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TECHNOLOGY GROUP

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Radiall™

Our Most Important Connection is with You.™



CABLE ASSEMBLIES

TestPro

Full Line Catalog

Connectivity has a profound and dramatic impact on the lives of people throughout the world. Because of advancements in technology, our lives are more convenient, more secure, more enjoyable and richer than ever. The speed of data enables communication in the most remote areas so people can reach all corners of the globe, allows for important defense and security, and facilitates space exploration. But technology doesn't just happen. It starts in the mind with ideas, making connections never considered in ways that nobody dreamed possible. Seeing the future in ways previously unimagined is the act of innovation and it begins with people –the inventors, the dreamers, the pioneers and the engineers– enriching the lives of billions. At Radiall, we have one single, solitary mission; Empower the people that enrich our lives. Enable their innovation by providing reliability and durability. Give them useful information and provide them with valuable guidance when determining the best course for success. We don't invent the future, we enable it. We inspire innovation, we embrace challenges, we challenge the conventional and we collaborate with you to succeed. At Radiall, we're proud to say – Our most important connection is with you.

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Company Profile

Our Most Important Connection is with You.™

Radiall is a global leader in the design, development and manufacturing of leading edge interconnect solutions. Dedicated to understanding its customers' needs since 1952, Radiall has earned the reputation of being "the best of the best" in engineering ingenuity by providing a constant flow of creative system solutions serving the defense, telecom, aerospace, instrumentation, automotive, industrial, medical and broadcast markets.

Best Value-added Services

Collaboration: We work closely with your engineers to understand your business, your technical needs and your budgetary issues.

Wide Product Range: We manage our product lines through the entire lifecycle in order to offer you a wide selection of standard products at an affordable cost.

Custom Products: We can tailor products to specific equipment and application needs.

Global Presence: We're everywhere you need us, with worldwide sales, engineering support, R&D in North America, Europe and Asia and manufacturing facilities strategically located in the United States, Mexico, France, India and China.

Responsive Support and Service: From the design stage, planning to post-installation support, we're with you at every step, whether you need sales support or engineering expertise.

On-time Delivery: We support your logistical needs so you get the products when and where you need them.

Warranty: We proudly stand behind our products.

The Best End-to-End Interconnect Solutions

We offer an extensive range of solutions that supports the most demanding signal transmission applications. 4G wireless infrastructure, active array radars, IED detection, electrical wiring in aircrafts, soldier tactical radios, in-vehicle communications networks and magnetic resonance imaging systems are just a few of the complex applications that we support.

- *RF coaxial connectors*
- *Fiber optic connectors and transceivers*
- *Coaxial and fiber optic cable assemblies and harnesses*
- *High frequency microwave components*
- *Coaxial switches, including the smallest and most reliable SPDT relay*
- *Multipin rectangular connectors*
- *Rack and panel connectors*
- *Antennas for tactical networks, aerospace and instrumentation*

Certifications and Environmental

Radiall is ISO 9001: 2008 certified and dedicated to continuous improvement programs that have resulted in also being AS9100, TS16949 and ISO 14001 certified. In addition, Radiall is committed to investing in its people, future technologies and the environment, such as being RoHS (Restriction of Hazardous Substances) and REACH (Registration, Evaluation, Authorization and Restriction of Chemical substances) compliant.

ISO 9001 Certified
AS/EN/JISQ9100-ISOTS 16949-ISO-14001



Technical information and sales contacts are available at ***www.radiall.com***

Radiall at a Glance

Worldwide Presence

Radiall has a global manufacturing presence. Our International sales network and qualified distributors cover every region around the world. The result is quick and insightful answers to all your requests.

- *International Sales Network*
- *Low cost facilities*
- *Local manufacturing, logistics and technical support*



North America





Asia



Europe



Market Focus

Aerospace | Defense | Industrial | Space | Telecom | Instrumentation | Medical

Radiall Technologies

- *Milling*
- *Plating & plastic metallization*
- *Molding*
- *Characterization*
- *Polishing*
- *Laser, ultrasonic, vapor, soldering*
- *Stamping*
- *Thin & thick film processes*
- *Etching on Si*
- *Thick film on AlN*
- *Test & measurement*
- *Simulation*
- *Cable & PTFE wrapping*
- *Automatic assembly*
- *Micro-machining*



A Global Range to Meet Your Needs



RF Coaxial Connectors

Radiall proudly offers the widest range of RF Coaxial Connectors in the Industry with over 12,000 part numbers and 72 product series including **AEP®** Mil QPL connectors. These precision-made components are a significant part of our heritage and essential to who we are.



RF & Microwave Switches

All Radiall switches provide exceptional reliability and performance. A unique modular and patented design of the actuator and transmission link enables Radiall to guarantee operation up to 10 million cycles with excellent repeatability, while reducing delivery times.



Microwave Components

Radiall has a wide range of coaxial devices, including terminations, attenuators and couplers using standard interfaces from low to high power. Our state of the art techniques enable us to produce microwave components for use in commercial, military and space applications.



Antennas

Radiall provides highly reliable antenna solutions for industrial and military applications. Our solutions include Line-Of-Sight tactical communications, vehicular mounts, GPS, telemetry and mesh networks. For optimum performance requirements, Radiall offers custom antenna solutions and support.



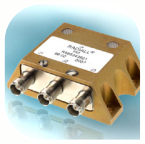
Multipin Connectors

Radiall has an unmatched range of rack and panel connectors and the most innovative modular and tool-less connectors used in harnesses and equipment connections. Our modern designs combine light weight, high performance levels and user friendly features to simplify even the most complex connections.



RF Cable Assemblies

Radiall has an extensive range of cable assemblies with outstanding electrical performance, low loss and high frequency. Our range includes flexible, semi rigid and handformable cable assemblies. Our **TestPro™** range meets the stringent requirements needed for test and lab applications.



Space Qualified

Industry leaders across the globe recognize the Radiall brand for quality, reliability, and performance. Our Space Qualified passive product offering includes a wide range of coaxial connectors, cable assemblies, microwave components, and switches with a frequency range up to Ka band.



D-Lightsys®

Active Optical Solutions Optimized by D-Lightsys® for harsh environments. From optical transceivers to the world's smallest parallel optics, D-Lightsys® technologies support the most challenging applications, including harsh environments and avionics applications.



Harnesses

The combination of design and manufacturing of RF and microwave cables as well as multipin connectors (EPX, ARINC 404 and 600) allows Radiall to be a specialist of harnesses for onboard or land equipment or communications systems. All types of contacts can be used and mixed such as signal, power, RF, quadrax, fiber optic...



Fiber Optics

Radiall designs and supports high performance end-to-end Optical Interconnect solutions. Our offer includes standard interfaces, termini, connectors, harnesses and custom design optical links and subsystems. The flexibility and high quality of our product range supports harsh environments and demanding applications.



