



ENGENHARIA DE RADIOFREQUÊNCIA

Datasheet Técnico

Antena FM circular AFCAN

Modelo: AFCAN

Categoria: Broadcast FM

Fonte: Estado não informado

Revisão/Data: não declarada · não declarada

Publicação: versão 1.2



VALIDAÇÃO ON-LINE

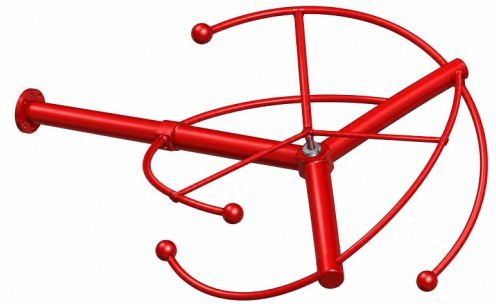
EFTX-DS-BROADCAST-FM-AFCAN

Escaneie ou acesse a URL. Para autenticar esta cópia digital, envie o arquivo completo ao validador; páginas ou QR copiados para outro documento serão recusados.

Validar em:
<https://eftx.com.br/validar/EFTX-DS-BROADCAST-FM-AFCAN/1.2>



Antena FM omnidirecional em polarização circular
 Antena de media potência até 5kW por elemento
 Alimentação interna com pressurização plena
 Capacidade de "tilt" e "null-fill"
 Montagem topo / lateral, pré sintonizada em fábrica
 Construção robusta em linha rígida coaxial
 Opções de ganho e separação vertical de λ ou $\lambda/2$

**Especificações****AFCAN**

Faixa de Frequência	FM - 76 até 108 MHz
Polarização	circular direita
Circularidade por polarização	< 1,5 dB @ espaço livre
Relação Axial (RA)	> 0,8 @ espaço livre
Diagrama vertical	"tilt" e "null fill" opcional - CONSULTE
Ganho de potência	vide tabela " Ganho vs. Modelo "
Impedância de entrada	50 Ohms
VSWR máx @ +/- 200 kHz	1,2 : 1 @ montagem topo / 1,5 : 1 @ montagem lateral 1,07 : 1 @ montagem lateral ou topo com sintonizador
Conector de entrada do sistema	EIA 1 5/8" , 3 1/8" compatível com a potência máx especificada
Potência máx por elemento	5kW @ EIA 1 5/8"
Pressurização	plena
Dimensões e esforços	vide tabela " Características Mecânicas "
Velocidade vento máx	180 Km/h

Material da antena	Elementos de cobre, latão e alumínio soldados em processo TIG/MIG Fixadores de inox ,Isoladores de PTFE e de fibra de vidro Compatibilidade galvânica entre os vários componentes da antena
Conexões Internas	Linha rígida com conexões internas com tratamento de prata
Montagem	Para cada elemento é fornecido a ferragem padrão para fixação traseira em tubos de diâmetro de 115 a 305 mm
Aterramento	Por intermédio da própria estrutura da antena
Embalagem	Todos os modelos são fornecidos com embalagem em separado para os elementos radiantes, linhas rígidas e ferragem de fixação
Variações	Alimentação inferior (end-feed) ou central (center-feed) com linha rígida Configurações acima de 8 níveis de empilhamento – CONSULTE Diagramas dedicados ou direcionais – CONSULTE Opção de separação $\lambda/2$ para redução de radiação não ionizante

AFCAN – {# níveis} – {frequência} – {potência}

1,2,3,4,5,6,7,8

76 até 108

em kW

Biblioteca com diagramas de radiação e composições especiais "tilt" e "null-fill" disponíveis para edicao e download
 Antenna Composer EFTX

Disponível para assinantes .

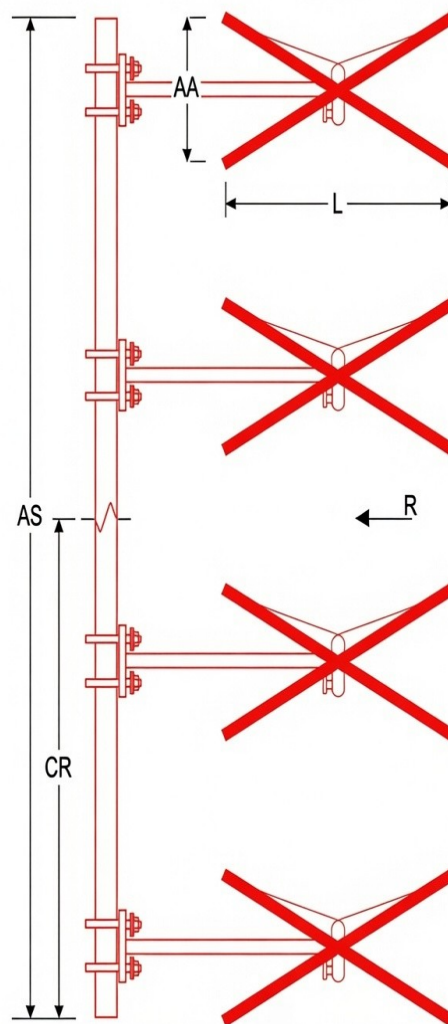
Ganho vs. Modelo

Modelo	dBd
AFCAN-1	-2,39
AFCAN-2	0,18
AFCAN-3	1,80
AFCAN-4	2,99
AFCAN-5	3,92
AFCAN-6	4,68
AFCAN-7	5,33
AFCAN-8	5,90

ganho para cada componente de polarização sem "tilt" e "null fill"

Características Mecânicas – dimensões e esforços

Modelo	MHz	Lateral		Topo	
		AS(*)	CR	AS	CR
AFCAN-1	76	0,52	0,26	2,52	2,26
	88	0,52	0,26	2,52	2,26
	98	0,52	0,26	2,52	2,26
	108	0,52	0,26	2,52	2,26
AFCAN-2	76	4,47	2,23	6,47	4,23
	88	3,93	1,96	5,93	3,96
	98	3,58	1,79	5,58	3,79
	108	3,30	1,65	5,30	3,65
AFCAN-3	76	8,41	4,21	10,41	6,21
	88	7,34	3,67	9,34	5,67
	98	6,64	3,32	8,64	5,32
	108	6,08	3,04	8,08	5,04
AFCAN-4	76	12,36	6,18	14,36	8,18
	88	10,7	5,37	12,7	7,37
	98	9,70	4,85	11,7	6,85
	108	8,85	4,43	10,9	6,43
AFCAN-5	76	16,31	8,15	18,31	10,15
	88	14,2	7,08	16,2	9,08
	98	12,8	6,38	14,8	8,38
	108	11,6	5,82	13,6	7,82
AFCAN-6	76	20,26	10,13	22,26	12,13
	88	17,6	8,78	19,6	10,8
	98	15,8	7,91	17,8	9,91
	108	14,4	7,20	16,4	9,20
AFCAN-7	76	24,20	12,10	26,20	14,10
	88	21,0	10,5	23,0	12,5
	98	18,9	9,44	20,9	11,4
	108	17,2	8,59	19,2	10,6
AFCAN-8	76	28,15	14,08	30,15	16,08
	88	24,4	12,2	26,4	14,2
	98	21,9	11,0	23,9	13,0



AS altura do sistema em m
CR centro de radiação em m
AA altura da antena em m
L largura da antena em m
AE área de exposição (CaAc) em m²
P peso da antena em Kg

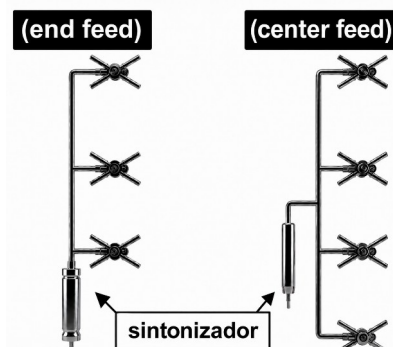
AS válido somente para alimentação central (center fed), acrescentar aprox. 2,4 m para alimentação inferior (end feed)

Modelo	AA	L	AE	P
AFCAN-1	0,41	0,81	0,16	4
AFCAN-2			0,32	9
AFCAN-3			0,48	13
AFCAN-4			0,64	17
AFCAN-5			0,80	21
AFCAN-6			0,96	26
AFCAN-7			1,12	30
AFCAN-8			1,28	34

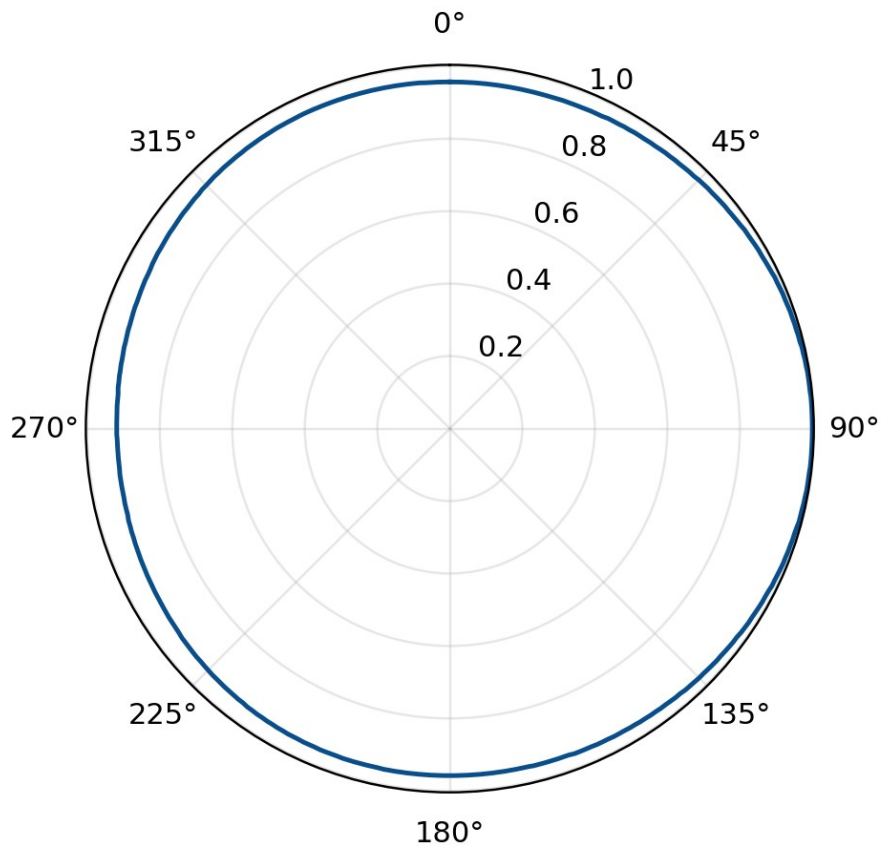
AE e P considerando interconexão dos elementos em linha rígida de 1 5/8"

Alimentação com LINHA RÍGIDA

Antenas especificadas com "tilt" e / ou "null -fill" são fornecidas com alimentação central ("center feed") e devem apresentar preferencialmente número par de níveis.



