



Spectrum Management: From Detection to Decision

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Make the Most of Your Field Time



Carry precision
into the field



All-in-one
analyzer



Built for harsh
environments



Built for the Field

Engineering from the ground up



Real-world field requirements shape every design decision.



The Goal

Strict field requirements
to ensure performance



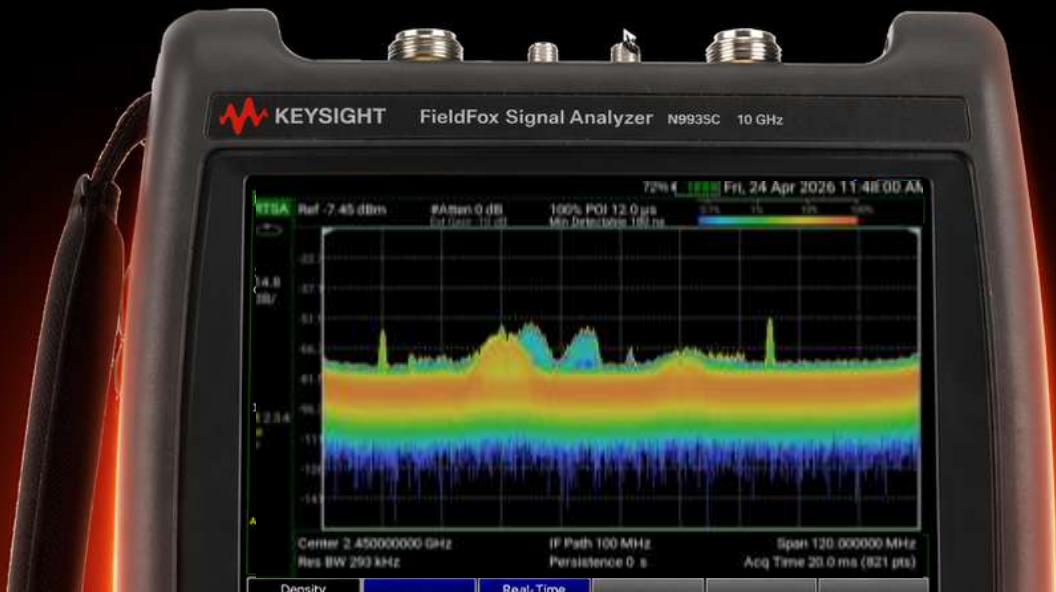
The Challenge

Power consumption,
safety, reliability



The Innovation

Highly integrated solution
ready for the field



+



Keysight Handheld Analyzer Portfolio

D-Series handheld analyzers for wideband IQ streaming



	A-Series	B-Series	C-Series	D-Series
Maximum Frequency	50 GHz	54 GHz	10 GHz	54 GHz
Minimum Frequency	30 kHz	30 kHz	5 kHz	9 kHz
Maximum Analysis Bandwidth	10 MHz	120 MHz	120 MHz	120 MHz
IQ Streaming Bandwidth	10 MHz	10 MHz	10 MHz	120 MHz
Upgradable Frequency and Bandwidth	No	No	Yes (N9912C)	No
Touchscreen	No	No	No	Yes

Introducing the New FieldFox Handheld Analyzers



IQ (In-phase Quadrature)

USB-C (Universal Serial Bus Type-C)

SFP+ (Small Form-factor Pluggable Plus)

