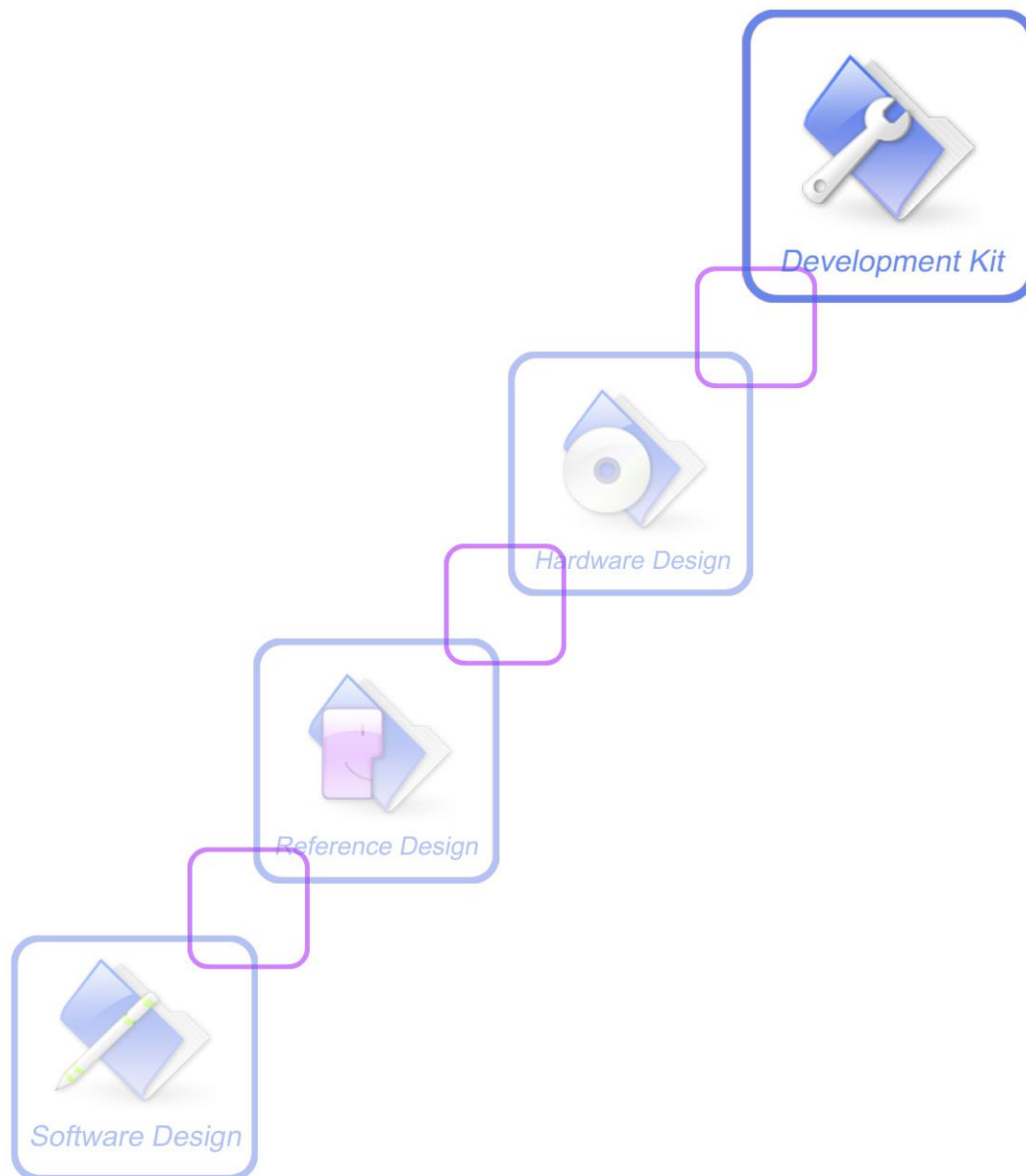




Development Kit Manual

SIM7100A_EVB_User Guide_V1.01



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Version History

Data	Version	Description of change	Author
2014-08-20	1.01	Origin	3G Team

1 Overview

This document gives the usage of SIM7100A EVB, user can get useful information about the SIM7100A EVB quickly through this document. All the functions of the SIM7100A can be used by this board.