Azimuth



Parâmetros da configuração

ÂNGULO DE MEIA POTÊNCIA HORIZONTAL

359.00°

GANHO

-2.39 dBd

FRENTE/COSTAS

0.33 dB

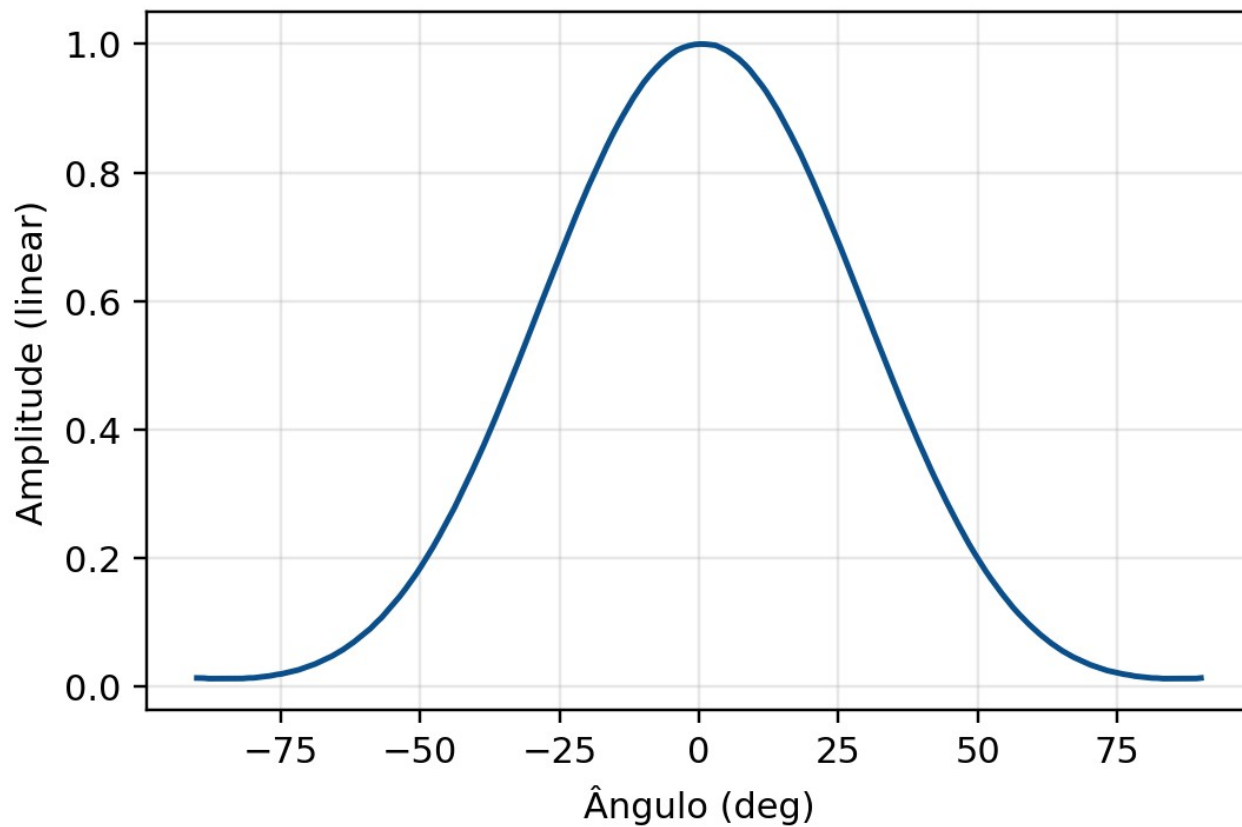
RIPPLE

0.74 dB

Tabela completa - Azimute

Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB
0°	0.9570	0.38	73°	0.9940	0.05	146°	0.9650	0.31	219°	0.9470	0.47	292°	0.9310	0.62
1°	0.9570	0.38	74°	0.9940	0.05	147°	0.9650	0.31	220°	0.9460	0.48	293°	0.9320	0.61
2°	0.9570	0.38	75°	0.9950	0.04	148°	0.9640	0.32	221°	0.9460	0.48	294°	0.9330	0.60
3°	0.9570	0.38	76°	0.9950	0.04	149°	0.9640	0.32	222°	0.9450	0.49	295°	0.9340	0.59
4°	0.9570	0.38	77°	0.9970	0.03	150°	0.9630	0.33	223°	0.9440	0.50	296°	0.9350	0.58
5°	0.9570	0.38	78°	0.9970	0.03	151°	0.9630	0.33	224°	0.9440	0.50	297°	0.9350	0.58
6°	0.9570	0.38	79°	0.9980	0.02	152°	0.9630	0.33	225°	0.9430	0.51	298°	0.9360	0.57
7°	0.9570	0.38	80°	0.9980	0.02	153°	0.9620	0.34	226°	0.9420	0.52	299°	0.9380	0.56
8°	0.9570	0.38	81°	0.9990	0.01	154°	0.9620	0.34	227°	0.9410	0.53	300°	0.9390	0.55
9°	0.9570	0.38	82°	0.9990	0.01	155°	0.9620	0.34	228°	0.9410	0.53	301°	0.9400	0.54
10°	0.9570	0.38	83°	0.9990	0.01	156°	0.9610	0.35	229°	0.9400	0.54	302°	0.9400	0.54
11°	0.9570	0.38	84°	0.9990	0.01	157°	0.9610	0.35	230°	0.9390	0.55	303°	0.9410	0.53
12°	0.9570	0.38	85°	1.0000	0.00	158°	0.9610	0.35	231°	0.9380	0.56	304°	0.9420	0.52
13°	0.9570	0.38	86°	1.0000	0.00	159°	0.9610	0.35	232°	0.9380	0.56	305°	0.9430	0.51
14°	0.9570	0.38	87°	1.0000	0.00	160°	0.9590	0.36	233°	0.9360	0.57	306°	0.9430	0.51
15°	0.9570	0.38	88°	1.0000	0.00	161°	0.9590	0.36	234°	0.9350	0.58	307°	0.9440	0.50
16°	0.9570	0.38	89°	1.0000	0.00	162°	0.9590	0.36	235°	0.9340	0.59	308°	0.9450	0.49
17°	0.9570	0.38	90°	1.0000	0.00	163°	0.9590	0.36	236°	0.9340	0.59	309°	0.9460	0.48
18°	0.9570	0.38	91°	1.0000	0.00	164°	0.9590	0.36	237°	0.9330	0.60	310°	0.9460	0.48
19°	0.9580	0.37	92°	1.0000	0.00	165°	0.9590	0.36	238°	0.9320	0.61	311°	0.9470	0.47
20°	0.9580	0.37	93°	1.0000	0.00	166°	0.9590	0.36	239°	0.9310	0.62	312°	0.9480	0.46
21°	0.9580	0.37	94°	1.0000	0.00	167°	0.9580	0.37	240°	0.9300	0.63	313°	0.9480	0.46
22°	0.9580	0.37	95°	1.0000	0.00	168°	0.9580	0.37	241°	0.9300	0.63	314°	0.9500	0.45
23°	0.9580	0.37	96°	1.0000	0.00	169°	0.9580	0.37	242°	0.9290	0.64	315°	0.9500	0.45
24°	0.9590	0.36	97°	0.9990	0.01	170°	0.9580	0.37	243°	0.9280	0.65	316°	0.9510	0.44
25°	0.9590	0.36	98°	0.9990	0.01	171°	0.9580	0.37	244°	0.9280	0.65	317°	0.9520	0.43
26°	0.9590	0.36	99°	0.9990	0.01	172°	0.9580	0.37	245°	0.9270	0.66	318°	0.9520	0.43
27°	0.9610	0.35	100°	0.9990	0.01	173°	0.9580	0.37	246°	0.9260	0.67	319°	0.9530	0.42
28°	0.9610	0.35	101°	0.9980	0.02	174°	0.9580	0.37	247°	0.9260	0.67	320°	0.9530	0.42
29°	0.9610	0.35	102°	0.9980	0.02	175°	0.9580	0.37	248°	0.9250	0.68	321°	0.9530	0.42
30°	0.9620	0.34	103°	0.9970	0.03	176°	0.9580	0.37	249°	0.9240	0.69	322°	0.9540	0.41
31°	0.9620	0.34	104°	0.9970	0.03	177°	0.9580	0.37	250°	0.9240	0.69	323°	0.9540	0.41
32°	0.9630	0.33	105°	0.9970	0.03	178°	0.9580	0.37	251°	0.9230	0.70	324°	0.9550	0.40
33°	0.9630	0.33	106°	0.9950	0.04	179°	0.9580	0.37	252°	0.9230	0.70	325°	0.9550	0.40
34°	0.9630	0.33	107°	0.9940	0.05	180°	0.9580	0.37	253°	0.9220	0.71	326°	0.9550	0.40
35°	0.9640	0.32	108°	0.9940	0.05	181°	0.9580	0.37	254°	0.9220	0.71	327°	0.9560	0.39
36°	0.9640	0.32	109°	0.9930	0.06	182°	0.9580	0.37	255°	0.9200	0.72	328°	0.9560	0.39
37°	0.9650	0.31	110°	0.9930	0.06	183°	0.9580	0.37	256°	0.9200	0.72	329°	0.9560	0.39
38°	0.9660	0.30	111°	0.9920	0.07	184°	0.9580	0.37	257°	0.9200	0.72	330°	0.9570	0.38
39°	0.9660	0.30	112°	0.9920	0.07	185°	0.9580	0.37	258°	0.9190	0.73	331°	0.9570	0.38
40°	0.9670	0.29	113°	0.9910	0.08	186°	0.9580	0.37	259°	0.9190	0.73	332°	0.9570	0.38
41°	0.9670	0.29	114°	0.9900	0.09	187°	0.9580	0.37	260°	0.9190	0.73	333°	0.9570	0.38
42°	0.9680	0.28	115°	0.9890	0.10	188°	0.9580	0.37	261°	0.9190	0.73	334°	0.9570	0.38
43°	0.9690	0.27	116°	0.9890	0.10	189°	0.9580	0.37	262°	0.9190	0.73	335°	0.9580	0.37
44°	0.9690	0.27	117°	0.9870	0.11	190°	0.9580	0.37	263°	0.9180	0.74	336°	0.9580	0.37
45°	0.9710	0.26	118°	0.9860	0.12	191°	0.9580	0.37	264°	0.9180	0.74	337°	0.9580	0.37
46°	0.9720	0.25	119°	0.9860	0.12	192°	0.9570	0.38	265°	0.9180	0.74	338°	0.9580	0.37
47°	0.9730	0.24	120°	0.9850	0.13	193°	0.9570	0.38	266°	0.9180	0.74	339°	0.9580	0.37
48°	0.9730	0.24	121°	0.9840	0.14	194°	0.9570	0.38	267°	0.9180	0.74	340°	0.9580	0.37
49°	0.9740	0.23	122°	0.9830	0.15	195°	0.9570	0.38	268°	0.9180	0.74	341°	0.9580	0.37
50°	0.9750	0.22	123°	0.9830	0.15	196°	0.9570	0.38	269°	0.9190	0.73	342°	0.9580	0.37
51°	0.9760	0.21	124°	0.9820	0.16	197°	0.9570	0.38	270°	0.9190	0.73	343°	0.9580	0.37
52°	0.9760	0.21	125°	0.9810	0.17	198°	0.9570	0.38	271°	0.9190	0.73	344°	0.9580	0.37
53°	0.9770	0.20	126°	0.9790	0.18	199°	0.9560	0.39	272°	0.9190	0.73	345°	0.9580	0.37
54°	0.9780	0.19	127°	0.9790	0.18	200°	0.9560	0.39	273°	0.9190	0.73	346°	0.9580	0.37
55°	0.9790	0.18	128°	0.9780	0.19	201°	0.9560	0.39	274°	0.9200	0.72	347°	0.9580	0.37
56°	0.9810	0.17	129°	0.9770	0.20	202°	0.9560	0.39	275°	0.9200	0.72	348°	0.9580	0.37
57°	0.9810	0.17	130°	0.9760	0.21	203°	0.9550	0.40	276°	0.9200	0.72	349°	0.9580	0.37
58°	0.9820	0.16	131°	0.9760	0.21	204°	0.9550	0.40	277°	0.9220	0.71	350°	0.9580	0.37
59°	0.9830	0.15	132°	0.9750	0.22	205°	0.9550	0.40	278°	0.9220	0.71	351°	0.9580	0.37
60°	0.9840	0.14	133°	0.9740	0.23	206°	0.9540	0.41	279°	0.9230	0.70	352°	0.9580	0.37
61°	0.9840	0.14	134°	0.9730	0.24	207°	0.9540	0.41	280°	0.9230	0.70	353°	0.9580	0.37
62°	0.9850	0.13	135°	0.9730	0.24	208°	0.9540	0.41	281°	0.9240	0.69	354°	0.9580	0.37
63°	0.9860	0.12	136°	0.9720	0.25	209°	0.9530	0.42	282°	0.9240	0.69	355°	0.9580	0.37
64°	0.9870	0.11	137°	0.9710	0.26	210°	0.9530	0.42	283°	0.9250	0.68	356°	0.9570	0.38
65°	0.9890	0.10	138°	0.9710	0.26	211°	0.9520	0.43	284°	0.9260	0.67	357°	0.9570	0.38
66°	0.9890	0.10	139°	0.9690	0.27	212°	0.9520	0.43	285°	0.9260	0.67	358°	0.9570	0.38
67°	0.9900	0.09	140°	0.9690	0.27	213°	0.9510	0.44	286°	0.9270	0.66	359°	0.9570	0.38
68°	0.9910	0.08	141°	0.9680	0.28	214°	0.9510	0.44	287°	0.9280	0.65	360°	0.9570	0.38
69°	0.9910	0.08	142°	0.9670	0.29	215°	0.9500	0.45	288°	0.9280	0.65			
70°	0.9920	0.07	143°	0.9670	0.29	216°	0.9500	0.45	289°	0.9290	0.64			
71°	0.9930	0.06	144°	0.9660	0.30	217°	0.9480	0.46	290°	0.9300	0.63			
72°	0.9930	0.06	145°	0.9660	0.30	218°	0.9480	0.46	291°	0.9310	0.62			

Elevação



Parâmetros da configuração

ELEMENTOS VERTICAIS

1

ÂNGULO DE MEIA POTÊNCIA VERTICAL

48.23°

GANHO

-2.39 dBd

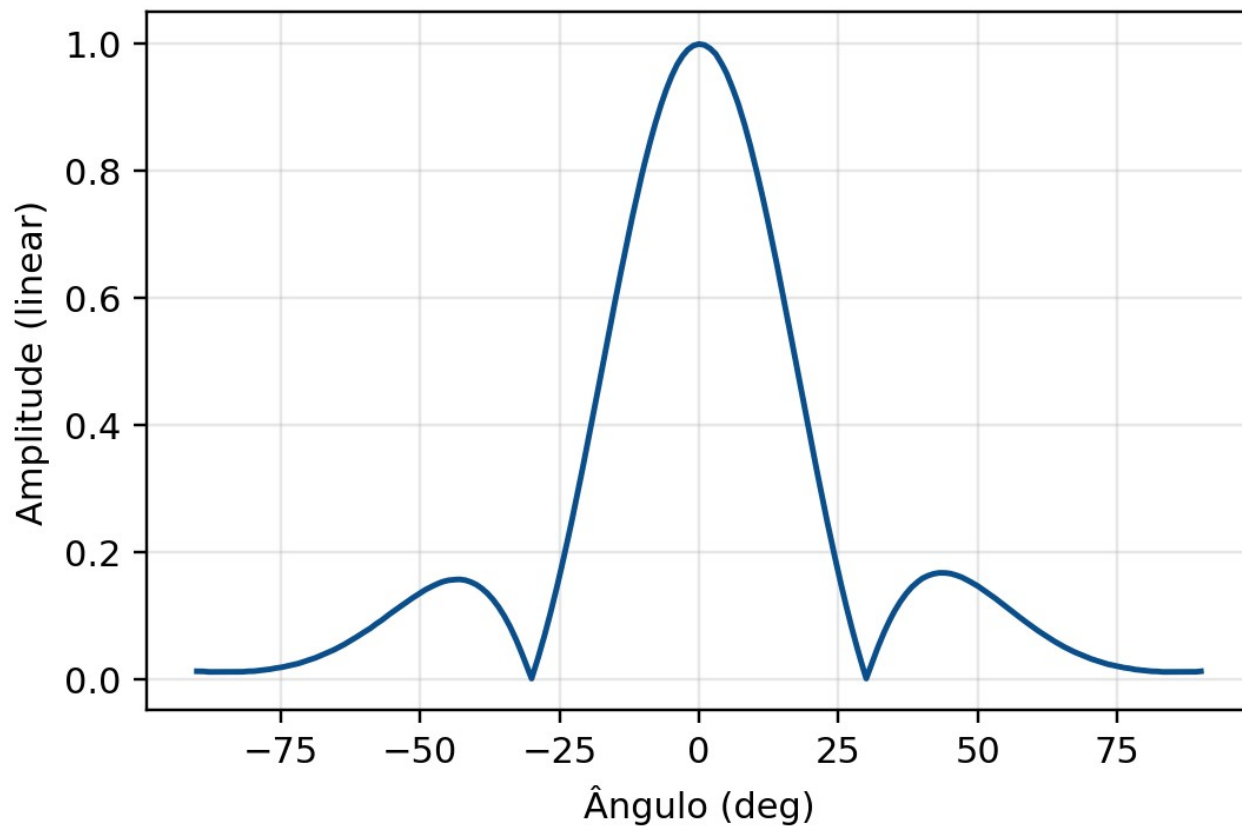
PRIMEIRO NULO

67.00°

Tabela completa - Elevação

Ângulo	E/Emax	Aten. dB	Ângulo	E/Emax	Aten. dB	Ângulo	E/Emax	Aten. dB	Ângulo	E/Emax	Aten. dB	Ângulo	E/Emax	Aten. dB
-90.0°	0.0130	37.72	-54.0°	0.1360	17.33	-18.0°	0.8130	1.80	18.0°	0.8330	1.59	54.0°	0.1480	16.59
-89.5°	0.0130	37.72	-53.5°	0.1415	16.98	-17.5°	0.8225	1.70	18.5°	0.8235	1.69	54.5°	0.1425	16.92
-89.0°	0.0130	37.72	-53.0°	0.1470	16.65	-17.0°	0.8320	1.60	19.0°	0.8140	1.79	55.0°	0.1370	17.27
-88.5°	0.0125	38.06	-52.5°	0.1530	16.31	-16.5°	0.8410	1.50	19.5°	0.8045	1.89	55.5°	0.1315	17.62
-88.0°	0.0120	38.42	-52.0°	0.1590	15.97	-16.0°	0.8500	1.41	20.0°	0.7950	1.99	56.0°	0.1260	17.99
-87.5°	0.0120	38.42	-51.5°	0.1650	15.65	-15.5°	0.8585	1.33	20.5°	0.7850	2.10	56.5°	0.1210	18.34
-87.0°	0.0120	38.42	-51.0°	0.1710	15.34	-15.0°	0.8670	1.24	21.0°	0.7750	2.21	57.0°	0.1160	18.71
-86.5°	0.0120	38.42	-50.5°	0.1775	15.02	-14.5°	0.8750	1.16	21.5°	0.7650	2.33	57.5°	0.1115	19.05
-86.0°	0.0120	38.42	-50.0°	0.1840	14.70	-14.0°	0.8830	1.08	22.0°	0.7550	2.44	58.0°	0.1070	19.41
-85.5°	0.0120	38.42	-49.5°	0.1910	14.38	-13.5°	0.8905	1.01	22.5°	0.7445	2.56	58.5°	0.1025	19.79
-85.0°	0.0120	38.42	-49.0°	0.1980	14.07	-13.0°	0.8980	0.93	23.0°	0.7340	2.69	59.0°	0.0980	20.18
-84.5°	0.0120	38.42	-48.5°	0.2050	13.76	-12.5°	0.9055	0.86	23.5°	0.7235	2.81	59.5°	0.0940	20.54
-84.0°	0.0120	38.42	-48.0°	0.2120	13.47	-12.0°	0.9130	0.79	24.0°	0.7130	2.94	60.0°	0.0900	20.92
-83.5°	0.0120	38.42	-47.5°	0.2195	13.17	-11.5°	0.9195	0.73	24.5°	0.7025	3.07	60.5°	0.0860	21.31
-83.0°	0.0120	38.42	-47.0°	0.2270	12.88	-11.0°	0.9260	0.67	25.0°	0.6920	3.20	61.0°	0.0820	21.72
-82.5°	0.0120	38.42	-46.5°	0.2350	12.58	-10.5°	0.9325	0.61	25.5°	0.6810	3.34	61.5°	0.0785	22.10
-82.0°	0.0120	38.42	-46.0°	0.2430	12.29	-10.0°	0.9390	0.55	26.0°	0.6700	3.48	62.0°	0.0750	22.50
-81.5°	0.0125	38.06	-45.5°	0.2510	12.01	-9.5°	0.9445	0.50	26.5°	0.6590	3.62	62.5°	0.0715	22.91
-81.0°	0.0130	37.72	-45.0°	0.2590	11.73	-9.0°	0.9500	0.45	27.0°	0.6480	3.77	63.0°	0.0680	23.35
-80.5°	0.0130	37.72	-44.5°	0.2670	11.47	-8.5°	0.9550	0.40	27.5°	0.6370	3.92	63.5°	0.0650	23.74
-80.0°	0.0130	37.72	-44.0°	0.2750	11.21	-8.0°	0.9600	0.35	28.0°	0.6260	4.07	64.0°	0.0620	24.15
-79.5°	0.0135	37.39	-43.5°	0.2840	10.93	-7.5°	0.9645	0.31	28.5°	0.6150	4.22	64.5°	0.0590	24.58
-79.0°	0.0140	37.08	-43.0°	0.2930	10.66	-7.0°	0.9690	0.27	29.0°	0.6040	4.38	65.0°	0.0560	25.04
-78.5°	0.0145	36.77	-42.5°	0.3020	10.40	-6.5°	0.9730	0.24	29.5°	0.5930	4.54	65.5°	0.0535	25.43
-78.0°	0.0150	36.48	-42.0°	0.3110	10.14	-6.0°	0.9770	0.20	30.0°	0.5820	4.70	66.0°	0.0510	25.85
-77.5°	0.0155	36.19	-41.5°	0.3200	9.90	-5.5°	0.9805	0.17	30.5°	0.5705	4.87	66.5°	0.0485	26.29
-77.0°	0.0160	35.92	-41.0°	0.3290	9.66	-5.0°	0.9840	0.14	31.0°	0.5590	5.05	67.0°	0.0460	26.74
-76.5°	0.0170	35.39	-40.5°	0.3385	9.41	-4.5°	0.9870	0.11	31.5°	0.5480	5.22	67.5°	0.0440	27.13
-76.0°	0.0180	34.89	-40.0°	0.3480	9.17	-4.0°	0.9900	0.09	32.0°	0.5370	5.40	68.0°	0.0420	27.53
-75.5°	0.0185	34.66	-39.5°	0.3575	8.93	-3.5°	0.9920	0.07	32.5°	0.5260	5.58	68.5°	0.0400	27.96
-75.0°	0.0190	34.42	-39.0°	0.3670	8.71	-3.0°	0.9940	0.05	33.0°	0.5150	5.76	69.0°	0.0380	28.40
-74.5°	0.0200	33.98	-38.5°	0.3770	8.47	-2.5°	0.9955	0.04	33.5°	0.5040	5.95	69.5°	0.0360	28.87
-74.0°	0.0210	33.56	-38.0°	0.3870	8.25	-2.0°	0.9970	0.03	34.0°	0.4930	6.14	70.0°	0.0340	29.37
-73.5°	0.0220	33.15	-37.5°	0.3970	8.02	-1.5°	0.9980	0.02	34.5°	0.4825	6.33	70.5°	0.0325	29.76
-73.0°	0.0230	32.77	-37.0°	0.4070	7.81	-1.0°	0.9990	0.01	35.0°	0.4720	6.52	71.0°	0.0310	30.17
-72.5°	0.0240	32.40	-36.5°	0.4175	7.59	-0.5°	0.9995	0.00	35.5°	0.4610	6.73	71.5°	0.0295	30.60
-72.0°	0.0250	32.04	-36.0°	0.4280	7.37	0.0°	1.0000	0.00	36.0°	0.4500	6.94	72.0°	0.0280	31.06
-71.5°	0.0265	31.54	-35.5°	0.4385	7.16	0.5°	1.0000	0.00	36.5°	0.4395	7.14	72.5°	0.0265	31.54
-71.0°	0.0280	31.06	-35.0°	0.4490	6.96	1.0°	1.0000	0.00	37.0°	0.4290	7.35	73.0°	0.0250	32.04
-70.5°	0.0295	30.60	-34.5°	0.4600	6.74	1.5°	0.9995	0.00	37.5°	0.4190	7.56	73.5°	0.0240	32.40
-70.0°	0.0310	30.17	-34.0°	0.4710	6.54	2.0°	0.9990	0.01	38.0°	0.4090	7.77	74.0°	0.0230	32.77
-69.5°	0.0325	29.76	-33.5°	0.4815	6.35	2.5°	0.9985	0.01	38.5°	0.3985	7.99	74.5°	0.0220	33.15
-69.0°	0.0340	29.37	-33.0°	0.4920	6.16	3.0°	0.9980	0.02	39.0°	0.3880	8.22	75.0°	0.0210	33.56
-68.5°	0.0360	28.87	-32.5°	0.5030	5.97	3.5°	0.9960	0.03	39.5°	0.3785	8.44	75.5°	0.0200	33.98
-68.0°	0.0380	28.40	-32.0°	0.5140	5.78	4.0°	0.9940	0.05	40.0°	0.3690	8.66	76.0°	0.0190	34.42
-67.5°	0.0400	27.96	-31.5°	0.5250	5.60	4.5°	0.9920	0.07	40.5°	0.3590	8.90	76.5°	0.0185	34.66
-67.0°	0.0420	27.53	-31.0°	0.5360	5.42	5.0°	0.9900	0.09	41.0°	0.3490	9.14	77.0°	0.0180	34.89
-66.5°	0.0440	27.13	-30.5°	0.5470	5.24	5.5°	0.9870	0.11	41.5°	0.3395	9.38	77.5°	0.0170	35.39
-66.0°	0.0460	26.74	-30.0°	0.5580	5.07	6.0°	0.9840	0.14	42.0°	0.3300	9.63	78.0°	0.0160	35.92
-65.5°	0.0485	26.29	-29.5°	0.5695	4.89	6.5°	0.9810	0.17	42.5°	0.3210	9.87	78.5°	0.0155	36.19
-65.0°	0.0510	25.85	-29.0°	0.5810	4.72	7.0°	0.9780	0.19	43.0°	0.3120	10.12	79.0°	0.0150	36.48
-64.5°	0.0535	25.43	-28.5°	0.5920	4.55	7.5°	0.9740	0.23	43.5°	0.3030	10.37	79.5°	0.0145	36.77
-64.0°	0.0560	25.04	-28.0°	0.6030	4.39	8.0°	0.9700	0.26	44.0°	0.2940	10.63	80.0°	0.0140	37.08
-63.5°	0.0590	24.58	-27.5°	0.6140	4.24	8.5°	0.9655	0.30	44.5°	0.2855	10.89	80.5°	0.0135	37.39
-63.0°	0.0620	24.15	-27.0°	0.6250	4.08	9.0°	0.9610	0.35	45.0°	0.2770	11.15	81.0°	0.0130	37.72
-62.5°	0.0650	23.74	-26.5°	0.6360	3.93	9.5°	0.9555	0.40	45.5°	0.2685	11.42	81.5°	0.0130	37.72
-62.0°	0.0680	23.35	-26.0°	0.6470	3.78	10.0°	0.9500	0.45	46.0°	0.2600	11.70	82.0°	0.0130	37.72
-61.5°	0.0715	22.91	-25.5°	0.6580	3.64	10.5°	0.9445	0.50	46.5°	0.2520	11.97	82.5°	0.0125	38.06
-61.0°	0.0750	22.50	-25.0°	0.6690	3.49	11.0°	0.9390	0.55	47.0°	0.2440	12.25	83.0°	0.0120	38.42
-60.5°	0.0785	22.10	-24.5°	0.6800	3.35	11.5°	0.9330	0.60	47.5°	0.2360	12.54	83.5°	0.0120	38.42
-60.0°	0.0820	21.72	-24.0°	0.6910	3.21	12.0°	0.9270	0.66	48.0°	0.2280	12.84	84.0°	0.0120	38.42
-59.5°	0.0855	21.36	-23.5°	0.7015	3.08	12.5°	0.9200	0.72	48.5°	0.2205	13.13	84.5°	0.0120	38.42
-59.0°	0.0890	21.01	-23.0°	0.7120	2.95	13.0°	0.9130	0.79	49.0°	0.2130	13.43	85.0°	0.0120	38.42
-58.5°	0.0935	20.58	-22.5°	0.7230	2.82	13.5°	0.9060	0.86	49.5°	0.2060	13.72	85.5°	0.0120	38.42
-58.0°	0.0980	20.18	-22.0°	0.7340	2.69	14.0°	0.8990	0.92	50.0°	0.1990	14.02	86.0°	0.0120	38.42
-57.5°	0.1020	19.83	-21.5°	0.7440	2.57	14.5°	0.8910	1.00	50.5°	0.1920	14.33	86.5°	0.0120	38.42
-57.0°	0.1060	19.49	-21.0°	0.7540	2.45	15.0°	0.8830	1.08	51.0°	0.1850	14.66	87.0°	0.0120	38.42
-56.5°	0.1110	19.09	-20.5°	0.7645	2.33	15.5°	0.8750	1.16	51.5°	0.1785	14.97	87.5°	0.0120	38.42
-56.0°	0.1160	18.71	-20.0°	0.7750	2.21	16.0°	0.8670	1.24	52.0°	0.1720	15.29	88.0°	0.0120	38.42
-55.5°	0.1210	18.34	-19.5°	0.7845	2.11	16.5°	0.8585	1.33	52.5°	0.1660	15.60	88.5°	0.0120	38.42
-55.0°	0.1260	17.99	-19.0°	0.7940	2.00	17.0°	0.8500	1.41	53.0°	0.1600	15.92	89.0°	0.0120	38.42
-54.5°	0.1310	17.65	-18.5°	0.8035	1.90	17.5°	0.8415	1.50	53.5°	0.1540	16.25	89.5°	0.0125	38.06

