**SilverLine™ Specifications:**

**SilverLine™-QMA Changeable Interface System**

### Specifications:
- Frequency response: DC-18.0 GHz (QMA, QMA r/a, Type N, SMA and TNC)
- VSWR: 1.35:1 Maximum, 1.25:1 Typical (Cable Assembly with Mated Adaptor)

### Features & Benefits:
- High Frequency Operation
- 5000 Mate Life
- SureGrip™ Coupling Nut
- Smooth, Fast Retraction for Quick Changes
- Large Interface Selection
- Between Series & Reverse Polarity Interfaces

**Adapters From QMA Jack To:**

- Mini-UHF Plug (Lengthened) 3191-182EA
- Mini-UHF Jack 3191-182EA
- TNC Jack Reverse Polarity 3191-196EA
- TNC Plug Reverse Polarity 3191-196EA Cisco Compatible
- Type N Plug 3191-143EA
- Type N Jack 3191-189EA
- SMA Plug 3191-133EA

**Between & Within Series Adaptors and Termination**

- N Plug - QMA Plug Between Series 3191-190EA
- QMA Plug - QMA Plug Adapter 3191-197EA
- QMA Plug-SMA Jack 3191-204EA
- 2-Watt QMA Load 3191-191EA
- SMA Plug-QMA Plug Between Series 3191-195EA
- QMA Plug-QMA Jack Adapter 3191-198EA

---

**SilverLine™ Test Cables**

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

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

---

**Times’ 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 includes cable or connector interface damage from misuse or abuse.

---

**ISO 9001 Certified**
**SilverLine™ Specifications:**

**Cable Construction**
- **Inner Conductor:** Solid Silver Plated Copper Clad Steel
- **Dielectric:** Solid PTFE
- **Shield:** Silver-Plated Copper Flat Ribbon Braid Aluminum-Polyimide Tape Interlayer
  - **High temperature 7mm**
  - **PTFE dielectric**
  - **Rugged, solder clamp to braid. 175 lb pull force.**
- **Thick wall interface (SMA)**
  - (Dual layer on armored version)
- **Interlayer**
  - Nickel plated brass
  - Aluminum-Polyimide Tape Interlayer
  - Silver-Plated Copper Flat Ribbon Braid
- **Solid PTFE**
- **Clad Steel**
  - Steel wire reinforced, thick wall, high flex life clear PVC
- **Armor (optional)**
  - Wire reinforced, thick wall, high flex life clear PVC

**Connectors**
- Passivated stainless steel finish (Complete QMA right angle and QMA straight coupling nut only are 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
- Knurled/hex coupling nut (Type N and TNC)
- Precision grade 7-16

**Connector Attachment/Strain Relief**
- Rugged, solder-clamp to braid. 175 lb pull force. Additional crimp system on armored version
- Redundant triple layer strain relief system (Dual layer on armored version)

---

**Physical & Mechanical Specifications**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>in</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inner Conductor</td>
<td>0.037</td>
<td>0.94</td>
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<tr>
<td>Dielectric</td>
<td>0.116</td>
<td>2.96</td>
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<tr>
<td>Inner Shield</td>
<td>0.126</td>
<td>3.20</td>
</tr>
<tr>
<td>Interlayer</td>
<td>0.132</td>
<td>3.35</td>
</tr>
<tr>
<td>Outer Shield</td>
<td>0.134</td>
<td>3.41</td>
</tr>
<tr>
<td>Jacket</td>
<td>0.195</td>
<td>4.95</td>
</tr>
<tr>
<td>Armor (optional)</td>
<td>0.450</td>
<td>11.50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight lbs./ft (g/m)</th>
<th>Cable: 0.043 (0.064)</th>
<th>Armor: 0.066 (0.098)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Force</td>
<td>1200 lbs. per linear inch</td>
<td></td>
</tr>
<tr>
<td>Bend Radius: minimum</td>
<td>Unarmored &amp; Armored &gt; 175 lbs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SMA, Type N &gt; 5000 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>QMA &gt; 2500</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Length Tolerances ≤ 2 ft. or 0.75m</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 2 ft. or 0.75m, ±0.50% of length</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Temperature Range 0°F to 221°F</td>
<td></td>
</tr>
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**Electrical Specifications**

