



# FN980m TLB HW Design Guide

1VV0301651 Rev. 0 – 2020-02-28

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## APPLICABILITY TABLE

### PRODUCTS

■ ■ FN980m

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## 1. INTRODUCTION

### 1.1. Scope

This scope of this document is to describe the FN980m TLB which is part of complete FN980m Development Kit (Dev-Kit)

### 1.2. Audience

This document is intended for Telit customers, especially system integrators, about to implement their applications using the Telit module.

### 1.3. Contact Information, Support

For general contact, technical support services, technical questions and report documentation errors contact Telit Technical Support at:

- TS-EMEA@telit.com
- TS-AMERICAS@telit.com
- TS-APAC@telit.com
- TS-SRD@telit.com

Alternatively, use:

<https://www.telit.com/support-training/>

For detailed information about where you can buy the Telit modules or for recommendations on accessories and components visit:

<http://www.telit.com>

Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.

Telit appreciates feedback from the users of our information.

## 1.4. Text Conventions

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Danger – This information **MUST** be followed or catastrophic equipment failure or bodily injury may occur.

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Caution or Warning – Alerts the user to important points about integrating the module, if these points are not followed, the module and end user equipment may fail or malfunction.

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Tip or Information – Provides advice and suggestions that may be useful when integrating the module.

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All dates are in ISO 8601 format, i.e. YYYY-MM-DD.

## 1.5. Related Documents

- FN980m HW User Guide, 1VV0301603
- FN980m Pinout, 80624ST10993A
- Telit EVB (Evaluation Board) User Guide, 1VV0301249



## 2. GENERAL PRODUCT DESCRIPTION

### 2.1. Overview

The Translation Board (TLB) is custom designed to interface the Telit module variant FN980m with the Telit Generic Evaluation Board (EVB) thus forming the complete Development Kit of FN980m.

The TLB provides the mapping of Telit module signals and functions into the generic EVB signals and functions.

The FN980m TLB design includes the following items:

- FN980m module
- RF SMA connectors
- Board to Board connectors for interfacing to EVB main board
- Module specific circuitry which is not part of the generic circuitry of the EVB

The TLB also makes provision to assemble a custom designed module socket instead of assembling the module.

Power supply and control interface for the RF module is provided from the EVB via the B2B connectors.

To monitor the temperature, a thermistor is placed on the top GND plane, close to the module which should be representative for the module's backside temperature.

The bottom plane solder-mask is cutout below the RF module in order to optimally mount/attach a heatsink aiming to cool the module via the many heat conducting GND via's.

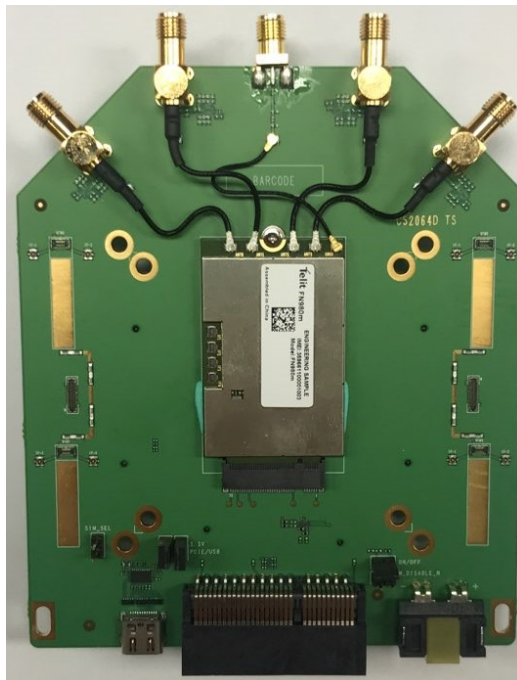
The board is designed to accommodate new modules according FN980m M.2 (50 x 30.00 x 3.40mm, +/- 0.15 mm tolerance and 75 pins) updated pin mapping.

#### **PCB reference numbers:**

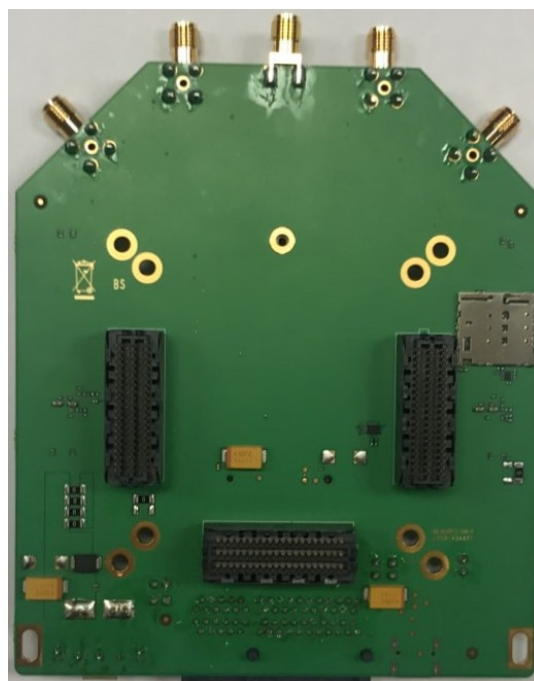
<b>TLB</b>	CS2064D
<b>EVB</b>	CS1742C, CS1942E
<b>Module</b>	FN980m