NOTE: This document is subject to change without notice at any time.

Table 1:SIM7100A EVB Key features

Feature	Implementation
Power supply	DC 6.0V~9.0V
functions	DC adapter power supply Handset interface UART interface USB2.0 interface SIM card interface SPI interface ADC interface POWER_ON key/Reset key RF enable/disable (flight mode) switch UART control switch Key interface

2 SIM7100A EVB

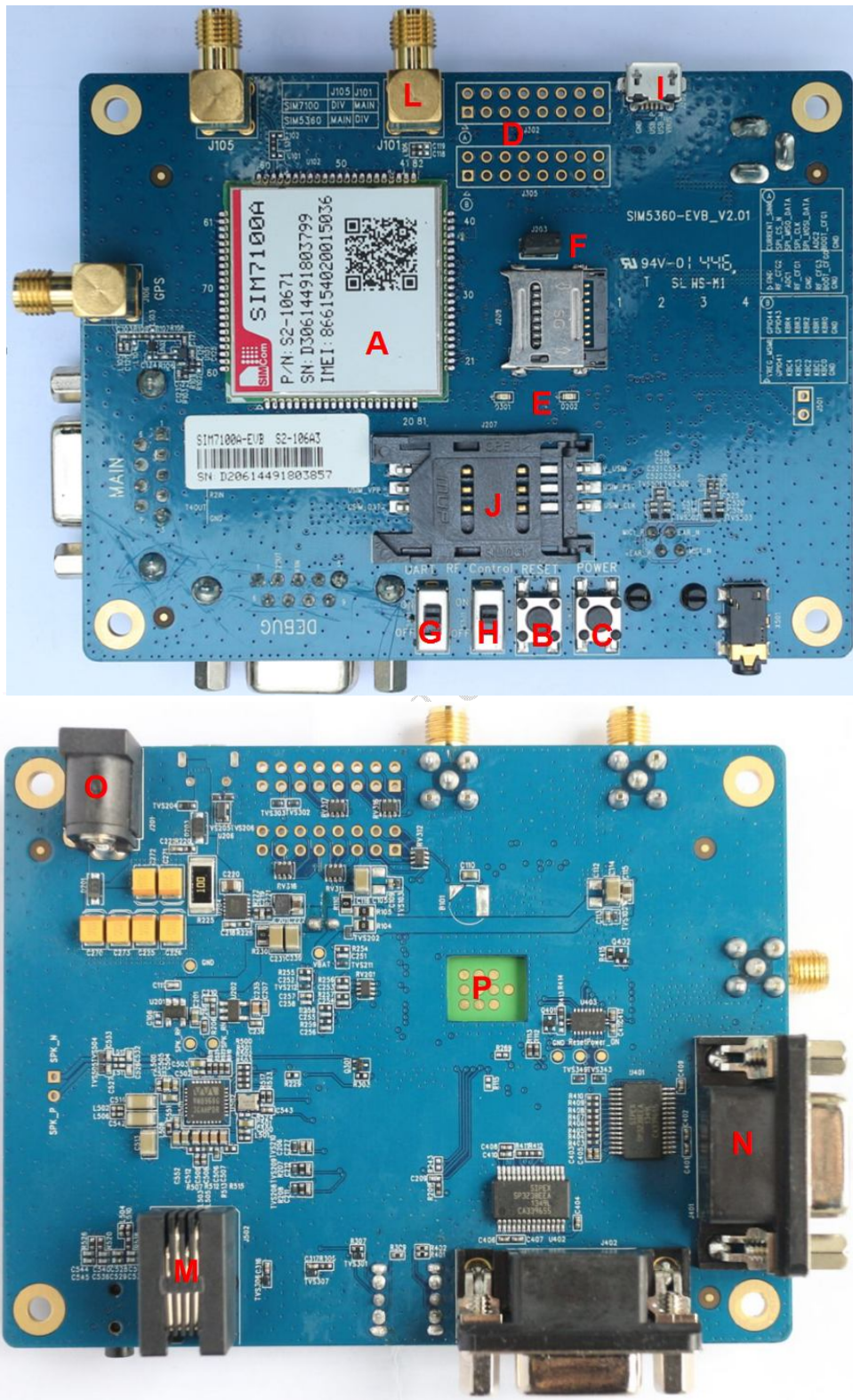


FIGURE 1: EVB view.

