

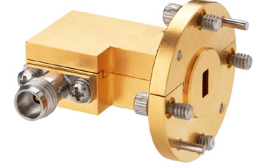
# Adapter

**WR19-EFR+**

50Ω 40 to 60 GHz Right-Angle 1.85mm Female to WR19 UG383/U Flange

**THE BIG DEAL**

- Full U-band Frequency Range, 40 to 60 GHz
- Low Insertion Loss, 0.8 dB typ.
- Excellent Return Loss, 20 dB typ.
- Compact Right-Angle Design
- Precision UG383/U Waveguide Flange
- 1.85mm-Female Connector

*Generic photo used for illustration purposes only*

Model No.	WR19-EFR+
Case Style	UW3147
Connector 1	Right-Angle 1.85mm-Female
Connector 2	WR19 UG383/U Flange

**+RoHS Compliant**

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

**APPLICATIONS**

- Waveguide Sub-system Rapid Prototyping
- R&D, Production, and OTA Test Systems
- 5G MIMO and Back Haul Radio Systems
- Test & Measurement Equipment
- SATCOM Systems

**PRODUCT OVERVIEW**

Mini-Circuits' WR19-EFR+ is a waveguide to coax adapter operating from 40 to 60 GHz. This product features a WR19 waveguide interface with a precision standard UG383/U flange to 1.85mm-Female coaxial connector. The WR19-EFR+ is machined from aluminum alloy 6061-T6 and gold-plated to ensure repeatable RF performance. This right-angle adapter has applications in R&D, production, over-the-air (OTA) mmWave test laboratories as well as in U-Band communication and SATCOM systems.

**KEY FEATURES**

Feature	Advantages
Wideband, 40 to 60 GHz	Full operating frequency range of WR19 waveguide
Low Insertion Loss, 0.8 dB typ. Excellent Return Loss, 20 dB typ.	Provides a near transparent transition for critical coax to waveguide transition requirements
Precision machined with outstanding surface finish	Mini-Circuits mmWave waveguide to coaxial adapters utilize high precision machining for repeatable performance over full waveguide bands. The highly polished, match-machined surfaces are gold plated to 20 μinches minimum over 100 μinches minimum of nickel.



# Adapter

## WR19-EFR+

50Ω 40 to 60 GHz Right-Angle 1.85mm Female to WR19 UG383/U Flange

Parameter	Condition (GHz)	Min.	Typ.	Max.	Units
Frequency Range		40		60	GHz
Insertion Loss <sup>1</sup>	40 - 60	—	0.8	—	dB
Return Loss <sup>2</sup>	40 - 60	—	20.0	15.0	dB

2. Tested on coax port, with termination on waveguide port.

Parameter	Ratings
Operating Case Temperature	-40 °C to +85 °C
Storage Temperature	-55 °C to +100 °C

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

Technical drawing of a 1.85mm female connector, showing three views: front, side, and top.

**Front View:**

- Overall diameter: .65 [16.59]
- Central hole diameter: .23 [5.92]
- Mounting hole diameter: .45 [11.35]
- Mounting hole offset from center: .20 [5.08]

**Side View:**

- Overall height: .119 [30.10]
- Base thickness: .030 [.76]
- Mounting hole diameter: .090 [22.87]

**Top View:**

- Overall diameter: .125 [Ø28.58]
- Central hole diameter: .090 [22.87]
- Mounting hole diameter: .45 [11.35]
- Mounting hole offset from center: .20 [5.08]

Callouts:

- 1.85mm FEMALE
- 4X #4-40UNC-2A X .18 LG
- WR-19, UG 383/U FLANGE

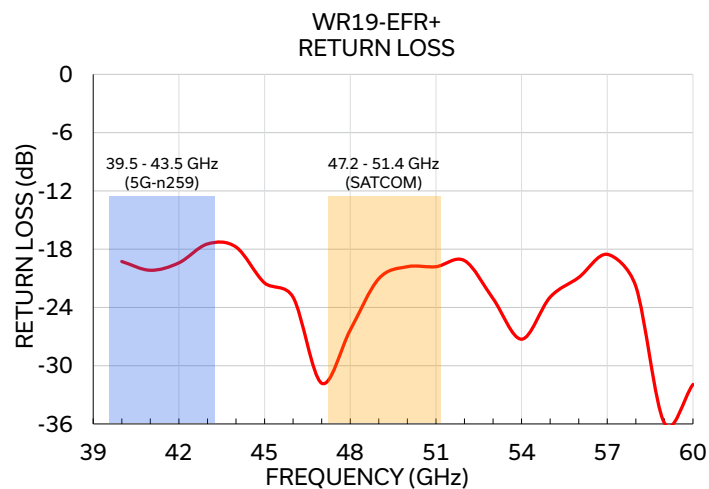
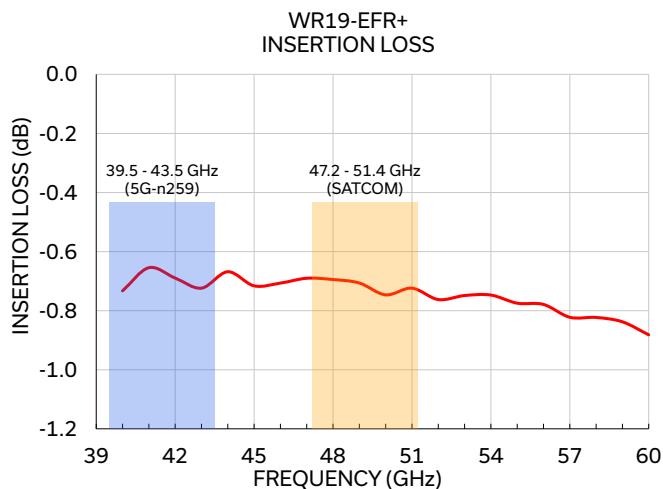
Dimensions are in inches [mm]. Tolerances 2Pl±.02; 3 Pl ±.010





## TYPICAL PERFORMANCE DATA / CHARTS

Frequency (GHz)	Insertion Loss (dB)	Return Loss (dB)
40	0.73	19.27
41	0.65	20.18
42	0.69	19.41
43	0.72	17.47
44	0.67	17.78
45	0.72	21.48
46	0.71	22.96
47	0.69	31.81
48	0.69	26.33
49	0.71	21.04
50	0.75	19.81
51	0.72	19.81
52	0.76	19.18
53	0.75	23.10
54	0.75	27.27
55	0.77	22.94
56	0.78	20.92
57	0.82	18.54
58	0.82	21.84
59	0.84	35.90
60	0.88	31.93



## 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)