



**टेस्ट गाइड**

**सं: टीईसी 57015:2022**

**TEST GUIDE**

**No.: TEC 57015:2022**

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**कंडीशनल एक्सेस सिस्टम (सीएस)**

**Conditional Access System (CAS)**

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ISO 9001:2015

**दूरसंचार अभियांत्रिकी केंद्र**

**खुशीदलाल भवन, जनपथ, नई दिल्ली-११०००१, भारत**

**TELECOMMUNICATION ENGINEERING CENTRE**

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डा० पी. डी. वाघेला  
Dr. P. D. Vaghela



अध्यक्ष  
भारतीय दूरसंचार विनियामक प्राधिकरण  
Chairman

TELECOM REGULATORY AUTHORITY OF INDIA



### FOREWORD

In the last twenty-five years since its formation, the Telecom Regulatory Authority of India, as the sector regulator for both the Telecom and Broadcasting sectors, has endeavoured to establish Regulatory Framework that engenders a trust-based transparent regime to enable and nurture harmonious growth of the sectors. Transparency, Non-discrimination, protection of consumer interests and enabling orderly growth of the sectors have remained cornerstones of the regulatory approach followed by TRAI.

Towards furtherance of the aforementioned objectives, and in order to address issues arising out of deployment of non-standard Conditional Access System (CAS) and Subscriber Management System (SMS) in television broadcasting sector, the Authority notified the Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) (Third Amendment) Regulations, 2021 on 11th June, 2021 and incorporated new regulation 4A and Schedule IX in the Interconnection Regulations, 2017. In addition to being the first step towards defining an indigenous set of specifications for CAS and SMS, the framework is expected to bring other benefits to the sector, such as enabling better content security, factual reporting of subscriber base and improving end to end compliance.

As the Agency designated to carry out the operationalization of the Testing and Certification of CAS and SMS, Telecom Engineering Centre (TEC) has carried out detailed deliberations with relevant stakeholders and put in a lot of effort in finalizing the Test Guide document containing the Test Schedules and Test Procedures. This is a crucial step in taking forward the testing and certification work. I congratulate TEC and B&CS division of TRAI for their joint efforts in this regard. I am sure that this will eventually achieve the desired objectives of delivering the expected benefits to the stakeholders and the consumers.

(P. D. Vaghela)

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75  
Azadi Ka  
Amrit Mahotsav

भारत सरकार  
संचार मंत्रालय  
दूरसंचार विभाग  
Government of India  
Ministry of Communications  
Department of Telecommunications



## Message

I am happy to note that Telecommunication Engineering Centre (TEC) has prepared the Test Guides for Conditional Access System (CAS) and Subscriber Management System (SMS) for Broadcasting and Cable services and are being released as guiding documents for all related stakeholders.

These documents set the test schedules and the testing procedures for CAS and SMS based on the mandatory and desirable requirements notified by TRAI in the form of Schedule-IX vide the Third Amendment of The Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) Regulations, 2017.

This will help in better conformity to the standards by the CAS and SMS deployed in the country and will also improve the customer experience.

It is commendable that Convergence & Broadcasting Division of TEC, a recently established division, has quickly prepared the test guides after detailed stakeholder consultations. I appreciate the efforts put in by TEC and TRAI. I hope these test schedules make way for ease of doing business and Atmanirbhar Bharat.

14<sup>th</sup> June, 2022  
New Delhi

  
(K. Rajaraman)

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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 Test Guide enumerates detailed test schedule and test procedure for evaluating requirements of Conditional Access System (CAS) as specified in Schedule-IX of Telecom Regulatory Authority of India (TRAI) Notification dated 11-06-2021.

This Test Guide has been prepared by Convergence and Broadcasting Division TEC.

