Semi-Rigid and Flexible

Microwave and RF Cable

CARLISLE®
INTERCONNECT TECHNOLOGIES

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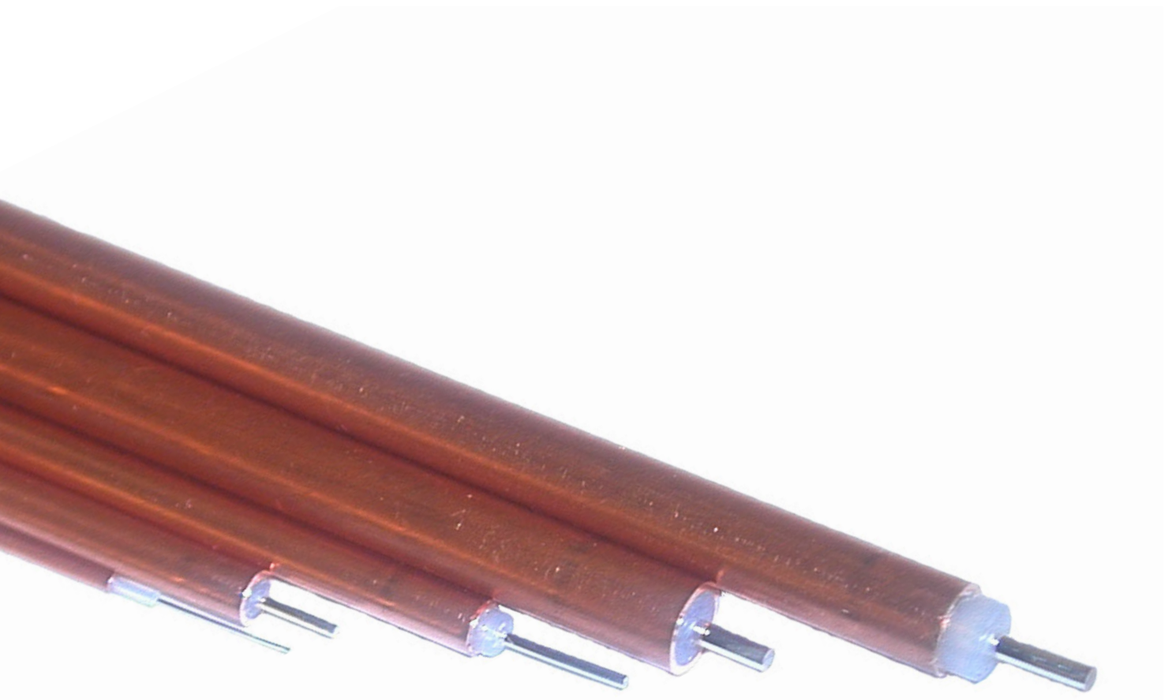


Cable Selection Guide

In order to simplify the selection process, microwave cables are divided into two families: Semi-Rigid Coaxial Cable and M-FLEX® Flexible Coaxial Cable. Each cable family has unique properties best suited for different applications. Use the following table and information to select the cable that best suits your needs.

	SEMI-RIGID CABLE	M-FLEX CABLE
RF Shielding	-130 dB	-90 dB (prior to bending)
Attenuation	Excellent	Very Good
VSWR	Excellent	Very Good
Maximum Frequency	110 GHz	26.5 GHz
Ease of Installation	• Typically preformed to specific drawing dimensions • Minor adjustments can be made during integration • Aluminum-jacketed cables are often hand-formed • Installation can be more difficult by the inability of the cable to be “snaked” through tight spaces	• A true flexible cable that can be easily routed without preforming • Can be flexed thousands of times and “snaked” through tight spaces
Packaging Density	Maximum efficiency due to small cable diameter, tight bend radius, and ability to control cable routing by forming to exact dimensions	• Good efficiency due to its ease of reshaping during installation • Consideration must be given to the limited bending allowed at the connector-to-cable interface • Bend restrictors are often needed

Semi-Rigid Coaxial Cable

We offer more semi-rigid coaxial cable options than any other cable. Cables with a large range of impedances, diameters, materials, and finishes are available for immediate delivery. Semi-rigid cable comes as close as possible to the ideal coaxial cable and should be the first choice by any RF/microwave engineer.

MIL-DTL-17 Qualified Cables
We offer a full range of MIL-DTL-17-qualified cables. These cables undergo additional testing to ensure they are fully capable of satisfying the most demanding military applications.

Copper 50 Ω Cables
Diameters from 0.013" to 0.390" in lengths up to 150' on select cables. Many standard connectors are available from numerous suppliers.

Dimensionally Stable “DS” 50 Ω Cables
The newest addition to our semi-rigid cable product line utilizes a unique solid PTFE dielectric that provides significantly improved thermal stability compared to traditional solid PTFE semi-rigid cables. The improved thermal stability reduces the need for temperature preconditioning and virtually eliminates the dielectric protrusion when soldering. All other mechanical and electrical performances are equal or better than the traditional solid PTFE equivalents.

Low-Loss & Ultra-Low-Loss 50 Ω Cables
When even better performance is required, our Low-Loss and Ultra-Low-Loss Semi-Rigid Coaxial Cables typically lower the attenuation by another 20% and extend the operating temperature to 250 °C.

Aluminum 50 Ω Cables
Available in both standard and low-loss versions, aluminum-jacketed cables offer easier bending and significant weight reduction.

Stainless Steel 50 Ω Cables
Stainless steel cables satisfy cryogenic or medical applications where low thermal conductivity or hypoallergenic properties are required.

Non-50 Ω Cables
Available in impedances from 5 to 100 Ω ranging in diameters from 0.020" to 0.250".

Custom Made-to-Order Cables
Our semi-rigid cables have been tested to the toughest requirements and built with a large spectrum of materials at every size imaginable and at almost any impedance. They can be insulated with an FEP or other polymer jackets as required by special request. Contact us if you cannot find the semi-rigid cable you need in this catalog. We may already have the special cable you need – or can build your custom configuration.

M-FLEX® Flexible Microwave Coaxial Cable

M-FLEX is a family of flexible cables capable of accepting connectors designed for semi-rigid cables. Unlike other single- or double-braided “RG” type flexible cables, M-FLEX cables are true microwave cables capable of operating at frequencies of 26.5 GHz. The extended frequency range is the result of a precision, helically wrapped, silver-plated copper foil inner shield. This inner shield allows for outstanding flexibility while providing 100% coverage. The electrical performance of the M-FLEX cables approaches that of their semi-rigid counterparts. M-FLEX cables are intended for static installations and are not recommended for applications that require extended flexing like a test lead. M-FLEX cables are supplied in long continuous lengths, which make them ideal for automated cutting and stripping equipment.

Cable Construction

Center Conductor

Function

The center conductor is either a solid or stranded metal wire that acts as the primary electrical signal carrier for any coaxial cable. Most attenuation occurs at the surface of the center conductor due to the “skin effect” of microwave signals, making the finish or plating a very important element. Stranded center conductors are generally only used in flexible cable constructions for added flexibility and longer flex life. In comparison, solid center conductors have lower attenuation and tend to be more amplitude-stable with flexure, while stranded center conductors tend to be more phase-stable with flexure. For larger semi-rigid cables, a tubular center conductor can be substituted. The tubular center conductor reduces weight and thermal conductivity without any impact on the electrical performance.

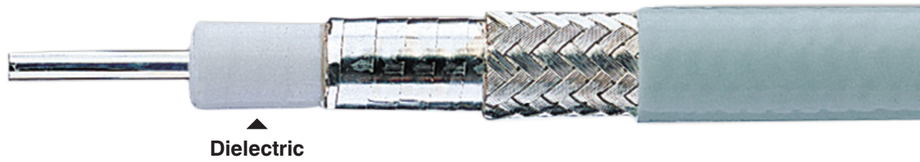
Materials

Silver-plated copper (SPC) per ASTM B-298 and silver-plated copper-clad steel, also referred to as silver-plated copper weld (SPCW) per ASTM B-501, are the two most common center conductor materials. Silver plating, besides being an excellent electrical conductor, prevents oxidization during manufacture and improves the solderability of the finished cable. Stainless steel and beryllium copper are also used when low thermal conductivity is a priority. Other materials, including many copper alloys, are available upon special request.

GUIDE TO CENTER CONDUCTOR SELECTION

Center Conductor Material	DC Resistance (Ω · in 2/ft)	Microwave Frequency Conductivity Compared to Copper (Ratio)	Thermal Conductivity	Used with “Pin-Less” Connector	Magnetic	Ease of Soldering	RoHS-Compliant
Silver-Plated Copper	10.4	1.0:1	Very High	No	No	Excellent	Yes
Silver-Plated Copper-Clad Steel	93.1	1.0:1	Low	Yes	Yes	Excellent	Yes
Stainless Steel	464.6	44.8:1	Very Low	No	Slightly	Poor	Yes
Silver-Plated Beryllium Copper	47.7	1.0:1	Low	No	No	Excellent	Yes

Dielectric



Function

The insulating material between the center and outer conductor maintains the spacing and geometry of the cable and ensures mechanical integrity during forming and bending. Most transmission losses are caused either directly or indirectly by the dielectric. Cables with a low dielectric constant, while offering lower bulk dielectric losses, also require a larger center conductor diameter to maintain the same characteristic impedance. The larger center conductor can significantly lower the overall cable attenuation. In addition, the dielectric determines the velocity of propagation, temperature range, power rating, phase and amplitude stability, and contributes to cable flexibility.

Materials

The most commonly used dielectric for high-performance microwave coaxial cable is Polytetrafluoroethylene (PTFE), in both full-density and low-density (aka low-loss or microporous) forms. PTFE is an excellent choice for a cable dielectric due to its low reactivity to chemicals, an operating temperature that can withstand the heat of soldering, and low dielectric constant that is stable at microwave frequencies. Full-density PTFE meets all the requirements of MIL-DTL-17, Type F-1. Most cables utilize full-density PTFE in the solid form. Low-density and ultra-low-density PTFE utilizes the same base material as the full-density version; it is just less dense. As a result of the lower density, both the dielectric constant and dissipation factor are reduced, leading to an overall lowering of the cable attenuation. Low-density PTFE is also much more thermally stable than solid PTFE. The trade-off is that anytime the dielectric density is reduced, the mechanical integrity is also reduced. As a result, cables employing a low-density dielectric will have larger minimum bend radii than the solid full-density versions.

Fluorinated Ethylene Propylene (FEP) and Perfluoroalkoxy (PFA) are two other dielectrics that are often used when very thin walls are required, such as those on low-impedance cables. Both FEP and PFA have properties that are similar to PTFE. Other materials, including polyethylene, are available upon special request.

GUIDE TO DIELECTRIC SELECTION

Dielectric Material	Dielectric Constant	Dissipation Factor	Phase Stability vs. Temperature	Maximum Service Temp. °C	Thermal Stability	RoHS-Compliant
Solid PTFE	2.03	0.0002	Good	260	Good	Yes
Low-Density PTFE	1.70	0.0001	Very Good	260	Excellent	Yes
Ultra-Low-Density PTFE	1.45	0.0001	Very Good	260	Excellent	Yes
FEP	2.05	0.0010	Good	204	Good	Yes
PFA	2.06	0.0003	Good	260	Good	Yes

Outer Conductor

Function

The outer conductor serves many purposes. It controls RF leakage and is the electrical shield that contributes to cable attenuation. Through precision mechanical tolerances, the outer conductor minimizes return loss (VSWR) by maintaining a constant characteristic impedance. The outer conductor is the primary strength member that keeps connectors firmly attached to the cable. It often provides environmental protection and determines the cable's flexibility.

Materials

The most commonly used materials are copper and aluminum because of their low DC resistance. These materials can be in many forms, such as tube for semi-rigid cable, tin-coated braid for conformable cable, or a foil in high-performance flexible cables. Material selection typically involves trade-offs between electrical performance, size, and flexibility.

GUIDE TO OUTER CONDUCTOR SELECTION

Outer Conductor Material	DC Resistance (Ω · in 2/ft)	Microwave Frequency Conductivity Compared to Copper (Ratio)	Thermal Conductivity	Weight	Magnetic	Ease of Soldering	RoHS-Compliant
Copper	10.4	1.0:1	Very High	Very High	No	Excellent	Yes
Aluminum	18.3	1.8:1	High	Low	No	Poor	Yes
Stainless Steel 304	464.6	44.8:1	Very Low	High	Slightly	Poor	Yes

Plating & Finishes (applies to semi-rigid cables only)

Copper and aluminum conductors are often plated for additional corrosion protection and solderability. The most common plating materials, tin and silver, are very soft and ductile.

Silver, which has superior electrical conductive properties along with being very corrosive-resistant to atmospheric oxygen, is vulnerable to tarnish by atmospheric sulfides and nitrates. Silver-plating is the preferred inner conductor plating and is part of the conductive path inside the cable. For semi-rigid cables, silver-plating the outer conductor is not recommended for high humidity or saltwater environments due to its susceptibility to galvanic corrosion.

Tin is economical and corrosion-resistant, has excellent solderability, and is the preferred plating for semi-rigid cable outer conductors. Tin plating can be prone to tin "whiskers," which are electrically conductive, crystalline tin structures. These whiskers sometimes grow from surfaces where tin is used as a final finish. They have been observed to increase to lengths of several millimeters and can cause short circuits by bridging closely spaced circuit elements maintained at different electrical potentials.

Other plating and finishes are available by special request.

GUIDE TO SEMI-RIGID CABLE OUTER CONDUCTOR PLATING SELECTION

Plating Material	Specification	Part Number Suffix	Remarks	RoHS-Compliant
Silver	ASTM B-700	SP	• Excellent corrosion protection and solderability • Not susceptible to silver whiskers • Not recommended for high humidity or saltwater environments	Yes
Tin	ASTM B-545	TP	• Lowest cost • Excellent corrosion protection • Improves solderability • Low melting point of 220 °C • Susceptible to tin whiskers	Yes
Tin-Lead (90/100)	SAE-AMS-P-81728	EDS9010	• Very good corrosion protection and solderability • Low melting point of 220 °C • Not susceptible to tin whiskers	Yes

Semi-Rigid Coaxial Cable

Features & Benefits

Semi-rigid coaxial cables are available in a wide variety of sizes, materials, and characteristic impedances. To be considered a semi-rigid coaxial cable, the cable must employ a solid metallic tube for the outer conductor. Most semi-rigid coaxial cables are less than 0.250" in diameter; however, some select cables are as large as 0.500". A silver-plated copper-center conductor, PTFE dielectric, and copper outer conductor are the most common materials. Impedances are available from 5 to 100 Ω. Typical maximum operating temperatures range from 125 °C to 250 °C.

Semi-rigid coaxial cables are used to transmit and receive microwave signals up to 110 GHz. These cables are the best pure microwave transmission medium available in the world.

- RF shielding in excess of -130 dB
- Lowest attenuation and lightest weight for any given geometry
- Unequaled impedance control and VSWR performance
- Smallest overall diameters available in a microwave cable
- Very tight bend radii allow utilization in the tightest configurations
- Environmentally sealed with no concern for jacket cuts or abrasions
- Numerous connector options available off the shelf from many different suppliers

Because semi-rigid coaxial cables can be precisely formed, they allow maximum packaging efficiency with no wasted space. While semi-rigid cables will hold their shape once formed, most are still pliable enough to provide some flexibility during system integration.

Semi-rigid coaxial cables are the benchmark against which all other coaxial cables are compared.

Typical Applications

Semi-rigid coaxial cable finds applications from very low frequencies through 110 GHz.

Almost any system operating above 500 MHz and in need of good operational performance and total shielding should use semi-rigid coaxial cable, including defense electronics, test and measurement instrumentation, medical electronics, telecommunications, and space flight systems, among other precision applications. In componentry, semi-rigid coaxial cable is used in oscillators, amplifiers, printed circuit boards, delay lines, and capacitor sections.

The CarlisleIT Advantage

CarlisleIT represents nearly 100 years of combined experience between the two original semi-rigid coaxial cable companies: Uniform Tubes, Inc., and Precision Tubes, Inc. The “UT” prefix in our part numbers is recognized around the world for its legacy of quality and reliable performance.

