



**PORTMAN**

**Portman Security Systems, Ltd**

**Operation Manual**

**GPRS / GPS TRACKING SYSTEM**

**Model: GST8000**

**Version 2.0**

## I. INTRODUCTION

PORTMAN GPS GPRS Tracking and Alarm System utilize the GPS and car alarm functions in one unit. You can monitor the vehicle location and control the car alarm remotely. In addition, the unit will send event report if any trigger occurs. It has built-in 3 outputs and 5 inputs to perform essential alarm functions. Tri-communication capability through SMS, GPRS and SBD (Iridium's short burst data). Tri-communication switch automatic. Communicate with Iridium's satellite where no GSM coverage.

### 1.1 Report structure

The standard report sent by the unit includes the information: (1) unit's ID, (2) status, (3) time, (4)GPS's latitude and longitude, (5)speed, (6) direction, (7)temperature, (8)device's status, (9)event number, and (10) report configuration parameters.

- (1) Unit's ID: each device has its own unique ID and must be registered in the server in order to perform monitoring or controlling.
- (2) Status: 'A' mean the number of satellite is more than 4 or equal to 4; 'B' mean the number of satellite is equal to 3, 'L' mean the number of satellite is less than 3.
- (3) Time: report time in Greenwich Mean time zone.
- (4) GPS's latitude and longitude.
- (5) Speed: in km/H
- (6) Direction: in degree to the North.
- (7) Temperature: in Celsius. If the temperature is not connected, 'NA' will be shown in this field.
- (8) Device's status: there are 32 states to represent the I/O and working modes for the both the device and the build in alarm.
- (9) Event number: all the generated reports will include a unique event number to indicate why it has been sent.
- (10) Report configuration parameters: user can remotely change the report configuration, and the configuration parameters will be shown in this field.

### 1.2 Report Setup

GST8000 must be initialized by PORTMAN PC setup program in order to make communication with the remote server /call center. There are 9 main sections that allow users to program the device, (1) User detail (Device ID, server IP, and port, SMS number, GPRS APN...) (2) In-built Geofence definition (up to 1 self geofence, 4 circular geofence, 5 rectangular geofence and 20 point Geofence shapes can be set in the device) (3) Report

setting (Time, Distance, Intelligent mode, Temperature, Low battery, Course change...)  
(4) Roam report setting (Time, Distance, Intelligent mode, Temperature, Low battery, Course change...) local or send or ignore. (5) Alarm setup (to enable or disable the event generated by the inputs or external alarm, e.g. ignition, DOOR, ALARM...) (6) Roam Alarm setup (to enable or disable the event generated by the inputs or external alarm, e.g. ignition, DOOR, ALARM...) local or send or ignore. (7) GSM Roaming (Roaming GPRS Mode setting, Compress setting...)(8)SBD Setting (SBD report, Check SBD, Power Management setting...)(9) ID Card learning...)Those data is saved in device's EEPROM and will not be lost even if the power is failure.

Note that the device ID, GPRS APN name, GPRS login name and password need to be set in initial PC setup in order to make the connection to the server. All the reports configuration or Geofence setup can be changed at anytime via over the air commands. The automatic reporting mode can be categorized as 'time' report, 'distance' report, or 'time & velocity' report. User can choose the reporting mode and related parameters via the PC setup program or the remote sever.

The event trigger report is also configurable. User can turn on or off any event generated report from the PC setup program or via the air command. The event triggered report include (1) In-vehicle Door close/open (2) In-vehicle ignition on/off (3) AD input (4) In-vehicle shock sensor trigger.

The server can not only configure the device just like the PC setup program does, but it also can send the command to control the device. The server can control both the device and the build in alarm.

### 1.3 Geofence function

The device has built-in 30 Geofence sets (1 immediate geofence, 4 circular, 5 rectangular and 20 point), it will send the report to the server if the Geofence event is triggered. User can setup the Geofence area from the PC setup program or sending the define.

A unique immediate Geofence function:

'Immediate-Geofence function' is a circular type Geofence which can be activated or deactivated from a single button. When activated, the system will record the current

position and use the pre-defined radius as a circular Geofence to guard the vehicle. If the vehicle moves out of the preset Geofence zone, a report will be generated to the server. User can deactivate the self-Geofence at any time by pressing the button again. If the GPS cannot be located when the Immediate Geofence function is been executed, GST8000 will used the last known position as the origin of the circular Geofence zone to perform the protection.

#### 1.4 Store and forward ability

When there is no GPRS service or the server close. The unit will send short message to the server if defined SMS number. All the stored report will be forward to the server when GPRS connection is completed next time.

#### 1.5 TCP and UDP socket support

GST8000 supports both UDP and TCP socket communication. The server IP, port number and socket type can be selected from the PC-setup program or remote server command. In addition, the connection can be swap over to any server IP or port (either UDP or TCP) via the air command.

#### 1.6 Valet switch operation

User can use the supplied Valet switch to perform 7 essential tasks, including (1) sending help report (2) activate or deactivate Immediate Geofence (3) sending 'Duty on' or 'Duty off' report to the server (4) Emergency release to exit 'ARM', 'Anti-carjacking' or 'Panic' modes

#### 1.7 History report

Flash memory for recording reports up to 900 reports. It can be read out from the PC setup program via serial port.

#### 1.8 Backup battery

The system has a built-in rechargeable battery (12V 1.3A/H) for emergency use. The system will send a power cut report when all the external power are disconnected.

#### 1.9 LED indication

Three LED indicate the status of the POWER, GPRS signal and GPS signal. The LED on the valet switch or keypad can also indicate the status of the button operation, e.g. sending help report, panic report, ...

### 1.10 Keep alive procedure

Keep alive procedure (in order keep connection in GPRS network, the unit can be set to send short keep alive report to the server in order to prevent the disconnection from the mobile service provider)

### 1.11 Sleep Mode

The Sleep Mode:

For long periods of inactivity user have the options to set the unit in sleep mode this will enable the unit to save electric power.

