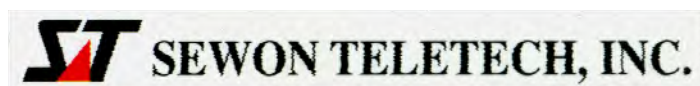


To: AirWalk communications, Co., Ltd.

# **User's Manual**

Model no.	All Slim RU series
-----------	--------------------



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## Revision history

Rev.	Date	Chap.	Changes	Note
1.0	Apr.25, 2008		First draft	Design Document for Slim RU Version 1.2
1.2	Jul.2, 2008	1	1. sector configuration added in 1 2. port setting added in 3.2.1	

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## 1. Introduction

It is monitor and controls all the functions of Slim-RU series based on graphic user interface (GUI) or Man Machine Interface (MMI).

Slim-RU GUI program offers straight forward user interface under Windows 2000 or Windows XP operating system. Therefore it needs only short training course for maintenance technicians.

Also MMI program performs all functions of GUI. But it has extra commands for detail such as test purpose command set.

This manual covers all type of Slim-RU series, e.g. totally independent for the series. All functions described in this document are same. Only operating frequency is different from each model like bellows.

Models	Tx Frequency
STS800-43HM-D	869~ 894MHz
STS1900-43HM-AAD	1930~1950MHz
STS1900-43HM-ABDE	1945~1970MHz
STS1900-43HM-DEFC	1965~1990MHz

*\* NOTE 1: Before run GUI or MMI program, PC or laptop computer should connect to Slim-RU with RJ-45 cable.*

*\* NOTE 2: When the cable connects Master Slim-RU, you can handle all Slim-RUs such as master, slave1, and slave2. But if you connect it to slave 1 or slave 2, you can handle only it.*

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## 2. Installation

To install Slim-RU GUI program, double click “Setup\_SLIM\_RU\_2008.06.20\_V1.4.exe”. Then InstallShield Wizard shows like figure 1. Click “Next” button.

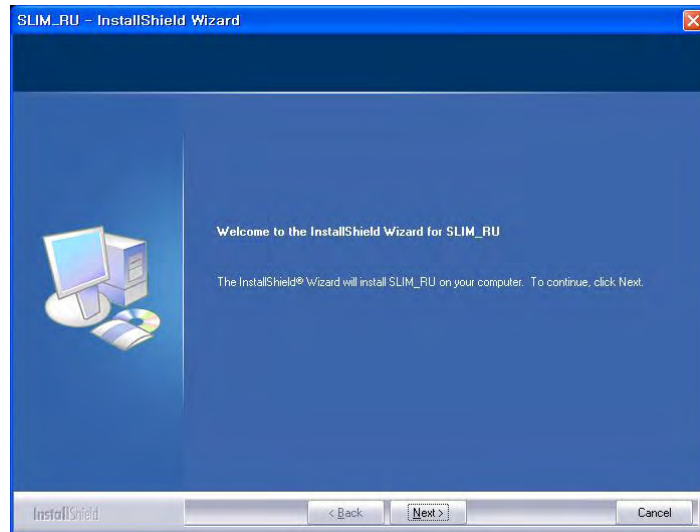


Figure1. Initial page

Click “Install” button like figure 2.

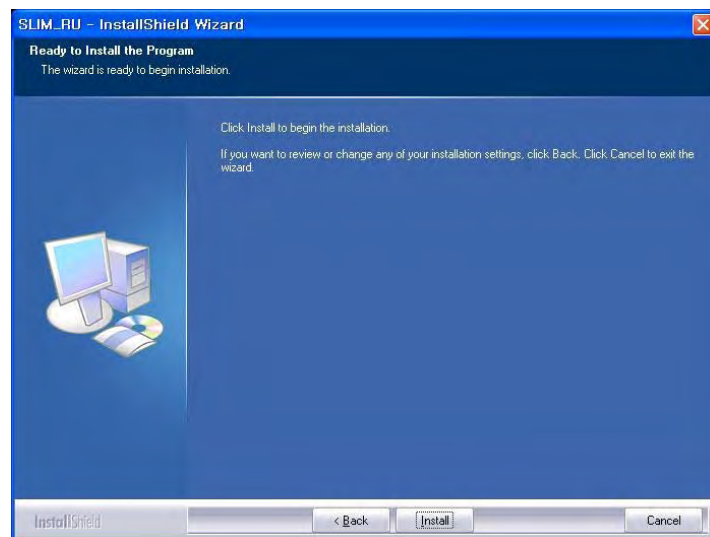


Figure2. Installation

InstallShield Wizard shows the last page when it is done like figure 3. Click “finish” button. Finally, installation is done. Please confirm file on “start-program-AirWalk-Slim-RU”

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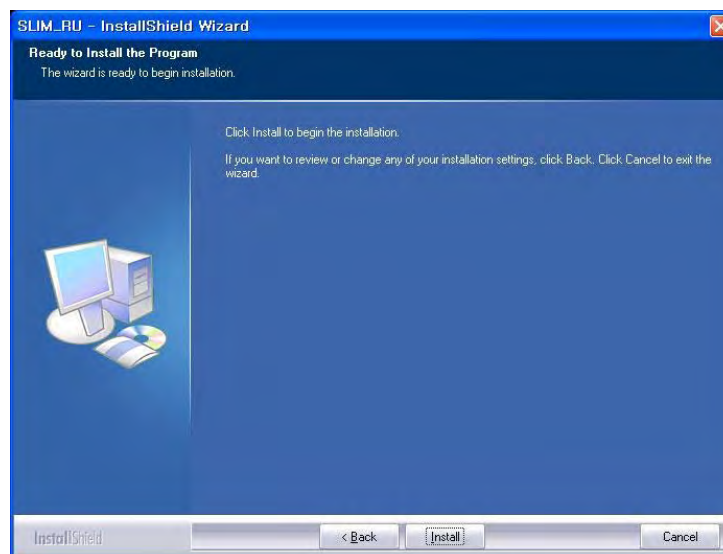


Figure3. Finish

### 3. Program configuration

#### 3.1. GUI

##### 3.1.1. Main window

It offers monitoring, setting, and downloading firmware to Slim-RU. You can select whatever you want to handle.

*\* NOTE : When the cable connects Master Slim-RU, you can handle all Slim-RUs such as master, slave1, and slave2. But if you connect it to slave 1 or slave 2, you can handle only it*



Figure4. Main window

\* Configuration for serial port

Click "CONFIG" button and set proper communication port and 57600-8-N-1 in the dialog box

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### 3.1.2. System window

It offers monitoring and setting in details

The screenshot shows the MASTER System window with the following sections:

- SYSTEM INFO:**
  - F/W Version: 1 | 0 | 0 | 5
  - F/W Build Date: 06/20/2008 12:30:00
  - Install Date: 01/01/1970 00:00:00
  - Repair Count: 0
  - Description: AirWalk Communication:High Power Amplifier unit:CDMA 1FA,HPA,RU:
  - PSU Type: 27V/27V
  - HPA Power: 0.0
  - HPA Temp: -50
  - Equip Temp: 36
  - Sys Version: 3
  - Sys Type: Unknown
  - Sys Capacity: Unknown
  - Sys Freq: Unknown
- HISTORY INFO:**
  - Manufacture Date: 01/01/1970 00:00:00
  - F/W Build Date: 06/20/2008 12:30:00
  - Install Date: 01/01/1970 00:00:00
  - Repair Count: 0
  - Repair Date: -
  - Repair Code: -
- ALARM INFO:**
  - HPA SHUTDOWN
  - HPA ON
  - HPA FAN
  - HPA DC FAIL
  - LNA.1
  - LNA.2
  - HPA OVER TEMP
  - HPA VSWR
  - HPA OVER POWER
  - HPA DELETION
  - LNA DELETION
  - KEEP ALIVE
  - PSU OVER HEAT
  - PSU DC FAIL
  - PSU FAN ALARM
  - PSU AC FAIL
  - RPSU OVER
  - RPSU DC FAIL
  - RPSU FAN ALARM
- DIP S.W STATUS:**
  - # System DIP S.W: ON (10 LEDs)
  - # Controller DIP S.W: ON (8 LEDs)

Figure5. System window

For details, it offers “hidden window” with pressing “ctrl + p”

The screenshot shows the MASTER Hidden window with the following sections:

- SYSTEM INFO:** (Same as Figure 5)
- HISTORY INFO:** (Same as Figure 5)
- ALARM INFO:** (Same as Figure 5)
- CONTROL INFO:**
  - Serial Number: -
  - Manufacture Date: 2007-1-1 00:00:00
  - Install Date: 2007-1-1 00:00:00
  - Repair Date: 2007-1-1 00:00:00
  - Repair Code: A A 0 0
  - Repair Clear: -
  - HPA CONTROL: ON
  - Power Offset: 0.0
  - SYSTEM MODE: MASTER
- DIP S.W STATUS:**
  - # System DIP S.W: ON (10 LEDs)
  - # Controller DIP S.W: ON (8 LEDs)

Figure6. Hidden window

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### 3.1.2.1. System info

Items	Descriptions
F/W Version	Shows Frimware Version
H/W Version	Shows H/W Version
Description	Shows brief system information
PSU TYPE	Shows PSU type and information
HPA Power	Shows HPA power in dBm
HPA Temp	Shows HPA temperature
Equip Temp	Shows Slim-RU temperature
Sys Version	Shows system version
Sys Capacity	Shows Slim-RU capacity
Sys Freq.	Shows sys Frequency

### 3.1.2.2. Alarm info

Items	Descriptions
HPA SHUTDOWN	Shows HPA shutdown status
HPA ON	Shows HPA enable or disable status
HPA FAN	Shows fan operation is normal or not
HPA DC FAIL	Shows the status of DC power to HPA
LNA_1.	Shows LNA_1 status is normal or not
LNA_2	Shows LNA_2 status is normal or not
HPA OVER TEMP	Shows HPA over temperature is normal or not
HPA VSWR	Shows HPA VSWR is normal or not
HPA OVER POWER	Shows HPA output power is over or not
HPA DELETION.	Shows HPA deletion or not
LNA DELETION	Shows LNA deletion or not
KEEP ALIVE	Shows Slim-RU communicates to AW96 normally or not
PSU OVER HEAT	Shows power supply is over heat or not
PSU DC FAIL	Shows power supply's DC is normal or not
PSU FAN FAIL	Shows power supply's fan is normal or not
PSU AC FAIL	Shows power supply's AC is normal or not
RPSU OVER HEAT	Shows RPSU is over heat or not
RPSU DC FAIL.	Shows RPSU DC is normal or not
RPSU FAN FAIL	Shows RPSU's fan is normal or not



