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LED Arrays of Laser Printers as sources of Valuable Emissions for Electromagnetic Penetration Process

Tytuł

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Abstract: Classified information may be derivable from unintended

electromagnetic signals. This article presents a technical analysis of LED

arrays used in monochrome computer printers and their contribution to unintentional electromagnetic emanations. Analyses were based on realistic type sizes and distribution of glyphs. Usable pictures were reconstructed from intercepted radio frequency (RF) emanations. We observed differences in the legibility of information receivable at a distance that we attribute to different ways used by printer designers to control the LED arrays, particularly the difference between relatively high voltage single-ended waveforms and lower-voltage differential signals. To decode the compromising emanations required knowledge of—or guessing—printer operating parameters including resolution, printing speed, and paper size. Measurements were carried out across differences in construction and control of the LED arrays in tested printers.

Keywords: pattern recognition, image processing; graphic information, LED array, laser printer, compromising emanations, electromagnetic infiltration, reconstruction, non-invasive data acquisition

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