T(P)WMR-5004

EN50155 Multifunction VPN Router w/1x WiFi 11ac + 1 LTE 4G + 2 serial ports + 4 Gigabit X-coded (PoE) Switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway, Storage** ; WV input

- *Built-in 4 Gigabit X-coded (PoE) Ethernet managed switch +2 WAN/LAN ports*
- *Support LTE Cat 6*
- *WIFI radio for 802.11ac/a/b/g/n with 5GHz or 2.4GHz;*
- *Support WIFI 802.11e traffic prioritization and WMM*
- *MIMO technology 3T3R up to 6 antenna; Detachable antenna connectors with 6 SMA/QMA** type incl. 3 WIFI + 3 LTE*
- *Advanced wireless security WEP64/128bits/ WPA/ WPA-PSK (TKIP,AES)/ WPA2/ WPA2-PSK (TKIP,AES)*
- *VPN router for Multi-site VPN, OpenVPN, L2TP over IPsec, IPsec, L2 over GRE , IPGRE*
- *Support Client-base roaming*
- *Supports AP/ Bridge/Client/MESH modes*
- *Support 802.11s Wireless Mesh Network*
- *Load Balancing built-in 5 mechanism*
- *Optional EMMC Flash storage on-board**
- *Support NAT and Firewall*
- *Support Modbus gateway on serial ports*
- *Support 2 RS422/RS485 ports with 2.5KV isolation or 2x RS232 ports*
- *Optional 2 GT smart bypass protection*
- *Galvanic isolation on WV model from 16.8V~137.5V input*
- *PoE model: PoE budget 60W*
- *Environmental monitoring for router inside info with voltage, current, temperature and total PoE load; WIFI & LTE graphic signal strength*
- *Editable login page of captive portal for hot-spot application*
- *USB port to backup, restore the configuration file and upgrade firmware; Dual image firmware*
- *Optional eSIM chip enables router with versatile data plans**
- *EN50155/61373/45545 verification for railway application*

MESH · MULTI-SITE VPN · LOAD BALANCING · Protocol GATEWAY

CE · FC · RoHS2 · EMMC · USB Restore &Backup

OVERVIEW

Lantech T(P)WMR-5004 series is a next generation EN50155 multi-function VPN router w/ 1 x 802.11ac Wi-Fi + 1 x LTE modem +4 Gigabit X-coded (PoE) Ethernet switch + 2 WAN/LAN ports + 2 serial ports that supports advanced function of VPN, Load-Balancing, EMMC Flash Storage**, Protocol gateway(Modbus*), Storage**, Wi-Fi roaming and LTE dual SIM fail-over for industrial applications. The dual core CPU with 1.6GHz + 256M flash enables the router to multi-task smoothly.

LTE design 4G/3G w/2SIMs for redundancy

With one mobile LTE module (1L model), 2 SIM card slots, T(P)WMR-5004 provides redundant link between two service providers.

Both GPS and Russian GLONASS systems are supported.

IEEE 802.11ac one band radio up to 1.3GMbps bandwidth

With IEEE 802.11ac capability, T(P)WMR-5004 can operate either 5GHz or 2.4GHz bands, offering the maximum speed of 1.3GMbps bandwidth. It is also compatible with 802.11g/n that can work with 2.4GHz for longer range transmission.

MIMO technology with 3T3R and standard SMA / optional

QMA type connectors

Lantech T(P)WMR-5004 series adapts MIMO technology with smart antenna transmission and reception for 3T3R. With six external detachable antenna SMA/QMA** connectors and optional antennas, T(P)WMR-5004can have better Wi-Fi & LTE/GPS coverage.

Support AP/Bridge/Client mode, Mesh roaming

T(P)WMR-5004 supports AP/Bridge/Client mode for different applications.

It also supports client-base roaming to swap between the APs in a network.

Built-in Wireless Mesh network（WMN）

T(P)WMR-5004 supports Mesh network composed of different nodes. The set of SSIDs allow the wireless client to roam freely without the need for complicated account management. With Mesh protocol, it can provide a reliable, scalable, stable and seamless network topology.

Optional EMMC Flash storage**

The optional EMMC flash storage on the router can offer 8G/16G/32G capacity.

Optional eSIM**

By replacing physical SIM, optional eSIM chip will allow users to purchase data plans at low prices from local carriers in the world.

