Enli Incorporation
(恩利科技)

SPECIFICATION

Wi-Fi 6 Dual Band Dual Current 2*2 + Bluetooth (V5.1 LE)

M.2 2230 Card

ENLI Ordering No. : ENL-Q6391M2
Model No. : ENL-Q6391M2
Date : 2020, Dec 3rd (Ver. #.:8.0)

Customer PN :_____

Customer APPROVED	
Company	
Representative Signature	

PREPARED	REVIEW		APPROVED	DCC ISSUE
	PM	QA		

Revision History

Version	Date	Revision Content	Draft	Approved
1.0	2019/11/06	New version	Lgp	Szs
2.0	2019/12/16	Update module number	Lgp	Szs
3.0	2019/12/19	Add M.2 connector information; Add RF connector information; Add key material list; Add package information	Lgp	Szs
4.0	2020/01/04	Update block diagram; Update module pin out figure; Update PCIe powerup timing requirements;	Lgp	Szs
5.0	2020/03/02	Update module number, features, module picture	Lgp	Szs
6.0	2020/06/15	Update operating temperature range; Update ordering partnumber; Correct typo; Update temperature range; Update RF Specification	Lgp	Szs
7.0	2020/08/19	Update temperature range; Update RF Specification; Update Reference design schematic	Lgp	Szs
8.0	2020/12/03	Update power consumption information; Update reference schematic; Correct pin 44 voltage value; Update module picture	Lgp	Szs

CONTENTS

1 Overview.....1
1.1 Introduction 1
1.2 Features 1
1.3 Block Diagram 2
1.4 General Specification 2
1.5 Recommended Operating Rating 3
1.6 Power Consumption Information 3
2 Wi-Fi RF Specification.....4
2.1 2.4GHz RF Specification 4
2.2 5GHz RF Specification 5
3 Bluetooth Specification.....7
3.1 Bluetooth Specification 7
4 Pin Assignments.....9
4.1 Pin Outline 9
4.2 Pin Definition 10
5 Dimensions.....13
5.1 Module Picture 13
5.2 Marking Description 13
5.3 Module Physical Dimensions 14
6 Host Interface Timing Diagram.....15
6.1 **PCIe powerup sequence timing.....15**
7 Reference Design 16
7.1 Reference design schematic 16
7.2 M.2 connector 17
7.3 RF connector of module 20
8 Ordering Information.....21
9 The Key Material List.....21
10 Package Information 22
10.1 Tray 22
10.2 Moisture sensitivity 23

1 Overview

1.1 Introduction

Enli Inc. would like to announce a low-cost and low-power consumption module which has all of the Wi-Fi and Bluetooth functionalities. The highly integrated module makes the possibilities of web browsing, VoIP, Bluetooth headsets applications. With seamless roaming capabilities and advanced security, also could interact with different vendors' 802.11a/b/g/n/ac/ax 2x2 Access Points in the wireless LAN.

The wireless module complies with IEEE 802.11 a/b/g/n/ac/ax 2x2 MIMO standard and it can achieve up to a speed of 1774.5Mbps (2x2 80MHz 11ax + 2x2 40MHz 11ax DBS). The integrated module provides PCIe interface for Wi-Fi, UART/PCM interface for Bluetooth.

This compact module is a total solution for a combination of Wi-Fi and Bluetooth V5.1 technology. The module is specifically developed for all portable devices.

1.2 Features

- Highly integrated wireless local area network (WLAN) system-on-chip (SOC) for 2.4G/5G 802.11ax WLAN applications.
- Compliant with IEEE 802.11a/b/g/n/ac/ax.
- Supports 2x2 Multi-User Multiple-Input Multiple-Output (MU-MIMO).
- Dual Band Simultaneous (DBS) with dual MAC, up to 1774.5 Mbps data rate (2x2+2x2 11ax DBS) Supports 20/40MHz at 2.4GHz and supports 20/40/80MHz at 5GHz.
- Dynamic Frequency Selection (DFS, radar detection).
- Offloading traffic for minimal host utilization at 11ac/ax speeds.
- Supports low power PCIe (w/L1 sub-state) interface for WLAN and UART/PCM interface for Bluetooth.
- Supports Bluetooth V5.1, BLE, ANT+ and be backwards compatible with Bluetooth 1.2, 2.X+ enhance data rate.
- Supports WLAN-Bluetooth coexistence and LTE-5G/ISM coexistence.
- Supports Bluetooth for class1 and class2 power level transmissions without requiring an external PA.
- BT host digital interface:
  - HCI UART (up to 3.2 Mbps)
  - PCM for audio data
- Standard M.2 2230 Key E Golden Finger interface.

