RADIO ENGINEERING
MICROWAVE RADIO
ANTENNA SPECIFICATIONS
KS-15852, 10-FOOT, 11-GHz

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1. GENERAL

1.01 The KS-15852 antenna is a 10-foot parabolic dish antenna for use on short-haul 11-GHz radio routes, such as TJ and TL microwave radio systems.

1.02 The 2-port construction of the feed assembly provides the capability of operation with both vertical and horizontal polarizations.

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 22 dB corresponds to a voltage standing wave ratio of 1.17 to 1.

2.03 Smoothed, horizontal-plane (azimuthal) directivity characteristics are given in Table C and illustrated in Fig. 1 and 2. Table C lists the radiation discrimination of the antenna in dB per degree (azimuth) to signals of the same polarization for which the antenna is arranged, and also to cross-polarized signals. Azimuthal angles are given between 0 and 180 degrees. The first letter of the four columns designated VV, HV, HH, and VH denotes *V*ertical or *H*orizontal polarization of the signal. The second letter of the four columns, V or H, denotes the polarization for which the antenna is arranged. Figures 1 and 2 are graphical presentations of the information given in Table C. The curves envelop the minor lobes that are likely to occur within the 11-GHz frequency band, and may be used as a worse-case situation when making interference computations.

3. EQUIPMENT DESCRIPTION

3.01 The KS-15852 antenna consists of a 10-foot spun-aluminum dish, a broadband feed assembly, and mounting frame for attaching the reflector to standard towers. The mounting can be readily adapted for mounting on other structures.

3.02 While no radome is included in the specification for this antenna, one may be obtained from the supplier.

3.03 The feed assembly consists of a length of circular waveguide 41-1/2 inches long with a focal length of 35.8 inches. The rotatable flange matches WC-75 gasketed waveguide. A 1405A network is required to separate the vertical and horizontal polarizations. If signal polarization is desired, a 4A transducer may be used. The network and transducer match WR-90 waveguides inserted or removed through the rear of the reflector.

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

3.05 The weight of the reflector and feed assembly is approximately 248 pounds without the heater and 268 pounds with the heater. The mounting frame weighs about 375 pounds. The antenna and its mounting frame are designed for wind loads of 40 pounds per square foot.

3.06 The equipment information is shown in Table D.

3.07 The reflector and feed assembly may be equipped with or without heaters. The reflector heater may be operated on either 115-volt or 230-volt ac service with or without thermostats. The reflector heater will be arranged for 230-volt ac service with thermostats unless specified otherwise. If thermostats are used, heaters will turn on at 40 $\pm$6 degrees Fahrenheit and turn off at 55 $\pm$6 degrees Fahrenheit. The feed heater operates only on 115-volt ac service, and is furnished with thermostats preset to operate at the same temperatures as the reflector heater thermostat.

4. REFERENCES

SD-3C041-01	Short-Haul Radio—Parabolic Reflector Antennas, Passive Reflectors, and Outdoor Waveguide Systems
402-435-200	KS-15852 Parabolic Antenna—Assembly and Installation
940-340-131*	Microwave Radio—Waveguide Systems—Design Considerations
AA266.091	Antennas, Passive Reflectors, and Radomes for Microwave Communication Systems—Toll Systems

*This section may not be issued. Consult the latest numerical index.

TABLE A

GAIN-FREQUENCY CHARACTERISTICS

FREQUENCY (GHz)	GAIN (dB)
10.7	46.5
11.2	47.5
11.7	47.7

TABLE B

TRANSMISSION CHARACTERISTICS

CHARACTERISTIC	11.2 GHz
Half-Power Beam Width	0.7 degrees MAX
Major Sidelobe Suppression	13 dB MIN
Return Loss	22 dB MIN
Polarization Discriminator	21 dB MIN

