HAND FLEX™

Coaxial Cable

141-12SMNB+

50Ω 12 inch DC to 12.5 GHz SMA Male to N-Type Female Bulkhead

THE BIG DEAL

- Bulkhead Female Type-N Connector at One End
- Low Insertion Loss, 0.6 dB Typ. at 12.5 GHz
- Excellent Return Loss, 19.5 dB Typ. to 12.5 GHz
- Hand Formable to Almost Any Custom Shape Without Special Bending Tools
- 8 mm Bend Radius for Tight Installations
- Anti-Torque Nut Prevents Cable Stress During Installation
- Insulated Outer Jacket Standard
- Ideal for Interconnect of Assembled Systems

Generic photo used for illustration purposes only

Model No.	141-10SMNB+
Case Style	KQ1669-12
Connectors	SMA Male to N-Type Female Bulkhead

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

APPLICATIONS

- Replacement for Custom Bent 0.141" Semi-Rigid Cables
- Communication Receivers and Transmitters
- Military and Aerospace Systems
- Environmental and Test Chambers

PRODUCT OVERVIEW

Mini-Circuits' 141 SMNB+ Series Hand-Flex™ coaxial cables are ideal for integrating rack-mounted coaxial components and sub-assemblies in tight spaces and dense system configurations. N-type female bulkhead connector at one end is equipped with a nickle-plated brass flange for secure connections to rack mounted equipment. SMA connector has a passivated stainless steel coupling nut over a gold-plated stainless steel connector body. The outer shield is tin-soaked copper braid, which minimizes signal leakage with high flexibility for easy bending, and dielectric is low loss PTFE. 141 SMNB+ Series Hand-Flex coaxial cables are available in various lengths for different system requirements.

KEY FEATURES

Features	Advantages
Single N-Type Female Bulkhead Connector	Eliminates need for a bulkhead adapter and connects directly to the front panel of rack-mounted equipment, improving reliability and reducing system cost.
Hand Formable	141 SMNB+ Series Hand-Flex cables avoid the need for cable-bending tools, alleviating the risk of damage during bending processes typical of semi-rigid cable assemblies.
8 mm Bend Radius	Ideal for making connections in tight spaces and dense system assemblies.
Excellent Return Loss	Supporting excellent return loss to 12.5 GHz or better makes 141 SMNB+ Series cables ideal for connecting a wide variety of RF components while minimizing VSWR ripple contribution due to mating cables & connectors.
High Power Handling Capability at +25 °C: • 546 W at 0.5 GHz • 110 W at 12.5 GHz	141 SMNB+ coaxial cables can support medium to high RF power levels and can be used in the transmit path. (Power rating at sea level.)
Built-In Anti-Torque Nut	Anti-torque feature supports the SMA connector body during installation, preventing stress to the connector/ cable interface. Connector interface meets MIL-STD-348.

ELECTRICAL SPECIFICATIONS AT +25 °C

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Units
Frequency Range		DC		12.5	GHz
Length[1]			12		inches
Insertion Loss	DC–2	—	0.19	0.40	dB
	2–6	—	0.36	0.70	
	6–10	—	0.47	0.95	
	10–12.5	—	0.58	1.50	
Return Loss	DC–2	22.0	30.9	—	dB
	2–6	17.0	22.0	—	
	6–10	17.0	20.1	—	
	10–12.5	17.0	19.5	—	

1. Custom sizes available, consult factory.

ABSOLUTE MAXIMUM RATINGS[2]

Parameter	Ratings
Operating Temperature	-55 °C to +105 °C
Storage Temperature	-55 °C to +105 °C
Power Handling at +25 °C Sea Level	546 W at 0.5 GHz 387 W at 1 GHz 273 W at 2 GHz 156 W at 6 GHz 121 W at 10 GHz 110 W at 12.5 GHz

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

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50Ω 12 inch DC to 12.5 GHz SMA Male to N-Type Female Bulkhead

