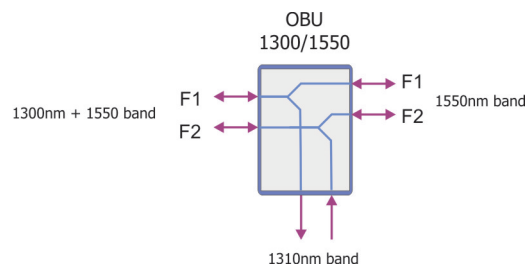


1310/1550 Optical Band unit

Technical Description

Optical Band Unit (1310/1550) (OBU1300/1550)



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This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard titled "Digital Apparatus," ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques," NMB-003 édictée par le Ministère des Communications.

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This is a Class A product based on the standard of the VCCI Council. If this equipment is used in a domestic environment, radio interference may occur, in which case, the user may be required to take corrective actions.

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この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI-A

Warning

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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1 Introduction

This manual provides an overview of the Optical Band Unit, 1310 and 1500 nm, **OBU1300/1550**.

1.1 Document Revision History

Table 1 Document Revision History

Revision	Date	Description of changes
A	2011-12-12	Due to introduction of a new documentation tool, the revision is reset to A. For details on previous document changes/updates, please see corresponding document in System Manual release R17. There are no changes in this A-version compared to R17.
B	2012-04-02	Added text in how CWDM channels are affected.
C	2012-05-25	Updated figure in section Technical Data.

2 Functional Description

The OBU Unit contains couplers with the ability to combine and split optical 1300 & 1550nm signals.

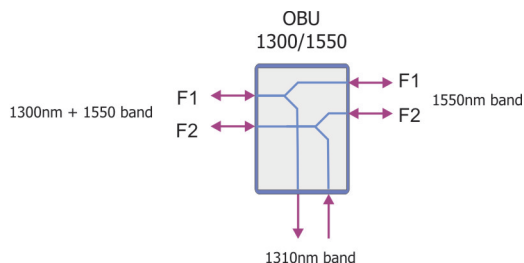


Fig. 1 Optical Band Unit

The OBU1300/1550 is a half-sized unit that shall be placed in a passive slot in a TM-3000, TM-301, TM-101 or TM-102 chassis.

3 Applications

3.1 Example 1

The normal approach to convert an existing 1310nm operating network to a WDM network is to connect the 1310nm equipment to WDM Transponders. The OBU units provide another solution where the 1310nm operating system can continue to operate at 1310nm. This is done by separating and merging the two bands.

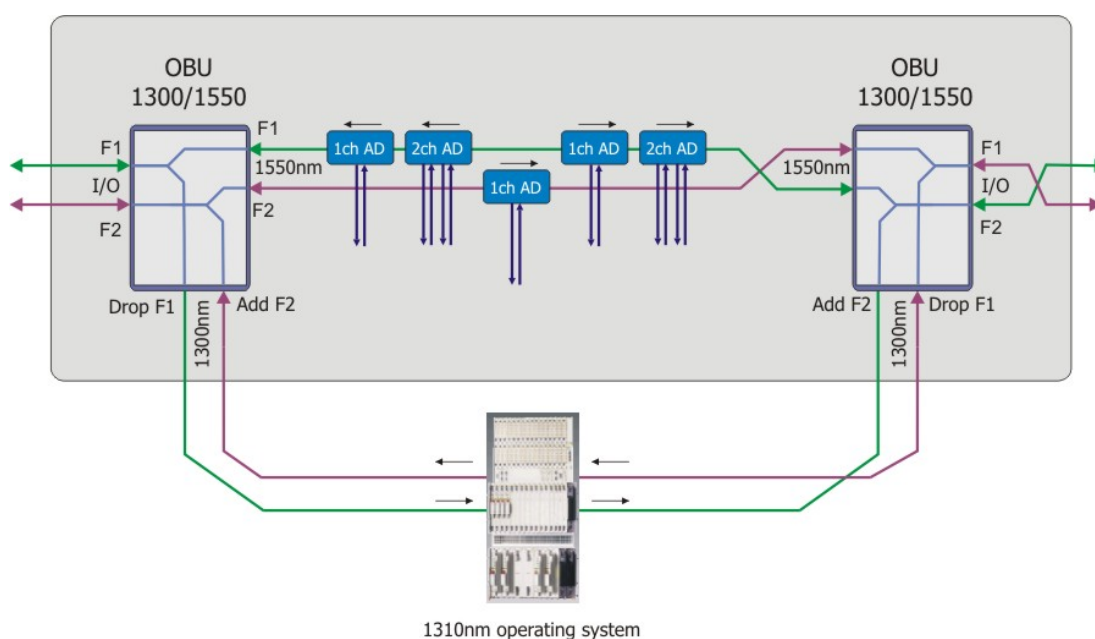


Fig. 2 Example of OBU application

In the example shown in Fig. 2, the client system is a 1310 nm ADM system operating on a fiber-pair. The 1310nm system is connected in east and west direction. The OBU units are inserted as shown in the figure, allowing single-fiber AD-filters to be inserted and thus enabling CWDM or DWDM channels to operate on the same fiber-pair. Note that this example configuration provides a mix of a fiber-pair 1310nm setup with a single fiber WDM configuration.

