

# WBAR FM ANTENNA

Electric Field : Phi Pattern  
Theta = 90°

Phi Degrees	Horizontal Polarization Magnitude E/Emax	Vertical Polarization Magnitude E/Emax	SPEC	DES <sub>V</sub> H	DES <sub>V</sub> V
0	0.829	0.514	1	-0.171	-0.486
1	0.823	0.526			
2	0.817	0.541			
3	0.811	0.557			
4	0.807	0.575			
5	0.802	0.595			
6	0.798	0.615			
7	0.795	0.637			
8	0.792	0.659			
9	0.789	0.681			
10	0.788	0.704	1	-0.212	-0.296
11	0.786	0.726			
12	0.785	0.749			
13	0.785	0.771			
14	0.785	0.792			
15	0.785	0.813			
16	0.786	0.833			
17	0.787	0.852			
18	0.788	0.869			
19	0.789	0.886			
20	0.791	0.902	1	-0.209	-0.098
21	0.793	0.916			
22	0.794	0.928			
23	0.796	0.940			
24	0.798	0.949			
25	0.800	0.958			
26	0.801	0.965			
27	0.803	0.970			
28	0.804	0.974			
29	0.806	0.976			
30	0.807	0.977	1	-0.193	-0.023
31	0.808	0.976			
32	0.809	0.974			
33	0.810	0.970			
34	0.810	0.965			
35	0.811	0.958			
36	0.812	0.951			
37	0.812	0.942			
38	0.813	0.932			
39	0.814	0.921			
40	0.814	0.909	1	-0.186	-0.091
41	0.815	0.896			
42	0.816	0.882			
43	0.817	0.867			
44	0.818	0.852			
45	0.820	0.836			
46	0.822	0.820			
47	0.824	0.803			

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Phi Degrees	Horizontal Polarization Magnitude E/Emax	Vertical Polarization Magnitude E/Emax	SPEC   DESV H DESV V		
48	0.827	0.786			
49	0.829	0.769			
50	0.832	0.752	1	-0.168	-0.248
51	0.836	0.735			
52	0.840	0.719			
53	0.844	0.702			
54	0.849	0.686			
55	0.854	0.670			
56	0.859	0.655			
57	0.865	0.640			
58	0.871	0.626			
59	0.877	0.613			
60	0.883	0.600	1	-0.117	-0.400
61	0.890	0.581			
62	0.896	0.571			
63	0.903	0.562			
64	0.910	0.554			
65	0.916	0.548			
66	0.923	0.542			
67	0.930	0.538			
68	0.936	0.535			
69	0.942	0.534			
70	0.948	0.529	1	-0.052	-0.471
71	0.954	0.530			
72	0.960	0.533			
73	0.965	0.536			
74	0.969	0.541			
75	0.974	0.547			
76	0.977	0.555			
77	0.981	0.556			
78	0.984	0.565			
79	0.986	0.575			
80	0.988	0.586	1	-0.012	-0.414
81	0.989	0.589			
82	0.990	0.602			
83	0.990	0.615			
84	0.990	0.628			
85	0.989	0.643			
86	0.988	0.657			
87	0.986	0.662			
88	0.983	0.677			
89	0.980	0.692			
90	0.977	0.699	1	-0.023	-0.301
91	0.973	0.714			
92	0.969	0.729			
93	0.964	0.743			
94	0.959	0.757			
95	0.953	0.771			