1.3 Block Diagram

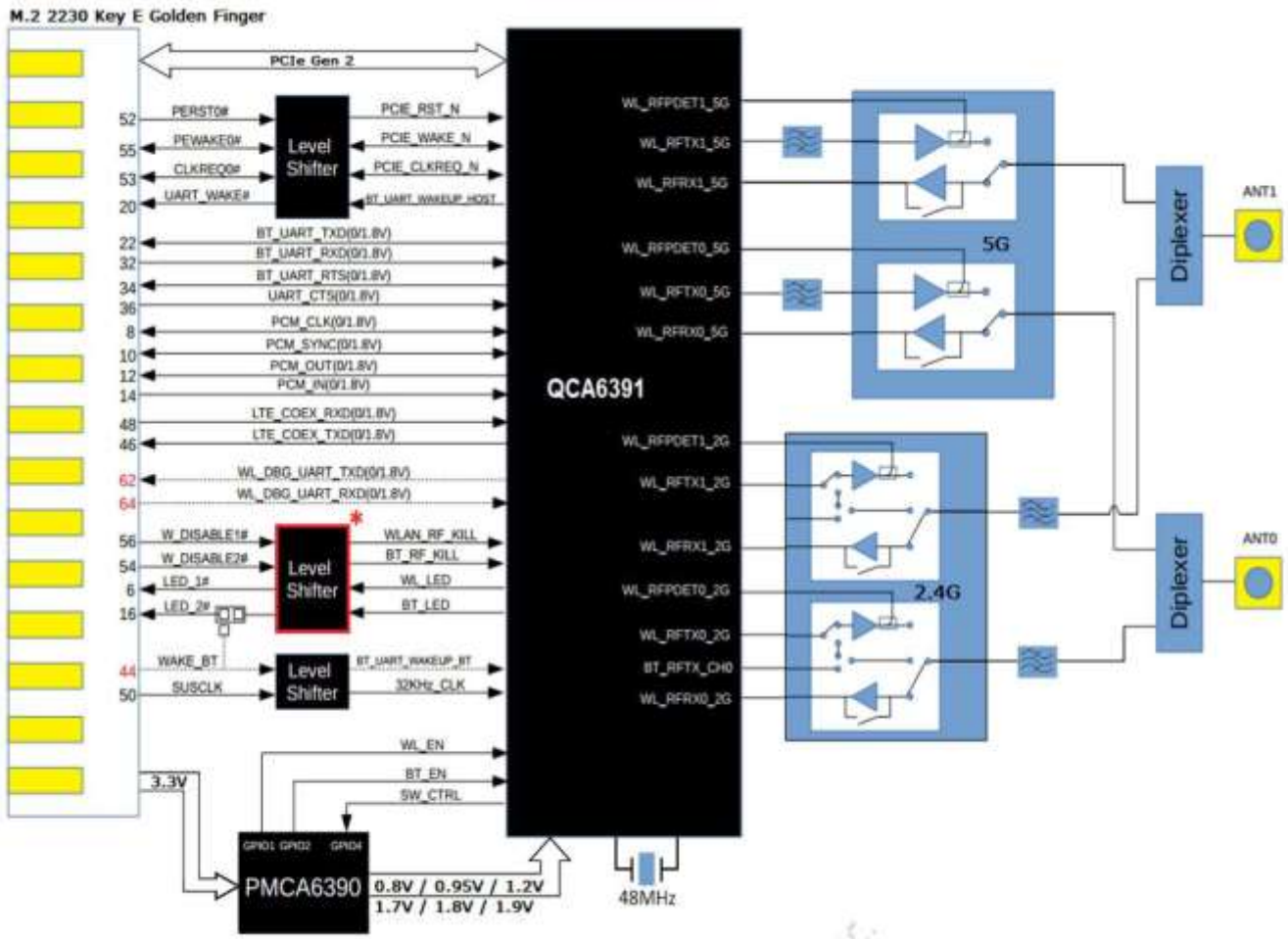


Figure 1-1 Block Diagram

1.4 General Specification

Model Name	ENL-Q6391M2
Product Description	Support Wi-Fi/Bluetooth functionalities
Dimension	L x W x H: 22 x 30 x 2.2 (typical) mm
Wi-Fi Interface	Support PCIe
BT Interface	UART / PCM
Operating temperature	-30°C to 70°C
Storage temperature	-40°C to 125°C

1.5 Recommended Operating Rating

	Min.	Typ.	Max.	Unit
Operating Temperature	-30	25	70	deg.C
VDD	3.15	3.3	3.45	V
VDDIO_3.3V	3.15	3.3	3.45	V
VDDIO_1.8V	1.71	1.8	1.89	V

1.6 Power Consumption Information

Test Mode	Current Value @3.3Vdc
2G TX (Chain Mask 2x2)	11M @20dBm 880mA
	54M @17dBm 840mA
	HT40 MCS7 @17dBm 810mA
	vHT40 MCS9 @15dBm 788mA
	HE40 MCS11 @14dBm 778mA
5G TX (Chain Mask 2x2)	54M @16dBm 750mA
	HT40 MCS7 @16dBm 726mA
	Vht80 MCS9 @14dBm 727mA
	HE80 MCS11 @13dBm 728mA
2G RX (Chain Mask 2x2)	Max 182mA
5G RX (Chain Mask 2x2)	Max 152mA
Power Up	118mA
BT TX	1M @7dBm 147mA
BT RX	Max 136mA

2 Wi-Fi RF Specification

2.1 2.4GHz RF Specification

Conditions : VDD=3.3V ; Temp:25°C

Feature	Description	
WLAN Standard	IEEE 802.11b/g/n/ac/ax Wi-Fi compliant	
Frequency Range	2412-2462MHz	
Number of Channels	2.4GHz：Ch1 ~ Ch11	
Item	**Value**	**Standard Value**
Output Power	802.11b /1Mbps: 20 dBm ± 2 dB	EVM ≤ -9dB
	802.11b /11Mbps: 20 dBm ± 2 dB	EVM ≤ -9dB
	802.11g /6Mbps: 20 dBm ± 2 dB	EVM ≤ -5dB
	802.11g /54Mbps: 17 dBm ± 2 dB	EVM ≤ -25dB
	802.11n HT20 /MCS0: 19.5 dBm ± 2 dB	EVM ≤ -5dB
	802.11n HT20 /MCS7: 17dBm ± 2 dB	EVM ≤ -28dB
	802.11n HT40 /MCS0: 19 dBm ± 2 dB	EVM ≤ -5dB
	802.11n HT40 /MCS7: 17 dBm ± 2 dB	EVM ≤ -28dB
	802.11ac vHT20/MCS0: 19.5 dBm ± 2 dB	EVM ≤ -5dB
	802.11ac vHT20/MCS8: 15 dBm ± 2 dB	EVM ≤ -30dB
	802.11ac vHT40/MCS0: 19 dBm ± 2 dB	EVM ≤ -5dB
	802.11ac vHT40/MCS9: 15 dBm ± 2 dB	EVM ≤ -32dB
	802.11ax HE20/MCS0: 19.5 dBm ± 2 dB	EVM ≤ -5dB
	802.11ax HE20/MCS11: 14 dBm ± 2 dB	EVM ≤ -35dB
	802.11ax HE40/MCS0: 19 dBm ± 2 dB	EVM ≤ -5dB
	802.11ax/MCS11: 14 dBm ± 2 dB	EVM ≤ -35dB
SISO Receive Sensitivity (11b,20MHz) @8% PER	- 1Mbps ≤ -92 dBm	≤ -83 dBm
	- 11Mbps ≤ -85 dBm	≤ -76 dBm
SISO Receive Sensitivity (11g,20MHz) @10% PER	- 6Mbps ≤ -87 dBm	≤ -85 dBm
	- 54Mbps ≤ -71 dBm	≤ -68 dBm
SISO Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 ≤ -86 dBm	≤ -85 dBm
	- MCS=7 ≤ -68 dBm	≤ -67 dBm
SISO Receive Sensitivity	- MCS=0 ≤ -83 dBm	≤ -82 dBm

(11n,40MHz) @10% PER	- MCS=7 ≤ -65 dBm	≤ -64 dBm
SISO Receive Sensitivity (11ac,20MHz) @10% PER	- MCS=0 ≤ -83 dBm	≤ -82 dBm
	- MCS=8 ≤ -63 dBm	≤ -60 dBm
SISO Receive Sensitivity (11ac,40MHz) @10% PER	- MCS=0 ≤ -82 dBm	≤ -79 dBm
	- MCS=9 ≤ -60 dBm	≤ -55 dBm
SISO Receive Sensitivity (11ax,20MHz) @10% PER	- MCS=0 ≤ -81 dBm	≤-74 dBm
	- MCS=11 ≤ -55 dBm	≤-52 dBm
SISO Receive Sensitivity (11ax,40MHz) @10% PER	- MCS=0 ≤ -74 dBm	≤-71 dBm
	- MCS=11 ≤ -52 dBm	≤-49 dBm
Maximum Input Level	802.11b: -10 dBm	
	802.11g/n/ac/ax: -10 dBm	

2.2 5GHz RF Specification

Conditions : VDD=3.3V ; Temp:25°C

Feature	**Description**	
WLAN Standard	IEEE 802.11 a/n/ac/ax 2x2, Wi-Fi compliant	
Frequency Range	5150-5250MHz ,5725-5850MHz	
Number of Channels	5.0GHz：Please see the table[1]	
Item	**Value**	**Standard Value**
Output Power	802.11a /6Mbps: 20 dBm ± 2 dB	EVM ≤ -5dB
	802.11a /54Mbps: 16 dBm ± 2 dB	EVM ≤ -25dB
	802.11n HT20 /MCS0: 19 dBm ± 2 dB	EVM ≤ -5dB
	802.11n HT20 /MCS7: 16 dBm ± 2 dB	EVM ≤ -28dB
	802.11n HT40 /MCS0: 18.5 dBm ± 2 dB	EVM ≤ -5dB
	802.11n HT40 /MCS7: 16 dBm ± 2 dB	EVM ≤ -28dB
	802.11ac vHT20/MCS0: 19 dBm ± 2 dB	EVM ≤ -5dB
	802.11ac vHT20/MCS8: 15 dBm ± 2 dB	EVM ≤ -30dB

