FLEXIBLE

Test Cable

FLC-2M-SMNM+

50Ω 2M DC to 18 GHz SMA-Male to N-Male

FLEX TEST™

THE BIG DEAL

- Low insertion loss, 4.25 dB at 18 GHz
- Rugged construction includes protective shield and strain relief for longer life
- Stainless steel connectors for long mating-cycle life
- Extra flexible

Generic photo used for illustration purposes only

Model No.	FLC-2M-SMNM+
Case Style	MU2339-6.56
Connectors	SMA-Male to N-Male

APPLICATIONS

- Military and Defense Systems
- Research & Development labs

+RoHS Compliant
The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

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.

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 N-Male 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.

REV. A
ECO-019810
FLC-2M-SMNM+
MCL NY
231024

FLEXIBLE

Test Cable

FLC-2M-SMNM+

50Ω 2M DC to 18 GHz SMA-Male to N-Male

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Units
Frequency Range		DC		18	GHz
Length[1]			2		M
Insertion Loss	DC - 6	—	1.43	2.6	dB
	6 - 16	—	2.62	4.6	
	16 - 18	—	4.03	5.0	
VSWR	DC - 6	—	1.05	1.38	:1
	6 - 16	—	1.04	1.38	
	16 - 18	—	1.05	1.38	

1. Custom sizes available, consult factory.

PERFORMANCE CHANGE VS. FLEXURE (TYPICAL)[2]

Parameter	Frequency (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

ABSOLUTE MAXIMUM RATINGS

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

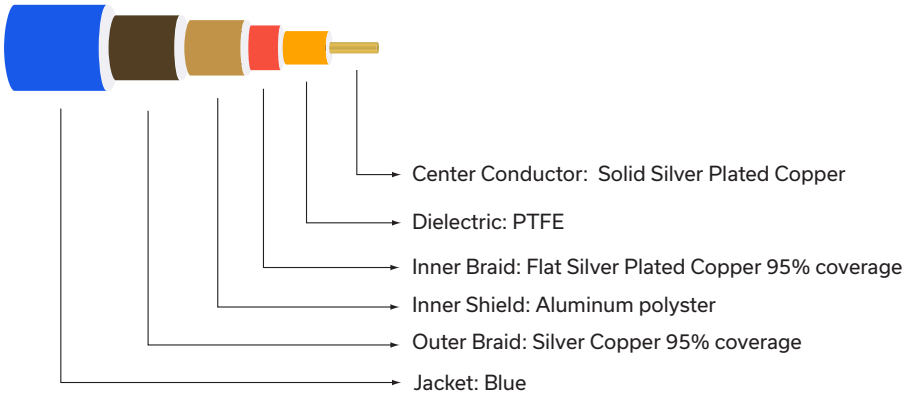
FLEXIBLE

Test Cable

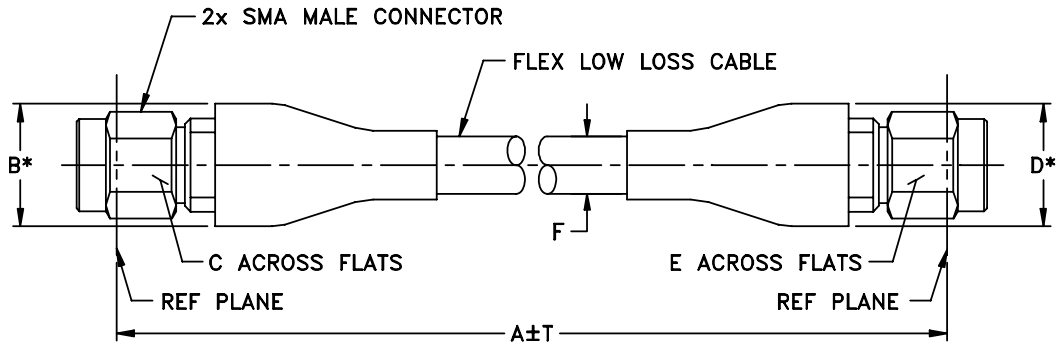
FLC-2M-SMNM+

50Ω 2M DC to 18 GHz SMA-Male to N-Male

CABLE CONSTRUCTION



OUTLINE DRAWING



* OVERALL CONNECTOR DIMENSION

OUTLINE DIMENSIONS (Inch / mm)

A		B	C	D	E	F	T		wt
Feet	Meters	.42	.312	.84	.75	.194	Inch	mm	grams
6.56	2.00	10.70	7.93	21.30	19.00	4.95	+1.57/-0	+40.0/-0	156

