PRODUCT SPECIFICATION

6162CIC

Bluetooth LE5.0 Module Datasheet

Version:v1.0

Customer : _____

Customer P/N: _____

Signature: _____

Date: _____

Manufacturer: **FN-LINK TECHNOLOGY LIMITED**

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6162CIC Module Datasheet

	Part NO.	Description
Ordering Information	FG6162CICX-02	6162CIC RTL8762CMF QFN40_5x5 On board PCB antennas,BT5.0+UART,Band RF output,PCB Version V2.0

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Revision History

Version	Date	Contents of Revision Change	Draft	Checked	Approved
V1.0	2024/04/24	First version	Lxp	Zzq	Qjp

1. General Description

1.1 Introduction

Mesh self-organizing network type communication equipment, can efficiently and quickly form a non-central wireless broadband network; Supporting multi-hop relay can effectively expand the coverage radius of wireless network.

FN-link releases a low-cost, low-power Bluetooth 5.0 module with Mesh functionality. It is a highly integrated ARM Cortex-M4F 32-bit CPU, 160kByte RAM and 512kByte flash MCU, and Bluetooth 5.0 LE transceiver Mesh network solution.

The wireless module meets the Bluetooth 5.0 LE standard and provides UART interfaces for Bluetooth. Modules of moderate size, suitable for intelligent LED and other applications, can efficiently solve the complex environment such as high-rise, underground, tunnel, large complex emergency communication problems.

1.2 Description

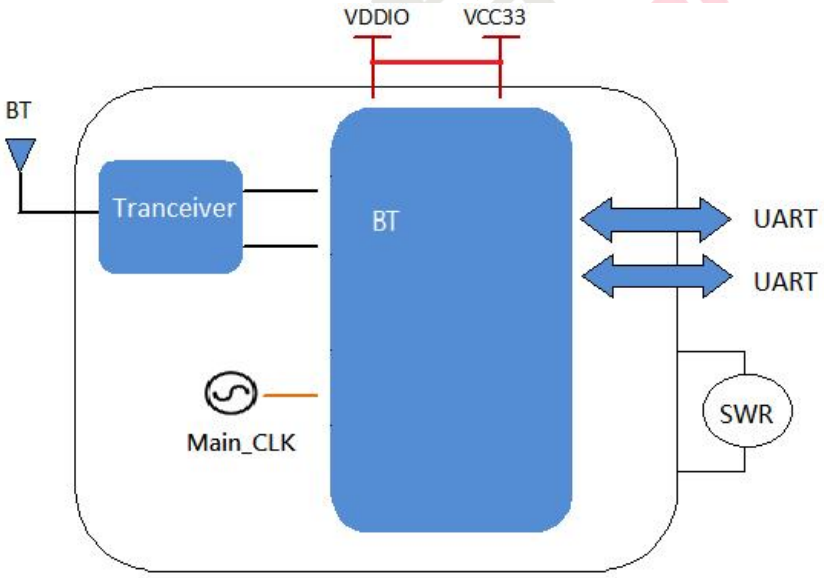
Model Name	6162CIC
Product Description	Support Bluetooth 5.0 functionalities
Dimension	L x W x T: 18.6X13X2.5 (typical) mm
BT Interface	UART
Operating temperature	-40° C to 85° C
Storage temperature	-40° C to 125° C
	40MHz

2. Features

General

- Supports Bluetooth 5 core specification
- Supports 2M LE ，LE Long Range，LE Data Length Extensions（257 byte）
- Supports OTA (Over-the-Air)programming mechanism for firmware upgrade
- UART x 2，one for data transceiver，the other for firmware upgrade
- Embedded 4Mbits Flash
- Supports 5 GPIOs
- Embedded Switching Regulator(SWR) for low current consumption
- Package：18.6X13X2.5mm

