LM821 WiFi 802.11 b/g/n Module with IPEX Receptical
Host Controller Interface (HCI) via USB Interface

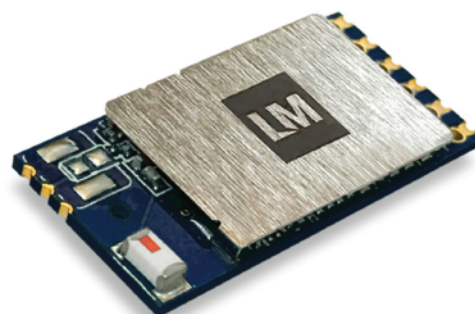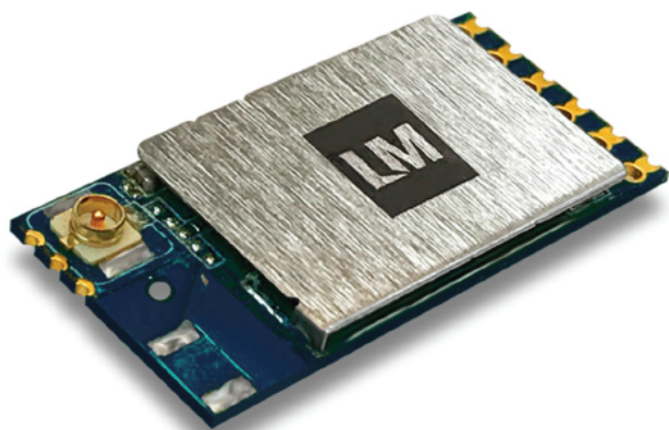|	
Revised	8/MAR/2021
Datasheet Version	1.4
Ordering Options	See last page

Linux | OSX | Win XP | Win Vista | Win 7 | Win 8 | Win 10 | Win CE 6 | Win CE 7

WIFI

Also available with Onboard Antenna. (LM820)

Features

- WiFi 802.11 b/g/n

- Operates in 2.4 GHz Frequency bands

- IPEX receptical

- Plug and Play (Linux, macOS X, Windows XP – 10 and Windows Compact Embedded 6/7 compatible)

- Up to 150Mbps Data Transfer Rate

- 802.11e-compatible bursting and I standards

- BPSK, QPSK, 16 QAM and 64 QAM modulation schemes

- WEP, TKIP, and AES, WPA and WPA2 encryption schemes

- Fully-featured software utility for easy configuration and management

- RoHS, REACH and WEEE compliant

- See our website for this products certifications.

Important update for EU Sales

Not for Sale in the EU.
For European sales please see our LM823

Optional Features

- DC power input 3.3V or 5V

- WPS or PDN control function on half-hole pin 6

- Support LED function when choose WPS option

Overview

The LM821 WiFi USB module, fully supports IEEE 802.11 b, g and n standards.

It supports up to 150Mbps high-speed wireless network connections and is designed to provide excellent performance with low power consumption.

It is designed to be a highly cost-effective module that offers superior performance, better power management applications above its competitors.

Onboard Antenna Option

This module is also offered with an Onboard Antenna (LM820). Please speak with our team for guidance when looking at this option.

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General Specification

Wireless

Wireless Standard	802.11 b/g/n, 802.3, and 802.3u
Module Type	Host Controller Interface (HCI)
OS Compatibility	Linux, macOS X, Windows XP – 10 and Window Embedded Compact 6/7
Security	WEP, TKIP, AES, WPA and WPA2
Network Architecture	Ad hoc mode (Peer-to-Peer) and Infrastructure mode (supported on Linux and Windows 8.1 or earlier)

Hardware

Chipset	Realtek
Antenna	IPEX receptical
Interfaces	USB 2.0

RF Characteristics

|	
Tx Output Power	(+/- 2dBm): 13dBm@11n, 17dBm@11b, 15dBm@11g
Rx Sensitivity	11Mbps -80dBm@8%, 54Mbps -70dBm@10%,130Mbps -64dBm@10%
Range (in open space)	Up to 180m
Current Consumption (DC 5V Module)	Transmit: 125 mA (Maximum) Receive: max 105 mA DC (Maximum)
Current Consumption (DC 3V3 Module)	Transmit: max. 172 mA (Maximum) Receive: max 139 mA (Maximum)
Data Transfer Rate	1,2,5.5,6,11,12,18,22,24,30,36,48,54,60,90,120 Mbps to a maximum of 150Mbps
Frequency	2.4GHz ISM Band
Modulation Scheme	BPSK/ QPSK/ 16-QAM/ 64-QAM
Spread Spectrum	IEEE 802.11b: DSSS (Direct Sequence Spread Spectrum) IEEE 802.11g/n: OFDM (Orthogonal Frequency Division Multiplexing)

