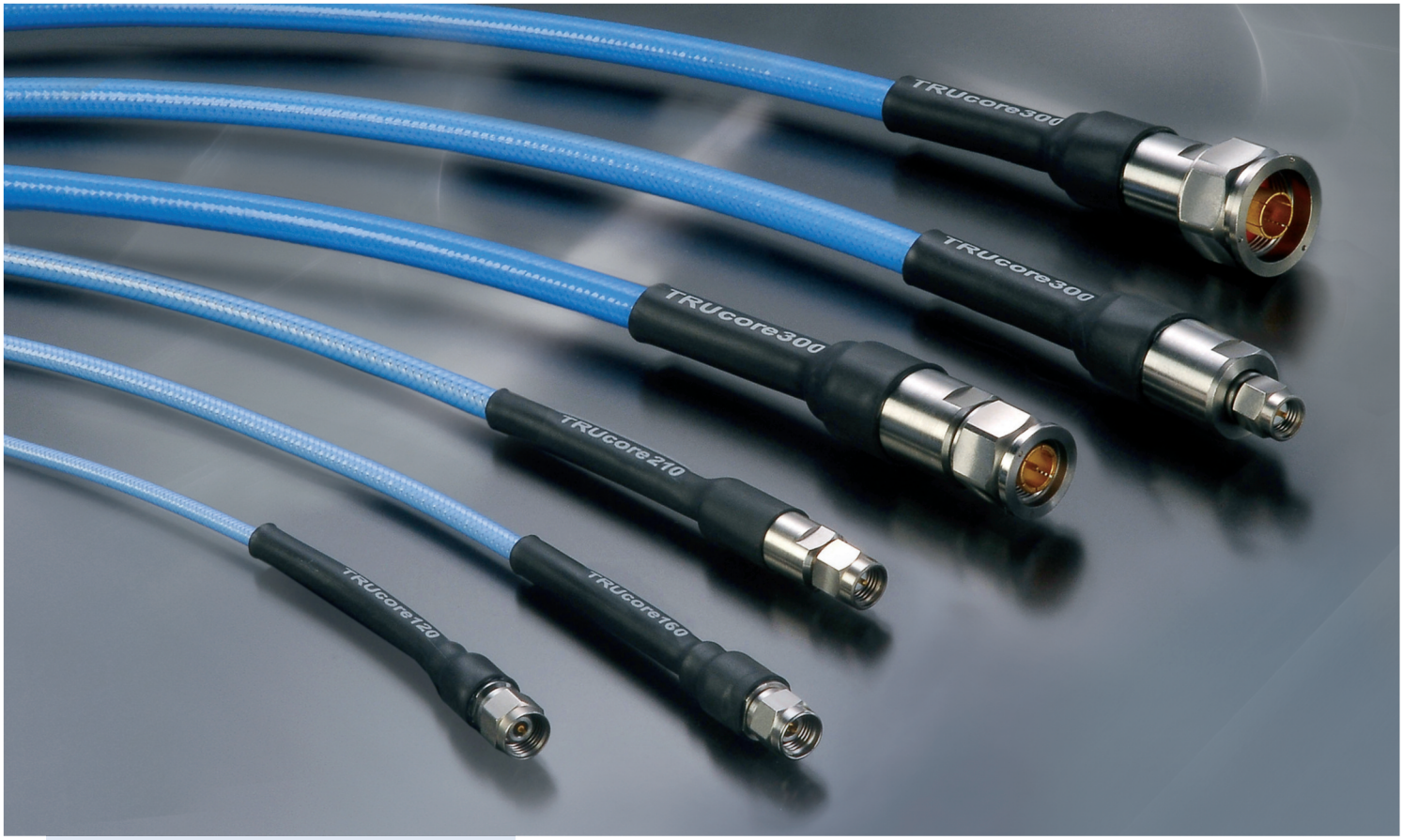
TRUcore™ Series

a division of WINCHESTER ELECTRONICS



TRUcore™ Series Cable Assemblies

- Broadband to 50 GHz
- Enhanced torque and crush resistance
- Stainless steel connectors
- Excellent VSWR and phase stability
- Environmentally sealed
- Ideal for ground-based, sea and airborne platforms

TRUcore™ series cable assemblies offer a new level of RF and microwave performance combined with superior mechanical and environmental durability. TRUcore™ series assemblies are available for 18, 26.5, 40 and 50 GHz broadband electrical performance. TRUcore™ provides designers with a mechanically durable construction that will not degrade under real life torque, vibration, crush, or kinking forces that may be found in your critical application. TRUcore™ provides a flexible coax solution without the need for supplemental armor or jacket layers to protect the controlled density core of the cable.

