6222B-SRC

Wi-Fi Dual-band 2X2 11ac +Bluetooth 5.0

Combo Module Datasheet

6222B-SRC Module Datasheet

Office: 6 Floor, Building U6, Junxiang U8 Park,
Hangcheng Avenue, Bao'an District,
Shenzhen City, CHINA
Factory: No.8, Litong Road, Liuyang Economic & Technical
Development Zone, Changsha, Hunan, CHINA
TEL: +86-755-2955-8186
Website: www.fn-link.com

Customer Approval :

_____ Company

_____ Title

_____ Signature

_____ Date

_____ Fn-Link

Revision History

Version	Date	Revision Content	Draft	Approved
1.0	2019/07/30	New version	LXY	SZS
1.1	2019/08/07	Update reference SCH	LXY	SZS
1.2	2020/04/09	Update pin description	LXY	SZS

CONTENTS

1 Overview

1.1 Introduction

Fn-Link Technology would like to announce a low-cost and low-power consumption module which has all of the Wi-Fi functionalities. It is a highly-integrated IEEE 802.11 a/b/g/n/ac MAC/Baseband/RF WLAN single chip. For Wireless LAN operation. The integrated module provides SDIO interface for Wi-Fi . The module provides simple legacy and 20MHz/40MHz/80MHz co-existence mechanism to ensure backward and network compatibility

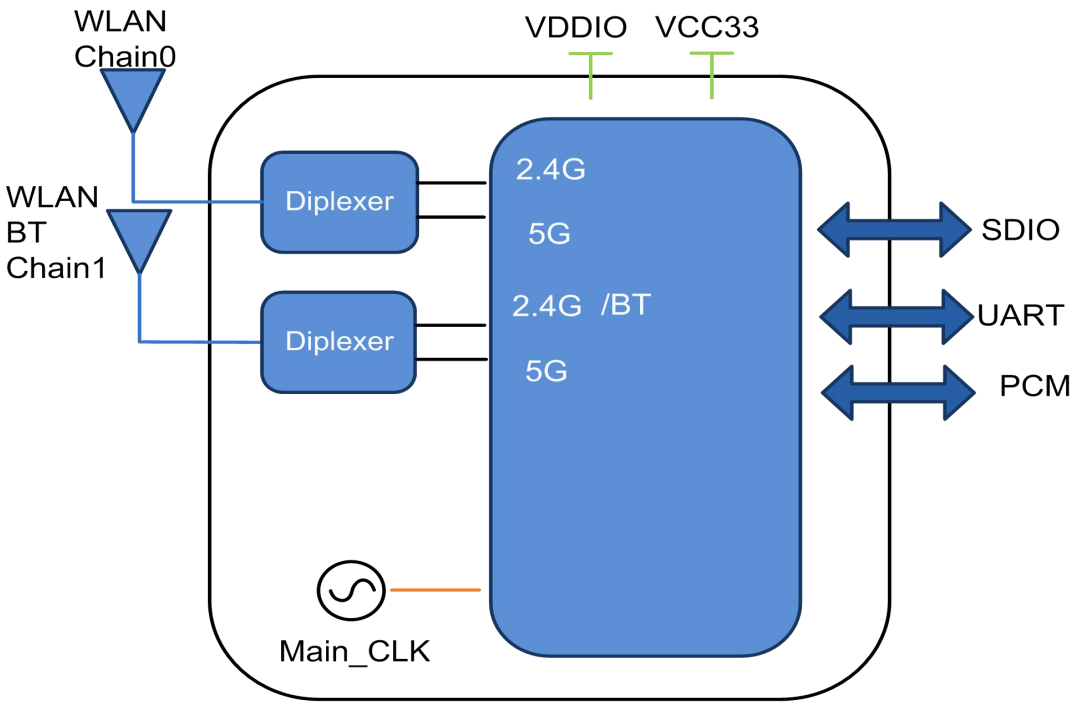
The wireless module complies with IEEE 802.11 a/b/g/n/ac 2x2 MIMO standard and the speed can achieve up to 867Mbps with dual stream in 802.11n. The integrated module provides SDIO interface for Wi-Fi, UART / PCM interface for Bluetooth.

This combo module is a total solution for a combination of Wi-Fi and Bluetooth V5.0 technologies.

1.2 Features

- Highly integrated wireless local area network(WLAN) system-on-chip (SOC) for 5 GHZ 802.11ac, or 2.4G/5G 802.11n WLAN applications.
- Dual-stream spatial multiplexing up to 867 Mbps data rate.
- Supports 20/40MHz at 2.4GHz and supports 20/40/80MHz at 5GHz
- Supports low power SDIO3.0 interface for WLAN and UART/PCM interface for Bluetooth.
- Supports Bluetooth V5.0 system.
- Supports WLAN-Bluetooth coexistence.
- Supports Bluetooth for class1 and class2 power level transmissions without requiring an external PA.
- BT host digital interface:
    - HCI UART (up to 4 Mbps)
    - PCM for audio data
- Module have 2 antenna port,BT port combine with WLAN1.

Block Diagram:



1.3 General Specification

Model Name	6222B-SRC
Product Description	Support Wi-Fi/Bluetooth functionalities
Dimension	L x W x H: 15 x 13 x 2.15 mm (typical)
Wi-Fi Interface	Support SDIO V3.0
BT Interface	UART / PCM
Operating temperature	0°C to 70°C
Storage temperature	-40°C to 85°C

ANT Description	
Frequency range	2.4~2.5GHz;5.15~5.85GHz
Type	FPC Antenna
Model name	1A220XX2G4-00
Manufacturer	FN-LINK TECHNOLOGY LIMITED
Address	No.8, Litong Road, Liuyang Economic & Technical Development Zone, Changsha, Hunan, China
Gain(Peak)	2.63dBi(max) for 2.4~2.5GHz;3.52dBi(max) for 5.15~5.85GHz

1.4 Recommended Operating Rating

	Min.	Typ.	Max.	Unit
Operating Temperature	0	25	70	deg.C
VCC33	3.15	3.3	3.45	V
VDDIO	1.7	1.8 or 3.3	3.45	V

※1.5 EEPROM Information

WI-FI

ID	8129

2 Wi-Fi RF Specification

2.1 2.4GHz RF Specification

Feature	**Description**			
WLAN Standard	IEEE 802.11 b/g/n Wi-Fi compliant			
Frequency Range	2.400 GHz ~ 2.497 GHz (2.4 GHz ISM Band)			
Number of Channels	2.4GHz：Ch1 ~ Ch14			
Spectrum Mask	Min. b/g/n	Typ. b/g/n	Max. b/g/n	Unit b/g/n
1st side lobes(to fc ± 11MHZ)	-	-43/-30/-40	-	dBr
2st side lobes(to fc ± 22MHZ)	-	-52/-33/-58	-	dBr
Freq. Tolerance	-20/-20/-20	-	20/20/20	ppm
Test Items	**Typical Value**			**EVM**
Output Power	802.11b /11Mbps : 17dBm ± 1.5 dB			EVM ≤ -9dB
	802.11g /54Mbps : 15dBm ± 1.5 dB			EVM ≤ -25dB
	802.11n /MCS7 : 14dBm ± 1.5 dB			EVM ≤ -28dB
Test Items	**TYP Test Value**			**Standard Value**
SISO Receive Sensitivity (11b,20MHz) @8% PER	- 1Mbps	PER @ -92 dBm		≤-83
	- 2Mbps	PER @ -90 dBm		≤-80
	- 5.5Mbps	PER @ -87 dBm		≤-79
	- 11Mbps	PER @ -85 dBm		≤-76
SISO Receive Sensitivity (11g,20MHz) @10% PER	- 6Mbps	PER @ -89 dBm		≤-85
	- 9Mbps	PER @ -88 dBm		≤-84
	- 12Mbps	PER @ -87 dBm		≤-82
	- 18Mbps	PER @ -84 dBm		≤-80
	- 24Mbps	PER @ -81 dBm		≤-77

	- 36Mbps PER @ -78 dBm	≤-73
	- 48Mbps PER @ -73 dBm	≤-69
	- 54Mbps PER @ -71 dBm	≤-68
SISO Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 PER @ -89 dBm	≤-85
	- MCS=1 PER @ -86 dBm	≤-82
	- MCS=2 PER @ -84 dBm	≤-80
	- MCS=3 PER @ -80 dBm	≤-77
	- MCS=4 PER @ -77 dBm	≤-73
	- MCS=5 PER @ -72 dBm	≤-69
	- MCS=6 PER @ -71 dBm	≤-68
	- MCS=7 PER @ -69 dBm	≤-67
SISO Receive Sensitivity (11n ,40MHz) @10% PER	- MCS=0, PER @ -88 dBm	≤-82
	- MCS=1, PER @ -85 dBm	≤-79
	- MCS=2, PER @ -83 dBm	≤-77
	- MCS=3, PER @ -79 dBm	≤-74
	- MCS=4, PER @ -76 dBm	≤-70
	- MCS=5, PER @ -71 dBm	≤-66
	- MCS=6, PER @ -70 dBm	≤-65
	- MCS=7, PER @ -68 dBm	≤-64
Maximum Input Level	802.11b : -10 dBm	
	802.11g/n : -20 dBm	
Antenna Reference	Small antennas with 0~2 dBi peak gain	

