

# BM817C

# Operation manual\_V1.1

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## 1. Introduction

BM817C EVB use for testing the function and performance of BM817Cmodule , and provide relevant assessment to help customer develop application.

### 1.1 Purpose

This document detailed describes the basic function of BM817C and point out the main feature is data transmission.

### 1.2 General view

- ✧ Chapter 2, Main introduction the Development environment and list of equipment for BM817C
- ✧ Chapter 3, in detail describe the construct of software environment for BM817C
- ✧ Chapter 4, in detail describe the methods of data transmission and common business for BM817C

## 2. Brief Introduction

BM817C EVB is development and evaluation board that for customer to test the performance and function of BM817Cmodul. This EVB board is module adapter PCBA board,

it has USB interface, SIM card interface, MINI PCI-E port  
3 ports.

Technology/Band	Mode	Target Power and Tolerance (dBm)
GSM 850	GPRS,GMSK	$31 \pm 1$
	EDGE,8PSK	$25 \pm 1$
GSM 1900	GPRS,GMSK	$27 \pm 1$
	EDGE,8PSK	$23 \pm 1$
WCDMA Band 2	RMC	$23 \pm 1$
WCDMA Band 4	RMC	$22 \pm 1$
WCDMA Band 5	RMC	$23 \pm 1$
LTE Band 2	QPSK	$21 \pm 2$
	16QAM	$21 \pm 2$
LTE Band 4	QPSK	$21 \pm 2$
	16QAM	$21 \pm 2$
LTE Band 5	QPSK	$21 \pm 2$
	16QAM	$21 \pm 2$
LTE Band 12	QPSK	$21 \pm 2$
	16QAM	$21 \pm 2$
LTE Band 17	QPSK	$22 \pm 1$
	16QAM	$21 \pm 2$

## 2.1 Necessary equipment

The chart 1 detailed describe the necessary equipment for testing environment BM817C.

Chart 1: EVB Kit List

Equipment	EVB kit whether or	Description
-----------	--------------------	-------------

	not Include	
EVB Board	Yes	Use for BM817Ctest
USB Cable	Yes	Standard USB
Antenna	Yes	Antenna has two parts: 1 ) diversity antenna and main antenna 2 ) antenna patch cord
BM817C Board	Not	
SIM/USIM	Not	Need a SIM/USIM Card have balance

Chart 2 Antenna Gain

Frequency (MHz)	Gain (dBi)
700	1.54
710	1.37
720	1.24
825	1.32
825	0.75
835	0.75
845	0.29

1710	-0.52
1730	-0.74
1750	-0.92
1850	-1.95
1880	-2.17
1910	-2.38

### 3. Set up and Install

EVb construct divide by hardware environment and software environment:

#### 1) The Construct of Hardware Environment

- ✧ How put in or out SIM/USIM card
- ✧ How to link module
- ✧ How to link main antenna
- ✧ How to link diversity antenna
- ✧ How to link USB cable
- ✧ How to power on
- ✧ How to power off

#### 2) The Construct of Software Environment

- ✧ How to install driver
- ✧ How to upgrade fireware



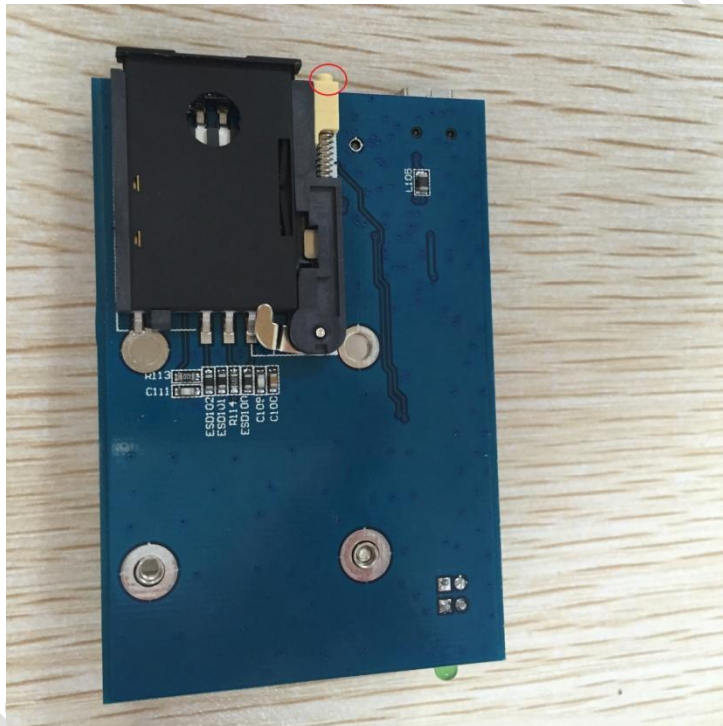
### 3.1. The Construct of Hardware Environment

#### 3.1.1. How put in or out SIM/USIM card

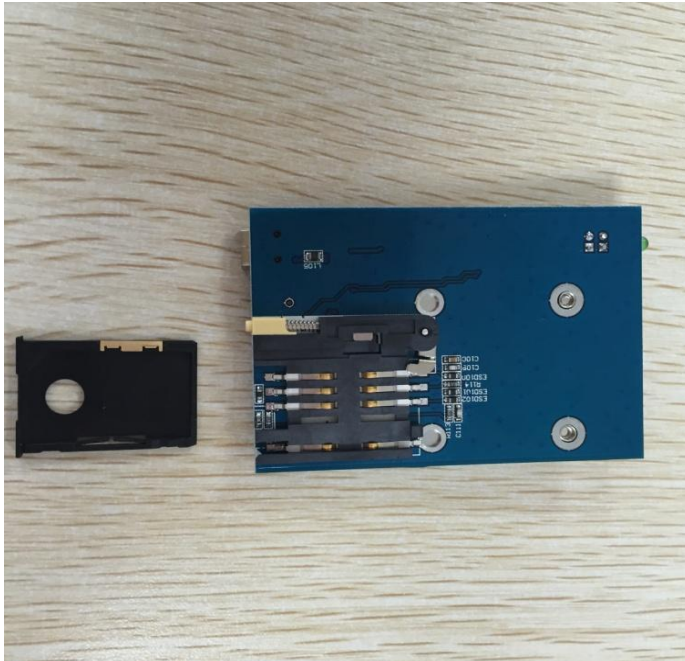
Need a SIM/USIM Card have balance.

