

ShenZhen Nater Electronics Co., Ltd

WL-UM01EBS-5572 Specification

Customer: _____

Description: WL-UM01EBS-5572 V1.0

Customer P/N: _____

Date: _____

Customer		
Approve	Auditing	Admit

Provider		
Approve	Auditing	Admit

Customer:

Add:

Tel:

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Attn:

E-mail:

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SPECIFICATIONS

IEEE 802.11 b/g/n 2.4 to 5GHz 2T2R

WIFI Module

WL-UM01EBS-5572-V1.0

Combo Module

Overview

WL-UM01EBS-5572-V1.0 is a integrated MAC/BBP and 2.4/5 GHz RF/PA/LNA single module which supports a 300 Mbps PHY rate. It fully complies with IEEE 802.11n and IEEE 802.11 b/g standards, offering feature-rich wireless connectivity at a high standard, and delivering reliable, cost-effective throughput from an extended distance. Optimized RF architecture and baseband algorithms provide superb performance and low power consumption. Intelligent MAC design deploys a highly efficient DMA engine and hardware data processing accelerators without overloading the host processor. The WL-UM01EBS-5572-V1.0 is designed to support standard-based features in the areas of security, quality of service, and international regulations, giving end users the greatest performance anytime and in any circumstance.

Features

- CMOS Technology with an integrated PA, LNA, RF, Baseband, and MAC
- 2T2R Mode with support for a 300 Mbps Tx/Rx PHY Rate
- Legacy and High Throughput Modes
- 20 MHz/40 MHz Bandwidth
- Reverse Direction Grant Data Flow and Frame Aggregation
- Multiple BSSID Support
- Bluetooth Co-existence
- Security: WEP 64/128, WPA, WPA2, TKIP, AES, WAPI
- QoS-WMM, WMM-PS
- WPS/ WPS2.0: PIN, PBC
- Cisco CCX Support
- USB 2.0
- Low Power with Advanced Power Management
- Support for Windows XP 32/64, 2000, Vista 32/64, Windows 7 32/64, Linux, Macintosh

General Specification

Model	WL-UM01EBS-5572-V1.0
Product Name	WLAN 11n USB module
MajorChipset	RT5572
Standard	802.11b/g/n
Data Transfer Rate	1,2,5.5,6,11,12,18,22,24,30,36,48,54,60,90,120 and maximum of 300Mbps
Modulation Method	QoS-WMM, WMM-PS;WPS/ WPS2.0: PIN, PBC
Frequency Band	2.4 ~ 5.8 GHz ISM Band
Spread Spectrum	IEEE 802.11b: DSSS (Direct Sequence Spread Spectrum) IEEE 802.11g/n:OFDM (Orthogonal Frequency Division Multiplexing)
RF Output Power	<18dBm@11b,<14dBm@11g,<13dBm@11n
Operation Mode	Ad hoc, Infrastructure
Receiver Sensitivity	11Mbps -86dBm@8%,135Mbps -73dBm@10%,300Mbps -66dBm@10%
OS Support	Windows XP 32/64, 2000, Vista 32/64, Windows 7 32/64, Linux, Macintosh
Security	WEP 64/128, WPA, WPA2, TKIP, AES, WAPI
Interface	USB 2.0
Power Consumption	DC3.3V
Operating Channel	11: (Ch. 1-11) - United States 13: (Ch. 1-13) - Europe 14: (Ch. 1-14) - Japan
Operating Temperature	-20~+75°C ambient temperature
Storage Temperature	-10 ~ 70°C ambient temperature
Humidity	5 to 90 % maximum (non-condensing)
Dimension	27.0 x 17.8537 x 1.9mm (LxWxH) +-0.2MM

Electrical Specifications

1) DC Characteristics

Module	Voltage	Current Consumption (linking)	Current consumption (Runthroughput)
5572	3.3V 2.4G	440MA	MAX:460/MIN:420
	3.3V 5G	620MA	MAX:640/MIN:600
	5V 2.4G	413MA	MAX:430/MIN:410
	5V 5G	540MA	MAX:560/MIN:520

2) 2.4G RF Characteristics for IEEE802.11b (11Mbps mode unless otherwise specified)

