

## Using MET/CAL® *Plus* for RF Calibration

Automation saves time and money

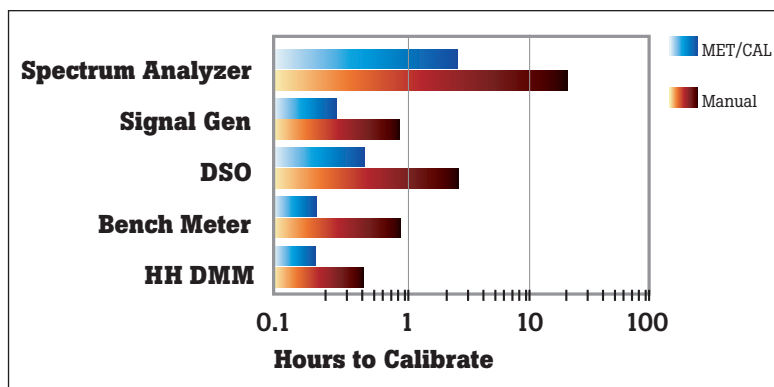
### Application Note



Imagine calibrating a spectrum analyzer in less than 40 minutes with data results and measurement uncertainty. Impossible? If you do this sort of calibration manually, you might think so. Calibrating RF instruments like spectrum analyzers or signal generators is generally a time consuming activity involving repetitive measurements and many standards. But it doesn't have to be that way. Automating the calibration process with MET/CAL *Plus* calibration management software can help you manage and calibrate your RF workload efficiently, saving you time and money.

### Automating with MET/CAL improves the calibration process

Users report that MET/CAL is four to eight times faster than manual calibration and provides consistent, fast calibration across their entire workload. With self-documenting procedures that can include plain language and graphics to guide the process, operators complete all tests and collect the appropriate data the same way every time. A MET/CAL calibration record documents calibration status, history, adequacy, test details and traceability for all the test and measurement instruments you manage. And MET/CAL also finishes the paperwork, with a wide range of included reports that fit easily into your quality system.



### Full access to multiple uncertainty tools

Performing uncertainty analysis is required by most lab accrediting organizations and national standards throughout the world. MET/CAL includes powerful tools to calculate measurement uncertainty, giving you more control over the calculations to enhance conformance to guidelines and standards.

MET/CAL *Plus* enables you to establish minimum test uncertainty ratios (TURs) to assure that tests performed by the calibrator are sufficiently accurate for the instrument being calibrated. Flagging TURs helps demonstrate the adequacy of standards according to ISO 9001, 4.11.2a.

Support is included for the Welch-Satterthwaite formula for computing effective degrees of freedom, including the ability to specify sensitivity coefficients and degrees of freedom for individual uncertainty components.

Also included is support for guardbanding, which dynamically adjusts your test limits during procedure execution to take into account the uncertainty of the measuring equipment. This decreases the risk of accepting an out-of-tolerance unit under test.

Calibrating RF instruments often involves calculating measurement uncertainty for a system rather than for a single instrument. You must take into account multiple instruments, connectors, and cables. MET/CAL lets you input all of the "user-defined" information you require to calculate system uncertainty. MET/CAL will retrieve the data at calibration and use it as part of the uncertainty calculation.

## Choose from a large procedure library

MET/CAL comes with a range of sample procedures that can be used as-is or can be modified to meet your needs. These procedures are also valuable as examples to guide you through creating your own.

You can receive additional warranted procedures by subscribing to the MET/SUPPORT Gold support plan. These procedures are warranted by Fluke Corporation to produce valid calibrations on the intended unit under test (UUT) for the specified model and revision level. The warranty assures you of Fluke's full support for the original, unaltered procedure.

You can view the current list of available procedures by visiting the MET/CAL *Plus* page on the Fluke web site [www.fluke.com](http://www.fluke.com).

## Write your own procedures

Write your own procedures using the supplied MET/CAL text editor, which uses a special calibration procedure language. Procedures for simple devices like digital multimeters, gauges, and mechanical tools are easy to create and may be generated by the Fluke AutoPro or Manual MET/CAL utility.

Procedures for complex items, such as spectrum analyzers and signal generators, can use a rich set of statements and functions that give the procedure writer complete control of the calibration process.

MET/CAL can also be programmed to interface directly with an instrument's IEEE or RS232 interface.

New procedures are always in development. For the most current and complete list of available MET/CAL procedures, visit the MET/CAL *Plus* product home page on [www.fluke.com](http://www.fluke.com), or go to the MET/CAL *Plus* online users' community at [support.fluke.com](http://support.fluke.com).

Fluke can also produce new procedures especially for you. Contact your local Fluke representative and request a quote on custom procedure development.

## Ongoing support how and when you need it

When you register a MET/CAL *Plus* software application, you are enrolled automatically in the MET/SUPPORT Silver program for 60 days of free support via telephone, fax, and e-mail to help get you up and running quickly. But that's only the beginning.

Enrolling in the annual MET/SUPPORT Gold program gives you additional premium support and services to help you get the most from MET/CAL *Plus*.

This provides you with priority access by telephone, fax, or e-mail; free access to the Fluke library of more than 1,300 warranted procedures; software updates and upgrades; discounts on training courses; custom procedure development; database repair services; and more, all for a fixed fee. Using just a few of the Gold services will pay for the cost of your membership.

Fluke provides additional benefits as well, including invitations to user group meetings and conferences, a MET/CAL online users' community, and e-mailed tips and bulletins.

## MET/CAL training

New MET/CAL users can get up to speed quickly by attending training. Classroom, online, and CD-ROM based training is available to meet a wide variety of learning preferences and budgets. Visit the online training center at [www.fluke.com/caltraining](http://www.fluke.com/caltraining) for a current list of classes and schedules.

## More information

Detailed information about MET/CAL *Plus* is available on the Fluke web site at [www.fluke.com](http://www.fluke.com). A printed data sheet and brochure are also available. You can request a free copy on the web or by contacting your local Fluke representative.

**Fluke.** *Keeping your world up and running.*

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