D-TA SYSTEMS

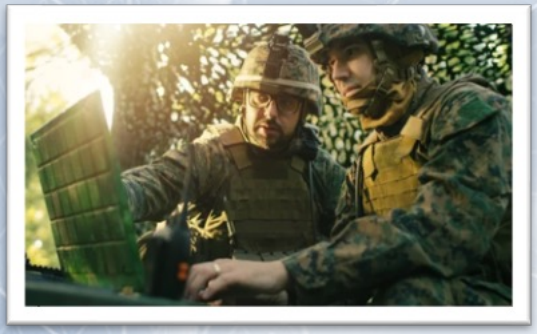
D-TA AT A GLANCE

THE FUTURE OF EMSO

AN ISO 9001-2015
CERTIFIED COMPANY

WE PROTECT

As threats become more agile, deceptive and diverse, our mandate becomes more focused on delivering advanced EMSO solutions that drastically cut deployment risk, time and cost.



CERTIFIED ISO 9001:2015 COMPANY

Next-Generation Electromagnetic Spectrum Operations (EMSO) Solutions

THE MANDATE

In an era where defence threats are agile, deceptive, and diverse, D-TA Systems Inc. delivers mission-critical Electronic Warfare (EW) sensor solutions. Our standard products cover all aspects of spectrum sensing and creation. Cut deployment risk by orders of magnitude. Accelerate timelines from development to deployment and reduce total expenditures through simplified architectures.

FULL-STACK ARCHITECTURAL CONTROL

Unlike traditional vendors, D-TA maintains total vertical control of the full engineering and technology stack: Antenna & RF Design - Front-end capture and transmission; Mixed Signal Processing - High-fidelity signal conversion; Real-Time, Highspeed Record Playback, Software - Multi-core, high-speed software processing architectures and, knowledge in EMSO domain.

OUR HISTORY & TRACK RECORD

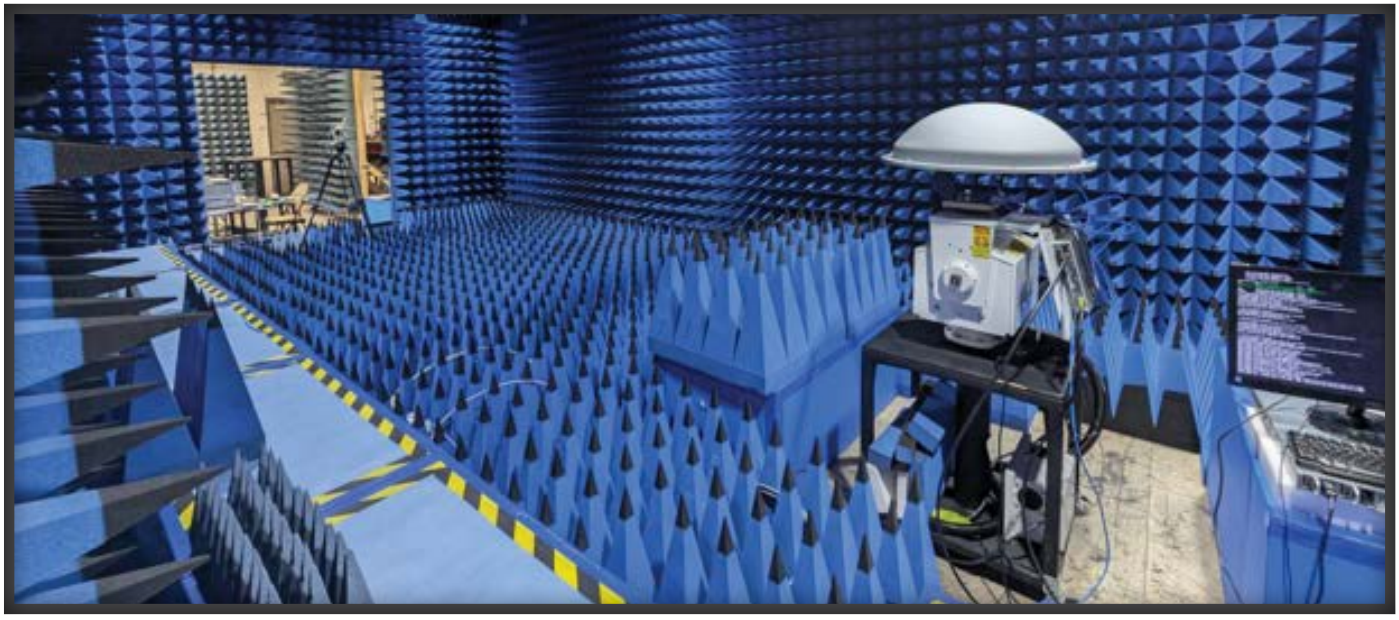
Founded in 2007 by Dr. Dipak Roy in Ottawa, Canada, D-TA Systems Inc. serves EW (Electronic Warfare) sensor systems market. Dr. Roy previously founded ICS Ltd, famous for winning the US Navy's AEGIS sonar upgrade program before its acquisition by Radstone/GE in 2003. Backed by 19 years of operational excellence and over $100 million in investment, D-TA enjoys significant market traction in FVEYs, NATO and QUAD nations. To date, over 200 high-tech defence jobs have been created. D-TA has total autonomy as it is 100% funded entirely from internal resources, ensuring long-term financial stability and agile decision-making.

D-TA Facilities

D-TA is an ISO 9001:2015 certified defense contractor. The company maintains personnel and facility clearances for major military contracts. Its headquarters spans over 25,000 square feet of office and lab spaces. These spaces house advanced computing and sophisticated manufacturing equipment. This infrastructure directly supports the design of complex military systems.

The facility features highly specialized testing environments. A large anechoic chamber enables high-precision radio frequency (RF) testing. The campus also includes a large facility dedicated to mobile system integration. These advanced spaces ensure strict quality control during technical development.

The workforce includes skilled Electrical Engineers and Computer Scientists. Most of these technical experts hold post-graduate degrees. Business professionals and military veterans further strengthen the core team. D-TA partners with local universities and colleges to support graduate research and skill development. Strong supply chain relationships guarantee on-time, on-budget project delivery.



Reconfigurable EMSO Solutions for Any Platform

In today's complex threat environment, spectrum superiority is paramount. One who controls the spectrum wins the war! D-TA provides the tools to acquire deep insight of the spectrum for maximum effectiveness. D-TA's line of highly advanced spectrum processing solutions provides the flexibility and power to capture, process and create spectrum to gain the advantages needed to control the outcome. These products provide end-to-end spectrum coverage for demanding requirements for both spectrum sensing (signal intelligence, radar) and spectrum creation (RF threat emulation, jamming) applications.

D-TA designs and manufactures products for every operational environment, customized to the space, operating conditions and demands of the user. The new class of extreme-SWaP-C optimized solutions are targeted for large deployments and disposable EW Pod requirements.

D-TA has introduced an AI-infused SIGINT solution that simplifies command and control (C2) operations by reducing human involvement. The solution also provides advanced behavioral modeling of track data, enabling improved pattern recognition, anomaly detection, and decision support for operators.

Our Markets

D-TA Systems provides advanced, end-to-end solutions for three core Electronic Warfare (EW) markets.

Over-The-Horizon Radar: Long-range surveillance applications.

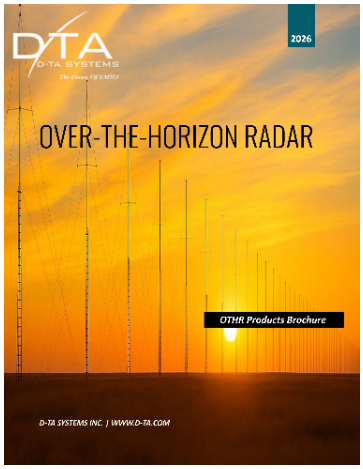
Signals Intelligence (SIGINT): Enhanced situational and spectral awareness.