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## A. History Sheet

S. No.	Test Guide No.	Equipment/ Interface	Remarks
1.	TEC 57015:2022	Test Guide for Conditional Access System (CAS)	June 2022

## B. Introduction

Considering the need for developing an overarching framework for standardization, certification and testing of various components of the addressable systems in television broadcasting i.e. Conditional Access System (CAS) and Subscriber Management System (SMS), Telecom Regulatory Authority of India (TRAI) notified “The Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) (Third Amendment) Regulations, 2021” on 11-06-2021. These Regulations specify the mandatory as well as the desirable requirements of CAS and SMS (Schedule-IX); seek compliance by distributors of television channels by deploying such CAS and SMS which conform to these requirements; and ask such distributors to get their CAS and SMS tested and certified within the stipulated timelines.

TRAI further designated Telecommunication Engineering Centre (TEC) DoT as the Testing and Certification Agency for CAS and SMS used for Broadcasting and Cable TV services as per order dated 21-09-2021.

This Test Guide, prepared as per exhaustive consultations with stakeholders, enumerates detailed test schedule and test procedure for evaluating requirements of Conditional Access System (CAS) as specified in Schedule-IX of Telecom Regulatory Authority of India (TRAI) Notification dated 11-06-2021.



**C. General Information: (to be filled by testing team)**

S. No.	General Information	Details	
1	Name and Address of the Applicant		
2	Date of Registration		
3	Name and No. of Specifications against which the approval sought (Schedule-IX of TRAI Notification dated 11-06-2021)		
4	Details of Equipment		
	Type of Equipment	Model No.	Serial No.
(i)			
(ii)			
...			
...			
...			
5	Declaration by Vendor/ Applicant of systems already deployed in India with Name of Distribution Platform Operator (DPOs), Address, Model Number and Serial Number.		
6	Any other relevant Information:-		

**D. Testing Team: (to be filled by testing team)**

S No.	Name	Designation	Organization	Signature
1.				
2.				
3.				

**E. List of the Test Instruments: (to be filled by testing team)**

S No.	Name of the test instrument	Make /Model <i>(to be filled by testing team)</i>	Validity of calibration <i>(to be filled by testing team)</i>
1			dd/mm/yyyy
2			
...			
...			
...			
...			

**F. Equipment Configuration Offered: (to be filled by testing team)**

**(a) <Equipment/product name> Configuration:**

S No.	Item	Details	Remarks

*Relevant information like Software version, Server details, ports, interfaces, size, etc. may be filled as applicable for the product.*

**(b) <Other equipment name> Configuration:**

S No.	Item	Details	Remarks

*Relevant information like Software version, Server details, ports, interfaces, size, etc. may be filled as applicable for the product.*

**G. Equipment/ System Manuals: (to be filled by testing team)**

*Availability of Maintenance manuals, Installation manual, Repair manual, User Manual etc.(Y/N)*

## H. Test Lab Requirements and General Test Setup:

### (a) Test Lab Requirement:

1. Server for the CAS installation (required only if CAS provider is not providing CAS server).
2. Backup CAS server\*
3. Standard SMS
4. SMS Server
5. STBs compatible with the CAS (with fingerprint support, B-mail/ Scroll support)
6. EMM generator
7. ECM Generator
8. Live Channels Streams
9. Multiplexer
10. Up convertors
11. SAS server
12. Networking Switches/ routers
13. Firewall
14. Streamer
15. NDA to be signed by SMS, CAS providers with Test Lab.

### (b) General Test Setup:

1. Set up of channels, CAS server, encryption of channels, integration of CAS with Mux and EMM generator, connect multiplexer to STB with the up convertor, connect up convertor to STB, connect the SMS to the SAS server which is connected to CAS.
2. A back up CAS server is also provided by the CAS provider and put into the system and the network diagram shared.
3. Need to integrate the streamer with multiplexer or EMM playout if the CAS systems allows.

