



**SGH-I307
Installation Guide
And User Manual**

1. Introduction

The SGH-I307 Module is a module on board(MOB) that provides LTE and HSPA+ connectivity for devices over several radio frequency bands.

The SGH-I307 will be AT&T-certified, and Windows 8 Mobile Broadband Interface Model(MBIM) compliant.

Supported RF bands

The modem, based on Qualcomm's MDM9200 baseband processor, Supports data operation on LTE and HSPA+ networks.

Table. Supported RF bands

Technology	Bands	Notes
LTE	• Band 4 (AWS)(1700/2100MHz) • Band 17 (700MHz)	MISO support
HSPA+	• Band 1 (2100MHz) • Band 2 (1900MHz) • Band 5 (850MHz)	Diversity support
GNSS	• GPS (1575.42MHz) • GLONASS (1602MHz)	

Physical features

- SGH-I307 : 50mm X 30mm X 2.7mm
- Operating temperature range : -20 to 60 Celsius temperature

Modem features

Physical features
• Thin (tablet) form factor
Application interface features
• QMI interface • NDIS NIC interface support for Windows 8 • USB selective suspend to maximize power savings • AT command interface (27.007 standard, plus proprietary extended AT commands) • Software Development Kit (SDK) for Windows 8 • Windows 8 MBIM support
Packet mode features
• LTE data rates (category 3, MIMO) • DL: 100 Mbps (20 MHz bandwidth)/50 Mbps (10 MHz bandwidth) • UL: 50 Mbps (20 MHz bandwidth)/25 Mbps (10 MHz bandwidth) • HSPA+ data rates up to 42 Mbps DL (category 24)/5.76 Mbps UL (category 6).

Connectivity

- Multiple (up to 16) cellular packet data profiles
- Traditional modem COM port support for CSD and AT commands (concurrent with NDIS)
- Suspend / Resume
- Sleep mode for minimum idle power draw
- SIM application tool kit with proactive SIM commands
- Enhanced Operator Name String (EONS)
- Mobile-originated PDP context activation / deactivation
- Support QoS profile
 - Release 99 QoS negotiation—Background, Interactive, and Streaming
 - Release 97—Precedence Class, Reliability Class, Delay Class, Peak Throughput, Mean Throughput
- Static and Dynamic IP address. The network may assign a fixed IP address or dynamically assign one using DHCP (Dynamic Host Configuration Protocol).
- PAP and CHAP support
- PDP context type (IPv4). IP Packet Data Protocol context
- RFC1144 TCP/IP header compression

Environmental features

Operating temperature ranges

- -20°C to +60°C

LTE features

- Basic cell selection and system acquisition
 - PSS/SSS/MIB decode
 - SIB1-SIB8, SIB10, SIB11 decoding
- NAS/AS security procedures
 - Snow 3G/AES security
- CQI/RI/PMI reporting
- Paging procedures
 - Paging in idle and Connected mode
- Dedicated bearer
 - Network-initiated dedicated bearer
 - UE-initiated dedicated bearer
- Connected mode intra-LTE mobility
- iRAT between LTE/3G for idle and connection release with redirection
- Detach procedure
 - Network-initiated detach with reattach required
 - Network-initiated detach followed by connection release

Position location (GNSS)

- Concurrent standalone GPS and GLONASS
- Assisted GPS (A-GPS) SUPL1.0
- Assisted GNSS (A-GPS) SUPL2.0
- gpsOneXTRA2.0 with GPS + GLONASS support

Standards Compliance

The SGH-I307 Module complies with the mandatory requirements described in the following standards. The exact set of requirements supported is carrier-dependent.

