

Commercial Space

APPLICATIONS



MaxGain®



InstaBend®



InstaBend®
PhaseStable

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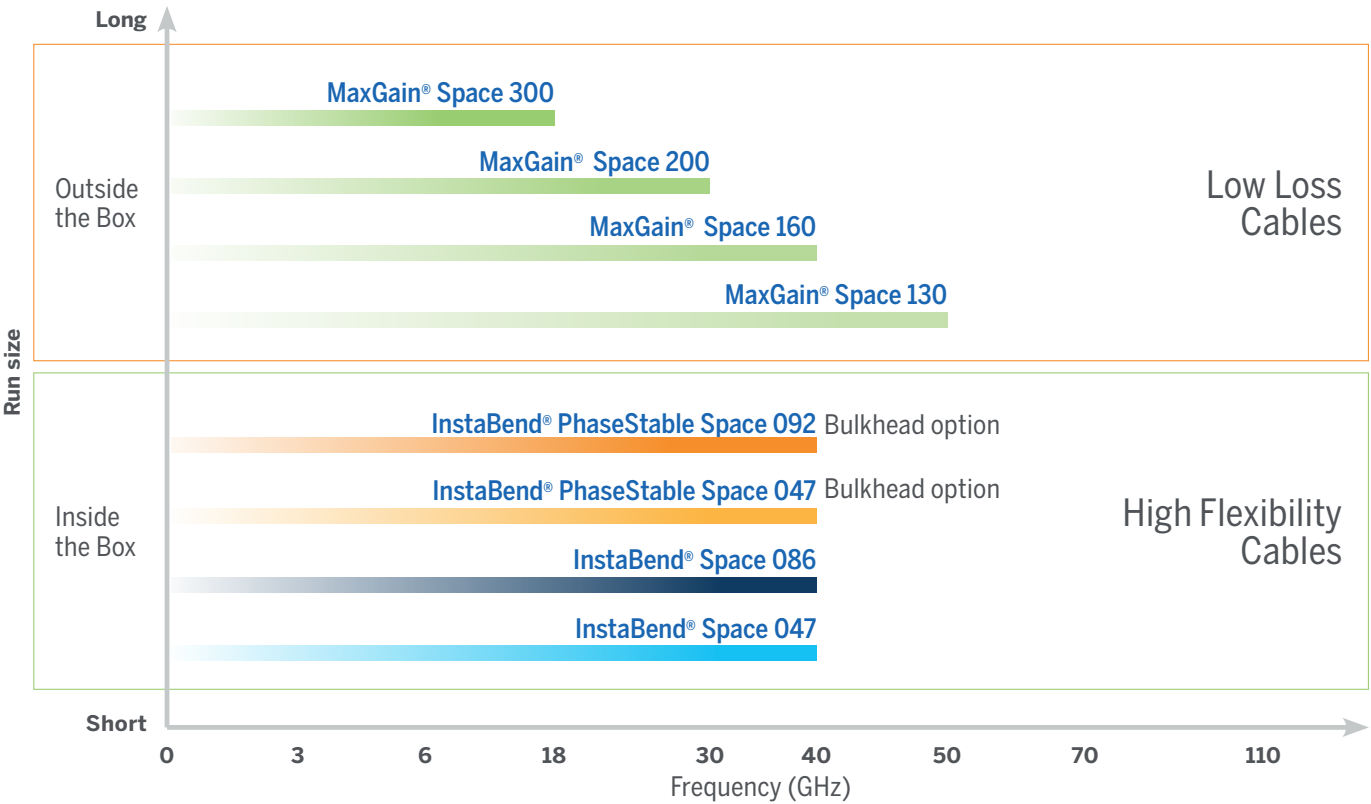
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Space Assembly Comparison Chart

Product Family	Product Series	Max. Frequency	Available Connector Interfaces				
			TNC	SMA	2.92 mm	SMPM	2.4 mm
MaxGain® Space	MGS-130	50 GHz		●	●		●
	MGS-160	40 GHz		●	●		
	MGS-200	40 GHz	●	●	●		
	MGS-300	18 GHz	●	●			
InstaBend® Space	IB-047-SP	40 GHz		●	●		
	IB-086-SP	40 GHz		●	●		
InstaBend® PhaseStable	IBPS-047	40 GHz		●	●		
	IBPS-092	40 GHz		●	●	●	

Cable Selection Guide

Selecting the correct assembly for the right application is not always an easy task. Below are some considerations when selecting RF assemblies for space environments.



- * Maximum operating frequency of the cable assembly depends on the selected connector interface.
- Radiation environment: 30 Mrads
 - Temperature Range: -90°C to + 150°C
 - Clean room manufacturing option
 - Certificate of conformance
 - T-VAC compatible
- Low outgassing per ASTM E595: TML ≤1% and CVCM ≤0.01%
 - 100% visual inspection
 - Baseline electricals performance (IL, VSWR)
 - Space heritage available on request

MaxGain® Space 130

High Performance Microwave Cable Assemblies



MaxGain® Assemblies are high-performance, ultra-low-loss microwave coaxial cables. Built with our unique spiral outer conductor technology, this light-weight cable is a reliable, high frequency interconnect solution.