## 2.2. TLB View

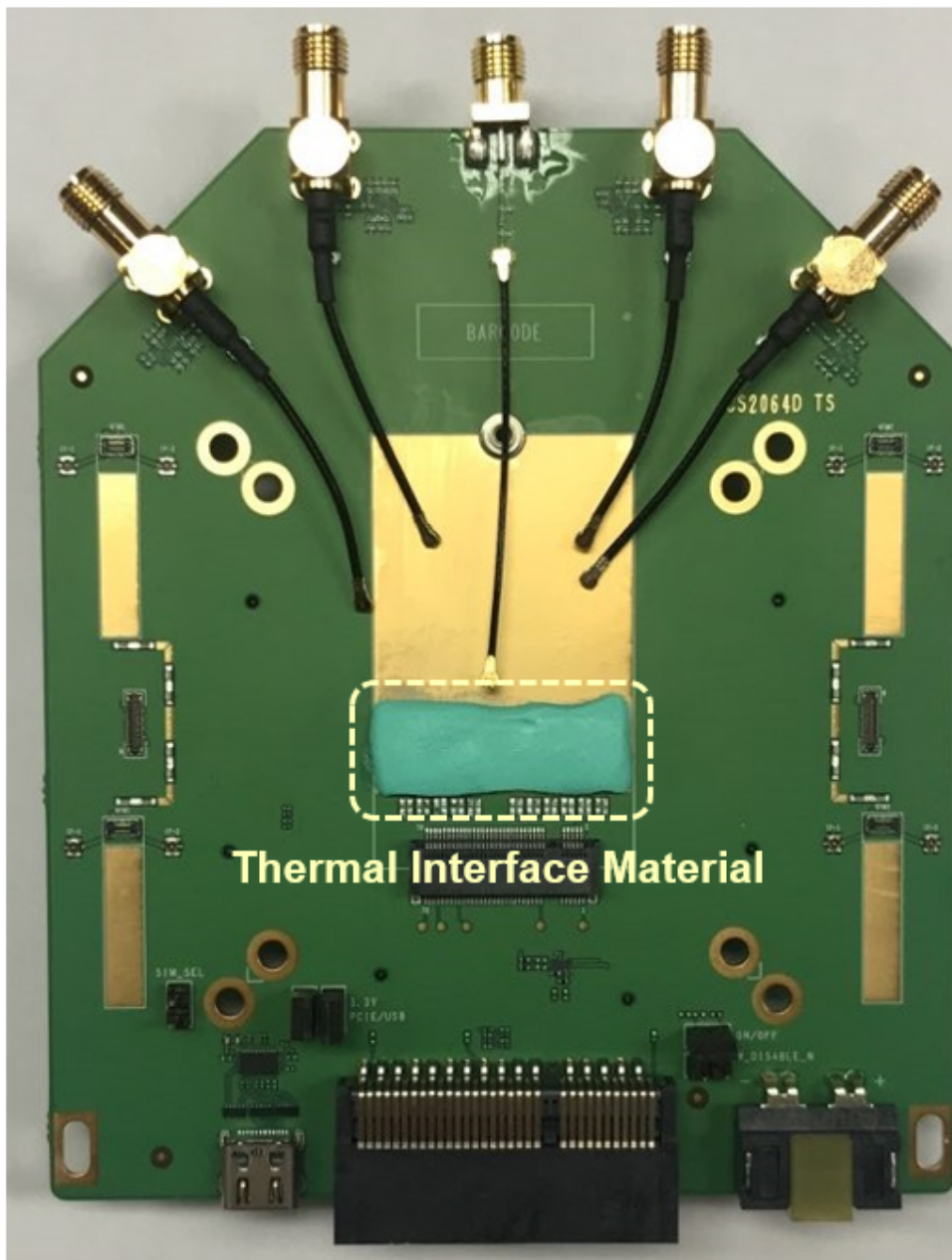
The below pictures show the TLB top and bottom view.



**FN980m TLB Top View**



**FN980m TLB Bottom View**



**FN980m TLB**



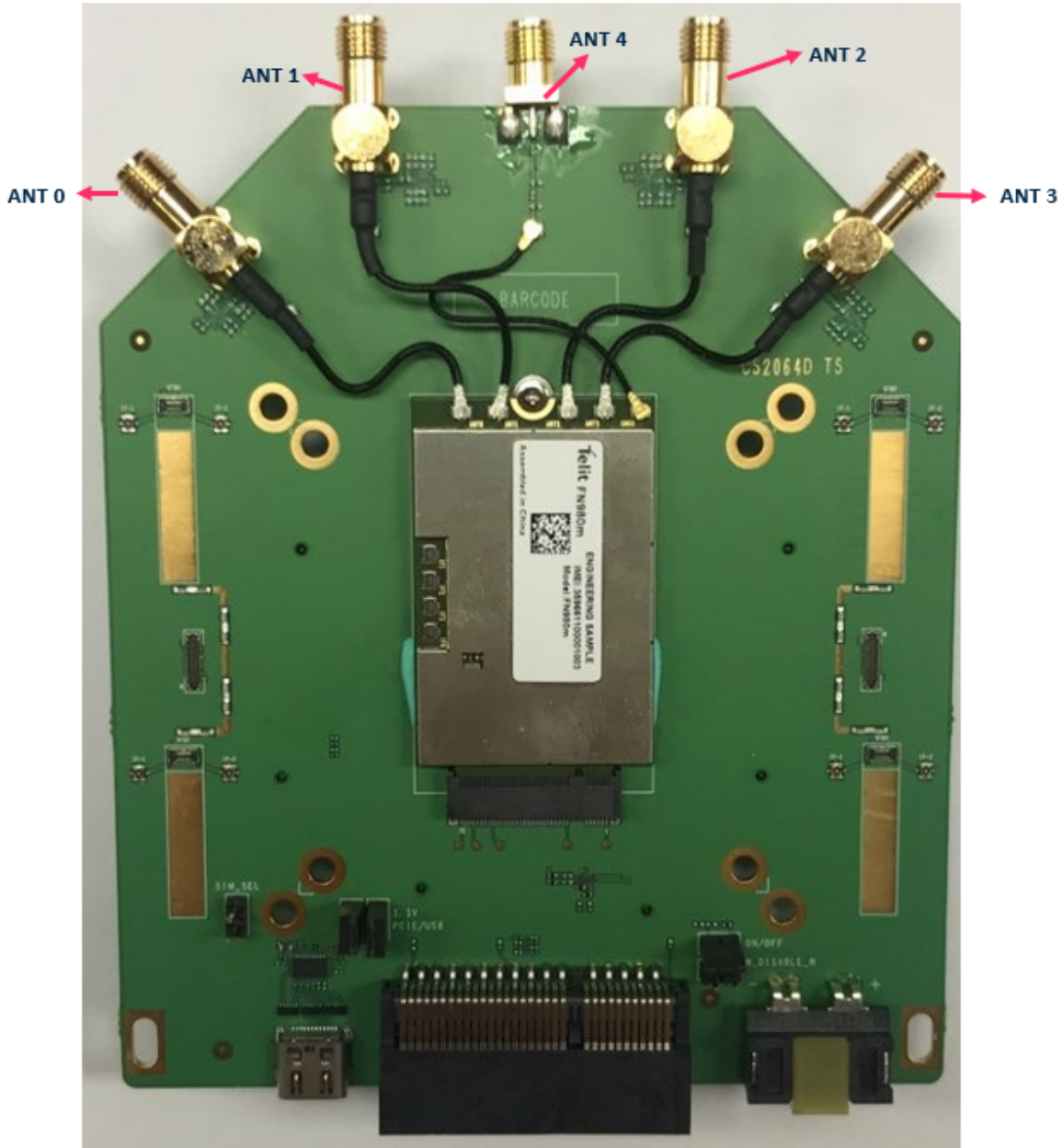
Information – There is the TIM on the TLB to transfer the heat generated by FN980m.

