

Keysight Technologies

Multi-Channel Attenuation Control Units

J7204A/B (4-channels)

DC to 6/18 GHz

J7205A/B (5-channels)

DC to 6/18 GHz

Technical Overview



Key Features

- Exceptional 0.03 dB insertion loss repeatability per section for the entire 5 million cycles ensures accuracy and reduces calibration intervals
- Excellent attenuation accuracy and flatness ensures precise measurements
- Multi-channel attenuation path (up to 5-channels) enables multi-DUT measurements at one time
- LAN and GPIB interface with soft front panel provide easy connectivity, programming flexibility and control

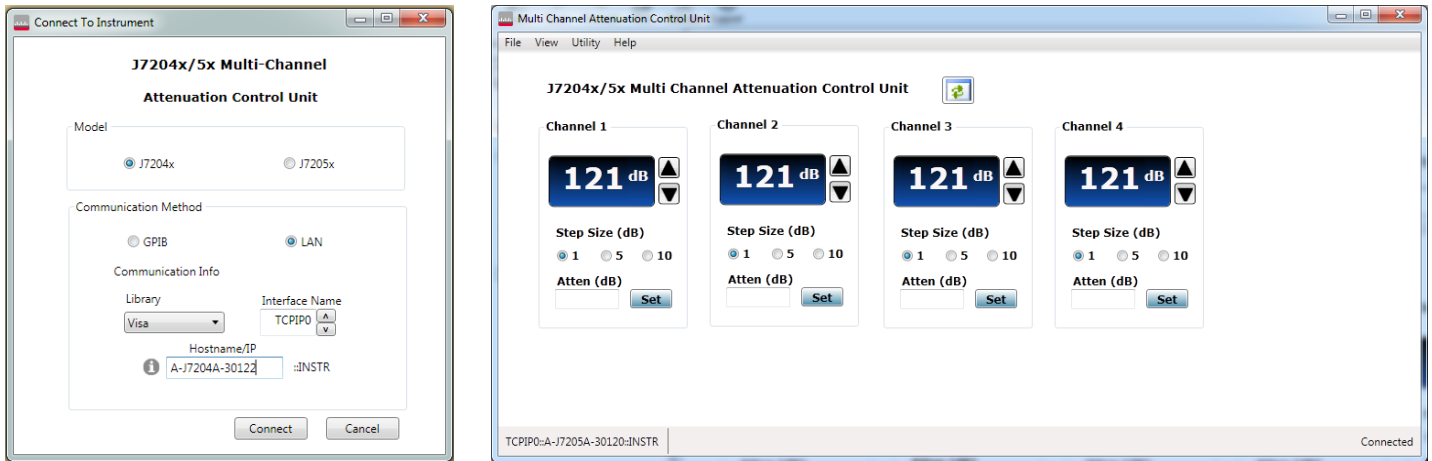


Figure 1. Soft front panel for J7204A/B multi-channel attenuation control unit

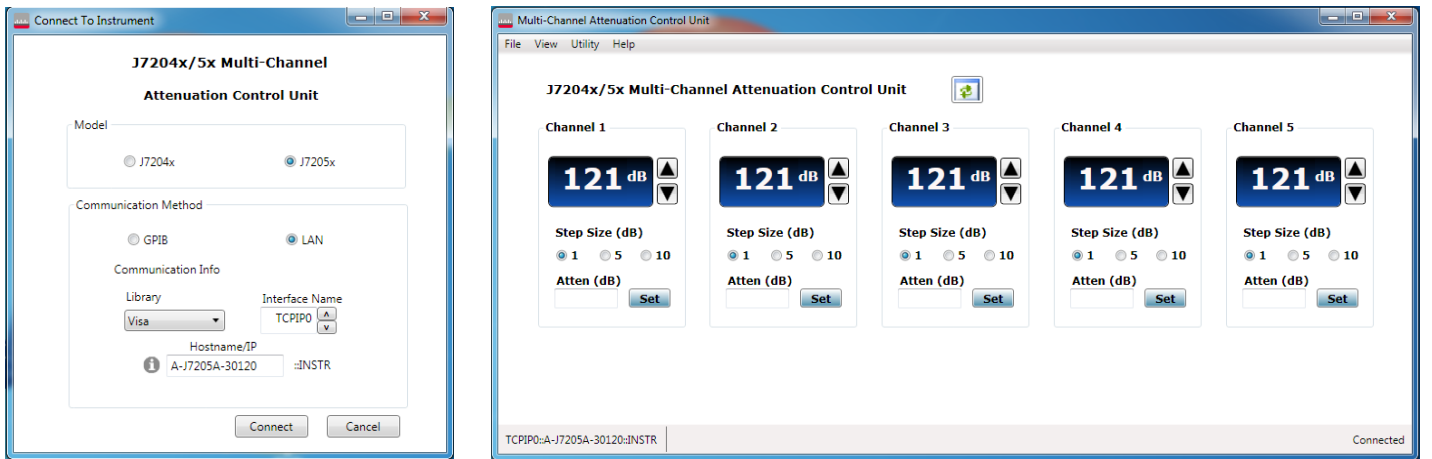


Figure 2. Soft front panel for J7205A/B multi-channel attenuation control unit

Mobile Receiver Sensitivity Test

Figure 3 shows the simplified test setup for measuring receiver sensitivity. The receiver sensitivity test measures a receiver's performance using known signal conditions which include: modulation and coding type, SNR, and power input levels. Using the specified conditions, receivers must be able to decode data bits with a specified bit error rate (BER) at different input power levels.

