



Reference Offer (RO)

**Annex C, Attachment 1**  
**Distribution Frame Characteristics**  
**DDF and ODF**

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## **1 Digital Distribution Frame (DDF)**

### **1.1 General**

- 1.1.1 DDFs are provided for termination of cables from higher order multiplex equipment, SDH equipment, optical line terminals, microwave equipment, exchange digital trunk circuits and digital access Network equipment.
- 1.1.2 Provision is made for protected monitoring points on the DDF, according to ITU G.772.
- 1.1.3 All installations are in accordance with the generic requirements of this Annex C.
- 1.1.4 A single U-link type DDF is employed for 75 Ohm coaxial interface, providing facilities for patching and break access as well as performance monitoring.
- 1.1.5 For 2Mbit/s (120 Ohm termination) a balanced termination block with break and test facilities are provided.
- 1.1.6 The DDF has the capability to insert balun transformers for matching lines with different terminating impedances.

### **1.2 Technical Requirements**

- 1.2.1 DDF's are installed in the transmission room and are of the ETSI or slim rack type. The DDF is to be modular and capable of accepting modules of two types:
  - i) The 75 Ohm coax standard module consisting of standard mounting plate for terminating cabling at rear and mounting U-links on the front.
  - ii) The monitoring module consists of a modified mounting plate. This includes in line protected monitoring points accessible via connectors.
- 1.2.2 The modules shall have maximum 10 go and 10 return digital streams.
- 1.2.3 The monitoring modules are capable of being fitted with either of the following two in line monitoring connectors:
  - i) Unbalanced (75 Ohm coaxial) measuring point.
  - ii) Balanced (120 Ohm pair) measuring point.

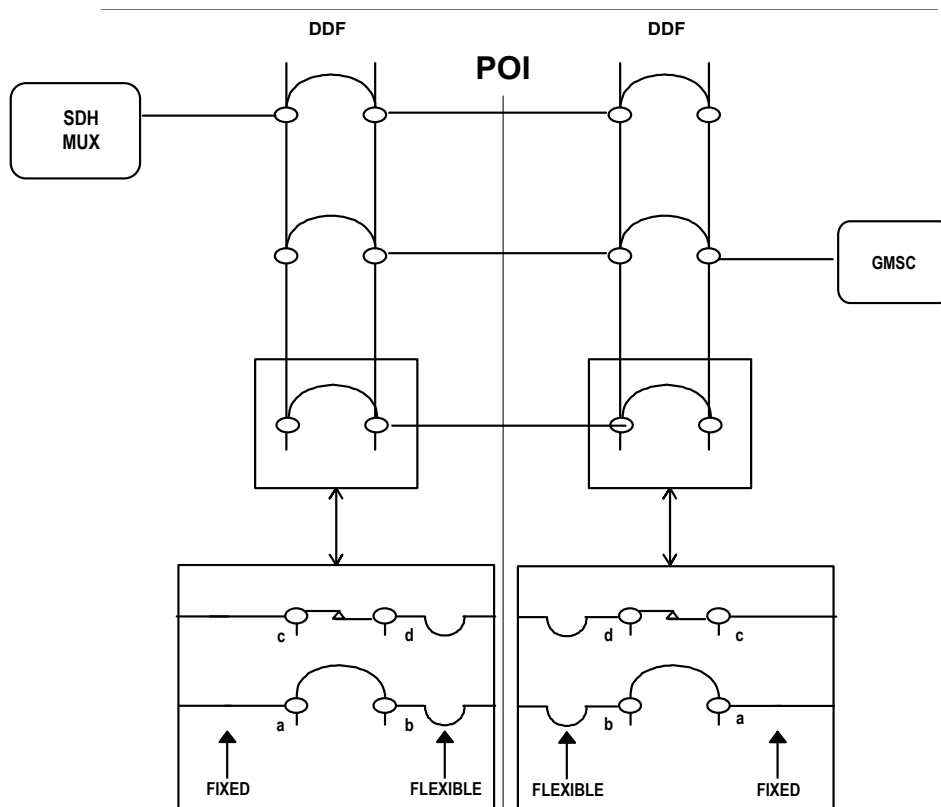
- 1.2.4 Temporary monitoring shall be performed by means of U-links with a protected monitoring point.
- 1.2.5 All measuring/monitoring points (including the special U-link) are to be in accordance with ITU-T rec. G.772 and related recommendations.
- 1.2.6 Short circuits applied for an indefinite period to the protected monitoring point, shall not cause a failure of the transmission path or degrade the transmission signal (i.e. bit errors) through the connector. Any change in the transmission path signal waveform shall be less than five percent (5%) and the waveform shall remain within the limits of the appropriate bit rate signal mask when the protected monitoring point is loaded with a test instrument or short circuited.
- 1.2.7 Coaxial cables used for termination on the DDF shall be in accordance with the relevant **stc** Material Specifications.
- 1.2.8 Coaxial cables from the transmission and exchange equipment shall be complete with male type connectors.
- 1.2.9 U-links complete with jack field shall be employed for all connections within the DDF. The U-links shall have a locking mechanism.
- 1.2.10 If Baluns are used, the type of Balun shall be specified with all relevant data.
- 1.2.11 Balun arrangements shall be approved by **stc**.
- 1.2.12 Arrangement of cables shall be properly managed and labelled. All coaxial cables to and from DDFs shall be individually labelled in accordance with the **stc** labelling scheme. Multipair balanced cables shall be similarly labelled. Cable congestion shall not be allowed in any rack.
- 1.2.13 All cables shall be securely fastened by cable clamps within the rack.
- 1.2.14 Transmission and switching cables shall be installed at all times on opposite sides of the DDF.