Physical Characteristics

Operating Temperature	0°C to +50°C ambient temperature
Storage Temperature	-10°C to +70°C ambient temperature
Humidity	5% to 90% maximum (non-condensing)
Dimensions (L x W x H)	25mm x 12mm x 2mm
Weight	1.09g +/- 0.25g tolerance
Certifications	See our website for this products certifications.
Compliance	RoHS, REACH and WEEE

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Pin Outs

9 - GND
8 - RF
7 - GND

6 - WPS or PDN
5 - VCC
4 - USB D-
3 - USB D+
2 - GND
1 - LED out
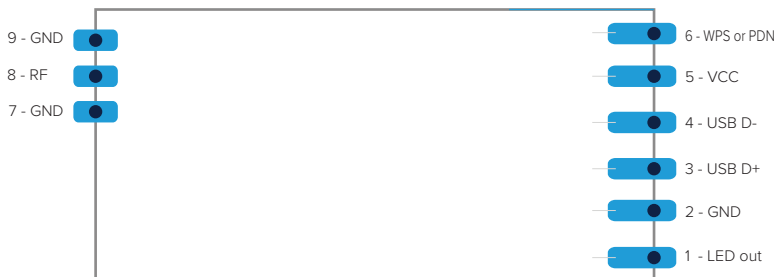
DC Power Input·

Module	Min	Typical	Max	Unit
DC 5V	4.75	5	5.25	V
DC 3.3V	3.135	3.3	3.465	V

Pin Assignments

Pin	Pin Name	Type	Description
1	LED out	Output	LED output
2	GND	Ground	Common Ground
3	USB D+	I/O	USB D+
4	USB D-	I/O	USB D-
5	VCC	Power	DC Power Supply (Refer to DC Power Input table)
6	WPS or PDN	I/O	WiFi Protected Setup switch or Power Down switch (factory option)
7	GND	Ground	Common Ground
8	RF	-	Do not connect
9	GND	Ground	Common Ground

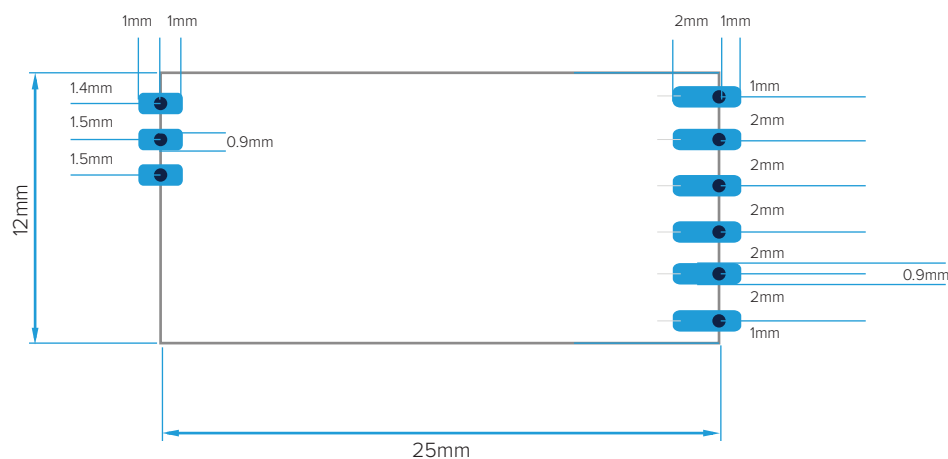## LM821 WiFi 802.11 b/g/n Module with IPEX Receptical
Host Controller Interface (HCI) via USB Interface
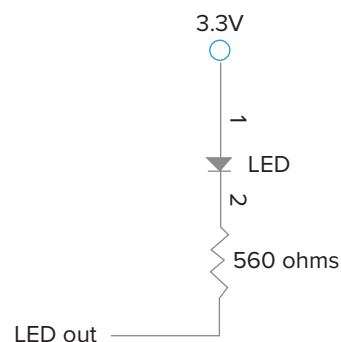
Module Block Diagram
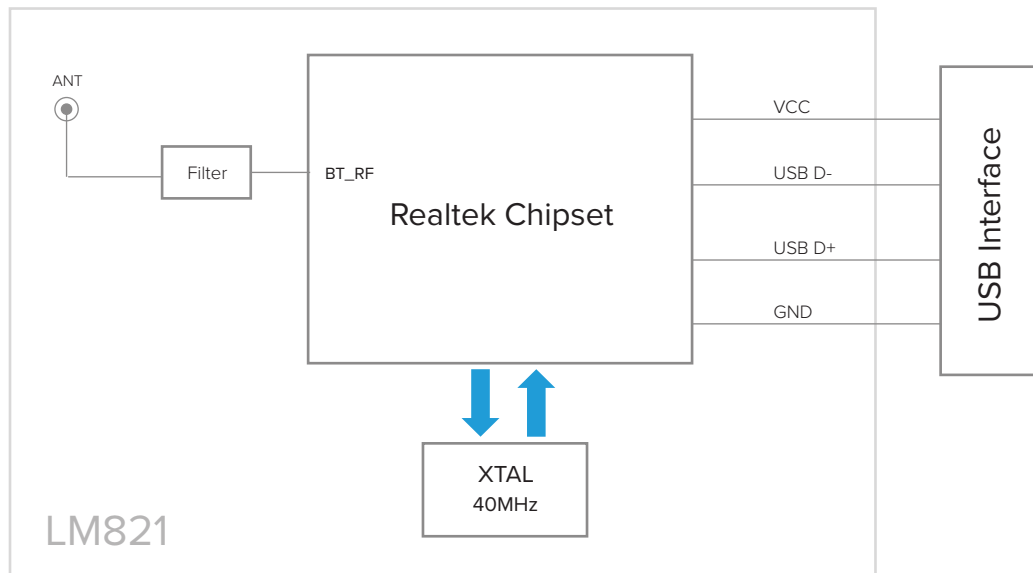
LM821 WiFi 802.11 b/g/n Module with IPEX Receptical
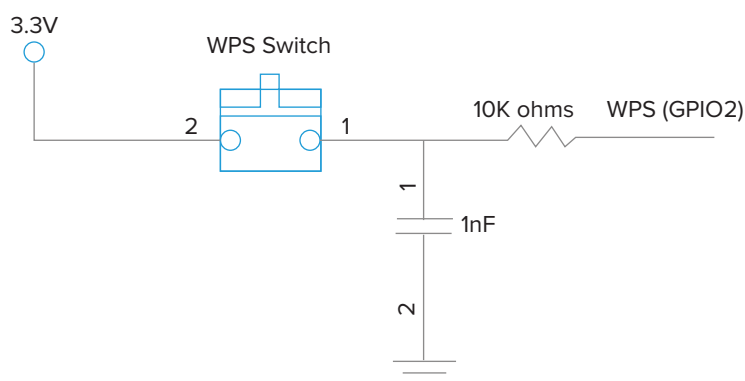Host Controller Interface (HCI) via USB Interface

