SANAV SJ-205HAB

Home Unit

User Manual

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SJ-205HAB User Documentation

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Introduction

SANAV SJ-205HAB is a low-powered, more compact version of 2G/3G tracker targeting the animal or asset tracking market. Moving targets can be tracked in real-time through internet or specified terminals. The device can communicate with the server through 2G/3G networks, to provide emergency & power alerts, geo-fencing, remote monitoring, and automatic back-up regarding tracking history. This User Manual details the product specifications, hardware features, SMS commands, and Tracker Status of SJ-205HAB. If you have any further questions about using SANAV's SJ-205HAB product, please contact SANAV Customer Service at **www.sanav.com.**

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Document Amendments

Revision	Date	Comments
1.0	2020/10/26	Formal release

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SJ-205HAB Hardware General Introduction

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Specification

Specifications	
Electrics Data	
RF Frequency:	436.8MHz
Antenna	Embedded GSM and RF Antenna
GSM Frequency	GSM/GPRS/EDGE: Quad band 850/900/1800/1900MHz UMTS/HSPA+: Five band 800/850/900/1900/2100MHz
GSM Module	Cinterion EHS6
Memory	Built-in 32M X 8bit NAND FLASH
Power Supply	
External Power Supply	12V DC / 18W
Internal Battery Life	4 hours (based on 1 report/1 minutes, No alarm)
Environmental Conditions	
Charging Temperature	0°C ~40°C
Operating Temperature	-10°C to +45°C
Relative Humidity	5% to 95 %, non-condensing
Mechanics Data	
Size	181mm (L) * 138mm (W) * 50mm (H)
Weight	600g (2600mAhLi-ION battery included)

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Package Contents

SJ-205HAB x 1	Adapter
AC Adapter x 1 100～240V AC / 1.2A	

Note: Connect Power Cord to AC Adapter to be a whole power charging solution.

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Front View

Green LED (Label 1): Power ON – both external and internal

- Light on when it is powered on

Red LED (Label 2): SIGNAL Status

- Turn on when GSM is in service
- Flash per 1s when without GSM service

Red LED (Label 3): Home Unit Tamper Alert

- Light on when Home Unit is tampered

Orange LED (Label 4): Status of Home Unit

- Flash once when transmitting a data via GPRS or SMS

Green LED (Label 5): External Power Detection Indicator

Turn on when external power has been plugged

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Charging SJ-205HAB

Power Supply Connect

12V DC Input

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SJ-205HAB Quick START/Setting Guide

STEP 1: APN Identification. Ensure APN Name, APN username and APN password for GSM SIM Card Cell carrier. Wrong APN setting will cause the device unable to report via internet service.

STEP 2: Send SMS command to device (Check the IMEI and make sure device can be set up by SMS): #username,0000,imei*

STEP 3: Send SMS command to device to set up APN:
#username,0000,3,APN,username,password,DNS (if needed)*
default: #username,0000,3,internet,,*(if empty, leave commas right after)

STEP 4: Send SMS command to point to TCP server: #username,0000,18,192.168.1.100:18888*
(Send SMS Message to point to http server: #username,0000,4,http://www.xyz.com/Data*)

STEP 5: Send SMS command to device to report via TCP: #username,0000,14,7*
(Send SMS Message to device to report via http: #username,0000,14,2*)

SETP 6: Set RTC Time：#username,0000,setrtc,161012141000*

SETP 7: Pair with bracelets

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Command Setup for SJ-205HAB

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SJ-205HAB currently provides SMS command and COTA (TCP) command for remote setup. User can setup the SJ-205HAB by following the instructions shown in following chapters via SMS/COTA. Key the specific SMS message in your cellular phone and send it to the SIM number of SJ-205HAB. The setup messages are showed in the following sections.

1: The default setting:

Default ID is "USERNAME". Please read chapter **Change User Name** to desired ID.

Default password is "0000". Please read chapter **Change Password** to change the password.

There is no number in the default contact. Please read chapter **Set up Phone Book List** to add the number.

Default setting of Retrospective Location Mode is deactivated. Please read chapter **Set up Retrospective Location Mode by Time** to setup the regular Retrospective Location Mode.

Default setting of APN is only suitable for mobile network. Please read chapter **Set up APN for MOBILE NETWORK Service** to change the APN.

Default setting of URL is **http://www.sanavtw.com/uploadM1.php.** Please read chapter **Set up URL** to change the URL for http server setup.

Before doing any setup, please ensure the device is connected with the GSM network. The GSM LED must light on. And please note the device is not in SOS/Panic mode.

2: Please note that all the characters which include #, * and comma (,) should be **HALFWIDTH** form.

3: Please be aware of the upper (capital)/lower cases when entering the SMS command.

4: While entering any SMS command, note that **NO SPACE** is allowed between the characters, comma and signs in the SMS.

5: Any setup command must be started with a "#" sign and ended up with a "*" sign.

6: The comma (,) can be abbreviated if no further setup required for the command besides **Set up APN for LTE Service.** Please refer to the examples of **Set up Retrospective Location Mode.**

7: Add or not add the "+ "sign in front of the cellular phone number(s) are both acceptable, while the"+" sign should precede the international call prefixes. The specified international call prefix is required if "+ "sign is not added.

8: The device will update setting Only when the password, USERNAME and setup command are all correct. If the command is not valid, a failure report is going to be sent to the user's cell phone.