FLEXIBLE

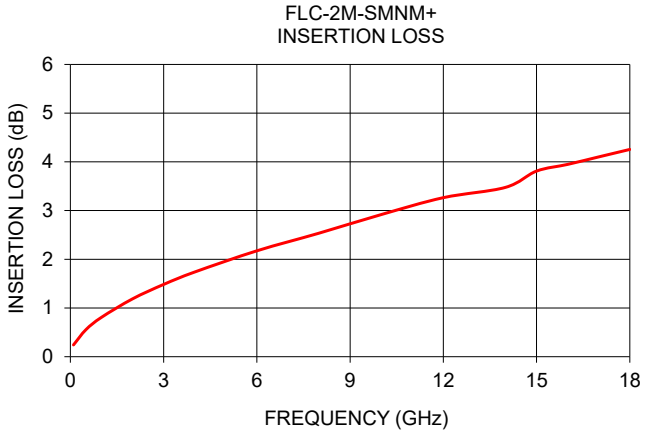
Test Cable

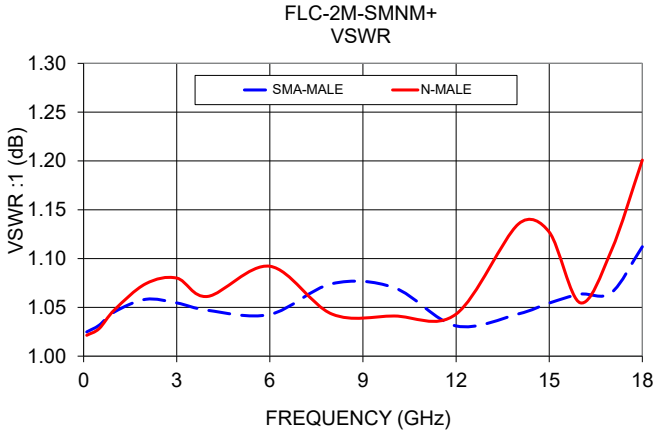
FLC-2M-SMNM+

50Ω 2M DC to 18 GHz SMA-Male to N-Male

TYPICAL PERFORMANCE DATA AND CHARTS

Frequency (GHz)	Insertion Loss (dB)	VSWR (:1)	
		SMA-Male	N-Male
0.1	0.24	1.02	1.02
0.5	0.55	1.03	1.03
1.0	0.81	1.05	1.05
2.0	1.19	1.06	1.07
3.0	1.48	1.05	1.08
4.0	1.74	1.05	1.06
6.0	2.17	1.04	1.09
8.0	2.54	1.07	1.04
10.0	2.92	1.07	1.04
12.0	3.26	1.03	1.04
14.0	3.48	1.04	1.14
15.0	3.81	1.05	1.13
16.0	3.95	1.06	1.05
17.0	4.10	1.06	1.11
18.0	4.25	1.11	1.20