3. Block Diagram



4. General Specification

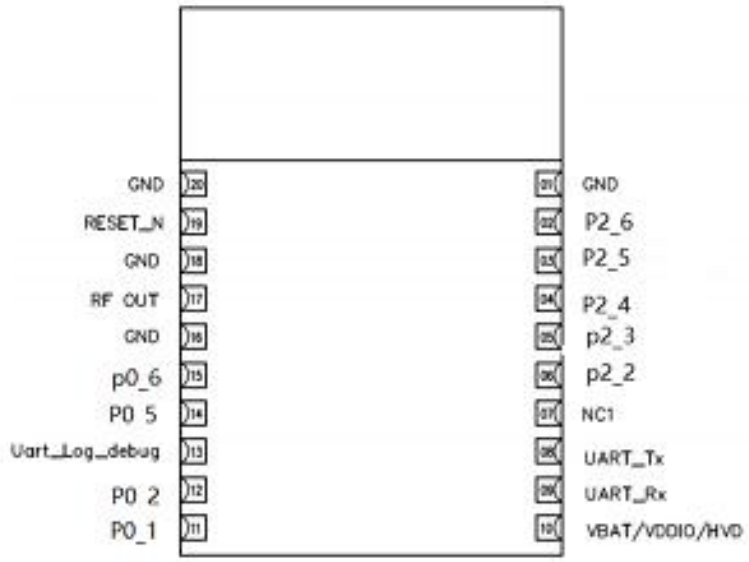
4.1 Bluetooth Specification

Feature	**Description**		
General Specification			
Bluetooth Standard	Bluetooth V5.0 LE		
Host Interface	UART		
Antenna Reference	On board PCB antennas		
Frequency Band	2400 MHz ~ 2483.5 MHz		
Number of Channels	40（3 Advertising + 37 Data)		
Modulation	GFSK		
RF Specification			
	Min(dBm)	**Typical**(dBm)	**Max**(dBm)
Output Power	/	/	9
Sensitivity @ BLE=30.8%	/	/	-90
Maximum Input Level	LE 1Mbps: -20dBm		

5. Pin Definition

5.1 Pin Outline

< TOP VIEW >



5.2 Pin Definition details

NO.	Name	Type	Description	Voltage
1	GND	P	Ground connections	
2	P2_6	I/O	GPIO pin, refer to Pin Function Table	
3	P2_5	I/O	GPIO pin, refer to Pin Function Table	
4	P2_4	I/O	GPIO pin, refer to Pin Function Table	
5	P2_3	I/O	GPIO pin, refer to Pin Function Table	
6	P2_2	I/O	GPIO pin, refer to Pin Function Table	
7	NC1	—	No connect	
8	Uart_Tx	O	Software Upgrade UART interface _Data Output	
9	Uart_Rx	I	Software Upgrade UART interface _Data Input	
10	VBAT/VDDIO/HVD	P	I/O Voltage supply input 3.3V	
11	P0_1	I/O	GPIO pin, refer to Pin Function Table	
12	P0_2	I/O	GPIO pin, refer to Pin Function Table	
13	Uart_Log_debug	I/O	Log_Uart Interface_ Data Output; Connect to GND for upgrade software (P0_3)	
14	P0_5	I/O	GPIO pin, refer to Pin Function Table	
15	P0_6	I/O	GPIO pin, refer to Pin Function Table	

16	GND	—	Ground connections	
17	RF OUT	NC1	RF OUT PIN（Alternative）	
18	GND	—	Ground connections	
19	Reset	I	Reset（Low active）	
20	GND	P	Ground connections	

P:POWER I:INPUT O:OUTPUT

Download；Test；AT command Default use pin 8,pin9

Before downloading, pull pin13 up before powering on the module

6. Electrical Specifications

6.1 Power Supply DC Characteristics

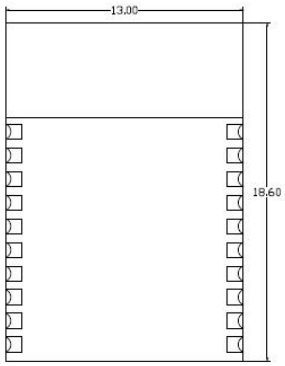
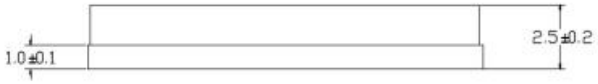
	MIN	TYP	MAX	Unit
Operating Temperature	-40	25	80	deg.C
VBAT&VDDIO	2.7	3.0	3.3	V