TRUcore™ series cable assemblies utilize an innovative core design that provides excellent phase stability over temperature and offers greater than two times the crush and torsional resistance of industry specifications even while remaining under load conditions. Our unique TRUtie™ cable-connector attachment technology is designed to eliminate the cable junction as a point of mechanical stress failure. All connector designs employ passivated stainless steel construction for durability and are individually optimized for broadband VSWR performance.

In addition to the broad range of standard configurations in this series, TRU can also provide custom design solutions for your challenging applications. Our experienced Applications Engineering team is available to personally work with your design team to answer all your technical questions.

Visit our website or contact your local authorized distribution office for additional support and product information at trucorporation.com

TRUcore™ Series

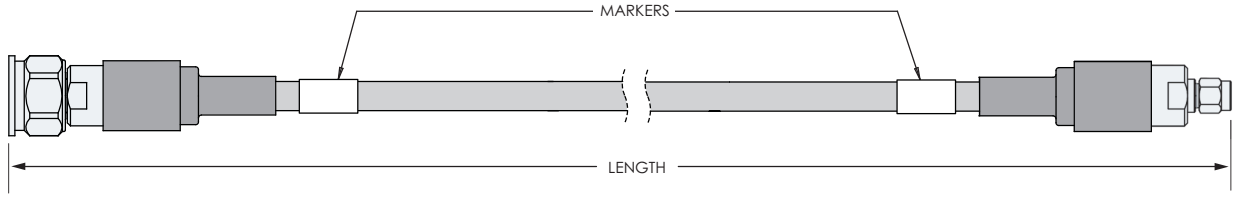
Specifying TRUcore™ Cable Assemblies

TRUcore™ series cable assemblies offer 18, 26.5, 40 and 50 GHz broadband frequency performance. Our cable assemblies utilize an innovative core design that offers greater than 2 times the crush and torque resistance of conventional tape wrap cable. These cables are flexible and ensure outstanding resistance to kinking and wear without the need for heavier and expensive supplemental armor. TRUcore™ series assemblies are available in a variety of standard connector interfaces for shorter lead time delivery and can be specified to custom lengths for your application. Connectors are stainless steel construction for long service life and repeatability.

Standard Cable Assembly Length Tolerances

Lengths ≤ 50 in (1,270 mm), tolerance = +/- 0.50 in (12,7 mm)

Lengths > 50 in (1,270 mm), tolerance = +/- 1% of length



TRU - XXB XXXX - XXX

- Length measured end to end. Ex: 125 is 12.5 feet*
  Add "M" as suffix for metric. Ex: 305M is 30,5 meters†
- Connector 2
- Connector 1
- Cable type

* Specify length in 0.5 ft increments
† Specify length in 0,1 m increments

Ordering Specifications

Cable Codes	Description
30B	TRU-300
21B	TRU-210
16B	TRU-160
12B	TRU-120

Connector Codes*	Description
11	N straight (m)
33	ATNC straight (m)
07	SMA straight (m)
03	2.92 mm straight (m)
01	2.4 mm straight (m)

* Designate the lower number connector code **first** in the part number specification sequence
Example: TRU-XXB0711-XXX

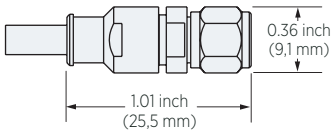
TRUcore™ Series

Standard Connector Options

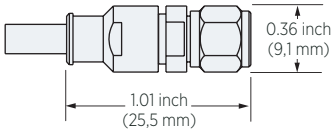
TRUcore™ series cable assemblies are available in standard connector interface configurations shown below. Each is designed specifically for use with TRUcore™ cable to optimize electrical performance and ensure high levels of mechanical and environmental durability. Each connector features an internal captive design with passivated stainless steel bodies and slotted spring finger interfaces (N and ATNC) for long life and use in applications where vibration may be present. Our unique TRUtie™ clamp method for cable-connector attachment provides best in class retention and exceeds all reference military specifications. Custom connector configurations are also available to meet your application requirement.