Features

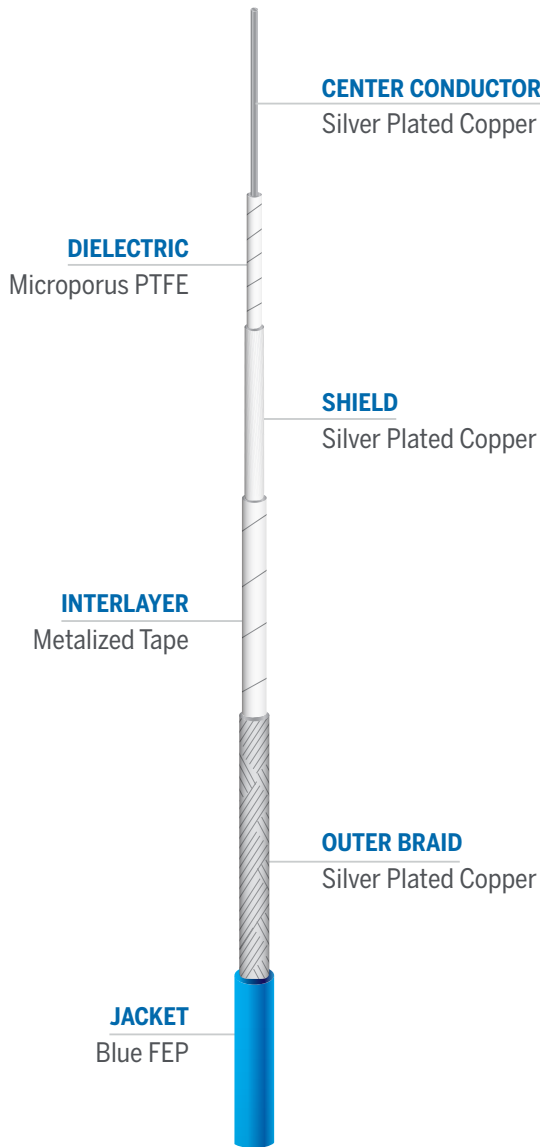
- Sold as cable assemblies
- Low outgassing materials per ASTM E595
- Class 100,000 clean room manufacturing
- Vented connectors, if applicable
- Optimized for lowest attenuation
- Ultra stable performance with flexure
- Superior shielding effectiveness (>90 dB)
- Radiation Resistance: 30 MRads

Specifications

Impedance
50 Ohms

Op Temp
-67 to +302°F
-55 to +150°C

	Units	
Diameter	in (mm)	0.130 (3.30)
Weight	lb/ft (g/m)	0.018 (27)
Minimum Bend Radius	in (mm)	0.625 (16)
Maximum Frequency	GHz	53
Velocity of Propagation	%	80
Capacitance	pF/ft (pF/m)	25.4 (83.3)
Delay	ns/ft (ns/m)	1.27 (4.17)
Shielding	dB	>90



Calculation

IL = (K1 x v(f) + K2 x f) x Cable Length + Connector Loss

Cable Insertion Loss
f = Frequency (MHz)

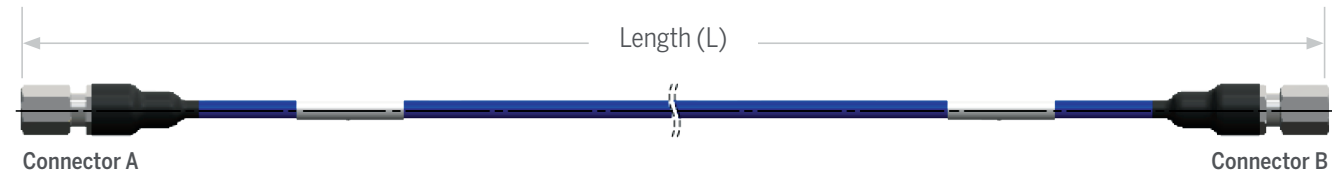
Use **K** values with
matching length unit

K values	dB/100ft	dB/m
K1	0.437597	1.435756
K2	0.000146	0.000479

Max. Connector Loss & VSWR

Frequency (GHz)	Insertion Loss (dB/pair)		VSWR	
	Straight	Right Angle	Straight	Right Angle
1.0	0.10	0.20	1.25	1.30
2.0	0.14	0.28	1.25	1.30
4.0	0.20	0.40	1.25	1.30
8.0	0.28	0.57	1.25	1.30
12.0	0.35	0.69	1.25	1.30
18.0	0.42	0.85	1.25	1.30
26.5	0.51	-	1.30	-
40.0	0.63	-	1.30	-
50.0	0.71	-	1.30	-

Ordering Guide



MGS130

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XX

Connector A

XX

Connector B

—

XX.X

Length

M

Length Unit:
M - Meter
C - Centimeter
F - Foot
I - Inch

Connector Options

Interface	Gender	Orientation	Max. Operating Frequency (GHz)	Stock Code	Connector Code
SMA	Male	Straight	18.0	3190-7241	SM
	Male	Right Angle	18.0	3190-7242	SMR
2.92 mm	Male	Straight	40.0	3190-7250	KM
2.4 mm	Male	Straight	50.0	3190-7257	24M

MaxGain® Space 160

High Performance Microwave Cable Assemblies



MaxGain® Assemblies are high-performance, ultra-low-loss microwave coaxial cables. Built with our unique spiral outer conductor technology, this light-weight cable is a reliable, high frequency interconnect solution.

Features

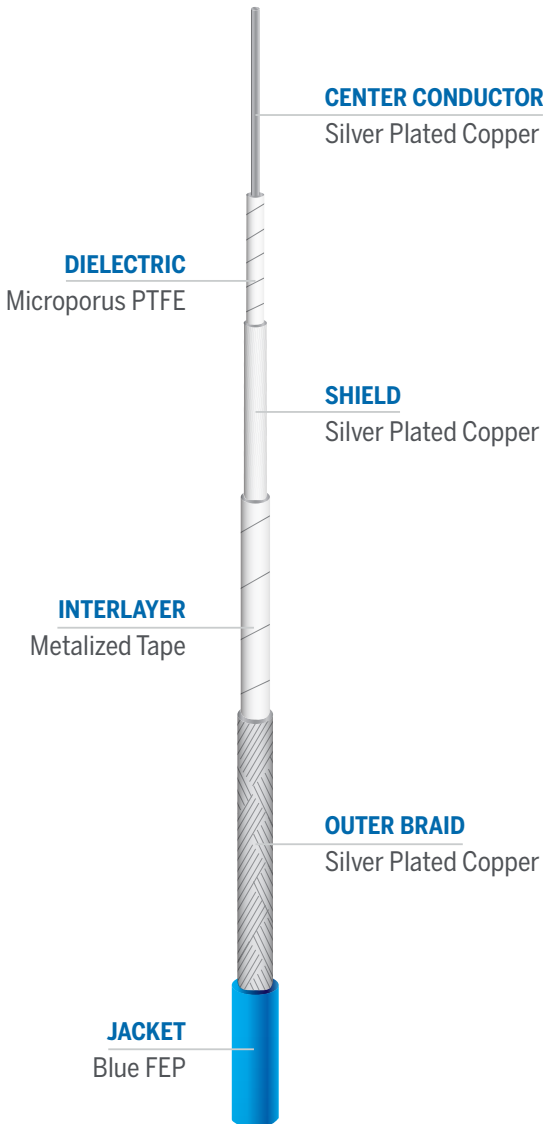
- Sold as cable assemblies
- Low outgassing materials per ASTM E595
- Class 100,000 clean room manufacturing
- Vented connectors, if applicable
- Optimized for lowest attenuation
- Ultra stable performance with flexure
- Superior shielding effectiveness (>90 dB)
- Radiation Resistance: 30 MRads

