Review of ITU-T References in 802.3

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Introduction

During the Maintenance meeting 26 May 2011 in Incline Village, NV the forthcoming P802.3bh revision project was discussed.

One element of this revision is to review the normative references included in IEEE Std 802.3 and update them as necessary.

This contribution reviews the dated ITU-T Recommendations referenced by IEEE Std 802.3-2008 and its approved amendments and makes recommendations regarding their updates.

It is intended that comments corresponding to each of the recommended changes will be made during the revision project ballot.

G.650.1

802.3av added reference:

> ITU-T Recommendation G.650.1, 2004—Transmission media characteristics - Optical fibre

G.650.1 was revised in 2010 and the title is incorrect.

Reference to G.650.1 is made in 75.7.1:

> Insertion loss for SMF fiber optic cabling (channel) is defined at 1270 nm, 1310 nm, or 1577 nm, depending on the particular PMD. A suitable test method is described in ITU–T G.650.1.

and footnote d to Table 75-14:

> …using spectral attenuation modelling method (5.4.4) included in G.650.1 (06/2004) and the matrix coefficients included in Appendix III therein. 1310 nm (0.4 dB/km), 1380 nm (0.5 dB/km) and 1550 nm (0.35 dB/km) attenuation values were used as the input for the predictor model.

In the 2010 revision of G.650.1, no changes were made to Clause 5.4 "*Test methods for the attenuation*" or Appendix III "*Example of a matrix model*", so it is recommended to change the reference to:

> ITU-T Recommendation G.650.1, 2010—Definitions and test methods for linear, deterministic attributes of single-mode fibre and cable

change footnote d to Table 75-14 to:

> …using spectral attenuation modelling method (5.4.4) included in G.650.1 (2010) and the matrix coefficients included in Appendix III therein. 1310 nm (0.4 dB/km), 1380 nm (0.5 dB/km) and 1550 nm (0.35 dB/km) attenuation values were used as the input for the predictor model.

G.652

802.3-2008 had the reference:

ITU-T Recommendation G.652, 2000—Characteristics of a single-mode optical fibre cable

802.3av changed this to:

ITU-T Recommendation G.652, 2005—Characteristics of a single-mode optical fibre cable

G.652 was further revised in 2009 and the title was changed in the 2003 revision.

Reference to G.652 is made in Clause 52 (1 instance), Clauses 53, 58, 59, 60 (4 instances each) and Clause 75 (7 instances). None of the references include a year.

In the 2009 revision the following changes were made:

Add IEC-60794-2-11 as an informative reference in Clause 2.2
Editorial correction at start of Clause 6.2 (PMD)
Jumper cut-off wavelength deleted from Clause 5.5
New note introduced in Tables 1 to 4 allowing higher maximum cabled attenuation (1.0 dB/km) for “short cables such as jumper cables, indoor cables and drop cables”.
Modification in Tables 3 and 4 to the cabled attenuation at 1383 nm (max. 0.40 dB/km).
New text has been introduced in Tables 3 and 4 concerning hydrogen ageing (Note 3).

Since none of these changes affect the use of G.652 fibre in Clauses 52, 53, 58, 59 or 60 it is recommended to change the reference to:

ITU-T Recommendation G.652, 2009—Characteristics of a single-mode optical fibre and cable

G.657

802.3av added reference:

> ITU-T Recommendation G.657, 2006—Characteristics of a bending loss insensitive single mode optical fibre and cable for the access network

G.657 was revised in 2009 and Amended in 2010 (Amendment 1) and the title is missing two hyphens “-”.

Reference to G.657 is made in Clause 75 (2 instances) and Annex 75B (2 instances). None of the references include a year.

In the 2009 revision the following changes were made:

> This revision includes the addition of sub-categories A1 and A2 in category A and sub-categories B2 and B3 in category B. These sub-categories differ in macrobending loss.
> The scope has been modified accordingly. This change totally encompasses backwards compatibility with version 1 as previous category A is fully inside new sub-category A1, and previous category B is fully inside new sub-category B2.
> Jumper cut-off wavelength has been removed from clause 5.5.
> Clause 5.6 (Macrobending loss) has been modified.
> In Table 1 the cable attribute on attenuation coefficient at 1383nm is set at maximum 0.40 dB/km.