PCB Footprint

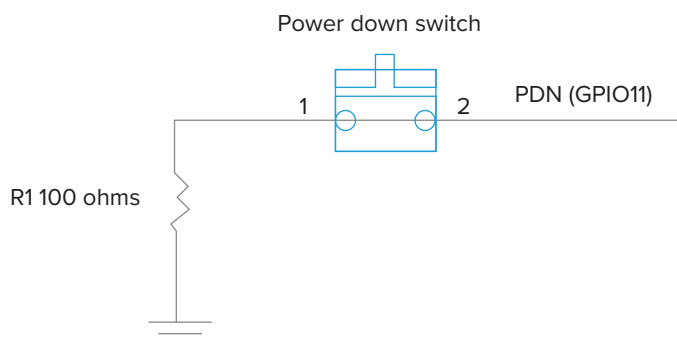- The external circuit for WiFi activity LED (factory option)

- The function of pin 6 is optional to WPS (GPIO2) or power-down (GPIO11), a factory option.
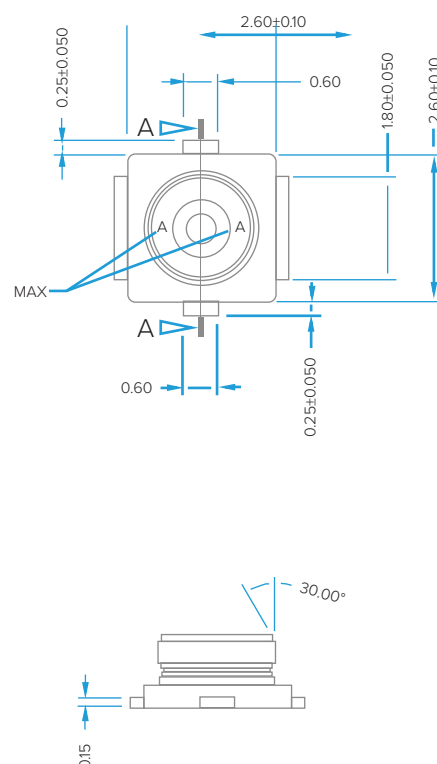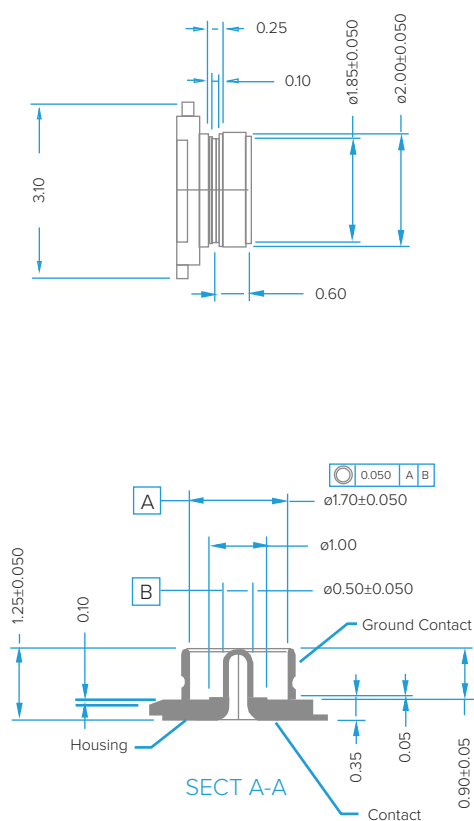 The external circuit for WPS function input (factory option), uses a tact switch.

