वर्गीय आवश्यकताओ के लिए मानक

टीईसी ५७०७०:२०२५

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STANDARD FOR GENERIC REQUIREMENTS

TEC 57070:2025

(Supersedes No. TEC /GR/SA/VST-001/01/MAR-09)

वीडियो स्ट्रीमिंग प्लेटफार्म

VIDEO STREAMING PLATFORM

ISO 9001:2015

दूरसंचार अभियांत्रिकी केंद्र

खुर्शीदलाल भवन, जनपथ, नई दिल्ली–110001, भारत

TELECOMMUNICATION ENGINEERING CENTRE

KHURSHID LAL BHAWAN, JANPATH, NEW DELHI–110001, INDIA

www.tec.gov.in

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FOREWORD

Telecommunication Engineering Centre (TEC) is the technical arm of Department of Telecommunications (DOT), Government of India. Its activities include:

- Framing of TEC Standards for Generic Requirements for a Product/Equipment, Standards for Interface Requirements for a Product/Equipment, Standards for Service Requirements & Standard document of TEC for Telecom Products and Services
- Formulation of Essential Requirements (ERs) under Mandatory Testing and Certification of Telecom Equipment (MTCTE)
- Field evaluation of Telecom Products and Systems
- Designation of Conformity Assessment Bodies (CABs)/Testing facilities
- Testing & Certification of Telecom products
- Adoption of Standards
- Support to DoT on technical/technology issues

For the purpose of testing, four Regional Telecom Engineering Centers (RTECs) have been established which are located at New Delhi, Bangalore, Mumbai, and Kolkata.

ABSTRACT

This document specifies the Video Streaming Platform for the Indian Telecom Network, supporting both on-demand and live video content across diverse devices, including mobile, broadband, and emerging terminals. The platform offers content adaptation for varied video value-added services such as internet and flash content, real-time live feeds, and multiple video formats. It supports delivery over 4G LTE, VoLTE, 5G NR, and upcoming 6G networks using protocols like HTTP/HTTPS, RTSP/RTP, WebRTC, and QUIC, with interoperability for SIP/IMS devices, broadband clients, XR/AR/VR/MR terminals, holographic communication devices, and PC/Web applications. Legacy systems are integrated through a Video Gateway. Applications include Video Streaming, Video on Demand, Video Blogging, Video Content Access, Video Surveillance, Interactive Video Services, RCS, VRBT, XR/AR/VR/MR services, Holographic Telepresence, and AI/ML-driven adaptive video delivery.

CONTENTS

HISTORY SHEET

Sl. No	*Standard/ document No*	*Title*	*Remarks*
1.	TEC/GR/SA/VST-001/01/MAR-09	Video Streaming Platform Generic Requirements	Existing
2.	TEC 57070:2025	Standard For Generic Requirements on "Video Streaming Platform".	Revision

REFERENCES

ITU-T Documents:		
S. No.	*Document No.*	*Title/Document Name*
1.	H.263	Video coding for low bit rate communication
2.	H.264	Advanced video coding for generic audio-visual services
IETF (Internet Engineering Task Force) Documents:		
S. No.	*Document No.*	*Title/Document Name*
1.	RFC 7826	Real Time Streaming Protocol (RTSP)
2.	RFC-8216	Hypertext Transfer Protocol -- HTTP/1.0"
3.	RFC 7230 to 7235	Hypertext Transfer Protocol -- HTTP/1.1",
4.	RFC 1889	RTP: A Transport Protocol for Real-Time Applications
5.	RFC 2190	RTP Payload Format for H.263 Video Streams
6.	RFC 2429	RTP Payload Format for the 1998 Version of ITU-T Rec. H.263 Video (H.263+)
7.	RFC 3016	RTP Payload Format for MPEG-4 Audio/Visual Streams
8.	RFC 3984	RTP Payload Format for H.264 Video
9.	RFC 3588	Diameter Base Protocol
TEC Standard:		
S. No.	*Document No.*	*Title/Document Name*
1.	SD/EMI-02/03 May.2006 with amendment No. 1	EMI/EMC Standards