6.2 Power Consumption

Power Consumption		VCC33 = 3.0V(Unit:mA)
	BT on	11.3

7. Size reference

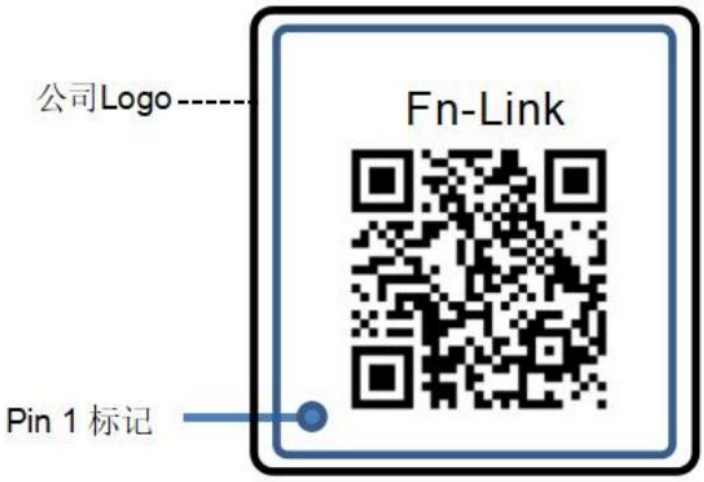
7.1 Module Picture

L x W : 18.6 x 13 (±0.2) mm	
H: 2.5 (±0.2) mm	
Weight	0.8g(±0.1)g

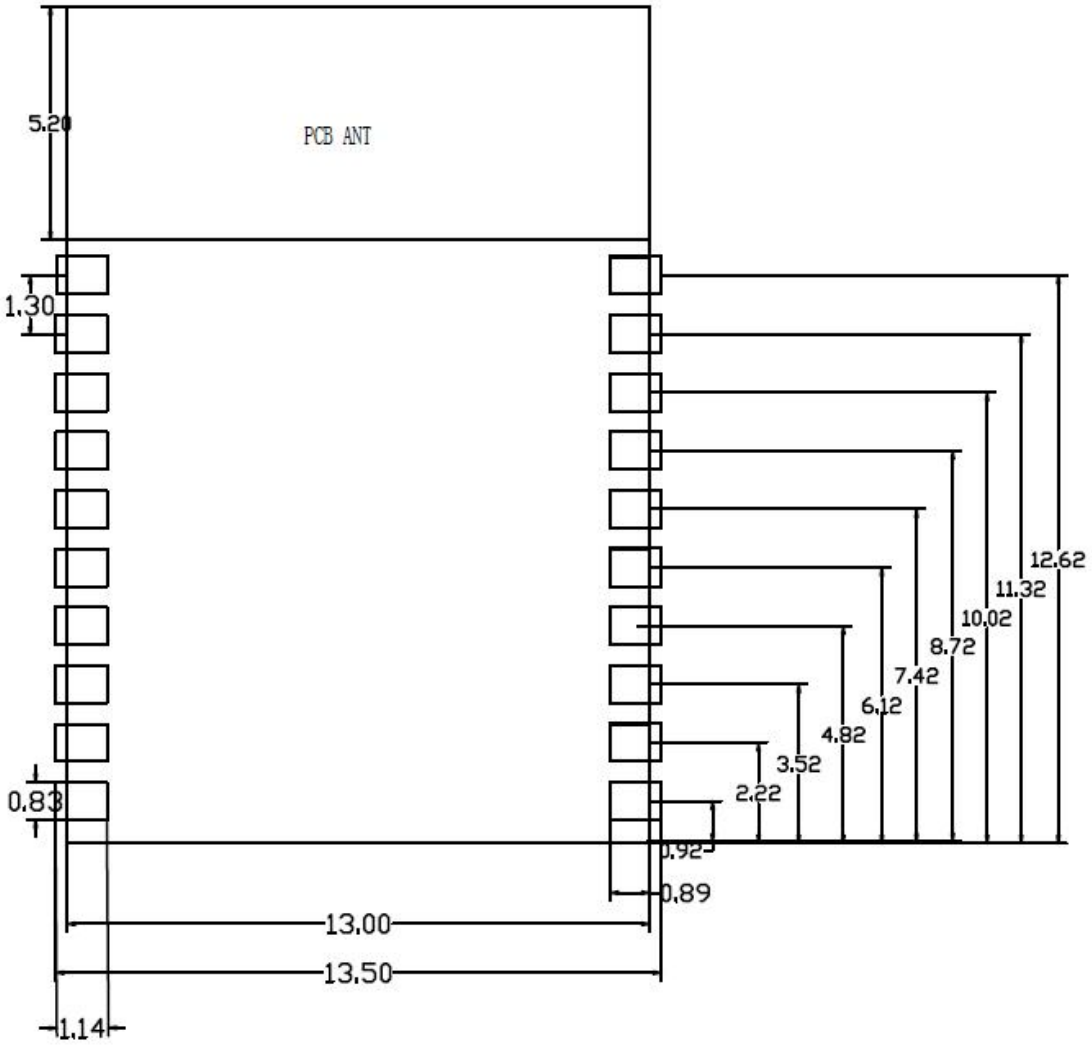
7.2 List of certified information

Certification project	Certificate number
SRRC	CMIIT ID:2019DP11567
FCC	2AATL-6162CIC
CE	BLA-S-202107-A23
IC	TBD
NCC	TBD
KCC	TBD