There are the large solder resist opening area on the bottom of FN980m for the better heat dissipation.

Adding a thermal TIM on the back of FN980m is the most important thing in thermal dissipation point of view.

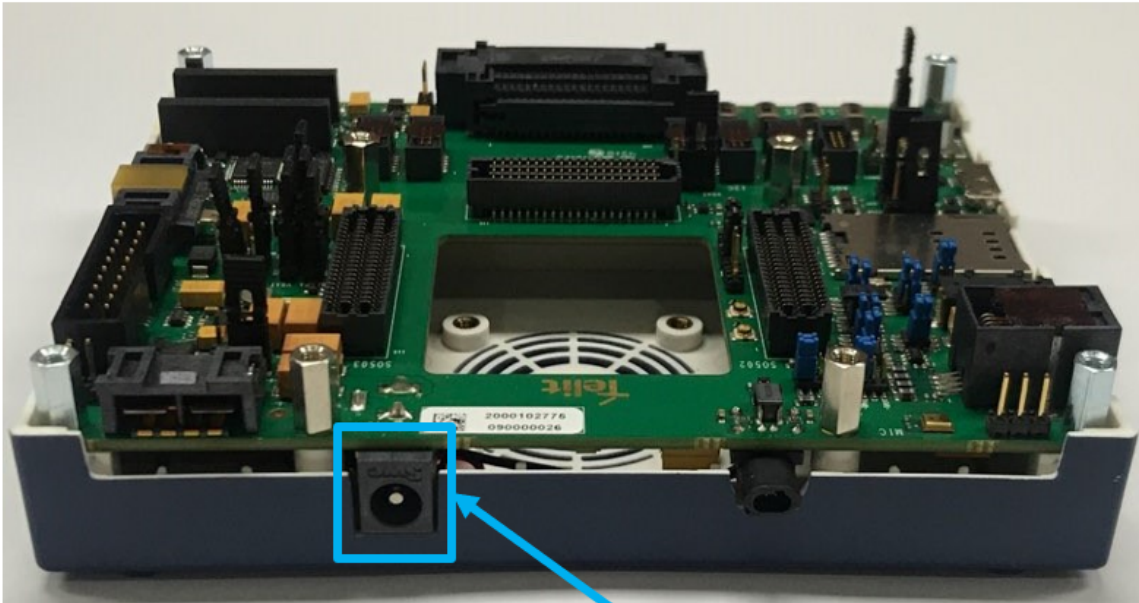
With this action, the temperature of FN980m can be decreased significantly.

### 2.3. Antenna Ports



Information – For more detail information of Antenna ports, please refer to FN980m HW User Guide, 1VV0301603, Chapter 7.1 Antenna Interface.