CABLE CONSTRUCTION

Center Conductor: Silver Plated Copper Clad Steel

Dielectric: Solid PTFE

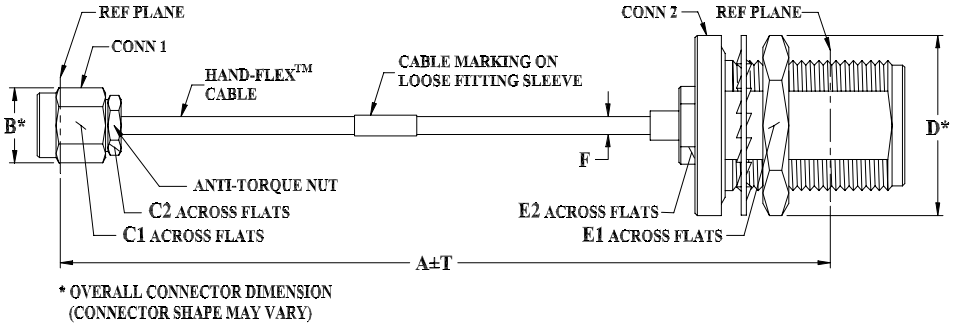
Outer Shield: Copper Braid, Tin Soaked

Jacket: FEP, Blue (Unjacketed cable also available upon request)

SMA-Male Connector:
Washer Nut: Stainless Steel
Passivated Body: Stainless Steel
Gold Plated Center Pin: Silver Plated Copper Clad Steel

N-Female Connector:
Washer, Nut & Body: Brass Nickel Plated.
Center Pin: BecuB, Gold Plated

OUTLINE DRAWING

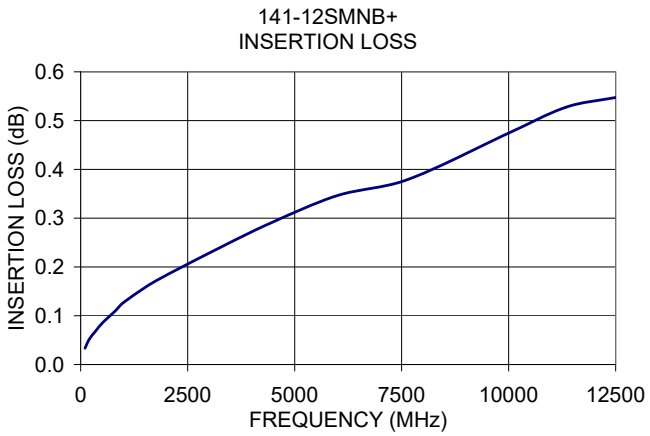


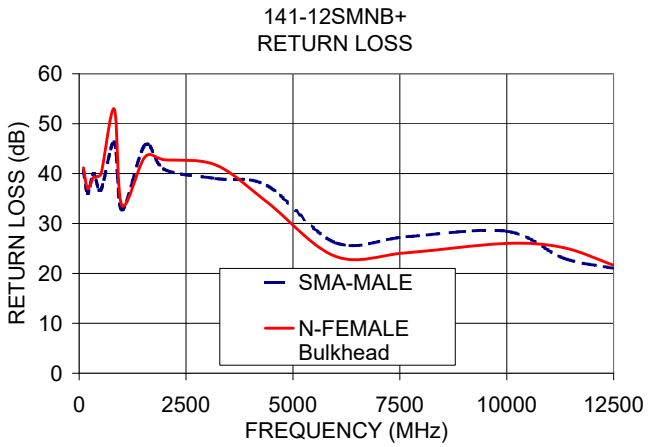
OUTLINE DIMENSIONS (Inch / mm)

A	B	C1	C2	D	E1	E2	F	T	wt
12.0	.36	.313	.250	.87	.750	.531	.163±.004	.10	grams
304.80	9.14	7.95	6.35	22.10	19.05	13.49	4.14±0.10	2.54	55.02