9: Some PREPAID PHONE CARD SIM modules do not enable or even support MOBILE NETWORK service. Please consult with GSM carrier for further information.

Change User Name

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Generally, SMS command execution needs correct user name with password, or it will remain the same setting. The SMS command default user name is "username". It can be changed by following the command format. For example, entering the SMS command as the following allows user to change the user name from "username" to a new user name "SANAV".

Only enter new command with new user name after it has been changed.

Setup Format: #「username」,「Password」,「Function Mode」,「New User Name」*

Command: #username,0000,1,SANAV *

SMS/ COTA Command	Description
#	Start sign.
username	Default username of the device.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
1	Mode 1 defines user name setup mode.
SANAV	✧ New user name changed by the user. ✧ At the maximum of 16 characters, including a~z,A~Z,0~9, @ - _ / .!%& ✧ **Please note whether the letters are capitalized or lowercased when sending the command.**
*	End sign.

Table 1: User Name Change Format Description

Situation	Message Reply
Setup Succeeds	[username] + Device username is updated.
Setup Fails	[username] + Device username setup fail!
Incorrect username or password, Incorrect command format	[username] + command error

Table 2: User Name Change Response Description

Change Password

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Generally, SMS command execution needs correct user name with password, or it will remain the same setting.

The SMS command default password is "0000". It can be changed by following the command format.

For example, entering the SMS command as the following allows user to change the password from "0000" to a new password "1111".

Only enter new command with new password after it has been changed.

Setup Format: #「username」,「Password」,「Function Mode」,「new Password」,「new Password」*

Command: #USERNAME,0000,2,1111,1111*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the USERNAME, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
2	Mode 2 defines the password setup mode.
1111	New password (Please note at the maximum of 4 number)
1111	Reconfirm the password
*	End sign.

Table 3: Password Change Format Description

Situation	Message Reply
Setup Succeeds	[username] + Device Password is updated.
Setup Fail	[username] + Password setup Fail!
Incorrect password	[username] + Password setup Fail!
Incorrect username or SMS format	[username] + command error

Table 4: Password Change Response Description

Request IMEI Number

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IMEI stands for International Mobile Equipment Identification, a unique number for identifying mobile devices validity in 2G/3G network.

As above stated, each device has a unique IMEI number. Entering the command as the following allows user to check the IMEI number of the device for network registration and tracking.

Setup Format: #「USERNAME」,「Password」,「Function Mode」*

Command: #USERNAME,0000,imei*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	Default ID of the device. If you have changed the user name, please use the updated one.
0000	Default password. If you have changed the password, please use the updated one.
imei	Mode "imei" defines the device IMEI number request mode.
*	End sign.

Table 5: IMEI Number Request Format Description

Situation	Message Reply
Setup Succeeds	[username] + ',[imei]'
Incorrect username or password, Incorrect command format	[username] + command error

Table 6: IMEI Number Request Response Description

Set up APN for mobile network Service

Access Point Name (APN) is a protocol that typically allows a user's device to access the internet using the mobile phone network. It is a network identifier used by a mobile device when connecting to a 2G/3G carrier. The carrier will then examine this identifier to determine what type of network connection should be created. For uploading the data to a web server, a set of 2G/3G APN from your 2G/3G network is required. Various 2G/3G networks provide different 2G/3G APN settings. Please ask your 2G/3G carrier about the APN settings. If the user name and password of APN are indefinite or showed in blank, just leave the parameters empty (no space). User can follow the Setup Format below to setup the APN that is provided by your 2G/3G carrier.

Setup Format: #「USERNAME」,「Password」,「Function Mode」,「APN」,「APN name」,「APN password」,「APN DNS」*

Example1: #USERNAME,0000,3,internet,guest,guest,172.20.2.10*

Leave the parameters empty (no space) if other parameters are not required.

Example2: #USERNAME,0000,3,internet,,,*

Note1: The total length of APN name, APN USERNAME, APN Password, and APN DNS should be less than 70 characters.

Note2: Some PREPAID PHONE CARD SIM modules do not enable or even support 2G/3G service. Please consult with 2G/3G carrier for further information.

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
Function Mode	Mode 3 defines the APN setup mode.
internet	APN Name
guest	APN user name (optional)
guest	APN Password (optional)
172.20.2.10	APN DNS (optional)
*	End sign.

Table 7: APN Setup Format Description

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Situation	Message Reply
Setup Succeeds	[username] + Device GPRS APN is updated.
Setup Fail	[username] + Device GPRS APN setup Fail!
Incorrect username or password, Incorrect command format	[username] + command error

Table 8: APN Setup Response Description

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Set up URL

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This SMS command instructs the device to transmit GPS (GPRMC) positioning data to a specified URL (Uniform Resource Locator) or IP address of HTTP protocol server for real time GPS tracking.

Entering the SMS command as the following allows user to changes the address to "**http://www.sanavtw.com/uploadM1.php**". The address will be assigned to receive the GPS data sent by the device. Then you can link to Sanav Test Website: **https://www.sanavtw.com** to view your device data.

Setup Format: #「USERNAME」,「Password」,「Function Mode」,「URL」*

Command: #USERNAME,0000,4,http://www.sanavtw.com/uploadM1.php*

Note: The URL should be less than 80 characters.

