

# will'tek



## Willtek Calibration Service

- Full functional check
- Verification of all RF paths
- Alignment to highest precision
- Detailed reporting with traceable results

boosting wireless efficiency

## Why calibrate?

Test equipment in the wireless industry uses analogue components such as capacitors, coils, RF amplifiers, mixers etc. These component types, to varying degrees, may develop age-related deviation from their rate value or performance.

Willtek design engineers select components according to suitability to each individual application. However, even the most reliable component may show value deviation over time.

Additional stress caused by temperature changes, switching appliances on and off, humidity or even simple oxidation will escalate deviation. Therefore, all test equipment requires periodic calibration.

Consumer products, such as mobile phones, have wide tolerance ranges and a deviation has only limited impact. Test equipment has much narrower tolerances. Any deviation can cause malfunction or result in out-of-specification measurements.

A malfunction may have a negative impact on your business. Many mobile phones are misaligned and their performance impaired, resulting in customer complaints and problems from manufacturers and network operators. Periodic calibration prevents such issues.

## What is Willtek's Calibration Service?

At Willtek, the Calibration Service goes beyond the mere verification of specified values.

Willtek's calibration service includes a periodical servicing of parts to ensure accurate operation. This accuracy is guaranteed until the next calibration is due.

Willtek Calibration Service covers inspection, maintenance, verification, alignment and documentation. These five steps ensure that a good and precise working unit is returned to the user.

## Inspection

Each unit is inspected for damage and wear and tear. Key functions are hand-checked and display visibility is confirmed. The inspection is carried out both externally and internally. Small damaged parts are replaced immediately. If the damage is more extensive, the sender receives a cost estimate for repair. Any damage or malfunction is noted on the service report, providing the user with an overview of the equipment's status.

## Maintenance

Units sent in for calibration undergo a standard maintenance procedure. Most Willtek testers have EMI protection covers. However, dust collection between cover and screen can impair visibility. Displays are cleaned of dust and marks, on both the inside and outside, resulting in a clear screen display. Fans are cleaned to enhance cooling and lengthen the device's lifespan.

## Verification

An essential part of the Willtek Calibration Service is verification. All specified values which can deviate over time are checked. This includes all paths a signal can take for measurement. The verification limits are tighter than the unit's specifications to ensure results remain accurate until the next calibration is due.

## Alignment

If equipment has drifted out of verification limits or if Top Calibration is requested, then the instrument will be aligned. Alignment tunes the unit into the centre of these verification limits. This results in maximum measurement precision. Only Willtek, as the original manufacturer has the competence necessary to provide such an alignment

## Documentation

Together with the calibrated instrument the user receives documents which certify and describe the status of this instrument. The Calibration Certification declares the conformity of the unit with the published specifications. A Calibration Report shows all test points with rated value, measured value, verification limit and measurement uncertainty. The service report provides the user with a status of his instrument. Any finding during examination is noted in this document.

## A Calibration Service you can trust

Willtek Communications runs a DKD, which is an accredited calibration lab. It is directly traceable to the German National Standard Institute (PTB) which is a member of the international metrology standard group. Results in a Willtek Calibration Report can be traced back to the international standard (CGPM). This standard is valid around the world.

Willtek Calibration Service follows the metrological confirmation system of ISO 10012-1, AQAP 130, MIL-STD 45662A and BS 5781 Part 1. Special processes ensure that the Willtek Calibration Service delivers a high-quality standard. Not only at Willtek Factory Service Centres, but also at the Willtek Accredited Service Centres worldwide. An example of such a process is user equipment verification.

This is only done on automatic test equipment (ATE) controlled by a proprietary test software and also contains printout of certificates. Only an automated system can check thousands of test points. This number of test points are needed to ensure that all signal paths are tested with the needed resolution. Every test point is checked against verification limits and the results are automatically listed in the calibration report.