2.2 5GHz RF Specification

Conditions : VBAT=3.3V ; VDDIO=3.3V ; Temp:25°C

Feature	**Description**	
WLAN Standard	IEEE 802.11a/n/ac 2x2, Wi-Fi compliant	
Frequency Range	4.900 GHz ~ 5.845 GHz (5.0 GHz ISM Band)	
Number of Channels	5.0GHz：Please see the table[1]	
Test Items	**Typical Value**	**EVM**
Output Power	802.11a /54Mbps : 15 dBm ± 1.5 dB	EVM ≤ -25dB
	802.11n /MCS7 : 14 dBm ± 1.5 dB	EVM ≤ -28dB
	802.11ac /MCS9 : 13 dBm ± 1.5 dB	EVM ≤ -32dB
Test Items	**Test Value**	**Standard Value**
SISO Receive Sensitivity	- 6Mbps PER @ -88 dBm	≤-85

(11a,20MHz) @10% PER	- 9Mbps PER @ -87 dBm	≤-84
	- 12Mbps PER @ -86 dBm	≤-82
	- 18Mbps PER @ -83 dBm	≤-80
	- 24Mbps PER @ -80 dBm	≤-77
	- 36Mbps PER @ -77 dBm	≤-73
	- 48Mbps PER @ -72 dBm	≤-69
	- 54Mbps PER @ -70 dBm	≤-68
SISO Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 PER @ -88 dBm	≤-85
	- MCS=1 PER @ -85 dBm	≤-82
	- MCS=2 PER @ -83 dBm	≤-80
	- MCS=3 PER @ -80 dBm	≤-77
	- MCS=4 PER @ -76 dBm	≤-73
	- MCS=5 PER @ -71 dBm	≤-69
	- MCS=6 PER @ -70 dBm	≤-68
	- MCS=7 PER @ -69 dBm	≤-67
SISO Receive Sensitivity (11n,40MHz) @10% PER	- MCS=0 PER @ -85 dBm	≤-82
	- MCS=1 PER @ -82 dBm	≤-79
	- MCS=2 PER @ -80 dBm	≤-77
	- MCS=3 PER @ -77 dBm	≤-74
	- MCS=4 PER @ -73 dBm	≤-70
	- MCS=5 PER @ -69 dBm	≤-66
	- MCS=6 PER @ -68 dBm	≤-65
	- MCS=7 PER @ -67 dBm	≤-64
SISO Receive Sensitivity (11ac,20MHz) @10% PER	- MCS=0, NSS1 PER @ -86 dBm	≤-82
	- MCS=1, NSS1 PER @ -84 dBm	≤-80
	- MCS=2, NSS1 PER @ -82 dBm	≤-77
	- MCS=3, NSS1 PER @ -79 dBm	≤-73
	- MCS=4, NSS1 PER @ -75 dBm	≤-69
	- MCS=5, NSS1 PER @ -70 dBm	≤-68
	- MCS=6, NSS1 PER @ -69 dBm	≤-67
	- MCS=7, NSS1 PER @ -68 dBm	≤-62
	- MCS=8, NSS1 PER @ -65 dBm	≤-60
SISO Receive Sensitivity (11ac,40MHz) @10% PER	- MCS=0, NSS1 PER @ -84 dBm	≤-79
	- MCS=1, NSS1 PER @ -81 dBm	≤-77
	- MCS=2, NSS1 PER @ -79 dBm	≤-74
	- MCS=3, NSS1 PER @ -76 dBm	≤-70
	- MCS=4, NSS1 PER @ -73 dBm	≤-66

	- MCS=5, NSS1 PER @ -68 dBm	≤-65
	- MCS=6, NSS1 PER @ -67 dBm	≤-64
	- MCS=7, NSS1 PER @ -66 dBm	≤-59
	- MCS=8, NSS1 PER @ -65 dBm	≤-57
	- MCS=9, NSS1 PER @ -64 dBm	≤-55
SISO Receive Sensitivity (11ac,80MHz) @10% PER	- MCS=0, NSS1 PER @ -81 dBm	≤-79
	- MCS=1, NSS1 PER @ -78 dBm	≤-76
	- MCS=2, NSS1 PER @ -76 dBm	≤-74
	- MCS=3, NSS1 PER @ -72 dBm	≤-71
	- MCS=4, NSS1 PER @ -69 dBm	≤-67
	- MCS=5, NSS1 PER @ -66 dBm	≤-63
	- MCS=6, NSS1 PER @ -64 dBm	≤-62
	- MCS=7, NSS1 PER @ -62 dBm	≤-61
	- MCS=8, NSS1 PER @ -58 dBm	≤-56
	- MCS=9, NSS1 PER @ -60 dBm	≤-54
Maximum Input Level	802.11a/n : -30 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
5260MHz~5320MHz	52	5260
	56	5280
	60	5300
	64	5320
5550MHz~5700MHz	100	5500
	104	5520
	108	5540
	112	5560
	116	5580
	120	5600
	124	5620
	128	5640

	132	5660
	136	5680
	140	5700
5745MHz~5825MHz	149	5745
	153	5765
	157	5785
	161	5805
	165	5825

3 Bluetooth Specification

3.1 Bluetooth Specification

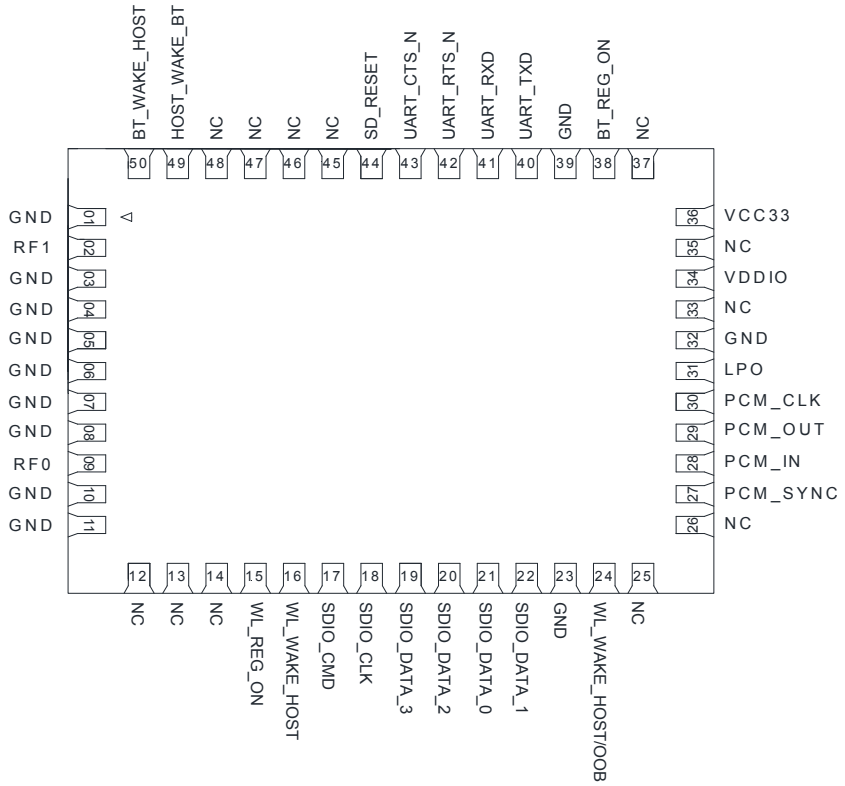
Feature	**Description**		
General Specification			
Bluetooth Standard	Bluetooth V5.0/4.2 BLE+EDR		
Host Interface	UART		
Antenna Reference	Small antennas with 0~2 dBi peak gain		
Frequency Band	2402 MHz ~ 2480 MHz		
Number of Channels	79 channels for EDR and 40 channels for BLE		
Modulation	GFSK, π/4-DQPSK,8DPSK		
RF Specification			
	Min.	**Typical.**	**Max.**
Output Power (Class 1)	0 dBm	7 dBm	15 dBm
Output Power (Class 2)	-6 dBm		4 dBm
Sensitivity @ BER=0.1% for GFSK (1Mbps)		-92 dBm	
Sensitivity @ BER=0.01% for π/4-DQPSK (2Mbps)		-86 dBm	
Sensitivity @ BER=0.01% for 8DPSK (3Mbps)		-85 dBm	
Maximum Input Level	GFSK (1Mbps):-20dBm		
	π/4-DQPSK (2Mbps) :-20dBm		

	8DPSK (3Mbps) :-20dBm

4 Pin Assignments

4.1 Pin Outline

< TOP VIEW >



4.2 Pin Definition

NO	Name	Type	Description	Voltage
1	GND	—	Ground connections	
2	RF1	I/O	RF I/O port chain1and BT	
3	GND	—	Ground connections	
4	GND	—	Ground connections	
5	GND	—	Ground connections	
6	GND	—	Ground connections	
7	GND	—	Ground connections	
8	GND	—	Ground connections	
9	RF0	I/O	RF I/O port chain0	
10	GND	—	Ground connections	
11	GND	—	Ground connections	

