011
-8.0	0.371	12.0	0.173	32.0	0.039	52.0	0.041	72.0	0.017
-7.0	0.297	13.0	0.071	33.0	0.087	53.0	0.059	73.0	0.022
-6.0	0.152	14.0	0.069	34.0	0.098	54.0	0.071	74.0	0.029
-5.0	0.137	15.0	0.125	35.0	0.090	55.0	0.081	75.0	0.036
-4.0	0.061	16.0	0.089	36.0	0.089	56.0	0.095	76.0	0.042
-3.0	0.074	17.0	0.088	37.0	0.097	57.0	0.113	77.0	0.047
-2.0	0.256	18.0	0.101	38.0	0.105	58.0	0.130	78.0	0.051
-1.0	0.639	19.0	0.077	39.0	0.098	59.0	0.138	79.0	0.051
0.0	0.962	20.0	0.074	40.0	0.072	60.0	0.131	80.0	0.050
1.0	0.939	21.0	0.090	41.0	0.045	61.0	0.111	81.0	0.047
2.0	0.630	22.0	0.117	42.0	0.039	62.0	0.083	82.0	0.042
3.0	0.359	23.0	0.112	43.0	0.056	63.0	0.056	83.0	0.036
4.0	0.271	24.0	0.081	44.0	0.080	64.0	0.041	84.0	0.030
5.0	0.253	25.0	0.066	45.0	0.087	65.0	0.038	85.0	0.024
6.0	0.241	26.0	0.082	46.0	0.069	66.0	0.036	86.0	0.017
7.0	0.213	27.0	0.103	47.0	0.044	67.0	0.029	87.0	0.011
8.0	0.200	28.0	0.082	48.0	0.041	68.0	0.019	88.0	0.006
9.0	0.204	29.0	0.021	49.0	0.042	69.0	0.008	89.0	0.002
								90.0	0.000

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