4G GATEWAY ETS-16x8G

USER'S MANUAL

SHENZHEN ETROSS TELECOM CO.,LTD

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1. Introduction

1.1 Overview

4G VoIP gateway ETS16x8G is newly designed IP to 4G gateway supporting maximum 16 ports 128SIMs of 4G Voice interface, it can effectively realize the smooth transition between PLMN(4G) and VoIP network. Compact cost effective design and system architecture of 4G Gateway ETS-16x8G provides customer satisfaction in high quality , performance and system reliance.

Mostly important, 4G Gateway ETS-16x8G features with new functions such as multi-SIM rotation, Human behaviour, BTS rotation,proxy server encryption for anti IP block, ETS bandwidth optimization(SBO) , Auto IMEI change and generation, auto activation SIM card etc.

This product uses the state-of-art technology voice compression and Smart QoS of ETS to maintain the maximum voice quality under fast internet line and slow internet line as well, thus It is an ideal gateway for heavy duty VoIP call termination (VoIP to 4G) and Origination (4G to VoIP), it is fully compatible with leading soft switch and SIP server.

1.2 Main features

Support 16 4G ports, up to 16 concurrent calls (1 Ports 8 SIM card ,total 128 SIM card)
Module: SIMCOM A7670C; Support 4G Band
FDD LTE: B1/B3/B5/B8
TDD LTE: B34/B38/B39/B40/B41
Support Multi sim card rotation to avoid sim block
Support BTS rotation and lock
Support encryption for VOS for anti-block of IP port
Support Human behaviour function
Support SMS Sending / batch SMS Sending / receiving
Support USSD balance inquiry
Auto activation SIM card and recharge
Support IMEI change , auto IMEI change and generation
Automatically lock/open SIM card/ port according to its balance or alarm
Support Codec: G.711a/u law, G.723.1, G726,G.729AB
Support bandwidth optimization (optional)
Sys log output by USB interface for tracking records
User friendly web management interface
HTTP Web support for configuration and upgrade
SIM swapping
HTTP Web support ASR, ACD, PDD, SIM balance inquiry
Convert the number as preset rules /Number translation
Call routing / digit map
CDR management
IVR customized
BCCH management

SIM card rotation conditions:

1) According to accumulated call duration check (talk time)
2) According to accumulated idle&talking check(use time)
3) According to accumulated calls check (call counter)
4) According to consecutive call failure check(call failure)
5) According to consecutive low-duration calls check (Low duration)

Human behaviour conditions:

1) According to accumulated call duration check (talk time)
2) According to accumulated idle&talking check(use time)
3) According to accumulated calls check (call counter)

1.3 Specifications

Interfaces

- Mobile Ports: 16 ports 4G/GSM channels
- Two(2) 10/100Mbps Ethernet Interface (2xRJ45)
- USB: 1 port

Voice Processing

- Voice Codec: G.711a/u law, G.723.1, G726,G.729AB
- QoS: Diff Serve, T oS, VAD, PLC, CNG

Call Features

- Calling Type: Terminate/Originate calls
- IVR Voice Prompt: Two stage dialing, Customized IVR
- Call handling: One stage dialing, Configurable dial plan, digit map
- DTMF: RFC2833, SIP

Mobile Features

- General Feature: SMS, USSD, IMEI/PIN modify, Call minutes restriction, Carrier select, BCCH, Reversal Polarity Network
- Network Mode: NAT router or switch mode
- Network Protocols: IP,TCP, UDP,TFTP, FTP, RTP, RTCP, ARP, RARP,ICMP Ping, NTP, SNTP, HTTP, DNS, PPPoE, DHCP
- NAT traversal: Static NAT, STUN

Protocol

- Protocol: SIP V2.0 RFC3261
- SIP Characteristics: By port/device registration, Two183 mode

Configuration Management

- Management: TFTP, HTTP, Sys log, CDR
- Web GUI: Configuration, firmware upgrade, call status, CDR ,Configuration backup/restore

Hardware Specifications

- Power Supply:AC100~240V 50/60HZ DC12V/5A
- Temperature: 0~40 ℃（Operation）, -20~80 ℃（storage）
- Humidity: 5%～90% RH,
- Power Consumption: 35W

- Product Appearance: Rack mountable 1u chassis
- Product Dimensions: 44(W) x 28(D) x 6.8(H) cm
- Product Net weight: 6.0kg
- Carton box Dimensions: 52(W) x 38(D) x 20(H) mm
- Gross weight with Packing box: 7 kg

1.4 Product appearance

Figure 1-4-1 the photos of 4G Gateway ETS-16x8G

	
Front view photo	back view photo

Figure 1-4-2 View of 4G Gateway ETS-16x8G

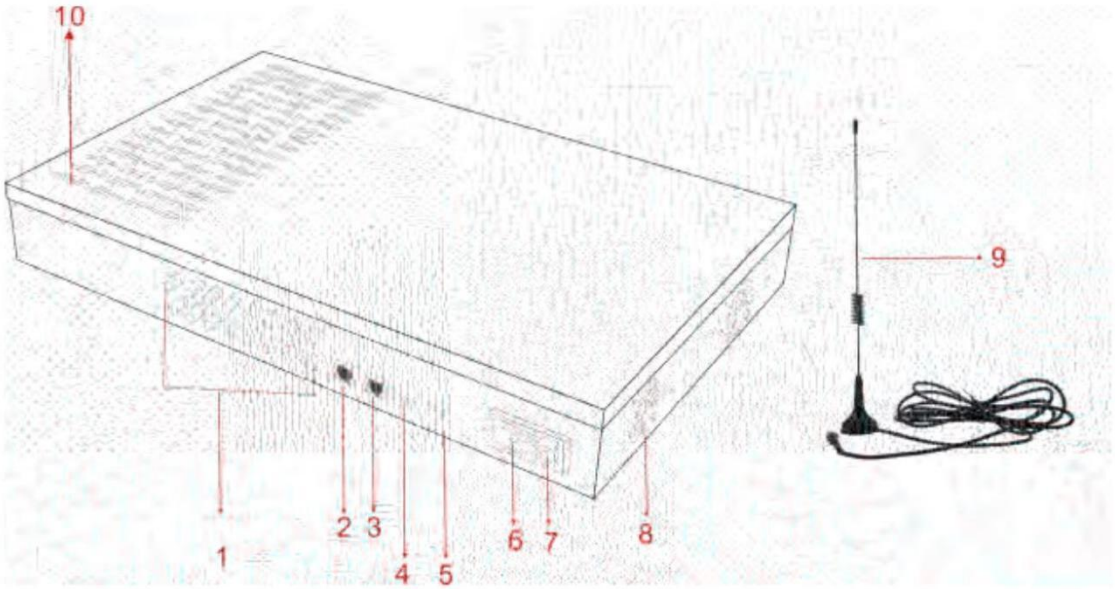


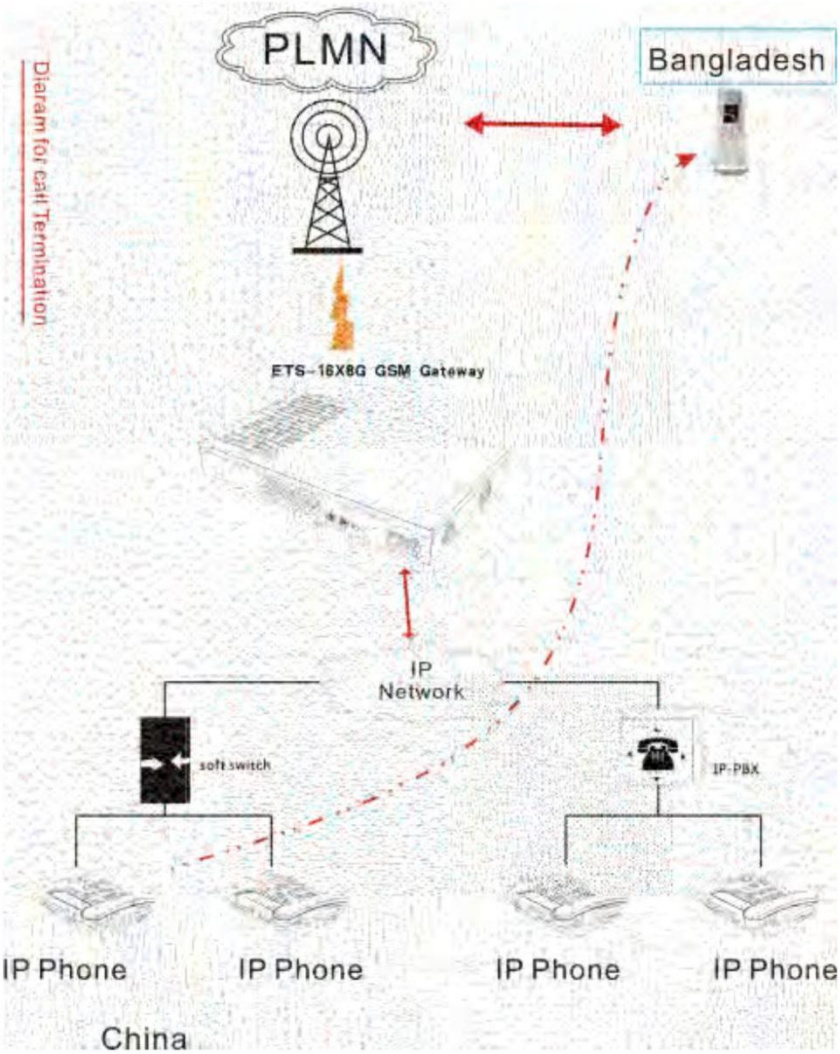
Table 1-4-1 Description of the top view

No.	Sign / item	Description
1	SMA	SMA connector to connect with Antenna, total 16 pieces
2	WAN	Ethernet Interface,10/100M Base-TX, RJ-45 to connect with external

		network
3	LAN	Local area network, to connect with internal network
4	USB	USB interface for connecting with PC for syslog
5	LED indicators	Led indicators for device running status
6	AC Power	110-240 VAC ,50/60Hz
7	Power switch	To switch on and off the device
8	Electrical Fan	2 Electrical Fans for cooling the device.
9	Antenna	Standard 3m cable Antenna,Gain 3 dbi , short plastic antenna optional But it may make interference noise, not recommended. Attention: The antennas should be placed at a distance(15-20cm) from each other, to avoid interference.
10	SIM Slot	SIM card slot to insert SIM card inside total 128 SIM slots

1.5 Call termination diagram

Figure 1-5-1 Call termination diagram



1.6 Packing list

Item	Photo	Quantity (piece)
4G Gateway ETS-16x8G host (black)		1
Antenna(3m cable antenna)		16

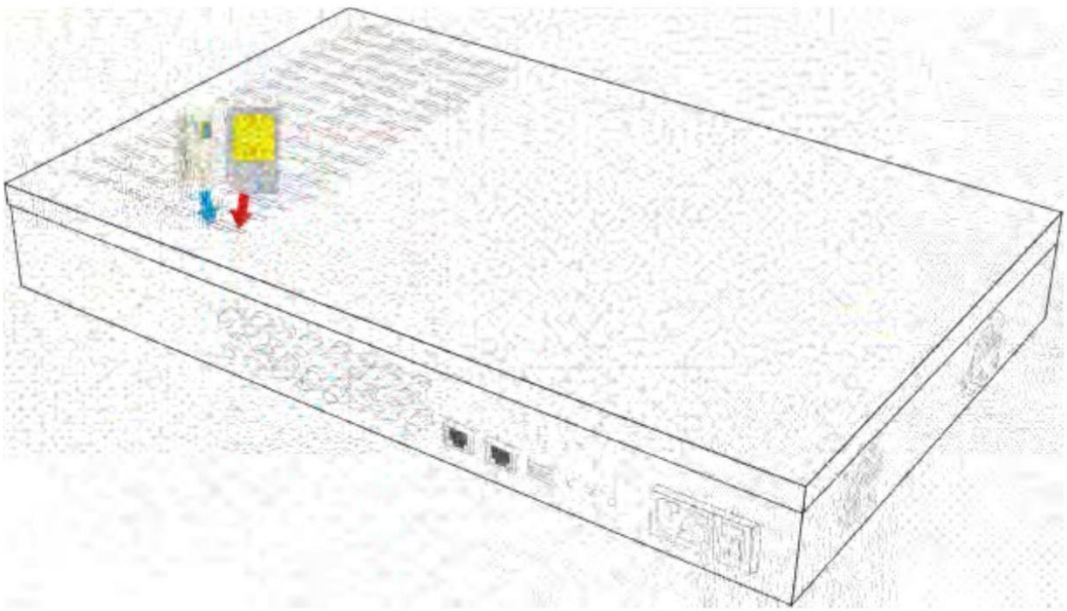
AC power cable		1
USB cable		1
Network cable		2
Weight (Kg)	7.0kg full set	
Size (L x W x H) cm	52x38x20 (outer packing box)	

2. Quick Installation Guide

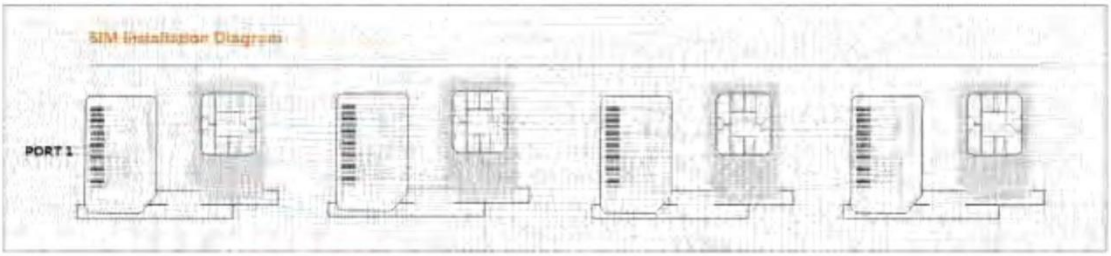
2.1 SIM card installation

Install SIM card into each SIM card slot, attention the direction of SIM card inserting, ETS-16G supports SIM card swapping, but not recommended.(If you want to change SIM card, strongly recommend you to turn the port off from web configuration page then to change SIM card)

Figure 2-1-1 SIM Card installation



2.2 SIM card Installation Diagram

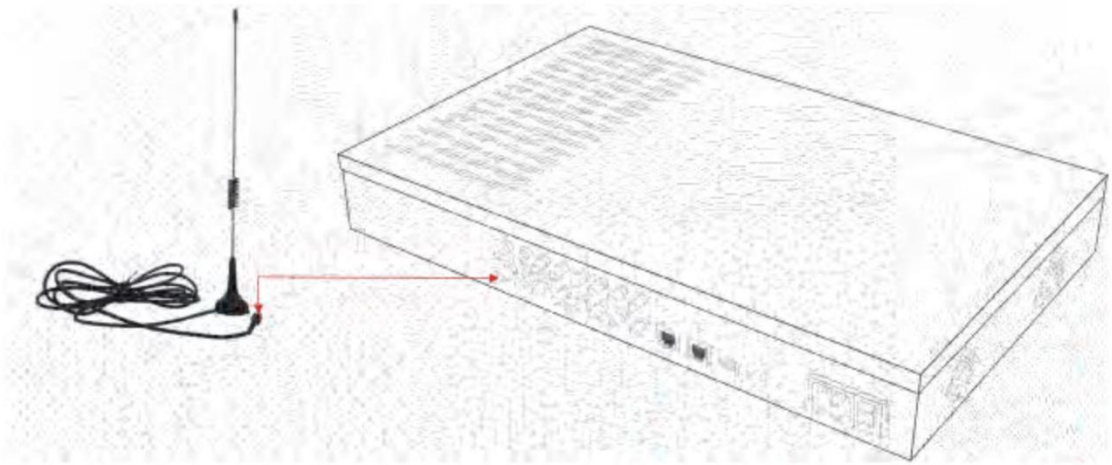


2.2 Antenna installation

Install Antenna with 3m cable, and put the antenna at least 1m far away from the device, otherwise it may make interference. Not recommend the short plastic antenna, if customer wants to use short antenna, it may make interference and noise and lower the efficiency of the device.

Attention: The antennas should be placed at a distance(15-20cm) from each other, to avoid interference.

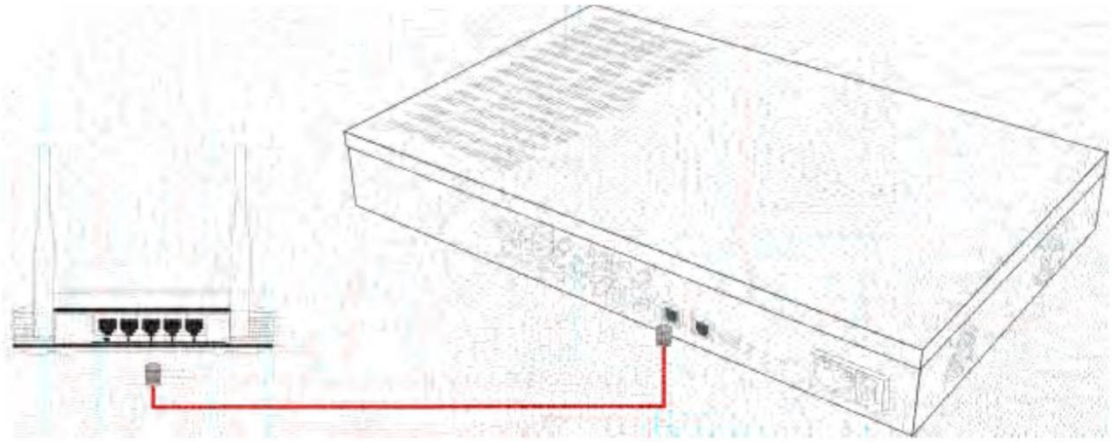
Figure 2-2-1 Antenna installation



2.3 Network cable connection of ETS-16x8G

Be sure to connect the WAN port of ETS-16x8G to the router / switch of external network.

