SF-1P

Final Test Instructions

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# Required Test Equipment

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Generic Name/Description | Manufacturer | Model |
|  | SF-1P - UUT | RAD |  |
|  | SFP for GE | RAD | SFP-9G |
|  | RJ45/DB9 Terminal and Serial cables | RAD | CBL-RJ45/D9/F/6FT x 2 |
|  | GETH Cable | N/A | N/A |
|  | Terminal S/W | N/A | Procomm |
|  | TFTP - S/W | N/A | N/A |
|  | GE/FE Generator | RAD | ETX-204AX x2 |
|  | Serial port LOOP cable | RAD | CBL-RS232-RJ45-RJ45 |
|  | GPS Passive antenna | RAD | T-RPA-PB0-393353-1M-X-005 |

# Preparations for Testing

## U-boot download

## 

1. The process of loading u-boot software and UUT option (according to latest version in ECO) is performed by PC Linux only.
2. Block diagram below (Figure 1) depicts connection of SF-1P to terminal

through serial port and connection of TFTP server to device Ethernet2

## 



Figure 1 : SF-1P Terminal and Ethernet port connection

1. Connect terminal to Serial Port 2 (upper connector) and relocate jumper J21 as shown in figure below:



1. Transfer UART image to the SF-1P, set jumpers J18, J19, J20 should be installed for “UART Mode” and relocated as show in figure below:



4. Use following command:

**cd /home/etx-1p/projects/boot/u-boot**

**sudo ./deploy.sh *2*** Press "Enter" ( 2 is the serial number (USB port)

Waiting for the process to complete until the command:

PCPE>>

PCPE>>***setenv serverip 10.10.10.1*** (PC Linux NIC)

PCPE>>***setenv ipaddr 10.10.10.10*** (UUT)

PCPE>>***setenv gatewayip 10.10.10.1***

PCPE>>***setenv ethact neta@40000***

PCPE>>***ping 10.10.10.1*** (To check the communication to the server)



PCPE>>***bubt flash-image.bin spi tftp***

Waiting for the process to complete until the command:

Done!

PCPE>>***tftpboot $loadaddr boot- scripts/set\_boot\_param\_etx\_general.img***

Press "Enter"

Waiting for the process to complete until the command:

done

Bytes transferred = 3601 (e11 hex)

PCPE>>

PCPE>>***source $loadaddr***

Waiting for the process to complete until the command:

Erasing SPI flash...Writing to SPI flash...done

PCPE>>

PCPE>>***reset***

resetting ...

>

E

Press "Enter"

>x Write the letter X Press "Enter"

Sometimes you need to write the letter X again

To begin deploying the software

>x Write the letter X

Need to see the command ***Hit any key to stop autoboot: 0*** and press “Enter"

PCPE>>

|  |  |
| --- | --- |
| ***NOTE:*** | ***Both files are burned according to an order option***  ***setenv fdt\_name /boot/armada-3720-SF1p.dtb (option 2 LAN)***  ***setenv fdt\_name /boot/armada-3720-SF1p\_superSet.dtb (option 4 LAN )*** |

PCPE>> ***setenv fdt\_name /boot/armada-3720-SF1p.dtb***

***setenv fdt\_name /boot/armada-3720-SF1p\_superSet.dtb***

|  |  |
| --- | --- |
| ***NOTE:*** | ***In PC, need 4x Mac per product*** |

PCPE>>***setenv eth1addr 00:51:82:11:22:60***

PCPE***>>setenv eth2addr 00:51:82:11:22:61***

PCPE***>>setenv eth3addr 00:51:82:11:22:62***

PCPE***>>setenv eth4addr 00:51:82:11:22:63***

PCPE***>>saveenv***

Waiting for the process to complete until the command:

Erasing SPI flash...Writing to SPI flash...done

PCPE>>

* For *option 4 LAN*

Enter command:

PCPE***>>*iic e 52**

PCPE***>>iic c* <EEPROM\_FILE >**

***Example:***

***iic c SF-1PE1DC4U2S2RS.txt***

* ***We are loading a preliminary file for the product***

MODEM\_1\_MANUFACTURER=,MODEM\_2\_MANUFACTURER=,MODEM\_1\_TYPE=,MODEM\_2\_TYPE=,MAC\_ADDRESS=18:18:18:18:18:AC,MAIN\_CARD\_HW\_VERSION=0.4,SUB\_CARD\_1\_HW\_VERSION=,CSL=B,PART\_NUMBER=SF-1P/E1/DC/4U2S/2RS,PCB\_MAIN\_ID=SF-1P.REV0.4I,PCB\_SUB\_CARD\_1\_ID=,PS=12V,SD\_SLOT=YES,SERIAL\_1=RS232,SERIAL\_2=RS232,SERIAL\_1\_CTS\_DTR=YES,SERIAL\_2\_CTS\_DTR=YES,RS485\_1=,RS485\_2=,DRY\_CONTACT=2\_2,NNI\_WAN\_1=FIBER,NNI\_WAN\_2=FIBER,LAN\_3\_4=,LIST\_REF=0.0,END=

* For *option 2 LAN*

Enter command:

PCPE***>>iic c* <EEPROM\_FILE >**

***Example:***

***iic c SF-1PE1ACEX2U2RS.txt***

* ***We are loading a preliminary file for the product***

MODEM\_1\_MANUFACTURER=,MODEM\_2\_MANUFACTURER=,MODEM\_1\_TYPE=,MODEM\_2\_TYPE=,MAC\_ADDRESS=18:18:18:18:18:18,MAIN\_CARD\_HW\_VERSION=0.4,SUB\_CARD\_1\_HW\_VERSION=,CSL=B,PART\_NUMBER=SF-1P/E1/ACEX/2U/2RS,PCB\_MAIN\_ID=SF-1P.REV0.4I,PCB\_SUB\_CARD\_1\_ID=,PS=12V,SD\_SLOT=YES,SERIAL\_1=RS232,SERIAL\_2=RS232,SERIAL\_1\_CTS\_DTR=YES,SERIAL\_2\_CTS\_DTR=YES,RS485\_1=,RS485\_2=,DRY\_CONTACT=2\_2,NNI\_WAN\_1=,NNI\_WAN\_2=,LAN\_3\_4=,LIST\_REF=0.0,END=

PCPE>>

PCPE>>***run bootnet***

Waiting for the process to complete until the command:

[ 373.381241] kvm: exiting hardware virtualization

[ 373.404>

Press "Enter"

>

E

Press "Enter"

>x Write the letter X Press "Enter"

Sometimes you need to write the letter X again

To begin deploying the software

>x Write the letter X Press "Enter"

Waiting for the process to complete until the command:

user>***su***

password>***1234***

SF-1p#

1. Power off SF-1P board.
2. Change Jumpers as follow for normal mode:



1. Power on SF-1P board - plug the power
2. When the boot starts, hit any key to stop autoboot and get to the PCPE U-Boot prompt:

Need to see the command **Hit any key to stop autoboot: 0** and press "Enter"

PCPE>>

# Visual Inspection

1. As specified in the GFTI.
2. Confirm there is a Quectel cellular modem according to the ordering option L1, L2, L3, L4 or HSP.
3. Make sure the mini - coax cables U.FL-to-SMA are attached to corresponding RF connectors on cellular modem:
4. For LTE modems L1, L2, L3 and L4, LTE MAIN and LTE AUX are connected on the back panel.
5. For HSP modem, LTE MAIN is connected on the back panel.
6. For GPS option, GPS is connected on the back panel.
7. Verify J18, J19, J20 assembled

# Basic Operational Tests (BOT)

## Automated BOT

N/A

## Manual BOT

All marked by yellow should be checked

### USB Tree Test (according to option)

1. Power on SF-1P board - plug the power
2. When the boot starts, hit any key to stop autoboot and get to the PCPE U-Boot prompt:

Need to see the command **Hit any key to stop autoboot: 0** and press "Enter"

PCPE>> ***usb start***

starting USB...

