

# FIXED ATTENUATORS

41, 43 Series DC to 60 GHz\*



41V-10



43KC-10



41V-20



43KC-20

Anritsu offers two series of fixed attenuators:

- *The Gold Line (Series 41) for precision measurement applications covering DC to 60 GHz\**
- *The Silver Line (Series 43) for use in systems and OEM equipment covering DC to 40 GHz*

Both series offer fixed attenuation values of 3, 6, 10, or 20 dB with models that span frequency range of DC to 26.5 GHz, 40 GHz, or 60 GHz\*

## Features

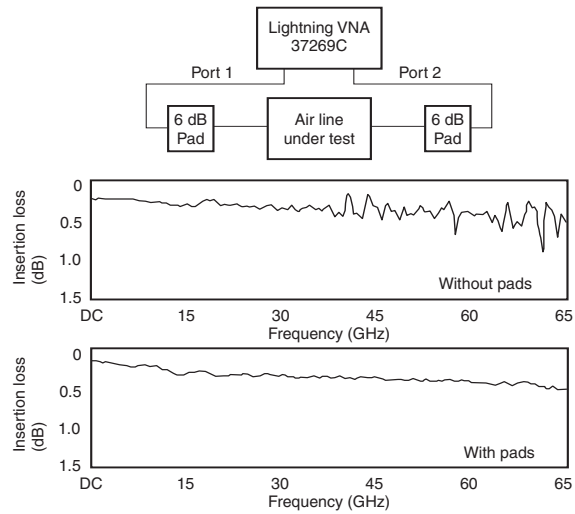
- 3, 6, 10, or 20 dB Attenuation up to 60 GHz\*
- Low SWR, 1.28 Up to 40 GHz
- SMA, 3.5 mm, and 2.4 mm compatibility
- Rugged and reliable K Connector® and V Connector®

## Advanced performance and reliability

Anritsu attenuators define the standard for fixed attenuator performance and reliability. Performance, however, is not their only distinguishing feature. Attenuators that use the K Connector® offer a vast improvement in reliability, compared to attenuators with SMA connectors. Attenuators that use the V Connector® can be connected directly to 2.4 mm devices.

For applications in metrology and calibration laboratories where precise characterization is essential, the Gold Line models are available in sets consisting of 3, 6, 10, and 20 dB units. Each is provided with attenuation and SWR calibration data. Calibration data is also optionally available for individual units, each of which is serialized.

\*Usable to 70 GHz



Improved Measurement Accuracy

The reliability of the attenuator connectors is affected by insertion force, outer conductor mating area, and mating alignment. The K Connector® is used because it has excellent performance in all of these areas. For example, a typical female SMA, 3.5 mm center conductor requires up to 27N\*\* of insertion force compared to 2.2N\*\* for the K Connector®. In addition, the K Connector® outer conductor is four times thicker than SMA, resulting in a conservative order-of-magnitude improvement in the number of reliable connections.

To avoid a major cause of connector failure, the K Connector® male pin is deliberately made shorter than the SMA pin. Therefore, the outer housing is properly aligned prior to center conductor mating, preventing destructive alignment.

## Gold Line - improved measurement accuracy

Adding Gold Line attenuators to your attenuation measurement setup will improve your measurement accuracy. In the test setup shown, the insertion loss of an air line was measured, first without and then with matching 6 dB pads. The difference in the accuracy of the two measurements is striking. By attenuating reflections and re-reflections that occur at the input and output of the air line, the pads reduce mismatch errors and allow the system to measure more accurately the actual insertion loss.

## Silver Line - improved system reliability

Fixed attenuators used in systems or OEM equipment must be small, lightweight, economical, and reliable under severe environmental conditions. The Silver Line meets these requirements. K Connectors ensure well-seated, low-reflection connections that provide consistent operation year after year.

The Series 43 (Silver Line) attenuator's small size, 8 mm dia. x 28.8 mm length, and light weight, 8g make them an attractive choice for miniaturized, lightweight systems.

\*\*Force is measured in Newtons (N).

# FIXED ATTENUATORS

41, 43 Series DC to 65 GHz

## Common specifications

Impedance	50 Ω	
Power rating (average)	2W at 20°C; 1W at 85°C	
Temperature coefficient	0.001 dB/dB/°C	
Connectors	V Connector®	Male and female compatible with 2.4 mm
	K Connector®	Male and female, compatible with SMA and 3.5 mm
Material	Passivated stainless steel housing	
Size	Length	28.8 mm ±0.5 mm
	Diameter	8 mm
Weight	8g	
Temperature range	Operating	-55°C to +85°C
	Nonoperating	-55°C to +125°C

