
MESSI-V M2 I/O APPLICATION

4G LTE Module

(NGFF type)

Doc. Title	MESSI-V M2 I/O APPLICATION
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Approved by	
Version	
Date	2013/08/08

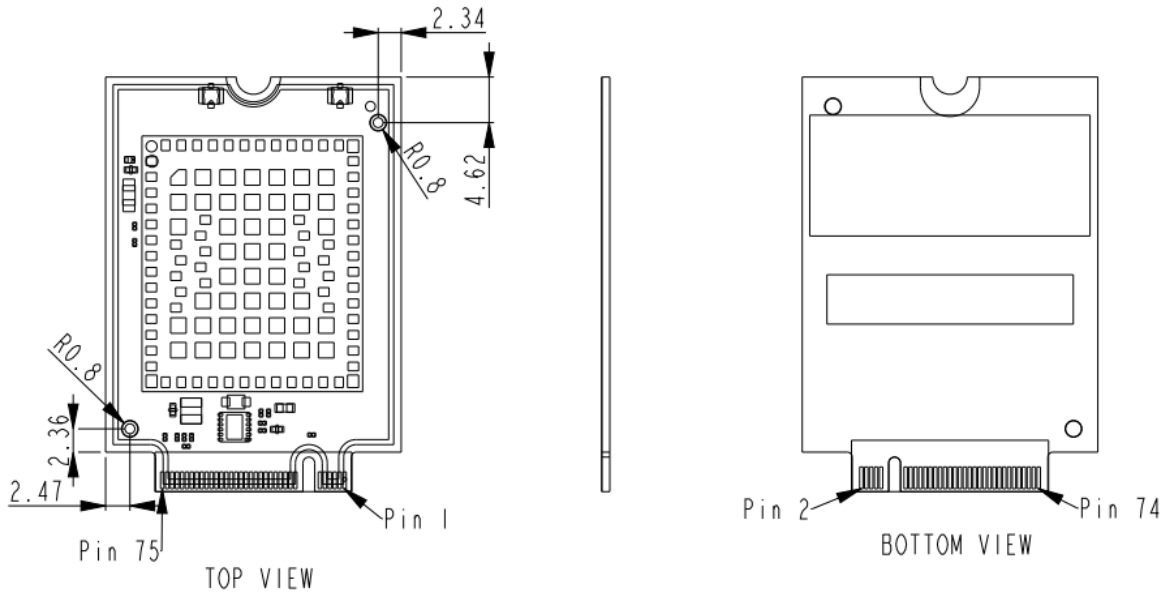
Revision History

Rev	Draft/Changes	Date
1.0	First version released (DVT phase)	2013/01/10

USI Confidential

Introduction:

MESSI-V M2 is an advanced and compact NGFF board / module which supports LTE category 3 (CAT-3) throughputs. MESSI-V M2 supports for UART, USB2.0, USIM and antenna interface. The details of I/O interfaces are described in the sections as followings:



- UART Interface
- USB2.0 Interface
- USIM Interface
- Power Input
- JTAG & Reset
- GPIO
- Antenna Interface
- Others

1. UART Interface

MESSI-V M2 board supports one UART port for debugging and downloading. The baud rate speed is up to 115200bps. Signal level is 3.3V. If MESSI-V M2 module goes through standard RS-232 interface to connect with PC, It is recommended to use TI TRS3253EIRSMR for best baud rate to catch log file and download boot loader setting.

Pin NO.	Pin name	Description
62	UART_RX	UART receive input
64	UART_TX	UART transmit output

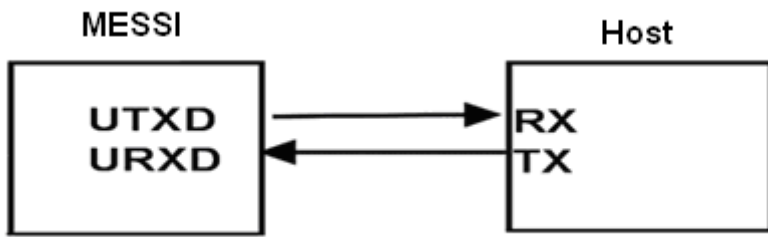


Figure1-1: UART block diagram.