USB0: Register 2000104 NbrPorts 2

Starting the controller

USB XHCI 1.00

USB1: USB EHCI 1.00

scanning bus 0 for devices... 2 USB Device(s) found

scanning bus 1 for devices... 1 USB Device(s) found

scanning usb for storage devices... 0 Storage Device(s) found

|  |  |
| --- | --- |
| **option** | **bus 0 devices** |
| LTE and WiFi | 2 |
| LTE only | 2 |
| WiFi only | 1 |
| No LTE no WiFi | 1 |

PCPE>> ***usb tree***

USB device tree:

1 Hub (5 Gb/s, 0mA)

| U-Boot XHCI Host Controller

|

+-2 Vendor specific

1 Hub (480 Mb/s, 0mA)

u-boot EHCI Host Controller

|  |  |
| --- | --- |
| **option** | **2 Vendor specific** |
| LTE and WiFi | 2 Vendor specific |
| LTE only | 2 Vendor specific |
| WiFi only | no “2 Vendor specific” |
| No LTE no WiFi | no “2 Vendor specific” |

PCPE>> pci

Scanning PCI devices on bus 0

BusDevFun VendorId DeviceId Device Class Sub-Class

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

00.00.00 0x1b4b 0x2b42 Network controller 0x00

### SD-Card connectivity test

PCPE>> **mmc dev 0:1**

switch to partitions #0, OK

mmc0 is current device

PCPE>> **mmc info**

Device: sdhci@d0000

Manufacturer ID: 27

OEM: 5048

Name: SD16G

Tran Speed: 50000000

Rd Block Len: 512

SD version 3.0

High Capacity: Yes

Capacity: 14.4 GiB

Bus Width: 4-bit

Erase Group Size: 512 Bytes

### SOC Flash memory device test

* Power on SF-1P board - plug the power
* When the boot starts, hit any key to stop autoboot and get to the PCPE U-Boot prompt:

Need to see the command **Hit any key to stop autoboot: 0** and press “Enter"

PCPE>>

* Use following command:

PCPE>> **mmc dev 1:0**

switch to partitions #0, OK

mmc1(part 0) is current device

PCPE>> **mmc info**

Device: sdhci@d8000

Manufacturer ID: 90

OEM: 14a

Name: H8G4a

Tran Speed: 52000000

Rd Block Len: 512

MMC version 5.1

High Capacity: Yes

Capacity: 7.3 GiB

Bus Width: 8-bit

Erase Group Size: 512 KiB

HC WP Group Size: 8 MiB

User Capacity: 7.3 GiB WRREL

Boot Capacity: 8 MiB ENH

RPMB Capacity: 4 MiB ENH

PCPE>> mmc list

sdhci@d0000: 0 (SD)

sdhci@d8000: 1 (eMMC)

### SOC I2C test

* Power on SF-1P board - plug the power
* When the boot starts, hit any key to stop autoboot and get to the PCPE U-Boot prompt:

Need to see the command **Hit any key to stop autoboot: 0** and press “Enter"

PCPE>>

* Use following command:

PCPE>> **i2c bus**

Bus 0: i2c@11000

PCPE>> **i2c dev 0**

Setting bus to 0

PCPE>> **i2c probe**

Valid chip addresses: 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F 60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F

PCPE>> **i2c mw 0x52 0.2 0xaa 0x1**

PCPE>> **i2c md 0x52 0.2 0x20**

0000: aa

PCPE>> **i2c mw 0x52 0.2 0xbb 0x1**

PCPE>> **i2c md 0x52 0.2 0x20**

0000: bb

### Front panel LEDs test

**SF-1P Front Panel LEDs**



Figure 2: SF-1P Front Panel LEDs

1. Connect a power supply to a test product SF-1P and confirm a green LED PWR is on
2. Disconnect the power supply to the test product SF-1P and confirm the LED PWR is off

LEDs may be tested with PCPE commands:

* Power on SF-1P board - plug the power
* When the boot starts, hit any key to stop autoboot and get to the PCPE U-Boot prompt:

Need to see the command **Hit any key to stop autoboot: 0** and press “Enter"

PCPE>>

|  |  |  |
| --- | --- | --- |
| **Test LED** | **Command** | **LED Status** |
| RUN” on/off | **gpio toggle GPIO112**  **gpio toggle GPIO112** | GREEN  OFF |
| ALM on/off | **gpio toggle GPIO113**  **gpio toggle GPIO113** | RED  OFF |
| AUX Green LED on | **mii write 1 1 0x80fe**  **mii write 1 0 0x9656** | GREEN |
| AUX Green LED off | **mii write 1 1 0x80ee**  **mii write 1 0 0x9656** | OFF |
| AUX Red LED on | **mii write 1 1 0x80fe**  **mii write 1 0 0x9636** | RED |
| AUX Red LED off | **mii write 1 1 0x80ee**  **mii write 1 0 0x9636** | OFF |
| WIFI Led on | **mii write 1 1 0x80fe**  **mii write 1 0 0x9676** | GREEN |
| WIFI Led off | **mii write 1 1 0x80ee**  **mii write 1 0 0x9676** | OFF |
| Led SIM1 on | **mii write 1 1 0x90fe**  **mii write 1 0 0x9656** | GREEN |
| Led SIM1 off | **mii write 1 1 0x90ee**  **mii write 1 0 0x9656** | OFF |
| Led SIM2 on | **mii write 1 1 0x90fe**  **mii write 1 0 0x9636** | GREEN |
| Led SIM2 off | **mii write 1 1 0x90ee**  **mii write 1 0 0x9636** | OFF |
| Sfp port 1 on | **mii write 2 1 0x80ef**  **mii write 2 0 0x96B6** | GREEN |
| Sfp port 1 off | **mii write 2 1 0x80ee**  **mii write 2 0 0x96B6** | OFF |
| Sfp port 2 on | **mii write 2 1 0x80fe**  **mii write 2 0 0x96B6** | GREEN |
| Sfp port 2 off | **mii write 2 1 0x80ee**  **mii write 2 0 0x96B6** | OFF |
| **UTP Port 3 on** | **mii write 1 1 0x80ef**  **mii write 1 0 0x9636** | GREEN |
| **UTP Port 3 off** | **mii write 1 1 0x80ee**  **mii write 1 0 0x9636** | OFF |
| **UTP Port 4 on** | **mii write 1 1 0x80ef**  **mii write 1 0 0x9656** | GREEN |
| **UTP Port 4 off** | **mii write 1 1 0x80ee**  **mii write 1 0 0x9656** | OFF |
| **UTP Port 5 on** | **mii write 1 1 0x80ef**  **mii write 1 0 0x9676** | GREEN |
| **UTP Port 5 off** | **mii write 1 1 0x80ee**  **mii write 1 0 0x9676** | OFF |
| **UTP Port 6 on** | **mii write 1 1 0x80ef**  **mii write 1 0 0x9696** | GREEN |
| **UTP Port 6 off** | **mii write 1 1 0x80ee**  **mii write 1 0 0x9696** | OFF |
| Ser1 TX on | **mii write 1 1 0x90ef**  **mii write 1 0 0x9636** | GREEN |
| Ser1 TX off | **mii write 1 1 0x90ee**  **mii write 1 0 0x9636** | OFF |
| Ser1 RX on | **mii write 1 1 0x90ef**  **mii write 1 0 0x9676** | GREEN |
| Ser1 RX off | **mii write 1 1 0x90ee**  **mii write 1 0 0x9676** | OFF |
| Ser2 TX on | **mii write 1 1 0x90ef**  **mii write 1 0 0x9656** | GREEN |
| Ser2 TX off | **mii write 1 1 0x90ee**  **mii write 1 0 0x9656** | OFF |
| Se2 RX on | **mii write 1 1 0x90ef**  **mii write 1 0 0x9696** | GREEN |
| Se2 RX off |  | OFF |

