




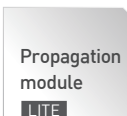




	 iBwave Design ENTERPRISE	Propagation module ENTERPRISE	Optimization module ENTERPRISE	Collection module ENTERPRISE	 iBwave Design LITE	Propagation module LITE	 iBwave Wi-Fi	 iBwave Public Safety
WIRELESS TECHNOLOGIES								
Wi-Fi (802.11 a/b/g/n/ac/ax)	✓				✓		✓	
5G: NR (Sub-6GHz and mmWave)		✓	✓					
4G: LTE / LTE-A / LTE-LAA / CBRS / WiMAX (802.16) / WiBro	✓				✓			✓ Public Safety bands only
3G: HSPA / HSPA+ / WCDMA / 1xEV-DO / TD-SCDMA	✓				✓			
2G: GSM / CDMA / EDGE / GPRS / iDEN / TDMA / & more	✓				✓			
Public Safety Broadband 4.9 GHz (802.11y)	✓				✓		✓	✓
Public Safety P25, Tetra	✓				✓			✓
DVB-H / MediaFLO / RFID / ZigBee (802.15.4) / WMTS / LoRa / UWB / GPS	✓				✓			
SYSTEM DESIGN								
Design Plan for indoor RF system design	✓				✓		✓	✓
Centralized database with over 29,000 components from over 300 vendors	✓				✓		✓	✓
Support base stations, off-air repeaters and small cells	✓				✓			✓ R14 FirstNet
MIMO 2X2, 3X3, 4X4	✓				✓		✓	✓ no 3X3 MIMO
Coaxial, radiating and CAT5 cable signal distribution	✓				✓		✓	✓
Multi-strand fiber-optic cables and components support for fiber modeling	✓						✓	✓
Support Wi-Fi access points including multi-radio APs (high density)	✓				✓		✓	
Antenna contours	✓						✓	✓
Smart antenna contours considering building architecture and antenna pattern		✓					✓	✓
Network validation and error checking	✓				✓		✓	✓
AUTOMATION								
Automatic design plan organizer	✓						✓	✓
Automatic access point placement			✓				✓	
Automatic channel assignment			✓				✓	
Power sharing automation for neutral host system designs	✓							
Cable route and automatic cable alignment	✓						✓	✓
Automatic cable and splitter selection for passive DAS	✓							✓
Optimal antenna placement			✓					
Reset part ID	✓						✓	✓
CALCULATIONS								
Automatic cable length measurements	✓				✓		✓	✓
RF Downlink link budget calculations	✓				✓		✓	✓
RF Uplink link budget calculations	✓							✓
Fiber link budget	✓						✓	✓
Passive Intermodulation (PIM) calculations and analysis based on component PIM ratings			✓					✓
BUILDING MODELING								
Create multiple buildings	✓						✓	✓
Multi-layered floor plans with layout plans, walls, system equipment, cables, and more	✓				✓		✓	✓
Import floor plans from .dwg, .dxf, .jpeg, .bmp, .tiff, .gif or .pdf files	✓				✓		✓	✓
Draw walls (linear and curved) and surfaces	✓				✓		✓	✓
Automatic drawing of inclined surfaces	✓						✓	✓
Assign material from material database		✓				✓	✓	✓
Import walls from raster CAD files, PDF or images		✓				✓	✓	✓
3D Viewer to display buildings and floors	✓				✓		✓	✓
Zone layer per wireless service	✓							✓
Export building to Google Earth and building in Google Earth or Bing	✓						✓	✓