Items	Contents			
Specification	IEEE802.11b (Data Rate 11M CCK)			
Data Rate	11, 5.5, 2, 1 Mbps			
Channel frequency	2412 ~ 2462 MHz			
RX (per \leq -85dBm@8%)	-85 dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (17 \pm 2 dBm)		17		dBm
EVM (<-18)		-25		

3) 2.4G RF Characteristics for IEEE802.11g (54Mbps mode unless otherwise specified)

Items	Contents			
Specification	IEEE802.11g (Data Rate 54M OFDM)			
Data Rate	54, 48, 36, 24, 18, 12, 9, 6 Mbps			
Channel frequency	2412 ~ 2462 MHz			
RX (per \leq -70dBm@10%) -70	dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (14 \pm 2 dBm)		14.6		dBm
EVM (<-27)		-30		dB

4) 2.4G RF Characteristics for IEEE802.11n (MCS 0 to 7 for HT20MHz)

Items	Contents			
Specification	IEEE802.11n (MCS 0 to 7 for HT20MHz)			
Data Rate	65 Mbps			
Channel frequency	2412 ~ 2462 MHz			
RX (per \leq -65dBm@10%) -65	dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (13 \pm 2 dBm)		14.6		dBm
EVM (<-28)		-30		dB

5) 2.4G RF Characteristics for IEEE802.11n (MCS 0 to 7 for HT40MHz)

Items Conte	nts			
Specification	IEEE802.11n (MCS 0 to 7 for HT40MHz)			
Mode	64 QAM, 16 QAM, QPSK, BPSK			
Data Rate	135 Mbps			
Channel frequency	2422 ~ 2452 MHz			
RX (per≤-65dBm@10%) -65	dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (13±2 dBm)		14		dBm
EVM (<-28)		-30		dB

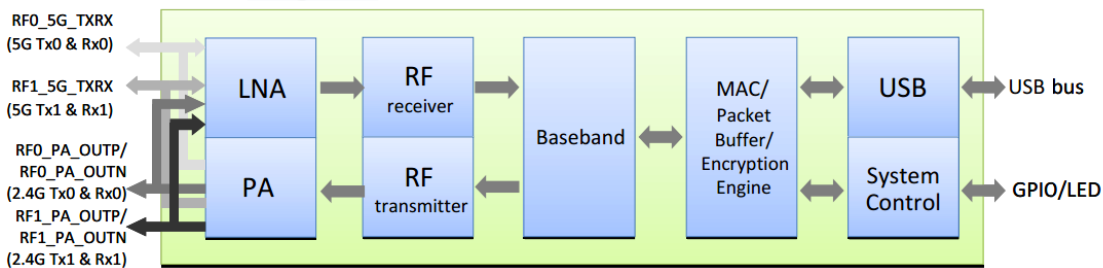
6) RF Characteristics for 5G (HT20_MCS7))

Items Conte	nts			
Specification 5G	(HT20_MCS7)			
Channel frequency	5180-5240MHz 5745-5825MHz			
RX (per≤-65dBm@10%) -65	dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (12±2 dBm)		10		dBm
EVM (<-28)		-29		dB

7) RF Characteristics for 5G (HT40_MCS7))

Items Conte	nts			
Specification 5G	(HT20_MCS7)			
Channel frequency	5180-5220MHz 5745-5825MHz			
RX (per≤-65dBm@10%) -65	dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (12±2 dBm)		10		dBm
EVM (<-28)		-29		dB

