SMAWAVE Solutions Inc.

MGM5607A Module

Product Specification

MGM5607A Module

March 8, 2019

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1 Product Overview

The MGM5607A module is an industrial-grade LTE module, which provides multiple bands supports and covers most of LTE bands in Europe and Latin America. This module can be adapted to various types of terminal devices, providing LTE network connection and data communication, such as industrial routers, industrial handsets, tablet computers, laptops, etc. The MGM5607Amodule achieves download rates up to 150Mbps and uplink rates to 50Mbps (FDD).

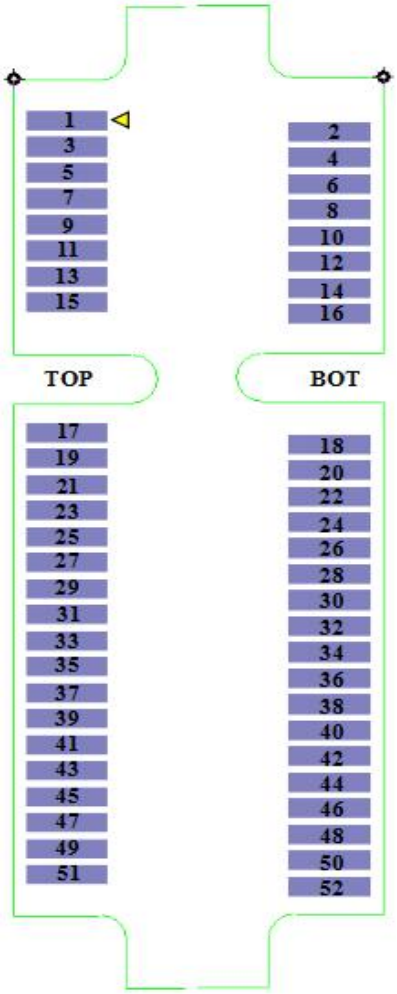
The MGM5607Amodule passed CE certifications.

2 General Features

Parameter	Value
Main Chipset	GCT GDM7243QT Dual ARM1136JFS processer 400MHz
Memory	2Gb Nand Flash + 1Gb LPDDR2
Band support	Band 40/41/42/43/48/53
Antenna	2 UFL ports LTE: Main and auxiliary antenna
Tx / Rx	1Tx / 2Rx
MIMO	DL: 4x2 MIMO or 2x2 MIMO UL: 1x2 MU-MIMO or 2x2 MIMO
CA（UL/DL）	40+42/40+43/40+48/41+42/41+43/41+48/ 53+42/53+43/53+48/42+40/42+41/42+53/ 43+40/43+41/43+53/48+40/48+41/48+53
Modulation	Uplink: QPSK / 16QAM Downlink: QPSK / 16QAM / 64QAM
Power output	+23dBm(Power Class 3)
Throughput	TDD DL: 110Mbps UL: 30Mbps
Interface	USB2.0 USIM RGMII GPIO
Voltage Input	3.0VDC ~ 3.6VDC (Recommend 3.3V)
Operating Temperature	-40℃ ~ +85℃ (Reduce RF performance: -40℃~ -30℃，+70℃~ +85℃
Storage Temperature	-40℃ ~ +85℃

3 Pin Definitions

Pin Description	Pin No.
LTE_WAKE#	1
UART0_TXD	3
UART0_RXD	5
FACT_RST	7
GND	9
RGMII_TXD3	11
RGMII_TXD1	13
GND	15
RGMII_TXD0	17
RGMII_TXEN	19
GND	21
RGMII_TXD2	23
RGMII_TXCLK	25
GND	27
GND	29
RGMII_RXCLK	31
RGMII_RXD1	33
GND	35
GND	37
VCC_Main	39
VCC_Main	41
GND	43
RGMII_RX_DV	45
RGMII_RXD3	47
PHY_RESET#	49
GPIO1	51



Pin Description	Pin No.
VCC_Main	2
GND	4
GPIO6	6
USIM_PWR	8
USIM_DATA	10
USIM_CLK	12
USIM_RESET	14
GPIO7	16
GND	18
W_DISABLE#	20
PERST#	22
VCC_Main	24
GND	26
RGMII_MDC	28
RGMII_RXD0	30
RGMII_RXD2	32
GND	34
USB_D-	36
USB_D+	38
GND	40
GPIO2	42
GPIO3	44
GPIO4	46
RGMII_MDIO	48
GND	50
VCC_Main	52

Pin direction definition:

I: Carrier board to Module

O: Module to Carrier board

I/O: both direction among module and carrier board

PI: Power input

PO: Power output

Pin Name	Pin No.	Description	I/O	Voltage Domain
Power				
VCC_Main	2, 24,39, 41, 52	VCC source	PI	3.3V
GND	4, 9, 15, 18, 21, 26, 27, 29, 34, 35, 37, 40, 43, 50	Return current path		
Universal Serial Bus (USB)				
USB_D+	38	USB serial data interface compliant to the USB 2.0 specification	I/O	
USB_D-	36		I/O	
Universal Asynchronous Receiver/Transmitter(UART)				
UART_TXD	3	UART serial data interface	O	
UART_RXD	5		I	
Serial Management Interface(SMI)				
RGMII_MDC	28	SMI data interface	O	
RGMII_MDIO	48		I/O	
Reduced Gigabit Media Independent Interface(RGMII)				
RGMII_TXD0	17	RGMII data interface	O	
RGMII_TXD1	13		O	
RGMII_TXD2	23		O	
RGMII_TXD3	11		O	
RGMII_TXCLK	25		O	
RGMII_TXEN	19		O	
RGMII_RXD0	30		I	
RGMII_RXD1	33		I	
RGMII_RXD2	32		I	
RGMII_RXD3	47		I	

RGMII_RXCLK	31		I	
RGMII_RX_DV	45		I	
Auxiliary Signals				
PERST#	22	Functional reset to the card	I, Pull-up	1.8V
FACT_RST	7	FACT reset signal	O Pull-up	1.8V
PHY_RESET#	49	PHY reset signal	O	
LTE_WAKE#	1	Open Drain active Low signal. This signal is used to request that the system return from a sleep/suspended state to service a function initiated wake event.	O	
Communications Specific Signals				
W_DISABLE#	20	Active low signal. This signal is used by the system to disable radio operation on add-in cards that implement radio frequency applications. When implemented, this signal requires a pull-up resistor on the card.	I, Pull-up	
GPIO1	51	NC		1.8V
GPIO2	42	NC		1.8V
GPIO3	44	NC		1.8V
GPIO4	46	NC		1.8V
GPIO6	6	NC		1.8V
GPIO7	16	NC		1.8V
User Identity Module (UIM) Signals				
USIM_PWR	8	Power source for the UIM. Compliant to the ISO/IEC 7816-3 specification (VCC)	O	1.8V/3V
USIM_RESET	14	UIM reset signal. Compliant to the ISO/IEC 7816-3 specification (RST).	O	1.8V/3V

USIM_CLK	12	UIM clock signal. Compliant to the ISO/IEC 7816-3 specification (CLK).	O	1.8V/3V
USIM_DATA	10	UIM data signal. Compliant to the ISO/IEC 7816-3 specification (I/O).	I/O	1.8V/3V

4 DC Electrical

Parameter	Description	Min	Max	Unit
VIH	High-level input voltage	1.17	VDD_IO	V
VIL	Low-level input voltage	-0.3	0.63	V
VOH	high-level output voltage	1.6	VDD_IO	V
VOL	low-level output voltage	0	0.4	V