GST8000 Can go to sleep mode when ignition goes off, TL-sensor not be trigger for 5minuts and this feature is configurable. "GPS" can be power off. User can setup the automatically wakeup time during the sleep mode to ensure the device is working. The system can send out a diagnostic report to the server after waking up.

During the sleep mode, if any of the inputs are triggered, the system will wake up and send relevant reports to the server. The input triggers for waking the device up are selectable.

When ignition is on, the system will back to working mode and stay connected to the TCP/UDP server in GPRS network.

### 1.12 Iridium satellite short burst data support

GST8000 support satellite short burst data. While there is no GSM coverage, Iridium satellite module start communicates with server. Unit sends compressed report to server, and server can send command to control or configure unit.

GST8000 supply special PC SETUP table for Iridium satellite module, satellite module report includes special fix time, fix distance, intelligence, help and power cut report.

## **II. BASIC FUNCTIONS**

<b>FUNCTIONS</b>	<b>APPLICATIONS</b>
GPS	GPS receiver will output a complete position, velocity, and time (PVT) solution in the NMEA Version 3.0 protocol
GPRS, SMS	GPRS use standard TCP or UDP communicate protocol. If the GPRS service is failed, the SMS mode will be turned on for emergency use.
Satellite SBD	If no GSM network coverage, Satellite will start work with SBD configuration.
5 input	In-vehicle Door. In-vehicle ignition Valet switch port

	AD1 input AD2 input
3 output	1. Door Lock 2. Door Unlock 3. Coil (for E-card searching)
GPS output interface	GPS port will output NMEA 0183 GPS data. Data rate: 9600 bps
Valet Switch	(1) Send help report (2) activate or deactivate Immediate Geofence
PC-setup	Initialize the unit and program the device, including Network APN, server IP address, user message, report control, and Geogence setting, etc ... Note that Network APN and server IP details must be set before the installation.
Standard Report	Automatic report for AVL tracking purpose: Fixed time report Fixed distance report Intelligent report (combine time and distance) Keep alive report
Event Report	Temperature report Speeding report Low battery report Geofence trigger report Wake up report ALARM trigger report, e.g. ARM, ignition inputs, etc ...
History data store	900 report can be saved in unit, and read from server and pc-setup

### **Valet switch OPERATION**

#### **(1) Sending help report**

Press the button once, The LED will flash once and a help report will be generated.

#### **(2) Activate or deactivate Immediate Geofence**

Press the button and release it when the LED flashes once. After releasing it, the LED will stay continuously on to indicate the 'Immediate Geofence' is on. To deactivate: Press the button (the LED will be temporarily off), and release it when the LED flashes once. After releasing it, the LED will then stay continuously off. A report will be sent out if the vehicle goes out/in to the Geofence zone.

### (3)ID CARD learn mode:

Turn ignition ON, press Valet Switch 12 times within 10 sec, the valet LED will keep on for 1 second to enter ID card learning mode, the new ID CARD can be learn in this time. If no ID card can be learn during 10 seconds, unit will exit ID card learning mode. During the learning process, the valet LED flash quickly.

### (4)Emergency release:

Press valet switch for 6 times, LED will keep on, then unit will enter Emergency release MODE, the LED will flash slowly.

LED flash N time and press valet switch to confirm the first digit of password, then confirm the other 3 digit password in turns. While the password input finished, the unit will emergency released or 1 minute later the unit will overtime exit.

## III. STATUS INDICATOR

### System LED:

**RED:** Power indicator. When the unit power on, the led will light all the time. When power cut off the unit works with backup battery, the led will flash until all the report is sent to server.

While satellite module works fine, red led flash twice every 2 seconds.

**YELLOW:** GSM/GPRS indicator. Yellow LED will flash when the device is connected to the server with valid GPRS connection. It will stay continuously on when it is in GSM mode. It will stay off if there is no GSM reception.

**Green:** GPS indicator. This LED will be ON when the unit received a valid GPS data.

Note that the Green LED indication will not be valid until the system goes to the working mode, normally 30 seconds after power on.

## PC SETUP AND SYSTEM INITIATION

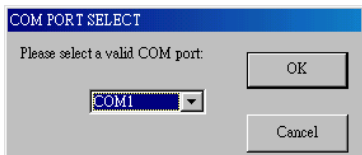
### PC setup Procedure:

- (1.) Connect the 4pin to USB cable to the DB9 port.
- (2.) Open the PC setup program.
- (3.) Select the correct COM port for communication.
- (4.) Power on the device or press the reset button until red LED turn off.
- (5.) Click “ok” to start the program

Note that, if the connection fails, please check the cable connection is secured correctly. Press the reset button for a longer time, e.g. another 3 seconds.

#### A. LOGIN dialog window

Select the correct COM port number, then “reset” the unit by pressing the reset button, and next click “OK”.



Note that: it is necessary to power on and reset the PORTMAN device soon after click the “ok” button.

PC setup program will detect the hardware for 60 seconds. If no hardware is detected, it will exit.

During the opening up screen shown as below, user can press “Esc” key to terminate the program.

#### B. Version No. Checking

The below interface will last until correct UNIT Version No. is checked. (You should run this program before turn on power of UNIT)





## C. MAIN INTERFACE

### 1. [User detail:]

The screenshot shows the 'User Detail' configuration window for the GST8000 device. The window title is 'GST8000' and the active tab is 'User Detail'. The interface includes the following elements:

- Version:** GST8000\_GST8000-8.M4\_PTM\_5.1.3\_1.06
- Device ID:** 123 (Max length:3)
- SIM PIN:** [Empty text box]
- Device Password:** [Empty text box]
- GPRS login information:**
  - APN:** cnet
  - User Name:** [Empty text box]
  - Password:** [Empty text box]
- Server information:**
  - TCP IP Address: 61.145.214.54 (Port: 10015)
  - UDP IP Address: [Empty text box] (Port: [Empty text box])
- GPRS SMS enable:**
  - Local GPRS enable
  - Local SMS enable
  - Roam GPRS enable
  - Roam SMS enable
- SMS:**
  - Primary SMS number:** [Empty text box]
- ID card setting:**
  - ID card enable
  - ID card control start kill enable
  - ID card send local report enable
  - ID card send roam report enable:  Send  Local  Ignore
- GPS Data valid condition:**
  - AUTO GPS fix
  - 3D GPS fix only
  - 2D and 3D GPS fix display
- Export History Record:**
  - To Text
  - To Excel

At the bottom of the window, there are buttons for 'Initialize', 'Request All', 'Request', 'Apply', 'Apply All', 'Load...', 'Save...', and 'Exit'.