## I. Clause-wise Test Procedure and Results Expected:

### a. Conditional Access System Mandatory Requirements (as per Schedule-IX notified by TRAI on 11-06-2021)

Clause No	Requirement	Test Procedure	Test Results Expected
1	<p><b>Time Stamping:</b></p> <p>All logs shall be stamped with date and time. The system shall not allow altering or modification of any logs.</p> <p>There shall be no facility for the distributor/ users to purge logs.</p>	<p>1. Commands from the SMS to be sent for the sample STBs to the CAS. After sending X number of commands, the audit report/ logs from the CAS server to be taken and header checked for date, time and user stamp.</p> <p>2. Try to change/ modify/ delete the logs or purge the logs.</p>	<p>1. The logs to be checked and should match with the commands being sent from SMS and no mismatch to be found.</p> <p>2. The logs cannot be deleted or modified from the database.</p>
2	<p><b>Activation and Deactivation:</b></p> <p>No access/ login IDs/ user interface/ application shall be provided to the distributor of television channels to execute any commands, including but not limited to, activation/ deactivation, bouquet creation/ modification/ deletion, etc., directly from CAS by bypassing SMS:</p>	<p>Go through the whole UI through operator id from the manuals of the CAS vendor and try to carry out the transactions like activating, deactivating, bouquet creation/ modification/ deletion of the entries directly from CAS bypassing the SMS.</p>	<p>The CAS UI does not allow any command for activation/ deactivation/ creation of bouquet or any other activity directly from CAS by bypassing the SMS.</p>
	<p>Provided that, if any activity has been carried directly from CAS for troubleshooting; such an exception shall be identified through the synchronization mismatch report. Further, for any activity outside the normal channel/ route of SMS-based commands, a secure log shall be maintained and made available on request to the audit or testing agency for scrutiny.</p>	<p>1. Check that all transactions being done in the CAS are being recorded in logs and there should not be any provision to delete the same. Try to get access to the database and try to bypass the logs or delete/ modify the logs.</p> <p>2. Install/ activate SMS simulator for any troubleshooting purpose. Make one sample client as test client in CAS. Perform activation/ deactivation using operator role user. Extract report from CAS.</p>	<p>1. No modification/ deletion/ purging/ or difference in logs is possible or found.</p> <p>2. The extracted report should identify that the commands are sent from CAS for troubleshooting purpose.</p> <p>3. Check if information of these operations carried from CAS directly are properly captured, including user id.</p> <p>4. Records of last six months can be retrieved.</p>

		3. Check that history of at least last six months alongwith user id is maintained for any direct operation from the CAS bypassing the SMS.	
3	<b>SMS and CAS Integration:</b> Each instance of the activity carried out at SMS pertaining to CAS shall be recorded in the logs/ reports of CAS, along with date and time stamp.	Perform all types of the activities from the SMS, the same should be reflected in the CAS and the commands should have date, time, user id and unique transaction id which can be co-related in SMS and CAS uniquely.	1. All SMS commands should be available in transaction logs with date, time and the user/ operator stamp. No exception to be found. 2. SMS and CAS are integrated in such a manner that activation and deactivation of STB happen simultaneously in both the systems.
4	<b>Set Top Box (STB) Operation:</b> Upon deactivation of any subscriber from the SMS, all program/ services, including all free-to-air (FTA) and pay channels and platform services, shall be denied to that subscriber:	1. Send commands from SMS for activation of à-la-carte channels, bouquets, services from the SMS to the targeted STBs. Check at the STBs whether the channels/ bouquets get activated or deactivated as intended. 2. Check the status of CAS and SMS logs for each command sent with date and time stamp.	No exception to be found to the service commands given and impact seen on the STB.
	Provided that there shall be a facility for the distribution platform operator (DPO) to continue to provide B-mail/ scroll messages that enable a consumer to get the information in relation to the recharge/ payment of the pending dues.	1. Send B-mail/ scroll messages command for payments or payment reminder from SMS to CAS for (i) the active STBs, as well as (ii) the deactivated STBs. The messaging character length should be minimal 120 characters. 2. Perform the above test for (i) STB switched on, and (ii) STB switched off. 3. STBs to be rebooted to check if the B-mail/ scroll messages are getting displayed in both activated and deactivated condition.	1. B-mail/scroll message should be displayed on the active as well as deactivated STBs. 2. The message should get displayed on the active STBs as well as on de-active STBs, both when the STB is 'on' and also when the STB is switched 'on' from a 'off' or 'stand-by' state.

