

INCH-POUND

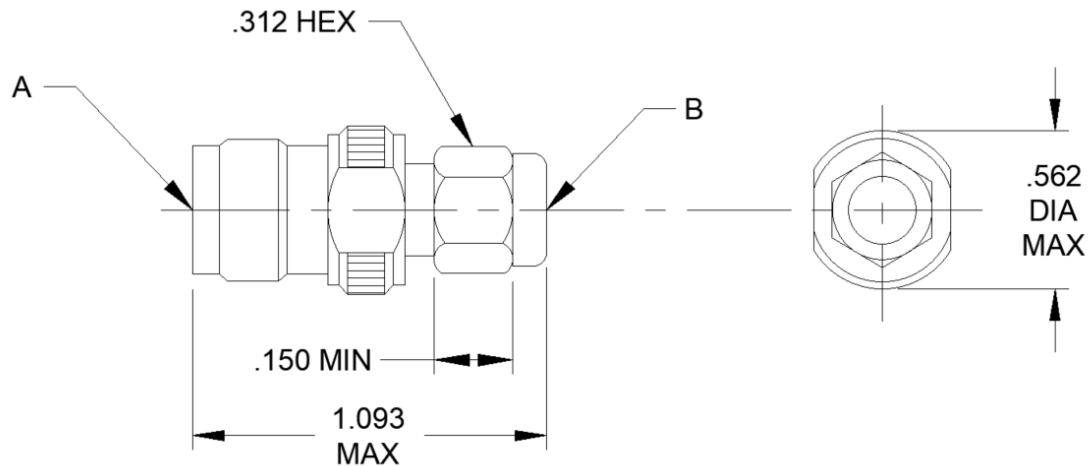
MIL-PRF-55339/40B
w/AMENDMENT 2
6 March 2020
SUPERSEDING
MIL-PRF-55339/40B
w/AMENDMENT 1
15 November 2019

PERFORMANCE SPECIFICATION

ADAPTER, CONNECTOR, COAXIAL, RADIO FREQUENCY, (BETWEEN SERIES SMA (MALE) TO SERIES TNC (FEMALE)), CLASS 2 STRAIGHT PLUG

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	TNC	Socket
B	SMA	Pin

Inches	mm
.150	3.81
.312	7.92
.562	14.27
1.093	27.76

NOTES:

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

FIGURE 1. General configuration jack-plug-jack.

ENGINEERING DATA:

Nominal impedance: 50 ohms.

Frequency range: 0 to 11 GHz.

Voltage rating: 335 volts rms maximum working voltage at sea level, 85 volts rms at 70,000 feet.

Temperature range: -65° to +165°C.

REQUIREMENTS:

Dimensions and configurations: See figure 1.

Center contact retention.

Axial force – 6 pounds minimum.

Force to engage and disengage.

Longitudinal force – Not applicable.

Torque – 2 inch-pounds maximum.

Coupling proof torque.

Series SMA – 15 inch-pounds, minimum.

Series TNC – Not applicable.

Inspection conditions.

Coupling torque – Series SMA – 7 to 10 inch-pounds.

Series TNC – 4 to 6 inch-pounds.

Mating characteristics.

Series SMA – Not applicable.

Series TNC

Center contact (socket):

Oversize test pin - .057 inch minimum.

Insertion depth - .125 inch minimum.

Number of insertions – 1.

Insertion force test. Steel test pin diameter - .054 inch minimum.

Test pin finish – 16 microinches.

Insertion force – 2 pounds maximum.

Withdrawal force. Steel test pin diameter - .052 inch maximum.

Withdrawal force – 2 ounces minimum.

Test pin finish – 16 microinches.

Permeability: Not to exceed 2.

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

Voltage standing wave ratio (VSWR): 1.15 + .015 F (GHz) at .5 to 11 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.

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RF leakage: -60 dB minimum tested at a frequency of 2 to 3 GHz.

RF insertion loss: $.06 \sqrt{F \text{ (GHz)}}$ dB maximum at 6 GHz.

Durability: 500 cycles minimum at 12 cycles per minute maximum.

Dielectric withstanding voltage: MIL-STD-202-301. Test voltage – 1,000 volts rms minimum at sea level.

Contact resistance (milliohms, max):

	Initial	After environment
Center contact	4.5 ^{1/}	6.0
Outer contact	2.2	--

^{1/} Two center contacts must be mated to the center conductor under test therefore doubling center contact resistance.

Vibration, high frequency: MIL-STD-202-204, test condition D, interruptions – 1 μ s, maximum.

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

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

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

Corona level:

Voltage – 375 volts minimum.

Altitude – 70,000 feet minimum.

RF high potential withstanding voltage:

RF voltage – 1,000 volts rms minimum.

Frequency – 5 to 7.5 MHz.

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

Coupling mechanism retention force:

Series TNC – Not applicable.

Series SMA – 60 pounds minimum.

Part or Identifying Number (PIN):

M55339/40-30001 (safety wire holes (SMA))
-30101 (without safety wire holes)

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 5935-2020-046)

Review activities:

Army - 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>.