



高性能
同轴射频电缆

HIGH PERFORMANCE
COAXIAL RF CABLE

射频电缆命名方法

X	代表昕讯公司名称的缩写
绝缘	F—氟塑料 Y—PE T—特殊材料
电缆特性与 外导体结构	WP— 发泡低损稳相（发泡介质+铜带绕包+圆线编织） XP— 发泡低损稳相（整体发泡介质+铜带绕包+圆线编织） HP— 大功率系列 BP— 发泡低损（扁线编织+圆线编织） X — 普通绝缘低损（铜带绕包+圆线编织） BX— 普通绝缘低损（扁线编织+圆线编织） S — 束丝外导体（圆线或扁线束丝） M — 常规结构（铝箔+圆线编织或圆线编织）
电缆阻抗	50—50Ω（可省略）如有特殊阻抗需标注
电缆直径	英寸×1000
护套	F—F46 FA—PFA J—聚氨酯 L—低烟无卤聚烯烃 V—PVC Y—PE G—硅橡胶
颜色	可省略（按我司标准色） 如有特殊需求需要标注 B—黑色 BL—蓝色 BR—棕色 G—灰 GR—绿 R—红色 Y—黄色
特殊备注	Q—轻型 D—多芯内导体 R—超柔等级 L—经济型

注：例如：1.低损稳相电缆国外类似型号：UFB-311,我司命名方法为：XFWP-311
2. 普通绝缘低损电缆国外类似型号：T-flex 402 ,我司命名方法为：XFX-141
3.半钢电缆国外类似型号：UT-142,我司命名方法为：XFT-142
注：普通常规电缆按国家标准命名：如：SFCJ-50-3；SFX-50-3；SFF-12.5-0.6；SFT-50-3等



Naming method

X	Abbreviation for the company
Insulating material	F—Fluoroplastics Y—PE T—Special materials
Cable characteristics and outer conductor structure	WP — Foaming low loss stable phase (foaming medium +copper tape wrapping + round wire weaving) XP — Foaming low loss stable phase (integral foaming medium + copper tape wrapping + round wire weaving) HP — High power series BP — Foaming and low loss (flat knitting + round knitting) X — Low loss of common insulation (copper tape wrapping + round wire braiding) BX — Low loss of common insulation (flat wire braiding + round wire braiding) S — Bundle wire outer conductor (round wire or flat bundle wire) M — Conventional construction (aluminum foil + round or round)
Cable impedance	50—50Ω (Can be omitte) If any special impedance, it should be noted
Cable diameter	Inch×1000
Sheath	F — F46 FA — PFA J — polyurethane L — Low smoke halogen free polyolefin V — PVC Y — PE G — silicon rubber
Colour	It can be omitted (according to our standard color) if there is special needs to be marked B—black BL—blue BR—brown G—gray GR—green R—red Y—yellow
Remarks	Q—light D—Multicore inner conductor R—Ultra soft L—Economic type

P.S: For example: 1.Similar type of low loss stable phase cable abroad: UFB-311,
 Our naming method is: XFWP-311
 2. Similar models of ordinary insulated low loss cables abroad:
 T-flex 402 ,Our naming method is: XFX-141
 3.Similar model of semi steel cable: UT-142,Our naming method is: XFT-142
 P.S: Common cables are named according to national standards: as: SFCJ-50-3;
 SFX-50-3; SFF-12.5-0.6; SFT-50-3etc.

产品型号对比

Comparison table of product models

我司型号 Cable type of our products	可替代产品 厂家及型号 Exchangeable type	阻抗 (Ω) Impedance	工作频率 (GHz) Working frequency	插损(dB/m) Insertion loss		
				1GHz	10GHz	18GHz
XFWP-90	GORE CXN3506	50	67	0.63	2.07	2.84
XFWP-142	GORE CXN3507	50	40	0.36	1.10	1.58
XFWP-190	GORE CXN3449	50	26.5	0.26	0.81	1.08
XFWP-205	MICRO-COAX UFB-205A	50	26.5	0.24	0.77	1.05
XFWP-290	GORE-CXN3450	50	18	0.21	0.52	0.71
XFWP-311	MICRO-COAX UFB-311A	50	18	0.17	0.50	0.67
XFWP-320	GORE-CXN3508	50	18	0.14	0.46	0.63
XFX-086	TIMES T-flex 405	50	40	0.77	2.67	3.74
XFX-141	TIMES T-flex 402	50	40	0.44	1.63	2.35
XFXP-150	CARLISLE 1130A	50	40	0.34	1.18	1.64
XFXP-155B	H+S SF102E	50	40	0.38	1.28	1.78
XFXP-216	H+S SF104E	50	26.5	0.22	0.70	1.13
SFCJ-50-3	中电科23所同款	50	18	0.45	1.43	2.02
SFCJ-50-5	中电科23所同款	50	18	0.34	1.05	1.58
SFCJ-50-7	中电科23所同款	50	15	0.18	0.72	-
SFCJ-50-9	中电科23所同款	50	10	0.14	0.57	-

产品型号对比

Comparison table of product models

电缆外径（mm） Outer diameter	温度范围（℃） Operating temperature range	温度相位稳定性（PPM）（-40℃~+85℃） Phase stability vs temperature
2.30	-65~+165	≤800PPM（-55℃~+85℃）
3.60	-65~+165	≤750PPM（-55℃~+85℃）
4.80	-65~+165	≤750PPM（-55℃~+85℃）
5.21	-65~+165	≤750PPM（-55℃~+85℃）
7.50	-65~+165	≤750PPM（-55℃~+85℃）
7.90	-65~+165	≤750PPM（-55℃~+85℃）
8.10	-65~+165	≤750PPM（-55℃~+85℃）
2.64	-65~+165	
4.17	-65~+165	
3.80	-65~+165	
4.20	-65~+90	
5.50	-65~+165	
5.00	-55~+85	
7.30	-55~+85	
10.50	-55~+85	
13.30	-55~+85	

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高性能柔性低损耗同轴射频电缆**High performance
flexible and low loss series****110GHz**

XFWP-060	02	XFWP-205	04
XFWP-90	02	XFWP-220	04
XFWP-125	02	XFWP-290	04
XFWP-142	02	XFWP-311	04
XFWP-143A	02	XFWP-320	04
XFWP-190	02	XFWP-400	04
		XFWP-480	04

04

特种高性能柔性低损耗同轴射频电缆**Special high performance
flexible and low loss series****110GHz**

XFWP-060W	06	XFWP-142D	08
XFWP-90W	06	XFWP-190D	08
XFWP-125W	06	XFWP-220D	08
XFWP-142W	06	XFWP-311D	08
XFWP-143AW	06	XFWP-400D	08
XFWP-190W	06	XFWP-480D	08

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柔性低损耗同轴射频电缆**Flexible low loss coaxial RF cable****110GHz**

XFXP-061	10	XFXP-150	12
XFXP-072	10	XFXP-150D	12
XFXP-091	10	XFXP-155B	12
XFXP-130	10	XFXP-216	12
		XFXP-216D	12

14

柔性低损耗同轴射频电缆**Flexible low loss coaxial RF cable****110GHz**

XFX-060	14
XFX-086	14
XFX-141	14

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低损耗稳相同轴射频电缆**Low loss stable phase
coaxial RF cable****18GHz**

XFBP-142	17	XFBP-310	17
XFBP-205	17	XFBP-480(J)	17
XFBP-304	17	XFBP-530(J)	17

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柔软低损耗同轴射频电缆**flexible and low loss series****18GHz**

SFCJ-50-3	19	SFCJ-50-7	19
SFCJ-50-5	19	SFCJ-50-9	19

21	低损耗同轴射频电缆 low loss series	5800MHz
	XYMR-100 21	XYMR-300 23
	XYMR-195 21	XYMR-400 23
	XYMR-200 21	XYMR-500 23
	XYMR-240 21	XYMR-600 23

25	经济型柔软低损耗同轴射频电缆 Economical soft low loss coaxial RF cable	40GHz
	XFLL-091 25	XFLL-250 25
	XFLL-130 25	XFLL-315 25
	XFLL-150 25	XFLL-480 25
	XFLL-216 25	

28	航空航天用超轻 柔性低损耗同轴射频电缆 Ultra soft and low loss coaxial RF cable for aerospace applications	60GHz
	XFWQ-088 28	XFWQ-190 28
	XFWQ-142 28	XFWQ-311 28

31	大功率稳相射频电缆 High power stable phase	5800MHz
	XFWP-480H 31	XFWP-790H 31
	XFWP-580H 31	XFMP-2500 33
	XFWP-700H 31	XFMP-2700 33
		XFMP-2900 33

36	柔软同轴射频电缆 Soft coaxial RF cable	3GHz
	RG178 (SFF-50-1) 36	RG-393 (SFF-50-7) 36
	RG179 (SFF-75-1.5) 36	RG58 38
	RG316 (SFF-50-1.5) 36	RG174 38
	RG142 (SFF-50-3) 36	RG213 38
	RG-400 (SFF-50-3) 36	RG214 38
	RG-304 (SFF-50-5) 36	RG-223 38

39	半柔同轴射频电缆 semi-flexible coaxial RF cable	18GHz
	SFX-50-1 39	SFX-50-3 (RG402) 39
	SFX-50-2 (RG405) 39	SFX-50-5.3 (RG401) 39

41	半刚同轴射频电缆 Semi-rigid coaxial RF cable	67GHz
	SFT-50-0.6 41	SFT-141-LP 43
	SFT-50-1 41	SFT-250-LP 43
	SFT-50-2 41	SFT-034-LPS 45
	SFT-50-3 41	SFT-047-LPS 45
	SFT-50-5.2 41	SFT-086-LPS 45
	SFT-034-LP 43	SFT-120-LPS 45
	SFT-047-LP 43	SFT-141-LPS 45
	SFT-086-LP 43	SFT-250-LPS 45
	SFT-120-LP 43	

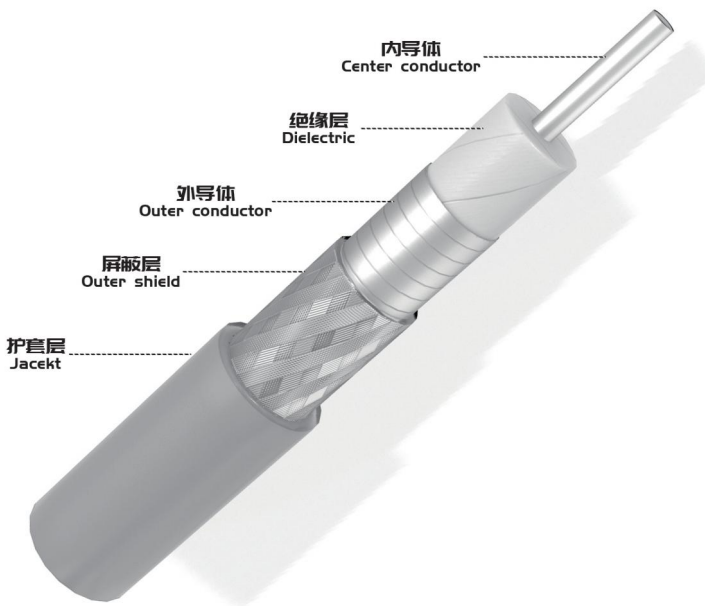


- *XFWP*
- *XFXP*
- *AFX*
- *SPECIAL XFWP*

结构说明 Construction

- 1.内导体：采用单芯镀银线。
- 2.绝缘：采用微孔低密度PTFE，介电常数1.45左右，多层绕包结构能使电缆外径和绝缘介电常数稳定，保障了信号的稳定传输。
- 3.屏蔽层：采用双屏蔽层结构，内屏蔽层采用镀银铜带绕包，外屏蔽层采用镀银铜线编织。
- 4.护套：采用了环境适应性性能优越的FEP或PFA等原材料，使电缆具有较高的环境适应性。

- 1.Centre conductor:Single core silver plated wire.
- 2.Insulator:Adopt microporous low density PTFE, dielectric constant 1.45, multilayer wrapped structure can make the cable diameter and insulating dielectric constant stability, safeguard the stability of the signal transmission.
- 3.Shield:With double shielding layer structure, the shielding layer using silver plating copper strap bag, the shielding layer using silver plated copper wire braided.
- 4.Jacket:Raw materials such as FEP or PFA with superior environmental adaptability are used, cable has high environmental adaptability.



XFWP series
高性能柔性低损耗同轴射频电缆

XFWP系列高性能柔性低损耗同轴射频电缆采用了特殊的结构设计先进的生产工艺，使得电缆在全频段范围内有着优良的电气与机械性能指标。
XFWP series High performance flexible low loss Radio Frequency Coaxial Cable adopt the special structure design and advanced production technology, make cable in the whole frequency range has excellent electrical and mechanical performance index.

结构参数与机械性能
Mechanical Characteristics

型号 TYPE	XFWP-060	XFWP-90	XFWP-125	XFWP-142	XFWP-143A	XFWP-190
内导体外径（mm） Center Conductor Diameter	0.32	0.51	0.72	0.91	1.02	1.40
导体形式 Center Conductor Type	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid
绝缘外径（mm） Insulation Diameter	0.88	1.40	2.00	2.50	2.79	3.85
屏蔽外径（mm） Shields Diameter	1.30	1.90	2.60	3.10	3.30	4.40
总外径(mm) Jacket Diameter	≤1.60	≤2.30	≤3.20	≤3.60	≤3.75	≤4.85
最小弯曲半径(mm) Min.bending radius	8	11	16	18	18	26

电气与环境性能 Electrical and Environmental Performance

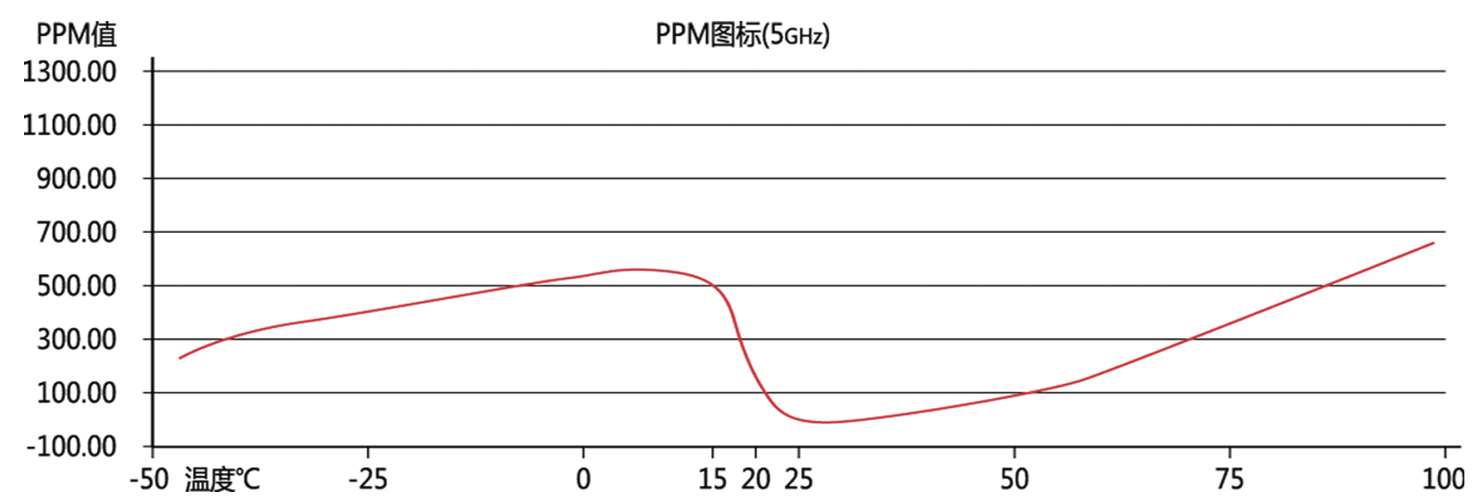
型号 TYPE	XFWP-060		XFWP-90		XFWP-125		XFWP-142		XFWP-143A		XFWP-190	
特性阻抗(ohms) Impedance	50		50		50		50		50		50	
电容(pf/m) Capacitance	88		85		83		83		83		83	
工作频率(GHz) Frequency Range	DC-110		DC-67		DC-50		DC-40		DC-40		DC-26.5	
传输速率 Velocity of Propagation	79%		81%		82%		82%		82%		83%	
最大工作电压 (kV) Max.Operating Voltage	0.4		0.8		1.0		1.2		1.2		1.3	
屏蔽效率 (dB@1GHz) Shielding Effectiveness	≥90		≥90		≥90		≥90		≥90		≥90	
损耗（+25℃室温时的典型值)和传输功率（+40℃室温，海平面时的典型值） Insertion Loss（Typical value at +25℃Ambient temperature）and Transmission power（Typical value at +40℃Ambient Temperature，Sea Level）												
频率Frequency	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW
0.5GHz	0.71	0.071	0.44	0.136	0.31	0.581	0.26	0.708	0.22	0.959	0.19	1.316
1GHz	1.02	0.050	0.63	0.096	0.44	0.408	0.36	0.499	0.32	0.675	0.26	0.925
3GHz	1.81	0.028	1.10	0.055	0.78	0.232	0.61	0.285	0.55	0.386	0.44	0.526
4GHz	2.11	0.024	1.28	0.047	0.91	0.198	0.70	0.246	0.64	0.333	0.51	0.453
6GHz	2.62	0.020	1.58	0.038	1.13	0.161	0.86	0.200	0.79	0.270	0.63	0.367
8GHz	3.06	0.017	1.84	0.033	1.32	0.138	0.99	0.172	0.92	0.232	0.73	0.315
10GHz	3.46	0.015	2.07	0.029	1.48	0.123	1.10	0.154	1.04	0.207	0.81	0.280
12GHz	3.83	0.014	2.28	0.027	1.64	0.112	1.24	0.140	1.14	0.188	0.88	0.254
15GHz	4.33	0.012	2.57	0.024	1.85	0.099	1.36	0.124	1.28	0.167	0.99	0.226
18GHz	4.80	0.011	2.84	0.022	2.05	0.090	1.58	0.113	1.41	0.152	1.08	0.204
26.5GHz	5.98	0.008	3.50	0.018	2.54	0.072	2.09	0.092	1.74	0.124	1.35	0.166
40GHz	7.61	0.007	4.39	0.014	3.21	0.058	2.64	0.074	2.18	0.099	-	-
50GHz	8.69	0.006	4.97	0.012	3.66	0.051	-	-	-	-	-	-
67GHz	10.37	0.005	5.87	0.011	-	-	-	-	-	-	-	-
90GHz	12.45	0.004	-	-	-	-	-	-	-	-	-	-
110GHz	14.13	0.003	-	-	-	-	-	-	-	-	-	-
机械相位稳定性（18GHz） Phase Stability vs Flexure （最小弯曲半径缠绕一圈）	±0.3°/GHz		±0.3°/GHz		±0.4°/GHz		±0.4°/GHz		±0.4°/GHz		±0.4°/GHz	
相位温度稳定性（ppm） -55℃~+85℃ Phase Change vs Temperature	≤850ppm		≤800ppm		≤750ppm		≤750ppm		≤750ppm		≤750ppm	
使用温度范围（℃） Temperature Range	-65~+165		-65~+165		-65~+165		-65~+165		-65~+165		-65~+165	