SIM PIN: [Empty text box]

If the SIM card is password protected, user can input the “SIM PIN” window to set password of SIM Card.

This close-up shows the 'Device ID' field containing the value '123' with the label 'Max length:3' next to it. Below it is the 'Device Password' field, which is currently empty.

Set UNIT ID and UNIT password of for the device.

Note: Device ID length does not more than 4-characters, otherwise SBD compressed packet will more than 30 bytes, and communication data fee is double.

GPRS login information:

APN:

User Name:

Password:

Set Access Point Name (APN), User Name, Password. The maximum length of the APN, User name and Password is 49 characters.

Server information:

TCP IP Address:  Port:

UDP IP Address:  Port:

TCP/UDP address and Port number of the remote server being set, UNIT will send report to these address.

Note that only one TCP or UDP server will be used at the same time.

GPRS SMS enable

Local GPRS enable  Roam GPRS enable

Local SMS enable  Roam SMS enable

To select enable or disable local GPRS/SMS or Roam GPRS/SMS

SMS

Primary SMS number:

Set the SMS Number of the user. The unit will send reports to the user if GPRS connection is failed.

AUTO GPS fix

3D GPS fix only

2D and 3D GPS fix display

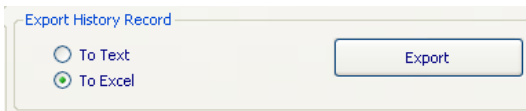
AUTO GPS fix: the report will be display “A” in the report and indicate that if the number of satellite is more than 3 or equal to 3. If the number of satellite is less than 3, then it will show “L” in GPS fix section.

3D GPS fix only: the report will be display “A” in the report and indicate that if the number of satellite is more than 4 or equal to 4. If the number of satellite is less than 4, then it will show “L” in GPS fix section.

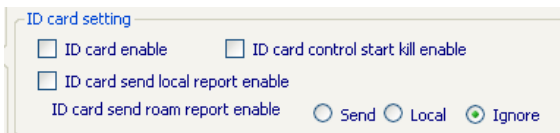
2D and 3D GPS fix display: the report will be display “A” in the report and indicate that if the number of satellite is more than 4 or equal to 4.

If the number of satellite is equal to 3, then the report will show “B” in GPS fix section.

If the number of satellite is less than 3, then the report will show “L” in GPS fix section.



UNIT can save 900 reports (900-1) recently; Click ‘Export’ button can export them with Excel or Text format.



To select ID-card enable or disable, ID-card control start kill enable or disable, ID-card send report enable or disable.

If “ID card control start kill enable” was selected, the unit will disarm by ID-card only or emergency release.



“Initialize ” button: clear all data in UNIT.

Request All: read out the whole existing setting from GST8000.

Request: read out the setting in the current page.

Apply: transfer the setting to GST8000 in the current pages.

Apply All: transfer the whole setting to GST8000.

Load: load the saved configuration files.

Save: save the current configuration setting to a file.

Save config: save the current setting to a config file

“Exit ” button: exit PC-Setup to main program.

Note that Device ID, GPRS Login and server IP/Port information need to be input correctly

in order to make the connection. If the report sending using GPRS connection fails, the report will be sent to the 'primary' SMS number first. The report will be resent, when the GPRS connection becomes available.

## 2. [Geofence:]

Four Circular Geofence and one self-geofence:

Circular Geofence must set origin and radius:

Origin format :N2446.5321E12120.4231;

N2446.5321 is latitude, E12120.4231 is longitude.

Radius from 0.1 km to 1000km.

User can set the reports send or local or ignore:

Send: report will send out immediately if generation

Local: report will save if generation, it will send out by local network

Ignore: cancel reports.

Rectangular Type Format Example : N2446.5321E12120.4231

No.	Upright point	Downleft point	
1.	<input type="text"/>	<input type="text"/>	<input type="radio"/> Send <input type="radio"/> Local <input checked="" type="radio"/> Ignore
2.	<input type="text"/>	<input type="text"/>	<input type="radio"/> Send <input type="radio"/> Local <input checked="" type="radio"/> Ignore
3.	<input type="text"/>	<input type="text"/>	<input type="radio"/> Send <input type="radio"/> Local <input checked="" type="radio"/> Ignore
4.	<input type="text"/>	<input type="text"/>	<input type="radio"/> Send <input type="radio"/> Local <input checked="" type="radio"/> Ignore
5.	<input type="text"/>	<input type="text"/>	<input type="radio"/> Send <input type="radio"/> Local <input checked="" type="radio"/> Ignore

Five rectangular geofence:

Set two points position, the point format is N2446.5321E12120.4231;



With two points, generate one rectangle. Unit will detect whether in rectangle. When unit enter or leave rectangle, will send one message out.



Point Type, Format Example : N2446.5321E12120.4231

No.	Point	<input type="radio"/> Send	<input type="radio"/> Local	<input checked="" type="radio"/> Ignore
1.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
2.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
3.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
4.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
5.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
6.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
7.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
8.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
9.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
10.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
11.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
12.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
13.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
14.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
15.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
16.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
17.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
18.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
19.	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

20 point Geo-fence areas can be set. When UNIT is out of these predefined zones, a report will be generated.



