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TEMPEST font counteracting a non-invasive acquisition of text data

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Abstract: The protection of information against electromagnetic penetration has huge significance. Different solutions, technological or organizational, are used to protect the information-limiting levels of unintentional emissions. In particular, technological solutions are implemented in commercial devices to limit levels of electromagnetic emissions. Nevertheless, such solutions cannot always be used. This is connected with the construction of these devices. Very often the devices do not have enough space on the inside to install new elements such as filters, electromagnetic shielding, and others. In the paper a new solution is proposed. The solution does not change the construction of the devices (e.g., printers, screens). The new method is based on computer fonts called TEMPEST fonts (safe fonts). In contrast to traditional fonts (e.g., Arial or Times New Roman), the new fonts are devoid of distinctive features. Without these features the characters of the new fonts are similar each other. At the output of the information infiltration channel the characters of the TEMPEST fonts limit the possibilities of recognition of characters that appear on the reconstructed image. The image is reconstructed based on an electromagnetic emission, which is correlated with the process information. In this paper the dominance of the TEMPEST fonts over the traditional fonts and Sang Mun fonts in the protection of information against electromagnetic penetration is demonstrated. The TEMPEST fonts have wider use. They are also resistant to optical character recognition programs. The use of the TEMPEST fonts in special systems allows the safe processing of data while displaying them on the screen as well as printing them on laser printers, especially on laser printers with LED slats.

Keywords: Electromagnetic emission, safe computer font, protection of information, electromagnetic eavesdropping, image and signal processing

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