

Subject: UMC-I210C User Manual

REV: 3.0

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UMC-I210C User Manual

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Revision History

| Issue Date | Version | Description |
|------------|---------|--|
| 2015/04/16 | 0.0 | Initial Issued |
| 2015/04/30 | 0.1 | Add freq. mapping table and tx output power setting |
| 2015/05/06 | 0.2 | Modify Zigbee Test Center Frequency Setting (i.e. CH. No.) |
| 2015/05/06 | 1.0 | Change document file name to match FCC application form |
| 2015/05/12 | 2.0 | Add LTE antenna gain table |
| 2015/05/26 | 2.1 | Add FCC Warning Message and Note for LTE antenna gain |
| 2015/05/27 | 2.2 | Correct typo |
| 2015/06/08 | 2.3 | Add required description by FCC Part 15.21 |
| 2015/08/24 | 3.0 | Add Secure Shell Access Section for PolicyNet v3.1..0-R requirement in section 3.1 |

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1. Introduction

This User Manual of Victor CB (Communication Board) module is to describe how to use the following sections for lab test by specific qualified engineers or technicians. Furthermore, this module is NOT intended for commercial use but designed as part of Smart Meter product which mainly provides 4G LTE WAN access and/or Zigbee HAN access capabilities. For the procedure of CB installation into electric meter and the operation of CB in assembly factory, that information is described in assembly instruction document.

FCC Interference Statement

This module complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This module may not cause harmful interference and (2) this module must accept any interference received, including interference that may cause undesired operation.

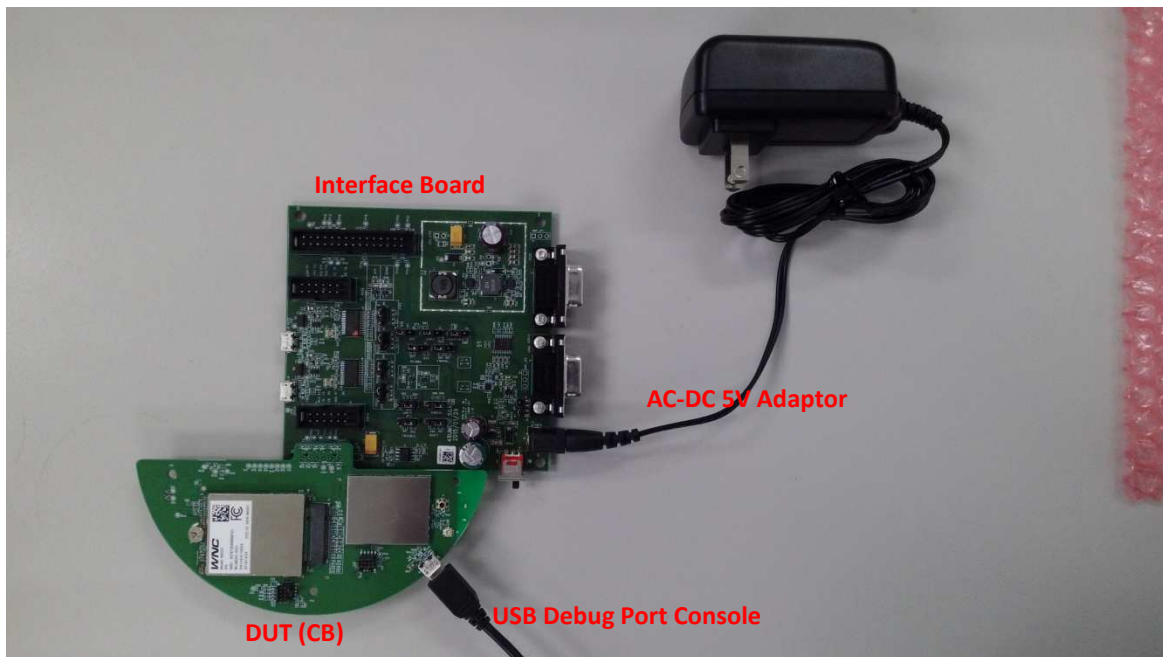
Radiation Exposure Statement

This module complies with FCC radiation exposure limits set forth for an uncontrolled environment. This module should be installed and operated with minimum distance of 20cm between radiator and human body.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the device.

