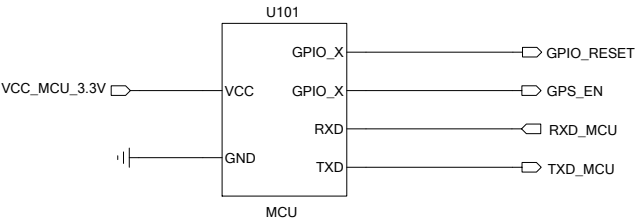
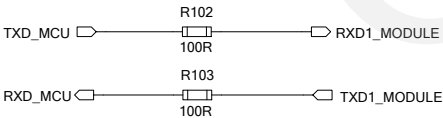


# Power Supply and UART Circuit

## Customer's MCU

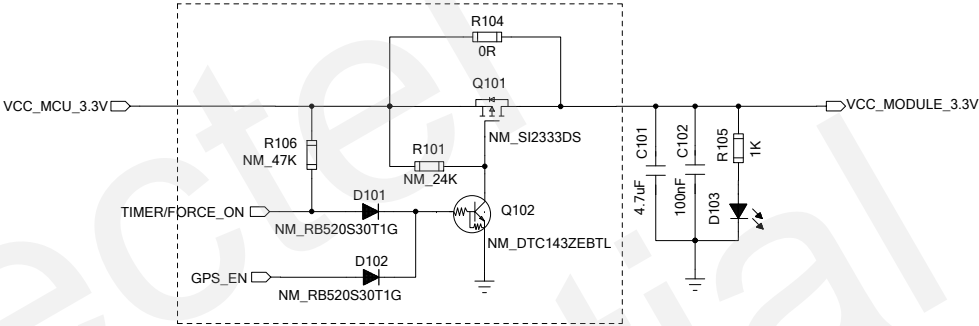


## UART Circuit



R102, R103 are reserved for debugging the waveform of UART, and they can prevent L80/L86 module from ESD interference. In general, 100R for R102 and R103 is recommended, but 0R also works well.

## Power Management Circuit (Optional)



Please ensure the output voltage (VCC\_MODULE\_3.3V) drop time is greater than 100ms (from 2.7V to 0.5V). For more details about the module's power supply design, please refer to the document [Quectel\\_GNSS\\_Modules\\_with\\_MTK\\_Engine\\_Application\\_Note](#).

	R101	R104	R106	D101	D102	Q101	Q102
L80	24K	NM	47K	RB520S30T1G	RB520S30T1G	SI2333DS	DTC143ZEBTL
L86	NM	0R	NM	0R	0R	NM	NM

(NM: Not Mounted)

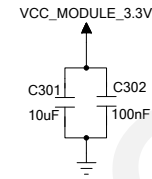
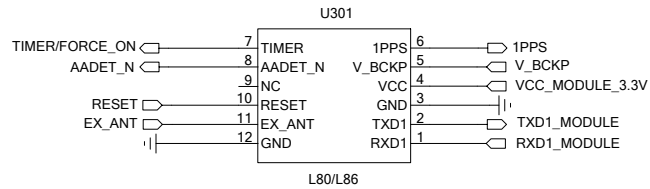
FORCE\_ON in L86 module: Logic high will force the GNSS module to be waked up from backup mode. TIMER in L80 module: An open drain output signal can be used to control the GPS module main power on/off. Note that when TIMER function is used in L80 module, please ensure V\_BCKP is powered all the time. For more details about TIMER & FORCE\_ON, please refer to L80/L86 Hardware Design.

