

Flexible Test Cable

FLC SMSM+ Series

50Ω DC to 26 GHz



CASE STYLE: MU1838

The Big Deal

- Ultra-wideband, DC to 26 GHz
- Minimal performance change versus flexure
- Low loss

Product Overview

Mini-Circuits FLC-SMSM+ series flexible test cables provide ultra-wideband performance from DC to 26 GHz with low insertion loss and excellent VSWR. Specially designed for outstanding stability of phase and insertion loss versus flexure, these cables are ideal for demanding lab environments where crowded layouts and frequent bending are common. They feature SMA-M to SMA-M stainless steel connectors and rugged cable construction with protective shield and strain relief for excellent durability. Available from stock in a variety of lengths to support a range of requirements.

Key Features

Feature	Advantages
Ultra-wideband, DC to 26 GHz	Supports a wide range of test applications including R&D, military and defense, production test and more.
Excellent stability of phase and insertion loss versus flexure	FLC-series test cables have been tested in bend radii as tight as 2.4 inches to qualify minimal change in insertion loss, insertion phase, and VSWR, providing reliable performance in a wide range of configurations.
Low insertion loss	Allows accurate measurement with minimal compensation for the effects of the cable connection.
Performance qualified to 20,000 flexures	Like all Mini-Circuits test cables, FLC-series models have been performance qualified up to 20,000 bend cycles, ensuring outstanding durability and extra long life.

Flexible Test Cable

FLC-3FT-SMSM+

50Ω 3FT DC to 26 GHz



CASE STYLE: MU1838-3

Connectors	Model
SMA Male	FLC-3FT-SMSM+

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Maximum Ratings

Operating Temperature	-55°C to +85°C
Storage Temperature	-55°C to +85°C
Power Handling at 25°C Sea Level	315W at 2 GHz
	94W at 18 GHz
	56W at 26 GHz

Permanent damage may occur if any of these limits are exceeded.

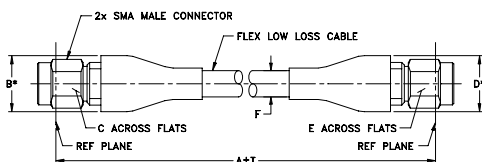
Features

- Low insertion loss, 2.3 dB at 26 GHz
- Rugged construction includes protective shield and strain relief for longer life
- Stainless steel connectors for long mating-cycle life
- Extra flexible

Applications

- Military and defense applications
- Research & development labs

Outline Drawing

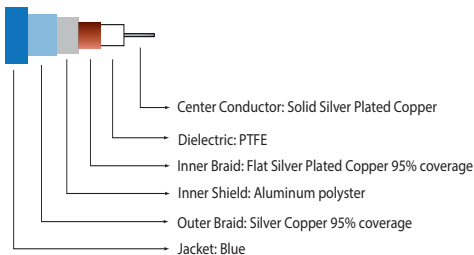


• OVERALL CONNECTOR DIMENSION

Outline Dimensions (inch/mm)

A	B	C	D	E	F	T	wt	
Feet	Meters					Inch	mm	grams
3.00	0.91	10.70	7.93	10.70	7.93	4.95	+72/-0	+18.3/-0

Cable Construction



Product Guarantee

Mini-Circuits® will repair or replace your test cable at its option if the connector attachment fails within six months of shipment. This guarantee excludes cable or connector interface damage from misuse or abuse.

Electrical Specifications at 25°C

Parameter	Condition (GHz)	Min.	Typ.	Max.	Units
Frequency Range		DC		26	GHz
Length ¹			3		ft
Insertion Loss	DC - 6	—	1.08	3.0	dB
	6 - 18	—	2.01	3.0	
	18 - 26	—	2.50	3.0	
VSWR	DC - 6	—	1.09	1.35	:1
	6 - 18	—	1.25	1.35	
	18 - 26	—	1.33	1.38	

1. Custom sizes available, consult factory.

Performance Change vs. Flexure (Typical)²

Parameter	Condition (GHz)	Bend Radius (inches)			Units
		10.0	3.25	2.40	
Insertion Loss ³	DC - 6	0.00	0.01	0.01	dB
	6 - 18	0.01	0.02	0.03	
	18 - 26	0.01	0.04	0.05	
Insertion Phase ³	DC - 6	0.03	0.09	0.49	Deg
	6 - 18	0.03	0.31	1.7	
	18 - 26	0.07	1.6	2.9	
VSWR ³	DC - 6	0.00	0.01	0.01	:1
	6 - 18	0.01	0.02	0.02	
	18 - 26	0.01	0.08	0.11	