Table 1: LED TESET IS ALL commands

### Front panel LED LTE test

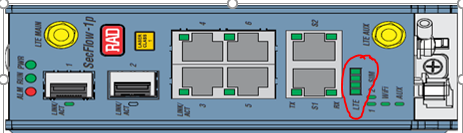


Figure 3: SF-Pront Panel LED LTE

* The LEDs may be tested with LINUX commands:
* Go into SF-1P Linux shell the following:

user>su

password>1234

SF-1p# logon debug

Key code: 8388569129 ( Example)

Challenge code: (10 figure numbers)

Open Deccryptor



* Enter the code (Challenge code: in the field key)
* Push on (change pass), you will get a number (Result)
* Insert the number to UUT

password>\*\*\*\*\*\*\*\*\*\*

SF-1p# debug shell

[root@localhost /]#

see the command:

[root@localhost /]# **stty icrnl**

[root@localhost /]# **cat > lte\_ledtest.sh**

Open file download with notepad



**ctrl+D**

[root@localhost /]# **cat > lte\_ledbar\_test.sh**

Open file download with notepad



**ctrl+D**

[root@localhost /]# **chmod 777 lte\_ledtest.sh**

[root@localhost /]# **chmod 777 lte\_ledbar\_test.sh**

[root@localhost /]# **./lte\_ledbar\_test.sh**

* **Verify that you see that all 4 LEDs are lit in green**
* **Verify that all 4 LEDs are off**

### Programming BRD EEPROM

|  |
| --- |
| Note: get **10 Macs** from RAD using MAC-File-Tool |

* The EEPROM may be tested with LINUX commands:
* Go into SF-1P Linux shell the following:

user>su

password>1234

SF-1p# logon debug

Key code: 8388569129 ( Example)

Challenge code: (10 figure numbers)

Open Decryptor



* Enter the code (Challenge code: in the field key)
* Push on (change pass), you will get a number (Result)
* Insert the number to UUT

password>\*\*\*\*\*\*\*\*\*\*

SF-1p# debug shell

[root@localhost /]#

see the command:

*Example parameters of* EEPROM (according to Option order)

[root@localhost /]#**rm -f /opt/info/current\_platform.json**

[root@localhost /]# **echo "aaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeee**

**MODEM\_1\_MANUFACTURER=QUECTEL,MODEM\_2\_MANUFACTURER=,MODEM\_1\_TYPE=EC25-E,MODEM\_2\_TYPE=,MAC\_ADDRESS=18:06:F5:DC:DB:F9,MAIN\_CARD\_HW\_VERSION=0.4,SUB\_CARD\_1\_HW\_VERSION=,CSL=B,PART\_NUMBER=SF-1P/E1/ACEX/4U2S/2RS/L1/G,PCB\_MAIN\_ID=SF-1P.REV0.4I,PCB\_SUB\_CARD\_1\_ID=,PS=12V,SD\_SLOT=YES,SERIAL\_1=RS232,SERIAL\_2=RS232,SERIAL\_1\_CTS\_DTR=YES,SERIAL\_2\_CTS\_DTR=YES,RS485\_1=,RS485\_2=,DRY\_CONTACT=2\_2,NNI\_WAN\_1=FIBER,NNI\_WAN\_2=FIBER,LAN\_3\_4=YES,LIST\_REF=0.0,END=" > /sys/class/i2c-adapter/i2c-0/0-0052/eeprom**

[root@localhost /]# **systemctl restart eeprom-parser**

[root@localhost /]# **cat /sys/class/i2c-adapter/i2c-0/0-0052/eeprom**

**Ctrl+c ( Depending on what com software is used )**

[root@localhost /]#cat /sys/class/i2c-adapter/i2c-0/0-0052/eeprom

**aaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeeeaaaaaaaaaabbbbbbbbbbccccccccccddddddddddeeeeeeeeee**

**MODEM\_1\_MANUFACTURER=QUECTEL,MODEM\_2\_MANUFACTURER=,MODEM\_1\_TYPE=EC25-E,MODEM\_2\_TYPE=,MAC\_ADDRESS=18:06:F5:DC:DB:F9,MAIN\_CARD\_HW\_VERSION=0.4,SUB\_CARD\_1\_HW\_VERSION=,CSL=B,PART\_NUMBER=SF-1P/E1/ACEX/4U2S/2RS/L1/G,PCB\_MAIN\_ID=SF-1P.REV0.4I,PCB\_SUB\_CARD\_1\_ID=,PS=12V,SD\_SLOT=YES,SERIAL\_1=RS232,SERIAL\_2=RS232,SERIAL\_1\_CTS\_DTR=YES,SERIAL\_2\_CTS\_DTR=YES,RS485\_1=,RS485\_2=,DRY\_CONTACT=2\_2,NNI\_WAN\_1=FIBER,NNI\_WAN\_2=FIBER,LAN\_3\_4=YES,LIST\_REF=0.0,END**

* Verify sure all the parameters we have defined in EEPROM correct Download file

[root@localhost /]# **cat /USERFS/eeprom/MAC\_ADDRESS**

18:06:F5:DC:DB:F9

* Verify MAC\_ADDRESS is the same as the EEPROM file highlighted in red

[root@localhost /]# **cat /USERFS/eeprom/PART\_NUMBER**

SF-1P/E1/ACEX/4U2S/2RS/L1/G

* Verify PART\_NUMBER is the same as the EEPROM file highlighted in red
* If the parameters MAC\_ADDRESS , PART\_NUMBER are the same you will execute the following commands

[root@localhost /]# **sync**

[root@localhost /]# **exit**

SF-1p#

SF-1p# **admin factory-default**

Current configuration will be erased and device will reboot with factory default configuration. Are you sure? [yes/no]**yes**

user>su

password>1234

**Example:**

SF-1p>config>system# show device-information

Description : SF-1p Hw: 1.0/a, Sw: 5.0.1.138

Name : SF-1p

Model : SF-1P\_superset

Location : The location of this device

Contact : Name of contact person

MAC Address : 18-06-F5-DC-DB-F9

Engine Time : 00:00:17

SF-1p>config>system# show summary-inventory

Index Physical Class Name HW Ver SW Ver FW Ver

-----------------------------------------------------------------------------

1001 Chassis SF-1p 0.4 5.0.3.33 SF-1P/E1/ACEX/4U2S/2RS/L1/G/WF

* Verify the model that is identical to the PART\_NUMBER of a EEPROM dedicated in red
* Follow instruction in next doc: according to latest ECO

Or refer to ‎Appendix A

# Environmental Stress Screening (ESS)

1. As specified in the GFTI.

# Automated Final Tests

The following instructions reflect:

|  |  |
| --- | --- |
|  | **Last Updated** |
| Final Test Instructions | 25.05.2022 |
| Automatic Tester | 25.05.2022 |

## Setup

1. Connect the Tester’s cables to the following UUT’s ports: PWR, 2xSFP, 4xUTP, S1 and S2 according to order option.

2. According to order option insert two SIM cards.

3. According to order option connect Cellular, GPS and Wi-Fi antennas.

4. Scan the DUT’s ID barcode to configure the Tester accordingly.

## Running the Test

1. Press the “RUN” button to start running the test and follow the Instructions on the screen. If the test fails, the display will show a red Fail message and the test will be stopped, and you may resume testing from this point.

