

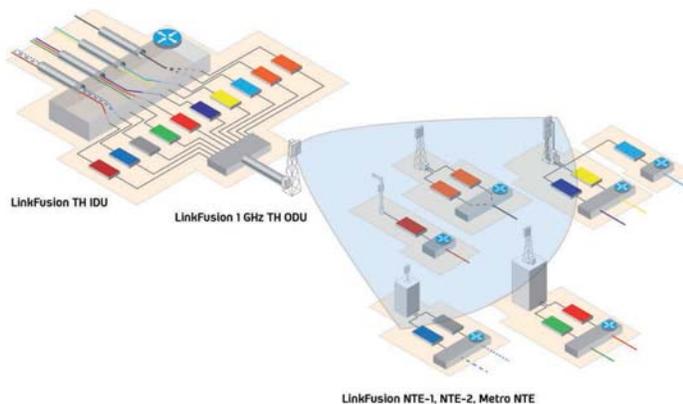
DATASHEET LINKFUSION

PEAK POINT-TO-POINT LINK PERFORMANCE IN A MULTI-GIGABIT POINT-TO-MULTIPOINT MMWAVE SYSTEM

Bluwan has developed the 2nd Generation of Carrier Grade Point to Multipoint (PMP) microwave equipment in the 42GHz band to meet the capacity requirements for next generation networks in a PMP configuration, ensuring substantial year-on-year Opex savings.

Bluwan's LinkFusion can scale to deliver multi gigabit sector capacity by combining up to 20 x 40 MHz channels into a single outdoor sector radio, thus delivering a sector capacity up to 2.5 Gbps, allowing operators to deliver 125 Mbps or 2x125 Mbps (with LACP) IP peak performance connectivity for multi-layered heterogeneous networks including 3G/4G macro sites, small cells, or WiFi backhaul, as well as providing very high throughputs to high value triple play or Enterprise customers on the same platform and maximising the ROI of the Hub site infrastructure cost. Up to two channels can be dedicated to a Network Terminating Equipment (NTE), or a single channel can be shared across multiple NTEs for lower throughput requirements.

For the first time, operators are able to deploy Multipoint Microwave technology and service peak PTP performance at a substantially lower Capex and Opex than traditional FTTx solutions.



The LinkFusion system fuses multiple channels to deliver up to 2.5 Gbps sector capacity using a 1 GHz ultra-wide band transmission hub ODU. Remote terminals, or NTEs, can receive up to 2x125 Mbps (with LACP) of peak capacity each (peak mode) or share channel bandwidth (shared mode).

Bluwan's 42 GHz LinkFusion Millimetre Wave (mmW) Point-to-Multipoint backhaul system is ideally suited for HetNet backhaul. With 10 Gbps per 4 sector transmission hub, MNOs can easily address their bandwidth density requirements. For the first time, using Bluwan's compact 125 Mbps and 2x125 Mbps (with LACP) Network Terminating Equipment (NTE), MNOs can deliver peak Point-to-Point performance combined with the TCO benefits of a Point-to-Multipoint solution. Line-of-Sight (LoS) un-masking and canyon in-filling can easily be delivered using Bluwan's Link Fusion NTE as a Relay.

Beyond the traditional cost reduction associated with the usage of Point-to-Multipoint, Bluwan's LinkFusion system enables operators to simply light up a coverage area by deploying a capacity pool, and deploy end-points or relays as required to provide total coverage. Operators no longer need to spend large amounts of time designing and re-designing complex mesh or daisy-chained network topologies. Due to LinkFusion's inherent high capacity and bandwidth pooling capabilities, backhaul service providers, or MNOs engaged in network sharing alliances can deliver multi-dimensional QoS profiles for multiple operators across multiple sites, enabling them to easily assign bandwidth pools for backhaul and RAN sharing.

This datasheet is provided for information purposes only. The details contained in this document, including product and feature specifications, are to the best of our knowledge true and accurate. They are, however, subject to change without notice and shall not bind Bluwan in any way.

42 GHz LinkFusion NTE



PoE fed compact outdoor 125 Mbps or 2x125 Mbps (with LACP) NTE with integrated modem, radio and antenna

26 dBi @ 6°, 271 x 198 x 125 mm

42 GHz LinkFusion Hub Radio



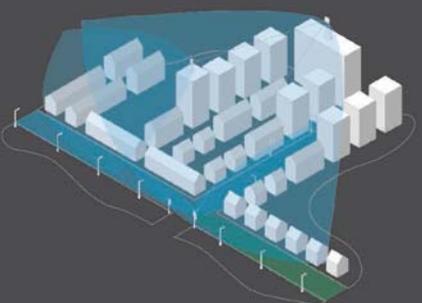
Compact Transmission Hub (TH) Sector outdoor unit with 1 GHz wide radio and a choice of antennas

*16 dBi @ 90°, 271 x 198 x 125 mm
19 dBi @ 45°, 271 x 198 x 125 mm
22 dBi @ 22°, 271 x 198 x 125 mm*

