CAS Mandatory Requirements

Clause No	Requirement		Prerequisite	Validation procedure on CAS (Test Procedure)	End Result (Pass Criteria)	Test Criteria	Tools required	Dependencies	Approval Criteria	Remarks
1	Time Stamping	All logs shall be stamped with date and time. The system shall not allow altering or modification of any logs. There shall be no facility for the distributor/users to purge logs.	1) CAS System 2) Operator user Access	1. Login as operator user and check header inside of Audits report 2. Open and modify any audit report from the CAS system.	Reports with time stamp available. Modification of Logs not allowed	Taking a report from the system after logging in query on line	Access to live system		Different reports show time, date and time stamp, it should also capture the signature of change initiating person or system	All the reports and logs fetched from DB have date and time stamp of exporting
2	Activation and Deactivation:	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/de-activation, bouquet creation/modification/deletion, etc., directly from CAS by bypassing SMS:	1) CAS System 2) Operator user access 3) MUX 4) STB	1. Login as operator user and check the Tool or software to carry out the transactions like activation/deactivation and Susbcriber's bouquet creation/modification/deletion, etc., directly from CAS by bypassing SMS.	No software or option found to carryout the the transactions like activation/deactivation and Subscriber's bouquet creation/modification/deletion, etc. bypassing the SMS.	Report from the live system of the activation/deactivation at different dates	access to the live system and ability to take the data of different dates for the set no of VC	Comparing the sata from the CAS with the data from SMS of the same date and time	If no exception Ok	All Activation/Deactivation and other commands are executed from SMS. If any command is executed from CAS, same can filtered by ising the IP address as all the executed transactions have IP address from where it is sent.
		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.	1) CAS System 2) Operator user Access 3) STBs with Fingerprint support in software. 4) Mux 5) SMS	Audit agency / DPO should provide permission to install / activate SMS simulator for any troubleshooting purpose. 1. Make one sample client as test client in CAS. 2. Perform activation/deactivation using operator role user. 3. Extract report from CAS	The extracted report should identify that the commands are sent from CAS for troubleshooting purpose.					
3	SMS and CAS Integration:	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.	1) CAS System 2) SMS	1. Perform CAS operations from SMS ,integrated with CAS system. 2. Login with Operator User id & Extract logs from CAS	All SMS command should be available in transaction logs with Date and Time Stamp.	Reports from the SMS and CAS for the last one quarter, showing changes done with the time and date and signature of the person doing the changes	Access to the system of CAS and SMS and computers		Comparing the same from the CAS with the data from SMS of same date and time	All the activities are recorded in CAS with date and time
4	Set Top Box (STB) Operation:	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) CAS System 2) Active STB with valid package / bouquet 3) Mux 4) SMS	1. Deactivate the STB with active package from SMS.	STB running with Audio/Video of any pay TV service should show error screen or tune to the home channel.	Commands sent to selected STV's SMS , processed in CAS, Time stamp to be matched , the command generating person or system signatures to checked	Set of STB of all models of the operator	Availability of all models of the STB deployed, ability to send live commands from SMS	If the activation of package, a-la-carte products, particular channels and deactivation of particular channel , package or all channels is found Ok	Same can be done and tested
		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) CAS System 2) Operator user Access 3) STB with Bmal/Scroll support in software. 4) Mux 5) SMS	1. Send B-mail/scroll messages command from SMS on the deactivated STB	B-mail/scroll message should be displayed on the deactivated STB.	Send the command of message to the STB in active stage / deactive state,	Set of STB of all models of the operator	Availability of all models of the STB deployed, ability to send live commands from SMS	If the message sent are received on the boxes, both when the boxes are on and even if the switched off box is switched on	
5	Channel Addition:	CAS shall be capable to add/modify channels/bouquets as may be required from time to time.	1) CAS System 2) Operator user Access	1. Login trough the Operator User access. 2. Open CAS GUI or use Webservice. 3. Create/modify channel/bouquet from CAS GUI of Webservice	Channel/Bouquet creation or modification is visible in CAS GUI.	Addition of channel, of a group of channel or a service is done live on system	Access to system	`Check if the same is required to be done in SMS simultaneously or not	If required to be done in SMS simultaneously then fine else the systems needs to be rechecked	Modification/addition/deletion of channels and bouqets can be done from CAS
6	Logical Channel Number (LCN)	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.	NA	LCN of channel is out of scope for CAS.		Live Live of products in SMS and CAS, on running a query and should be done at three different time slots are three different days, ability to get the list of the LCN numbers from the Mux	Access to the SMS and CAS system live, Set of STB with all the packages and products and channels activated on the same of all models, access to mux	Check the channel names, the composition of the packages, cross tally with SMS and CAS , also physically check the channel list on the STB,, access to Mux		All CAS vendors do not use LCN from CAS, only the CAS providers which have inbuilt PSI/SI can use LCN. Generally channels are mapped using service ID. Under one network ID, service ids are unique and if some DPO is using distributed network with more than one network id then they may or may not use same service id of one channel under different network.
