

# PhaseTrack®

PhaseTrack® cable assemblies are designed for applications demanding minimal phase change over temperature. These cables use a proprietary TF4® dielectric and feature a double shield and vapor seal design for a wide range of applications.

## IDEAL FOR:

- Phased Array Radars
- Space Applications
- Shipboard and Naval Systems
- Electronic Warfare Applications
- Airframe and Ground Systems
- Test and Measurement

## Learn More



PhaseTrack®



PhaseTrack® Low Smoke

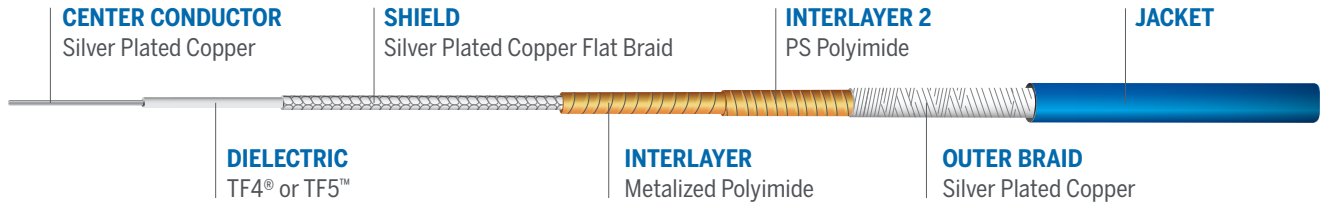


PhaseTrack® Semi Rigid

## JACKET OPTIONS:

- FEP
- Low Smoke
- Semi-Rigid
- ETFE

## Cable Details\*



## PhaseTrack® Family

### Specifications

	Standard		Space		Low Smoke		Semi-Rigid	
Diameters (in)	0.066 min	0.315 max	0.066 min	0.332 max	0.200 min	0.600 max	0.047 min	0.141 max
Max. Frequency (GHz)	Up to 40 GHz		Up to 40 GHz		Up to 30 GHz		Up to 40 GHz	
Operating Temperature (°C)	-65 min	+150 max	-150 min	+150 max	-40 min	+85 max	-150 min	+125 max
Dielectric Material	TF4®		TF4®		TF5™		TF4®	
Jacket Material	FEP		ETFE		Low Toxicity Polyolefin		Bare Copper	

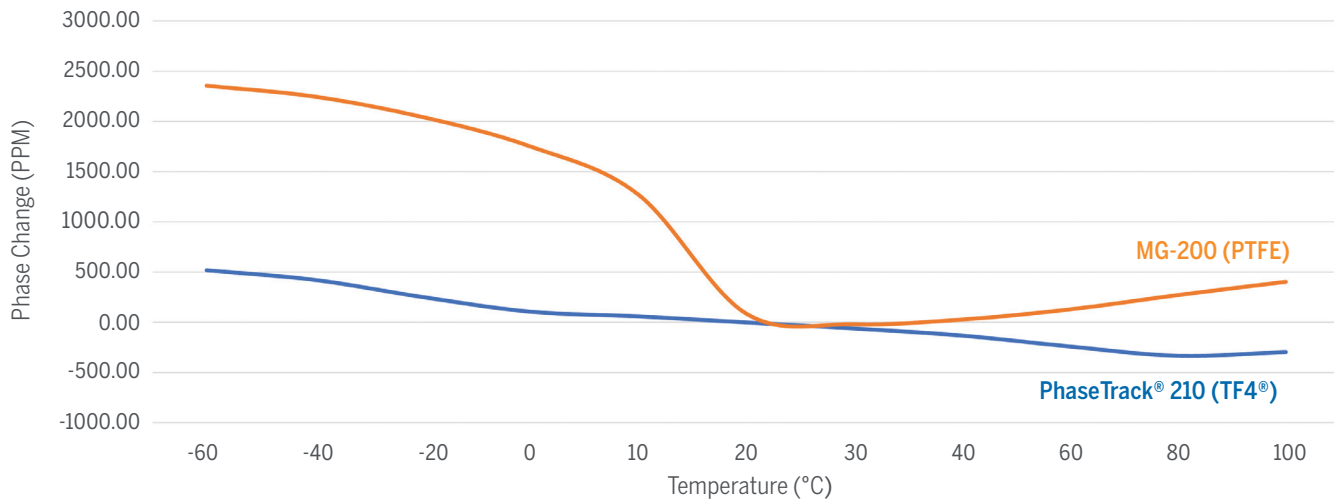
### Application

	Standard	Space	Low Smoke	Semi-Rigid
Airframe	•	•	•	•
Satellite		•		•
Radar	•	•	•	•
Ground Communication		•	•	•
Shipboard and Naval			•	•
Test and Measurement	•			

### Operating Environment

	Standard	Space	Low Smoke	Semi-Rigid
Dynamic (vibration, Shock, Flexure)			•	•
Wide Temperature Range	•	•	•	•
High Power Transfer Efficiency			•	
High-Density (Space Constrained)	•	•	•	•

### Phase Change VS Temperature



\* Contact us for Semi-Rigid diagram

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**TIMES**  
MICROWAVE SYSTEMS  
AN AMPHENOL COMPANY

# PhaseTrack® 047

## Low-Loss Micro Coaxial



PT-047 is a low-loss, highly flexible, foam-core micro coaxial cable. Originally designed for space satellite programs, this high-performance cable has many applications across multiple markets. It has a broad frequency range and strong durability making it ideal for medical, test equipment, and many other RF applications.