结构参数与机械性能 Mechanical Characteristics

型号 TYPE	XFWP-205	XFWP-220	XFWP-290	XFWP-311	XFWP-320	XFWP-400	XFWP-480
内导体外径 (mm) Center Conductor Diameter	1.45	1.60	2.10	2.30	2.40	3.00	3.80
导体形式 Center Conductor Type	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid
绝缘外径 (mm) Insulation Diameter	3.90	4.40	5.80	6.30	6.60	8.10	10.10
屏蔽外径 (mm) Shields Diameter	4.59	5.10	6.65	7.10	7.50	9.10	11.10
总外径(mm) Jacket Diameter	≤5.20	≤5.80	≤7.50	≤7.90	≤8.10	≤10.20	≤12.20
最小弯曲半径(mm) Min.bending radius	26	30	37	40	40	50	60

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	XFWP-205	XFWP-220	XFWP-290	XFWP-311	XFWP-320	XFWP-400	XFWP-480
特性阻抗(ohms) Impedance	50	50	50	50	50	50	50
电容(pf/m) Capacitance	88	83	83	83	83	83	83
工作频率(GHz) Frequency Range	DC-110	DC-18	DC-18	DC-18	DC-18	DC-12	DC-8
传输速率 Velocity of Propagation	83%	83%	83%	83%	83%	83%	84%
最大工作电压 (kV) Max.Operating Voltage	0.4	2.0	3.0	3.0	3.0	4.0	5.0
屏蔽效率 (dB@1GHz) Shielding Effectiveness	≥90	≥90	≥90	≥90	≥90	≥90	≥90

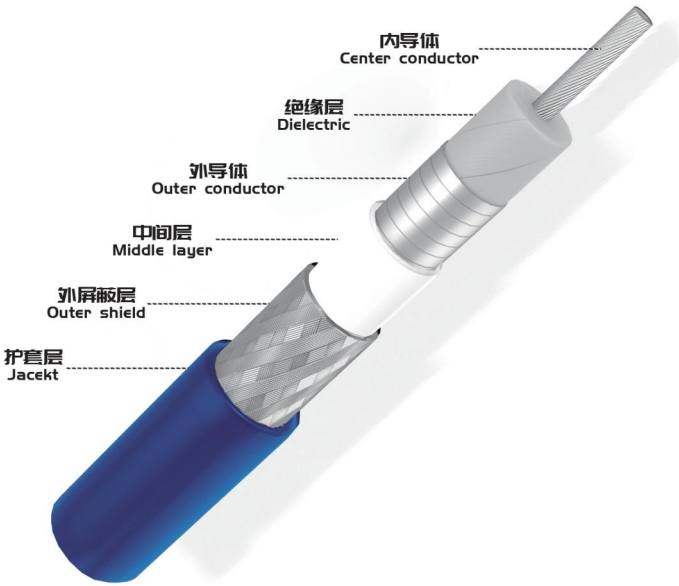


电气与环境性能 Electrical and Environmental Performance

型号 TYPE	XFWP-205		XFWP-220		XFWP-290		XFWP-311		XFWP-320		XFWP-400		XFWP-480	
频率Frequency	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW
0.5GHz	0.18	1.390	0.14	1.589	0.16	2.487	0.12	2.577	0.11	2.712	0.09	3.047	0.07	3.313
1GHz	0.24	0.977	0.20	1.116	0.21	1.750	0.17	1.812	0.14	1.906	0.13	2.132	0.10	2.324
3GHz	0.42	0.556	0.36	0.634	0.32	1.000	0.28	1.033	0.25	1.084	0.22	1.200	0.18	1.317
4GHz	0.48	0.479	0.41	0.546	0.36	0.863	0.33	0.890	0.28	0.934	0.26	1.030	0.21	1.132
6GHz	0.59	0.388	0.51	0.442	0.40	0.700	0.38	0.721	0.35	0.756	0.32	0.828	0.27	0.914
8GHz	0.68	0.333	0.60	0.379	0.46	0.603	0.44	0.621	0.41	0.649	0.37	0.708	0.31	0.784
10GHz	0.77	0.296	0.68	0.337	0.52	0.537	0.50	0.552	0.46	0.577	0.42	0.627	-	-
12GHz	0.84	0.269	0.75	0.306	0.57	0.488	0.55	0.501	0.50	0.524	0.47	0.566	-	-
15GHz	0.95	0.239	0.84	0.271	0.65	0.434	0.62	0.445	0.57	0.465	-	-	-	-
18GHz	1.05	0.216	0.93	0.246	0.71	0.394	0.67	0.404	0.63	0.421	-	-	-	-
26.5GHz	1.29	0.175	-	-	-	-	-	-	-	-	-	-	-	-
机械相位稳定性（18GHz） Phase Stability vs Flexure （最小弯曲半径缠绕一圈）	±0.4°/GHz		±0.4°/GHz		±0.4°/GHz		±0.4°/GHz		±0.4°/GHz		±0.5°/GHz		±0.5°/GHz	
相位温度稳定性（ppm） -55℃~+85℃ Phase Change vs Temperature	≤750ppm		≤750ppm		≤750ppm		≤750ppm		≤750ppm		≤750ppm		≤750ppm	
使用温度范围（℃） Temperature Range	-65~+165		-65~+165		-65~+165		-65~+165		-65~+165		-65~+165		-65~+165	

损耗（+25℃室温时的典型值）和传输功率（+40℃室温，海平面时的典型值）
Insertion Loss（Typical value at +25℃Ambient temperature）and Transmission power（Typical value at +40℃Ambient Temperature，Sea Level）

备注：
1.上表所列损耗值为未含连接器标称值，连接器按 $2 \times 0.03 \sqrt{f(\text{GHz})}$ 计算。
The loss shown does not include the connector，the connector according to $2 \times 0.03 \sqrt{f(\text{GHz})}$ calculation
2.机械相位稳定性与测试方法密切相关，如用其他方法测试，数值可能发生变化。
Is closely related to the phase stability and mechanical testing methods，such as test with other methods，numerical might change.



结构说明 Construction

- 1.内导体：采用单芯或绞合镀银线。
- 2.绝缘：采用微孔低密度PTFE，介电常数1.45左右，多层绕包结构能使电缆外径和绝缘介电常数稳定，保障了信号的稳定传输。
- 3.屏蔽层：采用双屏蔽层+中间层结构，内屏蔽与外屏蔽之间采用氟塑料中间层。
- 4.护套：采用了环境适应性能优越的FEP或PFA等原材料，使电缆具有较高的环境适应性。

- 1.Centre conductor: Utilizes solid or stranded silver-plated wire.
- 2.Insulation: Employs microporous low-density PTFE with a dielectric constant of approximately 1.45. The multi-layer spiral-wrapped structure ensures consistent cable outer diameter and stable insulation dielectric constant, enabling reliable signal transmission.
- 3.Shielding: Features a dual-shield + interstitial layer construction. A fluoropolymer interstitial layer is applied between the inner and outer shields.
- 4.Jacket: Constructed from environmentally superior materials such as FEP or PFA, offering enhanced environmental adaptability.

XFWP series 特种高性能柔性低损耗同轴射频电缆

XFWP系列特种低损耗同轴射频电缆采用了特殊的结构设计及先进的生产工艺，使得电缆在全频段范围内有着优良的电气与机械性能指标。
XFWP series special low loss Radio Frequency Coaxial Cable adopt the special structure design and advanced production technology, make cable in the whole frequency range has excellent electrical and mechanical performance index.

结构参数与机械性能 Mechanical Characteristics

型号 TYPE	XFWP-060W	XFWP-90W	XFWP-125W	XFWP-142W	XFWP-143AW	XFWP-190W
内导体外径（mm） Center Conductor Diameter	0.32	0.51	0.72	0.91	1.02	1.40
导体形式 Center Conductor Type	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid
绝缘外径（mm） Insulation Diameter	0.88	1.40	2.00	2.50	2.79	3.85
屏蔽外径（mm） Shields Diameter	1.50	2.10	2.80	3.30	3.55	4.65
总外径(mm) Jacket Diameter	≤1.80	≤2.50	≤3.40	≤3.80	≤4.00	≤5.10
最小弯曲半径(mm) Min.bending radius	9	12	17	19	20	26

电气与环境性能 Electrical and Environmental Performance

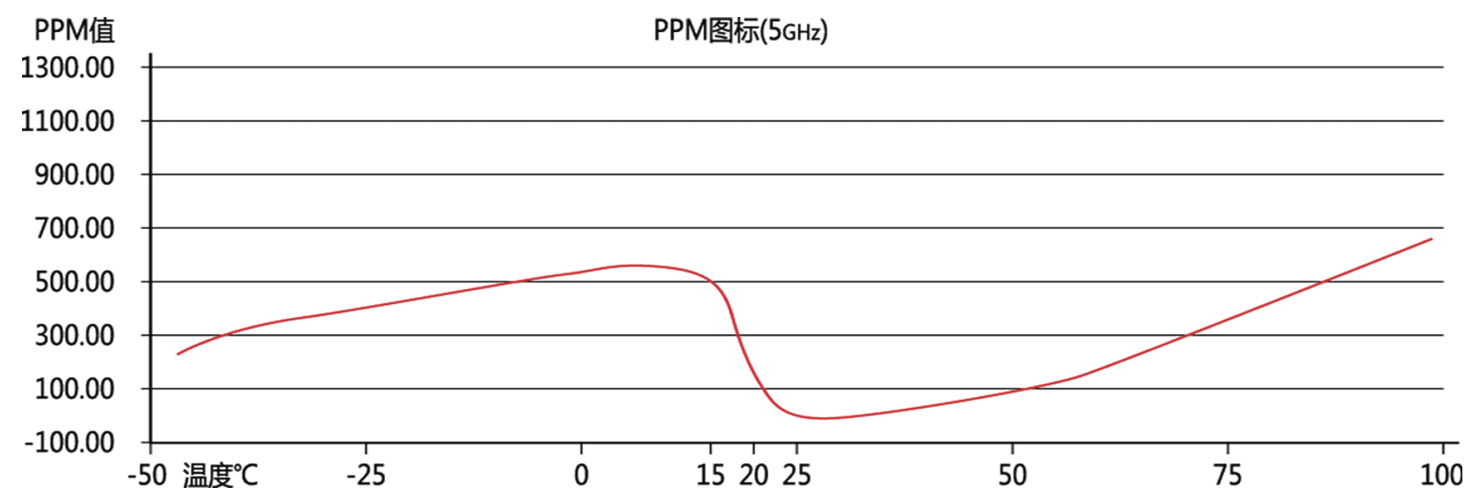
型号 TYPE	XFWP-060W	XFWP-90W	XFWP-125W	XFWP-142W	XFWP-143AW	XFWP-190W						
特性阻抗(ohms) Impedance	50	50	50	50	50	50						
电容(pf/m) Capacitance	88	85	83	83	83	83						
工作频率(GHz) Frequency Range	DC-110	DC-67	DC-50	DC-40	DC-40	DC-26.5						
传输速率 Velocity of Propagation	79%	81%	82%	82%	82%	83%						
最大工作电压 (kV) Max.Operating Voltage	0.4	0.8	1.0	1.2	1.2	1.3						
屏蔽效率 (dB@1GHz) Shielding Effectiveness	≥90	≥90	≥90	≥90	≥90	≥90						
损耗 (+25℃室温时的典型值)和传输功率 (+40℃室温, 海平面时的典型值) Insertion Loss (Typical value at +25℃Ambient temperature) and Transmission power (Typical value at +40℃Ambient Temperature, Sea Level)												
频率Frequency	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW
0.5GHz	0.71	0.071	0.44	0.136	0.31	0.581	0.26	0.708	0.22	0.959	0.19	1.316
1GHz	1.02	0.050	0.63	0.096	0.44	0.408	0.36	0.499	0.32	0.675	0.26	0.925
3GHz	1.81	0.028	1.10	0.055	0.78	0.232	0.61	0.285	0.55	0.386	0.44	0.526
4GHz	2.11	0.024	1.28	0.047	0.91	0.198	0.70	0.246	0.64	0.333	0.51	0.453
6GHz	2.62	0.020	1.58	0.038	1.13	0.161	0.86	0.200	0.79	0.270	0.63	0.367
8GHz	3.06	0.017	1.84	0.033	1.32	0.138	0.99	0.172	0.92	0.232	0.73	0.315
10GHz	3.46	0.015	2.07	0.029	1.48	0.123	1.10	0.154	1.04	0.207	0.81	0.280
12GHz	3.83	0.014	2.28	0.027	1.64	0.112	1.24	0.140	1.14	0.188	0.88	0.254
15GHz	4.33	0.012	2.57	0.024	1.85	0.099	1.36	0.124	1.28	0.167	0.99	0.226
18GHz	4.80	0.011	2.84	0.022	2.05	0.090	1.58	0.113	1.41	0.152	1.08	0.204
26.5GHz	5.98	0.008	3.50	0.018	2.54	0.072	2.09	0.092	1.74	0.124	1.35	0.166
40GHz	7.61	0.007	4.39	0.014	3.21	0.058	2.64	0.074	2.18	0.099	-	-
50GHz	8.69	0.006	4.97	0.012	3.66	0.051	-	-	-	-	-	-
67GHz	10.37	0.005	5.87	0.011	-	-	-	-	-	-	-	-
90GHz	12.45	0.004	-	-	-	-	-	-	-	-	-	-
110GHz	14.13	0.003	-	-	-	-	-	-	-	-	-	-
机械相位稳定性 (18GHz) Phase Stability vs Flexure (最小弯曲半径缠绕一圈)	±0.3°/GHz		±0.3°/GHz		±0.4°/GHz		±0.4°/GHz		±0.4°/GHz		±0.4°/GHz	
相位温度稳定性 (ppm) -55℃~+85℃ Phase Change vs Temperature	≤850ppm		≤800ppm		≤750ppm		≤750ppm		≤750ppm		≤750ppm	
使用温度范围 (℃) Temperature Range	-65~+165		-65~+165		-65~+165		-65~+165		-65~+165		-65~+165	

结构参数与机械性能 Mechanical Characteristics

型号 TYPE	XFWP-142D	XFWP-190D	XFWP-220D	XFWP-311D	XFWP-400D	XFWP-480D
内导体外径 (mm) Center Conductor Diameter	0.90	1.45	1.65	2.35	4.00	3.80
导体形式 Center Conductor Type	多股 Stranded	多股 Stranded	多股 Stranded	多股 Stranded	多股 Stranded	多股 Stranded
绝缘外径 (mm) Insulation Diameter	2.40	3.85	4.40	6.30	7.80	9.80
屏蔽外径 (mm) Shields Diameter	3.20	4.60	5.35	7.50	9.10	10.70
总外径(mm) Jacket Diameter	≤3.60	≤5.00	≤5.90	≤8.10	≤10.20	≤12.20
最小弯曲半径(mm) Min.bending radius	18	26	30	40	50	60

电气与环境性能 Electrical and Environmental Performance

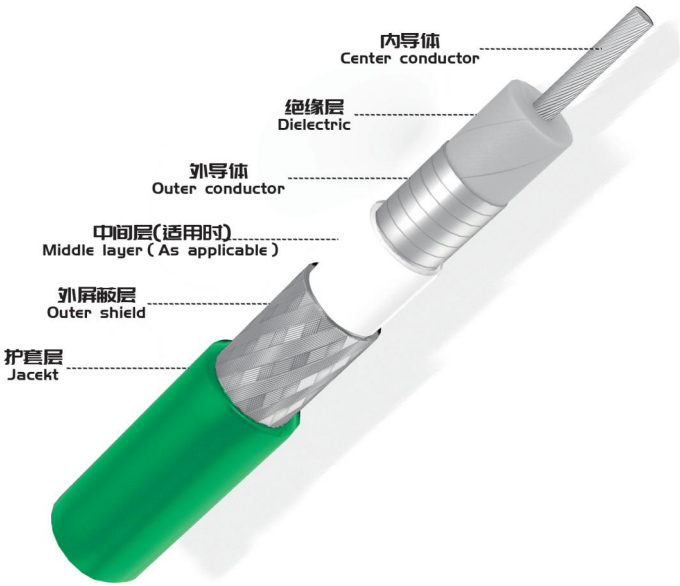
型号 TYPE	XFWP-142D	XFWP-190D	XFWP-220D	XFWP-311D	XFWP-400D	XFWP-480D
特性阻抗(ohms) Impedance	50	50	50	50	50	50
电容(pf/m) Capacitance	83	83	83	83	83	83
工作频率(GHz) Frequency Range	DC-40	DC-18	DC-18	DC-18	DC-12	DC-8
传输速率 Velocity of Propagation	82%	83%	83%	83%	83%	84%
最大工作电压 (kV) Max.Operating Voltage	1.2	1.3	2.0	3.0	4.0	5.0
屏蔽效率 (dB@1GHz) Shielding Effectiveness	≥90	≥90	≥90	≥90	≥90	≥90



电气与环境性能 Electrical and Environmental Performance

型号 TYPE	XFWP-142D		XFWP-190D		XFWP-220D		XFWP-311D		XFWP-400D		XFWP-480D	
频率Frequency	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW
0.5GHz	0.35	0.587	0.24	1.104	0.21	1.324	0.16	2.111	0.12	2.539	0.10	2.761
1GHz	0.55	0.415	0.34	0.777	0.30	0.930	0.21	1.486	0.17	1.777	0.15	1.937
3GHz	0.96	0.238	0.60	0.443	0.53	0.528	0.38	0.848	0.30	1.000	0.26	1.098
4GHz	1.11	0.206	0.69	0.382	0.62	0.455	0.44	0.731	0.35	0.858	0.31	0.943
6GHz	1.37	0.167	0.86	0.309	0.77	0.368	0.54	0.592	0.44	0.690	0.38	0.762
8GHz	1.59	0.144	1.00	0.266	0.89	0.316	0.63	0.510	0.51	0.590	0.44	0.653
10GHz	1.78	0.129	1.12	0.237	1.00	0.281	0.71	0.454	0.57	0.523	-	-
12GHz	1.96	0.117	1.24	0.215	1.11	0.255	0.78	0.412	0.63	0.472	-	-
15GHz	2.20	0.105	1.39	0.191	1.25	0.226	0.88	0.366	-	-	-	-
18GHz	2.42	0.095	1.54	0.173	1.38	0.205	0.97	0.332	-	-	-	-
26.5GHz	2.97	0.077	1.90	0.138	-	-	-	-	-	-	-	-
40GHz	3.71	0.062	-	-	-	-	-	-	-	-	-	-
机械相位稳定性（18GHz） Phase Stability vs Flexure （最小弯曲半径缠绕一圈）	±0.4°/GHz		±0.4°/GHz		±0.4°/GHz		±0.4°/GHz		±0.5°/GHz		±0.5°/GHz	
相位温度稳定性（ppm） -55℃~+85℃ Phase Change vs Temperature	≤850ppm		≤850ppm		≤850ppm		≤850ppm		≤750ppm		≤750ppm	
使用温度范围（℃） Temperature Range	-65~+165		-65~+165		-65~+165		-65~+165		-65~+165		-65~+165	
损耗（+25℃室温时的典型值）和传输功率（+40℃室温，海平面时的典型值） Insertion Loss（Typical value at +25℃Ambient temperature）and Transmission power（Typical value at +40℃Ambient Temperature，Sea Level）												

备注：
1.上表所列损耗值为未含连接器标称值，连接器按 $2 \times 0.03\sqrt{f(\text{GHz})}$ 计算。
The loss shown does not include the connector, the connector according to $2 \times 0.03\sqrt{f(\text{GHz})}$ calculation
2.机械相位稳定性与测试方法密切相关，如用其他方法测试，数值可能发生变化。
Is closely related to the phase stability and mechanical testing methods, such as test with other methods, numerical might change.



