

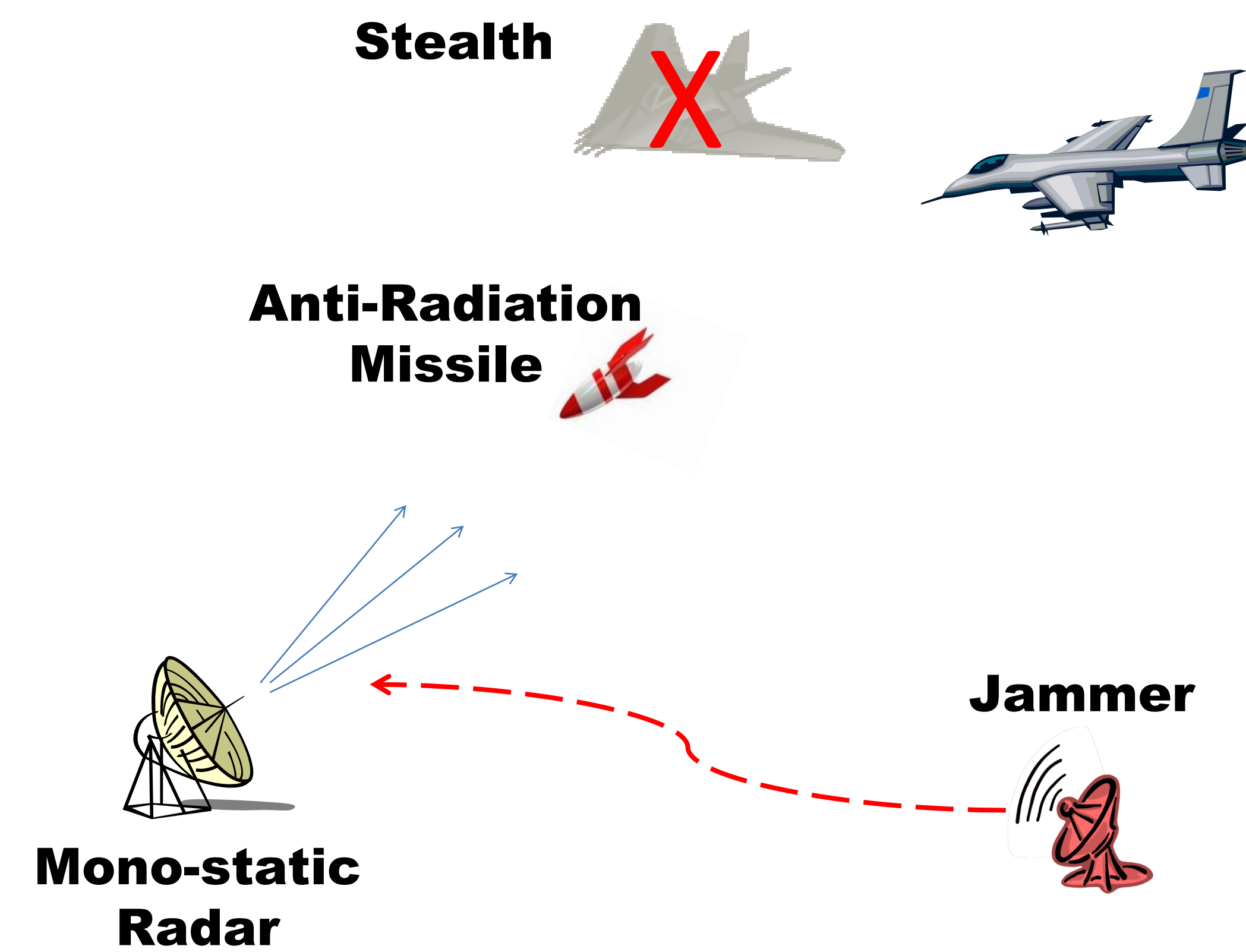
## Passive Bistatic Radar

### Monostatic radars

