

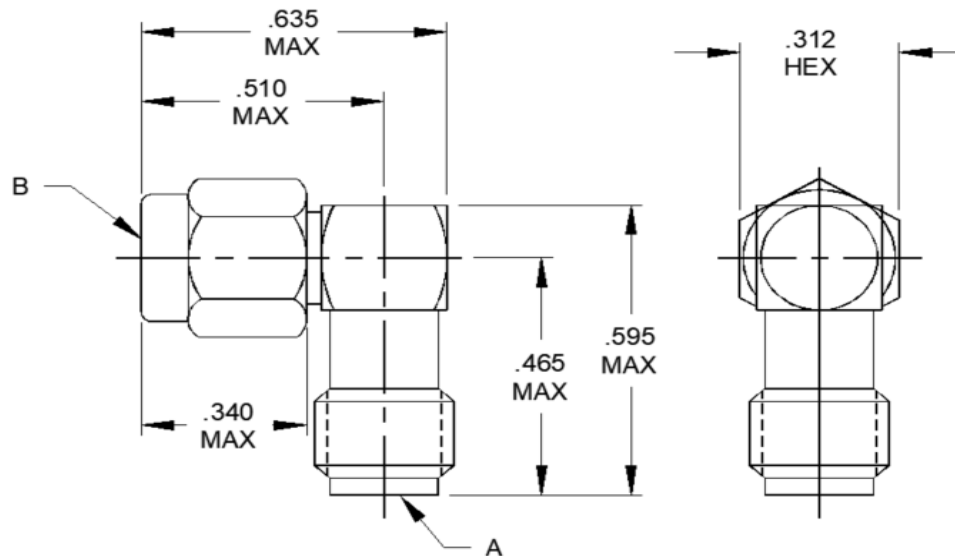
MIL-PRF-55339/2B
w/AMENDMENT 2
6 March 2020
SUPERSEDING
MIL-PRF-55339/2B
w/AMENDMENT 1
12 November 2019

PERFORMANCE SPECIFICATION

ADAPTERS, CONNECTOR, COAXIAL, RADIO FREQUENCY, (SERIES SMA), CLASS 2, RIGHT ANGLE, MALE TO FEMALE

This specification is approved for use by all
Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall
consist of this specification sheet and MIL-PRF-55339.



Reference	Series	Contact
A	SMA	Socket
B	SMA	Pin

Inches	mm
.312	7.92
.340	8.64
.465	11.81
.510	12.95
.595	15.11
.635	16.13

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. All undimensioned pictorial representations are for reference purposes only.
4. Interface dimensions shall be in accordance with MIL-STD-348.

FIGURE 1. Dimensions and configurations.

DESIGN AND CONSTRUCTION:

General configuration - - - - -	See figure 1.
Center contact spring member- - - - -	Copper beryllium.
Impedance - - - - -	50 ohms, nom.
Working voltage:	
Sea level - - - - -	335 Vrms.
70,000 feet- - - - -	85 Vrms.
Frequency range- - - - -	0 to 12.4 GHz.
Temperature range - - - - -	-65° to +165°C.

PERFORMANCE (for each test of a threaded coupling connector where the test is performed on mated pairs, the pairs shall be torqued 7 to 10 inch pounds [.791 to 1.13 Nm]).

Dimensions – See figure 1.

Center contact retention:

Axial force – 6 lb, min.

Torque – 4 in. oz, min.

Force to engage and disengage:

See table I.

Coupling proof torque: 15 in. lb, min.

Mating characteristics:

Center contact – See table II.

Outer contact – Not applicable.

Permeability: Less than 2.0

Seal (hermetic pressurized, and weatherproof). Not applicable.

Insulation resistance: MIL-STD-202-302, test condition B. 5,000 megohms, min.

VSWR: 1.05 + .010 F, (F in GHz) max, at .5 to 12.4 GHz.

VSWR procedure.

The VSWR shall be measured in accordance with the following procedure or a method acceptable to the Government.

Part should be tested using a Network Analyzer with the Time Domain (TDR) option installed. This is essential to allow the effect of the adapters to be “gated” out. The recommended network analyzer systems include suitable equipment with NIST traceability or equivalent. All gating will be completed in accordance with the procedures stated by the network analyzer manufacturer with the following time domain settings:

TABLE I. Suggested Time Domain Settings.