		Further, each channel available in CAS shall be uniquely mapped with channels available in SMS.	1) CAS System 2) Operator user Access 3) SMS	Mapping of channels between SMS and CAS can validated. 1. Login as Operator on CAS GUI and extract package report from CAS. 2. Compare the package report extracted from SMS.	CAS and SMS package report have same mapping.					
7	Hybrid STB:	In case 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:	1) CAS System 2) Operator user Access 3) SMS 4) Hybrid STB 5) Mux	1. Deactivate the Hybrid STB having valid package from SMS. OTT Apps in a hybrid STB works outside the scope of CAS. If a service is encrypted with CAS then it can only be accessible via valid activation from CAS.	Hybrid STB running linear services should show Error message on encrypted television channels.	One deactivation of the channel in the Linear format the same is not available to the subs via an OTT app also	Set of STB deployed , ability to activate deactivate a channel from SMS	STB availability of all models deployed, ability to block the OTT app on the STB	If the channel deactivated is not seen in linear format and also no app can provide the same channel for example Star sports but there can be conflict that subscriber has paid for the OTT app but has not renewed the DTH or Cable Subs then what is the view to be taken	OTT and linear TV channels runs seperatly on Hybrid STBs.
		Provided that,all the mandatory requirements for CAS shall be complied by the hybrid STBs.								
8	CAS Reports:	a)CAS database shall have the reports of whitelist of card/STBsalong with details such as active/inactive status, with the date and time stamp.	1) CAS System 2) Operator user Access 3) SMS	1. Extract active / inactive report from CAS GUI or CLI.	Reports should be available with Active / Inactive Status with Date and Time stamp.	The data base should should show the number of the VC and the STB imported into the system, how many are at which stage , means active, stock, in transit, how many deactive , age wise analysis of deactive with time stamp, How many black listed, how many reactivated after blacklisting and these should be tallied with the number in the SMS	Computer and access to data base	Computer and access to data base	If no discrepancy found then ok	All CAS do not whitelist the STB IDs in their DB, VC number is whitelisted in CAS DB generally. Whitelist VC number, with status active/inactive and date and time stamp can be extracted from CAS DB
		b) CAS system shall be capable ofgeneratingreports 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)STBNumber (ii)Viewing Card (VC)Number[or, in case of card-less CAS, chip identification (ID)or virtual card number of the STB] (iii)ProductCodepertaining to channels/ bouquets available on the platform (iv)Start date of entitlement (v)End date of entitlement (vi)Status of card(Active/Inactive)	1) CAS System 2) Operator user Access 3) SMS	1. Extract Active clients with product report from CAS GUI or CLI. 2. Generate Total Clients report from CAS GUI or CLI STBNumber is not required for Cardless CAS	Reports extracted should have the following information: 1. Virtual card no. / Chip identification 2. Product ID 3. Start date 4. End date	Report generated by the CAS, it will be able to give VC no or the chip id of the box, product activated, start date and end date of the selected card , the current status,	Computer and the access to the data base of the CAS and SMS		The report should tally with the similar data from the SMS for the same VC/ STB/ Chip id	Activation/Deactivation of subscribers is done through VC number, and all CAS vendors do not whitelist STB number in CAS DB. STB number details can exported from STB-VC pairing data
		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	1) CAS System 2) Operator user Access 3) SMS	1. Extract STB activation/deactivation report from CAS GUI or CLI. 2. Extract Channel assignment to STB report from CAS GUI or CLI. 3. Extract Report of the activation/deactivations of a particular channel for a given period from CAS GUI or CLI. STB-VC pairing/de-pairing is not required for Cardless CAS	Following reports should be generated : (i)STB activation/deactivation (ii) Channel assignment to STB (iii) Report of the activation/deactivations of a particular channel for a given period	Check the random set of data of the parameters, Also take a random set of STB of different models in the network and run the query on the same	Computer and the access to the data base of the CAS and SMS		The report should tally with the similar data from the SMS for the same VC/ STB/ Chip id	(i) All pairing and de-pairing data can be extracted from CAS DB. (ii) All activation/deactivation data can be extracted from CAS DB (iii) Ala-carte channel assignment to VC numbers can be extracted from CAS DB. (iv) Activation/deactivation for ala-carte channel id within specific time period can be extracted from CAS DB