	802.11ac vHT40/MCS0: 18.5 dBm ± 2 dB	EVM ≤ -5dB
	802.11ac vHT40/MCS9: 15 dBm ± 2 dB	EVM ≤ -32dB
	802.11ac vHT80/MCS0: 18.5 dBm ± 2 dB	EVM ≤ -5dB
	802.11ac vHT80/MCS9: 14 dBm ± 2 dB	EVM ≤ -32dB
	802.11ax HE20/MCS0: 19 dBm ± 2 dB	EVM ≤ -5dB
	802.11ax HE20/MCS11: 14 dBm ± 2 dB	EVM ≤ -35dB
	802.11ax HE40/MCS0: 18 dBm ± 2 dB	EVM ≤ -5dB
	802.11ax HE40/MCS11: 14 dBm ± 2 dB	EVM ≤ -35dB
	802.11ax HE80/MCS0: 18 dBm ± 2 dB	EVM ≤ -5dB
	802.11ax HE80/MCS11: 13 dBm ± 2 dB	EVM ≤ -35dB
SISO Receive Sensitivity (11a,20MHz) @10% PER	- 6Mbps ≤ -87 dBm	≤-85
	- 54Mbps ≤ -71 dBm	≤-68
SISO Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 ≤ -86 dBm	≤-85
	- MCS=7 ≤ -68 dBm	≤-67
SISO Receive Sensitivity (11n,40MHz) @10% PER	- MCS=0 ≤ -83 dBm	≤-82
	- MCS=7 ≤ -65 dBm	≤-64
SISO Receive Sensitivity (11ac,20MHz) @10% PER	- MCS=0, NSS1 ≤ -83 dBm	≤-82
	- MCS=8, NSS1 ≤ -63 dBm	≤-60
SISO Receive Sensitivity (11ac,40MHz) @10% PER	- MCS=0, NSS1 ≤ -82 dBm	≤-79
	- MCS=9, NSS1 ≤ -60 dBm	≤-55
SISO Receive Sensitivity (11ac,80MHz) @10% PER	- MCS=0, NSS1 ≤ -81 dBm	≤-79
	- MCS=9, NSS1 ≤ -57 dBm	≤-54
SISO Receive Sensitivity (11ax, 20MHz) @10% PER	- MCS=0 ≤ -81 dBm	≤-74
	- MCS=11 ≤ -55 dBm	≤-52
SISO Receive Sensitivity (11ax,40MHz) @10% PER	- MCS=0 ≤ -74 dBm	≤-71
	- MCS=11 ≤ -52 dBm	≤-49
SISO Receive Sensitivity (11ax,80MHz) @10% PER	- MCS=0 ≤ -73 dBm	≤-68
	- MCS=11 ≤ -51 dBm	≤-46
Maximum Input Level	802.11a/n/ac/ax : -10 dBm	
Antenna Reference	Small antennas with 0~2 dBi peak gain	

[1]5GHz(20MHz) Channel table

Band range	Operating Channel Numbers	Channel center frequencies (MHz)
5180MHz~5240MHz	36	5180
	40	5200
	44	5220
	48	5240
5745MHz~5825MHz	149	5745
	153	5765
	157	5785
	161	5805
	165	5825

RF specification will be updated in a future version of this document.

3 Bluetooth Specification

3.1 Bluetooth Specification

Feature	**Description**
General Specification	
Bluetooth Standard	Bluetooth V5.1
Host Interface	UART/PCM
Frequency Band	2402 MHz ~ 2480 MHz

Number of Channels	79 channels		
Modulation	GFSK, π/4-DQPSK, 8DPSK		
RF Specification			
	Min.	**Typical.**	**Max.**
Output Power		7 dBm	
Sensitivity @ BER=0.1% for GFSK (1Mbps)		-92 dBm	
Sensitivity @ BER=0.01% for π/4-DQPSK (2Mbps)		-92 dBm	
Sensitivity @ BER=0.01% for 8DPSK (3Mbps)		-85 dBm	
Maximum Input Level	GFSK (1Mbps):-10dBm		
	π/4-DQPSK (2Mbps) :-10dBm		
	8DPSK (3Mbps) :-10dBm		

