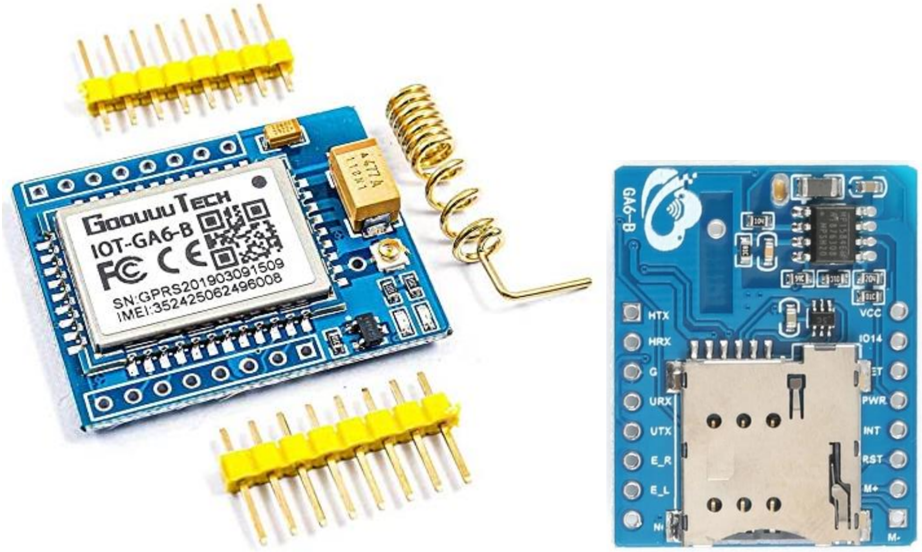
SYNACORP
Your Strategic Solutions Provider

SYNACORP TECHNOLOGIES SDN. BHD. (1310487-K)
No.25 Lorong I/SS3, Bandar Tasek Mutiara,
14120 Simpang Ampat, Penang, Malaysia.
T: +604.586.0026 F: +604.586.0026
WEBSITE: www.synacorp.my EMAIL: sales@synacorp.my

GA6 MINI GPRS / GSM MODULE



Introduction

A6 GSM/GPRS module is a miniature GSM modem, which can be integrated into a great number of IoT projects. You can use this module to accomplish almost anything a normal cell phone can; SMS text messages, Make or receive phone calls, connecting to internet through GPRS, TCP/IP, and more! To top it off, the module supports quad-band GSM/GPRS network, meaning it works pretty much anywhere in the world.

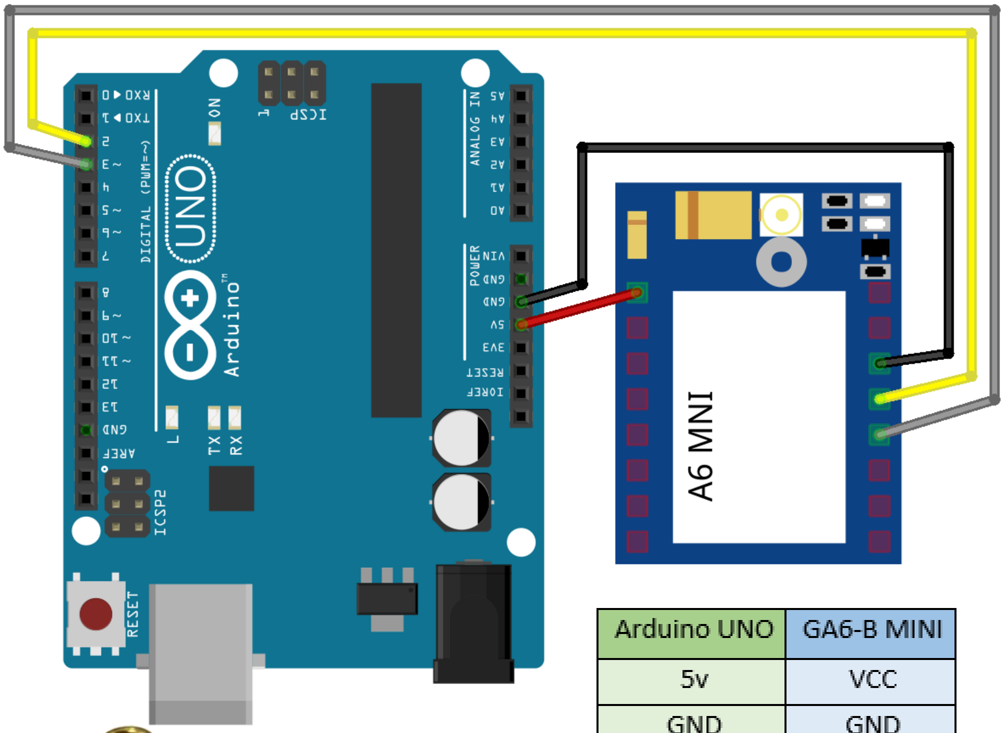
Features

• Voltage	: 3V-3.6V (**Tested working with 5v).
• Maximum Output Power	: +20dBm.
• Emission Mode Current (Peak)	: 115mA.
• Receive Mode Current (Peak)	: 45mA.
• Power-Down Mode Current	: 4.2uA.
• Sensitivity 2Mbps Mode In Received	: -92dBm.
• Sensitivity 1Mbps Mode In Received	: -95dBm.
• Sensitivity 250kbps Mode In Received	: -104dBm.

