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1-5/8 EIA
Mating Durability Test Report

Objective
Test & characterize the mating durability of a TRU manufactured 1-5/8 EIA interface using phosphor bronze contact over an extended number of mating cycles to simulate a lifetime of performance. The test will measure and monitor the following parameters: VSWR, insertion loss, flare diameter of contact, to determine their impact on electrical/ mechanical performance.

Test Sample
A cable assembly described below was subjected to the test.

1-5/8 Cable Assembly: 41.50" length, LMR-1200 FR cable, Fig.1
Connector 1: 1-5/8 EIA (m) Plug, (TRU-9751-SNX)
Connector 2: 1-5/8 EIA (m) Plug, (TRU-9751-SNX)

Test & Inspection Conditions:
All individual tests and inspections performed under the following conditions unless otherwise specified in the detail procedure(s):

Environment:

Temperature:	Room Ambient, 59 to 86 deg F (15 to 30 deg C)
Relative Humidity:	20% to 80%
Barometric Pressure:	Sea Level (650 to 800mm Hg)

Configuration:
Tests and inspections will be performed on a clean flat surface (bench or equivalent) in a clean well-lighted area, free of debris and foreign objects, unless otherwise specified.

Test & Inspection Equipment:
The following test equipment / tools / fixtures or equivalent were used to perform the test & inspections.

Electrical:
Vector Network Analyzer (HP 8753E) used on all electrical measurements
Applicable test port cables / adapters for each assembly, set up as applicable per figure 1.
7-16 Calibration Kit (p/n: Maury Microwave 2750B)
Full 2 Port Calibration:
401 data points
30 Hz BW
S11 measurement = End 1 of cable assembly
S22 measurement = End 2 of cable assembly