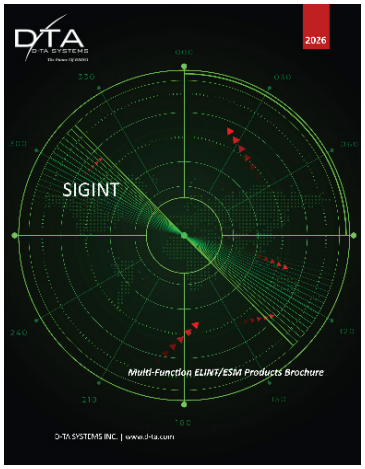
EW Threat Emitters: High-fidelity device testing and operator training.

All D-TA products have two major sub-systems: a sensor interface unit that either transfers I/Q data (for spectrum sensing applications) or receives I/Q data (spectrum creation applications), or both (for radar and jammer applications) to/from a commercial RAID server for processing. Typically, 100 GbE fiber-optic networks are used for high-speed data transfer between the sensor interface unit and processing server.

Low SWaP Sensor interface sub-system can be installed up mast or integrated with the antenna array. Only fiber-optic cables are required for data transfer to and from the processor which can be placed a long distance away. This approach eliminates the need for long RF cables, simplifies installation, and eliminates the need to have expensive VPX infrastructure for antenna-array signal processing.

D-TA's website, www.d-ta.com, provides a wealth of information on D-TA's products, applications, and services, including our recent publications below.





OVER-THE-HORIZON-RADAR

D-TA has been involved in Skywave Over-The-Horizon Radar (OTHR) development since 2011. These radars use ionospheric reflections of HF signals to detect targets thousands of miles away. To combat the congested HF spectrum, these radars require receivers and transmitters with the highest possible performances and processing techniques that can detect low probability of intercept signals that exhibit both low and high doppler shifts.

D-TA has been involved in over 20 OTHR projects for both Canada and USA for channel characterization, clutter studies and risk mitigation. They included building two of the largest OTHR systems in the world with 1024 receive and 256 transmit channels. D-TA's high-fidelity transmit solution is used to test OTHR receivers at multiple US sites.

D-TA's receiver configuration is optimized for IP2, IP3, and noise figure performance. It uses software-based channelization to deliver exceptional dynamic range. Its Arbitrary Waveform Generator (AWG), integrated with a High-Power amplifier (HPA), enables dynamic transmit configurations, allowing waveform characteristics to change with each transmit cycle. D-TA's shelter-free receivers also deliver significant cost savings by virtually eliminating site preparation requirements.

Over-The-Horizon-Radar (OTHR)

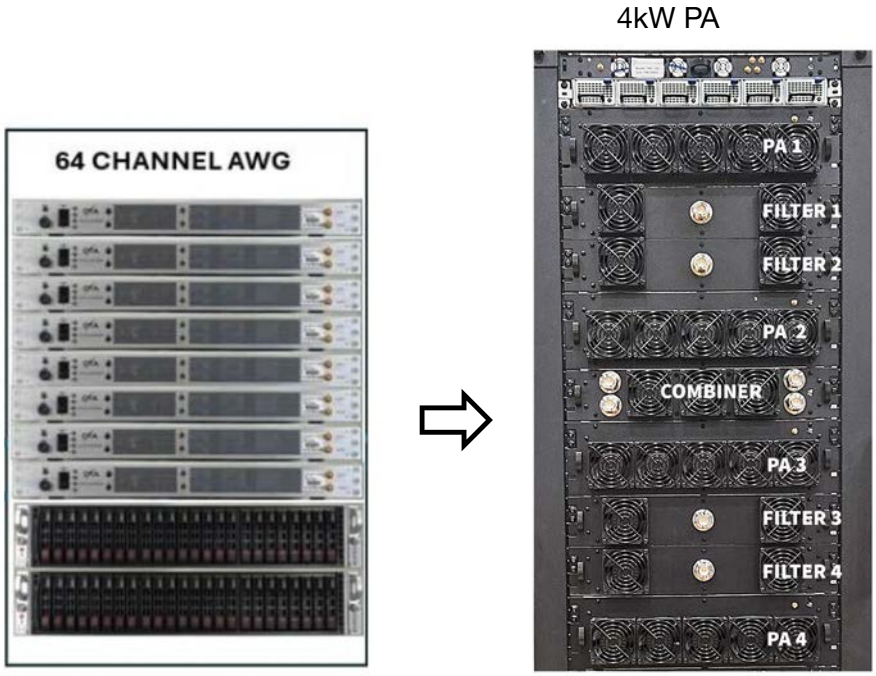
Skywave OTHR is a cost-effective way to undertake long range surveillance. Over the last five years, D-TA has delivered two (2) 1024-channel receive and 256-channel transmit OTHR systems. These bistatic radars used receiver and transmitter modules that were in two separate sites. The key features include modular design; better than 1 ns synchronization across 1024 channels; software-based beamforming and range-doppler processing; better than 90 dBc dual-tone dynamic range; and AWG (Arbitrary Waveform Generator) based transmit solution for tunable transmit. A 256 kW transmit solution was delivered.

1024 receive channels are distributed across 4 identical racks with 256 channels in each rack. All 1024 channels operate synchronously with less than 1ns timing skew.

Dynamic OTHR Transmit

The legacy approach of integrating a small digital memory with a Power amplifier for HF transmit is highly inadequate for modern OTH radar implementation which requires the transmit system to be dynamic for detecting agile and high velocity targets. The digital memory used is limited in capacity and typically only holds an LFM transmit waveform for repeated use. A smart transmit system requires transmit waveform's frequency, modulation, PRI and PW to change every transmit cycle (CPI or illumination period) by operating in a scheduled mode.

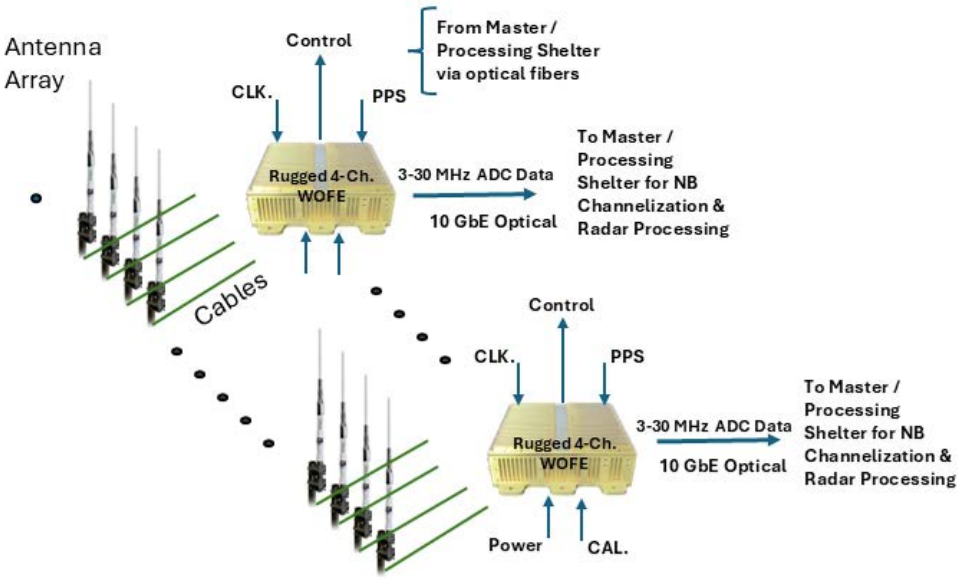
D-TA's Power Amplifier (PA) integrated Arbitrary Waveform Generator (AWG) provides the ultimate flexibility for implementing a smart and dynamic transmit solution. The AWG is based on streaming I/Q data (waveform baseband time series data) from deep memories (computer hard drives). Since the storage capacity is very large (multiples of TBs), many different transmit waveforms can be pre-stored in the hard drives for use as required for each transmit cycle. Leveraging D-TA's multi-core based real-time processing expertise, it is also possible to compute a transmit waveform in real time based on the analysis of received signals.