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/terms/viewterm.html

Test Cable, SMA-Male/N-Male FLC-2M-SMNM+

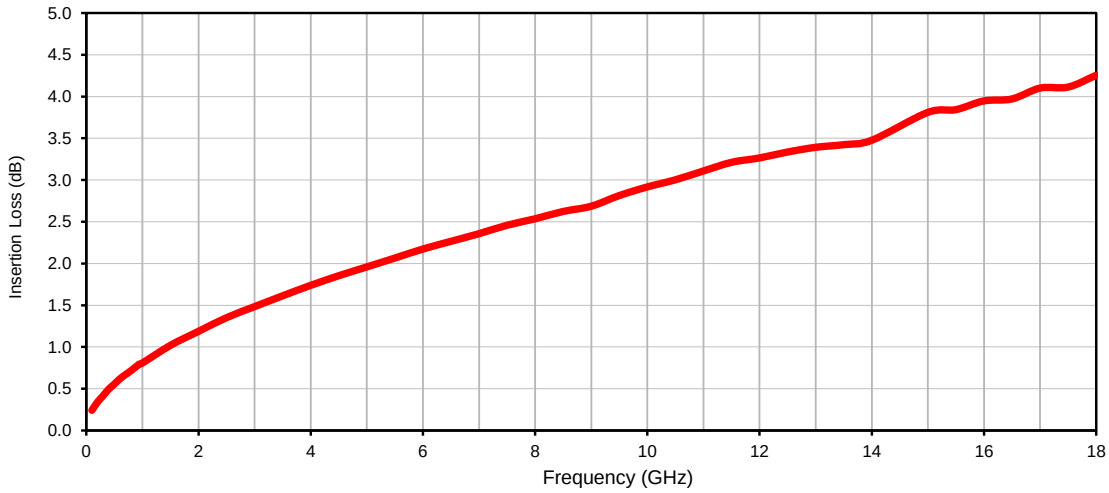
Typical Performance Data

FREQUENCY (GHz)	INSERTION LOSS (dB)	SMA-MALE VSWR (:1)	N-MALE VSWR (:1)
0.1	0.24	1.02	1.02
0.2	0.34	1.03	1.03
0.3	0.42	1.03	1.03
0.4	0.50	1.03	1.03
0.5	0.55	1.03	1.03
0.6	0.62	1.03	1.03
0.7	0.67	1.03	1.03
0.8	0.72	1.04	1.04
0.9	0.77	1.04	1.04
1.0	0.80	1.04	1.05
1.0	0.81	1.05	1.05
1.5	1.02	1.05	1.06
2.0	1.19	1.06	1.07
2.5	1.35	1.06	1.08
3.0	1.48	1.05	1.08
3.5	1.61	1.05	1.07
4.0	1.74	1.05	1.06
4.5	1.85	1.04	1.07
5.0	1.96	1.04	1.09
5.5	2.07	1.04	1.09
6.0	2.17	1.04	1.09
6.5	2.27	1.04	1.07
7.0	2.36	1.05	1.04
7.5	2.46	1.07	1.04
8.0	2.54	1.07	1.04
8.5	2.62	1.08	1.05
9.0	2.69	1.08	1.05
9.5	2.81	1.07	1.04
10.0	2.92	1.07	1.04
10.5	3.00	1.06	1.05
11.0	3.11	1.05	1.07
11.5	3.21	1.04	1.07
12.0	3.26	1.03	1.04
12.5	3.34	1.03	1.02
13.0	3.39	1.02	1.05
13.5	3.42	1.04	1.09
14.0	3.48	1.04	1.14
15.0	3.81	1.05	1.13
15.5	3.84	1.06	1.06
16.0	3.95	1.06	1.05
16.5	3.97	1.04	1.11
17.0	4.10	1.06	1.11
17.5	4.11	1.06	1.11
18.0	4.25	1.11	1.20

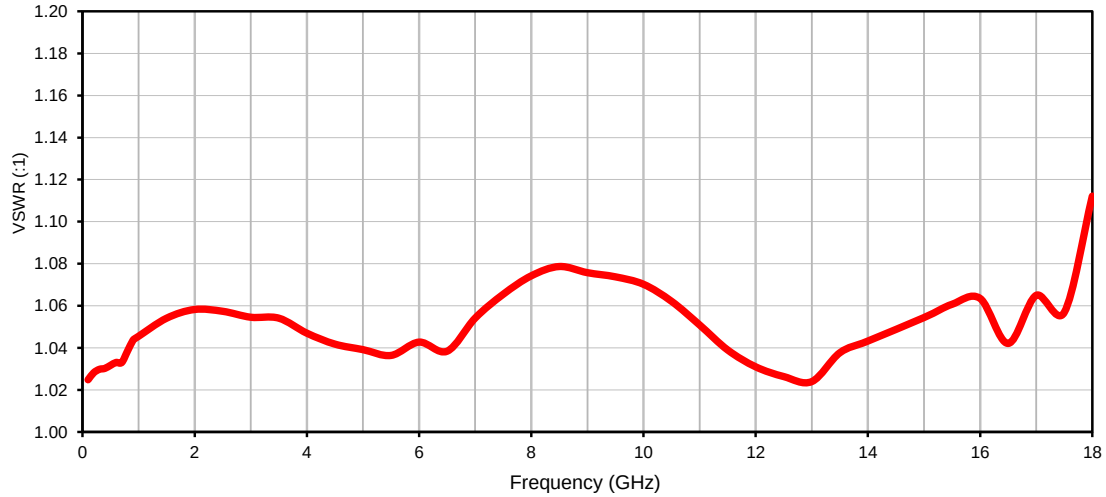
Test Cable, SMA-Male/N-Male FLC-2M-SMNM+