Electrical Test Set-Up

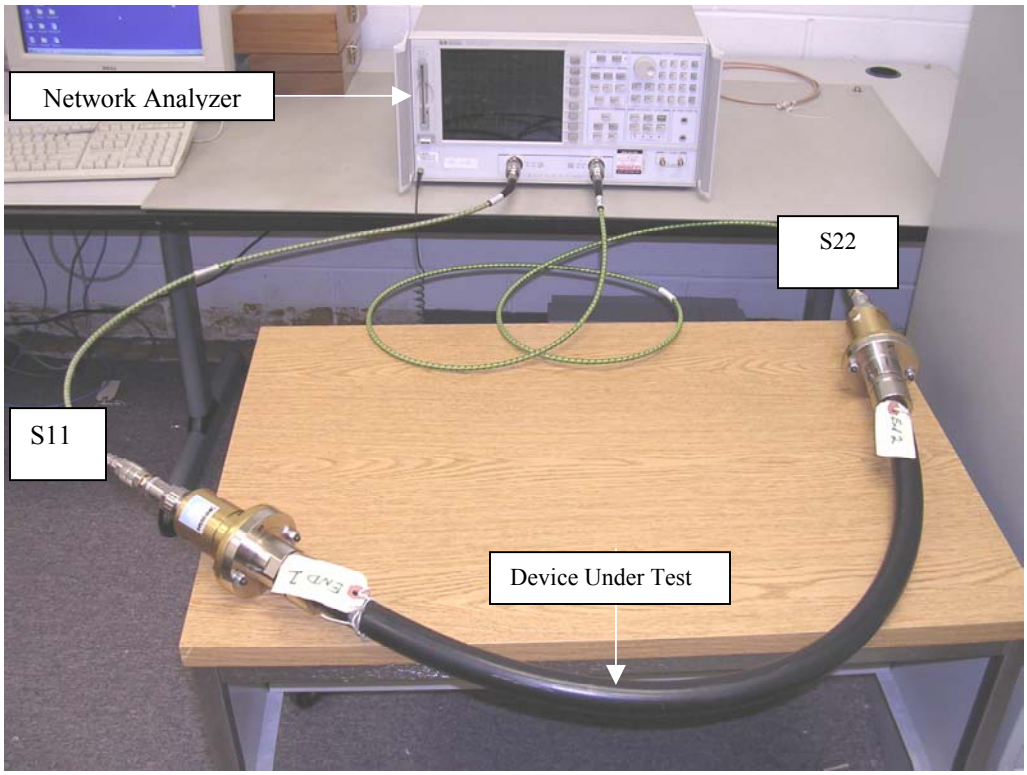


Figure 1

Mechanical:
Mitutoya 5210-540-2973 micrometer: used to measure contact diameter.

Test Procedure:

- Baseline electrical / mechanical measurements were performed on the sample assembly:
  - VSWR, Insertion Loss (Frequency range: 10 MHz to 1000 MHz)
  - Contact diameter, Visual Examination of Product
- Subject sample to 500 mating cycles or until a failure occurs.
  - A failure would consist of: assembly loses contact, or contact flare diameter does not meet spec (∅.598±.002).
  - Note: a cycle consists of 1 complete electro-mechanical mating onto its corresponding mating adapter or mating contact and 1 complete un-mating from its corresponding adapter or mating contact.
- After every 10 cycles (up to 100), then every 25 (up to 200), then every 50 (up to 500) all-electrical / mechanical test & inspections performed at baseline were repeated on each sample. See figures 2-3 for mating configurations.
- A separate test to simulate extended mating to be performed following 500 mating cycles.
  Assembly mated with applicable adapters for a duration of one week. All electrical/ mechanical test & inspections performed at baseline performed. See Results/ Conclusion portion of report for results.

Results / Conclusions:

- TRU 1-5/8 EIA meet /exceed 500 mating cycles, without any significant degradation to electrical / mechanical performance parameters. The test results were summarized and recorded per the following data: See figures 4-8.
- The VSWR and contact flare diameter following the extended mate test revealed little to no change.
- There was significant plating wear on the contact (see figures 9-11), but this did not affect electrical performance. The first signs of plating wear noticed after 60 cycles.

