OKTAL-SE
Synthetic Environment

EO
AEO
RF
GNSS
RAY

SE-RAY-RCS

ADVANCED RCS COMPUTATION TOOL

FAST

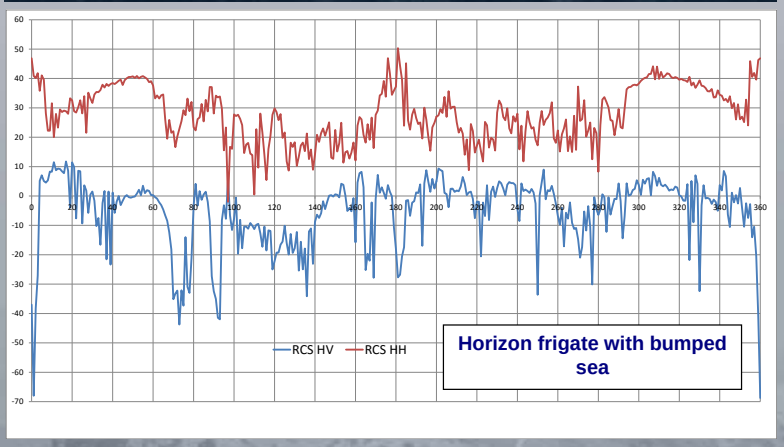
SE-RAY-RCS is a dedicated declination of the SE-RAY-EM software accessible through the user friendly SE-SCENARIO environment. It enables the calculation of complex target's RCS which 3D mock-up can be up to several million polygons.

Features

- RF models validated by ONERA in France, FOI in Sweden and Fraunhofer FHR in Germany
- Very efficient computation kernel, even for very complex objects described by a several million polygons CAD model
- Can compute objects coated with dielectric layers including diffraction by edges
- Can deal with almost all popular CAD formats thanks to its associated 3ds Max® and Sketchup® plug-ins
- Easy-to-use product thanks to its dedicated GUI
- Validated model: validated results against testing campaigns

Key Advantages

- **Complex 3D objects with multi-materials and multi layered materials (each layer being defined by its characteristics ε, ε', σ and its thickness)**
- **Complex 3D environment including foliage masking, bumped terrains, sea effect, other targets interaction…**
- **Multi frequencies computation**
- **Mono-static and multi-static configuration**
- **Multiple reflections of rays to order N**
- **Polarisation in emission and reception**



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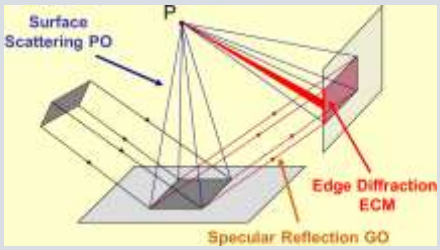
Benefits

- RF formulations validated by ONERA
- Coupling between the target and its environment



- A simpler and fast RCS computation is also accessible through an EXCEL™ spreadsheet.

Source parameters	
Frequency	10 GHz (Hz, kHz, MHz, GHz)
Polarization	Polarization: (•) Theta (V) ( ) Phi (H)

Computation parameters	
RCS polarization	[x] Theta (V) [ ] Phi (H)
RCS distance computation	10000,00m
Primary grid resolution	5,00E-02m
Antialiasing level	5
Antialiased grid resolution	1,56E-03m
Normal angle vector	5,0°
Output relative path	./
Output base filename	pp
Computation Model	EMmulti / EMmono

RCS trajectory	
Spin axis	Spin axis: ( ) X axis (•) Y axis ( ) Z axis
Beginning attitude	-50,0°
Ending attitude	50,0°
Elevation	0,0°
Angle sampling	1,0°

Target	
Filename	dihed100.bdd

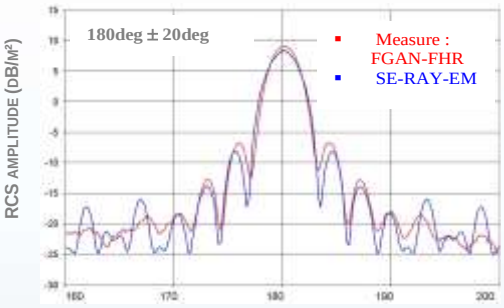
Environment	
Data Path	./

System requirements

Windows

Virtual mockup of the measured object

Measured object provided by FGAN

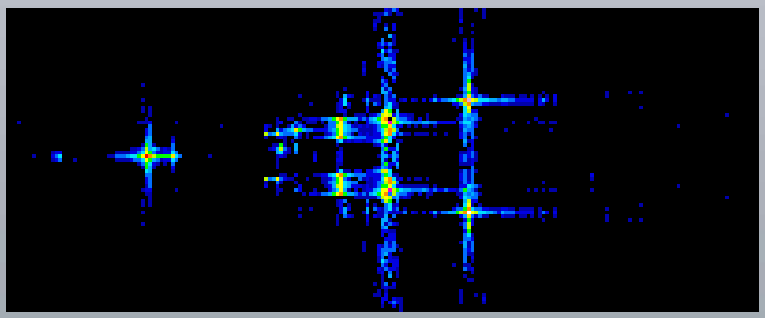


Physical Model Features

- Association of shooting and bouncing ray technique (ray tracing) & electromagnetic asymptotic formulations
- Scattering computation using Physical Optics
- Multiple reflections computation using Geometrical Optics
- Edge diffraction computation using the Equivalent Current Method of Michaelli extended to targets covered by dielectric materials
- Geometrical divergence in GO reflection computation
- Reflection and scattering on multilayer dielectric materials

ISAR image

- Based on multi-frequencies and multi-angles RCS computation, ISAR images can be computed



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