

/ ELECTRONICS	Maxwell	HFSS	HFSS-IC	SIwave	SIwave Plus	Q3D Extractor	Icepak	Motor-CAD	EMC Plus	Charge Plus	NuHertz FilterSolutions	SynMatrix Filter	SynMatrix Filter AI+	Electronics AI+	Electronics Pro	Electronics	Electronics Enterprise
LOW FREQUENCY ELECTROMAGNETICS																	
Electrostatics	●														●	●	
AC Conduction	●														●	●	
DC Conduction	●														●	●	
Magnetostatics	●														●	●	
Adaptive Field Mesh	●														●	●	
AC Harmonic Magnetic	●														●	●	
Electric Transient	●															●	
MAGNETIC TRANSIENT																	
Translational Motion	●														●	●	
Fully Automatic Symmetrical Mesh Generation	●														●	●	
Rotational Motion	●														●	●	
Non-Cylindrical Motion	●														●	●	
Advanced Embedded Circuit Coupling	●														●	●	
Circuit Coupling with Adaptive Time Stepping	●														●	●	
Direct and Iterative Matrix Solvers	●														●	●	
ADVANCED ELECTROMAGNETIC MODELING																	
Vector Hysteresis Modeling	●														●	●	
Multi-Conductive Terminals Modelling (PCBs, Busbars etc.) / A-Phi Solver	●															●	
3D Layout Component Integration (ECAD) for LF Electronics Design	●																
Hysteresis Modeling for Anisotropic Material	●														●	●	
Frequency Dependent Reduced Order Models	●														●	●	
Reduced Order Model Extraction (Linear-Motion, Rotational-Motion, No-Motion)	●														●	●	
Functional Magnetization Direction	●														●	●	
Magnetization/De- Magnetization Modeling	●														●	●	
Manufacturing Dependent Core L Loss Models	●														●	●	
Noise – Vibration Modeling	■														■	■	
Temperature Dependent De-Magnetization Modeling	●														●	●	

● Full Support

▲ Limited Capability

■ Requires more than 1 product

/ ELECTRONICS	Maxwell	HFSS	HFSS-IC	SIwave	SIwave Plus	Q3D Extractor	Icepak	Motor-CAD	EMC Plus	Charge Plus	NuHertz FilterSolutions	SynMatrix Filter	SynMatrix Filter AI+	Electronics AI+	Electronics Pro	Electronics	Electronics Enterprise
ADVANCED ELECTROMAGNETIC MODELING																	
Temperature Dependent Core Loss Computation	●									●	●				●	●	
Lamination Modeling	●									●	●				●	●	
Magnetostriction and Magnetoelastic Modeling	●									●	●				●	●	
Hardware in the Loop Modeling	●									●	●				●	●	
Integrated Motor Synthesis and Design Kit	●									●	●				●	●	
Integrated Planar Magnetics Synthesis and Design Kit	●									●	●				●	●	
Temperature Dependent Litz Wire Modeling	●									●	●				●	●	
Litz Wire Modeling	●									●	●				●	●	
DESIGN SOLUTION FOR ELECTRICAL MACHINE																	
Template-Based Magnetic Topologies									●								
Template-Based Cooling Topologies									●								
Adaptive Template-Based Topologies									●								
Magnetic 2D FEA with Analytical Solution									●								
Thermal 2D FEA									●								
3D Thermal and Fluid Network									●								
Optimization Workflow									■								
Temperature Dependent Duty-Cycle Analysis									●								
Manufacturing Effects Due to Winding Impregnation and Housing Interfaces									●								
Linear Structural 2D FEA									●								
Noise Vibration Harness Analytical Modelling									●								
Electrothermal Reduced Order Model (FMU)									●								
HIGH FREQUENCY ELECTROMAGNETICS																	
Fully Automated Adaptive Mesh Refinement			●								●						
Multi-Frequency Broadband Adaptive Meshing			●								●						
Frequency Domain Finite Element (FEM) Analysis			●								●						
Frequency Domain Integral Equation (MoM) Analysis			●								●						
Time Domain FEM Analysis			●								●						
FEM Eigenmode Analysis			●								●						
MoM Characteristic Mode Analysis			●								●						
Physical Optics (PO) Analysis			●	●												●	