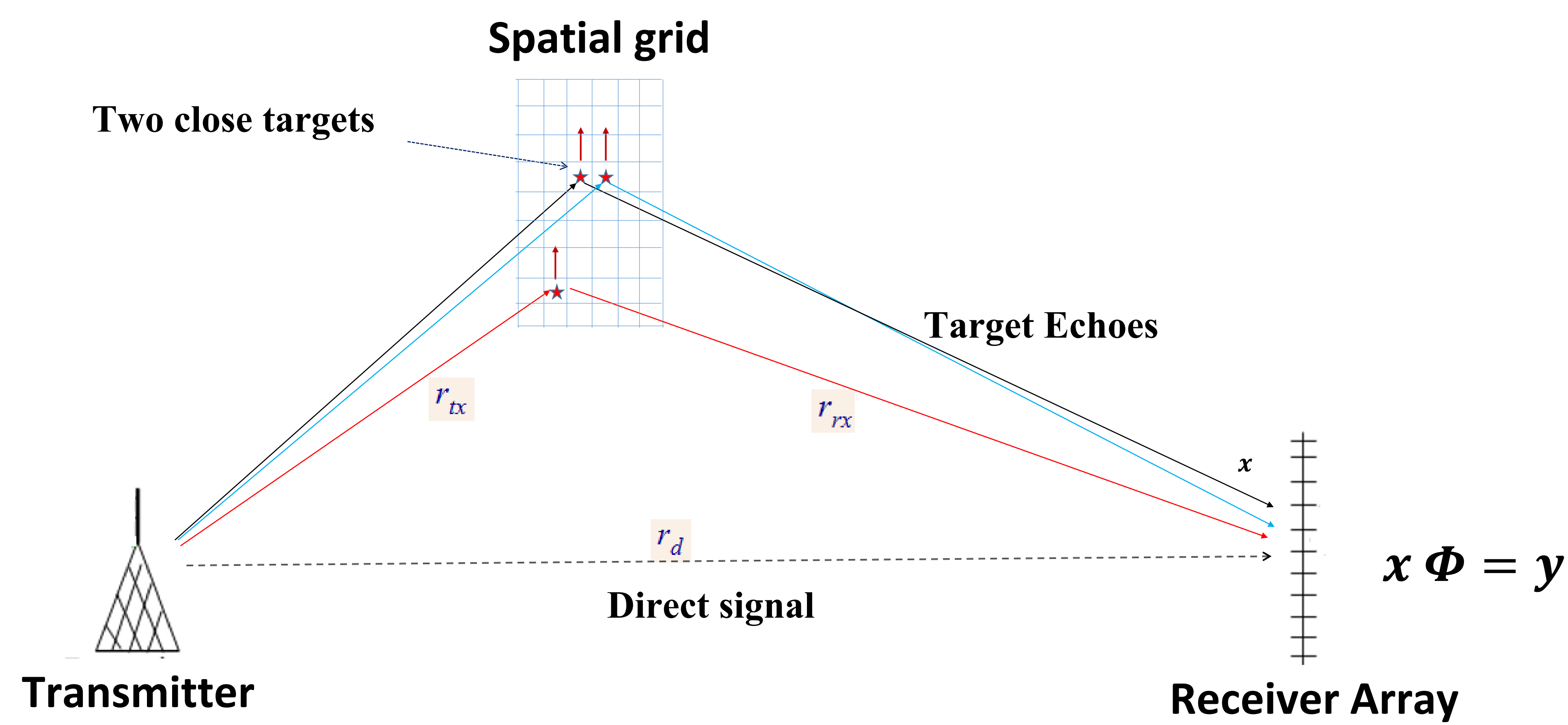
- ✓ Single-site operation
- ✓ Controlled transmission

