



RM520N Series

Reference Design

5G Module Series

Version: 1.2

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Status: Released



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About the Document

Revision History

Version	Date	Author	Description
-	2021-12-13	Wynna SHU	Creation of the document
1.0	2022-07-15	Wynna SHU	First official release
1.1	2023-04-17	Archibald JIANG	<ol style="list-style-type: none">1. Added applicable module: RM520N-EU.2. Updated the value of R0202, R0204, R0205, R0206, R0207, R0208, C0212, L0201, Vstart, Vstop and Vref (Sheet 2).
1.2	2023-12-22	Archibald JIANG	Added a note on avoiding abnormal RF functions caused by current sink on the module's pins (Sheet 1).

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1 Reference Design

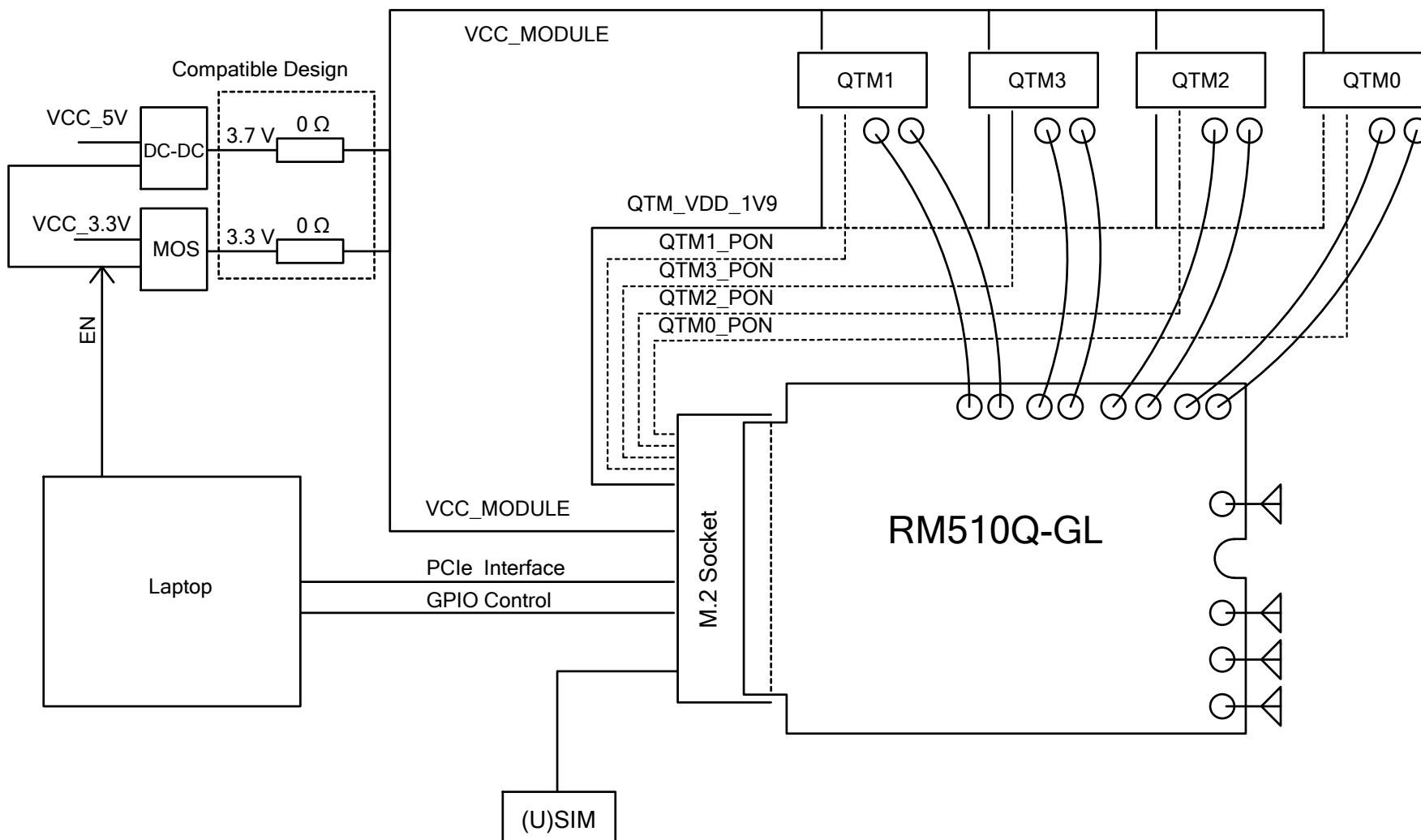
1.1. Introduction

This document provides the reference design for RM520N series module, including the design for power supply, module interfaces, AP interfaces and (U)SIM interfaces.

1.2. Schematics

The schematics illustrated in the following pages are provided for reference only.

