

### 17.3.8 Test value

The 6-bit test\_value in the LTP is generated by one of two methods. If the PHY has access to an ~~EUI-64 fixed value that is known to be unique among all possible PHY's (e.g., a EUI-64), that value-it~~ may be used to provide the successive values for the test value. If the PHY has no access to such fixed value, then the 6-bit value may be provided by a random number generator. If the random number generator is a polynomial type, then the generator should contain at least 32 bits. The generator should run continuously while power is present on the PHY. Six bits should be selected from the generator whenever a new test value is needed.

When using an EUI-64 as the source of data for the test value, it is necessary to make sure that non-matching values are not inadvertently seen as being the same because of offsets in the comparison. As a simplified illustration of the problem, assume that the test value contained a 4 bit value instead of a 6-bit test value. A device with a unique ID of 0x0f0f 0f0f 0f0f 0f0f 0f0f 0f0f 0f0f 0f0f might look the same as a device with a unique ID of 0xf0f0 f0f0 f0f0 f0f0 f0f0 f0f0 f0f0 f0f0 if they were using values that are offset from each other by 4 bits. Note that these numbers would also seem to be the same if they one node consumed the bits from lsb-to-msb order while the other consumed them in msb-to-lsb order. To avoid these problems, it is required that the EUI-64 be consumed in a defined manner on all nodes that use this scheme. The bits must be consumed in lsb-to-msb order with the lsb in the EUI-64 occupying the lsb of a first test value. To insure proper phase, a node that is using the EUI-64 must generate a sequence starting from the lsb if the HR value and the received test value are the same on the first test after acquiring the bus for purposes of testing a port. This means that a node using an EUI-64 for test purposes must potentially generate 11 test values to determine that a loop exists.

### 17.3.9 Test\_value Holding Register Initialization (HR)

The test\_value in the HR is initialized from the random number source or from the EUI-64, when the first port on the PHY is placed in the untested state. This provides an initial value that can be sent in an LTP as soon as the port has been synchronized. The generation number value in the HR need not be set to any specific initial value.