SOLUTION GUIDE & USER HANDBOOK

RF & MICROWAVE CABLE ASSEMBLIES

AS 9100 CERTIFIED

RADIALL
The next conneXion

COMPANY Profile

Founded in 1952 in France, Radiall started as a family owned company making coaxial plugs. Today, Radiall is an international and global manufacturer of interconnect components including ***RF coaxial connectors and cable assemblies****,* ***antennas****,* ***fiber optic components****,* ***microwave components,*** *and* ***multipin connectors*** *for the Automotive, Civil Aviation, Defense, Industrial, Medical, Space and Telecommunication markets.*

QSE (Quality Safety Environment) POLICY

Radiall maintains a quality management system conforming to international standards, including for environmental protection.Our customers' recognition for the quality of our products and the sustainability of our company, demonstrates the efficiency of our quality system.

CERTIFICATIONS

Certified ISO 9001 since 1994, Radiall has a pro-active policy in terms of conforming to international standards. Today, all Radiall sites are certified to **ISO 9001:2000** and some dedicated activities are AS9100 or TS 16949. Our process approach gives us the tool for continuous improvement in all our activities.

A major step in our environment policy was the **ISO 14001** certification in 2001 of the Voreppe plant. Radiall complies with European directives such as **RoHS** for hazardous substance restrictions and **EuP** for environmentally friendly designs for energy-using products.

Some Radiall product lines are on **MIL, ESA/SCC** Qualified Product Lists.

Radiall is consequently proud to be recognized by leading industrial customers for the quality of its service and products.

A WORLDWIDE ENGINEERING & MANUFACTURING CAPABILITY

With expertise centers and manufacturing locations in 3 continents. Radiall offers its customers, through 12 industrial sites, the proximity they need to obtain the best quality of service and delivery performance. Our facilities feature state of the art equipment for the many technologies involved in the design, manufacturing and assembly of interconnect products. Manufacturing plants based in **China**, **India**, **Tunisia** and **Mexico** give the opportunity to offer Radiall quality at competitive prices.

Technical information and sales contacts are available on: www.radiall.com

Cable assemblies

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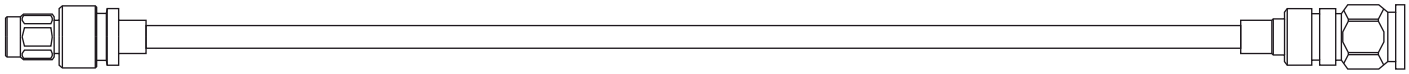

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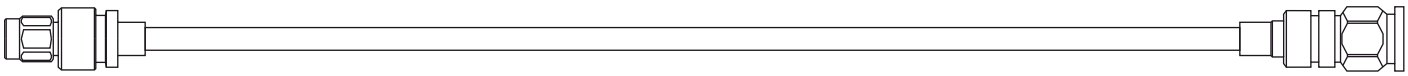
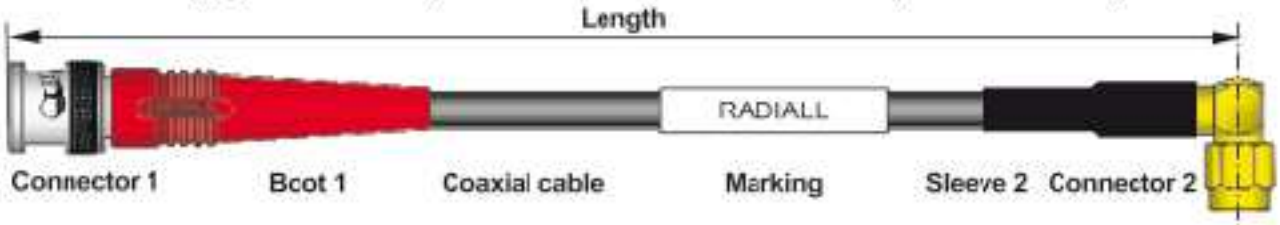
REQUIREMENTS FOR DESIGNING A CUSTOM CABLE ASSEMBLY

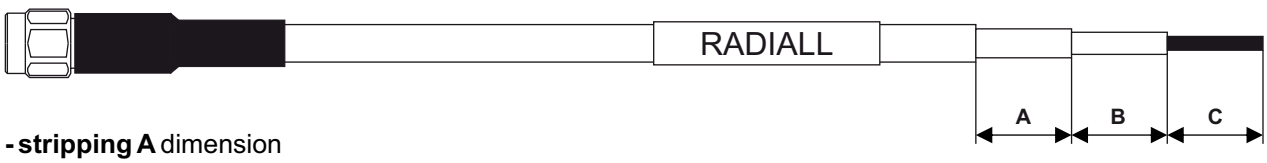


Start with identifying the needed components and the required information for your cable assembly:



- **coaxial cable** (P/N or description)
- **connector 1** (P/N or description)
- **optional boot 1 or heatshrink sleeve 1** (P/N or description)
- **connector 2** (P/N or description)
- **optional boot 2 or heatshrink sleeve 2** (P/N or description)
- **length:** Radiall standard = overall length (or please specify if length between reference planes) + **length tolerance** (Radiall standard = **±**2%)
- **marking:** Radiall standard = Radiall + P/N + batch code (or please specify if different)
- **connectors orientation** (if needed for right-angle or panel connectors)

If you need a pigtail, you will also need the following dimensions and information:



- **stripping A** dimension
- **stripping B** dimension
- **stripping C** dimension
- **tinned inner conductor** (if needed)
- **tinned braid** (if needed)

RADIALL CABLE GROUPS

The Radiall flexible cable groups are all expressed the following way: **outer diameter** of the cable (in mm) / **characteristic impedance** / **number of shields**

Example for flexible cables: 5 / 50 S

- **cable outer diameter in mm** (2.6 mm, 5 mm, 10 mm, 11 mm, …)
- **characteristic impedance** (50 Ω, 75 Ω)
- **number of shields** (S = single, D = double)

The Radiall corrugated cable groups are all expressed the following way: **outer conductor diameter** of the cable (in fraction of inch)

Example for corrugated cables: 1/2 spiral

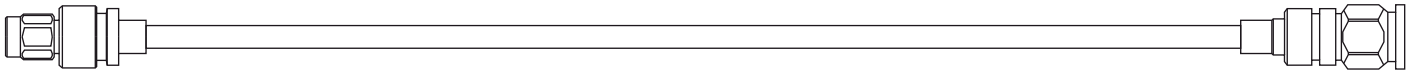
- **cable outer conductor diameter in fraction of inch** (1/4”, 3/8”, 1/2”, ...)

The Radiall semi-rigid and handformable cable groups are all expressed the following way: **outer conductor diameter** of the cable (in inches)

Example for semi-rigid & handformable cables: .141”

- **cable outer conductor diameter in inches** (.085”, .141”, .250”, …)

SPECIFY THE RIGHT CABLE FOR YOUR APPLICATION



flexibility

attenuation

RG flexible cables

Standardized by MIL-C-17 US government specification since the 40's, these familiar P/N's are mainly used for military RF and microwave applications.

Every electrical, mechanical and environmental performance is controlled and in compliance with the relevant standard.

KX cables are equivalent to RG cables under french standards (NF).

These cables will be of perfect use with dynamic applications (bending moment) or needing flexibility for ease of connection.

RADIALL Eco-friendly low loss cables

These high performance custom cables have been designed for optimized electrical and environmental requirements.

Cost effective compared with RG cables, they are the perfect alternative to fulfill your needs.

These cables are halogen free and flame retardant to meet safety environmental regulations.

Hand-formable cables

Using a tin-dipped braid technology, these cables are a compromise between performance and flexibility.

They allow easy routing during installation (without spring-back effect) and multiple repositions on site.

Preserving high performance level (low loss and high shielding efficiency,) they are a good cost-effective alternative to semi-rigid cables.

Corrugated cables

The outer conductor of these cables is constituted of a corrugated tube (spiral or ringed winding).

This construction allows perfect shielding and some bendability while respecting large bending radius.

The hight performance level of these cables enable them to be used in outdoor long length transmission lines.

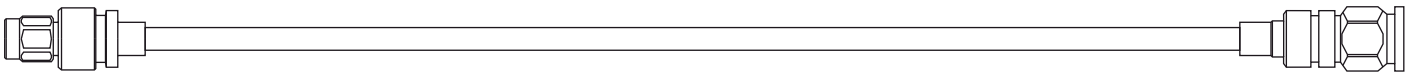
Semi-rigid cables

The solid tubing technology allows definitive and high precision forming. These cables use only high grade insulation material and feature optimal shielding effectiveness. They provide the highest electrical performance (e.g : the lowest insertion loss)

KS cables are equivalent to semi-rigid RG cables under French standards (NF)

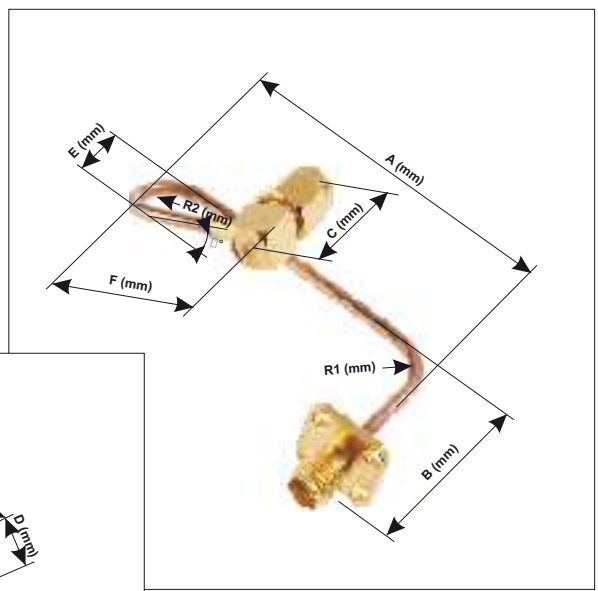
These cables can also be used for cosmetic aspect where straight and clear cable path must be demonstrated.

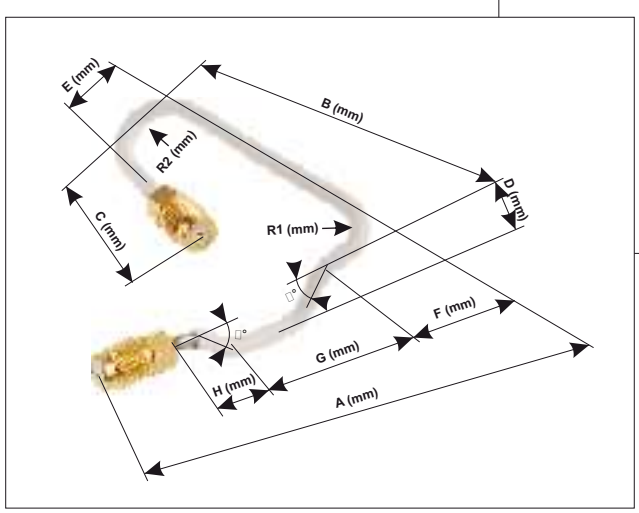
EXAMPLES OF APPLICATIONS



Flexible cable-assemblies

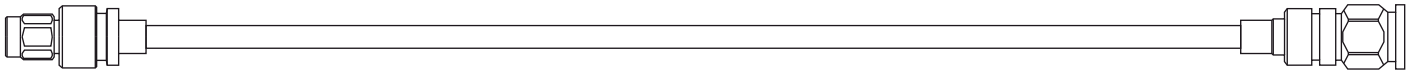
Hand formable cable-assemblies





Semi-rigid cable-assemblies

GLOSSARY OF TERMS
(used in the following pages)



BBR = (Bronze Blanc Radiall = Radiall white bronze) alloy of copper + tin + zinc + … used in replacement of nickel and featuring: good conductivity, low IMP3, good solderability, excellent corrosion resistance, high abrasion resistance, low surface friction, environmentally friendly and bright finish

Bulkhead feedthrough = panel connector fixed through the wall with a nut and requiring 1 single hole.

Captive center contact = the position of the center contact in the interface is guaranteed with a specific mechanical system.

Clamp attachment = the outer ferrule is fixed on the cable outer conductor with a clamp system and the center contact is soldered on the cable inner conductor.

Corrugated cables = the outer conductor is constituted of a corrugated tube (spiral or ringed winding) allowing some bendability while respecting large bending radius.

Crimp attachment = the outer ferrule is crimped on the cable outer conductor and the center contact is soldered on the cable inner conductor.

Flange mount =panel connector screwed into the wall and requiring several holes:
- 5 holes for a square flange (1 for the line + 4 for the screws),
- 3 holes for a rectangular flange (1 for the line + 2 for the screws).

Full crimp attachment = the outer ferrule is crimped on the cable outer conductor and the center contact is crimped on the cable inner conductor.

Heatshrink sleeves = optional sleeves used in replacement of the bottom plastic boot when the connector is not compatible with this boot.

Interface = in coaxial connectors, traditionally, the plugs have male center contact and the jacks have female center contact. Some series like SMP, SMB ,SMC and BMA have reverse genders and are pointed out.

Low intermodulation = IMP3 max = -110 dBm.

Panel floatting = connector allowing alignment tolerance.

Panel sealed = rainproof.

Plastic boot compatible = see list of optional bottom plastic boots at the end of the series charts.

Snap-in = panel connector fixed on the wall with an elastic clip and requiring 1 single hole.

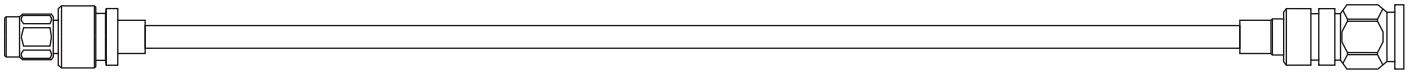
Solder attachment = the outer contact is soldered on the semi-rigid or hand-formable cable outer conductor and the center contact is soldered on the cable inner conductor.

Terminal = extremity of an RF line designed for the attachment (solder) on a PCB.

Threaded flange holes = M2.5 x 0.45 (ISO) is equivalent to 3-56-UNF-2B (USA).

Zamak = alloy of zinc + aluminium + … and allowing die-cast spare parts.

FINDER GUIDE
CABLES VS INSERTION LOSS



STANDARD FLEXIBLE CABLES

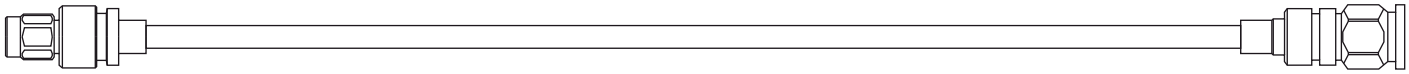
Cable group	Cable page	Cable type	1 GHz (VHF/UHF) *dB/m dB/ft*	2 GHz (band L) *dB/m dB/ft*	3 GHz (band S) *dB/m dB/ft*	6 GHz (band C) *dB/m dB/ft*	8 GHz (band C) *dB/m dB/ft*	12.4 GHz (band X) *dB/m dB/ft*	18 GHz (band Ku) *dB/m dB/ft*
0.8/50 S	12	132390 type	2.41/0.73	3.51/1.06	4.93/1.49				
1/50 S	14	50 VMTX type	2.12/0.64	3.36/1.02	4.45/1.35				
	15	P532590A type	1.50/0.45	2.16/0.66	2.69/0.81	3.92/1.19			
1/75 S	17	75 VMTX type	2.22/0.67	3.14/0.95					
2/50 S	19	RG178/KX21	1.54/0.47	2.20/0.67	2.72/0.82				
	20	RG178 non mag type	1.34/0.41	1.92/0.58	2.37/0.72				
2/50 D	24	124416 type	1.34/0.41	1.92/0.58	2.37/0.72				
2/75 S	26	296775 type	1.38/0.42	1.98/0.60	2.46/0.75				
2.6/50 S	28	RG174/KX3B	★ 1.07/0.32						
	29	RG316/KX22A	0.86/0.26	1.24/0.38	1.54/0.47				
2.6/50 D	37	RD316	0.86/0.26	1.24/0.38	1.54/0.47				
2.6/75 S	43	RG179	0.95/0.29	1.37/0.41	1.70/0.51				
5/50 S	46	RG58/KX15	★ 0.67/0.20						
5/50 D	51	RG142	0.44/0.13	0.65/0.20	0.81/0.25	1.22/0.37	1.45/0.44	1.90/0.58	
	52	RG223	0.46/0.14	0.67/0.20	0.85/0.26	1.27/0.38	1.51/0.46	1.97/0.60	
	53	RG400	0.52/0.16	0.76/0.23	0.95/0.29	1.42/0.43	1.68/0.51	2.19/0.66	
	54	KX23	0.48/0.14	0.70/0.21	0.89/0.27	1.35/0.41	1.61/0.49		
	61	POWER142	★ 0.41/0.12	0.58/0.18	0.72/0.22				
6/75 S	71	RG59	0.44/0.13						
	72	KX6A	0.48/0.15						
10/50 S	75	RG213/KX4	0.24/0.07						
10/50 D	78	RG393	0.23/0.07	0.35/0.11	0.45/0.14	0.71/0.21	0.86/0.26	$1.07_{(11)}/0.32_{(11)}$	
11/50 D	83	RG214/KX13	0.24/0.07	0.36/0.11	0.47/0.14	0.73/0.22	0.89/0.27	$1.1_{(11)}/0.33_{(11)}$	
11/75 D	86	RG216	0.32/0.10	0.48/0.14	0.60/0.18				

LOW-LOSS ECO-FRIENDLY FLEXIBLE CABLES *(alternative to RG cables)*

Cable group	Cable page	Cable type	1 GHz (VHF/UHF) *dB/m dB/ft*	2 GHz (band L) *dB/m dB/ft*	3 GHz (band S) *dB/m dB/ft*	6 GHz (band C) *dB/m dB/ft*	8 GHz (band C) *dB/m dB/ft*	12.4 GHz (band X) *dB/m dB/ft*	18 GHz (band Ku) *dB/m dB/ft*
2.6/50 S	30	ECO316	★ 0.76/0.23	1.09/0.33	1.34/0.41				
	31	ECO316X	0.96/0.29	1.45/0.44	1.85/0.56				
2.6/50 D	38	ECO316D	★ 0.76/0.23	1.09/0.33	1.34/0.41				
	39	ECO316DX	0.86/0.26	1.30/0.40	1.68/0.51	2.64/0.80			
5/50 D	60	ECO142	★ 0.41/0.12	0.58/0.18	0.72/0.22				
	55	ECO142X	0.54/0.16	0.83/0.25	1.07/0.32	1.70/0.51			
6/50 D	68	ECO230	0.28/0.08	0.40/0.12	0.50/0.15				
10/50 D	80	ECO393	★ 0.16/0.05	0.24/0.07	0.30/0.09				

: Service + program: fast delivery, please read page 129. ★ : cost effective solution. ECO : ECO-Friendly cables : in accordance with ROHS regulation.

FINDER GUIDE
CABLES VS INSERTION LOSS



LOW-LOSS FLEXIBLE CABLES

Cable group	Cable page	Cable type	1 GHz (VHF/UHF) *dB/m dB/ft*	2 GHz (band L) *dB/m dB/ft*	3 GHz (band S) *dB/m dB/ft*	6 GHz (band C) *dB/m dB/ft*	8 GHz (band C) *dB/m dB/ft*	12.4 GHz (band X) *dB/m dB/ft*	18 GHz (band Ku) *dB/m dB/ft*
SHF5LI	66	5/50D	0.26/0.08	0.38/0.11	0.47/0.14	0.68/0.21	0.80/0.24	1.03/0.31	
LMR200	88	LMR200	0.34/0.10	0.49/0.15	0.61/0.18	0.88/0.27			
LMR400	90	LMR400	0.14/0.04	0.20/0.06	0.25/0.07	0.37/0.11			
LMR600	92	LMR600	0.09/0.03	0.13/0.04	0.16/0.05	0.25/0.07			

CORRUGATED CABLES *(spiral outer shielding)*

Cable group	Cable page	Cable type	2 GHz (band L) *dB/m dB/ft*	3 GHz (band S) *dB/m dB/ft*	6 GHz (band C) *dB/m dB/ft*	8 GHz (band C) *dB/m dB/ft*	12.4 GHz (band X) *dB/m dB/ft*	18 GHz (band Ku) *dB/m dB/ft*	20 GHz (band Ku) *dB/m dB/ft*
Cellflex 1/4"	94	HCF 1/4" -50 AlCu	0.27/0.08	0.34/0.10		0.60/0.18	0.78/0.24	0.99/0.30	1.06/0.32
Cellflex 3/8"	97	HCF 3/8" CuH-50 AlCu	0.19/0.06	0.24/0.07		0.43/0.13	$0.54_{(11.7)}$/$0.16_{(11.7)}$		
Cellflex 1/2"	100	HCF 1/2" CuH-50 AlCu	0.16/0.05	0.20/0.06		0.36/0.11	$0.42_{(10)}$/$0.13_{(11.7)}$		

HAND-FORMABLE AND SEMI-RIGID CABLES

Cable group	Cable page	Cable type	2 GHz (band L) *dB/m dB/ft*	3 GHz (band S) *dB/m dB/ft*	6 GHz (band C) *dB/m dB/ft*	8 GHz (band C) *dB/m dB/ft*	12.4 GHz (band X) *dB/m dB/ft*	18 GHz (band Ku) *dB/m dB/ft*	20 GHz (band Ku) *dB/m dB/ft*
.047"	103	SR copper	1.64/0.50	2.03/061		3.43/1.04	4.73/1.32	5.39/1.63	5.72/1.73
	104	SR tinned copper	1.64/0.50	2.03/061		3.43/1.04	4.73/1.32	5.39/1.63	5.72/1.73
.085"	106	Hand. unjacketed	0.97/0.29	1.21/0.37		2.10/0.64	2.71/0.82	3.39/1.03	3.62/1.10
	107	SR RG405/KS1	0.94/0.29	1.18/0.36		2.05/0.62	2.64/0.80	3.31/1.00	3.53/1.07
	108	SR tinned copper	0.94/0.29	1.18/0.36		2.05/0.62	2.64/0.80	3.31/1.00	3.53/1.07
	109	SR aluminum	0.98/0.30	1.22/0.37		2.12/0.64	2.73/0.83	3.41/1.03	3.64/1.10
.141"	114	Hand. unjacketed	0.57/0.17	0.72/0.22		1.30/0.39	1.71/0.52	2.18/0.66	2.34/0.71
	115	Hand. FEP jacketed	0.63/0.19	0.80/0.24		1.42/0.43	1.87/0.57	2.37/0.72	2.54/0.77
	116	Hand. Hal. Free jacket	0.63/0.19	0.80/0.24		1.42/0.43	1.87/0.57	2.37/0.72	2.54/0.77
	117	SR RG402/KS2	0.50/0.15	0.64/0.19		1.17/0.35	1.55/0.47	1.99/0.06	2.14/0.65
	118	SR tinned copper	0.50/0.15	0.64/0.19		1.17/0.35	1.55/0.47	1.99/0.06	2.14/0.65
	119	SR silvered copper	0.50/0.15	0.64/0.19		1.17/0.35	1.55/0.47	1.99/0.06	2.14/0.65
	120	SR aluminum	0.53/0.16	0.67/0.20		1.23/0.37	1.62/0.49	2.08/0.63	2.23/0.38
.250"	125	SR RG401/KS3	0.31/0.09	0.41/0.12		0.79/0.24	1.08/0.33	1.42/0.43	1.54/0.47
	126	SR aluminum	0.33/0.10	0.43/0.13		0.83/0.25	1.13/0.34	1.48/0.45	1.60/0.49

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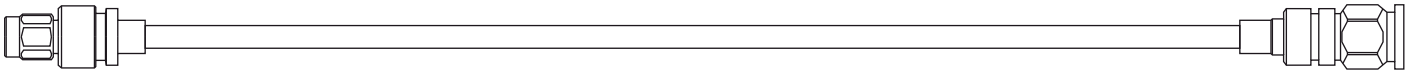
FINDER GUIDE
CABLES VS CONNECTOR INTERFACE



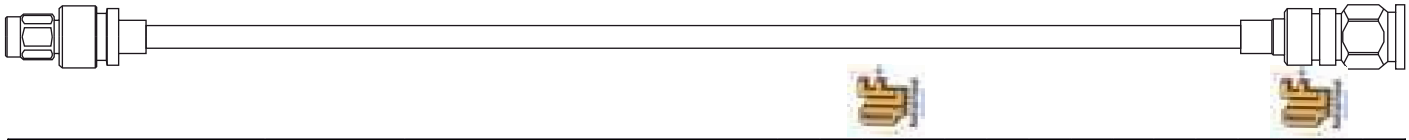
Cable group	Cable page	Cable type	Terminals	UMP	MMS	MMT	SMP	MC-Card	MMBX	MMCX	Coaxipack	MCX	MCX 75 Ω	SMB	RP SMB	DIN 1.0/2.3	DIN 1.6/5.6	DTF
STANDARD FLEXIBLE CABLES																		
0.8/50 S	12	132390 type		♦														
1/50 S	14	50 VMTX type	♦	♦	♦							♦						
	15	P532590A type	♦	♦	♦							♦						
1/75 S	17	75 VMTX type		♦	♦													
2/50 S	19	RG178/KX21	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦		♦				
	20	RG178 non mag type	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦		♦				
2/50 D	24	124416 type			♦	♦	♦											
2/75 S	26	296775 type			♦	♦	♦											
2.6/50 S	28	RG174/KX3B	♦	♦		♦	♦	♦	♦	♦	♦	♦		♦		♦		
	29	RG316/KX22A	♦	♦		♦	♦	♦	♦	♦	♦	♦		♦		♦		
2.6/50 D	37	RD316	♦			♦	♦	♦	♦			♦		♦	♦			
2.6/75 S	43	RG179	♦										♦	♦		♦	♦	♦
5/50 S	46	RG58/KX15																
5/50 D	51	RG142																
	52	RG223																
	53	RG400																
	54	KX23																
	61	POWER142																
6/75 S	71	RG59															♦	♦
	72	KX6A															♦	♦
LOW-LOSS ECO-FRIENDLY FLEXIBLE CABLES *(alternative to RG cables)*																		
2.6/50 S	30	ECO316	♦	♦		♦	♦	♦	♦	♦	♦	♦		♦		♦		
	31	ECO316X	♦			♦	♦	♦	♦			♦		♦	♦			
2.6/50 D	38	ECO316D																
	39	ECO316DX																
5/50 D	60	ECO142																
	55	ECO142X																
6/50 D	68	ECO230																
10/50 D	80	ECO393																
HAND-FORMABLE AND SEMI-RIGID CABLES																		
.047"	103	SR copper	♦				♦					♦						
	104	SR tinned copper	♦				♦					♦						
.085"	106	Hand. unjacketed					♦	♦		♦		♦		♦				
	107	SR RG405/KS1					♦	♦		♦		♦		♦				
	108	SR tinned copper					♦	♦		♦		♦		♦				
	109	SR aluminum					♦	♦		♦		♦		♦				
.141"	114	Hand. unjacketed										♦						
	115	Hand. FEP jacketed										♦						

: Service + program: fast delivery, please read page 129.

ECO : ECO-Friendly cables : in accordance with ROHS regulation.

Cable assemblies

FINDER GUIDE
CABLES VS CONNECTOR INTERFACE

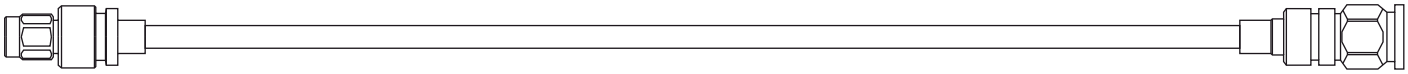


Cable group	Cable page	Cable type	SMA	RP SMA	QMA	BMA	BNC	BNC 75Ω	RP BNC	TNC	TNC 75Ω	RP TNC	N	N 75Ω	QN	UHF	DIN 7/16
STANDARD FLEXIBLE CABLES																	
2/50 S	19	RG178/KX21	♦	♦			♦					♦	♦				
	20	RG178 non mag type	♦	♦			♦					♦	♦				
2/50 D	24	124416 type					♦						♦				
2.6/50 S	28	RG174/KX3B	♦	♦	♦	♦	♦			♦		♦	♦				
	29	RG316/KX22A	♦	♦	♦	♦	♦			♦		♦	♦				
2.6/50 D	37	RD316	♦	♦	♦	♦	♦			♦			♦				
2.6/75 S	43	RG179						♦		♦							
5/50 S	46	RG58/KX15	♦	♦	♦		♦		♦	♦		♦	♦		♦		♦
5/50 D	51	RG142	♦	♦	♦	♦	♦		♦	♦		♦	♦		♦		♦
	52	RG223	♦	♦	♦	♦	♦		♦	♦		♦	♦		♦		♦
	53	RG400	♦	♦	♦	♦	♦		♦	♦		♦	♦		♦		♦
	54	KX23	♦	♦	♦	♦	♦		♦	♦		♦	♦		♦		♦
	61	POWER142	♦	♦	♦		♦		♦	♦		♦	♦		♦		♦
6/75 S	71	RG59						♦			♦			♦		♦	
	72	KX6A						♦			♦			♦		♦	
10/50 S	75	RG213/KX4					♦			♦		♦	♦		♦	♦	♦
10/50 D	78	RG393					♦			♦			♦				♦
11/50 D	83	RG214/KX13					♦			♦			♦		♦		♦
11/75 D	86	RG216						♦						♦			
LOW-LOSS ECO-FRIENDLY FLEXIBLE CABLE *(alternative to RG cables)*																	
2.6/50 S	30	ECO316	♦	♦	♦	♦	♦			♦		♦	♦				
	31	ECO316X															
2.6/50 D	38	ECO316D	♦	♦	♦	♦	♦			♦			♦				
	39	ECO316DX															
5/50 D	60	ECO142	♦	♦	♦		♦		♦	♦		♦	♦		♦		♦
	55	ECO142X															
6/50 D	58	ECO230	♦		♦								♦				♦
10/50 D	80	ECO393					♦			♦		♦	♦		♦	♦	♦
LOW-LOSS FLEXIBLE CABLES																	
5/50D	66	SHF5LI											♦				♦
LMR200	88	LMR200								♦		♦	♦				♦
LMR400	90	LMR400	♦									♦	♦				♦
LMR600	92	LMR600											♦				
CORRUGATED CABLES *(spiral outer shielding)*																	
Cellflex 1/4"	94	HCF 1/4" -50 AlCu											♦				♦
Cellflex 3/8"	97	HCF 3/8" CuH-50 AlCu											♦				♦
Cellflex 1/2"	100	HCF 1/2" CuH-50 AlCu											♦				♦
HAND-FORMABLE AND SEMI-RIGID CABLES																	
.085"	106	Hand. unjacketed	♦		♦	♦				♦			♦				
	107	SR RG405/KS1	♦		♦	♦				♦			♦				
	108	SR tinned copper	♦		♦	♦				♦			♦				
	109	SR aluminum	♦		♦	♦				♦			♦				
.141"	114	Hand. unjacketed	♦		♦	♦	♦			♦			♦		♦		
	115	Hand. FEP jacketed	♦		♦	♦	♦			♦			♦		♦		
	116	Hand. Hal. Free jacket	♦		♦	♦	♦			♦			♦		♦		
	117	SR RG402/KS2	♦		♦	♦	♦			♦			♦		♦		
	118	SR tinned copper	♦		♦	♦	♦			♦			♦		♦		
	119	SR silvered copper	♦		♦	♦	♦			♦			♦		♦		
	120	SR aluminum	♦		♦	♦	♦			♦			♦		♦		
.250"	125	SR RG401/KS3											♦		♦		♦
	126	SR aluminum											♦		♦		♦

: Service + program: fast delivery, please read page 129.

ECO : ECO-Friendly cables : in accordance with ROHS regulation.

FLEXIBLE CABLE 0.8/50 S
(132390 type)



Radiall P/N : C291 042 066

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPC(1)	0.16	0.006
dielectric	solid PFA(2)	0.50	0.020
inner shield	SPC(1) braid	0.70	0.028
outer shield	-	-	-
jacket	white FEP(3)	0.83 max	0.033 max

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 3 Ω	
operating frequency range	DC - 3 GHz	
shielding effectiveness	40 dB	
voltage withstanding	18 000 V rms	
peak power	6 kW	
capacitance	95 pF / m	28.8 pF / ft
velocity of propagation	69 % (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	4 mm	0.157 inch
weight	1.8 g / m	0.001 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-50 / +200°C	-58 / +392°F
fire resistance	yes (UL94V0)	
halogen free	no	

APPLICATION NOTE

The very small outer diameter and bending moment of this cable allow very easy routing during installation.

Its very light weight makes it perfect to be used in all miniature and space saving applications.

The insulation and jacket materials allows this cable to be used in severe thermal conditions.

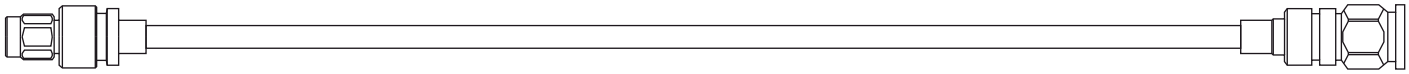
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level / 40°C)

GHz	dB / m	dB / ft	Watts
0.1	0.64	0.19	45
0.2	0.88	0.27	34
0.3	1.90	0.58	28
0.4	1.28	0.39	22
0.5	1.48	0.45	20
1.0	2.41	0.73	14
1.5	3.03	0.92	12
2.0	3.51	1.06	10
2.5	4.20	1.27	9
3.0	4.93	1.49	8

(1) SPC = Silver Plated Copper
(2) PFA = PerFluoroAlkoxy
(3) FEP = Fluorinated Ethylene Propylene

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

CONNECTORS COMPATIBLE WITH CABLE 0.8/50 S



UMP series

(temperature range cables = -40 / +90°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R107 001 000 ⋆	plug	straight	solder	6	350	yes	brass	gold	H2 - lock
R107 011 000	plug	straight	solder	6	350	yes	brass	gold	H2 - snap-on
R107 021 020	plug	straight	solder	6	350	yes	brass	gold	H2 – slide-on

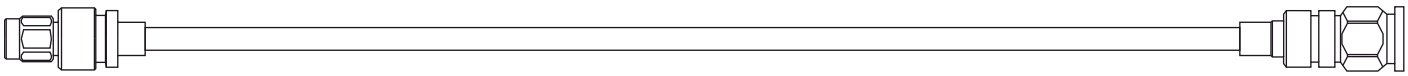
Note: the above P/N are only indicative and cannot be ordered separately from an assembly.

Heatshrink sleeves

a large range of heatshrink sleeves is available: please consult us.

⋆ : cost effective solution.

FLEXIBLE CABLE 1/50 S
(50 VMTX type)



Radiall P/N : C291 050 060 (Nexans black 50 VMTX)
Radiall P/N : C291 050 066 (Nexans white 50 VMTX) S+

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPC(1)	0.17	0.007
dielectric	solid PTFE(2)	0.52	0.020
inner shield	SPC(1) braid	0.70	0.028
outer shield	-	-	-
jacket	FEP(3)	1.17	0.046

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 5 Ω	
operating frequency range	DC - 3 GHz	
shielding effectiveness	40 dB	
voltage withstanding	19 000 V rms	
peak power	7 kW	
capacitance	85 pF / m	27.3 pF / ft
velocity of propagation	69 % (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	6 mm	0.236 inch
weight	3 g / m	0.002 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-90 / +200°C	-130 / +392°F
fire resistance	yes (UL94V0)	
halogen free	No	

APPLICATION NOTE

The very small outer diameter and bending moment of this cable allow very easy routing during installation.

Its very light weight makes it perfect to be used in all miniature and space saving applications.

The insulation and jacket materials allows this cable to be used in severe thermal conditions.

FREQUENCY / ATTENUATION (20°C) / CW MAX POWER (sea level / 40°C)

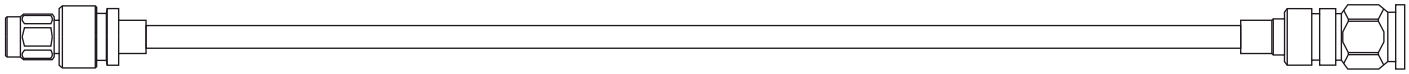
GHz	dB / m	dB / ft	Watts
0.1	0.54	0.16	82
0.2	0.80	0.24	58
0.3	1.01	0.31	45
0.4	1.20	0.36	39
0.5	1.37	0.42	34
1.0	2.12	0.64	25
1.5	2.76	0.84	21
2.0	3.36	1.02	17
2.5	3.91	1.19	15
3.0	4.45	1.35	14
attenuation calculation (dB / m)	(1.51 x √F GHz) + (0.61 x F GHz)		

(1) SPC = Silver Plated Copper
(2) PTFE = PolyTetraFluoroEthylene
(3) FEP = Fluorinated Ethylene Propylene

S+ : Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

FLEXIBLE CABLE 1/50 S
(P532590A type)



Radiall P/N : C291 066 070

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	stranded SPC(1)	0.30	0.012
dielectric	solid PTFE(2)	0.89	0.035
inner shield	SPC(1) braid	1.11	0.044
outer shield	-	-	-
jacket	black FEP(3)	1.37	0.054

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 6 GHz	
shielding effectiveness	55 dB	
voltage withstanding	800 V rms	
peak power	1 kW	
capacitance	96.5 pF / m	29.2 pF / ft
velocity of propagation	69.5 % (4,8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	6.9 mm	0.272 inch
weight	4.5 g / m	0.003 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-90 / +155°C	-130 / +311°F
fire resistance	yes (CSA FT6 / IEC 332-2)	
halogen free	no	

APPLICATION NOTE

The stranded center conductor enable this cable to be classified as **"superflexible" (120 000 flexions guaranteed)**.

The very small outer diameter and bending moment allow very easy routing during installation..

Its very light weight makes it perfect to be used in all miniature and space saving applications.

The insulation and jacket materials allows this cable to be used in severe thermal conditions.

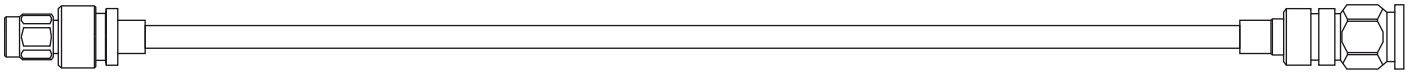
(1) SPC = Silver Plated Copper
(2) PTFE = PolyTetraFluoroEthylene
(3) FEP = Fluorinated Ethylene Propylene

FREQUENCY / ATTENUATION (25°C) / CW MAX POWER (sea level / 25°C)

GHz	dB / m	dB / ft	Watts
0.5	1.04	0.32	50
1.0	1.49	0.45	30
1.5	1.84	0.56	25
2.0	2.14	0.66	22
2.5	2.41	0.74	20
3.0	2.66	0.81	18
3.5	2.89	0.88	15
4.0	3.11	0.95	12
5.0	3.51	1.08	11
6.0	3.89	1.19	10
attenuation calculation (dB / m)	(1.415 x √F GHz) + (0.07 x F GHz)		

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

CONNECTORS COMPATIBLE WITH CABLE 1/50 S



UMP series

(temperature range = -40 / +90°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R107 001 000 ★	plug	straight	solder	6	350	yes	brass	gold	H2 - lock
R107 011 000	plug	straight	solder	6	350	yes	brass	gold	H2 - snap-on
R107 021 020	plug	straight	solder	6	350	yes	brass	gold	H2 – slide-on

The above P/N are only indicative and cannot be ordered separately from an assembly.

MMS series

(temperature range = -40 / +90°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R209 351 020 ★	plug	right-angle	crimp	6	250	yes	zamak	nickel	-

The above P/N are only indicative and cannot be ordered separately from an assembly

MCX series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R113 070 000	plug	straight	crimp	3	250	no	brass	gold	-
R113 070 020	plug	straight	crimp	3	250	no	brass	nickel	-

Terminals

(temperature range = -55 / +155°C)

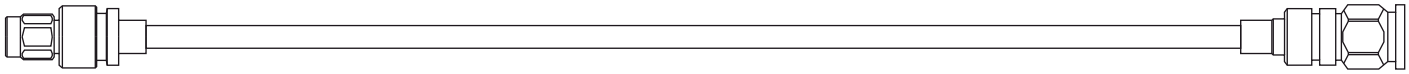
Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Material	Finish	PCB	Miscellaneous
R280 278 300	terminal	straight	crimp	3	2 000	brass	gold	2 solder pins	-

Heatshrink sleeves

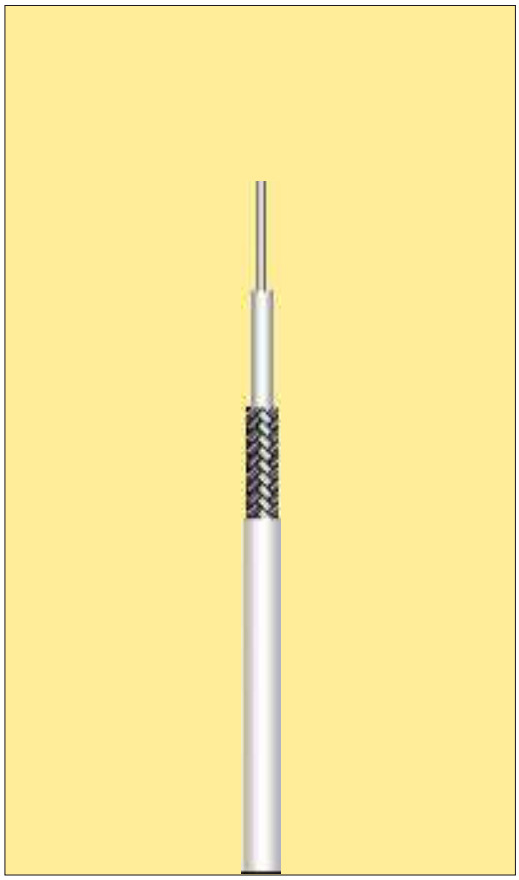
a large range of heatshrink sleeves is available: please consult us.

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

FLEXIBLE CABLE 1/75 S
(75 VMTX type)



Radiall P/N : C291 055 076



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPCCS(1)	0.10	0.004
dielectric	solid PTFE(2)	0.57	0.022
inner shield	SPC(3) braid	0.80	0.031
outer shield	-	-	-
jacket	white FEP(4)	1.22	0.048

ELECTRICAL CHARACTERISTICS

characteristic impedance	80 Ω ± 8 Ω	
operating frequency range	DC - 2 GHz	
shielding effectiveness	40 dB	
voltage withstanding	26 000 V rms	
peak power	9 kW	
capacitance	60 pF / m	18.3 pF / ft
velocity of propagation	69.5 % (4,8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	6.1 mm	0.240 inch
weight	3 g / m	0.002 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-90 / +200°C	-130 / +392°F
fire resistance	yes (UL94V0)	
halogen free	No	

APPLICATION NOTE

Due to its 75Ω characteristics impedance, this cable is rather dedicated to TV/Video application.

The very small outer diameter and bending moment allow very easy routing during installation..

Its very light weight makes it perfect to be used in all miniature and space saving and dynamic applications.

Usabled in severe thermal conditions.

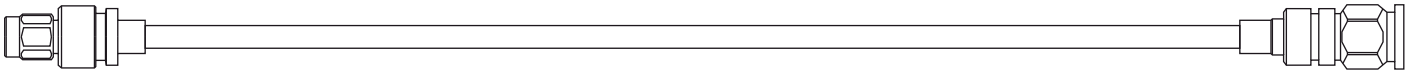
FREQUENCY / ATTENUATION (20°C) / CW MAX POWER (sea level 40°C)

GHz	dB / m	dB / ft	Watts
0.1	0.70	0.21	86
0.2	0.99	0.30	64
0.3	1.22	0.37	50
0.4	1.40	0.42	41
0.5	1.57	0.47	38
0.6	1.72	0.52	35
0.8	1.99	0.60	30
1.0	2.22	0.67	26
1.5	2.71	0.82	21
2.0	3.15	0.95	18
attenuation calculation (dB / m)	(2.218 x √F GHz) + (0.005 x F GHz)		

(1) SPCCS = Silver Plated Copper covered steel
(2) PTFE = PolyTetraFluoroEthylene
(3) SPC = Silver Plated Copper

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

CONNECTORS COMPATIBLE WITH CABLE 1/75 S



UMP series (50 Ω interface) **(temperature range = -40 / +90°C)**

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R107 001 020	plug	straight	solder	6	350	yes	brass	gold	H2 - lock

The above P/N are only indicative and cannot be ordered separately from an assembly.

MMS series (50 Ω interface)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R209 351 020 ⋆	plug	right-angle	crimp	6	250	yes	zamak	nickel	-

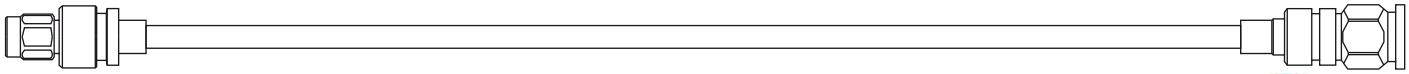
The above P/N are only indicative and cannot be ordered separately from an assembly.

Heatshrink sleeves

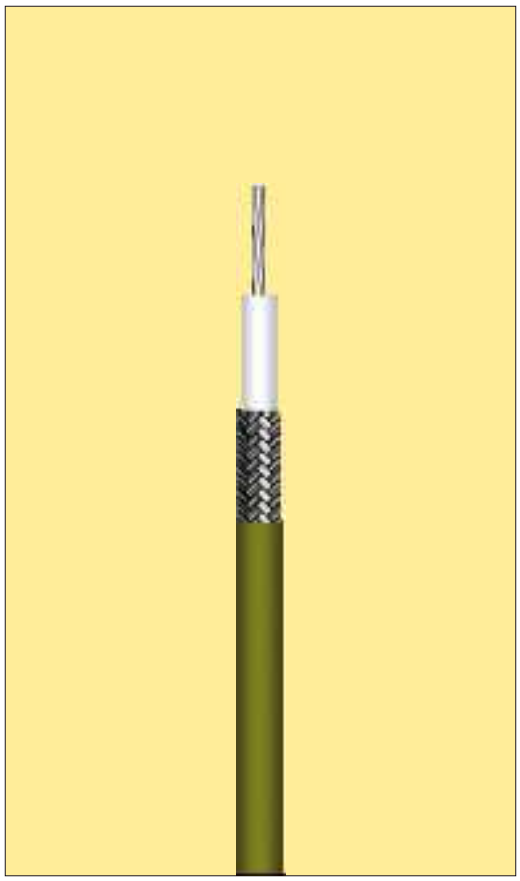
a large range of heatshrink sleeves is available: please consult us.

⋆ : cost effective solution.

FLEXIBLE CABLE 2/50 S
(RG178 - KX21A)



Radiall P/N : C291 145 007 (MIL-C-17/93-RG178)
Radiall P/N : C291 145 017 (NF-C-93/550-KX21A)



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	stranded SPCCS(1)	0.30	0.012
dielectric	solid PTFE(2)	0.84	0.033
inner shield	SPC(3) braid	1.30	0.051
outer shield	-	-	-
jacket	brown FEP(4)	1.78	0.07

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 3 GHz	
shielding effectiveness	40 dB	
voltage withstanding	2 000 V rms	
peak power	1 kW	
capacitance	96 pF / m	29 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	7 mm	0.275 inch
weight	8 g / m	0.0053 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-55 / +200°C	-67 / +392°F
fire resistance	yes (CSA FT6 / IEC 332-2)	
halogen free	no	

APPLICATION NOTE

Due to its small diameter and its stranded inner conductor, RG178/KX21A is used for applications requiring high flexibility.

its very low bending moment allows an easy routing during installation.

The insulation and jacket materials allow this cable to be used in severe thermal conditions.

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

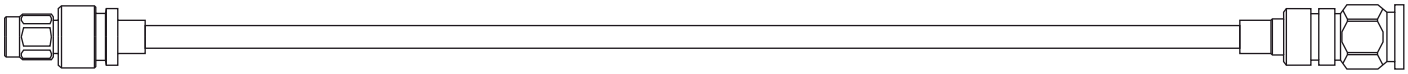
GHz	dB / m	dB / ft	Watts
0.1	0.48	0.14	190
0.2	0.68	0.21	134
0.3	0.83	0.25	110
0.5	1.08	0.33	85
1.0	1.54	0.47	60
1.5	1.90	0.57	49
2.0	2.20	0.67	42
2.5	2.47	0.75	38
3.0	2.72	0.82	35
attenuation calculation (dB / m)	(1.50 x √FGHz) + (0.04 x F GHz)		
power calculation (W)	60 / √F GHz		

(1) SPCCS = Silver Plated Copper covered steel
(2) PTFE = PolyTeraFluoroEthylene
(3) SPC = Silver Plated Copper

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

FLEXIBLE CABLE 2/50 S
(non magnetic RG178 type)



Radiall P/N : C291 140 087 (MIL-C-17/93-RG178)

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPC(1)	0.29	0.0114
dielectric	solid PTFE(2)	0.84	0.033
inner shield	SPC(1) braid	1.30	0.051
outer shield	-	-	-
jacket	brown FEP(3)	1.80	0.071

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 3 GHz	
shielding effectiveness	40 dB	
voltage withstanding	2 000 V rms	
peak power	1 kW	
capacitance	100 pF / m	30 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	9 mm	0.354 inch
weight	8 g / m	0.0053 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-55 / +200°C	-67 / +392°F
fire resistance	yes (CSA FT6 / IEC 332-2)	
halogen free	no	

APPLICATION NOTE

Based on MIL-C-17/93 US standard, this cable is used where non magnetic aspect is required.

In addition the solid inner conductor allows reduced attenuation in comparison with standard RG178.

The insulation and jacket materials allows this cable to be used in severe thermal conditions.

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

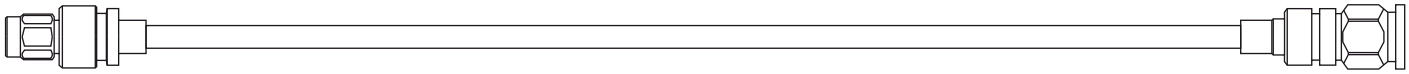
GHz	dB / m	dB / ft	Watts
0.1	0.42	0.13	253
0.2	0.59	0.18	179
0.3	0.72	0.22	146
0.5	0.94	0.28	113
1.0	1.34	0.41	80
1.5	1.65	0.50	65
2.0	1.92	0.58	57
2.5	2.16	0.65	51
3.0	2.37	0.72	46
attenuation calculation (dB / m)	(1.30 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	80 / √F GHz		

(1) SPC = Silver Plated Copper
(2) PTFE = PolyTetraFluoroEthylene
(3) FEP = Fluorinated Ethylene Propylene

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

CONNECTORS COMPATIBLE WITH CABLE 2/50 S



UMP series

(temperature range = -40 / +90°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R107 101 200 ★	plug	straight	solder	6	350	yes	brass	gold	H2.6 - lock
R107 111 200	plug	straight	solder	6	350	yes	brass	gold	H2.6 – snap-on
R107 121 020	plug	straight	solder	6	350	yes	brass	gold	H2.6 – slide-on

The above P/N are only indicative and cannot be ordered separately from an assembly.