The step for put in SIM/USIM:

- 1) Put EVB upwards, hold the yellow button, and pull out the SIM Card slot. See Picture 1 and 2.



(Picture 1)

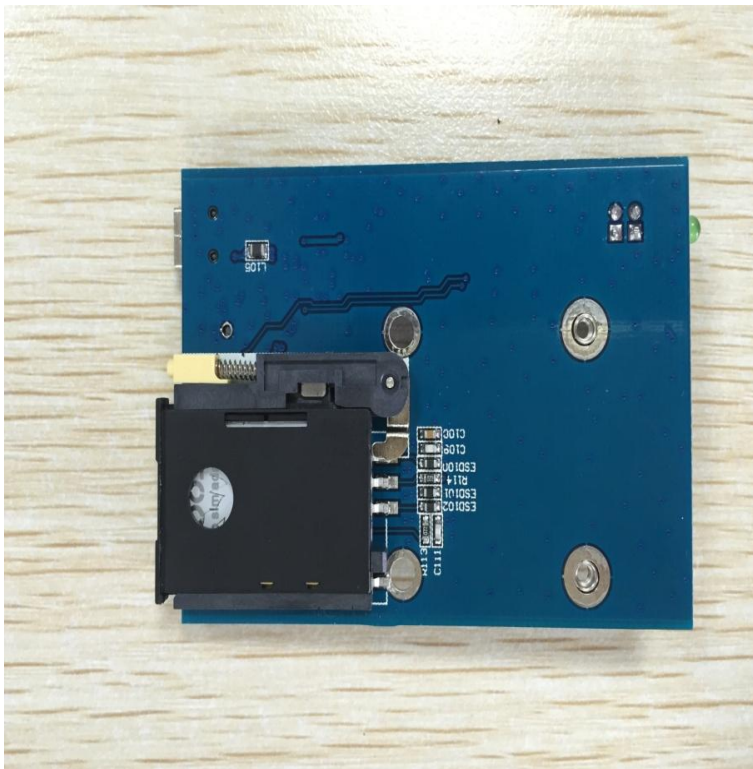


(Picture 2)

2) Put SIM Card into the slot, make sure SIM chip upwards, put into the SIM slot on EVB Board. See Picture 3 and 4.



(Picture 3)

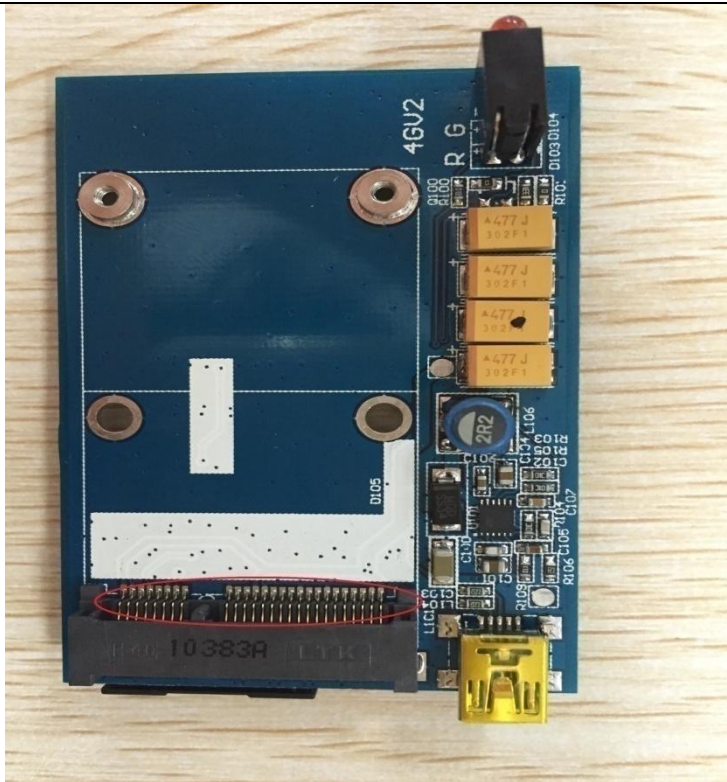


(Picture 4)

### 3.1.2. How to link module

**Put module into development board after finish install SIM card:**

- 1) Put EVB Board right side up, and put module into Mini PCI-E connector. See Picture 5 and 6.



(Picture 5)



(picture 6)

2) Put module into Mini PCI-E with screw fixation. See Picture 7.



(Picture 7)

### 3.1.3. How to link main antenna

Before the link antenna, need finish put in SIM card and Module.

- 1) Antenna interface located on top right of module with sign “M”. See Picture 8.



(Picture 8)

- 2) Spike RF Patch cord into module connector smoothly. See

Picture 9.



(Picture 9)

- 3) Tightening antenna SMA contact and RF patch cord SMA contact. See Picture 10.



(Picture 10)

### 3.1.4. How to link diversity antenna

**Before link diversity antenna, need finish put SIM Card and module in, and link the main antenna**

- 1) The antenna interface is located on the top left of module with sign “D”. See Picture 11.



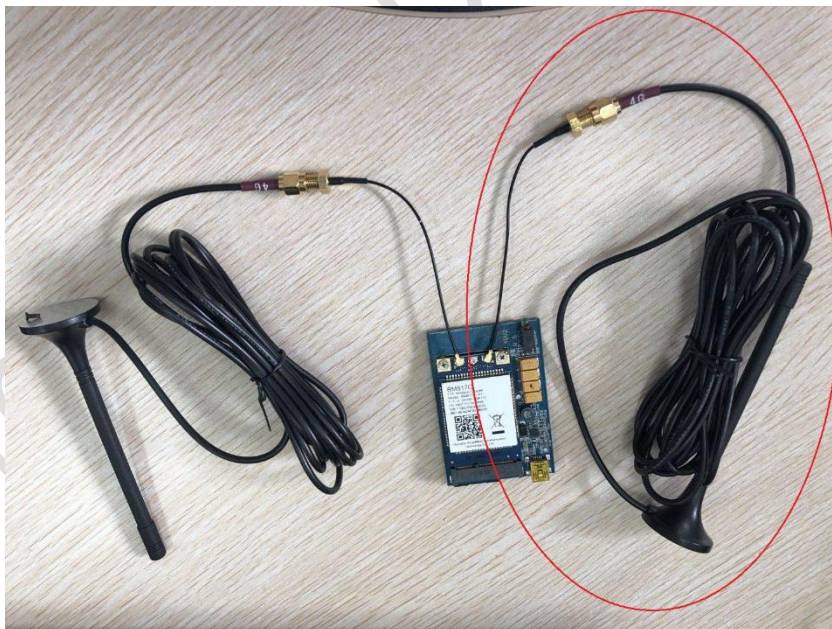
**(Picture 11)**

- 2) Spike RF Patch cord into module connector smoothly. See Picture 12.



