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.

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April 1st, 2010
Renesas Electronics Corporation

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HITACHI MICROCOMPUTER TECHNICAL UPDATE

DATE	7 November 2000	No.	TN-SH7-273A/E
THEME	SH7615 usage notice of use Ethernet controller and Ethernet controller direct memory access controller		
CLASSIFICATION	☐ Spec change ■ Limitation on Use ☐ Supplement of Documents		
PRODUCT NAME	HD6417615AF	Lot No.etc.	ALL
REFERENCE DOCUMENTS	SH7615 Hardware manual	EffectiveDate	
		Permanent	

There are two limitations on use of Ethernet controller and Ethernet controller direct memory access controller in SH7615, and their countermeasures are shown below

<Phenomenon>

  1. Inter Frame Gap Error

    There is a case in half-duplex mode that SH7615 does not comply the inter frame gap time on transmission, which must be more than $0.96 \mu s$ at 100Mbps or $9.6 \mu s$ at 10Mbps according to IEEE802.3.

  2. Multicast Address Frame Status Error

There is a case in half-duplex mode that the RFS7(Receive Multicast Address Frame) bit in a Rx-descriptor and RMAF(Receive Multicast Address Frame) bit in a EESR(EtherC/E-DMAC Status Register), which shows a multicast address frame received, may be asserted thougth a unicast address frame is received.
In this case, status of SH7615 is the following.
(1) The RFS7 bit in a Rx-descriptor is asserted.
(2) The RMAF bit in a EESR is asserted.
(3) The MAFCR(Multicast Address Frame Counter Register) counts up.
(4) The unicast frame is received normally.

<Condition>

  1. Condition of Inter Frame Gap Error

When all following conditions are valid, SH7615 does not comply the inter frame gap time on transmission.
(1) More than three stations are connected on one Ethernet.
(2) SH7615 works in half-duplex mode.
(3) The transmission from station-A to station-B is completed, and SH7615 on station-C starts transmission immediately.

2. Condition of Multicast Address Frame Status Error

  When all following conditions are valid, SH7615 shows a multicast address frame received.
    (1) Any of following errors occur when a multicast address frame is received, or a destination
    address in unicast frame is wrongly recognized as a multicast address because of collision and
    the receive transaction finishes as a broken frame reception.
    ① CRC Error on Received Frame
    ② RX-ER assert(PHY-LSI Receive Error)
    ③ Receive Too-Short Frame
    ④ Receive Too-Long Frame
    ⑤ Receive Residual-Bit Frame
  (2) The next frame is received normally.

<Countermeasures>

  1. Countermeasure of Inter Frame Gap Error

  Please insert a glue logic for making the CRS signal of SH7615 input delayed.
  This delay time should be more than 0.96ìs at 100Mbps or 9.6ìs at 10Mbps from TX-EN negert.

  2. Countermeasure of Multicast Address Frame Status Error

  This problem can be avoided by all of the following.
  (1) Not use the RFS7 bit in a Rx-descriptor.
  (2) Set 0 to the RMAFIP(Receive Multicast Address Frame Interrupt Permission) bit in a
       EESIPR(EtherC/E-DMAC Status Interrupt Permission Register).
  (3) Not use the MAFCR.
  (4) Use a destination address in receive data to judge multicast address frame.

<Modified MP>

  We will fix the above two errors and provide new MP from Jan.2001.