

I n t e r n a t i o n a l T e l e c o m m u n i c a t i o n U n i o n

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
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G.9700

Amendment 2
(06/2017)

SERIES G: TRANSMISSION SYSTEMS AND MEDIA,
DIGITAL SYSTEMS AND NETWORKS

Access networks – Metallic access networks

Fast access to subscriber terminals (G.fast) –
Power spectral density specification

Amendment 2

Recommendation ITU-T G.9700 (2014) – Amendment 2

ITU-T

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Recommendation ITU-T G.9700

Fast access to subscriber terminals (G.fast) – Power spectral density specification

Amendment 2

Summary

Recommendation ITU-T G.9700 specifies power spectral density (PSD) mask requirements for fast access to subscriber terminals (G.fast), a set of tools to support reduction of the transmit PSD mask, profile control parameters that determine spectral content, including the allowable maximum aggregate transmit power into a specified termination impedance, and a methodology for transmit PSD verification. It complements the physical layer (PHY) specification in Recommendation ITU-T G.9701.

Amendment 1 provided support for a new 106 MHz profile with +8 dBm maximum aggregate transmit power.

Amendment 2 aligns the text of clause 6.5 on notching of specific frequency bands with ITU-T G.9701 (2014) and its latest amendments, completes the specification of 212 MHz profiles, adds Annex X "Adaptation to the coax medium" in support of Annex X "Operation without multi-line coordination intended for a crosstalk free environment" that has been specified in amendment 3 to ITU-T G.9701, and updates the table of International amateur radio frequencies in Appendix I.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T G.9700	2014-04-04	15	11.1002/1000/12010
1.1	ITU-T G.9700 (2014) Amd. 1	2016-09-30	15	11.1002/1000/12842
1.2	ITU-T G.9700 (2014) Amd. 2	2017-06-30	15	11.1002/1000/13170

* To access the Recommendation, type the URL <http://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID. For example, <http://handle.itu.int/11.1002/1000/11830-en>.

FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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Recommendation ITU-T G.9700

Fast access to subscriber terminals (G.fast) – Power spectral density specification

Amendment 2

Editorial note: This is a complete-text publication. Modifications introduced by this amendment are shown in revision marks relative to Recommendation ITU-T G.9700 (2014) plus its Amd. 1 (2016).

1 Scope

This Recommendation complements the physical layer (PHY) specification in [ITU-T G.9701].

It specifies:

- power spectral density (PSD) limit mask requirements;
- a set of tools to support reduction of the transmit PSD mask;
- profile control parameters that determine spectral content, including the allowable maximum aggregate transmit power into a specified termination impedance; and
- a methodology for transmit PSD verification.

This ensures that the technology can address:

- regional requirements;
- operator deployment requirements, for example, compatibility with other digital subscriber line (DSL) technologies;
- applicable electromagnetic compatibility (EMC) regulations or standards; and
- local EMC issues.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[ITU-T G.993.2] Recommendation ITU-T G.993.2 (2011), *Very high speed digital subscriber line transceivers 2 (VDSL2)*.

[ITU-T G.9701] Recommendation ITU-T G.9701 (2014), *Fast access to subscriber terminals (G.fast) – Physical layer specification*.

3 Definitions

This Recommendation defines the following terms:

- 3.1 ceiling(*x*):** The smallest integer which is not less than *x*.
- 3.2 floor(*x*):** The largest integer which is not greater than *x*.
- 3.3 *f*_{sc}:** A parameter representing the frequency of subcarrier spacing.

3.4 subcarrier: A fundamental element of a discrete multitone (DMT) modulator. The modulator partitions the channel bandwidth into a set of parallel subchannels. The centre frequency of each subchannel is a subcarrier onto which bits may be modulated for transmission over a channel.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

DAB	Digital Audio Broadcasting
DMT	Discrete Multitone
DP	Distribution Point
DSL	Digital Subscriber Line
EMC	Electromagnetic Compatibility
FAST (G.fast)	Fast Access to Subscriber Terminals
FM	Frequency Modulation
FTU	FAST Transceiver Unit
FTU-O	FTU at the Optical network unit
FTU-R	FTU at the Remote site (i.e., subscriber end of the loop)
LESM	Low-frequency Edge Stop-band Mask
LPM	Limit PSD Mask
MBW	Measurement Bandwidth
MIB	Management Information Base
NM	Notching Mask
PSD	Power Spectral Density
PSM	PSD Shaping Mask
QoS	Quality of Service
SM	Subcarrier Mask
TDD	Time-Division Duplexing
TxPSDM	Transmit PSD Mask

5 Conventions

None.

6 Transmit PSD mask

6.1 Overview

The transmit PSD mask (TxPSDM) is constructed from the combination of the following masks:

- limit PSD mask (LPM);
- subcarrier mask (SM);
- PSD shaping mask (PSM);
- notching mask (NM); and
- low-frequency edge stop-band mask (LESM).