Connector Options

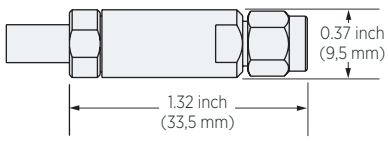
Interface	N	ATNC	SMA	2.9 mm	2.4 mm
Frequency (GHz, maximum)	18	18	26.5	40	50
Cable Option	TRU-300	TRU-300	TRU-300 and 210	TRU-160	TRU-120
Mating Cycles (minimum)	500	500	500	500	500
Recommended Mating Torque	23 in-lbs (2,6 Nm)	23 in-lbs (2,6 Nm)	9 in-lbs (1,0 Nm)	9 in-lbs (1,0 Nm)	9 in-lbs (1,0 Nm)



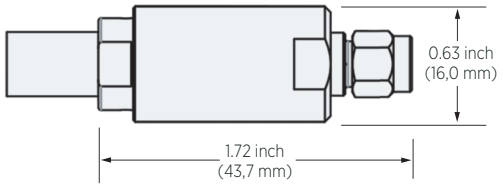
2.4 mm TRU-120 Straight Plug



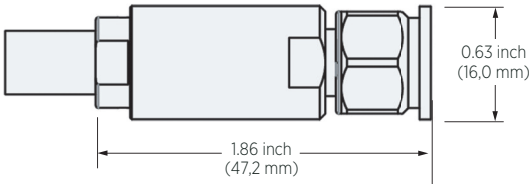
2.9 mm TRU-160 Straight Plug



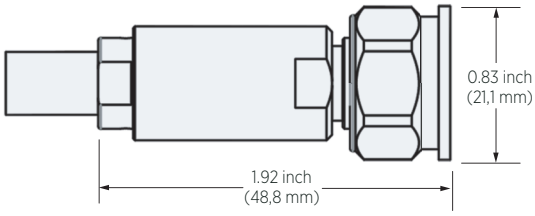
SMA TRU-210 Straight Plug



SMA TRU-300 Straight Plug



ATNC TRU-300 Straight Plug



Type N TRU-300 Straight Plug

TRUcore™ Specifications

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	TRUcore™ 300	TRUcore™ 210
Cable Outer Diameter	0.30 inch (7,6 mm) nominal 	0.21 inch (5,3 mm) nominall 
Electrical		
Operating Frequency	18.0 GHz	26.5 GHz
Impedance	50 Ohms nominal	50 Ohms nominal
Velocity of Propagation	78% nominal	78% nominal
VSWR	1.35:1 max. (0.05-18 GHz) See graph for typical performance.	1.35:1 max. (0.05-18 GHz) 1.45:1 max. (18-26.5 GHz) See graph for typical performance.
Attenuation	0.28 dB/ft + 0.35 @ 18 GHz See graph for typical performance.	0.41 dB/ft + 0.35 @ 18 GHz 0.53 dB/ft + 0.50 @ 26.5 GHz See graph for typical performance.
Shielding Effectiveness	> -90 dB	> -90 dB
Mechanical		
Cable/Connector Retention	Exceeds MIL-T-81490 and MIL-C-87104	Exceeds MIL-T-81490 and MIL-C-87104
Torque Resistance	Exceeds MIL-T-81490 and MIL-C-87104	Exceeds MIL-T-81490 and MIL-C-87104
Crush Resistance	>2x MIL-T-81490 and MIL-C-87104 performance requirements under concentrated load conditions	>2x MIL-T-81490 and MIL-C-87104 performance requirements under concentrated load conditions
Phase vs. Flexure	+/- 0.15 degrees per GHz typical, see graph	+/- 0.15 degrees per GHz typical, see graph
Flexure Life	100,000 cycles minimum per MIL-C-87014	100,000 cycles minimum per MIL-C-87014
Minimum Bend Radius (Dynamic)	1.50 inch (38,1 mm)	1.00 inch (25,4 mm)
Minimum Bend Radius (Static)	0.90 inch (22,9 mm)	0.63 inch (16,0 mm)
Mating Torque	SMA: 9 in-lbs. (1,0 Nm) 0.312 hex Type N: 23 in-lbs. (2,6 Nm) 0.750 hex ATNC: 23 in-lbs. (2,6 Nm) 0.562 hex	SMA: 9 in-lbs. (1,0 Nm) 0.312 hex
Mating Durability	500 cycles minimum	500 cycles minimum
Cable Materials	Silver plated, copper center conductor Expanded, PTFE dielectric Silver plated, copper shield layers Extruded FEP jacket	Silver plated, copper center conductor Expanded, PTFE dielectric Silver plated, copper shield layers Extruded FEP jacket
Connector Materials	Passivated, stainless steel outer bodies Gold plated, BeCu spring fingers, brass contacts PTFE insulators Gaskets/O-rings: silicone, fluoroelastomer	Passivated, stainless steel outer bodies Gold plated, BeCu spring fingers, brass contacts PTFE insulators Gaskets/O-rings: silicone, fluoroelastomer
Environmental		
Temperature	-65 to +165°C	-65 to +165°C
Moisture Resistance	MIL-STD-202, Method 106G	MIL-STD-202, Method 106G
Salt Atmosphere (Corrosion)	MIL-STD-202, Method 101E Cond B	MIL-STD-202, Method 101E Cond B
Phase vs Temperature	<1,500 PPM, see graph	<1,500 PPM, see graph
Vibration	MIL-STD-202, Method 204	MIL-STD-202, Method 204Flame Resistance & Smoke
Flame Resistance and Smoke	UL94 V-0	UL94 V-0

