COAXIAL CABLE ASSEMBLIES

C291

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Radiall cable groups

Example for flexible cables: 5/50 S
- **Cable outer diameter in mm** (2.6 mm, 5 mm, 10 mm, 11 mm,...)
- **Characteristic impedance** (50Ω, 75Ω)
- **Number of shields** (S=single, D=double)

Example for corrugated cables: 1/2 spiral
- **Cable outer conductor diameter in fraction of inch** (1/4", 3/8", 1/2",...)

Example for semi-rigid & handformable cables: .141"
- **Cable outer conductor diameter in inches** (.085", .141", .250",...)

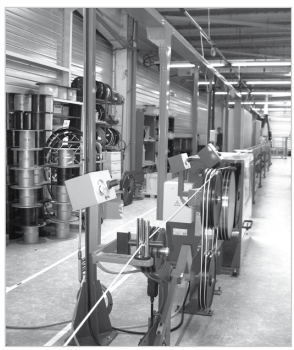
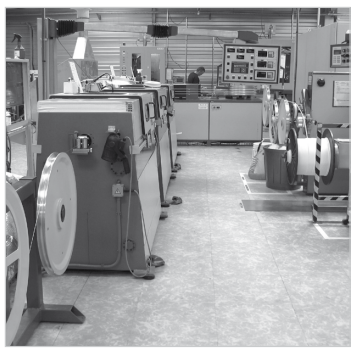
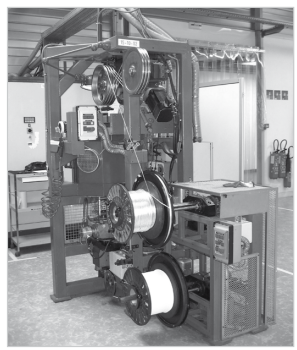
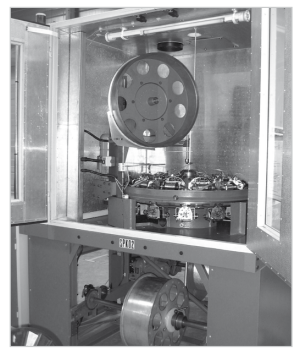
Introduction

Radiall is globally recognized as a leading manufacturer of coaxial connectors, cable and cable assemblies.

Radiall has top tier manufacturing technology and processes. As a result, we are one of the only manufacturers that have fully mastered foam PTFE wrapping technology. This capability enables us to supply cable assemblies featuring the highest level of performance, stability and repeatability.

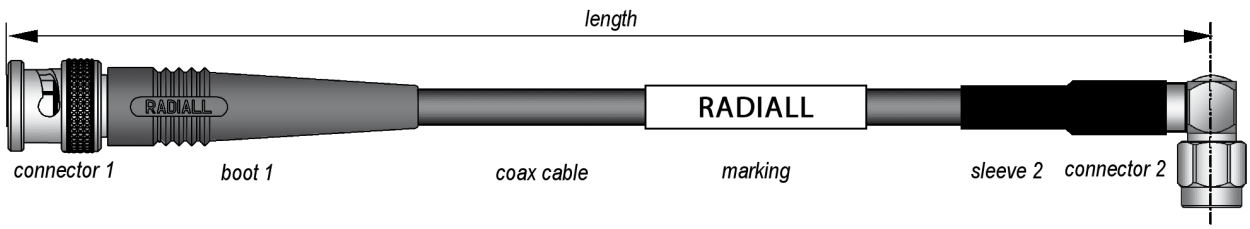
In addition, Radiall has high precision stripping and cutting machines, soldering and cleaning equipment.

Radiall offers five standard ranges of cable for a wide variety of applications for the telecom, military, instrumentation, medical and broadcast markets.

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 heat-shrink sleeve 1** (p/n or description)
- **Connector 2** (p/n or description)
- **Pptional boot or 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)

For 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)

Specify the Right Cable for Your Application

flexibility

attenuation

Flexible cables (Standard)

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 perfectly suited for dynamic applications (bending moment) or those requiring **flexibility** for ease of connection.

Flexible cables (low-loss Eco-friendly)

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 high 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 appeal** where straight and clear cable path must be demonstrated.

Finder Guide - Cables vs Insertion Loss

FLEXIBLE CABLES (STANDARD)

Cable group	Cable p/n	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
0.8/50 S	C291 042 066	132390 type	2.41/0.73	3.51/1.06	4.93/1.49	-	-	-
1/50 S	C291 050 066	50 VMTX type	2.12/0.64	3.36/1.02	4.45/1.35	-	-	-
1/75 S	C291 055 076	75 VMTX type	2.22/0.67	3.14/0.95	-	-	-	-
2/50 S	C291 145 007/017	RG178/KX21	1.54/0.47	2.20/0.67	2.72/0.82	-	-	-
	C291 140 087	RG178 non mag type	1.34/0.41	1.92/0.58	2.37/0.72	-	-	-
2/50 D	C291 146 087	124416 type	1.34/0.41	1.92/0.58	2.37/0.72	-	-	-
2/75 S	C291 147 060	296775 type	1.38/0.42	1.98/0.60	2.46/0.75	-	-	-
2.6/50 S	C291 150 000/010	RG174/KX3B	1.07/0.32	-	-	-	-	-
	C291 170 007/017	RG316/KX22A	0.86/0.26	1.24/0.38	1.54/0.47	-	-	-
2.6/50 D	C291 185 067	RD316	0.86/0.26	1.24/0.38	1.54/0.47	-	-	-
2.6/75 S	C291 210 007	RG179	0.95/0.29	1.37/0.41	1.70/0.51	-	-	-
5/50 S	C291 305 000/010	RG58/KX15	0.67/0.20	-	-	-	-	-
5/50 D	C291 320 007	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
	C291 330 000	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
	C291 324 007	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
	C291 322 017	KX23	0.48/0.14	0.70/0.21	0.89/0.27	1.35/0.41	1.61/0.49	-
	C291 325 270	POWER142	0.41/0.12	0.58/0.18	0.72/0.22	-	-	-
6/75 S	C291 360 000	RG59	0.44/0.13	-	-	-	-	-
	C291 351 012	KX6A	0.48/0.15	-	-	-	-	-
10/50 S	C291 510 000/010	RG213/KX4	0.24/0.07	-	-	-	-	-
10/50 D	C291 511 007	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	C291 600 000/010	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	C291 610 000	RG216	0.32/0.10	0.48/0.14	0.60/0.18	-	-	-

(11) = 11 GHz

FLEXIBLE CABLES (LOW-LOSS ECO-FRIENDLY) (alternative to RG cables - in accordance with RoHS regulation)

Cable group	Cable p/n	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
2.6/50 S	C291 999 904	ECO316	0.76/0.23	1.09/0.33	1.34/0.41	-
	C291 171 083	ECO316X	0.96/0.29	1.45/0.44	1.85/0.56	-
2.6/50 D	C291 999 905	ECO316D	0.76/0.23	1.09/0.33	1.34/0.41	-
	C291 217 020	ECO316DX	0.86/0.26	1.30/0.40	1.68/0.51	2.64/0.80
5/50 D	C291 325 290	ECO142	0.41/0.12	0.58/0.18	0.72/0.22	-
	C291 320 180	ECO142X	0.54/0.16	0.83/0.25	1.07/0.32	1.70/0.51
6/50 D	C291 326 490	ECO230	0.28/0.08	0.40/0.12	0.50/0.15	0.59/0.18(4)
10/50 D	C291 491 060	ECO393	0.16/0.05	0.24/0.07	0.30/0.09	-
	C291 512 020	ECO393X	0.29/0.09	0.47/0.14	0.64/0.19	1.11/0.34

(4) = 4 GHz

LOW-LOSS FLEXIBLE CABLES (AEP-xxxFR cables)

Cable group	Cable p/n	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
AEP-100FR	C291 327 060	LMR® 100	0.79/0.24	1.16/0.35	1.45/0.44	2.15/0.65
AEP-195FR	C291 327 010	LMR® 195	0.39/0.12	0.55/0.17	0.69/0.21	1.00/0.3
AEP-200FR	C291 327 020	LMR® 200	0.34/0.10	0.49/0.15	0.61/0.19	0.88/0.27
AEP-240FR	C291 327 030	LMR® 240	0.26/0.08	0.38/0.11	0.47/0.14	0.68/0.21
AEP-400FR	C291 327 040	LMR® 400	0.14/0.04	0.20/0.06	0.24/0.07	0.36/0.11
AEP-600FR	C291 327 050	LMR® 600	0.09/0.03	0.13/0.04	0.16/0.05	0.24/0.07

Finder Guide - Cables vs Insertion Loss

STANDARD FLEXIBLE HD CABLES

Cable group	Cable p/n	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	4.5 GHz (band C) dB/m dB/ft
4.6/75 D	C291 333 039	HD 0.6/2.8 mini RG59 type	0.34/0.10	0.50/0.15	0.62/0.19	-
6/75 D	C291 360 093	HD 0.8/3.7 RG59 type	0.25/0.07	0.35/0.11	0.44/0.13	0.54/0.16
7/75 D	C291 384 083	HD 1.0/4.8 RG6 type	0.19/0.06	0.28/0.08	0.35/0.11	0.44/0.13

CORRUGATED CABLES (spiral outer shielding)

Cable group	Cable p/n	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
Celiflex 1/4"	C291 993 170	HCF 1/4"-50 AlCu	0.27/0.08	0.34/0.10	0.51/0.15	0.60/0.18	0.78/0.24	0.99/0.30	1.06/0.32
Celiflex 3/8"	C291 996 170	HCF 3/8" CuH-50 AlCu	0.19/0.06	0.24/0.07	0.36/0.11	0.43/0.13	0.54(11.7)/ 0.16(11.7)	-	-
Celiflex 1/2"	C291 994 170	HCF 1/2" CuH-50 AlCu	0.16/0.05	0.20/0.06	0.30/0.09	0.36/0.11	0.42(10)/ 0.13(11.7)	-	-

