Data Sheet

CableExpert:

Fast and Accurate Cable Modeling and Simulation

Cable assembly is a key component in network systems. Accurate modeling of cables is becoming a necessity to achieve the desired signal integrity with multi-gigabit data rate. Twinaxial cable used for SFP and QSFP interface in 10G/40G/100G Ethernet is such an example. Many parameters have significant impact on signal quality such as drain type and shielding pattern, to name a few. Engineers need a fast and accurate way to model and simulate the cable with high confidence in signal integrity.

XPEEDIC

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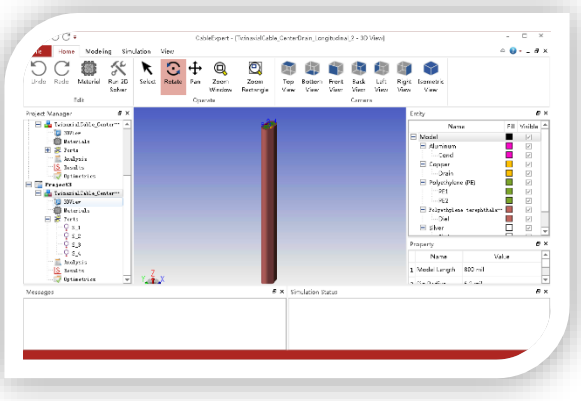
CableExpert Solutions

CableExpert is a modeling application for cable processing and can export models to HFSS for simulation. We can check the integrity of the signal indicators, such as insertion loss, loss, crosstalk, etc., it also allows designers to model the wiring after the simulation and tracking processing. CableExpert's main support functions are as follows:

- Built-in template to allow easy cable modeling
- Provide 3D model view interface, easy access to zoom in/out, move and rotate etc.
- 2D solver enabled for simulation
- Support parametric sweep and optimization
- Support setting materials for each project and adding/ removing materials, and importing and exporting CableMaterial(*.cmt) files
- Easy access to check results(S-parameters, TDR etc.) with SnpExpert

FEATURES

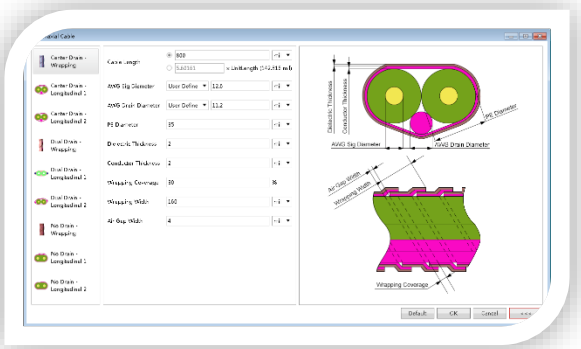


CableExpert Interface

Create model approaches

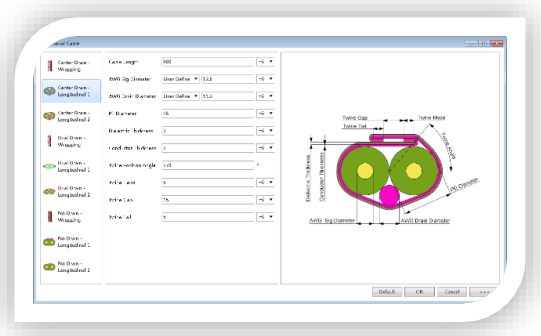
Built-in template to allow easy cable modeling:

