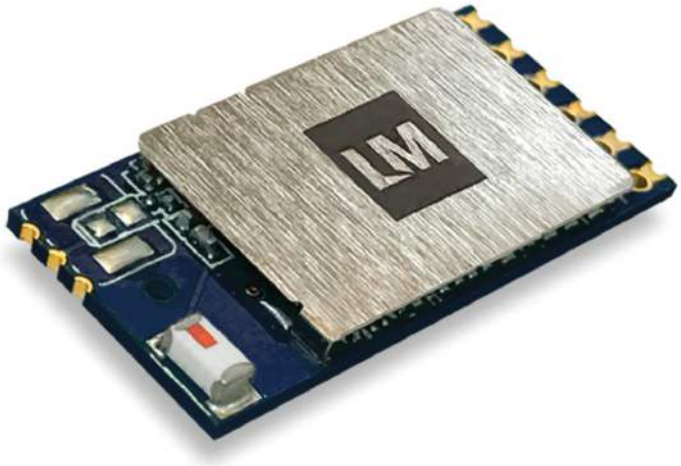
LM822 WiFi 802.11 b/g/n Module with IC Antenna

Host Controller Interface (HCI) via USB Interface

Revised	19/FEB/2021
Datasheet Version	1.5
Ordering Options	See last page

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

WIFI



Also available with IPEX Receptical (LM823)

Features

- WiFi 802.11 b/g/n
- Operates in 2.4 GHz Frequency bands
- Onboard Chip Antenna
- Plug and Play (Linux, macOS X, Windows XP – 10, Windows 10 IoT Core 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.

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 LM822 WiFi USB module fully supports the 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.

Antenna Option - IPEX

This module is also offered with an IPEX receptical for increased range and for placing the module in a different location to the selected antenna. 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, Windows 10 IoT Core and Windows 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	Onboard Chip Antenna
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	-20°C to +85°C ambient temperature
Humidity	5% to 90% maximum (non-condensing)
Dimensions (L x W x H)	25mm x 12mm x 2mm (+/- 0.2mm)
Weight	1.03g +/- 0.25g tolerance
Certifications	See our website for this products certifications.
Compliance	RoHS, REACH and WEEE

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Pin Outs

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	I/O	WiFi Protected Setup switch
7	GND	Ground	Common Ground
8	RF	-	Do not connect
9	GND	Ground	Common Ground

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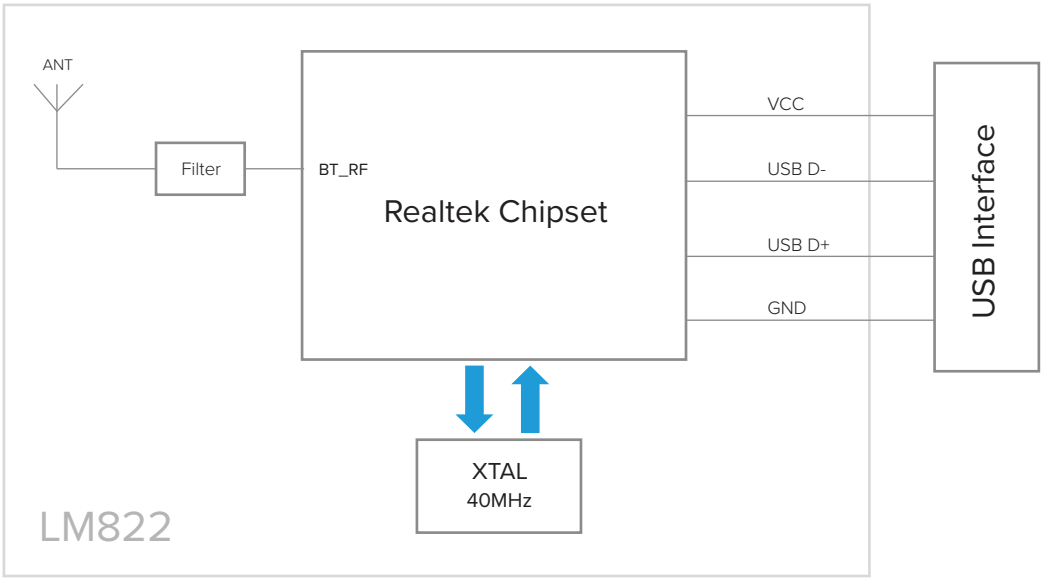
Module Block Diagram