(11.7) = 11.7 GHz (10) = 10 GHz

HAND-FORMABLE AND SEMI-RIGID CABLES

Cable group	Cable p/n	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"	C291 855 001	SR copper	1.64/0.50	2.03/0.61	2.93/0.89	3.43/1.04	4.73/1.32	5.39/1.63	5.72/1.73
	C291 855 065	SR tinned copper	1.64/0.50	2.03/0.61	2.93/0.89	3.43/1.04	4.73/1.32	5.39/1.63	5.72/1.73
.085"	C291 844 065	Handformable unjacketed	0.97/0.29	1.21/0.37	1.78/0.54	2.10/0.64	2.71/0.82	3.39/1.03	3.62/1.10
	C291 850 001	SR RG405/KS1	0.94/0.29	1.18/0.36	1.73/0.53	2.05/0.62	2.64/0.80	3.31/1.00	3.53/1.07
	C291 850 005	SR tinned copper	0.94/0.29	1.18/0.36	1.73/0.53	2.05/0.62	2.64/0.80	3.31/1.00	3.53/1.07
	C291 851 001	SR non magnetic	0.94/0.29	1.18/0.36	1.73/0.53	2.05/0.62	2.64/0.80	3.31/1.00	3.53/1.07
	C291 844 187	SR aluminum	0.98/0.30	1.22/0.37	1.80/0.54	2.12/0.64	2.73/0.83	3.41/1.03	3.64/1.10
.141"	C291 864 065	Handformable unjacketed	0.57/0.17	0.72/0.22	1.09/0.33	1.30/0.39	1.71/0.52	2.18/0.66	2.34/0.71
	C291 866 378	Handformable FEP jacketed	0.63/0.19	0.80/0.24	1.20/0.36	1.42/0.43	1.87/0.57	2.37/0.72	2.54/0.77
	C291 860 001	SR RG402/KS2	0.50/0.15	0.64/0.19	0.97/0.30	1.17/0.35	1.55/0.47	1.99/0.06	2.14/0.65
	C291 862 005	SR tinned copper	0.50/0.15	0.64/0.19	0.97/0.30	1.17/0.35	1.55/0.47	1.99/0.06	2.14/0.65
	C291 861 066	SR silvered copper	0.50/0.15	0.64/0.19	0.97/0.30	1.17/0.35	1.55/0.47	1.99/0.06	2.14/0.65
	C291 861 061	SR non magnetic	0.50/0.15	0.64/0.19	0.97/0.30	1.17/0.35	1.55/0.47	1.99/0.60	2.14/0.65
	C291 864 187	SR aluminum	0.53/0.16	0.67/0.20	1.02/0.31	1.23/0.37	1.62/0.49	2.08/0.63	2.23/0.38
.250"	C291 870 001	SR RG401/KS3	0.31/0.09	0.41/0.12	0.64/0.20	0.79/0.24	1.08/0.33	1.42/0.43	1.54/0.47
	C291 874 187	SR aluminum	0.33/0.10	0.43/0.13	0.68/0.21	0.83/0.25	1.13/0.34	1.48/0.45	1.60/0.49

Flexible cable 0.8/50 S (132390 type)

P/N: C291 042 066

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 allow this cable to be used in severe thermal conditions.

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	50Ω ± 3Ω	
Operating frequency range	DC - 3 GHz	
Shielding effectiveness	40 dB	
Voltage withstanding	18 000 V rms	
Peak power	6 kW	
Capacitance	98.7 pF / m	29.9 pF / ft
Velocity of propagation	69 % (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

Recommended minimum bending 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	

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

Flexible cable 1/50 S (50 vmtx type)

P/N: C291 050 066

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 allow this cable to be used in severe thermal conditions.

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	White FEP[3]	1.17	0.046

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50Ω ± 5Ω	
Operating frequency range	DC - 3 GHz	
Shielding effectiveness	40 dB	
Voltage withstanding	19 000 V rms	
Peak power	7 kW	
Capacitance	94 pF / m	28.5 pF / ft
Velocity of propagation	69 % (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

Recommended minimum bending 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	

FREQUENCY / ATTENUATION (typ.) / 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

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

Flexible cable 1/75 S (75 vmtx type)

P/N: C291 055 076

APPLICATION NOTE

Due to its 75 ohms characteristic impedance, this cable is best suited for TV/Video applications.
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, space saving and dynamic applications.
Suitable for severe thermal conditions.

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	80Ω ± 8Ω	
Operating frequency range	DC - 2 GHz	
Shielding effectiveness	40 dB	
Voltage withstanding	2 600 V rms	
Peak power	0.9 kW	
Capacitance	60 pF / m	18.3 pF / ft
Velocity of propagation	69 % (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

Recommended minimum bending 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	

FREQUENCY / ATTENUATION (typ.) / 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	1.21	0.37	50
0.4	1.40	0.42	41
0.5	1.57	0.47	38
0.6	1.71	0.52	35
0.8	1.98	0.60	30
1.0	2.22	0.67	26
1.5	2.71	0.82	21
2.0	3.14	0.95	18
Attenuation calculation (dB/m)	(2.21 x √f GHz) + (0.005 x f GHz)		

[1] SPCCS = Silver Plated Copper covered steel
[2] PTFE = PolyTetraFluoroEthylene
[3] SPC = Silver Plated Copper
[4] FEP = Fluorinated Ethylene Propylene

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

Flexible cable 2/50 S (RG178 - KX21A)

P/N: C291 145 007 (MIL-C-17/93-RG178)

P/N: C291 145 017 (NF-C-93/550-KX21A)

APPLICATION NOTE

Due to its small diameter and its stranded inner conductor, RG 178 / 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.

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	50Ω ± 3Ω	
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

Recommended minimum bending 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	

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 √f GHz) + (0.04 x f GHz)		
Power calculation (W)	60 / √f GHz		

[1] SPCCS = Silver Plated Copper covered steel
[2] PTFE = PolyTetraFluoroEthylene
[3] SPC = Silver Plated Copper
[4] FEP = Fluorinated Ethylene Propylene

Flexible cable 2/50 S (non magnetic RG178 type)

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

APPLICATION NOTE

Based on MIL-C17/93 US standard, this cable is used where non magnetic is required.

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

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

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	50Ω ± 2Ω	
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

Recommended minimum bending 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	

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

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

Flexible cable 2/50 D (124416 type)

P/N: C291 146 087

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 2mm single braided cables.

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

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

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	50Ω ± 2Ω	
Operating frequency range	DC - 3 GHz	
Shielding effectiveness	80 dB	
Voltage withstanding	3 000 V rms	
Peak power	1.8 kW	
Capacitance	105 pF / m	32 pF / ft
Velocity of propagation	69 % (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

Recommended minimum bending 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	

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

Flexible cable 2/75 S (296775 type)

P/N: C291 147 060

APPLICATION NOTE

Due to its 75 ohms characteristic impedance, this cable is is best suited for TV/Video and networks applications.
Its small diameter and light weight make it perfect to be used in all miniature, space saving and dymamic applications.

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[4]	1.90	0.075

ELECTRICAL CHARACTERISTICS

Characteristic impedance	75Ω ± 5Ω	
Operating frequency range	DC - 3 GHz	
Shielding effectiveness	50 dB min	
Voltage withstanding	8 000 V rms	
Peak power	400 W	
Capacitance	67 pF / m	20.1 pF / ft
Velocity of propagation	66 % (5 ns / m)	

MECHANICAL CHARACTERISTICS

Recommended minimum bending 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)	

FREQUENCY / ATTENUATION (typ. / 25 °C) / 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] PE = PolyEthylene
[3] SPC = Silver Plated Copper
[4] LSZH PE = Low Smoke Zero Halogen PolyEthylene

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

Flexible cable 2.6/50 S (RG174 - KX3B)

Cost effective solution

P/N: C291 150 000 (MIL-C-17/119-RG174)

P/N: C291 150 010 (NF-C-93/550-KX3B)

APPLICATION NOTE

For cost savings in 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.

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	50Ω ± 2Ω	
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

Recommended minimum bending 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	

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
[4] PVC = PolyVinyl Chloride

Flexible cable 2.6/50 S (RG316 - KX22A)

P/N: C291 170 007 (MIL-C-17/113-RG316)

P/N: C291 170 017 (NF-C-93/550-KX22A)

APPLICATION NOTE

RG316 is one of the most popular RG cables.

This cable has good flexibility and better attenuation than RG174.

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

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	50Ω ± 2Ω	
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

Recommended minimum bending 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	

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 = PolyTetraFluoroEthylene
[3] SPC = Silver Plated Copper
[4] FEP = Fluorinated Ethylene Propylene

Flexible cable 2.6/50 D (RD316)

P/N: C291 185 067

APPLICATION NOTE

Based on the RG 316 construction, RD316 has an outer shield braid which allows higher screening effectiveness and better mechanical resistance.
Suitable for severe thermal conditions, this cable is compatible with a large range of connector series.

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	50Ω ± 2Ω	
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

Recommended minimum bending 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	

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 = PolyTetraFluoroEthylene
[3] FEP = Fluorinated Ethylene Propylene

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

Flexible cable 2.6/75 S (RG179)

P/N: C291 210 007 (MIL-C-17/94-RG179)

APPLICATION NOTE

Due to its 75 ohms characteristic impedance, RG179 is dedicated to TV/Video application.

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

Suitable for severe thermal conditions.

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	75Ω ± 3Ω	
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

Recommended minimum bending 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	

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	117
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
[4] FEP = Fluorinated Ethylene Propylene

Flexible cable 4.6/75 D (HD 0.6/2.8 - mini RG59 type)

P/N: C291 333 039

APPLICATION NOTE

Due to its 75 ohms characteristic impedance, this cable is dedicated to HDTV/Video applications.

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Solid BC[1]	0.60	0.024
Dielectric	Foam PE[2]	2.80	0.110
Inner shield	Triplex tape Al[3]/PES[4]/Al	2.90	0.114
Outer shield	TC[5] braid	3.30	0.130
Jacket	Purple LSZH PE[6]	4.60	0.181

ELECTRICAL CHARACTERISTICS

Characteristic impedance	75Ω ± 3Ω	
Operating frequency range	DC - 3 GHz	
Shielding effectiveness	-	
Voltage withstanding	1 500 V rms	
Peak power	-	
Capacitance	56 pF / m	17.07 pF / ft
Velocity of propagation	78 % (4.3 ns / m)	

MECHANICAL CHARACTERISTICS

Recommended minimum bending radius	37 mm	1.46 inch
Weight	24 g / m	0.0161 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

Operating temperature range	-20 / +70 °C	-4 / +158 °F
Fire resistance	Yes (IEC 60332-1)	
Halogen free	Yes (IEC 60754-1 & -2)	

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

GHz	dB / m	dB / ft	Watts
0.05	0.073	0.022	-
0.1	0.103	0.031	-
0.5	0.238	0.072	-
0.8	0.305	0.092	-
1.0	0.343	0.104	-
1.5	0.426	0.129	-
2.0	0.499	0.151	-
2.5	0.563	0.171	-
3.0	0.623	0.189	-
Attenuation calculation (dB/m)	(0.32 x √f GHz) + (0.023 x f GHz)		

[1] BC = Bare Copper
[2] PE = PolyEthylene
[3] Al = Aluminum
[4] PES = PolyESter
[5] TC = Tinned Copper
[6] 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 S (RG58 - KX15)

P/N: C291 305 000 (MIL-C-17/28-RG58)

P/N: C291 305 010 (NF-C-93/550-KX15)

APPLICATION NOTE

RG58 is one of the most popular RG cables.

Due to its construction and raw material construction, RG58 / KX15 is designed to perform the same as 5/50 cables (RG142, RG223, ECO142)

This very flexible cable can be considered for applications requiring low electrical performance and reduced cost.

