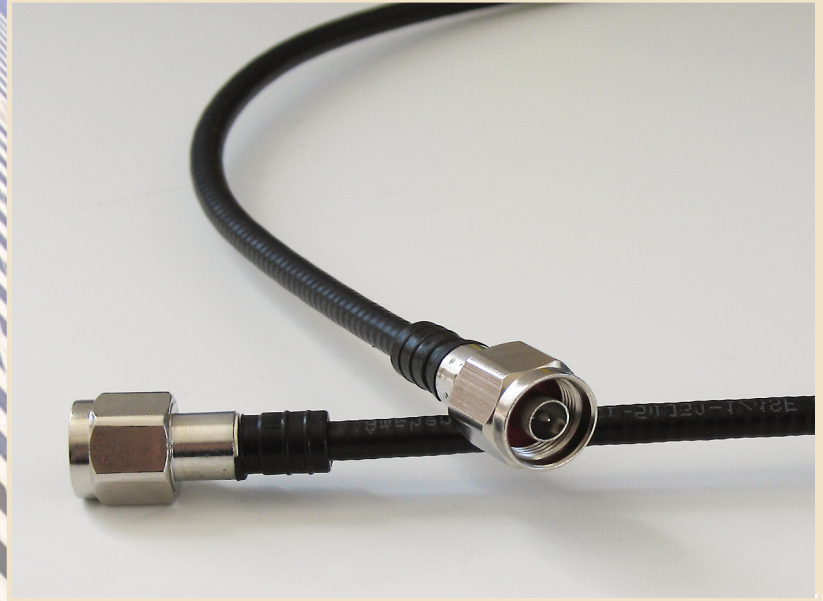


# SPO™ Low PIM Coaxial Cables

ISO 9001 Certified

## Low Loss, Low PIM Coaxial Cable Assemblies

- Excellent PIM (typical -160 dBc) for optimum system performance
- Super flexible for ease of installation
- Corrugated copper outer conductor providing greater than 100dB RF Shielding
- Wideband low VSWR typically 1.15:1 from 50 to 6000MHz covering all in-building technologies
- Durable black polyethelene outer jacket is suitable for outdoor use

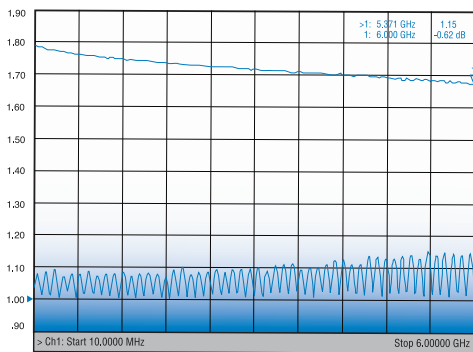


SPO-250, SPO-375, SPO-500 50 Ohm low loss low PIM coaxial cable assemblies

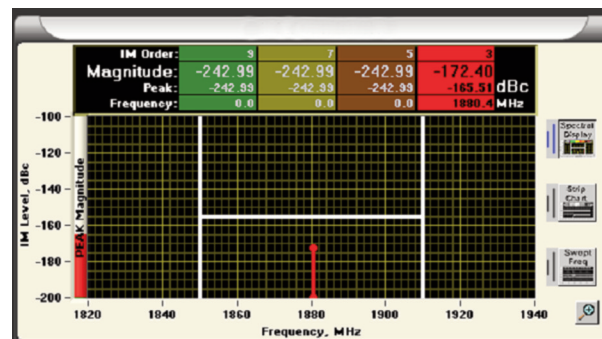
- Standard assemblies in 1, 2 and 3 meter lengths with popular connector combinations
- Custom length assemblies are available
- 10 year Times Microwave warranty

