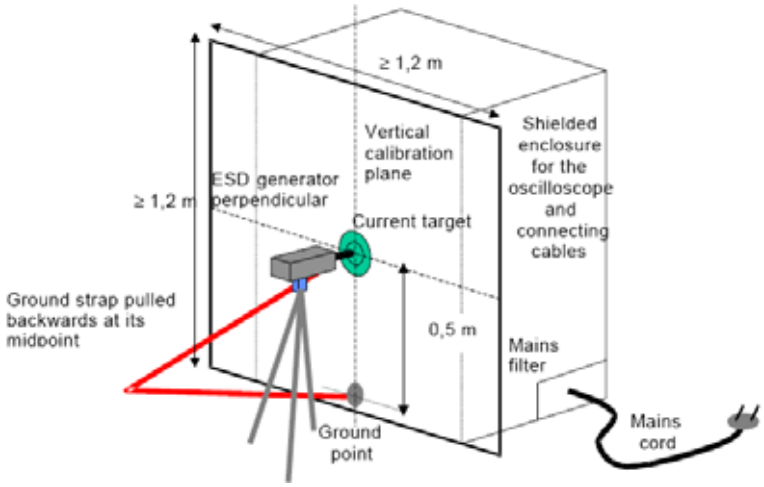
ESD-TARGET2-500 for calibration of the ESD discharge current waveform of Modules in accordance with IEC 61340-3-1

Revised: 15.December 2010

1 General Information

ESD-TARGET2-500	Proposed test set-up
	

The target shall be mounted at the centre of the vertical calibration plane of at least 1.2m x 1.2m. The connection for the ESD generator return cable (ground strap) to the calibration plane shall be made directly below the target at a distance of 0.5m below the target. The ground strap shall be pulled backwards at the middle of the cable, forming an isosceles triangle. It is not allowed to let the ground strap lay on the floor during the calibration.

2 Technical data of ESD-TARGET2-500

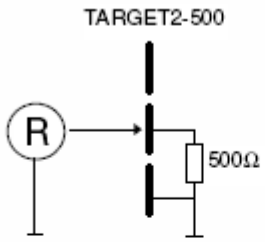
Resistor	500 Ohm	
Frequency range: chain target, cable and attenuator	> 1 GHz	+/- 0.5 dB up to 400 MHz +/- 3 dB 400MHz up to 3GHz
Standard	IEC 61000-4-2 Ed.2	Construction & calibration
Current range	0 up to 1 A *	First ns peak
Screws for fixing	8 x M3	not included in delivery
Dimension	70 x 40 mm	diameter x thickness

* Note: the usable current range is influenced by the attenuator and the DSO voltage input limit.

3 ESD-TARGET2-500 Calibration

Two measurements must be carried out: The low frequency transfer impedance and the Insertion loss over the frequency range of the network analyser.

3.1 Low frequency system transfer impedance



Measurement results

R 498.91 Ω

$$Z_{sys} = R = 498.91\ V/A$$

Measure the resistor value with the Ohm Meter R

$Z_{sys} = V_{50} / I_{sys}$ Example:

The Zsys value can be found in the EMC PARTNER calibration report. The value of the calibration report must be used to calculate the current amplitudes of the ESD discharge current wave shape.

$I_{ESD} = V_{ESD} / Z_{sys}$

If a repeated DC-transfer impedance measurement shows a result which differs from the original measurement by less than 1 %, the user may assume that the TARGET2-500 is correct and can be used for the Measurement in accordance with IEC 61340-3-1

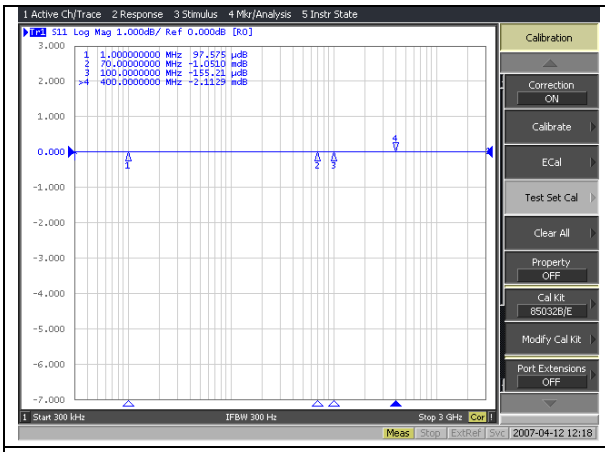
3.2 Insertion loss over the frequency range of the network analyser

The variation of the insertion loss of the target-attenuator-cable chain shall be:
+/- 0,5 dB, between DC and 400 MHz, see note.
+/- 3 dB, between 400 MHz and 4 GHz.

