

# Product Specifications

## AC-1025D

IEEE802.11a/b/g/n/ac Dual SIM LTE-Fi Access Point





## 1 Revision History

| Date       | Version | Author   | Description                   |
|------------|---------|----------|-------------------------------|
| 2015/6/25  | V0.1    | Samantha | 1 <sup>st</sup> draft version |
| 2015/7/27  | V0.2    | Samantha | Interface, frequency          |
| 2015/10/16 | V0.3    | Samantha | LED behavior update           |
| 2015/11/10 | V0.4    | Samantha | Operating temperature modify  |

## 2 Specification

### 2.1 Hardware Specification

The Hardware specifications of the product are as below:

Table 2-1 Hardware Specification

| Features                         | Additional Information   |  |   |
|----------------------------------|--|--|---|
| Chipset Solution                 | CPU/2G RF: QCA9557<br>5G RF: QCA9880<br>Ethernet PHY: QCA8334  |  |   |
| DDRII                            | 256Mbyte (128Mbyte*2)  |  |   |
| FLASH                            | 16Mbyte  |  |   |
| Ethernet Switch                  | 10/100/1000Mbps*1  |  |   |
| LED definition                   |  | Activity                                   | Description                                     |
|                                  | Power/Test   | Green                                      | Power on  |
|                                  |  | Off  | Power off                                       |
|                                  | Wireless LAN   | Off  | Wi-Fi off                                       |
|                                  |  | Blink Green                                | Wi-Fi WLAN Network activity is occurring        |
|                                  | LTE A  | Off  | Can not find 3G/4G mobile communication network |
|                                  |  | Green                                      | Connect 3G/4G mobile communication network      |
|                                  | LTE B  | Off  | Can not find 3G/4G mobile communication network |
| Green                            |  | Connect 3G/4G mobile communication network |   |
| External Antenna Support         | LTE external antenna * 2 : 2.5dBi  |  |   |
| Internal Wi-Fi ANT Specification | 2G: 8dBi<br>5G: 8.5dBi   |  |   |
| GNSS system                      | GNSS System Supported (Module Type) $\leq \pm 10m$<br><input type="radio"/> USA GPS System<br><input type="radio"/> Russia GLONASS System  |  |   |
| Interface                        | DB9 for LAN(10/100) or Console*1 (For technique debug using)<br>RJ45 for LAN(10/100/1000)*1<br>Reset Button*1<br>USB*2 (For storage)<br>External LTE Antenna Connector 4<br>External GPS antenna Connector*1<br>Power Plug*1 |  |   |



|                                |  |                   |    |
|--------------------------------|--|-------------------|----|
|                                | SIM Card Plug*2  |                   |    |
| Power supply                   | 12V/24V From Car Battery   |                   |    |
| Data rate                      | 11b: 11M, 5.5M, 2M, 1Mbps<br>11a/g: 54M, 48M, 36M, 24M, 18M, 12M, 9M, 6Mbps<br>11n: up to 300Mbps<br>11ac: up to 1300Mbps  |                   |    |
| Data modulation                | 802.11b: CCK/DBPSK/DQPSK<br>802.11a/g/n: BPSK/QPSK/16QAM/64QAM<br>802.11ac: BPSK/QPSK/16QAM/64QAM/128QAM   |                   |    |
| Frequency Supported            | <ul style="list-style-type: none"> <li>● LTE 1</li> <li><b><u>LTE Bands (Module Type) Multi-Band</u></b></li> <li>○ <u>category 4</u></li> <li>○ <u>B3/B7/B8/B20</u></li> <li>○ <u>All channel bandwidths: 1.4 - 20 MHz</u></li> <li>○ <u>MIMO 2x2</u></li> <li>○ <u>Rx diversity</u></li> <li><b><u>WCDMA</u></b></li> <li>○ B1/B8</li> <li><b><u>GPRS/EDGE</u></b></li> <li>○ 850/900/1800/1900MHz</li> <li>● LTE 2</li> <li><b><u>LTE Bands (Module Type) Multi-Band</u></b></li> <li>○ <u>category 4</u></li> <li>○ <u>B3/B28</u></li> <li>○ <u>All channel bandwidths: 1.4 - 20 MHz</u></li> <li>○ <u>MIMO 2x2</u></li> <li>○ <u>Rx diversity</u></li> <li><b><u>WCDMA</u></b></li> <li>○ B1/B5</li> <li><b><u>GPRS/EDGE</u></b></li> <li>○ 850/900/1800/1900MHz</li> </ul> |                   |    |
| SYS-Power Consumption          | ≤19W   |                   |    |
| Operating Frequency & Channels | IEEE 802.11b/g/gn 20MHz ISM Band <ul style="list-style-type: none"> <li>• NCC: 2.412GHz~2.462GHz</li> </ul> IEEE 802.11gn 40MHz Band <ul style="list-style-type: none"> <li>• NCC: 2.422GHz~2.452GHz</li> </ul> IEEE 802.11a/an/ac 20MHz/40MHz/80MHz ISM Band <ul style="list-style-type: none"> <li>• NCC: 5.15GHz~5.85GHz</li> </ul>   |                   |    |
| Output Power <sup>1</sup> @    | IEEE 802.11b   | 1~11Mbps (CH1-13) | 20 |

