

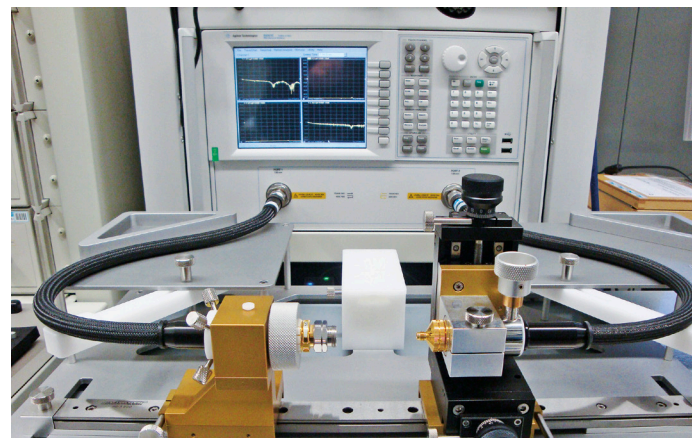


## Metrology course

# VNA Tools training course

*VNA Tools is a free software developed by METAS for measurements with the Vector Network Analyzer (VNA). The software facilitates the tasks of evaluating measurement uncertainty in compliance with the ISO-GUM and justifying metrological traceability. The software is available for download at [www.metas.ch/vnatools](http://www.metas.ch/vnatools). The three day course provides a practical and hands-on lesson with this superior and versatile software.*

<b>Dates</b>	<ul style="list-style-type: none"><li>• May 9 to 11, 2023 VNA expert day on May 12, 2023</li><li>• November 7 to 9, 2023 VNA expert day on November 10, 2023</li></ul>
<b>Location</b>	Federal Institute of Metrology METAS Lindenweg 50, 3003 Berne-Wabern
<b>Language</b>	The course will be given in English.
<b>Target audience</b>	Engineers, scientists, technicians and students in metrology, calibration, research and production. Anyone who is required to perform accurate S-parameter measurements and to demonstrate metrological traceability.
<b>Content</b>	<p>The training has a focus on practical usage of the software. Participants bring a laptop to the course and will be guided in the use of VNA Tools through the different steps of a VNA measurement. This covers interaction with the VNA, data taking, VNA calibration, VNA error correction, data visualization, data export, evaluation of uncertainty contributions, uncertainty budget and more.</p> <p>The course however goes beyond a tutorial in software usage. It touches a wide range of conceptual aspects related to VNA Tools and relevant for the quality of VNA measurements in general, just to name a few.</p> <ul style="list-style-type: none"><li>• the powerful generic uncertainty engine METAS UncLib (<a href="http://www.metas.ch/unclib">www.metas.ch/unclib</a>),</li><li>• the determination of best measurement capabilities,</li><li>• the role of connector imperfections in the definition of calibration standards and best measurement practice.</li></ul>



<b>Free VNA expert day</b>	State of the art primary S-parameter traceability and how VNA Tools can support
<b>Cost</b>	CHF 2,800, lunches and breaks included, without travel and accommodation. VNA expert day free for course participants.
<b>Registration</b>	<p>The number of participants is limited to 16. Registration by mail, at least one month before the course at <a href="mailto:sekretariat@metas.ch">sekretariat@metas.ch</a>.</p> <p>METAS reserves the right to cancel the course if the minimum number of participants is not reached.</p> <p>Registrations are final and binding but it is possible to appoint a replacement if unable to attend. The fee is also due in case of no-show, drop out of the training or cancellation on the part of the attendee.</p>
<b>Contacts / Course details</b>	Juerg Ruefenacht or Michael Wollensack: <a href="mailto:Juerg.Ruefenacht@metas.ch">Juerg.Ruefenacht@metas.ch</a> <a href="mailto:Michael.Wollensack@metas.ch">Michael.Wollensack@metas.ch</a>