# User Manual

R30



Shanghai AllyNav Technology Co.,Ltd.
Version 1.0
19/Aug/2020

# Table of Contents



# Figure List





Address: Room 201, Building 1, No,99, Lane 215, Gaoguang Road, QingPu District, Shanghai,
Tel: 021-61200180 Web: www.allynav.com

# 1. Abstract

This paper mainly introduces configuration of R30-NET receiver.

# 2. Device Configuration

## 2.1 Configuration of R30 Device.

R30 receiver is the device analysis satellite signal. The quality of signal output is related to satellite antenna installation environment. Should avoid interference or cover when installation satellite antenna.



### 2.1.1 Hardware

Hardware for R30 configuration:

| No. | Name | Volume | Note | Figure |
|---|---|---|---|---|
| 1 | R30 | 1 | |  |
| 2 | Antenna | 1 | |  |
| 3 | Antenna Cable | 1 | 10m | |

| | | | | |
|---|---|---|---|---|
| 4 | Data cable | 1 | RS232 |  |
| 5 | USB-Serial Port Converter | 1 | |  |
| 6 | Laptop | 1 | | |

### 2.1.2 Software

Software need for R30 configuration:

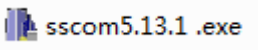



Figure 1 Configuration Software



### 2.1.3 R30 Device Installation

Connect device and accessories before configuration R30 device.
Connect option figure show as blow (Figure2):

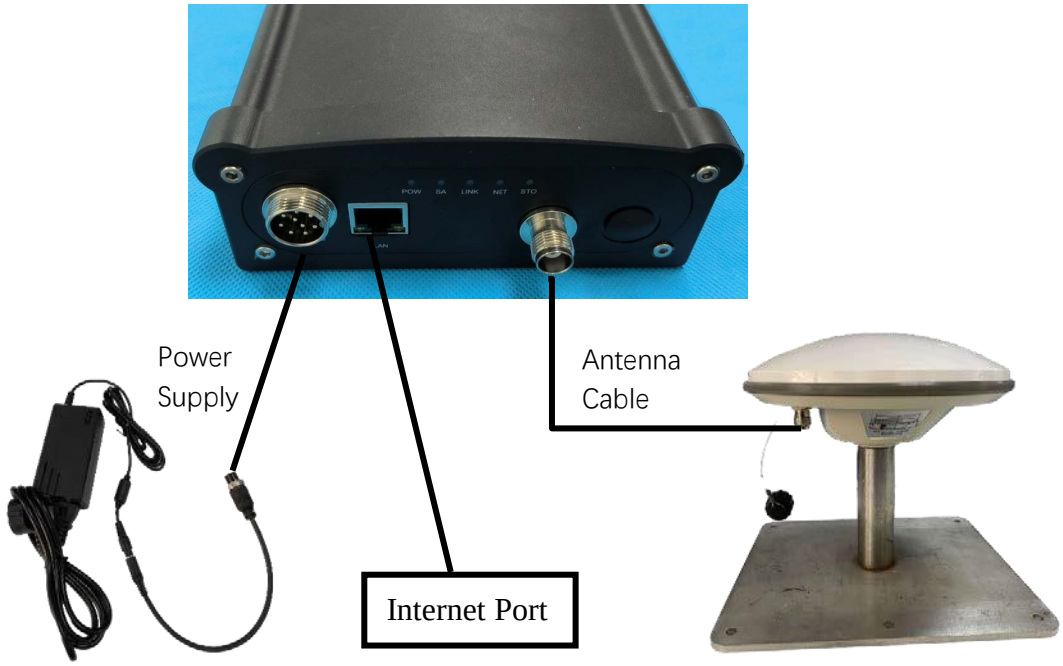



Figure 2 R30 Install options

*Note:*

*Must make sure there is no large area cover, high voltage cable, transformer, etc. when installation satellite antenna. It is for avoid interference satellite antenna signal.*

*It is not suggested to move antenna or change internet port after configuration. Please reference "Appendix-2" to make sure device output right signal if the position of antenna or internet port has been changed.*

After install R30 and set antenna in right position, connect R30 to laptop and start configuration. The way of cable installation show in below.（Figure3）



Address: Room 201, Building 1, No,99, Lane 215, Gaoguang Road, QingPu District, Shanghai,
Tel: 021-61200180 Web: www.allynav.com