2. Performance change versus flexure with a 3 ft cable 360° around a 4" diameter mandrel.

3. Absolute values normalized to the reference position 0. See AN-46-003 under Associated Application Notes

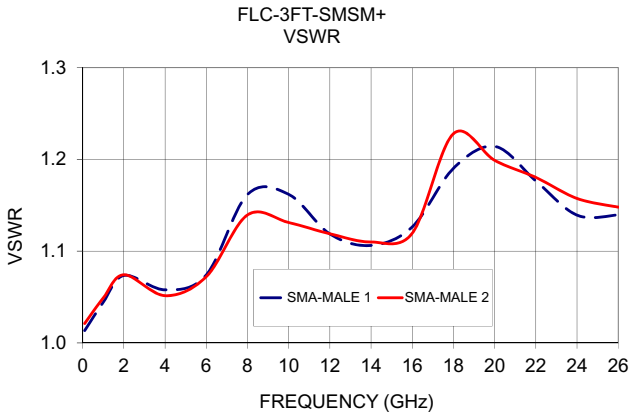
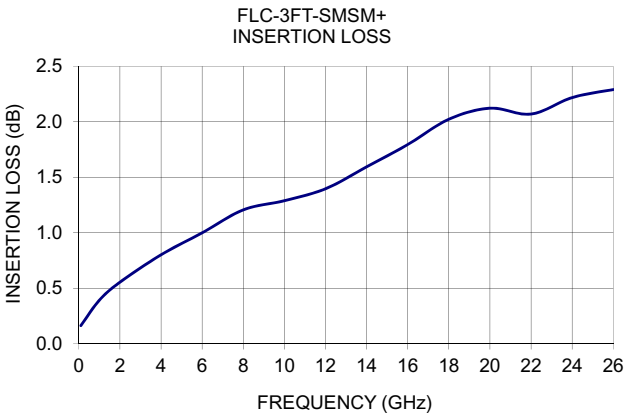


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FLC-3FT-SMSM+
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Typical Performance Data

Frequency (GHz)	Insertion Loss (dB)	VSWR (:1)	
		SMA MALE 1	SMA MALE 2
0.1	0.16	1.01	1.02
1.0	0.39	1.04	1.05
2.0	0.56	1.07	1.07
4.0	0.80	1.06	1.05
6.0	1.00	1.07	1.07
8.0	1.21	1.16	1.14
10.0	1.29	1.16	1.13
12.0	1.40	1.12	1.12
14.0	1.59	1.11	1.11
16.0	1.80	1.13	1.12
18.0	2.02	1.19	1.23
20.0	2.12	1.21	1.20
22.0	2.07	1.18	1.18
24.0	2.22	1.14	1.16
26.0	2.29	1.14	1.15