CarlisleIT is highly vertically integrated. Besides manufacturing all the cable we sell, we also extrude the PTFE dielectric, draw down and plate the copper tubing for the outer conductor, and straighten and mark the cable all in-house. This vertical integration not only gives CarlisleIT more control over the quality of the raw materials used to make a high-performance microwave cable, but also allows quick-turn capability, positioning CarlisleIT as the semi-rigid cable cost leader.

Unlike many other semi-rigid cable manufacturers, we build our semi-rigid cable in straight lengths. Building cable in straight lengths allows better mechanical tolerance control, and more importantly, better control of the adhesion between the conductors and the dielectric. This is true even when employing secondary operations such as bending, temperature cycling, soldering, or stripping the outer conductor when preparing for connector installation. In addition, we are the only semi-rigid cable manufacturer that marks its cable with our name, part number, and lot number for easy traceability.*

With the largest selection of semi-rigid coaxial cables in the industry, we have a solution for all of your cable configuration needs. Our extensive line of semi-rigid coaxial cable includes:

- MIL-DTL-17 certified cables.
- Standard copper-jacketed cables ranging from 0.013" to 0.390" and impedances from 5 to 100 Ω
- Low-loss cables employing a low-density PTFE dielectric for improved attenuation, phase stability, and increased temperature range
- Lightweight tin-plated, aluminum-jacketed cables that can be hand-formed
- Stainless steel jacketed cables for cryogenic and medical applications, where either low thermal conductivity or hypoallergenic qualities are required.

*For cable diameters of 0.085" and larger

Part Number Designation

The UT part number designation is easy to understand because it is simple and short, especially for standard cable. Some part numbers for standard cable have been shortened. Materials for component parts are indicated under individual cable specifications.

UT – 141 C – 75 – AL – TP – LL

Code	Code Outer Diameter
Value	Nominal diameter in thousandths of an inch; always three digits.

Code	Inner Conductor Material
No Entry or A	Silver-Plated Copper Weld (SPCW)
AL	Aluminum Alloy 1100
B	Silver-Plated Beryllium Copper
C	Silver-Plated Copper (SPC)
SS	Stainless Steel Alloy 304

Code	Character Impedance
No Entry	50 Ω
Value	Nominal Impedance in Ω

Code	Outer Conductor Material
No Entry	Copper
AL	Aluminum Alloy 1100
CuSS	Copper/Stainless Steel Composite
SS	Stainless Steel Alloy 304

Code	Outer Conductor Finish
No Entry	No Plating
ED9010	Solder Plating (90% Tin / 10% Lead)
SP	Silver Plating
TP	Tin Plating

Code	Miscellaneous
No Entry	PTFE
ULL	Ultra-Low-Density
DS	Dimensionally Stable PTFE
F	FEP Insulation Jacket
LL	Low-Density PTFE
M	Low Dielectric Compression PTFE
M17	MIL-DTL-17 QPL Cable

Additional descriptors where noted:
H=Hard Jacket
STR=Stranded Center Conductor

50 Ω Copper

Standard copper 50 Ω semi-rigid cables feature low attenuation and VSWR covering the entire microwave spectrum. With numerous connector options available off the shelf, this family of cables is one of the most versatile available today. They meet the demands of package density and provide total shielding for elimination of signal loss and noise.

CarlisleIT Description		UT-013	UT-020	UT-034	UT-034-TP	UT-034-SP
MIL-DTL-17 Description		-	-	UT-034-M17	UT-034-TP-M17	-
MIL-DTL-17 Part Number		-	-	M17/154-00001	M17/154-00002	-
Dimensions						
Outer Conductor Diameter *in (mm)*		0.013 ± 0.001 (0.330 ± 0.025)	0.023 ± 0.001 (0.584 ± 0.025)	0.034 ± 0.001 (0.864 ± 0.025)	0.034 + 0.002/-0.001 (0.864 + 0.051/-0.025)	0.034 +0.002/-0.001 (0.864 +0.051/-0.025)
Dielectric Diameter *in (mm)*		- -	- -	0.026 ± 0.001 (0.660 ± 0.025)	0.026 ± 0.001 (0.660 ± 0.025)	- -
Center Conductor Diameter *in (mm)*		0.0031 ± 0.0005 (0.0787 ± 0.0127)	0.0050 ± 0.0005 (0.1270 ± 0.0127)	0.0080 ± 0.0005 (0.2032 ± 0.0127)	0.0080 ± 0.0005 (0.2032 ± 0.0127)	0.0080 ± 0.0005 (0.2032 ± 0.0127)
Maximum Straight Length *ft (m)*		10 (3.05)	10 (3.05)	15 (4.57)	15 (4.57)	15 (4.57)
Materials						
Outer Conductor		Copper	Copper	Copper	Copper	Copper
Outer Conductor Plating		None	None	None	Tin	Silver
Dielectric		PTFE	PTFE	PTFE	PTFE	PTFE
Center Conductor		SPCW	SPCW	SPCW	SPCW	SPCW
RoHS-Compliant		Yes	Yes	Yes	Yes	Yes
Mechanical Characteristics						
Outer Conductor Integrity Temperature		150 °C	150 °C	150 °C	150 °C	150 °C
Maximum Operating Temperature		125 °C	125 °C	125 °C	125 °C	125 °C
Minimum Inside Bend Radius *in (mm)*		0.05 (1.27)	0.05 (1.27)	0.05 (1.27)	0.05 (1.27)	0.05 (1.27)
Weight *lbs/ft (kg/m)*		0.03/100 (0.05/100)	0.10/100 (0.15/100)	0.22/100 (0.33/100)	0.22/100 (0.33/100)	0.22/100 (0.33/100)
Electrical Characteristics						
Characteristic Impedance Ω		50.0 ± 5.0	50.0 ± 2.0	50.0 ± 1.5	50.0 ± 1.5	50.0 ± 1.5
Capacitance *pF/ft (pF/m)*		29.0 (95.2)	29.0 (95.2)	29.0 (95.2)	29.0 (95.2)	29.0 (95.2)
Velocity of Propagation		70%	70%	70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	150 VRMS	500 VRMS	750 VRMS	750 VRMS	750 VRMS
Voltage Withstanding	@ 60 Hz	900 VRMS	1500 VRMS	2100 VRMS	2100 VRMS	2100 VRMS
Higher Order Mode Frequency		402 GHz	239 GHz	155 GHz	155 GHz	155 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	87.8	51.6	34.0	34.0	34.0
	@ 1.0 GHz	124.4	73.3	48.3	48.3	48.3
	@ 5.0 GHz	280.5	166.1	110.4	110.4	110.4
	@ 10.0 GHz	399.1	237.4	158.5	158.5	158.5
	@ 18.0 GHz	539.3	322.3	216.5	216.5	216.5
	@ 26.5 GHz	658.2	394.9	266.6	266.6	266.6
	@ 40.0 GHz	814.9	491.4	333.7	333.7	333.7
	@ 50.0 GHz	915.5	553.8	377.5	377.5	377.5
	@ 65.0 GHz	1,050.4	638.1	437.0	437.0	437.0
	@ 90.0 GHz	1,247.3	762.1	525.5	525.5	525.5
Power (Watts CW @ 20 °C, Maximum)	@ 0.5 GHz	6.4	17.2	35.7	30.5	28.5
	@ 1.0 GHz	4.5	12.1	25.2	21.5	20.0
	@ 5.0 GHz	2.0	5.4	11.1	9.5	8.8
	@ 10.0 GHz	1.4	3.8	7.7	6.6	6.2
	@ 18.0 GHz	1.0	2.8	5.7	4.8	4.5
	@ 26.5 GHz	0.9	2.3	4.6	3.9	3.7
	@ 40.0 GHz	0.7	1.8	3.7	3.2	3.0
	@ 50.0 GHz	0.6	1.6	3.3	2.8	2.6
	@ 65.0 GHz	0.5	1.4	2.8	2.45	2.3
	@ 90.0 GHz	0.5	1.2	2.4	2.0	1.9

CarlisleIT Description		UT-034C	UT-047	UT-047-TP	UT-047-SP	UT-047C	UT-056
MIL-DTL-17 Description		-	UT-047-M17	UT-047-TP-M17	-	-	-
MIL-DTL-17 Part Number		-	M17/151-00001	M17/151-00002	-	-	-
Dimensions							
Outer Conductor Diameter *in (mm)*		0.034 ± 0.001 (0.864 ± 0.025)	0.047 ± 0.001 (1.194 ± 0.025)	0.047 +0.002/-0.001 (1.194 +0.051/-0.025)	0.047 +0.002/-0.001 (1.194 +0.051/-0.025)	0.047 ± 0.001 (1.194 ± 0.025)	0.056 ± 0.002 (1.422 ± 0.051)
Dielectric Diameter *in (mm)*		-	0.037 ± 0.001 (0.940 ± 0.025)	0.037 ± 0.001 (0.940 ± 0.025)	-	-	-
Center Conductor Diameter *in (mm)*		0.0080 ± 0.0005 (0.2032 ± 0.0127)	0.0113 ± 0.0005 (0.2870 ± 0.0127)	0.0113 ± 0.0005 (0.2870 ± 0.0127)	0.0113 ± 0.0005 (0.2870 ± 0.0127)	0.0113 ± 0.0005 (0.2870 ± 0.0127)	0.0113 ± 0.0005 (0.2870 ± 0.0127)
Maximum Straight Length *ft (m)*		15 (4.57)	20 (6.10)	20 (6.10)	20 (6.10)	20 (6.10)	20 (6.10)
Materials							
Outer Conductor		Copper	Copper	Copper	Copper	Copper	Copper
Outer Conductor Plating		None	None	Tin	Silver	None	None
Dielectric		PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
Center Conductor		SPC	SPCW	SPCW	SPCW	SPC	SPCW
RoHS-Compliant		Yes	Yes	Yes	Yes	Yes	Yes
Mechanical Characteristics							
Outer Conductor Integrity Temperature		150 °C	175 °C	175 °C	175 °C	175 °C	200 °C
Maximum Operating Temperature		125 °C	150 °C	150 °C	150 °C	150 °C	175 °C
Minimum Inside Bend Radius *in (mm)*		0.063 (1.6)	0.05 (1.27)	0.05 (1.27)	0.05 (1.27)	0.125 (3.175)	0.125 (3.175)
Weight *lbs/ft (kg/m)*		0.22/100 (0.33/100)	0.40/100 (0.60/100)	0.40/100 (0.60/100)	0.40/100 (0.60/100)	0.40/100 (0.60/100)	0.70/100 (1.05/100)
Electrical Characteristics							
Characteristic Impedance Ω		50.0 ± 3.0	50.0 ± 1.5	50.0 ± 1.5	50.0 ± 1.5	50.0 ± 2.5	50.0 ± 2.5
Capacitance *pF/ft (pF/m)*		29.0 (95.2)	29.0 (95.2)	29.0 (95.2)	29.0 (95.2)	29.0 (95.2)	29.0 (95.2)
Velocity of Propagation		70%	70%	70%	70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	750 VRMS	1000 VRMS	1000 VRMS	1000 VRMS	1000 VRMS	1500 VRMS
Voltage Withstanding	@ 60 Hz	2100 VRMS	3000 VRMS	3000 VRMS	3000 VRMS	3000 VRMS	3000 VRMS
Higher Order Mode Frequency		155 GHz	109 GHz	109 GHz	109 GHz	109 GHz	109 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	34.0	24.0	24.0	24.0	24.0	24.0
	@ 1.0 GHz	48.3	34.2	34.2	34.2	34.2	34.2
	@ 5.0 GHz	110.4	78.8	78.8	78.8	78.8	78.8
	@ 10.0 GHz	158.5	113.8	113.8	113.8	113.8	113.8
	@ 18.0 GHz	216.5	156.5	156.5	156.5	156.5	156.5
	@ 26.5 GHz	266.6	193.8	193.8	193.8	193.8	193.8
	@ 40.0 GHz	333.7	244.2	244.2	244.2	244.2	244.2
	@ 50.0 GHz	377.5	277.5	277.5	277.5	277.5	277.5
	@ 65.0 GHz	437.0	323.0	323.0	323.0	323.0	323.0
	@ 90.0 GHz	525.5	391.3	391.3	391.3	391.3	391.3
Power (Watts CW @ 20 °C, Maximum)	@ 0.5 GHz	35.7	80.5	67.5	62.2	80.5	110.4
	@ 1.0 GHz	25.2	56.6	47.4	43.8	56.6	77.6
	@ 5.0 GHz	11.1	24.7	20.7	19.1	24.7	34.0
	@ 10.0 GHz	7.7	17.2	14.4	13.3	17.2	23.6
	@ 18.0 GHz	5.7	12.6	10.5	9.7	12.6	17.3
	@ 26.5 GHz	4.6	10.2	8.5	7.9	10.2	14.0
	@ 40.0 GHz	3.7	8.1	6.8	6.3	8.1	11.2
	@ 50.0 GHz	3.3	7.2	6.0	5.5	7.2	9.9
	@ 65.0 GHz	2.8	6.2	5.2	4.8	6.2	8.5
	@ 90.0 GHz	2.4	5.1	4.3	4.0	5.1	7.1

50 Ω Copper

CarlisleIT Description		UT-056-STR	UT-070C	UT-085-H	UT-085-H-TP	UT-085C-H
MIL-DTL-17 Description		-	-	UT-085-H-M17	UT-085-H-TP-M17	UT-085C-H-M17
MIL-DTL-17 Part Number		-	-	M17/133-RG-405	M17/133-00001	M17/133-00002
Dimensions						
Outer Conductor Diameter *in (mm)*		0.056 ± 0.002 (1.422 ± 0.051)	0.070 ± 0.001 (1.778 ± 0.025)	0.0865 ± 0.0010 (2.197 ± 0.025)	0.0865 +0.0020/-0.0010 (2.197 +0.051/-0.025)	0.0865 ± 0.0010 (2.197 ± 0.025)
Dielectric Diameter *in (mm)*		-	-	0.066 ± 0.001 (1.676 ± 0.025)	0.066 ± 0.001 (1.676 ± 0.025)	0.066 ± 0.001 (1.676 ± 0.025)
Center Conductor Diameter *in (mm)*		7 x 0.004 ± 0.0005 (7 x 0.1016 ± 0.0127)	0.0179 ± 0.0005 (0.4547 ± 0.0127)	0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0201 ± 0.0005 (0.5105 ± 0.0127)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)	20 (6.10)	20 (6.10)
Materials						
Outer Conductor		Copper	Copper	Copper	Copper	Copper
Outer Conductor Plating		None	None	None	Tin	None
Dielectric		PTFE	PTFE	PTFE	PTFE	PTFE
Center Conductor		Stranded SPCW	SPC	SPCW	SPCW	SPC
RoHS-Compliant		Yes	Yes	Yes	Yes	Yes
Mechanical Characteristics						
Outer Conductor Integrity Temperature		200 °C	135 °C	175 °C	175 °C	175 °C
Maximum Operating Temperature		175 °C	100 °C	125 °C	125 °C	125 °C
Minimum Inside Bend Radius *in (mm)*		0.063 (1.6)	0.125 (3.175)	0.125 (3.175)	0.125 (3.175)	0.125 (3.175)
Weight *lbs/ft (kg/m)*		0.72/100 (1.08/100)	0.80/100 (1.20/100)	1.42/100 (2.13/100)	1.42/100 (2.13/100)	1.43/100 (2.15/100)
Electrical Characteristics						
Characteristic Impedance Ω		50.0 ± 4.0	50.0 ± 1.0	50.0 ± 1.0	50.0 ± 1.0	50.0 ± 1.0
Capacitance *pF/ft (pF/m)*		29.0 (95.2)	29.0 (95.2)	29.0 (95.2)	29.0 (95.2)	29.0 (95.2)
Velocity of Propagation		70%	70%	70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	1000 VRMS	1200 VRMS	1500 VRMS	1500 VRMS	1500 VRMS
Voltage Withstanding	@ 60 Hz	3000 VRMS	4800 VRMS	5400 VRMS	5400 VRMS	5400 VRMS
Higher Order Mode Frequency		111 GHz	68 GHz	61 GHz	61 GHz	61 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	24.7	15.2	13.6	13.6	13.6
	@ 1.0 GHz	35.2	21.7	19.5	19.5	19.5
	@ 5.0 GHz	81.0	50.9	46.0	46.0	46.0
	@ 10.0 GHz	117.0	74.4	67.4	67.4	67.4
	@ 18.0 GHz	160.8	103.7	94.3	94.3	94.3
	@ 26.5 GHz	199.0	129.7	118.3	118.3	118.3
	@ 40.0 GHz	250.6	165.5	151.5	151.5	151.5
	@ 50.0 GHz	284.6	189.4	173.8	173.8	173.8
	@ 65.0 GHz	331.2	222.6	-	-	-
	@ 90.0 GHz	400.9	-	-	-	-
Power (Watts CW @ 20 °C, Maximum)	@ 0.5 GHz	107.3	124.0	232.0	190.3	232.0
	@ 1.0 GHz	75.4	86.9	162.5	133.2	162.5
	@ 5.0 GHz	33.0	37.4	69.8	57.2	69.8
	@ 10.0 GHz	23.0	25.7	47.9	39.3	47.9
	@ 18.0 GHz	16.8	18.6	34.6	28.3	34.6
	@ 26.5 GHz	13.6	14.9	27.7	22.7	27.7
	@ 40.0 GHz	10.9	11.8	21.8	17.9	21.8
	@ 50.0 GHz	9.6	10.3	19.1	15.7	19.1
	@ 65.0 GHz	8.3	8.8	-	-	-
	@ 90.0 GHz	6.9	-	-	-	-