<sup>1</sup> 1. We just list the Target Power here, the exact EMI Conducted Power will be set in the CTL Table of the Card (base on EMC regulation), and the driver will limit the output power according to the CTL Table, thus sometimes the actual output power will be lower than the target power. For the detailed CTL Table Settings, please contact with our support engineers.



|  |               |          |                            |              |    |    |
|--|---------------|----------|----------------------------|--------------|----|----|
| 25°C<br>(per chain ±2 dBm)<br><br>**All modes are<br>measured via single<br>chain. | IEEE 802.11g  | 6~24Mbps |                            | 20           |    |    |
|  |               | 54Mbps   |                            | 20           |    |    |
|  | IEEE 802.11gn | HT20     | MCS 0/8                    |              | 20 |    |
|  |               |          | MCS 7/15                   |              | 20 |    |
|  |               | HT40     | MCS 0/8                    |              | 20 |    |
|  |               |          | MCS 7/15                   |              | 20 |    |
|  | IEEE 802.11a  | 6~48Mbps | 5240MHz                    |              | 17 |    |
|  |               |          | 5260~5850MHz               |              | 20 |    |
|  |               | 54Mbps   | 5240MHz                    |              | 15 |    |
|  |               |          | 5260~5850MHz               |              | 18 |    |
|  | IEEE 802.11an | HT20     | MCS 0~6,<br>8~14,<br>16~22 | 5240MHz      |    | 17 |
|  |               |          |                            | 5260~5850MHz |    | 20 |
|  |               |          | MCS7/15/23                 | 5240MHz      |    | 15 |
|  |               |          |                            | 5260~5850MHz |    | 18 |
|  |               | HT40     | MCS 0~6,<br>8~14,<br>16~22 | 5240MHz      |    | 17 |
|  |               |          |                            | 5260~5850MHz |    | 20 |
|  |               |          | MCS7/15/23                 | 5240MHz      |    | 15 |
|  |               |          |                            | 5260~5850MHz |    | 18 |
|  | 802.11ac      | VHT20    | MCS 0~6                    | 5240MHz      |    | 17 |
|  |               |          |                            | 5260~5850MHz |    | 20 |
| MCS 7  |               |          | 5240MHz                    |              | 15 |    |
|  |               |          | 5260~5850MHz               |              | 18 |    |
| MCS 8  |               |          | 5240MHz                    |              | 14 |    |
|  |               |          | 5260~5850MHz               |              | 16 |    |
| VHT40  |               | MCS 0~6  | 5240MHz                    |              | 17 |    |
|  |               |          | 5260~5850MHz               |              | 20 |    |
|  |               | MCS 7    | 5240MHz                    |              | 15 |    |
|  |               |          | 5260~5850MHz               |              | 18 |    |
|  |               | MCS 8    | 5240MHz                    |              | 14 |    |
|  |               |          | 5260~5850MHz               |              | 16 |    |
| MCS 9  | 5240~5850MHz  |          | 13                         |              |    |    |