External step attenuators are normally used in mobile receiver sensitivity test as they provide accurate power levels. They allow for an extremely accurate power measurement where the power level from the source can be kept constant leaving the attenuator to handle the signal conditioning from 0 dB up to 121 dB. In this case, the power level linearity problem at the source itself can be eliminated.

The multi-channel attenuation control units provide calibration data (as an option) to allow you to do a correction on the attenuation value and provides you with the exact input power level for each DUT. In addition to the superb repeatability of 0.03 dB and excellent attenuation accuracy and flatness, this method ensures the utmost accuracy and stability of the input power when performing receiver sensitivity test.

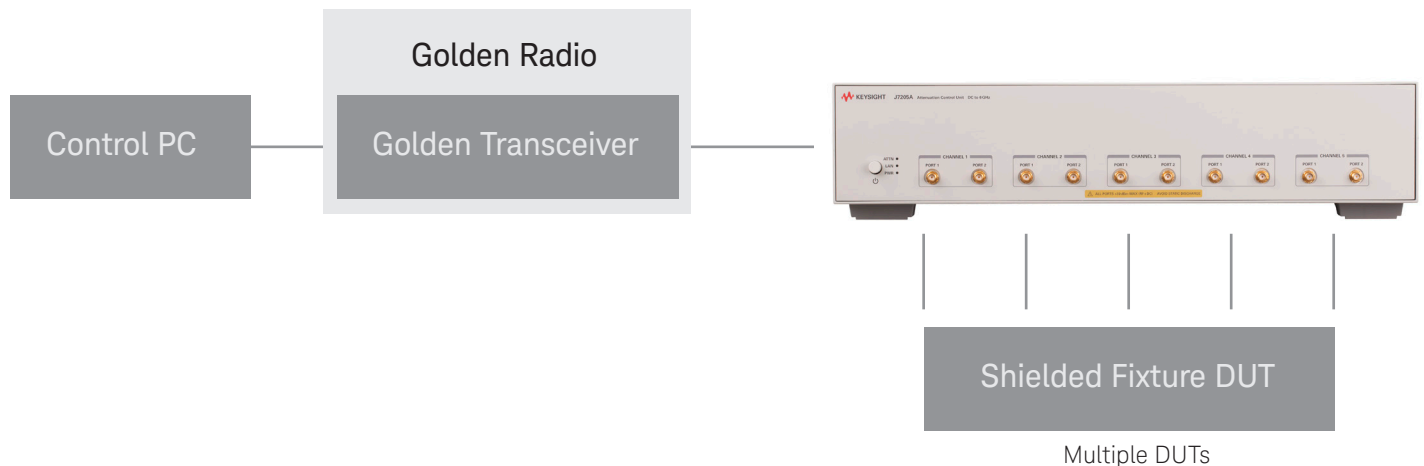


Figure 3. Simplified test setup for mobile receiver sensitivity test using golden radio method

Specifications

Specifications refer to the performance standards or limits against which the J7204A/B and J7205A/B attenuation control units are tested at 25°C.