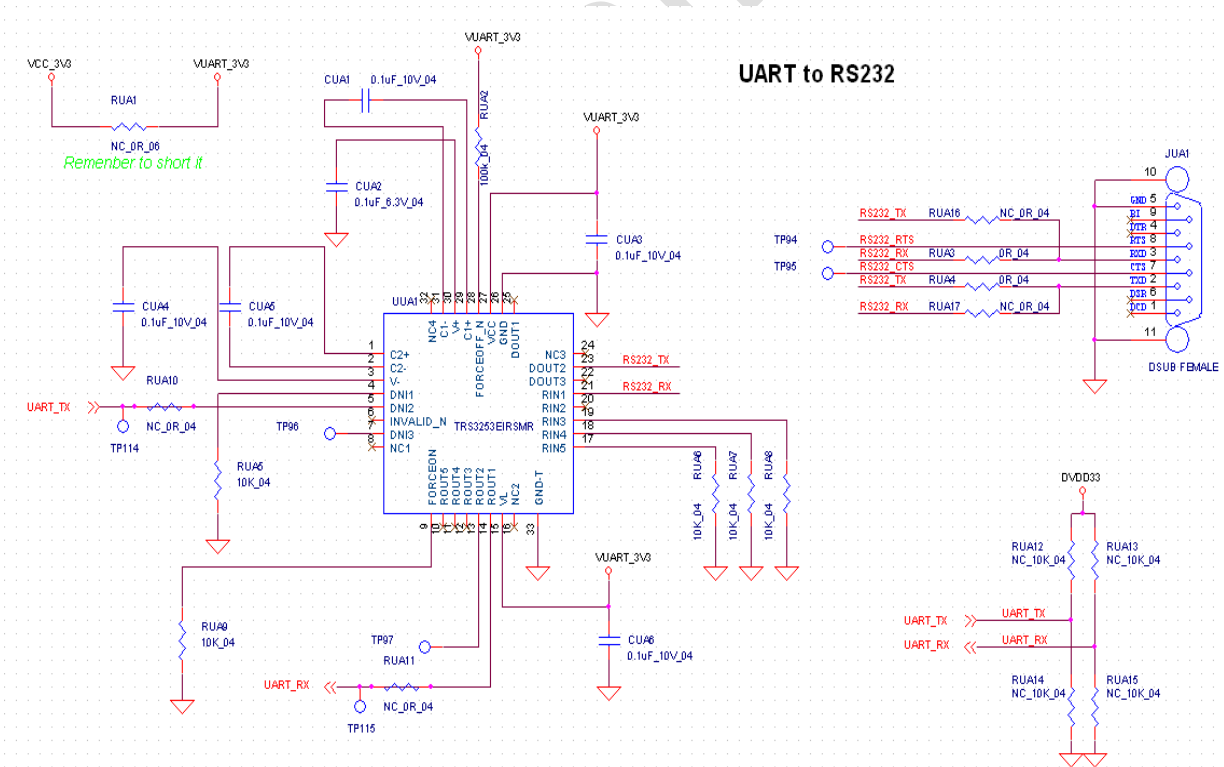


Figure1-2: RS-232 connection

2. USB 2.0 Interface

The USB interface is compliant with Version 2.0 of the USB standard for high speed operation. The reference circuit is showing in Figure2-1 as following.