### 3. [Report:]

Local intelligent report

NO More Often Than (moving)  Sec  Km/hr  Send Stop Report After  Sec  Sec  Send  Ignore

Local intelligent history report

NO More Often Than (moving)  Sec  Km/hr  Send Stop Report After  Sec  Sec  Save  Ignore

A/D 1 detect report

Less than  V  sec  sec  More than  V  sec  sec

Voltage go up  V  sec  Voltage go down  V  sec

Min voltage  V  sec  Max voltage  V  sec

A/D 2 detect report

Less than  V  sec  More than  V  sec

Voltage go up  V  sec  Voltage go down  V  sec

Min voltage  V  sec  Max voltage  V  sec

Speeding report

Resend interval  Sec Threshold speed  Km/h

Enter over speed delay time  Sec Exit over speed delay time  Sec

Alert when over speed  Send  Ignore

Course change report

When course change  degree  Send  Ignore

Fixed report

Local fixed time report  Sec  Send  Ignore

Local fixed distance  Km  Send  Ignore

Battery report

Local when less than  %  Send  Ignore

Keep alive

Keep alive  Min  retry  Send reports after successful keep alive ACK

Send keep alive packet before due reports, if the idle time is longer than  Sec

Towaway report

Towaway  meter sent report

Initialize Request All Request Apply Apply All Load... Save... Save config... Exit

Automatic report can be configured in this section. To activate the function(s), please select “” in checkbox and fill in data in the textbox.

The reports will be summarized as

#### (1) Local Intelligent report

Local intelligent report

NO More Often Than (moving)  Sec  Km/hr  Send Stop Report After  Sec  Sec  Send  Ignore

Parameters: report time when moving, report time when stop, threshold speed, send stop report after a preset value and to choose the reports send or ignore.

Report when speed less than a preset value (refer the following 1.5 Km/Hr), and it will send stop report after the preset time (refer the following 120Sec). (min. speed is 0.1 km/Hr, max. speed is 1000 km/Hr).

## (2) Local Intelligent history report (record the report in the system's flash ram)

Local intelligent history report

<input type="checkbox"/> NO More Often Than (moving)	<input type="text" value="90"/> Sec	<input type="checkbox"/> No less often Than (stopped)	<input type="text" value="360"/> Sec
Threshold speed:	<input type="text" value="1.5"/> Km/Hr	<input type="radio"/> Save <input checked="" type="radio"/> Ignore	

Parameters: Report time when moving, Report time when stop, and threshold speed. (min. speed is 0.1 km/Hr, max. speed is 1000 km/Hr). and to choose the reports send or ignore.

## (3) A/D 1 detect report

A/D 1 detect report

<input type="checkbox"/> Less than	<input type="text" value="0.10"/> v	<input type="checkbox"/> More than	<input type="text" value="0.10"/> v
debounce time	<input type="text" value="20"/> sec	debounce time	<input type="text" value="20"/> sec
resend time	<input type="text" value="120"/> sec	resend time	<input type="text" value="120"/> sec
<input type="checkbox"/> Voltage go up	<input type="text" value="0.10"/> v	<input type="checkbox"/> Voltage go down	<input type="text" value="0.10"/> v
debounce time	<input type="text" value="20"/> sec	debounce time	<input type="text" value="20"/> sec
<input type="checkbox"/> Min voltage	<input type="text" value="0.10"/> v	debounce time	<input type="text" value="20"/> sec
Max voltage	<input type="text" value="0.10"/> v		

[on/off] SEND REPORT IF ADC1 LESS THAN [min voltage] V for [debounce time] SEC, RESEND PER [resend time] SEC

[on/off] SEND REPORT IF ADC1 MORE THAN [max voltage] V for [debounce time] SEC, RESEND PER [resend time] SEC

[on/off] SEND REPORT IF ADC1 GO UP [up voltage] V for [debounce time] SEC

[on/off] SEND REPORT IF ADC1 GO DOWN [down voltage] V for [debounce time] SEC

[on/off] SEND REPORT IF ADC1 ENTER/EXIT [min voltage] V TO [max voltage] V for [debounce time] SEC

Note: AD1 input voltage range is 0~3.30v, it must connect a resistance to share the voltage if the detected voltage higher than 3.30v.



#### (4) A/D 2 detect report

A/D 2 detect report

<input type="checkbox"/> Less than	<input type="text" value="0.10"/> v	<input type="checkbox"/> More than	<input type="text" value="0.10"/> v
debounce time	<input type="text" value="20"/> sec	debounce time	<input type="text" value="20"/> sec
resend time	<input type="text" value="120"/> sec	resend time	<input type="text" value="120"/> sec
<input type="checkbox"/> Voltage go up	<input type="text" value="0.10"/> v	<input type="checkbox"/> Voltage go down	<input type="text" value="0.10"/> v
debounce time	<input type="text" value="20"/> sec	debounce time	<input type="text" value="20"/> sec
<input type="checkbox"/> Min voltage	<input type="text" value="0.10"/> v	debounce time	<input type="text" value="20"/> sec
Max voltage	<input type="text" value="0.10"/> v		

[on/off] SEND REPORT IF ADC2 LESS THAN [min voltage] V for [debounce time] SEC, RESEND PER [resend time] SEC

[on/off] SEND REPORT IF ADC2 MORE THAN [max voltage] V for [debounce time] SEC, RESEND PER [resend time] SEC

[on/off] SEND REPORT IF ADC2 GO UP [up voltage] V for [debounce time] SEC

[on/off] SEND REPORT IF ADC2 GO DOWN [down voltage] V for [debounce time] SEC

[on/off] SEND REPORT IF ADC2 ENTER/EXIT [min voltage] V TO [max voltage] V for [debounce time] SEC

Note: AD2 input voltage range is 0~3.30v, it must connect a resistance to share the voltage if the detected voltage higher than 3.30v.

#### (5) Speeding report

Speeding report

Resend interval	<input type="text" value="20"/> Sec	Threshold speed	<input type="text" value="110"/> Km/h
Enter over speed delay time	<input type="text" value="20"/> Sec	Exit over speed delay time	<input type="text" value="2"/> Sec
<input type="checkbox"/> Alert when over speed		<input type="radio"/> Send	<input checked="" type="radio"/> Ignore

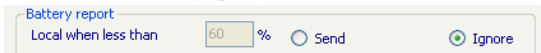
Parameters: resend interval, threshold speed, over speed delay time, exit over speed delay time, alert when over speed and report send or ignore

For example, if resend interval is 20 sec, enter over speed delay time is 20 sec, threshold

speed is 110Km/h and exit over speed delay time is 2 sec.