Technology	Standards
LTE	• 3GPP Release 8
UMTS	• 3GPP Release 5 • 3GPP Release 6 • 3GPP Release 7 • 3GPP Release 8

2. PCB guide

RF Connector

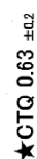
Diversity+GPS



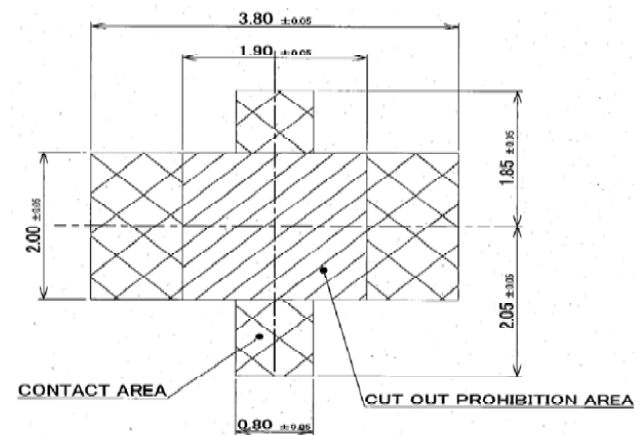
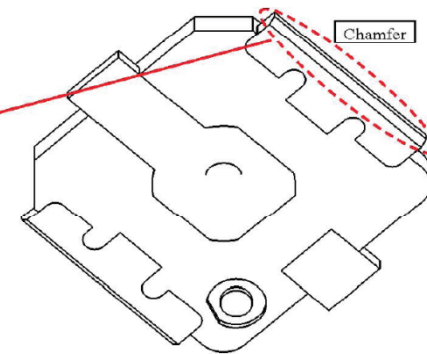
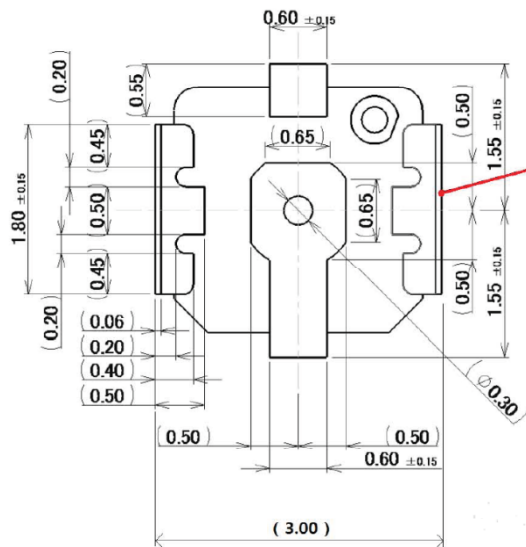
Connector
to Main PCB