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	50Ω ± 2Ω	
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

Recommended minimum bending 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	

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)	55 / √f GHz		

[1] TC = Tinned Copper
[2] PE = PolyEthylene
[3] PVC = PolyVinyl Chloride

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

Flexible cable 5/50 D (RG142)

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

APPLICATION NOTE

RG142 is one of the most popular RG cables.

This cable offers a compromise between flexibility and electrical performances.

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

Suitable for severe thermal conditions.

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	50Ω ± 2Ω	
Operating frequency range	DC - 12.4 GHz	
Shielding effectiveness	65 dB (DC - 3GHz)	
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

Recommended minimum bending 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	

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		

[1] SPCCS = Silver Plated Copper Covered Steel
[2] PTFE = PolyTetraFluoroEthylene
[3] SPC = Silver Plated Copper
[4] FEP = Fluorinated Ethylene Propylene

Flexible cable 5/50 D (RG223)

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

APPLICATION NOTE

RG223 is one of the most popular RG cables.

This cable is a good compromise between flexibility and electrical performance.

RG223 can be used instead of RG142 to reduce cost in applications that do not require high temperature resistance.

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	50Ω ± 2Ω	
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

Recommended minimum bending 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		

[1] SPC = Silver Plated Copper
[2] PE = PolyEthylene
[3] PVC = PolyVinyl Chloride

Flexible cable 5/50 D (RG400)

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

APPLICATION NOTE

Due to its stranded inner conductor, RG 400 is much more flexible than RG142 and RG223.

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

Suitable for severe thermal conditions.

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	50Ω ± 2Ω	
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

Recommended minimum bending 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	

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)

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

APPLICATION NOTE

Relevant standard: NF-C-93/550-KX23 (France)

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

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

Suitable for severe thermal conditions.

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	50Ω ± 2.5Ω	
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

Recommended minimum bending 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 (IEC 60332-1)	
Halogen free	No	

FREQUENCY / ATTENUATION (typ. / 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

Flexible cable 6/75 S (RG59)

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

APPLICATION NOTE

Due to its 75 ohms characteristic impedance, RG59 is best suited for TV/ Video application.

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

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	75Ω ± 3Ω	
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

Recommended minimum bending radius	30 mm	1.18 inch
Weight	47 g / m	0.0315 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

Operating temperature range	-40 / +85 °C	-40 / +185 °F
Fire resistance	No	
Halogen free	No	

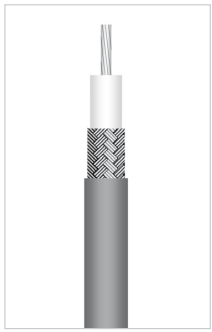
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level / 25 °C)

GHz	dB / m	dB / ft	Watts
0.05	0.09	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

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

Flexible cable 6/75 S (KX6A)



Cost effective solution

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

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 is better suited instead of RG59 for specific applications requiring high flexibility.

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	75Ω ± 3Ω	
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

Recommended minimum bending 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		

[1] PE = PolyEthylene
[2] PVC = PolyVinyl Chloride

Flexible cable 6/75 D (HD 0.8/3.7 - RG59 type)

P/N: C291360 093

APPLICATION NOTE

Due to its 75 ohms characteristic impedance, this cable is best suited for HDTV/Video application.

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Solid BC[1]	0.81	0.032
Dielectric	FHD PE[2]	3.68	0.145
Inner shield	Al[3] tape	3.81	0.150
Outer shield	TC[4] braid	4.37	0.172
Jacket	Blue PVC[5]	5.92	0.233

ELECTRICAL CHARACTERISTICS

Characteristic impedance	75Ω ± 1.5Ω	
Operating frequency range	DC - 4.5 GHz	
Shielding effectiveness	-	
Voltage withstanding	300 V rms	
Peak power	-	
Capacitance	53.5 pF / m	16.3 pF / ft
Velocity of propagation	83 % (4.0 ns / m)	

MECHANICAL CHARACTERISTICS

Recommended minimum bending radius	63.5 mm	2.5 inch
Weight	46 g / m	0.031 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

Operating temperature range	-30 / +75 °C	-22 / +167 °F
Fire resistance	Yes (UL1666 Vertical Shaft)	
Halogen free	No	

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

GHz	dB / m	dB / ft	Watts
0.5	0.173	0.052	-
1.0	0.247	0.075	-
1.5	0.304	0.092	-
2.0	0.353	0.107	-
2.5	0.397	0.120	-
3.0	0.437	0.132	-
3.5	0.473	0.143	-
4.0	0.508	0.154	-
4.5	0.541	0.164	-
Attenuation calculation (dB/m)	(0.24 x √f GHz) + (0.007 x f GHz)		

[1] BC = Bare Copper
[2] FHD PE = Foam High Density PolyEthylene
[3] Al = Aluminum
[4] TC = Tinned Copper
[5] PVC = PolyVinyl Chloride

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

Flexible cable 7/75 D (HD 1.0/4.8 - RG6 type)

P/N: C291 384 083

APPLICATION NOTE

Due to its 75 ohms characteristic impedance, this cable is rbetter suited for HDTV/Video application.

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Solid BC[1]	1.02	0.040
Dielectric	FHD PE[2]	4.56	0.180
Inner shield	Al[3] tape	4.70	0.185
Outer shield	TC[4] braid	5.26	0.207
Jacket	Blue PVC[5]	6.95	0.274

ELECTRICAL CHARACTERISTICS

Characteristic impedance	75Ω ± 1.5Ω	
Operating frequency range	DC - 4.5 GHz	
Shielding effectiveness	-	
Voltage withstanding	300 V rms	
Peak power	-	
Capacitance	53.15 pF / m	16.2 pF / ft
Velocity of propagation	82 % (4.1 ns / m)	

MECHANICAL CHARACTERISTICS

Recommended minimum bending radius	69.85 mm	2.75 inch
Weight	59.5 g / m	0.04 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

Operating temperature range	-30 / +75 °C	-22 / +167 °F
Fire resistance	Yes (UL1666 Vertical Shaft)	
Halogen free	No	

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

GHz	dB / m	dB / ft	Watts
0.5	0.134	0.040	-
1.0	0.193	0.058	-
1.5	0.240	0.073	-
2.0	0.281	0.085	-
2.5	0.318	0.096	-
3.0	0.352	0.107	-
3.5	0.384	0.116	-
4.0	0.414	0.125	-
4.5	0.443	0.134	-
Attenuation calculation (dB/m)	(0.179 x √f GHz) + (0.014 x f GHz)		

[1] BC = Bare Copper
[2] FHD PE = Foam High Density PolyEthylene
[3] Al = Aluminum
[4] TC = Tinned Copper
[5] PVC = PolyVinyl Chloride

Flexible cable 10/50 S (RG213 - KX4)

Cost effective solution

P/N: C291 510 000 (MIL-C-17/74-RG213)

P/N: C291 510 010 (NF-C-93/550-KX4)

APPLICATION NOTE

Due to its construction and raw material selection, RG213 is a cost effectiveness solution in the 10 mm cable range.

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

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Standed 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	50Ω ± 2Ω	
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

Recommended minimum bending 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	

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 = PolyVinyl Chloride

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

Flexible cable 10/50 D (RG393)

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

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.

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	50Ω ± 2Ω	
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

Recommended minimum bending radius	40 mm	1.57 inch
Weight	235 g / m	0.1567 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

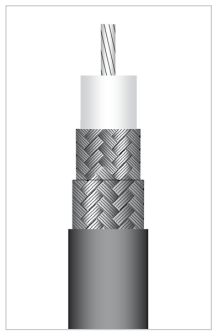
Operating temperature range	-55 / +200 °C	-67 / +392 °F
Fire resistance	Yes (CSA FT6 / IEC 332-2)	
Halogen free	No	

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

GHz	dB / m	dB / ft	Watts
0.5	0.15	0.05	1 273
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

Flexible cable 11/50 D (RG214 - KX13)



P/N: C291 600 000 (MIL-C-17/75-RG214)

P/N: C291 600 010 (NF-C-93/550-KX13)

APPLICATION NOTE

RG214 is one of the most popular RG cables.

To reduce cost when thermal conditions allow this cable may be used instead of RG393.

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Standed 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	50Ω ± 2Ω	
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

Recommended minimum bending 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		

[1] SPC = Silver Plated Copper
[2] PE = PolyEthylene
[3] PVC = PolyVinyl Chloride

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

Flexible cable 11/75 D (RG216)

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

APPLICATION NOTE

Due to its 75 ohms characteristic impedance, RG 216 is better suited for TV/Video applications.

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	75Ω ± 3Ω	
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

Recommended minimum bending 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	

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 = PolyVinyl Chloride

Flexible cable 2.6/50 S (ECO316: alternative to RG316)

ECO-Friendly cable
Cost effective solution

P/N: C291 999 904

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 RG 174.
- **Environmental advantages:** 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 standards.
- **Advantageous in term of price:** ECO316 design has integrated all Radiall knowledge to reach the best performance with a very competitive price.

ECO316 is UL style 1375 approved.

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

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	-	-	-
Jacket	Black LSZH PE[3]	2.45	0.096

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50Ω ± 2Ω	
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

Recommended minimum bending 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		

[1] OFC = Oxygen Free Copper
[2] PE = 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 2.6/50 S (ECO316X)

ECO-Friendly cable
Cost effective solution

P/N: C291 171 083

APPLICATION NOTE

Designed by Radiall, ECO316X is an 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.

• **Environmental advantages:**: 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.

• **Advantageous in term of price:** ECO316X design has integrated all Radiall knowledge to reach the best performance with a very competitive price.

ECO316X is UL style 1375 and 3651 approved

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

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	50Ω ± 2Ω	
Operating frequency range	DC - 3 GHz	
Shielding effectiveness	35 dB	
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

Recommended minimum bending 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)	

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level / 20 °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		

[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 2.6/50 D (ECO316D: alternative to RD316)

ECO-Friendly cable
Cost effective solution

P/N: C291 999 905

APPLICATION NOTE

Designed by Radiall, ECO316D is an alternative solution to RD316:

• **Advantageous in term of electrical performance:** its optimized construction allows better attenuation and screening effectiveness than RD316.

• **Environmental advantages:** 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 standards.

• **Advantageous in term of price:** ECO316D design has integrated all Radiall knowledge to reach the best performance with a very competitive price.

ECO316D is UL style 1375 approved.

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

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	50Ω ± 2Ω	
Operating frequency range	DC - 3 GHz	
Shielding effectiveness	65 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

Recommended minimum bending 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		

[1] OFC = Oxygen Free Copper
[2] PE = PolyEthylene
[3] LSZH PE = Low Smoke Zero Halogen PolyEthylene

Flexible cable 2.6/50 D (ECO316DX)

ECO-Friendly cable
Cost effective solution

P/N: C291 217 020

APPLICATION NOTE

Designed by Radiall, ECO316DX is an 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.

