

# Stability™ Microwave/RF Cable Assemblies

DATA SHEET / 2Z-004



MODELS:

- SC-185 // 1.85mm color-coded Stability™ cables
- SC-24 // 2.4mm color-coded Stability™ cables
- SC-292 // 2.92mm color-coded Stability™ cables
- SC-35 // 3.5mm color-coded Stability™ cables
- SC-N // Type N color-coded Stability™ cables



# Stability™ Microwave/RF Cable Assemblies

SERIES SC-185, SC-24, SC-292, SC-35 AND SC-N

## Features and Benefits

- > Amplitude and phase stable with flexure
- > Reliable and repeatable measurements
- > Durable, ruggedized, crush-resistant
- > Longer flex life

## Typical Applications

- > Vector network analyzers (VNAs)
- > RF and microwave instruments
- > Bench-top testing
- > Probe station integrations
- > RF production testing
- > ATE systems



## Description

Maury Microwave's Stability™ series sets the standard for high-performance ruggedized cable assemblies. Designed specifically for phase-stable and amplitude-stable applications, Stability™ offers excellent measurement repeatability even after cable flexure. With a ruggedized, durable construction, Stability™ will outlast and outperform other assemblies resulting in a reduced total cost-of-test. Stability's™ light weight, superior flexibility and small form factor make it ideal for daily use with VNA's, test instruments, bench-top testing and ATE systems.

Stability™ cable assemblies are now part of the ColorConnect™ family! Following the proposed IEEE high-frequency connector/adaptor color convention, Stability™ cable assemblies are the first commercially available assemblies to offer clear indications of compatibility and intermatability. ColorConnect™ makes it a simple matter to avoid and eliminate damaged equipment, degraded equipment reliability, degraded performance and lengthy maintenance times due to improper mating (and attempted mating) of incompatible interconnects.

## Stability™ Specifications

STABILITY™ Cable Type	Frequency	Typical Phase Stability with Flexure	Typical Amplitude Stability with Flexure
SC-185	67 GHz	±8.0°	±0.08 dB
SC-24	50 GHz	±6.0°	±0.05 dB
SC-292	40 GHz	±5.0°	±0.05 dB
SC-35	26.5 GHz	±3.5°	±0.02 dB
SC-N	18 GHz	±2.0°	±0.015 dB

# Cable Assembly Specifications

## Electrical Properties<sup>1</sup>

STABILITY™ Cable Type	SC-185	SC-24	SC-292	SC-35	SC-N
Maximum Frequency	67 GHz	50 GHz	40 GHz	26.5 GHz	18.0 GHz
VSWR	1.40 typ/ 1.50 max	1.30 typ/ 1.43 max	1.25 typ/ 1.40 max	1.25 typ/ 1.35 max	1.25 typ/ 1.30 max
Typical Insertion Loss (cable only)	1.79 dB/ft	1.52 dB/ft	0.84 dB/ft	0.67 dB/ft	0.54 dB/ft
Impedance (nominal)	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm
Phase Stability vs Bending <sup>2</sup>	±8° typ/ ±15.6° max	±6° typ/ ±11.8° max	±5° typ/ ±9.5° max	±3.5° typ/ ±7.0° max	±2.0° typ/ ±4.5° max
Amplitude Stability vs Bending <sup>3</sup>	±0.08 dB typ/ ±0.10 dB max	±0.05 dB typ/ ±0.08 dB max	±0.05 dB typ/ ±0.10 dB max	±0.02 dB typ/ ±0.04 dB max	±0.015 dB typ/ ±0.02 dB max
Phase Stability vs Temp	<4°/m/GHz (-55 ~+125°C)				
Velocity of Propagation	76% (nominal)				
Shielding Effectiveness	>90 dB (DC -18.0 GHz)				
Time Delay (nominal)	1.3ns/ft (4.4ns/m)				

<sup>1</sup> These specifications also apply to Stability™ Low-Profile (-LP) and Thermal Vacuum (-TV) cable assemblies (see page 5 & 7 respectively).

<sup>2</sup> Per IEC 60966-1, section 8.6, method 1.

<sup>3</sup> Per IEC 60966-1, section 8.4.