Additional Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

Test Cable, SMA-Male/SMA-Male

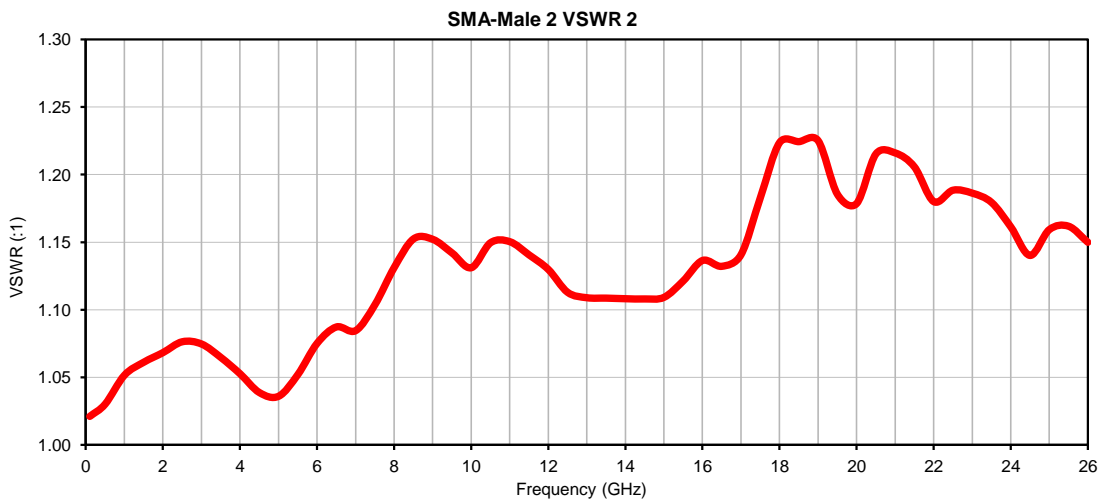
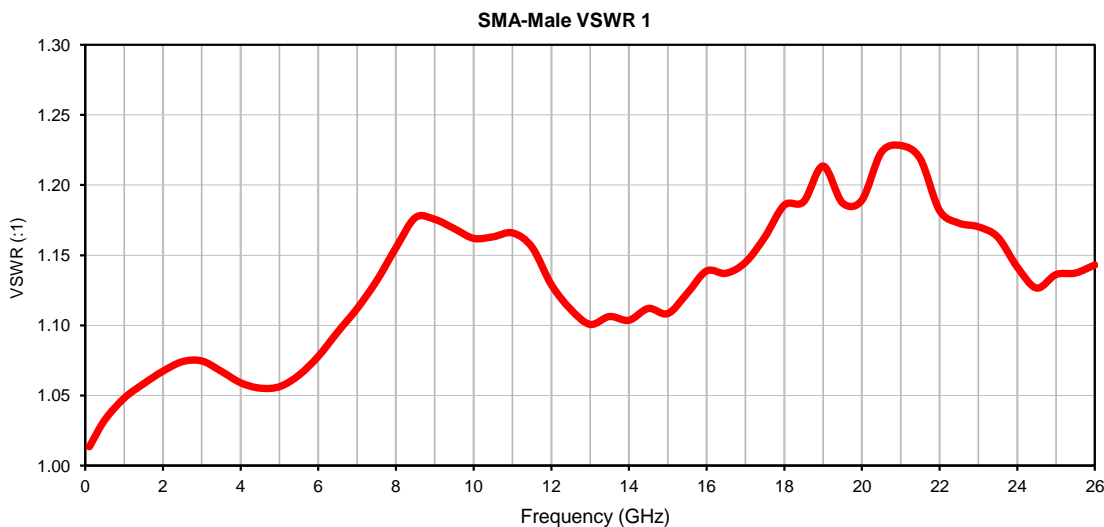
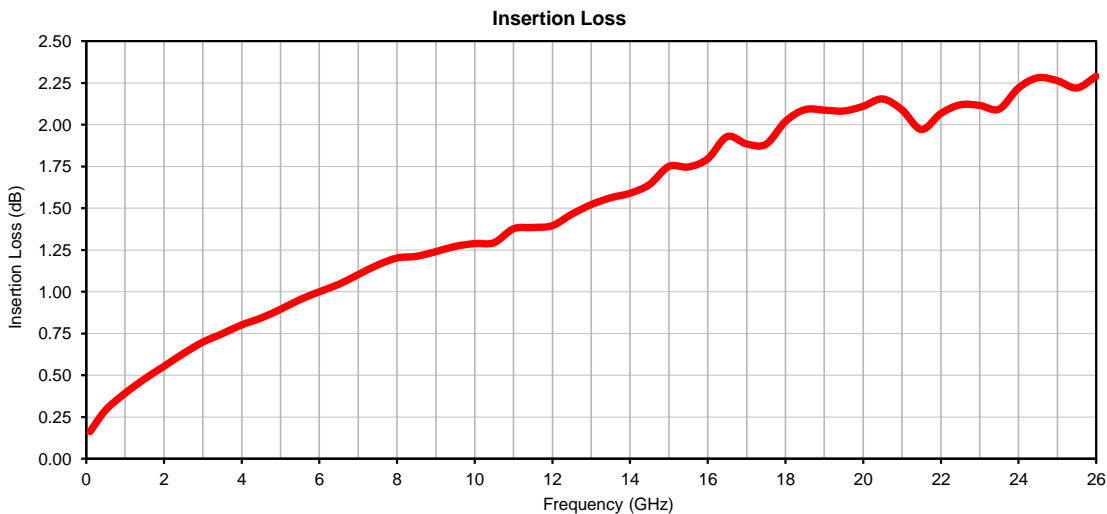
FLC-3FT-SMSM+