XFXP series

柔性低损耗同轴射频电缆

结构说明 Construction

- 1.内导体：采用单芯或绞合镀银线。
- 2.绝缘：采用整体低密度PTFE，介电常数1.65左右，整体绝缘结构能使电缆外径和绝缘介电常数稳定，保障了信号的稳定传输。
- 3.屏蔽层：采用双屏蔽层+中间层（多芯内导体）结构，内屏蔽与外屏蔽之间采用氟塑料中间层。
- 4.护套：护套：采用了环境适应性能优越的FEP或PFA等原材料，是电缆具有较高的环境适应性。

- 1.Centre conductor: Utilizes solid or stranded silver-plated wire.
- 2.Insulation: Employs solid-extruded low-density PTFE with a dielectric constant of approximately 1.65. The solid insulation structure ensures uniform cable outer diameter and stable insulation dielectric constant, enabling reliable signal transmission.
- 3.Shielding: Features a dual-shield + interstitial layer structure (with multi-stranded inner conductor). A fluoropolymer interstitial layer is applied between the inner and outer shields.
- 4.Jacket: Constructed from environmentally superior materials such as FEP or PFA, providing enhanced environmental adaptability.

XFXP系列柔性低损耗同轴射频电缆采用了特殊的结构与先进的生产工艺，使得电缆在全频段范围内有着优良的电气与机械性能指标，并具有很高的性价比。XFXP series Flexible low loss cable adopts the structure of special design and advanced production technology, make the cable in the range of frequencies has excellent electric and mechanical performance, and has a high cost performance.

结构参数与机械性能

Mechanical Characteristics

型号 TYPE	XFXP-061	XFXP-072	XFXP-091	XFXP-130
内导体外径（mm） Center Conductor Diameter	0.28	0.35	0.51	0.72
导体形式 Center Conductor Type	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid
绝缘外径（mm） Insulation Diameter	0.80	1.00	1.45	2.05
外导体外径（mm） Shields Diameter	1.20	1.40	1.98	2.70
总外径(mm) Jacket Diameter	≤1.50	≤1.80	≤2.35	≤3.20
最小弯曲半径(mm) Min.bending radius	8	9	15	16

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	XFXP-061		XFXP-072		XFXP-091		XFXP-130	
特性阻抗(ohms) Impedance	50		50		50		50	
电容(pf/m) Capacitance	88		88		88		87	
工作频率(GHz) Frequency Range	DC~110		DC~110		DC~67		DC~50	
传输速率 Velocity of Propagation	76%		76%		77%		77%	
最大工作电压 (kV) Max.Operating Voltage	0.4		0.4		0.8		1.2	
屏蔽效率 (dB@1GHz) Shielding Effectiveness	≥90		≥90		≥90		≥90	
损耗 (+25℃室温时的典型值)和传输功率 (+40℃室温, 海平面时的典型值) Insertion Loss (Typical value at +25℃Ambient temperature) and Transmission power (Typical value at +40℃Ambient Temperature, Sea Level)								
频率Frequency	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW
0.5GHz	0.81	0.062	0.65	0.078	0.44	0.141	0.32	0.569
1GHz	1.15	0.043	0.93	0.055	0.63	0.099	0.45	0.400
3GHz	2.04	0.025	1.66	0.031	1.11	0.057	0.80	0.227
4GHz	2.37	0.021	1.93	0.027	1.29	0.049	0.93	0.195
6GHz	2.95	0.017	2.41	0.021	1.59	0.040	1.15	0.158
8GHz	3.45	0.015	2.82	0.018	1.85	0.034	1.34	0.136
10GHz	3.89	0.013	3.19	0.016	2.09	0.030	1.51	0.120
12GHz	4.30	0.012	3.53	0.015	2.30	0.027	1.67	0.109
15GHz	4.87	0.010	4.00	0.013	2.59	0.024	1.89	0.097
18GHz	5.39	0.009	4.44	0.012	2.86	0.022	2.09	0.088
26.5GHz	6.72	0.007	5.55	0.009	3.53	0.018	2.59	0.071
40GHz	8.53	0.006	7.08	0.007	4.43	0.014	3.28	0.056
50GHz	9.73	0.005	8.10	0.006	5.02	0.012	3.74	0.048
67GHz	11.61	0.004	9.69	0.005	5.93	0.010	-	-
90GHz	13.91	0.003	11.66	0.004	-	-	-	-
110GHz	15.78	0.003	13.26	0.004	-	-	-	-
机械相位稳定性 (18GHz) Phase Stability vs Flexure (最小弯曲半径缠绕一圈)	±0.3°/GHz		±0.3°/GHz		±0.4°/GHz		±0.4°/GHz	
相位温度稳定性 (ppm) -55℃~+85℃ Phase Change vs Temperature	≤1300ppm		≤1300ppm		≤1300ppm		≤1300ppm	
使用温度范围 (℃) Temperature Range	-65~+165		-65~+165		-65~+165		-65~+165	

结构参数与机械性能 Mechanical Characteristics

型号 TYPE	XFXP-150	XFXP-150D	XFXP-155B	XFXP-216	XFXP-216D
内导体外径 (mm) Center Conductor Diameter	0.93	0.90	0.84	1.45	1.50
导体形式 Center Conductor Type	单芯 Solid	多股 Stranded	单芯 Solid	单芯 Solid	多股 Stranded
绝缘外径 (mm) Insulation Diameter	2.70	2.50	2.50	4.30	4.30
屏蔽外径 (mm) Shields Diameter	3.35	3.30	3.35	4.90	4.90
总外径(mm) Jacket Diameter	≤3.80	≤3.80	≤4.20	≤5.50	≤5.50
最小弯曲半径(mm) Min.bending radius	19	19	21	28	28
结构说明 Construction	-	D-外导体含中间层 outer conductor contains an intermediate layer	B-聚氨酯护套 Polyurethanesheath (外导体含中间层 outer conductor contains an intermediate layer)	-	D-外导体含中间层 outer conductor contains an intermediate layer

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	XFXP-150	XFXP-150D	XFXP-155B	XFXP-216	XFXP-216D
特性阻抗(ohms) Impedance	50	50	50	50	50
电容(pf/m) Capacitance	88	88	88	88	88
工作频率(GHz) Frequency Range	DC-40	DC-40	DC-50	DC-26.5	DC-26.5
传输速率 Velocity of Propagation	77%	77%	77%	77%	77%
最大工作电压 (kV) Max.Operating Voltage	1.2	1.2	1.2	2.0	2.0
屏蔽效率 (dB@1GHz) Shielding Effectiveness	≥90	≥90	≥90	≥90	≥90

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	XFXP-150		XFXP-150D		XFXP-155B		XFXP-216		XFXP-216D	
频率Frequency	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW
0.5GHz	0.24	0.603	0.35	0.503	0.26	0.766	0.16	1.132	0.23	0.943
1GHz	0.34	0.425	0.51	0.354	0.38	0.539	0.22	0.794	0.33	0.662
3GHz	0.61	0.243	0.89	0.203	0.67	0.306	0.41	0.448	0.59	0.373
4GHz	0.71	0.210	1.04	0.175	0.78	0.264	0.48	0.385	0.69	0.321
6GHz	0.89	0.170	1.29	0.142	0.97	0.214	0.60	0.310	0.86	0.258
8GHz	1.04	0.147	1.51	0.123	1.13	0.184	0.70	0.266	1.02	0.222
10GHz	1.18	0.131	1.70	0.109	1.28	0.163	0.80	0.235	1.15	0.196
12GHz	1.30	0.119	1.88	0.099	1.42	0.148	0.89	0.213	1.28	0.178
15GHz	1.48	0.106	2.13	0.088	1.60	0.131	1.01	0.188	1.46	0.157
18GHz	1.64	0.096	2.36	0.080	1.78	0.119	1.13	0.170	1.63	0.142
26.5GHz	2.05	0.078	2.93	0.065	2.22	0.096	1.43	0.137	2.05	0.114
40GHz	2.61	0.063	3.72	0.053	2.82	0.077	-	-	-	-
机械相位稳定性（18GHz） Phase Stability vs Flexure （最小弯曲半径缠绕一圈）	±0.4°/GHz		±0.5°/GHz		±0.5°/GHz		±0.6°/GHz		±0.6°/GHz	
相位温度稳定性（ppm） -55℃~+85℃ Phase Change vs Temperature	≤850ppm		≤1300ppm		≤1300ppm		≤1300ppm		≤1300ppm	
使用温度范围（℃） Temperature Range	-65~+165		-65~+165		-65~+85		-65~+165		-65~+165	
损耗（+25℃室温时的典型值）和传输功率（+40℃室温，海平面时的典型值） Insertion Loss（Typical value at +25℃Ambient temperature）and Transmission power（Typical value at +40℃Ambient Temperature，Sea Level）										

备注：
1.上表所列损耗值为未含连接器标称值，连接器按 $2 \times 0.03 \sqrt{f(\text{GHz})}$ 计算。
The loss shown does not include the connector, the connector according to $2 \times 0.03 \sqrt{f(\text{GHz})}$ calculation.
2.机械相位稳定性与测试方法密切相关，如用其他方法测试，数值可能发生变化。
Is closely related to the phase stability and mechanical testing methods, such as test with other methods, numerical might change.



结构说明 Construction

- 1.内导体：采用单芯镀银线。
- 2.绝缘：采用PTFE，传输速率70%
- 3.屏蔽层：采用双屏蔽层结构，内屏蔽层采用镀银铜带绕包，此类结构有损耗低，屏蔽高，外屏蔽层采用镀银铜线编织，保证了电缆的抗拉强度。
- 4.护套：采用了FEP护套，使电缆具有较高的环境适用性。

- 1.Centre conductor:single silver plated copper wire.
- 2.Insulation: Adopt PTFE, transmission rate of 70% .
- 3.Shield: Adopt double shield layer structure, the inner shielding layer is wrapped with silver plated copper tape, this structure has low loss, high block, the outer shielding layer is braided by silver-plated copper wire, ensure that the cable's tensile strength.
- 4.Jacket: used the FEP sheath, the cable has high environmental suitability.

XFX series 柔性低损耗同轴射频电缆

XFX系列电缆采用了双层屏蔽镀银铜带绕包加圆线编织的生产工艺，使得电缆在全频段范围内有着优良的电气与机械性能指标，并具有很高的性价比。
XFX series with a double-layer cable shielding copper with silver plated round bag with round wire weaving production process, make the cable in the range of frequencies has excellent electric and mechanical performance.

结构参数与机械性能 Mechanical Characteristics

型号 TYPE	XFX-060	XFX-086	XFX-141
内导体外径 (mm) Center Conductor Diameter	0.28	0.53	0.92
导体形式 Center Conductor Type	单芯 Solid	单芯 Solid	单芯 Solid
绝缘外径 (mm) Insulation Diameter	0.87	1.65	2.98
外导体外径 (mm) Shields Diameter	1.25	2.16	3.65
总外径(mm) Jacket Diameter	≤1.50	≤2.64	≤4.17
最小弯曲半径(mm) Min.bending radius	6	13	21

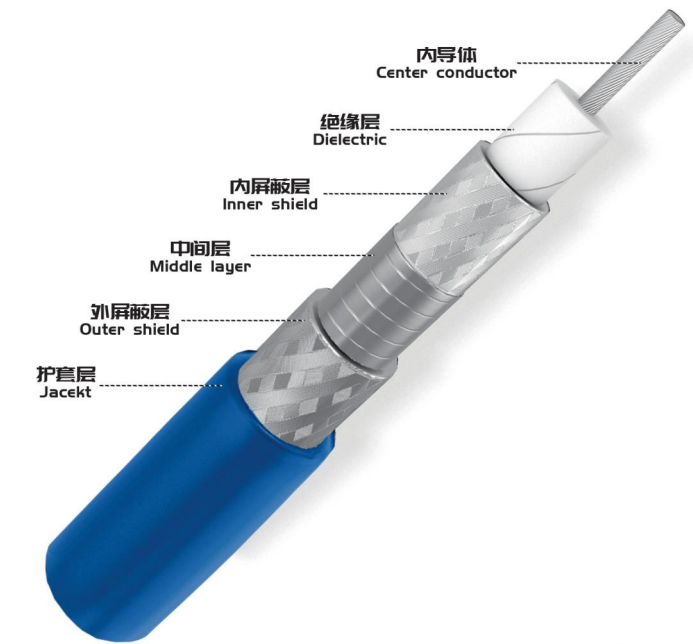
电气与环境性能 Electrical and Environmental Performance

型号 TYPE	XFX-060		XFX-086		XFX-141	
特性阻抗(ohms) Impedance	50		50		50	
电容(pf/m) Capacitance	96.1		96.1		96.1	
工作频率(GHz) Frequency Range	DC-110		DC-40		DC-40	
传输速率 Velocity of Propagation	70%		70%		70%	
最大工作电压 (kV) Max.Operating Voltage	0.4		0.8		1.2	
屏蔽效率 (dB@1GHz) Shielding Effectiveness	≥90		≥90		≥90	
损耗（+25℃室温时的典型值)和传输功率（+40℃室温，海平面时的典型值） Insertion Loss（Typical value at +25℃Ambient temperature）and Transmission power（Typical value at +40℃Ambient Temperature，Sea Level）						
频率Frequency	dB/m	kW	dB/m	kW	dB/m	kW
0.5GHz	1.00	0.054	0.54	0.159	0.30	0.375
1GHz	1.43	0.038	0.77	0.111	0.44	0.260
3GHz	2.52	0.022	1.38	0.062	0.81	0.143
4GHz	2.93	0.019	1.61	0.053	0.95	0.121
6GHz	3.62	0.015	2.01	0.043	1.20	0.096
8GHz	4.22	0.013	2.35	0.037	1.43	0.088
10GHz	4.76	0.012	2.67	0.032	1.63	0.071
12GHz	5.25	0.010	2.96	0.029	1.82	0.064
15GHz	5.92	0.009	3.36	0.026	2.09	0.056
18GHz	6.54	0.008	3.74	0.023	2.35	0.050
26.5GHz	8.10	0.007	4.70	0.019	3.01	0.039
40GHz	10.20	0.006	6.03	0.015	3.95	0.030
50GHz	11.59	0.005	-	-	-	-
67GHz	13.73	0.004	-	-	-	-
90GHz	16.34	0.003	-	-	-	-
110GHz	18.43	0.003	-	-	-	-
使用温度范围（℃） Temperature Range	-65~+165		-65~+165		-65~+165	

备注:
1.上表所列损耗值为未含连接器标称值, 连接器按2×0.03√f(GHz)计算。
The loss shown does not include the connector, the connector according to 2×0.03√f(GHz) calculation.



- *XFBP*
- *SFCJ*
- *XYMR*
- *XFLL*



结构说明 Construction

- 1.内导体：采用单芯或绞合镀银线。

2.绝缘：采用微孔低密度PTFE和整体低密度PTFE。

3.屏蔽层：采用三屏蔽层结构，内屏蔽层采用镀银铜带编织，中间采用聚酰亚胺薄膜绕包，外屏蔽层采用镀银铜线编织。

4.护套：采用了环境适应性能优越的FEP或PFA。
- 1.Centre conductor: Single-core or stranded silver-plated wire.

2. Insulation: Microporous low-density PTFE combined with solid low-density PTFE.

3. Triple-layer shielding structure comprising:
Inner layer: Silver-plated copper tape braiding.
Middle layer: Polyimide film wrapping.
Outer layer: Silver-plated copper wire braiding.

4. Jacket: FEP or PFA material with superior environmental adaptability.

XFBP series
低损耗稳相同轴射频电缆

XFBP系列电缆采用了特殊的结构设计与先进的生产工艺，使得电缆在全频段范围内有着优良的电气与机械性能指标，是低损耗首选的低成本方案。
XFWP series cable of the special structure design and advanced production technology, making the cable in the whole frequency range has excellent electrical and mechanical performance, and the high ratio of performance to price is low loss preferred low cost solution.

结构参数与机械性能
Mechanical Characteristics

型号 TYPE	XFBP-142	XFBP-205	XFBP-304	XFBP-310	XFBP-480 (J)	XFBP-530 (J)
内导体外径 (mm) Center Conductor Diameter	1.02	1.29	1.57	2.00	3.35	3.66
导体形式 Center Conductor Type	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid	多股 Stranded	多股 Stranded
绝缘外径 (mm) Insulation Diameter	2.95	3.80	4.70	5.85	9.05	10.30
屏蔽外径 (mm) Shields Diameter	3.70	4.50	5.70	7.00	10.30	11.00
总外径(mm) Jacket Diameter	≤4.30	≤5.20	≤6.20	≤7.70	≤11.45 (FEP) ≤12.30 (TPU)	≤12.30 (FEP) ≤13.50 (TPU)
最小弯曲半径(mm) Min.bending radius	22	26	30	39	64	69

电气与环境性能 Electrical and Environmental Performance

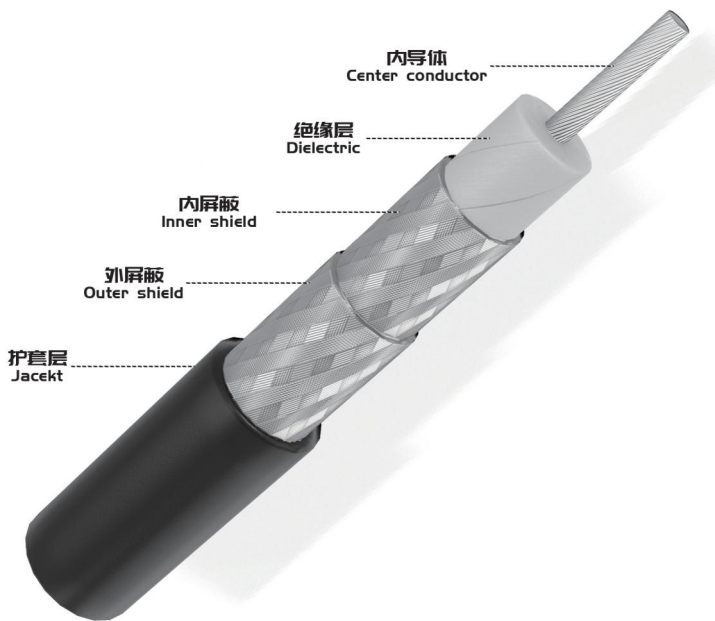
型号 TYPE	XFBP-142		XFBP-205		XFBP-304		XFBP-310		XFBP-480 (J)			XFBP-530 (J)		
特性阻抗(ohms) Impedance	50		50		50		50		50			50		
电容(pf/m) Capacitance	88		88		88		88		85			85		
工作频率(GHz) Frequency Range	DC-18		DC-18		DC-18		DC-18		DC-12			DC-10		
传输速率 Velocity of Propagation	76%		76%		76%		76%		80%			80%		
最大工作电压 (kV) Max.Operating Voltage	1.0		1.0		2.0		3.0		5			5		
屏蔽效率 (dB@1GHz) Shielding Effectiveness	≥90		≥90		≥90		≥90		≥90			≥90		
损耗 (+25℃室温时的典型值)和传输功率 (+40℃室温, 海平面时的典型值) Insertion Loss (Typical value at +25℃Ambient temperature) and Transmission power (Typical value at +40℃Ambient Temperature, Sea Level)														
频率Frequency	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW		dB/m	kW	
										FEP	TPU		FEP	TPU
0.5GHz	0.25	0.432	0.20	0.618	0.50	0.841	0.11	1.230	0.10	2.570	0.912	0.08	2.805	1.003
1GHz	0.36	0.303	0.28	0.431	0.20	0.586	0.17	0.853	0.15	1.778	0.630	0.12	1.928	0.687
3GHz	0.62	0.171	0.49	0.241	0.36	0.326	0.30	0.471	0.27	0.975	0.344	0.22	1.040	0.368
4GHz	0.72	0.147	0.57	0.207	0.44	0.279	0.36	0.401	-	-	-	-	-	-
6GHz	0.89	0.118	0.70	0.166	0.55	0.223	0.45	0.319	0.37	0.657	0.231	0.33	0.691	0.244
8GHz	1.03	0.101	0.82	0.141	0.69	0.189	0.53	0.270	-	-	-	-	-	-
10GHz	1.16	0.090	0.92	0.125	0.72	0.167	0.61	0.237	0.50	0.486	0.170	0.45	0.505	0.177
12GHz	1.28	0.081	1.01	0.112	0.76	0.150	0.68	0.213	0.55	0.436	0.152	-	-	-
15GHz	1.44	0.072	1.14	0.099	0.85	0.132	0.78	0.186	-	-	-	-	-	-
18GHz	1.59	0.065	1.26	0.089	1.07	0.118	0.88	0.166	-	-	-	-	-	-
机械相位稳定性 (18GHz) Phase Stability vs Flexure (最小弯曲半径缠绕一圈)	±0.4°/GHz		±0.5°/GHz		±0.5°/GHz		±0.5°/GHz		-			-		
相位温度稳定性 (ppm) -55℃~+85℃ Phase Change vs Temperature	≤1300ppm		≤1300ppm		≤1300ppm		≤1300ppm		-			-		
使用温度范围 (℃) Temperature Range	-65~+165		-65~+165		-65~+165		-65~+165		FEP:-65~+165 TPU:-65~+85			FEP:-65~+165 TPU:-65~+85		

备注:
1.上表所列损耗值为未含连接器标称值, 连接器按2×0.03√f(GHz)计算。
The loss shown does not include the connector, the connector according to 2×0.03√f(GHz) calculation.
2.机械相位稳定性与测试方法密切相关, 如用其他方法测试, 数值可能发生变化。
Is closely related to the phase stability and mechanical testing methods, such as test with other methods, numerical might change.