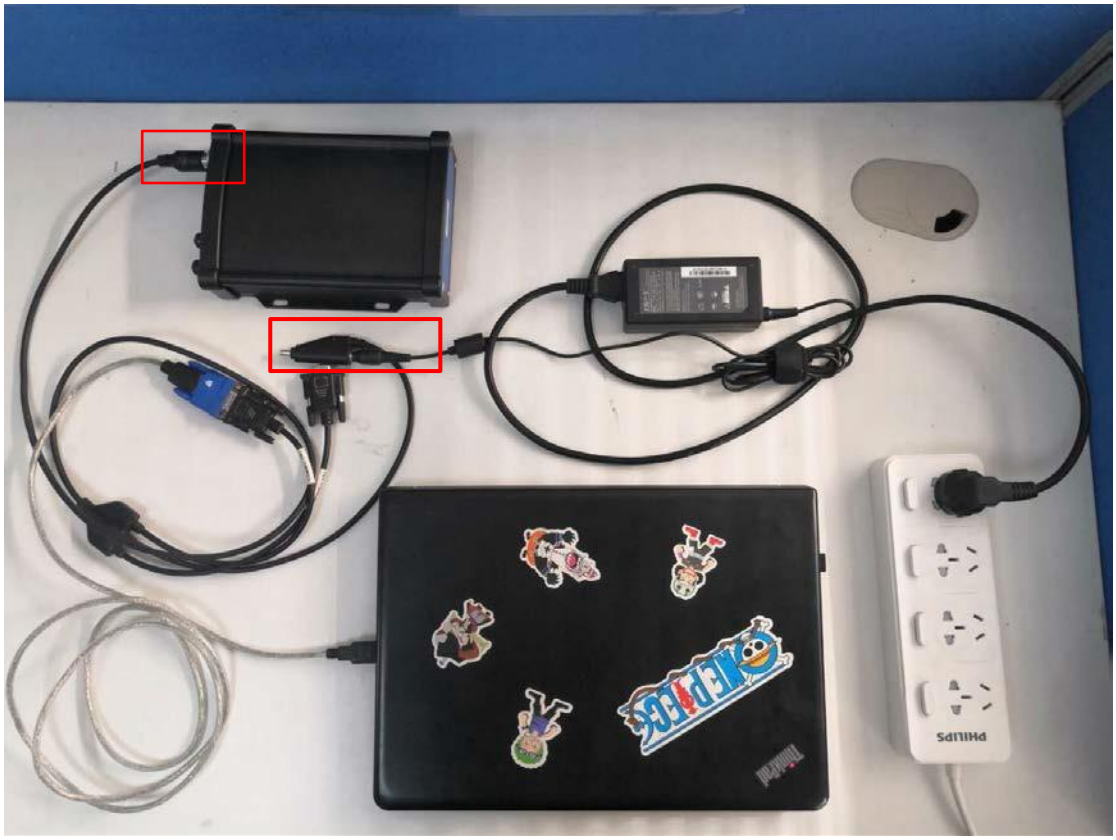





Figure 3 Device Configuration Install Options

Keep other accessories connected and plug in data cable on power supply port and connect power adapter.

*Note: USB-Serial Port Converter should connect to DB9 connector on data cable with COM label.*

### 2.1.4 Software Introduce

Operation sscom5.13.1.exe software and interface show as blow:

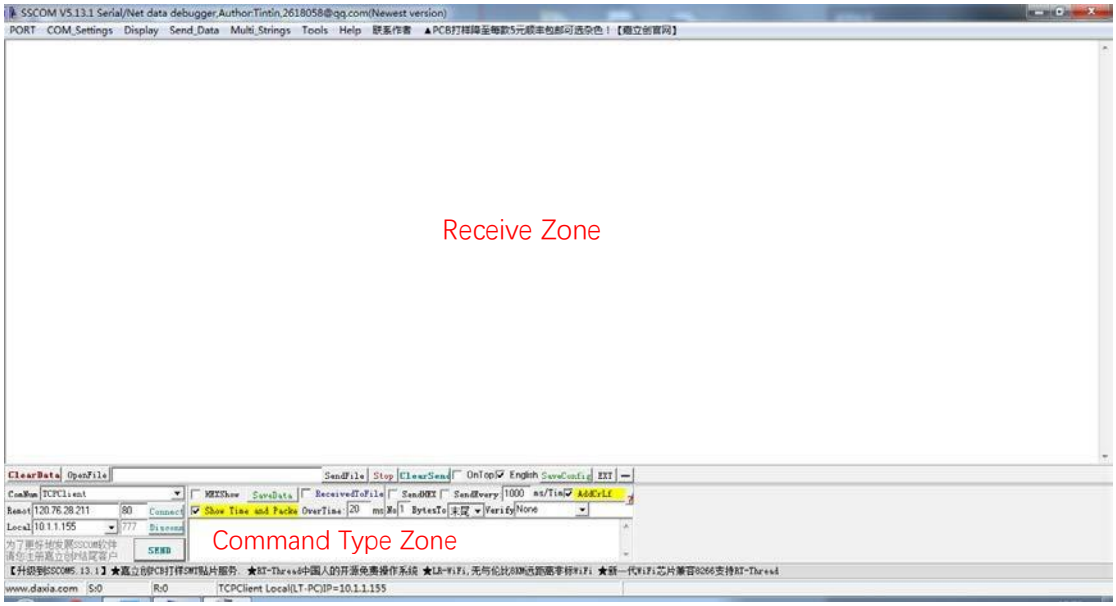



Figure 4 Configuration Software

Figure4 is R30 configuration interface. All configuration of R30 will be done at here.



Almost all software operations have showing on figure 5. Blue zone includes communication port, Baud rate, “OpenCom” button and “Send” button between software and R30. Red zone must be chosen; it could be double check after operation software. Before configurate the R30 device, we should choose right Com Number which match with USB-Serial Port Converter, then choose baud rate (38400 in normally), click “OpenCom”

to start type in and send command to R30 device.


Figure 5 Software Notes

Click “EXT” will expand a shortcuts (Figure6), you can customize your command at here (Blue Zone) and send command quickly by click (Red Zone).

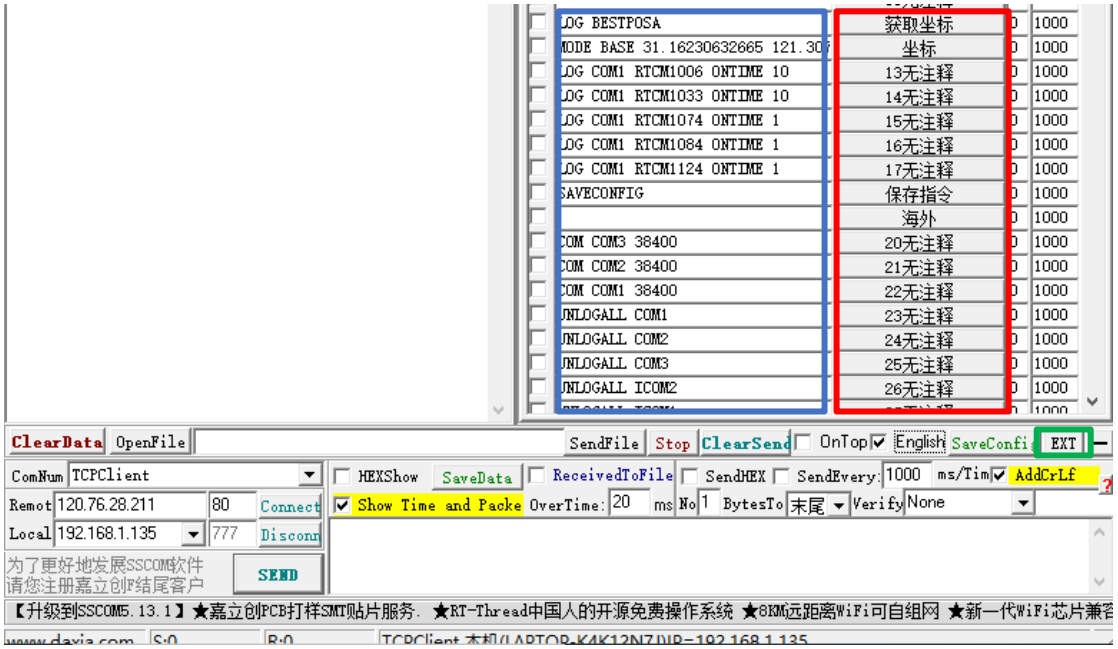



Figure 6 Shortcuts

## 2.1.5 The Use of Software

Operation software after double check hardware connect and power supply. Choose port No. in figure5 blue zone (The laptop recognizes the port number of the USB-Serial port converter), Baud rate (original 38400). Click “OpenCom” button after double check red zone have been choose. Then, connect between software and R30 has finished.



