

StabilityFlex™ Microwave/RF Cable Assemblies

DATA SHEET / 2Z-014



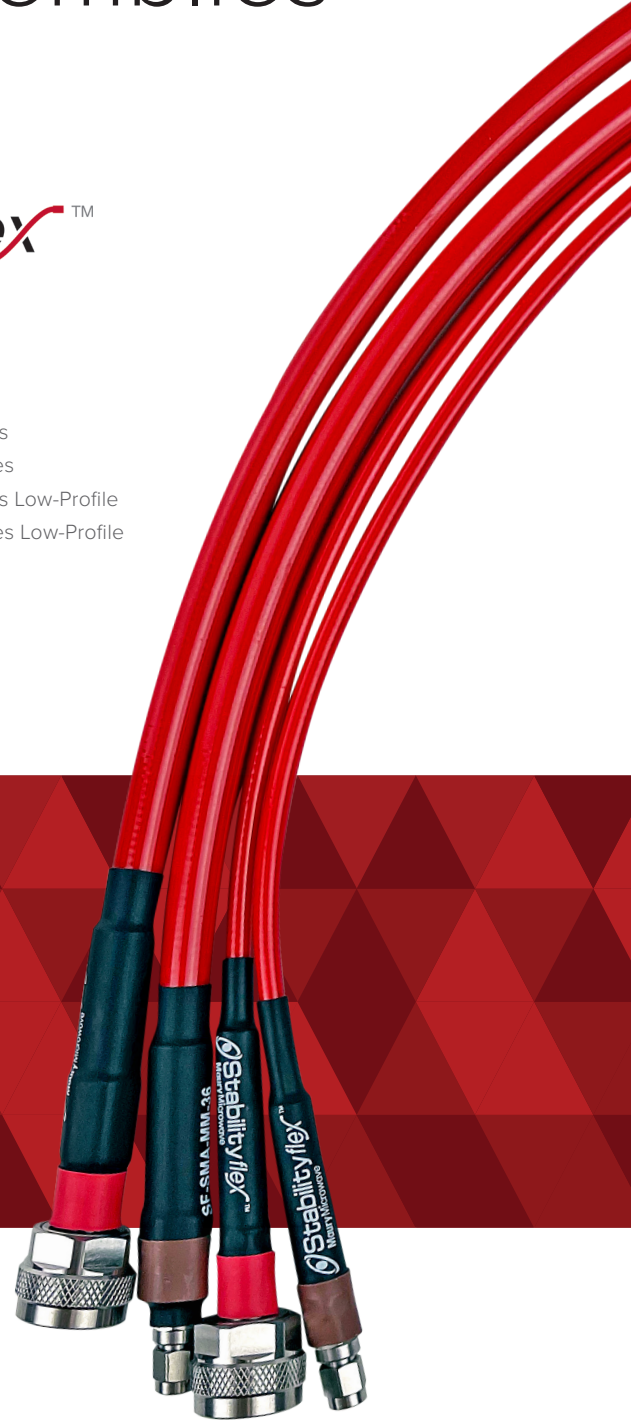
MODELS:

SF-N // Type N color-coded StabilityFlex™ cables

SF-SMA // SMA color-coded StabilityFlex™ cables

SF-N // Type N color-coded StabilityFlex™ cables Low-Profile

SF-SMA // SMA color-coded StabilityFlex™ cables Low-Profile



StabilityFlex™ Microwave/RF Cable Assemblies

SERIES SF-N, SF-SMA, SF-N-LP, SF-SMA-LP

Features and Benefits

- > Excellent value
- > Low insertion loss
- > Reliable and repeatable measurements
- > Amplitude and phase stable with flexure
- > High mating-cycle durability

Typical Applications

- > RF and microwave instruments
- > Bench-top testing
- > Probe station integrations
- > RF production testing
- > Component/module testing
- > ATE systems

Description

Maury Microwave's StabilityFlex™ series sets the standard for high-end all-purpose test and measurement cable assemblies. Designed for general testing applications, StabilityFlex™ offers excellent value with its low cost, low insertion loss, excellent return loss, flexibility, and amplitude and phase stability. StabilityFlex™ is the ideal interconnection for reliable and repeatable measurements when mated with test instruments including bench-top testing, on-wafer characterization and ATE systems.