TRUcore™ Series

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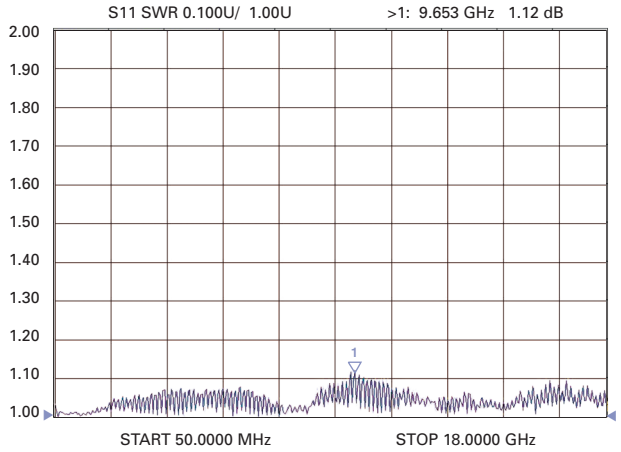
	TRUcore™ 160	TRUcore™ 120
Cable Outer Diameter	0.16 inch (4,1 mm) nominal	0.12 inch (3,0 mm) nominal
Electrical		
Operating Frequency	40.0 GHz	50.0 GHz
Impedance	50 Ohms nominal	50 Ohms nominal
Velocity of Propagation	78% nominal	78% nominal
VSWR	1.35:1 max. (0.05-18 GHz) 1.45:1 max. (18-26.5 GHz) 1.50:1 max. (26.5-40 GHz) See graph for typical performance.	1.35:1 max. (0.05-18 GHz) 1.45:1 max. (18-26.5 GHz) 1.50:1 max. (26.5-50 GHz) See graph for typical performance.
Attenuation	0.61 dB/ft + 0.35 @ 18 GHz 0.77 dB/ft + 0.50 @ 26.5 GHz 1.00 dB/ft + 0.70 @ 40 GHz See graph for typical performance.	0.79 dB/ft + 0.35 @ 18 GHz 0.99 dB/ft + 0.50 @ 26.5 GHz 1.44 dB/ft + 0.70 @ 50 GHz See graph for typical performance.
Shielding Effectiveness	> -90 dB	> -90 dB
Mechanical		
Cable/Connector Retention	Exceeds MIL-T-81490 and MIL-C-87104	Exceeds MIL-T-81490 and MIL-C-87104
Torque Resistance	Exceeds MIL-T-81490 and MIL-C-87104	Exceeds MIL-T-81490 and MIL-C-87104
Crush Resistance	>2x MIL-T-81490 and MIL-C-87104 performance requirements under concentrated load conditions	>2x MIL-T-81490 and MIL-C-87104 performance requirements under concentrated load conditions
Phase vs. Flexure	+/- 0.15 degrees per GHz typical, see graph	+/- 0.15 degrees per GHz typical, see graph
Flexure Life	100,000 cycles minimum per MIL-C-87014	100,000 cycles minimum per MIL-C-87014
Minimum Bend Radius (Dynamic)	0.80 inch (20,3 mm)	0.60 inch (15,2 mm)
Minimum Bend Radius (Static)	0.48 inch (12,2 mm)	0.36 inch (9,1 mm)
Mating Torque	2.9 mm: 9 in-lb (1,0 Nm) 0.312 hex	2.4 mm: 9 in-lb (1,0 Nm) 0.312 hex
Mating Durability	500 cycles minimum	500 cycles minimum
Cable Materials	Silver plated, copper center conductor Expanded, PTFE dielectric Silver plated, copper shield layers ExExtruded FEP jacket	Silver plated, copper center conductor Expanded, PTFE dielectric Silver plated, copper shield layers Extruded FEP jacket
Connector Materials	Passivated, stainless steel outer bodies Gold plated, BeCu/brass contacts PTFE insulators Gaskets/O-rings: silicone, fluoroelastomer	Passivated, stainless steel outer bodies Gold plated, BeCu/brass contacts PTFE insulators Gaskets/O-rings: silicone, fluoroelastomer
Environmental		
Temperature	-65 to +125°C	-65 to +125°C
Moisture Resistance	MIL-STD-202, Method 106G less step 7b	MIL-STD-202, Method 106G less step 7b
Salt Atmosphere (Corrosion)	MIL-STD-202, Method 101E Cond B	MIL-STD-202, Method 101E Cond B
Phase vs Temperature	<1,500 PPM, see graph	<1,500 PPM, see graph
Vibration	MIL-STD-202, Method 204	MIL-STD-202, Method 204
Flame Resistance and Smoke	UL94 V-0	UL94 V-0