## Mechanical/Environmental Properties

STABILITY™ Cable Type	SC-185, SC-24, SC-292, SC-35 and SC-N	
Center Conductor Material	Silver-Plated Copper-Clad Steel	
Maximum Outer Diameter	SC-292/SC-35/SC-N 0.277 in (7.04mm)	SC-185/SC-24 0.244 (6.20mm)
Nominal Weight	1.61 oz/ft (150g/m)	1.02 oz/ft (95g/m)
Min. Static Bend Radius/ Min. Dynamic Bend Radius	1.0 in. (25.4mm)/ 2.0 in. (50.8mm)	
Flex Life Cycles <sup>4</sup>	>20,000	
Connector Mating Cycles	>5,000	
Crush Resistance	>254 lb/inch (44 kN/m)	
Operating Temperature Range	-67 ~ +257°F (-55 ~ +125°C)	
Fire Resistance <sup>5</sup>	Yes	
Abrasion Resistance <sup>6</sup>	Yes	
RoHS/REACH	Yes	

<sup>4</sup> Per IEC 60966-1, section 9.3.

<sup>5</sup> Per MIL-C-87104.

<sup>6</sup> Per SAE AS5756.

## Insertion Loss / Attenuation

(1:1 VSWR, 25 C, Sea Level, Cable Only)

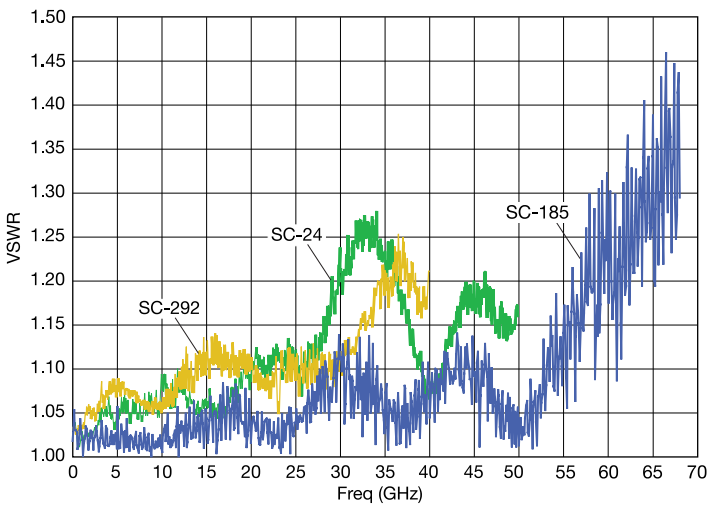
Freq. (GHz)	SC-185 (dB/100 ft)	SC-24 (dB/100 ft)	SC-292 (dB/100 ft)	SC-35 (dB/100 ft)	SC-N (dB/100 ft)
1	19	19	12	12	12
2	27	27	17	17	17
4	38	38	25	25	25
6	48	48	31	31	31
8	55	55	36	36	36
12	70	70	46	46	46
18	86	86	58	58	58
26.5	106	106	73	73	N/A
40	134	134	94	N/A	N/A
50	152	152	N/A	N/A	N/A
67	180	N/A	N/A	N/A	N/A

