

MeshUltra™ IP Mesh Waveform Family

MeshUltra™ is our most advanced Mesh waveform family yet and it 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 320MHz to 6GHz and tri-band capable products, plus options for OEM integration, DTC can offer hardware solutions for every application.

MeshUltra™ NETNode Phase 5

DTC's flagship dedicated Mesh platform, with four antennas and 2x4 MiMo, provides the longest range and highest throughput. Ideal for base stations, mobile nodes as well as integration on larger UxV platforms, the NETNode Phase 5 is available in robust mountable form factors and is tested and certified to Military Standard 810H for a wide variety of environmental survivability ratings.

NETNode2x2W-5RM



"Robust Mobile" ruggedised enclosure with integrated GPS, 4W output power comprehensive interface options, ideal for vehicle mounting.

NETNode2x2W-5RMT



This tri-band version of the 5RM unit, offers support for L-band, S-band and C-band and 4W output power.

NETNode2x5W-5RM



High power MiMo Mesh with 10W output power for extreme range applications.

NETNode2x2W-5PT



The tri-band product offers increased frequency agility with 4W output power, support for L-band, S-band and C-band, provided by one physical unit.

NETNode2x15W-5RH



For the longest range links. The 5RH is ideal for extended outdoor deployment and offers a full 30W of RF output power.

MeshUltra™ OEM

Original Equipment Manufacturers can offer the benefits of MeshUltra™ to their customers with OEM solutions based on the SDR-C, SDR-M and SDR2x1W-U (2x2 MiMo) and the D1740 platform (2x4 MiMo) and supported by a range of amplifiers with output powers of 2x1W, 2W and 5W.

Contact us or see our OEM brochure for more information.



MeshUltra™ SDR

The ultimate in flexibility, the SDR Software Defined Radio is able to operate as a 2x2 MiMo Mesh radio, hosting the latest MeshUltra™ waveform, or alternatively as a unidirectional COFDM Transmitter or Receiver family.



SDR-M

Based on an innovative single-board construction and rugged mountable enclosure, the SDR-M is DTC's smallest, lightest and lowest power Mesh radio and offers up to 400mW output power.



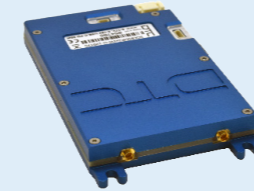
SDR-P

The SDR-P is a software defined radio with 2W of total output power, ideally suited for a range of manned, unmanned, commercial and tactical applications.



SDR-U

The SDR-U is a single board medium power Mesh radio ideally suited for integration into Unmanned systems.



SDR-H2

The SDR-H2 is a Handheld MANET Mesh Transceiver in a rugged "Soldier Radio" form factor. Offering a full 2 watts of output power and employing standard MBITR batteries and accessories, the SDR-H2 is ideal for a variety of Tactical Mesh deployments.



SDR-C

The SDR-C offers 200mW output in a tiny "Concealment" form factor, ideally suited for integration in small drones or other size/weight critical applications.



SDR-R

The SDR-R offers the same feature set and 200mW output power as the SDR-C but in a rugged form factor with military standard connectors. Ideal for platform integration or as a low power Soldier Data radio.



For more information about our MeshUltra™ Waveform Family or any other DTC solutions, contact your Sales Account Manager or one of our Regional Sales Offices. Or email us at info@domotactical.com

AMERICA

T: +1 571 563 7077
E: info@domotactical.com

UNITED KINGDOM

T: +44 (0) 1489 566 750
E: solent.info@domotactical.com

DENMARK

T: +45 8791 8100
E: spectronic.sales@domotactical.com

UAE

T: +971 0 44 53 72 01
E: sales@codancomms.com

SINGAPORE

T: +65 6339 0508
E: singapore.info@domotactical.com

AUSTRALIA

T: +61 8 8305 0311
E: sales@codancomms.com

The information contained in this document is the property of Domo Tactical Communications (DTC) Ltd. This document and the information contained herein is provided for evaluation purposes only and is subject to change without notice. Domo Tactical Communications (DTC) Ltd assumes no responsibility for errors that might appear in this document and gives no representations or warranties as to the accuracy of the information contained herein, including but not limited to the suitability and performance of the product or its intended application.

© Copyright Domo Tactical Communications (DTC) Limited 2021. All Rights Reserved.

