

# Keysight Technologies

## 8490G Coaxial Attenuators

Technical Overview





# Introduction

## Key Specifications

- Maximize your operating frequency range for DC to 67 GHz application
- Minimize your measurement uncertainty with low SWR of 1.45 up to 67 GHz
- Improve your measurement confidence with excellent attenuation accuracy

The Keysight Technologies, Inc. 8490G family is a line of precision fixed coaxial attenuators with performance specified up to 67 GHz. These attenuators use the 1.85 mm coaxial connector, and exhibit excellent SWR and accuracy performance from DC to 67 GHz. The 8490G family has attenuation values of 3, 6, 10, 20, 30 and 40 dB.

The Keysight 8490G family of 1.85 mm fixed coaxial connectors are assembled and tested with the same meticulous care as their lower frequency counterparts: the Keysight 8490D, 8491 and 8493 families. These attenuators are tested on Keysight precision Network Analyzers to assure full specifications over their entire frequency range.

## Applications

Ruggedness, reliability and small size make these attenuators suitable for use on bench as well as on system level. With their accuracy and low SWR, they are ideally suited for extending the range of sensitive power meters for high power measurements. The same characteristics lend themselves to applications such as calibration standards and RF substitution measurements.

With their broad DC to 67 GHz frequency range and reasonable cost, general applications such as the reduction of power level to sensitive components and instrumentation systems are attractive and appropriate uses for these attenuators.

## Specifications

Specifications describe the instrument's warranted performance over the temperature range 0° C to +55° C (except where noted). Supplemental and typical characteristics are intended to provide typical but non-warranted performance parameters. These are denoted as “typical”, “nominal” or “approximate”.

<b>Frequency range</b>	DC to 67 GHz
<b>Impedance</b>	(nominal) 50 $\Omega$
<b>Connectors</b>	1.85 mm
<b>Power</b>	(maximum) 1 W average

Options	Attenuation (dB) = Insertion Loss				Atten. Data Uncert. (dB)
	Min (GHz) 0 to 67	Max (GHz) 0 to 26.5	Max (GHz) 26.5 to 50	Max (GHz) 50 to 67	Max (GHz) 0.4 to 67
8490G 003	2.5	3.9	4.4	4.8	±0.3
8490G 006	5.4	6.9	7.4	7.8	±0.3
8490G 010	9.4	10.9	11.1	11.3	±0.3
8490G 020	19.2	21.3	21.5	21.7	±0.3
8490G 030	29.2	31.3	31.5	31.7	±0.3
8490G 040	38.0	42.5	42.5	42.5	±0.6

Options	SWR (Maximum)			Return Loss (dB)		
	(GHz) 0 to 26.5	(GHz) 26.5 to 50	(GHz) 50 to 67	(GHz) 0 to 26.5	(GHz) 26.5 to 50	(GHz) 50 to 67
8490G 003	1.15	1.25	1.45	23.1	19.1	14.7
8490G 006	1.15	1.25	1.45	23.1	19.1	14.7
8490G 010	1.15	1.25	1.45	23.1	19.1	14.7
8490G 020	1.15	1.25	1.45	23.1	19.1	14.7
8490G 030	1.15	1.25	1.45	23.1	19.1	14.7
8490G 040	1.10	1.15	1.25	26.4	23.1	19.1

Environmental Specifications

The 8490G is designed to fully comply with Keysights’ product operating environment specifications. The following summarizes the environmental specifications for these products.

<b>Temperature</b>	
Operating	0° C to +55° C
Non-operating	–55° C to +85° C
Cycling	–65° C to +120° C, 10 cycles @ 20° C per minute, 20 minutes dwell time per MIL-STD-833F, Method 1010.8, Condition C (modified)

<b>Humidity</b>	
Operating	50% to 95% RH @ 40° C, 24 hour cycling, 5 times.

