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TRU MEIA™ Products
Mating Durability Test Report

Objective

Test & characterize the mating durability of TRU MEIA™ Products (MEIA-1625 & MEIA-875) over an extended number of mating cycles to simulate the lifetime performance of TRU MEIA interface(s). The test will measure and monitor the following parameters: VSWR, insertion loss, phase, coupling torque, and insertion withdrawal forces to determine their impact on electrical/ mechanical performance.
A separate test; insertion / withdrawal force will be measured to determine the effect over an extended number of mating cycles to simulate the lifetime performance of MEIA interface(s).

Test Samples

One (1) each cable assembly described below was subjected to the test.

Sample 1: **MEIA-1625 Cable Assembly: 13.75" length, TRU-920 cable, Fig 1-3**
Connector 1: MEIA-1625 (f) Jack, Right Angle
Connector 2: MEIA (m) Plug
Adapter 1: 7-16 (f) to 1 5/8 EIA (f) plus 1 5/8 EIA (m) to MEIA-1625 (m)
Adapter 2: 7-16 (m) to 1 5/8 EIA (f) plus 1 5/8 EIA (m) to MEIA-1625 (f)

Sample 2: **MEIA-875 Cable Assembly: 13.5" length, TRU-450 cable, Fig 4-6**
Connector 1: MEIA-875 (f) Jack, Right Angle
Connector 2: SC (m) Plug
Adapter 1: 7-16 (f) to 7/8 EIA (f) plus 7/8 EIA (m) to MEIA-875 (m)
Adapter 2: SC (f) to 7mm