TABLE C

DISCRIMINATION OF TYPE KS-15852 ANTENNA

ANGLE (DEGREES)	DISCRIMINATION (DECIBELS) VV	HV	HH	VH
0	0.0	20.0	0.0	20.0
1	16.2	21.8	13.8	27.6
2	23.0	24.5	26.0	29.0
3	27.0	29.0	33.5	36.0
4	30.7	34.0	36.5	40.5
5	34.5	39.0	39.5	45.0
6	36.5	46.0	41.3	48.0
7	38.5	53.0	43.0	51.0
8	39.6	55.0	44.8	54.3
9	40.7	57.0	46.5	57.5
10	43.1	58.5	48.5	59.2
11	45.6	60.0	50.5	60.8
12	48.0	61.5	52.5	62.5
13	50.0	62.5	54.4	62.8
14	52.0	63.5	56.3	63.0
15	52.7	64.2	55.5	63.4
16	53.4	64.8	54.8	63.7
17	54.1	65.5	54.0	64.1
18	54.9	66.2	53.3	64.4
19	55.6	66.9	52.5	64.8
20	56.3	67.5	51.8	65.1
21	57.0	68.2	51.0	65.5
22	57.5	68.4	51.5	66.1
23	58.1	68.5	52.1	66.7
24	58.6	68.7	52.6	67.3
25	59.2	68.8	53.2	67.9
26	59.7	69.0	53.7	68.5
27	59.8	68.8	54.3	68.4
28	59.8	68.6	54.8	68.4
29	59.9	68.5	55.4	68.3
30	60.0	68.3	56.0	68.3
31	60.0	68.2	56.0	68.2
32	59.9	68.0	56.1	68.0
33	59.9	67.9	56.1	67.9
34	59.9	67.8	56.1	67.8
35	59.8	67.6	56.1	67.6

TABLE C (Cont)

ANGLE (DEGREES)	DISCRIMINATION (DECIBELS) VV	HV	HH	VH
36	59.8	67.5	56.2	67.5
37	59.8	67.4	56.2	67.4
38	59.8	67.3	56.2	67.3
39	59.7	67.1	56.3	67.1
40	59.7	67.0	56.3	67.0
41	59.4	66.8	56.2	66.6
42	59.1	66.7	56.0	66.3
43	58.7	66.5	55.9	65.9
44	58.4	66.4	55.8	65.6
45	58.1	66.3	55.6	65.3
46	57.8	66.1	55.5	64.9
47	57.5	65.9	55.4	64.5
48	57.1	65.8	55.3	64.2
49	56.8	65.6	55.1	63.8
50	56.5	65.5	55.0	63.5
51	56.4	64.9	54.8	63.9
52	56.3	64.3	54.6	64.3
53	56.1	63.6	54.4	64.6
54	56.0	63.0	54.2	65.0
55	56.0	63.2	54.5	64.8
56	56.0	63.3	54.9	64.7
57	56.0	63.5	55.2	64.5
58	56.0	63.7	55.6	64.3
59	56.0	63.8	55.9	64.2
60	56.0	64.0	56.3	64.0
61	56.1	64.4	56.7	63.8
62	56.2	64.9	57.2	63.7
63	56.2	65.3	57.6	63.5
64	56.3	65.8	58.1	63.3
65	56.4	66.2	58.5	63.2
66	56.5	66.7	59.0	63.0
67	56.6	67.2	59.3	63.6
68	56.6	67.6	59.6	64.1
69	56.7	68.1	59.9	64.7
70	56.8	68.6	60.1	65.3
71	56.9	69.1	60.4	65.9
72	56.9	69.5	60.7	66.4
73	57.0	70.0	61.0	67.0
74	56.8	70.1	61.3	66.9
75	56.6	70.1	61.6	66.9

TABLE C (Cont)

ANGLE (DEGREES)	DISCRIMINATION (DECIBELS) VV	HV	HH	VH
76	56.4	70.2	61.9	66.8
77	56.1	70.3	62.1	66.7
78	55.9	70.4	62.4	66.6
79	55.7	70.4	62.7	66.6
80	55.5	70.5	63.0	66.5
81	55.3	69.9	63.2	66.3
82	55.1	69.4	63.4	66.1
83	54.9	68.8	63.6	65.8
84	54.7	68.3	63.8	65.6
85	54.5	67.8	64.0	65.4
86	54.3	67.2	64.2	65.2
87	54.1	66.6	64.4	65.0
88	53.9	66.1	64.6	64.7
89	53.7	65.5	64.8	64.5
90	53.5	65.0	65.0	64.3
91	53.3	65.8	66.3	64.1
92	53.0	66.5	67.7	64.0
93	54.2	67.2	69.2	64.4
94	55.4	67.9	70.8	64.8
95	56.6	68.6	72.3	65.1
96	57.7	69.3	73.8	65.5
97	58.9	69.9	75.4	65.9
98	60.1	70.6	76.9	66.3
99	61.3	71.3	78.5	66.6
100	62.5	72.0	80.0	67.0
101	63.8	72.8	80.0	67.5
102	65.0	73.5	80.0	68.0
103	66.3	74.3	80.0	68.5
104	67.5	75.0	80.0	69.0
105	67.8	75.0	80.0	69.5
106	68.0	75.0	80.0	70.0
107	68.3	75.0	80.0	70.5
108	68.5	75.0	80.0	71.0
109	68.8	75.0	80.0	71.5
110	69.0	75.0	80.0	72.0
111	69.0	75.0	79.9	72.1
112	69.1	75.0	79.9	72.2
113	69.1	75.0	79.8	72.3
114	69.2	75.0	79.8	72.4
115	69.2	75.0	79.8	72.5