TestPro for Test & Measurement

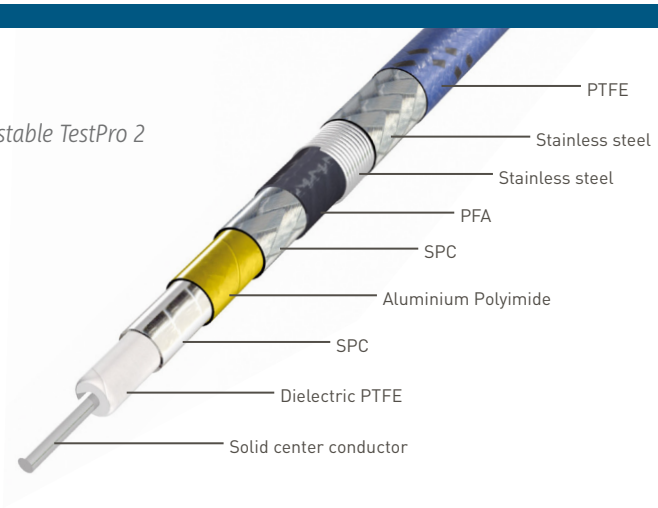
Ruggedization - Phase & Amplitude Stability - Flexibility

At Radiall we build a unique connection with our customers. We share the same passion and desire to strive for excellence. This distinctive connection gives our teams the opportunity to understand your needs.

Our priority is understanding customer concerns in order to provide cable assemblies for RF measurements. Rather than proposing standard cables with reinforced boots and cosmetic changes, engineers at Radiall fully design end-to-end TestPro cables and connector solutions to reach performance requirements.

TestPro features high precision quality with flexibility and offers loss stability with bending over an extended life cycle. TestPro is the ideal solution for Test and Measurement applications.





Phase stable TestPro 2

Bench Test Cable

Test and Measurement applications require excellent electrical performance and high mechanical endurance. To answer these specific needs Radiall has created TestPro, a high performance product range dedicated to Test and Measurement applications.

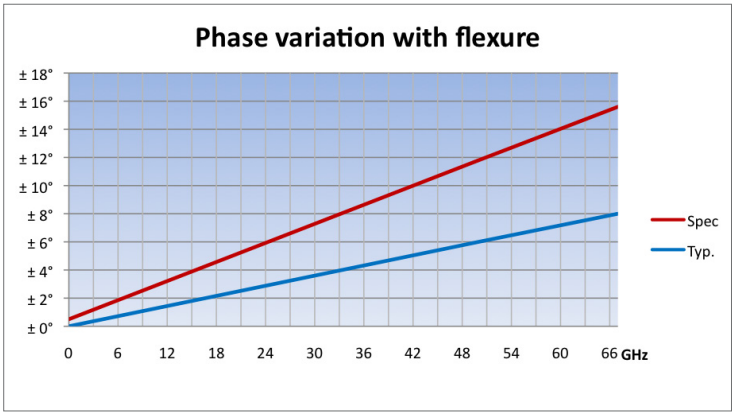
TestPro cables are designed specifically for Test and Measurement and combine outstanding electrical performance with a specially designed protection system. These ruggedized assemblies offer excellent durability while remaining exceptionally flexible. The unique connector attachment system and strong cable structure provide high tensile stress resistance to the entire assembly.

Test cable assemblies are intended for daily use in components and assembly shops, test labs and automatic test equipment applications.

They differ from standard cable assemblies in the fact that they are designed for applications that require repeated connection / disconnection procedures, strenuous flexing situations and applications where phase, loss and VSWR stability becomes an issue.

Typical applications include: Test labs, production floor testing, anechoic chambers, thermal vacuum chambers and nearfield scanners.

TestPro offers the **Phase Stable** product range:
- "**Phase stable TestPro**" cables are suitable for test benches in production or labs due to their long life and stability in dynamic use (includes: TestPro 2, TestPro 3 and TestPro 4.2)



TestPro 2 according to IEC966-1

Benefits:

- *Phase and loss stable with flexure*
- *Crush torque and tensile resistant*
- *Flexible design*
- *Long service life*
- *Longer calibration intervals*
- *Easy to configure to DUT*

Standard assembly lengths available are 24", 36", 48" and 72". Custom cable lengths are available with short lead times.

Bench Test Cable Range

TestPro 2 (67 GHz) & TestPro 3 (40 / 26.5 GHz)

The TestPro series goes up to 67 GHz. TestPro 2 - 67 GHz and TestPro 3 - 40 GHz are measurement cables. They combine electrical advantages and an integrated protection system. These ruggedized assemblies offer excellent durability while remaining exceptionally flexible. The unique connector attachment system and strong cable structure provides high tensile stress resistance to the whole assembly.

Properties	TestPro 2	TestPro 3
Frequency range	DC - 67 GHz	DC- 40 GHz
Impedance	50 Ω ± 1 Ω	50 Ω ± 1 Ω
IL Typ. (dB/m)	4.99 @ 50 GHz - 5.92 @ 67 GHz	3.11 @ 40 GHz
IL Typ. (dB/ft)	1.52 @ 50 GHz - 1.80 @ 67 GHz	0.94 @ 40 GHz
Phase with flexure stability typ.	6° @ 50 GHz - 8° @ 67 GHz	4.8° @ 40 GHz
Phase with flexure stability max.	11.8 @ 50 GHz - 15.6° @ 67 GHz	9.5° @ 40 GHz
Amplitude stability typ. (dB)	0.04 @ 50 GHz - 0.05 @ 67 GHz	0.05 @ 40 GHz
Amplitude stability max. (dB)	0.08 @ 50 GHz - 0.10 @ 67 GHz	0.1 @ 40 GHz
Shielding effectiveness	-100 dB min @ 1 GHz	-100 dB min @ 1 GHz
Crush resistance	260 lb/linear in.*	260 lb/linear in.
Minimum bend radius	25 mm (1 in.)	25 mm (1 in.)
Temperature (°C)	-55 / +125°C	-55 / +125°C
Connectors	SMA 2.9 - 2.4 mm - 1.85 mm	N Type - SMA 3.5 - SMA 2.9 - 2.4 mm
Flexure life cycle	20,000	20,000
Mating cycles durability	5,000	5,000
Armor	Integrated	Integrated
ROHS / REACH	Yes	Yes



**1 lb/linear in. = 17.5 N/100 mm*

TestPro 4.2 (18 GHz)

TestPro 4.2 is a high frequency microwave cable that delivers good attenuation characteristics. This low loss triple-shielded cable provides the best combination of low attenuation and VSWR/loss/phase stability, compared to similar size flexible cables. The rugged structure of TestPro 4.2 is perfectly adapted for dynamic applications such as laboratory measurements when assembled with TestPro connectors.