|               |        |            |   |              |        |  |     |
|---------------|--------|------------|---|--------------|--------|--|-----|
|               |        | VHT80      | MCS 0~6   | 5240MHz      | 17     |  |     |
|               |        |            |   | 5260~5850MHz | 20     |  |     |
|               |        |            | MCS 7   | 5240MHz      | 15     |  |     |
|               |        |            |   | 5260~5850MHz | 18     |  |     |
|               |        |            | MCS 8   | 5240MHz      | 14     |  |     |
|               |        |            |   | 5260~5850MHz | 16     |  |     |
|               |        |            | MCS 9   | 5240~5850MHz | 13     |  |     |
|               |        |            | Sensitivity<br>(PER <10%,<br>per chain>=Spec;<br>dBm) | IEEE 802.11b | 11Mbps |  | -87 |
|               |        |            |   | IEEE 802.11g | 6Mbps  |  | -89 |
|               |        |            |   |              | 54Mbps |  | -72 |
| IEEE 802.11a  | 6Mbps  |            |   | -92          |        |  |     |
|               | 54Mbps |            |   | -75          |        |  |     |
| IEEE 802.11gn | HT20   | MCS0/8     |   | -85          |        |  |     |
|               |        | MCS7/15    |   | -67          |        |  |     |
|               | HT40   | MCS0/8     |   | -82          |        |  |     |
|               |        | MCS7/15    |   | -64          |        |  |     |
| IEEE 802.11an | HT20   | MCS0/8/16  |   | -92          |        |  |     |
|               |        | MCS7/15/23 |   | -74          |        |  |     |
|               | HT40   | MCS0/8/16  |   | -89          |        |  |     |
|               |        | MCS7/15/23 |   | -69          |        |  |     |
| IEEE 802.11ac | VHT20  | MCS0 1~3ss |   | -90          |        |  |     |
|               |        | MCS7 1~3ss |   | -70          |        |  |     |
|               |        | MCS8 1~3ss |   | -66          |        |  |     |
|               |        | MCS9       |   | -64          |        |  |     |
|               | VHT40  | MCS0 1~3ss |   | -87          |        |  |     |
|               |        | MCS7 1~3ss |   | -67          |        |  |     |
|               |        | MCS8 1~3ss |   | -63          |        |  |     |
|               |        | MCS9       | -61(1~3ss)  |              |        |  |     |
|               | VHT80  | MCS0 1~3ss | -84   |              |        |  |     |
|               |        | MCS7 1~3ss | -64   |              |        |  |     |
|               |        | MCS8 1~3ss | -60   |              |        |  |     |
|               |        | MCS9       | -58(1~3ss)  |              |        |  |     |

## 2.2 Firmware Specification

The Firmware specifications of the product are as below:

Table 2-2 Firmware Specification

| Item                              | Descriptions  |
|-----------------------------------|---|
| <b>System Features</b>            |   |
| Centralized Management – TAP Mode | AP works in TAP (Thin AP) mode and can be managed by AC (AP Controller) in CAPWAP protocol  |
| Local Management – FAP Mode       | AP works in FAP (Fat AP) mode and can be managed locally with Web GUI for device status, fault management, configuration, firmware upgrade, and connection diagnosis.               |
| Local Web Portal                  | Equip with local web portal service. This service includes user-definable portal page (HTML and media files) which is stored on local storage.                                      |
| User Authentication               | Support WLAN authentication protocols including EAP-PEAP, and EAP-SIM.  |
| Local Storage                     | Equip with local non-volatile storage spaces for HTML and browser-compatible media files. The space can be managed by FTP or Web GUI interface remotely.                            |
| Link Integrity                    | Automatically turn off the WLAN service when the uplink WWAN (3G/4G) connection is lost.  |
| Handover                          | Support seamless layer-2/3 handover for uninterrupted WLAN connection in the environment with LTE-Fi devices.   |
| Power-loss Alarm                  | Alert AC when the power supply to the device is turned off (ACC off). In the meantime, release the WWAN (3G/4G) connection before power down the device.                            |
| GNSS                              | Equip with GNSS module and report the location information of device to the management system.  |
| Network Management                | Support industry standard network management interfaces including SNMP (v2c/v3), Syslog, FTP, HTTP, HTTPS, and Telnet.<br>Supported MIBs include MIB II, 802.11 MIB, and 802.3 MIB. |
| <b>WWAN(3G/4G) Features</b>       |   |
| Radio Management                  | Support MTU setup for TCP/IP traffic on WWAN.<br>Display WWAN status including connection status, RSSI, IMEI, campus id, and link uptime.   |
| Network Selection                 | Support WWAN network mode selection function including 4G First, 3G First, 4G Only, and 3G Only.  |
| <b>WLAN Features</b>              |   |
| 802.11n                           | Support IEEE 802.11n MIMO 2x2 (two stream)  |
|                                   | Support A-MPDU  |
|                                   | Support 20/40MHz Bandwidth  |
|                                   | Support Short GI  |
|                                   | Support 11n-Only Mode   |
|                                   | Backward Compatible to 802.11b/g Clients  |



