Anritsu Advancing beyond

Extended-K™ Female 2-Hole Flange Launcher

Mode-free and Traceable Performance

EK103F-R

DC to 43.5 GHz

Introduction

Anritsu Extended-K™ EK103F-R series Flange 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=3 meaning a 99% 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

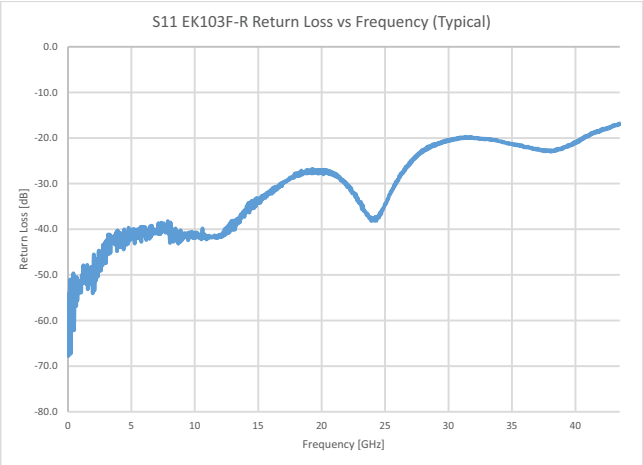
- Traceable and Mode-free Performance up to 43.5 GHz
- Performance Exceeding SMA Below 18 GHz
- Mate Compatible with SMA, WSMA, 3.5mm, and 2.92 mm
- Two-hole Flange Mounting
- Superior Reliability
- Low VSWR
- Low Insertion Loss
- Complete Testability on Existing Network Analyzers

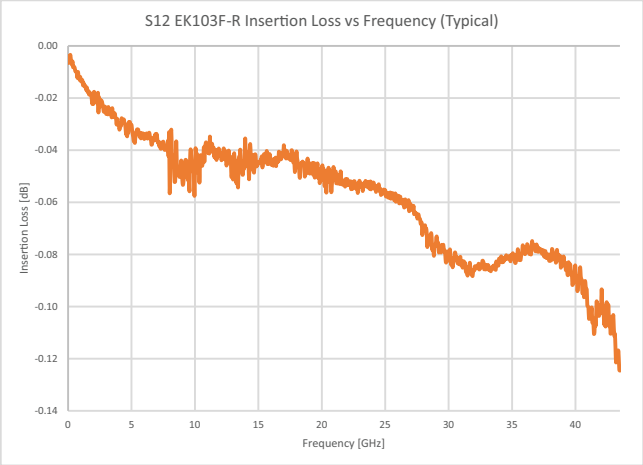
Electrical

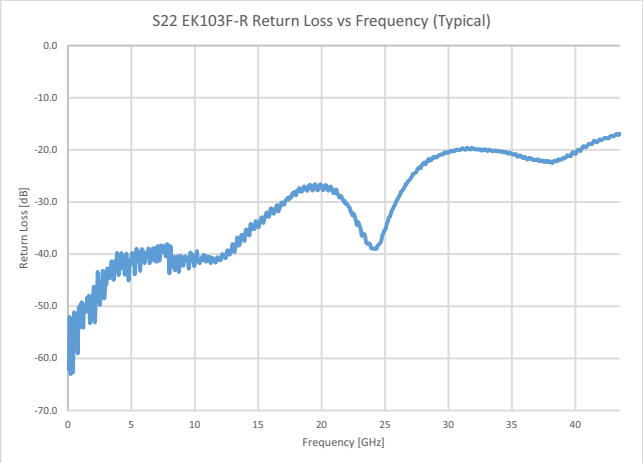
Specifications in parentheses are typical.