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/ ELECTRONICS	Maxwell	HFSS	HFSS-IC	SIwave	SIwave Plus	Q3D Extractor	Icepak	Motor-CAD	EMC Plus	Charge Plus	Numerical FilterSolutions	SynMatrix Filter	SynMatrix Filter AI+	Electronics AI+	Electronics Pro	Electronics Enterprise	
HIGH FREQUENCY ELECTROMAGNETICS																	
Shooting and Bouncing Ray+ (SBR+) Analysis		●	●														●
Physical Theory of Diffraction (PTD) Correction for SBR		●	●														●
Uniform Theory of Diffraction (UTD) Correction for SBR		●	●														●
Visual Ray Tracing for SBR+ Analysis		●	●														●
SBR+ Creeping Wave Correction for RCS of Curved Objects		●	●														●
Range Doppler Plots for Radar Scenario Analyses																	●
Accelerated Doppler Processing (ADP) for SBR+ Range Doppler																	●
RF Filter Synthesis and Design - Planar												●	●				
Digital Filter Synthesis and Design											●						
RF Filter Synthesis and Design - Cavity, Coaxial, SiW											●						
RF Filter Optimization											●						
RF Filter AI Driven Optimization												●	●				
Domain Decomposition Method (DDM) for Frequency Domain		●	●														●
FEM Analysis		●	●														●
Hybrid Finite Element/ Integral Equation Analysis		●	●														●
Efficient Wirebond Package Meshing		●	●														●
UI Coupled Finite Element and/or IE with SBR+ Analysis		●	●														●
Modal Wave Port Excitation		●	●														●
Terminal Wave Port Excitations		●	●														●
Lumped, Voltage and Current Excitations		●	●														●
Circuit Port Excitations		●	●														●
Parametric Antenna Excitations for SBR+		●	●														●
Floquet Excitations		●	●														●
Incident Wave Excitation		●	●														●
Magnetic Ferrite Bias Excitation		●	●														●
Perfect Electric and Magnetic Boundary		●	●														●
Finite Conductivity Boundary		●	●														●
Lumped RLC Boundary		●	●														●
Symmetry Boundary		●	●														●

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/ ELECTRONICS	Maxwell	HFSS	HFSS-IC	SIwave	SIwave Plus	Q3D Extractor	Icepak	Motor-CAD	EMC Plus	Charge Plus	NuHertz FilterSolutions	SynMatrix Filter	SynMatrix Filter AI+	Electronics AI+	Electronics Pro	Electronics Enterprise
HIGH FREQUENCY ELECTROMAGNETICS																
Periodic Boundary			●	●												●
Frequency Dependent Materials			●	●												●
Spatial XYZ Material Properties Via Dataset			●	●												●
Higher and Mixed Order Elements			●	●												●
Curvilinear Element Mesh Correction			●	●												●
S,Y,Z Matrix Results			●	●												●
E, H, J, P Field Results			●	●												●
Direct and Iterative Matrix Solvers			●	●												●
Antenna Parameter Calculation			●	●												●
Infinite and Finite Antenna Array Calculations			●	●												●
Radar Cross Section Calculation			●	●												●
FSS, EBG and Metamaterial Calculation			●	●												●
Specific Absorption Rate Calculation			●	●												●
EMI/EMC Calculation			●	●												●
System Level EMI and RFI Analysis			●	●											●	●
Linear Circuit Analysis with EM Dynamic link			●	●												●
Integrated Antenna Synthesis and Design Kit			●	●												●
5G SAR Standards Toolkit			●	●												●
Power Density and CDF			●	●												●
Radar Prep/Post Simulation Wizards			●	●												●
3D Component Libraries with User Controlled Parametrics			●	●												●
3D Component with Encryption Creation			●	●												●
3D Component with Encryption Utilization			●	●												●
RF Discharge Solver			●	●												●
Mutli-paction Solver			●	●												●
Volumetric SBR+ for 3D Dielectrics			●	●												●
Surface Roughness Model for SBR+			●	●												●
Accelerated Doppler Processing (ADP) for SBR+ Range-Doppler Analysis			●	●												●

