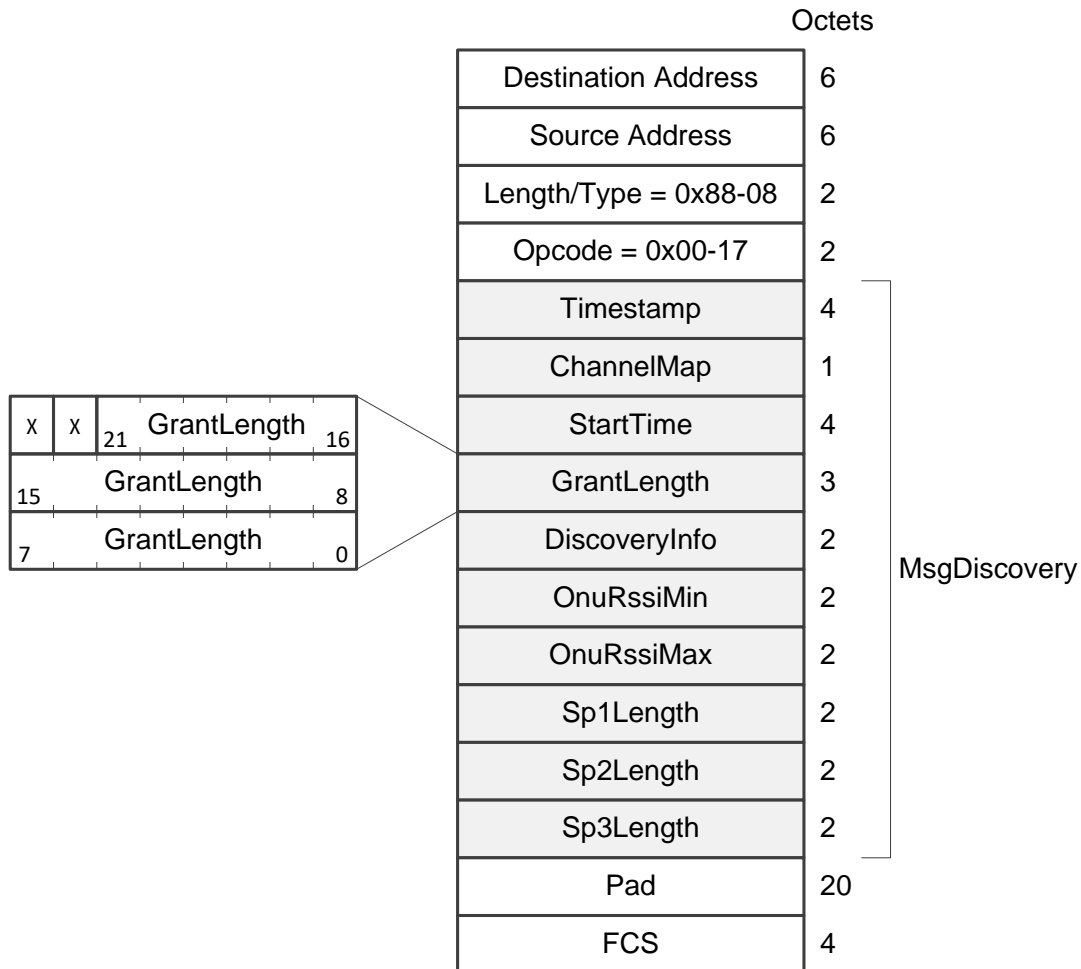


### 144.3.4.6 DISCOVERY description

The DISCOVERY message is used by the OLT to announce a discovery grant to all unregistered ONUs. The DISCOVERY MPCPDUs are transmitted in envelopes with LLID equal to DISC\_PLID (see 144.3.3). All registered ONUs ignore the DISC\_PLID, and therefore do not respond to the DISCOVERY MPCPDUs.



**Figure 144-15 – Format of DISCOVERY MPCPDU**

The DISCOVERY MPCPDU is an instantiation of the Generic MPCPDU and shall be as shown in Figure 144–15. The DISCOVERY MPCPDU is identified by the *Opcode* field value of 0x00-17. The *MsgDiscovery* structure represents a set of opcode-specific fields, defined as follows:

*Timestamp:*

This field conveys the content of the OLT’s MPCP local time counter (see *LocalTime* variable in 144.2.1.2) used for MPCP time synchronization (see 144.3.1.1). This field carries a 32-bit unsigned integer value that represents time in the units of EQT.

*ChannelMap:*

This 8-bit field identifies the upstream channel(s) granted to the ONU in a given DISCOVERY MPCPDU. Table 144–2 shows the mapping between individual bits and upstream channels. When

multiple channels are allowed in a single DISCOVERY MPCPDU, an unregistered ONU shall attempt to register on a single channel only. The choice of the channel is implementation-specific.

