

Noise Radar Electronic Protection and Spectrum Sharing Field Test

SET-298/RSM

30 May - 1 June 2023

Legionowo, Poland

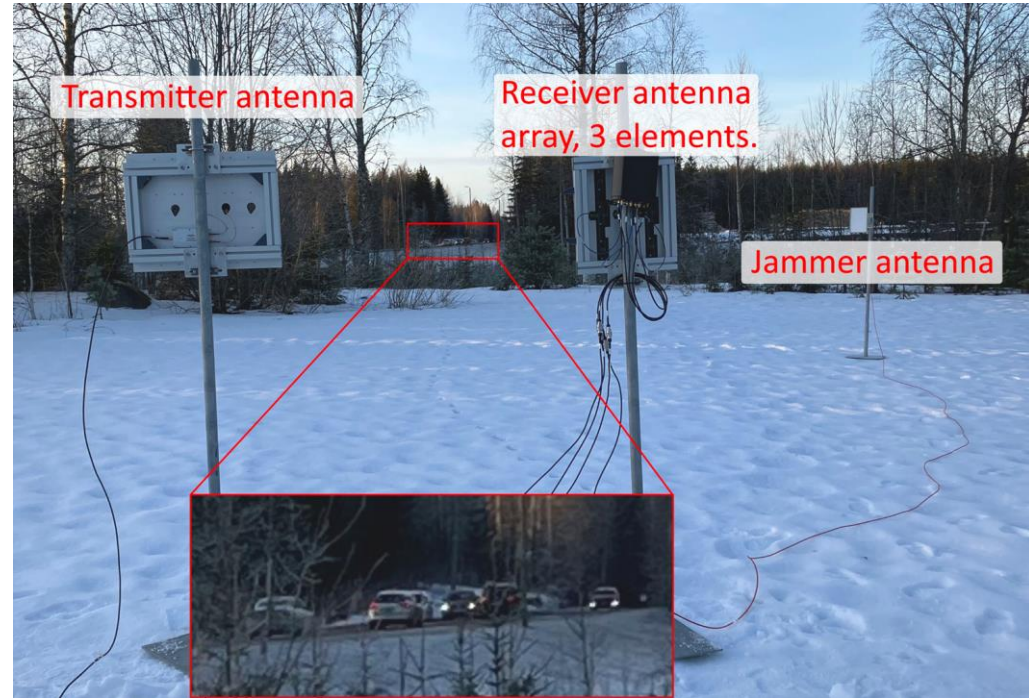


Background and Authors

- Field test performed as a part of two-year study on Noise Radars
- Kai Hiltunen
 - Patria Aviation Oy, Finland
 - Senior System Engineer
- Jouni Malinen
 - Patria Aviation Oy, Finland
 - Director, Research