|                         |   |
|-------------------------|---|
| Supported Protocols     | Supported Protocols includes IEEE 802.11a/b/g/n/ac, IEEE 802.3, STP, and DHCP.  |
| Radio Management        | Automatic Transmit Power Adjustment<br>Automatic Channel Selection  |
| User Separation         | Support an option to separate the network data (layer 2) between wireless users of connecting to same AP or different APs.  |
| Load Balance            | Balance the network load among LTE-Fi devices at a location.  |
| Fairover                | Backup by another LTE module  |
| Redundant               | LTE-Fi Backhaul connection.   |
| User Number             | Support up to 256 wireless connection at single LTE-Fi device. Support active wireless traffic from up to 30 users concurrently.  |
| Encryption              | Support WPA (TKIP) and WPA2 (AES) data encryption.<br>Support WPA/WPA2 Mixed Mode data encryption.<br>Support different encryption modes including none, static WEP, WPA, and WPA2 via one SSID or multiple SSID setup. |
| Access Control          | Support MAC address based access control per SSID as well as the limit of maximal number of wireless connection per SSID or per AP.   |
| Multiple SSID           | Support Multiple SSID function with up to 8 SSIDs can be configured for each WLAN.<br>Support VLAN setup in each SSID. A same VLAN id can be used for two or more SSIDs.  |
| Hidden SSID             | Support an option to enable or disable SSID broadcast.  |
| Bandwidth Management    | In corporate with AC, support bandwidth management function based on user, SSID, or VLAN.   |
| <b>Network Features</b> |   |
| IPv4 Support            | Support both IPv4 traffic:<br>Connect to AC with IPv4 address<br>Data tunnel to AC in IPv4 protocol   |
| NAT                     | Support NAT function to translate local private IP address for making Internet access possible.   |
| DHCP                    | Support DHCP Server when the device is in FAP mode or local bridged operation in TAP mode.  |
| NTP                     | Support NTP time synchronization.   |



## 2.3 Physical specification

The Physical specifications of the product are as below:

Table 2-3 Physical Specification

| Items     | Description       |
|-----------|-------------------|
| Dimension | 220 * 250 * 54 mm |
| Weight    | 1kg               |

## 2.4 Environment specification

The Environment specifications of the product are as below:

Table 2-4 Environment Specification

| Items                               | Device Description   |
|-------------------------------------|----------------------|
| Operating Temperature(Max)          | -40 ~ +50°C          |
| Operating Humidity (non-condensing) | 5 to 95% RH          |
| Storage Temperature                 | -40 ~ +60°C          |
| Storage Humidity (non-condensing)   | 10 to 95% RH         |
| Warranty                            | 24 Months            |
| Green                               | RoHs/REACH Compliant |

## 2.5 Safety/Country Approval

We will do EMI/EMC pre-test according to the following items:

| Items  | Description  |
|--------|--|
| CE     | EN301511<br>EN301908-1<br>EN300328 V1.8.1<br>EN300440<br>EN301489-1/-3/-7/-17/-24<br>EN55022/24<br>EN60950<br>NB(0560) |
| E-Mark | E24  |

## 2.6 Vibration Certification Specification

Noted: AC-1025D Will Follow “IEC 60721-3-5 5M2” Certification spec.

## 2.7 Packaging Specification

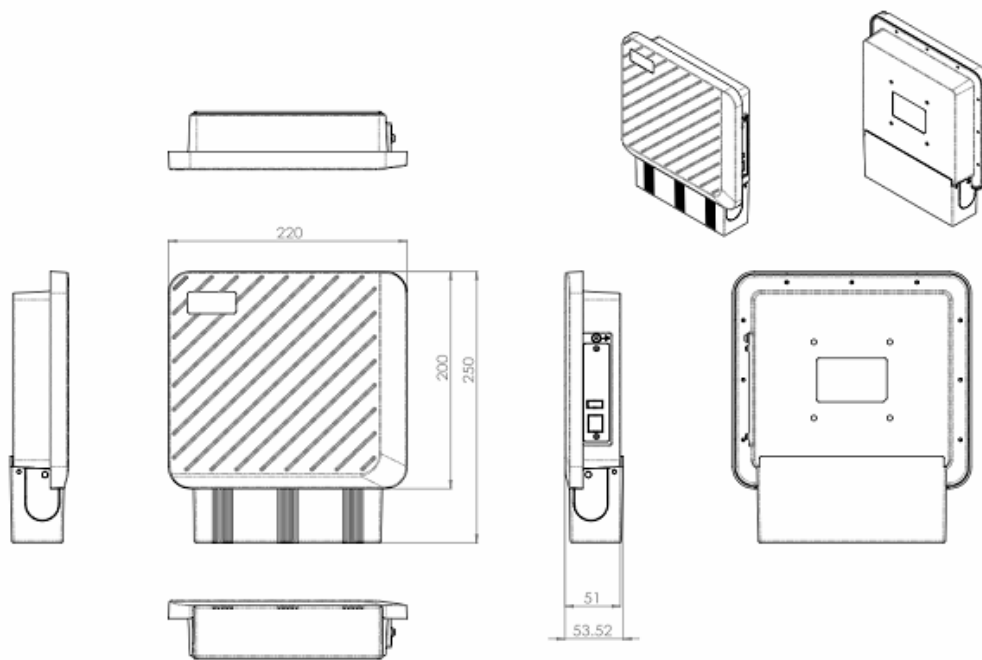
The following items will be required for the complete packaging:

Table 2-7 Package Specification

| Item               | Comments                                      |
|--------------------|---|
| Carton             | Suitable size and material to protect product |
| Gift Box / Cushion | Suitable size and material to protect product |
| Wall Mounting Kit  | Suitable size and material to protect product |

### 3 Mechanical Spec

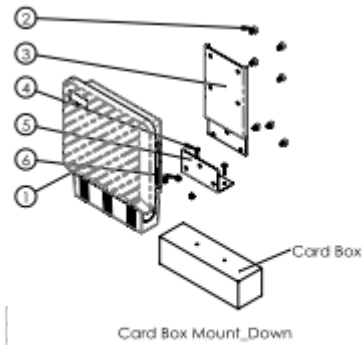
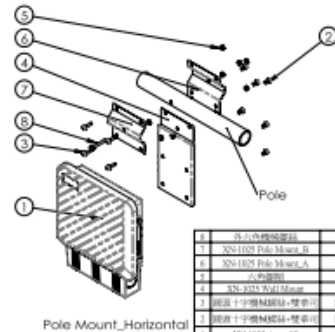
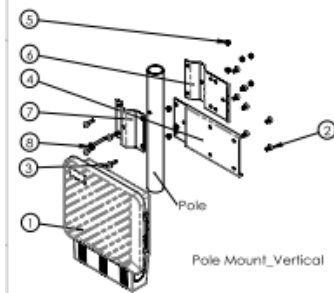
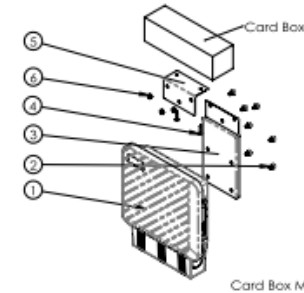
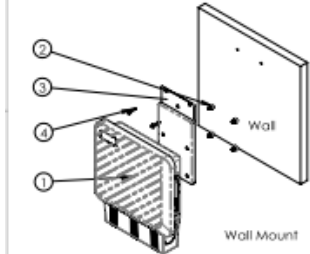
#### 3.1 Device Outline Drawing



### 3.2 Device Outline Drawing

|     |                    |                |    |
|-----|--------------------|----------------|----|
| 4   | 鐵架十字螺絲螺絲           | M4x20_S20-1025 | 2  |
| 1   | XN-1025 Wall Mount |                | 1  |
| 3   | 鐵架十字螺絲螺絲-雙車牙       | M5xL20         | 4  |
| 2   | XN-1025 Assy_S2    |                | 1  |
| No. | PART NAME          | DESCRIPTION    | 數量 |

|     |                                       |                 |    |
|-----|---------------------------------------|-----------------|----|
| 4   | 六角螺絲                                  |                 | 2  |
| 5   | XN-1025 Mounting Bracket for Card Box |                 | 1  |
| 1   | 鐵架十字螺絲螺絲                              | M5xL20_S20-1025 | 1  |
| 3   | XN-1025 Wall Mount                    |                 | 1  |
| 2   | 鐵架十字螺絲螺絲-雙車牙                          | M5xL20          | 7  |
| 1   | XN-1025 Assy_S2                       |                 | 1  |
| No. | PART NAME                             | DESCRIPTION     | 數量 |