Address: Room 201, Building 1, No,99, Lane 215, Gaoguang Road, QingPu District, Shanghai,
Tel: 021-61200180 Web: www.allynav.com

The communication available should be check before configuration R30. Show as figure7:


Figure 7 Communication Check

Enter “LOG VERSION” in software enter zone and click “SEND” button. View feedback from receive zone. Show as figure8.

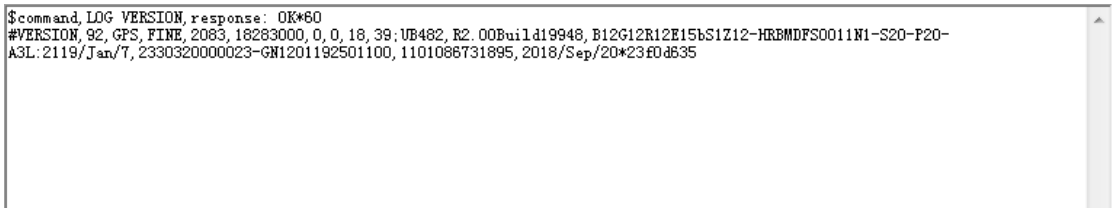



Figure 8 Version Feedback

Show as figure 8, there will exist a feedback start with #VERSION when you send “LOG VERSOIN”. That means software communicate in normal. Please check device connect, communication setting, etc. are correct.

### 2.1.6 Configuration Commands

Setting R30 as command below when check software could communication in normal.

Table 1 is the commands description and command list use for configurate will show in appendix.

Table 1 Configuration Commands Description

| No. | Command | Description |
|---|---|---|



Address: Room 201, Building 1, No,99, Lane 215, Gaoguang Road, QingPu District, Shanghai,
Tel: 021-61200180 Web: www.allynav.com

| | | |
|---|---|---|
| 1 | FRESET | Reset, communicate Baud rate should change to 115200 and then send command below. |
| 2 | UNLOGALL COM1 | Clear COM1 output statement |
| 3 | UNLOGALL COM2 | Clear COM2 output statement |
| 4 | UNLOGALL COM3 | Clear COM3 output statement |
| 5 | UNLOGALL ICOM1 | Clear ICOM1 serial port data output |
| 6 | COM COM3 38400 | Change COM3 port Baud rate to 38400 |
| 7 | COM COM2 38400 | Change COM2 port Baud rate to 38400 |
| 8 | COM COM1 38400 | Change COM3 port Baud rate to 38400 |
| 9 | MASK 10 | Set the satellite antenna height cut-off angle to 10 degrees |



Address: Room 201, Building 1, No,99, Lane 215, Gaoguang Road, QingPu District, Shanghai,
Tel: 021-61200180 Web: www.allynav.com

| | | |
|---|---|---|
| 10 | RTKTIMEOUT 6 | Set the board RTK differential age to 6s |
| 11 | DGPSTIMEOUT 6 | Set the board DGPS differential age to 6s |
| 12 | NMEATALKER GP | Set statement header to GP format |
| 13 | MODE ROVER | Set as a rover |
| 14 | LOG COM2 GPGGA ONTIME 1 | Request port2 output 1Hz GPGGA |
| 15 | LOG BESTPOSA | Obtain the best coordinate of current Satellite Antenna. Intercept coordinate form feedback and recording for use. |
| 16 | MODE BASE | Set receiver start coordinate. Edit the coordinate obtain form last command into this command and send. Format show as: MODE BASE long lat H. |



Address: Room 201, Building 1, No,99, Lane 215, Gaoguang Road, QingPu District, Shanghai,
Tel: 021-61200180 Web: www.allynav.com

| | | |
|---|---|---|
| 17 | CONFIG ETH1 192.168.0.200<br>192.168.0.1 255.255.255.0 | Set the receiver IP address information |
| 18 | CONFIG ICOM1 TCP<br>47.254.178.218 10001 | Set the return port code |
| 19 | LOG ICOM1 RTCM1004<br>ONTIME 1 | Differential data |
| 20 | LOG ICOM1 RTCM1104<br>ONTIME 1 | Differential data |
| 21 | LOG ICOM1 RTCM1012<br>ONTIME 1 | Differential data |
| 22 | LOG ICOM1 RTCM1033<br>ONTIME 1 | Differential data |
| 23 | LOG ICOM1 RTCM1005<br>ONTIME 10 | Differential data |



Table1 is all configuration command and command description. Setting R30 should follow the steps in table.

Detail configuration steps show in below:

Note: Each command has to occupy one line. It is not allowed to have more than one command in one line. But, it could each line have one command and send together.

FRESET

This is reset command. Should change Baud rate to 115200 after sends this command. If not, other command will cannot send in available. Interface should show as blow after send:

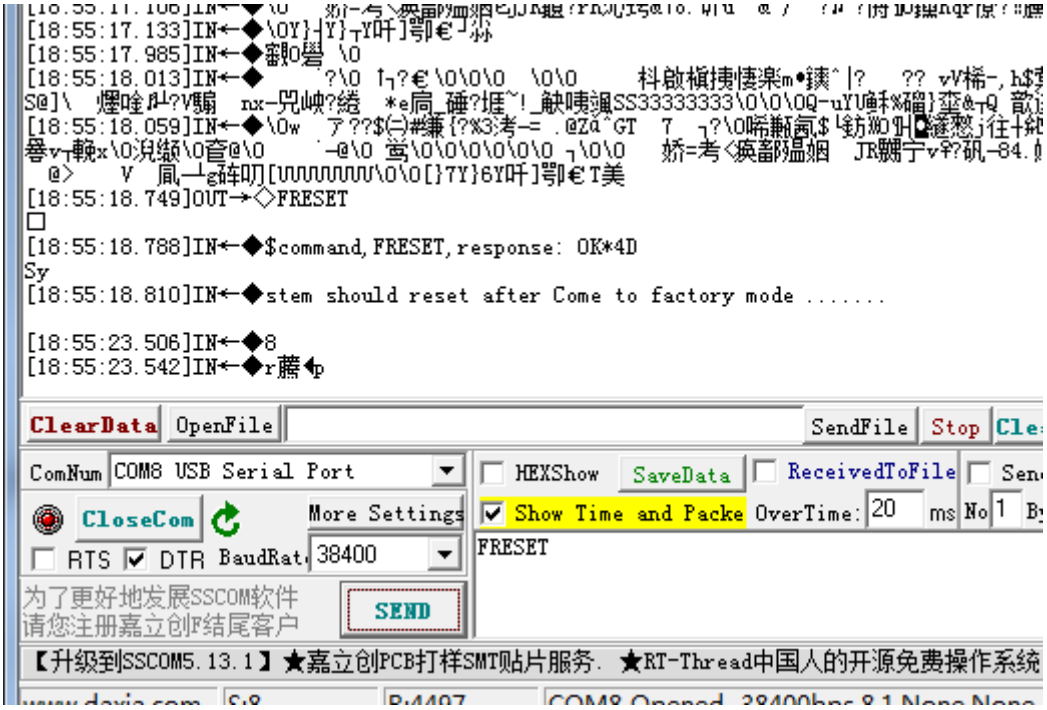



Figure 9 FRESET

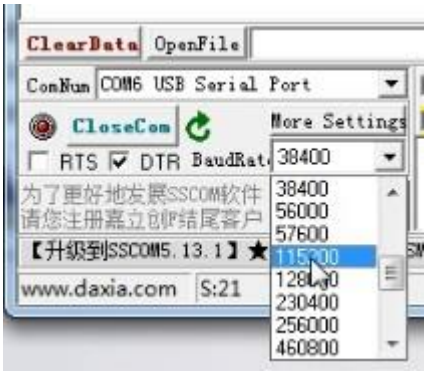



Figure 10 Change Baud rate to 115200

COM COM3 38400

COM COM2 38400



Address: Room 201, Building 1, No,99, Lane 215, Gaoguang Road, QingPu District, Shanghai,
Tel: 021-61200180 Web: www.allynav.com

COM COM1 38400

These commands change port Baud rate to 38400, could send in together. We change the Baud rate of COM1 to 38400 after sends those command. Thus, we need change communicate Baud rate to 38400. If not, other command will cannot send success.
Interface will show as below:

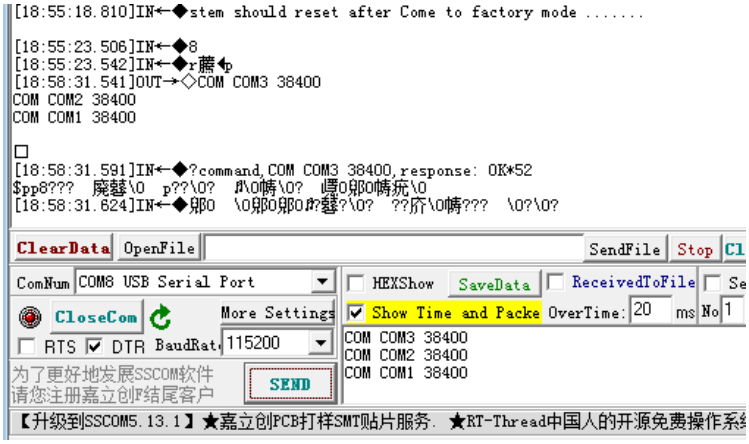



Figure 11 COM 38400

COM COM3 38400

COM COM2 38400

COM COM1 38400

We could send these 3 commands again for double check software communicate. Mind the baud rate change to 38400.
Interface should show as blow:



Address: Room 201, Building 1, No,99, Lane 215, Gaoguang Road, QingPu District, Shanghai,
Tel: 021-61200180 Web: www.allynav.com

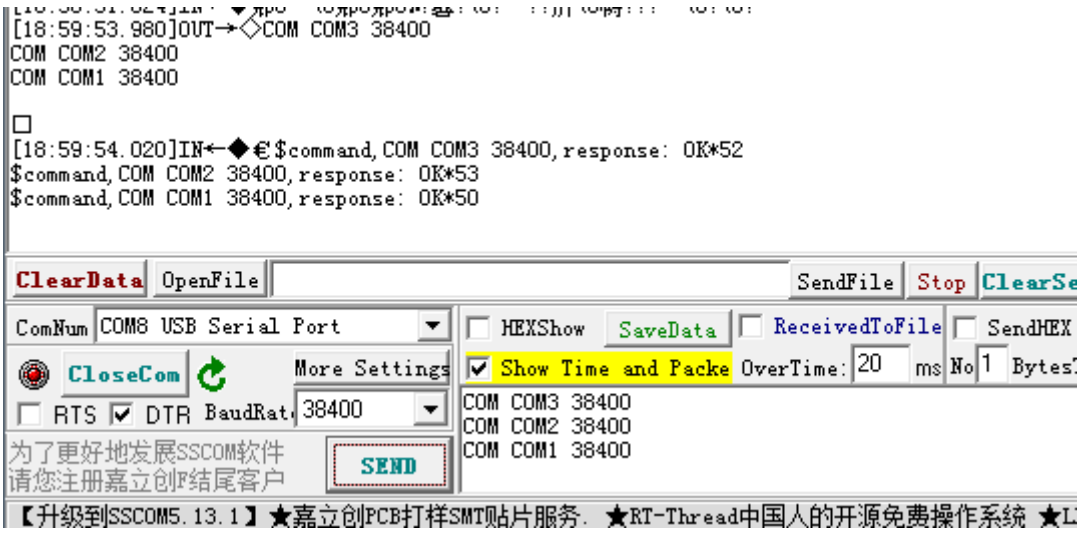



Figure 12 COM 38400 Double Check

UNLOGALL COM1

UNLOGALL COM2

UNLOGALL COM3

This command uses for clean output statement. UNLOGALL COM1 means clean COM1 port output statement.
Interface show as below:


Figure 13 UNLOGALL

UNLOGALL ICOM1

This command uses for clear serial port data output. UNLOGALL



Address: Room 201, Building 1, No,99, Lane 215, Gaoguang Road, QingPu District, Shanghai,
Tel: 021-61200180 Web: www.allynav.com

ICOM1 means clear ICOM1 port data output.
Interface show as below:

Figure 13 UNLOGALL ICOM1

MASK 10

RTKTIMEOUT 6



DGPSTIMEOUT 6
NMEATALKEP GP
These four commands use for setting receiver, four commands could send together.
Interface show as blow when command send success:

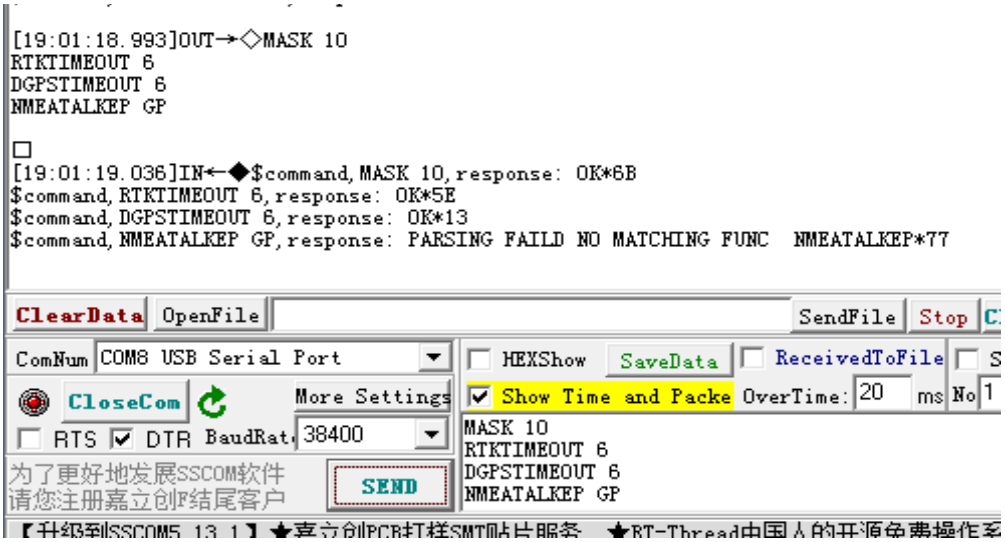



Figure 13 MASK 10, RTKTIMEOUT 6, DGPSTIMEOUT 6

MODE ROVER

This command sets device as a rover station. Interface will show “ok”



when setting successful.

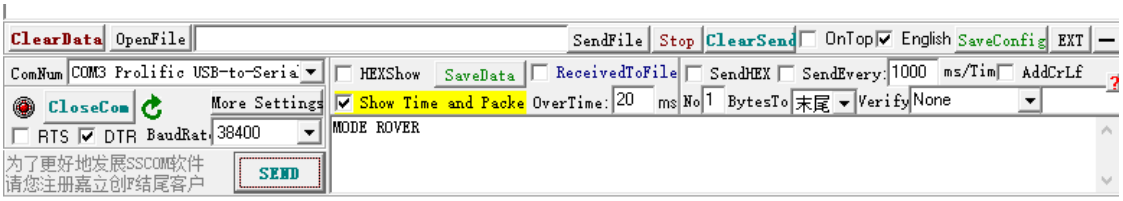



Figure 14 MODE ROVER

LOG COM2 GPGGA ONTIME 1

This command uses for request COM2 port output 1Hz GPGGA data. Interface show as below:

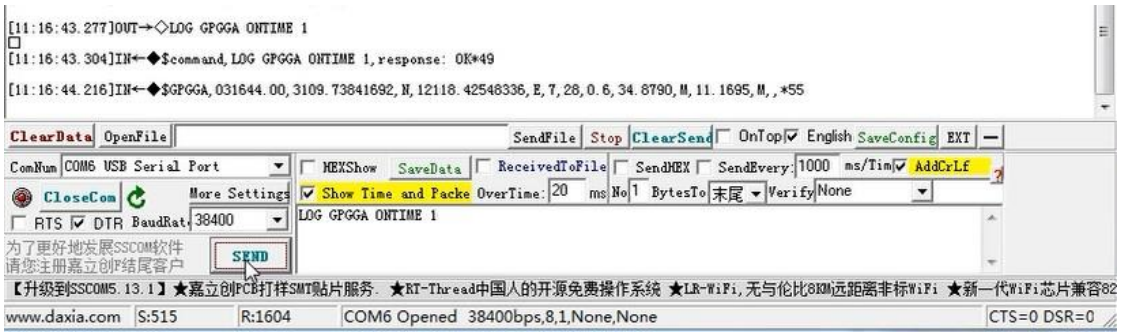



Figure 15 COM2 Output GPGGA ONTIME1

## LOG BESTPOSA

Obtain the best position of satellite antenna.

Interface show as blow when command send success:

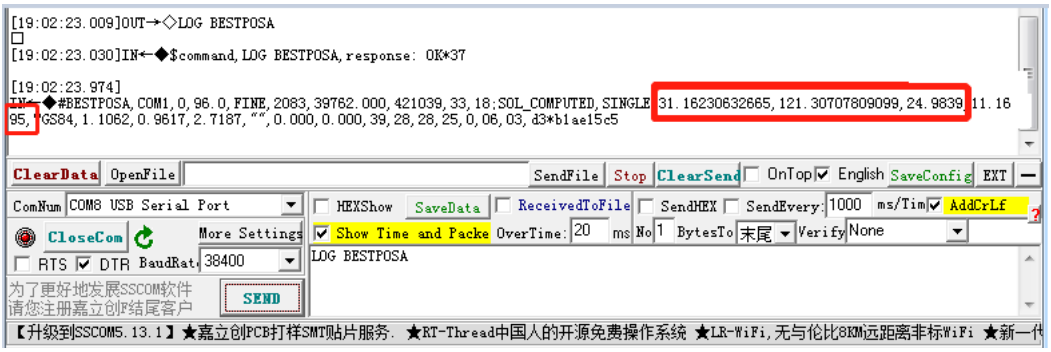



Figure 16 BESTPOSA

In this command feedback, we should record three information longitude, latitude and elevation respectively. For instance, information shows as
31.16230632665,121.30707809099,24.9839
Respectively means longitude, latitude, high altitude. Elevation is plus last two data. Thus, longitude, latitude and elevation are 31.16230632665, 121.30707809099 and 24.9839.