2. Test Setup Configuration

2.1 Power Supply and Debug Console Connection



Power on Sequence:

- I. Connect 12-pin-to-Jig-board cable
- II. Attach AC-DC Adaptor & USB Debug Port Cable
- III. Wait for 20 seconds when system ready (See Note 1)
- IV. Plug-in Console Port cable

[Caution] Improper power on sequence might lead to system boot-up failure!

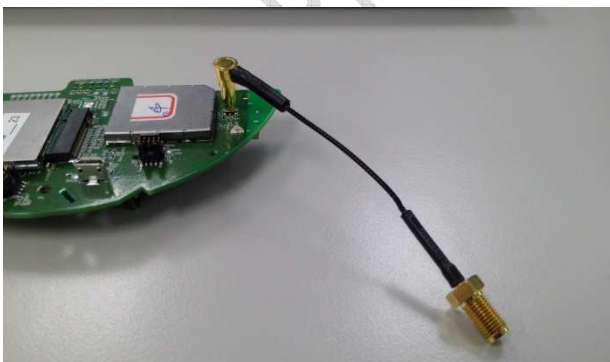
2.2 Antenna Connection



Connect to LTE primary antenna



Connect to LTE diversity antenna



Connect to Zigbee antenna

2.3 Hardware Component Introduction



AC-DC 5V Adaptor



Interface Board



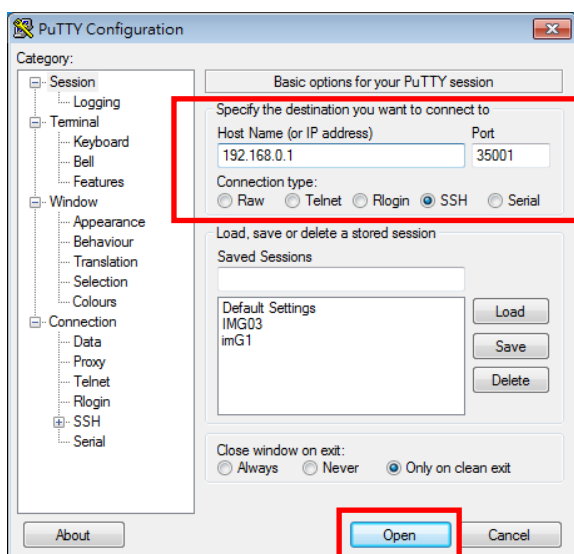
Victor CB

3. Zigbee Test

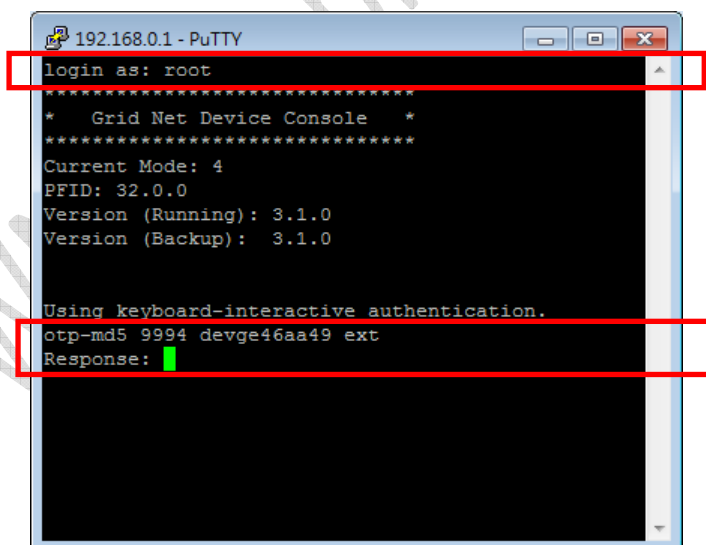
3.1 Secure Shell Setup in a Windows Host PC