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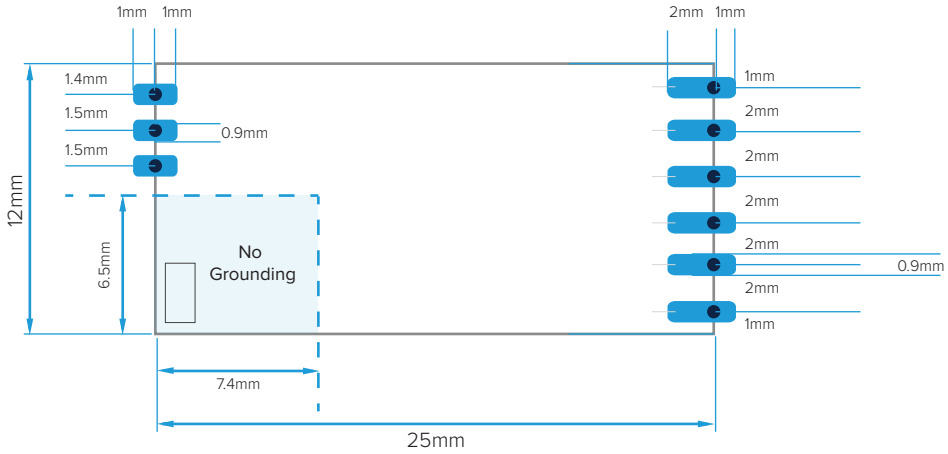
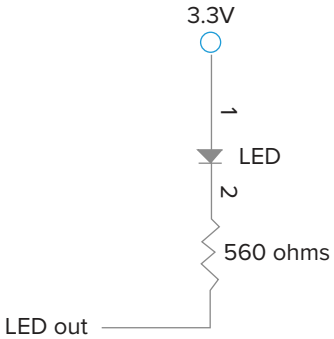
PCB Footprint



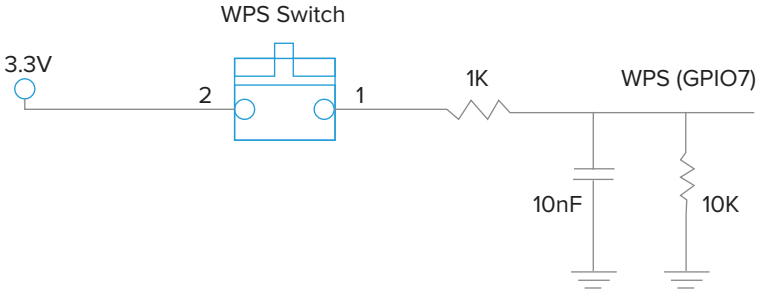
- The external circuit for WiFi activity LED (factory option)



- Pin 6 has a optional WPS (GPIO7) function.

  The external circuit for the WPS function input

  (factory option) uses a tact switch.



