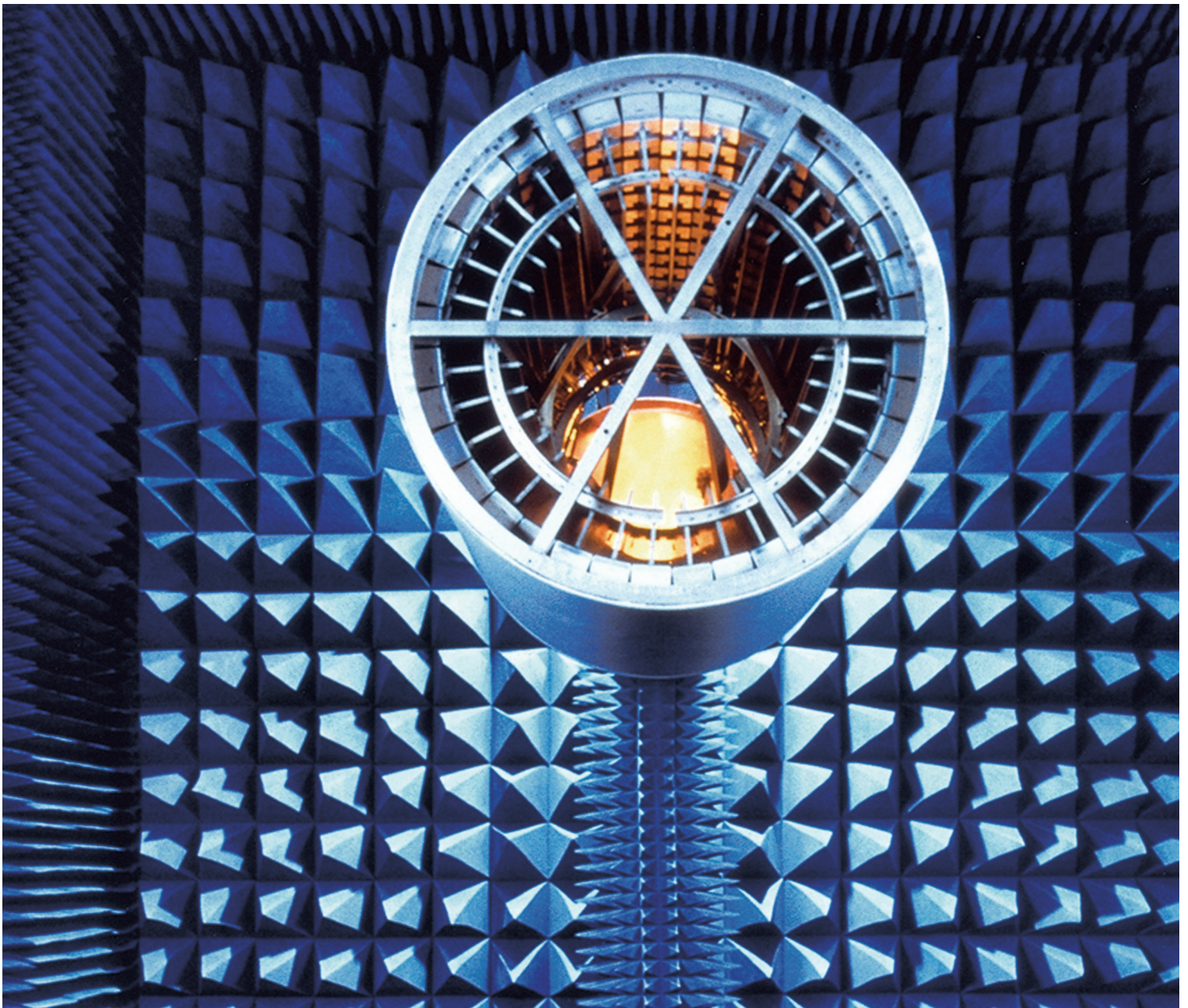


EMC Test Chamber Solutions

RF Cable Assemblies and Connectors



a division of WINCHESTER
ELECTRONICS



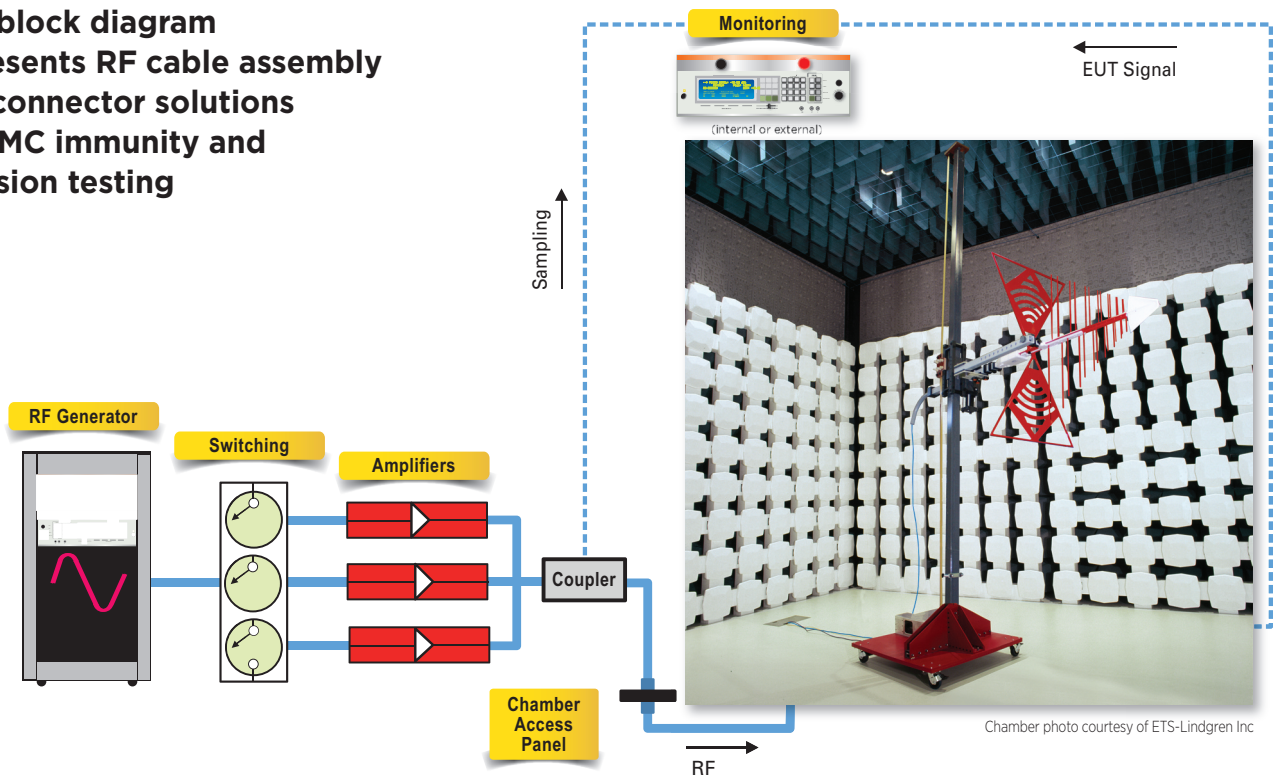
**RF CABLE ASSEMBLY AND CONNECTOR SOLUTIONS
FOR EMC IMMUNITY AND EMISSION COMPLIANCE TESTING**



