120D.3.1 200GAUI-4 and 400GAUI-8 transmitter characteristics

<Introductory paragraphs, as modified by other comments.>

120D.3.1.1 Output jitter

<Subclause as modified by other comments.>

120D.3.1.2 Transmitter linearity

<Contents of current 120D.3.1.2.1 as modified by other comments.>

120D.3.1.2.1 Measurement of mean signal levels

<Contents of current 120D.3.1.2.2 as modified by other comments.>

120D.3.1.3 Linear fit to the measured waveform

The test procedure in 94.3.12.5.2 is followed to determine the linear fit pulse response, linear fit error, and normalized transmitter coefficient values with the following exceptions.

a) The test pattern is PRBS13Q (see 120.5.11.2.3).
b) The aligned symbols x(n) are assigned normalized amplitudes -1, -ES, ES, and 1 to represent the PAM4 symbol values 0, 1, 2, and 3 respectively. ES is defined to be (ES1 + ES2)/2 where ES1 and ES2 are defined in 120D.3.1.2.
c) The value of Dp is 2, and the value of Np is ~~13~~200.
d) The clock recovery unit (CRU) used in the output waveform measurement has a corner frequency of 4 MHz and a slope of 20 dB/decade.

<Remove note c) from Table 120D-1.>

120D.3.1.4 Steady-state voltage and linear fit pulse peak

The linear fit pulse, p(k), is determined according to the linear fit procedure in 120D.3.1.2. The steady-state voltage vf is defined to be the sum of the linear fit pulse p(k) divided by M, determined in step 3 of the linear fit procedure.

120D.3.1.5 Transmitter equalization settings

The 200GAUI-4 and 400GAUI-8 chip-to-chip transmitters include programmable equalization to compensate for the frequency-dependent loss of the channel and to facilitate data recovery at the receiver. The functional model for the transmit equalizer is the three tap transversal filter shown in Figure 120D–6. The transmitter output equalization is characterized using the linear fit method described in 120D.3.1.2.

The state of the 200GAUI-4 or 400GAUI-8 transmit output is manipulated via management.

<Remaining contents of current 120D.3.1.2 (final two paragraphs, Figure 120D-6, Table 120D-2), as modified by other comments.>

120D.3.1.6 Transmitter output noise and distortion

Signal-to-noise and distortion ratio (SNDR) is measured at the transmitter output using the following method, with transmitters on all lanes enabled, with identical transmit equalizer settings, and transmitting PRBS31Q or a valid 200GBASE-R or 400GBASE-R signal.

Compute the linear fit to the captured waveform and the linear fit pulse response, p(k), and error, e(k), according to 120D.3.1.3. Denote the standard deviation of e(k) as sigma_e.

Using the same configuration of the transmitter equalizer, measure the RMS deviation from the mean voltage at a fixed low-slope point in runs of at least 6 consecutive identical PAM4 symbols. PRBS13Q includes such a run for each of the PAM4 levels. The average of the four measurements is denoted as sigma_n.

SNDR is defined by Equation (120D-x) where pmax is the maximum value of p(k).

<Insert Equation (94-20) as Equation (120D-x).>

<Update all cross-references accordingly.>