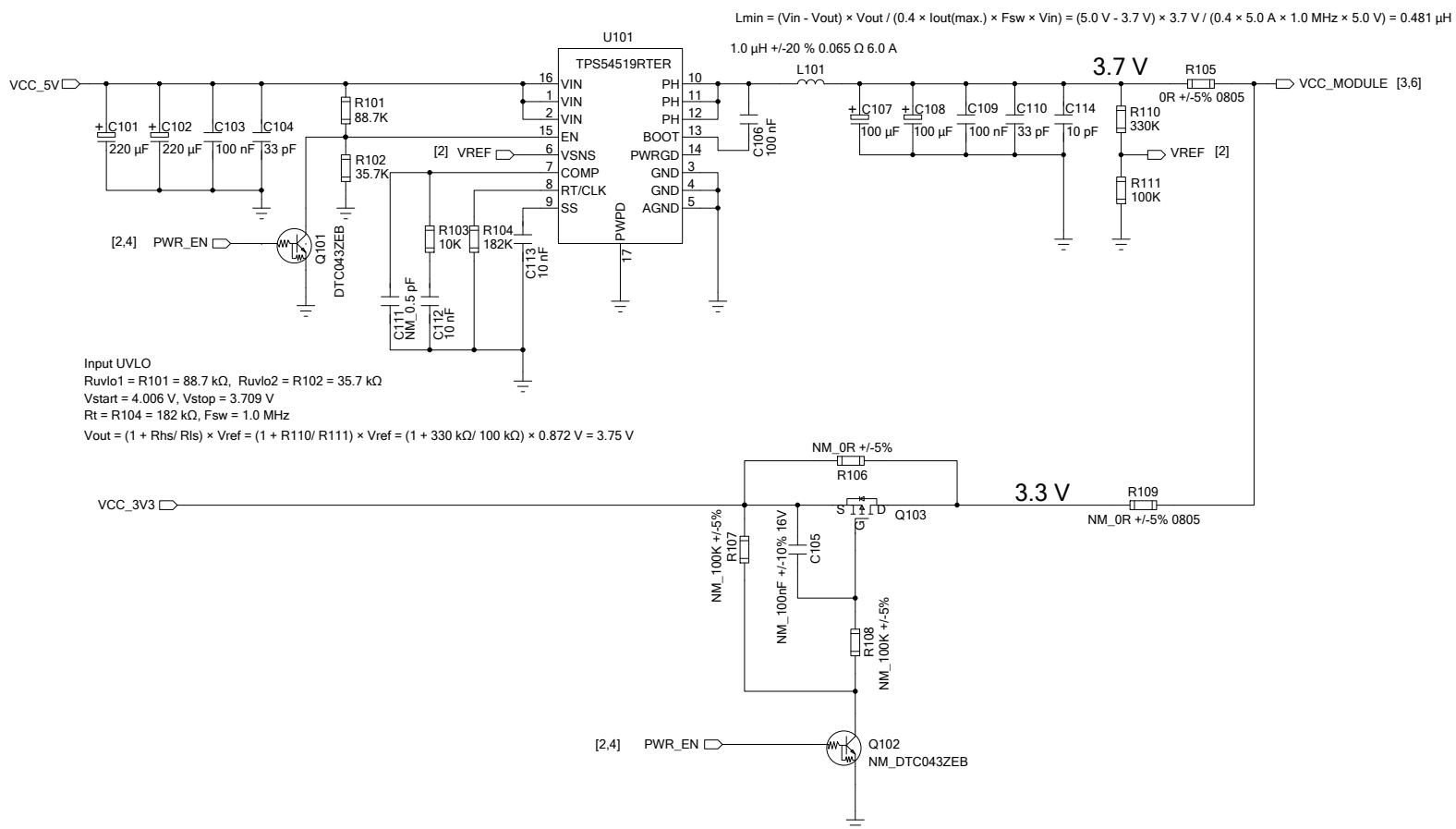
Block Diagram



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DRAWN BY	PROJECT	TITLE
Winter CHEN	RM510Q-GL	Reference Design