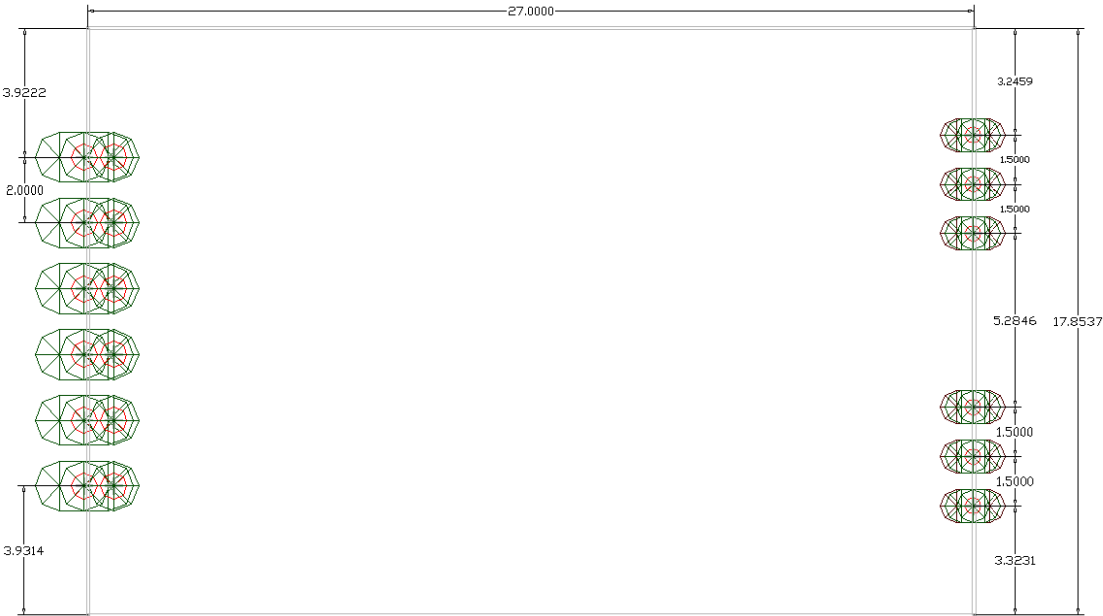
Diagram



Dimensions:

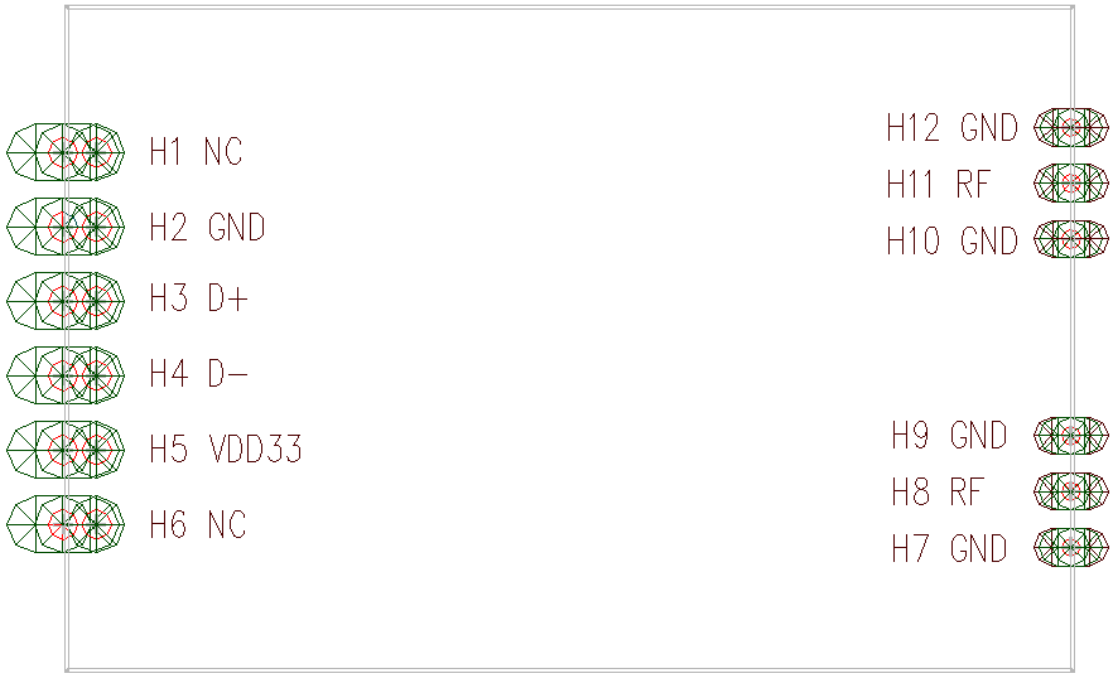
Mechanical

Dimensions (mm)	Length	Width	Height
	27.000 (Tolerance:±0.2mm)	17.8537 (Tolerance:±0.2mm)	1.9 (Tolerance:±0.2mm)