Typical characteristics are included for additional information only and they are not warranted specifications. Those denoted as “typical”, “nominal” or “approximate” and are printed in *italic*.

Specifications subject to change.

Product model	J7204A	J7204B	J7205A	J7205B
Frequency range	DC to 6 GHz	DC to 18 GHz	DC to 6 GHz	DC to 18 GHz
Number of channels	4-channels	4-channels	5-channels	5-channels
Attenuator type	Electro-mechanical attenuator	Electro-mechanical attenuator	Electro-mechanical attenuator	Electro-mechanical attenuator
Attenuation accuracy range/steps	0 to 121 dB, 1 dB steps	0 to 121 dB, 1 dB steps	0 to 121 dB, 1 dB steps	0 to 121 dB, 1 dB steps
Insertion loss repeatability	0.03 dB	0.03 dB	0.03 dB	0.03 dB
Max insertion loss (at 0 dB)	2.5 dB	DC to 6 GHz: 2.5 dB 6 to 18 GHz: 5.0 dB	2.5 dB	DC to 6 GHz: 2.5 dB 6 to 18 GHz: 5.0 dB
Return loss (VSWR)	14 dB (1.50)	DC to 6 GHz: 14 dB (1.50) 6 to 18 GHz: 10 dB (1.90)	14 dB (1.50)	DC to 6 GHz: 14 dB (1.50) 6 to 18 GHz: 10 dB (1.90)
Operating life per section	5 million cycles	5 million cycles	5 million cycles	5 million cycles
Switching speed per channel	100 ms	100 ms	100 ms	100 ms
Maximum input power	1 W (+30 dBm)	1 W (+30 dBm)	1 W (+30 dBm)	1 W (+30 dBm)
Connectivity	LAN and GPIB	LAN and GPIB	LAN and GPIB	LAN and GPIB
Connector type	SMA/Type-N	SMA/Type-N	SMA/Type-N	SMA/Type-N

J7204A/B and J7205A/B Supplemental Characteristics

Supplemental characteristics are intended to provide useful information. They are typical but non-warranted performance parameters.

J7204A/B and J7205A/B multi-channel attenuation control units	
Power	100 to 240 VAC (50/60 Hz)
	The instrument can operate with main supply voltage fluctuations of up to $\pm 10\%$ of the nominal voltage
	Air conditioning equipment (or other motor-operated equipment) should not be placed on the same AC line that powers the J7204A/B and J7205A/B
	The J7204A/B and J7205A/B maximum power is 50 W

Attenuation Accuracy

(± dB; reference from 0 dB setting)

Attenuation setting for step ranges (dB)	DC to 6 GHz	6 to 18 GHz
1 to 2	0.3	0.7
3 to 4	0.4	0.7
5 to 6	0.5	0.8
7 to 10	0.6	0.8
11 to 20	0.7	1.4
21 to 40	1.2	2
41 to 60	1.8	2.8
61 to 80	2.4	3.6
81 to 100	3	4.4
101 to 121	3.3	5.3