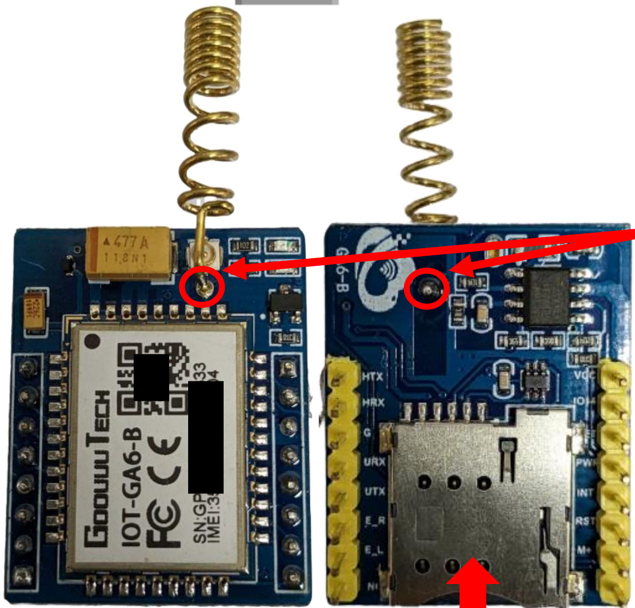
Objective

To make a call, send SMS and to communicate module via AT Command using the GA6 Mini module.

Connection Setup



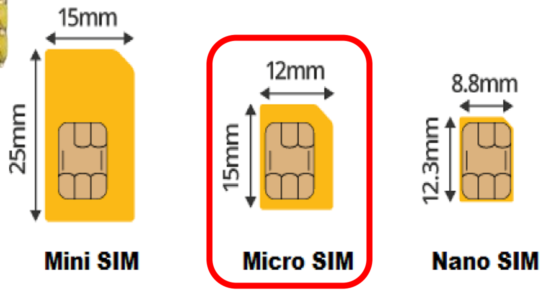
Arduino UNO	GA6-B MINI
5v	VCC
GND	GND
D2	URX
D3	UTX



Make sure to solder the built-in Antenna (spring like) provided in the package if not using External UFL Antenna.

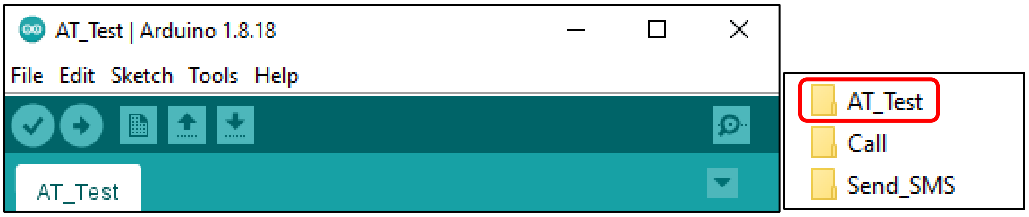
Support Micro size SIM Card only, use with adapter if using Nano size

SIM Card metal Chip facing toward PCB. Press inward until it click to lock. Press again to eject.



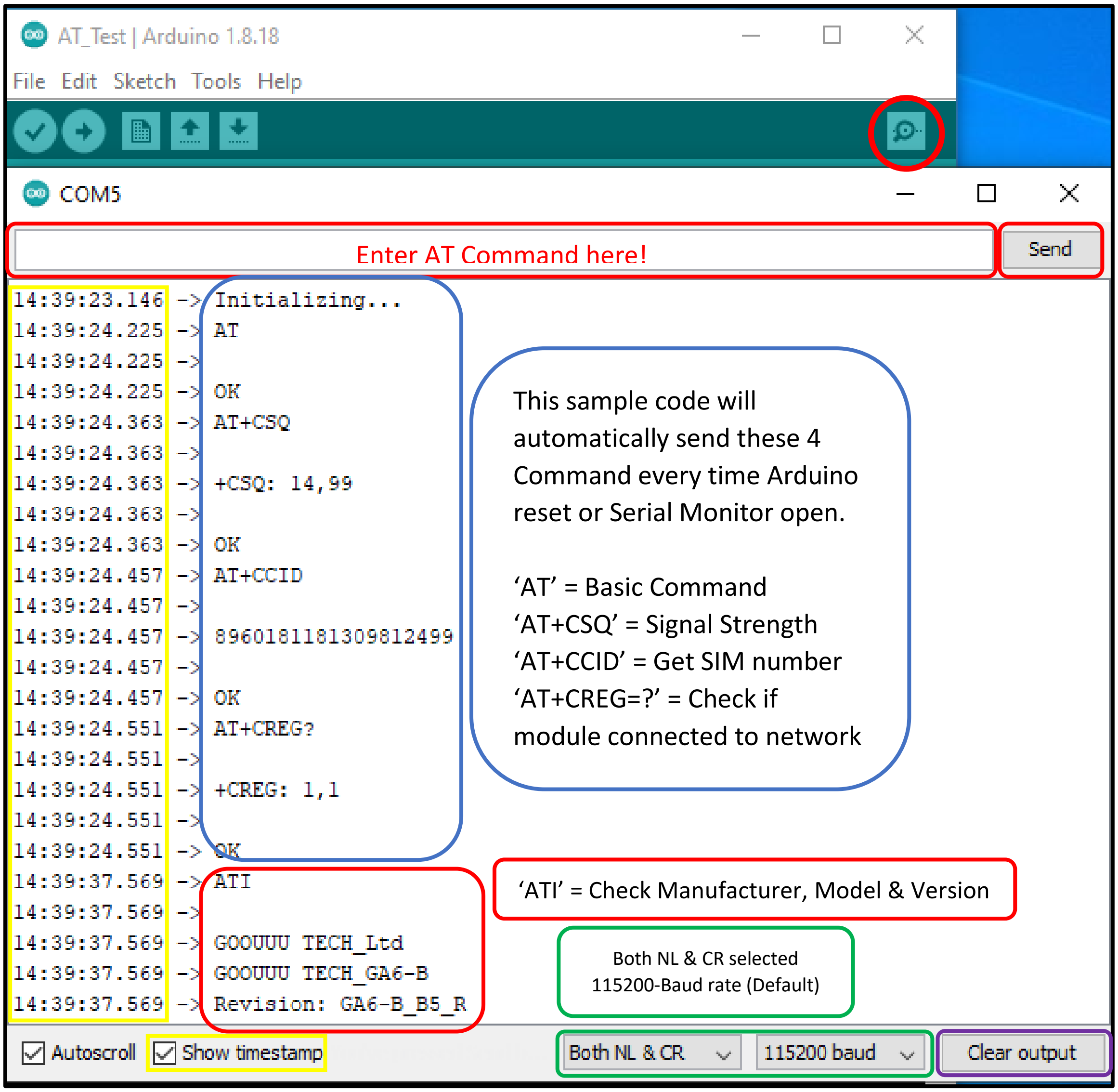
A. Communicating Module via Serial AT Command.