(Picture 12)

- 3) Tightening antenna SMA contact and RF patch cord SMA contact. See Picture 13



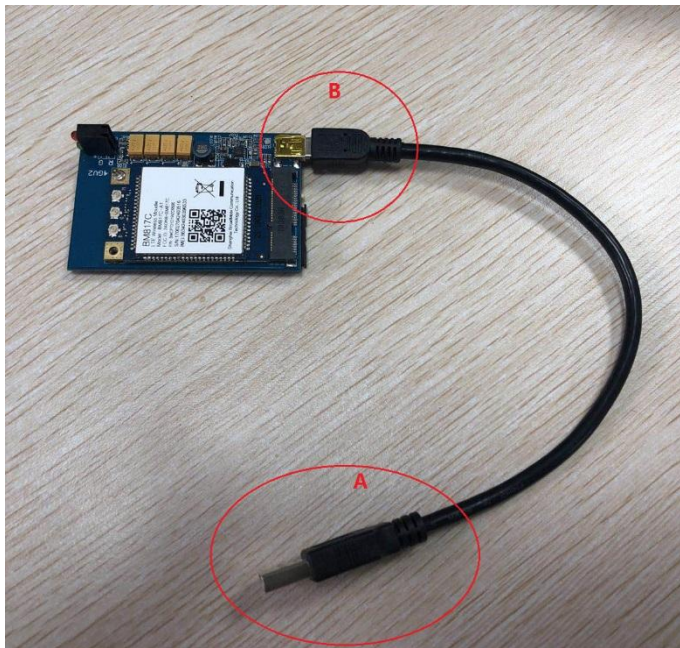
(Picture 13)

### 3.1.5. How to link USB cable

Follow the step to link USB cable:



- 1) Put EVB Board right side up;
- 2) Put the port B of USB Cable into the USB slot on the EVB Board.
- 3) Put the port A of USB cable into the USB interface of PC. See Picture 14.



(Picture 14)

### 3.1.6. How to power on

BM817C only support electrify power on, all need just put the port A of USB cable into PC, and module will auto power on.

### 3.1.7. How to power off

BM817C support outage shutdown, module will shut down when VBAT blackout.

## 3.2 The Construct of Software Environment

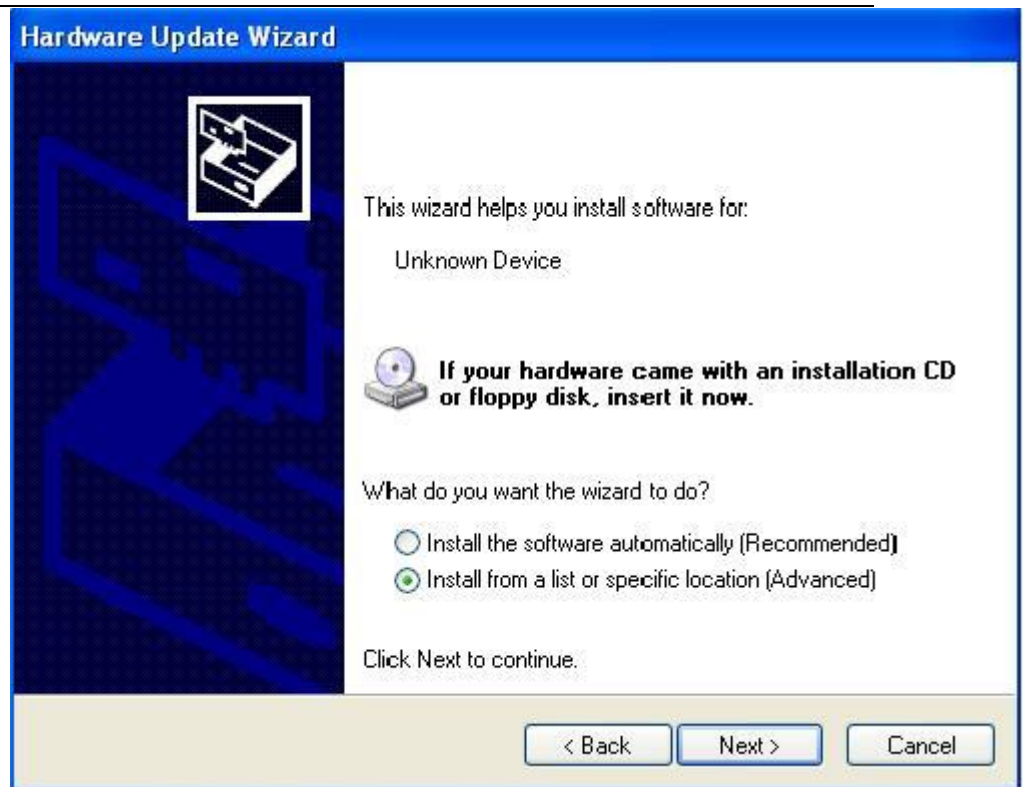
### 3.2.1. How to install driver

- 1) First use USB cable to connect PC and module, power module on, Windows will popup new equipment window, choose “No, not this time”, then click “Next”