TYPICAL PERFORMANCE DATA AND CHARTS

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)	
		SMA Male	N-Type Female Bulkhead
100	0.03	40.6	41.2
200	0.05	36.0	37.0
340	0.07	40.0	39.3
510	0.09	36.8	39.9
820	0.11	46.3	53.0
1000	0.13	32.7	33.6
1540	0.16	45.7	43.4
2000	0.18	40.8	42.8
3200	0.24	39.0	41.7
4400	0.29	37.6	34.2
6000	0.35	26.1	23.4
7670	0.38	27.4	24.1
10000	0.47	28.4	26.0
11340	0.53	23.0	25.1
12500	0.55	21.0	21.6



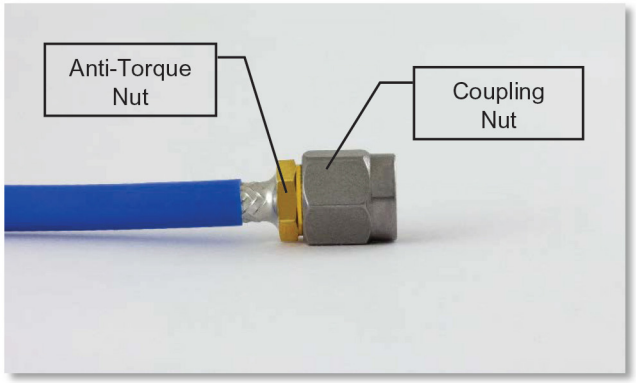


PROPER CABLE CONNECTION USING ANTI-TORQUE NUT

Mini-Circuits' 141 Series Hand-Flex interconnect cables are constructed with an anti-torque nut adjacent to the connector's coupling nut. When used properly, this feature prevents possible damage to the cable due to torquing and twisting when the connector is being tightened.

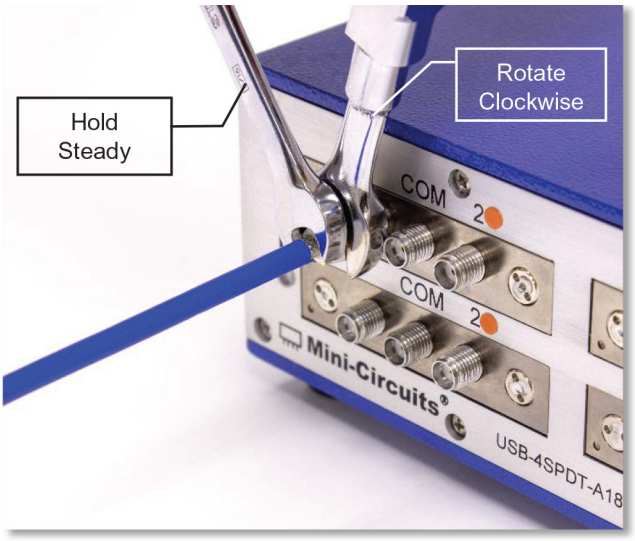
TO PROPERLY TIGHTEN THE CABLE CONNECTOR:

1) The cable connector includes a coupling nut which rotates to fasten the connector, and an anti-torque nut, which is fixed to prevent the cable from twisting during connection.



2) To properly tighten the cable, use a standard 1/4 inch open end wrench to brace the anti-torque nut.

3) Using a 5/16-inch open end wrench, rotate the coupling nut clockwise to tighten the cable connector.



*NOTE: Mini-Circuits recommends using a 5/16-inch open end wrench calibrated to 8 inch-pounds maximum torque to prevent damage due to over-torqueing the connector.