1. Upload the provided **AT Test code**. Make sure to select correct board and COM port of your Arduino.



2. Open Serial Monitor, make sure **"Both NL & CR"** selected and Baud Rate are at **115200**. Note that your result might be different due to different SIM card or network provider.

3. Sending **"AT"** thru terminal and it will reply **"OK"**. Sending **"ATI"** and it will reply module model and firmware version. Refer provided document (**A6 module AT commands.pdf**) for more info.



```
14:39:23.146 -> Initializing...
14:39:24.225 -> AT
14:39:24.225 ->
14:39:24.225 -> OK
14:39:24.363 -> AT+CSQ
14:39:24.363 ->
14:39:24.363 -> +CSQ: 14,99
14:39:24.363 ->
14:39:24.363 -> OK
14:39:24.457 -> AT+CCID
14:39:24.457 ->
14:39:24.457 -> 8960181181309812499
14:39:24.457 ->
14:39:24.457 -> OK
14:39:24.551 -> AT+CREG?
14:39:24.551 ->
14:39:24.551 -> +CREG: 1,1
14:39:24.551 ->
14:39:24.551 -> OK
14:39:37.569 -> ATI
14:39:37.569 ->
14:39:37.569 -> GOOUUU TECH_Ltd
14:39:37.569 -> GOOUUU TECH_GA6-B
14:39:37.569 -> Revision: GA6-B_B5_R
```

This sample code will automatically send these 4 Command every time Arduino reset or Serial Monitor open.

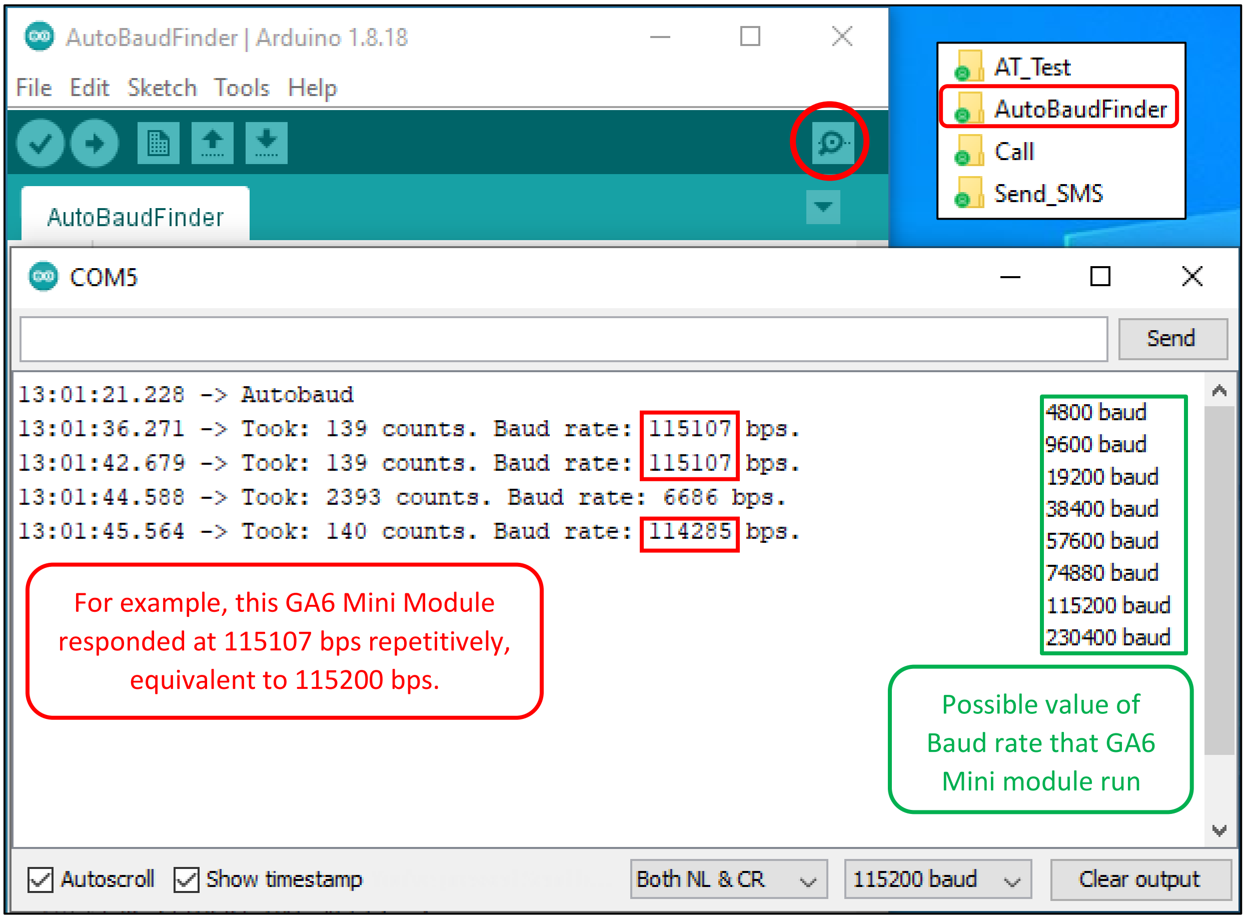
'AT' = Basic Command
'AT+CSQ' = Signal Strength
'AT+CCID' = Get SIM number
'AT+CREG=?' = Check if module connected to network

