SPPIM Low Loss, Low PIM Coaxial Cables

Flexible, Low PIM, Plenum Rated Jumper Cables

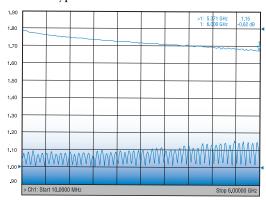
- -160 dBc PIM for optimal system performance
- UL listed, type CMP (plenum), UL file #E-170516
- Super flexible for ease of installation
- Corrugated copper outer conductor providing greater than 100dB of shielding
- Durable FEP outer jacket is suitable for both indoor and outdoor use



SPP-250-LLPL, SPP-375-LLPL, SPP-500-LLPL 50 Ohm low loss, low PIM cable assemblies

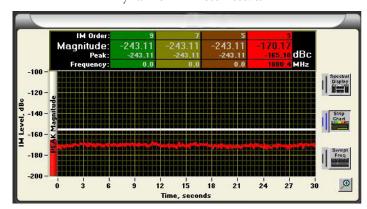
- Available in any required connector configuration and length
- Large selection of standard configurations for quick delivery
- Check inventory at StockCheck on our website
- Available connector interfaces: SMA, N, 7-16 DIN, 4.1/9.5 mini DIN, 4.3/10.0 DIN
- 100% tested for static and dynamic PIM, VSWR and inserion loss
- Serial marker band includes PIM, VSWR & IL test data which is retained and accessible on the Times website
- 10 year Times Microwave warranty

Typical VSWR & Insertion Loss



SPP250NMNM1.0M

Dynamic PIM Test Results

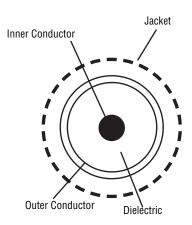






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SPPTM Coaxial Cables



Cable Construction

Inner Conductor:

 \bullet SPP-250-LLPL: Solid bare copper

• SPP-375-LLPL: BCCAl • SPP-500-LLPL: BCCAl

Dielectric: Expanded PTFE

Outer Conductor: Seam welded corrugated copper tube

Jacket: FEP

Physical Specifications	SPP-2	50-LLPL	SPP-3	75-LLPL	SPP-5	00-LLPL
Jacket: FEP; OD: in(mm)	0.280	(7.1)	0.402	(10.2)	0.500	(13.4)
Outer Conductor: Corrugated Copper Tube; OD: in(mm)	0.250	(6.3)	0.380	(9.6)	0.472	(12.1)
Dielectric: LD PTFE OD: in(mm)	0.190	(4.8)	0.285	(7.1)	0.370	(9.4)
Center Conductor: OD: in(mm)	0.068	(1.7)	0.100	(2.7)	0.136	(3.5)
Bend Radius: in(mm)	1.25	(32)	1.38	(35)	1.50	(38)
Bending Moment: ft-lbs (N-m)	0.8	(1.0)	1.7	(2.0)	2.0	(2.4)
Tensile Strength: lb (kg)	150	(68.2)	175	(79.5)	210	(95.5)
Flat Plate Crush Strength: lb/in (kg/mm)	100	(1.8)	100	(1.8)	110	(2.0)
Weight: lbs/1000 ft (kg/km)	66	(78)	115	(127)	200	(167)
Environmental Specifications						
Installation Temperature Range °C/°F	-55/+200	(-67/+392°)	-55/+200	(-67/+392°)	-55/+200	(-67/+392°)
Storage Temperature Range °C/°F	-55/+200	(-67/+392°)	-55/+200	(-67/+392°)	-55/+200	(-67/+392°)
Operating Temperature Range °C/°F	-55/+200	(-67/+392°)	-55/+200	(-67/+392°)	-55/+200	(-67/+392°)
Electrical Specifications						
Velocity of Propagation: %	-	76%	7	76%	7	76%

