CAREU P2 Personal Tracker
User Guide

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SYSTEMS & TECHNOLOGY CORP.

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Chapter 1. Introduction

The **CAREU P2 Personal Tracker** integrates GSM and GPS tracking services to provide monitoring care for the elderly and children by mobile applications. **CAREU P2** can be activated through mobile phones to track down the latest position of the device user, while the manually activated Geo-fencing Protection featured by **CAREU P2** makes it possible to detect if the device is either inside or outside of the predefined safety zone range.

In case of emergencies, the **CAREU P2** device user (elderly or children) is able to ask for help by simply pressing the SOS button on the device. Upon button trigger, the **CAREU P2** will automatically send alert messages to notify the device user's emergency contact and transact services of homecare and protection.

1.1. About this Document

This user guide will walk you through all the features of your **CAREU P2 Personal Tracker** and all the necessary settings for **CAREU P2** functions.

Chapter 2. The Device

2.1. Specification

- Weight: 76g
- GPS Receiver: 72 Channels or Above
- Datum: WGS-84
- Power Source: 5V DC
- Operating Temperature: Charge: 0℃ ~ +40℃; Discharge: 0℃ ~ +60℃
- Communications: GSM 850/900/1800/1900 ,WCDMA 800/850/900/1900/2100 , Voice, SMS, GPRS TCP/UDP
- Back-Up Battery: 770mA Lithium-Ion Battery
- IP65 Water Proof

2.2. Device Outlook
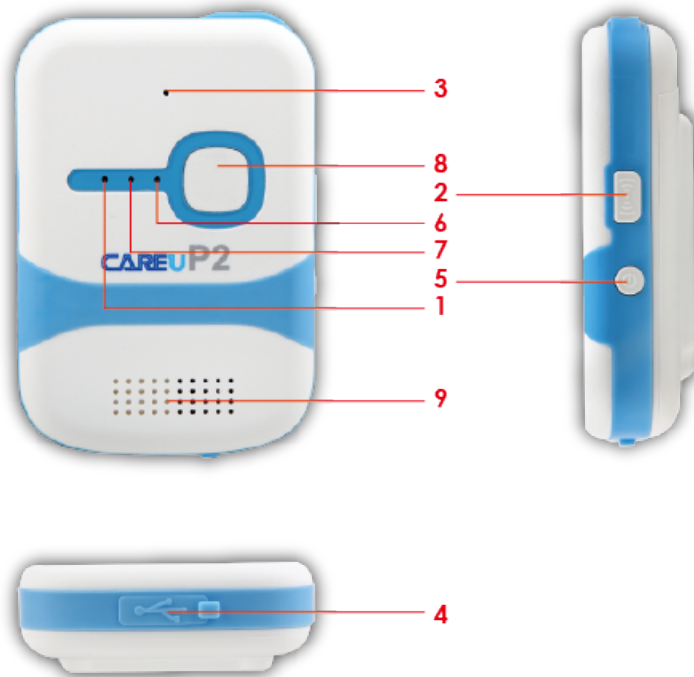
1. Power Button
2. Geo-fencing Button
3. Microphone
4. Micro USB Port
5. Charging & BT Indicator
6. GPS Indicator
7. GSM Indicator
8. SOS Button
9. Speaker

CAUTION
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

- **Notification LED**

1. Power LED: Red lights

   - Red: Charging
   - OFF: Fully charged / Discharging

2. GSM LED: Blue light

   - Flashing (once every 3 seconds): Searching signals
   - Flashing (once every 10 seconds): Receiving signals normally.

3. GPS LED: Yellow light

   - Flashing (once every 3 seconds): Searching signals in normal mode
   - Flashing (once every 10 seconds): Searching signals in A-GPS mode

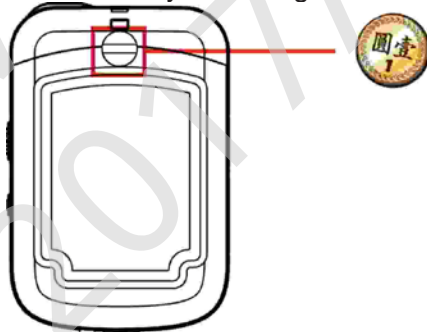4. GSM+GPS LED:

   - Flashing (three times every 5 seconds): SOS Event.
   - Flashing (once every 3 seconds): Self-Geo fence mode
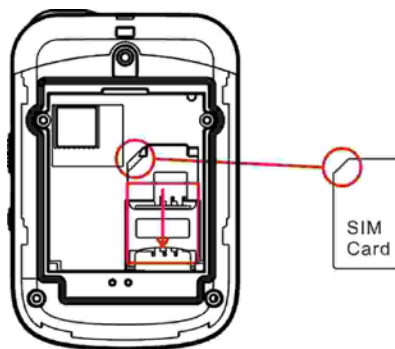
2.3. Setting up the Device

1. Install SIM Card and Battery

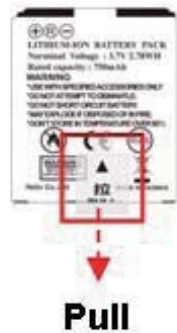   - Open the back cover by removing the mini screw.

     Note: For **CAREU P2** to function, install a SIM card first.

   - Fit the SIM card into SIM card socket with the metal contact facing down.
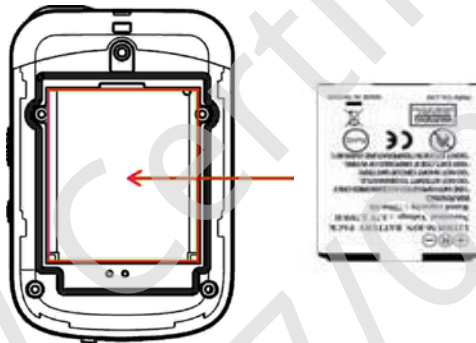
Note: Before installing the SIM card, be sure to remove SIM protection (PIN code) with a mobile phone.

• Remove the plastic strip from the battery.

Pull

• Place the battery into the battery compartment.

• Restore the back cover to its original position.

Note: Before restoring the back cover, make sure the SIM card and battery are installed properly in place.