Install PuTTY for connection to DUT, refer to <http://www.putty.org/>

Host Name: **192.168.0.1** ; Port: **35001** ; Connection Type: **SSH**

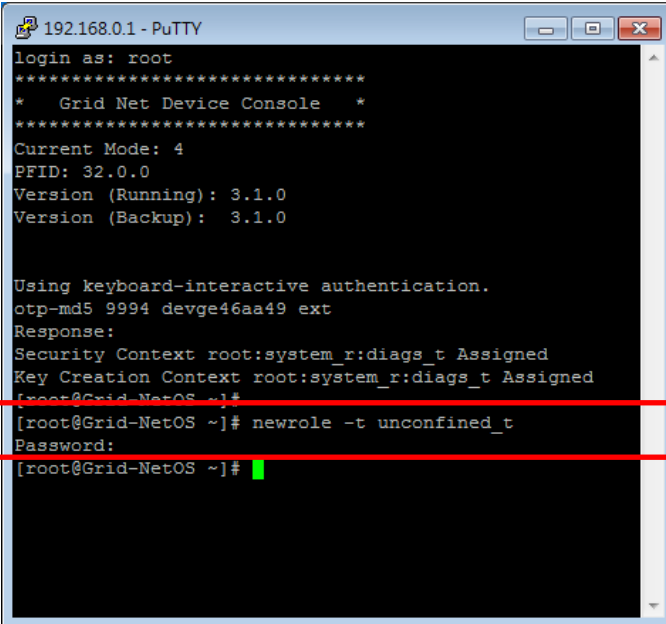


login as : **root** ; Response : find **otp-md5 9994** (See detail in Appendix-I)



Run the command “**newrole -t unconfined_t**”

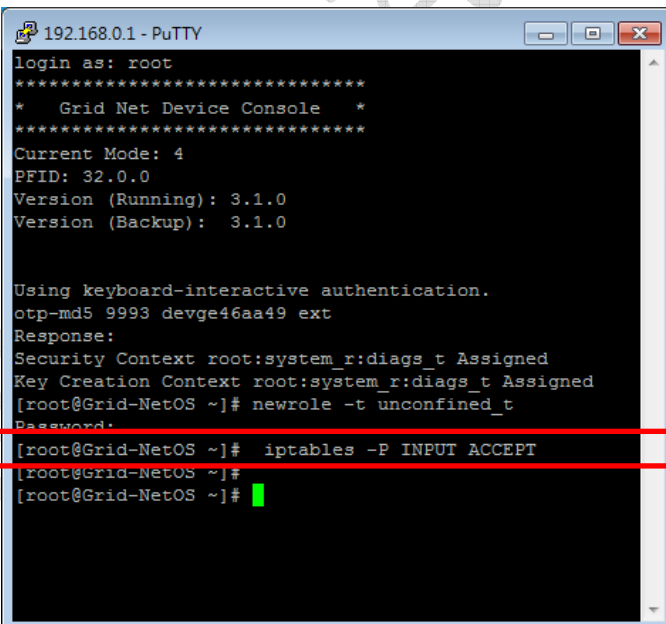
Password: “**gridnet**”



```
192.168.0.1 - PuTTY
login as: root
*****
*   Grid Net Device Console   *
*****
Current Mode: 4
PFID: 32.0.0
Version (Running): 3.1.0
Version (Backup): 3.1.0

Using keyboard-interactive authentication.
otp-md5 9994 devge46aa49 ext
Response:
Security Context root:system_r:diags_t Assigned
Key Creation Context root:system_r:diags_t Assigned
[root@Grid-NetOS ~]#
[root@Grid-NetOS ~]# newrole -t unconfined_t
Password:
[root@Grid-NetOS ~]#
```

Run the command “**iptables -P INPUT ACCEPT**”