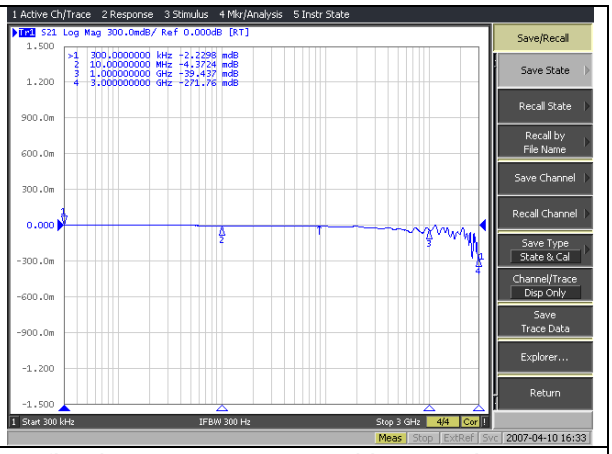
Instead of DC the lowest frequency available with the network analyser shall be used, The DC characteristics are measured separately.

3.2.1 Adapter calibration

The adapter line must be calibrated before the insertion loss measurement can be carried out. For the adapter line calibration two adapters are connected face to face to measure the reflection and the transmission.



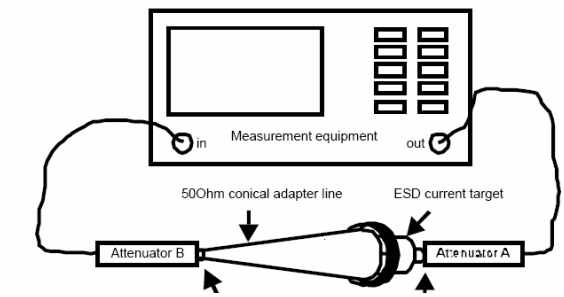
Reflection measurement with cable and termination



Reflection measurement with two adapters, cable and termination

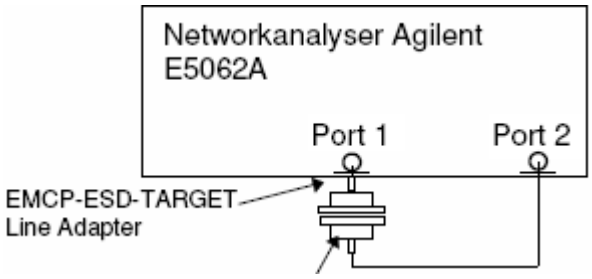
Further information about the adapter can be found in the instruction sheet of the ESD-TARGET2-ADAPTER

