RADIO ENGINEERING
MICROWAVE RADIO
ANTENNA SPECIFICATIONS
KS-19529, 10-FOOT, 6- AND 11-GHz

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1. GENERAL

1.01 The KS-19529 antenna ▮(now rated Manufacture Discontinued)◀ is a 10-foot parabolic dish antenna for use on short-haul 6- and 11-GHz radio routes, such as TL and TM microwave radio systems operating in crossband diversity.

1.02 This section is reissued to make corrections in Tables C and D and to make corresponding corrections in Fig. 1 and 2. Arrows are used to indicate significant changes.

1.03 The 3-port construction of the feed assembly provides the capability of operating with one polarization in the 6-GHz frequency band and two polarizations in the 11-GHz frequency band.

2. TRANSMISSION CHARACTERISTICS

2.01 The gain-frequency characteristics are shown in Table A. Other transmission characteristics are shown in Table B.

2.02 The minimum return loss of 23 dB corresponds to a voltage standing wave ratio of 1.15 to 1.

TABLE A

GAIN-FREQUENCY CHARACTERISTICS

FREQUENCY (GHz)	GAIN MIN (dB) WITH RADOME
5.925	41.9
6.175	42.3
6.425	42.7
10.7	46.3
11.2	46.7
11.7	47.1

TABLE B

TRANSMISSION CHARACTERISTICS

CHARACTERISTIC	FREQUENCY	
	6.175 GHz	11.2 GHz
Half-Power Beam Width	1.2 degrees	0.7 degree
Major Sidelobe Suppression	20.0 dB MIN	13.0 dB MIN
Radome Insertion Loss	0.6 dB	1.2 dB
Return Loss	23 dB MIN	
Polarization Discrimination	18 dB MIN	

2.03 Smoothed, horizontal-plane (azimuthal) directivity characteristics are given in Tables C and D, and illustrated in Fig. 1 and 2, respectively. ◗These tables list both principal and cross-polarized radiation discrimination (in dB) as a function of azimuthal angle (in degrees) at 6 GHz and 11 GHz.◖ Azimuthal angles are given between 0 and 180 degrees. In each table, the first letter of the four columns designated VV, VH, HH, and HV denotes ***V***ertical or ***H***orizontal polarization of the ***signal.*** The second letter of the four columns, V or H, denotes the polarization which the ***antenna*** is arranged to receive. Figures 1 and 2 are graphical presentations of the information given in Tables C and D, respectively. The curves of Fig. 1 and 2 envelop the minor lobes that are likely to occur within the 6- and 11-GHz frequency bands, respectively, and may be used as a worse-case situation when making interference computations. ◗When used at 6 GHz (Table C), the KS-19529 antenna has an interference code of 051; when used at 11 GHz (Table D), the code is 052.◖

3. EQUIPMENT DESCRIPTION

3.01 The KS-19529 antenna consists of a 10-foot spun-aluminum dish, a composite circular feed assembly, a radome, and a mounting frame for attaching the reflector to a tower or other structure.

3.02 A radome fits over the front face of the reflector and is required for the antenna to meet the design wind load requirements. The radome provides the feed assembly clamp and is required for feed assembly support and protection. Dish and feed heaters are not available.

3.03 The feed assembly consists of a composite circular feed assembly mounted in front of the reflector at a focal length of 48 inches. Two WR-90 waveguides and one WR-159 waveguide are extended from the network feed to the edge of the reflector where they terminate in gasketed flanges. Polarization may be changed by rotation of the feed assembly around the edge of the dish.

3.04 The mounting frame provides for independent azimuth and elevation adjustment. A fine adjustment of ± 6 degrees on azimuth and ± 4 degrees on elevation is possible with the mounting frame design.

3.05 The reflector and feed assembly weighs approximately 325 pounds. The mounting frame and radome weigh approximately 275 and 160 pounds, respectively. The mounting frame and antenna with radome are designed for a wind load of 40 pounds per square foot.