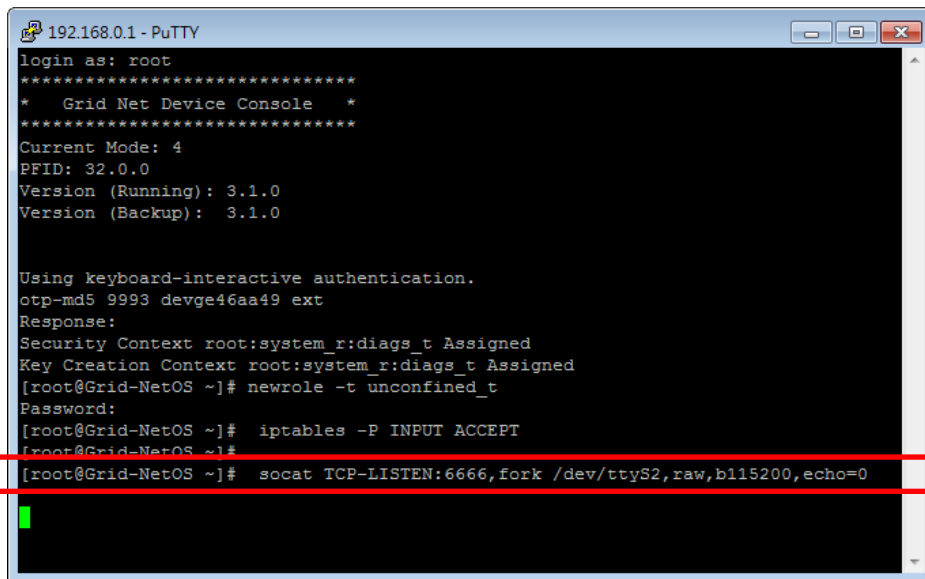
```
192.168.0.1 - PuTTY
login as: root
*****
*   Grid Net Device Console   *
*****
Current Mode: 4
PFID: 32.0.0
Version (Running): 3.1.0
Version (Backup): 3.1.0

Using keyboard-interactive authentication.
otp-md5 9993 devge46aa49 ext
Response:
Security Context root:system_r:diags_t Assigned
Key Creation Context root:system_r:diags_t Assigned
[root@Grid-NetOS ~]# newrole -t unconfined_t
Password:
[root@Grid-NetOS ~]# iptables -P INPUT ACCEPT
[root@Grid-NetOS ~]#
[root@Grid-NetOS ~]#
```

3.2 Setup socat Server in CB Device

Enter the command “`socat TCP-LISTEN:6666,fork`”

`/dev/ttyS2,raw,b115200,echo=0`” to complete socat server setup



The screenshot shows a PuTTY terminal window titled "192.168.0.1 - PuTTY". The terminal output includes the following text:

```
login as: root
*****
*   Grid Net Device Console   *
*****
Current Mode: 4
PFID: 32.0.0
Version (Running): 3.1.0
Version (Backup): 3.1.0

Using keyboard-interactive authentication.
otp-md5 9993 devge46aa49 ext
Response:
Security Context root:system_r:diags_t Assigned
Key Creation Context root:system_r:diags_t Assigned
[root@Grid-NetOS ~]# newrole -t unconfined_t
Password:
[root@Grid-NetOS ~]# iptables -P INPUT ACCEPT
[root@Grid-NetOS ~]#
[root@Grid-NetOS ~]# socat TCP-LISTEN:6666,fork /dev/ttyS2,raw,b115200,echo=0
```

The last line of the command is highlighted with a red box.

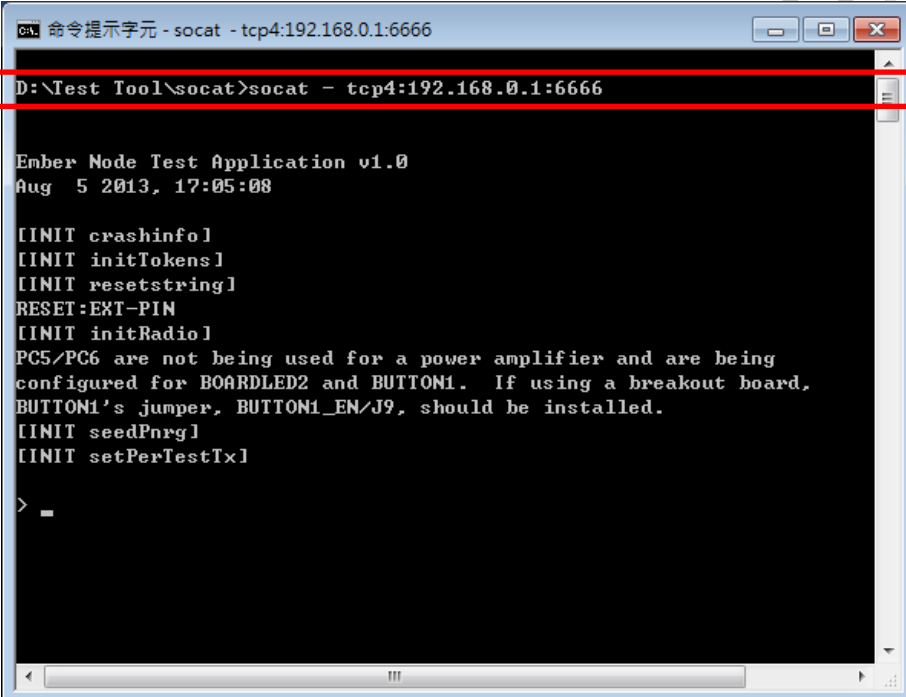
3.3 Setup socat Client in a Windows PC host

