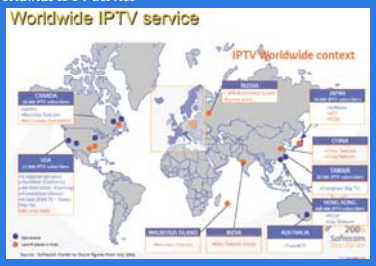
NEW WORK ITEM PROPOSAL of
IPTV Terminal Device

KOREA TESTING LABORATORY

Contents

1. State of IPTV

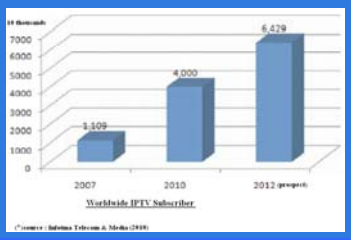
❑ **Worldwide IPTV Service**



1. State of IPTV

❑ **Worldwide IPTV Subscriber**

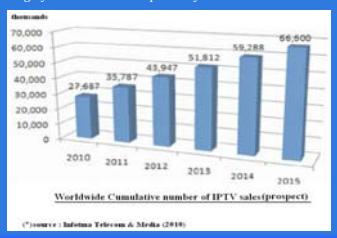
- Increasing by more than 10 millions per one year



1. State of IPTV

❑ **Worldwide Cumulative number of IPTV Terminal Device sales**

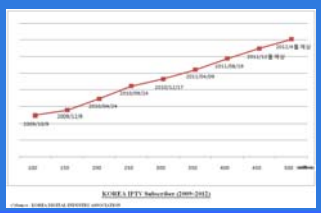
- Increasing by about 10 millions per one year



1. State of IPTV

❑ **IPTV Subscriber in Korea**

- More than 4 million subscribers, 2 years and 8 months after commercial service began in 2009.1
- 3 major Service Provider : KT, SK and LG



2. Purpose and Justification

❑ **Purpose and Justification**

- There is no explicit international measurement standard regarding IPTV terminal device.
  - ► International standard is needed for IPTV customers that are increasing by more than 10 millions (more than 0.8 million in Korea) every year globally.
- Lack of compatibility of IPTV terminal devices due to the difference of communication specification between countries and telecommunication enterprises.
  - ► Manufacturers' production cost increases due to the lack of compatibility between countries.
- IPTV terminal device is provided by a telecommunications company.
  - ► Impossible for customers to choose products as they want.
- Proposal of comprehensive standard including I/O, performance, safety, EMC, reliability and energy saving requirements

3. Present Condition of Standardization

❑ **Global Condition of Standardization**

- Standards regarding network, transmission, quality and so forth is being developed by organizations such as ITU-T.
- No comprehensive standard for IPTV terminal device exists.

❑ **Standardization in Korea**

- "Basic IPTV Terminal Device (TTAK.KO-08.0025)" developed by TTA(*) in 2010.9 is used as reference by manufacturers and communication enterprises.
- Performance standard of "Test Method of IPTV Set-Top Equipment for Internet Multimedia Broadcast" is used for mandatory certification by Korea Communications Commission.
- No national standard for I/O, performance, safety, EMC, reliability and energy saving requirements of IPTV terminal device exists.

(*)TTA : Telecommunications Technology Association

4. Proposal of IPTV Devices

❑ **Title of Proposal**

- Measuring Methods of Performance and Safety for IPTV Terminal Devices.

❑ **Scope**

- This standard applies to an IPTV terminal device or a TV receiver with IPTV terminal device.
- This standard covers the tests for performance, safety, EMC, environments and energy saving.

5. Features of the Standard

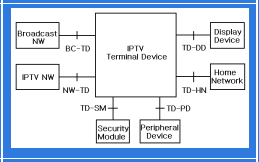
❑ **Features of the Proposed Standard**

- Input/Output requirements
- System requirements
- Performance and assessment requirements
- Safety test
- EMC test
- Reliability test
- Energy saving
- Minimum requirements of IPTV terminal device's specification and system considering telecommunication condition of each country

6. Structure of the Standard

Clause	Contents
1. Scope	- IPTV terminal device or a TV receiver with IPTV terminal device.
2. Reference Standard	
3. Definition	
4. Abbreviations	
5. General requirements 5.1 Test conditions	- Tolerances on rated test voltage : +6 % and –10 % - Ambient temperature : 15℃ - 35 ℃ - Relative humidity : 25% -75% R.H

