KIM1 power supply instabilities

Recommendation note

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Issue:	1.0
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Revision history

Issue	Date	Ref	Modifications
1.0	December 2021	MR	Document creation

Object of the document

This recommendation note is intended for Kinéis integrators who need to manage the KIM1 power supply instabilities when integrating the module into their solution.

1. Issue description and analysis

1.1 Issue description

The following behaviours are observed:

- Uncontrolled behaviours of the module such as unexpected AT commands, no message transmission, no module answer
- Configuration loss including module ID, Serial Number, message formatting
- Instabilities and garbage on the UART

1.2 Technical investigations

At module analysis, partial and random - if not total and permanent - flash memory erasing is observed.

1.3 Root cause

Power supply instabilities are generated by the floating potential of the ON/OFF and Reset pins. These instabilities impact the internal processor, hence the flash memory loss.

2. Issue management

2.1 Recommendations for integrators

Integrators must implement these recommendations:

- The RESET_N pin must be connected to the ON / OFF pin via a 10K Ohms resistor.
- A 10K Ohms pull-down resistor must be added on the ON-OFF pin.

This enables to terminate the On/Off pin actively, and to control the Reset pin by the On/Off pin with a specific delay.

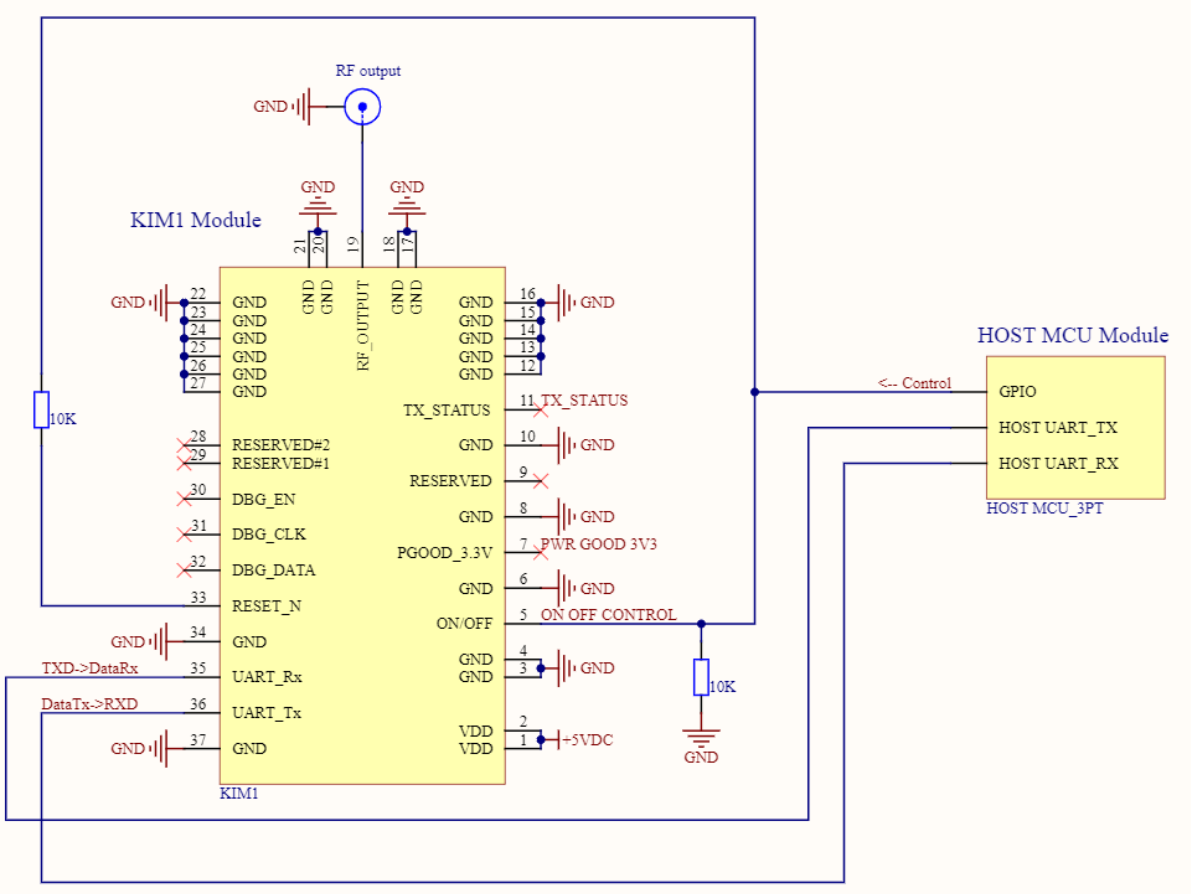

Figure 1: Typical application circuit with recommended implementation

This updated typical application circuit has been included in the latest versions of the datasheet.

2.2 Recommendations for KIM1 shield v2 implementation

The figures hereunder describe the modifications to be applied on a KIM1 shield v2.

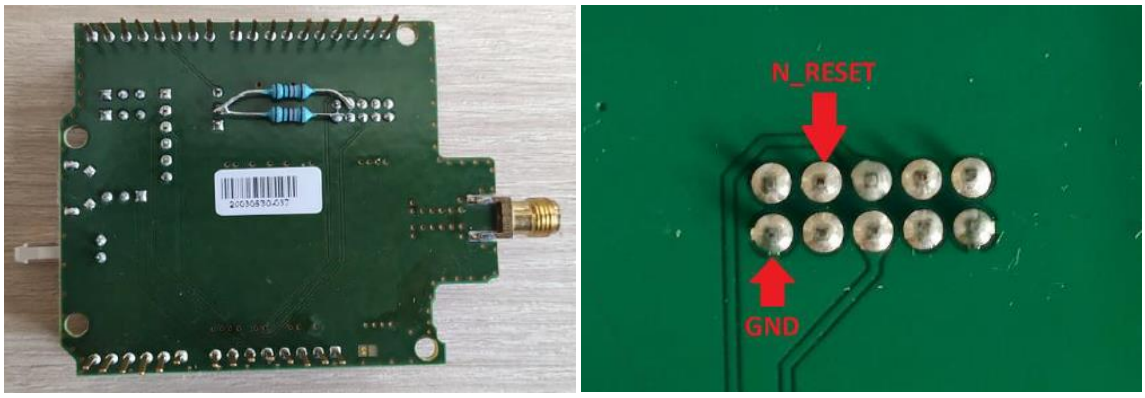

Figure 2: Rework with two 10K Ohms resistors on the shield V2 (left) - Zoom on the N_RESET and GND pins (right)