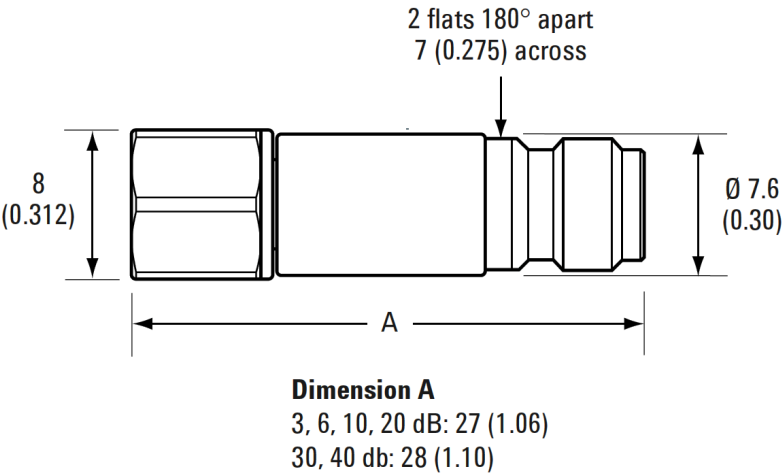
<b>Shock</b>	
Half-sine, smoothed	1000 G @ 0.5 ms, 3 shock pulses per orientation 18 total per MIL-STD-833F, Method 2002,4, Condition B (modified)

<b>Vibration</b>	
Broadband random	50 to 2000 Hz, 7.0 G rms, 15 minutes, per MIL-STD-833F, Method 2026-1 (modified)

<b>Altitude</b>	
Operating	< 4,600 meters (15,000 feet)
Storage	< 15,300 meters (50,000 feet)

Mechanical Dimension

<b>Net weight</b>	
	7.2 g (0.0158 lb) 3, 6, 10, 20 dB
	7.5 g (0.0165 lb) 30, 40 dB



All dimensions are in millimeters (inches)

Figure 1. 8490G product outline

Supplement  
Characteristics  
(typical)