TEST SAMPLE 1

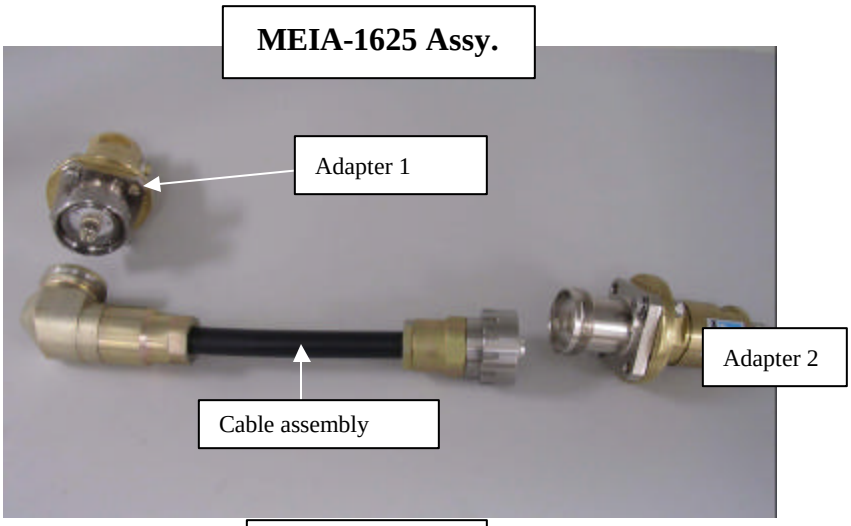


Figure 1

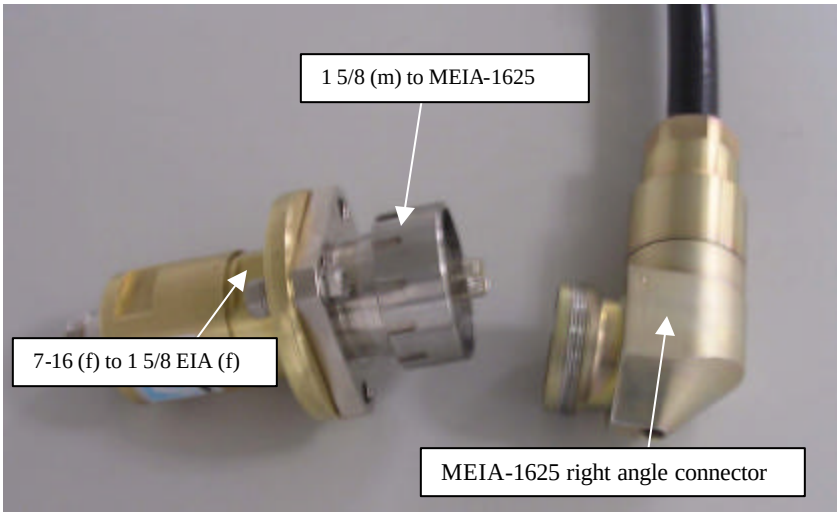


Figure 2

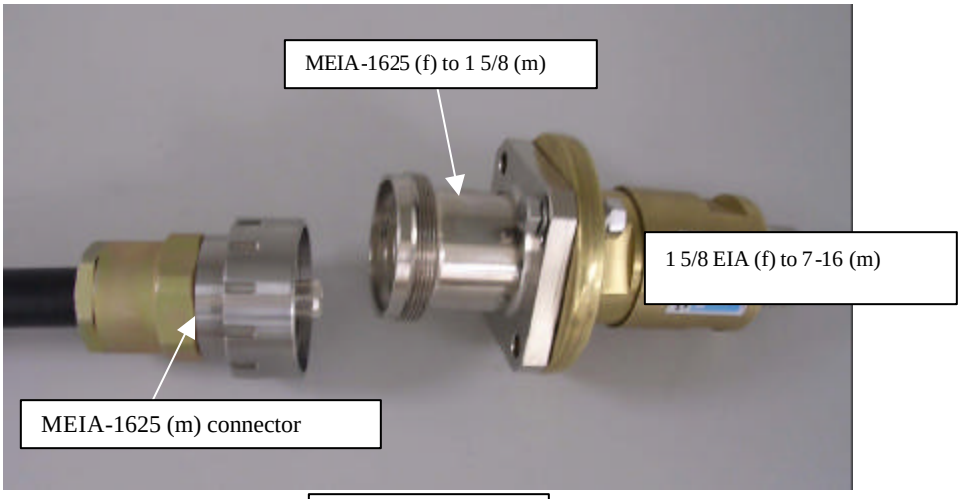


Figure 3

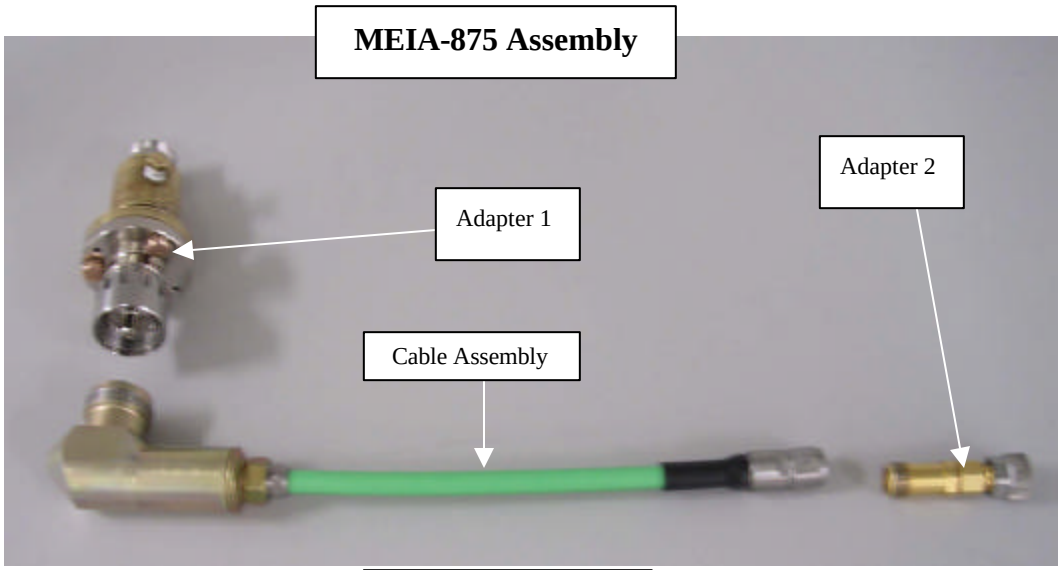


Fig 4

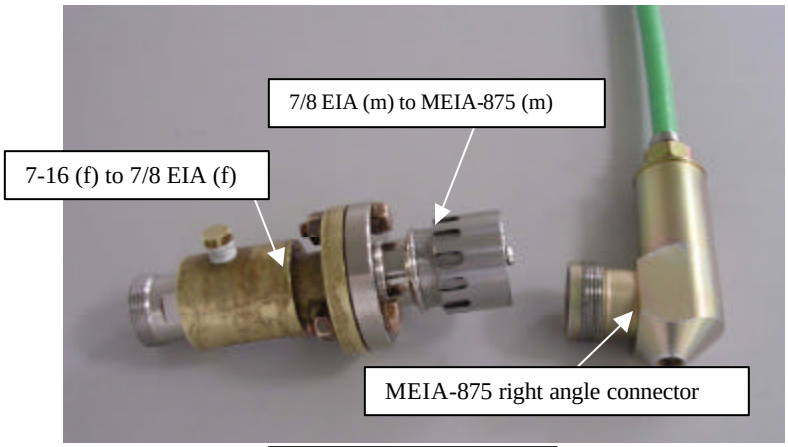


Fig 5

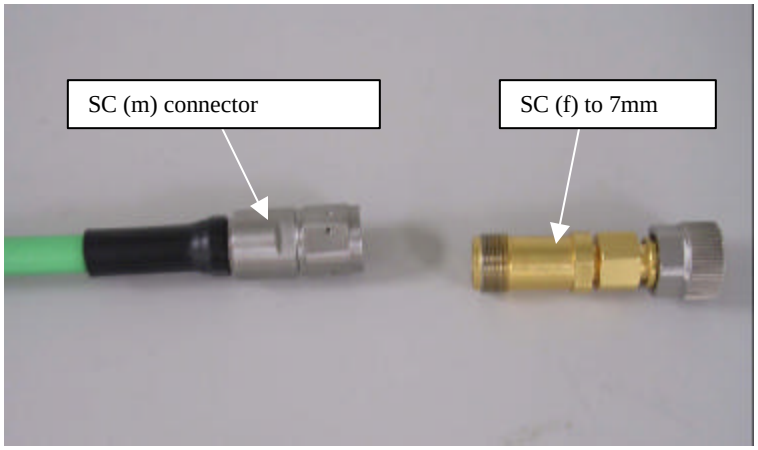


Fig 6

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: (Fig 10)
Vector Network Analyzer (HP 8753E) used on all electrical measurements