Wireless WMM QoS

T(P)WMR-5004 supports 802.11e standard which defines a set of Quality of Service for wireless LAN applications as well as WMM (WIFI multimedia)

Advanced security & 16 SSIDs

The security support standards including 64/128bits WEP, WPA/WPA2 PSK (TKIP, AES), 802.1x ensures the best security and active defense against security treads. Lantech T(P)WMR-5004 support up to 16 SSIDs, each SSID has its independent security and encryption.

Load Balancing with 5 mechanism for multi-WANs

T(P)WMR-5004 supports Load Balancing for LTE / WAN connections. There are five schemes for Load Balancing function:

Pack	Algorithm	Description
Basic	Fixed	All traffic will be distributed to a single WAN.
	Failover	Routes connections through preferred WAN link while others stand-by. Sequentially activating another link if the preferred link fails.
	Priority	Select the active WAN according to priority.
	Weighted Round-Robin	Evenly distribute the traffic over all working WAN links in circular order according to the specified weights.
	Custom Route	Routing through the selected WAN for each specific traffic, ex: TCP/UDP port number and IP address.

2 port serial connection, Modbus gateway

It builds 2 port serial connection for RS232; RS422; RS485 in which RS422/RS485 has 2.5KV isolation protection.
The built-in Modbus gateway can convert Modbus RTU/ASCII to Modbus TCP for device control.

Support various VPN applications and firewall

Besides traditional VPN peer to peer tunneling, T(P)WMR-5004 support latest Multi-Site VPN function that is an efficient way for Mesh tunneling. The registration is under cloud service and encrypted by SSH makes the connection easy and safe.

It supports Multi-Site VPN, OpenVPN, L2TP over IPsec, IPsec, L2 over GRE, IPGRE, and NAT for various VPN applications.

The built-in Layer-4 firewall includes DDoS, IP address filter / Mac address filter / TCP / UDP port number.

Support Routing Protocol: Static route / RIPv2 / OSPF / BGP / EIGRP

Lantech router series supports two routing methods: static routing and dynamic routing. Dynamic routing makes use of RIPv2, OSPF, EIGRP and BGP. The user can either choose one routing method to establish the routing table.

DIDO for alarm & email notice; Event log; Remote Web control

2 sets of DIDO function can support additional high/low physical contact for designate applications besides Port / Power events, for example, DIDO function can trigger alarm if the router was moved or stolen. In case of events, the T(P)WMR-5004 will immediately send email and trap.
The event log can be sent via syslog, emails or trigger the alarm relay.
When the router is at remote area with limited access, Web control can help to get router status or remotely reboot by Web.

Wide range input voltage from 16.8~137.5VDC (WV model); PoE model built-in 4 port PoE at/af switch with 60W budget

The T(P)WMR-5004 is able to work from 16.8~137.5V (WV with isolation) and PoE model built-in 4 port PoE at/af with PoE budget 60W that is particular good for vehicle, rail train, depot etc. application

Environmental monitoring for inside router info& alerting; Graphic WIFI & LTE signal strength

The built-in environmental monitoring can detect router ambient temperature, voltage, current and total PoE load where can send the syslog and email when abnormal.

Built-in Managed Switch Function

Managed switch function is built-in and provides various L2+ functions for network access deployment. It delivers ports and PoE management, VLAN, QoS, multicast, redundant ring, and security functions.

Editable login page of captive portal

Editable login page of captive portal

The TMR-5006 supports editable captive portal function that allows administrator to force end-users redirect to authentication page.

Dual image firmware

It supports dual-image firmware to choose which one to start.

USB port for back up, restore configuration and upgrade firmware

The built-in USB ports can upload/download/upgrade the firmware through USB dongle for router replacement.

Editable login page of captive portal

The T(P)WMR-5004 supports editable captive portal function that allows administrator to force end-users redirect to authentication page.

Ruggedized EN50155 design and FCC/CE & E-marking** certificate

The T(P)WMR-5004series is verified with EN50155, EN61373, EN45545 standard with IP65/54 housing. It passed tests under extensive Industrial EMI and environmental vibration and shocks standards. With CE & FCC radio certification for LTE and E-marking** certificate, the T(P)WMR-5004 is best for outdoor community, vehicle, power substation, process control automation etc. For more usage flexibilities, T(P)WMR-5004 supports operating temperature from -40°C to 65°C.

