

RADIO ENGINEERING
MICROWAVE RADIO
ANTENNA SPECIFICATIONS
KS-15640, 8-FOOT, 4-GHZ

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1. GENERAL

1.01 The KS-15640 antenna is an 8-foot parabolic dish antenna for use on lightly loaded 4-GHz radio routes, such as TD-2 operating as a spur off a main route. Manufacture of this antenna has been discontinued and superseded by the KS-15837 antenna. See Section 940-340-155.

1.02 The feed is capable of handling signals of only one polarization, either vertical or horizontal. Early models were arranged for plug tuning over only portions of the 4-GHz band; however, a later broadband feed provides good performance over the entire band.

2. TRANSMISSION CHARACTERISTICS

2.01 The KS-15640 antenna has a gain of 37.6 dB at 4 GHz. Most production models have a voltage standing wave ratio of 1.25 to 1 (19.1-dB return loss), but a ratio as high as 1.4 to 1 (15.6-dB return loss) is acceptable. Major sidelobe suppression

is 21 dB down five degrees from the main lobe with a vertically polarized signal. A horizontally polarized signal is typically 24 dB down at 5 degrees from the main lobe.

2.02 Smoothed horizontal-plane directivity patterns are shown in Fig. 1 and 2. The graphs show the response to the polarity of signal for which the antenna is arranged, and also the response to a cross polarized signal. These curves envelop the minor lobes that are likely to occur within the frequency band and are used as a worse-case situation when making interference computations.

3. EQUIPMENT DESCRIPTION

3.01 The KS-15640 antenna consists of an 8-foot spun-aluminum dish, a feed assembly, and a mounting frame. A heater is available. The feed assembly is flanged for connection to WR-229 waveguide. The front of the feed has two RF windows for illuminating the reflector. The feed is approximately 39 inches long with a focal length of 35.8 inches. The feed may be equipped with or without a heater.

3.02 The antenna may be attached to a job-engineered mounting assembly or to a clamp assembly for mast mounting. It will withstand wind loads of 110 miles per hour with one inch of ice on each side. Where additional support is required, horizontal and vertical bracing kits may be used. The complete antenna assembly weighs approximately 200 pounds.