3GPP Standards:		
S. No.	*Document No.*	*Title/Document Name*
1.	AMR	Audio data compression scheme optimized for speech coding.
2.	324M	Multimedia communication services
3.	3GP / 3GPP	Multimedia container format
ISO/IEC Moving Picture Experts Group (MPEG):		
S. No.	*Document No.*	*Title/Document Name*
1.	MPEG-4	Compression of AV data for web (streaming media) and voice (telephone, videophone) and broadcast television applications.
2.	MPEG-2	Generic coding of moving pictures and associated audio information
3.	MPEG-1	Audio Layer 3 :MP3, Digital audio encoding format
IEC & IS Documents:		
S. No.	*Document No.*	*Title/Document Name*
1.	IEC 61000-4-2 {2001)	Testing and measurement techniques of Electrostatic discharge immunity test
2.	IEC 61000-4-3 (2006)	Testing and measurement techniques-Radiated RF Electromagnetic Field Immunity test
3.	IEC 61000-4-3 (2006)	Testing and measurement techniques-Radiated RF Electromagnetic Field Immunity test
4.	IEC 61000- 4- 4 {2004)	Testing and measurement techniques of electrical fast transients/burst immunity test
5.	IEC 61000-4-5 (2005)	Testing & Measurement techniques for Surge immunity test

6.	IEC 61000-4-6 (2004) with amendment 1 (2004) & and. 2 (2006)	Testing & measurement techniques-Immunity to conducted disturbances induced by radio-frequency fields
7.	IEC 61000-4-11 (2004	Testing & measurement techniques- voltage dips, short interruptions and voltage variations immunity tests
8.	IEC 60950 {2001}] and IS 10437{1986}	Safety requirements of radio transmitting equipment
9.	IS 8437 (1993) and IEC 60479-1(1984)	Guide on the effects of current passing through the human body

CHAPTER-1

1.1 Introduction

1.1.1 This document describes the Video Streaming Platform to be used in Indian Telecom Network. Video Streaming Platform shall support video streaming of contents to different kinds of mobile, broadband and other terminals. This can be on demand stored contents or live streaming contents.

1.1.2 It shall also have a content adaptation capability to provide various video value added services such as internet contents, flash contents, video streaming clips of different formats, real-time live sources (e.g. surveillance cameras), etc.

1.1.3 The platform shall support service delivery over 4G LTE, VoLTE, 5G NR, Wi-Fi access (Wi-Fi 7 or IEEE 802.11), FTTH, other wireline access network and evolving 6G networks using HTTP/HTTPS, RTSP/RTP/RTCP, WebRTC, QUIC, and equivalent future protocols. It shall interwork with SIP/IMS-based devices, broadband clients, also supports satellite-based access XR/AR/VR/MR terminals, holographic communication devices, and PC/Web applications. Legacy interworking via a Video Gateway shall be supported where required.

1.1.4 The platform shall enable applications including Video Streaming, Video on Demand, Video Blogging, Video Content Access, Video Surveillance, Interactive Video Services, RCS, VRBT, XR/AR/VR/MR services, Holographic Telepresence, and AI/ML-enabled adaptive video delivery, and etc.

1.2 Description of System and Architecture

1.2.1 Network Architecture

Figure 1 shows the Video Streaming Platform in a telecom network. The mobile network may be any packet-based access network, including 4G LTE, VoLTE, 5G NR, or evolving 6G networks. For SIP/IMS-based access from smartphones, PC clients, or IP video phones, the streaming platform interfaces with the Media/Application Server within the operator's network. For WebRTC or QUIC-based access from broadband clients, XR/AR/VR/MR devices, or holographic communication terminals, the platform interfaces directly with next-generation service frameworks. Legacy interworking, where required, is supported via the Video Gateway.

The Streaming Platform supports a wide range of applications, such as Video Streaming, Video on Demand, Video Blogging, Video Content Access, Video Surveillance, Interactive Video Services, Rich Communication Services (RCS), Video Ring Back Tone (VRBT), Extended Reality (XR/AR/VR/MR), Holographic Telepresence, and AI/ML-enabled adaptive media delivery.