StabilityFlex™ cable assemblies are now part of the ColorConnect™ family! Following the proposed IEEE high-frequency connector/adaptor color convention, StabilityFlex™ 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.



Cable Assembly Specifications

Electrical Properties

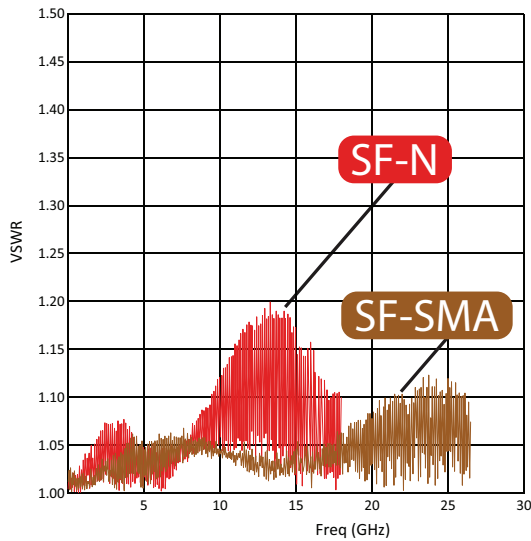
StabilityFlex™ Cable Type	SF-SMA	SF-SMA-LP	SF-N	SF-N-LP
Maximum Frequency	26.5 GHz		18 GHz	
VSWR (typical)	1.25:1			
"Maximum Insertion Loss (cable only)"	0.77 dB/ft		0.60 dB/ft	
Impedance (nominal)	50 ohm			
Phase Stability vs Flexure (typical)	±4°		±3°	
Amplitude Stability vs Flexure (typical)	±0.05 dB			
Velocity of Propagation	74% (nominal)			
Shielding Effectiveness	>100 dB			
Time Delay (nominal)	1.37 ns/ft (4.5 ns/m)			

Mechanical / Environmental Properties

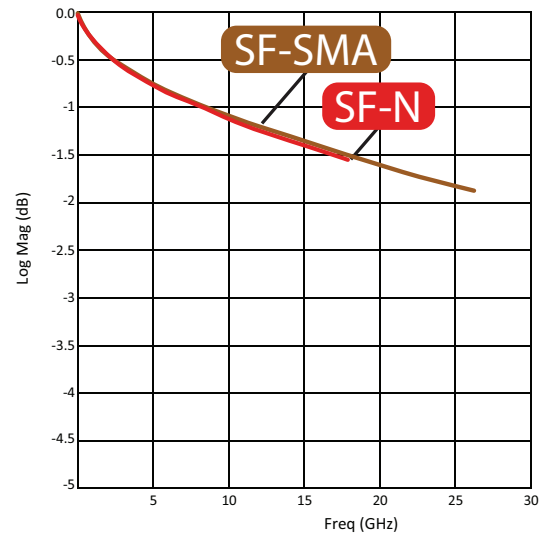
StabilityFlex™ Cable Type	SF-SMA	SF-SMA-LP	SF-N	SF-N-LP
Center Conductor Material	Stranded Silver Plated Copper			
"Maximum Outer Diameter (Connector)"	0.38 in (9.8 mm)		0.87 in (22.1 mm)	
"Maximum Outer Diameter (Cable)"	0.4in (10.2 mm)	0.21 in (5.35 mm)	0.4in (10.2 mm)	0.21 in (5.35 mm)
Nominal Weight	190 g/m (2.04 Oz/ft)	50 g/m (0.54 Oz/ft)	190 g/m (2.04 Oz/ft)	50 g/m (0.54 Oz/ft)
Min. Static Bend Radius	1.97 in (50.0 mm)	0.63 in (16.0 mm)	1.97 in (50.0 mm)	0.63 in (16.0 mm)
Min. Dynamic Bend Radius	3.94 in (100.0 mm)	1.97 in (50.0 mm)	3.94 in (100.0 mm)	1.97 in (50.0 mm)
Flex Life Cycles	>10,000			
Crush Resistance	440 lbf/in (78 Kgf/cm)	80 lbf/in (14 Kgf/cm)	440 lbf/in (78 Kgf/cm)	80 lbf/in (14 Kgf/cm)
Operating Temperature Range	-67°+121 °F(-55°+85°C)			
RoHS/REACH	Yes			