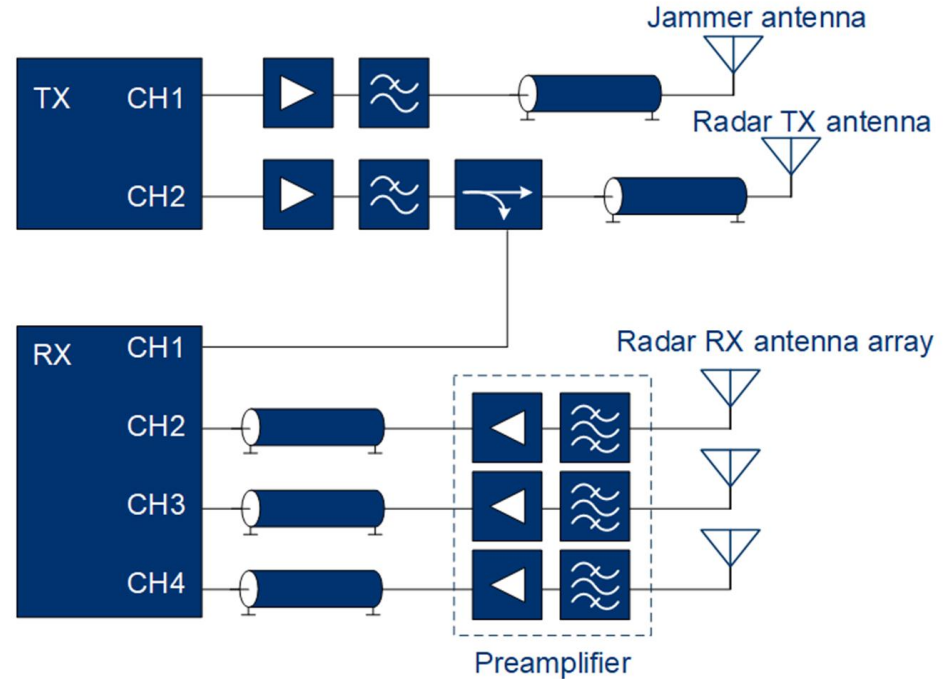
Measurement Setup

- Objective: measured data from a realistic scenario
- Monostatic continuous wave noise radar at 2.88 GHz
- 1 TX antenna, 3 element RX antenna array
- Interfering transmitter
 - Pulse radar
 - Noise jammer



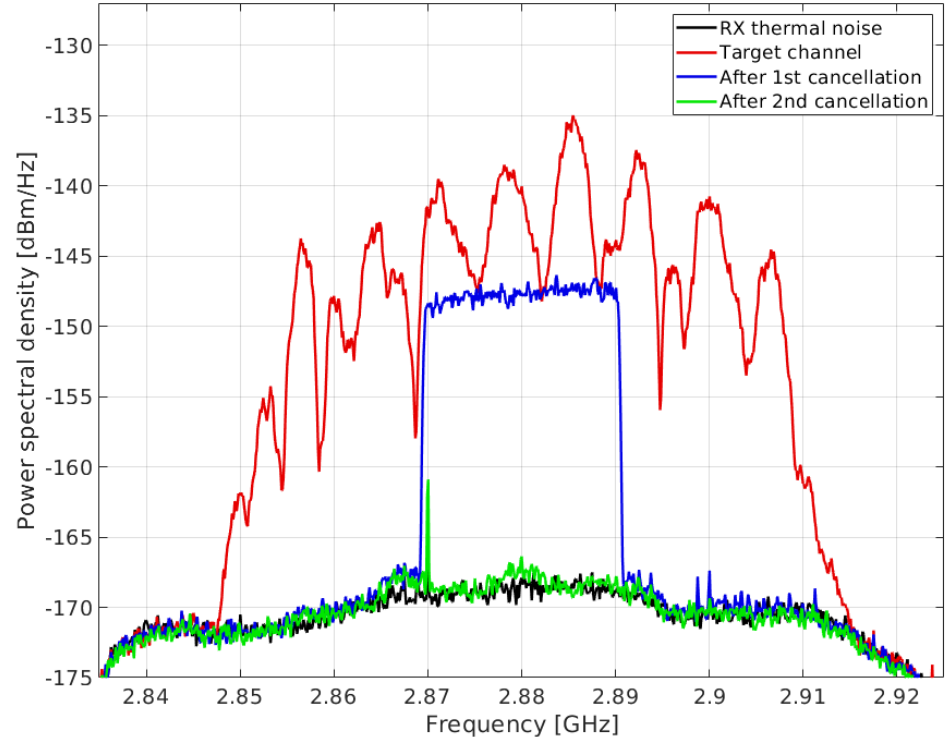
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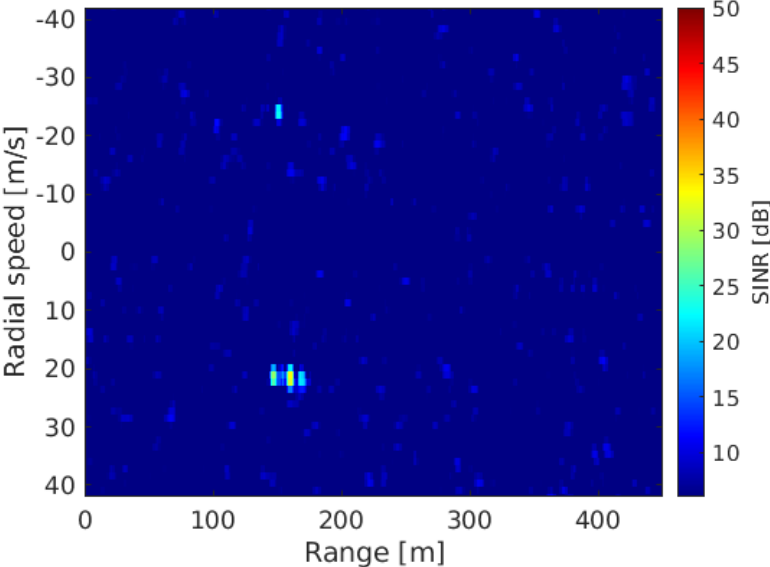