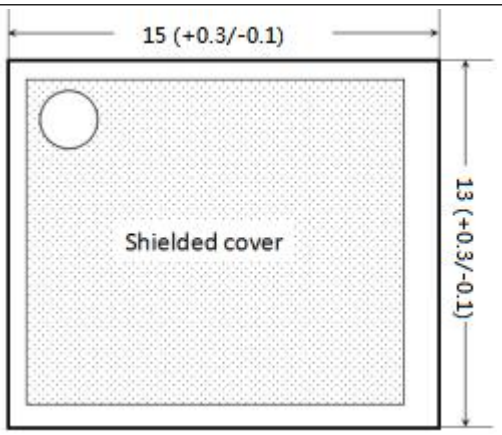
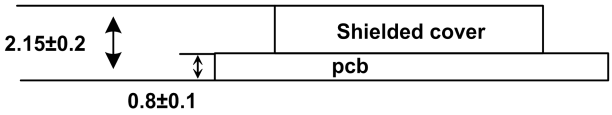
12	NC	I/O	No connect Do not connect to GND	
13	NC	—	GPIO6. If not used keep NC Do not connect to GND.	
14	NC	—	GPIO5.G_BT If not used keep NC. Do not connect to GND.	
15	WL_REG_ON	I	Enable pin for WLAN device ON: pull high ; OFF: pull low External pull low to shut down WL	VDDIO
16	WL_WAKE_HOST	O	GPIO10 WLAN to wake-up HOST	VDDIO
17	SDIO_CMD	I/O	SDIO command line	1.8V or 3.3V
18	SDIO_ CLK	I/O	SDIO clock line	1.8V or 3.3V
19	SDIO_DATA_3	I/O	SDIO data line 3	1.8V or 3.3V
20	SDIO_DATA_2	I/O	SDIO data line 2	1.8V or 3.3V
21	SDIO_DATA_0	I/O	SDIO data line 0	1.8V or 3.3V
22	SDIO_DATA_1	I/O	SDIO data line 1	1.8V or 3.3V
23	GND	—	Ground connections	
24	OOB/ WL_WAKE_HOST	O	GPIO10. SDIO interrupt	VDDIO
25	NC	—	GPIO7. If not used keep NC. Do not connect to GND.	
26	NC	—	No connect	
27	PCM_SYNC	I/O	PCM sync signal	VDDIO
28	PCM_IN	I	PCM data input	VDDIO
29	PCM_OUT	O	PCM Data output	VDDIO
30	PCM_CLK	I/O	PCM clock	VDDIO
31	LPO	I	External Low Power Clock input (32.768KHz) If not used keep NC	
32	GND	—	Ground connections	
33	NC	—	No connect	
34	VDDIO	P	I/O Voltage supply input	1.8V or 3.3V
35	NC	—	No connect	

36	VCC33	P	Main power voltage source input	3.3V
37	NC	—	No connect	
38	BT_REG_ON	I	Enable pin for Bluetooth device ON: pull high ; OFF: pull low External pull low to shut down BT	VDDIO
39	GND	—	Ground connections	
40	UART_TXD	O	Bluetooth UART interface	1.8V or 3.3V
41	UART_RXD	I	Bluetooth UART interface	1.8V or 3.3V
42	UART_RTS_N	O	Bluetooth UART interface	1.8V or 3.3V
43	UART_CTS_N	I	Bluetooth UART interface	1.8V or 3.3V
44	SD RESET	—	GPIO9, SD RESET This pin can externally shut down WLAN function when pulled low If not used keep NC.	
45	NC	—	GPIO4, G_WL If not used keep NC. Do not connect to GND.	
46	NC	—	Module ground connection. Can keep NC.	
47	NC	—	No connect	
48	NC	—	Module ground connection. Can keep NC.	
49	HOST_WAKE_BT	I	HOST wake-up Bluetooth device	VDDIO
50	BT_WAKE_HOST	O	Bluetooth device to wake-up HOST	VDDIO

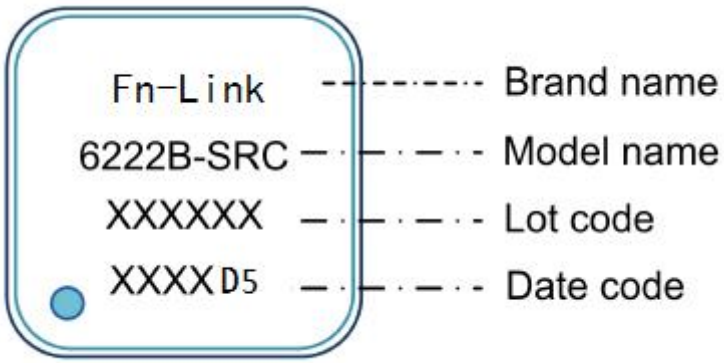
P:POWER I:INPUT O:OUTPUT VDDIO:1.8V or 3.3V

5 Dimensions

5.1 Module Picture

L x W : 15 x 13 (+0.3/-0.1) mm  	
H: 2.15 (±0.2) mm	
Weight	0.84g

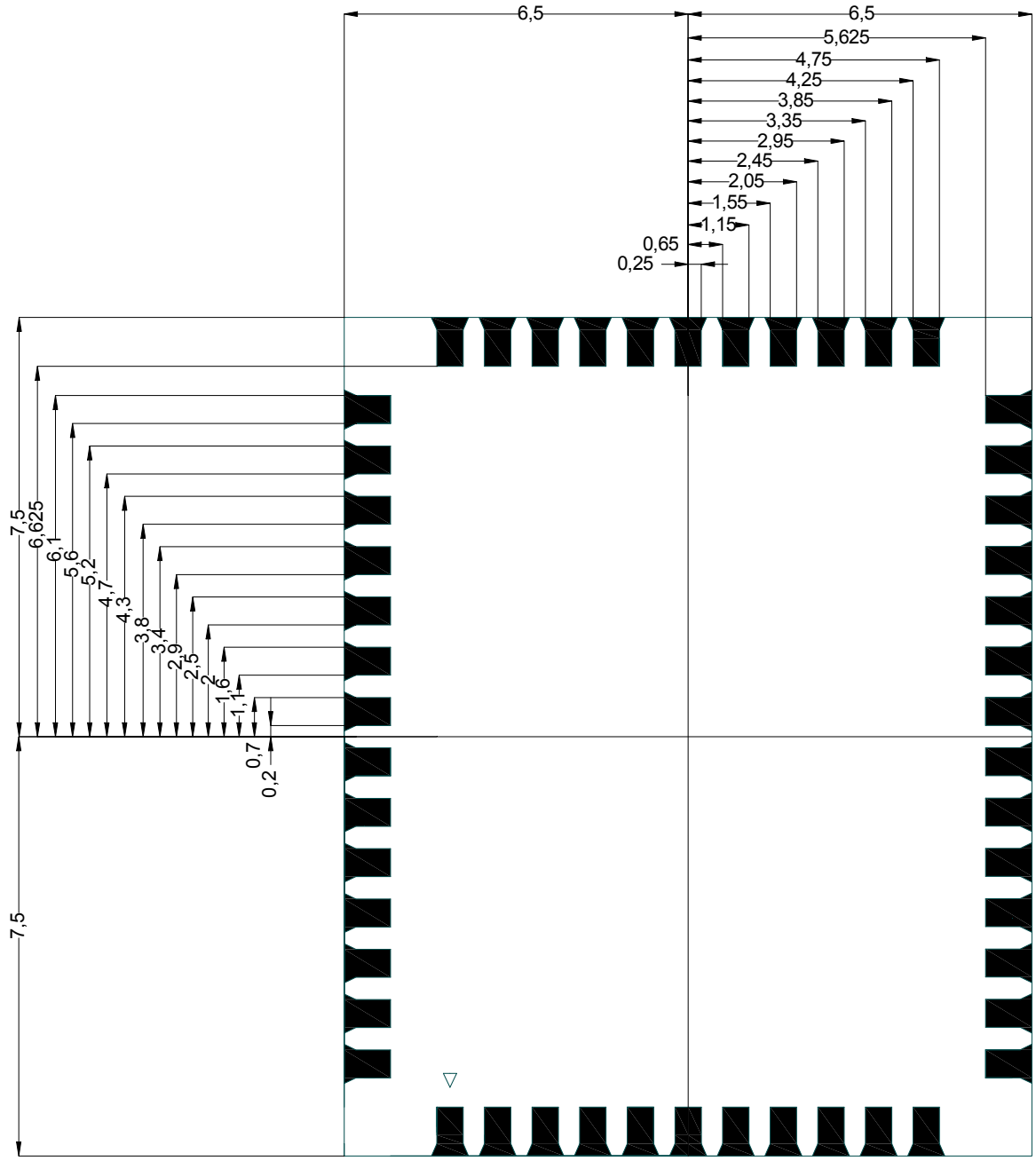
5.2 Marking Description



5.3 Module Physical Dimensions

(Unit: mm)

