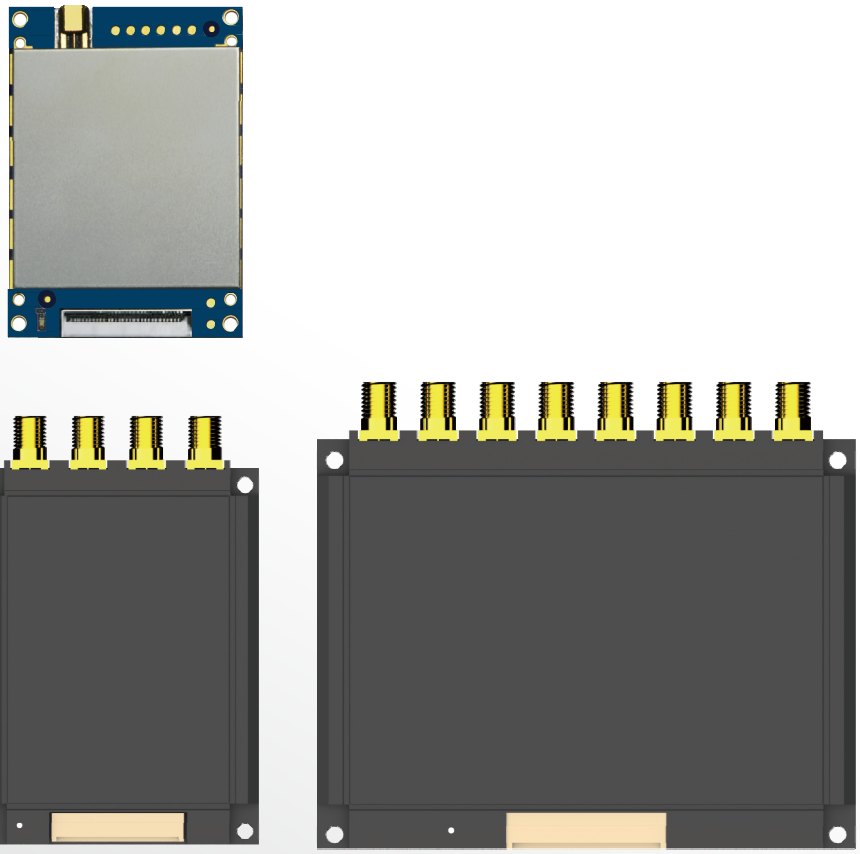
M30X Series

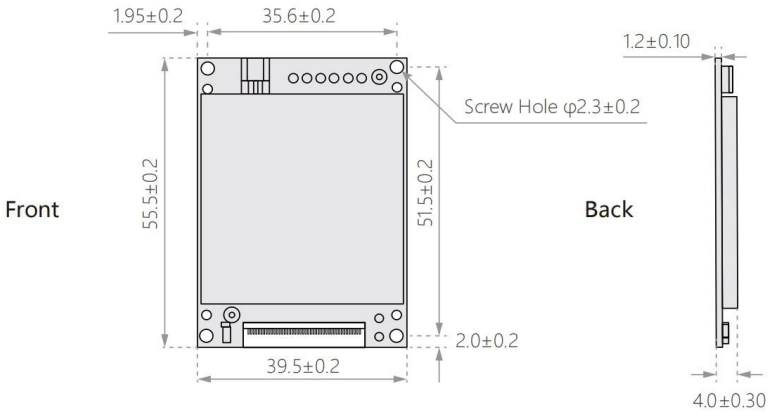
UHF RFID Module



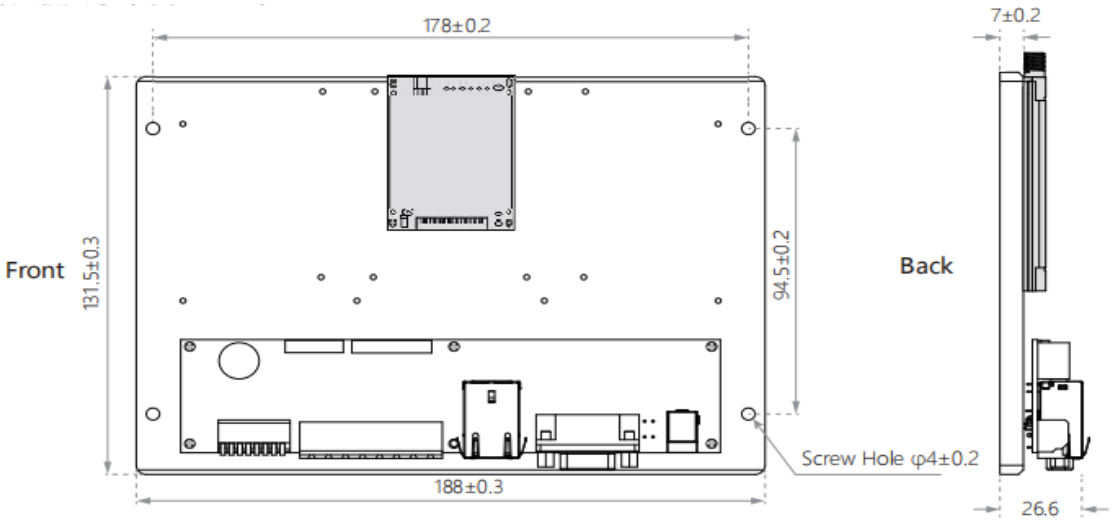
1. Product View

M-301		☐ RF Channel:	Single Channel
		☐ RF Connector:	MMCX
		☐ Antenna Connection Mode :	Single Antenna
		☐ Interface Connector:	FH34SRJ-30S-0.5SH (50)