*StartTime:*

This 32-bit unsigned integer value represents the start time of the discovery window (burst), expressed in the units of EQT. The start time is compared to the local clock, to correlate the start of the grant. The ONU's burst typically does not start at the advertised discovery grant *StartTime*, but is delayed by a random time interval to avoid persistent collisions of REGISTER\_REQ messages from multiple unregistered ONUs (see 144.3.5).

*GrantLength:*

This 22-bit unsigned value represents the length of the discovery grant expressed in the units of EQ. The *GrantLength* does not include any transmission overhead components (FEC overhead or optical burst-mode overhead).

*DiscoveryInfo:*

This is a 16-bit flag register. Table 144–7 presents the internal structure of the *DiscoveryInfo* field.

**Table 144–7—DiscoveryInfo field**

Bit	Flag field	Values
0	Reserved	Ignored on Reception
1	OLT is 10G upstream capable	0 – OLT does not support 10 Gb/s reception 1 – OLT supports 10 Gb/s reception
2	OLT is 25G upstream capable	0 – OLT does not support 25 Gb/s reception 1 – OLT supports 25 Gb/s reception
3-4	Reserved	Ignored on Reception
5	OLT is opening 10G discovery window	0 – OLT cannot receive 10 Gb/s data in this window 1 – OLT can receive 10 Gb/s data in this window
6	OLT is opening 25G discovery window	0 – OLT cannot receive 25 Gb/s data in this window 1 – OLT can receive 25 Gb/s data in this window
<del>7-13</del>	Reserved	Ignored on Reception
<u>14</u>	<u>Coexistence class G</u>	<u>0 – ONUs supporting PMDs coexistence class G are not allowed to register</u> <u>1 – ONUs supporting PMDs coexistence class G are allowed to register</u>
<u>15</u>	<u>Coexistence class X</u>	<u>0 – ONUs supporting PMDs coexistence class X are not allowed to register</u> <u>1 – ONUs supporting PMDs coexistence class X are allowed to register</u>

The flags in the *DiscoveryInfo* field allow the OLT to exercise discovery admission control over the unregistered ONUs. Specifically, the following ONU behavior is defined:

- The ONU shall not generate/transmit a REGISTER\_REQ MPCPDU using the 10 Gb/s upstream channel if the OLT did not open the 10 Gb/s discovery window, i.e., if the bit 5 was set to 0.
- The ONU shall not generate/transmit a REGISTER\_REQ MPCPDU using the 25 Gb/s upstream channel if the OLT did not open the 25 Gb/s discovery window, i.e., if the bit 6 was set to 0.
- The ONU supporting PMDs coexistence class G (see 141.2.3 and Table 141-7) shall not generate/transmit a REGISTER\_REQ MPCPDU if the OLT does not allow the G-type coexistence, i.e., if the bit 14 was set to 0.

— The ONU supporting PMDs coexistence class X (see 141.2.3 and Table 141-7) shall not generate/transmit a REGISTER\_REQ MPCPDU if the OLT does not allow the X-type coexistence, i.e., if the bit 15 was set to 0.

The values of the *DiscoveryInfo* field flags are set by the OLT MPMC client and may change from one discovery attempt to the next. The OLT MPMC client may allow a concurrent registration of ONUs with different rates by setting both bits 5 and 6 to 1, or it may allow a concurrent registration of ONUs with different coexistence options by setting both bits 14 and 15 to 1. The processing of *DiscoveryInfo* flags by the ONU and the ONU behavior in dual-rate systems is further specified in 144.3.7.

*OnuRssiMin:*

This is a 16-bit unsigned integer field, representing the minimum RSSI threshold for the given discovery attempt. Only the ONUs with measured RSSI greater or equal to *OnuRssiMin* shall generate a REGISTER\_REQ message in the given discovery window. The unit of *OnuRssiMin* value is 0.1  $\mu$ W, allowing the entire field to cover the range of 0 to 6.5535 mW (~ -40 to +8.2 dBm).

*OnuRssiMax:*

This is a 16-bit unsigned integer field, representing the maximum RSSI threshold for the given discovery attempt. Only the ONUs with measured RSSI lower or equal to *OnuRssiMax* shall generate a REGISTER\_REQ message in the given discovery window. The unit of *OnuRssiMax* value is 0.1  $\mu$ W, allowing the entire field to cover the range of 0 to 6.5535 mW (~ -40 to +8.2 dBm).

*SP1Length:*

This is a 16-bit unsigned integer field indicating the number of times SP1 is to be repeated at the beginning of a burst carrying the REGISTER\_REQ MPCPDU (see 142.1.3).

*SP2Length:*

This is a 16-bit unsigned integer field indicating the number of times SP2 is to be repeated at the beginning of a burst carrying the REGISTER\_REQ MPCPDU (see 142.1.3)..

*SP3Length:*

This is a 16-bit unsigned integer field indicating the number of times SP3 is to be repeated at the beginning of a burst carrying the REGISTER\_REQ MPCPDU (see 142.1.3)..