Noise Jamming Scenario

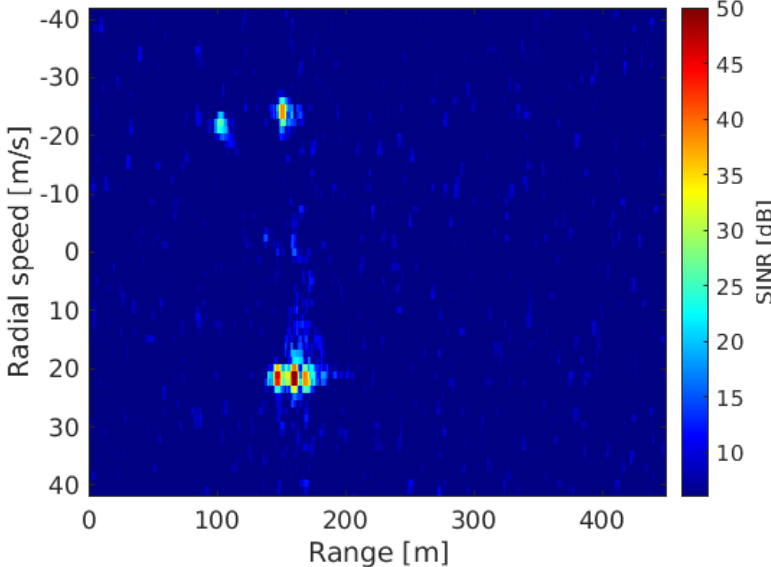
- Ground clutter cancellation using block least squares method → blue spectrum trace
- Antenna beam steered to jammer → reference signal for the jammer
- Second cancellation step → residual noise at thermal noise level



