

Cl 10x.t PHY-Link Part II

Baseline

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101. RS, PCS, and PMA for EPoC

101.5. PHY Link

101.5.1. Overview

101.5.2. PHY Discovery process

PART II

101.5.3. CLT PHY-Link Transmit

The CLT PHY Link transmitter ...

EDITORS NOTE (to be removed prior to publication): descriptive text for this section to be supplied at a later date.

101.5.3.1. Constants

PhyFmTime

This constant determines the length of the PHY-Link frame

TYPE: Integer

VALUE: TBD

101.5.3.2. Variables

FecPtr

This variable contains the FEC Pointer.

TYPE: TBD bit unsigned

LstPhyFm

This variable stores the last transmitted PHY Frame so that the receive side can verify the proper response from the CNU.

TYPE: bit array

NxtInst

This variable is used to temporarily hold a PHY Instruction

TYPE: bit array

PhyCID

This variable contains the PHY-Link Configuration ID bits.

TYPE: 2 bit unsigned

PhyDA

This variable contains the address of the destination entity for the PHY-Link frame.

TYPE: TBD bit unsigned

PhyTS

This variable contains the PHY-Link Timestamp.

TYPE: TBD bit unsigned

PhyTxD

This variable represents a 0-based bit array of variable length corresponding to the payload of a PHY-Link frame to be transmitted. This variable is used to assemble an outgoing PHY-Link frame.

TYPE: bit array

PhyTxD_len

This variable holds the current length of the PhyTxD array in bits.

TYPE: TBD bit unsigned

PhyTxFIFO

This variable holds a series of PHY Instructions to be transmitted in the next PHY Frame and includes Opcode, Count, Address and Data fields for each instruction.

TYPE: bit array

TxEnable

This constant reflects provisioning that allows the PHY to transmit on the network

Type: Boolean

101.5.3.3. Counters

101.5.3.4. Timers

PhyFm_timer

This timer is used to control the CLT PHY-Link Frame. The timer is set to PhyFmTime and decrements to zero on the {clock name} which signals the beginning of the next PHY Frame.

101.5.3.5. Functions

length()

This function returns the current length of the referenced bit array.

PhyTxFIFO_Sz()

This function returns the number of instructions remaining in the PhyTxFIFO.

PhyTxFIFO_RmvHd()

This function removes the oldest entry from the PHY Instruction FIFO. {detailed definition TBD}

101.5.3.6. Messages

PHYFM.request(PhyDA ,PhyTS, PhyCID, FecPTR, PhyTxFIFO)

This service primitive is use by the PHY to request transmission of a PHY-Link Frame.

PhyDA:	the destination of the target device or devices
PhyTS:	the PHY Timestamp
PhyCID:	the PHY Configuration ID
FecPTR:	the FEC Pointer
PhyTxFIFO:	a FIFO containing PHY Instructions to be transmitted