Typical Performance

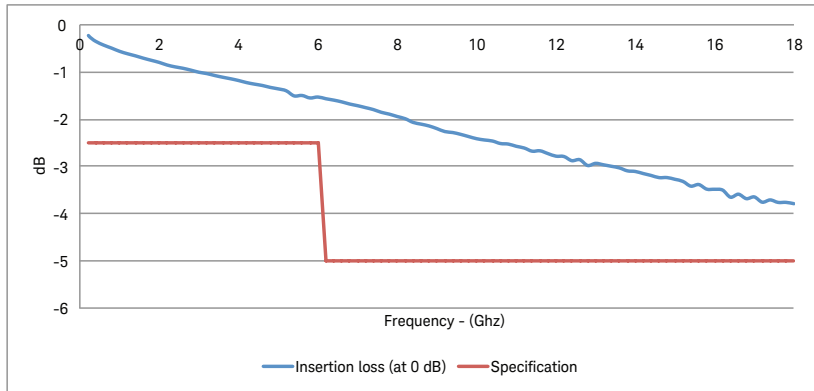


Figure 4. J7204A/B and J7205A/B insertion loss (at 0 dB) versus frequency

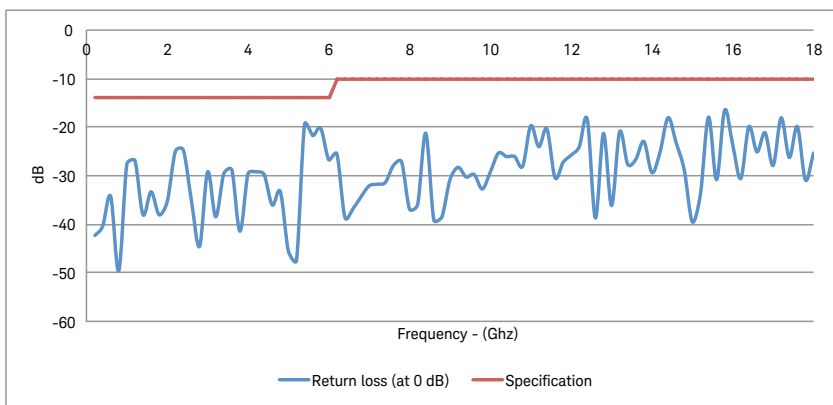


Figure 5. J7204A/B and J7205A/B return loss (at 0 dB) versus frequency

Environmental Specifications

The J7204A/B and J7205A/B multi-channel attenuation control units are designed to fully comply with Keysight Technologies' product specifications. The following information shows the summarized environmental specifications for this product.

Temperature range

Operating	0 to +55 °C
Storage	- 40 to +70 °C

Relative humidity

Operating	95 % Relative Humidity (RH) at 40 °C, 5-day cycles
Storage	90% RH at 65 °C, 24 hours

Shock

End-use handling	Delta-V: 1.6 m/s, duration < 3ms
Transportation	11.34 < m < 27.22 kg: 30 G, delta-V 6.76 m/s

Vibration

Operating random	5 to 500 Hz, 0.21 g RMS
Survival random	5 to 500 Hz, 2.09 g RMS
Swept sine	5 Hz to 500 Hz to 5 Hz, 0.5 g

Altitude

Operating	2,000 meters (6,651 feet)
Storage	4,572 meters (15,000 feet)

ESD immunity

Direct discharge	4 kV per IEC/EN61000-4-2
Air discharge	8 kV per IEC/EN61000-4-2

Mechanical Dimension

Does not include SMA/Type-N connectors

*Dimensions are in mm (inches) nominal, unless otherwise specified

Specifications	J7204A/B	J7205A/B
Net weight	11 kg (24.25 lbs)	11.5 kg (25.35 lbs)
Dimension (H x W x D)	88.3 mm x 425.6 mm x 578.1 mm	