4 Pin Assignments

4.1 Pin Outline

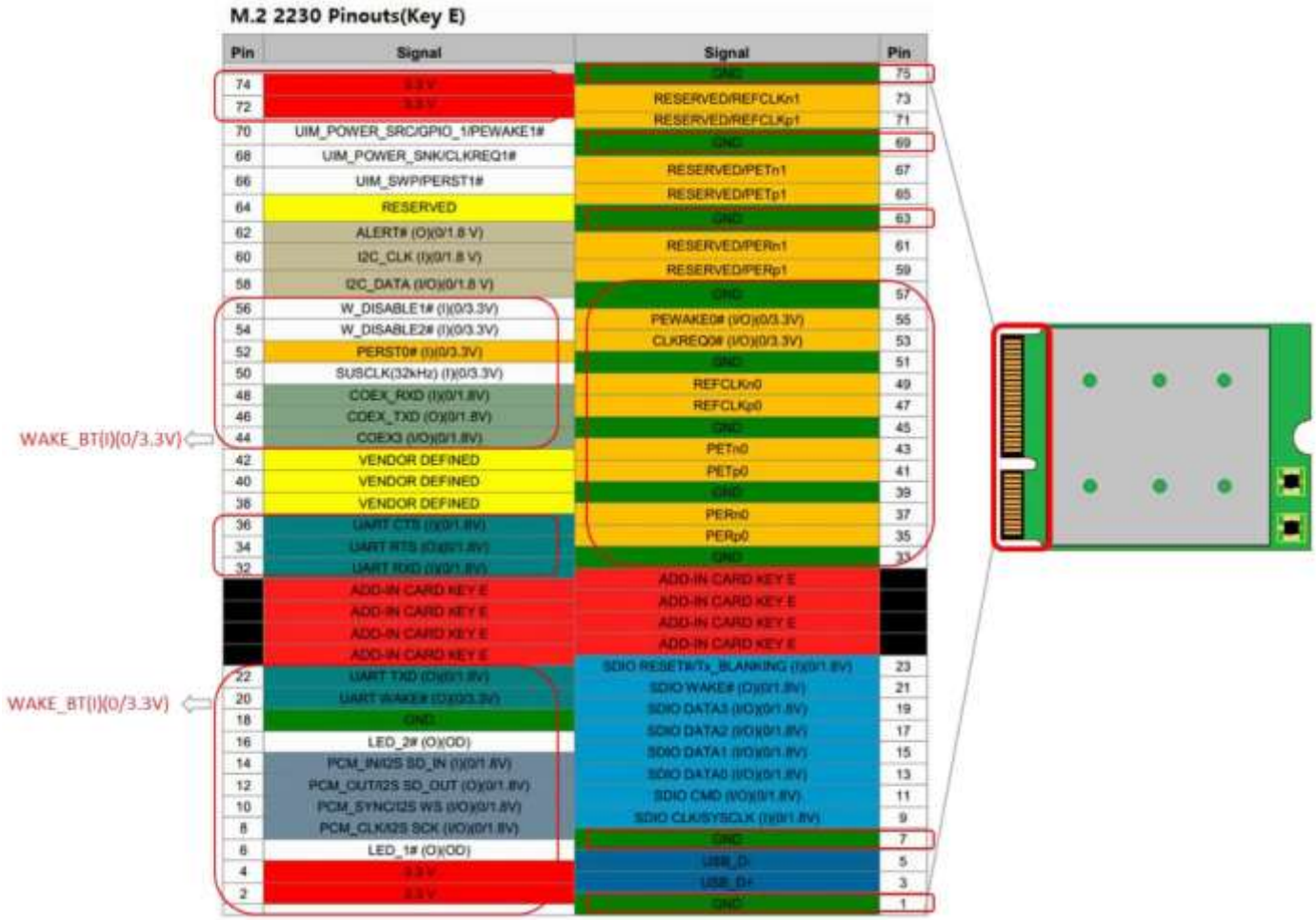


Figure 4-1 Module pin out

4.2 Pin Definition

Top side

NO	Name	Type	Description	Voltage
1	GND1	-	Ground	
3	NC	-		
5	NC	-		
7	GND2	-	Ground	
9	NC	-		
11	NC	-		
13	NC	-		
15	NC	-		
17	NC	-		
19	NC	-		
21	NC	-		
23	NC	-		
33	GND3	-	Ground	
35	PERP0	I	PCIe RX differential signals	
37	PERN0	I		
39	GND4	-	Ground	
41	PETP0	O	PCIe TX differential signals	
43	PETN0	O		
45	GND5	-	Ground	
47	REFCLKP0	I	PCIe clock differential input signal	
49	REFCLKN0	I		
51	GND6		Ground	
53	CLKREQ0#(I/O)(0/3.3V)	O	PCIe reference clock request signal, open drain, active low	3.3V
55	PEWAKE0#(I/O)(0/3.3V)	O	PCIe wake up host, open drain, active low	3.3V
57	GND7	-	Ground	
59	RESERVED_PERP1	-	NC	
61	RESERVED_PERN1	-	NC	
63	GND8	-	Ground	
65	RESERVED_PETP1	-	NC	

67	RESERVED_PETN1	-	NC	
69	GND9	-	Ground	
71	RESERVED_REFCLKP1	-	NC	
73	RESERVED_REFCLKN1	-	NC	
75	GND10	-	Ground	

Bottom side

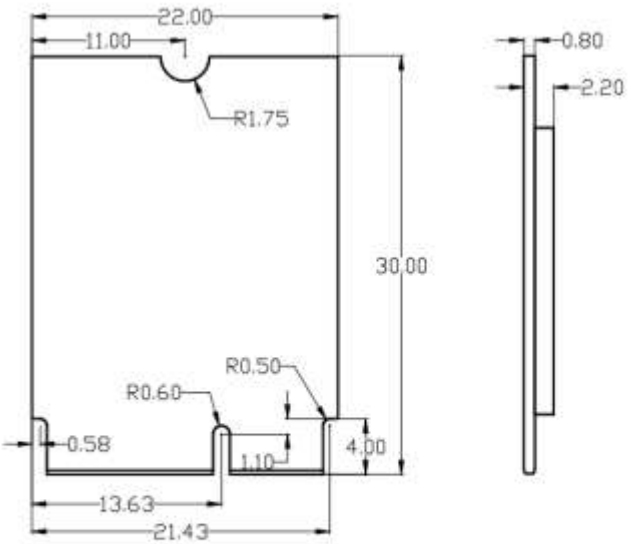
NO	Name	Type	Description	Voltage
2	3_3V_1	P	Power supply	3.3V
4	3_3V_2	P	Power supply	3.3V
6	LED_1#(O)(OD)	O	WLAN LED signal	3.3V
8	PCM_CLK	-	BT PCM clock	1.8V
10	PCM_SYNC	-	BT PCM sync	1.8V
12	PCM_OUT	O	BT PCM data out	1.8V
14	PCM_IN	I	BT PCM data in	1.8V
16	LED_2#(O)(OD)	O	BT LED signal	3.3V
18	GND11	-		
20	UART_WAKE_N	O	BT wake up host signal	3.3V
22	UART_TXD(O)(0/1.8V)	O	BT UART interface	1.8V
32	UART_RXD(I)(0/1.8V)	I		1.8V
34	UART_RTS(O)(0/1.8V)	O	BT UART request to send	1.8V
36	UART_CTS(I)(0/1.8V)	I	BT UART clear to send	1.8V
38	NC	-		
40	NC	-		
42	NC	-		
44	WAKE_BT	I	Host wake up BT signal	3.3V
46	LTE_COEX_TXD	O	LTE coexistence UART TXD	1.8V
48	LTE_COEX_RXD	I	LTE coexistence UART RXD	1.8V
50	SUSCLK_32KHZ	I	Sleep clock input	3.3V
52	PERST0#(I)(0/3.3V)	I	PCIe reset module, internal weak pull down	3.3V
54	W_DISABLE2#(I)(0/3.3V)	I	Turn off BT RF analog. Active low	3.3V
56	W_DISABLE1#(I)(0/3.3V)	I	Turn-off WLAN RF analog	3.3V

			and front-end. Active low	
58	I2C_DATA(I/O)(0/1.8V)	O	WLAN UART TXD for debug	1.8V
60	I2C_CLK(I/O)(0/1.8V)	I	WLAN UART RXD for debug	1.8V
62	NC	-		
64	NC	-		
66	NC	-		
68	NC	-		
70	NC	-		
72	3_3V_3	P	Power supply	3.3V
74	3_3V_4	P	Power supply	3.3V

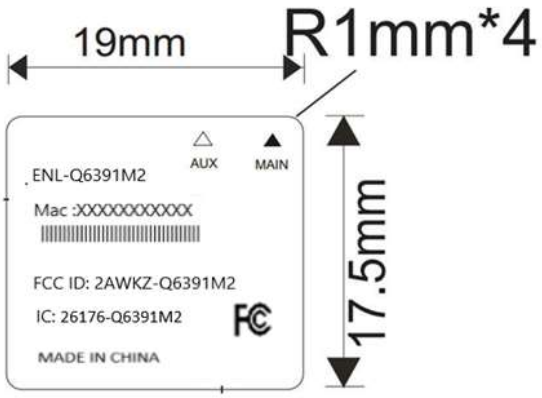
P:POWER I:INPUT O:OUTPUT PD：PULL-DOWN

5 Dimensions

5.1 Module Picture

L x W : 22 x 30 (+0.3-0.1) mm 	
H: 2.20 (±0.10) mm	
Weight	2.6±0.1g

5.2 Marking Description



5.3 Module Physical Dimensions

(Unit: mm)