0523



MeshUltra™

Powering **DTC**

MeshUltra™ Waveform Family
Revolutionising Mesh Technology

DOMOTACTICAL.COM

MeshUltra™ IP Mesh Waveform Family

Revolutionising Mesh Technology

DTC has long been the leader in Wireless IP Mesh technology. Our Tactical MANET IP Mesh waveforms were designed from the ground up for robust performance in the most demanding dynamic environments, free from the compromises of competitive solutions that are based on consumer standards.

Time and again, DTC Mesh excels not just on the datasheet or in the lab but in the most demanding real-world applications.

The DTC MeshUltra™ family offers our most capable and flexible Mesh yet.

The MeshUltra™ Family

DTC's MeshUltra™ waveform family is a range of High Performance Tactical COFDM MANET IP Mesh waveforms optimized for different deployment scenarios to ensure that our customers always get the best possible performance rather than a “one size fits all” compromise solution.

The whole MeshUltra™ waveform family is supplied as standard on all DTC Phase 5 NETNode products and Mesh-licensed SOL8SDR radios, allowing customers to choose the best waveform for each deployment and to freely swap between waveforms even after purchase.

MeshUltra™-M

MeshUltra™-M has been developed to deliver outstanding throughput and robustness in very dynamic “high mobility” scenarios such as Motor Racing, Unmanned Vehicle control or street level tactical surveillance. It rapidly updates information on network topology and link quality to ensure that every transmission is delivered via the best available route. Supporting up to 24 nodes and channel bandwidths up to 20MHz and delivering throughputs up to 87Mbps, MeshUltra™-M delivers rock solid connectivity in the most demanding of environments.



MeshUltra™-80 (MeshUltra™)

Previously known simply as MeshUltra™, MeshUltra™-80 offers support for up to 80 nodes™ and throughputs of up to 87Mbps in a 20MHz channel. It offers good overall performance in a wide range of deployment scenarios.

MeshUltra™ Waveform Family Comparison Table

WAVEFORM	MAX NO. OF NODES	CHANNEL BANDWIDTHS	MAX THROUGHPUT	RECOMMENDED NODE COUNT	KEY CHARACTERISTIC	TYPICAL APPLICATIONS
MeshUltra™-M	24	1.25-20MHz	~87Mbps	2-24	Outstanding Mobility Performance	Motor Racing, Broadcasting, Unmanned, Street Level Tactical Surveillance
MeshUltra™-X	144	1.25-5MHz	~22Mbps	25-144	Outstanding Throughput for Large Networks	Dismounted Soldier Systems, Unattended Ground Sensors, Large Drone Swarms, Voice Talkback Systems
MeshUltra™-80	80	1.25-20MHz	~87Mbps	25-80	Balance performance and support for medium/large networks	General wideband Mesh applications

Higher Throughput

With channel bandwidths up to 20MHz and adaptive modulation up to 64QAM, DTC MeshUltra™ waveforms support data rates of up to 87Mbps. Unlike some competitors, we specify real, usable payload data rates – not gross over the air data rate, including overheads.

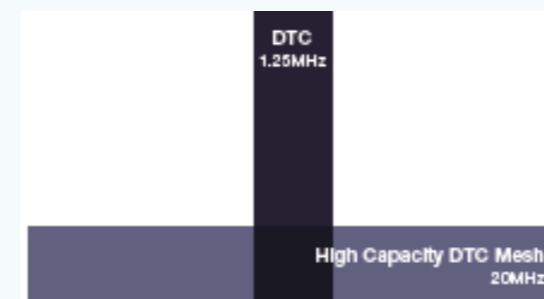
SQT Value	SNR Threshold/ dB	MiMo Mesh data capacity (Mbps) for each channel bandwidth and SQT value															
		Bandwidth (MHz)															
		1.25	1.5	1.75	2.5	3	3.5	5	6	7	8	10	12	14	16	20	
6	23.1	5.6	6.7	7.9	11.2	13.5	15.7	22.4	26.9	31.4	35.9	44.9	53.3	61.7	70.2	87	
5	17.1	4.0	4.8	5.6	8.0	9.6	11.2	16.0	19.2	22.4	25.6	32.0	38.0	44.0	50.0	62.0	
4	14.1	3.1	3.7	4.3	6.2	7.4	8.6	12.3	14.8	17.2	19.7	24.6	29.2	33.8	38.4	47.6	
3	11.1	2.0	2.4	2.8	4.0	4.8	5.6	8.0	9.6	11.2	12.8	16.0	19.0	22.0	25.0	31.0	
2	8.1	1.5	1.8	2.2	3.1	3.7	4.3	6.2	7.4	8.6	9.8	12.3	14.6	16.9	19.2	23.8	
1	5.1	0.8	0.9	1.1	1.5	1.8	2.2	3.1	3.7	4.3	4.9	6.2	7.4	8.5	9.7	12.0	

