

*EDITORS NOTE (to be removed before publication): the PMA Service Interface section was adapted from selected subsections of Clause 51.2 and needs to be renumbered for Clause 101.*

## **51.2 PMA Service Interface**

The EPoC PMA provides a Service Interface to the 10GPASS-XR PCS sublayer, i.e., the PMA client. These services are described in an abstract manner and do not imply any particular implementation. The PMA Service Interface shall support the exchange of data between the PMA and the PMA client.

The PMA converts data-groups into bits and passes these to the PMD, and vice versa. It also generates an additional status indication for use by its client.

The following primitives are defined:

PMA\_UNITDATA.request(tx\_data\_bit<1:0>, burstStart, burstEnd)

PMA\_UNITDATA.indication(rx\_data\_bit<1:0>, burstStart, burstEnd)

### **51.2.1 PMA\_UNITDATA.request**

This primitive defines the transfer of data (in the form of data bits) from the PMA client to the PMA. PMA\_UNITDATA.request is generated by the PMA client's transmit process.

#### **51.2.1.1 Semantics of the service primitive**

PMA\_UNITDATA.request(tx\_data\_bit<1:0>, burstStart, burstEnd)

The data conveyed by PMA\_UNITDATA.request is a single data bit which has been prepared for transmission by the PMA client. The boolean burstStart is set to TRUE when the data bit is the first bit at the start of transmission burst, and is set to FALSE otherwise. The Boolean burstEnd is set to TRUE when the data bit is the last bit of a transmission burst, and is set to FALSE otherwise. In the downstream direction, the CLT transmission burst is always a single FEC codeword of size FEC\_DS\_CodeWordSize bits, and the CLT is continually sending bursts. In the upstream direction, the CNU transmission burst is scheduled by MPCP, is variable in size and may be composed of one or more concatenated FEC codewords.

#### **51.2.1.2 When generated**

The PMA client continuously sends data bits to the PMA at a nominal rate of CLT\_DS\_DataRate in the downstream direction. In the upstream direction, the nominal rate of CLT\_US\_DataRate during a burst. Both CLT\_DS\_DataRate and CLT\_US\_DataRate are expressed in bits per second (bps). Refer to Section 101.x.x.x.

*NOTE: CLT\_DS\_DataRate is calculated by the PMA after the downstream PHY has been configured. It is based on the sum of the available data bits per subcarrier over the timespan of a downstream OFDM frame consisting of 128 modulation symbols. CLT\_DS\_DataRate is a constant during the span of the PHY configured. If re-configured, CLT\_DS\_DataRate must be re-calculated.*

*NOTE: CLT\_US\_DataRate is calculated by the PMA after the upstream PHY has been configured. It is based on the sum of the available data per Resource Element over the timespan of the upstream OFDMA frame consisting of 256 symbols plus 5 or 6 Probe region symbols. CLT\_US\_DataRate is a constant during the span of the PHY configured. If re-configured, CLT\_US\_DataRate must be re-calculated.*

### 51.2.1.3 Effect of receipt

Upon receipt of this primitive, the PMA Symbol Mapper transfers the data bit into the downstream OFDM frame.

In the CLT and upon the start of a downstream frame and when burstStart is TRUE, the PMA updates the FEC Codeword Pointer (FCP) in the downstream PHY Link. See Section 101.x.x.x.

In the CNU, both burstStart and burstEnd Booleans are used by the upstream Symbol Mapper for placing start and end burst markers, respectively, into the appropriate resource elements. See Section 101.x.x.x.

### 51.2.2 PMA\_UNITDATA.indication

This primitive defines the transfer of data in the form of bits from the PMA to its client. PMA\_UNITDATA.indication is used by the client's synchronization process.

#### 51.2.2.1 Semantics of the service primitive

PMA\_UNITDATA.indication(rx\_data\_bit<1:0>, burstStart, burstEnd)

The data conveyed by PMA\_UNITDATA.indication is single data bit that has been prepared for by the PMA receive process to the PMA client. The boolean burstStart is set to TRUE when the data bit is the first bit at the start of received burst, and is set to FALSE otherwise. The Boolean burstEnd is set to TRUE when the data bit is the last bit of a received burst, and is set to FALSE otherwise. In the downstream direction, the burst received by the CNU is always a single FEC codeword of size FEC\_DS\_CodeWordSize bits. In the upstream direction, the burst received by the CLT is variable in size and may be composed of one or more concatenated FEC codewords.

#### 51.2.2.2 When generated

The PMA sends one rx\_data\_bit<1:0> to the PMA client corresponding to the receipt of each bit of received from the receiver Symbol De-Mapper.

In the CNU, the PMA continuously sends data bits to the PMA client at a nominal rate of CLT\_DS\_DataRate in the downstream direction. In the upstream direction, the nominal rate of CLT\_US\_DataRate during a burst. Both CLT\_DS\_DataRate and CLT\_US\_DataRate are expressed in bits per second (bps). Refer to Section 101.x.x.x.

#### 51.2.2.3 Effect of receipt

The effect of receipt of this primitive by the client is unspecified by the PMA sublayer.