3.06 The equipment information is shown in Table E.

4. REFERENCES

SD-3C041-01	Short-Haul Radio—Parabolic Reflector Antennas, Passive Reflectors, and Outdoor Waveguide Systems
940-340-131	Microwave Radio—Waveguide Systems—Design Considerations
◗804-309-150◖	Antennas, Passive Reflectors, and Radomes for Microwave Communication Systems—Toll Systems

◗ TABLE C ◖

DISCRIMINATION OF KS-19529 ANTENNA
AT 6 GHZ

ANGLE (DEGREES)	DISCRIMINATION (DECIBELS) VV	VH	HH	HV
0	0.0	20.0	0.0	20.0
1	10.0	22.4	10.0	22.4
2	20.0	24.8	20.0	24.8
3	21.3	27.2	21.3	27.2
4	22.7	29.6	22.7	29.6
5	24.0	32.0	24.0	32.0
6	25.3	34.4	25.3	34.4
7	26.7	36.8	26.7	36.8
8	28.0	39.2	28.0	39.2
9	29.4	41.6	29.4	41.6
10	30.7	44.0	30.7	44.0
11	32.0	44.6	32.0	44.6
12	33.4	45.2	33.4	45.2
13	34.7	45.8	34.7	45.8
14	36.0	46.4	36.0	46.4
15	37.3	47.0	37.3	47.0
16	38.7	47.6	38.7	47.6
17	40.0	48.2	40.0	48.2
18	41.3	48.8	41.3	48.8
19	42.7	49.4	42.7	49.4
20	44.0	50.0	44.0	50.0
21	44.3	50.1	44.3	50.1
22	44.6	50.2	44.6	50.2
23	44.9	50.3	44.9	50.3
24	45.2	50.4	45.2	50.4
25	45.5	50.5	45.5	50.5
26	45.8	50.6	45.8	50.6
27	46.1	50.7	46.1	50.7
28	46.4	50.8	46.4	50.8
29	46.7	50.9	46.7	50.9
30	47.0	51.0	47.0	51.0
31	46.9	51.0	46.9	51.0
32	46.8	51.0	46.8	51.0
33	46.7	50.9	46.7	50.9
34	46.6	50.9	46.6	50.9
35	46.5	50.9	46.5	50.9

◗ TABLE C (Cont) ◖

ANGLE (DEGREES)	DISCRIMINATION (DECIBELS) VV	VH	HH	HV
36	46.4	50.9	46.4	50.9
37	46.3	50.9	46.3	50.9
38	46.2	50.8	46.2	50.8
39	46.1	50.8	46.1	50.8
40	46.0	50.8	46.0	50.8
41	46.2	50.8	46.2	50.8
42	46.4	50.7	46.4	50.7
43	46.6	50.7	46.6	50.7
44	46.8	50.7	46.8	50.7
45	47.0	50.6	47.0	50.6
46	47.2	50.6	47.2	50.6
47	47.4	50.6	47.4	50.6
48	47.6	50.6	47.6	50.6
49	47.8	50.5	47.8	50.5
50	48.0	50.5	48.0	50.5
51	48.0	50.4	48.0	50.4
52	48.0	50.4	48.0	50.4
53	48.0	50.3	48.0	50.3
54	48.0	50.3	48.0	50.3
55	48.0	50.3	48.0	50.3
56	48.0	50.2	48.0	50.2
57	48.0	50.1	48.0	50.1
58	48.0	50.1	48.0	50.1
59	48.0	50.0	48.0	50.0
60	48.0	50.0	48.0	50.0
61	48.0	50.0	48.0	50.0
62	48.0	50.1	48.0	50.1
63	47.9	50.1	47.9	50.1
64	47.9	50.2	47.9	50.2
65	47.9	50.2	47.9	50.2
66	47.9	50.3	47.9	50.3
67	47.9	50.3	47.9	50.3
68	47.8	50.4	47.8	50.4
69	47.8	50.4	47.8	50.4
70	47.8	50.5	47.8	50.5
71	47.8	50.5	47.8	50.5
72	47.8	50.6	47.8	50.6
73	47.7	50.6	47.7	50.6
74	47.7	50.7	47.7	50.7
75	47.7	50.7	47.7	50.7