- Support creating Twinaxial Cable-Center Drain- Wrapping model



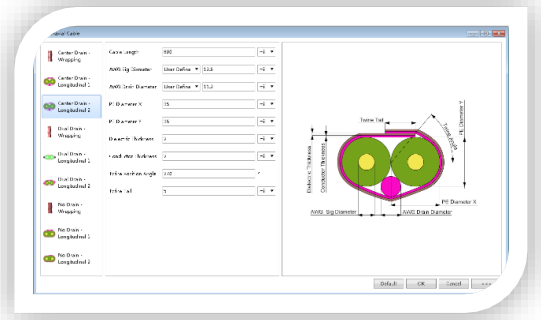
Center Drain Wrapping model

- Support creating Twinaxial Cable – Center Drain-Longitudinal 1 model



Center Drain Longitudinal 1 model

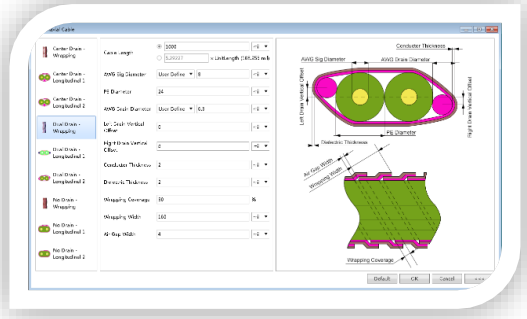
- Support creating Twinaxial Cable – Center Drain-Longitudinal 2 model



Center Drain Longitudinal 2 model

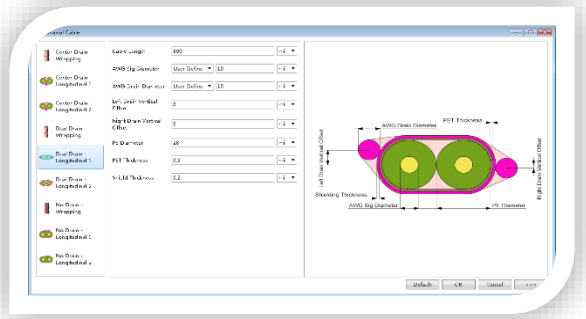
- Support creating Twinaxial Cable - Dual Drain-Warpping model

Dual Drain: Dual Drain with longitudinal twine shielding is used for high frequency (up to 25G) application. It is difficult to make drains and signals in the same horizon that determined the SCD performance. CableExpert provides a flexible way to adjust the offset of each drains.