### 3.1.2.3. History info

Items	Descriptions
Manufacture Date	Shows the date of RRCU manufacturing
F/W Build Date	Shows the date of firmware building
Install Date	Shows the date of Slim-RU installation
Repair Count	Shows the number of Slim-RU repair
Repair Date	Shows the date of repair date
Repair Code	Shows the date of repair history

### 3.1.2.4. Control info

Items	Descriptions
Serial Number	Sets RRCU serial number
Manufacture Date	Sets RRCU manufacturing date
Install Date	Sets Slim-RU installation date
Repair Date	Sets repair date
Repair Code	Sets repair history
Repair Clear	Clears repair all data
HPA CONTROL	Turns on or off HPA
Power Offset	Adjusts HPA power offset
SYSTEM MODE	Set system mode such as master, slave1, or slave2

### 3.1.2.5. DIP switch status

\* System DIP switch

It sets each type and details for Slim-RU. Each bit explains the status like follows

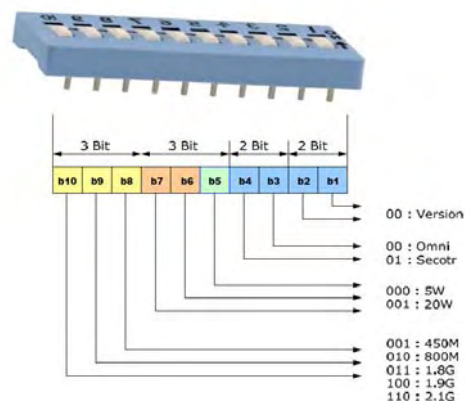


Figure7. Dip switch status

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#### \* Controller DIP switch

It sets details of PSU like table.

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
ON	DC/DC	48V/27V	—	—	—	—	—	—
OFF	AC/DC	27V/27V	—	—	—	—	—	—

### 3.1.2.6. Down load

File open: To select file to be downloaded click it.

Download: It starts download to Slim-RU. The figure shows in the processing with file progress bar

Cancel: It cancel download

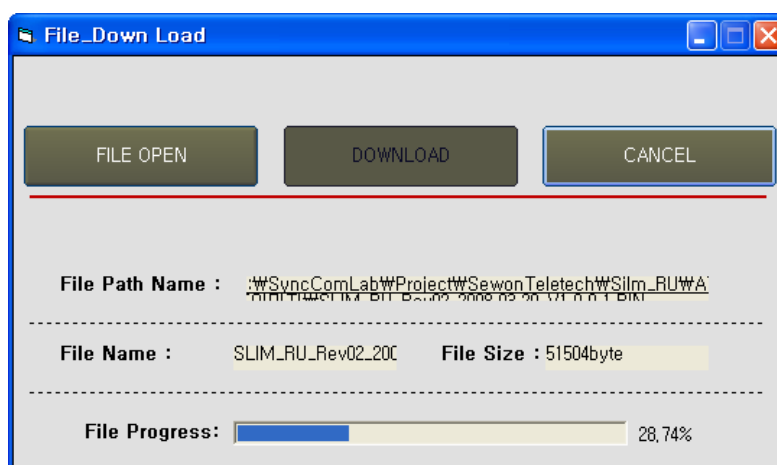


Figure8. Download proceeding

## 3.2. MMI

### 3.2.1. MMI connection

In order to connect to MMI on Slim-RU, Hiper terminal on Windows or any types of serial communication program like Tera Term. (Hereafter Tera Term)

Set proper communication port and 57600-8-N-1 like figure XX on “Serial port setup” dialog box.

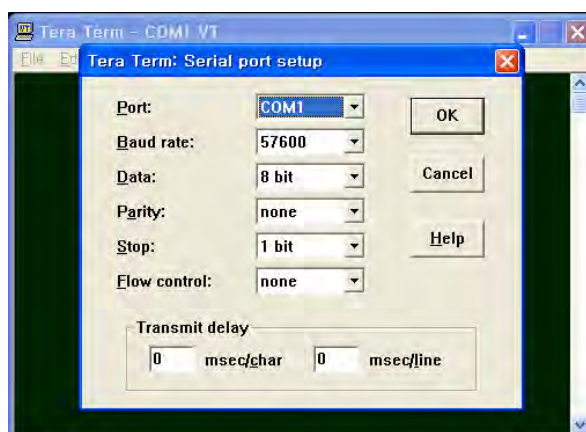
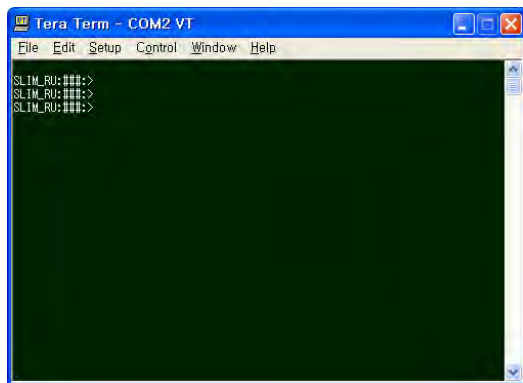


Figure9. Main screen of Tera Term

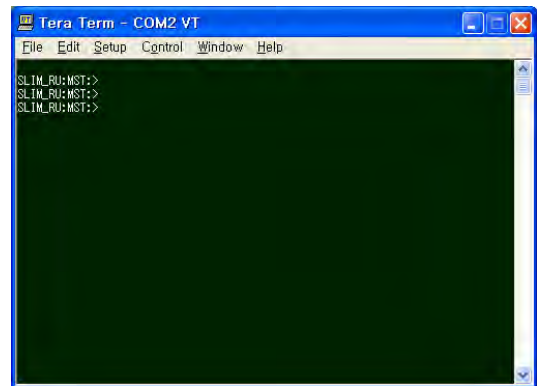
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Then you can see below terminal screen with prompt “SLIM\_RU:MST:>” like figure 10 (b) when you hit “Enter” key several times.

If prompt is “SLIM\_RU:###>” like figure XXX (a), it means no communication with upper system, e.g. AW96 if you connect master of Slim-RU or master if you connect slave 1 or 2 of Slim-RU. Please confirm it.



(a) No connections with upper system



(b) Connected properly

Figure10. Connecting status

### 3.2.2. General commands

\* ver: shows firmware version like below figure

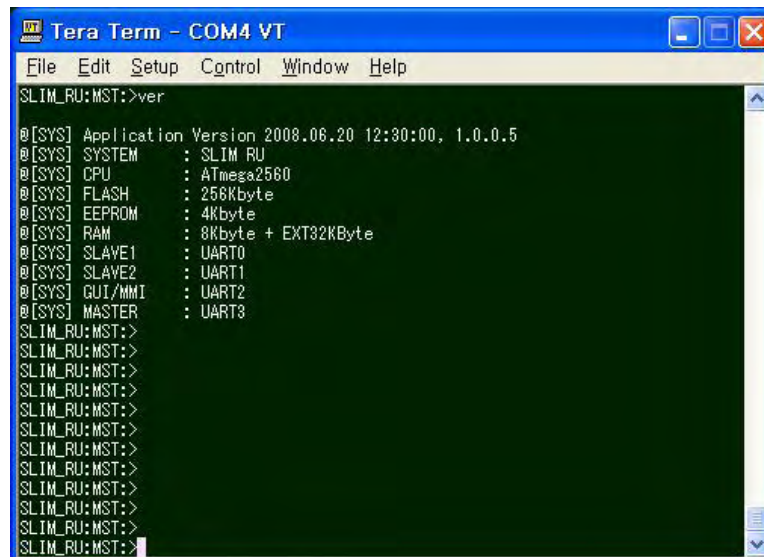


Figure11. command example “ver”

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\* reset: reboots Slim-RU without manual cycling. Reboot process is shown below

```

Tera Term - COM4 VT
File Edit Setup Control Window Help
SLIM_RU:MST:>reset
?
Boot Version 2008.02.12.01.00
System : SLIM RU
CPU : ATmega2560
FLASH : 256Kbyte
EEPROM : 4Kbyte
RAM : 8Kbyte + EXT 32KByte
RESERVED : UART0
RESERVED : UART1
GUI/MMI : UART2
RESERVED : UART3

@[OPR] Press enter to go to download...1,2,3,4,5,6,
@[SYS] BackUp Memory : 330Byte

@[SYS] Application Version 2008.06.20 12:30:00, 1.0.0.5
@[SYS] SYSTEM : SLIM RU
@[SYS] CPU : ATmega2560
@[SYS] FLASH : 256Kbyte
@[SYS] EEPROM : 4Kbyte
@[SYS] RAM : 8Kbyte + EXT32KByte
@[SYS] SLAVE1 : UART0
@[SYS] SLAVE2 : UART1
@[SYS] GUI/MMI : UART2
@[SYS] MASTER : UART3

SLIM_RU:###:>
SLIM_RU:###:>
SLIM_RU:###:>
SLIM_RU:###:>
SLIM_RU:###:>
SLIM_RU:###:>
SLIM_RU:###:>
SLIM_RU:###:>
SLIM_RU:###:>
SLIM_RU:###:>
SLIM_RU:###:>
SLIM_RU:###:>
SLIM_RU:###:>

```

Figure12. command example “reset”