3.2.2 Insertion loss over the frequency range of the network analyser



IEC test set up for insertion loss measurement

Note: Other shapes than conical are acceptable



EMCP set up for insertion loss measurement

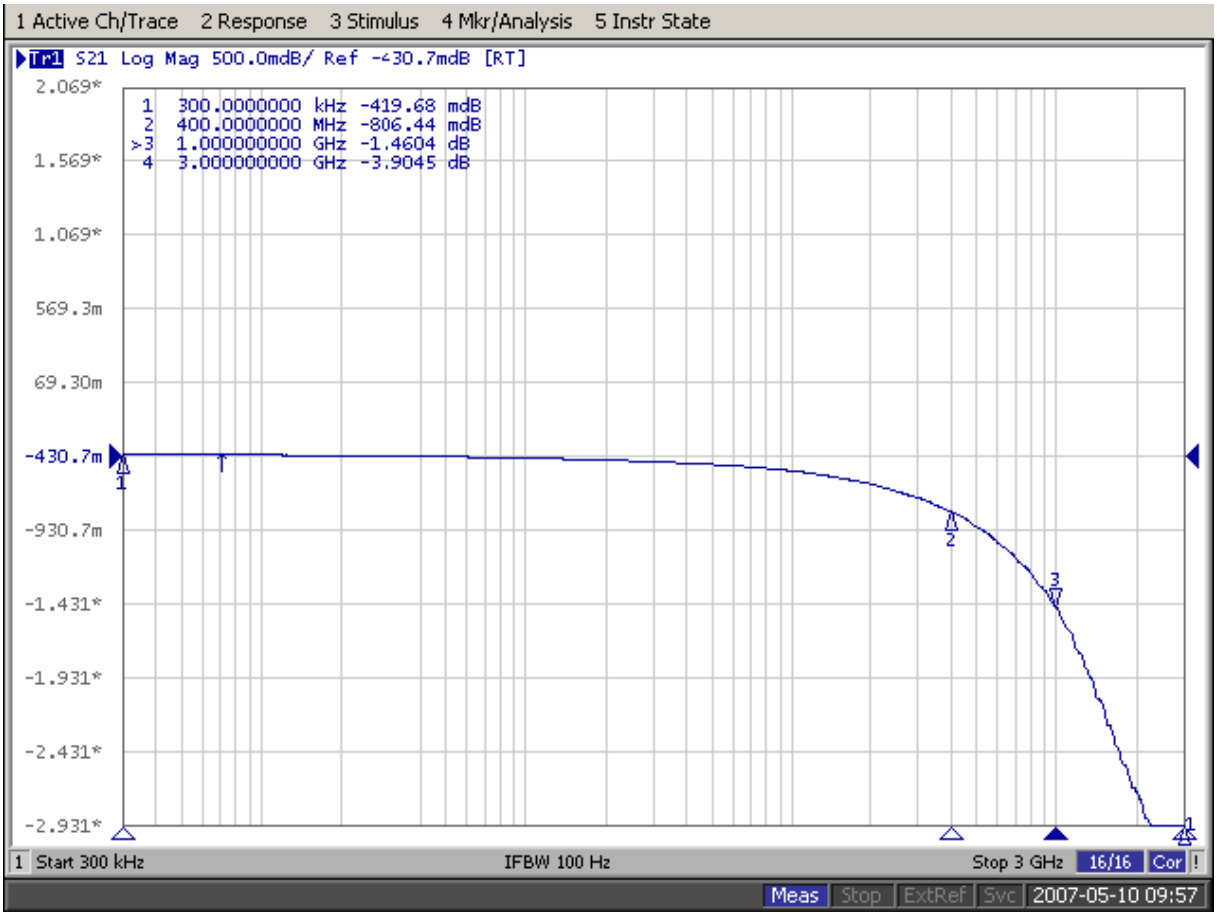
Note: same shape as the target itself is used as adapter

3.2.3 Definition of the nominal value

The nominal dB value can be defined as follow:

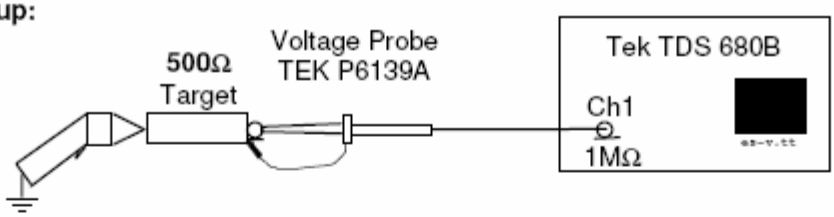
The dB value at the lowest frequency of the network analyser approx 300'000 Hz is equal to the d.c. value measured with the system transfer impedance, or calculated with the measured resistors values.

The actual insertion loss diagrams are shown in the calibration report.