101.5.3.7. State Diagrams

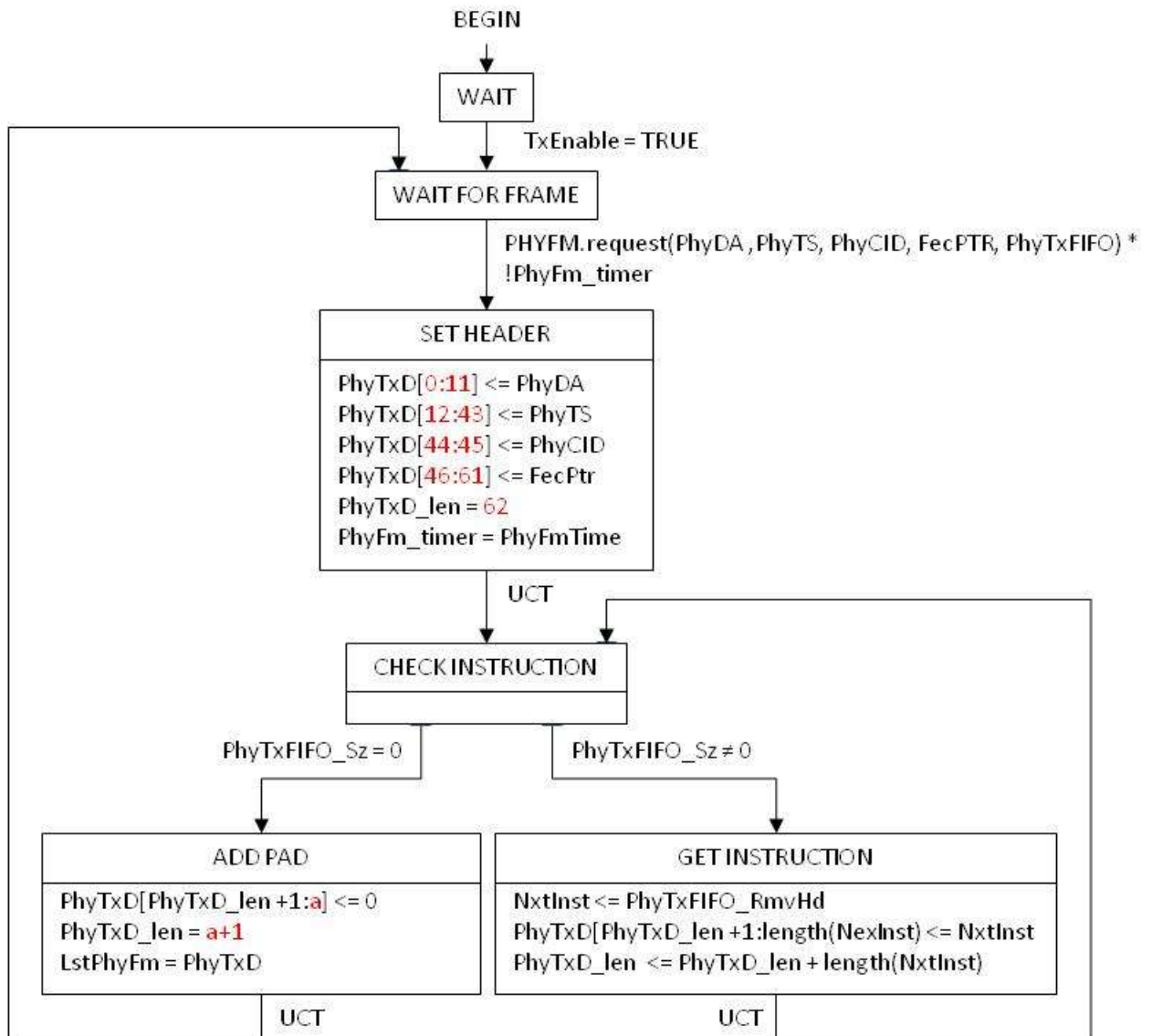


Figure 1 CLT PHY-Link Transmit Frame State Diagram

101.5.4. CLT PHY-Link Receive

The CLT PHY Link transmitter ...

EDITORS NOTE (to be removed prior to publication): descriptive text for this section to be supplied at a later date.

101.5.4.1. Constants

101.5.4.2. Variables

LstPhyFm see 101.5.3.2

NxtAdd

This variable temporarily holds the MDIO Address field from the PHY Instruction

TYPE: 16b unsigned

NxtIdx

This variable is used to index the PhyRxFIFO

TYPE: Integer

NxtOpcd

This variable temporarily holds the Operation field of the PHY Instruction

TYPE: 3b unsigned

PhyRxFIFO

This variable holds a series of PHY Instructions received in the most recent PHY Frame and includes Opcode, Count, Address and Data fields for each instruction.

TYPE: bit array

PhySA

This variable holds the SA field of the received PHY Instruction response.