## 2.4. Guidance for Evaluation Board



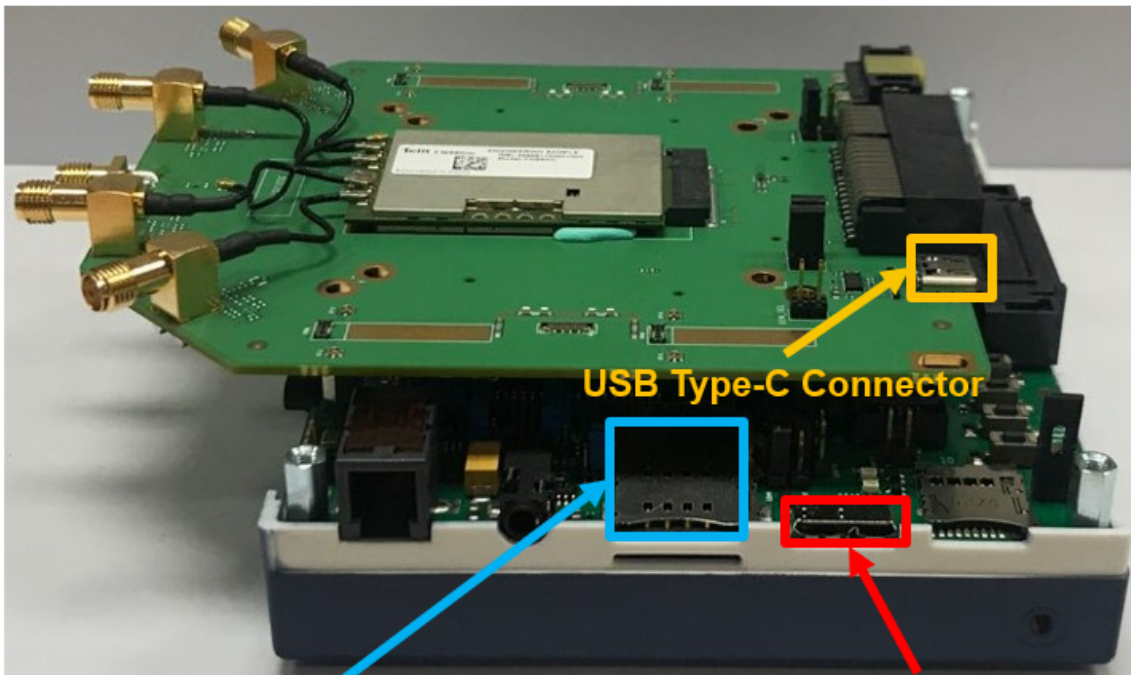
Using a 12V adaptor



Information – For more detail information of power supply source selection, please refer to 1VV0301249 Telit Evaluation Board (EVB) HW User Guide, Chapter 7.1 Supply Source Selection.

**OUTPUT: 12 V / 2.5 A**

**Two type of connectors  
for 110 V & 220V**



**SIM1 Socket**

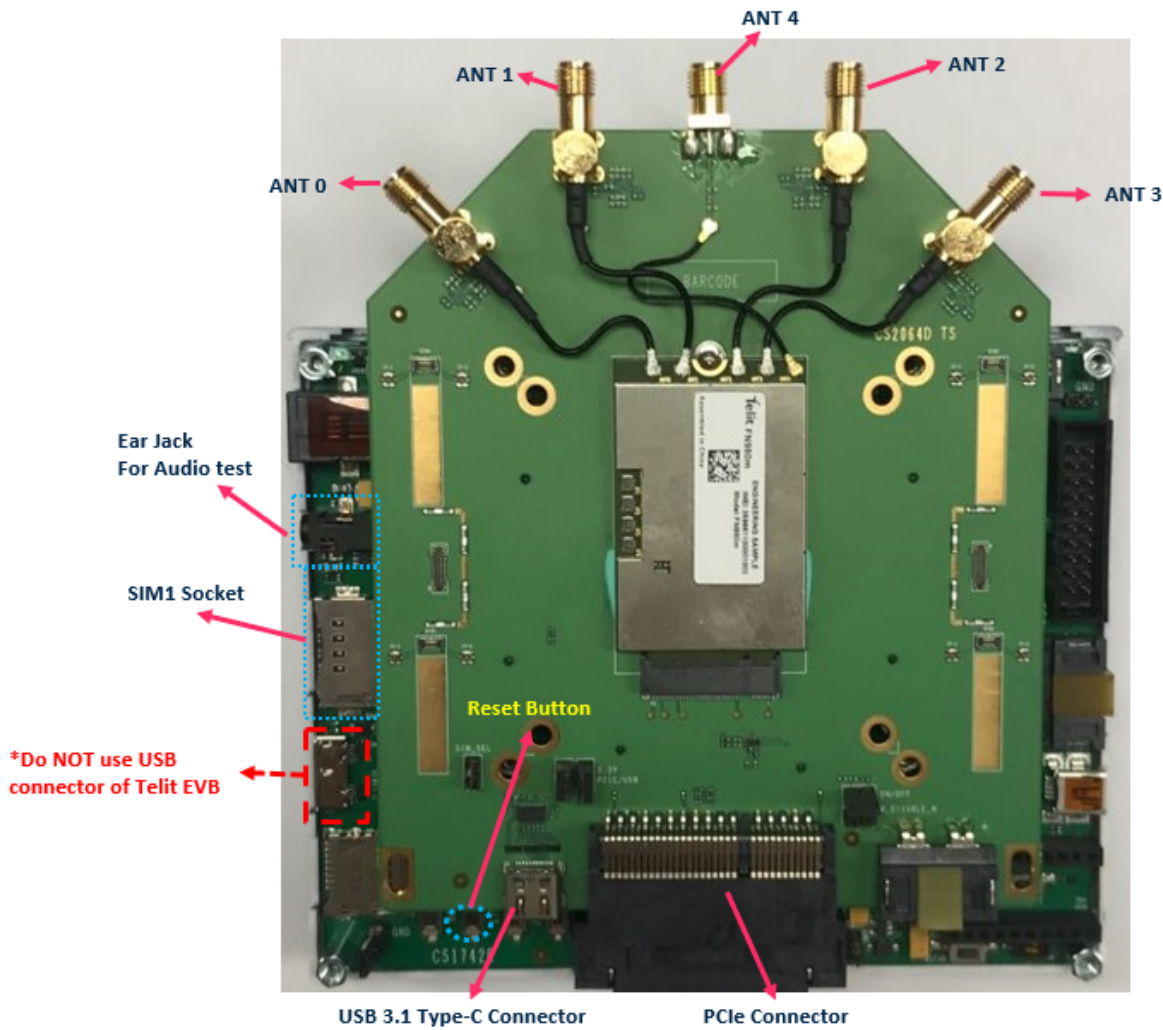
**\*Do not use USB connector**



**Warning** – FN980m features high throughput and high speed peripherals.

For such a reason, users who want to use USB interface **MUST** use USB C type connector which is in TLB.

The USB connector which is in TELIT EVB is not supported on FN980m.



