

## Automation of EMC tests on ICs

The automated ICT1 IC tester is a positioning system for the evaluation, control and protocol of the measurement of different IC probes. (**Figure 1** ICT1 with P201 probe and test IC). The ICT1 can be used to perform automated immunity and emission tests on individual IC pins and complete ICs. Automatic pin recognition and the highly precise positioning (10 µm) of the measurement systems at the test IC are just two special features of the ICT1. Automated measurements help save time and costs.

The ICT1's design allows direct contact between the measuring tips of the individual probes and the IC pins. The probes are connected to the required measuring and control devices (spectrum analyzer, oscilloscope, RF power amplifier, etc.). The devices are controlled via a PC interface. The test IC is tested in operation and located on a test board for this purpose. This test board is, in turn, connected to the connection board which forms the interface between the test IC and PC. It provides all necessary supply signals for the test IC and forwards the signals to be monitored to the respective measuring devices. The connection board and test IC are located in the ground plane, thus ensuring an optimum measurement environment.

The probe which is needed for the respective measurement objective is connected to the ICT1. Thanks to a dedicated holder, the probes can be changed quickly without any additional tools.



**Figure 1** ICT1 with P201 probe and test IC

The pins to be tested in conducted emission measurements such as the 1 Ohm / 150 Ohm method (IEC EN 61967-4) can be chosen in the control software. The ICT1 measures the emissions from the specified pin automatically and creates a measurement log.

In the course of conducted emission investigations such as measurements of the pulse immunity according to IEC 62215-3, the selected pins are approached and tested automatically up to the defined severity and/or until a fault occurs and a measurement log is created (**Figure 2** Measurement log for EMC immunity measurements).