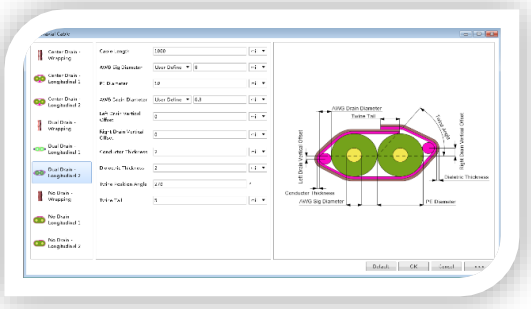
Dual Drain-Wrapping model

- Support creating Twinaxial Cable - Dual Drain-Longitudinal 1 model



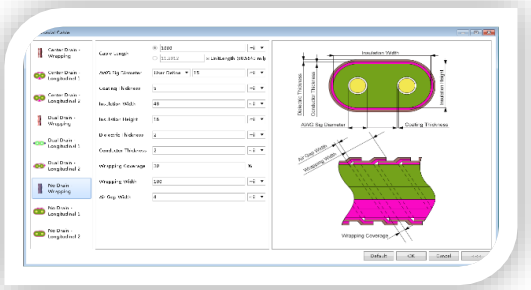
Dual Drain-Longitudinal model 1

- Support creating Twinaxial Cable - Dual Drain-Longitudinal 2 model



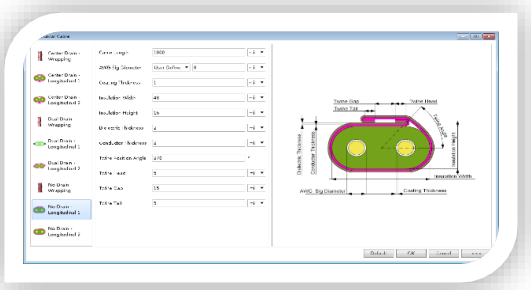
Dual Drain-Longitudinal 2

- Support creating Twinaxial Cable -No Drain-Wrapping model



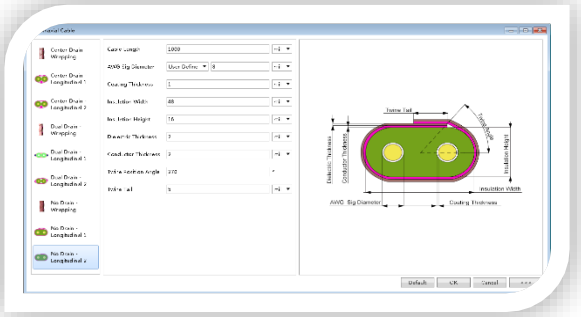
No Drain-Wrapping model

- Support creating Twinaxial Cable -No Drain- Longitudinal 1 model



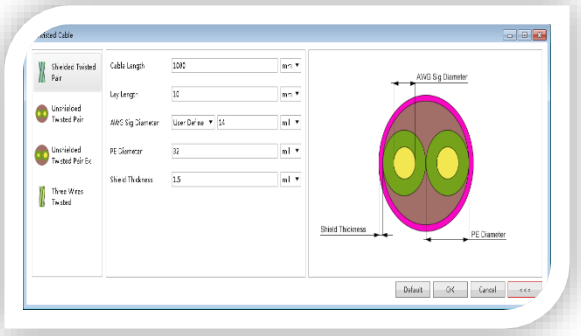
No Drain- Longitudinal 1 model

- Support creating Twinaxial Cable -No Drain- Longitudinal 2 model



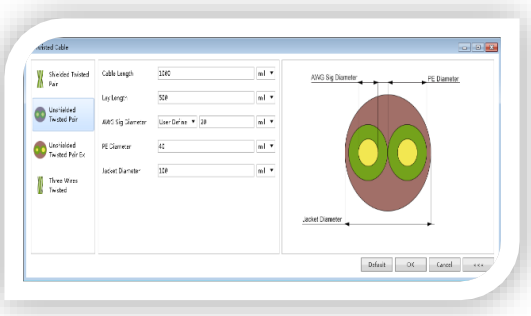
No Drain- Longitudinal 2 model

- Support creating Shielded Twisted Pair model



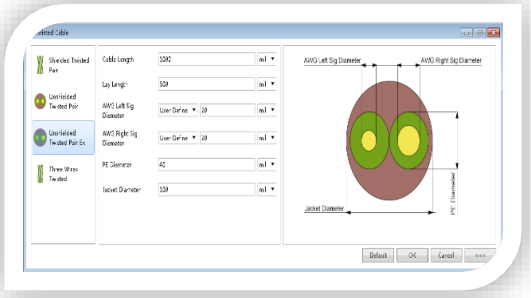
Shielded Twisted Pair model

- Support creating Unshielded Twisted Pair model



