HandyPort Usage

Power Consumption Optimization

Application Note

2013. 08. 01
AN-2010-7E

1. Power Consumption

1.1. Power Consumption at each state

The following is the power consumption of HandyPorts.

Table 1 Power Consumptions

Unit: mA

Model	Idle[1]		Connected[2]		Tx/Rx[3]		Adjusted Idle[4]		Power Saving Mode[5]	
	M[6]	S	M	S	M	S	Enable Scan[7]	w/o Inquiry Scan[8]	M	S
HPS-120	87	73	35	51	Up to 110	Up to 110	9 ~ 17	9 ~ 13	24	26
HPS-110	83	64	26	48	Up to 110	Up to 110	9 ~ 16	9 ~ 13	25	26

Remarks: This is an example of the power consumption of HandyPorts. It's just an information purpose only.

[1] Idle: Not connected/Normal
[2] Connected: Connected but no user traffic (idle in connected state)
[3] Tx/Rx: Connected and Tx/Rx user traffic
[4] Adjusted Idle: It was adjusted the search interval to 0x0800 and the search window to 0x0012. It was measured in idle state (not connected state). It's just for the Slave.
[5] Power Saving Mode: It was measured in connected idle state. The Power Saving Mode means that it'll be going into the sleep mode to save power. To enter the Power Saving Mode, the HandyPorts shall be in connected mode and no traffic.
[6] M (Master) / S (Slave): In the setup mode, you will see "Local BD_ADDR" and "Remote BD_ADDR". If Local BD_ADDR is greater than Remote BD_ADDR, it's the master. Otherwise, it's the slave.
[7] Enable Scan: This is a default scan mode. The HandyPorts will scan for inquiry and page in this mode.
[8] W/O Inquiry Scan: Disable Inquiry Scan. Apply to 1:1 connection mode only.

2. How to optimize the Power Consumption

Warning:

If you change the critical parameters improperly, your HandyPorts will not be working. Therefore, you have to understand fully about the critical parameters before changing it.

2.1. Setup for Adjusted Idle

You may adjust the search parameter for the **slave** as follows:

Step 1: Connect an HPS-120 (or HPS-110) to a COM port of PC and execute a HyperTerminal (You should set COM port properly.).

Step 2: Power it on.

Step 3: Push the RST (reset) button to enter the setting mode. And 5-sec. later, hit the enter key. You will see the current settings for the HandyPort.

Step 4: Execute a command "LR" to see the critical parameters.

Step 5: Execute a command "LI0800<CR>" to change the search interval for power saving.

Step 6. Execute a command "LR" to verify the changes.

Step 7: Execute a command "LS0012<CR>" to change the search window for power saving.

Step 8. Execute a command "LR" to verify the changes.

Step 9: Execute a command 'J[1]' and type "D<CR>" to disable Inquiry Scan.

Step 10: Execute a command 'V' to verify changes.

Step 11. Execute a command "X" to apply the changes.

Table 2 Search Parameters

Items	Normal	Power Saving	Command
Search Interval	0400	0800	LIxxxx<CR>
Search Window	0200	0012	LSxxxx<CR>

[1] Enable/Disable Inquiry Scan: JE/D<CR> ('E': enable, 'D': disable, This command is for the slave only.)

2.2. Setup for Authentication

There is a command ‘E’ for changing an authentication mode. You can enable the authentication mode as follows:

Step 1: Connect an HPS-120 (or HPS-110) to a COM port of PC and execute a HyperTerminal (You should set COM port properly.).

Step 2: Power it on.

Step 3: Push the RST (reset) button to enter the setting mode. And 5-sec. later, hit the enter key. You will see the current settings for the HandyPort.

Step 4: Execute a command ‘E[1]’ and type “PIN<CR>” to enable the authentication mode[2] (ex. 1111<CR>).

Step 5: Execute a command ‘V’ to verify changes.

Step 6. Execute a command "X" to apply the changes.

You shall apply the above for the master and slave HandyPort.

2.3. Setup for Power Save Mode

There is a command 'K' for the low power mode. You can setup the low power mode as follows:

Step 1: Connect an HPS-120 (or HPS-110) to a COM port of PC and execute a HyperTerminal (You should set COM port properly.).

Step 2: Power it on.

Step 3: Push the RST (reset) button to enter the setting mode. And 5-sec. later, hit the enter key. You will see the current settings for the HandyPort.

Step 4: Execute a command 'K[3]' and type “E<CR>” to enable Low Power Mode.

Step 5: Execute a command ‘V’ to verify changes.

Step 6. Execute a command "X" to apply the changes.

You can apply the above for the master and slave HandyPort.

[1] Set the authentication mode: “E[PIN]<CR>” (On: Type up to 11 characters and <CR>, Off: Type <CR>only, Default: Off)

[2] A pair of HandyPorts has to have the same PIN code to connect each other. Therefore, you shall maintain the same PIN code for each pair.

[3] Set the Low Power Mode: “KE/D<CR>” (‘E’: Enable, ‘D’: Disable, Default: Disable)

2.4. Command Lists for Power Optimization

The command lists for power optimization is as follows:

Table 3 Command Lists

Items	Command	Remarks
Read Critical Parameters	LR	
Change Search Interval	LIxxxx<CR>	Please refer to Table 2. Please verify changes with a command “LR” after using this command.
Change Search Window	LSxxxx<CR>	Please refer to Table 2. Please verify changes with a command “LR” after using this command.
Change Inquiry Scan Mode	J[E/D]<CR>	‘E’: enable / ‘D’: disable / Default: Enable This command is for the slave only. Please verify changes with a command ‘V’ after using this command.
Change Authentication State	E[PIN]<CR>	Authentication Off: hit <Enter> after typing ‘E’. Authentication On: Type up to 11 characters after typing ‘E’. (Ex. 1111) Paired HandyPorts have to have a same PIN code.
Change Power Save Mode	K[E/D]<CR>	‘E’: Enable / ‘D’: Disable / Default: Disable Please verify changes with a command ‘V’ after using this command.
Read Current Settings	V	
Apply Changes	X	

Warning

If you change the critical parameters improperly, your HandyPorts will not be working. Therefore, you have to understand fully about the critical parameters before changing it.