### Limitations

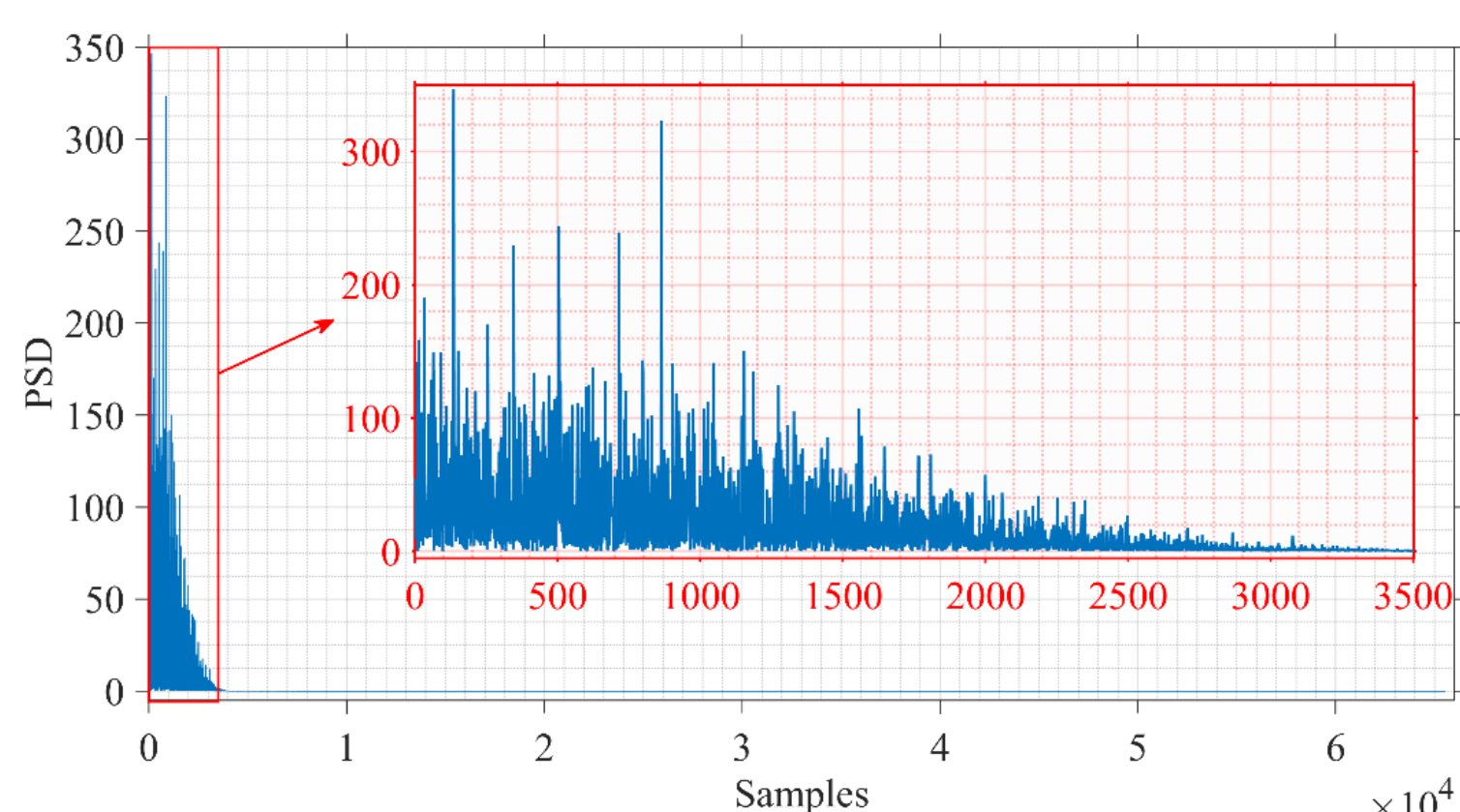
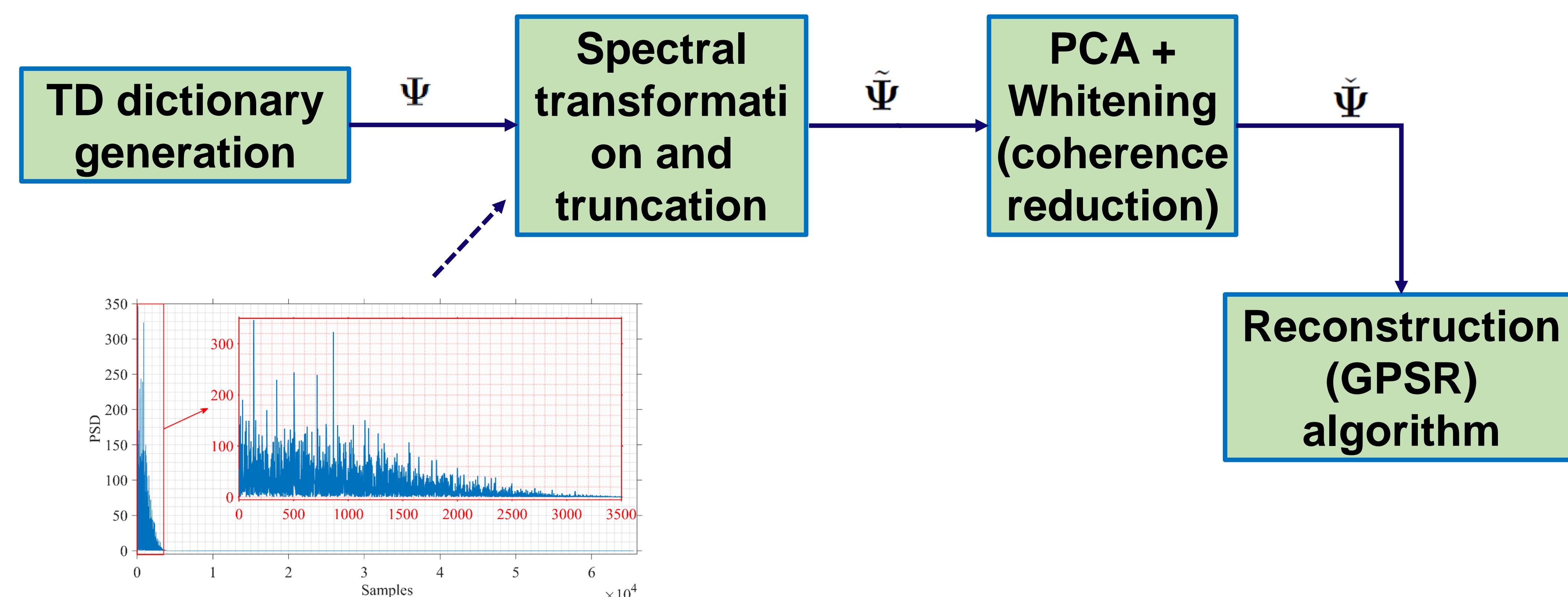
- ✗ Non-covert system
- ✗ Jamming, Interception and ECM
- ✗ Anti-Radiation Missile
- ✗ Stealthy targets
- ✗ Expensive