Find socat from <http://blog.gentilkiwi.com/downloads/socat-1.7.2.1.zip>

Unpack socat.7z and then install into a Windows host PC

Execute the commands in its corresponding directory

D:\Test Tool\socat> **socat - tcp4:192.168.0.1:6666** (Enter twice)



```
cmd 命令提示字元 - socat - tcp4:192.168.0.1:6666
D:\Test Tool\socat>socat - tcp4:192.168.0.1:6666

Ember Node Test Application v1.0
Aug 5 2013, 17:05:08

[INIT crashinfo]
[INIT initTokens]
[INIT resetstring]
RESET:EXT-PIN
[INIT initRadio]
PC5/PC6 are not being used for a power amplifier and are being
configured for BOARDLED2 and BUTTON1. If using a breakout board,
BUTTON1's jumper, BUTTON1_EM/J9, should be installed.
[INIT seedPnrg]
[INIT setPerTestTx]

> -
```

3.4 Zigbee Test Command (Refer to Ember Node Test)

Freq. channel setting: setchannel 0x0B

Channel Low : 0x0B -> CH11

Channel Mid : 0x12 -> CH18

Channel High : 0x19 -> CH25

Antenna selection: gpioout a 0

Power mode setting: settxpowmode 1 1

Power level setting: setTxPower -3

Single tone output: txTone

Modulation signal output: txStream

```

命令提示字元 - socat - tcp4:192.168.0.1:6666
D:\Test Tool\socat>socat - tcp4:192.168.0.1:6666

Ember Node Test Application v1.0
Aug 5 2013, 17:05:08

[INIT crashinfo]
[INIT initTokens]
[INIT resetstring]
RESET:EXT-PIN
[INIT initRadio]
PC5/PC6 are not being used for a power amplifier and are being
configured for BOARDLED2 and BUTTON1. If using a breakout board,
BUTTON1's jumper, BUTTON1_EN/J9, should be installed.
[INIT seedPnrg]
[INIT setPerTestTx]

> setchannel 0x0B
setchannel 0x0B
<<(setChannel)>> Setting channel and calibrating (as needed)...(status:0x00)>>
<<(getChannel)>> Radio channel (channel:0x0B)

> gpioout a 0
gpioout a 0
GPIO_PAOUT = 0x00

> settxpowmode 1 1
settxpowmode 1 1
PC5/PC6 are being configured for TX_ACTIVE/nTX_ACTIVE; a power amplifier.
If using a breakout board, BUTTON1's jumper, BUTTON1_EN/J9, should be
removed for nTX_ACTIVE due to a debounce capacitor.
Tx power mode set to BOOST level with EXTERNAL PA.

> setTxPower -3
setTxPower -3
<<(setTxPower)>> (requestedPower:-3)dBm (status:0)
//((getTxPower)) (actualPower:-3)dBm

> txStream
txStream
'e'nd...
    
```

4. LTE B4/B13 Test

It is suggested to use Anritsu MT8820C for RF conductive tests.setc
For LTE radiation tests, the LTE antenna gain lists below.

➤ LTE Main Antenna

✧ Band 13 Peak Gain: 2.0 dBi ~ 2.5 dBi

✧ Band 4 Peak Gain: 4.5 dBi ~ 5.0 dBi

➤ LTE Diversity Antenna

✧ Band 13 Peak Gain: 2.0 dBi ~ 2.5 dBi

✧ Band 4 Peak Gain: 2.5 dBi ~ 3.0 dBi

Appendix-I Example of otp-md5

9996: OWNS ITCH NOB GAUR NEST LYLE

9997: LOUD LUGE HART GOT VEAL CRIB

9998: COLD GYM GYP CHIN HUG SAL

For other numbering, please see "[root-otp-passwords-3.1.0-R.txt](#)" for detail.