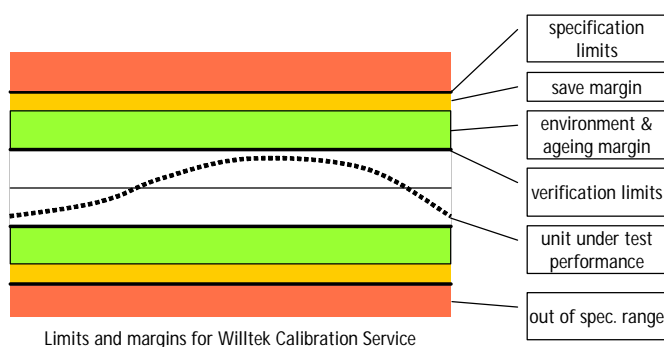
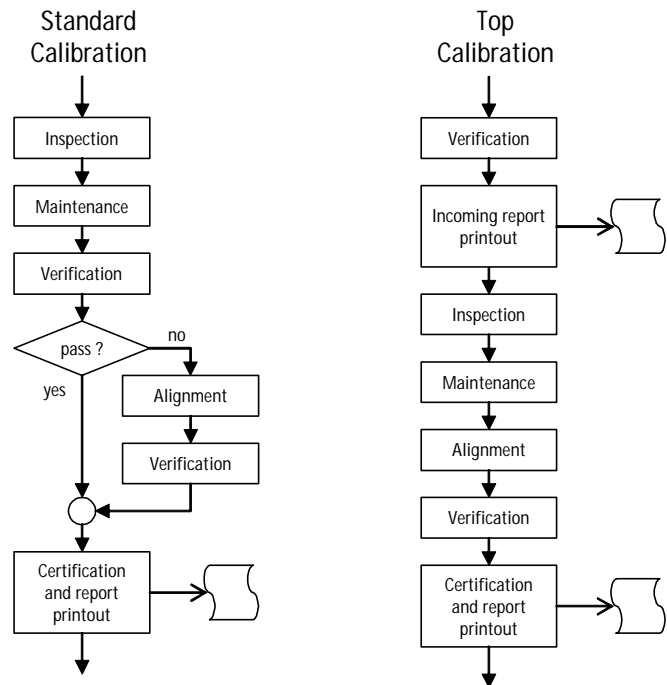
Willtek's ATE system prevents human error from impacting verification results. These ATE calibration systems are returned to Willtek's headquarters for inspection, maintenance and special calibration to maintain traceability and ensure that your Willtek test equipment provides a quality service.

## A Calibration Service tailored to your needs

Willtek offers two calibration services: a standard Willtek Calibration Service and a special Willtek Top Calibration Service. These two services differ in the method of verification and alignment. Inspection and maintenance tasks remain identical.

The target of low-cost standard calibration is compliance with international standards. Alignment is only done if the verification fails the tight verification limits.

Top Calibration means that the instrument will work with highest precision and improvements are verifiable. Top Calibration includes an incoming performance report and a final calibration report. These two reports allow measurement results to be traced, like on continuous production statistics, and allows comparison of measurement results before and after calibration. Additionally, with Top Calibration every instrument is aligned to achieve the highest precision. This alignment tunes the instrument parameters into the centre of the tolerance band.

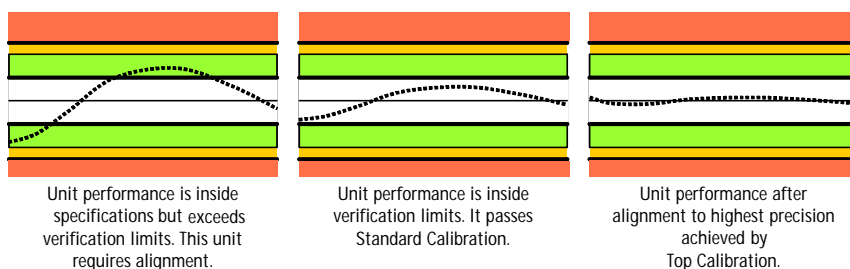


## Verification with tighter limits

Normal calibration verifies instrument behaviour within published specifications. Willtek Calibration Service tightens these limits to ensure instrument performance within specifications for the entire time until next calibration. The specification limits are tightened by a safe margin to ensure a unit is within specifications including measurement uncertainty.

These limits are reduced by the environmental margin which allows for deviation by environmental conditions like temperature and humidity changes. Additionally the limits are tightened by the ageing margin which allows for deviation up to the next calibration. The graph below shows how the limits are tightened from the specification limits to the verification limits.

Using these limits willtek may receive units for calibration performing within specifications limits but not within verification limits. Such units are aligned by Willtek before we returned them to the owner. Only if a unit performs within the verification limits, a calibration certificate is issued. With Top Calibration units are always aligned to maximum performance at the centre of verification limits.



## Willtek Calibration Service – A Manufacturer Service

Willtek's calibration package is more than just verification of application performance. It is a complete package of services including inspection and maintenance. Such services maintain the value of the instrument and extend its lifetime. Verification of an instrument is performed using tighter limits to ensure performance over the entire temperature range and for the whole period up to the next calibration. If Top Calibration is requested, or a unit fails verification,

then alignment offers highest precision for the instrument. Alignment and verification are done with special ATE systems. These ATE systems bring manufacturer service capability to local service centres, and instruments do not need to be shipped back to the factory. Additionally, these ATE systems check the performance of your test equipment in every detail, ensuring a calibration free of human error. Willtek Calibration Service and Willtek Calibration Top Service brings high precision and traceable performance to your test equipment.

### Supported brands

Willtek, Acterna, Chase, Schlumberger, Wavetek, WWG (Wireless product line)

### Supported products

3600D Communication Tester  
4015 STABLOCK  
4031/32 STABLOCK  
4040 STABLOCK  
4100 Mobile Fault Finder  
4200 Mobile Service Tester  
4300 Mobile Service Tester  
4350 Mobile Fault Finder  
4400 Mobile Phone Tester  
9100 Handheld Spectrum Analyzer  
BAT-2700 Base Station & Air interface Test Module  
GPR General Purpose Receiver  
Griffin Fast Measurement Receiver  
and more products (please request)

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