TELEC	TBD
Brazil	TBD
Argentina	TBD
Japan	TBD

7.3 Marking Description



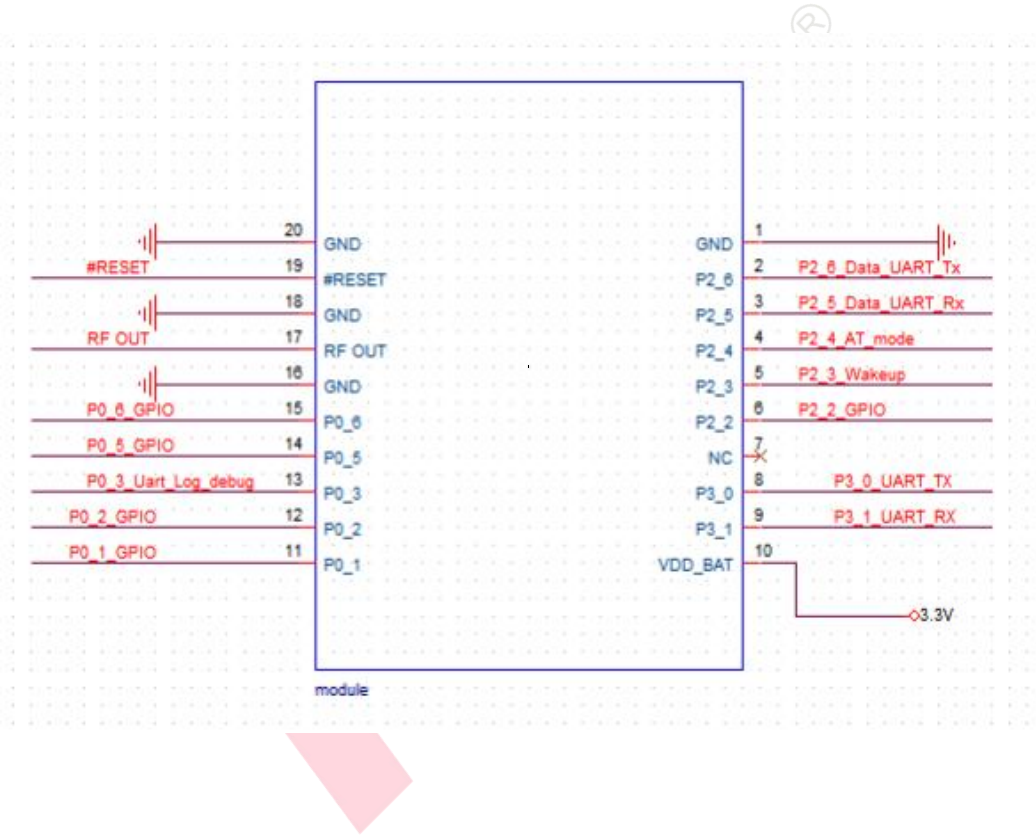
7.4 Layout Recommendation



8. The Key Material List

Item	Part Name	Description	Manufacturer
1	Crystal	3225 40MHz 9pF +/-10PPM	ECEC, TKD, Hosonic, JWT, TXC
2	Chipset	RTL8762CMF-CG QFN40	Realtek
3	PCB	6162CIC green,2L,13×18.6×1.0mm	XY-PCB, GDKX, Sunlord, SLPCB
4	Shielding	6162CIC shielding	信太(xingtai)，精力通(jinglitong)