Noise Jamming Scenario



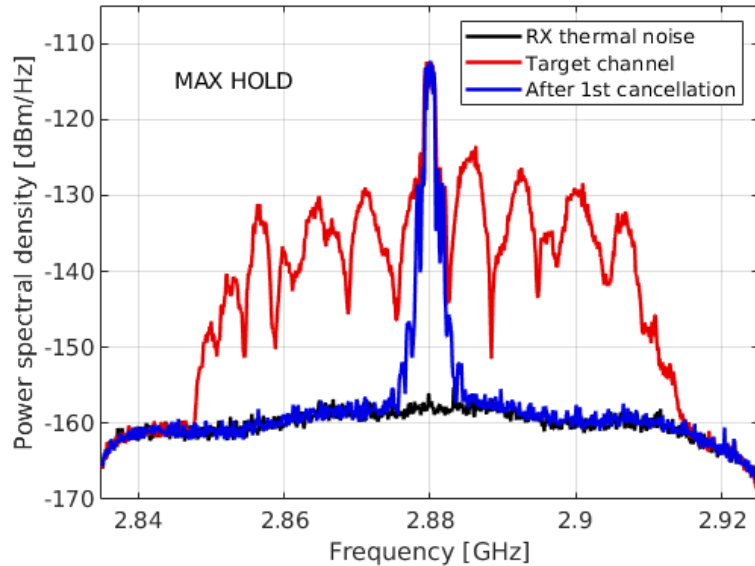
After 1st cancellation



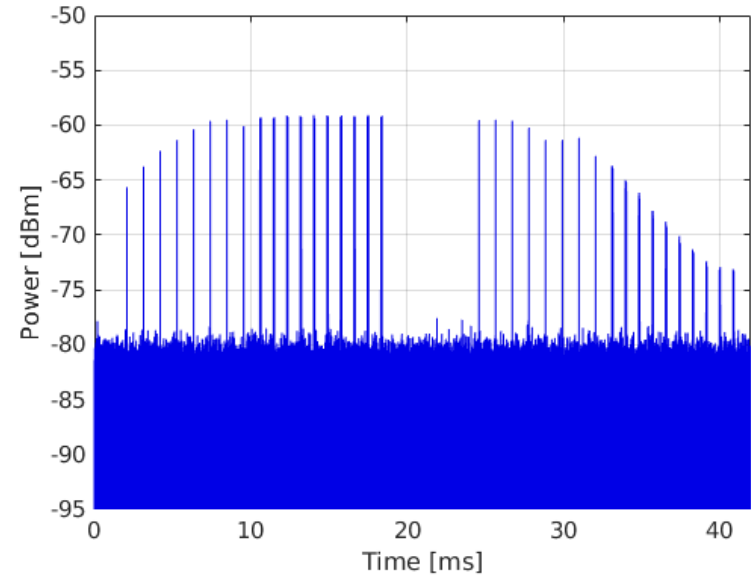
After 2nd cancellation

Pulse Radar Interference

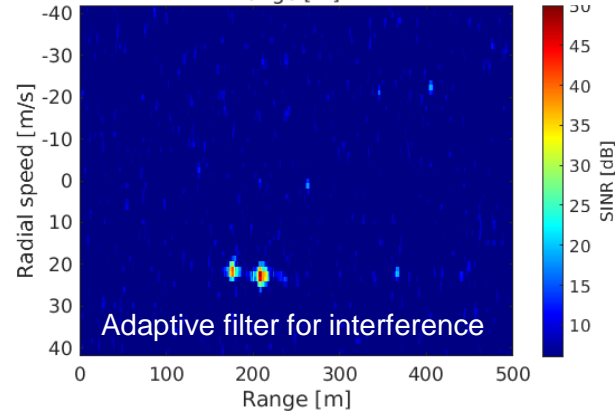
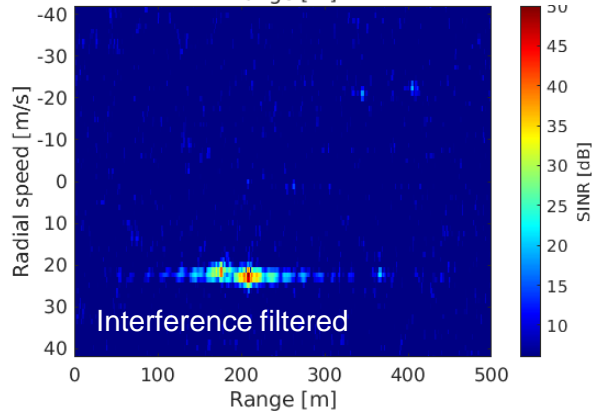
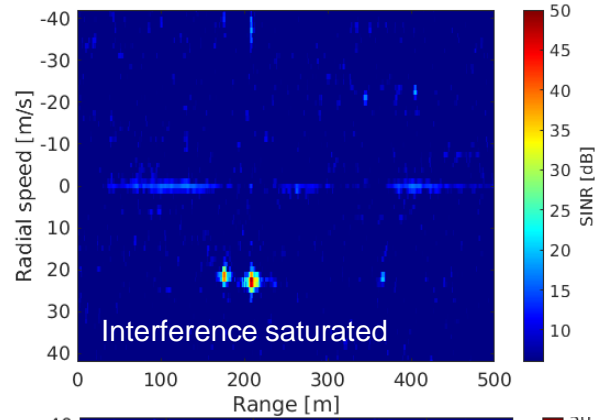
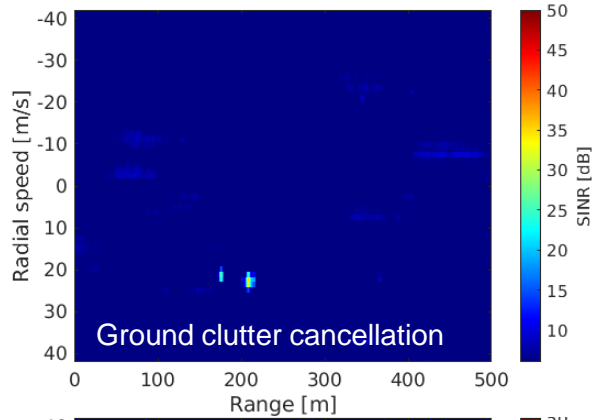
- Pulse radar interference mimics Helsinki Airport ATC radar



- Interference and noise left after the ground clutter cancellation



Pulse Radar Interference





Conclusions

Patria

- Field measurement with real signals and targets
- Monostatic continuous wave noise radar operating at the nominal sensitivity despite the interference
- Potential methods for modern multistatic netted noise radars