FEATURES & BENEFITS

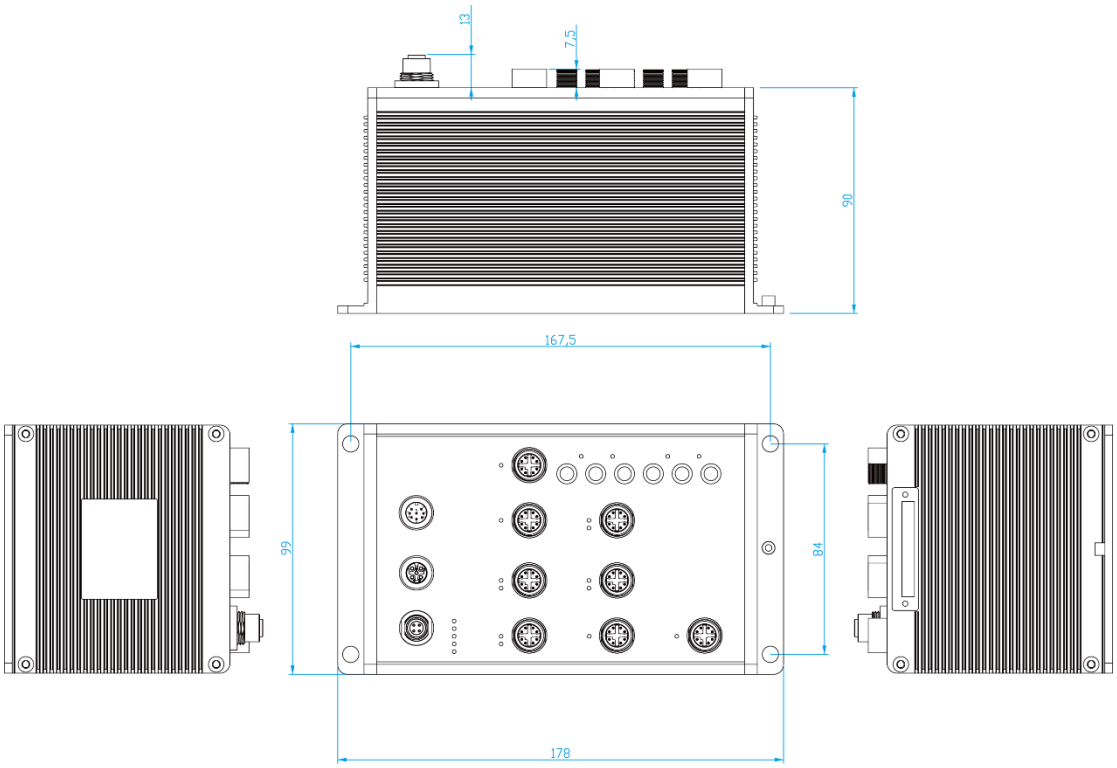
- **High Speed Air Connectivity: WLAN interface support 1.3GMbps**
- **Built-in 4 Gigabit X-coded (PoE) Ethernet managed switch + 2 WAN/LAN ports**
- **Dual DC input from 16.8V~137.5VDC input**
- **PoE model: 60W PoE budget**
- **EMMC-FLASH storage**8/16/32G**
- **eSIM** to allow data-plan globally**
- **Dual band 2.4G and 5GHz with 802.11ac/a/b/g/n**
- **Support AP/Bridge/Client/MESH mode**
- **Support Client-base roaming**
- **Support 802.11s Wireless Mesh Network**
- **Support 2.4Ghz operating within the following frequency bands:**
  - ***2.412~2.472 GHz***
- **Support 5Ghz operating within the following frequency bands:**
  - ***5.180~5.825GHz***
- **MIMO smart antenna technology with 3T3R**
- **6 STANDARD SMA / OPTIONAL QMA type connectors for Wi-Fi & LTE, GPS**
- **Output power : <24dBM**
- **Transmit power adjustment**
- **VAP (virtual access point) support up to 16 SSIDs**
- **Operation modes : AP/ Bridge / Client / MESH**
- **Traffic control for each SSID**
- **Band preference for same SSID services on dual band**
- **Highly Security Capability: WEP64/128bits/ WPA/ WPA-PSK (TKIP,AES)/ WPA2/ WPA2-PSK (TKIP,AES)**
- **HTTP/HTTPS/Telnet/SSH & Administration access**
- **Support IPv6 & IPv4 protocol**
- **Radius Authentication, EAP-TLS, EAP-TTLS, PEAP; SSID broadcast disable supported**
- **Multiple channel bandwidths of 20MHz and 40MHz for 2.4G.**
- **Multiple channel bandwidths of 20MHz, 40MHz and 80MHz for 5G only.**
- **Wi-Fi Multimedia (WMM) and 802.11e traffic prioritization**
- **Support Multi-Site VPN for Mesh tunneling as well as Open VPN, L2TP over IPsec, IPsec, L2 over GRE , IPGRE and NAT for secured network connection**
- **Support Routing Protocol: Static route / RIPv2 / OSPF / BGP / EIGRP**
- **The built-in Layer-4 firewall includes DDoS, IP address filter / Mac address filter / TCP/UDP port number**
- **NAT/DMZ/Port Forwarding**
- **Support SNMP v1/v2c/v3**
- **One LTE 4G/3G w/ 2 SIM card design(1L model) for mobile redundancy**
- **GPS/ GLONASS (built-in LTE module) connection**
- **Load Balancing supports 5 mechanism between multiple WANs**

