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# Analog Life Design Review Report

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# About the Document

## History

Revision	Date	Author	Description
1.0	2020-07-31	Jack	Initial the standard reply

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FIGURE 2: SIM PART DESIGN.....

# 1 Scope

The aim of this document is to describe suggestions and corrections that Quectel advises to improve application that integrates Quectel BG96 module.

## 2 Design Review

Design review is based on the following received documentation:

ABC-RevA-Schematic-202007291346

ABC-RevA-Layers-202007291344



# 3 Schematic Review

## 3.1. Power Supply

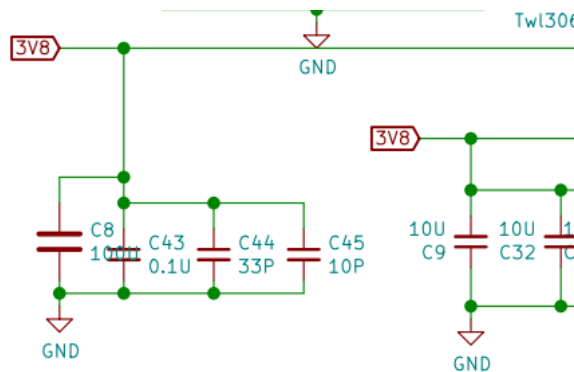
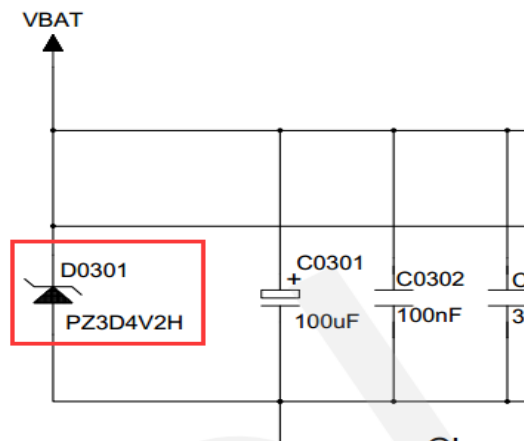


Figure 1: Power Supply – VBAT

Note: It is recommended to increase the voltage regulator diode. The BG96 power supply is 3.3~4.3V, and the typical value is 3.8V. The reference design is as follows



## 3.2. USB

The USB interface is used for AT command communication, data transmission, software debugging and firmware upgrade.

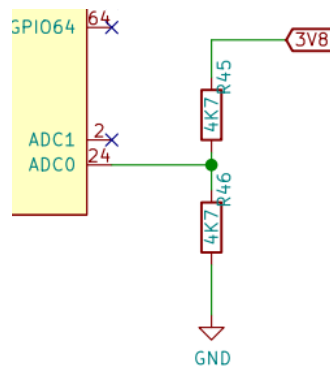
## 3.3. USIM

### 3.4. UART

### 3.5. RF

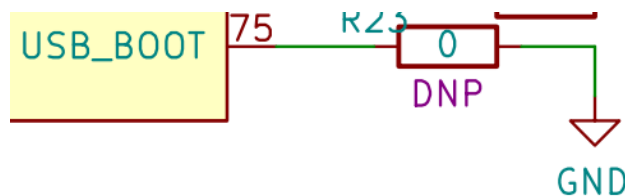
- 1、 Due to that the current of module will reach to 1.6A during the transmission burst in 2G network, it is recommended that the VBAT RF power supply is capable of providing the sufficient current up to 2A at least.
- 2、 the characteristic impedance of all RF traces (GPS and main) should be controlled as 50Ω.

### 3.6. ADC

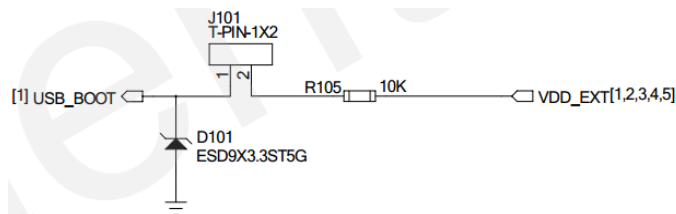


Note: ADC input voltage must not exceed 1.8V

### 3.7. USB\_BOOT



Note: It is recommended to reserve USB\_BOOT circuit for forcing into download mode.