• Optional: Place the *CAREU P2* into the jelly case cover.

Note: The jelly case may protect your *CAREU P2* from dust and scratches while allowing you full access to the three buttons and mini USB port.

2. Power on the Device

Power on/off your *CAREU P2* with the **Power Button**.

• Power On

To power on *CAREU P2*, press and hold the **Power Button** for 2 seconds. Then *CAREU P2* will make a long beep to indicate power-on status.

Push
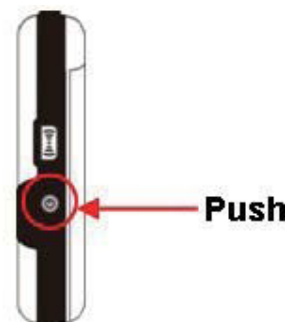
- Power Off

  To power off *CAREU P2*, press and hold the **Power Button** for 2 seconds. The *CAREU P2* will make a long beep and power off.

3. Charge the device

   - You may charge *CAREU P2* through the Micro USB port at the bottom of the device.

     Or

   - Charge *CAREU P2* through the optional *CAREU P2* Station.

   - Charger output specification 5V@1A required.

Chapter 3. Getting Started with CAREU P2

3.1 Device Configuration

1. In Windows OS, open **HyperTerminal**, or similar terminal console program.

2. If you are prompted to input the information of your location, complete them to proceed.

3. On the **File** menu of **HyperTerminal**, click **New Connection**.

4. In the **Name** box, type a name that describes the connection. In the **Icon** box, click an appropriate icon. Press the **OK** button to proceed.
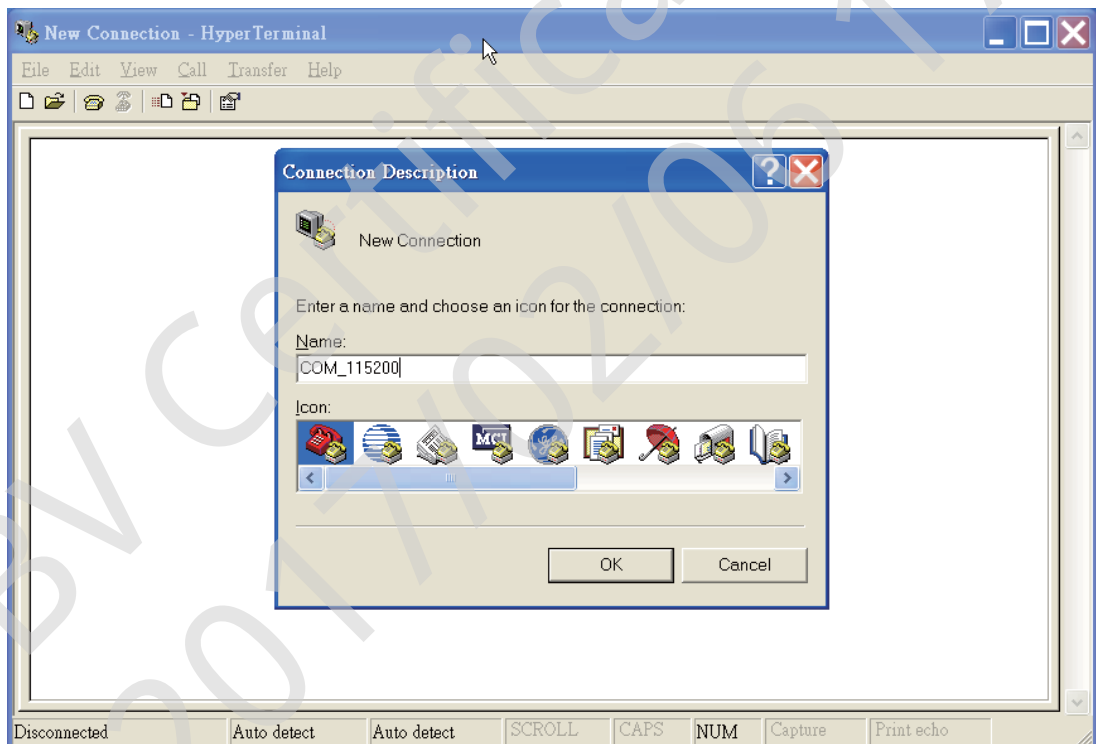
5. For Com port properties, configure as follows:

    Baud Rate --> 115200 bps
    Data Bits -->   8
    Parity -->   None
    Stop Bits -->   1
    Flow Control --> None