CarlisleIT Description		UT-085C-H-TP	UT-085	UT-085-TP	UT-085-SP	UT-085C
MIL-DTL-17 Description		UT-085C-H-TP-M17	UT-085-M17	UT-085-TP-M17	UT-085-SP-M17	UT-085C-M17
MIL-DTL-17 Part Number		M17/133-00003	M17/133-00006	M17/133-00007	M17/133-00016	M17/133-00008
Dimensions						
Outer Conductor Diameter *in (mm)*		0.0865 +0.0020/-0.0010 (2.197 +0.051/-0.025)	0.0865 ± 0.001 (2.197 ± 0.025)	0.0865 +0.0020/-0.0010 (2.197 +0.051/-0.025)	0.0865 +0.0020/-0.0010 (2.197 +0.051/-0.025)	0.0865 ± 0.0010 (2.197 ± 0.025)
Dielectric Diameter *in (mm)*		0.066 ± 0.001 (1.676 ± 0.025)	0.066 ± 0.001 (1.676 ± 0.025)	0.066 ± 0.001 (1.676 ± 0.025)	0.066 ± 0.001 (1.676 ± 0.025)	0.066 ± 0.001 (1.676 ± 0.025)
Center Conductor Diameter *in (mm)*		0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0201 ± 0.0005 (0.5105 ± 0.0127)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)	20 (6.10)	20 (6.10)
Materials						
Outer Conductor		Copper	Copper	Copper	Copper	Copper
Outer Conductor Plating		Tin	None	Tin	Silver	None
Dielectric		PTFE	PTFE	PTFE	PTFE	PTFE
Center Conductor		SPC	SPCW	SPCW	SPCW	SPC
RoHS-Compliant		Yes	Yes	Yes	Yes	Yes
Mechanical Characteristics						
Outer Conductor Integrity Temperature		175 °C	175 °C	175 °C	175 °C	175 °C
Maximum Operating Temperature		125 °C	125 °C	125 °C	125 °C	125 °C
Minimum Inside Bend Radius *in (mm)*		0.125 (3.175)	0.05 (1.27)	0.05 (1.27)	0.05 (1.27)	0.05 (1.27)
Weight *lbs/ft (kg/m)*		1.43/100 (2.15/100)	1.42/100 (2.13/100)	1.42/100 (2.13/100)	1.42/100 (2.13/100)	1.42/100 (2.13/100)
Electrical Characteristics						
Characteristic Impedance Ω		50.0 ± 1.0	50.0 ± 1.0	50.0 ± 1.0	50.0 ± 1.0	50.0 ± 1.0
Capacitance *pF/ft (pF/m)*		29.0 (95.2)	29.0 (95.2)	29.0 (95.2)	29.0 (95.2)	29.0 (95.2)
Velocity of Propagation		70%	70%	70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	1500 VRMS	1500 VRMS	1500 VRMS	1500 VRMS	1500 VRMS
Voltage Withstanding	@ 60 Hz	5400 VRMS	5400 VRMS	5400 VRMS	5400 VRMS	5400 VRMS
Higher Order Mode Frequency		61 GHz	61 GHz	61 GHz	61 GHz	61 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	13.6	13.6	13.6	13.6	13.6
	@ 1.0 GHz	19.5	19.5	19.5	19.5	19.5
	@ 5.0 GHz	46.0	46.0	46.0	46.0	46.0
	@ 10.0 GHz	67.4	67.4	67.4	67.4	67.4
	@ 18.0 GHz	94.3	94.3	94.3	94.3	94.3
	@ 26.5 GHz	118.3	118.3	118.3	118.3	118.3
	@ 40.0 GHz	151.5	151.5	151.5	151.5	151.5
	@ 50.0 GHz	173.8	173.8	173.8	173.8	173.8
	@ 65.0 GHz	-	-	-	-	-
	@ 90.0 GHz	-	-	-	-	-
Power (Watts CW @ 20 °C, Maximum)	@ 0.5 GHz	190.3	232.0	190.3	173.5	232.0
	@ 1.0 GHz	133.2	162.5	133.2	121.5	162.5
	@ 5.0 GHz	57.2	69.8	57.2	52.2	69.8
	@ 10.0 GHz	39.3	47.9	39.3	35.8	47.9
	@ 18.0 GHz	28.3	34.6	28.3	25.8	34.6
	@ 26.5 GHz	22.7	27.7	22.7	20.7	27.7
	@ 40.0 GHz	17.9	21.8	17.9	16.3	21.8
	@ 50.0 GHz	15.7	19.1	15.7	14.3	19.1
	@ 65.0 GHz	-	-	-	-	-
	@ 90.0 GHz	-	-	-	-	-

50 Ω Copper

CarlisleIT Description		UT-085C-TP	UT-085C-SP	UT-141A-HA	UT-141A-H-TP	UT-141A
MIL-DTL-17 Description		UT-085C-TP-M17	-	UT-141-HA-M17	UT-141-HA-TP-M17	UT-141-SA-M17
MIL-DTL-17 Part Number		M17/133-00009	-	M17/130-RG-402	M17/130-00001	M17/130-00004
Dimensions						
Outer Conductor Diameter *in (mm)*		0.0865 +0.0020/-0.0010 (2.197 + 0.051/-0.025)	0.0865 +0.0020/-0.0010 (2.197 +0.051/-0.025)	0.141 ± 0.001 (3.581 ± 0.025)	0.141 +0.002/-0.001 (3.581 +0.051/-0.025)	0.141 ± 0.001 (3.581 ± 0.025)
Dielectric Diameter *in (mm)*		0.066 ± 0.001 (1.676 ± 0.025)	-	0.1175 ± 0.0010 (2.985 ± 0.025)	0.1175 ± 0.0010 (2.985 ± 0.025)	0.1175 ± 0.0010 (2.985 ± 0.025)
Center Conductor Diameter *in (mm)*		0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0362 ± 0.0007 (0.9195 ± 0.0178)	0.0362 ± 0.0007 (0.9195 ± 0.0178)	0.0362 ± 0.0007 (0.9195 ± 0.0178)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)	20 (6.10)	20 (6.10)
Materials						
Outer Conductor		Copper	Copper	Copper	Copper	Copper
Outer Conductor Plating		Tin	Silver	None	Tin	None
Dielectric		PTFE	PTFE	PTFE	PTFE	PTFE
Center Conductor		SPC	SPC	SPCW	SPCW	SPCW
RoHS-Compliant		Yes	Yes	Yes	Yes	Yes
Mechanical Characteristics						
Outer Conductor Integrity Temperature		175 °C	175 °C	175 °C	175 °C	175 °C
Maximum Operating Temperature		125 °C	125 °C	125 °C	125 °C	125 °C
Minimum Inside Bend Radius *in (mm)*		0.05 (1.27)	0.05 (1.27)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)
Weight *lbs/ft (kg/m)*		1.43/100 (2.15/100)	1.43/100 (2.15/100)	3.29/100 (4.94/100)	3.29/100 (4.94/100)	3.29/100 (4.94/100)
Electrical Characteristics						
Characteristic Impedance Ω		50.0 ± 1.5	50.0 ± 1.5	50.0 ± 1.0	50.0 ± 1.0	50.0 ± 1.0
Capacitance *pF/ft (pF/m)*		29.0 (95.2)	29.0 (95.2)	29.0 (95.2)	29.0 (95.2)	29.0 (95.2)
Velocity of Propagation		70%	70%	70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	1500 VRMS	1500 VRMS	1900 VRMS	1900 VRMS	1900 VRMS
Voltage Withstanding	@ 60 Hz	5400 VRMS	5400 VRMS	9600 VRMS	9600 VRMS	9600 VRMS
Higher Order Mode Frequency		61 GHz	61 GHz	34 GHz	34 GHz	34 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	13.6	13.6	7.6	7.6	7.6
	@ 1.0 GHz	19.5	19.5	11.3	11.3	11.3
	@ 5.0 GHz	46.0	46.0	27.6	27.6	27.6
	@ 10.0 GHz	67.4	67.4	41.6	41.6	41.6
	@ 18.0 GHz	94.3	94.3	59.6	59.6	59.6
	@ 26.5 GHz	118.3	118.3	76.2	76.2	76.2
	@ 40.0 GHz	151.5	151.5	-	-	-
	@ 50.0 GHz	173.8	173.8	-	-	-
	@ 65.0 GHz	-	-	-	-	-
	@ 90.0 GHz	-	-	-	-	-
Power (Watts CW @ 20 °C, Maximum)	@ 0.5 GHz	190.3	173.4	600.4	483.5	600.4
	@ 1.0 GHz	133.2	121.5	450.0	336.2	450.0
	@ 5.0 GHz	57.2	52.2	180.0	140.4	180.0
	@ 10.0 GHz	39.3	35.8	120.0	94.6	120.0
	@ 18.0 GHz	28.3	25.8	83.0	66.8	83.0
	@ 26.5 GHz	22.7	20.7	65.6	52.7	65.6
	@ 40.0 GHz	17.9	16.3	-	-	-
	@ 50.0 GHz	15.7	14.3	-	-	-
	@ 65.0 GHz	-	-	-	-	-
	@ 90.0 GHz	-	-	-	-	-

CarlisleIT Description		UT-141A-TP	UT-141A-SP	UT-141C	UT-141C-TP	UT-141C-SP
MIL-DTL-17 Description		UT-141-SA-TP-M17	UT-141-SA-SP-M17	-	-	-
MIL-DTL-17 Part Number		M17/130-00005	M17/130-00012	-	-	-
Dimensions						
Outer Conductor Diameter *in (mm)*		0.141 +0.002/-0.001 (3.581 + 0.051/-0.025)	0.141 +0.002/-0.001 (3.581 + 0.051/-0.025)	0.141 ± 0.001 (3.581 ± 0.025)	0.141+0.002/-0.001 (3.581 +0.051/-0.025)	0.141 +0.002/-0.001 (3.581 + 0.051/-0.025)
Dielectric Diameter *in (mm)*		0.1175 ± 0.0010 (2.985 ± 0.025)	0.1175 ± 0.0010 (2.985 ± 0.025)	-	-	- -
Center Conductor Diameter *in (mm)*		0.0362 ± 0.0007 (0.9195 ± 0.0178)	0.0362 ± 0.0007 (0.9195 ± 0.0178)	0.0362 ± 0.0007 (0.9195 ± 0.0178)	0.0362 ± 0.0007 (0.9195 ± 0.0178)	0.0362 ± 0.0007 (0.9195 ± 0.0178)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)	20 (6.10)	20 (6.10)
Materials						
Outer Conductor		Copper	Copper	Copper	Copper	Copper
Outer Conductor Plating		Tin	Silver	None	Tin	None
Dielectric		PTFE	PTFE	PTFE	PTFE	PTFE
Center Conductor		SPCW	SPCW	SPC	SPC	SPC
RoHS-Compliant		Yes	Yes	Yes	Yes	Yes
Mechanical Characteristics						
Outer Conductor Integrity Temperature		175 °C	175 °C	175 °C	175 °C	175 °C
Maximum Operating Temperature		125 °C	125 °C	125 °C	125 °C	125 °C
Minimum Inside Bend Radius *in (mm)*		0.075 (1.905)	0.075 (1.905)	0.075 (1.905)	0.075 (1.905)	0.075 (1.905)
Weight *lbs/ft (kg/m)*		3.29/100 (4.94/100)	3.29/100 (4.94/100)	3.32/100 (4.94/100)	3.32/100 (4.94/100)	3.32/100 (4.94/100)
Electrical Characteristics						
Characteristic Impedance Ω		50.0 ± 1.0	50.0 ± 1.0	50.0 ± 1.0	50.0 ± 1.0	50.0 ± 1.0
Capacitance *pF/ft (pF/m)*		29.0 (95.2)	29.0 (95.2)	29.0 (95.2)	29.0 (95.2)	29.0 (95.2)
Velocity of Propagation		70%	70%	70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	1900 VRMS	1900 VRMS	1900 VRMS	1900 VRMS	1900 VRMS
Voltage Withstanding	@ 60 Hz	9600 VRMS	9600 VRMS	9600 VRMS	9600 VRMS	9600 VRMS
Higher Order Mode Frequency		34 GHz	34 GHz	34 GHz	34 GHz	34 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	7.6	7.6	7.6	7.6	7.6
	@ 1.0 GHz	11.3	11.3	11.3	11.3	11.3
	@ 5.0 GHz	27.6	27.6	27.6	27.6	27.6
	@ 10.0 GHz	41.6	41.6	41.6	41.6	41.6
	@ 18.0 GHz	59.6	59.6	59.6	59.6	59.6
	@ 26.5 GHz	76.2	76.2	76.2	76.2	76.2
	@ 40.0 GHz	-	-	-	-	-
	@ 50.0 GHz	-	-	-	-	-
	@ 65.0 GHz	-	-	-	-	-
	@ 90.0 GHz	-	-	-	-	-
Power (Watts CW @ 20 °C, Maximum)	@ 0.5 GHz	483.5	436.4	600.4	483.5	436.4
	@ 1.0 GHz	336.2	303.4	450.0	336.2	303.4
	@ 5.0 GHz	140.4	126.7	180.0	140.4	126.7
	@ 10.0 GHz	94.6	85.3	120.0	94.6	85.3
	@ 18.0 GHz	66.8	60.3	83.0	66.8	60.3
	@ 26.5 GHz	52.7	47.6	65.6	52.7	47.6
	@ 40.0 GHz	-	-	-	-	-
	@ 50.0 GHz	-	-	-	-	-
	@ 65.0 GHz	-	-	-	-	-
	@ 90.0 GHz	-	-	-	-	-