2. Verify that the test passed.

# Manual Final Tests

## General Function Tests

N/A

## Identification test

1. Type as follows:

user>su

Password:1234

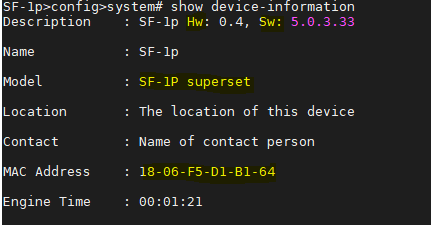
1. Verify the ID of Chassis and UUT’s are according to ECO and EEPROM following commands:

**config system**

config>system# **show device-information**

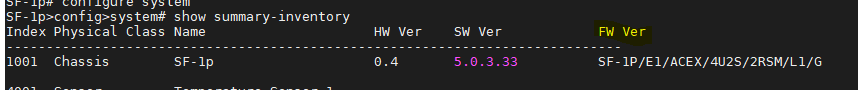
|  |  |
| --- | --- |
| **ID** |  |
| Description | SW: Verify the Versions list (According to the latest ECO by order option)  HW: verify (According to the latest ECO) and PCB according to Option |
| MAC Address | Verify range:  **18:06:F5:**00:00:00 **- 18:06:F5:**FF:FF:FF  or  **00:20:D2:** 00: 00: 00 - **00:20:D2:** FF: FF: FF |
| Model | ***according to an order option***  ***SF-1P (option 2 LAN)***  *or*  ***SF-1P superset (option 4 LAN )*** |
| Name | SF-1p |

*Example: Bold in yellow*



SF-1p>config>system# **show summary-inventory**

|  |  |
| --- | --- |
| FW Ver | according to Option (ORDER) |



1. Connect Ethernet Generator to all WAN and LAN port and verify the ports SFP, RJ45 (According to by order option)

following commands:

**exit all**

**configure port ethernet 1**

config>port>eth(1)#**no shutdown**

config>port>eth(1)#**show status**

Note: Please execute the same commands to the following ports ethernet 2-6

|  |  |  |
| --- | --- | --- |
| ethernet 1 - 2 | Connector Type | SFP In |
| Administrative Status | up |
| Operational Status | up |
| Identification SFP port ethernet 1 - 2 | Manufacturer Part Number | SFP-9G |
| ethernet 3-6 | Connector Type | RJ45 |
| Administrative Status | up |
| Operational Status | up |

* Power off and on SF-1P board - plug the power
* When the boot starts, hit any key to stop autoboot and get to the PCPE U-Boot prompt:

Need to see the command **Hit any key to stop autoboot: 0** and press “Enter"

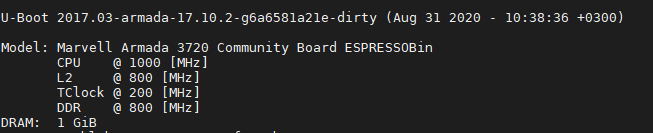
PCPE>>

* Verify the UBOOT (According to the latest ECO by order option)

U-Boot 2017.03.VER1.0.2-armada-17.10.2 (Nov 22 2021)

* Verify the DRAM: 1 GiB (According to order option)

*Example:U-BOOT,DRAM*



PCPE>> **printenv NFS\_VARIANT**

* Verify NFS\_VARIANT=general (According to the latest ECO by order option)

## FD Button check test

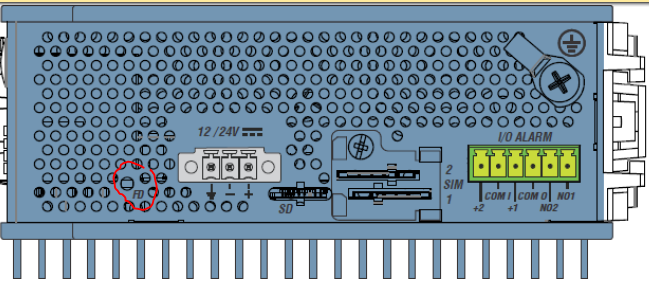


Figure 4 : SF-1P FD BUTTON (factory-default)

* The test for factory-default-config

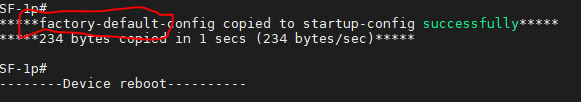
Use following command:

user>su

password>1234

SF-1p#

* Press the button for 15 seconds as shown in Figure 4
* Verify that the device is booting. Verify the message factory-default-config

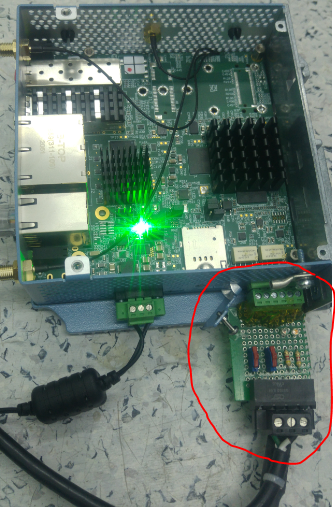


## Dry Contact/Alarm test

* Prepare the product according to the drawing



Connect the connector to Dry Contact as shown



* The Dry Contact may be tested with LINUX commands:

SF-1p# logon debug

Key code: 8388569129 ( Example)

Challenge code: (10 figure numbers)

Open Deccryptor



* Enter the code (Challenge code: in the field key)
* Push on (change pass), you will get a number (Result)
* Insert the number to UUT

password>\*\*\*\*\*\*\*\*\*\*

sf-1p# debug shell

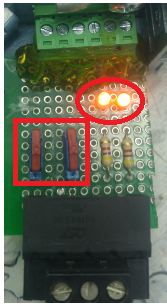
[root@localhost /]#

see the command:

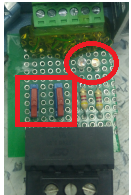
Open file with notepad and download the script to the UUT



Change the 2 switches upwards according to the picture and check 2 LEDs on



Change the 2 switches downwards according to the picture and check 2 LEDs off



## Cellular Modem test (according to option)

1. Connect cellular Antenna to LTE MAIN.
2. Test Cellular SIM1,SIM2, the commands:

user>su

Password:1234

configure

        port

            cellular lte

sim 1

                apn-name "statreal"

exit

mode sim 1

                no shutdown

            exit

        exit

        router 1

            interface 1

                bind cellular lte

                dhcp

                dhcp-client

                    client-id mac

                exit

                no shutdown

            exit all

* check the parameters the modem sim 1

**configure port cellular lte**

config>port>cellular(lte)# **show status**

|  |  |
| --- | --- |
| **Cellular network connection** | **Connected** |
| **IMEI** | **866758044466866 (Example)** |
| **RSSI (dBm)** | **-51 : -75** |
| Administrative Status | Up |
| Operational Status | Up |
| Mode | SIM 1 |
| SIM Status | ready |
| Firmware | Check firmware version |

