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| **Telecommunication Standardization Bureau** |  |
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Geneva, 29 July 2010

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| Ref:  Tel:  Fax: | **TSB Circular 126**  TSB Workshops/P.R.  +41 22 730 5235 +41 22 730 5853 | - To Administrations of Member States of   the Union;  - To ITU-T Sector Members;  - To ITU-T Associates; |
| E-mail: | [tsbworkshops@itu.int](mailto:tsbworkshops@itu.int) | **Copy:**  - To the Chairmen and Vice-Chairmen of ITU-T Study Groups;  - To the Director of the Telecommunication Development Bureau;  - To the Director of the Radiocommunication Bureau;  - To the Permanent Mission of Rwanda in Geneva  - To the Head of the ITU Regional Office for Africa, Addis Ababa, Ethiopia |

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| Subject: | **ITU-T Tutorial on Optical Fibres Cables and Systems**  **Recommendations (Kigali, Rwanda, 6-17 September 2010)** |

Dear Sir/Madam,

1 At the kind invitation of the Government of Rwanda, ITU-T and the Ministry in Charge of Information and Communications Technology are co-organizing a **“Tutorial on Optical Fibres Cables and Systems Recommendations”** which will take place from **6 to 17 September 2010** at t[he[**Gorillas Hotel**](http://www.gorillashotels.com/), Musanze, Rwanda,](http://www.ichotelsgroup.com/intercontinental/en/gb/locations/nairobi)  located at the Ruhengeri, Musanze District (Northern part of Rwanda near gorillas park, 95 km from Kigali).

2 The Tutorial will begin at 0930 hours on the first day. Participants’ registration will begin at 0800 hours. Detailed information concerning the meeting room will be made available at the entrance of the meeting venue. Discussions will be held in English only.

3 Participation in the Tutorial is open to all. Priority will be given to countries within the Eastern African Community being the target audience for this event. A registration fee of   
US $ 300 per participant is requested and payment should be made via bank transfer at the latest by **24 August 2010** to the account provided below:

**Account No. 240-C8108400.2**

**Account Name: International Telecommunication Union**

**UBS SA**

**Case Postale 2600**

**CH-1211 Geneva 2**

**Switzerland**

**Swift: UBSWCHZH80A  
IBAN: CH58 0024 0240 C810 8400 2**

Please send a scanned copy of your payment receipt to us by email to [tsbworkshops@itu.int](mailto:tsbworkshops@itu.int) .

4 Based on the ITU-T handbook “[Optical fibres, cables and systems](http://www.itu.int/dms_pub/itu-t/opb/hdb/T-HDB-OUT.10-2009-1-PDF-E.pdf)”, this Tutorial which is intended to assist engineers, technicians, technologists, mid-level management and regulators in the implementation of optical-fibre-based systems, will provide an in-depth insight into the ITU-T Recommendations that have shaped the optical transport networks of the world.

Participants will gain a better understanding of the Recommendations, how to design and implement projects and how to make the best choices in the various parts of an optical link. In addition, participants will learn how to evaluate a power budget, to choose interfaces and accessories and to define the fundamental parameters for the preparation of technical and administrative specifications for supply contracts or RFPs.

5 A draft programme of the Tutorial is set out in **Annex 1** hereto. The updated programme and relevant information will be made available at the ITU-T website at the following address: <http://www.itu.int/ITU-T/worksem/optical-fibre/201009/index.html>.

6 Practical information relating to this event is enclosed as **Annex 2.**

7 **Accommodation**: The designated hotel is the [**Gorillas Hotel**](http://www.gorillashotels.com/), Musanze, Rwanda. Delegates are requested to book their hotel rooms directly with the **Central reservations, Gorillas Hotels Group, Telephone: +252 501 717 or +252 501 718; Fax: +252 501 716;   
Mobile: +250 788 487 777; Email:** [**gorillashotel@rwanda1.com**](mailto:gorillashotel@rwanda1.com)**; or** [**book@gorillashotels.com**](mailto:book@gorillashotels.com).

Transportation from the airport to the designated hotel, which is also the meeting venue, will be provided by the host Administration. In order to ensure airport pickup and transfer, delegates are requested to provide all travel information, including flight number, arrival and departure dates and times by completing and returning by **31 August 2010**, the **Delegate Information Form** in **Annex 3.** (***Please use all email addresses when emailing to ensure that email reaches intended recipient).***

8 **Registration:** To enable TSB to make the necessary arrangements concerning the organization of the Tutorial, I should be grateful if you would register via the on-line form at <http://www.itu.int/ITU-T/worksem/optical-fibre/201009/index.html> **as soon as possible**, but **not later than 31 August 2010**. **Please note that pre-registration of participants to the Tutorial is carried out exclusively *online*.**

9 We would also like to inform you that there may be visa requirements for citizens of some countries to enter Rwanda. Where this is the case, visa applications can be made at any Rwandese Embassy or Consular Office in your country. Detailed information on visa requirements can be found at: [**www.migration.gov.rw**](http://www.migration.gov.rw).

