

## Calibration Guidelines, Expert Reports, Technical Reports

### Electricity and Magnetism

Reference	Title	Title (original)	Available in
DKD-R 1-1	Measurement and generation of small AC voltages with inductive voltage dividers <a href="https://doi.org/10.7795/550.20180828AEN">https://doi.org/10.7795/550.20180828AEN</a>	Messung und Erzeugung kleiner Wechselfspannungen mit induktiven Spannungsteilern <a href="https://doi.org/10.7795/550.20180828A">https://doi.org/10.7795/550.20180828A</a>	de, en
DKD-L 02-2	Procedures for a traceable RF voltage measurement <a href="https://doi.org/10.7795/550.20190509">https://doi.org/10.7795/550.20190509</a>	Verfahren zur rückgeführten Hochfrequenz-Spannungsmessung	de, en

#### Calibration Guidelines:

DKD calibration guidelines (DKD-R) are application documents that meet the requirements of DIN EN ISO/IEC 17025. The guidelines contain a description of technical, process-related and organizational procedures used by accredited calibration laboratories as a model for defining internal processes and regulations. DKD guidelines may become an essential component of the quality management manuals of calibration laboratories. The implementation of the guidelines promotes equal treatment of the equipment to be calibrated in the various calibration laboratories and improves the continuity and verifiability of the work of the calibration laboratories. In addition, the implementation of the guidelines allows the state of the art in the respective field to be incorporated into laboratory practice.

#### Technical Reports:

DKD technical reports (DKD-L) are recommendations on technical issues linked to the practical work of accredited calibration laboratories. The technical reports contain procedures which accredited calibration laboratories may use as a model for defining internal processes and regulations. These reports may become an essential component of the quality management manuals of calibration laboratories. Helping the laboratories to put the respective state-of-the-art techniques into practice, these reports aim to contribute to a harmonization of procedures as well as to improve the work efficiency in calibration laboratories.

Download of DKD documents: <https://www.ptb.de/cms/nc/en/metrological-services/dkd/publications.html>

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## Annex – Abstracts

DKD-R 1-1	<p><b>Measurement and generation of small AC voltages with inductive voltage dividers</b></p> <p>This guide applies to the generation and measurement of small AC voltages from 1 mV to 1 V, and in dependency on the selected procedure and method used in the frequency range from 50 Hz to 100 kHz. The accreditation of the measurand “AC voltage” for voltages above 1 V is required.</p>
DKD-L 02-2	<p><b>Procedures for a traceable RF voltage measurement</b></p> <p>Voltage, current and resistance are the basic quantities for precision measurements in the field of direct current and low frequency. At radio frequencies (RF), however, RF power and reflection are the most relevant, while voltage and current measurement only play a secondary role. Accordingly, extensive literature can be found regarding RF power and reflection measurement. Very little has been published about RF voltage measurement, which is equally the case for current measurement at higher frequencies.</p> <p>Voltage measurements from frequencies above approx. 1 MHz can be divided as follows: Traditional measurement procedures prevail in the frequency range up to 100 MHz; the source voltage of low impedance sources is determined by high impedance voltage measurement. For frequencies above about 1 GHz, both voltmeters and sources are usually adapted to the characteristic impedance of the connecting lines, i.e. load and source impedance are identical (usually 50 Ω). Given the low source resistance, a voltage measurement without load proves difficult. As a matter of principle, procedures from both areas can be applied in the range between 100 MHz and 1 GHz. In the range above approx. 1 GHz, it is usually only the amplitude of the incident voltage wave which is measured. Taking into account the characteristic impedance of the incident power, it can be measured with high accuracy.</p> <p>The present document describes the aspects to be considered in traceable RF voltage measurement in the frequency range above 1 MHz. In addition, there will be a brief discussion about RF current measurement.</p>