

# SPPTM Low Loss, Low PIM Coaxial Cables

ISO 9001 Certified

## Flexible, Low PIM, Plenum Rated Jumper Cables

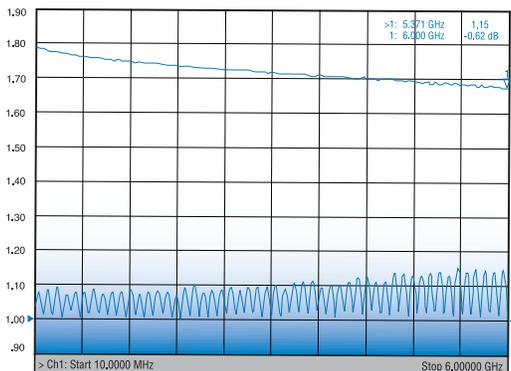
- -160 dBc PIM for optimal system performance
- UL listed, type CMP (plenum), UL file #E-170516
- Super flexible for ease of installation
- Corrugated copper outer conductor providing greater than 100dB of shielding
- Durable FEP outer jacket is suitable for both indoor and outdoor use



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

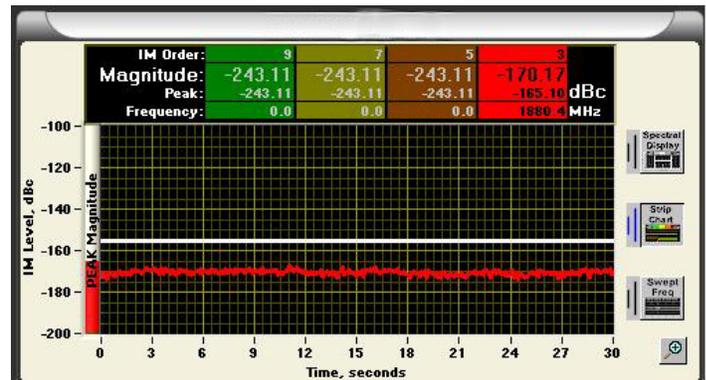
- Available in any required connector configuration and length
- Large selection of standard configurations for quick delivery
- Check inventory at StockCheck on our website
- Available connector interfaces: SMA, N, 7-16 DIN, 4.1/9.5 mini DIN, 4.3/10.0 DIN
- 100% tested for static and dynamic PIM, VSWR and insertion 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

