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PA-No. 2338

Applicant: SCHIRTEC Trading GmbH
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1210 Vienna, AUSTRIA

Commission received: 06.2007

TEST REPORT Ref.No.: PA 2338-1

Type of test item: Early Streamer Emission Lightning Protection Air Terminal
MODEL SCHIRTEC-DAS

Test specification (standard, test procedure):

Impulse test currents as specified in:
EN 50164-1 / 1999 - clause 6.3 / Class H
Lightning Protection Components (LPC) - Part 1: Requirements for connection components
and in:
IEC 61643-1 Ed.2.0 / 2005-03 respectively
EN 61643-11 / 2002 + A11 / 2007 - clause 7.1.1

Initial and final verification:
by resistance measurement between tip and sphere

Compiled by: Hubert Bachl

Date: 12.07.2007

Approved by: Jürgen Wolf

Date: 16.07.2007



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Test details and test arrangement:

Three samples of the lightning protection terminal were tested with lightning impulse currents according to the following table 1. Each terminal was subjected to three (3) current impulses according to EN 50164-1.

Table 1: Impulse test current parameters

Nominal values			Tolerances according					
			IEC/EN 61643				EN 50164-1	
I_{imp}/I_{max}	Q	W/R	Q -20%	Q +20%	W/R -35%	W/R +35%	W/R -20%	W/R +20%
kA $\pm 10\%$	As	kJ/Ohm	As	As	kJ/Ohm	kJ/Ohm	kJ/Ohm	kJ/Ohm
100	50	2500	40	60	1625	3375	2000	3000

In addition the impulse duration shall not exceed 2ms according EN 50164-1.

Before the first impulse current application and after the last impulse current application the resistance between the terminal tip and the sphere was measured to check for any damage or alteration of the internal circuitry.

The air terminal bottom tube was connected via a short down-conductor of appropriate cross section to the impulse generator. The connection between air terminal and down-conductor was done by use of a special clamping unit provided by the applicant.

The air terminal tip was connected via a minimum air gap of some mm to the other output terminal of the generator.

Details and pictures see Annex 1.

Test Results:

Initial measurement of resistance between the terminal tip and the sphere on all three samples

→ approx. 20 M Ω

Application of three current impulses – for details see table 2. Oscillograms are shown in Annex 2.

Final measurement of resistance between the terminal tip and the sphere on all three samples

→ approx. 20 M Ω

Table 2: Test current parameters

Test parameters	I_{imp} [kA]	Q [As]	W/R [kJ/ Ω]
<i>Sample 1</i>			
First impulse	101,2	63,3	2052
Second impulse	96,6	62,2	2153
Third impulse	96,6	56,3	1902
<i>Sample 2</i>			
First impulse	93,8	51,3	2450
Second impulse	94,2	56,1	2805
Third impulse	94,4	56,3	2862
<i>Sample 3</i>			
First impulse	94,4	51,7	2612
Second impulse	94,2	55,4	2811
Third impulse	94,2	54,5	2792