\* status [master/slave1/slave2] : shows the status that you connected briefly without any option like figure 13 (a) or with options [master/slave1/slave2] like (b) to (d). But you cannot see your upper system.

```

Tera Term - COM4 VT
File Edit Setup Control Window Help
SLIM_RU:MST:>status
##### SLIM RU STATUS #####
@[SYSTEM] ----- MASTER
@[PSU TYPE] ----- 27V/27V
@[HPA ENABLE] ----- ON
@[HPA FWD POWER] ----- 0.0
@[HPA TEMP] ----- -50
@[EQUIP TEMP] ----- 37
@[HPA SHUTDOWN] ----- ON
@[HPA FAN] ----- OFF
@[HPA DC FAIL] ----- ON
@[LNA_1] ----- OFF
@[LNA_2] ----- OFF
@[HPA OVER TEMP] ----- ON
@[HPA YSWR] ----- ON
@[HPA OVER POWER] ----- ON
@[HPA DELETION] ----- OFF
@[MASTER KEEP ALIVE] ----- OFF
@[SLAVE1 KEEP ALIVE] ----- OFF
@[SLAVE2 KEEP ALIVE] ----- OFF
@[PSU OVER HEAT] ----- OFF
@[PSU DC FAIL] ----- OFF
@[PSU FAN] ----- OFF
@[PSU AC FAIL] ----- OFF
@[RPSU OVER HEAT] ----- OFF
@[RPSU DC FAIL] ----- OFF
@[RPSU FAN] ----- OFF
SLIM_RU:MST:>

```

(a) status without option

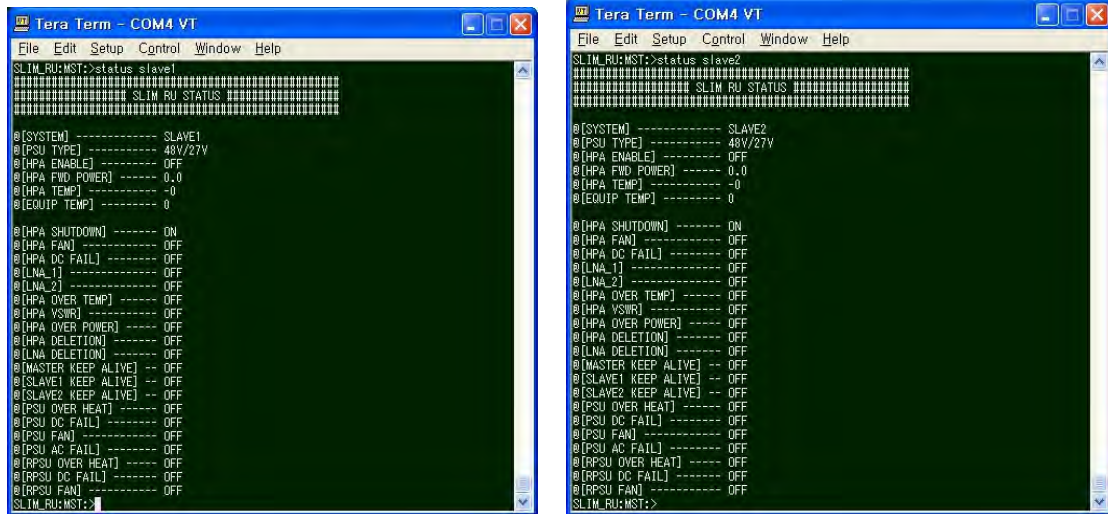
```

Tera Term - COM4 VT
File Edit Setup Control Window Help
SLIM_RU:MST:>status master
##### SLIM RU STATUS #####
@[SYSTEM] ----- MASTER
@[PSU TYPE] ----- 27V/27V
@[HPA ENABLE] ----- ON
@[HPA FWD POWER] ----- 0.0
@[HPA TEMP] ----- -50
@[EQUIP TEMP] ----- 37
@[HPA SHUTDOWN] ----- ON
@[HPA FAN] ----- OFF
@[HPA DC FAIL] ----- ON
@[LNA_1] ----- OFF
@[LNA_2] ----- OFF
@[HPA OVER TEMP] ----- ON
@[HPA YSWR] ----- ON
@[HPA OVER POWER] ----- ON
@[HPA DELETION] ----- OFF
@[LNA DELETION] ----- OFF
@[MASTER KEEP ALIVE] ----- OFF
@[SLAVE1 KEEP ALIVE] ----- OFF
@[SLAVE2 KEEP ALIVE] ----- OFF
@[PSU OVER HEAT] ----- OFF
@[PSU DC FAIL] ----- OFF
@[PSU FAN] ----- OFF
@[PSU AC FAIL] ----- OFF
@[RPSU OVER HEAT] ----- OFF
@[RPSU DC FAIL] ----- OFF
@[RPSU FAN] ----- OFF
SLIM_RU:MST:>

```

(b) status with option “master”

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(c) Status with option “slave1”

(d) Status with option “slave2”

Figure13. command example “status”

Commands	Descriptions
system	shows Slim-RU system ID
hpa enable	shows status of HPA enable or disable
hpa fwd power	shows HPA power in dBm
hpa temp	shows HPA temperature
equip temp	shows Slim-RU temperature
hpa shutdown	shows HPA shutdown status as an “ON or OFF”
hpa fan	shows fan operation is normal or not as an “ON or OFF”
hpa dc fail	shows the status of DC power to HPA as an “ON or OFF”
lna_1	shows LNA_1 status is normal or not as an “ON or OFF”
lna_2	shows LNA_2 status is normal or not as an “ON or OFF”
hpa over_temp	shows HPA over temperature is normal or not as an “ON or OFF”
hpa vswr	shows HPA VSWR is normal or not as an “ON or OFF”
hpa over_power	shows HPA output power is over or not as an “ON or OFF”
hpa_deletion	shows HPA deletion or not as an “ON or OFF”
lna_deletion	shows LNA deletion or not
master keep alive	shows master communicates to AW96 normally or not as an “ON or OFF”
slave1 keep alive	shows master communicates to slave1 normally or not as an “ON or OFF”
slave2 keep alive	shows master communicates to slave2 normally or not as an “ON or OFF”



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psu over heat	shows power supply is over heat or not as an “ON or OFF”
psu dc fail	shows power supply’s DC is normal or not as an “ON or OFF”
psu fan fail	shows power supply’s fan is normal or not as an “ON or OFF”
psu ac fail	shows power supply’s AC is normal or not as an “ON or OFF”
rpsu over heat	shows RPSU is over heat or not as an “ON or OFF”
rpsu dc fail	shows RPSU DC is normal or not as an “ON or OFF”
psu fan fail	shows RPSU’s fan is normal or not as an “ON or OFF”

### 3.2.3. Test commands

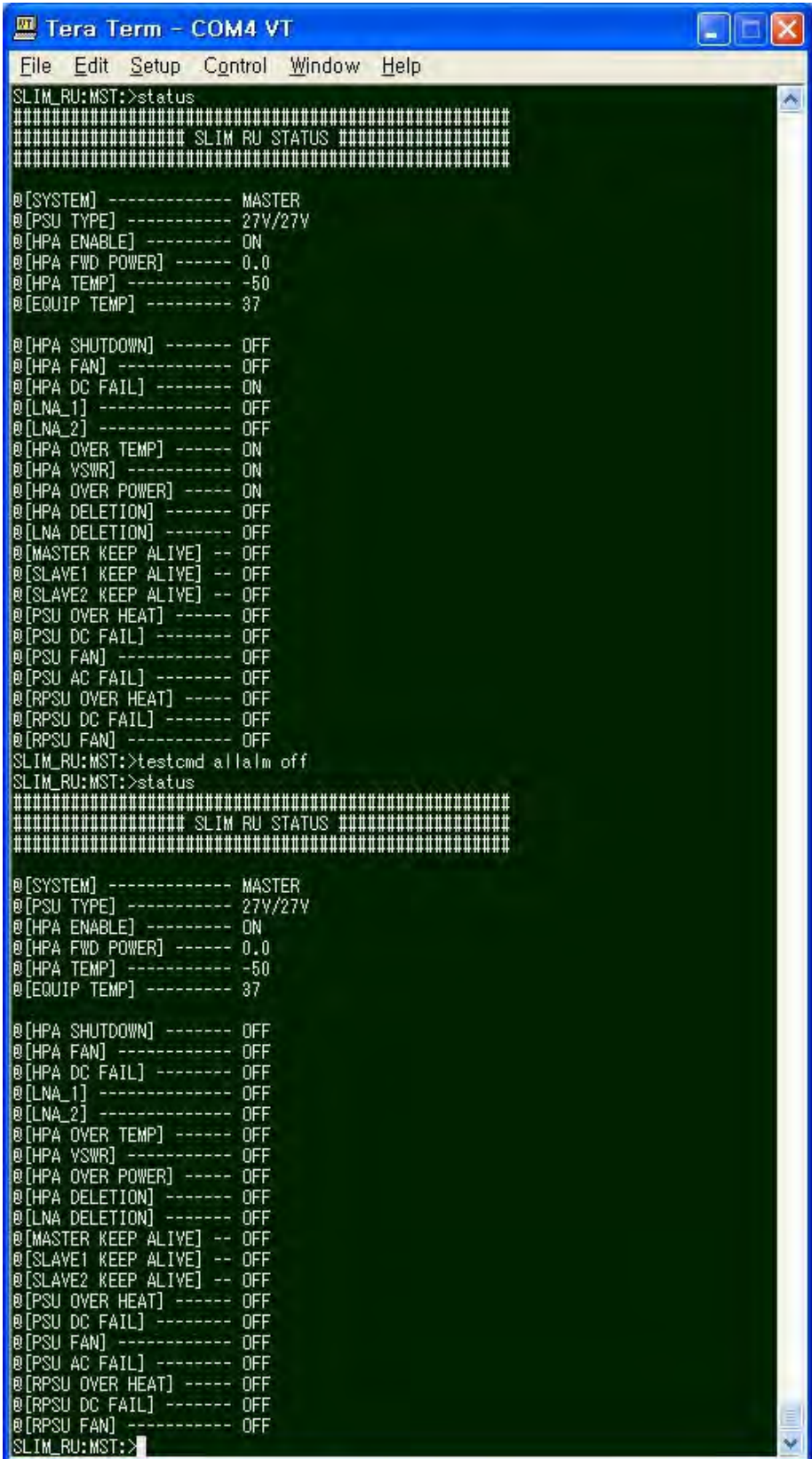
It offers several fake alarms command for test purpose

