

# RYW2000 Series

4G LTE / Wi-Fi Hotspot Platform

Datasheet



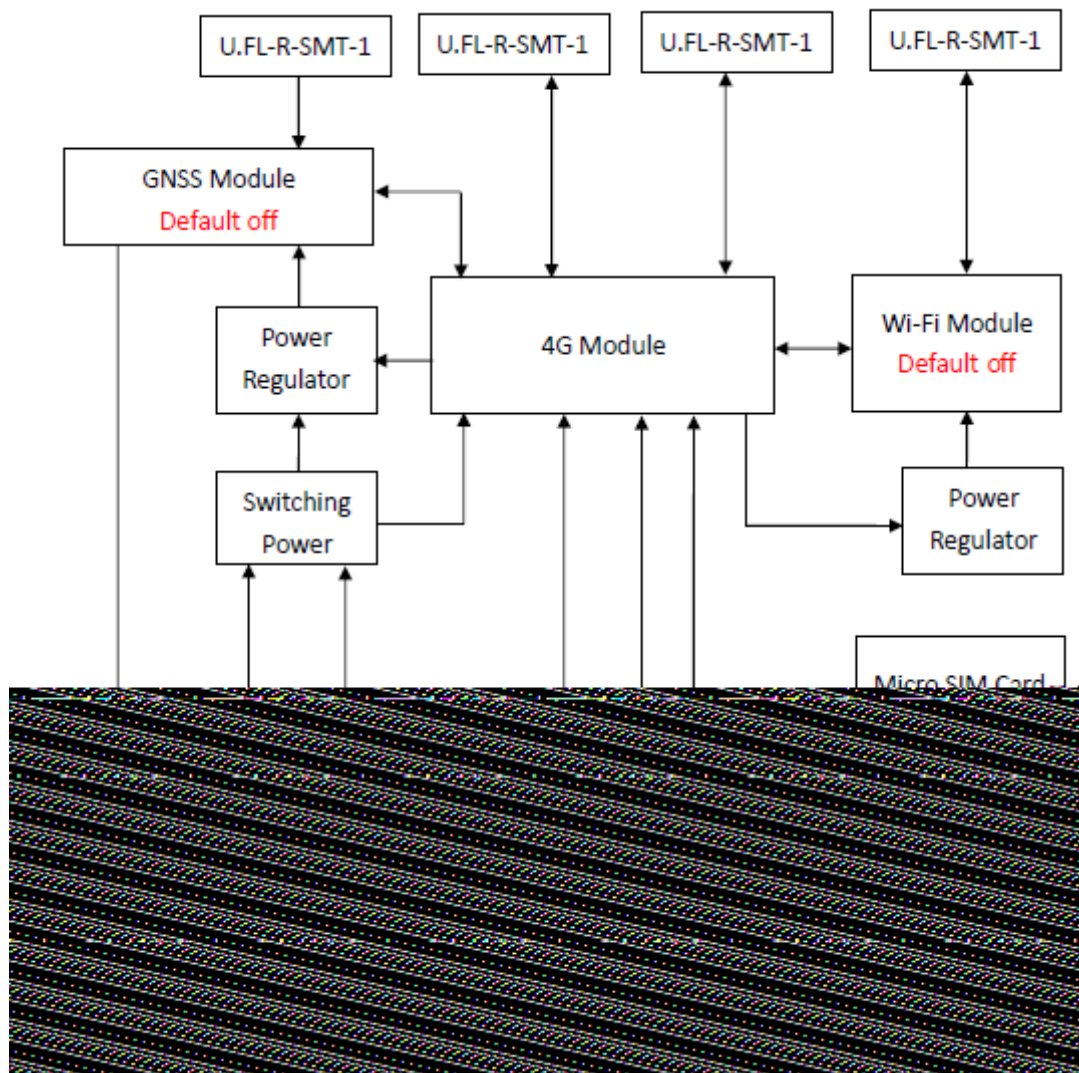
## PRODUCT DESCRIPTION

The REYAX RYW2000 Mobile Hotspot helps you offer a solution to industrial and vehicle tracking needing communication, improved IT administration and support, and security.