MMS series

(temperature range = -40 / +90°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R209 080 000	plug	straight	crimp	2	500	no	brass	nickel	-
R209 353 000 ★	plug	right-angle	crimp	6	500	yes	zamak	nickel	-

The above P/N are only indicative and cannot be ordered separately from an assembly.

MMT series

(temperature range = -55 / +100°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R210 153 000 ★	female plug	right-angle	crimp	8	500	yes	zamak	nickel	-

The above P/N are only indicative and cannot be ordered separately from an assembly.

SMP series

(temperature range = -55 / +125°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R222 900 100	female plug	straight	full crimp	12.4	750	yes	brass	NPGR(1)	telecom range
R222 900 310	female plug	right-angle	crimp	12.4	750	yes	brass	NPGR(1)	telecom range
R222 920 300	male jack	straight	crimp	12.4	750	yes	brass	NPGR(1)	telecom range / limited detent / bulkhead feedthrough / panel nut torque = 50 Ncm

NPGR(1) = Nickel Phosphorous Gold Radiall.

MC-Card series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R199 005 200	plug	straight	crimp	8	500	no	brass	nickel	-
R199 005 240	plug	righ-angle	crimp	8	500	yes	brass	nickel	-
R199 005 000	jack	straight	crimp	8	500	no	brass	nickel	-
R199 005 030	jack	straight	crimp	8	500	no	brass	nickel	bulkhead feedthrough / panel nut torque = 60 Ncm

MMBX series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R223 081 000	plug	straight	crimp	6	500	yes	brass	gold	-
R223 181 000	plug	right-angle	crimp	6	500	yes	brass	gold	-

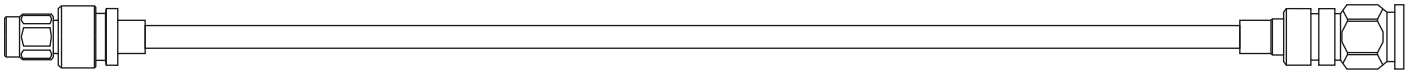
MMCX series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R110 081 020 ★	plug	straight	full crimp	6	500	no	brass	gold	-
R110 170 100 ★	plug	right-angle	crimp	6	500	yes	brass	gold	-

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 2/50 S



Coaxipack2 series

(temperature range = -25 / +125°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R199 001 203	male insert	straight	full crimp	6	750	no	brass	gold	-
R199 001 003	female insert	straight	full crimp	6	750	no	brass	gold	-
R199 031 003	female insert	straight	full crimp	6	750	no	brass	gold	easy mounting / positionning

MCX series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R113 081 000 ★	plug	straight	crimp	6	500	no	brass	gold	-
R113 081 020	plug	straight	crimp	6	500	no	brass	nickel	-
R113 181 000 ★	plug	right-angle	crimp	6	500	yes	brass	gold	-
R113 181 020	plug	right-angle	crimp	6	500	yes	brass	nickel	-
R113 236 000	jack	straight	crimp	6	500	no	brass	gold	-
R113 236 020 ★	jack	straight	crimp	6	500	no	brass	nickel	-
R113 306 000 ★	jack	straight	crimp	6	500	no	brass	gold	bulkhead feedthrough / panel nut torque = 60 Ncm
R113 306 020	jack	straight	crimp	6	500	no	brass	nickel	bulkhead feedthrough / panel nut torque = 60 Ncm

SMB series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R114 073 000 ★	female plug	straight	crimp	4	750	yes	brass	gold	-
R114 081 020	female plug	straight	full crimp	4	750	yes	brass	nickel	-
R114 183 000	female plug	right-angle	crimp	4	750	yes	brass	gold	-
R114 183 020 ★	female plug	right-angle	crimp	4	750	yes	brass	nickel	-
R114 237 000	male jack	straight	crimp	4	750	yes	brass	gold	-
R114 311 000	male jack	straight	crimp	4	750	yes	brass	gold	bulkhead feedthrough / panel nut torque = 60 Ncm

SMA series

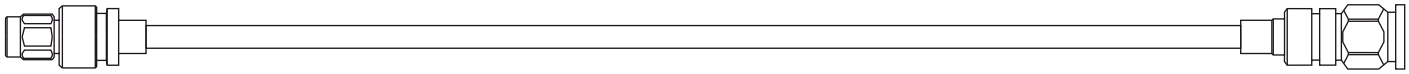
(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R124 069 120 ★	plug	straight	crimp	12.4	500	yes	brass	BBR	-
R125 069 000	plug	straight	crimp	18	500	yes	stainless steel	gold	-
R125 170 402	plug	right-angle	crimp	12.4	500	yes	stainless steel	gold	-
R124 310 020 ★	jack	straight	reverse crimp	12.4	500	yes	brass	BBR	bulkhead feedthrough / panel nut torque = 150 Ncm
R124 310 023	jack	straight	reverse crimp	12.4	500	yes	brass	gold	bulkhead feedthrough / panel nut torque = 150 Ncm

Advised torque wrench for R125 plugs: R282 320 000 / 8 mm / 80-120 Ncm.
Advised torque wrench for R124 plugs: R282 320 030 / 8 mm / 60 Ncm.

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 2/50 S



RP SMA series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R300 124 061	female plug	straight	crimp	12.4	750	yes	brass	gold	reverse polarity commercial SMA
R300 124 161	female plug	right-angle	crimp	12.4	750	yes	brass	gold	reverse polarity commercial SMA
R300 124 235	male jack	straight	crimp	12.4	750	yes	brass	nickel	reverse polarity commercial SMA / bulkhead feedthrough / panel nut torque = 150 Ncm /
R300 124 323	male jack	right-angle	crimp	12.4	750	yes	brass	gold	reverse polarity commercial SMA / bulkhead feedthrough / panel nut torque = 150 Ncm /

Advised torque wrench for plugs: R282 320 030 / 8 mm / 60 Ncm.

BNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R141 003 000	plug	straight	clamp	4	1 500	yes	brass	nickel	-
R141 153 000	plug	right-angle	clamp	4	1 500	yes	brass	nickel	-
R141 253 000	jack	straight	clamp	4	1 500	yes	brass	nickel	square flange 17.5 mm / 4 holes M2.5 x 0.45
R141 323 000	jack	straight	clamp	4	1 500	yes	brass	nickel	bulkhead feedthrough / panel nut torque = 370 Ncm

RP TNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R300 143 270	male jack	straight	crimp	11	1 000	yes	brass	nickel	reverse polarity TNC / 2 hole flange mount / 2 holes M2.5 x 0.45

N series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 071 000	plug	straight	crimp	11	750	yes	brass	BBR	
R161 281 000	jack	straight	crimp	11	750	yes	brass	BBR	square flange 25.4 mm / 4 holes dia. 3.3 mm
R161 309 200	jack	straight	crimp	11	750	yes	brass	BBR	bulkhead feedthrough / panel nut torque = 500 Ncm

Terminals

(temperature range = -55 / +155°C)

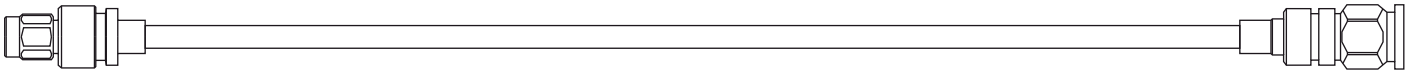
Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Material	Finish	PCB	Miscellaneous
R280 280 000	terminal	straight	crimp	3	2 000	brass	gold	2 solder pins	-
R280 280 020	terminal	straight	crimp	3	2 000	brass	BBR	2 solder pins	-
R280 282 000	terminal	straight	crimp	3	2 000	brass	gold	4 solder pins	-

Heatshrink sleeves

a large range of heatshrink sleeves is available: please consult us.

: Service + program: fast delivery, please read page 129. ⋆ : cost effective solution.

FLEXIBLE CABLE 2/50 D
(124416 type)



Radiall P/N : C291 146 087

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPC(1)	0.29	0.011
dielectric	solid PTFE(2)	0.84	0.033
inner shield	SPC braid	1.27	0.050
outer shield	SPC braid	1.60	0.063
jacket	brown FEP(3)	2.10	0.083

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 3 GHz	
shielding effectiveness	65 dB	
voltage withstanding	30 000 V rms	
peak power	18 kW	
capacitance	105 pF / m	32 pF / ft
velocity of propagation	69.5% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	12.5 mm	0.49 inch
weight	12.5 g / m	0.0083 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-90 / +200°C	-130 / +392°F
fire resistance	yes (UL94V0)	
halogen free	no	

APPLICATION NOTE

Due to its small diameter this cable will be used for applications requiring flexibility.

its low bending moment allows an easy routing during installation.

The double braid provides a higher level of shielding in comparison with 2 mm single braided cables.

In addition the solid inner conductor allows a very good attenuation level.

The insulation and jacket materials allow this cable to be used in severe thermal conditions.

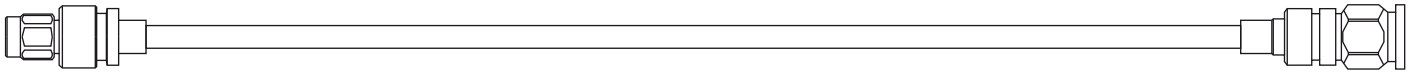
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 40°C)

GHz	dB / m	dB / ft	Watts
0.1	0.42	0.13	253
0.2	0.59	0.18	179
0.3	0.72	0.22	146
0.5	0.94	0.28	113
1.0	1.34	0.41	80
1.5	1.65	0.50	65
2.0	1.92	0.58	57
2.5	2.16	0.65	51
3.0	2.37	0.72	46
attenuation calculation (dB / m)	(1.30 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	80 / √F GHz		

(1) SPC = Silver Plated Copper
(2) PTFE = PolyTetraFluoroEthylene
(3) FEP = Fluorinated Ethylene Propylene

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

CONNECTORS COMPATIBLE WITH CABLE 2/50 D



UMP series

(temperature range = -40 / +90°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R107 301 190 ★	plug	straight	solder	6	350	yes	brass	gold	H3 - lock

The above P/N are only indicative and cannot be ordered separately from an assembly.

MMS series

(temperature range = -40 / +90°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R209 081 000	plug	straight	crimp	6	500	yes	zamak	nickel	-
R209 355 000 ★	plug	right-angle	crimp	6	500	yes	zamak	nickel	-

The above P/N are only indicative and cannot be ordered separately from an assembly.

MMT series

(temperature range = -55 / +100°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R210 155 000	female plug	right-angle	crimp	8	500	yes	zamak	nickel	-

The above P/N are only indicative and cannot be ordered separately from an assembly.

BNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R141 003 000	plug	straight	clamp	4	1 500	yes	brass	nickel	-
R141 153 000	plug	right-angle	clamp	4	1 500	yes	brass	nickel	-
R141 253 000	jack	straight	clamp	4	1 500	yes	brass	nickel	square flange 17.5 mm / 4 holes M2.5 x 0.45
R141 323 000	jack	straight	clamp	4	1 500	yes	brass	nickel	bulkhead feedthrough / panel nut torque = 370 Ncm

N series

(temperature range with SHF cables = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 071 000	plug	straight	crimp	11	750	yes	brass	BBR	
R161 281 000	jack	straight	crimp	11	750	yes	brass	BBR	square flange 25.4 mm / 4 holes dia. 3.3 mm
R161 309 200	jack	straight	crimp	11	750	yes	brass	BBR	bulkhead feedthrough / panel nut torque = 500 Ncm

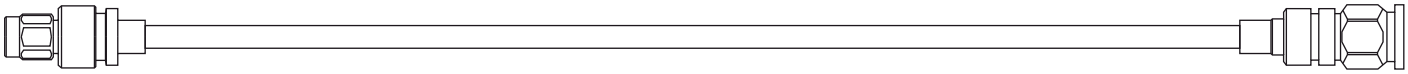
Heatshrink sleeves

a large range of heatshrink sleeves is available: please consult us.

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

FLEXIBLE CABLE 2/75 S

(296775 type)



Radiall P/N : C291 147 060

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPCCS(1)	0.17	0.007
dielectric	solid PE(2)	1.00	0.039
inner shield	SPC(3) braid	1.32	0.052
outer shield	-	-	-
jacket	black LSZH PE(2)	1.90	0.075

ELECTRICAL CHARACTERISTICS

characteristic impedance	75 Ω ± 5 Ω	
operating frequency range	DC - 3 GHz	
shielding effectiveness	50 dB min	
voltage withstanding	8 000 V rms	
peak power	400 kW	
capacitance	67 pF / m	20.1 pF / ft
velocity of propagation	66% (5 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	10 mm	0.394 inch
weight	6.6 g / m	0.0044 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-60 / +85°C	-40 / +185°F
fire resistance	No	
halogen free	yes (IEC 754-2)	

APPLICATION NOTE

Due to its 75 Ω characteristic impedance, this cable is rather dedicated to TV/Video and networks application.

its small diameter and light weight make it perfect to be used in all miniature, space saving and dynamic applications.

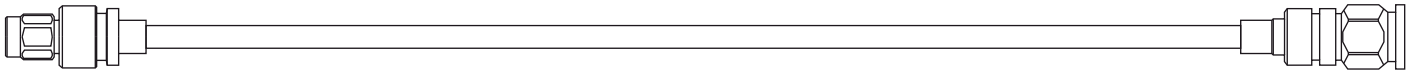
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 40°C)

GHz	dB / m	dB / ft	Watts
0.1	0.42	0.13	41
0.2	0.60	0.18	29
0.3	0.74	0.22	23
0.4	0.86	0.26	20
0.6	1.06	0.32	16
1.0	1.38	0.42	12
1.5	1.70	0.52	10
2.0	1.98	0.60	8
2.5	2.23	0.68	7
3.0	2.46	0.75	6
attenuation calculation (dB / m)	(1.317 x √F GHz) + (0.06 x F GHz)		

(1) SPCCS = Silver Plated Copper covered steel
(2) LSZH = Low Smoke Zero Halogen
(3) SPC = Silver Plated Copper

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH CABLE 2/75 S



UMP series (50 Ω interface) **(temperature range = -40 / +90°C)**

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R107 101 220 ⋆	plug	straight	solder	6	350	yes	brass	gold	H2.6 - lock

The above P/N are only indicative and cannot be ordered separately from an assembly.

MMS series **(temperature range = -40 / +90°C)**

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R209 082 000	plug	straight	crimp	6	250	yes	zamak	nickel	-
R209 353 000 ⋆	plug	right-angle	crimp	6	250	yes	zamak	nickel	-

The above P/N are only indicative and cannot be ordered separately from an assembly.

MMT series **(temperature range = -55 / +100°C)**

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R210 153 000 ⋆	female plug	right-angle	crimp	8	500	yes	zamak	nickel	-

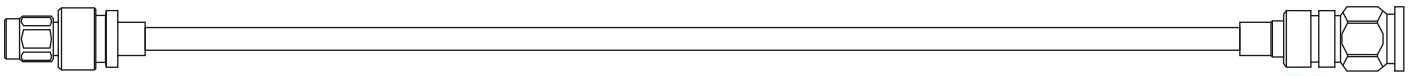
The above P/N are only indicative and cannot be ordered separately from an assembly.

Heatshrink sleeves

a large range of heatshrink sleeves is available: please consult us.

⋆ : cost effective solution.

FLEXIBLE CABLE 2.6/50 S
(RG174 - KX3B)



Radiall P/N : C291 150 000 (MIL-C-17/119-RG174)
Radiall P/N : C291 150 010 (NF-C-93/550-KX3B)

Cost effective solution.

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	stranded CCS(1)	0.48	0.019
dielectric	solid PE(2)	1.52	0.060
inner shield	TC(3) braid	2.21	0.087
outer shield	-	-	-
jacket	black PVC(4)	2.79	0.110

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 1 GHz	
shielding effectiveness	40 dB	
voltage withstanding	2 000 V rms	
peak power	1.4 kW	
capacitance	97.5 pF / m	29.5 pF / ft
velocity of propagation	66% (5 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	10 mm	0.394 inch
weight	13 g / m	0.0088 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	no	
halogen free	no	

APPLICATION NOTE

For cost effectiveness reasons and for low frequency applications, RG174 may be used instead of RG316 when environmental conditions like operating temperature allow it.

This cable is compatible with a large range of connector series.

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

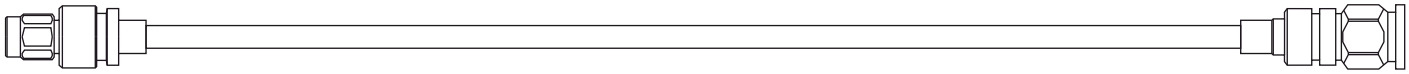
GHz	dB / m	dB / ft	Watts
0.05	0.23	0.07	72
0.1	0.33	0.10	51
0.2	0.47	0.14	36
0.3	0.58	0.17	29
0.5	0.75	0.23	23
0.6	0.82	0,25	21
0.7	0.89	0.27	19
0.8	0.95	0.29	18
1.0	1.07	0.32	16
attenuation calculation (dB / m)	(1.03 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	16 / √F GHz		

(1) CCS = Copper Covered Steel
(2) PE = PolyEthylene
(3) TC = Tinned Copper

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

FLEXIBLE CABLE 2.6/50 S
(RG316 - KX22A)



Radiall P/N : C291 170 007 (MIL-C-17/113-RG316)
Radiall P/N : C291 170 017 (NF-C-93/550-KX22A)

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	stranded SPCCS(1)	0.53	0.021
dielectric	solid PTFE(2)	1.52	0.060
inner shield	SPC(3) braid	1.98	0.078
outer shield	-	-	-
jacket	brown FEP(4)	2.49	0.098

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 3 GHz	
shielding effectiveness	40 dB	
voltage withstanding	2 000 V rms	
peak power	1.8 kW	
capacitance	96 pF / m	29 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	10 mm	0.394 inch
weight	17 g / m	0.0110 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-55 / +200°C	-67 / +392°F
fire resistance	yes (CSA FT6 / IEC 332-2)	
halogen free	no	

APPLICATION NOTE

RG316 is one of the most popular RG cables.

This cable has a good flexibility and a better attenuation than RG174.

Usable in severe thermal conditions, this cable is compatible with a large range of connector series.

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
0.1	0.26	0.08	411
0.2	0.37	0.11	291
0.3	0.46	0.14	237
0.5	0.60	0.18	184
1.0	0.86	0.26	130
1.5	1.06	0.32	106
2.0	1.24	0.38	92
2.5	1.40	0.42	82
3.0	1.54	0.47	75
attenuation calculation (dB / m)	(0.82 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	130 / √F GHz		

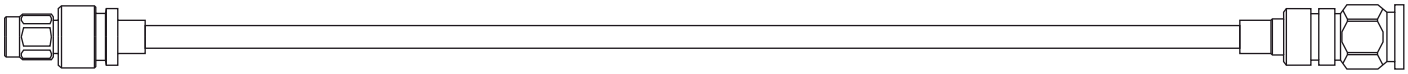
(1) SPCCS = Silver Plated Copper Covered Steel
(2) PTFE = PolyTeraFluoroEthylene
(3) SPC = Silver Plated Copper

: Service + program: fast delivery, please read page 129.

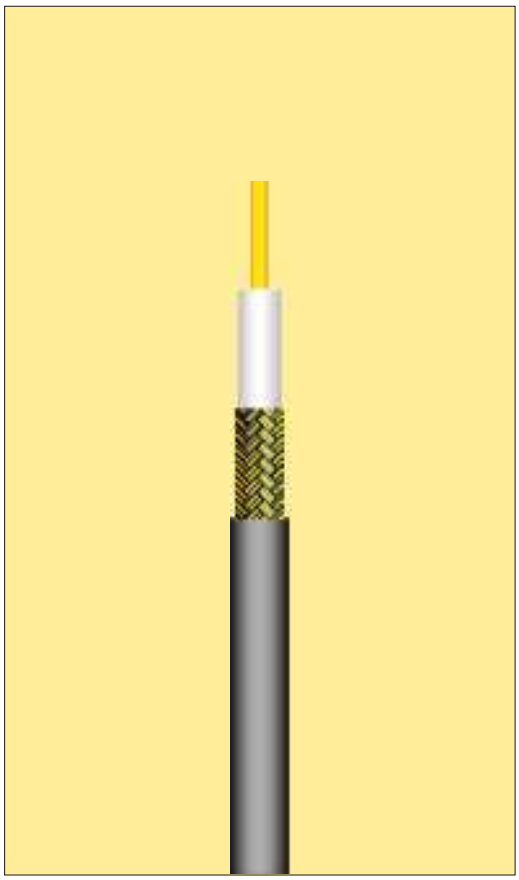
Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

FLEXIBLE CABLE 2.6/50 S

(ECO316 : alternative to RG316)



ECO-Friendly cable
Cost effective solution.



Radiall P/N : C291 999 904

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	stranded CCS(1)	0.55	0.022
dielectric	solid PE(2)	1.55	0.061
inner shield	TC(3) braid	1.90	0.075
outer shield	-	-	-
jacket	black PVC(4)	2.45	0.096

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 3 GHz	
Shielding effectiveness	50 dB	
voltage withstanding	2 000 V rms	
Peak power	1.4 KW	
capacitance	84 pF / m	25.5 pF / ft
velocity of propagation	80% (4.15 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	15 mm	0.590 inch
weight	10 g / m	0.0066 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	yes (UL1581 VW1 / IEC 332-1)	
halogen free	yes (IEC 754-2)	

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
0.1	0.24	0.07	120
0.2	0.33	0.10	85
0.3	0.41	0.12	69
0.5	0.53	0.16	54
1.0	0.76	0.23	38
1.5	0.94	0.28	31
2.0	1.09	0.33	27
2.5	1.22	0.37	24
3.0	1.34	0.41	22
attenuation calculation (dB / m)	(0,74 x √F GHz) + (0.02 x F GHz)		
power calculation (W)	38 / √F GHz		

APPLICATION NOTE

Designed by RADIALL, ECO316 is an advantageous alternative solution to RG316 :

- **Advantageous in term of electrical performance** : its optimized construction allows better attenuation and screening effectiveness than RG316 and RG174.
- **Advantageous in term of environmental aspect** : halogen and sulphur free, this cable does not emit any toxic substance when submitted to fire. The flame retardant jacket allows ECO316 to meet fire resistance standard (see data sheet).
- **Advantageous in term of price** : ECO316 design has integrated all RADIALL knowledge to reach the best performances with a very competitive price.

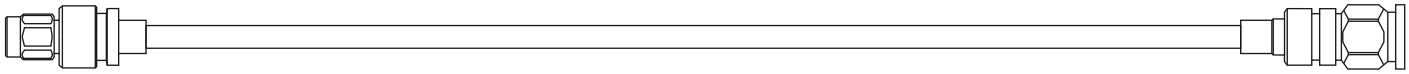
ECO316 is UL style 1375 approved. This cable is compatible with a large range of connector series.

(1) OFC = Oxygen Free Copper
(2) PE = PolyEthylene
(3) LSZH PE = Low Smoke Zero Halogen PolyEthylene

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

LOW LOSS FLEXIBLE CABLE 2.6/50 S
(ECO316X)



ECO-Friendly cable
Cost effective solution.

Radiall P/N : C291 171 083

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	stranded SPC(1)	0.54	0.021
dielectric	X foam PE(2)	1.54	0.061
inner shield	SPC(1) braid	2.05	0.081
jacket	blue LSZH PE(3)	2.52	0.099

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 3 GHz	
voltage withstanding	3 000 V rms	
capacitance	94.5 pF / m	28.7 pF / ft
velocity of propagation	71% (4.7 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	5 mm	0.197 inch
weight	16 g / m	0.011 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +105°C	-40 / +221°F
fire resistance	yes (UL1581 VW1 / IEC 332-1)	
halogen free	yes (IEC 754-2)	

APPLICATION NOTE

Designed by RADIALL, ECO316X is an advantageous alternative solution to ECo316 when higher power level is required :

- **Advantageous in term of electrical performance** : the crosslink foam polyethylene used as dielectric material allows higher temperature level (thus power range) than ECO316.
- **Advantageous in term of environnement aspect :** halogen and sulphur free, this cable does not emit any toxic substance when submitted to fire. The flame retardant jacket allows ECO316X to meet fire resistance standards (see data sheet)
- **Advantageous in term of price :** ECO316X design has integrated all RADIALL knowledge to reach the best performances with a very competitive price.

ECO316X is UL style 1375/3651 approved.

This cable is compatible with a large range of standard series.

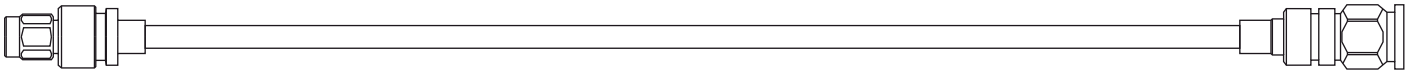
(1) SPC = Silver plated copper
(2) PE = PolyEthylene
(3) LSZH PE = Low Smoke Zero Halogen PolyEthylene

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
0.1	0.27	0.08	285
0.3	0.49	0.15	164
0.5	0.65	0.20	127
0.6	0.72	0.22	116
0.8	0.84	0.26	101
1.0	0.96	0.29	90
1.5	1.22	0.37	73
2.0	1.45	0.44	64
2.5	1.66	0.50	57
3.0	1.85	0.56	52
attenuation calculation (dB / m)	(0,81 x √F GHz) + (0.15 x F GHz)		
power calculation (W)	90 / √F GHz		

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH CABLE 2.6/50 S



UMP series

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R107 301 200 ★	plug	straight	solder	6	350	yes	brass	gold	H3 - lock
R107 321 020	plug	straight	solder	6	350	yes	brass	gold	H3 - slide-on

The above P/N are only indicative and cannot be ordered separately from an assembly.

MMT series

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R210 087 000	female plug	straight	crimp	8	500	yes	zamak	nickel	-
R210 157 000 ★	female plug	right-angle	crimp	8	500	yes	zamak	nickel	-

The above P/N are only indicative and cannot be ordered separately from an assembly.

SMP series

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R222 900 300	female plug	right-angle	crimp	12.4	750	yes	brass	NPGR	telecom range

The above P/N are only indicative and cannot be ordered separately from an assembly.

MC-Card series

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R199 005 010	plug	straight	crimp	8	500	yes	brass	nickel	-
R199 005 250	plug	righ-angle	crimp	8	500	yes	brass	nickel	-

MMBX series

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R223 082 000	plug	straight	crimp	6	750	yes	brass	gold	-
R223 182 000	plug	righ-angle	crimp	6	750	yes	brass	gold	-

MMCX series

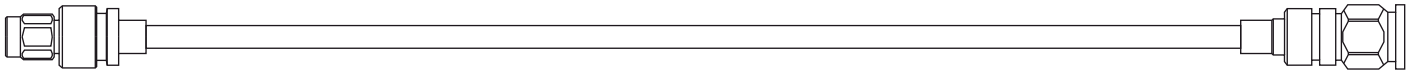
Part number	Interface	Geometry	Attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Captive cent.cont.	Material	Finish	Miscellaneous
R110 083 120	plug	straight	full crimp	6	750	no	brass	gold	-
R110 172 100	plug	righ-angle	crimp	6	750	yes	brass	gold	-

Coaxipack2 series

Part number	Interface	Geometry	Attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Captive cent.cont.	Material	Finish	Miscellaneous
R199 001 223	male insert	straight	crimp	6	750	no	brass	gold	-
R199 001 023	female insert	straight	crimp	6	750	no	brass	gold	-
R199 031 023	female insert	straight	crimp	6	750	no	brass	gold	easy mounting / positionning

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 2.6/50 S



MCX series

Part number	Interface	Geometry	Attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Captive cent.cont.	Material	Finish	Miscellaneous
R113 082 000 ★	plug	straight	crimp	6	750	yes	brass	gold	-
R113 082 020	plug	straight	crimp	6	750	yes	brass	nickel	-
R113 182 000 ★	plug	right-angle	crimp	6	750	yes	brass	gold	-
R113 182 020	plug	right-angle	crimp	6	750	yes	brass	nickel	-
R113 240 000 ★	jack	straight	crimp	6	750	yes	brass	gold	-
R113 240 020	jack	straight	crimp	6	750	yes	brass	nickel	-
R113 312 000	jack	straight	crimp	6	750	yes	brass	gold	bulkhead feedthrough / panel nut torque = 60 Ncm

SMB series

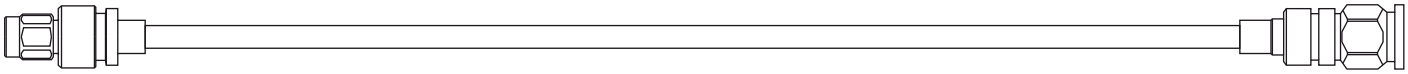
Part number	Interface	Geometry	Attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Captive cent.cont.	Material	Finish	Miscellaneous
R114 075 000	female plug	straight	crimp	4	1 000	yes	brass	gold	2 piece body / 5 mm on 2 flats
R114 082 000 ★	female plug	straight	full crimp	4	1 000	yes	brass	gold	plastic boot compatible
R114 082 020	female plug	straight	full crimp	4	1 000	yes	brass	nickel	plastic boot compatible
R117 082 807	female plug	straight	full crimp	4	1 000	yes	brass	nickel	SMB Lock
R114 186 000 ★	female plug	right-angle	crimp	4	1 000	yes	brass	gold	-
R114 186 020	female plug	right-angle	crimp	4	1 000	yes	brass	nickel	-
R117 186 807	female plug	right-angle	crimp	4	1 000	yes	brass	nickel	SMB Lock
R114 205 000	male jack	straight	clamp	4	1 000	yes	brass	gold	-
R114 238 000 ★	male jack	straight	full crimp	4	1 000	yes	brass	gold	plastic boot compatible
R114 238 120	male jack	straight	full crimp	4	1 000	yes	brass	nickel	plastic boot compatible
R114 313 000 ★	male jack	straight	full crimp	4	1 000	yes	brass	gold	bulkhead feedthrough / panel nut torque = 60 Ncm
R114 313 020	male jack	straight	full crimp	4	1 000	yes	brass	nickel	bulkhead feedthrough / reduced length / panel nut torque = 60 Ncm
R114 373 020	male jack	right-angle	crimp	4	1 000	yes	brass	nickel	bulkhead feedthrough / reduced length / panel nut torque = 60 Ncm

DIN 1.0/2.3 series

Part number	Interface	Geometry	Attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Captive cent.cont.	Material	Finish	Miscellaneous
R118 074 215	plug	straight	crimp	10	750	yes	brass	nickel	screw-on coupling nut
R120 074 215	plug	straight	crimp	10	750	yes	brass	nickel	slide-on interface
R120 189 215	plug	45°	crimp	10	750	yes	brass	nickel	slide-on interface
R118 311 215	jack	straight	crimp	10	750	yes	brass	gold	bulkhead feedthrough / panel nut torque = 100 Ncm

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 2.6/50 S



SMA series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R124 071 120 ★	plug	straight	crimp	12.4	750	yes	brass	BBR	commercial SMA
R125 071 120	plug	straight	full crimp	18	750	yes	stainless steel	gold	-
R124 172 120 ★	plug	right-angle	crimp	12.4	750	yes	stainless steel	BBR	commercial SMA
R125 172 000	plug	right-angle	crimp	12.4	750	yes	brass	gold	-
R124 236 120	jack	straight	crimp	12.4	750	yes	brass	BBR	commercial SMA
R125 236 000	jack	straight	crimp	18	750	yes	stainless steel	gold	-
R124 272 120	jack	straight	crimp	12.4	750	yes	brass	BBR	commercial SMA / square flange 12.7 mm / 4 holes dia.2.6 mm
R125 272 000	jack	straight	crimp	18	750	no	stainless steel	gold	square flange 12.7 mm / 4 holes dia.2.6 mm
R124 312 120	jack	straight	crimp	12.4	750	yes	brass	BBR	commercial SMA / bulkhead feedthrough / panel nut torque = 150 Ncm
R125 303 000	jack	straight	crimp	18	750	yes	stainless steel	gold	bulkhead feedthrough / panel nut torque = 150 Ncm

Advised torque wrench for R125 plugs: R282 320 000 / 8 mm / 80-120 Ncm
Advised torque wrench for R124 plugs: R282 320 030 / 8 mm / 60 Ncm

RP SMA series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R300 124 183	female plug	right-angle	crimp	12.4	750	yes	brass	gold	reverse polarity commercial SMA
R300 124 240	male jack	straight	full crimp	12.4	750	yes	brass	BBR	reverse polarity commercial SMA / bulkhead feedthrough / panel sealed / panel nut torque = 150 Ncm /
R300 124 343	male jack	right-angle	crimp	12.4	750	yes	brass	gold	reverse polarity commercial SMA / bulkhead feedthrough / panel nut torque = 150 Ncm /

Advised torque wrench for plugs: R282 320 030 / 8 mm / 60 Ncm

QMA series

(temperature range = -40 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R123 071 000	plug	straight	full crimp	6	750	yes	brass	BBR	-
R123 172 000 ★	plug	right-angle	crimp	6	750	yes	brass	BBR	-
R123 312 000	jack	straight	crimp	6	750	yes	brass	BBR	bulkhead feedthrough / panel nut torque = 160 Ncm

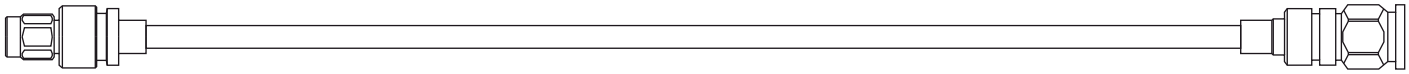
BMA series

(temperature range = -65 / +125°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R128 083 827	male plug	straight	crimp	4	750	yes	brass	BBR	commercial BMA / bulkhead feedthrough / panel nut torque = 150 Ncm
R128 233 827	female jack	straight	crimp	4	750	yes	brass	BBR	commercial BMA / snap-in / panel floating
R128 263 827	female jack	straight	crimp	4	750	yes	brass	BBR	commercial BMA / panel floating / 2 hole flange dia. 2.6 mm

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 2.6/50 S



BNC series

(temperature range = -65 / +165°C except p/n ending in 161 = -35 / +70°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R141 075 000	plug	straight	full crimp	4	1 500	yes	brass	nickel	Plastic boot compatible
R141 075 161 ★	plug	straight	crimp	1.5	1 500	yes	brass	nickel	Commercial BNC plastic boot compatible
R141 181 161	plug	right-angle	crimp	1.5	1 500	yes	brass	nickel	commercial BNC
R141 217 000 ★	jack	straight	full crimp	4	1 500	yes	brass	nickel	plastic boot compatible
R141 254 000	jack	straight	clamp	4	1 500	yes	brass	nickel	square flange 17.5 mm / 4 holes M2.5 x 0.45
R141 277 000	jack	straight	clamp	4	1 500	yes	brass	nickel	square insulated flange 18.5 mm / 4 holes dia. 2.6 mm
R141 278 000	jack	straight	clamp	4	1 500	yes	brass	nickel	square flange 17.5 mm / 4 holes dia. 2.7 mm
R141 324 000 ★	jack	straight	clamp	4	1 500	yes	brass	nickel	bulkhead feedthrough / fully sealed / panel nut torque = 370 Ncm
R141 331 500	jack	straight	crimp	4	1 500	yes	brass	nickel	bulkhead feedthrough / plastic boot compatible / panel sealed / panel nut torque = 370 Ncm

TNC series

(temperature range = -65 / +165°C except p/n ending in 161 = -35 / +70°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R143 075 000 ★	plug	straight	crimp	11	1 000	yes	brass	nickel	plastic boot compatible
R143 181 000	plug	right-angle	crimp	11	1 000	yes	brass	nickel	plastic boot compatible
R143 181 161 ★	plug	right-angle	crimp	11	1 000	yes	brass	nickel	commercial TNC / plastic boot compatible
R143 254 000	jack	straight	clamp	11	1 000	yes	brass	nickel	square flange 17.5 mm / 4 holes M2.5 x 0.45
R143 324 000	jack	straight	clamp	11	1 000	yes	brass	nickel	bulkhead feedthrough / panel nut torque = 370 Ncm
R143 331 161 ★	jack	straight	crimp	1.5	1 000	no	brass	nickel	commercial TNC / plastic boot compatible / bulkhead feedthrough / panel nut torque = 370 Ncm

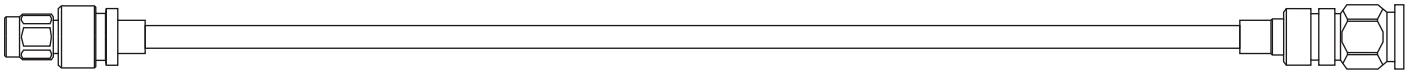
RP TNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R300 143 260	female plug	straight	crimp	11	1 000	yes	brass	nickel	2 hole flange mount / reverse polarity TNC

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 2.6/50 S



N series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 004 000 ★	plug	straight	clamp	11	1 000	yes	brass	BBR	-
R161 072 000	plug	straight	full crimp	11	1 000	yes	brass	BBR	plastic boot compatible
R161 181 000	plug	right-angle	crimp	11	1 000	yes	brass	BBR	-
R161 281 300 ★	jack	straight	full crimp	11	1 000	yes	brass	BBR	plastic boot compatible / square flange 25.4 mm / 4 holes dia. 3.3 mm
R161 311 300	jack	straight	full crimp	11	1 000	yes	brass	BBR	plastic boot compatible / bulkhead feedthrough / panel nut torque = 500 Ncm

Terminals

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Material	Finish	PCB	Miscellaneous
R280 280 100	terminal	straight	crimp	3	2 000	brass	gold	2 solder pins	-
R280 280 120	terminal	straight	crimp	3	2 000	brass	BBR	2 solder pins	-
R280 284 000	terminal	straight	crimp	3	2 000	brass	nickel	4 solder pins	-
R280 294 000	terminal	right-angle	crimp	3	2 000	brass	tin lead	4 solder pins	-

Plastic boots (PVC – length = 67.54 mm)

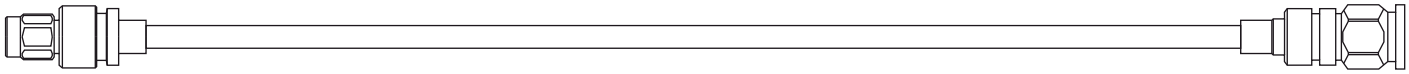
Part number (for SMB compatible connectors)	Part number (for BNC, TNC, N compatible connectors)	color
R280 560 000	R280 566 000	black
R280 560 001	R280 566 001	red
R280 560 002	R280 566 002	green
R280 560 003	R280 566 003	blue
R280 560 004	R280 566 004	yellow
R280 560 005	R280 566 005	grey
R280 560 006	R280 566 006	white
R280 560 007	R280 566 007	brown
R280 560 008	R280 566 008	orange
R280 560 009	R280 566 009	purple
R280 560 010	-	translucent

Heatshrink sleeves

a large range of heatshrink sleeves is available: please consult us.

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

FLEXIBLE CABLE 2.6/50 D
(RD316)



Radiall P/N : C291 185 067

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	stranded SPC(1)	0.53	0.021
dielectric	solid PTFE(2)	1.52	0.060
inner shield	SPC(1) braid	1.90	0.075
outer shield	SPC(1) braid	2.30	0.091
jacket	brown FEP(3)	2.80	0.110

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 3 GHz	
shielding effectiveness	60 dB	
voltage withstanding	2 000 V rms	
peak power	1.8 kW	
capacitance	96 pF / m	29 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	15 mm	0.590 inch
weight	27 g / m	0.0181 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-55 / +200°C	-67 / +392°F
fire resistance	yes (CSA FT6 / IEC 332-2)	
halogen free	no	

APPLICATION NOTE

Based on the RG316 construction, RD316 has an outer shield braid which allow higher screening effectiveness and better mechanical resistance.

Usable in severe thermal conditions, this cable is compatible with a large range of connector series.

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level / 25°C)

GHz	dB / m	dB / ft	Watts
0.1	0.26	0.08	411
0.2	0.37	0.11	291
0.3	0.46	0.14	237
0.5	0.60	0.18	184
1.0	0.86	0.26	130
1.5	1.06	0.32	106
2.0	1.24	0.38	92
2.5	1.40	0.42	82
3.0	1.54	0.47	75
attenuation calculation (dB / m)	(0.82 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	130 / √F GHz		

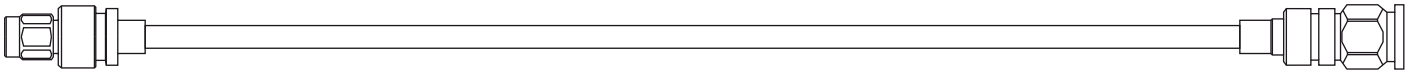
(1) SPC = Silver Plated Copper
(2) PTFE = PolyTeraFluoroEthylene
(3) FEP = Fluorinated Ethylene Propylene

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

LOW LOSS FLEXIBLE CABLE 2.6/50 D

(ECO316D : alternative to RD316)



ECO-Friendly cable
Cost effective solution.

Radiall P/N : C291 999 905

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid OFC(1)	0.55	0.022
dielectric	foam PE(2)	1.55	0.061
inner shield	OFC(1) braid	1.90	0.075
outer shield	OFC(1) braid	2.30	0.091
jacket	black LSZH PE(3)	2.80	0.110

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC – 3 GHz	
shielding effectiveness	65 dB	
voltage withstanding	2000 V ms	
Peak power	1.4 kW	
capacitance	84 pF / m	25.5 pF / ft
velocity of propagation	80% (4.15 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	15 mm	0.590 inch
weight	16 g / m	0.0106 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	yes (UL 1581 VW1 / IEC 332-1)	
halogen free	yes (IEC 754-2)	

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
0.1	0.24	0.07	120
0.2	0.33	0.10	85
0.3	0.41	0.12	69
0.5	0.53	0.16	54
1.0	0.76	0.23	38
1.5	0.94	0.28	31
2.0	1.09	0.33	27
2.5	1.22	0.37	24
3.0	1.34	0.41	22
attenuation calculation (dB / m)	(0.74 x √F GHz) + (0.02 x F GHz)		
power calculation (W)	38 / √F GHz		

APPLICATION NOTE

Designed by RADIALL, ECO316D is an advantageous alternative solution to RD316 :

- **Advantageous in term of electrical performance** : its optimized construction allows better attenuation and screening effectiveness than RD316.
- **Advantageous in term of environmental aspect** : halogen and sulphur free, this cable does not emit any toxic substance when submitted to fire. The flame retardant jacket allows ECO316D to meet fire resistance standard (see data sheet).
- **Advantageous in term of price** : ECO316D design has integrated all RADIALL knowledge to reach the best performances with a very competitive price.

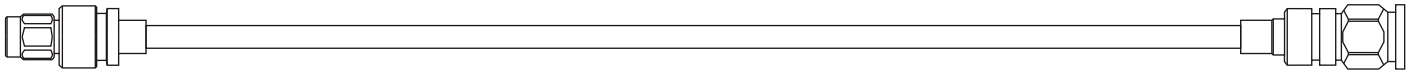
ECO316D is UL style 1375 approved.
This cable is compatible with a large range of connector series.

(1) OFC = Oxygen Free Copper
(2) PE = PolyEthylene
(3) LSZH PE = Low Smoke Zero Halogen PolyEthylene

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

LOW LOSS FLEXIBLE CABLE 2.6/50 D
(ECO316DX)



ECO-Friendly cable
Cost effective solution.

Radiall P/N : C291 217 020

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	stranded SPC(1)	0.54	0.021
dielectric	X foam PE(2)	1.54	0.061
inner shield	SPC(1) braid	2.03	0.080
outer shield	SPC(1) braid	2.50	0.098
jacket	Black LSZH PE(3) with blue stripe	3.16	0.124

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 6 GHz	
shielding effectiveness	70 dB (DC - 5 GHz)	
voltage withstanding	1 500 V rms	
capacitance	94.5 pF / m	28.7 pF / ft
velocity of propagation	71% (4.7 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	5 mm	0.196 inch
weight	21 g / m	0.0140 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +105°C	-40 / +221°F
fire resistance	yes (UL 1581 VW1 / IEC 332-1)	
halogen free	yes (IEC 754-2)	

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
0.5	0.58	0.17	127
1.0	0.86	0.26	90
1.5	1.09	0.33	73
2.0	1.30	0.40	64
2.5	1.50	0.45	57
3.0	1.68	0.51	52
3.5	1.85	0.56	48
4.0	2.02	0.61	45
5.0	2.34	0.71	40
6.0	2.64	0.80	37
attenuation calculation (dB / m)	(0.71 x √F GHz) + (0.15 x F GHz)		
power calculation (W)	90 / √F GHz		

APPLICATION NOTE

Designed by RADIALL, ECO316DX is an advantageous alternative solution to ECO316D when higher power level is required :

- **Advantageous in term of electrical performance** : the crosslink foam polyethylene used as dielectric material allows higher temperature level (thus power range) than ECO316D.
- **Advantageous in term of environmental aspect** : halogen and sulphur free, this cable does not emit any toxic substance when submitted to fire. The flame retardant jacket allows ECO316DX to meet fire resistance standards (see data sheet)
- **Advantageous in term of price** : ECO316DX design has integrated all RADIALL knowledge to reach the best performances with a very competitive price.

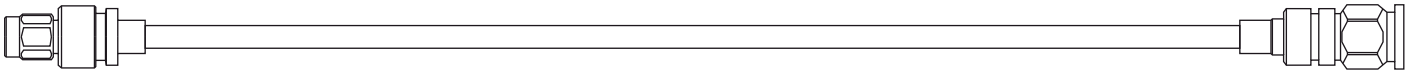
ECO316DX is UL style 1375/3651 approved.

This cable is compatible with a large range of standard connector series.

(1) SPC = Silver Plated Copper
(2) X foam PE = Crosslink foam PolyEthylene
(3) LSZH PE = Low Smoke Zero Halogen PolyEthylene

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH CABLE 2.6/50 D



MMT series

(temperature range = -55 / +100°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R210 158 000 ★	female plug	right-angle	crimp	8	500	yes	zamak	nickel	-

SMP series

(temperature range = -55 / +125°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R222 900 330	female plug	right-angle	crimp	12.4	750	yes	brass	NPGR	telecom range

NPGR = Nickel Phosphorous Gold Radiall

MC-Card series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R199 005 260	plug	right-angle	crimp	8	500	yes	brass	nickel	-

MMBX series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R223 083 000	plug	straight	crimp	6	750	yes	brass	gold	-
R223 183 000	plug	right-angle	crimp	6	750	yes	brass	gold	-

MCX series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R113 083 000 ★	plug	straight	full crimp	6	750	yes	brass	gold	-
R113 083 020	plug	straight	full crimp	6	750	yes	brass	nickel	-
R113 183 000 ★	plug	right-angle	crimp	6	750	yes	brass	gold	-
R113 183 020	plug	right-angle	crimp	6	750	yes	brass	nickel	-
R113 241 000	jack	straight	crimp	6	750	yes	brass	gold	-
R113 241 020	jack	straight	crimp	6	750	yes	brass	nickel	-

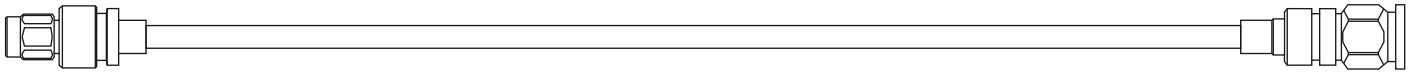
SMB series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R114 083 000 ★	female plug	straight	full crimp	4	1 000	yes	brass	gold	plastic boot compatible
R114 083 020	female plug	straight	full crimp	4	1 000	yes	brass	nickel	plastic boot compatible
R117 083 807	female plug	straight	full crimp	4	1 000	yes	brass	nickel	SMB Lock
R114 182 000 ★	female plug	right-angle	crimp	4	1 000	yes	brass	gold	-
R117 187 807	female plug	right-angle	crimp	4	1 000	yes	brass	nickel	SMB Lock
R114 245 020	male jack	straight	full crimp	4	1 000	yes	brass	nickel	-
R114 305 000 ★	male jack	straight	clamp	4	1 000	yes	brass	gold	bulkhead feedthrough / panel nut torque = 60 Ncm
R114 373 120	male jack	right-angle	crimp	4	1 000	yes	brass	nickel	bulkhead feedthrough / panel nut torque = 60 Ncm

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 2.6/50 D



RP SMB series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R300 114 047	female plug	straight	full crimp	4	750	yes	brass	BBR	reverse polarity SMB / plastic boot compatible

SMA series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	Attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Captive Cent. Cont.	Material	Finish	Miscellaneous
R124 072 220 ★	plug	straight	full crimp	12.4	750	yes	brass	BBR	commercial SMA
R124 174 000	plug	right-angle	crimp	12.4	750	yes	brass	BBR	commercial SMA
R124 233 120 ★	jack	straight	full crimp	12.4	750	yes	brass	BBR	commercial SMA
R124 274 120	jack	straight	full crimp	12.4	750	yes	brass	BBR	commercial SMA / square flange 12.7 mm / 4 holes dia. 2.6 mm
R124 313 120	jack	straight	full crimp	12.4	750	yes	brass	BBR	commercial SMA / bulkhead feethrough / panel nut torque = 150 Ncm
R125 072 220 ★	plug	straight	full crimp	18	750	yes	stainless steel	gold	-
R125 174 000	plug	right-angle	crimp	12.4	750	yes	stainless steel	gold	-

Advised torque wrench for R125 plugs: R282 320 000 / 8 mm / 80-120 Ncm
Advised torque wrench for R124 plugs: R282 320 030 / 8 mm / 60 Ncm

RP SMA series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R300 124 040	female plug	straight	full crimp	12.4	1 000	yes	brass	BBR	reverse polarity commercial SMA

Advised torque wrench for plugs: R282 320 030 / 8 mm / 60 Ncm

QMA series

(temperature range = -40 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R123 072 000	plug	straight	full crimp	6	750	yes	brass	BBR	-
R123 174 000 ★	plug	right-angle	crimp	6	750	yes	brass	BBR	-
R123 313 000	jack	straight	full crimp	6	750	yes	brass	BBR	bulkhead feedthrough / panel nut torque = 160 Ncm

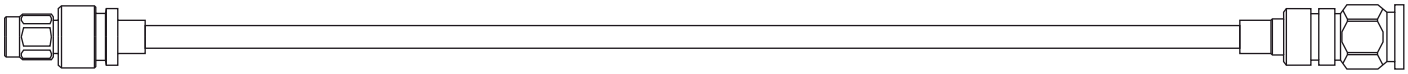
BMA series

(temperature range = -65 / +125°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R128 084 827	male plug	straight	crimp	4	750	yes	brass	BBR	commercial BMA / bulkhead feedthrough / panel nut torque = 150 Ncm
R128 234 827	female jack	straight	crimp	4	750	yes	brass	BBR	commercial BMA / snap-in / panel floating
R128 264 827	female jack	straight	crimp	4	750	yes	brass	BBR	commercial BMA / panel floating / 2 hole flange dia. 2.6 mm

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 2.6/50 D



BNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R141 004 000 ⚡ ★	plug	straight	clamp	4	1 500	yes	brass	nickel	-
R141 154 000	plug	right-angle	clamp	4	1 500	yes	brass	nickel	-
R141 254 000	jack	straight	clamp	4	1 500	yes	brass	nickel	square flange 17.5 mm / 4 holes M2.5 x 0.45
R141 277 000	jack	straight	clamp	4	1 500	yes	brass	nickel	square insulated flange 18.5mm / 4 holes dia 2.6mm
R141 278 000	jack	straight	clamp	4	1 500	yes	brass	nickel	square flange 17.5 mm / 4 holes dia. 2.7 mm

TNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R143 004 000	plug	straight	clamp	11	1 000	yes	brass	nickel	-
R143 254 000	jack	straight	clamp	11	1 000	yes	brass	nickel	square flange 17.5 mm / 4 holes M2.5 x 0.45

N series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 004 000 ⚡ ★	plug	straight	clamp	11	750	yes	brass	BBR	-
R161 072 000	plug	straight	full crimp	11	750	yes	brass	BBR	plastic boot compatible
R161 181 300	plug	right-angle	crimp	11	750	yes	brass	BBR	-
R161 252 000	jack	straight	clamp	11	750	yes	brass	BBR	square flange 25.4 mm / 4 holes dia 3.3 mm
R161 281 300 ⚡ ★	jack	straight	full crimp	11	750	yes	brass	BBR	plastic boot compatible / square flange 25.4 mm / 4 holes dia 3.3 mm

Terminals

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Material	Finish	PCB	Miscellaneous
R280 220 200	terminal	right-angle	crimp	3	2 000	brass	gold	2 solder pins	-
R280 280 200	terminal	straight	crimp	3	2 000	brass	gold	2 solder pins	-
R280 280 220	terminal	straight	crimp	3	2 000	brass	BBR	2 solder pins	-
R280 296 120	terminal	45°	crimp	3	2 000	brass	tin lead	2 solder pins	-

Plastic boots (PVC – length = 67.54 mm)

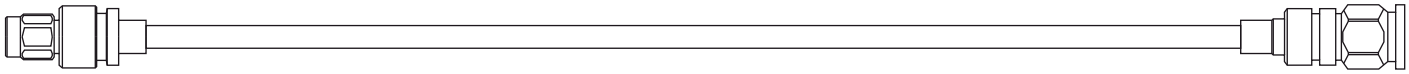
Part number (for SMB, SMC compatible connectors)	Part number (for N compatible connectors)	color
R280 560 000 ⚡	R280 566 000 ⚡	black
R280 560 001 ⚡	R280 566 001 ⚡	red
R280 560 002 ⚡	R280 566 002 ⚡	green
R280 560 003 ⚡	R280 566 003 ⚡	blue
R280 560 004 ⚡	R280 566 004 ⚡	yellow
R280 560 005 ⚡	R280 566 005 ⚡	grey
R280 560 006 ⚡	R280 566 006 ⚡	white
R280 560 007	R280 566 007	brown
R280 560 008	R280 566 008 ⚡	orange
R280 560 009	R280 566 009	purple
R280 560 010	-	translucent

Heatshrink sleeves

a large range of heatshrink sleeves is available: please consult us.