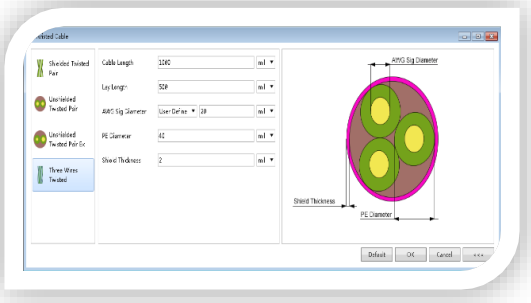
Unshielded Twisted model

- Support creating Unshielded Twisted Pair Ex model



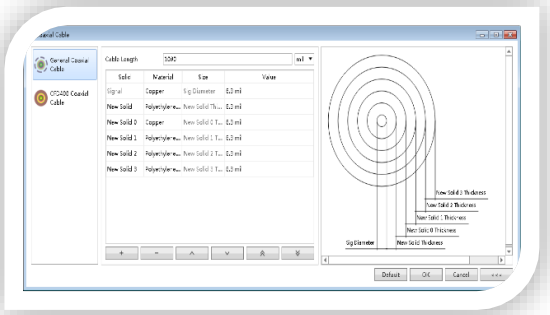
Unshielded Twisted Pair Ex model

- Support creating Three Wires Twisted model



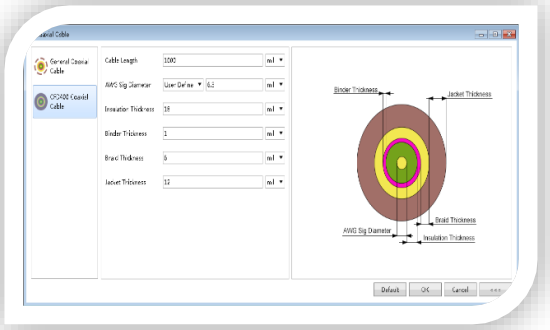
Three Wires Twisted model

- Support creating General Coaxial Cable model



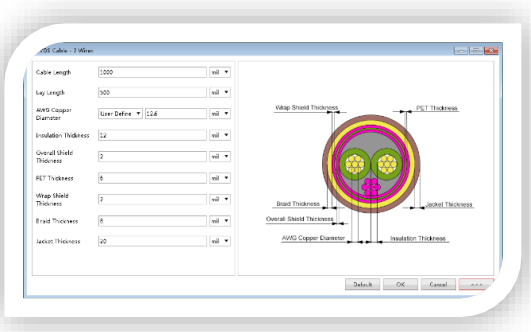
General Coaxial Cable model

- Support creating CFD400 Coaxial Cable model



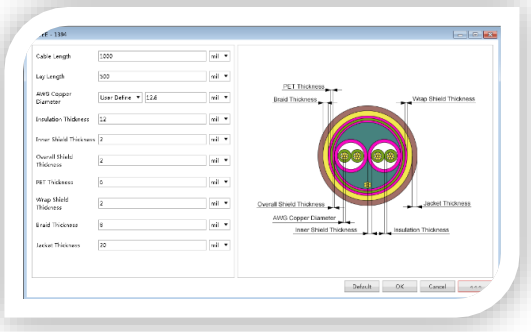
CFD400 Coaxial Cable model

- Support creating LVDS Cable - 2 Wires model



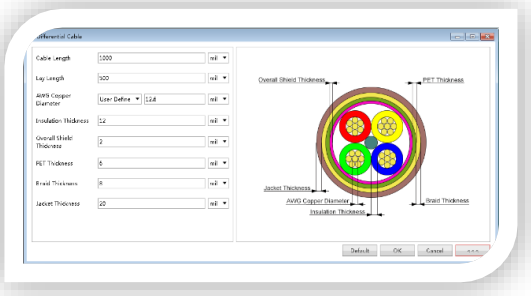
LVDS Cable - 2 Wires model

- Support creating IEEE – 1394 model



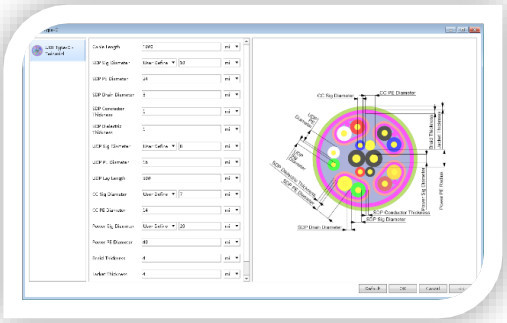
IEEE – 1394 model

- Support creating Differential Cable model



Differential Cable model

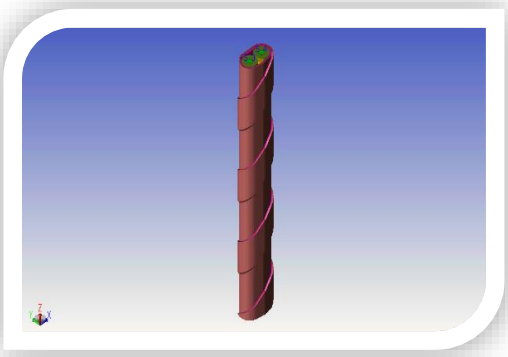
- Support creating USB Type-C-Twinaxial model