Pin NO.	Pin name	Description
7	USB_D+	Universal Serial BUS
9	USB_D-	

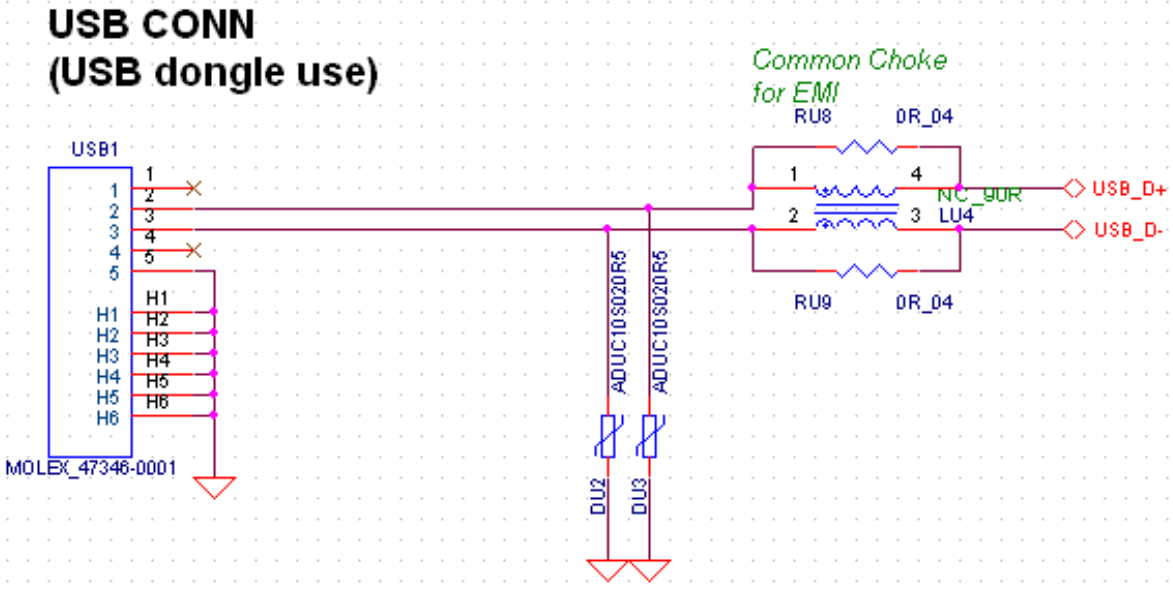


Figure2-1: USB connection

3. USIM interface

The USIM pins provide the connections necessary to interface to a USIM socket located on the host device. Voltage levels over this interface comply with 3GPP standards. MSEEI module outputs a SIMPWR power rail 1.8V and 3V.

Pin NO.	Pin name	Description
36	SIMPWR	1.8V/3V output to SIM card.
34	SIMIO	SIM data IO
32	SIMCLK	SIM clock
30	SIMRST	SIM reset

The reference circuit is showing in Figure3-1 as following.