		☐ RF Connectors Material:	Gold-plated brass
		☐ PCB Material:	Rogers FR4 gold-plated
		☐ Shield Material:	Cupronickel

2. Module Dimensions （ unit: mm ）



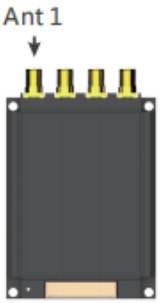
3. Kit Dimensions （ unit: mm ）



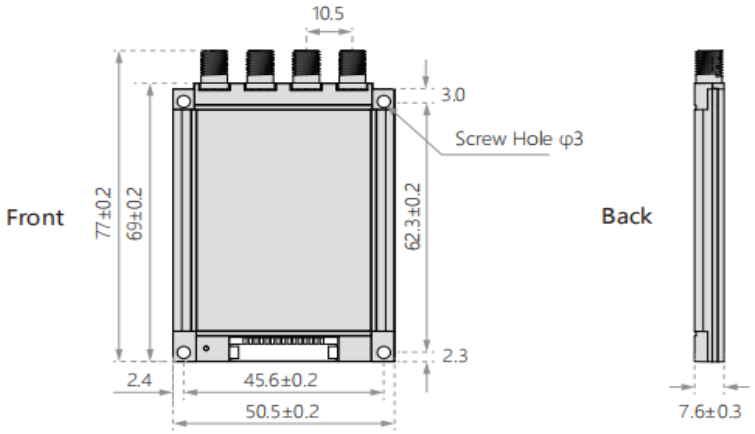
Note: Dimensional drawings are three-dimensional renderings, not physical.

