

# SilverLine®

## Test Cables

ISO 9001 Certified

### Coax Test Cables for:

- High Volume Production Test Stations
- Research & Development Labs
- Environmental & Temperature Test Chambers
- Replacement for OEM Test Port Cables
- Field RF Testing
- Cellular Infrastructure Site Testing

New Steel,  
Torque and Crush  
Resistant  
Armor Option!



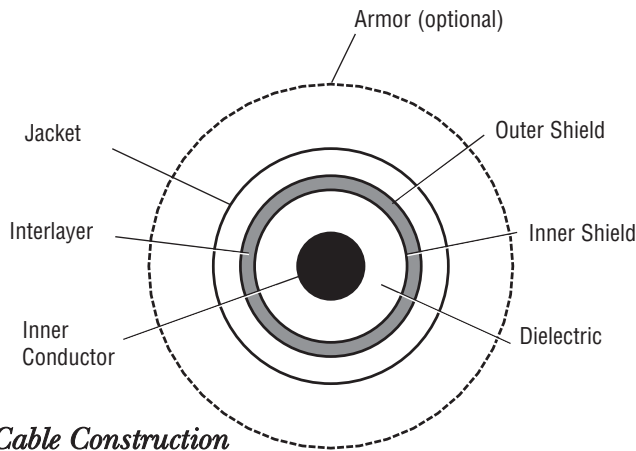
SilverLine® Test Cables are cost effective, durable, high-performance cable assemblies designed for use in a broad range of test and interconnect applications. Fabricated from rugged, solid PTFE dielectric cable with stainless steel connectors and a proven strain relief system, these cables provide long life and excellent stability in applications where they are repeatedly flexed and mated/unmated. SilverLine® test cables are ideal for use in production, field and laboratory test environments. They are also economical enough to be used as interconnects in test systems.

#### Features & Benefits:

- Phase & Loss Stable
- Long Flex Life
- Triple Shielded Cable
- High Mating Cycle, Stainless Steel Connectors
- Rugged, Solder-Clamp Attachment
- Redundant, Long Life Strain Relief System
- ROHS Compliant

#### Time's Silverline® Product Guarantee

Times will repair or replace your SilverLine test cable at its option if the connector attachment fails within four months of shipment. This guarantee excludes cable or connector



## Cable Construction

**Inner Conductor:** Solid silver plated copper clad steel

**Dielectric:** Solid PTFE

**Shield:** Silver plated copper flat ribbon braid aluminum-polyimide tape interlayer 36 GA silver plated copper braid (90%k)

**Jacket:** Clear FEP

**Armor (Optional):**

**PVC Style:** Steel wire reinforced, thick wall, high flex life clear PVC

**Steel Style:** 100% coverage, square locked, galvanized steel hose, high angle steel braid and TPR jacket

## Connectors

- Passivated stainless steel finish (QMA coupling nut is nickel plated brass)
- QMA SureGrip™ coupling nut design
- Captive contact
- Thick wall interface (SMA)
- Gold plated beryllium copper center contacts
- PTFE dielectric
- Type N & SMA OneTurn™ (1 full rotation to mate)
- High temperature 7mm
- Knurl/hex coupling nut (Type N and TNC)
- Precision grade 7-16

## Connector Attachment/Strain Relief

- Rugged, solder-clamp to braid. 175-300 lb pull force. Additional crimp system on armored version.
- Redundant triple layer strain relief system (Dual layer on armored version)

## Physical & Mechanical Specifications

Dimensions	in	mm
Inner Conductor	0.037	0.94
Dielectric	0.116	2.95
Inner Shield	0.126	3.20
Interlayer	0.132	3.35
Outer Shield	0.154	3.91
Jacket	0.195	4.95
Armor (optional)	0.450	11.50
Weight lbs./ft (kg/m)	Cable: 0.043 (0.064) Armor: 0.066 (0.098)	
Armor Crush Resistance	PVC:1200 lbs. per linear inch - Steel: 1500 lbs. per linear inch	
Bend Radius: minimum	1	25
Connector Retention	Unarmored & Armored PVC > 175 lbs - Steel Armored > 300 lbs	
Mating Life Cycle	QMA SMA, Type N: > 5000*	
Length Tolerances	≤ 2 ft. or 0.75m, -0, +0.50" (12.7mm) > 2 ft. or 0.75m, -0, +2% of length	
Temperature Range	-67°/+221°F	-55°/+105°C

## Electrical Specifications

VSWR Max		4 GHz	6 GHz	18 GHz	26.5 GHz
	BNC	1.20:1			
	7-16 DIN		1.25:1		
	SMA, QMA 2.4mm, 3.5mm, Type N, TNC		1.20:1	1.30:1	1.35:1
	7mm		1.25:1	1.35:1	(SMA, 2.4mm, 3.5mm)
Impedance	50 ohms				
Velocity of Propagation	70 %				
Shielding Effectiveness	>100 dB				
Capacitance	29.4 pf/ft = 96.4 pf/meter				
Phase Stability (ten, 4" radius, 180° reverse bends)	DC to 10 GHz: +/- 1.1° 10 to 18 GHz: +/- 2.0°				
<b>Attenuation Max @ +77°F (+25°C)</b>					
Attenuation (GHz)		dB/100 ft	dB/100 m		
1		12	40		
2		18	59		
6		34	112		
12		53	174		
18		68	224		
26.5		89	290		
Attenuation at any frequency formula: $(K1 * \sqrt{F(\text{MHz})}) + (K2 * F(\text{MHz}))$					
	K1	0.348			
	K2	0.0012			
<b>Power Handling @ +77°F (+25°C) (Sea Level) (Cable Only**)</b>					
Power Handling (GHz)		Watts (max.)			
0.4		891			
1		539			
2		363			
6		180			
12		117			
18		88			
26.5		65			

