

KESTREL TSCM PROFESSIONAL SOFTWARE



Key Features and Operational Advantages

Innovation is Simply the Beginning!

Key Features and Operational Advantages of the Kestrel Software

- We are often asked of compare Kestrel[®] to other products.
 - Such a comparative is generally not possible given the wide range of system design criteria, undeclared specifications, computing hardware, receiver and software capability.
- Kestrel[®] stands on its own merits, our goal and responsibility is to provide detailed information about Kestrel[®], so that the end-user can make an informed procurement decision.
- We are always here to assist with any questions or concerns about our software.
- PDTG Inc., is committed to the development of the most innovative, focused TSCM | SIGINT specific software available.



Innovation is Simply the Beginning!

*100%
Canadian
Innovation!*

*Developed in
Canada*

- Strong commitment and exceptional track record with the first software release in early 2009.
- Our extensive experience is your power!
- Unprecedented innovation with significant new deployment tools and methodology.
- Innovation is our design methodology.
 - Industry leading, operator centric and TSCM | SIGINT specific Software Defined Radio (SDR).
- Strong Engineering and Software Development Group (SDG)[™].
- Engineered by experience.
- Global industry disruptive technology | Delivered!



Innovation is Simply the Beginning!

Operator Centric

Engineered by Experience!

- Kestrel[®] places the technical operator back in control of the mission and analytical process.
- Full featured Technical Surveillance Countermeasures (TSCM) and Signals Intelligence (SIGINT) specific, standards based SDR application.
 - Included features and advanced functionality extend well beyond the typical spectrum analyzer.
 - Each software feature is carefully developed, coded and evaluated to meet strict operator centric criteria.
- Software design is firmly engineered on a standards based, real-world deployment methodology with a focus on a modern moving target threat model.



Innovation is Simply the Beginning!

*Award
Winning*

*“2013
Best New
TSCM
Product”*

- **2018** | Canadian Technical Security Conference (CTSC)
 - Software Engineering and Development
- **2015** | Canadian Technical Security Conference (CTSC)
 - Software Defined Radio (SDR) Innovation
- **2014** | Canadian Technical Security Conference (CTSC)
 - Software Defined Radio (SDR) Innovation
- **2013** | Espionage Research Institute International (ERII).
 - Glen H. Whidden Award for Best New TSCM Product.
- **2013** | Canadian Technical Security Conference (CTSC)
 - Software Defined Radio (SDR) Innovation
- **2012** | Canadian Technical Security Conference (CTSC)
 - Industry Design and Innovation



Innovation is Simply the Beginning!

Worldwide Distribution Partners

Sales in 36 Countries

- Strategic non-exclusive authorized distribution partners located worldwide, to facilitate commercial and government procurement requirements.
- Centralized licensing and technical support delivery remains firmly in Canada.
 - Proprietary source code is tightly controlled in Canada, no foreign sub-contracting of the software engineering or development process is permitted.
- International distribution network is ideal for government national security apparatus who require in-country procurement.



Innovation is Simply the Beginning!

Canadian Based Technical Support Group (TSG)

- The most important aspect of software based resources, is the type and level of technical support.
 - Technical support is delivered by our Technical Support Group (TSG)™, consisting of Canadian based technical operators and software engineers.
- Technical support is delivered via email and remote desktop software.
 - Level I support is provided by a qualified Technical Security Specialist (TSS) for most support issues and may be elevated to Level II support, if required.
 - Level II support involves our software engineering group lead developer, as required.
- There is no charge for our standard email or TeamViewer based technical support delivery on an as required basis.



Innovation is Simply the Beginning!

Simplified Software Licensing

No Annual License Maintenance Fees

- A single software license is considered permanent across two (2) computers within a generational life cycle.
- No annual maintenance or upgrade fees within the same software generation.
 - Software licensing supports, Dual Receiver Operation (DRO)[™] at the time of purchase, or in the future, as deployment needs and requirements change.
 - This capability provides a scalable, budget friendly TSCM platform.
- Updates, bug fixes, most new features and enhanced functionality are provided free of charge.
- Optional generational software releases may require an upgrade fee.
 - Anticipated in 3 to 5 year generational intervals.



Innovation is Simply the Beginning!

Custom Software Features

New Functionality Ready!