<table>
<thead>
<tr>
<th>Attenuation (GHz)</th>
<th>4 GHz</th>
<th>6 GHz</th>
<th>18 GHz</th>
<th>26.5 GHz*</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWR</td>
<td>12.1</td>
<td>13.5</td>
<td>17.2</td>
<td>26.5</td>
</tr>
<tr>
<td>7-16 DIN, SMA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3mm</td>
<td>1.20</td>
<td>1.30</td>
<td>1.35</td>
<td>1.35</td>
</tr>
<tr>
<td>3mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type N, TNC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.50</td>
<td>1.65</td>
<td>1.25</td>
<td>1.15</td>
</tr>
<tr>
<td>Impedance</td>
<td>50 ohms</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>VSWR Max</td>
<td>4 dB</td>
<td>6 dB</td>
<td>18 dB</td>
<td>26.5 dB</td>
</tr>
<tr>
<td>Phase Stability</td>
<td>2%</td>
<td>4%</td>
<td>12%</td>
<td>20%</td>
</tr>
<tr>
<td>Capacitance</td>
<td>29.4</td>
<td>56.4</td>
<td>112.8</td>
<td>209.6</td>
</tr>
<tr>
<td>Power Handling @ 77°F (°C = 1°C)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attenuation (GHz)</td>
<td>4 GHz</td>
<td>6 GHz</td>
<td>18 GHz</td>
<td>26.5 GHz*</td>
</tr>
<tr>
<td>SWR</td>
<td>12.1</td>
<td>13.5</td>
<td>17.2</td>
<td>26.5</td>
</tr>
<tr>
<td>7-16 DIN, SMA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3mm</td>
<td>1.20</td>
<td>1.30</td>
<td>1.35</td>
<td>1.35</td>
</tr>
<tr>
<td>3mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type N, TNC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.50</td>
<td>1.65</td>
<td>1.25</td>
<td>1.15</td>
</tr>
<tr>
<td>Power Handling @ 77°F (°C = 1°C) (Cable Only)**</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Handling (GHz)</td>
<td>0.4</td>
<td>0.6</td>
<td>1.0</td>
<td>1.5</td>
</tr>
<tr>
<td>Walls (max.)</td>
<td>569</td>
<td>834</td>
<td>117</td>
<td>151</td>
</tr>
<tr>
<td>0.4</td>
<td>0.6</td>
<td>1.0</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3.63</td>
<td>5.39</td>
<td>8.08</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>180</td>
<td>117</td>
<td>151</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>569</td>
<td>834</td>
<td>117</td>
<td></td>
</tr>
<tr>
<td>26.5</td>
<td>834</td>
<td>117</td>
<td></td>
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</table>

**Ordering Information**

<table>
<thead>
<tr>
<th>Connector Codes (2 or 3 Characters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BM = BNC Male</td>
</tr>
<tr>
<td>SM = SMA Male</td>
</tr>
<tr>
<td>SI = SMA Male OneTurn™</td>
</tr>
<tr>
<td>SF = SMA Female</td>
</tr>
<tr>
<td>SR = SMA Right Angle</td>
</tr>
<tr>
<td>SM = 3.5mm Male</td>
</tr>
<tr>
<td>SF = 3.5mm Female</td>
</tr>
<tr>
<td>SF = 3.5mm Female, Ruggedized</td>
</tr>
<tr>
<td>NM = Type N Male</td>
</tr>
<tr>
<td>NF = Type N Female</td>
</tr>
<tr>
<td>NR = Type N Right Angle</td>
</tr>
<tr>
<td>7mm = 7mm</td>
</tr>
<tr>
<td>7T = 7-16 DIN Male</td>
</tr>
<tr>
<td>7T = 7-16 DIN Female</td>
</tr>
<tr>
<td>TM = TNC Male (Extended range)</td>
</tr>
<tr>
<td>TF = TNC Female (Extended range)</td>
</tr>
<tr>
<td>OMM = SMA Male (changeable interface see pg 4)</td>
</tr>
<tr>
<td>OMR = QMA Male (changeable interface see pg 4)</td>
</tr>
</tbody>
</table>

**SLXXX-XXXXXX-XX.XXX**

---

**SilverLine Test Cables**

**Attenuation vs. Temperature**

<table>
<thead>
<tr>
<th>Frequency (GHz)</th>
<th>+25°C</th>
<th>+65°C</th>
<th>+100°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5</td>
<td>1.0</td>
<td>1.2</td>
<td>1.4</td>
</tr>
<tr>
<td>5.0</td>
<td>1.0</td>
<td>1.2</td>
<td>1.4</td>
</tr>
<tr>
<td>10.0</td>
<td>1.0</td>
<td>1.2</td>
<td>1.4</td>
</tr>
<tr>
<td>20.0</td>
<td>1.0</td>
<td>1.2</td>
<td>1.4</td>
</tr>
<tr>
<td>40.0</td>
<td>1.0</td>
<td>1.2</td>
<td>1.4</td>
</tr>
</tbody>
</table>

---

**Specifications subject to change without notice.**

---

**Times Microwave Systems**

800-867-2629 • www.timesmicrowave.com • 203-340-4100

---

**Times Microwave Systems**

800-867-2629 • www.timesmicrowave.com • 203-340-4100

---

Some connector combinations and/or lengths may be unavailable. Please contact Times or your Times authorized representative.