Amendment 1 (2010) only made changes to informative Appendix I.

Since none of these changes affect the use of G.657 fibre in Clause 75 or Annex 75B it is recommended to change the reference to:

> ITU-T Recommendation G.657, 2009—Characteristics of a bending-loss insensitive single-mode optical fibre and cable for the access network.

G.671

802.3av added reference:

> ITU-T Recommendation G.671 am 1, 2006—Transmission characteristics of optical components and subsystems, Amendment 1.

G.671 was further amended in 2006 (Amd 2) and 2008 (Amd 3) and then revised in 2009.

Reference to G.671 is made in Clause 75 (1 instance).

> The channel insertion loss was calculated under the assumption of 14.5 dB loss for a 1:16 splitter/18.1 dB loss for a 1:32 splitter (ITU–T G.671 am 1)

In the 2009 revision the 1:16 and 1:32 splitter losses remain as 14.5 dB and 18.1 dB.

Since the values referred to in Clause 75 are the same in the 2009 revision, it is recommended to change the reference to:

> ITU-T Recommendation G.671, 2009—Transmission characteristics of optical components and subsystems.

G.695

802.3ba added reference:

> ITU-T Recommendation G.695, 2006—Optical interfaces for coarse wavelength division multiplexing applications.

G.695 was revised in 2009 and again in 2010.

Reference to G.695 is made in Clause 87 (1 instance).

> The 0.47 dB/km at 1264.5 nm attenuation for optical fiber cables is derived from Appendix I of ITU-T G.695.

And also in Clause 88 (1 instance).

> The 0.43 dB/km at 1295 nm attenuation for optical fiber cables is derived from Appendix I of ITU-T G.695.

In the 2009 and 2010 revisions of G.695, the information on loss vs wavelength for G.652 fibre in Appendix I was not changed.

Since the values referred to in Clauses 87 and 88 are the same in the 2010 revision, it is recommended to change the reference to:

> ITU-T Recommendation G.695, 2010—Optical interfaces for coarse wavelength division multiplexing applications.

G.959.1

802.3ba added reference:

> ITU-T Recommendation G.959.1, 2008—Optical transport network physical layer interfaces.

G.959.1 was revised in 2009.

Reference to G.959.1 is made in Clause 87 (1 instance) and Clause 88 (1 instance). The text is the same in both clauses:

> The optical filter passband ripple shall be limited to 0.5 dB peak-to-peak and the isolation is chosen such that the ratio of the power in the lane being measured to the sum of the powers of all of the other lanes is greater than 20 dB (see ITU-T G.959.1 Annex B).

In the 2009 revision of G.959.1, no changes were made to Annex B.

Since the Annex referred to in Clauses 87 and 88 is the same in the 2009 revision, it is recommended to change the reference to:

> ITU-T Recommendation G.959.1, 2009—Optical transport network physical layer interfaces.

G.983.1 and G.984.3

802.3av added references:

> ITU-T Recommendation G.983.1, 2005—Broadband optical access systems based on Passive Optical Networks (PON).
> ITU-T Recommendation G.984.3, 2008—Gigabit-capable Passive Optical Networks (G-PON): Transmission convergence layer specification.

G.983.1 was amended in 2005. G.984.3 was amended twice in 2009

Reference to G.983.1 and G.984.3 is made in Annex 31C (1 instance for each):

> 31C.1 Organization specific extension description
>
> The extension operation is used to provide a standardized means for other standards development organizations, in particular ITU-T, to define their own MAC Control protocols outside the scope of this standard. The first application of this is to enable Physical Layer Operations, Administration, and Management (PLOAM) messages related to protection switching, low-level performance monitoring, and management channel set-up (see ITU-T G.984 and ITU-T G.983). The requirements defined in Clause 31 apply to these protocols.

The references in Annex 31C are incorrect as there is no document numbered G.984 or G.983 in ITU-T. There are in-force documents G.983.1 through G.983.5, withdrawn documents G.983.6 through G.983.10 and in-force documents G.984.1 through G.984.7.

