WE CALL IT KNOWLEDGE

MMI Test Box
Integrated smartphone tester
ALL IN ONE

Smartphone Tester

MMI Test Box is a multi-functional automatic test system designed for mobile phone final man-machine interface test on the product line.

This compact system can perform various tests for mobile phones, including audio tests, machine vision tests and other tests. The all-in-one solution allows smartphone manufacturers to minimize their time, equipment and labor investments on final MMI tests of the product, and make the product launching to the market quick and free of defects.

Audio is the most important factor for mobile phones, yet the most challenging to be tested. The audio test module of the MMI Test Box is designed by one of the best audio specialists in the industry. With the acoustic and electrical measurement capabilities of the MMI, you are ensured accuracy, consistency, and reliable performance of the full array of audio tests.

Machine Vision testing is another strong point of MMI Test Box. We use the time proven vision software, the Orbis UI Inspector, which is equipped with a set of tools specialized for mobile devices and LCD displays. From the 1990s to today, the UI Inspector software had been performing vision tests on the production line of the world’s leading mobile device manufacturers, such as Nokia and Sony Ericsson. With over 20 years hands-on practical experience and continuous improvement, the UI Inspector is capable of most highly complicated 2D and 3D testing tasks.

Besides audio and vision tests, MMI Test Box also provides Capacity Touch Panel (CTP) test, side key tests, wireless connectivity tests and others.

With the MMI lower level tester control DLL, customers have full control of every action of the Test Box, which means customers can fully customized the test sequences to meet their specific needs. And with Orbis local R&D and support team based in Shenzhen, it is easy to build up optimized test applications for your production within a very short time.

One other value-added feature is the design of the separate low-cost DUT adaptor. Four quick change adapter screws allow for a fast change from one product to another. When a new model is to be tested, all that is needed is the product step file to begin design of its matching adapter. And with golden samples Orbis can perform the necessary integration and gage R&R in-house to ensure a fast and cost-effective upgrade.
Audio Tests
Sound always comes first

A mobile phone without decent audio performance will be useless, no matter how smart it is. Speakers and microphones are not new to us, yet making a reliable audio test system is always challenging. With our experience and expertise in the field, we integrated the audio test module perfectly into the MMI Test Box.

A professional DSA card, multiple speaker and microphones are used to test the following audio items:

- Earpiece test
- Speaker L test
- Vibra test
- Noise reduction mic test
- Speaker R test
- Talking mic test
- FM radio test
- Audio plug test

Audio controller

The Audio Controller is specialized software for the audio module. It is used to debug the audio routes, audio performance, and used for calibration purposes.
Vision Tests
Not only judging the appearance

The displays of smartphones are getting bigger, but the pixel points are getting smaller. Often times, the screen can take up all the front side of the phone, and the tough consumers will only accept a perfect screen, without even a defect pixel. Machine vision tests are integrated into MMI test system to reduce the operator’s subjective judgment of LCD display, DUT camera quality and so on.

Machine vision module of MMI Test Box uses Orbis UI Inspector and Basler high-resolution industrial cameras to perform various tests as shown below:

Orbis UI Inspector

Orbis UI Inspector runs in a standard (industrial) PC environment in Microsoft Windows operating systems. The vision tools are stable, reliable and easy to integrate with the customer test platform software (C# or C++ source code). Teaching of the tests is easy and running of the tools is possible by using the GUI of the software, through the COM interface from the customer test platform software.

This window shows a DUT camera test example. DUT first takes a picture of the pre-designed pattern, and then displays it on the DUT screen. Next the vision cameras take pictures to analyze the focus, distortion, RGB color, and install position of the DUT cameras.
Other Tests
Extend to every possibility

Capacity Touch Panel test is accomplished with the combination of our automation and machine vision. Side key tests such as power key, volume keys, camera key, are tested by small cylinders on the DUT adaptor.

Other tests include capacity button test, SIM card test, SD card test, G-sensor test, approach sensor test, light sensor test, Wi-Fi test, Bluetooth test, compass test and USB connector test. RF tests will be available in the next version, and other test functions are possible as we have reserved hardware resources for extension in the original design.

