Product Specification

Model:FLC5336ARA-B

Jiangsu Fulian Communication Technology Co., Ltd.

Approval	Review	Draft	Version	Date
			V1.1	2025.01.12

I.Version Update Log

Jiangsu Fulian Communication Technology Co.,Ltd

Date	Version	Update Content
2024-10-25	V1.0	Initial document
2025-02-12	V1.1	Fixed program download port TXD,RXD definition

II. Product Overview

FLC5336ARA-B module adopts TR5336 chip, highly integrated 2.4GHz SoC BLE and WiFi Combo chip, integrated high-performance 32bit microprocessor, maximum operating frequency 240MHz, Embedded SRAM 606KB, ROM 300KB, embedded 4MB Flash; Integrated IEEE 802.11b/g/n/ax baseband and RF circuit, RF circuit includes power amplifier PA, low noise

Acoustic amplifier LNA, RF balun, antenna switch and power management module; Supports the HT 20MHz/ HT 40MHz and HE 20MHz standard bandwidths, and provides a maximum physical layer rate of 150Mbit/s.The air interface rate is 4Mbps, and the maximum air interface rate of the TR5336P is 12Mbps.Support BLE 1MHz/2MHz bandwidth, support BLE 5.4 protocol, support BLE Mesh and BLE gateway functions, maximum.The air interface rate is 2Mbps.Wi-Fi baseband supports orthogonal frequency division multiple access (OFDMA) technology, orthogonal frequency division multiplexing (OFDM) technology, and backward compatible direct sequence spread spectrum (DSSS) and complement keying (CCK)technology, supports various data rates of IEEE 802.11b/g/n protocols, and supports IEEE.MCS0 to MCS9 rates of 802.11ax.

It is suitable for the field of Internet of Things intelligent terminal such as smart home appliances.

III. Key Features

WiFi

● 2.4GHz band, PHY support IEEE 802.11b/g/n/ax. The MAC supports IEEE 802.11d/e/i/k/v/r/w

● Support 802.11n 20MHz/40MHz bandwidth, 802.11ax 20MHz bandwidth

● Supports maximum speeds: 150Mbit/s@HT40 MCS7, 114.7Mbit/s@HE20 MCS9

● Maximum speed supported: 150Mbps@HT40 MCS7

● Embedded SRAM 606KB, ROM 300KB, embedded 4MB Flash.

BLE

● Bluetooth Low Energy (BLE) Bluetooth Low Energy (BLE)