Typical Performance Data

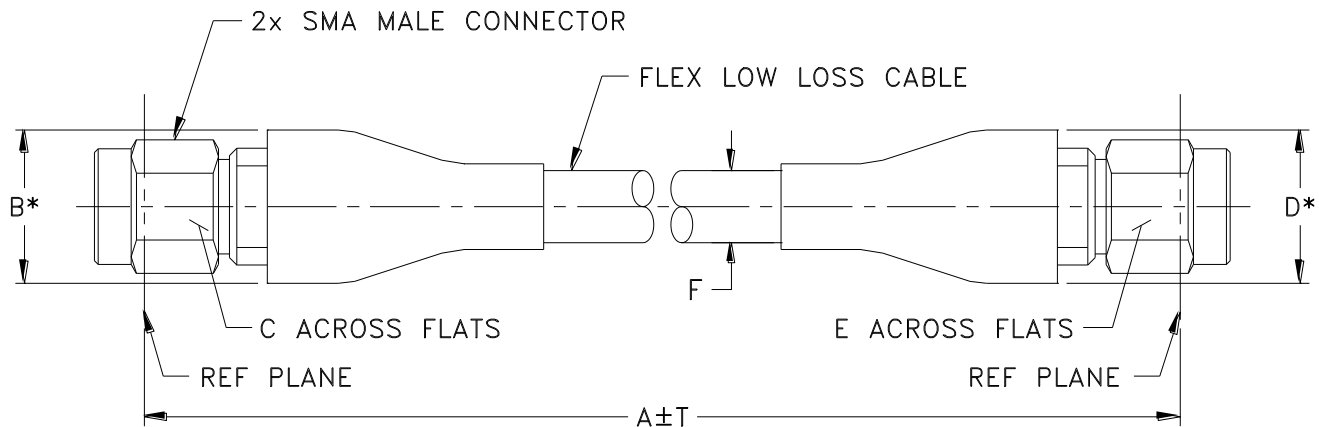
FREQUENCY (GHz)	INSERTION LOSS (dB)	SMA-MALE 1 VSWR (:1)	SMA-MALE 2 VSWR (:1)
0.1	0.16	1.01	1.02
0.5	0.29	1.03	1.03
1.0	0.39	1.05	1.05
1.5	0.48	1.06	1.06
2.0	0.55	1.07	1.07
2.5	0.63	1.07	1.08
3.0	0.70	1.07	1.07
3.5	0.75	1.07	1.06
4.0	0.80	1.06	1.05
4.5	0.84	1.06	1.04
5.0	0.89	1.06	1.04
5.5	0.95	1.06	1.05
6.0	1.00	1.08	1.08
6.5	1.04	1.10	1.09
7.0	1.10	1.11	1.08
7.5	1.16	1.13	1.10
8.0	1.20	1.16	1.13
8.5	1.21	1.18	1.15
9.0	1.24	1.18	1.15
9.5	1.27	1.17	1.14
10.0	1.29	1.16	1.13
10.5	1.29	1.16	1.15
11.0	1.38	1.17	1.15
11.5	1.38	1.16	1.14
12.0	1.40	1.13	1.13
12.5	1.46	1.11	1.11
13.0	1.52	1.10	1.11
13.5	1.56	1.11	1.11
14.0	1.59	1.10	1.11
14.5	1.64	1.11	1.11
15.0	1.75	1.11	1.11
15.5	1.75	1.12	1.12
16.0	1.80	1.14	1.14
16.5	1.93	1.14	1.13
17.0	1.89	1.14	1.14
17.5	1.88	1.16	1.18
18.0	2.02	1.19	1.22
18.5	2.09	1.19	1.22
19.0	2.09	1.21	1.23
19.5	2.08	1.19	1.19
20.0	2.11	1.19	1.18
20.5	2.15	1.22	1.22
21.0	2.09	1.23	1.22
21.5	1.97	1.22	1.21
22.0	2.07	1.18	1.18
22.5	2.12	1.17	1.19
23.0	2.12	1.17	1.19
23.5	2.09	1.16	1.18
24.0	2.22	1.14	1.16
24.5	2.28	1.13	1.14
25.0	2.26	1.14	1.16
25.5	2.22	1.14	1.16
26.0	2.29	1.14	1.15



Typical Performance Curves



Outline Dimensions



* OVERALL CONNECTOR DIMENSION
(CONNECTOR SHAPE MAY VARY)

MU1838 SERIES
SMA MALE (CONN-1)
SMA MALE (CONN-2)

CASE STYLE #	A		B	C	D	E	F	T		WEIGHT GRAMS
	FEET	METERS						INCH	MM	
MU1838-1	1.00	0.30	.42 (10.70)	.312 (7.93)	.42 (10.70)	.312 (7.93)	.194 (4.95)	+.50/-0	+12.7/-0	41
MU1838-1.5	1.50	0.46						+.50/-0	+12.7/-0	47
MU1838-2	2.00	0.61						+.50/-0	+12.7/-0	56
MU1838-3	3.00	0.91						+.72/-0	+18.3/-0	72
MU1838-3.28	3.28	1.00						+.79/-0	+20.0/-0	77
MU1838-4	4.00	1.22						+.96/-0	+24.4/-0	89
MU1838-6	6.00	1.83						+1.44/-0	+36.6/-0	123
MU1838-6.56	6.56	2.00						+1.57/-0	+40.0/-0	132

Unless otherwise specified dimensions are in inches (mm).

Tolerances: 2Pl. ± .03; 3Pl. ± .015

Note:

1. Flexible Low Loss Cable.



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 85° C Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 100° C, 100 cycles	MIL-STD-202, Method 107, Condition A-3
Mechanical Flexing	20,000 cycles During each cycle, cable flexed from 90° through 0° to -90° and back with a Radii of 3 inches	- - -