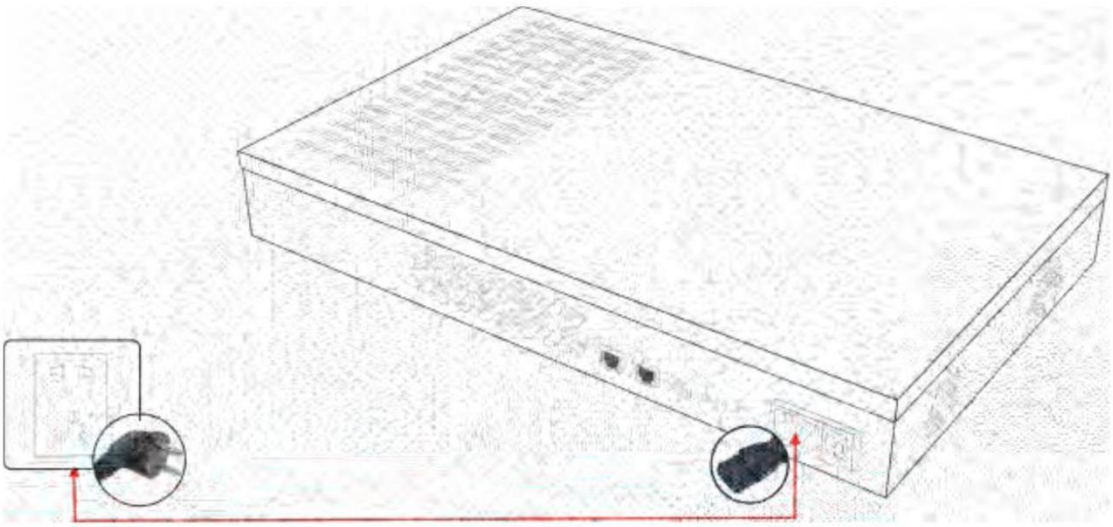
Figure 2-3-1 Network cable connection of ETS-16x8G



2.4 Power cable connection of ETS-16x8G

Connect power cable to the device, and switch on the device ,then it works. We provide US type, EU type, UK type ac power for optional.

Figure 2-4-1 Power cable connection of ETS-16x8G



3. Network Configuration

ETS gateway provides two methods for you to enter into web configuration page.

3.1, IVR method configuration

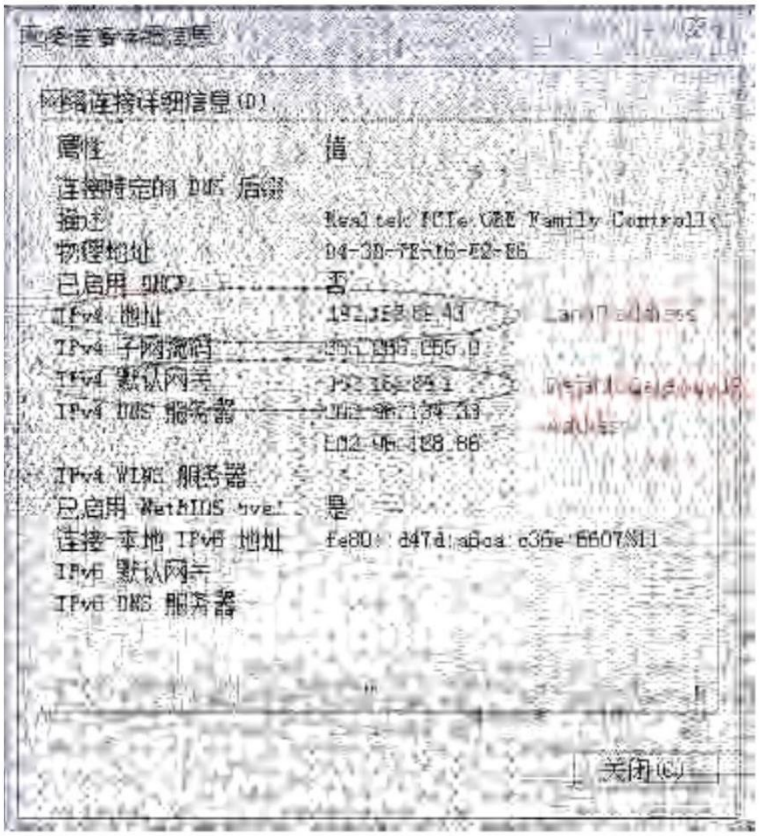
Connect router's cable to WAN port of ETS-16x8G, insert SIM card to SIM 1, connect Antenna for Port 1,then switch on the device. Wait 1 minutes later, the device will fully startup.

Then you can call the number of SIM1 which you inserted to the ETS-16x8G, Your phone will prompt you to input the code, input *****01# , you will hear the voice of WAN Port IP address and LAN port IP address accordingly.

3.2,LAN port method configuration

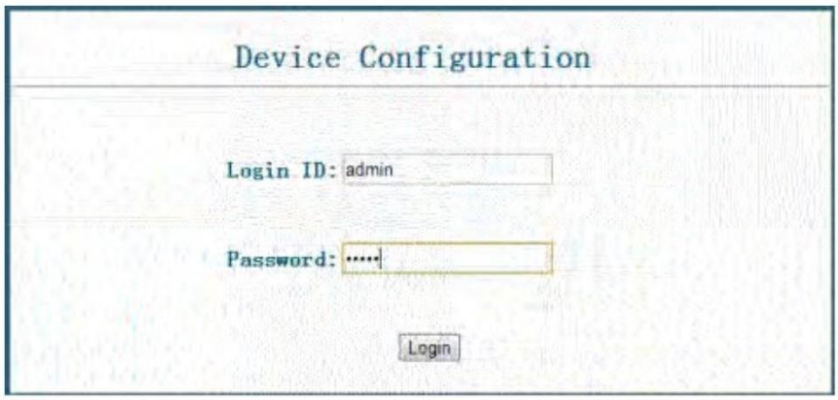
Connect PC to LAN port of ETS-16x8G,set PC to automatically obtain IP address. Check the IP address information, you will get the LAN port IP address And its default gateway IP address. See as below:

Figure 3-2-1 LAN & Default gateway IP address



Then you input the default gateway IP address "192.168.89.1" in the browser, it will enter into the Web configuration page, and input Login id: admin, password: admin

Figure 3-2-2 enter into Web configuration through LAN port



Then you will enter into the Web configuration page through LAN port, you will find the WAN port IP address as shown below:

Figure 3-2-3 Show Network information

1.3, Enter into Web Configuration Page

(Attention: Before you do this step, Be sure you have changed the LAN cable to connect with WAN port, not LAN port, otherwise it can not work).

After you obtain the WAN IP address, then you can input WAN IP Address of ETS-16G in browser to enter into Web Configuration page.

4 Web Configuration

Attention: Before you do the Web configuration, strongly recommend you use the Explorer (Google Chrome, or Microsoft IE 9.0 or above).

4.1 Web Configuration

4.1.1 Access the Web configuration page through HTTP

Enter WAN IP address of ETS-16x8G in browser, the GUI shows as below:

Figure 4-1-1 Web configuration interface

Enter Login ID: "admin" and password: "admin" and then click "login" in configuration interface. The default login ID and password are "admin/admin". It is strongly recommended for you to change the default password to a new password for system security.

4.1.2 Web Configuration

ETS-16x8G administration interface consists of the navigation tree and the detailed configuration interfaces.

Go through navigation tree, user can check, view, modify, and set the device configuration on the right of configuration interface. Currently We have listed "Status","BCCH","Call history","SIM Card", "Human behavior", "Port", "Trunk", "USSD", "SMS", "SMS Bulk", "Balance Manage", "call routing", "System", "Tools" Columns, and We may upgrade for new features according to special requirements.

Figure 4-1-2 ETS administration interface

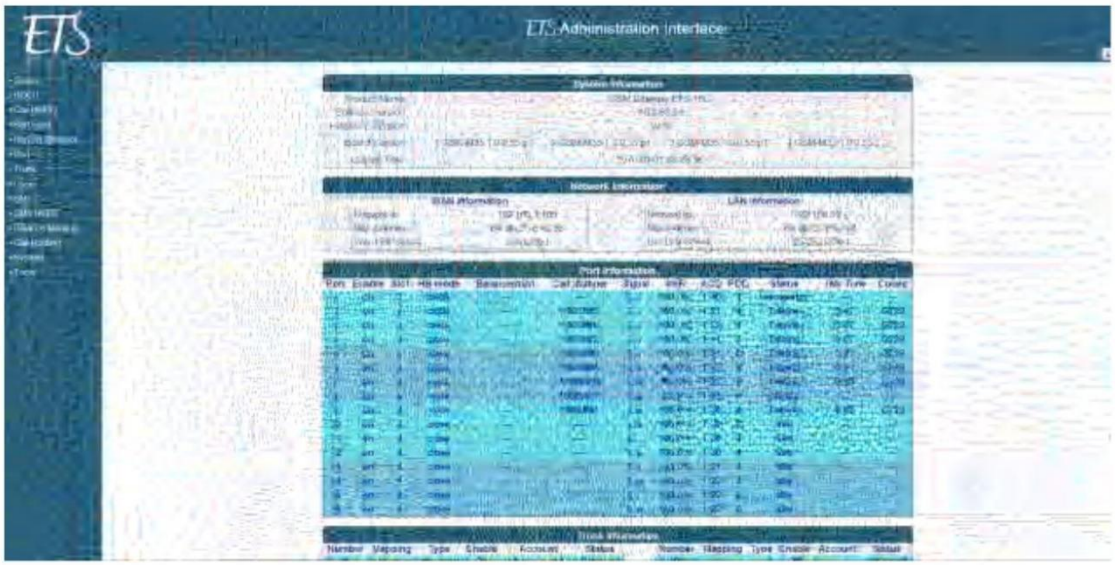


Table 4.1.1 Description of the Web configuration columns

Status	Shows the device current run status and lists related parameters and data
BCCH	Shows 4G ports BCCH data, e.g. Bcch, LAC and dbm for each port
Call history	Shows IP to 4G,4G to IP calls,duration,success and failure statistic
Sim card	Shows SIM card working status and parameters, and also for rotation setting, Lock setting , Initial SIM card setting
Human behavior	Shows human behavior status, Mode setting,server/client setting, server number setting, SMS content setting.
Port	Numbers of 4G/GSM channels
Trunk	Add remote IP of soft switch, SIP server which will send call traffics to gateway.
USSD	USSD (Unstructured Supplementary Service Data) is a Global System for Mobile(4G) communication technology that is used to send text between a mobile phone and an application program in the network.
SMS	To send SMS and receive SMS
SMS Bulk	To send SMD bulk, working as SMS modem
Balance manage	Shows SIM balance duration, to set the balance and unit and auto balance calculation management (auto query and auto update)
Call routing	To pre-define some digit map /call rules to realize the call routing
System	System instruction and setting
Tools	Useful tools

4.2 Status

4.2.1 System Information/Network information/Port information

System information shows product's name,software version and hardware version, 4G board version and Current time etc.

Network Information shows WAN and LAN network IP address, Mac Address and also the link status.

Port information shows the port basic information and working status.

Figure 4-2-1-1 system /Network /Port information

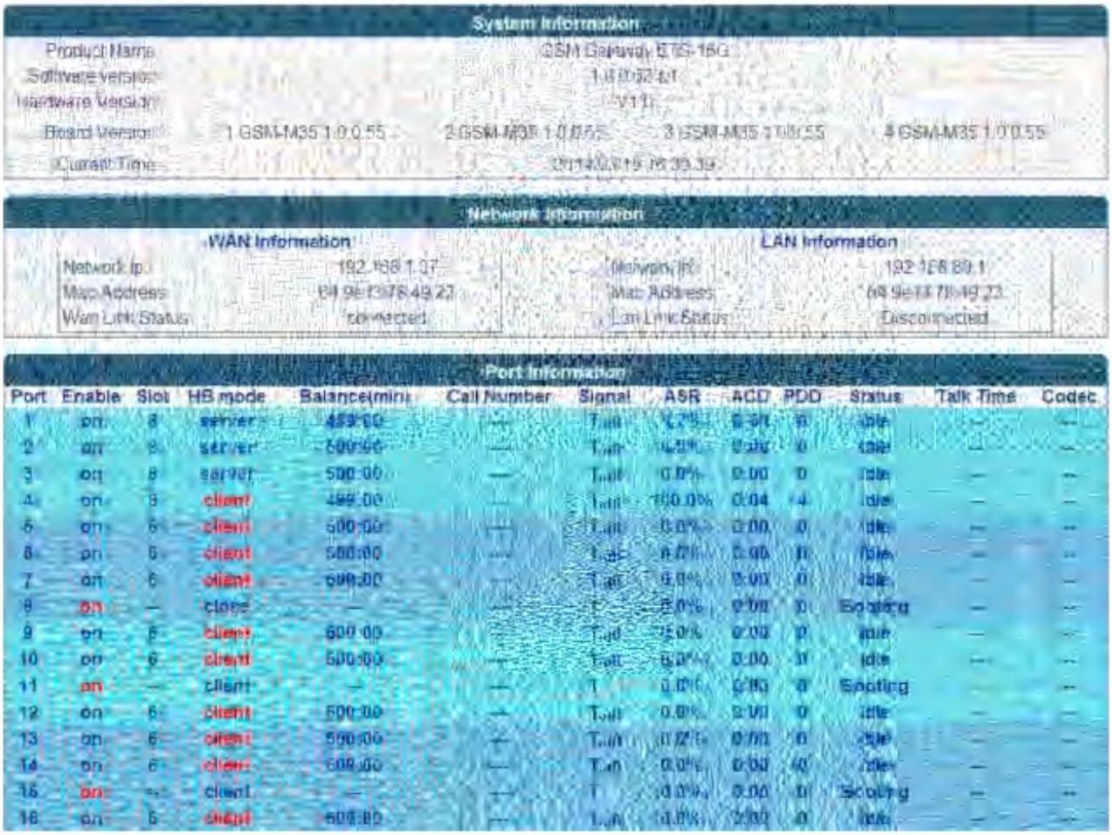


Table 4-2-1-1 Description of system/Network/Port Information

Product name	4G Gateway ETS-16x8G
Software version	Indicates the firmware version
Hardware version	Indicates the hardware version
Board Version	Indicates the 4G board version
Current time	If connect with external network, it will show the system time
WAN	WAN (Wide Area Network) port information
LAN	LAN (Local Area Network) port Information
Mac Address	Displays the current MAC of the gateway (WAN port and LAN port)
Wan/Lan link status	Displays Wan/Lan port connect status (connected /Disconnected)
Port	Numbers of 4G/GSM ports .
Enable	Enable displays the status of port (On or Off), if "On" is red color ,means the port is empty or not ready.
Slot	Indicates the current SIM slot
HB mode	Indicates human behavior status, if we don't activate the human behavior, it will show "close", if we activate the human behavior, we will see some ports as "Server", and some ports as "Client" in blue color, if "server" or "client" are red color, means the port is empty or not ready.
Balance (min)	Shows the balance (minutes) if we set the balance management, And if we open this option, it will show the remaining call minutes, when the call minute is "0", it will close the port (the port is off)
Call number	Shows the outgoing call number
Signal	Shows the 4G signal strength

ASR	Answer Seizure Ratio is a measure of network quality . Its calculated by taking the number of successfully answered calls and dividing by the total number of calls attempted. Since busy signals and other rejections by the called number count as call failures, the ASR value can vary depending on user behavior.
ACD	The Average Call Duration (ACD) is calculated by taking the sum of billable seconds (bill sec) of answered calls and dividing it by the number of these answered calls.
PDD	Post Dial Delay (PDD) is experienced by the originating customer as the time from the sending of the final dialed digit to the point at which they hear ring tone or other in-band information. Where the originating network is required to play an announcement before completing the call then this definition of PDD excludes the duration of such announcements
Talk time	Shows the current call duration
Status	shows the port's status: idle, talking, dialing,booting,no card,error.
Codec	Shows the current codec of the SIP voice, generally ETS-16x8G supports G.711a/u law, G.723.1, G726,G.729AB etc
IMSI	International Mobile Subscriber Identity, it is the uniquely identifies of SIM card
IMEI	International Mobile Equipment Identity, it is the uniquely identifies of the module

4.2.2 Trunk Information

Trunk information shows the IP trunk quantity and status.

Figure 4-2-2-1 Trunk Information

Table 4-2-2-1 Description of Trunk Information

Trunk information	Displays the IP trunk quantity, type,and status
Number	Index of the IP trunk, you can add 1 piece trunk or maximum 16 pieces
Mapping	
Type	Displays the IP trunk type (account /peer optional)
Enable	Displays the IP trunk on/off
Account	Trunk account name
Status	Displays trunk connection status, connect / uninstall optional

4.2.3 BCCH

The Broadcast Control Channel (BCCH) is a logical broadcast channel used by the base station in a 4G network to send information about the identity of the network. This information is used by a mobile station to get access to the network.

This information includes the Mobile Network Code (MNC), the Location Area Code (LAC) and a list of frequencies used by the neighboring cells (BA: BCCH Allocation List).