**Picture 15: find new hardware**

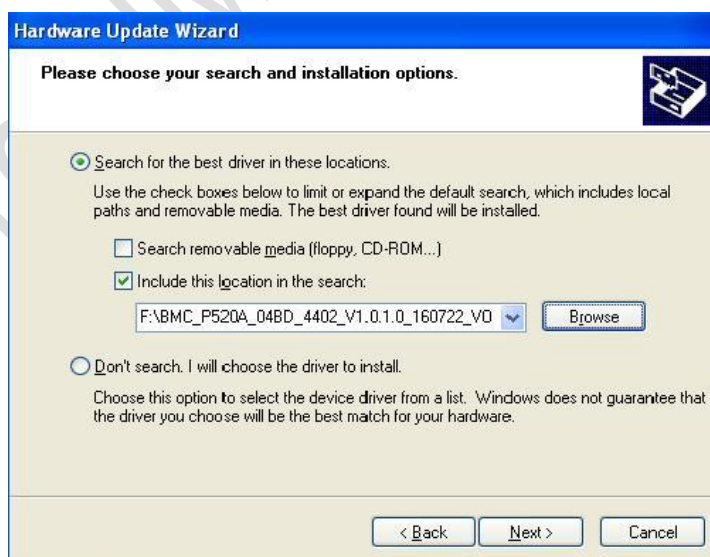
- 2) Choose “Install from a list or specific location (Advanced)”, click “Next”



**Picture 16: choose the method for install driver**

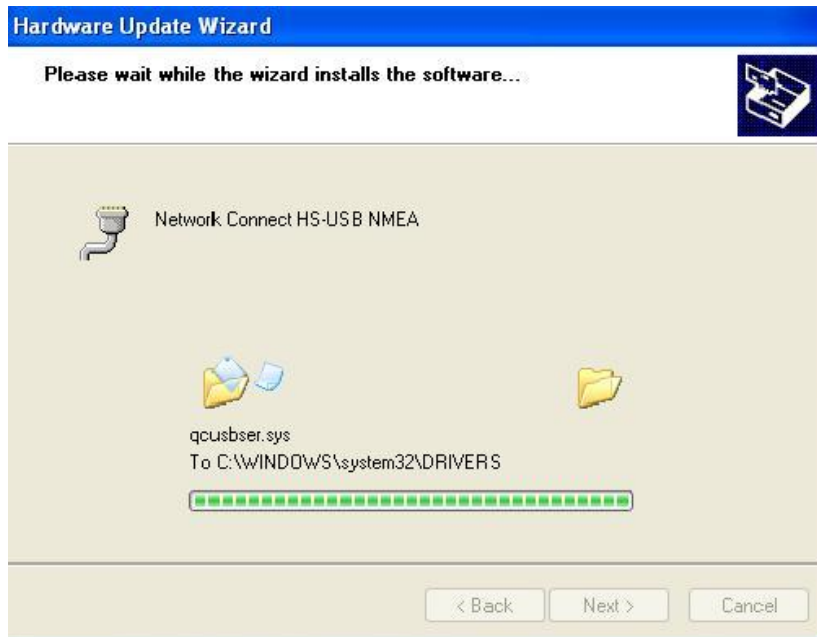
BM817C choose the path that driver file is located, and click “Yse”;

3) Click “Next”



**Picture 18: Choose driver file path 2 in XP**

4) The driver is installing



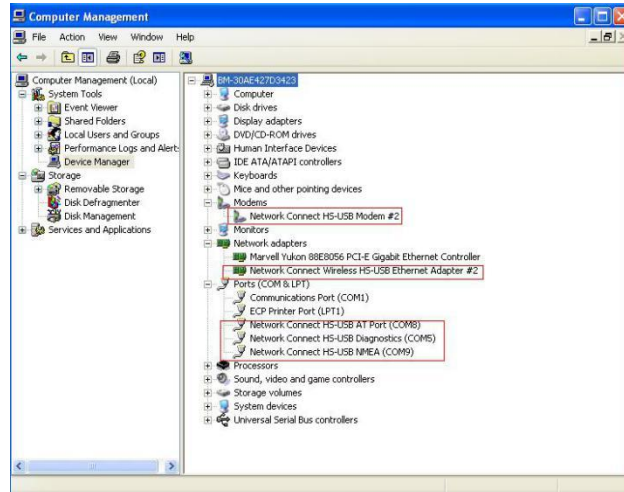
**Picture 19: driver install**

5) Wait for notes “Completing hardware Upgrade wizard”, click “Finish” finish the install.



**Picture 20: Finish the driver install**

- 6) Operation system will popup 4 new equipments, please repeat step 1 to 6. After finish install, you will see them in device manager. See below Picture 21.



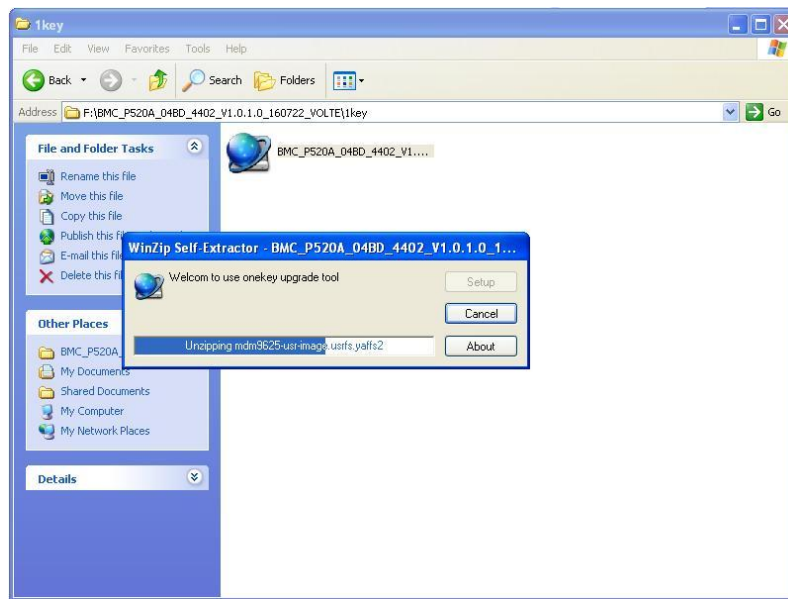
**Picture 21: module appear in device manager**

### 3.2.2. How to upgrade fireware

BM817C provide 1key upgrade tool for Windows, step of upgrade fireware:

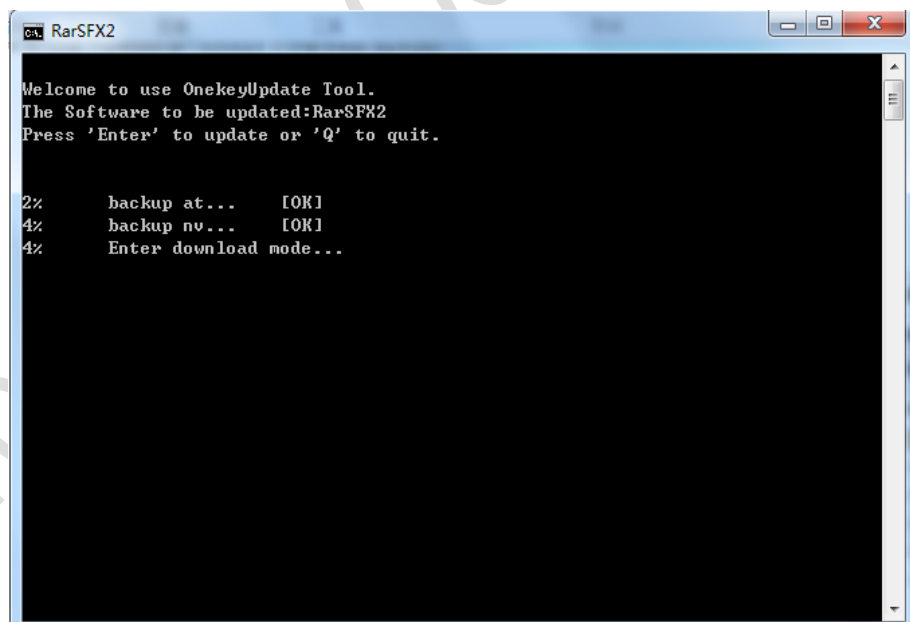
- 1) Use USB cable to connect PC and BM806U-E, double-click when the device manager recognize com port. See

Picture 22:



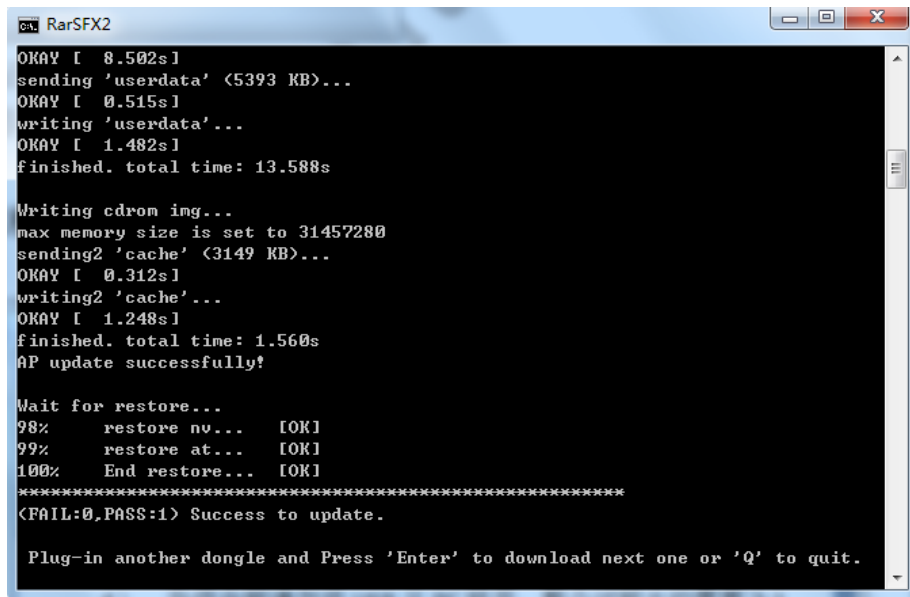
**Picture 22: the window of fireware upgrades 1**

- 2) Follow the note to press “Q” or press “Enter”, start to upgrade. See Picture 23



**Picture 23: Fireware is upgrading**

- 3) There is note “Success to upgrade” when it all finished.



```

RarSFX2
OKAY [ 8.502s]
sending 'userdata' (5393 KB)...
OKAY [ 0.515s]
writing 'userdata'...
OKAY [ 1.482s]
finished. total time: 13.588s

Writing cdrom img...
max memory size is set to 31457280
sending2 'cache' (3149 KB)...
OKAY [ 0.312s]
writing2 'cache'...
OKAY [ 1.248s]
finished. total time: 1.560s
AP update successfully!

Wait for restore...
98%  restore nv...  [OK]
99%  restore at...  [OK]
100% End restore... [OK]
*****
<FAIL:0,PASS:1> Success to update.

Plug-in another dongle and Press 'Enter' to download next one or 'Q' to quit.
  
```

**Picture 24: Finish fireware upgrade**

- 4) Do not remove USB cable from PC during the upgrade process, whole process cost 2-3 minutes.

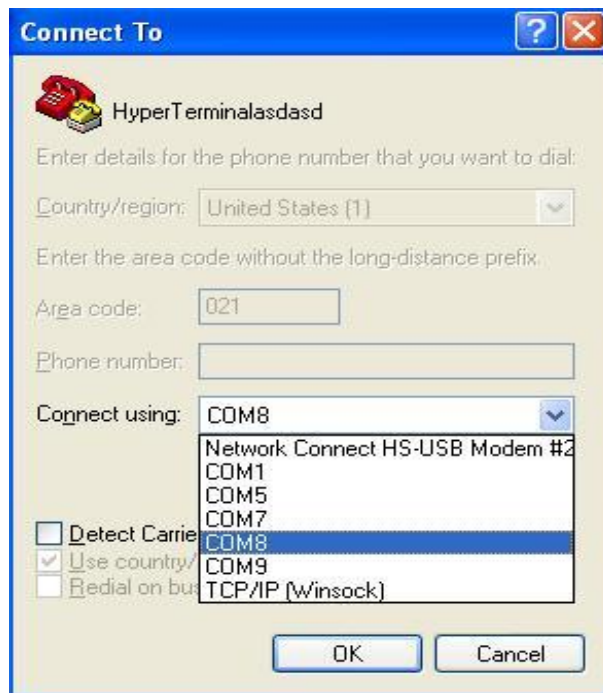
**Warning: Cannot outage during upgrade process, please make sure stabilization power supply, otherwise will damage module.**

#### 4. Debugging and Testing

The EVB through USB to communicate, can use for phone call, connect internet, this chapter will discuss in detail.