Module Specification | M-302 UHF RFID Module

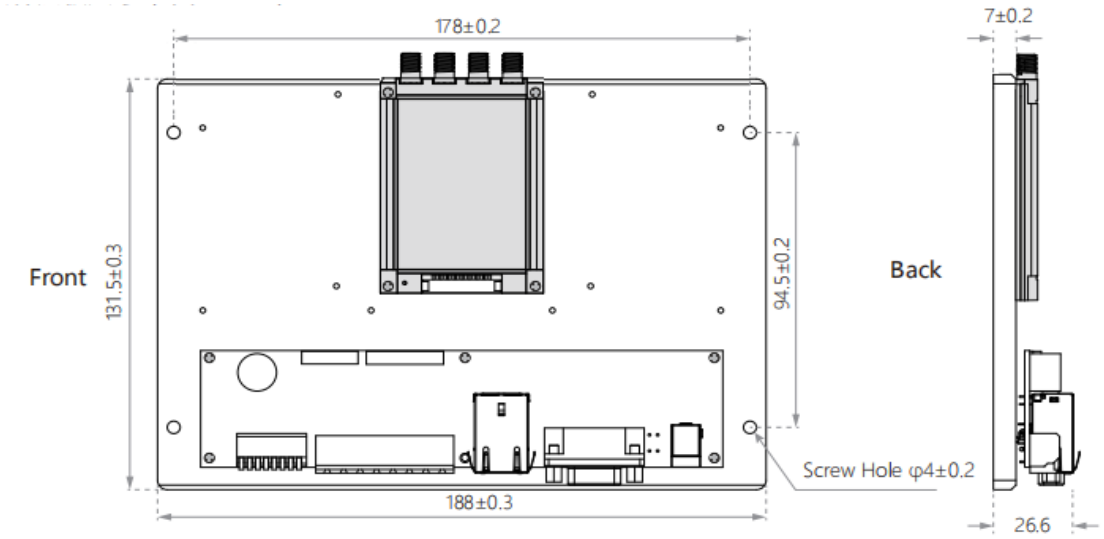
1. Product View

M-302		☐ **RF Channel:** Four channels ☐ **RF Connector:** SMA ☐ **Antenna Connection Mode :** Four Antenna ☐ **Interface Connector:** Molex 53261-1571 ☐ **RF Connectors Material:** Gold-plated brass ☐ **PCB Material:** Rogers FR4 gold-plated ☐ **Shield Material:** Aluminum

2. Module Dimensions （ unit: mm ）



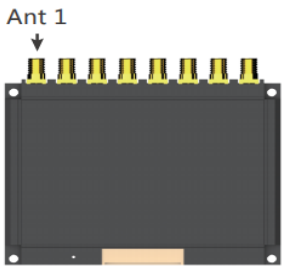
3. Kit Dimensions （ unit: mm ）



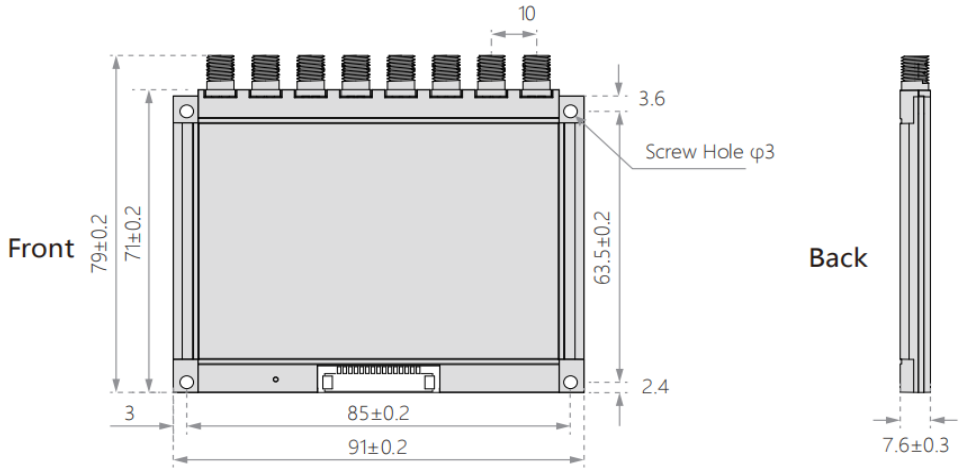
Note: Dimensional drawings are three-dimensional renderings, not physical.