⚡ : Service + program: fast delivery, please read page 129. ★ : cost effective solution.

FLEXIBLE CABLE 2.6/75 S
(RG179)



Radiall P/N : C291 210 007

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	stranded SPCCS(1)	0.30	0.012
dielectric	solid PTFE(2)	1.60	0.063
inner shield	SPC(3) braid	2.00	0.079
outer shield	-	-	-
jacket	brown FEP(4)	2.54	0.100

ELECTRICAL CHARACTERISTICS

characteristic impedance	75 Ω ± 3 Ω	
operating frequency range	DC - 3 GHz	
shielding effectiveness	40 dB	
voltage withstanding	2 000 V rms	
peak power	1.6 kW	
capacitance	69 pF / m	21 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	10 mm	0.400 inch
weight	14.5 g / m	0.0097 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-55 / +200°C	-67 / +392°F
fire resistance	yes (CSA FT6 / IEC 332-2)	
halogen free	no	

APPLICATION NOTE

Due to its 75 Ω characteristic impedance, this cable is rather dedicated to TV/Video application.

its small internal stranded inner conductor diameter allows high flexibility for an easy routing.

Usable in severe thermal conditions.

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

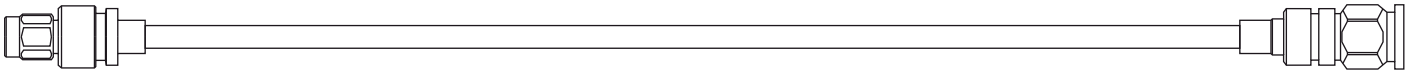
GHz	dB / m	dB / ft	Watts
0.1	0.29	0.09	791
0.2	0.41	0.13	559
0.3	0.51	0.15	456
0.5	0.66	0.20	354
1.0	0.95	0.29	250
1.5	1.17	0.36	204
2.0	1.37	0.41	177
2.5	1.54	0.47	158
3.0	1.70	0.51	144
attenuation calculation (dB / m)	(0.91 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	250 / √F GHz		

(1) SPCCS = Silver Plated Copper covered steel
(2) PTFE = PolyTetraFluoroEthylene
(3) SPC = Silver Plated Copper

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH CABLE 2.6/75 S



Coaxipack2 series (50 Ω interface) **(temperature range = -25 / +125°C)**

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R199 001 033	female insert	straight	crimp	6	750	no	brass	gold	-

MCX 75 Ω series **(temperature range = -55 / +155°C)**

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R213 082 007	plug	straight	full crimp	6	750	yes	brass	BBR	-
R213 182 007	plug	right-angle	crimp	6	750	yes	brass	BBR	-
R213 238 007	jack	straight	full crimp	6	750	yes	brass	BBR	panel snap mount

SMB series (50 Ω interface) **(temperature range = -65 / +165°C)**

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R114 075 000	female plug	straight	crimp	4	1 000	yes	brass	gold	5 mm / 2 flats
R114 082 000 ★	female plug	straight	full crimp	4	1 000	yes	brass	gold	plastic boot compatible
R114 082 020	female plug	straight	full crimp	4	1 000	yes	brass	nickel	plastic boot compatible
R114 186 000 ★	female plug	right-angle	crimp	4	1 000	yes	brass	gold	-
R114 186 020	female plug	right-angle	crimp	4	1 000	yes	brass	nickel	-
R114 205 000	male jack	straight	clamp	4	1 000	yes	brass	gold	-
R114 238 000 ★	male jack	straight	full crimp	4	1 000	yes	brass	gold	plastic boot compatible
R114 238 120	male jack	straight	full crimp	4	1 000	yes	brass	nickel	plastic boot compatible
R114 313 000 ★	male jack	straight	full crimp	4	1 000	yes	brass	gold	bulkhead feedthrough / panel nut torque = 60 Ncm
R114 313 020	male jack	straight	full crimp	4	1 000	yes	brass	nickel	bulkhead feedthrough / reduced length / panel nut torque = 60 Ncm

DIN 1.0/2.3 series **(temperature range = -55 / +155°C)**

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R118 074 215	plug	straight	crimp	10	750	yes	brass	nickel	screw-on coupling nut
R120 074 215	plug	straight	crimp	10	750	yes	brass	nickel	slide-on interface
R120 189 215	plug	45°	crimp	10	750	yes	brass	nickel	slide-on interface
R118 311 215	jack	straight	crimp	10	750	yes	brass	gold	bulkhead feedthrough / panel nut torque = 100 Ncm

DIN 1.6/5.6 series **(temperature range = -55 / +155°C)**

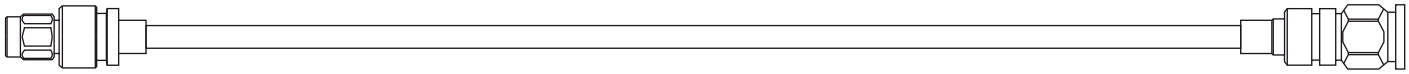
Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R129 074 000	plug	straight	crimp	1	1 500	yes	brass	nickel	screw-on coupling nut
R131 191 000	plug	righ-angle	crimp	1	1 500	yes	brass	nickel	slide-on interface
R129 342 000	jack	straight	crimp	1	1 500	yes	brass	nickel + gold	bulkhead feedthrough/ panel insulated / panel nut torque = 80 Ncm

DTF series (with separated center contact) **(temperature range = -40 / +80°C)**

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R139 076 100	plug	straight	crimp	3	1 500	no	brass	BBR	bulkhead feedthrough/ panel nut torque = 250 Ncm
R139 077 000	plug	straight	crimp	3	1 500	no	brass	BBR	-
R139 331 100	jack	straight	crimp	3	1 500	yes	brass	BBR	bulkhead feedthrough/ panel nut torque = 250 Ncm

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 2.6/75 S



BNC 75 Ω series (temperature range = -65 / +165°C) except p/n ending in 161 = -35 / +70°C

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R142 076 000	plug	straight	crimp	1.5	1 000	yes	brass	nickel	plastic boot compatible
R142 076 161 ★	plug	straight	crimp	1.5	1 000	yes	brass	nickel	commercial BNC / plastic boot compatible
R142 154 000	plug	right-angle	clamp	1.5	1 000	yes	brass	nickel	-
R142 202 000	jack	straight	clamp	1.5	1 000	yes	brass	nickel	square flange 17.5 mm / 4 holes M2.5 x 0.45
R142 217 000	jack	straight	full crimp	1.5	1 000	yes	brass	silver	plastic boot compatible
R142 331 011	jack	straight	crimp	1.5	1 000	yes	brass	nickel	bulkhead feedthrough / panel sealed / panel nut torque = 370 Ncm

TNC series (50 Ω interface) (temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R143 075 000	plug	straight	crimp	1.5	1 000	yes	brass	nickel	plastic boot compatible
R143 181 000	plug	right-angle	crimp	1.5	1 000	yes	brass	nickel	plastic boot compatible
R143 254 000	jack	straight	clamp	1.5	1 000	yes	brass	nickel	square flange 17.5 mm / 4 holes M2.5 x 0.45
R143 324 000	jack	straight	clamp	1.5	1 000	yes	brass	nickel	bulkhead feedthrough / panel nut torque = 370 Ncm

N series (temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 004 000 ★	plug	straight	clamp	11	1 000	yes	brass	BBR	-

Terminals (50 Ω interface) (temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Material	Finish	PCB	Miscellaneous
R280 280 100	terminal	straight	crimp	3	2 000	brass	gold	2 solder pins	-
R280 280 120	terminal	straight	crimp	3	2 000	brass	BBR	2 solder pins	-
R280 284 000	terminal	straight	crimp	3	2 000	brass	nickel	4 solder pins	-
R280 294 000	terminal	right-angle	crimp	3	2 000	brass	tin lead	4 solder pins	-

Plastic boots (PVC – length = 67.54 mm)

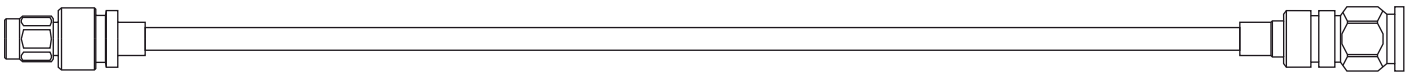
Part number (for SMB compatible connectors)	Part number (for BNC, TNC compatible connectors)	color
R280 560 000	R280 566 000	black
R280 560 001	R280 566 001	red
R280 560 002	R280 566 002	green
R280 560 003	R280 566 003	blue
R280 560 004	R280 566 004	yellow
R280 560 005	R280 566 005	grey
R280 560 006	R280 566 006	white
R280 560 007	R280 566 007	brown
R280 560 008	R280 566 008	orange
R280 560 009	R280 566 009	purple
R280 560 010	-	translucent

Heatshrink sleeves

a large range of heatshrink sleeves is available: please consult us.

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

FLEXIBLE CABLE 5/50 S
(RG58 - KX15)



Radiall P/N : C291 305 000 (MIL-C-17/28-RG58)
Radiall P/N : C291 305 010 (NF-C-93/550-KX15)

Cost effective solution.

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	stranded TC(1)	0.90	0.035
dielectric	solid PE(2)	2.95	0.116
inner shield	TC(1) braid	3.66	0.144
outer shield	-	-	-
jacket	black PVC(3)	4.95	0.195

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 1 GHz	
shielding effectiveness	40 dB	
voltage withstanding	5 000 V rms	
peak power	2.6 kW	
capacitance	96 pF / m	29 pF / ft
velocity of propagation	66% (5 ns / m	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	20 mm	0.787 inch
weight	35 g / m	0.0234 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	no	
halogen free	no	

APPLICATION NOTE

Due to its construction and raw materials construction, RG58/KX15 is far to be as performant as the equivalent 5/50 cables (RG142, RG223, ECO142).

However, this very flexible cable must be considered for applications requiring low electrical performance and reduced cost.

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

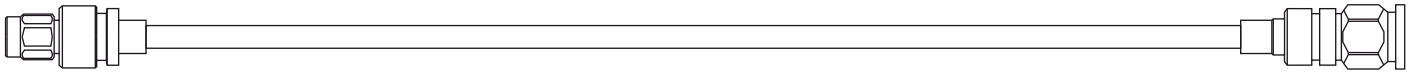
GHz	dB / m	dB / ft	Watts
0.05	0.14	0.04	246
0.1	0.20	0.06	174
0.2	0.29	0.09	123
0.3	0.36	0.11	100
0.5	0.47	0.14	78
0.6	0.51	0.16	71
0.7	0.56	0.17	66
0.8	0.60	0.18	61
1.0	0.67	0.20	55
attenuation calculation (dB / m)	(0.63 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	38 / √F GHz		

(1) TC = Tinned Copper
(2) PE = PolyEthylene
(3) PVC = PolyVinylChloride

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

CONNECTORS COMPATIBLE WITH CABLE 5/50 S



SMA series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R124 075 320 ★	plug	straight	full crimp	12.4	1 000	yes	brass	BBR	commercial SMA
R124 075 323	plug	straight	full crimp	12.4	1 000	yes	brass	gold	commercial SMA
R125 075 000	plug	straight	crimp	18	1 000	no	stainless steel	gold	-
R124 175 120 ★	plug	right-angle	crimp	12.4	1 000	yes	brass	BBR	commercial SMA
R124 175 123	plug	right-angle	crimp	12.4	1 000	yes	brass	gold	commercial SMA
R125 175 000	plug	right-angle	crimp	12.4	1 000	yes	stainless steel	gold	-
R125 175 001	plug	right-angle	crimp	12.4	1 000	yes	stainless steel	passiv	-
R124 277 120	jack	straight	full crimp	12.4	1 000	yes	brass	BBR	commercial SMA / square flange 12.7 mm / 4 holes dia. 2.6 mm
R125 277 000	jack	straight	crimp	18	1 000	no	stainless steel	gold	square flange 12.7 mm / 4 holes dia. 2.6 mm
R124 314 120	jack	straight	full crimp	12.4	1 000	yes	brass	BBR	commercial SMA / bulkhead feedthrough / panel nut torque = 150 Ncm
R124 314 123	jack	straight	full crimp	12.4	1 000	yes	brass	gold	commercial SMA / bulkhead feedthrough / panel nut torque = 150 Ncm
R125 314 120	jack	straight	full crimp	18	1 000	yes	stainless steel	gold	bulkhead feedthrough / panel nut torque = 150 Ncm

Advised torque wrench for R125 plugs: R282 320 000 / 8 mm / 80-120 Ncm
Advised torque wrench for R124 plugs: R282 320 030 / 8 mm / 60 Ncm

RP SMA series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R300 124 073	female plug	straight	fullcrimp	12.4	1 000	yes	brass	BBR	reverse polarity commercial SMA

Advised torque wrench for plugs: R282 320 030 / 8 mm / 60 Ncm

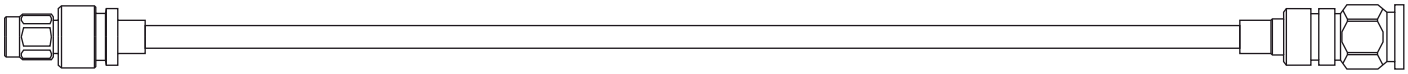
QMA series

(temperature range = -40 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R123 075 000	plug	straight	full crimp	6	1 000	yes	brass	BBR	-
R123 175 000 ★	plug	right-angle	crimp	6	1 000	yes	brass	BBR	-
R123 314 000	jack	straight	crimp	6	1 000	yes	brass	BBR	bulkhead feedthrough / panel nut torque = 160 Ncm

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 5/50 S



BNC series

(temperature range = -65 / +165°C)
except p/n ending in 161 = -35 / +70°C

Part number	Interface	Geometry	Attachment	Frequency (GHz)	Voltage Withstand (Vrms)	Captive Cent.cont.	Material	Finish	Miscellaneous
R141 082 000	plug	straight	full crimp	4	1 500	yes	brass	nickel	plastic boot compatible
R141 082 161 ★	plug	straight	crimp	1.5	1 500	yes	brass	nickel	commercial BNC / plastic boot compatible
R141 182 000	plug	right-angle	crimp	4	1 500	yes	brass	nickel	plastic boot compatible
R141 182 161 ★	plug	right-angle	crimp	1.5	1 500	yes	brass	nickel	commercial BNC / plastic boot compatible
R141 208 000	jack	straight	crimp	4	1 500	yes	brass	nickel	-
R141 237 000	jack	straight	full crimp	4	1 500	yes	brass	nickel	plastic boot compatible
R141 237 161 ★	jack	straight	full crimp	1.5	1 500	yes	brass	nickel	commercial BNC / plastic boot compatible
R141 258 000	jack	straight	crimp	4	1 500	yes	brass	nickel	square flange 17.5 mm / 4 holes M2.5 x 0.45
R141 327 000	jack	straight	crimp	4	1 500	yes	brass	nickel	bulkhead feedthrough / panel sealed / panel nut torque = 370 Ncm
R141 332 161 ★	jack	straight	full crimp	1.5	1 500	yes	brass	nickel	commercial BNC / bulkhead feedthrough / panel nut torque = 370 Ncm plastic boot compatible

RP BNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	Attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Captive cent.cont.	Material	Finish	Miscellaneous
R300 141 060	female plug	straight	full crimp	4	1 500	yes	brass	nickel	reverse polarity BNC
R300 141 120	female plug	right-angle	clamp	4	1 500	yes	brass	nickel	reverse polarity BNC

TNC series

(temperature range = -65 / +165°C)
except p/n ending in 161 = -35 / +70°C

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R143 082 000	plug	straight	full crimp	11	1 500	yes	brass	nickel	plastic boot compatible
R143 082 161 ★	plug	straight	full crimp	1.5	1 500	yes	brass	nickel	commercial TNC / plastic boot compatible
R143 182 000	plug	right-angle	full crimp	11	1 500	yes	brass	nickel	plastic boot compatible
R143 182 161	plug	right-angle	full crimp	1.5	1 500	yes	brass	nickel	commercial TNC / plastic boot compatible
R143 235 161	jack	straight	full crimp	1.5	1 500	yes	brass	nickel	commercial TNC / plastic boot compatible
R143 258 000	jack	straight	clamp	11	1 500	no	brass	nickel	square flange 17.5 mm / 4 holes M2.5 x 0.45
R143 325 000	jack	straight	clamp	11	1 500	yes	brass	nickel	bulkhead feedthrough / panel sealed / panel nut torque = 370Ncm

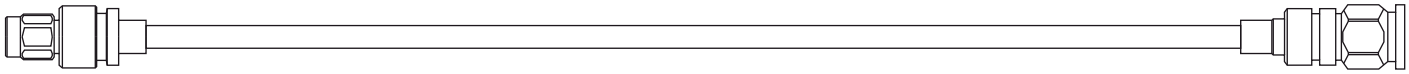
RP TNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	Attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Captive Cent.cont.	Material	Finish	Miscellaneous
R300 143 062	female plug	straight	full crimp	11	1 500	yes	brass	nickel	reverse polarity TNC
R300 143 240	male jack	straight	full crimp	11	1 500	yes	brass	nickel	reverse polarity TNC / bulkhead feedthrough / panel sealed / panel nut torque = 370Ncm

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 5/50 S



N series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 082 000 ★	plug	straight	full crimp	11	1 500	yes	brass	BBR	plastic boot compatible
R161 082 040	plug	straight	full crimp	11	1 500	yes	brass	BBR	6 flat coupling nut: 18 mm / coupling nut torque = 170 Ncm
R161 182 000 ★	plug	right-angle	crimp	11	1 500	yes	brass	BBR	plastic boot compatible
R161 182 230	plug	right-angle	crimp	11	1 500	yes	brass	BBR	6 flat coupling nut: 18 mm / coupling nut torque = 170 Ncm
R161 237 000	jack	straight	crimp	11	1 500	yes	brass	BBR	plastic boot compatible
R161 282 000	jack	straight	full crimp	11	1 500	no	brass	BBR	square flange 25.4 mm / 4 holes 3.3 mm / plastic boot compatible
R161 329 000	jack	straight	full crimp	11	1 500	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm / plastic boot compatible

Advised torque wrench for plugs with 18 mm 6 flats coupling nut: R282 303 020 / 170 Ncm

QN series

(temperature range = -55 / +125°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R164 075 000	plug	straight	full crimp	11	1 500	yes	brass	BBR	-
R164 175 000	plug	right-angle	crimp	11	1 500	yes	brass	BBR	-
R164 282 000	jack	straight	crimp	11	1 500	yes	brass	BBR	square flange 25.4 mm / 4 holes 3.3 mm
R164 329 000	jack	straight	full crimp	11	1 500	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

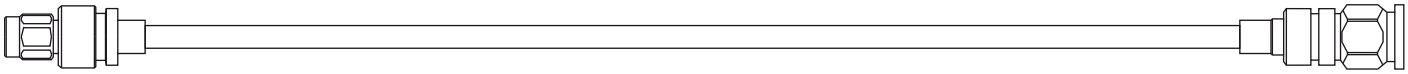
Coaxi-kit : N - DIN 7/16 series (2 parts straight or right-angle connectors = 1 tip + 1 head)

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R280 651 030	cable tip	straight	crimp	2.5	2 500	yes	brass	silver + BBR	allows to design straight or r-a connectors / compatible with following head part-numbers
R161 901 120	N series plug head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	mixed coupling nut (6 flat = 18 mm and manual) advised torque wrench : R282 303 020 / 170 Ncm
R161 912 120	N series jack head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	square flange 25.4 mm / 4 holes 3.3 mm
R161 913 120	N series jack head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	bulkhead feedthrough panel sealed / panel nut torque = 500 Ncm
R185 901 000	DIN 7/16 plug head	straight or right-angle	-	2.5	4 000	yes	brass	silver + BBR	mixed coupling nut (6 flat = 27 mm and manual) advised torque wrench : R282 303 520 / 3000 Ncm
R185 925 000	DIN 7/16 jack head	straight or right-angle	-	2.5	4 000	yes	brass	silver + BBR	square flange 32 mm / 4 holes 3.5 mm

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 5/50 S



Plastic boots (PVC – length = 67.54 mm)

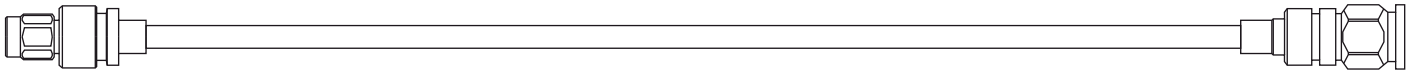
Part number (for BNC, TNC compatible connectors)	color
R280 570 000	black
R280 571 000	red
R280 572 000	green
R280 573 000	blue
R280 574 000	yellow
R280 575 000	grey
R280 576 000	white
R280 577 000	brown
R280 578 000	orange
R280 579 000	purple
R280 580 000	translucent

Heatshrink sleeves

a large range of heatshrink sleeves is available: please consult us.

: Service + program: fast delivery, please read page 129.

FLEXIBLE CABLE 5/50 D
(RG142)



Radiall P/N : C291 320 007 (MIL-C-17/158-RG142)

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPCCS(1)	0.94	0.037
dielectric	solid PTFE(2)	2.95	0.116
inner shield	SPC(3) braid	-	-
outer shield	SPC(3) braid	4.19	0.165
jacket	brown FEP(4)	4.95	0.195

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC – 12.4 GHz	
shielding effectiveness	65 dB (DC - 3 GHz)	
voltage withstanding	5 000 V rms	
peak power	3.4 kW	
capacitance	97 pF / m	29.3 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	25 mm	0.984 inch
weight	64 g / m	0.043 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-55 / +200°C	-67 / +392°F
fire resistance	yes (CSA FT6 / IEC 332-2)	
halogen free	no	

APPLICATION NOTE

RG142 is one of the most popular RG cables.

This cable presents a good compromise between flexibility and electrical performances.

RG142 shall be selected among other 5/50 RG's for applications requiring high frequency range and low attenuation.

Usable in severe thermal conditions.

(1) SPCCS = Silver Plated Copper covered steel
(2) PTFE = PolyTetraFluoroEthylene
(3) SPC = Silver Plated Copper

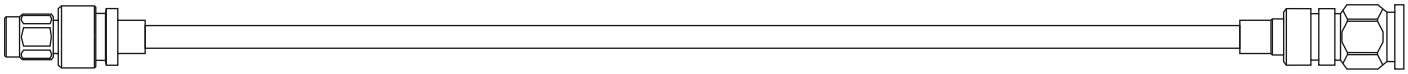
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
0.5	0.30	0.09	665
1.0	0.44	0.13	470
1.5	0.55	0.17	384
2.0	0.65	0.20	332
3.0	0.81	0.25	271
6.0	1.22	0.37	192
8.0	1.45	0.44	166
10.0	1.66	0.50	149
12.4	1.90	0.58	133
attenuation calculation (dB / m)	(0.40 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	470 / √F GHz		

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

LOW LOSS FLEXIBLE CABLE 5/50 D
(ECO142X)



ECO-Friendly cable
Cost effective solution.

Radiall P/N : C291 320 180

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPC(1)	0.95	0.037
dielectric	X foam PE(2)	2.98	0.117
inner shield	SPC(1) braid	3.64	0.143
outer shield	SPC(1) braid	4.30	0.169
jacket	Black LSZH PE(3) with blue stripe	5.00	0.197

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 6 GHz	
shielding effectiveness	75 dB (DC - 5 GHz)	
voltage withstanding	5 000 V rms	
capacitance	94.5 pF / m	28.7 pF / ft
velocity of propagation	71% (4.7 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	25 mm	1.18 inch
weight	60 g / m	0.0403 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +105°C	-40 / +221°F
fire resistance	yes (UL1581 VW1 / IEC 332-1)	
halogen free	Yes (IEC 754-2)	

APPLICATION NOTE

Designed by RADIALL, ECO142X is an advantageous alternative solution to ECO142 when higher power level is required:

- **Advantageous in term of electrical performance** : the crosslink foam polyethylene used as dielectric material allows higher temperature level (thus power range) than ECO142.
- **Advantageous in term of environmental aspect** : halogen and sulphur free, this cable does not emit any toxic substance when submitted to fire. The flame retardant jacket allows ECO142X to meet fire resistance standards (see data sheet)
- **Advantageous in term of price** : ECO142X design has integrated all RADIALL knowledge to reach the best performances with a very competitive price.

ECO142X is UL style 1375/3651 approved.
This cable is compatible with a large range of standard connector

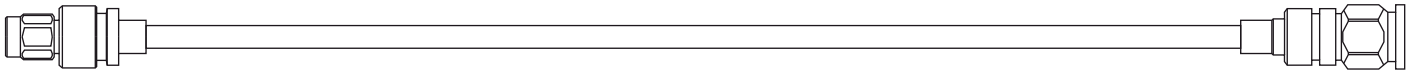
FREQUENCY / ATTENUATION (25°C) / CW MAX POWER (sea level 40°C)

GHz	dB / m	dB / ft	Watts
0.5	0.36	0.11	354
1.0	0.54	0.16	250
1.5	0.69	0.21	204
2.0	0.83	0.25	177
2.5	0.95	0.29	158
3.0	1.07	0.32	144
3.5	1.18	0.36	134
4.0	1.29	0.39	125
5.0	1.50	0.45	112
6.0	1.70	0.51	102
attenuation calculation (dB / m)	(0.44 x √F GHz) + (0.103 x F GHz)		
power calculation (W)	250 / √F GHz		

(1) SPC = Silver Plated Copper
(2) X foam PE = Crosslink foam PolyEthylene
(3) LSZH PE = Low Smoke Zero Halogen PolyEthylene

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

FLEXIBLE CABLE 5/50 D
(RG223)



Radiall P/N : C291 330 000 (MIL-C-17/84-RG223)

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPC(1)	0.89	0.035
dielectric	solid PE(2)	2.95	0.116
inner shield	SPC(1) braid	-	-
outer shield	SPC(1) braid	4.19	0.165
jacket	black PVC(3)	5.38	0.212

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC – 12.4 GHz	
shielding effectiveness	65 dB (DC - 3 GHz)	
voltage withstanding	5 000 V rms	
peak power	2.6 kW	
capacitance	96 pF / m	29 pF / ft
velocity of propagation	66% (5 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	25 mm	0.984 inch
weight	55 g / m	0.0370 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	no	
halogen free	no	

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
0.5	0.32	0.10	71
1.0	0.46	0.14	50
1.5	0.57	0.17	41
2.0	0.67	0.20	35
3.0	0.85	0.26	29
6.0	1.27	0.38	20
8.0	1.51	0.46	18
10.0	1.73	0.52	16
12.4	1.97	0.60	14
attenuation calculation (dB / m)	(0.42 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	50 / √F GHz		

APPLICATION NOTE

RG223 is one of the most popular RG cables.

This cable presents a good compromise between flexibility and electrical performances.

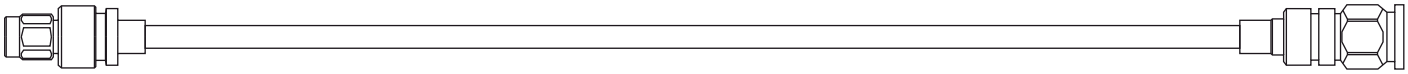
RG223 can be used instead og RG142 for cost reasons in applications that do not require high temperature resistance.

(1) SPC = Silver Plated Copper
(2) PE = PolyEthylene
(3) PVC = PolyVinylChloride

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

FLEXIBLE CABLE 5/50 D
(RG400)



Radiall P/N : C291 324 007 (MIL-C-17/128-RG400)

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	stranded SPC(1)	0.98	0.039
dielectric	solid PTFE(2)	2.95	0.116
inner shield	SPC(1) braid	-	-
outer shield	SPC(1) braid	4.19	0.165
jacket	brown FEP(3)	4.95	0.195

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC – 12.4 GHz	
shielding effectiveness	65 dB (DC - 3 GHz)	
voltage withstanding	5 000 V rms	
peak power	3.4 kW	
capacitance	97 pF / m	29.3 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	20 mm	0.79 inch
weight	66 g / m	0.0442 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-55 / +200°C	-67 / +392°F
fire resistance	yes (CSA FT6 / IEC 332-2)	
halogen free	no	

APPLICATION NOTE

Due to its stranded inner conductor, RG400 is much more flexible than RG142 and RG223.

This cable will be chosen instead of equivalent RG's for specific applications requiring high flexibility.

Usable in severe thermal conditions.

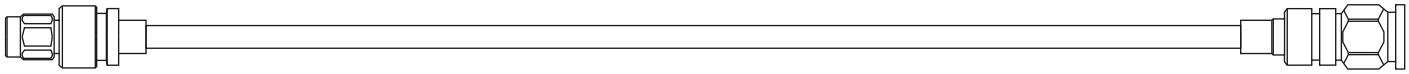
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
0.5	0.36	0.11	665
1.0	0.52	0.16	470
1.5	0.65	0.20	384
2.0	0.76	0.23	332
3.0	0.95	0.29	271
6.0	1.42	0.43	192
8.0	1.68	0.51	166
10.0	1.92	0.58	149
12.4	2.19	0.66	133
attenuation calculation (dB / m)	(0.48 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	470 / √F GHz		

(1) SPC = Silver Plated Copper
(2) PTFE = PolyTetraFluoroEthylene
(3) FEP = Fluorinated Ethylene Propylene

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

FLEXIBLE CABLE 5/50 D
(KX23)



Radiall P/N : C291 322 017 (MIL-C-93/550-KX23)

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	stranded SPC(1)	0.92	0.036
dielectric	Solid PTFE(2)	2.95	0.116
inner shield	SPC braid	-	-
outer shield	SPC braid	4.34	0.171
jacket	Translucent Fiber Glass	5.10	0.201

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2.5 Ω	
operating frequency range	DC - 8 GHz	
shielding effectiveness	65 dB (DC - 3 GHz)	
voltage withstanding	5 000 V rms	
peak power	3 kW	
capacitance	95 pF / m	28.8 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	30 mm	1.181 inch
weight	70 g / m	0.0466 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-55 / +200°C	-67 / +392°F
fire resistance	yes (UL1581 VW1 / IEC 332-1)	
halogen free	Yes (IEC 754-2)	

APPLICATION NOTE

Relevant standard : NF-C93/550-KX23 (France).

Due to its stranded inner conductor it is much more flexible than RG142 or RG223.

This cable will be chosen instead of equivalent RG's for specific applications requiring high flexibility.

Usable in severe thermal conditions.

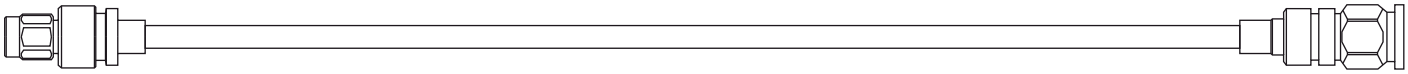
FREQUENCY / ATTENUATION (25°C) / CW MAX POWER (sea level 40°C)

GHz	dB / m	dB / ft	Watts
0.5	0.33	0.10	375
1.0	0.48	0.14	260
1.5	0.60	0.18	210
2.0	0.70	0.21	180
2.5	0.80	0.24	160
3.0	0.89	0.27	146
4.0	1.05	0.32	126
5.0	1.20	0.37	112
6.0	1.35	0.41	102
8.0	1.61	0.49	88
attenuation calculation (dB / m)	(0.427 x √F GHz) + (0.05 x F GHz)		

(1) SPC = Silver Plated Copper
(2) PTFE = PolyTetraFluoroEthylene

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

CONNECTORS COMPATIBLE WITH CABLE 5/50 D
(*RG142, RG223, RG400, KX23, ECO142X*)



SMA series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R124 076 320 ★	plug	straight	full crimp	12.4	1 000	yes	brass	BBR	commercial SMA
R125 076 000	plug	straight	crimp	18	1 000	no	stainless steel	gold	-
R124 176 120 ★	plug	right-angle	crimp	12.4	1 000	yes	brass	BBR	commercial SMA
R125 176 000	plug	right-angle	crimp	18	1 000	yes	stainless steel	gold	-
R125 176 001	plug	right-angle	crimp	18	1 000	yes	stainless steel	passiv	-
R124 278 120	jack	straight	full crimp	12.4	1 000	yes	brass	BBR	commercial SMA / square flange 12.7 mm / 4 holes dia. 2.6 mm
R125 278 000	jack	straight	crimp	18	1 000	no	stainless steel	gold	square flange 12.7 mm / 4 holes dia. 2.6 mm
R124 315 120	jack	straight	crimp	12.4	1 000	yes	brass	BBR	commercial SMA / bulkhead feedthrough / panel nut torque = 150 Ncm

Advised torque wrench for R125 plugs: R282 320 000 / 8 mm / 80-120 Ncm
Advised torque wrench for R124 plugs: R282 320 030 / 8 mm / 60 Ncm

RP SMA series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R300 124 080	female plug	straight	full crimp	12.4	1 000	yes	brass	BBR	reverse polarity commercial SMA

Advised torque wrench for plugs: R282 320 030 / 8 mm / 60 Ncm

QMA series

(temperature range = -40 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R123 076 000	plug	straight	full crimp	6	1 000	yes	brass	BBR	-
R123 176 000 ★	plug	right-angle	crimp	6	1 000	yes	brass	BBR	-
R123 315 000	jack	straight	crimp	6	1 000	yes	brass	BBR	bulkhead feedthrough / panel nut torque = 160 Ncm

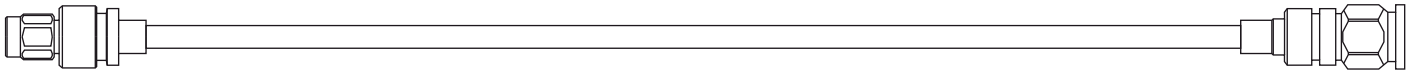
BMA series

(temperature range = -65 / +125°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R128 088 827	male plug	straight	crimp	4	1 000	yes	brass	BBR	commercial BMA / bulkhead feedthrough / panel nut torque = 150 Ncm
R128 238 827	female jack	straight	crimp	4	1 000	yes	brass	BBR	commercial BMA / snap-in / panel floating
R128 268 827	female jack	straight	crimp	4	1 000	yes	brass	BBR	commercial BMA / panel floating / 2 hole flange / 2 holes dia.2.6 mm

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 5/50 D
(*RG142, RG223, RG400, KX23, ECO142X*)



BNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R141 083 000 ★	plug	straight	full crimp	4	1 500	yes	brass	nickel	plastic boot compatible
R141 183 000	plug	right-angle	crimp	4	1 500	yes	brass	nickel	plastic boot compatible
R141 208 000	jack	straight	clamp	4	1 500	yes	brass	nickel	-
R141 220 000	jack	straight	full crimp	4	1 500	yes	brass	nickel	plastic boot compatible
R141 256 000	jack	straight	clamp	4	1 500	no	brass	nickel	square insulated flange 18.5 mm / 4 holes dia. 2.6 mm
R141 258 000	jack	straight	clamp	4	1 500	no	brass	nickel	square flange 17.5 mm / 4 holes M2.5 x 0.45
R141 297 000	jack	straight	full crimp	4	1 500	yes	brass	nickel	square flange 17.5 mm / 4 holes dia. 2.6 mm
R141 327 000	jack	straight	clamp	4	1 500	no	brass	nickel	bulkhead feedthrough / panel sealed / panel nut torque = 370Ncm

RP BNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	Attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Captive cent.cont.	Material	Finish	Miscellaneous
R300 141 030	female plug	straight	clamp	4	1 500	no	brass	nickel	reverse polarity BNC
R300 141 120	female plug	right-angle	clamp	4	1 500	yes	brass	nickel	reverse polarity BNC

TNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R143 008 000 ★	plug	straight	clamp	11	1 500	no	brass	nickel	-
R143 073 000	plug	straight	full crimp	11	1 500	yes	brass	nickel	plastic boot compatible
R143 156 000	plug	right-angle	clamp	11	1 500	yes	brass	nickel	-
R143 207 000	jack	straight	clamp	11	1 500	no	brass	nickel	-
R143 258 000	jack	straight	clamp	11	1 500	no	brass	nickel	square flange 17.5 mm / 4 holes M2.5 x 0.45
R143 325 000	jack	straight	clamp	11	1 500	yes	brass	nickel	bulkhead feedthrough / panel sealed / panel nut torque=370Ncm

RP TNC series

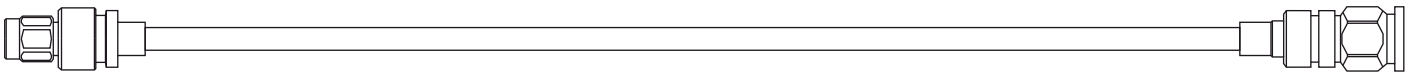
(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R300 143 070	female plug	straight	full crimp	11	1 500	yes	brass	nickel	reverse polarity TNC

: Service + program: fast delivery, please read page 129.

★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 5/50 D
(*RG142, RG223, RG400, KX23, ECO142X*)



N series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 083 000 ★	plug	straight	full crimp	11	1 500	yes	brass	BBR	plastic boot compatible
R161 083 137	plug	straight	full crimp	11	1 500	yes	brass	BBR	low intermodulation / mixed coupling nut (6 flat = 18 mm and manual) plastic boot compatible
R161 183 000 ★	plug	right-angle	crimp	11	1 500	yes	brass	BBR	plastic boot compatible
R161 183 137	plug	right-angle	crimp	11	1 500	yes	brass	BBR	low intermodulation / mixed coupling nut (6 flat = 18 mm and manual) plastic boot compatible
R161 238 000	jack	straight	full crimp	11	1 500	yes	brass	BBR	plastic boot compatible
R161 283 000	jack	straight	full crimp	11	1 500	yes	brass	BBR	square flange 25.4 mm / +4 holes dia.3.3 mm / plastic boot compatible
R161 329 200	jack	straight	full crimp	11	1 500	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm / plastic boot compatible

QN series

(temperature range = -55 / +125°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R164 076 000	plug	straight	full crimp	6	1 500	yes	brass	BBR	-
R164 176 000	plug	right-angle	crimp	6	1 500	yes	brass	BBR	-
R164 283 000	jack	straight	crimp	6	1 500	yes	brass	BBR	square flange 25.4 mm / 4 holes 3.3 mm
R164 329 200	jack	straight	full crimp	6	1 500	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

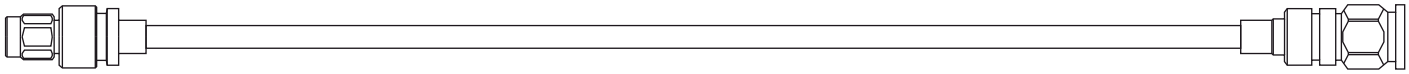
Coaxi-kit : N - DIN 7/16 series (2 parts straight or right-angle connectors = 1 tip + 1 head)

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R280 651 230	cable tip	straight	crimp	2.5	yes	yes	brass	silver + BBR	allows to design straight or r-a connectors / compatible with following head part-numbers
R161 901 120	N series plug head	straight or right-angle	-	2.5	yes	yes	brass	silver + BBR	mixed coupling nut (6 flat = 18 mm and manual) advised torque wrench : R282 303 020 / 170 Ncm
R161 912 120	N series jack head	straight or right-angle	-	2.5	yes	yes	brass	silver + BBR	square flange 25.4 mm / 4 holes 3.3 mm
R161 913 120	N series jack head	straight or right-angle	-	2.5	yes	yes	brass	silver + BBR	bulkhead feedthrough panel sealed / panel nut torque = 500 Ncm
R185 901 000	DIN 7/16 plug head	straight or right-angle	-	2.5	yes	yes	brass	silver + BBR	mixed coupling nut (6 flat = 27 mm and manual) advised torque wrench : R282 303 520 / 3000 Ncm
R185 925 000	DIN 7/16 jack head	straight or right-angle	-	2.5	yes	yes	brass	silver + BBR	square flange 32 mm / 4 holes 3.5 mm

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 5/50 D
(*RG142, RG223, RG400, KX23, ECO142X*)



Plastic boots (PVC – length = 67.54 mm)

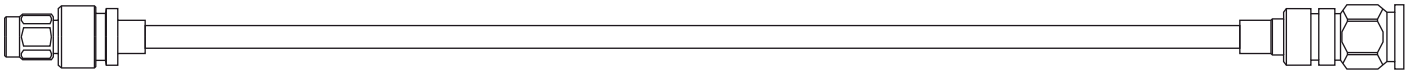
Part number (for BNC, TNC compatible connectors)	color
R280 570 000	black
R280 571 000	red
R280 572 000	green
R280 573 000	blue
R280 574 000	yellow
R280 575 000	grey
R280 576 000	white
R280 577 000	brown
R280 578 000	orange
R280 579 000	purple
R280 580 000	translucent

Heatshrink sleeves
a large range of heatshrink sleeves is available: please consult us.

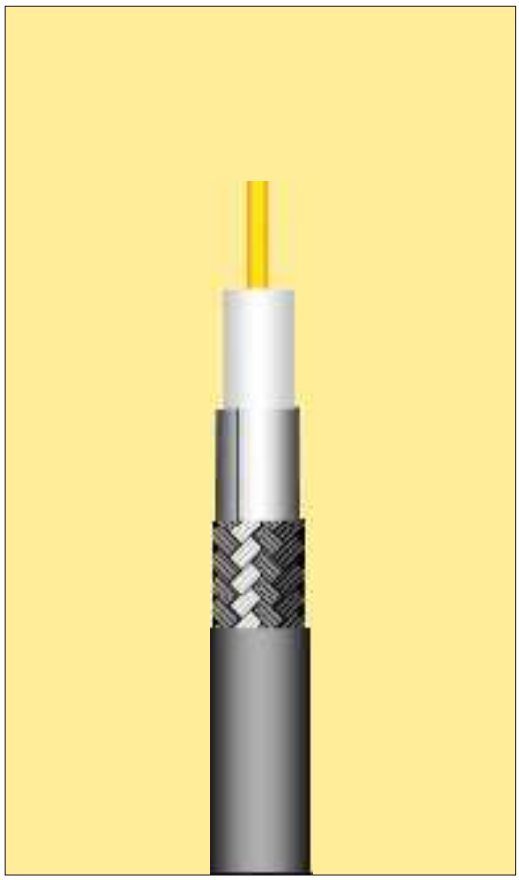
: Service + program: fast delivery, please read page 129.

LOW LOSS FLEXIBLE CABLE 5/50 D

(ECO142 : alternative to RG142)



ECO-Friendly cable
Cost effective solution.



Radiall P/N : C291 325 290

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	OFC(1) copper	0.95	0.037
dielectric	foam PE(2)	2.85	0.112
inner shield	Al(3) foil	3.10	0.122
outer shield	TC(4) braid	3.50	0.138
jacket	black LSZH PE(5)	4.50	0.177

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 3 GHz	
shielding effectiveness	80 dB (DC - 3 GHz)	
voltage withstanding	5 000 V rms	
peak power	2.7 kW	
capacitance	87 pF / m	26.4 pF / ft
velocity of propagation	77% (4.3 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	15 mm	0.59 inch
weight	36 g / m	0.0242 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	yes (UL1581 VW1 / IEC 332-1)	
halogen free	yes (IEC 754-2)	

FREQUENCY / ATTENUATION (20°C) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
0.1	0.12	0.04	411
0.2	0.18	0.05	291
0.3	0.22	0.07	237
0.5	0.28	0.09	184
1.0	0.41	0.12	130
1.5	0.50	0.15	106
2.0	0.58	0.18	92
2.5	0.65	0.20	82
3.0	0.72	0.22	75
attenuation calculation (dB / m)	(0,385 x √F GHz) + (0.008 x F GHz)		
power calculation (W)	130 / √F GHz		

APPLICATION NOTE

Designed by RADIALL, ECO142 is an advantageous alternative solution to RG142 :

- **Advantageous in term of electrical performance** : its optimized construction allows better attenuation and screening effectiveness than RG142.
- **Advantageous in term of environmental aspect** : halogen and sulphur free, this cable does not emit any toxic substance when submitted to fire. The flame retardant jacket allows ECO142 to meet fire resistance standard (see data sheet).
- **Advantageous in term of price** : ECO142 design has integrated all RADIALL knowledge to reach the best performances with a very competitive price.

ECO142 is UL style 1375 approved.
This cable is compatible with a large range of connector series.

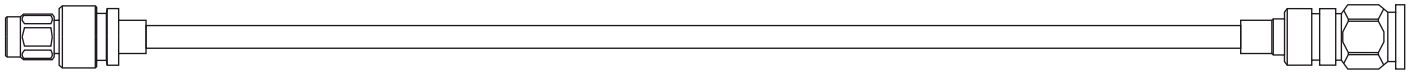
(1) OFC = Oxygen Free Copper
(2) PE = PolyEthylene
(3) Al = Aluminum
(4) TC = Tinned Copper
(5) LSZH PE = Low Smoke Zero Halogen PolyEthylene

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

LOW LOSS FLEXIBLE CABLE 5/50 D

(POWER142 : alternative to RG142)



Cost effective solution.

Radiall P/N : C291 325 270

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPC(1)	0.92	0.036
dielectric	solid PTFE(2)	2.97	0.117
inner shield	Al(3) foil	3.20	0.126
outer shield	TC(4) braid	3.60	0.142
jacket	black LSZH PE(5)	4.50	0.177

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 3 GHz	
shielding effectiveness	90 dB (DC - 3 GHz)	
voltage withstanding	5 000 V rms	
peak power	3.4 kW	
capacitance	97 pF / m	29.3 pF / ft
velocity of propagation	69% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	25 mm	0.98 inch
weight	40 g / m	0.0269 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +105°C	-40 / +221°F
fire resistance	yes (UL1581 VW1 / IEC 332-1)	
halogen free	no	

APPLICATION NOTE

Designed by RADIALL, POWER142 is an advantageous alternative solution to ECO142 when high power level is required :

- **Advantageous in term of electrical performance** : its optimized construction allows better attenuation and screening effectiveness than RG142 and higher power level than ECO142.
- **Advantageous in term of environmental aspect** : the flame retardant jacket allows POWER142 to meet fire resistance standard (see data sheet).
- **Advantageous in term of price** : POWER142 design has integrated all RADIALL knowledge to reach the best performances with a very competitive price.

POWER142 is UL style 1375 approved.

This cable is compatible with a large range of connector series.