Specifications

Impedance
50 Ohms

Op Temp
-67 to +302°F
-55 to +150°C

	Units	
Diameter	in (mm)	0.160 (4.04)
Weight	lb/ft (g/m)	0.026 (38)
Minimum Bend Radius	in (mm)	0.750 (19.0)
Maximum Frequency	GHz	40
Velocity of Propagation	%	80
Capacitance	pF/ft (pF/m)	25.4 (83.3)
Delay	ns/ft (ns/m)	1.27 (4.17)
Shielding	dB	>90



Calculation

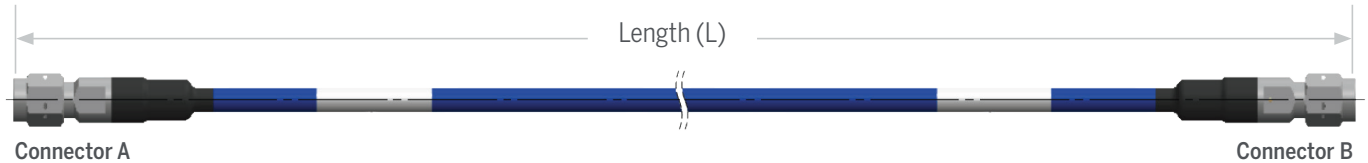
IL = (K1 x v(f) + K2 x f) x Cable Length + Connector Loss

Cable Insertion Loss f = Frequency (MHz)		Use K values with matching length unit	
↓ K values		dB/100ft	dB/m
K1		0.368	1.136243
K2		0.000146	0.000479

Max. Connector Loss & VSWR

Frequency (GHz)	Insertion Loss (dB/pair)		VSWR	
	Straight	Right Angle	Straight	Right Angle
1.0	0.10	0.20	1.25	1.30
2.0	0.14	0.28	1.25	1.30
4.0	0.20	0.40	1.25	1.30
8.0	0.28	0.57	1.25	1.30
12.0	0.35	0.69	1.25	1.30
18.0	0.42	0.85	1.25	1.30
26.5	0.51	-	1.30	-
40.0	0.63	-	1.30	-

Ordering Guide



MGS160

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XX

Connector A

—

XX

Connector B

—

XX.X

Length

M

Length Unit:
M - Meter
C - Centimeter
F - Foot
I - Inch

Connector Options

Interface	Gender	Orientation	Max. Operating Frequency (GHz)	Stock Code	Connector Code
SMA	Male	Straight	18.0	3190-7243	SM
	Male	Right Angle	18.0	3190-7244	SMR
	Female	Straight	18.0	3190-7345	SF
2.92 mm	Male	Straight	40.0	3190-7256	KM

MaxGain® Space 200

High Performance Microwave Cable Assemblies



MaxGain® Assemblies are high-performance, ultra-low-loss microwave coaxial cables. Built with our unique spiral outer conductor technology, this light-weight cable is a reliable, high frequency interconnect solution.

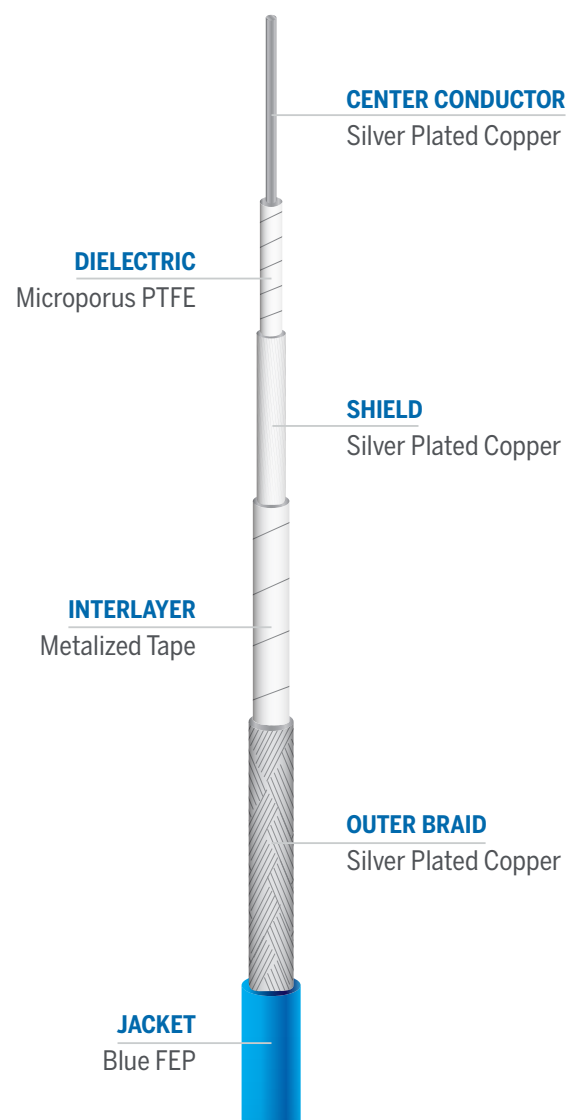
Features

- Sold as cable assemblies
- Low outgassing materials per ASTM E595
- Class 100,000 clean room manufacturing
- Vented connectors, if applicable
- Optimized for lowest attenuation
- Ultra stable performance with flexure
- Superior shielding effectiveness (>90 dB)
- Radiation Resistance: 30 MRads