Pack	Algorithm	Description
Basic	Fixed	All traffic will be distributed to a single WAN.
	Failover	Routes connections through preferred WAN link while others stand-by. Sequentially activating another link if the preferred link fails.
	Priority	Select the active WAN according to priority.
	Weighted Round-Robin	Evenly distribute the traffic over all working WAN links in circular order according to the specified weights.
	Custom Route	Routing through the selected WAN for each specific traffic, ex: TCP/UDP port number and IP address.

- **Built-in 2 x serial ports(RS232/RS422/RS485)**

- **Serial port with 2.5KV isolation on RS422/RS485**
- **Supports 2DI / 2DO(Digital Input / Output)**
- **Built-in Modbus gateway converting Modbus RTU/ASCII to Modbus/TCP for serial ports**
- **Event alerting by Syslog, SNMP Trap, Email, Relay ; Permanent local log rotation / Maxi 1K records**
- **Remote Web control to get status or re-boot by Web**
- **Support SNTP to synchronize system clock**
- **Support LLDP discovery protocol**
- **Support DHCP Server and Client**
- **Graphic LTE & WIFI signal strength**
- **Built-in environmental monitoring for system input voltage, current and ambient temperature; Able to set alert when abnormal**
- **Firmware upgradeable through TFTP/HTTP**
- **Configuration backup and restoration**
  - *Supports text configuration file for system quick installation*
  - *USB port to upload/download firmware by USB dongle*
- **Dual image firmware**
- **IP 65/54 housing for water proof environment**
- **Support editable captive portal login page**
- **Wall-mount installation**
- **Visible LED to show the power & port link and activity**
- **EN45545-2 Fire & Smoke, EN50155 and EN61373 shock/vibration verification**
- **Operation temperature -40~65C**

DIMENSIONS (unit=mm)



SPECIFICATION

WLAN Interface	
Radio Frequency Type	DSSS, OFDM
Wireless Standard	IEEE 802.11ac/n/a 5GHz IEEE 802.11b/g/n 2.4GHz
Wireless bandwidth	5GHz: Up to 1300Mbps 2.4GHz: Up to 450Mbps
Modulation	**802.11b: DSSS** **802.11a/g:** OFDM (BPSK, QPSK, 16-QAM, 64-QAM) **802.11n:** OFDM (BPSK, QPSK, 16-QAM, 64-QAM) **802.11ac:** OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM)
Operating Frequency	IEEE 802.11 a/b/g/n ISM Band, 2.412GHz~2.472GHz, 5150MHz~5850MHz
Transmission Rate	IEEE802.11ac: up to 1300Mbps
	IEEE802.11b: 1 / 2 / 5.5 / 11 Mbps IEEE802.11a/g: 6 / 9 / 12 / 18 / 24 / 36 / 48 / 54 Mbps IEEE802.11n: up to 450Mbps
IEEE 802.11b/g/n(2.4Gbps)	**Output Power Tx +/- 2dB(per chain)** 18dBm @ 1~11Mbps 18dBm @ 6~54Mbps 20/20dBm @ MCS0~MCS7 (HT20/40) **Receiver Sensitivity Rx +/- 2dB** ≦-95dBm @ 1~11Mbps ≦-92dBm @ 6~18Mbps ≦-88dBm @ 24Mbps ≦-85dBm @ 36Mbps ≦-81dBm @ 48Mbps ≦-80dBm @ 54Mbps ≦-94dBm @ MCS0 (HT20/40) ≦-76dBm @ MCS7 (HT20/40)
IEEE 802.11a/n/ac(5Gbp	**Output Power Tx +/- 2dB(per chain)** 20dBm @ 6~24Mbps

