

Feedthrough Terminations, Matching Pads

For the precise measurement of insertion loss and phase shift, the signal generator, DUT and receiver must be well matched to one another. Matching pads allow systems of different characteristic impedance to be connected without involving costly retrofits.

Feedthrough Terminations R&S®RAD (500 mW), R&S®RAD50

The Feedthrough Terminations R&S®RAD are used for matching 50 Ω lines to measuring equipment of high input impedance (e.g. oscilloscopes or tuners with 1 MΩ input impedance). The feedthrough terminations must be plugged directly onto the input connector of the measuring device to ensure optimum matching.



Matching Pads R&S®RAM and R&S®RAZ (2 W)

The bidirectional Matching Pad R&S®RAM provides the match between 50 Ω and 75 Ω impedance systems in both directions up to 2.7 GHz, causing minimum attenuation. Care should be taken that ports with the same characteristic impedances be connected to one another.



Voltage transformation is defined as the ratio in dB of the voltages at the connectors:

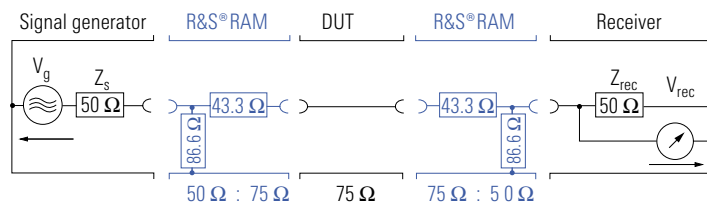
$$A_{50\Omega \rightarrow 75\Omega} = 20 \cdot \lg \frac{V_{50\Omega}}{V_{75\Omega}} = 4 \text{ dB}$$

$$A_{75\Omega \rightarrow 50\Omega} = 20 \cdot \lg \frac{V_{75\Omega}}{V_{50\Omega}} = 7.5 \text{ dB}$$

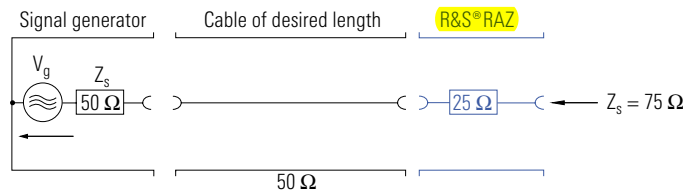
Power attenuation is the same in both directions:

$$A_p = 10 \cdot \lg \frac{V_{75\Omega}^2 \cdot 50\Omega}{75\Omega \cdot V_{50\Omega}^2} = 5.72 \text{ dB}$$

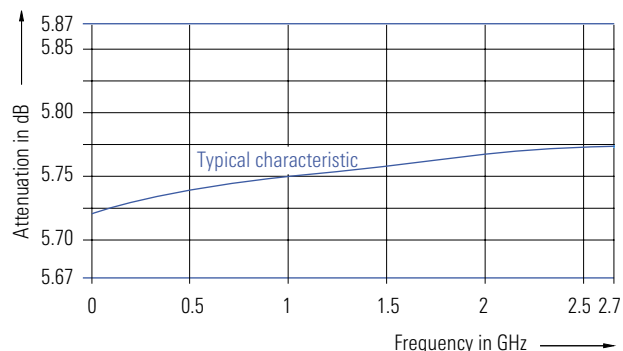
The unidirectional Matching Pad R&S®RAZ is particularly suitable for the matching of signal generators. Signal and sweep generators have in most cases a source impedance of 50 Ω. They can be adapted to feed 75 Ω systems by means of the Matching Pad R&S®RAZ involving extremely low power loss. The output voltage displayed on the generator is also valid for the 75 Ω system without requiring correction.



Two Matching Pads R&S®RAM to match a 75 Ω DUT to a signal generator and receiver, each having a characteristic impedance of 50 Ω



By connecting a Matching Pad R&S®RAZ consisting of a 25 Ω series resistor, a signal generator with a 50 Ω output has an output impedance of 75 Ω



Frequency response and error limits of power attenuation of the Matching Pad R&S®RAM