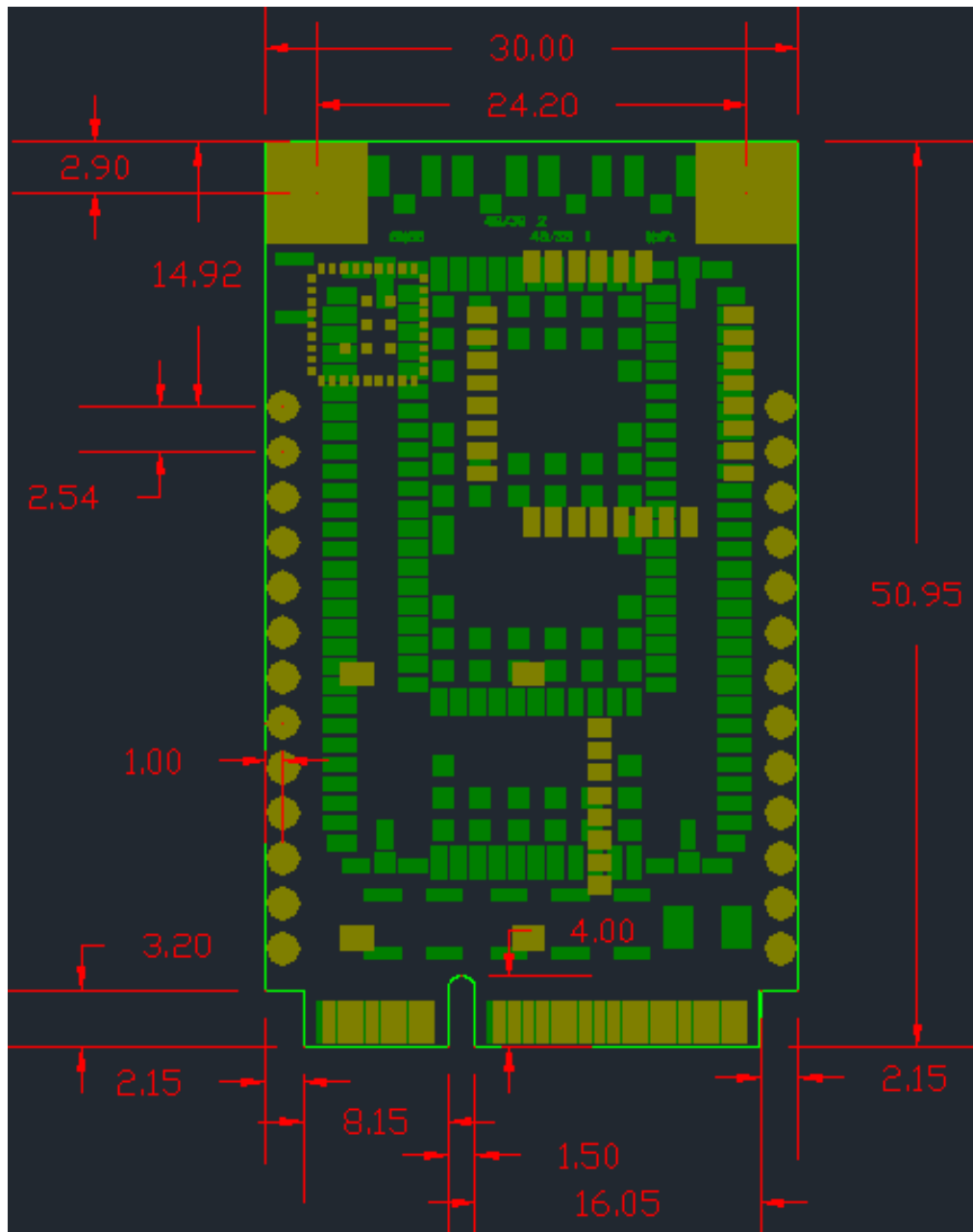
## FEATURES

- TOBY-L200/TOBY-L201/TOBY-L210/TOBY-L220/TOBY-L280 4G LTE engine.
- 72-channel EVA-M8M-0 engine(Optional).
- ELLA-W131 2.4GHz Wi-Fi engine.
- Build-in micro SIM card holder.
- Standard mini PCIe and plug PCB design.
- Temperature range: -40 to +85°C.
- Manufactured in ISO/TS 16949 certified production sites.
- Mini PCIe Signal Type USB2.0.