● Support BLE 5.4

● The speed supports 125Kbps, 500Kbps, 1Mbps, and 2Mbps

● Support Class 1

● Support high power of 20dBm

● Supports BLE Mesh and BLE gateway

Others

● Radium carving with shielding cover

● Standard 3.3V power supply

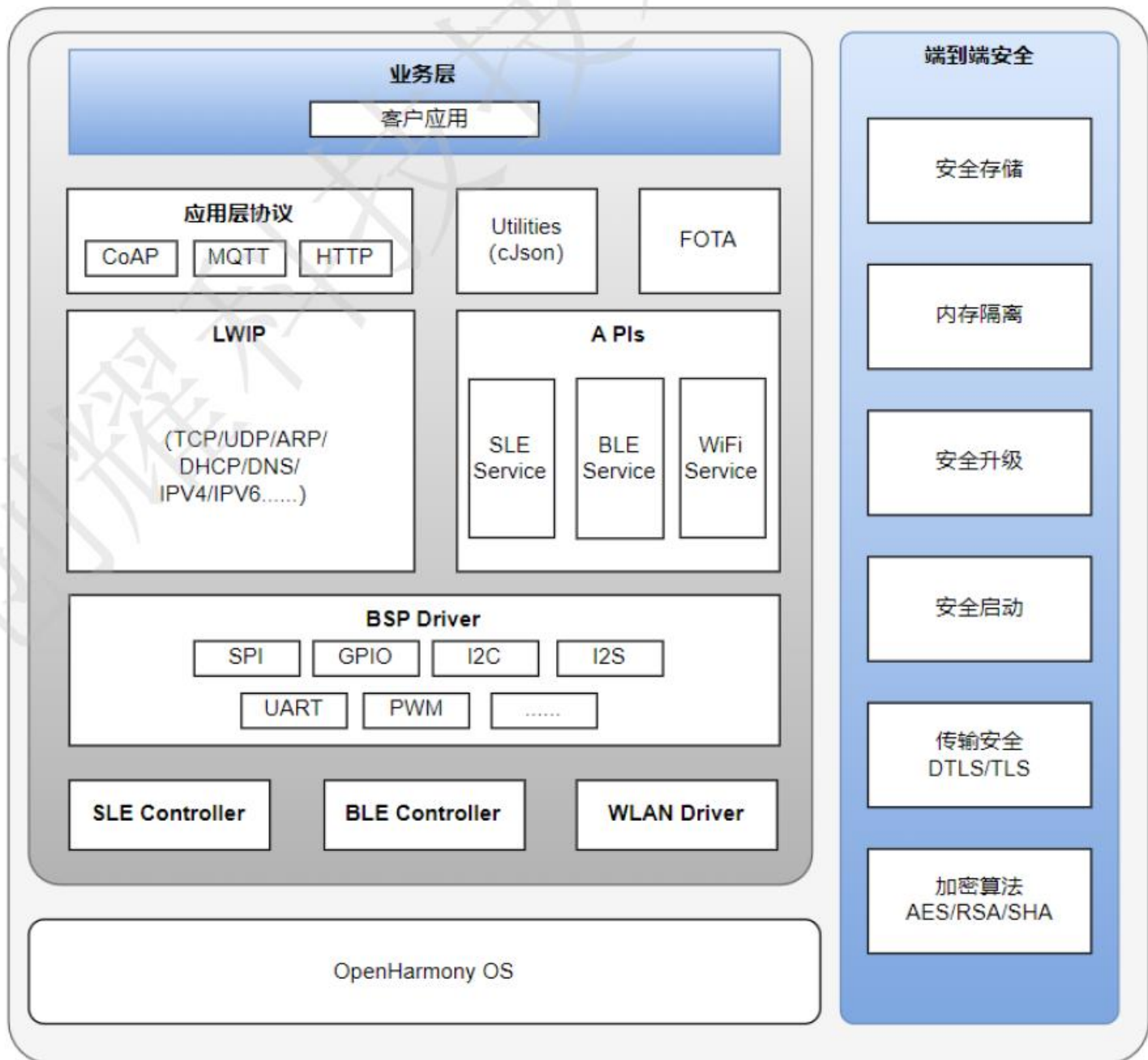● Module size: 20*18*2.8 (±0.2mm)

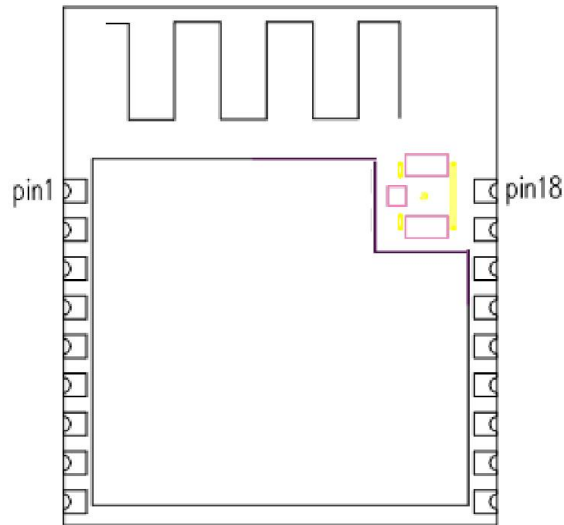# IV. Hardware framework schematic

Figure 1

V. pin definition:

Figure 2

Table 1 Module pin comparison table

Pin No.	Pin Name	Description
1	VDD	3.3V power supply
2	EN	The chip enables the pin to work normally at a high level
3	GPIO07	
4	GPIO08	
5	GPIO09	Deep-sleep wakeup when connected to RST pin
6	GPIO10	HSPI_CLK
7	GPIO11	HSPI_MISO
8	GPIO12	HSPI_MOSI;UART0_CTS
9	GND	Ground connection
10	GPIO03	Flash BOOT，High level feed burn mode
11	UART1_RXD	
12	UART1_TXD	
13	GND	Ground connection
14	GPIO13	UART1_CTS
15	GPIO14	UART1_RTS
16	UART0_RXD	
17	UART0_TXD	
18	GND	Ground connection