Address: Room 201, Building 1, No,99, Lane 215, Gaoguang Road, QingPu District, Shanghai,
Tel: 021-61200180 Web: www.allynav.com

MODE BASE

Set start coordinate of R30 receiver. We need use command feedback form last command to edit this command.
MODE BASE 31.16230632665 121.30707809099 24.9839

Interface show as blow:

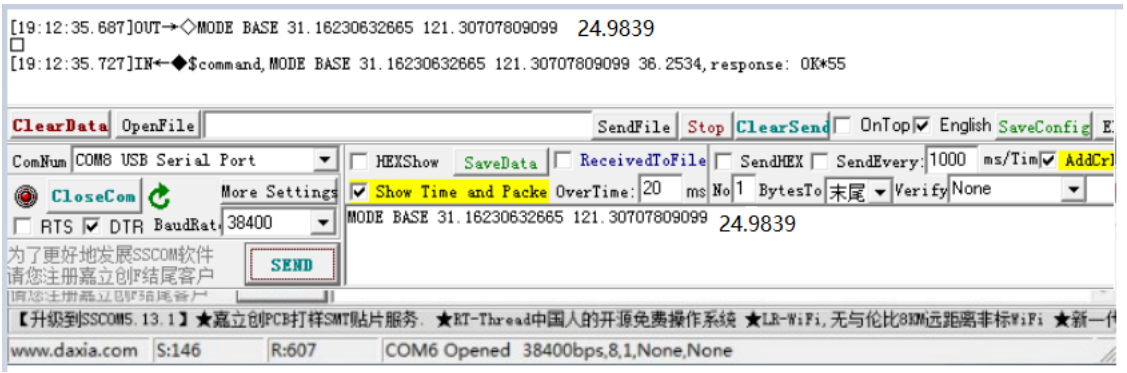
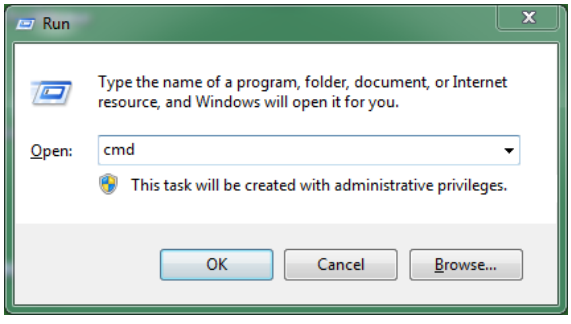



Figure 17 MODE BASE

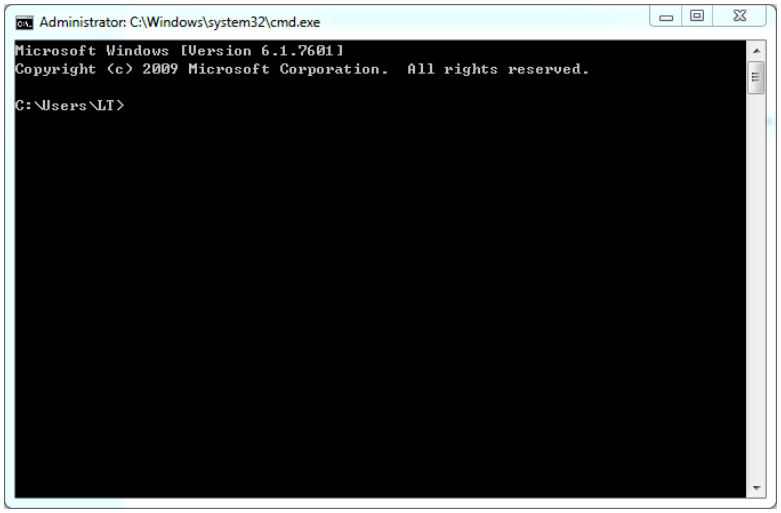


IP information obtain steps:

1. Plug the internet cable which should connect to R30 on lattop.
2. Click  Win+R on keyboard to operating “Run”.
3. Type in “cmd”

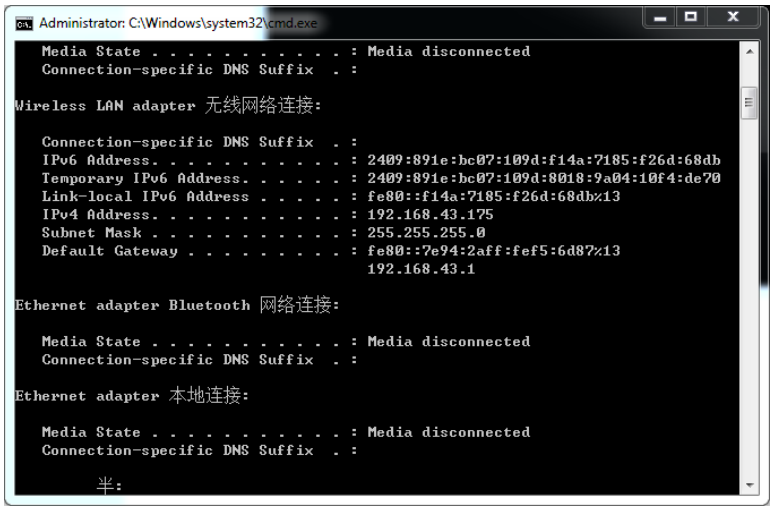



4. Click “OK” for next step.




5. Type in “ipconfig” and click “Enter” on keyboard to obtain IP information using for R30 configuration.
6. Read IP information.






Read form IP information obtain steps.