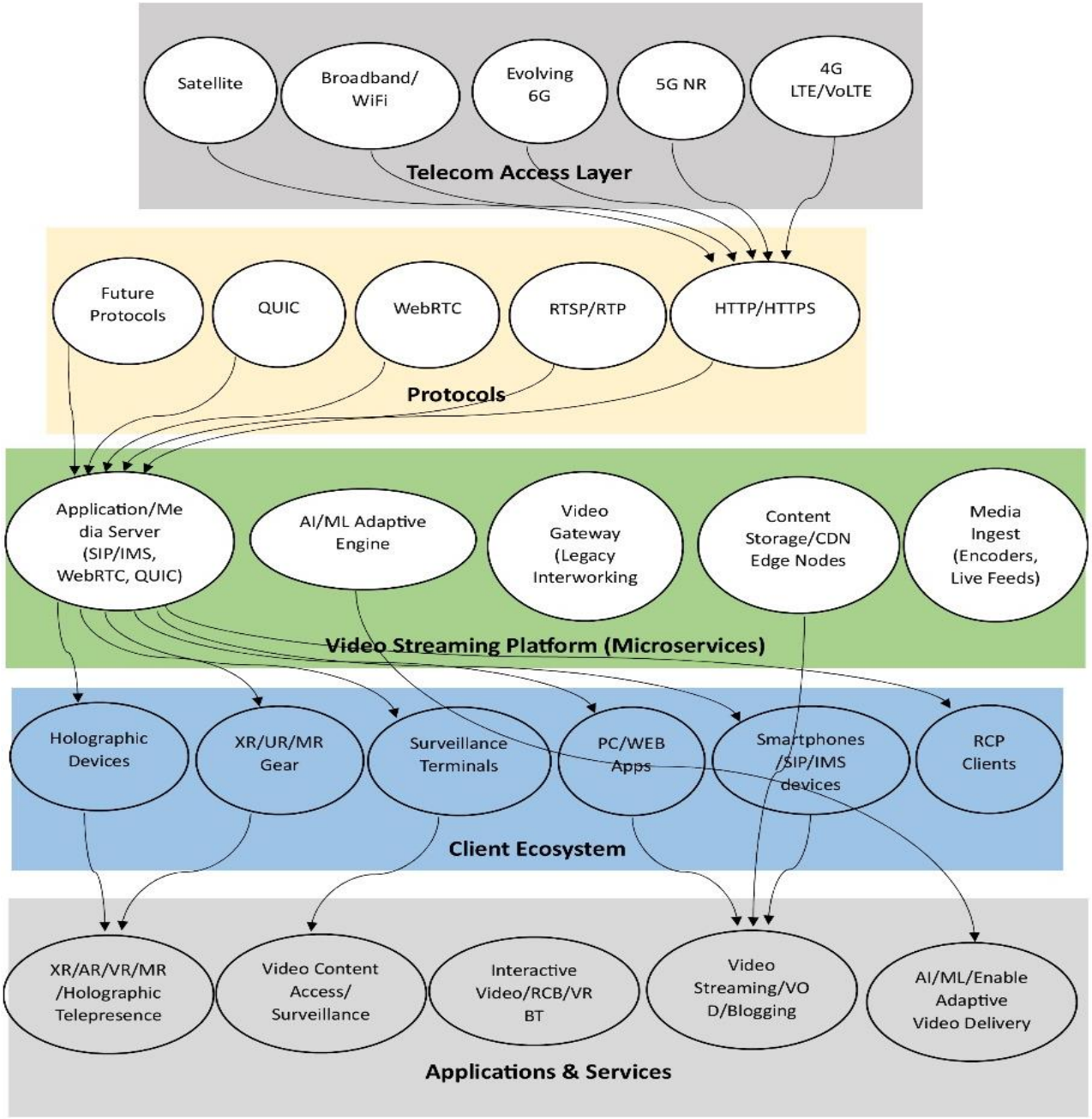

Figure 1 shows a high-level Video Streaming Platform architecture in a telecom network

1.3 Functional Requirements

1.3.1 The Video streaming platform shall support the delivery of packet-based multimedia streams to mobile and broadband terminals through the RTSP and RTP protocols.

1.3.2 The streaming platform shall support the adaptation from a file to deliver streaming content to a user without waiting for file download to handset using HTTP or RTSP protocols.

1.3.3 The streaming platform shall support progressive download from 3gpp2 container format.

1.3.4 The streaming platform shall support both live streaming (unicast and multicast) and on demand streaming (unicast) of stored contents.