TABLE C (Cont)

ANGLE (DEGREES)	DISCRIMINATION (DECIBELS) VV	HV	HH	VH
116	69.3	75.0	79.7	72.6
117	69.3	75.0	79.6	72.7
118	69.4	75.0	79.6	72.8
119	69.4	75.0	79.5	72.9
120	69.5	75.0	79.5	73.0
121	69.5	75.2	79.3	72.9
122	69.6	75.4	79.2	72.9
123	69.6	75.6	79.0	72.8
124	69.7	75.8	78.9	72.8
125	69.7	76.0	78.8	72.8
126	69.8	76.2	78.6	72.7
127	69.8	76.4	78.4	72.6
128	69.9	76.6	78.3	72.6
129	69.9	76.8	78.1	72.5
130	70.0	77.0	78.0	72.5
131	69.8	77.1	78.2	72.4
132	69.5	77.2	78.3	72.3
133	69.3	77.2	78.5	72.3
134	69.0	77.3	78.7	72.2
135	68.8	77.4	78.8	72.1
136	68.5	77.5	79.0	72.0
137	68.3	77.6	79.2	71.9
138	68.0	77.7	79.3	71.8
139	67.8	77.7	79.5	71.8
140	67.5	77.8	79.7	71.7
141	67.3	77.9	79.8	71.6
142	67.0	78.0	80.0	71.5
143	67.1	78.0	80.0	71.4
144	67.2	78.0	80.0	71.3
145	67.3	78.0	80.0	71.2
146	67.4	78.0	80.0	71.1
147	67.6	78.0	80.0	70.9
148	67.7	78.0	80.0	70.8
149	67.8	78.0	80.0	70.7
150	67.9	78.0	80.0	70.6
151	68.0	78.0	80.0	70.5
152	68.1	78.0	80.0	70.4
153	68.2	78.0	80.0	70.3
154	68.3	78.0	80.0	70.2
155	68.4	78.0	80.0	70.1

TABLE C (Cont)

ANGLE (DEGREES)	DISCRIMINATION (DECIBELS) VV	HV	HH	VH
156	68.6	78.0	80.0	69.9
157	68.7	78.0	80.0	69.8
158	68.8	78.0	80.0	69.7
159	68.9	78.0	80.0	69.6
160	69.0	78.0	80.0	69.5
161	69.2	77.5	80.0	69.6
162	69.3	77.0	80.0	69.7
163	69.5	76.5	80.0	69.8
164	69.7	76.0	80.0	70.0
165	69.8	75.5	80.0	70.1
166	70.0	75.0	80.0	70.2
167	70.4	75.4	80.0	70.4
168	70.7	75.9	80.0	70.6
169	71.1	76.3	80.0	70.8
170	71.4	76.7	80.0	71.0
171	71.8	77.1	80.0	71.2
172	72.1	77.6	80.0	71.4
173	72.5	78.0	80.0	71.6
174	72.9	78.4	80.0	71.8
175	73.2	78.9	80.0	72.0
176	73.6	79.3	80.0	72.2
177	73.9	79.7	80.0	72.4
178	74.3	80.1	80.0	72.6
179	74.6	80.6	80.0	72.8
180	75.0	81.0	80.0	73.0