### Features:

- High performance in a compact size
- Extremely rugged and low loss
- Broad frequency range up to 70 GHz
- Flex tested to over a million cycles
- In-the-box flexible alternative to 047 Semi-Rigid

### Specifications

**Ω** Impedance  
50 Ohms

**Op Temp**  
-85 to 302°F  
-65 to 150°C

Units

Maximum Outer Diameter	in (mm)	0.065 (1.651)
Maximum Weight/1000 Feet	lb (kg)	5.60 (2.54)
Static Bend Radius	in (mm)	0.25 (6.35)
Dynamic Bend Radius	in (mm)	0.75 (19.05)
Velocity of Propagation	%	77
Max. Frequency	GHz	70
Capacitance	pF/ft (pF/m)	26.9 (88.25)

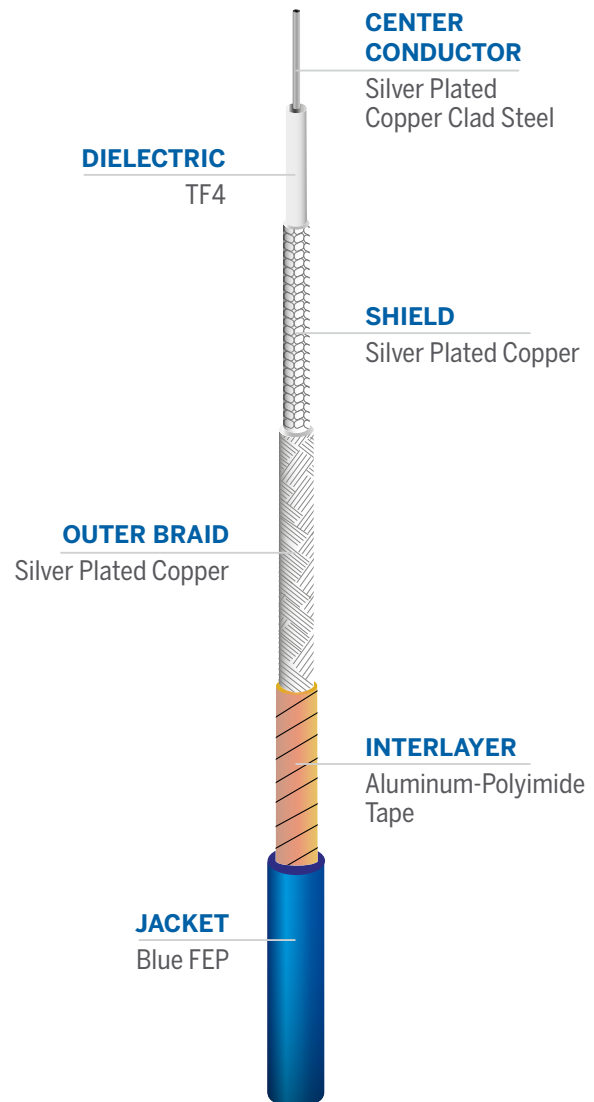
### Calculation

$$IL = (K1 \times V(f) + K2 \times f) \times \text{Cable Length}$$

Cable Insertion Loss  
f = Frequency (MHz)

Use **K** values with matching length unit

K values	dB/ft	dB/m
<b>K1</b>	0.011767	0.038607
<b>K2</b>	0.000008	0.00025



# PhaseTrack® 047

Low-Loss Micro Coaxial

## Ordering Guide

PT047    -XXX    XXX-    XX.X    CM  
                  └───┘    └───┘    └───┘    └───┘  
                  - Connector A    Connector B -    Length / 3 dig    in / cm

Code	Part-Number	Stock Code	Description
MSMPFR	EZ-047-MSMPF-DS	3190-6817	SMPM female Right Angle
185M	EZ-PT047-185M-SS	3190-6875	1.85 male
24M	EZ-PT047-24M-SS	3190-6876	2.4 male
MSMPF	EZ-PT047-MSMPF-DS	3190-6880	SMPM female Straight
KM	EZ-PT047-KM-SS	3190-6877	2.92 male Straight
SM	EZ-PT047-SM-SS	3190-6878	SMA male stainless
SMPF	EZ-PT047-SMPF-DS	3190-6879	SMP female Straight
SMPSF	EZ-PT047-SMPSF-DS	3190-6898	SMPS female straight
SMPSFR	EZ-PT047-SMPSF-RA-DS	3190-6906	SMPS female right angle



Global manufacturing capability: US and Asia.