Figure 4-2-3-1 BCCH

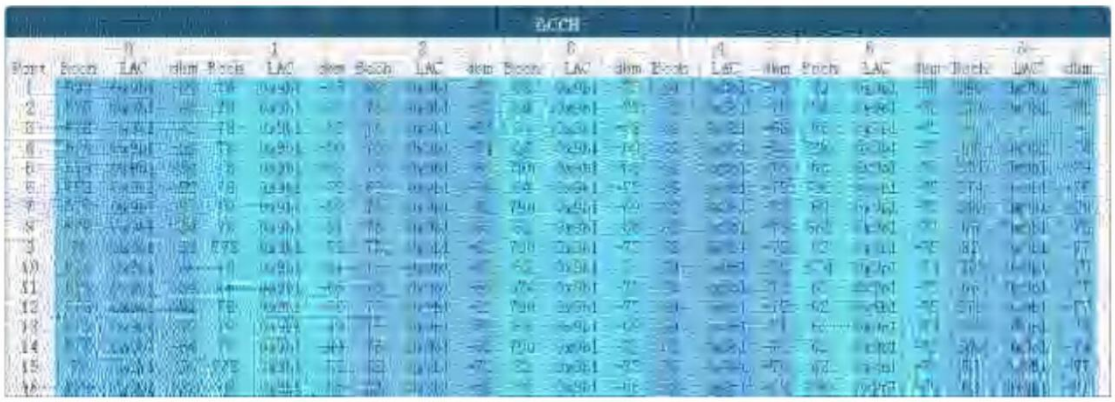


Table 4-2-3-1 Description of BCCH

BCCH	Broadcast control channel
LAC	Local Area Code
dbm	The signal gain index, generally use negative, the signal strength is good if the amount > -80

4.3 Call history

Call history interface shows all the call records and statistics, it includes IP to 4G call history, 4G to IP call history, CDR, And also provide the interface for clearing all the call history and duration.

4.3.1 IP to 4G call history

Figure 4-3-1-1 IP to 4G call history

IP to GSM Call History

Port	Call	Duration	Answered	Call Failed Caused by SIP				Call Failed Caused By GSM			
				Canceled	Timeout	Negotiation failed	Other	Busy	NO ANSWER	Error	System Error
1	283	370:59	282	0	0	0	0	0	1	0	0
2	276	379:48	276	0	0	0	0	0	0	0	0
3	276	374:21	275	0	0	0	0	0	0	1	0
4	265	374:48	265	0	0	0	0	0	0	0	0
5	267	370:56	267	0	0	0	0	0	0	0	0
6	271	375:2	271	0	0	0	0	0	0	0	0
7	274	373:31	274	0	0	0	0	0	0	0	0
8	273	373:59	272	0	0	0	0	0	0	0	1
9	277	373:6	277	0	0	0	0	0	0	0	0
10	270	373:56	270	0	0	0	0	0	0	0	0
11	274	378:40	273	0	0	0	0	0	1	0	0
12	273	374:16	273	0	0	0	0	0	0	0	0
13	271	374:28	269	0	0	0	0	0	1	1	0
14	266	373:51	265	0	0	0	0	0	0	1	0
15	273	374:38	273	0	0	0	0	0	0	0	0
16	272	374:57	271	0	0	0	0	0	0	0	1

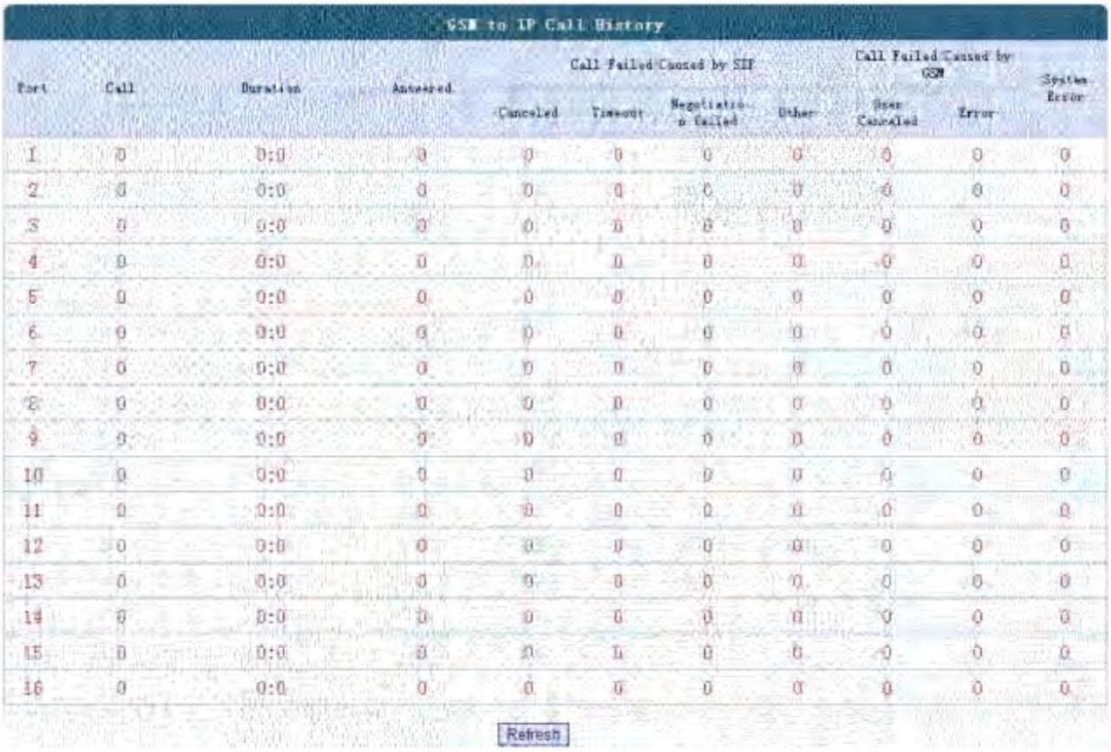
Refresh

Table 4-3-1-1 Description of IP to 4G call history

IP to 4G call history	Shows Sip VoIP calls to 4G call history (call termination)
Port	Numbers of 4G/GSM ports
Call	Call amounts
Duration	All the calls accumulated duration
Answered	The calls amount be answered
Call failure caused by Sip	the amount of call failure due to the reason of SIP problem
Canceled	The caller side cancel calls amount
Timeout	The timeout failure calls amount
Negotiation failed	The SIP and 4G negotiation failure calls amount
Others	Other reasons leads to call failure calls amount
Call failed by 4G	The calls failed by 4G side reason amount
Busy	The calls failed by answer side busy reason amount
No answer	The calls failed by no answer reason amount
Error	The calls failed by error reason amount
System error	The calls failed by system error reason amount

4.3.2 4G to IP call history

Figure 4-3-2-1 IP to 4G call history


GSM to IP Call History

Port	Call	Duration	Answered	Call Failed Caused by SIP				Call Failed Caused by GSM		System Error
				Canceled	Timeout	Negotiation Failed	Other	User Canceled	Error	
1	0	0:0	0	0	0	0	0	0	0	0
2	0	0:0	0	0	0	0	0	0	0	0
3	0	0:0	0	0	0	0	0	0	0	0
4	0	0:0	0	0	0	0	0	0	0	0
5	0	0:0	0	0	0	0	0	0	0	0
6	0	0:0	0	0	0	0	0	0	0	0
7	0	0:0	0	0	0	0	0	0	0	0
8	0	0:0	0	0	0	0	0	0	0	0
9	0	0:0	0	0	0	0	0	0	0	0
10	0	0:0	0	0	0	0	0	0	0	0
11	0	0:0	0	0	0	0	0	0	0	0
12	0	0:0	0	0	0	0	0	0	0	0
13	0	0:0	0	0	0	0	0	0	0	0
14	0	0:0	0	0	0	0	0	0	0	0
15	0	0:0	0	0	0	0	0	0	0	0
16	0	0:0	0	0	0	0	0	0	0	0

Refresh

Table 4-3-2-1 Description of IP to 4G call history

4G to IP call history	Shows 4G to VoIP call history (call origination)
Port	Numbers of 4G/GSM ports
Call	Call amounts
Duration	All the calls accumulated duration
Answered	The calls amount be answered
Call failure caused by Sip	the amount of call failure due to the reason of SIP problem
Canceled	The caller side cancel calls amount
Timeout	The timeout failure calls amount
Negotiation failed	The 4G and SIP negotiation failure calls amount
Others	Other reasons leads to call failure calls amount
Call failed by 4G	The calls failed by 4G side reason amount
Busy	The calls failed by answer side busy reason amount
No answer	The calls failed by no answer reason amount
Error	The calls failed by error reason amount
System error	The calls failed by system error reason amount

4.3.3 CDR

CDR is the call details records,it records all the details of the call from which ports, call type (IP to 4G or 4G to IP), call start time, durations, caller number, callee number etc .

Figure 4-3-3-1 CDR

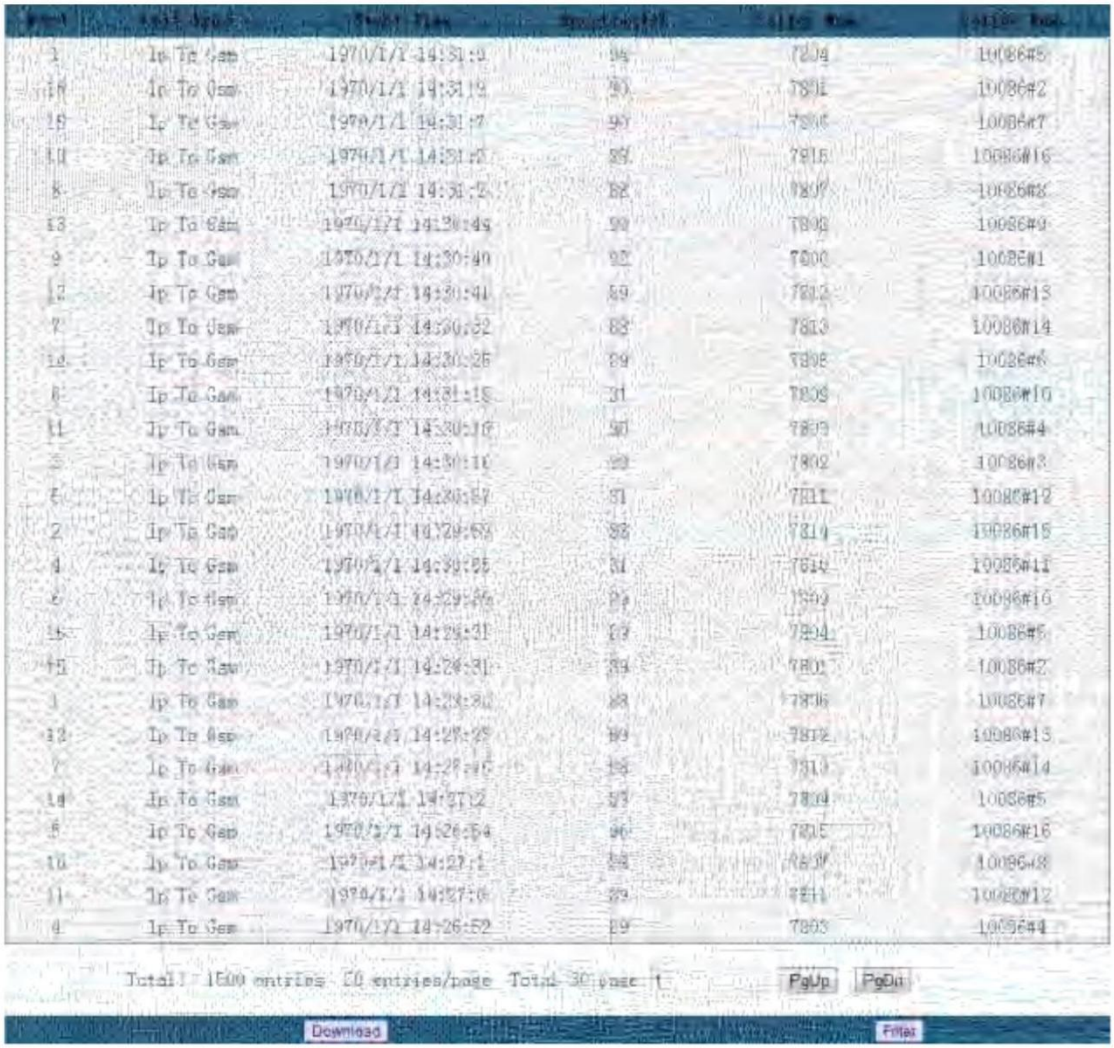


Table 4-3-3-1 Description of CDR

CDR	Call details records
Port	Numbers of the 4G/GSM Ports
Call type	Displays the call type from IP to 4G or 4G to IP.
Start time	The calls start time records
Duration(s)	Displays the calls duration (seconds)
Caller Num	Displays the caller ID number
Callee Num	Displays the callee ID number
Download	Click the download button to download the CDR to save in your PC to keep records, change the file name to file.csv ,then you can open it by Microsoft excel

4.3.4 Clear history

Note: Click "Clear call history", it means all the records of call in and call out will be deleted

Click "Clear All Cdr",it means all Cdr will be deleted

Figure 4-3-4-1 Clear record

Table 4-3-4-1 Description clear record

Clear record	Clear record including "Clear call history" and "Clear All Cdr"
Clear call history	Clear call history means all the call records will be deleted
Clear all CDR	Clear all CDR means all Cdr will be deleted
Submit	Click this button "submit" to execute

4.4 SIM card

4G Gateway ETS-16x8G support SIM card rotation to avoid the block by the operators, this chapter we will explain how it works.

4.4.1 Status

Figure 4-4-1-1

Table 4-4-1 Description of SIM card status

SIM card status	Shows the whole 128 SIM card status
No.1 -No.16	Numbers of the 4G/GSM Ports from No.1 to No.16
Slot	SIM card slot, each port has 8 SIM slots
Insert	Indicates SIM inserted or not, If SIM card inserted ,will display "Yes", And the whole line will show deep blue color,If the SIM card is in current use, the background color will show sky blue color, if no SIM card inserted, will display "no", and the whole line will show grey color. See Figure 4-4-1-2
ACT	Means to activate the SIM card, currently the function is under development
IMSI	International Mobile Subscriber Identity, it is the uniquely identifies of SIM card
IMEI	International Mobile Equipment Identity, it is the uniquely identifies of the module
Current	Means to display the current use SIM card status and statistics, if rotate to next sim card, all the parameters will start from 0
Statistics total	Means to display the total of the SIM card status (in use or not in use, if

	the SIM card inserted), if the sim card is taken out, all the parameters will be erased and it will start from 0 if you insert a new SIM card
Balance	Display the balance of the SIM card
Call	Counter the call times
Talk	Talk time(duration)
Used	SIM card power on time(online time)
Failed	Consecutive Call failure times
Low duration	Consecutive Low duration times
ASR	Answer Seizure Ratio is a measure of network quality . Its calculated by taking the number of successfully answered calls and dividing by the total number of calls attempted. Since busy signals and other rejections by the called number count as call failures, the ASR value can vary depending on user behavior.
ACD	The Average Call Duration (ACD) is calculated by taking the sum of billable seconds (bill sec) of answered calls and dividing it by the number of these answered calls.
Answered	The answer side answer the call times
No answer	The answer side no answer the call times
No alert	The answer side no ring times
other	Other reasons times
Unlock	When we preset balance management or call failure, low duration management ,the device will lock the SIM card and the character "unlock" will display red color if the parameters reaches the preset value. How to unlock: 1,Recharge the SIM card then click the "unlock" button to unlock it. If balance is less than the preset value . 2,Just click "unlock" button to unlock , if it is call failure or low duration reason. See figure 4-4-1-3

Figure 4-4-1-2, This Figure is to help you understand the SIM card status

If we insert the SIM card and the device can read out the IMSI of the SIM card and also display the 4G module IMEI, and the whole line character will show deep blue color, and if the SIM card in current use, the background color for the whole line will show sky blue color, If no SIM card inserted ,or the device can not read the SIM card,it will display "No",and the whole line character will show grey color. See the figure Figure 4-4-2 as below:

Figure 4-4-1-2

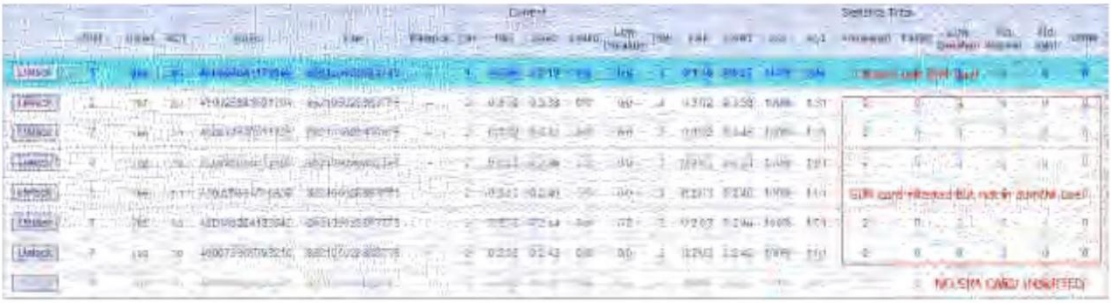
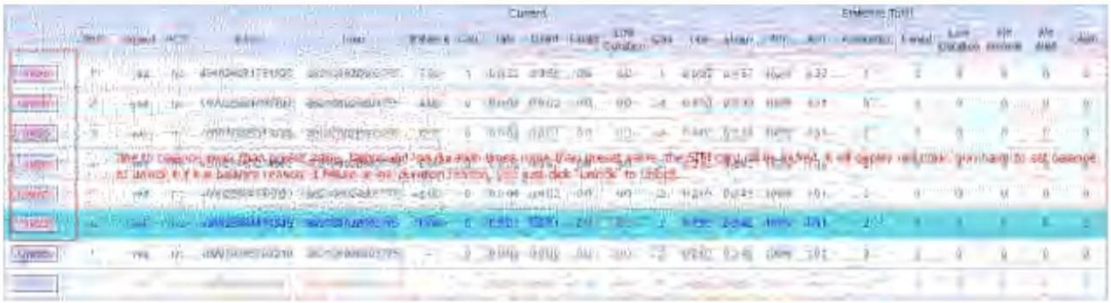


Figure 4-4-1-3 Unlock



4.4.2 Rotate

SIM rotation setting can effectively lower being blocked rate by the operators. There are 5 conditions you can set .see the figure 4-4-2-1

Actually SIM rotation setting should abide by the real situation of the block mechanism of operators, then employ different setting for different operators/countries. And also customer should do research then adjust the suitable conditions for the setting.

