

1. **Scope**

Detail specification for Micro-Coax Semi-Rigid Cable UT-047-25-TP manufactured and tested in accordance with MIL-DTL-17. Cable per this specification is intended for high reliability applications.

2. **Applicable Documents**

The following documents form a part of this specification to the extent specified herein. In the event of conflict, this specification shall govern.

- MIL-DTL-17 Cables, Radio Frequency, Flexible and Semi-Rigid, General Specification For
- ASQ ITEM H0862, Zero Acceptance Number Sampling Plans
- DISC EQ001B
- ASTM B-298 Standard Specification for Silver-Coated Soft or Annealed Copper Wire
- ASTM B-545 Standard Specification for Electrodeposited Coatings of Tin

3. **Material Requirements**

3.1 **Center Conductor**

3.1.1 Material: Silver-Coated Soft Copper Wire per ASTM B-298.Class A, 1.25% minimum silver by weight.

3.1.2 Tensile Strength: Not Applicable

3.1.3 Elongation: 20% minimum on a 10 inch (254 millimeter) sample.

3.2 **Dielectric**

Solid extruded polytetrafluoroethylene (PTFE) per MIL-DTL-17, Type F-1.

3.3 **Outer Conductor**

Copper tubing per MIL-DTL-17, paragraph 3.5.3.2.a.

3.4 **Outer Conductor Plating**

Tin plated per ASTM B-545

4. **Mechanical & Environmental Requirements**

4.1 Cable Outer Diameter: 0.047 +0.004/-0.003 inches (1.194 +0.102/-0.076 millimeters)

4.2 Cable Dielectric Diameter: 0.028 +/- 0.001 inches (0.711 +/- 0.025 millimeters)

4.3 Cable Center Conductor Diameter: (26 AWG) 0.0159 +/- 0.0005 inches (0.4039 +/- 0.0127 millimeters)

4.4 Length: Cable shall be supplied in 1 to 25 feet (0.30 to 7.62 meters) random straight lengths unless otherwise specified.

4.5 Marking: None

4.6 Bend Test: Cable shall withstand forming about a 0.250 inch (6.350 millimeter) diameter mandrel for an excursion of 360 degrees minimum without evidence of longitudinal or transverse splits or cracks in the outer conductor.

4.7 Center Conductor and Dielectric Adhesion: A 7 inch (177.8 millimeter) cable sample shall be stripped of its outer conductor for a length of 1 inch (25.4 millimeter) at one end. A pull of 2 lb. (0.91 kg) minimum shall be required to dislodge the dielectric from the outer conductor or the center conductor from the dielectric.

4.8 Center Conductor Concentricity: In any cross-section, the percentage ratio of the lesser dielectric wall thickness to the greater wall thickness shall be not less than 83%.

4.9 Weight (nominal) 0.58 lb./100 feet (0.86 kg/100 meters)

4.10 Maximum Operating Temperature: 302 degrees F (150 degrees C)

This specification is issued on an uncontrolled basis and therefore subject to change without notice. Contact Micro-Coax, Inc. prior to using as a basis for procurement and inspection document generation.



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5. **Electrical Requirements**

- 5.1 Continuity: Cable center conductor shall be verified with 100% sampling.
- 5.2 Characteristic Impedance (Z): 25.0 +/- 3.0 ohms, determined by calculation from the capacitance (C) and velocity of propagation (Vp) using the following formula: $Z = 101,670 / Vp(\%) \times C$ (pF/ft).
- 5.3 Higher Order Moding Frequency: 120 GHz
- 5.4 Maximum Operating Voltage: 500 VRMS @ 60 Hz
- 5.5 Dielectric Withstanding Voltage: 1500 VRMS @ 60 Hz
- 5.6 RF Leakage: -100 dB (1 to 18 GHz)
- 5.7 Velocity of Propagation: 70% (relative to the speed of light)
- 5.8 Capacitance: The capacitance measured between the center and outer conductor shall be between 51.8 and 66.0 pF/foot (170.0 and 216.4 pF/meter).
- 5.9 Attenuation and Power Handling:

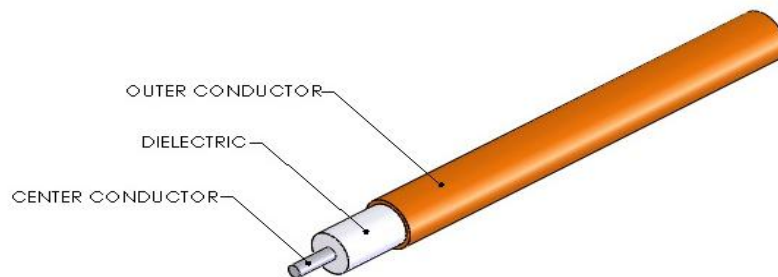
Freq (GHz)	Typical Attenuation dB/100 ft	Maximum Attenuation dB/100 ft	Typical Attenuation dB/100 m	Maximum Attenuation dB/100 m	Maximum Power Watts (CW)
0.5	42.6	44.7	139.8	146.8	38.2
1.0	60.5	63.5	198.5	208.4	26.9
5.0	137.6	144.5	451.5	474.0	11.9
10.0	197.1	207.0	646.7	679.0	8.3
18.0	268.2	281.6	880.0	924.0	6.1
20.0	283.5	297.7	930.2	976.7	5.8
26.5	329.3	345.8	1,080.4	1,134.5	5.0
40.0	410.7	431.2	1,347.5	1,414.9	4.0
50.0	463.6	486.8	1,521.1	1,597.1	3.6
65.0	535.2	562.0	1,756.0	1,843.8	3.1
90.0	641.1	431.2	2,103.4	2,208.6	2.6
109.0	713.8	749.5	2,342.0	2,459.1	2.3

6. Documentation and Traceability

- 6.1 Verification data of parameters detailed in this specification shall be maintained at Micro-Coax, Inc. and shall be submitted to the purchaser as required.
- 6.2 Traceability of raw and finished materials shall maintained throughout all processes from raw material procurement through delivery of finished cable by means of appropriate lot number assignments and records.

7. Quality Assurance

- 7.1 Tests and inspections are performed in accordance with MIL-DTL-17 unless otherwise specified.
- 7.2 Specification requirements are verified by lot inspection at sampling per ASQ ITEM H0862, DISC EQ001B, C=0, 4.0 AQL, unless otherwise specified.



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