

# TFT™ Low PIM Coaxial Cables

ISO 9001 Certified

## Flexible, Low PIM, Plenum Rated Jumper Cable Assemblies

- -160 dBc PIM for optimal system performance
- UL listed, type CMP (plenum) UL file #E-170516
- Flat Braid outer conductor construction for optimal flexibility
- Durable FEP outer jacket is suitable For both indoor and outdoor use

**Major Carrier Approved!**



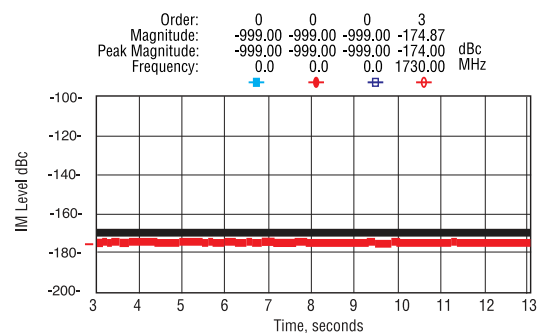
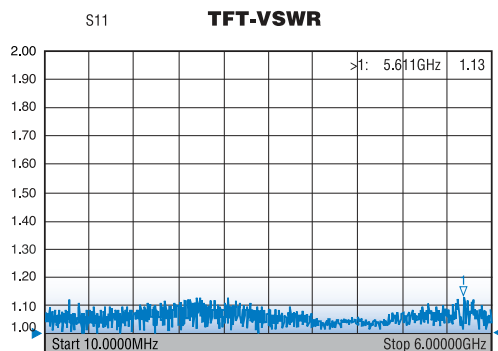
### TFT-401 (0.265") & TFT-402 (0.160") 50 Ohm low PIM cable assemblies

- 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, 4.3/10.0 DIN
- 100% tested for static and dynamic PIM, VSWR and inserion loss
- Marker band includes Serial Number PIM, VSWR & IL test data which is retained and accessible on the Times website
- 10 year warranty

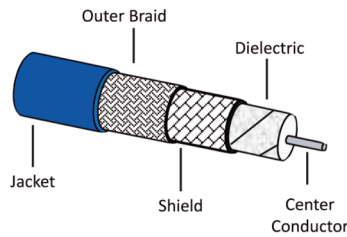
Typical VSWR

TFT401NMNM5.0M

Dynamic PIM Test Results



# TFT™ Low PIM Coaxial Cables



## Cable Construction

**Center Conductor:** Silver plated copper  
**Dielectric:** Taped PTFE  
**Shield:** Silver plated flat braid  
**Outer Braid:** Silver plated copper  
**Jacket:** Blue FEP

## Connectors

Low PIM connectors are available with interfaces of N, SMA, 7-16 DIN, 4.1/9.5 mini DIN and 4.3/10.0 mini DIN. Please consult Times Microwave Systems with your requirements.

## Cable Assemblies

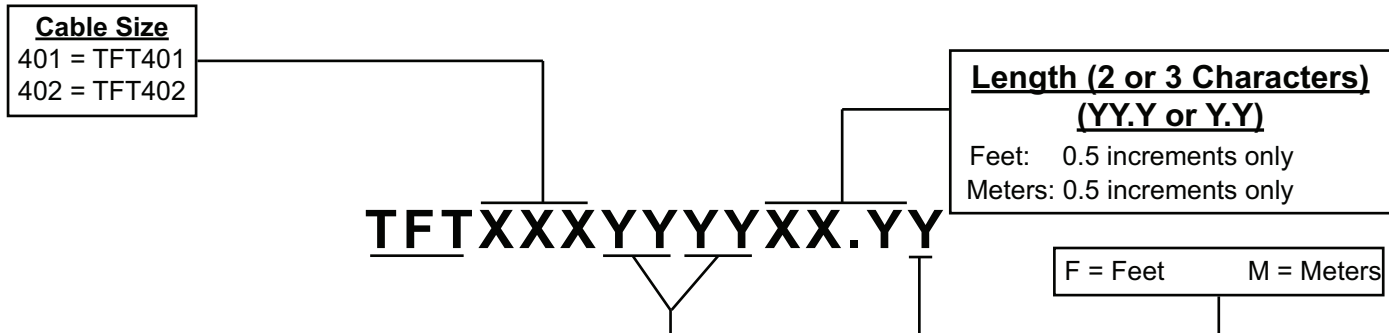
TFT™ cable assemblies of standard configuration are available in stock, and are factory tested for dynamic and static PIM, IL and VSWR. In addition, Times Microwave Systems also provides customized TFT™ cable assemblies according to the special requirements.