- Our Software Development Group (SDG) can design, develop, and seamlessly implement custom end-user features and functionality.
 - Our quickest turn-around for a request for a new feature by a government entity, was just 12 hours allowing the feature to be field deployed the following day.
- Our experienced software design, engineering, and development group is operator focused.
- End-user input, new features ideas and improved functionality are strongly encouraged and welcomed.
 - Operators have been complaining for years about the lack of TSCM specific features across industry manufacturers, now you have a voice!
 - Perhaps you will see your idea in the next major software release?



Innovation is Simply the Beginning!

*Lower Cost of
Ownership*

*Ownership
Cost
Matters!*

- Lower overall cost of system level ownership.
 - Flexibility, scalability, upgradability are all easily managed in a budget friendly procurement process.
- Future component upgrades can be better managed as deployment requirements and developing threat technology changes.
- Software and Firmware are easily updated to strengthen and extend the anticipated operational life cycle of the system.
- Equip the team with individual Rapid Deployment Kits (RDK).
 - Not typically possible with expensive single box solutions.



Innovation is Simply the Beginning!

*Budget
Friendly
Platform*

*Professional
Features
Matter!*

- All field team members can be equipped with a dedicated, RF Rapid Development kit (RDK).
- Promotes greater efficiency and enhances operator situational awareness.
 - Significantly increases the Probability of Detection (POD) when on-demand field ready deployment is realized.
- Promotes stronger operator familiarization and field effectiveness in deploying and effectively detecting RF threats.
- Cost aside, it is the powerful and innovative features and functionality that brings real value to the ownership of the Kestrel TSCM[®] Professional Software | Signals Intelligence Support System (SISS)[™].



Innovation is Simply the Beginning!

Typical Software Costing with all Options

*\$5,085.00
(CAD)*

- Kestrel TSCM Professional Software license
 - \$3,495.00 CAD
- Automatic Export Control (AEC)[™] | OPT AEC
 - \$495.00 CAD
- Command Line Programming (CLP)[™] | OPT CLP
 - \$400.00 CAD
- Autonomous Measurement and Collection System (AMCS)[™]
 - \$695.00 CAD



Innovation is Simply the Beginning!

Mission Agnostic by Design

- Field deployment ready for virtually any RF based surveillance or monitoring requirement.
 - Support for a wide range of SDR hardware options to meet the intended end-user mission specific deployment requirements.
- Convertible industry disruptive technology adapts instantly to changing mission parameters and requirements.
- Technical, analytical and tactical requirements associated with TSCM, RSSM™, and SIGINT deployment, require flexibility, versatility, and scalability.
- Places the technical operator firmly back in command of the analytical process.



Innovation is Simply the Beginning!

Low Profile

*Travel
Friendly*

- Completely portable as a component based spectrum surveillance and monitoring system analyzer and Signal Intelligence Support System (SISS).
 - Travels well in a standard laptop bag meeting low profile deployment requirements.
- Easily carry a laptop, dual USB powered search receivers, and antennas in a standard shoulder laptop bag.



Innovation is Simply the Beginning!

Future Proof Architecture

Upgradable and Scalable

- SDR hardware, host computer platform and antenna technology are field upgradable as mission requirements change.
 - Kestrel can take on many different deployment roles on-the-fly maximizing deployment efficiency with less resources during travel.
- Cyclic upgrade budgeting is easy, as there is no requirement to replace the entire system.
 - Software Defined Radio (SDR) is easily upgraded to include the latest application level tools and resources.
- SDR technology is obsolescence proof, extending the life cycle indefinitely, by replacement or upgrade of hardware components, as may be required.



Innovation is Simply the Beginning!

Field Serviceability

- Swapping out component level hardware is fully supported, and considered a major benefit.
- Often it will not be required to return what might be a single primary resource to the manufacturer for service.
 - Software Defined Radio (SDR) hardware is reliable and robust.
- Lower cost, promotes the ability to maintain multiple system, including a secondary, or backup system.



Innovation is Simply the Beginning!

Scalable Solution

Versatility by Design

- Start small or start big, based on budgetary and anticipated deployment requirements.
- Maintain building block components for maximum deployment versatility.
- Build redundancy and Fail-Safe operation at the system level.
 - Generate new sustainable revenue streams by adding additional professional services that are fully scalable, and cost effective for the end-user, such as Remote Spectrum Surveillance and Monitoring (RSSM)[™].



Innovation is Simply the Beginning!