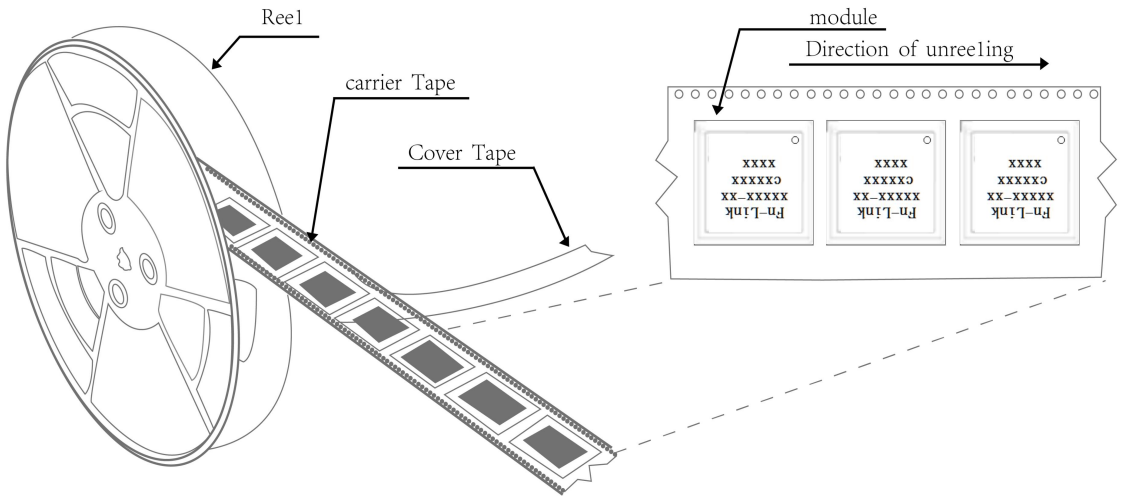
9. Reference Design



10. Package

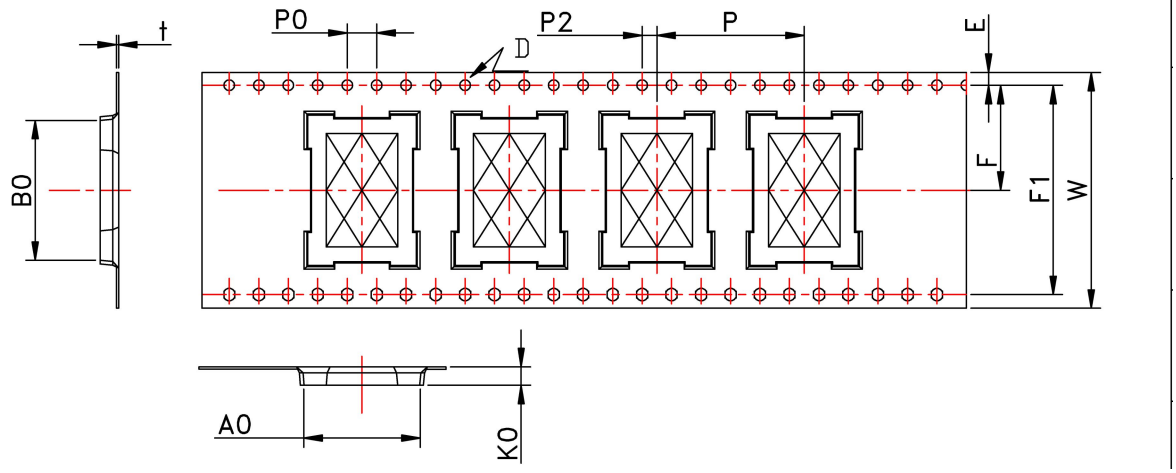
10.1 Reel

A roll of 1000pcs



10.2 Carrier Tape Detail

ITEM	W	A0	B0	D	E	F	F1	K0	P0	P2	P	T
DIM	32	13.30	19.00	1.5	1.75	14.20	28.4	2.80	4.0	2.0	20.0	0.30
TOLE	+0.3 −0.3	±0.18	±0.18	+0.1 −0.0	±0.1	±0.15	±0.10	±0.10	±0.1	±0.15	±0.1	±0.05



