

GOSAFE SYSTEMS



777 Tracking Unit **End User Manual - Distributor**

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Revision Sheet

Rev No.	Change Summary	Date
1.0	First Document	2011.04.27
2.0	1. Upload mode add to "S" mode (UUM/SSM/TPM/UPM command) 2. Server port default: 3032 (SIP command) 3. Server address domain default: empty (SDM command)	2011.05.16
3	1. Modified Chapter4.2 Insert SIM card 2. Updated device appearance photos	2012.07.31

Note: A full description of future changes will be found in the GoSafe Company Change Notes.

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Abbreviations

Abbreviation	Description
°C	Degree Celsius
μA	Micro Ampere
APN	Access Point Number
g	Gram
G	Gravitational Force
GHz	Giga Hertz
GPRS	General Packet Radio Service
GPS	Global Positioning System
GSM	Global System for Mobile
KB	Kilo Byte
Km/h	Kilometers per hour
LBS	Location Based Service
mA	Milli Ampere
mAH	Milli Ampere Hour
MCU	Main Control Unit
MHz	Mega Hertz
mm	Millimeter
MOT	Motion
OBD II	On Board Diagnostic
OEM	Original Equipment Manufacturer
PIN	Personal Identification Number
PQR	Polling Query Request
RAM	Random Access Memory
RFID	Radio Frequency Identification
S	Second
SMS	Short Message System
SOP	Speed Over Parameter
SPD	Speed
UAC	User Alarm Cleared
UNO	User Number
UPW	User Password
UTC	Universal Time Clock
V0.12	Software Version
VOM	Voice Monitoring

Terms and Definitions

Geo-fence	A geo-fence is a virtual boundary around a physical geographical space. A geo-fence consists of a set of coordinates that define an area.
Fleet Manager	The communications controlling authority between the tracking unit and end user
OBDII Port	An on board vehicle diagnostics and reporting port
Threshold Settings	Pre-determined (minimum and maximum) set of values covering a range in which an alarm will be triggered when a parameter is exceeded.
End User	The owner of the 777 tracking unit.

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1.0 INTRODUCTION

This new tracking unit is designed by the Gosafe Company Limited and the “Connect & Go” concept of the 777 enables the unit to interface with an OBDII diagnostic port of the vehicle which provides real time performance parameters on the engine as well as driver behaviour. While the 777 is plugged into the OBDII port, power to the tracking unit is received from the vehicle electrical system.

The 777 is available from established distributors who are involved in the asset tracking and recovery business. No configuration or installation of any components is required by the end user as this forms part of the distributor’s service who acts as the Fleet Manager. A set of default parameters (which may or may not) satisfy the client’s needs, are loaded by the manager during the fitment of a unit into an asset.

By means of a mobile phone, the end user can change some default settings on the tracking unit to satisfy unique requirements within a set range. This should be agreed upon between the manager and the end user. Should the end user require switching certain features ON or OFF, it can be done by using a mobile phone. Furthermore, error reports (also known as alarms) will be automatically send to the end user on engine RPM, Fuel Consumption, Temperature and error codes down loaded via the OBDII port.

The illustration below provides a basic view of the communication lines between the various products involved.