### 1.3 Connection Concept

- 1.3.1 The connection concept of the DDF is shown in Figure. 1
- 1.3.2 The following bit rates should be connected to DDF's as follows:

- 2Mbit/s 120 Ohm DDF

### 1.3.3 Connection concept of DDF



**Figure 1: Customer Sited Interconnection**

## 2 Optical Distribution Frame (ODF)

### 2.1 General

2.1.1 Optical distribution frames (ODF) are used to provide:

- Possibility for re-arrangement (i.e. future flexibility).
- Patching.
- Access for optical fibre cable testing.

2.1.2 General characteristics of **stc**'s ODFs:

- Centralised and modular arrangement.
- Single mode fibres to the relevant **stc** Material Specifications only to be installed and terminated in the ODF.
- Optical connectors are of D3 FC/PC, LC/PC single mode type.
- Connections to the equipment are to be made by optical patch-cords, equipped with D3 FC/PC, LC/PC connectors using one contact point only.
- Easy access to pigtails and patch cords for operation and maintenance and a proper organisation of these.

### 2.2 Preferred Arrangement

2.2.1 Only one ODF is normally used at each site. This ODF would normally be associated with the optical fibre cable first installed at the site. Equipment installed later (on the same or nearby equipment racks) required to operate over fibres in the same cable, would be connected to these fibres via optical patch cords running from the ODF to the new equipment.

### 2.3 ODF Design

2.3.1 The ODF includes a patch panel with FC through connectors. On one side of this panel (rear), D3 FC/PC connectorised pigtails from the optical cable termination box ((OCTB), being the fibre pigtail splice housing) terminate on the through connectors. On the other side of the patch panel (front), D3 FC/PC connectorised optical patch cords terminate on the through connectors.

2.3.2 Connection to the appropriate fibre is achieved by connection of the optical patch cord to the through connector associated with the relevant fibre/pigtail. Once terminated the pigtails should not be moved. All re-arrangements should

be made with the optical patch cords. Single mode fibre cords/optical jumpers and pigtails are blue according to current standards.

- 2.3.3 Proper patch cord management is applied within the frame. This includes, but is not limited to, bend radius management, protection from physical damage and tampering and excess length management.

## 2.4 Optical Patch Cord Protection

- 2.4.1 Where the optical patch cords are required to be run to another rack or another suit of equipment racks they should be suitably protected. This protection shall consist of:
- a) Within the rack, the rack's normal protection
  - b) Outside of the rack, open troughs (U shaped tray with removable lid) are run on the overhead ironwork. This tray is to provide physical protection for the optical patch cords and at the same time allow future access for maintenance or growth purposes. It is to be clearly labelled "Optical Fibre" and is only to be used for optical patch cords. The troughing is to be installed in such a way as to ensure minimum bending radii of the fibres are met (especially entry/exit points) and that sufficient capacity for growth exists.
- 2.4.2 The OLO shall submit the intended installation drawings (including the fibre distribution arrangements) to **stc** for approval before commencing installation.
- 2.4.3 ODF are labelled in accordance with the **stc** labelling scheme.
- 2.4.4 Congestion of cable arrangements is not allowed.