Host Computer Versatility

- Takes advantage of the latest COTS computing hardware.
- Desktop, Laptop, Tablet, and Micro PC ready to meet specific deployment requirements.
 - Provides the ability to upgrade as new and more powerful computing technology becomes available.
- Can be installed on a backup computing platform for fail-safe redundancy and to facilitate the analysis cycle and for post collection report generation.



Innovation is Simply the Beginning!

*Computer
Upgradable*

*Future
Proof*

- Upgrade, replace and customize the host computer hardware at any time.
 - The host computer doubles as an essential multi-mission and multi-tasking resource.
- One host computing platform supports a variety of mission requirements, which allows for greater efficiency during travel and deployment.
- Maximizes the operational life-cycle of the entire system.



Innovation is Simply the Beginning!

SDR Hardware Upgradable

Future Proof

- The receiver or analyzer is the heart of the systems capability, enhanced only by the capabilities of the software.
 - You are never stuck with obsolete hardware, simply upgrade or add the latest SDR hardware and utilize older receivers as backup resources or additional revenue generating deployment tools.
- Upgrade, replace, or change the receiver or spectrum analyzer as mission requirements change.



Innovation is Simply the Beginning!

USB 2.0
USB 3.0
USB 3.1

Fiber-Optic
Remote

LAN Remote

Innovation is Simply the Beginning!

- Direct host computer connectivity and wide range of optional hardware remote media conversion modules, allows for flexibility for unique deployment applications.
 - Support for USB 2.0 connectivity powered by the host computer.
 - Support for USB 3.0 / USB 3.1 connectivity powered by the host computer.
 - USB 3.0 to 100 Meters of 50 / 125 Multi-Mode Fiber-Optic Photonic Cable.
 - USB 2.0 to 100 Meters (or greater) of CAT 5e / Cat 6 LAN Cable.
 - USB 2.0 to 100 Meters (or greater) of 50 / 125 Multi-Mode Fiber-Optic Photonic Cable.



Powerful Operator Centric User Interface (UI)

- Our intuitive, user-friendly, work-flow based, operator centric UI places all essential and commonly accessed display and control groups up-front.
 - Dynamic control linking, the use of Artificial Intelligence (AI) and predictive logic, intuitively optimize settings that remain under full operator control during runtime collection, analysis and review.
- The operator can setup, navigate, view and analyze, multiple instances of independent spectrum and waterfall data in familiar tabbed windows.



Innovation is Simply the Beginning!

Global Positioning System (GPS)

Software and Hardware Support

- Support for generic USB GPS Receiver integration.
 - Automatically capture GPS coordinates to provide precise positional data utilized to resolve collection locations.
- Provides advanced RF capability for mobile Search and Rescue (SAR), Interference Analysis (IA), and Spectrum Regulatory assignments.
 - Provision for the manual entry of coordinates in the event a GPS signal is not available is supported.



Innovation is Simply the Beginning!

*Multi-
Tasking
Capability*

*Means
Mission
Flexibility!*

- Designed to meet or exceed Commercial, Government, and Military, Technical Security (TSEC) requirements.
- Supports, mission based Signals Intelligence (SIGINT), Technical Surveillance Countermeasures (TSCM), and Remote Spectrum Surveillance and Monitoring (RSSM)™ assignments.
 - Kestrel® is an ideal platform for mobile applications, such as our Mobile Monitoring and Analysis Platform (MMAP)™ built around the Ford Explorer.



Innovation is Simply the Beginning!

Virtual Reality Floor Plan and Mapping Import

Heat Mapping

- Import architectural floor plates, 3D renderings, facility riser plots, facility site plans, geographical maps, and virtual reality photographs.
 - Drag-and-Drop antenna locations and Rx positional ICONS onto any imported image.
- Default location block with calibration grid, when no floor plan, map or image is available.
- Powerful Heat Mapping Display (HMD)™ supported by Dual Receiver Operation (DRO)™, and Multiple Receiver Operation (MRO)™.
 - Powerful geo-location algorithms, including Gaussian, Inverse Square, and Differential Free Space Power Loss (FSPL).



Innovation is Simply the Beginning!

Kestrel Project Templates (KPT)

- Routine deployment is easy with our custom project template builder and editor.
- The operator can create, edit and store any number of project templates, and save the current project as a template.
 - The ability to reuse complex templates significantly simplifies the initial setup process.



Innovation is Simply the Beginning!