## Average Power Handling

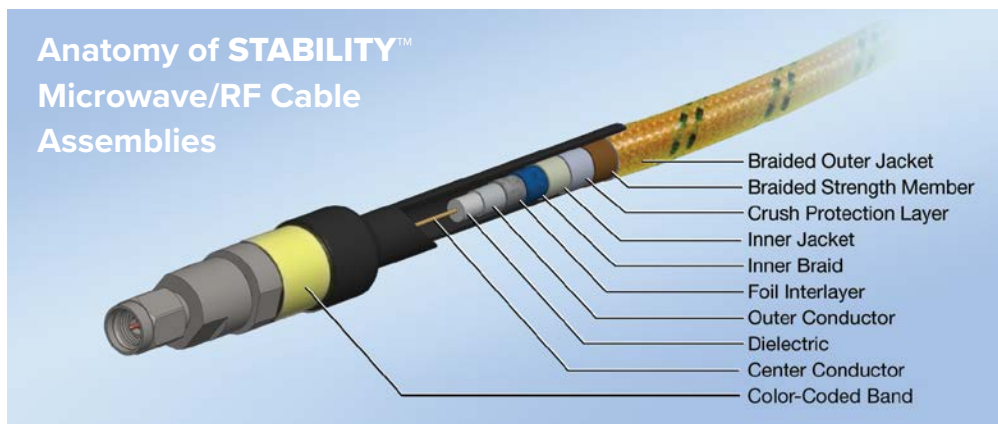
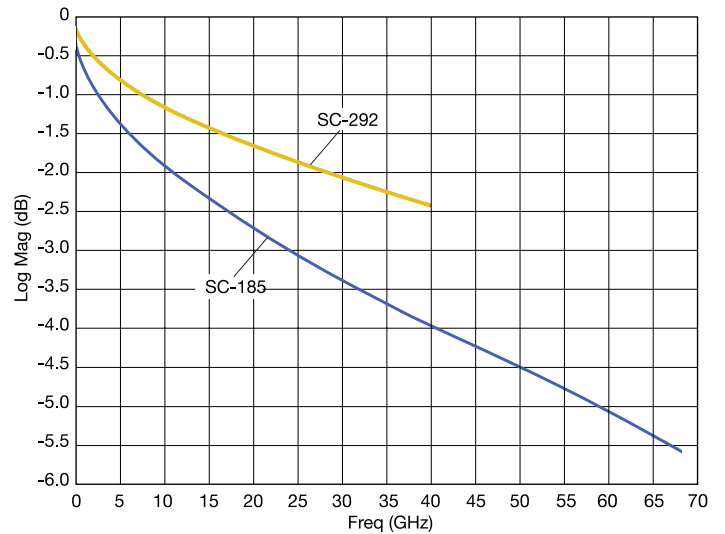
(1:1 VSWR, 25 C, Sea Level, Cable Only)

Freq. (GHz)	SC-185 Watts (max)	SC-24 Watts (max)	SC-292 Watts (max)	SC-35 Watts (max)	SC-N Watts (max)
1	260	260	400	400	400
2	180	180	280	280	280
4	130	130	200	200	200
6	105	105	160	160	160
8	90	90	140	140	140
12	75	75	120	120	120
18	60	60	90	90	90
26.5	50	50	80	80	N/A
40	35	35	60	N/A	N/A
50	33	33	N/A	N/A	N/A
67	29	N/A	N/A	N/A	N/A

## Maury Stability™ 36" Cable Assembly Typical VSWR

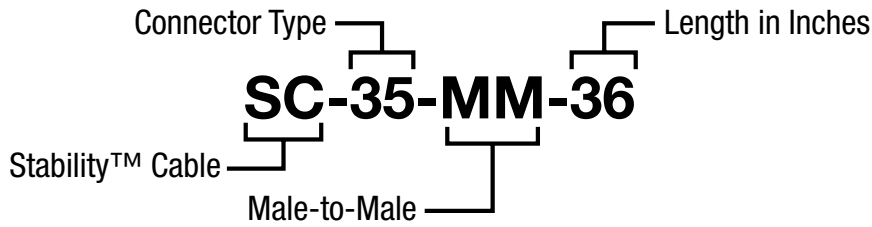


## Maury Stability™ 36" Cable Assembly Typical Insertion Loss



## Ordering Instructions for Stability™ Cable Assemblies

To specify a Stability™ Cable Assembly set, please follow the example below.



## Available Connectors

- > Type N male
- > 3.5mm male and female
- > 2.92mm male and female
- > 2.4mm male and female
- > 1.85mm male and female

## Stability™ Low-Profile Cable Assemblies (-LP)

Stability™ Low-Profile Cable Assemblies are designed for high-density applications such as switch matrices and PXI/PXIe/AXIe cards, as well as wafer-probe applications where traditional cable assemblies might cause interference due to cable and connector size. Stability™ Low-Profile Cable Assemblies offer the same electrical performance as Stability™ Microwave/RF Cable Assemblies in a configuration that is 44% smaller and 66% lighter<sup>1</sup>. Available with 2.4mm, 1.85mm, 3.5mm and 2.92mm connectors.

<sup>1</sup> For 2.92mm and 3.5mm connectors only.