Wideband IQ

See It All
Stream everything you capture

High-Speed USB-C and SFP+ Connectivity

Capture, Analyze, Act
Manage portable test sites remotely

Touch Screen

Skip the Scroll
Bridging the gap between tactile legacy and digital fluidity

Keysight Spectrum Management Software

Multi-Unit Monitoring

Monitor the spectrum from multiple receivers and antennas

Real-Time Signal Capture

Visualize time-varying RF activity across receivers

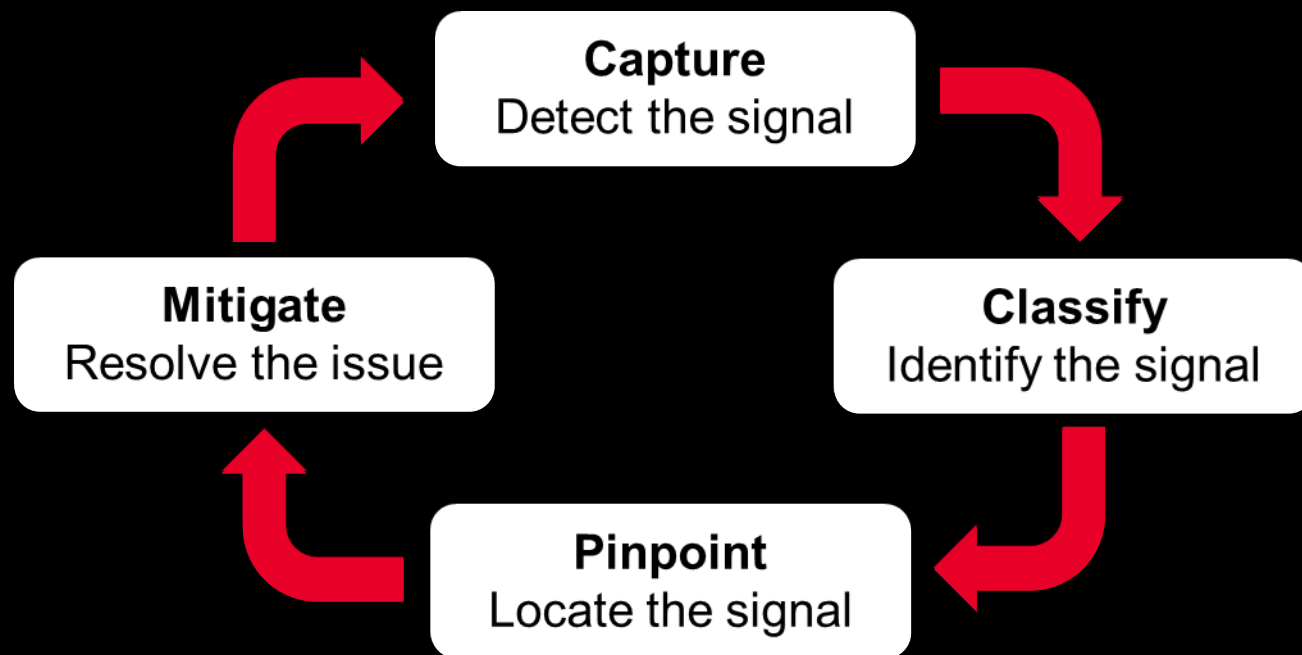
Utilization Insights

Automatic violation detection and frequency occupancy



The Interference Mitigation Workflow

Spectrum management



**FieldFox
Handheld
Analyzer**

+



**Keysight
Spectrum
Management
Software**