Note1: The question mark '?' or any symbol is not allowed to be entered behind the URL. The DEVICE will add the necessary symbol(s) on automatically.

Note2: For setting up TCP/IP (Transmission Control Protocol) or UDP/IP (User Datagram Protocol) server, please refer to Set up TCP or UDP/IP.

Note3: HTTP, TCP/IP, UDP/IP and SMS are different protocols (routes). Please refer to Set up Route for Data Transmission to set up corresponded route code for GPS data transmission.

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
Function Mode	Mode 4 defines the URL setup mode.
Address	URL of the HTTP server.
*	End sign.

Table 9: URL or IP Setup Format Description

Situation	Message Reply
Setup Succeeds	[username] + Device IP/Domain is updated.
Setup Fail	[username] + IP/Domain setup Fail!
Incorrect username or password Incorrect command format	[username] + command error

Table 10: URL or IP Setup Response Description

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Set up TCP ACK function

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The Home Unit has TCP ACK function to make sure no data lose. Use this command to toggle this feature.

Setup format: #<User Name>, <Password>, <Function Code>, <ON/OFF>, <Timeout>*

Command: #username,0000,tcpack,1,10*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
tcpack	Function code.
1	1: ON, 0: OFF
10	Timeout (sec) The range is 1~255.
*	End sign.

Table 11: TCP Ack Setup Format Description

Situation	Response
Setup Succeeds	[username] + setup OK. Device tcp ack mode is updated.
Incorrect username or password, Incorrect command format	[username] + command error

Table 12: TCP Ack Setup Response Description

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Set up Phone Book List

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There are three main purposes of Phone Book List setup:

The Home Unit can save 10 phone numbers for receiving or sanding SMS.

Function Code "5" can setup phone1~3

Function Code "e5" can setup phone4~10

Use this SMS command to set up the cellular phone book as the following format:

Setup Format: #<User Name>, <Password>, <Function Code>, <Phone number>*

Command: #username,0000,5, phone1,phone2,phone3*

#username,0000,e5,phone4,phone5,phone6,phone7,phone8,phone9,phone10*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
5 or e5	Mode '5' or 'e5' defines phone number setup mode.
Phone Number	Add phone number
*	End sign.

Table 13: Phone Book List Setup Format Description

Situation	Message Reply
Setup Succeeds	[username] + Device phone book is updated.
Setup Fail	[username] + Phone book setup Fail!
Incorrect username or password, Incorrect command format	[username] + command error

Table 14: Phone Number List Setup Response Description

Set up Location Auto Report Mode

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Generally, the device will generate GPS (GPRMC) data and report to server, specified cellular phone or network routes. Retrospective Location Mode setup can enable the device report GPS data automatically during a period of time.

Use this command to set up the frequency of Retrospective Location Mode. The device can report according to time interval. If you send the SMS command as the following example, the device will send a report every 5 minutes (300 seconds) and the total number of reports is 99.

Note: You may limit the number of the Auto Reports by inputting the digits from 1 to 9998 in the<total number of reports>field. When you input 9999, the device will generate unlimited Location Auto Reports. when 0 is entered, the device will stop/disable Location Auto Report Mode.

Setup Format: #「USERNAME」,「Password」,「Function Code」,「intervals (sec)」,「total number of report」*

Example1:#USERNAME,0000,6,300,99*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default user name of the device. ✧ If you have changed the USERNAME, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
6	Mode 6 defines Retrospective Location Mode setup mode.
300	Time Interval (period) of Retrospective Location Mode.
99	Times (frequency) of Auto Reports that will be sent automatically.
*	End sign.

Table 15: Location Auto report Mode Setup Format Description

[illegible]	Message Reply
Setup Succeeds	[username] + Setup OK. Device Auto Report setting is updated.
Setup Fail	[username] + Auto Report setting Setup Fail!
Incorrect username, Incorrect password or command format	[username] + command error

Table 16: Location Auto report Mode Setup Response Descriptio

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Set up Answer Call Mode

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User can use Answer Call (Voice Mode) command to define the response when MU-201 S3 is receiving an incoming call.

The device can answer the call automatically or hang up the call and send current location message.

Setup Format: #「USERNAME」,「Password」,「Function Mode」, 「Mode」*

Command: #USERNAME,0000,8,1*

Note: If user has enabled "Security Phone Book" function, MU-201 S3 will verify whether the caller's number is in the Security Phone Book. If not, MU-201 S3 will not react to the incoming call.

SMS/ COTA Command	Description	
#	Start sign.	
USERNAME	Default ID of the device. If you have changed the user name, please use the updated one.	
0000	Default password. If you have changed the password, please use the updated one.	
8	Mode 8 defines the Voice Mode setup.	
Mode	0	The device will answer the incoming call automatically.
	1	The device will answer the incoming call automatically.
	2	The device will hang up the call and respond its current location to caller's cell phone.
	3	The device will hang up the call and respond its current location to the defined route.
	4	Hang up phone and reply a SMS for mobile Application
*	End sign.	

Table 17: Answer Call Mode Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>USERNAME, setup OK, 8

Table 18: Answer Call Mode Setup Response Description

Set up Mandatory Polling report

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The user can send the SMS/COTA polling according to the shown example to get desired information. It defines the report format when you set SMS polling.