TRUcore™ Series

TRUcore™ 300

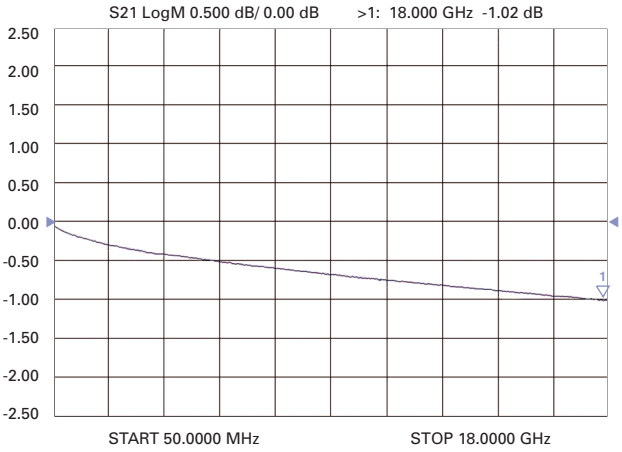
Typical VSWR

SMA straight plug to SMA straight plug
36 inches (914,4 mm) long



Typical Insertion Loss

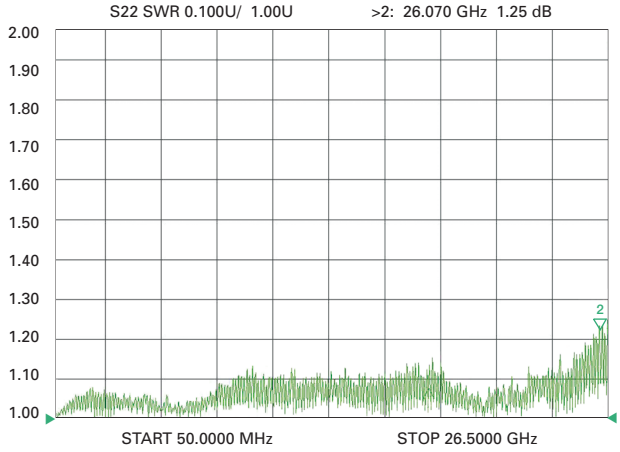
SMA straight plug to SMA straight plug
36 inches (914,4 mm) long