结构说明 Construction

- 1.内导体：采用绞合镀银线。
- 2.绝缘：采用微孔低密度PTFE，多层绕包结构能使电缆外径和绝缘介电常数稳定，保障了信号的稳定传输。
- 3.屏蔽层：采用二屏蔽层结构，内外屏蔽层采用镀银铜带编织，此类结构有损耗低，屏蔽高，并具有较强的抗扭能力。
- 4.护套：采用了TPU护套，使电缆柔软且耐磨。

- 1.Centre conductor: the twisted plating silver thread. Stranded conductor is relatively soft, have better bending resistance and bending fatigue life.
2. Insulation: Adopt microporous low density PTFE, multilayer wrapped structure can make the cable diameter and insulating dielectric constant stability, safeguard the stability of the signal transmission.
3. Shield: the two shielding layer structure, internal and external shielding layer using silver plating copper strip weaving, this kind of structure has low loss and high shielding, and have strong torsional capacity.
4. Jacket: using the TPU sheath, make cable soft and wear-resisting.



SFCJ series 柔性低损耗同轴射频电缆

SFCJ系列电缆采用了特殊的结构设计先进的生产工艺，使得电缆在全频段范围内有着优良的电气与机械性能指标，并具有很高的性价比。
SFCJ series cable of the special structure design and advanced production technology, making the cable in the whole frequency range has excellent electrical and mechanical performance, and the high ratio of performance to price is low loss low cost solution one option.

结构参数与机械性能 Mechanical Characteristics

型号 TYPE	SFCJ-50-3	SFCJ-50-5	SFCJ-50-7	SFCJ-50-9
内导体外径 (mm) Center Conductor Diameter	1.14	1.82	2.65	3.35
导体形式 Center Conductor Type	多股 Stranded	多股 Stranded	多股 Stranded	多股 Stranded
绝缘外径 (mm) Insulation Diameter	2.95	4.95	6.95	9.00
外导体外径 (mm) Shields Diameter	3.60	5.55	7.60	9.80
总外径(mm) Jacket Diameter	≤5.30	≤7.50	≤10.50	≤13.30
最小弯曲半径(mm) Min.bending radius	50	73	105	130

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	SFCJ-50-3		SFCJ-50-5		SFCJ-50-7		SFCJ-50-9	
特性阻抗(ohms) Impedance	50		50		50		50	
电容(pf/m) Capacitance	87		87		83		83	
工作频率(GHz) Frequency Range	DC-18		DC-18		DC-15		DC-10	
传输速率 Velocity of Propagation	81%		81%		81%		81%	
最大工作电压（kV） Max.Operating Voltage	1.0		1.5		2.5		3.0	
屏蔽效率（dB@1GHz） Shielding Effectiveness	≥80		≥80		≥80		≥80	
损耗（+25℃室温时的典型值）和传输功率（+40℃室温，海平面时的典型值） Insertion Loss（Typical value at +25℃Ambient temperature）and Transmission power（Typical value at +40℃Ambient Temperature，Sea Level）								
频率Frequency	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW
1GHz	0.45	0.131	0.34	0.267	0.18	0.470	0.14	0.664
3GHz	0.74	0.075	0.55	0.152	0.34	0.267	0.27	0.375
6GHz	1.08	0.052	0.80	0.106	0.51	0.187	0.41	0.260
8GHz	1.25	0.045	0.87	0.091	0.58	0.160	0.47	0.223
10GHz	1.43	0.040	1.05	0.081	0.72	0.143	0.57	0.198
12GHz	1.57	0.037	1.17	0.074	0.79	0.129	-	-
15GHz	1.80	0.033	1.39	0.066	0.94	0.115	-	-
18GHz	2.02	0.029	1.58	0.060	-	-	-	-
使用温度范围（℃） Temperature Range	-55~+85		-55~+85		-55~+85		-55~+85	

备注:
1.上表所列损耗值为未含连接器标称值, 连接器按 $2 \times 0.03 \sqrt{f(\text{GHz})}$ 计算。
The loss shown does not include the connector, the connector according to $2 \times 0.03 \sqrt{f(\text{GHz})}$ calculation.



内导体
Center conductor

绝缘层
Dielectric

铝箔
Aluminum foil

外屏蔽
Outer shield

护套层
Jacket

结构说明 Construction

- 1.内导体：采用单芯裸铜线或单芯铜包铝线，在相同外径的情况下单芯内导体有更低的损耗。
- 2.绝缘：采用发泡PE或PE，信号传输速率达83%（PE为66%）。
- 3.屏蔽层：采用铝箔+镀锡铜线编织屏蔽。
- 4.护套：采用了环境适应性能优良的交联PE材料。

- 1.Centre conductor: Single core,bare copper and copper clad aluminium wire on the outside diameter of the same order core inner conductor have lower loss.
2. Insulation: Adopt foam PE or PE, signal transmission rate up to 83%（PE for 66%）.
3. Shield: the shielding layer with aluminum foil + tinned round copper wire braided shield.
4. Jacket: the environment to adapt to the good performance of the crosslinked PE material.

XYMR series

经济型低损耗同轴射频电缆

XYMR系列电缆采用了发泡PE或PE为绝缘，铝箔+镀锡圆铜线编织屏蔽，交联PE为护套，具有很高的性价比，是XFWP和SFCJ的替代方案的选择之一。XYMR series cable adopts the foaming PE insulation or PE insulation, aluminum foil + tinned round copper wire braided shield, crosslinked PE jacket, has the very high cost performance, are XFWP and SFCJ one of the cost alternative choice.

结构参数与机械性能

Mechanical Characteristics

型号 TYPE	XYMR-100	XYMR-195	XYMR-200	XYMR-240
内导体外径（mm） Center Conductor Diameter	0.46	0.94	1.12	1.42
导体形式 Center Conductor Type	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid
绝缘外径（mm） Insulation Diameter	1.52	2.79	2.95	3.81
外导体外径（mm） Shields Diameter	2.11	3.53	3.66	4.52
总外径(mm) Jacket Diameter	≤2.79	≤4.95	≤4.95	≤6.10
最小弯曲半径(mm) Min.bending radius	14	26	26	35

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	XYMR-100		XYMR-195		XYMR-200		XYMR-240	
特性阻抗(ohms) Impedance	50		50		50		50	
电容(pf/m) Capacitance	101		80.4		80.4		80.4	
工作频率(GHz) Frequency Range	DC-5.8		DC-5.8		DC-5.8		DC-5.8	
传输速率 Velocity of Propagation	66%		80%		83%		85%	
最大工作电压（kV） Max.Operating Voltage	0.8		1.2		1.2		1.5	
屏蔽效率（dB@1GHz） Shielding Effectiveness	≥90		≥90		≥90		≥90	
损耗（+25℃室温时的典型值)和传输功率（+40℃室温，海平面时的典型值） Insertion Loss（Typical value at +25℃Ambient temperature）and Transmission power（Typical value at +40℃Ambient Temperature，Sea Level）								
频率Frequency	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW
30MHz	0.12	0.23	0.06	0.89	0.05	1.02	0.04	1.49
50MHz	0.16	0.18	0.08	0.68	0.07	0.79	0.05	1.15
150MHz	0.29	0.10	0.14	0.39	0.13	0.45	0.10	0.66
220MHz	0.35	0.08	0.17	0.32	0.15	0.37	0.12	0.54
450MHz	0.51	0.06	0.25	0.22	0.22	0.26	0.17	0.38
900MHz	0.74	0.05	0.36	0.15	0.32	0.18	0.24	0.26
1500MHz	0.98	0.04	0.47	0.12	0.42	0.14	0.32	0.20
1800MHz	1.10	0.03	0.52	0.11	0.46	0.13	0.35	0.18
2000MHz	1.16	0.02	0.55	0.10	0.49	0.12	0.37	0.17
2500MHz	1.31	0.01	0.62	0.09	0.55	0.10	0.42	0.15
5800MHz	2.17	0.01	0.93	0.06	0.86	0.07	0.66	0.10
使用温度范围（℃） Temperature Range	-22~+185		-22~+185		-22~+185		-22~+185	

备注：
1.上表所列损耗值为未含连接器标称值，连接器按 $2 \times 0.03 \sqrt{f(\text{GHz})}$ 计算。
The loss shown does not include the connector，the connector according to $2 \times 0.03 \sqrt{f(\text{GHz})}$ calculation.

结构参数与机械性能Mechanical Characteristics

型号 TYPE	XYMR-300	XYMR-400	XYMR-500	XYMR-600
内导体外径（mm） Center Conductor Diameter	1.78	2.74	3.61	4.47
导体形式 Center Conductor Type	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid
绝缘外径（mm） Insulation Diameter	4.83	7.24	9.40	11.56
外导体外径（mm） Shields Diameter	5.72	8.13	10.29	12.50
总外径(mm) Jacket Diameter	≤7.62	≤10.29	≤12.70	≤14.99
最小弯曲半径(mm) Min.bending radius	41	55	65	80

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	XYMR-300	XYMR-400	XYMR-500	XYMR-600
特性阻抗(ohms) Impedance	50	50	50	50
电容(pf/m) Capacitance	80.4	78.4	76.8	76.8
工作频率(GHz) Frequency Range	DC-5.8	DC-5.8	DC-5.8	DC-5.8
传输速率 Velocity of Propagation	85%	85%	86%	85%
最大工作电压（kV） Max.Operating Voltage	2.0	3.0	3.0	5.0
屏蔽效率（dB@1GHz） Shielding Effectiveness	≥90	≥90	≥90	≥90

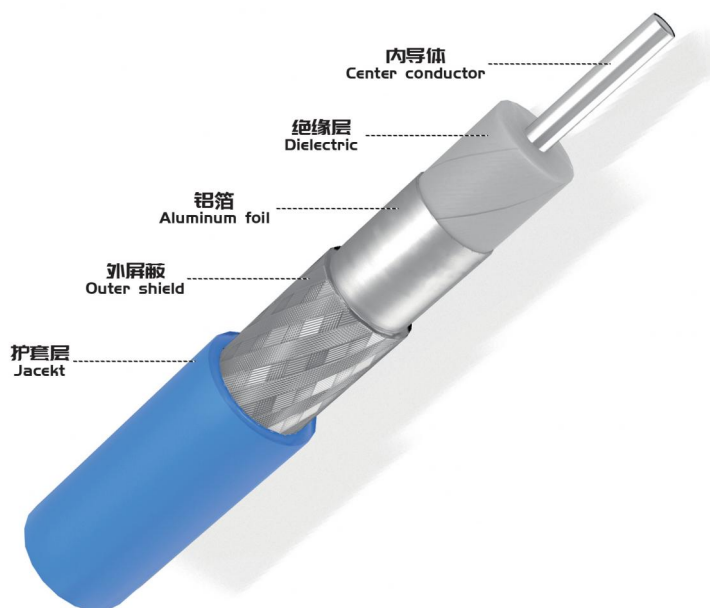
损耗（+25℃室温时的典型值）和传输功率（+40℃室温，海平面时的典型值）
Insertion Loss（Typical value at +25℃Ambient temperature）and Transmission power（Typical value at +40℃Ambient Temperature，Sea Level）

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	XYMR-300		XYMR-400		XYMR-500		XYMR-600	
频率Frequency	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW
30MHz	0.03	2.10	0.02	3.30	0.018	4.40	0.01	5.51
50MHz	0.04	1.60	0.03	2.60	0.02	3.40	0.02	4.24
150MHz	0.08	0.92	0.05	1.50	0.04	1.90	0.03	2.41
220MHz	0.09	0.76	0.06	1.20	0.05	1.60	0.04	1.97
450MHz	0.13	0.52	0.09	0.83	0.07	1.09	0.06	1.35
900MHz	0.20	0.36	0.13	0.58	0.10	0.75	0.08	0.93
1500MHz	0.26	0.28	0.17	0.44	0.13	0.57	0.11	0.70
1800MHz	0.28	0.25	0.19	0.40	0.15	0.52	0.12	0.63
2000MHz	0.30	0.24	0.20	0.37	0.16	0.49	0.13	0.59
2500MHz	0.34	0.21	0.22	0.33	0.18	0.43	0.15	0.52
5800MHz	0.54	0.13	0.35	0.21	0.29	0.26	0.24	0.32
使用温度范围（℃） Temperature Range	-22~+185		-22~+185		-22~+185		-22~+185	

备注：
1.上表所列损耗值为未含连接器标称值，连接器按 $2\times0.03\sqrt{f(\text{GHz})}$ 计算。
The loss shown does not include the connector, the connector according to $2\times0.03\sqrt{f(\text{GHz})}$ calculation.

结构说明 Construction



XFLL series 经济型柔软低损耗同轴射频电缆

XFLL系列电缆采用了特殊的结构设计和生产工艺，使得电缆在全频段范围内有着优良的电气与机械性能指标，并具有很高的性价比。

XFLL series cable adopts Special Structure Design and production technology, which makes the cable have excellent electrical and mechanical performance in the whole frequency range, and have high performance-price ratio.

结构参数与机械性能 Mechanical Characteristics

型号 TYPE	XFLL-091	XFLL-130	XFLL-150	XFLL-216	XFLL-250	XFLL-315	XFLL-480
内导体外径 (mm) Center Conductor Diameter	0.52	0.72	0.93	1.45	1.78	2.30	3.80
导体形式 Center Conductor Type	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid
绝缘外径 (mm) Insulation Diameter	1.68	2.00	2.75	4.20	5.20	6.80	10.30
外导体外径 (mm) Shields Diameter	2.10	2.53	3.30	4.78	5.75	7.40	11.10
总外径(mm) Jacket Diameter	≤2.65	≤3.20	≤3.80	≤5.30	≤6.40	≤8.10	≤12.20
最小弯曲半径(mm) Min.bending radius	6.5	16	18	26	32	40	60

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	XFLL-086	XFLL-141	XFLL-150	XFLL-216	XFLL-250	XFLL-315	XFLL-480							
特性阻抗(ohms) Impedance	50	50	50	50	50	50	50							
电容(pf/m) Capacitance	96.2	88	88	88	88	88	88							
工作频率(GHz) Frequency Range	DC-40	DC-40	DC-40	DC-18	DC-18	DC-15	DC-15							
传输速率 Velocity of Propagation	70%	76%	76%	76%	76%	76%	76%							
最大工作电压（kV） Max.Operating Voltage	0.8	1.0	1.2	1.5	1.5	2.0	2.0							
屏蔽效率（dB@1GHz） Shielding Effectiveness	≥90	≥90	≥90	≥90	≥90	≥90	≥90							
损耗（+25℃室温时的典型值)和传输功率（+40℃室温，海平面时的典型值） Insertion Loss（Typical value at +25℃Ambient temperature）and Transmission power（Typical value at +40℃Ambient Temperature，Sea Level）														
频率Frequency	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW
0.5GHz	0.49	0.154	0.36	0.266	0.29	0.366	0.17	1.098	0.15	1.453	0.10	2.409	0.07	4.374
1GHz	0.66	0.108	0.51	0.186	0.37	0.256	0.20	0.766	0.22	0.990	0.15	1.674	0.10	3.048
3GHz	1.20	0.060	0.88	0.104	0.65	0.145	0.43	0.428	0.38	0.574	0.27	0.926	0.18	1.698
4GHz	1.41	0.052	1.00	0.090	0.78	0.124	0.50	0.366	0.44	0.496	0.32	0.790	0.21	1.477
6GHz	1.75	0.041	1.23	0.072	0.96	0.100	0.62	0.293	0.55	0.396	0.40	0.629	0.27	1.161
8GHz	2.08	0.035	1.42	0.062	1.13	0.086	0.73	0.250	0.64	0.340	0.47	0.534	0.32	0.988
10GHz	2.37	0.031	1.60	0.054	1.28	0.076	0.83	0.220	0.72	0.302	0.54	0.469	0.36	0.870
12GHz	2.62	0.028	1.76	0.049	1.39	0.069	0.93	0.199	0.79	0.275	0.60	0.421	-	-
15GHz	3.00	0.025	1.97	0.043	1.58	0.061	1.04	0.174	0.90	0.242	0.70	0.360	-	-
18GHz	3.35	0.022	2.17	0.039	1.78	0.055	1.16	0.157	0.99	0.220	-	-	-	-
26.5GHz	4.32	0.018	2.66	0.032	2.35	0.044	-	-	-	-	-	-	-	-
40GHz	6.01	0.014	3.31	0.025	-	-	-	-	-	-	-	-	-	-
使用温度范围（℃） Temperature Range	-65~+165													

备注:
1.上表所列损耗值为未含连接器标称值，连接器按2×0.03√f(GHz)计算。
The loss shown does not include the connector，the connector according to 2×0.03√f(GHz) calculation.