PA Integrated AWG for Dynamic Transmit. The 4kW power amplifier sub-system used for the POTHR-4 system with a 2-D transmit array. The PA can deliver 4kW of power while withstanding a 4kW reverse power (reflected and coupled from other elements). With a matched antenna (e.g., a log-periodic antenna), the same system can deliver 10kW of power. The 4kW power is obtained by combining 4, 1kW PA units each with a dedicated harmonic filter bank.

Shelter-Free Receiver

To simplify logistics of building receive shelters and to place the receivers close to the antenna to reduce cable losses, D-TA has designed a shelter-free rugged WOFE receiver (DTA-2300R). This 4-channel unit (MIL-STD-810H & MIL-STD-1472 compliant) can be directly placed on ground or buried underground near the group of antennas it connects to. Full band digitized data is streamed via 10 GbE optical network to receiver processing shelter for software-based channelization (using full floating-point arithmetic) and further processing and data distribution.

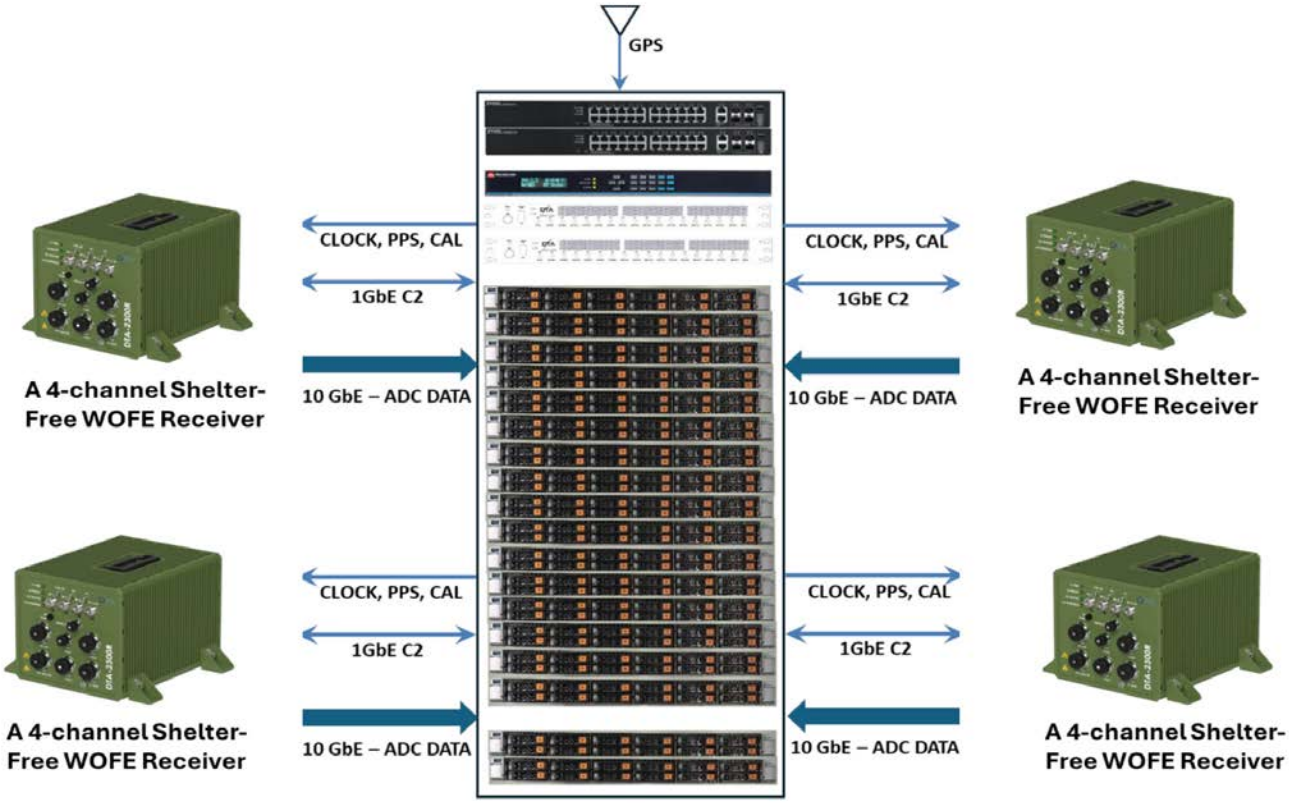


Site Installation made simple with D-TA's Shelter Free Receiver. The use of fiber-optic cables for clock, PPS, C2 and data simplifies installation and improves performance. Processing / Op Shelter includes commercial servers.

Receiver Processing Shelter (Master / OPS Shelter)

Full bandwidth ADC data from the WOFE receivers (DTA-2300R) are streamed to the Master/ Ops shelter for receiver processing. Use of optical fibers to stream ADC data allows the Master shelter to be in a secure location at a long distance away. The Master shelter is primarily composed of commercially available servers as all processing is done by software.

OTHR receivers require narrowband channelization for high-precision processing for target detection and estimating target range and velocity. Multiple narrowband channels are used for simultaneous processing across multiple frequency bands.



Layout of receivers in an OTHR deployment. Receivers are arranged in multiple groups with each group placed close to the subset of antennas it handles. Each group with N receivers is placed inside a protective shelter for outdoor operation. [N=4 in the above example]. Network attached WOFE frontend streams full bandwidth HF data to operating shelter for channelization and processing. Channelization with SW DDC in the Op Shelter offers extreme performance and flexibility and simplification of the Rx shelter.

Traditionally, FPGAs are used for DDC (comprising of NCOs and Decimating Filters) based channelization. FPGAs typically use fixed-point arithmetic with 16- or 32-bit arithmetic. To achieve ultimate phase noise and SFDR performances, D-TA has implemented DDCs, up to 10 per channel, with 32-bit floating point arithmetic for the decimating filters and 64-bit double precision arithmetic for the NCOs and other critical areas.

Narrowband channelization (DDC) is done in the servers. This enables full floating-point operation and provides narrowband SFDR close to 150 dBc. The narrowband channelized DDC I/Q data is distributed over DDS interface to back-end radar processing servers. The architecture allows for use of government provided or other 3rd party processing algorithms to be used and allows for upgrade of algorithms without changing hardware.

OTHR Stimulator and Multi-Channel Rx Test

The AWG system is based on the concept of streaming baseband I/Q time-series data from computer hard drives to an HF signal generation circuit. The I/Q data is either mathematically computed based on a signal scenario or collected from an actual mission and stored in the hard drives. Upon playback, the digital I/Q samples are sent for HF generation.

The I/Q data is prestored in the RAID server for playback during a test mission. Many I/Q data files can be stored, and a particular file is selected for playback in a loop or one-shot mode. Alternatively, several data files can be played back in a sequential manner using a soft or hard trigger to create a dynamic scenario. This is called a scheduled mode of operation. The same hardware used in the AWG transmit is used for the stimulator and Rx testing.