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Winter CHEN	A2	1.1
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Power Supply Design



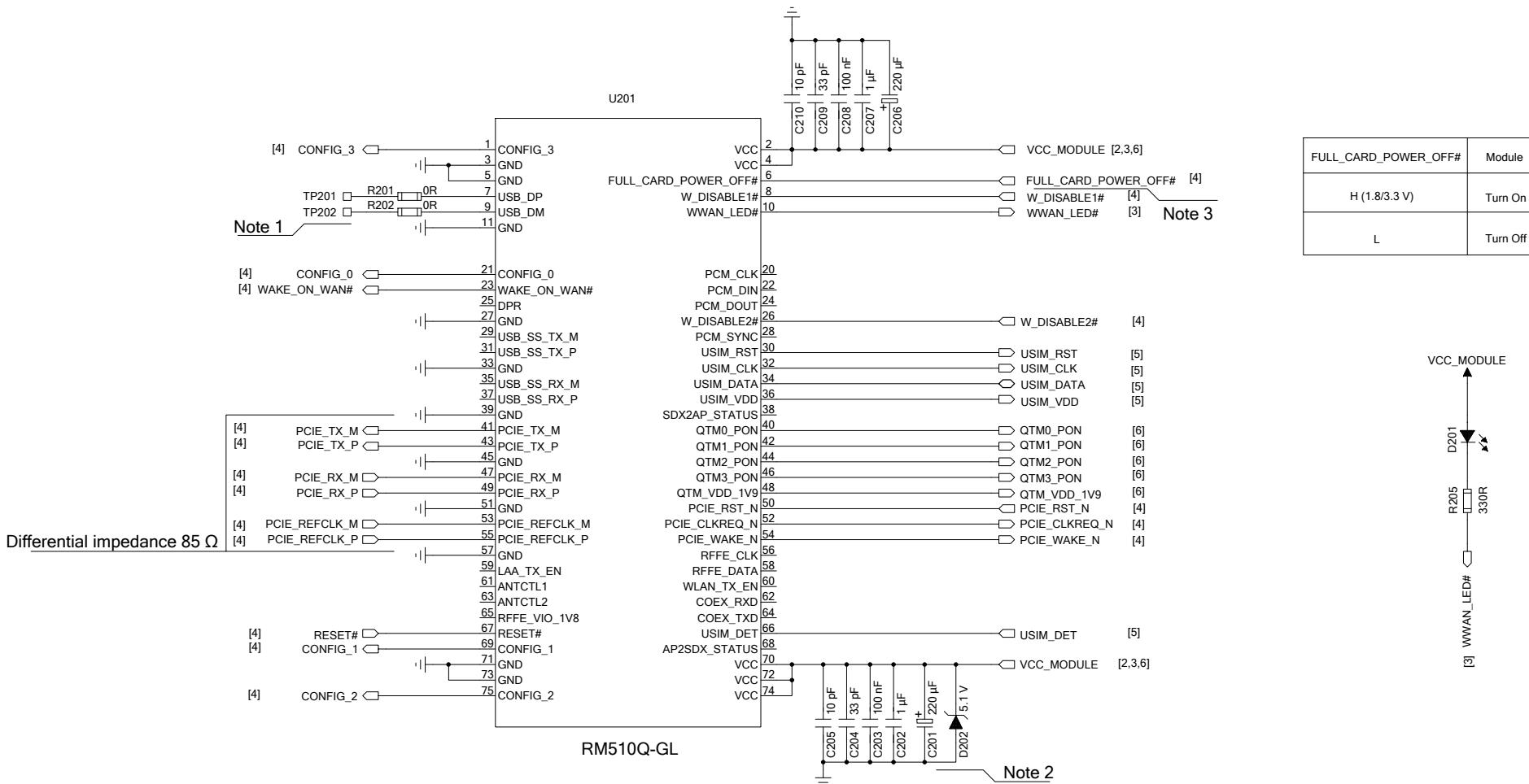
Notes:

1. The power supply must be able to provide sufficient current up to 5 A or higher.
2. A compatible design is recommended for VCC power supply.

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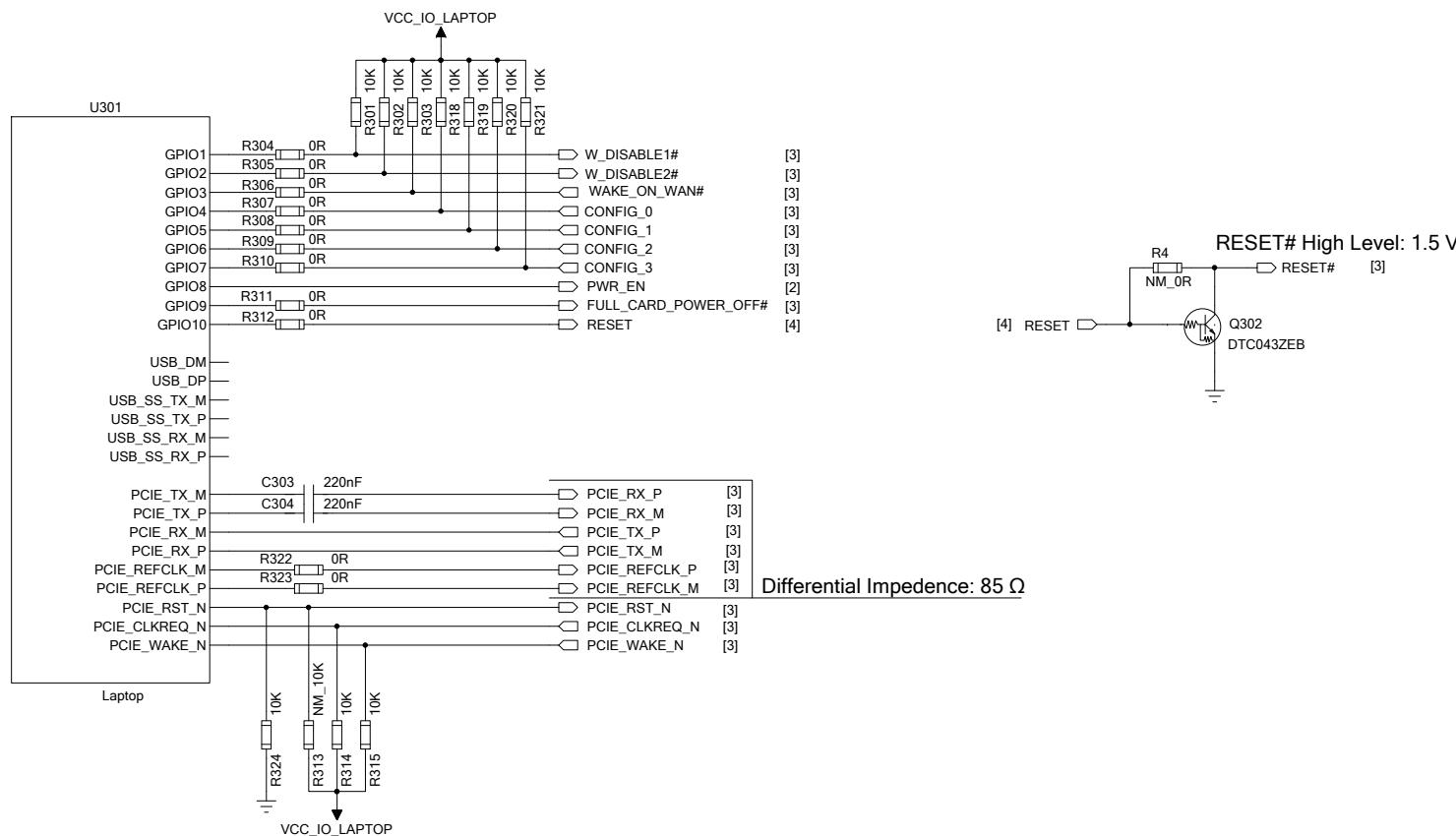
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Connectivity Between Laptop and RM510Q-GL (Part 1)