Specifications

 Impedance 50 Ohms	 Op Temp -67 to +302°F -55 to +150°C
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	Units	
Diameter	in (mm)	0.201 (5.10)
Weight	lb/ft (g/m)	0.037 (55)
Minimum Bend Radius	in (mm)	1.25 (31.8)
Maximum Frequency	GHz	30
Velocity of Propagation	%	80
Capacitance	pF/ft (pF/m)	25.40 (83.3)
Delay	ns/ft (ns/m)	1.27 (4.17)
Shielding	dB	>90



Calculation

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

Cable Insertion Loss
f = Frequency (MHz)

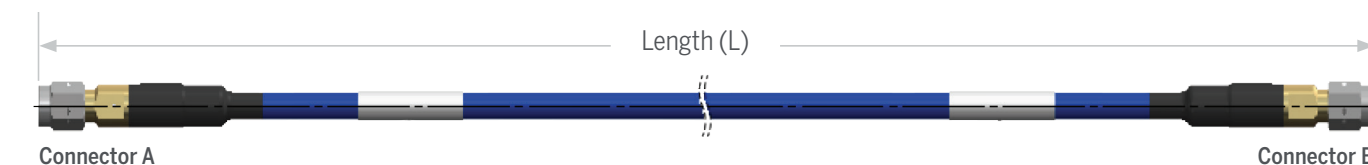
Use **K** values with
matching length unit

K values	dB/100ft	dB/m
K1	0.2461	0.807454
K2	0.000139	0.000456

Max. Connector Loss & VSWR

Frequency (GHz)	Insertion Loss (dB/pair)		VSWR	
	Straight	Right Angle	Straight	Right Angle
1.0	0.10	0.20	1.25	1.30
2.0	0.14	0.28	1.25	1.30
4.0	0.20	0.40	1.25	1.30
8.0	0.28	0.57	1.25	1.30
12.0	0.35	0.69	1.25	1.30
18.0	0.42	0.85	1.25	1.30
26.5	0.51	-	1.30	-
40.0	0.63	-	1.30	-

Ordering Guide



MGS200 — **XX** **XX** — **XX.X** **M**

Connector A Connector B Length Length Unit:
M - Meter
C - Centimeter
F - Foot
I - Inch

Connector Options

Interface	Gender	Orientation	Max. Operating Frequency (GHz)	Stock Code	Connector Code
SMA	Male	Straight	18.0	3190-7245	SM
	Male	Right Angle	18.0	3190-7246	SMR
TNC	Male	Straight	18.0	3190-7262	TM
2.92 mm	Male	Straight	40.0	3190-7251	KM

MaxGain® Space 300

High Performance Microwave Cable Assemblies



MaxGain® Assemblies are high-performance, ultra-low-loss microwave coaxial cables. Built with our unique spiral outer conductor technology, this light-weight cable is a reliable, high frequency interconnect solution.

Features

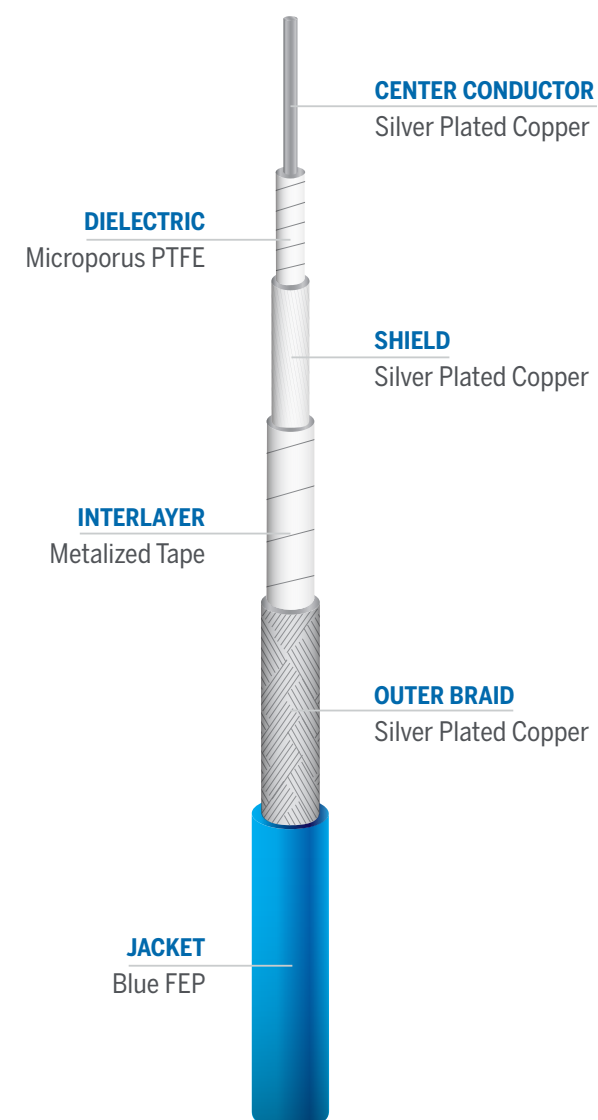
- Sold as cable assemblies
- Low outgassing materials per ASTM E595
- Class 100,000 clean room manufacturing
- Vented connectors, if applicable
- Optimized for lowest attenuation
- Ultra stable performance with flexure
- Superior shielding effectiveness (>90 dB)
- Radiation Resistance: 30 MRads