Setup Format: #「USERNAME」,「Password」,「Function Mode」*

Command: #USERNAME,0000,10*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
10	Mode 10 defines the SMS Polling setup mode.
*	End sign.

Table 19: Polling Format Setup Description

Situation	Message Reply
Setup Succeeds	Example Report : HAB,352557100308249,$GPRMC,132417.000,A,2458.9733,N,12125.6597,E,0.00,0.00,080720,,,A*48,POLL,,,,,N0004,M15,4108mV

Table 20: Polling Setup Response Description

Set up Route for Data Transmission

User can follow the instructions below to set the device's data transmission via HTTP/TCP/UDP or SMS routes. Please confirm the back-end server protocol type and corresponding URL or IP address (with port number if required) before setup. There are 2 main protocols available for transmitting route setup:

1. HTTP: Hypertext Transfer Protocol. An internet browser based server protocol that usually has a specified URL (Uniform Resource Locator).

2. TCP/IP: Transmission Control Protocol. An OSI Transport layer protocol that has more complex frame structure, higher reliability but slower processing speed than UDP/IP.

User can choose the route to transmit the data by HTTP/TCP protocol individually.

Please refer to the following table for the route setup.

Setup Format: #「USERNAME」,「Password」,「Function Mode」,「2 or 7」*

Command: #USERNAME,0000,14,2*(HTTP Only)

#USERNAME,0000,14,7*(TCP Only)

SMS/ COTA Command	Description	
#	Start sign.	
USERNAME	Default ID of the device. If you have changed the user name, please use the updated one.	
0000	Default password. If you have changed the password, please use the updated one.	
14	Mode 14 defines Transmission Route mode.	
	2	HTTP only. Send data to HTTP server. No SMS backup route.
	7	TCP Only. Send data to TCP server. No SMS backup route.
*	End sign.	

Table21: Transmission Route Setup Format Description

uation	Message Reply
Setup Succeeds	[username] + Device is switching to HTTP mode [username] + Device is switching to TCP mode

Table22: Transmission Route Setup Response Description

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Get Pairing Information

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Use this SMS/COTA command to get pairing device ID and status.

Setup Format: #「USERNAME」,「Password」,「Function Mode」*

Command: #USERNAME,0000,apstatus*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
apstatus	"apstatus" defines the get pairing information mode
*	End sign.

Table23: Get Pairing Information Setup Format Description

Situation	Message Reply
Setup Succeeds	<AP number>,<Device ID>,<N(Reserve)> Example: AP01:I001,N; AP02:I010,N; AP03:00,N; AP04:00,N; AP05:00,N; AP06:00,N; AP07:00,N; AP08:00,N; AP09:00,N; AP10:00,N; AP11:00,N; AP12:00,N; AP13:00,N; AP14:00,N; AP15:00,N; AP16:00,N; AP17:00,N; AP18:00,N; AP19:00,N; AP20:00,N

Table24: Get Pairing Information Setup Response Description

Set up Auto Reboot Time

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User can use the following commands below to set the device's auto reboot for clean up the system status regularly.

Setup Format: #「USERNAME」,「Password」,「Function Mode」,「Intervals (30 min.) 」*

Command: #USERNAME,0000,rst,48 *

SMS/ COTA Command	Description
#	Start sign.
USERNAME	Default ID of the device. If you have changed the user name, please use the updated one.
0000	Default password. If you have changed the password, please use the updated one.
rst	"rst" defines the auto reboot mode
48	30 minutes as a unit. The range is 0 to 99. 0 is disable. Example: 48 means 24hr reboot once
*	End sign.

Table25: Auto Reboot Time Setup Format Description

Situation	Message Reply
Setup Succeeds	[username] + Auto Reset is defined. [username] + Auto Reset is disabled.
Incorrect username or password, Incorrect command format	[username] + command error

Table26: Auto Reboot Time Setup Response Description

Set up TCP/UDP Server Address

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User can use the following commands below to set the device's GPS (GPRMC) positioning data to a specified IP address and port for real time tracking.

Entering the SMS command as the following allows user to change the address to specified IP and port. The IP address will be assigned to receive the GPS data sent by the device.

Setup Format: #「USERNAME」,「Password」,「Function Mode」, 「TCP/UDP server address」*

Command: #USERNAME,0000,18,220.128.123.1:7878 *

Or #USERNAME,0000,18,icare-u.com.tw:12345*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	Default ID of the device. If you have changed the user name, please use the updated one.
0000	Default password. If you have changed the password, please use the updated one.
18	Mode 18 defines the TCP/UDP Server Address setup mode.
220.128.123.1:7878	TCP/UDP Server Address and Port / Domain name
*	End sign.

Table27: Server Address Setup Format Description

	Message Reply
Setup Succeeds	[username] + Device TCP/UDP is updated
Incorrect username or password, Incorrect command format	[username] + command error

Table28: Server Address Setup Response Description

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Set up Turbo Link Mode

User can use the following commands below to set the device to maintain network connection or disconnect after reporting data.

Setup format：#「USERNAME」,「Password」,「Function mode」,「ON/OFF」*

Command: #USERNAME,0000,trb,0*

SMS/ COTA Command	Description	
#	Start sign.	
USERNAME	Default ID of the device. If you have changed the user name, please use the updated one.	
0000	Default password. If you have changed the password, please use the updated one.	
trb	turbo mode.	
	0	Network disconnection when the report finishes.
	1	Network keep connection when the report finishes.
*	End sign.	

