OPERATION AND MAINTENANCE
MANUAL FOR MODEL V255 GEN II ULTRA-WIDEBAND BIAS TEE

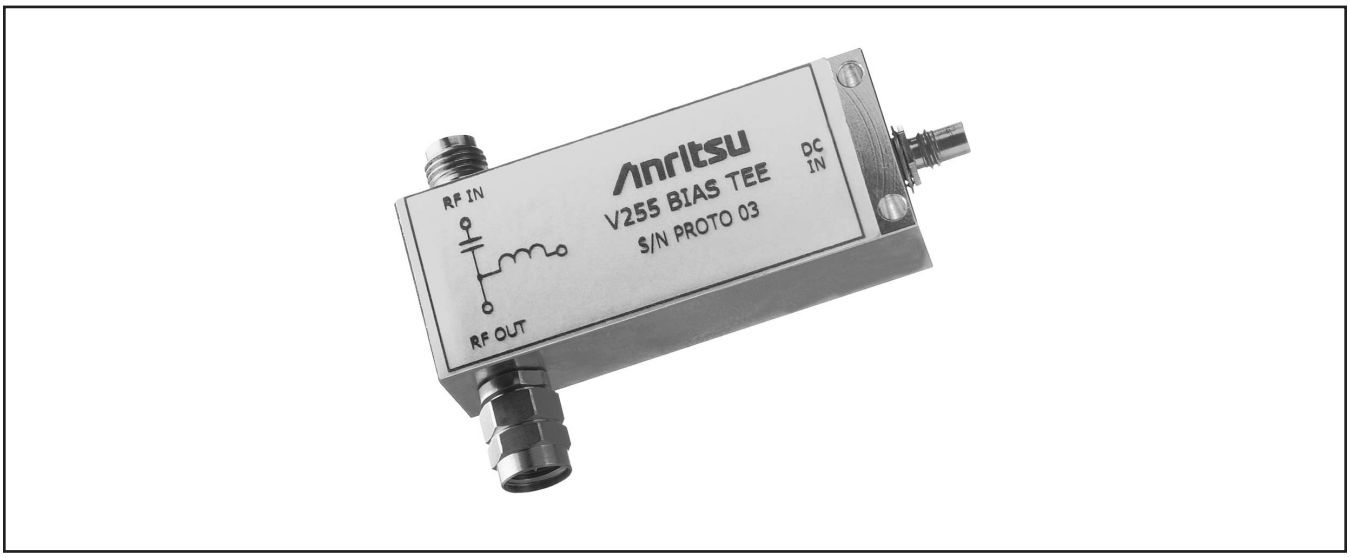

Figure 1. Model V255 Gen II Ultra-Wideband Bias Tee

1. INTRODUCTION

This manual describes the Model V255 Ultra-Wideband Bias Tee (Figure 1). It provides specifications and a list of precautions the user should observe when using this device.

2. DESCRIPTION

The V255 Gen II Ultra-Wideband Bias Tee is designed to meet the high electrical performance requirement of passive components in optical communication networks. Given a broader bandwidth of 50 kHz to 65 GHz, with low insertion losses and very good return loss, makes it ideal to use in 40 Gbps systems to bias optical modulators and broad band data drivers. It's fast rise time and flat group delay performance allows extremely accurate measurements within a laboratory environment. The V255 Bias Tee comes with a standard V Connector® that assures excellent impedance match across the available wide bandwidth. The DC signal can be applied or extracted from the bias tee through an SMC connector at the third port. As with our other bias tees, the V255 also has a one-year warranty.

3. SPECIFICATIONS

Table 2 provides performance specifications.

4. PRECAUTIONS

ANRITSU V255 Bias Tee is a high-quality, precision laboratory device and should receive the same care and respect afforded other such components. Complying with the following precautionary notes will guarantee longer component life and less equipment downtime due to connector failure. Also, such compliance will ensure that RF component failures are not due to misuse or abuse—two failure modes not covered under the ANRITSU warranty.

a. Beware of Destructive Pin Depth on Mating Connectors. Measure the pin depth of the connector that mates with the RF component, *before* mating. Use an ANRITSU Pin Depth Gauge (Figure 2) or equivalent. Based on RF compo-

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P/N: 10100-00040
REVISION: B
PRINTED: SEPTEMBER 2001

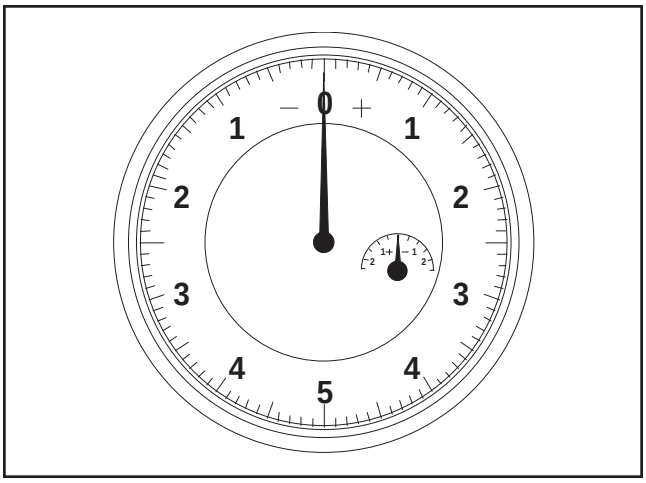


Figure 2. Pin Depth Gauge

nents returned for repair, destructive pin depth on mating connectors is the major cause of failure in the field. When an RF component connector is mated with a connector having a destructive pin depth, damage will likely occur to the RF component connector. (A destructive pin depth has a center pin that is too long in respect to the connector's reference plane.)