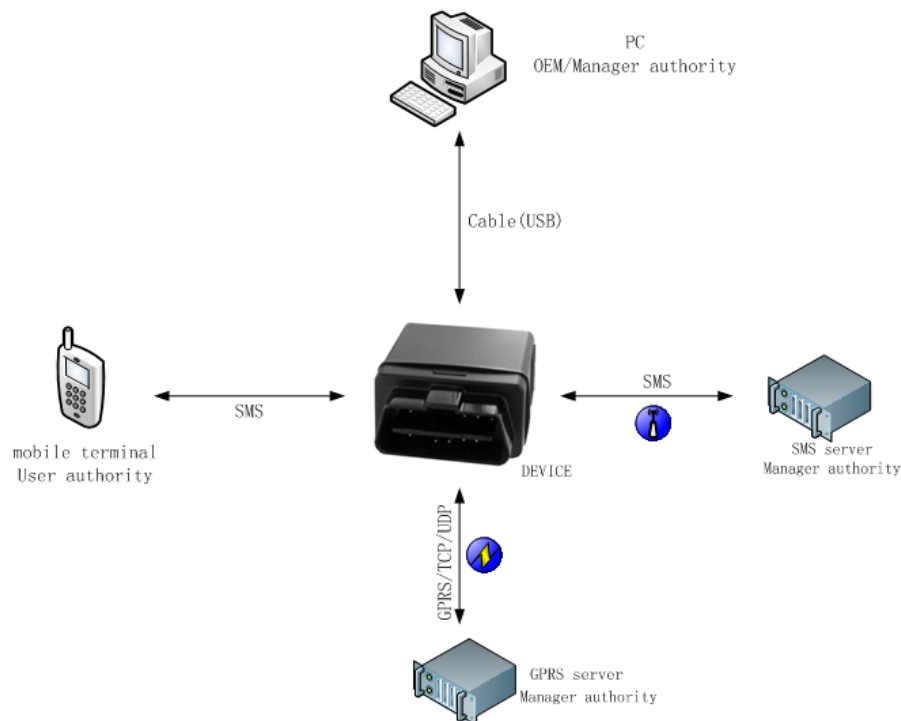


Figure 1: - Communication lines between the various products and 777

The default settings that can be manipulated by the end user, which should be agreed prior to the installation, between the manager and the end user, are:

- Password setting and changes.
- User mobile phone number setting and change.
- Alarm reporting intervals.
- Speed alarm settings and enable/disable.
- Movement settings and enable/disable.

- Voice monitoring enable and disable.
- Clear alarms.
- Location polling. Voice monitoring enable and disable.
- Clear alarms.
- Location polling.

1.1 Purpose

The purpose of this document is to provide guidance to the end user to understand the various settings of the pre-configured 777 tracking unit.

1.2 Scope

The document covers the following aspects:

Section 2 - Key Features: A short summary of the key features of the 777 product is provided.

Section 3 - Unit Illustration: Photos illustrating the various components of a complete 777 product is provided.

Section 4 - Unit Specification: The 777 physical, electrical and environmental performance specifications are provided.

Section 5 – Unit Default Change Procedure: A step by step procedure is given to enable the user to change the default settings.

Section 6 – Unit SMS Structures: The SMS reporting structures are shown to assist the user with the interpretation of commands received.

Section 7 – Trouble Shooting: Basic fault diagnostic procedures are included to assist the user when problems are experienced.

Section 8 – Contact Details: The contact details of the GoSafe Company Ltd in China for support are included.

1.3 Product Description




The new 777 tracking unit makes use of the Global System for Mobile (GSM) communication networks and the Short Message Service (SMS) technology to provide accurate real-time Global Positioning System (GPS) data to locate assets. Additional information such as temperature, fuel consumption, speed and voice monitoring is available on a vehicle.

The 777 unit houses a GSM modem, GPS receiver, control PCBA, microprocessor, power circuitry, etc. A separate RFID tag is provided to the end user to be left in the vehicle when it goes for routine services.

An internal movement sensor manages the power to the unit when an asset is stationary for long periods. The 777 is fitted with the latest available GPS uBlox modules and use Assist GPS (A-GPS) technology to connect the unit faster and more accurately.

Figure 2 illustrates the complete 777 tracking unit which is installed into your asset.

Figure 2 – 777 Component Illustration

Description	Illustration
Unit	 <p>OBDII plug to connect with vehicle port</p>
Rear View with USB port and microphone	 <p>USB Port</p> <p>MIC</p>
Complete Set with USB Cable	

2.0 KEY FEATURES

The main features of the 777 are:

- Real Time Location
- Mobile Map Location
- Latitude and Longitude Location
- GSM Base Station Location (LBS Technology)
- Convenient GSM Mobile Control
- Easy-to-use SMS Communication Mode
- Internal Movement Sensor for better power management
- Internal backup battery for Device disconnection notification
- Internal memory for the data buffer