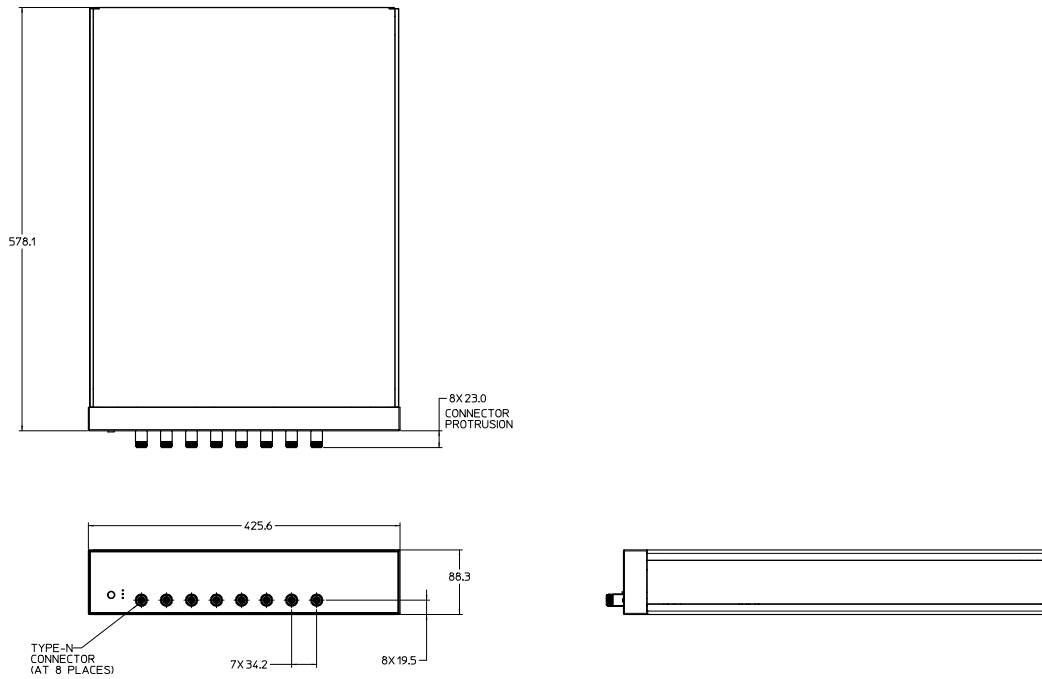


Figure 7. Product dimensions for J7204A/B (Option 001, Type-N connectors)

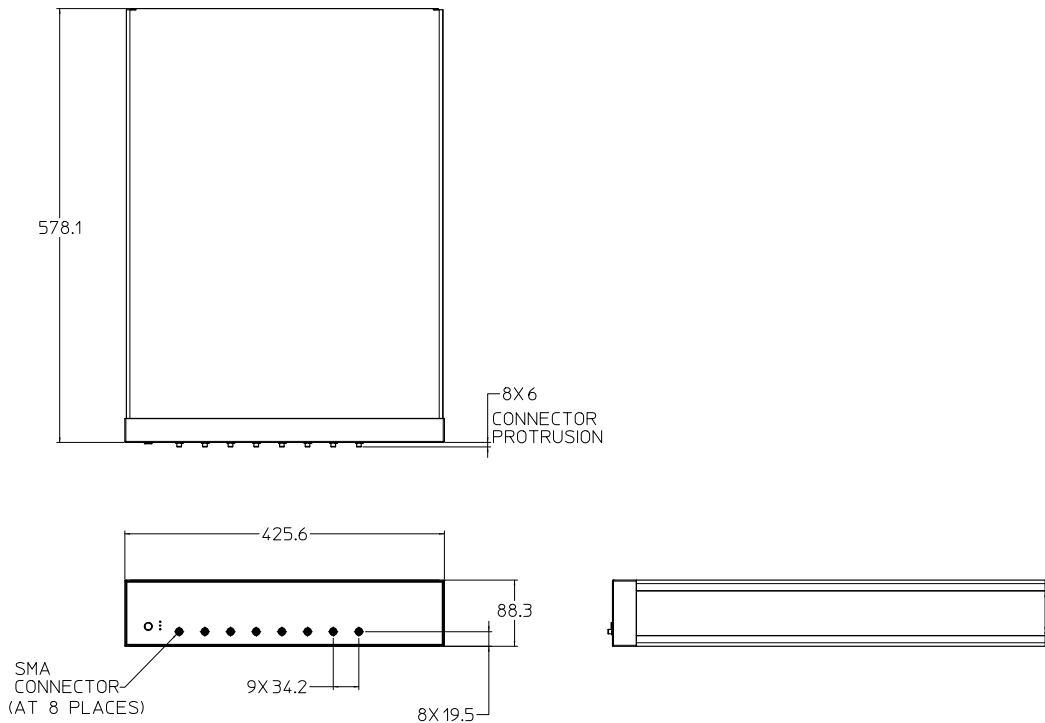


Figure 8. Product dimensions for J7204A/B (Option 002, SMA connectors)