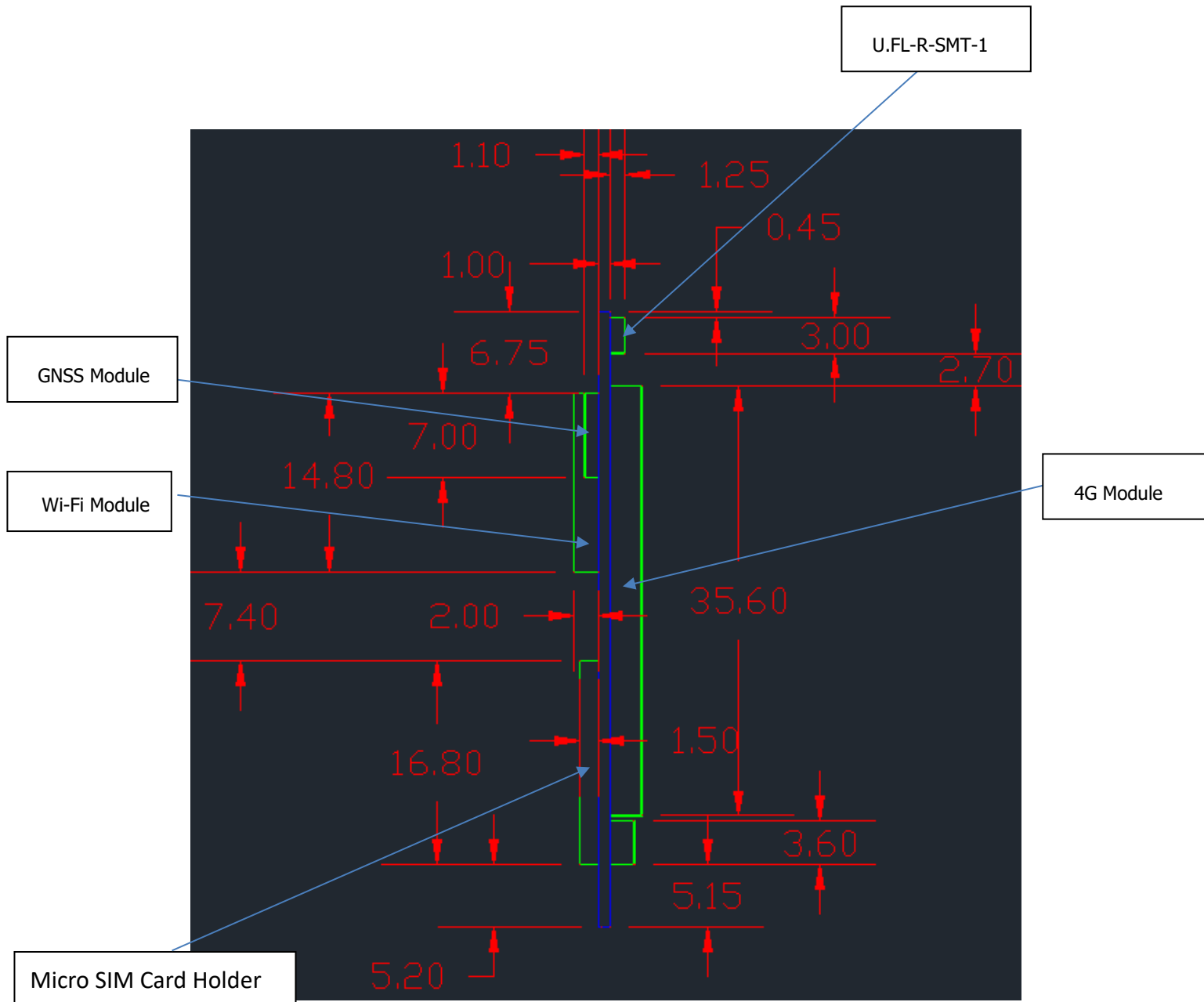
## BLOCK DIAGRAM



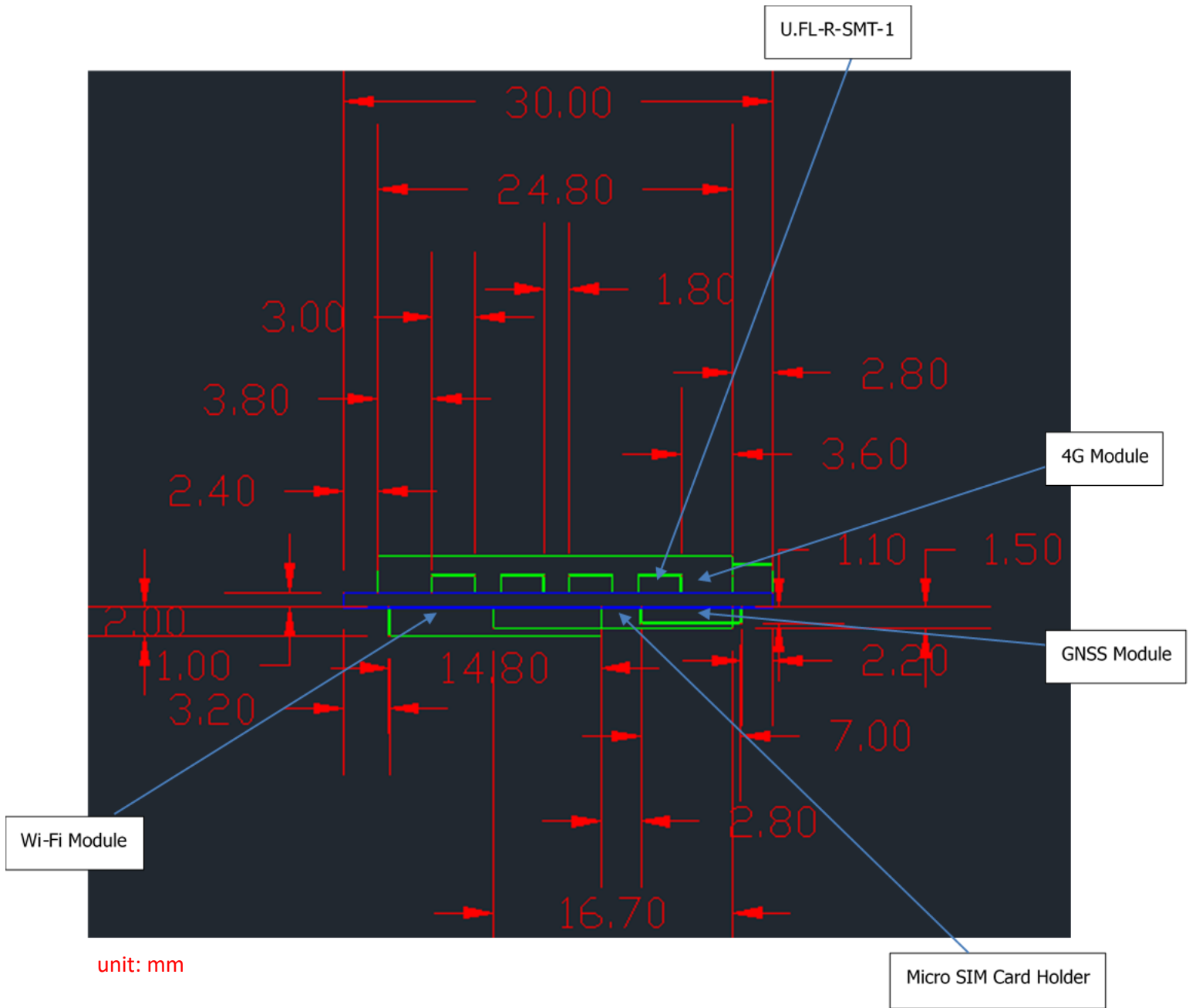
## DIMENSIONS



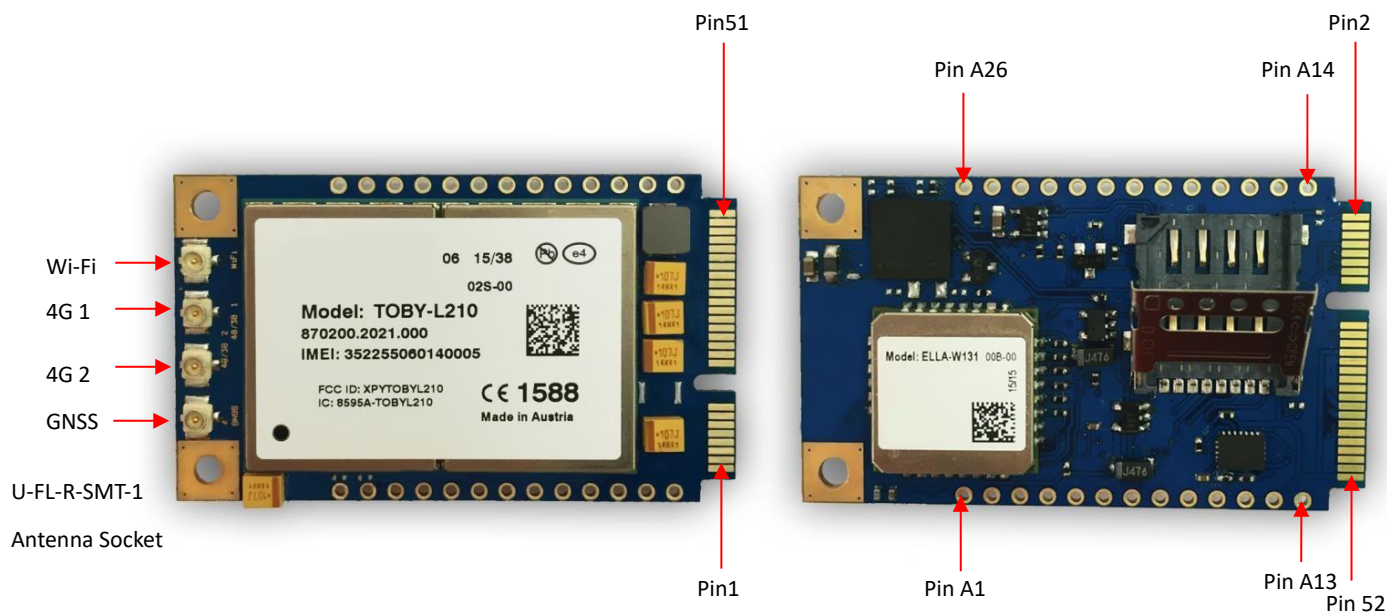
Unit:mm



Unit:mm



## PIN CONNECTOR



## PIN DESCRIPTION

| Pin | Name    | Input/Output | Description                                    |
|-----|---------|--------------|--|
| 1   | NC      |              | Not connected                                  |
| 2   | VCC     | Power        | Power Input                                    |
| 3   | NC      |              | Not connected                                  |
| 4   | GND     |              | Power Ground                                   |
| 5   | NC      |              | Not connected                                  |
| 6   | NC      |              | Not connected                                  |
| 7   | NC      |              | Not connected                                  |
| 8   | SIM_VCC |              | External SIM signal – Power supply for the SIM |
| 9   | GND     |              | Power Ground                                   |
| 10  | SIM_IO  | Input/Output | External SIM signal – Data I/O                 |