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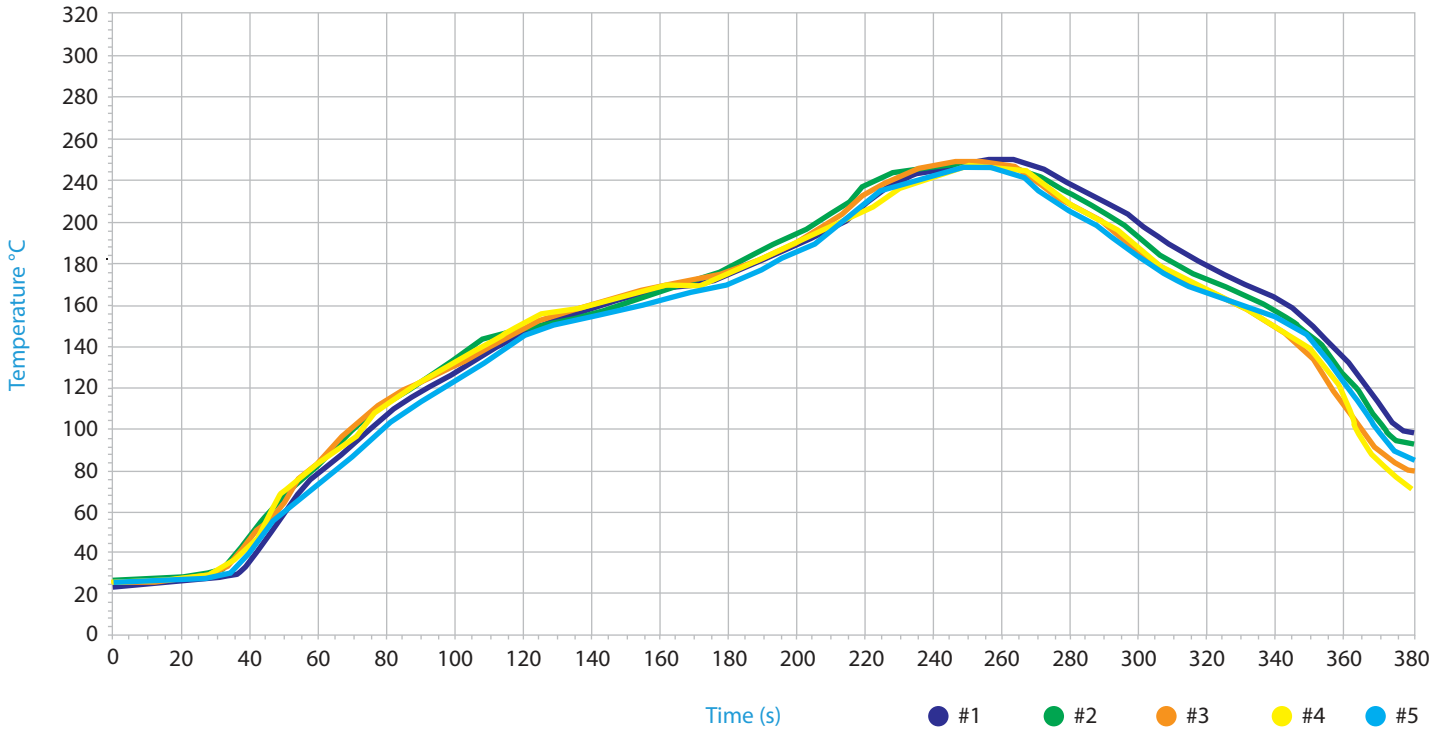
PCB Drying Conditions