6. In the connection that you have just set up, click **File** | **Properties**. Select the **[Connect To]** tab**.** From the **[Connect using]** drop down list, select the correct com port by checking Window's **[DeviceManager].**
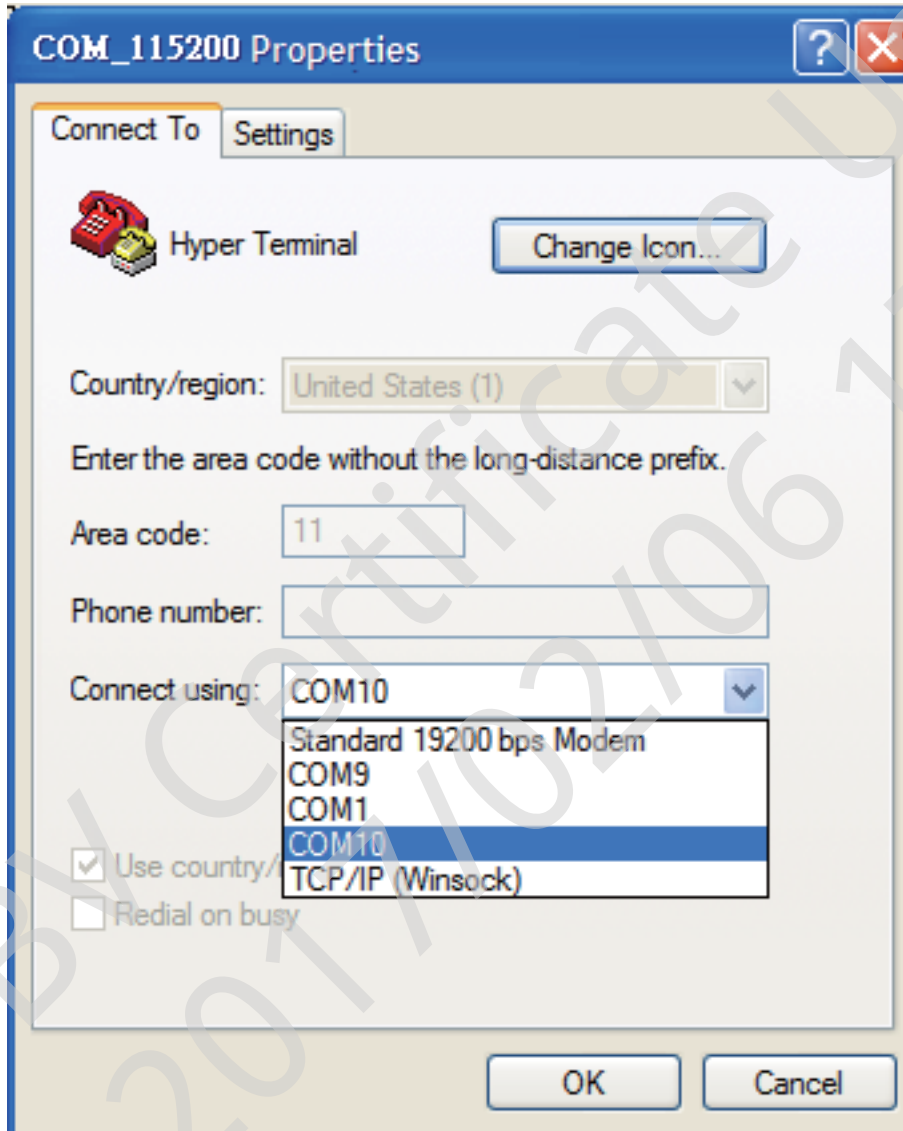
7. In the **File** menu, click **Properties**. Click the **[Settings]** tab. Press the **ASCII Setup** button.
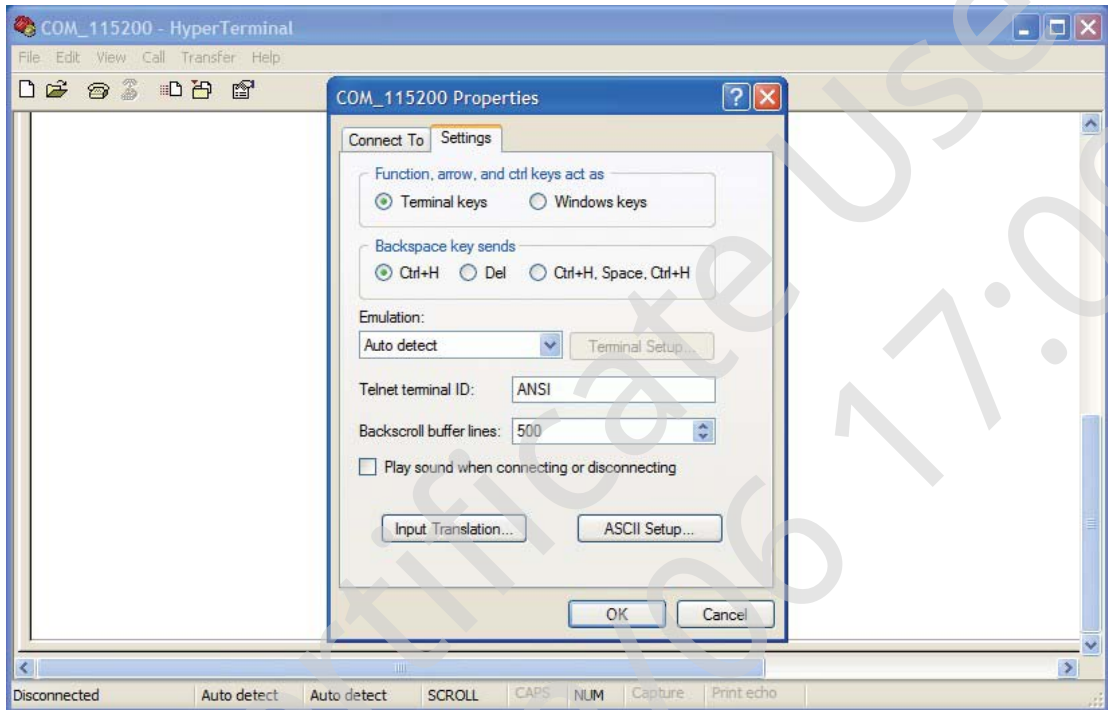
8. In the [**ASCII Sending**] group box. Select both **Send line ends with line feeds** and **Echo typed characters locally**. Press the **OK** button.