101.5.4.3. Counters

InsNack

This counter is incremented for each PHY Instruction to which there is a NACK response

InsErr

This counter is incremented for each PHY Instruction response for which the header (Opcode, Count and Address fields) in the response do not match the header in the Phy Instruction sent.

NxtCnt

This counter holds the MDIO register Count field from the PHY Instruction

TYPE: 5b unsigned

SAErr

This counter is incremented for each PHY Instruction received with a SA that does not match the DA sent.

101.5.4.4. Functions

MDIO(add)

This function returns the register value at stored at MDIO Address “add” when read and writes the MDIO register at address “add” when set.

PhyRxFIFO_RmvHd()

This function removes and returns the oldest entry from the PHY Instruction receive FIFO.

RmLPFhead(n)

This function will remove the first “n” bits from the LstPhyFm bit array.

101.5.4.5. Messages

PHYFM.indication(PhySA, PhyRxFIFO)

This service primitive is use by the PHY to indicate reception of a PHY-Link Frame at the CLT.

PhySA: the source of the sending device

PhyRxFIFO: a FIFO containing the transmit PHY Instructions for this frame

101.5.4.6. State Diagrams

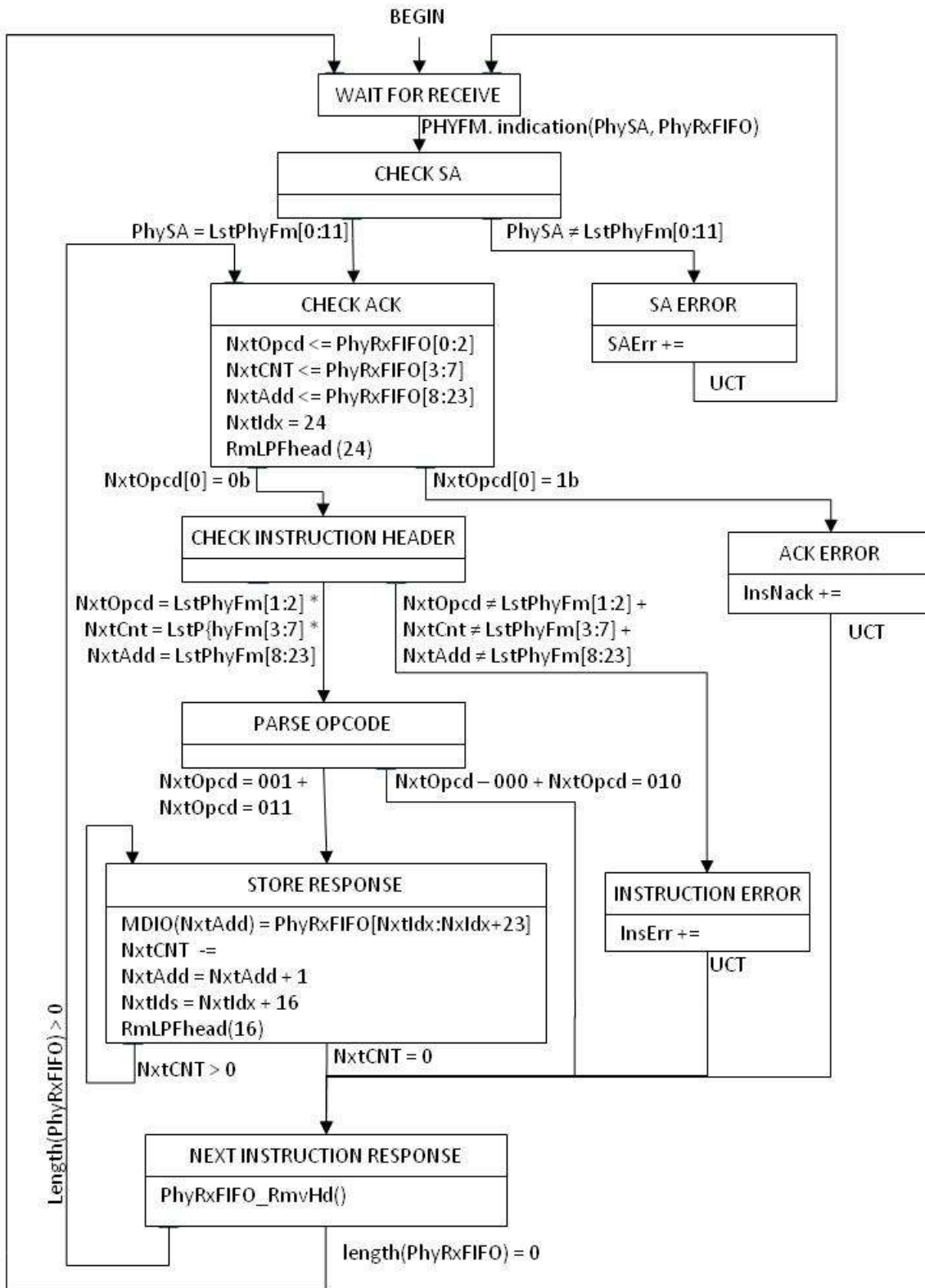


Figure 2 PHY-Link CLT Receive Frame State Diagram

101.5.5. CNU PHY-Link Transceiver

The CNU PHY Link transceiver ...

EDITORS NOTE (to be removed prior to publication): descriptive text for this section to be supplied at a later date.

101.5.5.1. Constants

bcstDA

This constant is the broadcast address for the PHY-Link

TYPE: 12 b bit unsigned

