# SLANPRO

## LP-ATRX496027a3X

ATREX Series 4.9 – 6.06 GHz Licensed Band EIRP 27dBm MIMO PTP / PTMP Ethernet Radio with 2 x 2, 4 x 4 or 6 x 6 external MIMO antenna configurations with 100~264 VAC 50~60Hz, 48VDC output Converter, 45 W max. and a 48 VDC PoE Injector

LPATRX496027a3X \_PFD\_ENB01W

Wireless - Equipment

#### Características

- PTP/ PTMP Ethernet backhaul.
- 4.9~6.06 GHz Operating Frequency.
- MIMO HT-OFDM Modulation.
- Integrated Multi-Radio Interfaces.
- Fast Data Switching Technology.
- 14 Channel Bandwidths: (2.5/3 /3.5/4/5/6/7/8/10/15/20/30/40/ 52 MHz).
- Up to 268 Mbps Real TCP Throughput.
- GPS Coordinates and Internet map database.
- 5.2 bits/s/Hz amazing spectral efficiency.
- Multi-hops repeating & Built-in NMS.
- Real Aggregate TCP Throughput ≥320Mbps @ 4x4 & 6x6 Base Station.
- High Efficiency in Multi-hops Repeating.
- Low Throughput dropped (≥100 Mbps @ 10 hops).
- Short Latency increased (≤10 ms @ 10 hops).
- Latency in 20 Hops: 35ms.
- IP-68 Water & Dust Resistant standard, IP-69h with GORETM membrane.
- IEC61000-4-5 Surge Protection.
- Outstanding MTBF.
- Propietary PoE powered:
   X=3: 100~264 VAC 50-60Hz, 48VDC output Converter, 45 W max., and a 48 VDC PoE Injector.



# LP-ATRX496027a3X ATREX Series 4.9 – 6.06 GHz Licensed Band EIRP 27dBm MIMO PTP / PTMP Ethernet Radio with 2 x 2, 4 x 4 or 6 x 6 external MIMO antenna configurations with 100~264 VAC 50~60Hz, 48VDC output Converter, 45 W max. and a 48 VDC PoE

Multi-Hops Repeater in ATREX Series 4.9 - 6.06 GHz Licensed Band EIRP 27dBm MIMO PTP / PTMP Ethernet Radio with 2 x 2, 4 x 4 or 6 x 6 external MIMO antenna configurations offers customers a great solution for PTP / PTMP / Hot zone applications by integrated multi-radios interfaces (up to  $3^*$  Radio modules) and Fast Data Switching technology from LanPro.

This series shows incredible efficiency on multihops repeating – truly throughput  $\geq$ 100Mbps and only  $\leq$  10 ms total latency after 10 extended hops. And low throughput drop per hop(~5Mbps), much different from the traditional Wi-fi that dropped 50% throughput per each extended hop and can't get reply from remote device after 5~6 hops for too long latency.

There are 14 channel BW options can be selected easily by software (2.5/3/3.5/4/5/6/7/8/10/15/20/30/40/52 MHz). This feature provides the flexibility of deployment channel plan in crowded city area or high capacity backhaul -- throughput up to 268Mbps.

With MIMO HT-OFDM (High Throughput OFDM) technology, this radio is a high capacity PTP / PTMP backhaul for 5GHz ISM band wireless deployment.

It utilizes coordinate and built-in NMS with internet map database to show the environment and status of the link. Customers can easily figure out the linking situation of the deployed radios.

www.lanpro.com

## A Product Highlights

## • Integrated Multi-radios interfaces on Atrex-MIMO platform.

Multiple radios interfaces were integrated by "Fast Data Switching" technology from LanPro inside the Atrex-MIMO series platform. There are 3 models for options:

LP-ATRX496043a31 (1\*radio) LP-ATRX496043a32 (2\*radios)

## LP-ATRX496043a33 (3\*radios)

and each radio interface can be configured independently to run different wireless connectivity missions.

## High efficiency transmission in multi-hops repeating

The backbone throughput will remain in a high level even after several hops repeating. ( $\geq 100$  Mbps @ 10 hops), and the total latency is short as well ( $\leq 10$  ms @ 10 hops)

### • Effective spectrum utility/variable capacities with 14 channel Bandwidths

This radio has 14 channel Bandwidths: (2.5 / 3 / 3.5 / 4 / 5 / 6 / 7 / 8 / 10 / 15 / 20 / 30 / 40 / 52MHz) for optional, which is adjustable via software. This function provides flexibilities of channel plan in crowded urban environment and variable capacities for different applications.