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POWER AND SIGNAL INTEGRITY BOARD SIMULATION CAPABILITIES																
Electronics Desktop 3D Layout GUI		●	●	●	●	●										●
ECAD Translation (Altium, Cadence, Mentor, Pulsonix, & Zuken)	●	●	●	●	●											●
MCAD (.x_b) Generation from ECAD		●	●	●	●				●	●						●
Lead Frame Editor		●	●	●	●											●
DC Voltage, Current and Power Analysis for PKG/PCB					●	●										●
DC and AC Joule Heating with Ansys Icepak					■	■	■									●
Passive Excitation Plane Resonance Analysis					●	●										●
Driven Excitation Plane Resonance Analysis					●	●										●
Automated Decoupling Analysis					●	●										●
Capacitor Loop Inductance Analysis					●	●										●
AC SYZ Analysis					●	●										●
Dynamically Linked Electromagnetic Field Solvers	●	●	●	●	●											●
Chip, Package, PCB Analysis (CPM)	●	●	●	●	●											●
Near-Field EMI Analysis	●	●			●											●
Far-Field EMI Analysis	●	●				●										●
EMI/EMC Full Board Scan						●										●
Characteristic Impedance (Zo) L PKG/PCB Scan						●										●
Full PCB/PKG Cross-Talk Scanning						●										●
TDR Wizard							●									●
TDR Analysis		●	●	●	●	●								●	●	●
Transient IBIS Circuit Analysis		●	●	●	●	●								●	●	●
Signal Net Analyzer						●										●
SerDes IBIS-AMI Circuit Analysis				●		●										●
Macro-Modeling (Network Data Explorer)	●	●	●	●	●	●										●
Steady State AC (LNA) Analysis		●	●	●	●	●										●

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POWER AND SIGNAL INTEGRITY BOARD SIMULATION CAPABILITIES																	
SPISIM Com and USB-C Compliance			●														●
SPISIM IBIS AMI Generation			●														●
Synopsys HSPICE Integration		●	●	●													●
Cadence PSPICE Support		●	●	●													●
Electromagnetically Circuit Driven Field Solvers		●	●	●		●											●
RLCG PARASITIC EXTRACTION																	
DCRL, ACRL & CG Solver			●			●	●			●					●	●	
IC Packaging RLCG IBIS Extraction for Signals & Power			●			●	●										●
Touchpanel RLCG Unit Cell Extraction			●			●	●										●
Adaptive Meshing for Accurate Extraction			●			●	●			●					●	●	
Bus Bar RLCG Extraction	●	●	●			●	●			●					●	●	
Power Inverter & Converter Component Extraction			●			●	●										●
3D Component Library			●			●	●										●
Reduced RLCG Matrix Operations			●			●	●										●
SPICE Equivalent Modeling Export			●			●	●			●							●
DCRL & ACRL Joule Heating Analysis with Icepak			●			●	●								●	●	
Macro-Modeling (Network Data Explorer)			●			●	●										●
2D Cable Modeling Toolkit			●			●	●										●
ELECTRONICS COOLING																	
Multi-Mode Heat Transfer		■	■	■	■	■	●										●
Steady-State and Transient								●									●
CFD Analysis								●									●
Turbulent Heat Transfer								●									●
Multiple-Fluid Analysis								●									●
Species Transport								●									●
Solar Loading								●									●
Reduced Order Flow and Thermal								●									●

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ELECTRONICS COOLING																	
Network Modeling							●										●
Joule Heating Analysis							●										●
Thermo-Electric Cooler Modeling							●										●
Thermostat Modeling							●										●
Package Characterization							●										●
CABLE MODELING																	
Finite Difference Time Domain Analysis										●							
Multi-Conductor Transmission Line Analysis	●	●	●	●	●	●	●	●	●					●	●		
Two-Way Coupling FDTD and Transmission Line Solver								●	●								▲
Twisted Conductors							●	●	●								
Seam Impedance							●		●								
Cable Junctions							●	●	●								
Braided Shield Support		▲	▲					●	●								
Pin Voltage, Current Density, Plane Wave Excitations								●	●								
Multi-Conductor and Multi-Shield Support								●	●								●
Uses Discovery Modeler UI							●	●	●								
Thin Surface and Thin Wire Algorithms							●	●	●								
HPC FOR ELECTRONICS																	
GPU Support	●	●	●					●						●	●		
HPC Meshing, Multi-Domain, Multi-Technology		●	●	●	●	●								●	●		
HPC Accelerated Frequency Sweeps	●	●	●											●	●		
HPC Accelerated Broadband Fast Frequency Sweep		●	●											●	●		
HPC Distributed Hybrid Solving		●	●											●	●		
HPC Enabled Domain Decomposition Method	●	●	●											●	●		
HPC Time Decomposition Method	●													●	●		
HPC Enabled Multi-port Excitation Acceleration		●	●											●	●		
HPC Acceleration for DCRL, ACRL and CG							●							●	●		
HPC 2D Skew Parallel Processing	●													●	●		
HPC Enabled Parallel Processing	●	●	●					●						●	●		