9	CAS Database and tables	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.	1) CAS System 2) Oracle user Access	CAS use single Active database. Validation : 1. Login into CAS database server and show instance details.	There is only one DB instance for CAS.	Check the data base of the CAS and random check the no of active VC/STB , deactive STB/VC and then cross tallying the same with the SMS	Computer and the access to the data base of the CAS and SMS	The reports of the CAS and the data should tally with the status in the SMS	If no discrepancy found then ok	If any VC number is not whitelisted in CAS DB, same can not be activated. Splitting of DB is not possible
		b) CAS must support the following options with reference to uploading of unique access(UA)/viewing card (VC)details in CAS database: i). secure un-editable file of card details, as purchased by the distributor, to be uploaded by the CAS vendor on the CAS Server directly, or, ii).if it is uploaded in any other form, UA/VC in CAS database shall be captured in logs.	1) CAS System 2) Operator user Access 3) New Keys	1. Login to CAS system and demonstrate the process of importing/ generation of the Keys/licences 2. Export logs	Logs available for Keys / Licenses update.	CAS data base to be checked, uploading of the info into CAS data base to be checked for authorisation, does the uploading of the information done by CAS vendor or third party and which format, check the loading of info, with time and date stamp and does it matches with the date and time stamp in SMS	Computer and the access to the data base of the CAS and SMS	The reports of the CAS and the data should tally with the status in the SMS , the file format should be secure and the info needs to be uploaded by the CAS vendor	If no discrepancy found, then ok	Encrypted file with digital signature is used to whitelist VC numbers
		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.			STB manufacturer will provide the UA/VC details to SMS for importing in SMS.					Only VC numbers are whitelisted in CAS DB, whereas SMS has a lot of other details with each VC number like STB ID, STB SN, Hardware details of STB etc., hence it can not be uploaded directly from CAS to SMS, SMS needs to have their own mechanism to whitelist VC in their DB.
10	CAS Logs:	CAS logs such as the user command, configuration, channel/bouquet creation, modification, etc., shall be kept in a secured and un-editable way.	1) CAS System 2) Operator user Access	1. Login as operator user on CAS system and export the GUI logs. 2. Open and modify the log on the CAS system.	Logs should be available in the CAS system for user command and details of modification of channel/bouquet Modification of Logs not allowed					All the CAS logs are exported in un-editable format with logo of DPO
11	CAS Backup Server:	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: Provided that a log of all such instances shall be maintained along with date and time stamp, where rthe backup server has been used as the main server: 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.	1) Redundant CAS system	1. Show Redundancy architecture or workflow. 2. Demonstrate the data is same on both Main and backup Server.	For Redundant CAS system the data on main and backup should be in sync and logs related to Main and backup usage are available.	Does the backup server is in place , of the same specs, are mirrored and sync online , the logs of the sync needs to be checked, the reports from both server for selected STB t be taken and difference to seen	Computer and the access to the data base of the CAS and SMS	Availability of the CAS person if the operator is not authorised to take the report, access to the data base of SMS and CAS	If no discrepancy found, then ok	In CAS DB redundancy, all the operations carried out on main server are instantly reflected on backup server.All logs are always synchronize on main and backup server instantly. Main and backup DB servers are always in sync with separate heartbeat data cable connected.