The optical losses introduced by the OBU's must be taken into account to ensure that the transmission properties are maintained for the 1310nm client system. The added extra loss per segment is 2.9dB (see Table 2 *Optical Data*).

Note how the line fibers are to be connected to and from the OBU units.

3.2 Example 2

This example shows a point-to-point network where two 4+4ch CWDM MDU's are combined with the OBU units to enable a 1310nm operating system to share the same fiber-pair.

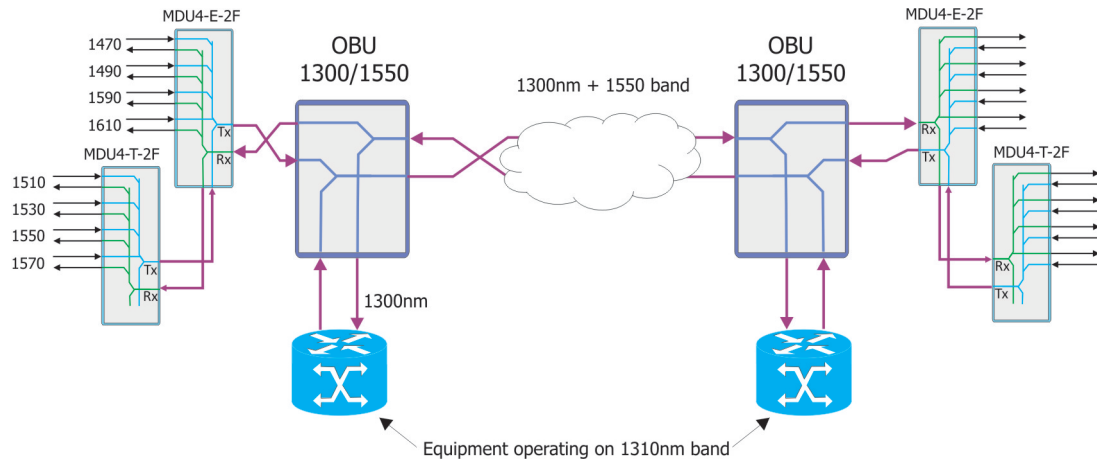


Fig. 3 Application example on fiber-pair

4 Management

4.1 Board data

All boards/units within a XTM Series Network Element have unit related information stored in non-volatile memory banks. This information is stored at production and is required for administration and start-up of the boards.

The information is divided into three main groups:

- Environmental data - Contains data, which is read and used without knowledge of production data version.
- Generic board data - Contains administrative data, which is included on all boards, both active and passive.
- Specific board data - Data needed for proper board operation.

Some alarms are based on the presence of this information:

- “Vital Product Data Missing”: Information in the board data memory bank that is vital to manage the unit is missing. This alarm is classified as “critical” and may require board replacement.
- “Non-vital Product Data Missing”: Information in the board data memory bank that is not vital to manage the unit is missing. This alarm is classified as “minor”.
- Board missing: The Control Unit can no longer detect the presence of the unit.

See *System Manual Volume C, Operation & Maintenance* for further details.

4.2 Remote Inventory

An on-board EE-PROM enables remote extraction of inventory data. The information provided is:

- Unit name.
- Unit HW Product number.
- HW revision.
- Unit serial number.