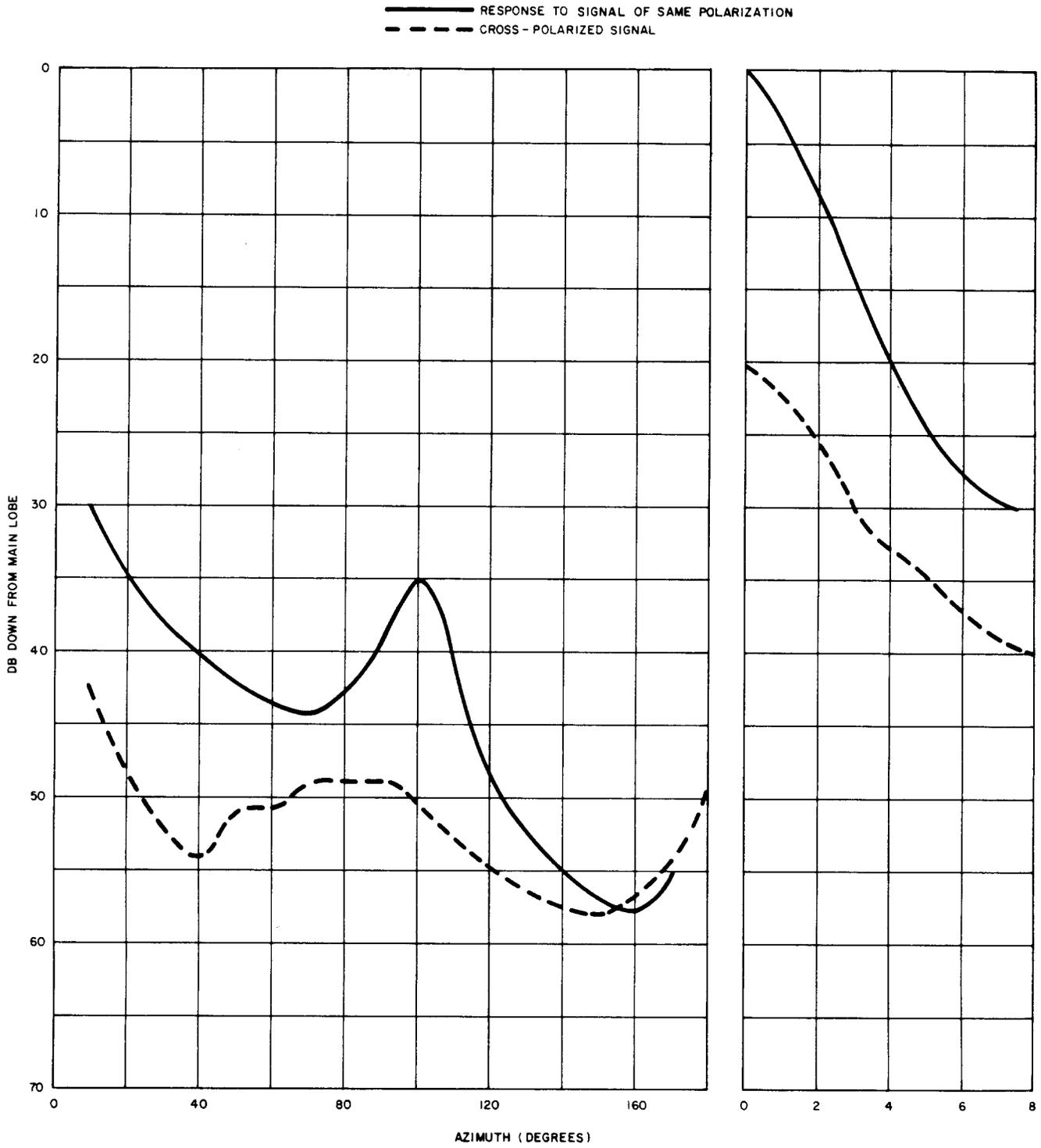


Fig. 1—Smoothed Horizontal-Plane Directivity—Vertical Polarization—4 GHz

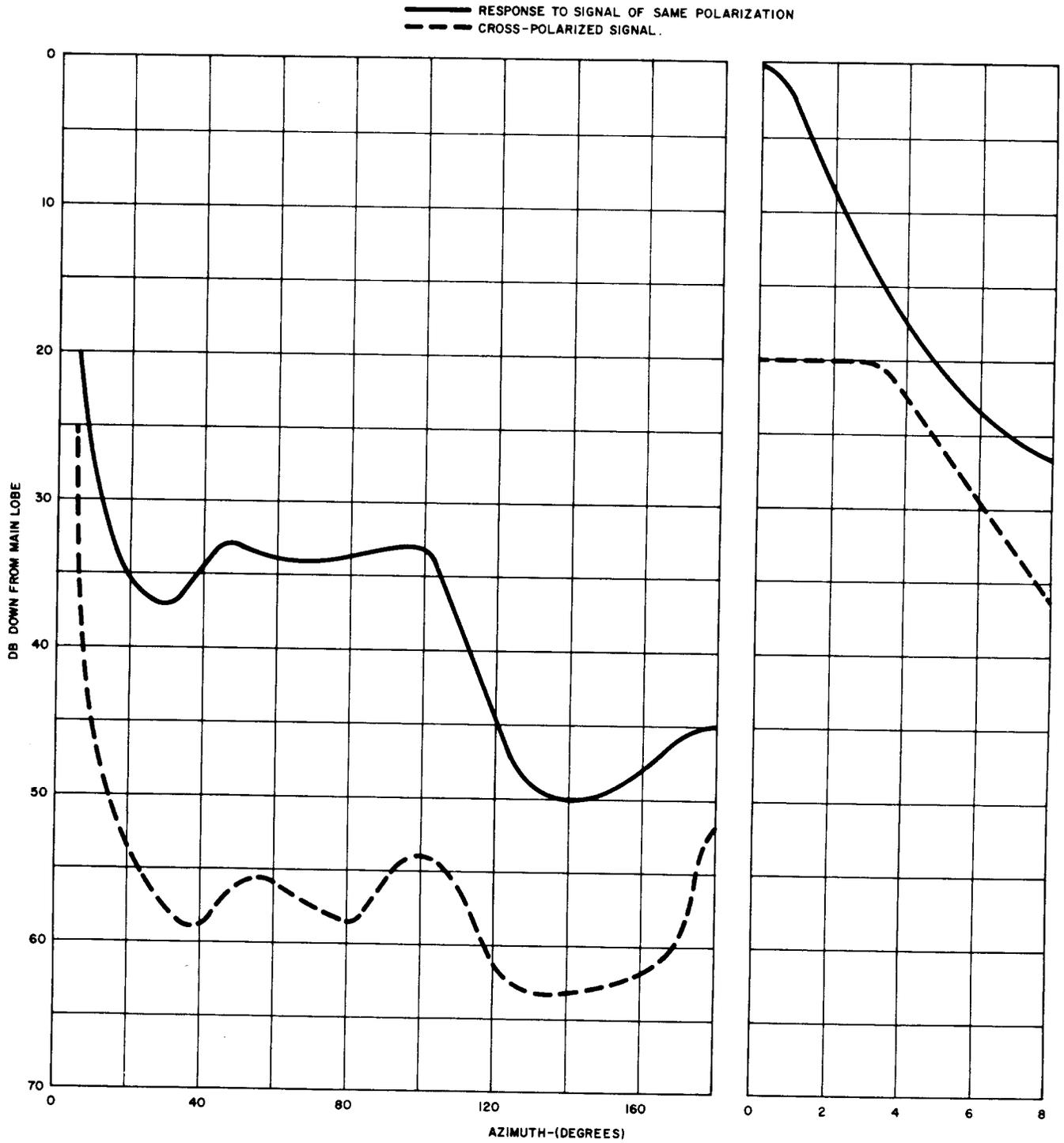


Fig. 2—Smoothed Horizontal-Plane Directivity—Horizontal Polarization—4 GHz

SECTION 940-340-153

3.03 Equipment information is shown in Table A.

TABLE A

EQUIPMENT INFORMATION — KS-15640

List 1	8-foot parabolic reflector
List 2*	Feed assembly (plug tuned)
List 3*	Feed assembly (plug tuned) with heater
List 4	1000-watt dish heater assembly
List 5	1500-watt dish heater assembly
List 6	Clamp assembly for mast mounting
List 7	Broadband feed assembly
List 8	Broadband feed assembly with heater

* Lists 2 and 3 are early models having a feed assembly arranged for plug tuning in one of the bands 3.700 to 3.800 GHz, 3.800 to 4.000 GHz, or 4.000 to 4.200 GHz.

3.04 If replacement of the feed on older antennas becomes necessary, it is suggested that a Gabriel F8P-2J39 feed be used.

4. REFERENCES

REFERENCE	TITLE
SD-3C041-01	Short Haul Radio—Parabolic Reflector Antennas, Passive Reflectors, and Outdoor Waveguide Systems
402-436-200	KS-15837, KS-15838, and KS-15924 Parabolic Antennas—Assembly and Installation.
940-340-131*	Microwave Radio—Waveguide Systems—Design Considerations
940-340-155	Antenna Specifications—KS-15837, 8-foot, 4-GHz
AA266.091	Antennas, Passive Reflectors, and Radomes for Microwave Communication Systems—Toll Systems

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