50 Ω Copper

CarlisleIT Description		UT-215-TP	UT-250C	UT-250C-TP
MIL-DTL-17 Description		-	UT-250A-M17	UT-250A-TP-M17
MIL-DTL-17 Part Number		-	M17/129-RG-401	M17/129-00001
Dimensions				
Outer Conductor Diameter *in (mm)*		0.215 +0.003/-0.002 (5.461 +0.076/-0.051)	0.250 ± 0.001 (6.350 ± 0.025)	0.250 +0.002/-0.001 (6.350 +0.051/-0.025)
Dielectric Diameter *in (mm)*		-	0.209 ± 0.002 (5.309 ± 0.051)	0.209 ± 0.002 (5.309 ± 0.051)
Center Conductor Diameter *in (mm)*		0.0571 ± 0.0005 (1.4503 ± 0.0127)	0.0641 ± 0.0010 (1.6281 ± 0.0254)	0.0641 ± 0.0010 (1.6281 ± 0.0254)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)
Materials				
Outer Conductor		Copper	Copper	Copper
Outer Conductor Plating		Tin	None	Tin
Dielectric		PTFE	PTFE	PTFE
Center Conductor		SPCW	SPC	SPCW
RoHS-Compliant		Yes	Yes	Yes
Mechanical Characteristics				
Outer Conductor Integrity Temperature		150 °C	150 °C	150 °C
Maximum Operating Temperature		125 °C	100 °C	100 °C
Minimum Inside Bend Radius *in (mm)*		0.375 (9.525)	0.125 (3.175)	0.125 (3.175)
Weight *lbs/ft (kg/m)*		7.17/100 (10.76/100)	10.38/100 (15.58/100)	10.38/100 (15.58/100)
Electrical Characteristics				
Characteristic Impedance Ω		50.0 ± 2.0	50.0 ± 0.5	50.0 ± 0.5
Capacitance *pF/ft (pF/m)*		29.0 (95.2)	29.0 (95.2)	29.0 (95.2)
Velocity of Propagation		70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	3000 VRMS	3000 VRMS	3000 VRMS
Voltage Withstanding	@ 60 Hz	15000 VRMS	15000 VRMS	15000 VRMS
Higher Order Mode Frequency		22 GHz	19 GHz	19 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	5.1	4.3	4.3
	@ 1.0 GHz	7.5	6.7	6.7
	@ 5.0 GHz	19.1	17.4	17.4
	@ 10.0 GHz	29.4	27.0	27.0
	@ 18.0 GHz	43.3	40.0	40.0
	@ 26.5 GHz	-	-	-
	@ 40.0 GHz	-	-	-
	@ 50.0 GHz	-	-	-
	@ 65.0 GHz	-	-	-
	@ 90.0 GHz	-	-	-
Power (Watts CW @ 20 °C, Maximum)	@ 0.5 GHz	844.1	1,780.0	1,061.4
	@ 1.0 GHz	581.2	914.8	278.6
	@ 5.0 GHz	234.0	364.5	290.1
	@ 10.0 GHz	154.0	238.3	189.5
	@ 18.0 GHz	106.1	163.2	129.7
	@ 26.5 GHz	-	-	-
	@ 40.0 GHz	-	-	-
	@ 50.0 GHz	-	-	-
	@ 65.0 GHz	-	-	-
	@ 90.0 GHz	-	-	-

CarlisleIT Description		UT-250C-SP	UT-325C	UT-390C
MIL-DTL-17 Description		-	-	-
MIL-DTL-17 Part Number		-	-	-
Dimensions				
Outer Conductor Diameter *in (mm)*		0.250 +0.002/-0.001 (6.350 +0.051/-0.025)	0.325 ± 0.002 (8.255 ± 0.051)	0.390 ± 0.002 (9.906 ± 0.051)
Dielectric Diameter *in (mm)*		-	-	-
Center Conductor Diameter *in (mm)*		0.0641 ± 0.0010 (1.6281 ± 0.0254)	7 x 0.0312 ± 0.0010 (7 x 0.7925 ± 0.0254)	0.102 ± 0.001 (2.5908 ± 0.0254)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)
Materials				
Outer Conductor		Copper	Copper	Copper
Outer Conductor Plating		Silver	None	None
Dielectric		PTFE	PTFE	PTFE
Center Conductor		SPC	Stranded SPC	SPC
RoHS-Compliant		Yes	Yes	Yes
Mechanical Characteristics				
Outer Conductor Integrity Temperature		150 °C	125 °C	175 °C
Maximum Operating Temperature		100 °C	90 °C	90 °C
Minimum Inside Bend Radius *in (mm)*		0.125 (3.175)	0.75 (19.05)	0.75 (19.05)
Weight *lbs/ft (kg/m)*		10.38/100 (15.58/100)	15.93/100 (23.92/100)	24.40/100 (36.63/100)
Electrical Characteristics				
Characteristic Impedance Ω		50.0 ± 0.5	50.0 ± 1.0	50.0 ± 0.5
Capacitance *pF/ft (pF/m)*		29.0 (95.2)	29.0 (95.2)	29.0 (95.2)
Velocity of Propagation		70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	3000 VRMS	3000 VRMS	6000 VRMS
Voltage Withstanding	@ 60 Hz	16800 VRMS	22800 VRMS	26700 VRMS
Higher Order Mode Frequency		19 GHz	14 GHz	12 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	4.3	3.5	3.0
	@ 1.0 GHz	6.7	5.2	4.6
	@ 5.0 GHz	17.4	13.8	12.5
	@ 10.0 GHz	27.0	22.0	20.1
	@ 18.0 GHz	40.0	-	-
	@ 26.5 GHz	-	-	-
	@ 40.0 GHz	-	-	-
	@ 50.0 GHz	-	-	-
	@ 65.0 GHz	-	-	-
	@ 90.0 GHz	-	-	-
Power (Watts CW @ 20 °C, Maximum)	@ 0.5 GHz	951.8	1,702.4	3,425.8
	@ 1.0 GHz	653.3	1,156.5	2,321.5
	@ 5.0 GHz	260.0	443.6	883.1
	@ 10.0 GHz	169.8	283.5	561.6
	@ 18.0 GHz	116.3	-	-
	@ 26.5 GHz	-	-	-
	@ 40.0 GHz	-	-	-
	@ 50.0 GHz	-	-	-
	@ 65.0 GHz	-	-	-
	@ 90.0 GHz	-	-	-

50 Ω Aluminum

Standard aluminum 50 Ω semi-rigid cables are ideal for hand forming or where weight savings is a premium. Connectors can be easily soldered to the tin-plated aluminum outer conductor.

CarlisleIT Description		UT-047-AL-TP	UT-085-AL	UT-085-AL-TP
MIL-DTL-17 Description		-	UT-085-AL-M17	UT-085-AL-TP-M17
MIL-DTL-17 Part Number		-	M17/133-00012	M17/133-00013
Dimensions				
Outer Conductor Diameter *in (mm)*		0.047 +0.002/-0.001 (1.194 +0.051/-0.025)	0.0865 ± 0.0010 (2.197 ± 0.025)	0.0865 +0.0020/-0.0010 (2.197 +0.051/-0.025)
Dielectric Diameter *in (mm)*		-	0.066 ± 0.001 (1.676 ± 0.025)	0.066 ± 0.001 (1.676 ± 0.025)
Center Conductor Diameter *in (mm)*		0.0113 ± 0.0005 (0.2870 ± 0.0127)	0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0201 ± 0.0005 (0.5105 ± 0.0127)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)
Materials				
Outer Conductor		Aluminum	Aluminum	Aluminum
Outer Conductor Plating		Tin	None	Tin
Dielectric		PTFE	PTFE	PTFE
Center Conductor		SPCW	SPCW	SPCW
RoHS-Compliant		Yes	Yes	Yes
Mechanical Characteristics				
Outer Conductor Integrity Temperature		225 °C	225 °C	225 °C
Maximum Operating Temperature		225 °C	225 °C	225 °C
Minimum Inside Bend Radius *in (mm)*		0.07 (1.778)	0.07 (1.778)	0.07 (1.778)
Weight *lbs/ft (kg/m)*		0.21/100 (0.32/100)	0.72/100 (1.08/100)	0.72/100 (1.08/100)
Electrical Characteristics				
Characteristic Impedance Ω		50.0 ± 1.5	50.0 ± 1.0	50.0 ± 1.0
Capacitance *pF/ft (pF/m)*		29.0 (95.2)	29.0 (95.2)	29.0 (95.2)
Velocity of Propagation		70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	1000 VRMS	1500 VRMS	1500 VRMS
Voltage Withstanding	@ 60 Hz	3000 VRMS	5400 VRMS	5400 VRMS
Higher Order Mode Frequency		109 GHz	61 GHz	61 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	25.8	14.3	14.3
	@ 1.0 GHz	36.7	21.0	21.0
	@ 5.0 GHz	84.5	47.6	47.6
	@ 10.0 GHz	121.9	72.0	72.0
	@ 18.0 GHz	167.3	100.3	100.3
	@ 26.5 GHz	206.9	125.6	125.6
	@ 40.0 GHz	260.4	160.5	160.5
	@ 50.0 GHz	295.5	183.9	183.9
	@ 65.0 GHz	343.6	-	-
	@ 90.0 GHz	415.5	-	-
Power (Watts CW @ 20 °C, Maximum)	@ 0.5 GHz	85.4	231.8	237.5
	@ 1.0 GHz	60.1	162.5	166.5
	@ 5.0 GHz	26.3	70.1	71.9
	@ 10.0 GHz	18.3	48.3	49.5
	@ 18.0 GHz	13.4	35.0	35.8
	@ 26.5 GHz	10.9	28.1	28.8
	@ 40.0 GHz	8.7	22.2	22.8
	@ 50.0 GHz	7.7	19.5	20.0
	@ 65.0 GHz	6.7	-	-
	@ 90.0 GHz	5.5	-	-

CarlisleIT Description		UT-141A-AL	UT-141A-AL-TP	UT-250C-AL-TP
MIL-DTL-17 Description		UT-141-SA-AL-M17	UT-141-SA-AL-TP-M17	-
MIL-DTL-17 Part Number		M17/130-00008	M17/130-00009	-
Dimensions				
Outer Conductor Diameter *in (mm)*		0.141 ± 0.001 (3.581 ± 0.025)	0.141 +0.002/-0.001 (3.581 +0.051/-0.025)	0.250 +0.003/-0.002 (6.350 +0.076/-0.051)
Dielectric Diameter *in (mm)*		0.1175 ± 0.0010 (2.985 ± 0.025)	0.1175 ± 0.0010 (2.985 ± 0.025)	-
Center Conductor Diameter *in (mm)*		0.0362 ± 0.0007 (0.9195 ± 0.0178)	0.0362 ± 0.0007 (0.9195± 0.0178)	0.0641 ± 0.0010 (1.6281 ± 0.0254)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)
Materials				
Outer Conductor		Aluminum	Aluminum	Aluminum
Outer Conductor Plating		None	Tin	Tin
Dielectric		PTFE	PTFE	PTFE
Center Conductor		SPCW	SPCW	SPC
RoHS-Compliant		Yes	Yes	Yes
Mechanical Characteristics				
Outer Conductor Integrity Temperature		225 °C	225 °C	225 °C
Maximum Operating Temperature		225 °C	225 °C	225 °C
Minimum Inside Bend Radius *in (mm)*		0.125 (3.175)	0.125 (3.175)	0.25 (6.35)
Weight *lbs/ft (kg/m)*		1.93/100 (2.90/100)	1.93/100 (2.90/100)	6.18/100 (9.28/100)
Electrical Characteristics				
Characteristic Impedance Ω		50.0 ± 1.0	50.0 ± 1.0	50.0 ± 0.5
Capacitance *pF/ft (pF/m)*		29.0 (95.2)	29.0 (95.2)	29.0 (95.2)
Velocity of Propagation		70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	1900 VRMS	1900 VRMS	3000 VRMS
Voltage Withstanding	@ 60 Hz	9600 VRMS	9600 VRMS	16800 VRMS
Higher Order Mode Frequency		34 GHz	34 GHz	19 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	7.9	7.9	4.9
	@ 1.0 GHz	11.5	11.5	7.2
	@ 5.0 GHz	28.7	28.7	18.4
	@ 10.0 GHz	43.3	43.3	28.4
	@ 18.0 GHz	63.0	63.0	42.0
	@ 26.5 GHz	80.3	80.3	-
	@ 40.0 GHz	-	-	-
	@ 50.0 GHz	-	-	-
	@ 65.0 GHz	-	-	-
	@ 90.0 GHz	-	-	-
Power (Watts CW @ 20 °C, Maximum)	@ 0.5 GHz	557.7	571.7	1,395.1
	@ 1.0 GHz	388.5	398.2	961.1
	@ 5.0 GHz	163.4	167.5	387.6
	@ 10.0 GHz	110.6	113.4	255.3
	@ 18.0 GHz	78.5	80.5	176.2
	@ 26.5 GHz	62.2	63.8	-
	@ 40.0 GHz	-	-	-
	@ 50.0 GHz	-	-	-
	@ 65.0 GHz	-	-	-
	@ 90.0 GHz	-	-	-

Dimensionally Stable 50 Ω Copper

Dimensionally stable "M" and "DS" semi-rigid cables utilize a unique dielectric that provides significantly improved thermal stability. Besides virtually eliminating dielectric protrusion from the heat of soldering, this feature makes them ideal for applications that must operate at the most extreme temperatures.

CarlisleIT Description		UT-020-M	UT-034-M	UT-047-M	UT-085-DS
CarlisleIT Description (Tin-Plated)		UT-020-TP-M	UT-034-TP-M	UT-047-TP-M	UT-085-TP-DS
Dimensions					
Outer Conductor Diameter (+0.001 inch for tin plate) *in (mm)*		0.023 ± 0.001 (0.584 ± 0.025)	0.038 ± 0.001 (0.953 ± 0.025)	0.050 ± 0.001 (1.257 ± 0.025)	0.0865 ± 0.0010 (2.197 ± 0.025)
Center Conductor Diameter *in (mm)*		0.0045 ± 0.0005 (0.1143 ± 0.0127)	0.0080 ± 0.0005 (0.2032 ± 0.0127)	0.0113 ± 0.0005 (0.2870 ± 0.0127)	0.0201 ± 0.0005 (0.5105 ± 0.0127)
Maximum Straight Length *ft (m)*		20 (3.05)	15 (4.57)	20 (6.10)	20 (6.10)
Materials					
Outer Conductor		Copper	Copper	Copper	Copper
Outer Conductor Plating		None or Tin	None or Tin	None or Tin	None or Tin
Dielectric		PTFE	PTFE	PTFE	PTFE
Center Conductor		SPCW	SPCW	SPCW	SPCW
RoHS-Compliant		Yes	Yes	Yes	Yes
Mechanical Characteristics					
Outer Conductor Integrity Temperature		250 °C	225 °C	250 °C	250 °C
Maximum Operating Temperature		225 °C	300 °C	225 °C	250[1] °C
Minimum Inside Bend Radius *in (mm)*		0.032 (0.813)	0.05 (1.27)	0.063 (1.6)	0.05 (1.27)
Weight *lbs/ft (kg/m)*		0.10/100 (0.15/100)	0.22/100 (0.33/100)	0.42/100 (0.63/100)	1.42/100 (2.13/100)
\1 225 °C for tin-plated outer conductor					
Electrical Characteristics					
Characteristic Impedance Ω		50.0 ± 6.0	50.0 ± 4.0	50.0 ± 4.0	50.0 ± 1.0
Capacitance *pF/ft (pF/m)*		29.0 (95.2)	29.0 (95.2)	29.0 (95.2)	29.0 (95.2)
Velocity of Propagation		70%	70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	250 VRMS	750 VRMS	750 VRMS	1500 VRMS
Voltage Withstanding	@ 60 Hz	1200 VRMS	1800 VRMS	3000 VRMS	5400 VRMS
Higher Order Mode Frequency		245 GHz	139 GHz	104 GHz	61 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	51.6	29.4	22.4	13.6
	@ 1.0 GHz	73.3	41.9	32.0	19.5
	@ 5.0 GHz	166.1	95.9	73.8	46.0
	@ 10.0 GHz	237.3	138.1	106.8	67.4
	@ 18.0 GHz	322.2	189.0	147.1	94.3
	@ 26.5 GHz	394.9	233.3	182.4	118.3
	@ 40.0 GHz	491.3	292.8	230.3	151.5
	@ 50.0 GHz	553.7	331.7	261.8	173.8
	@ 65.0 GHz	638.0	384.8	305.2	-
	@ 90.0 GHz	761.9	464.1	370.3	-
Power (Watts CW @ 20 °C, Maximum)	@ 0.5 GHz	30.9	75.8	125.4	306.9
	@ 1.0 GHz	21.8	53.4	88.2	215.0
	@ 5.0 GHz	9.6	23.4	38.5	92.5
	@ 10.0 GHz	6.8	16.4	26.8	63.7
	@ 18.0 GHz	5.0	12.0	19.6	46.0
	@ 26.5 GHz	4.1	9.8	15.9	36.9
	@ 40.0 GHz	3.3	7.8	12.7	29.1
	@ 50.0 GHz	2.9	6.9	11.2	25.5
	@ 65.0 GHz	2.6	6.0	9.6	-
	@ 90.0 GHz	2.1	5.0	8.0	-