76%		76%		76%				
50 Ohms 50 Ohms		50 Ohms						
27.0	(8.2	2)	27.5	5 (8	3.4)	29.0	((8.8)
0.067	(0.2	(2)	0.06	7 (0.	.22)	0.069	((0.23)
	>100 >100		>100					
3.0	(9.8	34)	1.30	(4.	.26)	0.82	(2	2.70)
2.00	(6.5	6)	1.52	(4.	.98)	1.00	(3	3.28)
dB/100 ft	(dB/100m)	Kw	dB/100 ft	(dB/100m)	Kw	dB/100ft	(dB/100m) Kw
3.8 4.8 5.3 8.1 8.6 9.0 9.2	(12.5) (15.8) (17.4) (26.6) (21.1) (29.5) (30.1) (44.4)	0.81 0.73 0.47 0.45 0.43 0.42	3.2 3.6 5.5 5.8 6.1 6.3	(8.4) (10.6) (11.7) (18.1) (19.1) (20.1) (20.5) (30.7)	1.67 1.50 0.97 0.92 0.87 0.85	2.8 3.2 4.9 5.2 5.4 5.6	(7.4) (9.3) (10.4) (16.1) (17.0) (17.9) (18.3) (27.5)	2.63 2.07 1.87 1.20 1.14 1.08 1.05 0.70
	27.0 0.067 3.0 2.00 dB/100 ft 3.8 4.8 5.3 8.1 8.6 9.0 9.2	50 Ohms 27.0 (8.3 0.067 (0.2 >100 3.0 (9.8 2.00 (6.5 dB/100 ft (dB/100m) 3.8 (12.5) 4.8 (15.8) 5.3 (17.4) 8.1 (26.6) 8.6 (21.1) 9.0 (29.5) 9.2 (30.1)	50 Ohms 27.0 (8.2) 0.067 (0.22) >100 3.0 (9.84) 2.00 (6.56) dB/100 ft (dB/100m) Kw 3.8 (12.5) 1.01 4.8 (15.8) 0.81 5.3 (17.4) 0.73 8.1 (26.6) 0.47 8.6 (21.1) 0.45 9.0 (29.5) 0.43 9.2 (30.1) 0.42	50 0 hms	50 0hms 50 0hms 27.0 (8.2) 27.5 (8.2) 0.067 (0.22) 0.067 (0.22) >100 >100 >100 3.0 (9.84) 1.30 (4.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2	50 0hms 50 0hms 27.0 (8.2) 27.5 (8.4) 0.067 (0.22) 0.067 (0.22) >100 >100 >100 3.0 (9.84) 1.30 (4.26) 2.00 (6.56) 1.52 (4.98) dB/100ft (dB/100m) Kw dB/100ft (dB/100m) Kw 3.8 (12.5) 1.01 2.5 (8.4) 2.11 4.8 (15.8) 0.81 3.2 (10.6) 1.67 5.3 (17.4) 0.73 3.6 (11.7) 1.50 8.1 (26.6) 0.47 5.5 (18.1) 0.97 8.6 (21.1) 0.45 5.8 (19.1) 0.92 9.0 (29.5) 0.43 6.1 (20.1) 0.87 9.2 (30.1) 0.42 6.3 (20.5) 0.85	50 0hms 50 0hms 5 27.0 (8.2) 27.5 (8.4) 29.0 0.067 (0.22) 0.067 (0.22) 0.069 >100 >100 > 0.82 2.00 (6.56) 1.52 (4.98) 1.00 dB/100 ft (dB/100m) Kw dB/100ft (dB/100m) Kw dB/100ft 3.8 (12.5) 1.01 2.5 (8.4) 2.11 2.3 4.8 (15.8) 0.81 3.2 (10.6) 1.67 2.8 5.3 (17.4) 0.73 3.6 (11.7) 1.50 3.2 8.1 (26.6) 0.47 5.5 (18.1) 0.97 4.9 8.6 (21.1) 0.45 5.8 (19.1) 0.92 5.2 9.0 (29.5) 0.43 6.1 (20.1) 0.87 5.4 9.2 (30.1) 0.42 6.3 (20.5) 0.85 5.6	50 0hms 50 0hms 50 0hms 27.0 (8.2) 27.5 (8.4) 29.0 (0.22) 0.067 (0.22) 0.067 (0.22) 0.069 (0.22) >100 >100 >100 >100 3.0 (9.84) 1.30 (4.26) 0.82 (2.2) 2.00 (6.56) 1.52 (4.98) 1.00 (3.2) dB/100 ft (dB/100m) Kw dB/100ft (dB/100m) Kw dB/100ft (dB/100m) 3.8 (12.5) 1.01 2.5 (8.4) 2.11 2.3 (7.4) 4.8 (15.8) 0.81 3.2 (10.6) 1.67 2.8 (9.3) 5.3 (17.4) 0.73 3.6 (11.7) 1.50 3.2 (10.4) 8.1 (26.6) 0.47 5.5 (18.1) 0.97 4.9 (16.1) 8.6 (21.1) 0.45 5.8 (19.1) 0.92 5.2 (17.0)

Connectors (solder body) (Connectors with BLK suffix packed 100 pieces per bulk pack)