Elevação



Parâmetros da configuração

ELEMENTOS VERTICAIS

2

ÂNGULO DE MEIA POTÊNCIA VERTICAL

25.44°

GANHO

0.18 dBd

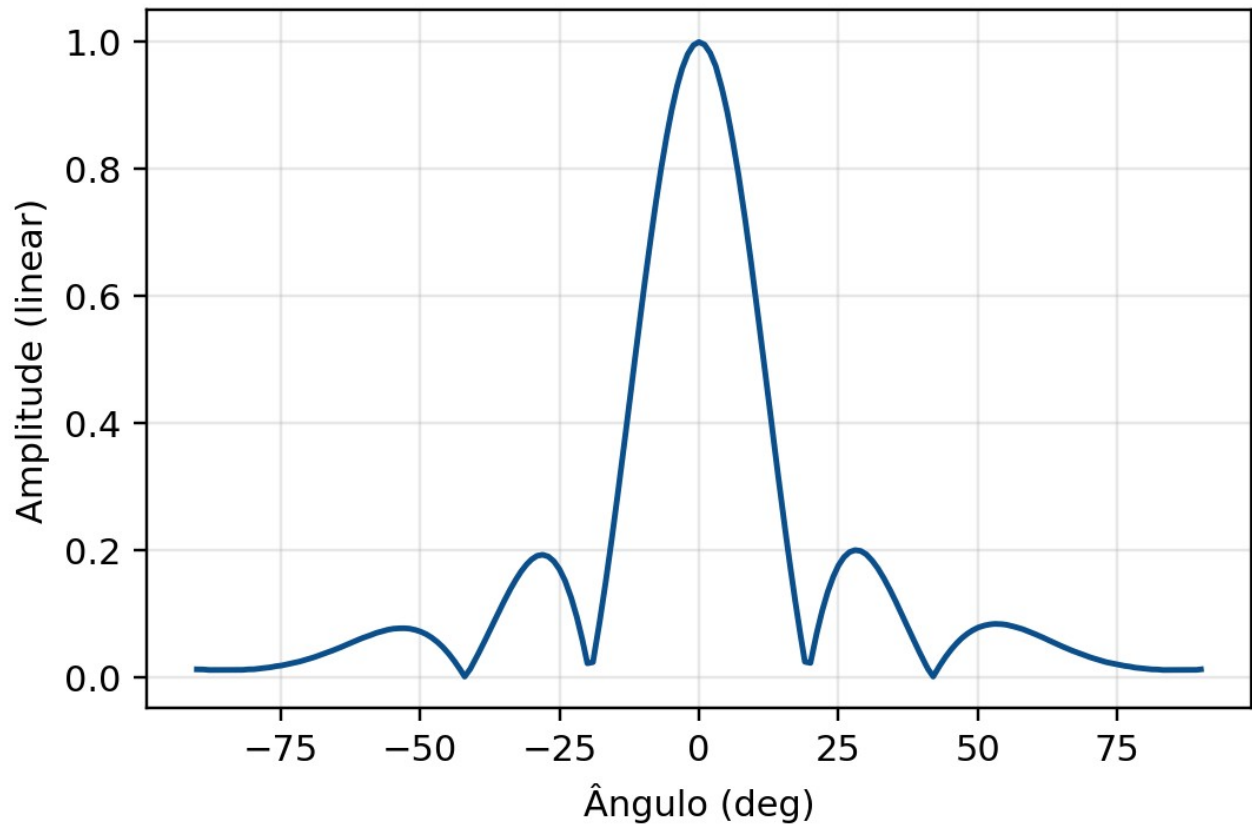
PRIMEIRO NULO

29.00°

Tabela completa - Elevação

Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB
-90.0°	0.0130	37.72	-54.0°	0.1119	19.02	-18.0°	0.4601	6.74	18.0°	0.4714	6.53	54.0°	0.1218	18.29
-89.5°	0.0130	37.72	-53.5°	0.1151	18.78	-17.5°	0.4831	6.32	18.5°	0.4483	6.97	54.5°	0.1185	18.53
-89.0°	0.0130	37.72	-53.0°	0.1182	18.55	-17.0°	0.5060	5.92	19.0°	0.4252	7.43	55.0°	0.1152	18.77
-88.5°	0.0125	38.06	-52.5°	0.1214	18.32	-16.5°	0.5288	5.53	19.5°	0.4025	7.90	55.5°	0.1116	19.05
-88.0°	0.0120	38.42	-52.0°	0.1246	18.09	-16.0°	0.5517	5.17	20.0°	0.3798	8.41	56.0°	0.1080	19.33
-87.5°	0.0120	38.42	-51.5°	0.1275	17.89	-15.5°	0.5742	4.82	20.5°	0.3573	8.94	56.5°	0.1046	19.61
-87.0°	0.0120	38.42	-51.0°	0.1303	17.70	-15.0°	0.5967	4.49	21.0°	0.3349	9.50	57.0°	0.1012	19.90
-86.5°	0.0120	38.42	-50.5°	0.1332	17.51	-14.5°	0.6187	4.17	21.5°	0.3130	10.09	57.5°	0.0980	20.18
-86.0°	0.0120	38.42	-50.0°	0.1360	17.33	-14.0°	0.6408	3.87	22.0°	0.2911	10.72	58.0°	0.0948	20.46
-85.5°	0.0120	38.42	-49.5°	0.1388	17.15	-13.5°	0.6622	3.58	22.5°	0.2698	11.38	58.5°	0.0915	20.77
-85.0°	0.0120	38.42	-49.0°	0.1415	16.98	-13.0°	0.6836	3.30	23.0°	0.2484	12.10	59.0°	0.0881	21.10
-84.5°	0.0120	38.42	-48.5°	0.1438	16.85	-12.5°	0.7046	3.04	23.5°	0.2279	12.84	59.5°	0.0850	21.41
-84.0°	0.0120	38.42	-48.0°	0.1461	16.71	-12.0°	0.7257	2.79	24.0°	0.2074	13.67	60.0°	0.0820	21.73
-83.5°	0.0120	38.42	-47.5°	0.1481	16.59	-11.5°	0.7454	2.55	24.5°	0.1877	14.53	60.5°	0.0788	22.07
-83.0°	0.0120	38.42	-47.0°	0.1502	16.47	-11.0°	0.7651	2.33	25.0°	0.1680	15.49	61.0°	0.0756	22.43
-82.5°	0.0120	38.42	-46.5°	0.1520	16.36	-10.5°	0.7841	2.11	25.5°	0.1492	16.52	61.5°	0.0727	22.77
-82.0°	0.0120	38.42	-46.0°	0.1538	16.26	-10.0°	0.8031	1.90	26.0°	0.1304	17.69	62.0°	0.0699	23.12
-81.5°	0.0125	38.07	-45.5°	0.1550	16.20	-9.5°	0.8205	1.72	26.5°	0.1126	18.97	62.5°	0.0669	23.49
-81.0°	0.0130	37.73	-45.0°	0.1561	16.13	-9.0°	0.8379	1.54	27.0°	0.0948	20.46	63.0°	0.0639	23.88
-80.5°	0.0130	37.73	-44.5°	0.1566	16.10	-8.5°	0.8540	1.37	27.5°	0.0782	22.14	63.5°	0.0614	24.24
-80.0°	0.0130	37.73	-44.0°	0.1571	16.08	-8.0°	0.8700	1.21	28.0°	0.0615	24.23	64.0°	0.0588	24.61
-79.5°	0.0135	37.41	-43.5°	0.1574	16.06	-7.5°	0.8845	1.07	28.5°	0.0459	26.77	64.5°	0.0562	25.01
-79.0°	0.0140	37.09	-43.0°	0.1577	16.04	-7.0°	0.8991	0.92	29.0°	0.0303	30.36	65.0°	0.0535	25.43
-78.5°	0.0145	36.79	-42.5°	0.1572	16.07	-6.5°	0.9120	0.80	29.5°	0.0159	35.96	65.5°	0.0513	25.80
-78.0°	0.0150	36.50	-42.0°	0.1567	16.10	-6.0°	0.9250	0.68	30.0°	0.0015	56.45	66.0°	0.0491	26.18
-77.5°	0.0155	36.22	-41.5°	0.1553	16.18	-5.5°	0.9362	0.57	30.5°	0.0132	37.58	66.5°	0.0468	26.60
-77.0°	0.0159	35.95	-41.0°	0.1539	16.25	-5.0°	0.9475	0.47	31.0°	0.0249	32.07	67.0°	0.0445	27.03
-76.5°	0.0169	35.43	-40.5°	0.1519	16.37	-4.5°	0.9569	0.38	31.5°	0.0369	28.65	67.5°	0.0427	27.39
-76.0°	0.0179	34.94	-40.0°	0.1499	16.49	-4.0°	0.9664	0.30	32.0°	0.0489	26.21	68.0°	0.0409	27.77
-75.5°	0.0184	34.71	-39.5°	0.1469	16.66	-3.5°	0.9735	0.23	32.5°	0.0597	24.47	68.5°	0.0390	28.18
-75.0°	0.0189	34.48	-39.0°	0.1439	16.84	-3.0°	0.9806	0.17	33.0°	0.0705	23.03	69.0°	0.0371	28.60
-74.5°	0.0199	34.04	-38.5°	0.1402	17.07	-2.5°	0.9858	0.12	33.5°	0.0801	21.92	69.5°	0.0352	29.06
-74.0°	0.0208	33.63	-38.0°	0.1364	17.30	-2.0°	0.9910	0.08	34.0°	0.0897	20.94	70.0°	0.0334	29.54
-73.5°	0.0218	33.23	-37.5°	0.1316	17.62	-1.5°	0.9943	0.05	34.5°	0.0983	20.15	70.5°	0.0319	29.91
-73.0°	0.0228	32.85	-37.0°	0.1268	17.94	-1.0°	0.9975	0.02	35.0°	0.1068	19.43	71.0°	0.0305	30.31
-72.5°	0.0237	32.50	-36.5°	0.1210	18.34	-0.5°	0.9988	0.01	35.5°	0.1140	18.86	71.5°	0.0291	30.73
-72.0°	0.0247	32.15	-36.0°	0.1153	18.76	0.0°	1.0000	0.00	36.0°	0.1212	18.33	72.0°	0.0276	31.17
-71.5°	0.0261	31.66	-35.5°	0.1084	19.30	0.5°	0.9993	0.01	36.5°	0.1274	17.90	72.5°	0.0262	31.63
-71.0°	0.0276	31.19	-35.0°	0.1016	19.87	1.0°	0.9985	0.01	37.0°	0.1336	17.48	73.0°	0.0247	32.13
-70.5°	0.0290	30.75	-34.5°	0.0937	20.57	1.5°	0.9958	0.04	37.5°	0.1389	17.15	73.5°	0.0238	32.48
-70.0°	0.0304	30.34	-34.0°	0.0857	21.34	2.0°	0.9930	0.06	38.0°	0.1441	16.82	74.0°	0.0228	32.84
-69.5°	0.0318	29.95	-33.5°	0.0766	22.32	2.5°	0.9888	0.10	38.5°	0.1482	16.59	74.5°	0.0218	33.21
-69.0°	0.0332	29.57	-33.0°	0.0674	23.43	3.0°	0.9846	0.13	39.0°	0.1522	16.35	75.0°	0.0209	33.61
-68.5°	0.0351	29.09	-32.5°	0.0571	24.86	3.5°	0.9774	0.20	39.5°	0.1555	16.16	75.5°	0.0199	34.03
-68.0°	0.0370	28.64	-32.0°	0.0468	26.59	4.0°	0.9703	0.26	40.0°	0.1589	15.98	76.0°	0.0189	34.47
-67.5°	0.0388	28.22	-31.5°	0.0354	29.03	4.5°	0.9618	0.34	40.5°	0.1611	15.86	76.5°	0.0184	34.69
-67.0°	0.0406	27.82	-31.0°	0.0239	32.44	5.0°	0.9532	0.42	41.0°	0.1633	15.74	77.0°	0.0179	34.93
-66.5°	0.0425	27.44	-30.5°	0.0127	37.95	5.5°	0.9424	0.52	41.5°	0.1648	15.66	77.5°	0.0169	35.42
-66.0°	0.0443	27.08	-30.0°	0.0014	56.82	6.0°	0.9316	0.62	42.0°	0.1662	15.59	78.0°	0.0160	35.94
-65.5°	0.0465	26.65	-29.5°	0.0153	36.30	6.5°	0.9195	0.73	42.5°	0.1671	15.54	78.5°	0.0155	36.21
-65.0°	0.0487	26.24	-29.0°	0.0292	30.70	7.0°	0.9074	0.84	43.0°	0.1679	15.50	79.0°	0.0150	36.50
-64.5°	0.0509	25.86	-28.5°	0.0442	27.09	7.5°	0.8932	0.98	43.5°	0.1679	15.50	79.5°	0.0145	36.79
-64.0°	0.0531	25.50	-28.0°	0.0592	24.55	8.0°	0.8790	1.12	44.0°	0.1679	15.50	80.0°	0.0140	37.09
-63.5°	0.0557	25.08	-27.5°	0.0753	22.46	8.5°	0.8633	1.28	44.5°	0.1674	15.52	80.5°	0.0135	37.40
-63.0°	0.0583	24.69	-27.0°	0.0915	20.77	9.0°	0.8476	1.44	45.0°	0.1670	15.55	81.0°	0.0130	37.73
-62.5°	0.0608	24.32	-26.5°	0.1087	19.28	9.5°	0.8301	1.62	45.5°	0.1658	15.61	81.5°	0.0130	37.73
-62.0°	0.0633	23.97	-26.0°	0.1259	18.00	10.0°	0.8126	1.80	46.0°	0.1646	15.67	82.0°	0.0130	37.73
-61.5°	0.0662	23.58	-25.5°	0.1442	16.82	10.5°	0.7942	2.00	46.5°	0.1630	15.76	82.5°	0.0125	38.07
-61.0°	0.0691	23.21	-25.0°	0.1625	15.79	11.0°	0.7758	2.20	47.0°	0.1614	15.84	83.0°	0.0120	38.42
-60.5°	0.0719	22.86	-24.5°	0.1817	14.81	11.5°	0.7563	2.43	47.5°	0.1593	15.96	83.5°	0.0120	38.42
-60.0°	0.0747	22.53	-24.0°	0.2010	13.94	12.0°	0.7368	2.65	48.0°	0.1571	16.08	84.0°	0.0120	38.42
-59.5°	0.0774	22.23	-23.5°	0.2210	13.11	12.5°	0.7159	2.90	48.5°	0.1547	16.21	84.5°	0.0120	38.42
-59.0°	0.0800	21.94	-23.0°	0.2410	12.36	13.0°	0.6950	3.16	49.0°	0.1522	16.35	85.0°	0.0120	38.42
-58.5°	0.0834	21.57	-22.5°	0.2620	11.63	13.5°	0.6737	3.43	49.5°	0.1497	16.50	85.5°	0.0120	38.42
-58.0°	0.0868	21.23	-22.0°	0.2830	10.96	14.0°	0.6524	3.71	50.0°	0.1471	16.65	86.0°	0.0120	38.42
-57.5°	0.0896	20.95	-21.5°	0.3044	10.33	14.5°	0.6300	4.01	50.5°	0.1440	16.83	86.5°	0.0120	38.42
-57.0°	0.0925	20.68	-21.0°	0.3258	9.74	15.0°	0.6077	4.33	51.0°	0.1410	17.02	87.0°	0.0120	38.42
-56.5°	0.0959	20.36	-20.5°	0.3480	9.17	15.5°	0.5852	4.65	51.5°	0.1379	17.21	87.5°	0.0120	38.42
-56.0°	0.0994	20.05	-20.0°	0.3702	8.63	16.0°	0.5627	4.99	52.0°	0.1348	17.41	88.0°	0.0120	38.42
-55.5°	0.1027	19.77	-19.5°	0.3925	8.12	16.5°	0.5398	5.35	52.5°	0.1317	17.61	88.5°	0.0120	38.42
-55.0°	0.1059	19.50	-19.0°	0.4148	7.64	17.0°	0.5170	5.73	53.0°	0.1286	17.81	89.0°	0.0120	38.42
-54.5°	0.1089	19.26	-18.5°	0.4375	7.18	17.5°	0.4942	6.12	53.5°	0.1252	18.05	89.5°	0.0125	38.06