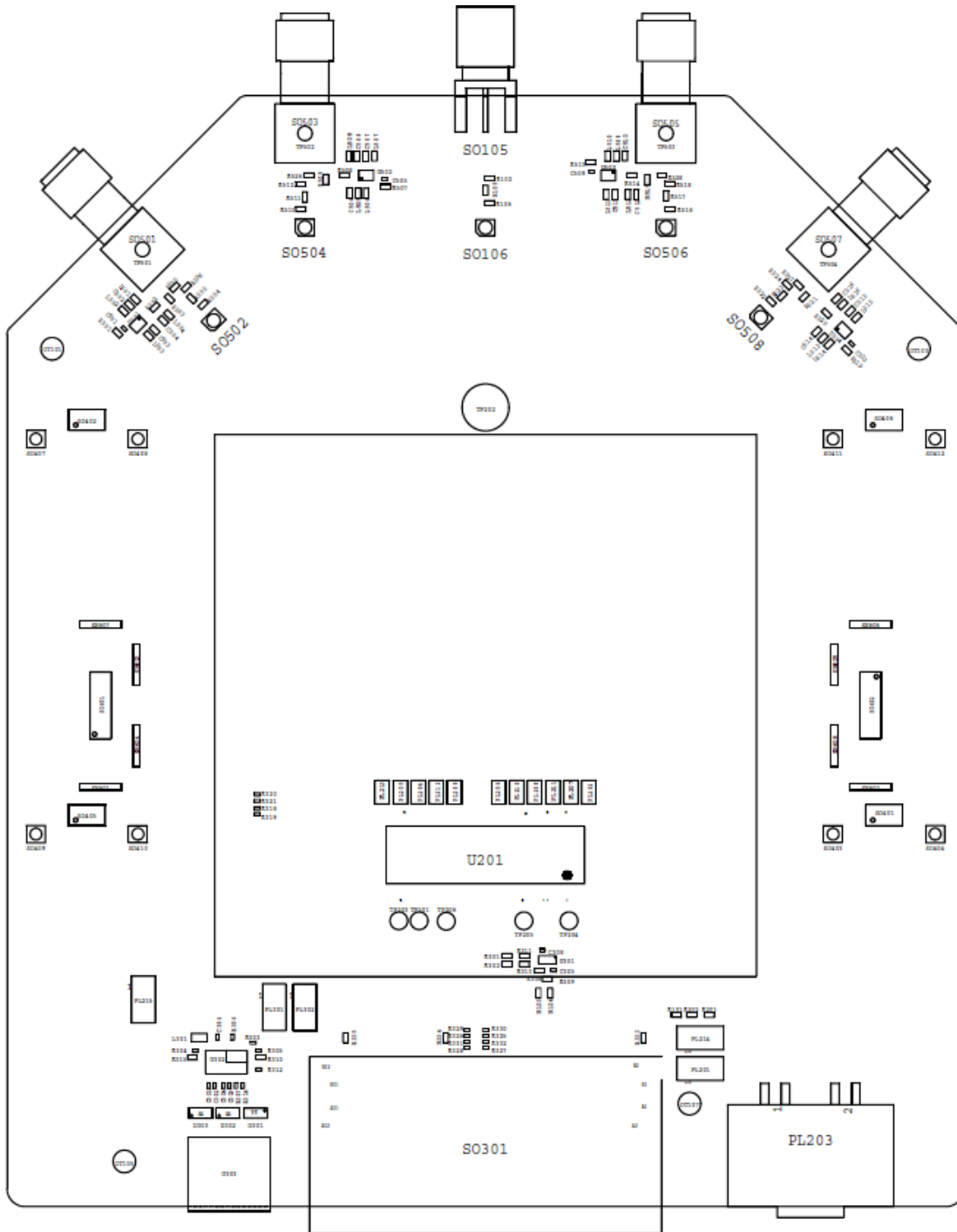
<b>SIM Card</b>	You can use the SIM 1 Socket on the top interface board.
<b>Power ON</b>	To Power-ON the Telit module, connect an AC adaptor.
<b>Power OFF</b>	To Power-OFF the Telit module, unplug an adaptor.
<b>Modem Reset</b>	To reset the Telit module, press the reset button for more than 1 second.

<b>RF Antenna</b>	For RF antenna, connect antennas to the 4 antenna ports ANT0, ANT1, ANT2 and ANT3.
<b>GNSS Antenna</b>	For GNSS antenna, you can use ANT4.
<b>*USB Type-C</b>	FN980m supports USB 3.1 GEN2 interface. USB connector of Telit Evaluation Board does not support 10 Gbit/s. Must use USB Type-C connector which is located in TLB of FN980m.
<b>AT Commands / DATA Port</b>	Connect the USB Type-C cable to a Windows PC or Linux PC only after you install necessary drivers. Refer to software user guide for details.

