5.6 Power Budgets

It is expected that NG-EPON can coexist with 1G-EPON and/or 10G-EPON (EPON) on the same ODN. It is therefore necessary for the NG-EPON to support the same power budgets as defined for EPON today, i.e.,

- Low power budget class, which supports PON ODN with the insertion loss of ≤ 20 dB. The low power budget is typically implemented in the form of PON ODN with the split ratio of at least 1:16 and the reach of at least 10 km.
- Medium power budget class, which supports PON ODN with the insertion loss of ≤ 24 dB. The low power budget is typically implemented in the form of PON ODN with the split ratio of at least 1:32 and the reach of at least 10 km.
- High power budget class, which supports PON ODN with the insertion loss of ≤ 29 dB. The low power budget is typically implemented in the form of PON ODN with the split ratio of at least 1:32 and the reach of at least 20 km.
- Extended power budget class, which supports PON ODN with the insertion loss of ≤ 34 dB. The low power budget is typically implemented in the form of PON ODN with the split ratio of at least 1:64 and the reach of at least 20 km.

The power budget supported by the pair of ONU and OLT PHYs allows an operator to trade distance for split ratio and vice versa, just like EPON today. Operators may therefore implement a PON ODN with the maximum distance between the OLT and the ONU exceeding the nominal reach associated with the given power budget class, while decreasing the implemented split ratio to compensate for increased insertions loss and dispersion penalty.