1.3.5 Protocol Support

1.3.5.1 The Video streaming platform shall support RTSP protocol according to RFC 7826.

1.3.5.2 The streaming platform shall support HTTP 1.1 protocols according to RFC 7230 to 7235 respectively.

1.3.6 Source Media Support

1.3.6.1 The platform shall support the following media container formats:

i 3GP
ii 3GPP
iii FLV
iv WAV
v MP4
vi MPEG-1
vii MOV
viii AVI
ix MPEG2-TS
x MPEG-TS/UDP Live Stream
xi RTP Live Streams
xii CMAF

1.3.6.2 The platform shall support the following video codecs:

i H.265 (HEVC)
ii H.264
iii MPEG-2
iv AV1
v VVC

1.3.6.3 The platform shall support the following audio codecs:

i GSM-AMR-NB
ii AAC (AAC- LC, HE-AAC, AAC-MAIN)
iii GSM-AMR-WB
iv MP3 (MPEG-1 Audio Layer3)
v WMA
vi Dolby Atoms (via EC-3 / AC-4)
vii Opus
viii Dolby Digital (AC-3)

1.3.6.4 The video streaming platform shall support Low-Latency HLS (LL-HLS) and Low-Latency DASH (LL-DASH) protocols based on CMAF segmented media to reduce glass-to-glass latency to under 5 seconds.

1.3.6.5 Modern Transport Protocols The video streaming platform shall support QUIC and HTTP/3 transport protocols for delivering video content. The implementation shall allow fallback to HTTP/1.1 or HTTP/2 in case of device or network incompatibility. QUIC support shall be integrated with CDN and client player logic to enable faster connection setup, improved segment fetch performance, and reduced buffering under variable network conditions.

1.3.7 Terminal side shall support one or more audio/ video codecs and container format as stated in above paragraph.

1.3.8 RFC Compliance

1.3.8.1 The platform shall comply with RFC 7826 for RTSP2.0

1.3.8.2 The platform shall comply with RFC 2616 for HTTP 1.1

1.3.8.3 The platform shall comply with RFC 7230-7235 for HTTP 1.1

1.3.8.4 The platform shall comply with RFC 3550+ for RTP for real-time applications.

1.3.8.5 The platform shall comply with RFC 9328 for AVI.

1.3.9 The streaming platform shall support multiple adaptive data rates on-demand audio and video transmitting down to at least 1 Mbps for video and 128 kbps for audio.

1.3.10 The streaming platform shall support on-demand frame scaling facilities to match client capabilities to arbitrary frame sizes (as supported by codecs) including QVGA, CIF, QCIF and may be extendible up to VGA or higher resolutions.

1.3.11 The streaming platform shall support on-demand adaptation of Flash Video (AVI) file format to 3GP/3GPP streaming format.

1.3.12 The streaming platform shall support on-demand adaptation of Windows Media Format files to 3GP/3GPP streaming format.

1.3.13 The streaming platform shall support on-demand adaptation of RTSP live streams to 3GPP format.

1.3.14 *The streaming platform shall support transcoding from live encoder sources delivered over IP Multicast (including MPEG-2 Transport Streams over UDP) as well as over modern ingest protocols such as RTMP, SRT, RIST, and HTTP. The platform shall support both on-premises and cloud-native transcoding capabilities (e.g., AWS Elemental, Google Cloud Transcoder API, Akamai Media Services), enabling elastic, scalable, and resilient media processing for both live and VOD workflows*.

1.3.15 The system shall provide configurable control over frame rate, resolution, encoding bitrate, codec (e.g., H.264, H.265/HEVC, AV1), and output format. It should support generation of ABR (adaptive bitrate) ladders, VBR/QVBR optimization, and encoding pre-sets for different device profiles to ensure quality and efficiency across varying network conditions and device capabilities.

1.4 Interconnectivity and Interoperability Requirements

1.4.1 Interface Support

1.4.2 The Video Streaming platform shall support Radius interface to the AAA system.

1.4.3 The Streaming platform shall support interfaces to the content management system.

1.4.4 The Streaming platform shall support HTTP/RTSP interfaces to the network side.

1.4.5 The Streaming platform shall support LDAP/HTTP interfaces to the Subscriber Management system.

1.4.6 The Streaming platform shall support SNMP interfaces to the O & M systems.

1.4.7 The Streaming platform shall support DIAMETER / Radius interfaces for prepaid or post-paid subscribers.

1.4.8 The Streaming Platform shall support isolated Network Interfaces for External Components.

1.4.9 The streaming platform shall follow an API-first architecture for all intersystem and intra-system communications. The platform shall support integration via RESTful APIs, gRPC, or GraphQL, and expose webhook-based event notifications for real-time workflows such as user session sync, entitlement updates, billing triggers, and content publishing.