TRUcore™ 210

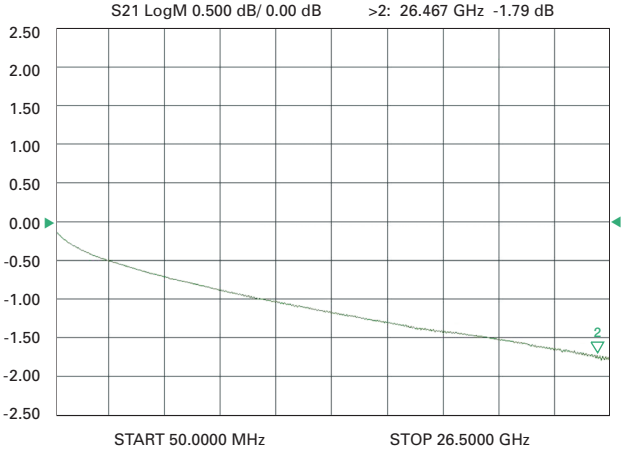
Typical VSWR

SMA straight plug to SMA straight plug
36 inches (914,4 mm) long

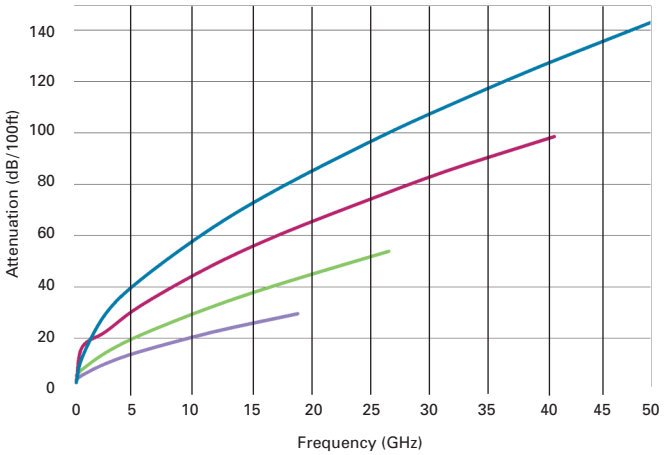


Typical Insertion Loss

SMA straight plug to SMA straight plug
36 inches (914,4 mm) long



Cable Attenuation (25°C)



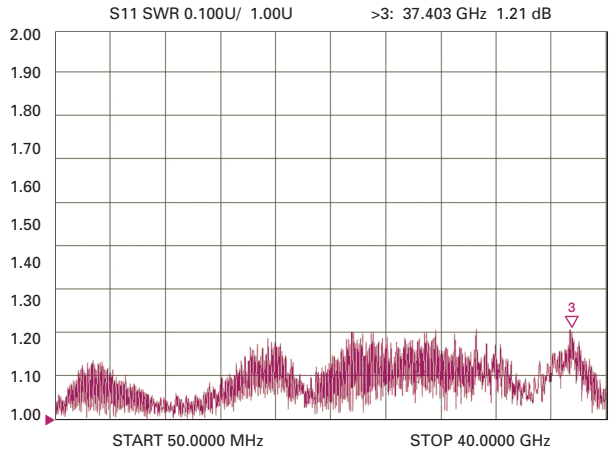
Frequency (GHz)	Cable Attenuation (dB/100 ft max.)			
	TRUcore™ 300	TRUcore™ 210	TRUcore™ 160	TRUcore™ 120
0.5	3.89	5.42	3.60	2.73
1	5.60	7.84	16.60	12.62
3	10.13	14.33	22.52	29.54
6	14.92	21.30	32.76	42.86
12	22.30	32.19	48.16	62.80
18	28.44	41.38	60.70	78.96
26	—	52.31	75.00	97.60
32	—	—	85.09	110.24
40	—	—	97.33	125.87
50	—	—	—	144.00