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

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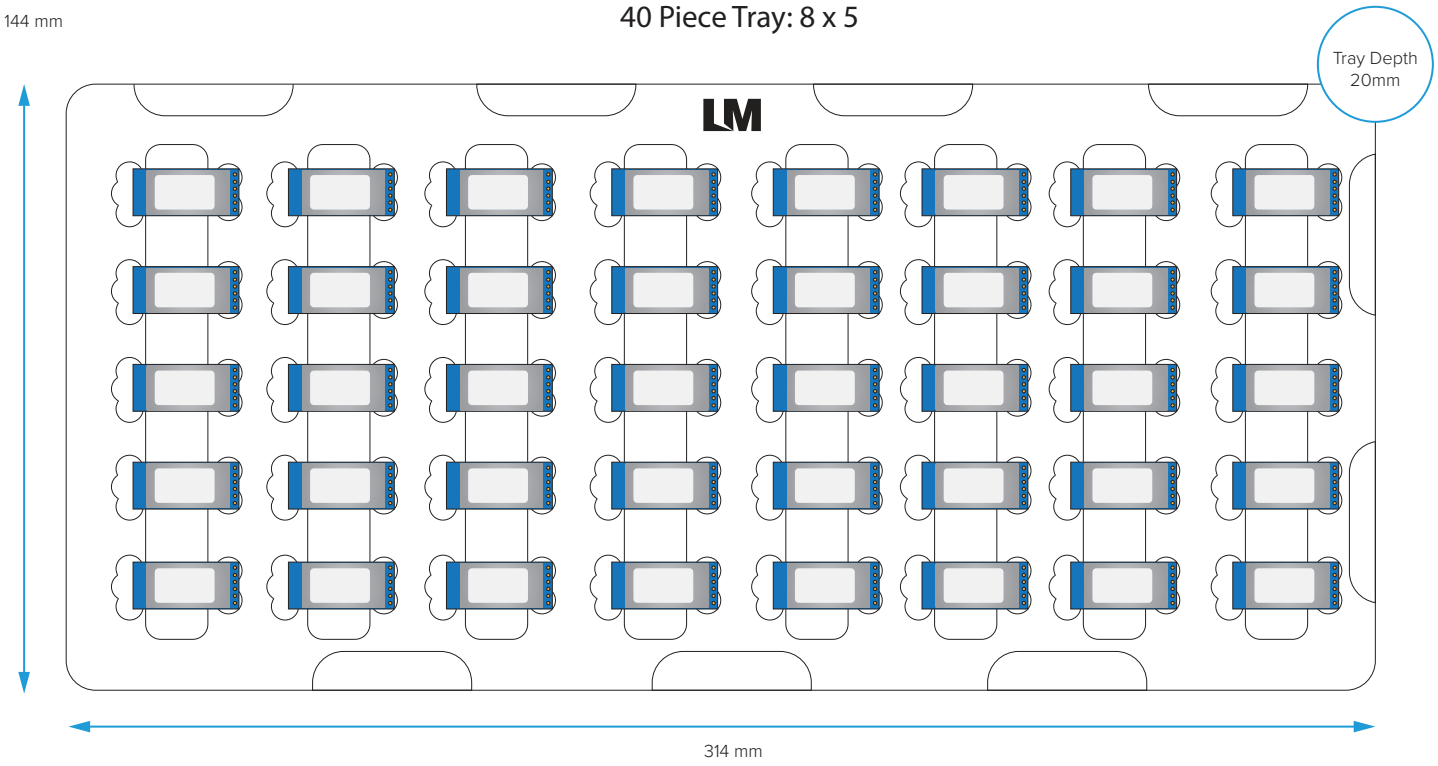
Tray Packaging

Tray Dimensions



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

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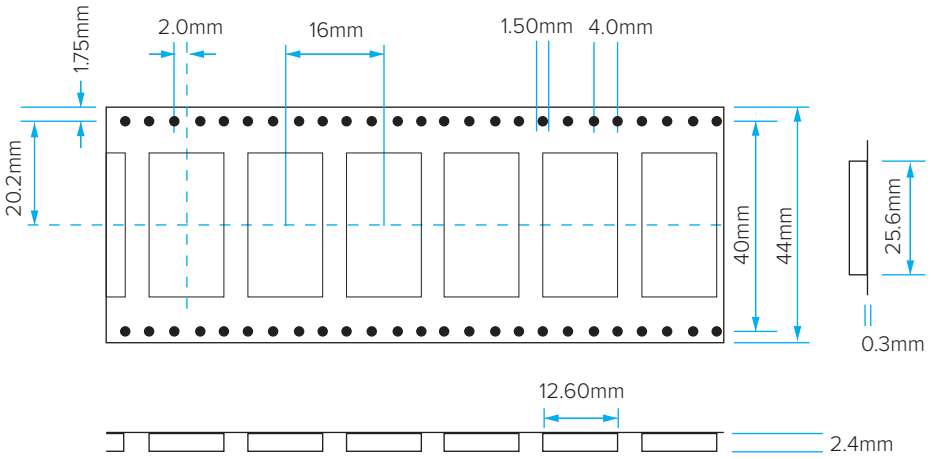
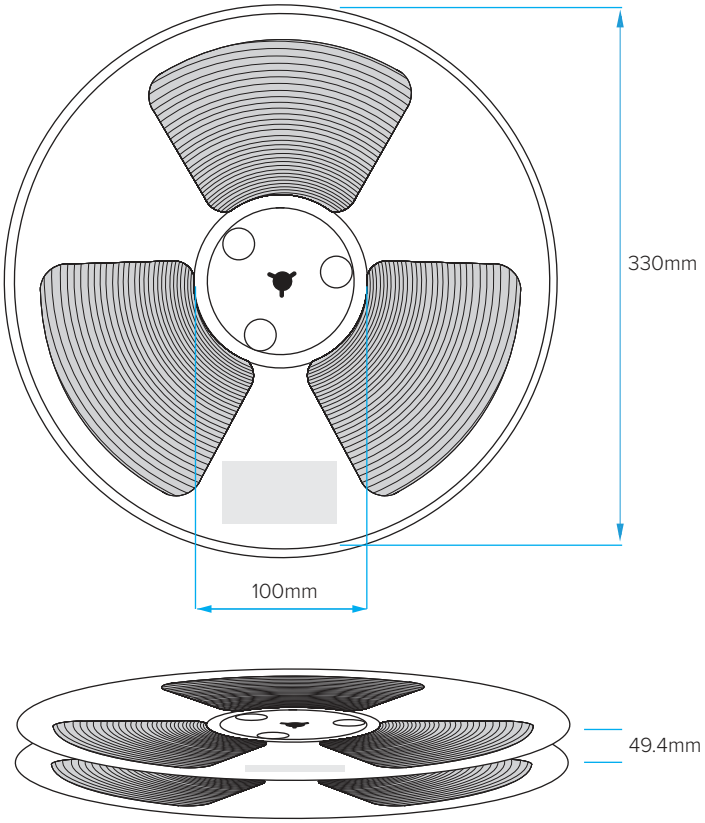
Tape and Reel Packaging