TABLE D

EQUIPMENT INFORMATION — KS-15852

List 1	10-foot diameter, spun-aluminum paraboloidal reflector (without feed and heater)
List 2	10-foot diameter, spun-aluminum paraboloidal reflector and 2250-watt heater (without feed)
List 3	Mounting frame assembly
List 4	Broadband antenna feed assembly (without heater)
List 6	2250-watt, 10-foot reflector heater assembly
List 8	Feed heater
List 9	Broadband antenna feed assembly with 65-watt heater

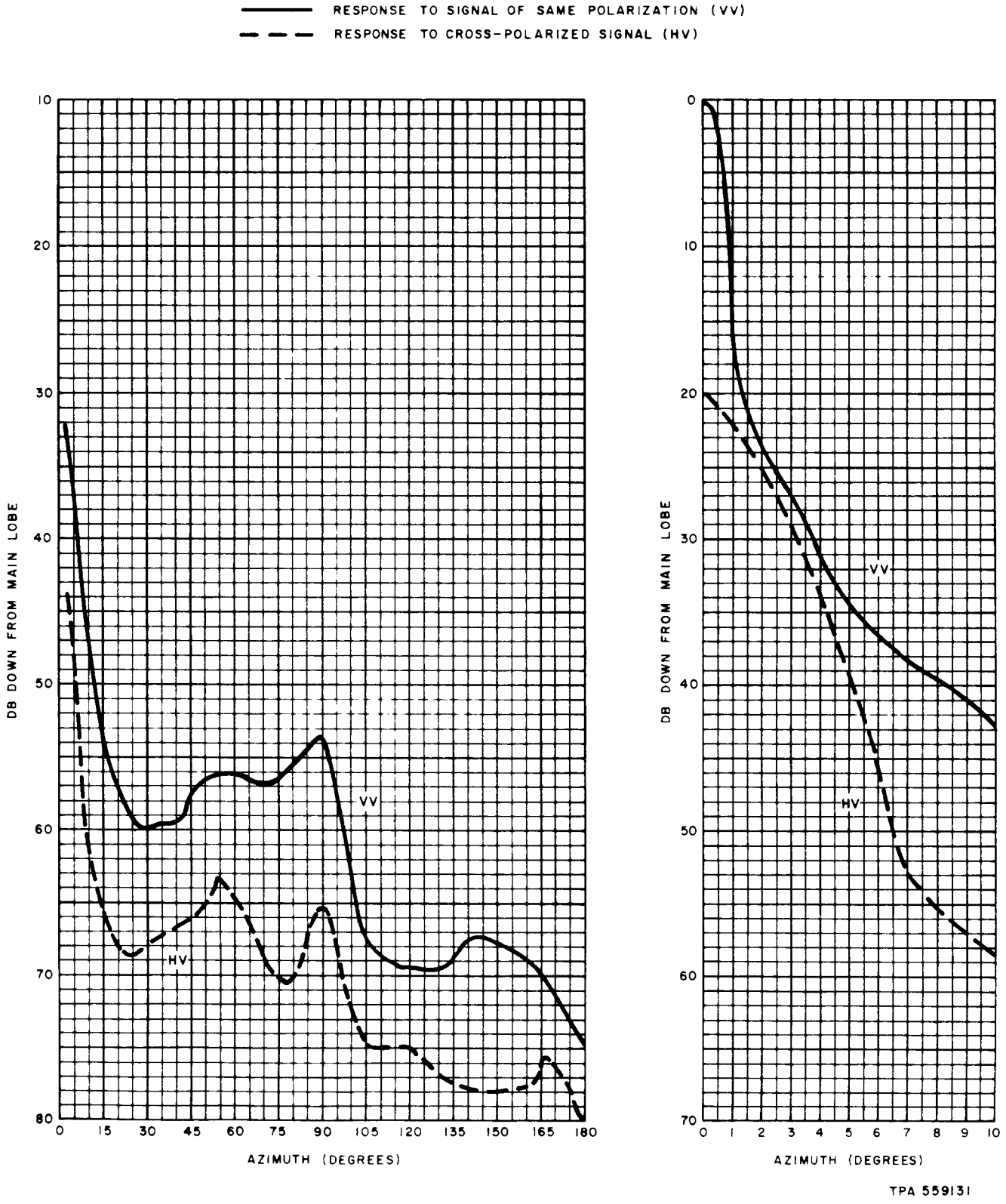

Fig. 1—Discrimination Characteristics of Antenna KS-15852 Arranged for Vertical Polarization—Horizontal-Plane (Azimuthal) Directivity

