

# Instrumentation Test Cable

VNAC-2R1-K+

50Ω    25 inches    DC to 40 GHz    Low Loss



CASE STYLE: NE1922-2.1

## The Big Deal

- Ultra-wideband operation, DC to 40 GHz
- Rugged 2.92mm-female connector for direct interface with VNA
- Rugged construction, crush and torque resistant

## Product Overview

Mini-Circuits’ VNAC-2R1-K+ is an ultra-wideband precision instrumentation cable specially designed for use with VNA equipment in test environments. The cable provides excellent VSWR and very low insertion loss over the entire frequency range. Passivated stainless steel rugged 2.92mm (F) connector interfaces directly with the ports of the VNA\*, and a rugged crush and torque resistant outer sheath protects the cable from damage in demanding lab settings.

| Feature                                                                  | Advantages                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DC-40 GHz operation designed for use with Vector Network Analyzers (VNA) | Covers a wide range of test applications; rugged 2.92mm connector interfaces directly with VNA without the need for an adapter for improved VSWR performance.                                                                                    |
| 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. |
| 25” length                                                               | Standard VNA cable length makes VNAC-2R1-K+ a high performing, cost-effective replacement for expensive OEM cables.                                                                                                                              |

\*Compatible with 2.92mm-female connector or customer VNA equipment.

**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](http://www.minicircuits.com/MCLStore/terms.jsp)

# Instrumentation Test Cable

50Ω 25 Inches DC to 40 GHz Low Loss

VNAC-2R1-K+



## Maximum Ratings

Operating Temperature +18°C to +30°C

Storage Temperature -40°C to +70°C

Power Handling at 25°C, Sea level 10W

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
- double shield cable for excellent shielding effectiveness

## Applications

- military and defense applications
- research & development labs

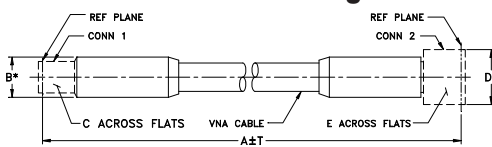
CASE STYLE: NE1922-2.1

| Conn1        | Conn2                | Model       |
|--------------|----------------------|-------------|
| 2.92 mm Male | 2.92mm Rugged Female | VNAC-2R1-K+ |

### +RoHS Compliant

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

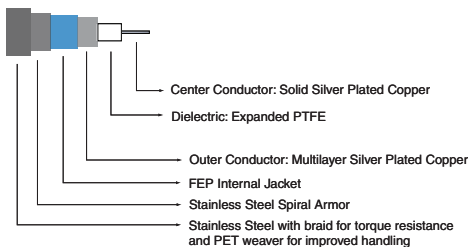
## Outline Drawing



## Outline Dimensions (inch mm)

| A    | B      | C     | D     | F     | T     |          |
|------|--------|-------|-------|-------|-------|----------|
| Feet | Meters | 0.62  | 0.312 | 0.86  | 0.750 | Inches   |
| 2.08 | 0.63   | 15.75 | 7.92  | 21.84 | 19.05 | +50/-0   |
|      |        |       |       |       |       | +12.7/-0 |
|      |        |       |       |       |       | 182      |

## 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.

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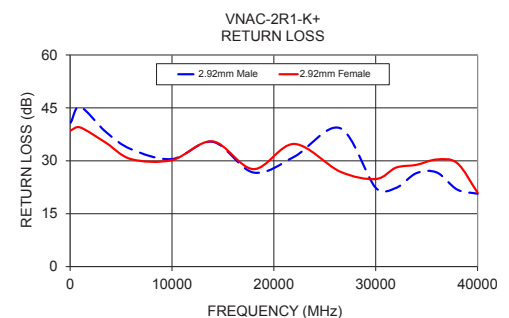
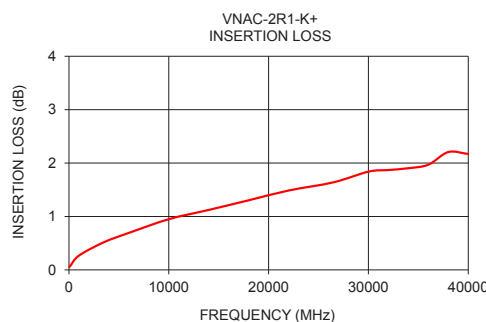
[www.minicircuits.com](http://www.minicircuits.com) P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