< TOP VIEW >

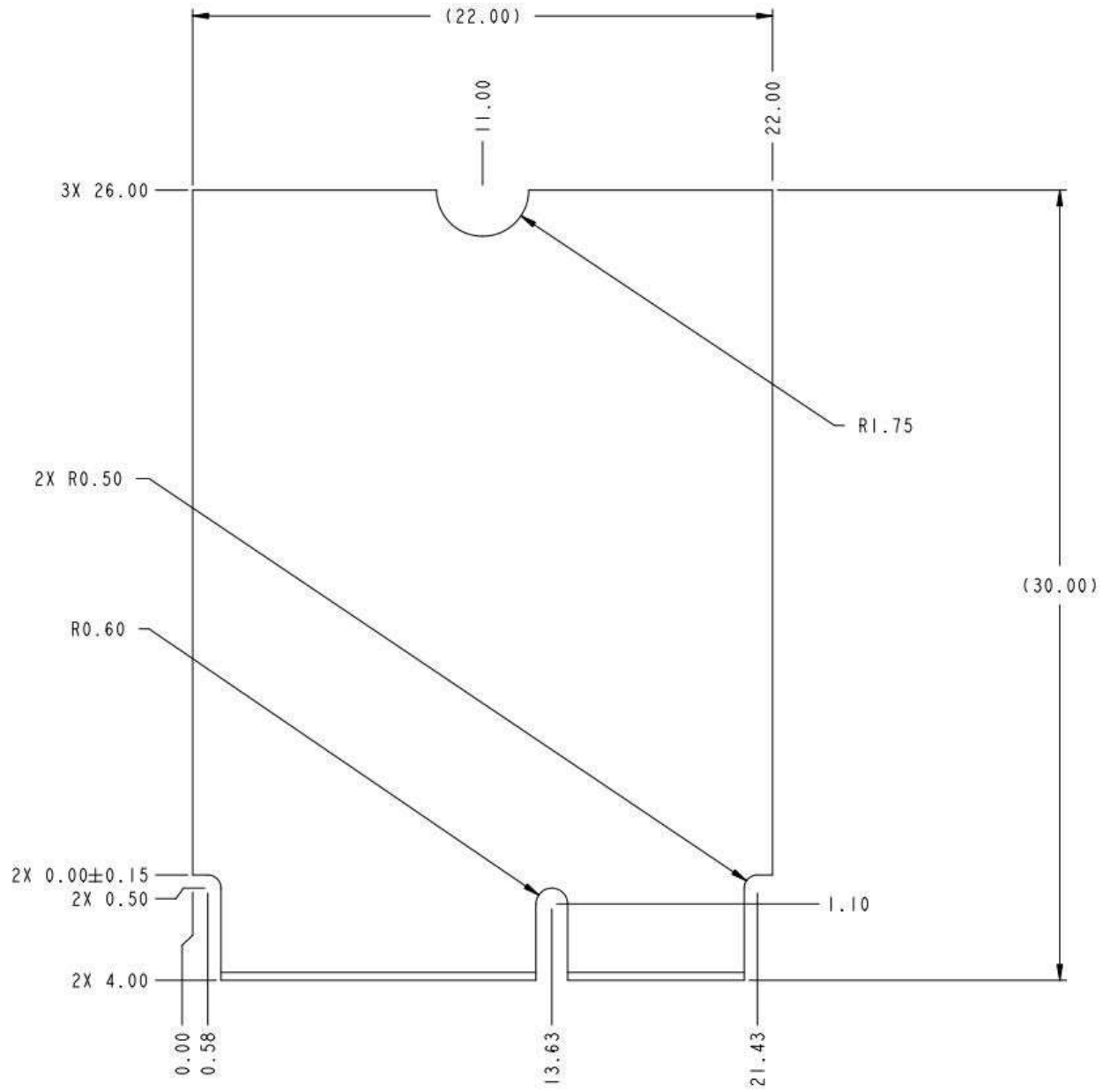


Figure 5-1 Module physical dimensions

6 Host Interface Timing Diagram

6.1 PCIe powerup sequence timing

Supports PCIe Gen 2 interface for WLAN.
Compliant to PCIe Gen 2 powerup sequence timing.

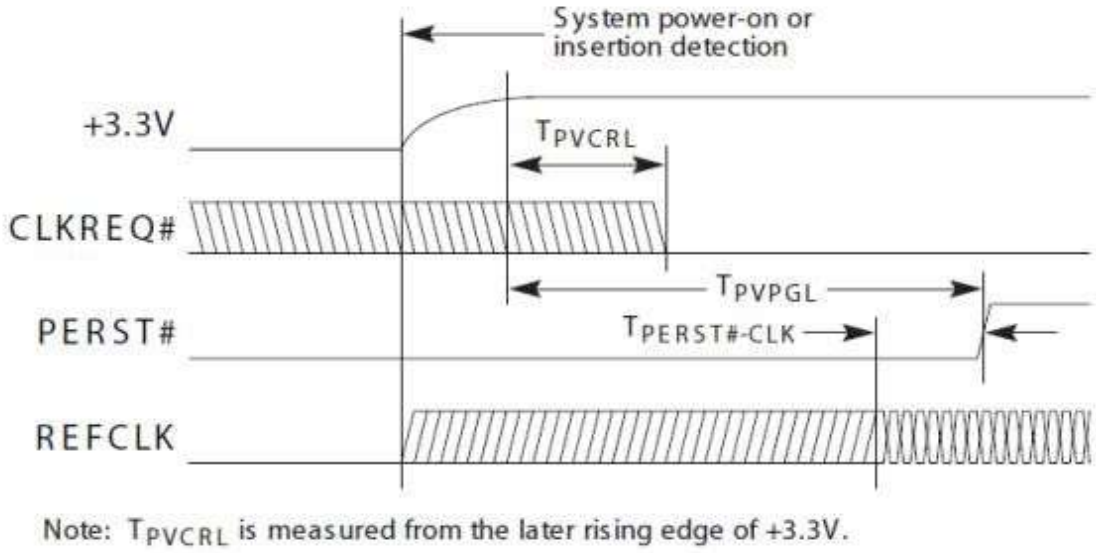


Figure 6-1 Powerup timing requirements

Symbol	Parameter	Min	Max	Units
T_{PVCRL}	Power Valid to CLKREQ# Output active		100	µS
T_{PVPGL}	Power Valid to PERST# Input inactive	1		mS
$T_{PERST\#-CLK}$	REFCLK stable before PERST# inactive	100		µS

