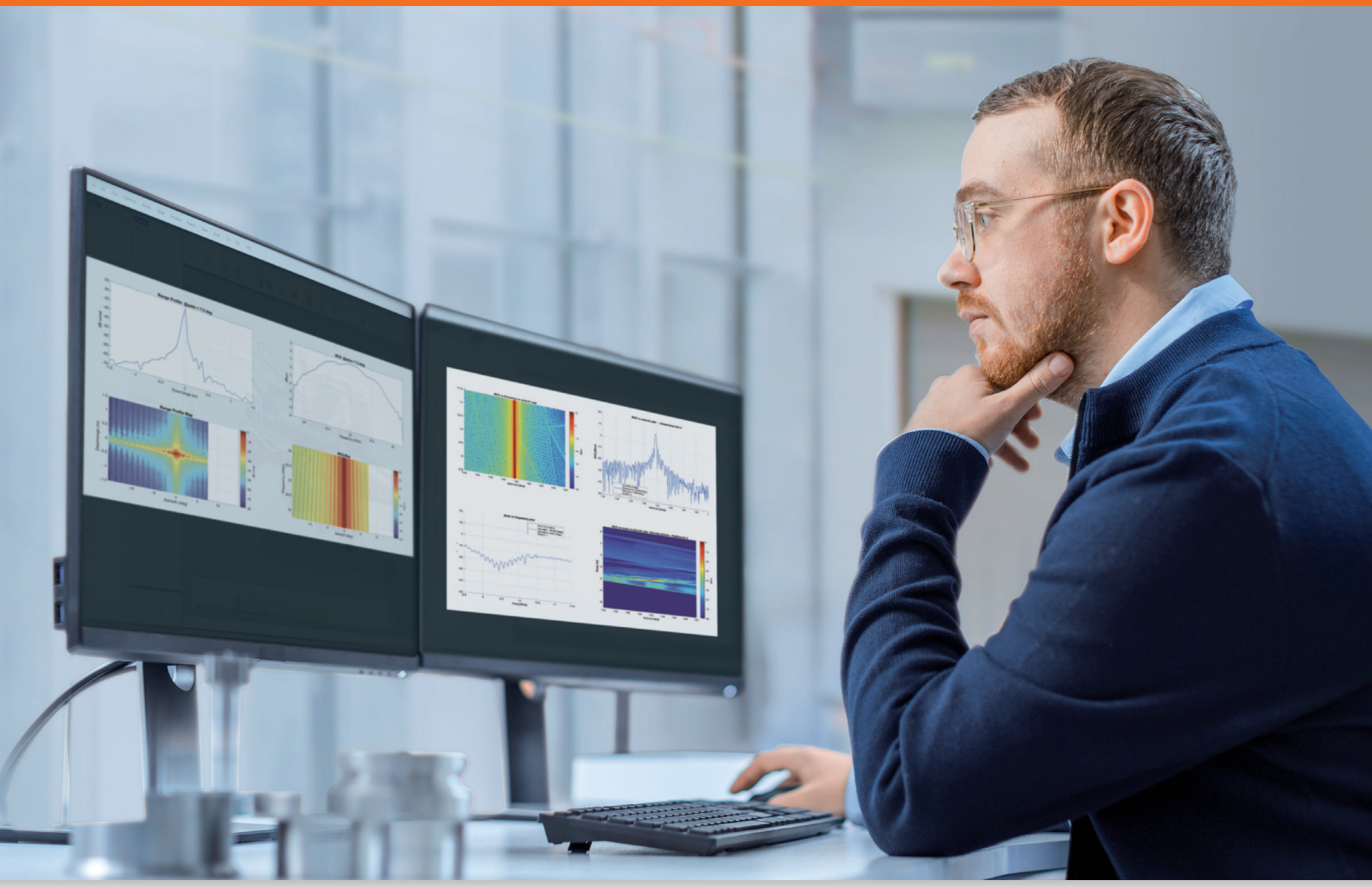
MV ISAR

mvg Microwave Vision Group

ISAR Software for RCS Visualization and Analysis



MV ISAR is a software tool optimized for off-line processing of RCS data collected from any near-field, compact indirect far-field, or traditional far-field measurement system by MVG. It provides a platform for visualization and analysis.

