# Physical Medium Dependent (PMD) and baseband medium, type 1000BASE-RH

### 115.3.3 PMD transmit function

The PMD transmit function translates abstract PMD service primitives into optical signals. The transmit signal at the MDI is specified in 115.4.1.

The PMD transmit function shall translate the amplitude parameter tx\_signal (see 115.2.1) into optical signal p at TP2 according to the following affine function:

$$p=\frac{P\_{1}-P\_{0}}{2a}tx\\_signal+\frac{P\_{1}+P\_{0}}{2}$$

where, a is the maximum absolute value that can take the parameter tx\_signal, and P0 and P1 are respectively the minimum and maximum optical power at TP2. The parameter a takes value 256 and $a\leq tx\\_signal<a$$ $$ $(see 114.X). Implementation of this affine function shall meet the specifications of rise time, fall time and harmonic distortion as specified in 115.4.1, per optical measurement requirements defined in 115.5.

According to this equation, the maximum amplitude of tx\_signal shall be translated into the highest optical power at TP2, the minimum amplitude of tx\_signal shall be translated into the lowest optical power at TP2, and the tx\_signal = 0 shall be translated into the average optical launch power (LOP). Extinction ratio (ER) in dB and LOP in dBm are defined as

$$ER=10$$

$$\_{}\left(\frac{\_{}}{\_{}}\right)$$

$$LOP=10log\_{10}\left(\frac{P\_{1}+P\_{0}}{2}\right)$$

where, P0 and P1 are provided in mW. ER and LOP shall meet the specifications for each topology defined in 115.4.1, per optical measurement requirements defined in 115.5.

Optionally, the PMD transmit function shall turn on and turn off the optical output as required by the PMD\_TXPWR.request primitive. The transition times from receipt of this primitive are specified in 115.4.1.