## Electrical Specifications at 25°C

| Parameter       | Condition (GHz) | Min. | Typ. | Max. | Units |
|-----------------|-----------------|------|------|------|-------|
| Frequency Range |                 | DC   |      | 40   | GHz   |
| Length          |                 |      | 2.08 |      | FT    |
| Insertion Loss  | DC - 6          | —    | 0.79 | 0.97 | dB    |
|                 | 6-18            | —    | 1.44 | 1.60 |       |
|                 | 18-26.5         | —    | 1.81 | 2.03 |       |
|                 | 26.5-40         | —    | 2.25 | 2.43 |       |
| Return Loss     | DC - 6          | 15.5 | 27.1 | —    | dB    |
|                 | 6-18            | 15.5 | 22.6 | —    |       |
|                 | 18-26.5         | 15.5 | 20.8 | —    |       |
|                 | 26.5-40         | 15.5 | 18.1 | —    |       |

## Typical Performance Data

| Frequency (MHz) | Insertion Loss (dB) | Return Loss (dB) |             |
|-----------------|---------------------|------------------|-------------|
|                 |                     | 2.92 mm Male     | 2.92 mm Fem |
| 50              | 0.05                | 40.79            | 38.62       |
| 1000            | 0.27                | 45.25            | 39.44       |
| 3500            | 0.52                | 38.21            | 35.13       |
| 6000            | 0.69                | 33.27            | 30.46       |
| 10000           | 0.95                | 30.50            | 30.19       |
| 14000           | 1.12                | 35.37            | 35.50       |
| 18000           | 1.30                | 26.68            | 27.64       |
| 22000           | 1.49                | 31.15            | 34.78       |
| 26500           | 1.64                | 39.25            | 26.94       |
| 30000           | 1.84                | 22.33            | 24.83       |
| 32000           | 1.87                | 22.32            | 28.08       |
| 34000           | 1.90                | 26.50            | 28.85       |
| 36000           | 1.97                | 26.68            | 30.37       |
| 38000           | 2.21                | 21.84            | 29.34       |
| 40000           | 2.17                | 20.66            | 20.97       |

