NEWSPACE MARKET

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TICRA

Denmark · founded 1971 · ticra.com

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as of 20 August 2026

ABOUT

TICRA

TICRA is a Danish engineering software company specializing in electromagnetic simulation tools for antenna design and analysis. Founded in Copenhagen, Denmark, in 1967, TICRA is best known for GRASP, the industry-standard software for reflector antenna analysis used by satellite manufacturers, space agencies, and radio observatories worldwide. TICRA's software tools are used at every stage of satellite antenna development, from concept validation to final verification. GRASP handles reflector, array, and combined systems using Physical Optics (PO), Physical Theory of Diffraction (PTD), and Method of Moments (MoM). CHAMP 3D analyzes passive waveguide components including OMTs, corrugated horns, and multiplexers using mode-matching and finite element methods. The integrated TICRA Tools platform combines all analysis capabilities in a modern GUI environment with Python scripting and cloud computation support. TICRA software has been applied to the design and verification of antennas for major space missions including Herschel, Planck, ALMA, IRAM, Cheops, and many commercial GEO telecommunications satellites. ESA, NASA, JAXA, and leading satellite manufacturers including Airbus Defence and Space and Thales Alenia Space use TICRA software for mission-critical antenna analysis. The company distributes μWave Wizard waveguide component synthesis software in partnership with Mician GmbH. TICRA provides training, support, and consultancy services alongside its software products.

This profile is generated from the live NewSpace Market catalogue. Specifications are as published by the manufacturer; every product links to a page where a request for quotation reaches the company directly.

SERVICES

Services

Feasibility studies and initial trade-offs

TICRA conducts early-stage studies to explore antenna concepts, identify performance boundaries, and evaluate key technical trade-offs using their trusted EM solvers.

Preliminary and detailed antenna design and analysis

TICRA designs and analyzes antennas for various applications, providing high-fidelity modeling, optimization, and performance evaluation throughout the design cycle.

RF and electromagnetic modelling

TICRA builds detailed EM models to investigate radiation characteristics, losses, coupling, and platform interactions, supporting design optimization and verification.

Software training, workshops, and knowledge sharing

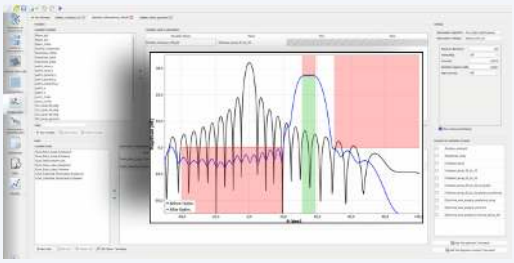
TICRA offers tailored training sessions and workshops to help users efficiently apply TICRA Tools, strengthening in-house EM capability.

Uncertainty qualification analysis

TICRA evaluates how manufacturing tolerances, material variations, and environmental factors influence final antenna performance to support margin allocation and risk reduction.

PRODUCTS

Product catalogue



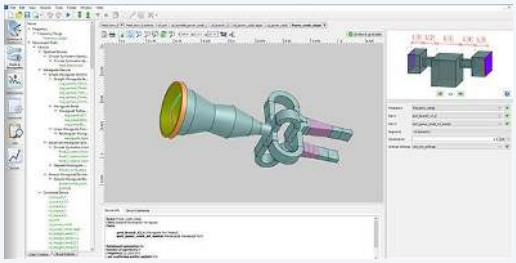
TICRA

ARRAY

Purpose-built software for phased-array antenna design, analysis and optimisation, from element level to full-wave installed performance.

Why ARRAY	Unified workflow — stay within one environment from concept to validated design
Why ARRAY	Accuracy where it counts — from approximate methods to full-wave fidelity
Why ARRAY	Built-in beamforming and optimisation to quickly reach required performance on element and
Why ARRAY	Fast design iteration — accelerate feasibility studies and tender responses
Why ARRAY	Reduce testing and cost — predict performance reliably and minimise physical prototyping
Why ARRAY	Scalable performance — efficiently simulate large arrays with reduced computational resour
Highlight	Library of predefined elements for fast project setup

price on request datasheet



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CHAMP 3D

Analysis and design of general passive multiport waveguide components and complex feed chains.