**Example:** firmware version

|  |  |
| --- | --- |
| **Model** | **Latest FW** |
| EC25-AUF (L3) | EC25AUFAR06A01M4G |
| UC20G (HSP) | UC20GQDR03A17E1G |
| EC-25EFA (L1) | EC25EFAR06A03M4G |
| EC-25AFA (L2) | EC25AFAR05A04M4G |
| EC25AFFD (L4) | EC25AFFDR07A09M4G |

**Example:**



**Ping 8.8.8.8**

**Example ping :**



* Check the no packet loss

Switch to sim2:

**exit all**

**configure port cellular lte**

config>port>cellular(lte)# **shutdown**

**sim 2**

                apn-name "statreal"

**exit**

**mode sim 2**

**no shutdown**

**exit all**

**configure port cellular lte**

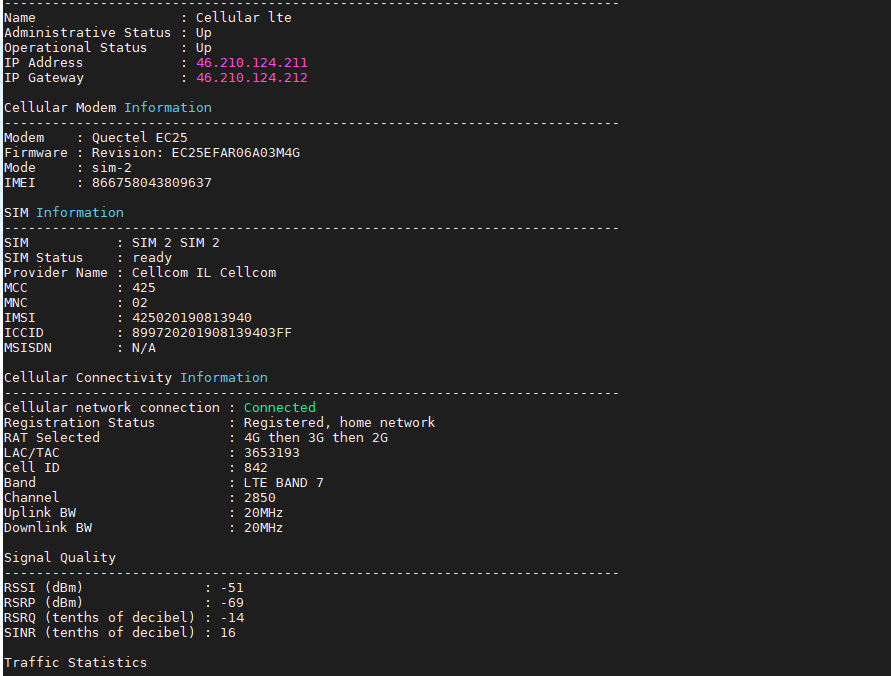
config>port>cellular(lte)# **no shutdown**

* check the parameters the modem sim 2

config>port>cellular(lte)# **show status**

|  |  |
| --- | --- |
| **Cellular network connection** | **Connected** |
| **RSSI (dBm)** | **-51 : -75** |
| Administrative Status | Up |
| Operational Status | Up |
| Mode | SIM 2 |
| SIM Status | ready |

**Example:**



**Ping 8.8.8.8**

**Example ping :**



* Check the no packet loss

## TEST RS232 for only port s1 Option 2RS (according to option)

Note: Only I have two ports S1,S2

1. Set the bellow setup:



Figure 5 : SF-1P Test for RS232 the port s1 only

• The RS232 may be tested with LINUX commands:

• Go into SF-1P Linux shell the following:

user>su

password>1234

SF-1p# logon debug

Key code: 8388569129 ( Example)

Challenge code: (10 figure numbers)

Open Decryptor



• Enter the code (Challenge code: in the field key)

• Push on (change pass), you will get a number (Result)

• Insert the number to UUT

password>\*\*\*\*\*\*\*\*\*\*

SF-1p# debug shell

[root@localhost /]#

see the command:

Please connect a terminal cable to port s1 ,s2 according to the drawing

**echo "1" > /sys/class/gpio/gpio484/value**

**stty -F /dev/ttyMV1 115200**

Send data to Serial Port s2 terminal through port s1

**echo "Data to terminal of Serial Port S1 from port S2 terminal" > /dev/ttyMV1**

**•** Confirm that message appears on terminal of Port s1

In s2 terminal enter command (receive data from Serial Port 1):

**cat /dev/ttyMV1 &**

- Type any message **ABCD** into terminal of Serial Port S1 and press “Enter”

- Confirm that message appears on port S2 terminal window.

|  |  |
| --- | --- |
| NOTE: | RS485 Product not supported |

## GPS test (according to option)

the commands:

config>system>clock>gnss(1)# ***secondary-system glonass galileo beidou***

*config>system>clock>gnss(1)#* ***no shutdown***

*config>system>clock>gnss(1)#* ***show status***

* check the parameters

|  |  |
| --- | --- |
| Administrative Status : Up | up |
| Operational Status | up |
| Tracking Status | GNSS Locked |

## Wi-Fi test (according to option)

|  |
| --- |
| Note:  Place the computer with WiFi adaptor in a distance from UUT |

1. Set the bellow setup:

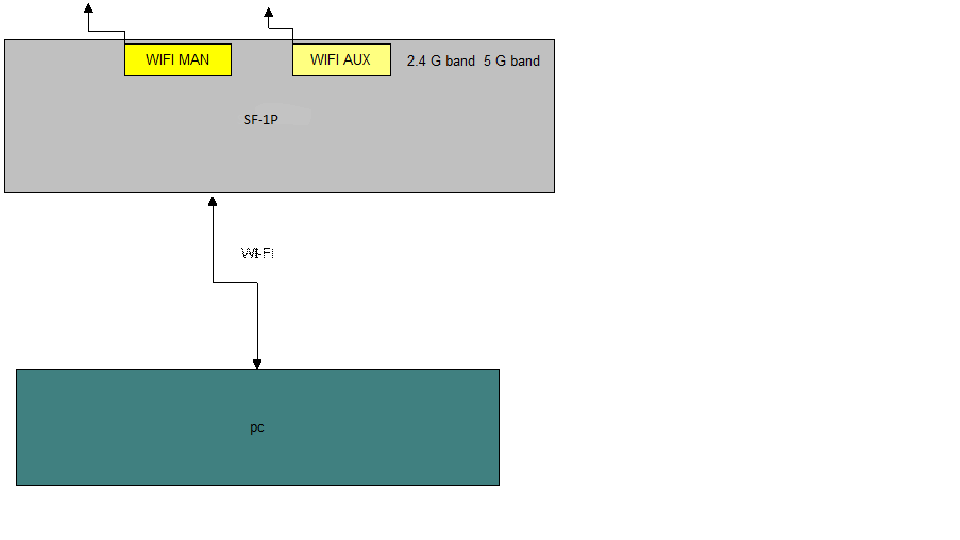


Figure 6 : SF-1P Test WI-FI

### 2.4G Baud rate test

1. Connect antenna for testing WIFI MAIN
2. Configure WiFi module to predefined channel (free) in 2.4G band and transmit over WIFI MAIN antenna with optimal power
3. Perform the bellow commands:

user>su

password>1234

Configure system dhcp-server 1

pool "1"

network 50.50.50.0/24

address-range 50.50.50.50 50.50.50.52

exit

no shutdown

exit

exit

port

wlan 1

radio-mode 802.11g

channel 4

access-point 1

ssid "2G"

password "1234" hash

max-clients 8

no shutdown

exit all

configure

router 1

interface 1

address 50.50.50.1/24

bind wlan 1 access-point 1

dhcp-client

client-id mac

exit

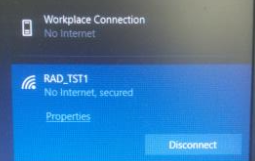
no shutdown

exit all

1. Check the following parameters:
2. Click an icon on your computer in the red bar on the image

Example:





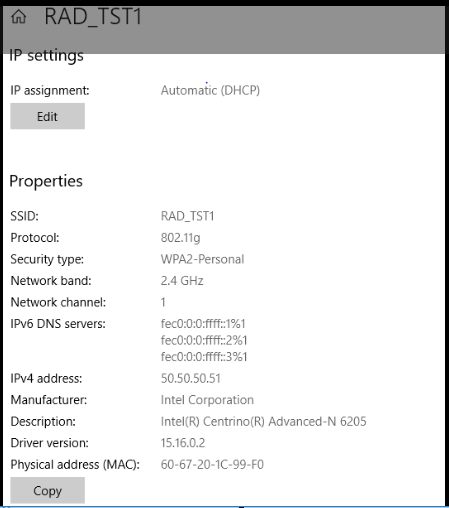
1. Connect with the following

SSID: 2G

1. Click on properties and verify the details:

|  |  |
| --- | --- |
| SSID | 2G |
| PROTOCOL | 802.11g (only 2.4G) |
| IPv4 address | 50.50.50.52 Example |

Example:



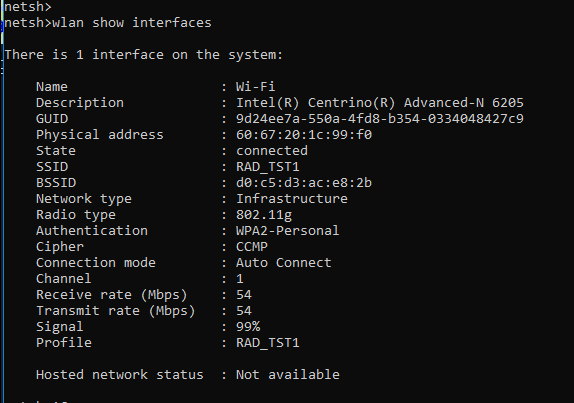
1. Test communication from SF-1P to PC over the established WLAN:

Send ping 50.50.50.52 (Example) and verify reply with no loss

1. Open RUN command screen on PC

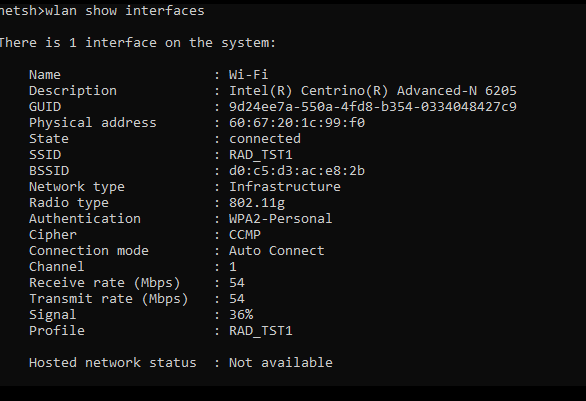
Check the signal percentage with the bellow commands:

Example:



1. Disconnect Antenna WIFI MAIN and check the parameters that percentage of signal will decrease

Example:



### 5G Baud rate test

1. Reset device
2. Connect Antenna for testing to WIFI AUX
3. Configure WiFi module to predefined channel (free) in 5G band and transmit over WIFI AUX antenna with optimal power
4. Perform the bellow commands:

configure system dhcp-server 1

pool "1"

network 50.50.50.0/24

address-range 50.50.50.50 50.50.50.52

exit

no shutdown

exit

exit

port

wlan 2

radio-mode 802.11na

channel 34

access-point 1

ssid "5G"

password "1234" hash

max-clients 8

no shutdown

exit all

configure

router 1

interface 1

address 50.50.50.1/24

bind wlan 2 access-point 1

dhcp-client

client-id mac

exit

no shutdown

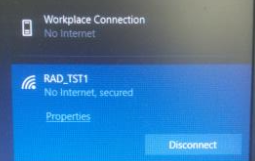
exit all

1. Check the following parameters:

Click an icon on your computer in the red bar on the image

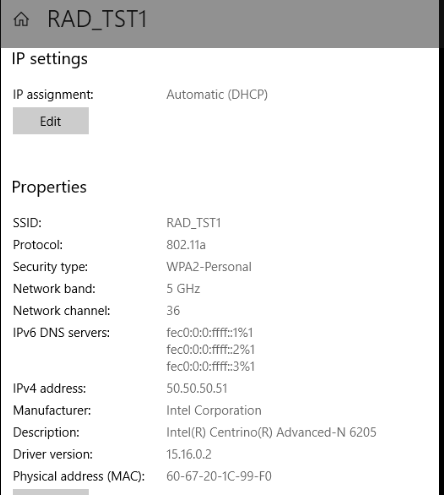
Example:





1. Connect with the following the ssid 5G
2. Click on properties and verify the details:

Example:



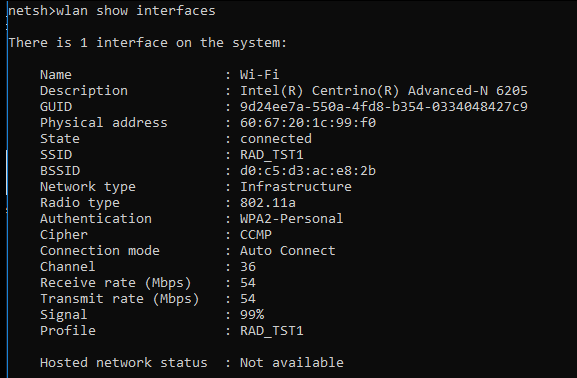
1. Check the following parameters:

|  |  |
| --- | --- |
| SSID | 5G |
| PROTOCOL | 802.11a (only 5G) |
| IPv4 address | 50.50.50.50 Example |

1. Test communication from SF-1P to PC over the established WLAN:
2. Send ping 50.50.50.50 (Example) and verify reply with no loss
3. Open RUN command screen on PC

Check the signal percentage with the bellow commands:

Example:



## Data Test

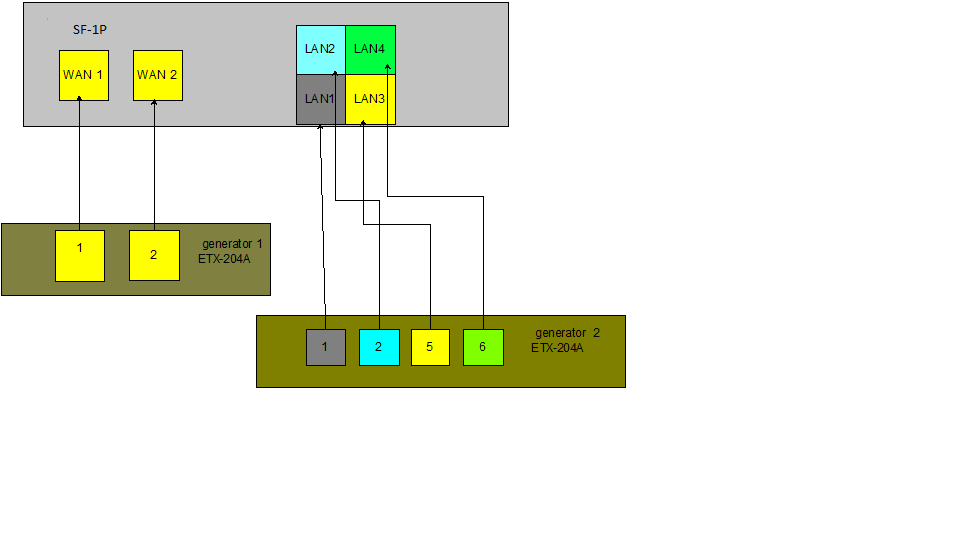


Figure 7: SF-1P Test DATA running 6 ports

* Testing for 6 ports (according to option)

**Note:** port ethernet 1-2 connect with SFP-9G for according to option order only SFP

1. Type as follows:

* The Cellular is tested with LINUX commands:

ETX-1p# ***logon debug***

Key code: 8388569129 ( Example)

Challenge code: (10 figure numbers)

Open Decryptor



* Enter the code (Challenge code: in the field key)
* Push on Change Pass, you will get a number (Result)
* Insert the number to UUT

password>\*\*\*\*\*\*\*\*\*\*

ETX-1p# ***debug shell***

[root@localhost /]#

brctl addbr br0;

brctl addif br0 wan1;

brctl addif br0 wan2;

ifconfig wan1 up;

ifconfig wan2 up;

ifconfig br0 up;

brctl addbr br1;

brctl addif br1 lan0;

brctl addif br1 lan1;

ifconfig lan0 up;

ifconfig lan1 up;

ifconfig br1 up;

brctl addbr br2;

brctl addif br2 lan3;

brctl addif br2 lan2;

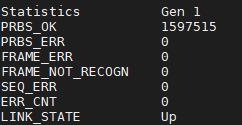
ifconfig lan2 up;

ifconfig lan3 up;

ifconfig br2 up;

1. Configure the ETX-204A Generator 1 and 2 according to ‎Appendix B
2. Verify DATA running without errors for 1 minutes in the ETX-204 generator
3. confirm each generator has a Link-State is Up, “PRBS\_OK” with running numbers and ERR-CNT = 0, PRBS\_ERR=0, FRAME\_ERR=0, SEQ\_ERR=0.  
    follows:

Example:



* Testing for 2 ports (according to option)



Figure 7 : SF-1P Test DATA running 2 ports

1. Type as follows:

brctl addbr br1;

brctl addif br1 lan0;

brctl addif br1 lan1;

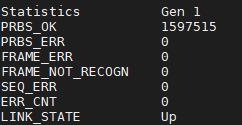
ifconfig lan0 up;

ifconfig lan1 up;

ifconfig br1 up;

1. Configure the ETX-204A Generator 1 only according to ‎Appendix B
2. Verify DATA running without errors for 1 minutes in the ETX-204 generator
3. confirm each generator has a Link-State is Up, “PRBS\_OK” with running numbers and ERR-CNT = 0, PRBS\_ERR=0, FRAME\_ERR=0, SEQ\_ERR=0.  
    follows:

Example:



## Test SSH connection ETH port 4 or 6 test (according to option)

At the end of all the tests we find the device with the default IP 169.254.1.1/16

Connect terminal to Serial Port 2 (upper connector) and relocate jumper J21 as shown in figure below:

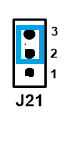
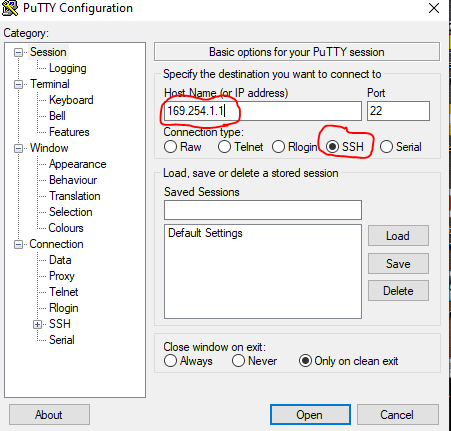




Figure 8 : SF-1P Test SSH

* Open SSH session with SF-1P device Ethernet Port4 or port 6 for Order option.
* Open Putty for ssh session and connect to SF-1P device (see below). Perform authorization into opened ssh session window:

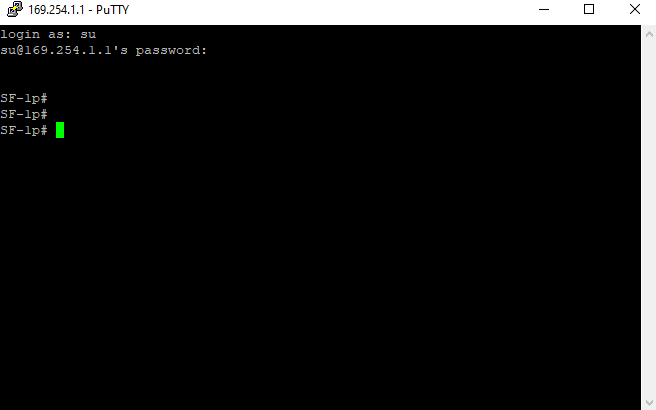


* Click the open button
* Type as follows:

user>su

Password:1234

SF-1p#



# Preparations for Shipment

1. As specified in the GFTI.
2. SFP ports covers.
3. Verify correct voltage indications
4. Make sure the screw-nut of the coax connectors (ANT & MI/DV) is closed.
5. Confirm the existence of the bar code label.

# Factory Setting

1. As specified in the GFTI.
2. Return to factory setting:
3. admin factory-default
4. Current configuration will be erased and device will reboot with factory default configuration. Are you sure? [yes/no]\_yes

# Safety Test

As specified in the GFTI.

1. EEPROM Parameters

EEPROM parameters (By order option)