IQ Record IQ Playback Loop IQ

IQ Conversion Utility

- IQ capability is the backbone of both analog and digital signal analysis capability.
 - IQ Record and Playback is supported as a proprietary KIQ file, or a standard CSV IQ format.
- IQ Loop capability for extended signal analysis.
- IQ Conversion Utility easily converts standard CSV IQ files to Kestrel IQ (KIQ) file format.
- Automatic Export Control (AEC)[™] | OPT AEC supports the ability to Trigger and Record IQ samples.
- Command Line Programming (CLP)[™] | OPT CLP supports a range of audio base alerts, system driven actions, and both email and SMS alerting.



Innovation is Simply the Beginning!

IQ Import and IQ Export

- KIQ and CSV Export of IQ Data.
- KIQ and CSV Import of IQ Data.
- Support for CSV IQ to KIQ file conversion.
- Support for wideband capture and selective playback and analysis of IQ Data.
 - IQ data files may be rendered for playback analysis, without interrupting the runtime collection of spectra.
 - No receiver or analyzer required for playback of historical IQ files.
- Captured IQ data can be imported into an Arbitrary Vector Signal Generator (VSG), allowing real-time training potential in signal analysis.



Innovation is Simply the Beginning!

Colour Coded Automatic Threat Lists (ATL)

- Unique, colourful Automatic Threat Lists (ATL) bring clarity to complex data relationships.
- Support for manual entry of operator defined Signals of Interest (SOI).
 - Innovative Signal Combining Technology (SCT)™ simplifies the analytical process.
- Ability to customize ATL data table elements.
- Support for CSV export of all ATL table data.



Innovation is Simply the Beginning!

Integrated Signal Profile Database

- Integrated Signal Profile Database (SPD), enhances situational awareness.
 - Identifies and provides hierarchy of fundamental Vs Harmonic associations.
- The SPD feature aids in the review and analysis process.
- Individual signal profiles can be rendered to the Session Report Generator (SRG).



Innovation is Simply the Beginning!

*Dual Rx
Ready*

*Multiple Rx
Hand-Off
Capability*

- A standard software licence is Dual Receiver Operation (DRO) ready, connect any two (2) supported Rx on a signal software licence.
 - Hand-Off the Spectrum and Demodulation process across any supported receiver or analyzer instantly.
 - Seamless multiple receiver Hand-Off with real-time automatic Rx synchronization.
- Operator programmability permits each Rx to be assigned independent mission parameters, including sweep, demodulation and analysis.



Innovation is Simply the Beginning!

Multiple Band Capability

Tabbed Windows

- Innovative colour coded Spectra band tabs promote exceptional operator situational awareness.
 - Quickly, identify the status of each band and receiver.
- Support for any number of independently controlled tabbed Spectra windows.
- Support for any number of Spectra bands, across multiple receivers and analyzers.



Innovation is Simply the Beginning!

Support for (10) Software Defined Radio (SDR) Manufacturers

- Kestrel Support Profiles (KSP)™ for Anritsu, CRFS, Rhode & Schwarz, Shearwater, Signal Hound, Tektronix, ThinkRF, Keysight, EPIC and SDRPlay 2 Pro.
- Future ready architecture support for the next generation of SDR receivers and spectrum analyzers.
 - End-user SDR receiver hardware support architecture to 325 GHz.



Innovation is Simply the Beginning!

Current Receiver Support

*1 Hz to
50 GHz*

- Support for 3.5 GHz, 4.4 GHz, 6 GHz, 6.2 GHz, 7.5 GHz, 8 GHz, 9 GHz, 12.4 GHz, 14 GHz, 13 GHz, 18 GHz, 20 GHz, 27 GHz, 30 GHz, 32 GHz, and 43 GHz, and 50 GHz.
- Additional Kestrel Support Profiles (KSP)[™] are currently under Development.
- Support for entry level, intermediate and advanced professional level hardware options.
 - Ability to support customer specified SDR hardware via a Kestrel Support Profile (KSP)[™].



Innovation is Simply the Beginning!

Powerline Carrier (PLC)

Broadband Power Line (BPL)

- Software profile for PLC and BPL unintentional radiator verification.
- Third-Party hardware support for PLC | BPL signal detection and characterization.
- Advanced hardware sensors and probes are currently under-development to accommodate additional testing protocols.
- Power Line Carrier (PLC) and Broadband Power Line (BPL) analysis supported.
- Pending Release;
 - Infrared (IR) Optical Modulation Detection
 - Visible Light (VL) Optical Modulation Detection.
 - Electro-Magnetic Field Density.