Capture: Spectrum Monitoring

Key challenges

Detecting weak or intermittent signals in noisy environments

Monitoring continuously across wide areas

Coordinating multiple test sites efficiently

Solution Benefits

Visualize spectrum occupancy to spot transients

Portable test sites for flexible deployment

Remote connectivity for centralized control

POI: Probability of Intercept



Spectrum Monitoring

Detect the signal

Multi-receiver stack mode display

Spectrum overlay

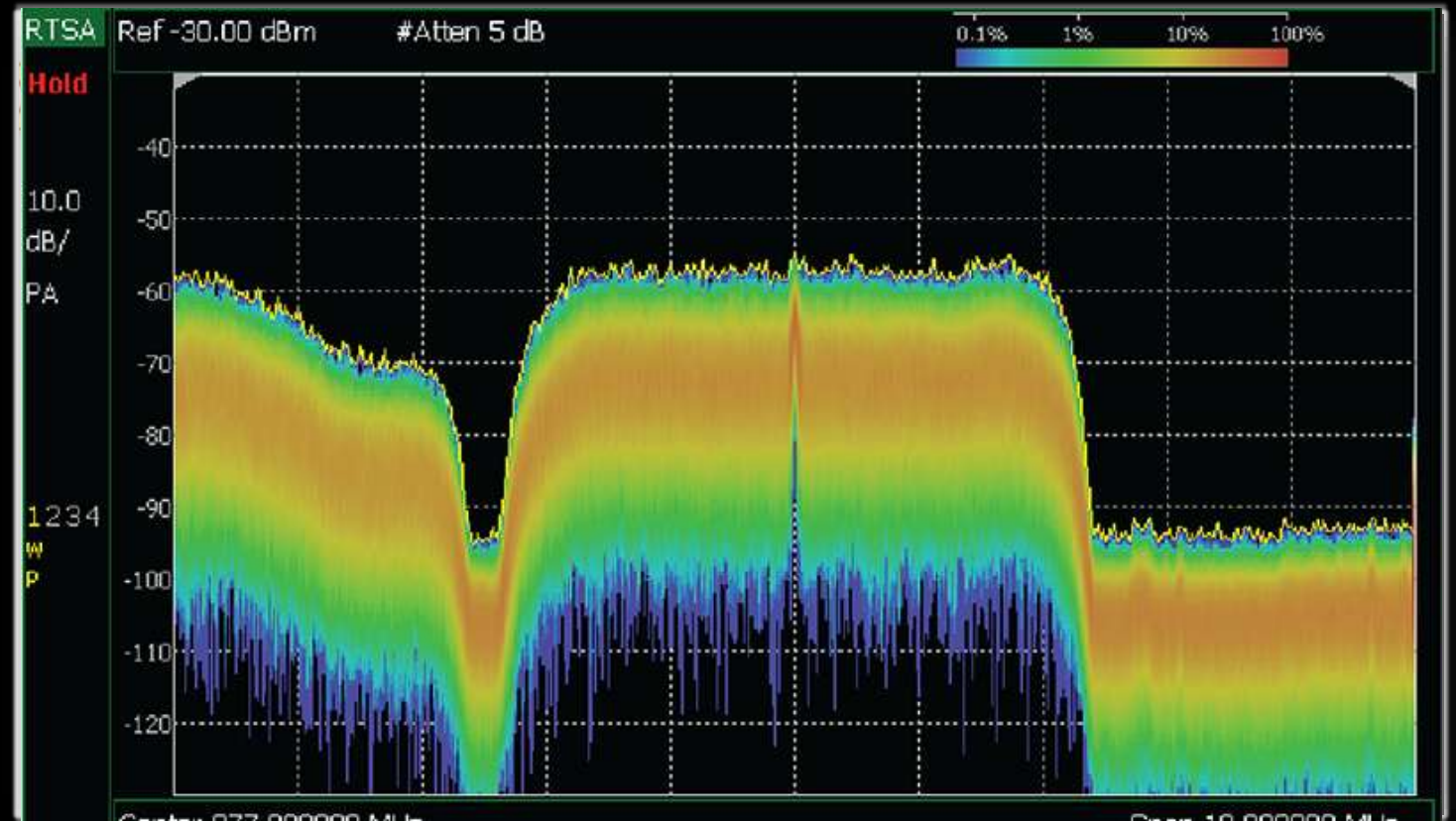
Spectrum Analysis

Cable and Antenna Testing

Power Measurements

Direction-Finding

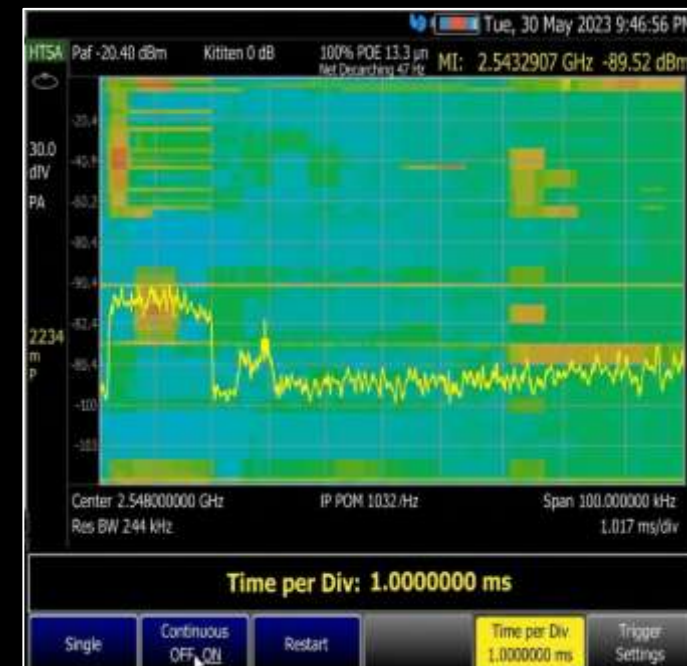
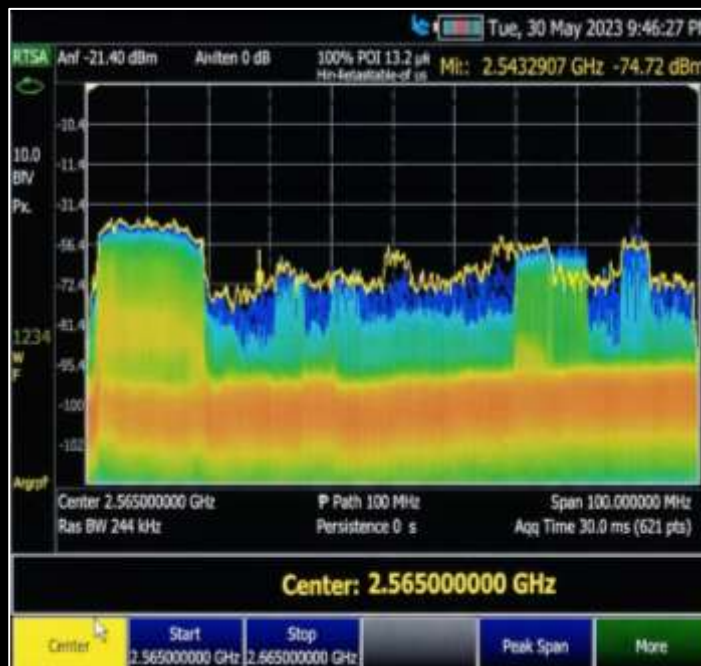
Tactical RTSA