'ATI' = Check Manufacturer, Model & Version

Both NL & CR selected
115200-Baud rate (Default)

☑ Autoscroll ☑ Show timestamp Both NL & CR 115200 baud Clear output

4. If serial monitor stuck at Initializing or did not respond, try the **AutoBaudFinder** code. **Disconnect URX** and **Connect the UTX to D8**. Open serial monitor and wait untill it got result.



```
13:01:21.228 -> Autobaud
13:01:36.271 -> Took: 139 counts. Baud rate: 115107 bps.
13:01:42.679 -> Took: 139 counts. Baud rate: 115107 bps.
13:01:44.588 -> Took: 2393 counts. Baud rate: 6686 bps.
13:01:45.564 -> Took: 140 counts. Baud rate: 114285 bps.
```

For example, this GA6 Mini Module responded at 115107 bps repetitively, equivalent to 115200 bps.

4800 baud
9600 baud
19200 baud
38400 baud
57600 baud
74880 baud
115200 baud
230400 baud

Possible value of Baud rate that GA6 Mini module run

☑ Autoscroll ☑ Show timestamp Both NL & CR 115200 baud Clear output

5. Once Baudrate value accuired from previous step, **replace new baudrate value** into other provided code and **reupload the code to Arduino board**.

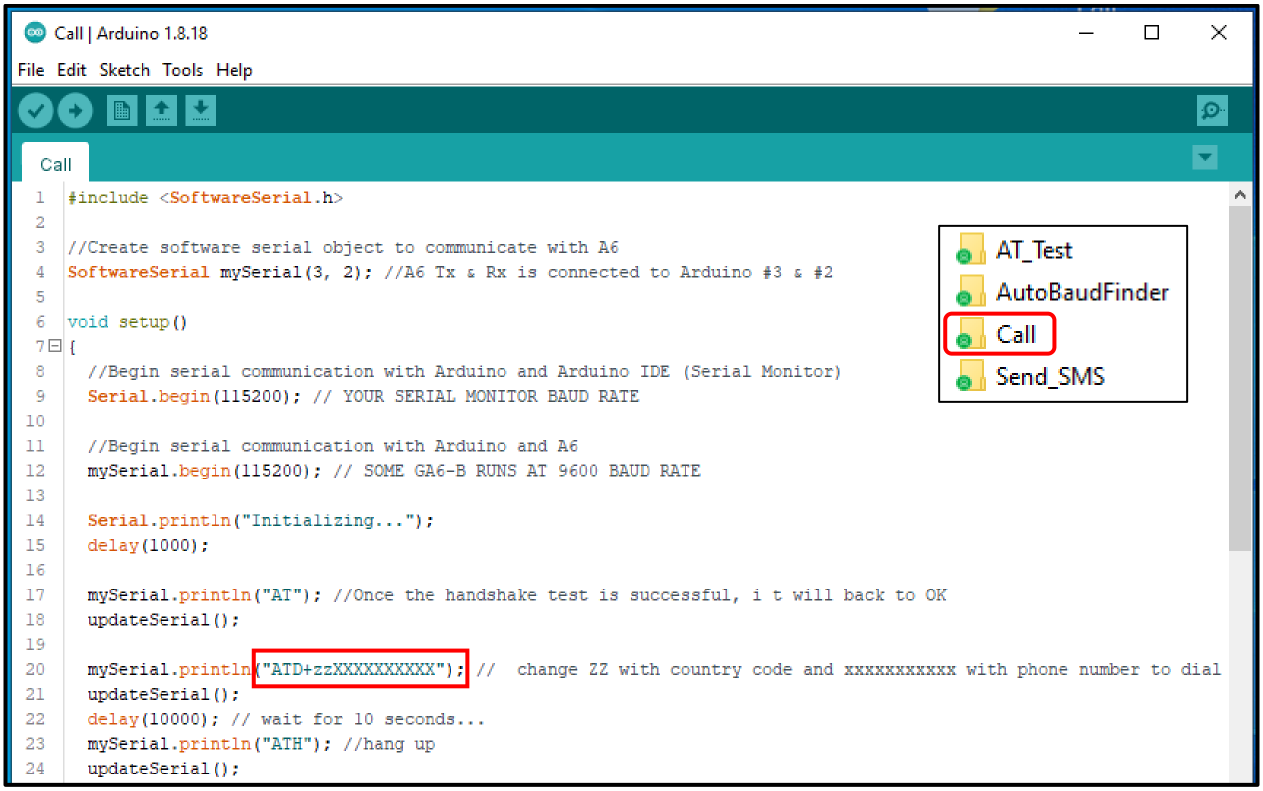
6. User also can change the baudrate address of the GA6 MINI by using **'AT+IPR=xxxxxx'**, where's **'xxxxxx'** is baudrate value. Example **'AT+IPR=38400'** will set the baurate to 38400 bps.