If vehicle speed over threshold speed 20seconds, system will send speed over report once interval 20 sec until exit speed over delay time 2 sec, the over speed report will stop to send. If alert when over speed has configured, then it will alert when speed over.

(6) Low battery warning report (to alert user when the external battery level is low)

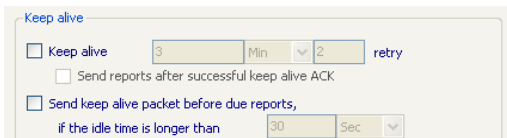


Parameters: warning battery level for report and report send in time or send by local network or ignore.

For example, 50 to represent 50% lower level report.

The system will ignore the parameter with a value '0' to prevent continuous non-stop reporting.

(7) Keep alive



Parameters: On/Off, and interval / retry times. In order to keep connection in GPRS network, the unit can be set to send short keep alive report to the server in order to prevent the disconnection from the mobile service provider.

Send reports after a successful keep alive ACK. Parameters: On/Off .

If you select this function, all the reports will only be sent out after a successful keep alive ACK. (So if your keep alive time is shorter then select this function will be OK.) This function is very useful while using UDP to prevent report lost.

Send a keep alive packet right before a due reports if no data stream within certain time: Parameters: On/Off, and idle time.

Some GSM provider might cut connection, if there is no data within certain time. It might result report lost in this “fake connection” duration. For example, you can set parameters in this region, ex 20 mins. (it means if the unit did not send any data in this 20 mins (including keep alive or normal reports) ), then it will send a keep alive packet to check if the GPRS connection is valid or not. If not, it will actively reconnect to GPRS network.

### (8) Towaway report

Towaway report

Towaway  meter sent report

When system in ignition OFF mode, if the vehicle has been towed away, unit will sent a towaway report.

### (9) Course change report (to send a report when the course change is bigger than the value set here)

Course change report

When course change  degree  Send  Ignore

Parameters:

Course change in degree and report send or ignore

### (10) Fixed report

Fixed report

Local fixed time report  Sec  Send  Ignore

Local fixed distance  Km  Send  Ignore

Parameters:

The time of local fixed time report and report send or ignore.

The distance of local fixed distance report and report send or ignore (min. distance is 0.1 km, max. distance is 100 km).

### (11) GPRS Dial-up procedure

GPRS Dial-up procedure

GPRS always online  
Reconnect interval  Min

Base on report mode  
Reconnect times(1-10)  interval  Min

GPRS connect once

Reduce dialup procedure  
When reconnect times more than  times

it will wait for  hour(s) before retry the next connection

### 1) GPRS always on-line

Parameters: Reconnect interval

While using this mode, when the unit can not searched GPRS signal, system will reconnect GPRS interval a preset value. (e.g.: 1minute)

### 2) Base on report mode

Parameters: Max. reconnect times, reconnect interval

While using this mode, the unit will connect to the server when there is a report to send. If the first connection is failed, it will retry to connect to the server up to the max. reconnect times. Each retry will be separated by the reconnect “interval”.

### 3) GPRS connect once

While using this mode, the unit will connect to the server when there is a report to send (but only try once). If it is not successful, the report will be stored and sent out in the next successful connection. Disconnect GPRS connection when report sending is completed.

### 4) Reduce GPRS dialup method

Parameters: On/Off, Max. reconnect times, connect delay

If this method is used, the unit will reduce the GPRS dial-up connection when the dial-up is failed after number of times. User can define the delay time for the unit before try to reconnect to the server. If there is trigger report, the unit will connect to server immediately.

### Special command for SMS mode:

If the GST8000 is not in the GPRS online status, user can send command &&Y02 or &&Y04 to ask unit to connect to server. This command can be sent from any device via SMS;

&&Y02:

When received this command, system will actively try to connect to server in next 600 seconds.

&&Y04,[connection time],[report interval]:

For example: &&Y04, 3600, 60

When received this command, system will connect to server in the next 3600 seconds, and send one report out every 60 seconds.

#### 4. [Roam alarm]

The screenshot shows the 'Roam Report' configuration window in the GST8000NT software. The window title is 'GST8000NT' and it has several tabs: User Detail, Geofence, Report, Roam Report (active), Alarm Setup, Roam Alarm, GSM Roaming, SBD Setting, and ID Card. The main area is divided into several sections:

- Roam intelligent report:** NO More Often Than (moving) is set to 60 Sec, Threshold speed is 1.5 Km/h. No less often Than (stopped) is set to 120 Sec. Send Stop Report After is 120 Sec. Radio buttons: Send, Local, Ignore (selected).
- Roam intelligent history report:** NO More Often Than (moving) is set to 90 Sec, Threshold speed is 1.5 Km/h. No less often Than (stopped) is set to 360 Sec. Radio buttons: Save, Ignore (selected).
- A/D 1 detect report:** Less than, More than, Voltage go up, Voltage go down, Min voltage, Max voltage. Each has a value field (e.g., 0.10 v) and a debounce time field (e.g., 20 sec). Radio buttons: Send, Local, Ignore (selected).
- A/D 2 detect report:** Similar to A/D 1, with the same fields and radio buttons.
- Course report:** Roam when course change is set to 180 degree. Radio buttons: Send, Local, Ignore (selected).
- Battery report:** When less than is set to 60 %. Radio buttons: Send, Local, Ignore (selected).
- Fix report:** Roam fixed time report is 120 Sec, Roam fixed distance is 1 Km. Radio buttons: Send, Local, Ignore (selected).
- Keep alive:** Keep alive is checked, with 3 Min and 2 retry. Send reports after successful keep alive ACK is checked. Send keep alive packet before due reports, if the idle time is longer than 30 Sec is checked.
- Roam speed report:** Resend interval is 20 Sec, Threshold speed is 110 Km/h. Enter over speed delay time is 20 Sec, Exit over speed delay time is 2 Sec. Alert when over speed is unchecked. Radio buttons: Send, Local, Ignore (selected).
- GPRS Dial-up procedure:** GPRS always online is unchecked. Reconnect Interval is 1 Min (10sec-100hr). Base on report mode is selected. Reconnect times(1-10) is 3, interval is 5 Min. GPRS connect once is unchecked. Reduce dialup procedure is unchecked. When reconnect times more than 15 times, it will wait for 0.5 hour(s) before retry the next connection.