Transform Mode <u>1/</u>	Gate Type	Gate Shape <u>2/</u>	Start Gate Time (ps)	Stop Gate Time (ps)
Low-pass	Bandpass	Minimum, Normal, Wide	End of Adapter <u>3/</u> – Rise Time of Gate <u>4/</u>	End of Device Under Test + Rise Time of Gate

1/ The low-pass mode will have a higher resolution than the band-pass mode.

2/ Each shape specified will not be smaller than the minimum gate span to ensure the response has the correct start and stop times.

3/ “Port Extension” is also used for detection to move the measurement plane after calibration is complete.

4/ The minimum window is used for best resolution.

5/ The maximum window is used for best dynamic range.

The printer/plotter and the computer should be any unit compatible to the system. The test adapters will utilize the following frequency bands:

Frequency	VSWR
500 MHz	1.055
1 GHz	1.055
5 GHz	1.075
10 GHz	1.100
15 GHz	1.125
18 GHz	1.140
26 GHz	1.180
40 GHz	1.25
50 GHz	1.30
65 GHz	1.375

50-ohm precision air lines may also be used on both sides of the device under test.

Calibration of the system should be performed using the manufacturer’s calibration kits and the recommended calibration procedures. The frequency range shall be DC to 65 GHz. The VSWR calibration test setup shall be verified using the manufacturers verification kits. The calibrated system VSWR shall be less than $1.02 + .001F$ (F in GHz).

The VSWR of the DUT shall be measured using the procedures described in the manufacturer’s operating instructions. The time domain shall then be used to remove the effects of the test adapter with the recommended settings as mentioned above.

The output shall be generated using the appropriate printer/plotter.

RF leakage (total): -60 dB, min, at 2 to 3 GHz.

RF insertion loss: $(.05 \sqrt{F \text{ (GHz)}})$ dB max tested at 6 GHz).

Durability: 500 cycles minimum at 12 cycles per minute maximum. The connector shall meet the mating characteristics and force to engage and disengage requirements.

Dielectric withstanding voltage: MIL-STD-202-301. Test voltage – 1,000 Vrms, max, at sea level.

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Contact resistance (in milliohms, max).

	Initial	After environment
Center contact	4.0	6.0
Outer contact	2.0	N/A

Vibration, high frequency: MIL-STD-202-204, test condition D.

Shock (specified pulse): MIL-STD-202-213, test condition I.

Thermal shock: MIL-STD-202-107, test condition B.

Moisture resistance: MIL-STD-202-106. Insulation resistance – 200 megohms, min.

Corona level: 250 V, min. Altitude: 70,000 feet.

RF high potential withstanding voltage: RF voltage – 670 Vrms. Frequency – 5 MHz.

Salt spray (corrosion): MIL-STD-202-101, test condition B.

Coupling mechanism retention force: 60 lbs, min.

Marking: As specified in MIL-PRF-55339.

TABLE II. Performance characteristics.

Characteristic	Test value	
	MALE	FEMALE
Force to engage and disengage		
Longitudinal force - - - - -	N/A	N/A
Torque - - - - -	2 in. lb, max	2 in. lb, max
Mating characteristics (center contact)		
Oversize test pin		
(inserted .030/.045 in. deep) - - - -		.0375 + .0001 in. dia
Max. test pin (insertion force 3 lb, max)		
(insertion depth .050/.075) - - - - -		.0370 in. dia
Min test pin (withdrawal force 1 oz, min)		
(insertion depth .050/.075) - - - - -		.0355 - .0001 in. dia

Part or Identifying Number (PIN): M55339/02-30001,
M55339/02-40001.

Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

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Referenced documents: In addition to MIL-PRF-55339, this document references the following:

MIL-STD-202-101	MIL-STD-202-213
MIL-STD-202-106	MIL-STD-202-301
MIL-STD-202-107	MIL-STD-202-302
MIL-STD-202-204	MIL-STD-348

CONCLUDING MATERIAL

Custodians:

Army - CR
Navy - EC
Air Force - 85
DLA – CC

Preparing activity:
DLA - CC

(Project 5935-2020-043)

Review activities:

Army – AR, AT, EA, MI
Navy - AS, MC, OS, SH
Air Force – 19

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of information above using the ASSIST Online database at <https://assist.dla.mil>.