1.4.245c EQT: The unit of measurement of time for time-related parameters specified in Clause 144 and Clause 200 Multipoint MAC Control. Each EQT is equal to the time required to transmit one EQ between the MCRS and the PCS in the downstream direction. When an EQ is transmitted across 25GMII (Clause 144), the EQT is equal to 2.56 ns. When an EQ is transmitted across XGMII (Clause 200), the EQT is equal to 6.4 ns.

200. Extensions to Physical Coding Sublayer, Reconciliation Sublayer, and Multipoint MAC Control Sublayer for Super-PON

200.1 Extension to Physical Coding Sublayer for Super-PON

200.2 Extension to Reconciliation Sublayer for Super-PON

200.3 Extension to Multipoint MAC Control for Super-PON

200.3.1 Overview

This clause defines the mechanisms and control protocols required in order to reconcile the Super-PON into the Ethernet framework. A Super-PON is an optical network with no active elements in the signal's path from source to destination. The only interior elements used in a PON are passive optical components, such as optical fiber, splices, and splitters. When combined with the Ethernet protocol, such a network is referred to as Ethernet passive optical network (EPON).

The functions of the Multipoint MAC Control for Super-PON include allocation of transmission resources in EPON, discovery and registration of EPON devices, and reporting queue occupancy to higher layers to facilitate dynamic bandwidth allocation schemes and statistical multiplexing across the PON.

Operation of Super-PON is defined as an extension of Nx25G-EPON operation. Therefore, this subclause predominantly references the specification defined in Clause 144 with the exceptions listed below.

200.3.2 Allowed drift threshold

The drift threshold represents the maximum amount of timestamp drift allowed in a system. Exceeding this threshold causes ONU deregistration. The value of the drift threshold is represented by DRIFT_THOLD constant, which in Super-PON is defined as follows:

DRIFT_THOLD

> Type: Integer
> Description: This constant holds the maximum amount of drift allowed before a timestamp drift error is declared. Exceeding this drift causes ONU deregistration (either self-deregistration or

deregistration by the OLT).
Value: 2 (for the receive channels operating at 10 Gb/s) or 3 (for the receive channels operating at 2.5 Gb/s)
Unit: EQT

200.3.3 Delay variability requirements

The MPCP protocol relies on strict timing based on distribution of timestamps. A compliant implementation needs to guarantee a constant delay through the MAC and PHY in order to maintain the correctness of the timestamping mechanism. The actual delay is implementation dependent; however, a complying implementation shall maintain the combined delay variation through the MAC and PHY of less than one EQT for channels operating at 10.3125 GBd and less than two EQTs for channels operating at 2.578125 GBd.

200.3.4 Discovery margin

DISCOVERY_MARGIN

Type: Integer
Description: This constant holds the extra margin reserved at the end of a discovery grant to accommodate the largest possible round-trip time on a given ODN. The round-trip time also includes any internal delays in the OLT and ONU, such as FEC encoding and decoding delays.
Value: 78,906 (505 μs for ODN with 50 km reach)
Unit: EQT