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-Circuits' 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

Hand-Flex Coaxial Cable

141-12SMNB+

SMA-M/N-F Bulkhead

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	SMA-MALE RETURN LOSS (dB)	N-FEMALE BULKHEAD RETURN LOSS (dB)
100.0	0.04	41.6	42.0
160.0	0.05	38.3	38.9
200.0	0.05	37.4	38.0
250.0	0.06	37.3	37.7
290.0	0.06	38.4	38.4
340.0	0.07	41.9	41.1
380.0	0.07	48.1	45.2
420.0	0.08	51.7	54.5
470.0	0.08	42.0	45.6
510.0	0.09	38.0	40.2
560.0	0.09	35.7	36.9
600.0	0.10	35.0	35.8
640.0	0.10	35.1	35.4
690.0	0.11	36.4	36.2
730.0	0.11	38.8	38.0
780.0	0.11	44.3	42.8
820.0	0.11	47.1	55.0
860.0	0.12	41.6	48.1
910.0	0.12	37.0	39.4
950.0	0.12	35.1	36.6
1000.0	0.13	34.2	35.1
1020.0	0.13	34.3	34.9
1080.0	0.13	35.9	35.9
1150.0	0.14	42.4	41.3
1280.0	0.15	37.6	39.4
1340.0	0.15	34.3	35.2
1410.0	0.15	33.8	34.2
1470.0	0.16	35.8	35.6
1540.0	0.16	43.6	42.2
1600.0	0.17	46.4	51.4
1670.0	0.17	36.0	37.0
1730.0	0.17	33.2	33.6
1800.0	0.18	32.7	32.8
1860.0	0.18	34.8	34.5
1930.0	0.18	42.5	40.8
2000.0	0.19	44.8	46.5
2020.0	0.19	40.9	42.2
2280.0	0.20	37.0	36.1
2550.0	0.21	33.8	33.3
2810.0	0.22	40.7	41.4
3080.0	0.24	32.3	32.4
3340.0	0.25	34.1	33.3
3610.0	0.26	40.2	44.3
3870.0	0.27	29.7	30.1
4140.0	0.28	30.8	30.2
4670.0	0.30	29.5	29.8
4930.0	0.31	27.2	26.7
5200.0	0.31	35.2	31.1
5460.0	0.32	31.9	30.4
5730.0	0.34	26.5	25.7
6000.0	0.35	27.3	25.0
6680.0	0.36	31.3	26.0
7010.0	0.37	35.1	27.4
7670.0	0.38	28.8	25.2
8010.0	0.39	26.4	23.6
8670.0	0.39	28.3	24.3
9000.0	0.38	28.4	23.7
9660.0	0.38	28.6	24.8
10000.0	0.41	29.2	26.6
11340.0	0.51	27.4	31.6
12000.0	0.54	24.1	24.9
12660.0	0.57	23.1	21.5