Innovation is Simply the Beginning!

Analog Demodulation and FFT Visualizer

- Demodulated signal analytics ready, for AM, FM, and USB, LSB modes
- Additional analog and digital demodulators are currently under development.
 - Sophisticated signal level FFT Visualization of the IF Spectrum, IQ Diagram, IQ Vs Time, RSSI History, Analog RSSI, Oscilloscope, and AF Spectrum.
- Multiple channel audio overlay with RSSI Tone Locator (RTL) feature for enhanced signal localization.
- AF Filters, IQ Recording and Playback, IQ Playback loop support.
- Audio sample capture and storage, utilizing the Kestrel Wave Recorder (KWR).



Innovation is Simply the Beginning!

Digital Demodulation and Protocol Analysis

- Pending official release effective with v1.39xx code.
 - Additional new demodulators, including both Analog and Digital formats.
 - Video demodulation and visualization rendering
- Demodulation and FFT visualization of key digital modulation modes.
- Common protocol analysis for key modulation types and formats.
 - Standard included COTS digital demodulation for commercial TSCM technical operators.
 - Advanced digital demodulation and protocol analysis for authorized end-users, including government, law-enforcement, military, and regulatory entities.



Innovation is Simply the Beginning!

Minimum Detection Amplitude (MDA)

- Establishes an operator defined threshold for threat detection.
 - Automatically captures continuous and periodic signal events that exceed operator threshold.
 - Absolute and Relative modes provide flexibility for narrow bandwidth and wide bandwidth Range of Interest (ROI) runtime collection.
- Generates an Automatic Threat List (ATL) of all signal events that exceed operator threshold.



Innovation is Simply the Beginning!

Chirp Threat Mode (CTM)

Threat Detection Algorithm (TDA)

- Positively detects, flags and characterizes analog audio transmitters within the defined target area.
 - Flags potentially hostile analog signal events containing room audio for further operator analysis.
- Colour coded CTM events flagged for exceptional clarity.



Innovation is Simply the Beginning!

Harmonic Signature Threshold (HST)

- Positively identifies and flags harmonic events against CTM confirmed hits.
 - Automatic Threat List (ATL) classification of harmonic events.
- Colour codes harmonic events flagged for exceptional clarity.



Innovation is Simply the Beginning!

Spectrum Baseline Logging (SBL)

- Establishes an operator defined threshold for detection and capture of the baseline ambient RF spectrum.
 - Automatically captures continuous and periodic signal events that exceed operator threshold.
- Generates an Automatic Threat List (ATL) of all signal events that exceed operator threshold.
- Colour codes SBL events flagged for exceptional clarity.



Innovation is Simply the Beginning!

Location Differential Signal Analysis (LDSA)™

Import Comparative Bands

- LDSA™ is a powerful feature that allows real-time and post collection comparative analysis of location based spectra and waterfall trace data.
- The operator can import comparative spectrum trace data from any previously captured historical Kestrel Project File (KPF)™.
 - Echo LDSA™ is supported permitting real-time differential detection across the entire runtime Range of Interest (ROI) against any previously captured historical trace.
 - Live View Analysis (LVA)™ and all navigation controls remain available.



Innovation is Simply the Beginning!

Time Differential Signal Analysis (TDSA)™

- TDSA™ is a powerful new technology feature that allows real-time and post collection comparative filtering and analysis of operator defined time period analytics.
- The operator can define time block comparative of single and multiple locations, across multiple receivers.
 - TDSA™ allows the technical operator to quickly isolate periodic burst signal events, that occur intermittently.
 - TDSA™ is supported across all existing features and functionality.
 - TDSA™ is supported across all display features, including our unique Signal of Interest (SOI) isolation display.



Innovation is Simply the Beginning!

Receiver Differential Signal Analysis (RDSA)™

- RDSA™ is a powerful feature that permits the independent operation of multiple radios for real-time multiple radio live spectrum overlay.
 - RDSA™ allows geolocation across multiple radios.
 - Each radio is treated as an independent resource when RDSA™ is invoked.
- The operator can validate RSSI levels across each radio and drop in live spectrum from any radio, band or sub-band on the fly as a PEAK, AVERAGE, or REAL-TIME display.



