

SeeWave[™] | Interference Locating System



SeeGull[®] Scanner
Host Platform
Directional Antenna
Intuitive Software

CHALLENGE:

Interference impacts network performance. On 4G LTE network deployments, the effects of interference may include significantly reduced throughput rates. Interferers discovered in new spectrum allocations and the re-farming of existing bands also threatens network quality. Potential sources of interference are too numerous to count, from florescent lights to garage door openers to unlicensed radio signals. Detecting and locating the exact position of these interferers can be expensive and time-consuming, often depending on equipment that can be cumbersome and difficult for one person to operate efficiently.

SOLUTION:

PCTEL's SeeWave is the comprehensive tool for a single user to accurately detect the interfering frequency and locate its exact source. SeeWave utilizes PCTEL's leading edge SeeGull[®] scanning receiver. A host platform links the scanner to both a direction-finding antenna and a touchscreen tablet. The platform can be held comfortably in one hand while the user operates SeeWave's intuitive software application. Scanning receiver, host platform, antenna, and tablet-optimized software combine to create an economical, easy-to-use, and highly effective interference hunting system. It uses advanced spectrum analysis and proprietary algorithms to both identify harmful interference and locate its source. This saves effort, time, and cost for mobile operators working to eliminate interference and maximize network Quality of Service.



BENEFITS

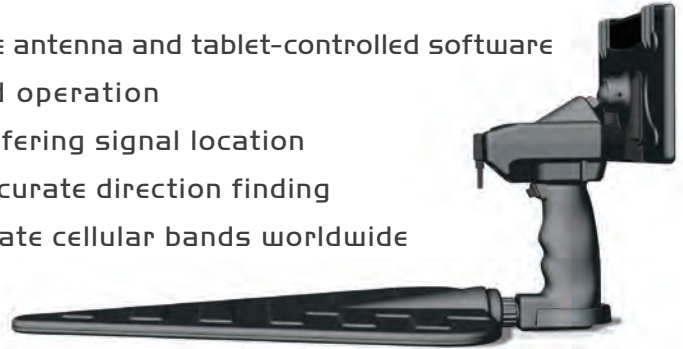
- Enhance network performance by identifying numerous types of interfering signals with advanced spectrum analysis measurements
- Locate the exact position of interference through triangulation algorithms
- Identify problems efficiently and quickly by collecting and analyzing results in a variety of playback options
- Clear uplink and downlink channels on select bands and spectrum ranges for spectrum re-farming using customizable view settings
- Reduce user fatigue with ergonomic design, using one hand to hold the unit and the other to operate the tablet
- Increase return on investment of existing PCTEL scanners, adding interference finding to a range of network testing applications

SeeWave | Features



SeeWave Hardware

- Host platform connects the scanning receiver to the antenna and tablet-controlled software
- Ergonomic and lightweight design for one hand operation
- Easy-to-hold grip with trigger for recording interfering signal location
- Includes digital compass and pre-amplifier for accurate direction finding
- Ability to mount different antenna types to evaluate cellular bands worldwide
- Specially designed to attach a range of tablets



SeeWave Software Application

- Windows® 8 based touch screen application
- Intuitive interface with a simple workflow and minimal learning curve
- Efficient management – set up and save working sessions with ease
- Rich charting options to quickly identify interfering sources
- Simplified open street based mapping and triangulation functionality
- Record and playback data for effective and detailed analysis

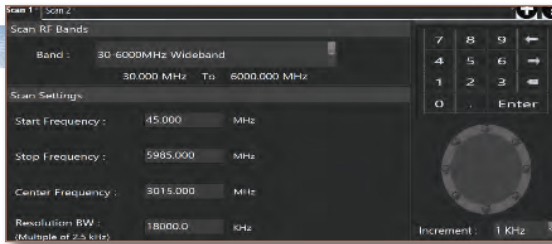


SeeWave Scanning Receivers and Walk Test Kit

- Utilizes PCTEL's leading edge SeeGull® scanning receivers equipped with advanced spectrum analyzer (Enhanced Power Scan)
- Supported across multiple SeeGull scanners, including the IBflex™, EXflex™, MX, and EX family
- Interference locating function adds to scanners' testing applications across the network life cycle and boosts ROI
- Use walk test kit to hold scanner, hot swap battery system, and additional accessories