12	CAS-STB addressability:	(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.	1) STB	STB CA Menu is capable of showing VC, STB, date-time information of the operator. Assuming this is about info in STB menu. STB Middleware has to show this info in the STB software which is out of scope for CAS		Check the CAS data base for the VC details as required, run a query for select no of VC cards or STB id if soft CAS, both the main and backup server to be checked for same set of STB's	Computer and the access to the data base of the CAS and SMS	Access to data base of CAS	If no discrepancy found, then ok	All the whitelisted VC numbers along with date and timestamp and logo of DPO can be extracted

CAS Mandatory Requirements

Clause No	Requirement		Prerequisite	Validation procedure on CAS (Test Procedure)	End Result (Pass Criteria)	Test Criteria	Tools required	Dependencies	Approval Criteria	Remarks
		(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.	1) CAS System 2) Operator user Access 3) SMS	1. Activate/deactivate a sample VC from SMS system. 2. Check status of that VC/STB through CAS GUI.	CAS should be able to address the subscriber					CAS reports can be generated according to VC numbers and Bouqet IDs
		(c)CAS shall be capable of tagging andblacklistingVC numbers and STB numbers that are involved in piracy, to ensure that such STB/ VC cannot be redeployed.	1) CAS System 2) Operator user Access 3) SMS	1. Obtain some sample STBs and VCs ids to be blacklisted. 2. Login to CAS system with operator acces and import the blacklist key file in CAS. 3. Send activation command for blacklisted VC from SMS.	Activation on blacklisted VC from SMS should fail.					STB numbers are not whitelisted in CAS DB, VC numbers are whitelisted and VC numbers can be blacklisted. Once blacklisted VC can not be used again.
		(d)CAS shall be capable of upgrading STBs over-the-air (OTA), so that the connected STBs can be upgraded.		OTA upgrade feature is out of scope for CAS						OTA can be done from CAS
13	Access to Database:	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 trail shall be permanently enabled. 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.	1) CAS System 2) Oracle user Access	1. Login to CAS system or GUI with oracle user and try to access DB 2. Try to login to CAS database using any random login Access to SMS database and login is out of scope of CAS	Read only access to DB should be granted for authorized oracle user. Login should be deined for any other unauthorized user.	Who triggers the enquiry into the data base, and is there any list of the authorised personnel, also check the log in activity in data bases as different days and different times , the digital signatures of the person logging in should be available , with date and time stamp	Access to the CAS data base to trigger the query to check the factor	Access to data base and personnel available to run the query as desired	If no discrepancy found, then ok	CAS DB has provision to provide access to different users with different privilleges, root user has admin rights, other user has only 'read only' rights.
14	Provision of à-la-carte channels or bouquet:	(a)CAS (and SMS) shall be able to handle all the channels, made available on a platform, in à la Carte mode.	1) CAS System 2) Operator user Access	1. Login as operator on CAS GUI 2. Add a new channel on the ala-carte product.	Ala-carte product should be capable of handling new channel addition	Run the activation of the channels, packages on the desired targeted set top boxes,	STB connected to the network	Activation deactivation process commands, if done via SMS then		All available channels in platform can be added on ala-carte basis.
		(b)CAS (and SMS) shall have the capability to handle such number of broadcaster/DPO bouquets, as required by the DPO.	1) CAS System 2) Operator user Access 3) Define the total no. of broadcaster/DPO bouquets with the DPO.	1. Login to CAS GUI with operator user. 2. Create new one sample/test bouquet.	The CAS system should be able to handle newly added bouquet.	Creation of package, no of channels each package can handle , deletion of the package	Computer connected to	Ability to create and delete package	If package can be created, and deleted and even channels from a package can be deleted or added after creation then OK	CAS can handle all the bouqets configuration as per DPO requirements
15	CAS and SMS Server Separation:	CAS and SMS applications, along with their respective databases, shall be stored in such a way that they can be separately identified.	1) CAS System 2) Oracle user access 2) SMS	1. Login to CAS system with oracle user and show CAS database and IP network details. 2. Show the API config of SMS server on CAS system. SMS database details are out of scope for CAS	CAS Database can be identified separately from SMS.					CAS and SMS databases are separate entities
16	Finger printing measures	(a)CAS shall support both covert and visible types of finger printing functionality.	1) CAS System 2) Operator user Access 3) STBs with Fingerprint support in software. 4) Mux 5) SMS	1. Send Global Fingerprinting command from SMS with 5 repetition and random position. 2. Send unique/individual Fingerprinting command from SMS with 5 repetition and random position.	(a)STB should show the fingerprint on the display at the topmost layer of the video.	Running FP on desired sample of STB	Ability to trigger the FP from the system STB	STB should be able to display		Covert and Overt FP is supported