Maury StabilityFlex™ Cable Assembly Typical Performance

Maury StabilityFlex™ 36" Cable Assembly Typical VSWR



Maury StabilityFlex™ 36" Cable Assembly Typical Insertion Loss



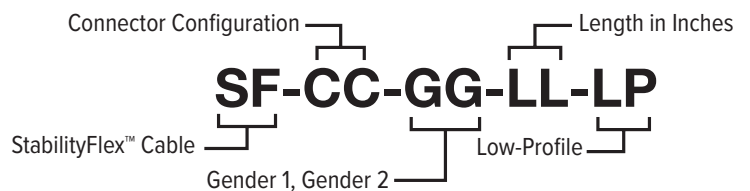
CC	GG	LL (Standard Lengths)**	Options
N (Type N)* SMA	MM (Male To Male) MF (Male to Female) FF (Female To Female)	24 36 48 60 78	Low-Profile

* Type N available in male only.

** StabilityFlex™ Low-Profile cable assemblies only; standard profile by special order

Ordering Instructions for StabilityFlex™ Cable Assemblies

Standard StabilityFlex™ Cable Assemblies



EXAMPLE:

The following is a StabilityFlex™ Low-Profile cable assembly with SMA male connectors on both ends, 24 inches in overall length, and low-profile option.



EXAMPLE:

The following is a StabilityFlex™ Low-Profile cable assembly with SMA male connector on one end and Type N connector on the other end, 24 inches overall length, and low-profile option.



S-parameter measurements with uncertainty

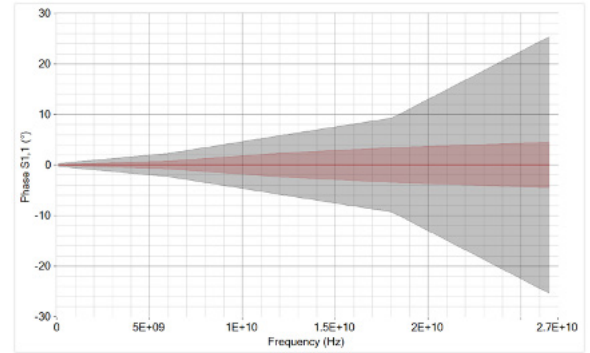
A cable's *phase stability with flexure* specification is a metric used to communicate the impact of cable movement on a DUT measurement. It implies that lower specifications lessen the impact on the measurement (i.e. a cable with a 2° phase stability with flexure specification will have a lesser impact on a measurement than a cable with a 5° phase stability). However, the methods used to determine this specification may not be consistent across manufacturers, and likely do not represent the actual cable movement range of a user.

A better metric to understand a cable's impact on a DUT measurement is "uncertainty contribution". The cable's impact on measurement uncertainty can be calculated by moving the cable through a user's actual range of motion and recording the S-parameters across the movement. This technique has been thoroughly documented by the European Association of National Metrology Institutes (EURAMET)* and has been made commercially available in Maury's Insight^{TM**} calibration and measurement software platform.

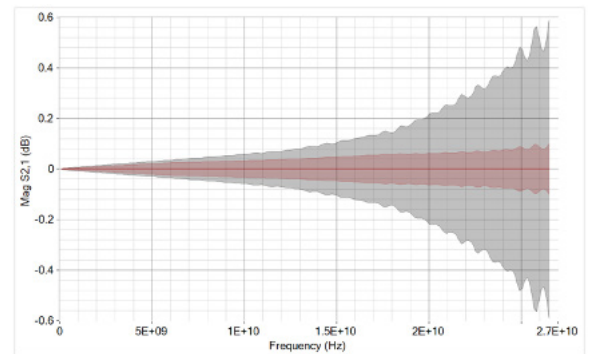
The plots on the right show typical S-parameter measurements with uncertainty boundaries on different types of DUTs. The boundaries shown only consider the cable's direct contribution on measurement uncertainty.