CarlisleIT Description		UT-085C-DS	UT-141-DS	UT-141C-DS
CarlisleIT Description (Tin Plated)		UT-085C-TP-DS	UT-141-TP-DS	UT-141C-TP-DS
Dimensions				
Outer Conductor Diameter (+0.001 inch for tin plate) *in (mm)*		0.0865 ± 0.0010 (2.197 ± 0.025)	0.141 ± 0.001 (3.581 ± 0.025)	0.141 ± 0.001 (3.581 ± 0.025)
Center Conductor Diameter *in (mm)*		0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0362 ± 0.0007 (0.9195 ± 0.0178)	0.0362 ± 0.0007 (0.9195 ± 0.0178)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)
Materials				
Outer Conductor		Copper	Copper	Copper
Outer Conductor Plating		None or Tin	None or Tin	None or Tin
Dielectric		PTFE	PTFE	PTFE
Center Conductor		SPCW	SPCW	SPCW
RoHS-Compliant		Yes	Yes	Yes
Mechanical Characteristics				
Outer Conductor Integrity Temperature		250 °C	225 °C	250 °C
Maximum Operating Temperature		250[1] °C	250[1] °C	250[1] °C
Minimum Inside Bend Radius *in (mm)*		0.05 (1.27)	0.075 (1.905)	0.075 (1.905)
Weight *lbs/ft (kg/m)*		1.43/100 (2.15/100)	3.29/100 (4.94/100)	3.32/100 (4.98/100)
\1 225 °C for tin-plated outer conductor				
Electrical Characteristics				
Characteristic Impedance Ω		50.0 ± 1.5	50.0 ± 1.0	50.0 ± 1.0
Capacitance *pF/ft (pF/m)*		29.0 (95.2)	29.0 (95.2)	29.0 (95.2)
Velocity of Propagation		70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	1500 VRMS	1900 VRMS	1900 VRMS
Voltage Withstanding	@ 60 Hz	5400 VRMS	9600 VRMS	9600 VRMS
Higher Order Mode Frequency		61 GHz	34 GHz	34 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	13.6	7.8	7.8
	@ 1.0 GHz	19.5	11.3	11.3
	@ 5.0 GHz	46.0	27.7	27.7
	@ 10.0 GHz	67.4	41.6	41.6
	@ 18.0 GHz	94.3	59.6	59.6
	@ 26.5 GHz	118.3	76.2	76.2
	@ 40.0 GHz	151.5	-	-
	@ 50.0 GHz	173.8	-	-
	@ 65.0 GHz	-	-	-
	@ 90.0 GHz	-	-	-
Power (Watts CW @ 20 °C, Maximum)	@ 0.5 GHz	306.9	737.4	737.4
	@ 1.0 GHz	215.0	513.0	513.0
	@ 5.0 GHz	92.5	214.8	214.8
	@ 10.0 GHz	63.7	145.0	145.0
	@ 18.0 GHz	46.0	102.6	102.6
	@ 26.5 GHz	36.9	81.2	81.2
	@ 40.0 GHz	29.1	-	-
	@ 50.0 GHz	25.5	-	-
	@ 65.0 GHz	-	-	-
	@ 90.0 GHz	-	-	-

Low-Loss 50 Ω Copper

Low-loss semi-rigid cables provide lower attenuation, better phase stability with temperature, and a higher operating temperature when compared to traditional solid PTFE semi-rigid cables.

CarlisleIT Description		UT-031-LL	UT-047C-LL	UT-070-LL	UT-085C-LL
CarlisleIT Description (Tin-Plated)		**UT-031-TP-LL**	**UT-047C-TP-LL**	**UT-070-TP-LL**	**UT-085C-TP-LL**
Dimensions					
Outer Conductor Diameter (+0.001 inch for tin plate) *in (mm)*		0.031 ± 0.001 (0.787 ± 0.025)	0.047 ± 0.001 (1.194 ± 0.025)	0.070 ± 0.001 (1.778 ± 0.025)	0.0865 ± 0.0010 (2.197 ± 0.025)
Center Conductor Diameter *in (mm)*		0.0080 ± 0.0005 (0.2032 ± 0.0127)	0.0126 ± 0.0005 (0.3200 ± 0.0127)	0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0226 ± 0.0005 (0.5740 ± 0.0127)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)	20 (6.10)
Materials					
Outer Conductor		Copper	Copper	Copper	Copper
Outer Conductor Plating		None or Tin	None or Tin	None or Tin	None or Tin
Dielectric		LD PTFE	LD PTFE	LD PTFE	LD PTFE
Center Conductor		SPCW	SPC	SPCW	SPC
RoHS-Compliant		Yes	Yes	Yes	Yes
Mechanical Characteristics					
Outer Conductor Integrity Temperature		250 °C	225 °C	250 °C	250 °C
Maximum Operating Temperature		250[1] °C	250[1] °C	250[1] °C	250[1] °C
Minimum Inside Bend Radius *in (mm)*		0.063 (1.600)	0.125 (3.175)	0.25 (6.35)	0.25 (6.35)
Weight *lbs/ft (kg/m)*		0.17/100 (0.26/100)	0.39/100 (0.59/100)	0.75/100 (1.13/100)	1.39/100 (2.09/100)
\1 225 °C for tin-plated outer conductor					
Electrical Characteristics					
Characteristic Impedance Ω		50.0 ± 2.0	50.0 ± 2.0	50.0 ± 1.5	50.0 ± 1.5
Capacitance *pF/ft (pF/m)*		26.5 (86.8)	26.5 (86.8)	26.5 (86.8)	26.5 (86.8)
Velocity of Propagation		77%	77%	77%	77%
Corona Extinction Voltage	@ 60 Hz	500 VRMS	1000 VRMS	1200 VRMS	1500 VRMS
Voltage Withstanding	@ 60 Hz	1800 VRMS	2700 VRMS	4200 VRMS	4800 VRMS
Higher Order Mode Frequency		180 GHz	116 GHz	73 GHz	65 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	33.6	21.9	13.8	12.4
	@ 1.0 GHz	47.6	31.1	19.6	17.5
	@ 5.0 GHz	107.1	70.2	44.5	39.9
	@ 10.0 GHz	152.2	100.0	63.6	57.2
	@ 18.0 GHz	205.4	135.2	86.4	77.8
	@ 26.5 GHz	250.3	165.2	106.0	95.5
	@ 40.0 GHz	309.3	204.8	132.0	119.2
	@ 50.0 GHz	347.1	230.2	148.9	134.5
	@ 65.0 GHz	397.7	264.4	171.7	155.3
	@ 90.0 GHz	471.3	314.4	-	-
Power (Watts CW @ 20 °C, Maximum)	@ 0.5 GHz	60.2	125.6	265.5	343.4
	@ 1.0 GHz	42.5	88.7	187.2	242.1
	@ 5.0 GHz	18.9	39.4	82.8	106.9
	@ 10.0 GHz	13.3	27.7	58.1	74.9
	@ 18.0 GHz	9.9	20.5	42.9	55.3
	@ 26.5 GHz	8.1	16.8	35.1	45.1
	@ 40.0 GHz	6.6	13.6	28.2	36.3
	@ 50.0 GHz	5.9	12.1	25.1	32.3
	@ 65.0 GHz	5.1	10.6	21.8	28
	@ 90.0 GHz	4.3	8.9	-	-

Low-Loss 50 Ω Copper

CarlisleIT Description		UT-120C-LL	UT-141C-LL	UT-250C-LL
CarlisleIT Description (Tin-Plated)		**UT-120C-TP-LL**	**UT-141C-TP-LL**	**UT-250C-TP-LL**
Dimensions				
Outer Conductor Diameter (+0.001 inch for tin plate) *in (mm)*		0.120 ± 0.001 (3.048 ± 0.025)	0.141 ± 0.002 (3.581 ± 0.051)	0.250 ± 0.002 (6.350 ± 0.051)
Center Conductor Diameter *in (mm)*		0.0359 ± 0.0005 (0.9119 ± 0.0127)	0.0403 ± 0.0010 (1.0236 ± 0.0254)	0.0720 ± 0.0010 (1.8288 ± 0.0254)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)
Materials				
Outer Conductor		Copper	Copper	Copper
Outer Conductor Plating		None or Tin	None or Tin	None or Tin
Dielectric		LD PTFE	LD PTFE	LD PTFE
Center Conductor		SPC	SPC	SPC
RoHS-Compliant		Yes	Yes	Yes
Mechanical Characteristics				
Outer Conductor Integrity Temperature		250 °C	225 °C	250 °C
Maximum Operating Temperature		250[1] °C	250[1] °C	250[1] °C
Minimum Inside Bend Radius *in (mm)*		0.188 (4.775)	0.5 (12.7)	0.75 (19.05)
Weight *lbs/ft (kg/m)*		2.01/100 (3.02/100)	3.18/100 (4.77/100)	9.40/100 (14.11/100)
\1 225 °C for tin-plated outer conductor				
Electrical Characteristics				
Characteristic Impedance Ω		50.0 ± 1.5	50.0 ± 1.5	50.0 ± 1.0
Capacitance *pF/ft (pF/m)*		26.5 (86.8)	26.5 (86.8)	26.5 (86.8)
Velocity of Propagation		77%	77%	77%
Corona Extinction Voltage	@ 60 Hz	1800 VRMS	1900 VRMS	3000 VRMS
Voltage Withstanding	@ 60 Hz	7800 VRMS	8400 VRMS	15600 VRMS
Higher Order Mode Frequency		41 GHz	37 GHz	20 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	7.7	7.0	3.9
	@ 1.0 GHz	11.0	10.0	5.6
	@ 5.0 GHz	25.3	23.0	13.1
	@ 10.0 GHz	36.4	33.2	19.3
	@ 18.0 GHz	50.0	45.6	26.9
	@ 26.5 GHz	61.8	56.5	-
	@ 40.0 GHz	77.7	-	-
	@ 50.0 GHz	-	-	-
	@ 65.0 GHz	-	-	-
	@ 90.0 GHz	-	-	-
Power (Watts CW @ 20 °C, Maximum)	@ 0.5 GHz	683.1	839.4	2130.7
	@ 1.0 GHz	480.8	590.4	1492.3
	@ 5.0 GHz	210.8	258.3	641.5
	@ 10.0 GHz	146.9	179.7	440.9
	@ 18.0 GHz	107.6	131.5	318.1
	@ 26.5 GHz	87.5	106.7	-
	@ 40.0 GHz	70	-	-
	@ 50.0 GHz	-	-	-
	@ 65.0 GHz	-	-	-
	@ 90.0 GHz	-	-	-

Low-Loss 50 Ω Aluminum

Low-loss aluminum semi-rigid cables provide lower attenuation, better phase stability with temperature, and a higher operating temperature compared to traditional solid PTFE aluminum semi-rigid cables. Low-loss aluminum semi-rigid cables are ideal for hand forming or where weight savings is a premium. Connectors can be easily soldered to the tin-plated aluminum outer conductor.

CarlisleIT Description		UT-047C-AL-TP-LL	UT-085C-AL-TP-LL	UT-141C-AL-TP-LL
Dimensions				
Outer Conductor Diameter (+0.001 inch for tin plate) *in (mm)*		0.047 +0.002/-0.001 (1.194 +0.051/-0.025)	0.0865 +0.0020/-0.0010 (2.197 +0.051/-0.025)	0.141 +0.003/-0.002 (3.581 +0.076/-0.051)
Center Conductor Diameter *in (mm)*		0.0126 ± 0.0005 (0.3200 ± 0.0127)	0.0226 ± 0.0005 (0.5740 ± 0.0127)	0.0403 ± 0.0010 (1.0236 ± 0.0254)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)
Materials				
Outer Conductor		Aluminum	Aluminum	Aluminum
Outer Conductor Plating		Tin	Tin	Tin
Dielectric		LD PTFE	LD PTFE	LD PTFE
Center Conductor		SPC	SPC	SPC
RoHS-Compliant		Yes	Yes	Yes
Mechanical Characteristics				
Outer Conductor Integrity Temperature		225 °C	225 °C	225 °C
Maximum Operating Temperature		225 °C	225 °C	225 °C
Minimum Inside Bend Radius *in (mm)*		0.125 (3.175)	0.25 (6.35)	0.5 (12.7)
Weight *lbs/ft (kg/m)*		0.20/100 (0.30/100)	0.69/100 (1.04/100)	1.83/100 (2.75/100)
Electrical Characteristics				
Characteristic Impedance Ω		50.0 ± 2.0	50.0 ± 2.0	50.0 ± 2.0
Capacitance *pF/ft (pF/m)*		26.5 (86.8)	26.5 (86.8)	26.5 (86.8)
Velocity of Propagation		77%	77%	77%
Corona Extinction Voltage	@ 60 Hz	1000 VRMS	1500 VRMS	1900 VRMS
Voltage Withstanding	@ 60 Hz	2700 VRMS	4800 VRMS	8400 VRMS
Higher Order Mode Frequency		116 GHz	65 GHz	37 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	23.7	13.4	7.6
	@ 1.0 GHz	33.6	19.0	10.8
	@ 5.0 GHz	75.9	43.1	24.8
	@ 10.0 GHz	108.0	61.7	35.7
	@ 18.0 GHz	146.1	83.9	49.1
	@ 26.5 GHz	178.4	102.9	60.7
	@ 40.0 GHz	220.9	128.3	-
	@ 50.0 GHz	248.3	144.7	-
	@ 65.0 GHz	285.1	166.9	-
	@ 90.0 GHz	338.7	-	-
Power (Watts CW @ 20 °C, Maximum)	@ 0.5 GHz	92.7	262.7	642.5
	@ 1.0 GHz	65.4	185.2	452.1
	@ 5.0 GHz	29.1	81.9	198.1
	@ 10.0 GHz	20.5	57.4	138.0
	@ 18.0 GHz	15.2	42.4	101.1
	@ 26.5 GHz	12.4	34.6	82.2
	@ 40.0 GHz	10.1	27.9	-
	@ 50.0 GHz	9.0	24.8	-
	@ 65.0 GHz	7.8	21.5	-
	@ 90.0 GHz	6.6	-	-

Ultra-Low-Loss 50 Ω Copper

Ultra-low-loss semi-rigid cables provide the lowest attenuation, better phase stability with temperature, and a higher operating temperature compared to traditional semi-rigid cables. Due to their compact size and minimum bend radius, these cables are ideal for tight configurations where low insertion loss is critical.

CarlisleIT Description		UT-047C-ULL	UT-085C-ULL	UT-141C-ULL
CarlisleIT Description (Tin-Plated)		**UT-047C-TP-ULL**	**UT-085C-TP-ULL**	**UT-141C-TP-ULL**
Dimensions				
Outer Conductor Diameter (+0.001 inch for tin plate) *in (mm)*		0.047 ± 0.001 (1.194 ± 0.025)	0.0865 ± 0.0010 (2.197 ± 0.025)	0.141 ± 0.001 (3.581 ± 0.025)
Center Conductor Diameter *in (mm)*		0.0142 ± 0.0005 (0.3607 ± 0.0127)	0.0253 ± 0.0005 (0.6426 ± 0.0127)	0.0453 ± 0.0005 (1.1506 ± 0.0127)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)
Materials				
Outer Conductor		Copper	Copper	Copper
Outer Conductor Plating		None or Tin	None or Tin	None or Tin
Dielectric		ULD PTFE	ULD PTFE	ULD PTFE
Center Conductor		SPCW	SPC	SPCW
RoHS-Compliant		Yes	Yes	Yes
Mechanical Characteristics				
Outer Conductor Integrity Temperature		250 °C	250 °C	250 °C
Maximum Operating Temperature		250[1] °C	250[1] °C	250[1] °C
Minimum Inside Bend Radius *in (mm)*		0.25 (6.35)	0.375 (9.525)	0.5 (12.7)
Weight *lbs/ft (kg/m)*		0.36/100 (0.54/100)	1.27/100 (1.91/100)	2.53/100 (3.80/100)
\1 225 °C for tin-plated outer conductor				
Electrical Characteristics				
Characteristic Impedance Ω		50.0 ± 2.0	50.0 ± 2.0	50.0 ± 1.0
Capacitance *pF/ft (pF/m)*		24.5 (80.5)	24.5 (80.5)	24.5 (80.5)
Velocity of Propagation		83%	83%	83%
Corona Extinction Voltage	@ 60 Hz	700 VRMS	1400 VRMS	2500 VRMS
Voltage Withstanding	@ 60 Hz	2100 VRMS	3300 VRMS	7500 VRMS
Higher Order Mode Frequency		119 GHz	66 GHz	36 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	20.2	11.2	6.1
	@ 1.0 GHz	28.6	15.9	8.7
	@ 5.0 GHz	64.5	36.1	19.9
	@ 10.0 GHz	91.8	51.5	28.6
	@ 18.0 GHz	124.0	70.0	39.2
	@ 26.5 GHz	151.2	85.7	48.4
	@ 40.0 GHz	187.1	106.6	-
	@ 50.0 GHz	210.1	120.1	-
	@ 65.0 GHz	241.0	138.3	-
	@ 90.0 GHz	285.9	-	-
Power (Watts CW @ 20 °C, Maximum)	@ 0.5 GHz	131.7	358.3	888.5
	@ 1.0 GHz	93.0	252.8	625.5
	@ 5.0 GHz	41.4	111.9	274.6
	@ 10.0 GHz	29.1	78.6	191.6
	@ 18.0 GHz	21.6	58	140.6
	@ 26.5 GHz	20.5	55	132.9
	@ 40.0 GHz	14.4	38.3	-
	@ 50.0 GHz	12.8	34.1	-
	@ 65.0 GHz	11.2	29.6	-
	@ 90.0 GHz	9.4	-	-

50 Ω Stainless Steel

Stainless steel 50 Ω semi-rigid cables are designed for applications where low thermal heat transfer is required, such as cryogenic feed cables. Because these cables also utilize a solid PTFE dielectric, they are often the first choice for highly corrosive environments.