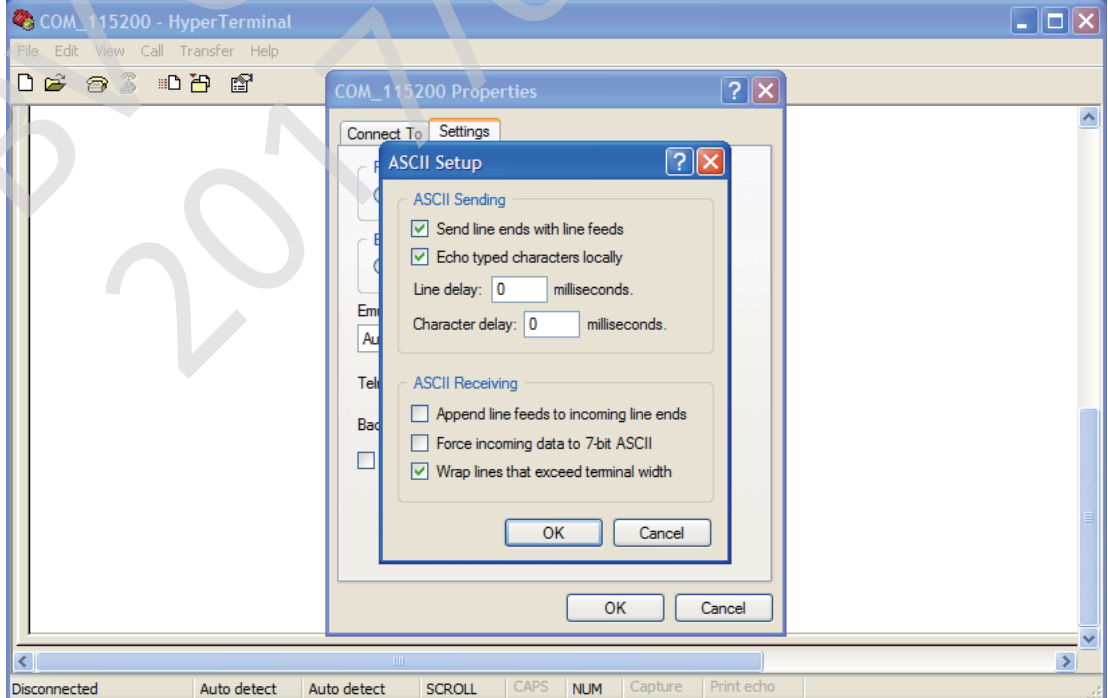
9. Connect **CAREU P2** and Power ON.
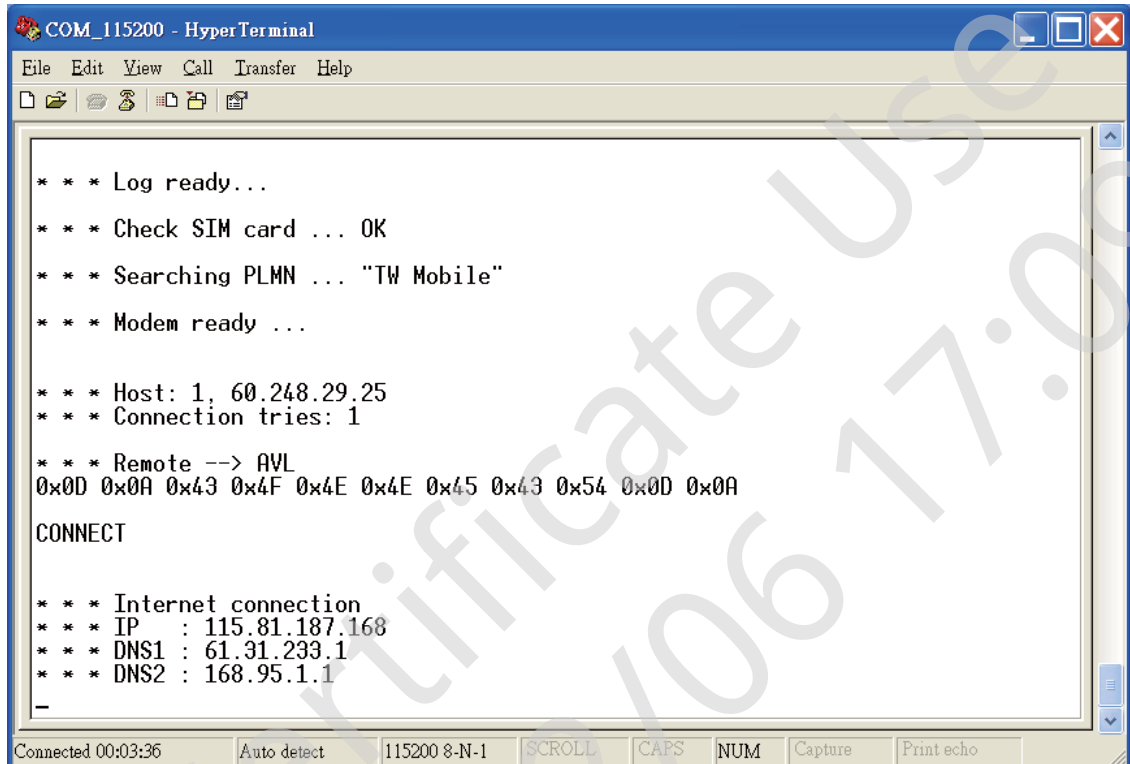
10. In the **[HyperTerminal]** window, type in the command "AT$VERSION?" and press the **Enter** key. The hardware and firmware version will show. As long as your **[HyperTerminal]** window appears as the screenshot below, a connection between the device and your system has already been built up and working. It is time to send all configuration commands.
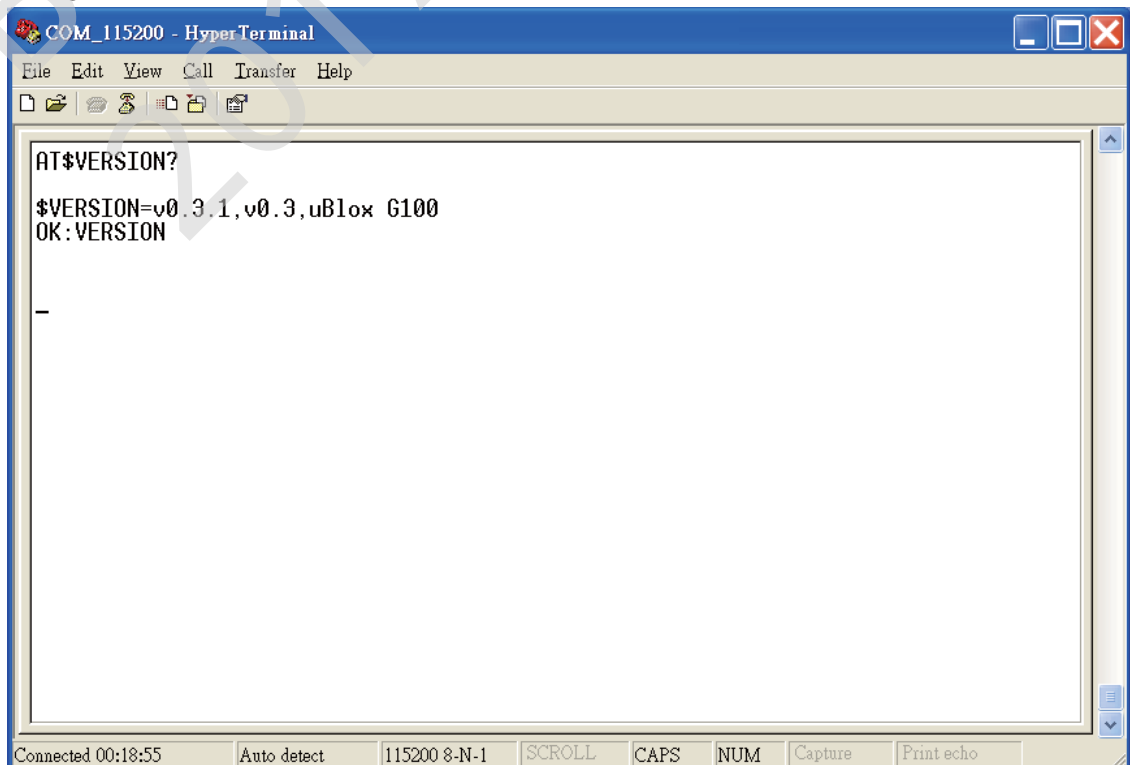
3.2   Communication Settings