Properties	TestPro 4.2
Frequency range	DC - 20 GHz
Impedance	50 Ω ± 2 Ω
IL Typ. (dB/m)	1.90 @ 18 GHz
IL Typ. (dB/ft)	0.58 @ 18 GHz
Phase with flexure stability typ.	2.2° @ 18 GHz
Phase with flexure stability max.	4.6° @ 18 GHz
Amplitude stability typ. (dB)	0.08 @ 18 GHz
Amplitude stability max. (dB)	0.15 @ 18 GHz
Shielding effectiveness	-110 dB min @ 1 GHz
Crush resistance	135 lb/linear in.*
Minimum bend radius	25 mm (1 in.)
Temperature (°C)	-55 / +105°C
Connectors	SMA - N - TNC - PC7
Flexure life cycle	10,000
Mating cycles durability	5,000
Armor	Available
ROHS / REACH	Yes



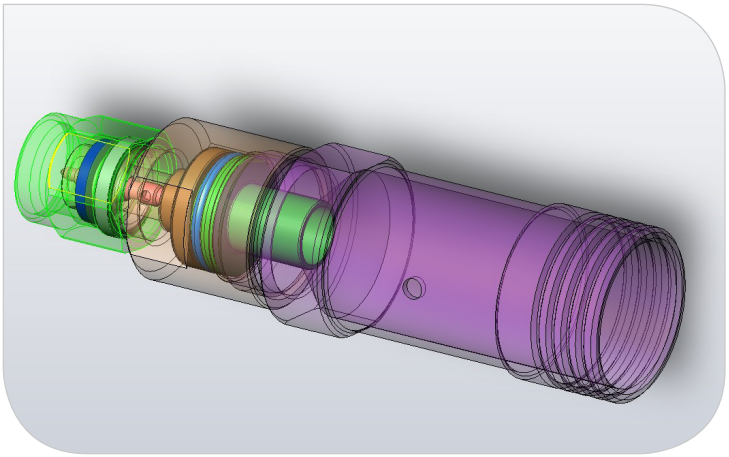
**1 lb/linear in. = 17.5 N/100 mm*

Connector Attachment

The connector attachment is the main weakness when using standard cable assemblies in Test and Measurement applications.

Radiall's TestPro connectors are designed with a unique attachment process which makes the assembly more rugged and provides a long life cycle and high electrical stability.

All components are designed and manufactured by Radiall in facilities operated under ISO9001-V2000/ASN9100 quality standards.



5,000 Mating Cycles Guaranteed

TestPro cable assemblies for test applications are extremely robust and are developed using highly rugged stainless steel connectors. The combination of higher grade stainless steel and the unique attachment method provide a very reliable product over multiple matings. TestPro connectors acheive 5,000 Mating Cycles which is 10 times greater than the industry standard.

CONNECTOR OPTIONS FOR TESTPRO 2 / 3 / 4.2

Connector type	Description	Torque Wrench	Fmax (GHz)	TestPro 2	TestPro 3	TestPro 4.2
SMA series	Straight Plug	110	20			M125 064 C00 (ID 001)
SMA series	Straight Jack	-	20			M125 207 C00 (ID 088)
PC7 series	Straight Plug	-	18			M151 064 C00 (ID 027)
N 18 series	Straight Plug	170	18		R163 063 101 (ID 121)	M163 064 C00 (ID 029)
TNC 18 series	Straight Plug	265	18			M143 064 C00 (ID 090)
SMA 3.5 series	Straight Plug	110	26.5		R127 900 001 (ID 117)	
SMA 3.5 series	Straight Jack	-	26.5		R127 920 001 (ID 118)	
SMA 3.5 series	Vented Straight Plug	110	26.5		R127 900 021 (ID 143)	
SMA 2.9 series	Straight Plug	110	40	R127 801 341 (ID 152)	R127 801 321 (ID 092)	
SMA 2.9 series	Straight Jack	-	40		R127 822 111 (ID 093)	
SMA 2.9 series	NMD 2.9 port female	-	40		R299 776 101 (ID 094)	
SMA 2.9 series	Vented Straight Plug	110	40		R127 801 311 (ID 097)	
SMA 2.9 series	Vented Straight Jack	-	40		R127 822 101 (ID 098)	
2.4 mm series	Straight Plug	90	50*	R327 062 101 (ID 144)	R327 063 101 (ID 141)	
2.4 mm series	Straight Jack	-	50*	R327 232 101 (ID 145)	R327 233 101 (ID 142)	
2.4 mm series	Vented Straight Plug	90	50	R327 062 111 (ID 146)		
2.4 mm series	Vented Straight Jack	-	50	R327 232 111 (ID 147)		
1.85 mm series	Straight Plug	90	67	R327 900 021 (ID 148)		
1.85 mm series	Straight Jack	-	67	R327 920 001 (ID 149)		
1.85 mm series	Vented Straight Plug	90	67	R327 900 031 (ID 150)		
1.85 mm series	Vented Straight Jack	-	67	R327 920 011 (ID 151)		

**Fmax 40 GHz with TestPro 3 cable*

Bench Test Cable Assemblies

TESTPRO 2

Part number	F (GHz)	Connector		Length (in./cm)	IL typ. (dB)	IL max. (dB)	VSWR max.	Phase stability typ. (°)	Phase stability max. (°)	Amplitude stability typ. (dB)	Amplitude stability max. (dB)
2001441440610TF	50 GHz	2.4 mm male	2.4 mm male	24 / 61	3.5	4.16	1.43	6.0	11.8	0.04	0.08
2001441450610TF	50 GHz	2.4 mm male	2.4 mm female	24 / 61	3.5	4.16	1.43	6.0	11.8	0.04	0.08
2001441440914TF	50 GHz	2.4 mm male	2.4 mm male	36 / 91	5.03	5.98	1.43	6.0	11.8	0.04	0.08
2001441450914TF	50 GHz	2.4 mm male	2.4 mm female	36 / 91	5.03	5.98	1.43	6.0	11.8	0.04	0.08
2001441441219TF	50 GHz	2.4 mm male	2.4 mm male	48 / 122	6.55	7.80	1.43	6.0	11.8	0.04	0.08
2001441451219TF	50 GHz	2.4 mm male	2.4 mm female	48 / 122	6.55	7.80	1.43	6.0	11.8	0.04	0.08
2001441441524TF	50 GHz	2.4 mm male	2.4 mm male	60 / 153	8.07	9.63	1.43	6.0	11.8	0.04	0.08
2001441451524TF	50 GHz	2.4 mm male	2.4 mm female	60 / 153	8.07	9.63	1.43	6.0	11.8	0.04	0.08
2001481480610ZT	67 GHz	1.85 mm male	1.85 mm male	24 / 61	4.15	4.92	1.50	8.0	15.6	0.05	0.10
2001481490610ZT	67 GHz	1.85 mm male	1.85 mm female	24 / 61	4.15	4.92	1.50	8.0	15.6	0.05	0.10
2001481480914ZT	67 GHz	1.85 mm male	1.85 mm male	36 / 91	5.96	7.09	1.50	8.0	15.6	0.05	0.10
2001481490914ZT	67 GHz	1.85 mm male	1.85 mm female	36 / 91	5.96	7.09	1.50	8.0	15.6	0.05	0.10
2001481481219ZT	67 GHz	1.85 mm male	1.85 mm male	48 / 122	7.76	9.25	1.50	8.0	15.6	0.05	0.10
2001481491219ZT	67 GHz	1.85 mm male	1.85 mm female	48 / 122	7.76	9.25	1.50	8.0	15.6	0.05	0.10
2001481481524ZT	67 GHz	1.85 mm male	1.85 mm male	60 / 153	9.56	11.41	1.50	8.0	15.6	0.05	0.10
2001481491524ZT	67 GHz	1.85 mm male	1.85 mm female	60 / 153	9.56	11.41	1.50	8.0	15.6	0.05	0.10

For custom configurations, see page 18 "How to Order" to determine your own part number.