## Specifications

	Model <sup>①</sup>	Attenuation (dB)	Attenuation Accuracy				SWR				
			DC-18 GHz	18-26.5 GHz	26.5-40 GHz	40-65 GHz	DC-12 GHz	12-18 GHz	18-26.5 GHz	26.5-40 GHz	40-60 GHz
Gold Line	DC to 60 GHz 41V-3 41V-6 41V-10 41V-20	3	±0.5	±0.6	±0.9	±1.50	1.15	1.20	1.30	1.50	1.90
		6	±0.5	±0.6	±0.9	±1.50	1.15	1.20	1.25	1.40	1.90
		10	±0.5	±0.6	±0.9	±1.50	1.15	1.20	1.25	1.40	1.90
		20	±0.5	±0.6	±0.9	±1.50	1.15	1.20	1.25	1.40	1.90
	DC to 40 GHz 41KC-3 41KC-6 41KC-10 41KC-20	3	±0.4	±0.5	±0.8	-	1.10	1.15	1.23	1.42	-
		6	±0.4	±0.5	±0.8	-	1.10	1.15	1.18	1.28	-
		10	±0.4	±0.5	±0.8	-	1.10	1.15	1.18	1.28	-
		20	±0.4	±0.5	±0.8	-	1.10	1.15	1.18	1.28	-
	DC to 26.5 GHz 41KB-3 41KB-6 41KB-10 41KB-20	3	±0.4	±0.5	-	-	1.10	1.15	1.23	-	-
		6	±0.4	±0.5	-	-	1.10	1.15	1.18	-	-
		10	±0.4	±0.5	-	-	1.10	1.15	1.18	-	-
		20	±0.4	±0.5	-	-	1.10	1.15	1.18	-	-
Silver Line	DC to 40 GHz 43KC-3 43KC-6 43KC-10 43KC-20	3	±0.5	±0.6	±0.9	-	1.15	1.20	1.30	1.50	-
		6	±0.5	±0.6	±0.9	-	1.15	1.20	1.30	1.40	-
		10	±0.5	±0.6	±0.9	-	1.15	1.20	1.30	1.40	-
		20	±0.5	±0.6	±0.9	-	1.15	1.20	1.30	1.40	-
	DC to 26.5 GHz 43KB-3 43KB-6 43KB-10 43KB-20	3	±0.5	±0.6	-	-	1.15	1.20	1.30	-	-
		6	±0.5	±0.6	-	-	1.15	1.20	1.30	-	-
		10	±0.5	±0.6	-	-	1.15	1.20	1.30	-	-
		20	±0.5	±0.6	-	-	1.15	1.20	1.30	-	-

① For traceability, all Gold Line attenuators are serialized.

② ±1 dB from DC to 26.5 GHz; ±1.3 dB from >26.5 to 40 GHz, including frequency response and DC offset.

## Environmental information

Tests are performed per MIL-STD-202F.

Operating Temperature Range	-55°C to +85°
Temperature Shock	-55°C to +150°
Humidity	95% at 40°C, 96 hours, Test 103B, Condition B
Shock	100 G peak sawtooth, method 213, Condition B
Vibration	Sinewave: 10 Hz to 2000 Hz, 0.06" DA, method 204, test condition D Random: 50 Hz to 2000 Hz, 11.6 Grms, Power Spectral Density 0.1 Grms 2 Hz, Method 214, Test Condition 1, Letter D
Salt Spray	5% concentration for 48 hours, Method 101D, Condition B
Voltage withstanding	500 Vac RMS, 60 seconds, method 301

## Ordering information

Please specify model/order number, name, and quantity when ordering. Single fixed attenuators may be ordered from the table above.

Model/Order No.	Name
	<b>Precision Fixed Attenuator</b>
41KB-3, 6, 10, or 20	3 dB, 6 dB, 10 dB, 20 dB, DC to 26.5 GHz, 50 Ω, K(m)-K(f)
41KC-3, 6, 10, or 20	3 dB, 6 dB, 10 dB, 20 dB, DC to 40 GHz, 50 Ω, K(m)-K(f)
41V-3, 6, 10, or 20	3 dB, 6 dB, 10 dB, 20 dB, DC to 60 GHz, 50 Ω, V(m)-V(f)
	<b>Precision Fixed Attenuator Set</b>
41KB-S*	41KB Series
41KC-S*	41KC Series
41V-S*	41V Series
	<b>Fixed Attenuator</b>
43KB-3, 6, 10, or 20	3 dB, 6 dB, 10 dB, 20 dB, DC to 26.5 GHz, 50 Ω, K(m)-K(f)
43KC-3, 6, 10, or 20	3 dB, 6 dB, 10 dB, 20 dB, DC to 40 GHz, 50 Ω, K(m)-K(f)
	<b>Option</b>
Option C**	Calibration Data

\* A set of 3, 6, 10, and 20 dB Gold line (Series 41). Attenuators are supplied in a handsome hardwood case. Calibration data are included for each unit.

\*\* Attenuation and SWR test data are provided for input and output ports at 500 MHz frequency intervals.