- The external circuit power-down function input (factory option) uses a push or toggle switch.

LM821 WiFi 802.11 b/g/n Module with IPEX Receptical
Host Controller Interface (HCI) via USB Interface

IPEX Connector Dimensions

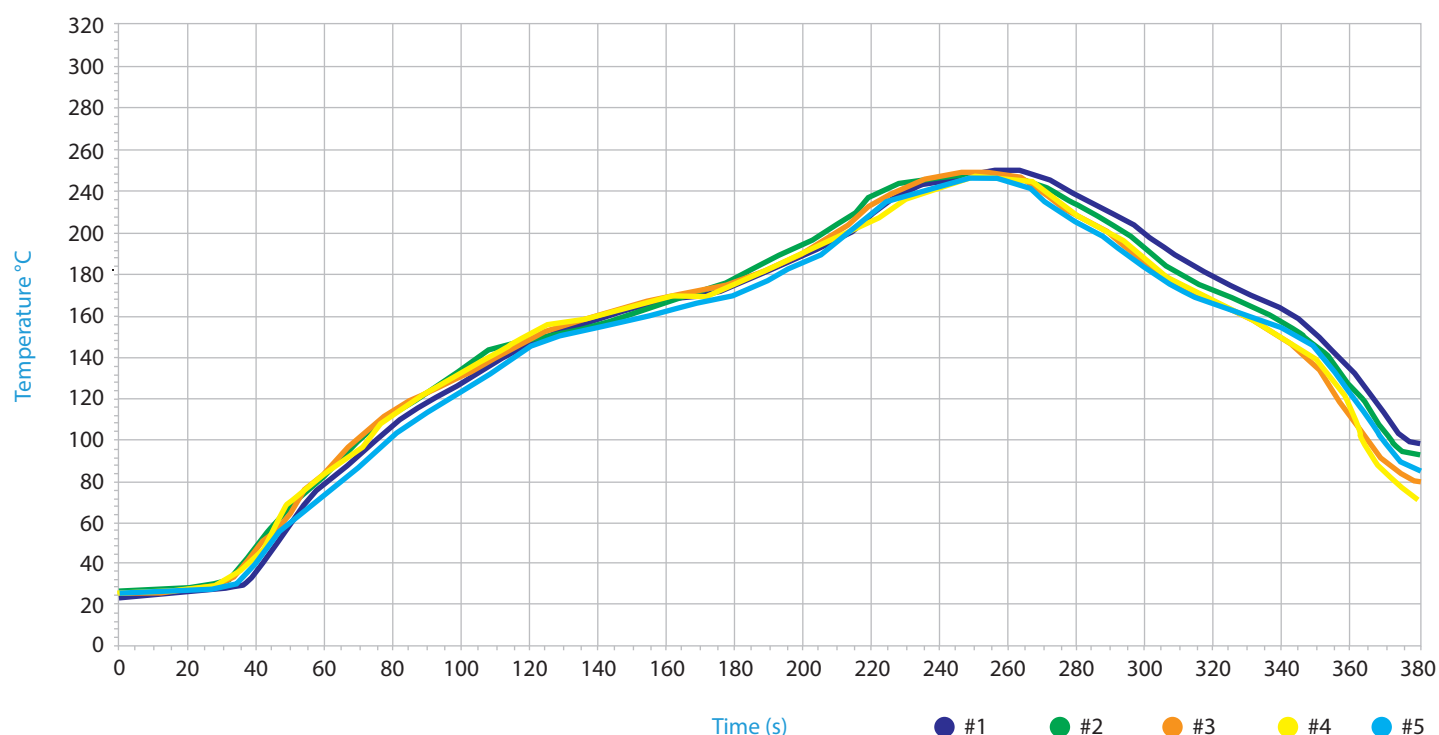SECT A-A

Housing
Ground Contact
Contact

30.00°

LM821 WiFi 802.11 b/g/n Module with IPEX Receptical
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PCB Drying Conditions