SQT Value	SNR Threshold/ dB	Reduced MiMo Mesh data capacity (Mbps) for each channel bandwidth and SQT value															
		Bandwidth (MHz)															
		1.25	1.5	1.75	2.5	3	3.5	5	6	7	8	10	12	14	16	20	
6	23.1	3.0	3.6	4.2	6.0	7.2	8.3	11.9	14.3	16.7	19.1	23.9	27.5	31.2	34.8	44	
5	17.1	2.1	2.6	3.0	4.3	5.1	6.0	8.5	10.2	11.9	13.6	17.0	19.6	22.2	24.8	30.0	
4	14.1	1.6	2.0	2.3	3.3	3.9	4.6	6.5	7.8	9.2	10.5	13.1	15.0	17.0	19.0	23.8	
3	11.1	1.1	1.3	1.5	2.1	2.6	3.0	4.3	5.1	6.0	6.8	8.5	9.8	11.1	12.4	15.5	
2	8.1	0.8	1.0	1.1	1.6	2.0	2.3	3.3	3.9	4.6	5.2	6.5	7.5	8.5	9.5	11.5	
1	5.1	0.4	0.5	0.6	0.8	1.0	1.1	1.6	2.0	2.3	2.6	3.3	3.8	4.3	4.8	5.8	

MeshUltra™-X supports channel bandwidths up to 5MHz

Greater Spectral Efficiency

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



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 is 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 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 around 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.

More Nodes

The DTC MeshUltra™ Family supports flat, single frequency Mesh networks of up to 144 nodes in channel bandwidths as narrow as 1.25MHz. With DTC's unique token-based channel access, more nodes does not need to mean more transmission clashes. MeshUltra™ also has no hard limit to the number of network hops.

Multiple Talk Groups

DTC is well known for its low latency Mesh talkback, facilitating crystal clear full duplex communications between multiple users. MeshUltra™ waveforms add to this capability with 32 selectable talk groups to allow multiple separate conversations or hierarchical talk schemes.

Greater Range

Noise-optimized RF design and high performance LDPC error correction coding, together with our custom developed Tactical Mesh waveforms and automatic MiMo mode switching allows MeshUltra™ to deliver DTC's longest ranges yet – up to 20% further than our previous MiMo Mesh mode.

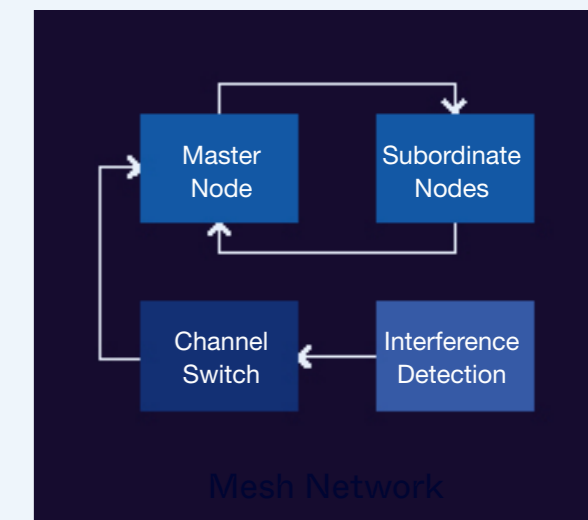
For the longest range requirements, DTC offers a full line of Mesh hardware supporting power outputs up to 30 Watts, which together with our narrow channel bandwidth options can offer ranges previously unheard of for IP Mesh systems.

Cognitive Radio Capabilities

With Auto Adaptive Modulation and seamless automatic full MiMo to reduced MiMo switching, MeshUltra™ 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.



Interlink Support

MeshUltra™ waveforms include DTC's innovative Interlink functionality, allowing nodes to be bridged together across different IP bearers, even between different networks on different RF frequencies. Interlink offers support for a range of different communication options - including direct support for a variety of USB Cellular and Wi-Fi dongles.