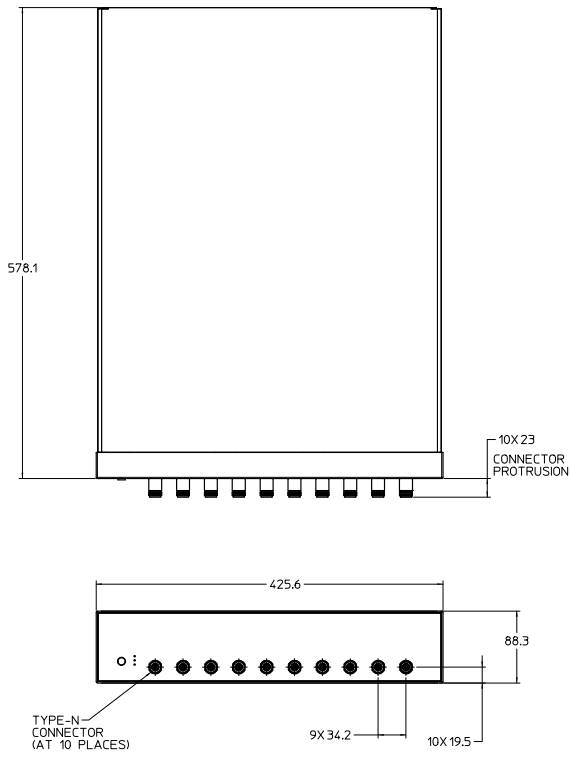


Figure 9. Product dimensions for J7205A/B (Option 001, Type-N connectors)

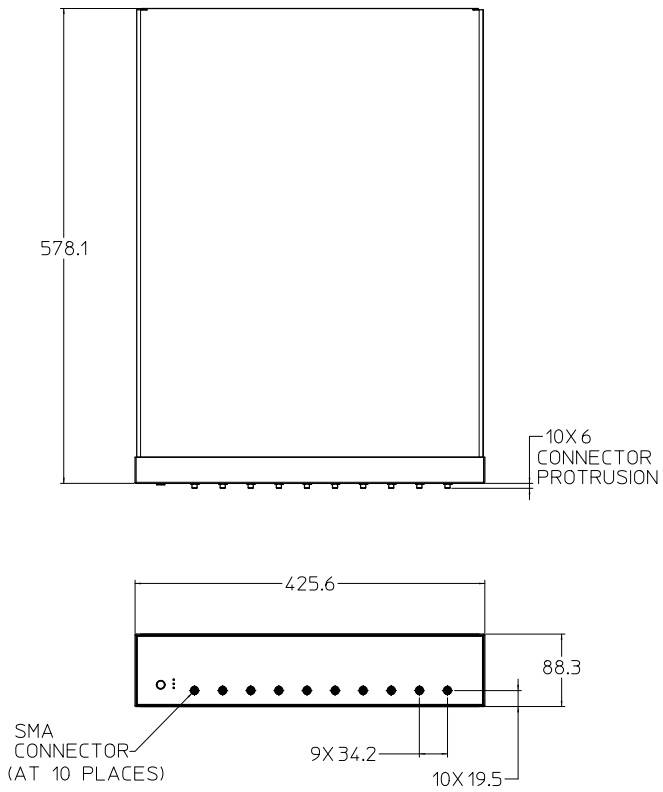


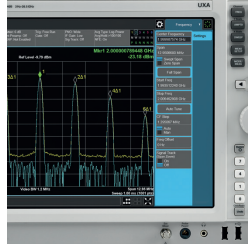
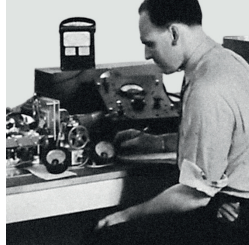
Figure 10. Product dimensions for J7205A/B (Option 002, SMA connectors)

Ordering Information

J7204A	4-channels attenuation control unit, DC to 6 GHz, 0 to 121 dB
J7204B	4-channels attenuation control unit, DC to 18 GHz, 0 to 121 dB
J7205A	5-channels attenuation control unit, DC to 6 GHz, 0 to 121 dB
J7205B	5-channels attenuation control unit, DC to 18 GHz, 0 to 121 dB
Option 001	Type-N (f) connectors
Option 002	SMA (f) connectors
UK6	Commercial calibration data

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