NEWSLETTER
ANTENNA MAGUS FEATURES 2021

Version 2021 includes various features and improvements as well as a number of new antennas and extensions. This newsletter will discuss the new features as well as the antennas and extensions that have been made available.

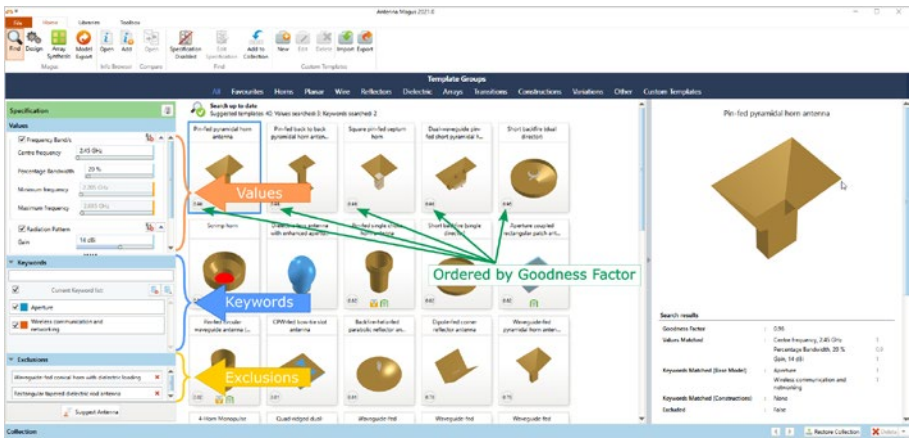
For more comprehensive information on the update, please visit the Antenna Magus website or read the full release notes.

NEW FEATURES AND EXTENSIONS

Smart Find by Value

Find Mode functionality has been improved to allow the specification of values for frequency, gain and bandwidth. Combined with the existing keyword search, a goodness factor is used to indicate the suitability of any given device. The result is a refined search with suggested device templates that are better matched to user requirements.

The improved Smart Find uses keywords, designable objective ranges and non-designable typical information ranges of each device, along with a unique search function and value weighting to arrive at a goodness factor. In addition, unsuitable templates may be manually excluded by the user.



Find Mode showing Find by Value and Goodness Factor

The search results are ordered according to a descending goodness factor, listing the most suitable devices at the top. A Preview Pane automatically expands on the right hand side of the workspace with information about the currently selected device in the workspace – in this case the most suited.

Radome Library

A library with fully parametric exportable radome geometries has been added to Antenna Magus. Each radome is presented with sketches and an information document, and may be used within other CST Studio Suite projects. The radomes extend the currently available library of substrates, waveguides and connectors.

The radome library currently contains a selection of aerodynamic nose cones; the main shapes/ profiles available are conical, elliptical, Haack, ogive, parabolic and power series.

Radome Library

Constructions

A Construction is a more practical rendering of an antenna / device using multiple building blocks that already exist in Antenna Magus. In this context, a building block refers to a device, a transition / balun, connector or radome / lens.

While each building block is useful in its own right, a more practical model may be constructed by using a combination. The typical manual approach of combining blocks using anchor points and system assembly modeling (SAM) in CST Studio Suite is automated using an integrated construction macro. The automation produces a full assembly model, which may be solved by setting up the desired Simulation Project in CST Studio Suite.

Devices that contain a construction as part of their Export capability are indicated in Find Mode with a constructions indicator, and are grouped under the Constructions tab. Available Constructions are listed under CST Studio Suite in Export Mode.

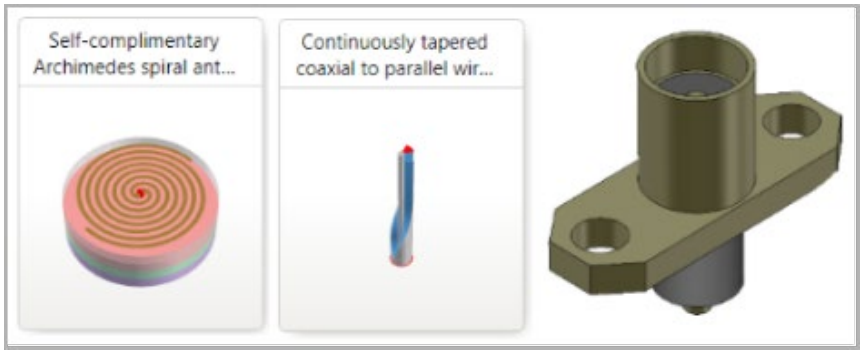
Indicator that shows whether an antenna has a Construction available for export

As an example, the Self-complimentary Archimedes Spiral Antenna with Absorber-lined Cavity Backing is available as a construction featuring a continuously tapered coaxial to parallel wire transition and an SMA connector (2 hole female panel mount with extended PTFE). The connector replaces the ideal feed of the spiral, while the transition transforms the impedance from 188 to 50 Ω.

The assembly is generated by opening the base model in CST Studio Suite and executing the construction macro while in the Schematic View. An information text file is included among the exported files with the relevant instructions.

Details regarding the Construction as well as images of the building blocks are provided in the information document. It is important to note that the base model is the only designable

building block of the construction. Parameters of all additional building blocks are derived using parameters of the base model, or use specific assumptions. These modifications are applied during the execution of the constructions macro.