Applicable test port cables / adapters for each assembly, set up as applicable per figures 1-9
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 (right angle connector)
S22 measurement = End 2 of cable assembly (straight connector)

Electrical Test Set-Up

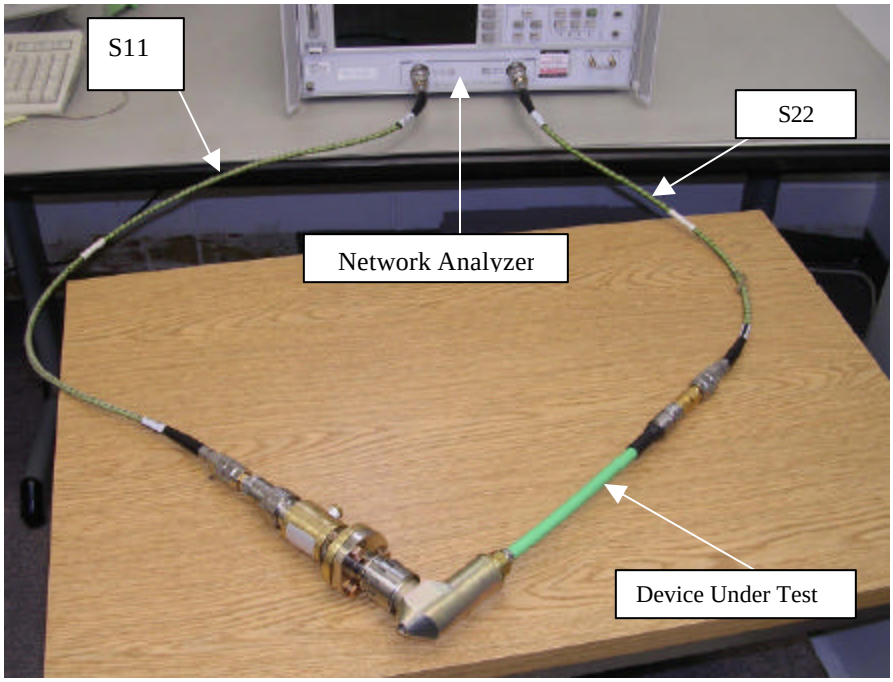


Fig 7

Mechanical: (Fig 8, 9 & 10)

Force Gauge:

Chatillon DFE-100 Used on MEIA-1625 and MEIA-875 contacts per figure 8.