7. **Default Baudrate** value for GA6 MINI are **115200 bps**, some user reported their module pre-applied at 9600 bps. But in our finding almost any baudrate value below than 115200 bps produce more stable Serial Connection, tested on 9600 bps and 38400 bps.

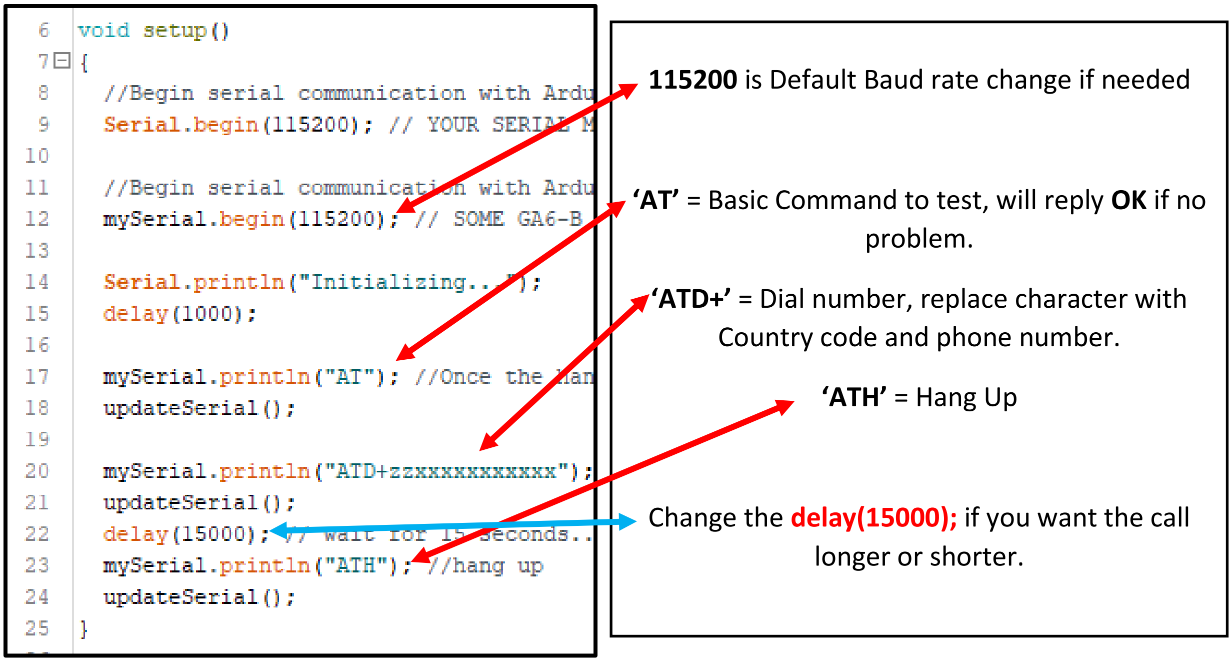
B. Making a phone Call

1. Open the Call code that provided. Replace the **'zz' with country code (60 – for Malaysia)** and **'XXXXXXXXXX' with phone number** that to be called.

2. Change the Baud rate if needed. **Upload** the code, make sure Board type and COM port are correct.



```
#include <SoftwareSerial.h>

//Create software serial object to communicate with A6
SoftwareSerial mySerial(3, 2); //A6 Tx & Rx is connected to Arduino #3 & #2

void setup()
{
  //Begin serial communication with Arduino and Arduino IDE (Serial Monitor)
  Serial.begin(115200); // YOUR SERIAL MONITOR BAUD RATE

  //Begin serial communication with Arduino and A6
  mySerial.begin(115200); // SOME GA6-B RUNS AT 9600 BAUD RATE

  Serial.println("Initializing...");
  delay(1000);

  mySerial.println("AT"); //Once the handshake test is successful, i t will back to OK
  updateSerial();

  mySerial.println("ATD+zzXXXXXXXXXX"); //  change ZZ with country code and xxxxxxxxxx with phone number to dial
  updateSerial();
  delay(10000); // wait for 10 seconds...
  mySerial.println("ATH"); //hang up
  updateSerial();
```



```
void setup()
{
  //Begin serial communication with Ardu
  Serial.begin(115200); // YOUR SERIAL M

  //Begin serial communication with Ardu
  mySerial.begin(115200); // SOME GA6-B

  Serial.println("Initializing...");
  delay(1000);

  mySerial.println("AT"); //Once the han

  updateSerial();

  mySerial.println("ATD+zzxxxxxxxxxxxx");
  updateSerial();
  delay(15000); // wait for 15 seconds..
  mySerial.println("ATH"); //hang up
  updateSerial();
}
```