♦ TABLE C (Cont) ♦

ANGLE (DEGREES)	DISCRIMINATION (DECIBELS) VV	VH	HH	HV
76	47.7	50.8	47.7	50.8
77	47.7	50.8	47.7	50.8
78	47.6	50.9	47.6	50.9
79	47.6	50.9	47.6	50.9
80	47.6	51.0	47.6	51.0
81	47.6	50.7	47.6	50.7
82	47.5	50.4	47.5	50.4
83	47.5	50.1	47.5	50.1
84	47.4	49.8	47.4	49.8
85	47.4	49.5	47.4	49.5
86	47.4	49.2	47.4	49.2
87	47.3	48.9	47.3	48.9
88	47.3	48.6	47.3	48.6
89	47.2	48.3	47.2	48.3
90	47.2	48.0	47.2	48.0
91	47.1	48.1	47.1	48.1
92	47.1	48.2	47.1	48.2
93	47.0	48.3	47.0	48.3
94	47.0	48.4	47.0	48.4
95	46.9	48.5	46.9	48.5
96	46.8	48.6	46.8	48.6
97	46.8	48.7	46.8	48.7
98	46.7	48.8	46.7	48.8
99	46.7	48.9	46.7	48.9
100	46.6	49.0	46.6	49.0
101	46.5	49.1	46.5	49.1
102	46.5	49.2	46.5	49.2
103	46.4	49.3	46.4	49.3
104	46.4	49.4	46.4	49.4
105	46.3	49.5	46.3	49.5
106	46.2	49.6	46.2	49.6
107	46.2	49.7	46.2	49.7
108	46.1	49.8	46.1	49.8
109	46.1	49.9	46.1	49.9
110	46.0	50.0	46.0	50.0
111	46.0	50.5	46.0	50.5
112	46.1	51.0	46.1	51.0
113	46.1	51.5	46.1	51.5
114	46.1	52.0	46.1	52.0
115	46.1	52.5	46.1	52.5

♦ TABLE C (Cont) ♦

ANGLE (DEGREES)	DISCRIMINATION (DECIBELS) VV	VH	HH	HV
116	46.2	53.0	46.2	53.0
117	46.2	53.5	46.2	53.5
118	46.2	54.0	46.2	54.0
119	46.3	54.5	46.3	54.5
120	46.3	55.0	46.3	55.0
121	46.3	55.0	46.3	55.0
122	46.4	55.1	46.4	55.1
123	46.4	55.1	46.4	55.1
124	46.4	55.2	46.4	55.2
125	46.4	55.2	46.4	55.2
126	46.5	55.3	46.5	55.3
127	46.5	55.3	46.5	55.3
128	46.5	55.4	46.5	55.4
129	46.6	55.4	46.6	55.4
130	46.6	55.5	46.6	55.5
131	46.6	55.5	46.6	55.5
132	46.6	55.6	46.6	55.6
133	46.7	55.6	46.7	55.6
134	46.7	55.7	46.7	55.7
135	46.7	55.7	46.7	55.7
136	46.8	55.8	46.8	55.8
137	46.8	55.8	46.8	55.8
138	46.8	55.9	46.8	55.9
139	46.8	55.9	46.8	55.9
140	46.9	56.0	46.9	56.0
141	46.9	56.0	46.9	56.0
142	46.9	56.1	46.9	56.1
143	47.0	56.1	47.0	56.1
144	47.0	56.2	47.0	56.2
145	47.0	56.2	47.0	56.2
146	47.0	56.3	47.0	56.3
147	47.1	56.3	47.1	56.3
148	47.1	56.4	47.1	56.4
149	47.1	56.4	47.1	56.4
150	47.1	56.5	47.1	56.5
151	47.2	56.5	47.2	56.5
152	47.2	56.6	47.2	56.6
153	47.2	56.6	47.2	56.6
154	47.3	56.7	47.3	56.7
155	47.3	56.7	47.3	56.7

♦ TABLE C (Cont) ♦

ANGLE (DEGREES)	DISCRIMINATION (DECIBELS) VV	VH	HH	HV
156	47.3	56.8	47.3	56.8
157	47.3	56.8	47.3	56.8
158	47.4	56.9	47.4	56.9
159	47.4	56.9	47.4	56.9
160	47.4	57.0	47.4	57.0
161	47.5	57.0	47.5	57.0
162	47.5	57.1	47.5	57.1
163	47.5	57.1	47.5	57.1
164	47.5	57.2	47.5	57.2
165	47.6	57.2	47.6	57.2
166	47.6	57.3	47.6	57.3
167	47.6	57.3	47.6	57.3
168	47.7	57.4	47.7	57.4
169	47.7	57.4	47.7	57.4
170	47.7	57.5	47.7	57.5
171	47.7	57.5	47.7	57.5
172	47.8	57.6	47.8	57.6
173	47.8	57.6	47.8	57.6
174	47.8	57.7	47.8	57.7
175	47.9	57.7	47.9	57.7
176	47.9	57.8	47.9	57.8
177	47.9	57.8	47.9	57.8
178	47.9	57.9	47.9	57.9
179	48.0	57.9	48.0	57.9
180	48.0	58.0	48.0	58.0