| 11  | NC      |              | Not connected                                  |
| 12  | SIM_CLK | Output       | External SIM signal – Clock                    |
| 13  | NC      |              | Not connected                                  |
| 14  | SIM_RST | Output       | External SIM signal – Reset                    |
| 15  | GND     |              | Power Ground                                   |
| 16  | NC      |              | Not connected                                  |
| 17  | NC      |              | Not connected                                  |

|    |             |              |  |
|----|-------------|--------------|--|
| 18 | GND         |              | Power Ground   |
| 19 | NC          |              | Not connected  |
| 20 | W_DISABLE_N | Input        | H : Enable<br>L : Disable<br>If this pin is unused, keep open. |
| 21 | GND         |              | Power Ground   |
| 22 | NC          |              | Not connected  |
| 23 | NC          |              | Not connected  |
| 24 | VCC         | Power        | Power Input  |
| 25 | NC          |              | Not connected  |
| 26 | GND         |              | Power Ground   |
| 27 | GND         |              | Power Ground   |
| 28 | NC          |              | Not connected  |
| 29 | GND         |              | Power Ground   |
| 30 | NC          |              | Not connected  |
| 31 | NC          |              | Not connected  |
| 32 | NC          |              | Not connected  |
| 33 | NC          |              | Not connected  |
| 34 | GND         |              | Power Ground   |
| 35 | GND         |              | Power Ground   |
| 36 | USB_DN      | Input/Output | USB Data Negative  |
| 37 | GND         |              | Power Ground   |
| 38 | USB_DP      | Input/Output | USB Data Positive  |
| 39 | VCC         | Power        | Power Input  |
| 40 | GND         |              | Power Ground   |
| 41 | VCC         | Power        | Power Input  |
| 42 | NC          |              | Not connected  |
| 43 | GND         |              | Power Ground   |
| 44 | NC          |              | Not connected  |
| 45 | NC          |              | Not connected  |
| 46 | NC          |              | Not connected  |
| 47 | NC          |              | Not connected  |
| 48 | NC          |              | Not connected  |
| 49 | NC          |              | Not connected  |