TESTPRO 3

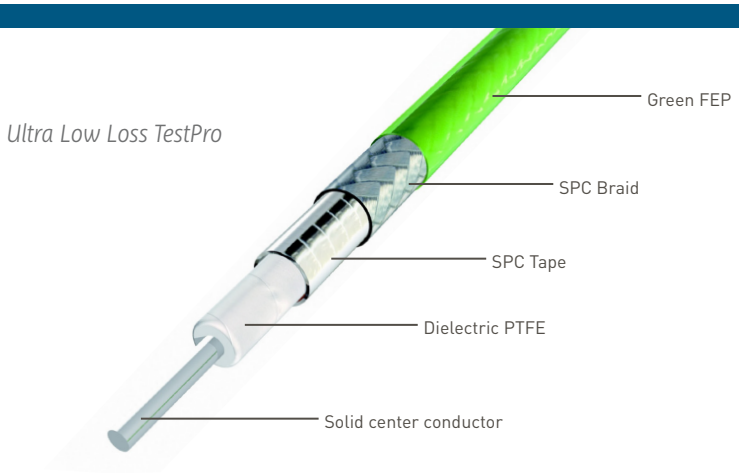
Part number	F (GHz)	Connector		Length (in./cm)	IL typ. (dB)	IL max. (dB)	VSWR max.	Phase stability typ. (°)	Phase stability max. (°)	Amplitude stability typ. (dB)	Amplitude stability max. (dB)
1801171170610KE	26.5 GHz	SMA 3.5 male	SMA 3.5 male	24 / 61	1.69	1.89	1.35	3.2	6.6	0.04	0.08
1801171180610KE	26.5 GHz	SMA 3.5 male	SMA 3.5 female	24 / 61	1.69	1.89	1.35	3.2	6.6	0.04	0.08
1801171170914KE	26.5 GHz	SMA 3.5 male	SMA 3.5 male	36 / 91	2.36	2.64	1.35	3.2	6.6	0.04	0.08
1801171180914KE	26.5 GHz	SMA 3.5 male	SMA 3.5 female	36 / 91	2.36	2.64	1.35	3.2	6.6	0.04	0.08
1801171171219KE	26.5 GHz	SMA 3.5 male	SMA 3.5 male	48 / 122	3.03	3.40	1.35	3.2	6.6	0.04	0.08
1801171181219KE	26.5 GHz	SMA 3.5 male	SMA 3.5 female	48 / 122	3.03	3.40	1.35	3.2	6.6	0.04	0.08
1801171171829KE	26.5 GHz	SMA 3.5 male	SMA 3.5 male	72 / 183	4.37	4.91	1.35	3.2	6.6	0.04	0.08
1801171181829KE	26.5 GHz	SMA 3.5 male	SMA 3.5 female	72 / 183	4.37	4.91	1.35	3.2	6.6	0.04	0.08
1800920920610PJ	40 GHz	SMA 2.92 male	SMA 2.92 male	24 / 61	2.12	2.37	1.40	4.8	9.5	0.05	0.10
1800920930610PJ	40 GHz	SMA 2.92 male	SMA 2.92 female	24 / 61	2.12	2.37	1.40	4.8	9.5	0.05	0.10
1800920920914PJ	40 GHz	SMA 2.92 male	SMA 2.92 male	36 / 91	2.96	3.33	1.40	4.8	9.5	0.05	0.10
1800920930914PJ	40 GHz	SMA 2.92 male	SMA 2.92 female	36 / 91	2.96	3.33	1.40	4.8	9.5	0.05	0.10
1800920921219PJ	40 GHz	SMA 2.92 male	SMA 2.92 male	48 / 122	3.8	4.28	1.40	4.8	9.5	0.05	0.10
1800920931219PJ	40 GHz	SMA 2.92 male	SMA 2.92 female	48 / 122	3.8	4.28	1.40	4.8	9.5	0.05	0.10
1800920921829PJ	40 GHz	SMA 2.92 male	SMA 2.92 male	72 / 183	5.49	6.19	1.40	4.8	9.5	0.05	0.10
1800920931829PJ	40 GHz	SMA 2.92 male	SMA 2.92 female	72 / 183	5.49	6.19	1.40	4.8	9.5	0.05	0.10
1800940920914PJ	40 GHz	NMD 2.9	SMA 2.92 male	36 / 91	2.96	3.33	1.40	4.8	9.5	0.05	0.10
1800940930914PJ	40 GHz	NMD 2.9	SMA 2.92 female	36 / 91	2.96	3.33	1.40	4.8	9.5	0.05	0.10
1800940921219PJ	40 GHz	NMD 2.9	SMA 2.92 male	48 / 122	3.8	4.28	1.40	4.8	9.5	0.05	0.10
1800940931219PJ	40 GHz	NMD 2.9	SMA 2.92 female	48 / 122	3.8	4.28	1.40	4.8	9.5	0.05	0.10
1800940921829PJ	40 GHz	NMD 2.9	SMA 2.92 male	72 / 183	5.49	6.19	1.40	4.8	9.5	0.05	0.10
1800940931829PJ	40 GHz	NMD 2.9	SMA 2.92 female	72 / 183	5.49	6.19	1.40	4.8	9.5	0.05	0.10

