FLEX TEST™

Instrumentation Test Cable VNAX-2FT-KMVRF+

50Ω 2 FT DC to 40 GHz Low Loss

CASE STYLE: RH2514-2

The Big Deal

- Ultra-wideband operation, DC to 40 GHz
- 2.4mm Rugged Female connector for direct interface with 40 GHz VNA ports
- Low insertion loss and excellent return loss
- Rugged construction, crush and torque resistant

Product Overview

Mini-Circuits' VNAX-2FT-KMVRF+ is an ultra-wideband precision instrumentation cable specially designed for use with 40 GHz VNA equipment in test environments. The cable provides excellent VSWR and very low insertion loss over its entire frequency range. 2.4mm rugged female to 2.92mm male connector configuration provides direct connection from the ports of a 40 GHz VNA to 2.92mm connectorized devices without the need for adapters. The cable features a rugged crush and torque resistant outer sheath that protects the cable from damage in demanding lab settings.

Key Features

Feature	Advantages
DC-40 GHz operation designed for use with Vector Network Analyzers (VNA)	Covers a wide range of test applications; rugged 2.4mm connector interfaces directly with VNA without the need for an adapter for improved VSWR performance and lower cost.
Rugged cable-connector interface	Chrome plated metal back shell maintains integrity of the cable-connector interface improving the reliability and extending life of use.
Extra rugged yet flexible armored cable construction.	100% coverage, non-interleaved, stainless steel spiral sheath provides crush resistance and captured, opposing force steel braid provides torque resistance. PET monofilament yarn outer cover eliminates conductivity and allows easy handling.
2 ft. length	Standard VNA cable length makes this model a high performing, cost-effective replacement for expensive OEM cables.

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Instrumentation Test Cable

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CASE STYLE: RH2514-2

Conn1	Conn2	Model
2.92mm Male	2.4mm Rugged Female	VNAX-2FT-KMVRF+

Maximum Ratings

Operating Temperature	+18°C to +28°C	
Storage Temperature	-40°C to +50°C	
Power Handling at 25°C, Sea level	140W	2GHz
	46W	18GHz
	38W	26.5GHz
	30W	40GHz

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

Features

- extremely low insertion loss
- extra rugged construction includes protective shield and strain relief for longer life
- stainless steel 40 GHz connector for long mating-cycle life
- amplitude and phase stability vs flexture

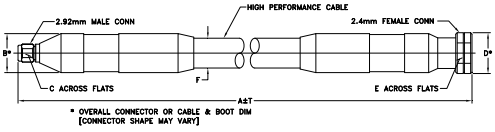
Applications

- military and defense applications
- research & development labs
- precision testing

+RoHS Compliant

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

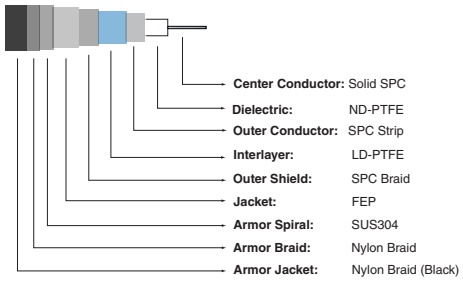
Outline Drawing



Outline Dimensions (inch / mm)

A		B	C	D	E	F	T		wt
Feet	Meters	0.79	.315	0.83	.75	.602	Inch	MM	grams
2.00	0.61	20.07	8.00	21.08	19.05	15.29	+.787/-0	+20/-0	328

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.

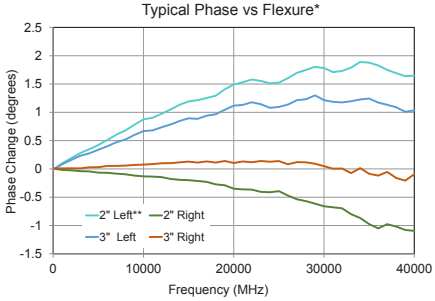
Electrical Specifications at 25°C

Parameter	Condition (GHz)	Min.	Typ.	Max.	Units
Frequency Range		DC		40	GHz
Length			2		FT
Insertion Loss	DC - 6	—	0.8	1.1	dB
	6 - 18	—	1.3	1.7	
	18 - 26.5	—	1.6	2.0	
	26.5 - 40	—	2.0	2.6	
Return Loss	DC - 6	23	28	—	dB
	6 - 18	20	21	—	
	18 - 26.5	17	20	—	
	26.5 - 40	16	19	—	

