

RS105 test installations Distortion due to the presence of walls in the vicinity

If metallic walls (or electrical installations, barriers, etc.) are in the vicinity of the installation, reflections of the wave can occur. The reflected waves return to the test zone and are added to the field under the antenna. Depending on the phase of the reflected wave, the distortion of the signal is positive or negative.

The figure below shows the comparison of the measurement of the electric field in 3 different environments: open area test site (OATS) and anechoic chambers no 1 (length 13 m / foam absorbers) and no 2 (length 15 m / ferrite absorbers).

It is important to note that even if the walls of the chamber are covered with electromagnetic absorbers reflections are occurring. In case of a room with metallic structures, electric wiring, etc. reflections could be higher and distortions of the pulse worst!

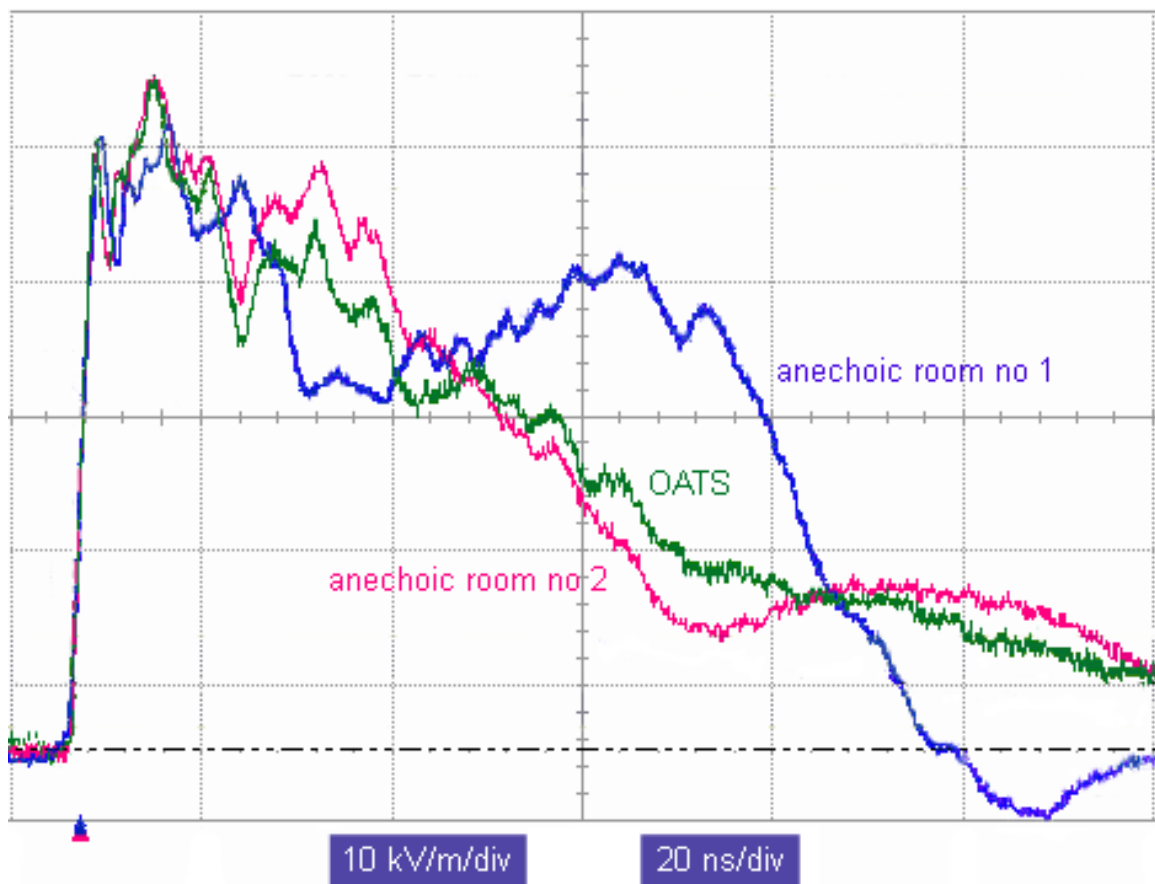


Fig. 1: field produced by a RS105 test installation in 3 different situations



Additionally, the standard MIL-STD-461 / RS105 specify a minimum distance between the line and the ceiling of 2 times the maximum height of the line. This requirement is also motivated by the reduction of the distortions due to reflections but also to avoid a change of the wave impedance of the line.