A 64-channel streaming I/Q based OTHR stimulator in a portable carrying case for ease of Rx testing.

For more information, visit www.d-ta.com > Our Products > OTHR.

EW EMITTERS

Electromagnetic threat signal generation for device testing and operator training is of increasing importance as deployment of EW systems proliferates. To replicate today's battlefield scenarios, a dense electromagnetic operational environment (EMOE) must be emulated for realistic testing and training operations.

D-TA has created a paradigm shift in EW threat signal emulation by streaming baseband I/Q data from deep memories (hard drives) to RF signal generation circuits. This concept is signal type agnostic and eliminates the signal drop out problem that has plagued legacy systems.

D-TA's approach can create a dense EM environment composed of Radar, Comms, Interference and Noise signals.

D-TA's MRSE family of Multi-Channel Radar Signal Emulators are designed for both indoor and outdoor testing. For indoor/chamber testing, MRSE-5000 base system can be used for EW receiver (ESM/RWR) testing in injection mode using RF cables. The MRSE-PETS system is used for outdoor testing (runway or dockside testing) for short ranges. The MRSE-PETS+ system is used for medium and long test ranges. In addition, D-TA also offers THREAT2 system which is a collection of MRSE-PETS+ systems operated from a common C2 to replicate Integrated Air Defense systems (IADS) for air combat training.

Paradigm Shift in EW Threat Signal Emulation

D-TA's Multi-Channel Radar Signal Emulator (MRSE) solution is based on the concept of streaming I/Q data (baseband waveform data) from deep memories (hard drives) to tunable RF transmit units. The electromagnetic environment is either computed or collected, sample by sample, for all frequency bands of interest and the information (baseband I/Q data) is stored in hard drives. Upon playback, the EM environment is reproduced accurately, irrespective of the number and types of signals (communications, radar, noise and/or interferences) in each frequency band.

The competing DDS based approach (used by all legacy vendors) can only emulate one pulse at a time (per RF channel) based on the description of the pulse (PDW) and not the environment. The MRSE solution does not suffer from these problems as any waveform and scenario that can be mathematically represented, can be reproduced (emulated). The compelling advantages include:

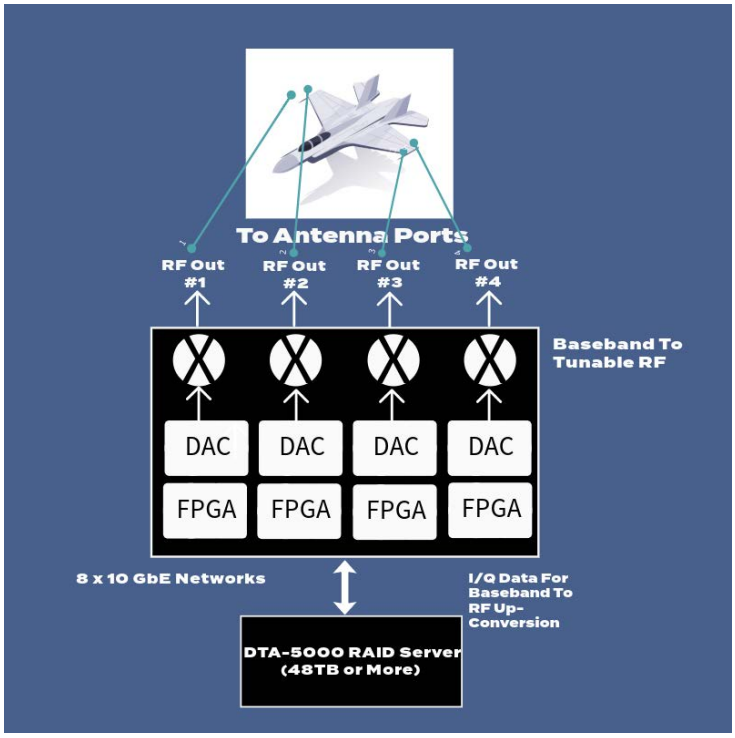
- No signal dropouts
- Unlimited emitters in each frequency band of each RF channel
- True emulation of EM environment (radar & comms signals, noise and interferences, as the concept is signal-type agnostic)
- Simultaneous emulation of multiple threats from multiple directions
- Large waveform data storage capacity (minimum 24 TB) for long duration simulation
- Open-architecture & software-based solution that can be readily modified and new waveforms created

MRSE-5000 Base System

D-TA's MRSE system essentially consists of two subsystems: a commercially available RAID server for data generation (computation of waveform I/Q data) and storage (DGEN-DSTOR); and D-TA's RF Transmit unit (RFGEN). The baseband I/Q data is supplied from DGEN-DSTOR to RFGEN using high-speed fiber-optic cables (10/40/100 GbE networks). The base systems provide maximum 0 dBm output for injection mode testing using RF cables. The frequency range is from 0.5 to 40 GHz. The IBW is 1 GHz.

Multi-Port & Multi-Band MRSE

MRSE-5000 base system is offered in 1, 2, 4, 8, 16 or more RF output channels. The IBW is 1 GHz. The RF output channels can be independently, or phase coherently tuned. The former allows multiple frequency bands to be simultaneously emulated (multi-band emulation). The latter is used for multi-port DF testing of radar warning or ESM receivers. Virtually any number of emitters can be generated in each frequency band.

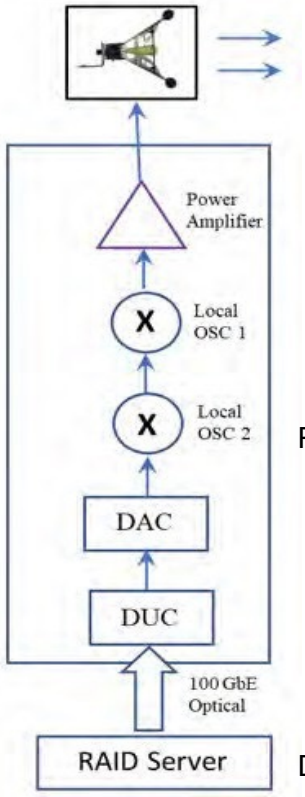


4-Port RWR testing (injection mode) using a 4-channel MRSE-5000 system. Output of each channel is connected to an antenna port. The channels are phase coherent. The amplitude and phase of each channel is modified by the antenna beam intercept for a particular signal direction and frequency. Multiple simultaneous threats, each coming from a different direction can be simulated.

MRSE-PETS

The MRSE-PETS system is designed for rapid over-the-air testing of RWRs, ESM, EA and other EW receivers in aircraft, ships, ground vehicles or other platforms from short distances (100 meters or less). The PETS is an up-mast system where the RFGEN is mounted on the mast to reduce the length of RF cables and associated signal losses. Most of the RF power generated is available for radiating out. The PETS uses a high-gain (dual- ridged horn or other) antenna. During emulation, stored waveform data is supplied from DGEN-DSTOR (RAID server via 40/100 GbE optical link). PETS system is offered in single or multi-band versions.

Dockside testing of ship's ESM receiver using the PETS system.



PETS Block Diagram

MRSE-PETS+

While PETS is for over-the-air testing of stationary targets over short ranges, the PETS+ is designed for long ranges, 50 Nautical miles and beyond. The PETS+ offers a frequency range of 1-40 GHz and EIRP of 1 MW or more.

