OKTAL-SE
Synthetic Environment

EO ❌
AEO ❌
RF ✓
GNSS ❌

RAY ✓

SE

SE-RAY-EM

## ADVANCED ELECTROMAGNETIC SCENE GENERATION TOOL

FAST ❌

SE-RAY-EM takes advantage of the recent improvements in the field of 3D graphics to compute the RF fields in a complex 3D synthetic environment

Features

- **RF models validated by ONERA in France, FOI in Sweden and Fraunhofer FHR in Germany**

- **Accurate ray-tracing technics for large and complex 3D database**

- **Available in both CPU and GPU modes**

- **Electromagnetic wave propagation taking into account reflection, scattering, diffraction and transmission**

- **Dedicated models for clutter materials including speckle effects**

- **Compatible with almost all popular CAD formats thanks to its associated 3ds Max®, Sketchup® and Blender® plug-ins**

- **Scenario creation and management tools provided in SE-SCENARIO**

- **Moving targets and moving radar carriers**

The powerful and innovative engine of SE-RAY-EM combines the shooting and bouncing forward ray technique with the RF asymptotic approach (Geometrical Optics, Physical Optics, Equivalent Current Method) to compute complete electromagnetic response of a scene including propagation, scattering, reflection and edge diffraction

A set of rays representing the incident wave is launched toward the observed 3D scene that can be made of several million polygons, including very complex objects and targets tessellated with triangles
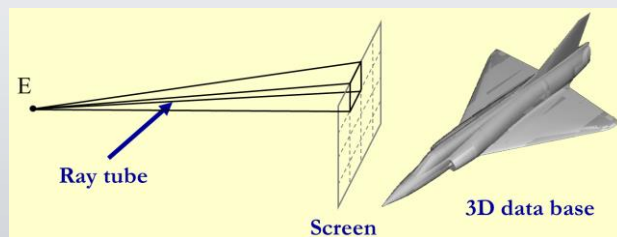

Automatic antialiasing technique is applied to the initial projection grid in order to get a 3D data base made of elementary contributors

This highly physics based approach has been intensively validated by research laboratories against real measurements
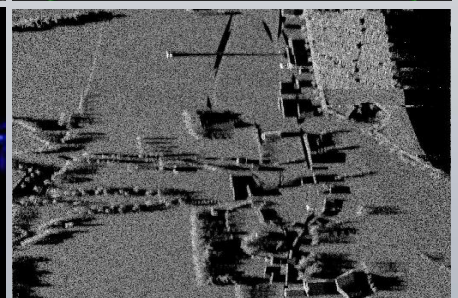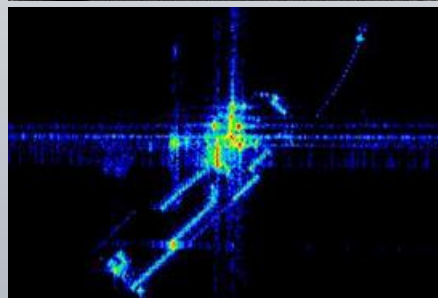

Virtual mockup of the measured object
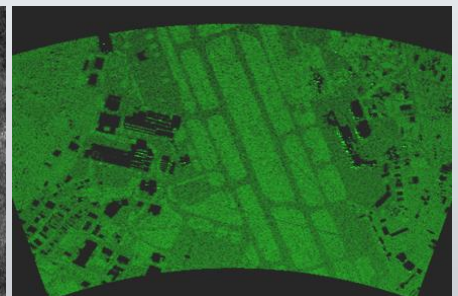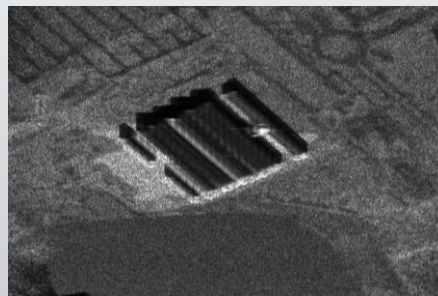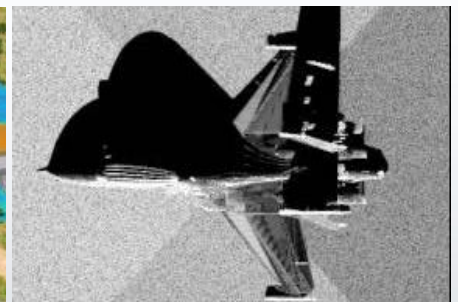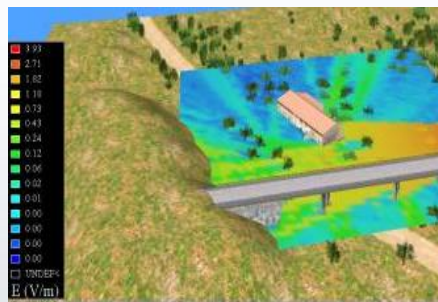
Measured object provided by FGAN
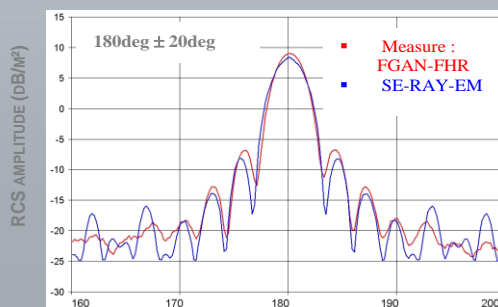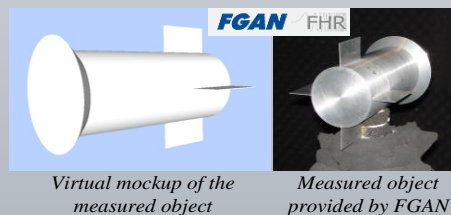
- Adaptive antialiasing for computation optimization

- Can compute objects coated with dielectric layers, including diffraction by their edges

- The interactions between targets and the 3D environment is fully addressed (no separated treatment)

- A complete documentation on physics model, along with a user guide and tutorials
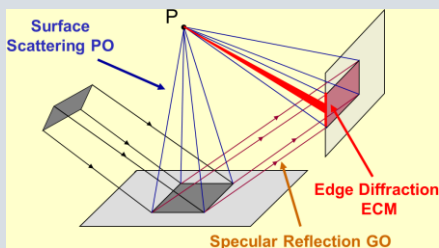
RF Applications

The EM fields computed by SE-RAY-EM provides the raw data from which many RF applications can be addressed, such as:

- EM field coverage
- Radar Cross Section with the interaction between the target and its complex environment
- ISAR images
- SAR images
- Narrow Beam SAR
- Real Beam Ground Mapping

System requirements

🪟 **Windows**

🐧 **Linux**