The *CAREU P2* communicates with your control center by either SMS or GPRS (TCP/UDP).

1.   SMS Configuration

Use AT$SMSDST command to set a SMS control center phone number or short code. For example, if the SMS control center phone number is +886123456789, the AT$SMSDST command to be issued into **HyperTerminal** should be:

AT$SMSDST=+886123456789

Then you can try to use cellular phone or SMS gateway to send a SMS message to the *CAREU P2*. Send a SMS message --> "AT$MODID?"

Device will response:

$MODID=101000001

OK

This shows a successful SMS communication between mobile phone and *CAREU P2* .

2.   GPRS Configuration

Set GPRS servers by using the following commands:

AT$APN=internet,username,password (APN=internet, Username=username, Password=password)
AT$HOSTS=1,0,60.148.19.10,6000

(Server IP address = 60.148.19.10 and Port number =6000)
OK
AT$RETRY=5,10 (Message retry settings)
AT$IPTYPE=1 (Using TCP/IP mode)
AT$GPRSEN=1 (GPRS enable)
AT$HB=60,1 (Heartbeat setting)

Please refer to the CAREU P2 Protocol Document *for more command details.*

3.3 GPS Tracking Configurations

After the device communication settings are done, the GPS tracking function is then ready to operate. The setting of GPS tracking can be done by using AT$PDSR command.
For example,
AT$PDSR=1,300,25,0,2,0,0,1,1(Tracking through GPRS by time interval 300 seconds)

For simple testing of GPRS, run the TCP Server U-Series software which is provided by SYSTECH.
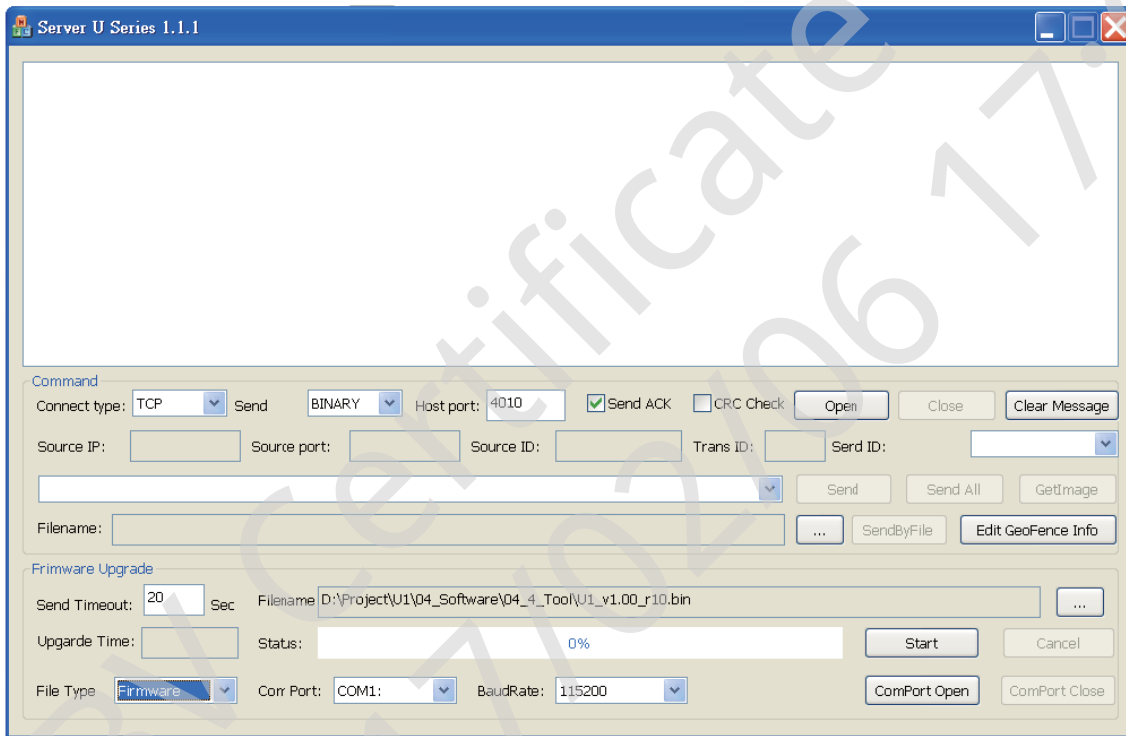
You may also apply for a testing account from SYSTECH's FleetWeb solution. Please contact your sales representative for more information.

Chapter 4. Using the CAREU P2

This chapter will guide you to major functions of **CAREU P2** and necessary settings to operate the device.

4.1. Self Geo-fencing

The device user may define the Geo Fence radius through protocol command (AT$SGF, default 100m), after triggering the **Geo-fencing** button, **CAREU P2** will use its last known fixed GPS location as the center to create a circular fence. Alert reports will be generated when the device either exits or re-enters this self defined Geo-fence.

• To enable/disable self define geo-fencing for your **CAREU P2**:

● **Create the Self Geo-fence:**
Press and hold **Geo-fencing Button** for 2 seconds. **CAREU P2** will make a short beep twice first, and then makes a short beep 3 times when valid GPS fix location is acquired. The GSM / GPS LED will both flash simultaneously every 3 seconds.