• **Environmental advantages::** 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.

• **Advantageous in term of price: ECO316DX** design has integrated all Radiall knowledge to reach the best performance with a very competitive price.

ECO316DX is UL style 1375 and 3651 approved.

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

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 with blue stripe LSZH PE[3]	3.16	0.124

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50Ω ± 2Ω	
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

Recommended minimum bending 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 (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
0.5	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		

[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 (ECO142: alternative to RG142)

ECO-Friendly cable
Cost effective solution

P/N: C291 325 290

APPLICATION NOTE

Designed by Radiall, ECO142 is an alternative solution to RG142:

• **Advantageous in term of electrical performance:** its optimized construction allows better attenuation and screening effectiveness than RG142.

• **Environmental advantages::** 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 standards.

• **Advantageous in term of price:** ECO142 design has integrated all Radiall knowledge to reach the best performance with a very competitive price.

ECO142 is UL style 1375 approved.

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

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Solid 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	50Ω ± 2Ω	
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

Recommended minimum bending radius	15 mm	0.590 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 (typ.) / 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	0.66	0.20	82
3.0	0.73	0.22	75
Attenuation calculation (dB/m)	(0.385 x √f GHz) + (0.02 x f GHz)		
Power calculation (W)	130 / √f GHz		

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

Flexible cable 5/50 D (ECO142X)

ECO-Friendly cable
Cost effective solution

P/N: C291 320 180

APPLICATION NOTE

Designed by Radiall, ECO142X is an 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.

• **Environmental advantages::** 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.

• **Advantageous in term of price:** ECO142X design has integrated all Radiall knowledge to reach the best performance with a very competitive price.

ECO142X is UL style 1375 and 3651 approved.

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

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 with blue stripe LSZH PE[3]	5.00	0.197

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50Ω ± 2Ω	
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

Recommended minimum bending radius	30 mm	1.18 inch
Weight	60 g / m	0.0433 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)	

FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level / 25 °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 (Power 142: alternative to RG142)

P/N: C291 325 270

APPLICATION NOTE

Designed by Radiall, POWER142 is an 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.

• **Environmental advantages::** the flame retardant jacket allows POWER142 to meet fire resistance standards.

• **Advantageous in term of price:** POWER142 design has integrated all Radiall knowledge to reach the best performance with a very competitive price.

POWER142 is UL style 1375 approved.

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

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	50Ω ± 2Ω	
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

Recommended minimum bending radius	25 mm	0.980 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	

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

Flexible cable 6/50 D (ECO230)

P/N: C291 326 490

APPLICATION NOTE

Designed by Radiall, ECO230 is an alternative solution to 5 mm dia. cables when higher power level is required:
- **Advantageous in term of electrical performance:** its optimized construction allows better attenuation and screening effectiveness than RG cables.
- **Environmental advantages::** 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 standards.
- **Advantageous in term of price:** ECO230 design has integrated all Radiall knowledge to reach the best performance with a very competitive price.

ECO230 is UL style 1375 approved.

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	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	50Ω ± 2Ω	
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

Recommended minimum bending 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)	

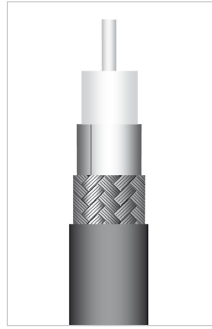
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level / 40 °C)

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
4.0	0.59	0.18	88
Attenuation calculation (dB/m)	(0.264 x √f GHz) + (0.015 x f GHz)		
Power calculation (W)	175 / √f GHz		

[1] OFC = Oxygen Free Copper
[2] PE = PolyEthylene
[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)

Flexible cable 10/50 D (ECO393: alternative to RG393)



ECO-Friendly cable
Cost effective solution

P/N: C291 491 060

APPLICATION NOTE

Designed by Radiall, ECO393 is an alternative solution to RG393:
- **Advantageous in term of electrical performance:** its optimized construction allows better attenuation and screening effectiveness than RG393
- **Environmental advantages::** 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 standards.
- **Advantageous in term of price:** ECO393 design has integrated all Radiall knowledge to reach the best performance with a very competitive price.

ECO393 is UL style 1375 approved.

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

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	50Ω ± 2Ω	
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

Recommended minimum bending 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	1 265
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		

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

Flexible cable 10/50 D (ECO393X)

ECO-Friendly cable
Cost effective solution

P/N: C291 512 020

APPLICATION NOTE

Designed by Radiall, ECO393X is an alternative solution to ECO393 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 ECO393.
- **Environmental advantages:** halogen and sulphur free, this cable does not emit any toxic substance when submitted to fire. The flame retardant jacket allows ECO393X to meet fire resistance standards.
- **Advantageous in term of price:** ECO393X design has integrated all Radiall knowledge to reach the best performance with a very competitive price.

ECO393X is UL style 3651 approved.

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

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Stranded SPC[1]	2.35	0.093
Dielectric	X foam PE[2]	7.20	0.283
Inner shield	SPC[1] braid	7.89	0.311
Outer shield	SPC[1] braid	8.57	0.337
Jacket	Black LSZH PE[3]	10.00	0.394

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50Ω ± 2Ω	
Operating frequency range	DC - 6 GHz	
Shielding effectiveness	78 dB (DC - 3 GHz)	
Voltage withstanding	5 000 V rms	
Capacitance	94 pF / m	28.1 pF / ft
Velocity of propagation	71 % (4.7 ns / m)	

MECHANICAL CHARACTERISTICS

Recommended minimum bending radius	50 mm	1.97 inch
Weight	180 g / m	0.120 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

Operating temperature range	-40 / +105 °C	-40 / +221 °F
Fire resistance	Yes (UL1581 VW1)	
Halogen free	Yes (IEC 754-2)	

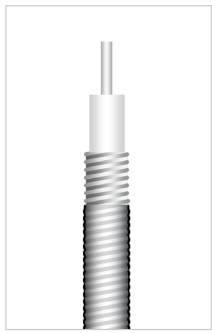
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level / 25 °C)

GHz	dB / m	dB / ft	Watts
0.5	0.18	0.05	693
1.0	0.29	0.09	490
1.5	0.38	0.12	400
2.0	0.47	0.14	346
2.5	0.56	0.17	310
3.0	0.64	0.19	283
3.5	0.72	0.22	262
4.0	0.80	0.24	245
5.0	0.96	0.29	219
6.0	1.11	0.34	200
Attenuation calculation (dB/m)	(0.17 x √f GHz) + (0.115 x f GHz)		
Power calculation (W)	490 / √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)

Corrugated cable 1/4" (Cellflex 1/4" Spiral)



P/N: C291 993 170 (Cellflex HCF 1/4" - 50 AlCu)

APPLICATION NOTE

The outer conductor of this cable is made up of a corrugated tube (spiral winding).

This construction allows perfect shielding and bendability while enabling a large bending radius.

The foam dielectric provides excellent loss and low return loss levels.

This cable will be advised for feeder and 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 outoor installations.

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Solid AlCC[1]	1.90	0.075
Dielectric	Foam PE[2]	4.30	0.169
Corrugated inner shield	Spiral copper tube	6.50	0.256
Outer shield	-	-	-
Jacket	Black LSZH PE[3]	7.80	0.307

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50Ω ± 1Ω	
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

Recommended minimum bending radius	25.0 mm	0.984 inch
Weight	70 g / m	0.047 lb / ft

ENVIRONMENTAL CHARACTERISTICS

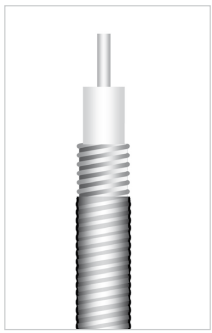
Operating temperature range	-40 / +85 °C	-40 / +185 °F
Fire resistance	Yes (UL 1581 VW1 / IEC 332-1)	
Halogen free	Yes (IEC 754-2)	

FREQUENCY / ATTENUATION (typ. / 25 °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)		

[1] AlCC = Aluminum Covered Copper
[2] PE = PolyEthylene
[3] LSZH PE = Low Smoke Zero Hallogen PolyEthylene

Corrugated cable 3/8" (Cellflex 3/8" Spiral)



P/N: C291 996 170 (Cellflex HCF 3/8" CuH-50 AlCu)

APPLICATION NOTE

The outer conductor of this cable is made up of a corrugated tube (spiral winding).

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

The foam dielectric provides excellent loss and low return loss levels.

This cable is suitable for feeder and jumper assemblies in cellular networks as well as applications requiring high performance level on long distances.

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

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Solid AlCC[1]	2.60	0.102
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	0.402

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50Ω ± 1Ω	
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

Recommended minimum bending radius	25.0 mm	0.984 inch
Weight	120 g / m	0.080 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

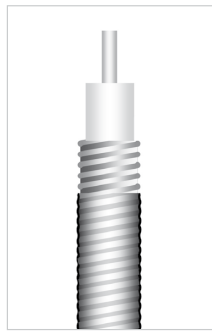
Operating temperature range	-40 / +85 °C	-40 / +185 °F
Fire resistance	Yes (UL 1581 VW1 / IEC 332-1)	
Halogen free	Yes (IEC 754-2)	

FREQUENCY / ATTENUATION (typ. / 25 °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)		

[1] AlCC = Aluminum Covered Copper
[2] PE = PolyEthylene
[3] LSZH PE = Low Smoke Zero Hallogen PolyEthylene

Corrugated cable 1/2" (Cellflex 1/2" Spiral)



P/N: C291 994 170 (Cellflex HCF 1/2" CuH-50 AlCu)

APPLICATION NOTE

The outer conductor of this cable is made up of a corrugated tube (spiral winding).

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

The foam dielectric provides excellent loss and low return loss levels.

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

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

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Solid AlCC[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]	13.50	0.531

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50Ω ± 1Ω	
Operating frequency range	DC - 11.7 GHz	
Shielding effectiveness	110 dB	
Voltage withstanding	5 845 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

Recommended minimum bending radius	32.0 mm	1.260 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 (typ. / 25 °C) / CW MAX POWER (sea level / 40 °C)

GHz	dB / m	dB / ft	Watts
0.5	0.08	0.02	1 120
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	0.42	0.13	204
Attenuation calculation (dB/m)	(0.10 x √f GHz) + (0.01 x f GHz)		

[1] AlCC = Aluminum Covered Copper
[2] PE = PolyEthylene
[3] LSZH PE = Low Smoke Zero Hallogen PolyEthylene

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

Semi-rigid cable .047 (Copper)

P/N: C291 855 001 (MIL-C-17/151-00001)

APPLICATION NOTE

This is the smallest semi-rigid cable size available through Radiall.

Its reduced size allows it to be easily handformable during integration operations.