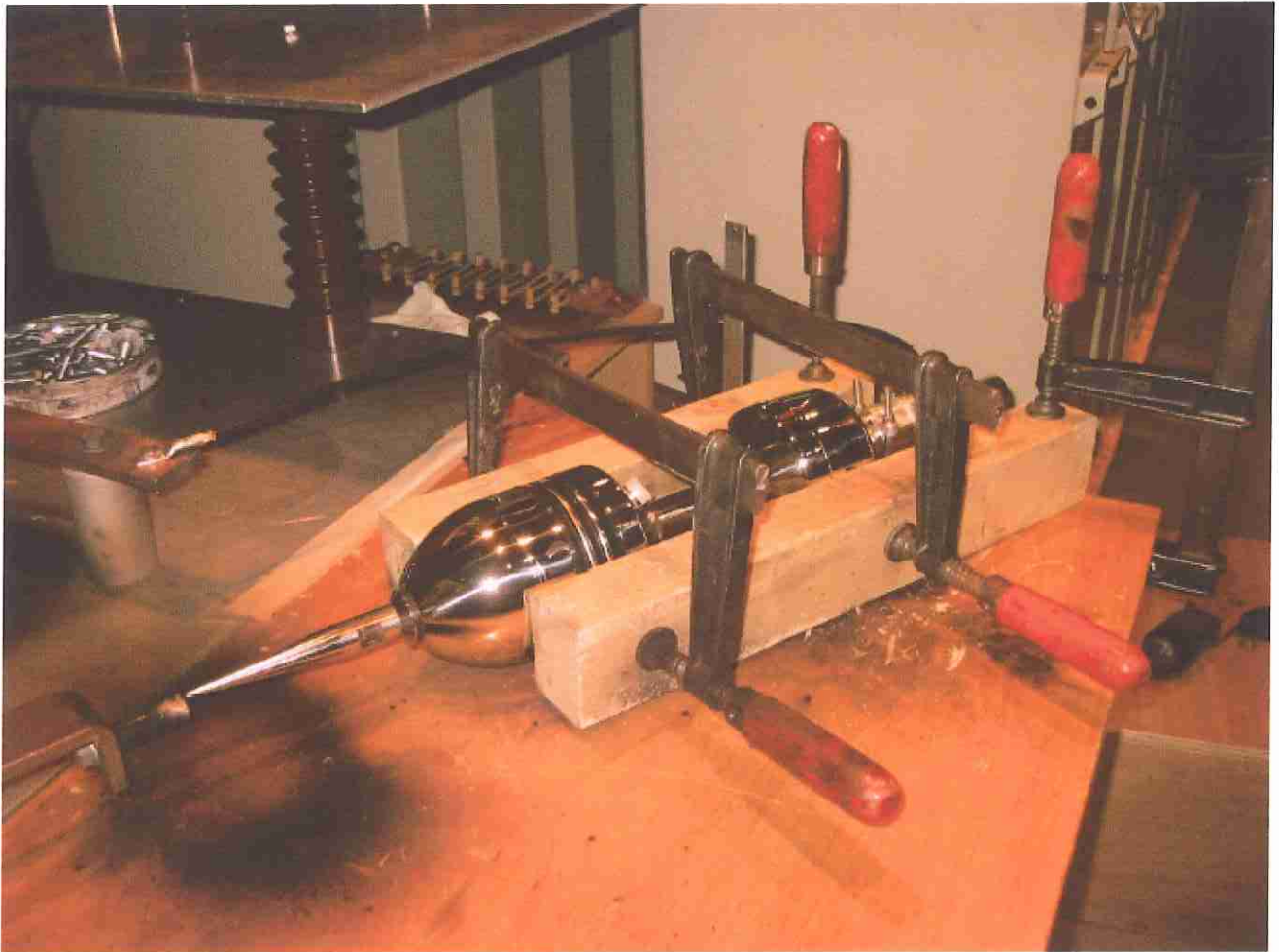
Conclusion:

Visual inspection showed no physical damage, no loose parts and no deformation. Comparison of initial and final resistance measurements between the terminal tip and the sphere showed no differences exceeding the measurement accuracy and therefore no indication for any alteration or damage of the internal circuitry.