Commands	Descriptions
testcmd vtralm [on/off]	<p>Report fake alarm to upper system with ignoring present status ex.) compare “HPA shutdown” after “testcmd vtralm on”</p>  <p>The screenshot shows a terminal window titled 'Tera Term - COM4 VT'. The user enters 'testcmd vtralm on' and then 'status'. The output shows various system status indicators, including HPA SHUTDOWN, which is initially 'ON' and then changes to 'OFF' after the command is executed. Other indicators like HPA FAN, HPA DC FAIL, LNA, and various temperatures are also listed.</p>

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testcmd allalm

Report all fake alarm to upper system  
(ex.) compare all alarm items on the screen after “testcmd allalm”



```
Tera Term - COM4 VT
File Edit Setup Control Window Help
SLIM_RU:MST:>status
#####
##### SLIM RU STATUS #####
#####

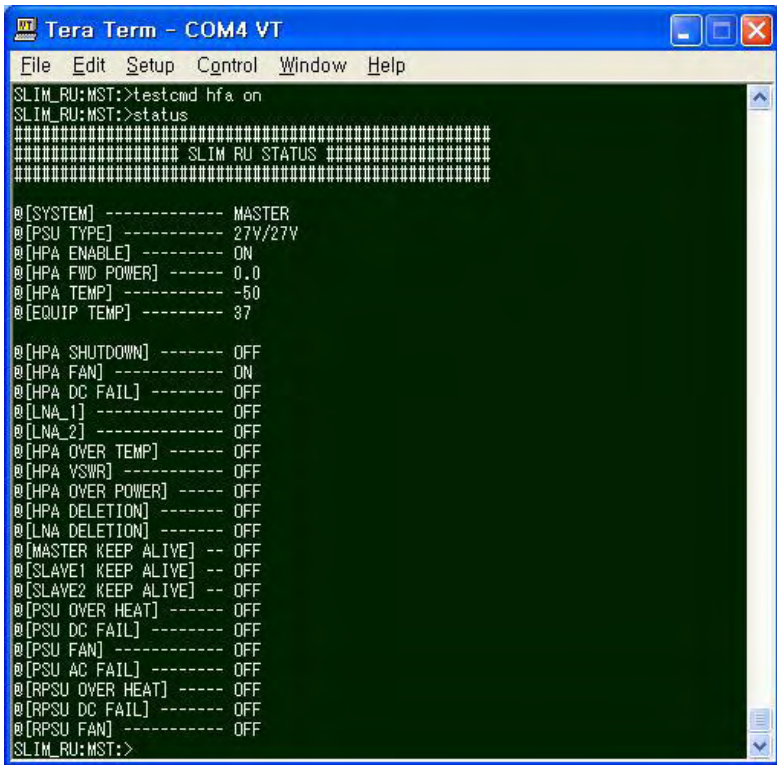
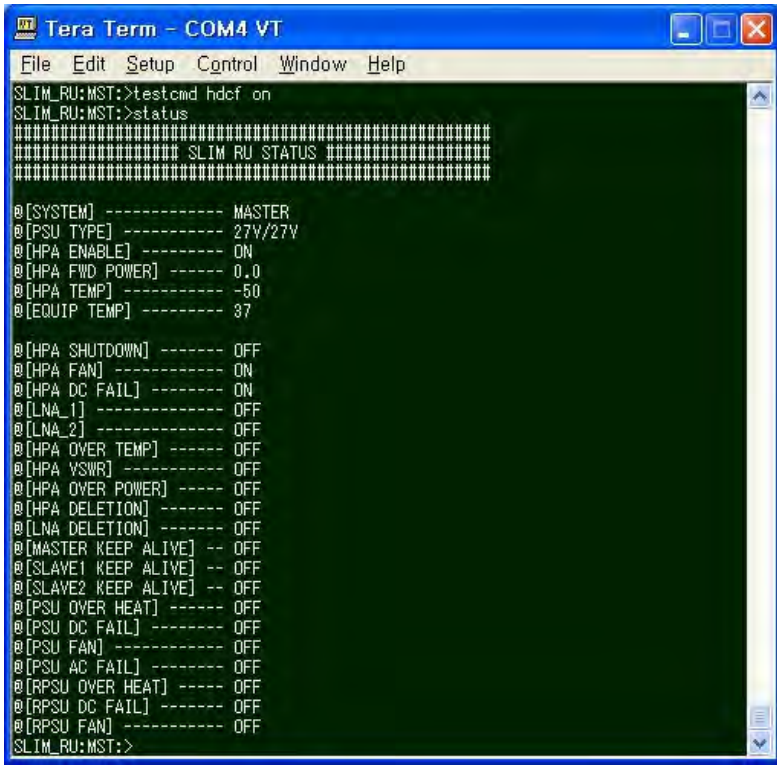
@[SYSTEM] ----- MASTER
@[PSU TYPE] ----- 27V/27V
@[HPA ENABLE] ----- ON
@[HPA FWD POWER] ----- 0.0
@[HPA TEMP] ----- -50
@[EQUIP TEMP] ----- 37

@[HPA SHUTDOWN] ----- OFF
@[HPA FAN] ----- OFF
@[HPA DC FAIL] ----- ON
@[LNA_1] ----- OFF
@[LNA_2] ----- OFF
@[HPA OVER TEMP] ----- ON
@[HPA VSWR] ----- ON
@[HPA OVER POWER] ----- ON
@[HPA DELETION] ----- OFF
@[LNA DELETION] ----- OFF
@[MASTER KEEP ALIVE] -- OFF
@[SLAVE1 KEEP ALIVE] -- OFF
@[SLAVE2 KEEP ALIVE] -- OFF
@[PSU OVER HEAT] ----- OFF
@[PSU DC FAIL] ----- OFF
@[PSU FAN] ----- OFF
@[PSU AC FAIL] ----- OFF
@[RPSU OVER HEAT] ----- OFF
@[RPSU DC FAIL] ----- OFF
@[RPSU FAN] ----- OFF
SLIM_RU:MST:>testcmd allalm off
SLIM_RU:MST:>status
#####
##### SLIM RU STATUS #####
#####

@[SYSTEM] ----- MASTER
@[PSU TYPE] ----- 27V/27V
@[HPA ENABLE] ----- ON
@[HPA FWD POWER] ----- 0.0
@[HPA TEMP] ----- -50
@[EQUIP TEMP] ----- 37

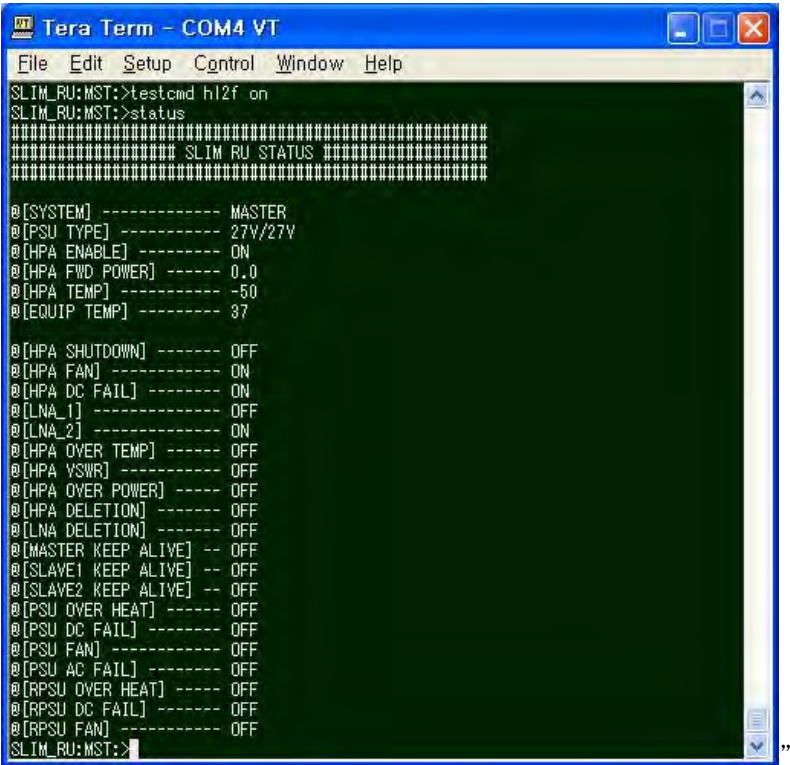
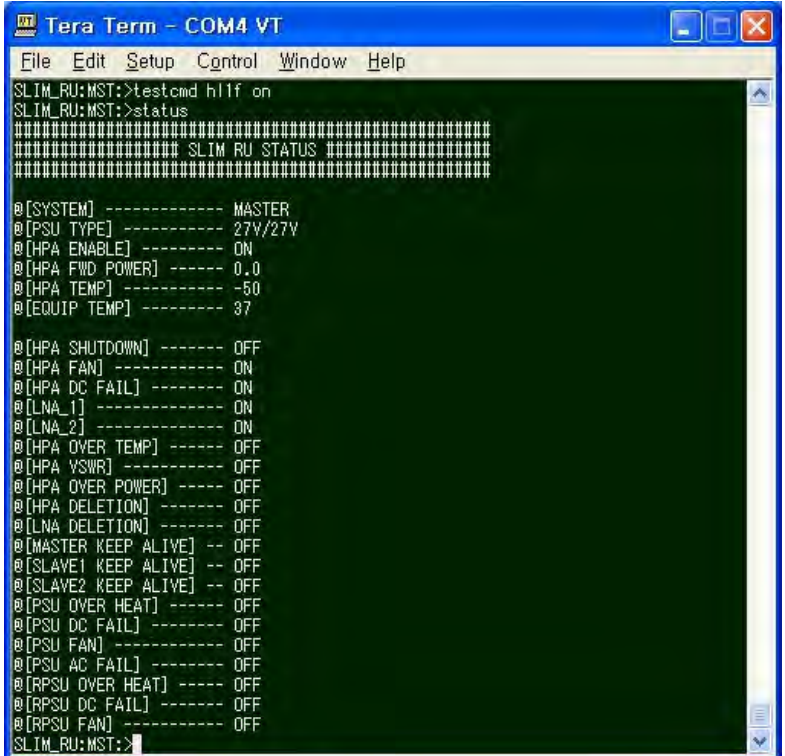
@[HPA SHUTDOWN] ----- OFF
@[HPA FAN] ----- OFF
@[HPA DC FAIL] ----- OFF
@[LNA_1] ----- OFF
@[LNA_2] ----- OFF
@[HPA OVER TEMP] ----- OFF
@[HPA VSWR] ----- OFF
@[HPA OVER POWER] ----- OFF
@[HPA DELETION] ----- OFF
@[LNA DELETION] ----- OFF
@[MASTER KEEP ALIVE] -- OFF
@[SLAVE1 KEEP ALIVE] -- OFF
@[SLAVE2 KEEP ALIVE] -- OFF
@[PSU OVER HEAT] ----- OFF
@[PSU DC FAIL] ----- OFF
@[PSU FAN] ----- OFF
@[PSU AC FAIL] ----- OFF
@[RPSU OVER HEAT] ----- OFF
@[RPSU DC FAIL] ----- OFF
@[RPSU FAN] ----- OFF
SLIM_RU:MST:>
```

