ELECTRONICS CORPORATION OF INDIA LTD
COMMUNICATION SYSTEMS GROUP – MATERIALS MANAGEMENT
RFQ TERMS AND CONDITIONS OF RFQ No. ECIL/CNSG/PUR/096420
Specifications and Scope of Work For Supply of PCB Layout Software

Annexure T1

PCB Layout Design Software requirement Specifications

The PCB layout design software is a complete design environment for PCB design – from initial concept through to product realization. With a unified suite of applications, engineers should seamlessly define, visualize, implement and verify their designs. Optimized for the typical small and mid-sized design team, it should appeals to individual all-rounder and corporations operating across multiple sites.

Applications - For Designing and verification of all types of PCB'S , PCB Layout designing, drill and Gerber data generation & Verification..

Functions	**Feature**
Library	
Library	have multiple library path support
Library	have schematic symbol wizard
Library	support hierarchical structure for libraries
Library	support extracting the library from design file (scm \ pcb)
Library	have documentation symbol creator
Library	have access to online library for free download and use
Library	support automatic version control for symbols, components and parts
Library	support automatic symbol and gate partitioning with import FPGA packaging
Library	support ODBC compliant databases architecture
Library	help manage part obsolescence with embedded part acceptance system
Library	enable to include document and URL paths for easy access to documentation and datasheets
Schematics	
Schematics	support hierarchy designs
Schematics	have electrical rule check
Schematics	have unlimited pin support
Schematics	support binary transfer to pcb
Schematics	have powerful library searcher
Schematics	support on-line change of units and grids
Schematics	have library preview
Schematics	support automatic bus labeling
Schematics	support transfer drc assignments
Schematics	support high speed attribute entry
Schematics	support multiple references for single part for decoupling capacitors
Schematics	have facility to import dxf files
Schematics	have cross probing between sheets and layout

Schematics	support back annotation
Schematics	support on-line enhanced electrical rules checking
Schematics	have option to connectors, global signals, signal references
Schematics	support option to set the route width in scm
Schematics	have bill of materials generation
Schematics	have on-line help in html format
Schematics	support auto connection symbol on bus
Schematics	support auto split net when dropping a symbol
Schematics	support schematic design migration
Schematics	support back annotate
Schematics	have constraint browser
Schematics	support schematic variant management
Schematics	forward annotate variant information
Schematics	produce variant bill of material output
PCB Design	
PCB Design	support upto 256 layers with electrical, non-electrical, documentation, power plane and construction
PCB Design	support intelligent full / spl/ partial power-plane definition
PCB Design	support buried route functionality
PCB Design	support buried \ blind and micro vias functionality
PCB Design	support creation of keep out, no-route, no via, placement areas
PCB Design	support height limit specification and online assistance while placing
PCB Design	support materials and layer properties settings for impedance controlled boards
PCB Design	support user definable assignments like line, pad, copper, via and different shapes and different sizes on different layer for pads and vias
PCB Design	support replicate placement
PCB Design	support radial components placement
PCB Design	have windows font support
PCB Design	support user defined color settings and assign to any item
PCB Design	support batch post processing
PCB Design	support color files related to design type
PCB Design	support saving the design as template
PCB Design	have reuse blocks facility
PCB Design	support cross probing between schematics and pcb
PCB Design	support optimized report generation
PCB Design	have bidirectional idf import / export facility
PCB Design	support pcb variant management
PCB Design	support variant assembly drawing control
PCB Design	support variant design rule checking

