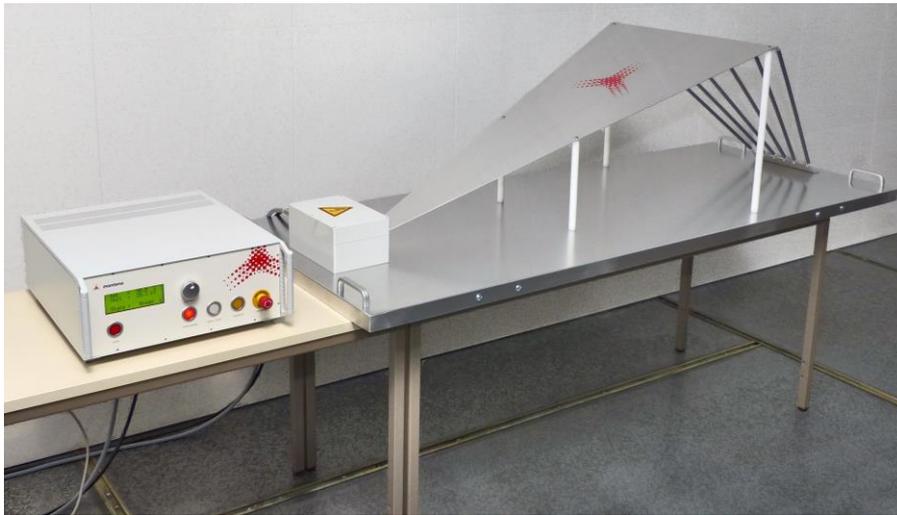




montena

NEMP radiated susceptibility test setup



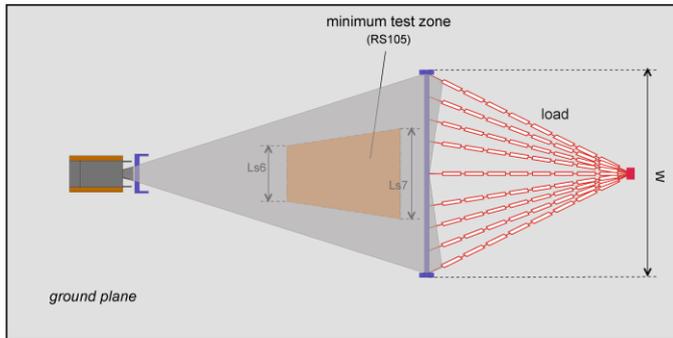
This test set-up can be used for the susceptibility testing of small pieces of equipment such as printed boards, small subsystems, etc., according to MIL-STD-461 / RS105 (NEMP: nuclear electromagnetic pulse). The system consists of a control unit and a line assembly including the high voltage unit directly connected to the radiating line. The high voltage unit and the antenna are fixed on a stable and solid frame which can be easily moved and placed on a table. The control unit is connected to the line structure through a high voltage cable and a control cable. The test system can be controlled by a computer through RS232 and USB interface. The minimum field under the line is 50 kV/m at full charging voltage. Even higher fields can be achieved for smaller objects placed close to the beginning of the line.

SPECIFICATIONS

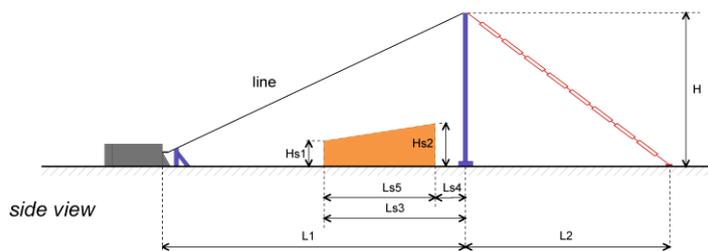
Type	EMP25K-2-23 + RL50-50
Standard	MIL-STD461-E / F, paragraph RS105
Charging voltage	0.2 to 25 kV, positive only
Peak electric field	minimum 50 kV/m at full charging voltage
Rise time (10 – 90 %)	2.3 ns \pm 0.5 ns
Pulse length on 100 ohm (50 – 50 %)	23 ns \pm 5 ns
Line structure	bounded wave line / TEM mode
Line impedance	100 ohm
Maximum height of the EUT	17 cm (according to MIL-STD461 / RS105)
Connecting cables	2 (can be disconnected on the control unit side)
Power rating	85 - 264 V _{ac} / 50 - 60 Hz / 150 VA
Control unit dimensions	56 x 19 x 45 cm (L x H x W)
Control unit weight	10 kg
Line assembly dimensions	200 x 55 x 80 cm (L x H x W)
Line assembly weight	18 kg



Appendix 1: dimensions and test zone



top view



side view

W = 69 cm
 L_{s6} = 17 cm
 L_{s7} = 34.5 cm

H = 50 cm
 L₁ = 116 cm
 L₂ = 56 cm
 L_{s3} = 62 cm
 L_{s4} = 0 cm
 L_{s5} = 62 cm
 H_{s1} = 8.5 cm
 H_{s2} = 16.5 cm

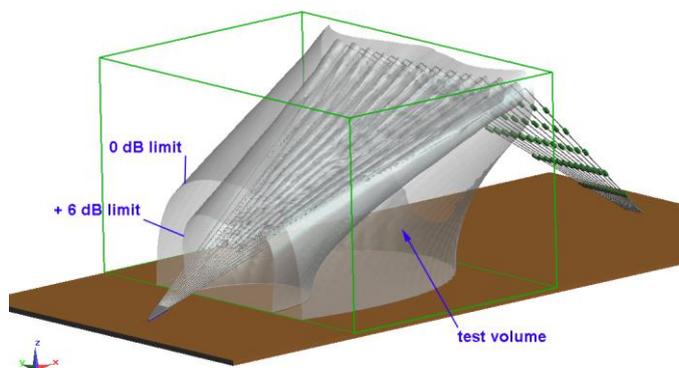
Appendix 2: description of the test zone

Three different requirements according to MIL-Std 461 / RS105 must be fulfilled for the maximum size of the EUT (equipment under test):

- Height limitation: the maximum height of the EUT must be lower than $\frac{1}{3}$ of the height under the septum (= the line);
- Width limitation: the maximum width of the EUT must be smaller than $\frac{1}{2}$ of the line width.
- Field homogeneity: the peak field value must be between 0 dB and + 6 dB in the test volume (\cong between 50 and 100 kV/m).

The test zone parallelepiped (in orange in the figure) takes into account these 3 requirements in a simplified representation. The following figure show the calculated envelopes of the 0 dB and + 6 dB limits. The volume inside these 2 envelopes fulfils the 0 / + 6 dB field homogeneity of the MIL-Std 461 / RS105 requirement. To define the exact maximum allowable test volume, the $\frac{1}{3}$ height under septum and the $\frac{1}{2}$ width limitations must be added.

Remark: by adapting the charging voltage of the generator, the test volume can be adjusted (limits can be moved a little along the line). See the technical note TN24.



Simulation of the field around the test zone – Grey envelops show the 0 and + 6 dB limits.