So it is recommended to place the installation away from the walls according to the following diagram in order to avoid the distortions.

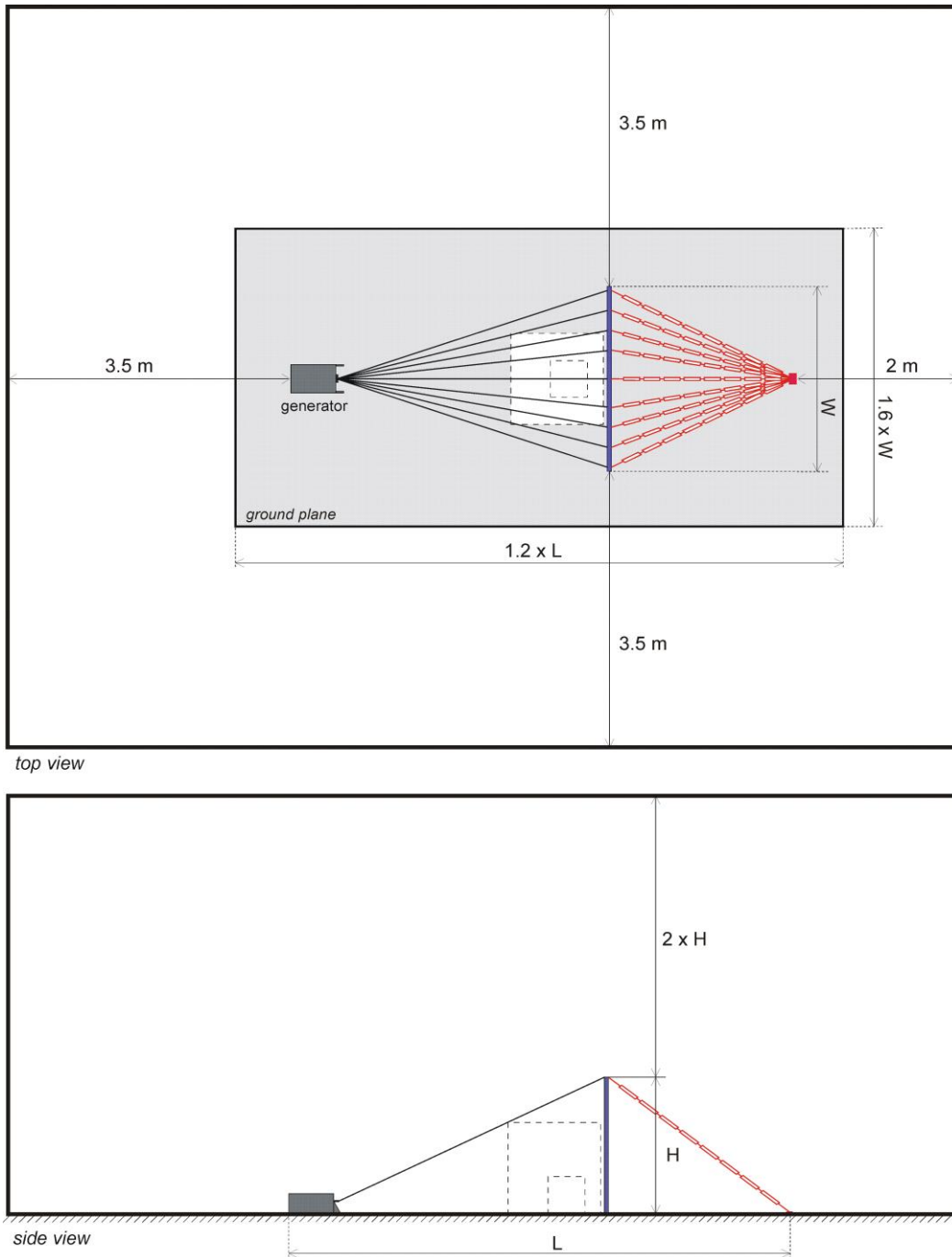


Fig. 2: minimum recommended clearance distances

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