PCB Design	have eco update facility
PCB Design	have star point pcb components
PCB Design	support unlimited number of pins
PCB Design	support pcb design migration form other standard tools
PCB Design	have output to Gerber / rs274x / all windows printer drivers / most of the plotter formats
PCB Design	have output to odb ++ format
Routing	
Routing	have semi-automatic routing features
Routing	have auto routing unlimited layers features
Routing	support analysis to determine the factor for routablity the design
Routing	have locating the density part of the design for better routing results
Routing	support user definable vias assignments for desired nets
Routing	have on line drc while doing manual routing
Routing	have memory pattern router
Routing	have river routing technology support
Routing	have python scripting support
Routing	have locate option to find the pins \ un routed connections \ errors \ off-grid pins \ off-grid vias \ untestable nets \ position
Routing	produce board status report contains the history of the design
Routing	have automatic fan-out creation
Routing	support automatic test point creation and conversion of pads / vias to test points
Routing	support automatic ring removal
Routing	support miter with 45 degree \ curved and unmiter
Routing	support user definable mitering
Routing	support changing route width after routing completion
Routing	support copper pour and thermal relief creation
Routing	have auto security file saving
Routing	support cross probing between schematic capture and routing module
Routing	support efficiency to route the fine pitch components especially bgas
Routing	support same net spacing controls
Routing	support smd pad special vias
Routing	support snap vias legal
Routing	support split power plane creation
Routing	support free angled auto routing
Routing	have pull tight (90º, 45º, 0º) options
High-Speed	
High-Speed	support allocate / create device models (pin types)
High-Speed	have characteristic impedance calculator
High-Speed	have differential pair routing features

High-Speed	have differential pair routing - match skew and lengthening
High-Speed	support routing information display for interactive routing (length)
High-Speed	generate high-speed reports (length, skew, differential pairs, max vias, etc.)
High-Speed	support interactive track lengthening to constraints
High-Speed	support length checks (pin-based including pin length groups)
High-Speed	support lengthen during autorouting
High-Speed	have lengthening wizard (size, style, mode, spacing, etc.)
High-Speed	support locate differential pairs
High-Speed	support manual route to length constraint
High-Speed	have ordered/controlled net topology
High-Speed	have routing constraint indicators
High-Speed	have shield route (adjacent reference lines)
High-Speed	have skew groups (generic or to user-defined base)
High-Speed	have virtual branch points (e.g., h-tree topologies)
High-Speed	have wire bond pin length support
High-Speed	support z0 and zdiff planning (impedance templates)
High-Speed	support delay (time) based routing
High-Speed	information display for interactive routing (delay)
High-Speed	support lengthen during autorouting (delay)
High-Speed	assist to locate crosstalk
High-Speed	assist to resolve crosstalk
High-Speed	display deviation (%) control – delay
High-Speed	display deviation (%) control – length
High-Speed	have routing information display for interactive routing (impedance, overshoot, crosstalk)
High-Speed	have lengthen tool (manual) for delay
High-Speed	support lengthen tool (manual) for length
High-Speed	have measure length to pin
Constraint	
Constraint	auto-generate pin pairs
Constraint	support busses in tree view with bus-level constraints
Constraint	support color-coded results measured against constraints
Constraint	have constraint manager (spreadsheet data entry)
Constraint	support create, edand apply high-speed topologies
Constraint	have graphical topology viewer
Constraint	support library reload (device and simulation models)
Constraint	have net classes in tree view
Constraint	allow to set nominated driver / receiver
Constraint	support crosstalk per aggressor results in the spreadsheet
Constraint	have graphical topology editor

Constraint	support area based rules in layout
Constraint	support rules setting for component placement to component placement
Constraint	support rules setting for copper to board
Constraint	support rules setting for hole to hole
Constraint	support rules setting for minimum thicker track length
Constraint	support rules setting for optimal route to pad
Constraint	support rules setting for optimal route to route
Constraint	support rules setting for optimal route to via
Constraint	support rules setting for pad to board
Constraint	support rules setting for pad to pad
Constraint	support rules setting for route to board
Constraint	support rules setting for route to route
Constraint	support rules setting for route to via
Constraint	support rules setting for thin route width
Constraint	support rules setting for via to board
Constraint	support rules setting for via to smd pad
Constraint	support rules setting for via to via
SI Analysis	
SI Analysis	have fast reflection and crosstalk simulators that analyze the behavior of complex transmission line systems on pcb board designs.
SI Analysis	have interactive/ batch simulation i.e. Quickly analyze a number of selected nets for signal integrity and timing effects.
SI Analysis	take into account return paths and obstructions in return paths while doing si analysis.
SI Analysis	show impedance variation due to obstructions in return paths
SI Analysis	have powerful and accurate simulator for reflection and crosstalk
SI Analysis	support the frequency upto 5ghz with very accurate results
SI Analysis	have the topology exploration; terminations options: experiments with terminations like placing ground, via, inductor, diode etc
SI Analysis	have configuration editor for layer stack editing and simulation.
SI Analysis	have constraint manager to view the tree view and history of the design.
SI Analysis	support ibis v3.2 and later. And should have good library management & graphical model editor
SI Analysis	provide the rlgc matrix for individual nets.
SI Analysis	have coupled net and differential pair simulation.
SI Analysis	have bi directional integration & cross probing capability with the pcb layout software.
SI Analysis	support time and frequency domain
SI Analysis	have impedance calculation