Finding and Capturing Transient and Burst Signals

120 MHz real-time spectrum analysis

- Gapless spectrum monitoring for intermittent signals
- 120 MHz RTSA bandwidth
- 5.52 μ s 100% POI
- 47 ns minimum detectable signal



Uninterrupted IQ Data Streaming Disk Based on VITA49

Capture every fleeting signal

- Gapless IQ streaming: **40/120 MHz**
- Streaming format: **VITA 49**
- Waveform playback: **VSG**



USB-C
x1

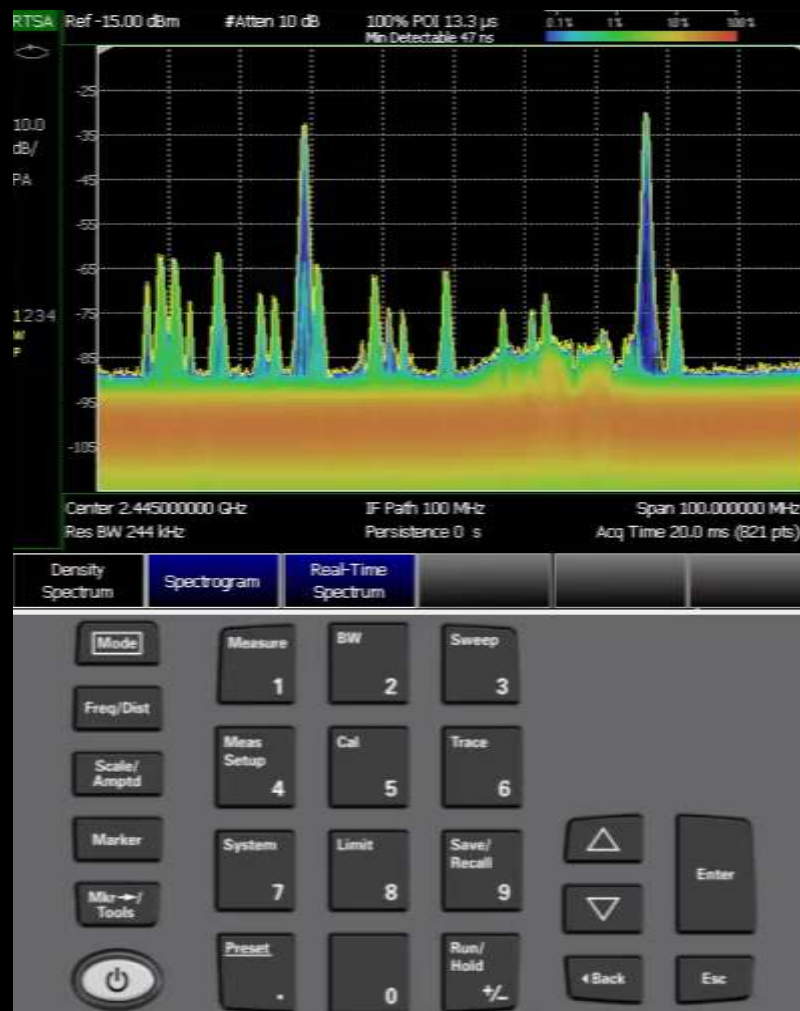


USB-A
x1



SFP+ /10GE
x2

VITA 49 — VITA Radio Transport (VRT)
(VITA = VMEbus International Trade Association)