5	<p><b>Channel Addition:</b></p> <p>CAS shall be capable to add/ modify channels/ bouquets as may be required from time to time.</p>	<p>1. Add few channels in the SMS through the UI and see if those are encrypted and service ids created in the CAS.</p> <p>2. Configure duplicate ECM, AC data and SID in MUX and check whether CAS is able to detect duplicate ECM/AC/SID data mapped to multiple channels.</p> <p>3. Check that logs are created in both CAS and SMS in real time for such addition, deletion, modification of bouquets and à-la-carte services.</p>	<p>1. Additional channels created should reflect both in CAS and SMS and should be able to be activated, deactivated on the targeted STBs.</p> <p>2. Logs should get created in CAS and SMS in real time for such addition, deletion, modification of bouquets / à-la-carte services and such logs are not possible to be altered.</p>
6	<p><b>Logical Channel Number (LCN):</b></p> <p>CAS shall not support carriage of channel with same name or nomenclature in the distributor's network served by each headend under more than one LCN, and another channel descriptor.</p>	<p>1. Feed two channels with the same name or nomenclature through the mux. Check whether the CAS is able to detect the channel with same name or nomenclature either through their LCN or their Service ids.</p> <p>2. Check the channels or service ids created in the SMS and also in the CAS.</p>	<p>1. CAS should not support carriage of channel with same name or nomenclature.</p> <p>2. Both the systems should have same service ids mapped to each other.</p>
	<p>Further, each channel available in CAS shall be uniquely mapped with channels available in SMS.</p>	<p>Check the channels or service ids created in the SMS and also in the CAS.</p>	<p>Both the system should have same service ids mapped to each other.</p>
7	<p><b>Hybrid STB:</b></p> <p>In case a distributor of television channels has deployed hybrid STBs, CAS shall ensure that the over-the-top (OTT) App does not get access to the linear Television channels, and the CAS does not get access to channels delivered through OTT platform:</p> <p>Provided that, all the mandatory requirements for CAS shall be complied by the hybrid STBs.</p>	<p>Self-certification may be obtained.</p> <p><i>Note: This may be checked at actual deployed site or during regular audits.</i></p>	
8	<p><b>CAS Reports:</b></p> <p>a) CAS database shall have the reports of whitelist of card/ STBs along with details such as</p>	<p>Create a few whitelisted cards/ STBs in SMS, activate a few cards or STB, deactivate a few cards/ STBs. Extract</p>	<p>CAS Reports should be available with active/ inactive status with date and time stamp. The action done from the SMS</p>

	active/ inactive status, with the date and time stamp.	active/ inactive report from CAS GUI.	on the targeted Card/ STBs should be reflected in the CAS status of those Cards/ STBs and there should be no exception.
	b) CAS system shall be capable of generating reports pertaining to the channel/ bouquet subscriptions and active/ deactivated subscribers, or any combination thereof; of sharing the same with SMS as a scheduled activity, and also upon request, including, but not limited to, the following details: (i) STB Number (ii) Viewing Card (VC) Number [or, in case of card-less CAS, chip identification (ID) or virtual card number of the STB] (iii) Product Code pertaining to channels/ bouquets available on the platform (iv) Start date of entitlement (v) End date of entitlement (vi) Status of card (Active/ Inactive)	Take out the CAS reports of the channel/ bouquet subscription and of active/ de-active, blacklisted cards, STBs permanently deactivated or killed, suspended cards.	Cross check the reports with the SMS and no exception to be found. The reports should contain the details mentioned in the clause requirement.
	(c) It shall be possible to generate following reports from the logs of CAS: (i) STB-VC pairing/ de-pairing (ii) STB activation/ deactivation (iii) Channel assignment to STB (iv) Report of the activation/ deactivations of a particular channel for a given period	Extract the four reports mentioned in the clause requirement from CAS UI.  For card-less STB, in place of physical VC number, chip-id or virtual card number may be taken.	1. The reports as per clause requirements should be generated from CAS UI.  2. Cross check the reports with the SMS and no exception to be found.
9	<b>CAS Database and tables:</b> a) There shall not be any active unique subscriber outside the database tables. Further, there shall not be an option to split CAS database for creation of more than one instance by a DPO or a vendor.	Run the query on the CAS database to check if there is way to split the database, or can the database be maintained in multiple servers, run the query through the CAS UI. Check through the CAS server if there are multiple databases or multiple tables.  <i>Note: The testing agency will check through the UI and CAS server if any database split has been enabled. However by</i>	No such way is found to split the data to maintain it on the multiple tables/ databases/ servers.