## Quectel Wireless Solutions

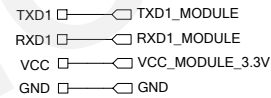
DRAWN BY <King HAO>	PROJECT <L80&L86>	TITLE <L80&L86_Reference_Design>
CHECKED BY <Tony GAO>	SIZE A2	VER <20140904>
SHEET 1 of 3		

## Module Interface

### Module Interface

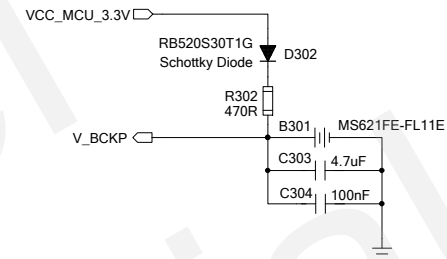


### Test Points



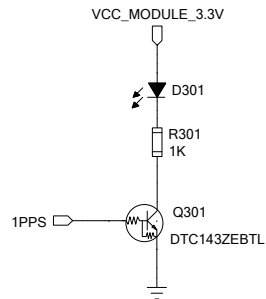
1. UART1 can be used to output NMEA message as well as to upgrade firmware.
2. The definition of pin 7: called FORCE\_ON on L86, and TIMER on L80.
3. The test points are reserved for debugging L80/L86 module.

### Charging Circuit for RTC Domain



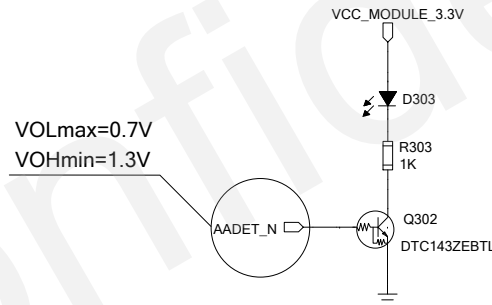
The V\_BCKP pin can be directly powered by an external rechargeable battery. Furthermore, it is necessary to add an external charging circuit for rechargeable battery.

### 1PPS Indicating Circuit



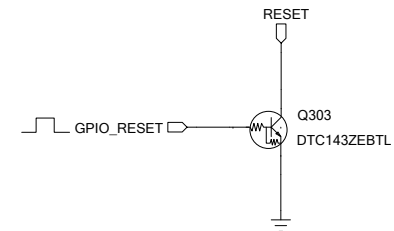
The 1PPS indicator will blink at 1Hz frequency after fixing the position.

### AADET\_N Indicating Circuit



The AADET\_N signal indicates whether the external active antenna is connected well.

### Reset Circuit



1. If the reset function is unused, the RESET pin can be connected to the VCC directly.
2. RESET has been pulled up internally.

### Quectel Wireless Solutions

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# Antenna Interface

## Inner Patch Antenna

1. Keep at least 10mm distance to the nearest edge of the mother board. It will be better for L80/L86 to be placed in the center of the mother board.

2. Keep enough distance between L80/L86 antenna and tall components (h>6mm) and the minimum d is 10mm.

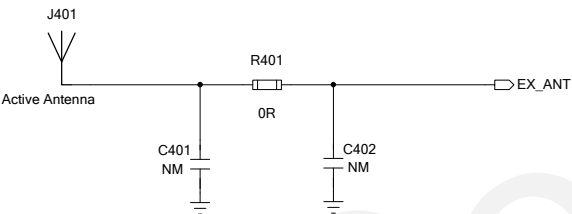
3. Put L80/L86 on the top of the device, which can guarantee antenna to face to open sky and achieve good receiving performance during operation.
4. Device enclosure should be made of non-metal materials especially around antenna area.  
The minimum distance between antenna and enclosure is 1mm.

5. It is recommended that the mother board should be bigger than 80mm×40mm for a better performance, and to pour ground copper on the whole mother board.

6. Other antennas such as BT/WIFI/GSM should be kept at least 10mm away from the embedded patch antenna in L80/L86.

7. It is highly recommended to place the MCU, especially the ST's MCU, on the other side of the PCB, and keep it far way from the L80/L86 module.  
For more details, please refer to L80/L86 Hardware Design.

## EXT Active Antenna



- By default, C401 and C402 are not mounted, R401 is 0R.
1. Pi circuit (C401, R401, C402) is reserved for impedance matching for antenna.

2. R401 must not be a capacitance, because DC will flow from the R401 to the active antenna.

3. Impedance of RF trace should be controlled by 50 ohm and the length should be kept as short as possible.
- For more details, please refer to L80/L86 Hardware Design.

### Quectel Wireless Solutions

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SHEET 3 of 3		