## CS-PBR Measurement



## PCA-enhanced CS-PBR Algorithm

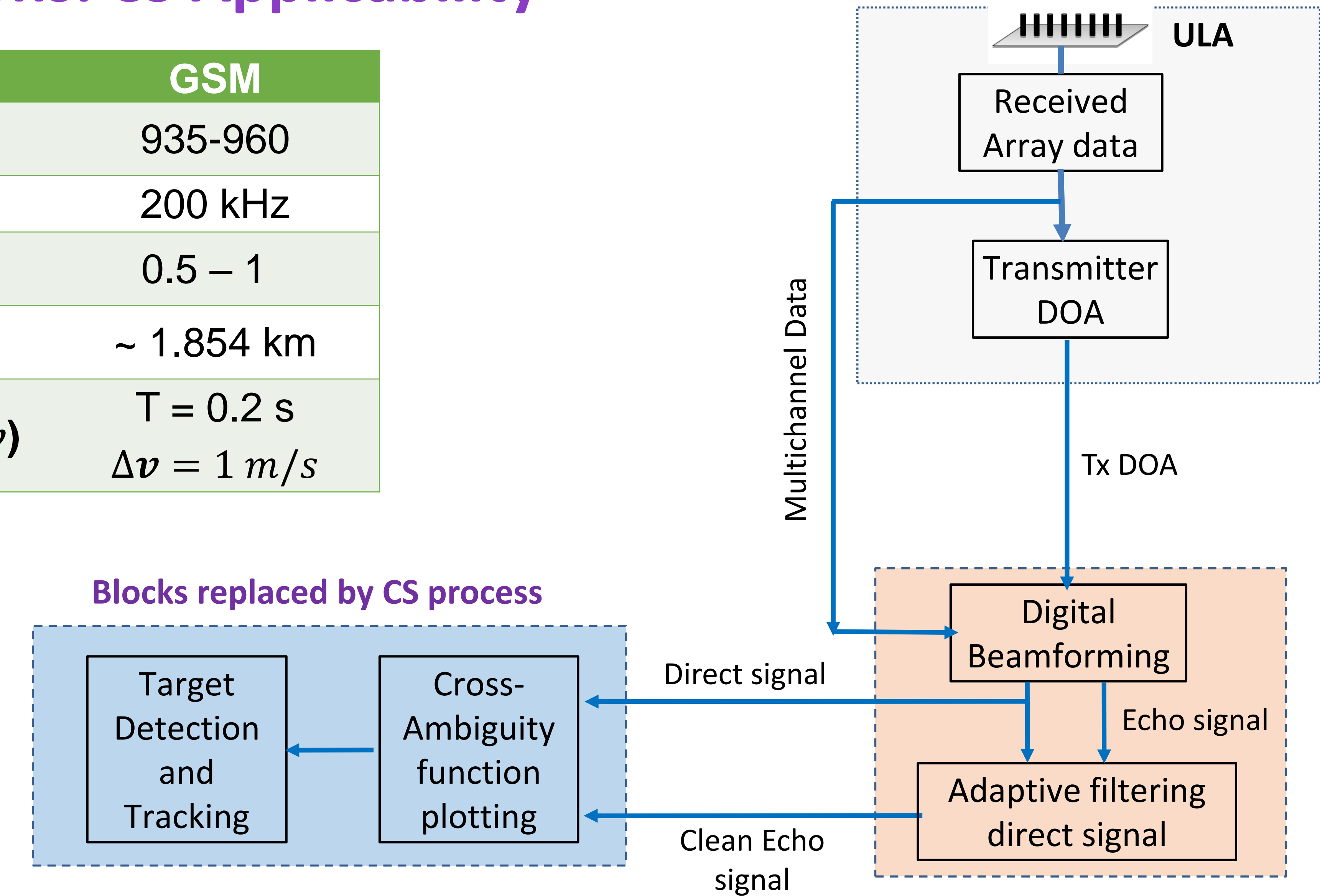


## Open Issues:

Off-grid mismatch, Appropriate clutter model, Target tracking

## Classical PBR Limitations: CS Applicability

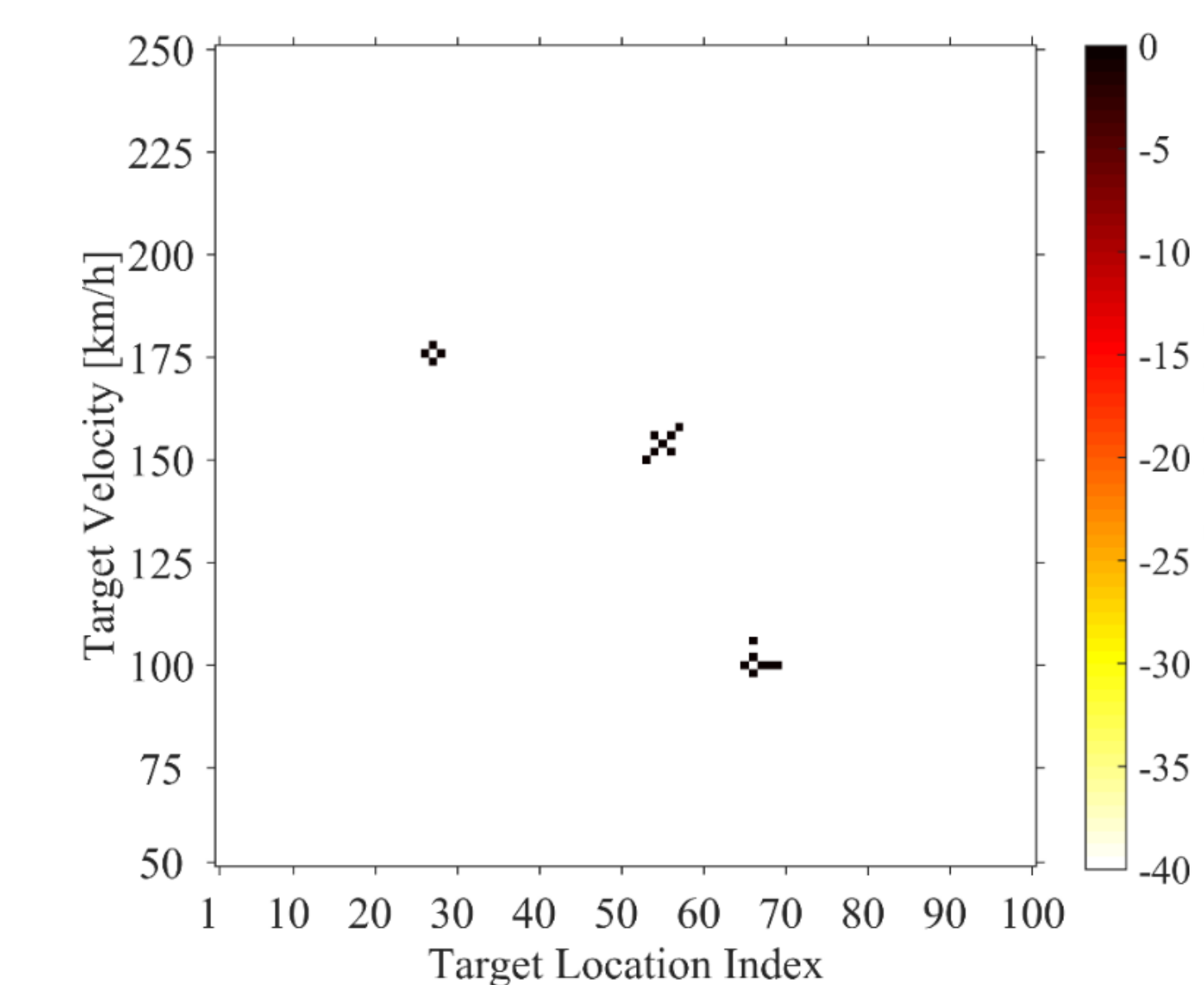
Parameters	GSM
Frequency band (MHz)	935-960
Channel BW	200 kHz
Typical ERP (kW)	0.5 – 1
Range resolution ( $\Delta R$ )	$\sim 1.854$ km
Doppler resolution ( $\Delta v$ )	$T = 0.2$ s $\Delta v = 1$ m/s