* <https://www.maurymw.com/pdf/I-CAL-GUI-012.pdf>

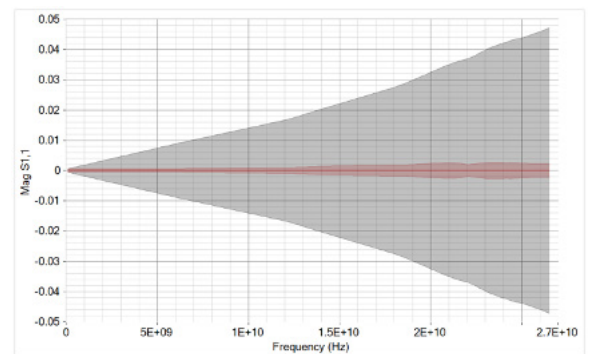
** https://www.maurymw.com/Precision/Insight_Software.php



S11_phase measured on a short circuit termination SF-SMA-MM-36 shown in red; leading global competitor shown in grey



S21_mag measured on a short circuit termination SF-SMA-MM-36 shown in red; leading global competitor shown in grey



S11_mag measured on a short circuit termination SF-SMA-MM-36 shown in red; leading global competitor shown in grey

Typical Insetion Loss/Attenuation

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

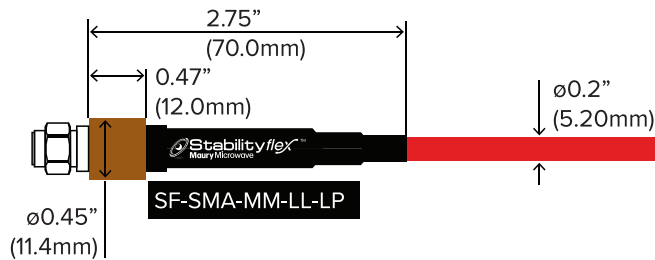
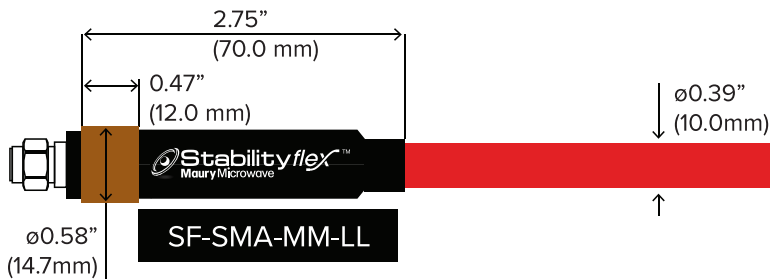
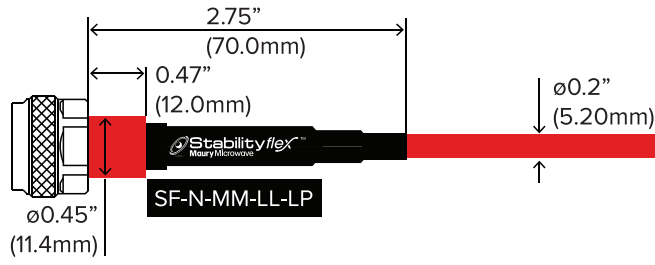
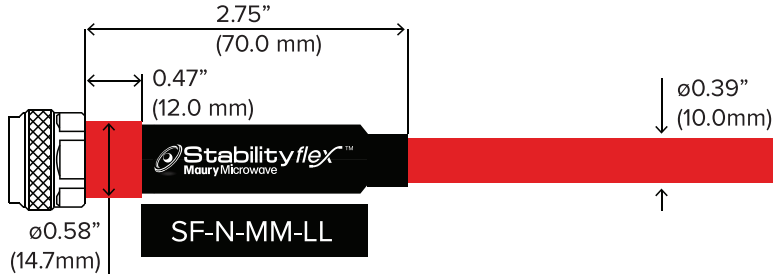
Freq (GHz)	SF-SMA & SF-SMA-LP (dB/100 ft)	SF-N & SF-N-LP (dB/100 ft)
1	11.73	11.73
2	17.04	17.04
4	25.00	25.00
6	31.47	31.47
8	37.16	37.16
12	47.21	47.21
18	60.37	60.37
26.5	76.85	N/A