Assembled and tested assemblies provide assured performance.

Rev. 3: 05/2023

# PhaseTrack® 110

Phase Stable Cable



PT-110 is a phase stable and low-loss coaxial cable. It uses Times Microwave Systems' proprietary TF4® dielectric technology, which provides excellent phase stability over wide range of temperatures for assemblies. Originally designed for space satellite programs, this high-performance cable has many applications across multiple markets.

## Features

- Excellent phase stability over temperature
- PTFE Knee is nonexistent
- Low insertion loss
- Vapor seal layer to prevent contamination

## Specifications

$\Omega$  Impedance  
50 Ohms

Op Temp  
-85 to +302°F  
-65 to +150°C

Units

	Units	
Maximum Diameter	in (mm)	0.110 (2.79)
Weight	lb/ft (kg/m)	0.014 (0.02)
Maximum Cutoff Frequency	GHz	70
Minimum Bend Radius	in (mm)	0.44 (11.1)
Velocity of Propagation	%	79.5
Capacitance	pF/ft (pF/m)	24.20 (88.3)
Time Delay	ns/ft (ns/m)	1.24 (4.1)
Shielding Effectiveness	dB	-90

## Calculation

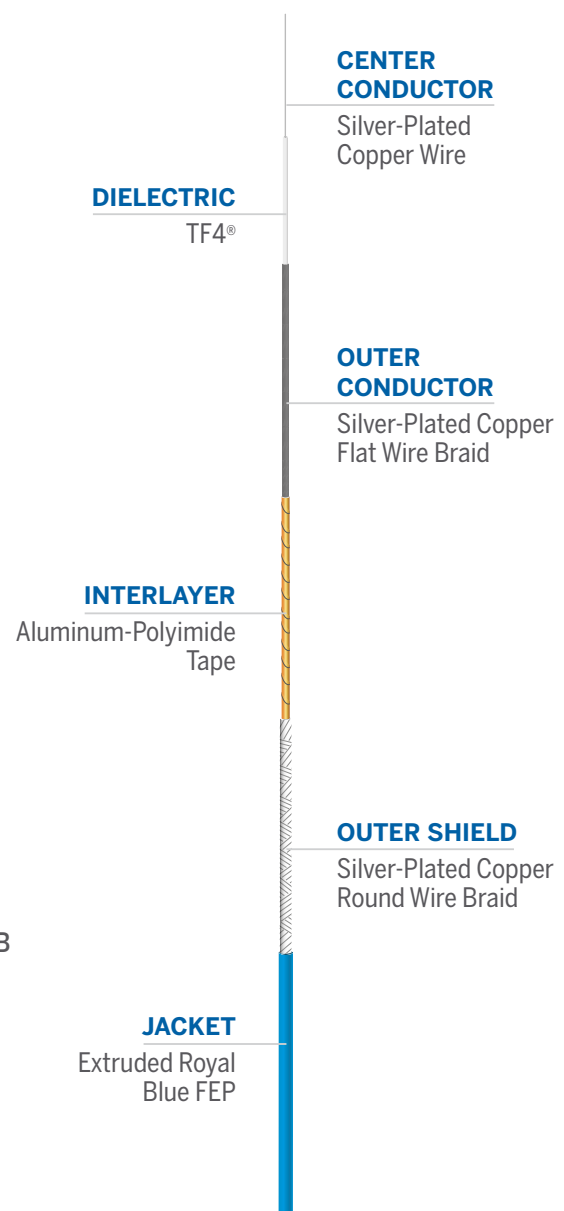
$$IL = \underbrace{(K1 \times v(f) + K2 \times f)}_{\substack{\text{Cable Insertion Loss} \\ f = \text{Frequency (MHz)}}} \times \underbrace{\text{Cable Length}}_{\substack{\text{Use K values with} \\ \text{matching length unit}}} + \text{Connector A Loss} + \text{Connector B Loss}$$