ELECTRONICS CORPORATION OF INDIA LTD
COMMUNICATION SYSTEMS GROUP – MATERIALS MANAGEMENT
RFQ TERMS AND CONDITIONS OF RFQ No. ECIL/CNSG/PUR/096420
Specifications and Scope of Work For Supply of PCB Layout Software

SI Analysis	give the result in spread sheet form &transfer the waveform to xml format, & also provide excel and sdf output
SI Analysis	Input parameter specification based on the net classification or pin / component level feature should be available in the software.
SI Analysis	Display of propagation direction for coupled nets should be possible.
SI Analysis	Velocity calculation should be possible.
SI Analysis	Information of whether driver / receiver / comp symbol should be available.
SI Analysis	have the feature of screening the entire board to provide the output of average impedance, overshoot, undershoot (rising& falling edge)
SI Analysis	provide the wave forms in the oscilloscope like display
SI Analysis	have waveform measurement capability
SI Analysis	have the fast fourier transformation(fft) to enable the user to view different frequency domain calculations like voltage, current and impedance.
SI Analysis	have eye diagrams with system generated statistically valid stimulus inputs.
SI Analysis	have complete bi directional integration with router for implementation purpose
EMC Screening	
EMC Screening	very easy to use and useable by any pcb designer. Should not need very high end expertise
EMC Screening	do a very quick analysis
EMC Screening	have pre-defined rules for design checking for both common and differential mode of emc losses
EMC Screening	have the "what-if analysis" capabilities.
EMC Screening	have an integrated accurate field solver
EMC Screening	have the rule weightings
EMC Screening	Check for ground return loop
EMC Screening	have crosstalk analysis and should provide the required spacing to remove coupling
EMC Screening	have the track current capacity calculation
EMC Screening	calculate the track impedance and should suggest the required width to attain the impedance margin.
EMC Screening	Finding the availability of shielding for the critical signals should be available.
EMC Screening	Check for closed loop antennae. (major source of energy loss)
EMC Screening	Avoidance of open track loop antennae should be possible.
EMC Screening	provide the impedance profile (for better si quality in the design)
EMC Screening	have the feature of finding the availability of proper terminations should check for proper track stubs

ELECTRONICS CORPORATION OF INDIA LTD
COMMUNICATION SYSTEMS GROUP – MATERIALS MANAGEMENT
RFQ TERMS AND CONDITIONS OF RFQ No. ECIL/CNSG/PUR/096420
Specifications and Scope of Work For Supply of PCB Layout Software