## Mechanical/Environmental Properties (-LP)

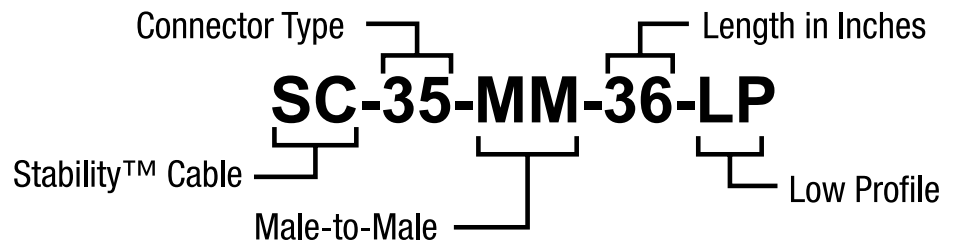
STABILITY™ Cable Type	SC-185, SC-24, SC-292 and SC-35
Center Conductor Material	Silver-Plated Copper-Clad Steel
Maximum Outer Diameter	0.156 in (3.95mm)
Nominal Weight	0.54 oz/ft (50g/m)
Minimum Bend Radius	1.0 in. (25.4mm)
Flex Life Cycles <sup>2</sup>	>20,000
Connector Mating Cycles	>5,000
Crush Resistance	>23 lb/inch (4kN/m)
Operating Temperature Range	-67 ~ +257°F (-55 ~ +125°C)
Fire Resistance <sup>3</sup>	Yes
RoHS/REACH	Yes

<sup>2</sup> Per IEC 60966-1, section 9.3.

<sup>3</sup> Per MIL-C-87104.

## Ordering Instructions for Stability™ Low Profile (-LP) Cable Assemblies

To specify a Stability™ Low Profile Cable Assembly, add "-LP" at the end of the SC model number, as shown in the example below.



## Available Connectors

- > 3.5mm male and female
- > 2.92mm male and female
- > 2.4mm male and female
- > 1.85mm male and female

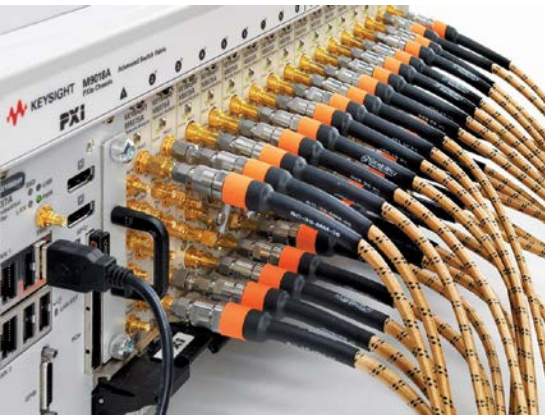
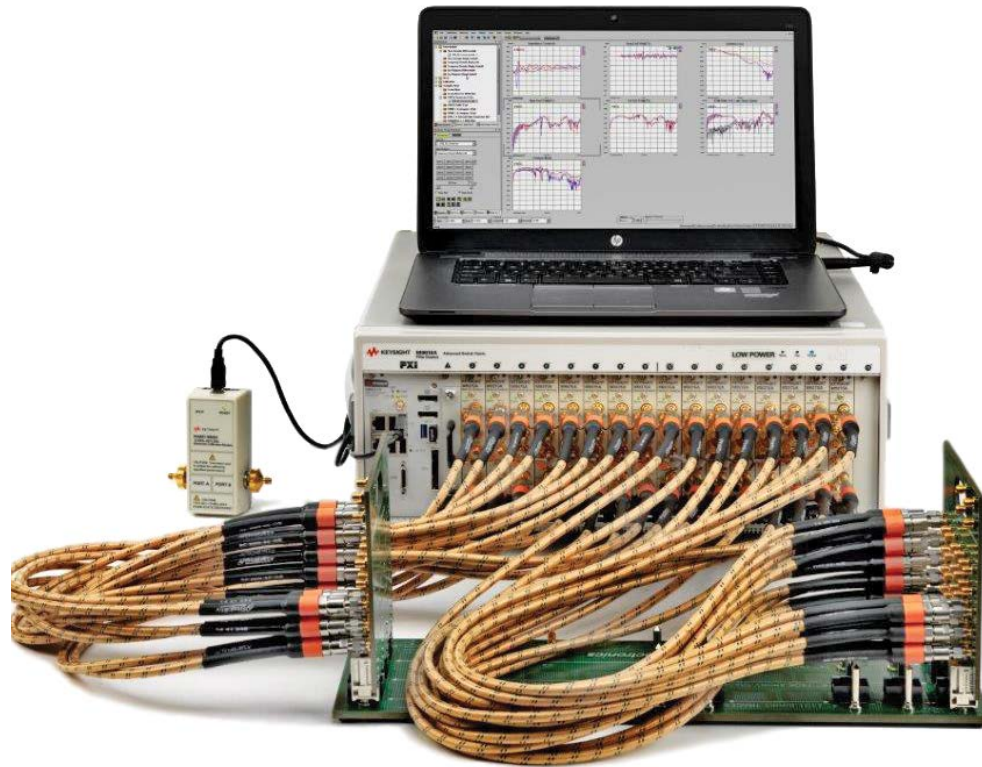
Stability™ Low-Profile Cable Assembly