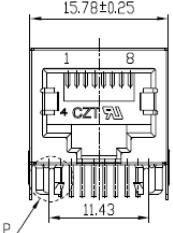
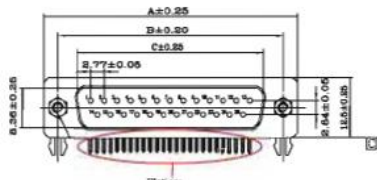
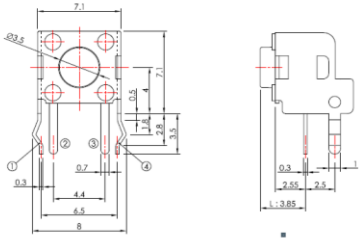


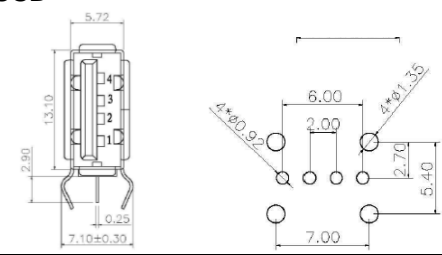
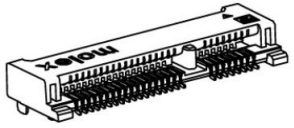
|     |                      |             |    |
|-----|----------------------|-------------|----|
| 5   | 六角螺絲螺絲               |             | 1  |
| 7   | XN-1025 Pole Mount_B |             | 1  |
| 6   | XN-1025 Pole Mount_A |             | 1  |
| 4   | 六角螺絲                 |             | 8  |
| 2   | XN-1025 Wall Mount   |             | 1  |
| 3   | 鐵架十字螺絲螺絲-雙車牙         | M5xL20      | 4  |
| 2   | 鐵架十字螺絲螺絲-雙車牙         | M5xL20      | 7  |
| 1   | XN-1025 Assy_S2      |             | 1  |
| No. | PART NAME            | DESCRIPTION | 數量 |

|     |                      |             |    |
|-----|----------------------|-------------|----|
| 4   | 六角螺絲螺絲               |             | 1  |
| 1   | XN-1025 Pole Mount_B |             | 1  |
| 6   | XN-1025 Pole Mount_A |             | 1  |
| 4   | 六角螺絲                 |             | 8  |
| 2   | XN-1025 Wall Mount   |             | 1  |
| 3   | 鐵架十字螺絲螺絲-雙車牙         | M5xL20      | 4  |
| 2   | 鐵架十字螺絲螺絲-雙車牙         | M5xL20      | 7  |
| 1   | XN-1025 Assy_S2      |             | 1  |
| No. | PART NAME            | DESCRIPTION | 數量 |

|     |                                       |                 |    |
|-----|---------------------------------------|-----------------|----|
| 4   | 六角螺絲                                  |                 | 2  |
| 5   | XN-1025 Mounting Bracket for Card Box |                 | 1  |
| 1   | 鐵架十字螺絲螺絲                              | M5xL20_S20-1025 | 1  |
| 3   | XN-1025 Wall Mount                    |                 | 1  |
| 2   | 鐵架十字螺絲螺絲-雙車牙                          | M5xL20          | 7  |
| 1   | XN-1025 Assy_S2                       |                 | 1  |
| No. | PART NAME                             | DESCRIPTION     | 數量 |

