# The Vircator: A Microwave Source of small bandwith ?

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The best way to destroy the aggressive capability of an adversary is to switch off or at least to disturb all its electronic equipments of major importance for communications and manoeuvrability and this without injuries for the aggressors.

One can reach that goal by two different physical coupling mechanisms. Front door coupling, with HPM-Emitters (High Power Microwave), penetrates in a system by using the regular input / output ways: Antennas, wires. But due to the efficient input protecting devices like surge- / lightning arresters …, the amplitude of the jamming signal must be of high level. For this coupling one knows exactly the resonance frequency of the target.

Back-door coupling uses structure defects like slots and openings in the housing. In this case one does not know the exact coupling frequencies. Therefore the emitter must cover a wide band of frequencies and, due to the lack of economical means to protect the target for all the frequencies, the needs for energy are less: UWB-Emitter (Ultra Wide Band).

Emitter for HPM are usually different to emitter for UWB. The former is often an electronic tube which has huge power and a specific working frequency. These tubes have a complex structure and most of them are difficult to handle: size, weight, power supply etc. . The latter is easier to handle, needs capacitors, pulsforming lines and / or puls transformers which do not always achieve the necessary in-band power and / or are frequency-limited.

In this paper we will present the HPM-vircator-tube. Although it is an electronic tube it combines under certain conditions the advantages of both systems. It is possible to concentrate the electromagnetic energy in several well-defined frequencies and therefore adjust the emitter to the target.

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