s)	16dBm @ 36~54Mbps 19/18dBm @ MCS0 (HT20/40) 16/16dBm @ MCS7 (HT20/40) 19/18/18dBm @ MCS0 (VHT20/40/80) 13/13/13dBm @ MCS8 (VHT20/40/80) 13/13dBm @ MCS9 (VHT40/80) **Receiver Sensitivity Rx +/- 2dB** ≦-92dBm @ 6~18Mbps ≦-86dBm @ 24Mbps ≦-84dBm @ 36Mbps ≦-81dBm @ 48Mbps ≦-80dBm @ 54Mbps ≦-93dBm @ MCS0 (HT20/40) ≦-71dBm/≦-80dBm @ MCS7 (HT20/40) ≦-90dBm @ MCS0 (VHT20/40/80) ≦-69dBm @ MCS8 (VHT20/40/80) ≦-66dBm @ MCS9 (VHT40/80)
Encryption Security	WEP : (64-bit ,128-bit key supported) WPA /WPA2 : IEEE802.11i(WEP and AES encryption) WPA-PSK (256-bit key pre-shared key supported) EAP-TLS,EAP-TTLS, and PEAP
Wireless Security	SSID broadcast disable

Cellular Interface

Location Solutions	GPS, Glonass
Band Options	**Europe & North America (EUNA model)** **LTE =** B1, B2※, B3, B4※, B5※, B7, B8, B12※, B13※, B20, B25※, B26※, B29※, B30※, B41※ (TDD) **DC-HSPA+/ HSPA+/ HSPA/ UMTS =** B1, B2※, B3※, B4※, B5※, B8
Data Rates – LTE	**Europe & North America (EUNA model)** Downlink (Cat 6): FDD: 300 Mbps TDD: 222 Mbps Uplink (Cat 6): FDD: 50 Mbps TDD: 26 Mbps

Software

IPv6/4	Present
Operation Mode	AP/Bridge/Client/MESH mode
Login Security	Supports IEEE802.1x Authentication/RADIUS
Access Security	HTTP/HTTPS/Telnet/SSH & Administration; SNMP v1/v2/v3 access for authentication via MD5/SHA(v3) and Encryption via DES/AES(v3)
Protocol	PPPoE Client, DHCP server/client, Adjustable MTU, Port forwarding (NAPT), DMZ; NAT, SNTP, Firewall(Firewall(DDoS;IP address filter / Mac address filter / TCP/UDP port number),VRRP**, DDNS*
Routing	Static route / RIPv2 / OSPF / BGP / EIGRP
Management	SNMP v1,v2c,v3/ Web/Telnet/CLI
Load Balancing	5 schemes for multiple WAN

Basic

Fixed	All traffic will be distributed to a single WAN.
Failover	Routes connections through preferred WAN link while others stand-by. Sequentially activating another link if the preferred link fails.
Priority	Select the active WAN according to priority.
Weighted Round-Robin	Evenly distribute the traffic over all working WAN links in circular order according to the specified weights
Custom Route	Routing through the selected WAN for each specific traffic ex: TCP/UDP port number and IP address.
Roaming	Client-base roaming
MESH	Support 802.11s Wireless Mesh Network
WMM	Wi-Fi multimedia and 802.11e traffic prioritization
Security	WEP64/128bits/ WPA/ WPA-PSK (TKIP,AES)/ WPA2/ WPA2-PSK (TKIP,AES)/SSH/SSL/HTTPS
Authentication	Radius Authentication, EAP-TLS, EAP-TTLS, PEAP; SSID broadcast disable supported
SSID	16 sets
Timer	Built-in Real Time Clock to keep track of time always(RTC)
Discovery	IEEE 802.1ab Link Layer Discovery Protocol (LLDP)
SNMP trap	Device cold / warm start Port link up / link down DI / DO high / low
Environmental Monitoring	System status for input voltage, current , ambient temperature to be shown in GUI and sent alerting if any abnormal status
Graphic signal display	Graphic LTE & Wi-Fi signal strength
Remote Web control	To reboot or get status of router by Web
Captive portal	Editable captive portal login page
Maintenance	Firmware upgradeable through TFTP /HTTP
Configuration backup & restore	Supports text configuration file for quick system installation USB port to upload/download firmware by USB dongle Dual image firmware
IPv6/4	Present
Login Security	Supports IEEE802.1x Authentication/RADIUS
Access Security	HTTP/HTTPS/Telnet/SSH & Administration; SNMP v1/v2/v3 access for authentication via MD5/SHA(v3) and Encryption via DES/AES(v3)