Please refer below to the conditions for drying before the solder reflow processes. (Extracted from IPC/JEDEC J-STD-033B.1)

### Soldering Reflow Chart

Speed (cm/min): 70.0

Name	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10
Max	158.0	160.0	170.0	170.0	180.0	180.0	190.0	220.0	235.0	250.0
Min	158.0	160.0	170.0	170.0	180.0	180.0	190.0	220.0	235.0	250.0
Length	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Probe	Liquidus Line		Maximum / Minimum		Slope	
	Rising 110.00-190.00	Above 230.0	Max	Min	Positive	Negative
#1	112.00	50.50	243.00	24.30	2.29	-2.97
#2	113.00	42.50	244.10	24.10	2.11	-3.08
#3	111.50	51.00	244.20	24.00	2.17	-2.69
#4	112.00	47.00	241.60	25.00	1.87	-2.13
#5	112.50	51.50	243.50	25.00	2.37	-1.95

LM821 WiFi 802.11 b/g/n Module with IPEX Receptical

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Host Controller Interface (HCI) via USB Interface

Tray Packaging

Tray Dimensions

144 mm

40 Piece Tray: 8 x 5

Tray Depth 20mm

314 mm
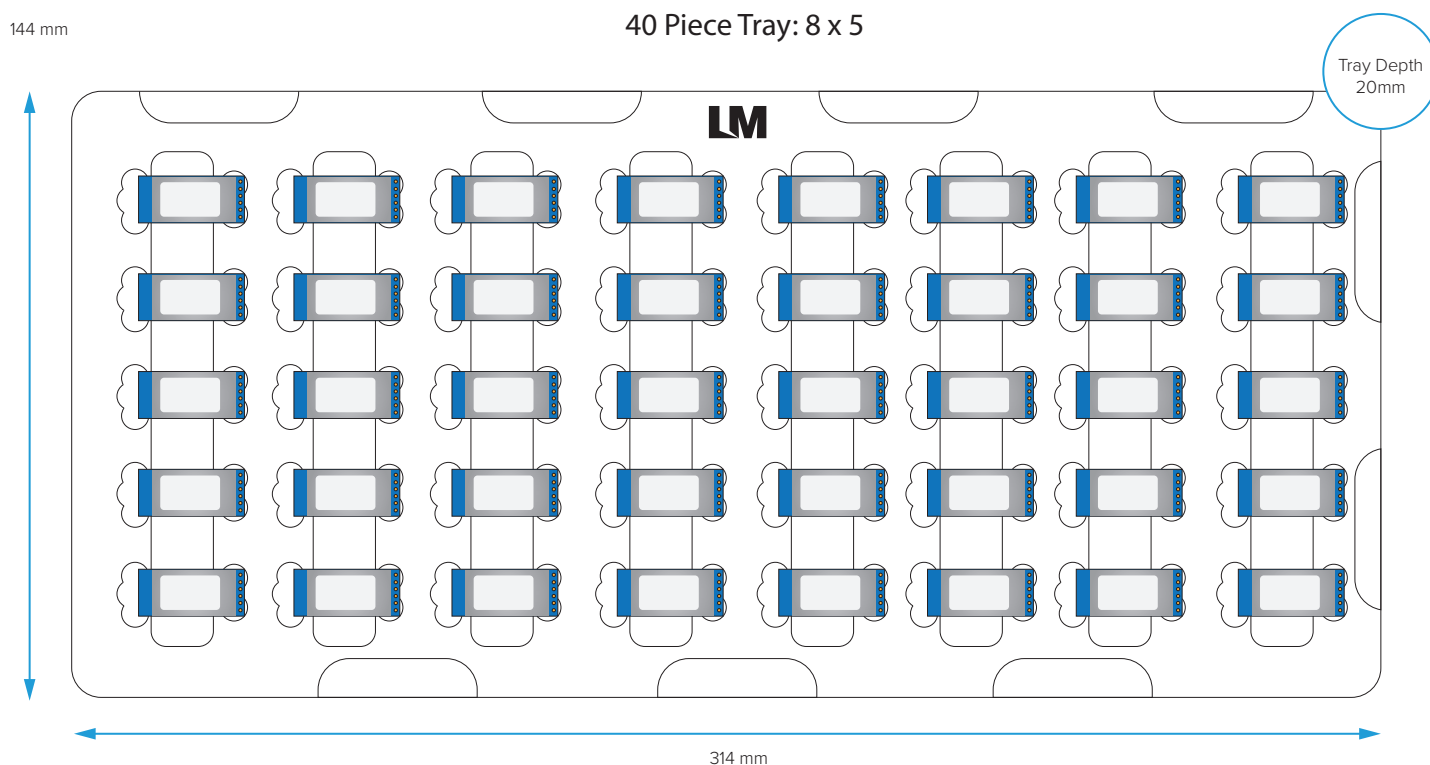
Quantities
- 40 modules per Tray
- 3 Trays per Inner Box
- 120 modules per Inner Box
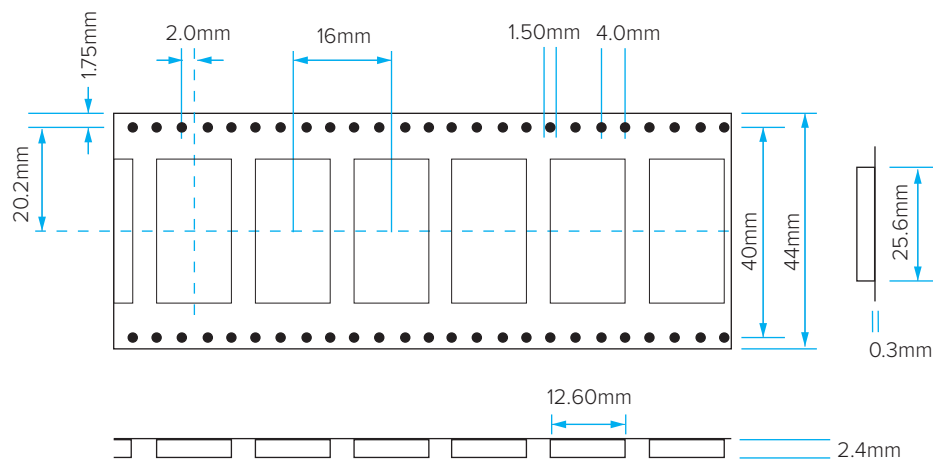- 8 Inner Boxes per Outer Carton
- 960 modules per Outer Carton