■ **XFWQ**

结构说明 Construction

- 1.内导体：单根镀银金属复合材料线。

2.绝缘：采用微孔低密度PTFE，传输速率83%。

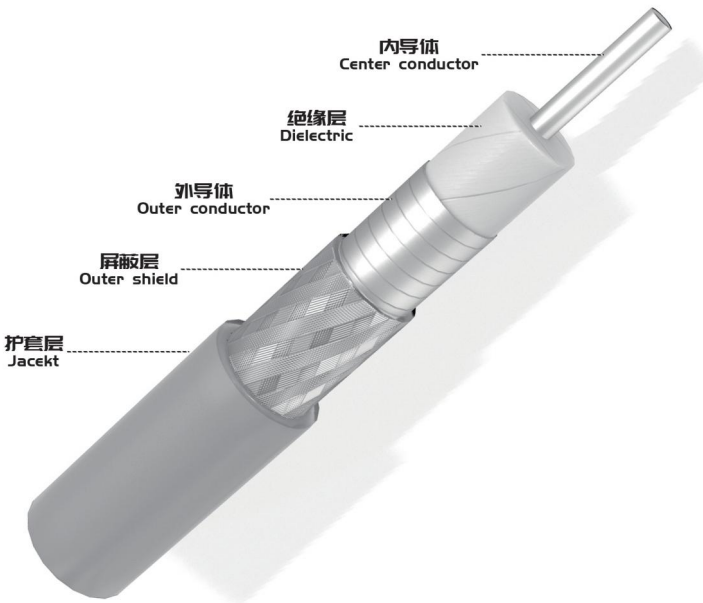
3.屏蔽层：采用双屏蔽层结构，内屏蔽层采用镀银铜带绕包，外屏蔽采用镀银金属复合材料线编织。

4.护套：采用了ETFE护套。
- 1.Centre conductor:Single silver plated metal composite wire.

2. Insulation: Adopt microporous low density PTFE, transmission rate of 83%.

3. The shield: With double shielding layer structure, the shielding layer using silver plating copper strap bag, the outer shield is braided by silver – plated metal composite wire.

4. Sheath: adopted ETFE sheath.



XFWQ series
航空航天用超轻柔性低损耗同轴射频电缆

XFWQ 系列电缆是专为航空航天设计的一款轻型低损耗同轴射频电缆，具有重量轻，耐辐射性能优良，电气性能稳定等特点。

XFWQ series cable is a lightweight low loss coaxial RF cable designed for aerospace, with light weight, good radiation resistance, stable electrical performance, etc.

结构参数与机械性能
Mechanical Characteristics

型号 TYPE	XFWQ-88	XFWQ-142	XFWQ-190	XFWPQ-311
内导体外径（mm） Center Conductor Diameter	0.51	0.91	1.40	2.30
导体形式 Center Conductor Type	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid
绝缘外径（mm） Insulation Diameter	1.40	2.50	3.85	6.30
外导体外径（mm） Shields Diameter	1.80	3.05	4.40	7.10
总外径(mm) Jacket Diameter	≤2.15	≤3.55	≤4.80	≤7.80
最小弯曲半径(mm) Min.bending radius	11	18	26	40
重量 Weight（g/m	11	23	42	85

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	XFWQ-88		XFWQ-142		XFWQ-190		XFWPQ-311	
特性阻抗(ohms) Impedance	50		50		50		50	
电容(pf/m) Capacitance	85		83		83		83	
工作频率(GHz) Frequency Range	DC-67		DC-40		DC-26.5		DC-18	
传输速率 Velocity of Propagation	80%		82%		83%		83%	
最大工作电压 (kV) Max.Operating Voltage	0.8		1.2		1.3		3.0	
屏蔽效率 (dB@1GHz) Shielding Effectiveness	≥90		≥90		≥90		≥90	
损耗 (+25℃室温时的典型值)和传输功率 (+40℃室温, 海平面时的典型值) Insertion Loss (Typical value at +25℃Ambient temperature) and Transmission power (Typical value at +40℃Ambient Temperature, Sea Level)								
频率Frequency	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW
0.5GHz	0.44	0.131	0.26	0.703	0.19	1.310	0.12	2.564
1GHz	0.63	0.092	0.36	0.495	0.26	0.921	0.17	1.804
3GHz	1.10	0.053	0.61	0.283	0.44	0.524	0.28	1.028
4GHz	1.28	0.045	0.70	0.244	0.51	0.451	0.33	0.886
6GHz	1.58	0.037	0.86	0.199	0.63	0.365	0.38	0.718
8GHz	1.84	0.032	0.99	0.171	0.73	0.314	0.44	0.618
10GHz	2.07	0.028	1.10	0.152	0.81	0.279	0.50	0.549
12GHz	2.28	0.026	1.24	0.139	0.88	0.253	0.55	0.499
15GHz	2.57	0.023	1.36	0.123	0.99	0.225	0.62	0.443
18GHz	2.84	0.021	1.58	0.112	1.08	0.204	0.67	0.402
26.5GHz	3.50	0.017	2.09	0.091	1.35	0.165	-	-
40GHz	4.39	0.013	2.64	0.073	-	-	-	-
50GHz	4.97	0.012	-	-	-	-	-	-
67GHz	5.87	0.010	-	-	-	-	-	-
机械相位稳定性 (18GHz) Phase Stability vs Flexure (最小弯曲半径缠绕一圈)	±0.3°/GHz		±0.4°/GHz		±0.4°/GHz		±0.4°/GHz	
相位温度稳定性 (ppm) -55℃~+85℃ Phase Change vs Temperature	≤800ppm		≤750ppm		≤750ppm		≤750ppm	
耐辐射性能 (kGy) Radiation	100		100		100		100	
使用温度范围 (℃) Temperature Range	-65~+150		-65~+150		-65~+150		-65~+150	

备注:

1.上表所列损耗值为未含连接器标称值, 连接器按 $2 \times 0.03 \sqrt{f(\text{GHz})}$ 计算。

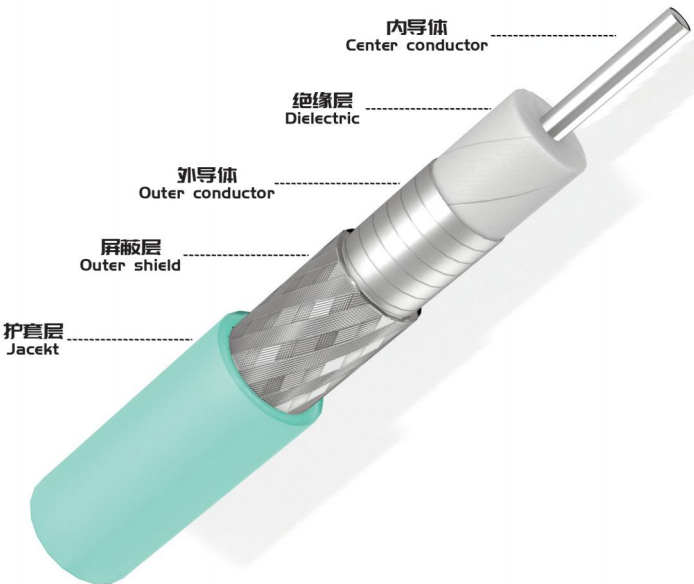
The loss shown does not include the connector, the connector according to $2 \times 0.03 \sqrt{f(\text{GHz})}$ calculation

2.机械相位稳定性与测试方法密切相关, 如用其他方法测试, 数值可能发生变化。

Is closely related to the phase stability and mechanical testing methods, such as test with other methods, numerical might change.



- *XFWP HIGH POWER*
- *XFMP HIGH POWER*



内导体
Center conductor

绝缘层
Dielectric

外导体
Outer conductor

屏蔽层
Outer shield

护套层
Jacket

结构说明 Construction

1.内导体：采用多股镀银圆铜线，在弯曲情况下有更好的机械稳定性和弯曲寿命，并使电缆具有更好的柔性。

2.绝缘：采用微孔低密度PTFE，介电常数1.45左右。

3.屏蔽层：采用双屏蔽层结构，内屏蔽层采用镀银铜扁带绕包，外屏蔽层采用镀银圆铜线编织。

4.护套：采用了环境适应性能优越的FEP或PFA等原材料，使电缆具有较高的环境适应性。

1.Centre conductor: Multi-stranded silver-plated round copper wire, providing enhanced mechanical stability and flex life during bending, while improving overall cable flexibility.

2. Insulation: Microporous low-density PTFE (Polytetrafluoroethylene), with a dielectric constant of approximately 1.45.

3. Shielding: Dual-layer shield structure. Inner shield: Helically wrapped silver-plated copper tape. Outer shield: Braided silver-plated round copper wire.

4. Jacket: Constructed from environmentally superior materials such as FEP (Fluorinated Ethylene Propylene) or PFA (Perfluoroalkoxy), ensuring high environmental adaptability of the cable.

XFWP series

大功率低损耗稳相射频电缆

XFWP系列高性能柔性大功率低损耗同轴射频电缆采用了特殊的结构设计与先进的生产工艺，使得电缆在全频段范围内有着优良的电气与机械性能指标。

XYMR series cable adopts the foaming PE insulation or PE insulation, aluminum foil + tinned round copper wire braided shield, crosslinked PE jacket, has the very high cost performance, are XFWP and SFCJ one of the cost alternative choice.

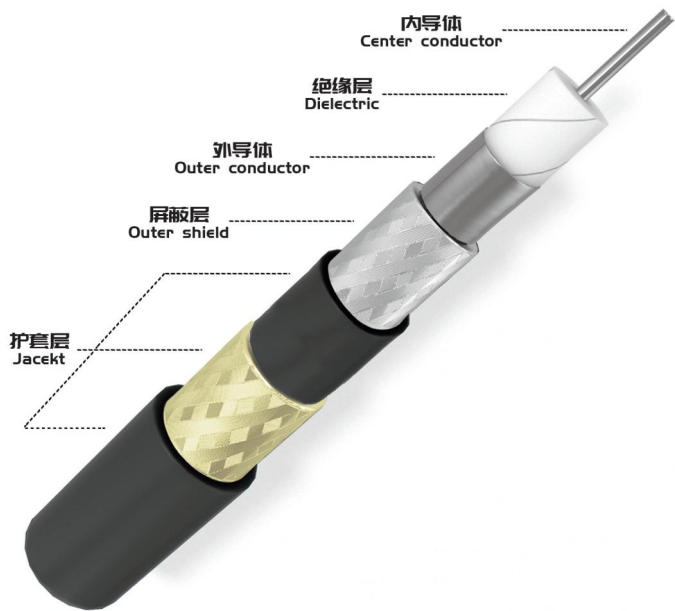
结构参数与机械性能

Mechanical Characteristics

型号 TYPE	XFWP-480H	XFWP-580H	XFWP-700H	XFWP-790H
内导体外径 (mm) Center Conductor Diameter	3.80	4.70	5.60	6.30
导体形式 Center Conductor Type	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid
绝缘外径 (mm) Insulation Diameter	10.15	12.30	15.00	17.00
外导体外径 (mm) Shields Diameter	10.40	12.60	15.25	17.30
总外径(mm) Jacket Diameter	≤12.20	≤14.70	≤17.80	≤20.00
最小弯曲半径(mm) Min.bending radius	静态 static: 60 动态 dynamic: 120	静态 static: 75 动态 dynamic: 150	静态 static: 90 动态 dynamic: 180	静态 static: 100 动态 dynamic: 200
最大重量 (g/m) Max. weight	280	410	575	700

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	XFWP-480H	XFWP-580H	XFWP-700H	XFWP-790H				
特性阻抗(ohms) Impedance	50	50	50	50				
电容(pf/m) Capacitance	84	84	84	84				
工作频率(MHz) Frequency Range	DC-8000	DC-8000	DC-6000	DC-5000				
传输速率 Velocity of Propagation	83%	83%	83%	83%				
最大工作电压（kV） Max.Operating Voltage	5.0	5.0	6.0	7.0				
时延（ns/m） Time delay	4.01	4.01	4.01	4.01				
电压驻波比 VSWR	1.30	1.30	1.30	1.30				
损耗（+25℃室温时的典型值)和传输功率（+40℃室温，海平面时的典型值） Insertion Loss（Typical value at +25℃Ambient temperature）and Transmission power（Typical value at +40℃Ambient Temperature，Sea Level）								
频率Frequency	dB/100m	kW	dB/100m	kW	dB/100m	kW	dB/100m	kW
100MHz	4.27	11.10	3.33	14.60	2.73	18.04	2.41	20.86
300MHz	7.25	6.37	5.83	8.37	4.78	10.31	4.23	11.90
500MHz	9.41	4.91	7.57	6.45	6.22	7.93	5.50	9.15
1000MHz	13.44	3.44	10.84	4.52	8.92	5.54	7.91	6.38
2000MHz	19.26	2.40	15.58	3.16	12.86	3.85	11.43	4.42
3000MHz	23.83	1.94	19.31	2.56	15.99	3.10	14.24	3.56
5000MHz	-	-	-	-	-	-	18.86	2.69
6000MHz	24.46	1.34	28.06	1.77	23.36	2.13	-	-
8000MHz	40.26	1.15	32.86	1.52	-	-	-	-
使用温度范围（℃） Temperature Range	-65~+165		-65~+165		-65~+165		-65~+165	



结构说明 Construction

- 1.内导体：采用多股镀银圆铜线，在弯曲情况下有更好的机械稳定性和弯曲寿命，并使电缆具有更好的柔性。
- 2.绝缘：采用微孔低密度PTFE，介电常数1.45左右。
- 3.屏蔽层：采用双屏蔽层结构，内屏蔽层采用镀银铜扁带绕包，外屏蔽层采用镀银圆铜线编织。
- 4.护套：采用了环境适应性能优越的FEP或PFA等原材料，使电缆具有较高的环境适应性。

- 1.Centre conductor: Multi-stranded silver-plated round copper wire, providing enhanced mechanical stability and flex life during bending, while improving overall cable flexibility.
2. Insulation: Microporous low-density PTFE (Polytetrafluoroethylene), with a dielectric constant of approximately 1.45.
3. Shielding: Dual-layer shield structure. Inner shield: Helically wrapped silver-plated copper tape. Outer shield: Braided silver-plated round copper wire.
4. Jacket: Constructed from environmentally superior materials such as FEP (Fluorinated Ethylene Propylene) or PFA (Perfluoroalkoxy), ensuring high environmental adaptability of the cable.

XFMP series 大功率低损耗稳相射频电缆

XFMP系列高性能柔性大功率低损耗同轴射频电缆采用了特殊的结构设计与先进的生产工艺，使得电缆在全频段范围内有着优良的电气与机械性能指标。
XYMR series cable adopts the foaming PE insulation or PE insulation, aluminum foil + tinned round copper wire braided shield, crosslinked PE jacket, has the very high cost performance, are XFMP and SFCJ one of the cost alternative choice.

结构参数与机械性能 Mechanical Characteristics

型号 TYPE	XFMP-2500	XFMP-2700	XFMP-2900
内导体外径 (mm) Center Conductor Diameter	7.50	8.25	9.00
导体形式 Center Conductor Type	单芯 Solid	单芯 Solid	单芯 Solid
绝缘外径 (mm) Insulation Diameter	19.80	21.80	23.80
外导体外径 (mm) Shields Diameter	20.00	22.00	24.00
总外径(mm) Jacket Diameter	≤25.00	≤27.00	≤29.50
最小弯曲半径(mm) Min.bending radius	静态 static: 125 动态 dynamic: 250	静态 static: 135 动态 dynamic: 270	静态 static: 150 动态 dynamic: 300
最大重量 (g/m) Max. weight	865	1063	1266

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	XFMP-2500		XFMP-2700		XFMP-2900	
特性阻抗(ohms) Impedance	50		50		50	
电容(pf/m) Capacitance	83		83		83	
工作频率(MHz) Frequency Range	DC-4000		DC-3000		DC-2000	
传输速率 Velocity of Propagation	84%		84%		84%	
最大工作电压（kV） Max.Operating Voltage	8.0		9.0		10.0	
时延（ns/m） Time delay	4.01		4.01		4.01	
电压驻波比 VSWR	1.30		1.30		1.30	
损耗（+25℃室温时的典型值)和传输功率（+40℃室温，海平面时的典型值） Insertion Loss（Typical value at +25℃Ambient temperature）and Transmission power（Typical value at +40℃Ambient Temperature，Sea Level）						
频率Frequency	dB/100m	kW	dB/100m	kW	dB/100m	kW
30MHz	1.23	37.31	1.12	41.97	1.03	46.30
100MHz	2.26	20.26	2.06	22.77	1.89	25.12
300MHz	-	-	-	-	3.34	14.29
500MHz	5.19	8.85	4.74	9.92	4.37	10.96
800MHz	-	-	6.08	7.75	5.60	8.56
1000MHz	7.48	6.15	6.84	6.89	6.31	7.61
2000MHz	10.86	4.25	9.95	4.74	9.20	5.25
3000MHz	13.55	3.41	12.45	3.80	-	-
4000MHz	15.90	2.91	-	-	-	-
使用温度范围（℃） Temperature Range	-65~+135		-65~+135		-65~+135	



- *RG*
- *SFX*
- *SFT*
- *SFT-LP*
- *SFT-LPS*

结构说明 Construction

- 1.内导体：镀银、锡铜线或镀银铜包钢线。
- 2.绝缘：采用实心PTFE或PE，传输速率：70%（PE为66%）左右。
- 3.屏蔽层：采用高密度镀银、镀锡圆铜线编织结构。屏蔽层95%的覆盖率使得电缆有很好的屏蔽性能，同时也降低了电缆的外导体损耗，使得较高的使用频段和在全频段内较好的电性能指标。
- 4.护套：根据客户要求定制。

- 1.Centre conductor:conductor:silver or tin plated copper wire or silver plated copper clad steel wire.
- 2. Insulation: Adopt solid PTFE or PE, transmission rate: 70%（PE is 66%）.
- 3.The outer conductor: using high density silver or tin round copper wire braid. Shielding close to 95% coverage makes cable has good shielding performance, also reduce the loss of the outer conductor of cable at the same time, makes the use of high frequency and good electric performance indicators within the full frequency.
- 4.Jacket: According to customer requirements customization.

RG series
柔软同轴射频电缆

RG系列属于柔性电缆，其外导体采用高密度镀银、镀锡圆铜线编织结构。由于屏蔽层接近95%的覆盖率，使其具有较高的使用频段和良好的电性能指标。
RG series belongs to a flexible cable, its outer conductor USES high density silver or tin round copper wire braid, Due to the shielding close to 95% coverage, make its have high use frequency and good electric performance indicators.