Physical Ports & System

Connectors	10/100/1000T: 6x ports M12 8pole X-coded incl. 2 WAN/LAN ports and 4 PoE ports (PoE model) USB/Console connector: 1 x M12 8-pole A-coded DIDO : 1 x M12 5-pole A-coded Power Input connector : 1 x M12 4-pole A-coded Serial connector : 2 x M12 8-pole X-coded SMA/QMA** connector for LTE: 2 (female) SMA/QMA** connector for GPS: 1 (female) RP-SMA/QMA** connector for Wi-Fi: 3 (female)
Serial Baud Rate	1000Kbps high data rate,250kbps normal for RS232 ; 20Mbps high data rate,250kbps normal for RS422/RS485
Serial Data Bits	5, 6, 7, 8
Serial Parity	odd, even, none, mark, space
Serial Stop Bits	1, 1.5, 2
RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422	Tx+,Tx-, Rx+, Rx-,GND
RS-485 (2-wire)	Data+, Data-,GND
Isolation protection	RS422/RS485 2.5KV isolation; 8KV contact & 15KV air RS232 8KV contact and 15KV air ESD DIDO 2.5KV isolation Input power 1.5KVA isolation
DI/DO	2 Digital Input (DI) : Level 0: -30~2V / Level 1: 10~30V Max. input current:8mA 2 Digital Output(DO): Open collector to 80 VDC, 50mA
EMMC Storage**	8/16/32 GB

LED Indicators

Power & System indicator	Per unit: Power 1 (Green), Power 2 (Green), P-Fail (Red) , Ring Master(Green), System Ready(Green), Serial1/Serial2(Green)
10/100/1000Base-T(X) port indicator	Link/Activity (Green), Speed (Yellow), PoE (Green, PoE model)
SIM	Green for Link/Act
GPS	Green for Link/Act
Fault	Red: Ethernet link down or power down

Fault contact

Relay	Relay output to carry capacity of 1A at 24VDC

Power

Input power	Dual DC input, 16.8VDC~137.5VDC for (WV model)
PoE budget (PoE model)	60W
Power consumption (Typ.)	20W Watts

Physical Characteristic

Enclosure	IP 65/54 aluminum case
Dimension	178 (W) x 99 (D) x 103 (H) mm
Weight	1000g

Environmental

Storage Temperature	-40°C ~ 85°C (-40°F ~ 185°F)
Operating Temperature	-40°C ~ 65°C (-40°F ~ 149°F)
Operating Humidity	5% to 95% Non-condensing

Regulatory approvals

EMC	FCC Part 15 Class A, EN55032 , EN55024
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-6-2

Radio Frequency	EN 301 489-1, EN 301 489-17, EN 301 489-19, EN 301 489-52, EN 300 440, EN 301 893, EN 300 328, EN 301 908-1※, EN 303 413, EN 62311
Verifications &	EN50155, EN50121-3-2, EN50121-4 verification EN45545-2 R13/R22/R23/R24/R25 (EN ISO 4589-2,

Report	EN ISO 5659-2, NF X70-100-1 & 2) Fire & Smoke verification
Safety	EN60950 (LVD), AS60950 (LVD)
Stability Testing	EN61373 (Shock & Vibration)
MTBF	NA
Warranty	5 years

*Future Release

**Optional

※Standard test of the following bands are not listed in EN 301 908-1 report:
(EUNA not listed bands) LTE = B2, B4, B5, B12, B13, B25, B26, B29, B30, B41
WCDMA = B2, B3, B4, B5;

RF Performance Table

	Data Rate	TX Power (per chain)	TX Power (3 chains)	Tolerance	RX Specifications Sensitivity	Tolerance
2.4GHz 802.11b	1Mbps	20dBm	25dBm	±2dB	-95dBm	±2dB
	2Mbps	20dBm	25dBm	±2dB	-94dBm	±2dB
	5.5Mbps	20dBm	25dBm	±2dB	-92dBm	±2dB
	11Mbps	20dBm	25dBm	±2dB	-90dBm	±2dB
2.4GHz 802.11g	6Mbps	21dBm	26dBm	±2dB	-94dBm	±2dB
	9Mbps	21dBm	26dBm	±2dB	-93dBm	±2dB
	12Mbps	21dBm	26dBm	±2dB	-93dBm	±2dB
	18Mbps	21dBm	26dBm	±2dB	-90dBm	±2dB
	24Mbps	21dBm	26dBm	±2dB	-90dBm	±2dB
	36Mbps	20dBm	25dBm	±2dB	-85dBm	±2dB
	48Mbps	19dBm	24dBm	±2dB	-82dBm	±2dB
	54Mbps	18dBm	23dBm	±2dB	-80dBm	±2dB
2.4GHz 802.11n HT20	MCS 0	21dBm	26dBm	±2dB	-94dBm	±2dB
	MCS 1	21dBm	26dBm	±2dB	-92dBm	±2dB
	MCS 2	21dBm	26dBm	±2dB	-89dBm	±2dB
	MCS 3	20dBm	25dBm	±2dB	-84dBm	±2dB
	MCS 4	20dBm	25dBm	±2dB	-83dBm	±2dB
	MCS 5	20dBm	25dBm	±2dB	-80dBm	±2dB
	MCS 6	18dBm	23dBm	±2dB	-79dBm	±2dB
	MCS 7	16dBm	21dBm	±2dB	-77dBm	±2dB
2.4GHz 802.11n HT40	MCS 0	20dBm	25dBm	±2dB	-93dBm	±2dB
	MCS 1	20dBm	25dBm	±2dB	-91dBm	±2dB
	MCS 2	20dBm	25dBm	±2dB	-89dBm	±2dB
	MCS 3	19dBm	24dBm	±2dB	-84dBm	±2dB
	MCS 4	19dBm	24dBm	±2dB	-82dBm	±2dB
	MCS 5	19dBm	24dBm	±2dB	-80dBm	±2dB
	MCS 6	18dBm	23dBm	±2dB	-79dBm	±2dB
	MCS 7	16dBm	21dBm	±2dB	-75dBm	±2dB