115200 is Default Baud rate change if needed

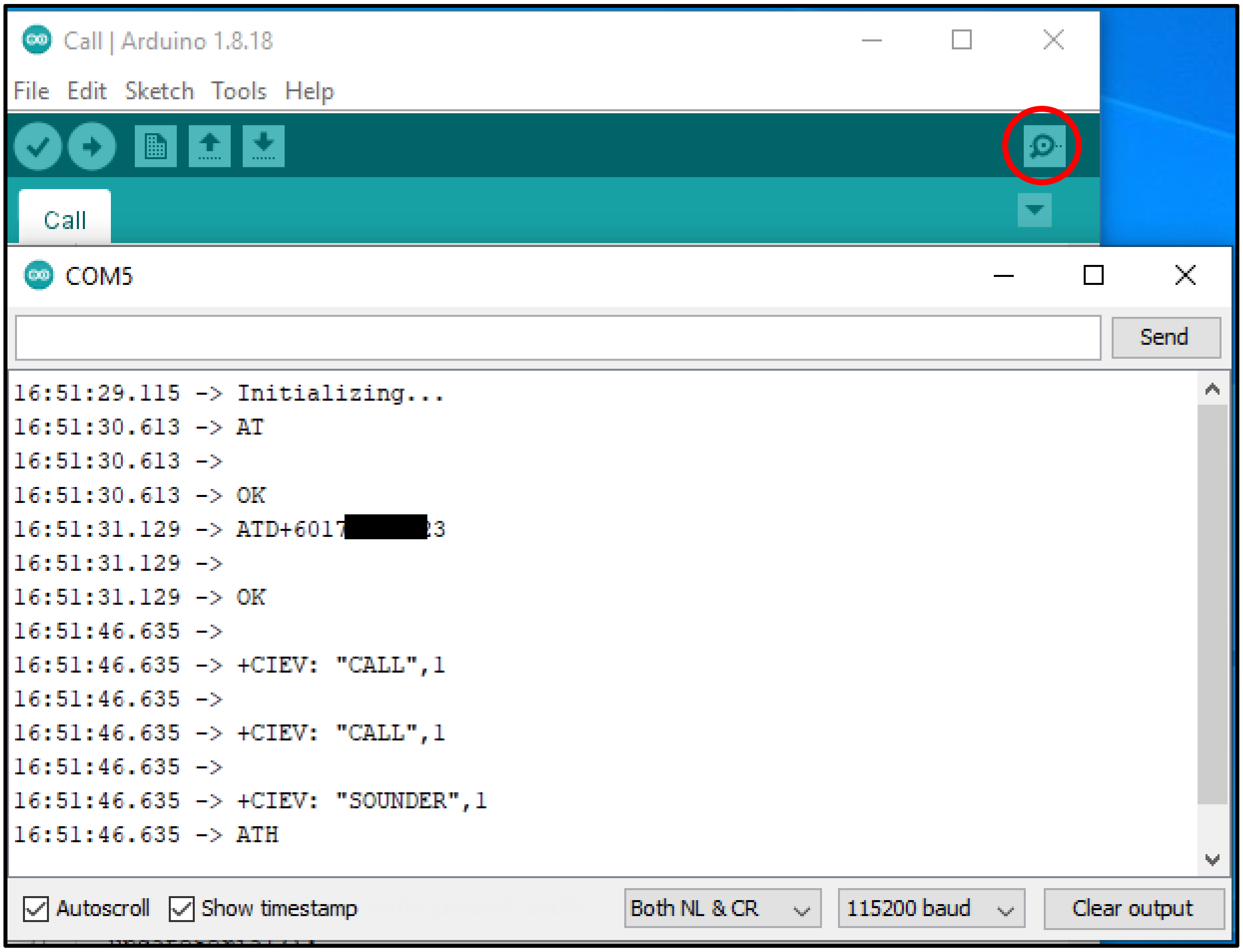
'AT' = Basic Command to test, will reply **OK** if no problem.

'ATD+' = Dial number, replace character with Country code and phone number.

'ATH' = Hang Up

Change the **delay(15000);** if you want the call longer or shorter.

3. Once code uploaded, open **Serial Monitor**. This code will automatically attempt to call number that entered in the code for around **15 seconds and then hang up**.