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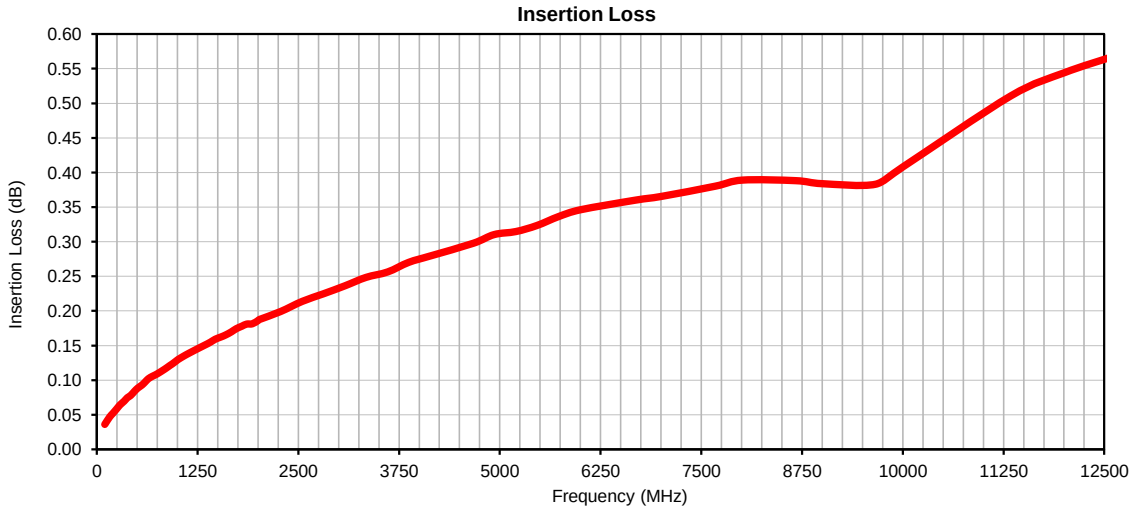
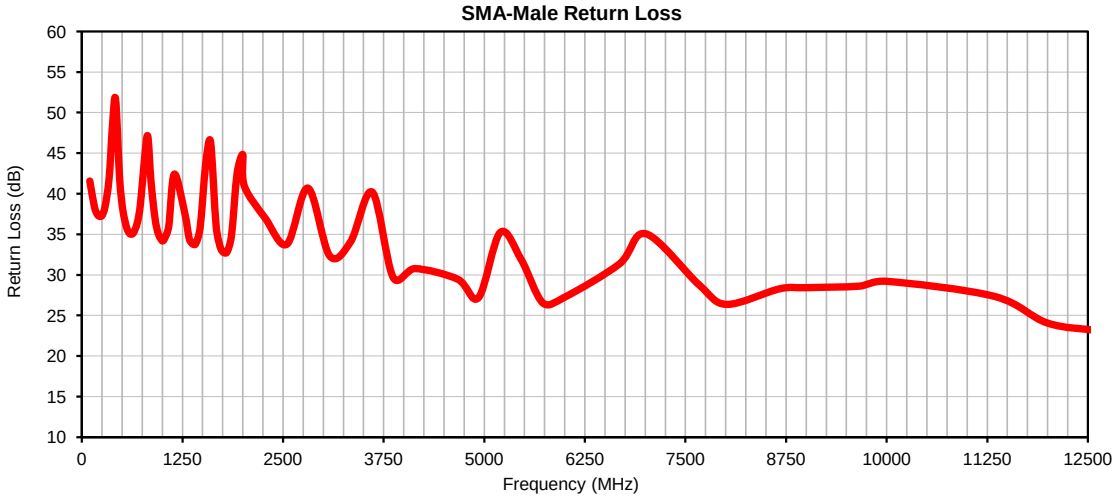
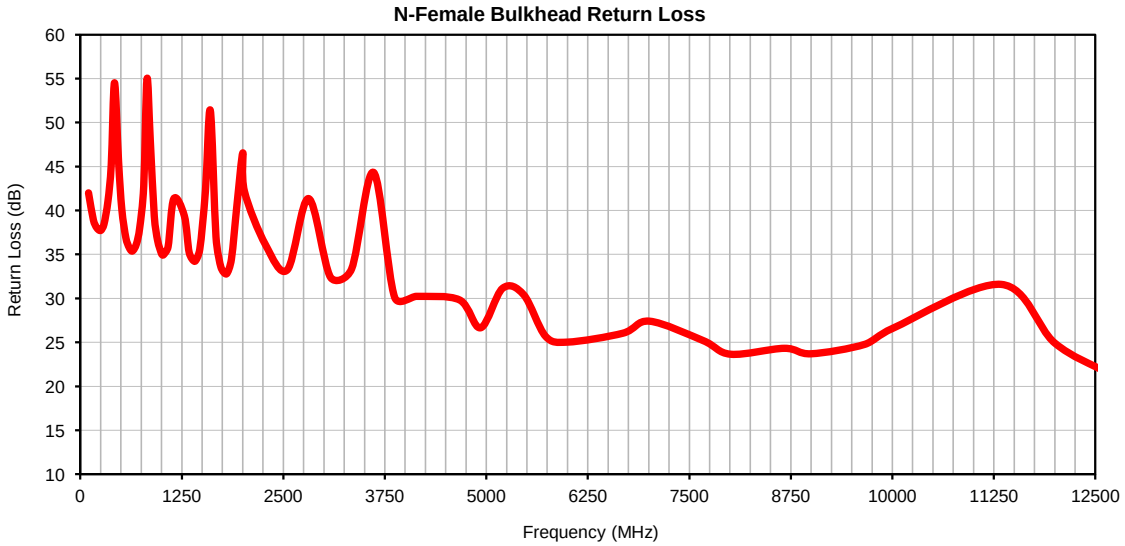
SMA-M/N-F Bulkhead