Notes
- Anti-Static PS Tray, Black.
- Material Thickness: 1mm
- Height of Tray: 20mm
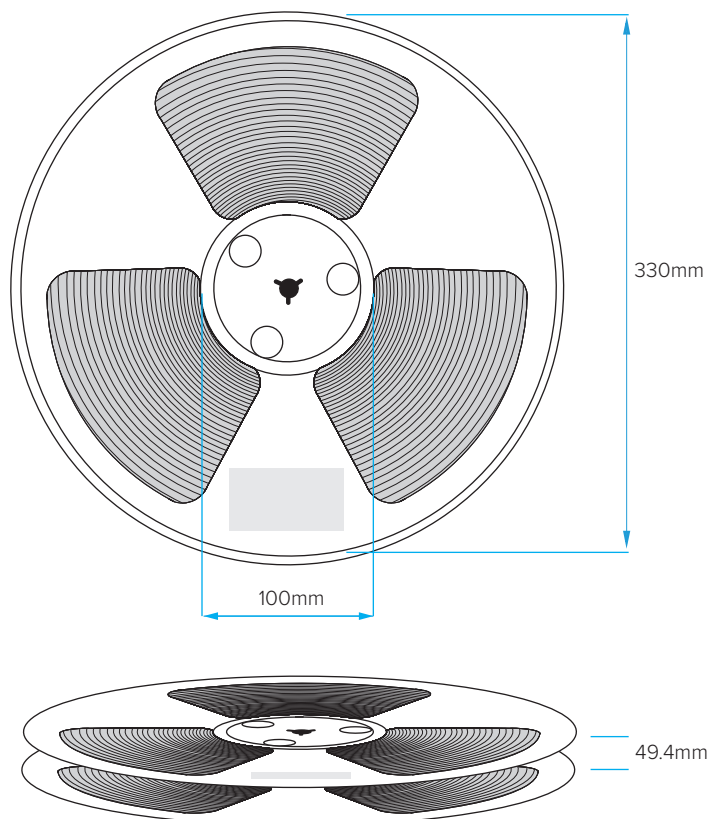- Carton Dimensions (L x W x H): 340mm x 290mm x 385mmm