结构参数与机械性能
Mechanical Characteristics

型号 TYPE		RG178 (SFF-50-1)	RG179 (SFF-75-1.5)	RG316 (SFF-50-1.5)	RG316 (SFF-50-1.5)	RG-400 (SFF-50-3)	RG-304 (SFF-50-5)	RG-393 (SFF-50-7)
内导体外径（mm） Center Conductor Diameter		7/0.10	7/0.10	7/0.18	0.93	19/0.20	1.50	7/0.80
导体形式 Center Conductor Type		多芯 Stranded	多芯 Stranded	多芯 Stranded	单芯 Solid	多芯 Stranded	单芯 Solid	多芯 Stranded
绝缘外径（mm） Insulation Diameter		0.86	1.50	1.50	2.95	2.95	4.70	7.25
外导体外径（mm） Shields diameter	单层编织 Single layer	1.30	1.95	1.95	3.40	3.40	5.15	7.88
	双层编织 Double Braid	1.75	2.40	2.40	3.95	3.95	5.70	8.51
护套外径（mm） Jacket diameter	单层编织 Single layer	1.85	2.55	2.55	4.50	4.50	6.40	9.20
	双层编织 Double Braid	2.50	3.20	3.20	4.95	4.95	7.11	9.91
最小弯曲半径(mm) Min.bending radius		12	15	15	25	25	30	51

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	RG178 (SFF-50-1)	RG179 (SFF-75-1.5)	RG316 (SFF-50-1.5)	RG316 (SFF-50-1.5)	RG-400 (SFF-50-3)	RG-304 (SFF-50-5)	RG-393 (SFF-50-7)
特性阻抗(ohms) Impedance	50	75	50	50	50	50	50
电容(pf/m) Capacitance	100	68	100	100	100	100	100
工作频率(GHz) Frequency Range	DC-3	DC-3	DC-3	DC-3	DC-3	DC-3	DC-3
传输速率 Velocity of Propagation	70%	70%	70%	70%	70%	70%	70%
最大工作电压 (kV) Max.Operating Voltage	1.0	1.2	1.2	1.9	1.9	3.0	5.0
时延 (ns/m) Time delay	4.7	4.7	4.7	4.7	4.7	4.7	4.7
损耗 (+25℃室温时的典型值)和传输功率 (+40℃室温, 海平面时的典型值) Insertion Loss (Typical value at +25℃Ambient temperature) and Transmission power (Typical value at +40℃Ambient Temperature, Sea Level)							
频率Frequency	dB/m	dB/m	dB/m	dB/m	dB/m	dB/m	dB/m
30MHz	-	0.206	0.192	0.086	0.103	0.072	0.072
200MHz	-	0.508	0.505	0.232	0.278	0.130	-
400MHz	1.094	0.706	0.705	0.324	0.389	0.180	0.140
1GHz	1.752	1.158	1.154	0.527	0.632	0.360	0.240
1.5GHz	-	1.558	1.555	0.636	0.763	0.480	-
2GHz	-	1.759	1.756	0.758	0.910	0.590	-
3GHz	3.086	2.004	2.001	0.957	1.148	0.670	0.480
使用温度范围 (℃) Temperature Range	-65~+165 (FEP) -30~+90 (LSZH)						

结构参数与机械性能 Mechanical Characteristics

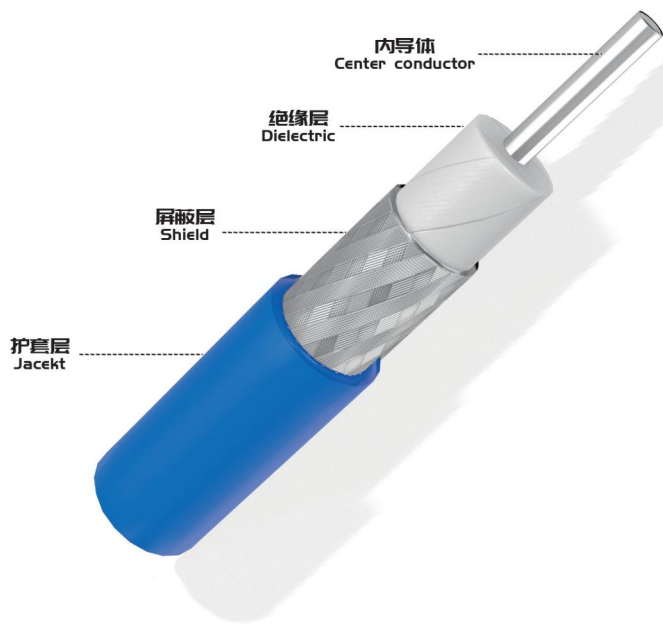
型号 TYPE	RG58	RG174	RG213	RG214	RG-223
内导体外径（mm） Center Conductor Diameter	19/0.18	7/0.16	7/0.75	7/0.75	0.90
导体形式 Center Conductor Type	多芯 Stranded	多芯 Stranded	多芯 Stranded	多芯 Stranded	单芯 Solid
绝缘外径（mm） Insulation Diameter	2.95	1.52	7.25	7.25	2.95
屏蔽外径（mm） Shields Diameter	3.45	2.05	7.85	8.40	3.95
总外径(mm) Jacket Diameter	4.95	2.60	10.30	10.80	5.30
最小弯曲半径(mm) Min.bending radius	25	13	52	54	26

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	RG58	RG174	RG213	RG214	RG-223
特性阻抗(ohms) Impedance	50	50	50	50	50
电容(pf/m) Capacitance	101	101	101	101	100
工作频率(GHz) Frequency Range	DC-1	DC-1	DC-1	DC-1	DC-1
传输速率 Velocity of Propagation	66%	66%	66%	66%	66%
最大工作电压（kV） Max.Operating Voltage	1.9	1.5	5.0	5.0	1.9
时延（ns/m） Time delay	5.1	5.1	5.1	5.1	5.1
损耗（+25℃室温时的典型值)和传输功率（+40℃室温，海平面时的典型值） Insertion Loss（Typical value at +25℃Ambient temperature）and Transmission power（Typical value at +40℃Ambient Temperature，Sea Level）					
频率Frequency	dB/m	dB/m	dB/m	dB/m	dB/m
10MHz	0.151	0.276	0.066	0.066	0.131
400MHz	0.308	0.558	0.141	0.141	0.269
1 GHz	0.502	0.899	0.240	0.240	0.440
使用温度范围（℃） Temperature Range	-40~+80（PVC） -30~+90（LSZH）				

备注：
1.上表所列损耗值为未含连接器标称值，连接器按2×0.03√f(GHz)计算。
The loss shown does not include the connector，the connector according to 2×0.03√f(GHz) calculation.

结构说明 Construction



- 1.内导体：单根镀银铜线或单根镀银铜包钢线。
- 2.绝缘层：采用实心PTFE，传输速率：70%左右。
- 3.外导体：采用高密度圆线编织镀锡结构。屏蔽层镀锡后100%的覆盖率使得电缆有很好的屏蔽性能，同时也降低了电缆的外导体损耗，使得较高的使用频段和在全频段内较好的电性能指标。
- 4.护套：根据客户要求定制。

- 1.Centre conductor: Single silver plated copper wire or single silver plated copper clad steel wire.
2. Insulation: Adopt solid PTFE. , transmission rate: 70%.
- 4.The outer conductor: using high density round wire woven structure of tin plating. Shielding layer of tin plating after 100% coverage makes cable has good shielding performance, also reduce the loss of the outer conductor of cable at the same time, makes the use of high frequency and good electric performance indicators within the full frequency.
4. Jacket: According to customer requirements customization.

SFX series 半柔同轴射频电缆

SFX系列属于半柔性电缆，其外导体采用高密度圆线编织镀锡结构。由于屏蔽层镀锡后接近100%的覆盖率,使其具有较高的使用频段和良好的电性能指标。

SFX series belongs to a semi-flexible cable, its outer conductor USES high density round wire woven structure of tin plating. Due to the shielding layer of tin plating after close to 100% coverage, cable has good shielding performance.

结构参数与机械性能 Mechanical Characteristics

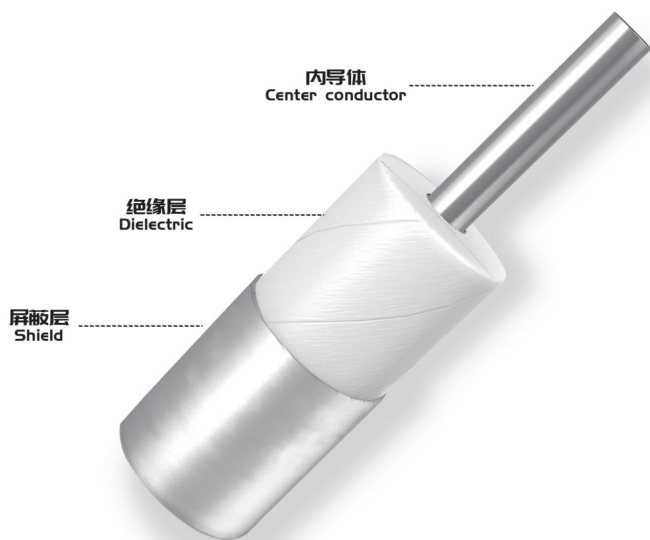
型号 TYPE		SFX-50-1	SFX-50-2 (RG405)	SFX-50-3 (RG402)	SFX-50-5.3 (RG401) t
内导体外径 (mm) Center Conductor Diameter		0.29	0.51	0.92	1.65
导体形式 Center Conductor Type		单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid
绝缘外径 (mm) Insulation Diameter		0.94	1.68	2.98	5.25
外导体外径 (mm) Shields Diameter		1.19	2.17	3.55	6.30
总外径(mm) Jacket Diameter	FEP	≤1.44	≤2.60	≤4.10	≤6.85
	LSZH	≤1.74	≤2.65	≤4.55	≤6.95
最小弯曲半径(mm) Min.bending radius		4.2	6	8	30

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	SFX-50-1	SFX-50-2 (RG405)	SFX-50-3 (RG402)	SFX-50-5.3 (RG401)				
特性阻抗(ohms) Impedance	50	50	50	50				
电容(pf/m) Capacitance	98	98	98	98				
工作频率(GHz) Frequency Range	DC-18	DC-18	DC-18	DC-18				
传输速率 Velocity of Propagation	70%	70%	70%	70%				
最大工作电压 (kV) Max.Operating Voltage	0.75	1.5	1.9	3.5				
屏蔽效率 (dB@1GHz) Shielding Effectiveness	≥100	≥100	≥100	≥100				
时延 (ns/m) Time delay	4.7	4.7	4.7	4.7				
损耗 (+25℃室温时的典型值)和传输功率 (+40℃室温, 海平面时的典型值) Insertion Loss (Typical value at +25℃Ambient temperature) and Transmission power (Typical value at +40℃Ambient Temperature, Sea Level)								
频率Frequency	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW
0.5GHz	0.83	0.046	0.49	0.338	0.27	0.790	0.16	1.831
1GHz	1.24	0.031	0.72	0.219	0.41	0.526	0.24	1.188
2GHz	1.78	0.022	1.07	0.142	0.62	0.351	0.37	0.771
3GHz	2.21	0.018	1.34	0.110	0.78	0.277	0.48	0.598
5GHz	2.96	0.013	1.80	0.080	1.05	0.205	0.65	0.435
8GHz	3.83	0.010	2.36	0.060	1.39	0.156	0.87	0.324
10GHz	4.31	0.009	2.67	0.052	1.58	0.137	0.99	0.282
15GHz	5.43	0.007	3.37	0.040	2.00	0.108	1.27	0.219
18GHz	6.03	0.006	3.73	0.036	2.22	0.097	1.42	0.196
使用温度范围 (℃) Temperature Range	-65~+165 (FEP) -30~+90 (LSZH)							

备注:
1.上表所列损耗值为未含连接器标称值, 连接器按2×0.03√f(GHz)计算。
The loss shown does not include the connector, the connector according to 2×0.03√f(GHz) calculation.

结构说明 Construction



- 1、内导体：单根镀银铜线或单根镀银铜包钢线。
- 2、绝缘层：采用实心PTFE，传输速率：70%左右；
- 3、外导体：采用无缝紫铜管或三元合金管结构。全封闭的屏蔽层结构，使得电缆具有最优的屏蔽性能和最小的外导体损耗，较高的使用频段范围和在全频段内较好的电性能指标。

- 1.Centre conductor: Single copper wire or silver plated single silver plated copper clad steel wire.
- 2. Insulation: Adopt solid PTFE, transmission rate: 70%.
- 3.The outer conductor: using seamless copper tube or ternary alloy tube structure. Totally enclosed shielding layer structure, make the cable with the best shielding performance and minimal outer conductor loss of the use of high frequency range and good electric performance indicators within the full frequency.

SFT series 半刚同轴射频电缆

SFT系列为半钢电缆，其外导体为无缝紫铜管或三元合金管结构。由于屏蔽层为全封闭结构，所以电缆具有最优的屏蔽性能和最小的外导体损耗。

The SFT series of steel cables, the outer conductor is seamless copper tube or ternary alloy tube structure. Due to the shield .Is fully enclosed structure, so the cable has a optimal shielding performance and minimal outer conductor loss.

结构参数与机械性能 Mechanical Characteristics

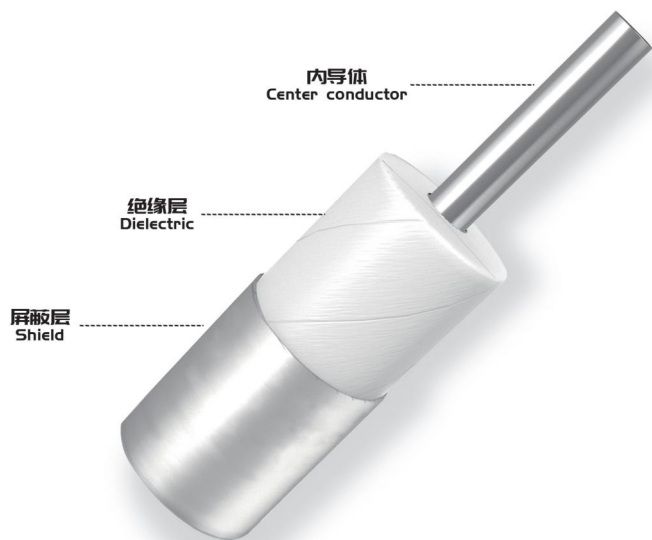
型号 TYPE	SFT-50-0.6	SFT-50-1	SFT-50-2	SFT-50-3	SFT-50-5.2
内导体外径（mm） Center Conductor Diameter	0.20	0.29	0.53	0.92	1.63
导体形式 Center Conductor Type	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid
绝缘外径（mm） Insulation Diameter	0.66	0.94	1.68	2.98	5.25
屏蔽外径（mm） Shields Diameter	0.86	1.19	2.20	3.58	6.35
最小弯曲半径(mm) Min.bending radius	4	5	10	15	30

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	SFT-50-0.6	SFT-50-1	SFT-50-2	SFT-50-3	SFT-50-5.2					
特性阻抗(ohms) Impedance	50	50	50	50	50					
电容(pf/m) Capacitance	98	98	98	98	98					
工作频率(GHz) Frequency Range	DC-20	DC-20	DC-20	DC-20	DC-10					
传输速率 Velocity of Propagation	70%	70%	70%	70%	70%					
最大工作电压 (kV) Max.Operating Voltage	1.0	2.0	2.5	3.0	6					
屏蔽效率 (dB@1GHz) Shielding Effectiveness	≥100	≥100	≥100	≥100	≥100					
损耗（+25℃室温时的典型值)和传输功率（+40℃室温，海平面时的典型值） Insertion Loss（Typical value at +25℃Ambient temperature）and Transmission power（Typical value at +40℃Ambient Temperature，Sea Level）										
频率Frequency	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW
0.5GHz	1.12	0.045	0.79	0.067	0.45	0.190	0.26	0.483	0.16	1.061
1GHz	1.59	0.032	1.13	0.047	0.64	0.133	0.38	0.336	0.23	0.728
5GHz	3.62	0.012	2.59	0.020	1.51	0.057	0.91	0.140	0.58	0.290
10GHz	5.20	0.008	3.74	0.014	2.22	0.039	1.37	0.094	0.89	0.189
20GHz	7.52	0.006	5.44	0.010	3.29	0.026	2.09	0.062	-	-
使用温度范围（℃） Temperature Range	-55~+125									

备注:
1.上表所列损耗值为未含连接器标称值, 连接器按 $2\times0.03\sqrt{f}(\text{GHz})$ 计算。
The loss shown does not include the connector, the connector according to $2\times0.03\sqrt{f}(\text{GHz})$ calculation.

结构说明 Construction



- 1、内导体：单根镀银铜线或单根镀银铜包钢线。
- 2、绝缘层：采用整体低密度PTFE，传输速率：77%左右；
- 3、外导体：采用无缝紫铜管或三元合金管结构。全封闭的屏蔽层结构，使得电缆具有最优的屏蔽性能和最小的外导体损耗，较高的使用频段范围和在全频段内较好的电性能指标。

- 1.Centre conductor: Single copper wire or silver plated single silver plated copper clad steel wire.
- 2. Insulation: Adopt overall low density insulation , Velocity of propagation: 77%.
- 3.The outer conductor: using seamless copper tube and aluminum tube structure. Totally enclosed shielding layer structure, make the cable with the best shielding performance and minimal outer conductor loss of the use of high frequency range and good electric performance indicators within the full frequency.

SFT-LP series 半刚同轴射频电缆

SFT-LP系列为低损耗半钢电缆，其外导体为无缝紫铜管或三元合金管结构。由于屏蔽层为全封闭结构，所以电缆具有最优的屏蔽性能和最小的外导体损耗。

The SFT series of low loss steel cables, the outer conductor is seamless copper tube or ternary alloy tube structure. Due to the shield is fully enclosed structure, so the cable has a optimal shielding performance and minimal outer conductor loss.

结构参数与机械性能 Mechanical Characteristics

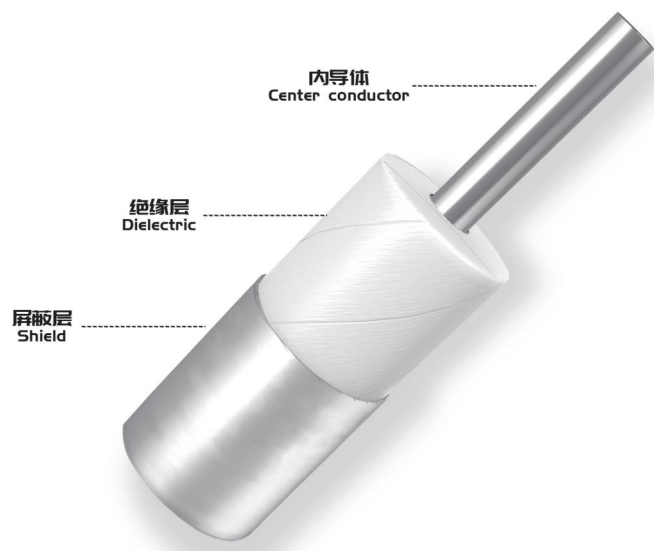
型号 TYPE	SFT-034-LP	SFT-047-LP	SFT-086-LP	SFT-120-LP	SFT-141-LP	SFT-250-LP
内导体外径（mm） Center Conductor Diameter	0.22	0.32	0.57	0.915	1.03	1.78
导体形式 Center Conductor Type	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid
绝缘外径（mm） Insulation Diameter	0.66	0.94	1.68	2.70	2.98	5.25
屏蔽外径（mm） Shields Diameter	0.86	1.19	2.20	3.05	3.60	6.35
最小弯曲半径(mm) Min.bending radius	4	5	10	15	18	30

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	SFT-034-LP		SFT-047-LP		SFT-086-LP		SFT-120-LP		SFT-141-LP		SFT-250-LP	
特性阻抗(ohms) Impedance	50		50		50		50		50		50	
电容(pf/m) Capacitance	88		88		88		88		88		88	
工作频率(GHz) Frequency Range	DC-67		DC-67		DC-50		DC-40		DC-26.5		DC-18	
传输速率 Velocity of Propagation	77%		77%		77%		77%		77%		77%	
最大工作电压（kV） Max.Operating Voltage	1.0		1.0		1.0		1.2		1.5		2.0	
屏蔽效率（dB@1GHz） Shielding Effectiveness	≥100		≥100		≥100		≥100		≥100		≥100	
损耗（+25℃室温时的典型值)和传输功率（+40℃室温，海平面时的典型值） Insertion Loss（Typical value at +25℃Ambient temperature）and Transmission power（Typical value at +40℃Ambient Temperature，Sea Level）												
频率Frequency	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW
1GHz	1.43	0.012	1.01	0.024	0.57	0.072	0.36	0.148	0.33	0.189	0.19	0.473
5GHz	3.23	0.005	2.30	0.011	1.31	0.031	0.84	0.064	0.77	0.081	0.47	0.196
10GHz	4.61	0.004	3.29	0.007	1.90	0.022	1.23	0.044	1.13	0.056	0.70	0.132
18GHz	6.24	0.003	4.47	0.005	2.61	0.016	1.71	0.032	1.58	0.040	1.00	0.093
26.5GHz	7.64	0.002	5.49	0.004	3.23	0.013	2.14	0.025	1.98	0.032	-	-
40GHz	9.48	0.002	6.84	0.004	4.06	0.010	2.73	0.020	-	-	-	-
50GHz	10.67	0.002	7.72	0.003	4.61	0.009	-	-	-	-	-	-
67GHz	12.48	0.001	9.06	0.002	-	-	-	-	-	-	-	-
使用温度范围（℃） Temperature Range	-55~+125											

备注:
1.上表所列损耗值为未含连接器标称值，连接器按2×0.03√f(GHz)计算。
The loss shown does not include the connector, the connector according to 2×0.03√f(GHz) calculation.