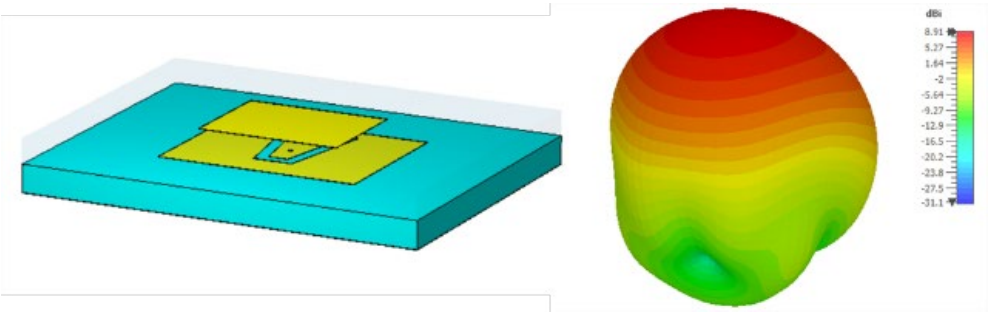
Images of the Construction building blocks in the information document

NEW ANTENNAS AND EXTENSIONS

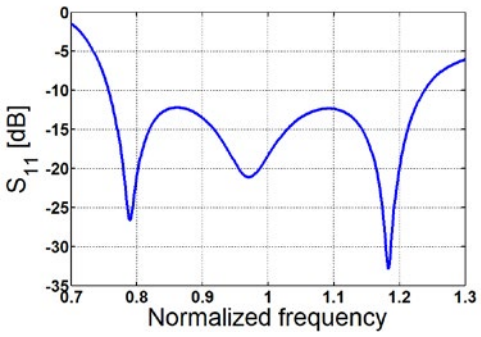
New Antennas

The total number of devices in the Antenna Magus database is now 372 with the inclusion of 1 new antenna.

Slots are commonly used to enhance the impedance bandwidth of microstrip antennas. In the Stacked Rectangular Broadband Patch with V-Slot, a patch with a truncated letter 'V' slot is layered with a simple rectangular patch. Exploiting parasitic coupling, impedance bandwidths of up to 47 % can be achieved with this configuration.



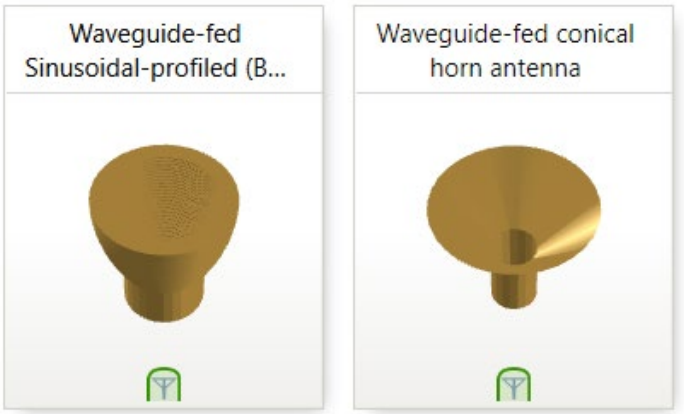
Typical gain pattern at the center frequency



Typical reflection coefficient

Device Extensions

Additional export models with various dielectric covers have been added for a total of 71 existing antenna prototypes. These variations include superstrates, lenses, elliptical and cylindrical covers. Prototypes featuring variations are marked with a green antenna/dome icon at the bottom of the card as shown below. All prototypes with variations may be viewed by clicking the Variations tab in Find Mode.



Indicator that shows whether a device has a Variation available in Export Mode

It is important to note that Variations do not undergo the same validation as standard export models. A brief overview of the variation is provided in Export Mode as part of the export model information.

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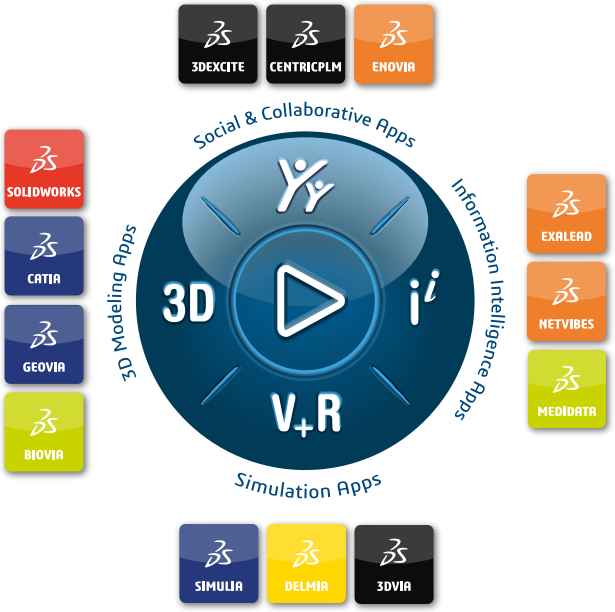

DASSAULT SYSTEMES | The **3DEXPERIENCE**® Company

Europe/Middle East/Africa
Dassault Systèmes
10, rue Marcel Dassault
CS 40501
78946 Vélizy-Villacoublay Cedex
France

Asia-Pacific
Dassault Systèmes K.K.
ThinkPark Tower
2-1-1 Osaki, Shinagawa-ku,
Tokyo 141-6020
Japan

Americas
Dassault Systèmes
175 Wyman Street
Waltham, Massachusetts
02451-1223
USA