								
PROPAGATION								
Body Loss Modeling		✓					✓	✓
LTE Handoff Matrix		✓						
Simultaneous multi-band / technology propagation 3D prediction analysis		✓				✓	✓	✓
Variable Path Loss Exponent propagation model using environment density zones		✓				✓	✓	✓
COST 231 Multi Wall model (Direct Ray) propagation model		✓				✓	✓	✓
Fast Ray Tracing propagation model		✓					✓	✓
Probe to display multi-system prediction results		✓				✓	✓	✓
Compliance results based on user defined criteria		✓				✓	✓	✓
Customizable output map legends		✓				✓	✓	✓
Prediction model and material calibration from survey data		✓		✓			✓	✓
Import outdoor propagation maps from leading outdoor planning tools		✓						✓
Consider outdoor signal for interference and propagation maps			✓					✓
2D and 3D antenna pattern support		✓				✓	✓	✓
Multiple Compliance Zone definition		✓						✓
Donor Antenna Isolation Validation		✓						✓
OUTPUT MAPS								
5G NR SS-RSRP, SS-SINR, PDSCH-SINR, PDSCH-RP, SS-RSRQ, MADR, Best Server		✓	✓					✓
Signal strength, Best Server		✓				✓		✓
HSPA RSCP, LTE RSRP		✓				✓		✓ LTE-RSRP
Field strength, Handoff, Service Count maps, Nature of the path		✓						
Wi-Fi Best AP, Best Channel, Overlap zone, AP Count		✓					✓	
SNIR, Maximum Achievable Data Rate, Dominance over Macro Maps			✓					✓ no MADR
CDMA and WCDMA Active ser			✓					
LTE RSRQ, LTE RSRP, LTE Best Server in R14, Overlapping Zones maps, LTE-A Max Achievable Data Rate			✓				✓	✓ LTE-RSRQ
Wi-Fi CCI, SNR			✓				✓	
Uplink Mobile Power			✓					✓
Indoor propagation map interpolated from:			✓					✓
Outdoor planning tools			✓					✓
Walk tests or empirical measurements			✓	✓				✓
Estimated surrounding signal strength			✓					✓
Redundant DAS failure point propagation simulations		✓				✓		✓
Hetnet Capacity Analysis with hotspot zones			✓				✓	
Average Downlink Data Rate			✓				✓	
Optimal Antenna Placement map			✓					
DATA COLLECTION								
Manually create trace routes and enter survey data on floor plans				✓			✓	✓
Import trace routes and survey measurements from 3rd party collection tools				✓			✓	✓
Export floor plans and transmitter information to 3rd party collection tools using the IBWC file format				✓			✓	✓
Wi-Fi active and passive survey				✓			✓	
PROJECT DOCUMENTATION								
Drawing tools for lines, shapes, text and images	✓				✓		✓	✓
Create picture plans and photo mock-ups	✓						✓	✓
Create annotations (text, voice, picture, video)	✓				✓		✓	✓
Create project revisions	✓				✓		✓	✓
Project file password protection	✓				✓		✓	✓
Export project to .dxf format	✓				✓		✓	✓



SOFTWARE & MODULES FEATURE COMPARISON

	 iBwave Design ENTERPRISE	 Propagation module ENTERPRISE	 Optimization module ENTERPRISE	 Collection module ENTERPRISE	 iBwave Design LITE	 Propagation module LITE	 iBwave Wi-Fi	 iBwave Public Safety
REPORTING								
Annotations, Output maps, RF Survey reports	✓				✓		✓	✓
Equipment list report	✓				✓		✓	✓
Cost details report	✓						✓	✓
Link budget report and Horizontal link budget reports	✓				✓			✓
Antennas report	✓						✓	✓
Access Points and Small Cells report	✓						✓	
Cable routing and Cross-reference reports	✓						✓	✓
Electromagnetic field (EMF) report	✓						✓	✓
Prediction vs. Measured data report		✓		✓			✓	✓
Compliance report		✓				✓	✓	✓
Include PIM results in the Compliance Report			✓					✓
Export reports in various format (.rpt, .pdf, .xls, .doc, .rtf, .xml)	✓				✓		✓	✓
Export project and floor plan in TAB file format	✓			✓				✓
COMPONENT DATABASE								
Database editor to add, edit or delete components	✓				✓		✓	✓
Share component database between multiple users	✓				✓		✓	✓
Customized pricing and part numbers	✓				✓		✓	✓
Sub-component support	✓				✓		✓	✓
List of approved parts per customer	✓				✓		✓	✓
List of equivalent parts	✓				✓		✓	✓
Extensive library of materials (60+) including electrical and mechanical properties		✓				✓	✓	✓
TOOLS								
Frequency calculator	✓				✓		✓	✓
Power converter	✓						✓	✓
Intermodulation calculator	✓						✓	✓
Wi-Fi Net scan	✓						✓	