Torque Meter(s):

CDI Torque Products: 751DIN, 3002LDIN per figure 9-10.

Stereo Magnifying Scope: (Vision Engineering p/n)

Digital Height Gauge: Fowler-Trimos V300+

Mechanical Test Set-Up

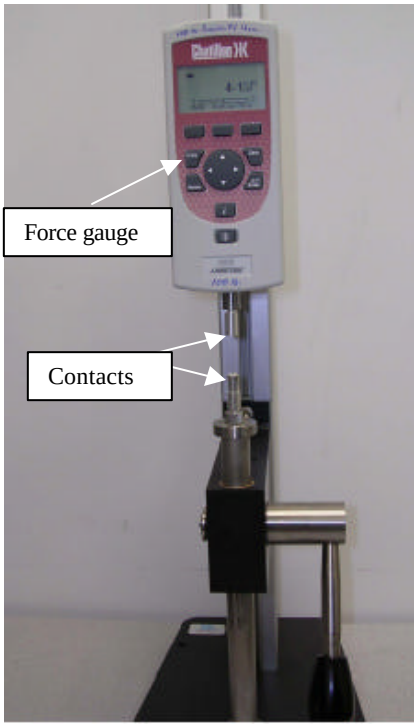


Fig 8

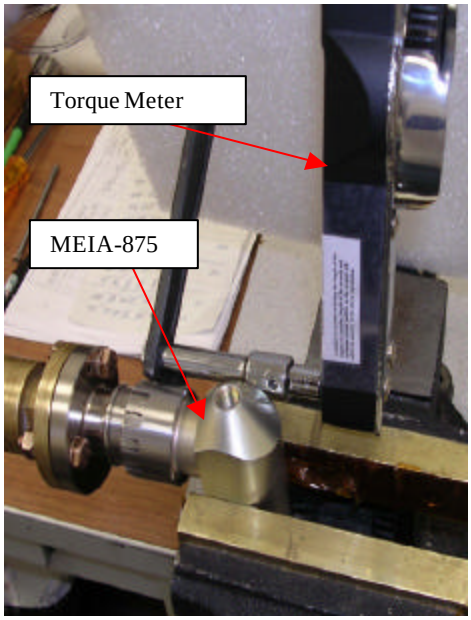


Fig 9

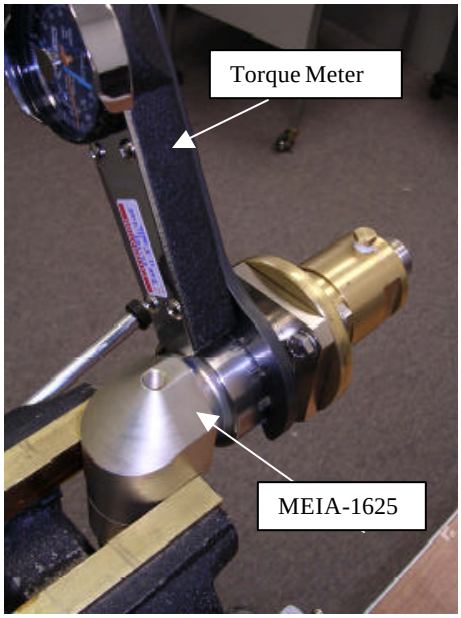


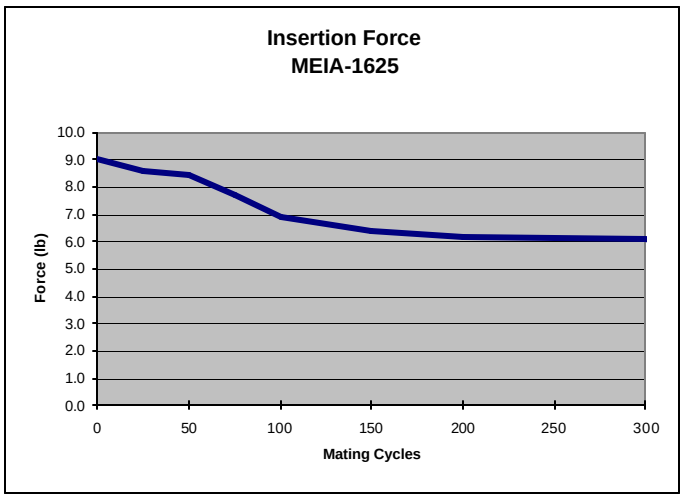
Fig 10

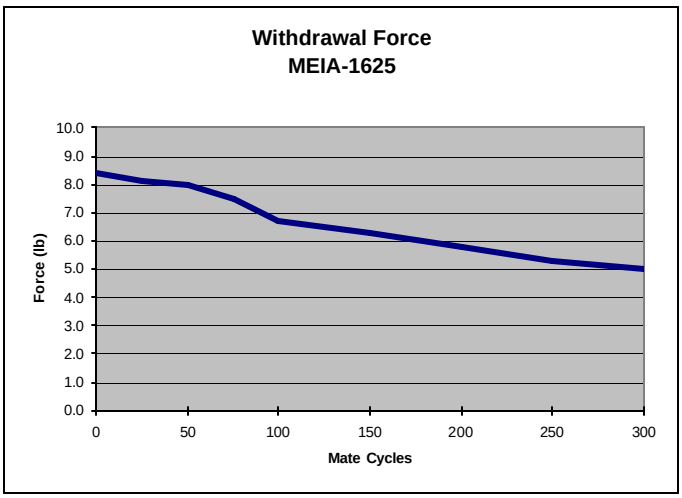
Test Procedure:

- Baseline electrical / mechanical tests were performed on each of the sample assemblies:
  - VSWR, Insertion Loss, Phase