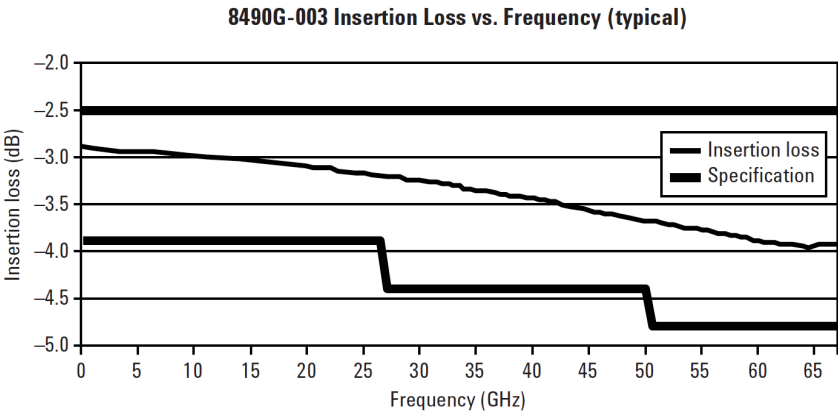


Figure 2. 8490G-003 typical insertion loss versus frequency

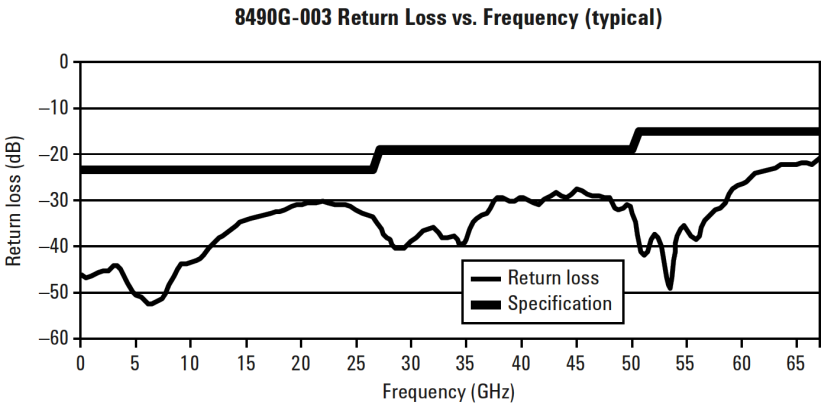


Figure 3. 8490G-003 typical return loss versus frequency

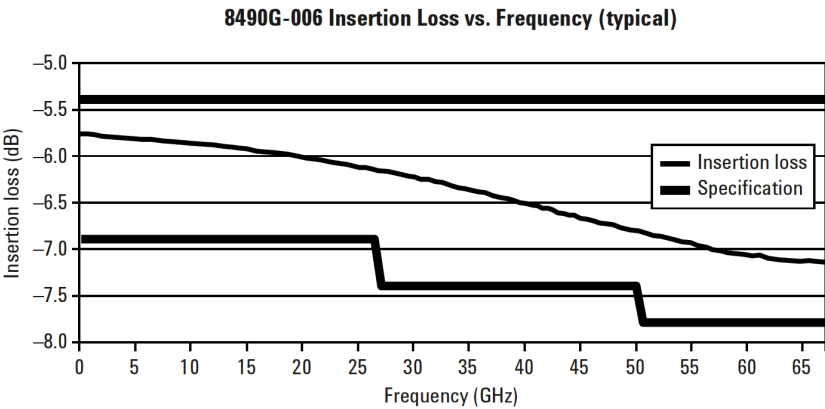


Figure 4. 8490G-006 typical insertion loss versus frequency

Supplement  
Characteristics  
(typical)  
—continued

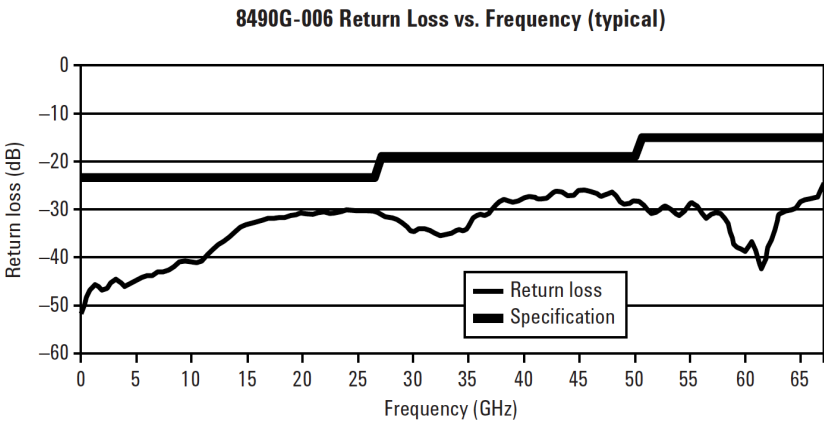


Figure 5. 8490G-006 typical return loss versus frequency

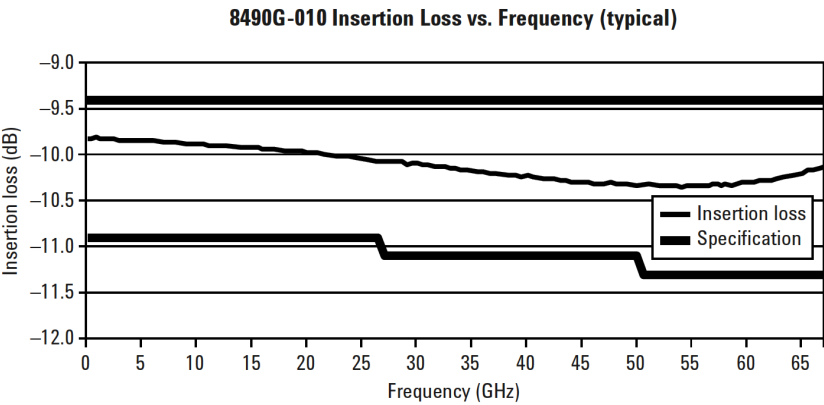


Figure 6. 8490G-010 typical insertion loss versus frequency

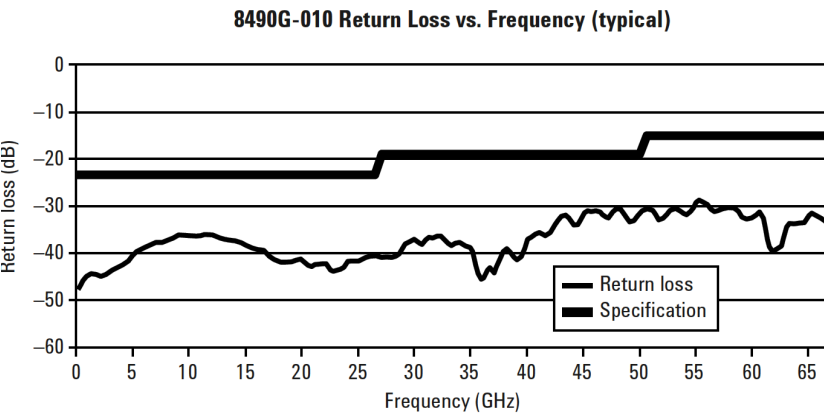