		<i>having admin rights, whether the database is split later, may also be checked at actual deployed site or during regular audits.</i>	
	<p>b) CAS must support the following options with reference to uploading of unique access (UA)/ viewing card (VC) details in CAS database:</p> <p>i) a secure un-editable file of card details, as purchased by the distributor, to be uploaded by the CAS vendor on the CAS Server directly, <b>or</b>,</p> <p>ii) if it is uploaded in any other form, UA/ VC in CAS database shall be captured in logs.</p>	<p>Understand the process of loading the VC cards or the UA of the STB in the CAS database, whitelist them in CAS. Check whether the information is uploaded by the CAS vendor or the operator. Check the format of the file to see if it can be edited. Check if the uploading of the file is immediately reflected in the CAS database.</p>	<p>The file cannot be edited and can be uploaded by the CAS vendor only.</p> <p>If the file is uploaded by the operator then an exception to be reported and captured in logs.</p>
	<p>iii) Further, CAS shall support an automated, application programming interface (API)-based mechanism to populate such UA/ VC details in the SMS, without any manual intervention.</p>	<p>Upload a file of the VC cards numbers/ UA IDs of the STB in the CAS, try blacklisting some VC cards in CAS.</p>	<p>The same VC number/ UA ids of the STB should be reflected in SMS; the same VC number should be blacklisted in SMS and no activation or deactivation on those cards can be done.</p>
10	<p><b>CAS Logs:</b></p> <p>CAS logs such as the user command, configuration, channel/ bouquet creation, modification, etc., shall be kept in a secured and un-editable way.</p>	<p>Check the commands executed for the above tests in the CAS and try modifying them or editing them or deleting them, also altering them. Access logs of the CAS and check if the logs of such changes are recorded. Check that the logs are in readable format and not editable by any process.</p>	<p>1. Logs are generated for any change done in configuration related to channel/ bouquet creation, modification, deletion, etc. (also refer clause 1).</p> <p>2. Modification/ deletion of logs not allowed.</p> <p>3. All the CAS logs are exported in readable and un-editable format.</p>
11	<p><b>CAS Backup Server:</b></p> <p>In the event of provisioning of a backup server, logs of all activities carried out in main server shall be concurrently copied into the backup server:</p> <p>Provided that a log of all such instances shall be maintained along with date and time stamp,</p>	<p>Check redundancy architecture or workflow of CAS. All the entries and changes done in the main server to be cross checked with the data available in the back server. Switch the backup server to main server and repeat the process of</p>	<p>1. The data on main and backup servers should be in sync.</p> <p>2. Logs related to main and backup usage are available.</p>