SPO250NMNM1.0M

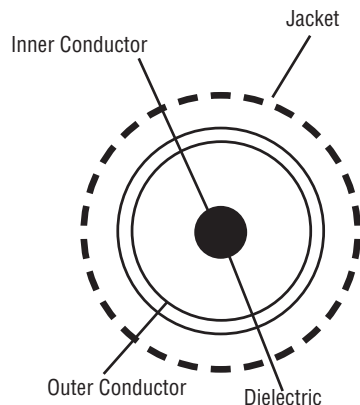
Typical VSWR



Dynamic PIM Test Results



# SPO™ Coaxial Cables



## Cable Construction

**Inner Conductor:** Solid bare copper

**Dielectric:** Foam Polyethylene

**Outer Conductor:** Seam welded corrugated copper tube

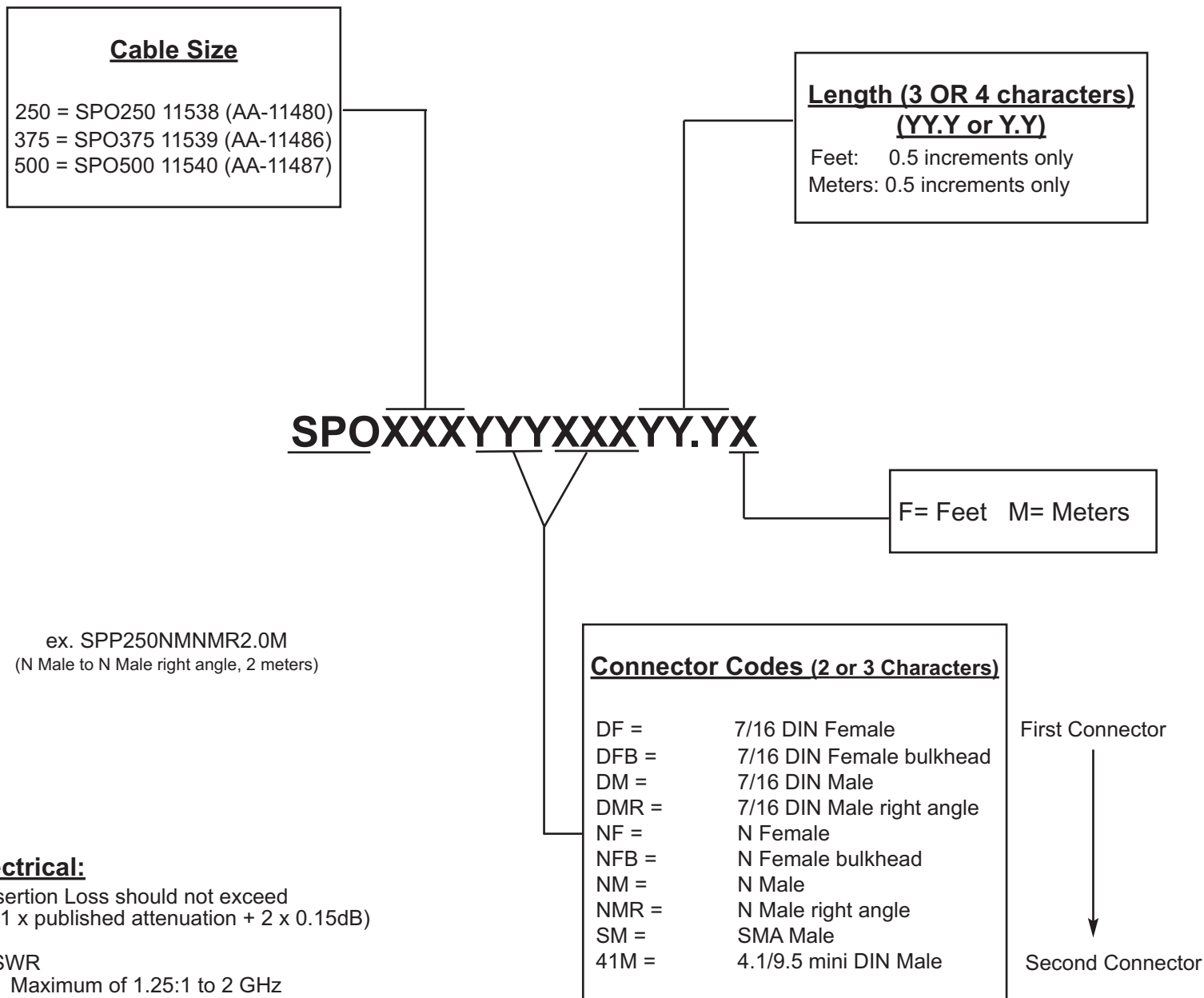
**Jacket:** UV and sunlight resistant black polyethylene

