

MRF24XA Silicon Errata and Data Sheet Clarification

The MRF24XA device that you have received conforms functionally to the current Device Data Sheet (DS70005023C), except for the anomalies described in this document.

The silicon issues are summarized in [Table 1](#).

The errata described in this document will be addressed in future revisions of the MRF24XA silicon.

Note: This document summarizes all silicon errata issues from all revisions of silicon, previous as well as current. Only the issues indicated in the last column of [Table 1](#) apply to the current silicon revision (**B1**).

TABLE 1: SILICON ISSUE SUMMARY

Module	Feature	Item Number	Issue Summary	Affected Revisions
				B1
Interface	IT Auto Clear	1.	Using short read on the PIRx registers does not always clear the interrupt flags.	X
MAC	Auto-ACK	2.	If the Auto-Acknowledgment feature is enabled, the minimum number of retransmissions is one.	X
MAC	Auto-ACK	3.	Auto-ACK MAC header is not completely IEEE 802.15.4™ 2006 Standard compliant.	X
PHY	Streaming Mode	4.	Even with good signal conditions, a high Packet Error Rate (PER) occurs when SPI activity is present during RX or TX.	X
Digital	Deep Sleep	5.	During recovery from Deep Sleep mode, the device does not always restore the register values.	X

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Silicon Errata Issues

Note: This document summarizes all silicon errata issues from all revisions of silicon, previous as well as current. Only the issues indicated by the shaded column in the following tables apply to the current silicon revision (**B1**).

1. Module: Interface

Using short read on the PIRx registers does not always clear the Interrupt flags.

Work around

Use long read or block read to read the PIRx registers to ensure the IT flags are cleared.

Affected Silicon Revisions

B1							
X							

2. Module: MAC

Some standards require one packet to be sent out on a given channel to determine if an ACK is received or not. If an ACK is present, then there is an active node on the channel and further communication begins. If an ACK is not present, the radio must try another channel without retransmitting on the first channel.

When Auto-ACK is enabled, the radio will retransmit the packet at least once on the original channel if the ACK packet is missing.

Work around

Use the Software Acknowledge frame to be entirely standard compliant during active device discovery.

Affected Silicon Revisions

B1							
X							

3. Module: MAC

According to the IEEE 802.15.5-2006 Standard, the Frame Control field of an ACK packet uses only two subfields: Frame Type and Frame Pending. All other subfields must be set to zero and ignored on reception.

The Frame Version subfield in the Auto-ACK packet's Frame Control Field is 0b01, so it is not set to zero.

Work around

Since this bit field has to be ignored in all receivers, Auto-ACK is fully functional and was tested with receivers from other vendors.

If full compliance with the standard is required, use the Software Acknowledge frame.

Affected Silicon Revisions

B1							
X							

4. Module: PHY

Even with good signal conditions, a high Packet Error Rate occurs when SPI activity is present during RX or TX.

Work around

Minimize SPI activity during Streaming mode by monitoring the TX Buffer Empty and RX Buffer Full bits on the GPIO pins. Use the GPIOMODE register to configure the GPIO pin accordingly.

Use the radio with the lowest possible supply voltage in the application to reduce this effect. Significant PER improvement can be reached at 1.5V.

Note that this effect is stronger on high data rates. Run PER tests to determine if the actual PER is acceptable for the application.

Affected Silicon Revisions

B1							
X							

5. Module: Digital

During recovery from Deep Sleep mode, the device does not always restore register values. RDYIF is missing after wake-up or some of the restored values are corrupted.

Work around

Use a hardware reset followed by the recommended initialization sequence to recover from Deep Sleep.

Affected Silicon Revisions

B1							
X							

Data Sheet Clarifications

There are no typographic corrections and clarifications to be noted for the latest version of the device data sheet (DS70005023C).

APPENDIX A: DOCUMENT REVISION HISTORY

Rev A Document (01/2014)

Initial release of this document.

Rev B Document (03/2015)

Added Module 5: [Digital](#).

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NOTES:

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Asia Pacific Office

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