N Male Straight	TC-SPP250-NM-LP (3190-2833BLK)	TC-SPP375-NM-LP (3190-2951BLK)	TC-SPP500-NM-LP (3190-2946BLK)
N Male Right Angle	TC-SPP250-NM-RA-LP (3190-2834BLK)	-	-
N Female	TC-SPP250-NF-LP (3190-2851BLK)	TC-SPP375-NF-LP (3190-306BLK)	TC-SPP500-NF-LP (3190-3011BLK)
N Female Bulkhead	TC-SPP250-NF-BH-LP (3190-2835BLK)	-	-
7-16 DIN Male Straight	TC-SPP250-716M-LP (3190-2853BLK)	TC-SPP375-716M-LP (3190-2940BLK)	TC-SPP500-716M-LP (3190-2945BLK)
7-16 DIN Female Straight	TC-SPP250-716F-LP (3190-3002BLK)	TC-SPP375-716F-LP (3190-6119BLK)	-
7-16 DIN Male Right Angle	TC-SPP250-716M-RA-LP (3190-2854BLK)	-	-
SMA Male Straight	TC-SPP250-SM-LP (3190-2947BLK)	-	-
SMA Male Right Angle	TC-SPP250-SM-RA-LP (3190-3006BLK)	-	-
4.1/9.5 mini DIN Male Straight	TC-SPP250-4195M-LP (3190-3014BLK)	-	-
4.1/9.5 mini DIN Right Angle	TC-SPP250-4195M-RA-LP (3190-3027BLK)	-	-
4.3/10.0 DIN Male Straight	TC-SPP250-4310M-LP (3190-6144BLK)	-	TC-SPP500-4310M-LP (3190-6213BLK)
4.3 /10.0 DIN Male Straight (Snap-on)	TC-SPP250-4310MS-LP (3190-6201BLK)	-	-
4.3 /10.0 DIN Male Right Angle	TC-SPP250-4310M-RA-LP (3190-6180BLK)	-	-
4.3 /10.0 DIN Female Straight	TC-SPP250-4310F-LP (3190-6197RLK)	-	-

[•] Jumpers available in any length with most popular connector combinations

• iBwave VEX files available at www.iBwave.com

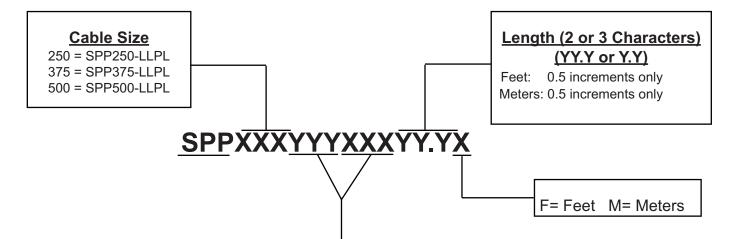






SPPTM Coaxial Cables

Smart Part Number Key for SPP Low PIM Jumpers



ex. SPP250NMNMR2.0M (N Male to N Male right angle, 2 meters)

Electrical:

- Insertion Loss not to exceed (1.1 x published attenuation + 2 x 0.15dB)
- VSWR

Maximum of 1.25:1 up to 3 GHz Maximum of 1.35:1 up to 6 GHz

PIM: (measured using two +43 dBm carriers)

- IM_{3:} < -160dBc (static and dynamic)
- IM₃· SMA's < -155dBc (static and dynamic)
- IM_{3:} QMA's < -140dBc (static only)

Connec	Connector	
DF =	7/16 DIN Female	l ı
DFB =	7/16 DIN Female bulkhead	
DM =	7/16 DIN Male	
DMR =	7/16 DIN Male right angle	
NF =	N Female	
NFB =	N Female bulkhead	
NM =	N Male	
NMR =	N Male right angle	
SM =	SMA Male	
SMR=	SMA Male right angle	
41M =	4.1/9.5 mini DIN Male	
41R=	4.1/9.5 mini DIN Male right angle	Sacand
43F=	4.3/10.0 DIN Female	Second
43M=	4.3/10.0 DIN Male	Connector

4.3/10.0 DIN male (snap-on)

4.3/10.0 DIN male right angle

First

Many assembly configurations are available from stock. Refer to the on-line <u>StockCheck</u> for specific configurations.

-◆

43S=

43R=





SPPTM Coaxial Cables

About TIMES MICROWAVE SYSTEMS

Times Microwave Systems, was founded in 1948 as the Times Wire and Cable Company. Today, the company specializes in the design and manufacture of high performance flexible, semi-flexible and semi-rigid coaxial cable, connectors and cable assemblies. With over 60 years of leadership in the design, development, and manufacture of coaxial products for defense microwave systems, Times Microwave Systems is the acknowledged leader, offering high tech solutions for today's most demanding applications.

Cable assemblies from Times Microwave Systems are used as interconnects for microwave transmitters, receivers, and antennas on airframes, missiles, ships, satellites, and ground based communications systems, and as leads for test and instrumentation applications.

As a highly specialized and technically focused company, Times Microwave Systems has been able to continually meet the challenges of specialty engineered transmission lines for both the military and commercial applications, drawing upon our:

- Thousands of unique cable and connector designs
- Exceptional RF and microwave design capability
- Precise material and process controls
- Unique in-house testing capabilities including RF shielding/leakage, vibration, moisture/vapor sealing, phase noise and flammability
- Years of MIL-T-81490, MIL-C-87104, and MIL-PRF-39012 experience
- ISO 9001 Certification
- AS-9100 Certification

In 2010, Times Microwave Systems introduced its Times-ProtectTM line of lightning and surge protection solutions to address the challenging needs of wireless systems in the 21st century.

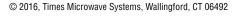
With over 60 years of Times Microwave Systems aerospace cable and connector technology experience and unparalleled design expertise, Times Microwave Systems' staff of Field Applications Engineers can help to provide the right solution for your interconnect applications.



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SPP-02/17





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