		(b)The fingerprinting shall be on the topmost layer of the video.	1) CAS System 2) Operator user Access 3) STBs with Fingerprint support in software. 4) Mux 5) SMS	1. Send Global Fingerprinting command from SMS with 5 repetition and random position. 2. Send unique/individual Fingerprinting command from SMS with 5 repetition and random position.	(b)The fingerprinting should appear on the screen in all scenarios, such as menu, electronic programme guide (EPG), settings, blank screen, games, etc.	The FP should be visible on all different screens and to be observed	Ability to trigger the FP from the system	STB should be able to display		FP is always on top most layer of video
		(c)The fingerprinting shall appear on the screen in all scenarios, such as menu, electronic programme guide (EPG), settings, blank screen, games, etc.	1) CAS System 2) Operator user Access 3) STBs with Fingerprint support in software. 4) Mux 5) SMS	1. Send Global Fingerprinting command from SMS with 5 repetition and random position. 2. Send unique/individual Fingerprinting command from SMS with 5 repetition and random position.	(c)The fingerprint should not get invalidated by use of any remote key	The FP should be visible on all different screens and to be observed	Ability to trigger the FP from the system	STB should be able to display on all and non-video screens also, and also on nonlinear channels		FP is displayed on all screens of STB
		(d)The fingerprinting shall not get invalidated by use of any device or software.	1) CAS System 2) Operator user Access 3) STBs with Fingerprint support in software. 4) Mux 5) SMS	1. Send Global Fingerprinting command from SMS with 5 repetition and random position. 2. Send unique/individual Fingerprinting command from SMS with 5 repetition and random position.	(d) Fingerprint should be displayed on all STBs for Global command	Trigger FP and press the remote keys and also the keys on the STB	Ability to trigger the FP from the system	The FP should not be disabled even after pressing key		FP can not be invalidated under any circumstances
		(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.	1) CAS System 2) Operator user Access 3) STBs with Fingerprint support in software. 4) Mux 5) SMS	1. Send Global Fingerprinting command from SMS with 5 repetition and random position. 2. Send unique/individual Fingerprinting command from SMS with 5 repetition and random position.	(e) Fingerprint should be displayed 5 times on the STB at intervals defined in SMS command	Schedule the FP and trigger the same and observe the same, also instant FP should be checked	Ability to trigger the FP from the system	The FP should be displayed on the STB as per the schedule		FP scheduling is dynamic and can be done
		(f)The fingerprinting shall be available on global as well as on individual STB basis.	1) CAS System 2) Operator user Access 3) STBs with Fingerprint support in software. 4) Mux 5) SMS	1. Send Global Fingerprinting command from SMS with 5 repetition and random position. 2. Send unique/individual Fingerprinting command from SMS with 5 repetition and random position.		Trigger FP on the all the boxes and on individual target boxes	Ability to trigger the FP from the system	The FP should appear on the STB		FP can be sent channel wise, globally on all STBs, on all channels and individual subscribers
17	CAS Database (DB)Export:	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.	1) CAS System 2) Operator user Access	1. Login to CAS system and extract report from CAS system Reconciliation with SMS is under responsibility of DPO	Reports should be available on CAS system for reconciliation	Auto reconciliation process should be run and checked, the interface between the CAS and the SMS should be able to generate the exception reports	Ability to trigger the reconciliation report	Ability to run the process and report to be generated	The exceptions to be reported, and the reason of the same to be checked and established	All the reports can be exported from CAS, and SMS can use their own method to reconcile
18	Firewall Access	CAS shall be accessible through a Firewall only.	1) CAS System 1) Firewall user Access	1. Login to CAS firewall. 2. Show the SMS <--> CAS and Mux <--> CAS connectivity.	CAS should be accessible only through Firewall.	Physical examination of the firewall and also access to the servers and hardware through the external toure	Computer	Understanding of the IP network of the operator		DPO can provide firewall for CAS access
19	CAS Server Hardware	CAS shall be deployed on hardened secure server hardware. CAS shall protect against any backdoors, malicious software deployments, and cyber security threats.	1) CAS System 2) Operator user access	1. Login to CAS system with operator user. 2. Check Internet access	CAS system should not be accessible from Internet.	Understanding of the network and installation of the CAS Servers and Hardware,	Ability to access the CAS network from outside the system to penetrate the system	Understanding of the IP network of the operator		All CAS providers do not provide their own hardware. Although minimum hardware requirement specifications are provided to DPO for hardware usage.