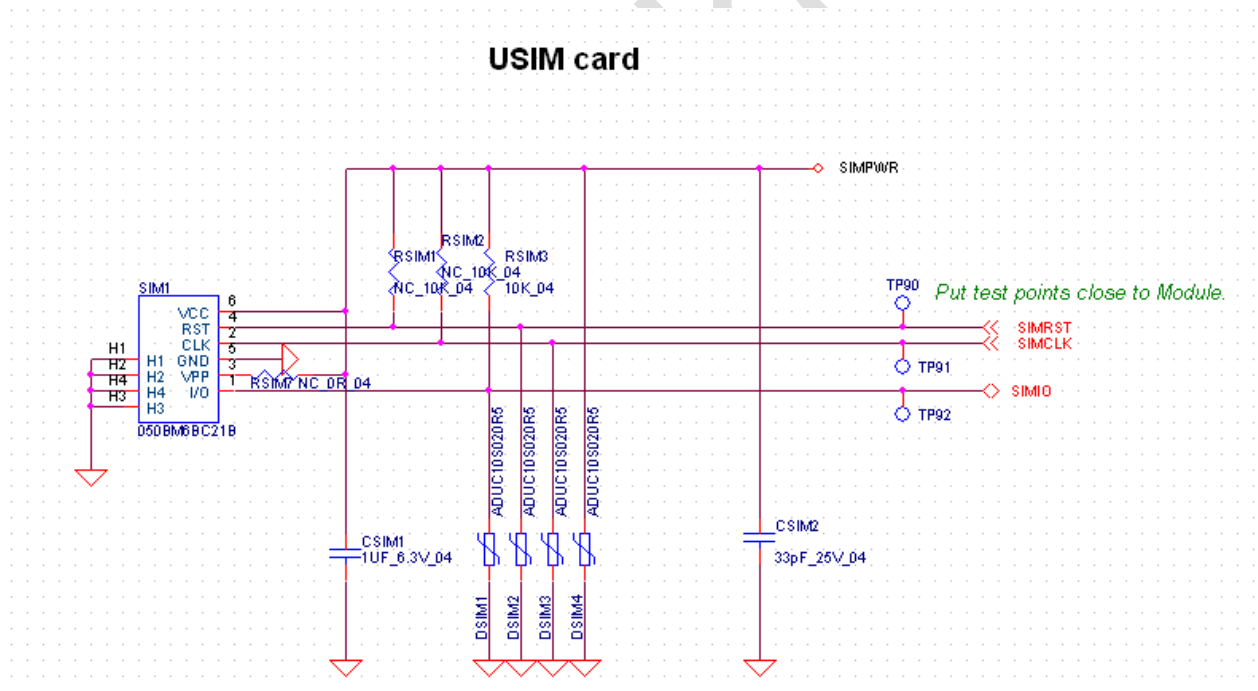


Figure3-1: USIM card connection

4. Power Input

MESSI-V M2 power input pin is VBAT. The power input range is from 3.4V to 5V with USB, external power or Battery. Figure 4-1 shows external power source to MESSI module.

Pin NO.	Pin name	Description
2	3.3V	Power input
4	3.3V	
70	3.3V	
72	3.3V	
74	3.3V	

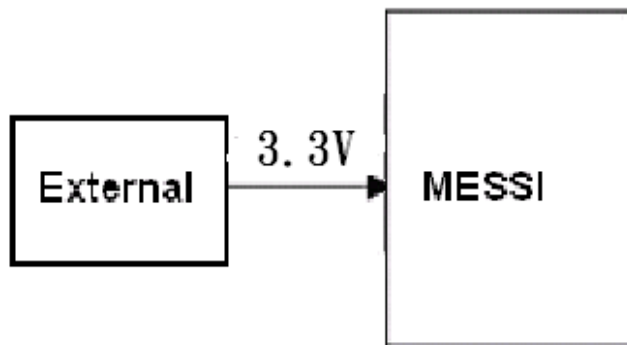


Figure4-1: External power for MESSI-V M2 board.

5. JTAG & Reset

Emulation JTAG is used to debug and run SW on embedded MIPS processors. MESSI has a single Reset input (RSTN). This signal should be connected and driven by the power management unit or the host application processor, depending on the usage scenario.

Pin NO.	Pin name	Description
42	TCK	Clock
43	TMS	Test Mode
47	TDI	Input Data
49	TDO	Output Data
53	EJTAG_TRST	EJTAG Reset
67	TRST	MESSI Reset Input(1.8V)