Electromagnetic Compatability (EMC)



This block diagram represents RF cable assembly and connector solutions for EMC immunity and emission testing



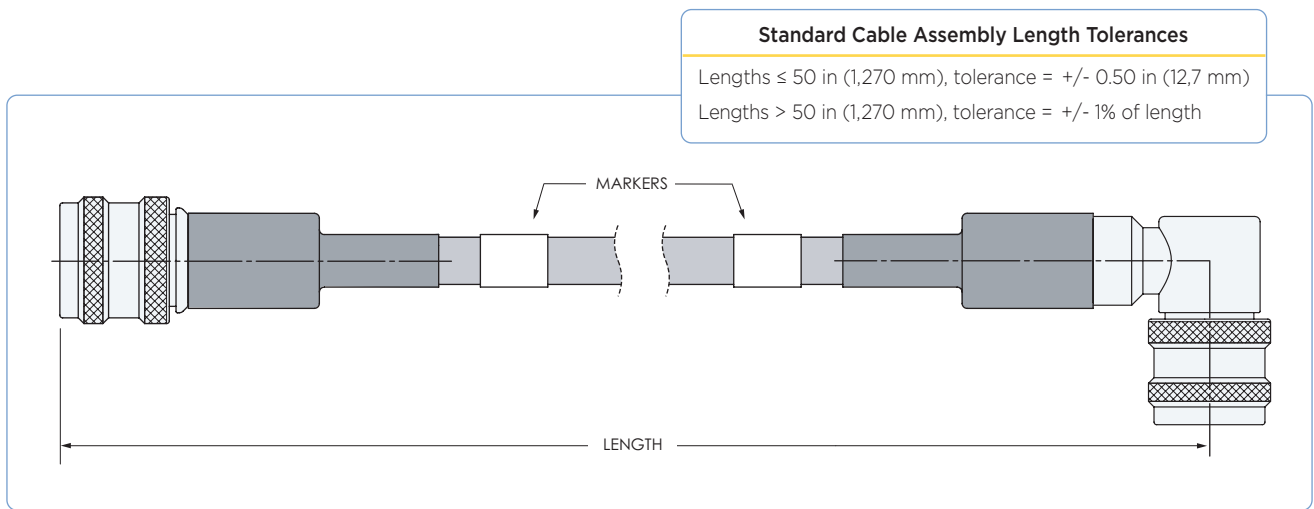
Chamber photo courtesy of ETS-Lindgren Inc