K values

dB/ft

dB/m

K1	0.0065810	0.021586
K2	0.0000120	0.000039



# PhaseTrack® 110

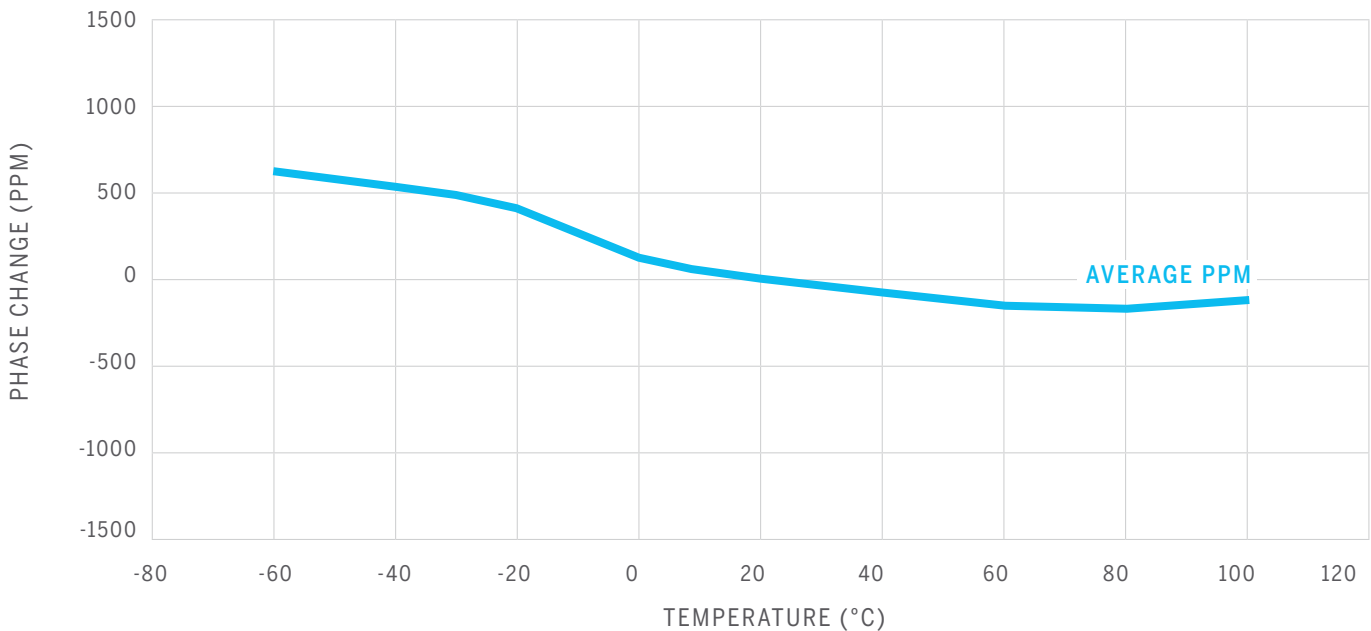
Phase Stable Cable



## Connectors

	Gender	Description	Stock Code	Connector Code	Max. Frequency (GHz)	Connector Loss (dB)
2.4mm	Male	Straight Plug	47316	24M	40	0.1 x √f(GHz)
	Female	Straight Bulkhead Jack	47465	24FBH	40	0.1 x √f(GHz)
SMA	Male	Straight Plug	3190-6287	SM	18	0.1 x √f(GHz)
	Female	Straight Jacket	47292	SFBH	18	0.1 x √f(GHz)

## Phase Change VS Temperature (PPM)



## Ordering Guide

**PT110**

Cable Code

-XXX

Connector A Code

XXX-

Connector B Code

XX.X

Length

X

Units of measure: I = Inches, F = Feet, M = Meters



Global manufacturing capability:  
US, Asia, and India.



Assembled and tested assemblies  
provide assured performance.

Rev. 1: 01/2025

**Times Microwave Systems**

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# PhaseTrack® 150

## Phase Stable Cable



PT-150 is a phase stable and low-loss coaxial cable. It uses Times Microwave Systems' proprietary TF4® dielectric technology, which provides excellent phase stability over wide range of temperatures for assemblies. Originally designed for space satellite programs, this high-performance cable has many applications across multiple markets.

### Features

- Excellent phase stability over temperature
- PTFE Knee is nonexistent
- Low insertion loss
- Vapor seal layer to prevent contamination