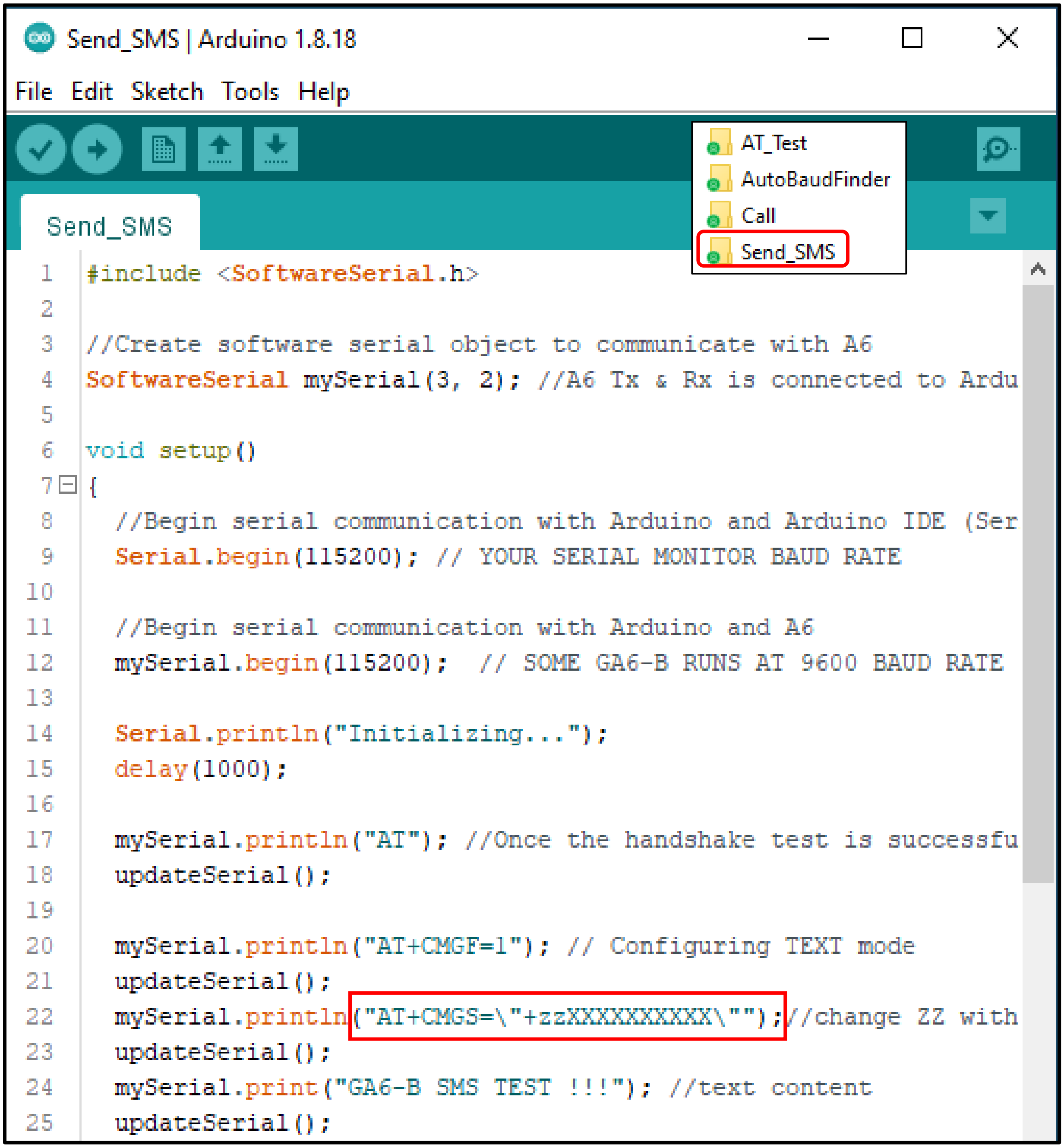
```
16:51:29.115 -> Initializing...
16:51:30.613 -> AT
16:51:30.613 -> 
16:51:30.613 -> OK
16:51:31.129 -> ATD+6017[redacted]3
16:51:31.129 -> 
16:51:31.129 -> OK
16:51:46.635 -> 
16:51:46.635 -> +CIEV: "CALL",1
16:51:46.635 -> 
16:51:46.635 -> +CIEV: "CALL",1
16:51:46.635 -> 
16:51:46.635 -> +CIEV: "SOUNDER",1
16:51:46.635 -> ATH
```

☑ Autoscroll ☑ Show timestamp Both NL & CR 115200 baud

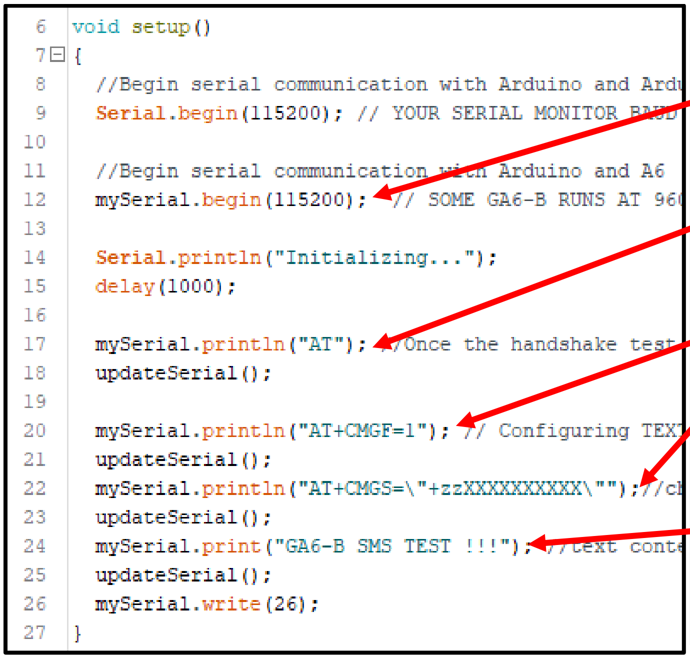
C. Sending an SMS

1. Open the Send SMS code that provided. Replace the **‘zz’ with country code (60 – for Malaysia)** and **‘XXXXXXXXXX’ with phone number** that to be called.