20	De-entitlement of STB	CAS should have the following features: (a)The entitlement end date in CAS shall be equal to the entitlement end date in SMS, or, (b)The entitlement end date in CASshall be open and SMS shall manage entitlements based on the billing cycles and payments.	1) CAS system 2) Operator user access 3) SMS 4) STB	1. Send activation command for a particular VC with valid end date from SMS. 2. Login to CAS system with operator access. 3. Show end date in CAS GUI for the VC activated in step1.	CAS and SMS should have same end date.	Check the activation and deactivation process of the set of STB's , by triggering specific process on the STB and Creating accounts to check the activation and deactivation on daily activation deactivation basis. Check the CAS activation data on the STB and see the stored period of the entitlement.	Ability to trigger the commands through the SMS and then be able to verify the CAS status of the STB/VC	Access to the SMS and CAS reports		CAS and SMS entitlement end date will always be same. CAS has provision to provide open end date for entitlement
21		Any history which can be captured if any activation has been done directly from the CAS in the last six months				Check if the same nos of STB are appearing in the SMS at any stage				

CAS Desirable Requirements						
Clause No	Requirement	Validation procedure on CAS (Test Procedure)	Test criteria	Tools Required	Dependencies	Approval Criteria
1a	**Message Queue:** (a)In the event of unsuccessful transmission of messages due to network failure (for instance, due to power failure), the head-end shouldhave 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.		This is an Headend feature being asked to be tested, the message should be on a carasoul or streamer in the HE , messages to be createdand then played out on scheduled times and repeat after some predeciced intervalSample set of STB's of all models Availability of streamer main and back up	Targetted Set of STB	Ability to run the scroll or send messages, availability of the streamer , main and back up	
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	Targetted Set of STB	Ability to run the scroll or send messages, availability of the streamer , main and back up	
2	**Geographical Blackout:** CAS shall have the feature of geographical blackout.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.		Create a sample set of STB allocate different regions, and test the regional blackout , also generate report of the commands sent from SMS	Sample set of STB	The SMS should have capatured the regional data of the STB base	
3	**After-Sales Service Support:** The required software and hardware support shouldbe available to the distributor of the television channels' installations from the CAS vendor's support teams located Page 8of 23in India. The support shouldbe such as to ensure the CAS system with 99.99% uptime and availability. The systems shouldhave sufficient provisions for backup systems to ensure quality of service and uptime.	Based on the Maintenance and Service contract signed with the DPO.	Who is the Service provider and does it has offices in India and does they have team in India, name and		Confirmation of the support from the SMS provider	
3(i)	Explanation 1: (i)The requirement for hardware support shouldbeapplicable, only if the hardware is directly or indirectly provided by the CAS vendor.	Based on the Maintenance and Service contract signed with the DPO.	Is the hardware from the CAS provider or is it from a third party supplier, is the support agreement in place and is the system redundant			
3(ii)	(ii)The actual service-level arrangementforthe 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).	Based on the Maintenance and Service contract signed with the DPO.	Pls check the same		Does the AMC of Hardware is in force, can the hardware be serviced in India and are the spare available, Check the service agreement and validity of the same	
3(iii)	(iii)The signatories to the said agreement may mutually choose lenient/stringent service-level guarantee.	Based on the Maintenance and Service contract signed with the DPO.				

Clause No	Requirement	Test Criteria	Tools required	Dependencies	Approval Criteria
	SMS Mandatory Requirements				
1	**Synchronization of the data of both CAS and SMS:**				
1a	(a) CAS and SMS data shall be synchronized with each other. There shall be a facility to trace data mismatch between CAS and SMS on periodic basis, to be made available during audits.	Ask for the synchronisation history, trigger a report and check the reports periodocity	Access to SMS servers and CAS Server	Ability to trigger the report from SMS and CAS	There should not be mismatches
1b	(b) SMS shall have a provision to generate synchronization report, with date and time, with the minimum fields as listed below:	Same as above	Same as above	Same as above	
1b(i)	(i) STB No.				
1b(ii)	(ii) VC No. (Or in case of card-less CAS, chip ID or virtual card number of the STB)				
1b(iii)	(iii) Product Code pertaining to à-la-carte channels and bouquets available on the platform				
1b(iv)	(iv) Start Date of entitlement				
1b(v)	(v) End Date of entitlement				
1b(vi)	(vi) Status of card (Active/Inactive)				
1c	(c) The file output of CAS shall be processed by SMS system to compare and generate a 100% match or mismatch error report.				