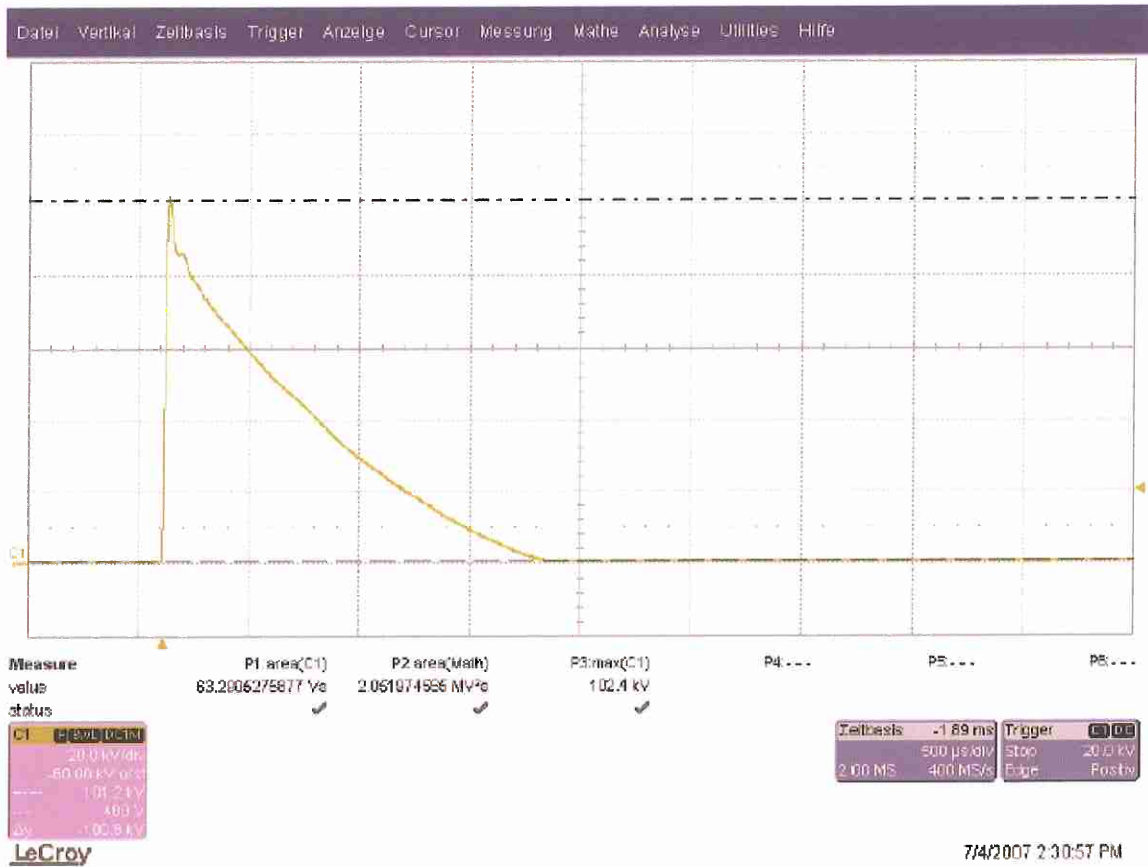
ANNEX 1 - SCHIRTEC Model SCHIRTEC-DAS



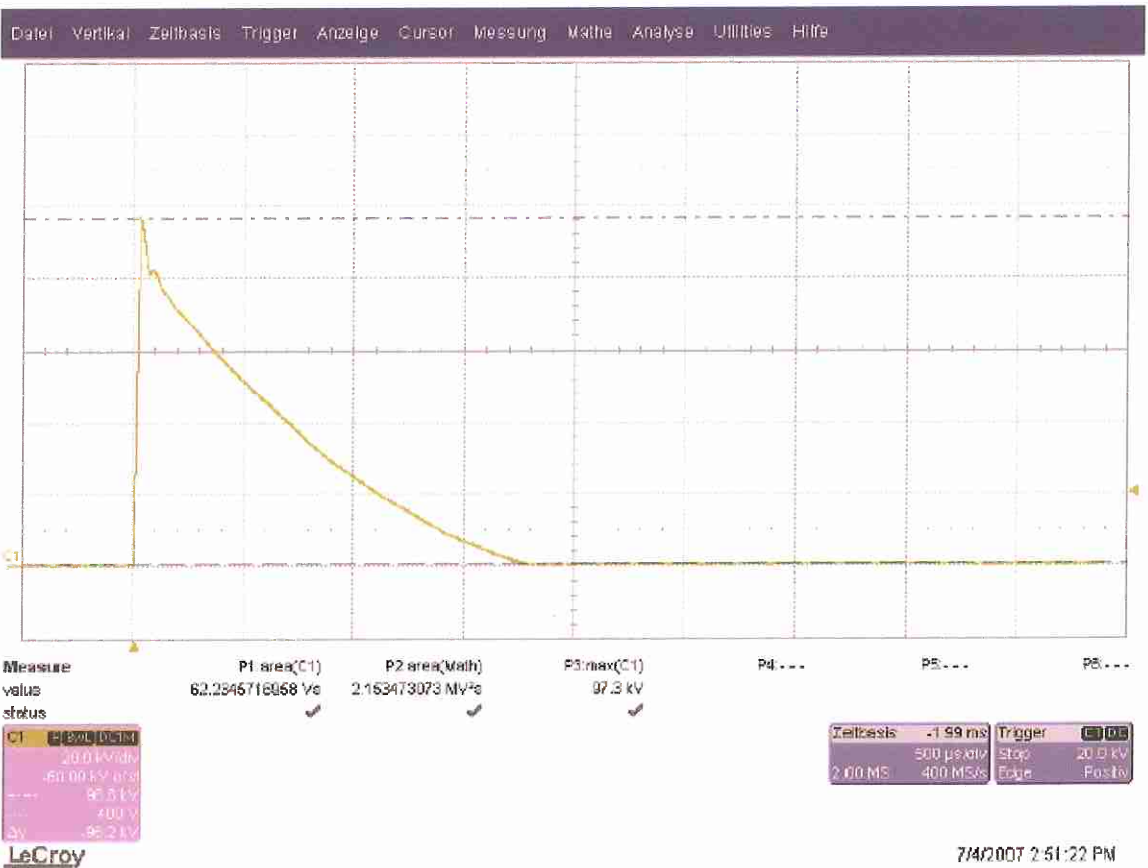
Test arrangement and generator connection