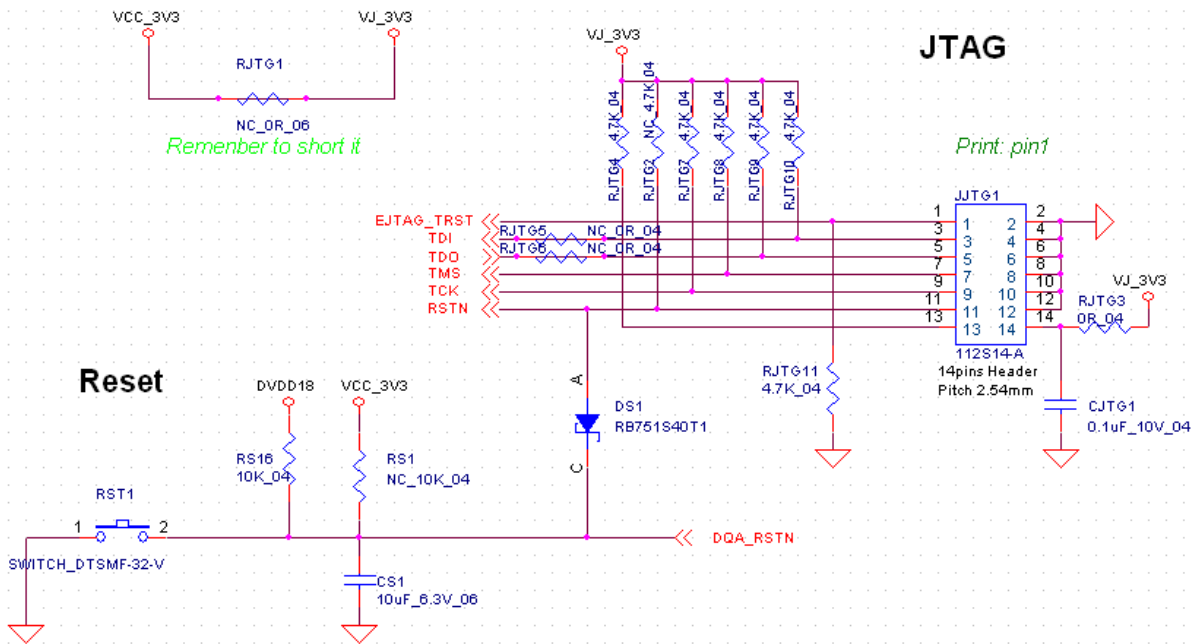


Figure 6-1: JTAG connection

6. GPIOs

MESSI-V M2 has various software-controlled general purpose IO (GPIO) pins which are listed below. The user can use these GPIOs for any general purpose their design calls for. If the GPIO is not in use, it is recommended to leave the pin as floating.

Pin NO.	Pin name	Description
8	GPIO4	3.3V General Purpose I/O
35	GPIO20	1.8V General Purpose I/O
31	GPIO19	1.8V General Purpose I/O
29	GPIO18	1.8V General Purpose I/O
20	GPIO11	1.8V General Purpose I/O
22	GPIO10	1.8V General Purpose I/O
24	GPIO9	1.8V General Purpose I/O
26	GPIO8	1.8V General Purpose I/O
28	GPIO12	1.8V General Purpose I/O
40	GPIO13	1.8V General Purpose I/O
42	GPIO14	1.8V General Purpose I/O
44	GPIO15	1.8V General Purpose I/O
46	GPIO16	1.8V General Purpose I/O

7. Antenna Interface

MESSI-V M2 support MIMO antenna. The reference RF cable SPEC is down below.

Pin NO.	Pin name	Description
ANT 1	RXTX	RF Transmission and RF receive chain
ANT 2	RXONLY	RF receive chain

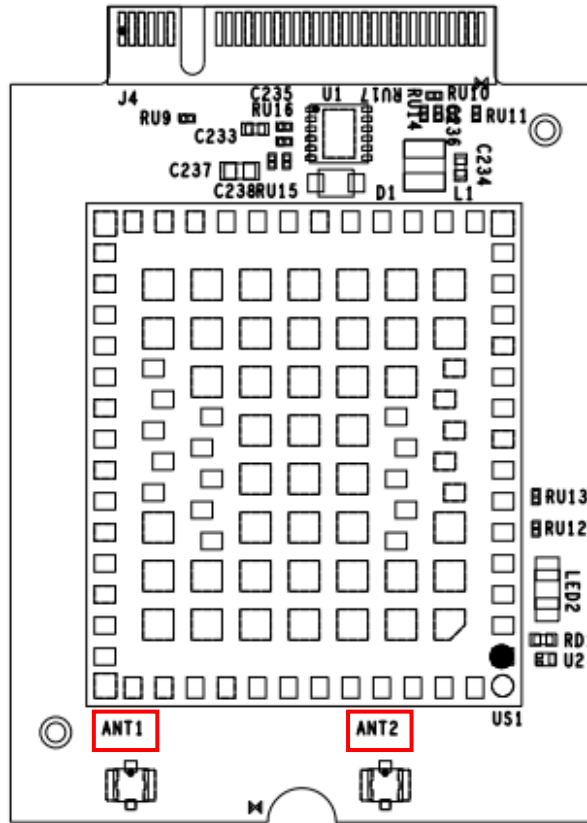
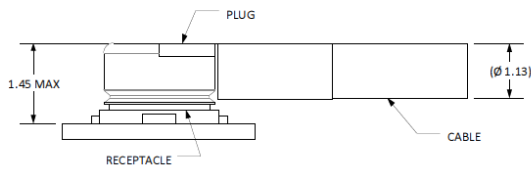
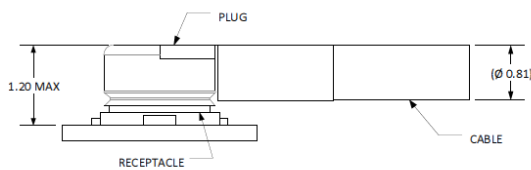