- A: SIM7100A module
- B: Reset keypad
- C: Power on/off keypad
- D: IO interface (including GPIO, ADC, SPI, etc)
- E: LED indicator (including network status, operating status)
- F: Power supply selection jumper
- G: UART enable/disable switch
- H: RF enable/disable (flight mode) switch
- I: USB connector
- J: SIM card socket
- L: Main antenna SMA
- M: Handset connector
- N: UART connector
- O: Adapter connector
- P: SIM7100A JTAG test point

All hardware Sub-interfaces included in SIM7100A EVB are described in detail in following chapters.

3 EVB accessories



FIGURE 2: EVB accessory

A: USB to UART cable

B: RFGPS antenna

Antenna Model: WT-C&G-28-90

VSWR ≤ 1.5 ($1500\text{MHz} \leq f \leq 1700\text{Mz}$)

Connector Type: SMA

C: USB cable

D: 6V DC adapter

E: RF 3G/4G antenna

Gain:

Band	Frequency (MHz)	Gain (dBi)
LTE	824-849	2.8
B5/WCDMA B5	869-894	1.8
	1710-1755	1.9
LTE B4	2110-2155	2.6
LTE	1850-1910	3.4
B2/WCDMA B2	1930-1990	3.2

Input Impedance (Ω): 50
Polarization Type: Vertical

F: RF 4G B17 antenna

VSWR ≤ 1.5 (650MHz) ≤ 2 (2155MHz)

Gain:

Band	Frequency (MHz)	Gain (dBi)
LTE B17	704-706	1
	734-746	1.3

Input Impedance (Ω): 50
Polarization Type: Vertical

4 Accessory Interface

4.1 Power Interface

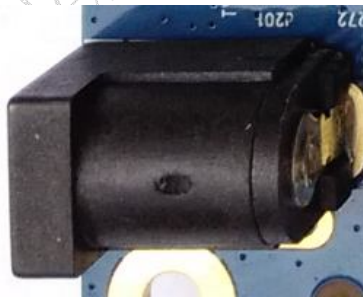


FIGURE 3: DC adapter interface



FIGURE 4: Power supply jumper

In this board, if user uses DC adapter as power supply, the J203 should be connected.

4.2 SIM card interface



FIGURE 5: SIM card socket

Table 2: SIM card socket

Pin	Signal	Input/Output	Description
1	V_USIM	O	USIM Card Power output automatic output on USIM mode, one is 3.0V±10%, another is 1.8V±10%. Current is about 10mA.
2	USIM_RESET	O	USIM Card Reset
3	USIM_CLK	O	USIM Card Clock
4	GND		Ground
5	SIM_VPP		NC
6	USIM_DATA	I/O	USIM Card Data

4.3 Antenna Interface



FIGURE 6: Main Antenna connector

4.4 RS232 Interface

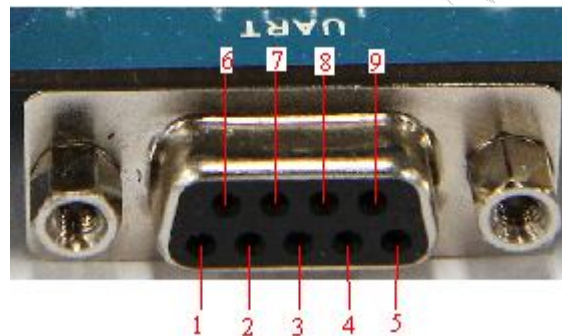


FIGURE 7: UART interface

J401 is 9 pins standard RS232 UART interface. It can be connected to a PC directly.