Specifications

Impedance
50 Ohms

Op Temp
-67 to +302°F
-55 to +150°C

	Units	
Diameter	in (mm)	0.314 (7.98)
Weight	lb/ft (g/m)	0.093 (138)
Minimum Bend Radius	in (mm)	1.750 (44.45)
Maximum Frequency	GHz	18.0
Velocity of Propagation	%	81
Capacitance	pF/ft (pF/m)	24.8 (81.2)
Delay	ns/ft (ns/m)	1.25 (4.10)
Shielding	dB	>90



Calculation

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

Cable Insertion Loss
f = Frequency (MHz)

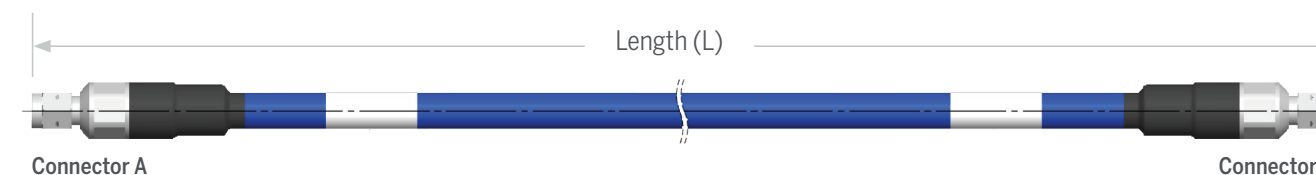
Use **K** values with
matching length unit

K values	dB/100ft	dB/m
K1	0.1413	0.463605
K2	0.000102	0.000335

Max. Connector Loss & VSWR

Frequency (GHz)	Insertion Loss (dB/pair)		VSWR	
	Straight	Right Angle	Straight	Right Angle
1.0	0.10	0.20	1.25	1.30
2.0	0.14	0.28	1.25	1.30
4.0	0.20	0.40	1.25	1.30
8.0	0.28	0.57	1.25	1.30
12.0	0.35	0.69	1.25	1.30
18.0	0.42	0.85	1.25	1.30

Ordering Guide



MGS300 — XX — XX.X M

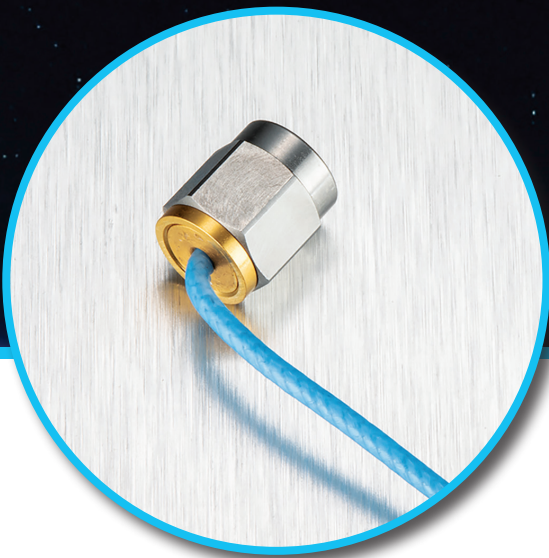
Connector A Connector B Length Length Unit:
M - Meter
C - Centimeter
F - Foot
I - Inch

Connector Options

Interface	Gender	Orientation	Max. Operating Frequency (GHz)	Stock Code	Connector Code
SMA	Male	Straight	18.0	3190-7247	SM
	Male	Right Angle	18.0	3190-7248	SMR
TNC	Male	Straight	18.0	3190-7258	TM

InstaBend® Space 047

High Performance Microwave Assemblies



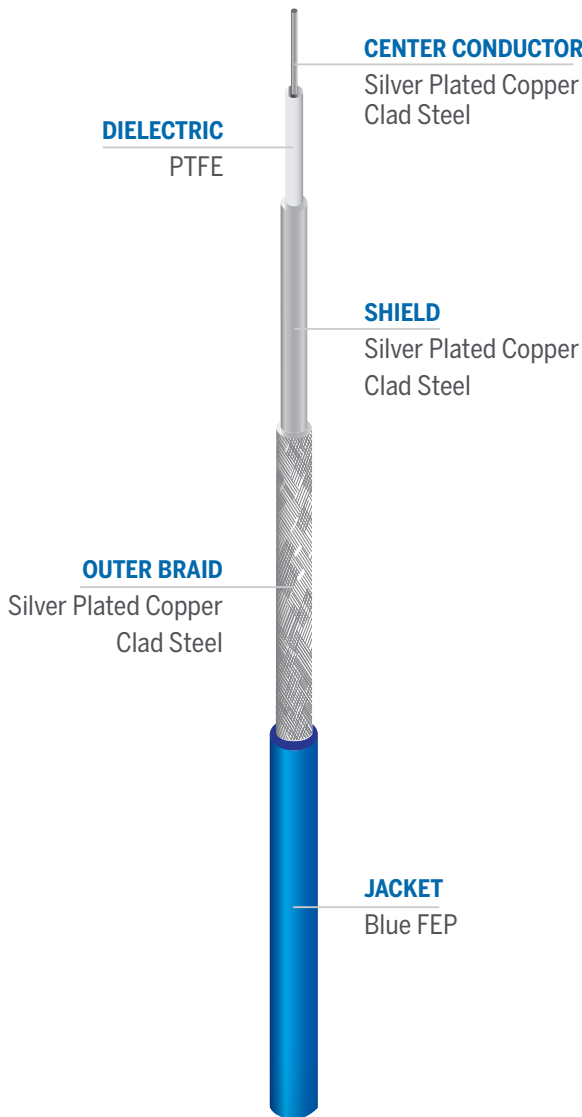
InstaBend® are flexible, coaxial microwave assemblies designed for interconnects between RF circuit cards, modules and enclosure panels. The cable can be formed very closely behind the connector, simplifying cable routing.