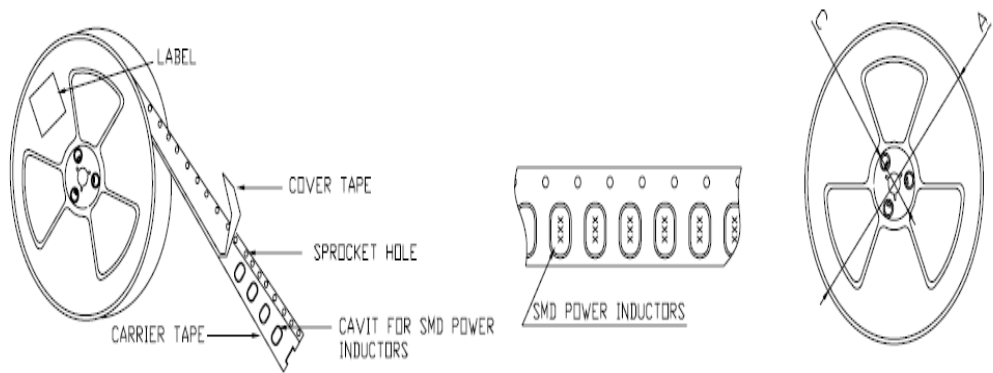


MODULE PIN ASSIGNMENT

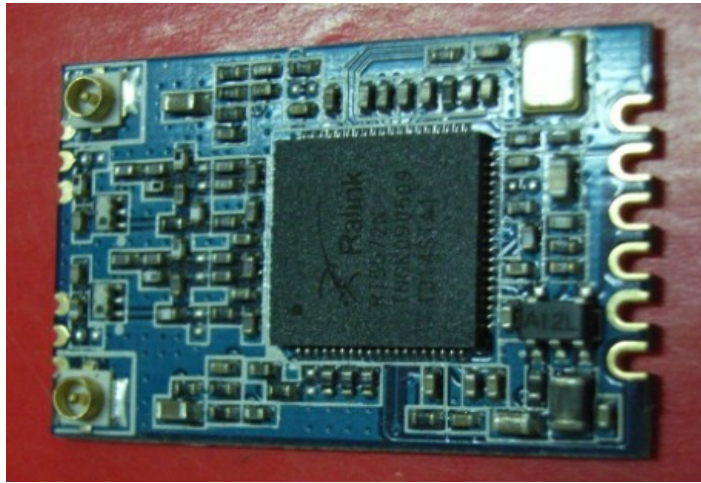
Pin	Function	Pin	Function
H1	NC	H7	GND
H2	GND	H8	RF
H3	D+	H9	GND
H4	D-	H10	GND
H5	VDD33	H11	RF
H6	NC	H12	GND