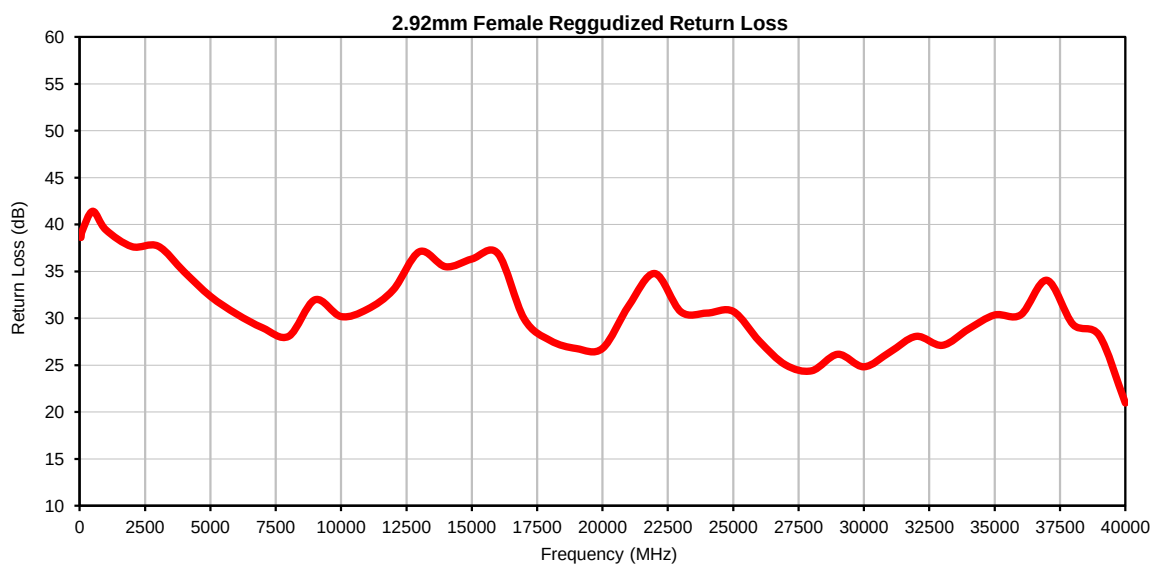
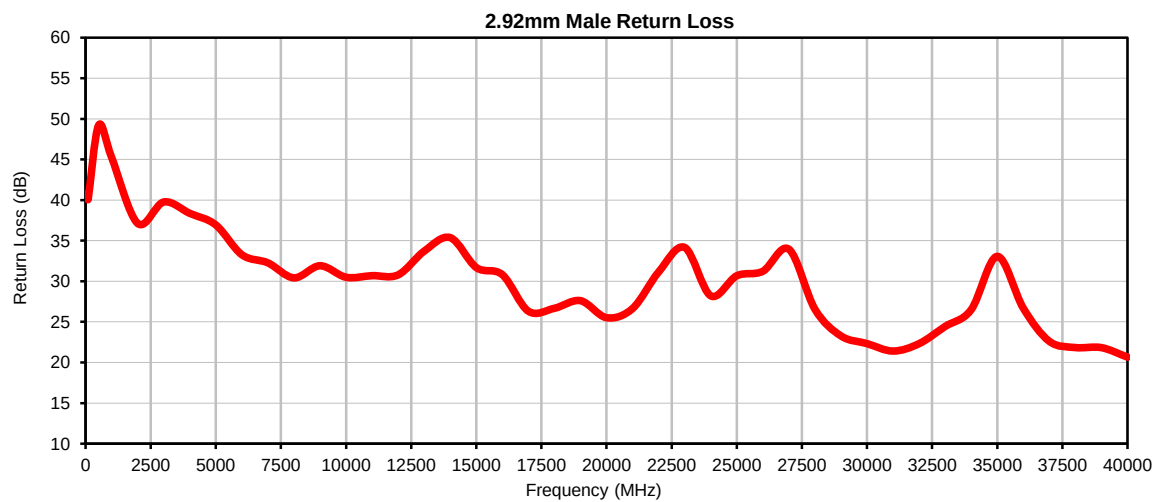
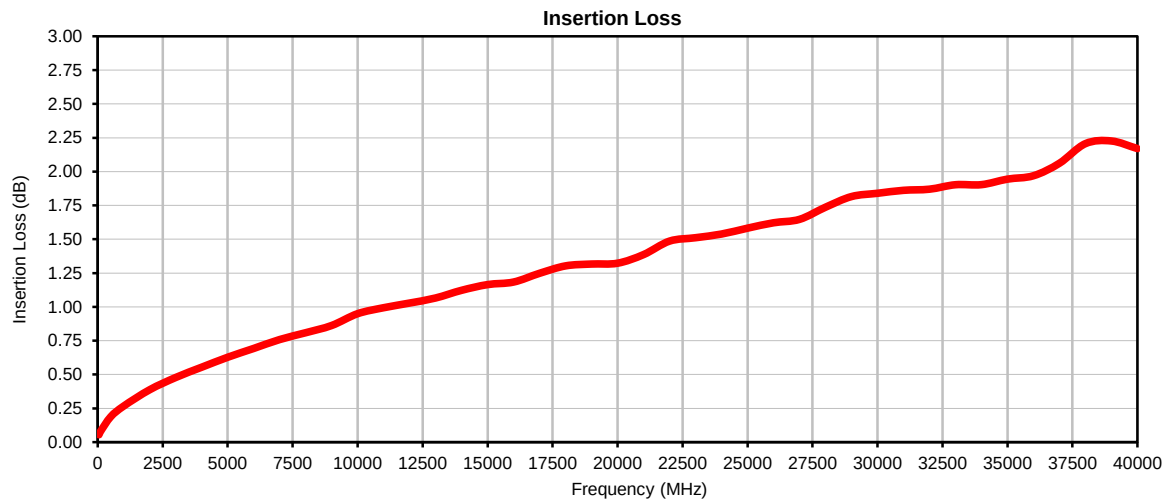