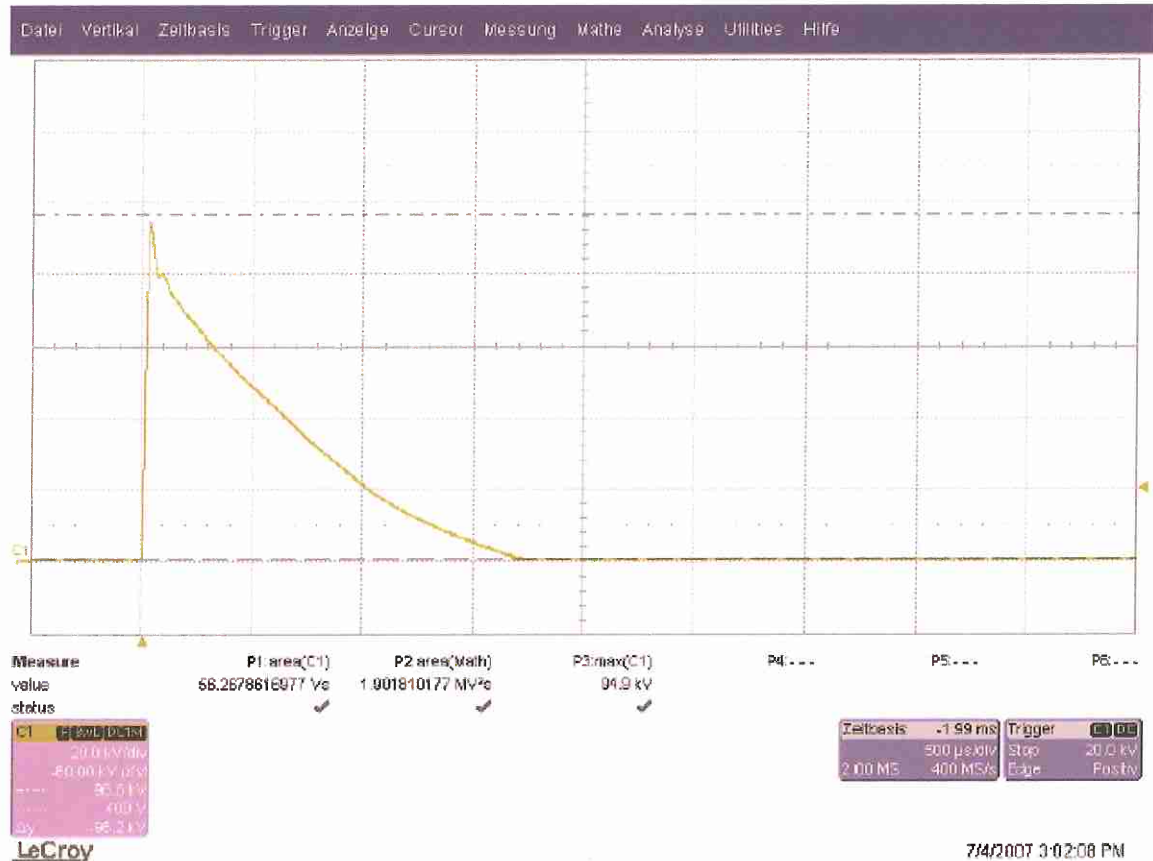
ANNEX 2 - SCHIRTEC Model SCHIRTEC-DAS



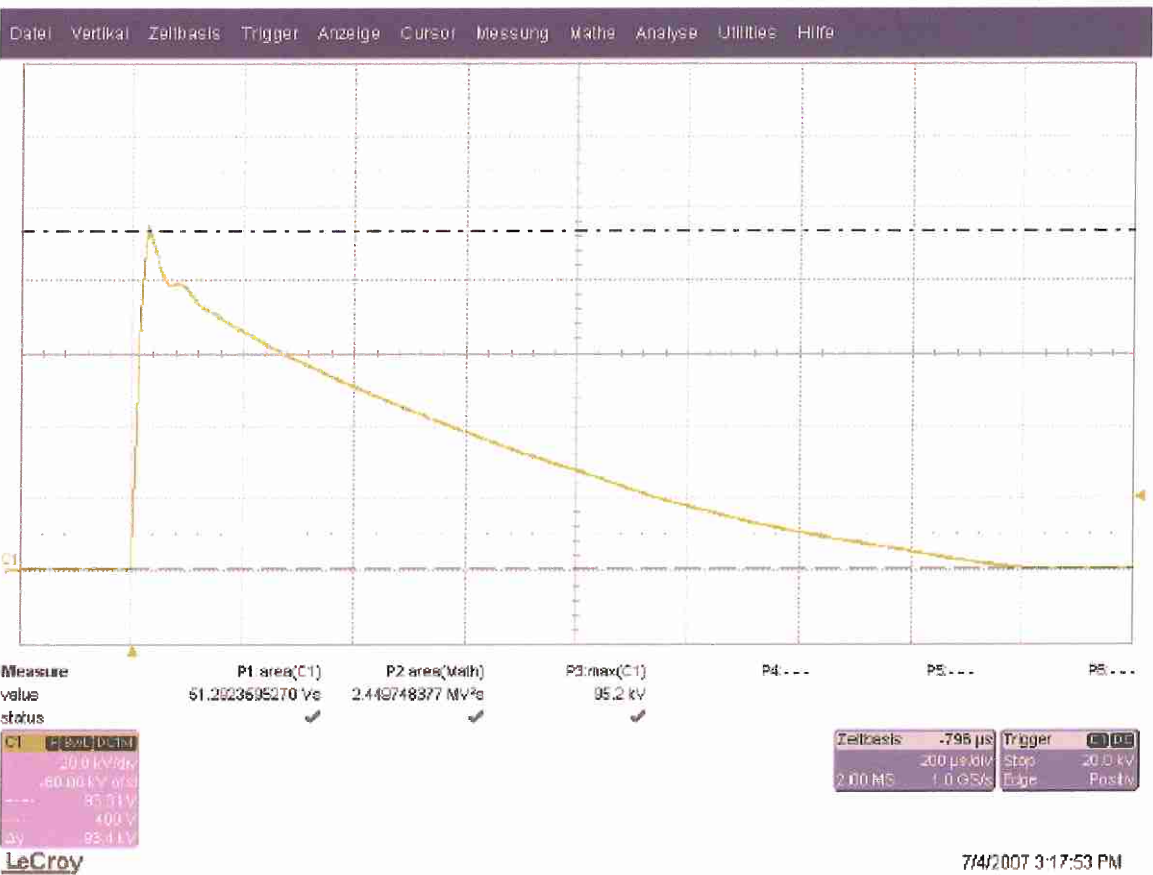
Sample 1, First impulse