TRUcore™ Series

TRUcore™ 160

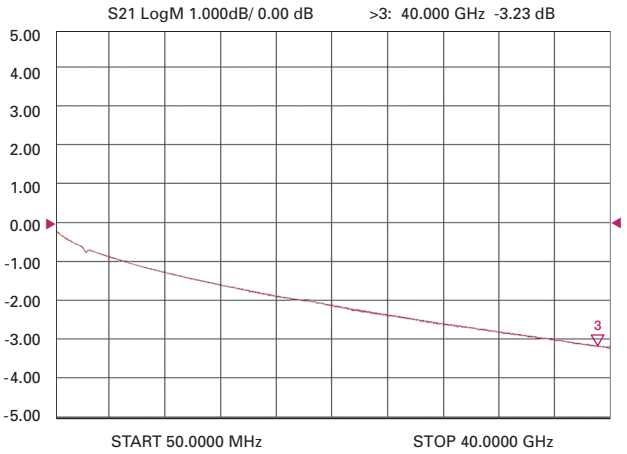
Typical VSWR

2.9 mm straight plug to 2.9 mm straight plug
36 inches (914,4 mm) long



Typical Insertion Loss

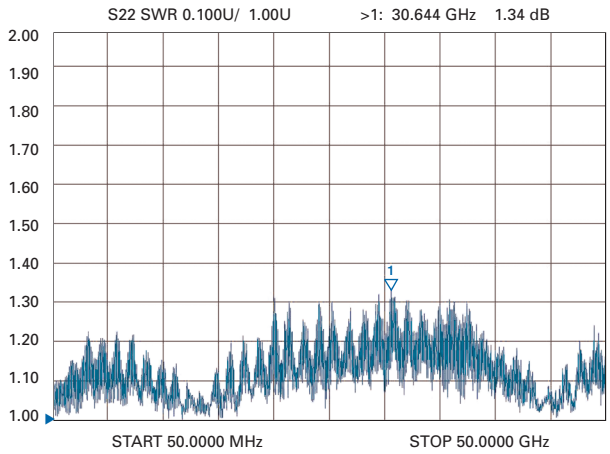
2.9 mm straight plug to 2.9 mm straight plug
36 inches (914,4 mm) long