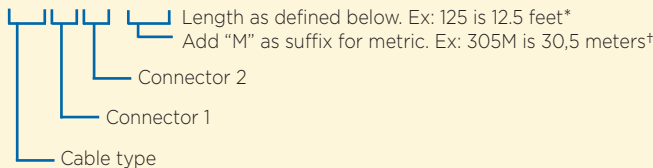
All chamber photos courtesy of ETS-Lindgren Inc

TRUflex™ PWR Quick Connect/Disconnect Cable Assemblies

Quick connect/disconnect cable assembly solutions are ideal for high power immunity test requirements providing efficient and rapid connection to your amplifier, chamber access panel and antenna connections. Our standard quick connect/disconnect TRU-SQS®, TRU-QRM™ and TRU-QDS® interfaces eliminate cross threading and ensure a fully mated condition without the need for additional torque tools. These highly flexible cable assemblies utilize our TRU-560 or TRU-500 cable that provide high power/voltage capability in a 0.560 or 0.500 inch diameter package.



TRU-XXX XX XX - XXX



Note on Length

Assemblies are generally measured from end to end for straight connectors, or from the centerline of right angle connectors.

- * Specify length in 0.5 foot increments
- † Specify length in 0,1 meter increments

Cable Specifications



See page 3 for Cable specifications

Cable Codes	Description
50B	TRU-500
56B	TRU-560
Connector Codes**	Description
17	TRU-SQS® straight (m)
67	TRU-SQS® right angle (m)
19	TRU-QRM™ straight (m)
69	TRU-QRM™ right angle (m)
21	TRU-QDS® straight (m)
71	TRU-QDS® right angle (m)

** Designate the lower number connector code **first** in the part number specification sequence. Example: TRU-XXX1767-XXX

TRUflex™ PWR Quick Connect/Disconnect Cable Assemblies

Cable Options

Cable Diameter (nominal)		
Cable Part Number	TRU-560	TRU-500
Center Conductor (stranded/solid)	7 strand	7 strand
Cable Dielectric (construction/material)	Tape-E/PTFE	Tape-E/PTFE
Shields (number)	2	2
Shields (type)	silver plated copper flat and round	silver plated copper flat and round
Cable Jacket (material/color)	PVC blue	FEP blue
Cable Operating Temperature (°C)	-55 to 105	-55 to 200
Frequency (maximum)	6 GHz	6 GHz
Impedance (Ohms - nominal)	50	50
Shielding Effectiveness (dB minimum)	> -75	> -75
Voltage	12 kV	12 kV

Power Rating (kW)*

	TRU-560	TRU-500
50 MHz	40.00	40.00
100 MHz	28.50	28.50
200 MHz	19.00	19.00
400 MHz	13.50	13.50
500 MHz	12.50	12.50
1,000 MHz	8.30	8.30
2,000 MHz	5.10	5.10
3,000 MHz	4.40	4.40
4,000 MHz	3.50	3.50
5,000 MHz	3.20	3.20
6,000 MHz	3.00	3.00

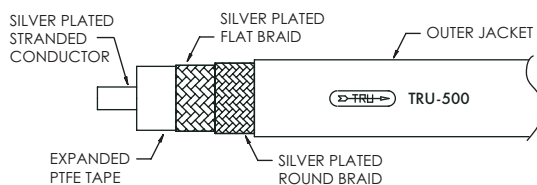
Attenuation (dB/100ft typical)*

	TRU-560	TRU-500
50 MHz	0.75	0.75
100 MHz	1.05	1.05
200 MHz	1.50	1.50
400 MHz	2.13	2.13
500 MHz	2.40	2.40
1,000 MHz	3.40	3.40
2,000 MHz	5.00	5.00
3,000 MHz	6.30	6.30
4,000 MHz	7.45	7.45
5,000 MHz	8.55	8.55
6,000 MHz	9.50	9.50

1000 MHz = 1 GHz *Sea level, 40°C, matched load

*20°C, matched load

Cable Construction



TRUtie™ CABLE-CONNECTOR ATTACHMENT

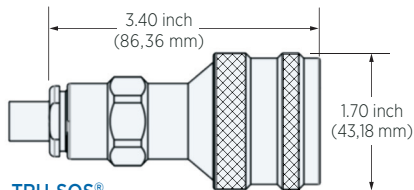
Our unique TRUtie™ cable-connector attachment technology has been designed to provide superior connector retention and torque resistance. This innovative design feature eliminates the cable junction as the point of mechanical stress failure.