Note：

GPIO3 is in download mode and the low level is in normal mode.
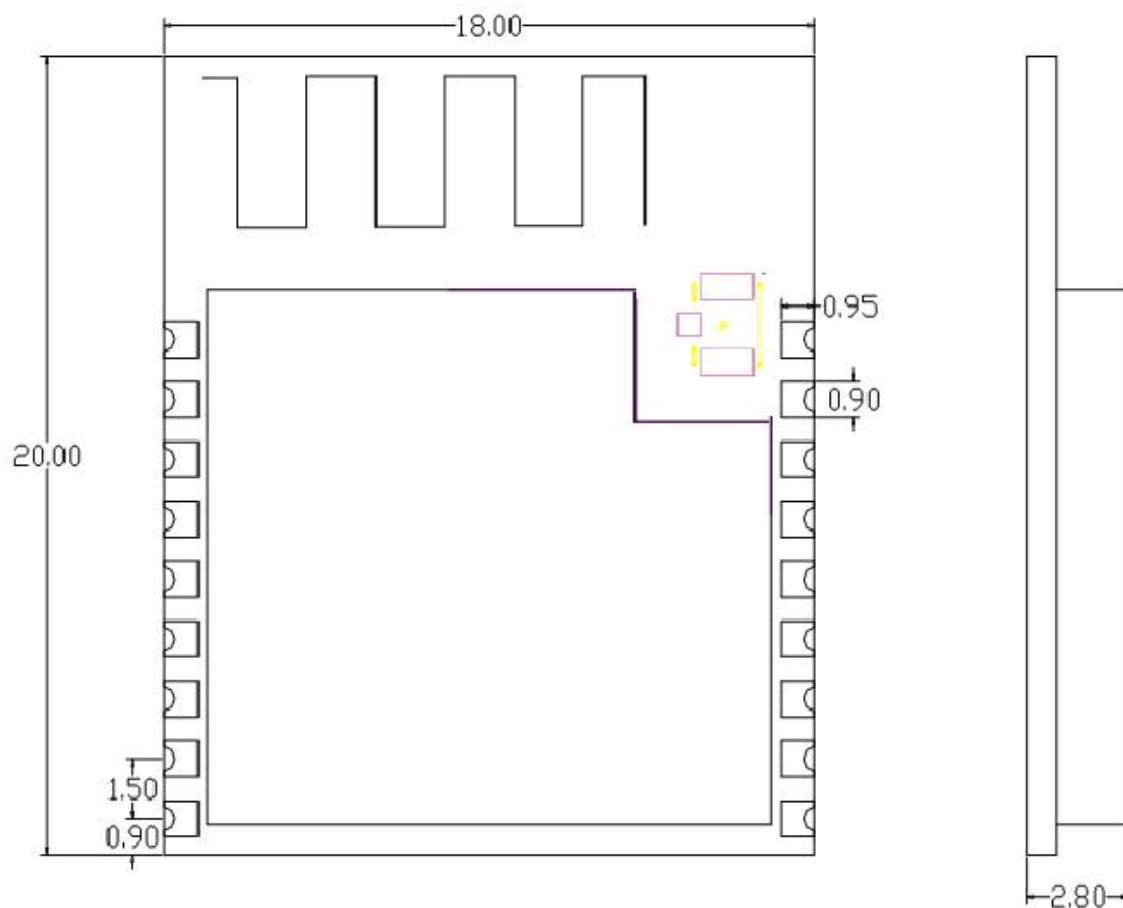
VI. Module Dimensions (Unit: mm)

Figure 3

VII.Rf parameters：

Table 2 RF parameters

RF Parameter	RF Index	
WLAN standards	IEEE802.11b/g/n/ax	
Frequency band	2.400GHz~2.4835GHz	
Channel	Ch1~Ch11	
Modulation mode	802.11b:DQPSK,DBPSK,CCK 802.11g/n:OFDM/64-QAM,16-QAM,QPSK,BPSK8 802.11ax:DBPSK/DQPSK/OFDM/16QAM/64QAM/256QAM	
Maximum output	802.11b/g/n/ax: ≤20dBm(EIRP)	
Receiving sensitivity (11b,20MHz)	－ 1Mbps	PER@ -99dBm
	－ 2Mbps	PER@ -96dBm
	－ 5.5Mbps	PER@ -94dBm
	－ 11Mbps	PER@ -91dBm
Receiving sensitivity (11g,20MHz)	－ 6Mbps	PER@ -96dBm
	－ 9Mbps	PER@ -94dBm
	－ 12Mbps	PER@ -93dBm
	－ 18Mbps	PER@ -90dBm
	－ 24Mbps	PER@ -87dBm
	－ 36Mbps	PER@ -84dBm
	－ 48Mbps	PER@ -80dBm
	－ 54Mbps	PER@ -78dBm
Receiving sensitivity (11n,20MHz)	－ MCS=0	PER@ -95dBm
	－ MCS=1	PER@ -92dBm
	－ MCS=2	PER@ -90dBm
	－ MCS=3	PER@ -87dBm
	－ MCS=4	PER@ -83dBm
	－ MCS=5	PER@ -79dBm
	－ MCS=6	PER@ -77dBm
	－ MCS=7	PER@ -76dBm
Receiving sensitivity (11n,40MHz)	－ MCS=0	PER@ -92dBm
	－ MCS=1	PER@ -89dBm
	－ MCS=2	PER@ -87dBm
	－ MCS=3	PER@ -84dBm