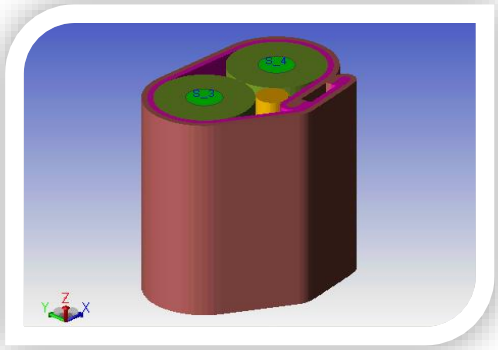
USB Type-C model

3D View

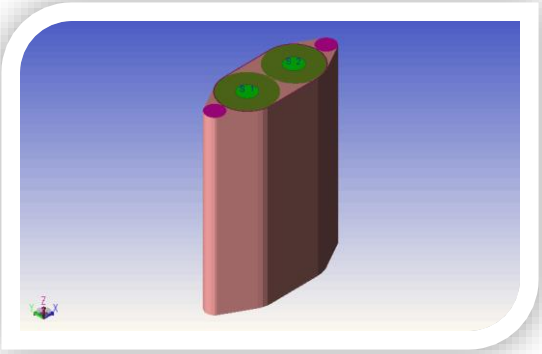
3D view provides a more intuitive way to view the model, the user can set the display or hide the different modules, ports, plates, stacks and so on.



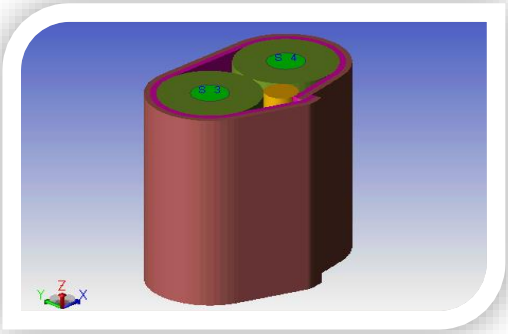
3D model view - Center Drain Wrapping



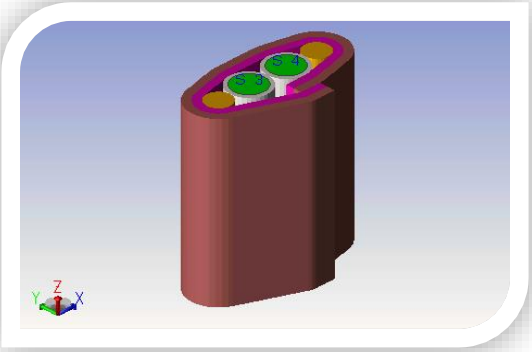
3D model view - Center Drain Longitudinal 1