Innovation is Simply the Beginning!

Kestrel Heat Mapping Display (HMD)™

- Our HMD™ display provides the ability to import and display any floor plan, geographical area map, 3D rendering, vertical riser, or virtual reality photograph.
 - The operator can drag and drop the radios as an overlay to invoke three (3) powerful algorithms to create a powerful geolocation resource with as few as two (2) radios.
 - The display can be scale calibrated directly from the HMD™ window.
 - The ability to conduct “walk and tap” heat mapping is fully supported for wireless survey evaluations at the facility level or wide geographical areas.
- Algorithms include Gaussian Weight, Inverse Square, and Differential Free Space Power Loss (FSPL) modeling and “walk and tap” Analytics.



Innovation is Simply the Beginning!

Live View Analysis (LVA)

- Support for real-time Signal of Interest (SOI) analysis, without interrupting the runtime collection process.
 - Open and navigate historical files for playback of Spectra and Waterfall data during post review and analysis.
- All Positional Zoom Control (PZC), Horizontal Range Control (HRC) and spectrum display features are available during runtime and post event analysis.



Innovation is Simply the Beginning!

Live View DSA (LVD)

Real-Time (Echo) DSA

- Display the current live collection location against one or more historical location based traces without interruption of the runtime collection process.
- Unique echo mode permits Live View DSA (LVD) to display a real-time differential trace between the current location and any available historical trace data.
 - Permits any historical trace to be run as a direct comparative against the current runtime trace location.



Innovation is Simply the Beginning!

Automatic Export Control (AEC)

OPT AEC

- Support for periodic export of MDA, SBL, CTM, HST, and DAA threat and signal list data to CSV file format.
- Export all data on an operator defined activity schedule, or export only changes since the previous timed export event.
- Triggered export of CSV based RSSI, Spectra, and IQ, including event pre/post buffer DAA Exceedance, DAA Loss, New MDA, New SBL, New CTM, and New HST.
 - Operator defined CSV table level programming of any available data element.



Innovation is Simply the Beginning!

Command Line Programming (CLP)™

OPT CLP

- There are three (3) powerful elements to the CLP™ feature.
 - 1 | Operator defined, application wide audio alert programming.
 - 2 | Operator defined, system level triggering for hand-off to IQ analyzers, smart ECM interaction, third-party demodulation and analysis programs, and automatic screen capture, etc.
 - 3 | Network alerting package that permits operator defined EMAIL and SMS network notifications.
- The CLP™ feature works standalone, or in concert with the Automatic Export Control (AEC)™ and the Dynamic Alert Annunciator (DAA)™ to provide a very powerful autonomous collection and reporting system.



Innovation is Simply the Beginning!

Remote Spectrum Surveillance and Monitoring (RSSM)

- Ready to deploy on-the-fly in a TSCM or RSSM role.
 - Remote Network access via LAN, DSL, and 3G / 4G / LTE Modem.
- Secure RSSM™ Command and Control Management via TeamViewer, or other suitable third-party Remote Desktop Software (RDS).
- Setup, Programming, Remote Reboot, Signal Level Review, Analysis, Characterization and Classification, all via a Network Connection.
- Unattended collection for days, weeks, or months, utilizing our unique write compression capability.
- Analysis is easily accomplished via a network connection and Remote Desktop Software (RDS).



Innovation is Simply the Beginning!

Advanced Signal Intelligence Database (ASID)

FCC and IC TAFL



Innovation is Simply the Beginning!

- FCC and TAFL Frequency Licensing Databases included as a standard licencing feature.
 - FDB overlay displays Free Space Power (FSP), as well as the Bearing To / From Station.
 - Search criteria filters for Free Space Power (FSP), and geographical area coordinates in Nautical miles, or both.
 - Supports triangulation based on RSSI Rx DSA locations, selectable at the signal level within the FDB window.
 - Mapping visualization support for Google Maps, Google Satellite and Street View.
 - Static image positional orientation overview reference map image generator.
 - FDB updates for FCC and TAFL databases is available for operator download
- Selective FDB zoning across both FCC and TAFL data to facility regional geographic boundaries, and Canada, United States of America border regions.