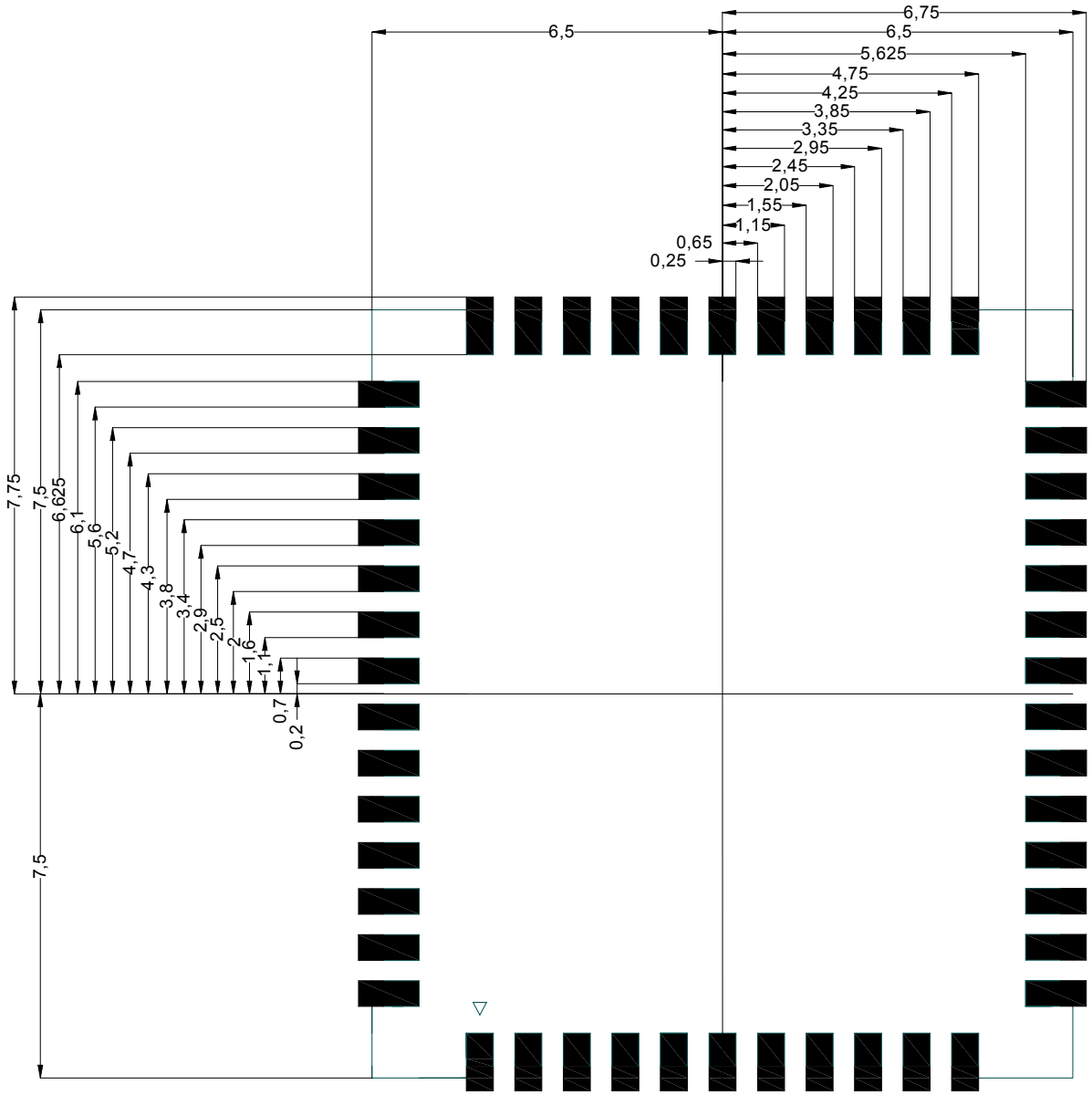
< TOP VIEW >



5.4 Layout Recommendation

(Unit: mm)

< TOP VIEW >



6 Host Interface Timing Diagram

6.1 SDIO Pin Description

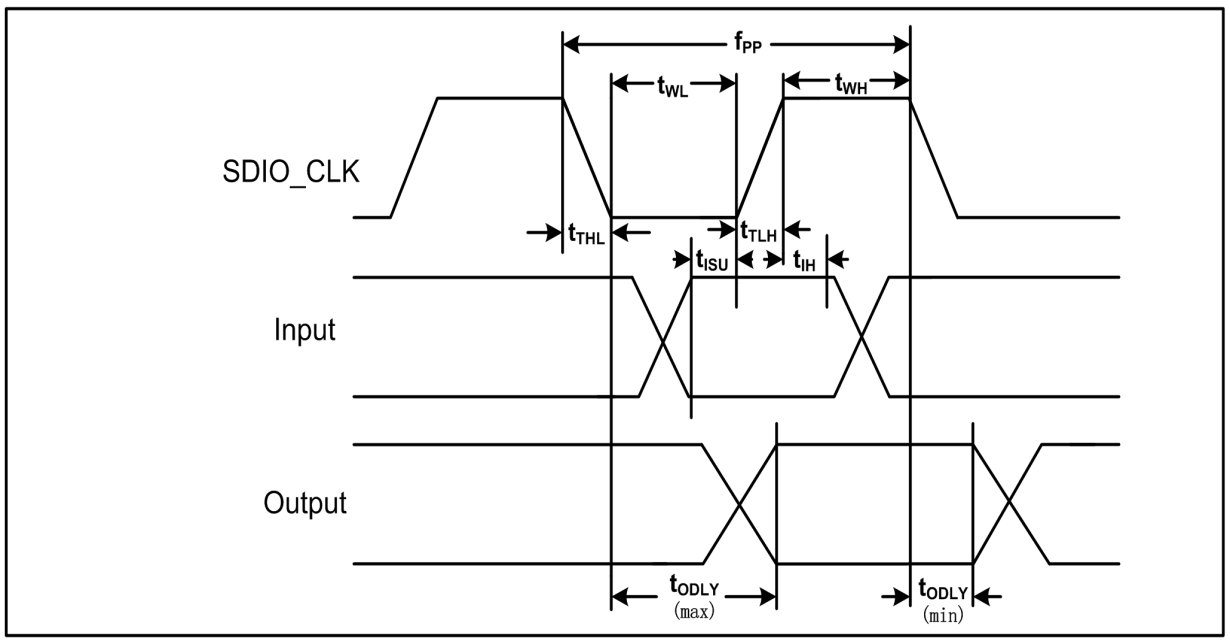
The module supports SDIO version 3.0 for all 1.8V 4-bit UHSI speeds: SDR50(100 Mbps), SDR104(208MHz) and DDR50(50MHz, dual rates) in addition to the 3.3V default

speed(25MHz) and high speed (50 MHz). It has the ability to stop the SDIO clock and map the interrupt signal into a GPIO pin. This 'out-of-band' interrupt signal notifies the host when the WLAN device wants to turn on the SDIO interface. The ability to force the control of the gated clocks from within the WLAN chip is also provided.

SDIO Pin Description

SD 4-Bit Mode	
DATA0	Data Line 0
DATA1	Data Line 1 or Interrupt
DATA2	Data Line 2 or Read Wait
DATA3	Data Line 3
CLK	Clock
CMD	Command Line

6.2 SDIO Default Mode Timing Diagram

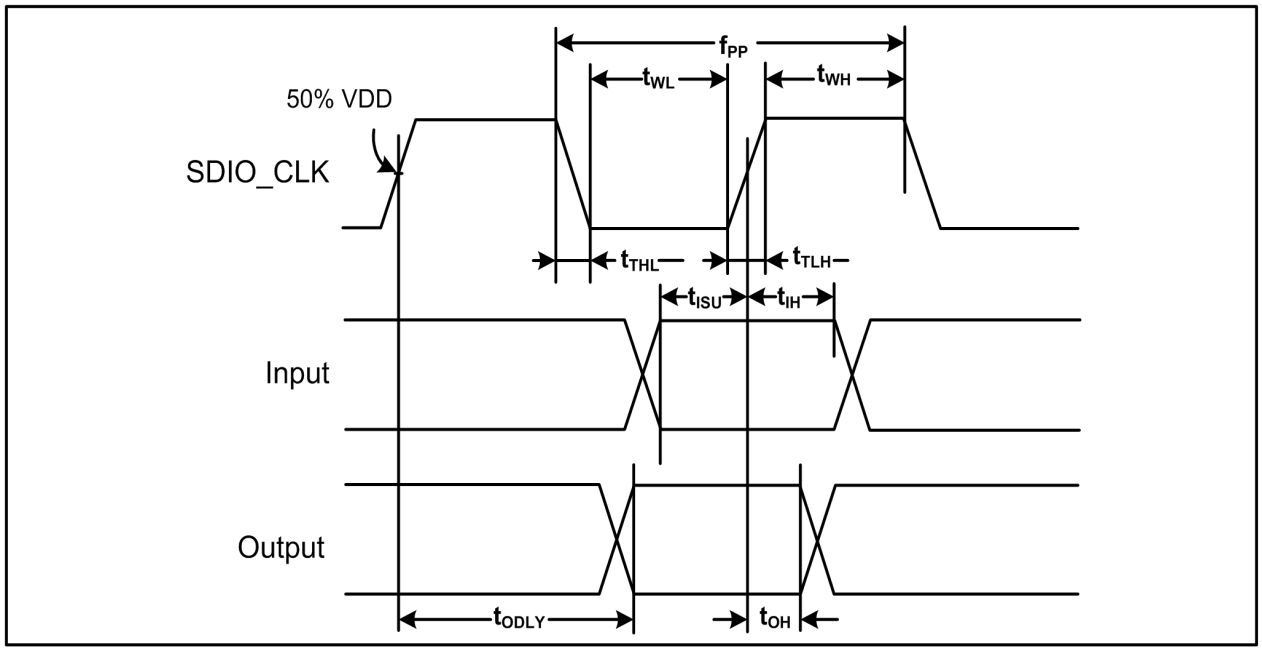


Parameter	*Symbol*	*Minimum*	*Typical*	*Maximum*	*Unit*
SDIO CLK(All values are referred to minimum VIH and maximum VIL[b])					
Frequency - Data Transfer mode	fPP	0	-	25	MHz

Frequency - Identification mode	fOD	0	-	400	kHz
Clock low time	tWL	10	-	-	ns
Clock high time	tWH	10	-	-	ns
Clock rise time	tTLH	-	-	10	ns
Clock low time	tTHL	-	-	10	ns
Inputs:CMD, DAT(referenced to CLK)					
Input setup time	tISU	5	-	-	ns
Input hold time	tIH	5	-	-	ns
Outputs:CMD, DAT(referenced to CLK)					
Output delay time - Data Transfer mode	tODLY	0	-	14	ns
Output delay time - Identification mode	tODLY	0	-	50	ns

a. Timing is based on CL ≤ 40 pF load on CMD and Data.

b. Min(Vih) = 0.7 × VDDIO and max(Vil) = 0.2 × VDDIO.