3D model view – Dual Drain-Longitudinal 1

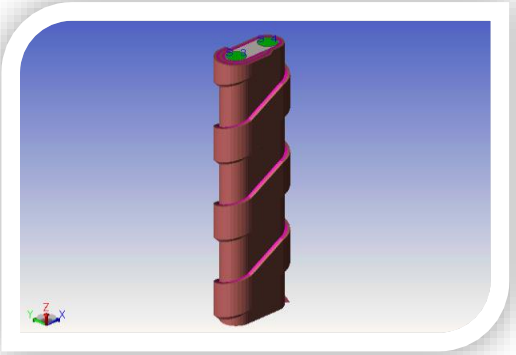


3D model view - Center Drain Longitudinal 2

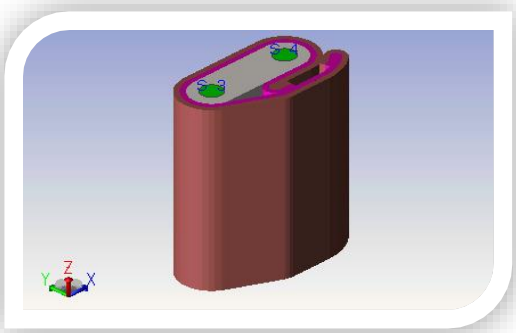


3D model view – Dual Drain-Longitudinal 2

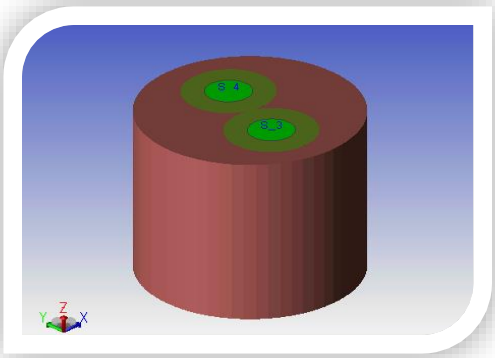
3D model view –Dual Drain-Wrapping



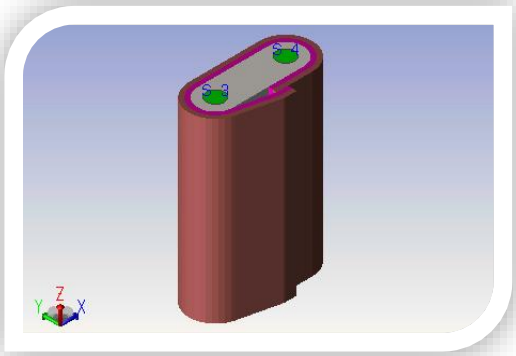
3D model view – No Drain- Wrapping



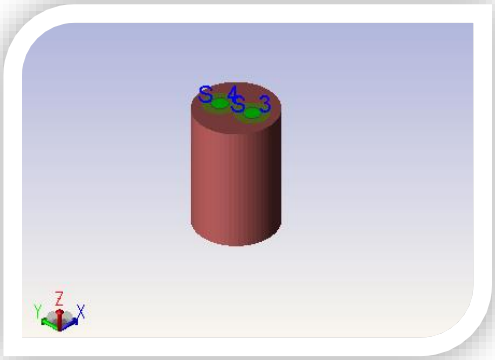
3D model view – No Drain- Longitudinal 1



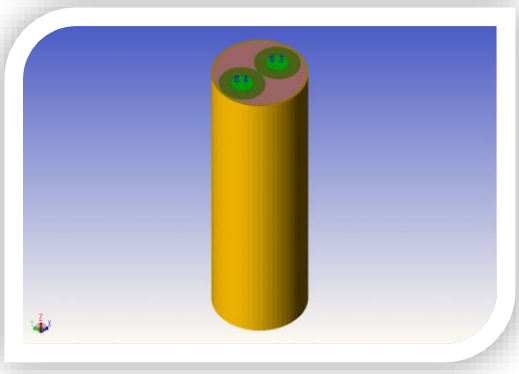
3D model view – Unshielded Twisted Pair



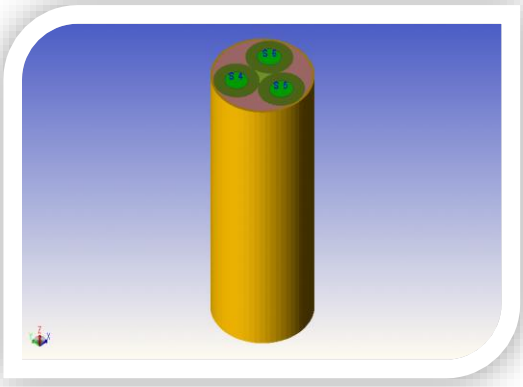
3D model view – No Drain- Longitudinal 2



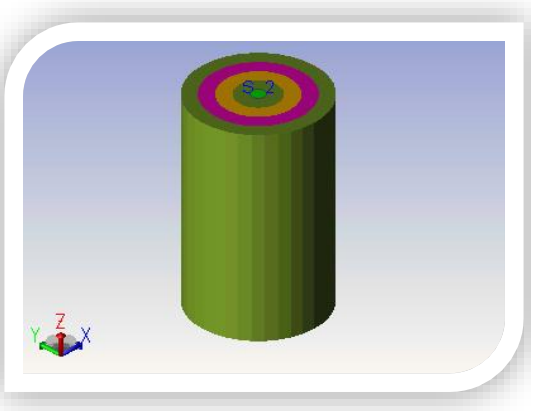
3D model view - Unshielded Twisted Pair Ex