#### • MIMO HT-OFDM technology provides amazing spectral efficiency

Up to 5.2 bits/s/Hz amazing spectral efficiency for all channel BW provided by the MIMO HT-OFDM technology. Work with the variable channel BW options, these two combination features provides great benefits for both crowded urban area and rural area with less interference.

Channel BW (MHz)	2.5	3	3.5	4	5	6	7	8	10	15	20	30	40	52
Real TCP throughput (Mbps)	12	14	17	20	25	30	35	40	51	77	104	158	215	268
Арр	Valuable spectrum			Crowded urban							Ru	ral		

#### • GPS Coordinates and Internet map database

GPS Coordinates marked system and internet map database help the administrator to monitor the connection structure and unit status in the PTP / PTMP network.

### • Robust design for harsh environment

For complete outdoor applications, radio can balance the internal pressure itself automatically, complies with IP-68 water resistant

## B Typical Graphical User Interface (GUI) showing Network Management EXAMPLES







Local Site info-purple node

Remote Site info-blue node

Link status

Link performance-poor (red line)

	Index	MAC Address	ID Address	-	CDS Coordin		Alterna	Mainh
	Index	MAC Address	IP Addres	•	GP 5 Coordina	1145	An(m)	Meigh
Wireless 1	Refresh <-	<						
	Status: P2P Bri Channel: 5710 Bit Rate: 300 M Assocaited: 1	dge mode enabled 000MHz bps						
	Index MAC	Address IP Add	dress RSSI	TX Rate	RX Rate	TX Modul:	ation R	X Modulat
	1 00:1b:	5c:00:23:03 192 168	1.233 -41/-44	292.03Mbps	271.49Mbps	DS 64QA	M 5/6 D	S 64QAM
Wireless 2	Refresh <	c dge mode enabled 000MHz bps						
	Index MAC	Address IP Add	ress RSSI	TX Rate	RX Rate	TX Modula	ation R	X Modulat
Status of neighboring	1 00:1b:	5c:00:22:13 192.168	1.231 -51/-51	291.75Mbps	293.09Mbps	DS 64QAI	M 5/6 D	S 64QAM
Status of neighboring sites	1 00:1b: Refresh Wireless 1 : 300 Mbps, Hall	5c:00:22:13 192.168	<u>1231</u> -51/-51	291.75Mbps	293.09Mbps	DS 64QAI	M 5/6 D	IS 64QAM
Status of neighboring sites Port Statistic	1 00:1b: Refresh Wireless 1 : 300 Mbps, Hall Clear	5c:00:22:13 <u>192 168</u> Clear << I Duplex Total bytes	1231 -51/-51 Total packets	291.75Mbps	293.09Mbps	DS 64QAI	Errors	S 64QAM
Status of neighboring sites Port Statistic	1 00:1b: Refresh 1 Wireless 1 : 300 Mbps, Hal Clear Sent	5c:00:22:13 192 188 Clear << Duplex Total bytes 4,870,939,704	1231 -51/-51 Total packets 4,622,89	291.75Mbps Unicas 4,62	293.09Mbps t packets 20,217	DS 64QAI Multicast 1,872	Errors	S 64QAM Dropp 0
Status of neighboring sites Port Statistic	1 00:1b: Refresh 1 : 300 Mbps, Hall Clear Sent Received	5c:00:22:13 192 198 Clear << Duplex Total bytes 4,870,939,704 5,682,786,665	1231 -51/-51 Total packets 4,622,89 4,352,289	291.75Mbps Unicas: 4,62 4,34	293.09Mbps t packets 20,217 14,829	DS 64QAI Multicast 1,872 7,460	Errors 0	Dropp 0 0
Status of neighboring sites Port Statistic	1 00:1b: Refresh Wireless 1 : 300 Mbps, Hall Clear Sent Received Wireless 2: 300	Clear << Clear << Clear << Clear <br Clear	1231 -51/-51 Total packets 4,622,89 4,352,289	291.75Mbps Unicas 4,62 4,34	293.09Mbps t packets 20,217 44,829	DS 64QA1 Multicast 1,872 7,460	Errors 0 0	Droppe 0 0
Status of neighboring sites Port Statistic	1 00:1b: Refresh Wireless 1 : 300 Mbps, Hall Clear Sent Received Wireless 2: 300 Clear	5c:00:22:f3 192 188 Clear << Duplex Total bytes 4,870,939,704 5,682,786,665 Mbps, Half Duplex Total bytes	1231 -51/-51 Total packets 4,622,89 4,352,289 Total packets	291.75Mbps Unicas 4,62 4,34 Unicas	293.09Mbps t packets 20,217 14,829 t packets	DS 64QAI Multicast 1,872 7,460 Multicast	Errors 0 0 Errors	Droppe 0 0 Droppe
Status of neighboring sites Port Statistic	1 00:1b: Refresh Wireless 1 : 300 Mbps, Hall Clear Sent Received Wireless 2: 300 Clear Sent	Sc:00:22:13         192 18           Clear         <	1231 -51/-51 Total packets 4,622,89 4,352,289 Total packets 4,490,76	291.75Mbps Unicas: 4,62 4,34 Unicas: 3,84	293.09Mbps t packets 20,217 14,829 t packets 16,613	DS 64QAI Multicast 1,872 7,460 Multicast 643,463	Errors 0 0 Errors 0	Droppe 0 0 Droppe 0