42 GHz LinkFusion Indoor Unit



Typical LinkFusion Solution Deployment Model



LINKFUSION SOLUTION SPECIFICATION

SYSTEM PARAMETERS	
Frequency Band	40.5 - 43.5 GHz
Radio Blocks offered	40.5 - 41.5, 41.5 - 42.5, 42.5 - 43.5 GHz
Radio Bandwidth	1 GHz ⁽¹⁾
Radio Interface / Access Method	Multi Channel Dynamic TDD (Time Division Duplex)
Sub-Channel Sizes	20, 40 MHz
Modulation	QPSK1/2, QPSK3/4, 16QAM1/2, 16QAM 3/4, 64QAM 2/3, 64QAM 3/4, 64QAM 5/6
Forward Error Correction	Low-Density Parity-Check (LDPC)
Channel throughput @ 40 MHz	125 Mbps (20 x 40 MHz Channels per 1 GHz)
Sector Throughput	2.5 Gbps per 1 GHz radio (sector)
Traffic Management	Dynamic up/downstream throughput
Cell Range	3.0 km ⁽²⁾
Security	128 bit AES Encryption and Access Control
Carrier Ethernet Features	Native Ethernet, 802.1p, 802.1q, PTPv2 ⁽³⁾
Latency	2 ms (typical)
Management	WEB, CLI, SNMP and Remote Management via Telnet & SSH
TH SECTOR PARAMETERS	
IDU Definition	19" build, 1U high, 56.5 cm deep, 7.5 kg (400 MHz ⁽¹⁾ per 1U IDU, stackable)
IDU Traffic Interface	4 x GigE ports for SFPs (electrical SFP and optical SFP SX or LX)
IDU Management Interface	1 x RJ45 & 1 x Serial DB-9
IDU RF Ports	2 x SMA female with 24 VDC injection on Tx & Rx port
IDU Local Monitoring	LED 1: Green - Orange for PSU (Primary/Secondary PSU), LED 2: Green - Red for Tx (Radio On/Off)
Radio Transmit Power	26 dBm
Peak Throughput @ 40MHz	125Mbps@64QAM 5/6 - 118Mbps@64QAM 3/4 - 105Mbps@64QAM 2/3 - 78Mbps@16QAM 3/4 - 50Mbps@16QAM 1/2 - 39Mbps@QPSK 3/4 - 26Mbps@QPSK 1/2 - 12Mbps@BPSK 1/2
ODU Dimensions & Weight	271 x 198 x 125 mm / 3.0 kg / 60 - 110 mm pole mount
Antenna Gain & Beamwidth	16 dBi (90° Sectoral Antenna) / 19 dBi (45° Sectoral Antenna) / 22 dBi (22.5° Sectoral Antenna)
TH ELECTRICAL / PHYSICAL	
Power Supply & Consumption	-48V DC / 125W (2.5A max)
Operating Temperatures	ODU; -30°C to +60°C / IDU; 0°C to +45°C
Humidity	ODU: 95% / IDU: 85% (non condensing)
IP Rating	IP66 (ODU only)
STANDARDS COMPLIANCE	
Radio Compliance	ETSI EN 301 997-1, ETSI EN 301 997-2
Safety & EMC	ETSI EN 301 489-1, EN 301 489-4, EN 60950-1, EN 50420 (V1.1.1) and FCC part 101
Regulatory Compliance	RoHS, WEEE

LINKFUSION NTE DATASHEET

The LinkFusion NTE-1 (125 Mbps) and NTE-2 (2 x 125 Mbps with LACP) are outdoor compact units with all the elements in one box (switch, modem, multiplexer, radio and antenna). They are ideally suited for rooftop, street furniture or tower installations without the requirement of equipment space in an indoor room.

The unit is Power over Ethernet (PoE) fed, making the cabling of the unit much simpler, cost effective, and faster. All that is required is a RJ45 connection as well as AC or DC power for the small indoor PoE power injector.



SYSTEM PARAMETERS		ELECTRICAL / PHYSICAL	
Throughput	NTE-1: 125 Mbps / NTE-2: 2x125 Mbps & LACP	Dimensions & Weight	NTE-1: 271 x 198 x 125 mm, 3.0 kg NTE-2: 271 x 198 x 125 mm, 3.2 kg
Antenna Gain & Beamwidth	26 dBi / 6° Directive Antenna	Power Supply	110/240 V AC or 48/60 V DC
Radio Transmit Power	26 dBm (1 GHz wide radio)	Power Consumption	NTE-1: 35W, NTE-2: 40W
Radio Receive Sensitivity	see TH Rx Sensitivity	Operational Wind Speed	220 km/h
Network Interface	2 x RJ45 10/100/1000 BaseT	Survival Wind Speed	336 km/h
Security	128 bit AES Encryption and Access Control	Operating Temperatures	-30°C to +60°C
Traffic Management	Dynamic up/downstream throughput	Humidity	95% (non condensing)
Carrier Ethernet Features	802.1q, 802.1p, PTPv2 ⁽³⁾	IP Rating	IP66
Latency	2 ms (typical)	Mounting	60 - 110 mm Pole Mount
Management	Web, CLI, SNMP, Telnet		

⁽¹⁾ spectrum allocation in 250, 500 and 1000 MHz blocks supported

⁽²⁾ based on generic assumption, contact us for more details

⁽³⁾ based on marked packets and QoS



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