Figure 7. 8490G-010 typical return loss versus frequency

Supplement  
Characteristics  
(typical)  
—continued

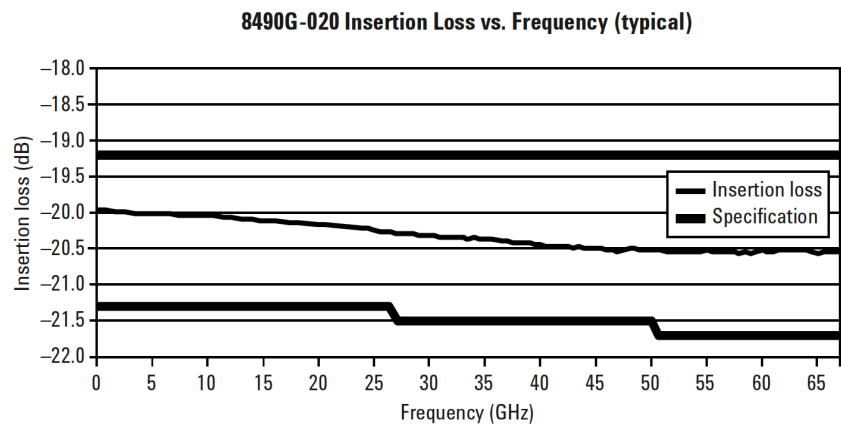


Figure 8. 8490G-020 typical insertion loss versus frequency

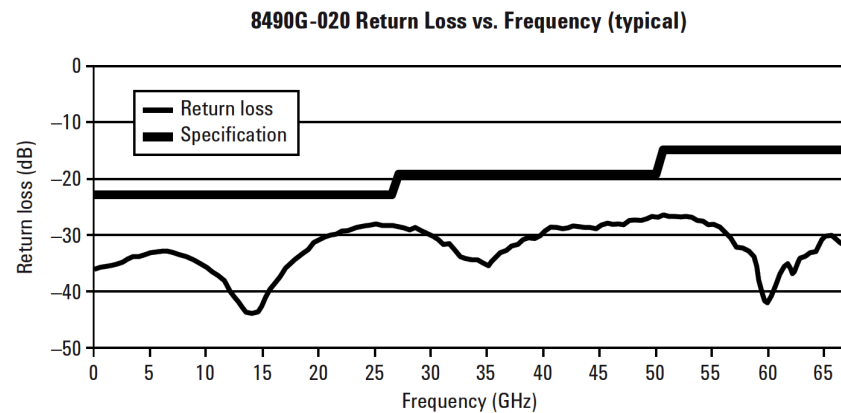


Figure 9. 8490G-020 typical return loss versus frequency

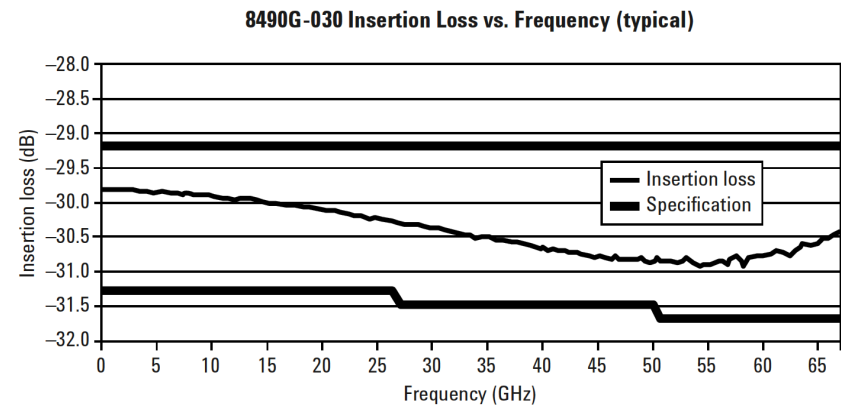


Figure 10. 8490G-030 typical insertion loss versus frequency

Supplement  
Characteristics  
(typical)  
—continued

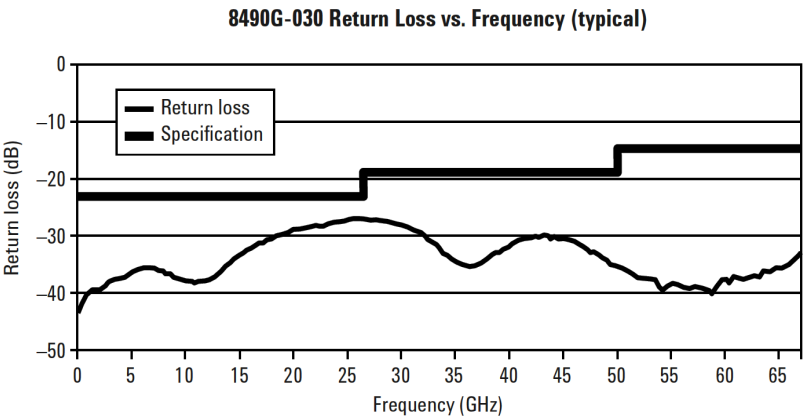


Figure 11. 8490G-030 typical return loss versus frequency

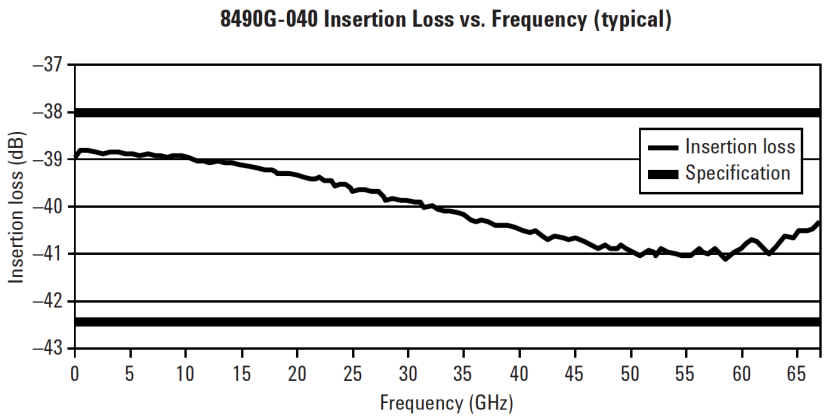