Operator Signal List (OSL)

- Support for an unlimited number of operator defined and maintained, Operator Signal Lists (OSL) at the application level.
- Ability to maintain any number of OSL databases at the facility level, for known hostile signals, known friendly signals, manufacturer specific frequency data.
 - Display currently loaded OSL as a spectrum overlay to quickly identify matching signal events within the currently displayed spectra band.
- Individual OSL database files can be easily transported to another system, if required.
- The ability to hide or view the OSL graphical overlay is supported on the User-Interface (UI).



Innovation is Simply the Beginning!

Channel Profile Masks (CPM)™

- Allows official bands, sub-bands, Range of Interest (ROI) to display as a graphical overlay for easy identification.
 - Band level and channel level programming is supported utilizing the CPM™ Editor.



Innovation is Simply the Beginning!

DSA Trace Limit

Trace Count Limit

Activity Event Alarm

- The DSA Trace Limit and Trace (Time) Count feature allows the technical operator to define the Trace Limit and Trace (Time) Count, for the current location.
 - A activity event alarm will sound at the completion of the capture process, prompting the operator to move to the next DSA collection location.
 - This allows the operator to tackle other tasks during the collection process.
 - At the end of the defined cycle, the software locks the current location and sounds the process event alarm.
 - The operator can override the alarm and restart collection at the same location or move to the next location.



Innovation is Simply the Beginning!

Multiple Instances of the Kestrel Software

- The ability to open a second or third instance of the software permits uninterrupted collection, and historical project analysis and review, at the same time.
 - Establish a runtime collection and complete analysis and report generation within a second instance of software on the same host computer.



Innovation is Simply the Beginning!

RSSI Tone Locator (RTL)

- RSSI based direction-finding is simplified at the Signal of Interest (SOI) level.
- Activate the amplitude based RSSI Locator Tone (RTL) as a standalone walk-about direction-finder.
 - Support for multiple channel audio supports the ability to monitor the Signal of Interest (SOI) audio and the RTL tone independently or simultaneously.
- Utilize FFT Visualization to determine the RSSI levels of the signal source.



Innovation is Simply the Beginning!

Kestrel Wave Recorder (KWR)

- Record audio samples of both analog and digital Signals of Interest (SOI) during the demodulation process.
 - Files are saved as a common WAV format for playback without the Kestrel[®] software.



Innovation is Simply the Beginning!

Kestrel TSCM Professional Software Setup Wizard

- Establish a runtime environment with a highly structured format that is export ready for report generation.
- Establish virtually all necessary programming parameters within a single Setup Wizard.
 - Project Description
 - GPS Coordinates
 - Activity schedule
 - Time Zone
 - DSA Trace count limit
 - Event Alarm
 - Collection Duration
 - Antenna Locations
 - Spectrum Bands



Innovation is Simply the Beginning!

Project Activity Scheduler

- The ability to precisely schedule multiple bands across multiple receivers totally independently is fully supported.
 - Create hardware independent start and stop cycles for individual bands across any receiver.
 - Programmable Project Activity Scheduler event alarm.



Innovation is Simply the Beginning!

Sub-Harmonic and Harmonic Calculator

- Innovative Sub-Harmonic Calculator displays SOI harmonic relationships from $1 / H_2$ to $1 / H_9$.
- Provides unique threat detection opportunity below the fundamental frequency.
 - Harmonic Calculator displays SOI harmonic relationships from H_2 to H_9 based on an operator defined fundamental frequency value.
- Support for Drag-and-Drop of any displayed table value to the User-Interface (UI) and Demodulator.



Innovation is Simply the Beginning!

File Write Compression Management

- Supports real-time write-to-storage capability for fail-safe reliability.
- Write to Internal or External HDD.
- Write to Internal or External SSD.
 - Powerful write compression algorithm for extended TSCM / RSSM deployment.
- Increases file management efficiency and results in a significantly smaller project file size footprint.
- Captures all spectra and waterfall peak data elements at the (1 / n=?) value and writes a single Kestrel Super Trace (KST).



Innovation is Simply the Beginning!

Kestrel Super Trace (KST)

- The Kestrel Super Trace (KST) is a function of write compression.
 - If $(1/n=100)$ is defined by the operator, all of the peak data captured from the first 99 standard traces will be written to a single trace (100), defined as a Kestrel Super Trace (KST).
- All discrete peak trace data is captured and displayed during analysis as a single KST.
- Successive time stamps reflect the KST and therefore a minor displacement in event time accuracy, which varies with the $(1/n=?)$ value progression, will occur.
 - The result of $(1/n=100)$ is a storage footprint 100 times smaller, bringing greater efficiency to the analytical process.



