The EKKO II experimental digital radar jammer is capable of storing digitised replica of radar signals, modulating them, and retransmitting signals resembling extended real targets.

**EKKO II – digital radar jamming**

*The Digital RF Memory or DRFM is a core technology for all modern radar jamming systems. Developing this technology and producing an experimental system based on it has been a long term activity at FFI since 1995, with multiple goals:*

- To understand capabilities and limitations of the technology
- To conduct field trials against various radars to assess vulnerability and develop operational techniques
- To develop operational concepts for radar jamming
- To establish basic knowledge required to support acquisition programs
- To participate in international research programmes

**Operational relevance**

Jamming and deception of radar systems are relevant for many military situations, platforms and scenarios. Some situations are shown in the illustrations, other uses may be:

- As self protection for aircraft, ground vehicles and ships against radar guided missiles by breaking the lock of missile seekers
- To enhance survivability of non-protected platforms, such as attack aircraft or escort of non-combat ships, by jamming from dedicated jamming platforms
- As countermeasure against wide area surveillance radar by deceiving synthetic aperture radar (SAR) satellites
- To prevent situational awareness by introducing false information or hiding true information
- To increase the vulnerability of opponents and degrade the delivery efficiency of weapons by denying long range radar based target identification or long range radar based battle damaged assessment (BDA)
EKKO II description
EKKO II is an experimental jamming system developed at FFI. It is designed to be modular, easily upgradable and flexible, and it represents the core technology required for all the tasks listed above.

EKKO II can receive and store the signal emitted from a radar, modify it, e.g. by applying a target signature, and retransmit the modified signal towards the radar. This is done in real time on each received radar pulse. The stored signal provides a high fidelity digital copy of the radar signal. The modifications or modulations applied can emulate the reflection processes that occur in real life so that the radar sees false targets with natural motions and a natural radar signature.

The system has been developed with the latest commercially available high speed digital electronics and microwave technologies. EKKO II outperforms operational radar jammers, but is at the same time able to emulate many of their limitations, so that the results deduced from trials conducted with EKKO II are operationally relevant.

EKKO II – a proven system
EKKO II has participated in national and international trials, operating against various types of radars including fighter aircraft radar, UAV radar and MPA radar. The system is in continuous development, and will continue participating in trials.

EKKO II is operated from a mobile laboratory in a trailer, measuring approximately 30 kg/200x50x50 cm. It is designed for maximum flexibility, ease of upgrading and future development. An operational system with dedicated tasks based on EKKO II technology could be in the 10 kg class within a 50x50x50 cm volume, e.g. for an airborne application.

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Flexible. The digital radar jammer is equally relevant for air, sea and land operations.