

Anritsu Advancing beyond

Extended-K™ Female Sparkplug Launcher Connector

Mode-free and Traceable Performance

EK102F-R

DC to 43.5 GHz



Introduction

Anritsu Extended-K™ EK102F-R series sparkplug launchers are the only class of K connectors (2.92 mm) capable of providing mode-free and traceable performance from DC to 43.5 GHz in the connector market. These new connectors address the signal interface for new 5G telecommunication standards equipment including internal system components as well as aerospace and defense transceiver systems.

The Extended-K connectors provide an alternative to more expensive Q connectors (2.4 mm) when coverage past 43.5 GHz is not warranted or necessary. Additionally, Anritsu Extended-K connectors are traceable to 43.5 GHz, enabling accurate measurement uncertainty budgeting for the tightest measurement requirements. Anritsu provides the highest quality connectors with hard specifications using a coverage factor of K=2 meaning a 95% confidence level of performance guaranteed. Connectors are randomly sample tested per various lots to ensure Extended-K connectors meet electrical specifications.

For frequency domain systems and products, Extended-K connectors provide low insertion loss and good return loss, ensuring minimal signal interaction through the connector. For time domain systems and products, Extended-K has good eye diagram characteristics in both NRZ and PAM4, displaying minimal impact on signal fidelity.

Definitions

| | |
|----------------------------------|--|
| Specifications | Specifications are warranted and include guard-bands, unless otherwise stated. |
| Typical Performance | Typical performance indicates the measured performance of an average unit. It does not include guard-bands and are shown in parenthesis, such as (-30 dB), or noted as Typical. |
| Measurement Method | Connectors are measured in a back-to-back configuration using an Anritsu proprietary fixture. Data provided for Extended-K connectors are done with Insertion loss doubled from the specification because of back-to-back configuration. |
| Specifications Subject to Change | All specifications subject to change without notice. For the most current data sheet, please visit the Anritsu website: www.anritsu.com |

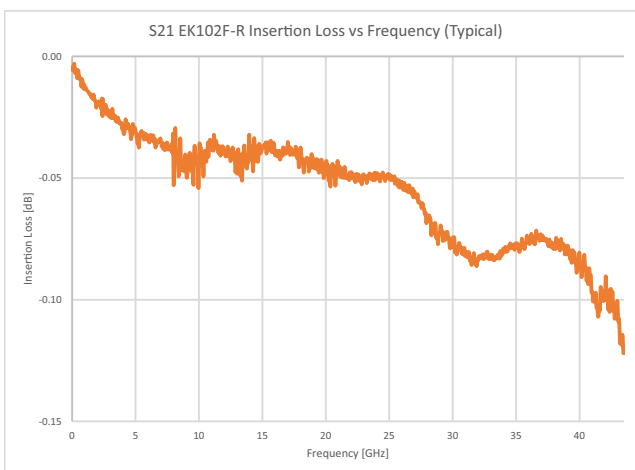
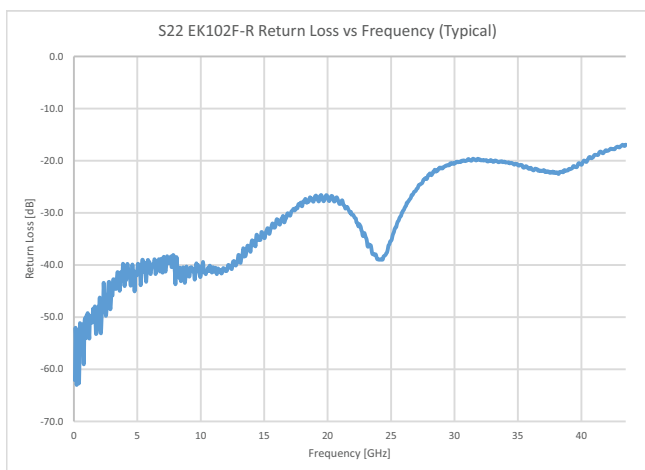
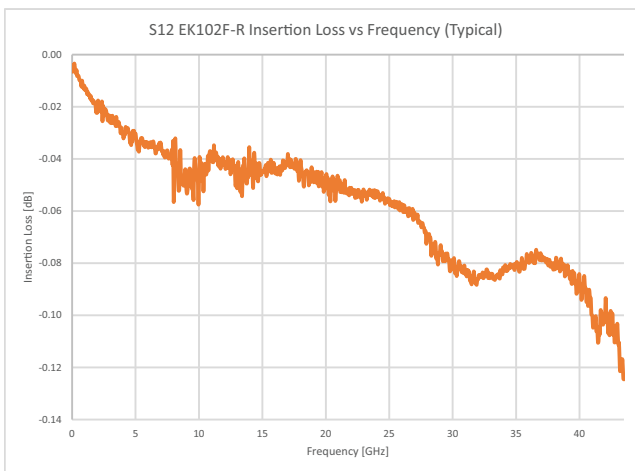
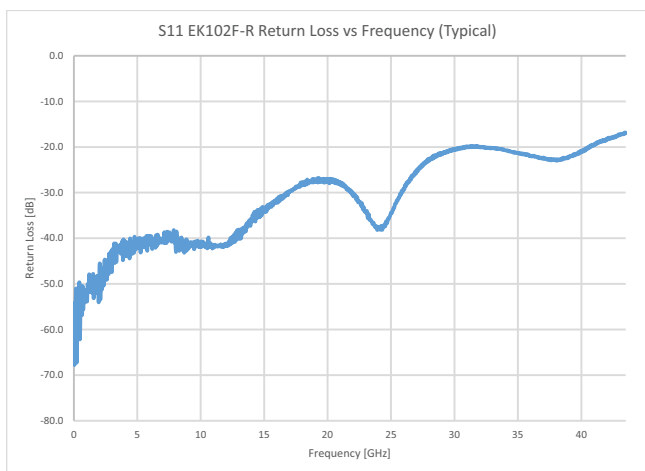
Highlights