## Instrumentation Test Cable

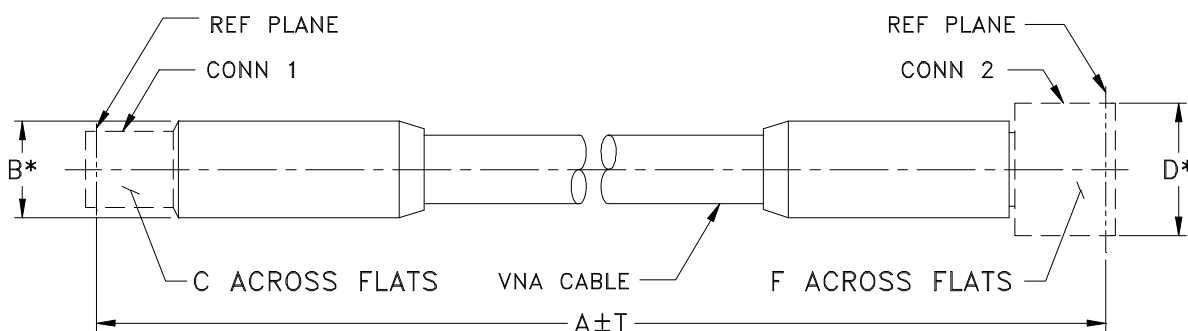
*Typical Performance Data*

| FREQUENCY | INSERTION LOSS | 2.92mm MALE<br>RETURN LOSS | 2.92mm FEMALE<br>Ruggedized<br>RETURN LOSS |
|-----------|----------------|----------------------------|--------------------------------------------|
| (MHz)     | (dB)           | (dB)                       | (dB)                                       |
| 50        | 0.05           | 40.8                       | 38.6                                       |
| 100       | 0.08           | 40.1                       | 39.3                                       |
| 500       | 0.19           | 49.2                       | 41.4                                       |
| 1000      | 0.27           | 45.2                       | 39.4                                       |
| 2000      | 0.39           | 37.1                       | 37.6                                       |
| 3000      | 0.48           | 39.8                       | 37.7                                       |
| 4000      | 0.55           | 38.4                       | 34.9                                       |
| 5000      | 0.63           | 36.9                       | 32.3                                       |
| 6000      | 0.69           | 33.3                       | 30.5                                       |
| 7000      | 0.76           | 32.3                       | 29.0                                       |
| 8000      | 0.81           | 30.4                       | 28.1                                       |
| 9000      | 0.86           | 31.9                       | 32.0                                       |
| 10000     | 0.95           | 30.5                       | 30.2                                       |
| 11000     | 0.99           | 30.7                       | 31.0                                       |
| 12000     | 1.03           | 30.8                       | 33.0                                       |
| 13000     | 1.07           | 33.7                       | 37.1                                       |
| 14000     | 1.12           | 35.4                       | 35.5                                       |
| 15000     | 1.16           | 31.7                       | 36.3                                       |
| 16000     | 1.18           | 30.8                       | 36.9                                       |
| 17000     | 1.25           | 26.3                       | 30.0                                       |
| 18000     | 1.30           | 26.7                       | 27.6                                       |
| 19000     | 1.32           | 27.6                       | 26.8                                       |
| 20000     | 1.32           | 25.5                       | 26.8                                       |
| 21000     | 1.39           | 26.6                       | 31.3                                       |
| 22000     | 1.49           | 31.1                       | 34.8                                       |
| 23000     | 1.51           | 34.2                       | 30.7                                       |
| 24000     | 1.54           | 28.2                       | 30.6                                       |
| 25000     | 1.58           | 30.7                       | 30.7                                       |
| 26000     | 1.62           | 31.2                       | 27.6                                       |
| 27000     | 1.65           | 33.9                       | 25.0                                       |
| 28000     | 1.74           | 26.6                       | 24.4                                       |
| 29000     | 1.82           | 23.3                       | 26.2                                       |
| 30000     | 1.84           | 22.3                       | 24.8                                       |
| 31000     | 1.86           | 21.4                       | 26.4                                       |
| 32000     | 1.87           | 22.3                       | 28.1                                       |
| 33000     | 1.90           | 24.4                       | 27.1                                       |
| 34000     | 1.90           | 26.5                       | 28.9                                       |
| 35000     | 1.94           | 33.1                       | 30.4                                       |
| 36000     | 1.97           | 26.7                       | 30.4                                       |
| 37000     | 2.06           | 22.6                       | 34.1                                       |
| 38000     | 2.21           | 21.8                       | 29.3                                       |
| 39000     | 2.23           | 21.8                       | 28.2                                       |
| 40000     | 2.17           | 20.7                       | 21.0                                       |

*Typical Performance Curves*



### Outline Dimensions



#### NA1922 SERIES

2.92mm MALE (CONN-1)

2.92mm RUGGED FEMALE (CONN-2)

| CASE<br>STYLE # | A    |        | B              | C              | D              | E | F               | T       |           | WEIGHT<br>GRAMS |
|-----------------|------|--------|----------------|----------------|----------------|---|-----------------|---------|-----------|-----------------|
|                 | FEET | METERS |                |                |                |   |                 | INCH    | MM        |                 |
| NE1922-2.1      | 2.08 | .63    | .62<br>(15.75) | .312<br>(7.92) | .86<br>(21.84) | - | .750<br>(19.05) | +.50/-0 | +12.7/-0  | 182.0           |
| NE1922-3        | 3.00 | .91    |                |                |                |   |                 | +.72/-0 | +18.29/-0 | 210.0           |
|                 |      |        |                |                |                |   |                 |         |           |                 |

Unless otherwise specified dimensions are in inches (mm).

Tolerances: 2Pl.  $\pm .03$ ; 3Pl.  $\pm .015$

#### Note:

- VNA 26.5 and 40 GHz Coaxial 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 | +18°C to 30°C<br>Ambient Environment | Individual Model Data Sheet                                                       |
| Storage Temperature   | -40° to 70° C<br>Ambient Environment | Individual Model Data Sheet                                                       |
| Thermal Shock         | -40°C to 70°C, 100 cycles            | MIL-STD-202, Method 107, Condition A-3, except- 30 minute dwell instead of 1 hour |