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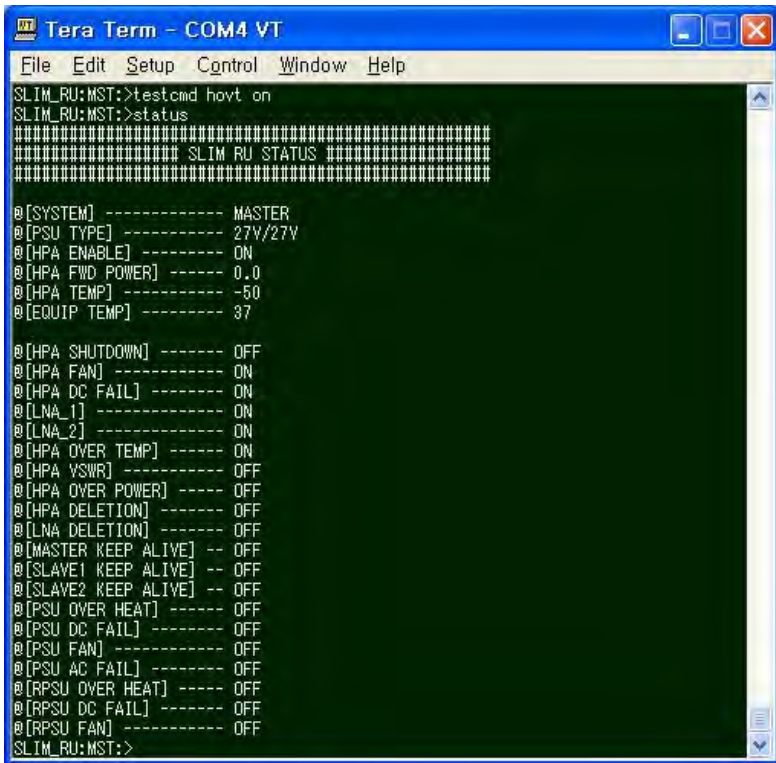
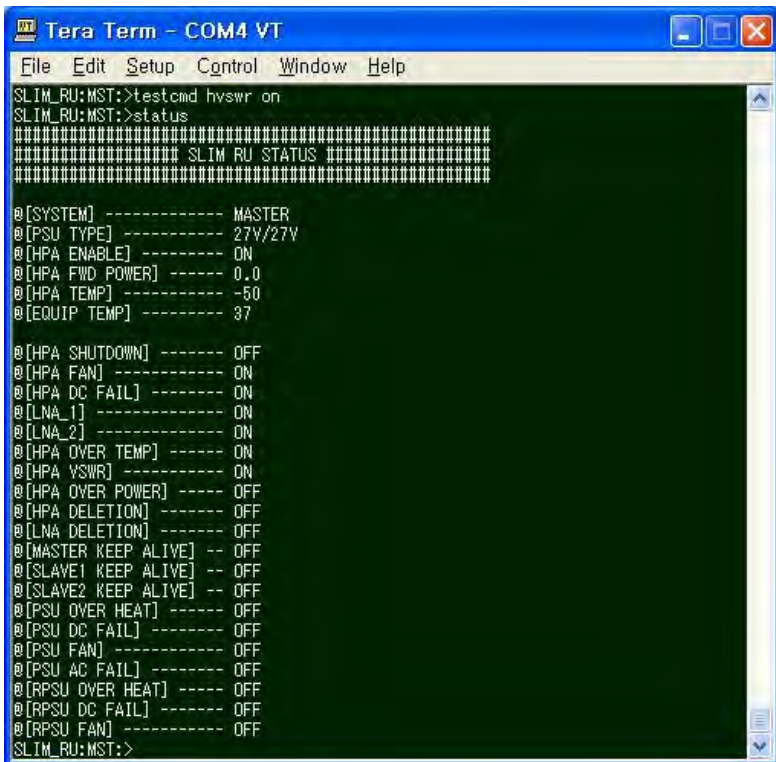
testcmd [on/off]	hfa	Report fake HPA fan alarm to upper system (ex.) confirm “HPA FAN” after “testcmd hfa on”
		 <pre> Tera Term - COM4 VT File Edit Setup Control Window Help SLIM_RU:MST:&gt;testcmd hfa on SLIM_RU:MST:&gt;status ##### SLIM RU STATUS ##### @[SYSTEM] ----- MASTER @[PSU TYPE] ----- 27V/27V @[HPA ENABLE] ----- ON @[HPA FWD POWER] ----- 0.0 @[HPA TEMP] ----- -50 @[EQUIP TEMP] ----- 37  @[HPA SHUTDOWN] ----- OFF @[HPA FAN] ----- ON @[HPA DC FAIL] ----- OFF @[LNA_1] ----- OFF @[LNA_2] ----- OFF @[HPA OVER TEMP] ----- OFF @[HPA VSWR] ----- OFF @[HPA OVER POWER] ----- OFF @[HPA DELETION] ----- OFF @[LNA DELETION] ----- OFF @[MASTER KEEP ALIVE] -- OFF @[SLAVE1 KEEP ALIVE] -- OFF @[SLAVE2 KEEP ALIVE] -- OFF @[PSU OVER HEAT] ----- OFF @[PSU DC FAIL] ----- OFF @[PSU FAN] ----- OFF @[PSU AC FAIL] ----- OFF @[RPSU OVER HEAT] ----- OFF @[RPSU DC FAIL] ----- OFF @[RPSU FAN] ----- OFF SLIM_RU:MST:&gt; </pre>
testcmd hdcf		Report HPA DC fail alarm to upper system (ex.) confirm “DC FAIL” after “testcmd hdcf on”
		 <pre> Tera Term - COM4 VT File Edit Setup Control Window Help SLIM_RU:MST:&gt;testcmd hdcf on SLIM_RU:MST:&gt;status ##### SLIM RU STATUS ##### @[SYSTEM] ----- MASTER @[PSU TYPE] ----- 27V/27V @[HPA ENABLE] ----- ON @[HPA FWD POWER] ----- 0.0 @[HPA TEMP] ----- -50 @[EQUIP TEMP] ----- 37  @[HPA SHUTDOWN] ----- OFF @[HPA FAN] ----- ON @[HPA DC FAIL] ----- ON @[LNA_1] ----- OFF @[LNA_2] ----- OFF @[HPA OVER TEMP] ----- OFF @[HPA VSWR] ----- OFF @[HPA OVER POWER] ----- OFF @[HPA DELETION] ----- OFF @[LNA DELETION] ----- OFF @[MASTER KEEP ALIVE] -- OFF @[SLAVE1 KEEP ALIVE] -- OFF @[SLAVE2 KEEP ALIVE] -- OFF @[PSU OVER HEAT] ----- OFF @[PSU DC FAIL] ----- OFF @[PSU FAN] ----- OFF @[PSU AC FAIL] ----- OFF @[RPSU OVER HEAT] ----- OFF @[RPSU DC FAIL] ----- OFF @[RPSU FAN] ----- OFF SLIM_RU:MST:&gt; </pre>