3.0 UNIT SPECIFICATIONS

Table 1 – 777 Unit Specification

Physical Specification	Size	55 x 50 x 25 mm
	Weight	80 g
	IP Rating	IP62
Power	Rechargeable Battery	7.4V 180mAh Lithium ION
	Power Consumption	Sleep mode < 20uA
		Power Save mode < 5mA
		Max. Performance < 300mA
MCU	MCU	TI MSP430 12KB RAM, 256KB Flash
GSM	Antenna	Internal
	Modem	uBlox LEON 100
	Frequency	Quad band 850/900/1800/1900MHz
	GPRS	Class 10 (4 downlink, 2 uplink, max. 5) Mobile Station Class B
	Approvals	AT&T, R&TTE, CE, GCF, FCC, PTCRB, Anatel, IC, China SRRC, etc
	SIM card	3.3V SIM
	LBS Location Accuracy	100 to 500meters(Urban)
		0.5 to 30kilometers(Suburb)
GPS	Antenna	Internal
	Receiver	uBlox NEO 6M (GPS, & Sbase) engine
	Channels	50 Parallel Channels
	Sensitivity	-162dBm
	Navigation update	1sec
	Acquisition	Cold Starts: 27s
		Aided Starts: <1s
		Hot Starts: <1s
Sensor	3D G-Force Sensor	Onboard
Memory	Flash	10,000 Locations
Environmental Conditions	Operating Temperature	-40° to +70°
	Storing Temperature	-40° to +85°
	Humidity	95%

4.0 UNIT SET-UP PROCEDURE

The end user of the 777 will now be guided to set-up and personalise the settings on a newly fitted tracking unit into a vehicle also called the asset. This ensures safe communication between the end user and the unit and protects valuable data against misuse by dubious people.

Notes:

1. A mobile phone is required to perform the personalised set-up. In future, this mobile number is the only one that will be able to manipulate default settings on the unit and message centre.
2. The end user must obtain [Message Centre contact details](#) from the Fleet Manager if the default settings need to be changed afterwards.

4.1 Command Settings

All the commands for unit settings in this End User Manual are in the same format i.e.:

user password + command content

The command content is restricted to digits (0-9), English characters (a-z, and/or A-Z) and/or common punctuations.

- , The comma is used as a “Command separator & information separator”.
- : The colon is used as:
 - (1) Separator between the information symbol and parameters of upload information, OR
 - (2) Separator between a command and a parameter when the device responds to a command
- ; The semi colon is used as:
 - (1) Parameter separator OR
 - (2) Separator between a command and parameters when sending a command,

Beyond these characters, the unit will not be able to recognize any commands and therefore ignore such request. No response or warning will inform the user of this fault. The commands are not case sensitive.

4.2 Set User Number

Every user of the 777 will receive a User Number (UNO) from the Fleet Manager and this forms part of the service provided when the unit is procured. The end user is required to provide a mobile number to the Fleet Manager which will be used to link the end user (by means of a mobile number) and the tracking unit (by means of the UNO). One UNO can be linked to many tracking units.

4.3 Creating your First Password

It is recommended that the end user change the factory set password to your own personalized one as soon as possible. A 4 digit password is chosen between the digits 0-9. To create a personalized password, use your 4 digits (e.g. 5678) of choice and send the following command (See paragraph 4 Note 1) 1234 ,UPW;5678 to the Fleet Manager Centre. (See paragraph 4 Note 2)

Explanation:

1234	Factory Password
UPW	Command Word
5678	Your new personalized password

Notes:

1. Please memorize your New Password and wait for the confirmation by SMS that your password modification was successful.
2. The system can only process the command if there is a **UNO** registered by the Fleet Manager.

4.3.1 Modify User Password (UPW)

Should it become necessary to change your password for whatever reason, follow these steps:

Command Format:

****	,	UPW	;	xxxx
------	---	-----	---	------

Explanation:

****	Old UPW (4-digit)
,	Command delimiter
UPW	Command Control Word
;	Command delimiter
xxxx	New UPW (4-digit)

SMS this command setting to the Message Centre.

Note:

1. Please memorize your new password.

The expected reply:

777 V0.12 (This represents the tracking unit type (777) and the hardware/software version)

UPW: 3456 (This will be your new password)

4.3.2 Change Upload Mode and Reporting Interval Setting (UUM)

This is to change the intervals or frequency between the responses and the format or type of response required.