◆ TABLE D ◆

DISCRIMINATION OF KS-19529 ANTENNA
AT 11 GHZ

ANGLE (DEGREES)	DISCRIMINATION (DECIBELS) VV	VH	HH	HV
0	0.0	20.0	0.0	20.0
1	14.2	24.2	10.9	40.0
2	16.6	28.5	15.0	40.8
3	18.9	32.7	17.5	41.6
4	21.2	37.0	20.0	42.4
5	23.5	40.0	22.5	43.2
6	25.8	41.6	25.0	44.1
7	28.1	43.2	27.5	44.9
8	30.4	44.8	30.0	45.8
9	32.7	46.4	31.1	46.6
10	35.0	48.0	32.3	47.5
11	36.1	48.6	33.5	48.3
12	37.2	49.2	34.6	49.2
13	38.3	49.8	35.8	50.0
14	39.4	50.4	37.0	50.6
15	40.5	51.0	38.1	51.2
16	41.6	51.6	39.3	51.8
17	42.7	52.2	40.5	52.3
18	43.8	52.8	41.7	52.9
19	44.9	53.4	42.8	53.5
20	46.0	54.0	44.0	54.1
21	46.2	54.6	44.4	54.7
22	46.4	55.2	44.8	55.3
23	46.6	55.8	45.2	55.9
24	46.8	56.4	45.6	56.5
25	47.0	57.0	46.0	57.0
26	47.2	57.6	46.4	57.6
27	47.4	58.2	46.8	58.2
28	47.6	58.8	47.2	58.8
29	47.8	59.4	47.6	59.4
30	48.0	60.0	48.0	60.0
31	48.0	60.0	48.0	60.0
32	48.0	60.0	48.0	60.0
33	48.0	60.0	48.0	60.0
34	48.0	60.0	48.0	60.0
35	48.0	60.0	48.0	60.0

♦ TABLE D (Cont) ♦

ANGLE (DEGREES)	DISCRIMINATION (DECIBELS) VV	VH	HH	HV
36	48.0	60.0	48.0	60.0
37	48.0	60.0	48.0	60.0
38	48.0	60.0	48.0	60.0
39	48.0	60.0	48.0	60.0
40	48.0	60.0	48.0	60.0
41	48.0	60.0	48.0	60.0
42	48.0	60.0	48.0	60.0
43	48.0	60.0	48.0	60.0
44	48.0	60.0	48.0	60.0
45	48.0	60.0	48.0	60.0
46	48.0	60.0	48.0	60.0
47	48.0	60.0	48.0	60.0
48	48.0	60.0	48.0	60.0
49	48.0	60.0	48.0	60.0
50	48.0	60.0	48.0	60.0
51	48.0	60.0	48.0	60.0
52	48.0	60.0	48.0	60.0
53	48.0	60.0	48.0	60.0
54	48.0	60.0	48.0	60.0
55	48.0	60.0	48.0	60.0
56	48.0	60.0	48.0	60.0
57	48.0	60.0	48.0	60.0
58	48.0	60.0	48.0	60.0
59	48.0	60.0	48.0	60.0
60	48.0	60.0	48.0	60.0
61	48.0	60.0	48.0	60.0
62	48.0	60.0	48.0	60.0
63	48.0	60.0	48.0	60.0
64	48.0	60.0	48.0	60.0
65	48.0	60.0	48.0	60.0
66	48.0	60.0	48.0	60.0
67	48.0	60.0	48.0	60.0
68	48.0	60.0	48.0	60.0
69	48.0	60.0	48.0	60.0
70	48.0	60.0	48.0	60.0
71	48.0	60.0	48.0	60.0
72	48.0	60.0	48.0	60.0
73	48.0	60.0	48.0	60.0
74	48.0	60.0	48.0	60.0
75	48.0	60.0	48.0	60.0