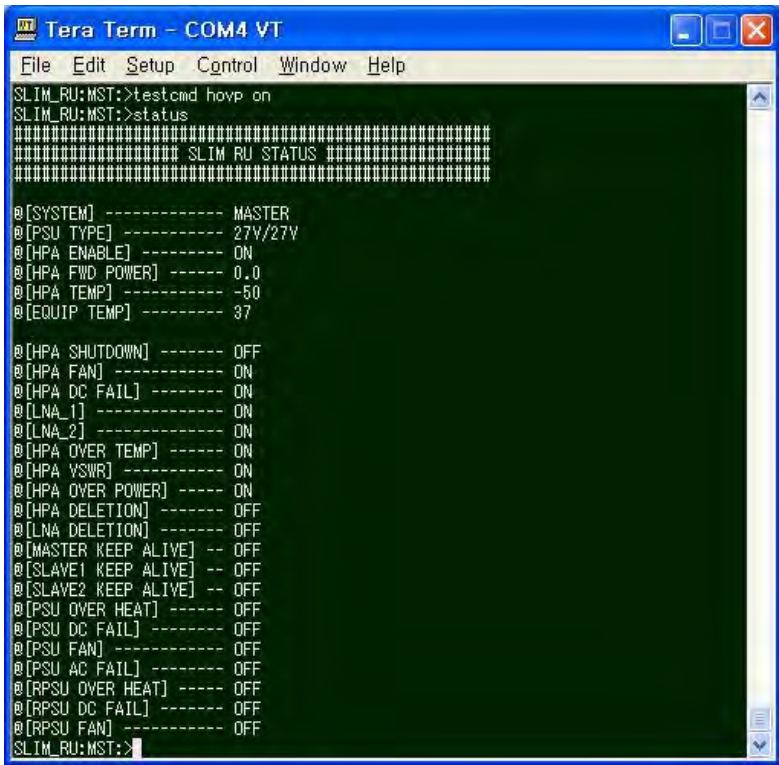
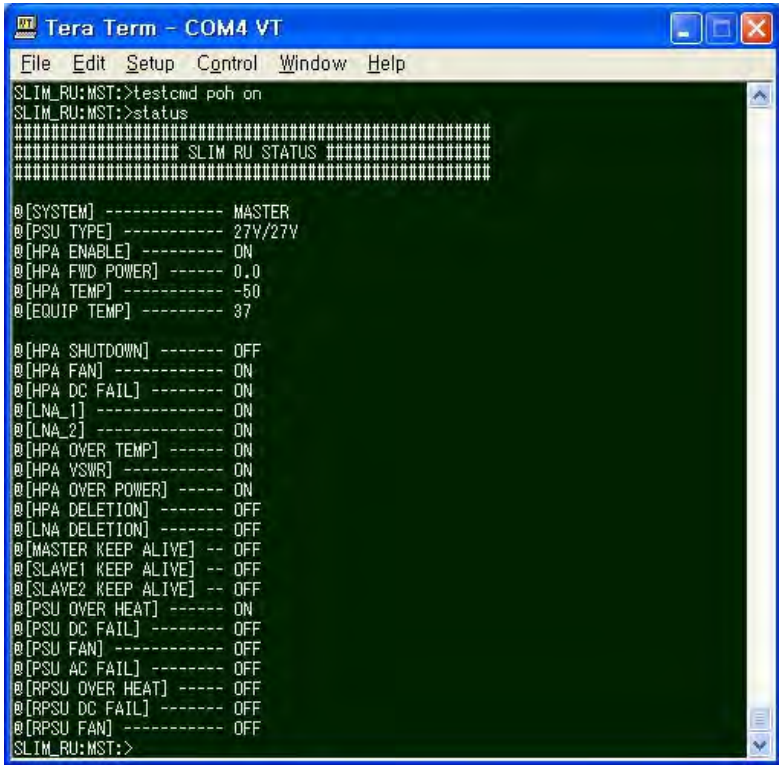
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testcmd [on/off]	HL2F	Report fake LNA_2 alarm to upper system (ex.) confirm “LNA_2” after “HL2F
		 <pre> Tera Term - COM4 VT File Edit Setup Control Window Help SLIM_RU:MST:&gt;testcmd hl2f on SLIM_RU:MST:&gt;status ##### SLIM RU STATUS ##### @[SYSTEM] ----- MASTER @[PSU TYPE] ----- 27V/27V @[HPA ENABLE] ----- ON @[HPA FWD POWER] ----- 0.0 @[HPA TEMP] ----- -50 @[EQUIP TEMP] ----- 37 @[HPA SHUTDOWN] ----- OFF @[HPA FAN] ----- ON @[HPA DC FAIL] ----- ON @[LNA_1] ----- OFF @[LNA_2] ----- ON @[HPA OVER TEMP] ----- OFF @[HPA VSWR] ----- OFF @[HPA OVER POWER] ----- OFF @[HPA DELETION] ----- OFF @[LNA DELETION] ----- OFF @[MASTER KEEP ALIVE] -- OFF @[SLAVE1 KEEP ALIVE] -- OFF @[SLAVE2 KEEP ALIVE] -- OFF @[PSU OVER HEAT] ----- OFF @[PSU DC FAIL] ----- OFF @[PSU FAN] ----- OFF @[PSU AC FAIL] ----- OFF @[RPSU OVER HEAT] ----- OFF @[RPSU DC FAIL] ----- OFF @[RPSU FAN] ----- OFF SLIM_RU:MST:&gt; </pre>
testcmd [on/off]	HL1F	Report fake LNA_1 alarm to upper system (ex.) confirm “LNA_1” after “testcmd HL1F on”
		 <pre> Tera Term - COM4 VT File Edit Setup Control Window Help SLIM_RU:MST:&gt;testcmd hl1f on SLIM_RU:MST:&gt;status ##### SLIM RU STATUS ##### @[SYSTEM] ----- MASTER @[PSU TYPE] ----- 27V/27V @[HPA ENABLE] ----- ON @[HPA FWD POWER] ----- 0.0 @[HPA TEMP] ----- -50 @[EQUIP TEMP] ----- 37 @[HPA SHUTDOWN] ----- OFF @[HPA FAN] ----- ON @[HPA DC FAIL] ----- ON @[LNA_1] ----- ON @[LNA_2] ----- ON @[HPA OVER TEMP] ----- OFF @[HPA VSWR] ----- OFF @[HPA OVER POWER] ----- OFF @[HPA DELETION] ----- OFF @[LNA DELETION] ----- OFF @[MASTER KEEP ALIVE] -- OFF @[SLAVE1 KEEP ALIVE] -- OFF @[SLAVE2 KEEP ALIVE] -- OFF @[PSU OVER HEAT] ----- OFF @[PSU DC FAIL] ----- OFF @[PSU FAN] ----- OFF @[PSU AC FAIL] ----- OFF @[RPSU OVER HEAT] ----- OFF @[RPSU DC FAIL] ----- OFF @[RPSU FAN] ----- OFF SLIM_RU:MST:&gt; </pre>

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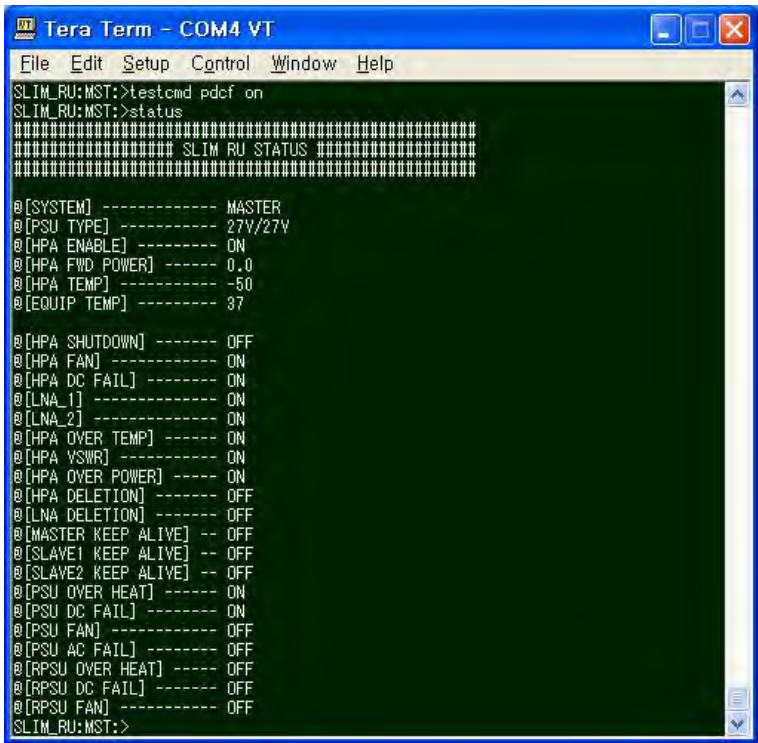
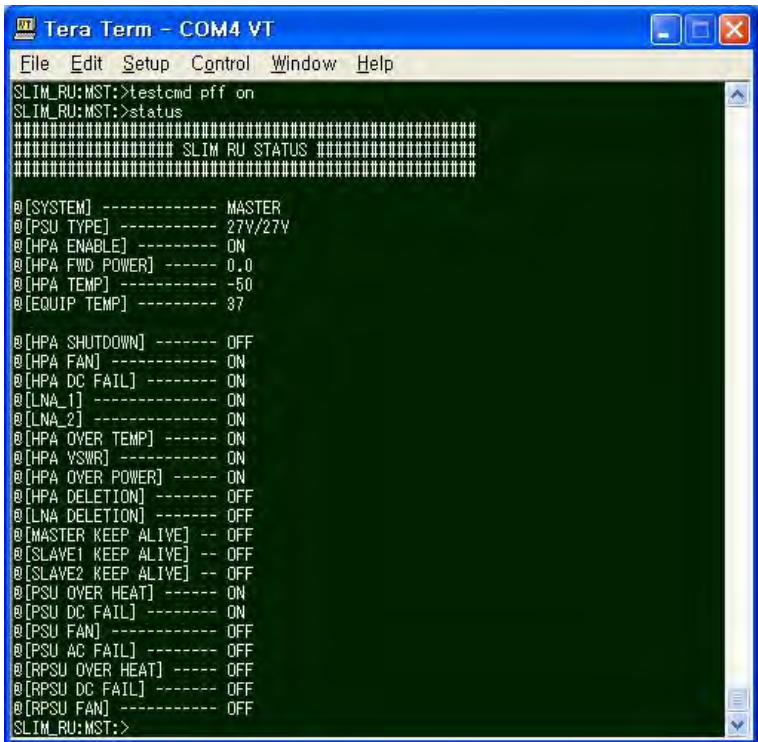
testcmd HOVT [on/off]	<p>Report fake over temperature alarm to upper system (ex.) confirm “Over temp” after “testcmd hovt on”</p> 
testcmd HVSWR [on/off]	<p>Report fake HPA VSWR alarm to upper system (ex.) confirm “VSWR” after “testcmd hvswr on”</p> 