2	**Channel/Bouquet management:** SMS shall support the following essential requirements:				
2a	(a) Create and manage all channels and bouquets along with the relevant details such as name, tariff, broadcaster, or DPO bouquet, etc.	Create a bouquet, add ala carte channel , their price , tax impact etc in the SMS	Computer connected to the SMS	Ability to create the products	Should be able to be listed in the CAS and activated on few test samples
2b	(b) Manage changes in the channel/bouquet, as may be required, from time to time.				
2c	(c) Link the products'IDs for à-la-carte channels and bouquets (Single and Bulk) created in CAS with the product information being managed in SMS, for smooth working of SMS and CAS integration.	Ask for a list of all products in SMS and SMS , check for any difference, also ask for a list of the LCN no and check the product LCN, SMS products with the CAS Products	Computer system connected to the systems	Plroduct list from the SMS, CAS, Mux	List of the products in ala carted shld tally with the LCN nos and the Mux information, the information should come out with a date and time stamp and should be verified on three different dates and time
2d	(d) Management of historical Data of Product name, i.e., Broadcasters (name), maximum retail price (MRP), distributor retail price (DRP).				
3	**Network Capacity Fee (NCF) Policy Creation**: SMS shall support all Network Capacity Fee related requirements mandated by the applicable tariff order.	Check the availability of the NCF parameters , add and deleted few channels in NCF package, check the price change etc	Computer system	Creating the channle as a product and the simulating it provisioning the same ot the consumer	
4	**Bill/Invoice Generation**: SMS shall be capable of generating proper subscriber bill/invoice with explicit details of NCF charges, Pay Channels charges (with clear itemized details of à-la-carte channel cost and bouquet costs), rental charges for STB (if any), other applicable charges, including Goods and Services Tax (GST).	See previously raised invoices and also raise the invoices for the targetted STB, also check if the billing is on per day basis, does the consumer can get a sleep period or not	Computer system	Ability to generate the invoices, check for all details on the targetted STB	
5	**Password Policy Creation for Users**: SMS shall have a defined password policy, with minimum length criteria and composition (upper and lower-case characters, numeric, alphabets or special characters), forced password changes or any other appropriate mechanisms or combinations thereof.	Check the process and create a password for the targetted set of STB's ,	Computer system	Check the consistency and the accessability of the data by the user	
6	**Management of Logs:**				
6a	(a) SMS shall have the facility to provide user detail logs with the ID of users on each login event.	Check the logs of difference dates	Computer system	Accessability of the data	
6b	(b) SMS shall have the provision of generating the user activity log report to enable tracking users' work history. It shall not be allowed to delete the records from the log.	Check the logs of difference dates	Computer system	Accessability of the data	

	SMS Mandatory Requirements				
Clause No	Requirement	Test Criteria	Tools required	Dependencies	Approval Criteria
6c	(c) All logs shall be stamped with date and time and the system shall not allow altering or modifying any logs.	Check the logs of difference dates	Computer system	Accessability of the data	
6d	(d) The logs shall be maintained for a period as specified in Schedule III or at least two audit cycles, whichever is later.	Check the logs of difference dates	Computer system	Accessability of the data	
7	**Channel subscription report:** SMS shall be able to provide the total counts of monthly subscribers of channels including both à la carte and bouquet subscriptions.	Extract reports from the SMS and check with the CAS	Computer system	Accessability of the data from the SMS and CAS	
8	**SMS Database and tables:**				
8a	(a) There shall not be any active unique subscriber outside the database tables.	Check the no of boxes /VC imported into the system, check the no of active subs in CAS and SMS and the number of boxes and reoncile, Also check the model nos in the SMS and their nos	Computer system	Accessability of the data from the SMS and CAS	
8b	(b) SMS shall not provide an option to split SMS database or for creation of more than one instance.	Check the database and run aquery	Computer system	Accessability of the data from the SMS and CAS	
8c	(c) SMS shall have the provision to enable or disable channel (à-la-carte channel or bouquet of channels) selection by subscribers either through website or an application through interface provided by the distributor platform operator.	Take random sample of STB of all models and run the test	STB of all models	Connection to the signal and also ability to trigger the commands	No exception