# **C** Specifications

				RADIO							
Frequency	/ Range			4.9 to 6.06 GHz							
Channel E	Bandwidth			2.5/3/3.5/4/5/6/7/8/10/15/20/30/40/52 MHz							
Frequency	/ Stability			±2 ppm							
Modulatio	n			MIMO HT-OFD	Μ						
		HT-OFD	м / нт20			HT-OF	DM / HT40				
MCS	MCS Data Rate (Mbps)		Tx Output	Rx	Data Rat	e (Mbps)	Tx Output	Rx			
Index	GI=800ns	GI=400ns	Power (dBm)	Sensitivity (BER 1E10-6)	GI=800ns	GI=400ns	Power (dBm)	Sensitivity (BER 1E10-6)			
MCS8	6.5/13	N/A	27 (±1.5)	-94/-92 dBm	27	30	27 (±1.5)	-92/-90 dBm			
MCS9	13/26	N/A	27 (±1.5)	-92/-90 dBm	54	60	27 (±1.5)	-89/-87 dBm			
MCS10	13/26	N/A	26 (±1.5)	-90/-87 dBm	81	90	26 (±1.5)	-87/-83 dBm			
MCS11	26/52	N/A	25 (±1.5)	-87/-84 dBm	108	120	25 (±1.5)	-84/-81 dBm			
MCS12	39/78	N/A	24 (±1.5)	-84/-81 dBm	162	180	24 (±1.5)	-81/-79 dBm			
MCS13	52/104	N/A	23 (±1.5)	-80/-77 dBm	216	240	23 (±1.5)	-78/-75 dBm			
MCS14	58.5/117	N/A	23 (±1.5)	-78/-75 dBm	242	270	23 (±1.5)	-76/-73 dBm			
MCS15	65/130	N/A	23 (±1.5)	-76/-73 dBm	270	300	23 (±1.5)	-71/-71 dBm			

# **C** Specifications

	INTERFACES						
Ethernet	10/100/1000 Base-T RJ-45 port with M25 Cable Gland						
Ethernet Port Surge Protection	As per the IEC61000-4-5 standard						
Wireless Interface	Wireless Interface : $2 \times N$ -type Female Connectors / $4 \times N$ -type Female Connectors / $6 \times N$ -type Female Connectors						
	MANAGEABILITY						
Gestión y programación	Web-based (Chrome/IE 9.0 or later)						
Agentes SNMP	MIB II						
Protocolo	TCP/IP, IPX/SPX,NetBEUI						
Arquitectura de Red	PTP(1+0)/2+0)/Multi-hops/PTMP						
Alineación de antena	WEB GUI Local / Información Remota						
NMS embebido	Live linking status of the network by GPS coordinates and internet map database						
Othors	VLAN (IEEE 802.1Q, IEEE 802.1p)						
	QoS (IEEE 802.1p)						
	SECURITY						
Data Encryption	WPA-PSK / WPA2-PSK						
Advanced security	Mac Access Control/ Disable Broadcast SSID / Proprietary Protocol						
	ENVIRONMENTAL						
Operating Temperature	-30°C~60°C						
Storage Temperature	-30°C~70°C						
Relative Humidity	95% non-ondensing						
PO	WER SUPPLY OPTIONS						
*Note: LP-ATRX496027a3x Radios are basically <b>X=3:</b> 100~264 VAC 50~60Hz, 48VDC output Co	48 VDC powered nverter, 45 W max., and a 48 VDC PoE Injector						
LP-ATRX496027a31	10 Watts (typical) / 12 Watts (Max.) @ DC 48V						
LP-ATRX496027a32	16 Watts (typical) / 19 Watts (Max.) @ DC 48V						
LP-ATRX496027a33	22 Watts (typical) / 26 Watts (Max.) @ DC 48V						
	PHYSICAL						
Dimensions	259 (L) ×250 (W) × 75 (H) mm						
Weight	1.8 Kg						
	WARRANTY						
One (1) Year against manufacture or parts defect	ts						

## True Value of narrow bandwidth with high spectral efficiency

- 1. More effective non-overlapping channels for flexible channel Plan
- 2. More total assumption capacity due to more effective narrow band channels in limited clear band without interferences.