Main

RF Connector



- ① Housing
- ② Contact
- ③ Ground Contact



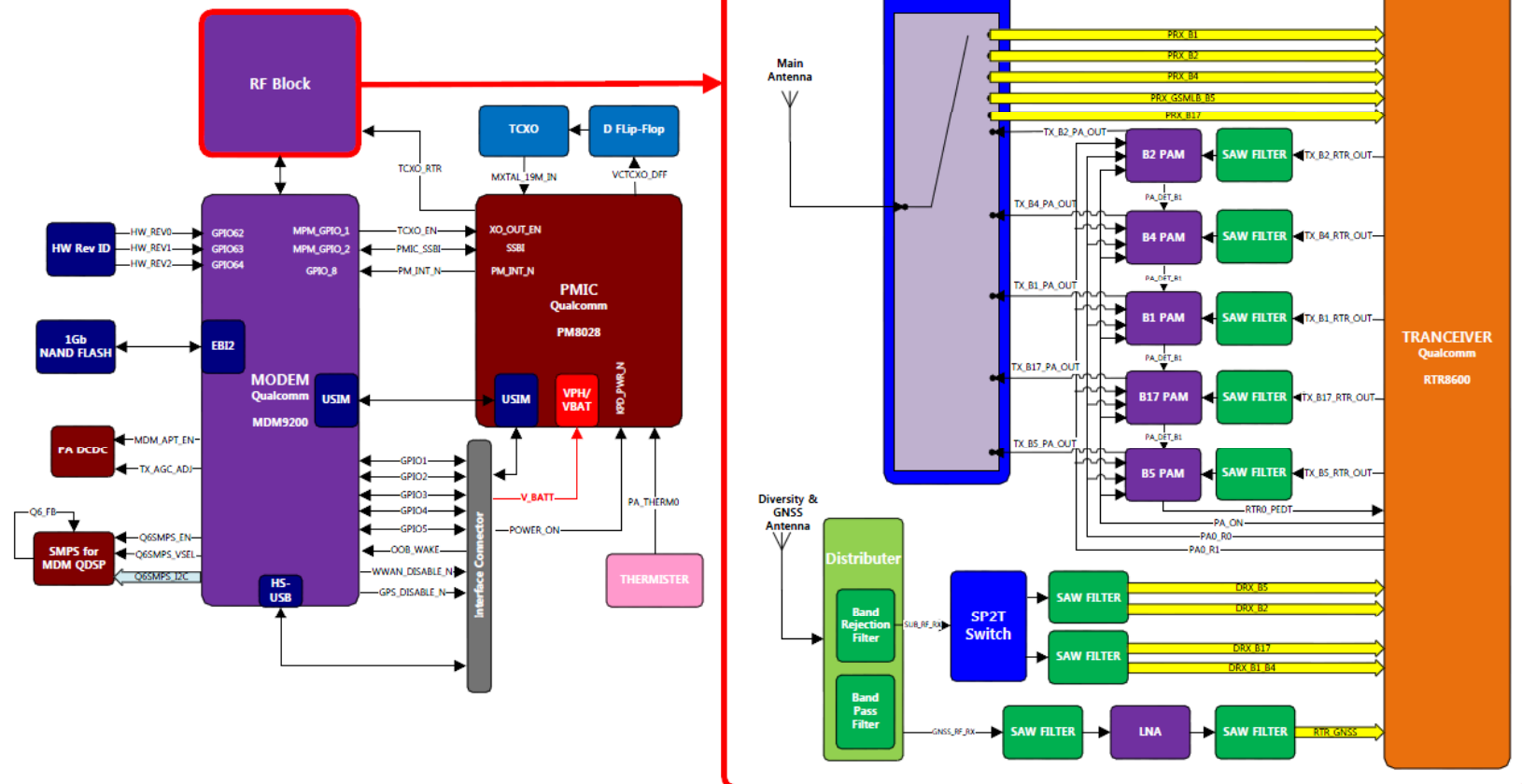
3. Applicable Device

SGH-I307 is a just RF module.