At the bottom, there is a toolbar with buttons: Initialize, Request All, Request, Apply, Apply All, Load..., Save..., Save config..., and Exit.

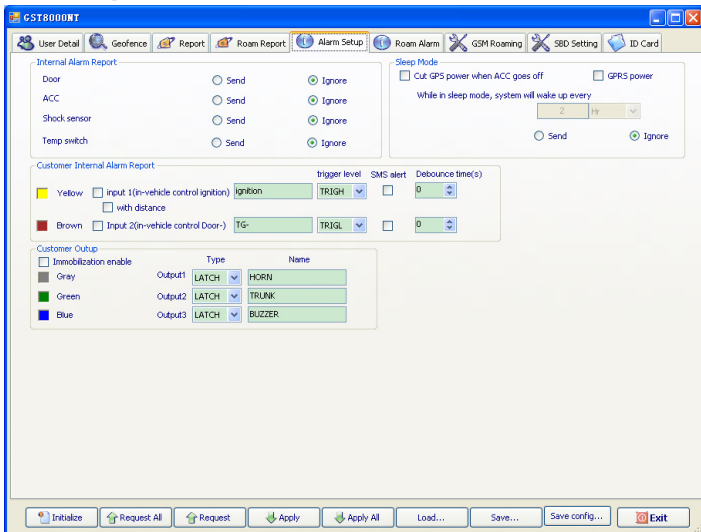
All the roam reports configured are same as Local report.

Send: report will send out immediately if generation

Local: report will save if generation, it will send out by local network

Ignore: cancel reports.

## 5. [Alarm setup]



Alarm report(s) is also configurable. User can customize the events generated by the in-vehicle input or build in car alarm to be sent to the server. If the item(s) be selected (VALID), the related reports will be sent. Otherwise the report will be ignored even when an event is occurred internally.

Also build in car alarm function can be set on here.

Sleep mode (when ignition OFF)

(1) GST8000 can go to sleep mode when ignition goes off and TL-sensor not be trigger for 5minutes. In sleep mode, GPS will be disabled.

All the auto report (Time, Distance, Intelligent...) will not be send when ignition goes off.

(2) During the sleep mode, the system can wait up automatically and send a wake up diagnostic report. The automatic wakeup time is configurable. (Minimum duration is 5 minutes; maximum duration is 1000 Hours).

(3) If any of the inputs are triggered while in the sleep mode, the system will wake up automatic and then send reports to the server. The input triggers for waking the device up are selectable. If the GPRS connection is failed, for emergency purpose, GST8000 will send out SMS report if number is defined.

Customer Internal Alarm Report

			trigger level	SMS alert	Debounce time(s)
<input type="checkbox"/> Yellow	<input type="checkbox"/> input 1(in-vehicle control ignition)	ignition	TRIGH	<input type="checkbox"/>	0
	<input type="checkbox"/> with distance				
<input type="checkbox"/> Brown	<input type="checkbox"/> Input 2(in-vehicle control Door-)	TG-	TRIGL	<input type="checkbox"/>	0

The input events can be changed to trigger on low or high, by using the TRIGL or TRIGH command

TRIGL: TRIGL will set the input to trigger on LOW (ground)

TRIGH: TRIGH will set the input to trigger on HIGH (12V)

SMS alert: when the item(s) were selected (valid), the related reports will be sent by SMS.

Debounce time(s): the delay time for report sending.

If input 1 with distance is selected, system will send the distance report every time ignition ON to ignition OFF, for example: %%GST8000,A,03,

070521024400,N2240.8929E11359.2030,000,270,NA,D7000000,254,CFG:5: 00

CFG: 5: 00 is the time from ACC ON to ACC OFF.

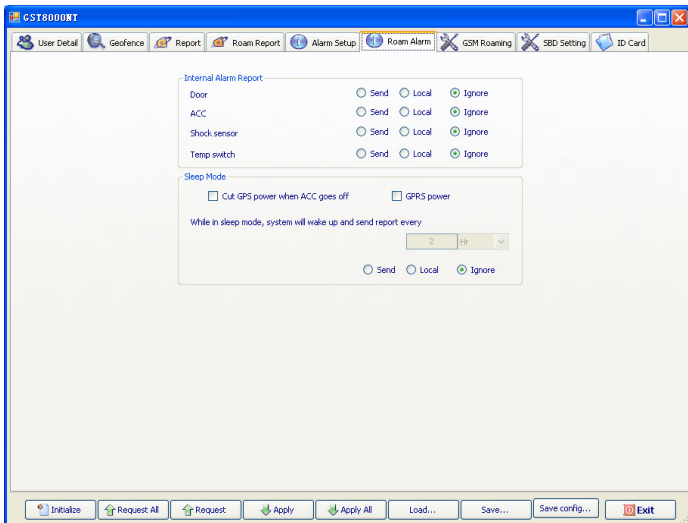
Customer Output

Immobilization enable

	Type	Name
<input type="checkbox"/> Gray	Output1 LATCH	HORN
<input type="checkbox"/> Green	Output2 LATCH	TRUNK
<input type="checkbox"/> Blue	Output3 LATCH	BUZZER

User can set the output enabled with LATCH or PULSE or CYCLE.

## 6. [Roam alarm]



All the roam alarm configured are same as Local report.