## EXAMPLE: IN A 170MHZ AVAILABLE RANGE WITH OTHER INTERFERENCE SOURCE

**40 MHz channel BW: 1 x effective channel** without interference only, total throughput < 300Mbps.

**10 MHz channel BW: 6 x effective channels** without interferences, each channel offers 50Mbps TCP throughput. Total throughput about 300Mbps.

**2.5 MHz channel BW: 24 x effective channels** without interferences, each channel offers 12Mbps TCP throughput. Total throughput about 300Mbps.

Channel BW (MHz)	2.5	3	3.5	4	5	6	7	8	10	15	20	30	40	52
Real TCP throughput (Mbps)	12	14	17	20	25	30	35	40	51	77	104	158	215	268
Арр	Valuable spectrum			Crowded urban							Ru	ral		

# CHANNEL BW & TCP THROUGHPUT LIST TABLE

Built-in NMS functio	on GPS Coordinates Input setting page
SLANPRO	
	Basic Setup
About System Setup Basic Settings Time thing	Device Settings Device Name DEVICE00212D Ethernet Data Rate VLAN(802.10) Enable Disable Management VLAN ID
Bridge Settings TCP/IP Settings GPS Coordinates Statistics Wireless Setup	GPS Coordinates If the device is connected to internet, you can also setup the GPS coordinates from <u>geographic map</u> . Latitude N • 3 * 25 * 11 Longitude E • 101 * 47 * 24
Management	Apply Cancel
About System Setup Basic Settings Time Setting Bridge Settings TCP/IP Settings GPS Coordinates Statistic Wireless Setup Management Logout	Pevice Position a latter (3*10*43*N, 101*36*43*E) Srivedah Apply Settings Sungai Buloh Burnarser Damas
Remote Site info M	AC / IP address / RSSI / Coverage
About -	The second second second
System Setup	00:1b:5c:00:21:2e
Statistice	-52dBm/-62dBm
Wireless Setup       Radio       Differential TX Rates       Security       Access Control       Status       Map	H nliands
Manugement	and the second of the

# **E** The Membrane Vents Enhance the Reliability, Quality and Image of Your Products.

GORETM Membrane Vents are designed to enhance the free passage of gases and vapors, equalizing the pressure differential between the enclosure and ambient before it builds to the point that a seal is compromised. Water, dust, dirt, cleaning agents and most oils are repelled by the oleophobic membrane, thereby protecting expensive and sensitive electronics.





- Water proof and dust proof to IP69K, protecting sensitive electronics.
- High airflow allows pressure equalization to prevent stress on enclosure seals, ultimately lowering enclosure design and manufacturing costs.
- Water and oil repellant ePTFE membrane is inert, non-shedding, chemically resistant, UV resistant and enclosed in a tough polyamide housing to ensure a long trouble-free service life even in extreme conditions.
- The micro-porous structure of the ePTFE membrane even keeps salt crystals from passing, minimizing electrical malfunctions caused by salt corrosion.
- Moisture vapor permeable to help aid in condensation and fogging reduction.
- Screw-in housing with silicone O-ring for versatile and easy installation.

#### 📄 How to Order

LP-ATRX496027a31	ATREX Series 4.9 – 6.06 GHz Licensed Band EIRP 27 dBm 2x2 MIMO High Capacity PTP / PTMP Ethernet Radio for use with one external MIMO antenna with 100~264 VAC 50~60Hz, 48VDC output Converter, 45 W max., and a 48 VDC PoE Injector.
LP-ATRX496027a32	ATREX Series 4.9 – 6.06 GHz Licensed Band EIRP 27 dBm 4x4 MIMO High Capacity PTP / PTMP Ethernet Radio for use with two external MIMO antennas with 100~264 VAC 50~60Hz, 48VDC output Converter, 45 W max., and a 48 VDC PoE Injector.
LP-ATRX496027a33	ATREX Series 4.920 – 6.075 GHz Licensed Band EIRP 27 dBm 6x6 MIMO High Capacity PTP / PTMP Ethernet Radio for use with three external MIMO antennas with 100~264 VAC 50~60Hz, 48VDC output Converter, 45 W max., and a 48 VDC PoE Injector.

LanPro is continuously improving its products and reserves the right to change specifications and availability without prior notice.