- **Maximum flexibility in data processing**
- **Capacity to build user-customized sequences of processing steps**
- **Easy navigation and operation between different process buffers**

Main Features

Management of data, visualization and analysis:

- 2D and 3D SAR with planar acquisition
- 2D and 3D ISAR from rotating target
- Cylindrical acquisition with vertical SAR scan

RCS data processing in frequency and time domain

- Target/feed scan motion compensation
- Data windowing and interpolation
- Focused and unfocused high resolution radar imaging
- Image gating on user-defined windows
- Image Editing and Reconstruction (IER) procedures for scattering centers selection or residual clutter suppression
- Statistic functions for overall data reduction (mean, percentile levels, CDF and PDF curves) or data averaging on sliding windows

Advanced Analysis Procedures

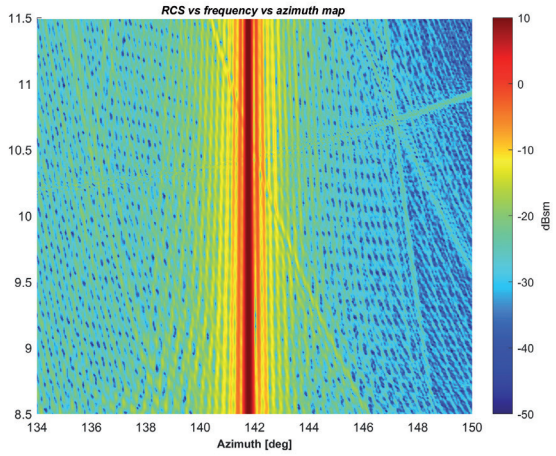
Advanced data analysis procedures for frequency response correction, RCS calibration and highly cluttered environments:

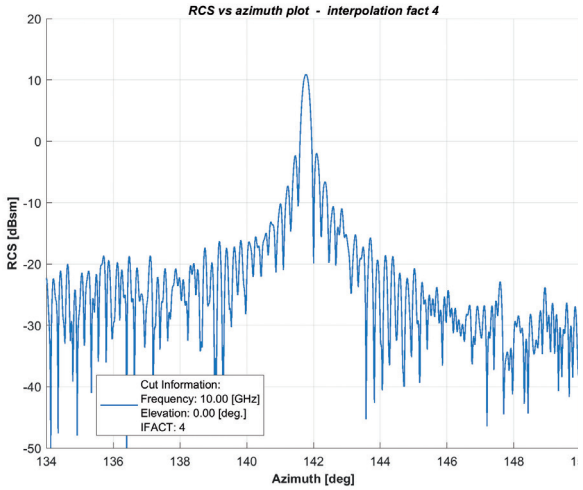
- Coherent background subtraction
- Zero doppler removal
- Image edit and subtraction of spurious signals from environment
- Compensation of near-field effects to produce far-field corrected images
- Calibration by substitution with reference body frequency response correction

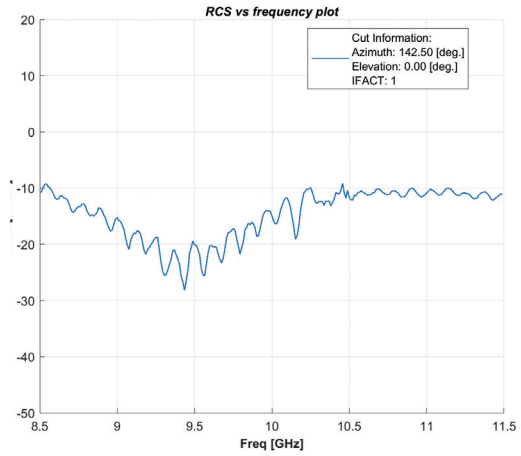
Data Presentation

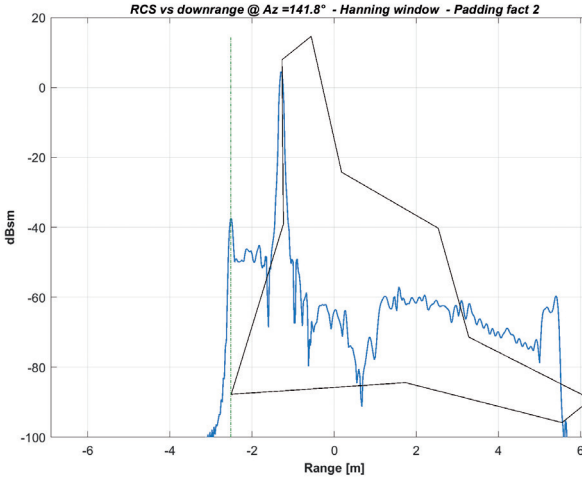
A complete set of data presentation:

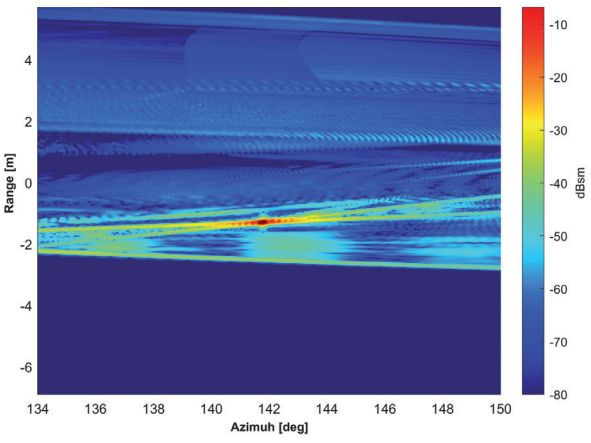
- Logarithmic and linear scale, amplitude and phase, I/Q data
- Cartesian and polar RCS plots vs. time, frequency and aspect angle
- RCS vs. down range, horizontal and vertical cross range (2D and 3D radar images)
- High-Resolution Range Profiles (HRRP) vs. downrange and aspect angle