6. Structure of the Standard

Clause	Contents
5.2. Interface of IPTV terminal device	
5.3. General Requirements	- On-demand service - Real-time broadcast service - EPG - Select favorite language

6. Structure of the Standard

Clause	Contents
5.4 Peripheral equipment interface 5.4.1 Network interface 5.4.2 Video interface 5.4.3 Audio interface 5.4.4 Display interface 5.4.5 Home network interface 5.4.6 Security interface 5.4.7 Peripheral device interface	 

6. Structure of the Standard

Clause	Contents
5.5 Communication requirements	- Terminal protocol : IPv4, IPv6. - IP address assignment : static IP, floating IP - TCP - RTP - UDP - IP - PPPoE - RTSP - IGMP

6. Structure of the Standard

Clause	Contents
5.6 Video requirements	- SD : support 640 x 480 resolution or more
5.6.1 On Screen Display Graphic resolution	- HD : 960 x 540
5.6.2 Video resolution	- 4:3 or 16:9 aspect ratio for SD and HD
5.6.3 Video format	- 16:9 letter box conversion
5.6.4 Screen aspect ratio setting	- CCO (Center Cut Out)
5.6.5 Display Format according to video frame and aspect ratio of the TV	- Pillar box conversion
5.6.6 Up /Down conversion	- Lip sync : within -20msec in case of ahead audio and +40msec in case of ahead video.
5.6.7 Video and Audio synchronizing test	

Scanning line number	Pixel number	Screen width : length	Screen refresh rate (Hz)
1080	1920	16:9	60i, 30p, 24p
720	1280	16:9	60p, 30p, 24p
480	704	4:3 / 16:9	60p, 60i, 30p, 24p
480	640	4:3	60p, 60i, 30p, 24p

< Video format >

6. Structure of the Standard

Clause	Contents
5.7 Audio requirements 5.7.1 General audio requirements 5.7.2 Audio channel 5.7.3 Audio sampling 5.7.4 Language descriptor 5.7.5 Audio output delay function for synchronize audio and video 5.7.6 Down mix of multi-channel audio	- Language setting - Two channel audio conversions of multi-channel

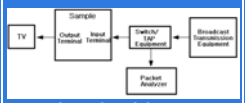
6. Structure of the Standard

Clause	Contents
5.8 Codec requirements 5.8.3 Video codec 5.8.4 Audio codec	- Video : MPEG2, MPEG4 AVC and H264 - Audio : MPEG2-AAC, MPEG4-HE AAC
5.9 Middleware 5.9.1 Middleware requirements 5.9.2 Middleware application programming interface (API) requirements	- Minimum requirements for terminal operation system
5.10 Security requirements	- Service security - Contents security - Terminal security - Subscriber security

6. Structure of the Standard

Clause	Contents
5.11 Other requirements 5.11.1 Power control 5.11.2 Peripheral devices 5.11.6 Captioning process 5.11.8 Changed channel display delay time	- Power control requirements - IR remote controller function - Caption function - Channel zapping time within 1.5 seconds

6. Structure of the Standard

Clause	Contents
6 Performance 6.1 Network access standard of the IPTV terminal device 6.2 Multicast channel change test of the IPTV terminal device 6.3 Audio signal decoding test of the IPTV terminal device 6.4 Video signal decoding test of the IPTV terminal device 6.5 De-multiplexing test for transfer streaming of the IPTV terminal device 6.6 Contents security test of the IPTV terminal device	- Test Method of IPTV Set-Top Equipment for Internet Multimedia Broadcast by Korea Communications Commission.  <Multicast channel change test>

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6. Structure of the Standard

Clause	Contents
7. Safety test	- IEC 60065 or IEC 60950-1
8. Electromagnetic compatibility (EMC) test	- CISPR 13, 20, 22 and 24
9. Environment test 9.1 Normal condition 9.2.1 Temperature and humidity cycle test 9.2.2 Heat resistance test 9.2.3 Cold resistance test	- Temperature 45°C ± 3°C and relative humidity 80% ± 2% - IEC 60068-2-30 (cycle test) - IEC 60068-2-2 (Heat) - IEC 60068-2-1 (Cold) - Normally operated without any abnormalities of the system operation
10. Energy saving test	- e stand-by Power

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Thank you

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