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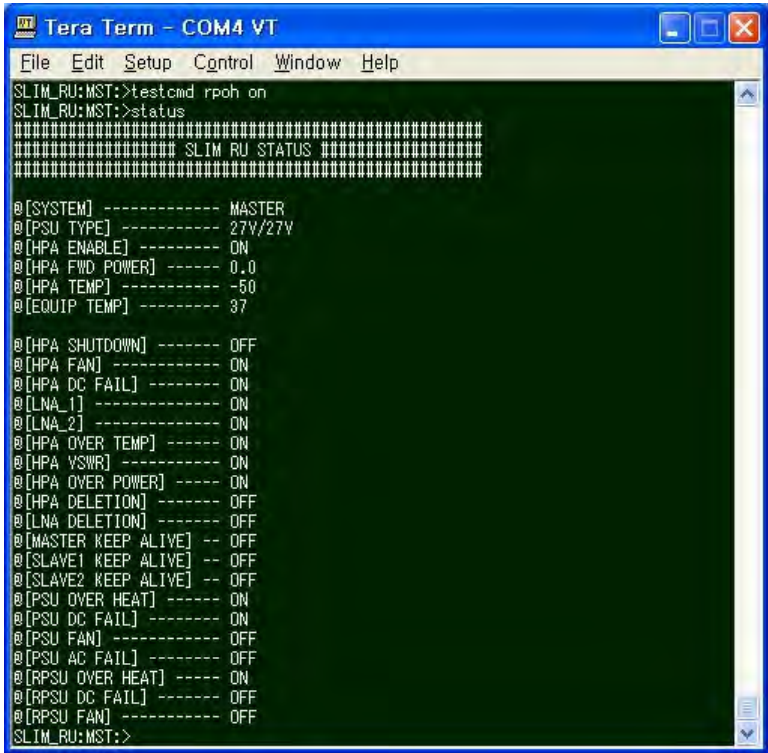
Testcmd [on/off]	HOVP	Report fake HPA over power alarm to upper system (ex.) confirm “Over power” after “testcmd hovp on”
		 <pre> Tera Term - COM4 VT File Edit Setup Control Window Help SLIM_RU:MST:&gt;testcmd hovp on SLIM_RU:MST:&gt;status ===== ##### SLIM RU STATUS ##### ===== @[SYSTEM] ----- MASTER @[PSU TYPE] ----- 27V/27V @[HPA ENABLE] ----- ON @[HPA FWD POWER] ----- 0.0 @[HPA TEMP] ----- -50 @[EQUIP TEMP] ----- 37  @[HPA SHUTDOWN] ----- OFF @[HPA FAN] ----- ON @[HPA DC FAIL] ----- ON @[LNA_1] ----- ON @[LNA_2] ----- ON @[HPA OVER TEMP] ----- ON @[HPA VSWR] ----- ON @[HPA OVER POWER] ----- ON @[HPA DELETION] ----- OFF @[LNA DELETION] ----- OFF @[MASTER KEEP ALIVE] -- OFF @[SLAVE1 KEEP ALIVE] -- OFF @[SLAVE2 KEEP ALIVE] -- OFF @[PSU OVER HEAT] ----- OFF @[PSU DC FAIL] ----- OFF @[PSU FAN] ----- OFF @[PSU AC FAIL] ----- OFF @[RPSU OVER HEAT] ----- OFF @[RPSU DC FAIL] ----- OFF @[RPSU FAN] ----- OFF SLIM_RU:MST:&gt; </pre>
testcmd [on/off]	poh	Report fake over heat alarm to upper system (ex.) confirm “PSU over heat” after “testcmd poh on”
		 <pre> Tera Term - COM4 VT File Edit Setup Control Window Help SLIM_RU:MST:&gt;testcmd poh on SLIM_RU:MST:&gt;status ===== ##### SLIM RU STATUS ##### ===== @[SYSTEM] ----- MASTER @[PSU TYPE] ----- 27V/27V @[HPA ENABLE] ----- ON @[HPA FWD POWER] ----- 0.0 @[HPA TEMP] ----- -50 @[EQUIP TEMP] ----- 37  @[HPA SHUTDOWN] ----- OFF @[HPA FAN] ----- ON @[HPA DC FAIL] ----- ON @[LNA_1] ----- ON @[LNA_2] ----- ON @[HPA OVER TEMP] ----- ON @[HPA VSWR] ----- ON @[HPA OVER POWER] ----- ON @[HPA DELETION] ----- OFF @[LNA DELETION] ----- OFF @[MASTER KEEP ALIVE] -- OFF @[SLAVE1 KEEP ALIVE] -- OFF @[SLAVE2 KEEP ALIVE] -- OFF @[PSU OVER HEAT] ----- ON @[PSU DC FAIL] ----- OFF @[PSU FAN] ----- OFF @[PSU AC FAIL] ----- OFF @[RPSU OVER HEAT] ----- OFF @[RPSU DC FAIL] ----- OFF @[RPSU FAN] ----- OFF SLIM_RU:MST:&gt; </pre>



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testcmd PDCF [on/off]	Report fake PSU DC fail alarm to upper system (ex.) confirm “PSU DC Fail” after “testcmd pdcf on”
	 <pre> Tera Term - COM4 VT File Edit Setup Control Window Help SLIM_RU:MST:&gt;testcmd pdcf on SLIM_RU:MST:&gt;status ##### SLIM RU STATUS ##### @[SYSTEM] ----- MASTER @[PSU TYPE] ----- 27V/27V @[HPA ENABLE] ----- ON @[HPA FWD POWER] ----- 0.0 @[HPA TEMP] ----- -50 @[EQUIP TEMP] ----- 37 @[HPA SHUTDOWN] ----- OFF @[HPA FAN] ----- ON @[HPA DC FAIL] ----- ON @[LNA_1] ----- ON @[LNA_2] ----- ON @[HPA OVER TEMP] ----- ON @[HPA YSWR] ----- ON @[HPA OVER POWER] ----- ON @[HPA DELETION] ----- OFF @[LNA DELETION] ----- OFF @[MASTER KEEP ALIVE] -- OFF @[SLAVE1 KEEP ALIVE] -- OFF @[SLAVE2 KEEP ALIVE] -- OFF @[PSU OVER HEAT] ----- ON @[PSU DC FAIL] ----- ON @[PSU FAN] ----- OFF @[PSU AC FAIL] ----- OFF @[RPSU OVER HEAT] ----- OFF @[RPSU DC FAIL] ----- OFF @[RPSU FAN] ----- OFF SLIM_RU:MST:&gt; </pre>
testcmd PFF [on/off]	Report fake PSU fan fail alarm to upper system (ex.) confirm “PSU fan” after “testcmd pff on”
	 <pre> Tera Term - COM4 VT File Edit Setup Control Window Help SLIM_RU:MST:&gt;testcmd pff on SLIM_RU:MST:&gt;status ##### SLIM RU STATUS ##### @[SYSTEM] ----- MASTER @[PSU TYPE] ----- 27V/27V @[HPA ENABLE] ----- ON @[HPA FWD POWER] ----- 0.0 @[HPA TEMP] ----- -50 @[EQUIP TEMP] ----- 37 @[HPA SHUTDOWN] ----- OFF @[HPA FAN] ----- ON @[HPA DC FAIL] ----- ON @[LNA_1] ----- ON @[LNA_2] ----- ON @[HPA OVER TEMP] ----- ON @[HPA YSWR] ----- ON @[HPA OVER POWER] ----- ON @[HPA DELETION] ----- OFF @[LNA DELETION] ----- OFF @[MASTER KEEP ALIVE] -- OFF @[SLAVE1 KEEP ALIVE] -- OFF @[SLAVE2 KEEP ALIVE] -- OFF @[PSU OVER HEAT] ----- ON @[PSU DC FAIL] ----- ON @[PSU FAN] ----- OFF @[PSU AC FAIL] ----- OFF @[RPSU OVER HEAT] ----- OFF @[RPSU DC FAIL] ----- OFF @[RPSU FAN] ----- OFF SLIM_RU:MST:&gt; </pre>

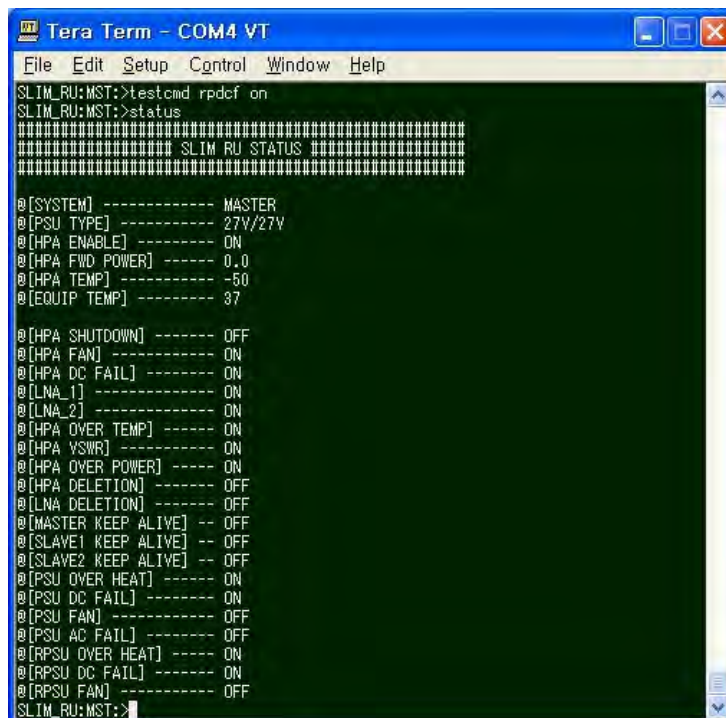
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testcmd [on/off]	PACF	Report fake HPA fan alarm to upper system (ex.) confirm “PSU AC failAN” after “testcmd pacf on”
		 <pre> Tera Term - COM2 VT File Edit Setup Control Window Help SLIM_RU:MST:&gt; SLIM_RU:MST:&gt;testcmd pacf on SLIM_RU:MST:&gt;status ##### SLIM RU STATUS ##### ##### @[SYSTEM] ----- MASTER @[AMP ENABLE] ----- ON @[FWD POWER] ----- 0.0 @[HPA TEMP] ----- -50 @[EQUIP TEMP] ----- 27  @[HPA SHUTDOWN] ----- OFF @[HPA FAN] ----- ON @[DC FAIL] ----- ON @[LNA_1] ----- ON @[LNA_2] ----- ON @[OVER TEMP] ----- ON @[VSWR] ----- ON @[OVER POWER] ----- ON @[HPA DELETION] ----- OFF @[LNA DELETION] ----- OFF @[MASTER KEEP ALIVE] -- OFF @[SLAVE1 KEEP ALIVE] -- OFF @[SLAVE2 KEEP ALIVE] -- OFF @[PSU OVER HEAT] ----- ON @[PSU DC FAIL] ----- ON @[PSU FAN] ----- ON @[PSU AC FAIL] ----- ON SLIM_RU:MST:&gt; </pre>
testcmd [on/off]	RPOH	Report fake RPSU over heat alarm to upper system (ex.) confirm “RPSU over heat” after “testcmd RPOH on”
		 <pre> Tera Term - COM4 VT File Edit Setup Control Window Help SLIM_RU:MST:&gt; SLIM_RU:MST:&gt;testcmd rpoH on SLIM_RU:MST:&gt;status ##### SLIM RU STATUS ##### ##### @[SYSTEM] ----- MASTER @[PSU TYPE] ----- 27V/27V @[HPA ENABLE] ----- ON @[HPA FWD POWER] ----- 0.0 @[HPA TEMP] ----- -50 @[EQUIP TEMP] ----- 37  @[HPA SHUTDOWN] ----- OFF @[HPA FAN] ----- ON @[HPA DC FAIL] ----- ON @[LNA_1] ----- ON @[LNA_2] ----- ON @[HPA OVER TEMP] ----- ON @[HPA VSWR] ----- ON @[HPA OVER POWER] ----- ON @[HPA DELETION] ----- OFF @[LNA DELETION] ----- OFF @[MASTER KEEP ALIVE] -- OFF @[SLAVE1 KEEP ALIVE] -- OFF @[SLAVE2 KEEP ALIVE] -- OFF @[PSU OVER HEAT] ----- ON @[PSU DC FAIL] ----- ON @[PSU FAN] ----- OFF @[PSU AC FAIL] ----- OFF @[RPSU OVER HEAT] ----- ON @[RPSU DC FAIL] ----- OFF @[RPSU FAN] ----- OFF SLIM_RU:MST:&gt; </pre>