TESTPRO 4.2

Part number	F (GHz)	Connector		Length (in./cm)	IL typ. (dB)	IL max. (dB)	VSWR max.	Phase stability typ. (°)	Phase stability max. (°)	Amplitude stability typ. (dB)	Amplitude stability max. (dB)
0100290290610GX	18 GHz	N Type male	N Type male	24 / 61	1.57	1.75	1.30	2.2	4.6	0.08	0.15
0100290290914GX	18 GHz	N Type male	N Type male	36 / 91	2.21	2.47	1.30	2.2	4.6	0.08	0.15
0100290291219GX	18 GHz	N Type male	N Type male	48 / 122	2.85	3.18	1.30	2.2	4.6	0.08	0.15
0100290291829GX	18 GHz	N Type male	N Type male	72 / 183	4.13	4.62	1.30	2.2	4.6	0.08	0.15
0100290010610GX	18 GHz	N Type male	SMA male	24 / 61	1.57	1.75	1.30	2.2	4.6	0.08	0.16
0100290010914GX	18 GHz	N Type male	SMA male	36 / 91	2.21	2.47	1.30	2.2	4.6	0.08	0.16
0100290011219GX	18 GHz	N Type male	SMA male	48 / 122	2.85	3.18	1.30	2.2	4.6	0.08	0.16
0100290011829GX	18 GHz	N Type male	SMA male	72 / 183	4.13	4.62	1.30	2.2	4.6	0.08	0.16
0100290270610GX	18 GHz	N Type male	PC7	24 / 61	1.59	1.77	1.35	2.2	4.6	0.08	0.15
0100290270914GX	18 GHz	N Type male	PC7	36 / 91	2.23	2.49	1.35	2.2	4.6	0.08	0.15
0100290271219GX	18 GHz	N Type male	PC7	48 / 122	2.87	3.21	1.35	2.2	4.6	0.08	0.15
0100290271829GX	18 GHz	N Type male	PC7	72 / 183	4.15	4.64	1.35	2.2	4.6	0.08	0.15
0100270270610GX	18 GHz	PC7	PC7	24 / 61	1.59	1.77	1.35	2.2	4.6	0.08	0.15
0100270270914GX	18 GHz	PC7	PC7	36 / 91	2.23	2.49	1.35	2.2	4.6	0.08	0.15
0100270271219GX	18 GHz	PC7	PC7	48 / 122	2.87	3.21	1.35	2.2	4.6	0.08	0.15
0100270271829GX	18 GHz	PC7	PC7	72 / 183	4.15	4.64	1.35	2.2	4.6	0.08	0.15
0100270010610GX	18 GHz	PC7	SMA male	24 / 61	1.59	1.77	1.35	2.2	4.6	0.08	0.15
0100270010914GX	18 GHz	PC7	SMA male	36 / 91	2.23	2.49	1.35	2.2	4.6	0.08	0.15
0100270011219GX	18 GHz	PC7	SMA male	48 / 122	2.87	3.21	1.35	2.2	4.6	0.08	0.15
0100270011829GX	18 GHz	PC7	SMA male	72 / 183	4.15	4.64	1.35	2.2	4.6	0.08	0.15
0100010010610HR	20 GHz	SMA male	SMA male	24 / 61	1.66	1.84	1.27	2.4	5.0	0.08	0.16
0100010880610HR	20 GHz	SMA male	SMA female	24 / 61	1.66	1.84	1.27	2.4	5.0	0.08	0.16
0100010010914HR	20 GHz	SMA male	SMA male	36 / 91	2.34	2.61	1.27	2.4	5.0	0.08	0.16
0100010880914HR	20 GHz	SMA male	SMA female	36 / 91	2.34	2.61	1.27	2.4	5.0	0.08	0.16
0100010011219HR	20 GHz	SMA male	SMA male	48 / 122	3.02	3.37	1.27	2.4	5.0	0.08	0.16
0100010881219HR	20 GHz	SMA male	SMA female	48 / 122	3.02	3.37	1.27	2.4	5.0	0.08	0.16
0100010011829HR	20 GHz	SMA male	SMA male	72 / 183	4.38	4.90	1.27	2.4	5.0	0.08	0.16
0100010881829HR	20 GHz	SMA male	SMA female	72 / 183	4.38	4.90	1.27	2.4	5.0	0.08	0.16

For custom configurations, see page 18 "How to Order" to determine your own part number.

Ultra Low Loss Test Cable



Ultra Low Loss Test Cable

Test and Measurement applications require cables for long step connections where loss is the major criteria.

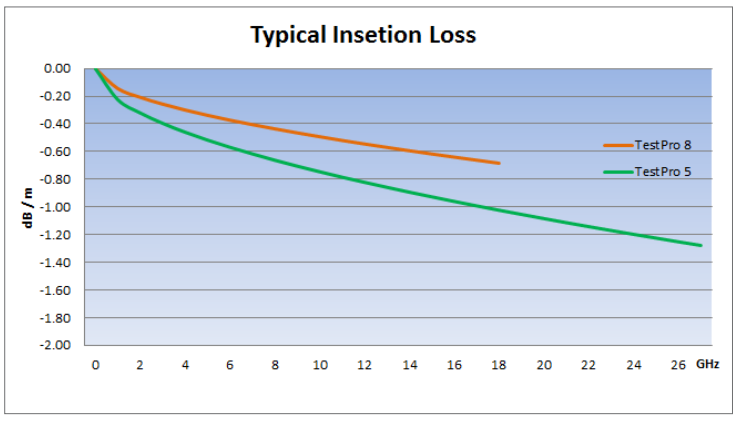
At Radiall, our first objective is to understand our customers' needs and design solutions to match. As a result, Radiall offers a range of products specifically for Ultra Low Loss long step connections.

With over 30 years of experience in manufacturing low loss cable assemblies, Radiall now offers two high performance Ultra Low Loss cables specially designed for Test and Measurement applications.

TestPro contains the **Ultra Low Loss** product range:

- "**Ultra Low Loss TestPro**" allows the use of long length cables with remote test stations and anechoic chambers. Their high stability with temperature makes them easy to use in temperature chambers. They are also suitable for high power applications.

Our TestPro Ultra Low Loss range is designed to operate in the DC - 26.5 GHz frequency range depending on connector and cable choice.



To meet Test and Measurement requirements, these cables are reinforced. They are terminated with high rugged TestPro connectors. The combination of the unique center contact captivation system and attachment method offers reliable products over multiple matings. An optional protective jacket offers a different armor level.

Key features & benefits:

- *Ultra low loss*
- *High phase stability with temperature*
- *Strain relief*
- *Crush resistance*
- *Long length available*

Typical applications include: test labs, production floor testing and anechoic chambers.

Standard assembly length available is 39 inches. Custom lengths available with short lead times.

Ultra Low Loss Test Cable Range

Ultra Low Loss Test Cable Assembly

TestPro 5 and TestPro 8 benefit from Radiall's 30 years of expertise in manufacturing Ultra Low Loss microwave cables. The low density PTFE tape wrapping elevates TestPro 5 and TestPro 8 to be top performers in the market.

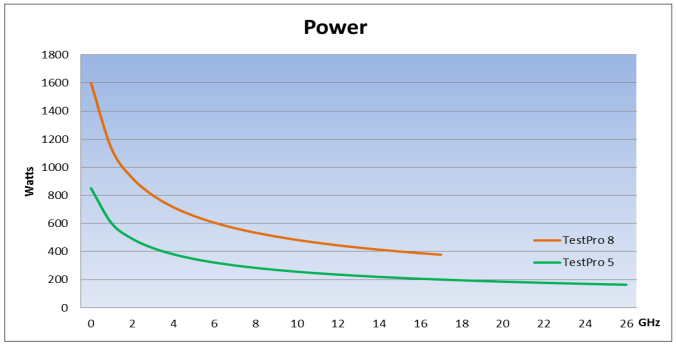
Radiall's cable assemblies are reinforced to meet Test and Measurement requirements and are terminated with ruggedized TestPro connectors. The combination of the unique center contact captivation system and attachment method ensures reliability throughout the product life cycle and multiple matings.

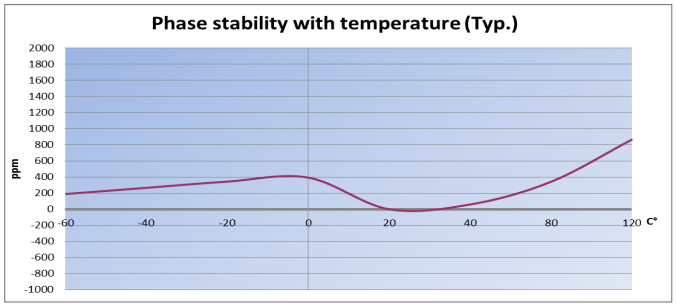
TestPro Ultra Low Loss Test and Measurement cables are designed for when loss becomes an issue and are suitable for high power applications. They offer phase stability with temperature which allows them to be used in temperature chambers.