6.3 SDIO High Speed Mode Timing Diagram

Parameter	*Symbol*	*Minimum*	*Typical*	*Maximum*	*Unit*
SDIO CLK(all values are referred to minimum VIH and maximum VIL[b])					
Frequency - Data Transfer mode	fPP	0	-	50	MHz
Frequency - Identification mode	fOD	0	-	400	kHz
Clock low time	tWL	7	-	-	ns

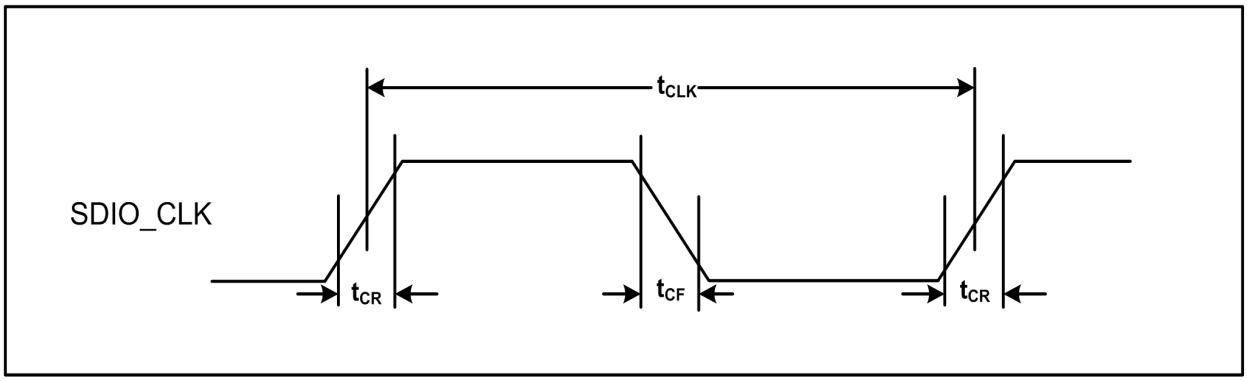
Clock high time	tWH	7	-	-	ns
Clock rise time	tTLH	-	-	3	ns
Clock low time	tTHL	-	-	3	ns
Inputs:CMD, DAT(referenced to CLK)					
Input setup time	tISU	6	-	-	ns
Input hold time	tIH	2	-	-	ns
Outputs:CMD, DAT(referenced to CLK)					
Output delay time - Data Transfer mode	tODLY	-	-	14	ns
Output delay time - Identification mode	tODLY	2.5	-	-	ns
Total system capacitance(each line)	CL	-	-	40	pF

a. Timing is based on CL ≤ 40 pF load on CMD and Data.

b. Min(Vih) = 0.7 × VDDIO and max(Vil) = 0.2 × VDDIO.

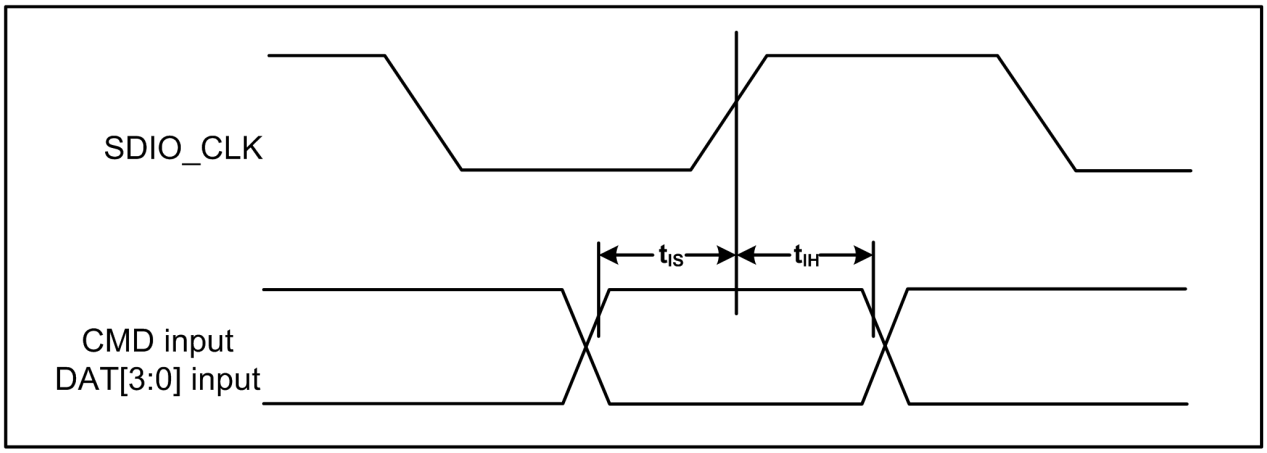
6.4 SDIO Bus Timing Specifications in SDR Modes

Clock timing(SDR Modes)



Parametwer	*Symbol*	*Minimum*	*Maximum*	*Unit*	*Comments*
-	t_{CLK}	40	-	ns	SDR12 mode
		20	-	ns	SDR25 mode
		10	-	ns	SDR50 mode
		4.8	-	ns	SDR104 mode
-	t_{CR}, t_{CF}	-	0.2 × t_{CLK}	ns	t_{CR}, t_{CF} < 2.00 ns (max)@100 MHz, C_{CARD} = 10 pF t_{CR}, t_{CF} < 0.96 ns (max)@208 MHz, C_{CARD} = 10 pF
Clock duty	-	30	70	%	-

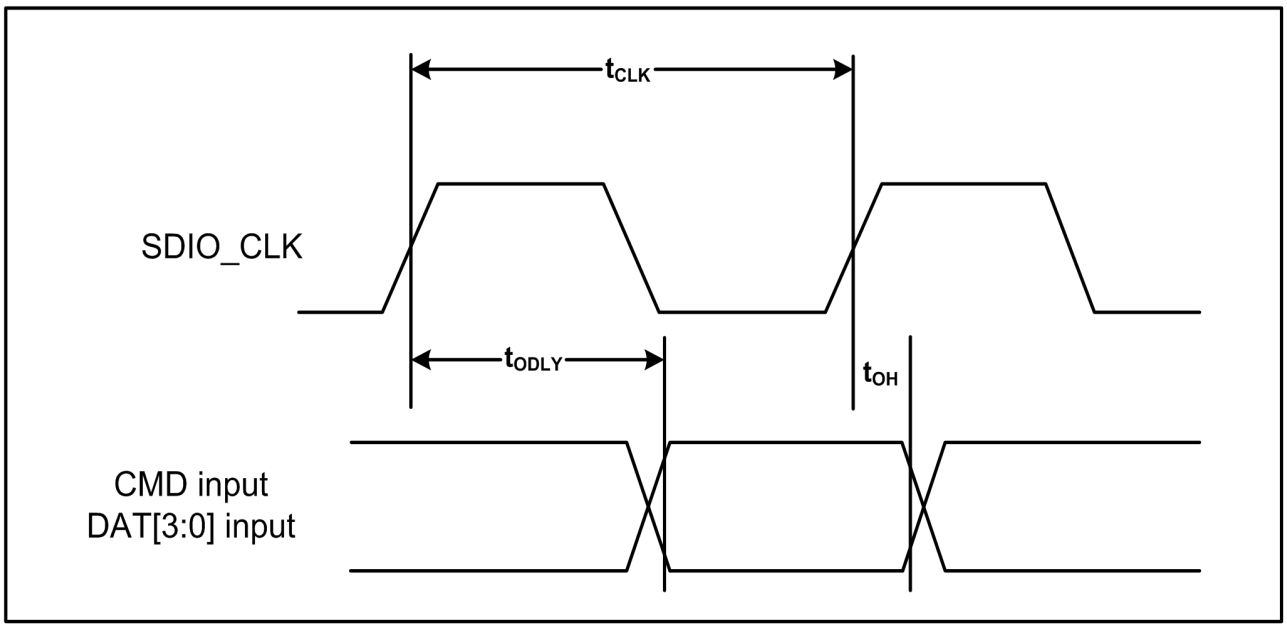
Card Input timing (SDR Modes)



Symbol	*Minimum*	*Maximum*	*Unit*	*Comments*
SDR104 Mode				
t_{IS}	1.70[a]	-	ns	C_{CARD} = 10pF, VCT = 0.975V
t_{IH}	0.80	-	ns	C_{CARD} = 5pF, VCT = 0.975V
SDR50 Mode				
t_{IS}	3.00	-	ns	C_{CARD} = 10pF, VCT = 0.975V
t_{IH}	0.80	-	ns	C_{CARD} = 5pF, VCT = 0.975V

a. SDIO 3.0 specification value is 1.40 ns.

