

**X01**  
"Lucius"



# XNET

## Outdoor Node Specifications



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Datasheet



## INTRODUCTION

The XNET X01 "Lucius" is an advanced two-carrier outdoor eNodeB (eNB) compliant with 3GPP LTE TDD technology. This 4x250mW eNB operates in Carrier Aggregation (CA) mode or Dual Carrier (DC) mode.

In CA mode, the X01 Lucius supports 2CC (2 Component Carriers) DL/UL CA. 2CC DL/UL CA doubles DL/UL peak throughput compared to a single carrier by aggregating two separate spectrum resources into a virtual contiguous spectrum resource.

In DC mode, each carrier is treated as an independent cell, supporting 96+96 users with each cell supporting 5, 10, 15, or 20 MHz bandwidth. Using a X01 Lucius in DC mode simplifies and streamlines the deployment of split sectors.

## HIGHLIGHTS

- Standard LTE TDD Band 48
- Compact, all-in-one design of internal antenna and GPS
- Excellent Non-Line-of-Sight (NLOS) coverage
- Peak rate: Up to DL 290 Mbps and UL 68 Mbps with 2x20 MHz bandwidth
- 2CC DL/UL CA improves the spectrum efficiency of fragmented spectrum resources
- 96 RRC connected users per carrier (96+96 in DC mode), upgradeable to higher capacity in future releases
- Integrated small cell form factor for quick and easy installation
- Lower power consumption, which reduces OPEX

## TECHNOLOGY

<b>Standard</b>	LTE TDD RAN (3GPP Release 15 compliant)
<b>TDD UL/DL Configuration</b>	1, 2, 6 (with Special Subframe Configuration 7)
<b>Frequency Band</b>	B48 (3550 MHz–3700 MHz)
<b>Channel Bandwidth</b>	SC: 5/10/15/20 MHz CA: 40 MHz as maximum aggregated bandwidth
<b>Multiplexing</b>	MIMO: 2x2 (DL)

## INTERFACE

<b>Ethernet Interface</b>	1 RJ-45 Ethernet interface (1 FE/GE)
<b>Power Supply</b>	PoE++ (IEEE 802.3bt compliant)
<b>LED Indicators</b>	4 x status LED CELL1/CELL2/ALM/PWR

## PERFORMANCE

<b>Peak Data Rate (DC)</b>	<b>2x20 MHz</b>	<b>DL (Mbps)</b>	<b>UL (Mbps)</b>
	UL/DL Config 1	2x105	2x28
	UL/DL Config 2	2x145	2x14
	UL/DL Config 6	2x85	2x35
<b>Peak Data Rate (CA)</b>	<b>2x10 MHz</b>	<b>DL (Mbps)</b>	<b>UL (Mbps)</b>
	UL/DL Config 1	2x52.5	2x14
	UL/DL Config 2	2x72.5	2x7
	UL/DL Config 6	2x42	2x17
<b>Peak Data Rate (CA)</b>	<b>2x20 MHz</b>	<b>DL (Mbps)</b>	<b>UL (Mbps)</b>
	UL/DL Config 1	210	56
	UL/DL Config 2	290	28
	UL/DL Config 6	174	68
	<b>2x10 MHz</b>	<b>DL (Mbps)</b>	<b>UL (Mbps)</b>
	UL/DL Config 1	105	28
	UL/DL Config 2	145	14
	UL/DL Config 6	87	34

	<b>20 MHz + 10 MHz</b>		<b>DL (Mbps)</b>	<b>UL (Mbps)</b>
	UL/DL Config 1		154.5	42
	UL/DL Config 2		213	21
	UL/DL Config 6		126	51
	<b>20 MHz + 15 MHz</b>		<b>DL (Mbps)</b>	<b>UL (Mbps)</b>
	UL/DL Config 1		185	48
	UL/DL Config 2		253	24
	UL/DL Config 6		151	60
<b>User Capacity</b>	Up to 96 RRC connected users per cell (4 users per TTI)			
	<ul style="list-style-type: none"> <li>• SC/CA: 96 RRC connected users</li> <li>• DC: 96+96 RRC connected users</li> </ul>			
<b>Maximum Deployment Range</b>	5 kilometers			
<b>Latency</b>	30 milliseconds			
<b>Receive Sensitivity</b>	-100 dBm (per channel)			
<b>Modulation</b>	MCS0 (QPSK) to MCS27 (256 QAM) DL: QPSK, 16 QAM, 64 QAM, 256 QAM UL: QPSK, 16 QAM, 64 QAM			
<b>Transmit Power Range</b>	0 to 24 dBm per channel (combined +30 dBm, configurable) (1 dB interval)			
<b>ARQ/HARQ</b>	Yes			
<b>Synchronization</b>	GPS (built-in), 1588v2			