1.5 Quality Requirements

1.5.1 The Video Streaming platform shall support detection and rectification of on air Packet Errors.

1.5.2 The Streaming platform shall support prevention of Video Corruption for better Audio Video Lip-Synch.

1.5.3 The Streaming platform shall support prevention of Video Ghosting for Live Streams using I-frame buffering.

1.5.4 The Streaming platform shall support the QoS mechanisms to ensure guaranteed service experience to end-users. Following QoS mechanisms shall be implemented:

1.5.4.1 Initial control and limitation of presentation bandwidth based on subscription data.

1.5.4.2 Regulation of total system bandwidth consumption, by prioritization of ongoing streaming sessions over new ones.

1.5.4.3 Support for Differentiated Services (DiffServe) for prioritization of time critical IP traffic enabling End-To-End QoS in combination with Radio Network QoS bearers.

1.6 EMI/EMC Requirements

1.6.1 Electromagnetic Interference

The equipment shall conform to the following EMC requirements for Class A:

General Electromagnetic Compatibility (EMC) Requirements: - The equipment shall conform to the EMC requirements as per the following standards and limits indicated therein. A test certificate and test report shall be furnished from a test agency.

a) Conducted and radiated emission *(applicable to telecom equipment)*: Name of EMC Standard: "CISPR 22 {2006}-Limits and methods of measurement of radio disturbance characteristics of Information Technology Equipment".

Limits: -

i) To comply with Class A of CISPR 22 {2006}

ii) The values of limits shall be as per TEC Standard No. SD/EMI-02/03 May.2006 with amendment No. 1 Dt. 01.01.2008.

Alternatively, the testing conducted against the CISPR 22 (2003) or its later editions with associated limits for Class A, as given in tables 4(a) or 4 (a1), 5(a) or 5(a1), 6 and 7 of TEC Standard No. SD/EMI-02/03 May.2006 with amendment No. 1 Dt. 01.01.2008, shall also be acceptable till March 2009.

OR

Conducted and radiated emission (applicable to instruments such as power meter, frequency counters etc.):

Name of EMC Standard: "CISPR 11 {2004}- Industrial, scientific and medical (ISM) radio- frequency Equipment-Electromagnetic disturbance characteristics- Limits and methods of measurement"

Limits: -

i) To comply with the category of Group 1 of Class A of CISPR 11 {2004} ii) The values of limits shall be as per clause No. 8.5.2 of TEC Standard No. SD/EMI- 02/03 May.2006 with amendment No. 1 Dt. 01.01.2008.

Alternatively, the testing conducted against CISPR 11 (2003) or its later editions with limits, as given in tables 5 (a) or 5 (a1) and 7 of TEC Standard No. **SD/EMI-02/03 May.2006 with amendment No. 1 Dt. 01.01.2008** shall also be acceptable till March 2009.

b) Immunity to Electrostatic discharge:

Name of EMC Standard: IEC 61000-4-2 {2001) "Testing and measurement techniques of Electrostatic discharge immunity test".

Limits: -

i) Contact discharge level 2 {± 4 kV} or higher voltage; ii)
Air discharge level 3 {± 8 kV} or higher voltage;

c) Immunity to radiated RF:

Name of EMC Standard: IEC 61000-4-3 (2006) "Testing and measurement techniques-Radiated RF Electromagnetic Field Immunity test"

Limits: -

i) Under Test level 2 {Test field strength of 3 V/m} for general purposes in frequency range 80 MHz to 1000 MHz and

ii) Under test level 3 (10 V/m) for protection against digital radio telephones and other RF devices in frequency ranges 800 MHz to 960 MHz and 1.4 GHz to 6.0 GHz. **Alternatively,** till March 2009, the testing against 6100-4-3 (2002) or its later editions with the following test limits shall also be acceptable.

Limits: -

i) Under Test level 2 {Test field strength of 3 V/m} for general purposes in frequency range 80 MHz to 1000 MHz and

ii)Under test level 3 (10 V/m) for protection against digital radio telephones in frequency ranges 800 MHz to 960 MHz and 1.4 GHz to 2.0 GHz,

d) Immunity to fast transients (burst):

Name of EMC Standard: IEC 61000- 4- 4 {2004) "Testing and measurement techniques of electrical fast transients/burst immunity test"

Limits: -

Test Level 2 i.e. a) 1 kV for AC/DC power lines; b) 0. 5 kV for signal / control / data / telecom lines;

Alternatively, till March 2009, the testing against 61000-4-4 (1995) with Amendment No. 1 (2000) & Amendment No.2 (2001), or its later editions with the test level as mentioned above in this case, shall also be acceptable.

e) Immunity to surges:

Name of EMC Standard: IEC 61000-4-5 (2005) "Testing & Measurement techniques for Surge immunity test"

Limits: -

i) For mains power input ports: (a)1.0 kV peak open circuit voltage for line to ground coupling (b) 0.5 kV peak open circuit voltage for line to line coupling ii) For telecom ports: (a) 0.5 kV peak open circuit voltage for line to ground (b) 0.5 KV peak open circuit voltage for line to line coupling.

