

Characterization of Building Used for HPM Testing

Narrow band measurements in different parts of building

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Abstract— During a field trial a computer network and alarm systems were installed in a building, while different HPM sources were used on the outside of the building to radiate the electronic systems inside. No efforts were made to protect the building, and all the tested equipment was placed in a room at the outer wall. This paper will focus on potential protection by placing the equipment in other places in the building

Keywords-Shielding; attenuation; protection; building

I. INTRODUCTION

Critical infrastructure may be installed in buildings which have not been planned for protection against IEMI. There could be a variety of reasons for this lack of protection; like costs, no defined threat at time of planning, etc. In some cases facilities which was not planned with protection, could still provide considerable shielding.

II. DESCRIPTION OF SITUATION

Studies have been done to investigate shielding effects in normal building materials in laboratories [1] and some measurements have been done on actual buildings. [2] These measurements have shown diverging levels of attenuation. A great variety of parameters can affect the result.

Given an attack on a certain building, the IEMI hazard could be dependent on location in the building. Multiple walls and floor separations may provide considerable attenuation.

III. MEASUREMENTS

Before the field trial, measurements were done to investigate attenuation in the room where tested equipment was installed. Afterwards, we wanted to investigate protection in different locations in the building.

A simple way to estimate the shielding of a building with moderate attenuation is to use already existing electromagnetic environment. [3] Most areas are covered by transmitters for FM radio, TV and cellular phones. Measuring field strength of these signals in different parts of the building was done as a first investigation to locate best location for critical installations.

Further tests were done with a narrow band source in different locations on the outside, and field strength was measured at different location on the inside for each position for the outside source.

REFERENCES

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