Figure 12. 8490G-040 typical insertion loss versus frequency

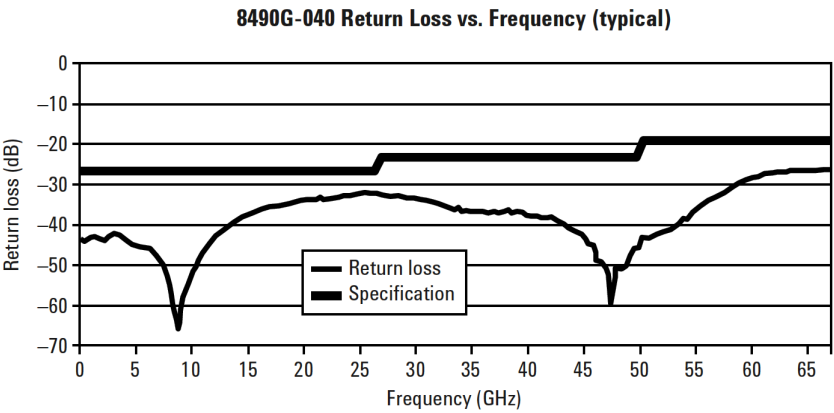


Figure 13. 8490G-040 typical return loss versus frequency



Ordering Information

Coaxial attenuator

8490G DC to 67 GHz, 1.85 mm coaxial connector

Attenuation option (must choose one)

8490G-003	3 dB attenuation
8490G-006	6 dB attenuation
8490G-010	10 dB attenuation
8490G-020	20 dB attenuation
8490G-030	30 dB attenuation
8490G-040	40 dB attenuation

Calibration Documentation (optional)

8490G-UK6	calibration data
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Web Resource

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