Elevação



Parâmetros da configuração

ELEMENTOS VERTICAIS

3

ÂNGULO DE MEIA POTÊNCIA VERTICAL

17.39°

GANHO

1.80 dBd

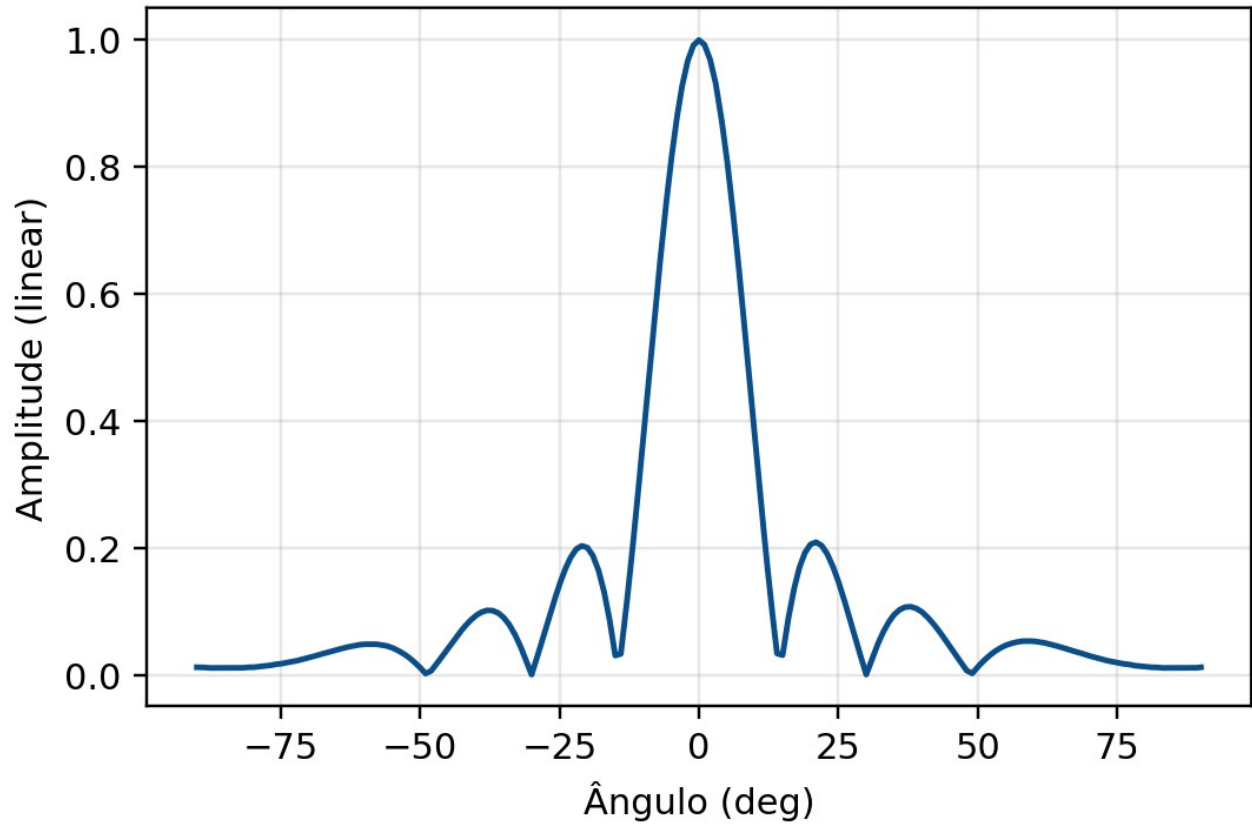
PRIMEIRO NULO

19.00°

Tabela completa - Elevação

Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB
-90.0°	0.0130	37.72	-54.0°	0.0775	22.22	-18.0°	0.0762	22.36	18.0°	0.0781	22.15	54.0°	0.0843	21.48
-89.5°	0.0130	37.72	-53.5°	0.0776	22.20	-17.5°	0.1046	19.61	18.5°	0.0515	25.77	54.5°	0.0839	21.53
-89.0°	0.0130	37.72	-53.0°	0.0777	22.19	-17.0°	0.1330	17.52	19.0°	0.0249	32.09	55.0°	0.0834	21.58
-88.5°	0.0125	38.06	-52.5°	0.0775	22.22	-16.5°	0.1635	15.73	19.5°	0.0240	32.41	55.5°	0.0824	21.68
-88.0°	0.0120	38.42	-52.0°	0.0772	22.24	-16.0°	0.1940	14.24	20.0°	0.0231	32.74	56.0°	0.0814	21.79
-87.5°	0.0120	38.42	-51.5°	0.0763	22.34	-15.5°	0.2263	12.91	20.5°	0.0442	27.08	56.5°	0.0802	21.92
-87.0°	0.0120	38.42	-51.0°	0.0754	22.45	-15.0°	0.2585	11.75	21.0°	0.0654	23.69	57.0°	0.0790	22.05
-86.5°	0.0120	38.42	-50.5°	0.0741	22.61	-14.5°	0.2921	10.69	21.5°	0.0837	21.55	57.5°	0.0777	22.19
-86.0°	0.0120	38.42	-50.0°	0.0727	22.77	-14.0°	0.3257	9.74	22.0°	0.1020	19.83	58.0°	0.0764	22.34
-85.5°	0.0120	38.42	-49.5°	0.0708	23.00	-13.5°	0.3601	8.87	22.5°	0.1173	18.62	58.5°	0.0747	22.54
-85.0°	0.0120	38.42	-49.0°	0.0689	23.24	-13.0°	0.3945	8.08	23.0°	0.1325	17.55	59.0°	0.0730	22.74
-84.5°	0.0120	38.42	-48.5°	0.0662	23.58	-12.5°	0.4296	7.34	23.5°	0.1449	16.78	59.5°	0.0713	22.94
-84.0°	0.0120	38.42	-48.0°	0.0635	23.95	-12.0°	0.4647	6.66	24.0°	0.1573	16.07	60.0°	0.0696	23.15
-83.5°	0.0120	38.42	-47.5°	0.0602	24.41	-11.5°	0.4994	6.03	24.5°	0.1668	15.56	60.5°	0.0676	23.41
-83.0°	0.0120	38.43	-47.0°	0.0568	24.91	-11.0°	0.5341	5.45	25.0°	0.1763	15.08	61.0°	0.0655	23.67
-82.5°	0.0120	38.43	-46.5°	0.0528	25.54	-10.5°	0.5685	4.90	25.5°	0.1829	14.76	61.5°	0.0637	23.92
-82.0°	0.0120	38.43	-46.0°	0.0488	26.23	-10.0°	0.6029	4.39	26.0°	0.1895	14.45	62.0°	0.0618	24.18
-81.5°	0.0125	38.08	-45.5°	0.0440	27.14	-9.5°	0.6358	3.93	26.5°	0.1935	14.27	62.5°	0.0596	24.49
-81.0°	0.0130	37.74	-45.0°	0.0391	28.15	-9.0°	0.6688	3.49	27.0°	0.1975	14.09	63.0°	0.0575	24.80
-80.5°	0.0130	37.75	-44.5°	0.0336	29.49	-8.5°	0.7000	3.10	27.5°	0.1991	14.02	63.5°	0.0556	25.10
-80.0°	0.0130	37.75	-44.0°	0.0280	31.07	-8.0°	0.7312	2.72	28.0°	0.2006	13.95	64.0°	0.0537	25.40
-79.5°	0.0134	37.43	-43.5°	0.0217	33.26	-7.5°	0.7602	2.38	28.5°	0.2000	13.98	64.5°	0.0516	25.75
-79.0°	0.0139	37.12	-43.0°	0.0155	36.21	-7.0°	0.7893	2.06	29.0°	0.1993	14.01	65.0°	0.0495	26.10
-78.5°	0.0144	36.83	-42.5°	0.0085	41.41	-6.5°	0.8156	1.77	29.5°	0.1966	14.13	65.5°	0.0477	26.42
-78.0°	0.0149	36.54	-42.0°	0.0015	56.24	-6.0°	0.8419	1.49	30.0°	0.1940	14.24	66.0°	0.0459	26.76
-77.5°	0.0154	36.27	-41.5°	0.0076	42.39	-5.5°	0.8652	1.26	30.5°	0.1894	14.45	66.5°	0.0440	27.13
-77.0°	0.0158	36.00	-41.0°	0.0136	37.30	-5.0°	0.8884	1.03	31.0°	0.1849	14.66	67.0°	0.0421	27.51
-76.5°	0.0168	35.49	-40.5°	0.0218	33.24	-4.5°	0.9081	0.84	31.5°	0.1790	14.95	67.5°	0.0406	27.84
-76.0°	0.0178	35.01	-40.0°	0.0299	30.48	-4.0°	0.9278	0.65	32.0°	0.1731	15.24	68.0°	0.0390	28.18
-75.5°	0.0182	34.79	-39.5°	0.0385	28.29	-3.5°	0.9432	0.51	32.5°	0.1659	15.60	68.5°	0.0374	28.55
-75.0°	0.0187	34.57	-39.0°	0.0471	26.55	-3.0°	0.9586	0.37	33.0°	0.1588	15.98	69.0°	0.0357	28.94
-74.5°	0.0196	34.15	-38.5°	0.0560	25.04	-2.5°	0.9699	0.27	33.5°	0.1507	16.44	69.5°	0.0340	29.37
-74.0°	0.0206	33.74	-38.0°	0.0649	23.75	-2.0°	0.9811	0.17	34.0°	0.1425	16.92	70.0°	0.0323	29.81
-73.5°	0.0215	33.36	-37.5°	0.0740	22.62	-1.5°	0.9881	0.10	34.5°	0.1338	17.47	70.5°	0.0310	30.17
-73.0°	0.0224	33.00	-37.0°	0.0830	21.62	-1.0°	0.9950	0.04	35.0°	0.1251	18.05	71.0°	0.0297	30.54
-72.5°	0.0233	32.66	-36.5°	0.0921	20.71	-0.5°	0.9975	0.02	35.5°	0.1158	18.73	71.5°	0.0284	30.93
-72.0°	0.0242	32.34	-36.0°	0.1013	19.89	0.0°	1.0000	0.00	36.0°	0.1065	19.46	72.0°	0.0271	31.35
-71.5°	0.0255	31.87	-35.5°	0.1101	19.16	0.5°	0.9980	0.02	36.5°	0.0970	20.27	72.5°	0.0257	31.80
-71.0°	0.0269	31.42	-35.0°	0.1190	18.49	1.0°	0.9960	0.03	37.0°	0.0875	21.16	73.0°	0.0243	32.28
-70.5°	0.0282	31.01	-34.5°	0.1276	17.88	1.5°	0.9896	0.09	37.5°	0.0780	22.15	73.5°	0.0234	32.61
-70.0°	0.0295	30.62	-34.0°	0.1362	17.32	2.0°	0.9831	0.15	38.0°	0.0686	23.27	74.0°	0.0225	32.95
-69.5°	0.0307	30.25	-33.5°	0.1439	16.84	2.5°	0.9728	0.24	38.5°	0.0592	24.56	74.5°	0.0216	33.32
-69.0°	0.0320	29.91	-33.0°	0.1517	16.38	3.0°	0.9625	0.33	39.0°	0.0498	26.06	75.0°	0.0207	33.70
-68.5°	0.0336	29.47	-32.5°	0.1587	15.99	3.5°	0.9470	0.47	39.5°	0.0407	27.80	75.5°	0.0197	34.11
-68.0°	0.0353	29.05	-32.0°	0.1656	15.62	4.0°	0.9316	0.62	40.0°	0.0317	29.97	76.0°	0.0188	34.54
-67.5°	0.0369	28.67	-31.5°	0.1714	15.32	4.5°	0.9127	0.79	40.5°	0.0231	32.73	76.5°	0.0183	34.76
-67.0°	0.0385	28.30	-31.0°	0.1772	15.03	5.0°	0.8938	0.98	41.0°	0.0145	36.79	77.0°	0.0178	34.98
-66.5°	0.0399	27.97	-30.5°	0.1816	14.82	5.5°	0.8709	1.20	41.5°	0.0081	41.88	77.5°	0.0169	35.47
-66.0°	0.0414	27.65	-30.0°	0.1860	14.61	6.0°	0.8480	1.43	42.0°	0.0016	55.73	78.0°	0.0159	35.98
-65.5°	0.0433	27.28	-29.5°	0.1889	14.48	6.5°	0.8223	1.70	42.5°	0.0091	40.86	78.5°	0.0154	36.25
-65.0°	0.0451	26.92	-29.0°	0.1917	14.35	7.0°	0.7966	1.98	43.0°	0.0165	35.66	79.0°	0.0149	36.52
-64.5°	0.0468	26.60	-28.5°	0.1925	14.31	7.5°	0.7677	2.30	43.5°	0.0232	32.70	79.5°	0.0144	36.81
-64.0°	0.0485	26.29	-28.0°	0.1932	14.28	8.0°	0.7388	2.63	44.0°	0.0299	30.49	80.0°	0.0139	37.11
-63.5°	0.0505	25.94	-27.5°	0.1919	14.34	8.5°	0.7077	3.00	44.5°	0.0359	28.90	80.5°	0.0135	37.42
-63.0°	0.0524	25.61	-27.0°	0.1905	14.40	9.0°	0.6765	3.39	45.0°	0.0419	27.56	81.0°	0.0130	37.74
-62.5°	0.0542	25.32	-26.5°	0.1867	14.58	9.5°	0.6433	3.83	45.5°	0.0470	26.55	81.5°	0.0130	37.74
-62.0°	0.0560	25.04	-26.0°	0.1830	14.75	10.0°	0.6100	4.29	46.0°	0.0522	25.64	82.0°	0.0130	37.74
-61.5°	0.0580	24.74	-25.5°	0.1767	15.06	10.5°	0.5758	4.79	46.5°	0.0567	24.93	82.5°	0.0125	38.07
-61.0°	0.0599	24.44	-25.0°	0.1704	15.37	11.0°	0.5416	5.33	47.0°	0.0611	24.28	83.0°	0.0120	38.43
-60.5°	0.0617	24.20	-24.5°	0.1614	15.84	11.5°	0.5067	5.90	47.5°	0.0647	23.78	83.5°	0.0120	38.42
-60.0°	0.0634	23.96	-24.0°	0.1524	16.34	12.0°	0.4718	6.52	48.0°	0.0683	23.31	84.0°	0.0120	38.42
-59.5°	0.0648	23.77	-23.5°	0.1405	17.05	12.5°	0.4365	7.20	48.5°	0.0712	22.95	84.5°	0.0120	38.42
-59.0°	0.0663	23.58	-23.0°	0.1286	17.82	13.0°	0.4011	7.93	49.0°	0.0741	22.60	85.0°	0.0120	38.42
-58.5°	0.0681	23.34	-22.5°	0.1139	18.87	13.5°	0.3664	8.72	49.5°	0.0764	22.34	85.5°	0.0120	38.42
-58.0°	0.0699	23.10	-22.0°	0.0991	20.07	14.0°	0.3316	9.59	50.0°	0.0786	22.09	86.0°	0.0120	38.42
-57.5°	0.0711	22.97	-21.5°	0.0814	21.79	14.5°	0.2974	10.53	50.5°	0.0801	21.92	86.5°	0.0120	38.42
-57.0°	0.0722	22.83	-21.0°	0.0636	23.93	15.0°	0.2633	11.59	51.0°	0.0816	21.76	87.0°	0.0120	38.42
-56.5°	0.0736	22.67	-20.5°	0.0431	27.32	15.5°	0.2306	12.74	51.5°	0.0826	21.66	87.5°	0.0120	38.42
-56.0°	0.0749	22.51	-20.0°	0.0225	32.96	16.0°	0.1979	14.07	52.0°	0.0836	21.56	88.0°	0.0120	38.42
-55.5°	0.0758	22.40	-19.5°	0.0234	32.62	16.5°	0.1669	15.55	52.5°	0.0841	21.51	88.5°	0.0120	38.42
-55.0°	0.0767	22.30	-19.0°	0.0243	32.30	17.0°	0.1359	17.34	53.0°	0.0846	21.45	89.0°	0.0120	38.42
-54.5°	0.0771	22.26	-18.5°	0.0502	25.98	17.5°	0.1070	19.41	53.5°	0.0844	21.47	89.5°	0.0125	38.06