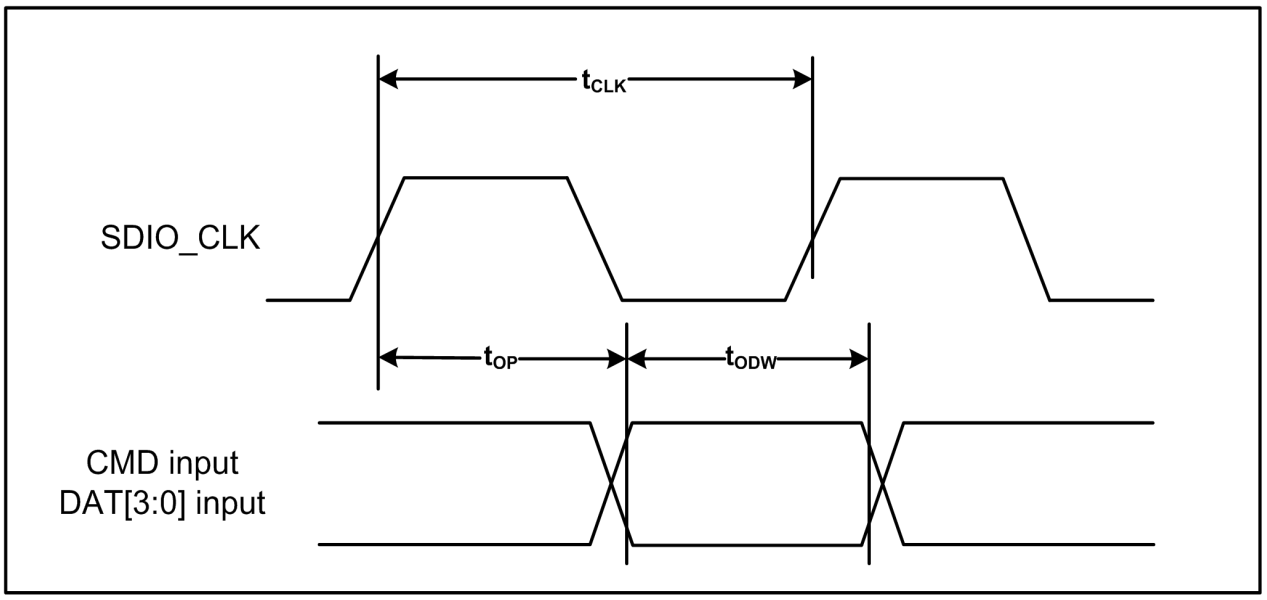
Card output timing (SDR Modes up to 100MHz)



Symbol	*Minimum*	*Maximum*	*Unit*	*Comments*
t_{ODLY}	-	7.85[a]	ns	t_{CLK}≥10 ns C_L=30 pF using driver type B for SDR50
t_{ODLY}	-	14.0	ns	t_{CLK}≥20 ns C_L=40 pF using for SDR12, SDR25
t_{OH}	1.5	-	ns	Hold time at the t_{ODLY}(min) CL=15 pF

a. SDIO 3.0 specification value is 7.5 ns.

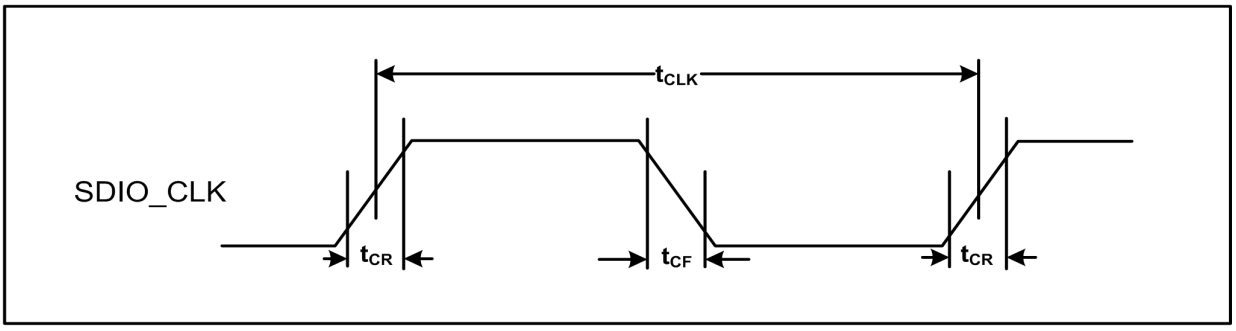
Card output timing (SDR Modes 100MHz to 208MHz)



Symbol	*Minimum*	*Maximum*	*Unit*	*Comments*
t_{OP}	0	2	UI	Card output phase
$\triangle t_{OP}$	-350	+1550	ps	Delay variation due to temp change after tuning
t_{ODW}	0.6	-	UI	t_{ODW} = 2.88 ns @ 208 MHz

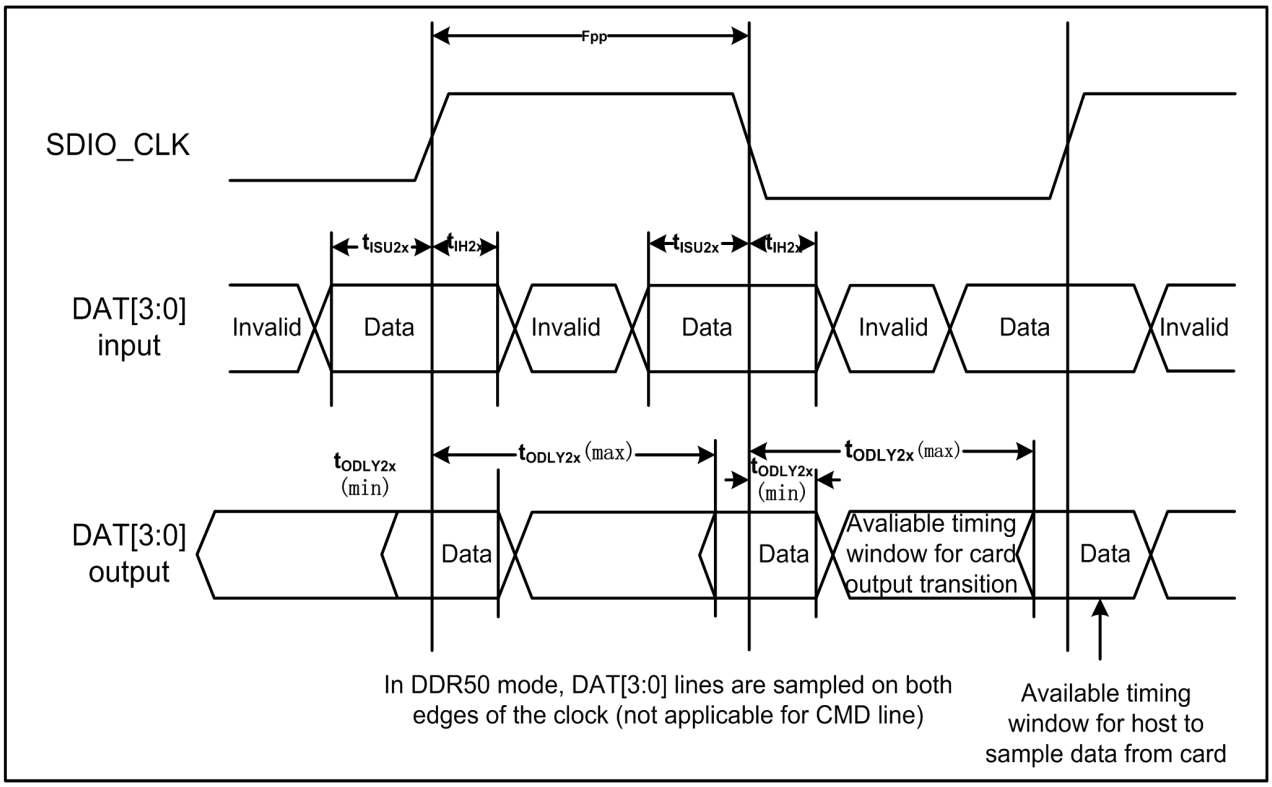
- $\triangle t_{OP}$ = +1550 ps for junction temperature of $\triangle t_{OP}$ = 90 degrees during operation
- $\triangle t_{OP}$ = -350 ps for junction temperature of $\triangle t_{OP}$ = -20 degrees during operation
- $\triangle t_{OP}$ = +2600 ps for junction temperature of $\triangle t_{OP}$ = -20 to +125 degrees during operation

6.5 SDIO Bus Timing Specifications in DDR50 Mode



parameter	*Symbol*	*Minimum*	*Maximum*	*Unit*	*Comments*
-	t_{CLK}	20	-	ns	DDR50 mode
-	t_{CR}, t_C	-	0.2 ×t_{CLK}	ns	t_{CR}, t_{CF} < 4.00 ns (max)@50 MHz, C_{CARD} = 10 pF
Clock duty	-	45	55	%	-