## MODULATION LEVELS (ADAPTIVE)

MCS	Modulation Scheme	RSRP (dBm)	Coverage Distance (km)
0-4	QPSK	$-120 \leq \text{RSRP} < -110$	$4 < D \leq 5$
5-9	16 QAM	$-110 \leq \text{RSRP} < -100$	$3 < D \leq 4$
10-19	64 QAM	$-100 \leq \text{RSRP} < -85$	$2 < D \leq 3$
20-27	256 QAM	$\text{RSRP} \geq -85$	$D \leq 2$

NOTE: The information provided is for reference only as the environment can impact modulation levels. Scenario: Base Station height is 30 meters; Customer User Equipment (CPE) height is two meters.

## FEATURES

<b>Voice</b>	VoLTE*
<b>NSA</b>	Supported

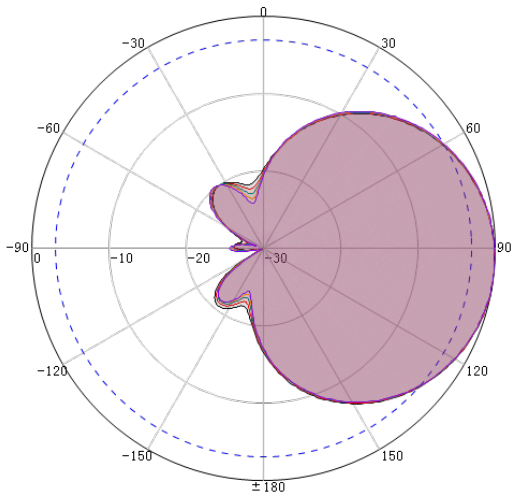
## LINK BUDGET

<b>Antenna</b>	Integrated 4T4R antennas <ul style="list-style-type: none"> <li>• Horizontal Beam width <math>65 \pm 10^\circ</math></li> <li>• Vertical Beam width <math>17^\circ</math></li> <li>• Polarization: <math>\pm 45^\circ</math></li> </ul>
<b>Electrical Downtilt</b>	$6^\circ$ at Band 48
<b>Antenna Gain</b>	$13 \pm 1$ dBi
<b>Maximum EIRP</b>	$43 \pm 1$ dBm
<b>Power Control</b>	UL Open-loop/Closed-loop Power Control, DL Power Allocation (3GPP TS 36.213 compliant)

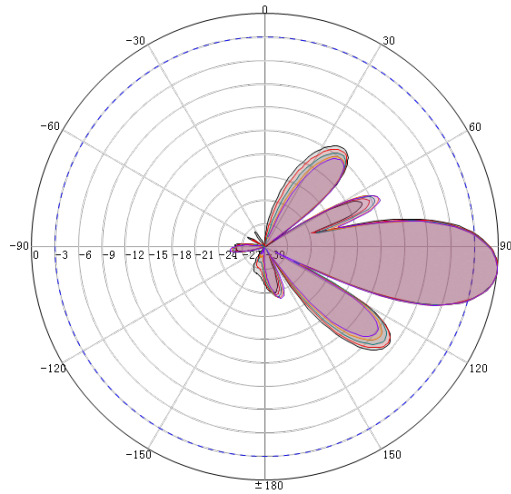
## PHYSICAL

<b>Surge Suppression</b>	Yes
<b>Power Interface</b>	Differential mode: $\pm 10$ KA
<b>Lightning Protection</b>	Common mode: $\pm 20$ KA
<b>MTBF</b>	$\geq 150000$ hours
<b>MTTR</b>	$\leq 1$ hour
<b>Ingress Protection Rating</b>	IP65
<b>Operating Temperature</b>	$-40^\circ\text{F}$ to $131^\circ\text{F}$ / $-40^\circ\text{C}$ to $55^\circ\text{C}$
<b>Storage Temperature</b>	$-49^\circ\text{F}$ to $158^\circ\text{F}$ / $-45^\circ\text{C}$ to $70^\circ\text{C}$
<b>Humidity</b>	5% to 95% RH
<b>Atmospheric Pressure</b>	70 kPa to 106 kPa
<b>Power Consumption</b>	Typical 20 W, maximum 25 W
<b>Weight</b>	10.7 lb/4.85 kg (without bracket)
<b>Dimensions (HxWxD)</b>	12.6 x 8.9 x 4.1 inches 319 x 227 x 104 millimeters
<b>Installation</b>	Pole or wall mount

## ANTENNA PATTERN



H-Pattern



V-Pattern