Feature	Calculate scattering parameters for 3D and rotationally symmetric passive metallic and die
Feature	Calculate reflection coefficients/scattering parameters and radiation patterns for rotatio
Feature	Fast recalculation of waveguide assemblies via Generalized Scattering Matrix (GSM) decompo
Feature	Most appropriate solver (analytical expressions, mode matching, higher-order BoR-MoM, or h
Feature	Dedicated wizard and 2D editor for easy geometry setup of corrugated horns, smooth-wall ho
Feature	Direct optimisation with goals on scattering parameters as well as primary and secondary r
Benefit	Seamless integration with other products in TICRA Tools

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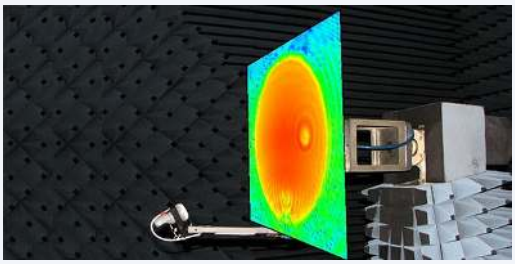

TICRA

DIATOOL

Antenna diagnostics software that reconstructs near-field and surface currents of the antenna under test from measured radiated fields.

Feature	Reconstruct the extreme near field with a resolution better than half a wavelength
Feature	Planar reconstruction for fast analysis of large antennas; inverse MoM for higher resoluti
Feature	Definition of the AUT geometry by CAD or mesh file import
Feature	Automatic generation of reconstruction surface through best-fit canonical surfaces, CAD or
Feature	Visualisation of reconstructed currents over AUT surface
Feature	Compatible with most near-field and far-field range data formats
Benefit	Early detection and location of antenna anomalies

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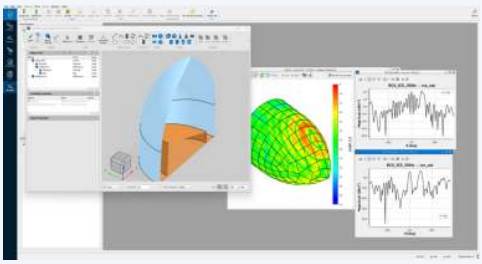

TICRA

ESTEAM

Design and analysis of general antennas and scattering by large structures, including full spacecraft platforms.

Feature	State-of-the-art higher-order MoM solver
Feature	MLFMM implementation tailored to higher-order MoM
Feature	Automatic meshing of imported CAD files
Feature	Selection of parametrised geometries, including wires, boxes, BoR and clusters of any of t
Feature	Waveguide ports, generators and measured patterns as excitations
Feature	Analysis of structures with composite metallic, dielectric and magnetic materials
Feature	Monostatic RCS

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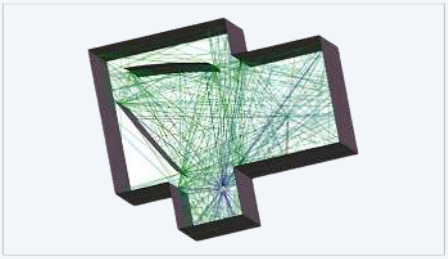

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GRASP

Dedicated software for fast and accurate design and analysis of advanced reflector antenna systems.

Feature	Wizard for easy definition of single and dual reflector geometries
Feature	Near-field and far-field calculations of vector fields
Feature	Component library for common geometries: conic surfaces, general quadrics, radomes, panels
Feature	Import of general reflector shapes from data files
Feature	Component library of mathematical feed models and import of general feed definitions from
Feature	Import of general feed definitions from file and expansion in spherical modes
Feature	Easy definition and fast analysis of quasi-optical networks

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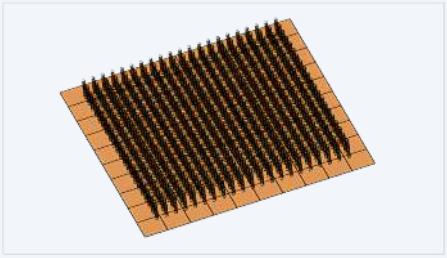

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POS

Industry-standard reflector shaping combined with array optimisation for advanced payload antenna systems.

Feature	Shaping of single-, dual-, and multiple-reflector systems
Feature	Array classes with full freedom of configuration for element positions and orientations
Feature	Optimisation of array excitation coefficients
Feature	Optimisation of array layout
Feature	Constraints on excitation coefficients for representation of DBF performance
Feature	Optimisation goals for design of HTS antennas
Feature	CAD export of shaped reflector surfaces

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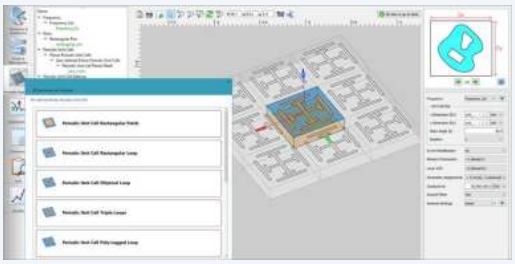

TICRA

QUPES

Analysis and design of quasi-periodic surfaces such as reflectarrays, frequency selective surfaces and transmitarrays.