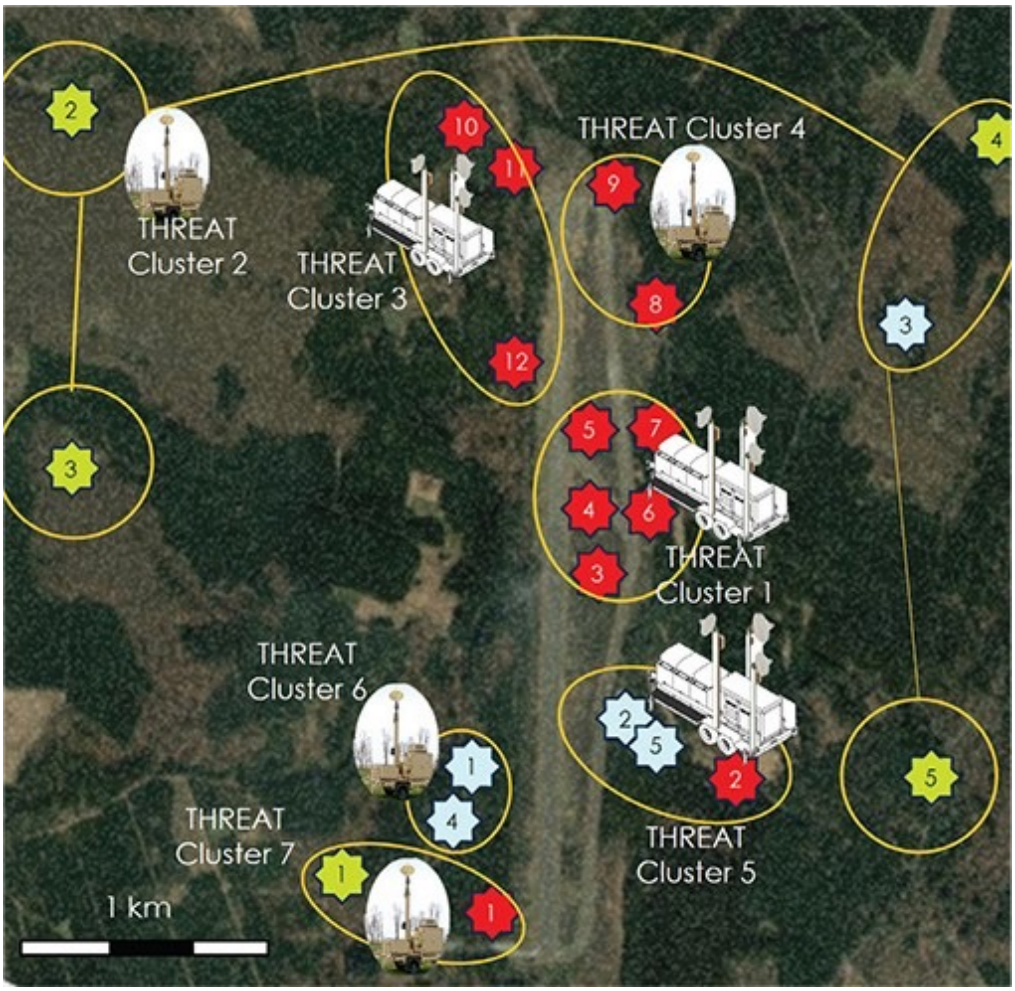
A PETS+ system can be installed on a mobile platform (e.g., trailer) to provide value-focused surface EW threat emitters for air crew training. The antenna positioner provides target pointing and tracking based on ADS-B, IFF, Link-16, video feed and others.

Mobile THREAT2 Trailer with three Wideband, High-Power PETS+ Emitter nodes. Multiple trailers can be networked to a common C2 for IADS replication.

Theatre Replication for Advanced Test & Training (THREAT2)

A collection of PETS+ systems, each installed on a mobile trailer, can provide exceptional replication of IADS (Integrated Air Defense System) for air combat training. Typically, an IADS includes layers of emitters with military environment (red), airport environment (yellow) and urban environment (white) in and around the airport, as depicted in the below example.

The mobile THREAT2 nodes are signal-type agnostic and can create virtually unlimited emitter density and are ideally suited for replication of IADS. The mobility of each trailer-mounted threat nodes also makes the solution rapidly reconfigurable to mimic specific enemy IADS for SEAD (Suppression of Enemy Air Defense) training.



Replication of IADs for Air Combat Training

Radar Target /Jamming Simulator (RTS-5000)

D-TA's RTS-5000 system has leveraged the latest FPGA technology for developing advanced DRFM technology for multi-target radar emulation for radar testing and jamming. The DRFM module interfaces with D-TA's high-performance receive and transmit systems to offer an operating frequency range from 1 GHz – 40 GHz and IBW of 1 GHz. The system latency (minimum round-trip delay) is under 500 ns.

The RTS system can create multiple independent targets with varying distances, speeds, clutter and RCS. It can also implement deceptive jamming techniques such as VGPO, RGPO, RVGPO, Noise Cover Pulse, Synthetic CW and others.

D-TA's Electronic Warfare Database from Open Sources (DEWDOS)

Not every researcher, scientist, engineer, or technician needs access to classified electronic warfare data to enable their work. Nor may they need the precision of classified data; instead, relying on representative and typical emitters to perform their activities. D-TA's unclassified database of over 40,000 emitter modes covers the globe and has examples of nearly every type of platform and emitter. The database is completely editable and changeable to reflect the parameters and characteristics of signals unique to your requirement.

How Close is DEWDOS to the Real Thing?

The database contains a high level of detail collected online, from open sources. DEWDOS data is not the real thing; it is representative of the real-world capabilities described in high fidelity. DEWDOS does not contain specific emitter identifiers, however, the emulation software does support the necessary degrees of freedom to create emitter-unique waveforms for a specific platform. DEWDOS can be used for MFEL products to supply a threat library, and as parametric radar and communications data for MRSE products. As an added benefit, the DEWDOS is editable by the user.

For more information, visit www.d-ta.com > Our Products > EW Threat Emulation.

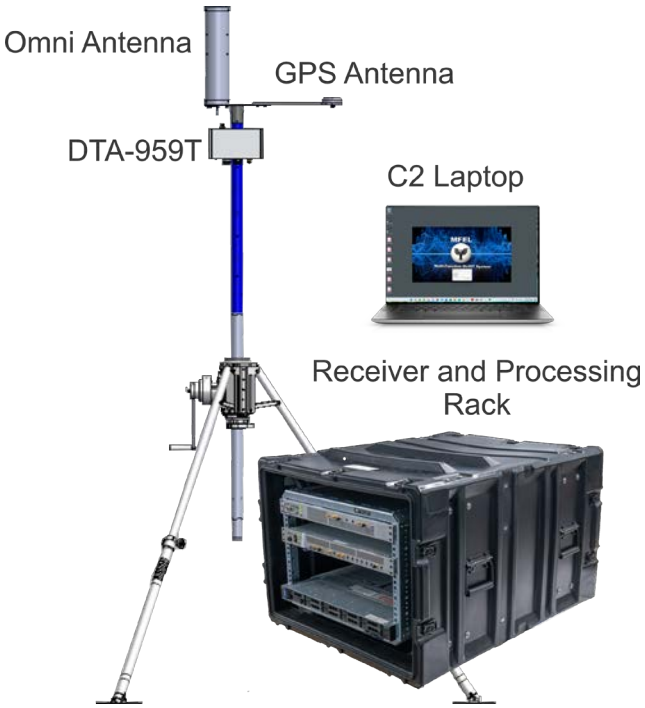
SIGINT

D-TA's Multi-Function Electronic Intelligence (MFEL) family of ELINT/ESM products use high-performance super-heterodyne receivers to offer the highest sensitivity available anywhere. They also offer 360-deg situational awareness, fast threat detection with bearing information and provide classification and identification of threats. In addition, they offer high-fidelity ELINT collection.