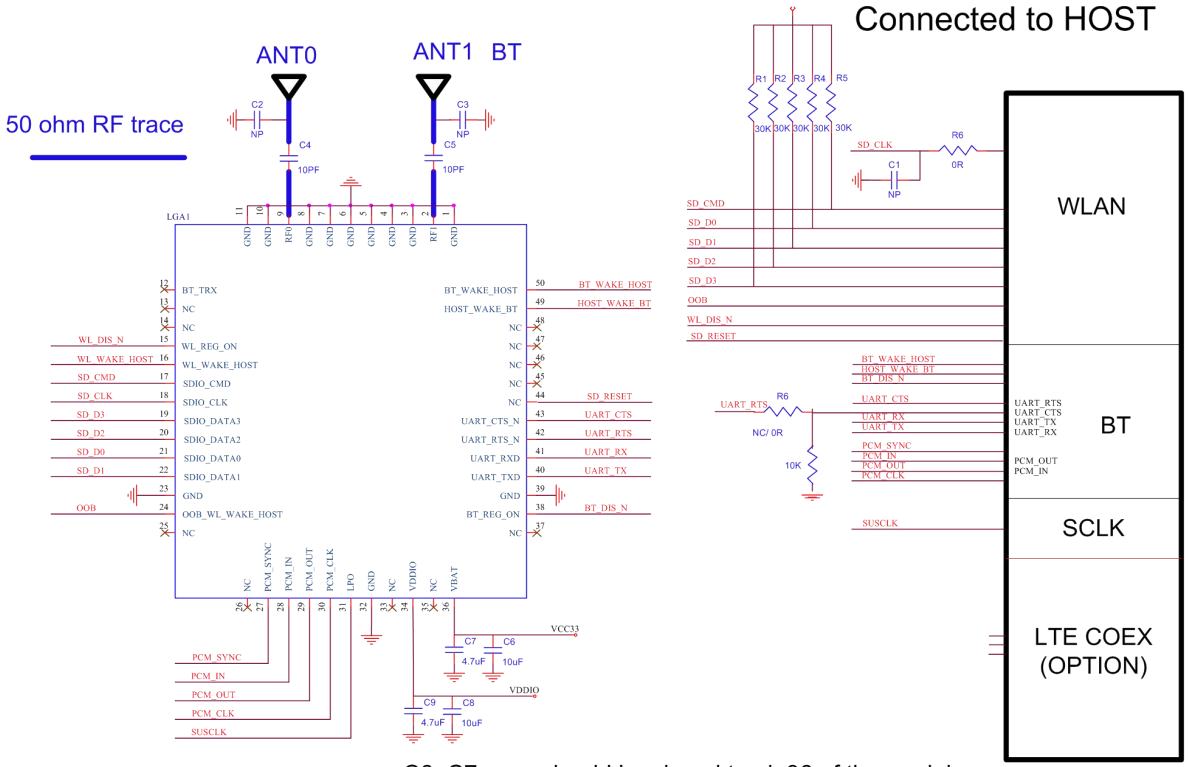
Data Timing



parameter	*Symbol*	*Minimum*	*Maximum*	*Unit*	*Comments*
Input CMD					
Input setup time	t_{ISU}	6	-	ns	C_{CARD} < 10 pF (1 Card)
Input hold time	t_{IH}	0.8	-	ns	C_{CARD} < 10 pF (1 Card)
Output CMD					
Output delay time	t_{ODLY}	-	13.7	ns	C_{CARD} < 30 pF (1 Card)
Output hold time	t_{OH}	1.5	-	ns	C_{CARD} < 15 pF (1 Card)
Input DAT					
Input setup time	t_{ISU2x}	3	-	ns	C_{CARD} < 10 pF (1 Card)
Input hold time	t_{IH2x}	0.8	-	ns	C_{CARD} < 10 pF (1 Card)
Output CMD					
Output delay time	t_{ODLY2x}	-	7.85[a]	ns	C_{CARD} < 25 pF (1 Card)
Output hold time	t_{ODLY2x}	1.5	-	ns	C_{CARD} < 15 pF (1 Card)

a. SDIO 3.0 specification value is 7.0 ns

7 Reference Design



C6, C7 caps should be closed to pin36 of the module

C8, C9 caps should be closed to pin34 of the module

8 Ordering Information

Part No.	Description
FG6222BSRC-03	RTL8822CS-VS-CG,a/b/g/n/ac,Wi-Fi+BT5.0,2T2R,SDIO+UART, PCB V2.0, 2 Antenna version.

9 The Key Material List

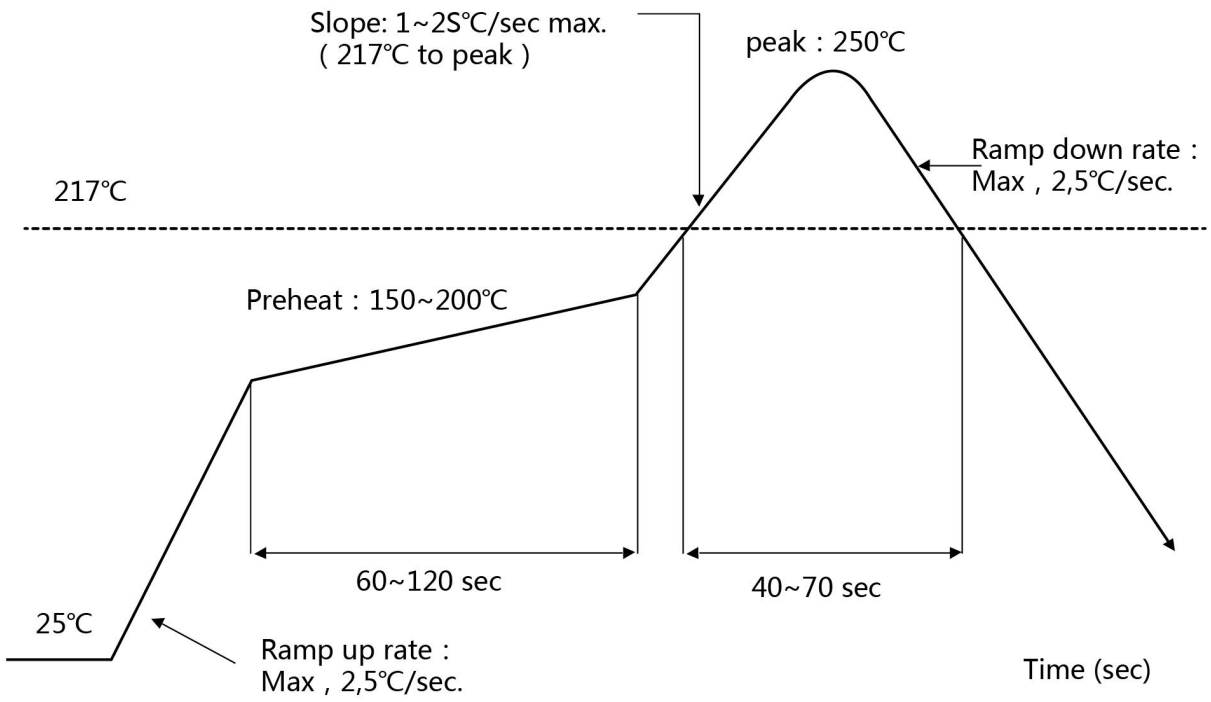
Main	Inductor	2012 1uH,±20%,0.8A,LQM21PN1R0MC0（MURATA）
Alt	Inductor	2012 1.5uH ,±20%，1A 以上 MGFL2012F1R5MT-LF（麦捷微）
Alt	Inductor	2016 1.5uH ,±20%，800mA 以上 MPIE201610-1R5M-LF（麦捷微）
Main	Diplexer	RFDIP160806BLM6T25
Alt	Diplexer	DPX166000DT-8093A1,1.6*0.8mm,6PIN (TDK）
Alt	Diplexer	LD18D2450LAN-D40/M (GLEAD)
Main	Shielding cover	RTL8822CS Copper, without positioning foot
Main	Crystal	2520 40MHz 10ppm 12pF E2SB40.0000F12G11RE (HOSONIC)
Alt	Crystal	2520 40MHz 10ppm 12PF -20-85° C Q40000E087(东晶)
Main	Chipset	RTL8822CS-VS-CG 9X9mm

10 Recommended Reflow Profile

Referred to IPC/JEDEC standard.