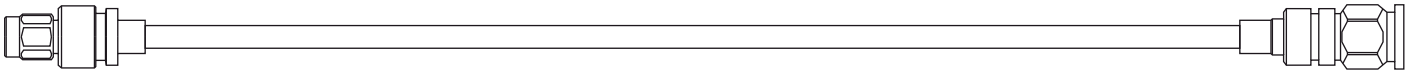
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 40°C)

GHz	dB / m	dB / ft	Watts
0.2	0.18	0.05	470
0.4	0.26	0.08	332
0.6	0.32	0.10	271
0.8	0.37	0.11	235
1.0	0.41	0.12	210
1.5	0.50	0.15	171
2.0	0.58	0.18	148
2.5	0.66	0.20	133
3.0	0.72	0.22	121
attenuation calculation (dB / m)	(0.402 x √F GHz) + (0.008 x F GHz)		
power calculation (W)	210 / √F GHz		

(1) SPC = Silver Plated Copper
(2) PTFE = PolyTetraFluoroEthylene
(3) Al = Aluminum
(4) TC = Tinned copper
(5) LSZH PE = Low Smoke Zero Halogen PolyEthylene

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

CONNECTORS COMPATIBLE WITH CABLE 5/50 D
(ECO142, POWER142)



SMA series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R124 075 320 ★	plug	straight	full crimp	12.4	1 000	yes	brass	BBR	commercial SMA
R124 075 323	plug	straight	full crimp	12.4	1 000	yes	brass	gold	commercial SMA
R125 075 000	plug	straight	crimp	18	1 000	no	stainless steel	gold	
R124 175 120 ★	plug	right-angle	crimp	12.4	1 000	yes	brass	BBR	commercial SMA
R124 175 123	plug	right-angle	crimp	12.4	1 000	yes	brass	gold	commercial SMA
R125 175 000	plug	right-angle	crimp	12.4	1 000	yes	stainless steel	gold	
R124 277 120	jack	straight	full crimp	12.4	1 000	yes	brass	BBR	commercial SMA / square flange 12.7 mm / 4 holes dia. 2.6 mm
R125 277 000	jack	straight	crimp	18	1 000	no	stainless steel	gold	square flange 12.7 mm / 4 holes dia. 2.6 mm
R124 314 120	jack	straight	full crimp	12.4	1 000	yes	brass	BBR	commercial SMA / bulkhead feedthrough / panel nut torque = 150 Ncm
R124 314 123	jack	straight	full crimp	12.4	1 000	yes	brass	gold	commercial SMA / bulkhead feedthrough / panel nut torque = 150 Ncm

Advised torque wrench for R125 plugs: R282 320 000 / 8 mm / 80-120 Ncm
Advised torque wrench for R124 plugs: R282 320 030 / 8 mm / 60 Ncm

RP SMA series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R300 124 073	female plug	straight	full crimp	12.4	1 000	yes	brass	BBR	reverse polarity commercial SMA

Advised torque wrench for plugs: R282 320 030 / 8 mm / 60 Ncm

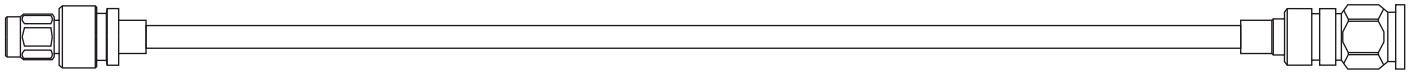
QMA series

(temperature range = -40 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R123 075 000	plug	straight	full crimp	6	1 000	yes	brass	BBR	-
R123 175 000 ★	plug	right-angle	crimp	6	1 000	yes	brass	BBR	-
R123 314 000	jack	straight	crimp	6	1 000	yes	brass	BBR	bulkhead feedthrough / panel nut torque = 160 Ncm

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 5/50 D
(ECO142, POWER142)



BNC series

(temperature range = -65 / +165°C)
except p/n ending in 161 = -35 / +70°C

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R141 082 000	plug	straight	full crimp	4	1 500	yes	brass	nickel	plastic boot compatible
R141 082 161 ★	plug	straight	crimp	1.5	1 500	yes	brass	nickel	commercial BNC / plastic boot compatible
R141 182 000	plug	right-angle	crimp	4	1 500	yes	brass	nickel	plastic boot compatible
R141 182 161 ★	plug	right-angle	crimp	1.5	1 500	yes	brass	nickel	commercial BNC / plastic boot compatible
R141 208 000	jack	straight	clamp	4	1 500	yes	brass	nickel	-
R141 237 000	jack	straight	full crimp	4	1 500	yes	brass	nickel	plastic boot compatible
R141 237 161 ★	jack	straight	full crimp	1.5	1 500	no	brass	nickel	commercial BNC / plastic boot compatible
R141 258 000	jack	straight	clamp	4	1 500	no	brass	nickel	square flange 17.5 mm / 4 holes M2.5 x 0.45
R141 327 000	jack	straight	clamp	4	1 500	no	brass	nickel	bulkhead feedthrough / panel sealed / panel nut torque = 370Ncm
R141 332 161 ★	jack	straight	full crimp	1.5	1 500	yes	brass	nickel	commercial BNC / bulkhead feedthrough / panel nut torque = 370Ncm / plastic boot compatible

RP BNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	Attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Captive cent.cont.	Material	Finish	Miscellaneous
R300 141 060	female plug	straight	full crimp	4	1 500	yes	brass	nickel	reverse polarity BNC
R300 141 120	female plug	right-angle	clamp	4	1 500	yes	brass	nickel	reverse polarity BNC

TNC series

(temperature range = -65 / +165°C)
except p/n ending in 161 = -35 / +70°C

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R143 082 000	plug	straight	full crimp	11	1 500	yes	brass	nickel	plastic boot comatible
R143 082 161 ★	plug	straight	full crimp	1.5	1 500	yes	brass	nickel	commercial TNC / plastic boot compatible
R143 182 000	plug	right-angle	full crimp	11	1 500	yes	brass	nickel	plastic boot compatible
R143 182 161	plug	right-angle	full crimp	1.5	1 500	yes	brass	nickel	commercial TNC / plastic boot compatible
R143 235 161	jack	straight	full crimp	1.5	1 500	yes	brass	nickel	commercial TNC / plastic boot compatible
R143 258 000	jack	straight	clamp	11	1 500	no	brass	nickel	square flange 17.5 mm / 4 holes M2.5 x 0.45
R143 325 000	jack	straight	clamp	11	1 500	yes	brass	nickel	bulkhead feedthrough / panel sealed / panel nut torque = 370Ncm

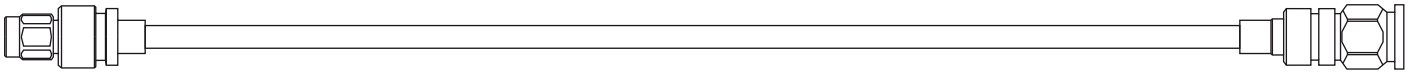
RP TNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R300 143 062	female plug	straight	full crimp	11	1 500	yes	brass	nickel	reverse polarity TNC
R300 143 240	male jack	straight	full crimp	11	1 500	yes	brass	nickel	reverse polarity TNC / bulkhead feedthrough / panel sealed / panel nut torque = 370Ncm

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 5/50 D
(ECO142, POWER142)



N series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 082 000 ★	plug	straight	full crimp	11	1 500	yes	brass	BBR	plastic boot compatible
R161 082 040	plug	straight	full crimp	11	1 500	yes	brass	BBR	6 flat coupling nut : 18 mm / coupling nut torque = 170 Ncm
R161 182 000 ★	plug	right-angle	crimp	11	1 500	yes	brass	BBR	plastic boot compatible
R161 182 230	plug	right-angle	crimp	11	1 500	yes	brass	BBR	6 flat coupling nut : 18 mm / coupling nut torque = 170 Ncm
R161 237 000	jack	straight	crimp	11	1 500	yes	brass	BBR	plastic boot compatible
R161 282 000	jack	straight	full crimp	11	1 500	yes	brass	BBR	square flange 25.4 mm / 4 holes 3.3 mm / plastic boot compatible
R161 329 000	jack	straight	full crimp	11	1 500	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm / plastic boot compatible

Advised torque wrench for plugs with 18 mm 6 flats coupling nut: R282 303 020 / 170 Ncm

QN series

(temperature range = -55 / +125°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R164 075 000	plug	straight	full crimp	11	1 500	yes	brass	BBR	-
R164 175 000	plug	right-angle	crimp	11	1 500	yes	brass	BBR	-
R164 282 000	jack	straight	crimp	11	1 500	yes	brass	BBR	square flange 25.4 mm / 4 holes 3.3 mm
R164 329 000	jack	straight	full crimp	11	1 500	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

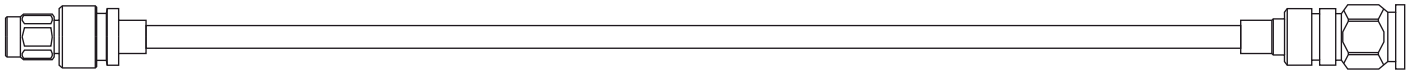
Coaxi-kit : N - DIN 7/16 series (2 part straight or right-angle connectors = 1 tip + 1 head)

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R280 651 030	cable tip	straight	crimp	2.5	2 500	yes	brass	silver + BBR	allows to design straight or r-a connectors / compatible with following head part-numbers
R161 901 120	N series plug head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	mixed coupling nut (6 flat = 18 mm and manual) advised torque wrench : R282 303 020 / 170 Ncm
R161 912 120	N series jack head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	square flange 25.4 mm / 4 holes 3.3 mm
R161 913 120	N series jack head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	bulkhead feedthrough panel sealed / panel nut torque = 500 Ncm
R185 901 000	DIN 7/16 plug head	straight or right-angle	-	2.5	4 000	yes	brass	silver + BBR	mixed coupling nut (6 flat = 27 mm and manual) advised torque wrench : R282 303 520 / 3000 Ncm
R185 925 000	DIN 7/16 jack head	straight or right-angle	-	2.5	4 000	yes	brass	silver + BBR	square flange 32 mm / 4 holes 3.5 mm

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 5/50 D
(ECO142, POWER142)



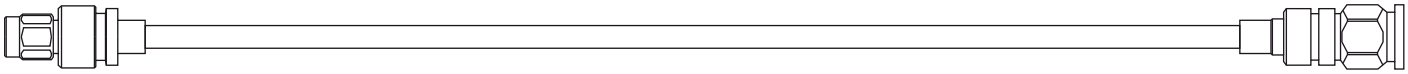
Plastic boots (PVC – length = 67.54 mm)

Part number (for BNC, TNC compatible connectors)	color
R280 570 000	black
R280 571 000	red
R280 572 000	green
R280 573 000	blue
R280 574 000	yellow
R280 575 000	grey
R280 576 000	white
R280 577 000	brown
R280 578 000	orange
R280 579 000	purple
R280 580 000	translucent

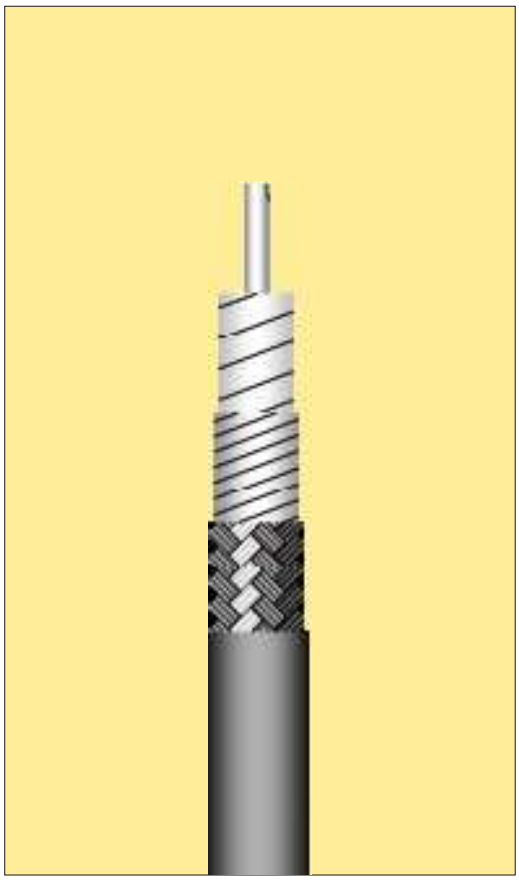
Heatshrink sleeves
a large range of heatshrink sleeves is available: please consult us.

: Service + program: fast delivery, please read page 129.

LOW LOSS FLEXIBLE CABLE 5/50 D
(SHF5LI)



Radiall P/N : F1703-183



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPC(1)	1,42	0,056
dielectric	PTFE(2) tape	4,03	0,158
inner shield	SPC(1) tape	4,20	0,165
outer shield	SPC(1) braid	4,60	0,181
jacket	green FEP(3)	5.25	0.207

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC – 26.5 GHz	
shielding effectiveness	>110 dB (DC - 18 GHz)	
voltage withstanding	5 000 V rms	
peak power	3.4 kW	
capacitance	85 pF / m	26 pF / ft
velocity of propagation	78% (4.3 ns / m)	
Intermodulation (IMP3)	-160 dBc under (2x20 W carriers)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	25 mm	0.984 inch
weight	72 g / m	0.048 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-70 / +200°C	-94 / +392°F
fire resistance	yes (MIL C 87104)	
halogen free	no	

APPLICATION NOTE

Designed by RADIALL, this cable is part of the "SHF cable assembly" product ligne : the ultra low loss cable family.

- **The dielectric is made of wrapped PTFE tape** : this unique technology allows this SHF5LI to reach ultra low loss.
- **The outer conductor is constituted of wrapped silver plated copper tape** : this construction enables this cable to feature ultra high shielding, ultra low leakage levels, and Low Intermodulation (LI) performance.

This SHF5LI cable is advised in all applications requiring high performance level like mobile phones BTS and BSC cellular mobile networks.

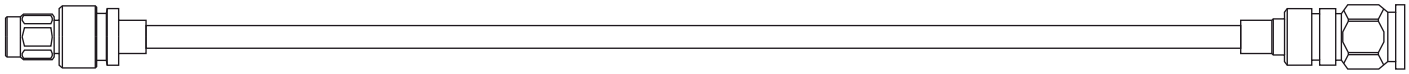
(1) SPC = Silver Plated Copper
(2) PTFE = PolyTetraFluoroEthylene
(3) FEP = Fluorinated Ethylene Propylene

FREQUENCY / ATTENUATION (20°C) / CW MAX POWER (sea level 40°C)

GHz	dB / m	dB / ft	Watts
1.0	0.26	0.08	550
2.0	0.38	0.11	400
3.0	0.47	0.14	368
4.0	0.55	0.17	330
6.0	0.68	0.21	300
8.0	0.80	0.24	250
10.0	0.91	0.28	220
12.4	1.02	0.31	200
18.0	1.27	0.39	180
26.5	1.59	0.49	120
attenuation calculation (dB / m)	(0.252 x √F GHz) + (0.012 x F GHz)		

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH CABLE 5/50 D
(SHF 5 LI)



N series

(temperature range = -40 / +80°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R446 Q00 100	jack surge arrestor	straight	solder	824 to 960 MHz	-	yes	brass	silver + BBR	QuarterWave Stub (QWS) / bulkhead feedthrough / panel sealed / panel nut torque = 500Ncm

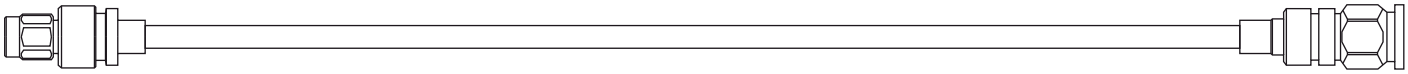
7/16 series

(temperature range = -55 / +155°C for R185 p/n
temperature range = -40 / +80°C for R446 p/n)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R185 195 240 ⋆	plug	right-angle	solder	7.5	2 000	yes	brass	silver	6 flat coupling nut : 32mm coupling nut torque = 3 500 Ncm
CS185120002 ⋆	jack	straight	solder	2	1 500	yes	brass	silver + BBR	bulkhead feedthrough / panel sealed / panel nut torque = 3 500Ncm
CS44612006 ⋆	jack surge arrestor	straight	solder	824 to 960 MHz	-	yes	brass	silver + BBR	QuarterWave Stub (QWS) / bulkhead feedthrough / panel sealed / panel nut torque = 3 500Ncm
CS44612009 ⋆	jack surge arrestor	straight	solder	1710 to 1880 MHz	-	yes	brass	silver + BBR	QuarterWave Stub (QWS) / bulkhead feedthrough / panel sealed / panel nut torque = 3 500Ncm
CS44612008	jack surge arrestor	straight	solder	1850 to 1990 MHz	-	yes	brass	silver + BBR	QuarterWave Stub (QWS) / bulkhead feedthrough / panel sealed / panel nut torque = 3 500Ncm

⋆ : cost effective solution.

LOW LOSS FLEXIBLE CABLE 6/50 D
(ECO230)



ECO-Friendly cable
Cost effective solution.

Radiall P/N : C291 326 490

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	Solid OFC(1) copper	1.46	0.057
dielectric	foam PE(2)	4.07	0.160
inner shield	Al(3) foil	4.27	0.168
outer shield	TC(4) braid	4.75	0.187
jacket	black LSZH(5) PE	5.90	0.232

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 4 GHz	
shielding effectiveness	>90 dB (DC - 3 GHz)	
voltage withstanding	3 000 V rms	
peak power	3.3 kW	
capacitance	84 pF / m	25.5 pF / ft
velocity of propagation	79% (4.2 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	25 mm	0.98 inch
weight	62 g / m	0.0417 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	yes (UL1581 VW1 / IEC 332-1)	
halogen free	yes (IEC 754-2)	

FREQUENCY / ATTENUATION (20°C) / CW MAX POWER (sea level 40°C)

GHz	dB / m	dB / ft	Watts
0.2	0.12	0.04	391
0.4	0.17	0.05	277
0.6	0.21	0.06	226
0.8	0.25	0.08	196
1.0	0.28	0.08	175
1.5	0.35	0.10	143
2.0	0.40	0.12	124
2.5	0.45	0.14	111
3.0	0.50	0.15	101
attenuation calculation (dB / m)	(0.264 x √F GHz) + (0.015 x F GHz)		
power calculation (W)	130 / √F GHz		

APPLICATION NOTE

Designed by RADIALL, ECO230 is an advantageous alternative solution to 5 mm dia. cables when higher power level is standard required :

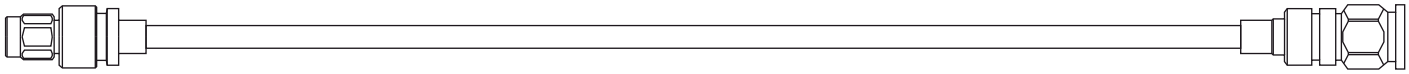
- **Advantageous in term of electrical performance** : its optimized construction allows better attenuation and screening effectiveness than RG cable.
- **Advantageous in term of environmental aspect** : halogen and sulphur free, this cable does not emit any toxic substance when submitted to fire The flame retardant jacket allows ECO230 to meet fire resistance standard (see data sheet).
- **Advantageous in term of price** : ECO230 design has integrated all RADIALL knowledge to reach the best performances with a very competitive price.

ECO230 is UL style 1375 approved.

(1) OFC = Oxygen Free Copper
(2) PE = PolyEthylene
(3) Al = Aluminum
(4) TC = Tinned Copper
(5) LSZH = Low Smoke Zero Halogen

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH CABLE 6/50 D



SMA series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R124 176 320	plug	right-angle	crimp	12.4	1 000	yes	brass	BBR	commercial SMA

Advised torque wrench for plugs: R282 320 030 / 8 mm / 60 Ncm

QMA series

(temperature range = -40 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R123 176 320 ⋆	plug	right-angle	crimp	6	1 000	yes	brass	BBR	-

N series

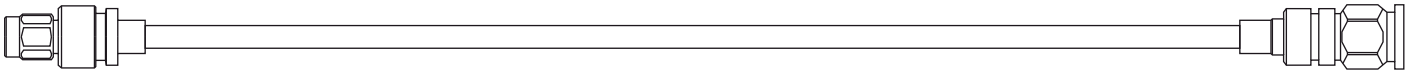
(temperature range = -55 / +155°C for R161 p/n
temperature range = -40 / +80°C for R446 p/n)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 082 700	plug	straight	crimp	11	1 500	yes	brass	BBR	6 flat coupling nut : 18 mm coupling nut torque=170 Ncm
R161 083 727	plug	straight	crimp	11	1 500	yes	brass	silver + BBR	Low intermodulation / mixed coupling nut / (manual and 6 flat : 18 mm) / coupling nut torque=170 Ncm
R161 182 020 ⋆	plug	right-angle	crimp	2	1 500	yes	brass	BBR	6 flat coupling nut : 18 mm coupling nut torque=170 Ncm
R161 329 727	jack	straight	crimp	11	1 500	yes	brass	silver + BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm
R446 Q00 000	jack surge arrestor	straight	solder	824 to 960 MHz	-	yes	brass	silver + BBR	QuarterWave Stub (QWS) / bulkhead feedthrough / panel sealed / panel nut torque = 500Ncm

Advised torque wrench for plugs with 6 flats coupling nut: R282 303 020 / 18 mm / 170 Ncm

⋆ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 6/50 D



7/16 series

(temperature range = -55 / +155°C for R185 p/n temperature range = -40 / +80°C for R446 p/n)

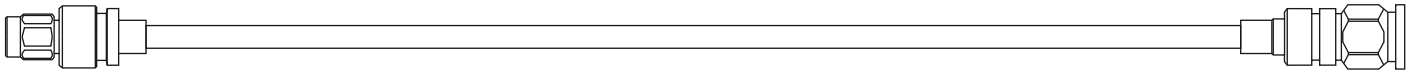
Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
CS18501001 ⋆	plug	right-angle	crimp	2	1 500	yes	brass	silver + BBR	6 flat coupling nut : 32mm/flats coupling nut torque = 3 500 Ncm
CS18512003 ⋆	jack	straight	crimp	2	1 500	yes	brass	silver + BBR	low intermodulation / bulkhead feedthrough / panel sealed / panel nut torque = 3 500Ncm)
CS44 612 001 ⋆	jack surge arrestor	straight	crimp	DC to 2.5 GHz	-	yes	brass	silver + BBR	Gas Discharge Tube (GDT) / bulkhead feedthrough / panel sealed / panel nut torque = 3 500Ncm surge arrestor capsule = R445 999 1xx (not supplied)
R446 112 010	jack surge arrestor	straight	crimp	824 to 960 MHz	-	yes	brass	silver + BBR	QuarterWave Stub (QWS) / bulkhead feedthrough / panel sealed / panel nut torque = 3 500Ncm
R446 Q01 000	jack surge arrestor	straight	crimp	1710 to 1990 MHz	-	yes	brass	silver + BBR	QuarterWave Stub (QWS) / bulkhead feedthrough / panel sealed / panel nut torque = 3 500Ncm
R446 Q01 003	jack surge arrestor	straight	crimp	1710 to 1880 MHz	-	yes	brass	silver + BBR	QuarterWave Stub (QWS) / bulkhead feedthrough / panel sealed / panel nut torque = 3 500Ncm
R446 111 010	jack surge arrestor	straight	crimp	1850 to 1990 MHz	-	yes	brass	silver + BBR	QuarterWave Stub (QWS) / bulkhead feedthrough / panel sealed / panel nut torque = 3 500Ncm
CS44612010 ⋆	jack surge arrestor	straight	crimp	1920 to 2170 MHz	-	yes	brass	silver + BBR	QuarterWave Stub (QWS) / bulkhead feedthrough / panel sealed / panel nut torque = 3 500Ncm
R446 M01 000	jack surge arrestor	straight	crimp	824 to 2200 MHz	-	yes	brass	silver + BBR	Multiband QWS / bulkhead feedthrough / panel sealed / panel nut torque = 3 500Ncm

Heatshrink sleeves

a large range of heatshrink sleeves is available: please consult us.

⋆ : cost effective solution.

FLEXIBLE CABLE 6/75 S
(RG59)



Radiall P/N : C291 360 000 (MIL-C-17/29-RG59)

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid CCS(1)	0.57	0.022
dielectric	solid PE(2)	3.71	0.146
inner shield	copper braid	4.50	0.177
outer shield	-	-	-
jacket	black PVC(3)	6.15	0.242

ELECTRICAL CHARACTERISTICS

characteristic impedance	75 Ω ± 3 Ω	
operating frequency range	DC - 1 GHz	
shielding effectiveness	40 dB	
voltage withstanding	7 000 V rms	
peak power	2.7 kW	
capacitance	60 pF / m	18.2 pF / ft
velocity of propagation	66% (5 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	30 mm	1.18 inch
weight	47 g / m	0.0315 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-70 / +200°C	-40 / +185°F
fire resistance	no	
halogen free	no	

APPLICATION NOTE

Due to its 75 characteristic impedance, RG59 is rather dedicated to TV/Video application.

Its solid inner conductor allows better attenuation than the equivalent KX solution (KX6).

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

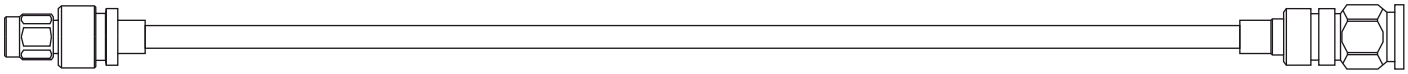
GHz	dB / m	dB / ft	Watts
0.05	0.09	0.03	335
0.1	0.13	0.04	237
0.2	0.19	0.06	168
0.3	0.23	0.07	137
0.5	0.30	0.09	106
0.6	0.33	0.10	97
0.7	0.36	0.11	90
0.8	0.39	0.12	84
1.0	0.44	0.13	75
attenuation calculation (dB / m)	(0.40 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	75 / √F GHz		

(1) CCS = Copper Covered Steel
(2) PE = PolyEthylene
(3) PVC = PolyVinyl Chloride

: Service + program: fast delivery, please read page 129.

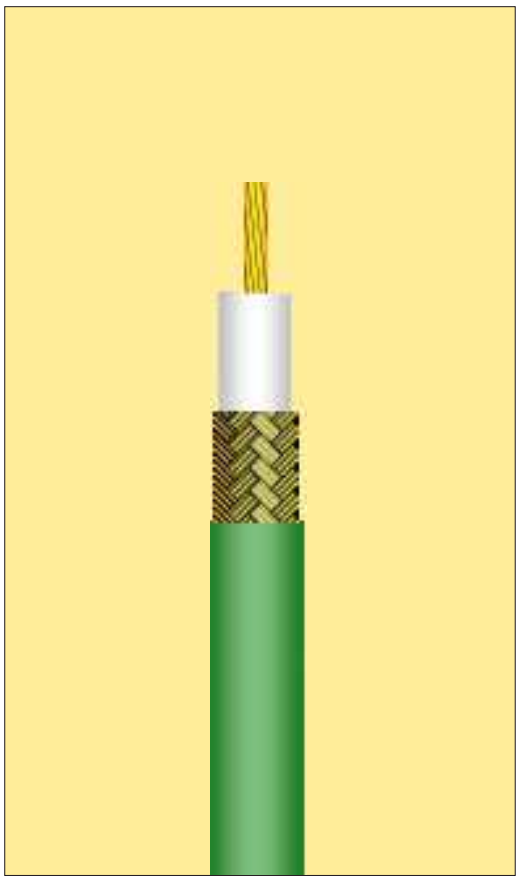
Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

FLEXIBLE CABLE 6/75 S
(KX6A)



Cost effective solution.

Radiall P/N : C291 351 012 (NF-C-93/550-KX6)



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	stranded copper	0.60	0.024
dielectric	solid PE(1)	3.70	0.146
inner shield	copper braid	4.50	0.177
outer shield	-	-	-
jacket	green PVC(2)	6.10	0.240

ELECTRICAL CHARACTERISTICS

characteristic impedance	75 Ω ± 3 Ω	
operating frequency range	DC - 1 GHz	
shielding effectiveness	40 dB	
voltage withstanding	7 000 V rms	
peak power	2.7 kW	
capacitance	63 pF / m	19 pF / ft
velocity of propagation	66% (5 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	25 mm	0.98 inch
weight	48 g / m	0.0320 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	no	
halogen free	no	

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
0.05	0.10	0.03	300
0.1	0.14	0.04	212
0.2	0.20	0.06	150
0.3	0.25	0.08	122
0.5	0.33	0.10	95
0.6	0.36	0.11	86
0.7	0.40	0.12	80
0.8	0.43	0.13	75
1.0	0.48	0.15	67
attenuation calculation (dB / m)	(0.44 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	67 / √F GHz		

APPLICATION NOTE

Relevant standard: NF-C-93/550-KX6 (France)

Due to its stranded inner conductor, KX6 is much more flexible than RG59.

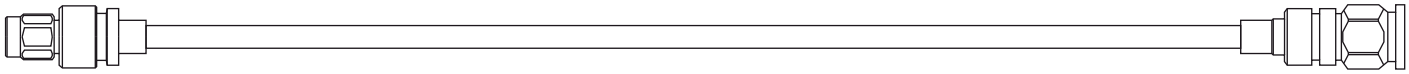
This cable will be chosen instead of RG59 for specific applications requiring high flexibility.

(1) PE = Poly Ethylene
(2) PVC = PolyVinyl Chloride

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH CABLE 6/75 S



DIN 1.6/5.6 series

(temperature range = -40 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R129 084 000	plug	straight	crimp	1	1 500	yes	brass	nickel	screw-on / NF range
R129 184 000	plug	right-angle	crimp	1	1 500	yes	brass	nickel	screw-on / NF range
R131 016 215	plug	straight	clamp	1	1 500	yes	brass	nickel	slide-on / DIN 47295 range
R129 305 215	jack	straight	clamp	1	1 500	yes	brass	selective gold	screw-on / slide-on / DIN 47295 range / bulkhead feedthrough / panel nut torque = 80 Ncm

DTF series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R139 085 100	plug	straight	crimp	3	1 500	yes	brass	BBR	with integrated center contact accepts cable center conductors dia 0.8 to 1.2 mm

BNC 75 Ω series

(temperature range = -65 / +165°C except p/n ending in 161 = -35 / +70°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R142 085 161 ★	plug	straight	full crimp	1.5	1 500	yes	brass	nickel	commercial BNC / plastic boot compatible
R142 184 161 ★	plug	right-angle	crimp	1.5	1 500	yes	brass	nickel	commercial BNC / plastic boot compatible
R142 242 161 ★	jack	straight	full crimp	1.5	1 500	yes	brass	nickel	commercial BNC / plastic boot compatible
R142 295 000	jack	straight	full crimp	1.5	1 500	yes	brass	nickel	square flange 17.5 mm / 4 holes M2.5 x 0.45 / plastic boot compatible
R142 329 000	jack	straight	clamp	1.5	1 500	yes	brass	nickel	bulkhead feedthrough / panel sealed / panel nut torque = 370Ncm

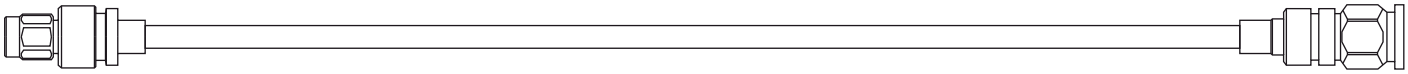
TNC 75 Ω series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R144 085 000	plug	straight	crimp	1,5	1 500	yes	brass	nickel	plastic boot compatible
R144 334 000	jack	straight	crimp	1,5	1 500	yes	brass	nickel	bulkhead feedthrough / panel sealed / panel nut torque = 370Ncm / plastic boot compatible

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 6/75 S



N 75 Ω series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R162 084 000	plug	straight	full crimp	1.5	1 500	yes	brass	BBR	plastic boot compatible
R162 184 000	plug	right-angle	crimp	1.5	1 500	yes	brass	BBR	plastic boot compatible
R162 239 000	jack	straight	full crimp	1.5	1 500	yes	brass	BBR	plastic boot compatible
R162 262 000	jack	straight	clamp	1.5	1 500	no	brass	BBR	square flange 25.4 mm / 4 holes dia. 3.3 mm
R162 335 000	jack	straight	full crimp	1.5	1 500	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500Ncm / plastic boot compatible

UHF series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R155 074 000	plug	straight	crimp	0.5	2 000	yes	brass	nickel	-

Plastic boots (PVC – length = 67.54 mm)

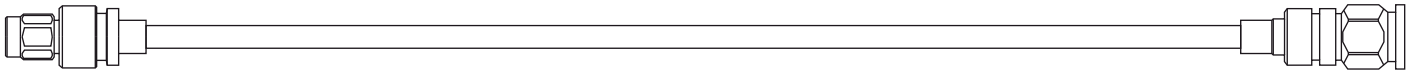
Part number (for BNC, TNC, N compatible connectors)	color
R280 590 000	black
R280 591 000	red
R280 592 000	green
R280 593 000	blue
R280 594 000	yellow
R280 595 000	grey
R280 596 000	white
R280 597 000	brown
R280 598 000	orange
R280 599 000	purple
R280 600 000	translucent

Heatshrink sleeves

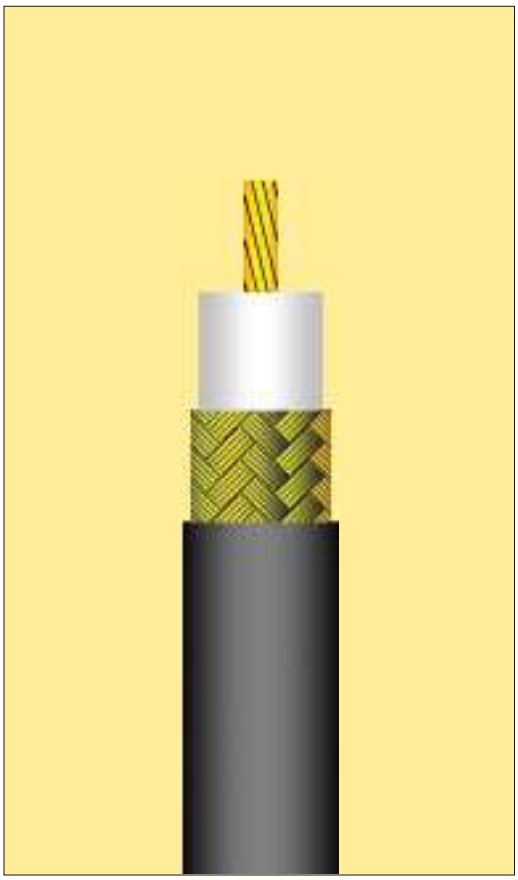
a large range of heatshrink sleeves is available: please consult us.

: Service + program: fast delivery, please read page 129.

FLEXIBLE CABLE 10/50 S
(RG213 - KX4)



Radiall P/N : C291 510 000 (MIL-C-17/74-RG213)
Radiall P/N : C291 510 010 (NF-C-93/550-KX4)



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	stranded copper	2.26	0.089
dielectric	solid PE(1)	7.24	0.285
inner shield	copper braid	8.13	0.320
outer shield	-	-	-
jacket	black PVC(2)	10.30	0.406

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 1 GHz	
shielding effectiveness	40 dB	
voltage withstanding	10 000 V rms	
peak power	6.5 kW	
capacitance	96 pF / m	29 pF / ft
velocity of propagation	66% (5 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	40 mm	1.57 inch
weight	148 g / m	0.0999 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	no	
halogen free	no	

APPLICATION NOTE

Due to its construction and raw materials selection, RG213 is a cost effective solution in the 100 mm cable range.

This cable may be considered for low frequencies applications that do not require a high level of screening effectiveness.

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

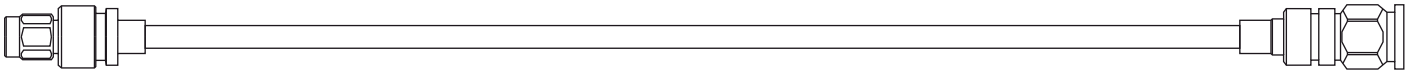
GHz	dB / m	dB / ft	Watts
0.05	0.05	0.01	805
0.1	0.07	0.02	569
0.2	0.10	0.03	402
0.3	0.12	0.04	329
0.5	0.16	0.05	255
0.6	0.18	0.05	232
0.7	0.20	0.06	215
0.8	0.21	0.06	201
1.0	0.24	0.07	180
attenuation calculation (dB / m)	(0.20 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	180 / √F GHz		

(1) PE = PolyEthylene
(2) PVC = PolyVinylChloride

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

CONNECTORS COMPATIBLE WITH CABLE 10/50 S



BNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R141 018 000 ★	plug	straight	clamp	4	1 500	yes	brass	nickel	-

TNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R143 018 000 ★	plug	straight	clamp	11	1 500	yes	brass	nickel	-

RP TNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	Attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Captive Cent.cont.	Material	Finish	Miscellaneous
R300 143 090	female plug	straight	crimp	11	1 500	yes	brass	nickel	reverse polarity TNC
R300 143 220	male jack	straight	crimp	11	1 500	yes	brass	nickel	reverse polarity TNC

N series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 075 000 ★	plug	straight	full crimp	11	2 500	yes	brass	BBR	-
R161 088 147	plug	straight	full crimp	11	2 500	yes	brass	BBR	low intermodulation / mixed coupling nut : manual and 6 flat = 18 mm
R161 184 000	plug	right-angle	crimp	11	2 500	yes	brass	BBR	-
R161 185 000 ★	plug	right-angle	full crimp	11	2 500	yes	brass	BBR	-
R161 186 107	plug	right-angle	crimp	11	2 500	yes	brass	BBR	low intermodulation / mixed coupling nut : manual and 6 flat = 18 mm
R161 220 000 ★	jack	straight	clamp	11	2 500	yes	brass	BBR	-
R161 241 000	jack	straight	full crimp	11	2 500	yes	brass	BBR	-
R161 286 000	jack	straight	crimp	11	2 500	yes	brass	BBR	square flange 25.4 mm / 4 holes dia. 3.3 mm
R161 332 000	jack	straight	clamp	11	2 500	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

Advised torque wrench for plugs with 6 flats coupling nut: R282 303 020 / 18 mm / 170 Ncm

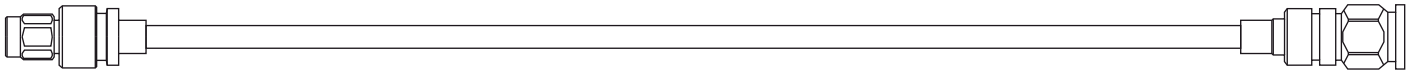
QN series

(temperature range = -55 / +125°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R164 080 000 ★	plug	straight	full crimp	6	2 500	yes	brass	BBR	-
R164 184 000 ★	plug	right-angle	crimp	6	2 500	yes	brass	BBR	-
R164 286 000	jack	straight	crimp	6	2 500	yes	brass	BBR	square flange 25.4 mm / 4 holes 3.3 mm
R164 331 000	jack	straight	full crimp	6	2 500	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500Ncm

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 10/50 S



UHF series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R155 003 000	plug	straight	solder + screw	0.5	2 000	yes	brass	nickel	PL 259 A
R155 005 000	plug	straight	solder	0.5	2 000	yes	brass	nickel	PL 259 T

7/16 series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R185 074 000	plug	straight	crimp	7.5	2 700	yes	brass	BBR	mixed coupling nut : manual and 6 flat = 27 mm
R185 174 000	plug	right-angle	crimp	7.5	2 700	yes	brass	BBR	mixed coupling nut : manual and 6 flat = 27 mm
R185 234 000	jack	straight	crimp	7.5	2 700	yes	brass	BBR	-
R185 274 000	jack	straight	crimp	7.5	2 700	yes	brass	BBR	square flange 32 mm / 4 holes dia. 3.6 mm
R185 304 000	jack	straight	crimp	7.5	2 700	yes	brass	BBR	bulkhead feedthrough / panel nut torque = 600 Ncm

Advised torque wrench for plugs: R282 303 520 / 27 mm / 3000 Ncm

Coaxi-kit : N - DIN 7/16 series (2 part straight or right-angle connectors = 1 tip + 1 head)

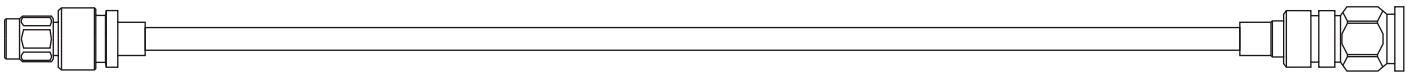
(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R280 663 030	cable tip	straight	crimp	2.5	2 500	yes	brass	silver + BBR	allows to design straight or r-a connectors / compatible with following head part-numbers
R161 901 120	N series plug head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	mixed coupling nut (6 flat = 18 mm and manual) advised torque wrench : R282 303 020 / 170 Ncm
R161 912 120	N series jack head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	square flange 25.4 mm / 4 holes 3.3 mm
R161 913 120	N series jack head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	bulkhead feedthrough panel sealed / panel nut torque = 500 Ncm
R185 901 000	DIN 7/16 plug head	straight or right-angle	-	2.5	4 000	yes	brass	silver + BBR	mixed coupling nut (6 flat = 27 mm and manual) advised torque wrench : R282 303 520 / 3000 Ncm
R185 925 000	DIN 7/16 jack head	straight or right-angle	-	2.5	4 000	yes	brass	silver + BBR	square flange 32 mm / 4 holes 3.5 mm

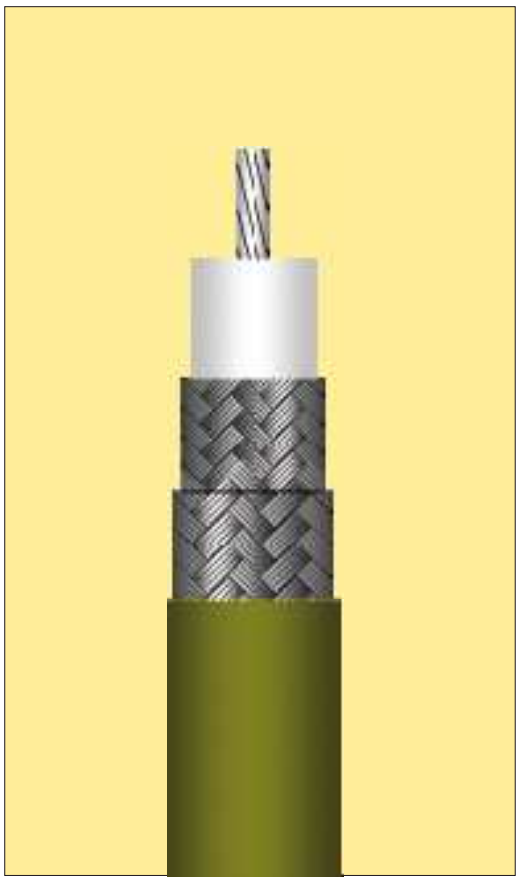
Heatshrink sleeves

a large range of heatshrink sleeves is available: please consult us.

FLEXIBLE CABLE 10/50 D
(RG393)



Radiall P/N : C291 511 007 (MIL-C-17/174-RG393)



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	stranded SPC(1)	2.39	0.094
dielectric	solid PTFE(2)	7.24	0.285
inner shield	SPC(1) braid	-	-
outer shield	SPC(1) braid	8.90	0.350
jacket	brown FEP(3)	9.91	0.390

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 11 GHz	
shielding effectiveness	65 dB (DC - 3 GHz)	
voltage withstanding	10 000 V rms	
peak power	8.3 kW	
capacitance	96 pF / m	29 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	40 mm	1.57 inch
weight	235 g / m	0.1567 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-55 / +200°C	-67 / +392°F
fire resistance	yes (CSA FT6 / IEC 332-2)	
halogen free	no	

APPLICATION NOTE

RG393 is one of the most popular RG cables.

This cable may be used for high frequency range and severe thermal conditions applications.

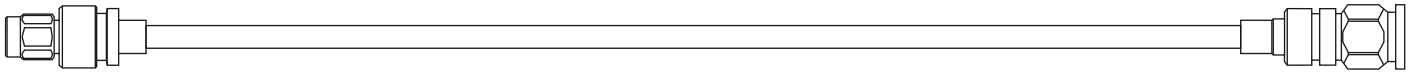
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
0.5	0.15	0.05	1273
1.0	0.23	0.07	900
1.5	0.29	0.09	735
2.0	0.35	0.11	636
3.0	0.45	0.14	520
6.0	0.71	0.21	367
8.0	0.86	0.26	318
10.0	1.00	0.30	285
11.0	1.07	0.32	271
attenuation calculation (dB / m)	(0.19 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	900 / √F GHz		

(1) SPC = Silver Plated Copper
(2) PTFE = PolyTetraFluoroEthylene
(3) FEP = Fluorinated Ethylene Propylene

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH CABLE 10/50 D



BNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R141 018 000 ⋆	plug	straight	clamp	4	1 500	yes	brass	nickel	-

TNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R143 018 000 ⋆	plug	straight	clamp	11	1 500	yes	brass	nickel	-

N series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 020 000	plug	straight	clamp	11	2 500	no	brass	BBR	-
R161 168 000	plug	right-angle	clamp	11	2 500	yes	brass	BBR	-
R161 220 000	jack	straight	clamp	11	2 500	yes	brass	BBR	-
R161 270 000	jack	straight	clamp	11	2 500	yes	brass	BBR	square flange 25.4 mm / 4 holes dia 3.3 mm
R161 332 000	jack	straight	clamp	11	2 500	no	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

Advised torque wrench for plugs with 6 flat coupling nut: R282 303 020 / 18 mm / 170 Ncm

7/16 series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R185 074 000	plug	straight	crimp	7.5	2 700	yes	brass	BBR	mixed coupling nut : manual and 6 flat = 27 mm
R185 174 000	plug	right-angle	crimp	7.5	2 700	yes	brass	BBR	mixed coupling nut : manual and 6 flat = 27 mm
R185 234 000	jack	straight	crimp	7.5	2 700	yes	brass	BBR	-
R185 274 000	jack	straight	crimp	7.5	2 700	yes	brass	BBR	square flange 32 mm / 4 holes dia 3.6 mm
R185 304 000	jack	straight	crimp	7.5	2 700	yes	brass	BBR	bulkhead feedthrough / panel nut torque = 500 Ncm

Advised torque wrench for plugs with 6 flat coupling nut: R282 303 520 / 27 mm / 3000 Ncm

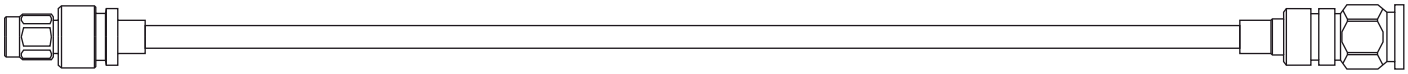
Heatshrink sleeves

a large range of heatshrink sleeves is available: please consult us.

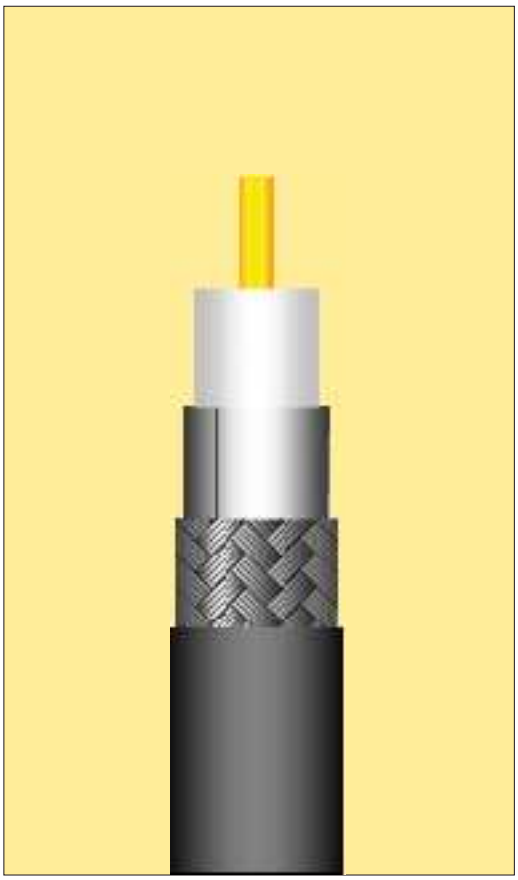
⋆ : cost effective solution.

FLEXIBLE CABLE 10/50 D

(ECO393: alternative to RG393)



ECO-Friendly cable
Cost effective solution.



Radiall P/N : C291 491 060

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid OFC(1)	2.40	0.094
dielectric	foam PE(2)	7.25	0.285
inner shield	Al(3) foil	7.35	0.289
outer shield	TC(4) braid	7.85	0.309
jacket	black LSZH PE(5)	9.10	0.358

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 3 GHz	
shielding effectiveness	80 dB (DC - 3 GHz)	
voltage withstanding	10 000 V rms	
peak power	6.6 kW	
capacitance	88 pF / m	26.6 pF / ft
velocity of propagation	75% (4.4 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	40 mm	1.57 inch
weight	130 g / m	0.0875 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	yes (UL1581 VW1 / IEC 332-1)	
halogen free	yes (IEC 754-2)	

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
0.1	0.05	0.01	1265
0.2	0.07	0.02	894
0.3	0.08	0.03	730
0.5	0.11	0.03	566
1.0	0.16	0.05	400
1.5	0.20	0.06	327
2.0	0.24	0.07	283
2.5	0.27	0.08	253
3.0	0.30	0.09	231
attenuation calculation (dB / m)	(0.14 x √F GHz) + (0.02 x F GHz)		
power calculation (W)	400 / √F GHz		

APPLICATION NOTE

Designed by RADIALL, ECO393 is an advantageous alternative solution to RG393 :

- **Advantageous in term of electrical performance** : its optimized construction allows better attenuation and screening effectiveness than RG393.
- **Advantageous in term of environmental aspect** : halogen and sulphur free, this cable does not emit any toxic substance when submitted to fire. The flame retardant jacket allows ECO393 to meet fire resistance standard (see data sheet).
- **Advantageous in term of price** : ECO393 design has integrated all RADIALL knowledge to reach the best performances with a very competitive price.

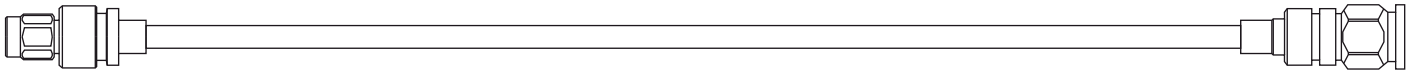
ECO393 is UL style 1375 approved.
This cable is compatible with a large range of connector series.