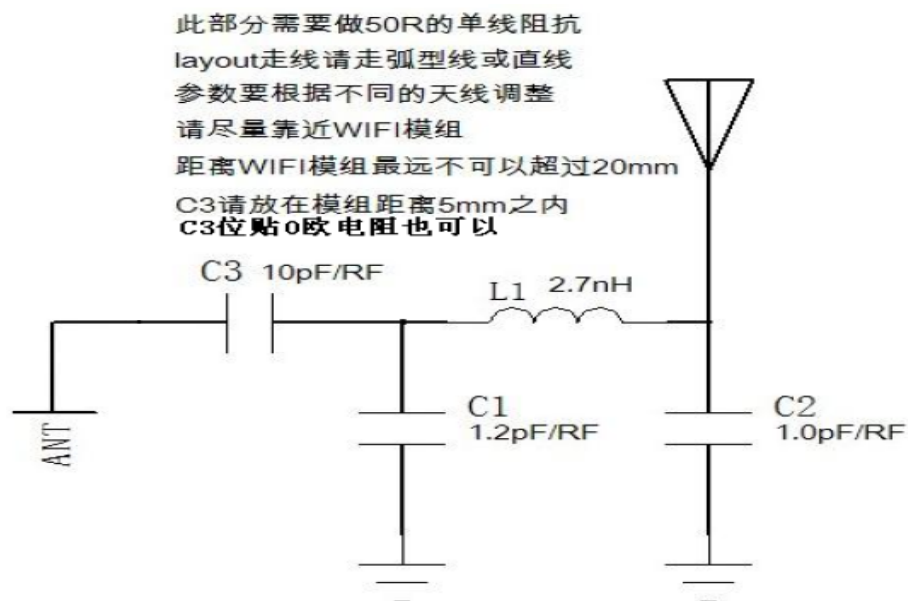
Packaging Appearance Figure



Physical map



External antenna reference design



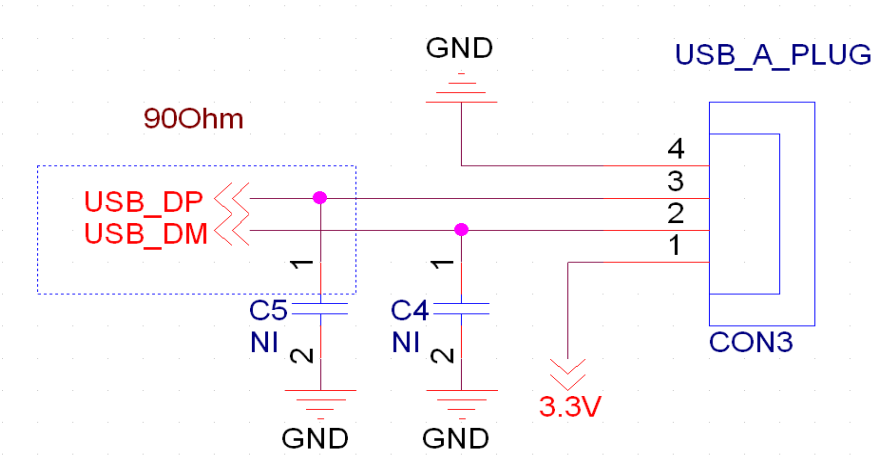
DC Characteristics

Symbol	Parameter	Minimum	Typical	Maximum	Units
VD33A, VD33D	3.3V I/O Supply Voltage	3.1	3.3	3.5	V
VD15A, VD15D	1.5V Supply Voltage	1.4	1.5	1.6	V
IDD33	3.3V Rating Current	-	-	400	mA

Power Consumption

Parameters	Sym	Conditions	Min	Typ	Max	Unit
3.3V Supply Voltage	Vc33		3.1	3.3	3.5	V
1.5V Supply Voltage	Vc15		1.4	1.5	1.6	V
Receiving Tests the biggest receive						
3.3V Current Consumption	Icc33rx	H40MCS7		65		mA
3.3V Current Consumption	Icc33rx	OFDM 54M		70		mA
Transmission Biggest transmission test						
3.3V Current Consumption	Icc33tx	H40 MCS7		80		mA
3.3V Current Consumption	Icc33tx	OFDM 54M		85		mA
The depth waits for an opportunity	Icc33tx/rx			2		mA
Deep sleep	Ic33tx/rx			2		mA

USB interface electrical characteristics



- 注：1.USB 数据线需要做 90Ohm 的阻抗。
- 2.建议电源输入端留一个电源开关，每次开关卡时可以做一个上电断电的作用
可以使用 wifi 复位，就不会有打不开 wifi 的错误现象出现。
- Note:1.Two root go line do difference , but also required to make 90Ohm the impedance test.e get lock can do
- 2.Suggested that leave a power switch power supply input terminal ,every tim a electric power is on

Environmental Requirements and Specifications TP Content

1 Temperature

1.1 Operating Temperature Conditions

The product shall be capable of continuous reliable operation when operating in ambient temperature of -10°C to +70°C.

1.2 Non-Operating Temperature Conditions

Neither subassemblies shall be damaged nor shall the operational performance be degraded when restored to the operating temperature when exposed to storage temperature in the range of -45°C to +135°C.

2 PCB Bending

The PCB bending spec shall be keep planeness under 0.1mm for both NATER and end assembly customer.

3 Handling environment

3.1. ESD

Symbol	Ratings	Max	Unit
V_{ESD} (HBM)	Electrostatic discharge voltage (human body model)	2000	V
V_{ESD} (CDM)	Electrostatic discharge voltage (charge device model)	500	

Please handle it under ESD protection environment.

3.2. Terminals

The product is mounted with motherboard through half hole. In order to prevent poor soldering, please do not touch the pad by hand.