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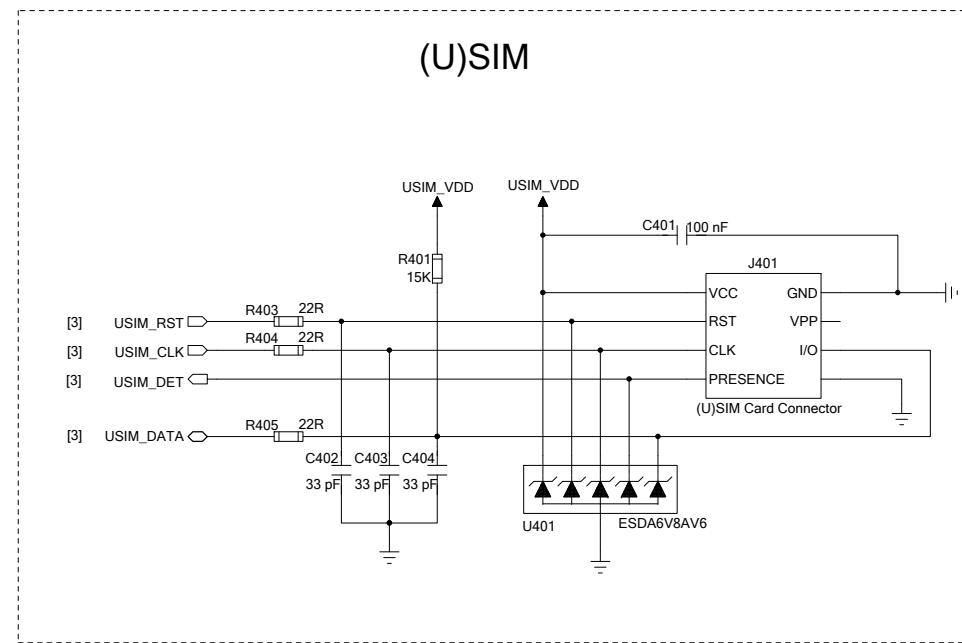
Connectivity Between Laptop and RM510Q-GL (Part 2)