Note: If valid GPS fix location is not acquired (Geo-fence cannot be created), the device will indicate such status by vibrating 3 times.

● **Cancel the Self Geo-fence:**
Press and hold **Geo-fencing Button** for two seconds. **CAREU P2** will make one long beep and cancel the Geo-fence creating process.

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Self Geo-fence Related Protocol Commands :

AT$SGF Self Geo-fence alert settings	
Description	This command is used to set/query the Self Geo-Fence zone settings.
Syntax	**Write** Command: AT$SGF=<Radius>,< Entry Time>,<Exit Time> **Read** Command: AT$SGF? **Read** Status: AT$SGF
Parameters	< Radius >: Radius in meters of circle used to detect exit from Self Geo-Fence. (50 ~ 65535)
	< Entry Time >: Qualifying delay in seconds. (10~255)
	< Exit Time >: Qualifying delay in seconds. Duration of time that must elapsed after transitioning out of zone before accepting an out of zone state change and causing an alert. (10~255)

Return Value	**Write** Command: OK：SGF **Read** Command: OK：SGF $SGF=<Radius>,< Entry Time >,< Exit Time > **Error** Response: ERROR：SGF
Example	AT$SGF=100,20,20 OK:SGF AT$SGF? OK:SGF $SGF=100,20,20
Note	

AT$SGFEN	Self Geo-fence alert enable	
Description	This command is used to set/query the Self Geo-Fence enable settings.	
Syntax	**Write** Command: AT$SGFEN=< Option >,< Action >,< Force Connection > **Read** Command: AT$ SGFEN? **Read** Status: AT$ SGFEN	
Parameters	<Option>	0 – Disable 1 – Entry and Exit 2 – Entry Only 3 – Exit Only
	<Action>	1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval. 2 – Polling When the alert condition is true, send the latest GPS position to the remote base station. 3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.
	<Force Connection>	0 – Disable Bit 0 – Deliver HB before report (Only ASCII mode) Bit 1 – Send SMS Report (Default is 0)

Return Value	**Write** Command: OK：SGFEN **Read** Command: OK：SGFEN $SGF=< Option >,< Action >,< Force Connection > **Error** Response: ERROR：SGFEN
Example	AT$SGFEN=1,3,1 OK:SGFEN AT$SGFEN? OK:SGFEN $SGFEN=1,3,1
Note	

4.2. Positioning

Setting regular timed interval or distance travelled interval reports.

AT$PDSR	Position and device status reporting settings	
Description	Position and data shall be reported when the device is moving. Reporting shall be based upon satisfying a minimum time requirement and minimum distance requirement	
Syntax	**Write** Command: AT$PDSR=<Mode>,<Min. Time>,<Min. Distance>,< Reserve >, [<Destination>,< Reserve >,<Reserve>,<Time Multiplier>,<IgnoreGPS>] **Read** Command: AT$PDSR?	
Parameters	<Mode>	0 – Disable Bit 0(2^0 = 1) – Time Mode Bit 1(2^1 = 2) – Distance Mode Bit 2(2^2 = 4) – Reserved Bit 3(2^3 = 8) –Reserved Bit 4(2^4 = 16) – Time or Distance Mode You can set two or more conditions like 3(1+2) for ignition on and time conditions. Bit 4 can't be set with Bit 0 or Bit1 simultaneously.
	<Min. Time>	Minimum Time in seconds that must elapse before reporting next position. (1 – 65535)
	<Min. Distance>	Minimum Distance in meters that must be traveled before reporting next position. (25 – 50000)
	<Reserve>	0
	<Destination>	Bit 0 – Log to Data Queue Bit 1 – Transmit GPRS Bit 2 – Reserved Bit 3 – Transmit SMS
	< Reserve >	0
	<Reserve>	0
	<Time Multiplier>	1 – The PDSR Log and GPRS messages will be sent according to the <Min. Time> setting. n – The PDSR Log messages will be performed according to the <Min. Time> setting, the PDSR GPRS messages will be sent according to <Min. Time> times n. (2 – 65535)
	<IgnoreGPS>	0 – Continuously tracking regardless of GPS signal. 1 – Ignore no GPS signal tracking report.

Return Value	**Write** Command: OK：PDSR **Read** Command: OK：PDSR $PDSR=<Mode>,<Min. Time>,<Min. Distance>,< Reserve >, <Destination>,< Reserve >,<Reserve>,<Time Multiplier>,<IgnoreGPS> **Error** Response: ERROR：PDSR
Example	Tracking every 30 seconds through GPRS AT$PDSR=1,30,1000,30,2,0,0,1,0 OK：PDSR Tracking every 60 seconds through GPRS and Logging every 15 seconds AT$PDSR=1,15,1000,30,3,0,0,4,0 OK：PDSR
Note	If <Mode> is 3 and both <Min. Time> and <Min. Distance> parameters are set, the position and data are only reported if both the minimum amount of time has elapsed and the minimum distance has been traveled.

4.3. Unusual Collision Alarm

The *CAREU P2* is integrated with a 3-axis G sensor to detect any unusual collision.

To enable and disable the alarm for unusual collision:

- **Enable / Disable Unusual Collision Alarm:**

AT$DOWN	Man Down Detection settings	
Description	This command is used to set/query man down threshold settings. Man down is described as an abrupt change in velocity as might be experienced during a wreck.	
Syntax	**Write** Command: AT$DOWN=<Detect Threshold >,<Detect Duration> **Read** Command: AT$DOWN?	
Parameters	< Detect Threshold >	The g-force threshold setting that must be exceeded in order to be considered an impact. (1 ~ 128) where force is equal to N * 15.625mG.
	< Detect Duration >	Duration at which impact must be sustained to indicate impact has been detected. (1 ~ 255) where time is N * 2.5ms.
Return Value	**Write** Command: OK: DOWN **Read** Command: OK: DOWN $ DOWN =<Detect Threshold >,<Detect Duration> **Error** Response: ERROR：DOWN	
Example	AT$DOWN=15,1 OK:DOWN AT$DOWN? OK:DOWN $DOWN=15,1	
Note		