#### 4 Pin Assignment and Dimension of DIP Connector


| Item    | Description & Pin Assignment   |                |             |                |   |        |        |   |            |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |
|---------|--|----------------|-------------|----------------|---|--------|--------|---|------------|--------|---|------|--------|---|------|--------|---|------|--------|---|------|--------|---|------|--------|---|------|--------|
| CN1     | <ul style="list-style-type: none"> <li>RJ45 for LAN(10/100/1000)</li> </ul>  <table border="1" data-bbox="511 667 1307 1102"> <thead> <tr> <th>Pin NO.</th> <th>Signal Name</th> <th>Pin Definition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>TX1+</td> <td>TX1(+)</td> </tr> <tr> <td>2</td> <td>TX1-</td> <td>TX1(-)</td> </tr> <tr> <td>3</td> <td>RX1+</td> <td>RX1(+)</td> </tr> <tr> <td>4</td> <td>TX2+</td> <td>TX2(+)</td> </tr> <tr> <td>5</td> <td>TX2-</td> <td>TX2(-)</td> </tr> <tr> <td>6</td> <td>RX1-</td> <td>RX1(-)</td> </tr> <tr> <td>7</td> <td>RX2+</td> <td>RX2(+)</td> </tr> <tr> <td>8</td> <td>RX2-</td> <td>RX2(-)</td> </tr> </tbody> </table> | Pin NO.        | Signal Name | Pin Definition | 1 | TX1+   | TX1(+) | 2 | TX1-       | TX1(-) | 3 | RX1+ | RX1(+) | 4 | TX2+ | TX2(+) | 5 | TX2- | TX2(-) | 6 | RX1- | RX1(-) | 7 | RX2+ | RX2(+) | 8 | RX2- | RX2(-) |
| Pin NO. | Signal Name  | Pin Definition |             |                |   |        |        |   |            |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |
| 1       | TX1+   | TX1(+)         |             |                |   |        |        |   |            |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |
| 2       | TX1-   | TX1(-)         |             |                |   |        |        |   |            |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |
| 3       | RX1+   | RX1(+)         |             |                |   |        |        |   |            |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |
| 4       | TX2+   | TX2(+)         |             |                |   |        |        |   |            |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |
| 5       | TX2-   | TX2(-)         |             |                |   |        |        |   |            |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |
| 6       | RX1-   | RX1(-)         |             |                |   |        |        |   |            |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |
| 7       | RX2+   | RX2(+)         |             |                |   |        |        |   |            |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |
| 8       | RX2-   | RX2(-)         |             |                |   |        |        |   |            |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |
| J7      | <p>DB9 for LAN(10/100) or Console</p>  <p>Plating:<br/>     2: Selective Gold<br/>     3: All Gold</p>  |                |             |                |   |        |        |   |            |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |
| SW1     | <p>Reset Button</p>  <table border="1" data-bbox="511 1675 1307 1864"> <thead> <tr> <th>Pin NO.</th> <th>Signal Name</th> <th>Pin Definition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Signal</td> <td></td> </tr> <tr> <td>2</td> <td>System_GND</td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> </tr> </tbody> </table>  | Pin NO.        | Signal Name | Pin Definition | 1 | Signal |        | 2 | System_GND |        | 3 |      |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |
| Pin NO. | Signal Name  | Pin Definition |             |                |   |        |        |   |            |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |
| 1       | Signal   |                |             |                |   |        |        |   |            |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |
| 2       | System_GND   |                |             |                |   |        |        |   |            |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |
| 3       |  |                |             |                |   |        |        |   |            |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |   |      |        |