Figure 2

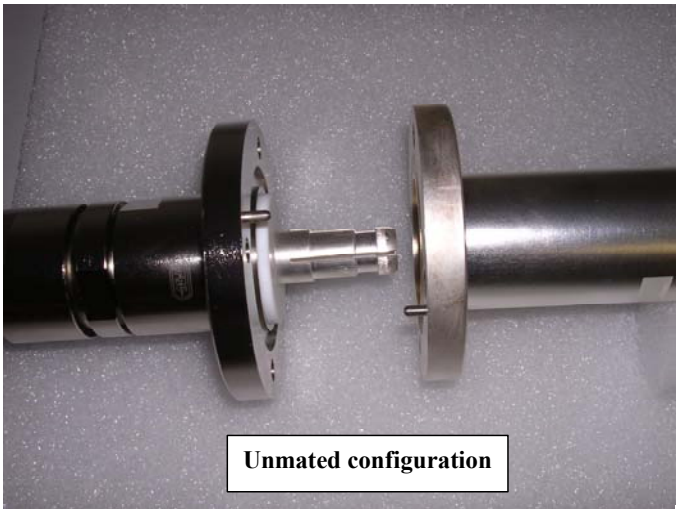


Figure 3

TEST DATA

Contact Flare diameter measurements

Figure 4

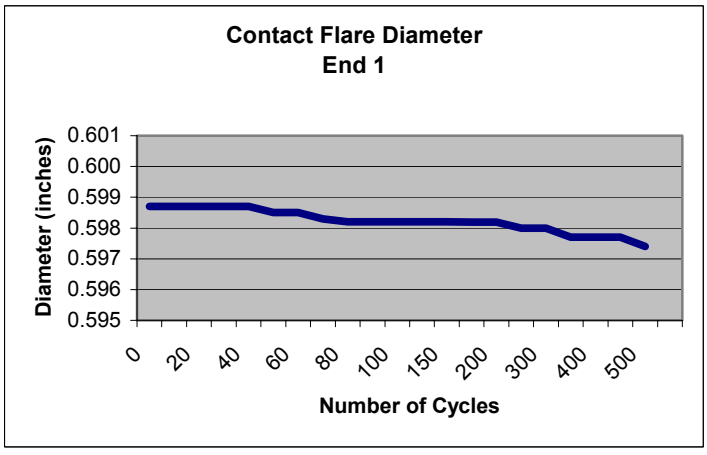
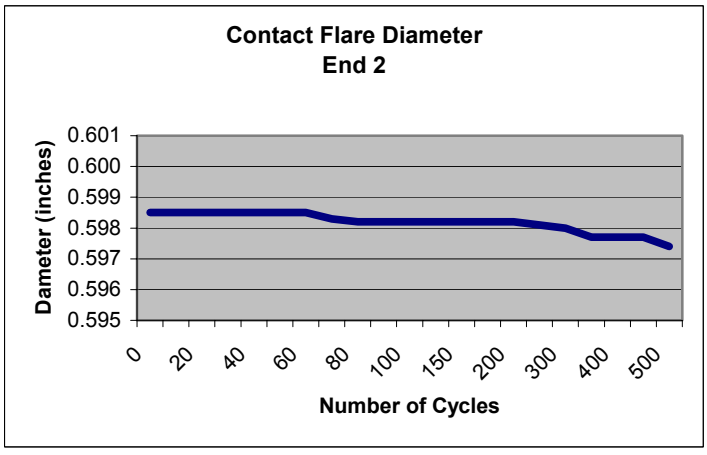


Figure 5



VSWR measurements

Figure 6

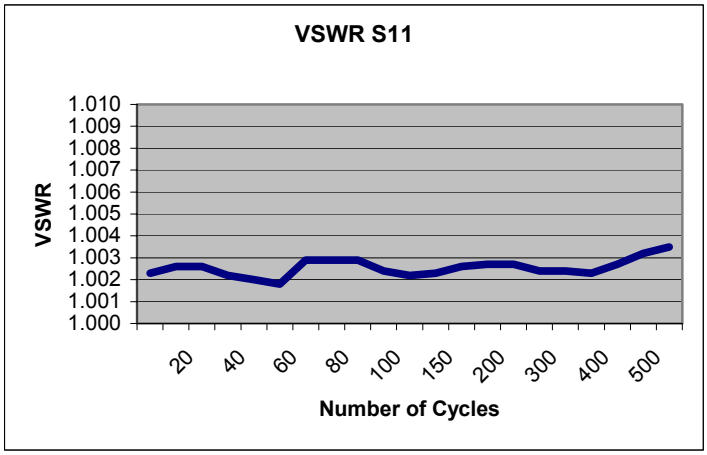
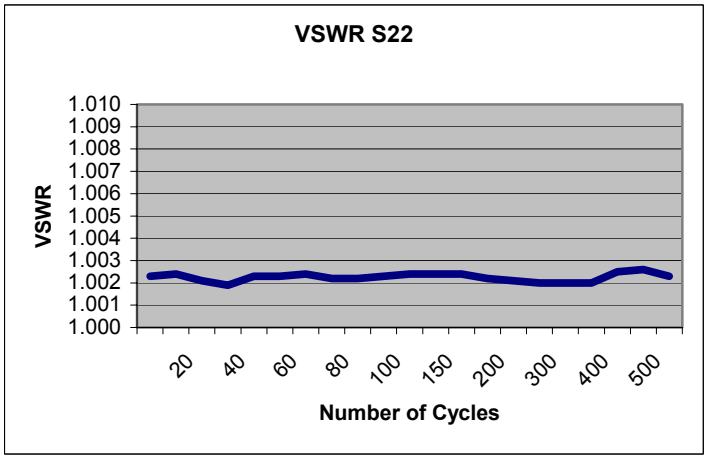