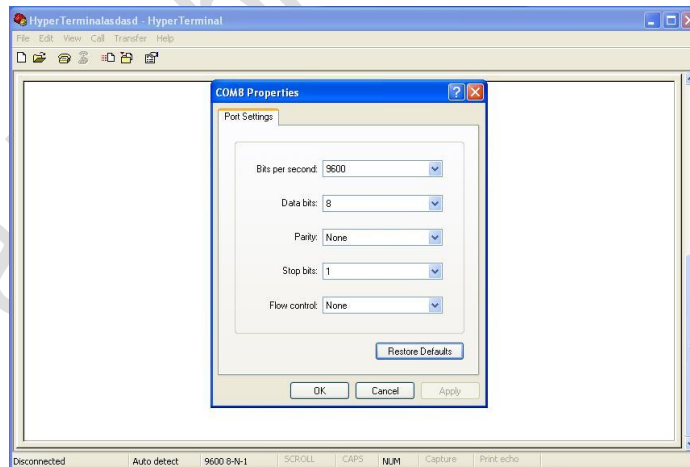
##### 4.1 How to use USB cable to communicate

- 1) The communication methods for PC and BM817C is AT command, to test whether PC successfully communicate BM817C by sending AT command.
- 2) Open HyperTerminal, choose AT port.



**Picture 25: Choose the port for HyperTerminal**

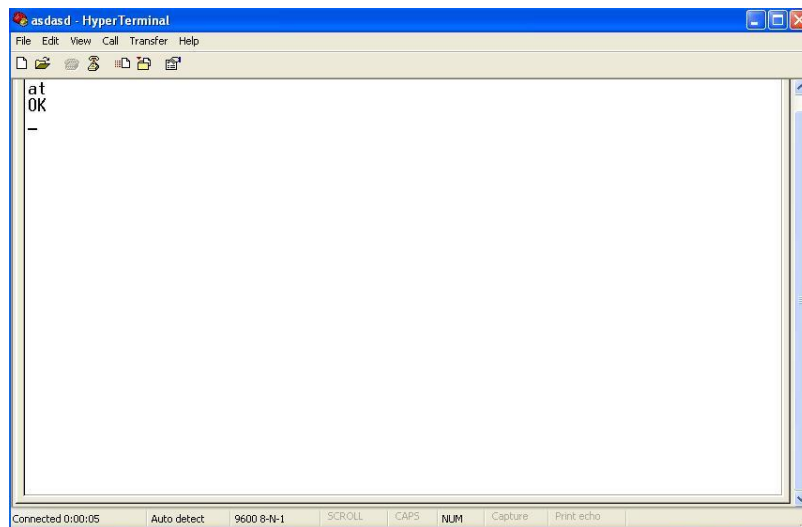
- 3) Choose baud rate 9600, choose none for flow control, other setting default. See Picture 26



**Picture 26: ConfigurationHyperTerminal**

- 4) Sending AT, check it is or isn't communicated. See Picture 27





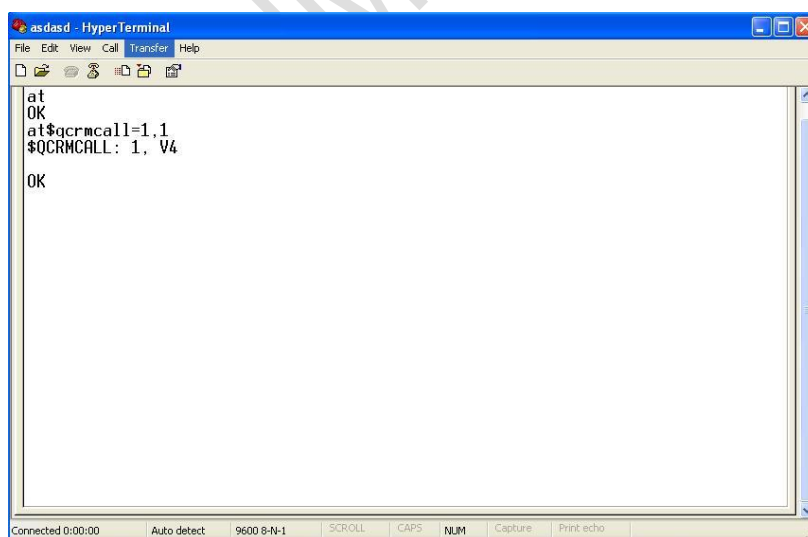
**Picture 27: UsingHyperTerminal sending at**

## **4.2 How to make data connection**

Put SIM/USIM card that support data traffic into EVB board, connect antenna right, though USB cable to connect PC and power on module.

### **1) through NDIS to dial**

a) type “at\$qrncall=1,1”, create network connection.



**Picture 28: using HyperTerminal to send AT command to NDIS dial**

b) Type “at\$qrncall=0,1” , to disconnect Network connection.

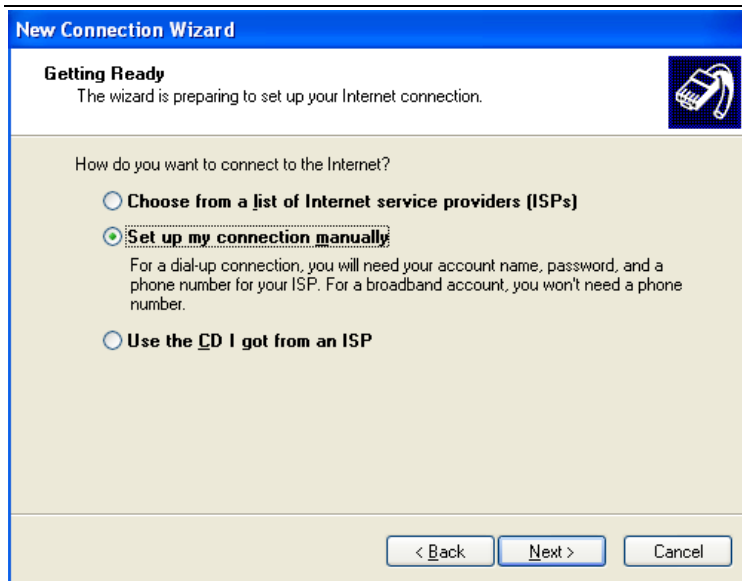
## 2) through MODEM to dial

A) open Network Connections to choose to connect Internet and click “下一步 Next”