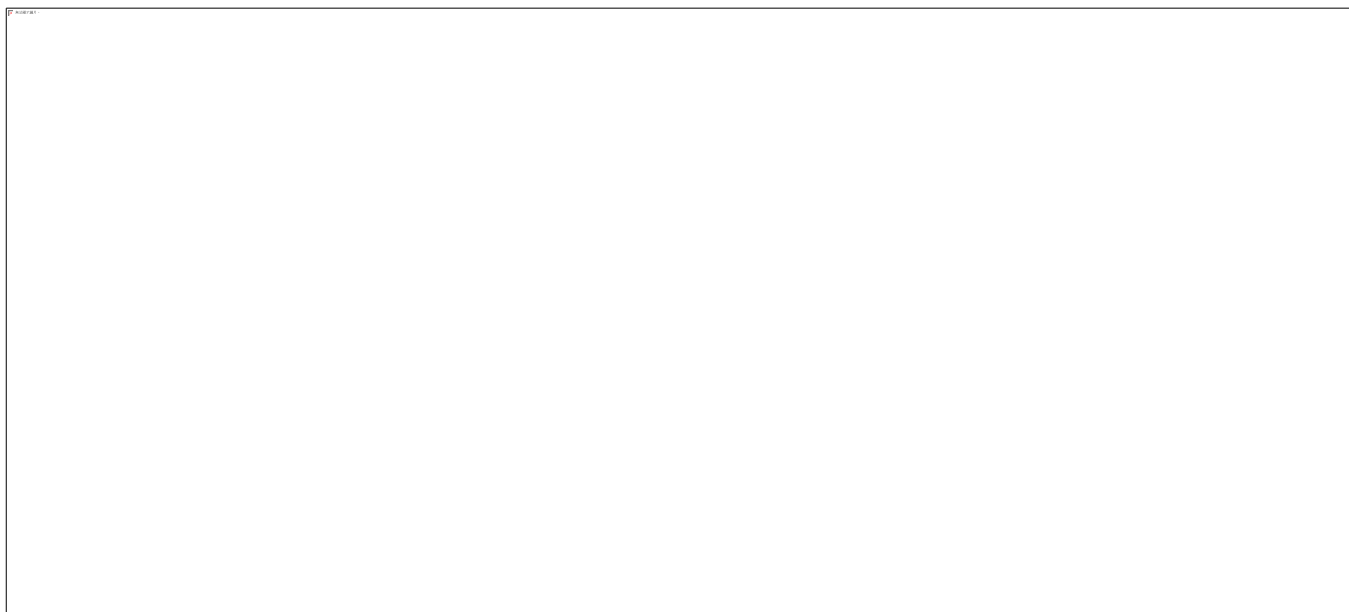
|                                      |             |              |   |
|--------------------------------------|-------------|--------------|---|
| 50                                   | GND         |              | Power Ground  |
| 51                                   | NC          |              | Not connected   |
| 52                                   | VCC         | Power        | Power Input   |
| <b>DIP A1~A26 1.8V I/O Interface</b> |             |              |   |
| A1                                   | SIM_VCC     | Power        | External SIM signal – Power supply for the SIM  |
| A2                                   | SIM_RST     | Output       | External SIM signal – Reset   |
| A3                                   | SIM_IO      | Input/Output | External SIM signal – Data I/O  |
| A4                                   | SIM_CLK     | Output       | External SIM signal – Clock   |
| A5                                   | GNSS_ENABLE | Input        | H : Enable GNSS Power<br>L : Disable GNSS Power   |
| A6                                   | GNSS_RXD    | Input        | GNSS Serial interface   |
| A7                                   | GNSS_TXD    | Output       | GNSS Serial interface   |
| A8                                   | W_DISABLE_N | Input        | H : Enable Power<br>L : Disable Power   |
| A9                                   | LED_WWAN    | Output       | Default: high impedance;<br>LED setting flash via AT command port<br><a href="#">AT+UGPIOC=16,2,1</a> |
| A10                                  | RESET_N     | Input        | 4G External reset input   |
| A11                                  | VCC         | Power        | Power Input   |
| A12                                  | VCC         | Power        | Power Input   |
| A13                                  | GND         |              | Power Ground  |
| A14                                  | GND         |              | Power Ground  |
| A15                                  | USB_DP      | Input/Output | USB Data Positive   |
| A16                                  | USB_DN      | Input/Output | USB Data Negative   |
| A17                                  | PWR_ON      | Input        | 4G Power-on input   |
| A18                                  | RXD         | Output       | UART received data  |
| A19                                  | TXD         | Input        | UART transmitted data   |
| A20                                  | CTS         | Output       | UART clear to send  |
| A21                                  | RTS         | Input        | UART ready to send  |
| A22                                  | DTR         | Input        | UART data terminal ready  |
| A23                                  | DCD         | Output       | UART data carrier detect  |
| A24                                  | RI          | Output       | UART ring indicator   |
| A25                                  | DSR         | Output       | UART data set ready   |
| A26                                  | V_BCKP      | Power        | RTC Backup supply   |