(1) OFC = Oxygen Free Copper
(2) PE = PolyEthylene
(3) Al = Aluminum
(4) TC = Tinned copper
(5) LSZH PE = Low Smoke Zero Halogen PolyEthylene

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH CABLE 10/50 D



BNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R141 018 000 ★	plug	straight	clamp	4	1 500	yes	brass	nickel	-

TNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R143 018 000 ★	plug	straight	clamp	11	1 500	yes	brass	nickel	-

RP TNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	Attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Captive cent.cont.	Material	Finish	Miscellaneous
R300 143 090	female plug	straight	crimp	11	1 500	yes	brass	nickel	reverse polarity TNC
R300 143 220	male jack	straight	crimp	11	1 500	yes	brass	nickel	reverse polarity TNC

N series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 075 000 ★	plug	straight	full crimp	11	2 500	yes	brass	BBR	-
R161 088 147	plug	straight	full crimp	11	2 500	yes	brass	BBR	low intermodulation / mixed coupling nut : manual and 6 flat = 18 mm
R161 184 000	plug	right-angle	crimp	11	2 500	yes	brass	BBR	-
R161 185 000 ★	plug	right-angle	full crimp	11	2 500	yes	brass	BBR	-
R161 186 107	plug	right-angle	crimp	11	2 500	yes	brass	BBR	low intermodulation / mixed coupling nut : manual and 6 flat = 18 mm
R161 186 207	plug	right-angle	crimp	11	2 500	yes	brass	BBR	low intermodulation / 6 flat coupling nut = 18 mm
R161 220 000 ★	jack	straight	clamp	11	2 500	yes	brass	BBR	-
R161 241 000	jack	straight	full crimp	11	2 500	yes	brass	BBR	-
R161 286 000	jack	straight	crimp	11	2 500	yes	brass	BBR	square flange 25.4 mm / 4 holes dia. 3.3 mm
R161 332 000	jack	straight	clamp	11	2 500	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

Advised torque wrench for plugs with 6 flat coupling nut: R282 303 020 / 18 mm / 170 Ncm

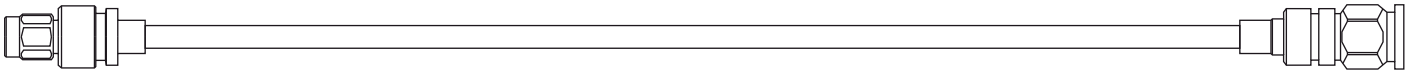
QN series

(temperature range = -55 / +125°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Captive cent.cont.	Material	Finish	Miscellaneous
R164 080 000 ★	plug	straight	full crimp	6	2 500	yes	brass	BBR	-
R164 184 000 ★	plug	right-angle	crimp	6	2 500	yes	brass	BBR	-
R164 286 000	jack	straight	crimp	6	2 500	yes	brass	BBR	square flange 25.4 / 4 holes dia. 3.3 mm
R164 331 000	jack	straight	full crimp	6	2 500	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm
R155 003 000	plug	straight	solder + screw	0.5	2 000	yes	brass	nickel	PL 259 A
R155 005 000	plug	straight	solder	0.5	2 000	yes	brass	nickel	PL 259 T

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 10/50 D



7/16 series **(temperature range = -55 / +155°C)**

Part number	Interface	Geometry	Attachment	Frequency	Voltage Withstanding (Vrms)	Captive cent.cont.	Material	Finish	Miscellaneous
R185 074 000	plug	straight	crimp	7.5	2 700	yes	brass	BBR	mixed coupling nut : manual and 6 flat =27 mm
R185 174 000	plug	right angle	crimp	7.5	2 700	yes	brass	BBR	mixed coupling nut : manual and 6 flat =27 mm
R185 234 000	jack	straight	crimp	7.5	2 700	yes	brass	BBR	-
R185 274 000	jack	straight	crimp	7.5	2 700	yes	brass	BBR	Square flange 32 mm / 4 holes dia. 3.6 mm
R185 304 000	jack	straight	crimp	7.5	2 700	yes	brass	BBR	Bulkhead feedthrough / Panel nut torque = 600 Ncm

Advised torque wrench for plugs: R282 303 520 / 27 mm / 3000 Ncm

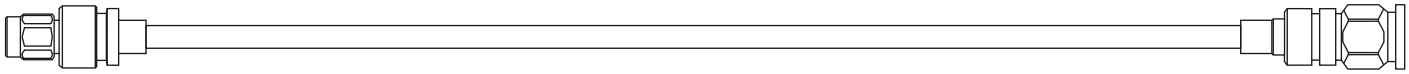
Coaxi-kit : N - DIN 7/16 series (2 part straight or right-angle connectors = 1 tip + 1 head) **(temperature range = -55 / +155°C)**

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R280 663 030	cable tip	straight	crimp	2.5	2 500	yes	brass	silver + BBR	allows to design straight or r-a connectors / compatible with following head part-numbers
R161 901 120	N series plug head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	mixed coupling nut (6 flat = 18 mm and manual) advised torque wrench : R282 303 020 / 170 Ncm
R161 912 120	N series jack head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	square flange 25.4 mm / 4 holes 3.3 mm
R161 913 120	N series jack head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	bulkhead feedthrough panel sealed / panel nut torque = 500 Ncm
R185 901 000	DIN 7/16 plug head	straight or right-angle	-	2.5	4 000	yes	brass	silver + BBR	mixed coupling nut (6 flat = 27 mm and manual) advised torque wrench : R282 303 520 / 3000 Ncm
R185 925 000	DIN 7/16 jack head	straight or right-angle	-	2.5	4 000	yes	brass	silver + BBR	square flange 32 mm / 4 holes 3.5 mm

Heatshrink sleeves

a large range of heatshrink sleeves is available: please consult us.

FLEXIBLE CABLE 11/50 D
(RG214 - KX13)



Radiall P/N : C291 600 000 (MIL-C-17/75-RG214)
Radiall P/N : C291 600 010 (NF-C-93/550-KX13)

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	stranded SPC(1)	2.25	0.089
dielectric	solid PE(2)	7.24	0.285
inner shield	SPC(1) braid	-	-
outer shield	SPC(1) braid	8.89	0.350
jacket	black PVC(3)	10.80	0.425

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 11 GHz	
shielding effectiveness	65 dB (DC - 3 GHz)	
voltage withstanding	10 000 V rms	
peak power	6.5 kW	
capacitance	96 pF / m	29 pF / ft
velocity of propagation	66% (5 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	40 mm	1.57 inch
weight	174 g / m	0.1170 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	no	
halogen free	no	

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
0.5	0.16	0.05	255
1.0	0.24	0.07	180
1.5	0.30	0.09	147
2.0	0.36	0.11	127
3.0	0.47	0.14	104
6.0	0.73	0.22	73
8.0	0.89	0.27	64
10.0	1.03	0.31	57
11.0	1.10	0.33	54
attenuation calculation (dB / m)	(0.20 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	180 / √F GHz		

APPLICATION NOTE

RG214 is one of the most popular RG cables.

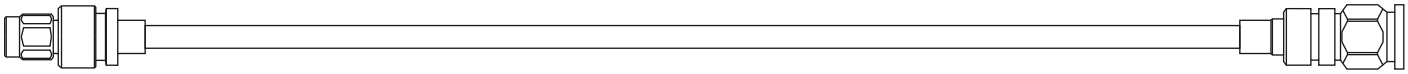
For economical reasons and when thermal conditions allow it, this cable may be used instead of RG393.

(1) SPC = Silver Plated Copper
(2) PE = PolyEthylene
(3) PVC = PolyVinylChloride

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

CONNECTORS COMPATIBLE WITH CABLE 11/50 D



BNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R141 018 000 ★	plug	straight	clamp	4	1 500	yes	brass	nickel	-

TNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R143 018 000 ★	plug	straight	clamp	11	1 500	yes	brass	nickel	-

N series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 088 000	plug	straight	full crimp	11	2 500	yes	brass	BBR	
R161 088 137	plug	straight	full crimp	11	2 500	yes	brass	BBR	low intermodulation / mixed coupling nut : manual and 6 flat = 18 mm
R161 186 000	plug	right angle	crimp	11	2 500	yes	brass	BBR	
R161 186 137	plug	right angle	crimp	11	2 500	yes	brass	BBR	low intermodulation / mixed coupling nut : manual and 6 flat = 18 mm
R161 220 000 ★	jack	straight	clamp	11	2 500	yes	brass	BBR	
R161 243 000	jack	straight	full crimp	11	2 500	yes	brass	BBR	
R161 286 200	jack	straight	full crimp	11	2 500	yes	brass	BBR	square flange 25.4 mm / 4 holes dia 3.3 mm
R161 332 000	jack	straight	clamp	11	2 500	no	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

Advised torque wrench for 6 flat coupling nut: R282 303 020 / 18 mm / 170 Ncm

QN series

(temperature range = -55 / +125°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R164 088 000 ★	plug	straight	full crimp	11	2 500	yes	brass	BBR	-
R164 186 000 ★	plug	right angle	crimp	11	2 500	yes	brass	BBR	-
R164 286 200	jack	straight	crimp	11	2 500	yes	brass	BBR	square flange 25.4 mm / 4 holes dia 3.3 mm
R164 331 200	jack	straight	full crimp	11	2 500	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

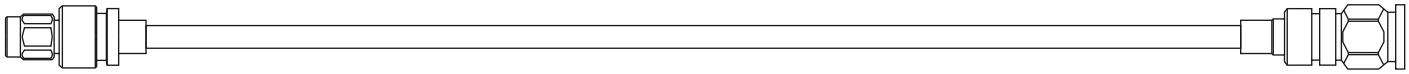
7/16 series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R185 077 000 ★	plug	straight	crimp	7.5	2 700	yes	brass	BBR	mixed coupling nut : manual and 6 flat = 27 mm
R185 177 000	plug	right angle	crimp	7.5	2 700	yes	brass	BBR	mixed coupling nut : manual and 6 flat = 27 mm
R185 237 000	jack	straight	crimp	7.5	2 700	yes	brass	BBR	-
R185 277 000	jack	straight	crimp	7.5	2 700	yes	brass	BBR	square flange 32 mm / 4 holes dia 3.6 mm
R185 307 000	jack	straight	crimp	7.5	2 700	yes	brass	BBR	bulkhead feedthrough / panel nut torque = 500 Ncm

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH CABLE 11/50 D



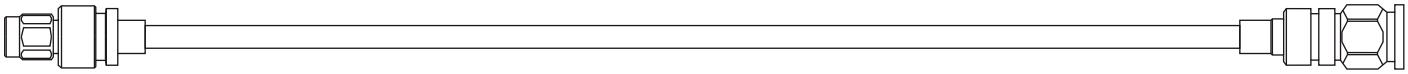
Coaxi-kit : N - DIN 7/16 series (2 part straight or right-angle connectors = 1 tip + 1 head) **(temperature range = -55 / +155°C)**

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R280 664 030	cable tip	straight	crimp	2.5	2 500	yes	brass	silver + BBR	allows to design straight or r-a connectors / compatible with following head part-numbers
R161 901 120	N series plug head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	mixed coupling nut (6 flat = 18 mm and manual) advised torque wrench : R282 303 020 / 170 Ncm
R161 912 120	N series jack head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	square flange 25.4 mm / 4 holes 3.3 mm
R161 913 120	N series jack head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	bulkhead feedthrough panel sealed / panel nut torque = 500 Ncm
R185 901 000	DIN 7/16 plug head	straight or right-angle	-	2.5	4 000	yes	brass	silver + BBR	mixed coupling nut (6 flat = 27 mm and manual) advised torque wrench : R282 303 520 / 3000 Ncm
R185 925 000	DIN 7/16 jack head	straight or right-angle	-	2.5	4 000	yes	brass	silver + BBR	square flange 32 mm / 4 holes 3.5 mm

Heatshrink sleeves

a large range of heatshrink sleeves is available: please consult us.

FLEXIBLE CABLE 11/75 D
(RG216)



Radiall P/N : C291 610 000 (MIL-C-17/77-RG216)

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	stranded TC(1)	1.21	0.048
dielectric	solid PE(2)	7.24	0.285
inner shield	copper braid	-	-
outer shield	copper braid	8.89	0.350
jacket	black PVC(3)	10.80	0.425

ELECTRICAL CHARACTERISTICS

characteristic impedance	75 Ω ± 3 Ω	
operating frequency range	DC – 3 GHz	
shielding effectiveness	65 dB	
voltage withstanding	10 000 V rms	
peak power	5.3 kW	
capacitance	66 pF / m	20 pF / ft
velocity of propagation	66% (5 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	50 mm	1.97 inch
weight	165 g / m	0.1104 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	no	
halogen free	no	

APPLICATION NOTE

Due to its 75 ohms characteristics imprdance, RG216 is rather dedicated to TV/Video application.

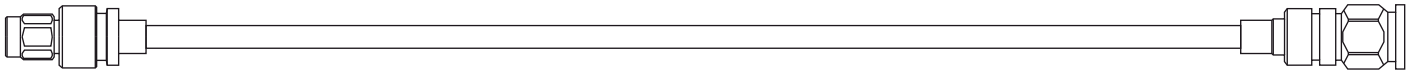
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
0.1	0.09	0.03	395
0.2	0.13	0.04	280
0.3	0.17	0.05	228
0.5	0.22	0.07	177
1.0	0.32	0.10	125
1.5	0.40	0.12	102
2.0	0.48	0.14	88
2.5	0.54	0.16	79
3.0	0.60	0.18	72
attenuation calculation (dB / m)	(0.28 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	125 / √F GHz		

(1) TC = Tinned Copper
(2) PE = PolyEthylene
(3) PVC = PolyVinylChloride

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH CABLE 11/75 D



BNC 75 Ω series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R142 018 000	plug	straight	clamp	1.5	1 500	yes	brass	nickel	-

N 75 Ω series

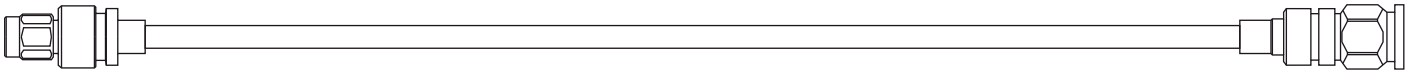
(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R162 088 000	plug	straight	crimp	1.5	2 500	yes	brass	BBR	-
R162 187 000	plug	right angle	crimp	1.5	2 500	yes	brass	BBR	-
R162 243 000	jack	straight	crimp	1.5	2 500	yes	brass	BBR	-
R162 267 000	jack	straight	clamp	1.5	2 500	no	brass	BBR	square flange 25.4 mm / 4 holes dia 3.3 mm
R162 339 000	jack	straight	crimp	1.5	2 500	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

Heatshrink sleeves

a large range of heatshrink sleeves is available: please consult us.

LOW LOSS FLEXIBLE CABLE 5/50 D
(Times LMR200)



Radiall P/N : C291 316 070

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid copper	1.12	0.044
dielectric	foam PE(1)	2.95	0.116
inner shield	Al(2) foil	3.07	0.121
outer shield	TC(3) braid	3.66	0.144
jacket	Black PE(1)	4.95	0.195

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC - 6 GHz	
shielding effectiveness	>90 dB	
voltage withstanding	1 000 V rms	
peak power	2.5 kW	
capacitance	80.3 pF / m	24.5 pF / ft
velocity of propagation	83% (4.02 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	12.7 mm	0.50 inch
weight	30 g / m	0.022 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	no	
halogen free	no	

APPLICATION NOTE

This LMR200 cable can be considered as an alternative to equivalent diameter corrugated cable.
The main advantage is greater flexibility and bendability allowing easy routing during the installation.
The foam dielectric provides excellent loss and low return loss levels.
The double screen construction 'Aluminum foil + tinned copper braid) offers a high level of shielding as well as low leakage.
This cable will be advised for feeder or jumper assemblies in cellular networks as well as applications requiring easy routing.

(1) PE = PolyEthylene
(2) Al = Aluminum
(3) TC = Tinned Copper

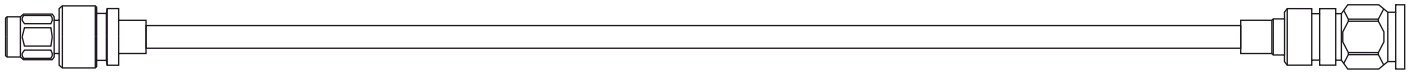
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 40°C)

GHz	dB / m	dB / ft	Watts
0.1	0.11	0.03	560
0.5	0.24	0.07	240
1.0	0.34	0.10	170
1.5	0.42	0.13	140
2.0	0.49	0.15	120
2.5	0.55	0.17	110
3.0	0.61	0.18	100
4.0	0.71	0.22	80
5.0	0.80	0.24	70
6.0	0.88	0.27	65
attenuation calculation (dB / m)	(0.333 x √F GHz) + (0.011 x F GHz)		

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH LMR 200



TNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R143 082 200	plug	straight	crimp	11	1 500	yes	brass	nickel	-

RP TNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	Attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Captive Cent.cont.	Material	Finish	Miscellaneous
R300 143 082	female plug	straight	crimp	11	1 500	yes	brass	nickel	reverse polarity TNC

N series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 082 200	plug	straight	crimp	11	1 500	yes	brass	BBR	-
R161 182 200	plug	right-angle	crimp	11	1 500	yes	brass	BBR	-
R161 329 130	jack	straight	crimp	11	1 500	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

7/16 series

(temperature range = -55 / +155°C)

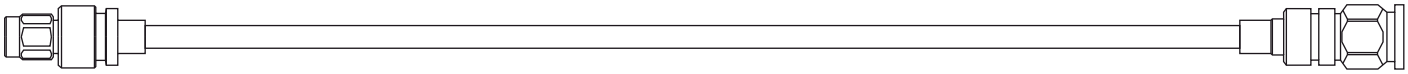
Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R185 082 027	plug	straight	crimp	7.5	1 500	yes	brass	BBR	6 flat coupling nut = 32 mm

Heatshrink sleeves

a large range of heatshrink sleeves is available: please consult us.

: Service + program: fast delivery, please read page 129.

LOW LOSS FLEXIBLE CABLE 10.3/50 D
(Times LMR400)



Radiall P/N : C291 516 070

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid ALCC(1)	2.74	0.108
dielectric	foam PE(2)	7.24	0.285
inner shield	Al(3) foil	7.39	0.291
outer shield	TC(4) braid	8.13	0.320
jacket	black PE(2)	10.29	0.405

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC – 6 GHz	
shielding effectiveness	>90 dB	
voltage withstanding	2 500 V DC	
peak power	16 kW	
capacitance	78.4 pF / m	23.9 pF / ft
velocity of propagation	85% (3.9 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	25.4 mm	1.00 inch
weight	100 g / m	0.068 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	no	
halogen free	no	

APPLICATION NOTE

This LMR400 cable can be considered as an alternative to equivalent diameter corrugated cable.
The main advantage is greater flexibility and bendability allowing easy routing during the installation.
The foam dielectric provides excellent loss and low return loss levels.
The double screen construction 'Aluminum foil + tinned copper braid) offers a high level of shielding as well as low leakage.
This cable will be advised for feeder or jumper assemblies in cellular networks as well as applications requiring easy routing.

(1) ALCC = Aluminum Covered Copper
(2) PE = PolyEthylene
(3) Al = Aluminum

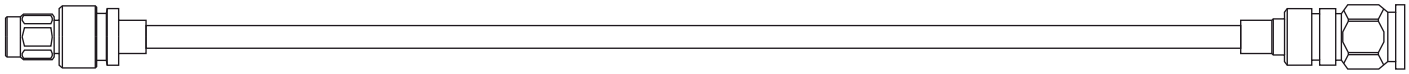
FREQUENCY / ATTENUATION (25°C) / CW MAX POWER (sea level 40°C)

GHz	dB / m	dB / ft	Watts
0.1	0.04	0.01	1810
0.5	0.09	0.03	790
1.0	0.14	0.04	540
1.5	0.17	0.05	440
2.0	0.20	0.06	370
2.5	0.22	0.07	335
3.0	0.25	0.07	300
4.0	0.29	0.09	250
5.0	0.33	0.10	220
6.0	0.37	0.11	200
attenuation calculation (dB / m)	(0.127 x √F GHz) + (0.009 x F GHz)		

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH LMR 400



SMA series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R124 080 030	plug	straight	crimp	12.4	1 000	yes	brass	nickel	commercial SMA

Advised torque wrench for plugs: R282 320 030 / 8 mm / 60 Ncm

RP TNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	Attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Captive cent.cont.	Material	Finish	Miscellaneous
R300 143 010	female plug	straight	crimp	11	1 500	yes	brass	BBR	reverse polarity TNC
R300 143 210	male jack	straight	crimp	11	1 500	yes	brass	BBR	reverse polarity TNC

N series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 075 060	plug	straight	crimp	11	2 500	yes	brass	BBR	-
R161 184 036	plug	right-angle	crimp	6	2 500	yes	brass	silver	-
R161 331 060	jack	straight	crimp	11	2 500	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

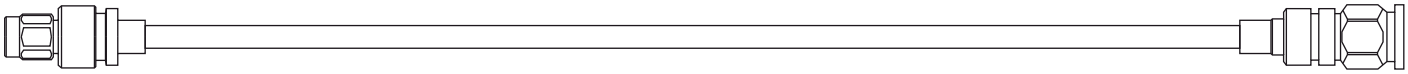
Heatshrink sleeves

a large range of heatshrink sleeves is available: please consult us.

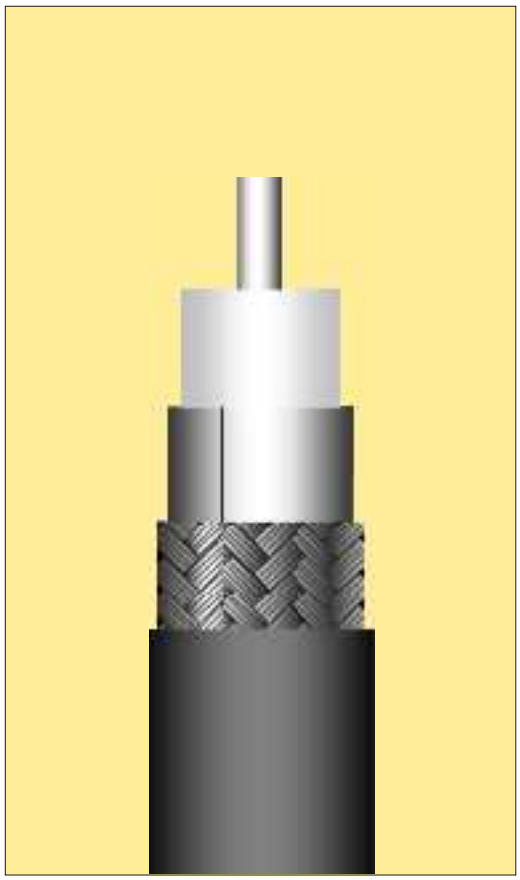
: Service + program: fast delivery, please read page 129.

LOW LOSS FLEXIBLE CABLE 15.2/50 D

(Times LMR600)



Radiall P/N : C291 626 070



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid ALCC(1)	4.47	0.176
dielectric	foam PE(2)	11.56	0.455
inner shield	Al(3) foil	11.71	0.461
outer shield	TC(4) braid	12.45	0.490
jacket	black PE(2)	14.99	0.590

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC – 6 GHz	
shielding effectiveness	>90 dB	
voltage withstanding	4 000 V DC	
peak power	40 kW	
capacitance	76.6 pF / m	23.4 pF / ft
velocity of propagation	87% (3.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	38.1 mm	1.50 inch
weight	200 g / m	0.131 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	no	
halogen free	no	

APPLICATION NOTE

This LMR600 cable can be considered as an alternative to equivalent diameter corrugated cable.
The main advantage is greater flexibility and bendability allowing easy routing during the installation.
The foam dielectric provides excellent loss and low return loss levels.
The double screen construction (Aluminum foil + tinned copper braid) offers a high level of shielding as well as low leakage.
This cable will be advised for feeder or jumper assemblies in cellular networks as well as applications requiring easy routing.

(1) ALCC = Aluminum Covered Copper
(2) PE = PolyEthylene
(3) Al = Aluminum

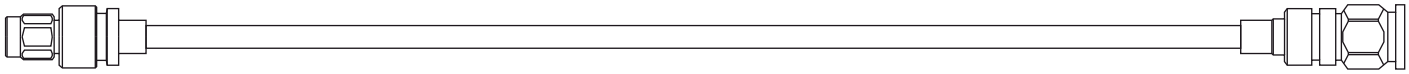
FREQUENCY / ATTENUATION (25°C) / CW MAX POWER (sea level 40°C)

GHz	dB / m	dB / ft	Watts
0.1	0.03	0.008	2970
0.5	0.06	0.018	1270
1.0	0.09	0.026	870
1.5	0.11	0.033	700
2.0	0.13	0.039	590
2.5	0.15	0.044	520
3.0	0.16	0.049	470
4.0	0.19	0.058	400
5.0	0.22	0.066	350
6.0	0.25	0.074	310
attenuation calculation (dB / m)	(0.078 x √F GHz) + (0.009 x F GHz)		

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH LMR 600



N series

(temperature range = -55 / +155°C)

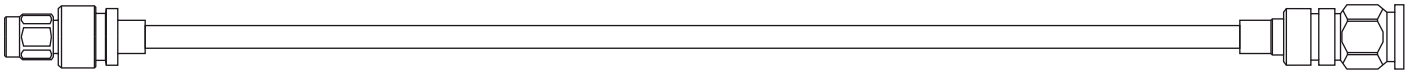
Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 079 220	plug	straight	crimp	11	2 500	yes	brass	BBR	-
R161 188 200	plug	right-angle	crimp	11	2 500	yes	brass	BBR	-
R161 331 400	jack	straight	crimp	11	2 500	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

Heatshrink sleeves

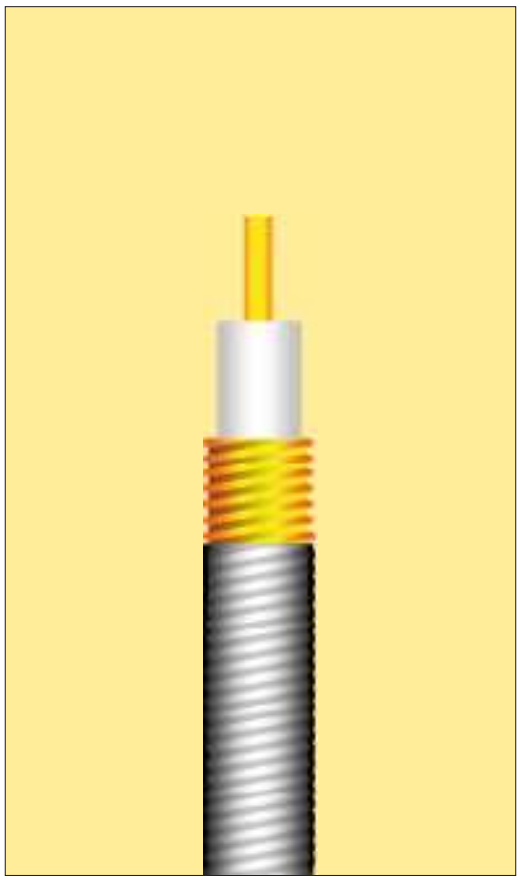
a large range of heatshrink sleeves is available: please consult us.

: Service + program: fast delivery, please read page 129.

CORRUGATED CABLE 1/4”
(Cellflex 1/4” Spiral)



Radiall P/N : C291 993 170 Cellflex HCF 1/4”-50 AlCu



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid CCAl(1)	1.90	0.075
dielectric	foam PE(2)	4.3	0.173
corrugated inner shield	spiral Copper tube	6.50	0.256
outer shield	-	-	-
jacket	black LSZH PE(3)	7.8	0.303

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 1 Ω	
operating frequency range	DC – 20.4 GHz	
shielding effectiveness	110 dB	
voltage withstanding	3 100 V rms	
peak power	5.5 kW	
capacitance	82 pF / m	24.8 pF / ft
velocity of propagation	82% (4.1 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	25.0 mm	0.984 inch
weight	70 g / m	0.047 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	yes (UL 1581 VW1 / IEC 332-1)	
halogen free	yes (IEC 754-2)	

FREQUENCY / ATTENUATION (20°C) / CW MAX POWER (sea level 40°C)

GHz	dB / m	dB / ft	Watts
1.0	0.19	0.06	339
2.0	0.27	0.08	232
3.0	0.34	0.10	185
4.0	0.40	0.12	156
6.0	0.51	0.15	124
8.0	0.60	0.18	104
10.0	0.69	0.21	91
12.4	0.78	0.24	79
18.0	0.99	0.30	63
20.0	1.06	0.32	59
attenuation calculation (dB / m)	(0.17 x √F GHz) + (0.015 x F GHz)		

APPLICATION NOTE

The outer conductor of this cable is constituted of a corrugated tube (spiral winding).
This construction allows perfect shielding and bendability while respecting large bending radius.
The foam dielectric provides excellent loss and low return loss levels.

This cable will be advised for feeder or jumper assemblies in cellular networks as well as applications requiring high performance level on long distances.

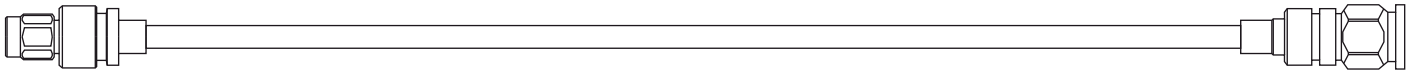
The anti-UV LSZH (Low Smoke Zero Hallogen) material is also flame retardant and allows this cable to be used for indoor public areas as well as outdoor installations.

(1) CCAl = Copper Covered Aluminum
(2) PE = PolyEthylene
(3) LSZH PE = Low Smoke Zero Hallogen PolyEthylene

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH CORRUGATED CABLE 1/4" SPIRAL



N series

(temperature range = -55 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 036 007	plug	straight	EZ fit	11	1 500	yes	brass	silver + BBR	low PIM3 = -110 dBm / mixed coupling nut: manual + 6 flat = 18 mm
865 48 030 B	plug	straight	solder	11	1 500	yes	brass	silver + BBR	very low PIM3 = -125 dBm / mixed coupling nut : manual + 6 flat = 18 mm
R161 177 007	plug	right-angle	EZ fit	11	1 500	yes	brass	silver + BBR	low PIM3 = -110 dBm / mixed coupling nut: manual + 6 flat = 18 mm
865 48 040 B	plug	right-angle	solder	11	1 500	yes	brass	silver + BBR	very low PIM3 = -125 dBm / mixed coupling nut: manual + 6 flat = 18 mm
R161 232 007	jack	straight	EZ fit	11	1 500	yes	brass	silver + BBR	low PIM3 = -110 dBm
865 48 050 B	jack	straight	solder	11	1 500	yes	brass	silver + BBR	very low PIM3 = -125 dBm
R161 279 007	jack	straight	EZ fit	11	1 500	yes	brass	silver + BBR	low PIM3 = -110 dBm / square flange 25.4 mm / 4 holes dia. 3.3 mm
865 48 070 B	jack	straight	solder	11	1 500	yes	brass	silver + BBR	very low PIM3 = -125 dBm / square flange 25.4 mm / 4 holes dia. 3.3 mm
R161 341 007	jack	straight	EZ fit	11	1 500	yes	brass	silver + BBR	low PIM3 = -110 dBm / bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm
865 48 060 B	jack	straight	solder	11	1 500	yes	brass	silver + BBR	very low PIM3 = -125 dBm / bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

Advised torque wrench for plugs with 6 flat coupling nut: R282 303 020 / 18 mm / 170 Ncm

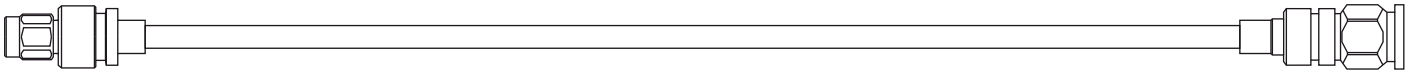
7/16 series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R185 030 200	plug	straight	EZ fit	7.5	2 700	yes	brass	silver + BBR	low PIM3 = -110 dBm / mixed coupling nut: manual + 6 flat = 27 mm
865 06 250 B	plug	straight	solder	7.5	2 700	yes	brass	silver + BBR	very low PIM3 = -125 dBm / 6 flat coupling nut = 32 mm
R185 164 200	plug	right-angle	EZ fit	7.5	2 700	yes	brass	silver + BBR	low PIM3 = -110 dBm / mixed coupling nut: manual + 6 flat = 27 mm
865 06 350 B	plug	right-angle	solder	7.5	2 700	yes	brass	silver + BBR	very low PIM3 = -125 dBm / 6 flat coupling nut = 32 mm
R185 215 200	jack	straight	EZ fit	7.5	2 700	yes	brass	silver + BBR	low PIM3 = -110 dBm
865 06 300 B	jack	straight	solder	7.5	2 700	yes	brass	silver + BBR	very low PIM3 = -125 dBm
R185 265 200	jack	straight	EZ fit	7.5	2 700	yes	brass	silver + BBR	low PIM3 = -110 dBm / square flange 32 mm / 4 holes dia. 3.5 mm
865 06 400 B	jack	straight	solder	7.5	2 700	yes	brass	silver + BBR	very low PIM3 = -125 dBm / square flange 32 mm / 4 holes dia. 3.5 mm
R185 315 200	jack	straight	EZ fit	7.5	2 700	yes	brass	silver + BBR	low PIM3 = -110 dBm / bulkhead feedthrough / panel nut torque = 3 000 Ncm

Advised torque wrench for plugs: R282 303 520 / 27 mm / 3 000 Ncm

CONNECTORS COMPATIBLE WITH CORRUGATED CABLE 1/4" SPIRAL



Coaxi-kit : N - DIN 7/16 series (2 part straight or right-angle connectors = 1 tip + 1 head) **(temperature range = -55 / +155°C)**

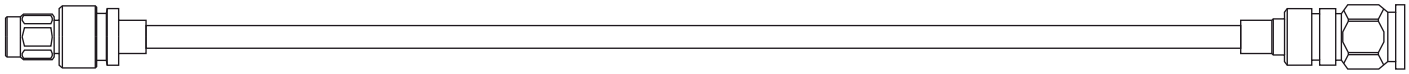
Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R280 021 200	cable tip	straight	EZ fit	2.5	2 500	yes	brass	silver + BBR	allows to design straight or r-a connectors / compatible with following head part-numbers
R161 901 120	N series plug head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	mixed coupling nut (6 flat = 18 mm and manual) advised torque wrench : R282 303 020 / 170 Ncm
R161 912 120	N series jack head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	square flange 25.4 mm / 4 holes 3.3 mm
R161 913 120	N series jack head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	bulkhead feedthrough panel sealed / panel nut torque = 500 Ncm
R185 901 000	DIN 7/16 plug head	straight or right-angle	-	2.5	4 000	yes	brass	silver + BBR	mixed coupling nut (6 flat = 27 mm and manual) advised torque wrench : R282 303 520 / 3000 Ncm
R185 925 000	DIN 7/16 jack head	straight or right-angle	-	2.5	4 000	yes	brass	silver + BBR	square flange 32 mm / 4 holes 3.5 mm

Heatshrink sleeves

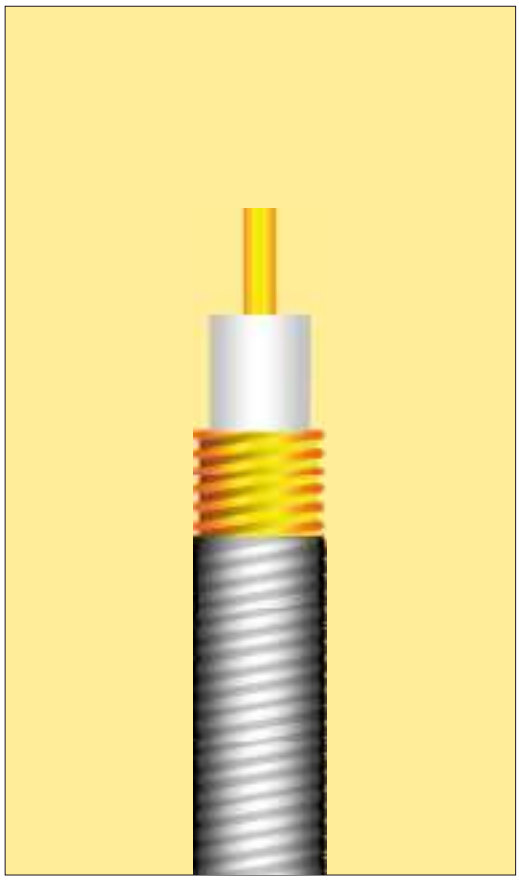
a large range of heatshrink sleeves is available: please consult us.

: Service + program: fast delivery, please read page 129.

CORRUGATED CABLE 3/8”
(Cellflex 3/8” Spiral)



Radiall P/N : C291 996 170 Cellflex HCF 3/8” CuH-50 AlCu



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid CCAl[1]	2.60	0.1.2
dielectric	foam PE[2]	6.30	0.248
corrugated inner shield	spiral Copper tube	9.10	0.358
outer shield	-	-	-
jacket	black LSZH PE[3]	10.20	0.398

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 1 Ω	
operating frequency range	DC – 13.4 GHz	
shielding effectiveness	110 dB	
voltage withstanding	4 500 V rms	
peak power	11.9 kW	
capacitance	82 pF / m	24.8 pF / ft
velocity of propagation	82% (4.1 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	25.0 mm	0.984 inch
weight	120 g / m	0.080 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	yes (UL 1581 VW1 / IEC 332-1)	
halogen free	yes (IEC 754-2)	

APPLICATION NOTE

The outer conductor of this cable is constituted of a corrugated tube (spiral winding).
This construction allows perfect shielding and bendability while respecting large bending radius.
The foam dielectric provides excellent loss and low return loss levels.

This cable will be advised for feeder or jumper assemblies in cellular networks as well as applications requiring high performance level on long distances.

The anti-UV LSZH (Low Smoke Zero Hallogen) material is also flame retardant and allows this cable to be used for indoor public areas as well as outdoor installations.

[1] CCAl = Copper Covered Aluminum
[2] PE = PolyEthylene
[3] LSZH PE = Low smoke Zero Hallogen PolyEthylene

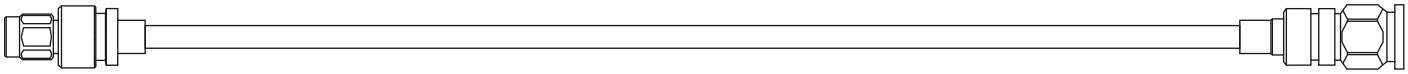
FREQUENCY / ATTENUATION (20°C) / CW MAX POWER (sea level 40°C)

GHz	dB / m	dB / ft	Watts
0.5	0.09	0.03	810
1.0	0.13	0.04	560
1.5	0.17	0.05	449
2.0	0.19	0.06	384
3.0	0.24	0.07	306
4.0	0.29	0.09	260
6.0	0.36	0.11	205
8.0	0.43	0.13	173
10.0	0.49	0.15	152
12.4	0.56	0.17	133
attenuation calculation (dB / m)	(0.123 x √F GHz) + (0.01 x F GHz)		

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

CONNECTORS COMPATIBLE WITH CORRUGATED CABLE 3/8" SPIRAL



N series

(temperature range = -55 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 036 207	plug	straight	EZ fit	11	2 500	yes	brass	silver + BBR	low PIM3 = -110 dBm / mixed coupling nut: manual + 6 flat = 18 mm
865 48 080 B	plug	straight	solder	11	2 500	yes	brass	silver + BBR	very low PIM3 = -125 dBm / mixed coupling nut : manual + 6 flat = 18 mm
R161 177 207	plug	right-angle	EZ fit	11	2 500	yes	brass	silver + BBR	low PIM3 = -110 dBm / mixed coupling nut: manual + 6 flat = 18 mm
865 48 090 C	plug	right-angle	solder	11	2 500	yes	brass	silver + BBR	very low PIM3 = -125 dBm / mixed coupling nut: manual + 6 flat = 18 mm
R161 232 207	jack	straight	EZ fit	11	2 500	yes	brass	silver + BBR	low PIM3 = -110 dBm
865 48 100 B	jack	straight	solder	11	2 500	yes	brass	silver + BBR	very low PIM3 = -125 dBm
R161 279 207	jack	straight	EZ fit	11	2 500	yes	brass	silver + BBR	low PIM3 = -110 dBm / square flange 25.4 mm / 4 holes dia. 3.3 mm
865 48 110 B	jack	straight	solder	11	2 500	yes	brass	silver + BBR	very low PIM3 = -125 dBm / square flange 25.4 mm / 4 holes dia. 3.3 mm
R161 341 207	jack	straight	EZ fit	11	2 500	yes	brass	silver + BBR	low PIM3 = -110 dBm / bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm
865 48 170 B	jack	straight	solder	11	2 500	yes	brass	silver + BBR	very low PIM3 = -125 dBm / bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

Advised torque wrench for plugs with 6 flat coupling nut: R282 303 020 / 18 mm / 170 Ncm

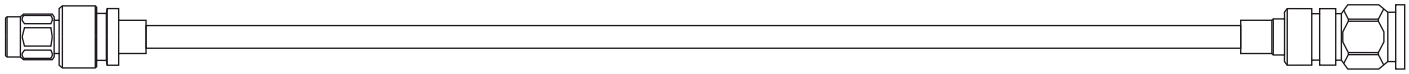
7/16 series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R185 032 200	plug	straight	EZ fit	7.5	2 700	yes	brass	silver + BBR	low PIM3 = -110 dBm / mixed coupling nut: manual + 6 flat = 27 mm
865 06 260 B	plug	straight	solder	7.5	2 700	yes	brass	silver + BBR	very low PIM3 = -125 dBm / 6 flat coupling nut = 32 mm
R185 166 200	plug	right-angle	EZ fit	7.5	2 700	yes	brass	silver + BBR	low PIM3 = -110 dBm / mixed coupling nut: manual + 6 flat = 27 mm
865 06 360 B	plug	right-angle	solder	7.5	2 700	yes	brass	silver + BBR	very low PIM3 = -125 dBm / 6 flat coupling nut = 32 mm
R185 217 200	jack	straight	EZ fit	7.5	2 700	yes	brass	silver + BBR	low PIM3 = -110 dBm
865 06 310 D	jack	straight	solder	7.5	2 700	yes	brass	silver + BBR	very low PIM3 = -125 dBm
R185 267 200	jack	straight	EZ fit	7.5	2 700	yes	brass	silver + BBR	low PIM3 = -110 dBm / square flange 32 mm / 4 holes dia. 3.5 mm
865 06 410 D	jack	straight	solder	7.5	2 700	yes	brass	silver + BBR	very low PIM3 = -125 dBm / square flange 32 mm / 4 holes dia. 3.5 mm
R185 317 200	jack	straight	EZ fit	7.5	2 700	yes	brass	silver + BBR	low PIM3 = -110 dBm / bulkhead feedthrough / panel nut torque = 3 000 Ncm

Advised torque wrench for plugs: R282 303 520 / 27 mm / 3 000 Ncm

CONNECTORS COMPATIBLE WITH CORRUGATED CABLE 3/8” SPIRAL



Coaxi-kit : N - DIN 7/16 series (2 part straight or right-angle connectors = 1 tip + 1 head) **(temperature range = -55 / +155°C)**

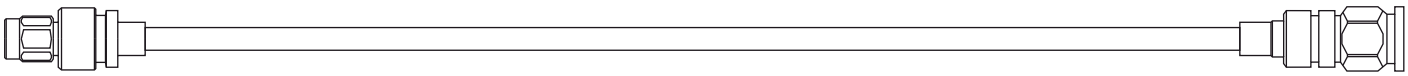
Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R280 023 200	cable tip	straight	EZ fit	2.5	2 500	yes	brass	silver + BBR	allows to design straight or r-a connectors / compatible with following head part-numbers
R161 901 120	N series plug head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	mixed coupling nut (6 flat = 18 mm and manual) advised torque wrench : R282 303 020 / 170 Ncm
R161 912 120	N series jack head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	square flange 25.4 mm / 4 holes 3.3 mm
R161 913 120	N series jack head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	bulkhead feedthrough panel sealed / panel nut torque = 500 Ncm
R185 901 000	DIN 7/16 plug head	straight or right-angle	-	2.5	4 000	yes	brass	silver + BBR	mixed coupling nut (6 flat = 27 mm and manual) advised torque wrench : R282 303 520 / 3000 Ncm
R185 925 000	DIN 7/16 jack head	straight or right-angle	-	2.5	4 000	yes	brass	silver + BBR	square flange 32 mm / 4 holes 3.5 mm

Heatshrink sleeves

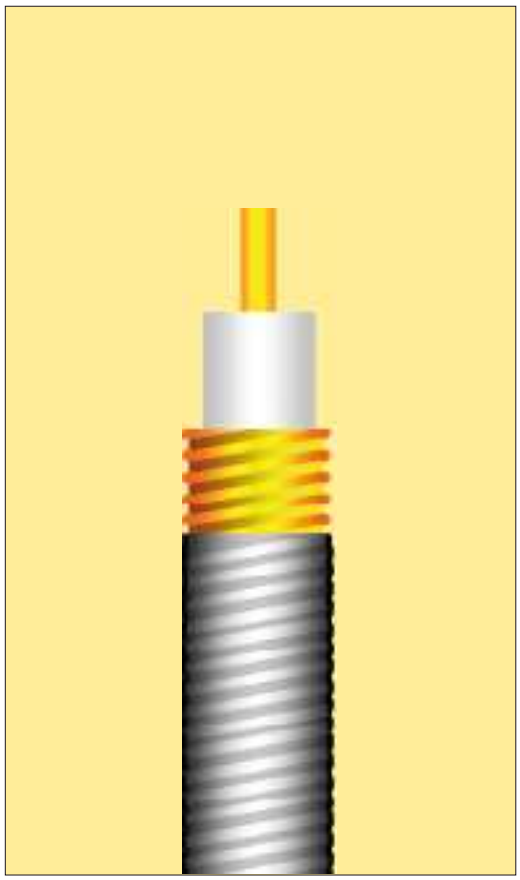
a large range of heatshrink sleeves is available: please consult us.

: Service + program: fast delivery, please read page 129.

CORRUGATED CABLE 1/2”
(Cellflex 1/2” Spiral)



Radiall P/N : C291 994 170 Cellflex HCF 1/2”-50 AlCu



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid CCAl[1]	3.60	0.142
dielectric	foam PE[2]	8.30	0.327
corrugated inner shield	spiral Copper tube	12.30	0.484
outer shield	-	-	-
jacket	black LSZH PE[3]	13.70	0.539

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 1 Ω	
operating frequency range	DC – 11.7 GHz	
shielding effectiveness	110 dB	
voltage withstanding	5 000 V rms	
peak power	20.5 kW	
capacitance	82 pF / m	24.8 pF / ft
velocity of propagation	82% (4.1 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	30.0 mm	1.181 inch
weight	210 g / m	0.140 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	yes (UL 1581 VW1 / IEC 332-1)	
halogen free	yes (IEC 754-2)	

FREQUENCY / ATTENUATION (20°C) / CW MAX POWER (sea level 40°C)

GHz	dB / m	dB / ft	Watts
0.5	0.08	0.02	1120
1.0	0.11	0.03	770
1.5	0.14	0.04	616
2.0	0.16	0.05	525
2.5	0.18	0.06	461
3.0	0.20	0.06	417
4.0	0.24	0.07	353
6.0	0.30	0.09	278
8.0	0.36	0.11	234
10.0	1.42	0.13	204
attenuation calculation (dB / m)	(0.10 x √F GHz) + (0.01 x F GHz)		

APPLICATION NOTE

The outer conductor of this cable is constituted of a corrugated tube (spiral winding).
This construction allows perfect shielding and bendability while respecting large bending radius.
The foam dielectric provides excellent loss and low return loss levels.

This cable will be advised for feeder or jumper assemblies in cellular networks as well as applications requiring high performance level on long distances.

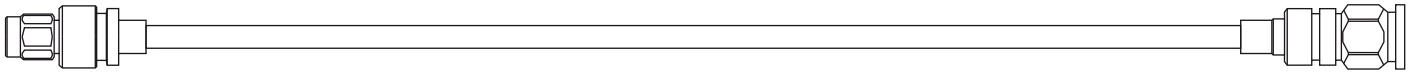
The anti-UV LSZH (Low Smoke Zero Hallogen) material is also flame retardant and allows this cable to be used for indoor public areas as well as outdoor installations.