CarlisleIT Description		UT-085-SS	UT-085SS-SS	UT-047-SS
Dimensions				
Outer Conductor Diameter *in (mm)*		0.0865 ± 0.0010 (2.197 ± 0.025)	0.0865 ± 0.0010 (2.197 ± 0.025)	0.47 ± 0.001 (1.195 ± 0.025)
Center Conductor Diameter *in (mm)*		0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0113 ± 0.0005 (0.287 ± 0.0127)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)
Materials				
Outer Conductor		304 SS	304 SS	304 SS
Outer Conductor Plating		None	None	None
Dielectric		PTFE	PTFE	PTFE
Center Conductor		SPCW	304 SS	SPCW
RoHS-Compliant		Yes	Yes	Yes
Mechanical Characteristics				
Outer Conductor Integrity Temperature		225 °C	225 °C	200 °C
Maximum Operating Temperature		200 °C	200 °C	200 °C
Minimum Inside Bend Radius *in (mm)*		0.125 (3.175)	0.25 (6.35)	0.25 (6.35)
Weight *lbs/ft (kg/m)*		1.30/100 (1.95/100)	1.30/100 (1.95/100)	0.37/100 (0.55/100)
Electrical Characteristics				
Characteristic Impedance Ω		50.0 ± 1.0	50.0 ± 1.0	50.0 ± 2.5
Capacitance *pF/ft (pF/m)*		29.0 (95.2)	29.0 (95.2)	29.0 (95.2)
Velocity of Propagation		70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	1500 VRMS	1500 VRMS	1000 VRMS
Voltage Withstanding	@ 60 Hz	5400 VRMS	5400 VRMS	3000 VRMS
Higher Order Mode Frequency		61 GHz	61 GHz	100 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	31.2	88.9	55.4
	@ 1.0 GHz	44.4	126.0	78.6
	@ 5.0 GHz	101.5	284.0	178.1
	@ 10.0 GHz	146.0	404.1	254.3
	@ 18.0 GHz	199.7	545.9	345.0
	@ 26.5 GHz	246.2	666.3	422.5
	@ 40.0 GHz	308.7	824.8	525.3
	@ 50.0 GHz	349.5	926.5	591.7
	@ 65.0 GHz	-	-	681.2
	@ 90.0 GHz	-	-	812.9
Power (Watts CW @ 20 °C, Maximum)	@ 0.5 GHz	142.7	49.2	57.7
	@ 1.0 GHz	100.5	34.7	36.5
	@ 5.0 GHz	44.2	15.4	16.2
	@ 10.0 GHz	30.9	10.9	11.3
	@ 18.0 GHz	22.7	8.1	8.4
	@ 26.5 GHz	18.5	6.6	6.9
	@ 40.0 GHz	14.8	5.4	5.5
	@ 50.0 GHz	13.1	4.8	4.9
	@ 65.0 GHz	-	-	4.3
	@ 90.0 GHz	-	-	3.6

CarlisleIT Description		UT-085B-SS	UT-141-SS	UT-141B-SS
Dimensions				
Outer Conductor Diameter (+0.001 inch for tin plate) *in (mm)*		0.0865 ± 0.0010 (2.197 ± 0.025)	0.141 ± 0.001 (3.581 ± 0.025)	0.141 ± 0.001 (3.581 ± 0.025)
Center Conductor Diameter *in (mm)*		0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0359 ± 0.0010 (0.9119 ± 0.0254)	0.0362 ± 0.0007 (0.9195 ± 0.0178)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)
Materials				
Outer Conductor		304 SS	304 SS	304 SS
Outer Conductor Plating		None	None	None
Dielectric		PTFE	PTFE	PTFE
Center Conductor		SP BeCu	SP BeCu	SP BeCu
RoHS-Compliant		Yes	Yes	Yes
Mechanical Characteristics				
Outer Conductor Integrity Temperature		225 °C	225 °C	225 °C
Maximum Operating Temperature		200 °C	200 °C	200 °C
Minimum Inside Bend Radius *in (mm)*		0.25 (6.35)	0.25 (6.35)	0.5 (12.7)
Weight *lbs/ft (kg/m)*		1.31/100 (1.97/100)	3.05/100 (4.58/100)	3.06/100 (4.59/100)
Electrical Characteristics				
Characteristic Impedance Ω		50.0 ± 1.5	50.0 ± 1.0	50.0 ± 1.0
Capacitance *pF/ft (pF/m)*		29.0 (95.2)	29.0 (95.2)	29.0 (95.2)
Velocity of Propagation		70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	1900 VRMS	1900 VRMS	1900 VRMS
Voltage Withstanding	@ 60 Hz	5400 VRMS	9600 VRMS	9600 VRMS
Higher Order Mode Frequency		61 GHz	34 GHz	34 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	31.2	17.7	17.8
	@ 1.0 GHz	44.4	25.3	25.4
	@ 5.0 GHz	101.5	58.9	59.2
	@ 10.0 GHz	146.0	85.8	86.1
	@ 18.0 GHz	199.7	118.9	119.4
	@ 26.5 GHz	246.2	148.2	148.7
	@ 40.0 GHz	308.7	-	-
	@ 50.0 GHz	349.5	-	-
	@ 65.0 GHz	-	-	-
	@ 90.0 GHz	-	-	-
Power (Watts CW @ 20 °C, Maximum for non-plated outer conductor)	@ 0.5 GHz	142.7	347.1	346.2
	@ 1.0 GHz	100.5	243.6	243.1
	@ 5.0 GHz	44.2	105.7	105.5
	@ 10.0 GHz	30.9	73.1	73.0
	@ 18.0 GHz	22.7	53.1	53.0
	@ 26.5 GHz	18.5	42.9	42.8
	@ 40.0 GHz	14.8	-	-
	@ 50.0 GHz	13.1	-	-
	@ 65.0 GHz	-	-	-
	@ 90.0 GHz	-	-	-

Non-50 Ω

Our ODD impedance semi-rigid cables are the right solution for any impedance matching requirement and are available with impedances from 10 to 100 Ω and diameters from 0.020" to 0.250".

CarlisleIT Description		UT-034C-10	UT-043C-10	UT-070C-10	UT-075C-10	UT-044-12
CarlisleIT Description (Tin-Plated)		UT-034C-10-TP	UT-043C-10-TP	UT-070C-10-TP	UT-075C-10-TP	UT-044-12-TP
Dimensions						
Outer Conductor Diameter *in (mm)*		0.034 ± 0.001 (0.864 ± 0.025)	0.043 ± 0.001 (1.092 ± 0.025)	0.070 ± 0.001 (1.778 ± 0.025)	0.075 ± 0.001 (1.905 ± 0.025)	0.044 ± 0.002 (1.118 ± 0.051)
Center Conductor Diameter *in (mm)*		0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0285 ± 0.0005 (0.7239 ± 0.0127)	0.0403 ± 0.0005 1.0236 ± 0.0127)	0.0453 ± 0.0010 (1.1506 ± 0.0254)	0.0226 ± 0.0005 (0.5740 ± 0.0127)
Maximum Straight Length *ft (m)*		15 (4.57)	15 (4.57)	20 (6.10)	20 (6.10)	15 (4.57)
Materials						
Outer Conductor		Copper	Copper	Copper	Copper	Copper
Outer Conductor Plating		None or Tin	None or Tin	None or Tin	None or Tin	None or Tin
Dielectric		PFA	PFA	PFA	PFA	PFA
Center Conductor		SPC	SPC	SPC	SPC	SPCW
RoHS-Compliant		Yes	Yes	Yes	Yes	Yes
Mechanical Characteristics						
Outer Conductor Integrity Temperature		175 °C	175 °C	200 °C	225 °C	225 °C
Maximum Operating Temperature		150 °C	150 °C	175 °C	200 °C	200 °C
Minimum Inside Bend Radius *in (mm)*		0.125 (3.175)	0.125 (3.175)	0.125 (3.175)	0.125 (3.175)	0.125 (3.175)
Weight *lbs/ft (kg/m)*		0.32/100 (0.48/100)	0.47/100 (0.71/100)	1.35/100 (2.03/100)	1.50/100 (2.25/100)	0.51/100 (0.77/100)
Electrical Characteristics						
Characteristic Impedance Ω		10.0 ± 1.5	10.0 ± 1.5	10.0 ± 2.0	10.0 ± 1.0	12.0 ± 2.0
Capacitance *pF/ft (pF/m)*		145.1 (476.0)	145.1 (476.0)	145.1 (476.0)	145.1 (476.0)	120.9 (396.6)
Velocity of Propagation		70%	70%	70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	200 VRMS	200 VRMS	500 VRMS	500 VRMS	150 VRMS
Voltage Withstanding	@ 60 Hz	600 VRMS	900 VRMS	1200 VRMS	1500 VRMS	900 VRMS
Higher Order Mode Frequency		117 GHz	82 GHz	58 GHz	51 GHz	100 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	100.2	65.7	50.7	42.2	66.9
	@ 1.0 GHz	142.0	93.2	72.0	59.9	94.9
	@ 5.0 GHz	320.3	211.3	163.3	136.2	215.0
	@ 10.0 GHz	456.0	301.9	233.4	195.1	307.1
	@ 18.0 GHz	616.6	409.8	316.9	265.6	416.7
	@ 26.5 GHz	752.9	502.0	388.4	326.1	510.5
	@ 40.0 GHz	932.8	624.5	483.4	406.8	634.9
	@ 50.0 GHz	1,048.4	703.7	544.8	459.2	715.3
	@ 65.0 GHz	1,203.6	810.7	-	-	823.9
	@ 90.0 GHz	1,430.4	-	-	-	983.6
Power (Watts CW @ 20 °C, Maximum for non-plated outer conductor)	@ 0.5 GHz	15.0	27.6	43.2	55.0	27.6
	@ 1.0 GHz	10.6	19.5	30.5	38.8	19.5
	@ 5.0 GHz	4.7	8.6	13.5	17.1	8.6
	@ 10.0 GHz	3.3	6.0	9.5	12.0	6.0
	@ 18.0 GHz	2.4	4.5	7.0	8.8	4.5
	@ 26.5 GHz	2.0	3.6	5.7	7.2	3.7
	@ 40.0 GHz	1.6	2.9	4.6	5.8	2.9
	@ 50.0 GHz	1.4	2.6	4.1	5.1	2.6
	@ 65.0 GHz	1.3	2.3	-	-	2.3
	@ 90.0 GHz	1.1	-	-	-	1.9

CarlisleIT Description		UT-020-13	UT-085C-15	UT-141C-15	UT-034C-17	UT-062-18
CarlisleIT Description (Tin-Plated)		UT-020-13-TP	UT-085C-15-TP	UT-141C-15-TP	UT-034C-17-TP	UT-062-18-TP
Dimensions						
Outer Conductor Diameter *in (mm)*		0.023 ± 0.001 (0.584 ± 0.025)	0.0865 ± 0.0010 (2.197 ± 0.025)	0.141 ± 0.001 (3.581 ± 0.025)	0.034 ± 0.001 (0.864 ± 0.025)	0.062 ± 0.001 (1.575 ± 0.025)
Center Conductor Diameter *in (mm)*		0.0126 ± 0.0005 (0.3200 ± 0.0127)	0.0453 ± 0.0005 (1.1506 ± 0.0127)	0.0800 ± 0.0010 (2.0320 ± 0.0254)	0.0159 ± 0.0005 (0.4039 ± 0.0127)	0.0320 ± 0.0005 (0.8128 ± 0.0127)
Maximum Straight Length *ft (m)*		10 (3.05)	20 (6.10)	20 (6.10)	15 (4.57)	20 (6.10)
Materials						
Outer Conductor		Copper	Copper	Copper	Copper	Copper
Outer Conductor Plating		None or Tin	None or Tin	None or Tin	None or Tin	None or Tin
Dielectric		PTFE	PFA	PTFE	PTFE	PTFE
Center Conductor		SPCW	SPC	SPC	SPC	SPCW
RoHS-Compliant		Yes	Yes	Yes	Yes	Yes
Mechanical Characteristics						
Outer Conductor Integrity Temperature		125 °C	150 °C	175 °C	175 °C	150 °C
Maximum Operating Temperature		100 °C	125 °C	150 °C	150 °C	125 °C
Minimum Inside Bend Radius *in (mm)*		0.05 (1.27)	0.25 (6.35)	0.188 (4.775)	0.125 (3.175)	0.125 (3.175)
Weight *lbs/ft (kg/m)*		0.13/100 (0.20/100)	1.83/100 (2.75/100)	4.74/100 (7.12/100)	0.28/100 (0.42/100)	0.87/100 (1.31/100)
Electrical Characteristics						
Characteristic Impedance Ω		13.0 ± 3.0	15.0 ± 1.0	15.0 ± 1.0	17.0 ± 1.0	18.0 ± 2.0
Capacitance *pF/ft (pF/m)*		111.6 (366.1)	96.7 (317.3)	96.7 (317.3)	85.3 (280.0)	80.6 (264.4)
Velocity of Propagation		70%	70%	70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	150 VRMS	850 VRMS	750 VRMS	200 VRMS	1100 VRMS
Voltage Withstanding	@ 60 Hz	60 VRMS	2400 VRMS	3900 VRMS	1200 VRMS	2100 VRMS
Higher Order Mode Frequency		178 GHz	47 GHz	27 GHz	129 GHz	65 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	112.2	24.4	15.0	55.5	29.8
	@ 1.0 GHz	158.9	34.7	21.4	78.7	42.4
	@ 5.0 GHz	357.5	79.9	50.2	178.3	97.0
	@ 10.0 GHz	508.0	115.5	73.4	254.6	139.6
	@ 18.0 GHz	685.4	158.7	102.2	345.4	191.1
	@ 26.5 GHz	835.5	196.4	127.9	422.9	235.8
	@ 40.0 GHz	1,032.7	247.5	-	525.8	295.9
	@ 50.0 GHz	1,159.0	-	-	592.2	335.2
	@ 65.0 GHz	1,328.1	-	-	681.9	388.9
	@ 90.0 GHz	1,574.0	-	-	813.6	-
Power (Watts CW @ 20 °C, Maximum for non-plated outer conductor)	@ 0.5 GHz	6.2	106.9	320.6	27.0	66.7
	@ 1.0 GHz	4.4	75.2	224.7	19.0	46.9
	@ 5.0 GHz	2.0	32.8	96.8	8.4	20.6
	@ 10.0 GHz	1.4	22.8	66.6	5.9	14.3
	@ 18.0 GHz	1.0	16.7	48.2	4.4	10.5
	@ 26.5 GHz	0.8	13.5	38.7	3.6	8.6
	@ 40.0 GHz	0.7	10.8	-	2.9	6.8
	@ 50.0 GHz	0.6	-	-	2.6	6.1
	@ 65.0 GHz	0.5	-	-	2.2	5.2
	@ 90.0 GHz	0.4	-	-	1.9	-