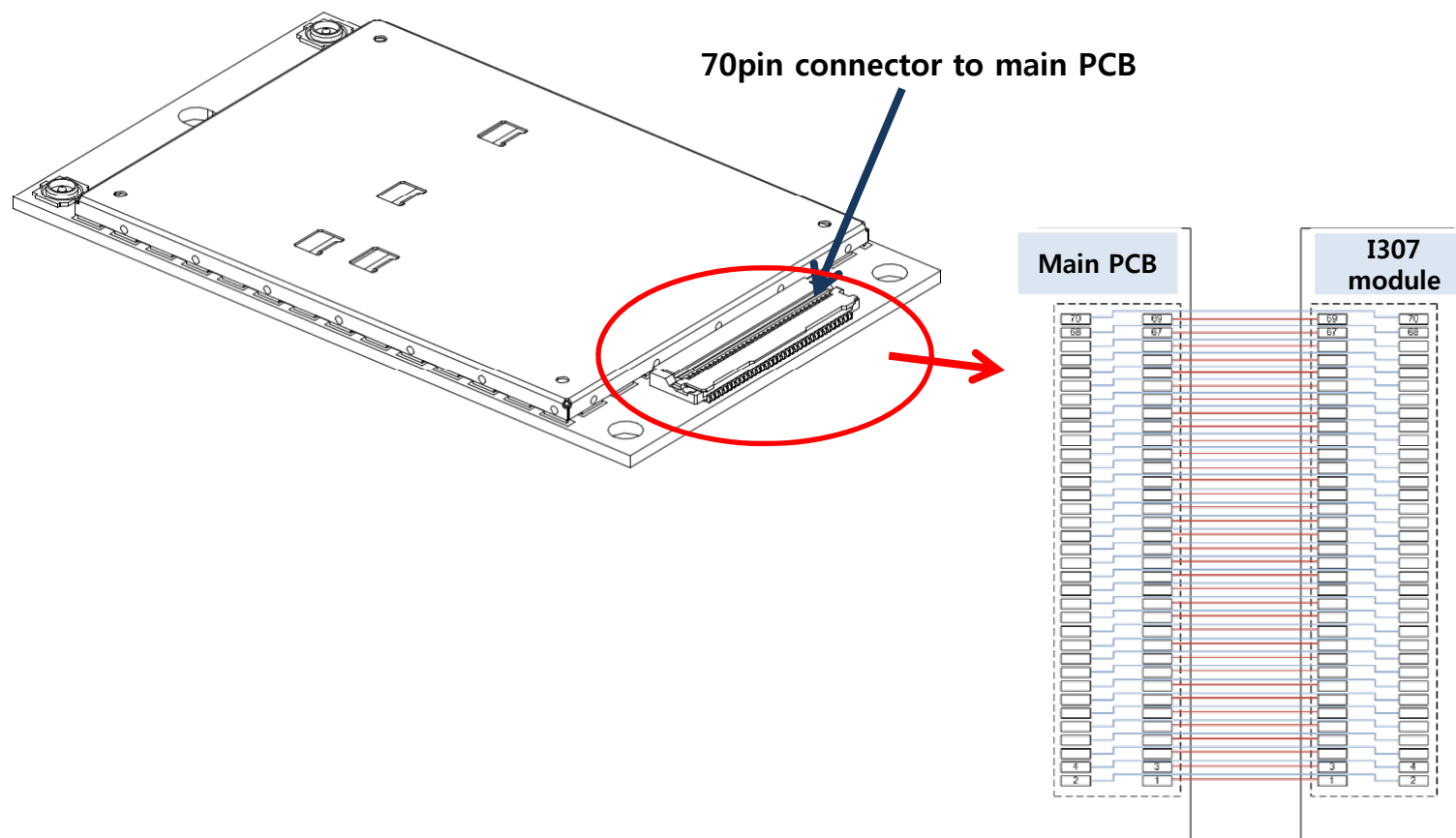
It is not for specified device. It can be applicable to electronic devices which use USB interface.
But the manufacturer has to make sw for control MDM9200, main modem.

Technology	Bands	Notes
LTE	• Band 4 (AWS)(1700/2100MHz) • Band 17 (700MHz)	MISO support
HSPA+	• Band 1 (2100MHz) • Band 2 (1900MHz) • Band 5 (850MHz)	Diversity support
GNSS	• GPS (1575.42MHz) • GLONASS (1602MHz)	

4. Block diagram



5. SGH-I307 Interface



Connector pin assignment

Pin #	SIGNAL name	Description	Direction to module	Active state	Votage levels(V)		
					Min	Typ	Max
1	GND	Ground					
2	GND	Ground					
3	MDM_JTAG_RESOUT_N	Jtag reset enable	Input	Low	-0.3		0.63
4	MOB_GPS_DISABLE_N	GPS Radio disable	Input	High	1.15	1.8	2.1
5	MDM_TDO	Jtag data output	Output				
6	MOB_WWAN_DISABLE_N	WWAN Radio disable	Input	High	1.15	1.8	2.1
7	GND	Ground	Input				
8	GND	Ground	Input				
9	MDM_RTCK	Jtag return clock	Output				
10	MOB_RF_TOUCH_EN	WWAN LED indicator	Output				
11	MDM_TCK	Jtag Clock input	Input				
12	MOB_RESET_N	Reset pin	Input	Low	-0.3		0.63
13	GND	Ground	Input				
14	GND	Ground	Input				
15	MOB_USB_DP	High Speed USB 2.0	Input/Output				
16	MDM_TMS	Jtag mode selection	Input	Low	-0.3		0.63
17	MOB_USB_DN	High Speed USB 2.0	Input/Output				
18	MDM_TDI	Jtag data input	Input	Low	-0.3		0.63
19	GND	Ground	Input				
20	GND	Ground	Input				
21	NC	Not connected	-				
22	NC	Not connected	-				
23	NC	Not connected	-				
24	NC	Not connected	-				
25	GND	Ground					
26	MOB_HW_READY	Hardware ready indicator	Output	Output high	1.75	1.8	1.85
27	NC	Not connected	-				