### Specifications

**Ω** Impedance  
50 Ohms

**Op Temp**  
-85 to +302°F  
-65 to +150°C

#### Units

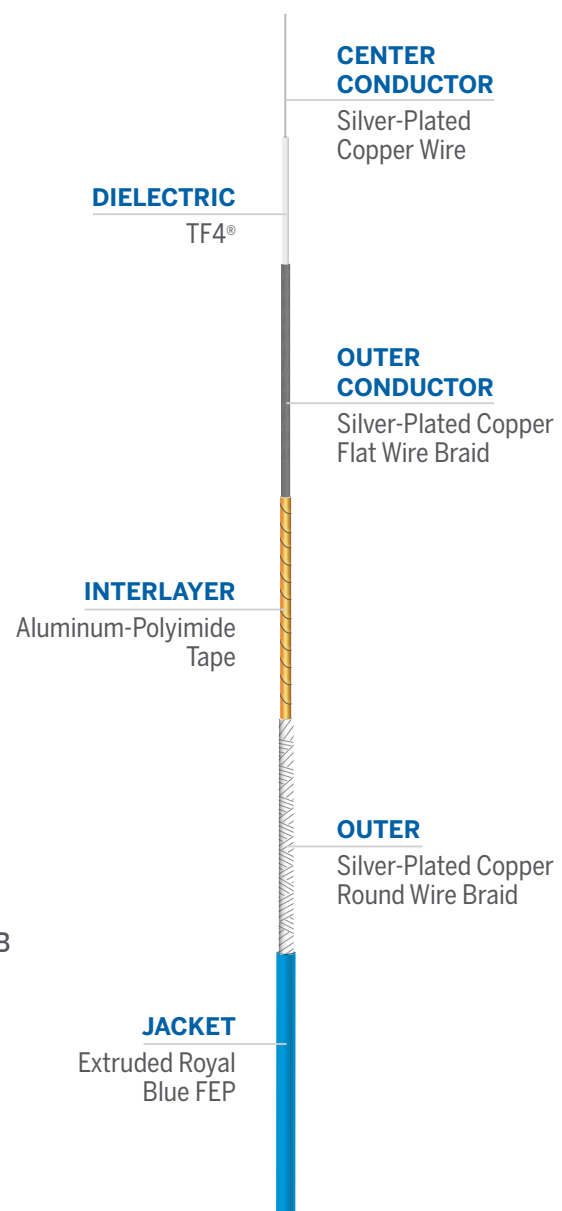
	Units	
Maximum Diameter	in (mm)	0.148 (3.76)
Weight	lb/ft (kg/m)	0.027 (0.04)
Maximum Cutoff Frequency	GHz	50
Minimum Bend Radius	in (mm)	0.75 (19.1)
Velocity of Propagation	%	81
Capacitance	pF/ft (pF/m)	25.20 (88.3)
Time Delay	ns/ft (ns/m)	1.26 (4.1)
Shielding Effectiveness	dB	-90

### Calculation

$$IL = \underbrace{(K1 \times v(f) + K2 \times f)}_{\substack{\text{Cable Insertion Loss} \\ f = \text{Frequency (MHz)}}} \times \underbrace{\text{Cable Length}}_{\substack{\text{Use K values with} \\ \text{matching length unit}}} + \text{Connector A Loss} + \text{Connector B Loss}$$