## SPECIFICATION

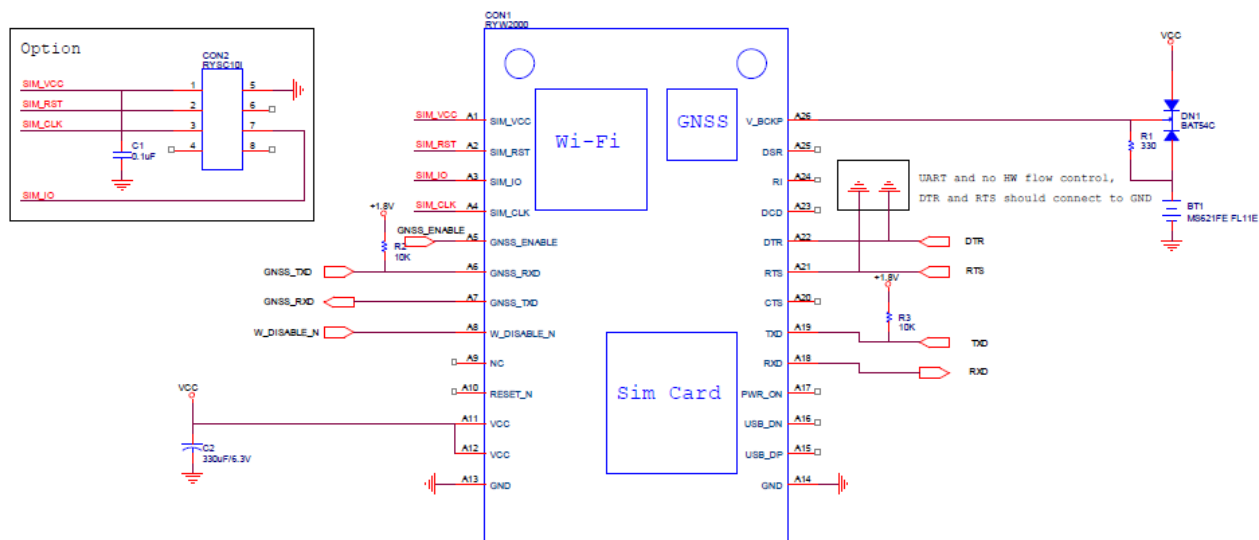
| Item                            | Min. | Typ                   | Max. | Unit | Description                         |
|---------------------------------|------|-----------------------|------|------|-------------------------------------|
| <b>4G TOBY-L2 Series</b>        |      |                       |      |      |                                     |
| LTE Bands                       |      | 2,4,5,7,17            |      |      | TOBY-L200                           |
|                                 |      | 2,4,5,13,17           |      |      | TOBY-L201                           |
|                                 |      | 1,3,5,7,8,20          |      |      | TOBY-L210                           |
|                                 |      | 1,3,5,8,19            |      |      | TOBY-L220                           |
|                                 |      | 1,3,5,7,8,28          |      |      | TOBY-L280                           |
| UMTS Bands                      |      | 850/900/<br>1900/2100 |      | MHz  | TOBY-L200<br>TOBY-L210<br>TOBY-L280 |
|                                 |      | 850/900/<br>2100      |      |      | TOBY-L220                           |
|                                 |      | 850/1900              |      |      | TOBY-L201                           |
| GSM Band                        |      | 850/900/<br>1800/1900 |      | MHz  | TOBY-L200<br>TOBY-L210<br>TOBY-L280 |
| LTE FDD Category                |      | 4                     |      |      |                                     |
| Downlink Speed                  |      | 150                   |      | Mb/s |                                     |
| Uplink Speed                    |      | 50                    |      | Mb/s |                                     |
| <b>GNSS EVA-M8M-0(Optional)</b> |      |                       |      |      |                                     |
| GNSS Center Frequency           |      | 1575.42<br>1602.5625  |      | MHz  | GPS<br>Glonass                      |
| Navigation Update Rate          |      | 1                     | 18   | Hz   | Configurable                        |
| Accuracy                        |      | 2.5                   |      | M    | CEP                                 |
| Cold Starts                     |      | 27                    |      | Sec. |                                     |
| Aided Starts                    |      | 4                     |      | Sec. |                                     |
| Reacquisition                   |      | 1                     |      | Sec. |                                     |
| Tracking Sensitivity            |      | -164                  |      | dBm  |                                     |
| Cold Starts Sensitivity         |      | -147                  |      | dBm  |                                     |
| Hot Starts Sensitivity          |      | -156                  |      | dBm  |                                     |
| <b>Wi-Fi ELLA-W131</b>          |      |                       |      |      |                                     |
| Wi-Fi 2.4 GHz Channels          | 1    |                       | 13   | Ch.  |                                     |
| Wi-Fi IEEE802.11 version        |      | b/g/n                 |      |      |                                     |