	Data Rate	TX Power (per chain)	TX Power (3 chains)	Tolerance	RX Specifications Sensitivity	Tolerance
5GHz 802.11a	6Mbps	20dBm	25dBm	±2dB	-94dBm	±2dB
	9Mbps	20dBm	25dBm	±2dB	-94dBm	±2dB
	12Mbps	20dBm	25dBm	±2dB	-92dBm	±2dB
	18Mbps	20dBm	25dBm	±2dB	-91dBm	±2dB
	24Mbps	20dBm	25dBm	±2dB	-90dBm	±2dB
	36Mbps	18dBm	23dBm	±2dB	-86dBm	±2dB
	48Mbps	16dBm	21dBm	±2dB	-83dBm	±2dB
	54Mbps	15dBm	20dBm	±2dB	-80dBm	±2dB
5GHz 802.11n/ac VHT20	MCS 0	19dBm	24dBm	±2dB	-93dBm	±2dB
	MCS 1	19dBm	24dBm	±2dB	-90dBm	±2dB
	MCS 2	19dBm	24dBm	±2dB	-87dBm	±2dB
	MCS 3	18dBm	23dBm	±2dB	-83dBm	±2dB
	MCS 4	18dBm	23dBm	±2dB	-80dBm	±2dB
	MCS 5	17dBm	22dBm	±2dB	-77dBm	±2dB
	MCS 6	16dBm	21dBm	±2dB	-74dBm	±2dB
	MCS 7	14dBm	19dBm	±2dB	-73dBm	±2dB
	MCS 8	13dBm	18dBm	±2dB	-71dBm	±2dB
5GHz 802.11n/ac VHT40	MCS 0	18dBm	23dBm	±2dB	-90dBm	±2dB
	MCS 1	18dBm	23dBm	±2dB	-88dBm	±2dB
	MCS 2	18dBm	23dBm	±2dB	-85dBm	±2dB
	MCS 3	17dBm	22dBm	±2dB	-82dBm	±2dB
	MCS 4	17dBm	22dBm	±2dB	-80dBm	±2dB
	MCS 5	16dBm	21dBm	±2dB	-75dBm	±2dB
	MCS 6	15dBm	20dBm	±2dB	-73dBm	±2dB
	MCS 7	14dBm	19dBm	±2dB	-73dBm	±2dB
	MCS 8	13dBm	18dBm	±2dB	-70dBm	±2dB
	MCS 9	13dBm	18dBm	±2dB	-68dBm	±2dB
5GHz 802.11ac VHT80	MCS 0	18dBm	23dBm	±2dB	-89dBm	±2dB
	MCS 1	18dBm	23dBm	±2dB	-87dBm	±2dB
	MCS 2	18dBm	23dBm	±2dB	-85dBm	±2dB
	MCS 3	17dBm	22dBm	±2dB	-83dBm	±2dB
	MCS 4	17dBm	22dBm	±2dB	-80dBm	±2dB
	MCS 5	16dBm	21dBm	±2dB	-78dBm	±2dB
	MCS 6	15dBm	20dBm	±2dB	-75dBm	±2dB
	MCS 7	14dBm	19dBm	±2dB	-72dBm	±2dB
	MCS 8	13dBm	18dBm	±2dB	-70dBm	±2dB
	MCS 9	13dBm	18dBm	±2dB	-68dBm	±2dB

ORDERING INFORMATION

All standard models are non-conformal coated, optional conformal coated models are available with –C model name; QMA connector models are with –Q model name.