Elevação



Parâmetros da configuração

ELEMENTOS VERTICAIS

4

ÂNGULO DE MEIA POTÊNCIA VERTICAL

13.31°

GANHO

2.99 dBd

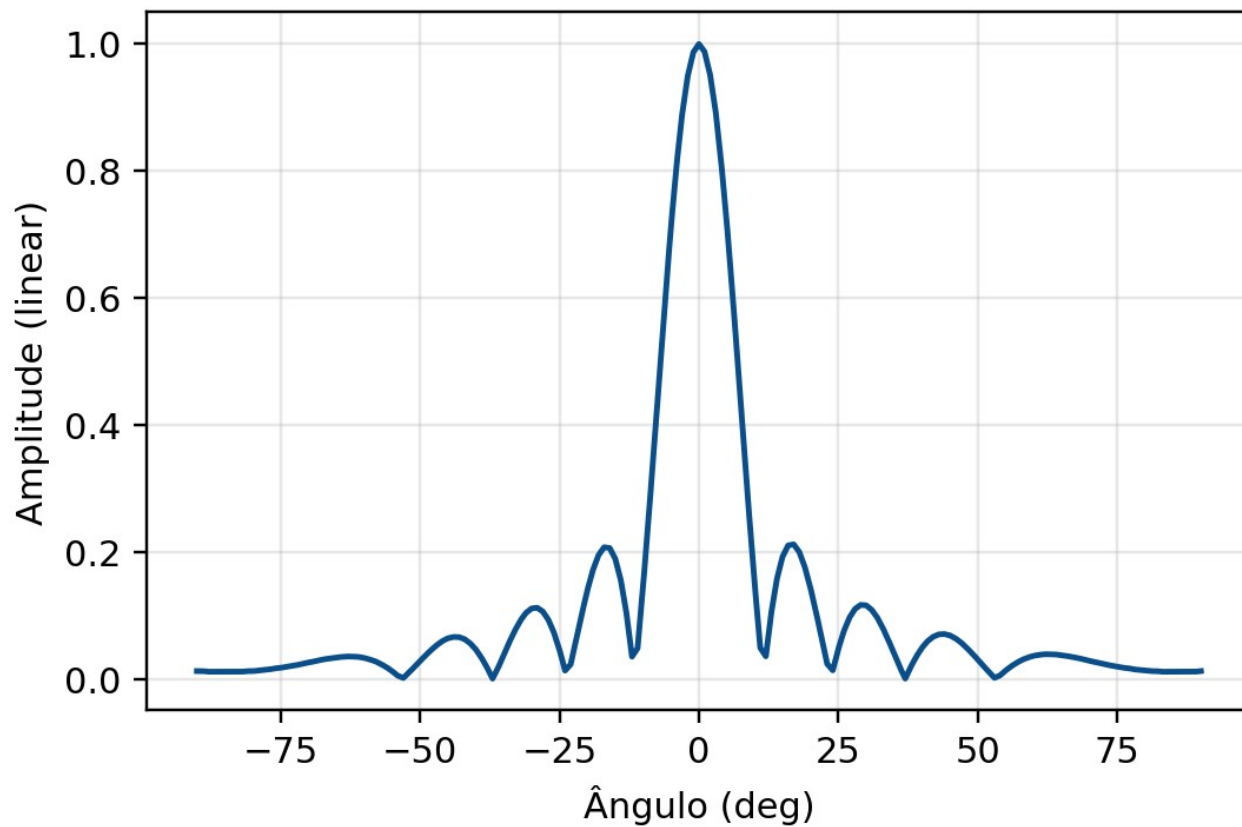
PRIMEIRO NULO

14.00°

Tabela completa - Elevação

Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB
-90.0°	0.0130	37.72	-54.0°	0.0397	28.03	-18.0°	0.1654	15.63	18.0°	0.1694	15.42	54.0°	0.0432	27.29
-89.5°	0.0130	37.72	-53.5°	0.0372	28.60	-17.5°	0.1485	16.56	18.5°	0.1813	14.83	54.5°	0.0454	26.86
-89.0°	0.0130	37.72	-53.0°	0.0346	29.21	-17.0°	0.1317	17.61	19.0°	0.1931	14.28	55.0°	0.0476	26.45
-88.5°	0.0125	38.06	-52.5°	0.0316	30.02	-16.5°	0.1093	19.23	19.5°	0.1998	13.99	55.5°	0.0491	26.18
-88.0°	0.0120	38.42	-52.0°	0.0285	30.91	-16.0°	0.0869	21.22	20.0°	0.2064	13.70	56.0°	0.0506	25.91
-87.5°	0.0120	38.42	-51.5°	0.0248	32.11	-15.5°	0.0592	24.56	20.5°	0.2081	13.63	56.5°	0.0517	25.73
-87.0°	0.0120	38.42	-51.0°	0.0211	33.52	-15.0°	0.0315	30.05	21.0°	0.2098	13.56	57.0°	0.0527	25.56
-86.5°	0.0120	38.42	-50.5°	0.0169	35.47	-14.5°	0.0328	29.69	21.5°	0.2072	13.67	57.5°	0.0534	25.44
-86.0°	0.0120	38.42	-50.0°	0.0126	37.98	-14.0°	0.0341	29.34	22.0°	0.2046	13.78	58.0°	0.0541	25.33
-85.5°	0.0120	38.42	-49.5°	0.0078	42.10	-13.5°	0.0714	22.92	22.5°	0.1980	14.07	58.5°	0.0542	25.32
-85.0°	0.0120	38.42	-49.0°	0.0031	50.22	-13.0°	0.1087	19.27	23.0°	0.1915	14.36	59.0°	0.0543	25.30
-84.5°	0.0120	38.43	-48.5°	0.0052	45.60	-12.5°	0.1499	16.48	23.5°	0.1819	14.80	59.5°	0.0542	25.32
-84.0°	0.0120	38.43	-48.0°	0.0074	42.60	-12.0°	0.1912	14.37	24.0°	0.1723	15.28	60.0°	0.0541	25.34
-83.5°	0.0120	38.43	-47.5°	0.0130	37.69	-11.5°	0.2353	12.57	24.5°	0.1603	15.90	60.5°	0.0534	25.44
-83.0°	0.0120	38.43	-47.0°	0.0187	34.57	-11.0°	0.2794	11.07	25.0°	0.1482	16.58	61.0°	0.0528	25.54
-82.5°	0.0120	38.44	-46.5°	0.0246	32.17	-10.5°	0.3257	9.74	25.5°	0.1344	17.43	61.5°	0.0521	25.66
-82.0°	0.0120	38.44	-46.0°	0.0306	30.29	-10.0°	0.3720	8.59	26.0°	0.1205	18.38	62.0°	0.0514	25.79
-81.5°	0.0124	38.10	-45.5°	0.0366	28.73	-9.5°	0.4189	7.56	26.5°	0.1057	19.52	62.5°	0.0503	25.97
-81.0°	0.0129	37.76	-45.0°	0.0427	27.40	-9.0°	0.4658	6.64	27.0°	0.0908	20.84	63.0°	0.0492	26.17
-80.5°	0.0129	37.77	-44.5°	0.0486	26.26	-8.5°	0.5124	5.81	27.5°	0.0755	22.44	63.5°	0.0481	26.36
-80.0°	0.0129	37.78	-44.0°	0.0546	25.26	-8.0°	0.5590	5.05	28.0°	0.0603	24.40	64.0°	0.0470	26.56
-79.5°	0.0134	37.47	-43.5°	0.0605	24.37	-7.5°	0.6039	4.38	28.5°	0.0452	26.89	64.5°	0.0456	26.82
-79.0°	0.0139	37.16	-43.0°	0.0664	23.56	-7.0°	0.6489	3.76	29.0°	0.0302	30.41	65.0°	0.0442	27.09
-78.5°	0.0143	36.88	-42.5°	0.0718	22.88	-6.5°	0.6910	3.21	29.5°	0.0158	36.01	65.5°	0.0430	27.33
-78.0°	0.0148	36.60	-42.0°	0.0772	22.25	-6.0°	0.7332	2.70	30.0°	0.0015	56.45	66.0°	0.0418	27.58
-77.5°	0.0153	36.33	-41.5°	0.0818	21.74	-5.5°	0.7713	2.26	30.5°	0.0132	37.62	66.5°	0.0403	27.89
-77.0°	0.0157	36.08	-41.0°	0.0865	21.26	-5.0°	0.8094	1.84	31.0°	0.0248	32.11	67.0°	0.0389	28.21
-76.5°	0.0166	35.58	-40.5°	0.0904	20.88	-4.5°	0.8424	1.49	31.5°	0.0365	28.76	67.5°	0.0377	28.48
-76.0°	0.0176	35.11	-40.0°	0.0943	20.51	-4.0°	0.8753	1.16	32.0°	0.0481	26.35	68.0°	0.0365	28.76
-75.5°	0.0180	34.90	-39.5°	0.0970	20.27	-3.5°	0.9018	0.90	32.5°	0.0580	24.73	68.5°	0.0351	29.08
-75.0°	0.0184	34.70	-39.0°	0.0997	20.03	-3.0°	0.9283	0.65	33.0°	0.0679	23.36	69.0°	0.0338	29.42
-74.5°	0.0193	34.29	-38.5°	0.1011	19.91	-2.5°	0.9478	0.47	33.5°	0.0759	22.40	69.5°	0.0323	29.81
-74.0°	0.0202	33.91	-38.0°	0.1025	19.78	-2.0°	0.9674	0.29	34.0°	0.0838	21.54	70.0°	0.0309	30.21
-73.5°	0.0210	33.55	-37.5°	0.1023	19.80	-1.5°	0.9795	0.18	34.5°	0.0898	20.93	70.5°	0.0298	30.53
-73.0°	0.0219	33.21	-37.0°	0.1022	19.81	-1.0°	0.9915	0.07	35.0°	0.0958	20.37	71.0°	0.0286	30.86
-72.5°	0.0227	32.90	-36.5°	0.1004	19.97	-0.5°	0.9958	0.04	35.5°	0.0997	20.02	71.5°	0.0275	31.23
-72.0°	0.0235	32.60	-36.0°	0.0986	20.13	0.0°	1.0000	0.00	36.0°	0.1036	19.69	72.0°	0.0263	31.61
-71.5°	0.0247	32.16	-35.5°	0.0949	20.46	0.5°	0.9963	0.03	36.5°	0.1057	19.52	72.5°	0.0250	32.04
-71.0°	0.0259	31.74	-35.0°	0.0912	20.80	1.0°	0.9925	0.07	37.0°	0.1077	19.36	73.0°	0.0238	32.49
-70.5°	0.0270	31.37	-34.5°	0.0856	21.35	1.5°	0.9809	0.17	37.5°	0.1080	19.33	73.5°	0.0229	32.80
-70.0°	0.0281	31.01	-34.0°	0.0801	21.93	2.0°	0.9693	0.27	38.0°	0.1083	19.30	74.0°	0.0221	33.12
-69.5°	0.0292	30.69	-33.5°	0.0725	22.80	2.5°	0.9507	0.44	38.5°	0.1068	19.42	74.5°	0.0212	33.47
-69.0°	0.0302	30.39	-33.0°	0.0649	23.76	3.0°	0.9320	0.61	39.0°	0.1054	19.55	75.0°	0.0203	33.83
-68.5°	0.0316	30.00	-32.5°	0.0555	25.12	3.5°	0.9054	0.86	39.5°	0.1027	19.77	75.5°	0.0194	34.22
-68.0°	0.0330	29.63	-32.0°	0.0461	26.73	4.0°	0.8789	1.12	40.0°	0.1000	20.00	76.0°	0.0185	34.64
-67.5°	0.0343	29.31	-31.5°	0.0349	29.14	4.5°	0.8466	1.45	40.5°	0.0959	20.37	76.5°	0.0181	34.84
-67.0°	0.0355	29.00	-31.0°	0.0238	32.47	5.0°	0.8143	1.78	41.0°	0.0918	20.74	77.0°	0.0177	35.05
-66.5°	0.0366	28.73	-30.5°	0.0126	37.98	5.5°	0.7763	2.20	41.5°	0.0868	21.23	77.5°	0.0167	35.53
-66.0°	0.0377	28.48	-30.0°	0.0014	56.82	6.0°	0.7384	2.63	42.0°	0.0819	21.74	78.0°	0.0158	36.04
-65.5°	0.0390	28.18	-29.5°	0.0152	36.34	6.5°	0.6967	3.14	42.5°	0.0763	22.35	78.5°	0.0153	36.30
-65.0°	0.0403	27.90	-29.0°	0.0290	30.74	7.0°	0.6549	3.68	43.0°	0.0707	23.02	79.0°	0.0149	36.56
-64.5°	0.0414	27.67	-28.5°	0.0435	27.22	7.5°	0.6099	4.30	43.5°	0.0645	23.81	79.5°	0.0144	36.85
-64.0°	0.0424	27.45	-28.0°	0.0581	24.72	8.0°	0.5648	4.96	44.0°	0.0584	24.68	80.0°	0.0139	37.14
-63.5°	0.0436	27.21	-27.5°	0.0728	22.76	8.5°	0.5180	5.71	44.5°	0.0520	25.68	80.5°	0.0134	37.44
-63.0°	0.0448	26.97	-27.0°	0.0876	21.15	9.0°	0.4712	6.54	45.0°	0.0456	26.81	81.0°	0.0129	37.76
-62.5°	0.0457	26.80	-26.5°	0.1020	19.83	9.5°	0.4238	7.46	45.5°	0.0392	28.14	81.5°	0.0129	37.76
-62.0°	0.0466	26.64	-26.0°	0.1164	18.68	10.0°	0.3763	8.49	46.0°	0.0327	29.71	82.0°	0.0130	37.75
-61.5°	0.0474	26.48	-25.5°	0.1298	17.73	10.5°	0.3298	9.63	46.5°	0.0264	31.57	82.5°	0.0125	38.08
-61.0°	0.0483	26.32	-25.0°	0.1433	16.88	11.0°	0.2833	10.95	47.0°	0.0201	33.94	83.0°	0.0120	38.43
-60.5°	0.0488	26.23	-24.5°	0.1551	16.19	11.5°	0.2387	12.44	47.5°	0.0140	37.06	83.5°	0.0120	38.43
-60.0°	0.0493	26.15	-24.0°	0.1670	15.55	12.0°	0.1941	14.24	48.0°	0.0080	41.97	84.0°	0.0120	38.43
-59.5°	0.0493	26.14	-23.5°	0.1764	15.07	12.5°	0.1523	16.34	48.5°	0.0056	44.97	84.5°	0.0120	38.43
-59.0°	0.0493	26.14	-23.0°	0.1858	14.62	13.0°	0.1105	19.13	49.0°	0.0033	49.59	85.0°	0.0120	38.42
-58.5°	0.0495	26.12	-22.5°	0.1923	14.32	13.5°	0.0726	22.78	49.5°	0.0085	41.43	85.5°	0.0120	38.42
-58.0°	0.0496	26.10	-22.0°	0.1989	14.03	14.0°	0.0347	29.19	50.0°	0.0136	37.30	86.0°	0.0120	38.42
-57.5°	0.0489	26.22	-21.5°	0.2015	13.91	14.5°	0.0334	29.53	50.5°	0.0182	34.78	86.5°	0.0120	38.42
-57.0°	0.0482	26.34	-21.0°	0.2041	13.80	15.0°	0.0320	29.89	51.0°	0.0228	32.84	87.0°	0.0120	38.42
-56.5°	0.0474	26.48	-20.5°	0.2027	13.86	15.5°	0.0603	24.39	51.5°	0.0268	31.43	87.5°	0.0120	38.42
-56.0°	0.0466	26.63	-20.0°	0.2012	13.93	16.0°	0.0887	21.04	52.0°	0.0308	30.22	88.0°	0.0120	38.42
-55.5°	0.0452	26.90	-19.5°	0.1948	14.21	16.5°	0.1116	19.05	52.5°	0.0343	29.31	88.5°	0.0120	38.42
-55.0°	0.0438	27.18	-19.0°	0.1884	14.50	17.0°	0.1345	17.43	53.0°	0.0377	28.48	89.0°	0.0120	38.42
-54.5°	0.0417	27.59	-18.5°	0.1769	15.05	17.5°	0.1520	16.36	53.5°	0.0404	27.86	89.5°	0.0125	38.06