- Traceable and Mode-free Performance up to 43.5 GHz
- Performance Exceeding SMA Below 18 GHz
- Mate Compatible with SMA, WSMA, 3.5mm, and 2.92 mm
- Convenient K Female Sparkplug Launcher Connector
- Superior Reliability
- Low VSWR
- Low Insertion Loss
- Complete Testability on Existing Network Analyzers

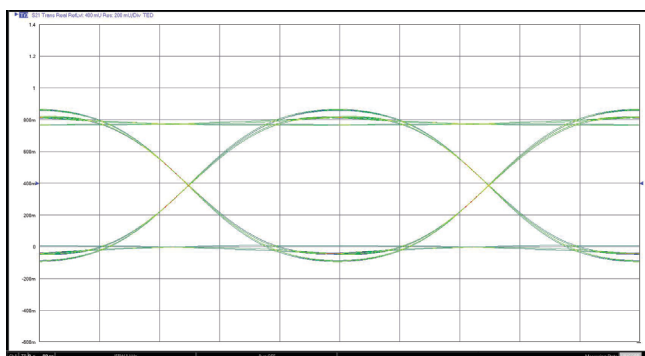
Electrical

Specifications in parentheses are typical.

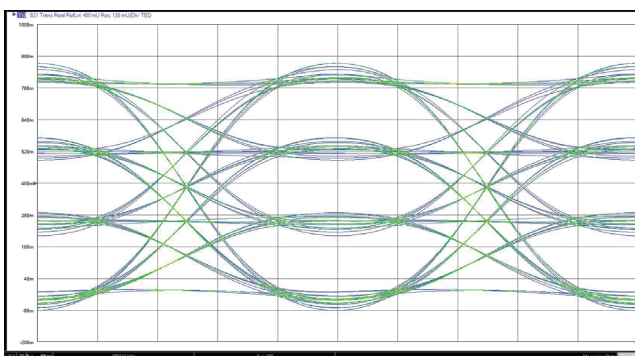
| | | |
|---------------------------------|---------------------|---------------------|
| Frequency Range | DC to 43.5 GHz | |
| VSWR | DC to 5 GHz | 1.07 (1.02) |
| | > 5 to 10 GHz | 1.08 (1.02) |
| | > 10 to 25 GHz | 1.29 (1.08) |
| | > 25 to 40 GHz | 1.44 (1.22) |
| | > 40 to 43.5 GHz | 1.50 (1.33) |
| Return Loss | DC to 5 GHz | -29.4 dB (-40 dB) |
| | > 5 to 10 GHz | -28.3 dB (-27 dB) |
| | > 10 to 25 GHz | -18.0 dB (-27 dB) |
| | > 25 to 40 GHz | -14.9 dB (-20 dB) |
| | > 40 to 43.5 GHz | -14.0 dB (-17 dB) |
| Insertion Loss | DC to 5 GHz | -0.07 dB (-0.04 dB) |
| | > 5 to 25 GHz | -0.09 dB (-0.07 dB) |
| | > 25 to 40 GHz | -0.13 dB (-0.09 dB) |
| | > 40 GHz | -0.20 dB (-0.15 dB) |
| Impedance | 50 Ω | |
| Insulation Resistance | ≥ 5 G Ω | |
| RF Leakage | -90 dB (typical) | |
| Dielectric Withstanding voltage | 750 Vrms | |
| Working Voltage | 250 Vrms | |

Electrical Performance^{1,2,3,4,5}

EK102F-R Scale vs. Time (ns) NRZ Eye Diagram



EK102F-R Scale vs. Time (ns) PAM4 Eye Diagram



1. All plots typical.
2. Plot is a back-to-back measurement of two EK102F-R connectors with a 12 mil pin installed.
3. S12 (dB) and S21 (dB) of single EK102F-R is equal to S12/2 (dB) and S21/2 (dB) of the back to back measurement.
4. S11 (dB) and S22 (dB) of single EK102F-R is equal to S11-6 (dB) and S22-6 (dB) of the back to back measurement.
5. NRZ and PAM4 plots created with .s2p simulations using VectorStar eye diagram software.