TRUflex™ PWR Quick Connect/Disconnect Cable Assemblies

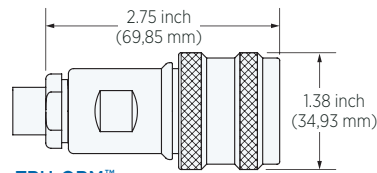
Connector Options

Interface	TRU-SQS®	TRU-QRM™	TRU-QDS®
Maximum Frequency (MHz)	500	1,000	6,000
Mating Cycles (minimum)	> 2,500	> 2,500	> 2,500
Voltage Rating (Vrms)	4,000	3,500	1,200
Power Rating (kW)*			
10 MHz	33.00	24.00	12.00
50 MHz	15.50	11.00	5.40
100 MHz	11.00	8.00	3.80
500 MHz	5.00	3.30	1.80
1,000 MHz		2.30	1.30
2,000 MHz			0.90
3,000 MHz			0.74
4,000 MHz			0.64
5,000 MHz			0.58
6,000 MHz			0.52

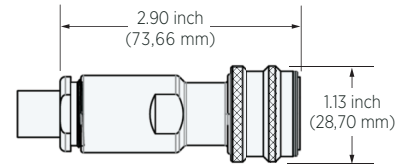
*Sea level, 40°C, matched load



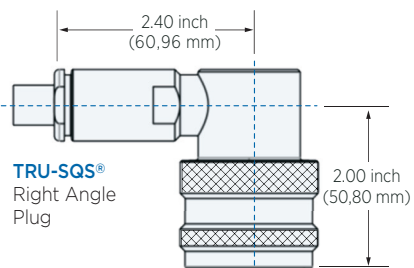
TRU-SQS®
Straight Plug



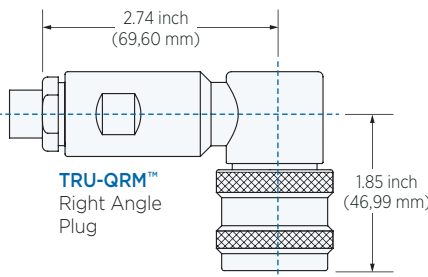
TRU-QRM™
Straight Plug



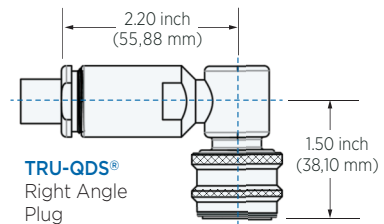
TRU-QDS® Straight Plug



TRU-SQS®
Right Angle Plug

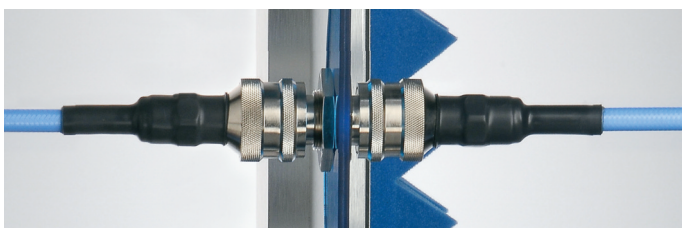


TRU-QRM™
Right Angle Plug



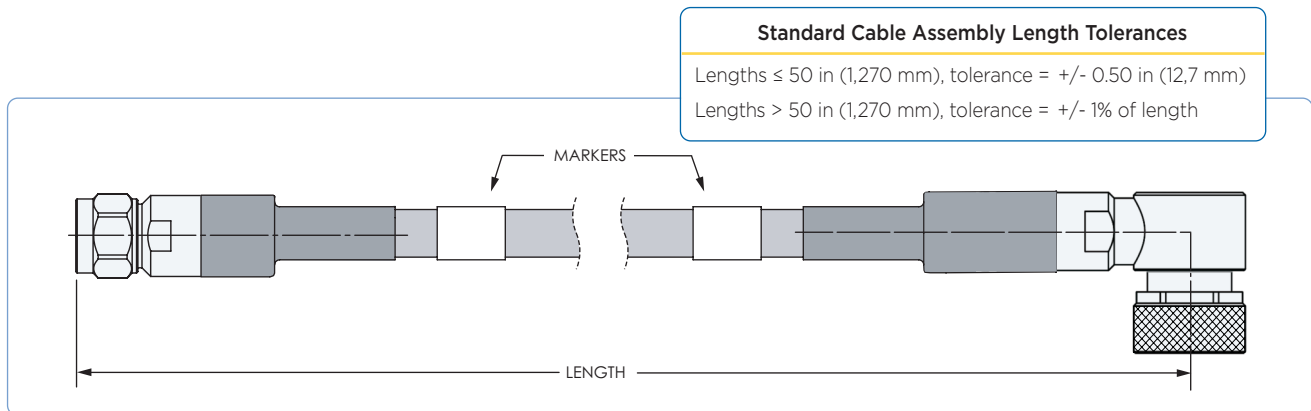
TRU-QDS®
Right Angle Plug

Dimensions shown are reference only.



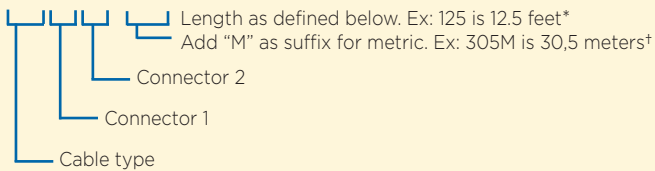
TRUflex™ PWR cable assemblies with our quick connect/disconnect interface are shown mated to a chamber access panel bulkhead adapter. Quick connect/disconnect interfaces provide positive locking, high power connectivity that ensures safe and reliable performance.