AT$DOWNEN	Man Down alert enable	
Description	This command is used to set or query man down alert enable.	
Syntax	**Write** Command: AT$DOWNEN=<Option>,<Action>,<Force Connection> **Read** Command: AT$DOWNEN?	
Parameters	<Option>	0 – Disable 1 –Man down detect under power ON mode 2 –Man down detect under power OFF mode 3 –Man down detect under power ON/OFF mode

	<Action>	1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval. 2 – Polling When the alert condition is true, send the latest GPS position to the remote base station. 3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.
	<Force Connection>	0 – Disable Bit 0 – Deliver HB before report (Only ASCII mode) Bit 1 – Send SMS Report (Default is 0)
Return Value	**Write** Command: OK：DOWNEN **Read** Command: OK：DOWNEN $ DOWNEN =<Option>,<Action><Force Connection> **Error** Response: ERROR：DOWNEN	
Example	AT$ DOWNEN =3,3,1 OK：DOWNEN	
Note		

4.4. SOS Alert

- Press and hold the **SOS Button** for 2 seconds, the *CAREU P2* will beep 4 times. Within 10 seconds time, if the user presses and holds the **Geo-fencing** button for 2 seconds, *CAREU P2* will make a long beep once and cancels the SOS alert event. If no cancellation action takes place within 10 seconds time, the SOS event then becomes valid and proceeds to alert actions.

- As soon as the **SOS Button** is pressed, the *CAREU P2* will automatically power on and executes the "SOS" process even if the *CAREU P2* is prevously powered off.

- Geo-fencing is disabled when "SOS" event is active.

Note: When SOS alert event is active, **Power Button** is disabled immediately. The user must cancel the SOS event by pressing the Geo-fencing button first before *CAREU P2* is able to power off normally.

SOS alert event related Protocol Commands.

AT$SOS SOS Tracking Report Configuration		
Description	This command is used to set SOS Tracking report characteristics.	
Syntax	**Write** Command: AT$SOS=< Enable >,<Tricking Time>,<Force Connection> **Read** Command: AT$SOS?	
Parameters	<Enable>	0 – Disable 1 – Enable
	< Tricking Time >	Minimum Time in 180 seconds that must elapse before reporting next position. (180 –7200)
	<Force Connection>	0 – Disable Bit 0 – Deliver HB before report (Only ASCII mode) Bit 1 – Send SMS Report for SOS event triggered (Default is 0)
Return Value	**Write** Command: OK：SOS **Read** Command: OK：SOS? $ SOS =< Enable >,<Tricking Time>,<Force Connection> **Error** Response: ERROR：SOS	
Example	AT$ SOS =1,180,0 OK：SOS AT$SOS? OK：SOS $SOS =1,180,0	
Note		

4.5. Bluetooth (BLE)

When BLE function is enabled, an alert report is generated if **CAREU P2** is out of the **P2 Station** proximity range. A separate alert report is also generated when **CAREU P2** is once again within the **P2 Station** proximity range.

BLE function related Protocol Commands

AT$BLEEN	BLE alert enable	
Description	This command is used to set/query the BLE enable settings.	
Syntax	**Write** Command: AT$ BLEEN =< Option >,< Action >,< Force Connection > **Read** Command: AT$ BLEEN? **Read** Status: AT$ BLEEN	
Parameters	<Option>	0 – Disable 1 – Entry and Exit 2 – Entry Only 3 – Exit Only
	<Action>	1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval. 2 – Polling When the alert condition is true, send the latest GPS position to the remote base station. 3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.
	<Force Connection>	0 – Disable Bit 0 – Deliver HB before report (Only ASCII mode) Bit 1 – Send SMS Report (Default is 0)
Return Value	**Write** Command: OK：BLEEN **Read** Command: OK：BLEEN $ BLEEN =< Option >,< Action >,< Force Connection > **Error** Response: ERROR：BLEEN	
Example	AT$ BLEEN =1,3,2 OK: BLEEN AT$ BLEEN? OK: BLEEN $ BLEEN =1,3,2	
Note		

4.6.   P2 Station Specification

- Weight: 80g
- Power Source: 5V DC (via Micro USB)
- Operating Temperature: -20℃ ~+60℃