Yours faithfully,

Malcolm Johnson  
Director of the Telecommunication  
Standardization Bureau

**Annexes: 3**

**ANNEX 1**

(to TSB Circular 126)

**ITU-T Tutorial on Optical Fibres Cables and Systems Recommendations**

**(Kigali, Rwanda, 6-17 September 2010)**

**Draft Programme**

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| **Time** | **Subjects** | **Objectives** |
| **Week 1** |  |  |
| Monday | Introduction on the ITU-T and on the objectives / structure of the Tutorial | It is an overview of the ITU, its Sectors and an introduction to ITU-T SG15, to the Handbook and to the structure of the Tutorial |
| Monday | Optical fibres characteristics ( Note. Test methods are outside the scope of the Handbook. Moreover the description of the test methods (G.650.1, G.650.2, G.650.3) requires an advance knowledge of mathematics) | This session will provide the participants with the description of the dimensional, optical, mechanical and transmission characteristics of the optical fibres. The ITU-T types of optical fibres will be described. This will give the elements to choose the type of fibre that best meets the needs of an optical plant based on the services and systems requirements. |
| Tuesday | General characteristics of optical cables | The optical cables must protect fibres from mechanical, chemical and human activities. In particular the structure of optical cables is to be designed to protect fibres to withstand the environment where the cable has to be installed: aerial, ducts, underground, shallow water, submarine. |
| Wednesday | Optical cables installation [ Note. Test methods are outside the scope of the Handbook.] | The installation is linked to the session before. Specific techniques, such as underground ducts, trenchless techniques, mini-trench, micro-trench, aerial, tunnels, bridges, along railways, in sewer ducts, shallow water and submarine, will be analysed. |
| Thursday | Optical splices, connectors and passive nodes [ Note. Test methods are outside the scope of the Handbook.] | Fibres and cables are produced according to factory lengths that need to be jointed in order to realize the optical links. This session will provide a description of the best techniques for the interconnection of the optical fibres and in particular the optical fibre splices, optical connectors, optical distribution frames, fibre closures, fibre organizers, etc. All these elements are necessary to guarantee an optimized transmission of the optical signal along the fibre. |
| Friday | Optical active and passive components / subsystems | There are various passive and active components in an optical/plant: optical transmitters, optical receivers, optical amplifiers, chromatic dispersion compensators, regenerators, transponders, etc. This session will provide the description of these components, will outline how they are used in the optical systems / plants and will indicate the criteria for their choice. |

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| **Week 2** |  |  |
| Monday | General characteristics of optical systems and their specification | This part of the tutorial is of fundamental importance. Knowing the characteristics of the optical systems will give the participants the skills they need to make the right choice of equipment which are specified on the basis of applications, optical fibres, number of channels, wavelength of operation, future needs for new services, etc. |
| Tuesday | Optical systems design | In this part there is the description of the various approaches which can be followed for the design of the optical systems. Moreover the impact of the various impairments on the length of the links and on their capacity are evaluated. The main elements necessary for the design of an optical system will be given |
| Wednesday | Optical systems applications | Ability to design an optical plant for a specific application will depend on the knowledge of the subjects dealt with in all the previous sessions. An optical system design based on a given Quality of Service and on a given life-time is a “must” for any engineer in order to choose the best optical system for each application in their network and for the needs of his country. Some information on submarine systems will be also provided |
| Thursday | B- and G-PONs - xDSL,  Passive Optical Networks, Broadband PON, Gigabit-PON, Digital Subscriber Lines, Wireless broadband. | This part will complete the training showing, from a general point of view, the user-side (last-mile) of a plant/system. This is the part closer to the end-users and to the needs of the service providers. The various techniques that are presently used will be described together with their advantages and drawbacks both for wired and wireless networks. |
| Friday | Operation & Maintenance, safety and environmental aspects | Operation and maintenance are elements that the engineers have to learn in order to take actions to limit the effects of systems failures or low performance. |

**ANNEX 2**

(to TSB Circular 126)

**ITU-T Tutorial on Optical Fibres Cables and Systems Recommendations**

**(Kigali, Rwanda, 6-17 September 2010)**

## Practical Information

1. **Meeting venue**

**The ITU-T Tutorial on Optical Fibres Cables and Systems Recommendations** will take place from **6 – 17 September 2010** at [**the** [**Gorillas Hotel**](http://www.gorillashotels.com/), Musanze, Rwanda,](http://www.ichotelsgroup.com/intercontinental/en/gb/locations/nairobi)  located at: {Ruhengeri, Musanze District (Northern part of Rwanda near gorillas park, 95 km from Kigali)

