

- 1 *High-precision modular  
Charged Device Model tester  
Fraunhofer EMFT ATIS MCDM3*
- 2 *CDM device test on the ATIS  
MCDM3*

## MODULAR ESD-TESTER FOR THE CHARGED DEVICE MODEL MCDM3

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### Future trends

Upcoming mega trends to be considered for CDM testing are:

- Measurement of discharge currents
- Extremely small size pads and balls even for 3D-stacked circuits
- Increasing GHz-frequencies prohibiting larger protection
- Increasing package sizes with impedance controlled interconnects
- Complex pin layouts and test plans
- Fully automated handling and assembly systems

These trends require precise CDM test systems providing maximum testing flexibility. Building on 20 years of experience of Fraunhofer EMFT with CDM tester development, analytical CDM test and CDM protection development for many industrial clients, the modular M-CDM is flexibly tackling the demands and complexity of today's and tomorrow's CDM test.

### Advantages

#### Modular system setup

- All key components such as the positioning stage, single shot GHz-oscilloscope and high voltage source are robust off-the-shelf components controlled via an Agilent VEE program that is customized to the needs of the test lab

#### High positioning accuracy

- The positioning stage, which is driven by linear motors, provides a high positioning accuracy required for small size pads and balls

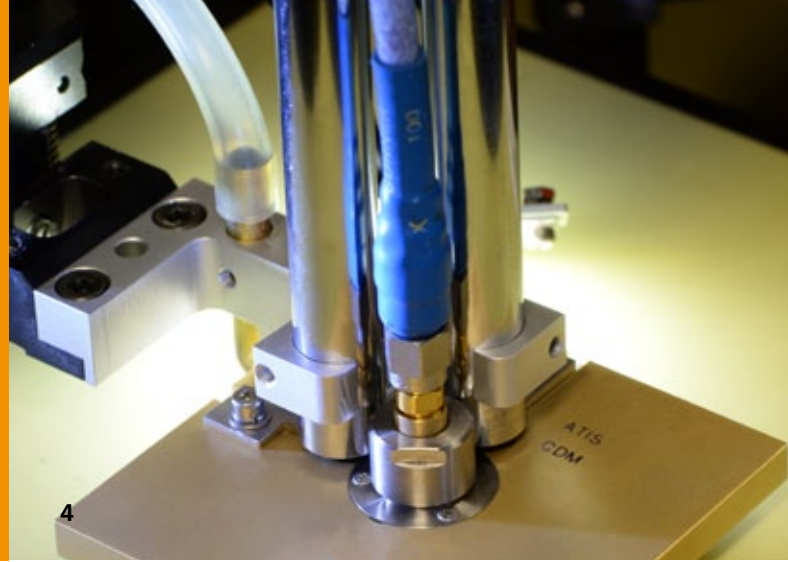
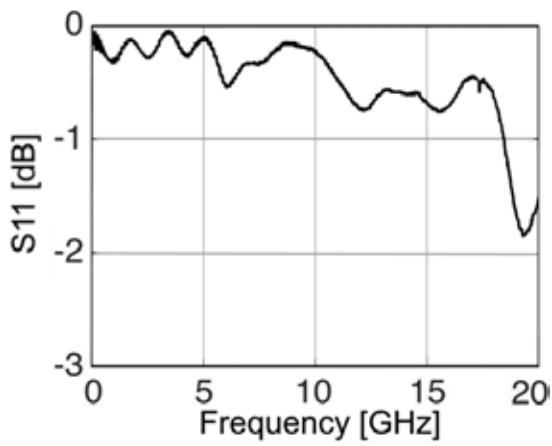
#### Individual adaption to customer needs

- The program interfaces to descriptions of device layouts and test plans in a Microsoft Excel® spreadsheet. The program interface can be adapted to individual needs

#### Large field charge plate

- Allows testing of larger devices (also Charged Board Model)

Fraunhofer EMFT is participant in the



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**Arbitrary charging and discharging sequences (timing, sequence)**

- Allows testing of complex pin layouts and test plans

**User specific, automated data acquisition and evaluation of stress parameters**

- All discharge currents are automatically measured and stored. The relevant stress parameters are summarized in a suitable output file

**Fraunhofer EMFT lab serves as a back-up for tests during maintenance**

- Since Fraunhofer EMFT provides also CDM testing services for its customers, a continuous test flow even during the maintenance of your M-CDM system is ensured

**Fixed ground plane**

- During a CDM test only the DUT is moved by the positioning stage. The ground plane remains in a fixed position. This ensures that the measurement cable, which is used for capturing the stress pulses, does not degrade with time

The adaption and integration into a CE-compliant test system will be done within an individual R&D project by Fraunhofer EMFT.

**System Description**

- M-CDM control unit, which contains a commercial high voltage (HV) source FUG HCP 14-3500, a HV switch, which enables and disables the HV during operation, and relay switch matrix for controlling an optional, electrically switchable attenuator
- Field Charge Plate FCP, which is mounted on the chuck of the wafer prober and which connects to the HV output of the control unit
- Ground planes (GP), which are compliant with the standards ANSI/ESD-S5.3.1-2009 and JEDEC JESD22-C101D 2008 and ANSI/ESDA/JEDEC JS-002-2014
- Two USB cameras for convenient device outline definition and monitoring of the discharge pin during the test
- System controller (PC including 17" 16:9 flat screen) with the M-CDM controller SW

**Technical Data**

Max. CDM voltage	3.0 kV
Supported standards (adaptable):	ANSI/ESD-STM5.3.1-2009; JEDEC JESD22-C101F 2013 ANSI/ESDA/JEDEC JS-002-2014
Size of the Field Charge Plate	19 cm x 22 cm
Precision of positioning	+/- 1 µm

**Service**

Support can be tailored to your requirements. From on-demand maintenance to an "all inclusive" package with preventive maintenance including CDM testing services during the maintenance of the tester.

- 3 Measured return loss of the CDM ground plane showing a 3 dB bandwidth of more than 20 GHz
- 4 M-CDM test head including the ground plane and cameras