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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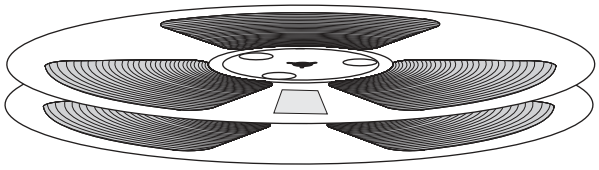
Packaging for Tape & Reel / Tray

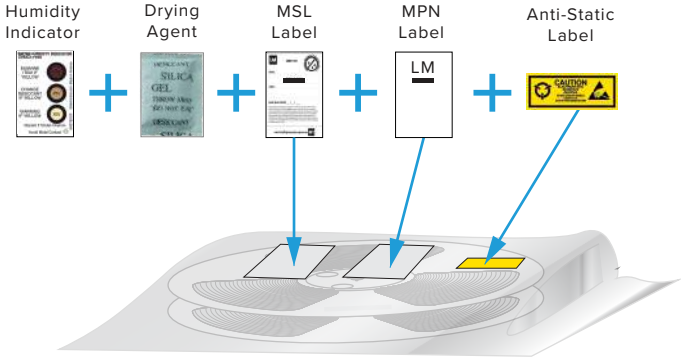
The Tape & Reel / Tray are inserted into an anti-static vacuum bag with a Humidity Indicator Card and Drying Agent.

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

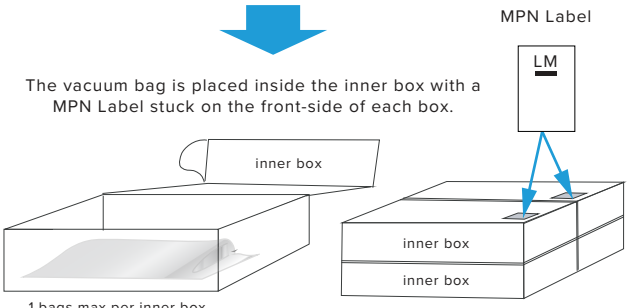
Tape & Reel

Reels are placed within a vacuum bag.

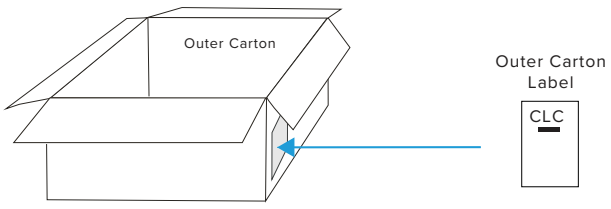




Vacuum bag.