结构说明 Construction



- 1、内导体：单根镀银铜线或单根镀银铜包钢线。
- 2、绝缘层：采用微孔低密度PTFE，传输速率：83%左右；
- 3、外导体：采用无缝紫铜管或三元合金管结构。全封闭的屏蔽层结构，使得电缆具有最优的屏蔽性能和最小的外导体损耗，较高的使用频段范围和在全频段内较好的电性能指标。

- 1.Centre conductor: Single copper wire or silver plated single silver plated copper clad steel wire.
- 2. Insulation: Adopt microporous low density PTFE , Velocity of propagation: 77%.
- 3.The outer conductor: using seamless copper tube and aluminum tube structure. Totally enclosed shielding layer structure, make the cable with the best shielding performance and minimal outer conductor loss of the use of high frequency range and good electric performance indicators within the full frequency.

SFT-LPS series
半刚同轴射频电缆

SFT-LPS系列为低损耗稳相半刚电缆，其外导体为无缝紫铜管或三元合金管结构。由于屏蔽层为全封闭结构，所以电缆具有最优的屏蔽性能和最小的外导体损耗。
The SFT series of low loss phase stabilization cables, the outer conductor is seamless copper tube or ternary alloy tube structure. Due to the shield .Is fully enclosed structure, so the cable has a optimal shielding performance and minimal outer conductor loss.

结构参数与机械性能 Mechanical Characteristics

型号 TYPE	SFT-034-LPS	SFT-047-LPS	SFT-086-LPS	SFT-120-LPS	SFT-141-LPS	SFT-250-LPS
内导体外径（mm） Center Conductor Diameter	0.23	0.33	0.60	0.98	1.08	1.91
导体形式 Center Conductor Type	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid	单芯 Solid
绝缘外径（mm） Insulation Diameter	0.66	0.94	1.68	2.70	2.98	5.25
屏蔽外径（mm） Shields Diameter	0.86	1.19	2.20	3.05	3.60	6.35
最小弯曲半径(mm) Min.bending radius	4	5	10	15	18	30

电气与环境性能 Electrical and Environmental Performance

型号 TYPE	SFT-034-LPS		SFT-047-LPS		SFT-086-LPS		SFT-120-LPS		SFT-141-LPS		SFT-250-LPS	
特性阻抗(ohms) Impedance	50		50		50		50		50		50	
电容(pf/m) Capacitance	85		85		83		83		83		83	
工作频率(GHz) Frequency Range	DC-67		DC-67		DC-50		DC-40		DC-26.5		DC-18	
传输速率 Velocity of Propagation	80%		80%		81%		83%		83%		83%	
最大工作电压（kV） Max.Operating Voltage	1.0		1.0		1.0		1.2		1.5		2.0	
屏蔽效率（dB@1GHz） Shielding Effectiveness	≥100		≥100		≥100		≥100		≥100		≥100	
损耗（+25℃室温时的典型值)和传输功率（+40℃室温，海平面时的典型值） Insertion Loss（Typical value at +25℃Ambient temperature）and Transmission power（Typical value at +40℃Ambient Temperature，Sea Level）												
频率Frequency	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW	dB/m	kW
1GHz	1.39	0.012	0.98	0.025	0.55	0.076	0.34	0.162	0.30	0.202	0.17	0.539
5GHz	3.16	0.005	2.24	0.011	1.26	0.033	0.77	0.071	0.70	0.089	0.40	0.236
10GHz	4.50	0.004	3.20	0.008	1.83	0.023	1.10	0.050	1.00	0.062	0.57	0.164
18GHz	6.10	0.003	4.36	0.006	2.51	0.017	1.50	0.036	1.37	0.045	0.78	0.120
26.5GHz	7.46	0.002	5.35	0.005	3.10	0.014	1.85	0.030	1.69	0.037	-	-
40GHz	9.26	0.002	6.67	0.004	3.91	0.011	2.32	0.024	-	-	-	-
50GHz	10.42	0.002	7.52	0.003	4.44	0.010	-	-	-	-	-	-
67GHz	12.19	0.001	8.83	0.003	-	-	-	-	-	-	-	-
使用温度范围（℃） Temperature Range	-55~+125											

备注:
1.上表所列损耗值为未含连接器标称值, 连接器按 $2 \times 0.03 \sqrt{f(\text{GHz})}$ 计算。
The loss shown does not include the connector, the connector according to $2 \times 0.03 \sqrt{f(\text{GHz})}$ calculation.



- 技术支持
- TECHNICAL SUPPORT

公式 Formula

特性阻抗 (ohms) Impedance	$Z_c = \frac{60}{\sqrt{\epsilon}} \ln \frac{D}{d} = \frac{138}{\sqrt{\epsilon}} \lg \frac{D}{d} \quad (\Omega)$	延时与长度 And the length of delay	$T = 3.33\sqrt{\epsilon} \quad (\text{ns/m})$ $L = \frac{0.3T}{\sqrt{\epsilon}} \quad (\text{m})$
衰减 Attenuation	$\partial_{\text{总}} = \partial_R + \partial_G \quad (\text{dB/km})$ $\partial_R = \frac{2.61 \times 10^{-3} \sqrt{f\epsilon}}{\lg \frac{D}{d}} \left(\frac{1}{d} + \frac{1}{D} \right)$ $\alpha_G = 9.1 \times 10^{-5} f \sqrt{\epsilon} \cdot \text{tg} \delta$	速率 Rate	$V_p = \frac{1}{\sqrt{\epsilon}} \times 100 \quad (\%)$
电容 (pf/m) Capacitance	$C = \frac{24.12\epsilon}{\lg \frac{D}{d}} \quad (\text{pF/m})$	截止频率 Cut-off frequency	$F_{\infty} = \frac{1.91 \times 10^5}{\sqrt{\epsilon}(D+d)} \quad (\text{MHz})$

回波损耗与驻波比对照表 Return Loss and VSWR table

反射系数 (ρ) Reflection coefficient	回波损耗 (RL) Return Loss	驻波比 (SWR) VSWR
1.00	0.00	∞
0.90	0.92	19.00
0.80	0.94	9.00
0.70	3.10	5.67
0.60	4.44	4.00
0.50	6.02	3.00
0.40	7.96	2.33
0.30	10.46	1.86
0.20	13.98	1.50
0.10	20.00	1.22
0.09	20.92	1.20
0.08	21.94	1.17
0.07	23.10	1.15
0.06	24.44	1.13
0.05	26.02	1.11
0.04	27.96	1.08
0.03	30.46	1.06
0.02	33.98	1.04
0.01	40.00	1.02
0.00	∞	1.00

$\rho = (\text{SWR}-1) / (\text{SWR}+1)$
$$\text{RL} = -20\lg(\rho)$$
$$\text{SWR} = (1+\rho) / (1-\rho)$$

复反射系数: $\Gamma = (Z_L-Z_0) / (Z_L+Z_0) = \rho (\sin \theta + j\cos \theta)$

A. 1 温度相位稳定性

A. 1.1 概述

电缆由于环境温度的变化引起机械长度及介电常数的变化, 从而产生相位变化。电缆的温度相位变化是温度的函数, 温度相位稳定性可以用相位温度变化系数 η_T 表示与最大相位变化系数 $|\Delta\eta|_{\max}$ 评定。

相位温度变化系数 η_T 为在规定的频率下, 各规定温度点电缆相位值相对室温 t_0 (通常为 25 °C) 相位值的变量 (= -) 与室温相位之比值, 并以 1×10^{-6} 为 1 个单位:

$$\eta_T = (\Delta\Phi_i / \Phi_{i_0}) \times 10^6 |\Delta\eta| \text{ ----- (A. 1)}$$

最大相位变化系数 $|\Delta\eta|_{\max}$ 为在试验温度范围内, “ η_T - T” 曲线图中最大值 $\eta_{\max}$ 和最小值 $\eta_{\min}$ 的绝对差值:

$$|\Delta\eta| = |\eta_{\max} - \eta_{\min}| \text{ ----- (A. 2)}$$

A. 1.2 试验设备

试验设备包括矢量网络分析仪、温度试验箱。

A. 1.3 试验步骤

试验步骤如下:

- 1) 试样长度为 6 m ~ 10 m, 两端应配接适配的连接器;
- 2) 测试电缆试样在常温 (25 °C) 下, 规定频率点的相位;
- 3) 为了 η_T - T 曲线可重复性稳定, 试样需做多个温度循环;
- 4) 电缆试样置温度试验箱内温度均一区域, 连接器两端伸出箱体段长不大于 0.3 米。在试验温度范围内, 从最低温开始升温至最高温, 每次升温不大于 5 °C, 并记录每次升温温度稳定后的电缆相位;
- 5) 按公式 A. 1 计算 η_T , 并作出 η_T - T 曲线图 (见 A. 1 示例图);
- 6) 确定曲线图中的最大值 $\eta_{\max}$ 和最小值 $\eta_{\min}$, 并按公式 A. 2 计算电缆在该温度范围内的最大相位变化系数

$$|\Delta\eta|_{\max}$$

A. 1.4 试验报告

试验报告应包含以下内容:

- 试样长度;
- 测试频率;
- 试验温度范围;
- 循环次数;
- η_T - T 曲线图;
- 最大相位变化系数 $|\Delta\eta|_{\max}$ 。

A. 1 temperature phase stability

A. 1.1 Overview

Cable due to environmental temperature changes cause changes in the mechanical length and the dielectric constant, resulting in phase change. Phase change temperature of the cable is a function of temperature, the temperature of the phase of phase stability can η_T represents the temperature coefficient of the maximum phase variation coefficient $|\Delta\eta|_{\max}$ Assessment.

Temperature coefficient of η_T phase at a predetermined frequency for each point of a predetermined temperature value of the relative phase of the cable temperature t_0 (typically 25 °C) variable phase value (= -) ratio of the phase of a room temperature, and 1×10^{-6} to one unit:

$$\eta_T = (\Delta\Phi_i / \Phi_{i_0}) \times 10^6 |\Delta\eta| \text{ ----- (A. 1)}$$

The maximum phase variation coefficient $|\Delta\eta|_{\max}$ To be within the test temperature range, " η_T - T" $\eta_{\max}$ maximum graph and the $\eta_{\min}$ imum absolute difference $\eta_{\min}$:

$$|\Delta\eta| = |\eta_{\max} - \eta_{\min}| \text{ ----- (A. 2)}$$

A.1.2 Test Equipment

Test equipment including vector network analyzers, temperature chambers.

A.1.3 Test procedure

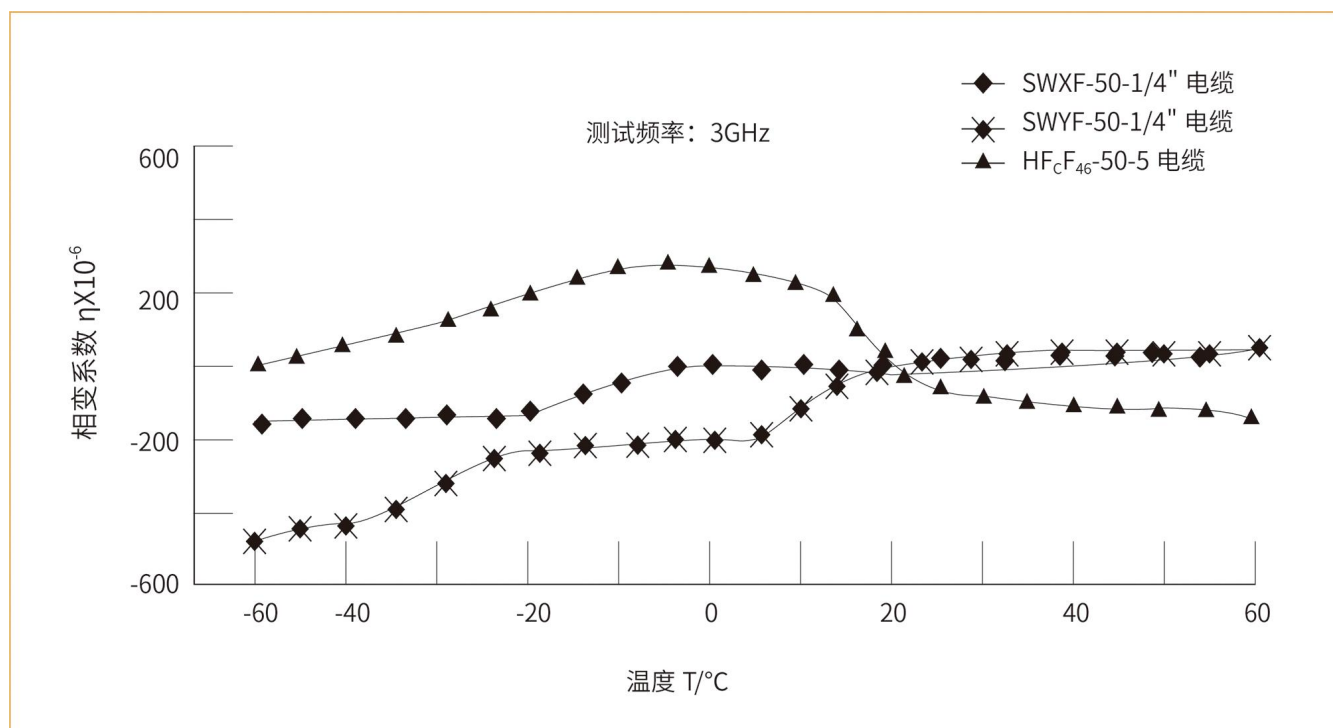
The test procedure is as follows:

- 1) The sample length is 6 m ~ 10 m, the ends should be connected with the adapter connector;
- 2) Test cable specimens at room temperature (25 °C), the phase of a predetermined frequency points;
- 3) In order to stabilize the reproducibility η_T - T curve, the samples to be done to a plurality of temperature cycles;
- 4) Cable sample set temperature test chamber temperature uniformity region, extending both ends of the connector box segment grow to 0.3 meters. Within the test temperature range from low temperature to warm up to the maximum temperature, each temperature of not more than 5 °C, and records the phase of each cable stable temperature after heating;
- 5) Calculated according to the formula A.1 η_T , and make η_T - T graph (see the example in Figure A.1);
- 6) Determine the maximum $\eta_{\max}$ graph and minimum $\eta_{\min}$, then the formula A.2 cable maximum phase variation coefficient calculated within the temperature range $|\Delta\eta|_{\max}$.

A.1.4 Test Report

The test report shall contain the following:

- Sample length;
- Test frequency;
- Test temperature range;
- Cycles;
- η_T - T graph;
- Maximum phase variation coefficient max.



A. 2 弯曲相位稳定性

A.2.1 概述

弯曲相位稳定性为在规定的频率下，电缆弯曲时产生的相位变化。其数值大小表示电缆结构机械稳定性，试验值与试验频率、弯曲圆盘直径、弯曲角（弯曲圈数）、试样长度等试验条件密切相关。

A.2.2 试验设备

试验设备包括矢量网络分析仪、弯曲圆盘。

A.2.3 试验步骤

试验步骤如下：

- 1) 试样长度大于 3 m，两端应配接适配的连接器；
- 2) 测试电缆试样在常温（25 °C）下，规定频率点的相位并校准为“零”；
- 3) 电缆按详细规范规定的直径和弯曲角进行弯曲，如图 A.2 所示；
- 4) 记录各弯曲状态时相位变化量 $|\Delta\Phi_i|$ ；
- 5) 弯曲时，电缆非弯曲部位应处于静止状态，尤其是与矢量网络分析仪接口部位。

A. 2 bending phase stability

A.2.1 Overview

Bending phase stability at a predetermined frequency to produce a phase change of the cable bend. Its value indicates the size of the cable structure mechanical stability test with the test frequency, bending disc diameter, bend angle (bending laps), is closely related to the sample length test conditions.

A.2.2 Test Equipment

Test equipment including vector network analyzer, bend the disc.

A.2.3 Test procedure

The test procedure is as follows:

- 1) The sample length is greater than 3 m, the ends should be connected with the adapter connector;
- 2) Test cable samples at room temperature (25°C), the provisions of frequency and phase calibration for "zero";
- 3) Press the detailed specification cable diameter and bending angle bend, as shown in Figure A.2;
- 4) The amount of the phase change recording bent state $|\Delta\Phi|$;
- 5) When bending, bending parts of the cable should be in the non-stationary state, especially with the vector network analyzer interface site.

A.2.4 试验报告

试验报告应包含以下内容：

- 试样长度；
- 测试频率；
- 试验弯曲圆盘直径；
- 弯曲角；
- 各弯曲状态时弯曲相位变化量 $|\Delta\Phi_t|$ 。

A.2.4 Test Report

The test report shall contain the following:

- Sample length;
- Test frequency;
- Bending test disc diameter;
- Bending angle;
- Bending phase change amount each bent state $|\Delta\Phi_t|$.