Command Format:

****	,	UUM	;	xxxS	;	G	;	T
------	---	-----	---	------	---	---	---	---

Explanation:

****	User password (4-digit)
,	Command delimiter
UUM	Command Control Word
;	Command delimiter
xxx	SMS time interval value (refer to operating cycle explanation below)
S	Command control word interval in (S)econd, (M)inute, (H)ours
;	Command delimiter
G	Command Control Word (Modes O, S, G, or L)
;	Command delimiter
T	Type of upload (Text or hyperlink. Refer to Message Types explanation below)

SMS this command setting to the Message Centre.

A reply with the following message **UUM: 30M;G;T** in SMS Format will be received. At the set intervals (xxxS, xxxM or xxxH) the unit will respond with an asset location report.

If the unit operates in the real-time positive work mode (i.e. the operating cycle is set as 00S or 00M or 00H), a single report message will be sent. Should update location reports be required more frequently, new time settings need to be submitted before the unit will respond accordingly.

Operating Cycle:**xxxS:** Seconds upload range (30 ~ 900 seconds)**xxxM:** Minute upload range (15 ~ 59 minutes)**xxxH:** Hour upload range (1 ~ 240 hours)**Work Modes:****O:** --Cancel Upload**G:** --If there is GPS data, send GPS based location. If not, send GSM base station (LBS) data.**S:** --Always update with GSM base station (LBS)**L:** --Unit replies at the set intervals for voice monitoring.**Message Types:****T:** Text format (SMS)**W:** Text format with hyperlink (SMS with hyperlink of Fleet Manager Platform)**Example:** 1234,UUM;30S;G;T**The expected reply:**

777 V0.12

UUM:30S;G;T

4.3.3 Enable/Disable Over Speed Alarm (SPO)

This is to activate or de-activate the over speeding alarm feature.

Command format:

****	,	SPO	;	M
------	---	-----	---	---

Explanations:

****	User password (4-digit)
,	Command delimiter
SPO	Command Control Word
;	Command delimiter
M	Parameter (1=Enable, 0=Disable)

SMS this command setting to the Message Centre.

After receiving this command a reply with the following message: SPO:M will be issued, which implies that the over speed alarm is now enabled (1) or disabled (0). In future, the unit will only respond with over speeding alarms when an enabled command (1) is requested.

Example:Enable over speed alarm, command is: 1234,SPO;1Disable over speed alarm, command is: 1234,SPO;0**The expected reply:**

777 V0.12 (This represents the tracking unit type (777) and the hardware/software version)

SPO:1 (Parameter is enabled)

or

777 V0.12 (This represents the tracking unit type (777) and the hardware/software version)

SPO:0 (Parameter is disabled)

4.3.4 Enable/Disable Over Speed Alarm (SOP)

This is to change the default speed limits. The range of the settings varies between 0 km/h and 255 km/h. The “alert speed” threshold must be smaller than the “over speed alarm” threshold.

Command format:

****	,	SOP	;	Alert Speed	;	Alarm Speed
------	---	-----	---	-------------	---	-------------

Explanation:

****	User password (4-digit)
,	Command delimiter
SOP	Command Control Word
;	Command delimiter
Alert Speed	Set the speed in KM/H (Default setting 80 km/h)
;	Command delimiter
Alarm Speed	Set the speed in KM/H (Default setting 100 km/h)

SMS this command setting to the Message Centre.

After receiving this command a reply with the following message: `SOP:Alert speed; alarm speed` will be issued.

The Alert Speed is the speed when the tracking unit is activated once the vehicle exceeds the lower set speed limit and will respond with a single audio warning alert. Once the vehicle exceeds the Alarm Speed or upper speed limit, the unit will send alarms at the default set intervals (2 seconds and 255 seconds).

Example: (1234,SOP;80;100)

UPW = 1234
Command = SOP
Alert speed = 80
Alarm speed = 100

The expected reply:

777 V0.12
SOP:80;100

4.3.5 Enable/Disable Movement (MOT)

This is to activate or deactivate the asset movement feature.

Command format:

****	,	MOT	;	M
------	---	-----	---	---

Explanation:

****	User password (4-digit)
,	Command delimiter
MOT	Command Control Word
;	Command delimiter
M	Parameter (1=Enable, 0=Disable)

SMS this command setting to the Message Centre.