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testcmd RPDCF  
[on/off]

Report fake RPSU DC fail alarm to upper system  
(ex.) confirm “RPSU DC fail” after “testcmd rpdcf on”



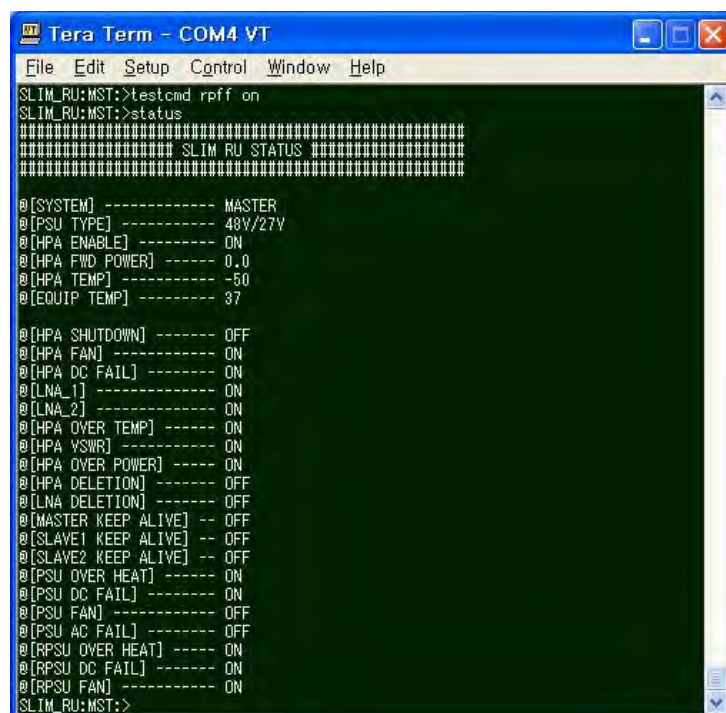
```

Tera Term - COM4 VT
File Edit Setup Control Window Help
SLIM_RU:MST:>testcmd rpdcf on
SLIM_RU:MST:>status
##### SLIM RU STATUS #####
@[SYSTEM] ----- MASTER
@[PSU TYPE] ----- 27V/27V
@[HPA ENABLE] ----- ON
@[HPA FWD POWER] ----- 0.0
@[HPA TEMP] ----- -50
@[EQUIP TEMP] ----- 37
@[HPA SHUTDOWN] ----- OFF
@[HPA FAN] ----- ON
@[HPA DC FAIL] ----- ON
@[LNA_1] ----- ON
@[LNA_2] ----- ON
@[HPA OVER TEMP] ----- ON
@[HPA VSWR] ----- ON
@[HPA OVER POWER] ----- ON
@[HPA DELETION] ----- OFF
@[LNA DELETION] ----- OFF
@[MASTER KEEP ALIVE] -- OFF
@[SLAVE1 KEEP ALIVE] -- OFF
@[SLAVE2 KEEP ALIVE] -- OFF
@[PSU OVER HEAT] ----- ON
@[PSU DC FAIL] ----- ON
@[PSU FAN] ----- OFF
@[PSU AC FAIL] ----- OFF
@[RPSU OVER HEAT] ----- ON
@[RPSU DC FAIL] ----- ON
@[RPSU FAN] ----- OFF
SLIM_RU:MST:

```

testcmd RPFF  
[on/off]

Report fake RPSU fan alarm to upper system  
(ex.) confirm “RPSU fan fail” after “testcmd rpff on”



```

Tera Term - COM4 VT
File Edit Setup Control Window Help
SLIM_RU:MST:>testcmd rpff on
SLIM_RU:MST:>status
##### SLIM RU STATUS #####
@[SYSTEM] ----- MASTER
@[PSU TYPE] ----- 48V/27V
@[HPA ENABLE] ----- ON
@[HPA FWD POWER] ----- 0.0
@[HPA TEMP] ----- -50
@[EQUIP TEMP] ----- 37
@[HPA SHUTDOWN] ----- OFF
@[HPA FAN] ----- ON
@[HPA DC FAIL] ----- ON
@[LNA_1] ----- ON
@[LNA_2] ----- ON
@[HPA OVER TEMP] ----- ON
@[HPA VSWR] ----- ON
@[HPA OVER POWER] ----- ON
@[HPA DELETION] ----- OFF
@[LNA DELETION] ----- OFF
@[MASTER KEEP ALIVE] -- OFF
@[SLAVE1 KEEP ALIVE] -- OFF
@[SLAVE2 KEEP ALIVE] -- OFF
@[PSU OVER HEAT] ----- ON
@[PSU DC FAIL] ----- ON
@[PSU FAN] ----- OFF
@[PSU AC FAIL] ----- OFF
@[RPSU OVER HEAT] ----- ON
@[RPSU DC FAIL] ----- ON
@[RPSU FAN] ----- ON
SLIM_RU:MST:>

```

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### 3.2.4. Emergency recovery mode

#### 3.2.4.1. Entering

You can download firmware when Slim-RU does not operate properly.

Press “enter” within 7 sec. when it boots up. Fig.14 shows the screen when it enters on emergency recovery mode

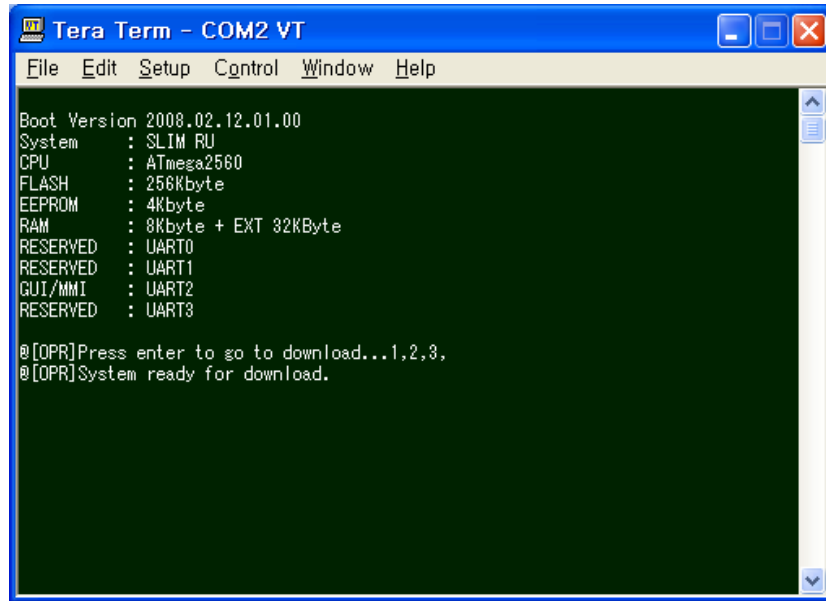


Figure14. Entering emergency recovery mode

\* You can close window or disconnect com port when you want finish. Please confirm emergency recovery mode prompt”@[OPR]System ready for download” before that.

#### 3.2.4.2. GUI connection

Run GUI after disconnecting terminal program, e.g. Tera Term here. It will work although it looks like no communication or improper communication with Slim-RU



Figure15. Downloading process

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### 3.2.4.3. Download

Start download procedure with click “download”. You can download firmware when Slim-RU does not operate. It will automatically reboot when it is done.

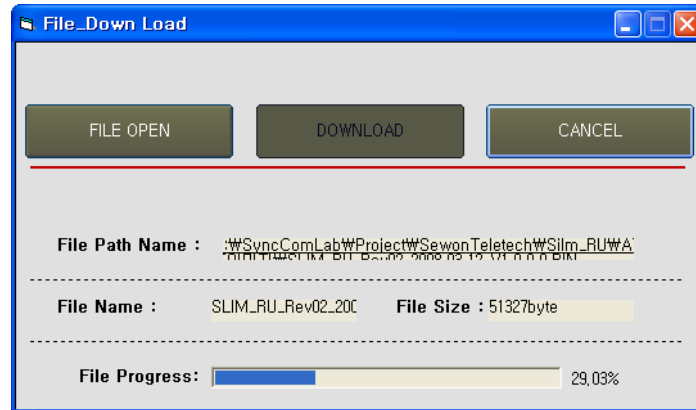


Figure16. Downloading in processing



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**Caution:** The user that 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 A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

#### **RF Power Requirements**

The antenna(s) used for this transmitter must be fixed-mounted on outdoor permanent structures