D-TA's MFEL family of products include: MFEL-1000, a compact and low-cost situational awareness (360-deg) solution for detection and collection of low probability intercept (LPI) signal; MFEL-5000 GSN ELINT system for ground and naval deployment. This system includes an OMNI and a Spinning DF antenna that provide high sensitivity and bearing accuracy. MFEL-5000 UAS system for deployment in manned and unmanned aircrafts and for ground mobile and soldier-portable applications.

MFEL-1000 Omni ELINT Collection System

The compact and low-cost MFEL-1000 system is designed to provide 360-degree spectrum view to detect, analyze, classify, and identify radar emitters. On-demand, it can record emitter track information, PDWs and burst and wideband I/Q data for post processing. MFEL-1000 is particularly suitable for detecting Low Probability of Intercept (LPI signals). MFEL-1000 supports manned and unattended operations as a standalone ELINT system or as an add-on to ESM systems to provide 360-degree situational awareness.



Omni MFEL-1000 System

MFEL-1000 system is available in rackmount or portable package. It includes a highly sophisticated wideband super-heterodyne receiver, tunable from 0.5-18 or 40 GHz (option). The IBW is 500 MHz or 1 GHz (option) and sensitivity at full IBW, without accounting for the antenna gain, is approximately -80 dBm. A GPS system for generating timing signals is also offered. The receiver provides full bandwidth I/Q data to a multi-core RAID server for processing and data recording.

MFEL-1000 is offered with either an omni-directional antenna (standard) or a dual-ridged horn antenna or an LPA antenna (optional). The latter provides up to 20 dBi antenna gain, however, the beamwidth is narrow for high frequencies and should be used when the signal direction is known, or when the antenna is mounted on a rotating platform. A fixed adjustable mast is offered with the antenna.

MFEL-5000 GSN
High-Fidelity ELINT With DF

MFEL-5000 GSN is a dual receiver system for ground and surface naval deployment. It includes an Omni and a Spinning DF antenna. The frequency tuning range is 0.5 – 18 GHz (optionally 40 GHz) and IBW is 500 MHz (optionally 1 GHz). MFEL-5000 GSN system includes an OMNI antenna for situation view and a spinning DF antenna for finding signal bearing and recording of signals of interest (SOIs). D-TA's open-architecture MFEL-5000 GSN dual channel ELINT solution leverages multi-core software-based processing for rapid adaptation for evolving threats. The system combines the antennas with dual high-performance superheterodyne receivers and a powerful RAID server with large processing power and storage capability.

Antenna Control Unit (ACU)

DTA-9590N (Ultra-Wideband Receiver)

CLK-15A (GPS & Clock Distribution Unit)

DTA-9590N (Ultra-Wideband Receiver)

DTA-5000W (RAID Server)

1 GbE Ethernet Switch

MFEL-5000 GSN Processing Subsystem

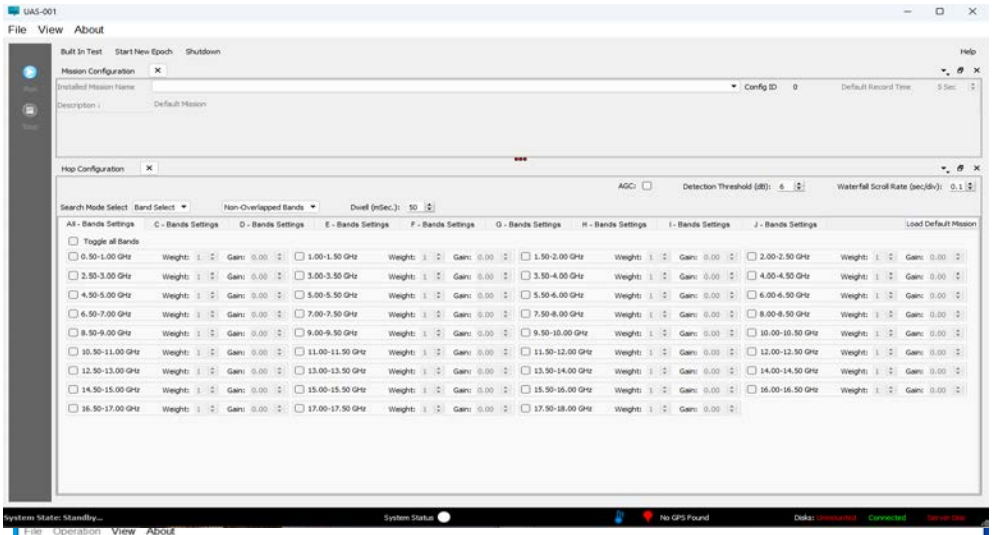
MFEL-5000 GSN with Omni & Spinning DF Antennas. RF Distribution subsystem is mounted up mast to allow using long RF cables.

MFEL Human Machine Interface & Displays

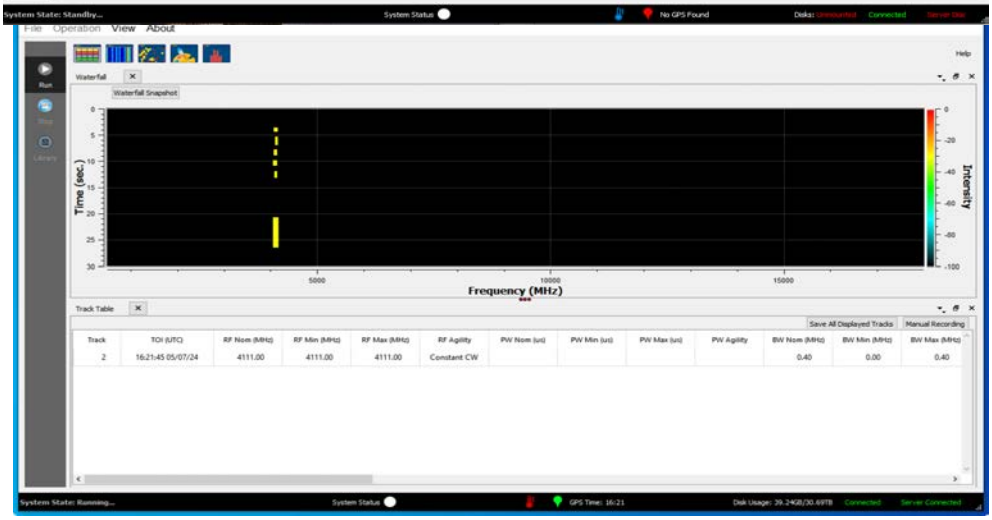
MFEL-5000 system is designed to operate with minimal operator training. Once the system is set up with appropriate frequency scan parameters, the system starts providing situational awareness with detected signal details without human intervention.

The MFEL system uses a search strategy that provides complete flexibility in RF search coverage. The Operator is free to enable/disable bands and to set the relative revisit weighting for each band. In addition, the Operator has control over the Dwell time that will be used for all hops in the search. This simple-to-understand strategy allows the Operator a very high degree of control over the search pattern.

Once the system is activated with the appropriate search script, the situation view page is displayed. The situation view page is the “home” page for the system while it is actively searching for signals of interest. This page provides a high-level EW situational view by displaying the signals that are currently active in the environment. EW situational view shows waterfall display and track details which shows SOIs with PW, Centre Frequency, PRI, Signal Power, Time of Arrivals for the operator to select a particular signal track to record.