TRUcore™ 120

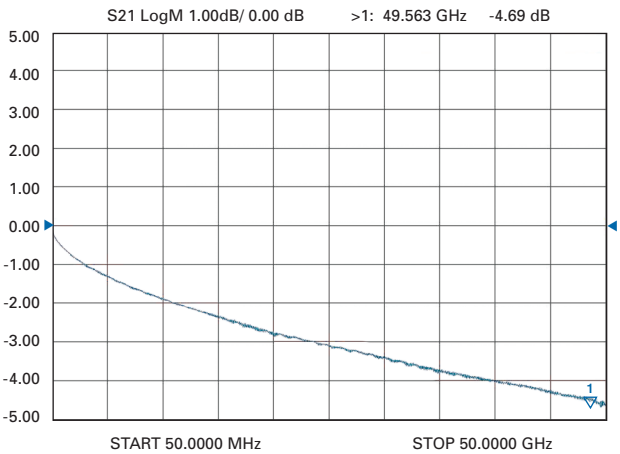
Typical VSWR

2.4 mm straight plug to 2.4 mm straight plug
36 inches (914,4 mm) long

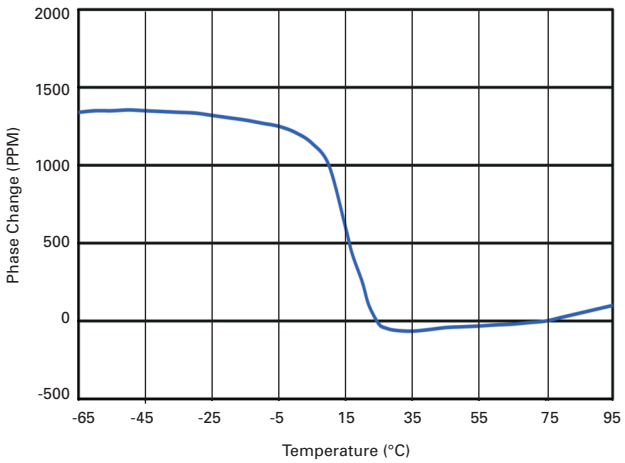


Typical Insertion Loss

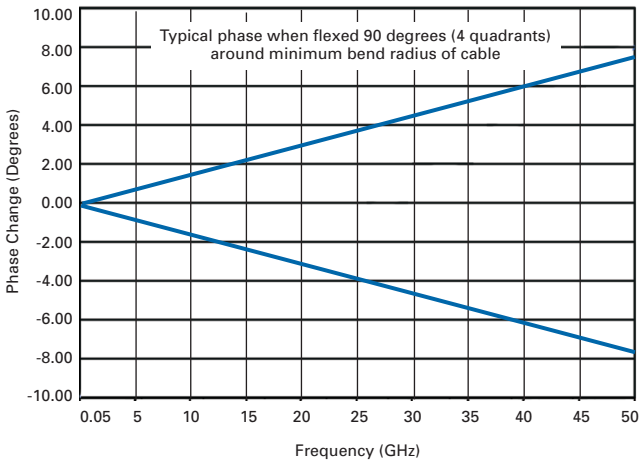
2.4 mm straight plug to 2.4 mm straight plug
36 inches (914,4 mm) long



Phase vs. Temperature



Phase vs. Flexure



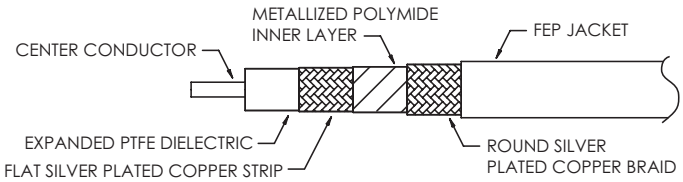
TRUcore™ Series

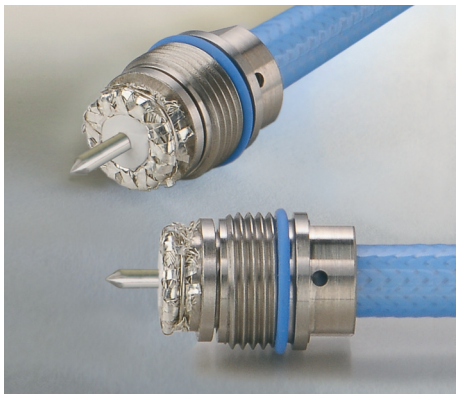
Engineered for High Performance

TRUcore™ cable assemblies provide engineered solutions for applications where performance and reliability are critical. Exceptional mechanical durability lowers the total cost of ownership and ensures mated equipment or component performance is optimized and repeatable.

ADVANCED CABLE DESIGN

Our TRUcore™ series cables are designed to achieve an optimal combination of electrical performance, durability and long service life. TRUcore™ cables utilize an innovative core design that provides excellent phase stability and mechanical durability that exceeds conventional tape wrap PTFE construction. A flat inner braid and metallized interlayer ensure excellent shielding characteristics and resistance to torsional forces that can cause failure at the connector-cable junction. TRUcore™ cables offer unique advantages for designers seeking high performance cable assembly solutions.

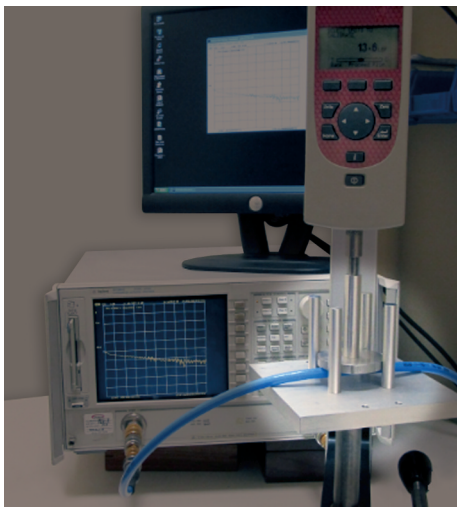




TRUtie™ CABLE-CONNECTOR ATTACHMENT

Our unique TRUtie™ cable-connector attachment technology has been designed to provide superior connector retention and torque resistance on the TRUcore™ 300 series. This eliminates the cable junction as the point of mechanical stress failure.

◀ TRUcore™ 300 series sub-assembly shown



CRUSH RESISTANCE

The unique cable dielectric properties of the the TRUcore™ series allow it to withstand greater than 2 times the concentrated load of a conventional low loss, tape wrap construction. TRUcore™ 300 assemblies have been shown to withstand >250 lbs of concentrated load and still pass specifications.

TRU Corporation
Peabody, Massachusetts
trucorporation.com