

## The **Aptitude** Parametric Tester for **Contactless Chips** or **Micro Modules**

This unique line of testers allows customers to test all the fundamental characteristics of the micro modules before they are connected to an antenna. The tester has the ability to test micro modules compliant with 14443 standard for both type A & B.

### **For Laboratory Use**

The Aptitude Parametric Tester comes complete with dedicated analysis software and includes:

- Input capacitance measurement from 10 pF to 200pF (accuracy < 1pF)
- Variation of capacitance depending on voltage variation (from 0 up to 20 Vpp) and frequency variation (from 1 Mhz to 20 MHz)
- Minimal tension of operation measurement
- Power on reset time of measurement
- Test of the micro module capability to answer to the main type A & B instructions
- Modulation factor measurement

### **For Production Use**

The Aptitude Parametric Tester is also available in a rack version with up to 8 boards inside. In this configuration, the tester can be connected to a prober for wafer testing or connected to the Aptitude Micro Module Handler for micro modules on film testing. Several racks can be connected and synchronized giving you the flexibility to accommodate your current and future needs.

The Parametric Tester ensures that that both laboratory and production sites have the identical reference of test. Customers can now enjoy the comfort of consistent and reliable test results, whether in the lab or on the production floor.

**NBS.**

**Meeting your needs and  
exceeding your expectations.**



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# Shaping the Future of Micro Module Test Solutions for **Contact & Contactless Applications**

NBS is focused on the production, testing and personalization of micro modules, smart cards, smart objects and RF products for applications in the telecommunications, identification, security and transportation markets. These markets demand innovative solutions and through the integration of our product lines into a single, highly-synchronized and leveraged solutions group, NBS provides a broad solutions portfolio that is backed by years of practical, in-the-field experience.

Our strength lies within our high level of knowledge and understanding of the way embedded chips function. Tools and equipment designed and developed in concert with our customers in the area of micro module testing on film or even at the wafer stage prior to chip encapsulation into micro module form factor, has led NBS to the forefront in the area of micro module testing solutions.

With the increase in memory size of chips along with the unbridled acceleration of contactless technology deployment around the world, the contactless card market demands a high level of expertise and experience. Through numerous projects, NBS has gained the highly developed knowledge and understanding of the micro module testing process in order to meet and exceed those needs. NBS is well positioned to offer the complete micro module test solution to its clientele that is reliable, flexible and cost effective.

**Trust NBS  
to bring you the newest  
innovations that are  
field proven.**



# Micro Module Test Solutions

When **Experience** and **Expertise** counts, trust **NBS** to deliver the **Innovative, Value-Added** solution for **Micro Module** testing.

## New Evolution in our Products

Listening to the needs of our customers, NBS pulled together our range of testing products under one umbrella, "Aptitude". Formerly known individually as MTH, MIH and Mimosa, the newly configured suite of Aptitude consists of the "Aptitude Micro Module Handler", the "Aptitude Visual Inspection", the "Aptitude Tester (Parametric Tester for contactless chips or micro modules), and rounding out the suite, is the "Aptitude Analysis Software" allowing for the interpretation of results from the tester.

The Aptitude suite of products addresses the challenge of ever increasing memory size on chips resulting in increased processing time by allowing the test or the pre-personalization/data-loading/initialization of up to 64 micro modules at the same time. Thanks to the increased number of micro modules processed in parallel, the Aptitude ensures customers can better meet the challenge of increased process time. The result of our innovative thinking is the savings of your time and money.



## Aptitude in the field of Electrical Testing

Since 1985, NBS has manufactured and marketed an entire set of testers dedicated to the parametric testing of the electrical characteristics of discrete components.

Over 300 of these testers ("Automatic Test Equipment") have been successfully installed in production sites all across the globe. These installations encompass the testing of wafer elements (front-stage), the testing of discrete components (back-end stage) subsequent to product packaging, all the way to the testing of highly complex components with up to 256 pins tested in parallel.

Thanks to these activities, NBS has accumulated highly regarded expertise across a broad range of parametric testing processes such as current and voltage measurement with varying levels of accuracy and test speeds. NBS has also developed a complementary set of hardware and software modules based on elements such as DSP, FPGA including the necessary software for the monitor and analysis of test results. Moreover, based on our field experience, NBS developed an adapted design of our highly efficient tester to accommodate the testing of contactless micro modules.

## Aptitude in the field of Test Handlers for Micro Modules on film

Test handlers for micro modules have been a part of the NBS product line for over 10 years and have been used and endorsed by market leading customers all across the globe.

This equipment integrates several functions such as circuit breaking and visual inspection of both sides of the micro modules, electrical testing of contact and contactless micro modules, thickness measurement as well as defective micro module punch.

NBS brings customers the utmost in flexibility and value with the "Aptitude Test Handler", a high capacity reel-to-reel machine that can typically be integrated into the micro module production line following the micro module coating/milling equipment - several film configurations are available. It can also be utilized as a "stand alone" machine for quality control of incoming micro modules into the smart card production plant. Configurable in either contact or contactless environments, the Aptitude Test Handler offers customers exceptional flexibility.

## Aptitude in the field of Visual Inspection

NBS also boasts leading edge solutions in the area of micro module visual inspection. Applied to the micro modules on film handling, NBS offers a totally open solution allowing inspection of the micro modules for smart cards during or after the encapsulation process. The machine performs a global quality inspection of the encapsulation including:

- glob top metrology and location
- resin pollution
- resin missing/over dispensing
- uncovered pads
- inspection of the contact side of the micro module