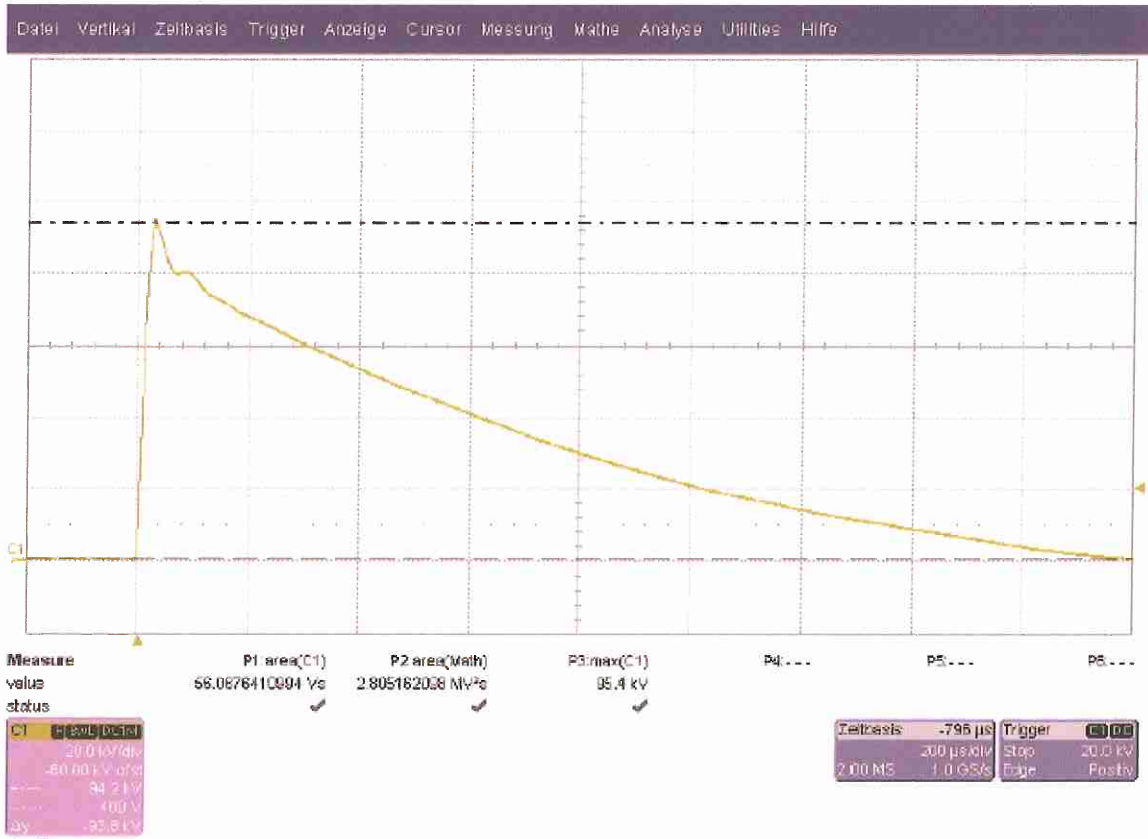
Sample 1, Second impulse



Sample 1, Third impulse

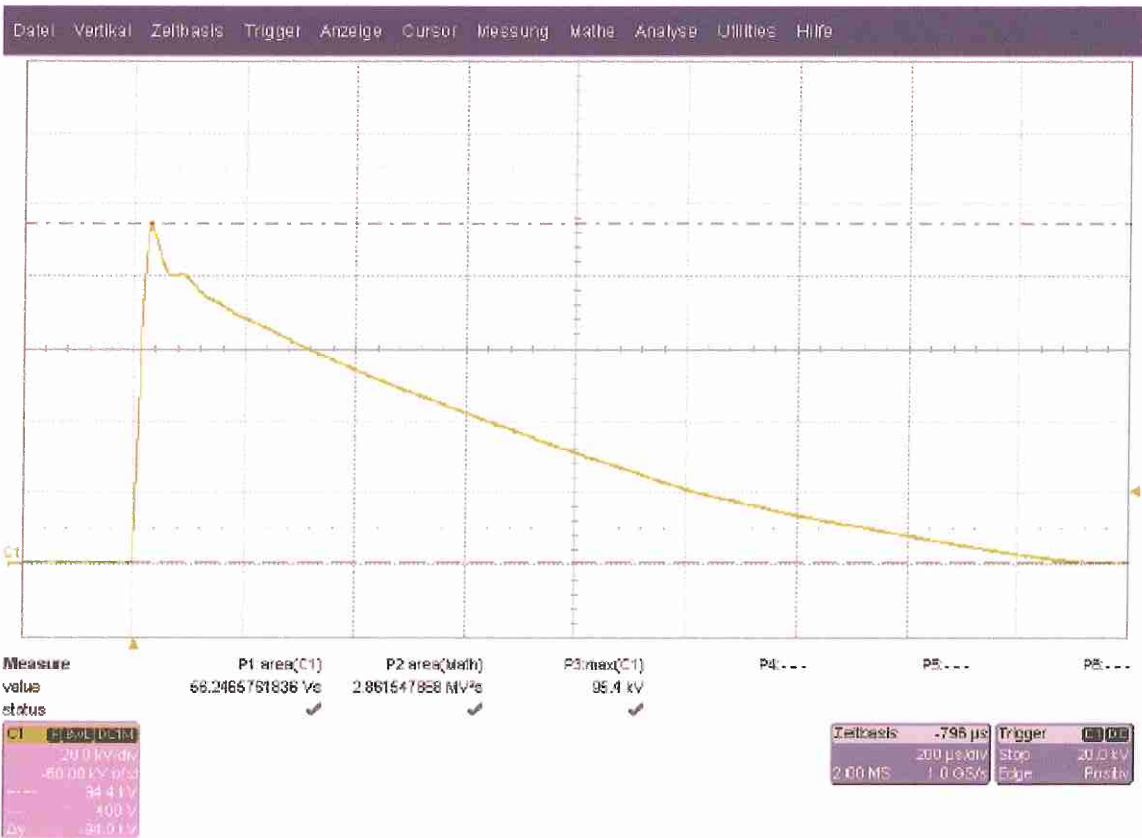