Non-50 Ω

CarlisleIT Description		UT-062C-18	UT-034-25	UT-038C-25	UT-070C-25
CarlisleIT Description (Tin-Plated)		UT-062C-18-TP	UT-034-25-TP	UT-038C-25-TP	UT-070C-25-TP
Dimensions					
Outer Conductor Diameter *in (mm)*		0.062 ± 0.001 (1.575 ± 0.025)	0.034 ± 0.001 (0.864 ± 0.025)	0.038 ± 0.002 (0.965 ± 0.051)	0.070 ± 0.001 (1.778 ± 0.025)
Center Conductor Diameter *in (mm)*		0.0320 ± 0.0005 (0.8128 ± 0.0127)	0.0126 ± 0.0005 (0.3200 ± 0.0127)	0.0159 ± 0.0005 (0.4039 ± 0.0127)	0.0314 ± 0.0005 (0.7976 ± 0.0127)
Maximum Straight Length *ft (m)*		20 (6.10)	15 (4.57)	15 (4.57)	20 (6.10)
Materials					
Outer Conductor		Copper	Copper	Copper	Copper
Outer Conductor Plating		None or Tin	None or Tin	None or Tin	None or Tin
Dielectric		PTFE	PTFE	PTFE	PFA
Center Conductor		SPC	SPCW	SPC	SPC
RoHS-Compliant		Yes	Yes	Yes	Yes
Mechanical Characteristics					
Outer Conductor Integrity Temperature		150 °C	175 °C	175 °C	150 °C
Maximum Operating Temperature		125 °C	150 °C	150 °C	125 °C
Minimum Inside Bend Radius		0.125 (3.175)	0.05 (1.27)	0.125 (3.175)	0.125 (3.175)
Weight *lbs/ft (kg/m)*		0.89/100 (1.34/100)	0.28/100 (0.42/100)	0.33/100 (0.50/100)	1.04/100 (1.56/100)
Electrical Characteristics					
Characteristic Impedance Ω		18.0 ± 2.0	25.0 ± 2.0	25.0 ± 3.0	25.0 ± 1.5
Capacitance *pF/ft (pF/m)*		80.6 (264.4)	58.0 (190.4)	58.0 (190.4)	58.0 (190.4)
Velocity of Propagation		70%	70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	1100 VRMS	200 VRMS	200 VRMS	1500 VRMS
Voltage Withstanding	@ 60 Hz	2100 VRMS	1200 VRMS	1500 VRMS	3000 VRMS
Higher Order Mode Frequency		65 GHz	148 GHz	120 GHz	60 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	29.8	49.9	42.6	21.2
	@ 1.0 GHz	42.4	70.7	60.5	30.3
	@ 5.0 GHz	97.0	160.5	137.6	70.0
	@ 10.0 GHz	139.6	229.4	197.1	101.4
	@ 18.0 GHz	191.1	311.6	268.2	139.8
	@ 26.5 GHz	235.8	382.0	329.3	173.5
	@ 40.0 GHz	295.9	475.5	410.7	219.4
	@ 50.0 GHz	335.2	536.0	463.6	249.7
	@ 65.0 GHz	388.9	617.7	535.2	-
	@ 90.0 GHz	-	738.1	641.1	-
Power (Watts CW @ 20 °C, Maximum for non-plated outer conductor)	@ 0.5 GHz	66.7	30.0	38.4	103.2
	@ 1.0 GHz	46.9	21.2	27.1	72.5
	@ 5.0 GHz	20.6	9.4	12.0	31.5
	@ 10.0 GHz	14.3	6.6	8.4	21.9
	@ 18.0 GHz	10.5	4.8	6.2	15.9
	@ 26.5 GHz	8.6	4.0	5.0	12.9
	@ 40.0 GHz	6.8	3.2	4.0	10.2
	@ 50.0 GHz	6.1	2.8	3.6	9.0
	@ 65.0 GHz	5.2	2.5	3.1	-
	@ 90.0 GHz	-	2.1	2.6	-

CarlisleIT Description		UT-090C-25	UT-141C-25	UT-064SS-SS-30	UT-047C-35	UT-090C-35
CarlisleIT Description (Tin-Plated)		UT-090C-25-TP	UT-141C-25-TP	-	UT-047C-35-TP	UT-090C-35-TP
Dimensions						
Outer Conductor Diameter *in (mm)*		0.090 ± 0.001 (2.286 ± 0.025)	0.141 ± 0.001 (3.581 ± 0.025)	0.064 +0.002/-0.001 (1.626 +0.051/-0.025)	0.047 ± 0.001 (1.194 ± 0.025)	0.090 ± 0.001 (2.286 ± 0.025)
Center Conductor Diameter *in (mm)*		0.0403 ± 0.0010 (1.0236 ± 0.0254)	0.0640 ± 0.0010 (.6256 ± 0.0254)	0.0201 ± 0.0010 (1.6256 ± 0.0254)	0.0159 ± 0.0005 (0.4039 ± 0.0127)	0.0320 ± 0.0010 (0.8128 ± 0.0254)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)	20 (6.10)	20 (6.10)
Materials						
Outer Conductor		Copper	Copper	304 SS	Copper	Copper
Outer Conductor Plating		None or Tin	None or Tin	None	None or Tin	None or Tin
Dielectric		PFA	PFA	PTFE	PTFE	PTFE
Center Conductor		SPC	SPCW	304 SS	SPC	SPC
RoHS-Compliant		Yes	Yes	Yes	Yes	Yes
Mechanical Characteristics						
Outer Conductor Integrity Temperature		175 °C	175 °C	225 °C	175 °C	150 °C
Maximum Operating Temperature		125 °C	125 °C	200 °C	150 °C	125 °C
Minimum Inside Bend Radius *in (mm)*		0.125 (3.175)	0.188 (4.775)	0.25 (6.35)	0.125 (3.175)	0.125 (3.175)
Weight *lbs/ft (kg/m)*		1.69/100 (2.54/100)	4.02/100 (6.04/100)	0.88/100 (1.31/100)	0.43/100 (0.65/100)	1.51/100 (2.27/100)
Electrical Characteristics						
Characteristic Impedance Ω		25.0 ± 1.0	25.0 ± 1.0	30.0 ± 4.0	35.0 ± 1.5	35.0 ± 1.0
Capacitance *pF/ft (pF/m)*		58.0 (190.4)	58.0 (190.4)	48.4 (158.7)	41.5 (136.0)	41.5 (136.0)
Velocity of Propagation		70%	70%	70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	750 VRMS	1000 VRMS	900 VRMS	850 VRMS	1500 VRMS
Voltage Withstanding	@ 60 Hz	3900 VRMS	6300 VRMS	2700 VRMS	2400 VRMS	4800 VRMS
Higher Order Mode Frequency		46 GHz	29 GHz	85 GHz	100 GHz	50 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	16.1	10.1	161.7	26.2	13.3
	@ 1.0 GHz	23.0	14.6	228.9	37.3	19.1
	@ 5.0 GHz	53.8	38.8	514.1	85.7	45.1
	@ 10.0 GHz	78.5	51.7	729.5	123.6	66.2
	@ 18.0 GHz	109.2	73.2	982.6	169.7	92.6
	@ 26.5 GHz	136.3	92.7	1196.1	209.8	116.2
	@ 40.0 GHz	173.7	-	1475.7	263.9	148.9
	@ 50.0 GHz	-	-	1654.3	299.4	170.9
	@ 65.0 GHz	-	-	1892.8	348.1	-
	@ 90.0 GHz	-	-	-	420.8	-
Power (Watts CW @ 20 °C, Maximum for non-plated outer conductor)	@ 0.5 GHz	205.1	472.5	23.5	74.1	200.7
	@ 1.0 GHz	143.8	329.7	16.6	52.1	140.4
	@ 5.0 GHz	62.1	139.7	7.4	22.8	60.2
	@ 10.0 GHz	42.8	95.0	5.2	15.9	41.3
	@ 18.0 GHz	31.0	67.8	3.9	11.6	29.7
	@ 26.5 GHz	25.0	54.0	3.2	9.4	23.8
	@ 40.0 GHz	19.7	-	2.6	7.5	18.7
	@ 50.0 GHz	-	-	2.3	6.7	16.4
	@ 65.0 GHz	-	-	2.0	5.8	-
	@ 90.0 GHz	-	-	-	4.8	-

Semi-Rigid Coaxial Cable Cont'd

Non-50 Ω

CarlisleIT Description		UT-141C-35	UT-047-70	UT-141-70	UT-141C-70	UT-085-75	UT-141-75
CarlisleIT Description (Tin Plated)		UT-141C-35-TP	UT-047-70-TP	UT-141-70-TP	UT-141C-70-TP	UT-085-75-TP	UT-141-75-TP
Dimensions							
Outer Conductor Diameter *in (mm)*		0.141 ± 0.001 (3.581 ± 0.025)	0.047 ± 0.001 (1.194 ± 0.025)	0.141 ± 0.001 (3.581 ± 0.025)	0.141 ± 0.001 (3.581 ± 0.025)	0.085 +0.002/-0.001 (2.159 +0.051/-0.025)	0.141 ± 0.001 (3.581 ± 0.025)
Center Conductor Diameter *in (mm)*		0.0508 ± 0.0010 (1.2903 ± 0.0254)	0.0071 ± 0.0005 (0.1803 ± 0.0127)	0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0226 ± 0.0005 (0.5740 ± 0.0127)	0.0113 ± 0.0005 (0.2870 ± 0.0127)	0.0201 ± 0.0005 (0.5105 ± 0.0127)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)	20 (6.10)	20 (6.10)	20 (6.10)
Materials							
Outer Conductor		Copper	Copper	Copper	Copper	Copper	Copper
Outer Conductor Plating		None or Tin	None or Tin	None or Tin	None or Tin	None or Tin	None or Tin
Dielectric		PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
Center Conductor		SPC	SPCW	SPCW	SPC	SPCW	SPCW
RoHS-Compliant		Yes	Yes	Yes	Yes	Yes	Yes
Mechanical Characteristics							
Outer Conductor Integrity Temperature		175 °C	175 °C	150 °C	150 °C	150 °C	175 °C
Maximum Operating Temperature		125 °C	150 °C	125 °C	125 °C	125 °C	125 °C
Minimum Inside Bend Radius *in (mm)*		0.25 (6.35)	0.05 (1.27)	0.188 (4.775)	0.188 (4.775)	0.125 (3.175)	0.075 (1.905)
Weight *lbs/ft (kg/m)*		3.66/100 (5.49/100)	0.37/100 (0.56/100)	3.87/100 (5.81/100)	3.13/100 (4.70/100)	1.25/100 (1.88/100)	3.09/100 (4.64/100)
Electrical Characteristics							
Characteristic Impedance Ω		35.0 ± 2.0	70.0 ± 1.5	70.0 ± 1.0	70.0 ± 1.0	75.0 ± 1.0	75.0 ± 1.5
Capacitance *pF/ft (pF/m)*		41.5 (136.0)	20.7 (68.0)	20.7 (68.0)	20.7 (68.0)	19.3 (63.5)	19.3 (63.5)
Velocity of Propagation		70%	70%	70%	70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	1500 VRMS	1000 VRMS	2000 VRMS	1500 VRMS	1200 VRMS	2000 VRMS
Voltage Withstanding	@ 60 Hz	7800 VRMS	3600 VRMS	9600 VRMS	11100 VRMS	6600 VRMS	11400 VRMS
Higher Order Mode Frequency		31 GHz	117 GHz	43 GHz	38 GHz	67 GHz	38 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	8.6	24.6	9.2	8.2	14.5	8.4
	@ 1.0 GHz	12.4	35.0	13.3	11.8	20.7	12.1
	@ 5.0 GHz	30.1	80.5	32.0	28.7	48.7	29.4
	@ 10.0 GHz	45.0	116.2	47.7	43.0	71.3	44.1
	@ 18.0 GHz	64.1	159.8	67.8	61.5	99.4	62.9
	@ 26.5 GHz	81.7	197.7	86.2	78.5	124.5	80.2
	@ 40.0 GHz	-	249.1	112.1	-	159.1	-
	@ 50.0 GHz	-	282.9	-	-	182.3	-
	@ 65.0 GHz	-	329.2	-	-	214.5	-
	@ 90.0 GHz	-	398.6	-	-	-	-
Power (Watts CW @ 20 °C, Maximum for non-plated outer conductor)	@ 0.5 GHz	552.5	78.1	409.5	463.2	144.0	549.1
	@ 1.0 GHz	384.6	55.0	285.4	322.2	100.8	382.3
	@ 5.0 GHz	161.5	24.0	120.2	134.7	43.4	160.6
	@ 10.0 GHz	109.2	16.7	81.5	90.9	29.8	108.6
	@ 18.0 GHz	77.5	12.2	57.9	64.3	21.5	77.1
	@ 26.5 GHz	61.3	9.9	46.0	50.8	17.3	61.0
	@ 40.0 GHz	-	7.9	35.7	-	13.6	-
	@ 50.0 GHz	-	7.0	-	-	11.9	-
	@ 65.0 GHz	-	6.0	-	-	10.2	-
	@ 90.0 GHz	-	5.0	-	-	-	-

CarlisleIT Description		UT-141C-75	UT-250-75	UT-085-93	UT-130-93	UT-034-95	UT-141-100
CarlisleIT Description (Tin-Plated)		UT-141C-75-TP	UT-250-75-TP	UT-085-93-TP	UT-130-93-TP	UT-034-95-TP	UT-141-100-TP
Dimensions							
Outer Conductor Diameter *in (mm)*		0.141 ± 0.001 (3.581 ± 0.025)	0.250 ± 0.001 (6.350 ± 0.025)	0.085 ± 0.001 (2.159 ± 0.025)	0.130 ± 0.001 (3.302 ± 0.025)	0.034 ± 0.001 (0.864 ± 0.025)	0.141 ± 0.001 (3.581 ± 0.025)
Center Conductor Diameter *in (mm)*		0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0359 ± 0.0010 (0.9119 ± 0.0254)	0.0080 ± 0.0005 (0.2032 ± 0.0127)	0.0113 ± 0.0005 (0.2870 ± 0.0127)	0.0028 ± 0.0005 (0.0711 ± 0.0127)	0.0100 ± 0.0005 (0.2540 ± 0.0127)
Maximum Straight Length *ft (m)*		20 (6.10)	20 (6.10)	20 (6.10)	20 (6.10)	15 (6.10)	20 (6.10)
Materials							
Outer Conductor		Copper	Copper	Copper	Copper	Copper	Copper
Outer Conductor Plating		None or Tin	None or Tin	None or Tin	None or Tin	None or Tin	None or Tin
Dielectric		PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
Center Conductor		SPC	SPCW	SPCW	SPCW	SPCW	SPCW
RoHS-Compliant		Yes	Yes	Yes	Yes	Yes	Yes
Mechanical Characteristics							
Outer Conductor Integrity Temperature		175 °C	150 °C	150 °C	175 °C	150 °C	150 °C
Maximum Operating Temperature		125 °C	100 °C	125 °C	125 °C	125 °C	125 °C
Minimum Inside Bend Radius *in (mm)*		0.25 (6.35)	0.5 (12.7)	0.125 (3.175)	0.188 (4.775)	0.05 (1.27)	0.25 (6.35)
Weight *lbs/ft (kg/m)*		3.10/100 (4.65/100)	9.15/100 (13.74/100)	1.03/100 (1.55/100)	2.86/100 (4.29/100)	0.19/100 (0.29/100)	3.03/100 (4.55/100)
Electrical Characteristics							
Characteristic Impedance Ω		75.0 ± 1.5	75.0 ± 1.5	93.0 ± 2.0	93.0 ± 1.5	95.0 ± 4.0	100.0 ± 4.0
Capacitance *pF/ft (pF/m)*		19.3 (63.5)	19.3 (63.5)	15.6 (51.2)	15.6 (51.2)	15.3 (50.1)	14.5 (47.6)
Velocity of Propagation		70%	70%	70%	70%	70%	70%
Corona Extinction Voltage	@ 60 Hz	2000 VRMS	3000 VRMS	1200 VRMS	1500 VRMS	1000 VRMS	1500 VRMS
Voltage Withstanding	@ 60 Hz	11400 VRMS	20700 VRMS	7500 VRMS	10800 VRMS	2700 VRMS	12600 VRMS
Higher Order Mode Frequency		38 GHz	21 GHz	65 GHz	46 GHz	177 GHz	41 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	8.4	4.8	15.6	11.2	42.5	11.1
	@ 1.0 GHz	12.1	7.1	22.3	16.1	60.4	15.9
	@ 5.0 GHz	29.4	18.1	52.2	38.2	137.4	37.9
	@ 10.0 GHz	44.1	28.1	76.3	56.4	196.7	56.0
	@ 18.0 GHz	62.9	41.4	106.1	79.5	267.7	79.0
	@ 26.5 GHz	80.2	-	132.6	100.4	328.7	99.7
	@ 40.0 GHz	-	-	169.2	129.5	410.1	128.7
	@ 50.0 GHz	-	-	193.5	-	462.8	-
	@ 65.0 GHz	-	-	227.3	-	534.4	-
	@ 90.0 GHz	-	-	-	-	640.0	-
Power (Watts CW @ 20 °C, Maximum for non-plated outer conductor)	@ 0.5 GHz	549.1	1,234.0	159.4	380.6	28.2	332.3
	@ 1.0 GHz	382.3	849.1	111.8	266.1	19.9	232.2
	@ 5.0 GHz	160.6	341.0	48.2	113.5	8.8	98.9
	@ 10.0 GHz	108.6	224.0	33.2	77.6	6.1	67.5
	@ 18.0 GHz	77.1	154.2	24.0	55.7	4.5	48.4
	@ 26.5 GHz	61.0	-	19.3	44.5	3.7	38.6
	@ 40.0 GHz	-	-	15.3	34.9	3.0	30.2
	@ 50.0 GHz	-	-	13.4	-	2.6	-
	@ 65.0 GHz	-	-	11.5	-	2.3	-
	@ 90.0 GHz	-	-	-	-	1.9	-