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SYSTEM MODELING FOR POWER ELECTRONICS																	
Circuit Simulation	●	●	●	●	●	●	●	●							●	●	
Block Diagram Simulation	●	●	●	●	●	●	●	●							●	●	
State Machine Simulation	●	●	●	●	●	●	●	●							●	●	
VHDL-AMS Simulation	●	●	●	●	●	●	●	●							●	●	
Integrated Graphical Modeling Environment	●	●	●	●	●	●	●	●							●	●	
Power Electronics Component Libraries	●	●	●	●	●	●	●	●							●	●	
Reduced Order Modeling	●	●	●	●	●	●	●	●							●	●	
Power Electronic Device and Module Characterization	●	●	●	●	●	●	●	●							●	●	
Push-Back Excitation	●	●	●	●	●	●	●	●							●	●	
Co-Simulation with Low Frequency Electromagnetics	●														●	●	
Co-Simulation with MathWorks Simulink	●	●	●	●	●	●	●	●							●	●	
IC CAPABILITIES																	
Solve projects with encrypted tech files			●	●				●								●	
RaptorX solver					●												
LDE - Layout Dependent Effects				●													
AI / ML CAPABILITIES																	
SIwave simulation runtime and memory prediction															●		
SynMatrix AI optimization															●		
SYSTEM MODELING FOR RF / MICROWAVE																	
Radio Frequency Interference (RFI) System Solver			●	●											●	●	
Electromagnetic Interference System Solver			●	●											●	●	
RF Link Budget Analysis			●	●											●	●	
RF Co-Site and Antenna Coexistence Analysis			●	●											●	●	
Automated Diagnostics for Rapid Root-Cause Analysis			●	●											●	●	
RF Component Library			●	●											●	●	
SYSTEM MODELING FOR SI / PI																	
SerDes Channel Modeling - IBIS-AMI, QuickEye and VerifEye				●		●										●	
Multi-Drop & Parallel Bus Modeling - IBIS, HSPICE, Spectre, PSPICE, and Nexxim Transient			●	●	●	●	●									●	

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SYSTEM MODELING FOR SI / PI																		
Network Data Exploration	●	●	●	●	●												●	
TDR analysis		■	●	●	●	●											●	
Steady State AC (LNA) Analysis		●	●	●	●	●											●	
MULTIPHYSICS-PLATFORM TECHNOLOGIES																		
Advanced, Automated Data Exchange	●	●	●	●	●	●	●	●								●	●	
Drag-n-Drop Multiphysics	■	■	■	■	■	■	■	■	■						■	■	●	
Direct Coupling Between Physics	●	●	●	●	●	●	●	●	●						●	●	●	
Collaborative Workflows	●	●	●	●	●	●	●	●	●						●	●	●	
Fully Managed Co-Simulation	●	●	●	●	●	●	●	●	●						●	●	●	
Flexible Solver Coupling Options	●	●	●	●	●	●	●	●	●						●	●	●	
MULTIPHYSICS ELECTRO-THERMAL INTERACTION																		
Convection Cooled Electronics	■	■	■	■	■	■	■	■	■								●	
Conduction Cooled Electronics	■	■	■	■	■	■	■	■	■								●	
High Frequency Thermal Management		■	■							■							●	
Low Frequency Thermal Management	■								■								●	
MATERIALS FOR ELECTRONICS																		
Granta Materials Data for Simulation	■	■	■	■	■	■	■	■	■						■	■	■	
Granta MI Materials Gateway	■	■	■	■	■	■	■	■	■						■		■	
Ansys Granta Advanced Materials – Electromagnetic	■	■	■	■	■	■	■	■	■	▲							■	
MISCELLANEOUS																		
Integrated Windows HPC Support	●	●	●	●	●	●	●	●	●									
Integrated IBM Spectrum LSF Support	●	●	●	●	●	●	●	●	●									
Customizable 3rd Party Scheduler Support	●	●	●	●	●	●	●	●	●									
Support ACT Extensions	▲	▲	▲					▲	▲								▲	
Parallel Solving with Ansys Cloud Launched from Desktop	●	●	●	●	●	●	●	●	●									
Elastic Licensing	●	●	●	●	●	●	●	●	●	●								
CHARGING AND DISCHARGING MODELING																		
Internal Charging											●							
Electrostatic Discharge in Air											●							
Surface Charging											●							
3D Particle Transport											●							
Arcing in Solid Dielectrics											●							
Coupled Charging Simulations											●							
CERTIFICATION AND COMPLIANCE																		
ISO 26262	●	●						●								●		

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