Elevação



Parâmetros da configuração

ELEMENTOS VERTICAIS

5

ÂNGULO DE MEIA POTÊNCIA VERTICAL

11.06°

GANHO

3.92 dBd

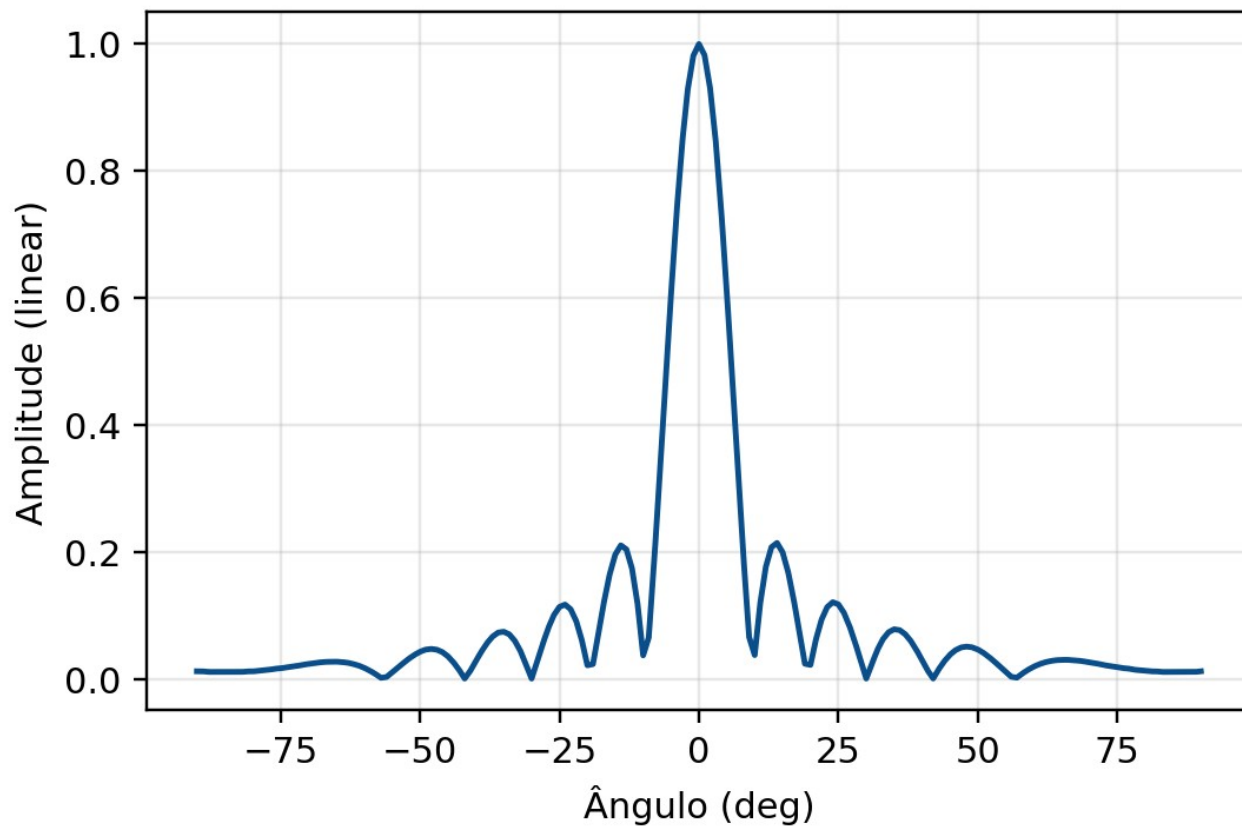
PRIMEIRO NULO

11.00°

Tabela completa - Elevação

Ângulo	E/Emax	Aten. dB	Ângulo	E/Emax	Aten. dB	Ângulo	E/Emax	Aten. dB	Ângulo	E/Emax	Aten. dB	Ângulo	E/Emax	Aten. dB
-90.0°	0.0130	37.72	-54.0°	0.0058	44.78	-18.0°	0.1955	14.18	18.0°	0.2003	13.97	54.0°	0.0063	44.05
-89.5°	0.0130	37.72	-53.5°	0.0039	48.13	-17.5°	0.2017	13.91	18.5°	0.1883	14.50	54.5°	0.0101	39.90
-89.0°	0.0130	37.72	-53.0°	0.0021	53.64	-17.0°	0.2079	13.64	19.0°	0.1764	15.07	55.0°	0.0140	37.10
-88.5°	0.0125	38.06	-52.5°	0.0063	43.95	-16.5°	0.2073	13.67	19.5°	0.1602	15.91	55.5°	0.0173	35.25
-88.0°	0.0120	38.42	-52.0°	0.0106	39.49	-16.0°	0.2067	13.69	20.0°	0.1439	16.84	56.0°	0.0206	33.73
-87.5°	0.0120	38.42	-51.5°	0.0151	36.43	-15.5°	0.1982	14.06	20.5°	0.1249	18.07	56.5°	0.0234	32.61
-87.0°	0.0120	38.42	-51.0°	0.0196	34.18	-15.0°	0.1898	14.44	21.0°	0.1058	19.51	57.0°	0.0262	31.63
-86.5°	0.0120	38.42	-50.5°	0.0241	32.35	-14.5°	0.1728	15.25	21.5°	0.0854	21.37	57.5°	0.0286	30.89
-86.0°	0.0120	38.42	-50.0°	0.0287	30.84	-14.0°	0.1558	16.15	22.0°	0.0650	23.74	58.0°	0.0309	30.20
-85.5°	0.0120	38.42	-49.5°	0.0333	29.56	-13.5°	0.1301	17.72	22.5°	0.0446	27.01	58.5°	0.0326	29.72
-85.0°	0.0120	38.43	-49.0°	0.0378	28.45	-13.0°	0.1043	19.63	23.0°	0.0242	32.33	59.0°	0.0344	29.27
-84.5°	0.0120	38.43	-48.5°	0.0420	27.53	-12.5°	0.0700	23.10	23.5°	0.0192	34.34	59.5°	0.0357	28.94
-84.0°	0.0120	38.43	-48.0°	0.0463	26.69	-12.0°	0.0357	28.95	24.0°	0.0142	36.96	60.0°	0.0370	28.62
-83.5°	0.0120	38.44	-47.5°	0.0501	26.01	-11.5°	0.0423	27.47	24.5°	0.0312	30.12	60.5°	0.0378	28.45
-83.0°	0.0120	38.44	-47.0°	0.0539	25.37	-11.0°	0.0489	26.21	25.0°	0.0482	26.35	61.0°	0.0386	28.27
-82.5°	0.0119	38.45	-46.5°	0.0571	24.87	-10.5°	0.0981	20.17	25.5°	0.0622	24.13	61.5°	0.0390	28.17
-82.0°	0.0119	38.46	-46.0°	0.0602	24.40	-10.0°	0.1473	16.64	26.0°	0.0762	22.36	62.0°	0.0395	28.07
-81.5°	0.0124	38.12	-45.5°	0.0624	24.09	-9.5°	0.2017	13.90	26.5°	0.0867	21.24	62.5°	0.0395	28.07
-81.0°	0.0129	37.79	-45.0°	0.0646	23.79	-9.0°	0.2562	11.83	27.0°	0.0972	20.24	63.0°	0.0395	28.08
-80.5°	0.0129	37.80	-44.5°	0.0656	23.66	-8.5°	0.3140	10.06	27.5°	0.1041	19.65	63.5°	0.0393	28.12
-80.0°	0.0129	37.82	-44.0°	0.0667	23.52	-8.0°	0.3718	8.59	28.0°	0.1109	19.10	64.0°	0.0391	28.16
-79.5°	0.0133	37.51	-43.5°	0.0665	23.54	-7.5°	0.4308	7.31	28.5°	0.1140	18.86	64.5°	0.0385	28.29
-79.0°	0.0138	37.21	-43.0°	0.0664	23.55	-7.0°	0.4898	6.20	29.0°	0.1172	18.62	65.0°	0.0379	28.42
-78.5°	0.0142	36.94	-42.5°	0.0648	23.77	-6.5°	0.5476	5.23	29.5°	0.1168	18.65	65.5°	0.0373	28.56
-78.0°	0.0147	36.67	-42.0°	0.0631	24.00	-6.0°	0.6054	4.36	30.0°	0.1164	18.68	66.0°	0.0367	28.70
-77.5°	0.0151	36.42	-41.5°	0.0599	24.46	-5.5°	0.6596	3.61	30.5°	0.1128	18.96	66.5°	0.0358	28.92
-77.0°	0.0155	36.17	-41.0°	0.0566	24.94	-5.0°	0.7139	2.93	31.0°	0.1091	19.24	67.0°	0.0349	29.14
-76.5°	0.0164	35.69	-40.5°	0.0518	25.71	-4.5°	0.7622	2.36	31.5°	0.1030	19.75	67.5°	0.0342	29.33
-76.0°	0.0173	35.23	-40.0°	0.0470	26.56	-4.0°	0.8105	1.83	32.0°	0.0968	20.28	68.0°	0.0334	29.53
-75.5°	0.0177	35.05	-39.5°	0.0407	27.82	-3.5°	0.8503	1.41	32.5°	0.0886	21.05	68.5°	0.0324	29.79
-75.0°	0.0181	34.87	-39.0°	0.0343	29.30	-3.0°	0.8901	1.01	33.0°	0.0804	21.90	69.0°	0.0314	30.06
-74.5°	0.0189	34.49	-38.5°	0.0266	31.51	-2.5°	0.9200	0.72	33.5°	0.0708	23.01	69.5°	0.0303	30.39
-74.0°	0.0197	34.12	-38.0°	0.0189	34.49	-2.0°	0.9499	0.45	34.0°	0.0611	24.28	70.0°	0.0291	30.73
-73.5°	0.0204	33.80	-37.5°	0.0100	40.01	-1.5°	0.9685	0.28	34.5°	0.0508	25.89	70.5°	0.0282	31.00
-73.0°	0.0212	33.48	-37.0°	0.0011	59.10	-1.0°	0.9871	0.11	35.0°	0.0404	27.87	71.0°	0.0273	31.28
-72.5°	0.0219	33.20	-36.5°	0.0097	40.27	-0.5°	0.9935	0.06	35.5°	0.0298	30.52	71.5°	0.0263	31.61
-72.0°	0.0226	32.94	-36.0°	0.0183	34.76	0.0°	1.0000	0.00	36.0°	0.0192	34.33	72.0°	0.0253	31.95
-71.5°	0.0236	32.54	-35.5°	0.0283	30.95	0.5°	0.9940	0.05	36.5°	0.0102	39.84	72.5°	0.0241	32.34
-71.0°	0.0246	32.16	-35.0°	0.0384	28.31	1.0°	0.9881	0.10	37.0°	0.0012	58.64	73.0°	0.0230	32.76
-70.5°	0.0256	31.84	-34.5°	0.0484	26.30	1.5°	0.9699	0.27	37.5°	0.0106	39.53	73.5°	0.0223	33.04
-70.0°	0.0265	31.53	-34.0°	0.0584	24.67	2.0°	0.9518	0.43	38.0°	0.0199	34.01	74.0°	0.0216	33.33
-69.5°	0.0273	31.27	-33.5°	0.0676	23.40	2.5°	0.9227	0.70	38.5°	0.0281	31.03	74.5°	0.0208	33.66
-69.0°	0.0281	31.02	-33.0°	0.0768	22.29	3.0°	0.8937	0.98	39.0°	0.0363	28.81	75.0°	0.0200	34.00
-68.5°	0.0292	30.70	-32.5°	0.0847	21.44	3.5°	0.8537	1.37	39.5°	0.0431	27.32	75.5°	0.0191	34.37
-68.0°	0.0302	30.40	-32.0°	0.0927	20.66	4.0°	0.8138	1.79	40.0°	0.0498	26.05	76.0°	0.0183	34.76
-67.5°	0.0310	30.16	-31.5°	0.0987	20.12	4.5°	0.7660	2.32	40.5°	0.0549	25.20	76.5°	0.0179	34.95
-67.0°	0.0319	29.93	-31.0°	0.1047	19.61	5.0°	0.7182	2.87	41.0°	0.0600	24.43	77.0°	0.0175	35.15
-66.5°	0.0325	29.76	-30.5°	0.1081	19.32	5.5°	0.6640	3.56	41.5°	0.0635	23.94	77.5°	0.0166	35.62
-66.0°	0.0331	29.60	-30.0°	0.1116	19.05	6.0°	0.6097	4.30	42.0°	0.0670	23.48	78.0°	0.0157	36.11
-65.5°	0.0338	29.42	-29.5°	0.1121	19.00	6.5°	0.5520	5.16	42.5°	0.0688	23.24	78.5°	0.0152	36.36
-65.0°	0.0345	29.24	-29.0°	0.1127	18.96	7.0°	0.4943	6.12	43.0°	0.0707	23.01	79.0°	0.0148	36.62
-64.5°	0.0349	29.14	-28.5°	0.1098	19.19	7.5°	0.4350	7.23	43.5°	0.0710	22.98	79.5°	0.0143	36.89
-64.0°	0.0353	29.05	-28.0°	0.1068	19.43	8.0°	0.3757	8.50	44.0°	0.0713	22.94	80.0°	0.0138	37.17
-63.5°	0.0356	28.96	-27.5°	0.1003	19.97	8.5°	0.3174	9.97	44.5°	0.0702	23.07	80.5°	0.0134	37.48
-63.0°	0.0360	28.88	-27.0°	0.0938	20.56	9.0°	0.2591	11.73	45.0°	0.0691	23.21	81.0°	0.0129	37.79
-62.5°	0.0359	28.90	-26.5°	0.0837	21.55	9.5°	0.2041	13.80	45.5°	0.0668	23.51	81.5°	0.0129	37.78
-62.0°	0.0358	28.92	-26.0°	0.0736	22.67	10.0°	0.1490	16.54	46.0°	0.0645	23.82	82.0°	0.0129	37.77
-61.5°	0.0356	28.98	-25.5°	0.0601	24.43	10.5°	0.0993	20.06	46.5°	0.0612	24.27	82.5°	0.0124	38.10
-61.0°	0.0353	29.05	-25.0°	0.0466	26.64	11.0°	0.0496	26.09	47.0°	0.0579	24.74	83.0°	0.0120	38.44
-60.5°	0.0345	29.24	-24.5°	0.0302	30.41	11.5°	0.0429	27.35	47.5°	0.0538	25.38	83.5°	0.0120	38.44
-60.0°	0.0338	29.43	-24.0°	0.0137	37.24	12.0°	0.0362	28.82	48.0°	0.0498	26.06	84.0°	0.0120	38.43
-59.5°	0.0325	29.76	-23.5°	0.0186	34.61	12.5°	0.0711	22.96	48.5°	0.0452	26.90	84.5°	0.0120	38.43
-59.0°	0.0312	30.11	-23.0°	0.0235	32.59	13.0°	0.1060	19.49	49.0°	0.0407	27.82	85.0°	0.0120	38.43
-58.5°	0.0298	30.53	-22.5°	0.0433	27.26	13.5°	0.1323	17.57	49.5°	0.0359	28.91	85.5°	0.0120	38.42
-58.0°	0.0283	30.96	-22.0°	0.0632	23.98	14.0°	0.1586	15.99	50.0°	0.0310	30.16	86.0°	0.0120	38.42
-57.5°	0.0261	31.66	-21.5°	0.0831	21.61	14.5°	0.1759	15.09	50.5°	0.0261	31.67	86.5°	0.0120	38.42
-57.0°	0.0240	32.41	-21.0°	0.1029	19.75	15.0°	0.1933	14.28	51.0°	0.0212	33.49	87.0°	0.0120	38.42
-56.5°	0.0215	33.37	-20.5°	0.1216	18.30	15.5°	0.2020	13.89	51.5°	0.0163	35.75	87.5°	0.0120	38.42
-56.0°	0.0190	34.44	-20.0°	0.1403	17.06	16.0°	0.2108	13.52	52.0°	0.0115	38.80	88.0°	0.0120	38.42
-55.5°	0.0159	35.97	-19.5°	0.1562	16.13	16.5°	0.2116	13.49	52.5°	0.0069	43.26	88.5°	0.0120	38.42
-55.0°	0.0128	37.83	-19.0°	0.1720	15.29	17.0°	0.2124	13.46	53.0°	0.0023	52.90	89.0°	0.0120	38.42
-54.5°	0.0093	40.63	-18.5°	0.1837	14.72	17.5°	0.2064	13.71	53.5°	0.0043	47.39	89.5°	0.0125	38.06