[1] CCAl = Copper Covered Aluminum
[2] PE = PolyEthylene
[3] LSZH PE = Low Smoke Zero Hallogen PolyEthylene

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH CORRUGATED CABLE 1/2" SPIRAL



N series

(temperature range = -55 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 037 020	plug	straight	EZ fit	11	2 500	yes	brass	silver + BBR	low PIM3 = -110 dBm / mixed coupling nut: manual + 6 flat = 18 mm
865 48 120 B	plug	straight	solder	11	2 500	yes	brass	silver + BBR	very low PIM3 = -125 dBm / mixed coupling nut : manual + 6 flat = 18 mm
R161 177 137	plug	right-angle	EZ fit	11	2 500	yes	brass	silver + BBR	low PIM3 = -110 dBm / mixed coupling nut: manual + 6 flat = 18 mm
865 48 130 B	plug	right-angle	solder	11	2 500	yes	brass	silver + BBR	very low PIM3 = -125 dBm / mixed coupling nut: manual + 6 flat = 18 mm
R161 232 407	jack	straight	EZ fit	11	2 500	yes	brass	silver + BBR	low PIM3 = -110 dBm
865 48 140 B	jack	straight	solder	11	2 500	yes	brass	silver + BBR	very low PIM3 = -125 dBm
R161 279 407	jack	straight	EZ fit	11	2 500	yes	brass	silver + BBR	low PIM3 = -110 dBm / square flange 25.4 mm / 4 holes dia. 3.3 mm
865 48 150 B	jack	straight	solder	11	2 500	yes	brass	silver + BBR	very low PIM3 = -125 dBm / square flange 25.4 mm / 4 holes dia. 3.3 mm
R161 341 407	jack	straight	EZ fit	11	2 500	yes	brass	silver + BBR	low PIM3 = -110 dBm / bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm
865 48 160 B	jack	straight	solder	11	2 500	yes	brass	silver + BBR	very low PIM3 = -125 dBm / bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

Advised torque wrench for plugs with 6 flat coupling nut: R282 303 020 / 18 mm / 170 Ncm

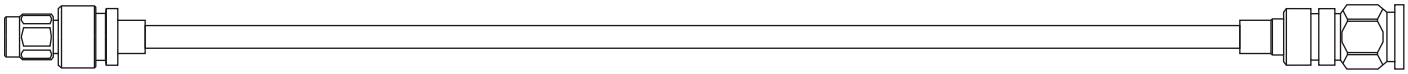
7/16 series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R185 031 200	plug	straight	EZ fit	7.5	2 700	yes	brass	silver + BBR	low PIM3 = -110 dBm / mixed coupling nut: manual + 6 flat = 27 mm
865 06 270 A	plug	straight	solder	7.5	2 700	yes	brass	silver + BBR	very low PIM3 = -125 dBm / 6 flat coupling nut = 32 mm
R185 165 200	plug	right-angle	EZ fit	7.5	2 700	yes	brass	silver + BBR	low PIM3 = -110 dBm / mixed coupling nut: manual + 6 flat = 27 mm
865 06 370 B	plug	right-angle	solder	7.5	2 700	yes	brass	silver + BBR	very low PIM3 = -125 dBm / 6 flat coupling nut = 32 mm
R185 216 200	jack	straight	EZ fit	7.5	2 700	yes	brass	silver + BBR	low PIM3 = -110 dBm
865 06 320 B	jack	straight	solder	7.5	2 700	yes	brass	silver + BBR	very low PIM3 = -125 dBm
R185 266 200	jack	straight	EZ fit	7.5	2 700	yes	brass	silver + BBR	low PIM3 = -110 dBm / square flange 32 mm / 4 holes dia. 3.5 mm
865 06 420 B	jack	straight	solder	7.5	2 700	yes	brass	silver + BBR	very low PIM3 = -125 dBm / square flange 32 mm / 4 holes dia. 3.5 mm
R185 316 200	jack	straight	EZ fit	7.5	2 700	yes	brass	silver + BBR	low PIM3 = -110 dBm / bulkhead feedthrough / panel nut torque = 3 000 Ncm

Advised torque wrench for plugs: R282 303 520 / 27 mm / 3 000 Ncm

CONNECTORS COMPATIBLE WITH CORRUGATED CABLE 1/2" SPIRAL



Coaxi-kit : N - DIN 7/16 series (2 part straight or right-angle connectors = 1 tip + 1 head) **(temperature range = -55 / +155°C)**

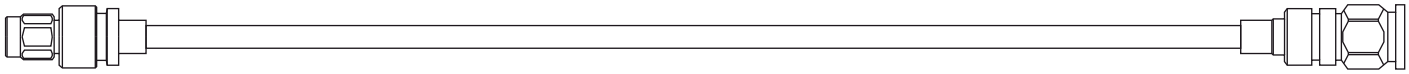
Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R280 022 200	cable tip	straight	EZ fit	2.5	2 500	yes	brass	silver + BBR	allows to design straight or r-a connectors / compatible with following head part-numbers
R161 901 120	N series plug head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	mixed coupling nut (6 flat = 18 mm and manual) advised torque wrench : R282 303 020 / 170 Ncm
R161 912 120	N series jack head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	square flange 25.4 mm / 4 holes dia. 3.3 mm
R161 913 120	N series jack head	straight or right-angle	-	2.5	2 500	yes	brass	silver + BBR	bulkhead feedthrough panel sealed / panel nut torque = 500 Ncm
R185 901 000	DIN 7/16 plug head	straight or right-angle	-	2.5	4 000	yes	brass	silver + BBR	mixed coupling nut (6 flat = 27 mm and manual) advised torque wrench : R282 303 520 / 3000 Ncm
R185 925 000	DIN 7/16 jack head	straight or right-angle	-	2.5	4 000	yes	brass	silver + BBR	square flange 32 mm / 4 holes dia. 3.5 mm

Heatshrink sleeves

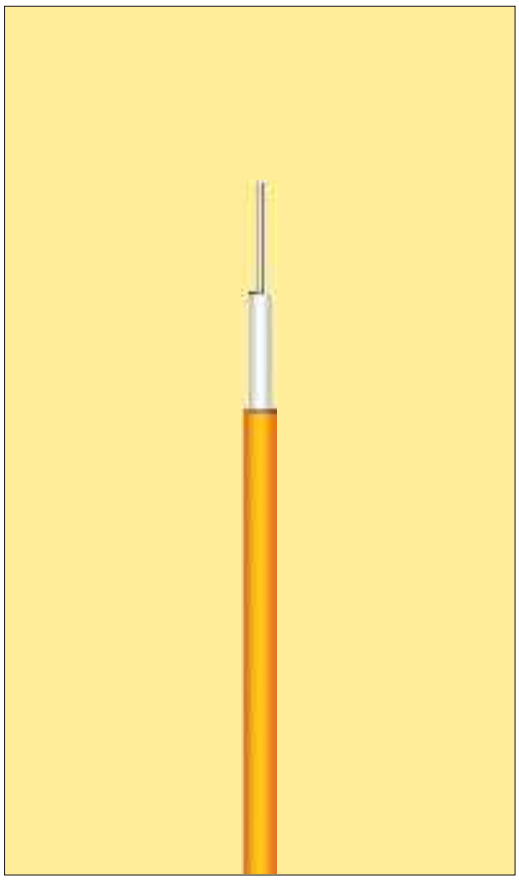
a large range of heatshrink sleeves is available: please consult us.

: Service + program: fast delivery, please read page 129.

SEMI-RIGID CABLE .047”
(Copper)



Radiall P/N : C291 855 001 (MIL-C-17/151-00001)



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPCCS(1)	0.29	0.011
dielectric	solid PTFE(2)	0.94	0.037
inner shield	copper tubing	1.19	0.047
outer shield	-	-	-
jacket	-	-	-

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2.5 Ω	
operating frequency range	DC – 20 GHz	
shielding effectiveness	110 dB	
voltage withstanding	2 000 V rms	
peak power	1.1 kW	
capacitance	100 pF / m	30 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	3.17 mm	0.125 inch
weight	6.0 g / m	0.004 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +100°C	-40 / +212°F
fire resistance	Not applicable	
halogen free	no	

APPLICATION NOTE

This is the smallest semi-rigid cable size proposed by RADIALL.

Its reduced size allows it to be easily handformable during integration operations.

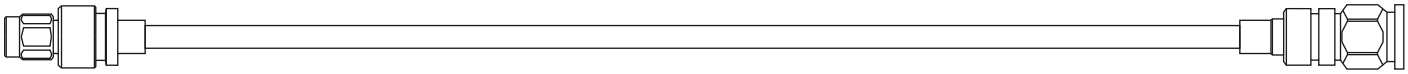
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
1.0	0.08	0.02	1120
2.0	0.11	0.03	770
3.0	0.14	0.04	616
6.0	0.16	0.05	525
8.0	0.18	0.06	461
10.0	0.20	0.06	417
12.4	0.24	0.07	353
18.0	0.30	0.09	278
20.0	0.36	0.11	234
attenuation calculation (dB / m)	(1.10 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	30 / √F GHz		

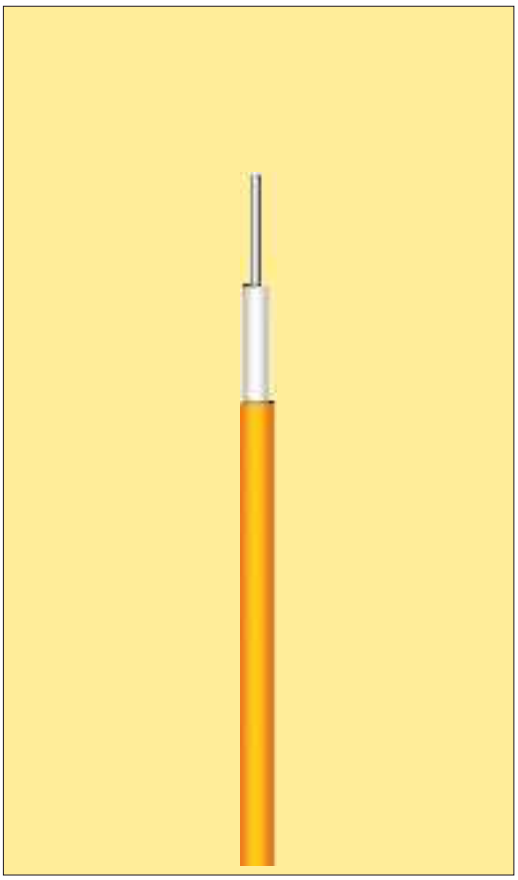
(1) SPCCS = Silver Plated Copper Covered Steel
(2) PTFE = PolyTetraFluoroEthylene

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

SEMI-RIGID CABLE .047”
(Tinned copper)



Radiall P/N : C291 855 065 (MIL-C17/151-00002)



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPCCS(1)	0.29	0.011
dielectric	solid PTFE(2)	0.94	0.037
inner shield	copper tubing	1.19	0.047
outer shield	-	-	-
jacket	-	-	-

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2.5 Ω	
operating frequency range	DC – 20 GHz	
shielding effectiveness	110 dB	
voltage withstanding	2 000 V rms	
peak power	1.1 kW	
capacitance	100 pF / m	30 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	3.17 mm	0.125 inch
weight	6.0 g / m	0.004 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +100°C	-40 / +212°F
fire resistance	Not applicable	
halogen free	no	

APPLICATION NOTE

This is the smallest semi-rigid cable size proposed by RADIALL.

Its reduced size allows it to be easily handformable during integration operations.

Due to the outer conductor coating (tin), this cable shall be used instead of standard .047 copper for applications requiring high corrosion resistance and improved solderability.

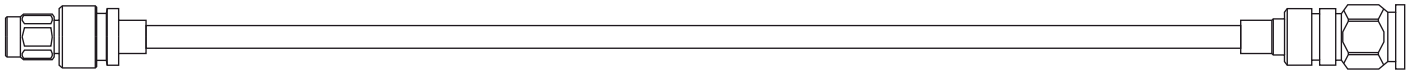
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
1.0	1.14	0.35	30
2.0	1.64	0.50	21
3.0	2.03	0.61	17
6.0	2.93	0.89	12
8.0	3.43	1.04	11
10.0	3.88	1.18	9.5
12.4	4.37	1.32	8.5
18.0	5.39	1.63	7.1
20.0	5.72	1.73	6.7
attenuation calculation (dB / m)	(1.10 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	30 / √F GHz		

(1) SPCCS = Silver Plated Copper Covered Steel
(2) PTFE = PolyTetraFluoroEthylene
(3) TC = Tinned Copper

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH SEMI-RIGID CABLE .047”



SMP series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R222 051 000	female plug	straight	solder	40	500	no	CuBe2	gold	female c.c.
R222 151 000	female plug	right-angle	solder	40	500	yes	CuBe2	gold	female c.c.
R222 251 000	male jack	straight	solder	40	500	no	stainless steel	passivated	FD / male c.c. / 2 holes flange 4.7x10.2 mm / 2 holes dia. 1.8 mm
R222 251 302	male jack	straight	solder	40	500	no	stainless steel	passivated	LD / male c.c. / 2 holes flange 4.7x10.2 mm / 2 holes dia. 1.8 mm
R222 251 702	Male jack	straight	solder	40	500	no	stainless steel	passivated	SB / male c.c. / 2 holes flange 4.7x10.2 mm / 2 holes dia. 1.8 mm

MCX series

(temperature range = -55 / +115°C)

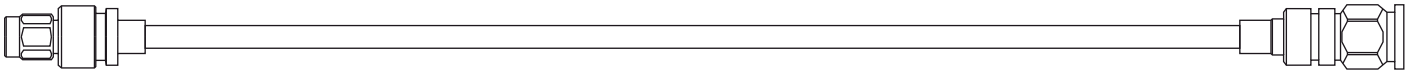
Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R113 051 000	plug	straight	solder	6	500	no	brass	gold	-
R113 051 020	plug	straight	solder	6	500	no	brass	BBR	-
R113 151 000	plug	right-angle	solder	6	500	yes	brass	gold	-
R113 151 020	plug	right-angle	solder	6	500	yes	brass	BBR	-
R113 221 000	jack	straight	solder	6	500	no	brass	gold	-
R113 221 020	jack	straight	solder	6	500	no	brass	BBR	-
R113 301 000	jack	straight	solder	6	500	no	brass	gold	bulkhead feedthrough / panel nut torque = 60 Ncm
R113 301 020	jack	straight	solder	6	500	no	brass	BBR	bulkhead feedthrough / panel nut torque = 60 Ncm

Terminals

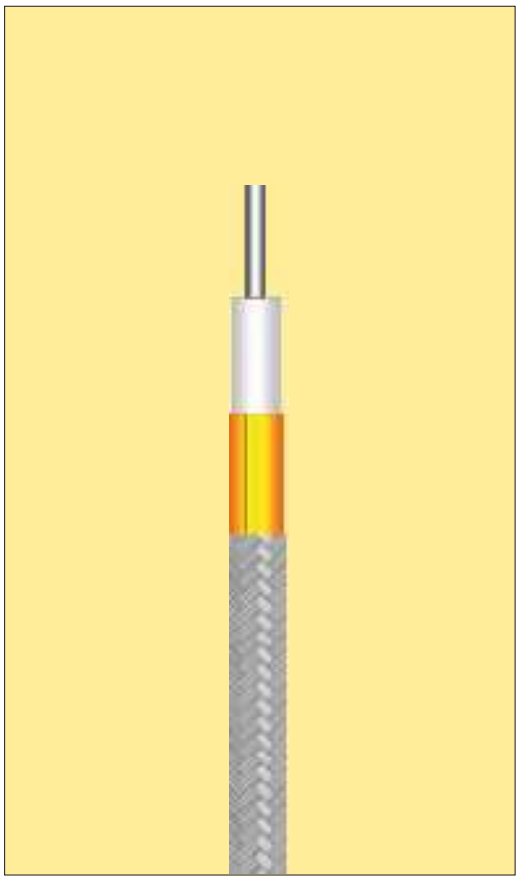
(temperature range = -55 / +155°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Material	Finish	PCB	Miscellaneous
R280 287 100	terminal	straight	solder	3	2 000	brass	gold	2 solder pins	-

HAND-FORMABLE CABLE .085”
(unjacketed)



Radiall P/N : C291 844 065



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPCCS(1)	0.51	0.020
dielectric	solid PTFE(2)	1.63	0.064
inner shield	copper foil	-	-
outer shield	TS(3) braid	2.21	0.087
jacket	-	-	-

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC – 20 GHz	
shielding effectiveness	90 dB	
voltage withstanding	5 000 V rms	
peak power	1.9 kW	
capacitance	97.5 pF / m	29.5 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	3.2(4) / 9.5(5) mm	0.125(4) / 0.375(5) inch
weight	17.8 g / m	0.012 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-65 / +150°C	-85 / +302°F
fire resistance	not applicable	
halogen free	no	

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
1.0	0.67	0.20	100
2.0	0.97	0.29	71
3.0	1.21	0.37	58
6.0	1.78	0.54	41
8.0	2.10	0.64	35
10.0	2.39	0.72	32
12.4	2.71	0.82	28
18.0	3.39	1.03	24
20.0	3.62	1.10	22
attenuation calculation (dB / m)	(0.63 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	100 / √F GHz		

APPLICATION NOTE

This handformable cable is a good alternative to RG405 for applications requiring an easy routing on equipment.

Due to the outer conductor construction, this cable can be hand formed with exceptional ease with no spring back effect.

Cable can be reshaped, eliminating the need for costly drawings.

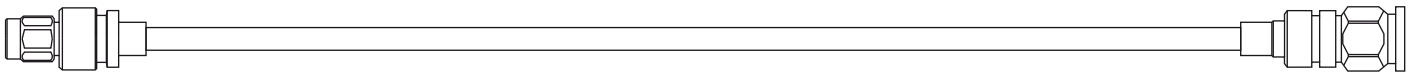
Attenuation is a little bit higher than the RG405's one but temperature range is wider.

(1) SPCCS = Silver Plated Copper Covered Steel
(2) PTFE = PolyTetraFluoroEthylene
(3) TS = Tin Soaked
(4) one time
(5) repeated

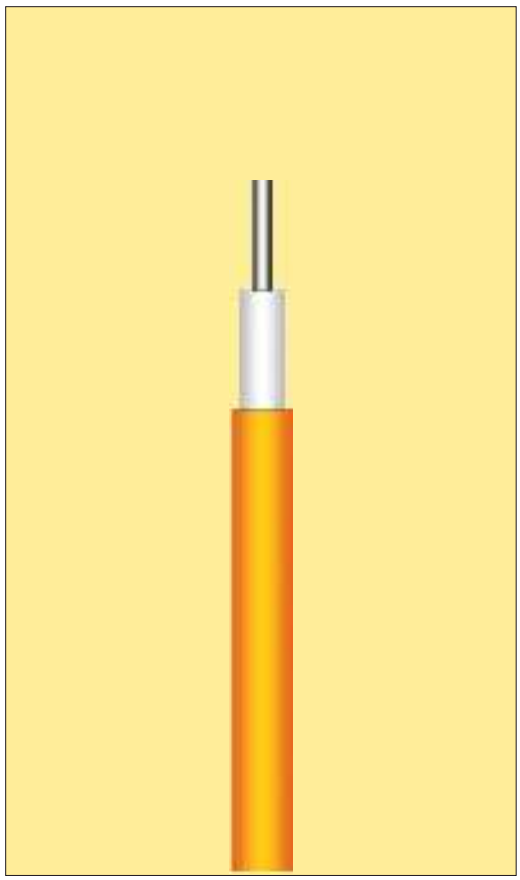
: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

SEMI-RIGID CABLE .085”
(RG405 - KS1)



Radiall P/N : C291 850 001 (MIL-C-17/133-RG405)
(NF-C-93/551-KS1)



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPCCS(1)	0.51	0.020
dielectric	solid PTFE(2)	1.68	0.066
inner shield	copper tubing	2.20	0.087
outer shield	-	-	-
jacket	-	-	-

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 1.5 Ω	
operating frequency range	DC – 20 GHz	
shielding effectiveness	110 dB	
voltage withstanding	5 000 V rms	
peak power	1.9 kW	
capacitance	100 pF / m	30 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	3.17 mm	0.125 inch
weight	20.0 g / m	0.013 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +125°C	-40 / +257°F
fire resistance	not applicable	
halogen free	no	

APPLICATION NOTE

RG405 is one of the most popular semi-rigid RG cables.

RG405 will be prefered to flexible RG316 or RD316 for applications requiring high frequency range, low attenuation, high screening effectiveness, very small bending radius and/or no spring back effect.

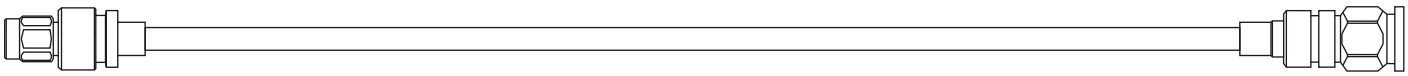
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
1.0	0.65	0.20	100
2.0	0.94	0.29	71
3.0	1.18	0.36	58
6.0	1.73	0.53	41
8.0	2.05	0.62	35
10.0	2.33	0.71	32
12.4	2.64	0.80	28
18.0	3.31	1.00	24
20.0	3.53	1.07	22
attenuation calculation (dB / m)	(0.61 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	100 / √F GHz		

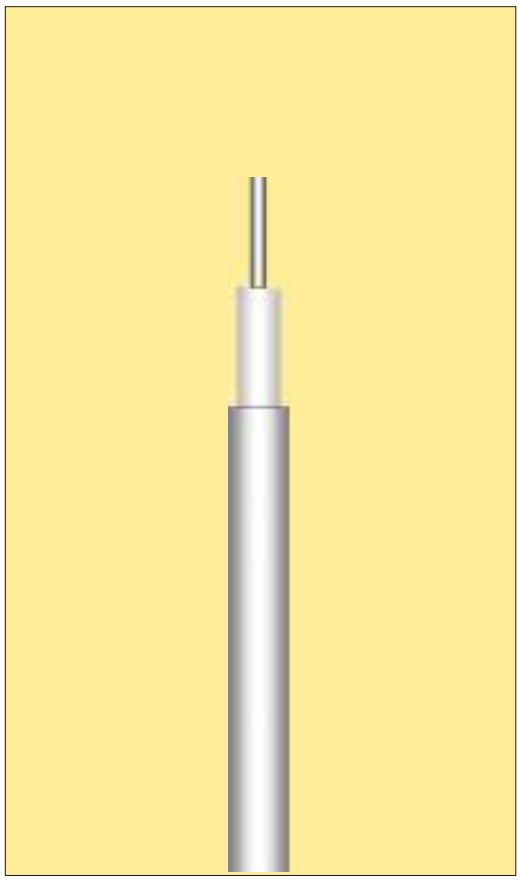
(1) SPCCS = Silver Plated Copper Covered Steel
(2) PTFE = PolyTetraFluoroEthylene

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

SEMI-RIGID CABLE .085”
(Tinned copper)



Radiall P/N : C291 850 005 (MIL-C17/133-00007)



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPCCS(1)	0.51	0.020
dielectric	solid PTFE(2)	1.68	0.066
inner shield	TPC(3)	2.20	0.087
outer shield	-	-	-
jacket	-	-	-

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 1.5 Ω	
operating frequency range	DC – 20 GHz	
shielding effectiveness	110 dB	
voltage withstanding	5 000 V rms	
peak power	1.9 kW	
capacitance	100 pF / m	30 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	3.17 mm	0.125 inch
weight	20.0 g / m	0.013 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +125°C	-40 / +257°F
fire resistance	not applicable	
halogen free	no	

APPLICATION NOTE

Due to the outer conductor coating (tin), this cable shall be used instead of RG405 for applications requiring high corrosion resistance and improved solderability.

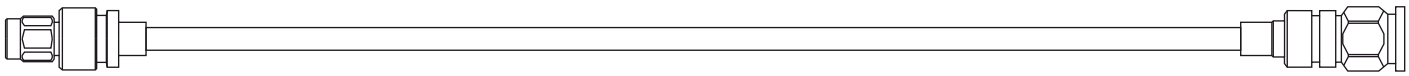
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
1.0	0.65	0.20	100
2.0	0.94	0.29	71
3.0	1.18	0.36	58
6.0	1.73	0.53	41
8.0	2.05	0.62	35
10.0	2.33	0.71	32
12.4	2.64	0.80	28
18.0	3.31	1.00	24
20.0	3.53	1.07	22
attenuation calculation (dB / m)	(0.61 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	100 / √F GHz		

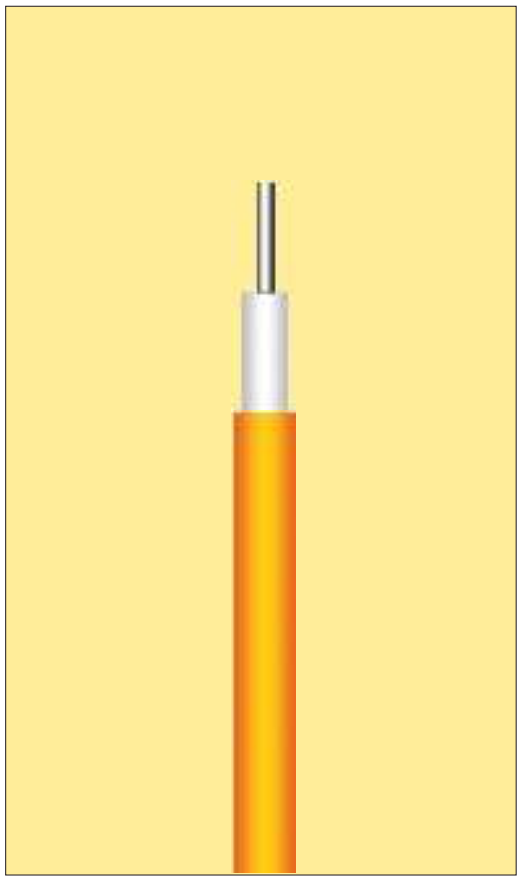
(1) SPCCS = Silver Plated Copper Covered Steel
(2) PTFE = PolyTetraFluoroEthylene
(3) TPC = Tin Plated Copper

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

SEMI-RIGID CABLE .085”
(Aluminum)



Radiall P/N : C291 844 187 (MIL-C-17/133-00013)



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPC(1)	0.51	0.020
dielectric	solid PTFE(2)	1.68	0.066
inner shield	copper tubing	2.20	0.087
outer shield	-	-	-
jacket	-	-	-

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 1 Ω	
operating frequency range	DC – 20 GHz	
shielding effectiveness	110 dB	
voltage withstanding	5 000 V rms	
peak power	1.9 kW	
capacitance	100 pF / m	30 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	1.8 mm	0.07 inch
weight	10.7 g / m	0.007 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +125°C	-40 / +257°F
fire resistance	not applicable	
halogen free	no	

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
1.0	0.68	0.20	100
2.0	0.98	0.30	71
3.0	1.22	0.37	58
6.0	1.80	0.54	41
8.0	2.12	0.64	35
10.0	2.41	0.73	32
12.4	2.73	0.83	28
18.0	3.41	1.03	24
20.0	3.64	1.10	22
attenuation calculation (dB / m)	(0.635 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	100 / √F GHz		

APPLICATION NOTE

Based on RG405 standard, this cable shall be selected for application requiring easy conformability and/or application requiring reduced weight.

Due to the aluminum outer conductor, this cable can be hand formed with exceptional ease with no spring back effect.

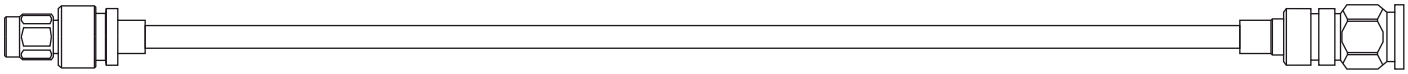
Cable can be reshaped, eliminating the need for costly drawings.

The outer conductor material (aluminum) slightly increases the attenuation compared to standard RG405.

(1) SPCCS = Silver Plated Copper Covered Steel
(2) PTFE = PolyTetraFluoroEthylene
(3) TPAI = Tin Plated Aluminum

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

SEMI-RIGID CABLE .085”
(Non magnetic)



Radiall P/N : C291 851 001(MIL-C17/133-00008)

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPC(1)	0.51	0.020
dielectric	solid PTFE(2)	1.68	0.066
inner shield	copper tubing	2.20	0.087
outer shield	-	-	-
jacket	-	-	-

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 1.5 Ω	
operating frequency range	DC – 20 GHz	
shielding effectiveness	110 dB	
voltage withstanding	5 000 V rms	
peak power	1.9 kW	
capacitance	100 pF / m	30 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	3.17 mm	0.125 inch
weight	20.0 g / m	0.0135 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +125°C	-40 / +257°F
fire resistance	not applicable	
halogen free	no	

APPLICATION NOTE

Based on RG405 standard, this cable is used where non magnetic aspect is required.

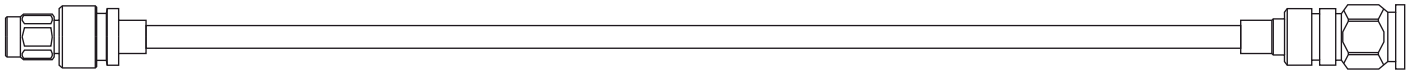
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
1.0	0.65	0.20	100
2.0	0.94	0.29	71
3.0	1.18	0.36	58
6.0	1.73	0.53	41
8.0	2.05	0.62	35
10.0	2.33	0.71	32
12.4	2.64	0.80	28
18.0	3.31	1.00	24
20.0	3.53	1.07	22
attenuation calculation (dB / m)	(0.61 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	100 / √F GHz		

(1) SPC = Silver Plated Copper I
(2) PTFE = PolyTetraFluoroEthylene

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

CONNECTORS COMPATIBLE WITH SEMI-RIGID and HAND-FORMABLE CABLE .085”



SMP series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R222 052 000	female plug	straight	solder	40	500	no	CuBe2	gold	female c.c.
R222 152 000	female plug	right-angle	solder	40	500	yes	CuBe2	gold	female c.c.
R222 252 001	male jack	straight	solder	40	500	no	stainless steel	passivated	FD / male c.c. / 2 holes flange 4.7x10.2 mm / 2 holes dia. 1.8 mm
R222 252 301	male jack	straight	solder	40	500	no	stainless steel	passivated	LD / male c.c. / 2 holes flange 4.7x10.2 mm / 2 holes dia. 1.8 mm
R222 252 702	male jack	straight	solder	40	500	no	stainless steel	passivated	SB / male c.c. / 2 holes flange 4.7x10.2 mm / 2 holes dia. 1.8 mm

SMP COM series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	Attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Captive cent.cont.	Material	Finish	Miscellaneous
R222 900 200	female plug	straight	solder	12.4	500	no	brass	npgr	-
R222 900 340	female plug	right-angle	solder	12.4	500	yes	brass	npgr	-

MC-Card series

(temperature range = -65 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R199 005 233	plug	straight	solder	8	500	no	brass	gold	-
R199 005 273	plug	right-angle	solder	8	500	yes	brass	gold	-
R199 005 013	jack	straight	solder	8	500	no	brass	gold	-
R199 005 023	jack	straight	solder	8	500	no	brass	gold	bulkhead feedthrough / panel nut torque = 60 Ncm

MMCX series

(temperature range = -55 / +155°C)

Part number	Interface	Geometry	Attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	Captive cent.cont.	Material	Finish	Miscellaneous
R110 153 000	plug	right-angle	solder	6	500	yes	brass	gold	-

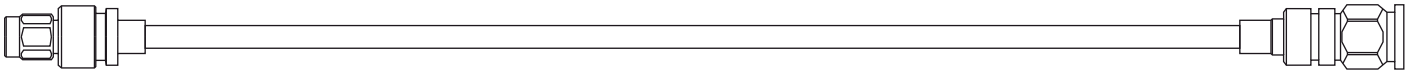
MCX series

(temperature range = -55 / +115°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R113 053 000 ★	plug	straight	solder	6	750	no	brass	gold	-
R113 053 020	plug	straight	solder	6	750	no	brass	BBR	-
R113 153 000 ★	plug	right-angle	solder	6	750	yes	brass	gold	-
R113 153 020	plug	right-angle	solder	6	750	yes	brass	BBR	-
R113 161 000 ★	plug	right-angle	solder	6	750	yes	brass	gold	reduced height
R113 161 020	plug	right-angle	solder	6	750	yes	brass	BBR	reduced height
R113 223 000	jack	straight	solder	6	750	no	brass	gold	-
R113 223 020	jack	straight	solder	6	750	no	brass	BBR	-
R113 303 000	jack	straight	solder	6	750	no	brass	gold	bulkhead feedthrough / removable front clip / panel nut torque = 60 Ncm
R113 303 020	jack	straight	solder	6	750	no	brass	BBR	bulkhead feedthrough / removable front clip / panel nut torque = 60 Ncm

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH SEMI-RIGID and HAND-FORMABLE CABLE .085”



SMB series

(temperature range = -65 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R114 053 000	female plug	straight	solder	4	750	no	brass	gold	-
R114 169 000	female plug	right-angle	solder	4	750	yes	brass	gold	cable bending required
R114 222 000	male jack	straight	solder	4	750	yes	brass	gold	bulkhead feedthrough / panel nut torque = 60 Ncm

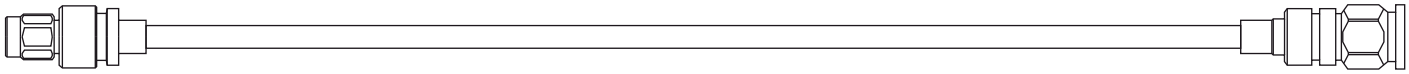
SMA series

(temperature range = -65 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R124 052 003 ★	plug	straight	solder	18	750	no	brass	gold	commercial SMA
R124 052 520	plug	straight	solder	18	750	yes	brass	gold	commercial SMA / slide-on interface
R125 052 000	plug	straight	solder	18	750	no	stainless steel	gold	-
R125 052 002	plug	straight	solder	18	750	no	stainless steel	passivated	gold plated soldered part
R124 153 001 ★	plug	right-angle	solder	12.4	750	yes	brass	BBR	commercial SMA
R124 153 003	plug	right-angle	solder	12.4	750	yes	brass	gold	commercial SMA
R125 153 000	plug	right-angle	solder	12.4	750	yes	stainless steel	gold	-
R125 153 002	plug	right-angle	solder	12.4	750	yes	stainless steel	passivated	gold plated soldered part
R124 222 000	jack	straight	solder	18	750	no	brass	BBR	commercial SMA
R124 222 003	jack	straight	solder	18	750	no	brass	gold	commercial SMA
R125 222 000	jack	straight	solder	18	750	no	stainless steel	gold	-
R124 252 000	jack	straight	solder	18	750	no	brass	BBR	commercial SMA / 2 holes flange / 2 holes dia. 2.6 mm
R124 252 003	jack	straight	solder	18	750	no	brass	gold	commercial SMA / 2 holes flange / 2 holes dia. 2.6 mm
R125 252 000	jack	straight	solder	18	750	no	stainless steel	gold	2 holes flange / 2 holes dia. 2.6 mm
R124 256 000	jack	straight	solder	18	750	no	brass	BBR	commercial SMA / square flange 12.7 mm / 4 holes dia. 2.6 mm
R124 256 043 ★	jack	straight	solder	18	750	no	brass	gold	commercial SMA / square flange 12.7 mm / 4 holes dia. 2.6 mm
R125 256 000	jack	straight	solder	18	750	no	stainless steel	gold	square flange 12.7 mm / 4 holes dia. 2.6 mm
R124 326 000 ★	jack	straight	solder	18	750	no	brass	BBR	commercial SMA / bulkhead feedthrough / panel sealed / panel nut torque 150 Ncm
R124 326 003	jack	straight	solder	18	750	no	brass	gold	commercial SMA / bulkhead feedthrough / panel sealed / panel nut torque 150 Ncm
R125 326 000	jack	straight	solder	18	750	no	stainless steel	gold	bulkhead feedthrough / panel sealed / panel nut torque 150 Ncm

: Service + program: fast delivery, please read page 129. ★ : cost effective solution.

CONNECTORS COMPATIBLE WITH SEMI-RIGID and HAND-FORMABLE CABLE .085”



QMA series

(temperature range = -40 / +80°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R123 054 000	plug	straight	solder	6	750	no	brass	BBR	-
R123 153 000	plug	right-angle	solder	6	750	yes	brass	BBR	-
R123 153 003	plug	right-angle	solder	6	750	yes	brass	gold	-
R123 326 003	jack	straight	solder	6	750	yes	brass	gold	bulkhead feedthrough / panel sealed / panel nut torque 160 Ncm

BMA series

(temperature range = -65 / +125°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R128 052 000	male plug	straight	solder	22	1 000	yes	stainless steel	gold	bulkhead feedthrough / panel nut torque = 150 Ncm
R128 052 827 ⋆	male plug	straight	solder	4	1 000	yes	brass	BBR	commercial BMA / bulkhead feedthrough / panel nut torque = 150 Ncm
R128 292 000	female jack	straight	solder	22	1 000	yes	stainless steel	gold	panel floating / 2 holes flange dia. 2.65 mm
R128 292 827 ⋆	female jack	straight	solder	4	1 000	yes	brass	BBR	commercial BMA / panel floating / 2 holes flange dia. 2.6 mm
R128 294 000	female jack	straight	solder	22	1 000	yes	stainless steel	gold	snap-in / panel floating / advised removal tool : R282 918 000
R128 302 000	female jack	straight	solder	22	1 000	yes	stainless steel	gold	bulkhead feedthrough / panel nut torque = 150 Ncm
R128 360 827 ⋆	female jack	right-angle	solder	4	1 000	yes	brass	BBR	commercial BMA / panel floating / 2 holes flange dia.2.6 mm

TNC series

(temperature range = -65 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R143 257 440	jack	straight	solder	6	1 000	no	brass	nickel	square flange 17.5 mm / 4 holes M2.5 x 0.45
R143 257 450	jack	straight	solder	6	1000	no	brass	nickel	square flange 17.5 mm / 4 holes dia. 3 mm

N series

(temperature range = -55 / +105°C)

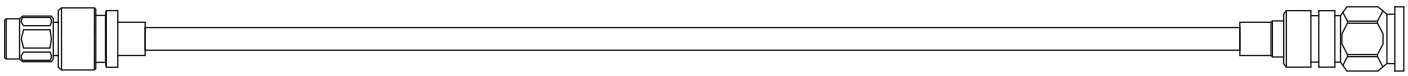
Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 050 000	plug	straight	clamp	11	1 000	no	brass	BBR	-
R161 050 300	plug	straight	solder	11	1 000	no	brass	BBR	gold plated soldered part / short length
R161 276 300	jack	straight	solder	11	1 000	no	brass	BBR	gold plated soldered part / square flange 25.4 mm / 4 holes dia.3.3 mm
R161 335 200	jack	straight	solder	11	1 000	no	brass	BBR	bulkhead feedthrough / short length / panel sealed / panel nut torque = 500 Ncm

Heatshrink sleeves

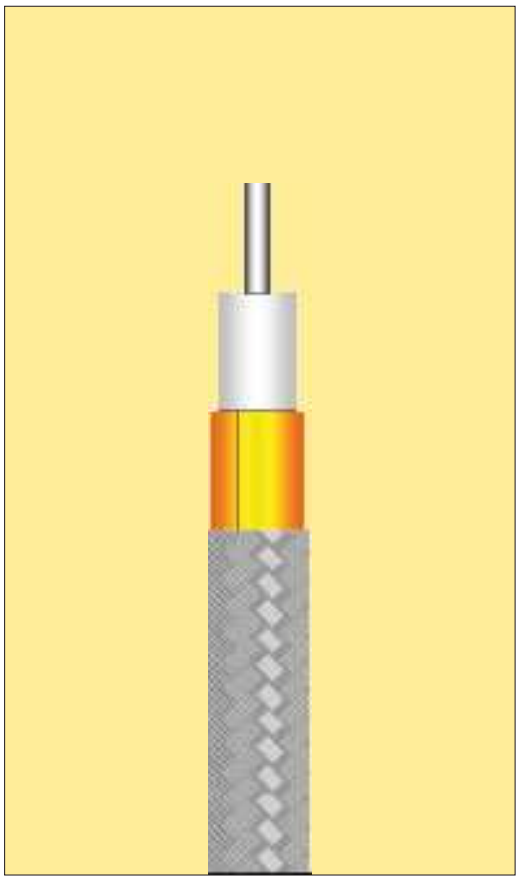
a large range of heatshrink sleeves is available: please consult us.

⋆ : cost effective solution.

HAND-FORMABLE .141”
(Unjacketed)



Radiall P/N : C291 864 065



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPCCS(1)	0.92	0.036
dielectric	solid PTFE(2)	2.95	0.116
inner shield	copper tape	-	-
outer shield	TS(3) braid	3.50	0.138
jacket	-	-	-

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC – 20 GHz	
shielding effectiveness	90 dB	
voltage withstanding	5 000 V rms	
peak power	3.4 kW	
capacitance	97.5 pF / m	29.5 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	6.4(4) / 19(5) mm	0.25(4) / 0.75(5) inch
weight	33 g / m	0.022 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-65 / +150°C	-85 / +302°F
fire resistance	not applicable	
halogen free	No	

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
1.0	0.39	0.12	315
2.0	0.57	0.17	223
3.0	0.72	0.22	182
6.0	1.09	0.33	129
8.0	1.30	0.39	111
10.0	1.49	0.45	100
12.4	1.71	0.52	89
18.0	2.18	0.66	74
20.0	2.34	0.71	70
attenuation calculation (dB / m)	(0.345 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	315 / √F GHz		

APPLICATION NOTE

This handformable cable is a good alternative to RG402 for applications requiring an easy routing on equipment.

Due to the outer conductor construction, this cable can be hand formed with exceptional ease with no spring back effect.

Cable can be reshaped, eliminating the need for costly drawings.

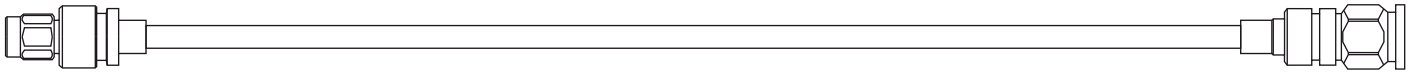
Attenuation is a little bit higher than the RG402’s one but temperature range is wider.

(1) SPCCS = Silver Plated Copper Covered Steel
(2) PTFE = PolyTetraFluoroEthylene
(3) TS = Tin Soaked
(4) one time
(5) repeated

: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

HAND-FORMABLE CABLE .141”
(Jacketed)



Radiall P/N : C291 866 378

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPC(1)	0.92	0.036
dielectric	solid PTFE(2)	2.98	0.117
inner shield	TS(3) braid	3.50	0.138
outer shield	-	-	-
jacket	black FEP(4)	4.05	0.159

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC – 20 GHz	
shielding effectiveness	90 dB	
voltage withstanding	5 000 V rms	
peak power	3.4 kW	
capacitance	97.5 pF / m	29.5 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	11(5) / 33(6) mm	0.43(5) / 1.3(6) inch
weight	38 g / m	0.025 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-65 / +150°C	-85 / +302°F
fire resistance	yes (CSA FT6 / IEC 332-2)	
halogen free	no	

APPLICATION NOTE

This jacketed cable shall be used instead of standard unjacketed .141” for applications requiring electrical insulation and/or protection against environmental agression (chemical, humidity, ...).

The FEP jacket allows this cable to be used under severe thermal conditions.

The jacket makes the spring back effect slightly increasing.

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

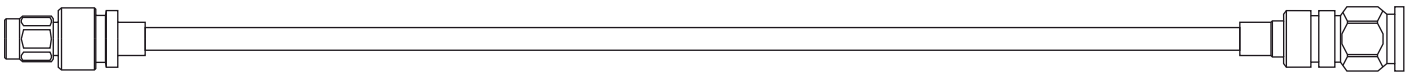
GHz	dB / m	dB / ft	Watts
1.0	0.43	0.13	315
2.0	0.63	0.19	223
3.0	0.80	0.24	182
6.0	1.20	0.36	129
8.0	1.42	0.43	111
10.0	1.63	0.49	100
12.4	1.87	0.57	89
18.0	2.37	0.72	74
20.0	2.54	0.77	70
attenuation calculation (dB / m)	(0.390 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	315 / √F GHz		

(1) SPC = Silver Plated Copper
(2) PTFE = PolyTetraFluoroEthylene
(3) TS = Tin Soaked
(4) FEP = Fluorinated Ethylene Propylene
(5) one time
(6) repeated

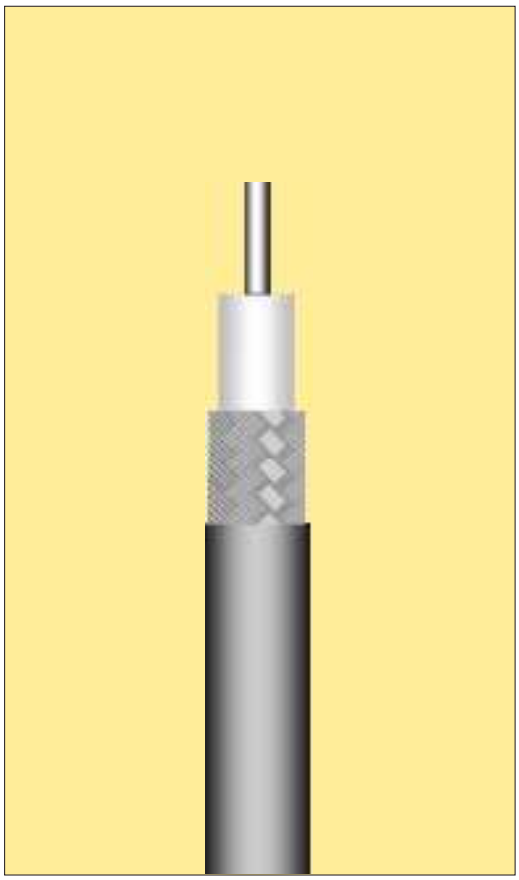
: Service + program: fast delivery, please read page 129.

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

HAND-FORMABLE .141”
(Jacketed + halogen free)



Radiall P/N : C291 866 270



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPCCS(1)	0.92	0.036
dielectric	solid PTFE(2)	2.98	0.117
inner shield	TS(3) braid	3.50	0.138
outer shield	-	-	-
jacket	LSZH(4)	4.50	0.177

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 2 Ω	
operating frequency range	DC – 20 GHz	
shielding effectiveness	90 dB	
voltage withstanding	5 000 V rms	
peak power	3.4 kW	
capacitance	97.5 pF / m	29.5 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	11(5) / 33(6) mm	0.43(5) / 1.3(6) inch
weight	35 g / m	0.023 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +85°C	-40 / +185°F
fire resistance	yes (UL 1581 VW1 / IEC 332-1)	
halogen free	Yes (IEC 754-2)	

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
1.0	0.43	0.13	115
2.0	0.63	0.19	81
3.0	0.80	0.24	66
6.0	1.20	0.36	47
8.0	1.42	0.43	41
10.0	1.63	0.49	36
12.4	1.87	0.57	33
18.0	2.37	0.72	27
20.0	2.54	0.77	26
attenuation calculation (dB / m)	(0.390 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	115 / √F GHz		

APPLICATION NOTE

This jacketed cable shall be used instead of standard unjacketed .141” for applications requiring electrical insulation and/or protection against environmental agressions (chemical, humidity, ...).

The specific “LSOH” is halogen and sulfur free, and so does not emit any toxic substance when submitted to fire.

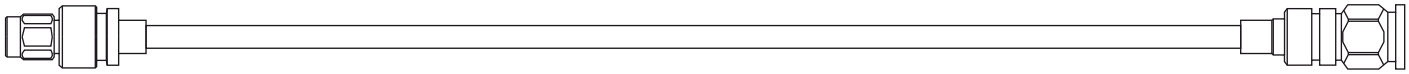
The flame retardant jacket allows this cable to meet fire resistance standards (see data sheet).

The jacket makes the spring back effect slightly increasing.

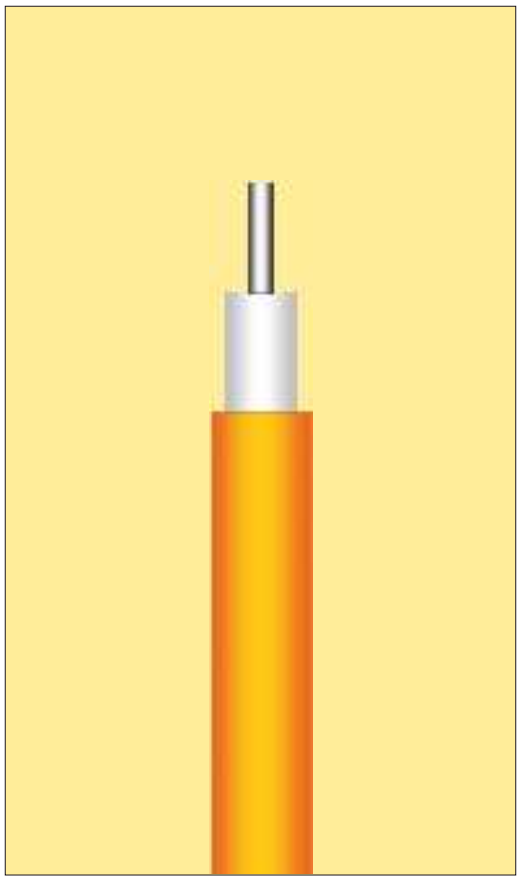
(1) SPCCS = Silver Plated Copper Covered Steel
(2) PTFE = PolyTetraFluoroEthylene
(3) TS = Tin Soaked
(4) LSZH = Low Smoke Zero Halogen
(5) one time
(6) repeated

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

SEMI-RIGID CABLE .141”
(RG402 - KS2)



Radiall P/N : C291 860 001 (MIL-C-17/130-RG402)
(NF-C-93/551-KS2)



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPCCS(1)	0.92	0.036
dielectric	solid PTFE(2)	2.98	0.117
inner shield	copper tubing	3.58	0.141
outer shield	-	-	-
jacket	-	-	-

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 1 Ω	
operating frequency range	DC – 20 GHz	
shielding effectiveness	110 dB	
voltage withstanding	5 000 V rms	
peak power	3.4 kW	
capacitance	89 pF / m	27 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	6.35 mm	0.250 inch
weight	46 g / m	0.031 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +125°C	-40 / +257°F
fire resistance	not applicable	
halogen free	no	

APPLICATION NOTE

RG402 is one of the most popular semi-rigid RG cables.

RG402 will be prefered to flexible RG142 for applications requiring high frequency range, low attenuation, high screening effectiveness, very small bending radius and/or no spring back effect.

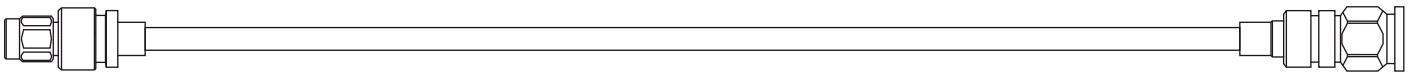
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
1.0	0.34	0.10	315
2.0	0.50	0.15	223
3.0	0.64	0.19	182
6.0	0.97	0.30	129
8.0	1.17	0.35	111
10.0	1.35	0.41	100
12.4	1.55	0.47	89
18.0	1.99	0.60	74
20.0	2.14	0.65	70
attenuation calculation (dB / m)	(0.30 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	315 / √F GHz		

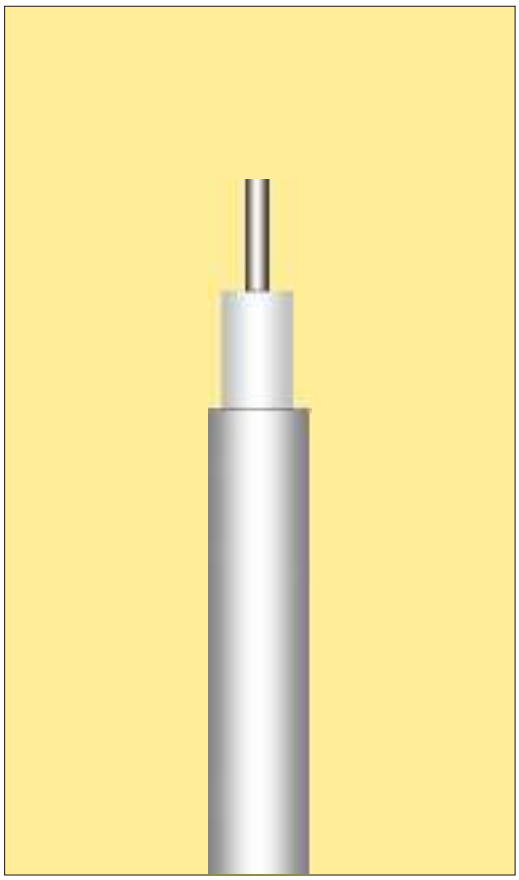
(1) SPCCS = Silver Plated Copper Covered Steel
(2) PTFE = PolyTetraFluoroEthylene

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

SEMI-RIGID CABLE .141”
(Tinned copper)



Radiall P/N : C291 862 005 (MIL-C-17/130-00005)



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPCCS(1)	0.92	0.036
dielectric	solid PTFE(2)	2.98	0.117
inner shield	TPC(3)	3.58	0.141
outer shield	-	-	-
jacket	-	-	-

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 1 Ω	
operating frequency range	DC – 20 GHz	
shielding effectiveness	110 dB	
voltage withstanding	5 000 V rms	
peak power	3.4 kW	
capacitance	89 pF / m	27 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	1.90 mm	0.075 inch
weight	46 g / m	0.031 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +125°C	-40 / +257°F
fire resistance	not applicable	
halogen free	no	

APPLICATION NOTE

Due to the outer conductor coating (tin), this cable shall be used instead of RG402 for applications requiring high corrosion resistance and improved solderability.