Remarks:

1, if user fill condition 1 , talk time >30 minutes, and use time >120 minutes, that means when both conditions are met, then the device will rotate to next slot. Otherwise it will not rotate.

2,if user fill condition 1: talk time >30 minutes, and condition 2 : use time >120 minutes in different condition columns, that means when 1 condition is met, then will execute this one. Another condition will be ignored.

3,Condition setting can not be self-contradictory,or the settings value can not be too small, otherwise it will affect the device running.

4, Strongly suggest customer to set easy conditions or do according to etross advice first.

Figure 4-4-2-1

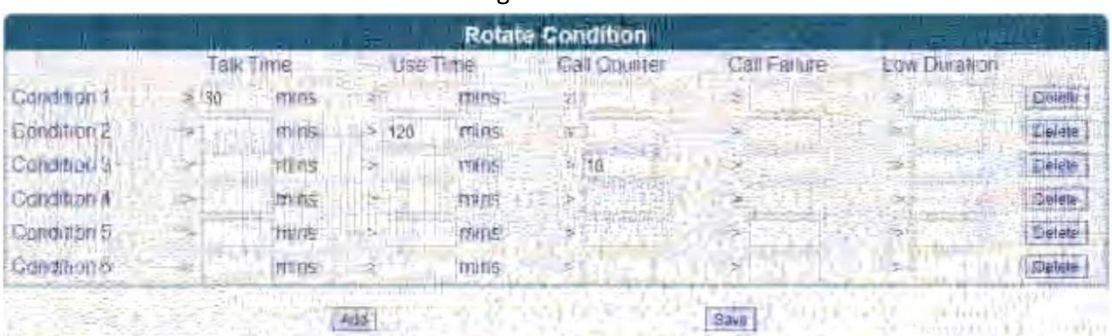


Table 4-4-2 Description of Rotate Condition

Rotate condition	For setting rotate conditions
Condition	There are maximum 6 conditions can be set
Talk time	Condition according to call duration
Use time	Condition according to SIM card online time
Call counter	Condition according to call times
Call failure	Condition according to consecutive call failure times
Low duration	Condition according to consecutive low duration times
Delete	Click "delete" to delete condition
Add	To add one condition
Save	To save the conditions setting

4.4.3 Lock

Lock here means to lock the SIM card and doesn't permit it to use, why we do this? In VoIP call termination practice, operator may block the SIM card if they think the SIM card is for call termination purpose, and consecutive call failure and consecutive low duration calls are among their judgment standards, and low balance reminder also help us to do recharge in advance.

There are 3 kind of lock settings:

1, Consecutive call failure lock setting

2, Consecutive low duration lock setting

3, Low balance lock setting

Figure 4-4-3

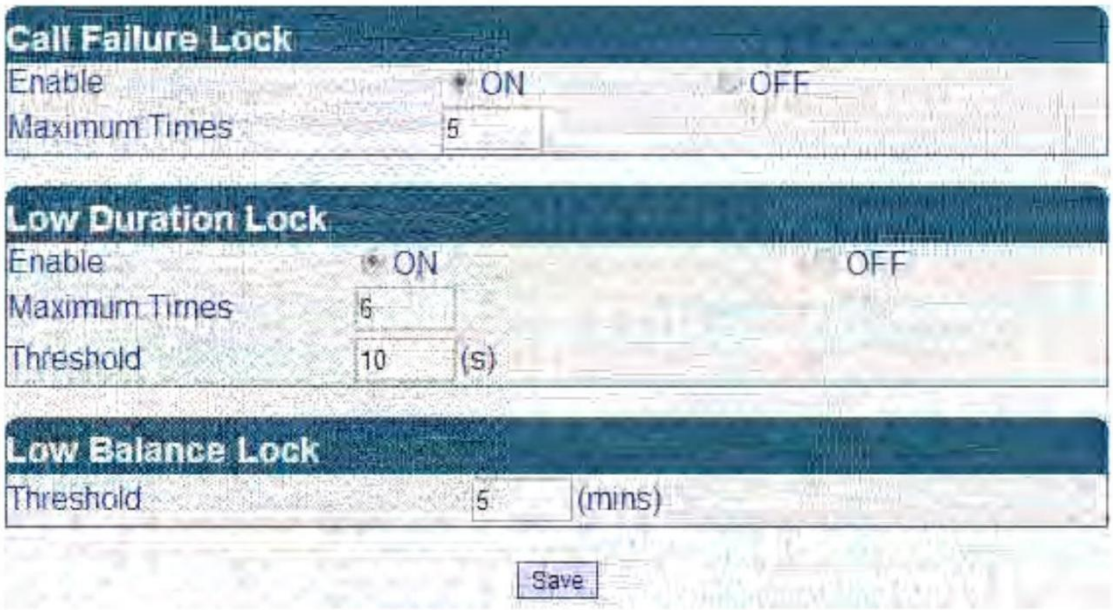


Table 4-4-3 Description of lock

Call failure lock	Consecutive call failure lock
Enable	Enable has two status "On" and "Off" ,If you want to use Lock, then click "On", if no use lock, then click "Off"
Maximum Times	Set lock maximum times
Low duration Lock	Consecutive low duration lock
Threshold	The value which is met then do lock

Low balance lock	Condition according to consecutive call failure times

4.4.4 Change SIM slot Manually

Change SIM slot manually means we can select which SIM card to be used manually by clicking the related SIM slot. Then the SIM slot will be current one for use.

How to change SIM slot manually?

Choose the port first, and click to select, then choose the slot you want to use , then click "submit" button.

Figure 4-4-4

Remarks:

Blue color represents the current use SIM slot

Deep blue color represents the slot has SIM card ,but not in current use.

Red color represents empty SIM slot, no Insert SIM card

Table 4-4-3 Description of change SIM slot manually

Change sim slot manually	To select SIM slot to be used currently by manually
Port	Port 1 to Port 16 ,total 16
Slot	Every port has 8 slots, to insert SIM card
Submit	After you select finish, click "click" to submit

4.5 Human Behavior

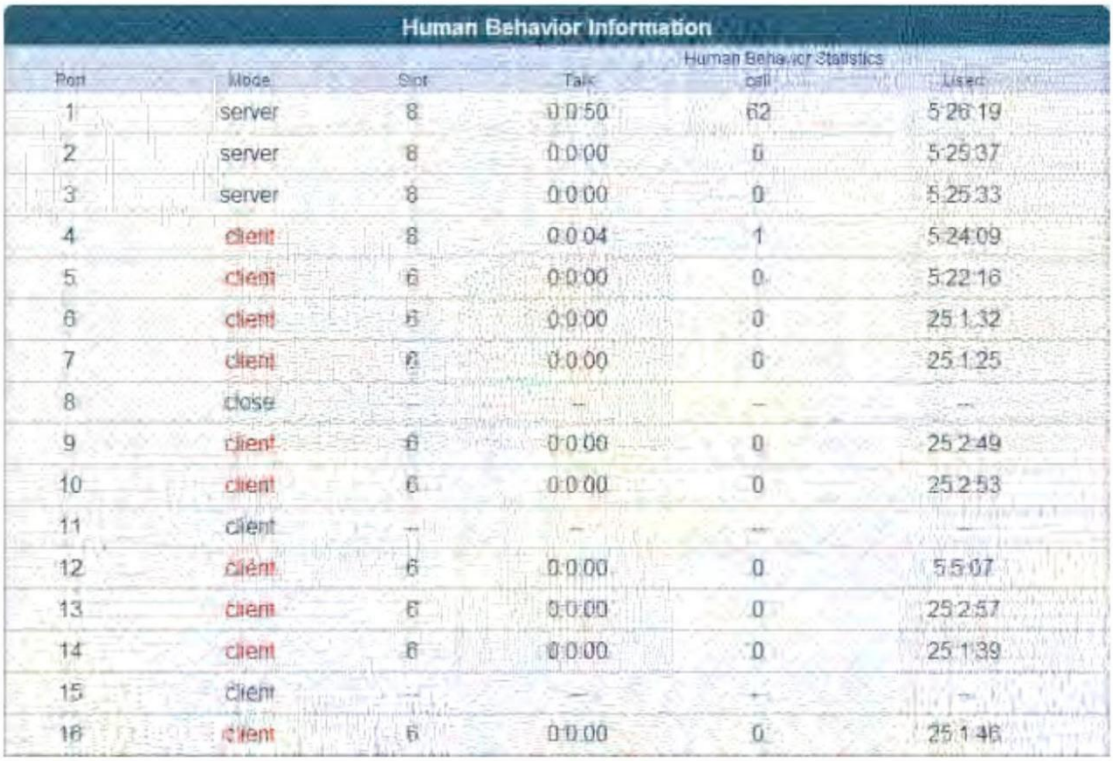
Human behavior function means the device can simulate the human behavior to make/receive calls.

As we know, VoIP call termination is mainly for outgoing calls, operator can easily find this characteristics, and think it is VoIP termination, then it will block the SIM card. While Human behavior is designed to let the ports call each other and SMS to each other, just like a human being phone call behavior, the operators can not distinguish it is for normal phone call or termination, therefore human behavior function can help our client lower the SIM card being blocked rate and realize the efficiency of termination.

ETS human behavior theory

4G Gateway ETS-16x8G allocates some ports as server ports(also you can use some other ETS 4G gateway as Server port) , some ports as client ports, Server port doesn't pass traffic calls, client port pass traffic calls. And user can preset some conditions for client port , when the condition is met, client port will send message to server port SIM card, when server port receives the message from client port,then server port will make a phone call to client port. There will be call in and call out records for the SIM card in each port, thus SIM card can not be blocked.

Figure 4-5-1 Human behavior information



Human Behavior Information

Human Behavior Statistics

Port	Mode	Slot	Talk	call	Used
1	server	8	0:0:50	62	5:26:19
2	server	8	0:0:00	0	5:25:37
3	server	8	0:0:00	0	5:25:33
4	client	8	0:0:04	1	5:24:09
5	client	6	0:0:00	0	5:22:16
6	client	6	0:0:00	0	25:1:32
7	client	6	0:0:00	0	25:1:25
8	close	--	--	--	--
9	client	6	0:0:00	0	25:2:49
10	client	6	0:0:00	0	25:2:53
11	client	--	--	--	--
12	client	6	0:0:00	0	5:5:07
13	client	6	0:0:00	0	25:2:57
14	client	6	0:0:00	0	25:1:39
15	client	--	--	--	--
16	client	6	0:0:00	0	25:1:46

Table 4-5-1 Description of human behavior information

Port	Numbers of the 4G/GSM Ports
Mode	There are close, server, client mode Close: human behavior function is not activated Client: set the port as client port Sever: set the port as server port How to set mode, please refer to 4.5.2 Mode (Human behavior mode

	setup)
Slot	Displays the current SIM slot
Talk	Displays the current slot call duration
Call	Displays the current slot call times
Used	Displays the current slot online time.

4.5.2 Mode (Human behavior mode setup)

Setup the human behavior mode, first choose the port, then to set it close, server or client according to your requirement.

Close: human behavior function is not activated

Client: set the port as client port

Sever: set the port as server port,if the port is set as server, the SIM card number should be filled in the blank, see Figure 4-5-2

(To save the port resources, customer can buy other ETS 4G gateway ETS-16G as server port)

Figure 4-5-2 Human behavior mode setup

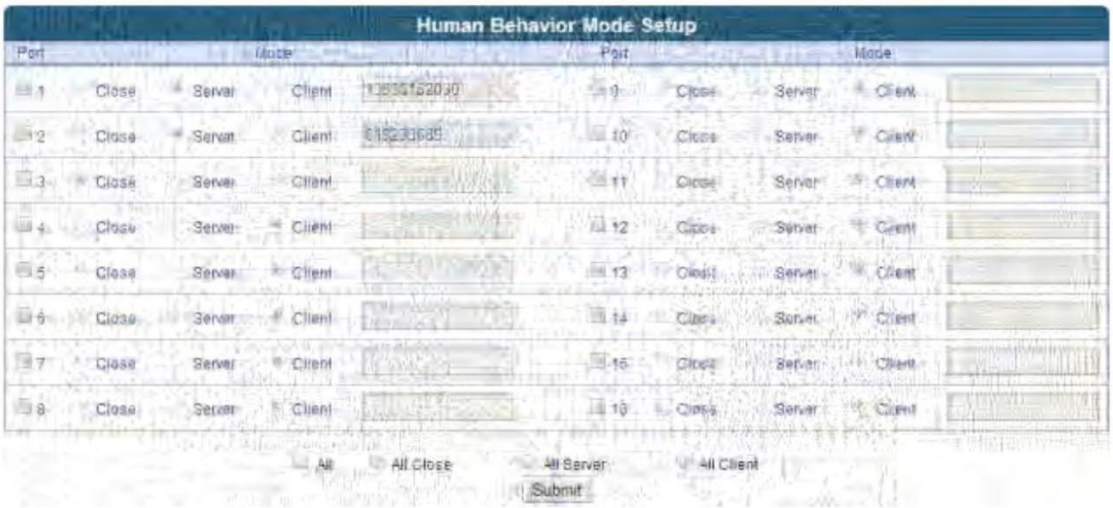


Table 4-5-2 Description of human behavior Mode setup

Port	Numbers of the 4G/GSM Ports
Mode	There are close, server, client mode Close: human behavior function is not activated Client: set the port as client port Sever: set the port as server port
Submit	To save the mode setting

4.5.3 Client (Human behavior condition (client))

Human behavior setting can effectively lower being blocked rate by the operators. There are 3 conditions you can set .see the figure 4-5-3

Human behavior condition setting also should abide by the real situation of the block mechanism of operators, then employ different setting for different operators/countries. And also user should do research then adjust the suitable conditions for the setting.

Remarks:

1, if you fill condition 1 , talk time >30 minutes, and use time >120 minutes, that means when

both conditions are met, then the device will make action ("request call in" or "send SMS")

2,if you fill condition 1: talk time >30 minutes, and condition 2 : use time >120 minutes in different condition columns, that means when 1 condition is met, then will execute this one. Another condition will be ignored.

3,Condition setting can not be self-contradictory,or the settings value can not be too small, otherwise it will affect the device running.

4, Strongly suggest customer to set easy conditions or do according to etross advice first.

Figure 4-5-3 Human behavior Condition (client)

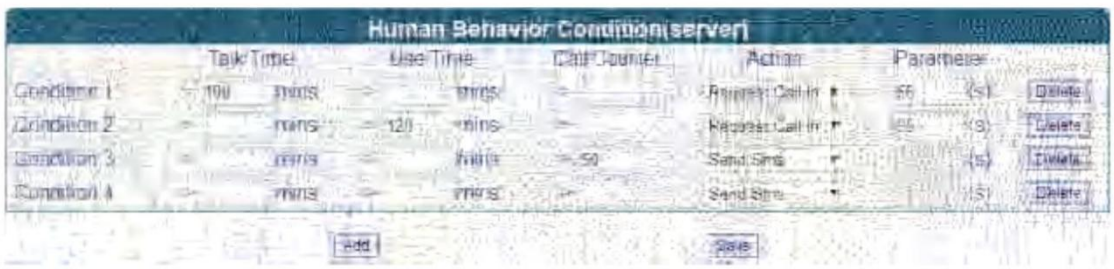
Table 4-5-3 Description of human behavior condition(client)

Condition1,2,3	There are maximum 6 conditions can be set
Talk time	Condition according to call duration
Use time	Condition according to SIM card online time
Call counter	Condition according to call times
Action	Action type
Request call in	When condition is met, the client port will "request call in " action
Send SMS	When condition is met, the client port will "Send SMS" action
Parameter (s)	Parameter here represents the call duration for "request call in"
Delete	Click "delete" to delete condition

4.5.4 Sever (Human behavior condition(server))

Sever condition setting is almost same as Client condition,but not recommended to do setting. If you want to do the setting, please refer to 4.5.3 Client (Human behavior condition (client)) or according to Figure 4-5-4

Figure 4-5-4 Human behavior condition (Sever)



4.5.5 Server number

If user sets the server ports, user should fill the server number into the blank of Human behavior server number setup, and the server numbers should be same with server port in human behavior mode setup, the sequence is not important. See Figure 4-5-5

Figure 4-5-5 human behavior Sever number setup

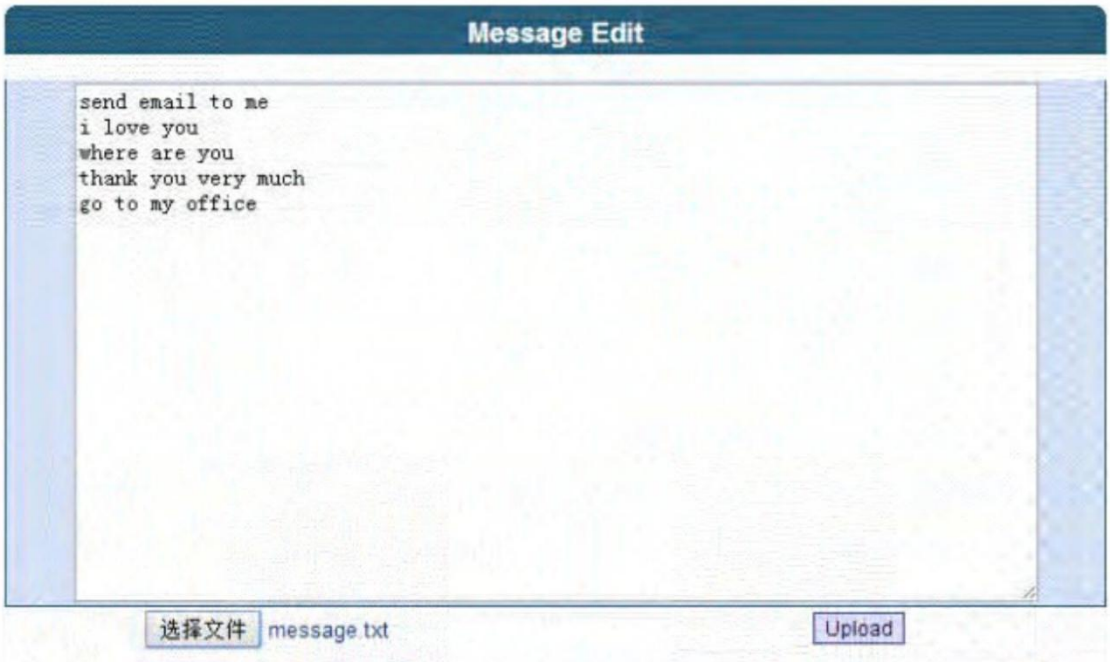
Table 4-5-5 Description of human behavior Sever number setup

Sever number setup	To input the server port SIM card number into the blank
Number translation	To translation some prefix to specified number E.g. Prefix: 00880 ,translation: 0

4.5.6 Update SMS content

In ETS Human behavior theory,client port will send message to server port when the condition is met, to avoid the detect of operator, user can let client port send different message content to server port to request call in . Here as below give user D.I.Y message content. User should make a .txt file in PC,see the figure 4-5-6,message.txt, and click "upload" to upload the message.txt file into the device. When sever port receives any line of the message, it will send call to the client port.