Stability™ Cable Assembly

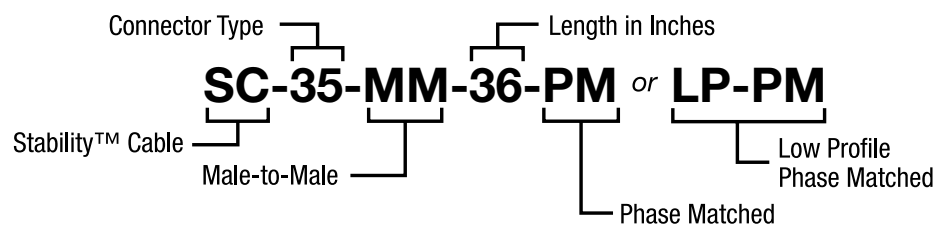
## Stability™ Phase-Matched (PM) Cable Assembly Sets

Stability™ Phase-Matched Cable Assemblies have been designed for applications where strict phase equality between multiple paths are required. Stability™ PM Cable Assemblies are matched within  $\pm 0.63^\circ/\text{GHz}$  and available as sets of two or more assemblies. Stability™ PM Cable Assemblies are offered in both standard and low-profile formats and maintain the mechanical and electrical characteristics of the original assembly. Phase matched assemblies are available with 1.85mm, 2.4mm, 2.92mm, 3.5mm and Type-N connectors and in all lengths. (See Typical Configurations table on page 3.)



### Ordering Instructions for Stability™ Phase-Matched (PM) Cable Assembly Sets

To specify a Stability™ Phase-Matched Cable Assembly set, add "PM" or "LPPM" at the end of the SC model number, as shown in the example below. "PM" indicates standard configuration Phase-Matched sets; "LPPM" indicates Low Profile configuration, Phase-Matched sets.



### Available Connectors

- > all SC cable assemblies are available in phase-matched sets

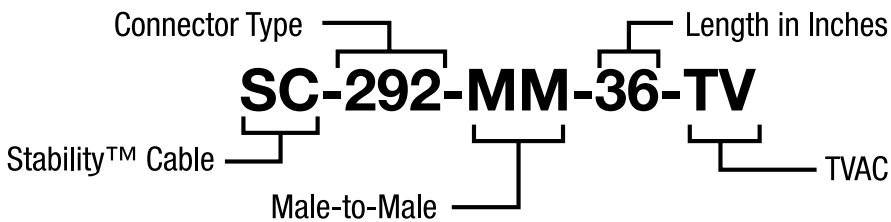


## Stability™ Thermal Vacuum Cable Assemblies (-TV)

Stability™ TVAC Cable Assemblies have been designed for measurements in a thermal vacuum environment for space product testing. TVAC cable assemblies connect components or satellites located in thermal test chambers to systems and instruments outside. Stability™ TVAC Cable Assemblies offer the same electrical and mechanical performance as Stability™ Microwave/RF Cable Assemblies with specialized vented connectors that meet low outgassing requirements of ESA-PSS-01-702 with a TML < 1% and CVCM < 0.1%.