This cable is also an economical alternative solution to .141” silvered copper.

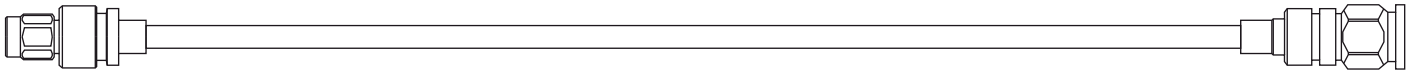
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
1.0	0.34	0.10	315
2.0	0.50	0.15	223
3.0	0.64	0.19	182
6.0	0.97	0.30	129
8.0	1.17	0.35	111
10.0	1.35	0.41	100
12.4	1.55	0.47	89
18.0	1.99	0.60	74
20.0	2.14	0.65	70
attenuation calculation (dB / m)	(0.30 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	315 / √F GHz		

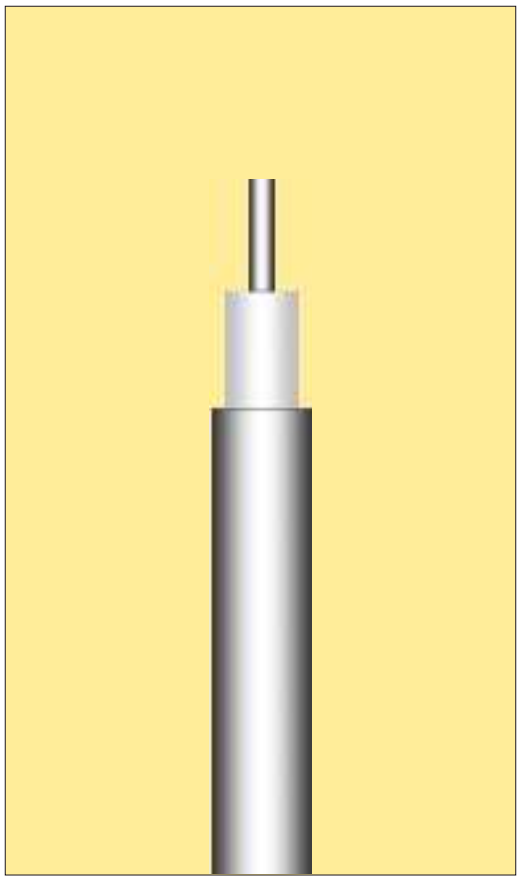
(1) SPCCS = Silver Plated Copper Covered Steel
(2) PTFE = PolyTetraFluoroEthylene
(3) TPC = Tin Plated Copper

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

SEMI-RIGID CABLE .141”
(Silvered copper)



Radiall P/N : C291 861 066



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPC(1)	0.92	0.036
dielectric	solid PTFE(2)	2.98	0.117
inner shield	SPC(3) tubing	3.58	0.141
outer shield	-	-	-
jacket	-	-	-

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 1 Ω	
operating frequency range	DC – 20 GHz	
shielding effectiveness	110 dB	
voltage withstanding	5 000 V rms	
peak power	3.4 kW	
capacitance	89 pF / m	27 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	1.90 mm	0.075 inch
weight	46 g / m	0.031 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +125°C	-40 / +257°F
fire resistance	not applicable	
halogen free	no	

APPLICATION NOTE

Based on RG402 standard, this cable is used where non magnetic aspect is required.

In addition, due to the outer conductor coating (silver), this cable shall be used instead of RG402 for applications requiring high corrosion resistance and improved solderability.

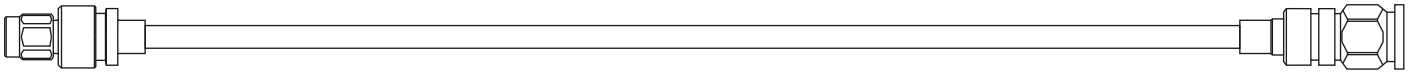
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
1.0	0.34	0.10	315
2.0	0.50	0.15	223
3.0	0.64	0.19	182
6.0	0.97	0.30	129
8.0	1.17	0.35	111
10.0	1.35	0.41	100
12.4	1.55	0.47	89
18.0	1.99	0.60	74
20.0	2.14	0.65	70
attenuation calculation (dB / m)	(0.30 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	315 / √F GHz		

(1) SPC = Silver Plated Copper
(2) PTFE = PolyTetraFluoroEthylene

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

SEMI-RIGID CABLE .141”
(Aluminum)



Radiall P/N : C291 864 187 (MIL-C-17/130-00009)

CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPCCS(1)	0.92	0.036
dielectric	solid PTFE(2)	2.98	0.117
inner shield	TPAI(3)	3.58	0.141
outer shield	-	-	-
jacket	-	-	-

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 1 Ω	
operating frequency range	DC – 20 GHz	
shielding effectiveness	110 dB	
voltage withstanding	5 000 V rms	
peak power	3.4 kW	
capacitance	89 pF / m	27 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	3.17 mm	0.125 inch
weight	30 g / m	0.018 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +125°C	-40 / +257°F
fire resistance	not applicable	
halogen free	no	

APPLICATION NOTE

Based on RG402 standard, this cable shall be selected for application requiring easy conformability and/or application requiring reduced weight.

Due to the aluminum outer conductor, this cable can be hand formed with exceptional ease with no spring back effect.

Cable can be reshaped, eliminating the need for costly drawings.

The outer conductor material (aluminum) slightly increases the attenuation compared to standard RG402.

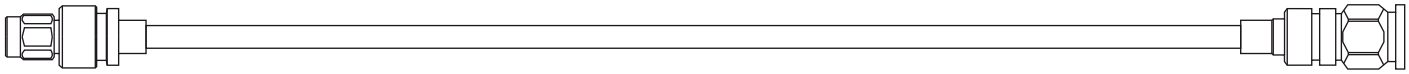
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
1.0	0.36	0.11	315
2.0	0.53	0.16	223
3.0	0.67	0.20	182
6.0	1.02	0.31	129
8.0	1.23	0.37	111
10.0	1.41	0.43	100
12.4	1.62	0.49	89
18.0	2.08	0.63	74
20.0	2.23	0.68	70
attenuation calculation (dB / m)	(0.32 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	315 / √F GHz		

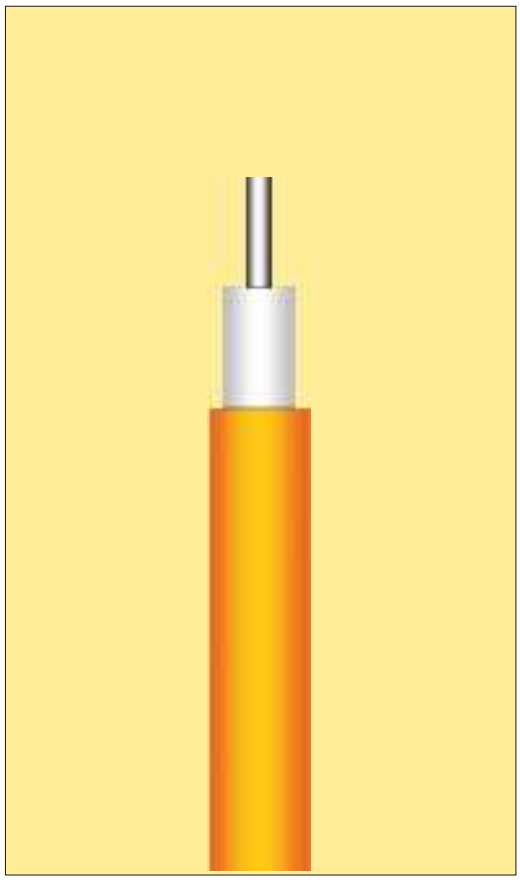
(1) SPCCS = Silver Plated Copper Covered Steel
(2) PTFE = PolyTetraFluoroEthylene
(3) TPAI = Tin Plated Aluminum

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

SEMI-RIGID CABLE .141”
(Non magnetic)



Radiall P/N : C291 861 061



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPC(1)	0.92	0.036
dielectric	solid PTFE(2)	2.98	0.117
inner shield	copper tubing	3.58	0.141
outer shield	-	-	-
jacket	-	-	-

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 1 Ω	
operating frequency range	DC – 20 GHz	
shielding effectiveness	110 dB	
voltage withstanding	5 000 V rms	
peak power	3.4 kW	
capacitance	89 pF / m	27 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	2.54 mm	0.100 inch
weight	46 g / m	0.0309 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +125°C	-40 / +257°F
fire resistance	not applicable	
halogen free	no	

APPLICATION NOTE

Based on RG402 standard, this cable is used where non magnetic aspect is required.

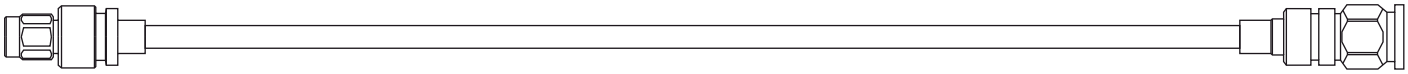
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
1.0	0.34	0.10	315
2.0	0.50	0.15	223
3.0	0.64	0.19	182
6.0	0.97	0.30	129
8.0	1.17	0.35	111
10.0	1.35	0.41	100
12.4	1.55	0.47	89
18.0	1.99	0.60	74
20.0	2.14	0.65	70
attenuation calculation (dB / m)	(0.30 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	315 / √F GHz		

(1) SPC = Silver Plated Copper
(2) PTFE = PolyTetraFluoroEthylene

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH SEMI-RIGID and HAND-FORMABLE CABLE .141”



MCX series

(temperature range = -55 / +115°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R113 055 000	plug	straight	solder	6	1 000	no	brass	gold	-
R113 155 000	plug	right-angle	solder	6	500	yes	brass	gold	-

SMA series

(temperature range = -65 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R124 055 003 ★	plug	straight	solder	18	1 000	no	brass	gold	commercial SMA
R125 055 000	plug	straight	solder	18	1 000	no	stainless steel	gold	-
R125 055 002	plug	straight	solder	18	1 000	no	stainless steel	passivated	-
R124 154 001	plug	right-angle	solder	12.4	1 000	yes	brass	BBR	commercial SMA
R124 154 003 ★	plug	right-angle	solder	12.4	1 000	yes	brass	gold	commercial SMA
R125 154 000	plug	right-angle	solder	12.4	1 000	yes	stainless steel	gold	commercial SMA
R125 154 002	plug	right-angle	solder	12.4	1 000	yes	stainless steel	passivated	-
R124 225 000	jack	straight	solder	18	1 000	no	brass	BBR	commercial SMA
R125 225 000	jack	straight	solder	18	1 000	no	stainless steel	gold	-
R124 251 000	jack	straight	solder	18	1 000	no	brass	BBR	commercial SMA / 2 holes flange dia. 2.6 mm
R125 251 000	jack	straight	solder	18	1 000	no	stainless steel	gold	2 holes flange dia. 2.6 mm
R125 255 000	jack	straight	solder	18	1 000	no	stainless steel	gold	Square flange 12.7 mm / 4 holes dia. 2.6 mm
R124 325 000	plug	straight	solder	18	1 000	no	brass	BBR	commercial SMA / bulkhead feedthrough / panel sealed / panel nut torque = 150 Ncm
R125 325 000	plug	straight	solder	18	1 000	no	stainless steel	gold	bulkhead feedthrough / panel sealed / panel nut torque = 150 Ncm

Advised torque wrench for R125 plugs: R282 320 000 / 8 mm / 80-120 Ncm
Advised torque wrench for R124 plugs: R282 320 030 / 8 mm / 60 Ncm

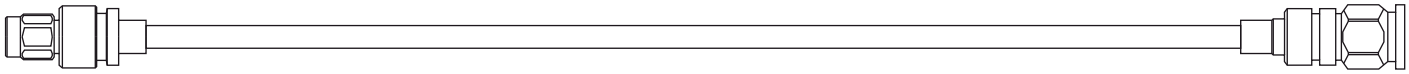
QMA series

(temperature range = -40 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R123 055 000	plug	straight	solder	6	1 000	no	brass	BBR	-
R123 154 000	plug	right-angle	solder	6	1 000	yes	brass	BBR	-
R123 154 003	plug	right-angle	solder	6	1 000	yes	brass	gold	-
R123 305 023	jack	straight	solder	6	1 000	no	brass	gold	bulkhead feedthrough / panel sealed / panel nut torque = 160 Ncm

: Service + program: fast delivery, please read page 129.

CONNECTORS COMPATIBLE WITH SEMI-RIGID and HAND-FORMABLE CABLE .141”



BMA series

(temperature range = -65 / +125°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R128 055 000	male plug	straight	solder	22	1 500	yes	stainless steel	gold	bulkhead feedthrough / panel nut torque = 150 Ncm
R128 055 827 ⋆	male plug	straight	solder	4	1 500	yes	brass	BBR	commercial BMA / bulkhead feedthrough / panel nut torque = 150 Ncm
R128 295 000	female jack	straight	solder	22	1 500	yes	stainless steel	gold	panel floating / 2 holes flange dia. 2.65 mm
R128 295 827 ⋆	female jack	straight	solder	4	1 500	yes	brass	BBR	commercial BMA / panel floating / 2 holes flange dia. 2.6 mm
R128 296 000	female jack	straight	solder	22	1 500	yes	stainless steel	gold	snap-in / panel floating / advised removal tool : R282 918 000
R128 305 000	female jack	straight	solder	22	1 500	yes	stainless steel	gold	bulkhead feedthrough / panel nut torque = 150 Ncm
R128 359 827 ⋆	female jack	right-angle	solder	4	1 500	yes	brass	BBR	commercial BMA / panel floating / 2 holes flange dia.2.6 mm

BNC series

(temperature range = -65 / +165°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R141 052 000	plug	straight	clamp	4	1 500	no	brass	nickel	-
R141 338 000	jack	straight	clamp	4	1 500	no	brass	nickel	bulkhead feedthrough / panel sealed / panel nut torque = 370 Ncm

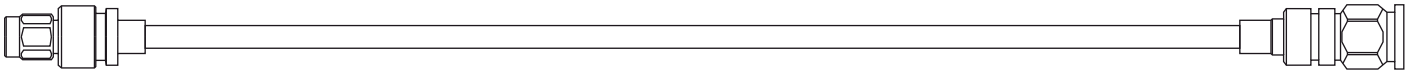
TNC series

(temperature range = -65 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R143 052 000	plug	straight	clamp	11	1 500	no	brass	nickel	-
R143 337 000	jack	straight	clamp	11	1 500	no	brass	nickel	bulkhead feedthrough / panel sealed / panel nut torque = 370 Ncm

⋆ : cost effective solution.

CONNECTORS COMPATIBLE WITH SEMI-RIGID and HAND-FORMABLE CABLE .141”



N series

(temperature range = -55 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 051 000	plug	straight	solder	11	1 000	no	brass	BBR	gold plated soldered part
R161 152 107	plug	right-angle	solder	11	1 000	yes	brass	BBR	6 flat coupling nut = 20 mm
R161 226 020	jack	straight	solder	11	1 000	no	brass	BBR	gold plated soldered part
R161 277 300	jack	straight	solder	11	1 000	no	brass	gold + BBR	gold plated soldered part / square flange 25.4 mm / 4 holes dia. 3.3 mm
R161 323 200	jack	straight	clamp	11	1 000	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm
R161 336 000	jack	straight	solder	11	1 000	no	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm
R161 336 200	jack	straight	solder	11	1 000	no	brass	BBR	gold plated soldered part / bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

QN series

(temperature range = -55 / +125°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R164 051 002	plug	straight	solder	6	1 000	yes	brass	BBR	-
R164 152 000	plug	right angle	solder	6	1 000	yes	brass	BBR	-
R164 336 000	jack	straight	solder	6	1 000	yes	brass	BBR	-
R164 635 002	jack	straight	solder	6	1 000	yes	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

7/16 series

(temperature range = -55 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R185 102 400	plug	straight	solder	7.5	1 500	yes	brass	BBR	6 flat coupling nut / square flange = 32 mm / 4 holes dia. 3.5 mm
R185 252 000	jack	straight	solder	7.5	1 500	yes	brass	BBR	square flange = 32 mm / 4 holes dia. 3.5 mm

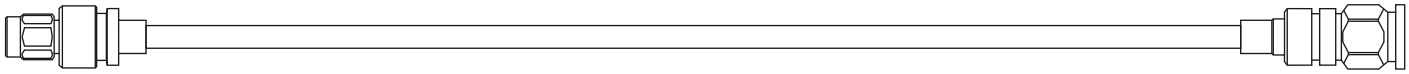
Advised torque wrench for plugs: R282 303 520 / 27 mm / 3 000 Ncm

Heatshrink sleeves

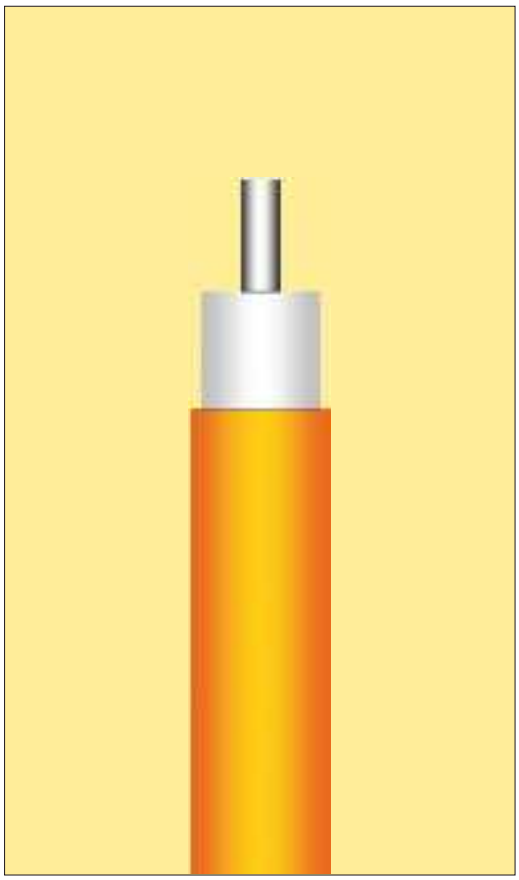
a large range of heatshrink sleeves is available: please consult us.

: Service + program: fast delivery, please read page 129.

SEMI-RIGID CABLE .250”
(RG401-KS3)



Radiall P/N : C291 870 001 (MIL-C-17/129-RG401)
(NF-C-93/551-KS3)



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPC(1)	1.63	0.064
dielectric	solid PTFE(2)	5.31	0.209
inner shield	copper tubing	6.35	0.250
outer shield	-	-	-
jacket	-	-	-

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 0.5 Ω	
operating frequency range	DC – 18 GHz	
shielding effectiveness	110 dB	
voltage withstanding	7 500 V rms	
peak power	6.1 kW	
capacitance	89 pF / m	27 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	9.53 mm	0.375 inch
weight	140 g / m	0.094 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +90°C	-40 / +194°F
fire resistance	not applicable	
halogen free	no	

APPLICATION NOTE

RG401 shall be used for applications requiring very low attenuation, high power and high screening effectiveness.

Caution must be paid to the reduced operating temperature range.

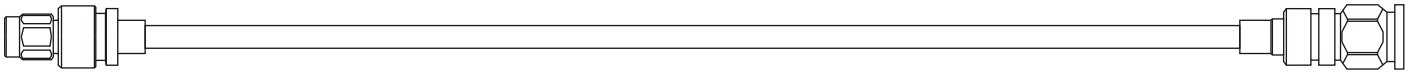
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
1.0	0.21	0.06	900
2.0	0.31	0.09	636
3.0	0.41	0.12	520
6.0	0.64	0.20	367
8.0	0.79	0.24	318
10.0	0.92	0.28	285
12.4	1.08	0.33	256
18.0	1.42	0.43	212
20.0	1.54	0.47	201
attenuation calculation (dB / m)	(0.165 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	900 / √F GHz		

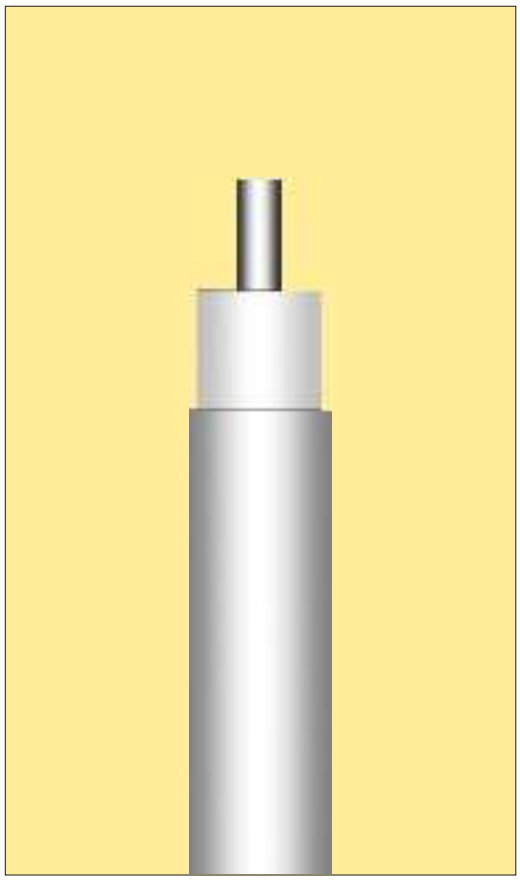
(1) SPC = Silver Plated Copper
(2) PTFE = PolyTetraFluoroEthylene

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F(GHz)

SEMI-RIGID CABLE .250”
(Aluminum)



Radiall P/N : C291 874 187



CONSTRUCTION / DIMENSIONS

	material	mm	inches
center conductor	solid SPC(1)	1.63	0.064
dielectric	solid PTFE(2)	5.31	0.209
inner shield	TPAI(3) tubing	6.35	0.250
outer shield	-	-	-
jacket	-	-	-

ELECTRICAL CHARACTERISTICS

characteristic impedance	50 Ω ± 1 Ω	
operating frequency range	DC – 18 GHz	
shielding effectiveness	110 dB	
voltage withstanding	7 500 V rms	
peak power	6.1 kW	
capacitance	89 pF / m	27 pF / ft
velocity of propagation	70% (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

recommend. min. bend radius	9.53 mm	0.375 inch
weight	79.5 g / m	0.053 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

operating temperature range	-40 / +100°C	-40 / +212°F
fire resistance	not applicable	
halogen free	no	

APPLICATION NOTE

Based on RG401 standard, this cable shall be selected for application requiring easy conformability and/or application requiring reduced weight.

Due to the aluminum outer conductor, this cable can be hand formed with exceptional ease with no spring back effect.

Cable can be reshaped, eliminating the need for costly drawings.

The outer conductor material (aluminum) slightly increases the attenuation compared to standard RG401.

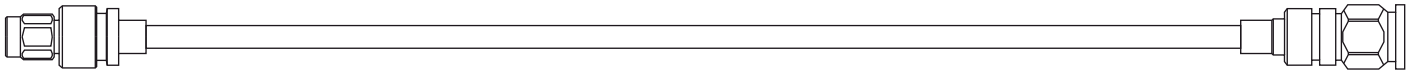
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level 25°C)

GHz	dB / m	dB / ft	Watts
1.0	0.22	0.07	550
2.0	0.33	0.10	389
3.0	0.43	0.13	318
6.0	0.68	0.21	225
8.0	0.83	0.25	194
10.0	0.97	0.29	174
12.4	1.13	0.34	156
18.0	1.48	0.45	130
20.0	1.60	0.49	123
attenuation calculation (dB / m)	(0.18 x √F GHz) + (0.04 x F GHz)		
power calculation (W)	550 / √F GHz		

(1) SPC = Silver Plated Copper
(2) PTFE = PolyTetraFluoroEthylene
(2) TPAI = Tin Plated Aluminum

Note: typical attenuation for a couple of connectors (dB) = 0.045 x √F (GHz)

CONNECTORS COMPATIBLE WITH SEMI-RIGID CABLE .250”



N series

(temperature range = -55 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R161 054 000	plug	straight	solder	11	2 500	no	brass	BBR	-
R161 278 300	jack	straight	solder	11	2 500	no	brass	BBR	square flange 25.4 mm / 4 holes dia. 3.3 mm
R161 337 200	jack	straight	solder	11	2 500	no	brass	BBR	bulkhead feedthrough / panel sealed / panel nut torque = 500 Ncm

QN series

(temperature range = -55 / +125°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R164 054 002	plug	straight	solder	6	2 500	no	brass	BBR	-
R164 228 000	jack	straight	solder	6	2 500	yes	brass	BBR	-

7/16 series

(temperature range = -55 / +105°C)

Part number	Interface	Geometry	attachment	Frequency (GHz)	Voltage Withstanding (Vrms)	captive cent.cont.	Material	Finish	Miscellaneous
R185 054 200	plug	straight	solder	7.5	2 700	yes	brass	silver	-
R185 254 000	jack	straight	solder	7.5	2 700	yes	brass	Silver + BBR	square flange = 32 mm / 4 holes dia. 3.6 mm

Advised torque wrench for plugs: R282 303 520 / 27 mm / 3 000 Ncm

COAXIAL CABLE ASSEMBLIES

Fast & Reliable : Your Source for Microwave & RF Cable Assemblies

RADIALL
The next conneXion

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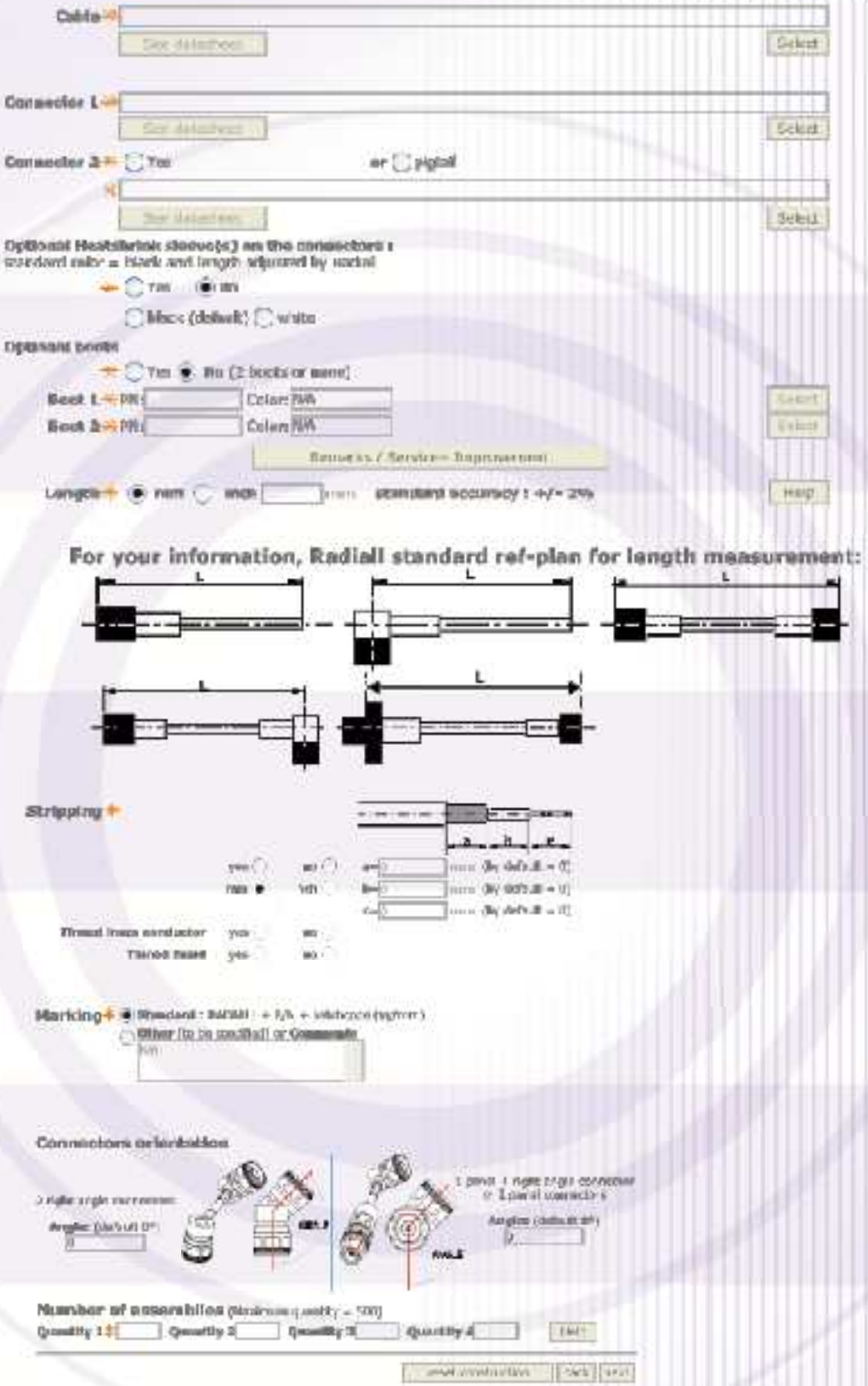
SELECTING A COAXIAL CABLE AND A CONNECTOR TYPE

						Flexible cable														Conformable		Corrugated		
						Single braid (SB)						Double braid (DB)												
						2/50	2.6/50	2.6/75	5/50	6/75	10/50	2.6/50	5/50	10/50	11/50									
Max.Freq (GHz)	Connector type	Threaded coupling	Quick lock	Snap-on	Bayonet	RG178-KX21A	RG174-RG316-ECO316 KX3B-KX22A	RG179	RG58-KX15	RG59-KX6A	RG213	RD316-ECO316D	RG142-RG223-ECO142	ECO393	RG214	LMR200	LMR400	LMR600	.085"	.141" (jacketed and no jacketed)	1/4"	3/8"	1/2"
18	SMA	●				✓	✓		✓			✓	✓						✓	✓			
11	TNC	●					✓	✓	✓				✓										
11	N	●					✓		✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
7.5	7/16	●													✓						✓	✓	✓
6	QMA		●				✓		✓			✓	✓										
6	QN		●						✓				✓										
40	SMP			●															✓				
6	MMCX			●		✓	✓																
6	MCX			●		✓	✓					✓							✓				
4	SMB			●		✓	✓	✓				✓											
4	BNC				●	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓								

AVAILABILITY

is now available in Canada, Denmark, Finland, France, Israel, Netherlands, Poland, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom and USA. Service+ will be available in other countries soon.

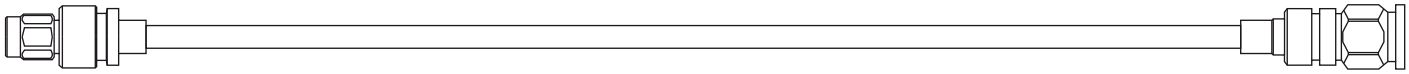
BUILDING YOUR OWN ASSEMBLY ONLINE THROUGH THE RADIALL WEBSITE OR VIA OUR DISTRIBUTORS WEBSITE



REQUIREMENTS

is applicable for a wide range of coaxial cables and connectors. The quantity required can not exceed 500 and maximum length is 10 meters (390 inches).

REQUEST FOR QUOTATION



Two ways to request a quote for Radiall cable assemblies online:

Direct from Radiall web site : http://www.radiall.com/cableassembly

Or via our distributor website

You can also have direct information from your local Radiall contact or distributor or representative :

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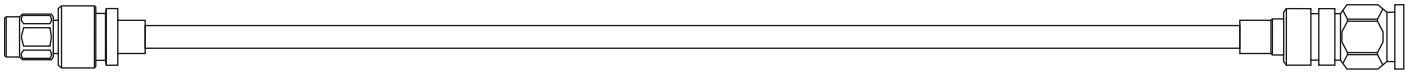


Choosing the best cable for a new application is not an easy thing.
The cable selection is always a question of compromise between mechanical, electrical and environmental performances.
For example, choosing a stranded inner conductor will improve the flexibility but will increase the attenuation and so the power withstanding.

With 15 years of expertise in cable technology and 40 years in coaxial connectors RADIALL masters the expertise to help the customers to make the best choice adapted to their needs.

To choose the best technical solution, the characteristics listed below have to be considered.
The following sections provide information dealing with each characteristic.

1- Capacitance = C (pF/m)
2- Velocity of propagation
3- Characteristic impedance
4- Skin effect
5- Attenuation
6- VSWR (Voltage Standing Wave Ratio)
7- Shielding effectiveness
8- Dielectric Withstanding Voltage
9- Power handling (CW and peak power)
10- Phase stability with temperature.
11- Flexibility/Bending radius
12- Operating temperature range
13- Environmental considerations

1- CAPACITANCE = C (expressed in pF/m)

The capacitance is the ability of a dielectric material placed between conductors to store energy when a difference of potential is created between the conductors

It is linked to the dielectric constant (ε) of the insulator material and conductors sizes (Ø **d** = outer diameter of the inner conductor and Ø **D** = inner diameter of the outer conductor)

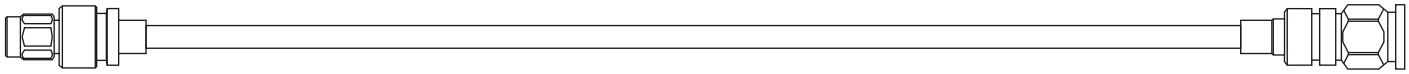
$$C = \frac{24.2 \times \varepsilon}{\log(D/d)}$$

Another relationship can also be used relating the capacitance to the characteristic impedance (**Zc**) and dielectric constant (ε).

$$C = \frac{3333 \times \sqrt{\varepsilon}}{Zc}$$

Typical capacitance values are given below.

Characteristic impedance	Insulation material	Capacitance (pF/m)	Capacitance (pF/foot)
50 ohms	Solid PE	99	30
	Foam PE	79	24
	Solid PTFE	95.7	29
	Foam PTFE	82.5	25
75 ohms	Solid PE	67.5	20.5
	Foam PE	53	16
	Solid PTFE	63	19
	Foam PTFE	56	17



2- VELOCITY OF PROPAGATION = Vp (%) and propagation time (ns/m)

The velocity of propagation characterizes the speed of electrical energy in the cable, compared to the speed of light in free space.

The velocity of propagation is a key point when, for example, the coaxial cable is to be used as a delay line

Vp is calculated as follow **:**

$$Vp\ (m/s) = \frac{C}{\sqrt{\varepsilon}}$$

Where :
C = Light velocity (= 3 x 10^8 m/s)

Ɛ = Dielectric constant.

Vp is also usually expressed in percentage of the velocity of light in free space.

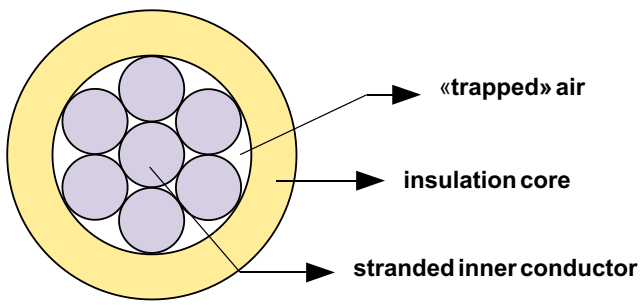
$$Vp\ (\%) = \frac{1}{\sqrt{\varepsilon}}$$

As Ɛ is independent of the frequency for considered insulation materials, **Vp** is also independent of the frequency.

Remarks :

Dielectric constant Ɛ not only depends on the dielectric material but also on cable construction.

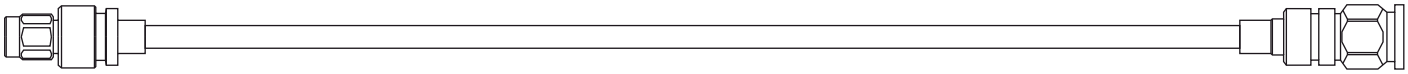
Thus, a stranded inner conductor will make the Ɛ decrease around 5 %, due to the presence of air between wires and insulation core (see fig. below).



For the same kind of reason, braided external conductor will have the same effect.
The propagation time (t) is the time taken by the wave to cover one meter of cable.
t is directly calculated from **Vp** :

$$t = \frac{1}{Vp(m/s)}$$

Material	Dielectric constant	Velocity (%)	Propagation time/m (ns)
Solid PTFE	2.07	69.5	4.8
PE	2.3	65.9	5
Foam PTFE	1.4 - 1.6	79 – 84.5	3.9 – 4.2
Foam PE	1.4 – 1.7	76.5 – 84.5	3.9 – 4.3
FEP	2.1	69	4.8
Foam FEP	1.4 – 1.7	76.5 – 84.5	3.9 – 4.2



3- CHARACTERISTIC IMPEDANCE = Zc (ohm = Ω)

The characteristic impedance is usually the prime parameter when selecting cable and connectors for a given system impedance.
For the best performance, the cable and connectors must be selected to match the impedance of the other components in the system.

The characteristic impedance is linked to the dielectric constant (ε) and conductors sizes (**Ø d** and **Ø D**) according to the following formula:

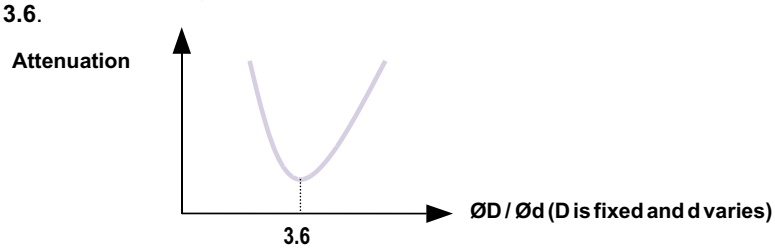
$$Zc = \frac{60}{\sqrt{\varepsilon}} \times \ln(D/d)$$

Where :
d = outer diameter of the inner conductor
D = inner diameter of the outer conductor

Zc can also be expressed in function of **C** and ε (see capacitance section).

$$Zc = \frac{3333 \times \sqrt{\varepsilon}}{C(Pf/m)}$$

Remark :
For a given insulation diameter D, and considering that the external shield construction and dielectric are fixed, the best attenuation is obtained for the ratio **ØD / Ød = 3.6**.



That means, with a typical dielectric constant **ε=2**, that the best compromise between attenuation, size and weight is obtained with a **50 ohms** cable.
Therefore, low loss cables required for microwave and RF applications very often utilize a 50 ohms technology.

4- SKIN EFFECT

The skin effect describes the behavior of high frequency currents to propagate only on the surface of the conductors when the frequency increases.

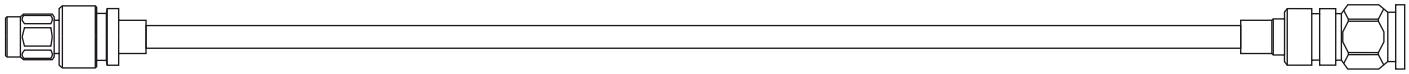
The sections of conduction decrease with the frequency and are located, due to magnetic inductance effect, in the external part of the inner conductor and the internal part of the external conductor. This state is called the **skin effect.**

For microwaves frequencies, around 100% of the current circulates in a depth of around **3xE**.

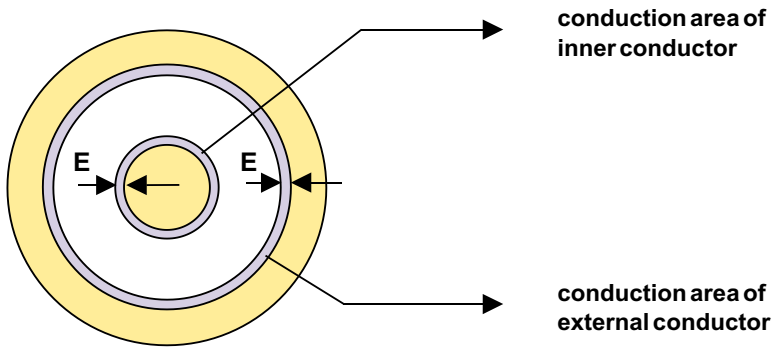
The skin depth (**E**) in which approximately 40% of the current flows is calculated as follow :

$$E = \sqrt{\frac{1}{\pi \times f \times \mu_0 \times \mu_r \times \sigma}}$$

Where :
E = Thickness of conduction.
f = Frequency (Hz)
μ_0 = Permeability of vacuum (H/m)
μ_r = Permeability of the metal (H/m)
σ = Conductivity ($\Omega^{-1}m^{-1}$)



Example with copper (valid for silver too) : **E** (µm) = $\sqrt{\frac{66}{f\ (MHz)}}$

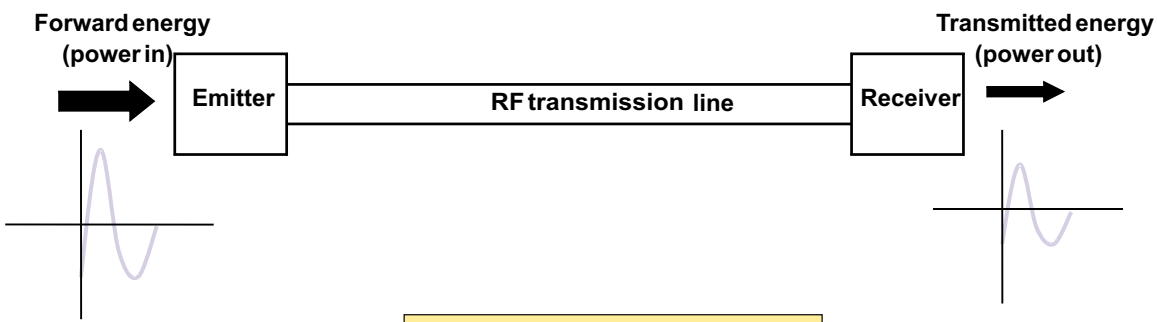


The table below gives some examples of the skin effect depth for copper (or silver)

Frequency	Skin depth
50 Hz	9.3 mm
1 MHz	66 µm
1 GHz	2 µm
18 GHz	0.5 µm

5- ATTENUATION / TRANSMISSION LOSS (dB/m or dB/100ft)

Attenuation (or transmission loss) is defined as the loss of energy along the RF line.

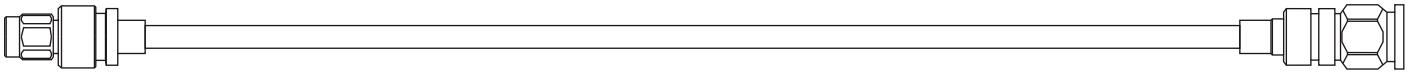


$$\text{Attenuation (dB)} = 10 \log \frac{\text{Power out}}{\text{Power in}}$$

The energy loss comes from four origins :
– Loss in the conductors (a portion of signal is converted to heat)
– Loss due to external shield leakage(radiation)
– Loss coming from dissipation in the dielectric
– Loss induced by reflected signal (VSWR)

Considering that the radiation loss is non significant in comparison with conductors and dielectric losses, the attenuation formula is given as follow:

$$\text{Attenuation (dB)} = (A \times \sqrt{f}) + (B \times f)$$



Where :
A = loss factor due to conductors
(**A** depends on conductors construction and conductivity)
B = loss factor due to dielectric.

(**B** only depends on the dielectric material : dielectric constant ε and dissipation factor **tg** δ)

f = frequency in GHz.

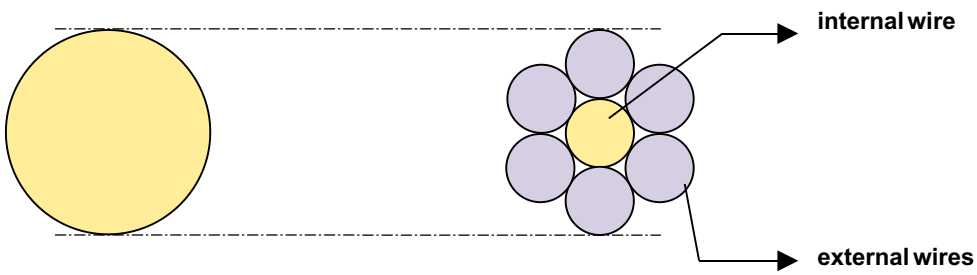
For cable assemblies, the insertion loss is the sum of cable attenuation x length + connectors losses.
Due to the connector length (non significant) the connectors losses are due to impedance mismatching. (see VSWR section).

For cables size < 10mm, **A** is much more greater than **B.**
As a consequence, the loss due to dielectric dissipation can be considered as non significant for low frequencies
(typically for **f** < 0.5 GHz)
Dielectric loss increases linearly with the frequency, while conductor loss increases with the square root of frequency.
Therefore, dielectric loss takes a bigger part of the total loss as frequency is increasing.
Thus, the choice of the dielectric material must be considered in detail for high frequencies (>1GHz) application.
The below paragraphs present in detail the origin of conductor loss and dielectric loss.

5 a) RELATION BETWEEN CONDUCTORS CONSTRUCTION AND ATTENUATION

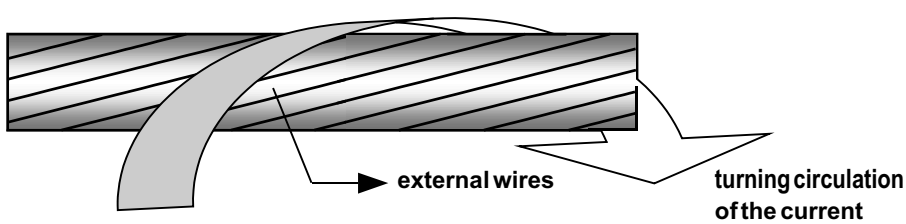
1 - The inner conductor

Two main kinds of construction currently exist :

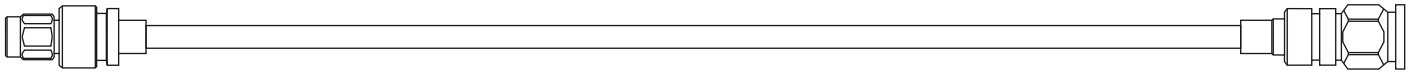


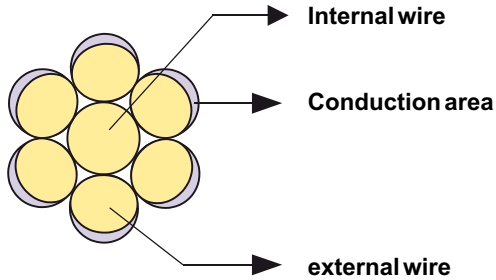
For the same inner conductor size, the best configuration for an optimized attenuation is the solid conductor.
Choosing a solid inner conductor allows to save between 5 to 20 % of the attenuation. (to the detriment of flexibility).

For solid inner conductors the current circulates straight along the wire bar. For stranded constructions it circulates along the external wires, which turn around the inner wires (see drawing below)
As a consequence, the current has to cover a longer distance in the case of stranded construction.



Another reason of higher attenuation of the stranded inner construction is the electromagnetic repulsion generated by currents circulating in the same way on the external wires.
The electromagnetic repulsion , in conjunction with the skin effect, generates a reduction of the conduction area which is reduced to the crescent shaped described below.





2 - The outer conductor

As seen in the skin effect section, the current circulates in the internal part of the shield.
The direct consequence is that only the internal shield has an impact on the attenuation.
Adding a second braid does not have any significant impact on the attenuation.

In practical terms, five kinds of construction are used.

Braided wires (flexible RG types)
Braided wire tinned soaked (hand-formable technology)
Longitudinal tape (eco-friendly cables ECO142 and ECO393)
Tube (semi-rigid technology)
SHF technology

The table below gives a rough idea of attenuation performances attached to each type of shield.

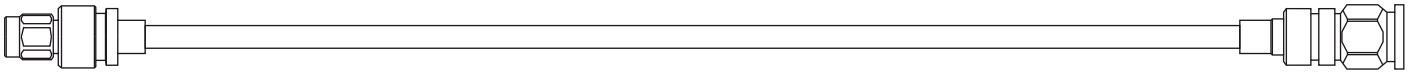
	Braided wires	Braided wires tin soaked	Longitudinal tape	Tube	SHF technology
Attenuation	⊕ Medium loss	⊕⊕ Low loss	⊕⊕⊕ Ultra low loss	⊕⊕⊕ Ultra low loss	⊕⊕⊕ Ultra low loss

5 b) RELATION BETWEEN INSULATION MATERIEL AND ATTENUATION

The dielectric losses are independent of the cable size.

The table below gives typical values of the dielectric constant (ε) and dissipation factor (**tg** δ) of the most common materials used as insulation core.

Material	Dielectric constant	Dissipation factor	Operating temperature (°C)
Solid PTFE	2.07	0.0003	-65/+250
PE	2.3	0.0003	-40/+85
Foam PTFE	1.4 – 1.6	0.00005	-65/+250
Foam PE	1.4 – 1.7	0.0001	-40/+85
FEP	2.1	0.0007	-65/+200
Foam FEP	1.4 – 1.7	0.0007	-65/+200



5 c) RELATION BETWEEN ATTENUATION AND TEMPERATURE

The temperature has an important impact on the cable attenuation.
This effect is due to the conductors electrical resistance which increases for T°C upper than 20°C and decrease for T°C below 20°C.
The relation between temperature and attenuation can be given in first approach as follow :

$$\textbf{Attenuation}(\text{at X°C}) = \textbf{att. (20°C)} \times \left[1 + (\textbf{X-20}) \times \theta\right]$$

Where :

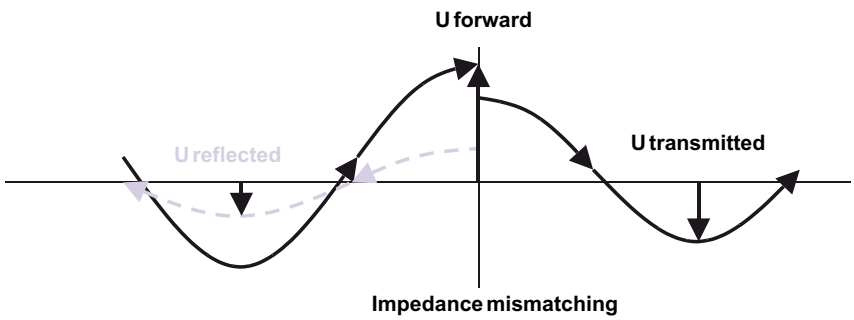
θ : Temperature coefficient depending on the conductor materials

(θ = 0.002 for Copper and Aluminum)

6- VSWR (VOLTAGE STANDING WAVE RATIO) / RETURN LOSS

The VSWR / Return loss characterizes the level of energy reflected by impedance mismatching along a cable assembly.

