SFT™ High Performance Microwave Coaxial Cable, Connectors and Assemblies

ISO 9001 Certified

SFT™ - Strip Flex Taped

- *Low Loss*
- *Flexible*
- *Rugged*
- *High Temperature*
- *High Power Handling*
- *Sizes from – SFT-316 (0.120") to SFT-600 (0.565")*

SFT™ high performance microwave cables are rugged and flexible, making them ideal for inter connect applications from inside LRU's to system interconnects and antenna feeders in military and commercial systems. The wide range of available connectors covers many interface types and frequency ranges.

Features & Benefits:

- Much lower loss than solid dielectric cables
- Superior shielding effectiveness >100 dB
- Stable Loss, VSWR and phase with flexing
- Available as fully tested, custom cable assemblies

TIMES MICROWAVE SYSTEMS
An Amphenol Company

SFT ™ Cable Construction

Center Conductor — SFT™ Cables use solid center conductors for the lowest attenuation. The center conductors are silver-plated copper except for SFT-600. The silver plating provides the best long-term performance in high frequency applications. Since SFT-600 is limited to low frequencies by its size, the use of a copper clad aluminum conductor results in lower cost and weight.

Dielectric — SFT Cables incorporate proprietary low loss taped expanded PTFE dielectrics with 76% velocity. These provide much greater inherent ruggedness than dielectrics with 80% or higher velocity. This results in better flex life and stability in applications, such as testing and field deployable antenna feeders, where the cable will be flexed over its life.

Jacket — The jacket is translucent blue FEP (Fluorinated Ethylene Propylene). This tough, high temperature material provides mechanical protection and its smooth low friction sur face is ideal for routing through tight spaces. It is also inherently resistant to degradation from exposure to UV, making these cables suitable for outdoor use.

Inner Shield — The inner shield of the SFT cables is silver-plated copper flat ribbon braid. This construction, pioneered by Times Microwave Systems in the mid-1960s, replaces groups of round wire with a single silver-plated flat wire or ribbon. The result is a close approximation of a smooth, continuous silver surface — the ideal coaxial cable inner shield. This is achieved while maintaining the ability for the cable to flex and bend due to the interwoven braided construction.

Outer Shield — The outer shield consists of round wire braid. In addition to providing additional shielding and mechanical protection, this layer is used for connector attachment and retention. Connectors for these cables are designed to crimp, clamp or solder to the flat wire and round wire braids.

Interlayer — The helically applied interlayer consists of a composite Aluminum/Kapton® tape, which serves to provide improved shielding and to mechanically restrain the flat braids to maintain their electrical performance with flexing. This layer is removed for connector attachment.