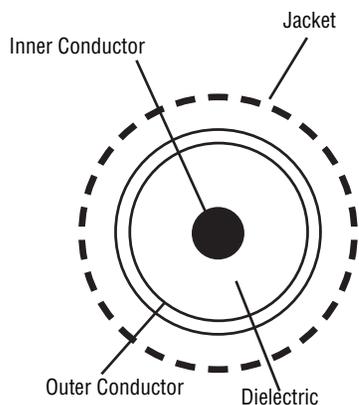


### SPP250NMNM1.0M

Dynamic PIM Test Results



# SPP™ Coaxial Cables



## Cable Construction

### Inner Conductor:

- SPP-250-LLPL: Solid bare copper
- SPP-375-LLPL: BCCAI
- SPP-500-LLPL: BCCAI

### Dielectric:

Expanded PTFE

### Outer Conductor:

Seam welded corrugated copper tube

### Jacket:

FEP

| Physical Specifications                             | SPP-250-LLPL |        | SPP-375-LLPL |        | SPP-500-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         | SPP-250-LLPL |             | SPP-375-LLPL |             | SPP-500-LLPL |             |
|--------------------------------------|--------------|-------------|--------------|-------------|--------------|-------------|
| 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                         | SPP-250-LLPL           |        | SPP-375-LLPL           |        | SPP-500-LLPL           |        |     |        |      |
|---|------------------------|--------|------------------------|--------|------------------------|--------|-----|--------|------|
| Velocity of Propagation: %                        | 76%                    |        | 76%                    |        | 76%                    |        |     |        |      |
| Impedance: Ohms                                   | 50 Ohms                |        | 50 Ohms                |        | 50 Ohms                |        |     |        |      |
| Capacitance: pF/ft (pF/m)                         | 27.0                   | (8.2)  | 27.5                   | (8.4)  | 29.0                   | (8.8)  |     |        |      |
| Inductance: μH/ft (uH/m)                          | 0.067                  | (0.22) | 0.067                  | (0.22) | 0.069                  | (0.23) |     |        |      |
| Shielding Effectiveness: dB                       | >100                   |        | >100                   |        | >100                   |        |     |        |      |
| Center Conductor DC Resistance: Ohms/1000 ft/(km) | 3.0                    | (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 |        |     |        |      |
| 450   | 3.8                    | (12.5) | 1.01                   | 2.5    | (8.4)                  | 2.11   | 2.3 | (7.4)  | 2.63 |
| 700   | 4.8                    | (15.8) | 0.81                   | 3.2    | (10.6)                 | 1.67   | 2.8 | (9.3)  | 2.07 |
| 850   | 5.3                    | (17.4) | 0.73                   | 3.6    | (11.7)                 | 1.50   | 3.2 | (10.4) | 1.87 |
| 1900  | 8.1                    | (26.6) | 0.47                   | 5.5    | (18.1)                 | 0.97   | 4.9 | (16.1) | 1.20 |
| 2100  | 8.6                    | (21.1) | 0.45                   | 5.8    | (19.1)                 | 0.92   | 5.2 | (17.0) | 1.14 |
| 2300  | 9.0                    | (29.5) | 0.43                   | 6.1    | (20.1)                 | 0.87   | 5.4 | (17.9) | 1.08 |
| 2400  | 9.2                    | (30.1) | 0.42                   | 6.3    | (20.5)                 | 0.85   | 5.6 | (18.3) | 1.05 |
| 4900  | 13.5                   | (44.4) | 0.28                   | 9.3    | (30.7)                 | 0.57   | 8.4 | (27.5) | 0.70 |
| 5800  | 14.8                   | (48.7) | 0.26                   | 10.3   | (33.8)                 | 0.52   | 9.2 | (30.3) | 0.63 |

