To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: http://www.renesas.com

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Renesas Electronics Corporation

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HITACHI SEMICONDUCTOR TECHNICAL UPDATE

Classification of Production	MPU			No	TN-SH7-433A/E	Rev	1
THEME	SH7616 limitation of Ethernet Controller Half-duplex transfer.		Classification of Information	1. Spec change 2. Supplement of Documents 3. Limitation of Use 4. Change of Mask 5. Change of Production Line			

PRODUCT NAME	HD6417616RF	Lot No.		Reference Documents	SH7616 Hardware Manual ADE-602-243 Rev.1.0	Effective Date
		ALL				Permanent

There is a limitation on use of internal Ethernet Controller (EtherC) in SH7616, and the countermeasures for this limitation are shown below.
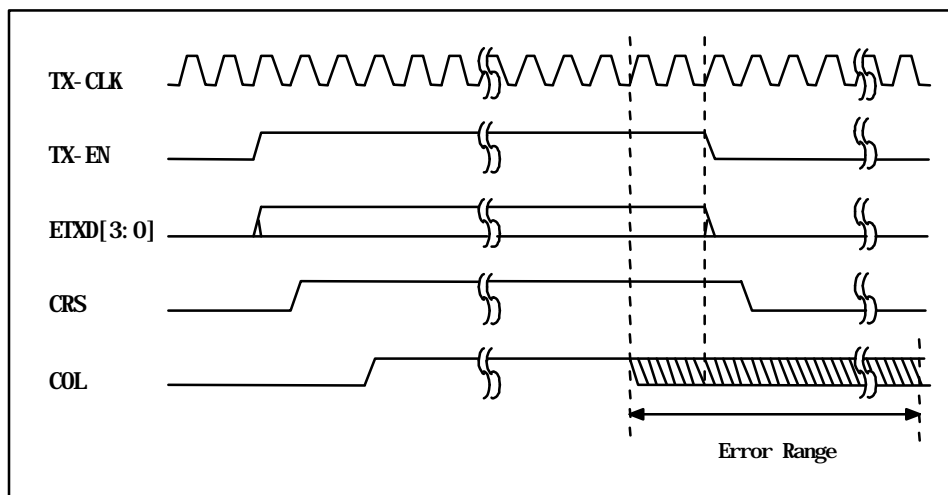
[Phenomenon]

On operating in Half-duplex transfer mode, there is a case that the SH7616 would transmit a frame with jam, even though any Collision doesn't occur. And it would move into the re-transmission state with back-off algorithm.

[Description]

When the following both conditions are met, the SH7616 would transmit a frame with jam as the next re-try frame and move into back-off, even though any collision doesn't occur at the next re-try.
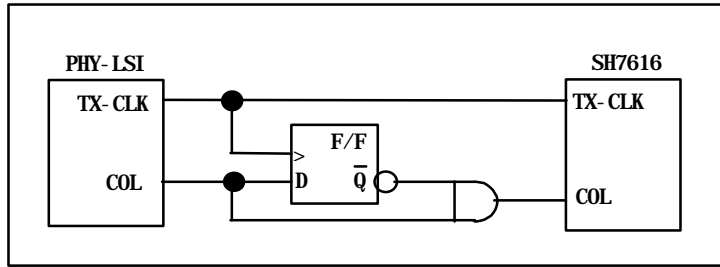
(1) SH7616 is in Half-duplex transfer mode.

(2) SH7616 detects a collision, in which the COL from the PHY gets inactive later than 2 TX-CLKs before TX-EN inactive (refer to the figure below).

[Countermeasures]

This problem is avoided by adding the following external logic.

(1) The logic generates one-shot pulse of COL output signal from PHY-LSI.

For preventing the error from spreading:

(a) Limit to the number of stations connected to the same segment.

(b) Restrain the communication rate between stations

(c) Disable the SQE test of PHY-LSI

A PHY chip asserts the COL signal for SQE test after TX-EN negates. Because of this problem, SH7616 mis-recognize the COL as actual collision and the communication efficiency is reduced.

[Fixing the limitation]

Hitachi plans to fix the error with metal change. And the schedule will be announced later.