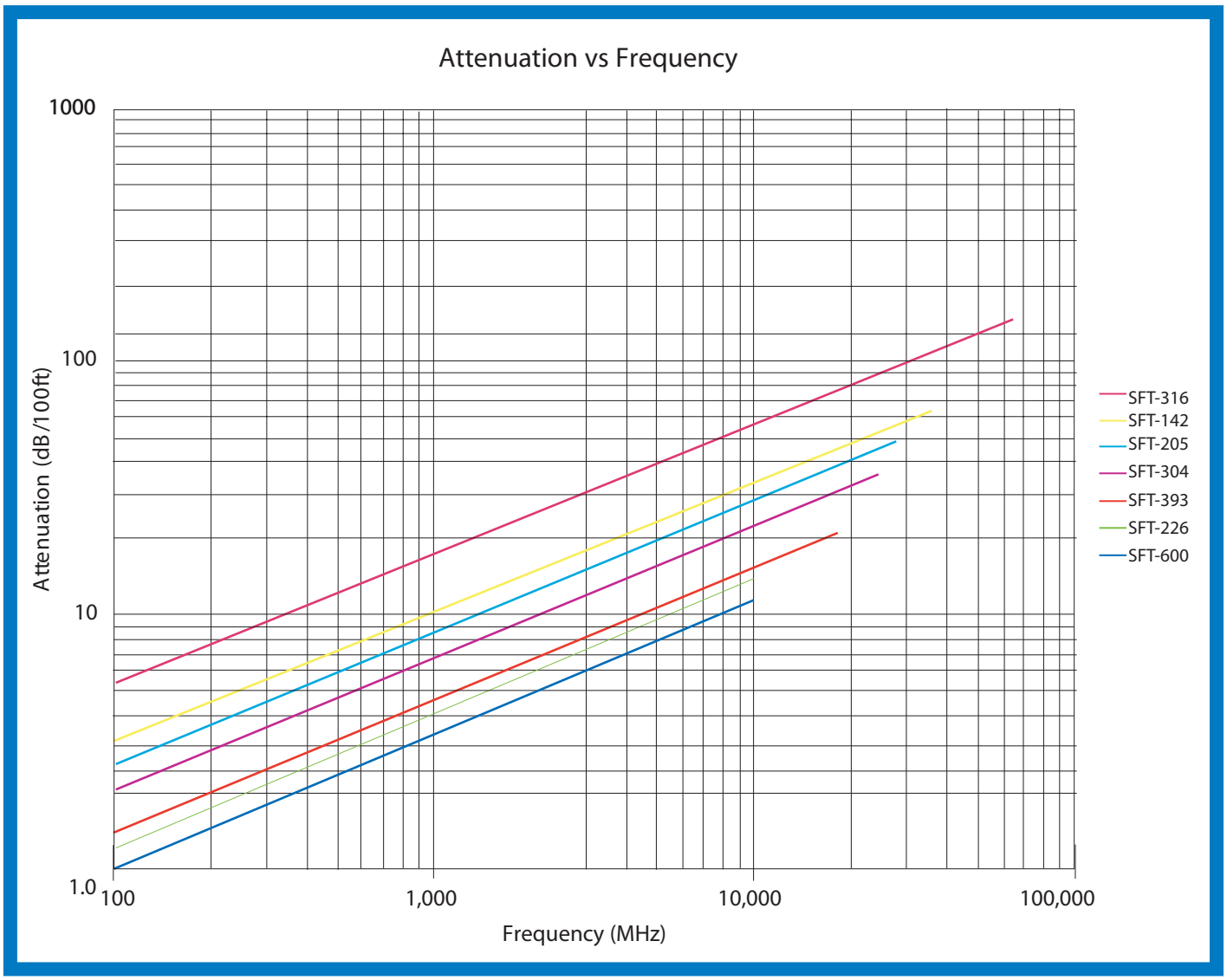
*Kapton® is a registered trademark of Dupont.

SFT ™ High Performance Microwave Coaxial Cables, Connectors

The SFT Product Line has been successfully deployed in a broad range of applications. It has been used in system level microwave interconnects for airborne and ground based military as well as, commercial telecom applications. It performs admirably as a low loss test cable for production testing of RF components and equipment with excellent phase stability and durability. The larger sizes are ideal for high power industrial applications, where their high power handling combined with flexibility provide long life in semi-conductor manufacturing equipment and robotic laser cutting equipment. Interconnects in MRI systems and other medical applications utilize the low loss and stability that these cables provide. The smaller sizes have been used as board level interconnects within LRU's in both military and commercial systems.

Our expertise as a cable assembly supplier has led to the refinement of these cable designs. They provide an excellent combination of outstanding electrical performance, mechanical ruggedness and cost effectiveness. Combined with the availability of a good selection of connectors, this makes them the practical choice for a broad range of demanding applications. Our field engineers can help you to select the right cable for your application from the range of SFT cables or the large range of other standard and special cables produced by Times Microwave Systems.