Properties	TestPro 5	TestPro 8
Frequency range	DC - 26.5 GHz	DC - 18 GHz
Impedance	50 Ω ± 1 Ω	50 Ω ± 1 Ω
IL (dB/m)	1.02 @ 18 GHz - 1.27 @ 26.5 GHz	0.68 @ 18 GHz
IL (dB/ft)	0.31 @ 18 GHz - 0.39 @ 26.5 GHz	0.21 @ 18 GHz
Phase with flexure stability typ.	4.3° @ 18 GHz	4.3° @ 18 GHz
Phase with flexure stability max.	0.09° @ 18 GHz	0.09° @ 18 GHz
Amplitude stability (dB) typ.	0.09 @ 18 GHz	0.09 @ 18 GHz
Amplitude stability (dB) max.	0.18 @ 18 GHz	0.18 @ 18 GHz
Shielding effectiveness	-110 dB min @ 1 GHz	-110 dB min @ 1 GHz
Crush resistance	40 lb/linear in.*	60 lb/linear in.*
Minimum bend radius	25 mm (1 in.)	40 mm (1.6 in.)
Temperature (°C)	-55 / +125°C	-55 / +125°C
Connectors	SMA - N - TNC	SMA - N - TNC
Flexure life cycle	5,000	5,000
Mating cycles durability	5,000	5,000
Armor	Available	Available
ROHS / REACH	Yes	Yes



**1 lb/linear in. = 17.5 N/100 mm*





CONNECTOR OPTIONS FOR TESTPRO 5 & 8

Connector type	Description	Torque Wrench	Fmax (GHz)	TestPro 5	TestPro 8
SMA series	Straight Plug	110	26.5	M125 065 C00 (ID 099)	M125 068 C00 (ID 108)
SMA series	Right Angle Plug	110	18	M125 195 L02 (ID 007)	M125 199 L04 (ID 009)
SMA series	Straight Bulk Head Jack	-	26.5	M125 330 L02 (ID 011)	M125 338 L04 (ID 013)
TNC 18 series	Straight Plug	265	18	M143 065 C00 (ID 102)	M143 068 C00 (ID 111)
TNC 18 series	Right Angle Plug	265	18	M143 195 L02 (ID 119)	M143 198 L04 (ID 021)
TNC 18 series	Straight Bulk Head Jack	-	18	M143 330 L02 (ID 023)	M143 338 L04 (ID 025)
N 18 series	Straight Plug	170	18	M163 065 C00 (ID 105)	M163 068 C00 (ID 114)
N 18 series	Straight Bulk Head Jack	-	18	M163 195 L02 (ID 035)	M163 198 L04 (ID 037)
N 18 series	Right Angle Plug	170	18	M163 325 L02 (ID 039)	M163 328 L04 (ID 041)

Cable Assemblies

TESTPRO 5

Part number	F (GHz)	Connector		Length (in./cm)	IL typ. (dB)	IL max. (dB)	VSWR max.	Phase stability typ. (°)	Phase stability max. (°)	Amplitude stability typ. (dB)	Amplitude stability max. (dB)
0501051051000GX	18 GHz	N male	N male	39.4 / 100	1.32	1.45	1.30	4.3	8.8	0.09	0.18
0501050391000GX	18 GHz	N male	N female	39.4 / 100	1.32	1.45	1.30	4.3	8.8	0.09	0.18
0501051052000GX	18 GHz	N male	N male	78.8 / 200	2.34	2.58	1.30	4.3	8.8	0.09	0.18
0501050392000GX	18 GHz	N male	N female	78.8 / 200	2.34	2.58	1.30	4.3	8.8	0.09	0.18
0501051053000GX	18 GHz	N male	N male	118.1 / 300	3.36	3.70	1.30	4.3	8.8	0.09	0.18
0501050393000GX	18 GHz	N male	N female	118.1 / 300	3.36	3.70	1.30	4.3	8.8	0.09	0.18
0500990991000KE	26.5 GHz	SMA male	SMA male	39.4 / 100	1.59	1.74	1.27	6.5	13	0.10	0.20
0500990111000KE	26.5 GHz	SMA male	SMA female	39.4 / 100	1.59	1.74	1.27	6.5	13	0.10	0.20
0500990992000KE	26.5 GHz	SMA male	SMA male	78.8 / 200	2.86	3.14	1.27	6.5	13	0.10	0.20
0500990112000KE	26.5 GHz	SMA male	SMA female	78.8 / 200	2.86	3.14	1.27	6.5	13	0.10	0.20
0500990993000KE	26.5 GHz	SMA male	SMA male	118.1 / 300	4.12	4.53	1.27	6.5	13	0.10	0.20
0500990113000KE	26.5 GHz	SMA male	SMA female	118.1 / 300	4.12	4.53	1.27	6.5	13	0.10	0.20

TESTPRO 8

Part number	F (GHz)	Connector		Length (in./cm)	IL typ. (dB)	IL max. (dB)	VSWR max.	Phase stability typ. (°)	Phase stability max. (°)	Amplitude stability typ. (dB)	Amplitude stability max. (dB)
0801141141000GX	18 GHz	N male	N male	39.4 / 100	0.98	1.08	1.30	4.3	8.8	0.09	0.18
0801140411000GX	18 GHz	N male	N female	39.4 / 100	0.98	1.08	1.30	4.3	8.8	0.09	0.18
0801081081000GX	18 GHz	SMA male	SMA male	39.4 / 100	0.96	1.06	1.25	4.3	8.8	0.09	0.18
0801080131000GX	18 GHz	SMA male	SMA female	39.4 / 100	0.96	1.06	1.25	4.3	8.8	0.09	0.18
0801141143000GX	18 GHz	N male	N male	118.1 / 300	2.35	2.60	1.30	4.3	8.8	0.09	0.18
0801140413000GX	18 GHz	N male	N female	118.1 / 300	2.35	2.60	1.30	4.3	8.8	0.09	0.18
0801081083000GX	18 GHz	SMA male	SMA male	118.1 / 300	2.33	2.58	1.25	4.3	8.8	0.09	0.18
0801080133000GX	18 GHz	SMA male	SMA female	118.1 / 300	2.33	2.58	1.25	4.3	8.8	0.09	0.18
0801141145000GX	18 GHz	N male	N male	196.9 / 500	3.71	4.13	1.30	4.3	8.8	0.09	0.18
0801140415000GX	18 GHz	N male	N female	196.9 / 500	3.71	4.13	1.30	4.3	8.8	0.09	0.18
0801081085000GX	18 GHz	SMA male	SMA male	196.9 / 500	3.70	4.11	1.25	4.3	8.8	0.09	0.18
0801080135000GX	18 GHz	SMA male	SMA female	196.9 / 500	3.70	4.11	1.25	4.3	8.8	0.09	0.18

For custom configurations, see page 18 "How to Order" to determine your own part number.