  - Insertion & Withdrawal force
  - Interface Dimensions, Visual Examination of Product
- Subject each sample to 500 mating cycles or until a failure occurs.
  - 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.
  - Coupling torque for MEIA-1625: 165 in-lbs
  - Coupling torque for MEIA-875: 70 in-lbs
- After every 25 cycles (up to 100), then every 50 (up to 500) all electrical / mechanical test & inspections performed at baseline were repeated on each sample.

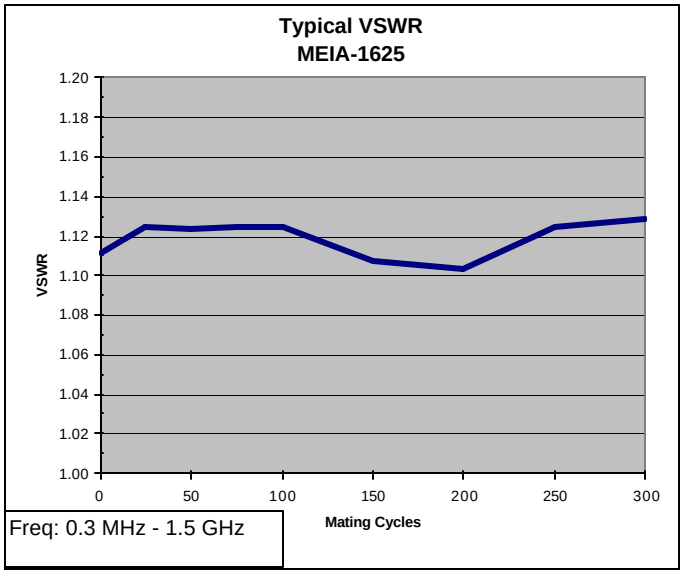
  The test results were summarized and recorded per the following data:

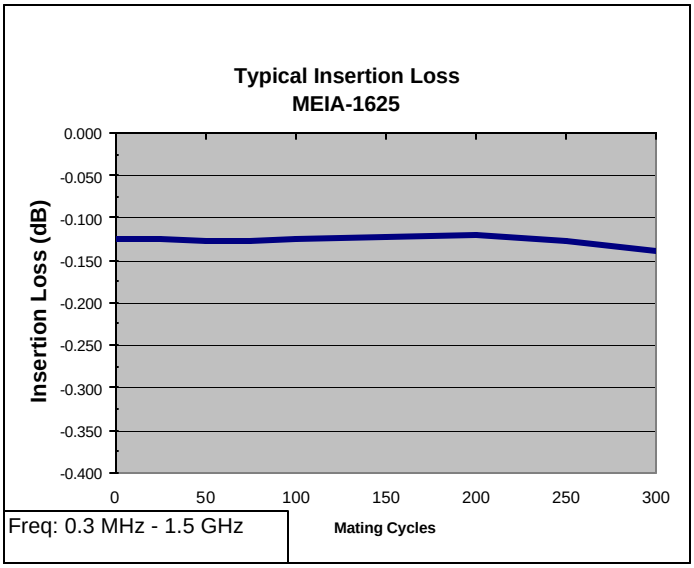
MEIA-1625
TEST DATA



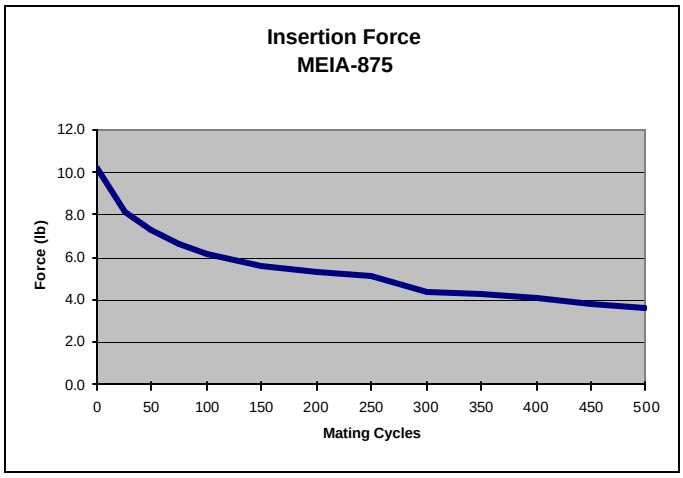


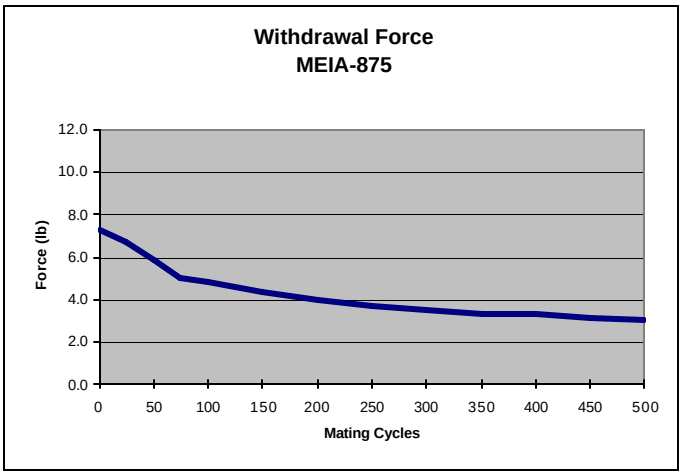
f

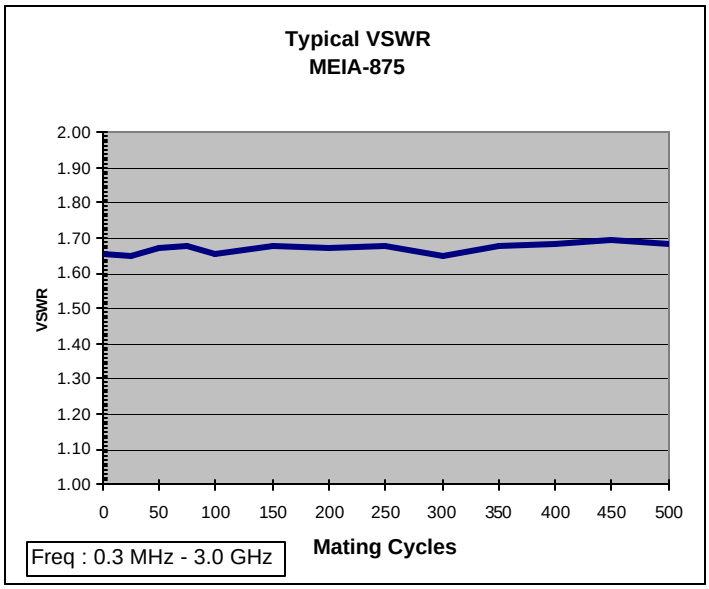


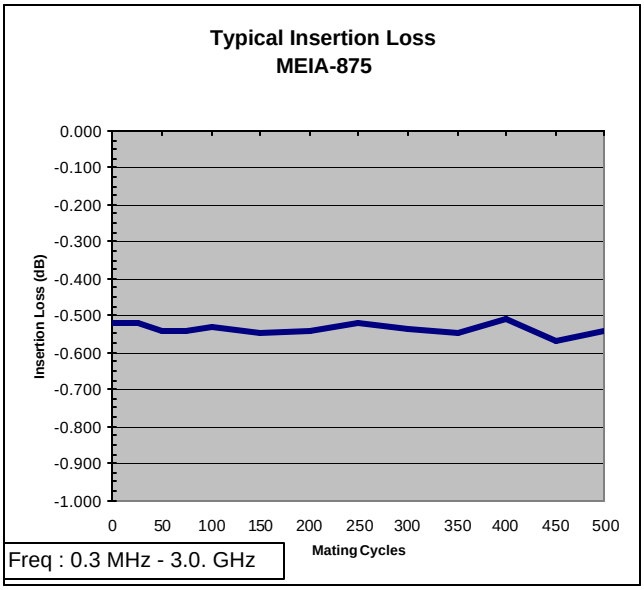


MEIA-875
TEST DATA

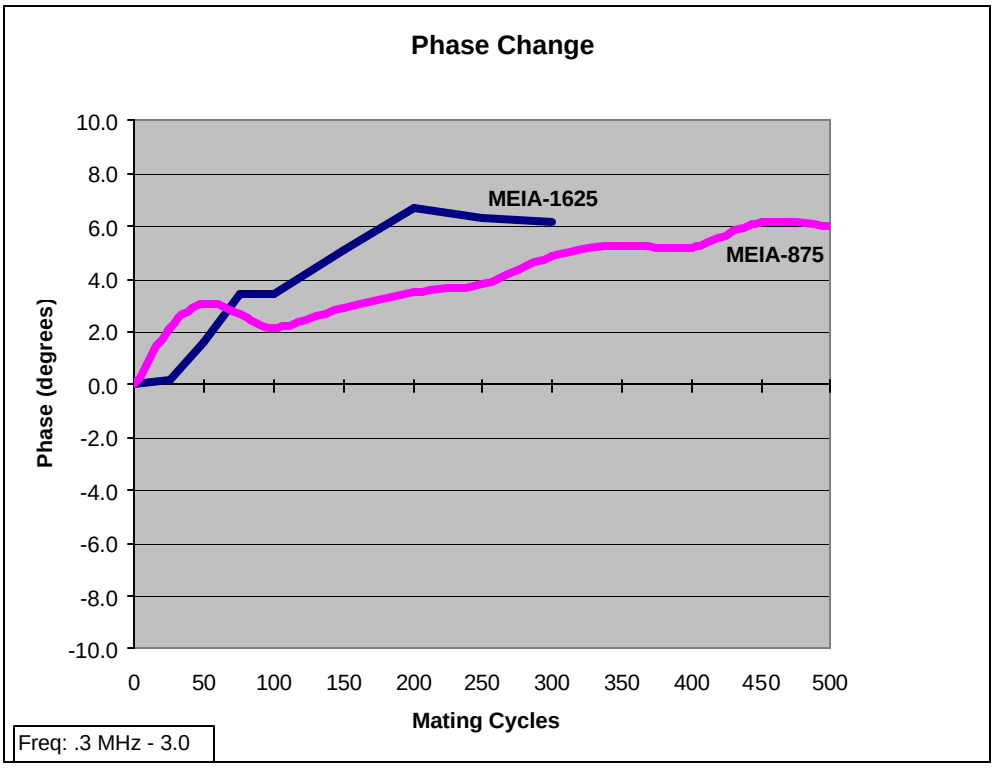








PHASE CHANGE TEST DATA
MEIA-1625, MEIA-875



Results / Conclusions:

- TRU MEIA-1625 products meet /exceed 250 mating cycles, without any degradation to electrical / mechanical performance parameters.

- TRU MEIA-875 products meet /exceed 500 mating cycles, without any degradation to electrical / mechanical performance parameters.

- The surface of the interface(s) exhibited wear marks and some plating wear over the threads (see figures 11-14).