Sample 2, First impulse



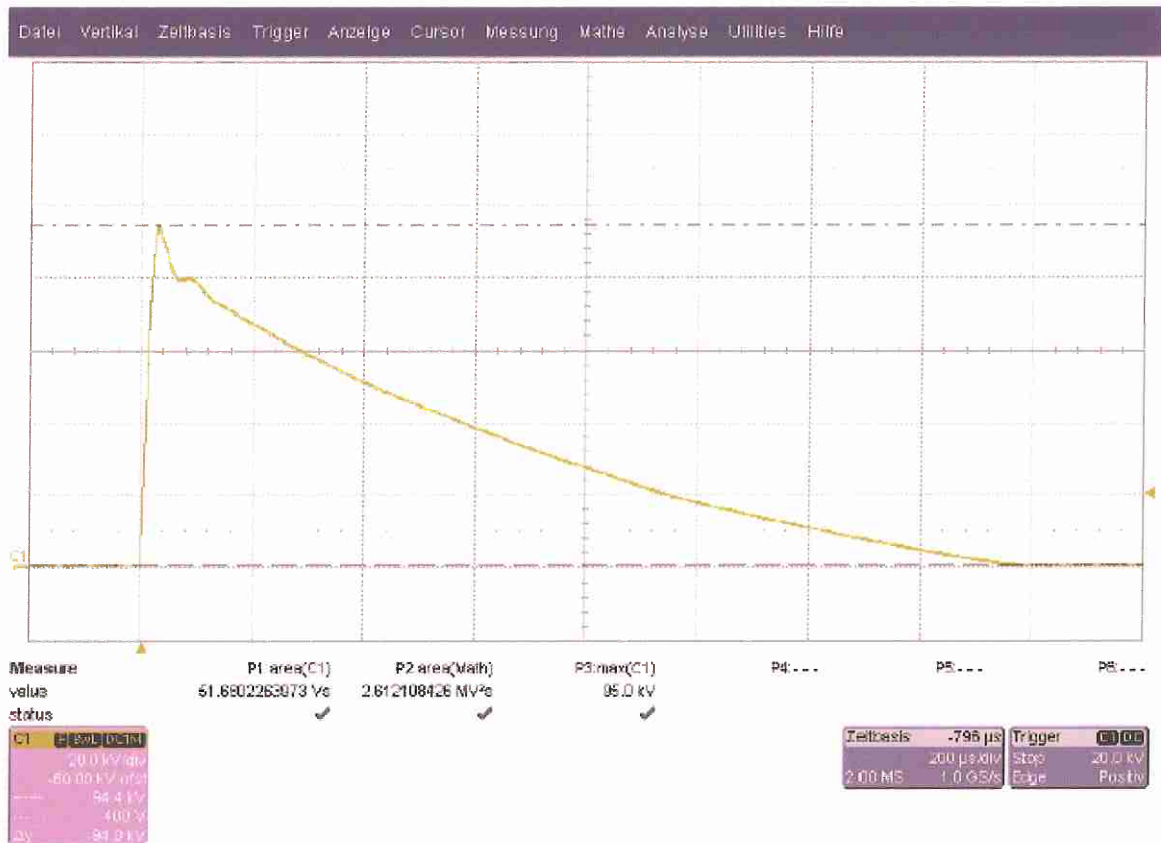
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Sample 2, Second impulse