Table29: Turbo Mode Setup Format Description

Situ	Message Reply
Setup Succeeds	[username] + setup OK. Device turbo mode is turned on. [username] + setup OK. Device turbo mode is turned off.
Setup Fail	[username] + turbo mode setup fail.
Incorrect username or password, Incorrect command format	[username] + command error

Table30: Turbo Mode Setup Response Description

Set up Command By GPRS

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Use this SMS command to setup sending commands over the network.

Setup Format: #「USERNAME」,「Password」,「Function Mode」,「0/1」,「IP: Port」*

Command: #USERNAME,0000,cmdbygprs,0,202.39.31.179:13377*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
cmdbygprs	Function code
0	After the command 0: disconnect after 1 minute of inactivity 1: keep connect
202.39.31.179:13377	IP address; Domain name also is acceptable.
*	End sign.

Table31: Command By GPRS Setup Format Description

	Message Reply
Setup Succeeds	[username] + Device cmdbygprs is Disabled. [username] + Device cmdbygprs is Enabled.
Setup Fail	[username] + cmdbygprs setup Fail!
Incorrect username or password, Incorrect command format	[username] + command error

Table32: Command By GPRS Setup Response Description

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Set up Device Position

User can use the following commands below to set the device positon.

Setup Format:

#「USERNAME」,「Password」,「Function Mode」,「Latitude」,「N/S」,「Longitude」,「E/W」*

Command: #username,0000,gpspos,2458.0000,N,12136.0000,E*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
gpspos	Function code
2458.0000	Latitude
N	North / South
12136.0000	Longitude
E	East / West
*	End sign.

Table33: device positon Setup Description

Situation	Message Reply
Setup Succeeds	[username] + setup OK. Device region coordinates setting is updated.
Setup Fail	[username] + GPS Position setup Fail!
Incorrect username or password, Incorrect command format	[username] + command error

Table34: device positon Setup Response Description

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Set up RTC time

User can use the following commands below to set the RTC time.

SMS Setup Format: #「USERNAME」,「Password」,「Function Mode」,「YYYY&MM&DD&TTTTTT」*

Command: #username,0000,setrtc,150115115000*

COTA Setup format：<@PCswrtc>,<YYYY&MM&DD&TTTTTT>

COTA Command: @PCswsetrtc,170528170501

SMS/ COTA Command	Description	
#	Start sign.	
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.	
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.	
setrtc	"setrtc" defines the RTC time setup mode	
150115115000	15	Christian era (2015)
	01	month (May)
	15	date (28th)
	1150	time (17:05)
	00	Second(00)
*	End sign.	

Table35: RTC time Setup Format Description

Situation	Response
Success	[username] + setup OK. Device RTC settings is updated.
Setup Fail	[username] + GPS Position setup Fail!
Incorrect username or password, Incorrect command format	[username] + command error

Table36: RTC time Setup Response Description

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Set up Tamper Function

The Home Unit tamper switch is located at rear side of Home Unit and should be pressed for detection.

Once the Home Unit is moved to have tamper status changed, the Home Unit will report periodical tamper event with loud beep sound. The way to stop event reporting and beep sound is sending SMS command of "ALARMOFF" or hardware reset.

As Tamper event is triggered, the device will send TT reports to the server according to the related setting.

There are two types of command, the short one is for toggling the function quickly and the long one is for setting up all the parameter

SMS Setup Format: #「USERNAME」,「Password」,「Function Mode」,「ON/OFF」,「Report Interval」,「Detection delay time」*

SMS Command: #username,0000,tamper,1*

#username,0000,tamper,1,60,3*

COTA Setup format：<@PCswtamper>,<ON/OFF>,<Report Interval>,<Detection delay time>

COTA Command: @PCswfbr,1,60,3

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
tamper	"tamper" defines the Tamper report setup mode
1	ON/OFF switch. (1: ON, 0: OFF)
60	TT Report interval (60 sec.). The range is 15 to 65000.
3	Detection delay time (Unit : Second) Once tamper status have been changed, it will have the delay time to trigger the TT event to avoid the false alarm. Generally this value has no need to be changed.
*	End sign.

Table37: Tamper Function Setup Format Description

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Set up Vibration Detection Function

The Home Unit has built-in vibration detection function.

Once the Home Unit is moved and detected by vibration sensor, the Home Unit will report periodical vibration event with loud beep sound. This MT event which generates MT reports will end when the home unit stops moving.

There are two types of command, the short one is for toggling the function quickly and the long one is for setting up all the parameter

SMS Setup Format: #「USERNAME」,「Password」,「Function Mode」,「ON/OFF」,「Report Interval」,「Report times」,「Sensitivity」*

SMS Command: #username,0000,vs,1*

#username,0000,vs,1,60,2,4*

COTA Setup format：<@PCswvs>, <ON/OFF>, <Report Interval>, <Report Times>, <Sensitivity>

COTA Command: @PCswvs,1,60,2,4

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
vs	"vs" defines the MT report setup mode
1	ON/OFF switch. (1: ON, 0: OFF)
60	MT Report interval (60 sec.). The range is 15 to 65000.
2	Total report times (2 times)
4	Sensitivity ranges from 1 (most sensitive) to 10(least sensitive). The default value is 4
*	End sign.