The center pin on an RF component connector has a precision tolerance measured in mils (1/1000 inch), whereas connectors on test devices that mate with RF components may not be precision types. Their pins may not have the proper depth. *They must be measured before mating to ensure suitability.* When gauging pin depth, if the test device connector measures out of tolerance in the "+" region, the center pin is too long. Mating under this condition will likely damage the RF component connector. On the other hand, if the test device connector measures out of tolerance in the "–" region, the center pin is too short. While this will not cause any damage, it will result in a poor connection and a consequent degradation in performance.

The pin depth for the V255 bias tee is: 0.000 to 0.003

b. Avoid Over Torquing Connectors. Over torquing connectors is destructive; it may damage the connector center pin. *Never* use pliers to tighten connectors.

c. Avoid Mechanical Shock. RF components are designed to withstand years of normal bench handling. However, do not drop or otherwise treat them roughly. They are laboratory-quality devices and, like other such devices, require careful handling.

d. Keep Bias Tee Connectors Clean. The precise geometry that makes the RF component's high performance possible can be easily disturbed by dirt and other contamination adhering to connector interfaces. When not in use, keep the connectors covered. Refer to paragraph 5 for cleaning instructions.

5. MAINTENANCE

ANRITSU recommends that no maintenance other than cleaning be attempted by the customer. The bias tee should be returned to ANRITSU for repair and/or service when needed.

The traditional method of cleaning V Connectors with a cotton swab and alcohol can break the male connector pin on the precision connectors. The reason: the cotton swab has a larger diameter than the connector (that is, the area between the inner wall and the center pin.)

We still recommend using a cotton swab; however, you need to trim the swab before inserting into the connector.

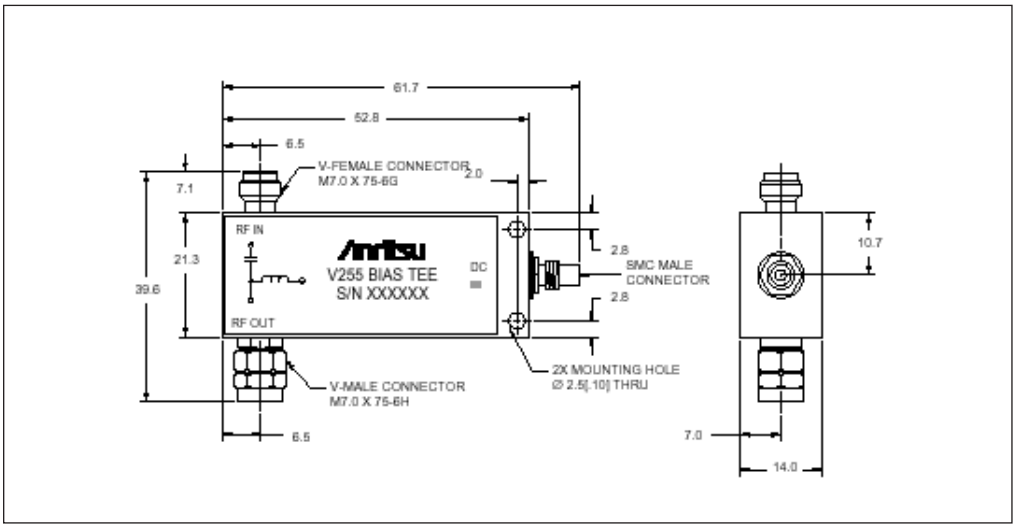
For best results, observe the following precautions:

- Use either the finger saver that has been provided with the bias tee or use a 5 inch-pound torque wrench when connecting to other devices. No other tools are recommended.
- Always spin the coupling nut to tighten connections. Spinning the connector body causes premature wear to the connector interface.

Do not disturb connector center pin. Improper use (see above) of a cotton swab or other such probe to clean the inner connector may cause the center conductor to hinge on its bead and weaken or shear the internal connection.