Search Script Table



Situation View with Track Table

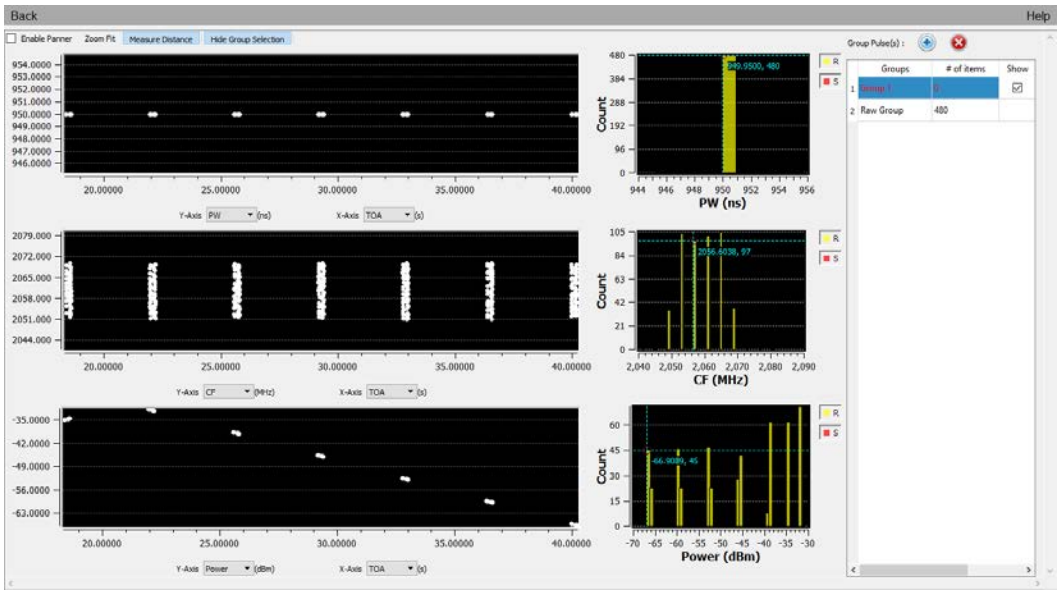
Signal Visualization and Analysis Software (SVAS) for Recorded Data

SVAS is a Windows compatible standalone executable which allows for the baseband data retrieval, visualization, and advanced signal processing for the recorded baseband I/Q data on the D-TA server. Derived from thousands of hours of signal analysis of D-TA recorded data, this software provides the user detailed analysis of the recorded digital data for ELINT/ESM applications. The software architecture is fully flexible and open to user requirements in terms of providing support for advanced digital signal processing.

The base version of the software encompasses visualization of baseband I/Q data and its subsequent analysis including signal detection, Pulse Descriptor Words (PDW creation and pulse deinterleaving and classification of multiple sources. I/Q data can be ingested by the software with any unclassified format. Standard format includes, dta, .csv, .txt, VITA49, etc.

D-TA can provide customization options for the file upload and does not need to know the actual user data if the format is known. The D-TA SVAS has two main modules comprising of Signal Visualization and Signal Analysis.

- Signal visualization functionality allows the user to visualize the recorded signal within Frequency-Time space with user defined resolution.
- Signal analysis functionality allows signal detection and measurements with PDW, IMOP, and UMOP



Various PDW & Histogram Plots

MFEL-5000 UAS Lightweight ESM System for Small UAVs

MFEL-5000 UAS system is based on two lightweight LRUs that can be easily installed in a small UAV. A 4- element circular antenna array is used to provide 360-deg azimuth coverage. A 4-channel phase coherent receiver system with integrated processing provides signal track information via a downlink to the ground control center. The system weighs under 21lbs and consumes less than 150 W of power. The base system covers 2-18 GHz and can be expanded by 0.5-40 GHz frequency bands.

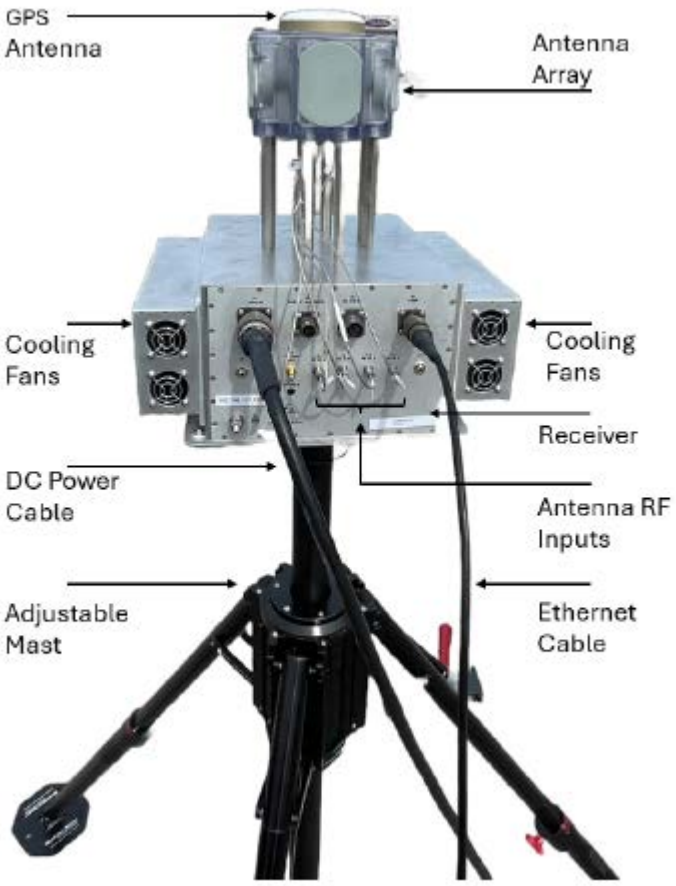
Circular Antenna Array for Instantaneous 360° FOV

A circular antenna array built with 4 spiral antennas is used for 360-deg coverage. The antenna array has 6” diameter, approximately 4” tall and weighs only 3 lbs. DF accuracy is 5°. D-TA Systems took advantage of the recent advancements in lightweight materials to build antenna array enclosures using 3D printing.

A Soldier-Portable Variant

The highly versatile MFEL-5000 UAS can also support soldier-portable deployments by simply mounting the antenna array receivers and processor system on an adjustable mast. This variant supports intelligence, surveillance and reconnaissance (ISR) missions, information operations (IO), and real-time spectrum operations (RTSO).

The soldier-portable variant is provided with an adjustable mast and provision for rapid mounting of the antenna-array and receiver. An optical ethernet cable connects the receiver to a C2 laptop computer for control and signal track display.



Soldier-Portable MFEL
With Circular Antenna Array

Soldier-Portable MFEL
With linear antenna array
(4 spirals in each of 3 sides for 360 ° FOV on 1° DF accuracy)

MFEWS-5000 GSN SIGINT Container with AI Fusion

D-TA's MFEWS-5000 GSN in a hardened passive sensing shelter is a containerized SIGINT system with built-in C2 capability. The system combines COMINT, ELINT, R-ESM, AIS and E/O camera with AI-assisted fusion and encrypted remote connectivity. It can be used as a self-contained mission module on offshore patrol or other naval vessels or placed ashore as a stand-alone coastal, port, or remote collection node using the same processing, reach-back and operator workflows.

MFEL-5000 GSN is a self-contained SIGINT & C2 capability housed in a 12-foot container, transportable by road, sea and air. The AI fusion layer does not perform sensing or primary detection. Its role is to process and correlate sensor outputs to deliver the following operational functions:

- Multi-sensor data fusion: All sensor outputs are assessed together to improve detection confidence, reduce false positives and provide a cleaner operational picture.
- Establishing baselines: The AI rapidly establishes what is normal in a monitored environment. Deviations from baselines are ranked by operational significance reducing time spent analyzing routine and low-value activity.
- Analyst workload reduction: Automated triage filters routine activity before it reaches the analyst.