**K values**                      **dB/ft**                      **dB/m**

K1	0.0041680	0.013675
K2	0.0000086	0.000028



# PhaseTrack® 150

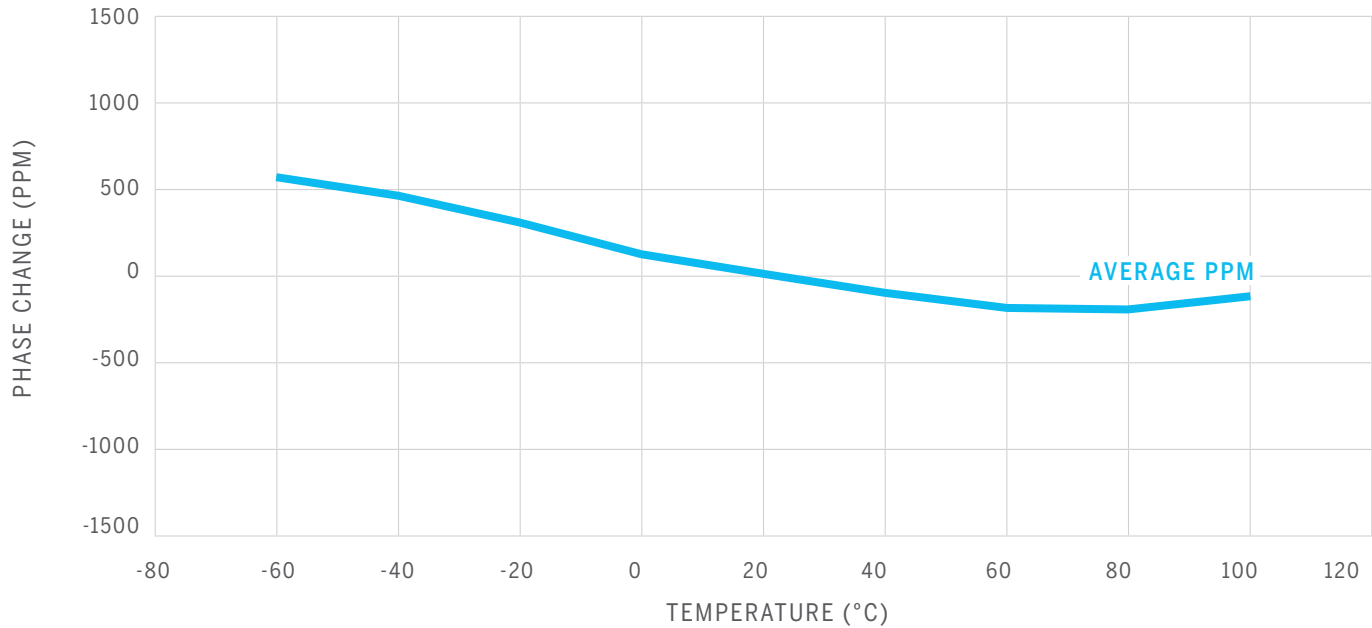
Phase Stable Cable



## Connectors

	Gender	Description	Stock Code	Connector Code	Max. Frequency (GHz)	Connector Loss (dB)
2.4mm	Female	Straight Bulkhead Jack	47465	24FBH	40	0.1 x vf(GHz)
	Male	Straight Plug	47350	24M	40	0.1 x vf(GHz)
2.92mm	Male	Straight Plug	47408	KM	40	0.1 x vf(GHz)
SMA	Female	Straight Bulkhead Jack	47345	SFBH	18	0.1 x vf(GHz)
	Male	Straight Plug	47288	SM	18	0.1 x vf(GHz)
		Right Angle Plug	47289	SMR	18	0.1 x vf(GHz)
SMP	Female	Straight Plug	3190-3261	SMPF	26.5	0.1 x vf(GHz)
		Right Angle Plug	3190-3259	SMPFR	26.5	0.1 x vf(GHz)

## Phase Change VS Temperature (PPM)



## Ordering Guide

**PT150**  
Cable Code

-XXX  
Connector A Code

XXX-  
Connector B Code

XX.X  
Length

X  
Units of measure: I = Inches, F = Feet, M = Meters



Global manufacturing capability:  
US, Asia, and India.



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Rev. 1: 01/2025

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# PhaseTrack® 180

## Phase Stable Cable



PT-180 is a phase stable and low-loss coaxial cable. It uses Times Microwave Systems' proprietary TF4® dielectric technology, which provides excellent phase stability over wide range of temperatures for assemblies. Originally designed for space satellite programs, this high-performance cable has many applications across multiple markets.

### Features

- Excellent phase stability over temperature
- PTFE Knee is nonexistent
- Low insertion loss
- Vapor seal layer to prevent contamination

### Specifications

**Ω** Impedance  
50 Ohms

**Op Temp**  
-85 to +302°F  
-65 to +150°C

#### Units

	Units	
Maximum Diameter	in (mm)	0.184 (4.67)
Weight	lb/ft (kg/m)	0.036 (0.05)
Maximum Cutoff Frequency	GHz	32
Minimum Bend Radius	in (mm)	1.00 (25.4)
Velocity of Propagation	%	83
Capacitance	pF/ft (pF/m)	24.70 (88.3)
Time Delay	ns/ft (ns/m)	1.23 (4.1)
Shielding Effectiveness	dB	-90

### Calculation

$$IL = (K1 \times v(f) + K2 \times f) \times \text{Cable Length} + \text{Connector A Loss} + \text{Connector B Loss}$$

$v(f)$  = Cable Insertion Loss  
 $f$  = Frequency (MHz)  
 Use K values with matching length unit