♦ TABLE D (Cont) ♦

ANGLE (DEGREES)	DISCRIMINATION (DECIBELS) VV	VH	HH	HV
76	48.0	60.0	48.0	60.0
77	48.0	60.0	48.0	60.0
78	48.0	60.0	48.0	60.0
79	48.0	60.0	48.0	60.0
80	48.0	60.0	48.0	60.0
81	48.0	60.0	47.8	60.0
82	48.0	60.0	47.7	60.0
83	48.0	60.0	47.5	60.0
84	48.0	60.0	47.4	60.0
85	48.0	60.0	47.3	60.0
86	48.0	60.0	47.1	60.0
87	48.0	60.0	46.9	60.0
88	48.0	60.0	46.8	60.0
89	48.0	60.0	46.6	60.0
90	48.0	60.0	46.5	60.0
91	48.0	60.0	46.3	60.0
92	48.0	60.0	46.2	60.0
93	48.0	60.0	46.0	60.0
94	48.0	60.0	45.9	60.0
95	48.0	60.0	45.8	60.0
96	48.0	60.0	45.6	60.0
97	48.0	60.0	45.4	60.0
98	48.0	60.0	45.3	60.0
99	48.0	60.0	45.1	60.0
100	48.0	60.0	45.0	60.0
101	48.0	60.0	45.1	60.0
102	48.0	60.0	45.2	60.0
103	48.0	60.0	45.3	60.0
104	48.0	60.0	45.4	60.0
105	48.0	60.0	45.5	60.0
106	48.0	60.0	45.6	60.0
107	48.0	60.0	45.7	60.0
108	48.0	60.0	45.8	60.0
109	48.0	60.0	45.9	60.0
110	48.0	60.0	46.0	60.0
111	48.1	60.0	46.1	60.0
112	48.2	60.0	46.2	60.0
113	48.3	60.0	46.3	60.0
114	48.4	60.0	46.4	60.0
115	48.5	60.0	46.5	60.0

♦ TABLE D (Cont) ♦

ANGLE (DEGREES)	DISCRIMINATION (DECIBELS) VV	VH	HH	HV
116	48.6	60.0	46.6	60.0
117	48.7	60.0	46.7	60.0
118	48.8	60.0	46.8	60.0
119	48.9	60.0	46.9	60.0
120	49.0	60.0	47.0	60.0
121	49.1	60.0	47.1	60.0
122	49.2	60.0	47.2	60.0
123	49.3	60.0	47.3	60.0
124	49.4	60.0	47.4	60.0
125	49.5	60.0	47.5	60.0
126	49.6	60.0	47.6	60.0
127	49.7	60.0	47.7	60.0
128	49.8	60.0	47.8	60.0
129	49.9	60.0	47.9	60.0
130	50.0	60.0	48.0	60.0
131	50.0	60.0	48.0	60.0
132	50.0	60.0	47.9	60.0
133	50.0	60.0	47.9	60.0
134	50.0	60.0	47.9	60.0
135	50.0	60.0	47.8	60.0
136	50.0	60.0	47.8	60.0
137	50.0	60.0	47.8	60.0
138	50.0	60.0	47.7	60.0
139	50.0	60.0	47.7	60.0
140	50.0	60.0	47.7	60.0
141	50.0	60.0	47.6	60.0
142	50.0	60.0	47.6	60.0
143	50.0	60.0	47.6	60.0
144	50.0	60.0	47.5	60.0
145	50.0	60.0	47.5	60.0
146	50.0	60.0	47.5	60.0
147	50.0	60.0	47.4	60.0
148	50.0	60.0	47.4	60.0
149	50.0	60.0	47.4	60.0
150	50.0	60.0	47.3	60.0
151	50.0	60.0	47.3	60.0
152	50.0	60.0	47.3	60.0
153	50.0	60.0	47.2	60.0
154	50.0	60.0	47.2	60.0
155	50.0	60.0	47.2	60.0

♦ TABLE D (Cont) ♦

ANGLE (DEGREES)	DISCRIMINATION (DECIBELS) VV	VH	HH	HV
156	50.0	60.0	47.1	60.0
157	50.0	60.0	47.1	60.0
158	50.0	60.0	47.1	60.0
159	50.0	60.0	47.0	60.0
160	50.0	60.0	47.0	60.0
161	50.0	60.0	47.0	60.0
162	50.0	60.0	47.1	60.0
163	50.0	60.0	47.1	60.0
164	50.0	60.0	47.2	60.0
165	50.0	60.0	47.2	60.0
166	50.0	60.0	47.3	60.0
167	50.0	60.0	47.3	60.0
168	50.0	60.0	47.4	60.0
169	50.0	60.0	47.4	60.0
170	50.0	60.0	47.5	60.0
171	50.0	60.0	47.5	60.0
172	50.0	60.0	47.6	60.0
173	50.0	60.0	47.6	60.0
174	50.0	60.0	47.7	60.0
175	50.0	60.0	47.7	60.0
176	50.0	60.0	47.8	60.0
177	50.0	60.0	47.8	60.0
178	50.0	60.0	47.9	60.0
179	50.0	60.0	47.9	60.0
180	50.0	60.0	48.0	60.0