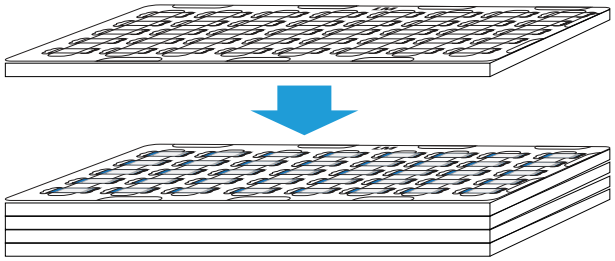
1 bags max per inner box
(1500 pcs)

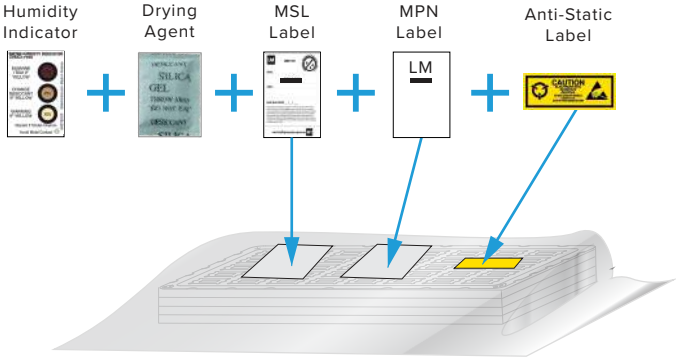


Each Outer Carton contain 5 inner boxes max
(7500 pcs)

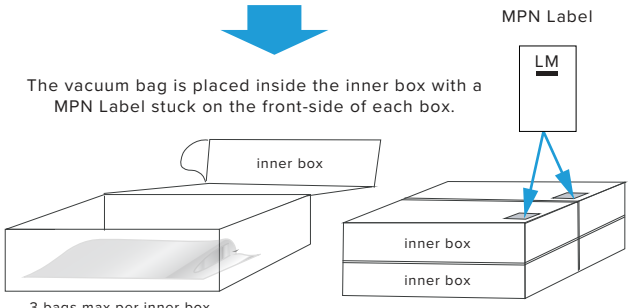
Tray

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

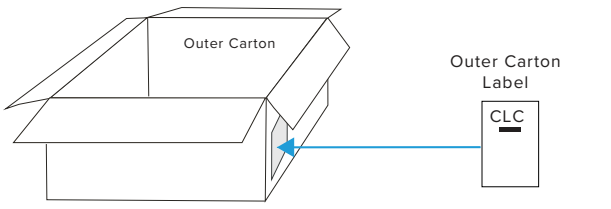




Vacuum bag.



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



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	Module dimensions updated for new shield height.
v1.4	11 DEC 2019	Alterations to Packaging Options and PDN option.
v1.5	19 FEB 2021	Datasheet branding update.

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Ordering Options

RF Country Bands

Our default radio region is ETSI. Unless specified otherwise, units will be shipped using the ETSI radio bands.
When ordering units for use withing the US region, include US at the end of the part number as shown here. e.g.: 822-XXXX-X US

3 VOLT

822-1458	3V Module MOD SMT HCI 802.11n EUS USB -20c 3V IC-ANT PCS	ETSI
822-1459	3V Module MOD SMT HCI 802.11n EUS USB -20c 3V IC-ANT TRAY	ETSI
822-1457	3V Module MOD SMT HCI 802.11n EUS USB -20c 3V IC-ANT T&R	ETSI

822-1458 US	3V Module MOD SMT HCI 802.11n EUS USB -20c 3V IC-ANT PCS	US
822-1459 US	3V Module MOD SMT HCI 802.11n EUS USB -20c 3V IC-ANT TRAY	US
822-1457 US	3V Module MOD SMT HCI 802.11n EUS USB -20c 3V IC-ANT T&R	US

5 VOLT

822-1451	5V Module MOD SMT HCI 802.11n EUS USB -20c 5V IC-ANT PCS	ETSI
822-1452	5V Module MOD SMT HCI 802.11n EUS USB -20c 5V IC-ANT TRAY	ETSI
822-1456	5V Module MOD SMT HCI 802.11n EUS USB -20c 5V IC-ANT T&R	ETSI

822-1451 US	5V Module MOD SMT HCI 802.11n EUS USB -20c 5V IC-ANT PCS	US
822-1452 US	5V Module MOD SMT HCI 802.11n EUS USB -20c 5V IC-ANT TRAY	US
822-1456 US	5V Module MOD SMT HCI 802.11n EUS USB -20c 5V IC-ANT T&R	US

Note: All modules are signified by having 7 digits and 1 dash within their part number.
e.g.: XXX-XXXX