10.3 Packaging Detail

the take-up package

Using self-adhesive tape

Size of black tape: 32mm*32.6m the cover tape :25.5mm*32.6m

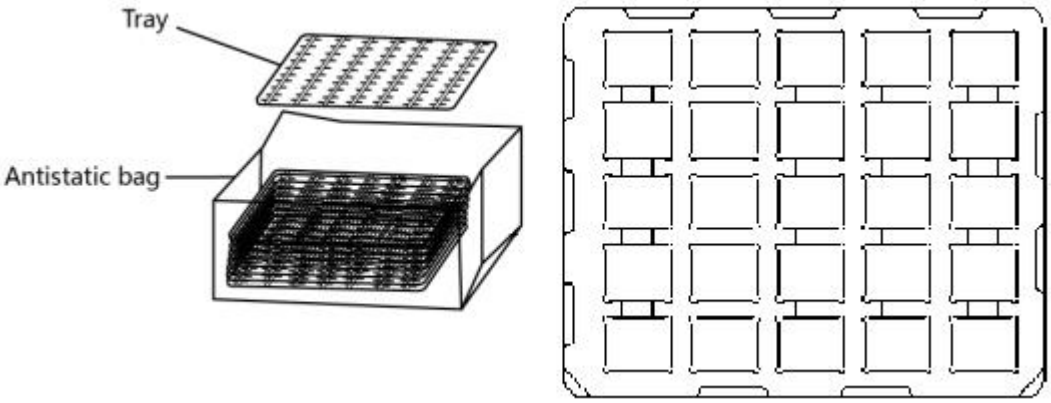
Color of plastic disc: blue

NY bag size:450X415mm size ： 350*350*35mm

The packing case size:360X210X370mm

10.4 Tray

Use pallet packaging for less than 300 pieces



11. 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

IC Warning:

ISED Canada RSS-Gen Notice (in English and French):

“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.

2. This device must accept any interference, including interference that may cause undesired operation of the device.”

“L’émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d’Innovation, Sciences et Développement économique 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’appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d’en compromettre le fonctionnement.”

ISED Canada ICES-003 Compliance Label (CAN BE PROVIDED ON LABEL OR in MANUAL):

This is only required **if** product is within ICES-003 scope and is not exempt: Insert either “A” or “B”, but not both, to identify the applicable Class of the device used for compliance verification.

“CAN ICES-3 (*)/NMB-3(*)”

RF Exposure Guidance Statement (in English and French, for equipment used a specified distance (more than 5mm away from persons)):

“In order to comply with ISED RF Exposure requirements, this device must be installed to provide at least 20 cm separation from the human body at all times.

“Afin de se conformer aux exigences d'exposition RF ISED, cet appareil doit être installé pour fournir au moins 20 cm de séparation du corps humain en tout temps. “

（EN）This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

（FH） Lors de l'installation et du fonctionnement de cet équipement, la distance minimale entre le radiateur et le corps doit être de 20 cm

The 6162CIC module is labelled with its own IC Certification Number. If the IC 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. In that case, the final end product must be labelled in a visible area with the following: “Contains IC: 12425A-6162CIC”

FCC Warning:

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

For all Class B Digital Devices, a statement like the following is needed:

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 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.

FCC Part 15.19(a [interference compliance statement], unless the following statement is already provided on the device label: -

“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.”

Radiation Exposure Statement:

1.This equipment complies with FCC/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.

2.The device has been evaluated to meet general RF exposure requirement

OEM integration instructions:

This device is intended only for OEM integrators under the following conditions: The transmitter module may not be co-located with any other transmitter or antenna. The module shall be only used with the external antenna(s) that has been originally tested and certified with this module. As long as the conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

Validity of using the module certification:

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module cannot 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.

End product labeling: The final end product must be labeled in a visible area with the following: “Contains Transmitter Module FCC ID: 2AATL-6162CIC”.

Information that must be placed in the end user manual: 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.