Table38: Tamper Function Setup Format Description

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Set up Alarm OFF

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The Home Unit has alarm off function to disable all current alarm reporting and return to normal status as the following:

Rear Side Tamper Switch (TT)

Once the alarm off command is sent, the Home Unit will stop all current alarm reporting (alarm status).

Note that the device still is detecting violation event.

SMS Setup Format: #「USERNAME」,「Password」,「Function Mode」*

SMS Command: #username,0000,alarmoff *

COTA Setup format：<@PCswalarmoff>

COTA Command: @PCswalarmoff

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
alarmoff	"alarmoff" defines the alarm OFF mode
*	End sign.

Table39: Alarm off Function Setup Format Description

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Disable the beep sound when alarm event is triggered

When the alarm events such as MT event are triggered, SJ-205HAB (Home Unit) will generate the beep sound during the event until it has received the "Alarmoff" Command. We can disable this beep sound.

The device still alarms as the event has been triggered but without beep sound While this feature is disabled.

Use this command to toggle this feature.

SMS Setup Format: #「USERNAME」,「Password」,「Function Mode」,<ON/OFF>,<BEEP Interval>*

SMS Command: #username,0000,19,1,3*

#username,0000,19,0*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
19	Function code 19 which toggle this beep sound when alarm event occurs.
1	ON/OFF switch. (1: ON, 0: OFF)
3	The interval of the beep sound. Unit: second.
*	End sign.

Table40: Alarm off Function Setup Format Description

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Set up RF power of Home unit

The ankle bracelet RF transmit power can be set for HAB (Home Unit) curfew range adjustment as well as the Home Unit RF transmit power.

RF transmit power:

There are totally 8 levels of RF transmit power that can be set. The stronger the RF transmit power is, the wider the curfew range would be. We always adjust the level of RF transmit power for both the bracelet.

We recommend keeping the level of RF transmit power of Home Unit as default value (8).

RF channel:

RF channel defines that all types of equipment (HA (bracelet), HAB (Home Unit), XT (Transmitter)) should use the same channel to communicate with each other. In some cases there are a number of sets of equipment in the same place (such as more than 10 sets), we can set them in groups and configure each set to a different channel, and it will reduce the possibility of disturbing each other. Generally, we don't have to change the default channel.

SMS Setup Format: #「USERNAME」,「Password」,「Function Mode」,< RF Power Level >,< RF Channel >*

SMS Command: #username,0000,rfpw,8,10*

SMS Format	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
rfpw	Mode "rfpw" defines RF power level setup mode.
8	RF power level. Ranges from 1(min) to 8(max). (The default is 8)
10	RF channel. Ranges from 1 to 150. (The default is 10)
*	End sign.

Table41: RF Power Setup Format Description

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Set up AES 128 Encryption

The Home Unit has data encryption function to protect the transmitted data. Use this command to toggle this feature.

SMS Setup Format: #「USERNAME」,「Password」,「Function Mode」,<ON/OFF>*

SMS Command: #username,0000,aes,1*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
aes	"aes" defines the AES 128 encryption setup mode
1	ON/OFF switch. (1: ON, 0: OFF)
*	End sign.

Table42: AES 128 Encryption Setup Format Description

	Response
Setup Succeeds	[username] + setup OK. Device data for aes128 protection is switched on. [username] + setup OK. Device data for aes128 protection is switched off.
Incorrect username or password, Incorrect command format	[username] + command error

Table43: AES Setup Response Description

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Set up FOTA (Over-the-Air Technology)

The Home Unit provides OTA upgrade function. Put the upgrade file on the server and update the device through SMS command.

SMS Setup Format: #「USERNAME」,「Password」,「Function Mode」,「File URL」*

SMS Command: #username,0000,fota, http://220.128.123.1:30000/FW_file.txt*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
fota	Mode "fota" defines firmware OTA setup mode.
http://220.128.123.1:30000/FW_file.txt	File URL
*	End sign.

Table44: FOTA Setup Format Description

	Response
Setup Succeeds	[username] + , Device OTA Process Start. [username] + , Download success. Device will start update and reboot.
Setup Fail	[username] + , FOTA setup fail. The checksum is not correct in filename.
Incorrect username or password, Incorrect command format	[username] + command error

Table45: FOTA Setup Response Description

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Set up paired with the bracelet (NB5)

IDPAIR (Pair)

The Home Unit can detect if the bracelets or the extenders are in the RF Range. However, the bracelet's HAID and the extender's ID should be set to the Pair-list (idpair) which is restored in the SJ-205HAB.

We send this "Idpair" command to SJ-205HAB for configuring this setting.

There are 20 sets of HAID that can be set, including bracelet's and the extender's.

SMS Setup Format: #「USERNAME」,「Password」,「Function Mode」,「Bracelet HAID」*

SMS Command: #username,0000,idpair,I0251*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
idpair	Function code for pairing NB5 or SJ203RF with Home Unit
I0251	If its ID is 50, we set the I0051 there. If its ID is 251, we set the I0251 there. Note that there are always four digits.
*	End sign.

Table46: IDPAIR Setup Format Description

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Set up unpaired with the bracelet (NB5)

IDUNPAIR (Unpair)

Use this "Idunpair" command to clear the pairing. For instance, when SJ-205HAB receives this command and there is a pair number(I0251) in the Pair-list, then this pair number will be deleted.