Alternatively, till March 2009, the testing against 61000-4-5 (2001) or its later editions with the limits as mentioned above in this case shall also be accepted.

f) Immunity to conducted disturbance induced by Radio frequency fields:

Name of EMC Standard: IEC 61000-4-6 (2004) with amendment 1 (2004) & and. 2 (2006) "Testing & measurement Techniques-Immunity to conducted disturbances induced by radio- frequency fields"

Limits: -

Under the test level 2 {3 V r.m.s.} in the frequency range 150 kHz-80 MHz for AC / DC lines and Signal /Control/telecom lines.

Alternatively, till March 2009, the testing against 61000-4-6 (2001) or its later editions with the above mentioned voltage & frequency limits shall also be acceptable.

g) Immunity to voltage dips & short interruptions (applicable to only ac mains power input ports, if any):
Name of EMC Standard: IEC 61000-4-11 (2004) "Testing & measurement techniques- voltage dips, short interruptions and voltage variations immunity tests"

Limits: -

i) a voltage dip corresponding to a reduction of the supply voltage of 30% for 500ms (i.e. 70 % supply voltage for 500 ms) ii) a voltage dip corresponding to a reduction of the supply voltage of 60% for 200ms; (i.e. 40% supply voltage for 200ms) and iii) a voltage interruption corresponding to a reduction of supply voltage of > 95% for 5s.

Class A: Class A is a category of all other equipment, which satisfies the class A limits but not the class B limits.

The test agency for EMC tests shall be an accredited agency and details of accreditation shall be submitted. Alternatively, EMC test report from a non-accredited test lab, which is audited by an accredited lab / accrediting authority for the availability of all the essential facilities (test equipment, test chamber, calibrations in order, test instructions, skilled personnel etc.), required for performing the tests according to the EMC test methods audited, may be acceptable.
However, such accredited lab / accrediting authority should take responsibility of the test results of the "non-accredited lab" along with indication of period of such delegation and the submitted test report should be of such valid period of delegation. The audit report, mentioning above facts, should be provided along with EMC test report.

Note 3: - For checking compliance with the above EMC requirements, the method of measurements shall be in accordance with TEC Standard No. SD/EMI-02/03 MAY 2006 with amendment No. 1 Dt. 01.01.2008 and the references mentioned therein unless

otherwise specified specifically. Alternatively, corresponding relevant Euro Norms of the above IEC/CISPR standards are also acceptable subject to the condition that frequency range and test level are met as per above mentioned sub clauses (a) to (g) and TEC Standard No. SD/EMI-02/03 MAY 2006 with amendment No. 1 Dt. 01.01.2008. The details of IEC/CISPR and their corresponding Euro Norms are as follows:

IEC/CISPR	Euro Norm
CISPR 11	EN 55011
CISPR 22	EN 55022
IEC 61000-4-2	EN 61000-4-2
IEC 61000-4-3	EN 61000-4-3
IEC 61000-4-4	EN 61000-4-4
IEC 61000-4-5	EN 61000-4-5
IEC 61000-4-6	EN 61000-4-6
IEC 61000-4-11	EN 61000-4-11

1.7 Safety Requirements

1.7.1 The operating personnel shall be protected against shock hazards as per IS 8437 (1993)- "Guide on the effects of current passing through the human body" [equivalent to IEC publication 60479-1(1984)]. The manufacturer/supplier shall submit a certificate in respect of compliance to these requirements.

1.7.2 The equipment shall conform to IS 13252 (2003)- "Safety of information technology equipment including electrical business equipment" [equivalent to IEC publication 60950 {2001}] and IS 10437 {1986} "Safety requirements of radio transmitting equipment" [equivalent to IEC publication 60215]. The manufacturer/supplier shall submit a certificate in respect of compliance to these requirements.

1.8 Security Requirements

1.8.1 The Video Streaming Platform shall be protected with multi-level passwords.

1.8.2 The Streaming Platform passwords shall be encrypted

1.8.3 The Streaming Platform shall have different functional and administrative interfaces CLI/GUI.

1.8.4 The Streaming Platform shall support the subscriber Blacklists and White lists as an Admission Control Policy.

1.8.5 The Streaming Platform shall support masking of the Streaming URLs in each session so as not to expose it to the end subscribers.