7 Reference Design

7.1 Reference design schematic

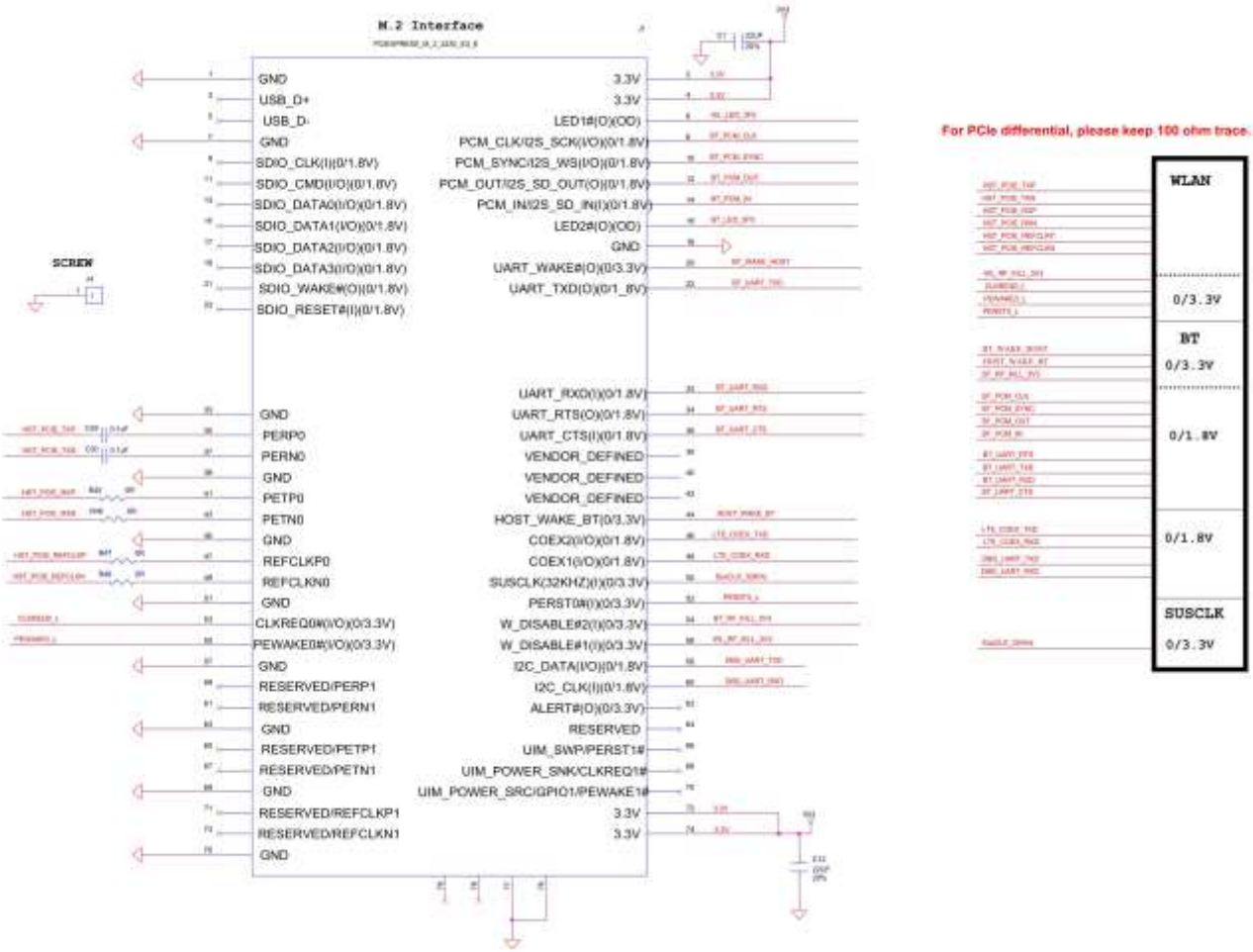


Figure 7-1 Reference schematic

C29, C30 should be closed to host.

PCIe differential signals should be followed 100 Ohm impedance.

For the I/O interface voltage, please refer to chapter 4.2 pin definition.

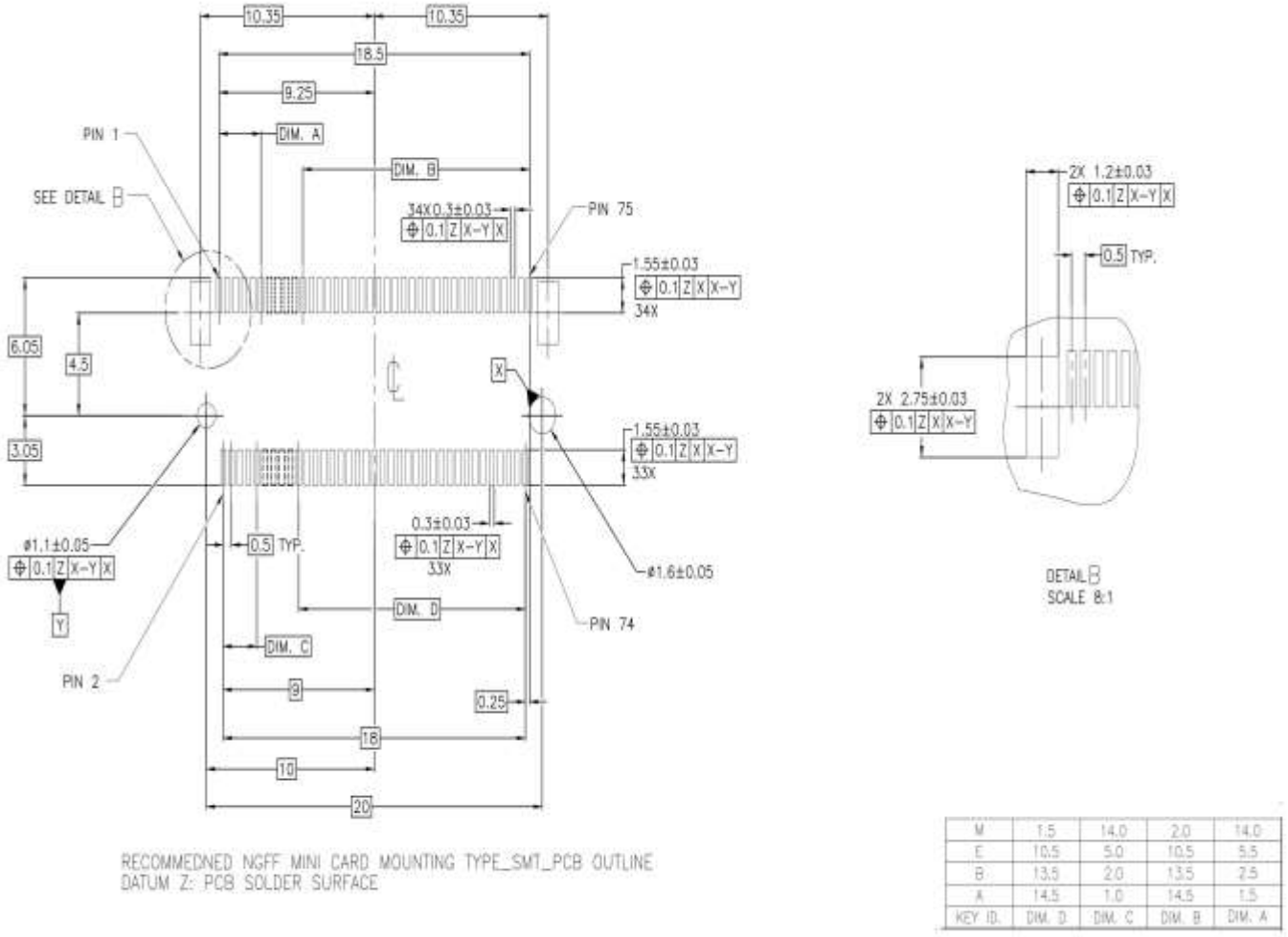
For the 1.8V interface, such as PCM, UART and some I/O, if the host voltage level is 3.3V or 5V, need to add level shift circuit.

7.2 M.2 connector

The module is standard M.2 2230 Key E double sided module.
It complies with the standard M.2 2230 Key E slot.

Recommended M.2 connector part number:
2199230-4 (TE connectivity).
AS0BC21-S67BE-LH (Foxconn).