SMS Setup Format: #「USERNAME」,「Password」,「Function Mode」,「Bracelet HAID」*

SMS Command: #username,0000,idunpair,I0251*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
idunpair	Function code for unpairing NB5 or SJ203RF with Home Unit
I0251	If its ID is 50, we set the I0051 there. If its ID is 251, we set the I0251 there. Note that there are always four digits.
*	End sign.

Table47: IDUNPAIR Setup Format Description

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IDRST (Clear all of the idpair at the same time)

Use this "Idrst" command to clear all the pairing number in the list which is restored in Home Unit.

SMS Setup Format: #「USERNAME」,「Password」,「Function Mode」*

SMS Command: #username,0000,idrst*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
idrst	Function code for clear all the pairing number in the list which is restored in Home Unit.
*	End sign.

Table48: IDRST Setup Format Description

RF Command

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The Home Unit can forward RF command to set the bracelet.

SMS Setup Format: #「USERNAME」,「Password」,「Function Mode」,「Device ID」,「Function」,「Value」*

There are three function can use.

- **RT**

Set transmission time frequency. Range is 1 ~ 999 sec Example：

#username,0000,rfcmd,I0251,rt,60*

- **PW**

Set RF power. Range is 1 ~ 8 Example：

#username,0000,rfcmd,I0251,pw,8*

- **AC**

Set alarm off function. Example：

#username,0000,rfcmd,I0251,ac*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
rfcmd	Function Mode
I0251	If its ID is 50, we set the I0051 there. If its ID is 251, we set the I0251 there. Note that there are always four digits.
rt	To bracelet function
60	value
*	End sign.

Table49: RF command Setup Format Description

[illegible]	Response
Setup Succeeds	[username] + setup OK. TA Setting is updated.
Setup Fail	[username] + setup Fail. System Time Out.
Incorrect username or password, Incorrect command format	[username] + command error

Table50: RF Command Setup Response Description

Erase the Backup Data(Clear the flash memory)

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The device reports GPRMC data to the server/cell phone normally via 3G mobile network.

When the 3G is not in service or the 3G signal strength is poor, the GPRMC data will not be able to report to the server. They will be saved to flash memory as backup and back to the server when 3G service is recovered.

User can use this command to erase the logged (historical) GPRMC data stored at the flash memory of the device.

Setup Format: #「USERNAME」,「Password」,「Function Mode」*

Command: #USERNAME,0000,er*

Note: Erasing the flash memory takes about 90 seconds when it comes to NB5, so the reply will be a bit later than that of other SMS commands. In generally, the reply will be received in 2-3 minutes.

SMS/ COTA Command	Description
#	Start sign.
USERNAME	Default ID of the device. If you have changed the user name, please use the updated one.
0000	Default password. If you have changed the password, please use the updated one.
er	Mode "er" defines the Data Erase mode.
*	End sign.

Table51: Erase the Logged Data Format Description

Setup buzzing when receiving RF signal

As this feature is on, the Home Unit will generate a buzz sound while receiving RF signal. We usually use this feature as a purpose of testing so that is easier for testers to make sure whether there is a RF connection or not. The default setting is OFF.

Setup Format: #「USERNAME」,「Password」,「Function Mode」,「ON/OFF」*

Command: #USERNAME,0000,rfdemo,1*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	Default ID of the device. If you have changed the user name, please use the updated one.
0000	Default password. If you have changed the password, please use the updated one.
rfdemo	Function code for toggling this feature
1	ON/OFF switch. (1: ON, 0: OFF)
*	End sign.

Table52: RFdemo Setup Format Description

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Setup RFall feature

As this feature is on, the Home Unit will receive all of the bracelets nearby without pairing in advance. We usually use this feature as a purpose of testing; therefore the default setting is OFF. Generally, we recommend pairing the bracelet while monitoring in order to prevent from receiving unnecessary data. However, we reserve this feature for the necessary conditions.

Setup Format: #「USERNAME」,「Password」,「Function Mode」,「ON/OFF」*

Command: #USERNAME,0000,rfall,0*

SMS/ COTA Command	Description
#	Start sign.
USERNAME	Default ID of the device. If you have changed the user name, please use the updated one.
0000	Default password. If you have changed the password, please use the updated one.
rfall	Function code for toggling this feature
0	ON/OFF switch. (1: ON, 0: OFF)
*	End sign.

Table53: RFall Setup Format Description

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Set up Low Power reminder

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The user can set the SMS/COTA command to alert user if the battery voltage is low or automatically shut down system when the battery voltage reaches a certain threshold .

Setup Format: #「USERNAME」,「Password」,「Function Mode」,「Voltage Value 1」,「Voltage Value 2」*

Command: #USERNAME,0000,LP,3650,50*

SMS/ COTA Command	Description
#	Start sign.
user name	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
Function Mode	Mode LP defines the low power alarm and device shutdown setting.
Voltage Value 1 (V1)	The range is 3500~3800, when the voltage reaches this value, the "LP" event will be sent out.
Voltage Value 2 (V2)	The range is 1~99, when the voltage is lower than V1 - V2, "LP2" event will be sent out and shut down.
*	End sign.

Table54: Low Power Setup Description

	Message Reply
Setup Succeeds	[username] + setup OK. Device low power value setting is updated.