Table 3: Serial Interface

Pin	Signal	I/O	Description
1	DCD	O	Data Carrier Detection
2	TXD	O	Transmit data
3	RXD	I	Receive data
4	DTR	I	Data Terminal Ready
5	GND		Ground
6	NC		NC
7	RTS	I	Request to Send
8	CTS	O	Clear to Send
9	RI	O	Ring Indicator

4.5 Operating Status LED

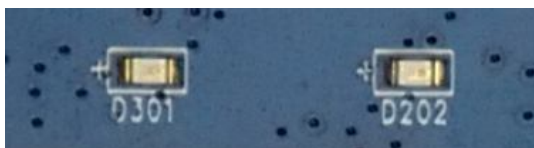


FIGURE 8: Status LED

Table 4: Network status LED

D301 Status	Module Status
Off	Module is not running
On	Module is running, or voice call is connected
800ms On/ Off	Module find the network and registered
200ms On/ Off	Data communication

LED	I/O	Description
D202	O	ADAPTER power indicator

4.6 USB interface

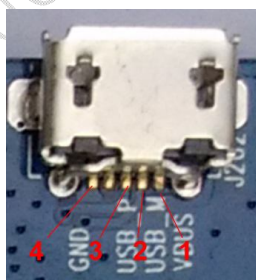


FIGURE 9: USB Interface

It is a normal 4Pin USB connector.

Table 5: USB interface

Pin	Signal	I/O	Description
1	USB_VBUS	I	5V
2	USB_DM	I/O	D+ line
3	USB_DP	I/O	D- line
4	GND		Ground

4.7 Switch interface

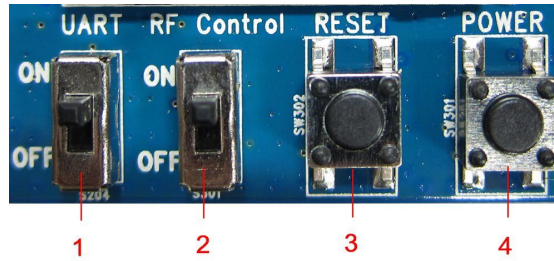
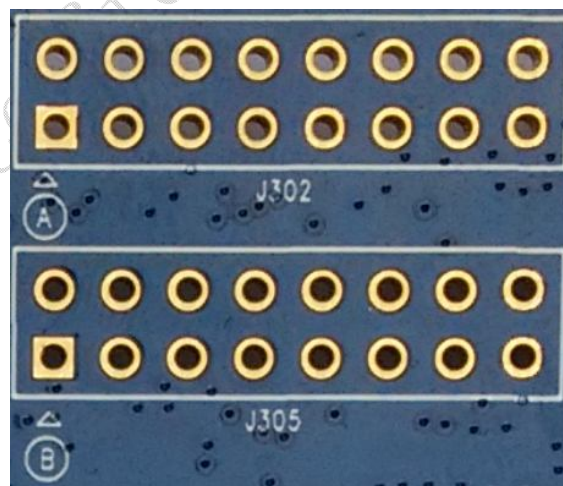


FIGURE 10: Switch Interface

Table 6: Switch interface

Switch	Signal	I/O	Description
1	RS232 chip SHUTDOWN	I	UART switch
2	GPIO4	I	RF switch (S301) ON : Normal mode OFF : Flight mode
3	RESET	I	Reset the module
4	PWRER_ON	I	Power on the module

4.8 IO interface



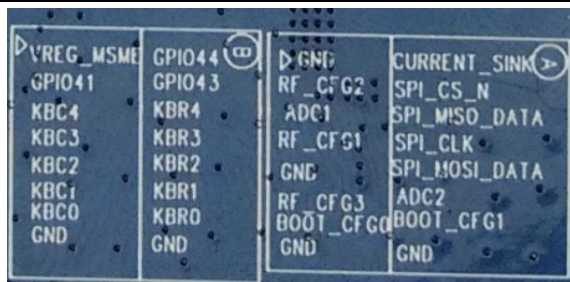


FIGURE 11: IO Interface

Table 7: IO interface

Signal	I/O	Description
VREG_MSME	O	1.8V power supply
GPIO41	I/O	GPIO
KBC4	I	Sensing key
KBC3	I	Sensing key
KBC2	I	Sensing key
KBC1	I	Sensing key
KBC0	I	Sensing key
GND		Ground
GPIO44	I/O	GPIO
GPIO43	I/O	GPIO
KBR4	O	Driving pad
KBR3	O	Driving pad
KBR2	O	Driving pad
KBR1	O	Driving pad
KBR0	O	Driving pad
GND		Ground
GND		Ground
RF_CFG2	I/O	RF control
ADC1	I	Analog Digital Converter Input
RF_CFG1	I/O	RF control
GND		Ground
RF_CFG3	I/O	RF control
BOOT_CFG0	I	Boot configure
GND		Ground
CURRENT_SINK	I	Input current
SPI_CS_N	O	SPI Chip selection
SPI_MISO_DATA	I	SPI Master input Slave output
SPI_CLK	O	SPI clock