For the mainboard PCB, it should reserve screw hole for fixing the module.



M	1.5	14.0	2.0	14.0
E	10.5	5.0	10.5	5.5
B	13.5	2.0	13.5	2.5
A	14.5	1.0	14.5	1.5
KEY ID.	DIM. D	DIM. C	DIM. B	DIM. A

Figure 7-2 Recommended M.2 connector PCB outline

Dimensions unit: mm
Note: Refer Key ID is E

7.3 RF connector of module

There are 2 gen 4 RF receptacle connectors on the module, for external dual band antenna. The RF receptacle connectors are complied with IPEX 4 standard.

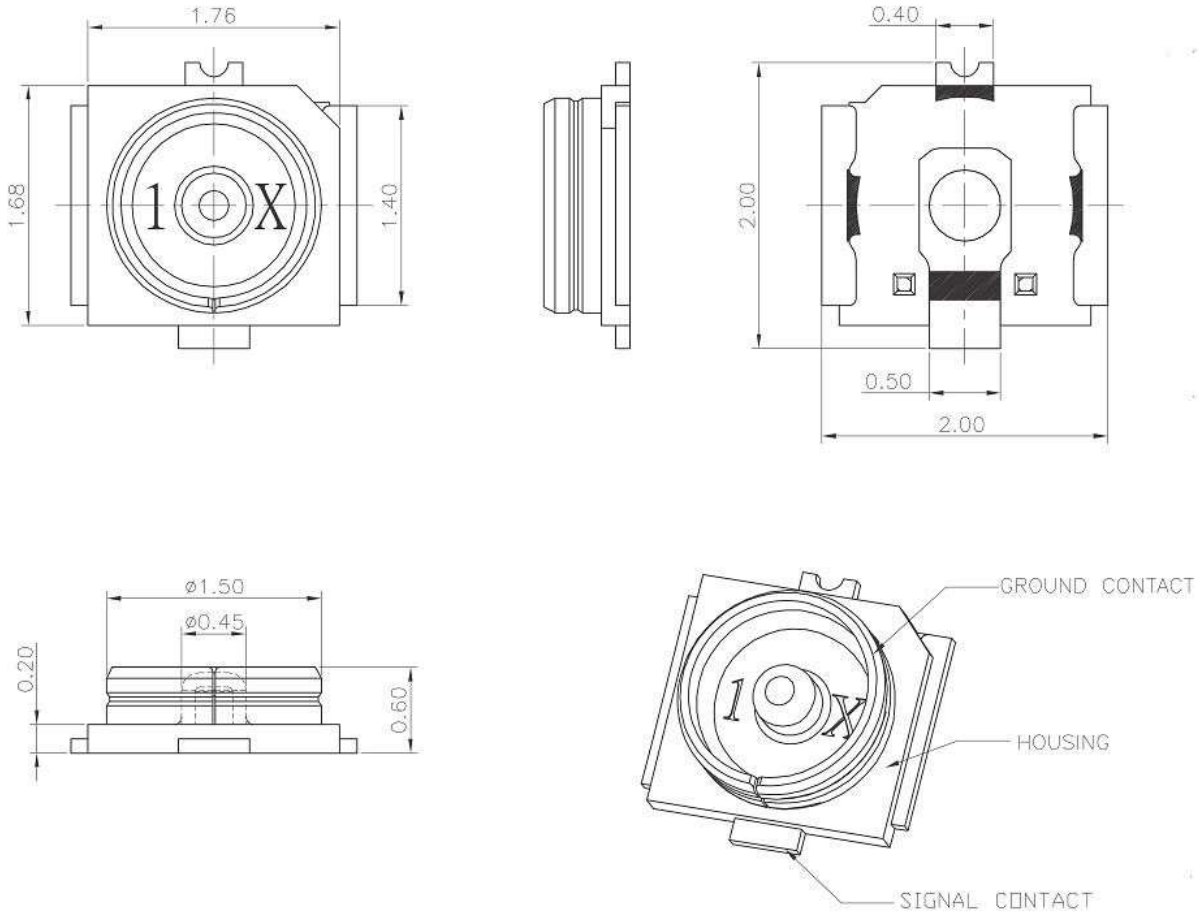


Figure 7-3 RF connector

8 Ordering Information

Part No.	Description
ENL-Q6391M2	QCA6391(QCA1064), M.2 2230 E key, 2x2, 802.11a/b/g/n/ac/ax BT5.1DBS 2G&5G

9 The Key Material List

Item	Part Name	Description	Manufacturer
1	Inductor	2012 0.47uH,±20%	Sunlord, Ceaiya, Cenker
2	Diplexer	1608 Dual-band, dual-mode 2.4GHz/5GHz WLAN	Glead, Walsin, ACX, Murata, MAG.LAYERS
3	Crystal	2016 48MHz	ECEC, TKD, Hosonic, JWT, TXC
4	Chipset	QCA6391, QCA106X	Qualcomm
5	2.4G FEM	Dual FEM, 2.4G	Qorvo, NXP
6	5G FEM	Dual FEM, 5G	Qorvo, NXP
7	PCB	FR4, 6 LAYER	Brain-power, GDKX, Piotek, Sunlord

10 Package Information

10.1 Tray

Note: The package information will be updated in next revision of this document.

Layer size: L300.0*W240.0 mm
Layer material: PVC
Carton size: L310.0*W260.0*H220.0 mm
Carton material: A=A