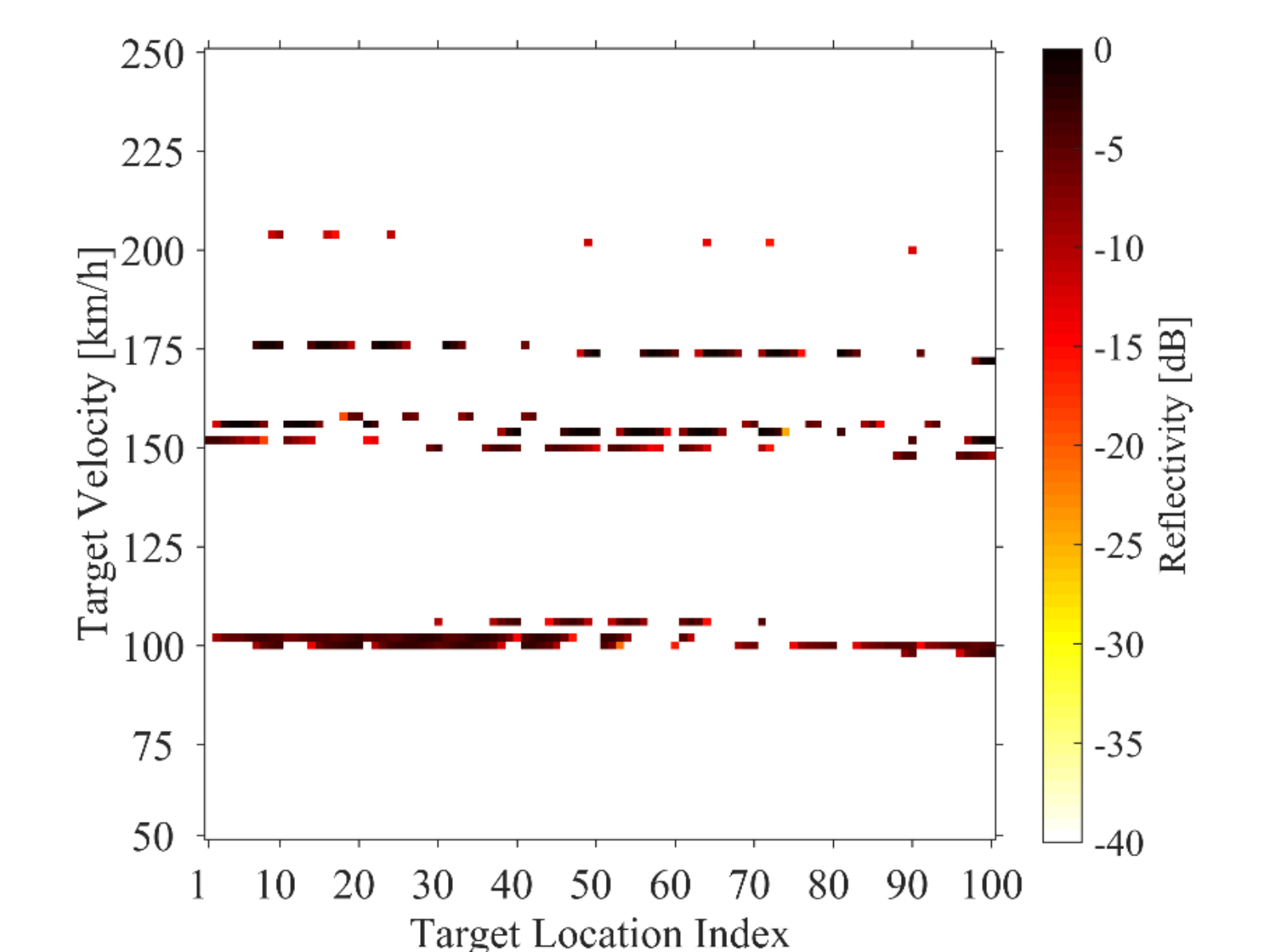
## High-resolution Results for GSM-PBR

Target space: 3km x 3km ;  $\Delta R = 300$  m ;  $\Delta v = 2$  km/hr ( $\sim 0.56$  m/s);