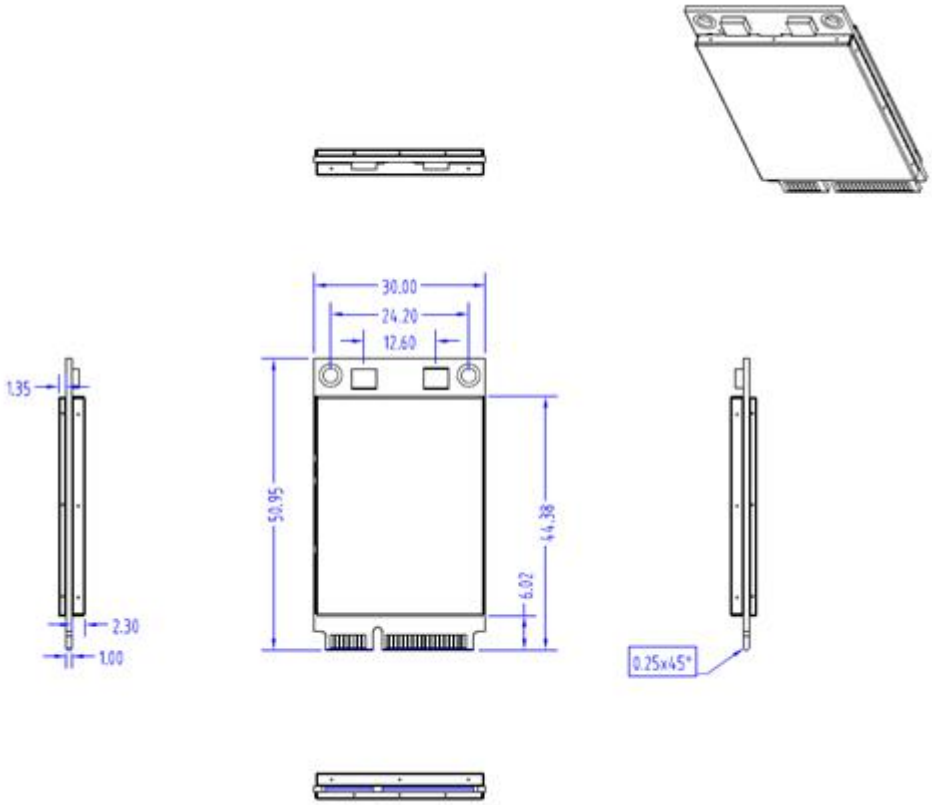
5 Power Consumption

Parameter	Min	Typical	Max	Unit
TDD Band		520		mA

6 RF Performance

Operating Band	Transmit Power (dBm)	Antenna Interface receiving sensitivity
Band 40	23±2	< –95dBm @20MHz bandwidth
Band 41	23±2	< –95dBm @20MHz bandwidth
Band 42	23±2	< –96dBm @20MHz bandwidth
Band 43	23±2	< –96dBm @20MHz bandwidth
Band 48	23±2	< –96dBm @20MHz bandwidth
Band 53	23±2	< –95dBm @20MHz bandwidth

7 Module Dimensions



FCC Certification Requirements.

According to the definition of mobile and fixed device is described in Part 2.1091(b), this device is a mobile device.

And the following conditions must be met:

1. This Modular Approval is limited to OEM installation for mobile and fixed applications only. The antenna installation and operating configurations of this transmitter, including any applicable source-based time- averaging duty factor, antenna gain and cable loss must satisfy MPE categorical Exclusion Requirements of 2.1091.

2. The EUT is a mobile device; maintain at least a 20 cm separation between the EUT and the user's body and must not transmit simultaneously with any other antenna or transmitter.

3. A label with the following statements must be attached to the host end product: This device contains FCC ID: 2AU8HMGM5607A.

4.To comply with FCC regulations limiting both maximum RF output power and human exposure to RF radiation, maximum antenna gain (including cable loss) must not exceed:

❒ <3.18dBi

5. This module must not transmit simultaneously with any other antenna or transmitter

6. The host end product must include a user manual that clearly defines operating requirements and conditions that must be observed to ensure compliance with current FCC RF exposure guidelines.

For portable devices, in addition to the conditions 3 through 6 described above, a separate approval is required to satisfy the SAR requirements of FCC Part 2.1093

If the device is used for other equipment that separate approval is required for all other operating configurations, including portable configurations with respect to 2.1093 and different antenna configurations.

For this device, OEM integrators must be provided with labeling instructions of finished products. Please refer to KDB784748 D01 v07, section 8. Page 6/7 last two paragraphs:

A certified modular has the option to use a permanently affixed label, or an electronic label. For a permanently affixed label, the module must be labeled with an FCC ID - Section 2.926 (see 2.2 Certification (labeling requirements) above). The OEM manual must provide clear instructions explaining to the OEM the labeling requirements, options and OEM user manual instructions that are required (see next paragraph).

For a host using a certified modular with a standard fixed label, if (1) the module's FCC ID is not visible when installed in the host, or (2) if the host is marketed so that end users do not have straightforward commonly used methods for access to remove the module so that the FCC ID of the module is visible; then an additional permanent label referring to the enclosed module:"Contains Transmitter Module FCC ID: 2AU8HMGM5607A" or "Contains FCC ID: 2AU8HMGM5607A" must be used. The host OEM user manual must also contain clear instructions on how end users can find and/or access the module and the FCC ID.

The final host / module combination may also need to be evaluated against the FCC Part 15B criteria for unintentional radiators in order to be properly authorized for operation as a Part 15 digital device.

The user's manual or instruction manual for an intentional or unintentional radiator shall

caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

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.

Changes or modifications not expressly approved by the manufacturer could void the user’s authority to operate the equipment.

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 the after the module is installed and operational the host continues to be compliant with the Part 15B unintentional radiator requirements.