

# MeshUltra™ Tactical Waveform COFDM IP Mesh



## MeshUltra™-X Hardware Platforms

MeshUltra™-X is supported by the industry's widest range of Mesh hardware platforms – from tiny modules, perfect for small drones, to the longest range ruggedized nodes, ideal for maritime or industrial applications. With frequency options spanning 340MHz to 6GHz and tri-band-capable products, plus options for OEM integration, DTC can offer hardware solutions for every application. Examples include:

### SDR-C



The SDR-C offers 2x100mW output in a tiny "Concealment" form factor, ideally suited for integration into small drones or other size/weight critical applications.

### SDR-H2



The SDR-H is a Handheld MANET Mesh Transceiver in a rugged "Soldier Radio" form factor. Offering a full two watts of output power and employing standard MBITR batteries and accessories, the SDR-H2 is ideal for a variety of Tactical Mesh deployments.

### SDR-P



The SDR2x2W-P is a 2x2 watt MiMo Mesh radio in a practical enclosure suitable for desktop use or platform integration and incorporating industry-standard interface connection.

### 8SDR-M



The SDR-M Software Defined Radio transceiver offers 2x100mW output power in a small, ruggedized package. It's particularly suited for concealment and for small drone platforms. And it comes with two USB interfaces for external devices, including cameras, headsets, and cellular dongles.



# MeshUltra™ -X

Powering **DTC**

For more information about our MeshUltra™ Solutions or any other DTC solutions, contact your Sales Account Manager or one of our Regional Sales Offices. Or email us at [info@domotactical.com](mailto:info@domotactical.com)

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## Wireless COFDM IP Mesh Waveform

# MeshUltra™ Tactical COFDM IP Mesh Waveform

## Game-changing Mesh Technology

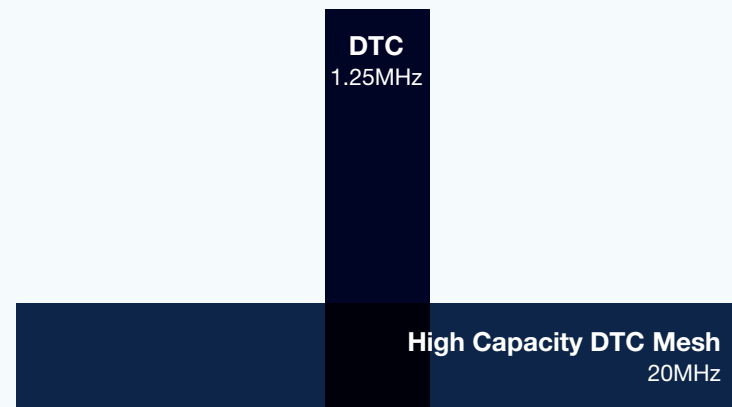
Following the success of the DTC MeshUltra™ MANET waveform, DTC MeshUltra™-X offers optimized performance for large networks of up to 144 radios, operating in channels as narrow as 1.25MHz. MeshUltra™-X aggressively minimizes overheads in order to offer the highest possible user throughput and lowest latency.

Benefiting from DTC's industry-leading Software Defined Radio architecture, MeshUltra™-X is available for all DTC SDR and NETNode Phase 5 radios. It has been developed to perfectly meet the needs of Dismounted Soldier Systems, large drone swarms, networked ground sensors, and wide-area voice systems. It's also ideal for a range of similar applications where a large number of radios need to operate efficiently in limited spectrum.

## Greater Spectral Efficiency

With Auto-Adaptive Modulation up to 64QAM, MiMo transmission, and DTC's unique token-based channel access mechanism, MeshUltra™-X achieves high real-world throughput from even the narrowest channels. With bandwidth options down to 1.25MHz, DTC MeshUltra™-X can access spectrum in which competing Mesh systems will not fit.

By compressing metadata and reducing FFT size, MeshUltra™-X ensures the maximum possible throughput of useful data and the lowest latency even in the largest of networks.



## Channel Access Mechanisms

Most Mesh systems use “contention-based” channel access – also known as CSMA – which essentially means that radios listen to see if the channel appears to be free before transmitting their data. Contention-based access works pretty well when there's not much data traffic, but as the traffic level increases, there is a higher chance of collisions when two or more radios make a decision to transmit at the same time. The normal outcome of this is that all messages are lost and need to be sent again. This can become a self-feeding problem – the more traffic, the more

chance of collisions and the more retries that are required, increasing the traffic level further and leading to yet more collisions and so on.

DTC takes a completely different approach to channel access, based instead on the use of an access “token”, which is passed around all the Mesh nodes in turn. Only when it has this token can a node transmit data, after which it passes the token on to the next node. DTC's token-based access mechanism leads to extremely efficient channel utilization and very consistent latency.

## 16 Talk Groups

DTC is well known for its low-latency Mesh talkback, facilitating crystal-clear, full-duplex communications between multiple users. MeshUltra™-X adds to this capability with 16 selectable talk groups to allow multiple separate talk groups or hierarchical talk schemes.

## CoT Message Generation

DTC radios with MeshUltra™-X and a GPS feed can generate Cursor on Target (CoT) messages without the need for an external End User Device (EUD). CoT messaging can be used to control tracking antennas or to allow direct reporting of radio position in situational awareness applications such as ATAK.

## ATAK and WINTAK Integration

DTC MeshUltra and MeshUltra™-X offer proven “out of the box” integration with ATAK and WINTAK, with direct USB connection to EUDs.

## Intelligent Routing Optimizes LPI/LPD Performance

DTC Mesh Algorithms are all about minimizing unnecessary transmissions. Our optimized, cost-table-based algorithms are designed to route data as efficiently as possible from A to B. They do so with the minimum of transmissions, maximizing network capacity, while lowering power consumption and optimizing LPI/LPD performance. No “network flooding” algorithms here!

## True Multicast Support

Unlike some competitors, DTC MeshUltra™-X intelligently handles Multicast traffic to further reduce unnecessary transmissions. This helps to optimize throughput video applications – or in “peer to peer” PLI and voice applications. It also contributes to enhanced LPI/LPD performance and lower power consumption.

## On-Board Encryption with FIPS140-2

MeshUltra™-X is available with optional AES256 or AES128 encryption, subject to export control. DTC AES256 has been accredited by NIST to FIPS140-2, ensuring the highest security for your data. Support is also provided for external encryption solutions where required.

## Greater Range

Noise-optimized RF design and high-performance LDPC error correction coding, together with our custom-developed Tactical Mesh waveform and automatic MiMo mode switching, allows MeshUltra™-X to deliver DTC's

longest ranges yet – up to 20% further than our previous MiMo Mesh mode.

For the longest range requirements, DTC offers a full line of Mesh hardware supporting power outputs up to 30W. Together with our narrow channel bandwidth options, it can offer ranges previously unheard of for IP Mesh systems.

## Cognitive Radio Capabilities

With Auto Adaptive Modulation and seamless automatic full MiMo to reduced MiMo switching, MeshUltra™-X constantly works to maintain the most robust link possible and the highest possible throughput as conditions change. DTC's optional Interference Avoidance Scheme (IAS) takes things one step further, offering true cognitive radio capabilities for the first time in a DTC radio.

## Interference Avoidance (IAS) Scheme

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.