Option

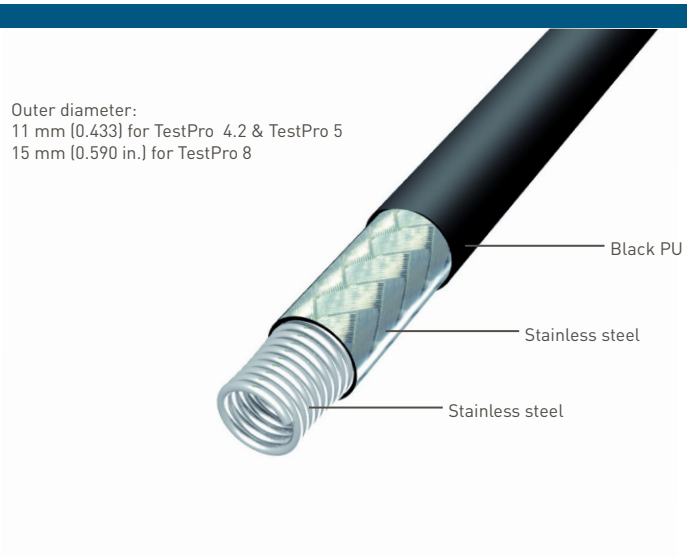
Armor Options for TestPro 4.2 / 5 / 8

The black PU jacket, stainless steel braid and stainless steel spring make ProJack suitable for harsh environments.

Main benefits:

- *High mechanical protection:*
  *Crush resistance: 2500 N / 100 mm**
  Tensile strength: 900 N
- *High flexibility (Equal to cable)*
- *Anti-torque*
- *Strain relief*
- *Anti-kinking action*
- *Secured watertightness*
- *Temperature from -55 to +100°C (-67 to +212°F)*
- *Fire resistance (FAR 25853)*

**100 N/10 mm = 5.7 lb/linear in.*



CONNECTOR OPTIONS FOR ARMORED CABLES

Connector type	Description	Torque Wrench	Fmax (GHz)	TestPro 4.2 Armored	TestPro 5 Armored	TestPro 8 Armored
SMA series	Straight Plug	110	26.5	M125 064 C01 (ID 002)	M125 065 C03 (ID 101)	M125 068 C05 (ID 110)
SMA series		110	18		M125 195 L03 (ID 008)	M125 199 L05 (ID 010)
SMA series	Straight Jack	-	26.5	M125 207 C01 (ID 089)	M125 330 L03 (ID 012)	M125 338 L05 (ID 014)
PC7 series	Straight Plug	-	18	M151 064 C01 (ID 028)		
TNC 18 series	Straight Plug	265	18	M143 064 C01 (ID 091)	M143 065 C03 (ID 104)	M143 068 C05 (ID 113)
TNC 18 series	Right Angle Plug	265	18		M143 195 L03 (ID 020)	M143 198 L05 (ID 022)
TNC 18 series	Straight Jack	-	18		M143 330 L03 (ID 024)	M143 338 L05 (ID 026)
N 18 series	Straight Plug	170	18	M163 064 C01 (ID 030)	M163 065 C03 (ID 107)	M163 068 C05 (ID 116)
N 18 series	Right Angle Plug	170	18		M163 195 L03 (ID 036)	M163 198 L05 (ID 038)
N 18 series	Straight Jack	-	18		M163 325 L03 (ID 040)	M163 328 L05 (ID 042)



TestPro 3 Low Profile

TestPro 3 Low Profile offers the same performance and electrical characteristics as TestPro 3.

The slim form factor offers a high density connection without compromising performance.

Main benefits:

- *Max diameter is 9.5 mm*
- *High phase stability with bending: 9.5° at 40 GHz*
- *High flexibility endurance: 20,000 cycles*

CONNECTOR OPTIONS FOR TESTPRO 3 LOW PROFILE

Connector type	Description	Torque Wrench	Fmax (GHz)	TestPro 3 Low Profile
SMA 3.5 series	Straight Plug	110	26.5	R127 900 011 (ID 119)
SMA 3.5 series	Straight Jack	-	26.5	R127 920 011 (ID 120)
SMA 2.9 series	Straight Plug	110	40	R127 801 331 (ID 095)
SMA 2.9 series	Straight Jack	-	40	R127 822 121 (ID 096)

TVAC Application

The Space industry requires measurement under thermal vacuum (TVAC) conditions.

To comply with TVAC requirements TestPro 2 and TestPro 3 offer the option of vented connectors.

TestPro versions with TVAC are equipped with vented connectors to withstand ESA outgassing specs for such applications.
Outgassing ACC. ESA-PSS-01-702: TML < 1%, CVCM < 0.1%



CONNECTOR OPTIONS FOR TVAC

See the table on page 9 for vented connectors.

How to Order

How to Order

Assembly Identification Code (ASIC) allows customers to quickly quote and directly build a cable assembly. An ASIC is composed of 15 characters and describes the cable, the connectors, the length and the frequency.

Place component ID into the Assembly Identification Code (ASIC) formula below to create a part number.

	Cable	Connector 1	Connector 2	Length	Frequency
ASIC =					
	Group 1	Group 2	Group 3	Group 4	Group 5

Below you can find the ID corresponding to each part of your cable assembly:

Group 1: Find your cable ID

TestPro 4.2	010
TestPro 4.2 Armored	01P
TestPro 3	180
TestPro 3 Low Profile	190
TestPro 2	200
TestPro 5	050
TestPro 5 Armored	05P
TestPro 8	080
TestPro 8 Armored	08P

Group 2: Find your connector 1 ID on page 9 or 15

Group 3: Find your connector 2 ID on page 9 or 15

Group 4: Lengh ID is the actual length you require, stated in millimeters

Example:
For a 1 meter cable assembly, you would enter in group 4: 1000
For a 50 centimeter cable assembly, you would enter in group 4: 0500
For a 36 inch (91.4 cm) cable assembly (1 inch is 2.54 cm), you would enter in group 4: 0914

Group 5: Find your frequency ID

18 GHz	GX
26.5 GHz	KE
40 GHz	PJ
50 GHz	TF
67 GHz	ZT

Accessories

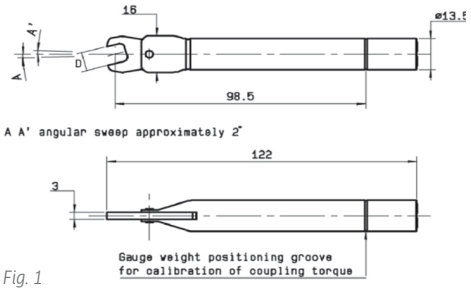


Fig. 1

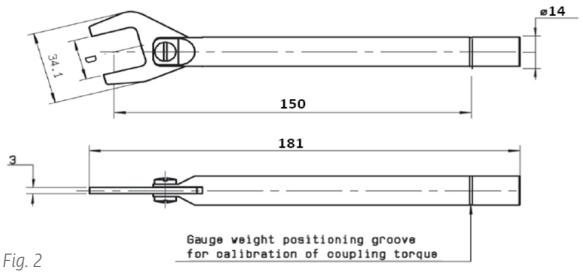


Fig. 2

TORQUE WRENCH

Part Number	Series	Coupling Torque	D (mm)	Fig.
R282320000	SMA, SMA3.5, SMA2.9, 2.4 mm, 1.85 mm	80 N.cm to 120 N.cm	8	1
R282300000	TNC 18	240 N.cm to 290 N.cm	14	2
R282303000	N 18	160 N.cm to 180 N.cm	19	2