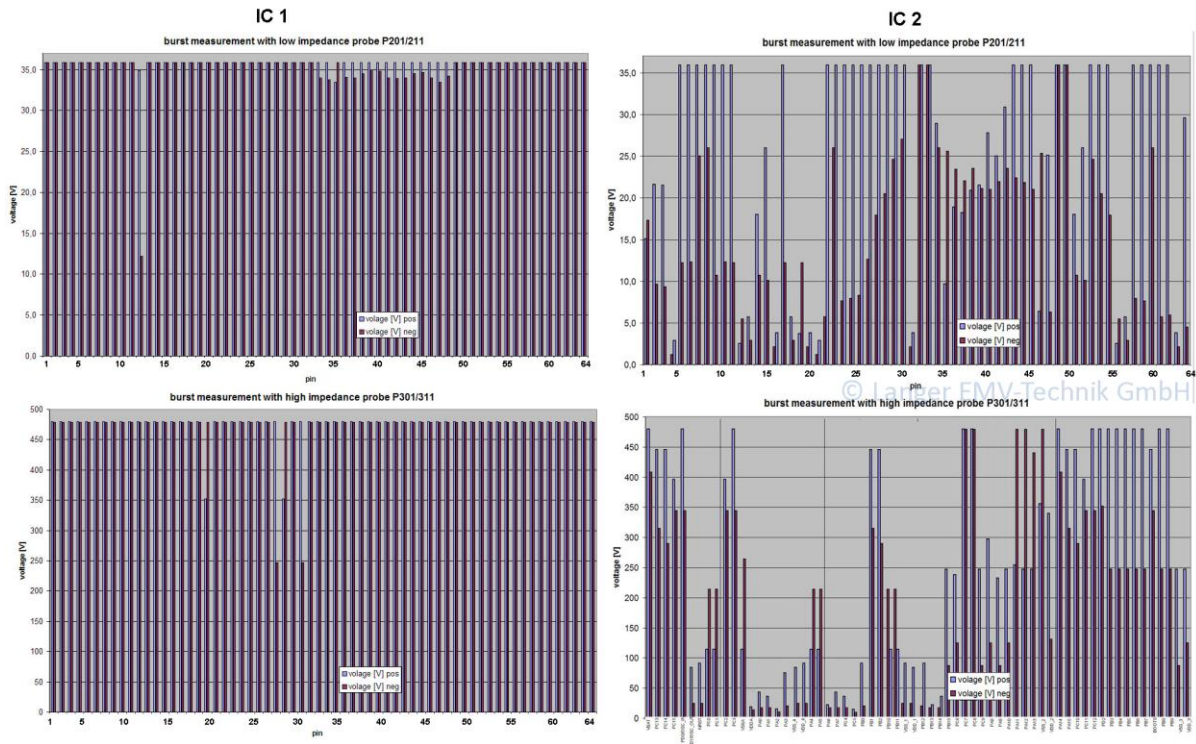


Figure 2 Measurement log for EMC immunity measurements

Near-field probes (e.g. ICR micro-probes) can be used to measure radiated emissions. Apart from measurements at individual IC pins, area or volume scans can be made over the entire test IC (Figure 3 EMC emission measurement over a test IC).