4.6.1 P2 Station Outlook
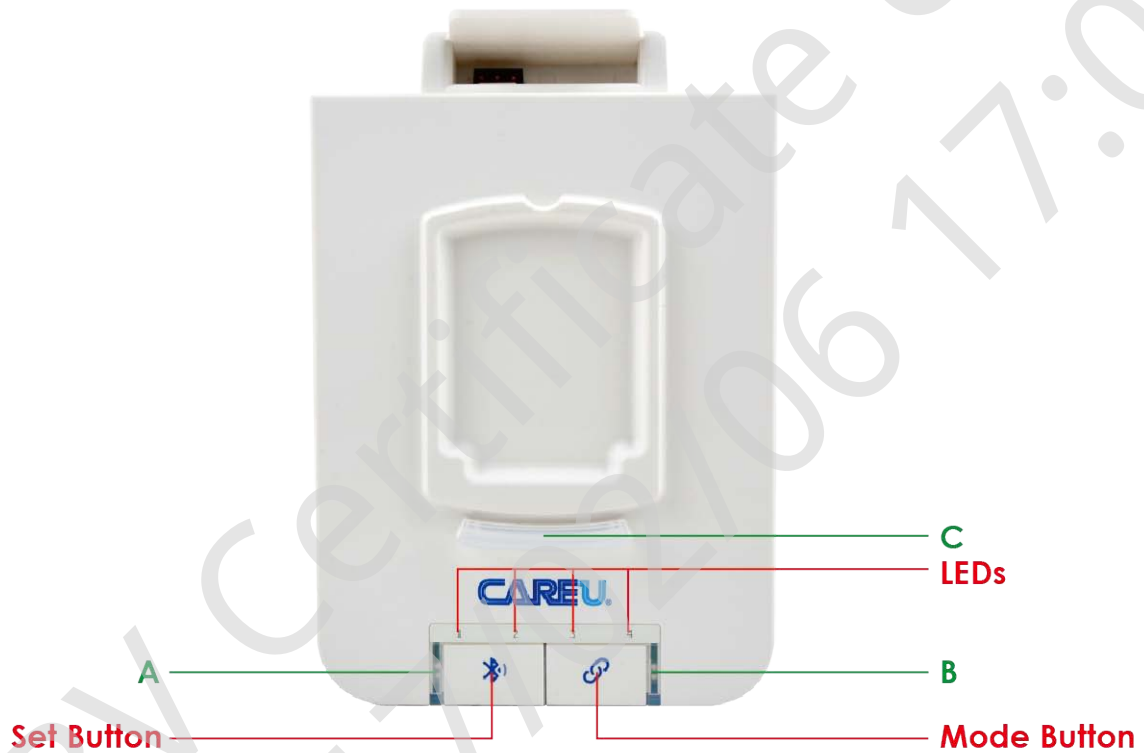
1.   ![Bluetooth icon]   Set Bluetooth Button

2.   ![Mode icon]   Mode Button

3.   LEDS status Indicator

A.   Backup battery slot charged LED (solid light when fully charged)

B.   Backup battery slot charging status LED (solid light when battery is charging)

C.   Qi wireless charger status LED (solid light when **CAREU P2** is paired and wirelessly charging, LED light flashes if there is an error in pairing, LED off if **CAREU P2** is not paired or taken off the **P2 Station**)

4.6.2 P2 Station Pairing

Upon powering up the **P2 Station**, the station automatically enters Scanning Mode to scan within its proximity for all previously paired **CAREU P2** units. When a **CAREU P2** unit is already paired, the number LED on the **P2 Station** lights up. The different numbering of LED lights also indicate which **CAREU P2** unit is currently connected to the **P2 Station**. One **P2 Station** may pair up to maximum 4 units of **CAREU P2**.

◆ **P2 Station Pairing Mode:** Storing **CAREU P2** address into **P2 Station** memory.

Step 1. Powering up **P2 Station**, while in Scanning Mode, press and hold the "Link Button" 🔗 for 3 seconds to enter Pairing Mode.

When in Pairing Mode, if there are no previously stored pairing of **CAREU P2** units, all LEDs (LED1/LED2/LED3/LED4) beings to flash (On:1 sec ,Off:1 sec).

Note: If the **P2 Station** is already stored with maximum 4 pairings of **CAREU P2** units, the number LEDs will flash in sequence LED1-> LED2-> LED3-> LED4 and then returns to Scanning Mode. User must delete the previously paired **CAREU P2** units before the **P2 Station** can pair more units.

Step 2. If a **CAREU P2** unit is found while in Pairing Mode, the **P2 station** automatically stores the unit address into the number slot memory. The numbering LED on the **P2 Station** will flash in sequence to indicate **CAREU P2** is newly paired (LED 1 flashes for 3s when first unit is paired, LED 2 flashes for 3 seconds if another unit is paired). If no **CAREU P2** is found within the proximity after 30 seconds the **P2 Station** automatically returns to Scanning Mode.

Note: If there already existed previously paired **CAREU P2** units, the numbering LED will become solid light indicating the number slot is already paired.

◆ **Delete Pairing Mode:** Delete the paired **CAREU P2** units stored in **P2 Station** memory

Step 1. While **P2 station** is in Scanning Mode, press and hold both the Bluetooth Button 🔵 and Link Button 🔗 together to enter Delete Mode, the numbering LED will quickly flash in this order LED4-> LED3-> LED2-> LED1.

Step 2. Within 10 seconds time, press the "Bluetooth Button" 🔵 again to confirm delete and clear all previously stored **CAREU P2** unit pairings. The numbering LEDs will fast flash for 5 seconds (On:0.1 sec ,Off:0.1 sec) indicating all paired units are successfully deleted before **P2 Station** returns to Scanning Mode.

Chapter 5.   About Systems & Technology Corp.

The *CAREU P2 Personal Tracker* is produced by **Systems & Technology Corporation**. The company is a key developer and supplier of advanced systems in tracking solutions, geographical information systems and navigation systems.

If you need the information about other products, please contact us by phone or by fax as listed below, or visit our websites.

Contact Information for **Systems & Technology Corp.**

SYSTECH Web Site	http://www.systech.com.tw
Technical Support Hotline	+886-2-2698-1599
Technical Support E-mail	avl@systech.com.tw
Main Phone	+886-2-2698-1599
Main Fax	+886-2-2698-1211

Chapter 6.   Declaration

As the *CAREU P2 Personal Tracker* works based on GPS (Global Positioning System) and GSM (Global System for Mobile Communication), it has to work with normal GSM and GPS conditions.

Performance of the *CAREU P2* is liable to the following:

• Weak GPS satellite signals: The positioning quality will be affected.
• Weak GSM signals: The report quality of *CAREU P2* will be affected.

Notification of GPS

GPS (Global Positioning System) is based on the 24 satellites launched by the Defense Department of the United States to measure and compute vehicle positions. **Systems and Technology Corporation**, the developer and producer of *CAREU P2*, therefore does not guarantee *CAREU P2*will work normally under the poor surroundings due to the following causes:

• Locations with weak GPS signals
• The Defense Department of the United States temporarily closes or disturbs the GPS.
• Some tinted window films can hinder *CAREU P2* from receiving GPS signal. Please consult your tinted window film vendors for details.

Notification of GSM

GSM (Global System for Mobile Communication) is the key factor if the system can immediately notify the message receiver through short messages. **Systems & Technology Corp.** therefore does not guarantee *CAREU P2* will work normally under the poor surroundings due to the following causes:

• Place with weak GSM signals
• Message losing or detention caused by telecommunication service providers.
• Malfunction of telecommunication systems
• Invalid SIM cards

Chapter 7.   Regulations

- This device complies with part 15 of 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.

- This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiated 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.

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

Radiation Exposure Statement:

This device meets the government's requirements for exposure to radio waves.

This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.

The exposure standard for wireless device employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg. *Tests for SAR are conducted using standard operating positions accepted by the FCC with the device transmitting at its highest certified power level in all tested frequency bands.

The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.