



**DEFENSE LOGISTICS AGENCY**  
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January 12, 2018

DSCC-V (VAI/Mr. Funk/614-506-4980)

MEMORANDUM FOR MILITARY/INDUSTRY DISTRIBUTION

**SUBJECT:** EP Study to determine final VSWR test method to incorporate vector network analyzers (VNAs) into updated test requirements. Project number 5935-2018-041.

The purpose of this EPS is to examine updating Method 1 for VSWR testing with a vector network analyzer (VNA).

Question #1. MIL-PRF-39012 currently has the following VSWR test requirements:

4.6.11 VSWR ([see 3.14](#)). The VSWR shall be measured in accordance with the following procedure or a method acceptable to the Government. In the event of dispute the method outlined herein shall be used.

The measurement shall be made on a Vector Network Analyzer using a full 12 term error correction with the appropriate calibration standards. A minimum of 400 data points shall be used.

Optional calibration: single port 6 term calibration can be used.

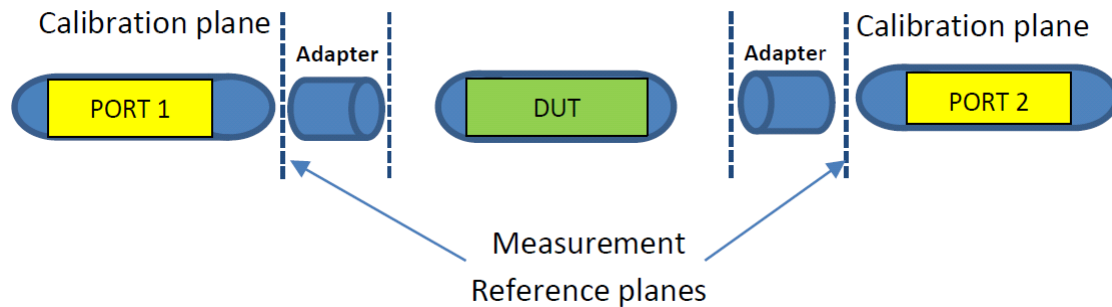
The test connector shall be terminated to an appropriate load. The cable's length should have attenuation equal to or greater than  $\frac{1}{2}$  the dynamic range of the analyzer. A termination can be added to the end of the long cable to ensure that no signal is reflected back to the connector under test.

MIL-PRF-39012 will be updated to Method 1:

The VSWR (reflection) shall be measured in accordance to the following approved procedure or a method acceptable to the Government. Part (s) shall be measured using a Network Analyzer. If the DUT (device under test) is not insertable to the calibration port(s), the most practical way is to use a 50-Ohm test adapter or a test fixture.

The following acceptable methods can be used for VSWR (reflection) measurement. Further details on each method can also be found on each manufacturer's network analyzer operation instructions.

*Method 1:* This method includes the effect of the adapter(s) in the DUT measurement trace. Such a pair of test adapters are to be of equal electrical length and meet a VSWR less than  $1.05 + .005 \times F$  (F in GHz). If the DUT (e.g. a cable assembly) including test adapters meets the VSWR requirement, the component is within specifications (with some safety margin) and it can be accepted.



The purpose of this EPS is to determine if DLA should update the MIL-PRF-39012 VSWR test requirements to Method 1 as shown above?

Applicable documents include MIL-PRF-39012.

Please provide this office with your response or comments within 30 days of the date of this Memorandum. Lack of response will be construed as concurrence or lack of interest.

If there are any questions please contact Mr. Jeremy Funk, phone number 614-692-6608, facsimile transmission, 614-692-6939, e-mail [Jeremy.Funk@dla.mil](mailto:Jeremy.Funk@dla.mil), or may be mailed via the US Postal Service to DLA LAND AND MARITIME, ATTN: VAI (Attention: Jeremy Funk), P.O. Box 3990, Columbus, OH 43218-3990.

Sincerely,

**/ SIGNED /**

ABDONASSER M. ABDOUNI  
Chief,  
Interconnection Branch