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	50Ω ± 2.5Ω	
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

Recommended minimum bending radius	3.17 mm	0.125 inch
Weight	6.0 g / m	0.0040 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

Operating temperature range	-40 / +100 °C	-40 / +212 °F
Fire resistance	N/A	
Halogen free	No	

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

Semi-rigid cable .047 (Tinned copper)

P/N: C291 855 065 (MIL-C-17/151-00002 TYPE)

APPLICATION NOTE

This is the smallest semi-rigid cable size available at Radiall.

Its reduced size allows it to be easily handformable during integration operations.

Due to the outer conductor coating (tin), this cable will be used instead of standard .047 copper for applications requiring high corrosion resistance and improved solderability.

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Solid SPCCS[1]	0.29	0.011
Dielectric	Solid PTFE[2]	0.94	0.037
Inner shield	TC[3] tubing	1.19	0.047
Outer shield	-	-	-
Jacket	-	-	-

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50Ω ± 2.5Ω	
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

Recommended minimum bending radius	3.17 mm	0.125 inch
Weight	6.0 g / m	0.0040 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

Operating temperature range	-40 / +100 °C	-40 / +212 °F
Fire resistance	N/A	
Halogen free	No	

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)

Hand-formable cable .085 (unjacketed)

P/N: C291 844 065

APPLICATION NOTE

This handformable cable is the perfect 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 RG405 but temperature range is wider.

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	50Ω ± 2Ω	
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

Recommended minimum bending radius	3.2[4] / 9.5[5] mm	0.125[4] / 0.375[5] inch
Weight	17.8 g / m	0.0119 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

Operating temperature range	-65 / +150 °C	-85 / +302 °F
Fire resistance	N/A	
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		

[1] SPCCS = Silver Plated Copper Covered Steel
[2] PTFE = PolyTetraFluoroEthylene
[3] TS = Tin Soaked
[4] one time
[5] repeated

Semi-rigid cable .085 (RG405 - KS1)

P/N: C291 850 001 (MIL-C-17/133-RG405) (NF-C-93/551-KS1)

APPLICATION NOTE

RG405 is one of the most popular semi-rigid RG cables.
RG405 is a more preferred option 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.

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	50Ω ± 1.5Ω	
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

Recommended minimum bending 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	N/A	
Halogen free	No	

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)

P/N: C291 850 005 (MIL-C-17/133-00007)

APPLICATION NOTE

Due to the outer conductor coating (tin), this cable can be used instead of RG405 for applications requiring high corrosion resistance and improved solderability.

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	50Ω ± 1.5Ω	
Operating frequency range	DC - 20 GHz	
Shielding effectiveness	110 dB	
Voltage withstanding	5 000 V DC	
Peak power	1.9 kW	
Capacitance	100 pF / m	30 pF / ft
Velocity of propagation	70 % (4.8 ns / m)	

MECHANICAL CHARACTERISTICS

Recommended minimum bending 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	N/A	
Halogen free	No	

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

Semi-rigid cable .085 (Non magnetic)

P/N: C291 851 001 (MIL-C-17/133-00008)

APPLICATION NOTE

Based on RG405 standard, this cable is used where non magnetic is required.

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	50Ω ± 1.5Ω	
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

Recommended minimum bending 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	N/A	
Halogen free	No	

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
[2] PTFE = PolyTetraFluoroEthylene

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

Semi-rigid cable .085 (Aluminum)

P/N: C291 844 187 (MIL-C-17/133-00013)

APPLICATION NOTE

Based on RG405 standard, this cable will 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.

The cable can be reshaped, eliminating the need for costly drawings.

The outer conductor material (aluminum) slightly increases the attenuation compared to standard RG405.

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Solid SPCCS[1]	0.51	0.020
Dielectric	Solid PTFE[2]	1.68	0.066
Inner shield	TPAl[2] tubing	2.20	0.087
Outer shield	-	-	-
Jacket	-	-	-

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50Ω ± 1Ω	
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

Recommended minimum bending radius	1.8 mm	0.07 inch
Weight	10.7 g / m	0.0072 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

Operating temperature range	-40 / +125 °C	-40 / +257 °F
Fire resistance	N/A	
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		

[1] SPCCS = Silver Plated Copper Covered Steel
[2] PTFE = PolyTetraFluoroEthylene
[3] TPAl = Tin Plated Aluminum

Hand-formable cable .141 (Unjacketed)

P/N: C291 864 065

APPLICATION NOTE

This handformable cable is an 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.

The cable can be reshaped, eliminating the need for costly drawings.

Attenuation is a little bit higher than RG402 but the temperature range is wider.

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	50Ω ± 2Ω	
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

Recommended minimum bending radius	6.4[4] / 19[5] mm	0.25[4] / 0.75[5] inch
Weight	33 g / m	0.0221 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

Operating temperature range	-65 / +150 °C	-85 / +302 °F
Fire resistance	N/A	
Halogen free	No	

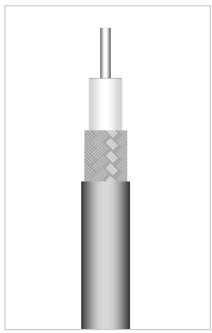
FREQUENCY / ATTENUATION (typ.) / CW MAX POWER (sea level / 25 °C)

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		

[1] SPCCS = Silver Plated Copper Covered Steel
[2] PTFE = PolyTetraFluoroEthylene
[3] TS = Tin Soaked
[4] one time
[5] repeated

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

Hand-formable cable .141 (Jacketed)



P/N: C291 866 378

APPLICATION NOTE

This jacketed cable will be used instead of standard unjacketed .141 for applications requiring electrical insulation and/or protection against environmental aggressions (chemical, humidity...).

The FEP jacket allows this cable to be used under severe thermal conditions.

The jacket slightly increases the spring back effect.

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	50Ω ± 2Ω	
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

Recommended minimum bending radius	11[5] / 33[6] mm	0.43[5] / 1.3[6] inch
Weight	38 g / m	0.0254 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

Operating temperature range	-65 / +150 °C	-85 / +302 °F
Fire resistance	Yes (CSA FT6 / IEC 332-2)	
Halogen free	No	

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

Semi-rigid cable .141 (RG402 - KS2)

P/N: C291 860 001 (MIL-C-17/130-RG402) (NF-C-93/551-KS2)

APPLICATION NOTE

RG402 is one of the most popular semi-rigid RG cables.

RG402 will be preferred to flexible RG142 for applications requiring high frequency range, low attenuation, high screening effectiveness, very small bending radius and/or no spring back effect.

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	50Ω ± 1Ω	
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

Recommended minimum bending radius	6.35 mm	0.250 inch
Weight	46 g / m	0.0309 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

Operating temperature range	-40 / +125 °C	-40 / +257 °F
Fire resistance	N/A	
Halogen free	No	

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)

P/N: C291 862 005 (MIL-C-17/130-00005)

APPLICATION NOTE

Due to the outer conductor coating (tin), this cable will be used instead of RG402 for applications requiring high corrosion resistance and improved solderability.

This cable is also an economical alternative to .141 silvered copper.

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	50Ω ± 1Ω	
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

Recommended minimum bending radius	1.90 mm	0.075 inch
Weight	46 g / m	0.0309 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

Operating temperature range	-40 / +125 °C	-40 / +257 °F
Fire resistance	N/A	
Halogen free	No	

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

Semi-rigid cable .141 (Silvered copper)

P/N: C291 861 066

APPLICATION NOTE

Based on RG402 standard, this cable is used where non magnetic is required.

In addition, due to the outer conductor coating (silver), this cable will be used instead of RG402 for applications requiring high corrosion resistance and improved solderability.

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[1] tubing	3.58	0.141
Outer shield	-	-	-
Jacket	-	-	-

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50Ω ± 1Ω	
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

Recommended minimum bending radius	1.90 mm	0.075 inch
Weight	46 g / m	0.0309 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

Operating temperature range	-40 / +125 °C	-40 / +257 °F
Fire resistance	N/A	
Halogen free	No	

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 (Non magnetic)

P/N: C291 861 061

APPLICATION NOTE

Based on RG402 standard, this cable is used where non magnetic is required.

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	50Ω ± 1Ω	
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

Recommended minimum bending 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	N/A	
Halogen free	No	

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

Semi-rigid cable .141 (Aluminum)

P/N: C291 864 187 (MIL-C-17/130-00009)

APPLICATION NOTE

Based on RG402 standard, this cable will 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.

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Solid SPCCS[1]	0.92	0.036
Dielectric	Solid PTFE[2]	2.98	0.117
Inner shield	TPAl[3]	3.58	0.141
Outer shield	-	-	-
Jacket	-	-	-

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50Ω ± 1Ω	
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

Recommended minimum bending radius	3.17 mm	0.125 inch
Weight	30 g / m	0.0185 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

Operating temperature range	-40 / +125 °C	-40 / +257 °F
Fire resistance	N/A	
Halogen free	No	

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] TPAl = Tin Plated Aluminum

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

Semi-rigid cable .250 (RG401 - KS3)

P/N: C291 870 001 (MIL-C-17/129-RG401) (NF-C-93/551-KS3)

APPLICATION NOTE

RG401 will be used for application requiring very low attenuation, high power and high screening effectiveness.

Note: reduced operating temperature range.

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	50Ω ± 0.5Ω	
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

Recommended minimum bending radius	9.53 mm	0.375 inch
Weight	140 g / m	0.0945 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

Operating temperature range	-40 / +90 °C	-40 / +194 °F
Fire resistance	N/A	
Halogen free	No	

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

Semi-rigid cable .250 (Aluminum)

P/N: C291 874 187

APPLICATION NOTE

Based on RG401 standard, this cable will 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.

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Solid SPC[1]	1.63	0.064
Dielectric	Solid PTFE[2]	5.31	0.209
Inner shield	TPAl[3] tubing	6.35	0.250
Outer shield	-	-	-
Jacket	-	-	-

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50Ω ± 1Ω	
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

Recommended minimum bending radius	9.53 mm	0.375 inch
Weight	79.5 g / m	0.0530 lbs / ft

ENVIRONMENTAL CHARACTERISTICS

Operating temperature range	-40 / +100 °C	-40 / +212 °F
Fire resistance	N/A	
Halogen free	No	

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
[3] TPAl = Tin Plated Aluminum

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

Low loss flexible cable 2.6/50 S+F
(AEP-100FR alternative to LMR-100FR®)

P/N: C291 327 060

APPLICATION NOTE

AEP-100FR cable is an alternative solution to 50 Ohms LMR-100FR® cable offering the same performance and similar construction with cost advantage.