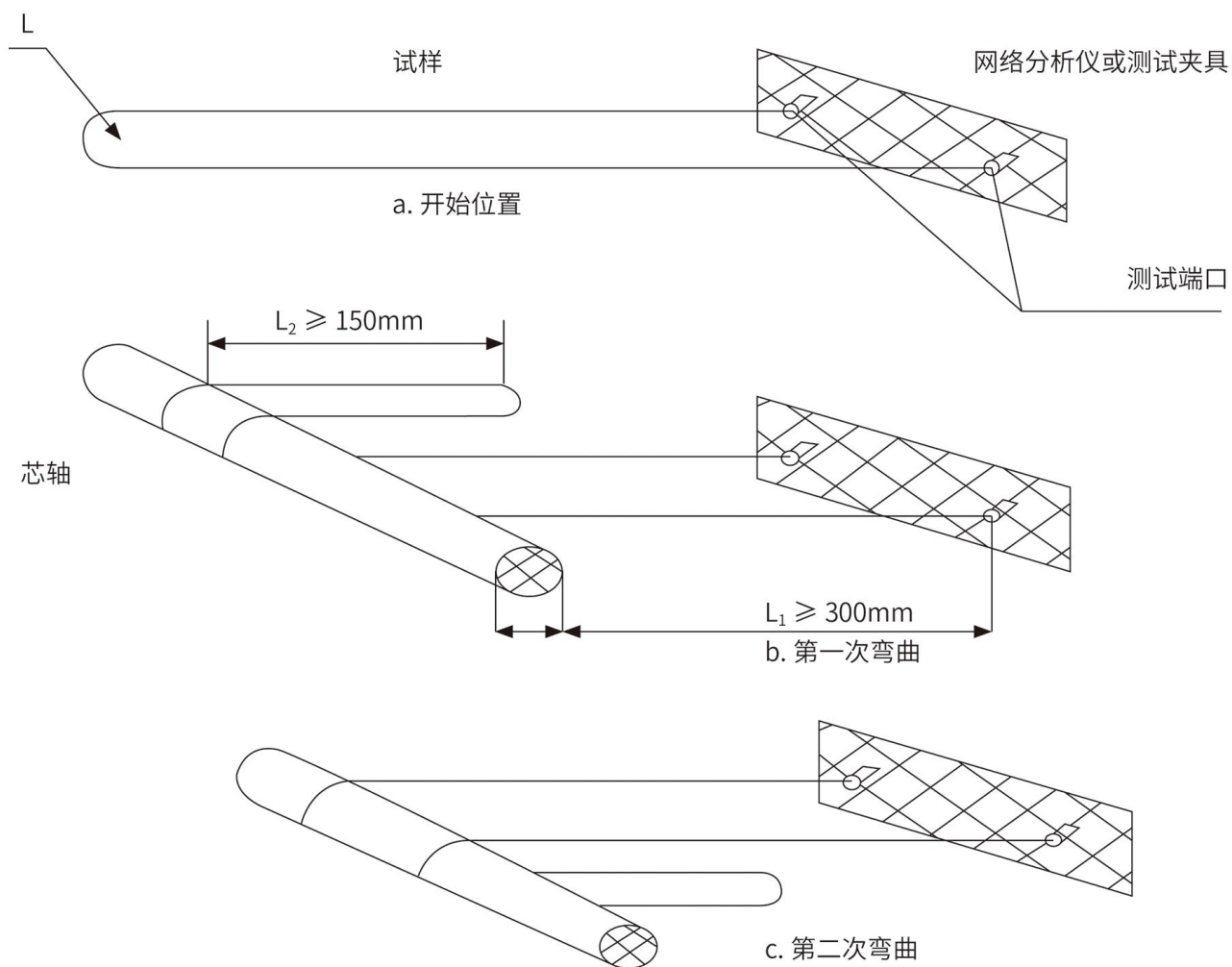


图 A.2 弯曲相位稳定性试验示意图

1. 试样的制备

测试样品选用电缆长度 $L=2000\pm 20\text{mm}$ ，两段装接符合 GJB681A-2002 及相关详细规范要求的 SMA-50J 连接器插头。

2. 试验设备

振动台：最小振动频率 1Hz, 振动位移幅值 $\geq 0.5\text{mm}$ 。
如果无专业振动台，可按试验要求手工或台具进行模拟振动。
矢量网络分析仪：足够精度、准确度和频率范围的矢量网络分析仪。

3. 试验环境

试验环境温度变化范围应保持在 $\pm 2^\circ\text{C}$ 以内。

4. 试验系统的组装

试验前，电缆应无支撑的成圈，成圈直径不小于 200mm，将电缆组件安装在指定夹具上置于振动台上，通过测试线连接到矢量网络分析仪上，网络分析仪扫描频点 801 点，避免测试线和连接部位受到振动影响。

5. 测量振动前衰减

按 3.5.7 方法测试组件衰减，按要求频率点测试衰减 值。

6. 测量振动时变化最大的衰减 值：振动频率 2Hz，振动位移幅值 $\leq 20\text{mm}$ ，振动时间 30s，监测振动过程中规定频率的衰减最大值。

7. 计算衰减振动稳定值： $|\Delta\partial| = |\partial_{\max} - \partial_0|$

1. Specimen preparation

Test samples were selected cable length $L = 2000 \pm 20\text{mm}$, two attachment meets GJB681A-2002 and the related detailed specification requirements SMA-50J connector plug.

2. Test Equipment

Vibration table: minimum vibration frequency 1Hz, vibration displacement amplitude $\geq 0.5\text{mm}$. If there is no professional shaking table, according to test requirements with manual or Taiwan to simulate vibration.
Vector Network Analyzer: sufficient precision, accuracy and frequency range of vector network analyzer.

3. Test environment

Test the ambient temperature changes should be maintained within $\pm 2^\circ\text{C}$.

4. Assembly 4 test system

Before the test, the cable should be no support of a circle, a circle diameter of not less than 200mm, the cable assembly is mounted on the vibration table designated fixture placed, connected to a vector network analyzer through the test line, network analyzers scanning frequency 801 points, avoid testing line and connecting parts affected by vibration.

5. Measuring vibration damping ago 3.5.7 The method according to test components decay, according to the requirements of the test frequency attenuation value.

6. Measuring vibration changes the maximum attenuation values: vibration frequency 2Hz, vibration displacement amplitude $\leq 20\text{mm}$, vibration time 30s, the process of monitoring the vibration attenuation specified maximum frequency.

7. Calculate the stable value of attenuated vibration:

$$|\Delta\partial| = |\partial_{\max} - \partial_0|$$

同轴电缆额定平均功率 Rated average power of coaxial cable

同轴电缆的允许传输额定平均功率代表电缆可以长期安全运行而不发生热损坏所能承受的平均输入功率值，其主要受到以下因素限制：

- 电缆的自身产生发热的热流源—衰减；
- 绝缘介质的耐高温能力；
- 电缆的自身散热能力—热阻；
- 敷设条件、环境温度等。

The allowable transmission average power of coaxial cable represents the average input power that the cable can operate safely for a long time without thermal damage. It is mainly limited by the following factors:

- The heat source of the cable which produces heat itself - attenuation;
- The high temperature resistance of insulating medium;
- The thermal resistance of the cable;
- Laying conditions, ambient temperature, etc.

电缆的发热
 Heating of cable

电缆传输一定的功率时，其内部有三个热源组成：

内导体发热 $W_d=I^2R_d=2Pa_d$
 外导体发热 $W_D=I^2R_D=2Pa_D$
 介质发热 $W_G=U^2G=2Pa_G$
 式中 $\alpha_d=R_d/2ZC$ —内导体电阻引起的衰减
 衰减

$\alpha_D=R_D/2ZC$ —外导体电阻引起的衰减
 $\alpha_G=1/2GZC$ —介质衰减
 $R_d、R_D$ —分别为内、外导体的电阻
 P —平均功率
 $W_d、W_D、W_G$ —分别为上述衰减分量所引起的热流分量。

When the cable transmits a certain power, there are three heat sources in it:
 Heating of inner conductor
 $W_d=I^2R_d=2Pa_d$
 Heating of outer conductor
 $W_D=I^2R_D=2Pa_D$
 Medium heating
 $W_G=U^2G=2Pa_G$
 In $\alpha_d=R_d/2ZC$ —Attenuation caused by resistance of inner conductor
 $\alpha_D=R_D/2ZC$ —Attenuation caused by resistance of outer conductor
 $\alpha_G=1/2GZC$ —Dielectric attenuation
 $R_d、R_D$ —The resistance of inner and outer conductor respectively
 P —Average power
 $W_d、W_D、W_G$ —They are the heat flux component caused by the attenuation component.

电缆的散热
 Cable heat dissipation

电缆的散热能力可以用所谓“热阻”来表示，热阻表示电缆散热时受到的阻碍，如图所示，当电缆内导体向周围环境散热时，热流要经过绝缘的热阻 S_d ，护套的热阻 S_c 以及护套表面向周围环境散热的热阻 S_0 ，当然热流还会遇到内、外导体金属的热阻，由于金属是良好的导热体，其热阻可忽略不计。

The heat dissipation capacity of the cable can be expressed as the so-called "thermal resistance". The thermal resistance indicates the resistance of the cable when it is cooled. As shown in the figure, when the inner conductor of the cable is radiating to the surrounding environment, the heat flow shall pass through the insulation thermal resistance S_D , the thermal resistance S_C of the sheath and the thermal resistance S_0 of the sheath surface to the surrounding environment. Of course, the heat flow will encounter the thermal resistance of the inner and outer conductor metal, Because metal is a good heat conducting body, its thermal resistance can be ignored.

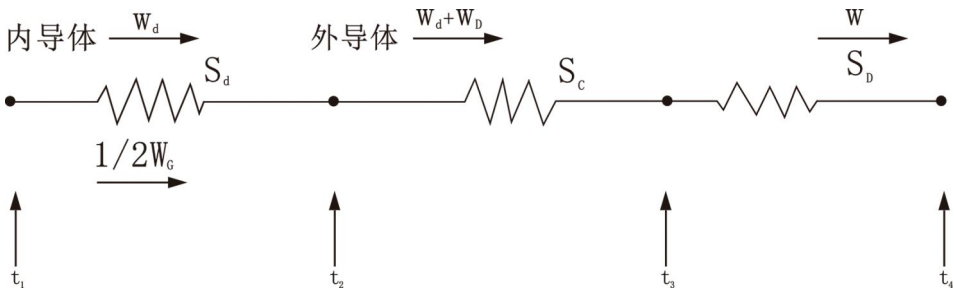


图1 同轴电缆的等效热路图

绝缘和护套的热阻Sd、Sc可按下式计

算：

$$S_d = \frac{G_d}{2\pi} \ln \frac{D}{K_{1d}} = 0.3665 G_d I_g \frac{D}{K_{1d}} \text{热欧厘米}$$

$$S_c = \frac{G_c}{2\pi} \ln \frac{D_0}{D_1} = 0.3665 G_c I_g \frac{D_0}{D_1} \text{热欧厘米}$$

式中D、d为绝缘层的外、内径（毫米）

D₀、D₁为护套层的外、内径（毫米）

K₁为绞线内导体的等效直径系数（见表1

）

G_d、G_c分别为绝缘介质和护套材料的热阻率（热偶厘米），可由表2选取。

对于埋地敷设：

$$S_0 = \frac{G_g}{2\pi} \ln \frac{4L}{D_0} = 0.3665 G_g I_g \frac{4L}{D_0} \text{热欧厘米}$$

式中：G_g为土壤的热阻率，L为电缆的埋地深度，D₀为电缆的外径。

对于架空敷设：

$$S_0 = \frac{1}{\pi D_0 K_h \theta_0^4} \text{热欧厘米}$$

式中θ₀=t₃-t₀表示电缆表面与周围环境的温差（℃）

K_h - 电缆表面的散热系数（瓦/厘米²·℃）

D₀ - 电缆外径（应该用厘米代入）

The thermal resistance S_D and S_C of insulation and sheath can be calculated as follows:

$$S_d = \frac{G_d}{2\pi} \ln \frac{D}{K_{1d}} = 0.3665 G_d I_g \frac{D}{K_{1d}}$$

$$S_c = \frac{G_c}{2\pi} \ln \frac{D_0}{D_1} = 0.3665 G_c I_g \frac{D_0}{D_1}$$

In the above formula,

D、d is the outer and inner diameter of the insulating layer (mm).

D₀、D₁ is the outer and inner diameter of sheath (mm).

K₁ Is the equivalent diameter coefficient of conductor in stranded wire (see Table 1).

G_d、G_c They are the thermal resistances (thermocouple cm) of insulating medium and sheath material respectively, which can be selected from table 2.

For buried laying:

$$S_0 = \frac{G_g}{2\pi} \ln \frac{4L}{D_0} = 0.3665 G_g I_g \frac{4L}{D_0}$$

In the above formula, G_g is the thermal resistance of the soil, L is the buried depth of the cable, and D₀ is the outer diameter of the cable.

For overhead laying:

$$S_0 = \frac{1}{\pi D_0 K_h \theta_0^4}$$

In the above formula, θ₀=t₃-t₀ indicates the temperature difference between the cable surface and the surrounding environment (℃)

K_h - heat dissipation coefficient of cable surface (watt / cm² ·℃)

D₀ - cable outer diameter (should be replaced in cm)

表1 绞线内导体的有效直径系数

Table 1 effective diameter coefficient of inner conductor of stranded wire

绞线内导体的导线根数N Number of conductors in stranded conductor(N)	1	3	7	12	19	27
有效直径系数K ₁ Effective diameter coefficient (K ₁)	1.000	0.871	0.939	0.957	0.970	0.976
绞线内导体的导线根数N Number of conductors in stranded conductor(N)	37	50	70	90	-	-
有效直径系数K ₁ Effective diameter coefficient (K ₁)	0.980	0.983	0.986	0.988	-	-

表2 常规材料的热阻率 Table 2 thermal resistance of conventional materials

材料 Material	热阻率（热欧厘米） Thermal resistance
聚乙烯 polyethylene	350-450
聚氯乙烯 polyvinyl chloride	700
聚四氟乙烯 pteflon	500
微孔聚四氟乙烯 Microporous polytetrafluoroethylene	900
泡沫聚乙烯 Foamed polyethylene	900
聚苯乙烯 polystyrene	750
氯丁橡胶 Chloroprene rubber	500
涂沥青的棉麻 Pitch coated cotton and hemp	500
土壤 soil	120
干燥电缆纸 Drying cable paper	1000
静止空气 Still air	4100

由图1可见额定功率的计算公式

$$t_1 - t_2 = (W_d + 1/2 W_G) S_d = (\alpha_d + 1/2 \alpha_G) 2PS_d$$

$$2PS_d$$

$$t_2 - t_3 = WS_c = 2PaS_c$$

$$t_3 - t_0 = WS_0 = 2PaS_0$$

相加之后可得：

$$t_1 - t_0 = 2PS_d(\alpha_d + 1/2 \alpha_G) + 2Pa(S_c + S_0)$$

$$\text{因此 } P = \frac{t_1 - t_0}{(2\alpha_d + \alpha_G)S_d + 2\alpha(S_c + S_0)}$$

式中 $t_1 - t_0$ 表示允许的内导体最高温度 t_1 与环境温度 t_0 之差，通常是预先规定的耐温等级。

在使用上式时，如果是架空敷设，则热阻 S_0 中包含着未知数 θ_0 ，而电缆内导体与护套表面之间温差为：

$\theta' = t_1 - t_3$ 它与总热流 W 之间有如下线性关系：

$$\theta' = S_d W_{\text{绝}} + S_c W \left(\frac{\alpha_d + \frac{1}{2} \alpha_G}{\alpha} S_d + S_c \right) W$$

将温升曲线 θ_0 和 θ' 相互迭加即可确定允许的热流值 $W_{\text{允}}$ （迭加的方法见图3），则额定功率即可求出如下：

$$P = \frac{W_{\text{允}}}{2\alpha}$$

式中 α 应该用电缆在工作温度下的衰减值代入。

The calculation formula of rated power can be seen from Figure 1:

$$t_1 - t_2 = (W_d + 1/2 W_G) S_d = (\alpha_d + 1/2 \alpha_G) 2PS_d$$

$$2PS_d$$

$$t_2 - t_3 = WS_c = 2PaS_c$$

$$t_3 - t_0 = WS_0 = 2PaS_0$$

After adding, we can get:

$$t_1 - t_0 = 2PS_d(\alpha_d + 1/2 \alpha_G) + 2Pa(S_c + S_0)$$

$$\text{So } P = \frac{t_1 - t_0}{(2\alpha_d + \alpha_G)S_d + 2\alpha(S_c + S_0)}$$

$t_1 - t_0$ refers to the difference between the maximum allowable temperature T_1 of the inner conductor and the ambient temperature T_0 , which is usually the pre-determined temperature resistance level.

When using the above formula, if it is overhead laying, the thermal resistance S_0 contains unknowns θ_0 , and the temperature difference between the inner conductor and the sheath surface is:

$\theta' =$ The linear relationship between $T_1 - T_3$ and total heat flux W is as follows

Temperature rise curve θ_0 and θ' The allowable heat flow value W is determined by superposition (see Fig. 3 for the superposition method), then the rated power can be calculated as follows:

$$P = \frac{W_{\text{允}}}{2\alpha}$$

α should be replaced by the attenuation value of the cable at the working temperature.

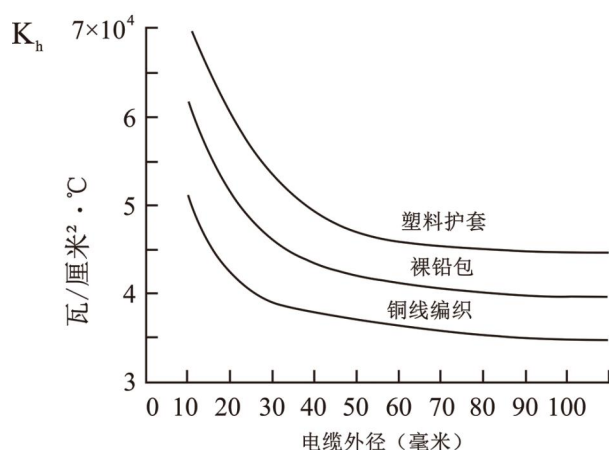


图2 电缆的表面散热系数

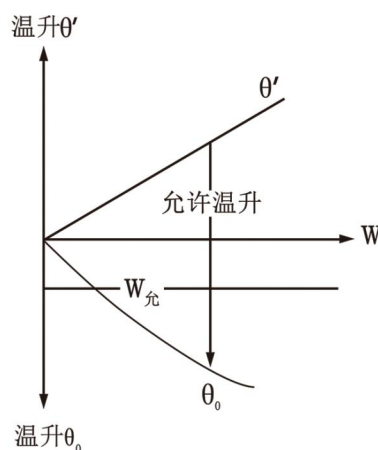


图2 图解法求得允许热流

改善网络分析仪的插入损耗测量精度

Improve the accuracy of insertion loss measurement for network analyzers

在用网络分析仪测量无源器件(尤其是低损耗的器件如电缆组件, 空气线等)的插入损耗时, 在通路上插入固定衰减器可以提高测量精度。

在测试通路中插入两个6dB(或10dB)衰减器, 在通路中校准时, 将这两个衰减器作为测试电缆的一部分进行校准, 使测试通路的插入损耗归一化到0dB, 然后接入DUT进行测试。从图1的测试结果可以发现, 当不加衰减器时, DUT的插入损耗曲线存在波动; 而加入衰减器后(图2), 曲线变得平滑。是因为由于衰减器的存在改善了测试通路的失配损耗。

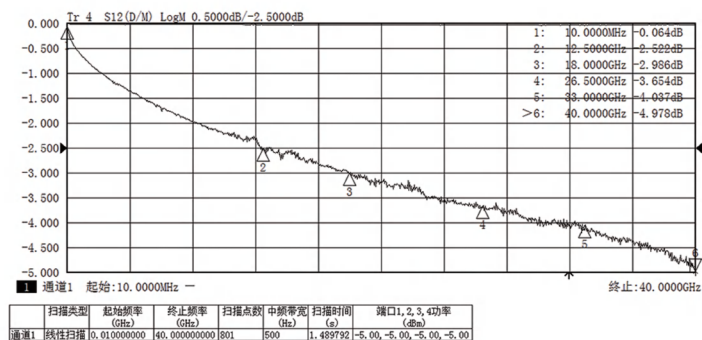


图1 不加衰减器时的插入损耗测试结果

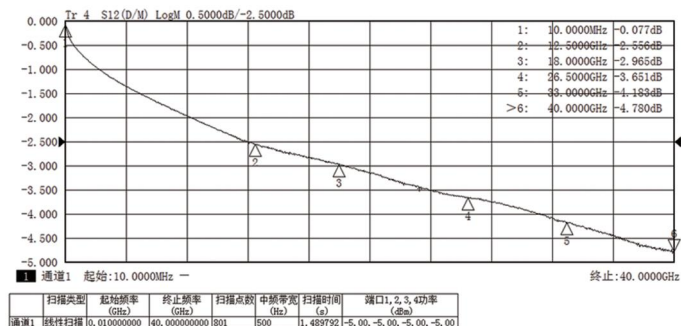


图2 加衰减器时的插入损耗测试结果

用于上述用途的衰减器, 并不需要十分平坦的衰减量频率相应, 因为在通路校准时, 这些频响误差都被校准了, 但衰减器的VSWR则越低越好。



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