SFT Attenuation -vs- Frequency



SFT Specifications

	SFT-316			SFT-142			SFT-205		
Physical & Mechanical Specifications									
Dimensions	inches		mm	inches		mm	inches		mm
Center Conductor	0.0226		0.57	0.0403		1.02	0.0508		1.29
Dielectric	0.068		1.73	0.121		3.07	0.154		3.91
Inner Shield	0.078		1.98	0.131		3.33	0.164		4.17
Interlayer	0.083		1.85	0.136		3.48	0.169		4.29
Outer Shield	0.096		2.44	0.158		4.01	0.187		4.75
Jacket	0.120		3.05	0.180		4.57	0.205		5.21
Bend Radius: minimum	0.500		12.7	0.750		19.1	1.000		25.4
Weight	0.018 lbs/ft		0.03 kG/m	0.036lbs/ft		0.05kG/m	0.042lbs/ft		0.06kG/m
Temperature Range	-67°/+392°F (-55°/+200°C)								
Electrical Specifications									
Impedance	50 ohms			50 ohms			50 ohms		
Velocity of Propagation	76%			76%			76%		
Dielectric Constant	1.73			1.73			1.73		
Shielding Effectiveness	>100 dB			>100 dB			>100 dB		
Time Delay	1.34 nS/ft		4.39 nS/m	1.34 nS/ft		4.39 nS/m	1.34 nS/ft		4.39 nS/m
Capacitance	26.7 pF/ft		87.7 pF/m	26.7 pF/ft		87.7 pF/m	26.7 pF/ft		87.7 pF/m
Inductance	0.067 uH/ft		0.22 uH/m	0.067 uH/ft		0.22 uH/m	0.067 uH/ft		0.22 uH/m
Cutoff Frequency	63 GHz			35 GHz			28 GHz		
Voltage Withstand	500 DC			1000 DC			1500 DC		
DC Resistance - ohms	ohms/1000ft		ohms/km	ohms/1000ft		ohms/km	ohms/1000ft		ohms/km
Inner Conductor	20.3		66.6	6.39		21.0	4.02		13.2
Outer Conductor	5.54		18.2	3.10		10.2	2.43		8.0
Attenuation & Power Handling	Attenuation +25°C Ambient & Power Handling +40°C Ambient; Sea Level; VSWR 1:1								
Frequency MHz	dB/100ft	dB/100m	kW	dB/100ft	dB/100m	kW	dB/100ft	dB/100m	kW
13.56	2.0	7.0	4.044	1.2	3.8	5.040	1.0	3.2	6.648
30	3.0	10.0	2.713	1.7	5.7	3.382	1.4	4.7	4.461
100	5.5	18.0	1.478	3.2	10.4	1.843	2.6	8.6	2.431
150	7.0	22.0	1.203	3.9	12.8	1.501	3.2	10.6	1.980
400	11.0	36.0	0.730	6.4	20.9	0.912	5.3	17.4	1.202
900	17.0	55.0	0.481	9.6	31.6	0.601	8.0	26.2	0.792
1000	18.0	58.0	0.455	10.2	33.3	0.569	8.4	27.7	0.750
1500	22.0	71.0	0.368	12.5	41.0	0.461	10.4	34.0	0.608
2000	25.0	82.0	0.316	14.5	47.4	0.397	12.0	39.5	0.523
3000	31.0	101.0	0.255	17.8	58.4	0.320	14.8	48.7	0.422
4000	36.0	117.0	0.219	20.7	67.8	0.275	17.2	56.5	0.362
5000	40.0	131.0	0.194	23.2	76.1	0.244	19.4	63.5	0.321
6000	44.0	144.0	0.175	25.5	83.7	0.221	21.3	69.9	0.291
8000	51.0	167.0	0.149	29.6	97.3	0.189	24.8	81.3	0.249
10000	57.0	187.0	0.132	33.3	109.4	0.167	27.9	91.5	0.220
12000	63.0	205.0	0.119	36.7	120.4	0.151	30.7	100.9	0.198
13500	67.0	218.0	0.111	39.1	128.2	0.141	32.8	107.5	0.186
15000	70.0	231.0	0.105	41.3	135.6	0.133	34.7	113.7	0.175
18000	77.0	253.0	0.094	45.5	149.4	0.120	38.3	125.5	0.157
24000	90.0	295.0	0.079	53.2	174.5	0.101	44.8	146.8	0.133
28000	97.0	319.0	0.072	57.8	189.7	0.092	48.7	159.8	0.122
35000	110.0	359.0	0.063	65.3	214.2	0.081			
63000	150.0	492.0	0.043						
Attenuation at Frequency									
K1	0.551680			0.315330			0.260980		
K2	0.000180			0.000180			0.000180		