Pin #	SIGNAL name	Description	Direction to module	Active state	Votage levels(V)		
					Min	Typ	Max
28	MOB_ANT_SW_SELO	Tunable antenna (Vendor specific)	Input/Output	Input high	1.15	1.8	2.1
				Input low	-0.3		0.63
				Output high	1.35		1.8
				Output low	0		0.45
29	NC	Not connected	-				
30	MOB_ANT_SW_SEL1	Tunable antenna (Vendor specific)	Input/Output	Input high	1.15	1.8	2.1
				Input low	-0.3		0.63
				Output high	1.35		1.8
				Output low	0		0.45
31	GND	Ground	Input				
32	GND	Ground	Input				
33	NC	Not connected	-				
34	MDM_JTAG_PS_HOLD	Not connected	-				
35	NC	Not connected	-				
36	MOB_GPIO0_GRIP_INT_N	GPIO signal - vendor specific	Input/Output	Input high	1.15	1.8	2.1
				Input low	-0.3		0.63
				Output high	1.35		1.8
				Output low	0		0.45
37	GND	Ground	Input				
38	NC	NC - unless 2G supported	-				
39	NC	Not connected	-				
40	MOB_ANT_SW_SEL2	Tunable antenna (Vendor specific)	Input/Output	Input high	1.15	1.8	2.1
				Input low	-0.3		0.63
				Output high	1.35		1.8
				Output low	0		0.45
41	NC	Not connected	-				

Pin #	SIGNAL name	Description	Direction to module	Active state	Votage levels(V)		
					Min	Typ	Max
42	MOB_ANT_SW_SEL3	Tunable antenna (Vendor specific)	Input/Output	Input high	1.15	1.8	2.1
				Input low	-0.3		0.63
				Output high	1.35		1.8
				Output low	0		0.45
43	GND	Ground	Input				
44	GND	Ground	Input				
45	NC	Not connected	-				
46	NC	32 kHz real time clock	Input				
47	SIM_IO	SIM/USIM Data	Input/Output	Input high	1.95(3V SIM) 1.15(1.8V SIM)	3.00(3V SIM) 1.8(1.8V SIM)	3.3(3V SIM) 2.1(1.8V SIM)
				Input low	-0.3(3V SIM) -0.3(1.8V SIM)		1.05(3V SIM) 0.63(1.8V SIM)
				Output high	2.55(3V SIM) 1.35(1.8V SIM)		3.00(3V SIM) 1.8(1.8V SIM)
				Output low	0		0.45
48	MOB_GPIO1	GPIO signal - vendor specific	Input/Output	Output low	0		0.45
				Input high	1.15	1.8	2.1
				Input low	-0.3		0.63
				Output high	1.35		1.8
49	GND	Ground	Input				
50	MOB_GPIO2	GPIO signal - vendor specific	Input/Output	Output low	0		0.45
				Input high	1.15	1.8	2.1
				Input low	-0.3		0.63
				Output high	1.35		1.8
51	NC	SIM hotswap	Input/Output				
52	MOB_GPIO3	GPIO signal - vendor specific	Input/Output	Output low	0		0.45
				Input high	1.15	1.8	2.1
				Input low	-0.3		0.63
				Output high	1.35		1.8