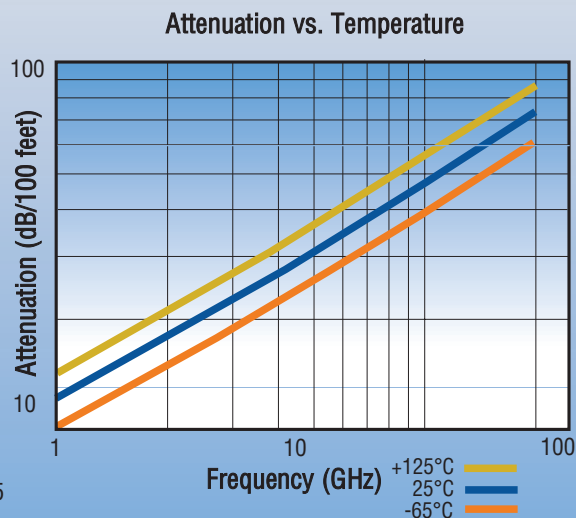
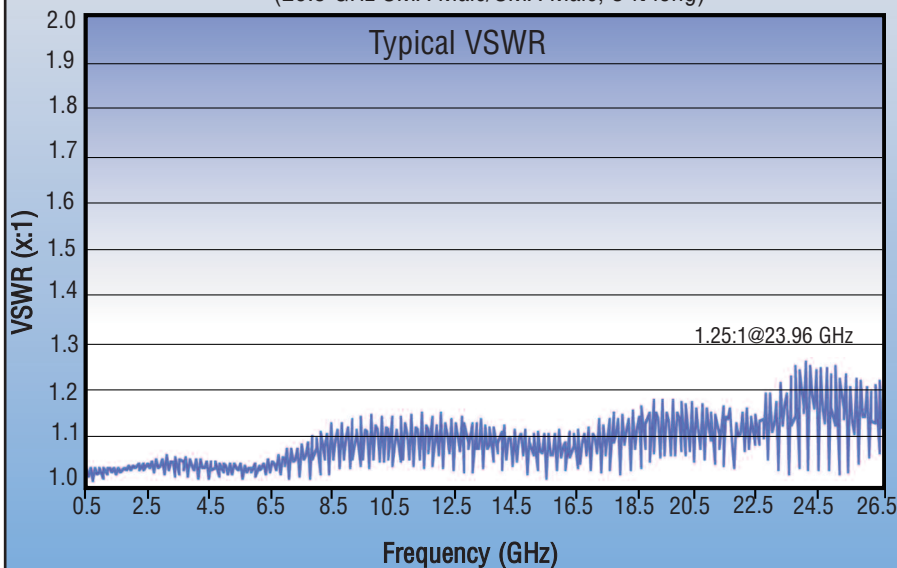
\* SMA Male & Type N: Assumes use of calibrated torque wrench, proper care and cleaning of interface and mated connector is within mil spec limits. QMA: Assumes proper use, care and cleaning.

\*\* Connector configuration may limit cable assembly maximum power handling capability.

Specifications subject to change without notice.

# Silverline® Test Cables

(26.5 GHz SMA Male/SMA Male, 3 ft long)



## Ordering Information

U = Unarmored (1ft (0.25m) Minimum Assembly Length)  
A = Armored (2 ft (0.5m) Minimum Assembly Length)  
S = Steel, torque and crush resistant armor 3ft (1.0m)

Feet: 0.50 ft Increments  
Example: -04.50F = 4.50 ft

Meters: 0.25 m increments  
Example: -00.75M = 0.75 m

SLXXX-XXXXXX-XX.XXX

F= Feet M= Meters

### Maximum Frequency

04 = 4.0 GHz (BNC equipped only)  
06 = 6.0 GHz  
18 = 18.0 GHz  
26 = 26.5 GHz (SMA, 2.4mm, 3.5mm only)

### Connector Codes (2 or 3 Characters)

BM = BNC Male  
SM = SMA Male  
S1T = SMA Male **OneTurn™**  
SF = SMA Female  
SMR = SMA Right Angle  
35M = 3.5mm Male  
35F = 3.5mm Female  
3RF = 3.5mm Ruggedized Female  
NM = Type N Male  
N1T = Type N Male **OneTurn™**  
NF = Type N Female  
NMR = Type N Right Angle  
70M = 7mm  
76F = 7-16 Female  
TM = ETNC Male (Extended range)  
TF = ETNC Female (Extended range)  
QMM = QMA Male

First Connector

Second Connector



3.5mm Female (L),  
Ruggedized 3.5mm Female (R)



Times QMA SureGrip™

Labels on unarmored assemblies under 1.5 feet (0.5m) long remain loose to increase flexibility.  
Some connector combinations and/or lengths may be unavailable.  
Please contact Times or your Times authorized representative.

# SilverLine®

Now there is a SilverLine® Test Cable available for almost every application:

- SilverLine® for high volume production RF testing
- SilverLine®- TG (TuffGrip) for cell site distance to fault testing
- SilverLine®- LP (Low PIM) for cell site Passive Intermodulation testing
- SilverLine®- VNA for 40 GHz R&D testing
- SilverLine®- SF (Super Flex) for more flexibility
- SilverLine®- XF (Extra Flex) for tight areas and breadboard development
- SilverLine®- LL (Low Loss) 30% lower loss
- SilverLine®- DAS (Distributed Antenna System) for in-building wireless radio testing (*coming in early, 2014*)
- SilverLine®- ULA (Ultra Low Attenuation) for high power, high frequency testing (*coming in early, 2014*)

Visit our website or contact your Times local representative for more information.

## 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.



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