

“Remote Spectrum Surveillance and Monitoring (RSSM)[™] is an Advanced TSCM Requirement — NOT an Option!”

August 2020 | Issue 62

Technical Research and Standards Group

Paul D Turner, TSS TSI

New Technology = New Terminology!

Remote Spectrum Surveillance and Monitoring (RSSM)[™] is a key feature of the Kestrel TSCM[®] Professional Software and is decidedly utilized for complex electro-magnetic radio-frequency interference detection, capture, identification and localization of intentional and unintentional signal events leading to a timely resolution.



Advanced concepts of RSSM[™] are used to determine spectrum availability for mission critical, telemetry, radio-frequency applications and wireless communications to characterize Signals of Interest (SOI), to achieve intelligence-based traffic analysis,

determine emitter appearance patterns and for signature analysis requirements on a 24/7/365 basis to confirm that operational frequencies, bands and sub-bands are available for authorized use, and also from a technical security perspective to detect, identify and resolve potentially hostile emissions and unintentional radiator vulnerabilities.

Spectrum regulatory applications include the management, control and authorized use of the licensed and unlicensed spectrum. The RSSM[™] methodology is based on the concept of advancing the Probability of Detection (POD) beyond the snap-shot style deployment typical of most technical security applications. The national security apparatus cannot rely on TSCM snap-shots a few times a year and SIGINT based intelligence operations and counter-terrorist applications for example, demand around the clock technical surveillance.

When RSSM[™] is utilized the POD is exponentially enhanced far beyond a few hours of operator assisted analysis a few times, or hours a year.

If a Signal of Interest (SOI) does not appear during the operator assisted monitored time frame, the hostile signal event, unintentional radiator, electro-magnetic interference, or other spectrum event will go undetected and unresolved.

RSSM[™] extends the POI and enhances operator analytics.

Continuous managed RSSM[™] is the only way to ensure that all detectable spectrum events are detected, captured, identified, proactively characterized, localized and ultimately resolved. RSSM[™] allows the technical operator to observe the spectrum in real-time, locally or remotely and capture spectra, RSSI levels, configure alerts that trigger and capture IQ samples for more detailed analytics, notify the technical operator via Email / SMS messaging, and efficiently write all data to storage for historical review, playback and analysis from 1 Hz to 54 GHz (hardware dependent).

The ability to capture all of the spectrum data across the entire hardware Range of Interest (ROI), define multiple capture bands, sub-bands and assign priority spectrum bands across multiple radios, builds a detailed historical record of what might be seemingly unimportant spectrum events that may become significant at a later date and time. The ability to deploy new software resources to allow the technical operator to compare historical spectra from any number of supported SDR radio sources, dates, times or locations, is fully supported within the Kestrel TSCM[®] Professional Software.

During operator assisted spectrum analysis, the operator rarely can form conclusions about what is normal and what is not normal across the spectrum[™]. RSSM[™] allows the technical operator to better recognize and identify Signals of Interest (SOI) against the so-called normalized RF ambient spectrum environment.

The radio-frequency spectrum is a living, dynamic and ever changing work environment of the professional technical operator, and as such, the cold-war era snap-shot style approach is generally obsolete by today's threat technology and applied standards within a moving target threat model.

During the pandemic, many of our clients that rely on monthly inspection schedules moved from routine operator assisted inspections to our managed Remote Spectrum Surveillance and Monitoring (RSSM)[™] for critical infrastructure, allowing us to operate at close to 70% of our normal inspection capacity.

With the enhanced fiber-optic capability of the recently released Signal Hound SM200C Spectrum Monitoring Receiver, our ability to remote the SDR hardware across the client's network at distances of 10, 30, 40 or even 80 Kilometers is now a reality across vast corporate, government and military mission critical infrastructure at all security levels.

**Remember, in a Moving Target Threat Model the
Technical Operator is the Spectrum Analyzer...**

Kestrel TSCM[®] Professional Software

Introducing the Signal Hound SM200C (1 THz) Spectrum Monitoring Receiver | SFP+ 10GbE Photonic Network

Professional Development TSCM Group Inc.