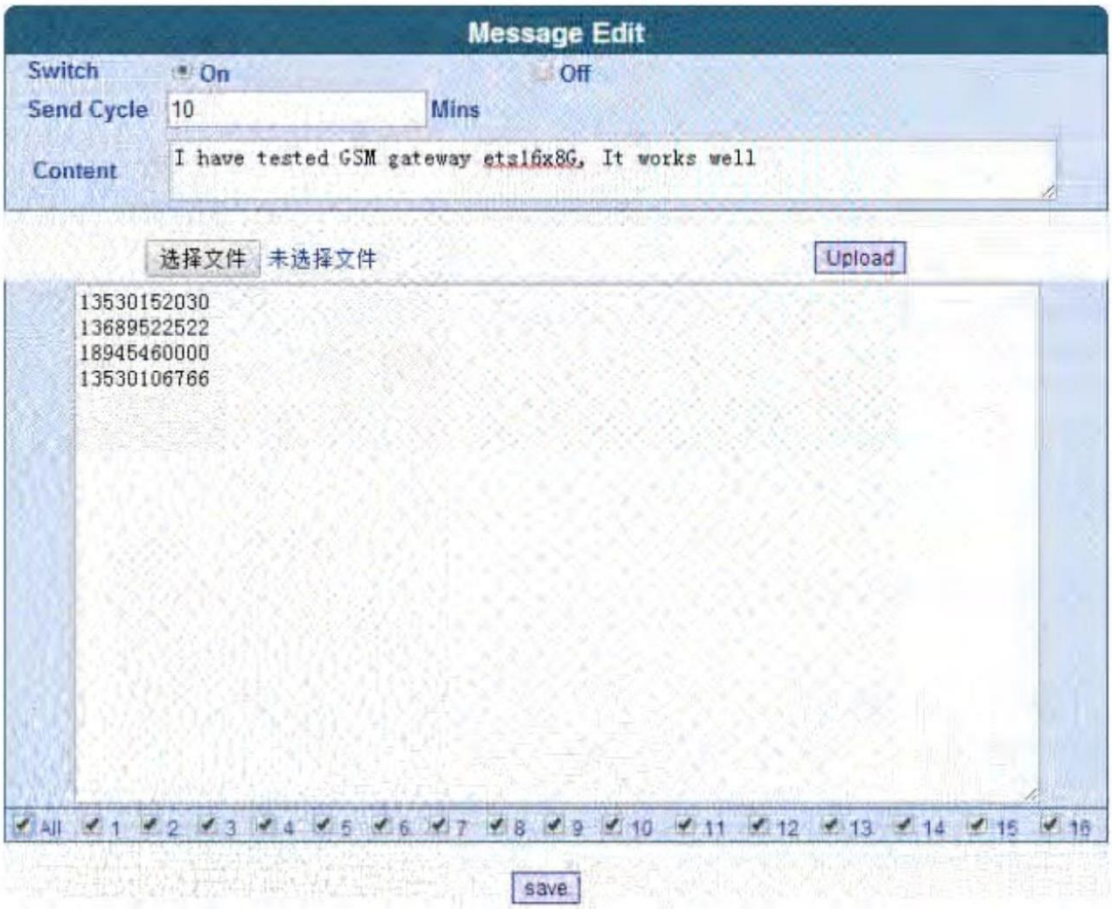
Figure 4-5-6 message Edit



4.5.7 Auto SMS bulk

Auto SMS bulk to permit the port to send SMS to some specified numbers according to preset cycle.see Figure 4-5-7

Figure 4-5-7 Auto SMS bulk



You can also upload number list as a .txt file to the device.
.txt file format should be as below:
[Number Start]
13530152030
10086
10086
13356956522
15025258888
[Number End]

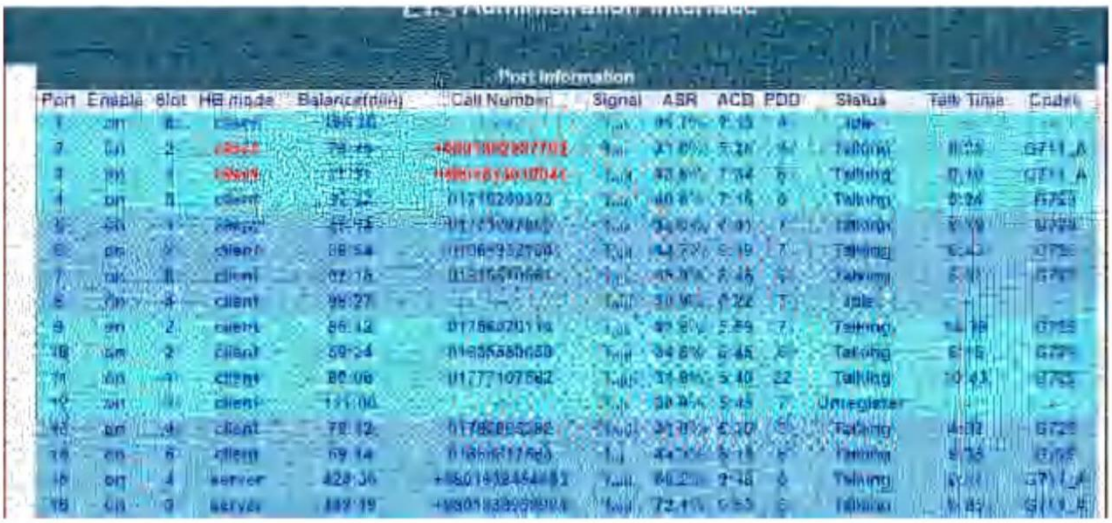
4.5.8 Human behavior practice examples

Example 1:

Explanation: The port2 Human behavior condition is met, it turns "red", status is "idle" and waits for server port to call in.

The port12 Human behavior condition is met already and it turns "red", status is "talking" means sever port15 is talking with client port 12 now. Sever port15 call number +8801852382219 is client port12 SIM slot 8 number, while client port12 call number +8801813010041 is Sever port 15 SIM slot 4 number. And server port 16 is in idle and is ready to make call if it receives request call in message .

Example 2



Explanation: There are 2 client ports (port2, port3) condition are met, so server ports (port15,port16) are making calls to port2 and port3.

4.6 Port

Port means the number of 4G/GSM channel, We can easily setup the port parameters according to the real requirements from this interface. It has single port setting and batch ports setting for optional.

4.6.1 Config (Port Setting)

Figure 4-6-1 Port Setting

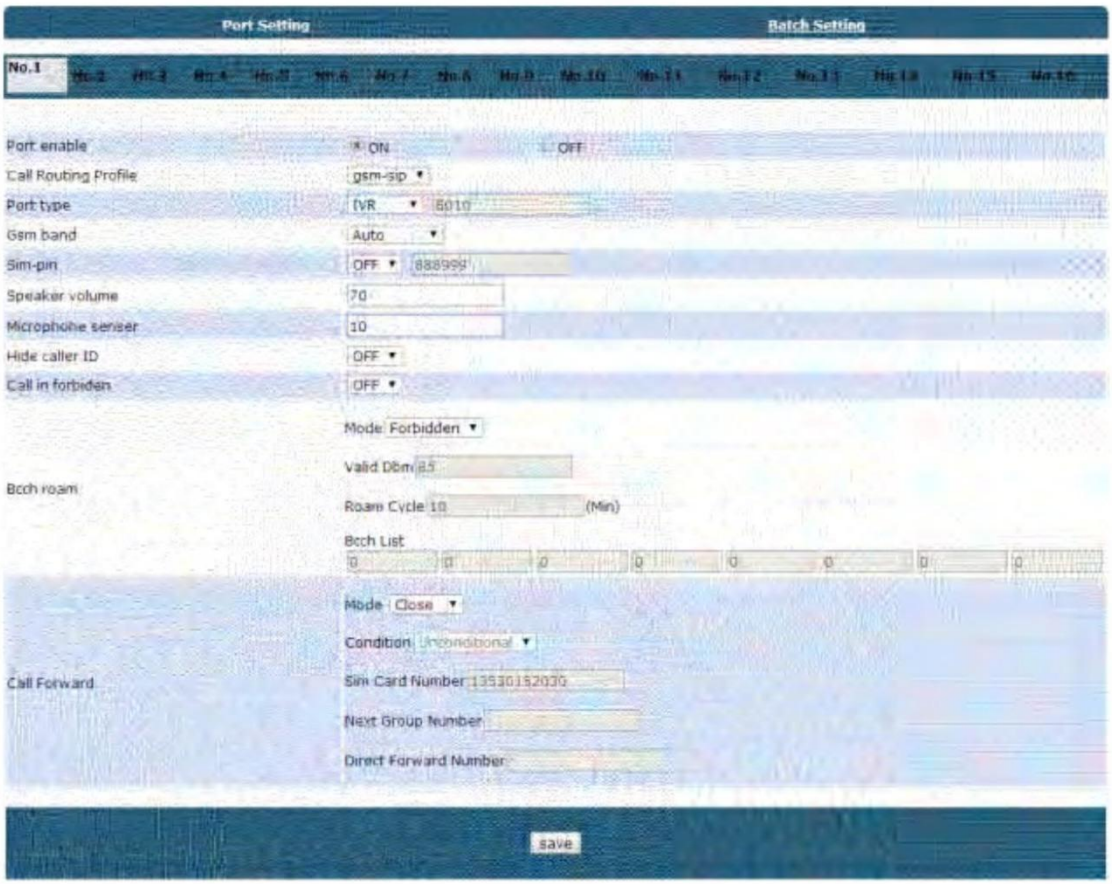


Table 4-6-1 Description of port setting

Port Setting	Port setting means we set single port each time
Port enable	Means we can choose to open or close the port (On / Off)
Call routing profile	To choose routing method,SIP to 4G(Termination) or 4G to SIP (Origination)
Port type	Call in type: IVR or hotline for selection
4G band	To choose the 4G frequency, generally default "auto"
SIM-PIN	SIM pin setting and the PIN code number to be inputted
Speaker Volume	To set the speaker's volume value
Microphone sensor	To set the microphone's sensor value
Hide caller ID	To hide the outgoing caller's ID (Need carrier's support),default is off
Call in forbidden	To forbid call in, default is off
BCCH roam	To set BCCH roaming if you enable it on
Valid Dbm	To set the base station dbm value,if the value is more than this value,the base station will not accept Bcch roam, only the value is less than this value, it will roam to this base station
Roam cycle	To set rotate/cycle after specified minutes .e.g.10 minutes means rotate to next base station after 10 minutes.
BCCH list	Means you can input the BCCH list in the blank, then the base station roam will do in these BCCH list . You can get the BCCH list parameters from the Status\BCCH
white	To permit the BCCH roam in these specified BCCH list

Black	To permit the BCCH roam in other BCCH list expect the specified BCCH list
Call forward	Call forward function is for call origination, only used in China,can not working in other countries.so to avoid misunderstanding, here not do explanation.
Save	To save the setting

4.6.1.2 Batch setting

To do batch setting of ports, you can do the setting in one time if all the ports setting parameters are same.

Figure 4-6-1-2 Batch setting

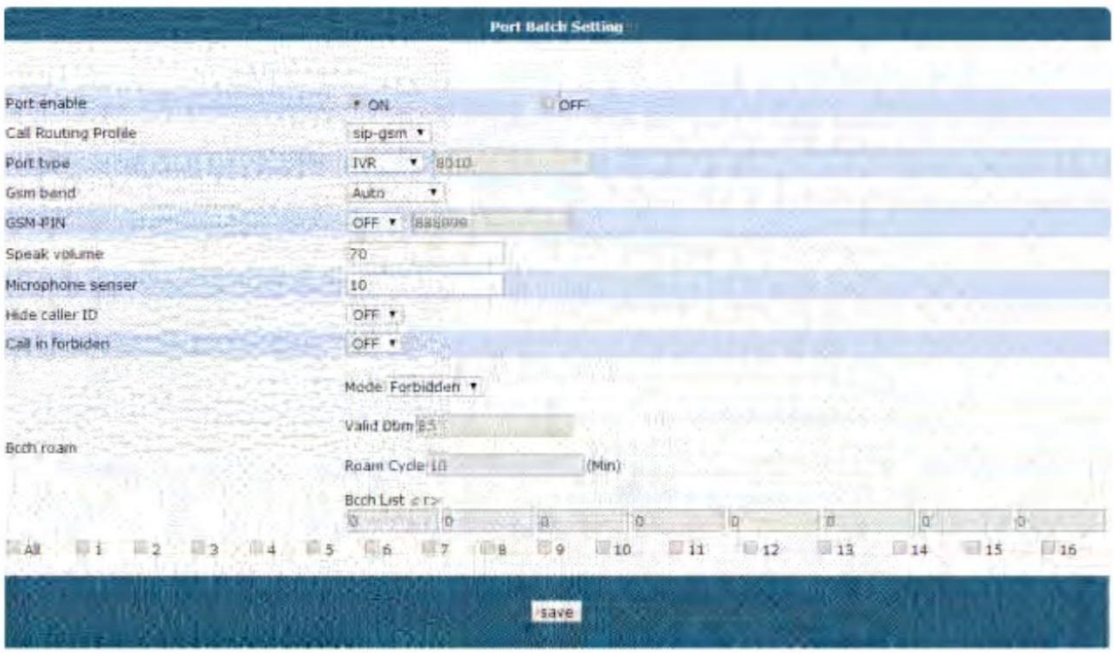


Table 4-6-1-2 Description of batch setting

Port batch setting	To set all the 16 ports parameters in one time
Port enable	Means we can choose to open or close the port (On / Off)
Trunk number	To specify the Trunk to use for this port
Port type	Call in type: IVR or hotline for selection
SIM-PIN	SIM pin setting and the PIN code number to be inputted
Speaker Volume	To set the speaker's volume value
Microphone sensor	To set the microphone's sensor value
Hide caller ID	To hide the outgoing caller's ID (Need carrier's support),default is off
Call in forbidden	To forbid call in, default is off
BCCH roam	To set BCCH roaming if you enable it on
Valid Dbm	To set the base station dbm value,if the value is more than this value,the base station will not accept Bcch roam, only the value is less than this value, it will roam to this base station
Roam cycle	To set rotate/cycle after specified minutes .e.g.10 minutes means rotate to next base station after 10 minutes.

BCCH list	Means you can input the BCCH list in the blank, then the base station roam will do in these BCCH list . You can get the BCCH list parameters from the Status\BCCH
Save	To save the setting
white	To permit the BCCH roam in these specified BCCH list
Black	To permit the BCCH roam in other BCCH list expect the specified BCCH list

4.6.2 Power manage

Port Power switch can let user to choose switch on /off the port manually from web, no need to power off the whole unit.