Central reservations :

Gorillas Hotels Group

P.O. Box 1782 Kigali,

Telephone : +252 501 717; +252 501 718;

Fax: +252 501 716

Mob: +250 788 487 777

Email: [gorillashotel@rwanda1.com](mailto:gorillashotel@rwanda1.com); or [book@gorillashotels.com](mailto:book@gorillashotels.com)

**Website:** [**www.gorillashotels.com**](http://www.gorillashotels.com)

1. **Hotel Accommodation**

[Gorillas Hotel](http://www.gorillashotels.com/), Musanze

1. **Visa**

**For visa requirements, consult** [**www.migration.gov.rw**](http://www.migration.gov.rw)

1. **Travel and airport transfers**

Participants are responsible for making their travel arrangements. Delegates are requested to provide all travel information, including flight number, arrival and departure dates and times by completing and returning by **31 August 2010** the attached Delegate Information Form to

**Ministry in the Office of the President in charge of ICT**

**PO Box 15 KIGALI**

**Email:** [**amakuza@presidendency.gov.rw**](mailto:amakuza@presidendency.gov.rw)

[**abusingye@presidency.gov.rw**](mailto:abusingye@presidency.gov.rw)

[**rkirabo@presidency.gov.rw**](mailto:rkirabo@presidency.gov.rw)

Transport will be provided to delegates:

1. On arrival and departure from the Kanombe International Airport.
2. From the designated/recommended hotel to the venue.
3. During the various social events organized for the delegates.

Note: Delegates are advised to look out for paging boards or signage with the name of the meeting. Due to the number of delegates expected, the local host may not prepare signage for each individual delegate arriving.

1. **Climate**

Rwanda has tropical climate and the average temperatures in September vary between 12°C - 27°C during the day and fall to 10°C at night.

1. **Local time**

GMT+2

1. **Currency, banks and credit cards**

The unit of currency is the Rwandan Francs.

The indicative exchange rate, as of 20th March 2010, is:

1USD = 580 - 590 FRW

* Major international credit cards are widely accepted for transactions.
* Banks are open from 08.00am to 08.00pm Monday through Friday, and to 12 noon on Saturday
* Forex Bureaux located in different parts of the city are open from 08:00hrs to 09.00 pm Monday through Friday.

1. **Vaccination**

Yellow fever vaccination is usually required by Health authorities on arrival.

**9. Electricity**

220V/50hz

Wall round sockets with or without earth pins

**HOST COUNTRY CONTACT:**

**Mr. Abraham MAKUZA**

**Senior Expert in charge of ICT Infrastructure and Regulation**

**Ministry in the Office of the President In charge of ICT**

**P.O box 15**

**KIGALI**

**Email:** [**amakuza@presidency.gov.rw**](mailto:amakuza@presidency.gov.rw)

**Tel: + 250788 835 52**

**Ms Alice BUSINGYE**

**ICT Partnership Coordinator**

**Ministry in the Office of the President In charge of ICT**

**P.O box 15**

**KIGALI**

**Email:** [**abusingye@presidency.gov.rw**](mailto:abusingye@presidency.gov.rw)

**Tel: +250 788 303 954**

**ANNEX 3**

(to TSB Circular 126)

**ITU-T Tutorial on Optical Fibres Cables and Systems Recommendations  
 (Kigali, Rwanda – 6 – 17 September 2010)**

DELEGATE INFORMATION FORM

**MEETING VENUE:**[**Gorillas Hotel**](http://www.gorillashotels.com/)**, Musanze, Rwanda**located at: Ruhengeri, Musanze District (Northern part of Rwanda near gorillas park,   
95 km from Kigali)

**Country** …………………………………………………………….…………

**Name of delegate** …………………………………………………………….

**Title**………………………………………………………………………………

**Organization**…………………………………………………………………..

**Email and Tel. contacts**:………………………………………………………

**Date of Arrival/Flight number**…………………………………………….

**Date of Departure/Flight number**………………………………………..

# Signature………………..……………………………………………………..

**Please return by 31st August 2010**  **to:**

**Ministry in the Office of the President in charge of ICT, PO Box 15 Kigali, Rwanda**

**Email:** [**amakuza@presidendency.gov.rw**](mailto:amakuza@presidendency.gov.rw)

[**abusingye@presidency.gov.rw**](mailto:abusingye@presidency.gov.rw)

[**rkirabo@presidency.gov.rw**](mailto:rkirabo@presidency.gov.rw)