- Recommended mating torque:

MEIA-1625	165 in-lbs +/- 15 in-lbs
MEIA-875	70 in-lbs +/- 10 in-lbs

- The insertion/ withdrawal forces:

	Insertion	Withdrawal
MEIA-1625	5-10 lbs	4-9 lbs
MEIA-875	3-9 lbs	2-8 lbs

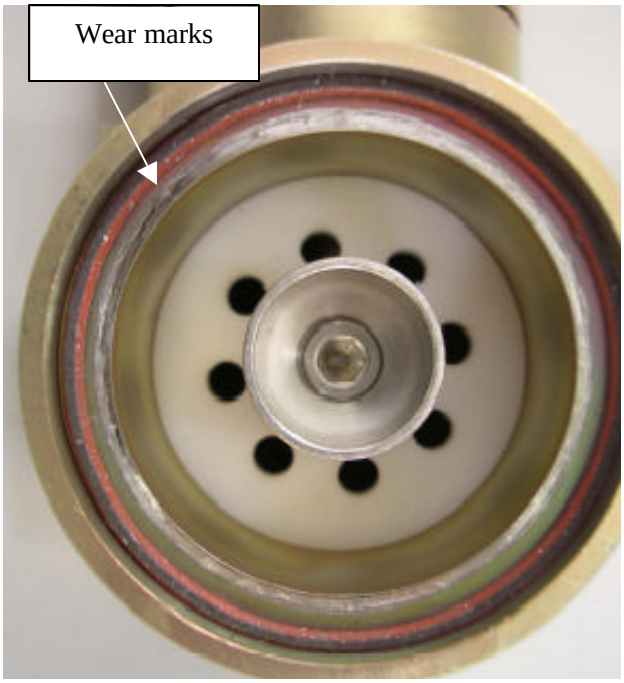


Fig 11

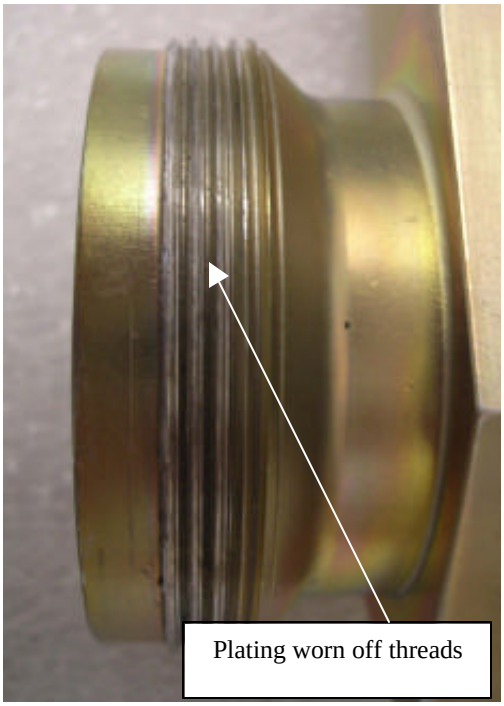


Fig 12

Fig 13

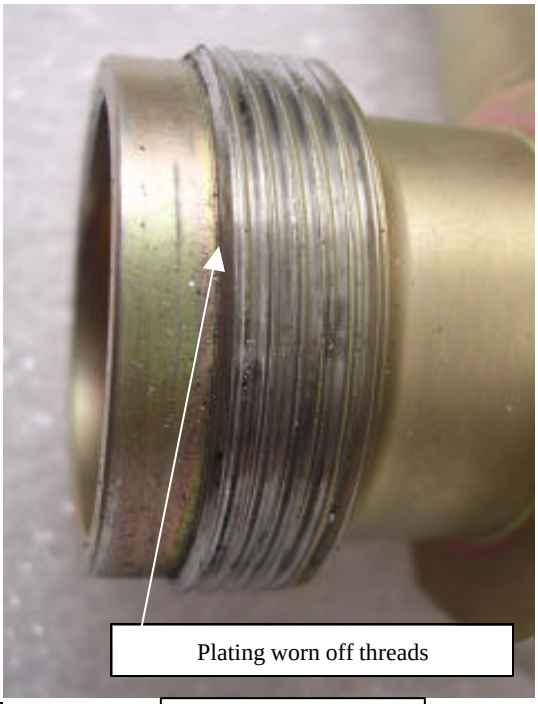


Fig 14