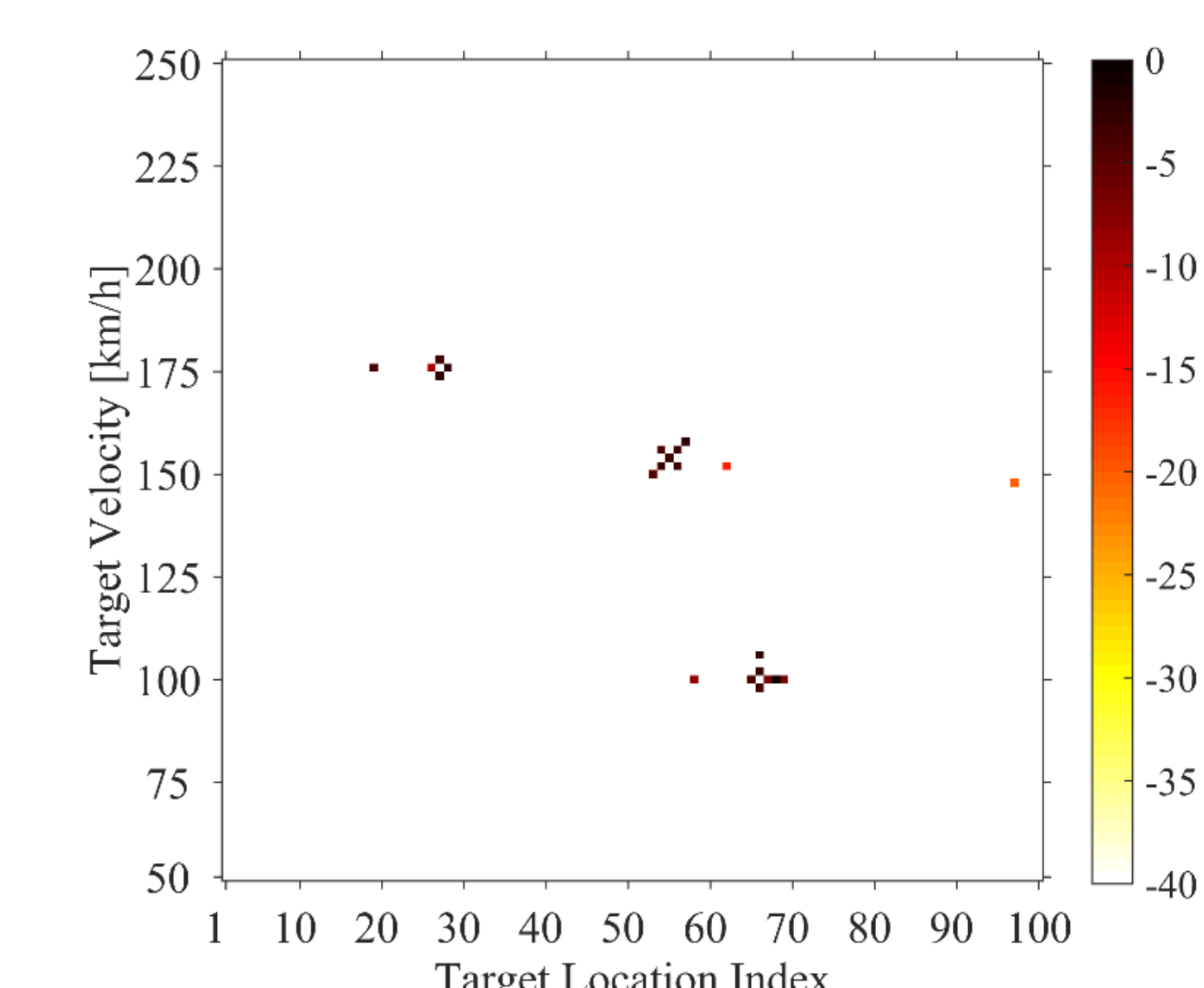
Observation time = 0.6554 s



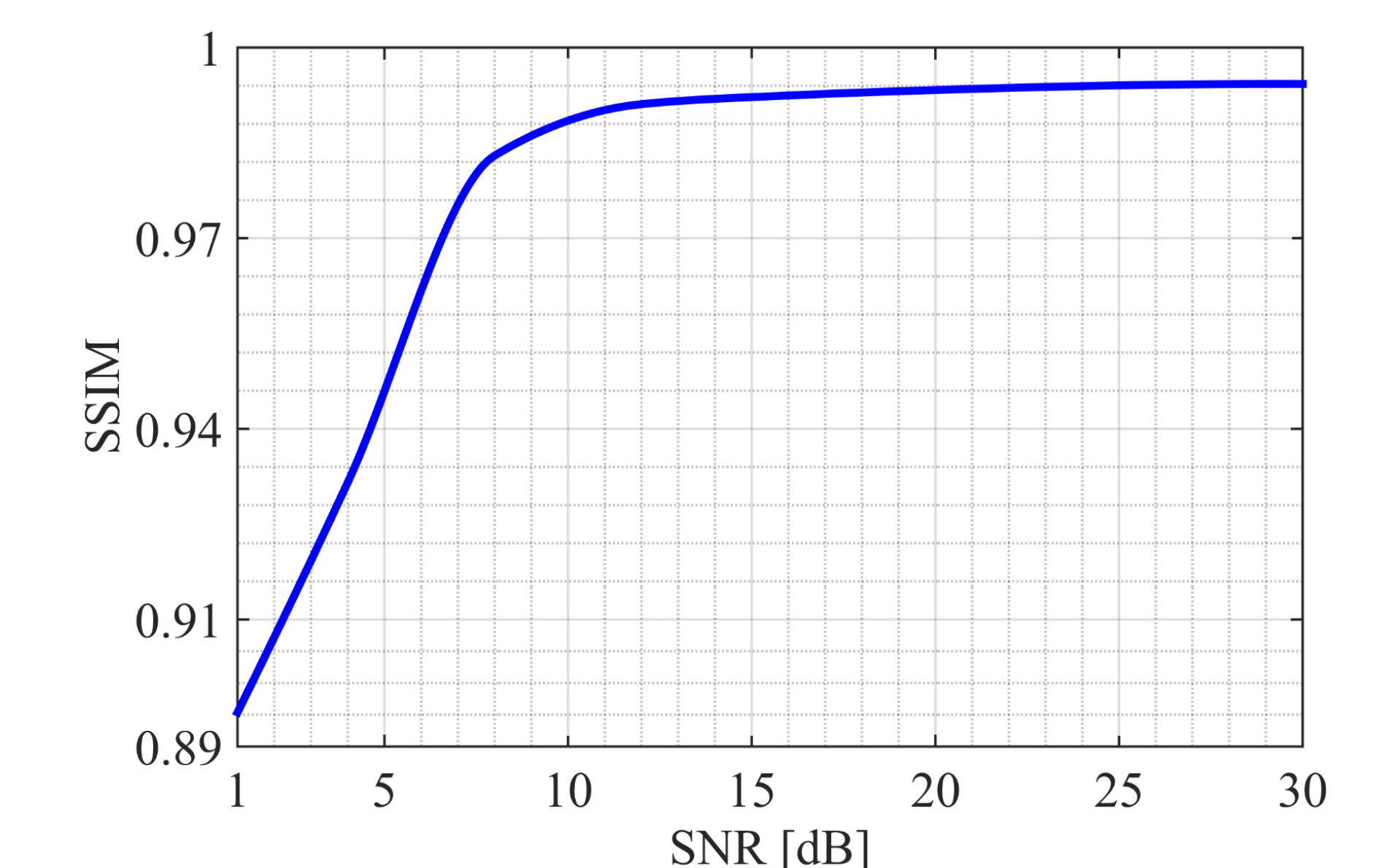
Original target scenario



Reconstruction using  $\tilde{\Psi}$



Reconstruction using  $\tilde{\tilde{\Psi}}$



Structural similarity index vs. SNR values