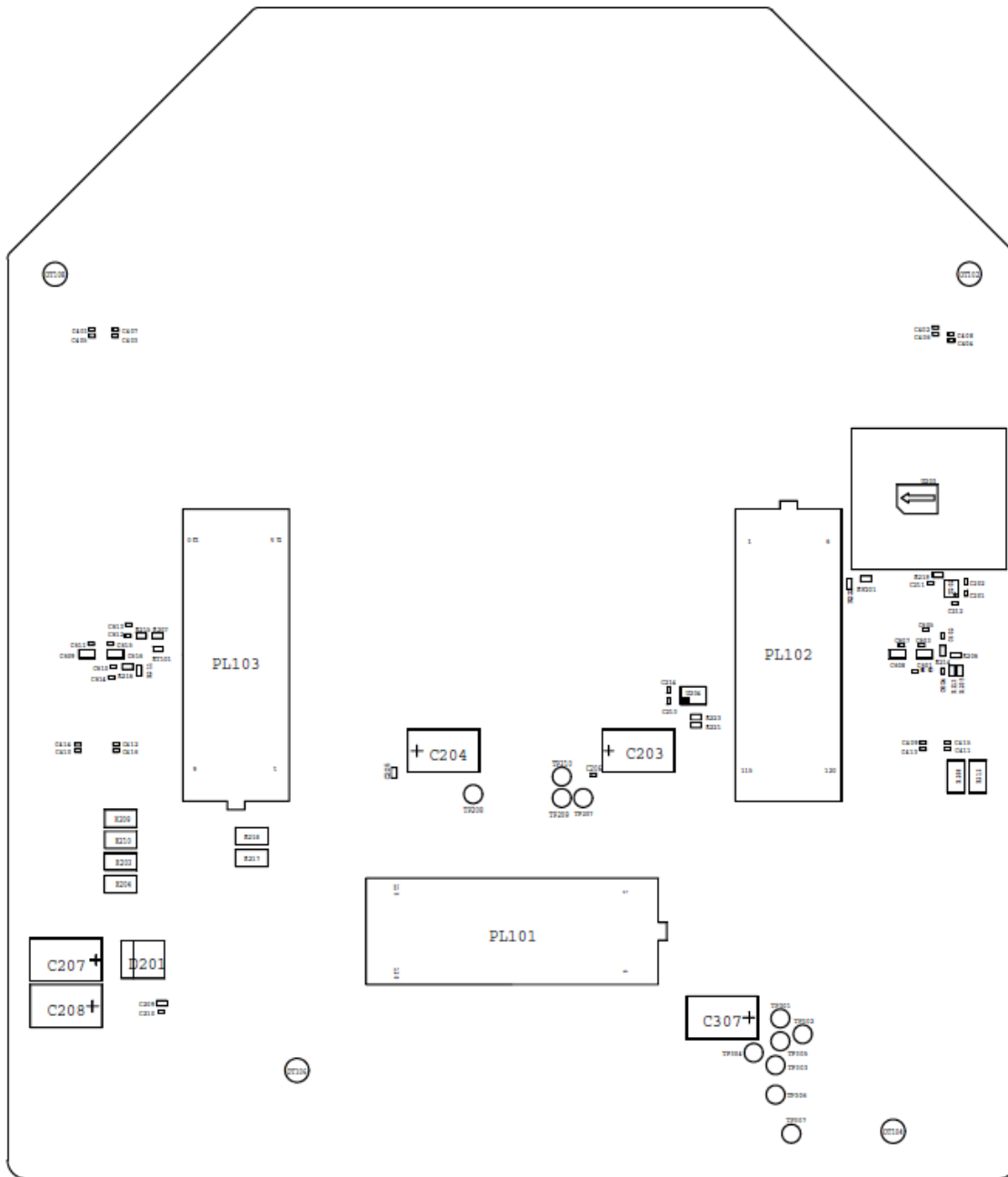


### 3. COMPONENT ASSEMBLY DIAGRAM

#### Layout

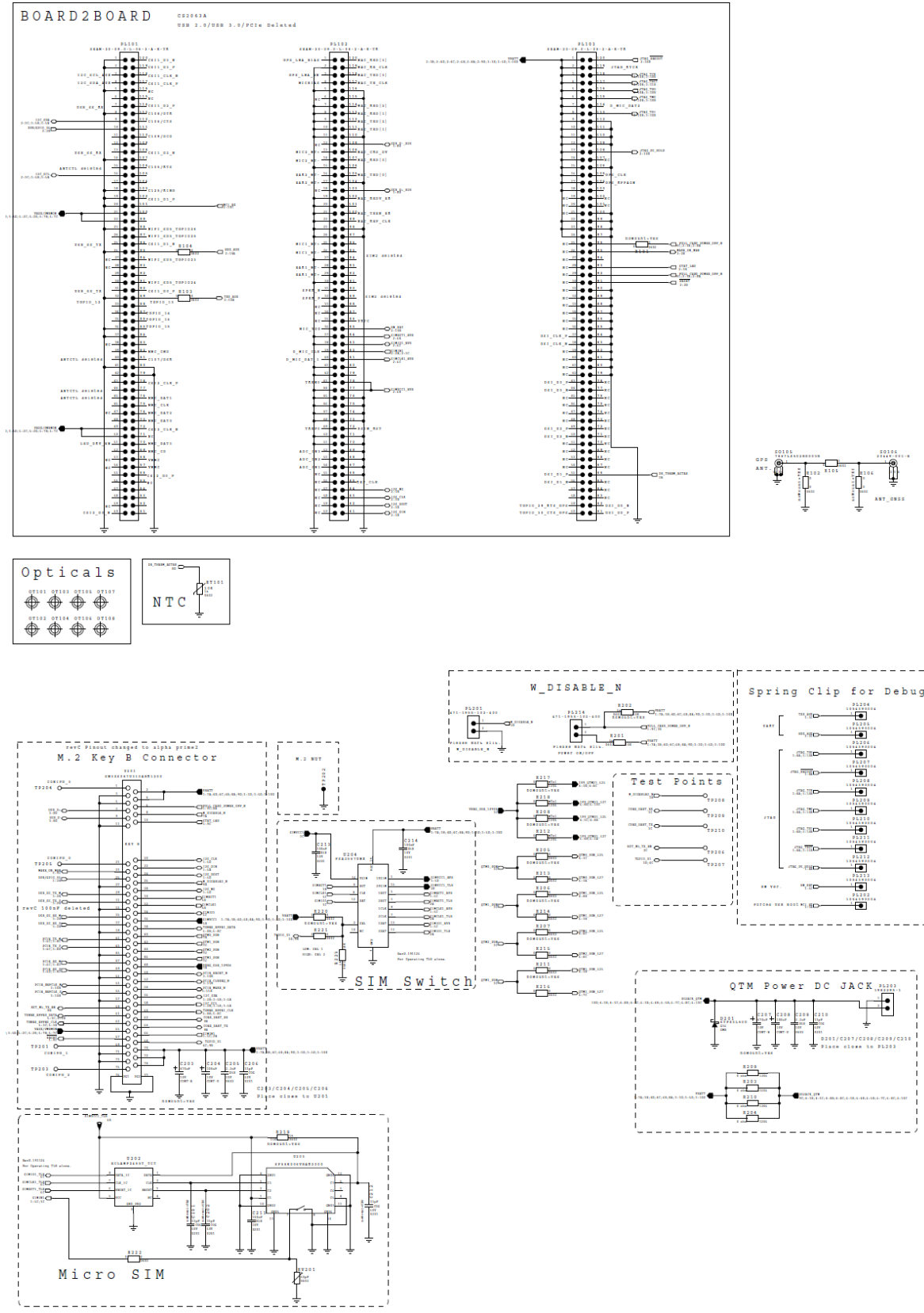


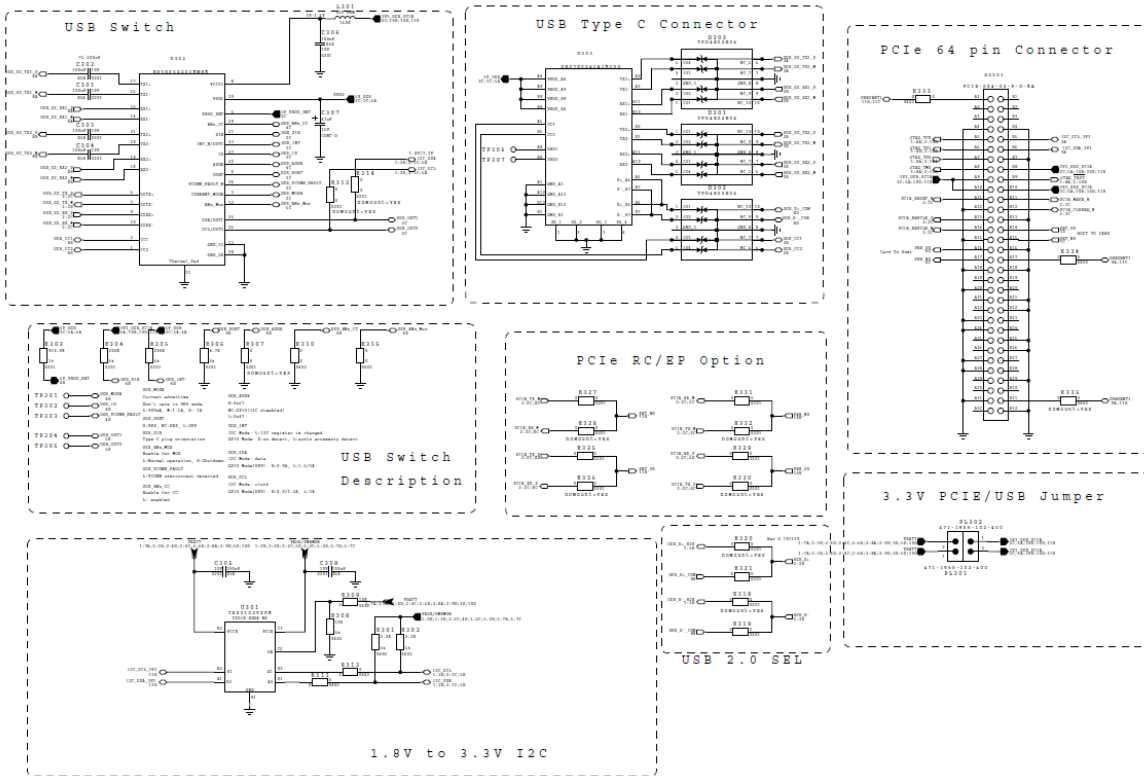
Component Diagram Top View



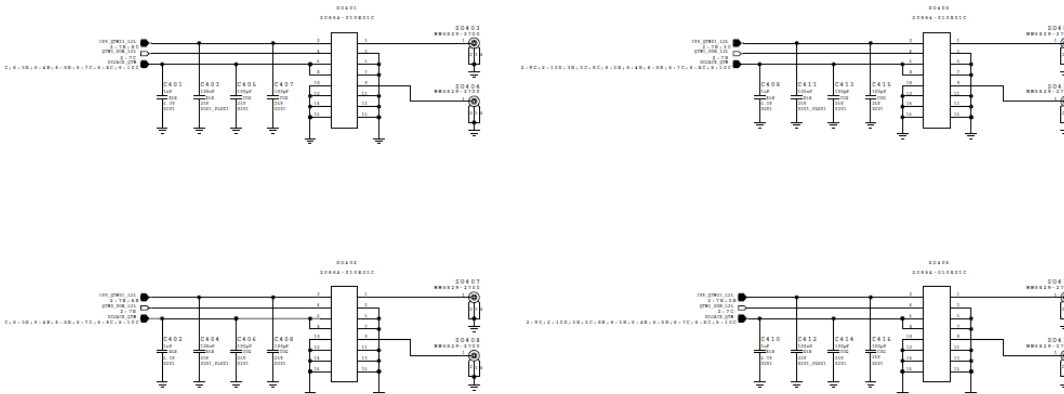
Component Diagram Bottom View

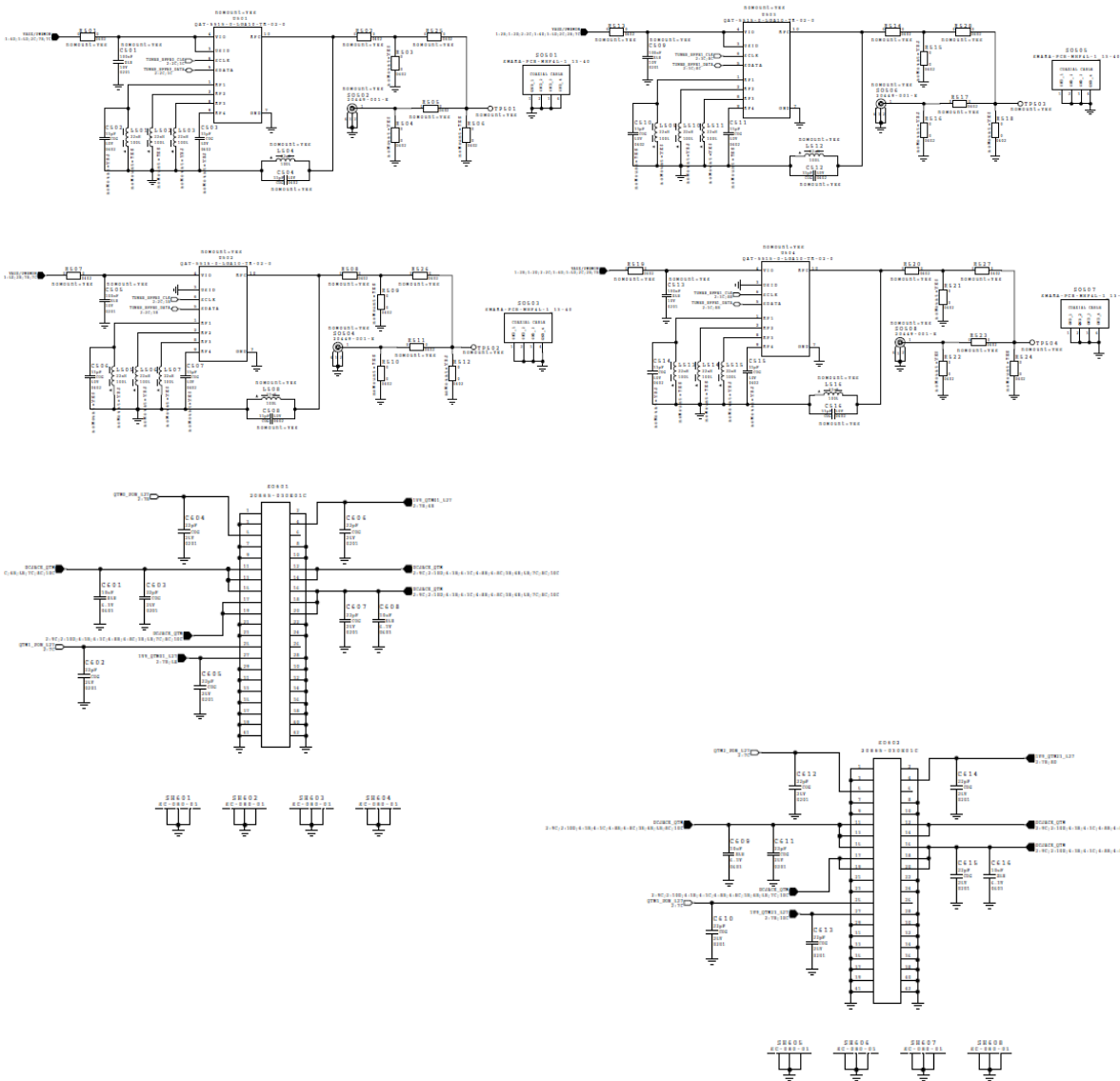
# 4. SCHEMATICS





TLB to QTM525





Information – For a higher resolution picture of schematic, please contact Telit technical support as below.

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- [TS-AMERICAS@telit.com](mailto:TS-AMERICAS@telit.com)
- [TS-APAC@telit.com](mailto:TS-APAC@telit.com)
- [TS-SRD@telit.com](mailto:TS-SRD@telit.com)

## 5. SAFETY RECOMMENDATIONS

### 5.1. READ CAREFULLY

Be sure the use of this product is allowed in the country and in the environment required. The use of this product may be dangerous and has to be avoided in the following areas:

- Where it can interfere with other electronic devices in environments such as hospitals, airports, aircrafts, etc.
- Where there is risk of explosion such as gasoline stations, oil refineries, etc. It is the responsibility of the user to enforce the country regulation and the specific environment regulation.