	<p>where the backup server has been used as the main server:</p> <p>Provided further that the main and backup server shall always be in sync with regard to the key data such as subscription data, STB UA/ VC details, entitlement level information, etc.</p>	cross-checking the entries, logs, reports.	
12	<p><b>CAS-STB addressability:</b></p> <p>(a) CAS shall be capable of providing STB/ viewing card information with the current date, time, and name/ logo of the distributor of television channels.</p>	Report to be generated of the targeted VC/ STB in the CAS.	The report should give current date, time , name of the distributor and the user id triggering the report.
	<p>(b) CAS shall be capable of individually addressing subscribers, for the purpose of generating the reports, on channel by channel and STB by STB basis.</p>	Report to be generated by VC and by STB number/ UA ID of the STB for each channel in the setup, or by bouquet and channels in the bouquet.	Cross-check the reports from SMS, no exception to be found. The channel should be uniquely activated on each STB/ UA id, i.e. if it is in bouquet or à-la-carte, for each VC, it is counted as one.
	<p>(c) CAS shall be capable of tagging and blacklisting VC numbers and STB numbers that are involved in piracy, to ensure that such STB/ VC cannot be redeployed.</p>	<ol style="list-style-type: none"> <li>1. Blacklist a few STBs, VCs, UA ID.</li> <li>2. Send activation command for activating some channels or bouquet for blacklisted STBs and VCs from SMS.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check if the same STBs/ VCs/ UA id are blacklisted in SMS.</li> <li>2. Activation on blacklisted VCs and STBs from SMS should fail.</li> </ol>
	<p>(d) CAS shall be capable of upgrading STBs over-the-air (OTA), so that the connected STBs can be upgraded.</p>	<p>Take an upgradation file for targeting STB's and play it via CAS. Check that the upgrade is received in the targeted STBs.</p> <p><i>Note: While the CAS may play the upgradation file, whether the STBs get upgraded or not through OTA would depend on various factors including compatibility.</i></p>	CAS should have the required capability.
13	<p><b>Access to Database:</b></p> <p>CAS and SMS shall ensure that the access to database is available to authorized users only, and in “read only” mode only. Further, the database audit</p>	<ol style="list-style-type: none"> <li>1. Try to gain access to the data base through the UI and manual provided, check if the database can be modified, deleted or purged.</li> <li>2. Check if the access to data base is recorded in the logs of the data base, i.e. date and</li> </ol>	<ol style="list-style-type: none"> <li>1. Logs of database access should be available.</li> <li>2. Access should be restricted to authorised users only and in “read-only” mode only.</li> </ol>

	<p>trail shall be permanently enabled.</p> <p>Explanation 1: Database here refers to the database where data and log of all activities related to STB activation, deactivation, subscription data, STB UA/ VC details, entitlement level information, etc., is being stored.</p>	<p>time of accessing the database and by whom.</p> <p>3. Check access permissions provided to various users on the on CAS server.</p> <p><i>Note: This may also be checked at actual deployed site or during regular audits.</i></p>	
14	<p><b>Provision of à-la-carte channels or bouquet:</b></p> <p>(a) CAS (and SMS) shall be able to handle all the channels, made available on a platform, in à la carte mode.</p>	<p>Create number of channels on the platform, check if the same can be created on the CAS and SMS in à-la-carte.</p>	<p>Channel should be able to be created in à-la-carte in both SMS and CAS and a cross reference report can be generated from CAS and no exception found.</p>
	<p>(b) CAS (and SMS) shall have the capability to handle such number of broadcaster/ DPO bouquets, as required by the DPO.</p>	<p>Create some broadcaster bouquets in the CAS and SMS. Also create some bouquets of the DPO in the CAS and SMS.</p>	<p>Both the CAS and SMS reflect the bouquets created.</p>
15	<p><b>CAS and SMS Server Separation:</b></p> <p>CAS and SMS applications, along with their respective databases, shall be stored in such a way that they can be separately identified.</p>	<p>Check that CAS server does not have SMS and vice versa.</p> <p>Self-certification may be obtained.</p> <p><i>Note: This may be checked at actual deployed site or during regular audits.</i></p>	
16	<p><b>Finger printing measures:</b></p> <p>(a) CAS shall support both covert and visible types of finger printing functionality.</p>	<p>1. Send Global Fingerprinting command from SMS with 5 repetition and random position.</p> <p>2. Send unique/ individual Fingerprinting command from SMS with 5 repetition and random position.</p>	<p>FP should appear on all the targeted STBs each time.</p>
	<p>(b) The fingerprinting shall be on the topmost layer of the video.</p>	<p>Same as for clause 16(a) above.</p>	<p>FP should appear on the video and be visible.</p>
	<p>(c) The fingerprinting shall appear on the screen in all scenarios, such as menu, electronic programme guide (EPG), settings, blank screen, games, etc.</p>	<p>Same as for clause 16(a) above.</p>	<p>FP should appear each time on all screens of STB in all scenarios mentioned in the clause.</p>