EMC Screening	check for track resonance
EMC Screening	have frequency-dependent actual vs ideal length
EMC Screening	Check for right-angled bends (which vary impedance and affect si quality)
EMC Screening	find the areas of isolated or badly grounded copper
EMC Screening	The tools should have the rule of overlapping planes
EMC Screening	High power plane impedance due to thin copper & via "swiss-cheese" effect calculation should be available in the tool
EMC Screening	find layer stack integrity
3D Verification	
3D Verification	direct integration with layout editor for back annotation of placement
3D Verification	possible to visualize 2d pcb layout in 3d.
3D Verification	support the creation of true 3d components in library.
3D Verification	possible to replace simple component blocks with true 3d models.
3D Verification	possible to measure and check the collision of pcb components in 3d.
3D Verification	support both online & batch collision checks between components, boards & enclosure
3D Verification	possible to check the pcb assembly against the enclosure.
3D Verification	support import/export of idf, step & sat file formats. (for complex thermal simulations)
3D Verification	support idf 2.0 and 3.0 versions.
3D Verification	support the visualization of multiple pcbs in single environment and stack in enclosure.
3D Verification	support the import of board profiles and placement data from 3d systems.
3D Verification	support the translation of board profiles and placement data into 2d pcb layout.
Hardware and Software Requirements	
Compatible with Intel based multi-processor standard machines with Microsoft Windows® Window latest version.• 4th Generation Intel i5-4440S Processor (2.7 GHz, 6 MB Cache). Windows 8.1 OS Single Language - 64 Bit ,• 1TB hard disc HDD-SATA (Seagate). (NTFS format) 250Mb disk space required for full CADSTAR installation and libraries.• 1 Gb RAM to 32GB DDR3 RAM• • 4GB Graphics Card- NVIDIA 820A Graphics,2 Gb virtual memory / paging file.,• 1280 x 1024 display, 256 colours.• • USB Optical Scroll Mouse. • USB port.	
It must have a capability of floating Windows outside the core window to extend the monitor (for dual monitor) great for dual-monitor use, schematic on one monitor, layout on the other.	
It must have network licensed	
Deliverables:	
Software in CD/DVD media with Documentation in soft copy and Hardcopy.	
Single user, Floating perpetual License with 12 months update and support.	

ELECTRONICS CORPORATION OF INDIA LTD
COMMUNICATION SYSTEMS GROUP – MATERIALS MANAGEMENT
RFQ TERMS AND CONDITIONS OF RFQ No. ECIL/CNSG/PUR/096420
Specifications and Scope of Work For Supply of PCB Layout Software

All updates in CD/DVD media as and when released by vendor during the Maintenance period	
Terms and Conditions:	
All software supplied including updates to be installed at site & support must be provided.	
Two days on site Product Training must be provided at our facility.	
All Software related support to users to be given during the product Maintenance period	
Demonstration and evaluation version of quoted software will be required with quotation.	
b) WORKSTATION for the above software package	
HP Z440 Workstation (1EW89PA) or equivalent	
Chipset	Intel C612
Processor	Intel Xeon E5-1620 v3 (3.5 GHz, 10 MB cache, 4 cores, Intel vPro™)
Operating system	Windows 10 Professional 64
Memory	16 GB DDR4-2133 RegRAM SDRAM (2 x 8 GB)
Hard drive	1 TB 7200 rpm SATA x 2
Graphics	NVIDIA Quadro K1200 (4 GB) or better
Warranty	3-year (3-3-3) 3 years of parts- labor and on-site repair.
Expansion slots	2 PCIe Gen3 x16; 1 PCIe Gen3 x8 (open-ended); 1 PCIe Gen2 x4 (open-ended); 1 PCIe Gen2 x1 (open-ended); 1 PCI
Network interface	Integrated Intel® I218LM PCIe GbE
USB Optical Scroll Mouse	
USB Business Slim Keyboard	
Slim SATA SuperMulti DVD writer	
Indicate price separately for additional Integrated SATA 6.0 Gb/s; Factory integrated RAID with redundant power supply	
Ports	4 USB 3.0; 1 microphone; 1 headset
	4 USB 3.0; 2 USB 2.0; 2 PS/2; 1 RJ-45; 1 audio line in; 1 audio line out
	1 USB 2.0; 1 USB 3.0
Monitor	HP 27es 27-inch Display or equivalent
Input connector	1 VGA; 2 HDMI (with HDCP support)
Display features	Anti-glare; In plane switching; Language selection; LED Backlights; On-screen controls; Plug and Play; User programmable
Display size (diagonal)	27"