Testing a Single Antenna Radio Altimeter (SARA) with the ALT-8000 or ALT-9000 Radio Altimeter Test Set

Testing a SARA using the ALT-9000 or ALT-8000 Radio Altimeter Test Set can be accomplished by using a circulator, with a minimum of 36 dB of isolation, in line with the antenna coupler. The antenna coupler is connected to the circulator so that the RF transmission from the SARA is circulated to the UUT TX port of the Test Set. The UUT RX port of the Test Set is then connected to the circulator so that the return signal is circulated to the port connected to the antenna coupler. The antenna coupler then transmits the return signal to the SARA UUT.

Note: The two 20 ft coax cables and the 1 ft coax cable supplied with the test set are recommended for this setup.

Note: The Pasternack PE83CR1020 four-port circulator is the recommended circulator. Determine the Cable Loss value of the coax connected to the Test Set UUT TX port and enter it as the UUT:Tx Cable Loss on the Test Sets Test Setup – Loss tab.

Determine the Cable Loss value of the coax connected to the Test Set UUT RX port and enter it as the UUT:Rx Cable Loss on the Test Sets Test Setup – Loss tab.

Determine the Total Loss of (A) the antenna coupler, (B) the coax between the circulator and the coupler, and (C) the circulator insertion loss. Add the loss values together as shown below to determine the Total Loss. Enter the Total Loss value as both the UUT: Tx Coupler Loss and the UUT: Rx Coupler Loss on the Test Sets Test Setup – Loss tab.

Note: Insertion loss of the PE83CR1020 four-port circulator is 1 dB.

Antenna Coupler Loss _____ = A

Coax between Circulator and Coupler _____ = B

Circulator Insertion Loss _____ = C

A + B + C = _____ Total Loss (UUT:TX and UUT:Rx Coupler Loss)

Additional Test Set Setup Steps:

On the Test Sets Simulation page, enter an RF Level Offset value of 10 dB.

On the Test Sets Test Setup – General tab, set the Connection Type to Coupler.

On the Test Sets Test Setup – General tab, perform the Delay Calibration of the two 20 ft cables.

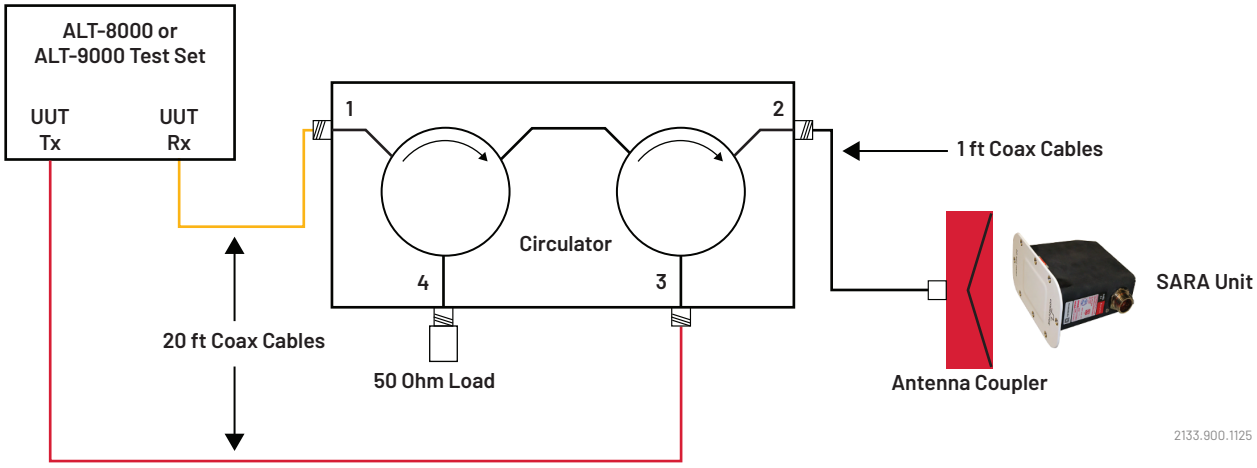

FIGURE 1: Test Configuration using a Four-Port Circulator

Note: The referenced circulator is a Pasternack PE83CR1020

NOTES:

If using a circulator other than the Pasternack PE83CR1020, ensure that it has 36 dB or more of isolation and can accommodate the output power level of the SARA.

Ensure that the coupler completely covers the TX/RX antenna of the SARA.

When performing the Test Set delay calibration, disconnect the 20' coax cables from the circulator's #1 and #3 ports.

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