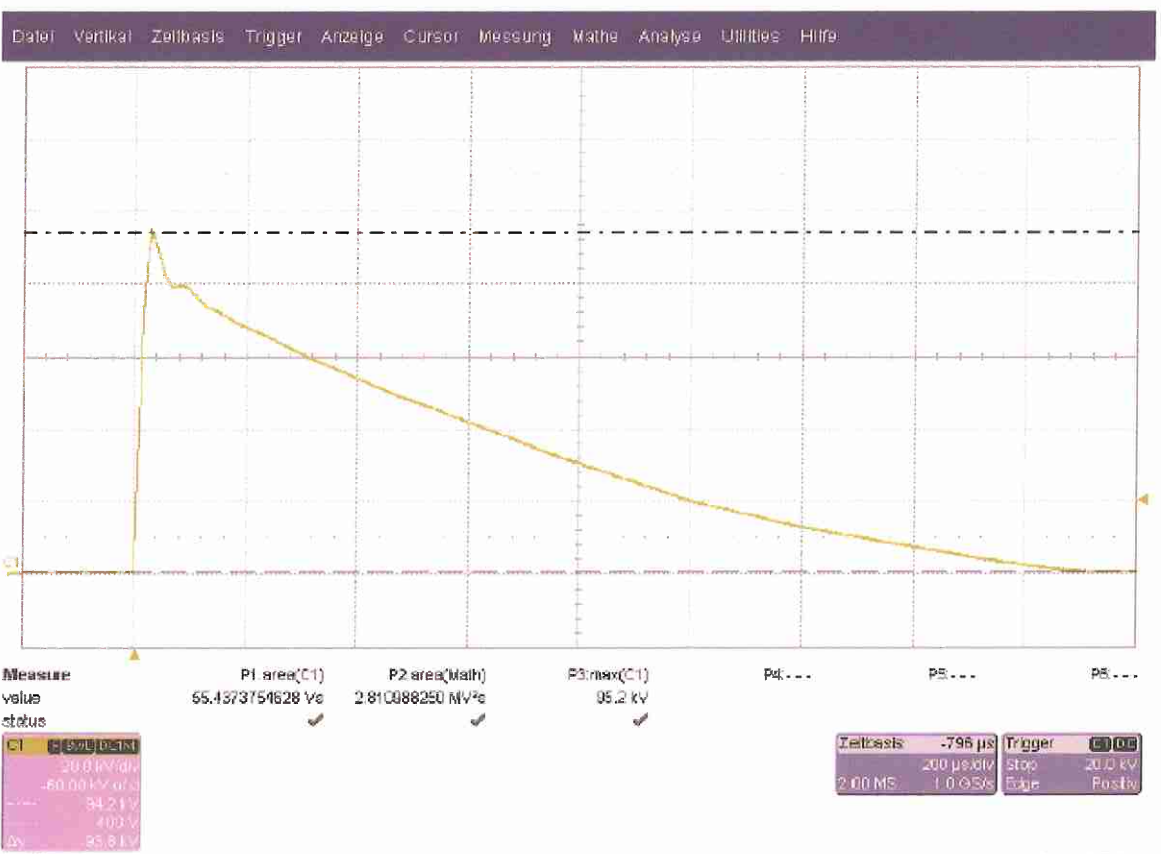
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Sample 2, Third impulse