VALUE: 0xFFF

101.5.5.2. Variables

ActProfile

This variable holds the current active profile.

TYPE: Boolean

localDA

The variable contains the PHY Address assigned to the device by the CLT. In the CLT this address defaults to 0x001.

TYPE: 12 b bit unsigned

NxtAdd see 101.5.4.2

NxtIdx see 101.5.4.2

NxtOpcd see 101.5.4.2

PhyCID see 101.5.3.2

PhyDA see 101.5.3.2

PhyRxD

This variable represents a 0-based bit array corresponding to the payload of a received PHY-Link frame. This variable is used to parse an incoming PHY-Link frame.

TYPE: bit array

PhySA see 101.5.4.2

PhyTS see 101.5.3.2

PTS_Drift

This variable hold the most recent difference between the local time and the PHY-Link Timestamp.

PhyTxD see 101.5.3.2

PhyTxD_len see 101.5.3.2

101.5.5.3. Counters

NxtCnt see 101.5.4.3

PhyTime

This timer tracks the local time.

101.5.5.4. Functions

CkMdioAdd(add)

This function checks if the MDIO address “add” is supported by the device. If the address is supported by the device the function returns TRUE, if not it returns FALSE.

MDIO(add) see 0

PhyRxFIFO_Rd()

This function reads the oldest entry from the PHY Instruction FIFO but does not change the size of the FIFO in the process. The notation [a:b] will return bits “a” through “b” of the oldest entry in the FIFO.

PhyRxFIFO_RmvHd() see 0

PhyRxFIFO_Sz()

This function returns the number of instructions remaining in the PhyTxFIFO.

101.5.5.5. Messages

PHYFM.indication(PhyDA, PhyTS, PhyCID, FecPTR, PhyRxFIFO)

This service primitive is use by the PHY to signal reception of a PHY-Link Frame at the CNU.

