

Phase Stable Cable Assemblies

Phase Stable Cable Assemblies are precision designed and constructed to provide highly repeatable electrical length and electrical phase performance despite varying environmental conditions. These cables use state-of-the-art dielectrics like Aptiv's DynaCore® PS, conductor geometry optimizations and precision manufacturing to provide the highest level of stability and reliability. Thoroughly tested and ready for integration, Phase Stable Cable Assemblies are used in radar, phased array antennas and high accuracy test and measurement applications.



KEY FEATURES & BENEFITS

- Stable Performance – Minimal phase shift with temperature and bending.
- High Accuracy – Consistent electrical path for precise, repeatable measurements.
- Signal Integrity – Maintains in-phase coherence and low loss.
- Reduced Downtime – Less recalibration saves time and cost.
- Proven Reliability – Factory-tested to meet strict performance specs.

PRODUCT SPECIFICATIONS

Electrical Properties*	
Impedance	50 Ohms (standard).
Frequency Range	DC up to 110 GHz, supporting RF and millimeter-wave applications.
Phase Stability vs. Temperature	Degrees of phase change per degree Celsius (e.g., ± 50 ppm/°C). Winchester's PhaseTite® series offers improved figures.
Phase Stability vs. Flexure	Max phase change when bent (e.g., $\pm 2^\circ$ @ 18 GHz for 360° bend).
VSWR (Voltage Standing Wave Ratio)	Rigorously tested, achieving excellent values (e.g., 1.25:1 or better).
Velocity of Propagation (VP)	High (76% to 85%) due to low-dielectric-constant materials.
Shielding Effectiveness	Very high (>90 dB to >100 dB) to protect signals.
Power Handling	Efficient thermal dissipation and robust construction for high power.

*reference website for specific part number specifications

PRODUCT SPECIFICATIONS CONTD.

Environmental Properties*	
Temperature Range	Wide operating range (-65°C to +165°C) with optimized phase stability.
Thermal Shock	Resistant to rapid temperature fluctuations (MIL-STD-202, Method 107).
Vibration & Shock	Withstands significant levels (MIL-STD-202, Method 204/213 compliance).
Moisture Resistance	Robust jackets and sealed connectors provide humidity and moisture resistance.
UV Resistance	Outer jackets are often UV-stabilized for outdoor use.
Chemical Resistance	Available with jackets resistant to oils, fuels, and solvents.
Space Qualification	Specialized versions (e.g., Winchester's SpaceFlex™) for space environments

*reference website for specific part number specifications

PRODUCT SPECIFICATIONS CONTD.

Mechanical Properties*	
Inner Conductor	Solid or multi-strand silver-plated copper.
Outer Conductors/Shielding	Multi-layered, braided, foil-wrapped, or helical-wrap shields.
Jacket	Flexible and durable materials like FEP, ETFE, or polyurethane.
Outer Diameter (OD)	Various diameters (e.g., Winchester's PhaseTite® series in 0.153", 0.217", 0.302").
Connectors	High-performance RF connectors (e.g., SMA, N-Type) via precise methods.
Length Tolerance	Extremely precise custom lengths with tight tolerances (e.g., ± 0.060 ").
Minimum Bend Radius	Specified for static and dynamic bending - maintaining phase stability.
Dielectric/Insulator Material	Specialized low-density PTFE or proprietary foam PTFE variations.
Flex Life	High number of flex cycles (>25,000 cycles) without degradation.

*reference website for specific part number specifications