Table 1. Performance Specifications, 1 of 2

Specification	V255
Frequency Range, 3dB BW	50 kHz to 65 GHz 30 kHz to 65 GHz typical
Insertion Loss	1.5 dB to 65 GHz typical
Return Loss	12 dB to 65 GHz typical
Rise Time	3 ps typical
Group Delay	125 ±2 ps typical
Max DC Voltage	10V (maximum)
DC current	400 mA (maximum)
Isolation	–50 dBm (minimum)
Operating Temperature	0°C to 80°C



Outline Drawing, V255

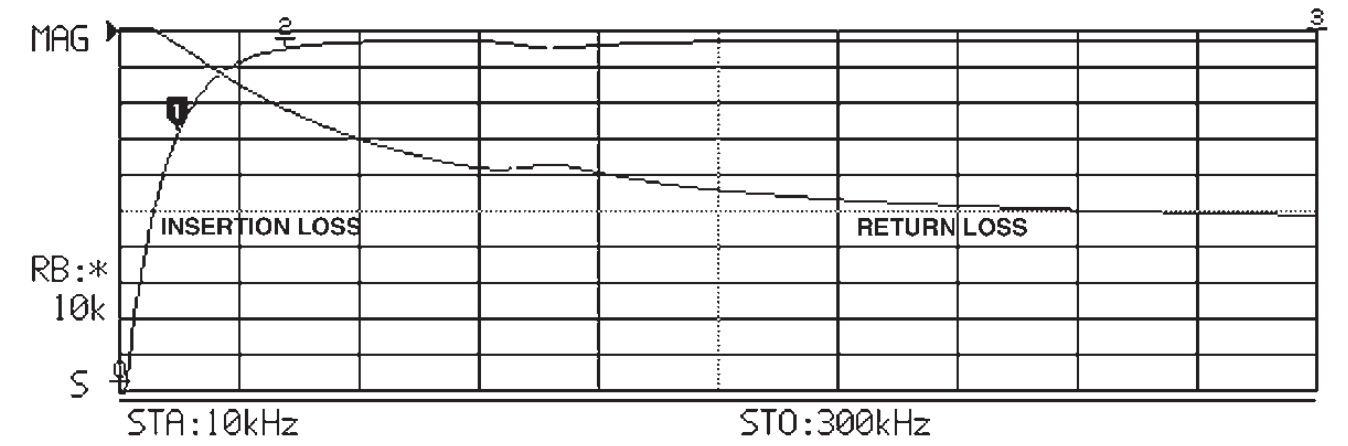


Figure 2. Typical V255 Insertion Loss and Return Loss, 1 kHz to 1 MHz

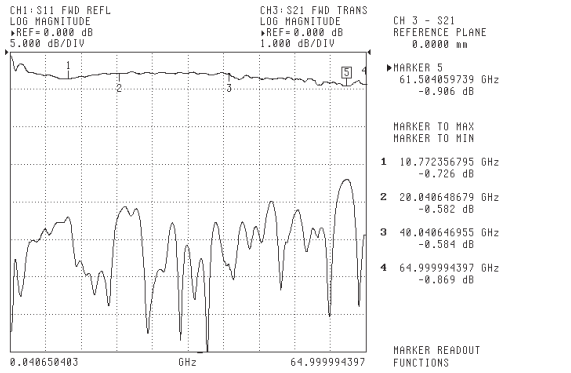


Figure 4. Typical V251 Insertion Loss and Return Loss, 40 MHz to 65 GHz

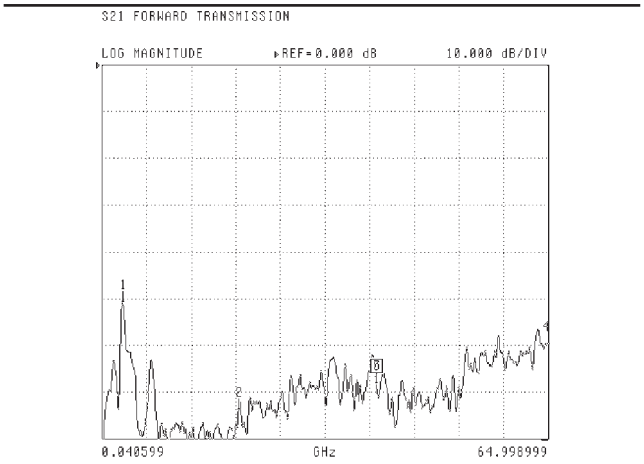


Figure 3. Typical Isolation between Data I/P and DC Port

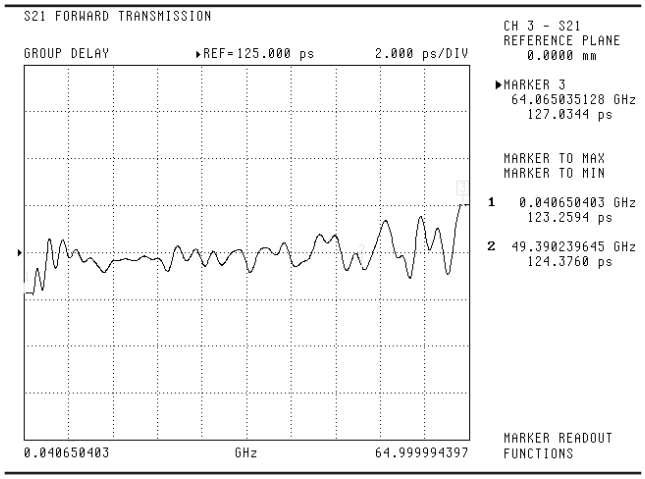


Figure 6. Typical Group Delay Performance measured on V255