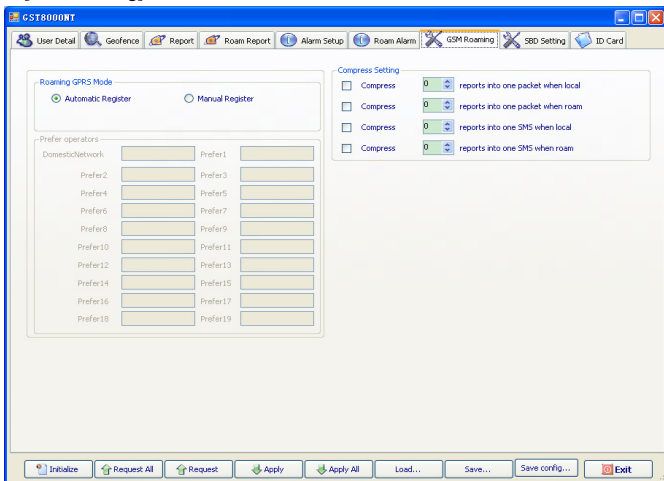
Send: report will send out immediately if generation

Local: report will save if generation, it will send out by local network

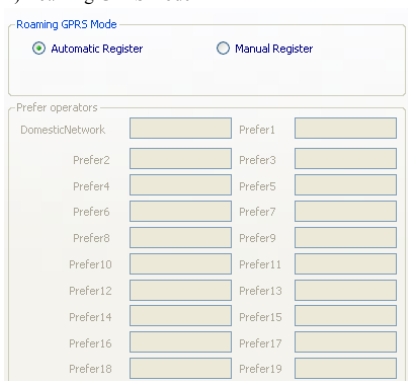
Ignore: cancel reports.



## 7. [GSM roaming]



### 1) Roaming GPRS mode



User can configure roaming GPRS mode with automatic register or manual register in this field.

When roaming GPRS mode in manual register, user can set 20 prefer operators, main unit will search and register from the 20 prefer operators.

## 2) Compress setting

Compress Setting		
<input type="checkbox"/>	Compress	0 reports into one packet when local
<input type="checkbox"/>	Compress	0 reports into one packet when roam
<input type="checkbox"/>	Compress	0 reports into one SMS when local
<input type="checkbox"/>	Compress	0 reports into one SMS when roam

1. To send report in local GPRS, compressing N reports to a packet and then send out.(N: the digit between 1~8)
2. To send report in roam GPRS, compressing N reports to a packet and then send out.(N: the digit between 1~8)
3. To send report in local SMS, compressing N reports to a SMS and then send out.(N: the digit between 1~4)
4. To send report in roam SMS, compressing N reports to a SMS and then send out.(N: the digit between 1~4)

## 8. [SBD setting]

IMEI:

**SBD report**

Intelligent report    NO More Often Than (moving)    30 Min    No less often Than (stopped)    1 Hr  
Speed more than:    10 Km/Hr

Fixed time report    1 Hr

Fixed distance report    1 Km

Check SBD(10sec-200hours)

Check SBD inbox every    1 Hr

Attention: You will pay for every check

Power Management

SBD power on after GSM register failed    300 Sec

Restart SBD delay time    1 Hr    when network register failed

Out SBD when ACC off

Initialize   Request All   Request   Apply   Apply All   Load...   Save...   Save config...   Exit

IMEI:

IMEI: Any operate with 'request or request all' after GPRS power on, the module series number will display automatically, otherwise it displayed with space.

Intelligent report    NO More Often Than (moving)    30 Min    No less often Than (stopped)    1 Hr  
Speed more than:    10 Km/Hr

This report is special for satellite module. It is different to intelligent report defined in common report setting.

This report only work when no GSM coverage.

Attention: because consumption with satellite is different to GPRS/SMS. Pay attention to report frequency.

Fixed time report    1    Hr    ▾

This report is special for satellite module. It is different to fix time report defined in common report setting.

This report only work when no GSM coverage.

Attention: because consumption with satellite is different to GPRS/SMS. Pay attention to report frequency.

Fixed distance report    1    Km    ▾

This report is special for satellite module. It is different to fix distance report defined in common report setting.

This report only work when no GSM coverage.

Attention: because consumption with satellite is different to GPRS/SMS. Pay attention to report frequency.

Check SBD(10sec-2000hours)

Check SBD inbox every    1    Hr    ▾

Attention: You will pay for every check

Set time how often to check inbox. After get command from server, unit will analyze command and feed back.

Attention: User must pay for every time to check SBD inbox.

Besides actively check inbox, satellite check inbox once while send report to server.

SBD power on after GSM register failed    300    Sec    ▾

Set delay time before satellite module power on.

After unit detected GSM register fail, unit need a little time to confirm GSM signal lost really, Then power on satellite module.

This period is used to avoid satellite module frequency power on/off.

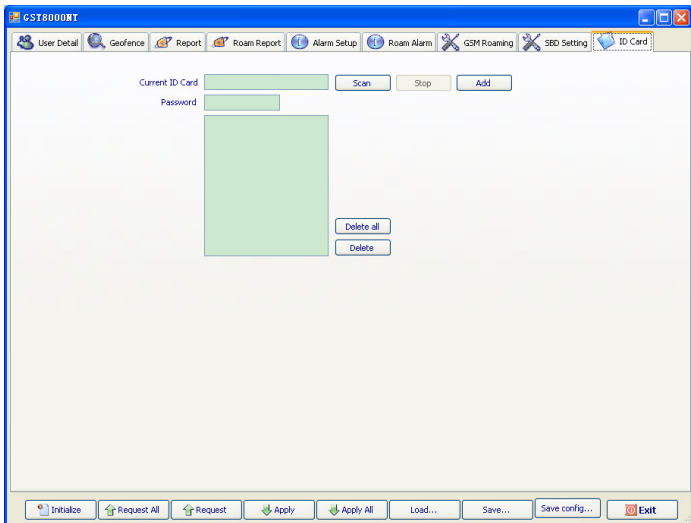
Restart SBD delay time    1    Hr    ▾    when network register failed

Set idle time. When satellite module registers fail, it will go to idle mode.