Cable Preconditioning

[Per MIL-DTL-17]

The electromechanical performance specified for semi-rigid cables is achieved by a compression fit between the outer conductor and the dielectric core which, in turn, necessitates manufacturing processes that cause core deformation by compression and elongation. The resulting stress, which is initially nonuniform, tends to equalize by cold flow within a few weeks after manufacturing, and will cause the core to withdraw into the cable. If this occurs in cable that has become part of a cable assembly, the resultant development of an air void of the cable-connector interface may cause VSWR increases. It is therefore advantageous to achieve core stress relief by preconditioning cable before it becomes a cable assembly.

Preconditioning is not effective on long lengths of cable. Cable bending, which is usually involved with the manufacture of cable assemblies, tends to introduce nonuniform core stresses; therefore, CarlisleIT recommends preconditioning after bending and before attaching the connectors. Since preconditioning will result in the withdrawal of the dielectric into the cable, preparation of the cable assembly should allow for a 0.25" length on each cable end beyond the design dimension. The outer conductor and the core should not be cut to the final dimensions until preconditioning has been completed.

A recommended preconditioning procedure consists of three cycles of the following routine:

- Step 1 — Heat the specimen to the maximum operating temperature and maintain for a minimum of one hour.
- Step 2 — Return specimen to room-ambient temperature. Trim protruding core, if any, and flush with the edge of the outer conductor.
- Step 3 — Maintain the specimen at room temperature for a minimum of one hour.
- Step 4 — Cool the specimen to -45 °C and maintain for a minimum of one hour.
- Step 5 — Return the specimen to room temperature and maintain for a minimum of one hour.

After the last temperature cycle, maintain the specimen at room temperature for a minimum of 24 hours before proceeding with further processing.

Special preconditioning requirements can be obtained by consulting the engineering staff at CarlisleIT.

Phase vs. Temperature Characteristics

Exposure of PTFE-Insulated Cables to Elevated Temperatures

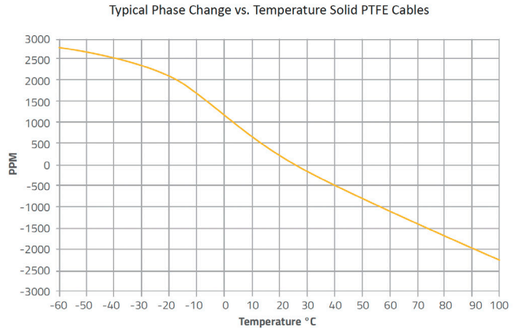
Exposure of cables with PTFE insulation to elevated temperatures causes stressing of the outer conductor since the thermal expansion coefficient of the core insulation is about 10X greater than that of the metal conductors. The effects of this outer conductor stressing require distinction of two temperature levels as cables are subjected to increasing temperatures.

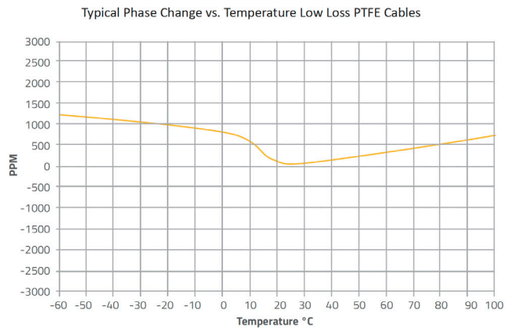
Recommended Maximum Operating Temperature

The first significant effect on cable characteristics occurs as the expansive forces on the core material exceed the yield strength of the outer conductor material, resulting in a permanent increase in impedance, and a permanent decrease in capacitance, core adhesion, and corona extinction potential. The temperature at which such changes begin is the maximum recommended operating temperature. This has been determined by testing one-foot-long specimens until a discernible increase in outer conductor OD was measured on 30% of the number of test specimens.

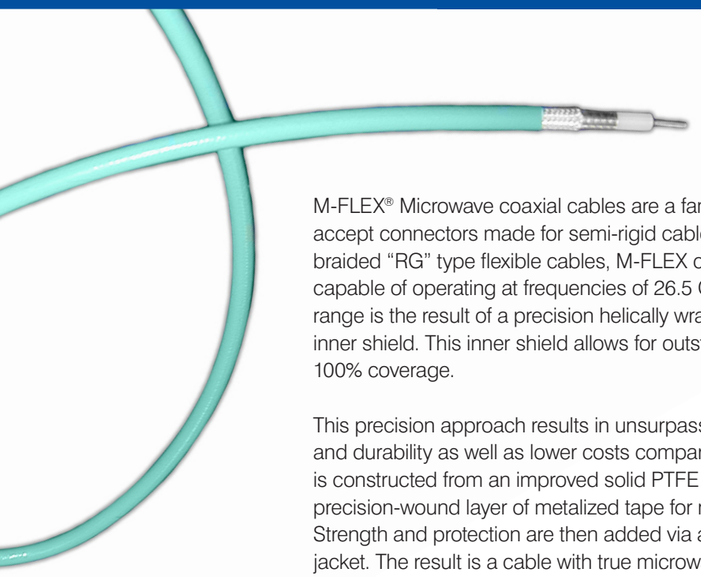
Outer Conductor Integrity Test Temperature

The second significant effect of temperature exposure is to cause catastrophic failure of the outer conductor as the core stresses exceed the tensile strength of the outer conductor material. This temperature is the outer conductor integrity test temperature, which has been determined by testing two-foot-long specimens, with no failures allowed at the rated temperature. (For test details, refer to MIL-DTL-17.)





M-FLEX® Flexible Cable



M-FLEX® Microwave coaxial cables are a family of flexible cables designed to accept connectors made for semi-rigid cable. Unlike other single- or double-braided “RG” type flexible cables, M-FLEX cables are true microwave cables capable of operating at frequencies of 26.5 GHz. The extended frequency range is the result of a precision helically wrapped silver-plated copper foil inner shield. This inner shield allows for outstanding flexibility while providing 100% coverage.

This precision approach results in unsurpassed improvements in shielding and durability as well as lower costs compared to similar products. M-FLEX is constructed from an improved solid PTFE dielectric core underneath a precision-wound layer of metalized tape for nearly ideal microwave shielding. Strength and protection are then added via a round wire braid and FEP outer jacket. The result is a cable with true microwave performance and excellent mechanical characteristics. M-FLEX is also easy to use since it strips with standard tools and accepts standard solder-on connectors designed for semi-rigid cable.

Features & Benefits

High Performance

» Helical shield for improved loss and phase stability

» Same line size as semi-rigid cable to optimize assembly loss and VSWR

» RF shielding greater than 90 dB to minimize cross-talk and maximize system performance

Easy to Use

» Fully flexible for ease of installation

» Uses standard machines for cutting and stripping with no added investment in time or equipment

» Designed for standard solder-on connectors, which are readily available and easy to use

Availability

» Stock

» Packaged on spools in lengths of 50' to 1000' to meet a wide variety of volume requirements

» Metric lengths available for added flexibility

» Low-smoke, zero-halogen jacket options to meet specific requirements

» Preassembled with connectors upon request for added convenience

CarlisleIT Description		TGE055D	HFE100D	HFE160D
Dimensions				
Cable Diameter *in (mm)*		0.055 ± 0.004 (1.397 ± 0.102)	0.100 ± 0.004 (2.540 ± 0.102)	0.160 ± 0.004 (4.064 ± 0.102)
Outer Shell Diameter *in (mm)*		0.044 ± 0.003 (1.118 ± 0.076)	0.082 ± 0.003 (2.083 ± 0.076)	0.138 ± 0.003 (3.505 ± 0.076)
Dielectric Diameter *in (mm)*		0.034 ± 0.001 (0.864 ± 0.025)	0.066 ± 0.002 (1.676 ± 0.051)	0.118 ± 0.002 (2.997 ± 0.051)
Center Conductor Diameter *in (mm)*		0.0113 ± 0.0005 (0.287 ± 0.0127)	0.0201 ± 0.0005 (0.5105 ± 0.0127)	0.0359 ± 0.0005 (0.9119 ± 0.0127)
Maximum Continuous Length *ft(m)*		25 (7.6)	25 (7.6)	25 (7.6)
Materials				
Outer Jacket		Blue PFA	Light Aqua FEP	Light Aqua FEP
Outer Shield		SPC	SPC	SPC
Inner Shield		SPC	SPC	SPC
Dielectric		PTFE	PTFE	PTFE
Center Conductor		SPCW	SPCW	SPCW
RoHS-Compliant		Yes	Yes	Yes
Mechanical Characteristics				
Temperature Range		-65 °C to 125 °C	-65 °C to 125 °C	-65 °C to 125 °C
Minimum Inside Bend Radius *in (mm)*		0.125 (3.175)	0.250 (6.35)	0.500 (12.7)
Weight *lbs/ft (kg/m)*		0.35/100 (0.53/100)	1.14/100 (1.71/100)	2.90/100 (4.35/100)
Electrical Characteristics				
Characteristic Impedance Ω		50	50	50
Capacitance *pF/ft (pF/m)*		29 (95)	29 (95)	29 (95)
Velocity of Propagation		70%	70%	70%
Shielding Effectiveness		>70 dB	>90 dB	>90 dB
Maximum Voltage		1000 VRMS	1500 VRMS	1900 VRMS
Signal, Delay *ns/ft (ns/m)*		1.45 (4.76)	1.45 (4.76)	1.45 (4.76)
Frequency Range		DC - 26.5 GHz	DC - 18 GHz	DC - 18 GHz
Attenuation (dB/100 ft, Typical)	@ 0.5 GHz	25.9	13.4	7.6
	@ 1.0 GHz	37.0	19.2	10.9
	@ 5.0 GHz	84.8	45.2	26.8
	@ 10.0 GHz	122.5	66.4	40.4
	@ 18.0 GHz	168.1	92.9	58.0
	@ 26.5 GHz	207.9	116.7	74.2
Power (Watts CW @ 20 °C, Maximum for non-plated outer conductor)	@ 0.5 GHz	98.1	307.6	788.3
	@ 1.0 GHz	59.0	215.5	548.5
	@ 5.0 GHz	30.2	92.7	229.8
	@ 10.0 GHz	21.0	53.8	155.1
	@ 18.0 GHz	15.4	46.0	109.8
	@ 26.5 GHz	12.5	37.0	86.9

Ordering & Service Information

How to Order

Please order by catalog part number and/or drawing number, adding any special requirements, such as plating. Lengths must be given when purchasing any cable type.

Where to Order

Address all purchase orders and communications to:

Carlisle Interconnect Technologies
206 Jones Boulevard
Pottstown, PA 19464-3465
Phone: 610-495-0110
Fax: 610-495-6656
Email: Pottstown.Sales@CarlisleIT.com
Web: CarlisleIT.com/Micro-Coax

Terms

Formal price quotations remain in effect for thirty (30) days unless otherwise agreed upon. Terms of payment are net thirty (30) days, subject to approval of credit. Estimated shipment is based on material availability and factory capacity at the time of quote and, as such, is subject to prior sale.

Sample Policy

Samples are normally available for most standard stock items. A cable sample quantity of 2' is applicable. Non-stock items may be sampled depending on availability at the time of the request.

Source Inspection

Prices quoted are based on inspection at destination. A charge per day or part of a day applies to any order requiring source inspection.

Shipments

Unless specific instructions accompany the order, shipment is made FOB Pottstown, PA. CarlisleIT will use its judgment as to the best method of shipment. CarlisleIT reserves the right to ship COD or upon receipt of advance payment if satisfactory credit cannot be established. All claims for shortages must be made within ten (10) days after receipt of material from CarlisleIT.

Return Policy

Please contact us for an RMA number before returning products. The RMA number should be referenced on the packing container and all associated paperwork.

Nonrecurring Engineering Charges

Nonrecurring engineering charges, if any, reimburse CarlisleIT in part for tools and fixtures needed for a particular job. They do not give the customer any claim or right to remove these tools from the CarlisleIT plant or to have a say in the use or disposition of these tools. There will be no charge for upkeep or repair of tools and fixtures. Upon completion of the order, CarlisleIT may dispose of said tools and fixtures as it sees fit.

Equations & Symbols

Characteristic Impedance

$$Z_0 = \frac{138}{\sqrt{e}} \cdot \log\left(\frac{D}{d}\right)(\Omega)$$

$$Z_0 = \frac{138}{\sqrt{e}} \cdot \log\left(\frac{D}{d}\right)(\Omega)$$

Delay

English

$$T = 1.017 \cdot \sqrt{e} \text{ ns/ft}$$

$$L = \frac{0.984 \cdot T}{\sqrt{e}} \text{ ft}$$

Metric

$$T = 3.336 \cdot \sqrt{e} \text{ ns/m}$$

$$L = \frac{0.300 \cdot T}{\sqrt{e}} \text{ m}$$

Cutoff Frequency

$$F_{CO} = \frac{7.514}{\sqrt{e} \cdot (D+d)} \text{ GHz}$$

Velocity of Propagaton

$$VP = \frac{1}{\sqrt{e}} \cdot 100 \quad \text{\% of Free Space Velocity}$$

Cable Rise Time (10% to 90% Amplitude)

$$T_r = 1.315 \cdot A^2 \cdot L^2 \cdot 10^{-2} \text{ ps}$$

Attenuation (Theoretical) at 20 °C

$$\alpha = \frac{0.434 \cdot \sqrt{f}}{Z_o}\left(\frac{\sqrt{R_1}}{d} + \frac{\sqrt{R_2}}{D}\right) + 2.78 \cdot f \cdot \sqrt{e} \cdot F_p \text{ dB/100 ft}$$

Symbol Key

α	Attenuation
A	Attenuation in db/100 feet at 1 GHz
d	Center conductor diameter, inches
D	Dielectric diameter, inches
e	Dielectric constant
f	Frequency in MHz
f_{co}	Cutoff frequency in GHz
F_p	Dielectric power factor
L	Length
ps	Picoseconds
R_1	Ratio of center conductor conductivity to copper
R_2	Ratio of outer conductor conductivity to copper
T	Time in nanoseconds (ns)
T_r	Rise time in picoseconds (ps)
VP	Velocity of propagation
Z_o	Characteristics impedance

Cable Rise Time (10% to 90% Amplitude)

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