	(d) The fingerprinting shall not get invalidated by use of any device or software.	Same as for clause 16(a) above.	FP should appear each time on all screens and should not be deactivated even if any key on remote or STB is pressed.
	(e) CAS shall have the capability to run fingerprinting at regular intervals (e.g., minimum of 2 fingerprints per hour on a 24x7x365 basis) and provide broadcasters with the fingerprint schedule on request.	Same as for clause 16(a) above.	FP should appear as scheduled each time on the boxes and it should change its location on all schedules.
	(f) The fingerprinting shall be available on global as well as on individual STB basis.	Same as for clause 16(a) above.	FP should appear each time as per schedule on specific STBs and all STBs.
17	<b>CAS Database (DB) Export:</b> CAS shall have a provision to export the database/ report for reconciliation with the SMS database. Further, there shall be a provision of reconciliation through secure APIs/ secure scripts.	Export the database details/ report from CAS. Data from SMS may also be pulled and reconciled without manual intervention.	The CAS database is exported in entirety to the period and is in reconcilable format.
18	<b>Firewall Access:</b> CAS shall be accessible through a Firewall only.	Firewall of the CAS server OS may be enabled; or, CAS server may be placed behind external firewall. Check that access to CAS is restricted through VPN or a limited IP addresses and all other ports are closed.  <i>Note: The DPO might use the firewall of the CAS server OS or a perimeter firewall. Restricted access to CAS through firewall may also be checked at actual deployed site or during regular audits.</i>	CAS should be accessible only through Firewall.
19	<b>CAS Server Hardware:</b> CAS shall be deployed on hardened secure server hardware. CAS shall protect against any backdoors, malicious software deployments, and cyber security threats.	Check the CAS server: i) OS of Server is updated ii) Check password policy - use of strong passwords is enforced iii) No unnecessary third party software is installed iv) All necessary third party software are updated v) Anti-virus is activated and	The CAS server should meet the server hardening and security checks mentioned in the test procedure.

		<p>updated vi) firewall access</p> <p><i>Note: The CAS may be deployed on physical server or cloud server. This clause refers to the capability of CAS to protect against malicious deployments, and cyber security threats. Server hardening may also be checked at actual deployed site or during regular audits.</i></p>	
20	<p><b>De-entitlement of STB:</b></p> <p>CAS should have the following features:</p> <p>(a) The entitlement end date in CAS shall be equal to the entitlement end date in SMS, <b>or,</b></p>	<p>Check the status of the VC/STB for the activation periods.</p>	<p>The CAS should comply with either clause 20(a) or 20 (b). For 20(a), the activation period of the STB/ VC in CAS should be same as activation period in the SMS. No exception to be there.</p>
20	<p>(b) The entitlement end date in CAS shall be open and SMS shall manage entitlements based on the billing cycles and payments.</p>	<p>Check if the CAS is complying with clause 20 (a) above, if not, then it should not have end date so that it is managed by SMS only.</p>	<p>Either the CAS complies with clause 20 (a) above, or it should not have end date so that it is managed by SMS only.</p>