REGULATIONS

RoHS compliant
UL/NEC: CMR
UL/CSA: FT4

CONNECTORS COMPATIBLE WITH AEP-100FR (and to LMR® 100FR)

QMA Series

P/N	Interface	Model
R123 071 000	Straight plug	Crimp type

SMA Series

P/N	Interface	Model
R124 071 123	Straight plug	Crimp type
R124 172 123	R/A plug	Crimp type
R124 312 123	Straight BH jack	Crimp type

TNC Series

P/N	Interface	Model
R143 075 000	Straight plug	Crimp type

N Series

P/N	Interface	Model
R161 072 000	Straight plug	Crimp type

[1] BC = Bare Copper
[2] PE = PolyEthylene

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Solid BC [1]	0.46	0.018
Dielectric	Solid PE[2]	1.52	0.06
Inner shield	Al Tape Unbonded	1.65	0.065
Outer shield	Tinned Copper braid	2.11	0.083
Outer jacket	Black LSZH	2.79	0.11

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50 ohms	
Operating frequency range	DC - 6 GHz	
Dielectric constant	2.3	
Screening effectiveness	> 90 dB	
Velocity of propagation	66 %	
Capacitance	101.1 pF / m	30.8 pF / ft
Inductance	0.25 uH / m	0.077 uH / ft
Time delay	5.05 nS / m	1.54 nS / ft
Inner conductor DC resistance	266 ohms / km	81.0 ohms / 1000 ft
Outer conductor DC resistance	31.2 ohms / km	9.5 ohms / 1000 ft
Voltage withstand	500 Volts DC	
Jacket spark	2000 Volts RMS	
Peak power	0.6kW	
Phase stability over temp	< 25 ppm / deg C	

MECHANICAL CHARACTERISTICS

Maximum weight	14 g / m	0.092 lb / ft
Min. bend radius: installation	6.4 mm	0.25 inch
Min. bend radius: repeated	25.4 mm	1.0 inch
Bending moment	0.014 N-m	0.1 ft-lb
Tensile strength	6.8 kg	15 lb
Flat plate crush	0.18 kg / mm	10 lb / inch

ENVIRONMENTAL CHARACTERISTICS

Installation temperature range	-40 / +85 °C	-40 / +185 °F
Storage temperature range	-70 / +85 °C	-94 / +185 °F
Operating temperature range	-40 / +85 °C	-40 / +185 °F

FREQUENCY / ATTENUATION (typ.) / AVG POWER (*)

MHz	DB / 100 m	DB / 100 ft	kW
30	12.9	3.9	0.230
50	16.7	5.1	0.180
150	29.4	8.9	0.100
220	35.8	10.9	0.083
450	51.9	15.8	0.057
900	74.9	22.8	0.039
1500	98.7	30.1	0.029
1800	109.0	33.2	0.027
2000	115.5	35.2	0.025
2500	130.6	39.8	0.022
5800	210.3	64.1	0.013

(*) = Avg power calculated at sea level / 40°C and VSWR 1:0
(Cable-assembly power ratings may be limited by the connector type. Please contact us for specific needs)

Flexible low loss cable 5/50 S+F
(AEP-195FR alternative to LMR-195FR®)

P/N: C291 327 010

APPLICATION NOTE

AEP-195FR cable is an alternative solution to 50 Ohms LMR-195FR® cable offering the same performance and similar construction with cost advantage.

REGULATIONS

RoHS compliant
UL/NEC:CMR
UL/CSA: FT4

CONNECTORS COMPATIBLE WITH AEP-195FR (and to LMR® 195FR)

QMA Series

P/N	Interface	Model
R123 075 200	Straight plug	Crimp type

SMA Series

P/N	Interface	Model
R124 075 210	Straight plug	Crimp type
R124 175 110	R/A plug	Crimp type

TNC Series

P/N	Interface	Model
R143 082 027	Straight plug	Crimp type

N Series

P/N	Interface	Model
R161 082 120	Straight plug	Crimp type

[1] BC = Bare Copper
[2] PE = PolyEthylene

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Solid BC [1]	0.94	0.037
Dielectric	Foam PE[2]	2.79	0.11
Inner shield	Aluminum Tape	2.95	0.116
Outer shield	Tinned Copper braid	3.53	0.139
Outer jacket	Black LSZH	4.95	0.195

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50 ohms	
Operating frequency range	DC - 6 GHz	
Dielectric constant	1.56	
Screening effectiveness	> 90 dB	
Velocity of propagation	76 %	
Capacitance	83.3 pF / m	25.4 pF / ft
Inductance	0.21 uH / m	0.064 uH / ft
Time delay	4.17 nS / m	1.27 nS / ft
Inner conductor DC resistance	24.9 ohms / km	7.6 ohms / 1000 ft
Outer conductor DC resistance	16.1 ohms / km	4.9 ohms / 1000 ft
Voltage withstand	1000 Volts DC	
Jacket spark	3000 Volts RMS	
Peak power	2.5kW	
Phase stability over temp	< 25 ppm / deg C	

MECHANICAL CHARACTERISTICS

Maximum weight	30 g / m	0.021 lb / ft
Min. bend radius: installation	12.7 mm	0.5 inch
Min. bend radius: repeated	50.8 mm	2.0 inch
Bending moment	0.27 N-m	0.2 ft-lb
Tensile strength	18.2 kg	40 lb
Flat plate crush	0.27 kg / mm	15 lb / inch

ENVIRONMENTAL CHARACTERISTICS

Installation temperature range	-40 / +85 °C	-40 / +185 °F
Storage temperature range	-70 / +85 °C	-94 / +185 °F
Operating temperature range	-40 / +85 °C	-40 / +185 °F

FREQUENCY / ATTENUATION (typ.) / AVG POWER (*)

MHz	DB / 100 m	DB / 100 ft	kW
30	6.5	2.0	0.89
50	8.4	2.5	0.68
150	14.6	4.4	0.39
220	17.7	5.4	0.32
450	25.5	7.8	0.22
900	36.5	11.1	0.16
1500	47.7	14.5	0.12
1800	52.5	16.0	0.11
2000	55.4	16.9	0.10
2500	62.4	19.0	0.09
5800	98.1	29.9	0.06

(*) = Avg power calculated at sea level / 40°C and VSWR 1:0
(Cable-assembly power ratings may be limited by the connector type. Please contact us for specific needs)

Low loss Flexible cable 5/50 S+F
(AEP-200FR alternative to LMR-200FR®)

P/N: C291 327 020

APPLICATION NOTE

AEP-200FR cable is an alternative solution to 50 Ohms LMR-200FR® cable offering the same performance and similar construction with cost advantage.

REGULATIONS

RoHS compliant
UL/NEC: CMR
UL/CSA: FT4

CONNECTORS COMPATIBLE WITH AEP-200FR (and to LMR® 200FR)

QMA Series

P/N	Interface	Model
R123 096 110	Straight plug	Crimp type

SMA Series

P/N	Interface	Model
R124 076 450	Straight plug	Crimp type
R124 175 200	R/A plug	Crimp type

TNC Series

P/N	Interface	Model
R143 082 200	Straight plug	Crimp type

N Series

P/N	Interface	Model
R161 082 200	Straight plug	Crimp type
R161 182 080	R/A plug	Crimp type
R161 329 130	Straight BH jack	Crimp type

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Solid BC (1)	1.12	0.044
Dielectric	Foam PE(2)	2.95	0.116
Inner shield	Aluminum Tape	3.07	0.121
Outer shield	Tinned Copper braid	3.66	0.144
Outer jacket	Black LSZH	4.95	0.195

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50 ohms	
Operating frequency range	DC - 6 GHz	
Dielectric constant	1.45	
Screening effectiveness	> 90 dB	
Velocity of propagation	83 %	
Capacitance	80.3 pF / m	24.5 pF / ft
Inductance	0.20 uH / m	0.061 uH / ft
Time delay	4.02 nS / m	1.22 nS / ft
Inner conductor DC resistance	17.6 ohms / km	5.36 ohms / 1000 ft
Outer conductor DC resistance	16.1 ohms / km	4.9 ohms / 1000 ft
Voltage withstand	1000 Volts DC	
Jacket spark	3000 Volts RMS	
Peak power	2.5kW	
Phase stability over temp	< 25 ppm / deg C	

MECHANICAL CHARACTERISTICS

Maximum weight	30 g / m	0.022 lb / ft
Min. bend radius: installation	12.7 mm	0.5 inch
Min. bend radius: repeated	50.8 mm	2.0 inch
Bending moment	0.27 N-m	0.2 ft-lb
Tensile strength	18.2 kg	40 lb
Flat plate crush	0.27 kg / mm	15 lb / inch

ENVIRONMENTAL CHARACTERISTICS

Installation temperature range	-40 / +85 °C	-40 / +185 °F
Storage temperature range	-70 / +85 °C	-94 / +185 °F
Operating temperature range	-40 / +85 °C	-40 / +185 °F

FREQUENCY / ATTENUATION (typ.) / AVG POWER (*)

MHz	DB / 100 m	DB / 100 ft	kW
30	5.8	1.8	1.02
50	7.5	2.3	0.79
150	13.1	4.0	0.45
220	15.9	4.8	0.37
450	22.8	7.0	0.26
900	32.6	9.9	0.18
1500	42.4	12.9	0.14
1800	46.6	14.2	0.13
2000	49.3	15.0	0.12
2500	55.4	16.9	0.11
5800	86.5	26.4	0.07

(*) = Avg power calculated at sea level / 40°C and VSWR 1:0
(Cable-assemblypower ratings may be limited by the connector type. Please contact us for specific needs)

Flexible low loss cable 6.1/50 S+F
(AEP-240FR alternative to LMR-240FR®)

P/N: C291 327 030

APPLICATION NOTE

AEP-240FR cable is an alternative solution to 50 Ohms LMR-240FR® cable offering the same performance and similar construction with cost advantage.

