

# User Manual

FCC ID : A3LSMH111U

## Module specification

### 1. Supported Band list

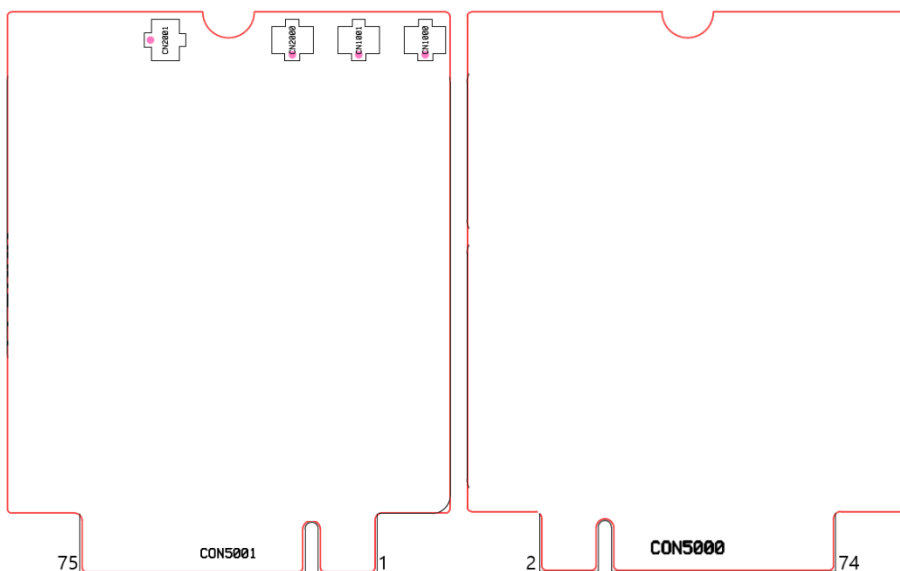
- WCDMA BAND 2/4/5
- LTE BAND 2/4/5/7/12/13/14/17/25/29/30/41/41(PC2)/48/66/71
- NR BAND n2/n5/n41/n66/n71/n77 Rel.15

### 2. Environment Specification

Item	Spec.
Storage Temperature	-40~ +85°C
Operating Temperature	0 ~ 50 °C

### 3. Pin assignment : M. module / PCIE interface

#### 3-1. Figure of the pin arrangement



#### 3-2. Pin Description

Pin NO	Pin name	IN /OUT(	Pin Voltage	Description
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CON5 000 /CON5 001	1	CONFIG_3			
	2	3.3VAUX			VCC
	3	GND			
	4	3.3VAUX			VCC
	5	GND			
	6	FULL_CARD_PWR_OFF#			
	7	USB_D+			USB2.0
	8	W_DISABLE#1			
	9	USB_D-			USB2.0
	10	LDE#  DAS DSS#			M2_LED
	11	GND			
	20	AUDIO0			
	21	WWAN SSD_IND			
	22	AUDIO1			
	23	RSV			
	24	AUDIO2			
	25	RSV			
	26	AUDIO3			
	27	GND			
	28	UIM_RFU			
	29	RERN1 UDSB3.0_RX SSI C_RXN			USB3.0
	30	UIM_RST			SIM1
	31	RERN1 UDSB3.0_RX SSI C_RXP			USB3.0
	32	UIM_CLK			SIM1
	33	GND			
	34	UIM_DATA			SIM1
	35	RERN1 UDSB3.0_TX SSI C_TXN			USB3.0
	36	UIM_PWR			SIM1
	37	RERN1 UDSB3.0_TX SSI C_TXP			USB3.0
	38	DEVSLP			I2C
	39	GND			
	40	GNSS0			SIM2(eSIM)
	41	PERNO SATA_B+			PCIE
	42	GNSS1			SIM2(eSIM)
	43	PERNO SATA_B-			PCIE
	44	GNSS2			SIM2(eSIM)
	45	GND			
	46	GNSS3			SIM2(eSIM)