Typical Performance Curves



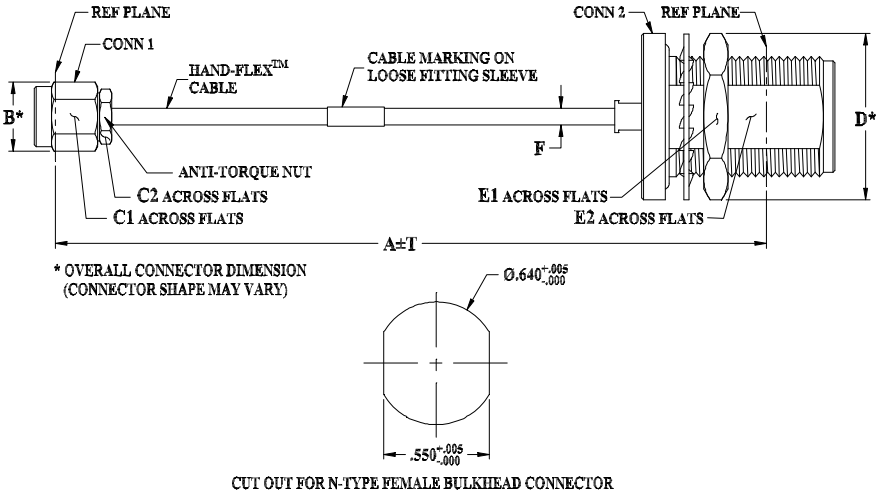




Case Style KQ

KQ1669

Outline Dimensions



KQ1669 SERIES
SMA MALE (CONN-1)
N FEMALE BULKHEAD (CONN-2)

CASE STYLE #	A		B	C1	C2	D	E1	E2	F		T		WEIGHT GRAMS
	INCH	MM							141U-ASMNB+	141-ASMNB+	INCH	MM	
KQ1669-3	3.00	76.20	.36 (9.14)	.313 (7.95)	.250 (6.35)	.87 (22.10)	.750 (19.05)	.531 (13.49)	.141±.003 (3.58±0.07)	.163±.004 (4.14±0.10)	.05	1.27	44.73
KQ1669-4	4.00	101.60									.05	1.27	45.87
KQ1669-5	5.00	127.00									.05	1.27	47.02
KQ1669-6	6.00	152.40									.05	1.27	48.16
KQ1669-7	7.00	177.80									.10	2.54	49.30
KQ1669-8	8.00	203.20									.10	2.54	50.44
KQ1669-9	9.00	228.60									.10	2.54	51.59
KQ1669-10	10.00	254.00									.10	2.54	52.73
KQ1669-11	11.00	279.40									.10	2.54	53.87
KQ1669-12	12.00	304.80									.10	2.54	55.02
KQ1669-14	14.00	355.60									.15	3.81	57.30
KQ1669-16	16.00	406.40									.15	3.81	59.59
KQ1669-18	18.00	457.20									.15	3.81	61.87
KQ1669-20	20.00	508.00									.15	3.81	64.16
KQ1669-24	24.00	609.60									.15	3.81	68.73
KQ1669-30	30.00	762.00									.20	5.08	75.59
KQ1669-36	36.00	914.40									.20	5.08	82.45

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

Note:

1. 141 Hand-Flex™ Coaxial Cable.
2. "A" represents length of cable.

Mini-Circuits®
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Mini-Circuits

Environmental Specifications ENV73

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 105°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 105°C Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 100°C, 50 Cycles	MIL-STD-202F; Method 107G
Multiple Bend Radius	40 mm, 5 times for 141 series cables 30 mm, 5 times for 086 series cables	
Single Bend Radius	8 mm for 141 series cables 6 mm for 086 series cables	

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