
2 Specifications

Environmental Requirements

Table 2-1 Environmental Requirements

Parameter	Limits
Temperature	
Operating ^a	+15 °C to +35 °C
Storage	−40 °C to +75 °C
Error-corrected range ^b	± 1 °C of measurement calibration temperature
Relative humidity	Type tested, 0% to 95% at 40 °C, non-condensing

- a. The temperature range over which the calibration standards maintain conformance to their specifications.
- b. The allowable network analyzer ambient temperature drift during measurement calibration and during measurements when the network analyzer error correction is turned on. Also, the range over which the network analyzer maintains its specified performance while correction is turned on.

Temperature—What to Watch Out For

Changes in temperature can affect electrical characteristics. Therefore, the operating temperature is a critical factor in performance. During a measurement calibration, the temperature of the calibration devices must be stable and within the range shown in [Table 2-1](#).

IMPORTANT Avoid unnecessary handling of the devices during calibration because your fingers are a heat source.

Mechanical Characteristics

Mechanical characteristics such as center conductor protrusion and pin depth are *not* performance specifications. They are, however, important supplemental characteristics related to electrical performance. Agilent Technologies verifies the mechanical characteristics of the devices in the kit with special gaging processes and electrical testing. This ensures that the device connectors do not exhibit any center conductor protrusion or improper pin depth when the kit leaves the factory.

“Gaging Connectors” on page 3-6 explains how to use gages to determine if the kit devices have maintained their mechanical integrity. Refer to Table 2-2 for pin depth specifications.

Pin Depth

Pin depth is the distance the center conductor mating plane differs from being flush with the outer conductor mating plane. See Figure 2-1. on page 2-4. The pin depth of a connector can be in one of two states: either protruding or recessed.

Protrusion is the condition in which the center conductor extends beyond the outer conductor mating plane. This condition will indicate a positive value on the connector gage.

Recession is the condition in which the center conductor is set back from the outer conductor mating plane. This condition will indicate a negative value on the connector gage.

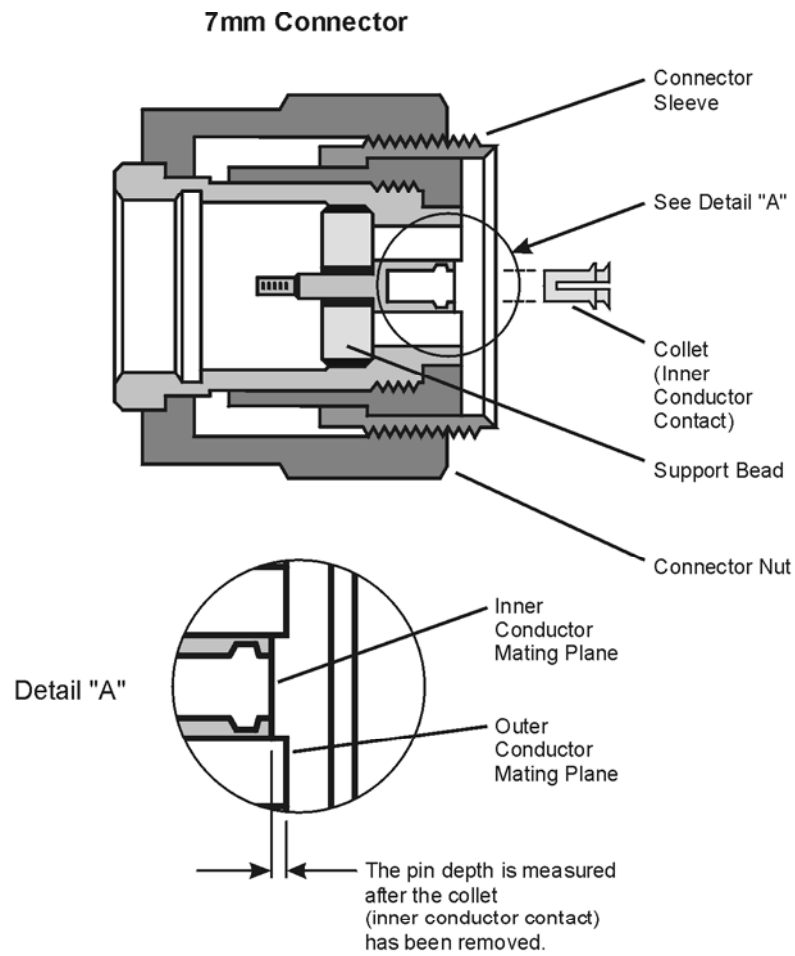
The pin depth value of each calibration device in the kit is not specified, but is an important mechanical parameter. The electrical performance of the device depends, to some extent, on its pin depth. The electrical specifications for each device in the kit take into account the effect of pin depth on the device’s performance. Table 2-2 lists the typical pin depths for the devices in the kit. If the pin depth of a device does not measure within the observed pin depth limits, it may be an indication that the device fails to meet electrical specifications. Refer to Figure 2-1. on page 2-4 for a visual representation of proper pin depth (slightly recessed).

Table 2-2 Pin Depth Limits

Device	Typical Pin Depth Inches Millimeters
Lowband load	-0.0002 to -0.0025 -0.0051 to -0.0635
Combination open/short	Open: 0 to -0.001 0 to -0.0254 Short: +0.0001 to -0.0001 +0.00254 to -0.00254

NOTE Center conductor recession with collet removed = 0.000 to 0.002 inches.

Figure 2-1. Connector Pin Depth



pi51b

Electrical Specifications

The electrical specifications in [Table 2-3](#) apply to the devices in your calibration kit when connected with an Agilent precision interface.

Table 2-3 Electrical Specifications for the 85031B 7 mm Devices

Device	Specification	Frequency (GHz)
Broadband loads	Return loss ≥ 52 dB	dc to ≤ 5
	Return loss ≥ 46 dB	> 5 to ≤ 6
	Return loss ≥ 26.4 dB (typical)	> 6 to ≤ 18

Certification

Agilent Technologies certifies that this product met its published specifications at the time of shipment from the factory. Agilent further certifies that its calibration measurements are traceable to the United States National Institute of Standards and Technology (NIST) to the extent allowed by the institute's calibration facility, and to the calibration facilities of other International Standards Organization members. See [“How Agilent Verifies the Devices in Your Kit” on page 4-2](#) for more information.