Example of EEPROM identifying string

MODEM\_1\_MANUFACTURER=QUECTEL,MODEM\_2\_MANUFACTURER=QUECTEL,MODEM\_1\_TYPE=EC25­E,MODEM\_2\_TYPE=EC25­E,MAC\_ADDRESS=00:a7:b1:46:4e:a3,MAIN\_CARD\_HW\_VERSION=0.0,SUB\_CARD\_1\_HW\_VERSION=0.1,CSL=A,PART\_NUMBER=ETX­1P/ACEX/1SFP1UTP/4UTP,PCB\_MAIN\_ID=SF­1V/MAIN/0.1I,PCB\_SUB\_CARD\_1\_ID=SF­1V/PS/0.1I,PS=WDC­12V,SD\_SLOT=YES,SERIAL\_1=RS232,SERIAL\_2=RS232,SERIAL\_1\_CTS\_DTR=YES,SERIAL\_2\_CTS\_DTR=YES,RS485\_1=,RS485\_2=,DRY\_CONTACT=YES,NNI\_PORT\_4=COPPER,NNI\_PORT\_5=COPPER,PORT\_2\_3=YES,LIST\_REF=0.0,END=

|  |  |  |
| --- | --- | --- |
| Name | Possible Values | Comments |
| MODEM\_1\_MANUFACTURER | QUECTEL | Null (no value) if modem is not present |
| MODEM\_2\_MANUFACTURER | QUECTEL  AZUREWAVE  RAK | Null (no value) if modem is not present  WiFi, WF ordering option  LoRa ordering option |
| MODEM\_1\_TYPE | UC20  EC25-E  EC25-A  EC25-AU  EC25-AFFD | Null (no value) if modem is not present  QUECTEL, HSP ordering option  QUECTEL, L1 ordering option  QUECTEL, L2 ordering option  QUECTEL, L3 ordering option  QUECTEL, L4 ordering option |
| MODEM\_2\_TYPE | UC20  EC25-E  EC25-A  EC25-AU  EC25-AFFD  AW-CM276MA  EU433  EU868  US915  US915  AS923  EU868 | Null (no value) if modem is not present  QUECTEL, HSP ordering option  QUECTEL, L1 ordering option  QUECTEL, L2 ordering option  QUECTEL, L3 ordering option  QUECTEL, L4 ordering option  AZUREWAVE, WF ordering option  RAK, LoRa ordering option LR1  RAK, LoRa ordering option LR2  RAK, LoRa ordering option LR3  RAK, LoRa ordering option LR4  RAK, LoRa ordering option LR6  RAK, LoRa ordering option LR7 |
| MAC\_ADDRESS | AA:BB:CC:DD:EE:FF | 10 consecutive addresses, starting with the specified |
| MAIN\_CARD\_HW\_VERSION |  | Filled by Badas |
| SUB\_CARD\_1\_HW\_VERSION |  | Null (no value) if there is no sub card |
| CSL |  | Filled by Badas |
| PART\_NUMBER |  | Refer to [1P Ordering Options] for possible values |
| PCB\_MAIN\_ID |  | Filled by Badas |
| PCB\_SUB\_CARD\_1\_ID |  | Null (no value) if there is no sub card |
| PS | 12V  WDC-12V | 12V DC  Wide range 10V to 30V DC |
| SD\_SLOT | YES | Null (no value) if SD card slot is not present |
| SERIAL\_1 | RS232  RS485 | Null (no value) if serial is not present  Non isolated RS232  Non isolated RS485 |
| SERIAL\_2 | RS232 | Null (no value) if serial is not present  Non isolated RS232 |
| SERIAL\_1\_CTS\_DTR | YES | Null (no value) if serial is not present  CTS and DTR are supported |
| SERIAL\_2\_CTS\_DTR | YES | Null (no value) if serial is not present  CTS and DTR are supported |
| RS485\_1 | 2W | Null (no value) if RS485 is not supported Half duplex RS485 |
| RS485\_2 |  | Null (no value); RS485 is not supported on serial-2 |
| DRY\_CONTACT\_IN\_OUT | 2\_2  3\_1 | Null (no value) if there are no dry contacts  2 in and 2 out dry contacts  3 in and 1 out dry contacts |
| NNI\_WAN\_1 | FIBER | Null (no value) if there is no interface  NNI port 1 is SFP |
| NNI\_WAN\_2 | COPPER  FIBER | Null (no value) if there is no interface  NNI port 2 is RJ-45  NNI port 2 is SFP |
| LAN\_3\_4 | YES | Null (no value) if ports are not present  MNI ports 3-4 are available |
| END |  | Null (no value), denoting end of string |

1. ETX-204 generator configuration
2. Configure the parameters as shown below in yellow

Main Menu

3. Generator >

>3 Press "Enter"

ETX-204A-AC

\*Generator

1. Generator number > (All)

2. Generator mode (GE)

3. Packet type > (MAC)

8. Packet rate[1 - 1500000] ... (115000)

14. Save

>14 Press "Enter"

ETX-204A-AC

\*Generator

1. Generator number > (All)

>1 Press "Enter"

ETX-204A-AC

Generator>Generator number (Generator 1)

1. Generator 1

2. Generator 2

3. Generator 3

4. Generator 4

5. All

>1

ETX-204A-AC

\*Generator

1. Generator number > (Generator 1)

14. Save

>14 Press "Enter"

ETX-204A-AC

Generator

1. Generator number > (Generator 1)

11. Base SA/DA >

>11 Press "Enter"

ETX-204A-AC

Generator>Base SA/DA

1. Generator num > (Generator 1-2)

|  |  |  |
| --- | --- | --- |
| Generator | Base DA | Base SA |
| Generator1 (WAN1) | 00-00-00-00-00-05 | 00-00-00-00-00-01 |
| Generator2 (WAN2) | 00-00-00-00-00-01 | 00-00-00-00-00-05 |

>S

Please select item <1 to 13>

S-Save to FPGA

ETX-204A-AC

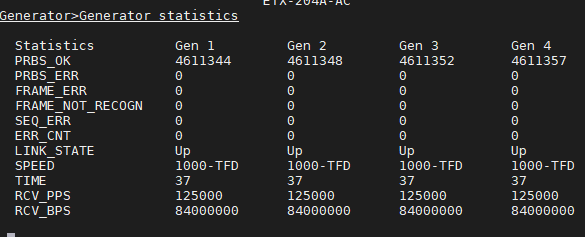
\*Generator

9. Generator statistics []

>9 Press "Enter"

ETX-204A-AC

Generator>Generator statistics



>

H-Stop; C-Clear all; F-Clear one; S-Save to FPGA

1. Configure the ETX-204A Generator 2 as follows:
2. Configure the parameters as shown on the page that appears in yellow
3. At the end of the process make sure all the parameters are correct

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\*Generator

1. Generator number > (All)

2. Generator mode (GE)

3. Packet type > (MAC)

8. Packet rate[1 - 1500000] ... (125000)

14. Save

>14 Press "Enter"

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Generator

1. Generator number > (All)

>1 Press "Enter"

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Generator>Generator number (All)

1. Generator 1

2. Generator 2

3. Generator 3

4. Generator 4

5. All

>1 Press "Enter"

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Generator>Base SA/DA

1. Generator num > (Generator 1-4 )

|  |  |  |
| --- | --- | --- |
| Generator | Base DA | Base SA |
| Generator1 (LAN1) | 00-00-00-00-00-10 | 00-00-00-00-00-11 |
| Generator2 (LAN2) | 00-00-00-00-00-11 | 00-00-00-00-00-10 |
| Generator3 (LAN3) | 00-00-00-00-00-07 | 00-00-00-00-00-03 |
| Generator4 (LAN4) | 00-00-00-00-00-03 | 00-00-00-00-00-07 |

>S

Please select item <1 to 13>

S-Save to FPGA

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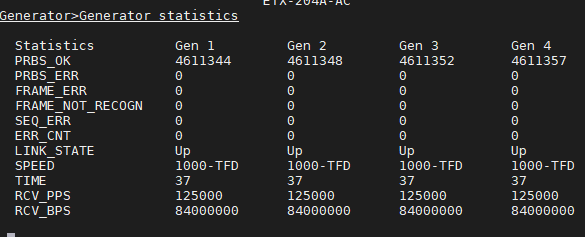
\*Generator

9. Generator statistics []

>9 Press "Enter"

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Generator>Generator statistics



>

H-Stop; C-Clear all; F-Clear one; S-Save to FPGA