After receiving this command a reply with the following message: `MOT:M` will be issued, which implies that the movement alarm is now enabled (1) or disabled (0). In future, the unit will only respond with a movement alarm when an enabled command (1) is requested.

Note: The unit will automatically respond with a single location SMS to the end user once it senses any asset movement. Once the vehicle stops the unit will start a countdown sequence and after a 60 minutes uninterrupted stationery period, will the unit responds to a movement.

The expected reply:

Enable SMS upload when movement trigger, command is: 1234,MOT;1

Disable SMS upload when movement trigger, command is: 1234,MOT;0

4.3.6 Set Voice Monitoring Number (VOM)

This is to activate or de activate the voice monitoring feature on the tracking unit.

Command format:

****	,	VOM	;	+YYXXXXXXXXXXXX
------	---	-----	---	-----------------

Explanation:

****	User password (4-digit)
,	Command delimiter
VOM	Command Control Word
;	Command delimiter
+YYXXXXXXXXXXXX	Registered telephone number of end user (Refer to paragraph 4 note 1)

SMS this command setting to the Message Centre.

After receiving this command a reply to the number listed in the command +YYXXXXXXXXXXXX will be issued.
The user will then be able to listen to conversations inside the vehicle cab without the knowledge of the driver.

When the unit is busy, a SMS "VOM: BSY" will be send and the request needs to be resubmitted.

Example:

1234,VOM;+86123456789

The expected reply:

777 V0.12

VOM:123456789

4.3.7 Location Poll (PQR)

There are two methods to poll the location of the tracking unit.

1. By sending PQR SMS to the unit:

****	,	PRQ
------	---	-----

Explanation:

****	User password (4-digit)
,	Command delimiter
PRQ	Command Control Word

SMS this command setting to the Message Centre.

Example:

1234,PRQ

The expected reply:

777 V0.17

PRQ

The unit will respond with the location information after the first GPS data update is received.

777 V0.17

GPS 5/67
UTC 11-05-11 06:47
N23.164367
E113.428548
SPD:0km/h
TMP:37.8C
PWR:10.5V

Notes:

1. N = North, E = East, W = West and S = South
 2. A negative represent Western Time zone, a positive represent Eastern Time zone.
-
2. By calling the Unit Number and hang up after the first ring, the device will send back the GPS location to the user mobile phone.

Note: The Unit Number is the contact number of the SIM Card installed by the Fleet Manager in the tracking unit.

The expected reply:

777 V0.17
GPS 5/67
UTC 11-05-11 06:47
N23.164367
E113.428548
SPD:0km/h
TMP:37.8C
PWR:10.5V

4.3.8 Clear Alarm (UAC)

This is to clear an alarm response from the unit to the end user.

Command format:

****	,	UAC
------	---	-----

Explanation:

**** User password (4-digit)
, Command delimiter
UAC Command Control Word

SMS this command setting to the Message Centre.

After receiving this command a reply with the following message: UAC is issued. This implies that the alarm has been cleared.

Example:

1234,UAC

The expected reply:

777 V0.12
UAC

4.4 Pending Commands

In the event the user sends commands and the unit is in the "sleep" mode, the unit will not process the commands. During the next "wakeup" session, the unit will download and process the commands within the first minute. A message will be send to the user afterwards to confirm the reception of the commands. There after the unit will receive and process the commands in real-time and reply accordingly.

4.5 Alarms

The unit transpond alarms when certain conditions or parameters are triggered. The expected messages to receive when the unit is in the alarm state are listed in table 2:

Table 2 - List of Alarms

SMS Received	Explanation
777 V0.12 GPS 6/77 UTC 11-05-14 05:33:47 N23.164479 E113.428606 SPD:0km/h 0 Alarm: Power Off	Ignition Off
777 V0.12 GPS 6/77 UTC 11-05-14 05:33:47 N23.164479 E113.428606 SPD:0km/h 0 Alarm: Over Speed	Over Speed
777 V0.12 GPS 6/77 UTC 11-05-14 05:33:47 N23.164479 E113.428606 SPD:0km/h 0 Alarm: Moving	Moving (When the movement sensor is enabled (1), an alarm is triggered by the movement sensor as soon as the vehicle gets in motion)
777 V0.12 GPS 6/77 UTC 11-05-14 05:33:47 N23.164479 E113.428606 SPD:0km/h 0 Alarm: Geo-Fence	Geo-Fence (The format provided are just an example from GoSafe Company. Every Fleet Manager's platform is unique and may differ from this).
777 V0.12 GPS 6/77 UTC 11-05-14 05:33:47 N23.164479 E113.428606 SPD:0km/h 0 Alarm: Anti-Jamming	Anti-Jamming (This alarm appears when the anti-jamming feature is enable and someone uses a GSM jammer near the unit)
Alarms	This depends on the Fleet Manager's platform and the alarm reporting format for e.g. Temperature, RPM, Fuel Consumption and OBDII error codes readings.

Note: The user can use the UAC command to clear user based alarms.

4.6 Default Parameters

The unit is set to the following default parameters. When the unit is powered up for the first time, the unit will default to the following parameters and wait for user or server commands to update. The user will be able to manipulate the parameters marked as "Y" whilst the Manager /OEM can change any default parameter

Table 3 – Default Parameters

Description	Parameter
User number	(EMPTY)
SMS center number	(EMPTY)
PIN code of SIM	1234
APN list	APN list of China only
User password	1234
User upload mode	30M;G;W
Manager phone number	(empty)
Manager upload mode	30M; G; T
Server IP or domain name	domain name (empty) IP (114.142.154.28)
TCP port	3032
UDP port	3032
TCP channel upload mode (mode 0)	60S; G; B
UDP channel upload mode (mode 0)	60S; G; B
Package number per TCP upload	1
Package number per UDP upload	1
Percentage of data buffer per TPC upload	50
Percentage of data buffer per UDP upload	50
Over speed	80; 100
Enable/ disable over speed alarm	Disable
Enable/disable vibration sensor	Disable
Enable/disable phone roaming status test	Enable
Enable/disable anti-jamming	Disable
Time zone	0:00
Vibration sensor parameter	10; 10; 30
Anti-jamming parameter	30; 20
Baud rate of extend serial port	9600
Transmit mode of extend serial port	Common mode
USB port mode	Common mode
Supper link (0) GPS Link	http://maps.google.com/staticmap?zoom=14&size=300x300&markers=%n,%e&sensor=false
Supper link (1) (LBS Link)	(empty)
Phone list of SMS forwarding	(empty)
Hot line list	(empty)
Time for talking	0; 0
SMS number counter	0; 0

4.7 Combining Commands

To save time and money when configuring the tracking unit, the user can consolidate commands where more than one command is included in a request. The combined command begins with the user password, which is followed by a series of command requests.

Notes:

1. The command order is flexible, but the sequence within the command should follow the format below.
2. The “combine command” function is only available to the mobile phone number of the registered user.

The format is:

Password	,	Command word	;	Parameter	;	Parameter	,	Command word	;	parameter
		First command						Second Command		

If there is duplication in the command requests, the latter request will be processed; if there is an error in the command, the incorrect command will be discarded and the unit will only confirm the settings of the correct commands. No error warning will be given. If all the commands are in error, an alarm will be sent.

All command settings, except for the User No. setting command, are controlled by the user.

Any mobile phone type can be used to communicate.

Example: 1234,UUM;30M;G;T,UPW;1234

5.0 UNIT SMS STRUCTURES

The SMS and hyperlink formats for every Fleet Management Platform is unique and should be obtained from the specific fleet manager. Below the GoSafe fleet management platform format details.