2. Change the Baud rate if needed. **Upload** the code, make sure Board type and COM port are correct.



```
#include <SoftwareSerial.h>

//Create software serial object to communicate with A6
SoftwareSerial mySerial(3, 2); //A6 Tx & Rx is connected to Ardu

void setup()
{
  //Begin serial communication with Arduino and Arduino IDE (Ser
  Serial.begin(115200); // YOUR SERIAL MONITOR BAUD RATE

  //Begin serial communication with Arduino and A6
  mySerial.begin(115200);  // SOME GA6-B RUNS AT 9600 BAUD RATE

  Serial.println("Initializing...");
  delay(1000);

  mySerial.println("AT"); //Once the handshake test is successfu
  updateSerial();

  mySerial.println("AT+CMGF=1"); // Configuring TEXT mode
  updateSerial();
  mySerial.println("AT+CMGS=\"+zzXXXXXXXXXX\"");//change ZZ with
  updateSerial();
  mySerial.print("GA6-B SMS TEST !!!"); //text content
  updateSerial();
```



```
void setup()
{
  //Begin serial communication with Arduino and Ardu
  Serial.begin(115200); // YOUR SERIAL MONITOR BAUD

  //Begin serial communication with Arduino and A6
  mySerial.begin(115200); // SOME GA6-B RUNS AT 96(

  Serial.println("Initializing...");
  delay(1000);

  mySerial.println("AT"); //Once the handshake test
  updateSerial();

  mySerial.println("AT+CMGF=1"); // Configuring TEXT
  updateSerial();
  mySerial.println("AT+CMGS=\"+zzXXXXXXXXXX\"");//ch
  updateSerial();
  mySerial.print("GA6-B SMS TEST !!!"); //text conte
  updateSerial();
  mySerial.write(26);
}
```

115200 is Default Baud rate change if needed

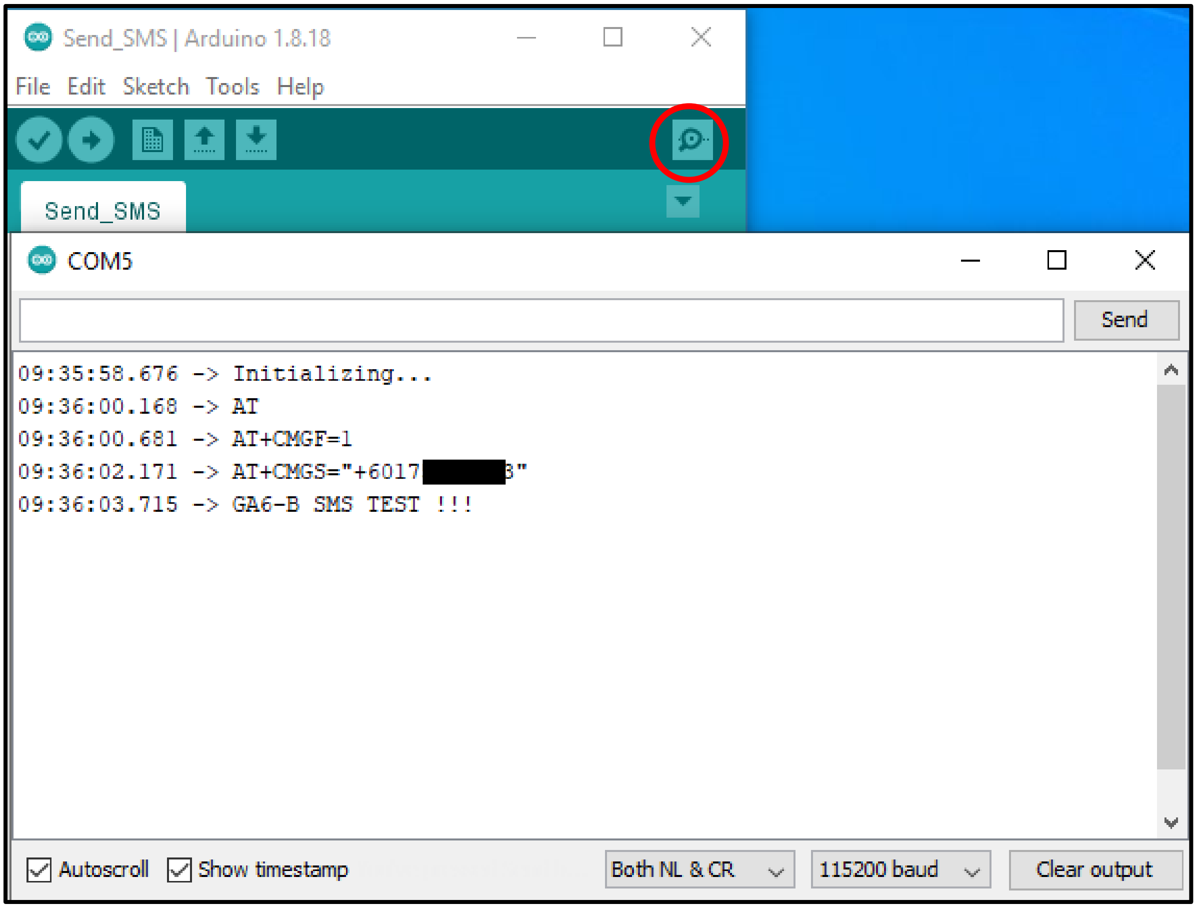
'AT' = Basic Command to test, will reply **OK** if no problem.

'AT+CMGF=1' = Text/Message Mode

'AT+CMGS=' = Send Text command, replace character with Country code and phone number.

Change the text message inside the bracket
mySerial.print("**GA6-B SMS TEST !!!**");

3. Once code uploaded, open **Serial Monitor**. This code will automatically attempt to send the SMS to number that has been configured.



```
09:35:58.676 -> Initializing...
09:36:00.168 -> AT
09:36:00.681 -> AT+CMGF=1
09:36:02.171 -> AT+CMGS="+6017[redacted]3"
09:36:03.715 -> GA6-B SMS TEST !!!
```