LM821 WiFi 802.11 b/g/n Module with IPEX Receptical
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Tape and Reel Packaging

Tape Dimensions

Reel Dimensions

Quantities

- 1500 modules per Tape & Reel
- 1 Tape & Reel per Inner Box
- 5 Inner Boxes per Outer Carton
- 7500 modules per Outer Carton

Notes

- Inner Box Dimensions (L x W x H): 360mm x 360mm x 60mm
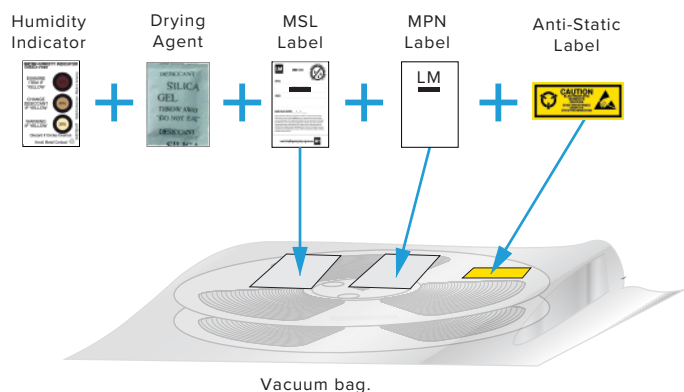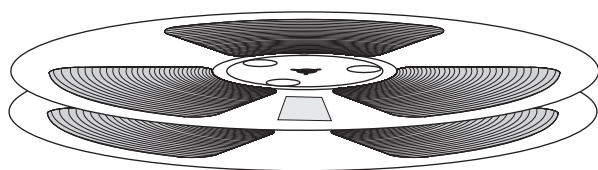- Outer Carton Dimensions (L x W x H): 395mm x 360mm x 305mm

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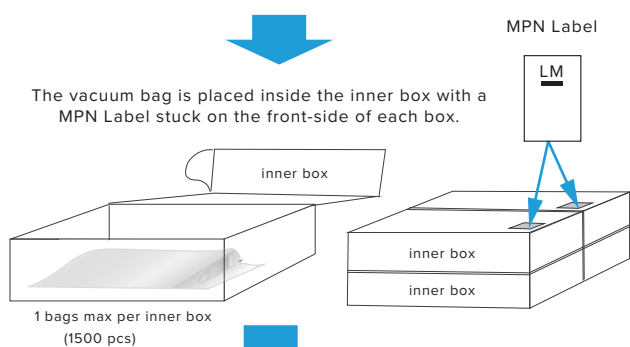### Packaging for Tape & Reel / Tray

The Tape & Reel / Tray are inserted into an anti-static vacuum bag with a Humidity Indicator Card and Drying Agent.

On the outside of the vacuum bag are MSL (Moisture Sensitivity Levels), MPN and an Anti-Static Labels.
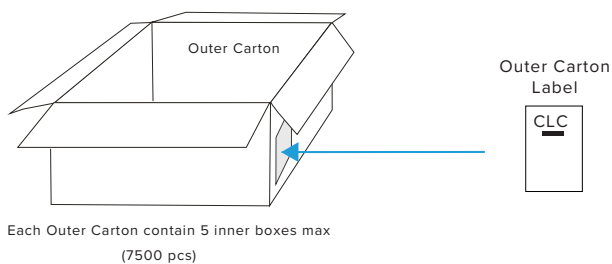
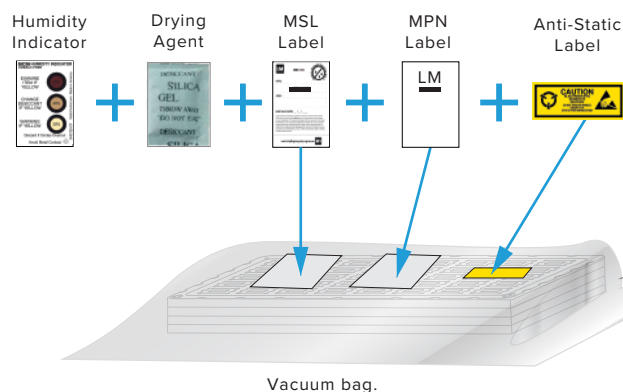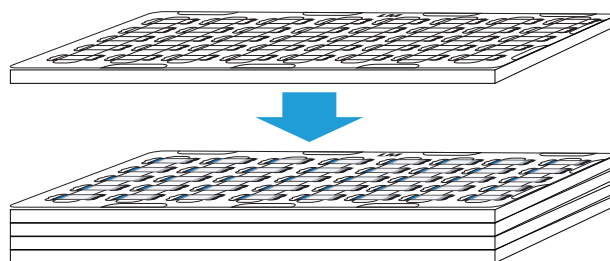### Tape & Reel

Reels are placed within a vacuum bag.