Classify: Spectrum Classification

Key challenges

Differentiating signals in congested spectrum

Identify complex waveforms

Identifying unknown or unauthorized transmissions

Solution Benefits

Separate complex signals with wideband spectrograms

Automate classification with integrated algorithms

Flag anomalies and known emitters



Spectrum Classification

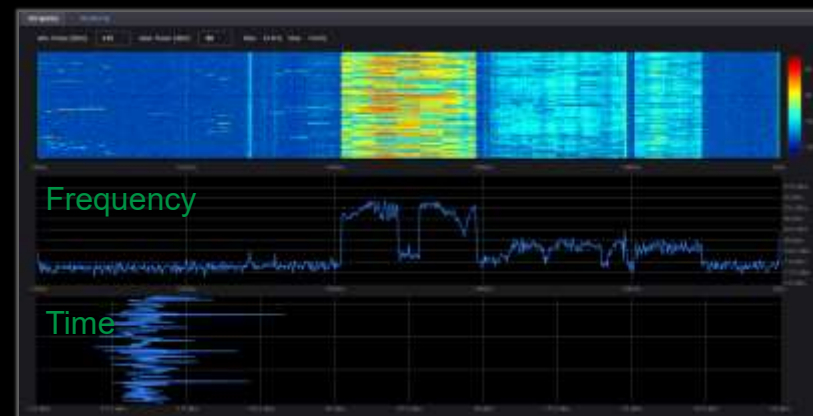
Identify the signal



Single receiver spectrogram



Multi-receiver spectrogram

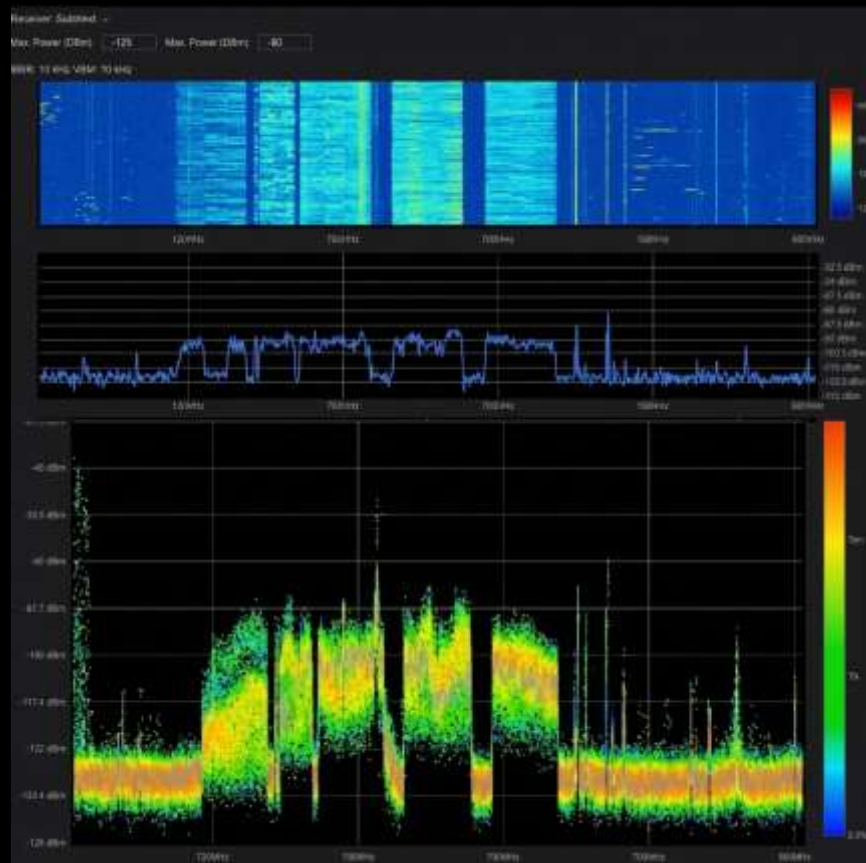


Cross domain spectrogram

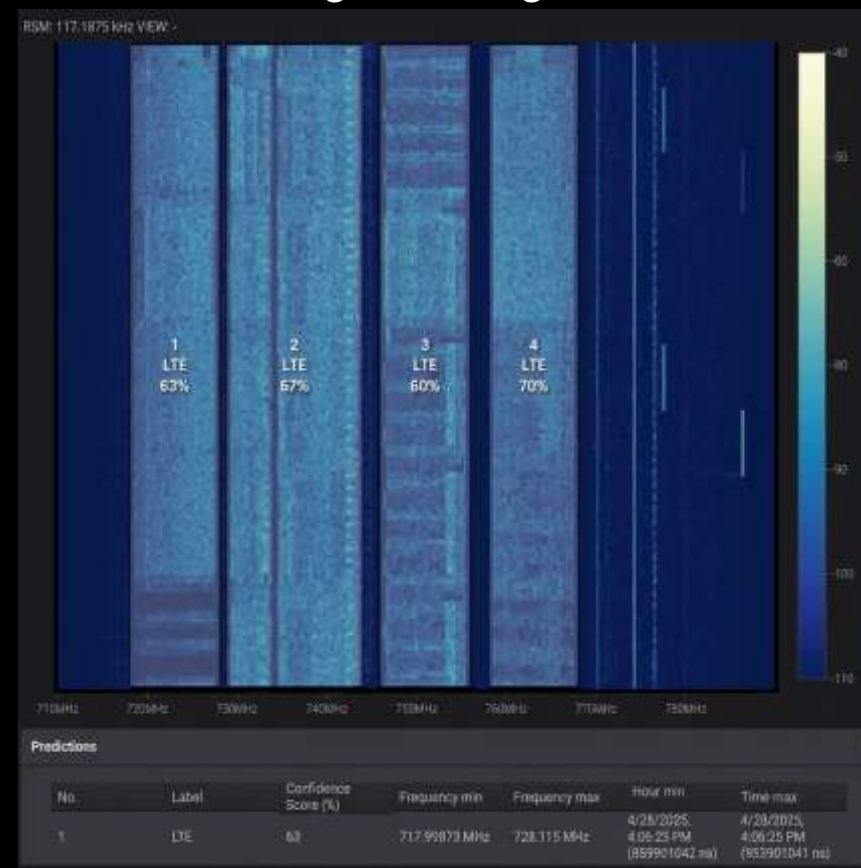
AI/ML – Based Signal Recognition

Identify the signal

Energy detection



Signal recognition



Pinpoint: Direction Finding

Key challenges

Avoiding slow, manual drive tests and triangulation

Locating interference across large remote areas

Synchronizing multiple receivers

Solution Benefits

Pinpoint sources fast using GPS-synced units

Deploy anywhere with rugged, field-ready units

Centralize control for multi-site coordination



ANGLE OF ARRIVAL (AOA)

Uses the angle of the signal as it arrives at one location.



TIME DIFFERENCE OF ARRIVAL (TDOA)

Uses the time difference of the signal at multiple synchronized receivers.



DIRECTION FINDING (MANUAL / AUTOMATIC)