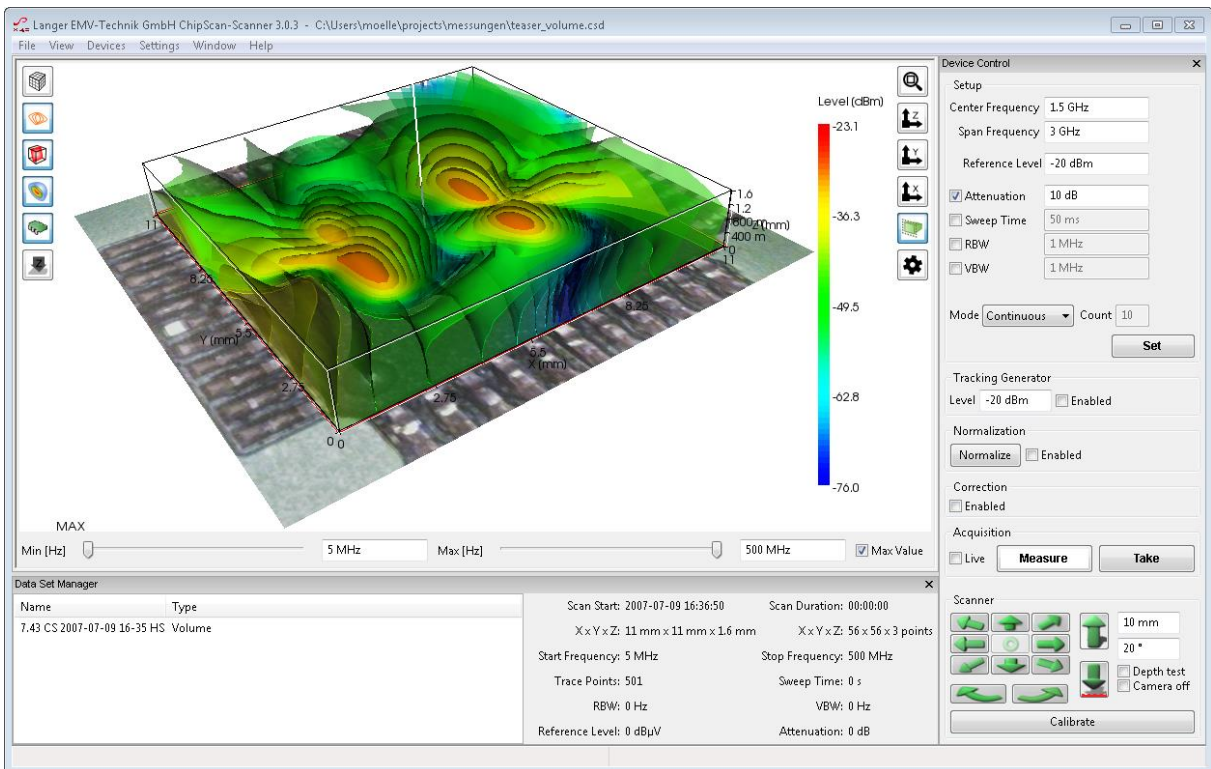
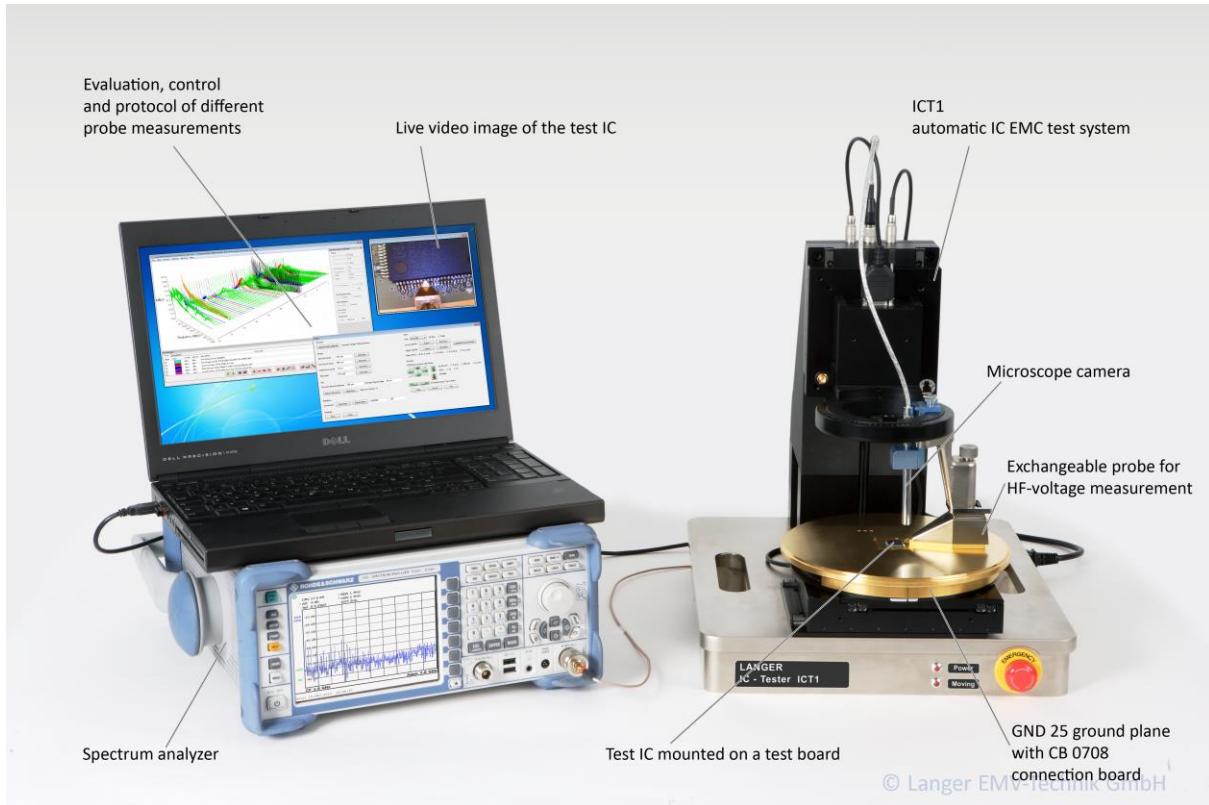


Figure 3 EMC emission measurement over a test IC

Radiated immunity measurements can thus be carried out with a wide variety of field sources. Thanks to the high mechanical resolution, disturbances can be selectively applied to individual areas of the test IC.

The ICT1 is a desktop unit with a footprint of 40 cm by 40 cm. The entire test set-up fits easily on a developer's workplace (**Figure 4** ICT1 test set-up with a P750 probe and external devices.).



**Figure 4** ICT1 test set-up with a P750 probe and external devices.