Features:

- Sold as cable assemblies
- Low outgassing materials per ASTM E595
- Class 100,000 clean room manufacturing
- Vented connectors, if applicable
- Optimized for lowest attenuation
- Ultra stable performance with flexure
- Superior shielding effectiveness (>90 dB)
- Radiation Resistance: 30 MRads

Specifications

	 Impedance 50 Ohms	 Op Temp -85 to +257°F -65 to +125°C
	Units	
Diameter	in (mm)	0.064 (1.63)
Weight	lb/ft (g/m)	0.004 (6)
Minimum Bend Radius	in (mm)	0.130 (3.30)
Maximum Frequency	GHz	50
Velocity of Propagation	%	70
Capacitance	pF/ft (pF/m)	29.9 (98.1)
Delay	ns/ft (ns/m)	1.45 (4.76)
Shielding	dB	>90



Calculation

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

Cable Insertion Loss
f = Frequency (MHz)

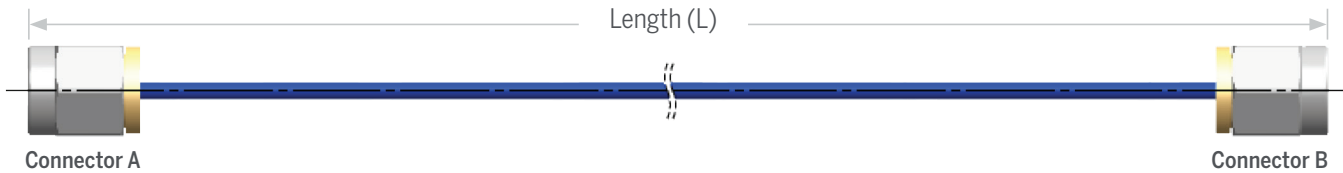
Use **K** values with
matching length unit

K values	dB/100ft	dB/m
K1	0.01195	0.03920795
K2	0.000013	0.000042653

Max. Connector Loss & VSWR

Frequency (GHz)	Insertion Loss (dB/pair)	VSWR
1.0	0.12	1.35
2.0	0.17	1.35
4.0	0.24	1.35
8.0	0.34	1.35
12.0	0.42	1.35
18.0	0.51	1.35
26.5	0.62	1.40
40.0	0.76	1.40

Ordering Guide



IB047 — **XX** **XX** — **XX.X** **M** — **SP**

Connector A Connector B Length

Length Unit:
M - Meter
C - Centimeter
F - Foot
I - Inch

Connector Options

Interface	Gender	Orientation	Max. Operating Frequency (GHz)	Stock Code	Connector Code
SMA	Male	Straight	22.0	SP112	SM
2.92 mm	Male	Straight	40.0	SP121	KM

InstaBend® Space 086

High Performance Microwave Assemblies



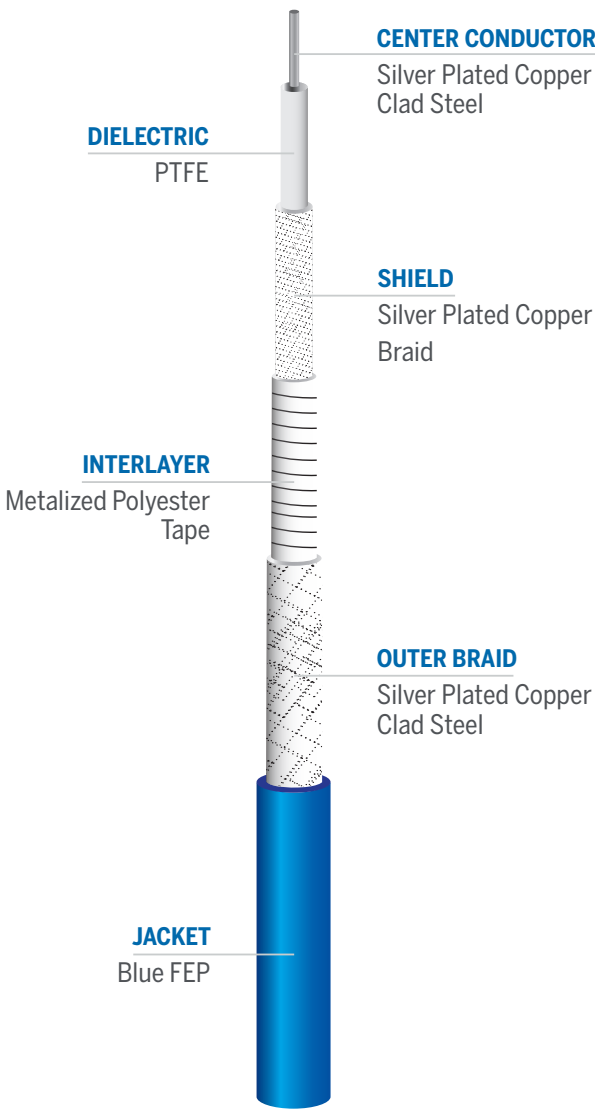
InstaBend® are flexible, coaxial microwave assemblies designed for interconnects between RF circuit cards, modules and enclosure panels. The cable can be formed very closely behind the connector, simplifying cable routing.

Features:

- Sold as cable assemblies
- Low outgassing materials per ASTM E595
- Class 100,000 clean room manufacturing
- Vented connectors, if applicable
- Optimized for lowest attenuation
- Ultra stable performance with flexure
- Superior shielding effectiveness (>90 dB)
- Radiation Resistance: 30 MRads
- 90° torque resistance

Specifications

Impedance 50 Ohms Op Temp -85 to 257°F -65 to 125°C		
Units		
Diameter	in (mm)	0.108 (2.74)
Weight	lb/ft (g/m)	0.013 (19)
Minimum Bend Radius	in (mm)	0.25 (6.35)
Maximum Frequency	GHz	50
Velocity of Propagation	%	70
Capacitance	pF/ft (pF/m)	29 (95.1)
Delay	ns/ft (ns/m)	1.45 (4.76)
Shielding	dB	>90



Calculation

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

Cable Insertion Loss
f = Frequency (MHz)