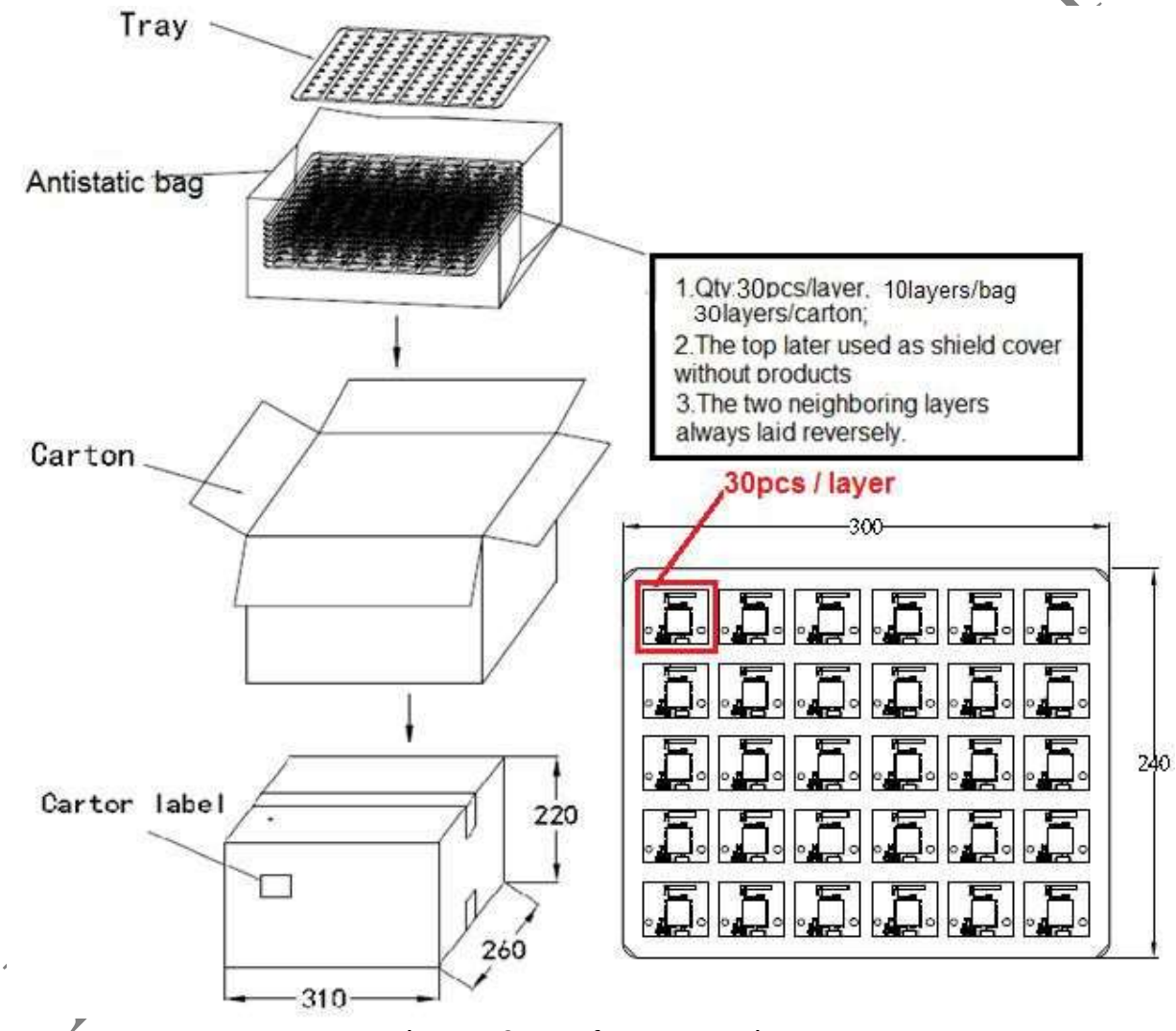


Figure 10-1 Reference Package

10.2 Moisture sensitivity

The Modules is a Moisture Sensitive Device level 3, in according with standard IPC/JEDEC J-STD-020, take care all the relatives requirements for using this kind of components.

Moreover, the customer has to take care of the following conditions:

a) Calculated shelf life in sealed bag: 12 months at <40°C and <90% relative humidity (RH)

b) Environmental condition during the production: 30°C / 60% RH according to IPC/JEDEC J-STD-033A paragraph 5

c) The maximum time between the opening of the sealed bag and the reflow process must be 168 hours if condition

d) “IPC/JEDEC J-STD-033A paragraph 5.2” is respected

e) Baking is required if conditions b) or c) are not respected

f) Baking is required if the humidity indicator inside the bag indicates 10% RH or more

Federal Communication Commission Interference Statement:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

RF exposure statements
This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body or nearby persons.

CFR 47 FCC PART 15 SUBPART C (15.247) and SUBPART E (15.407) has been investigated. It is applicable to the modular transmitter.

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

This radio transmitter 2AWKZ-Q6391M2 has been approved by Federal Communications Commission to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Unique antenna connector must be used on the Part 15 authorized transmitters used in the host product.

Antenna Type	Antenna Model	Maximum Gain (dBi)		Remark
		2.4 GHz	5GHz	
Dipole	RFA-27-C38H1-MHF4300	3 dBi	5dBi	
PIFA	SPEC-RFA-27-JP326-MHF4300	3.5 dBi	5 dBi	

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: “Contains Transmitter Module FCC ID: 2AWKZ-Q6391M2” Or “Contains FCC ID: 2AWKZ-Q6391M2”

The modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

Industry Canada statement:
This device complies with Industry Canada license-exempt RSSs. Operation is subject to the following two conditions:
1) This device may not cause interference, and
2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
1) l'appareil ne doit pas produire de brouillage;
2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, meme si le brouillage est susceptible d'en compromettre le fonctionnement.

Caution:
1) The device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

2) For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits specified for point-to-point and non-point-to-point operation as appropriate; and

Avertissement:
1) Le dispositif fonctionnant dans la bande 5150-5250 MHz est réservé uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;

2) Le gain maximal d'antenne permis pour les dispositifs avec antenne(s) amovible(s) utilisant la bande 5725-5850 MHz doit se conformer à la limitation P.I.R.E spécifiée pour l'exploitation point à point et non point à point, selon le cas.

Radiation Exposure Statement:
This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Déclaration d'exposition aux radiations:
Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

This radio transmitter IC: 26176-Q6391M2 has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio IC: 26176-Q6391M2 a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés cidessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Antenna Type	Antenna Model	Maximum Gain (dBi)		Remark
		2.4 GHz	5GHz	
Dipole	RFA-27-C38H1-MHF4300	3 dBi	5dBi	Dipole
PIFA	SPEC-RFA-27-JP326-MHF4300	3.5 dBi	5 dBi	PIFA

If the ISED certification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains IC: 26176-Q6391M2".

Si le numéro de certification ISDE n'est pas visible lorsque le module est installé à l'intérieur d'un autre appareil, alors l'extérieur de l'appareil dans lequel le module est installé doit également afficher une étiquette faisant référence au module inclus. Cette étiquette extérieure peut utiliser un libellé comme celui-ci: " Contient IC: 26176-Q6391M2".

Plaque signalétique du produit final:
Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: "Contient des IC: 26176-Q6391M2 ".

Manual Information To the End User:
The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.
The end user manual shall include all required regulatory information/warning as show in this manual.

Manuel d'information à l'utilisateur final
L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module. Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et
avertissements comme indiqué dans ce manue

Must use the device only in host devices that meet the FCC/ISED RF exposure category of mobile, which means the device is installed and used at distances of at least 20cm from persons.
The end user manual shall include FCC Part 15 /ISED RSS GEN compliance statements related to the transmitter as show in this manual.

Host manufacturer is responsible for compliance of the host system with module installed with all other applicable requirements for the system such as Part 15 B, ICES 003.
Host manufacturer is strongly recommended to confirm compliance with FCC/ISED requirements for the transmitter when the module is installed in the host.
Must have on the host device a label showing Contains FCC ID: 2AWKZ-Q6391M2, Contains IC: 26176-Q6391M2
The use condition limitations extend to professional users, then instructions must state that this information also extends to the host manufacturer's instruction manual.

If the end product will involve the Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer have to consult with module manufacturer for the installation method in end system.

l'hôte doit utiliser l'instrument uniquement dans des dispositifs qui répondent à la fcc / (catégorie d'exposition rf mobile, ce qui signifie le dispositif est installé et utilisé à une distance d'au moins 20 cm de personnes.
le manuel de l'utilisateur final doit inclure la partie 15 / (fac rss gen déclarations de conformité relatives à l'émetteur que de montrer dans ce manuel.
le fabricant est responsable de la conformité de l'hôte, le système d'accueil avec le module installé avec toutes les autres exigences applicables du système comme la partie 15 b, ices - 003. accueillir
le fabricant est fortement recommandé de confirmer la conformité avec les exigences de la fcc / (émetteur lorsque le module est installé dans l'hôte.
le dispositif d'accueil doivent avoir une étiquette indiquant contient FCC ID: 2AWKZ-Q6391M2, contient IC : 26176-Q6391M2