**b. Conditional Access System Desirable Requirements (as per Schedule-IX notified by TRAI on 11-06-2021)**

Clause No	Requirement	Test Procedure	Test Results Expected
1a	<p><b>Message Queue:</b></p> <p>(a) In the event of unsuccessful transmission of messages due to network failure (for instance, due to power failure), the head-end should have an option to queue up the messages. Further, there should be a provision to retry them at specified intervals using additive back off retrial timings.</p>	The message should be on a carousel or streamer in the head-end, messages to be created and then played out on scheduled times and repeated after some pre-decided intervals. Check on the sample set of STBs.	The messages are queued as per this clause requirement.
1b	(b) In the event of unsuccessful deliveries of the messages, the life of the messages should be specifiable.	Repetition of the messages should be checked.	
2	<p><b>Geographical Blackout:</b></p> <p>CAS shall have the feature of geographical blackout.</p> <p>Explanation 1: Geographical blackout is the ability of CAS to blackout a particular region based on the postal index number (PIN) Codes [Geographic Area Code], if required by government agencies or for other reasons.</p>	Generate different blocks of cards, can be geographical, PIN code based or other criteria like channels of a particular broadcaster. Configure STBs for different geographical areas. Send commands from SMS to the STBs of the geographical area to be deactivated.	The channels of the targeted STBs should be deactivated.
3	<p><b>After-Sales Service Support:</b></p> <p>The required software and hardware support should be available to the distributor of the television channels' installations from the CAS vendor's support teams located in India. The support should be such as to ensure the CAS system with 99.99% uptime and availability. The systems should have sufficient provisions for backup systems to ensure quality of service and uptime.</p>	<p>1. Check if CAS vendor's support teams are located in India. Record details of the local office address, contact details, names of team members, etc.</p> <p>2. Check the Service agreements and SLAs with the service providers and if they ensure 99.99% uptime.</p>	<p>1. Record details of the support teams located in India.</p> <p>2. Agreements have provision of required uptime.</p>
3(i)	<p>Explanation 1: (i) The requirement for hardware support should be applicable, only if the hardware is directly or indirectly provided by the CAS vendor.</p>	Check if the hardware is directly or indirectly provided by the CAS vendor or is it from a third party supplier. Check if the support agreement is in place.	To be recorded.

3(ii)	(ii) The actual service-level arrangement for the system support shall be governed by the mutual agreement/ service-level agreement (SLA) between the service provider, i.e., CAS vendor and the customer (DPO).	SLAs, if available, to be checked and details of service level guarantee to be recorded.	To be recorded.
3(iii)	(iii) The signatories to the said agreement may mutually choose lenient/ stringent service-level guarantee.	SLAs, if available, to be checked and details of service level guarantee to be recorded.	To be recorded.

**J. Summary of Test Results: (to be filled by testing team)**

GR/ IR No.: Schedule-IX of TRAI Notification dated 11-06-2021

Test Guide No.: TEC 57015:2022

Equipment name & Model No. \_\_\_\_\_

<b>Clause No.</b>	<b>Compliance</b> <i>(Complied/Not Complied/ Submitted/Not Submitted/Not Applicable)</i>	<b>Remarks / Test Report Annexure No.</b>

Date:

Place:

Signature & Name of TEC testing Officer /

\* Signature of Applicant / Authorized Signatory

**\* Section J as given above is also to be submitted by the Applicant/ Authorised signatory as part of in-house test results alongwith Form-A. The Authorised signatory shall be the same as the one for Form 'A'.**



**K. Annexure** *(to be filled by testing team)*

**(Please provide the clause wise test procedure for specific Lab tests)**

## L. List of Abbreviations

Abbreviation	Expanded Form
API	Application Programming Interface
CAS	Conditional Access System
DB	Database
DPO	Distribution Platform Operator
EPG	Electronic Programme Guide
FP	Finger Printing
FTA	Free-To-Air
GUI	Graphical User Interface
LCN	Logical Channel Number
OEM	Original Equipment Manufacturer
OS	Operating System
OTA	Over-The-Air
OTT	Over-The-Top
PIN	Postal Index Number
PSI/ SI	Program Specification Information / System Information
SLA	Service-Level Arrangement
SMS	Subscriber Management System
STB	Set Top Box
TEC	Telecommunication Engineering Centre
TRAI	Telecom Regulatory Authority of India
UA	Unique Access
UI	User Interface