INSERIES ADAPTORS

Part Number	Connector 1	Connector 2	Frequency (GHz)	VSWR max
R125 703 000	SMA male	SMA male	18	1.05
R125 704 000	SMA male	SMA female	18	1.14
R125 705 000	SMA female	SMA female	18	1.14
R125 703 001	SMA male	SMA male	18	1.14
R125 704 001	SMA male	SMA female	18	1.12
R125 705 001	SMA female	SMA female	18	1.14
R143 703 700	TNC 18 male	TNC 18 male	18	1.3
R143 705 700	TNC 18 male	TNC 18 female	18	1.3
R143 704 700	TNC 18 female	TNC 18 female	18	1.3
R143 710 700	TNC 18 female	TNC 18 female	18	1.3
R143 730 700	TNC 18 female	TNC 18 female	18	1.3
R163 703 701	N 18 male	N 18 male	18	1.14
R163 708 701	N 18 male	N 18 female	18	1.14
R163 705 701	N 18 female	N 18 female	18	1.14
R163 703 001	N 18 male	N 18 male	18	1.14
R163 708 001	N 18 male	N 18 female	18	1.14
R163 705 001	N 18 female	N 18 female	18	1.14
R127 973 001	3.5 mm male	3.5 mm male	26.5	1.20
R127 974 001	3.5 mm male	3.5 mm female	26.5	1.20
R127 975 001	3.5 mm female	3.5 mm female	26.5	1.20
R127 871 001	2.92 mm male	2.92 mm male	40	1.15
R127 872 001	2.92 mm male	2.92 mm female	40	1.15
R127 870 001	2.92 mm female	2.92 mm female	40	1.15
R327 703 000	2.4 mm male	2.4 mm male	50	1.15
R327 704 000	2.4 mm male	2.4 mm female	50	1.15
R327 771 000*	2.4 mm male	2.4 mm female	50	1.45
R327 705 000	2.4 mm female	2.4 mm female	50	1.15

(*) Right angle

Accessories



BETWEEN SERIES ADAPTORS

Part Number	Connector 1	Connector 2	Frequency (GHz)	VSWR max
R191 009 000	SMA male	PC7	18	1.23
R191 011 000	SMA female	PC7	18	1.23
R191 010 000	SMA3.5 male	PC7	18	1.23
R191 012 000	SMA3.5 female	PC7	18	1.23
R191 324 000	SMA3.5 male	N 18 male	18	1.21
R191 326 000	SMA3.5 male	N 18 female	18	1.21
R191 328 000	SMA3.5 female	N 18 male	18	1.21
R191 330 000	SMA3.5 female	N 18 female	18	1.21
R191 017 700	TNC 18 male	PC7	18	1.23
R191 019 700	TNC 18 female	PC7	18	1.23



TEST & MEASUREMENT ATTENUATORS (DC-40 GHZ)

Part Number	Interface	Gender	Attenuation (dB)	Power (W)	VSWR max
R4144xx150	BNC (4 GHz)	Male to Female	0 to 30 dB	2	1.15
R4145xx150	TNC (12.4 GHz)	Male to Female	0 to 30 dB	2	1.22
R4147xx150	N (18 GHz)	Male to Female	0 to 30 dB	2	1.25
R4138xx150	SMA (18 GHz)	Male to Female	0 to 30 dB	2	1.25
R4132xx150	SMA3.5 (26.5 GHz)	Male to Female	0 to 30 dB	2	1.35
R4133xx150	SMA2.9 (40 GHz)	Male to Female	0 to 30 dB	2	1.45

xx = attenuation value



TEST & MEASUREMENT TERMINATIONS (DC-50 GHZ)

Part Number	Interface	Gender	Power (W)	VSWR max
R404110150	BNC (4 GHz)	Male	2	1.12
R404115150	BNC (4 GHz)	Female	2	1.12
R404370150	TNC (12.4 GHz)	Male	2	1.15
R404375150	TNC (12.4 GHz)	Female	2	1.15
R404752000	TNC (6 GHz)	Male	30	1.3
R404762000	TNC (6 GHz)	Male	50	1.3
R404772000	TNC (6 GHz)	Male	100	1.3
R404782000	TNC (6 GHz)	Male	150	1.3
R404782020	TNC (6 GHz)	Male	200	1.3
R404753000	TNC (6 GHz)	Female	30	1.3
R404763000	TNC (6 GHz)	Female	50	1.3
R404773000	TNC (6 GHz)	Female	100	1.3
R404783000	TNC (6 GHz)	Female	150	1.3
R404783020	TNC (6 GHz)	Female	200	1.3
R404350150	N v (18 GHz)	Male	2	1.1
R404355150	N (18 GHz)	Female	2	1.12
R404750000	N (6 GHz)	Male	30	1.3
R404760000	N (6 GHz)	Male	50	1.3
R404770000	N (6 GHz)	Male	100	1.3
R404780000	N (6 GHz)	Male	150	1.3
R404780020	N (6 GHz)	Male	200	1.3
R404751000	N (6 GHz)	Female	30	1.3
R404761000	N (6 GHz)	Female	50	1.3
R404771000	N (6 GHz)	Female	100	1.3
R404781000	N (6 GHz)	Female	150	1.3
R404781020	N (6 GHz)	Female	200	1.3
R404210150	SMA (18 GHz)	Male	2	1.1
R404215150	SMA (18 GHz)	Female	2	1.1
R404754000	SMA (6 GHz)	Male	30	1.3
R404764000	SMA (6 GHz)	Male	50	1.3
R404774000	SMA (6 GHz)	Male	100	1.3
R404755000	SMA (6 GHz)	Female	30	1.3
R404765000	SMA (6 GHz)	Female	50	1.3
R404775000	SMA (6 GHz)	Female	100	1.3
R404211150	SMA3.5 (26.5 GHz)	Male	2	1.1
R404216150	SMA3.5 (26.5 GHz)	Female	2	1.12
R404280150	SMA2.9 (40 GHz)	Male	2	1.18
R404285150	SMA2.9 (40 GHz)	Female	2	1.22
R4042N0000	SMA2.4 (50 GHz)	Male	2	1.3
R4042N5000	SMA2.4 (50 GHz)	Female	2	1.3

Radiall Part Numbers

0100010010610HR 10
0100010010914HR 10
0100010011219HR 10
0100010011829HR 10
0100010880610HR 10
0100010880914HR 10
0100010881219HR 10
0100010881829HR 10
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0100270010914GX.....10
0100270011219GX.....10
0100270011829GX.....10
0100270270610GX.....10
0100270270914GX.....10
0100270271219GX.....10
0100270271829GX.....10
0100290010610GX.....10
0100290010914GX.....10
0100290011219GX.....10
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