Do not disassemble the product; any mark of tampering will compromise the warranty validity. We recommend following the instructions of the hardware user guides for correct wiring of the product. The product has to be supplied with a stabilized voltage source and the wiring has to be conformed to the security and fire prevention regulations. The product has to be handled with care, avoiding any contact with the pins because electrostatic discharges may damage the product itself. Same cautions have to be taken for the SIM, checking carefully the instruction for its use. Do not insert or remove the SIM when the product is in power saving mode.

The system integrator is responsible for the functioning of the final product; therefore, care has to be taken to the external components of the module, as well as any project or installation issue, because the risk of disturbing the GSM network or external devices or having impact on the security. Should there be any doubt, please refer to the technical documentation and the regulations in force. Every module has to be equipped with a proper antenna with specific characteristics. The antenna has to be installed with care in order to avoid any interference with other electronic devices and has to guarantee a minimum distance from the body (20 cm). In case this requirement cannot be satisfied, the system integrator has to assess the final product against the SAR regulation.

The European Community provides some Directives for the electronic equipment introduced on the market. All of the relevant information is available on the European Community website:

<http://ec.europa.eu/enterprise/sectors/rtte/documents/>

The text of the Directive 99/05 regarding telecommunication equipment is available, while the applicable Directives (Low Voltage and EMC) are available at:

<http://ec.europa.eu/enterprise/sectors/electrical/>

## 6. ACRONYMS

EVB	Evaluation Board
TLB	Translation Board
IFBD	Interface Board
USB	Universal serial bus
SIM	Subscriber Identification Module
TIM	Thermal Interface Material

## 7. DOCUMENT HISTORY

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Revision	Date	Changes
0	2020-02-28	First draft

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