Pin #	SIGNAL name	Description	Direction to module	Active state	Votage levels(V)		
					Min	Typ	Max
53	SIM_CLK	SIM/USIM Clock	Output	Output low	0		0.45
				Output high	2.55(3V SIM) 1.35(1.8V SIM)		3.00(3V SIM) 1.8(1.8V SIM)
54	SIM_RST	SIM/USIM Reset	Output		0		0.45
55	VBATT	Power Source	Input		3.4	3.8	4.35
56	VREG_USIM	SIM/USIM Power	Output		2.95(3V SIM) 1.75(1.8V SIM)	3.00(3V SIM) 1.8(1.8V SIM)	3.05(3V SIM) 1.85(1.8V SIM)
57	VBATT	Power Source	Input		3.4	3.8	4.2
58	MOB_GPIO4	GPIO signal - vendor specific	Input/Output	Input high	1.15	1.8	2.1
				Input low	-0.3		0.63
				Output high	1.35		1.8
				Output low	0		0.45
59	VBATT	Power Source	Input		3.4	3.8	4.2
60	MOB_GPIO5	GPIO signal - vendor specific	Input/Output	Input high	1.15	1.8	2.1
				Input low	-0.3		0.63
				Output high	1.35		1.8
				Output low	0		0.45
61	VBATT	Power Source	Input		3.4	3.8	4.2
62	MDM_TRST_N	Jtag reset Enable	Input	High	1.15	1.8	2.1
63	VBATT	Power Source	Input		3.4	3.8	4.2
64	MOB_OOB_WAKE	Out of band signal	Output		1.35		1.8
65	VBATT	Power Source	Input		3.4	3.8	4.2
66	MOB_POWER_ON	Module Power On	Input	High	1.4		4.2
67	VBATT	Power Source	Input		3.4	3.8	4.2
68	UART_TXD(Reserved)	Not connected	-				
69	VBATT	Power Source	Input		3.4	3.8	4.2
70	UART_RXD(Reserved)	Not connected	-				

USB interface

The USB interface is the path for communication between the host and module.

The interface complies with the Universal Bus Specification, Rev2.0, and the host device must be Designed to the same standard.

(When designing the host device, careful PCB layout practices must be followed)

USB interface

Name	Pin	Description
USB_D-	53	USB data negative
USB_D+	55	USB data positive

USB interface features include:

- Data rate: Full-speed (12 Mbps)/High-speed (480 Mbps)
- Module enumeration¹ as modem or COM ports, using host Windows drivers.
- USB-compliant transceivers
- Selective suspend mode
- Resumption initiated by host or module

SIM interface

The module supports one SIM(Subscriber Identity Module)(1.8V or 3V).

The SIM holds account information, allowing users to use their account on multiple devices.

The SIM pins provide the connections necessary to interface to a SIM socket located on the host device. Voltage levels over this interface comply with 3GPP standards.

SIM interface signal

Name	Pin	Description	SIM contact number ¹	Notes
UIM_PWR	16	SIM voltage	1	Power supply for SIM
UIM_CLK	17	Serial clock	3	Serial clock for SIM data
UIM_RST	18	Reset	2	Active low SIM reset
UIM_DATA	23	Data I/O	7	Bi-directional SIM data line
GND		Ground	5	Use any module ground pin

Critical Installation Requirements

This device is approved for use as a mobile installation meaning that it will only be used in products That are capable of maintaining a minimum separation distance of 20cm from the antenna(s) of this Device and end user.

When installed in a final configuration the antenna must be installed such that a minimum separation Of 20cm(8 inches) between the wireless device and the body of the user(this does not include extremities) must be maintained during use and while the wireless device is on and transmitting. This distance must be ensured for all operating modes and conditions.

This transmitter must not be collocated or operate in conjunction with any other antenna or transmitter.

Installations in which the device is collocated with other transmitters or the minimum separation distance Between the body and antenna(s) can not be maintained require a separate FCC authorization. Such installations may require additional testing for RF Exposure(i.e. SAR) and a Class II Permissive Change Filling for FCC approval. Please contact Samsung Electronics, Ltd. Regarding such installations.

A label must be affixed to the outside of the end product into which the Module is installed, with a statement similar to the following: This device contains FCC ID: A3LSGHI307

Antenna Requirements

To comply with FCC regulations limiting both maximum RF output power and human exposure to RF radiation, the maximum antenna gain including cable loss in a mobile-only exposure condition must not exceed 1.4dBi in WCDMA Band2/5, LTE Band 4 and LTE Band 17.

Note

If this module is intended for use in a portable device, you are responsible for separate approval to satisfy the SAR requirements of FCC Part 2.1093.