Separate Adaptor
Adapted to quick changing market

Separate DUT adapter design allows the customer to upgrade the MMI Test Box to test new DUT models by only changing the DUT adaptor. It only takes about ten days to design and manufacture.

One MMI system can equip with multiple adaptors, and the customer can test different models in different time slots because switching between adaptors is simple and fast. Take off the adaptor and place the new one on to the drawer, select a preset configure file associated with that new model, and you can start to test.
**MMI test box controller**

Despite the powerful test performance of the MMI Test Box, it is very easy to use the system. The software, such as UI Inspector, audio controller, and the test box controller, come with user-friendly and easy to use graphical user interfaces.

MMI test box controller controls the electronic and mechanic parts of the Test Box, including the cylinder actions, flying finger motor actions, audio paths and other electronic signals.

By clicking the buttons on the graphic user interface window, you have full control of the Test Box to complete configuration or debug tasks.

---

**Professional works**

Experiences do speak louder than words. With over 20 years of test system design experience in the mobile industry, Orbis MMI project team has made the Test Box stand out in the crowd.

From prototype design to assembly, delivery, and integration with customer platform. Every step is done professionally and efficiently, which makes the Orbis Systems MMI Test Box the best solution for today's quick changing and tough market. Many MMI systems are running smoothly inside the production lines of the leading smartphone manufacturers, taking key roles of quality control.

---

**Powerful local R&D and service team**

Orbis Systems now has the team in China (Shenzhen) with all the high talented R&D and service engineers, supported our customers by 24*7. By getting close to the customer, we helped customers to solve any problem promptly and earned the trust from our customers.
## Technical specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Name</td>
<td>MMI Test Box (Orbis Code: 202999)</td>
</tr>
<tr>
<td>Dimensions (mm)</td>
<td>290 (W) * 840(H) * 700(D) (Test chamber only)</td>
</tr>
<tr>
<td>Weight (KG)</td>
<td>75 (Test chamber only, Not included Mains Unit, IPC and test rack)</td>
</tr>
<tr>
<td>Power Supply</td>
<td>220V 50Hz, nominal power: 100W (Not included IPC)</td>
</tr>
<tr>
<td></td>
<td>Max. power: 250W (Not included IPC)</td>
</tr>
<tr>
<td>Pneumatic Supply</td>
<td>0.4-0.6 Mpa</td>
</tr>
<tr>
<td>DUT range</td>
<td>Max. DUT dimensions (mm): 300(H)*70(W)*250(D);</td>
</tr>
<tr>
<td></td>
<td>Max. MV inspection range (mm): 100(H)*70(W)</td>
</tr>
<tr>
<td>Cooling</td>
<td>Natural cooling</td>
</tr>
<tr>
<td>Working temperature</td>
<td>0-40 °C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>M 90%, Non-condensing</td>
</tr>
<tr>
<td>Outer parts</td>
<td>Mains Unit, LED Power supply</td>
</tr>
<tr>
<td>Control terminal</td>
<td>IPC, LCD monitor</td>
</tr>
<tr>
<td>Test rack movement</td>
<td>manually</td>
</tr>
<tr>
<td>Test process control</td>
<td>Full-automatic</td>
</tr>
<tr>
<td>DUT control</td>
<td>By USB</td>
</tr>
<tr>
<td>System framework upgrade</td>
<td>By USB or LAN</td>
</tr>
<tr>
<td>System communication</td>
<td>LAN</td>
</tr>
<tr>
<td>System hardware module</td>
<td>Test chamber, audio module, MV module, flying finger module, product adaptor</td>
</tr>
<tr>
<td>System software</td>
<td>DUT control software and test sequence platform (provided by customer);</td>
</tr>
<tr>
<td></td>
<td>UI Inspector(Vision software), Audio test software, Test Box controller</td>
</tr>
<tr>
<td></td>
<td>(system and flying finger control software);</td>
</tr>
</tbody>
</table>

---

**Orbis Systems Oy**

Konekuja 8, FI-90620 Oulu, Finland

Tel: +358 (0)290 040 800  Fax: +358 8 531 5175  www.orbissystems.eu