Figure 4-6-2 Port Power switch

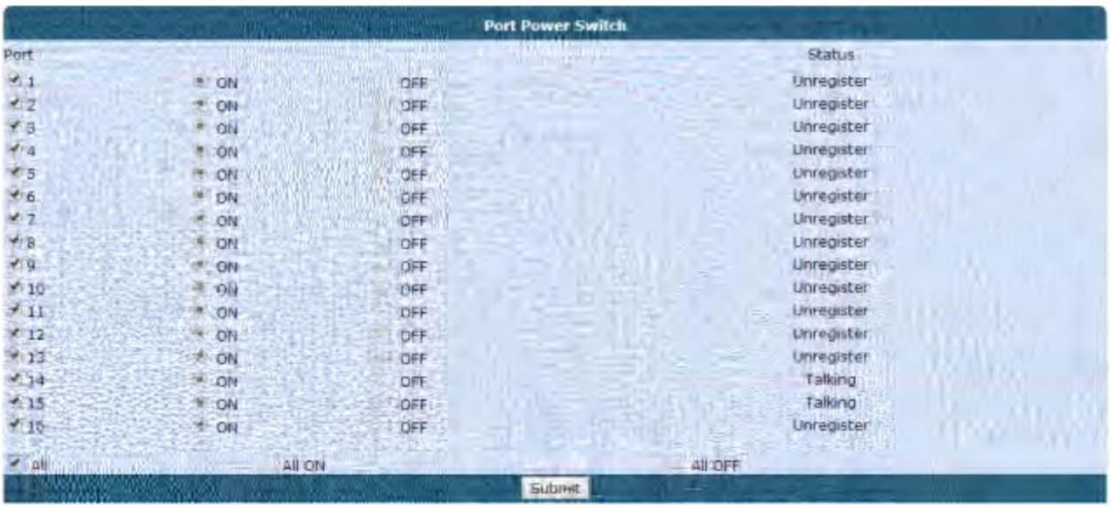


Table 4-6-2 Description of port power switch

Port	Port 1 to port 16, total 16 ports
Port switch	On / off
Status	Port Status
Submit	Submit to save the setting

4.6.3 IMEI manage

The device can provide IMEI change for the 4G module in each port.

Figure 4-6-3-1 IMEI manage

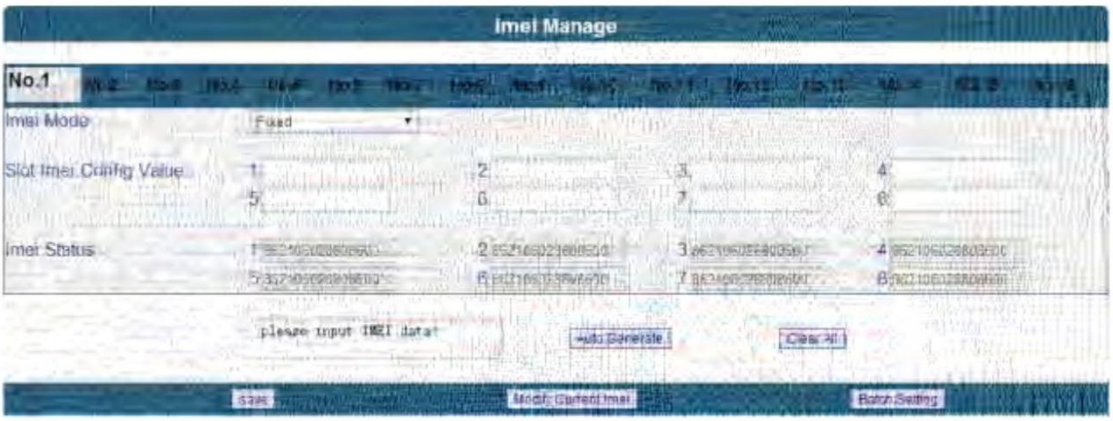


Table 4-6-3-1 Description of IMEI manage

IMEI manage	To manage IMEI for 4G module each port,mainly for change IMEI
IMEI mode	There are 4 modes for IMEI Fixed: means the IMEI of each module is original one, no change Every slot with an IMEI, means in each slot has an IMEI no, sim card change or not change, the slot IMEI will keep same Every sim with an IMEI, means when you insert a new SIM card, the device will generate an IMEI for it, when this SIM card is taken out and re-put in another slot, the IMEI will keep same Random: device will generate IMEI randomly. But generally if operator does not block IMEI,we just choose "Fixed" Refer to Figure 4-6-3-2
Slot IMEI config value	The IMEI no.for each slot to be inputted
IMEI status	Displays the current IMEI number in each slot / port
Auto generate	Auto generate IMEI no.
Clear all	Clear all the IMEI no.
Save	To save the IMEI no.setting
Modify Current IMEI	To modify / change the current IMEI no. See Figure 4-6-3-3
Batch setting	For batch modify / change IMEI no. See Figure 4-6-3-4

Figure 4-6-3-2 IMEI change mode

Figure 4-6-3-3 Modify Current IMEI

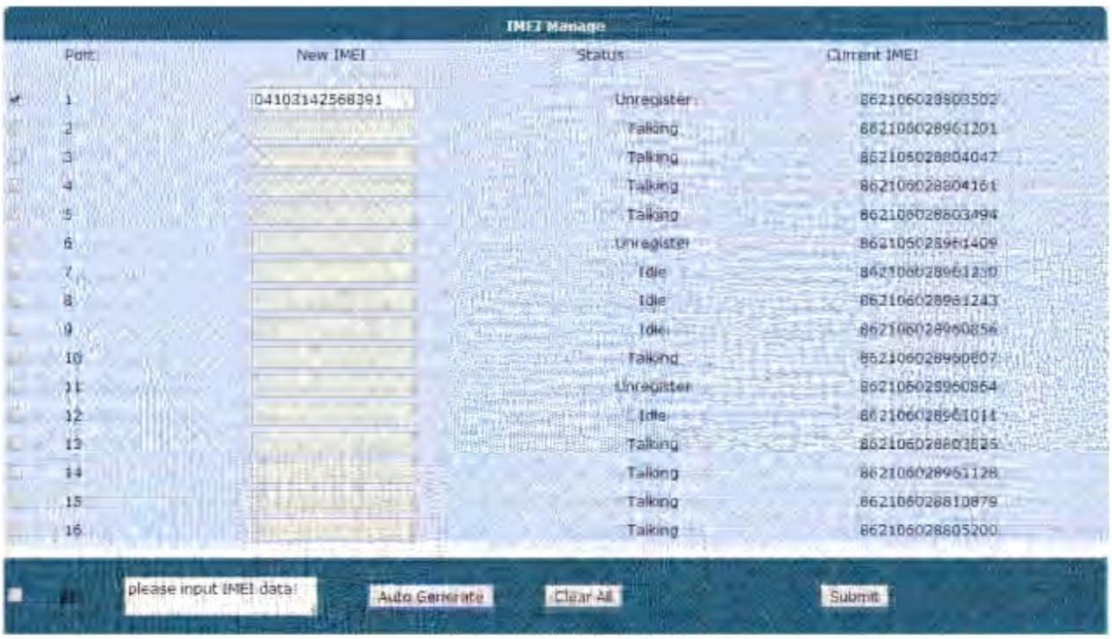


Figure 4-6-3-3 IMEI Batch setting

4.7 Trunk

4.7.1 Trunk Setting

Trunk or IP trunk interface permits us to add remote IP of softs witch, SIP server which will send call traffics to ETS-16x8G gateway. In one ETS-16x8G 4G gateway,we can setup 1 or several trunks . User can add remote soft switch or IP server by "account" or by "peer", to realize the connection with remote soft switch or IP server.

Figure 4-7-1 Trunk setting

Table 4-7-1 Description of Trunk setting

Trunk Setting	To set the trunk parameters
Trunk enable	To open (on) /Close(off) the Trunk
Account setting	Trunk type, to set with account according to SIP server or Soft switch
Server IP	SIP server IP address
Sever port	Sip server port number, default is 5060
Local port	Local port number, default is 5060
Call domain	Call domain setting should be same with Server IP
Name	Nickname of the trunk
Password	Authentication password registered in SIP server or soft switch
Auth Id	Authentication ID which registered in SIP server or Soft switch
Expiration	Register expiration in SIP server
Anti register	Anti register switch
Peer setting	Trunk type, to peer with SIP server of Soft switch
Peer device IP	It is an interworking parameter between the remote Soft switch and the SIP server. It specifies the IP address of the peer equipment.
Peer device port	It is an interworking parameter between the remote Soft switch and the SIP server. It specifies the SIP port number of the peer equipment.
Local port	Local port number, default is 5060
Local URL	Local device URL address
Save	To save the selected parameters

4.7.2 Trunk batch setting

Figure 4-7-2 Trunk Batch Setting

Table 4-7-2 Trunk Batch setting

Trunk Batch Setting	To Batch set the trunk parameters
Trunk enable	To open (on) /Close(off) the Trunk
Account setting	Trunk type, to set with account according to SIP server or Soft switch
Server IP	SIP server IP address
Sever port	Sip server port number, default is 5060
Local port	Local port number, default is 5060
Call domain	Call domain setting should be same with Server IP
Name	Nickname of the trunk
Password	Authentication password registered in SIP server or soft switch
Auth Id	Authentication ID which registered in SIP server or Soft switch
Expiration	Register expiration in SIP server
Anti register	Anti register switch
Peer setting	Trunk type, to peer with SIP server of Soft switch
Peer device IP	It is an interworking parameter between the remote Soft switch and the SIP server. It specifies the IP address of the peer equipment.
Peer device port	It is an interworking parameter between the remote Soft switch and the SIP server. It specifies the SIP port number of the peer equipment.
Local port	Local port number, default is 5060
Local URL	Local device URL address

Save	To save the selected parameters

4.8 USSD

4.8.1 Compose

USSD (Unstructured Supplementary Service Data) is a Global System for Mobile(4G) communication technology that is used to send text between a mobile phone and an application program in the network. Applications may include prepaid roaming or mobile chatting.

Figure 4-8-1-1 USSD

Table 4-8-1 Description of USSD

Port	Select the 4G channel to send USSD
USSD request	Display the request info of USSD
USSD reply	Show the return value of USSD
All	Select all the 4G ports (channels)
Copy to select	Copy the USSD request info to selected ports
Clear all	Clear the USSD request or USSD reply
Send	Send the request info of USSD

USSD reply information, after you click "send" ,you will get USSD reply status.

Figure 4-8-1-2 USSD reply status

4.8.2 Inbox

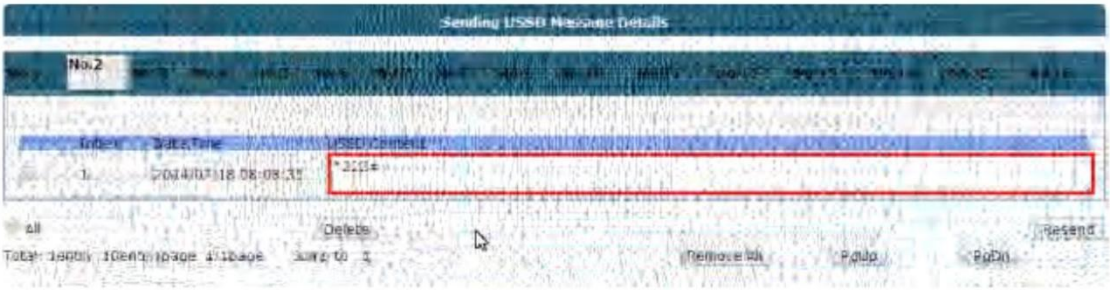
Inbox records all the USSD reply messages

Figure 4-8-2 receive USSD message details

4.8.3 Outbox

Outbox records all the USSD sending messages

Figure 4-8-3 Sending USSD message details



4.8.4 Sent

Sent records all sent out USSD messages

Figure 4-8-4 Sent USSD message details

4.9 SMS

4.9.1 Compose

Send SMS permit you to send SMS by ETS-16x8G, See as figure 4-9-1 message

Figure 4-9-1 Message

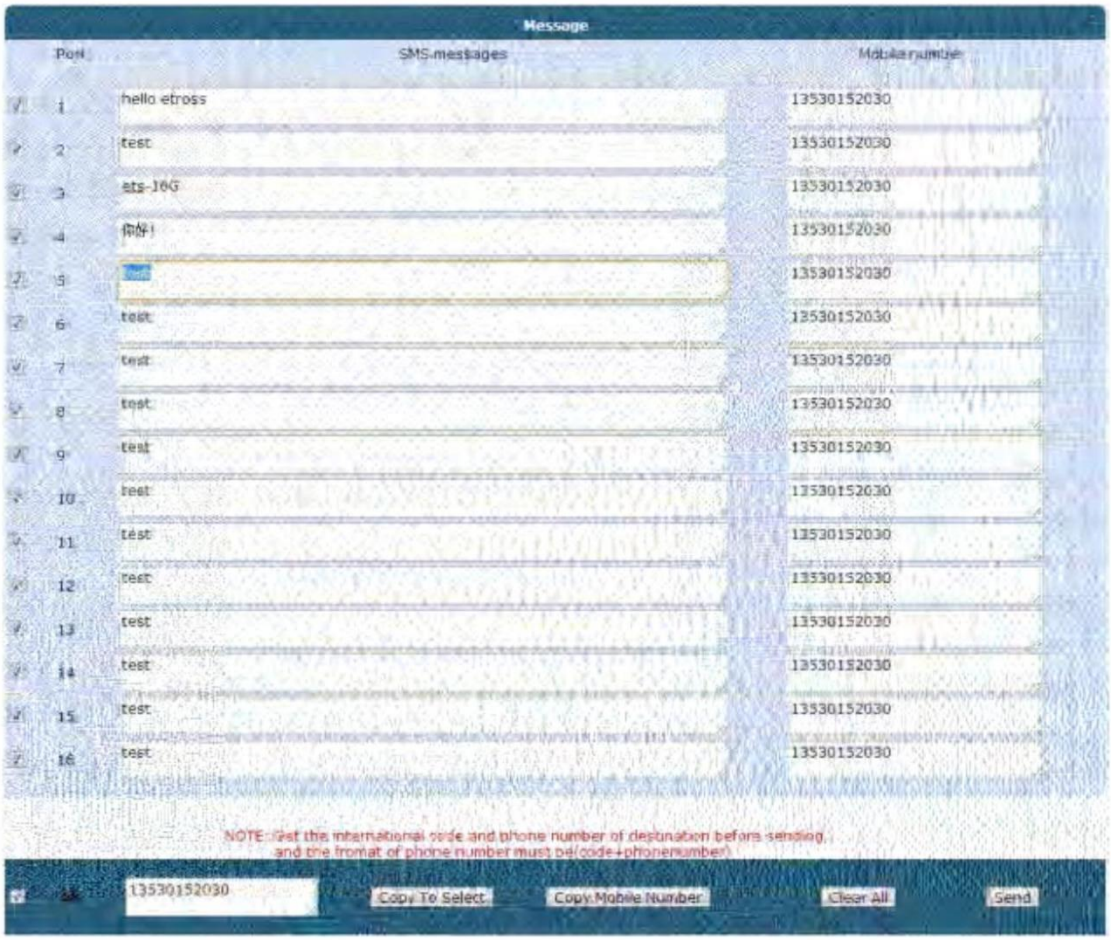


Table 4-9-1 Description of Send SMS

Message	SMS
Port	Select the 4G channel to send SMS
SMS message	The content of SMS
Mobile number	The destination mobile phone no. Which the SMS will be sent to
All	Select all the 4G channels
Copy to select	Copy the content of SMS to selected ports
Copy mobile number	Copy mobile number to the selected ports
Clear all	Clear all the content of SMS or mobile phone numbers
Send	Send SMS

SMS send status Shows the SMS Send result.if the port is not active,it shows inactive, If the SMS send successfully, then it shows "finish" ,otherwise ,it shows "fail" .

Figure 4-9-1-2 SMS send status

4.9.2 Inbox

Inbox records all the SMS reply messages

Figure 4-9-2 Receive message details

4.9.3 Outbox

Outbox records all SMS sending messages

Figure 4-9-3 Sending message details

4.9.4 Sent

Sent records all SMS sent out messages

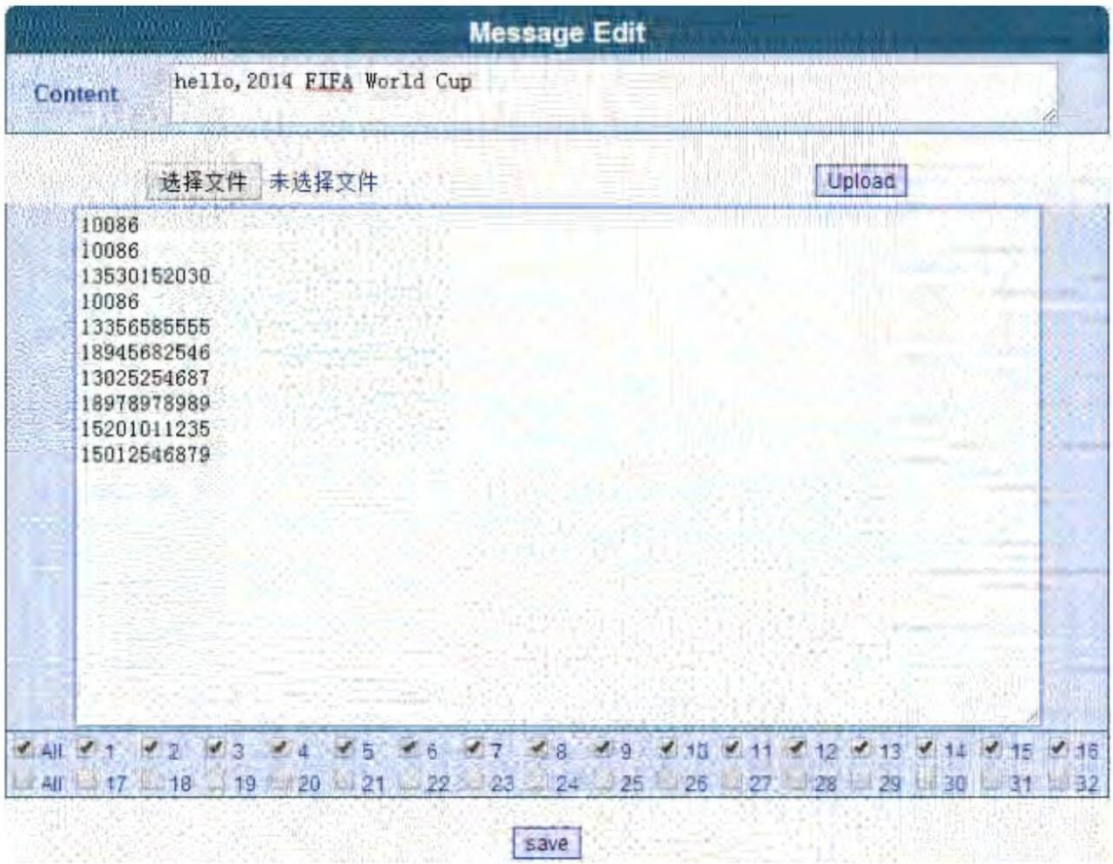
Figure 4-9-4 Sent messages details

4.10 SMS bulk

SMS bulk is designed for some users to send bulk SMS to some numbers, it can be used as 4G Modem Pool purpose.

