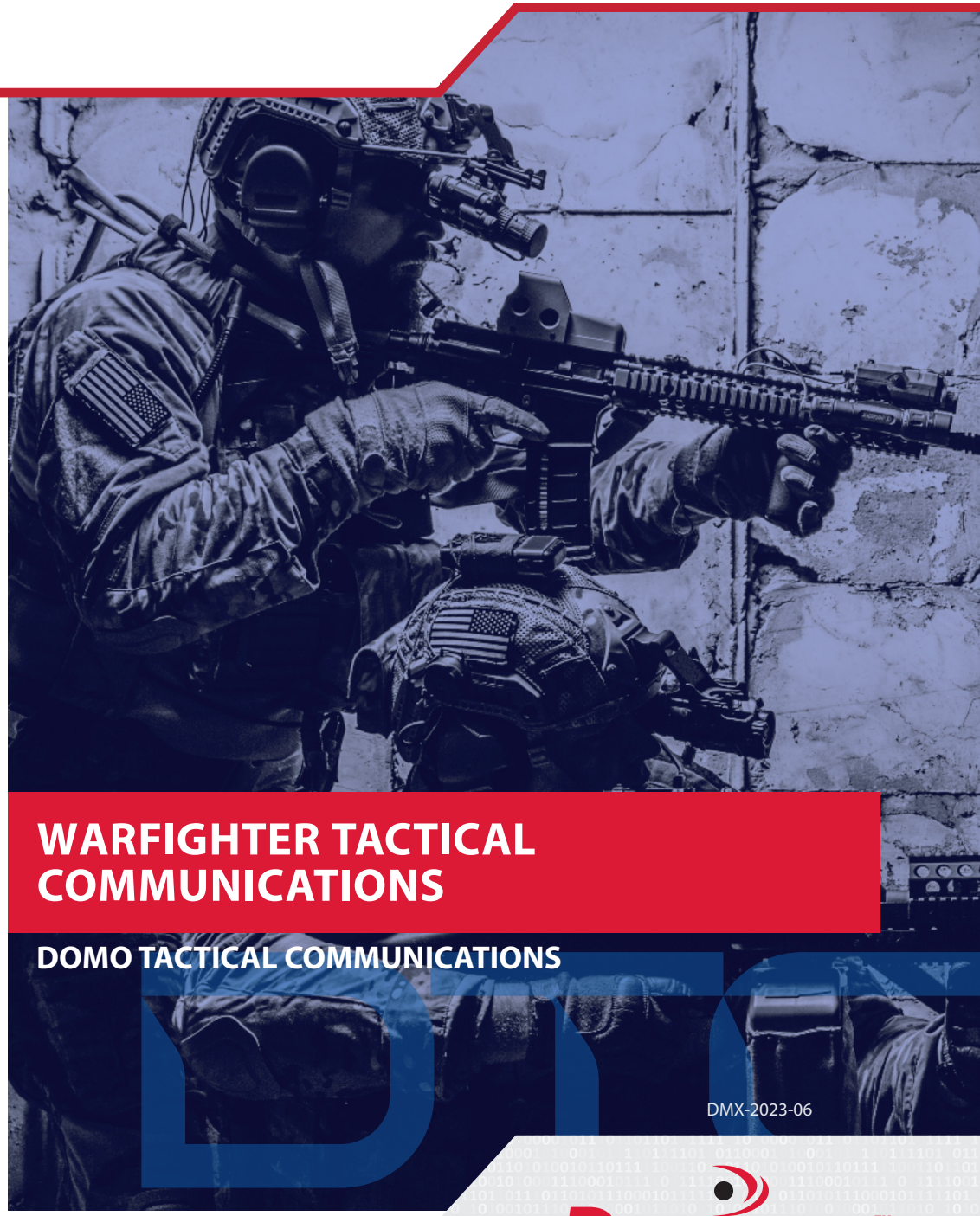
The Solution: DTC SOL8SDR-H

The SOL8SDR-H is a single solution to meet the mission-critical requirements of tactical and special operation applications where robust, encrypted, tactical mobile communication links are needed to provide enhanced situational awareness. The SOL8SDR-H utilizes DTC's proprietary waveforms to provide fully encrypted high bandwidth data, video and audio in challenging, dynamic, NLOS environments in which our users operate. It has been engineered for dismounted, body worn, ground fighting vehicles and MUM-T to provide Shared Situational Awareness (SSA) applications in cities, urban and subterranean environments. The DTC SOL8SDR-H is based on DTC's game-changing SOL8 Software Defined Radio (SDR). It is at home operating as a Tactical Mobile Adhoc Network (MANET) IP Mesh node, a point-to-point (P2P) COFDM Transmitter, or a P2P receiver, streaming video to a tablet PC. It also offers dual on-board HD-capable video encoders and support for a variety of different camera interfaces to stream live video in an operational environment. The radio also features an "open mic" full duplex-audio with four independent audio channels, built-in GPS receiver, on-board SD card storage, as well as a full 2W of output power. The SOL8SDR-H joins DTC's versatile family of IP Mesh and P2P COFDM radios, designed to meet the requirements of a diverse range of surveillance and battle-field applications. It combines a familiar "Soldier Radio" physical form factor, robust construction and simplified user interface, with the ability to use industry standard battery packs, chargers and holsters.