|         | <p>4</p>  |                |             |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
|---------|---|----------------|-------------|----------------|-------------|-----|-------|---|------|--------|----------|----|--------|---|----------|--------|------|---|---------|---|---------|---|-----|----|----------|----|---------|----|---------|----|---------|----|-----------|----|-----|----|---------|----|-------------------|----|-----|----|-------------------|----|----------|----|-----|----|--------|----|-------|----|----------|
| DOWN1   | <p>USB</p>  <table border="1" data-bbox="511 766 1307 1008"> <thead> <tr> <th>Pin NO.</th> <th>Signal Name</th> <th>Pin Definition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>+5V</td> <td>Power</td> </tr> <tr> <td>2</td> <td>D-</td> <td>Data -</td> </tr> <tr> <td>3</td> <td>D+</td> <td>Data +</td> </tr> <tr> <td>4</td> <td>GND</td> <td>Ground</td> </tr> </tbody> </table>  | Pin NO.        | Signal Name | Pin Definition | 1           | +5V | Power | 2 | D-   | Data - | 3        | D+ | Data + | 4 | GND      | Ground |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| Pin NO. | Signal Name   | Pin Definition |             |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| 1       | +5V   | Power          |             |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| 2       | D-  | Data -         |             |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| 3       | D+  | Data +         |             |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| 4       | GND   | Ground         |             |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| J18/J21 | <p>mini PCI-E for LTE Module</p>  <table border="1" data-bbox="511 1186 1307 1879"> <thead> <tr> <th>Pin NO.</th> <th>Signal Name</th> <th>Pin NO.</th> <th>Signal Name</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>WAKE#</td> <td>2</td> <td>3.3V</td> </tr> <tr> <td>3</td> <td>Reserved</td> <td>4</td> <td>GND</td> </tr> <tr> <td>5</td> <td>Reserved</td> <td>6</td> <td>1.5V</td> </tr> <tr> <td>7</td> <td>CLKREQ#</td> <td>8</td> <td>UIM_PWR</td> </tr> <tr> <td>9</td> <td>GND</td> <td>10</td> <td>UIM_DATA</td> </tr> <tr> <td>11</td> <td>REFCLK-</td> <td>12</td> <td>UIM_CLK</td> </tr> <tr> <td>13</td> <td>REFCLK+</td> <td>14</td> <td>UIM_RESET</td> </tr> <tr> <td>15</td> <td>GND</td> <td>16</td> <td>UIM_VPP</td> </tr> <tr> <td>17</td> <td>Reserved (UIM_C8)</td> <td>18</td> <td>GND</td> </tr> <tr> <td>19</td> <td>Reserved (UIM_C4)</td> <td>20</td> <td>Reserved</td> </tr> <tr> <td>21</td> <td>GND</td> <td>22</td> <td>PERST#</td> </tr> <tr> <td>23</td> <td>PERn0</td> <td>24</td> <td>+3.3Vaux</td> </tr> </tbody> </table> | Pin NO.        | Signal Name | Pin NO.        | Signal Name | 1   | WAKE# | 2 | 3.3V | 3      | Reserved | 4  | GND    | 5 | Reserved | 6      | 1.5V | 7 | CLKREQ# | 8 | UIM_PWR | 9 | GND | 10 | UIM_DATA | 11 | REFCLK- | 12 | UIM_CLK | 13 | REFCLK+ | 14 | UIM_RESET | 15 | GND | 16 | UIM_VPP | 17 | Reserved (UIM_C8) | 18 | GND | 19 | Reserved (UIM_C4) | 20 | Reserved | 21 | GND | 22 | PERST# | 23 | PERn0 | 24 | +3.3Vaux |
| Pin NO. | Signal Name   | Pin NO.        | Signal Name |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| 1       | WAKE#   | 2              | 3.3V        |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| 3       | Reserved  | 4              | GND         |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| 5       | Reserved  | 6              | 1.5V        |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| 7       | CLKREQ#   | 8              | UIM_PWR     |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| 9       | GND   | 10             | UIM_DATA    |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| 11      | REFCLK-   | 12             | UIM_CLK     |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| 13      | REFCLK+   | 14             | UIM_RESET   |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| 15      | GND   | 16             | UIM_VPP     |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| 17      | Reserved (UIM_C8)   | 18             | GND         |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| 19      | Reserved (UIM_C4)   | 20             | Reserved    |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| 21      | GND   | 22             | PERST#      |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |
| 23      | PERn0   | 24             | +3.3Vaux    |                |             |     |       |   |      |        |          |    |        |   |          |        |      |   |         |   |         |   |     |    |          |    |         |    |         |    |         |    |           |    |     |    |         |    |                   |    |     |    |                   |    |          |    |     |    |        |    |       |    |          |

|    |          |    |           |
|----|----------|----|-----------|
| 25 | PERp0    | 26 | GND       |
| 27 | GND      | 28 | +1.5V     |
| 29 | GND      | 30 | SMB_CLK   |
| 31 | PETn0    | 32 | SMB_DATA  |
| 33 | PETp0    | 34 | GND       |
| 35 | GND      | 36 | USB_D-    |
| 37 | Reserved | 38 | USB_D+    |
| 39 | Reserved | 40 | GND       |
| 41 | Reserved | 42 | LED_WWAN# |
| 43 | Reserved | 44 | LED_WLAN# |
| 45 | Reserved | 46 | LED_WPAN# |
| 47 | Reserved | 48 | +1.5V     |
| 49 | Reserved | 50 | GND       |
| 51 | Reserved | 52 | +3.3V     |

J33

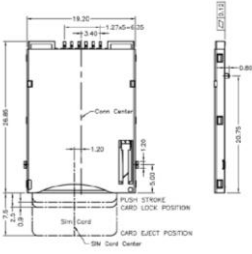
Power Plug (TY4282WNR-2XNP)



| Color  | Functions | Pin Number | Description                 |
|--------|-----------|------------|-----------------------------|
| Red    | Power+    | Pin1       | Connect to Battery+         |
| Black  | Power-    | Pin2       | Connect to Battery-         |
| Orange | ACC+      | Pin3       | Connec to ACC control Cable |
| Brown  | ACC-      | Pin4       | Connect to GND              |

CON3

SIM Socket



| Pin NO. | Signal Name |
|---------|-------------|
| 1       | VCC         |
| 2       | RST         |
| 3       | CLK         |



|  |    |     |  |
|--|----|-----|--|
|  | 4  | GND |  |
|  | 5  | GND |  |
|  | 6  | VPP |  |
|  | 7  | I/O |  |
|  | 8  | GND |  |
|  | 9  | GND |  |
|  | 10 | GND |  |