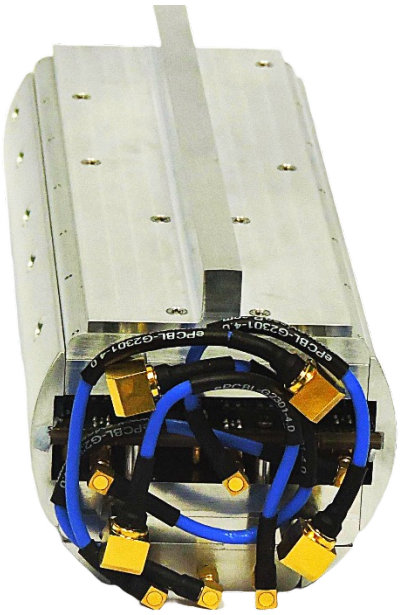
For more information, visit www.d-ta.com > Our Products > SIGINT.

EXTREME-SWAP SOLUTION FOR EMSO

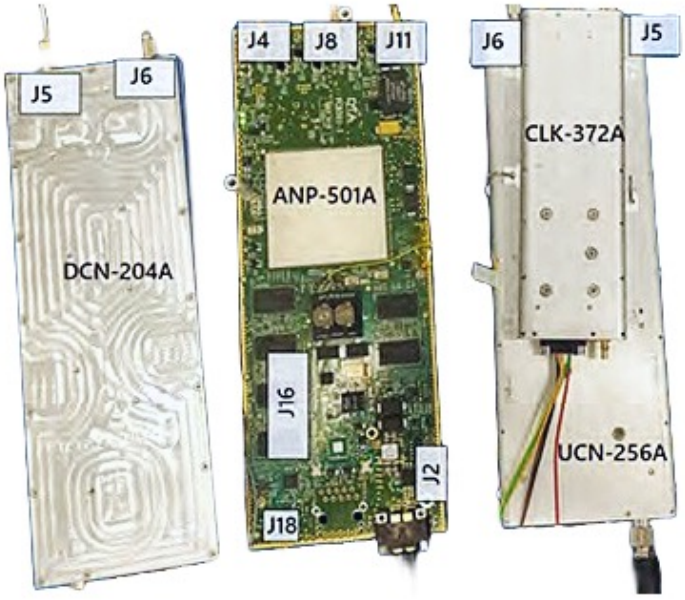
Leveraging recent advances in RF and FPGA technologies, D-TA has developed next generation, mission agnostic platform for virtually any EMSO mission, including disposable requirements. The system is housed in a 3” x 8” tube and it includes a 100 MHz to 20 GHz tunable receive and transmit and an RFSoC FPGA based processor unit that incorporates six arm processors. The instantaneous bandwidth (IBW) can be as high as 1 GHz for both receive and transmit subsystems. The operating BW is user programmable from 100 MHz to 1 GHz.

Disposable EW POD

EW POD is a 3” x 8” cylinder that includes 3 (2” x 7”) cards: an RF Down Converter (DCON), an RF UP Converter (UCON), and an FPGA processor card. The system called, EW POD, consumes under 70W power from a 12V supply. It weighs around 1 Kg. The EW POD can also be configured to have 2 receive or 2 transmit channels. Multiple EW PODs can be operated synchronously. The EW POD can be programmed for a diverse range of EMSO applications, including ESM system for Group 1 UAS, RF Decoy, Spectrum Obfuscation, EW Threat Emulation and other applications. The EW POD is also low cost and is suitable for disposable applications.



Assembled EW POD



DCON (left), RFSoC Processor (Middle) and UCON (Right) Modules. The Synthesizer Module (Clk -372) is shown on top of UCON. Both DCON (Rx) and UCON (Tx) provide 100 MHz to 20 GHz frequency.

For more information, visit www.d-ta.com > Our Products > RF/IF Record and Playback.

RF SIGNAL RECORDING & PLAYBACK

Recording and playing back RF spectrum is a fundamental requirement for most EMSO missions. D-TA has developed a software-based record/playback solution via 10/40/100 GbE UDP/IP data network using off-the-shelf RAID servers. Coupled with D-TA's innovative network attached sensor interface products, it provides end-to-end solutions for record/playback of RF and IF signals for demanding radio and radar applications.

D-TA has delivered many record/playback solutions that support sustained data rates from few GBytes/s to 256 GBytes/s. The use of optical fibers allows the record/playback server to be in a secured place away from the sensor site.

RFvision Family of Recording/ Playback Systems

RFvision-Broadview multi-channel record and playback system includes 16 or more RF Receive and/or Transmit channels. The exact number of RF channels (Rx and Tx) is user specified at the time of order. The frequency tuning range is 1 MHz to 8 GHz (extendable to 18 GHz) and the instantaneous BW is 80 MHz. The operating BW is DDC selectable from 5 kHz to 80 MHz. The channels can be phase-coherently or independently tuned. The data converter precision is 16 bits. The minimum storage capacity is 24 TB for record or playback. It is available in 19" rack mount or custom packages.

RFvision-2 single or dual channel ultra-wideband RF recording solution offers frequency tuning range from 0.5 to 18 GHz (extendable to 40 GHz) and an instantaneous BW of 500/1000 MHz. The data converter precision is 14 bits, and the minimum storage capacity is 24 TB. The RF channels can be independently, or phase-coherently tuned (specified at the time of order). Available in 19" rack mount (2U) or custom packages.

Software All D-TA's RF record and playback solutions come with standard SigInspector software for spectrum scanning, spectrum selection for recording, recorded data file transfer to user computer and RF playback of pre-recorded and computer-generated data.

Our Customers And Deployments

Our customers include FVEY, NATO, and QUAD nations, as well as leading prime contractors such as Lockheed Martin, Raytheon, Northrop Grumman, GD-MS, Thales, Naval Group, Mitsubishi, QinetiQ, and Havelsan. We also support government laboratories, including MIT Lincoln Laboratory, GTRI, DRDC, DSTO, and FMV, along with armed forces such as the U.S. Air Force, Belgian Air Force, Royal Canadian Navy, Canadian Army, and Royal Thai Navy.

Major Deployments:

DEPLOYABLE SIGINT SYSTEMS FOR TACTICAL DOMAIN AWARENESS

D-TA has delivered multiple SIGINT systems now deployed in passive sensor shelters across the Indo-Pacific region for situational awareness for air and naval threats. Additional deployments include EMCON monitoring systems for joint forces training exercises, a soldier-portable solution for the Canadian Army, and the Royal Thai Navy's first ELINT system.

EW THREAT EMULATION FOR ADVANCED TEST AND TRAINING

The Belgian Air Force selected D-TA's THREAT (Theater Replication for Advanced Training) system to support F-35 pilot training. This advanced electronic warfare range equipment streams high-fidelity radar signals to replicate an Integrated Air Defence System (IADS) for future mission planning. Similar systems are used by the Canadian Armed Forces, the UK MoD, and various U.S. electronic warfare sites, with future deployments planned for several NATO nations.

OVER-THE-HORIZON RADAR (OTHR)

Since 2011, D-TA has played a major role in nearly every OTHR project in Canada and the United States. With delivery of two of the largest OTHR systems featuring 1,024 receive channels and 256 transmit channels, D-TA has established itself as one of the world's leading OTHR solution providers. One of these larger systems is currently deployed by the Canadian Armed Forces in the Polar region. Additional solutions are deployed across various U.S. DoD laboratories for testing OTHR receivers.

D-TA SYSTEMS

The Future Of EMSO

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