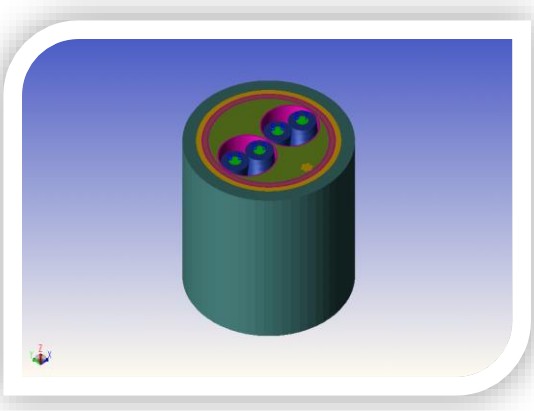
3D model view - Shielded Twisted Pair



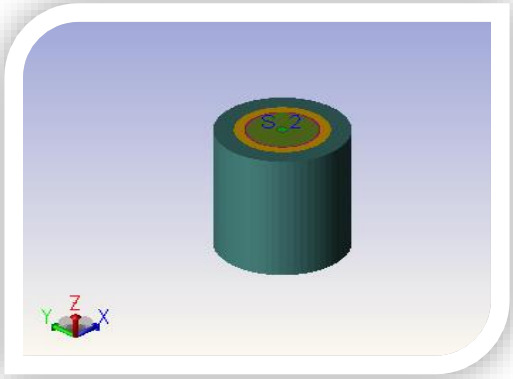
3D model view - Three Wires Twisted



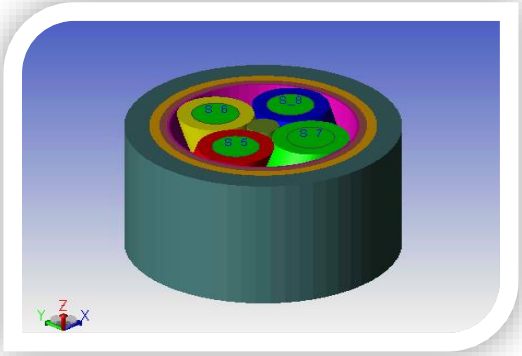
3D model view – General Coaxial Cable



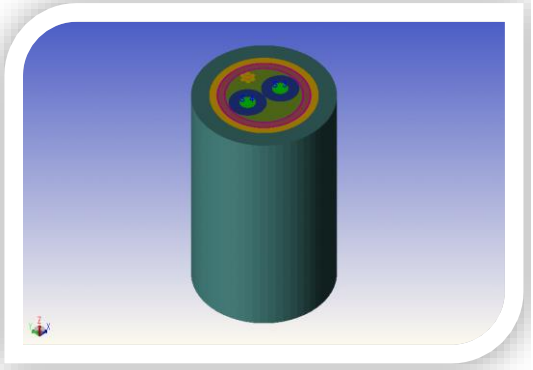
3D model view - IEEE – 1394



3D model view – CFD400 Coaxial Cable



3D model view – Differential Pair

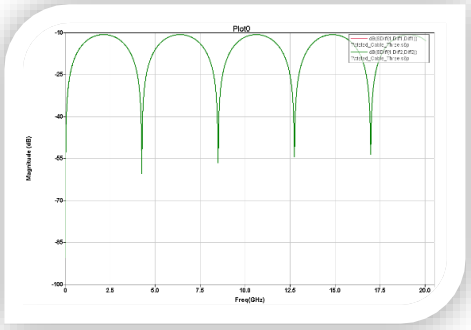


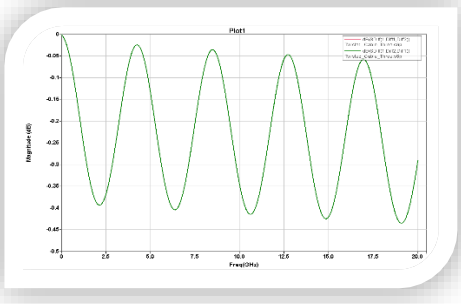
3D model view - LVDS Cable - 2 Wires

3D model view – USB Type-C-Twinaxial

2D Solver simulation

2D solver is enabled in CableExpert for generating the S-parameters.