Humidity Indicator + Drying Agent + MSL Label + MPN Label + Anti-Static Label

Vacuum bag.

MPN Label

The vacuum bag is placed inside the inner box with a MPN Label stuck on the front-side of each box.

inner box
inner box
inner box

1 bags max per inner box
(1500 pcs)

Outer Carton

Outer Carton Label

CLC

Each Outer Carton contain 5 inner boxes max
(7500 pcs)

Tray

Trays are stacked with an empty tray on the top and placed within a vacuum bag.

Humidity Indicator + Drying Agent + MSL Label + MPN Label + Anti-Static Label

Vacuum bag.

MPN Label

The vacuum bag is placed inside the inner box with a MPN Label stuck on the front-side of each box.

inner box
inner box
inner box
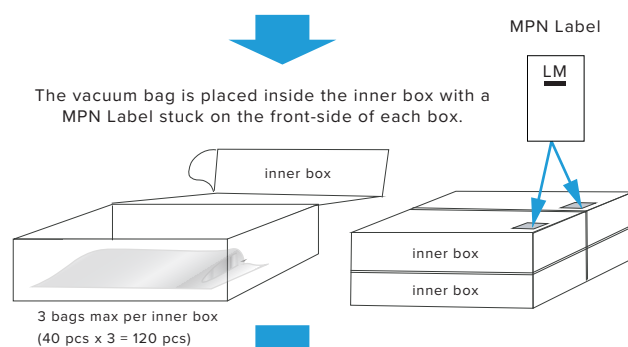
3 bags max per inner box
(40 pcs x 3 = 120 pcs)
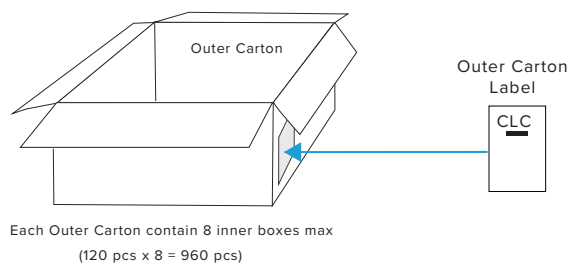
Outer Carton

Outer Carton Label

CLC

Each Outer Carton contain 8 inner boxes max
(120 pcs x 8 = 960 pcs)

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Datasheet Version Notes

v1.0	11 JAN 2018	Added version notes to datasheet.
v1.1	13 MAR 2018	MSL Description text improvement in the PCB Drying Conditions section.
v1.2	04 JUL 2018	MSL Description text improvement in the PCB Drying Conditions section. Packing information addition.
v1.3	30 NOV 2018	Part Numbers added to Packing Options.
v1.4	08 MAR 2021	Datasheet branding update.

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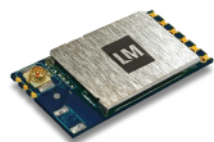
Ordering Options
Alternative suggestion for this product due to EOL (End Of Life), see LM823

Important update for EU Sales

Not for Sale in the EU.
For European sales please see our LM823

3 VOLT

821-0461
See LM823

Not for Sale in the EU.
For EU sales see LM823

3.3V Module
MOD SMT HCI 802.11n CUS USB 3.3V IPEX PCS

821-0464
See LM823

Not for Sale in the EU.
For EU sales see LM823

3.3V Module
MOD SMT HCI 802.11n CUS USB 3.3V IPEX TRAY

821-0466
See LM823

Not for Sale in the EU.
For EU sales see LM823

3.3V Module
MOD SMT HCI 802.11n CUS USB 3.3V IPEX T&R

821-0468
See LM823

Not for Sale in the EU.
For EU sales see LM823

3.3V Module
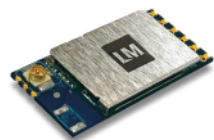MOD SMT HCI 802.11n CUS USB 3.3V IPEX PDN 6pin T&R

5 VOLT

821-0470
See LM823

Not for Sale in the EU.
For EU sales see LM823

5V Module
MOD SMT HCI 802.11n CUS USB, -20 5V IPEX PCS

821-0463
See LM823

Not for Sale in the EU.
For EU sales see LM823

5V Module
MOD SMT HCI 802.11n CUS USB, -20 5V IPEX TRAY

821-0465
See LM823

Not for Sale in the EU.
For EU sales see LM823

5V Module
MOD SMT HCI 802.11n CUS USB -20 5V IPEX T&R

- See our website to download any applicable Product Software, Manuals and Notes - http://www.lm-technologies.com/downloads