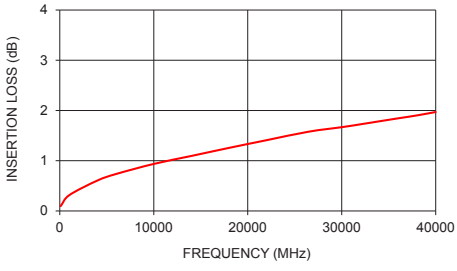
Typical Performance Data

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)	
		2.92 mm Male	2.4 mm Female
100	0.10	41.55	38.08
1000	0.31	35.47	38.02
4000	0.61	29.62	30.33
6000	0.74	31.45	31.36
10000	0.94	28.37	27.94
14000	1.09	37.70	41.91
18000	1.26	31.46	29.97
22000	1.41	23.84	22.34
26500	1.58	24.87	22.43
30000	1.67	41.80	27.44
32000	1.73	29.56	28.46
34000	1.78	40.38	35.34
36000	1.84	31.93	32.44
38000	1.90	35.56	39.19
40000	1.97	27.75	27.57

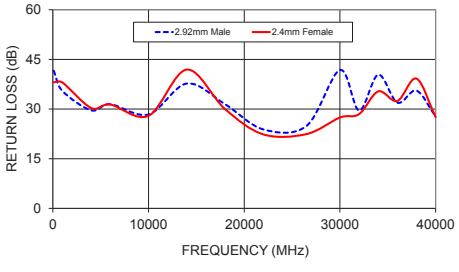
Typical Phase vs Flexure*



VNAX-2FT-KMVRF+
INSERTION LOSS



VNAX-2FT-KMVRF+
RETURN LOSS



* Typical phase change over flexure performed on VNAX-3FT-KMVRF+ by wrapping cable 360° around 2" and 3" radii mandrels referenced to normalized straight position.

** Setup is flipped and measurement is repeated.

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

Flex Test, 2.92mm-Male/2.4mm-Female Ruggedized Instrumentation Test Cable

VNAX-2FT-KMVRF+

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	2.92mm MALE RETURN LOSS (dB)	2.4mm FEMALE Ruggedized RETURN LOSS (dB)
100	0.10	41.55	38.08
1000	0.31	35.47	38.02
2000	0.43	45.36	43.95
4000	0.61	29.62	30.33
6000	0.74	31.45	31.36
8000	0.84	30.83	29.14
10000	0.94	28.37	27.94
12000	1.02	39.24	36.95
14000	1.09	37.70	41.91
15000	1.14	31.72	30.68
15500	1.15	48.23	37.19
16000	1.17	31.85	31.05
16500	1.19	35.27	38.31
17000	1.21	38.84	34.48
17500	1.24	28.52	27.10
18000	1.26	31.46	29.97
18500	1.28	31.05	27.01
19000	1.31	24.99	23.39
19500	1.31	32.14	31.70
20000	1.33	29.78	26.51
20500	1.37	24.19	22.91
21000	1.37	28.18	25.29
21500	1.39	26.40	23.85
22000	1.41	23.84	22.34
22500	1.41	29.34	25.03
23000	1.44	25.69	22.26
23500	1.49	21.89	20.64
24000	1.49	30.22	24.09
24500	1.53	22.80	21.11
25000	1.55	22.42	21.00
25500	1.54	31.40	24.67
26000	1.56	24.96	22.24
26500	1.58	24.87	22.43
28000	1.62	26.47	24.24
30000	1.67	41.80	27.44
32000	1.73	29.56	28.46
34000	1.78	40.38	35.34
36000	1.84	31.93	32.44
38000	1.90	35.56	39.19
40000	1.97	27.75	27.57