Module Specification | M-303 UHF RFID Module

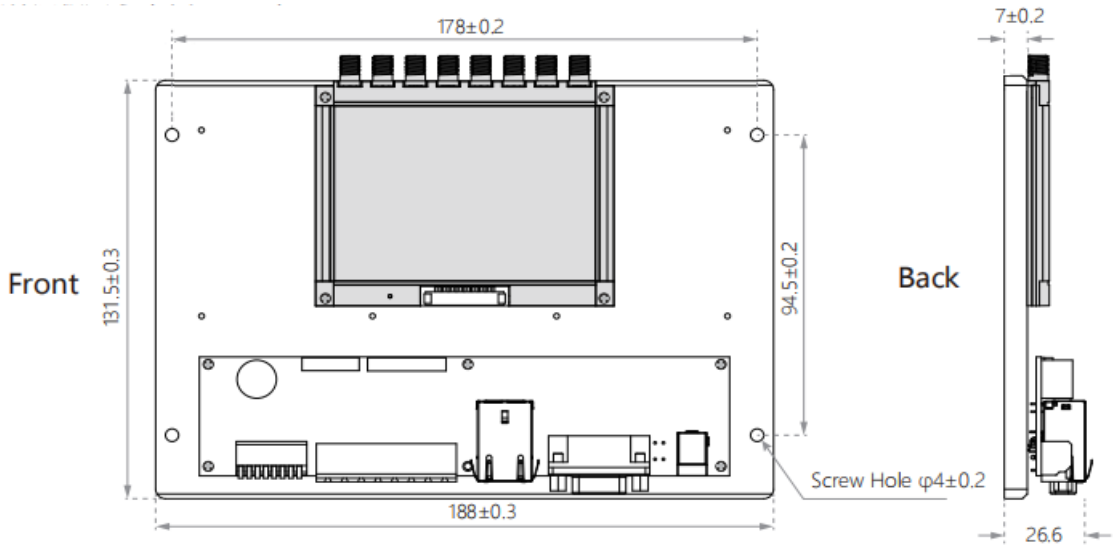
1. Product View

M-303		☐ **RF Channel:**	Eight Channels
		☐ **RF Connector:**	SMA
		☐ **Antenna Connection Mode :**	Eight Antenna
		☐ **Interface Connector:**	Molex 53261-1571
		☐ **RF Connectors Material:**	Gold-plated brass
		☐ **PCB Material:**	Rogers FR4 gold-plated
		☐ **Shield Material:**	Aluminum

2. Module Dimensions （ unit: mm ）



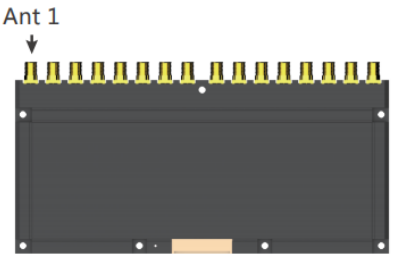
3. Kit Dimensions （ unit: mm ）



Note: Dimensional drawings are three-dimensional renderings, not physical.