SPI_MOSI_DATA	O	SPI Master output Slave input
ADC2	I	Analog Digital Converter Input
BOOT_CFG1	I	Boot configure
GND	O	General output pin.

5 Quickly start

5.1 Running

User can use the 6V DC adapter provided in the EVB kit to provide power supply to SIM7100A module.

First user should insert a 6V DC adapter and the jumper should be connected; then insert a valued SIM card and check if the antenna is connected, and make sure that RF control switch is set to ON; finally press the power on/off switch for about 1 second, and then SIM7100A module will begin running.

User can see the light on the EVB flashing at a certain frequency about 1.25Hz. By the state, user can judge whether the EVB and SIM7100A is running or not. No function and test can be executed if user has not connected necessary accessories.

5.2 Installing Driver

There are 3 ways to connect the module to user's computer and communicate via HyperTerminal:

- (1) Using USB-TO-USB cable;
- (2) Using UART-TO-USB cable;
- (3) Using UART-TO-UART cable.

In the first case, user need install the module USB driver, which can be got from our FAE or sales; For the UART to USB driver, user may get it from the CD in the EVB kit; If user use UART to UART cable, there are certain points to be noticed. One can use UART to UART cable in EVB kit, if the customers want to use their own UART to UART cable, please make sure that the pin sequences of it is same as those of cable in EVB kit, pin sequences are shown in Figure 9.

5.3 Connecting Net and calling

Once user installs the driver, user can follow steps below to connect to Network.

(1) User should connect the EVB Kit to PC, then open the HyperTerminal (AT command windows) on user's Personal computer. The location of the HyperTerminal in windows2000/XP/Vista can be found from START→accessory→communication→HyperTerminal. Please set the correct Baud Rate and COM port number, the Baud Rate of SIM7100A is 115200, and the COM port number is based on which UART port user's serial port line is inserted, user should select the port such as COM1 or COM2 etc.

(2) Connect the antenna to the SIM7100A module using an antenna transmit line, insert SIM card into the SIM card socket, and insert the handset.

(3) Follow the steps of running which has been mentioned above in Sector 5.1, power on the system, type the AT command from the HyperTerminal, and then the SIM7100A module will execute its corresponding function. For example, if user type "AT", then it should respond "OK"; if user type "ATI", it should display product identification information.

(4) If user want to use USB to USB cable, user need to connect the cable to USB port of the module and the computer, then follow step 1~3.

(5) If user use UART to USB cable, user need to connect the cable to module serial port and the USB port of the computer, then follow step 1~3.

5.4 Downloading

Connect the USB port line to the USB port, connect the direct current source adapter, run the download program, and choose the correct image, please follow the QDL downloading menu for the operation. Update procedure is described in the figure below.

