

11.12 Loudspeaker cables

If the cable connecting guitar amplifier and loudspeaker is merely a few meters long, any cable with adequately thick cross-section may be used. “Adequate” is a conductor cross-section of 0.75 mm², beyond reproach would be 1.5 mm². Regular conductor-copper is perfectly suitable, low-oxygen special copper – or even silver – is not required. It is entirely irrelevant whether 49.4 W or 49.5 W, of an amplifier power of 50 W, arrive at the speaker, and possible sound changes are certainly inaudible at $\Delta L < 0.05$ dB. However, conventional guitar cables are unsuitable because the inner conductor will, as a rule, be too thin. The following table specifies the **percentile power loss** for a loudspeaker cable of a length of 2 m and for a load impedance of 8 Ω :

	Cu	Cu!	Ag	Al
2x0.75 mm ²	2,33	2,24	2,10	3,76
2x1.5 mm ²	>> 1,18 <<	1,13	1,06	1,91
2x2.5 mm ²	0,71	0,68	0,64	1,15

Cu = regular cable copper, Cu! = high-purity copper, Ag = silver, Al = aluminum*. Example: with a 2-m-long 2x1,5mm²-cable you will experience, given a load of 8 Ω , a power loss of 1.18%; instead of e.g. 50 W, only 49.4 W arrive at the speaker; with a pure-silver cable, that power rises to 49.5 W. For a 16- Ω -load, the losses are even smaller: 49,71 W and 49,74 W, respectively.

In A.D. 2014, robust cables with high-quality collets-plugs are available for less than 10 Euro – these should be good even for professional use. Yes, cables do have a capacitance, and an inductance, and a skin effect may also be observed – but all associated effects are completely irrelevant compared of the loudspeaker impedance. Minimizing such aspects will increase the price but not the relevant quality. As soon as cable comparison tests are carried out under blind-test conditions, the inexpensive cable sounds just as good as the costly designer-cable. “Costly” may indicate 100 Euro – but possibly much more: for 5 m loudspeaker wire, the asking is **21.000.- €! Silver, braided**. Here’s a recommendation: cut up in pieces, it makes for a nice (alternative) necklace for the groupies.

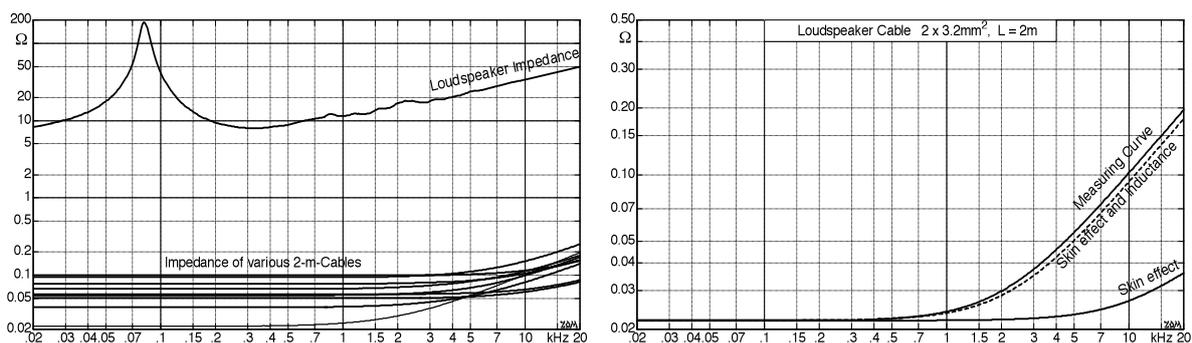


Fig. 11.125: Loudspeaker- and cable-impedance- in comparison (left), calculation vs. measurement (right).

Fig. 11.125 indicates that the measured rise of the impedance of a relatively thick speaker-cable is only in part due to the skin effect. The main share results from the inductance of the two-wire line. Even this increase of the impedance is insignificant because it makes for only less than 1% of the loudspeaker impedance.

* A CCA-cable (copper clad aluminum) is an aluminum cable with a thin copper coating!