TRUflex™ PWR Threaded and Flange Mount Cable Assemblies



Ordering Specifications

TRU-XXX XX XX - XXX



Note on Length

Assemblies are generally measured from end to end for straight connectors, or from the centerline of right angle connectors.

* Specify length in 0.5 foot increments

† Specify length in 0,1 meter increments

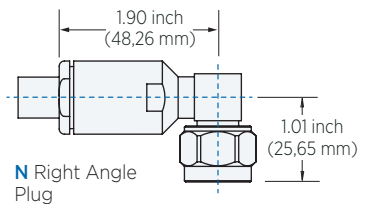
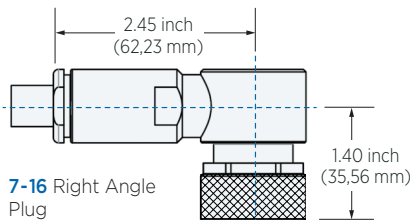
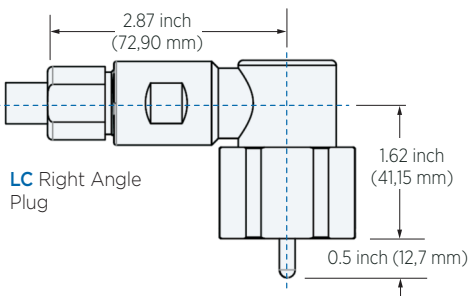
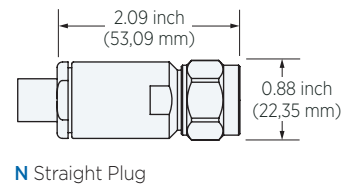
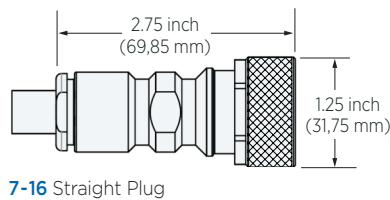
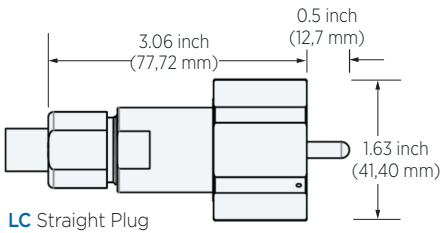
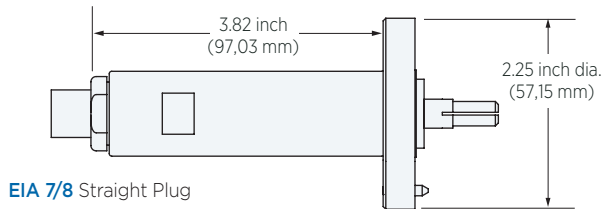
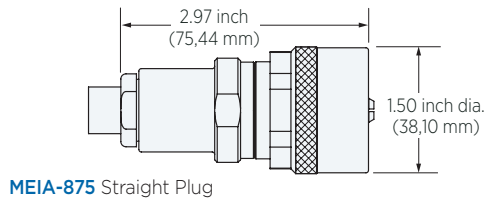
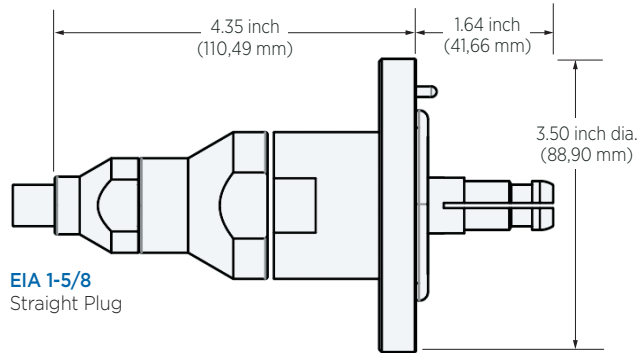
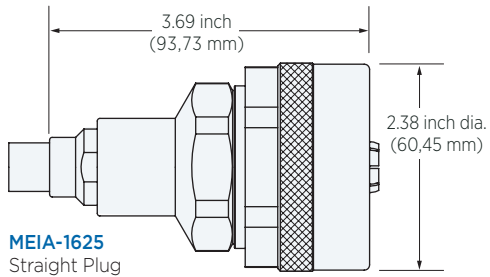
Cable Specifications

See page 3 for Cable specifications

Cable Codes	Description
50B	TRU-500
56B	TRU-560
Connector Codes**	Description
11	N straight (m)
61	N right angle (m)
13	7-16 straight (m)
63	7-16 right angle (m)
27	LC straight (m)
77	LC right angle (m)
29	MEIA-875 straight (m)
31	MEIA-1625 straight (m)
15	EIA 7/8 straight (m)
16	EIA 1-5/8 straight (m)

** Designate the lower number connector code **first** in the part number specification sequence. Example: TRU-XXX0711-XXX