KEY FEATURES

- **Interference Avoidance (IAS):** With IAS, every radio is a sensor, contributing data on local noise levels on a selection of pre-agreed frequencies. This data is brought together to drive a cognitive radio capability which can coordinate a move in frequency to avoid interference or jamming – or simply to ease in-theater frequency coordination.
- **LPE, LPD & LPI:** DTC's combination of flexible channel bandwidth and variable power levels, with our unique token-based channel access mechanism, offers excellent Low Probability of Exploitation (LPE), Low Probability of Detection (LPD) and Low Probability of Intercept (LPI)
- **Lightning-Fast Data Rates:** Delivering high data rate connectivity of up to 87 Mbps wwwith MiMo capability, the SOL8SDR-H has the potential to support multiple HD streams in difficult RF and operational environments.
- **Secure:** Critical data is secured with FIPS140-2 compliant AES256 encryption and a secure zeroized function.
- **Storage:** 128GB of on-board storage for constant video recording.
- **Audio Talkback**: 4 voice channels for simultaneous talkback ensuring fast dependable communications.
- **Truly Software Defined:** DTC's SOL8SDR platform is truly software-defined and future proofed, able to host multiple waveforms as the mission evolves. In addition to MiMo and SiMo Mesh solutions, the SOL8SDR can be a unidirectional COFDM transmitter – including interoperable DVB-T modes – and a streaming COFDM receiver ideal for RVT applications.
- **DTC Proprietary Waveforms:** DTC Mesh waveforms are designed specifically for long range and robustness in the presence of interference and multipath reflections. Implemented in FPGA, they are not constrained by consumer technologies such as Wi-Fi, nor by the lifecycles of consumer ASICs.
- **Range:** With noise optimized RF architecture, high performance LDPC coding and channel bandwidths down to 1.25MHz, DTC Mesh delivers outstanding real-world range and performance at range.
- **Dual Video Encoders:** Dual high profile HD H.264 independent video encoders enables up to two simultaneous HD video streams at ultra-low delay under 180ms for video and under 20ms data only.



WARFIGHTER TACTICAL COMMUNICATIONS

DOMO TACTICAL COMMUNICATIONS

DMX-2023-06

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WARFIGHTER KEY SPECIFICATIONS

Frequency

032047	320 – 470MHz
114150	1.14 – 1.50GHz
167235	1.67 – 2.35GHz
198270	1.98 – 2.35GHz
440500	4.40 – 5.00GHz

COFDM Transceivers

Required application	*SDRAPP-TX or *SDRAPP-MESH
Power	1W (30dBm) per output, 2W (33dBm) total
Power step	0.25dB incremental control
Tuning range	Frequency variant dependent
Tuning step	125kHz

Power (ext PSU)

DC input	8V to 18V reverse polarity protected
Power consumption	Up to 20W (RMS) dependent on mode and peripherals, 10W typical Mesh mode

Environment

Temperature range	-20ºC to +60ºC
Humidity	Less than 85% non-condensing
Cooling	Passive
Sealing	Designed to IP68

Physical

Dimensions (incl. connectors)	146mm (L), 71mm (W), 38mm (D)
Weight	650g

The Technology

MANET Mesh Networks are seamlessly self-healing. If a node is removed or a link is broken, for example due to interference or the introduction of a large obstacle, then the Mesh will re-route via another path. For a dense cluster of nodes, this can provide significant redundancy and resilience.

DTC's Mesh technology uses COFDM modulation. Coded Orthogonal Frequency Division Multiplexing - or COFDM for short - is today widely used in wireless mobile communications systems. It provides significant advantages in terms of robustness and multipath rejection over traditional "single carrier" communications systems. COFDM works by splitting the information to be transmitted over a large number of signals or "carriers," each transmitting at a very low data rate. These carriers are separated just enough to avoid interfering with each other. This contrasts with traditional high-speed communication links which use a single, very high data rate carrier (or a small number of carriers as in Wi-Fi), which are extremely susceptible to multipath interference, particularly in longer range applications.

Warfighter Tactical Communications

The Communication Challenges for the Warfighter

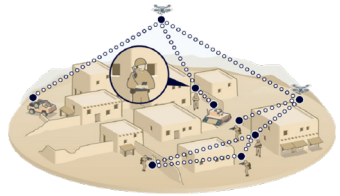
Asymmetric warfare has redefined the tactical edge. Defensive postures and communication infrastructure of the past applied to a much more stationary battlefield with less sophisticated adversaries.