|		
	– MCS=4	PER@ -80dBm
	– MCS=5	PER@ -76dBm
	– MCS=6	PER@ -74dBm
	– MCS=7	PER@ -73dBm
Receiving sensitivity (11ax HE20)	– MCS=0	PER@ -96dBm
	– MCS=1	PER@ -93dBm
	– MCS=2	PER@ -91dBm
	– MCS=3	PER@ -88dBm
	– MCS=4	PER@ -84dBm
	– MCS=5	PER@ -80dBm
	– MCS=6	PER@ -79dBm
	– MCS=7	PER@ -77dBm
	– MCS=8	PER@ -73dBm
	– MCS=9	PER@ -71dBm
Maximum input signal power	802.11b:-10dBm	
	802.11g/n/ax: -20dBm	
Antenna gain	2.81dBi	
LE RX sensitivity	LE 1M, -99dBm	
	LE 2M, -96dBm	
	LR S2 255 byte, -100dBm	
	LR S8 255 byte, -105dBm	
	LR S2 37 byte, -101dBm	
	LR S8 37 byte, -105dBm	
LE TX Maximum transmit power	8dBm± 2dBm	

VIII. Secondary reflow temperature curve:
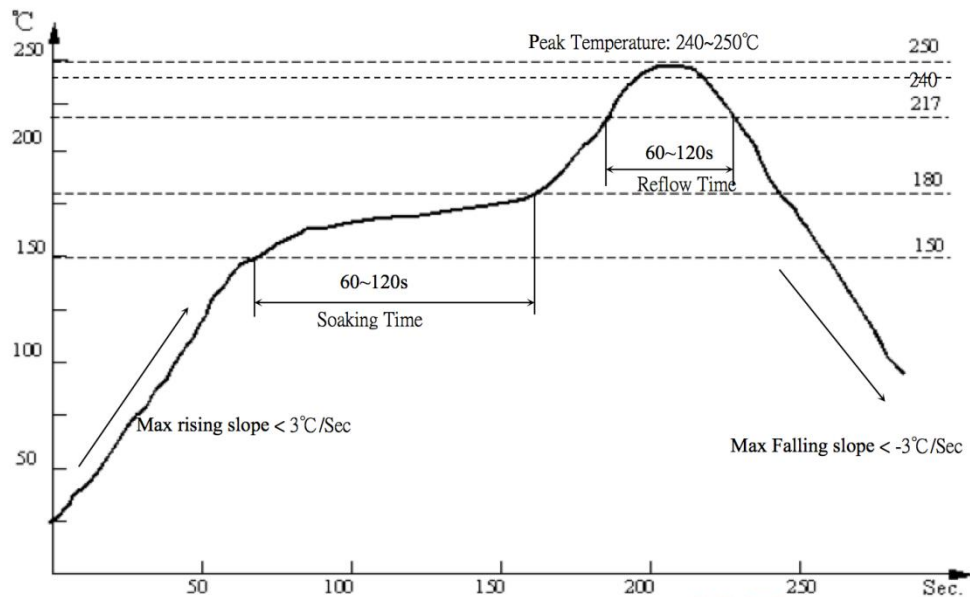
图 4

IX. Packing method：

It is shipped by coil packaging, which is convenient for customers to SMT, built-in humidity card and desiccant, electrostatic bag vacuum, and carton packaging, and the coil and the outer box are pasted with factory notes and the inspection of the warehouse two-dimensional code, which is easy to track and cross goods.

Figure 5

Announcements

● The operators at all stations must wear electrostatic gloves during the whole process of production.

● The copper needs to be removed from the bottom plate corresponding to the red area in Figure 2. The larger the area, the less the impact on the antenna and the better the performance.

● During operation, ensure that the bottom surface of the module is protected from water or dirt;

● If the unpacking time exceeds 3 months, it is prohibited to use SMT process to weld this batch of modules, because PCB metal-sinking process, the pad oxidation is serious after 3 months, the SMT patch is very likely to lead to false welding, welding failure, and our company will not be responsible for all kinds of problems caused by this;

● Before installing the SMT, protect the module with ESD discharge.

● Please apply the SMT patch according to the reflow soldering curve, the peak temperature is 245℃, the reflow soldering temperature curve is shown in the figure.

● In order to ensure the qualified rate of reflow soldering, 10% of the first SMT products should be selected for visual inspection and AOI detection to ensure the reasonableness of furnace temperature control, device adsorption method and placement method; After mass production, it is recommended to extract 5-10 pieces per hour for visual inspection and AOI testing.