- **TPWMR-5004-1L-1AC-2S-WV-65-EUNA…..……..…….…….....P/N: 8643-021**
  EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial ports + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP65; -40~65C
- **TPWMR-5004-1L-1AC-2SA-WV-65-EUNA…..……..…….…….....P/N: 8643-0211**
  EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS422 ports + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP65; -40~65C
- **TPWMR-5004-1L-1AC-2SB-WV-65-EUNA…..……..…….…….....P/N: 8643-0212**
  EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS485 ports + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP65; -40~65C
- **TPWMR-5004-1L-1AC-2S-WV-54-EUNA…..……..…….…….....P/N: 8643-041**
  EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS232 ports + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP54; -40~65C
- **TPWMR-5004-1L-1AC-2SA-WV-54-EUNA…..……..…….…….....P/N: 8643-0411**
  EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS422 ports + 4 Gigabit X-coded

Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP54; -40~65C

- **TPWMR-5004-1L-1AC-2SB-WV-54-EUNA…..……..……..P/N: 8643-0412**
  EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS485 ports + 4 Gigabit X-coded Ethernet PoE switch + 2 WAN/LAN w/Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP54; -40~65C
- **TWMR-5004-1L-1AC-2S-WV-65-EUNA…..……..……..……..P/N: 8640-021**
  EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP65; -40~65C
- **TWMR-5004-1L-1AC-2SA-WV-65-EUNA…..……..……..……..P/N: 8640-0211**
  EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS422 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP65; -40~65C
- **TWMR-5004-1L-1AC-2SB-WV-65-EUNA…..……..……..……..P/N: 8640-0212**
  EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS485 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP65; -40~65C
- **WMR-5004-1L-1AC-2S-WV-67-EUNA…..……..……..……..P/N: 8640-051**
  EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP67; -40~65C
- **TWMR-5004-1L-1AC-2SA-WV-67-EUNA…..……..……..……..P/N: 8640-0511**
  EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS422 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP67; -40~65C
- **TWMR-5004-1L-1AC-2SB-WV-67-EUNA…..……..……..……..P/N: 8640-0512**
  EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS485 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP67; -40~65C
- **TWMR-5004-1L-1AC-2S-WV-54-EUNA…..……..……..……..P/N: 8640-041**
  EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS232 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP54; -40~65C
- **TWMR-5004-1L-1AC-2SA-WV-54-EUNA…..……..……..……..P/N: 8640-0411**
  EN50155 Multifunction VPN Router w/1x Wi-Fi 11ac + 1 LTE 4G SMA connectors + 2 serial RS422 ports + 4 Gigabit X-coded Ethernet managed Switch + 2WAN/2LAN with Load Balancing, VPN, Protocol Gateway; EU and US band; dual 16.8V~137.5VDC; IP54; -40~65C
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EMMC Flash Storage

- **8G……..……..……..……..P/N: 8850-113**
- **16G……..……..……..……..P/N: 8850-114**
- **32G……..……..P/N: 8850-115**

OPTIONAL ACCESSORIES

Management System

- **InstaAir……..……..……..P/N: 9000-121**
  Cloud Based Fleet Management System for Routers

GPS Antenna

- **ANT12000001** SMA GPS antenna, 28dB, 300m

Cellular Antenna

- **ANT11000041** 2G/3G/4G dipole antenna, 791-960/1710~2170/2500~2700MHz, 3dBi, SMA plug, EU

- **ANT11000042** 2G/3G/4G dipole antenna, 704-960/1710~2170MHz, 3dBi, SMA plug, US

- **ANT11000046** LTE hinge rotatable antenna, 698-960MHz, 1710-2690MHz, Diameter 10mm, Length 108mm, SMA Connector

Wi-Fi Antenna

- **ANT11000051** 2.4/5GHz SMA dipole Wi-Fi antenna, 3dBi (2.4GHz), 4dBi (5GHz)

- **ANT11000056** Wi-Fi hinge rotatable antenna, WiFi Dual Bands 2.4/5.8GHz, SMA Connector

Antenna Base

- **ADA11000052** Magnetic antenna base for Wi-Fi, RP SMA Jack Base, Length : 1M

- **ADA11000053** Magnetic antenna base for 3G/4G, RP SMA Jack Base, Length : 1M

Lantech Communications Global Inc.

www.lantechcom.tw
info@lantechcom.tw