Figure 8-1: MIMO antenna connection



Mated Plug for Ø 1.13 mm Coax Cable



Mated Plug for Ø 0.81 mm Coax Cable

8. Others

The following Pins are reserved for future update. The user can leave these pin as floating.

Pin NO.	Pin name	Description
23	PMU SLEEP/PWR_REQ	Reserved
66	SCR_DTCT	Reserved

9. Mechanical Outline

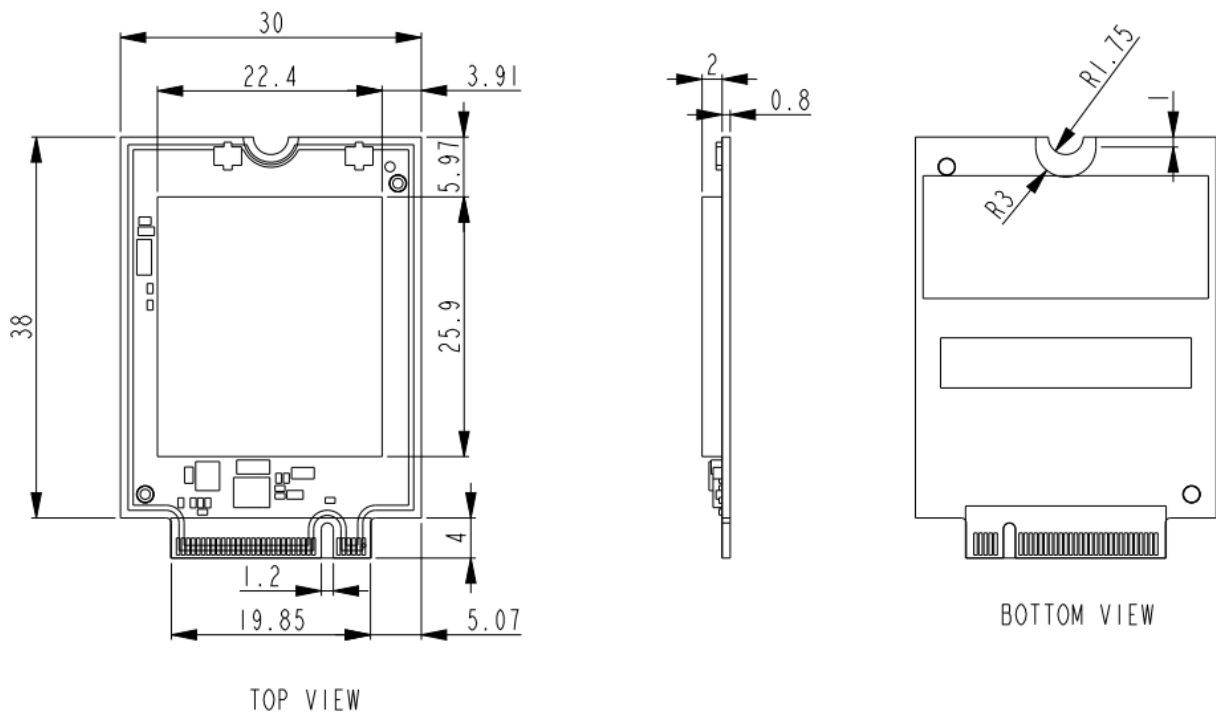


Figure9-1: Messi-V M2 Mechanical

Federal Communication Commission Interference 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 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 Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement:

This equipment 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.

This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.

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.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: IXMMESSI-V". The grantee's FCC ID can be used only when all FCC compliance requirements are met.

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 end user manual shall include all required regulatory information/warning as show in this manual.