Picture 29: Choose Network Connection

B) Choose “Set up my Connection manually”, click “Next”



Picture 30: Create new Network connection

C) Choose "Connect using a dial-up modem"



Picture 31: Choose Modem to Dial

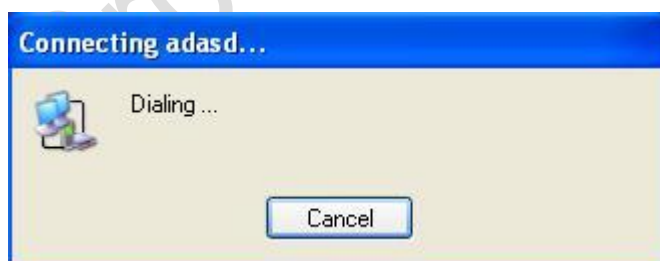
D) type the number u want to dial, the user and password need according different carriers. For example, the user and password for

China Union 3G and 4G is empty (not type any character ) the number is \*99#, then choose “连接 Connect”



Picture 32: Configuration Network Connection

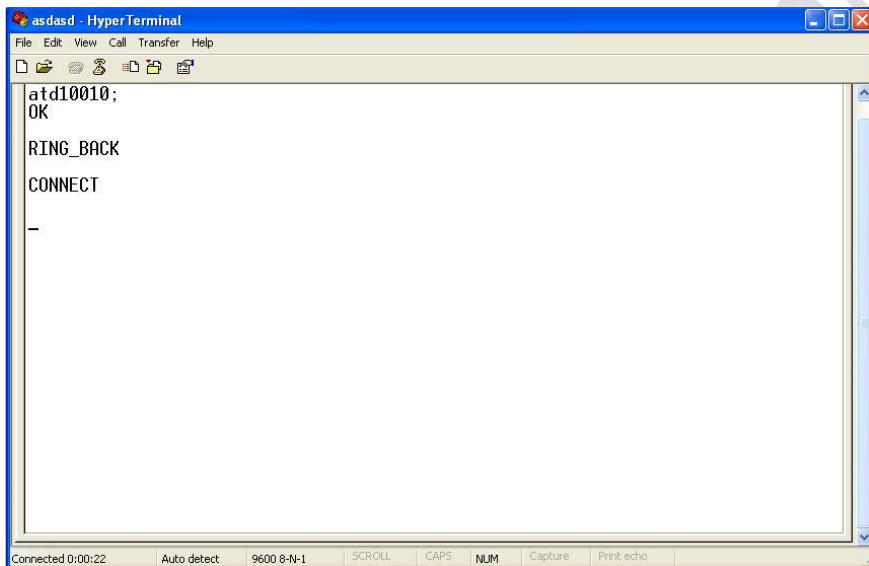
E) there is a note after Network Connection is successful.



Picture 33: Dial success

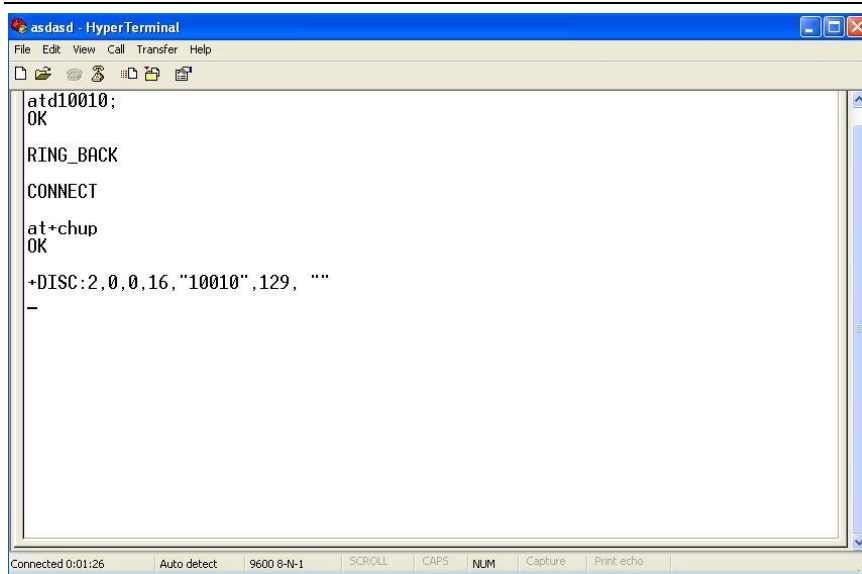
### 4.3. How to make voice call out

- A. Put SIM/USIM card which support voice service into EVB board.
- B. Open the HyperTerminal, configuration same as Picture 22 and 23.
- C. The AT command for dial phone call is “ATDXXX;”. For example, we make a call to 10010, type “ATD10010;”



**Picture 34: Using HyperTerminal dial number**

- D. The AT Command for Hang up is “AT+CHUP”.