Average Power Handling

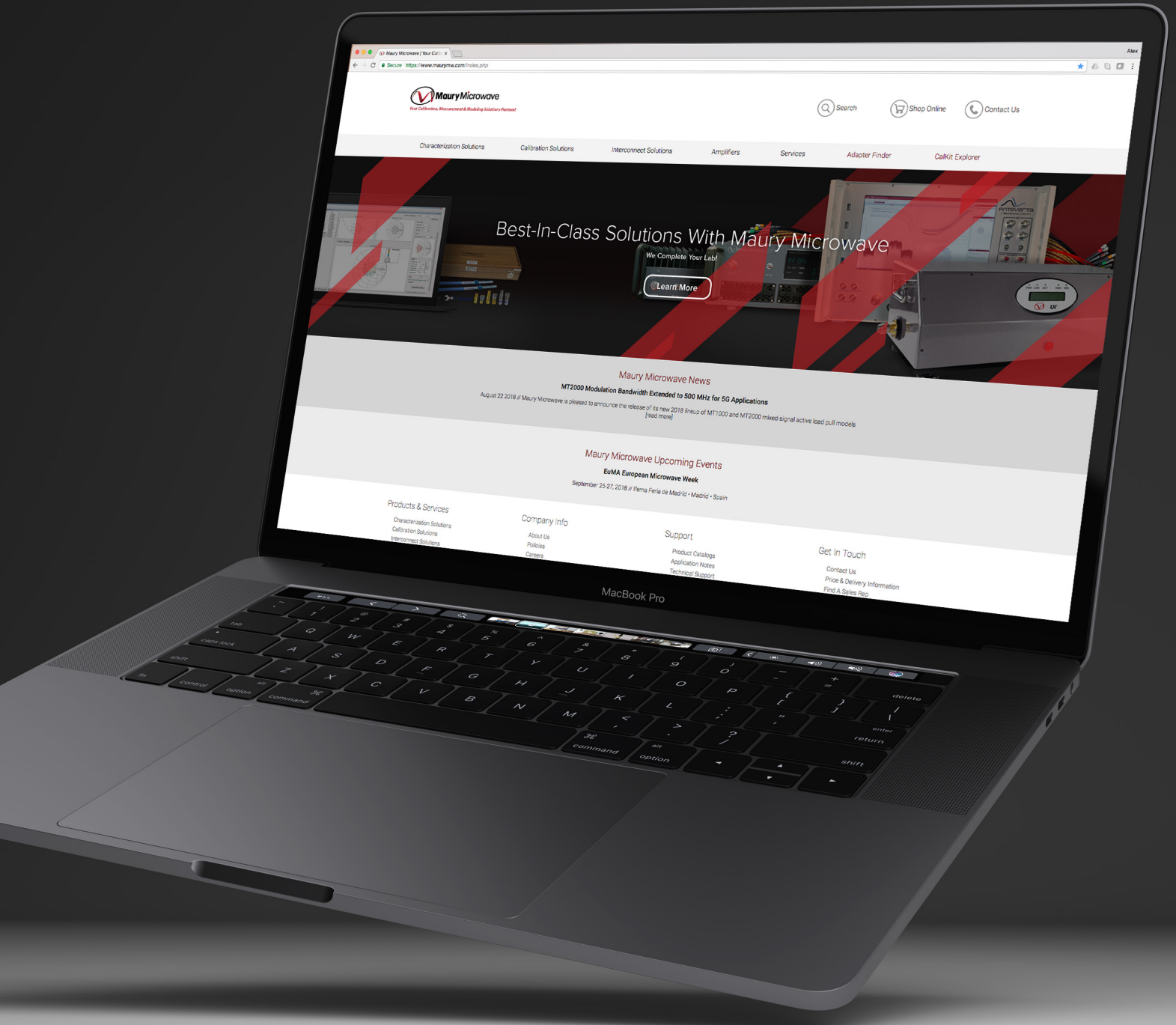
(1:1 VSWR, 25 C, Sea Level, Cable Only)

Freq (GHz)	SF-SMA & SF-SMA-LP Watts (Max)"	SF-N & SF-N-LP Watts (Max)
1	149	149
2	102	102
4	70	70
6	55	55
8	47	47
12	37	37
18	29	29
26.5	23	N/A

StabilityFlex™
Dimensions



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