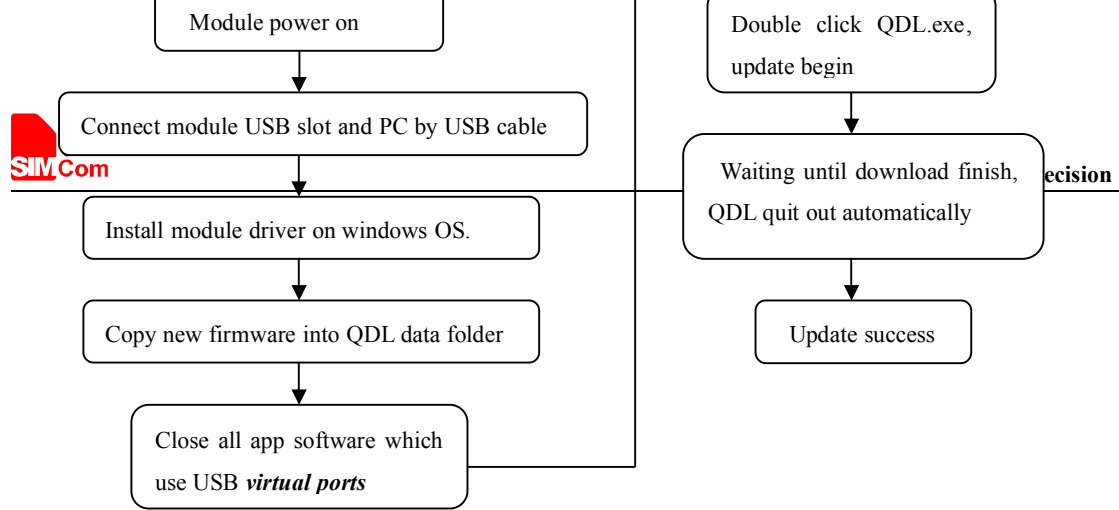


FIGURE 12: USB interface update procedure

5.5 Turning off

Press the POWER key for about 1 second, SIM7100A module will be turned off.

5.6 Measuring the current consumption

User can measure SIM7100A current consumption in the sleep mode on our EVB. User need to follow steps.

- (1) Remove the jumper from J203, and provide a 3.8V DC power supply (such as: Agilent 66319B) for VBAT on SIM7100A EVB;
- (2) Install a SIM card and a RF antenna;
- (3) Shutdown UART by S401;
- (4) Remove the USB cable;
- (5) Power on SIM7100A;

SIM7100A will enter sleep mode automatically. User can measure SIM7100A current consumption. Test report is described in the figure below.

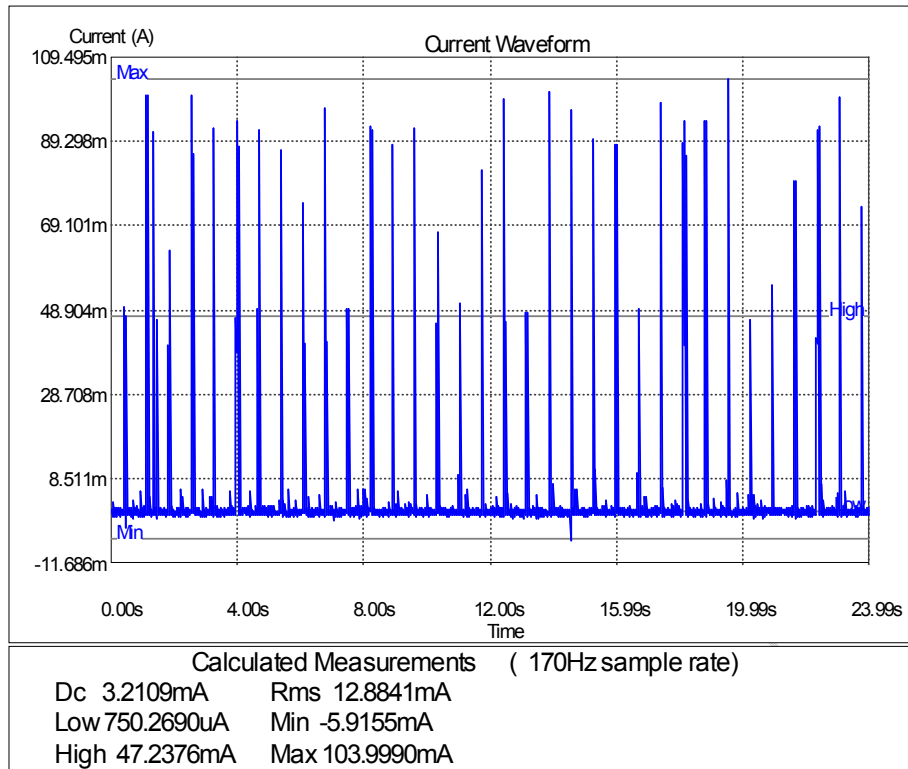


FIGURE 13: current consumption in the sleep mode

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