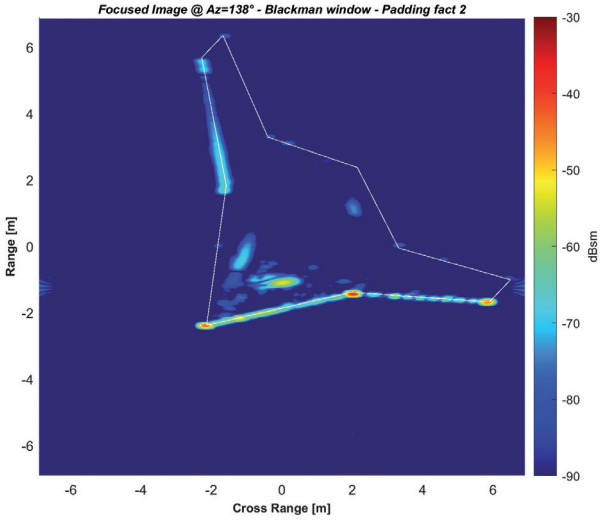












All data presented in this data sheet are from simulation based on an ideal model and are not submitted to export control.

Add-on Option 1: NF-RCS Analysis

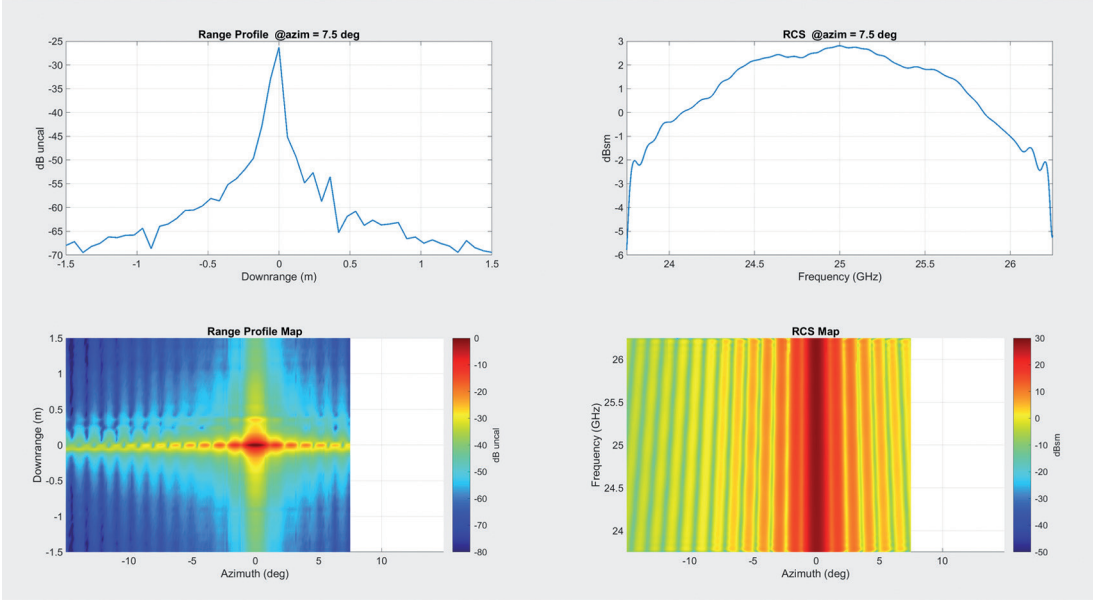
Near-field to far-field correction for radar image focalization

- A near-field to far-field transformation capability. This add-on aims at the focalization of 2D and 3D radar images measured under near-field conditions and far-field RCS estimation.
- Based on a generalized, focused imaging procedure for 2D/3D SAR, ISAR or cylindrical acquisition scans, it computes complex reflectivity of the target in each point of the space domain by implementing a conjugate-phase matched filter algorithm.
- The corrected far-field images are obtained considering the compensation of the typical near-field effects: spherical wave-front compensation, antenna pattern tapering compensation across target extension, and power range decay compensation.
- The target's complex reflectivity image in the corrected far-field is then used to estimate the far-field RCS of the target at the central frequency of the measured frequency band.

Add-on Option 2 : Real-time RCS

Real-time visualization and processing tool

- Allows for the processing and visualization of RCS data during the acquisition, providing real-time measurement diagnostics on processed data.
- Performs measurement system parameter optimization in real-time and fine tuning in the frequency and time domains.
- On-the-fly coherent background subtraction and time domain gating on part of the downrange profile can be performed, as well as frequency response correction for the visualization of calibrated data in the frequency domain.
- RCS vs frequency vs angle/time map and range profile vs downrange vs angle/time are built and visualized while the acquisition is in progress.



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