Storage conditions and ESD

prevention

Figure 6 storage conditions and ESD prevention instructions

Sales and technical support information

If you need to consult or purchase this product, please call Jiangsu Fu Unicom Communication Technology

Co., LTD during office hours.

Office hours: Monday to Saturday, 8:00 am to 12:00 PM, 13:00 PM to 17:00 PM

postcode： 212310

phone： 0511-80760088

Email: sales@fulian-link.com

Address: Fulianxun Industrial Park, Lanling Road, Economic and Technological Development Zone, Danyang

City, Jiangsu Province

FCC Statement

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.
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.
This modular has been tested and found to comply with part 15 requirements for Modular Approval.
FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01r01
2.2 List of applicable FCC rules
CFR 47 FCC Part 15 Subpart C and Subpart F has been investigated. It is applicable to the modular transmitter

2.3 Specific Operational Use Conditions – Antenna Placement Within the Host Platform
The module is tested for standalone mobile RF exposure use condition.
The antenna must be installed such that 20cm is maintained between the antenna and users,
The transmitter module may not be co-located with any other transmitter or antenna.
In the event that these conditions cannot 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 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.
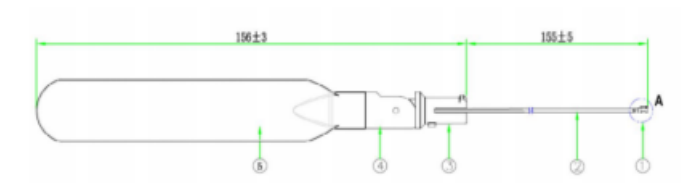
2.4 Limited Module Procedures
Not Applicable.

2.5 Trace Antenna Designs
PCB antenna specification
Below is chip antenna specification
You can see antenna size is 301(L)mm*16(W)mm*7.2(T)mm From below specification.

Note: PCB is RF-4 material, 0.6 m thick; The four solder joints on the PCB are used for OSP machining or soldering.
Modules need to be connected to external antennas via IPEX.
FLC5336ARA-B uses a Shared PAD design, and if an external antenna is used, there will be no signal on the PCB antenna.

2.6 RF Exposure Considerations

This device complies with FCC 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.

2.7 Antenna Type and Gain

The following antennas have been certified for use with this module.
Only antennas of the same type with equal or lower gain may also be used with this module.
Other types of antennas and/or higher gain antennas may require the additional authorization for operation.
Antenna Specification list below:

Antenna Type	Antenna Model No.	Maximum Antenna Gain(dBi)	Frequency Range(MHz)
external antenna	FLC5336ARA-B	2.81	2400-2500

2.8 End Product Labelling Compliance Information

When the module is installed in the host device, the FCC ID label must be visible through a window on the final device or it must be visible when an access panel, door or cover is easily removed. If not, a second label must be placed on the outside of the final device that contains the following text: "Contains FCC ID: 2AXS5-FLC5336ARA-B". The FCC ID can be used only when all FCC compliance requirements are met.

2.9 Information on Test Modes and Additional Testing Requirements

This transmitter is tested in a standalone mobile RF exposure condition and any co-located or simultaneous transmission with other transmitter(s) class II permissive change re-evaluation or new FCC authorization.
Host manufacturer installed this modular with single modular approval should perform the test of radiated emission and
spurious emission according to FCC part 15C, 15.209, 15.207 requirement, only if the test result comply with FCC part 15C, 15.209, 15.207 requirement, then the host can be sold legally.

2.10 Additional testing, Part 15 Subpart B Disclaimer

This transmitter modular us tested as a subsystem and its certification does not cover the FCC Part 15 Subpart B rules requirement applicable to the final host. The final host will still need to be reassessed for compliance to this portion of rules requirements if applicable. As long as all 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 modular installed.

2.11 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 host integrator must follow the integration instructions provided in this document and ensure that the composite system end product complies with the requirements by a technical assessment or evaluation to the rules and to KDB Publication 996369.
The host integrator installing this module into their product must ensure that the final composite product complies with the requirements by a technical assessment or evaluation to the rules, including the transmitter operation and should refer to guidance in KDB Publication 996369.

OEM/Host Manufacturer Responsibilities

OEM/Host manufacturers are ultimately responsible for the compliance of the Host and Module. The final product must be reassessed against all the essential requirements of the FCC rule such as FCC Part 15 Subpart B before it can be placed on the US market. This includes reassessing the transmitter module for compliance with the Radio and RF Exposure essential requirements of the FCC rules.

2.12 How to Make Changes - Important Note

In the event that these conditions cannot 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 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.