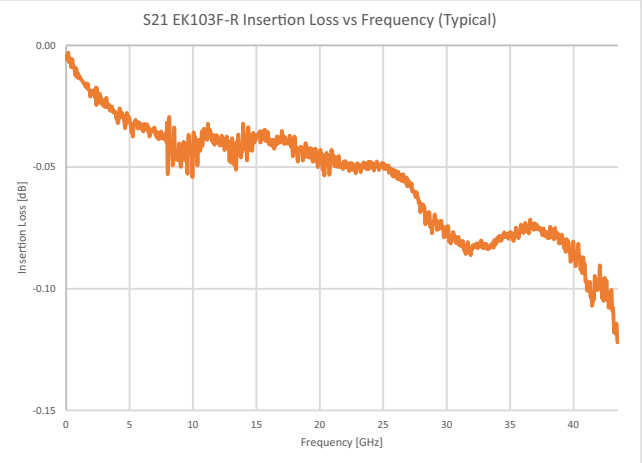
Frequency Range	DC to 43.5 GHz	
VSWR	DC to 5 GHz	1.07 (1.02)
	> 5 to 10 GHz	1.08 (1.02)
	> 10 to 25 GHz	1.29 (1.08)
	> 25 to 40 GHz	1.44 (1.22)
	> 40 to 43.5 GHz	1.50 (1.33)
Return Loss	DC to 5GHz	-29.4 dB (-40 dB)
	> 5 to 10 GHz	-28.3 dB (39 dB)
	> 10 to 25 GHz	-18.0 dB (-28 dB)
	> 25 to 40 GHz	-14.9 dB (-20 dB)
	> 40 to 43.5 GHz	-14 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 GΩ	
RF Leakage	-90 dB (typical)	
Dielectric Withstanding voltage	750 Vrms	
Working Voltage	250 Vrms	

Electrical Performance[1,2,3,4,5]

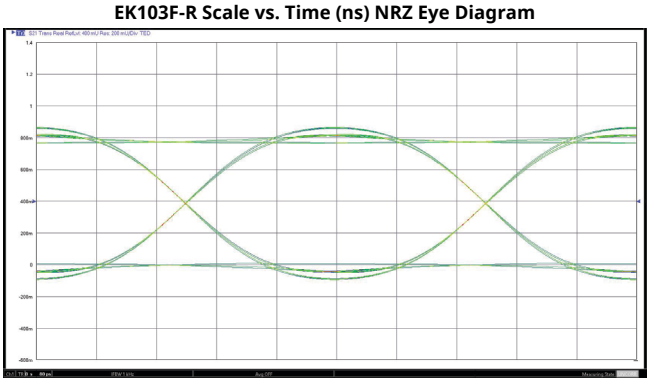




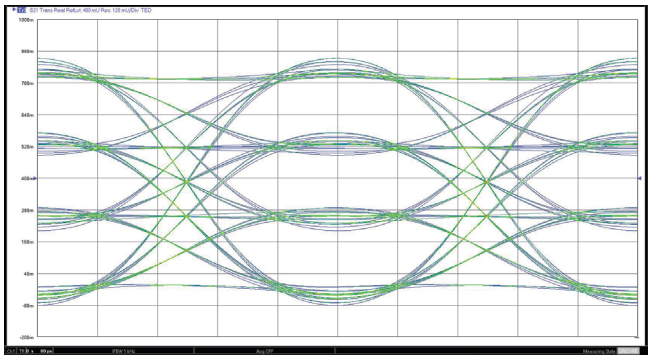




EK103F-R Scale vs. Time (ns) NRZ Eye Diagram



EK103F-R Scale vs. Time (ns) PAM4 Eye Diagram



1. All plots typical.
2. Plot is a back-to-back measurement of two EK103F-R connectors with a 12 mil pin installed.
3. S12 (dB) and S21 (dB) of single EK103F-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 EK103F-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

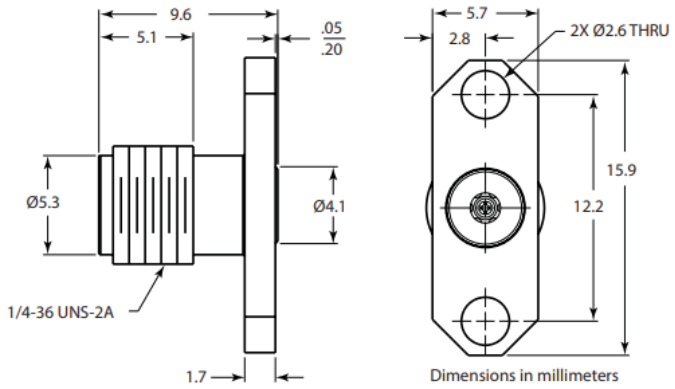
Regulatory Compliance

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

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