TABLE E

EQUIPMENT INFORMATION – KS-19529

List 1	10-foot parabolic reflector
List 2	Feed assembly
List 3	Mounting frame
List 4	Radome

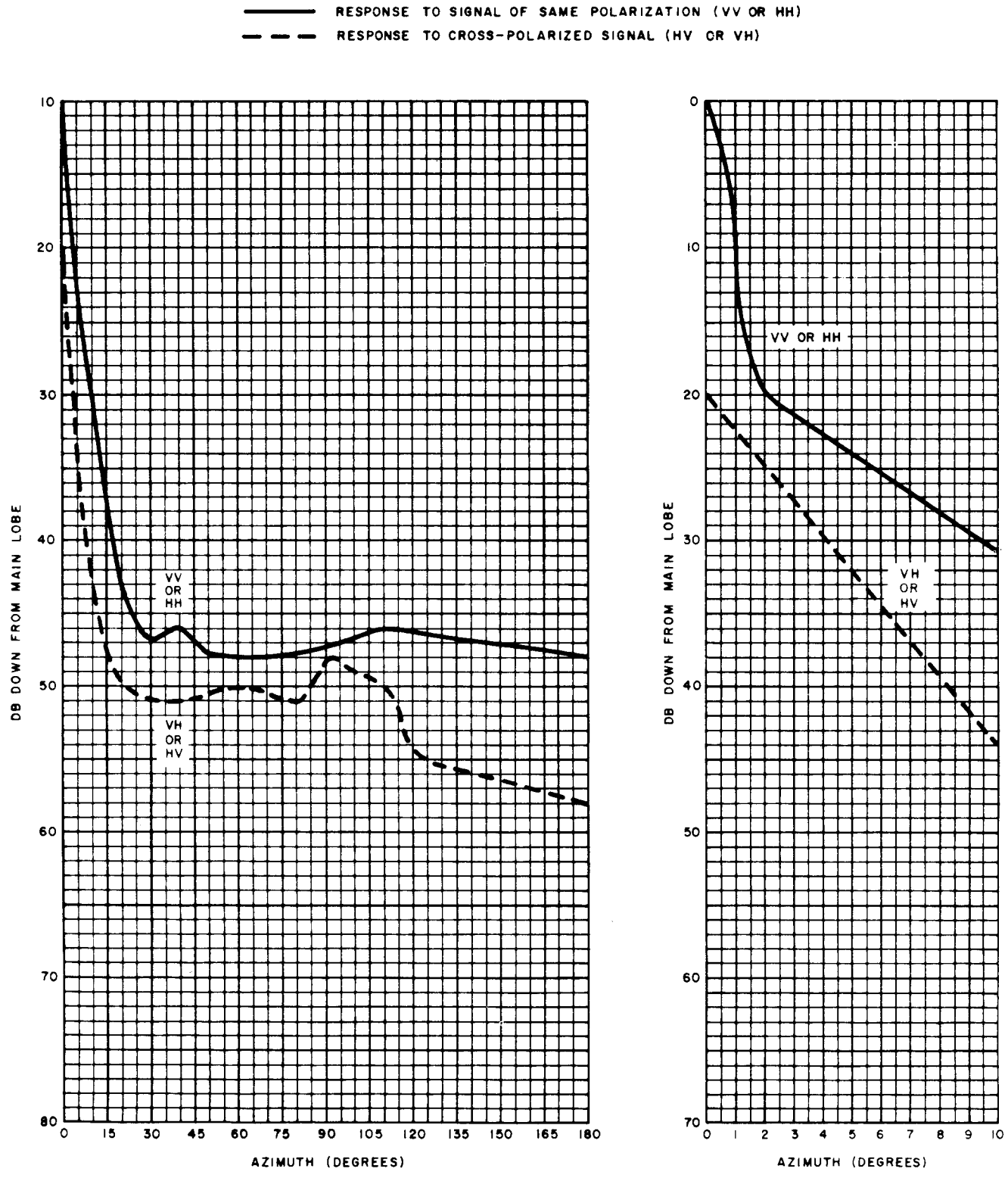

Fig. 1—Discrimination Characteristics of Antenna KS-19529 Arranged for Either Vertical or Horizontal Polarization, 6 GHz—Horizontal-Plane (Azimuthal) Directivity