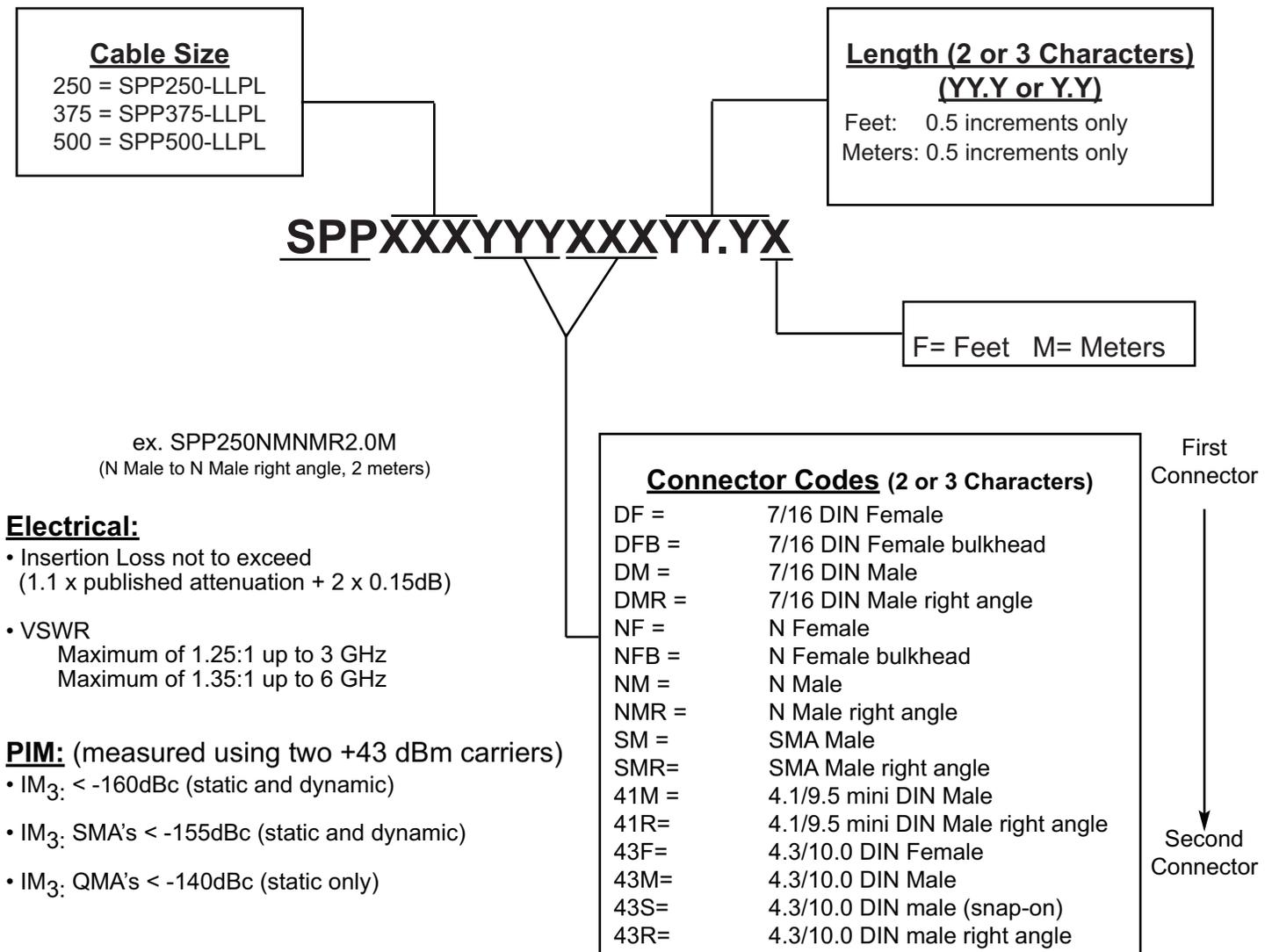
| Connectors (solder body) (Connectors with BLK suffix packed 100 pieces per bulk pack) |   |                                     |                                      |
|---|---|-------------------------------------|--------------------------------------|
| N Male Straight   | TC-SPP250-NM-LP<br>(3190-2833BLK)       | TC-SPP375-NM-LP<br>(3190-2951BLK)   | TC-SPP500-NM-LP<br>(3190-2946BLK)    |
| N Male Right Angle  | TC-SPP250-NM-RA-LP<br>(3190-2834BLK)    | -                                   | -                                    |
| N Female  | TC-SPP250-NF-LP<br>(3190-2851BLK)       | TC-SPP375-NF-LP<br>(3190-306BLK)    | TC-SPP500-NF-LP<br>(3190-3011BLK)    |
| N Female Bulkhead   | TC-SPP250-NF-BH-LP<br>(3190-2835BLK)    | -                                   | -                                    |
| 7-16 DIN Male Straight  | TC-SPP250-716M-LP<br>(3190-2853BLK)     | TC-SPP375-716M-LP<br>(3190-2940BLK) | TC-SPP500-716M-LP<br>(3190-2945BLK)  |
| 7-16 DIN Female Straight  | TC-SPP250-716F-LP<br>(3190-3002BLK)     | TC-SPP375-716F-LP<br>(3190-6119BLK) | -                                    |
| 7-16 DIN Male Right Angle   | TC-SPP250-716M-RA-LP<br>(3190-2854BLK)  | -                                   | -                                    |
| SMA Male Straight   | TC-SPP250-SM-LP<br>(3190-2947BLK)       | -                                   | -                                    |
| SMA Male Right Angle  | TC-SPP250-SM-RA-LP<br>(3190-3006BLK)    | -                                   | -                                    |
| 4.1/9.5 mini DIN Male Straight  | TC-SPP250-4195M-LP<br>(3190-3014BLK)    | -                                   | -                                    |
| 4.1/9.5 mini DIN Right Angle  | TC-SPP250-4195M-RA-LP<br>(3190-3027BLK) | -                                   | -                                    |
| 4.3/10.0 DIN Male Straight  | TC-SPP250-4310M-LP<br>(3190-6144BLK)    | -                                   | TC-SPP500-4310M-LP<br>(3190-6213BLK) |
| 4.3 /10.0 DIN Male Straight (Snap-on)   | TC-SPP250-4310MS-LP<br>(3190-6201BLK)   | -                                   | -                                    |
| 4.3 /10.0 DIN Male Right Angle  | TC-SPP250-4310M-RA-LP<br>(3190-6180BLK) | -                                   | -                                    |
| 4.3 /10.0 DIN Female Straight   | TC-SPP250-4310F-LP<br>(3190-6197BLK)    | -                                   | -                                    |

• Jumpers available in any length with most popular connector combinations

• iBwave VEX files available at [www.iBwave.com](http://www.iBwave.com)

# SPP™ Coaxial Cables

## Smart Part Number Key for SPP Low PIM Jumpers



**Many assembly configurations are available from stock.  
 Refer to the on-line [StockCheck](#) for specific configurations.**

# SPP™ 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-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.



World Headquarters: 358 Hall Avenue, Wallingford, CT 06492 • Tel: 203-949-8400, 1-800-867-2629 Fax: 203-949-8423

International Sales: +1 203-949-8503 • +1 800-867-2629

China Sales: TMC Building 4, No. 318 Yuanshan Road, Xinzhuang Industrial Park, Shanghai, China 201108 Tel: 86-21-5176-1209 Fax: 86-21-64424098  
[www.timesmicrowave.com](http://www.timesmicrowave.com)