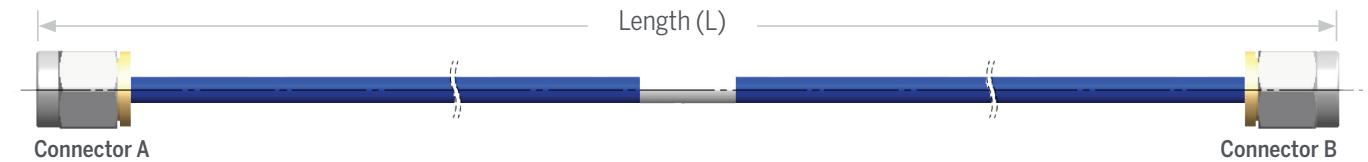
Use **K** values with
matching length unit

K values	dB/100ft	dB/m
K1	0.006446	0.021148
K2	0.000013	0.000043

Max. Connector Loss & VSWR

Frequency (GHz)	Insertion Loss (dB/pair)	VSWR
1.0	0.12	1.35
2.0	0.17	1.35
4.0	0.24	1.35
8.0	0.34	1.35
12.0	0.42	1.35
18.0	0.51	1.35
26.5	0.62	1.40
40.0	0.76	1.40

Ordering Guide



IB086 — **XX** **XX** — **XX.X** **M** — **SP**

Connector A Connector B Length

Length Unit:
M - Meter
C - Centimeter
F - Foot
I - Inch

Connector Options

Interface	Gender	Orientation	Max. Operating Frequency (GHz)	Stock Code	Connector Code
SMA	Male	Straight	22.0	SP110	SM
2.92 mm	Male	Straight	40.0	SP120	KM

InstaBend® PhaseStable 047

IBPS-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.

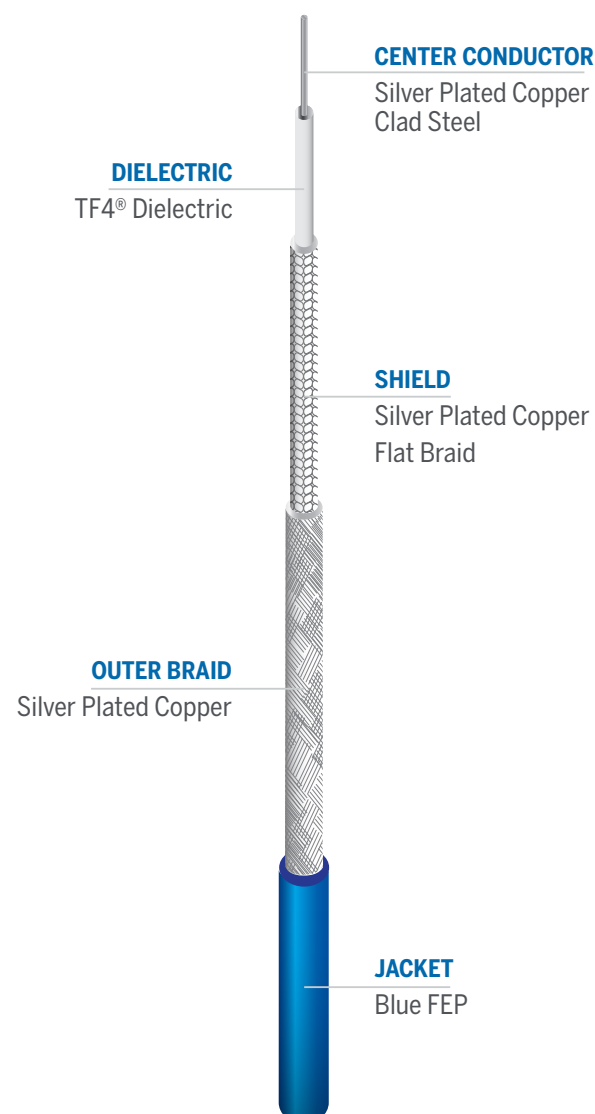
Features

- Phase stable performance over temperature
- Sold as cable assemblies
- Low outgassing materials per ASTM E595
- Class 100,000 clean room manufacturing
- Vented connectors, if applicable
- Optimized for lowest attenuation
- Ultra stable performance with flexure
- Superior shielding effectiveness (>90 dB)
- Radiation Resistance: 30 MRads

Specifications

 Impedance 50 Ohms	 Op Temp -65 to 150°C
Units	

Diameter	in (mm)	0.062 (1.58)
Weight	lb/ft (g/m)	0.031 (46)
Minimum Bend Radius	in (mm)	0.25 (6.5)
Maximum Frequency	GHz	40
Velocity of Propagation	%	76
Capacitance	pF/ft (pF/m)	26.7 (87.6)
Delay	ns/ft (ns/m)	1.25 (4.10)
Shielding	dB	>80



Calculation

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

Cable Insertion Loss
f = Frequency (MHz)

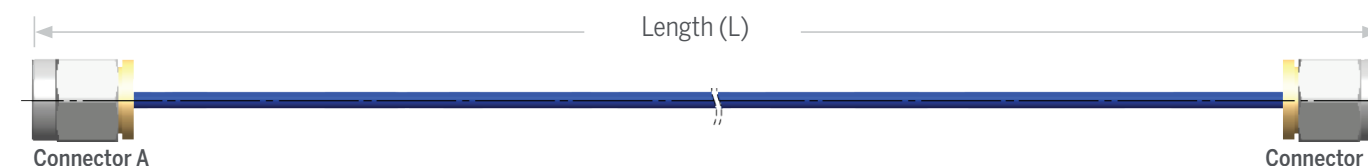
Use **K** values with
matching length unit

K values	dB/100ft	dB/m
K1	0.01176752	0.03860924
K2	0.00000775	0.00002543

Max. Connector Loss & VSWR

Frequency (GHz)	Insertion Loss (dB/pair)	VSWR
1.0	0.12	1.35
2.0	0.17	1.35
4.0	0.24	1.35
8.0	0.34	1.35
12.0	0.42	1.35
18.0	0.51	1.35
26.5	0.62	1.35
40.0	0.76	1.40