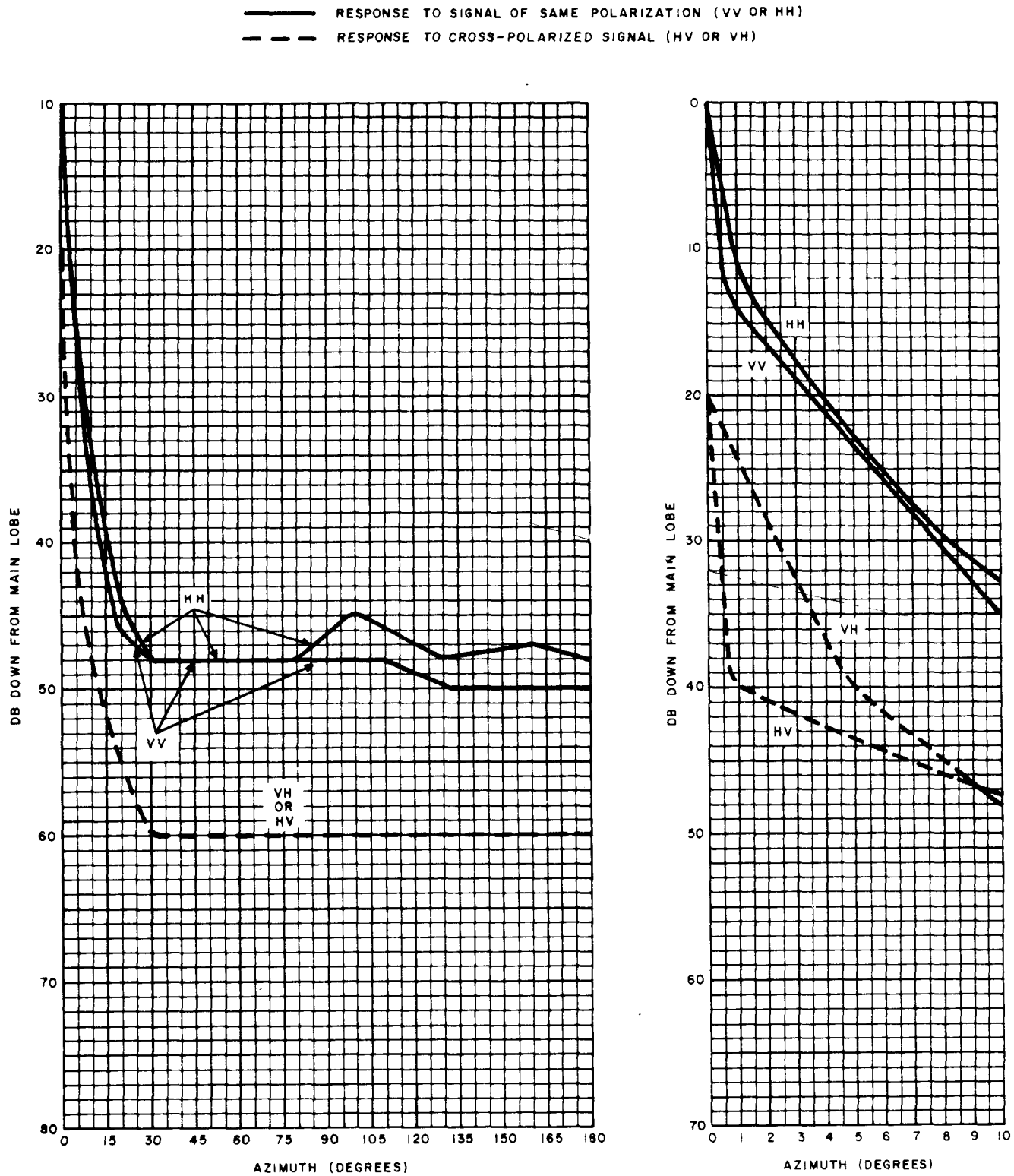

Fig. 2—Discrimination Characteristics of Antenna KS-19529 Arranged for Either Vertical or Horizontal Polarization, 11 GHz—Horizontal-Plane (Azimuthal) Directivity