Cut SBD when ACC off

Selection whether cut SBD power when ignition off. If unit go to sleep mode, SBD power will be cut.

## 9. ID card



ID card learning function:

1. Press 'scan' and put the ID card near coil
2. The unit will read ID card number and display in here
3. Press 'add' once
4. Press 'APPLY' to save the ID card number to unit.
5. Up to 20 ID numbers can be saved

when the ID list was set here, if unit didn't detect valid ID or invalid ID was detected, the ignition won't be started, if the ID list was not set, then user can start the ignition without ID card.

To learn ID card in PC-SETUP use the same way to learn ID card by using valet switch.

Password: the password is used for release start kill by inputting card password through KEYPAD.

## GST8000 SPECIFICATIONS

### Physical Parameters

Enclosure dimensions	160(L)*115(W)*70(H)
Weight	1000g

### Electrical

DC Supply voltage	12V
DC Tolerance voltage	9V – 16V
Current (GPRS online)	45mA
Current (GPRS transmission)	100mA
Current (GPRS Peak)	140mA
Current (Sleep)	25mA (GPS and Satellite module are off)
Current (SBD standby)	120mA
Current (SBD transmit)	200mA

### Backup Battery

	Internal for emergency report
Battery type	6V (2 pcs battery)
Battery capacity	1.3A/H
Charge type	Built-in charge circuit

### GPRS\*

Frequency Range (MHz)	850/900/1800/1900
GPRS connectivity	GPRS multi-slot class 10 GPRS mobile station class B
SIM card interface	3V
Antenna Impedance	50ohms

### GPS\*

Channels	20 parallel tracking
Frequency	L1-1575 MHz
Sensitivity	
Tracking	-159 dBm
Acquisition (Cold start)	-142 dBm

Position accuracy (Horizontal)	<2.5m CEP autonomous
	<2.0m CEP SBAX
Time to first fix	
Hot start 1	< 1s
Warm start 2	< 32s
Cold 3	<35s
Standard GPS software	
NMEA message switchable	GGA, GSA GSV, VTG, RMC, GLL

### **Satellite module**

DC supply voltage	5V
Baud Rate	19200
Frequency range	1616 MHz to 1626.5 MHz
Input/Output Impedance	50Ω
Multiplexing Method	TDMA/FDMA
Duplexing Method	TDD (Time Domain Duplex)
Average Power during a transmit slot (max)	1.6W

### **Communication**

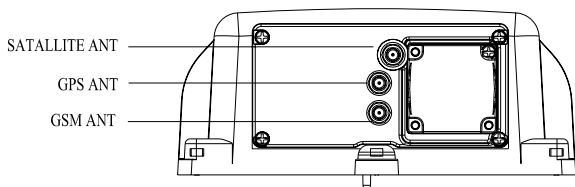
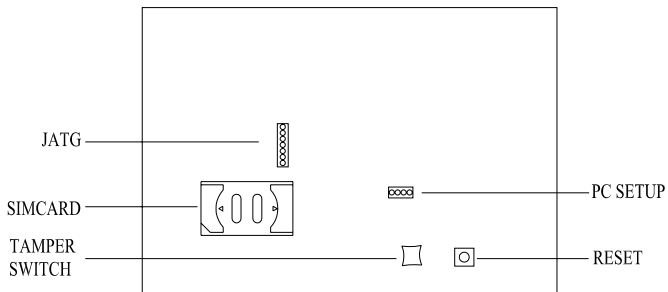
	GPRS \SMS\USB
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### **Environmental**

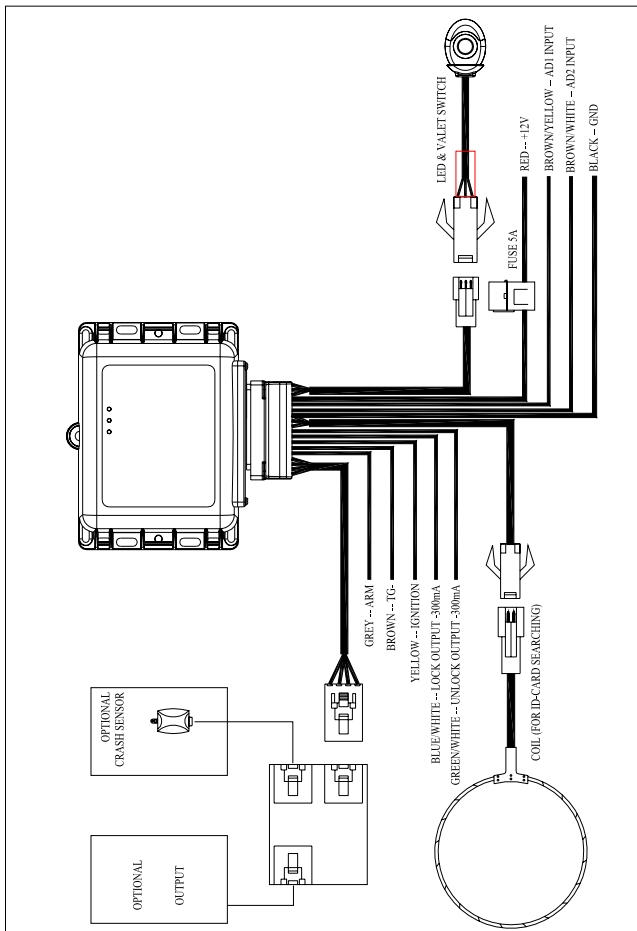
Operating Temperature	-20°C to +55°C
Storage Temperature	-40°C to +85°C

## **PACKING LIST**

1. Unit
2. Main wire harness
3. User manual
4. Valet & LED wire
5. PC-setup Cable







## **Federal Communications Commission (FCC) Statement**

15.21

**You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.**

15.105(b)

## **Federal Communications Commission (FCC) Statement**

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.

This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

### **FCC RF Radiation Exposure Statement:**

1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.