---

Some connector combinations and/or lengths may be unavailable. Please contact Times or your Times authorized representative.

---

**U = Unarmored**

**A = Armored**

---

**First Connector**

---

**Second Connector**

---

**Labels on unarmored assemblies under 1.5 feet long are left loose to increase flexibility.**

---

**Example: -04.50F = 4.50 ft**

---

**Feet: 0.50 ft Increments**

---

**Example: -00.75M = 0.75 m**

---

**Some connector combinations and/or lengths may be unavailable. Please contact Times or your Times authorized representative.**

---

**26.5 GHz SMA Male/SMA Male, 3 ft long**

---

**Maximum Frequency**

---

**4 GHz (BNC equipped only)**

---

**0.4 GHz (SMA equipped only)**

---

**06 = 6.0 GHz**

---

**18 = 18.0 GHz**

---

**26 = 26.5 GHz (SMA, 2.4mm, 3.5mm only)**

---

**Maximum Power Handling**

---

**U = Unarmored**

---

**A = Armored**

---

**NMR = Type N Right Angle**

---

**SMR = SMA Right Angle**

---

**SF = SMA Female**

---

**3RM = 3.5mm Female**

---

**3RF = 3.5mm Female, Ruggedized Female**

---

**2RF = 2.4mm Female, Ruggedized Female**

---

**NM = Type N Male**

---

**NF = Type N Female**

---

**NR = Type N Right Angle**

---

**7MM = 7mm**

---

**TM = TNC Male (Extended range)**

---

**TF = TNC Female (Extended range)**

---

**OMM = SMA Male (changeable interface see pg 4)**

---

**OMR = QMA Male (changeable interface see pg 4)**

---

**Specifications subject to change without notice.**
SilverLine™ Specifications:

Physical & Mechanical Specifications

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>mm</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inner Conductor</td>
<td>0.637</td>
<td>0.94</td>
</tr>
<tr>
<td>Dielectric</td>
<td>0.116</td>
<td>2.96</td>
</tr>
<tr>
<td>Interlayer</td>
<td>0.126</td>
<td>3.35</td>
</tr>
<tr>
<td>Outer Shield</td>
<td>0.132</td>
<td>3.35</td>
</tr>
<tr>
<td>Jacket</td>
<td>0.154</td>
<td>3.91</td>
</tr>
<tr>
<td>Armor (optional)</td>
<td>0.195</td>
<td>4.95</td>
</tr>
<tr>
<td>Weight lbs./ft (kg/m)</td>
<td>0.043 (0.064)</td>
<td>Armor: 0.066 (0.098)</td>
</tr>
<tr>
<td>Armor Crush Resistance</td>
<td>1200 lbs. per linear inch</td>
<td></td>
</tr>
<tr>
<td>Bend Radius: minimum</td>
<td>11.59</td>
<td></td>
</tr>
</tbody>
</table>

Electrical Specifications

- **SWR Max**:
  - 4 GHz: 1.25
  - 6 GHz: 1.25
  - 18 GHz: 1.35

- **Atten Max @ +77°F (+25°C)**:
  - 10 dB: 100 ft
  - 20 dB: 50 ft

- **Power Handling**:
  - 0.4 dBm: 0 dBm
  - 2 dBm: 3 dBm
  - 6 dBm: 6 dBm
  - 12 dBm: 12 dBm

- **Temperature Range**: -67°/+221°F (-55°/+105°C)

Connector Codes (2 or 3 Characters)

- **RN**: BNC Male
- **SM**: SMA Male
- **S1T**: SMA Male OneTurn™
- **SF**: SMA Female
- **SMR**: SMA Right Angle
- **3SM**: 3.5mm Male
- **3SF**: 3.5mm Female
- **3RM**: 3.5mm Ruggedized Male
- **3RF**: 3.5mm Ruggedized Female
- **2RF**: 2.4mm Ruggedized Female
- **NM**: N Male
- **NT**: Type N Male OneTurn™
- **NF**: Type N Female
- **NMR**: Type N Right Angle
- **7MV**: 7mm
- **7DV**: 7-16 Din Male
- **7FD**: 7-16 Din Female
- **TM**: ETNC Male (extended range)
- **TF**: ETNC Female (extended range)
- **OAM**: SMA Male (chargeable interface see pg. 4)
- **OMR**: SMA Right Angle (chargeable interface see pg. 4)

**Ordering Information**

<p>| U | = Unarmored                        |</p>
<table>
<thead>
<tr>
<th>A</th>
<th>= Armored</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feet</td>
<td>0.5 ft increments</td>
</tr>
<tr>
<td></td>
<td>Example: -04.50F = 4.50 ft</td>
</tr>
<tr>
<td>Meters</td>
<td>0.25 m increments</td>
</tr>
<tr>
<td></td>
<td>Example: -00.75M = 0.75 m</td>
</tr>
</tbody>
</table>