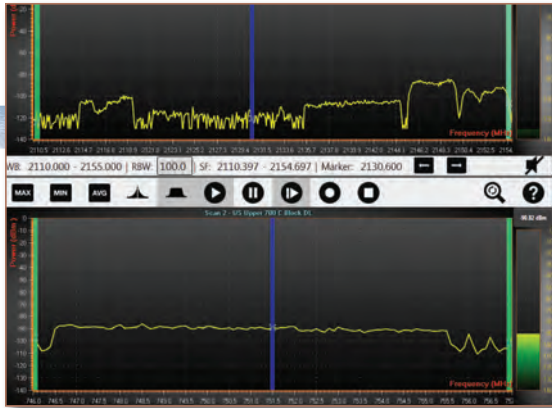


SeeWave | Software



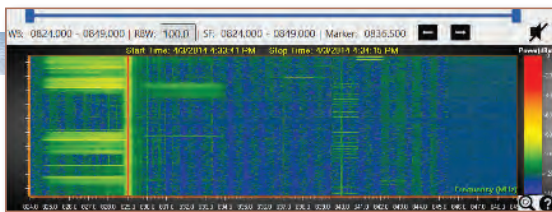
Scan Setup

- Scan settings set up by E-UTRA band or custom selected range compatible with connected SeeGull scanner
- Start, Stop, Center Frequency, and Resolution Bandwidth determines initial scanning parameters
- Allows for two independent scans at any time for parallel scanning and data collection



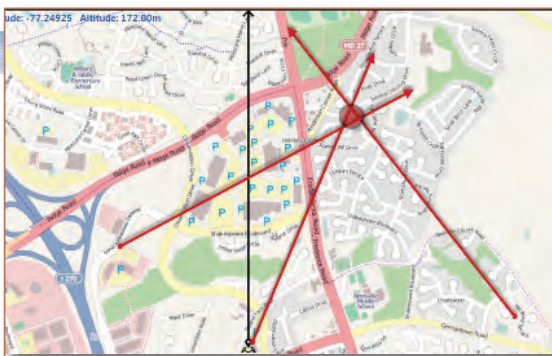
Spectrum Charts

- Trace displays real time, average, maximum, and minimum power levels
- Touch-and-drag adjustable Selected Frequency Marker determines the directional bearings for mapping
- Adjustable parameters with Wideband and Selected Frequency Ranges, plus blue Marker for Selected Frequency Range for bearings



Spectrogram Waterfall

- Chronological, linear visual representation of the scan power levels
- Spot patterns and identify intermittent interference signals



Maps

- Digital compass displays antenna direction
- GPS displays user's exact location on map
- User option of manual or automatic mode to select directional bearing of maximum interferer
- Triangulate based on multiple user-selected bearings

SeeWave | Specifications




PREAMPLIFIER/ATTENUATOR				
Preamplifier Bandwidth	200 MHz to 6 GHz			
Preamplifier Gain	200 MHz – 2.7 GHz	Bypass: 0 dB	Step 1: 9 dB	Steps 1 & 2: 25 dB
	2.7 GHz – 4.5 GHz	0 dB	6 dB	20 dB
	4.5 GHz – 6.0 GHz	0 dB	4 dB	15 dB
Attenuation Steps	0, 10, 20, 30 dB			
DIGITAL COMPASS AND GPS				
Digital Compass Accuracy	<= 5 deg, nominal			
GPS	Refer to MX, EX Family, EXflex or IBflex Specifications			
PHYSICAL				
Maximum Power	0.9W with Preamplifiers On			
Size	7.3”L x 8.5”W x 10.5”H (185.4 mm L x 216 mm W x 267 mm H) with tablet computer mounted			
Weight	1.3 lb (0.57 kg) includes cables			
Tripod Mount	¼ – 20 UNC x 7 mm			
Temperature Range	Operating: -10°C to +50°C; Storage: -40°C to +85°C			
RF Connector	N Male			
Cables (to Walk Test Kit)	50” (1.3 m) Length			
Safety (CE)	EN 60950-1			
EMC	EN 301 489-1			
Shock and Vibration	MIL-STD-810G, SAE J1455			
RoHS	Compliant (6/6)			
DIRECTIONAL ANTENNAS				
OP409 Antenna, 690 MHz – 6 GHz Log Periodic				
Size	17.7”L x 9”W (450 mm L x 229 mm W)			
Weight	1.3 lb (0.59 kg)			
Gain	8 dBd			
RF Connector	N Female			
OP410 Antenna, 440 MHz – 480 MHz Yagi				
Size	22”L x 13.2”W (558 mm L x 335 mm W)			
Weight	1.2 lb (0.54 kg)			
Gain	6.5 dBd			
RF Connector	N Female			

Please contact your sales representative or email RFS.Sales@pctel.com for more details.



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Specifications subject to change without notice.

PCTEL RF Solutions products are protected under the following U.S. patents:
7,272,126; 7,236,746; 7,050,755; 7,013,113; 6,950,665; 6,931,235; 6,917,609; 6,816,709; 6,609,001; 8,422,461; 7,639,985; 7,019,691.