Peak Temperature : <250°C

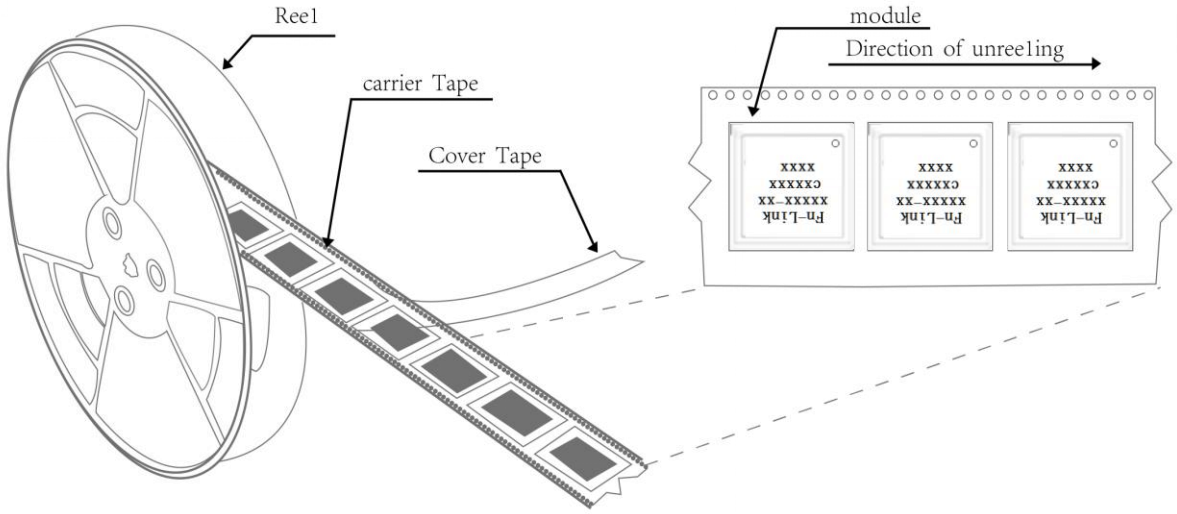
Number of Times : ≤2 times



11 Package Information

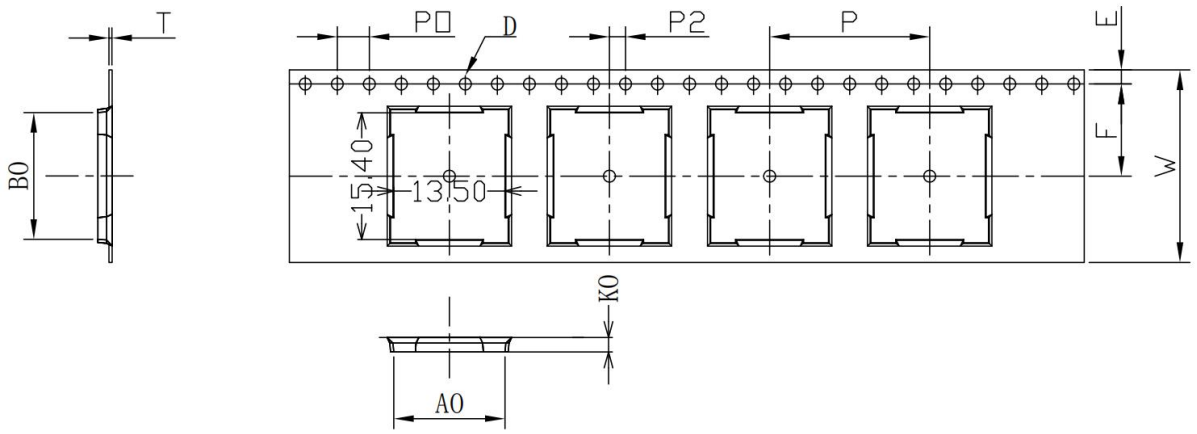
11.1 Reel

A roll of 1500pcs

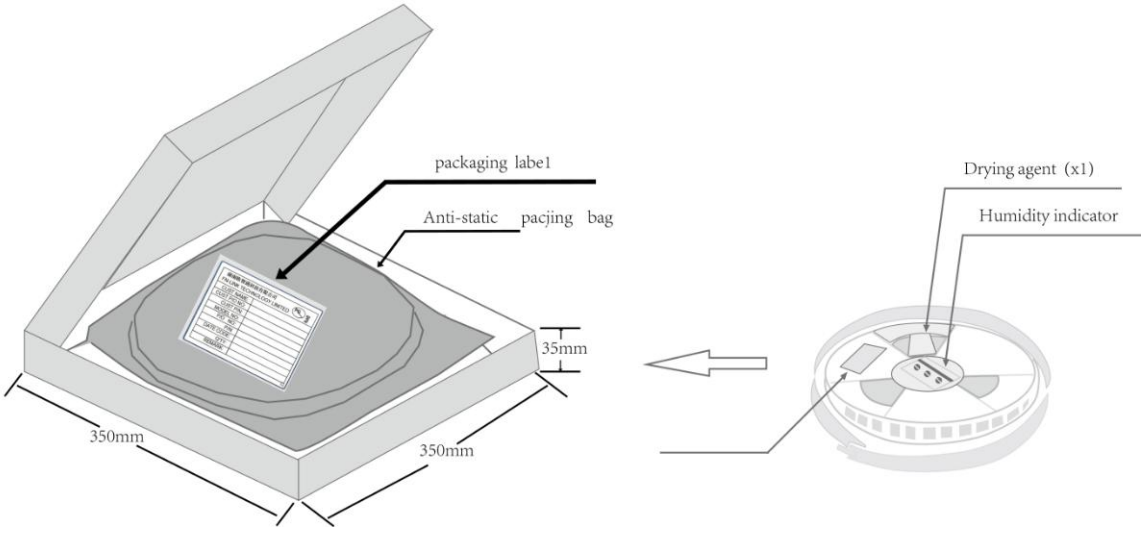


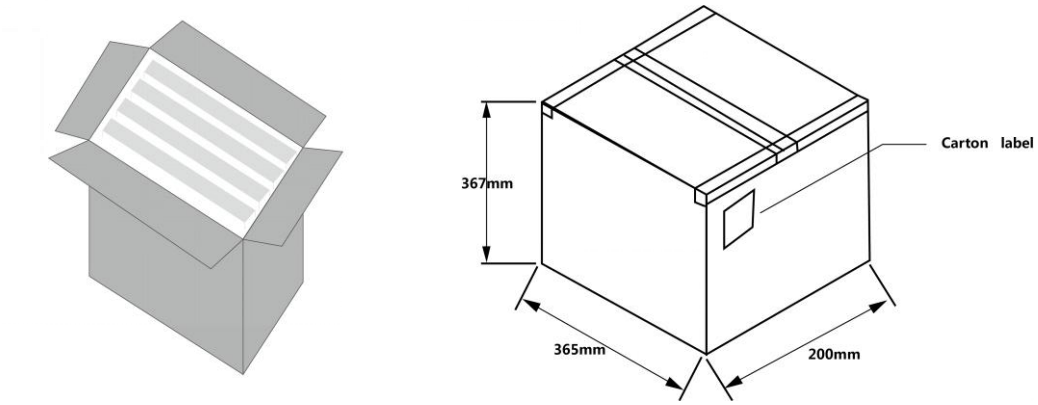
11.2 Carrier Tape Detail

ITEM	W	A0	B0	D	F	E	K0	P0	P2	P	T
DIM	24	13.50	15.40	1.50	11.5	1.75	1.80	4.0	2.0	20.0	0.30
TOLE	+0.3 −0.3	±0.15	±0.15	+0.1 −0.0	+0.1 −0.1	±0.1	±0.10	±0.1	±0.1	±0.1	±0.05



11.3 Packaging Detail





11.4 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
b) “IPC/JEDEC J-STD-033A paragraph 5.2” is respected
d) Baking is required if conditions b) or c) are not respected
e) Baking is required if the humidity indicator inside the bag indicates 10% RH or more

Warning & Statement

This module meets the requirements of Part 15 Subpart B, Part 15 Subpart C, Part 15 Subpart E, FCC CFR Title 47 Part 2.

Integration is strictly limited to fixed categorized end-products where a separation distance of at least 20 cm between the radiating part and any human body can be assured during normal operating conditions.

This module only allows connection antenna in the instruction manual. If other antennas are used, re-evaluation is required.

This module is test stand-alone, if more another modules work together with this module, please evaluation the multiple RF exposure.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: 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 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.

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: 2AATL-6222B-SRC or Contains FCC ID: 2AATL-6222B-SRC”.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment must be installed and operated with minimum distance 20cm between radiator & your body

IMPORTANT NOTE:
Integration is strictly limited to mobile/fixed categorized end-products where a separation distance of at least 20 cm between the radiating part and any human body can be assured during normal operating conditions.

IMPORTANT NOTE:
In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter).then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

IMPORTANT NOTE:
This module is intended for OEM integrator only and the OEM integrators are instructed to ensure that the end user has no manual instructions to remove or install the device. The OEM integrator is still responsible for the FCC compliance requirement of the end product, which integrates this module.

LABEL OF THE END PRODUCT:
The final end product must be labeled in a visible area with the following “Contains FCC ID: 2AATL-6222B-SRC” .If the size of the end product is smaller than 8x10cm, then additional FCC part 15.19 statement is required to be available in the users manual: This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Warnings:
This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence exempt RSS(s).
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.

Cet appareil contient un ou des émetteurs/récepteurs exempts de licence conformes aux RSS exempts de licence d'Innovation, Sciences et Développement économique Canada.
Le fonctionnement est soumis aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la uissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

This radio transmitter (identify the device by certification number, or model number if Category II) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type 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 (identifier le dispositif par son numéro de certification ou son numéro de modèle s'il fait partie du matériel de catégorie I) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur

This equipment should be installed and operated with minimum distance 40cm between radiator & your body.

Cet équipement doit être installé et utilisé avec une distance minimale de 40 cm entre le radiateur et votre corps.

IMPORTANT NOTE:
Integration is strictly limited to mobile/fixed categorized end-products where a separation distance of at least 40 cm between the radiating part and any human body can be assured during normal operating conditions.

IMPORTANT NOTE:
In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter).then the IC authorization is no longer considered valid and the IC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate IC authorization.

IMPORTANT NOTE:
This module is intended for OEM integrator only and the OEM integrators are instructed to ensure that the end user has no manual instructions to remove or install the device. The OEM integrator is still responsible for the IC compliance requirement of the end product, which integrates this module.

LABEL OF THE END PRODUCT:
If the IC 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 :11648A-TRM101”
If the size of the end product is smaller than 8x10cm, then additional IC statement is required to be available in the users manual: Cet appareil contient un ou des émetteurs/récepteurs exempts de licence conformes aux RSS exempts de licence d'Innovation, Sciences et Développement économique Canada.
Le fonctionnement est soumis aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Cet équipement doit être installé et utilisé avec une distance minimale de 40 cm entre le radiateur et votre corps.