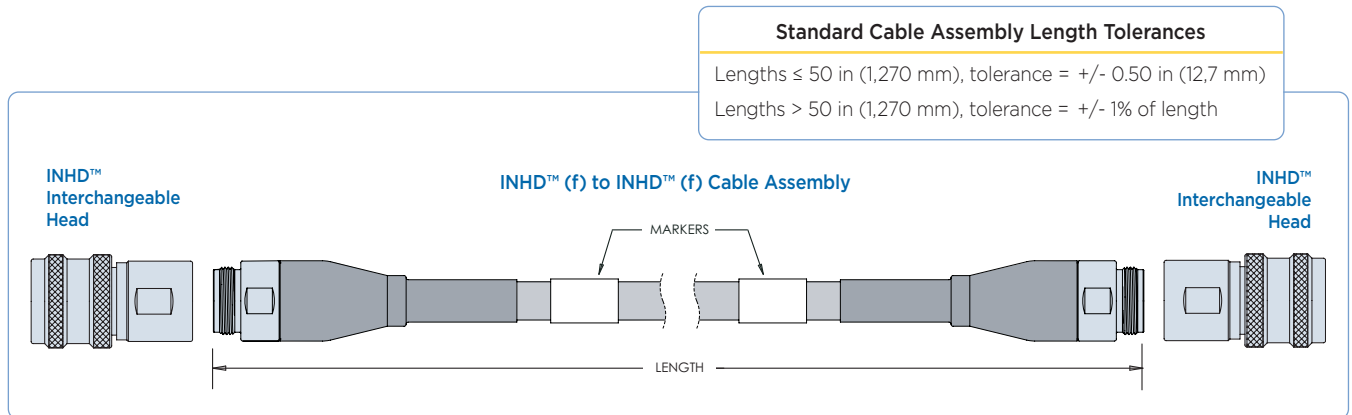
TRUflex™ PWR Threaded and Flange Mount Connector Configurations



Dimensions shown are reference only.

Interchangeable Head (INHD™ Series) Cable Assemblies

INHD™ series assemblies with interchangeable head connectors offer the ultimate versatility in applications where multiple test set-ups and interfaces are found between amplifiers and antennas. INHD™ series assemblies are ideal for high power immunity testing and utilize our highly flexible TRU-560 cable. Interchangeable head capability ensures that any damage to the connector or cable assembly can be quickly and efficiently replaced without costly down time. All the interchangeable heads are 50 ohm matched to allow interchangeability without affecting initial calibration.

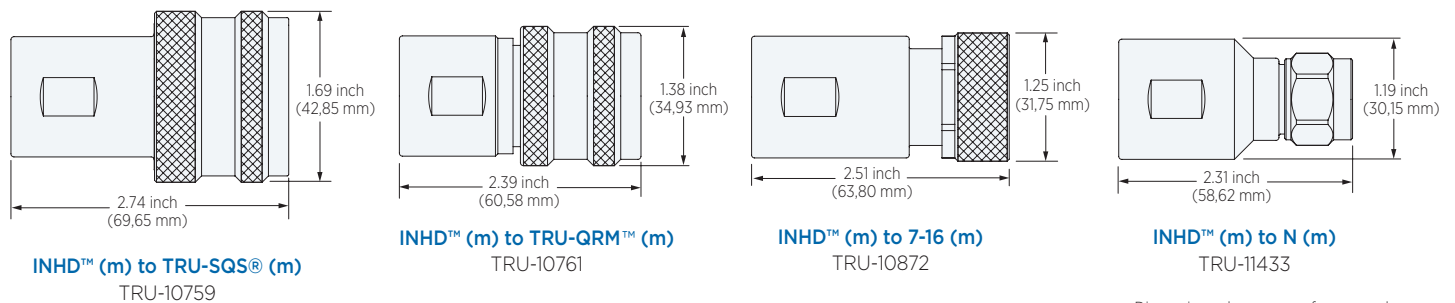


INHD™ Cable Assembly Part Numbers

INHD™ (f) to INHD™ (f) Cable Assembly	Length
TRU-10882-05	5.0 ft (1,5 m)
TRU-10882-10	10.0 ft (3,0 m)
TRU-10882-20	20.0 ft (6,1 m)
TRU-10882-30	30.0 ft (9,1 m)

Note: Different cable assembly lengths are available upon request.

