



PRODUCT BULLETIN

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ISSUE DATE: 18-Jun-2014
NOTIFICATION: 16225
TITLE: ERRATA: TBI LINK STATUS / SGMII STAYS UP (RBYT Workaround)
EFFECTIVE DATE: 19-Jun-2014

DEVICE(S)

MPN
KCU8313CVRADDC
KCU8313CVRAFFC
KCU8313CVRAGDC
KCU8313CZQAFFC
KCU8313EVRADDC
KCU8313EVRAFFC
KCU8313EVRAGDC
KCU8313ZQAFFC
KP1023SSE5CFB
KP1023SXE5CFB
KSC1018NSE5DFA
KSCU8378CZQAGDA
MPC8313CVRADDB
MPC8313CVRADDC
MPC8313CVRAFFB
MPC8313CVRAFFC
MPC8313CVRAGDB
MPC8313CVRAGDC
MPC8313CZQADDB
MPC8313CZQADDC
MPC8313CZQAFFB
MPC8313CZQAFFC
MPC8313CZQAGDC
MPC8313ECVRADDB
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MPC8313ECVRAFFB
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MPC8313ECVRAGDB

MPC8313ECVRAGDC
MPC8313ECZQADDB
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MPC8313EVRAGDC
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MPC8313EZQADDC
MPC8313EZQAFFB
MPC8313EZQAFFC
MPC8313EZQAGDC
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MPC8313VRADDC
MPC8313VRAFFB
MPC8313VRAFFC
MPC8313VRAGDB
MPC8313VRAGDC
MPC8313ZQADDB
MPC8313ZQADDC
MPC8313ZQAFFB
MPC8313ZQAFFC
MPC8313ZQAGDC
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MPC8314CVRAFDA
MPC8314CVRAGDA
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SC411241C
SCWP2020C

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AFFECTED CHANGE CATEGORIES

- ERRATA

DESCRIPTION OF CHANGE

PLEASE REFER TO DEVICE ERRATUM A-007207 FOR EXACT REGISTER OFFSETS AND AFFECTED SILICON VERSIONS

The TBI Status Register (SR) contains a link status bit (TBI SR [Link Status]) that represents the current state of the SGMII link. If Auto-Negotiation (AN) is disabled, the TBI link status bit should become a b'1 indicating the link is up after recognizing IDLE sequences, and stay at b'1 as long as valid data is received & the TBI is not reset. TBI link status bit should become a b'0 indicating the link is down after several invalid characters are received or the TBI is reset. If AN is enabled, the TBI link status bit does not become set to b'1 until auto-negotiation is complete (TBI CR [AN DONE]=1), but the same conditions as AN disabled then apply for the TBI link status bit to get cleared to b'0.

An electrical idle (common mode) condition on the SGMII link results in the reception of invalid data, and should cause the TBI link status bit to get cleared. If the transition from active to common mode takes enough time that the Rx is able to recognize at least 4 more K28.5 characters (for IDLE sequences, 70-80 UI), the portion of the design intended to detect the link down condition may shut off before the link down condition is actually reflected in the TBI.

This premature shutdown may cause the TBI link status to remain set to a b'1 indicating the link is up. This 'stuck at 1' condition would persist until valid K28.5 characters are received again.

WORKAROUND:

For affected systems, there is no access to electrical idle detection circuitry in SGMII mode and there is no bit replacement for TBI SR[Link Status] to monitor..

When the TBI link status is set, the SW can periodically poll the state of the Ethernet Controller by reading RBYT. If the controller is expected to receive data packets, RBYT should increment. If RBYT has not incremented over a period of time it could indicate the link is down. However, there are various reason why RBYT may not increment (controller configuration errors, SerDes PLL issues, or MIB Counter RCDE incremented). Examination of system conditions may be necessary to determine why RBYT has not incremented

The link is down if TBI SR[Link Status]=0.

REASON FOR CHANGE

If the customer system never enters SGMII electrical idle, or if the transition from active to common mode takes less than 40 UI (~32ns), then there is no impact – the false link up scenario will not occur.

If the customer system can generate an SGMII electrical idle condition as described above, then the TBI status may stay stuck at 1 while the link is down, and would not transition to 0 until valid K28.5 characters are received again.

ANTICIPATED IMPACT OF PRODUCT CHANGE(FORM, FIT, FUNCTION, OR RELIABILITY)

MINIMAL IMPACT WITH WORKAROUND IMPLEMENTED

NOTE:

THE CHANGE(S) SPECIFIED IN THIS NOTIFICATION WILL BE IMPLEMENTED ON THE EFFECTIVE DATE LISTED ABOVE. To request further data or inquire about the notification, please enter a [Service Request](#)

For sample inquiries - please go to www.freescale.com

QUALIFICATION STATUS: N/A

QUALIFICATION PLAN:

N/A

RELIABILITY DATA SUMMARY:

N/A

ELECTRICAL CHARACTERISTIC SUMMARY:

N/A

CHANGED PART IDENTIFICATION:

N/A

ATTACHMENT(S):

External attachment(s) FOR this notification can be viewed AT:

[16225_SGMII_False_Link_Up_PB16225.pdf](#)