REGULATIONS

RoHS compliant
UL/NEC: CMR
UL/CSA: FT4

CONNECTORS COMPATIBLE WITH AEP-240FR (and to LMR® 240FR)

QMA Series

P/N	Interface	Model
R123 076 310	Straight plug	Crimp type
R123 177 100	R/a plug	Crimp type
R123 314 010	Straight bh jack	Crimp type
R123W 076 310	Wp straight plug	Crimp type
R123W 177 110	Wp r/a plug	Crimp type

SMA Series

P/N	Interface	Model
R124 076 430	Straight plug	Crimp type
R124 175 310	R/A plug	Crimp type

TNC Series

P/N	Interface	Model
R143 084 161	Straight plug	Crimp type

N Series

P/N	Interface	Model
R161 075 030	Straight plug	Crimp type
R161 183 310	R/A plug	Crimp type
R161 329 140	Straight bh jack	Crimp type

QN Series

P/N	Interface	Model
R164 075 010	Straight plug	Crimp type

7/16 Series

P/N	Interface	Model
R185 085 007	Straight plug	Crimp type
R185 320 020	Straight BH jack	Crimp type

(1) BC = Bare Copper
(2) PE = PolyEt hylene

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Solid BC (1)	1.42	0.056
Dielectric	Foam PE(2)	3.81	0.15
Inner shield	Aluminum Tape	3.94	0.155
Outer shield	Tinned Copper braid	4.52	0.178
Outer jacket	Black LSZH	6.1	0.24

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50 ohms	
Operating frequency range	DC - 6 GHz	
Dielectric constant	1.42	
Screening effectiveness	> 90 dB	
Velocity of propagation	84 %	
Capacitance	79.4 pF / m	24.2 pF / ft
Inductance	0.20 uH / m	0.060 uH / ft
Time delay	3.97 nS / m	1.21 nS / ft
Inner conductor dc resistance	10.5 ohms / km	3.2 ohms / 1000 ft
Outer conductor dc resistance	12.8 ohms / km	3.89 ohms / 1000 ft
Voltage withstand	1500 Volts DC	
Jacket spark	5000 Volts RMS	
Peak power	5.6kW	
Phase stability over temp	< 25 ppm / deg C	

MECHANICAL CHARACTERISTICS

Maximum weight	0.05 kg / m	0.034 lb / ft
Min. bend radius: installation	19.1 mm	0.75 inch
Min. bend radius: repeated	63.5 mm	2.5 inch
Bending moment	0.34 N-m	0.25 ft-lb
Tensile strength	36.3 kg	80 lb
Flat plate crush	0.36 kg / mm	20 lb / inch

ENVIRONMENTAL CHARACTERISTICS

Installation temperature range	-40 / +85 °C	-40 / +185 °F
Storage temperature range	-70 / +85 °C	-94 / +185 °F
Operating temperature range	-40 / +85 °C	-40 / +185 °F

FREQUENCY / ATTENUATION (typ.) / AVG POWER (*)

MHz	DB / 100 m	DB / 100 ft	kW
30	4.4	1.3	1.49
50	5.7	1.7	1.15
150	9.9	3.0	0.66
220	12.0	3.7	0.54
450	17.3	5.3	0.38
900	24.8	7.6	0.26
1500	32.4	9.9	0.20
1800	35.6	10.9	0.18
2000	37.7	11.5	0.17
2500	42.4	12.9	0.15
5800	66.8	20.4	0.10

(*) = Avg power calculated at sea level / 40°C and VSWR 1:0
(Cable-assembly power ratings may be limited by the connector type. Please contact us for specific needs)

Low loss Flexible cable 10.3/50 S+F
(AEP-400FR alternative to LMR-400FR®)

P/N: C291 .327 040

APPLICATION NOTE

AEP-400FR cable is an alternative solution to 50 Ohms LMR-400FR® cable offering the same performance and similar construction with cost advantage.

REGULATIONS

RoHS compliant
UL/NEC: CMR
UL/CSA: FT4

CONNECTORS COMPATIBLE WITH AEP-400FR (and to LMR® 400FR)

SMA Series

P/N	Interface	Model
R124 080 030	Straight plug	Crimp type

TNC Series

P/N	Interface	Model
R143 089 117	Straight plug	Crimp type

N Series

P/N	Interface	Model
R161 088 180	Straight plug	Crimp type
R161 184 080	R/A plug	Crimp type
R161 331 060	Straight bh jack	Crimp type

QN Series

P/N	Interface	Model
R164 080 020	Straight plug	Crimp type
R164 185 007	R/A plug	Crimp type
R164 241 020	Straight bh jack	Crimp type

7/16 Series

P/N	Interface	Model
R185 085 007	Straight plug	Crimp type
R185 320 020	Straight BH jack	Crimp type

[1] BC = Bare Copper
[2] PE = PolyEt hylene

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Solid BCCAl [1]	2.74	0.108
Dielectric	Foam PE[2]	7.24	0.285
Inner shield	Aluminum Tape	7.39	0.291
Outer shield	Tinned Copper braid	8.13	0.32
Outer jacket	Black LSZH	10.29	0.405

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50 ohms	
Cut-off frequency	16 GHz	
Dielectric constant	1.38	
Screening effectiveness	> 90 dB	
Velocity of propagation	85 %	
Capacitance	78.4 pF / m	23.9 pF / ft
Inductance	0.20 uH / m	0.060 uH / ft
Time delay	3.97 nS / m	1.21 nS / ft
Inner conductor DC resistance	4.6 ohms / km	1.39 ohms / 1000 ft
Outer conductor DC resistance	5.4 ohms / km	1.65 ohms / 1000 ft
Voltage withstand	2500 Volts DC	
Jacket spark	8000 Volts RMS	
Peak power	16kW	
Phase stability over temp	< 25 ppm / deg C	

MECHANICAL CHARACTERISTICS

Maximum weight	0.10 kg / m	0.068 lb / ft
Min. bend radius: installation	25.4 mm	1.00 inch
Min. bend radius: repeated	101.6 mm	4.0 inch
Bending moment	0.68 N-m	0.5 ft-lb
Tensile strength	72.6 kg	160 lb
Flat plate crush	0.71 kg / mm	40 lb / inch

ENVIRONMENTAL CHARACTERISTICS

Installation temperature range	-40 / +85 °C	-40 / +185 °F
Storage temperature range	-70 / +85 °C	-94 / +185 °F
Operating temperature range	-40 / +85 °C	-40 / +185 °F

FREQUENCY / ATTENUATION (typ.) / AVG POWER (*)

MHz	DB / 100 m	DB / 100 ft	kW
30	2.2	0.7	3.33
50	2.9	0.9	2.57
150	5.0	1.5	1.47
220	6.1	1.9	1.20
450	8.9	2.7	0.83
900	12.8	3.9	0.58
1500	16.8	5.1	0.44
1800	18.6	5.7	0.40
2000	19.6	6.0	0.37
2500	22.2	6.8	0.33
5800	35.5	10.8	0.21

(*) = Avg power calculated at sea level / 40°C and VSWR 1:0
(Cable-assembly power ratings may be limited by the connector type. Please contact us for specific needs)

Flexible low loss cable 15/50 S+F
(AEP-600FR alternative to LMR-600FR®)

P/N: C291 327 050

APPLICATION NOTE

AEP-600FR cable is an alternative solution to 50 Ohms LMR-600FR® cable offering the same performance and similar construction with cost advantage.

REGULATIONS

RoHS compliant
UL/NEC: CMR
UL/CSA: FT4

CONNECTORS COMPATIBLE WITH AEP-600FR (and to LMR® 600FR)

N Series

P/N	Interface	Model
R161 079 200	Straight plug	Crimp type
R161 188 200	R/A plug	Crimp type
R161 331 400	Straight BH jack	Crimp type

QN Series

P/N	Interface	Model
R164 080 030	Straight plug	Crimp type

7/16 Series

P/N	Interface	Model
R185 077 010	Straight plug	Crimp type

[1] BCCAl = Copper Clad Aluminum
[2] PE = PolyEthylene

CONSTRUCTION / DIMENSIONS

	Material	mm	Inches
Center conductor	Solid BCCAl (1)	4.47	0.176
Dielectric	Foam PE(2)	11.56	0.455
Inner shield	Aluminum Tape	11.71	0.461
Outer shield	Tinned Copper braid	12.45	0.49
Outer jacket	Black LSZH	14.99	0.59

ELECTRICAL CHARACTERISTICS

Characteristic impedance	50 ohms	
Operating frequency range	DC - 6 GHz	
Dielectric constant	1.32	
Screening effectiveness	> 90 dB	
Velocity of propagation	87 %	
Capacitance	76.6 pF / m	23.4 pF / ft
Inductance	0.19 uH / m	0.058 uH / ft
Time delay	3.83 nS / m	1.17 nS / ft
Inner conductor DC resistance	1.7 ohms / km	0.53 ohms / 1000 ft
Outer conductor DC resistance	3.9 ohms / km	1.2 ohms / 1000 ft
Voltage withstand	4000 Volts DC	
Jacket spark	8000 Volts RMS	
Peak power	40kW	
Phase stability over temp	< 25 ppm / deg C	

MECHANICAL CHARACTERISTICS

Maximum weight	0.20 kg / m	0.131 lb / ft
Min. bend radius: installation	38.1 mm	1.50 inch
Min. bend radius: repeated	152.4 mm	6.0 inch
Bending moment	3.73 N-m	2.75 ft-lb
Tensile strength	158.9 kg	350 lb
Flat plate crush	1.07 kg / mm	60 lb / inch

ENVIRONMENTAL CHARACTERISTICS

Installation temperature range	-40 / +85 °C	-40 / +185 °F
Storage temperature range	-70 / +85 °C	-94 / +185 °F
Operating temperature range	-40 / +85 °C	-40 / +185 °F

FREQUENCY / ATTENUATION (typ.) / AVG POWER (*)

MHz	DB / 100 m	DB / 100 ft	kW
30	1.4	0.4	5.51
50	1.8	0.5	4.24
150	3.2	1.0	2.41
220	3.9	1.2	1.97
450	5.6	1.7	1.35
900	8.2	2.5	0.93
1500	10.9	3.3	0.70
1800	12.1	3.7	0.63
2000	12.8	3.9	0.59
2500	14.5	4.4	0.52
5800	23.8	7.3	0.32

(*) = Avg power calculated at sea level / 40°C and VSWR 1:0
(Cable-assembly power ratings may be limited by the connector type. Please contact us for specific needs)

Connectors

The unique design of SHF cables allows for the use of custom-designed connectors. At Radiall, we pay particular attention to the design and to termination techniques to ensure low VSWR and superior cable performance.

Our cable /connector terminations are designed to maintain shield integrity into the lowest leakage attainable in a flexible assembly. All electrical connections (center contact and inner tape shield) are soldered.

Most popular connector interfaces to fit SHF cable are SMPM, SMP, SSMA, SMA, QRE, TNC, and N Type.

SHF Cable Range

Ultra low loss flexible cable

Typical construction

Cable	VP	Max Dia.	Attenuation	Bending radius	Weight
SHF2.4M	**76%**	**2.45mm**	**4.59 dB/m @ 40GHz**	**10mm**	**20 g/m**
DC-40GHz		0.095in	139 dB/100ft	0.394in	6.1 g/ft
SHF2.9M [2]	**75%**	**2.90mm**	**5.92 dB/m @ 67GHz**	**25mm**	**23 g/m**
DC-67GHz		0.114in	179 dB/100ft	0.984in	7.01 g/ft
SHF3M	**76%**	**3.64mm**	**2.76 dB/m @ 40GHz**	**12.5mm**	**35 g/m**
DC-40GHz		0.139in	84 dB/100ft	0.492in	10.6 g/ft
SHF4M [2]	**84%**	**4.15mm**	**2.05 dM/m @ 40GHz**	**20mm**	**40 g/m**
DC-40GHz		0.160in	62 dB/100ft	0.788in	12.2 g/ft
SHF4.2M	**76%**	**4.20mm**	**1.96 dB/m @ 26.5GHz**	**25mm**	**45 g/m**
DC-26.5GHz		0.165in	60 dB/100ft	0.984in	13.6 g/ft
SHF4.6M	**84%**	**4.65mm**	**1.69 dB/m @ 32GHz**	**25mm**	**41 g/m**
DC-32GHz		0.183in	51 dB/100ft	0.984in	12.5 g/ft
SHF5M	**84%**	**5.20mm**	**1.27 dB/m @ 26.5GHz**	**25mm**	**60 g/m**
DC-26.5GHz		0.201in	39 dB/100ft	0.984	18.2 g/ft
SHF8M	**84%**	**7.78mm**	**0.68 dB/m @ 18GHz**	**40mm**	**130 g/m**
DC-18GHz		0.302in	21 dB/100ft	1.575in	39.4 g/ft
SHF13	**85%**	**13.80mm**	**0.33 dB/m @ 9.5GHz**	**60mm**	**280 g/m**
DC-9.5GHz		0.543in	9 dB/100ft	2.362in	84.8 g/ft

[2] Triple shield structure

[1] SPC: Silver Plated Copper

SHF Cable Range

Stranded Inner Conductor Cable

Using stranded center conductor allow better flexibility while keeping good IL performance level.