SFT-304		SFT-318		SFT-320		
Physical & Mechanical Specifications						
inches	mm	inches	mm	inches	mm	Dimensions
0.062	1.57	0.074	1.88	0.089	2.26	Center Conductor
0.185	4.70	0.221	5.61	0.250	6.35	Dielectric
0.195	4.95	0.231	5.87	0.260	6.60	Inner Shield
0.200	5.08	0.240	6.10	/	/	Interlayer
0.227	5.77	0.263	6.68	0.290	7.37	Outer Shield
0.250	6.35	0.291	7.39	0.322	8.18	Jacket
1.250	31.80	1.750	44.45	1.860	47.24	Bend Radius: minimum
0.067lbs/ft	0.10kG/m	0.095lbs/ft	0.14kG/m	0.090lbs/ft	0.13kG/m	Weight
-67°/+392°F		(-55°/+200°C)				Temperature Range
Electrical Specifications						
50 ohms		50 ohms		50 ohms		Impedance
76%		76%		76%		Velocity of Propagation
1.73		1.73		1.73		Dielectric Constant
>100 dB		>90 dB		>90 dB		Shielding Effectiveness
1.34 nS/ft	4.39 nS/m	1.34 nS/ft	4.39 nS/m	1.34 nS/ft	4.39 nS/m	Time Delay
26.7 pF/ft	87.7 pF/m	27.0 pf/ft	88.6 pF/m	26.4 pF/ft	86.6 pF/m	Capacitance
0.067 uH/ft	0.22 uH/m	0.067 uH/ft	0.22 uH/m	0.067 uH/ft	0.22 uH/m	Inductance
23 GHz		18 GHz		16 GHz		Cutoff Frequency
2000 DC		2000 DC		2500 DC		Voltage Withstand
ohms/1000ft	ohms/km	ohms/1000ft	ohms/km	ohms/1000ft	ohms/km	DC Resistance - ohms
2.70	8.9	1.89	6.2	1.67	5.5	Inner Conductor
2.02	6.6	1.90	6.2	1.8	5.9	Outer Conductor
Attenuation & Power Handling						
dB/100ft	dB/100m	kW	dB/100ft	dB/100m	kW	dB/100ft	dB/100m	kW	Frequency MHz
0.8	2.5	9.057	0.71	2.33	10.80	0.60	1.97	13.80	13.56
1.1	3.8	6.076	1.06	3.47	7.24	0.90	2.95	9.20	30
2.1	6.9	3.310	1.94	6.36	3.95	1.70	5.58	5.00	100
2.6	8.5	2.695	2.38	7.80	3.22	2.10	6.89	4.10	150
4.2	13.9	1.635	3.91	12.81	1.95	3.30	10.82	2.50	400
6.4	21.0	1.077	5.90	19.37	1.29	5.00	16.40	1.60	900
6.8	22.2	1.020	6.23	20.44	1.22	5.30	17.38	1.50	1000
8.3	27.3	0.826	7.67	25.16	0.99	6.60	21.65	1.20	1500
9.7	31.7	0.710	8.90	29.19	0.85	7.70	25.26	1.10	2000
11.9	39.2	0.573	10.97	36.00	0.69	8.99	29.49	0.86	3000
13.9	45.5	0.491	12.75	41.83	0.59	10.48	34.37	0.73	4000
15.6	51.2	0.435	14.33	47.02	0.52	12.40	40.67	0.65	5000
17.2	56.4	0.394	15.78	51.76	0.47	13.03	42.74	0.59	6000
20.1	65.8	0.336	18.37	60.28	0.41	15.24	49.99	0.50	8000
22.6	74.2	0.297	20.70	67.90	0.36	17.24	56.53	0.44	10000
25.0	81.9	0.268	22.83	74.90	0.32	20.00	65.60	0.40	12000
26.6	87.3	0.251	24.33	79.81	0.30				13500
28.2	92.5	0.236	25.75	84.50	0.29				15000
31.2	102.2	0.213	28.44	93.32	0.26				18000
36.6	119.9	0.180							24000
									28000
									35000
									63000
Attenuation at Frequency						
0.208100		0.192356		0.154065		K1
0.000180		0.000146		0.000183		K2