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(U)SIM Interface Design



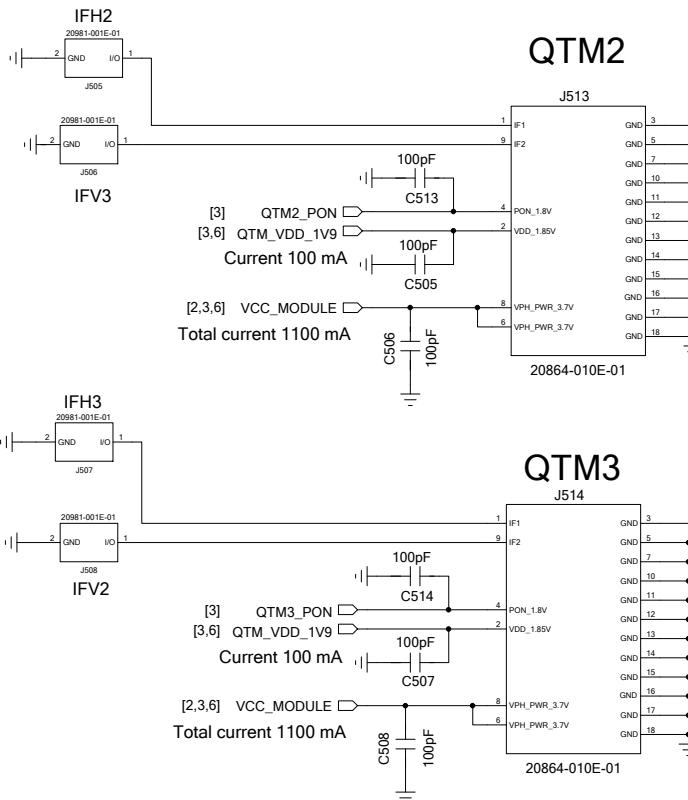
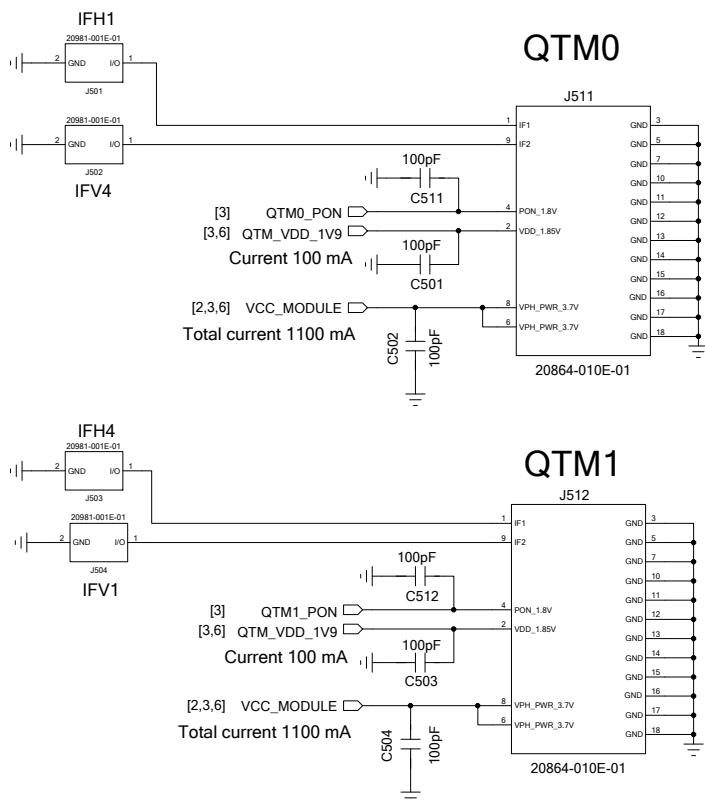
Notes:

1. The decoupling capacitors of (U)SIM signals and (U)SIM related resistors must be placed close to the (U)SIM card connector.
2. The module provides the input pin USIM_DET to detect (U)SIM card.
 - 1) A normally short-circuited (U)SIM card connector is used in this reference design, and high-logic-level detection is supported. For more details, see *Quectel_RM510Q-GL_Hardware_Design*.
 - 2) This pin is pulled LOW by default, and will be internally pulled up to 1.8 V by software configuration only when (U)SIM hot-plug is enabled by AT+QSIMDET.
3. R403-R405 are applied to suppress the EMI such as spurious transmission.
4. An ESD diode array with a junction capacitance of lower than 10 pF should be placed as close to the (U)SIM card connector as possible for ESD protection.
5. R401 can improve the anti-jamming capability of the (U)SIM card circuit and it should be placed close to the (U)SIM card connector.
6. The (U)SIM card connector should be placed near the M.2 socket, because a long trace may lead to wave distortion which affects the signal quality.

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mmWave IF Interfaces



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