- Jumpers available in any length with most popular connector combinations.
- iBwave VEX files available at [www.iBwave.com](http://www.iBwave.com)

Physical Specifications	TFT-401		TFT-402		
AA Drawing Number:	AA-11410		AA-11408		
Dimensions:	in	(mm)	in	(mm)	
Center Conductor:	0.0641	1.628	0.037	0.93	
Dielectric:	0.208	5.28	0.113	2.87	
Shield:	0.218	5.53	0.121	3.07	
Outer Braid:	0.240	6.09	0.138	3.51	
Jacket:	0.265	6.73	0.160	4.06	
Mechanical Specifications					
Bend Radius:	0.75	19.05	0.75	19.05	
Weight:	78 lbs/1000 ft		31 lbs/1000 ft		
Operating Temperature Range °C/°F	-55 to +150° C		-55 to +150° C		
Electrical Specifications					
Velocity of Propagation: %	72%		76%		
Impedance: Ohms	50 Ohms		50 Ohms		
Capacitance: pF/ft (pF/m)	28.2 pF/ft		26.7 pF/ft		
Shielding Effectiveness: dB	-80 dB		-80 dB		
Nominal Attenuation: dB/100 ft (100m) (Power kW)					
	450 MHz	4.8 (15.8)	0.95	7.4 (24.2)	0.45
	700 MHz	6.1 (22.2)	0.75	9.2 (30.3)	0.36
	850 MHz	6.8 (22.2)	0.68	10.2 (33.5)	0.33
	1900 MHz	10.5 (34.4)	0.44	15.4 (50.4)	0.22
	2100 MHz	11.1 (36.3)	0.41	16.2 (53.1)	0.21
	2300 MHz	11.6 (38.2)	0.39	16.9 (55.6)	0.20
	2400 MHz	11.9 (39.1)	0.38	17.3 (56.8)	0.19
	4900 MHz	17.9 (58.7)	0.25	25.0 (82.1)	0.13
	5800 MHz	19.7 (64.7)	0.25	27.3 (89.6)	0.12
N Male Straight	TC-TFT401-NM-LP (3190-2943BLK)		TC-TFT402-NM-LP (3190-2943BLK)		
N Male Right Angle	TC-TFT401-NM-RA-LP (3190-3057BLK)		TC-TFT402-NM-RA-LP (3190-3015BLK)		
N Female	TC-TFT401-NF-LP (3190-3060BLK)		TC-TFT402-NF-LP (3190-3004BLK)		
N Female Bulkhead			TC-TFT402-NF-BH-LP (3190-3013BLK)		
7-16 DIN Male Straight	TC-TFT401-716M-LP (3190-2944BLK)		TC-TFT402-716M-LP (3190-2942BLK)		
7-16 DIN Male Right Angle	TC-TFT401-716M-RA-LP (3190-3058BLK)		TC-TFT402-716M-RA-LP (3190-2967BLK)		
7-16 DIN Female Straight			TC-TFT402-716F-LP (3190-3003BLK)		
SMA Male Straight	TC-TFT401SM-LP (3190-2941BLK)		TC-TFT402-SM-LP (3190-2903BLK)		
SMA Male Right Angle	TC-TFT401-SM-RA-LP (3190-3059BLK)		TC-TFT402SM-RA-LP (3190-3059BLK)		
4.1/9.5 mini DIN Male Straight	TC-TFT401-4195M-LP 3190-3008BLK		TC-TFT402-4195M-LP (3190-3009BLK)		
4.1/9.5 mini DIN Male Right Angle	TC-TFT401-4195M-RA-LP (3190-6127BLK)				
4.1/9.5 mini DIN Female	TC-TFT401-4195MF-LP (3190-6126BLK)		TC-TFT402-4195F-LP (3190-6184BLK)		
4.3/10.0 DIN Male Straight	TC-TFT401-4310M-LP (3190-6171BLK)		TC-TFT405-4310M-LP (3190-6125BLK)		
4.3/10.0 DIN Male Right Angle	TC-TFT401 4310M-RS-LP (3190-6172BLK)		TC-TFT402-4310M-RA-LP (3190-6173BLK)		
4.1/9.5 mini DIN Female			TC-TFT402-4310F-LP (3190-6195)		
4.1/9.5 mini DIN Female Bulkhead			TC-TFT402-4310F-BH-LP (3190-6196BLK)		

# TFT™ Low PIM Coaxial Cables

## Smart Part Number Key for TFT Low PIM Jumpers



ex. TFT401NMNM2.0M  
(N Male to N Male right angle, 2 meters)

**Electrical:**

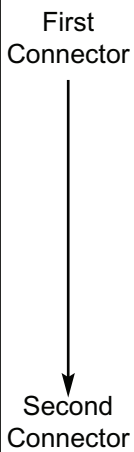
- Insertion Loss should not exceed (1.1 x published attenuation + 2 x 0.15dB)
- VSWR
  - Maximum of 1.25:1 up to 2 GHz
  - Maximum of 1.35:1 up to 6 GHz

**PIM:** (measured using two +43 dBm carriers)

- IM<sub>3</sub>: < -160dBc (static and dynamic)
- IM<sub>3</sub>: SMA's < -155dBc (static and dynamic)
- IM<sub>3</sub>: QMA's < -140dBc (static only)

**Connector Codes (2 or 3 Characters)**

DF =	7/16 DIN Female
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
43M =	4.3/10.0 DIN Male
43F =	4.3/10.0 DIN Female



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

# TFT™ Low PIM 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.



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[www.timesmicrowave.com](http://www.timesmicrowave.com)

TFT 06/18

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