K values	dB/ft	dB/m
K1	0.0031510	0.010338
K2	0.0000090	0.000030

#### CENTER CONDUCTOR

Silver-Plated  
Copper Wire

#### DIELECTRIC

TF4®

#### OUTER CONDUCTOR

Silver-Plated Copper  
Flat Wire Braid

#### INTERLAYER

Aluminum-Polyimide  
Tape

#### INTERLAYER 2

Adhesive  
Polyimide Tape

#### OUTER SHIELD

Silver-Plated Copper  
Round Wire Braid

#### JACKET

Extruded Royal  
Blue FEP

# PhaseTrack® 180

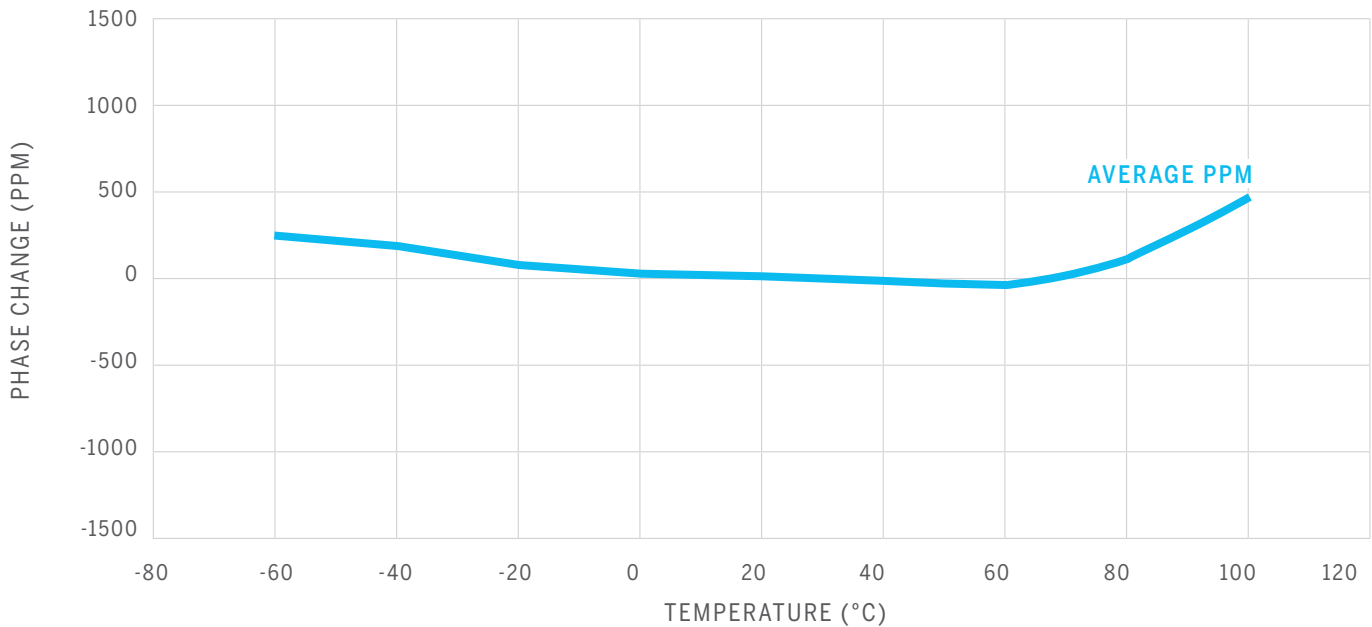
Phase Stable Cable



## Connectors

	Gender	Description	Stock Code	Connector Code	Max. Frequency (GHz)	Connector Loss (dB)
2.92mm	Male	Straight Plug	47403	KM	40	0.1 x vf(GHz)
SMA	Female	Straight Jacket	47346	SF	18	0.1 x vf(GHz)
		Straight Bulkhead Jack	47303	SFBH	18	0.1 x vf(GHz)
	Male	Straight Plug	47220	SM	18	0.1 x vf(GHz)
		Right Angle Plug	47321	SMR	18	0.1 x vf(GHz)

## Phase Change VS Temperature (PPM)



## Ordering Guide

**PT180**

Cable Code

-XXX

Connector A Code

XXX-

Connector B Code

XX.X

Length

X

Units of measure: I = Inches, F = Feet, M = Meters



Global manufacturing capability:  
US, Asia, and India.



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Rev. 1: 01/2025

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# PhaseTrack® 318

## Phase Stable Cable



PT-318 is a phase stable and low-loss coaxial cable. It uses Times Microwave Systems' proprietary TF4® dielectric technology, which provides excellent phase stability over wide range of temperatures for assemblies. Originally designed for space satellite programs, this high-performance cable has many applications across multiple markets.

### Features

- Excellent phase stability over temperature
- PTFE Knee is nonexistent
- Low insertion loss
- Vapor seal layer to prevent contamination

### Specifications

**Ω** Impedance  
50 Ohms

**Op Temp**  
-85 to +302°F  
-65 to +150°C

Units

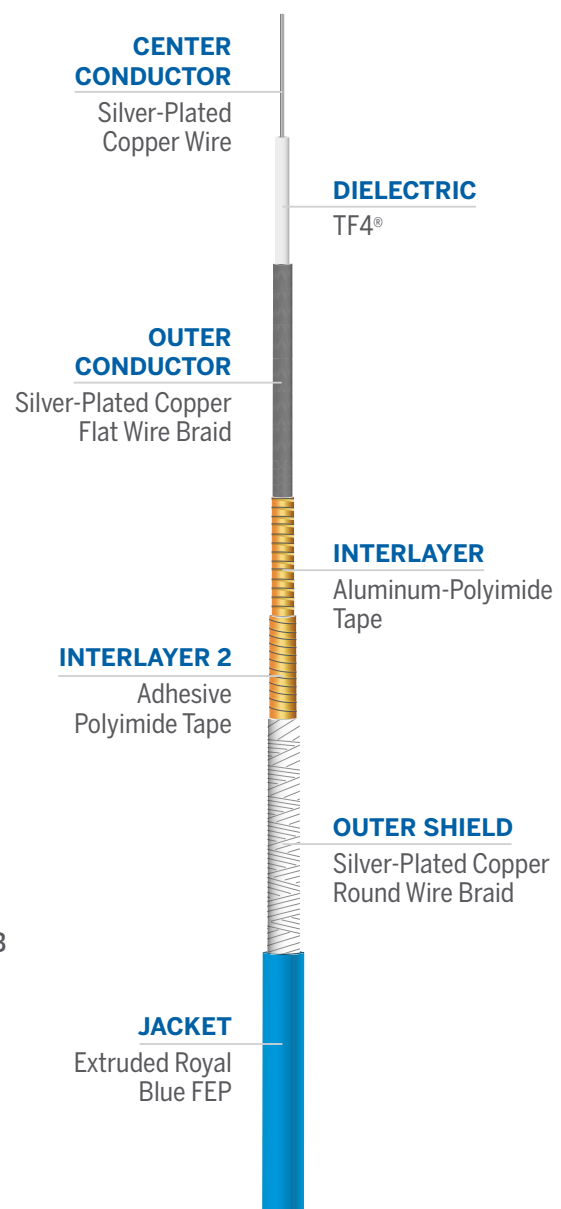
	Units	
Maximum Diameter	in (mm)	0.316 (8.03)
Weight	lb/ft (kg/m)	0.096 (0.14)
Maximum Cutoff Frequency	GHz	18
Minimum Bend Radius	in (mm)	1.75 (44.5)
Velocity of Propagation	%	83.5
Capacitance	pF/ft (pF/m)	23.85 (88.3)
Time Delay	ns/ft (ns/m)	1.22 (4.1)
Shielding Effectiveness	dB	-90