Mechanical Data

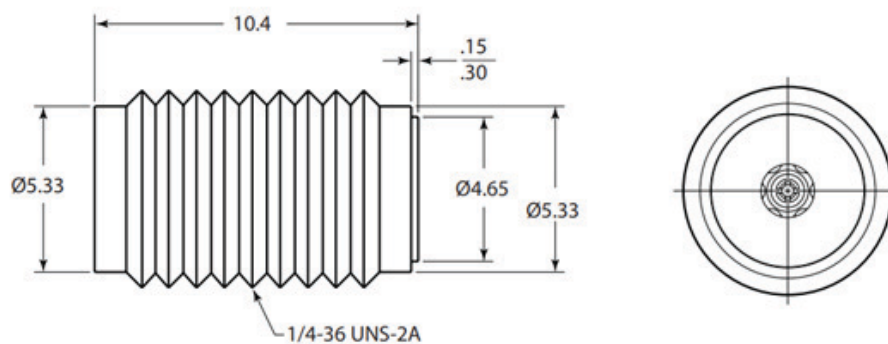
| | |
|----------------|--|
| Mating Cycles | > 500 |
| Connector Type | K(f), 2.92 mm |
| Pin Depth | 0.000 to -0.13 mm for male and female connectors |
| Weight | 1.89 g |

Regulatory Compliance

| | |
|----------------|---|
| European Union | RoHS Directive: 2011/65/EU + Amendment 2015/863 |
|----------------|---|

Material Data

| | |
|------------------|--|
| Outer Conductor | Passivated Stainless Steel |
| Bead Holder | Passivated Stainless Steel |
| Center Conductor | Heat-treated Beryllium Copper, Gold-plated over Nickel MIL-G-45204C |

Outline Drawing

All dimensions are in mm.

Installation Resources

For installation procedures, please visit www.anritsu.com and search for PN: 10100-00046. This part number references the *K Connector Instruction Sheets*, which outlines the technique required to install any of the K connectors or Extended-K connectors. The *K Connector Instruction Sheets* also list a section, the Tools and Materials section, for each connector that identifies all parts needed to install an Anritsu Extended-K connector.

Accessories

| | |
|----------|---|
| 01-101A | K Connector Evaluation Kit |
| 01-103 | Soldering Fixture for Sparkplug Launcher Glass Bead |
| 01-104 | Drill and Tap Set (For precision machining of concentric holes in microwave housing for K connector) |
| 01-105A | Male and Female Sparkplug torquing kit for K & V Connector |
| 01-106 | K Soldering fixture for Flange Launcher glass bead |
| 01-107M | K cable sleeve soldering fixture, male connector |
| 01-107F | K cable sleeve soldering fixture, female connector |
| 01-108 | Drill and Tap Set (For precision machining of concentric holes in microwave housing for K connector using sliding contacts) |
| 01-118 | K connector cable assembling fixture for 0.118" semi-rigid coax cable |
| 01-201 | Torque end wrench, 5/16 in, 0.9 N·m (8lbf-in), For tightening male devices, for SMA, 3.5 mm, 2.4 mm, K and V connectors. |
| 01-202 | Universal test port connector wrench |
| 01-204 | Anritsu stainless steel connector wrench |
| K110-1-R | Microstrip stress relief contact |
| K110-2-R | Stripline stress relief contact |
| K110-3-R | Microstrip stress relief contact (larger contact pad) |
| S110-1-R | Microstrip and coplanar waveguide stress relief contact for 0.38 mm glass feedthrough center conductor |
| S110-3-R | Microstrip and coplanar waveguide stress relief contact for 0.38 mm glass feedthrough center conductor (Larger contact pad) |

Notes

Training at Anritsu

Anritsu has designed courses to help you stay up to date with technologies important to your job. For available training courses, visit: www.anritsu.com/training



• United States

Anritsu Americas Sales Company
450 Century Parkway, Suite 190,
Allen, TX 75013, U.S.A.
Phone: +1-800-Anritsu (1-800-267-4878)

• Canada

Anritsu Electronics Ltd.
700 Silver Seven Road, Suite 120,
Kanata, Ontario K2V 1C3, Canada
Phone: +1-613-591-2003
Fax: +1-613-591-1006