5.1 Normal Location (G Mode) SMS Format (T Mode)

(Successfully Located)

<i>Gosafe 777 V0.10</i>	Device Name and Version
<i>GPS 3/56</i>	Satellites Connected & Time used for Location (secs)
<i>LTM08:00 11-24-10 02:54</i>	Specific time zone and Location time based on specific time zone
<i>N23 9.8329</i>	Latitude in degree-minute format
<i>E113 25.7149</i>	Longitude in degree-minute format
<i>Speed: 1km/h 39</i>	Device speed and Move Direction
<i>TMP=25.6C</i>	Temperature
<i>PWR=12.5</i>	Power

(Unsuccessful Located)

<i>Gosafe 777 V0.10</i>	Device Name and Version
<i>MCC=460</i>	Mobile Country Code
<i>MNC=1</i>	Mobile Network Code
<i>LAC=517A</i>	Location Area Code
<i>CID=1FB1</i>	Cell Identity
<i>TMP=25.6C</i>	Temperature
<i>PWR=12.5</i>	Power

5.2 Hyperlink SMS Format (W Mode)

(Successful Located) Google link

<i>Gosafe 777 V0.10</i>	Device Name and Version
<i>http://maps.google.com/staticmap?zoom=14</i>	
<i>&size=150x150&markers=39.9493,116.3875</i>	
<i>&sensor=false</i>	Google Map Link
<i>TMP=25.6C</i>	Temperature
<i>PWR=12.5</i>	Power

(Successful Located) Yandex link

<i>Gosafe 777 V0.10</i>	Device Name and Version
<i>http://m.maps.yandex.ru/?ll=116.3875,39.949328&pt=116.3875,39.949328&z=12</i>	Yandex Link
<i>TMP=25.6C</i>	Temperature
<i>PWR=12.5</i>	Power

(Unsuccessful Located)

<i>Gosafe 777 V0.10</i>	Device Name and Version
<i>MCC=460</i>	Mobile Country Code
<i>MNC=1</i>	Mobile Network Code
<i>LAC=517A</i>	Location Area Code
<i>CID=1FB1</i>	Cell Identity
<i>TMP=25.6C</i>	Temperature
<i>PWR=12.5</i>	Power

5.3 Error Command Alert

Gosafe 777 V0.10
Error command!

5.4 Password Modification Successful Confirmation

Gosafe 777 V0.10

UPW:5678

5.5 User No Setting Successful Confirmation

Gosafe 777 V0.10

UNO:+8613912345678

6.0 TROUBLE SHOOTING

6.1 LED Flashes & Relevant Device Status

An external flashing LED light, next to the USB port, reflects the operational status of the unit. The LED will flash at 8-sec intervals to indicate the GSM and GPS operational status. There is a short interval between each flashing cycle, first the GSM then followed by the GPS status. To check the statuses, please count the LED light flashes and compare it to the table below:

Table 4 – LED Status Reporting

Status	LED Flashes
Device Power on	LED ON <1 sec
GSM module ON but unregistered	1 flash at the beginning of each flash cycle
GSM module ON and registered	2 flashed at the beginning of each flash cycle
GSM module OFF	No flash at the beginning of each flash cycle
GSM module on and registered	3 flash then GPRS connection
GSM module on and registered	4 flash then TCP connection
GPS module ON but haven't located	1 flash after interval (behind GSM status flash) in each flash cycle
GPS module ON and located	2 flashes after interval (behind GSM status flash) in each flash cycle
GPS module OFF	No flash after interval (behind GSM status flash) in each flash cycle

The unit also uses the LED flashes to indicate an error during the following situations:

Device Error, SIM card funds depleted, GSM network cannot register.

During any of the above errors, **the LED light will come "ON" for 1 sec, and then flash quickly.** To assist with trouble shooting errors; the user can count the quick flashes of the LED and compare it with the table below:

Table 5 - LED Fault Reporting

Error Details	LED Flashes	Solutions
GSM module Communication Error	1 flash	Power OFF. Check GSM module power supply and communication
SIM card Error	2 flashes	Power OFF. Check whether the SIM card installation is good and the PIN is disabled
Cannot register at GSM network	3 flashes	Check whether the SIM card is expired and/or GSM signal strength.
GPS module Error	4 flashes	Power OFF. Check GPS module power supply and communication.
SMS Sending Error	5 flashes	Check whether there is SIM card, SMS center setting error, and/or SIM card expired
Can't use GPRS	6 flashes	Check whether the APN is correct and the SIM has a GPRS function or not
TCP connection Error	7 flashes	Check if the server is normal
Unknown Error	8 flashes	Switch power OFF then power ON, (reset). If the error persists, please contact your nearest GoSafe representative.

7.0 CONTACT DETAILS

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