Typical Performance Curves

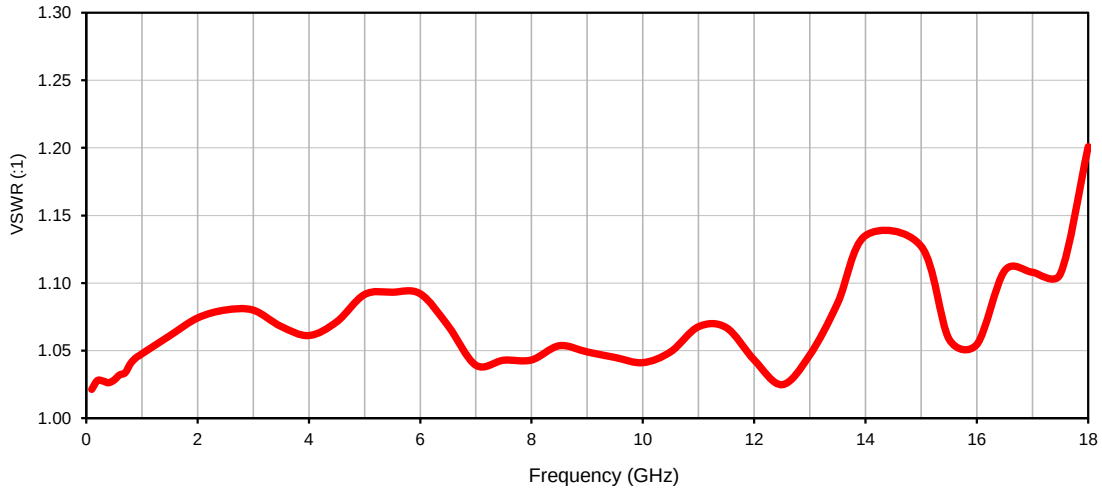
Insertion Loss



SMA-Male VSWR



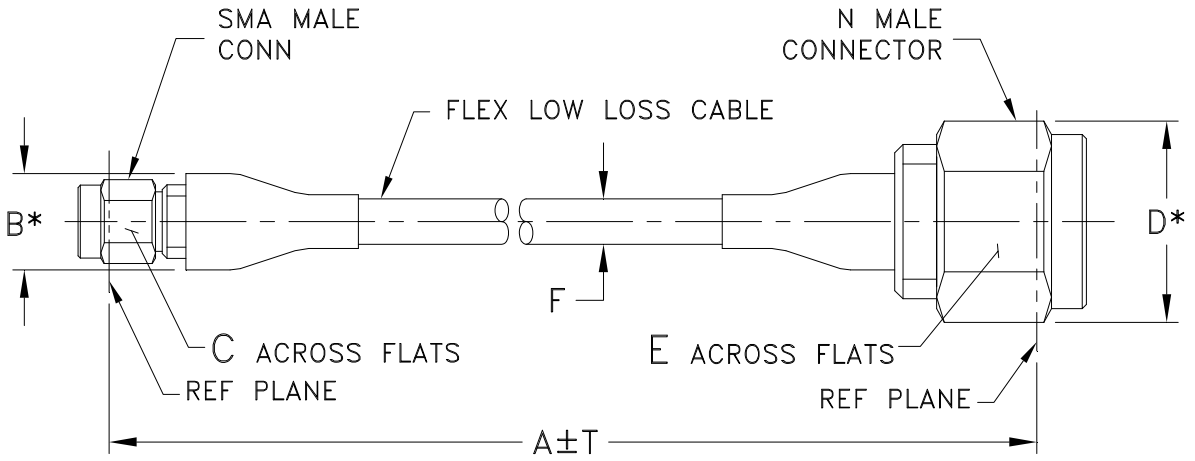
N-Male VSWR



Case Style MU

MU2339

Outline Dimensions



* OVERALL CONNECTOR DIMENSION
(CONNECTOR SHAPE MAY VARY)

MU2339 SERIES
SMA MALE (CONN-1)
N MALE (CONN-2)

CASE STYLE #	A		B	C	D	E	F	T		WEIGHT GRAMS
	FEET	METERS						INCH	MM	
MU2339-6.56	6.56	2.00	.42 (10.70)	.312 (7.93)	.84 (21.3)	.75 (19.0)	.194 (4.95)	+1.57/-0	+40.0/-0	156

Unless otherwise specified dimensions are in inches (mm).
Tolerances: 2Pl. ± .03; 3Pl. ± .015

Note:
1. Flexible Low Loss Cable.

Mini-Circuits®
INTERNET http://www.minicircuits.com
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661
Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010
Mini-Circuits ISO 9001 & ISO 14001 Certified

Mini-Circuits

Environmental Specifications ENV60

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	- - -