CONFIG ETH1 192.168.0.200 192.168.0.1 255.255.255.0

This command uses for setting Internet IP address information.
Interface show as below:

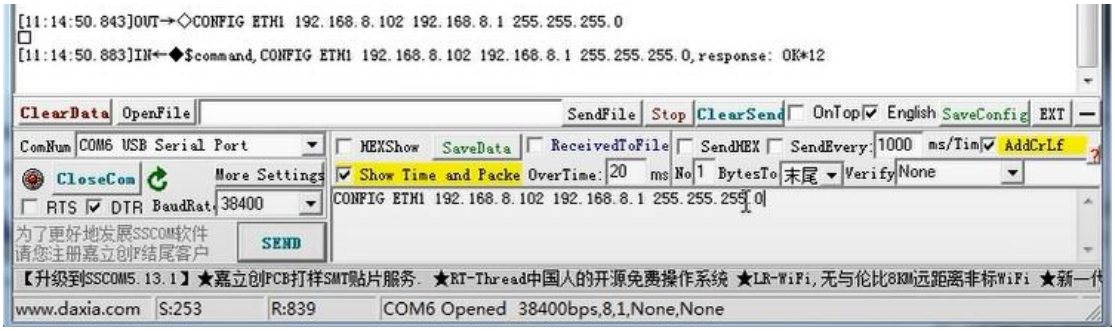



Figure 18 IP Address Information

CONFIG ICOM1 TCP 47.254.178.218 10001

This command uses for setting code of return port. Last 5 numbers should ask form AllyNav engineer.

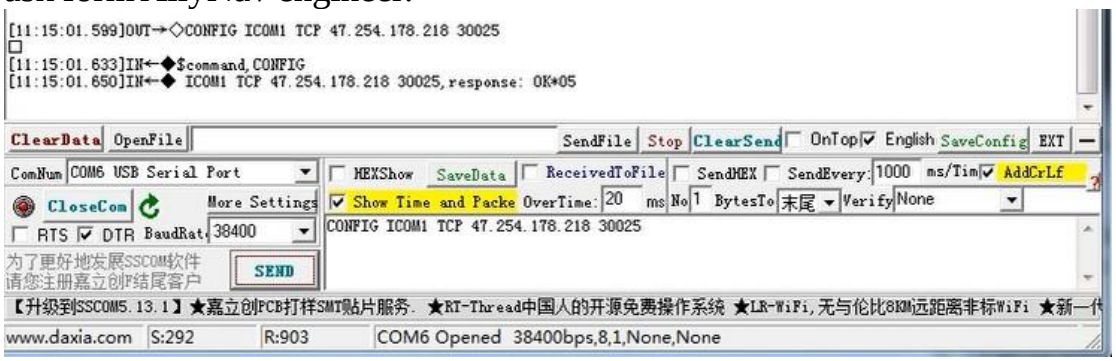



Figure 19 Setting Return Port

LOG ICOM1 RTCM1004 ONTIME 1
LOG ICOM1 RTCM1104 ONTIME 1
LOG ICOM1 RTCM1012 ONTIME 1
LOG ICOM1 RTCM1005 ONTIME 1
These commands require receiver output RTCM difference data. These five commands could send together.
Interface should show as blow:



Address: Room 201, Building 1, No,99, Lane 215, Gaoguang Road, QingPu District, Shanghai,
Tel: 021-61200180 Web: www.allynav.com

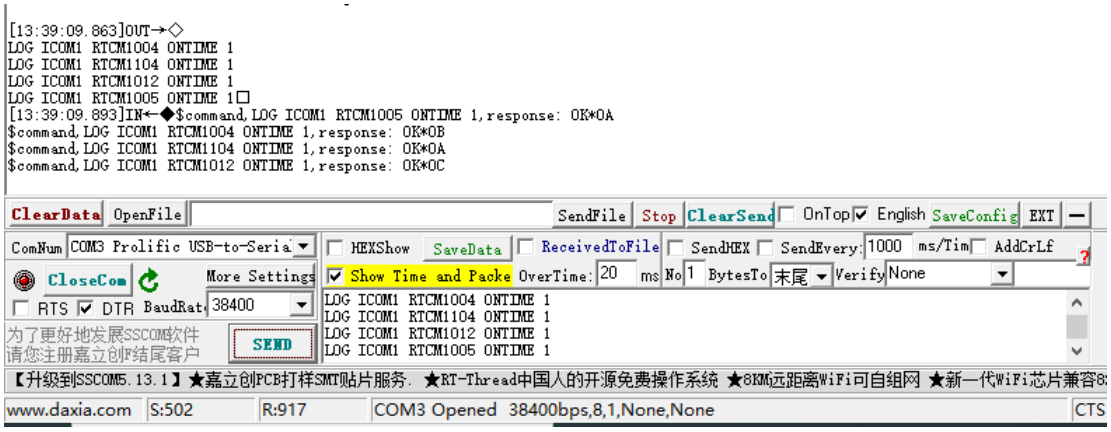



Figure 20 Require receiver output RTCM difference data

SAVECONFIG

This command is saving the command which we send before into receiver.



Interface should show as blow:


Figure 21 SAVECONFIG

Those are R30 configuration step. Please contact our company engineer if there are any question.

# Appendix-1

All configuration commands show in blow:

```
FRESET
UNLOGALL COM1
UNLOGALL COM2
UNLOGALL COM3
UNLOGALL ICOM1
CONFIG COM3 38400
CONFIG COM2 38400
```



```
CONFIG COM1 38400

MASK 10

RTKTIMEOUT 6

DGPSTIMEOUT 6
NMEATALKER GP
MODE ROVER
LOG COM2 GPGGA ONTIME 1
LOG BESTPOSA
MODE BASE

CONFIG ETH1 192.168.0.200 192.168.0.1 255.255.255.0
CONFIG ICOM1 TCP 47.254.178.218 10001
LOG ICOM1 RTCM1004 ONTIME 1
```

LOG ICOM1 RTCM1104 ONTIME 1
LOG ICOM1 RTCM1012 ONTIME 1
LOG ICOM1 RTCM1005 ONTIME 1
SAVECONFIG

# Appendix-2

**Antenna position has been changed.**

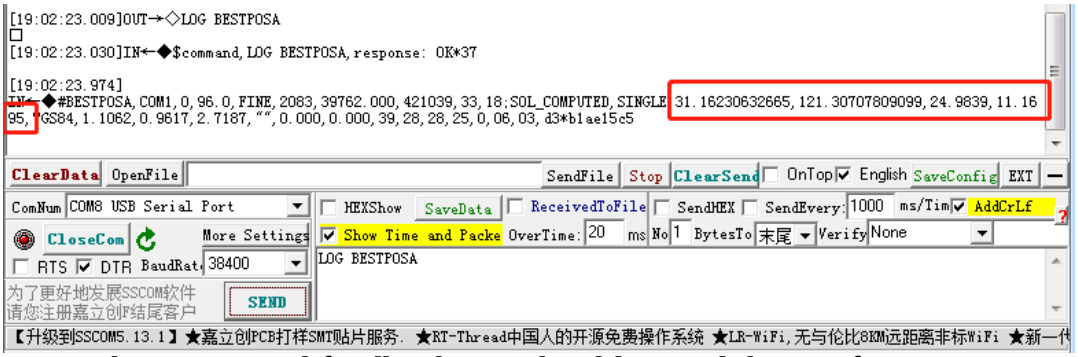
You have to configuration “LOG BESTPOSA” and “MODE BASE” for R30. Commands show as below.