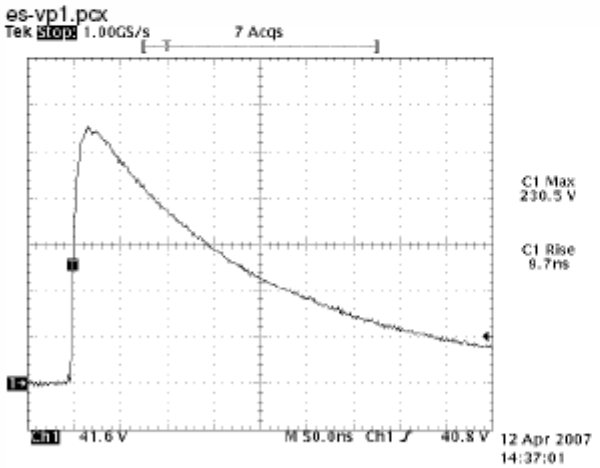


4 Example ESD discharge measurement

Verification set-up:



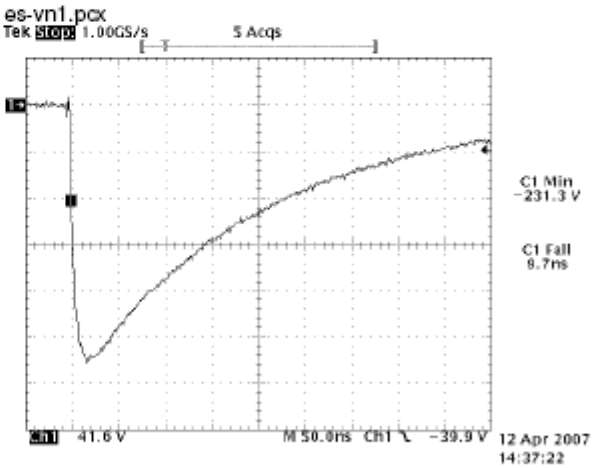
Contact discharge:	**ESD3000 with DM6**	CH 1:Voltage Probe P6139A and 500Ω target PC control file es-v.tt



1000V positive, contact discharge @ 500Ω

Rise time: **5 to 25 ns**

First peak: 375 mA to 550 mA
187.5 V to 275.0 V **(231 V)**



1000V negative, contact discharge @ 500Ω

Rise time: **5 to 25 ns**

First peak: 375 mA to 550 mA
187.5 V to 275.0 V **(231 V)**

Further information can be found in the calibration report ESD-TARGET2-500

5 Standard accessory, dimensions

5.1 Included articles, dimensions

ESD-TARGET2 500 (Article No. 103633)

Mechanical Dimensions

Unit Height:	
Length:	28 cm
Width:	23 cm
Height:	9 cm
Net Weight:	1 kg

Included Articles

According to STL-Variante 20, STL-Version 1

Qty	*PN*	*Description*
1	103194	CD-UM-IN-ALL includes all User Manuals and Instruction sheets of all EMC PARTNER AG sales products.
1	104802	Standard calibration report
1	103191	Standard accessories pack
1	104836	Broschure ESD Test System

5.2 Standard accessories

Accessories to ESD-TARGET2 500 (Article No. 103633)
According to OP-Variante 1, OP-Version 1

Qty	PN	Description	Weight (kg)	Length (cm)	Width (cm)	Height (cm)
8	102211	Nut M3	0	0	0	0
8	102233	Washer M3	0	0	0	0
8	102244	Shakeproof washer M3	0	0	0	0
1	104375	Measuring adapter to SMA connector	0	0	0	0

6 Recycling / Disposal

6.1 RoHS directive 2002/95/EG

The ESD-TARGET2-500 complies with the directive 2002/95/EG (RoHS - Restriction of certain Hazardous Substances).

From December 2005, all EMC PARTNER products either hand soldered or by machine are produced using lead-free solder.

6.2 WEEE directive 2002/96/EG

The EMC PARTNER ESD-TARGET2-500 is exempted from the directive 2002/96/EG (WEEE) under category 9.

The product should be recycled through a professional organisation with appropriate experience for the disposal and recycling of electronic products. EMC PARTNER are also available to help with questions relating to the recycling of this product.

6.3 Information for dismantling

There is no special danger involved in dismantling the ESD-TARGET2-500.

6.4 Parts which can be recycled

The ESD-TARGET2-500 contains parts made from steel, aluminium, PVC, two-component sealing compound. The impulse capacitors are filled with non-poisonous mineral oil. The various parts can be separated and recycled.

6.5 Parts which can not be recycled

All parts in the ESD-TARGET2-500 can be recycled.

7 Service Information

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