Feature	Analysis and optimisation of scattering parameters of periodic unit cell structures
Feature	Predefined library of commonly used geometries
Feature	Dedicated methods for the analysis of periodic/quasi-periodic surfaces
Feature	Features for multiple panels, holes, planar and curved surfaces
Feature	Large-scale direct optimisation of quasi-periodic surfaces for goals on primary as well as
Benefit	Seamless integration with other products in TICRA Tools
Benefit	Fast and accurate analysis of periodic/quasi-periodic surfaces

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TICRA

SATSOFT

Satellite antenna coverage planning, gain assessment, and multi-beam antenna design for payload design and regulatory filings.

Feature	Quickly select countries or draw polygons to use as coverage area definition
Feature	Synthesise contoured and spotbeams with or without pointing error from reflector or array
Feature	Plot pattern contours and create performance tables of directivity, EIRP, G/T
Feature	Import measured or predicted antenna patterns to use in your analysis
Benefit	Efficient planning, designing, and marketing of communication satellite payloads
Benefit	Conduct antenna trade-off studies
Benefit	Prepare documents for ITU regulatory filings

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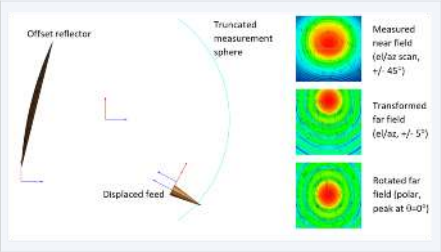

TICRA

SNIFT

Accurate and highly stable transformation of measured spherical near-field antenna data to far fields, accounting for the full characteristics of the measuring probe.

Feature	Allows full sphere or partial sphere input data
Feature	Full correction for axially symmetric (m=±1) probes
Feature	Fast Fourier Transformation and self-stabilising recurrence relations allow handling of ev
Feature	Industry standard for spherical near-field to far-field transformation with probe correcti
Feature	Independent of the actual measurement system implementation
Benefit	Short transformation time
Benefit	Mathematically exact pattern transformation

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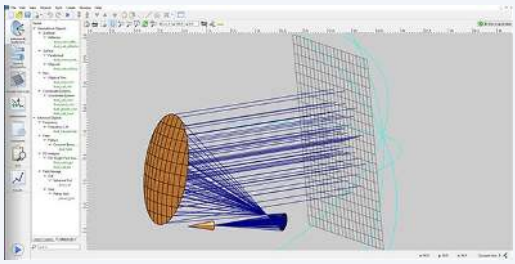

TICRA

TICRA Tools – Integrated Antenna Design Platform

Next-generation unified antenna design platform integrating reflector, array, and waveguide component analysis in a modern GUI for satellite and ground antenna engineers.

Integrated Software	GRASP, CHAMP 3D, POS, ESTEAM
GUI	Modern unified project-based interface
Scripting	Python API
Computation	Cloud-ready parallel processing
Analysis Methods	PO, PTD, MoM, GTD

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TICRA Tools Student Edition

TICRA Tools Student Edition is a reduced-functionality version of GRASP and QUPES software, designed for educational and self-study purposes to familiarize users with antenna analy

Capability	Define single- and dual-reflector systems with paraboloidal, hyperboloidal, ellipsoidal, a
Capability	Define reflector rims as circles, ellipses, or rectangles
Capability	Perform PO and/or GO-UGTD analysis of single and dual reflectors
Capability	Define reflectarray antennas using a rectangular patch element
Capability	Perform Periodic MoM analysis of reflectarrays
Capability	Optimise the reflectarray element layout to achieve a pencil beam in a user-defined direct
Capability	Define frequency-selective surfaces based on single or multiple element layers of rectangu

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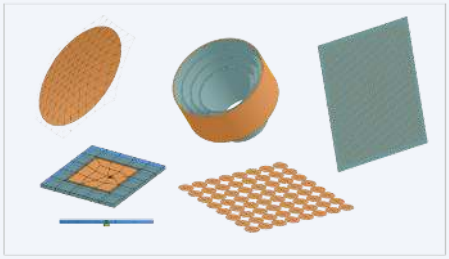

TICRA

UQ

Quantify uncertainties of antenna performance and predict expected behaviour by accounting for uncertainties in system parameters.

Feature	Simulate expected performance with confidence intervals of antenna radiation patterns and
Feature	Uncertainty due to any parameter, such as manufacturing tolerances and alignment or excita
Feature	Accelerated Monte Carlo, Stochastic Collocation and Polynomial Chaos Expansion algorithms
Feature	Sobol indices to identify parameters contributing most to the total uncertainty
Feature	Sensitivity analysis
Benefit	Seamless integration with TICRA Tools products
Benefit	Insights for more robust antenna designs

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Contact TICRA

Open the company profile on NewSpace Market to see full specifications and datasheets, and to send a request for quotation that reaches the manufacturer directly.

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https://www.ticra.com

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