Today's battlefield is much more dynamic and adversaries have adopted cyber and electronic warfare tactics. To stay ahead, we need to ensure that warfighters have the same secure and robust communication's experience while on-the-move as they do at-the-halt.

On-the-move means communications components that are ruggedized to adapt to mobility over any terrain, reliable in the face of unanticipated conditions and have smaller form factors. Situational awareness cannot wait until troops establish an at-the-halt position.

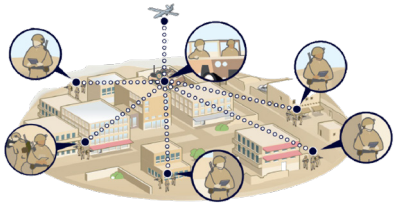
Wireless, secure, mobile, ad-hoc and enterprise communication networks deployed at the tactical edge are critical to the success of the mission and the safety of warfighters.

Situational Awareness – Identifying the Threat



Enhanced situational awareness means better decision-making. Enhanced soldier-to-soldier communication means safer and more efficient mission execution. The SOL8SDR-H, powered by DTC's unique mission-critical Tactical COFDM Mesh waveforms, delivers high bandwidth Full Motion Video (FMV) from helmet and body worn cameras, low latency full-duplex voice throughout the team and supports the sharing of critical mission data on the ground where it is needed. Operating as a standalone network or backhauling via DTC's Mobile and Infrastructure Mesh radios such as the NETNode-5RM, the SOL8SDR-H leverages the self-forming, self-healing properties of the DTC Mesh to provide a robust, high-bandwidth tactical network in the most demanding environments.

Squad Data Radio – Secure Communications

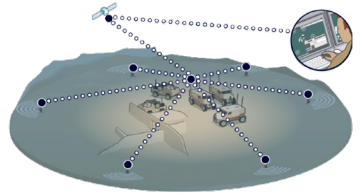


Proven compatibility with ATAK, CIVTAK & WINTAK and other situational awareness applications, the SOL8SDR-H has the ability to operate in channel bandwidths down to 1.25MHz for extreme range performance at very low power and low LPE/LPI/LPD. This makes the SOL8SDR-H the ideal choice for Squad Data Radios sharing PLI, mapping data, messaging and mission plans while operating without the need for external infrastructure. Equally, DTC's Interference Avoidance System (IAS) provides a cognitive radio capability, protecting blue force communications from interference and jamming, while facilitating battlefield frequency coordination. The SOL8SDR-H helps build the overall situational awareness picture within the squad.

Reducing the Warfighter's Load – MUM-T

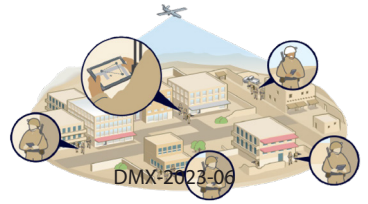
A reduced load leads to a more mobile and faster moving force. Manned-unmanned teaming (MUM-T) systems can do this by teaming the soldier with an unmanned or optionally manned vehicle, to deliver supplies and ammunition or even to act as mobile stretchers to aid in the evacuation of casualties. With a DTC Mesh radio on the vehicle, the SOL8SDR-H is theideal choice for a soldier carried controller node. Interfacing to a rugged tablet, PC or a custom remote controller and powered from standard MBITR-style military batteries, the SOL8SDR-H facilitates vehicle control and brings back video and sensor data from the vehicle. With the DTC Mesh, repeater nodes can easily be dropped to build-out control range well beyond Line-of-Sight – all without any need for manual configuration.

Battlefield Sensor Integration –Data Communication



The ability to quickly connect ad hoc sensor platforms across a battlefield environment is a key force multiplier as it enables units and formations to extend the reconnaissance gap and provides real-time information to both tactical commanders and HQ elements. In this role, the SOL8SDR-H can operate either in Mesh Mode or in unidirectional COFDM mode, to act as a data or video bearer for a wide range of sensors such as Chemical Threat Monitoring, EO (traditional and thermal), ground sensors, radar and SIGINT/EW platforms. The self-healing, self-forming network is ideal for rapidly deploying sensors to relay actionable data back to field commanders and onwards back to HQ using existing IP networks. The connectivity options available with the SDR-H offer versatility and adaptability for disparate systems and the MBITR compatible battery packs provide long-endurance monitoring along with compatibility with a wide variety of chargers and other accessories.

Battlefield-Wide Situational Awareness



Direct video downlink from UAV platforms can provide unrivalled situational awareness on the battlefield, as well as close-in intelligence on targets and opposing forces. The SOL8SDR-H can operate in a "receive only" COFDM mode, using industry standard DVB-T or DTC proprietary narrowband COFDM waveforms to provide a low latency "one-to-many" downlink surveillance capability. In addition, the SOL8SDR–H IP Video streaming capability can stream video directly to existing tablets and PC's.

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