Innovation is Simply the Beginning!

Triggered File Write Management

ARM and REC

- Support for triggered capture of Signal of Interest (SOI) events.
- Results in capturing only critical SOI events for analytical analysis.
 - Spectrum Analyzer (SA) only mode, when write to storage is not required.
- ARM is a triggered REC mode that records triggered DAA exceedance or loss during runtime for any number of active DAA alert zones.



Innovation is Simply the Beginning!

Dynamic Alert Annunciator (DAA)

- Real-time interactive PASS / FAIL spectrum event status monitoring display.
- Real-time unattended or operator assisted event status capture and alerting.
 - Unlimited number of operator defined Alert Zones.
 - Detect Loss and Exceedance events in real-time.
- Export DAA Threat / Signal List data to CSV file format.
- View event based statistical details at the signal level.
- DAA triggered IQ capture and recording.



Innovation is Simply the Beginning!

Software Programming and Operation Manual (SPOM)

- Our SPOM documentation is one of the most thorough software technical manuals in the industry.
- SPOM is authored and maintained by technical operators for technical operators.
- Serves as not only an operational document, but rather a self-guided operational training manual.
 - Quick deployment charts are available for essential field deployment tasks.



Innovation is Simply the Beginning!

Session Report Generator (SRG)

- Innovative Session Report Generator, based on the TSB 2000 (Technical) Standard TM.
- Intuitive SRG interface, supports multiple reports, for reader specific parameters.
 - Support for On-the-Fly session report generation.
- Output saves directly too an easy to handle PDF format.
- Import feature for target area photographs.
 - Customizable report cover page logo.



Innovation is Simply the Beginning!

File Management

Fail-Safe Operation

- All captured spectra and waterfall trace data is written to the storage media in real-time, unless otherwise programmed by the operator.
 - All single session runtime files are appended to a single Kestrel Project File (KPF) directory.



Innovation is Simply the Beginning!

Powerful Positional Zoom Control (PZC)

- The most powerful spectrum navigation capability in the industry.
 - Navigation is intuitive and operator centric.



Innovation is Simply the Beginning!

Powerful Horizontal Range Control (HRC)

- Custom programmable HRC provides powerful display range control for precision analytical review.
 - Innovative HRC database derived from the operator defined Spectrum Profile File (SPF) database.
- Precise on-the-fly navigation and display of specific allocation bands or frequency ranges without the need to set the start and stop frequencies manually.



Innovation is Simply the Beginning!

Probability of Intercept (POI) Calculator Display

- A realistic real-time POI tool provides immediate runtime analysis and feedback to the operator as to the Probability of Intercept (POI) within the current runtime state.
 - This information is extremely important for the technical operator to assess the ability of the radio to capture extremely fast burst signal events.
 - For example, if the current sweep speed is 57 mSec and a 10 mSec burst occurs, the Probability of Intercept (POI) is likely only about 17% and a 1 mSec event would realize a POI of just 1.7%
 - A burst of 57 mSec (or higher) would have a 100% POI in the above example with a 20 GHz ROI at 20 kHz RBW with a sweep speed of 350 GHz per second with the Signal Hound SM200A Spectrum Monitoring Receiver.



Innovation is Simply the Beginning!

Enhanced Video Demodulation (EVD)™

*Pending
Release...*

- Video demodulation provides a check and balance method of positively identifying wireless video transmissions detected during a sweep, or signals suspected to contain video content.
 - Supports the ability to demodulate Power Line Carrier (PLC) video senders.
- Enhanced Audio Oscilloscope Display (OSD)™ filtering and control capability in support of the video demodulation process.



Innovation is Simply the Beginning!

Tactical Self-Destruct Mode (TSD)™

OPT TSD (Restricted)

- For active deployment in potentially hostile environments, the Kestrel TSCM® Professional Software includes a multiple threat level Tactical Self-Destruct (TSD)™ capability.
 - Level I
 - Removes the Activation Security Key (ASK)™, the application, and all historical and current runtime data.
 - Level II
 - Removes the Activation Security Key (ASK)™, and the application.
 - Level III
 - Removes the Activation Security Key (ASK)™ only.
- The ability to remotely initiate the TSD™ feature is supported with remote network connectivity.



Innovation is Simply the Beginning!