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Horizontal Polarization		Vertical Polarization						
Phi	Magnitude	Magnitude	SPEC	DES	V			
Degrees	E/E <sub>max</sub>	E/E <sub>max</sub>						
96	0.947	0.784	1	-0.080	-0.175			
97	0.941	0.796						
98	0.934	0.808						
99	0.927	0.819						
100	0.920	0.825						
101	0.912	0.835						
102	0.904	0.837						
103	0.895	0.843						
104	0.886	0.849						
105	0.877	0.850						
106	0.868	0.852	0.98	-0.132	-0.130			
107	0.858	0.853						
108	0.848	0.850						
109	0.837	0.841						
110	0.826	0.838				0.84	-0.014	-0.002
111	0.815	0.832						
112	0.803	0.826						
113	0.791	0.820						
114	0.779	0.811						
115	0.766	0.801						
116	0.753	0.790						
117	0.739	0.777						
118	0.725	0.763						
119	0.711	0.747	0.729	-0.032	0.000			
120	0.697	0.729						
121	0.682	0.715						
122	0.667	0.701						
123	0.651	0.687						
124	0.636	0.672						
125	0.620	0.658						
126	0.605	0.644						
127	0.589	0.629						
128	0.574	0.615				0.62	-0.076	-0.065
129	0.559	0.585						
130	0.544	0.555						
131	0.530	0.524						
132	0.516	0.493						
133	0.503	0.462						
134	0.491	0.431						
135	0.480	0.401						
136	0.471	0.371						
137	0.462	0.343	0.574	-0.128	-0.301			
138	0.455	0.317						
139	0.450	0.293						
140	0.446	0.273						
141	0.444	0.257						
142	0.444	0.246						
143	0.445	0.242						

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Phi Degrees	Horizontal Polarization Magnitude E/Emax	Vertical Polarization Magnitude E/Emax	SPEC	DESIGN	
				DESIGN H	DESIGN V
144	0.448	0.243	0.58	-0.132	-0.337
145	0.453	0.251			
146	0.459	0.264			
147	0.466	0.282			
148	0.474	0.303			
149	0.484	0.327			
150	0.494	0.353	0.586	-0.092	-0.233
151	0.505	0.380			
152	0.517	0.408			
153	0.529	0.436			
154	0.541	0.465			
155	0.553	0.494			
156	0.566	0.522			
157	0.578	0.550			
158	0.591	0.578			
159	0.603	0.605			
160	0.615	0.632	0.696	-0.081	-0.064
161	0.626	0.658			
162	0.638	0.683			
163	0.649	0.707			
164	0.659	0.730			
165	0.669	0.753			
166	0.679	0.775			
167	0.689	0.796			
168	0.698	0.816			
169	0.706	0.834			
170	0.715	0.852	0.876	-0.161	-0.024
171	0.723	0.869			
172	0.730	0.885			
173	0.738	0.900	0.983	-0.245	-0.083
174	0.745	0.914			
175	0.752	0.927			
176	0.758	0.938			
177	0.765	0.949			
178	0.771	0.959			
179	0.777	0.967			
180	0.783	0.975	1	-0.217	-0.025
181	0.789	0.982			
182	0.795	0.987			
183	0.801	0.992			
184	0.807	0.995			
185	0.813	0.998			
186	0.819	0.999			
187	0.825	1.000			
188	0.831	1.000			
189	0.837	0.999			
190	0.843	0.997	1	-0.157	-0.003
191	0.849	0.994			

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Phi Degrees	Horizontal Polarization Magnitude E/Emax	Vertical Polarization Magnitude E/Emax	SPEC   DESV H DESV V		
192	0.856	0.990			
193	0.862	0.986			
194	0.869	0.981			
195	0.875	0.975			
196	0.882	0.969			
197	0.889	0.962			
198	0.896	0.954			
199	0.902	0.946			
200	0.909	0.938	1	-0.091	-0.062
201	0.916	0.929			
202	0.923	0.919			
203	0.929	0.909			
204	0.936	0.899			
205	0.942	0.889			
206	0.949	0.878			
207	0.955	0.866			
208	0.960	0.855			
209	0.966	0.843			
210	0.971	0.830	1	-0.029	-0.170
211	0.976	0.818			
212	0.981	0.805			
213	0.985	0.792			
214	0.988	0.778			
215	0.992	0.764			
216	0.994	0.750			
217	0.997	0.736			
218	0.998	0.721			
219	0.999	0.707			
220	1.000	0.691	1	0.000	-0.309
221	1.000	0.676			
222	0.999	0.660			
223	0.998	0.645			
224	0.997	0.629			
225	0.994	0.613			
226	0.991	0.597			
227	0.988	0.581			
228	0.984	0.566			
229	0.980	0.551			
230	0.975	0.536	1	-0.025	-0.464
231	0.970	0.522			
232	0.965	0.509			
233	0.960	0.496			
234	0.954	0.485			
235	0.948	0.475			
236	0.942	0.467			
237	0.936	0.460			
238	0.931	0.455			
239	0.925	0.453			