Technical Security Branch (TSB)

Kestrel IQ Recorder Mode

The Kestrel TSCM[®] Professional Software includes a powerful IQ Recorder mode. The ability to record, playback and analyze IQ signals is essential in a modern and complex signal environment providing the technical operator or signal analyst with powerful real-world signal content that can be looped and edited using our unique Time Reference Sub-Sampling (TRSS)[™] tool and our CSV to KIQ file format conversion utility. The ability to capture, playback and loop analytical IQ as a KIQ, CSV, WAV, XML, DGZ, and DGZM file formats are fully supported at the application level. IQ captured using the Signal Hound Spike software and the Anritsu Field MasterPro (MS2090A) DGZ and DGZM IQ file formats are fully compliant with Kestrel[®].

Signal Hound (SM200C) SFP+ Photonic | Thunderbolt 3

The Kestrel TSCM[®] Professional Software now supports the new Signal Hound SM200C Spectrum Monitoring Receiver across an SFP+ Short Range (Copper to Copper), or Photonic (Fiber-Optic to Fiber-Optic),



or (Fiber-Optic to Thunderbolt 3) connectivity for far superior local and remote TSCM | RSSM[™] | SIGINT | ELINT | and | COMINT | applications. Thunderbolt 3 connectivity allows the SM200C to be run on a laptop computer with a dedicated Thunderbolt 3 port (transfer rates of (up to) 40 GB / Second), utilizing a multi-mode SFP+ conversion process. Transfer speeds can and will vary with host computer specifications and other factors, however, if you ever dreamed of data transfer speeds just shy of 9 Gb / second across a 10 GbE SFP+ connection, your dreams have now come true. The Kestrel Support Profile (KSP)[™] for the Signal Hound SM200C is now available for the SONNET SOLO10G SFP+ Thunderbolt 3 adapter and the QNAP SFP+ Thunderbolt 3 adapter across a direct fiber-optic (LC) to (LC) multiple (OM3) 50/125 photonic cable utilizing the SR module (300m). The laptop selected for the initial testing is a Gigabyte (Aero) running an Intel i9 10980HK processor, 1 TB SSD and 64 GB RAM and the latest Windows 10 Professional operating system.

An entirely new disruptive resource for TSCM professionals!

Kestrel TSCM[®] Professional Software is innovative industry leading, disruptive technology, sold in 46 countries worldwide.



Innovation is Simply the Beginning!

Visionary Software Beyond the Technology Limitations...

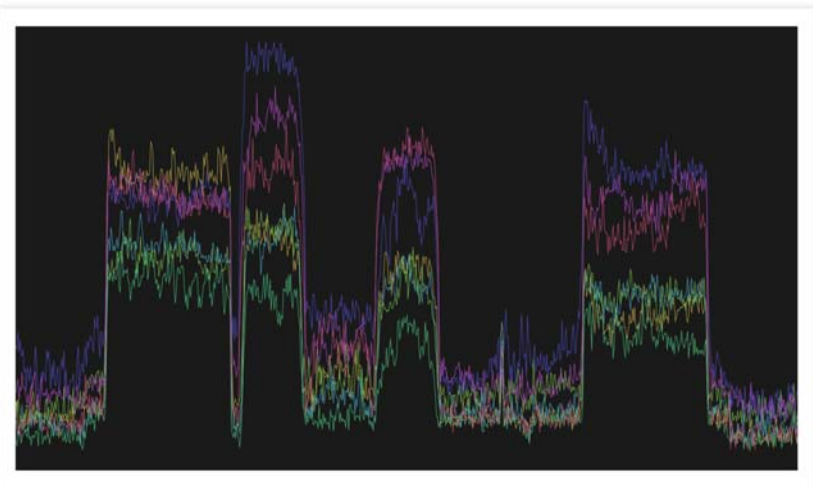
| www.pdtg.ca | www.kestreltscm.com | www.ctsc-canada.com |

| Paul D Turner, TSS TSI | President | CEO | pturner@pdtg.ca

| Andrzej Wolczanski, TSS | awolczanski@pdtg.ca

| Gabriele Conflitti, TSS | gconflitti@pdtg.ca

| Carol Fairbrother | CTSC Event Manager | cfairbrother@pdtg.ca



They say that the value of art is in the eye of the beholder! Every day a new never before seen artistic spectrum is developed within the Kestrel TSCM[®] Professional Software somewhere in the world. Whether impressionist, contemporary or abstract, the RF spectrum brings a commonly understood meaning for every professional technical operator who views it...