INHD™ Interchangeable Heads

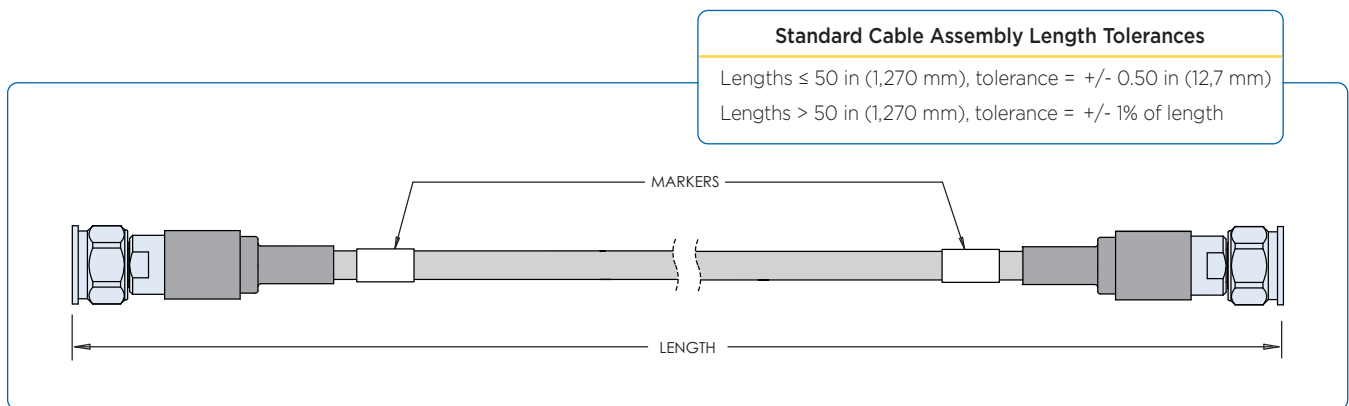


Dimensions shown are reference only.

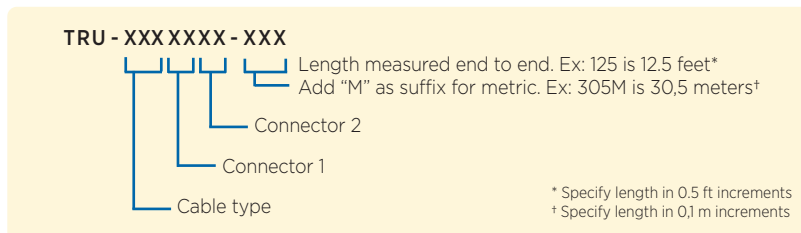
Note: Additional INHD™ interchangeable heads are available upon request.

TRUcore™ Cable Assemblies

TRUcore™ series cable assemblies are ideal for emission test applications offering 18, 26.5, 40, and 50 GHz broadband frequency performance, as well as excellent insertion loss characteristics. TRUcore™ cable assemblies utilize an innovative core design that offers greater than 2x the crush and torque resistance of conventional tape wrap cable. These cables are flexible and offer 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. Connectors are stainless steel construction for long service life and repeatability.



Type N interface shown.





Ordering Specifications

Cable Codes	Description
30B	TRU-300
21B	TRU-210
16B	TRU-160
12B	TRU-120
Connector Codes*	Description
11	N straight (m)
07	SMA straight (m)
03	2.9 mm straight (m)
01	2.4 mm straight (m)

* Designate the lower number connector code **first** in the part number specification sequence
 Example: TRU-XXX0711-XXX

TRUcore™ Cable Assemblies

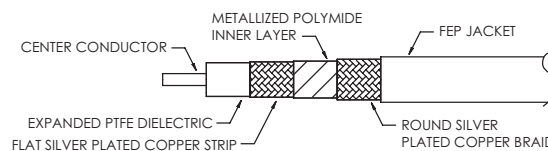
Cable Options

Cable Diameter (nominal)				
Cable Part Number	TRU-300	TRU-210	TRU-160	TRU-120
Frequency (GHz maximum)	18	26.5	40	50
Cable Operating Temperature (°C)	-65 to +165	-65 to +165	-65 to +125	-65 to +125
Shielding Effectiveness (dB minimum)	> -90	> -90	> -90	> -90
Bend Radius (static minimum)	0.90 inch (22,9 mm)	0.63 inch (16,0 mm)	0.48 inch (12,2 mm)	0.36 inch (9,1 mm)
Cable Jacket (material/color)	FEP blue	FEP blue	FEP blue	FEP blue
Attenuation (dB/ft maximum)*				
0.5 GHz	0.03	0.05	0.08	0.11
1 GHz	0.05	0.07	0.12	0.16
3 GHz	0.10	0.14	0.22	0.29
6 GHz	0.14	0.21	0.32	0.4
12 GHz	0.22	0.32	0.48	0.62
18 GHz	0.28	0.41	0.60	0.78
26 GHz		0.52	0.73	0.97
32 GHz			0.85	1.10
40 GHz			0.97	1.25
50 GHz				1.44
Power Rating (W) [†]				
0.5 GHz	5,900	2,800	1,520	950
1 GHz	4,100	1,960	1,070	650
3 GHz	2,220	1,100	610	380
6 GHz	1,540	760	420	260
12 GHz	1,030	520	290	180
18 GHz	810	440	230	140
26 GHz		330	190	120
32 GHz			170	110
40 GHz			150	100
50 GHz				80