Elevação



Parâmetros da configuração

ELEMENTOS VERTICAIS

6

ÂNGULO DE MEIA POTÊNCIA VERTICAL

9.22°

GANHO

4.68 dBd

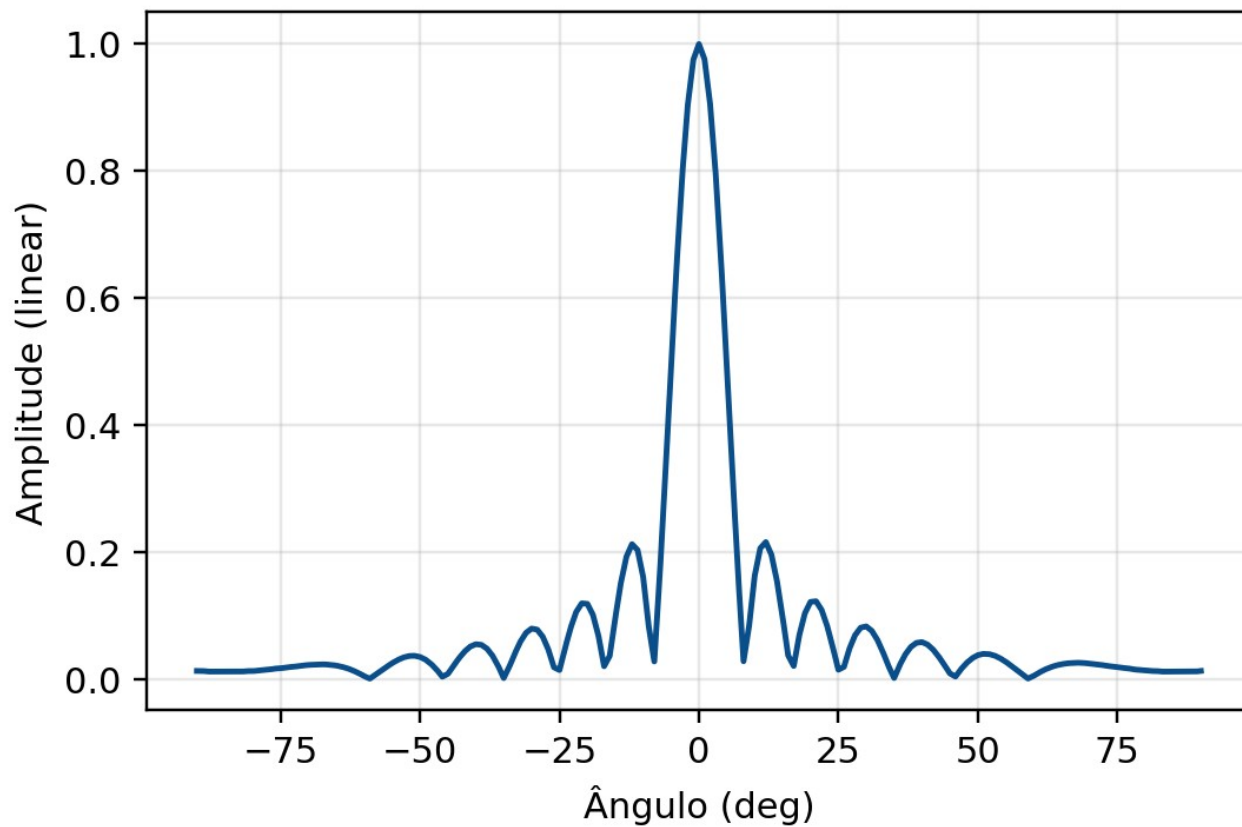
PRIMEIRO NULO

10.00°

Tabela completa - Elevação

Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB
-90.0°	0.0130	37.72	-54.0°	0.0185	34.63	-18.0°	0.0741	22.60	18.0°	0.0760	22.39	54.0°	0.0202	33.90
-89.5°	0.0130	37.72	-53.5°	0.0222	33.07	-17.5°	0.0986	20.13	18.5°	0.0504	25.96	54.5°	0.0162	35.82
-89.0°	0.0130	37.72	-53.0°	0.0259	31.74	-17.0°	0.1230	18.20	19.0°	0.0248	32.11	55.0°	0.0122	38.30
-88.5°	0.0125	38.06	-52.5°	0.0294	30.64	-16.5°	0.1443	16.81	19.5°	0.0239	32.43	55.5°	0.0083	41.67
-88.0°	0.0120	38.42	-52.0°	0.0329	29.67	-16.0°	0.1656	15.62	20.0°	0.0230	32.76	56.0°	0.0043	47.25
-87.5°	0.0120	38.42	-51.5°	0.0359	28.90	-15.5°	0.1812	14.84	20.5°	0.0433	27.26	56.5°	0.0036	48.77
-87.0°	0.0120	38.42	-51.0°	0.0389	28.20	-15.0°	0.1967	14.12	21.0°	0.0637	23.92	57.0°	0.0029	50.62
-86.5°	0.0120	38.42	-50.5°	0.0413	27.67	-14.5°	0.2039	13.81	21.5°	0.0791	22.03	57.5°	0.0063	44.08
-86.0°	0.0120	38.42	-50.0°	0.0438	27.18	-14.0°	0.2112	13.51	22.0°	0.0946	20.48	58.0°	0.0096	40.39
-85.5°	0.0120	38.43	-49.5°	0.0454	26.85	-13.5°	0.2080	13.64	22.5°	0.1043	19.63	58.5°	0.0124	38.11
-85.0°	0.0120	38.43	-49.0°	0.0471	26.54	-13.0°	0.2048	13.77	23.0°	0.1140	18.86	59.0°	0.0153	36.30
-84.5°	0.0120	38.44	-48.5°	0.0476	26.44	-12.5°	0.1898	14.44	23.5°	0.1179	18.57	59.5°	0.0178	35.01
-84.0°	0.0120	38.44	-48.0°	0.0482	26.34	-12.0°	0.1747	15.15	24.0°	0.1217	18.29	60.0°	0.0202	33.89
-83.5°	0.0120	38.45	-47.5°	0.0476	26.45	-11.5°	0.1468	16.66	24.5°	0.1200	18.41	60.5°	0.0221	33.10
-83.0°	0.0119	38.46	-47.0°	0.0470	26.56	-11.0°	0.1189	18.49	25.0°	0.1183	18.54	61.0°	0.0240	32.38
-82.5°	0.0119	38.47	-46.5°	0.0451	26.92	-10.5°	0.0785	22.10	25.5°	0.1117	19.04	61.5°	0.0256	31.85
-82.0°	0.0119	38.48	-46.0°	0.0432	27.30	-10.0°	0.0380	28.40	26.0°	0.1051	19.57	62.0°	0.0271	31.35
-81.5°	0.0124	38.14	-45.5°	0.0398	28.00	-9.5°	0.0520	25.68	26.5°	0.0946	20.48	62.5°	0.0281	31.03
-81.0°	0.0129	37.82	-45.0°	0.0365	28.76	-9.0°	0.0660	23.61	27.0°	0.0842	21.49	63.0°	0.0291	30.73
-80.5°	0.0128	37.84	-44.5°	0.0318	29.96	-8.5°	0.1274	17.89	27.5°	0.0713	22.94	63.5°	0.0298	30.53
-80.0°	0.0128	37.86	-44.0°	0.0271	31.35	-8.0°	0.1889	14.48	28.0°	0.0583	24.68	64.0°	0.0304	30.33
-79.5°	0.0132	37.57	-43.5°	0.0212	33.47	-7.5°	0.2568	11.81	28.5°	0.0441	27.11	64.5°	0.0307	30.27
-79.0°	0.0137	37.28	-43.0°	0.0153	36.29	-7.0°	0.3248	9.77	29.0°	0.0299	30.48	65.0°	0.0309	30.20
-78.5°	0.0141	37.01	-42.5°	0.0084	41.48	-6.5°	0.3956	8.05	29.5°	0.0157	36.08	65.5°	0.0310	30.18
-78.0°	0.0145	36.76	-42.0°	0.0015	56.24	-6.0°	0.4665	6.62	30.0°	0.0015	56.45	66.0°	0.0310	30.16
-77.5°	0.0149	36.52	-41.5°	0.0075	42.44	-5.5°	0.5363	5.41	30.5°	0.0131	37.67	66.5°	0.0307	30.25
-77.0°	0.0153	36.29	-41.0°	0.0136	37.36	-5.0°	0.6060	4.35	31.0°	0.0246	32.16	67.0°	0.0304	30.34
-76.5°	0.0162	35.83	-40.5°	0.0213	33.42	-4.5°	0.6705	3.47	31.5°	0.0357	28.94	67.5°	0.0301	30.42
-76.0°	0.0170	35.39	-40.0°	0.0291	30.72	-4.0°	0.7350	2.67	32.0°	0.0468	26.60	68.0°	0.0298	30.51
-75.5°	0.0173	35.23	-39.5°	0.0366	28.74	-3.5°	0.7899	2.05	32.5°	0.0552	25.16	68.5°	0.0292	30.68
-75.0°	0.0176	35.07	-39.0°	0.0440	27.13	-3.0°	0.8447	1.47	33.0°	0.0636	23.93	69.0°	0.0286	30.86
-74.5°	0.0184	34.72	-38.5°	0.0506	25.91	-2.5°	0.8867	1.04	33.5°	0.0690	23.22	69.5°	0.0278	31.12
-74.0°	0.0191	34.39	-38.0°	0.0573	24.84	-2.0°	0.9287	0.64	34.0°	0.0744	22.57	70.0°	0.0270	31.38
-73.5°	0.0197	34.10	-37.5°	0.0624	24.10	-1.5°	0.9552	0.40	34.5°	0.0768	22.30	70.5°	0.0263	31.59
-73.0°	0.0204	33.82	-37.0°	0.0675	23.41	-1.0°	0.9816	0.16	35.0°	0.0791	22.03	71.0°	0.0257	31.81
-72.5°	0.0209	33.58	-36.5°	0.0707	23.01	-0.5°	0.9908	0.08	35.5°	0.0784	22.11	71.5°	0.0249	32.09
-72.0°	0.0215	33.36	-36.0°	0.0739	22.63	0.0°	1.0000	0.00	36.0°	0.0777	22.19	72.0°	0.0241	32.37
-71.5°	0.0223	33.02	-35.5°	0.0746	22.55	0.5°	0.9913	0.08	36.5°	0.0745	22.56	72.5°	0.0231	32.73
-71.0°	0.0232	32.69	-35.0°	0.0753	22.47	1.0°	0.9826	0.15	37.0°	0.0712	22.95	73.0°	0.0221	33.09
-70.5°	0.0239	32.43	-34.5°	0.0732	22.71	1.5°	0.9566	0.39	37.5°	0.0659	23.63	73.5°	0.0215	33.34
-70.0°	0.0246	32.18	-34.0°	0.0711	22.96	2.0°	0.9306	0.62	38.0°	0.0605	24.36	74.0°	0.0209	33.60
-69.5°	0.0251	32.00	-33.5°	0.0659	23.62	2.5°	0.8893	1.02	38.5°	0.0535	25.43	74.5°	0.0202	33.89
-69.0°	0.0256	31.83	-33.0°	0.0608	24.32	3.0°	0.8481	1.43	39.0°	0.0465	26.64	75.0°	0.0195	34.20
-68.5°	0.0263	31.60	-32.5°	0.0528	25.55	3.5°	0.7931	2.01	39.5°	0.0387	28.25	75.5°	0.0187	34.55
-68.0°	0.0270	31.38	-32.0°	0.0448	26.98	4.0°	0.7380	2.64	40.0°	0.0309	30.21	76.0°	0.0179	34.92
-67.5°	0.0274	31.25	-31.5°	0.0342	29.32	4.5°	0.6739	3.43	40.5°	0.0226	32.91	76.5°	0.0176	35.09
-67.0°	0.0278	31.13	-31.0°	0.0236	32.53	5.0°	0.6097	4.30	41.0°	0.0144	36.84	77.0°	0.0172	35.27
-66.5°	0.0279	31.09	-30.5°	0.0125	38.04	5.5°	0.5398	5.36	41.5°	0.0080	41.93	77.5°	0.0164	35.72
-66.0°	0.0280	31.06	-30.0°	0.0014	56.82	6.0°	0.4698	6.56	42.0°	0.0016	55.73	78.0°	0.0155	36.19
-65.5°	0.0281	31.04	-29.5°	0.0151	36.41	6.5°	0.3988	7.98	42.5°	0.0090	40.93	78.5°	0.0151	36.43
-65.0°	0.0281	31.01	-29.0°	0.0288	30.82	7.0°	0.3278	9.69	43.0°	0.0163	35.74	79.0°	0.0147	36.68
-64.5°	0.0278	31.11	-28.5°	0.0425	27.44	7.5°	0.2593	11.72	43.5°	0.0226	32.91	79.5°	0.0142	36.94
-64.0°	0.0275	31.21	-28.0°	0.0562	25.01	8.0°	0.1909	14.39	44.0°	0.0289	30.77	80.0°	0.0138	37.22
-63.5°	0.0270	31.37	-27.5°	0.0687	23.26	8.5°	0.1288	17.80	44.5°	0.0340	29.37	80.5°	0.0133	37.51
-63.0°	0.0265	31.54	-27.0°	0.0812	21.80	9.0°	0.0668	23.51	45.0°	0.0390	28.17	81.0°	0.0129	37.82
-62.5°	0.0255	31.86	-26.5°	0.0913	20.79	9.5°	0.0526	25.58	45.5°	0.0426	27.41	81.5°	0.0129	37.80
-62.0°	0.0246	32.20	-26.0°	0.1014	19.88	10.0°	0.0385	28.30	46.0°	0.0462	26.71	82.0°	0.0129	37.79
-61.5°	0.0233	32.66	-25.5°	0.1079	19.34	10.5°	0.0795	21.99	46.5°	0.0483	26.31	82.5°	0.0124	38.12
-61.0°	0.0220	33.16	-25.0°	0.1144	18.83	11.0°	0.1206	18.37	47.0°	0.0505	25.94	83.0°	0.0119	38.46
-60.5°	0.0202	33.89	-24.5°	0.1162	18.70	11.5°	0.1490	16.54	47.5°	0.0512	25.82	83.5°	0.0120	38.45
-60.0°	0.0184	34.70	-24.0°	0.1180	18.56	12.0°	0.1774	15.02	48.0°	0.0518	25.71	84.0°	0.0120	38.44
-59.5°	0.0162	35.83	-23.5°	0.1143	18.84	12.5°	0.1928	14.30	48.5°	0.0512	25.81	84.5°	0.0120	38.44
-59.0°	0.0139	37.14	-23.0°	0.1106	19.12	13.0°	0.2082	13.63	49.0°	0.0507	25.91	85.0°	0.0120	38.43
-58.5°	0.0113	38.92	-22.5°	0.1013	19.89	13.5°	0.2116	13.49	49.5°	0.0490	26.20	85.5°	0.0120	38.43
-58.0°	0.0088	41.15	-22.0°	0.0920	20.73	14.0°	0.2150	13.35	50.0°	0.0473	26.49	86.0°	0.0120	38.42
-57.5°	0.0057	44.85	-21.5°	0.0770	22.28	14.5°	0.2077	13.65	50.5°	0.0447	26.99	86.5°	0.0120	38.42
-57.0°	0.0027	51.40	-21.0°	0.0620	24.16	15.0°	0.2003	13.97	51.0°	0.0421	27.52	87.0°	0.0120	38.42
-56.5°	0.0033	49.52	-20.5°	0.0422	27.50	15.5°	0.1846	14.67	51.5°	0.0388	28.22	87.5°	0.0120	38.42
-56.0°	0.0040	47.97	-20.0°	0.0224	32.98	16.0°	0.1689	15.45	52.0°	0.0355	28.99	88.0°	0.0120	38.42
-55.5°	0.0076	42.39	-19.5°	0.0233	32.65	16.5°	0.1473	16.64	52.5°	0.0319	29.94	88.5°	0.0120	38.42
-55.0°	0.0112	39.03	-19.0°	0.0242	32.33	17.0°	0.1257	18.02	53.0°	0.0282	31.01	89.0°	0.0120	38.42
-54.5°	0.0149	36.56	-18.5°	0.0492	26.17	17.5°	0.1008	19.93	53.5°	0.0242	32.33	89.5°	0.0125	38.06

Elevação



Parâmetros da configuração

ELEMENTOS VERTICAIS

7

ÂNGULO DE MEIA POTÊNCIA VERTICAL

7.60°

GANHO

5.33 dBd

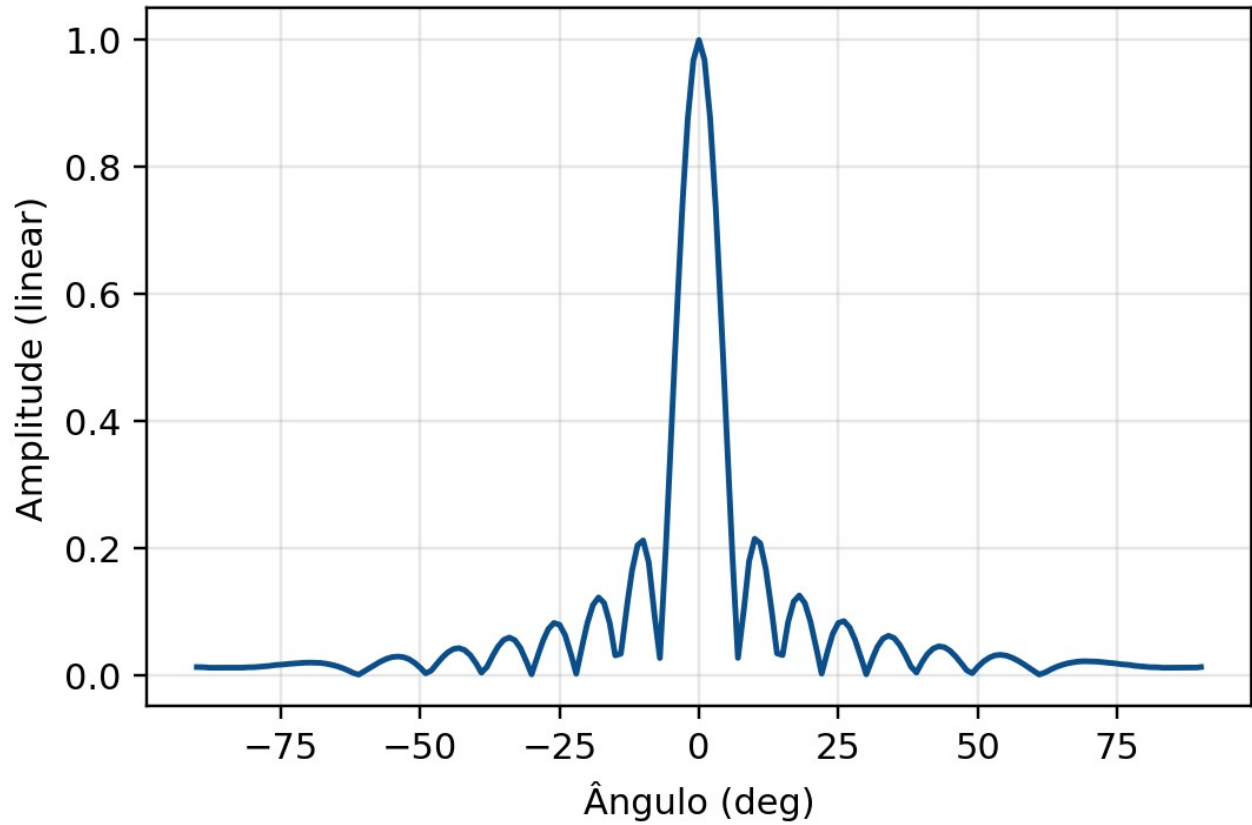
PRIMEIRO NULO

8.00°

Tabela completa - Elevação

Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB	Ângulo	E/E _{max}	Aten. dB
-90.0°	0.0130	37.72	-54.0°	0.0303	30.38	-18.0°	0.0677	23.39	18.0°	0.0694	23.18	54.0°	0.0330	29.64
-89.5°	0.0130	37.72	-53.5°	0.0322	29.83	-17.5°	0.0440	27.13	18.5°	0.0866	21.25	54.5°	0.0302	30.39
-89.0°	0.0130	37.72	-53.0°	0.0342	29.33	-17.0°	0.0203	33.86	19.0°	0.1038	19.68	55.0°	0.0275	31.21
-88.5°	0.0125	38.06	-52.5°	0.0354	29.03	-16.5°	0.0285	30.92	19.5°	0.1127	18.96	55.5°	0.0243	32.29
-88.0°	0.0120	38.42	-52.0°	0.0366	28.74	-16.0°	0.0366	28.72	20.0°	0.1217	18.30	56.0°	0.0211	33.52
-87.5°	0.0120	38.42	-51.5°	0.0367	28.70	-15.5°	0.0666	23.53	20.5°	0.1222	18.26	56.5°	0.0177	35.04
-87.0°	0.0120	38.42	-51.0°	0.0369	28.67	-15.0°	0.0965	20.31	21.0°	0.1228	18.22	57.0°	0.0143	36.88
-86.5°	0.0120	38.43	-50.5°	0.0359	28.90	-14.5°	0.1240	18.13	21.5°	0.1159	18.72	57.5°	0.0109	39.22
-86.0°	0.0120	38.43	-50.0°	0.0350	29.13	-14.0°	0.1514	16.40	22.0°	0.1090	19.25	58.0°	0.0075	42.45
-85.5°	0.0120	38.43	-49.5°	0.0328	29.67	-13.5°	0.1721	15.28	22.5°	0.0962	20.34	58.5°	0.0043	47.41
-85.0°	0.0120	38.44	-49.0°	0.0307	30.26	-13.0°	0.1928	14.30	23.0°	0.0834	21.57	59.0°	0.0010	60.22
-84.5°	0.0120	38.44	-48.5°	0.0273	31.28	-12.5°	0.2027	13.86	23.5°	0.0670	23.48	59.5°	0.0030	50.37
-84.0°	0.0120	38.45	-48.0°	0.0239	32.45	-12.0°	0.2126	13.45	24.0°	0.0506	25.92	60.0°	0.0051	45.87
-83.5°	0.0119	38.46	-47.5°	0.0193	34.28	-11.5°	0.2080	13.64	24.5°	0.0327	29.71	60.5°	0.0078	42.20
-83.0°	0.0119	38.47	-47.0°	0.0148	36.60	-11.0°	0.2034	13.83	25.0°	0.0148	36.57	61.0°	0.0104	39.63
-82.5°	0.0119	38.49	-46.5°	0.0093	40.63	-10.5°	0.1822	14.79	25.5°	0.0171	35.34	61.5°	0.0127	37.90
-82.0°	0.0119	38.51	-46.0°	0.0038	48.38	-10.0°	0.1610	15.87	26.0°	0.0194	34.27	62.0°	0.0150	36.46
-81.5°	0.0123	38.17	-45.5°	0.0061	44.24	-9.5°	0.1221	18.27	26.5°	0.0338	29.41	62.5°	0.0169	35.47
-81.0°	0.0128	37.85	-45.0°	0.0085	41.45	-9.0°	0.0832	21.60	27.0°	0.0483	26.32	63.0°	0.0187	34.58
-80.5°	0.0128	37.89	-44.5°	0.0148	36.60	-8.5°	0.0555	25.11	27.5°	0.0589	24.60	63.5°	0.0201	33.92
-80.0°	0.0127	37.92	-44.0°	0.0211	33.51	-8.0°	0.0279	31.09	28.0°	0.0694	23.17	64.0°	0.0216	33.31
-79.5°	0.0131	37.63	-43.5°	0.0272	31.31	-7.5°	0.0973	20.24	28.5°	0.0753	22.47	64.5°	0.0226	32.93
-79.0°	0.0136	37.35	-43.0°	0.0333	29.55	-7.0°	0.1667	15.56	29.0°	0.0811	21.82	65.0°	0.0235	32.57
-78.5°	0.0140	37.10	-42.5°	0.0385	28.29	-6.5°	0.2457	12.19	29.5°	0.0821	21.71	65.5°	0.0242	32.31
-78.0°	0.0144	36.86	-42.0°	0.0437	27.18	-6.0°	0.3247	9.77	30.0°	0.0831	21.60	66.0°	0.0250	32.06
-77.5°	0.0147	36.64	-41.5°	0.0475	26.46	-5.5°	0.4076	7.80	30.5°	0.0796	21.98	66.5°	0.0252	31.96
-77.0°	0.0151	36.43	-41.0°	0.0513	25.80	-5.0°	0.4904	6.19	31.0°	0.0761	22.38	67.0°	0.0255	31.86
-76.5°	0.0159	35.99	-40.5°	0.0532	25.48	-4.5°	0.5708	4.87	31.5°	0.0690	23.23	67.5°	0.0257	31.80
-76.0°	0.0166	35.58	-40.0°	0.0551	25.18	-4.0°	0.6511	3.73	32.0°	0.0618	24.17	68.0°	0.0259	31.74
-75.5°	0.0169	35.45	-39.5°	0.0546	25.26	-3.5°	0.7220	2.83	32.5°	0.0522	25.65	68.5°	0.0257	31.80
-75.0°	0.0171	35.32	-39.0°	0.0541	25.34	-3.0°	0.7928	2.02	33.0°	0.0425	27.44	69.0°	0.0255	31.85
-74.5°	0.0178	35.00	-38.5°	0.0511	25.83	-2.5°	0.8484	1.43	33.5°	0.0315	30.05	69.5°	0.0251	32.02
-74.0°	0.0184	34.70	-38.0°	0.0481	26.36	-2.0°	0.9041	0.88	34.0°	0.0204	33.79	70.0°	0.0246	32.18
-73.5°	0.0189	34.46	-37.5°	0.0425	27.44	-1.5°	0.9396	0.54	34.5°	0.0111	39.07	70.5°	0.0242	32.31
-73.0°	0.0195	34.22	-37.0°	0.0369	28.67	-1.0°	0.9752	0.22	35.0°	0.0018	54.74	71.0°	0.0239	32.45
-72.5°	0.0199	34.04	-36.5°	0.0290	30.76	-0.5°	0.9876	0.11	35.5°	0.0120	38.42	71.5°	0.0233	32.67
-72.0°	0.0203	33.87	-36.0°	0.0211	33.52	0.0°	1.0000	0.00	36.0°	0.0222	33.09	72.0°	0.0227	32.89
-71.5°	0.0209	33.60	-35.5°	0.0114	38.85	0.5°	0.9881	0.10	36.5°	0.0305	30.31	72.5°	0.0219	33.19
-71.0°	0.0215	33.33	-35.0°	0.0017	55.17	1.0°	0.9762	0.21	37.0°	0.0388	28.11	73.0°	0.0211	33.50
-70.5°	0.0220	33.16	-34.5°	0.0106	39.47	1.5°	0.9410	0.53	37.5°	0.0448	26.97	73.5°	0.0206	33.70
-70.0°	0.0224	32.98	-34.0°	0.0195	34.19	2.0°	0.9059	0.86	38.0°	0.0508	25.88	74.0°	0.0202	33.91
-69.5°	0.0226	32.90	-33.5°	0.0301	30.44	2.5°	0.8509	1.40	38.5°	0.0540	25.35	74.5°	0.0196	34.18
-69.0°	0.0229	32.82	-33.0°	0.0406	27.83	3.0°	0.7960	1.98	39.0°	0.0572	24.85	75.0°	0.0190	34.45
-68.5°	0.0231	32.72	-32.5°	0.0499	26.04	3.5°	0.7249	2.79	39.5°	0.0578	24.76	75.5°	0.0183	34.77
-68.0°	0.0234	32.61	-32.0°	0.0592	24.55	4.0°	0.6537	3.69	40.0°	0.0584	24.67	76.0°	0.0176	35.11
-67.5°	0.0234	32.63	-31.5°	0.0661	23.60	4.5°	0.5736	4.83	40.5°	0.0564	24.97	76.5°	0.0173	35.26
-67.0°	0.0233	32.65	-31.0°	0.0729	22.74	5.0°	0.4934	6.14	41.0°	0.0544	25.28	77.0°	0.0170	35.41
-66.5°	0.0229	32.80	-30.5°	0.0763	22.35	5.5°	0.4102	7.74	41.5°	0.0504	25.95	77.5°	0.0161	35.84
-66.0°	0.0225	32.95	-30.0°	0.0797	21.97	6.0°	0.3270	9.71	42.0°	0.0464	26.67	78.0°	0.0153	36.30
-65.5°	0.0220	33.16	-29.5°	0.0789	22.06	6.5°	0.2477	12.12	42.5°	0.0409	27.76	78.5°	0.0149	36.52
-65.0°	0.0214	33.38	-29.0°	0.0780	22.16	7.0°	0.1683	15.48	43.0°	0.0355	29.01	79.0°	0.0145	36.75
-64.5°	0.0205	33.78	-28.5°	0.0724	22.80	7.5°	0.0982	20.16	43.5°	0.0290	30.75	79.5°	0.0141	37.01
-64.0°	0.0195	34.20	-28.0°	0.0669	23.50	8.0°	0.0282	31.00	44.0°	0.0226	32.93	80.0°	0.0137	37.27
-63.5°	0.0183	34.77	-27.5°	0.0567	24.92	8.5°	0.0561	25.01	44.5°	0.0158	36.02	80.5°	0.0132	37.56
-63.0°	0.0170	35.38	-27.0°	0.0466	26.63	9.0°	0.0841	21.50	45.0°	0.0090	40.87	81.0°	0.0128	37.85
-62.5°	0.0153	36.29	-26.5°	0.0326	29.72	9.5°	0.1235	18.17	45.5°	0.0066	43.66	81.5°	0.0128	37.83
-62.0°	0.0136	37.31	-26.0°	0.0187	34.57	10.0°	0.1628	15.76	46.0°	0.0041	47.79	82.0°	0.0129	37.81
-61.5°	0.0116	38.72	-25.5°	0.0165	35.64	10.5°	0.1845	14.68	46.5°	0.0100	40.01	82.5°	0.0124	38.14
-61.0°	0.0095	40.41	-25.0°	0.0144	36.86	11.0°	0.2063	13.71	47.0°	0.0159	35.98	83.0°	0.0119	38.47
-60.5°	0.0071	42.99	-24.5°	0.0317	29.98	11.5°	0.2111	13.51	47.5°	0.0208	33.65	83.5°	0.0119	38.46
-60.0°	0.0046	46.68	-24.0°	0.0490	26.20	12.0°	0.2158	13.32	48.0°	0.0257	31.81	84.0°	0.0120	38.45
-59.5°	0.0028	51.18	-23.5°	0.0650	23.75	12.5°	0.2059	13.73	48.5°	0.0293	30.65	84.5°	0.0120	38.44
-59.0°	0.0009	61.06	-23.0°	0.0809	21.84	13.0°	0.1960	14.15	49.0°	0.0330	29.62	85.0°	0.0120	38.44
-58.5°	0.0039	48.18	-22.5°	0.0934	20.59	13.5°	0.1751	15.13	49.5°	0.0354	29.02	85.5°	0.0120	38.43
-58.0°	0.0069	43.21	-22.0°	0.1059	19.50	14.0°	0.1542	16.24	50.0°	0.0378	28.45	86.0°	0.0120	38.43
-57.5°	0.0100	40.00	-21.5°	0.1127	18.96	14.5°	0.1262	17.98	50.5°	0.0388	28.21	86.5°	0.0120	38.43
-57.0°	0.0131	37.66	-21.0°	0.1194	18.46	15.0°	0.0983	20.15	51.0°	0.0399	27.99	87.0°	0.0120	38.42
-56.5°	0.0163	35.78	-20.5°	0.1190	18.49	15.5°	0.0678	23.37	51.5°	0.0397	28.02	87.5°	0.0120	38.42
-56.0°	0.0194	34.24	-20.0°	0.1186	18.52	16.0°	0.0374	28.55	52.0°	0.0396	28.06	88.0°	0.0120	38.42
-55.5°	0.0224	33.01	-19.5°	0.1099	19.18	16.5°	0.0290	30.74	52.5°	0.0384	28.32	88.5°	0.0120	38.42
-55.0°	0.0253	31.94	-19.0°	0.1012	19.90	17.0°	0.0207	33.67	53.0°	0.0372	28.59	89.0°	0.0120	38.42
-54.5°	0.0278	31.12	-18.5°	0.0845	21.47	17.5°	0.0450	26.93	53.5°	0.0351	29.10	89.5°	0.0125	38.06