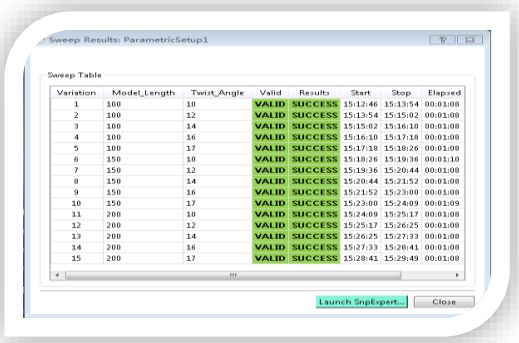


S-parameters of Twisted_Cable_Three

Parametric sweep and optimization

Parametric sweep allows to sweep the parameters of cable and simplify the work flow of optimizing the design of cable.

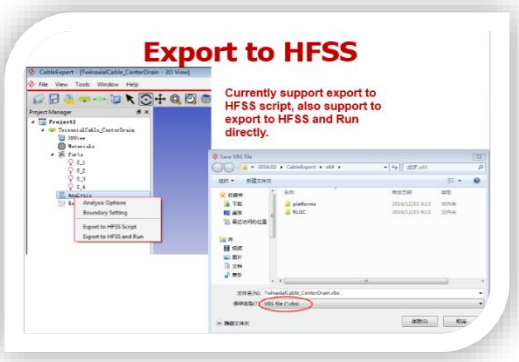
Almost all the parameters of cable model provided in CableExpert can be swept. Users could add parameters to sweep. With CableExpert, validation of parameters could be easily checked.



Parametric sweep result of Model_Length and Twisted_Angle

Export to HFSS

CableExpert offers users a quick way to export to HFSS for benchmark purpose. The exported project has all the settings including layer settings, ports, traces and boundary condition and is ready to run without manual intervention, including layer settings, ports, and traces.

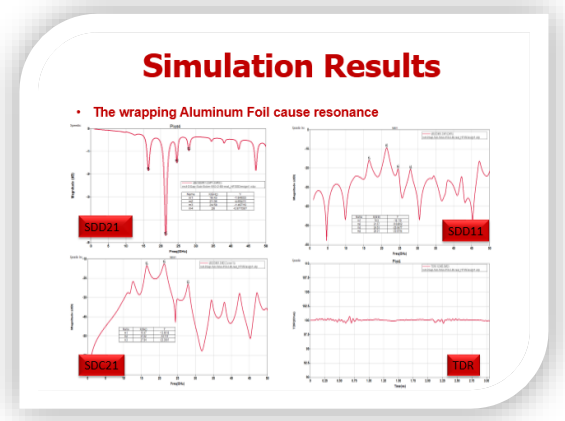


Export to HFSS simulation

Results Display

The S-parameters generated by CableExpert can be displayed in SnpExpert. Users can view more parameters and results with features:

- Single-ended and paired port conversion
- S parameters, TDR and Eye Diagram display
- Contain FEXT, NEXT, PSXT, ILD, ICN, ICR and other graphics display
- Contain standard parameters such as IEEE 802.3ba, OIF CEI-25G / 28G, etc.
- Contain the calculation and display of passivity, causality, reciprocity, stability metrics, enforcements and other indicators.



S-Parameter Display

US Office

Seattle

14205 SE 36th St, Bellevue, WA 98006

Silicon Valley

19925 Stevens Creek Blvd #100

Cupertino, CA

95014sales_us@xpeedic.com

China, Shanghai Office

No.608, ShengXia Road, Building 2, Room210-211, Pudong New Area, Shanghai, 201203

Tel: 86-021-61636350

sales@xpeedic.com

China, Suzhou Office

No.2358, Changan Road, Bldg 1, Floor 5, Wujiang, Suzhou, 215200

Tel: 86 512 63989910

sales@xpeedic.com