Figure 7



Insertion loss measurements

Figure 8

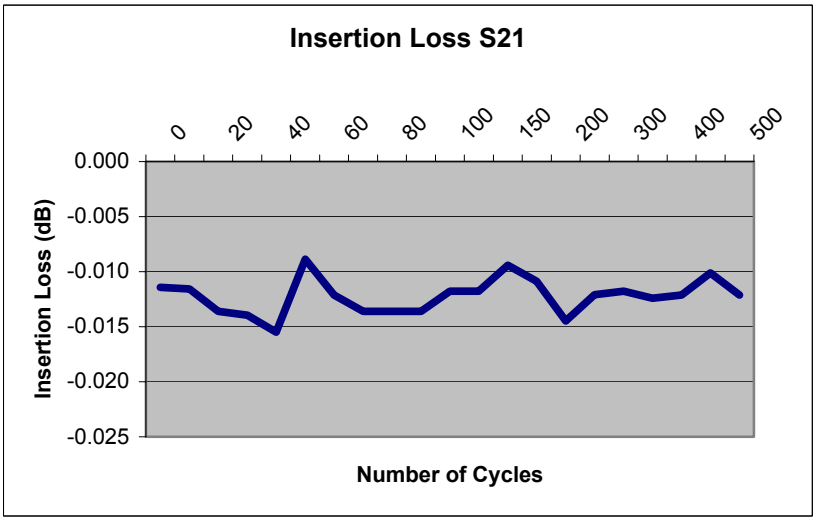


Figure 9

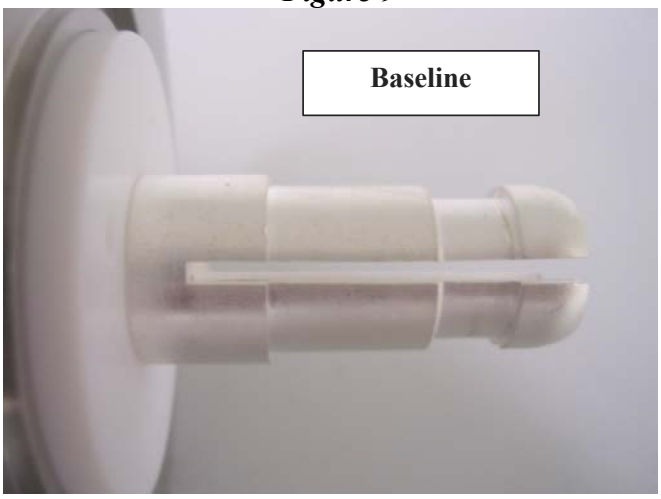


Figure 10

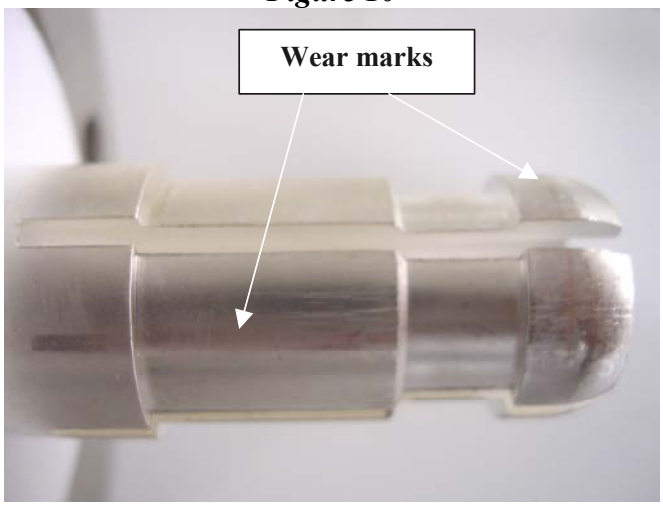


Figure 11