1.8.6 The Streaming platform shall have a Login Protection Security on all the System Access Ports like SSH-2/SFTP V3.

1.8.7 The Streaming platform shall support the following security functions for management connectivity:

1.8.7.1 HTTPS secured for Web and GUI interfaces.

1.8.7.2 Read-Write and Read-Only account type for accessing the elements.

1.8.7.3 Session inactivity timeout for web UI sessions.

1.8.7.4 Enforcement of strong passwords for management accounts.

1.8.7.5 Tracking of old passwords per account for preventing the user to enter same password twice.

1.8.8 All interfaces on the provisioning side shall be secured.

1.8.9 The Streaming platform shall provide SSH-2/SFTP V3 based interfaces to remotely access the system.

1.8.10 The Streaming platform shall support the session log.

1.8.11 The video streaming platform shall support integration with major DRM frameworks e.g. Google Widevine, Apple FairPlay, and Microsoft PlayReady to ensure secure playback of premium content across a wide range of devices and operating systems.

1.8.12 Security control standard ISO/IEC 27001should be include as it is international standard for information security management system.

1.8.13 For Application, Security ISO/IEC 27034 will be applicable.

1.8.14 TLS (Transport Layer Security) and SRTP (Secure Real Time Transport Protocol) is applicable where TLS for signaling and SRTP for media.

1.8.15 Rules under DPDP-Act (Digital Personal Data Protection) shall be applicable to Video Streaming Platform.

1.9 Other Mandatory Requirements

1.9.1 Scripting support and tools for application creation

1.9.1.1 The Video Streaming platform shall support scripting language as SOAP, XML etc. for control over media properties, defining application logic and managing content access.

1.9.1.2 The Streaming platform shall support standard extensions for scripting for supporting a wide range of functions and interfaces to external systems and databases. The interfaces to the supporting nodes could be to perform Billing, Content Management, Operation and Maintenance (O&M), as well as Subscriber Management.

1.9.2 Billing Support

1.9.2.1 The Streaming platform shall support CDR for maintaining call records.

1.9.2.2 The Streaming platform shall support CDR format in ASCII format or XML format.

1.9.2.3 The Streaming platform shall support capabilities to transfer the CDR to billing system using any file transfer protocols.

1.9.2.4 The Streaming platform shall support DIAMETER (as per RFC3588) for online charging.

1.9.2.5 The Streaming platform shall support different charging models including one time viewing, subscription based services and time based credit using both pre- and post-paid charging.

1.9.3 Database Support

1.9.3.1 The Streaming platform shall support the capability to interface to multiple external database sources simultaneously, including RDBMS.

1.9.3.2 The Streaming platform database interfaces shall support easy customization for integration into various operator/customer database infrastructures.

1.9.3.3. The Streaming platform shall retrieve data streams from storage for multimedia presentations, converting these presentations into data packets that can be sent over the underlying network for delivery to the end-user.

1.9.4 Configuration and Management

1.9.4.1 The Streaming platform shall support web-based management interface.

1.9.4.2 The Streaming platform shall support URI (User Resource Identifier) expression matching for multiple application/protocol support.

1.9.4.3 The Streaming platform shall support for administrator and application users

1.9.4.4 The Streaming platform shall Support for hosted applications with access controls.

1.9.4.5 The Streaming platform shall customize CDR for each application.

1.9.4.6 The Streaming platform should support Reporting and Statistics capability, a Web-based application.

1.9.4.7 The Streaming platform shall extend the SNMP based alarms and events to O&M systems

1.9.5 The Streaming platform shall provide the following functionalities:

1.9.5.1 The Streaming platform shall support session management, traffic control and QoS monitoring.

1.9.5.2 The Streaming platform shall create charging data and provide an interface to the support nodes that perform Billing, Authentication, Authorization, Accounting (AAA), Content Management, Operation and Maintenance (O&M), as well as Subscriber Management.

1.9.6 Platform High Availability and load balancing

1.9.6.1 The Streaming platform shall support dynamic load-balancing to load share and distribute the traffic evenly.

1.9.6.2 The Streaming platform shall support active-active configuration or active-standby configuration by deploying multiple systems

1.9.6.3 The Streaming platform shall support load-balancing using L4-L7 switches or DNS load sharing when multiple systems are deployed.