Longer flex life
SHF3, SHF5, SHF8

Ultra Flexible Cable

Unique design of center conductor as well as braiding and jacketing provide a unique flexibility behavior to SHF UF.

Low bending moment
Up to 1 million flexures
SHF2.2UF, SHF3UF, SHF5UF

Heavy Duty Protective Jacket

Projack provides the highest mechanical protection to SHF cables. Despite this high protection level, Projack maintains the same level of flexibility as the original cable.

Crush resistant 2500N/10cm
UV resistant
Watertightness

A/10 Armored Cable

In many customer applications, mechanical stress may damage cable assemblies. Radiall has designed several levels of armored structures embedding SHF core lines.

Crush resistant 1000N/10cm
Abrasion resistant
SHF5MA/10, SHF8MA/10

OD Outdoor Cable

Designed for outdoor environments, Radiall's outdoor cables are typically used for Ground Radars and Navy systems.

UV resistant
Watertightness
SHF5OD, SHF5MOD
SHF8OD, SHF8MOD

LW-2 Light Weight Cable

Radiall's Lightweight range is the best choice for on-board equipment, where weight and density are critical.

30% weight saving
SHF5MLW-2, SHF8MLW-2

AF-2 Air Frame Cable

SHF AirFrame cables: Robustness for extended life in extreme condition. Radiall's AirFrame cables are used in non-pressurized or not-protected areas.

Hermetically sealed
15 Km (50,000 ft) - 150°C
Fluid resistant
SHF5MAF-2, SHF8MAF-2

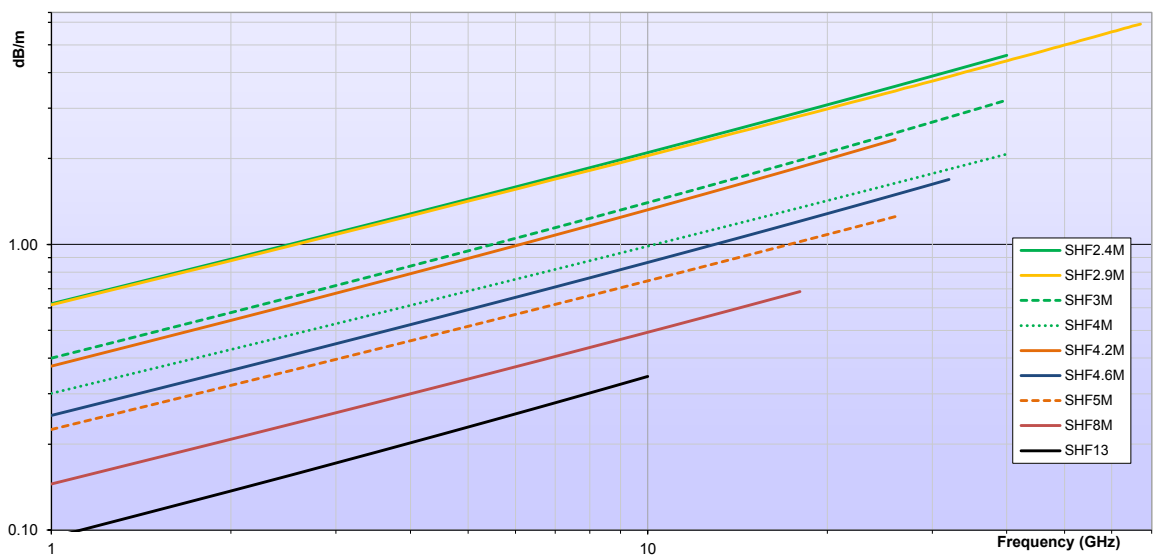
Ultra Low Loss SHF Cable Range

Attenuation (dB/m)

GHz		SHF2.4M	SHF2.9M	SHF3M	SHF4M	SHF4.2M	SHF4.6M	SHF5M	SHF8M	SHF13
1.0	Typical	0.62	0.62	0.40	0.30	0.38	0.25	0.23	0.15	0.09
2.0		0.89	0.88	0.58	0.43	0.54	0.36	0.32	0.21	0.14
4.0		1.28	1.26	0.84	0.61	0.79	0.52	0.46	0.30	0.20
6.0		1.59	1.56	1.05	0.76	0.99	0.65	0.57	0.37	0.26
8.0		1.86	1.82	1.23	0.88	1.16	0.76	0.66	0.44	0.30
12.4		2.36	2.30	1.59	1.10	1.50	0.98	0.84	0.55	-
18.0		2.91	2.82	1.97	1.35	1.87	1.21	1.02	0.68	-
26.5		3.62	3.49	2.49	1.66	2.36	1.51	1.27	-	-
32.0		4.03	3.87	2.79	1.83	-	1.69	-	-	-
40.0		4.59	4.39	3.20	2.07	-	-	-	-	-
50.0		-	4.99	-	-	-	-	-	-	-
67.0		-	5.92	-	-	-	-	-	-	-

Attenuation (dB/100 ft)

GHz		SHF2.4M	SHF2.9M	SHF3M	SHF4M	SHF4.2M	SHF4.6M	SHF5M	SHF8M	SHF13
1.0	Typical	18.90	18.90	12.19	9.14	11.58	7.62	7.01	4.57	2.74
2.0		27.13	26.82	17.68	13.11	16.46	10.97	9.75	6.40	4.27
4.0		39.01	38.40	25.60	18.59	24.08	15.85	14.02	9.14	6.10
6.0		48.46	47.55	32.00	23.16	30.18	19.81	17.37	11.28	7.92
8.0		56.69	55.47	37.49	26.82	35.36	23.16	20.12	13.41	9.14
12.4		71.93	70.10	48.46	33.53	45.72	29.87	25.60	16.76	-
18.0		88.70	85.95	60.05	41.15	57.00	36.88	31.09	-	-
26.5		110.34	106.38	75.90	50.60	71.93	46.02	38.71	-	-
32.0		122.83	117.96	85.04	55.78	-	51.51	-	-	-
40.0		139.90	133.81	97.54	63.09	-	-	-	-	-
50.0		-	152.10	-	-	-	-	-	-	-
67.0		-	180.44	-	-	-	-	-	-	-

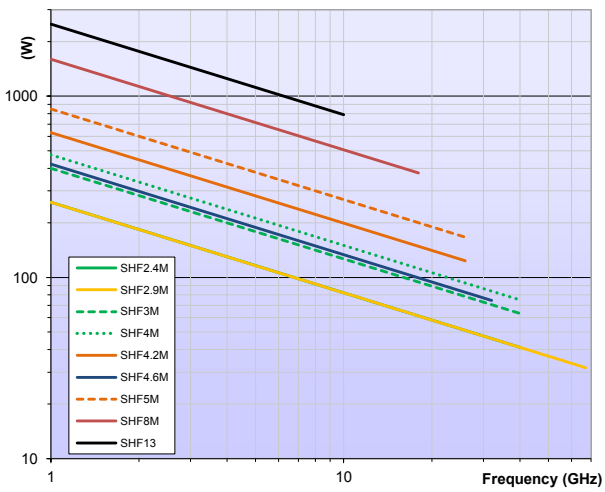


Ultra Low Loss SHF Cable Range

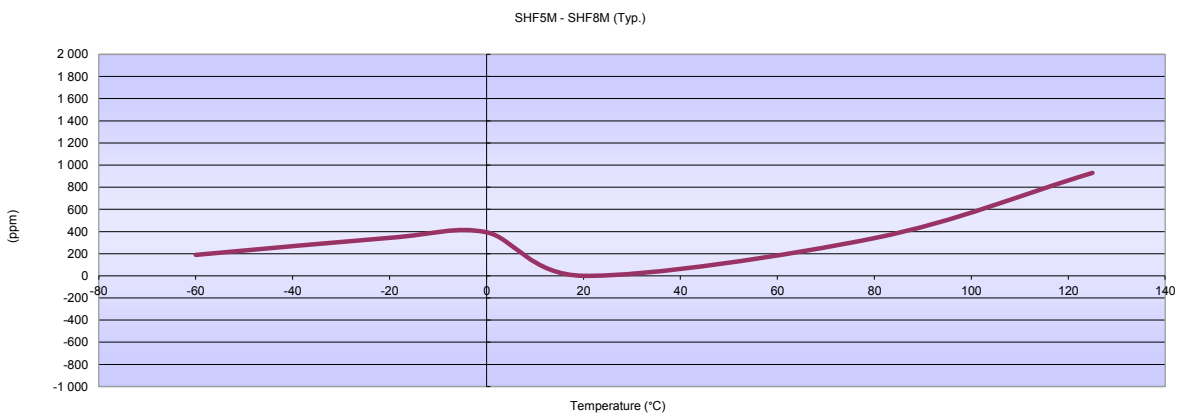
Power (W)

GHz		SHF2.4M	SHF2.9M	SHF3M	SHF4M	SHF4.2M	SHF4.6M	SHF5M	SHF8M	SHF13
1.0	CW Max Power (*)	260	260	400	475	630	422	850	1600	2500
2.0		184	184	283	336	445	298	601	1131	1768
4.0		130	130	200	238	315	211	425	800	1250
6.0		106	106	163	194	257	172	347	653	1021
8.0		92	92	141	168	223	149	301	566	884
12.4		74	74	114	135	179	120	241	454	-
18.0		61	61	94	112	148	99	200	377	-
26.5		51	51	78	92	122	82	165	-	-
32.0		46	46	71	84	-	75	-	-	-
40.0		41	41	63	75	-	-	-	-	-
50.0		-	37	-	-	-	-	-	-	-
67.0		-	32	-	-	-	-	-	-	-

(*) CW max power calculated at sea level / 40°C and V.S.W.R. 1:1
Cable assembly power rating may be limited by connector type



Phase change vs temperature



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