• Brazil

Anritsu Eletronica Ltda.
Praça Amadeu Amaral, 27 - 1 Andar
01327-010 - Bela Vista - São Paulo - SP, Brazil
Phone: +55-11-3283-2511
Fax: +55-11-3288-6940

• Mexico

Anritsu Company, S.A. de C.V.
Blvd Miguel de Cervantes Saavedra #169 Piso 1,
Col. Granada, Mexico, Ciudad de Mexico,
11520, MEXICO
Phone: +52-55-4169-7104

• United Kingdom

Anritsu EMEA Ltd.
200 Capability Green,
Luton, Bedfordshire, LU1 3LU, U.K.
Phone: +44-1582-433200
Fax: +44-1582-731303

• France

Anritsu S.A.
12 avenue du Québec, Immeuble Goyave,
91140 VILLEBON SUR YVETTE, France
Phone: +33-1-60-92-15-50

• Germany

Anritsu GmbH
Nemetschek Haus, Konrad-Zuse-Platz 1,
81829 München, Germany
Phone: +49-89-442308-0
Fax: +49-89-442308-55

• Italy

Anritsu S.r.l.
Spaces Eur Arte, Viale dell'Arte 25, 00144 Roma, Italy
Phone: +39-6-509-9711

• Sweden

Anritsu AB
Kistagången 20 B, 2 tr, 164 40 Kista, Sweden
Phone: +46-8-534-707-00

• Finland

Anritsu AB
Technopolis Aviapolis, Teknobulevardi 3-5 (D208.5.),
FI-01530 Vantaa, Finland
Phone: +358-20-741-8100

• Denmark

Anritsu A/S
c/o Regus Winghouse, Ørestads Boulevard 73, 4th floor,
2300 Copenhagen S, Denmark
Phone: +45-7211-2200

• Russia

Anritsu EMEA Ltd.
Representation Office in Russia
Tverskaya str. 16/2, bld. 1, 7th floor,
Moscow 125009, Russia
Phone: +7-495-363-1694
Fax: +7-495-935-8962

• Spain

Anritsu EMEA Ltd.
Representation Office in Spain
Paseo de la Castellana, 141.
Planta 5, Edificio Cuzco IV
28046, Madrid, Spain
Phone: +34-91-572-6761

• Austria

Anritsu EMEA GmbH
Am Belvedere 10, A-1100 Vienna, Austria
Phone: +43-(0)1-717-28-710

• United Arab Emirates

Anritsu EMEA Ltd.
Anritsu A/S
Office No. 164, Building 17, Dubai Internet City
P. O. Box - 501901, Dubai, United Arab Emirates
Phone: +971-4-3758479

• India

Anritsu India Private Limited
6th Floor, Indique ETA, No.38/4, Adjacent to EMC2,
Doddanekundi, Outer Ring Road,
Bengaluru - 560048, India
Phone: +91-80-6728-1300
Fax: +91-80-6728-1301

• Singapore

Anritsu Pte. Ltd.
11 Chang Charn Road, #04-01, Shriro House
Singapore 159640
Phone: +65-6282-2400
Fax: +65-6282-2533

• Vietnam

Anritsu Company Limited
16th Floor, Peakview Tower, 36 Hoang Cau Street,
O Cho Dua Ward, Dong Da District, Hanoi, Vietnam
Phone: +84-24-3201-2730

• P.R. China (Shanghai)

Anritsu (China) Co., Ltd.
Room 2701-2705, Tower A, New Caohejing
International Business Center No. 391 Gui Ping Road
Shanghai, 200233, P.R. China
Phone: +86-21-6237-0898
Fax: +86-21-6237-0899

• P.R. China (Hong Kong)

Anritsu Company Ltd.
Unit 1006-7, 10/F., Greenfield Tower, Concordia Plaza,
No. 1 Science Museum Road, Tsim Sha Tsui East,
Kowloon, Hong Kong, P.R. China
Phone: +852-2301-4980
Fax: +852-2301-3545

• Japan

Anritsu Corporation
8-5, Tamura-cho, Atsugi-shi, Kanagawa, 243-0016 Japan
Phone: +81-46-296-6509
Fax: +81-46-225-8352

• South Korea

Anritsu Corporation, Ltd.
5FL, 235 Pangyojeok-ro, Bundang-gu, Seongnam-si,
Gyeonggi-do 13494, South Korea
Phone: +82-31-696-7750
Fax: +82-31-696-7751

• Australia

Anritsu Pty. Ltd.
Unit 20, 21-35 Ricketts Road,
Mount Waverley, Victoria 3149, Australia
Phone: +61-3-9558-8177
Fax: +61-3-9558-8255

• Taiwan

Anritsu Company Inc.
7F, No. 316, Sec. 1, NeiHu Rd., Taipei 114, Taiwan
Phone: +886-2-8751-1816
Fax: +886-2-8751-1817

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