Maintenance request 1228 proposes to remove the text in 31C.1 containing these references. If this is agreed, then the references in subclause 1.3 to these Recommendations should be removed also.

If the text in 31C.1 is not removed, then it should be modified to clarify that it refers to the G.983 and G.983 series of Recommendations and the references modified accordingly.

O.172

802.3-2008 had the reference:

> ITU-T Recommendation O.172, 1999—Jitter and wander measuring equipment for digital systems which are based on the synchronous digital hierarchy (SDH).

O.172 was revised in 2001 and in 2005 and amended in 2008 and 2010.

Reference to O172 is made in subclause 50.3.8.3.1 (1 instance):

> Standard SONET test equipment may not support the WIS test-pattern generator and checker as the PRBS is resynchronized on every WIS frame, instead of the free-running PRBS described in ITU-T Recommendation O.172, 1999.

The structured test signal (SDH frame with PRBS payload) is defined in Annex A of O.172 (1999). The only change to the test pattern for STM-64 described in Annex A made in the revisions of 2001 and 2005 is to allow a PRBS length 2^31-1 in addition to the PRBS length 2^23-1 .

Since the point being made in Clause 50.3.8.3 is only that standard test equipment may not generate the pattern specified in Clause 50, changing the reference to O.172 (2005) makes this reference relevant to more modern testgear and does not change the specification in Clause 50. It is recommended to change the reference to :

> ITU-T Recommendation O.172, 2005—Jitter and wander measuring equipment for digital systems which are based on the synchronous digital hierarchy (SDH).

Also, in 50.3.8.3.1 change the reference to:

> instead of the free-running PRBS described in ITU-T Recommendation O.172.

G.991.2, G.993.1 and G.994.1

The following references in 802.3 have been revised since the dates referenced and have the correct titles:

ITU-T Recommendation G.991.2, 2001—Single-pair high-speed digital subscriber line (SHDSL) transceivers.

ITU-T Recommendation G.991.2, 2001—Amendment 1.

ITU-T Recommendation G.993.1, 2003—Amendment 1.

ITU-T Recommendation G.994.1, 2004—Handshake procedures for digital subscriber line (DSL) transceivers.

The following references in 802.3 have been revised since the dates referenced and have incorrect titles:

ITU-T Recommendation G.993.1, 2001—Very high-speed digital subscriber line foundation.

However there are many normative references to these Recommendations:

G.991.2 – Clause 61 (3 inst.), Annex 61B (3 inst.), Clause 63 (38 inst.), Annex 63A (1 inst.), Annex 63B (7 inst.)
G.993.1 – Clause 61 (10 inst.), Annex 62A (15 inst.)
G.994.1 – Clause 45 (8 inst.), Clause 61 (72 inst.), Annex 61A (1 inst.), Annex 61B (7 inst.), Clause 62 (19 inst.), Clause 63 (2 inst.)

Since it isn't feasible to be sure that changing the revision dates won't have unintended consequences, only the title of G.993.1 should be corrected to:

ITU-T Recommendation G.993.1, 2001—Very high speed digital subscriber line foundation.

Up to date references

The following references in 802.3 are still up to date with the latest revisions and have correct titles:

ITU-T Recommendation I.430, 1995—Basic user-network interface—Layer 1 specification.

ITU-T Recommendation O.150, 1996—General requirements for instrumentation for performance measurements on digital transmission equipment.

ITU-T Recommendation O.153, 1992—Basic parameters for the measurement of error performance at bit rates below the primary rate.

The following references in 802.3 are still up to date with the latest revisions but have incorrect titles:

ITU-T Recommendation G.691, 2006—Optical interfaces for single-channel STM-64 and other SDH systems with optical amplifiers.

ITU-T Recommendation G.957, 2006—Optical interfaces for equipments and systems relating to the synchronous digital hierarchy (SDH).

These references should be corrected to:

ITU-T Recommendation G.691, 2006—Optical interfaces for single channel STM-64 and other SDH systems with optical amplifiers.

ITU-T Recommendation G.957, 2006—Optical interfaces for equipments and systems relating to the synchronous digital hierarchy.

Thanks!