**Silverline Test Cables**

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

<table>
<thead>
<tr>
<th>Frequency (GHz)</th>
<th>+125°C</th>
<th>-65°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>25</td>
<td>65</td>
</tr>
<tr>
<td>12</td>
<td>26</td>
<td>65</td>
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<tr>
<td>14</td>
<td>27</td>
<td>65</td>
</tr>
<tr>
<td>16</td>
<td>28</td>
<td>65</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attenuation vs. Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (GHz)</td>
</tr>
<tr>
<td>26.5 GHz</td>
</tr>
</tbody>
</table>

**Connectors**

- Passivated stainless steel finish
- QMA SureGrip™ coupling nut design
- Captive contact
- QMA, SMA 2.4mm, 3.5mm (Type N, TNC)
- PTFE dielectric
- Gold plated beryllium copper center contacts
- Clear FEP
- Type N & SMA OneTurn™ (1 full rotation to mate)
- High temperature 7mm
- Knurled coupling nut (Type N and TNC)
- Precision grade 7-16

**Connector Attachments/Strain Relief**

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

**Silverline Test Cables**

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

<table>
<thead>
<tr>
<th>Frequency (GHz)</th>
<th>+10°C</th>
<th>25°C</th>
<th>-10°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.5 GHz</td>
<td>0.25 M</td>
<td>0.50 M</td>
<td>0.75 m</td>
</tr>
</tbody>
</table>

**Specifications subject to change without notice.**
**SilverLine™ Specifications:**

**SilverLine™-QMA Changeable Interface System**

- QMA Plug Permanently Installed
- Type N plug Adapter Mated to QMA Plug
- SMA Plug Mated to QMA Plug

**Specifications:**
- Frequency response: DC-18.0 GHz
- VSWR: 1.35:1 Maximum, 1.25:1 Typical
- (Cable Assembly with Mated Adaptor)

**Features & Benefits:**
- High Frequency Operation
- 5000 Mate Life
- SureGrip™ Coupling Nut
- Smooth, Fast Retraction for Quick Changes
- Large Interface Selection
- Between Series & Reverse Polarity Interfaces

**Adapters From QMA Jack To:**
- PL259 Plug 3191-184EA
- PL259 Jack 3191-183EA
- BNC Plug 3191-187EA
- BNC Jack 3191-186EA
- SMB Plug 3191-192EA
- SMB Jack 3191-196EA
- TNC Plug Reverse Polarity 3191-196EA Cisco Compatible
- Type N Plug 3191-143EA
- Type N Jack 3191-189EA
- SMA Plug 3191-133EA

**Between & Within Series Adaptors and Termination**
- N Plug - QMA Plug Between Series 3191-190EA
- SMA Plug - QMA Plug Adapter 3191-197EA
- SMA Plug-QMA Plug Between Series 3191-195EA
- 2-Watt QMA Load 3191-204EA
- SMA Plug-QMA Plug Between Series 3191-195EA
- Hard Kit Case (3190-2169EA)
- Soft Kit Pouch (3190-584)
- Release Tool (High Volume Testing) 3190-141EA

**Reverse Polarity**

- **Mini-UHF Plug**
  - Lengthened 3191-141EA
  - (Lengthened)

- **SMA Plug**
  - Reverse Polarity 3191-194EA

- **PL259 Plug**
  - Reverse Polarity 3191-148EA

- **Type N Plug**
  - Adapter 3191-204EA

- **TNC Plug**
  - Reverse Polarity 3191-143EA

- **Type N Jack**
  - Adapter 3191-204EA

- **SMA Plug**
  - QMA Jack Adapter 3191-198EA

**Reverse Polarity**

- **Mini-UHF Plug**
  - Lengthened 3191-141EA

- **SMA Plug**
  - Reverse Polarity 3191-194EA

- **PL259 Plug**
  - Reverse Polarity 3191-148EA

- **Type N Plug**
  - Adapter 3191-204EA

- **TNC Plug**
  - Reverse Polarity 3191-143EA

- **Type N Jack**
  - Adapter 3191-204EA

- **SMA Plug**
  - QMA Jack Adapter 3191-198EA

**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

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- Replacement for OEM Test Port Cables
- Field RF Testing
- Cellular Infrastructure Site Testing

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Times will repair or replace your SilverLine test cable at its option if the connector attachment fails within four months of shipment. This guarantee covers only connector interface damage from misuse or abuse.

**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

Times Microwave Systems, Wallingford, CT 06492

ISO 9001 Certified

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www.timessystems.com