Ordering Guide



IBPS047 — XX XX — XX.X M

Connector A Connector B Length Length Unit:
M - Meter
C - Centimeter
F - Foot
I - Inch

Connector Options

Interface	Gender	Orientation	Max. Operating Frequency (GHz)	Stock Code	Connector Code
SMA	Male	Straight	27.0	SP149	SM
2.92 mm	Male	Straight	40.0	SP107	KM
	Female	Straight	40.0	SP133	KF

InstaBend® PhaseStable 092



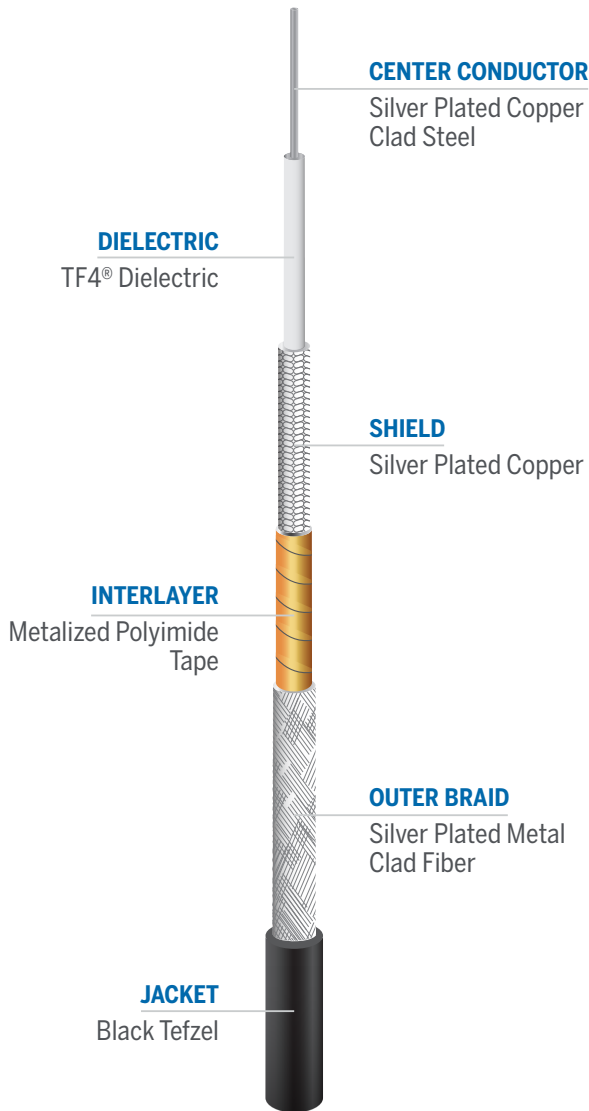
InstaBend® PhaseStable 092 is an Ultra-Flexible phase-stable coax assembly featuring a proprietary fluorocarbon dielectric, TF4®, eliminating the PTFE change phase occurring around 19 °C. PhaseTrack assemblies have the same triple-shield construction used in our popular SF®, SFT®, SilverLine®, and MilTech® cables and are ideal for applications demanding stable electrical performance over temperature.

Features:

- Phase stable performance over temperature
- Sold as cable assemblies
- Low outgassing materials per ASTM E595
- Class 100,000 clean room manufacturing
- Vented connectors, if applicable
- Radiation Resistance: 100 MRads

Specifications

	 Impedance 50 Ohms	 Op Temp -65 to 150°C
	Units	
Diameter	in (mm)	0.103 (2.61)
Weight	lb/ft (g/m)	0.0113 (17)
Minimum Bend Radius	in (mm)	0.5 (12.7)
Maximum Frequency	GHz	40
Velocity of Propagation	%	79.5
Capacitance	pF/ft (pF/m)	25.4
Delay	ns/ft (ns/m)	1.24 (4.07)
Shielding	dB	-90



Calculation

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

Cable Insertion Loss
f = Frequency (MHz)

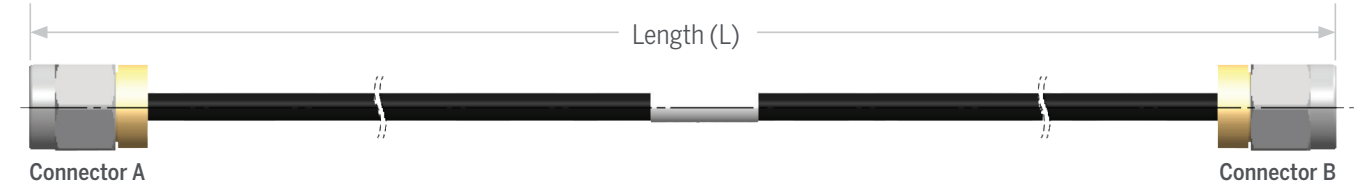
Use **K** values with
matching length unit

K values	dB/100ft	dB/m
K1	0.006575	0.021573
K2	0.000009607	0.000031521

Max. Connector Loss & VSWR

Frequency (GHz)	Insertion Loss (dB/pair)	VSWR
1.0	0.12	1.35
2.0	0.17	1.35
4.0	0.24	1.35
8.0	0.34	1.35
12.0	0.42	1.35
18.0	0.51	1.35
26.5	0.62	1.35
40.0	0.76	1.40*

Ordering Guide



IBPS092 — **XX** **XX** — **XX.X** **M**

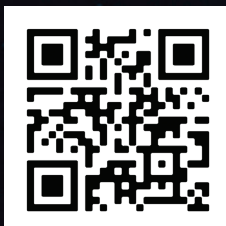
Connector A Connector B Length Length Unit:
M - Meter
C - Centimeter
F - Foot
I - Inch

Connector Options

Interface	Gender	Orientation	Max. Operating Frequency (GHz)	Stock Code	Connector Code
SMA	Male	Straight	27.0	SP150	SM
2.92 mm	Male	Straight	40.0	SP116	KM
SMPM	Female	Straight	40.0	SP129	MSMPF



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