SFT Specifications

	SFT-393			SFT-226			SFT-600		
Physical & Mechanical Specifications									
Dimensions	inches		mm	inches		mm	inches		mm
Center Conductor	0.096		2.440	0.131		3.330	0.163		4.140
Dielectric	0.285		7.240	0.370		9.400	0.455		11.560
Inner Shield	0.295		7.490	0.380		9.650	0.465		11.810
Interlayer	0.300		7.620	0.385		9.780	0.470		11.940
Outer Shield	0.319		8.100	0.399		10.140	0.499		12.670
Jacket	0.390		9.910	0.485		12.320	0.565		14.350
Bend Radius: Minimun	2.000		50.800	2.500		63.500	3.000		76.200
Weight	0.126 lbs/ft		0.19 kG/m	0.235 lbs/ft		0.35 kG/m	0.265lbs/ft		0.39kG/m
Temperature Range	-67°/+392°F (-55°/+200°C)								
Electrical Specifications									
Impedance	50 ohms			50 ohms			50 ohms		
Velocity of Propagation	76%			76%			76%		
Dielectric Constant	1.73			1.73			1.73		
Shielding Effectivess	>100 dB			>100 dB			>100 dB		
Time Delay	1.34 nS/ft		4.39 nS/m	1.34 nS/ft		4.39 nS/m	1.34 nS/ft		4.39 nS/m
Capacitance	26.7 pF/ft		87.7 pF/m	26.7 pF/ft		87.7 pF/m	26.7 pF/ft		87.7 pF/m
Inductance	0.067 uH/ft		0.22 uH/m	0.067 uH/ft		0.22 uH/m	0.067 uH/ft		0.22 uH/m
Cutoff Frequency	15 GHz			11 GHz			9.2 GHz		
Voltage Constant	2500 DC			3000 DC			4000 DC		
DC Resistance - ohms	ohms/1000ft		(ohms/km)	ohms/1000ft		(ohms/km)	ohms/1000ft		(ohms/km)
Inner Conductor	1.13		3.7	0.63		2.1	0.52		1.7
Outer Conductor	1.3		4.3	1.04		3.4	0.8		2.6
Attenuation & Power Handling	Attenuation (+25°C Ambient & Power Handling (+40°C Ambient; Sea Level; VSWR 1:1)								
Frequency (MHz)	dB/100ft	dB/100m	kW	dB/100ft	dB/100m	kW	dB/100ft	dB/100m	kW
13.56	0.5	1.7	16.417	0.5	1.5	20.571	0.4	1.2	26.138
30	0.7	2.5	11.007	0.7	2.2	13.788	0.6	1.8	17.512
100	1.4	4.5	5.987	1.2	4.1	7.496	1.0	3.4	9.509
150	1.7	5.6	4.871	1.5	5.0	6.097	1.3	4.2	7.731
400	2.8	9.2	2.948	2.5	8.2	3.686	2.1	6.9	4.665
900	4.2	13.9	1.936	3.8	12.5	2.418	3.2	10.5	3.052
1000	4.5	14.7	1.832	4.0	13.2	2.288	3.4	11.1	2.887
1500	5.5	18.2	1.480	5.0	16.4	1.846	4.2	13.8	2.326
2000	6.4	21.1	1.270	5.8	19.1	1.584	4.9	16.1	1.992
3000	8.0	26.2	1.022	7.2	23.7	1.272	6.1	16.1	1.597
4000	9.3	30.6	0.874	8.4	27.6	1.087	7.1	16.1	1.362
5000	10.5	34.5	0.773	9.5	31.2	0.961	8.1	16.1	1.202
6000	11.6	38.1	0.698	10.5	34.5	0.868	8.9	16.1	1.084
8000	13.6	44.6	0.594	12.3	40.5	0.738	10.5	16.1	0.919
10000	15.4	50.5	0.524	14.0	45.9	0.649			
12000	17.1	55.9	0.471						
13500	18.2	59.8	0.440						
15000	19.3	63.5	0.414						
18000									
24000									
28000									
35000									
63000									
Attenuation at Frequency (A=K1 FMHz + K2 FMHz)									
K1	0.135930			0.121830			0.101373		
K2	0.000180			0.000180			0.000180		