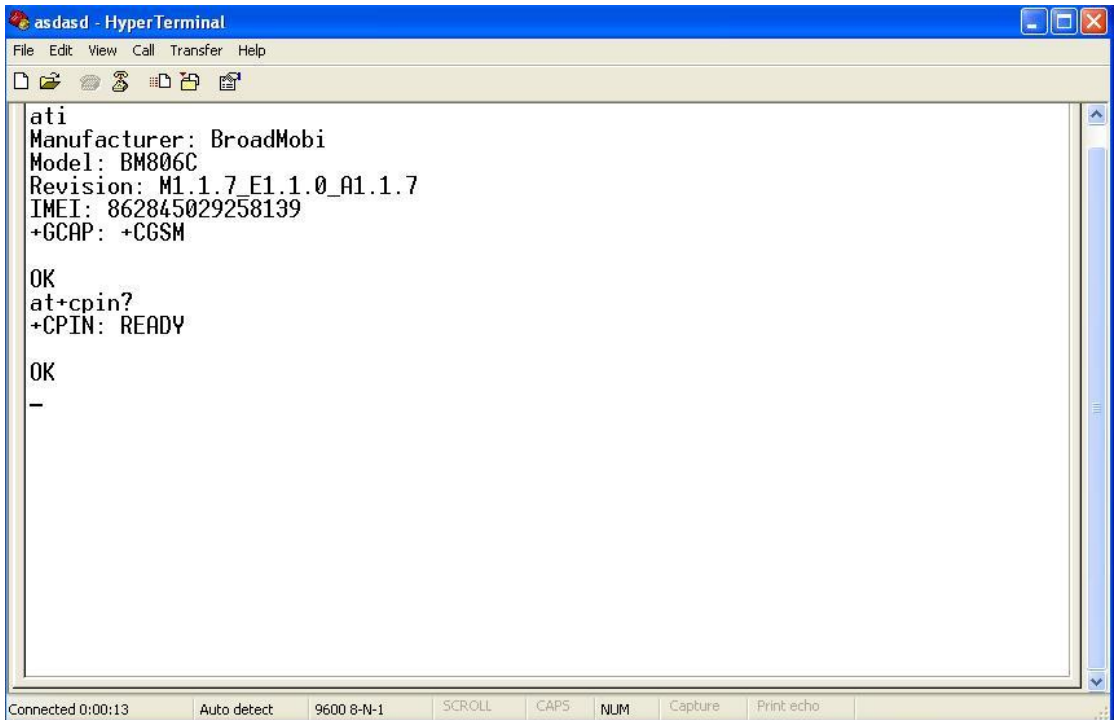
```
asdasd - HyperTerminal
File Edit View Call Transfer Help
atd10010;
OK
RING_BACK
CONNECT
at+chup
OK
+DISC:2,0,0,16,"10010",129, ""
-
```

Connected 0:01:26 Auto detect 9600 8-N-1 SCROLL CAPS NUM Capture Print echo

**Picture 35: Hand up phone call**

#### 4.4. How to check module information and SIM card status

- A. Put SIM/USIM Card which supports voice service into EVB board.
  - a) Open the HyperTerminal, configuration same as Picture 22 and 23.
- B. Type “AT”, shows module information; type “AT+CPIN?” shows SIM Card Status.



```
asdasd - HyperTerminal
File Edit View Call Transfer Help
[Icons]
ati
Manufacturer: BroadMobi
Model: BM806C
Revision: M1.1.7_E1.1.0_A1.1.7
IMEI: 862845029258139
+GCAP: +CGSM

OK
at+cpin?
+CPIN: READY

OK
-
```

Connected 0:00:13    Auto detect    9600 8-N-1    SCROLL    CAPS    NUM    Capture    Print echo

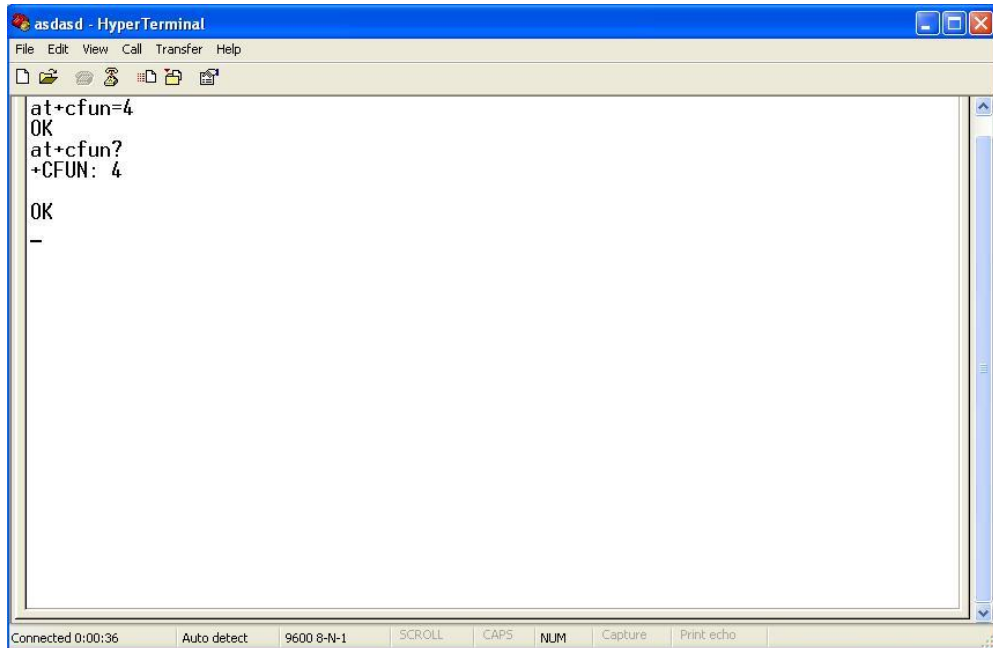
### Picture 36: Show module information and SIM Status

Warning: SIM Card shows “Ready” indicate SIM status is normal, if it shows other, it means unmoral, please make sure your SIM is whether or not valid, or has pin.

#### 4.5. How to set airplane mode

A. Type ATCommad“AT+CFUN=4”, enter intoairpalne mode.

(at+cfun=1 is normal mode; at+cfun=0 turn off RF, SIM 卡 cannot register ; default is equal 1; at+cfun? shows current status)



```
asdasd - HyperTerminal
File Edit View Call Transfer Help
[at+cfun=4
OK
at+cfun?
+CFUN: 4
OK
-
Connected 0:00:36 Auto detect 9600 8-N-1 SCROLL CAPS NUM Capture Print echo
```

**Picture 37 : Setting airplane mode**

\*RF warning for Mobile device:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

when the module is installed inside another device, This exterior label can use wording such as the following: “Contains Transmitter Module FCC ID: 2AON8-BM817C”



**CAUTION:**

**1. Labelling requirements.**

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.

**2. Information to user.**

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**3. Information to the user.**

Note: 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 or more 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.**