Elevação



Parâmetros da configuração

ELEMENTOS VERTICAIS

8

ÂNGULO DE MEIA POTÊNCIA VERTICAL

7.16°

GANHO

5.90 dBd

PRIMEIRO NULO

7.00°

Tabela completa - Elevação

Ângulo	E/Emax	Aten. dB	Ângulo	E/Emax	Aten. dB	Ângulo	E/Emax	Aten. dB	Ângulo	E/Emax	Aten. dB	Ângulo	E/Emax	Aten. dB
-90.0°	0.0130	37.72	-54.0°	0.0297	30.54	-18.0°	0.1226	18.23	18.0°	0.1257	18.02	54.0°	0.0323	29.81
-89.5°	0.0130	37.72	-53.5°	0.0292	30.69	-17.5°	0.1182	18.54	18.5°	0.1196	18.45	54.5°	0.0318	29.94
-89.0°	0.0130	37.72	-53.0°	0.0287	30.85	-17.0°	0.1138	18.87	19.0°	0.1135	18.90	55.0°	0.0313	30.08
-88.5°	0.0125	38.07	-52.5°	0.0271	31.34	-16.5°	0.0982	20.16	19.5°	0.0990	20.09	55.5°	0.0299	30.50
-88.0°	0.0120	38.42	-52.0°	0.0255	31.86	-16.0°	0.0826	21.66	20.0°	0.0845	21.47	56.0°	0.0284	30.94
-87.5°	0.0120	38.42	-51.5°	0.0227	32.86	-15.5°	0.0569	24.89	20.5°	0.0648	23.77	56.5°	0.0262	31.63
-87.0°	0.0120	38.42	-51.0°	0.0200	33.99	-15.0°	0.0313	30.10	21.0°	0.0451	26.92	57.0°	0.0241	32.37
-86.5°	0.0120	38.43	-50.5°	0.0162	35.81	-14.5°	0.0326	29.74	21.5°	0.0238	32.46	57.5°	0.0215	33.36
-86.0°	0.0120	38.43	-50.0°	0.0124	38.13	-14.0°	0.0339	29.39	22.0°	0.0026	51.71	58.0°	0.0189	34.48
-85.5°	0.0120	38.44	-49.5°	0.0077	42.23	-13.5°	0.0686	23.28	22.5°	0.0193	34.27	58.5°	0.0159	35.95
-85.0°	0.0120	38.44	-49.0°	0.0031	50.23	-13.0°	0.1032	19.72	23.0°	0.0361	28.85	59.0°	0.0130	37.71
-84.5°	0.0120	38.45	-48.5°	0.0052	45.64	-12.5°	0.1339	17.46	23.5°	0.0508	25.88	59.5°	0.0100	39.98
-84.0°	0.0119	38.46	-48.0°	0.0074	42.65	-12.0°	0.1646	15.67	24.0°	0.0656	23.67	60.0°	0.0070	43.04
-83.5°	0.0119	38.48	-47.5°	0.0127	37.90	-11.5°	0.1848	14.67	24.5°	0.0740	22.62	60.5°	0.0041	47.69
-83.0°	0.0119	38.49	-47.0°	0.0181	34.84	-11.0°	0.2049	13.77	25.0°	0.0824	21.68	61.0°	0.0012	58.36
-82.5°	0.0119	38.51	-46.5°	0.0231	32.72	-10.5°	0.2086	13.61	25.5°	0.0839	21.52	61.5°	0.0027	51.38
-82.0°	0.0118	38.53	-46.0°	0.0282	31.01	-10.0°	0.2124	13.46	26.0°	0.0854	21.37	62.0°	0.0042	47.56
-81.5°	0.0123	38.21	-45.5°	0.0322	29.84	-9.5°	0.1951	14.19	26.5°	0.0805	21.89	62.5°	0.0066	43.66
-81.0°	0.0127	37.90	-45.0°	0.0363	28.80	-9.0°	0.1779	15.00	27.0°	0.0756	22.43	63.0°	0.0089	40.98
-80.5°	0.0127	37.94	-44.5°	0.0388	28.21	-8.5°	0.1377	17.22	27.5°	0.0656	23.66	63.5°	0.0110	39.20
-80.0°	0.0126	37.98	-44.0°	0.0414	27.66	-8.0°	0.0974	20.22	28.0°	0.0557	25.09	64.0°	0.0130	37.72
-79.5°	0.0130	37.70	-43.5°	0.0421	27.51	-7.5°	0.0623	24.11	28.5°	0.0426	27.41	64.5°	0.0146	36.72
-79.0°	0.0134	37.44	-43.0°	0.0429	27.36	-7.0°	0.0272	31.32	29.0°	0.0296	30.58	65.0°	0.0162	35.82
-78.5°	0.0138	37.21	-42.5°	0.0413	27.68	-6.5°	0.1076	19.36	29.5°	0.0155	36.17	65.5°	0.0175	35.16
-78.0°	0.0142	36.98	-42.0°	0.0397	28.02	-6.0°	0.1881	14.51	30.0°	0.0015	56.45	66.0°	0.0187	34.54
-77.5°	0.0145	36.79	-41.5°	0.0358	28.93	-5.5°	0.2800	11.06	30.5°	0.0130	37.75	66.5°	0.0196	34.16
-77.0°	0.0148	36.60	-41.0°	0.0318	29.94	-5.0°	0.3719	8.59	31.0°	0.0244	32.25	67.0°	0.0204	33.80
-76.5°	0.0155	36.19	-40.5°	0.0258	31.78	-4.5°	0.4664	6.62	31.5°	0.0347	29.20	67.5°	0.0210	33.54
-76.0°	0.0162	35.80	-40.0°	0.0197	34.12	-4.0°	0.5610	5.02	32.0°	0.0450	26.94	68.0°	0.0217	33.28
-75.5°	0.0164	35.70	-39.5°	0.0119	38.49	-3.5°	0.6481	3.77	32.5°	0.0514	25.78	68.5°	0.0219	33.17
-75.0°	0.0166	35.60	-39.0°	0.0041	47.72	-3.0°	0.7353	2.67	33.0°	0.0579	24.75	69.0°	0.0222	33.07
-74.5°	0.0171	35.33	-38.5°	0.0087	41.20	-2.5°	0.8057	1.88	33.5°	0.0601	24.42	69.5°	0.0221	33.11
-74.0°	0.0176	35.07	-38.0°	0.0133	37.52	-2.0°	0.8761	1.15	34.0°	0.0623	24.11	70.0°	0.0220	33.15
-73.5°	0.0180	34.88	-37.5°	0.0219	33.18	-1.5°	0.9220	0.71	34.5°	0.0605	24.37	70.5°	0.0219	33.18
-73.0°	0.0184	34.70	-37.0°	0.0306	30.30	-1.0°	0.9679	0.28	35.0°	0.0586	24.64	71.0°	0.0218	33.22
-72.5°	0.0186	34.59	-36.5°	0.0380	28.40	-0.5°	0.9839	0.14	35.5°	0.0532	25.48	71.5°	0.0215	33.35
-72.0°	0.0189	34.48	-36.0°	0.0455	26.84	0.0°	1.0000	0.00	36.0°	0.0478	26.40	72.0°	0.0212	33.49
-71.5°	0.0193	34.29	-35.5°	0.0506	25.91	0.5°	0.9844	0.14	36.5°	0.0400	27.95	72.5°	0.0206	33.73
-71.0°	0.0197	34.10	-35.0°	0.0558	25.07	1.0°	0.9688	0.28	37.0°	0.0322	29.84	73.0°	0.0200	33.97
-70.5°	0.0199	34.03	-34.5°	0.0576	24.78	1.5°	0.9234	0.69	37.5°	0.0231	32.71	73.5°	0.0197	34.13
-70.0°	0.0201	33.95	-34.0°	0.0595	24.50	2.0°	0.8779	1.13	38.0°	0.0141	37.04	74.0°	0.0193	34.28
-69.5°	0.0200	33.99	-33.5°	0.0574	24.82	2.5°	0.8081	1.85	38.5°	0.0092	40.72	74.5°	0.0188	34.51
-69.0°	0.0199	34.04	-33.0°	0.0553	25.14	3.0°	0.7382	2.64	39.0°	0.0043	47.24	75.0°	0.0183	34.73
-68.5°	0.0197	34.09	-32.5°	0.0492	26.17	3.5°	0.6507	3.73	39.5°	0.0126	37.99	75.5°	0.0177	35.02
-68.0°	0.0196	34.15	-32.0°	0.0430	27.33	4.0°	0.5633	4.99	40.0°	0.0209	33.61	76.0°	0.0171	35.33
-67.5°	0.0191	34.37	-31.5°	0.0332	29.57	4.5°	0.4687	6.58	40.5°	0.0273	31.27	76.5°	0.0169	35.45
-67.0°	0.0186	34.59	-31.0°	0.0234	32.61	5.0°	0.3741	8.54	41.0°	0.0338	29.43	77.0°	0.0166	35.57
-66.5°	0.0178	35.01	-30.5°	0.0124	38.11	5.5°	0.2818	11.00	41.5°	0.0380	28.41	77.5°	0.0159	35.99
-66.0°	0.0169	35.44	-30.0°	0.0014	56.82	6.0°	0.1894	14.45	42.0°	0.0421	27.50	78.0°	0.0151	36.42
-65.5°	0.0158	36.01	-29.5°	0.0149	36.51	6.5°	0.1084	19.30	42.5°	0.0439	27.15	78.5°	0.0147	36.63
-65.0°	0.0147	36.63	-29.0°	0.0284	30.92	7.0°	0.0274	31.24	43.0°	0.0456	26.81	79.0°	0.0144	36.84
-64.5°	0.0132	37.56	-28.5°	0.0410	27.74	7.5°	0.0629	24.02	43.5°	0.0449	26.95	79.5°	0.0140	37.08
-64.0°	0.0117	38.60	-28.0°	0.0536	25.41	8.0°	0.0985	20.13	44.0°	0.0443	27.08	80.0°	0.0136	37.33
-63.5°	0.0099	40.05	-27.5°	0.0632	23.98	8.5°	0.1392	17.13	44.5°	0.0415	27.63	80.5°	0.0132	37.61
-63.0°	0.0081	41.78	-27.0°	0.0729	22.75	9.0°	0.1799	14.90	45.0°	0.0388	28.22	81.0°	0.0127	37.90
-62.5°	0.0060	44.48	-26.5°	0.0777	22.20	9.5°	0.1974	14.09	45.5°	0.0345	29.25	81.5°	0.0128	37.87
-62.0°	0.0038	48.41	-26.0°	0.0825	21.68	10.0°	0.2149	13.36	46.0°	0.0301	30.42	82.0°	0.0128	37.84
-61.5°	0.0025	52.21	-25.5°	0.0811	21.82	10.5°	0.2113	13.50	46.5°	0.0248	32.11	82.5°	0.0124	38.16
-61.0°	0.0011	59.13	-25.0°	0.0797	21.97	11.0°	0.2078	13.65	47.0°	0.0195	34.22	83.0°	0.0119	38.49
-60.5°	0.0038	48.49	-24.5°	0.0716	22.90	11.5°	0.1875	14.54	47.5°	0.0137	37.27	83.5°	0.0119	38.48
-60.0°	0.0064	43.85	-24.0°	0.0635	23.94	12.0°	0.1672	15.54	48.0°	0.0079	42.02	84.0°	0.0119	38.46
-59.5°	0.0091	40.80	-23.5°	0.0493	26.15	12.5°	0.1361	17.33	48.5°	0.0056	45.00	84.5°	0.0120	38.45
-59.0°	0.0118	38.55	-23.0°	0.0350	29.12	13.0°	0.1049	19.58	49.0°	0.0033	49.59	85.0°	0.0120	38.44
-58.5°	0.0145	36.74	-22.5°	0.0188	34.53	13.5°	0.0697	23.13	49.5°	0.0084	41.55	85.5°	0.0120	38.44
-58.0°	0.0173	35.25	-22.0°	0.0025	51.96	14.0°	0.0345	29.24	50.0°	0.0134	37.45	86.0°	0.0120	38.43
-57.5°	0.0196	34.14	-21.5°	0.0232	32.70	14.5°	0.0332	29.58	50.5°	0.0175	35.13	86.5°	0.0120	38.43
-57.0°	0.0220	33.15	-21.0°	0.0438	27.16	15.0°	0.0319	29.94	51.0°	0.0216	33.30	87.0°	0.0120	38.42
-56.5°	0.0241	32.38	-20.5°	0.0631	24.00	15.5°	0.0581	24.72	51.5°	0.0246	32.18	87.5°	0.0120	38.42
-56.0°	0.0261	31.66	-20.0°	0.0823	21.69	16.0°	0.0843	21.49	52.0°	0.0276	31.18	88.0°	0.0120	38.42
-55.5°	0.0275	31.22	-19.5°	0.0965	20.31	16.5°	0.1003	19.98	52.5°	0.0294	30.63	88.5°	0.0120	38.42
-55.0°	0.0288	30.81	-19.0°	0.1107	19.12	17.0°	0.1163	18.69	53.0°	0.0312	30.11	89.0°	0.0120	38.42
-54.5°	0.0293	30.67	-18.5°	0.1167	18.66	17.5°	0.1210	18.35	53.5°	0.0318	29.96	89.5°	0.0125	38.06