5 Mechanical Layout

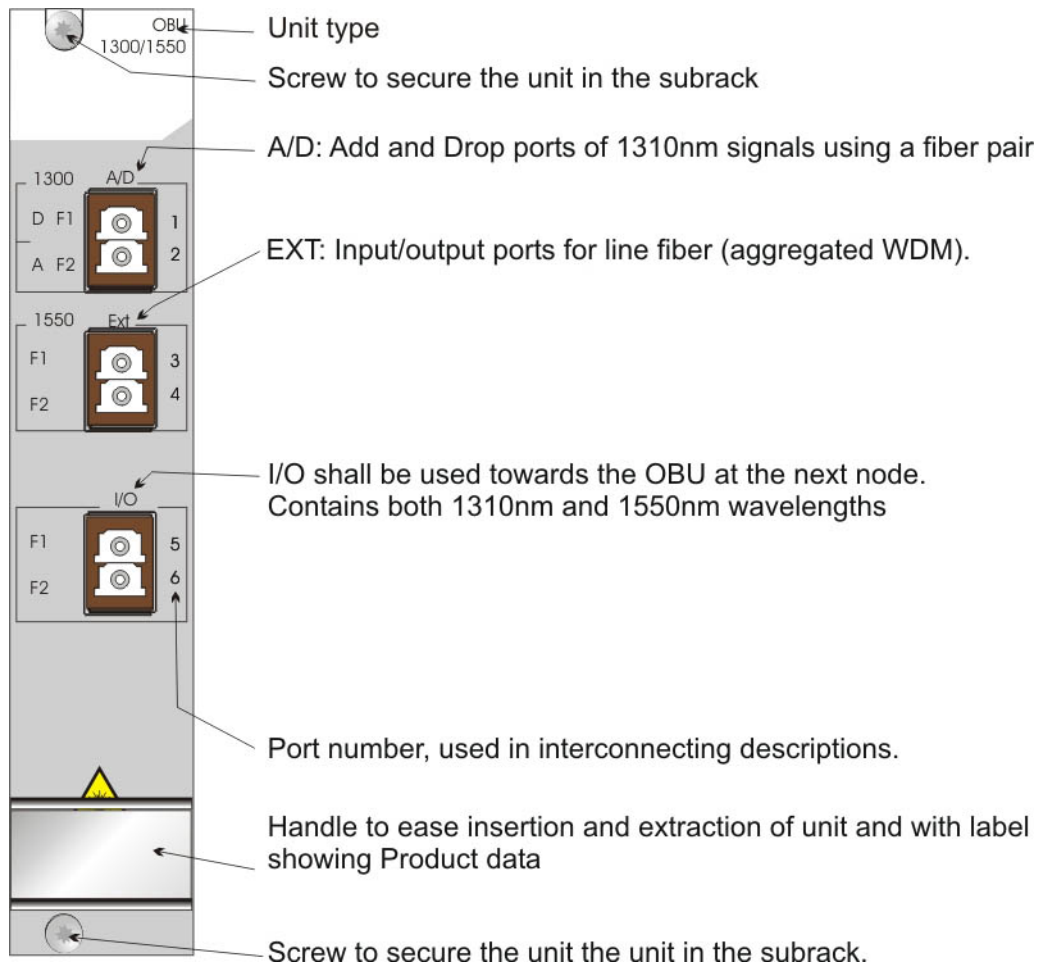


Fig. 4 Front layout

All optical connectors are of MU-type.

6 Technical Data

This section lists the technical data for the Optical Band Unit.

Table 2 Optical Data

Parameter/requirement	Unit	Min/typ/max	Comment
Express Ch.: Wavelength range	nm	1460/-/1620	
Express Ch.: Insertion loss (Fiber 1)	dB	-/1.0/1.2	
Express Ch.: Insertion loss (Fiber 2)	dB	-/0.6/0.8	
Express Ch.: Isolation (Fiber 1)	dB	45/-/-	Isolation from 1310 band. Note: only relevant for Fiber 1.
Express Ch.: Isolation (Fiber 2)	dB	13,0/-/-	
Add and Drop Ch.: Wavelength range	nm	1260/-/1360	
Drop Ch: Insertion loss (Fiber 1)	dB	-/1.3/1.7	
Drop Ch. Cross talk (Fiber 1)	dB	57/-/-	Isolation from 1550 band.
Add Ch: Insertion loss (Fiber 2)	dB	-/1.0/1.2	
Add Ch. Cross talk (Fiber 2)	dB	10/13/-	Suppression of un-expected adjacent CWDM channel (1490 nm resp 1510 nm)
Add+Drop Ch: Insertion loss	dB	-/2.4/2.9	1310 band (unit to unit)
Return loss	dB	40/-/-	40 dB for connectors and 45 dB for filters
PMD	ps	-/-/0,1	
PDL	dB	-/-/0,15	
Dispersion	ps/nm	-/-/5	Express channel

Table 3 Loss values, condensed

Losses, max values	
OCU & OCU4	3.7dB in both directions
OBU1300/1550	Express loss: 1.2dB Add+Drop loss: 2.9dB

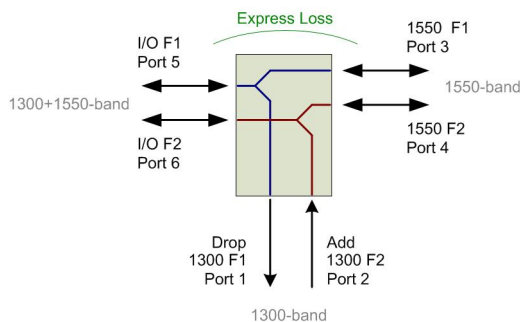


Fig. 5 Loss Values OBU 1300/1550

The max loss seen by the 1310nm equipment in a segment is 2.9dB.



Note

Table 4 Product Revision Data

Product Number	Rev	Introduced release	Comment
OBU/1300/1550	R1A	A2.1	1st released version.