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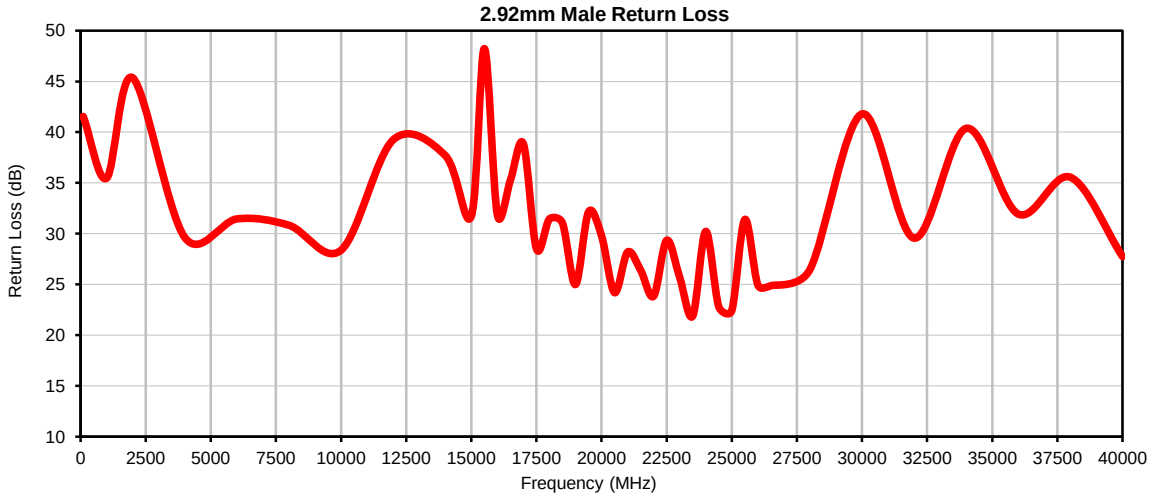
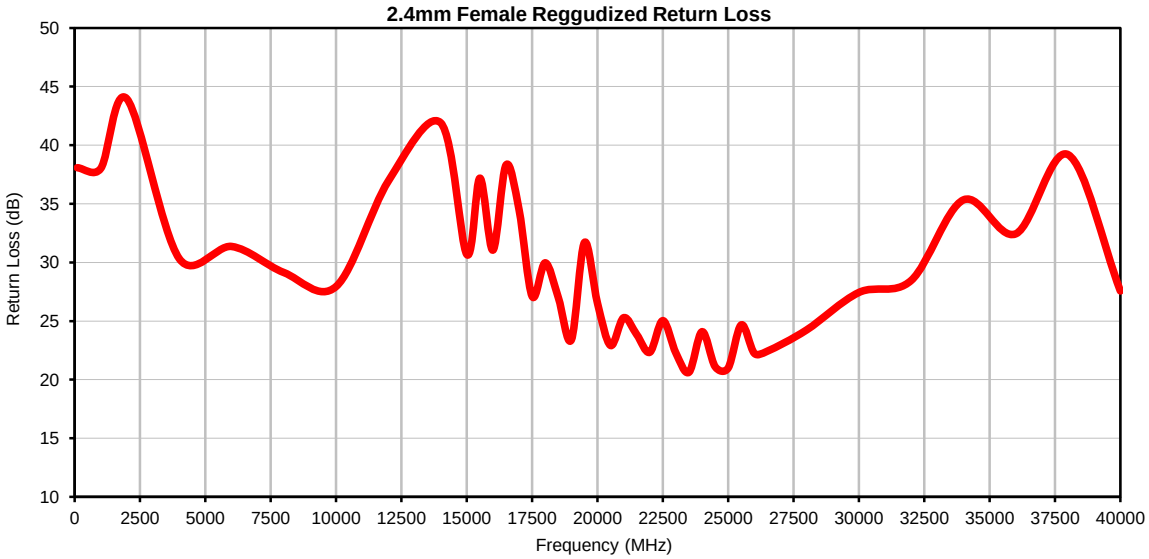
Typical Performance Curves

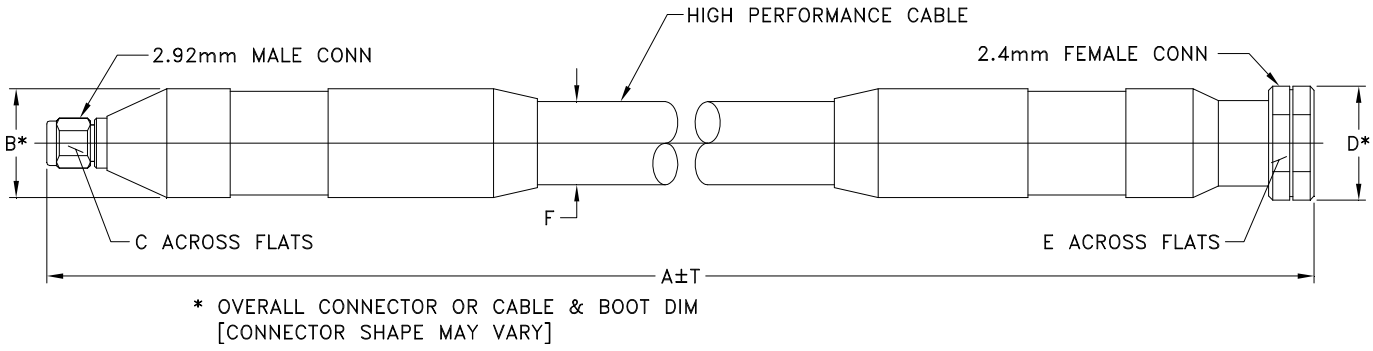




Case Style RH

RH2514

Outline Dimensions



RH2514 SERIES
2.92mm MALE (CONN-1)
2.4mm FEMALE (CONN-2)

CASE STYLE #	A		B	C	D	E	F	T		WEIGHT GRAMS
	FEET	METERS						INCH	MM	
RH2514-2	2.00	.61	.79 (20.0)	.315 (8.00)	.83 (21.00)	.75 (19.00)	.602 (15.3)	+.787/-0	+20.0/-0	328

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

Note:
1. High Performance rugged Cable.

Mini-Circuits®
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Mini-Circuits ISO 9001 & ISO 14001 Certified

Mini-Circuits

Environmental Specifications **ENV90**

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	+18°C to 28°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-40° to 50°C Ambient Environment	Individual Model Data Sheet