47	PETN0 SATA_A-				PCIE
48	GNSS4				SIM2(eSIM)
49	PETP0 SATA_A+				PCIE
50	PERST#				PCIE
51	GND				
52	CLKREQ#				PCIE
53	REFCLKN				PCIE
54	PEWAKE#				PCIE
55	REFCLKP				PCIE
56	NC				I2C
57	GND				
58	NC				I2C
59	ANTCTL0				ANTCTL[0:3]
60	COEX3				
61	ANTCTL1				ANTCTL[0:3]
62	COEX2				
63	ANTCTL2				ANTCTL[0:3]
64	COEX1				
65	ANTCTL3				ANTCTL[0:3]
66	SIM_DET				SIM1
67	RST#				
68	SUSCLK_32KHZ				
69	PEDET				
70	3.3VAUX				VCC
71	GND				
72	3.3VAUX				VCC
73	GND				
74	3.3VAUX				VCC
75	USB3.0IND				

### 3-3. Power supply :

Requirement of Input Voltage is refer to the below table

No	Item		Pin NO	Min	Typ	Max	Unit	Comments
1	Supply Voltage	VCC	2,4,70,72,74	3.2	3.3	3.4	V	

### 3-4. Antenna port

Pin no.	Pin name	Pin description
CON1000	ANT#0	TRX_N77_78, TRX_MHB, PRX_MIMO_MHB, DRX_LB
CON1001	ANT#1	GPS, TRX_MHB, PRX_MIMO_N77_78
CON2000	ANT#2	TRX_N77_78, DRX_MHB, TRX_N41, DRX_MIMO_MHB
CON2001	ANT#3	DRX_MIMO_N77_78, DRX_MHB, TRX_LB

### 4. Safety precautions :

**This module should be used at authorized places or environments due to frequency jamming possibility while operating. If occur any issues when the module operates at not authorized places or environments, Samsung Electronics does not have any responsibility.**

### 5. FCC Part 15 Information and Notices

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.

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.

### 6. Important Notice to integrators

1. This module is limited to OEM installation ONLY.
2. This module is limited to installation in mobile or fixed applications, according to Part 2.1091(b).
3. The separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations
4. For FCC Part 15.31 (h) and (k): The host manufacturer is responsible for additional testing to verify compliance as a composite system. When testing the host device for compliance with Part 15 Subpart B, the host

manufacturer is required to show compliance with Part 15 Subpart B while the transmitter module(s) are installed and operating. The modules should be transmitt and the evaluation should confirm that the module's intentional emissions are compliant (i.e. fundamental and out of band emissions).

The host manufacturer must verify that there are no additional unintentional emissions other than what is permitted in Part 15 Subpart B or emissions are complaint with the transmitter(s) rule(s).

The Grantee will provide guidance to the host manufacturer for Part 15 B requirements if needed.

## 7. End Product Labeling :

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 re-moved. If not, a second label must be placed on the outside of the final device that contains the following text: "Contains FCC ID: A3LSMH111U" The FCC ID can be used only when all FCC compliance requirements are met.

## 8. Antenna Installation :

(1) The antenna must be installed such that 20 cm is maintained between the antenna and users,

(2) The transmitter module may not be co-located with any other transmitter or antenna.

(3) Only antennas of the equal or less gains as shown below may be used with this module:

<b>Frequency Band</b>	<b>700 MHz</b>	<b>780 MHz</b>	<b>800 MHz</b>	<b>850 MHz</b>	<b>1700 MHz</b>
<b>Max. Gain (dBi)</b>	5.5	6.5	6.0	6.1	5.2
<b>Frequency Band</b>	<b>1850 MHz</b>	<b>2300 MHz</b>	<b>2500 MHz</b>	<b>2500 MHz (B7)</b>	<b>3500MHz (B48)</b>
<b>Max. Gain (dBi)</b>	8.2	0.5	6.5	8.2	0.0
<b>Frequency Band</b>	<b>3500 MHz (n77)</b>	<b>3800 MHz (n77)</b>			
<b>Max. Gain (dBi)</b>	5.5	5.5			

Note: The above gain is considered cable loss.

When using an antenna higher than the gain mentioned above, the conducted output power must be reduced, and the product may require C2PC filing with additional tests and RF exposure evaluation.

In the event that these conditions cannot be met (for example higher than max gain 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.

## 9. 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.

## **10. List of applicable FCC rules**

This module has been tested and found to comply with part 22, part 24, part 27, part 90, part 96 requirements for Modular Approval.

The modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuitry), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

## **11. This device is intended only for OEM integrators under the following conditions: (For module device use)**

- 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.

As long as 2 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.

## **12. 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 20 cm between the radiator & your body.