PhyDA: the destination of the target device or devices
PhyTS: the PHY Timestamp
PhyCID: the PHY Configuration ID
FecPTR: the FEC Pointer
PhyRxFIFO: a FIFO containing the received PHY Instructions

101.5.5.6. State Diagrams

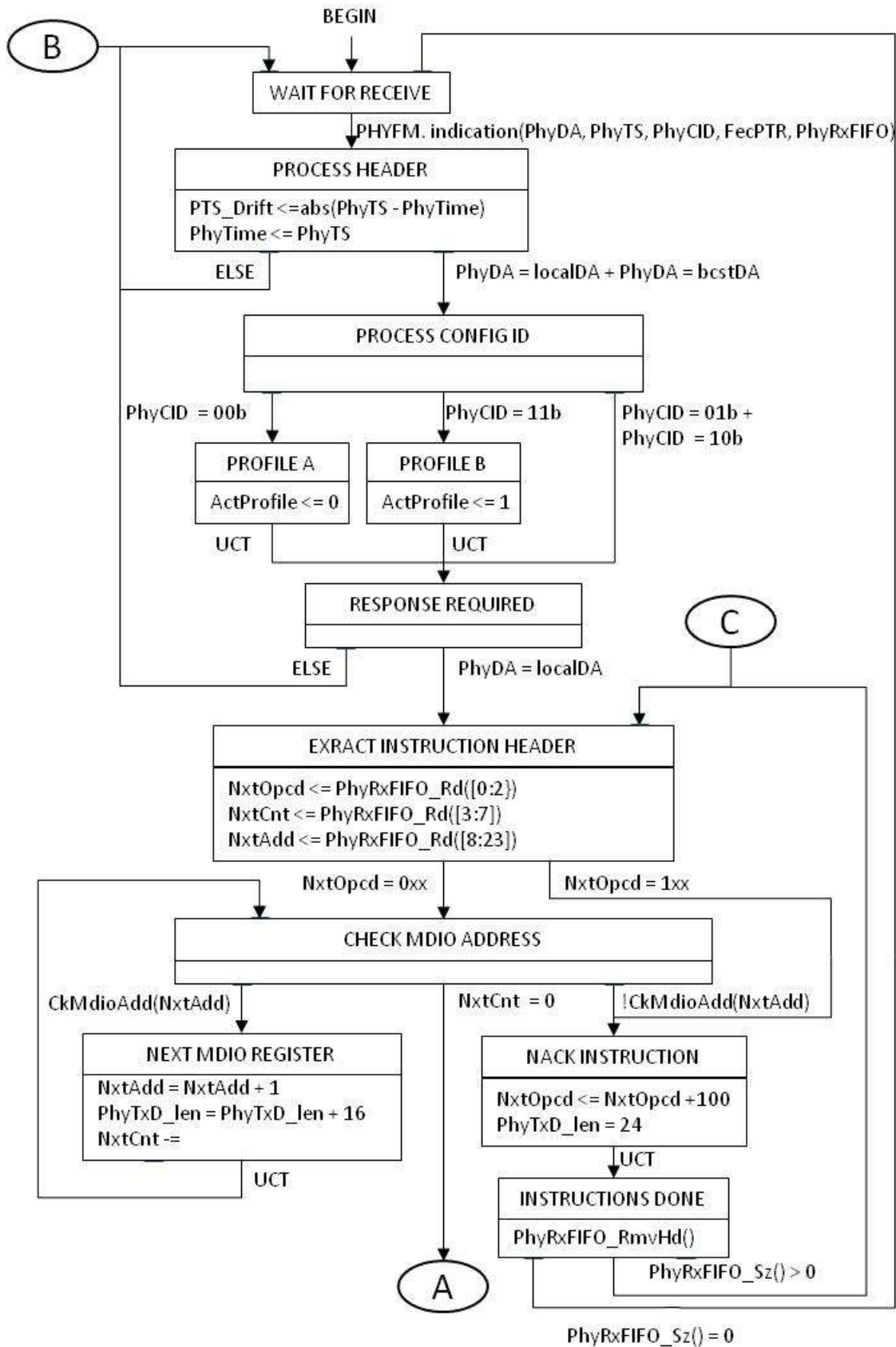


Figure 3 PHY-Link CNU Transceiver State Diagram part I

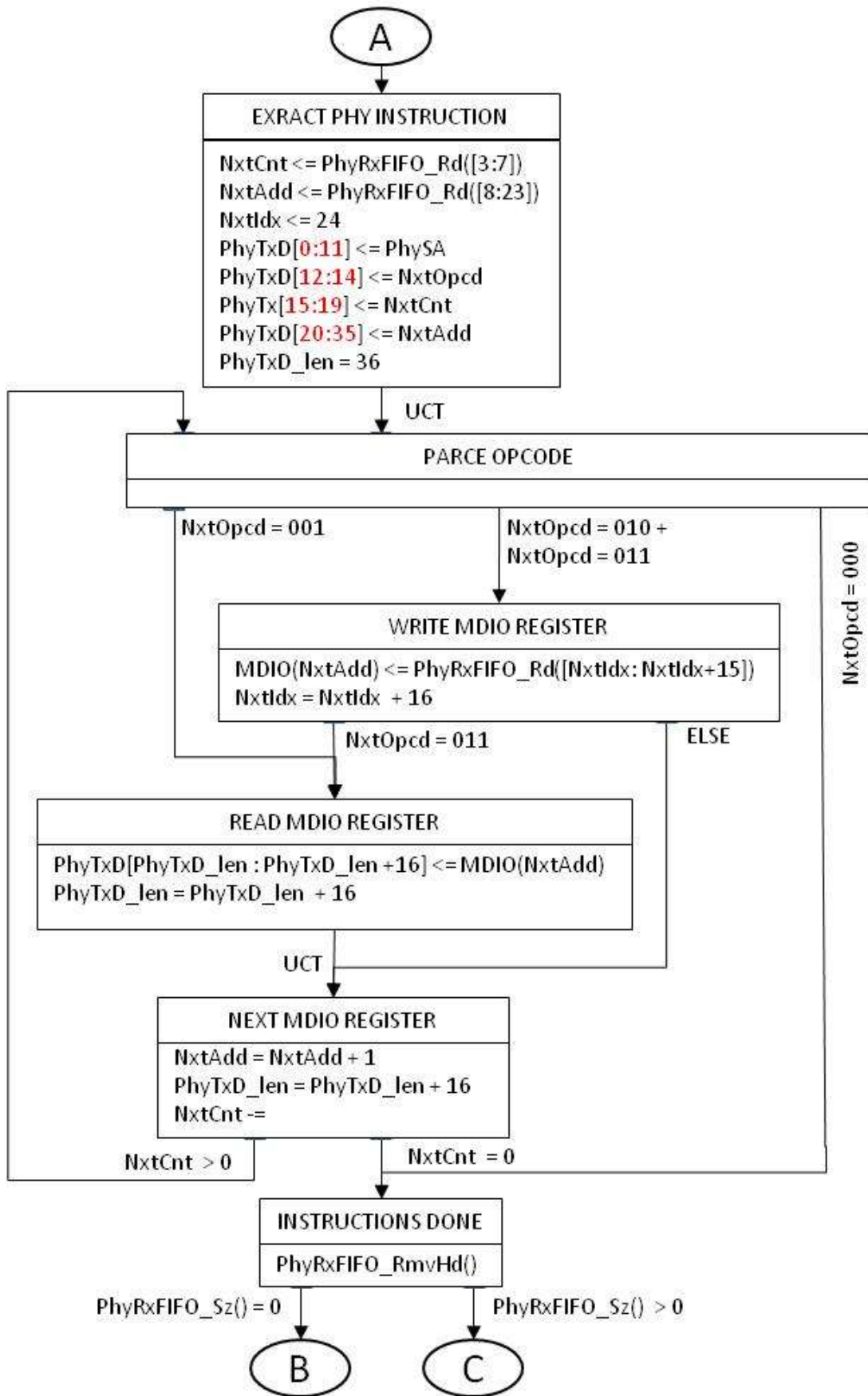


Figure 4 PHY-Link CNU Transceiver State Diagram part II