A Transponder is the element that sends and receives the optical

signal from a fiber. A transponder is typically characterized by its

data rate and the maximum distance the signal can travel. Channel

frequency, per channel input power, FEC and Modulation are also

associated with a transponder. From a path computation point of

view, the selection of the compatible source and destination

transponders is an important factor for optical signal to traverse

through the fiber. There are three main approaches (named as “mode” in the model) to determine optical signal compatibility:

**Application Code**: An application code represents a standard G.698.2 optical interface specification towards the realization of transversely compatible DWDM systems. Two transceivers supporting the same application code and a line system matching the constraints, defined in ITU-T G.698.2, for that application code will interoperate.

**Organizational Mode**: An organizational mode represents a non-standard optical interface specification towards the realization of transversely compatible DWDM systems. Two transceivers supporting the same organizational mode and a line system matching the constraints, defined by the organization which owns the mode, for that organizational will interoperate. These organizations can be MSA-Groups, Operators, System vendors, component vendors etc.

**Explicit mode**: The explicit mode allows to encode, explicitly, any subset of parameters e.g., FEC type, Modulation type, etc, to enable a controller entity to check for interoperability by means outside of this draft. It shall be noted that using the explicit encoding does not guarantee interoperability between two transceivers even in case of identical parameter definitions. The explicit mode shall therefore be used with care, but it could be useful when no common Application Codes or Organizational Modes exist or the constraints of common Application Codes or Organizational Modes cannot be met by the line system.

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Any transceiver related to one transponder must follow only one of these “mode” (choice in the YANG model).

The current YANG model described in Section 3 contains optical transponder properties. They are divided between:

1. Optical Transponder capabilities, showing how it can be configured
2. Current Transponder setting

As for part A, The transponder capabilities are:

* supported transmitter tuning range with min/max nominal central frequency [f\_tx\_min, f\_tx\_max]
* supported transmitter tunability grid, the minimum difference in frequency between two adjacent channels (in GHz)
* supported transmitter power range [p\_tx-min, p\_tx\_max] x channel
* supported receiver power range [p\_rx-min, p\_rx\_max] x channel
* supported maximum total power, rx power for all the channels

These optical transponder properties are explicit in the model, in case the “mode” chosen is explicit or organizational, while they are implicitly considered in case of “application code”.

In case the chosen approach for signal compatibility is “organizational” the “operational mode” identifier is shown in the model and this operational mode is including, implicitly, a set of optical impairment limit, i.e. min OSNR, max PMD, max CD, max PDL, Q-factor limit, etc.

This set of optical impairment values range, is provided explicitly in case of “explicit” mode.

Moreover, in case of “explicit” mode, the set of parameters can support one or more application code/organizational mode, that means this set of parameters if applied to configure one transceiver, is aligned with one or more application code/organizational mode.

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To retrieve this information in the explicit mode, a container “supported-mode” containing 2 different list of pointers to application code and organizational modes.

About part B, the “Current transponder setting” is the configuration related to any OTSi generated by a transceiver attached to a specific transponder.

[configured part to be completed]

|  |  |  |
| --- | --- | --- |
| Mode\ | min/max nominal central frequencytunability gridmin\_spacingtransmitter power range receiver power rangemaximum channelpower on receivermax total power on receiver | Other parameters |
| Application code | Implicit | Implicit |
| Organisational mode | Explicit | Implicit |
| Explicit mode | explicit | Explicit |

 [Editor's note: The current YANG model described in Section 3 with