Each time the forward wave meets a non adapted impedance area (modification in the dielectric constant (ε) or conductors size ratio (**Ø d** and **Ø D**) or concentricity, …) a part of the energy is reflected, the rest is transmitted.
To express these two parameters, it is necessary to define the **reflection coefficient factor :** Γ.



The reflection coefficient factor (expressed in %) is calculated as follow :

$$\Gamma = \frac{\textbf{U reflected}}{\textbf{U forward}} \times 100\%$$

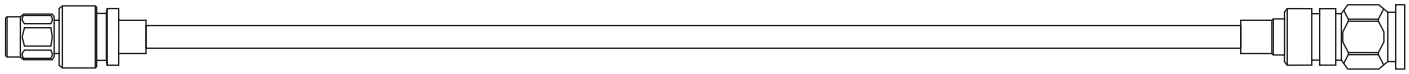
Where :
U forward : forwarded voltage.
U reflected : reflected voltage.

6 a) THE RETURN LOSS (dB)

The return loss (expressed in dB) is a logarithmic measure of the reflection coefficient.
It represents the ratio of the transmitted power to the reflected power.

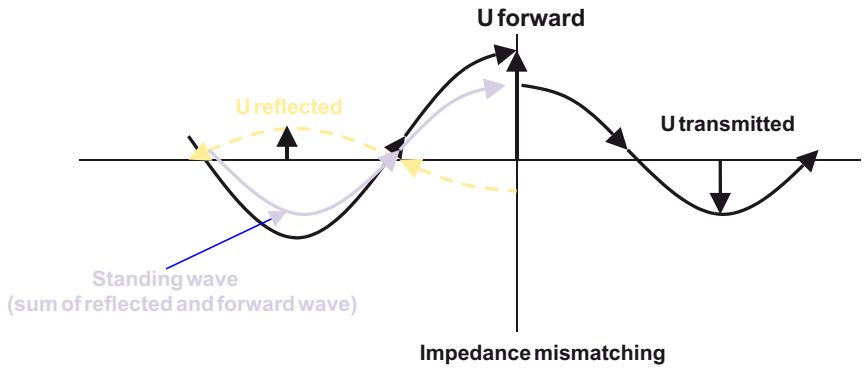
$$R_L\,(\text{dB}) = -20 \log \Gamma$$

Ideal line U reflected = 0 $R_L = \infty$ (dB)
Open or short circuit U reflected = U forward R_L = 0 (dB)



6 b) THE VSWR

Along a line containing an impedance default, two waves propagate : one travels forward and the other one is reflected. Both waves have the same frequency. At any point of the line the measured voltage will be the sum of the two waves. The summed wave does not travel along the line but stands still, and is known as the standing wave.



The standing wave ratio is the ratio of the maximum voltage (U forward + U reflected) to the minimum voltage (U forward - U reflected) along the RF ligne.

$$VSWR = \frac{U\ forward + U\ reflected}{U\ forward - U\ reflected}$$

Ideal line : VSWR =1.0 (U reflected = 0)

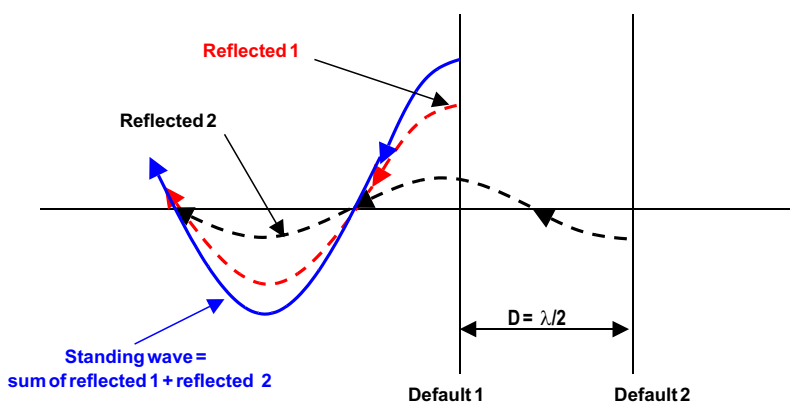
Short or open circuit : VSWR = ∞ (U reflected = U forward)

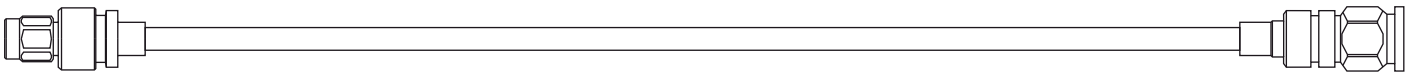
The table below summarizes the relationship between Γ, R_L, and **VSWR** :

Reflection coefficient (Γ)	Return loss R_L (dB)	VSWR
$\Gamma = \frac{U\ reflected \times 100\ \%}{U\ forward}$	$R_L = -20 \log \Gamma$	$VSWR = \frac{U\ forward + U\ reflected}{U\ forward - U\ reflected}$
$\Gamma = \frac{VSWR - 1}{VSWR + 1}$	$R_L = -20 \log \frac{U\ reflected}{U\ forward}$	$VSWR = \frac{1 + \Gamma}{1 - \Gamma}$

In practical terms, for cable assemblies, there is not only one impedance discontinuity but several.
Like the previous presentation with one impedance default, the standing wave is going to be the sum of all the reflected signals + the forward signal.
Depending on the distance between impedance discontinuities and on the frequency, the sum will be maximum or minimum.

For example, the sum will be maximum if the distance between defaults is $\lambda/2$ as described below.

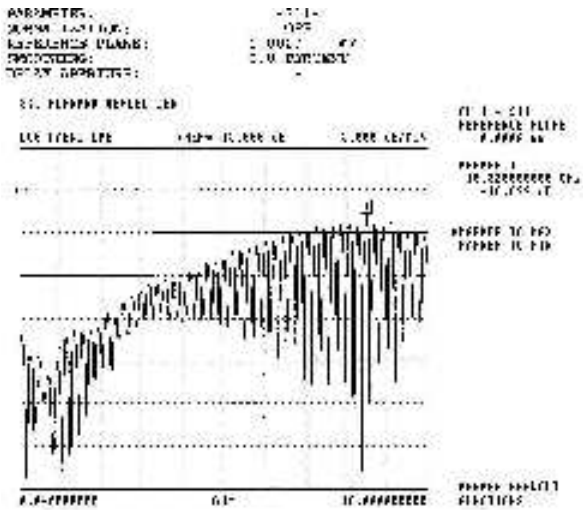




6 c) REMARKS : Typical Return loss signature and associated causes.

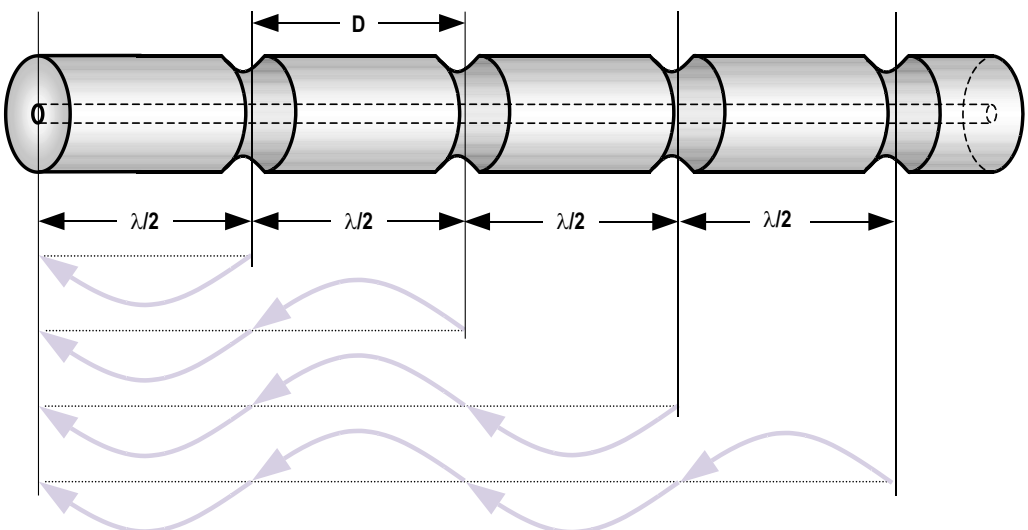
1 - Signature due to a single discontinuity

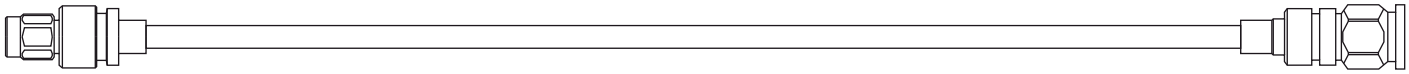
A typical VSWR signature is the result coming from a cable assembly having a single discontinuity often located at the cable-connector link. For all the frequencies such as λ is much bigger (at least 50 times bigger) than the discontinuity length, the discontinuity is not "seen" by the wave, and so the VSWR is very low.
Then, the default impact on $\mathbf{R_L}$ increases with frequency as shown in the graph below.



2 - Signature due to discontinuities at regular intervals.

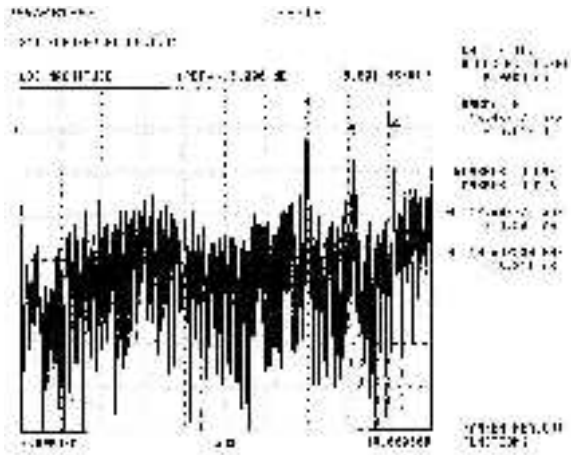
The principle of reflected waves sum, generating maximum or minimum reflected signal allows to understand the typical signature of a cable assembly presenting **discontinuities at regular intervals**.
This kind of regular defaults is quite always due to the cable manufacturing process. (see drawing below).



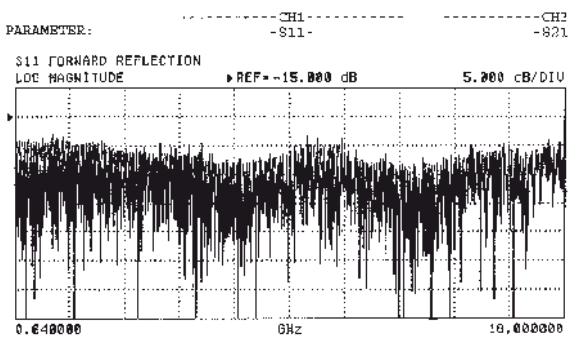


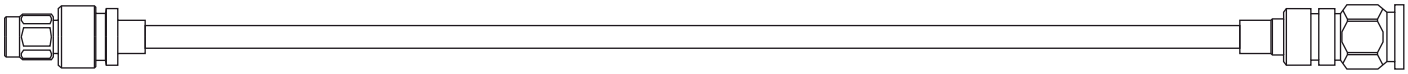
In this case, and considering that the distance between two defaults is **D**, the sum of the reflected signals will be maximum for frequency **F** such as $\lambda/2$ = **D** (or multiple).
At such a frequency, all the waves reflected by each individual default add in phase with another.

If the cable assembly is long enough to allow a significant number of defaults, the resulting $\mathbf{R_L}$ at specific frequencies (such as λ is multiple of **D**) will be very high, even in case of small discontinuities as shown in the graph below :



3 - Signature due to wrong cable impedance
This happens when cable impedance (even if constant) is not well adapted (matched).
In that case, starting from very low frequencies, the discontinuity is seen by the wave and $\mathbf{R_L}$ is quite high . See the graph below :



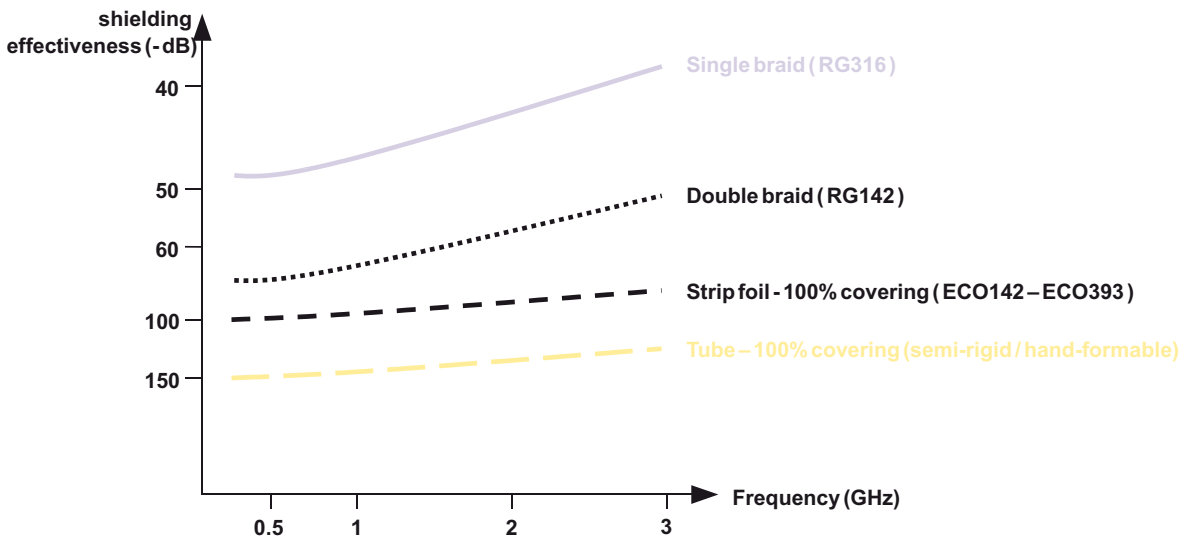


7- SHIELDING EFFECTIVENESS (dB)

The shielding effectiveness represents the ability of the used technology to screen out interference and to prevent RF leakage out of the transmission line. It can also be characterized as the RF leakage value

The shielding effectiveness depends solely on the outer conductor construction and on the frequency.
It features the level of protection of the cable against external electromagnetic fields such as power lines, electric motors, transformers…
In the same way, it characterizes the protection of the environment against electromagnetic pollution coming from the coaxial line.
These two effects are totally symmetrical .
Radiall has the facilities to perform shielding effectiveness measurement by several ways(tri-axial test set up and reverberation chamber according to MIL STD 1344 and IEC61726).
The most efficient and representative test for cable assemblies is the reverberation chamber that allows Radiall to measure the RF leakage of complete cable-assemblies (cable + connectors) from 0.5 to 20 GHz.
In addition, RADIALL has at his disposal an anechoïd chamber to perform default research test (see Radiall test capability section)

For low frequencies (< 10MHz) the shielding effectiveness mainly depends on the outer conductor thickness and material (outer conductor resistance)
For frequencies > 10MHz the shielding effectiveness mainly depends on the outer conductor self induction.
In addition of these two main effects, holes located in the cable outer conductor or poor electrical contact between cable shield and connector are important sources of RF leakage in cable assemblies applications.
Obviously, holes and self induction effect becomes more and more critical when frequency increases.
The graph below shows typical shielding effectiveness performances corresponding to major coax outer shield constructions.
It clearly shows that the best technology for an optimized shielding effectiveness is the 100% covering shield without any self induction effect (longitudinally applied tape or tube technology).



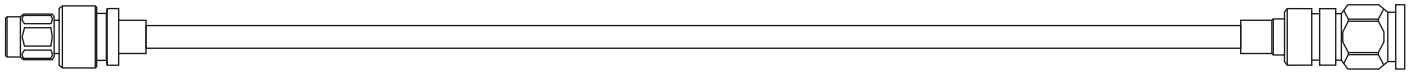
8- VOLTAGE WITHSTANDING (V rms)

To ensure the selected cable is the correct cable for the application, care must be taken regarding the continuous and peak voltage operating conditions.
Two different voltage ratings have to be considered for a coaxial cable, the corona voltage and the **D**ielectric **W**ithstanding **V**oltage **(D.W.V)**

8 a) CORONA EFFECT

The Corona effect is a ionization phenomenon that appears in the dielectric when submitted to high potential.

The Corona effect causes electrical noise, long term dielectric damage and in some cases a breakdown of the cable.
As a consequence, it is not recommended to use a cable under corona conditions, and the maximum operating voltage must be lower than the corona extinction voltage of the cable.
The determination of the corona extinction voltage requires a very sensitive instrumentation able to detect voltage induced ionization noise.



8 b) DIELECTRIC WITHSTANDING VOLTAGE (V rms)

The Dielectric Withstanding Voltage (named voltage withstanding in the cable TDS) is the voltage at which the dielectric abruptly breaks down.
The D.W.V does not depend on the frequency but only on the distance between inner and outer conductor and the nature of dielectric material.

This test requires a less sensitive instrumentation, and can be performed as a cable and cable-assembly serial control.
For this test, a voltage is applied (during a limited time) to the cable or cable assembly, and monitored for current flow.

To determine the right cable assembly configuration for a given application proceed as follow :

I1. dentify your effective input voltage by multiplying your input voltage by the square root of the VSWR :
→ **Effective voltage = Input voltage x $\sqrt{VSWR}$**

2. Identify the maximum dielectric withstanding voltage of the cable assembly which is limited by the lower D.W.V of the different components (Connector 1 - Cable - Connector 2). The maximum dielectric withstanding voltage (at sea level) is given in RMS (root mean square) in this catalogue for cable and connectors.
→ **Cable assembly D.W.V = Min (Connector 1 D.W.V / Cable D.W.V / Connector 2 D.W.V)**

3. Check that the cable assembly D.W.V (2.) is greater than the effective voltage (1.)

Remarks :
To determine peak voltage using D.W.V in RMS given in this catalogue, the following calculation shall be done :

$$\textbf{Peak voltage} = \textbf{D.W.V}\ (\text{V rms}) \times \sqrt{2}$$

When altitude increases, the air pressure in the cable assembly termination (cable-connector link and connector) decreases and reduces as a consequence the cable assembly D.W.V.
Relation between D.W.V and altitude is given below :

$$\textbf{Connector D.W.V.}\ (\text{at } 21000\text{ m} = 70\,000\text{ft}) = \frac{\textbf{Connector D.W.V.}(\text{at sea level})}{4}$$

9 - POWER HANDLING (W)

9 a) CONTINUOUS WORKING (CW) POWER HANDLING

As seen in the insertion loss chapter, a part of the input energy is converted to heat by the resistive effect of the conductors.
Most of the heat is generated at the inner conductor which offers, due to its low section, the higher electrical resistance.
As a consequence, the power handling of a cable (or cable assembly) is limited by the maximum allowable operating temperature of the materials used in the cable (or cable assembly).

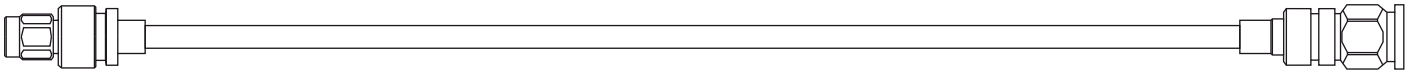
The most critical materials is the dielectric for raw cable and solder spots for cable assemblies.
The power handling increases when the attenuation decreases and also generally when the size increases.
Another factor to take in to account is the heat transfer in the cable (or cable assembly).

Power handling must be de-rated by correction factors taking into account the frequency, the ambient temperature, the altitude and the VSWR.
An increasing of each of these parameters will decrease the power handling.
RADIALL has at his disposal all the de-rating curves to quickly calculate the max. power handling in all kinds of environmental conditions.

9 b) PEAK POWER

Peak power is the maximum instantaneous value of a varying power.

Peak power, like dielectric voltage withstanding, does not depend on the frequency but only on the distance between inner and outer conductor and dielectric material.



10 - FLEXIBLE / BENDING RADIUS (MM)

Cable flexibility is one of the most important parameters when specifying a cable-assembly.
Bends generated during integration and during operating have to be considered.

To help to make the right cable selection, the designer shall identify, among the following parameters list, those which are pertinent in regard of the application:

- Small bending radius ?
- Low bending moment ?
- Flexure endurance ? Bending angle ? How many cycles ?
- Spring back effect ?
- Cable assembly may be routed during integration (“on site” forming), or pre-formed before ?

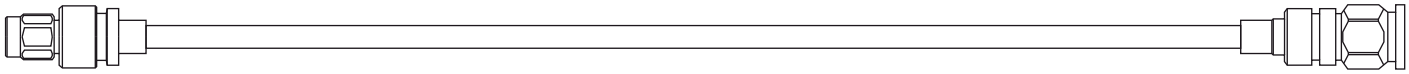
The following table will help to link cable construction to expected performances .

10 a) FLEXIBILITY AND INNER CONDUCTOR

	Small bending radius	Low bending moment	Flexure endurance	Spring back effect	“On site” forming
Standed inner conductor	⊕ ⊕	⊕ ⊕	⊕ ⊕	⊕ ⊕	⊕ ⊕
Solid inner conductor	⊕	⊕	⊕	⊕	⊕

10 b) FLEXIBILITY AND OUTER CONDUCTOR

	Small bending radius	Low bending moment	Flexure endurance	Spring back effect	“On site” forming
Braid (flexible RG cables)	⊕ ⊕	⊕ ⊕	⊕ ⊕	⊕ ⊕	⊕ ⊕
Longitudinal tape (ECO friendly cables)	⊕ ⊕	⊕	⊖	⊖	⊕ ⊕
Wrapped foil (SHF technology)	⊕ ⊕	⊕ ⊕	⊕ ⊕	⊕	⊕ ⊕
Tin soaked braid (Handformable)	⊕ ⊕	⊖	⊖	⊖	⊕ ⊕
Tube (semi-rigid)	⊕ ⊕	⊖	⊖	⊖	⊖



11- OPERATING TEMPERATURE RANGE

11 a) FOR FLEXIBLE CABLES :

Operating temperature of flexible cables is limited by the operating temperature range of the dielectric and jacket material.
Note that Silver Plated Copper (SPC) conductors are more suitable for long life applications at temperature over 80°C.
The table below gives operating temperature range for main materials used in cable technology.

Material	Operating temperature (°C)
Solid PTFE	-65/+250
PE	-40/+85
Foam PTFE	-65/+250
Foam PE	-40/+85
FEP	-65/+200
Foam FEP	-65/+200
PVC	-50/+105
(PUR) Polyurethane	-50/+125
PA (Polyamide)	-50/+105

11 b) FOR SEMI-RIGID CABLES

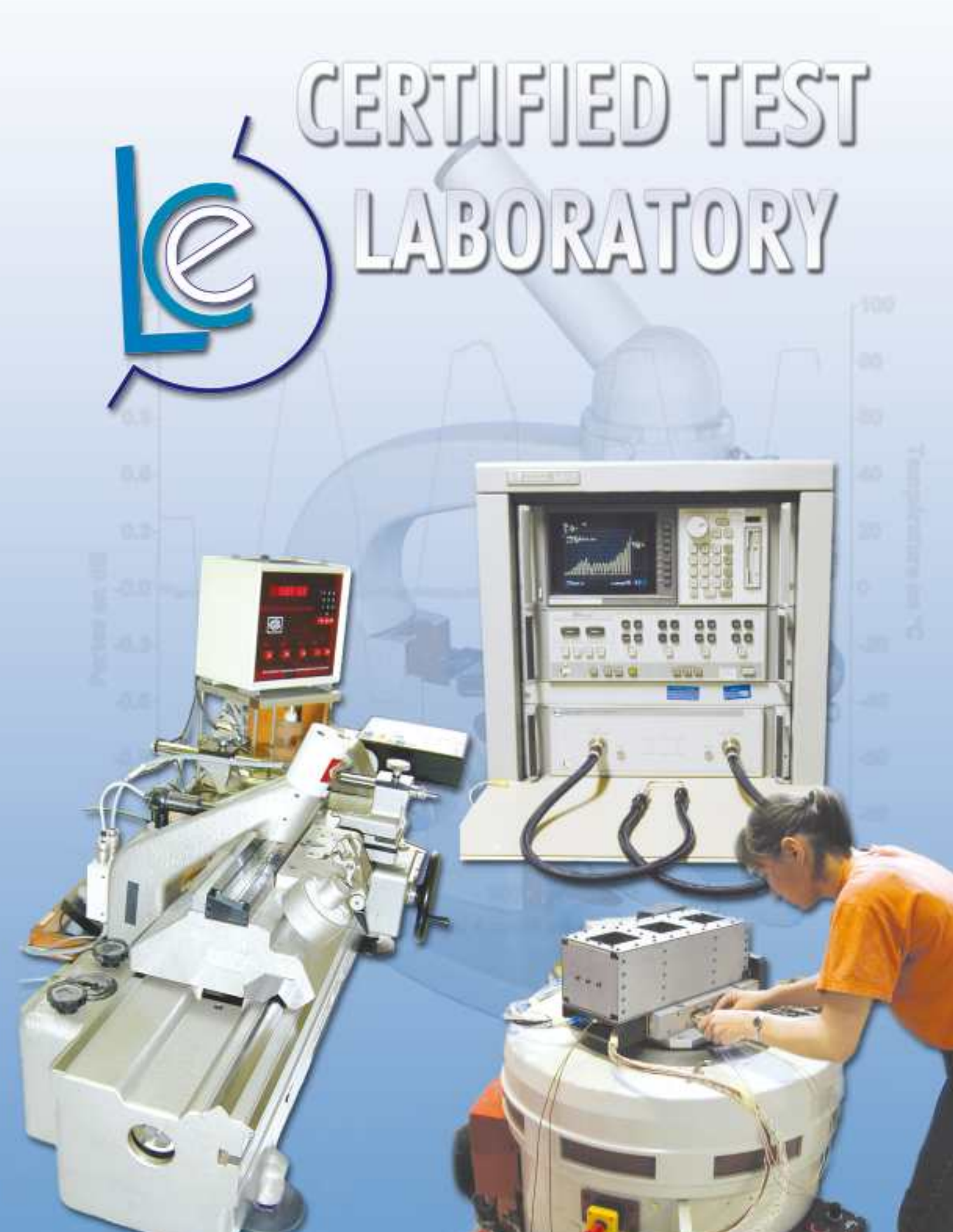
Exposure of cable with extruded PTFE insulation to elevated temperatures causes stressing of the outer conductor since the thermal expansion coefficient of the PTFE is about 10 times greater than that of the metal conductors.
Operating temperature of semi-rigid cables is limited by the expansive force applied by the core material on the outer conductor.
The maximum operating temperature is the temperature at which the expansive force exceeds the yield strength of the outer conductor and causes a permanent (but non significant) increase of the cable outer diameter.
Cable operating temperature are given in cable Technical Data Sheet;

12- ENVIRONMENTAL CONSIDERATIONS.

The life duration of a coaxial cable-assembly depends on many effects that can be combined or not.
The effects of radiation exposure, humidity, salt fog or salt water, corrosive vapors, chemical attacks and fire on material used are the main cause of cable failure.
As the coaxial jacket is used to protect the “active” electrical line against environmental attacks, it is critical to identify cable resistance through jacket material resistance.
The table below gives elements of comparison between main raw material jackets.
In any case, for specific environmental conditions, it is advised to contact RADIALL for an optimized solution.

	Radiation resistance	Chemical resistance	Moisture resistance	Flame non propagating	Abrasion resistance
FEP	±	++	++	++	±
PFA	+	++	++	++	±
PVC	±	+	+	+	+
Polyurethane	++	+	±	±	++
Polyethylène	++	+	+	-	±
PA	+	+	+	-	++

CERTIFIED TEST LABORATORY



Since 1989, RADIALL has centralised the main part of its measurements capabilities in VOIRON (France).

In this Independent Testing Laboratory, engineers and technicians have run high quality systems in compliance with ISO/ICE 17025.


HARMONIZED SYSTEM OF QUALITY ASSESSMENT FOR ELECTRONIC COMPONENTS
CECC ECQAC
CERTIFICATE OF APPROVAL OF INDEPENDENT TEST LABORATORY
EN 100114 – 1 (1996)
LABORATOIRE CENTRAL D'ESSAI (L.C.E.) de RADIALL
IT IS HEREBY CERTIFIED THAT THE QUALITY SYSTEM OPERATED BY THE TEST LABORATORY IS IN COMPLIANCE WITH EN 45001 (1989)
CECC
ECQAC
LCIE

LCE certified test laboratory offers Environmental, Mechanical, Electrical and Optical Testing Services.

LCE provides:

- IEC, CECC, MIL (QPL), ESA/SCC, Bellecore and costumers' qualification tests
- Evaluation, Homologation or Qualifications of your products
- Calibration of wide range of equipment (Electrical, Optical, Dimentional...).

Various Standards (COFRAC) are available.

- Development of specific new measurement methodologies with real time acquisition measurement facilities.
- CAD Design, Modal analysis and manufacturing of vibration specific device.
- Investigation and analysis of materials.

LCE certified test laboratory has over 12 years of experience in testing:

- RF & microwave passive components and antennas
- Electrical and coaxial connectors
- Aerospace/military components and devices
- Automotive and commercial products
- Fiber optic connectors, optical components, cable assemblies and optoelectronic devices
- ...

TESTING

ENVIRONMENTAL TESTS :

- Thermal shocks
- Thermal cycling
- Moisture resistance
- Damp steady state
- Salt spray
- Temperature life
- Temperature cycling with space conditions
- Power handling with space conditions

ELECTRICAL TESTS :

- Contact resistance
- Insulation resistance
- Voltage proof
- LCZ measurements
- Switching time

MECHANICAL TESTS :

- Half-sinus/sawtooth shocks
- Sinus/random vibrations
- Mechanical endurance
- Half-sinus bump
- Tensile/Compression
- Flexion
- Life test (commutations)

OPTICAL TESTS :

- Losses
- Reflection
- Characterisation of laser diodes
- Characterisation of photodiodes

MICROWAVE TESTS :

- VSWR
- Losses
- Insulation
- Power handling
- Permittivity
- Transfer impedance
- E.M.I

ANALYSIS :

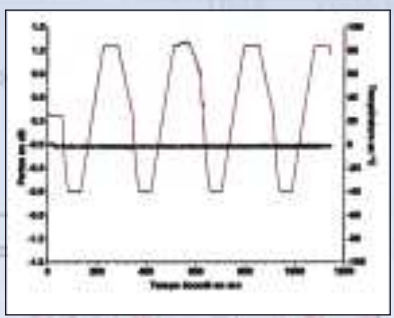
- Concentration profile of chemical elements (according of their number of photons)
- Backscattered electrons
  - chemical contrast
  - topographic contrast
- Secondary electrons
  - high quality image

ENVIRONMENTAL TESTS

APPARATUS (number)	SALT SPRAY CHAMBER (1)	THERMAL VACUUM CHAMBER (1)	THERMAL CHAMBER : temperature cycling, humidity (5)	HOT CLIMATIC CHAMBER (4)	HUMIDITY CHAMBER (1)	THERMAL SHOCK CHAMBER (1)
FEATURES	+30° to +60°C	2.10^{-6} mbar -60° to +100°C	-70° to +200°C 20 to 98% HR 10°C/min max	Up to +300°C	0° to +150°C 20 to 98% HR	-70° to +200°C
ASSOCIATED MESUREMENT APPARATUS	Large possibilities of **optical**, **electrical and high frequency** measures during environmental tests					
STANDARDS non exhaustive list	MIL.STD 1344 MIL.STD 202 MIL.STD 810 BS 2011 IEC 68-2-11 IEC 68-2-52 NF EN 2591	Customers' specifications	MIL.STD 1344 MIL.STD 202 MILSTD 810 BS 2011 IEC 68-2-x NF EN 2591	MIL.STD 1344 MIL.STD.202 MIL.STD 810 BS 2011 IEC 68.2.2 NF EN 2591	MIL.STD 1344 MIL.STD 202 MIL.STD 810 BS 2011 IEC 68.2.3 NF EN 2591	MIL.STD.1344 MIL.STD.202 MIL.STD 810 BS 2011 IEC 68.2.14 NF EN 2591

Others apparatus are also available :

- PRESSURE PUMP : 1 to 600 bars
- VACUUM PUMP : min 10 mbars
- VACUUM TEST CHAMBER : max 10 liters



Thermal cycling graph

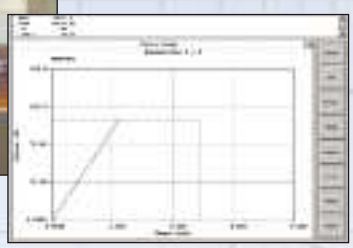
Optical measurements under thermal cycling

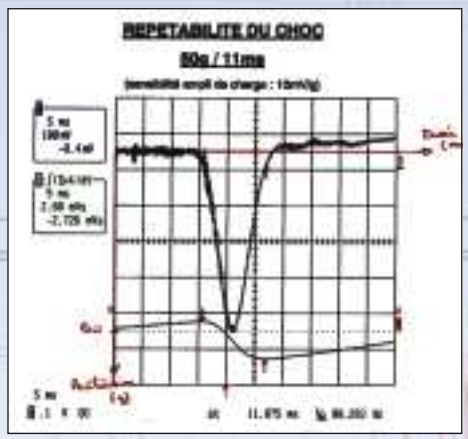
Climatic chambers

MECHANICAL TESTS

APPARATUS	TENSILE MACHINE	SHOCK MACHINE : half sinus & sawtooth	BUMP MACHINE : half sinus	VIBRATION MACHINE : sinus & random shocks Gunfire		
FEATURES	30000 N max 0.1 to 1000 mm/mn Max displacement: 1100 mm	20 kg max 30,50,100,1000 g 0.5,6,11 ms	20,40 g 6 ms	Max displacement : 50.8mm Max force : 35000 N Frequency range : 5 to 2500 Hz		
ASSOCIATED MESUREMENTS' APPARATUS	Large possibilities of **optical**, **eletrical and high fequency** measures during mechanical tests. Electrical discontinuities (40 ms to 2 ns)					
STANDARDS non exhaustive list	MIL.STD.1344 MIL.STD.202	MIL.STD.1344 MIL.STD.202 MIL.STD 810 BS 2011 IEC 68-2-27	MIL.STD.202 BS 2011 IEC 68-2-29	***Sinus :*** MIL.STD.202 BS 2011 IEC 68-2-6	***Random :*** MIL.STD .1344 MIL.STD.202 MIL.STD 810 IEC 68-2-3X	***Gunfire :*** MIL.STD 810

Tensile machine



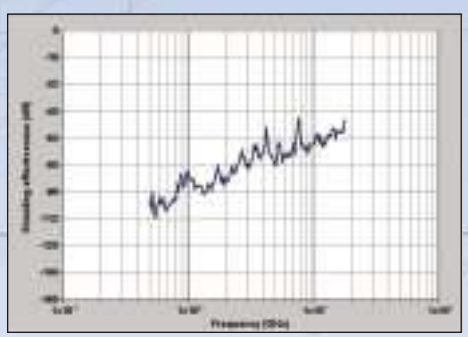


Shocks graph

Coaxial cable assembly under vibration

MICROWAVE TESTS

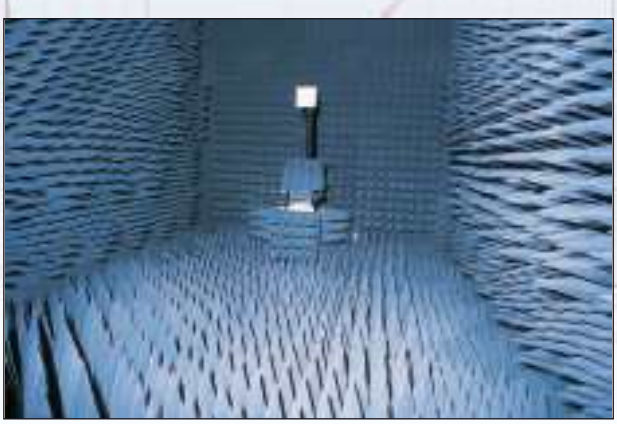
APPARATUS	REVERBERA-TION CHAMBER	TRI-AXIAL ASSEMBLY	VECTORIAL ANALYSER	ANECHOIC CHAMBER	AMPLIFIER	AMPLIFIER	PIM 3 TEST SYSTEM
FEATURES	Frequency range : 500 MHz/20GHz Dynamic : -140 dB	Frequency range : 100 MHz/3 GHz Dynamic : -138 dB	45 MHz/65 GHz Max losses : 50 dB	900 MHz/ 17 GHz Size: 6x6x10m	400 W 17.6 GHz	400 W 935 MHz	2x20W 1810-1850MHz Dyn=170dBc
STANDARDS non exhaustive list	MIL.STD 1344A ICE 61726	MIL C 38999 MIL C 39012 NF C 93422 NF EN 2591	ESA/SCC 3402 MIL C 39012 CusTomers' specifications	ETSI 300 440 Customers' specifications	Customers' specifications		IEC 62037



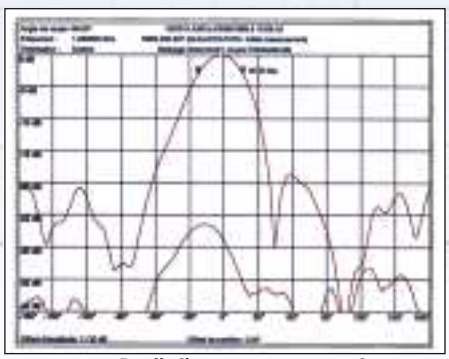
Reverberation chamber

Network analyser
Coupler under test

ANTENNAS :



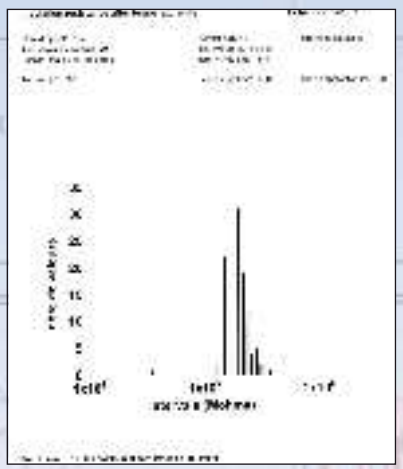
Anechoic chamber



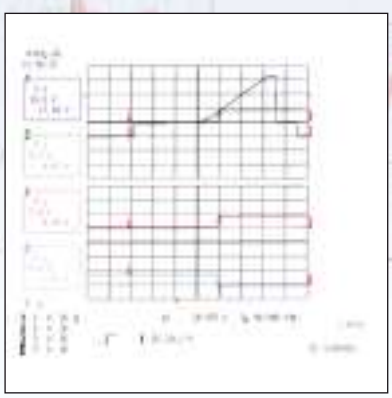
Radiation measurements

ELECTRICAL TESTS

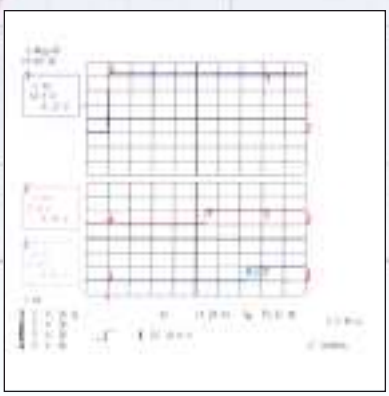
APPARATUS (number)	DIELECTRIC STRENGH TEST METER/ MEGOHMMETER test bench	DIELECTRIC STRENGH TEST METER	MEGOHM-METER	MICRO-OHMETER	CURRENT SUP-PLY/SENSITIVE DIGITAL VOLTMETER	DIGITAL OSCILLOSCOPE (2)
FEATURES	Leakage current : 1 mA 1500 V max (auto) 5000 V max 200 points max	Leakage current : 100 microA to 5 mA 6000 V max	100Ω/ 2000 TΩ 1 V/1500 V	0.1μΩ/ 26 KΩ 100 microA/ 10 A	10 V max 1 A DC max 1 mV to 30 V DC	100 Mech/s 2 and 4 channels
STANDARDS non exhaustive list	MIL.STD 1344 BS 9210 IEC 169-1 NF C 93050 NF EN 2591			MIL.STD 1344 MIL.STD 202 BS 9210 NF C 93050 NF EN 2591		MIL.STD 202



Electrical test on multicontact connectors



Operating voltage



Switching time

Switch under electrical test

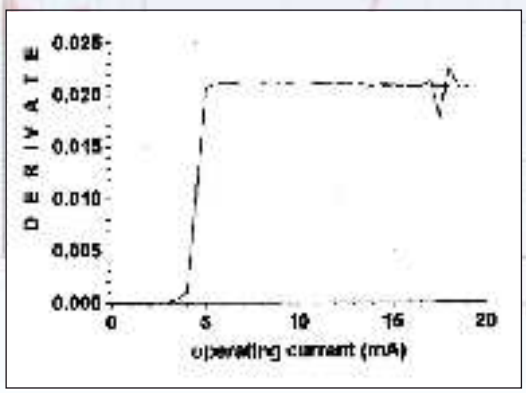
OPTICAL TESTS

APPARATUS (NUMBER)	LED SOURCE MODULE + OPTICAL POWER METER	MULTI CHANNEL OPTICAL TEST SYSTEM	OPTICAL TEST SYSTEM	MULTI CHANNEL OPTICAL TEST SYSTEM (2)	OPTICAL REFLECTO-METER	OPTO-ELECTRONIC POWER METER
FEATURES	850/1310 nm	12 channels max 6 : 1310 nm (single mode) 6 : 850 nm (multimode)	1310/1550nm Dynamic : +10/-90 dBm	50 channels 1310/1550 nm (single mode)	Reflection : -30 to -80 dB Loss : 0 to -10 dB 1310/1550 nm	Characte-rization of diodes
STANDARDS non exhaustive list	GR-326-CORE GR-1209-CORE GR-1221-CORE NF EN 186 000-1 IEC 874-1 TIA/EIA-455-34				TIA/EIA-455-107 NF EN 186 000-1 IEC 874-1	Customers' specifications

Opto-electronic bench

Diodes in climatic chamber

50 channel optical test system



Kink's measurements

Reflectometer

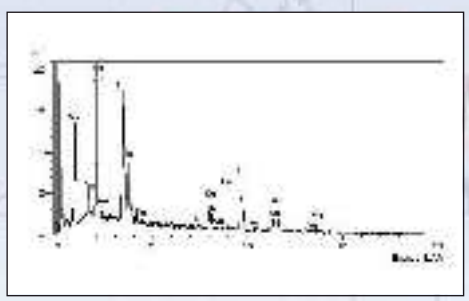
ANALYSIS

APPARATUS	SCANNING ELECTRON MICROSCOPE	OPTICAL MICROSCOPE	BINOCULAR	TRIBOMETER
FEATURES	Magnifying : up to 50000 Acceleration tension : 30 kV max Max displacement : X 100 mm Y 125 mm Z 3 mm Environmental configuration available BSE, SE and Photons detectors Quantitative Composition Analysis	Magnifying : X25, X100, X400, X1000	Magnifying : from X8 to X40	Rider and flat configuration Normal force 0,1 to 2 N Displacement 0,1 to 2,5 mm Speed max 4mm/s Integrated contact resistance measurement

NB : Possibility to analyse insulating materials with the Scanning electron microscope

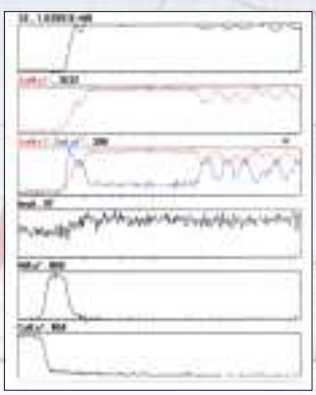
Scanning electron microscope

OBSERVATION OF A TIN GOLD SOLDERING JOINT

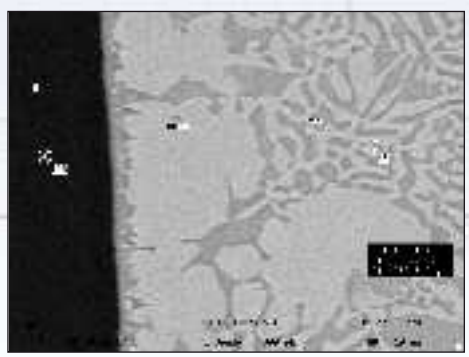


Photons' energy spectrum

Microscope



Concentration profile of chemical elements (according to their number of photons



Backscattered electrons, Chemical contrast

METROLOGY

APPARATUS	UNIVERSAL MEASURING BENCH	SURFACE PROFILING INSTRUMENT	INDUCTIVE COMPARATOR	INDUCTIVE COMPARATOR	LASER MICROMETER
FEATURES	0 to 300 mm	0 to 20µm	2000 µm 200µm 20µm Calibration of comparators	0 to 25 mm Calibration of gauge blocks	0 to 25.4 mm Calibration of gauge rods
MEASRING ACCURACY	Sleek plug : 0.8µm Sleek ring : 0.85µm Thread plug : 1.5µm Thread ring : 2.5µm	10%	0.07µm	From 1 to 3.5µm Various standards (COFRAC) - Block gauges - Roughness gauge - Plug and ring gauges - Rod gauges	0.7µm

Surface profiling instrument

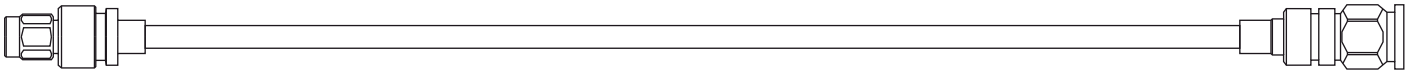
Inductive comparator (gauge blocks)

Universal measuring bench

Laser micrometer

Inductive comparator (gauge blocks)

PART NUMBER INDEX



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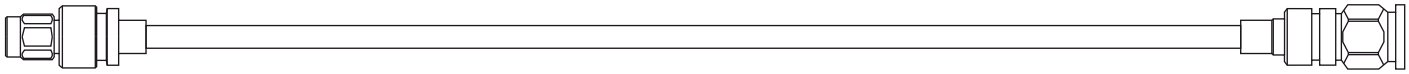

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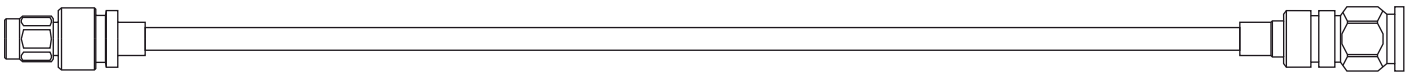

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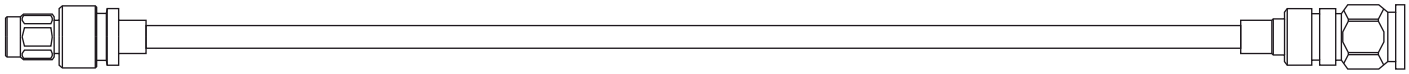

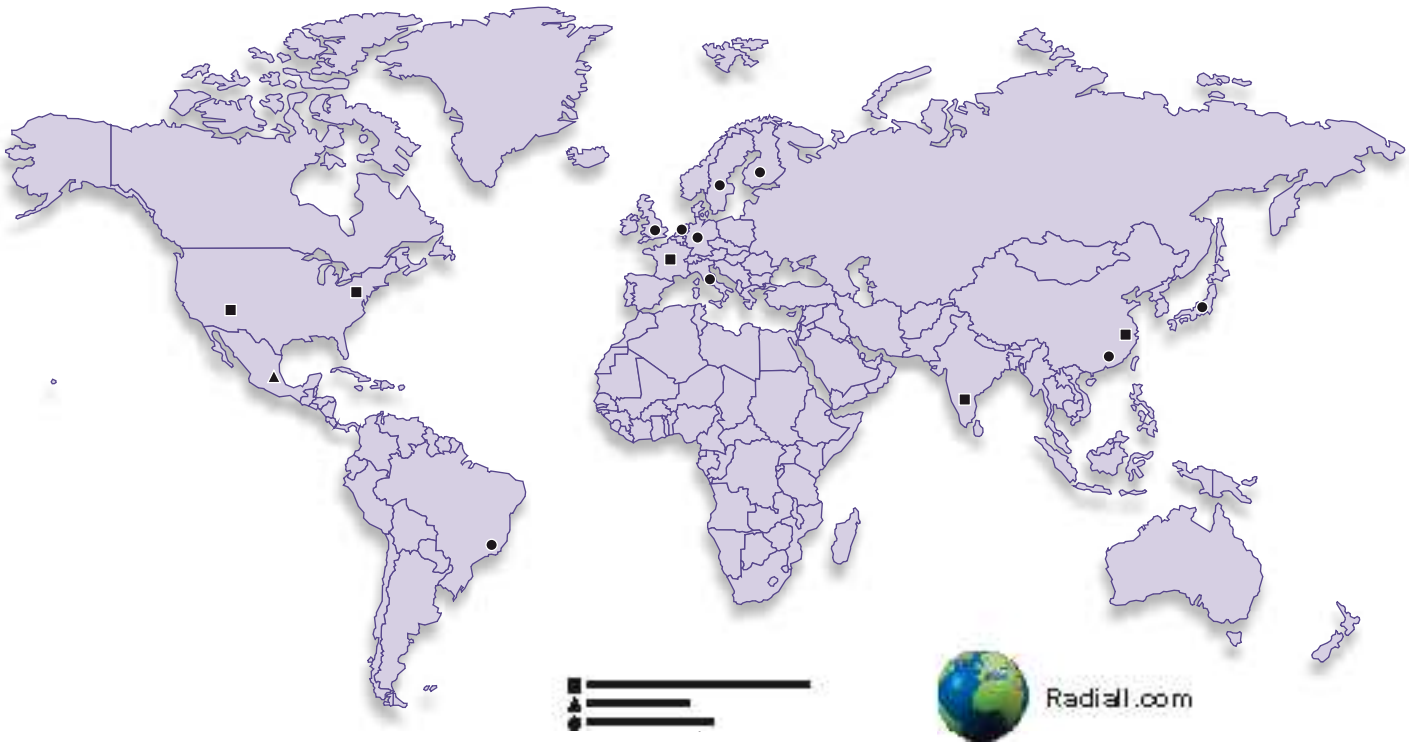

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Printed in France

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