*20°C, matched load

[†]Sea level, 40°C, matched load

Cable Construction

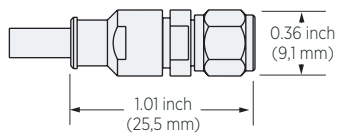


TRUcore™ Cable Assemblies

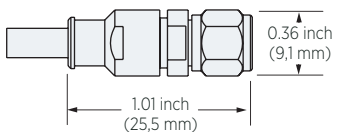
Connector Options

Interface	N	SMA	2.9 mm	2.4 mm
Frequency (GHz, maximum)	18	26.5	40	50
Cable Option	TRU-300	TRU-300 and 210	TRU-160	TRU-120
Mating Cycles (minimum)	500	500	500	500
Recommended Mating Torque	23 in-lbs (2,6 Nm)	9 in-lbs (1,0 Nm)	9 in-lbs (1,0 Nm)	9 in-lbs (1,0 Nm)
Interface Power Rating (W)*				
0.25 GHz	2,000	250	200	200
1 GHz	1,000	150	102	91
6 GHz	395	83	42	33
12 GHz	277	65	30	22
18 GHz	225	55	25	18
26 GHz		50	21	14
40 GHz			17	11
50 GHz				10

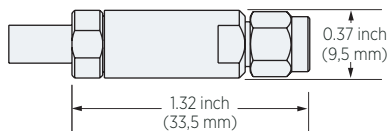
*Sea level, 40°C, matched load



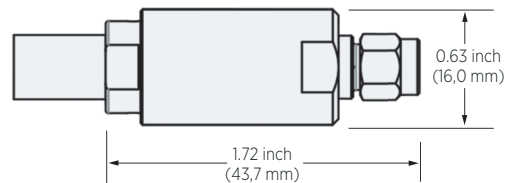
2.4 mm TRU-120 Straight Plug



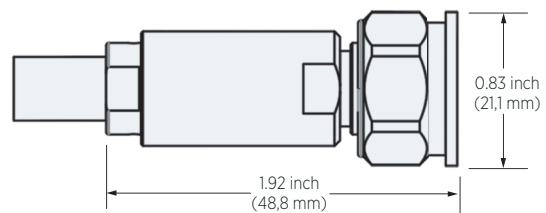
2.9 mm TRU-160 Straight Plug



SMA TRU-210 Straight Plug



SMA TRU-300 Straight Plug



Type N TRU-300 Straight Plug

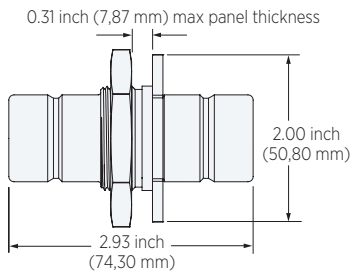
Dimensions shown are reference only.

Adapters

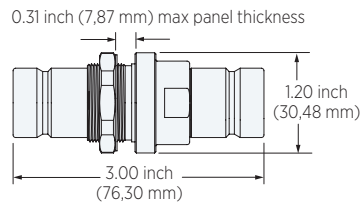


Chamber Access Panel Adapters

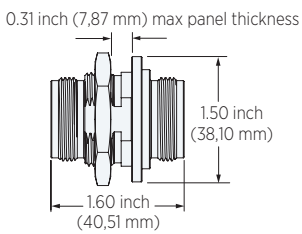
TRU offers a range of bulkhead adapters that can be used on chamber access panels with either quick connect/disconnect interfaces or the flexibility of INHD™ interchangeable heads.



TRU-SQS® jack to TRU-SQS® jack
Bulkhead Adapter
TRU-12341



TRU-QRM™ jack to TRU-QRM™ jack
Bulkhead Adapter
TRU-12280



INHD™ jack to INHD™ jack
Bulkhead Adapter
TRU-12340

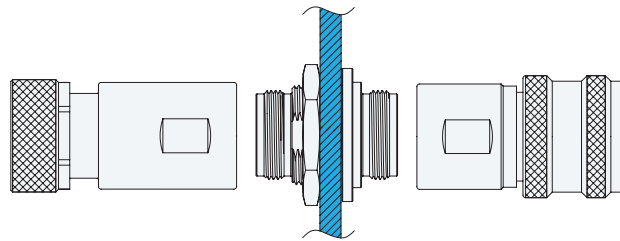
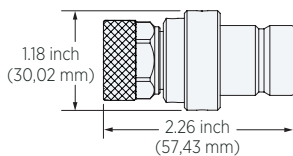


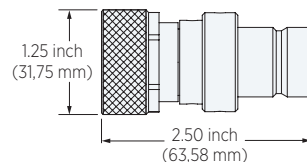
Illustration of INHD™ bulkhead adapter with interchangeable heads (see page 7)

Between Series Adapters

Between series adapters provide a means to easily adapt threaded connector interfaces found on the output of the amplifier or input to the antenna for a more efficient, positive locking, quick connect/disconnect interface.



N plug to TRU-QRM™ jack
Adapter
TRU-12281



7-16 plug to TRU-QRM™ jack
Adapter
TRU-12284

TRU Corporation
Peabody, MA 01960 USA
1 800 262-9878
(1 800 COAX-TRU)
978 532-0775
trucorporation.com