3.3. Falling

It will cause damage on the mounted components when the product is falling or receiving drop shock. It may cause the product mal-function.

4 Storage Condition

4.1 Moisture barrier bag before opened

Moisture barrier bag must be stored under 30 degree C, humidity under 85% RH. The calculated shelf life for the dry packed product shall be a 12 months from the bag seal date.

4.2. Moisture barrier bag open

Humidity indicator cards must be blue, <30%.

5 Baking Condition

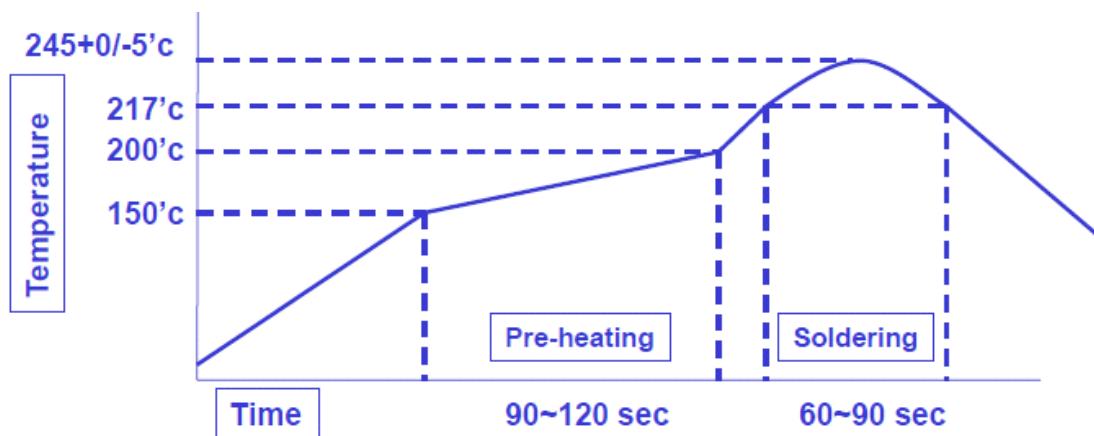
Products require baking before mounting if

- a) humidity indicator cards reads >30%
- b) temp <30 degree C, humidity < 70% RH, over 96 hours

Baking condition: 90 degree C, 12-24 hours

Baking times: 1 time

6 Soldering and reflow condition



- ◆ Follow the solder paste composition to set the reflow profile
- ◆ Lead free solder paste(SAC305, SAC387 or SAC405) reflow profile setting as above :
 - Ramp up rate (to Peak temp) : < 1.2°C/sec, typically
 - Time above Liquidus(217°C) : 60~90Sec
 - Peak Temp : 245+0/-5°C
 - Ramp-down rate (Peak to RT) : 1~3°C/sec, typically

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance.

Note 1: This module certified that complies with RF exposure requirement under mobile or fixed condition, this module is to be installed only in mobile or fixed applications.

A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

A fixed device is defined as a device is physically secured at one location and is not able to be easily moved to another location.

Note 2: Any modifications made to the module will void the Grant of Certification, this module is limited to OEM installation only and must not be sold to end-users, end-user has no manual instructions to remove or install the device, only software or operating procedure shall be placed in the end-user operating manual of final products.

Note 3: The device must not transmit simultaneously with any other antenna or transmitter.

Note 4: To ensure compliance with all non-transmitter functions the host manufacturer is responsible for ensuring compliance with the module(s) installed and fully operational. For example, if a host was previously authorized as an unintentional radiator under the Declaration of Conformity procedure without a transmitter certified module and a module is added, the host manufacturer is responsible for ensuring that after the module is installed and operational the host continues to be compliant with the Part 15B unintentional radiator requirements. Since this may depend on the details of how the module is integrated with the host, LM Technologies Ltd. shall provide guidance to the host manufacturer for compliance with the Part 15B requirements.

Note 5: FCC ID label on the final system must be labeled with “Contains FCC ID: 2AGKCNT-5572M” or “Contains transmitter module FCC ID: 2AGKCNT-5572M”.

The transmitter module must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the host product. ShenZhen Nater Electronics Co., Ltd is responsible for the compliance of the module in all final hosts.

FCC Notice

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.

NOTE 1: 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.

NOTE 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.