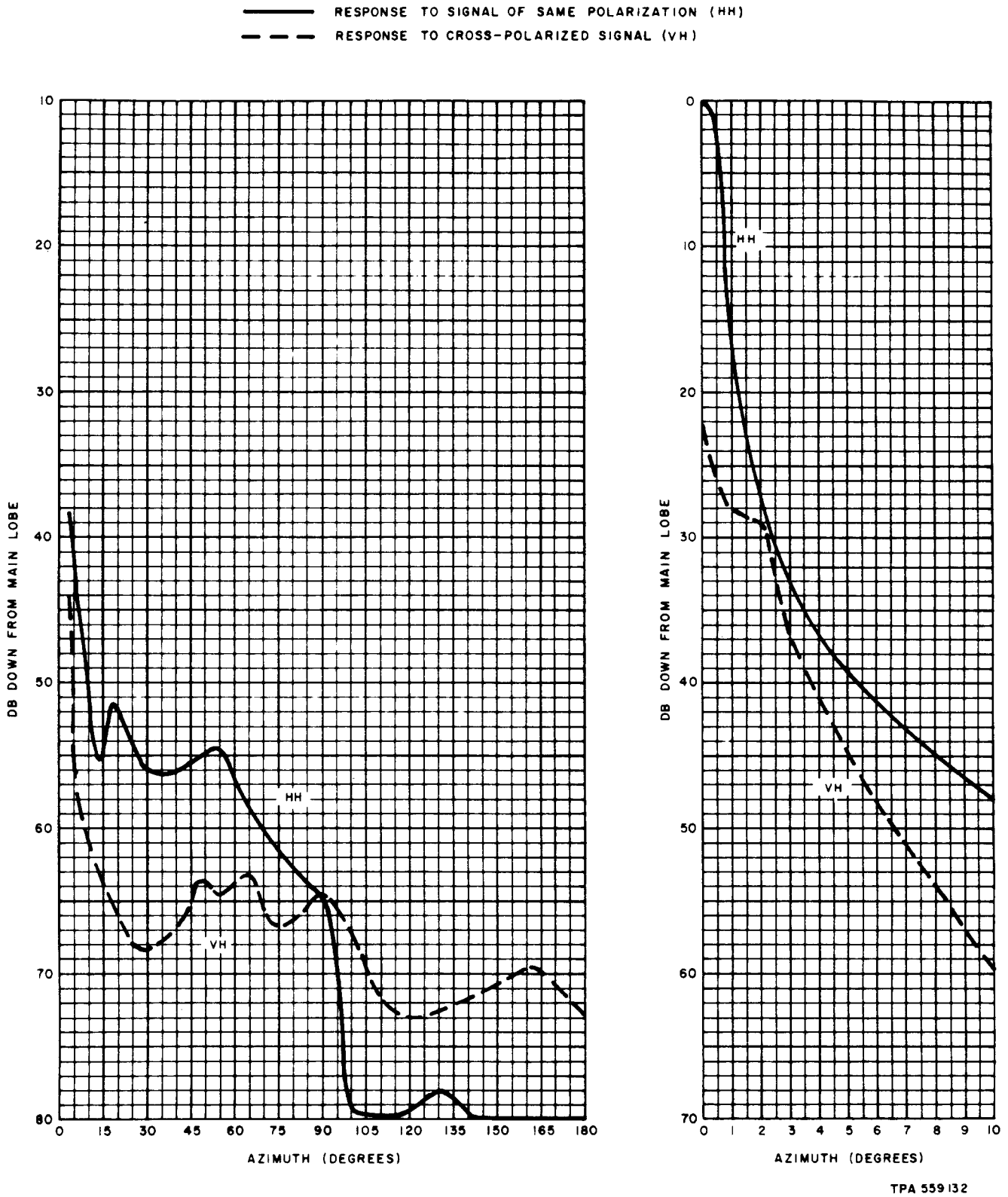

Fig. 2—Discrimination Characteristics of Antenna KS-15852 Arranged for Horizontal Polarization—Horizontal-Plane (Azimuthal) Directivity