1.9.7 The Streaming platform shall support Circuit switched streaming towards the 3G mobile terminals through a gateway.

1.9.8 The Streaming platform shall in addition to live streaming, also support the video content download and progressive downloads.

1.9.9 The Streaming platform shall support the ability to generate content play lists for client sessions to allow the presentation of pre- and post- roll ads, default promotional clips and operator logos.

1.9.10 The Streaming platform shall have a caching support to cache the transcended media and to dynamically store it for subsequent requests.

1.9.11 The Streaming platform shall fetch the contents from an external storage server, if required or access from external storage using appropriate network file sharing protocols.

1.10 Desirable Requirement

1.10.1 The Video Streaming Platform shall support a Web Server for still images, SMIL files, and static text information as a front end for end-subscribers to browse and access streaming content stored or accessible from this solution.

1.10.2 The Streaming Platform shall support Directory Server to provide a central repository for storing and managing identity profiles, access privileges and application information, and enables access to the Subscriber and Content Information Databases.

1.10.3 The Streaming Platform shall have an Upload Server allowing content to be uploaded to the streaming system. It shall support standard SFTP functions for the upload as well as transient storage capacity for the uploaded content.

1.10.4 The Streaming Platform shall include the encoders for converting the raw content into a streaming digital content.

1.10.5 The Streaming platform real time (transcoding, transrating and trans-sizing) response time shall be within 4 seconds (excluding source access time and client buffering)

1.10.6 The platform should support companion apps and session continuity, allowing users to seamlessly switch playback across devices such as Smart TVs, mobile apps, and tablets. Support for multi-device resume, synchronized watchlists, and cross-platform bookmarks shall be provided.

1.10.7 The platform shall support Dynamic Ad Insertion (DAI), including Server-Side Ad Insertion (SSAI) and Client-Side Ad Insertion (CSAI), with compatibility for cue tone signaling standards such as SCTE-35 and SCTE-104.

CHAPTER-2

2.1 Information for the procurer of product

2.1.1 **.....**

2.1.2 **.....**

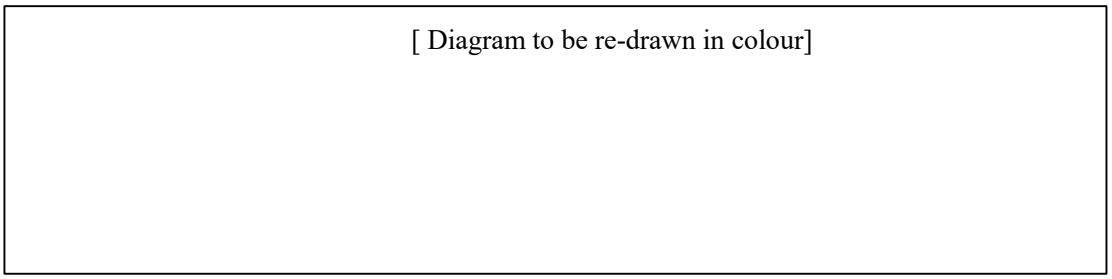

Fig 3 :**.....**[Title of the Diagram]

2.2 Specific remarks / information to be mentioned in the Certificate [if required]

The following information shall be mentioned in the certificate:

1. _____
2. _____
3. _____

ABBREVIATIONS

AAC	Advanced Audio Compression
AAA	Authentication, Authorization, and Accounting
ASCII	American Standard Code for Information Interchange
BICC	Bearer Independent Call Control
CDR	Call Detail Record
CIF	Common Intermediate Format
CLI	Command Line Interface
CLIP	Calling Line Identification Presentation
O&M	Operation & Maintenance
PRI	Primary Rate Interface
QCIF	Quarter CIF
QOS	Quality of Service
QVGA	Quarter Video Graphics Array
RAS	Registration Admission status
RTP	RTCP Control Protocol
RTSP	Real Time Streaming Protocol
RoSh	Restriction of Hazardous Substance Directive
SMS	Short Message Service
SDP	Service Delivery Platform
SIP	Session Initiation Protocol
SSH	Secure Shell
SNMP	Simple Network Management Protocol
UDP	User Datagram Protocol
URI	Uniform Resources Identifier
VGA	Video Graphics Array
Imax	World Interoperability for Microwave Access
WAP	Wireless Application Protocol

WAV	Windows Wave (Audio Format)
WMA	Window Media Audio
WMV	Window Media Video
WNSRP	Windowed Numbered Simple Retransmission Protocol
XML	Extensible Mark-up Language