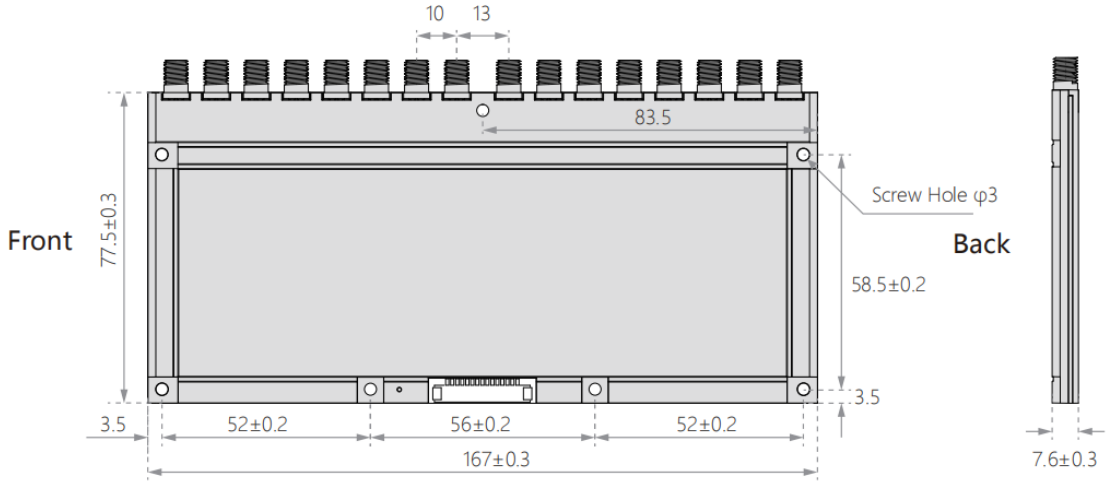
1. Product View

M-304

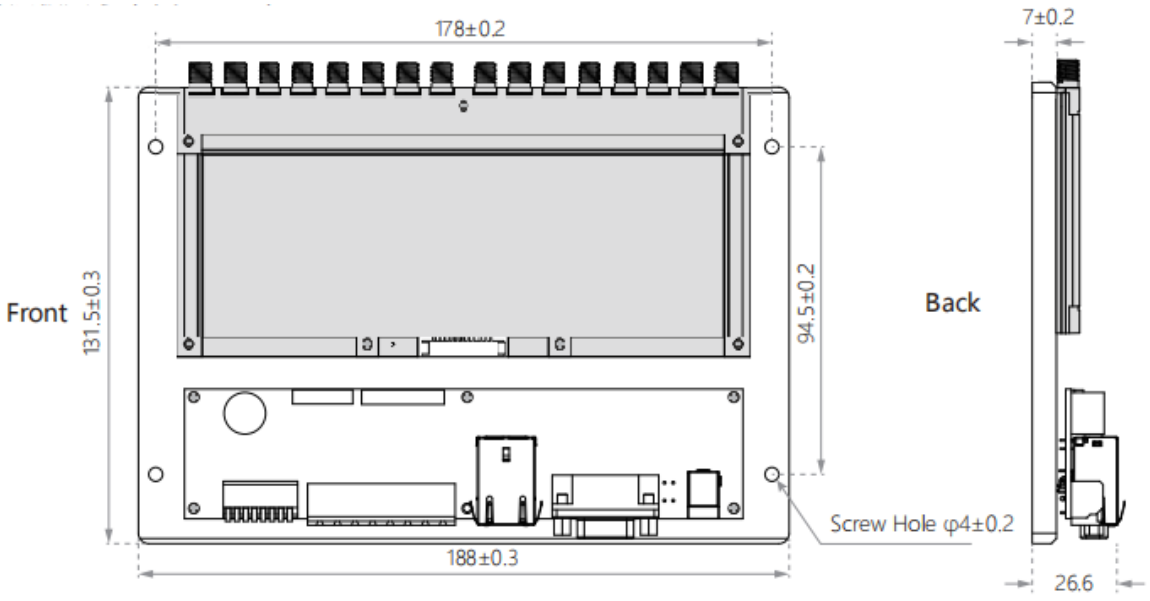


☐ RF Channel:	Sixteen channels
☐ RF Connector:	SMA
☐ Antenna Connection Mode :	Sixteen Antenna
☐ Interface Connector:	Molex 53261-1571
☐ RF Connectors Material:	Gold-plated brass
☐ PCB Material:	Rogers FR4 gold-plated
☐ Shield Material:	Aluminum

2. Module Dimensions （ unit: mm ）



3. Kit Dimensions （ unit: mm ）



Note: Dimensional drawings are three-dimensional renderings, not physical.

PIN Connector Pin Assignments

PIN Connector Pin Assignments

Connector (15Pin , Space between PINs 1.25mm)

PIN	Interface	Instruction
1	GND	Meanwhile grounding
2	GND	
3	4.5V – 5.5V DC	Meanwhile connect power, Recommended input voltage: 4.6V
4	4.5V – 5.5V DC	
5	GPIO 3	Output
6	GPIO 4	Output
7	GPIO 1	Input
8	Beeper	Has driven with > 50mA output current
9	UART_RXD	TTL level
10	UART_TXD	
11	USB_DM	For testing
12	USB_DP	
13	GPIO 2	Input
14	EN	High level enable
15	GPIO 5	RS-485 direction control