Table55: Low Power Setup Response Description

Appendix 1: Tracker Event List

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This table shows the different events/ messages sent from the device.

There are more than 9 different situations that can trigger the device to respond to positioning commands and tracker status messages as the following.

Note: Any event marked with the letter "**B**" represents data which failed to send through specified route due to priority or mobile network service issue. Check whether the data is sent after network issues are cleared.

Event	Description
AUTO / BAUTO	When the device is set to report to assigned route in a given period of time, it will send a report automatically with an **AUTO** message. When any other event is triggered and the priority is greater than AUTO, the Retrospective Location report will be backed up and reported to assigned route later.
POLL / BPOLL	When sending polling command to poll the report, it triggers the **POLL** event.
LP2	When the equipment is in the lowest power, it triggers the "LP2" event.
TT	When the residential equipment tamper switch is detected, it triggers the "TT" event.
MT	When the residential equipment is moved, it triggers the "MT" event.
PLUG	When the equipment is plugged in charger for more than 10 seconds, it triggers the "PLUG" event.
UNPLUG	When the equipment is unplugged from charger, it triggers the "UNPLUG" event.
CHOK	When the equipment is full charged, it triggers the "CHOK" event.
RFIN	When the equipment is receiving RF signal from bracelet, it triggers the "RFIN" event.

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Appendix 2: Report Data Output Format

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1	2	3	4	5	6	7	8
HAB	357042062420808	$GPRMC	132152	A	2458.973	N	12125.66
HAB	357042062420808	$GPRMC	134914	A	2458.973	N	12125.66

9	10	11	12	13	14	15
E	0	0	300620			A*46
E	0	0	300620			A*4A

16	17	18	19	20	21	22	23
AUTO					N0000	M18	4079mV
RFIN	I0001	19	8	-74	N0006	M19	4087mV

Field	Description	Field	Description
1	Device Type	16	Event
2	GSM IMEI	17	RF Identification number
3	Log header	18	RF Tag Event ; see appendix 3
4	UTC Time ; 11:08:57.000 (GMT+0)	19	RF Tag RF Power Indicator
5	validity - A-ok, V-invalid	20	RF Sensitivity
6	current Latitude	21	Report Counter
7	North / South	22	GSM Sensitivity
8	current Longitude	23	Battery Voltage
9	East / West		
10	Speed in knots		
11	True course		
12	Date : Day, Month, Year		
13	Magnetic variation, degrees (No use)		
14	Magnetic variation direction E/W (No use)		
15	Positioning system mode indicator* checksum		

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Appendix 3: NB5 & RF Within SJ-205HAB Range(RF Tag event)

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1(hexadecimal)				9(hexadecimal)			
0	**0**	**0**	**1**	**1**	**0**	**0**	**1**
Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
UNPLUG (Disconnect from main power)	if charge not completed when unplug	LP2 (Extremely Low Power)	Charging	FBR (Strap Tamper)	ACK bit (Reserved)	Device Tamper	Low Battery

Example:

RF Tag event	Description
00	Normal
01	NB5 Low Battery (Low Power)
02	NB5 Device Tamper
08	NB5 Strap Tamper
80	Charging Complete
C0	Charging Not Complete

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Warranty Regulation

Warranty Time Period and Repair Coverage

SAN JOSE TECHNOLOGY, INC. provides a 1-year (12-month) product warranty for SANAV products purchased directly from SAN JOSE Technology or authorized dealers effective from date of unit purchase. If the equipment is defective or malfunctions during the 1-year warranty period, SAN JOSE Technology will either repair or replace the unit free of charge for the customer. SANAV's repair service will include necessary adjustments, remanufacturing, and replacements. The product will be returned by freight shipping prepaid by the customer within valid warranty period. **Notice that you must contact SAN JOSE Technology, Inc. for a valid RMA (Return Material Authorization) number before returning the goods for repair**.

In order to expedite the SANAV repair process, customers will complete a **detailed symptom description** of each unit for RMA..

Service assistance by phone is also provided during the warranty period.

Limitations

This warranty is limited only to the repair or replacement of defective parts confirmed by SAN JOSE Technology to be a result of faulty materials or workmanship. Instruments mechanically or physically damaged due to the following conditions are beyond our warranty:

1. Neglect, misuse, or abuse, such as incorrect testing, installation, or operation.
2. Placement of unit in extreme environments beyond the limits of the specifications.
3. Subjugation of unit to disassembling, soldering, alteration, unauthorized repair and electrical shock by nature.
4. Any incidental or consequential losses or damages resulting from the purchase.
5. Disaster, accidents, use of any inauthentic substitutive equipment, or loss of any accessory that is not provided by SAN JOSE Technology.

For damages caused under the above conditions, we'll contact you to discuss replacement options.

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FCC Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

Specific Absorption Rate (SAR) information:

This SJ-205HAB meets the government's requirements for exposure to radio waves. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons regardless of age or health. FCC RF Exposure Information and Statement the SAR limit of USA (FCC) is 1.6 W/kg averaged over one gram of tissue. Device types: Tablet has also been tested against this SAR limit. This device was tested for typical body-worn operations with the back of the phone kept 0mm from the body. To maintain compliance with FCC RF exposure requirements, use accessories that maintain an 0mm separation distance between the user's body and the back of the phone. The use of belt clips, holsters and similar accessories should not contain metallic components in its assembly. The use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements, and should be avoided.