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Phi Degrees	Horizontal Polarization Magnitude E/Emax	Vertical Polarization Magnitude E/Emax	SPEC	DES <sub>V</sub> H	DES <sub>V</sub> V
240	0.920	0.452	1	-0.080	-0.548
241	0.915	0.453			
242	0.910	0.457			
243	0.906	0.463			
244	0.902	0.470			
245	0.899	0.480			
246	0.896	0.492			
247	0.895	0.504			
248	0.893	0.519			
249	0.893	0.534			
250	0.893	0.551	1	-0.107	-0.449
251	0.893	0.568			
252	0.894	0.586			
253	0.896	0.604			
254	0.898	0.623			
255	0.901	0.641			
256	0.904	0.660			
257	0.908	0.679			
258	0.912	0.697			
259	0.916	0.714			
260	0.920	0.732	1	-0.080	-0.268
261	0.925	0.749			
262	0.929	0.765			
263	0.933	0.780			
264	0.937	0.795			
265	0.941	0.809			
266	0.945	0.822			
267	0.948	0.834			
268	0.951	0.846			
269	0.954	0.857			
270	0.956	0.866	1	-0.044	-0.134
271	0.957	0.875			
272	0.959	0.883			
273	0.959	0.890			
274	0.959	0.896			
275	0.959	0.902			
276	0.958	0.906			
277	0.957	0.910			
278	0.955	0.913			
279	0.952	0.915			
280	0.950	0.917	1	-0.050	-0.083
281	0.946	0.918			
282	0.943	0.918			
283	0.939	0.917			
284	0.935	0.916			
285	0.930	0.915			
286	0.925	0.912			
287	0.921	0.910			

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Phi Degrees	Horizontal Polarization Magnitude E/Emax	Vertical Polarization Magnitude E/Emax	SPEC   <b>DESV H DESV V</b>		
288	0.916	0.906	1 -0.094 -0.101		
289	0.911	0.903			
290	0.906	0.899			
291	0.901	0.894			
292	0.897	0.889			
293	0.892	0.884			
294	0.888	0.878			
295	0.884	0.873	1 -0.131 -0.159		
296	0.880	0.867			
297	0.877	0.860			
298	0.874	0.854			
299	0.871	0.847			
300	0.869	0.841			
301	0.868	0.834	1 -0.129 -0.223		
302	0.866	0.827			
303	0.865	0.820			
304	0.865	0.814			
305	0.865	0.807			
306	0.865	0.801			
307	0.866	0.794			
308	0.867	0.788	1 -0.097 -0.260		
309	0.869	0.783			
310	0.871	0.777			
311	0.873	0.772			
312	0.875	0.767			
313	0.878	0.762			
314	0.881	0.758			
315	0.884	0.754	1 -0.062 -0.285		
316	0.888	0.751			
317	0.892	0.748			
318	0.895	0.745			
319	0.899	0.743			
320	0.903	0.740			
321	0.907	0.738			
322	0.911	0.736			
323	0.915	0.734			
324	0.919	0.732			
325	0.922	0.730			
326	0.926	0.728			
327	0.929	0.725			
328	0.932	0.722			
329	0.935	0.719			
330	0.938	0.715			
331	0.940	0.711			
332	0.942	0.706			
333	0.943	0.700			
334	0.944	0.694			
335	0.945	0.687			

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Horizontal Polarization		Vertical Polarization			
Phi	Magnitude	Magnitude	SPEC	DES	V
Degrees	E/Emax	E/Emax			
336	0.945	0.679	1	-0.059	-0.359
337	0.945	0.671			
338	0.944	0.662			
339	0.943	0.652			
340	0.941	0.641			
341	0.939	0.630			
342	0.936	0.618			
343	0.933	0.606			
344	0.929	0.593			
345	0.924	0.580			
346	0.920	0.567	1	-0.103	-0.480
347	0.915	0.555			
348	0.909	0.542			
349	0.903	0.531			
350	0.897	0.520			
351	0.890	0.510			
352	0.884	0.502			
353	0.877	0.496			
354	0.870	0.491			
355	0.863	0.489			
356	0.856	0.489	1	-0.171	-0.486
357	0.849	0.491			
358	0.842	0.496			
359	0.835	0.504			
360	0.829	0.514			