PIN Connector Pin Assignments

FPC connector (30Pin , Space between PINs 0.5mm)

PIN	Interface	Instruction
1	GND	Meanwhile grounding
2	GND	
3	GND	
4	GND	
5	GND	
6	4.5V–5.5V DC	Meanwhile connect power, Recommended input voltage: 4.8V
7	4.5V–5.5V DC	
8	4.5V–5.5V DC	
9	4.5V–5.5V DC	
10	4.5V–5.5V DC	
11	4.5V–5.5V DC	
12	4.5V–5.5V DC	
13	4.5V–5.5V DC	
14	4.5V–5.5V DC	
15	4.5V–5.5V DC	
16	GND	Meanwhile grounding
17	GND	
18	GND	
19	GND	
20	GND	
21	UART_RXD	TTL level
22	UART_TXD	
23	EN	High level enable
24	GPIO1	Input
25	Beeper	Has driven with > 50mA output current
26	GPIO3	Output
27	GPIO4	Output
28	GPIO5	RS-485 direction control
29	GND	Meanwhile grounding

30	GND	

Module Specification | UHF RFID Module

Electrical Characteristics

Electrical Characteristics				
Operating Voltage	4.5V – 5.5V			
Standby Mode Current	50mA (EN high level)			
Sleep Mode Current	<100uA (EN high level)			
Operating Current	Conditions	Min	Type	Max
	@5V(33dbm Output，Multi-tag，25°C)	300mA	1.3A+-10%	2.5A
Operating Temperature	- 20 °C ~ + 65 °C			
Storage Temperature	- 40 °C ~ + 85 °C			
Humidity	5%RH~95%RH (non -condensing)			
Air Interface Protocol	EPC global UHF Class 1 Gen 2 / ISO 18000-6C			
Spectrum Range	902MHz – 928MHz，865MHz – 868MHz			
Supported Regions	US, Canada and other regions following U.S. FCC Europe and other regions following ETSI EN 302 208 China , Korea , Malaysia			
Output Power	0 – 33dBm			
Output Power Precision	+/- 1dB			
Output Power Flatness	+/- 0.2dB			
Receive Sensitivity	< -88 dBm			
Peak Inventory Speed	>900 tags/sec			
Tag RSSI	Supported			
Antenna Detector	Supported			
Ambient Temp Monitor	Supported			
Working Mode	Single/DRM			
Host Communication	Uart 3.3V			
GPIO	2 inputs & 2 outputs (3.3V level)			
Max Baud Rate	38400 bps ， 115200 bps (Default and recommended)，921600bps			
Heat Dissipation	External radiator			

Note:

- When the temperature, measured by the ambient temperature measurement function, exceeds 60°C, please do not keep the device working at full capacity.
- Please connect the device to heat sink when it continuously work at full load.
- Supply voltage must not exceed 5.5V,otherwise it will damage the internal protection circuit.
- Be cautious if set RF output power over 30dBm, as the peak current and internal temperature will increase significantly.

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

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.

FCC RF EXPOSURE STATEMENT:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01

2.2 List of applicable FCC rules
CFR 47 FCC PART 15 SUBPART C has been investigated. It is applicable to the modular.

2.3 Specific operational use conditions
This module is stand-alone modular. 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.
2.4 Limited module procedures
Not applicable

2.5 Trace antenna designs
Not applicable

2.6 RF exposure considerations
To maintain compliance with FCC’s RF Exposure guidelines, This equipment should be installed and operated with minimum distance of 20cm from your body.

2.7 Antennas

This radio transmitter FCC ID: 2AKQD-M-302 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.

No.	Antenna Type	Antenna Gain	Impedance	Frequency Range
1	external antenna	2.0dBi	50Ω	902-928MHz

2.8 Label and compliance information

The final end product must be labeled in a visible area with the following" Contains FCC ID: 2AKQD-M-302”

2.9 Information on test modes and additional testing requirements

Host manufacturer is strongly recommended to confirm compliance with FCC requirements for the transmitter when the module is installed in the host.

2.10 Additional testing, Part 15 Subpart B disclaimer

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