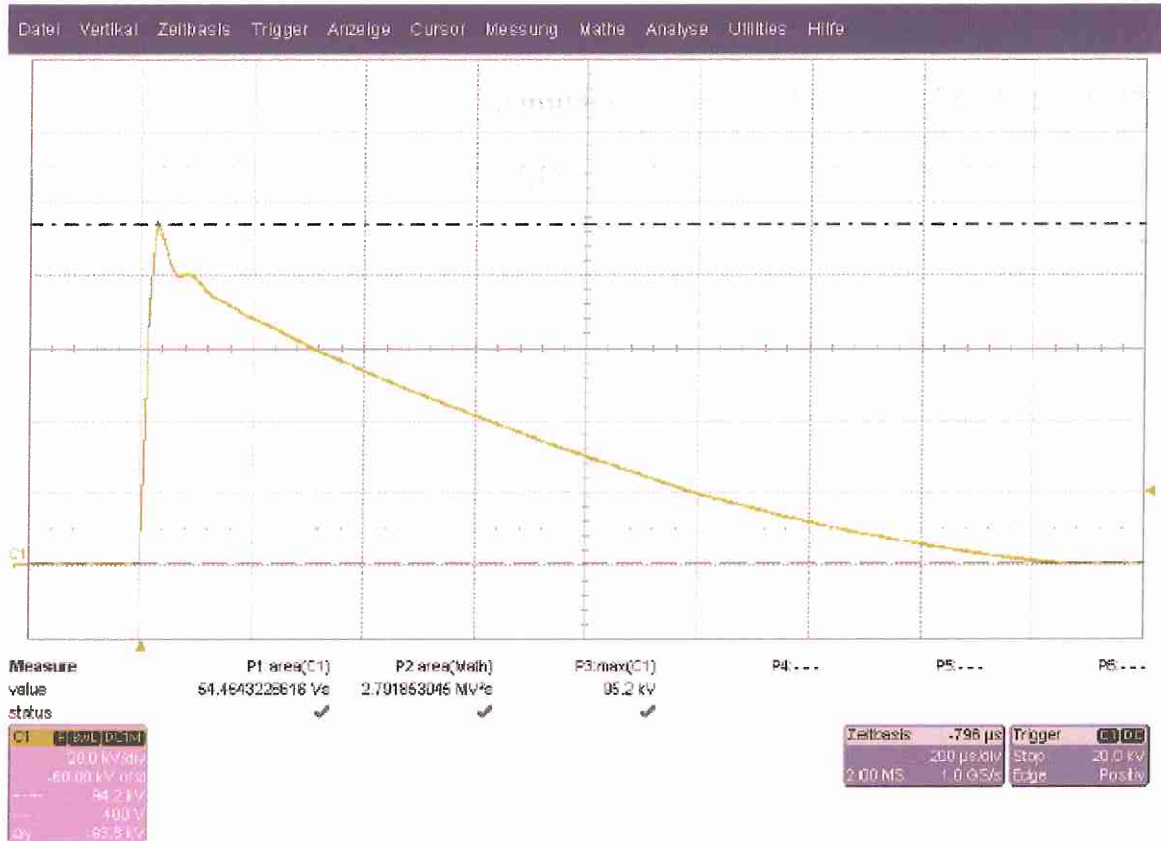
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 Sample 3, First impulse

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 Sample 3, Second impulse

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Sample 3, Third impulse