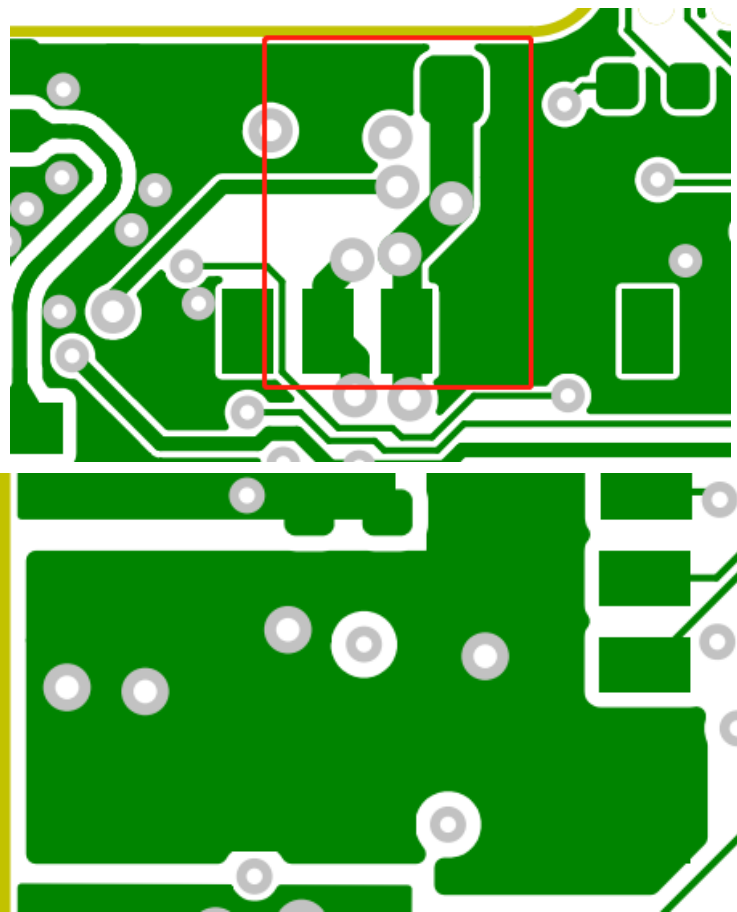
### 3.8. Other



Note : Keep all RESERVED and unused pins unconnected

# 4 PCB Layout Review

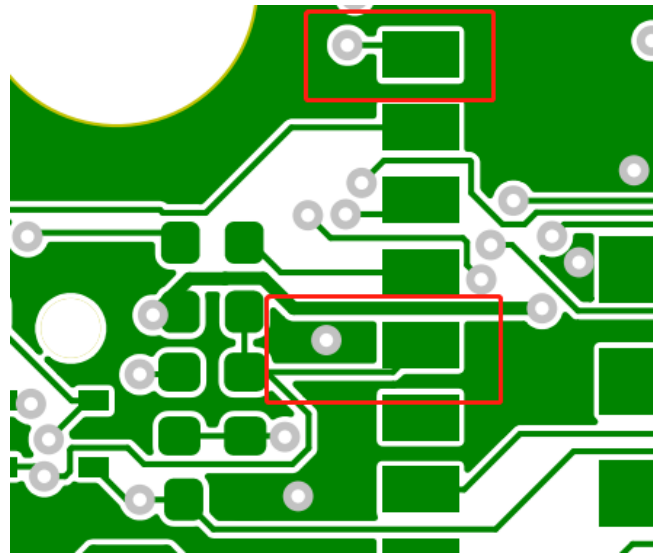
## 4.1. Power Supply



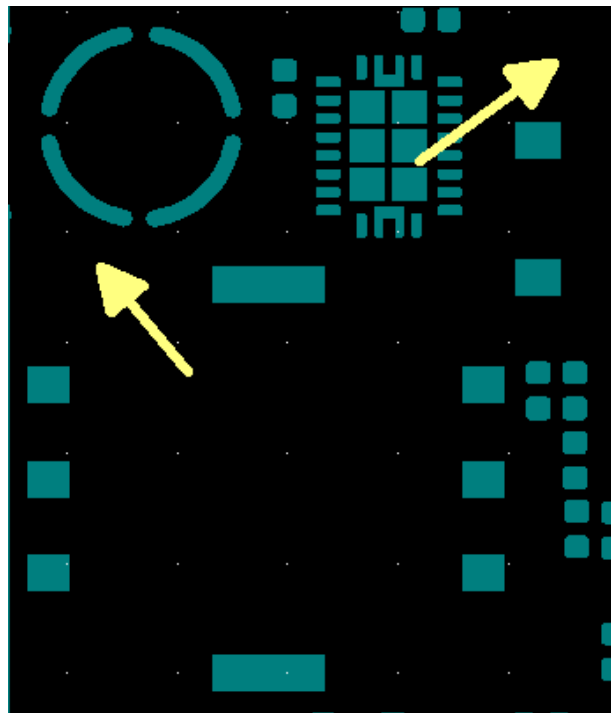
Note:

1. When the power supply is changed to the layer, the number of holes is sufficient (the number of vias recommended by the module power supply is not less than 4) . The width of VBAT trace should be no less than 2mm ,the longer route, the wider trace
2. VBAT\_BB and VBAT\_RF should layout as star structure

## 4.2. USIM



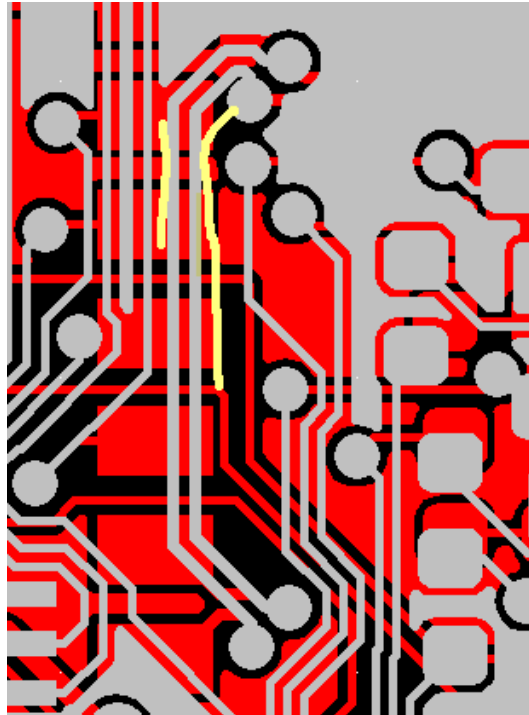
Note : Note: The line width of SIM\_VDD power supply and SIM\_GND cable is more than 20 mils



Note:

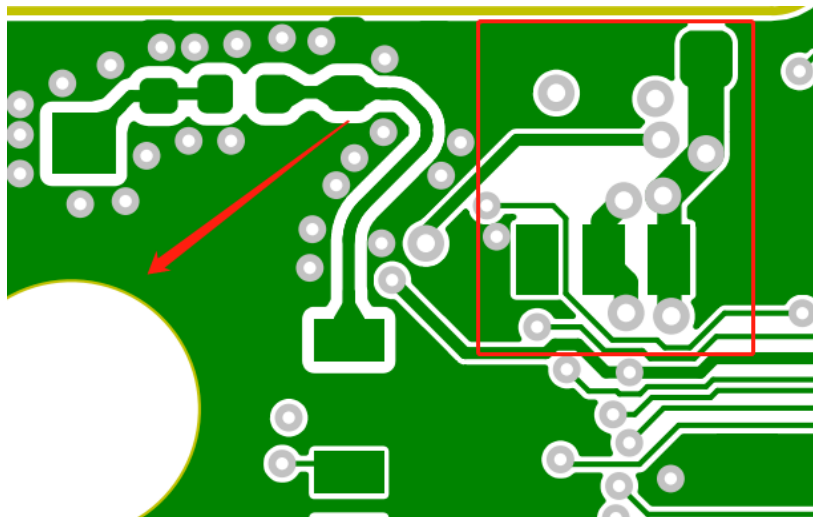
1. USIM circuit routing sequence: module pin -> series 0R resistor -> parallel 33PF capacitor -> ESD -> USIM card connector. The USIM\_CLK and USIM\_DATA signal lines need to be surrounded by ground.
2. VBAT line should be far away from SIM signal line

### 4.3. USB



Note: USB signal traces is routed as differential pairs with total grounding

### 4.4. RF



Note: It is recommended to adjust the GNSS RF routing direction and away from the power supply

### 4.5. Others

# 5 General Comments