

114.6.3.4 Receiver test procedure

This subclause defines corner test conditions to verify the receiver optical specifications defined in 114.6.3.3. A 1000BASE-RHx PHY shall be able to establish a reliable link as specified in 114.6.3.3 under corner conditions defined in 114.6.3.4.1 and 114.6.3.4.2.

114.6.3.4.1 Receiver sensitivity corner test

This test is oriented to verify the sensitivity of a 1000BASE-RHx PHY receiver. Conditions of the transmitter and the receiver are defined Table 114–10a. For the purpose of this test, the responses of channel type I, type II, and type III are defined by the lower bound limits specified in Table 114–11, Table 114–12, and Table 114–13, respectively. No specified parameters of Table 114–9 and Table 114–10 are considered not relevant for this test and they can take any value in the specification ranges.

Table 114–10a—Parameters for receiver sensitivity corner test

| Parameter | | Symbol | Units | Value/Criteria | | | |
|--------------------------|---|-----------------|-------|---------------------|--------|---------|----------|
| | | | | RHA | RHB | RHC | |
| | | | | Fiber optic channel | | | |
| | | | | Type I | Type I | Type II | Type III |
| Transmitter | Extinction ratio | ER | dB | 11 | | | |
| | Rise time (10% – 90%) | t_r | ns | 3 | | | |
| | Fall time (10% – 90%) | t_f | ns | 3 | | | |
| | Overshoot | OS | % | 8.6 | | | |
| | Positive output droop | DO ⁺ | dB | 0.8 | | | |
| | Negative output droop | DO ⁻ | dB | -0.7 | | | |
| | Timing jitter | t_j | ps | 10 | | | |
| | 2 nd order harmonic distortion | HD ₂ | dB | -20 | | | |
| | 3 rd order harmonic distortion | HD ₃ | dB | -26 | | | |
| | 4 th order harmonic distortion | HD ₄ | dB | -36 | | | |
| | Residual distortion | RD | dB | -40 | | | |
| Relative intensity noise | RIN | dB/Hz | -134 | | | | |
| Receiver | Receive average optical power | AOP | dBm | -17 | -17 | -17 | -18.5 |

114.6.3.4.2 Receiver saturation corner test

This test is oriented to operate a 1000BASE-RHx PHY receiver in saturation conditions. Conditions of the transmitter and the receiver are defined Table 114–10b. The local receiver under test is connected to the remote transmitter by means of plastic optical fiber consistent with specifications of 114.7 of at most 1 meter length. No specified parameters of Table 114–9 and Table 114–10 are considered not relevant for this test and they can take any value in the specification ranges.

Table 114–10b—Parameters for receiver saturation corner test

| Parameter | Symbol | Units | Value/Criteria | | | |
|-------------|---|-----------------|----------------|------|-----|--|
| | | | RHA | RHB | RHC | |
| Transmitter | Extinction ratio | ER | dB | 15 | | |
| | Overshoot | OS | % | 3.2 | | |
| | Positive output droop | DO ⁺ | dB | 0.8 | | |
| | Negative output droop | DO ⁻ | dB | -0.7 | | |
| | 2 nd order harmonic distortion | HD ₂ | dB | -20 | | |
| | 3 rd order harmonic distortion | HD ₃ | dB | -26 | | |
| | 4 th order harmonic distortion | HD ₄ | dB | -36 | | |
| | Residual distortion | RD | dB | -40 | | |
| Receiver | Receive average optical power | AOP | dBm | 1 | | |
| | Receiver reflectance | RR ^a | dBm | 14 | | |

^a See 1.4 for definition of reflectance.