Physical Specifications		SPO-250		SPO-375		SPO-500	
Jacket: Extruded Polyethylene; OD: in(mm)		0.300 (7.7)		0.425 (10.8)		0.525 (13.4)	
Outer Conductor: Corrugated Copper Tube; OD: in(mm)		0.250 (6.3)		0.380 (9.6)		0.472 (12.1)	
Dielectric: Foam PE; OD: in(mm)		0.190 (4.8)		0.285 (7.1)		0.370 (9.4)	
Center Conductor: Solid BCCAI; OD: in(mm)		0.075 (1.9)		0.110 (2.8)		0.142 (3.6)	
Bend Radius: in(mm)		1.0 (25)		1.7 (2.3)		2.0 (51)	
Bending Moment: ft-lbs (N-m)		1.84 (2.5)		2.07 (2.8)		3.25 (4.4)	
Tensile Strength: lb (kg)		150 (68.2)		175 (79.5)		210 (95.5)	
Flat Plate Crush Strength: lbf (kgm)		100 (1.8)		100 (1.8)		110 (2.0)	
Weight: lbs/1000 ft (kg/km)		46 (67)		78 (120)		140 (210)	
Environmental Specifications							
Installation Temperature Range °F/°C		-25/+60°C		-25/+60°C		-25/+60°C	
Storage Temperature Range °F/°C		-70/+85°C		-70/+85°C		-70/+85°C	
Operating Temperature Range °F/°C		-40/+85°C		-40/+85°C		-40/+85°C	
Electrical Specifications							
Velocity of Propagation: %		84		84		84	
Impedance: Ohms		50		50		50	
Capacitance: pF/ft (pF/m)		24.2 (79.4)		24.3 (79.7)		25.2 (82.7)	
Inductance: μH/ft (uH/m)		0.61 (0.200)		0.61 (0.200)		0.63 (0.205)	
Shielding Effectiveness: dB		>100		>100		>100	
Center Conductor DC Resistance: Ohms/1000 ft/(km)		3.00 (9.84)		1.30 (4.26)		0.82 (2.70)	
Shield DC Resistance: Ohms/1000 ft (km)		2.00 (6.56)		1.52 (4.98)		1.00 (3.28)	
Attenuation & Average Power @ MHz		dB/100 ft (dB/100m) kW		dB/100 ft (dB/100m) kW		dB/100 ft (dB/100m) kW	
	500	4.3 (14.2)	0.68	3.0 (9.7)	0.97	2.4 (8.0)	1.26
	1000	6.3 (20.5)	0.50	4.3 (14.2)	0.74	3.5 (11.5)	0.90
	2000	9.1 (30.0)	0.35	6.2 (20.4)	0.51	5.1 (16.8)	0.61
	6000	17.0 (55.7)	0.13	11.6 (38.1)	0.22	9.6 (31.5)	0.26
Connectors							
N Male Straight		TC-SPO250-NM-LP		TC-SPO375-NM-LP		TC-SPO500-NM-LP	
N Male Right Angle		TC-SPO250-NM-RA-LP		TC-SPO375-NM-RA		TC-SPO500-NM-RA-LP	
N Female		TC-SPO250-NF-LP		TC-SPO375-NF-LP		TC-SPO500-NF-LP	
N Female Bulkhead		TC-SPO250-NF-BH-LP		TC-SPO375-NF-BH-LP		TC-SPO500-NF-BH-LP	
7-16 DIN Male Straight		TC-SPO250-716M-LP		TC-SPO375-716M-LP		TC-SPO500-716M-LP	
7-16 DIN Male Right Angle		TC-SPO250-716M-RA-LP		TC-SPO375-716M-RA-LP		TC-SPO375-716M-RA-LP	
7-16 DIN Female Straight		TC-SPO250-716-LP		TC-SPO375-716F-LP		TC-SPO500-716F-LP	
SMA Male Straight		TC-SPP250-SM-LP		N/A		N/A	
4.1/9.5 mini DIN Male Straight		TC-SPO250-4195M-LP		TC-SPO375-4195M-LP		LP-SPO500-4195M-LP	
4.1/9.5 mini DIN Male Right Angle		TC-SPO250-4195M-RA-LP		TC-SPO375-4195M-RA-LP		TC-SPO500-4195M-RA-LP	

Available in any lengths with most popular connector combinations

# SPO™ Coaxial Cables

## Smart Part Number Key for Low PIM Jumpers



### Electrical:

- Insertion Loss should not exceed (1.1 x published attenuation + 2 x 0.15dB)
- VSWR
  - Maximum of 1.25:1 to 2 GHz
  - Maximum of 1.35:1 to 6 GHz
- PIM
  - IM<sub>3</sub>: -160 dBc (static and dynamic)

Many assembly configurations are available from stock.  
 Refer to the on-line Price List for specific configurations.

## **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

In 2010, Times Microwave Systems introduced its Times-Protect™ 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.



SPO 05/14

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