4.10.1 Compose

Figure 4-10-1 Message edit



You can fill the content which will be sent

And you can fill the mobile phone number in the blank and every number should be one line, and also you can make a number list file as .txt, then "upload" into the number blank, then you choose the ports which will be responsible for sending the content to the destination number lists shown as Figure 4-10-1.to click "save" button to finish the setting.

.txt file format should be as below:

[Number Start]

13530152030

10086

10086

13356956522

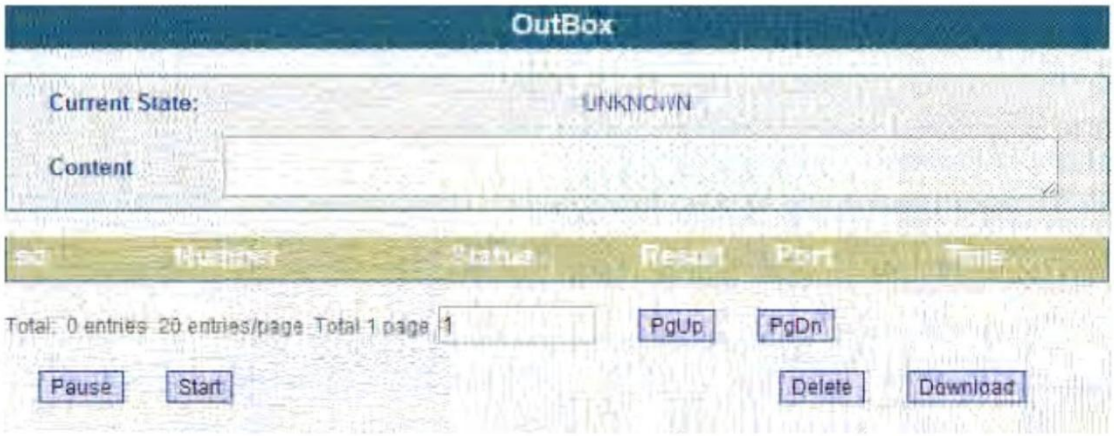
15025258888

[Number End]

4.10.2 Outbox

Outbox displays the SMS sending records for user's reference, see Figure 4-10-2

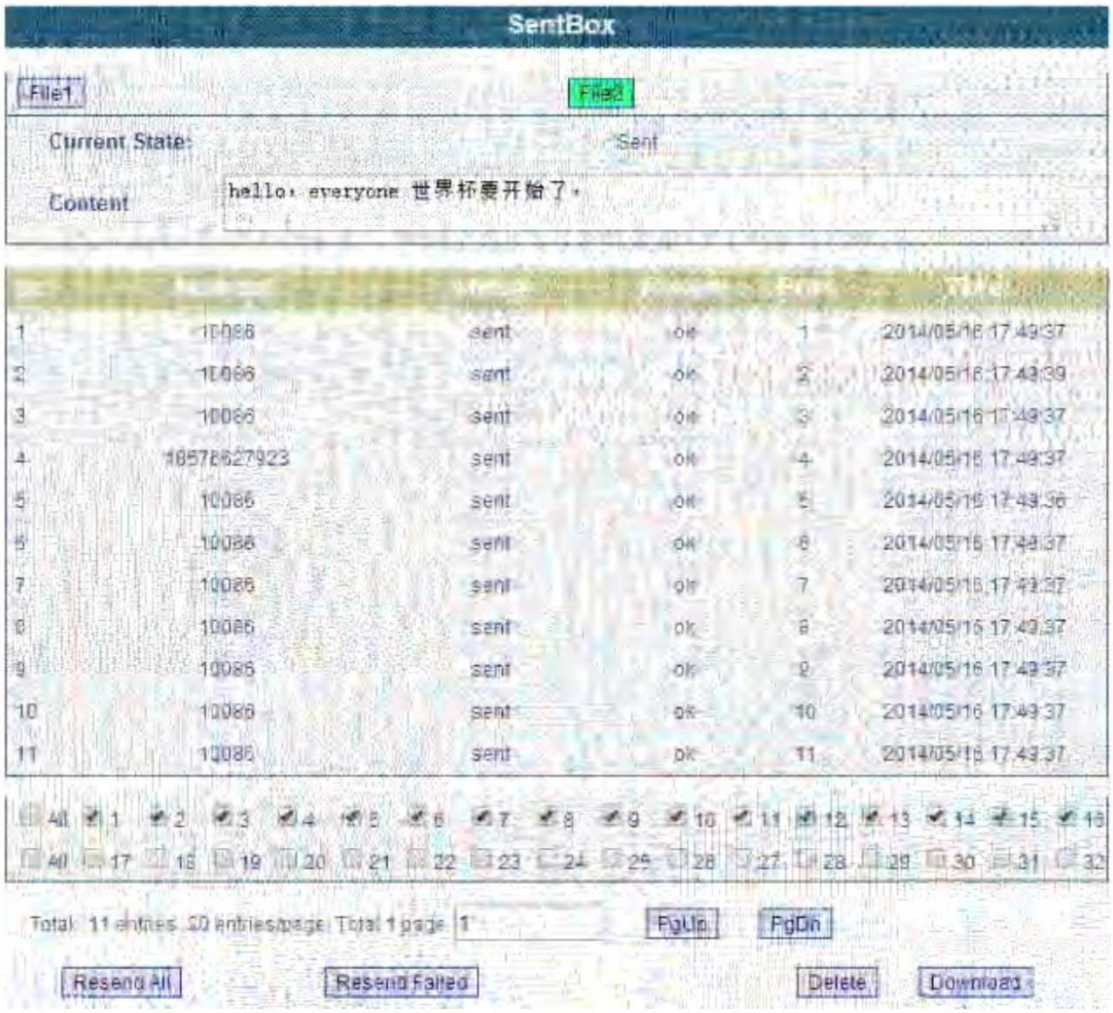
Figure 4-10-2 Outbox



4.10.3 Sentbox

Sent box displays all the SMS sent records for user's reference , see Figure 4-10-3

Figure 4-10-3 SentBox



4.11 Balance manage

4.11.1 Set

4G Gateway ETS16x8G provides user balance management function,but user has to preset the SIM card balance after its activation, attention: all the call balance use the minute as unit, not dollar, so you have to transfer it before you input data. (User can use USSD or SMS management to obtain the SIM card balance).

Figure 4-11-1 Balance config

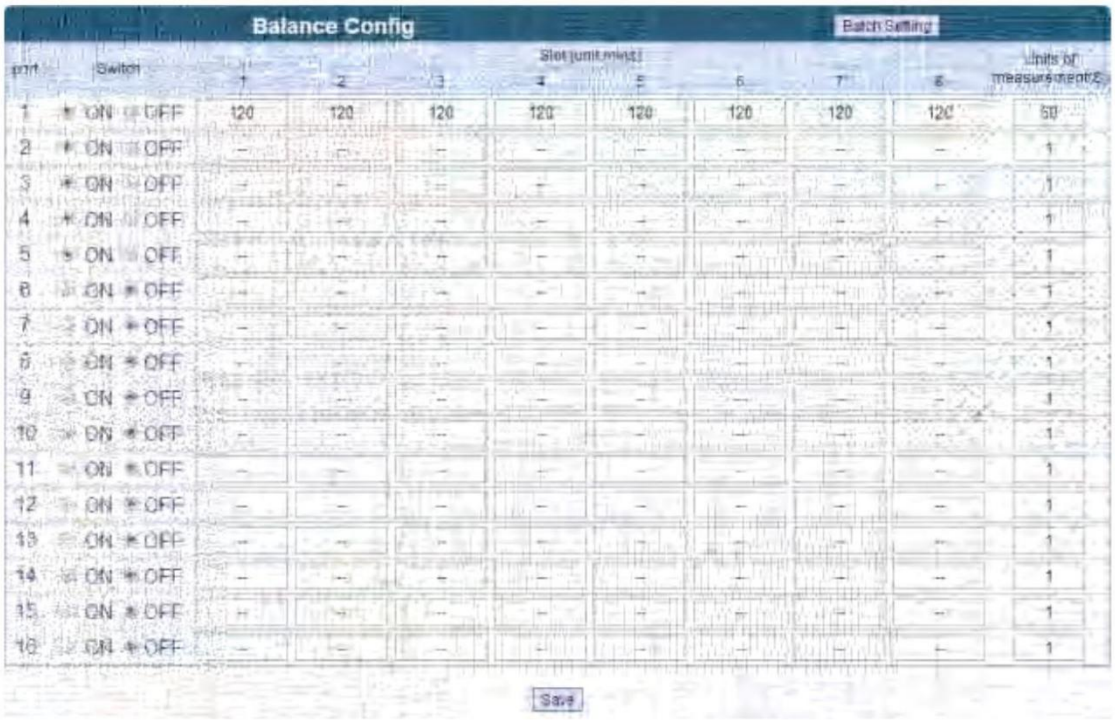


Table 4-11-1 Description of balance config

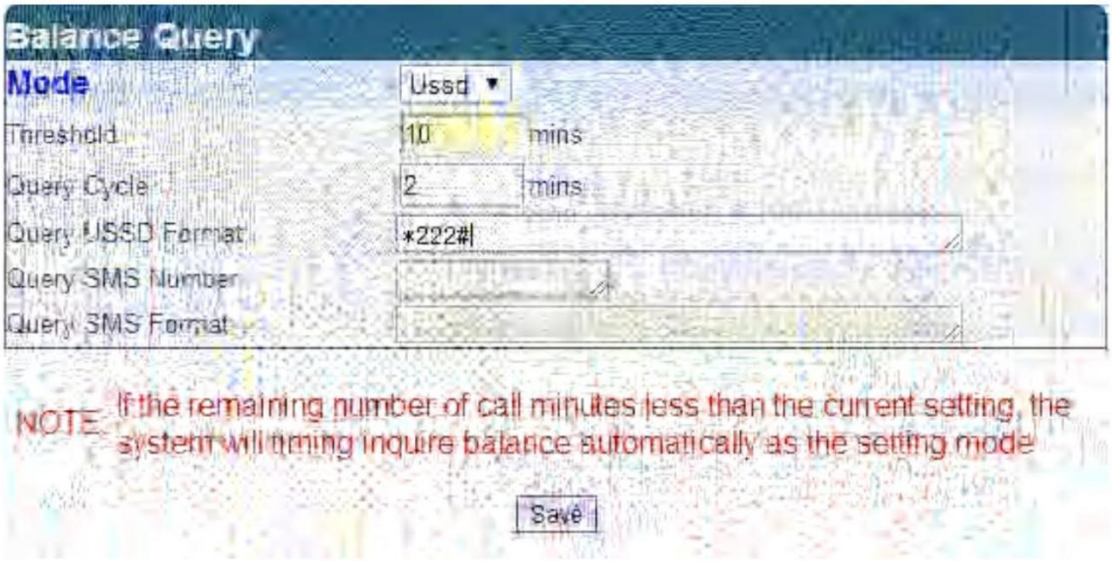
Balance config	To set every SIM card balance
Port	The numbers of 4G/GSM channels
Switch	To activate balance management (On), to close (Off).
Slot (mins)	Shows the balance time in each SIM slot (use minute as unit)
Unit of measurement(s)	To set unit duration(eg. 60 seconds as a unit, whether less than or equals to 60 seconds, it will bill as a unit)
Save	To save the setting

If user wants to know the real SIM card balance and automatically fill in the balance, then user should activate "Auto balance query" and "Auto balance update" function.

4.11.2 Auto Balance Query

Auto balance Query can automatically check the balance of SIM card by sending USSD or SMS if the remaining balance is less than Threshold value in every query cycle. This may prompt user to do recharge for the SIM card in time.

Figure 4-11-2 Balance Query

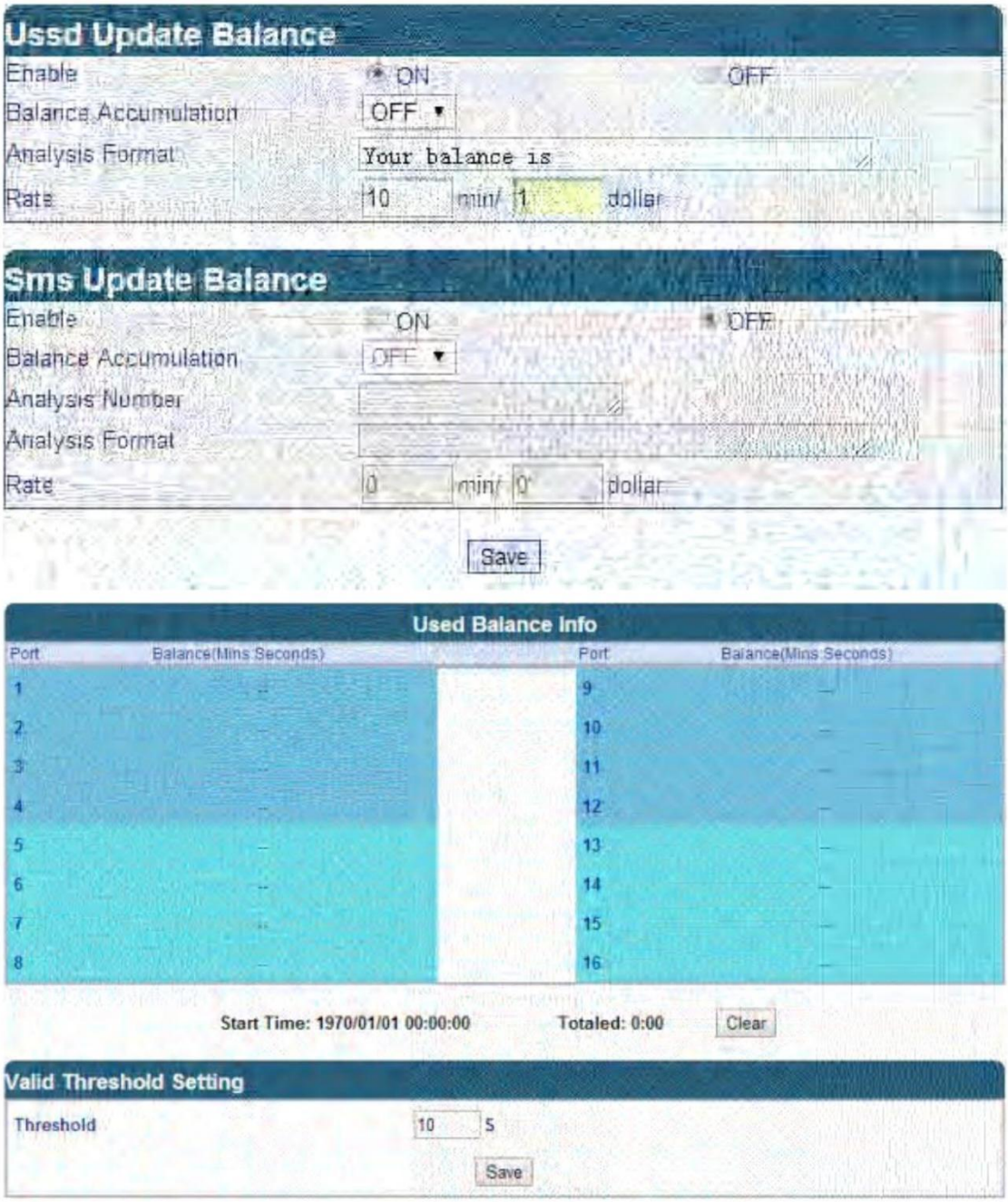


4.11.3 Auto Balance Update

Auto Balance update,user can get the real balance of the SIM card, just we have to fill the Analysis format: e.g. "Your balance is" or "Balance Tk." according to USSD reply message. Then the device will automatically get the real balance through Auto balance query and then to fill into the balance config through Auto Balance update.

Attention rate min and dollar should be integer.
Analysis format is according to USSD or SMS reply message,
Examples:1, Your balance is 80 dollar, validity 2014-08-09 ...
2, Balance Tk. 24.05, validity 2014-10-9 ....
Users just take the character before the balance value as analysis format, so the system will automatically take all the real balance data if we switch this function "On",

Figure 4-11-3 Auto Balance update



4.12 Call routing

4.10.1 Digit map syntax:

ETS-16x8G digit map supports digit (0,1,2,...9) ,"[", "]", "*" ,"-", and ",".

1. Digit:

A digit from "0" to "9"

2. Range []:

One or more Digit enclosed between square brackets ("[" and "]"), but only one can be selected

3. Star *

matches any digit ("0" to "9")

4. Subrange -

Two digits separated by hyphen ("-") which matches any digit between and including the two. The subrange construct can only be used inside a range construct, i.e., between "[" and "]".