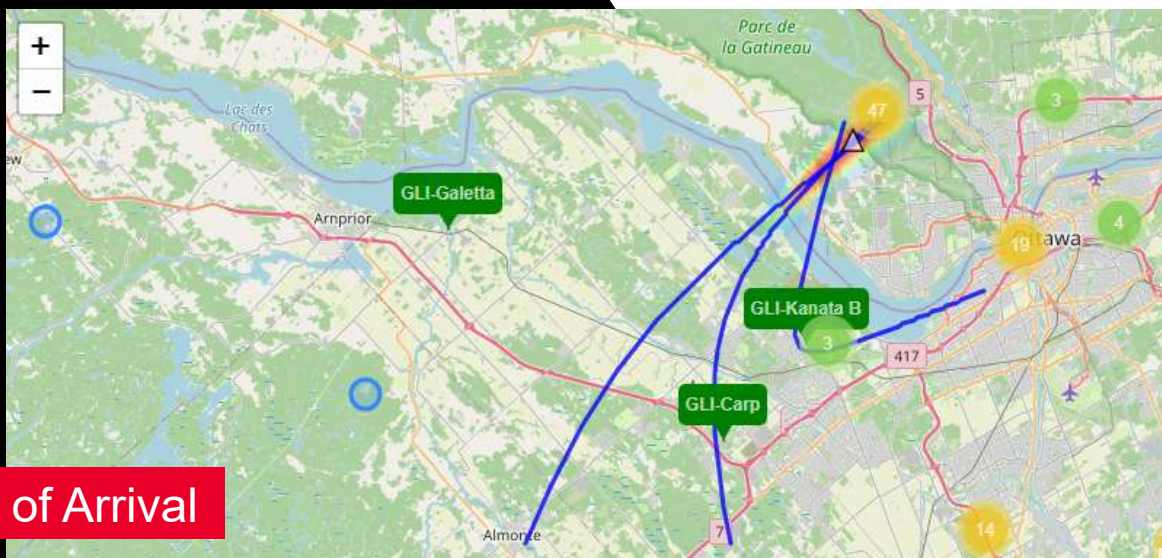
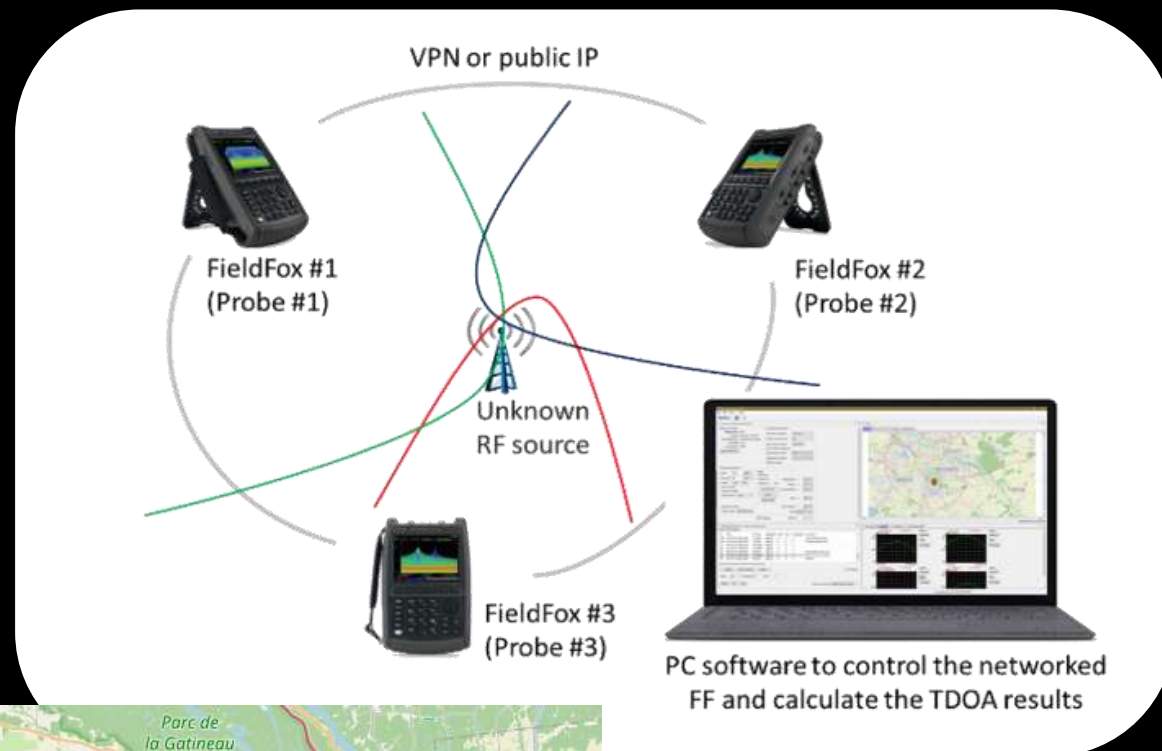
Uses an antenna or array to find the direction of the signal.