LOG BESTPOSA

Obtain the best position of satellite antenna.

Interface show as blow when command send success:




In this command feedback, we should record three information longitude, latitude and elevation respectively. For instance, information shows as 31.16230632665,121.30707809099,24.9839,11.1695 respectively

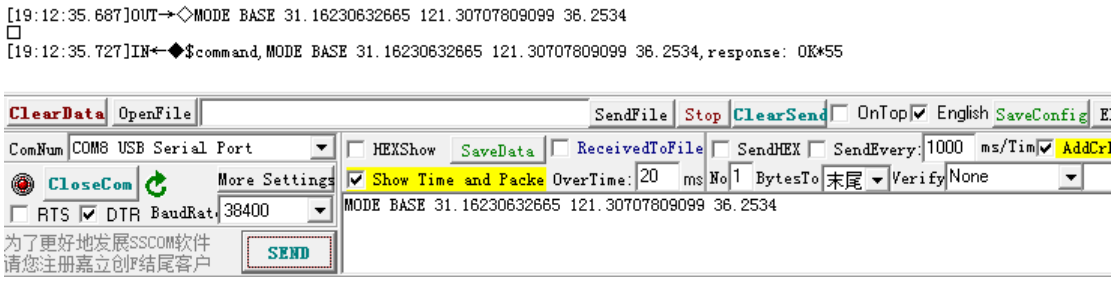
means longitude, latitude, high altitude, geoid gap minus distance between geoid gap and WG84 oval ball. Elevation is plus last two data. Thus, longitude, latitude and elevation are 31.16230632665, 121.30707809099 and 36.2534.

MODE BASE

Set start coordinate of R30 receiver. We need use command feedback form last command to edit this command.
MODE BASE 31.16230632665 121.30707809099 36.2534

Interface show as blow:






SAVECONFIG

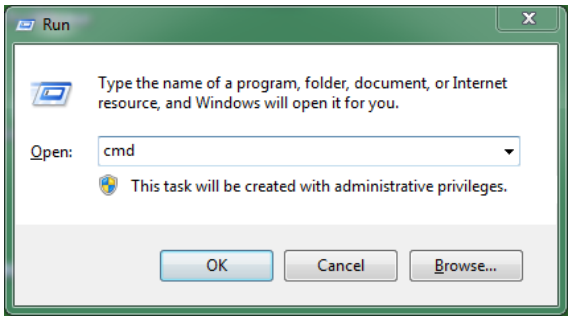
This command is saving the command which we send before into receiver.
Interface should show as blow:


**Change the internet which connect with R30 device.**

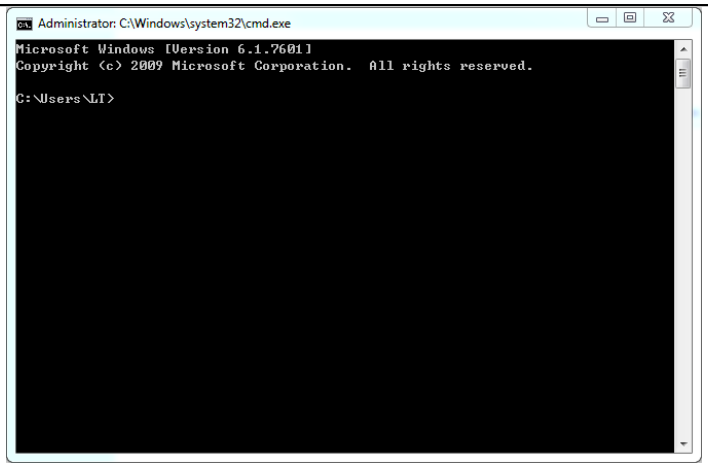
If the internet connect with R30 device has been changed, you have to obtain internet information again and configurate R30 in new IP information.
IP information obtain steps:



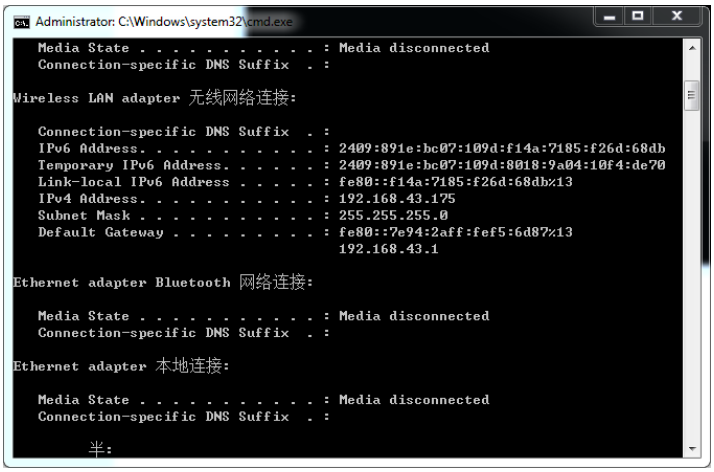
7. Plug the internet cable which should connect to R30 on lattop.
8. Click  Win+R on keyboard to operating “Run”.
9. Type in “cmd”




10. Click “OK” for next step.




11. Type in "ipconfig" and click "Enter" on keyboard to obtain IP information using for R30 configuration.
12. Read IP information.






Then, using software configurate R30 IP information.

Read from laptop, please reference IP information Obtain steps.

CONFIG ETH1 192.168.0.200 192.168.0.1 255.255.255.0

This command uses for setting Internet IP address information.
Interface show as below:


SAVECONFIG

This command is saving the command which we send before into receiver.
Interface should show as blow:




Address: Room 201, Building 1, No,99, Lane 215, Gaoguang Road, QingPu District, Shanghai,
Tel: 021-61200180 Web: www.allynav.com

## FCC Statement :

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

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.

**FCC Radiation Exposure Statement:**

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.

**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.