

DOC. CA/MMS/TS/IPTV/ VER.1 of JANUARY 2018

**TECHNICAL SPECIFICATIONS FOR INTERNET PROTOCOL
TELEVISION (IPTV) SET TOP BOXES (STBs)**

NOTE:

The Authority wishes to inform licensees and the general public that the effective date of coming into force of the technical specifications for IPTV STBs shall be **1st July 2018**. This specification shall be the basis of confirming compliance of IPTV STBs for use in Kenya.

The importation into Kenya of IPTV STBs that do not comply with this IPTV specifications shall not be permitted from 1st July 2018. However, IPTV STB stocks not complying with this IPTV specification that are already in the country prior to the said date shall continue to be used and eventually phased out over time to pave way for the IPTV STBs complying with this specification.

The table below provides the minimum technical specifications for the IPTV STBs

S/N	Parameters	Mandatory Requirements	Optional Requirements
1.	Electrical specifications: a) Input Voltage range b) Frequency	170-250V AC 50Hz±5%	
2.	Processor RAM memory Flash Memory	At least 800MHz At least 500MB At least 256MB	
3.	Operating System	Android 4.0 or IOS or Linux	
4.	Wireless LAN	Wi-Fi (IEEE 80.11n)	
5.	Graphics Resolution	Standard Definition: 720X576	High definition: 1920X1080

S/N	Parameters	Mandatory Requirements	Optional Requirements
6.	Aspect Ratio	4:3;16:9	
7.	TV standard	PAL	
8.	Video Codec	MPEG-2 (ETSI TS 102 005)	H.264 AVC & H.265/HEVC HD Video support
9.	Audio Codec	MPEG -2 layers (ETSI TS 102 005) 1,2	Dolby Passthrough (AC-3)
10.	Data	Teletext (DVB EN 300 472) Subtitles (DVB EN 300 743) SPTS/IP	
11.	Security	Integrated Conditional Access or Smart Card	
12.	Network Protocols	TCP/IP, ICMP, UDP, IGMP V2/V3, HTTP and FTP Terminal Access: Static IP, PPoE & DHCP Streaming Media transport: RTP & RTCP Streaming media play: HLS, RTP & RTSP	
13.	Parental Control/Lock	Basic Feature controlling viewers	
14.	EPG	On screen electronic guide	
15.	Interfaces	Ethernet Port: 1x10/100Mbps, RJ45 Video Output port: HDMI & RCA Audio Output port: 2xRCA, 5.1 Dolby digital Optical output, 1xS/P DIF optical	

S/N	Parameters	Mandatory Requirements	Optional Requirements
		USB Port: 2xUSB 2.0 Port Miscellaneous Connectors: input 3.5mm slot mini-jack Power input: 1xDC input port	
16.	Remote Control	IR Remote Control,	Dual Mode (TV & STB)
17.	Operating Temperature Range	0°C to 45°C	
18.	Operating humidity range	5% to 95%	
19.	Language of operation	English	
20.	User Manual	English	
21.	STB Marking	a) Manufacturer's name or trademark (if any); b) Model designation and Serial No.; c) Country of manufacture; d) Input supply voltage and frequency; e) Power consumption; f) Cable input/output; g) All Connectors	
22.	Warranty	One year	

COMPLIANCE WITH INTERNATIONAL STANDARDS

The IPTV STB shall be based on open (non proprietary) architecture and shall ensure technical compatibility and effective interoperability amongst different IPTV services in the country. The interoperability shall be achieved by complying with the following ETSI standards:

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|----|-------------------|---|--|
| a) | ETSI TS 102 034 | : | Digital Video Broadcasting (DVB); Transport of MPEG-2 TS |
| b) | ETSI TS 102 542-1 | : | Based DVB Services over IP Based Networks; Digital Video Broadcasting (DVB); Guidelines for the implementation of DVB-IPTV Phase 1 specifications; |
| c) | ETSI TS 102 539 | : | Part 1: Core IPTV Functions. Digital Video Broadcasting (DVB); Carriage of Broadband Content Guide (BCG) information over Internet Protocol (IP) |
| d) | ETSI TS 102 824 | : | Digital Video Broadcasting (DVB); Remote Management and Firmware Update System For DVB IP Services. |
| e) | ETSI TS 102 366 | : | Digital Audio Compression (AC-3, Enhanced AC-3) Standard |

PERFORMANCE SPECIFICATIONS

i) The STB shall have the capability to receive the following three types of services delivered using Real Time Stream Protocol (RTSP) as per ETSI TS 102 034.

- Live Media Broadcast (LMB): Delivery in Unicast or Multicast
- Media Broadcast with Trick Modes (MBwTM): Delivery in Unicast only.
- Content on Demand (CoD) Delivery in Unicast. User initiates a presentation

The IPTV STB should conform to the complete protocol stack used for the delivery of the services as per ETSI EN 300 468. ETSI EN 300 468 gives complete specifications on DVB SI to be carried in MPEG TS for Broadcasting whereas TS 102 034 specifies the two options specifying the SI tables to be carried in IPTV.

ii) For carriage of DVB-SI in transport streams the following are applicable as per ETSI EN 300 468.

Carriage of Programme Associate Table (PAT) & Programme Map Table (PMT) is mandatory on all transport streams.

Option 1: Carriage of all DVB SI tables except NIT (TS-Full SI)

Option 2: Carriage of tables other than PMT & PAT is optional (TS-Optional SI)

iii) On connection to the network, the IPTV STB should conform the protocol stack as detailed in ETSI TS 102 034 V1.5.1 and ETSI TS 542 V1.2.1.

iv) The IPTV STB should have the capability of building a list of service providers and the different services available from each service provider using the Service Discovery / Selection (SD&S) information as per ETSI TS 102 034.

v) The STB should support Remote Management and Firmware Update Services (RMS-FUS) for managed and unmanaged populations of DVB-IPTV Delivery Network Gateways (DNGs) and Home Network End Devices (HNEDs), as laid down in ETSI TS 102 824 V1.2.1.

vi) The IPTV STB should have the capability to generate Broadband Content Guide through information of Metadata as per ETSI TS 102 539.

Note: Anytime Meta data describing both Content on Demand as well as Live services delivered over an always on bi-directional IP Networks.

vii) The STB should have mechanism to provide immediate feedback (FB) towards the network using RTCP and how to retransmit the missing packets as per ETSI TS 102 034.

viii) The STB should have the capability to decode MPEG -2 MP@ML SDTV and optionally MPEG-4 Part 10 AVC HP@L4 HDTV signals.

ix) The STB should have the capability to decode one or more of the following formats: MPEG-1 Layer2, E-AC3 Stereo, MPEG-4 HE AAC Stereo, MPEG-1 Layer3. If any multi-channel audio is available, it should be transcoded and passed through to an S/PDIF if available.

x) The STB Software has to provide the information of the signal level and signal quality.

xi) The STB has to be provided with a cold start time of no more than 40 seconds and a start time from standby mode to no more than 5 seconds.

xii) The STB hardware design has to be provided with an Annualized Failure Rate (AFR) of not more than 2% over 3 years.

xiii) The STB is required to support the “Hardware root of trust” concept by locking each STB uniquely to the CAS embedded in a secured chipset.

xiv) The STB should support a smart card/cardless CAS solution. In the case of a cardless CAS, STBs should include a smartcard slot (minimal cost) as mitigation against risks of “clone” type piracy attacks and the replacement of devices.

xvi) The Set-Top Box (STB) shall comply with ETSI EN 50221; Common Interface Specification for Conditional Access and other Digital Video Broadcasting Decoder Applications