5. Comma ,

Two digits separated by comma (",") which means this two digits matches, the comma contruct can only be used inside a range construct, i.e., between "[" and "]".

Examples:

Test_1 digit map: 12[5,6,7,8,9], port 1,2,3,4,5

means any number starts with 125,126,127,128,129 can use port 1,2,3,4,5

Test_2 digit map:13[0-2] , port 11,12

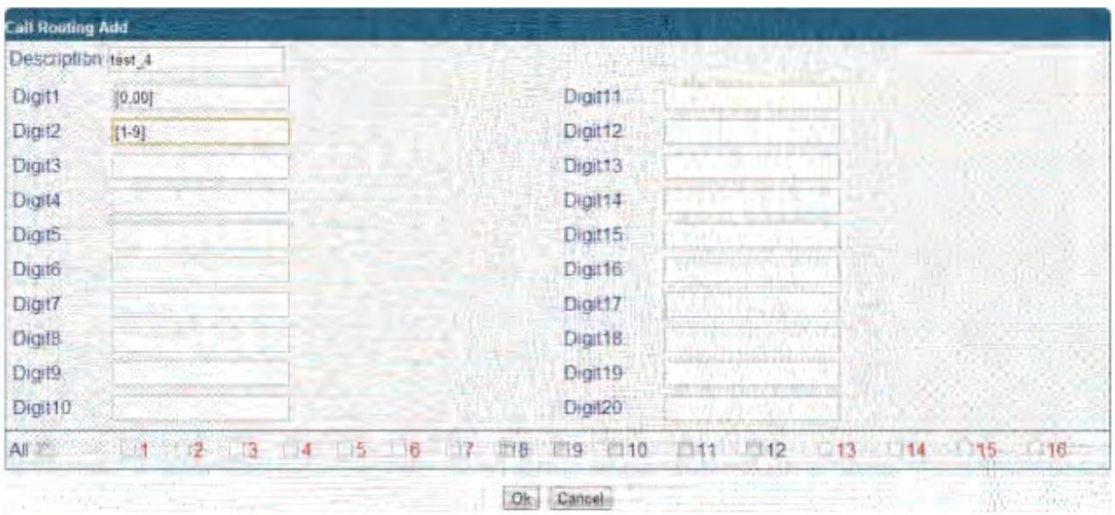
Means any numbers starts with 130,131,132 can use port 11, port 12

Test_3 digit map: *[1-5,8,9], port 14,15,16

Means any numbers starts with first digit (0,1,2,3,4,5,6,7,8,9) and second digit (1,2,3,4,5,8 or 9) will use port 14,15,16.

Figure 4-12-1 call routing configuration

Figure 4-12-2 Call routing add



4.13 System

4.13.1 System Configuration

System configuration describes WAN & LAN configuration, Voice Codec, DTMF parameter setting and time setting

1, Wan configuration

Wan configuration can be done by 3 methods, 1) Static IP , 2) DHCP , 3) PPPoE . The user can do Wan configuration according to the real need .

Figure 4-11-1 System configuration

Table 4-13-1 Description of system configuration

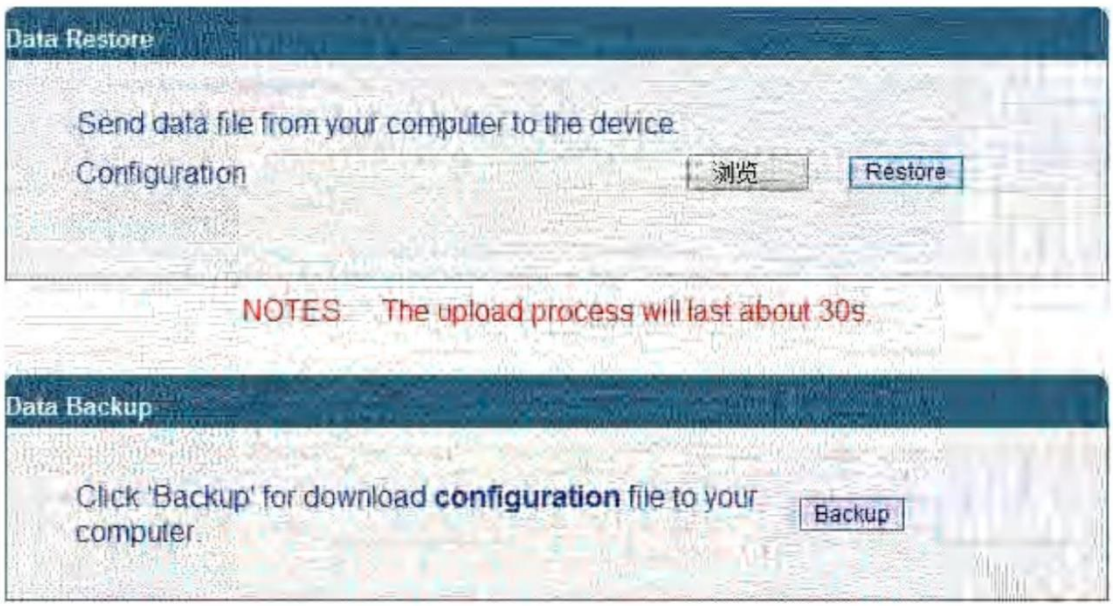
Static	Means use static IP, to configure static IP address, static gateway, and Netmask manually
DHCP	Dynamic Host Configuration Protocol, means to obtain IP address automatically
PPPoE	Need ISP offer the account and password. Use this mode when there is not router in the local network
Obtain DNS Server Address Automatically	When enable the WAN port option of "Obtain DNS Server Address Automatically" , which will be enabled subsequently.
Use the Following DNS Server Addresses	Fill in the IP address of "Primary DNS Server" and "Secondary DNS Server"
Voice codec	Codec list for selection
DTMF parameter	To set the DTMF parameter, it should be same with the SIP server
Time setting	To set the system time

4.13.2 Back up & restore

To click "backup" to download configuration file to your computer.

To click "restore" to send saved data from computer to the device ETS-16G

Figure 4-13-2 Back up & restore



4.13.3 Reset & Reboot

Reset to default means to restore to factory setting.

Reboot means to power off then power on the device again.

Figure 4-13-3 Reset & Reboot

4.13.4 upgrade firmware

The user can upgrade firmware from this file upload interface.

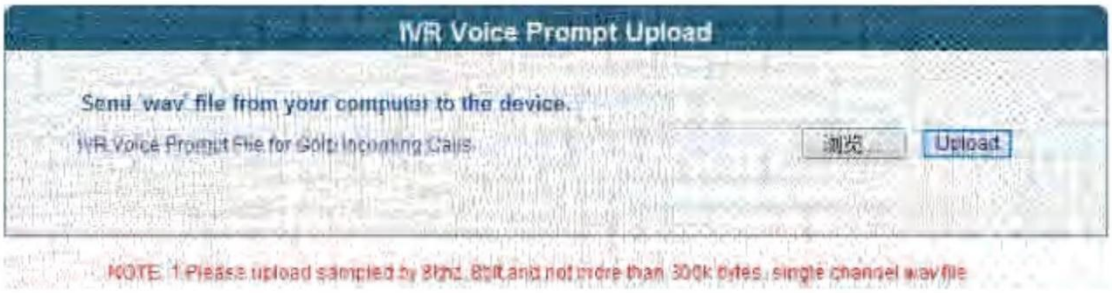
Note: After uploading, the device will auto restart to take effect.

Figure 4-13-4 File Upload

4.13.5 IVR Voice upload

When call in to the SIM card of the ETS-16G, the system will pay IVR if you choose the port type(call in) is IVR , also the user cal upload custom IVR.

Figure 4-13-5 IVR voice prompt upload



Note: The IVR sound formate is 8kHz , with Wav format, and the size can not exceed 300k bytes

4.11.6 Username & Password

Users can change the user's name and password to enter into the web configuration,it is also strongly recommended to change the password, but please do remember the password. The default username & password: admin / admin

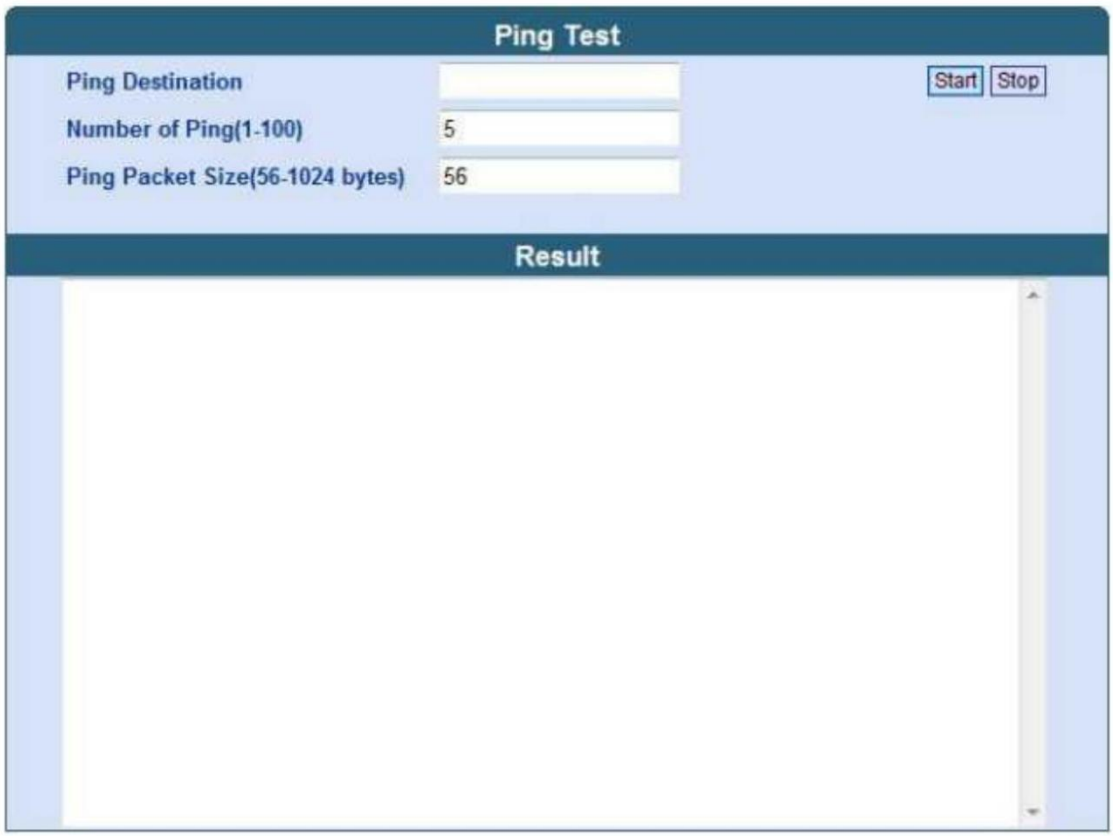
Figure 4-13-6 username & password

4.14 Tools

4.14.1 Ping Test

Ping is usually used to test the reach ability of a host on an Internet Protocol (IP) network and to measure the round-trip time for messages sent from the originating host to a destination host.

Figure 4-14-1 Ping Test



4.14.2 Tracert Test

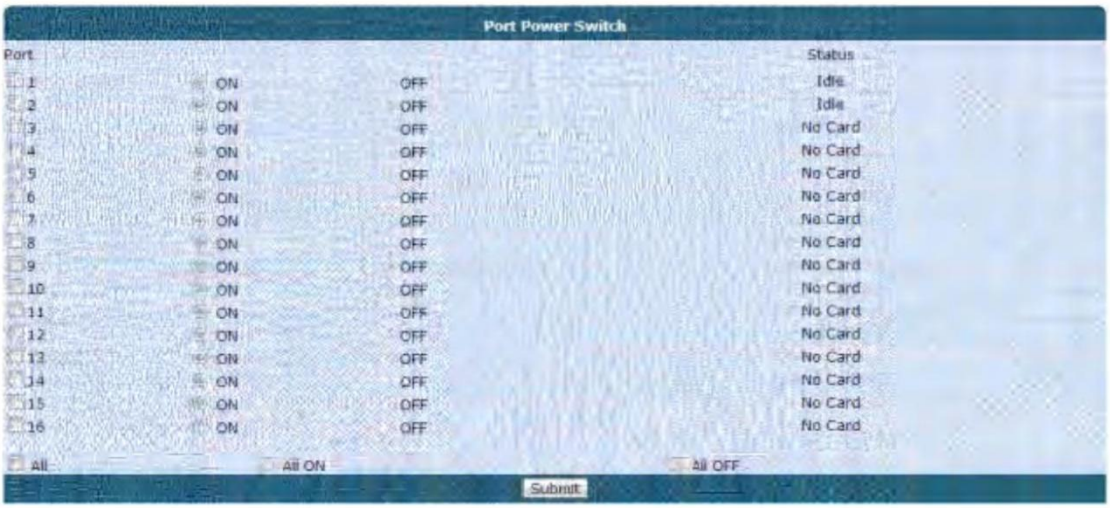
Tracert is a computer network diagnostic tool for displaying the route (path) and measuring transit delays of packets across an Internet Protocol (IP) network.

Figure 4-14-2 Tracert test

4.14.3 Port Power manage

Port power manage permits user to open(On) or close(Off) the port power supply, so user can change SIM card or do other operations without re boot the device.

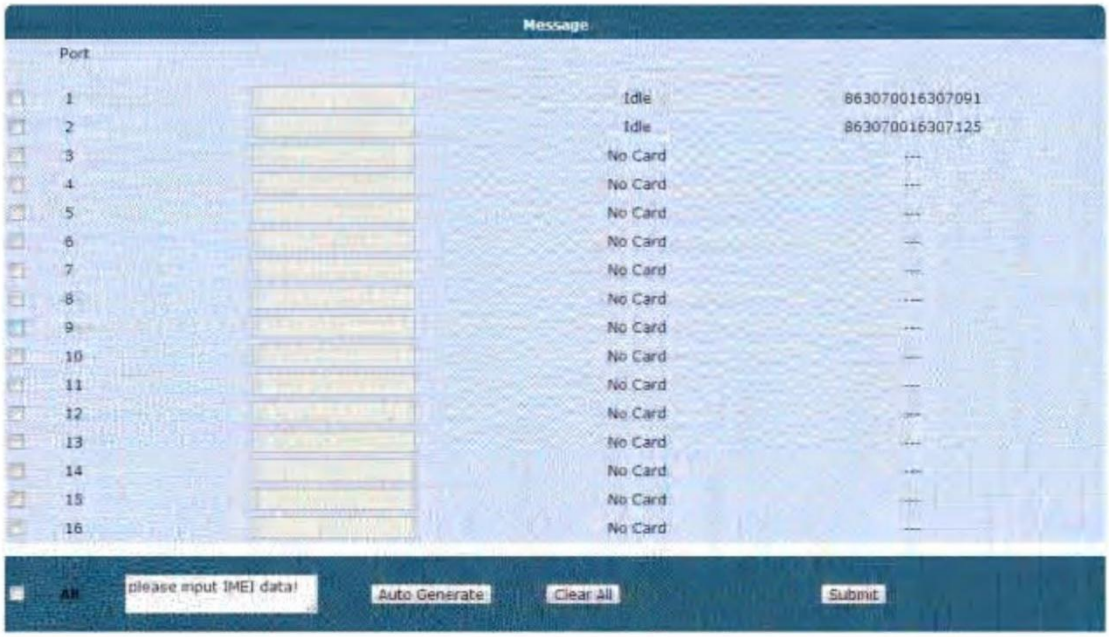
Figure 4-14-3 Port power switch



4.14.4 Change IMEI

Due to the carrier's block, users have to change IMEI frequently, ETS-16G provide user the interface to change IMEI of the module easily. It can also auto generate the IMEI no. Very smart way to use.

Figure 4-14-4 Change IMEI



4.14.5 Debug

Figure 4-14-5 Debug

5. Glossary:

0-9

3G- refers to the third generation of mobile telephony that supports high-speed data transfer and is primarily suitable for mobile Internet.

A

ACD- The Average Call Duration (ACD) is calculated by taking the sum of billable seconds (bill second) of answered calls and dividing it by the number of these answered calls.

ASR- Answer Seizure Ratio is a measure of network quality . Its calculated by taking the number of successfully answered calls and dividing by the total number of calls attempted. Since busy signals and other rejections by the called number count as call failures, the ASR value can vary depending on user behavior.

B

BCCH- The Broadcast Control Channel (BCCH) is a logical broadcast channel used by the base station in a 4G network to send information about the identity of the network. This information is used by a mobile station to get access to the network.

C

GSM- Code Division Multiple Access

CDR- Call data records

CODEC- Coder-Decoder

D

DTMF- Dual Tone Multi Frequency

DHCP- Dynamic Host Configuration Protocol

G

4G- Global System for Mobile Communications

GPRS- General Packet Radio Service

I

IMEI- International Mobile Equipment Identity

IMSI- International Mobile Subscriber Identification Number

IVR- Interactive Voice Response

L

LAN- Local Area Network

M

MAC- Media Access Control

P

PDD- Post Dial Delay

PSTN- Public Switched Telephone Network

S

SIM- Subscriber Identity Module

SIP- Session Initiation Protocol

SMS-Short Message Service

U

USB- Universal Serial BUS

USSD- Unstructured Supplementary Service Data

UMTS- Universal Mobile Telecommunications System

V

VLAN- Virtual Local Area Network

VPN- Virtual Private Network

W

WAN- Wide Area Network , Ethernet Interface,10/100M Base-TX, RJ-45 to connect with external network