| General                          |      |     |      |      |                                    |
|----------------------------------|------|-----|------|------|------------------------------------|
| Item                             | Min. | Typ | Max. | Unit | Description                        |
| Operating Voltage<br>Power Input | 3    | 3.3 | 5.5  | V    | VCC                                |
| RTC Backup supply                | 1.4  | 3.3 | 3.6  | V    | V_BCKP                             |
| USB Interface                    |      |     |      |      | V2.0                               |
| Operating Temperature Range      | -40  | 25  | +85  | °C   |                                    |
| Dimension                        |      |     |      |      | mini PCIe Standard<br>50.95mm*30mm |
| Antenna Connector                |      | 4   |      |      | U.FL-R-SMT-1                       |
| Weight                           |      | 11  |      | g    |                                    |

## APPLICATION CIRCUIT REFERENCE : MINI PCIE CARD



## APPLICATION CIRCUIT REFERENCE : PLUG PCB TYPE



## BASIC AT COMMAND

Wi-Fi

AT+UWFWRESET=1

AT+UWAPCFG="REYAX\_ssid",2,"1234567890\_psk",0,0,3

AT+UWAPCFG="REYAX\_ssid",2,"1234567890\_psk",1,0,3

AT+UWCFG=1,1

'Reset Wi-Fi

'Set ssid & psk - RYW2100/RYW2800

'Set ssid & psk - RYW2000

'Turn Wi-Fi on

\*Please refer to the AT Commands Manual

## ORDER INFORMATION

| Ordering No. | 4G Engine | GNSS Engine | Wi-Fi Engine |
|--------------|-----------|-------------|--------------|
| RYW2000      | TOBY-L200 |             | ELLA-W131    |
| RYW2010      | TOBY-L201 |             | ELLA-W131    |
| RYW2100      | TOBY-L210 |             | ELLA-W131    |
| RYW2200      | TOBY-L220 |             | ELLA-W131    |
| RYW2800      | TOBY-L280 |             | ELLA-W131    |



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