### Ordering Instructions for Stability™ Thermal Vacuum (-TV) Cable Assemblies

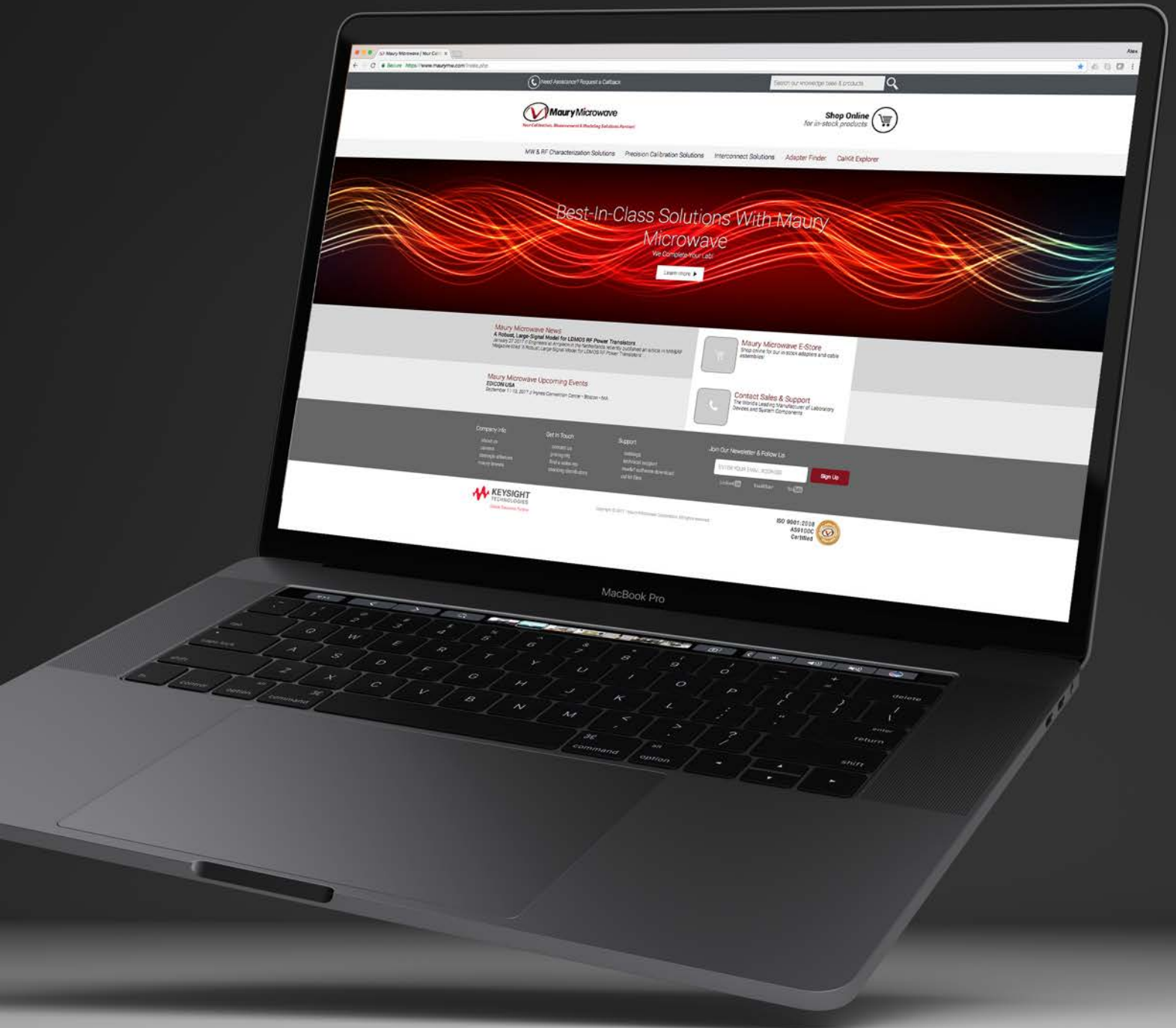
To specify a Stability™ Thermal Vacuum Cable Assembly, add "-TV" at the end of the SC model number, as shown in the example at the right.



### Available Connectors

- > 3.5mm male
- > 2.92mm male and female
- > 2.4mm male and female
- > 1.85mm male and female

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