SFT™ Premium Performance Connectors

Premium connectors attach to the cable via a solder to both the outer shield and the center conductor. Achieving the stated performance requires expert soldering techniques and precise trimming of the outer shield, which is best accomplished with automated stripping equipment, and expert soldering techniques. They are suitable for use by experienced, professional cable assembly shops. Below are some of the connectors for reference:

Interface	Description	Part Number	Stock Code	Coupling Nut	Center Contact Attachement	Outer Contact Attachment	Finish Body/Pin	Length		Width		VSWR (<18GHz)
								in	mm	in	mm	
SMA Male	Straight Plug	TC-316T-SM-SS	3190-2738	Hex	Solder	Solder	SS/G	1.09	27.7	0.35	9.0	<1.30:1
SMA Male	Straight Plug	TC-142T-SM-SS	3190-2793	Hex	Solder	Solder	SS/G	1.23	31.3	0.50	12.7	<1.30:1
N Male	Straight Plug	TC-142T-NMH-SS	3190-2794	Hex	Solder	Solder	SS/G	1.58	40.2	0.81	20.6	<1.35:1
SMA Male	Straight Plug	TC-205T-SM-SS	3190-2289	Hex	Solder	Solder	SS/G	1.38	35.1	0.41	10.3	<1.30:1
N Male	Straight Plug	TC-205T-NMH-SS	3190-2291	Hex	Solder	Solder	SS/G	2.03	51.5	0.87	22.1	<1.35:1
TNC Male	Straight Plug	TC-205T-TMH-LW-SS	3190-2676	Hex	Solder	Solder	SS/G	1.52	38.7	0.61	15.6	<1.35:1
SMA Male	Right Angle Plug	TC-205T-SM-RA-LW-SS	3190-2733	Hex	Solder	Solder	SS/G	1.37	34.8	0.78	19.7	<1.35:1
SMA Male	Straight Plug	TC-304T-SM-SS	3190-2288	Hex	Solder	Solder	SS/G	1.38	35.1	0.41	10.5	<1.30:1
N Male	Straight Plug	TC-304T-NMH-LW-SS	3190-2290	Hex	Solder	Solder	SS/G	1.49	37.8	0.87	22.1	<1.35:1
TNC Male	Straight Plug	TC-304T-TMH-LW-SS	3190-2584	Hex	Solder	Solder	SS/G	1.52	38.7	0.61	15.5	<1.35:1

Finish Metals: G=Gold SS=Stainless Steel

SFT™ Cable Assemblies

Times Microwave Systems also provides SFT cables as assemblies to meet a broad range of application requirements. We provide special testing, custom connectors, improved strain relief, special markings and other services to meet the requirements of your application. We produce the cable assemblies in our facilities in US or China (Shanghai).

About TIMES MICROWAVE SYSTEMS

Times Microwave Systems was founded in 1948 and was formerly known as Times Wire and Cable Company. Times Microwave Systems specializes in the design and manufacture of high performance flexible, semi-flexible and semi-rigid coaxial cable, connectors and cable assemblies. Times Microwave Systems, with over 50 years of leadership in the defense microwave systems arena, offers high tech solutions for today's most challenging applications.

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