### Calculation

$$IL = (K1 \times v(f) + K2 \times f) \times \text{Cable Length} + \text{Connector A Loss} + \text{Connector B Loss}$$

$v(f)$  = Cable Insertion Loss  
 $f$  = Frequency (MHz)  
 Use K values with matching length unit

K values	dB/ft	dB/m
K1	0.0014150	0.004642
K2	0.0000070	0.000023



# PhaseTrack® 318

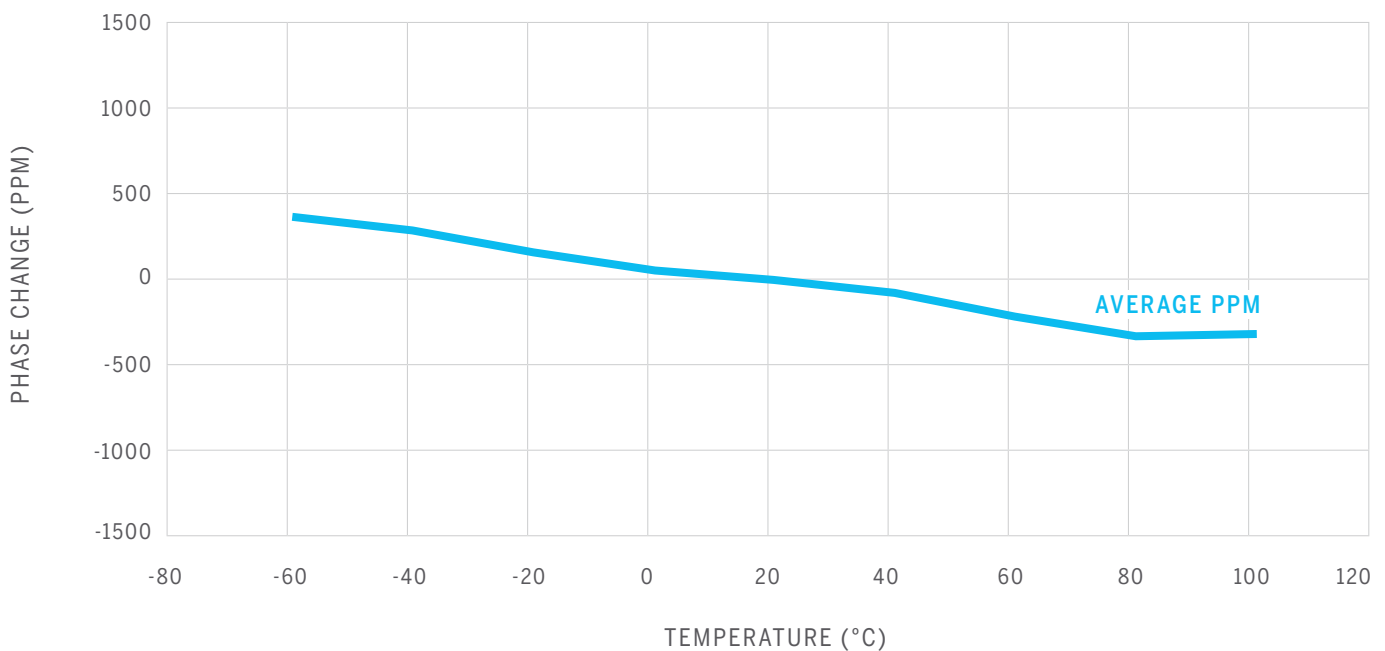
Phase Stable Cable



## Connectors

	Gender	Description	Stock Code	Connector Code	Max. Frequency (GHz)	Connector Loss (dB)
Type N	Male	Straight Plug	3190-3056	NM	40	0.1 x vf(GHz)
SMA	Male	Straight Plug	47261	SM	40	0.1 x vf(GHz)

## Phase Change VS Temperature (PPM)



## Ordering Guide

**PT318**

Cable Code

-XXX

Connector A Code

XXX-

Connector B Code

XX.X

Length

X

Units of measure: I = Inches, F = Feet, M = Meters



Global manufacturing capability:  
US, Asia, and India.



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