Direction Finding

Locate the signal

- TDOA and AOA methods
- Low noise floor
- Real-time spectrum analysis
- Wideband IQ streaming
- Multisite coordination

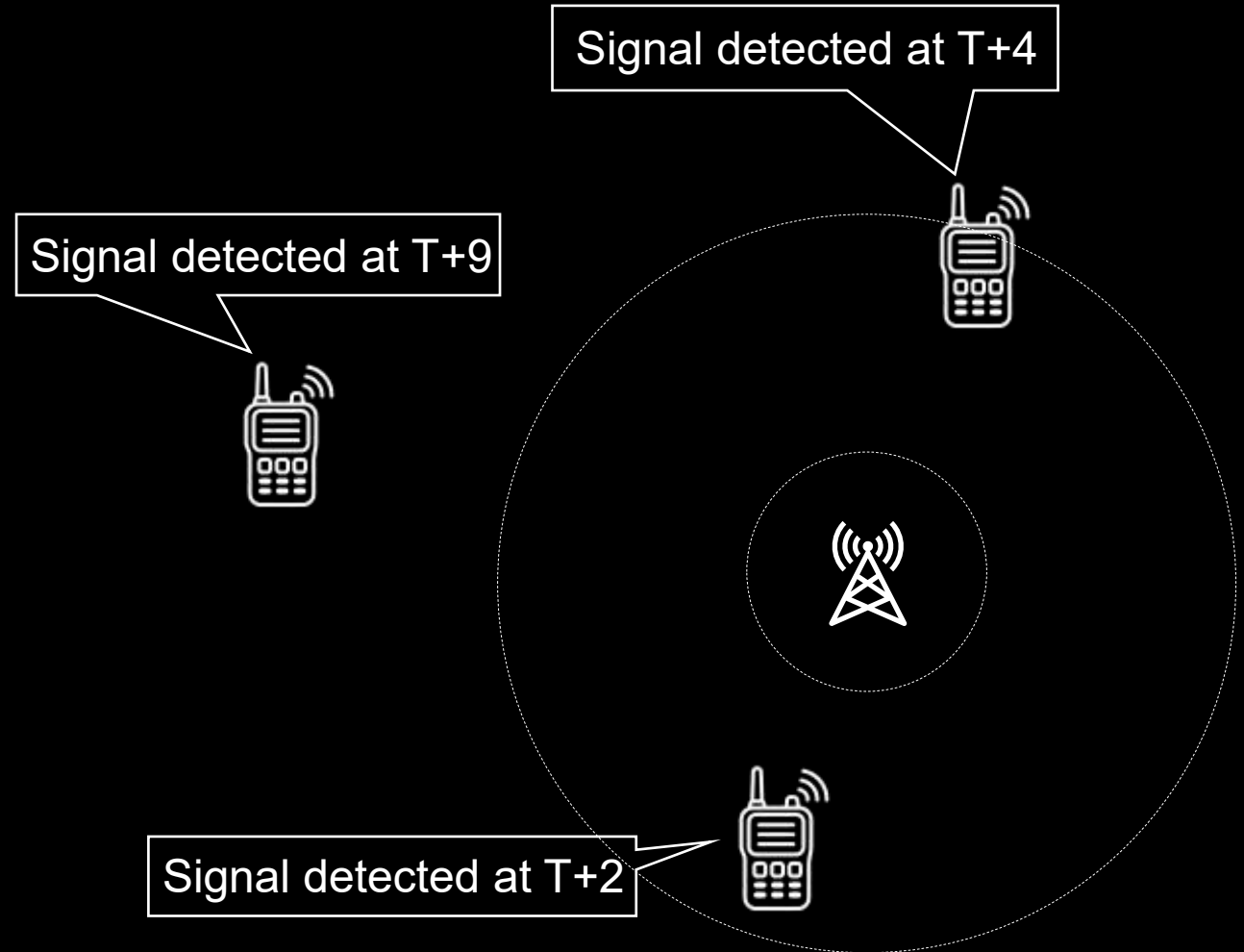


AOA: Angle of Arrival of Arrival

Time Difference of Arrival

Locate the signal

- Distributed receivers
- Compare arrival time
- Compute location intersection



Why Choose Keysight's FieldFox Handheld Analyzer?

Wideband Visibility

Capture and stream 120 MHz

Remote Control

Manage test sites centrally

Field Ready

Rugged, lightweight, mission-ready

Multiple Instruments in One

VNA, SA, RTSA, RF recorder



Learn More

keysight.com/find/fieldfox