8d	(d) SMS shall be capable of capturing the following information required for audit or otherwise:				
8d(i)	(i) Bouquet à la carte status change history	Check by creating bouquet capturing the info from the main server and back up server , activate boque and then alacarte and capture the history	Computer system	Ability to create the products in the SMS and CAS and check the reports	
8d(ii)	(ii) Bouquet composition change history	Check the information for the last 6 months and also create a package and get report from the CAS and SMS	Computer system	Ability to create the products in the SMS and CAS and check the reports	
8d(iii)	(iii) Change in status of connection (primary to secondary and vice versa)	Designate a set of STB as Primary and few secondary and then change the sequence in the same set	STB and signal to the STB	Ability to run the process in SMS	
9	**Firewall Access: SMS shall be accessed through a Firewall.**	Check the firewal and version of the same and network diagram and its Connection the SAS server			
10	**STB-VC pairing**: STB and VC shall be paired from the SMS to ensure security of channel.	Check the sample cases			
11	**SMS-STB addressability:** The SMS shall be capable of individually addressing subscribers, for the purpose of generating the reports, on channel by channel and STB by STB basis.	Check the sample cases			

Clause No	Requirement	Test criteria	Tools Required	Dependencies	Approval Criteria
	SMS Desirable Requirements				
1	**Data Verification:**				
	SMS should have the facility to carry out auto-reconciliation of channels/à la carte and all bouquets with their respective ID created in SMS with CAS configuration, and the variance report should be available in the system with logs.	Check the variance reports generated in the last six months with date and time stamp and also run a query instantly	Computer system	Accesses to the SMS data base	No exception
2	**SMS Reports**: SMS should have a provision of generating the following reports pertaining to STB/VC:	Generate the report and check for the reconcillatinon with the CAS for the points no a, b,d, e, f and g. For the point C a reconcillation with the stock ledger of store may be asked for	Computer system	Access to the data base of the SMS and able to run live query	
2a	(a) White list of STB/VC along with active/inactive status				
2b	(b) Faulty STB/VC – repairable and beyond repairable				
2c	(c) Warehouse fresh stock				
2d	(d) In stock at local cable operator (LCO) end				
2e	(e) Blacklist				
2f	(f) Deployed with activation status				
2g	(g) Testing/demonstration STB/VC with location				
3	**Audit-related requirements**: SMS should have the capability to capture below-mentioned information that may be required for audit and otherwise:	Check the history and create sample cases in the each instance	Computer system	Access to the system	
3a	**a. Subscriber related:**				
3a(i)	(i) Subscriber contact details change history				
3a(ii)	(ii) Connection count history				
3a(iii)	(iii) Transition of connection between Disconnected/Active/Temporary Disconnected				
3a(iv)	(iv) Subscription change history				
3b	**b. LCO related:**				
3b(i)	(i) LCO Contact details change history				
3b(ii)	(ii) LCO and DPO sharing change history				
3c	**c. Product (Bouquet/à-la-carte channel) related:**				
3c(i)	(i) Broadcaster à-la-carte relation				
3c(ii)	(ii) Bouquet name change history				
3c(iii)	(iii) À la carte name change history				
	(iv) Bouquet à-la-carte channel rate change history				
4	**User Authentication:** SMS should have the capability to authenticate its subscribers through registered mobile number (RMN) through one-time password (OTP) system.	Creat a a set of subscribers with their registered mobile nos and then carry the process of authenticaion	Set of STB and access to signal	Ability to send the OTP back form the system	
5	**Miscellaneous:** SMS should have the provision to support the following miscellaneous requirements:				
5a	(a) List of à-la-carte channels and bouquets, digital headend (DHE) and Zone-wise: Provision to support/manage Zone/ Sub-Headend-wise list of à-la-carte channels and bouquets, in sync with the list available in CAS.	Check the list of the products with the zone wise split or is it a universal for all the regions the HE serves, Check in reconcillation report with CAS	Computer systems	Access to data base to take reports	
5b	(b) Revenue Sharing Between DPO and LCO: Provision to define and calculate DPO and LCO revenue share separately for distribution fee as well as for NCF, as per the agreement executed between them, with the option to maintain historical information can be very useful and is desirable.	Check if the master parameter can be fed for each DPO and LCO for all LCF and the pay channels and they be dynamically chaned	Computer systems	Access to data base to take reports	
5c	(c) LCO invoicing with GST: Provision to generate invoicing under multiple GST registration numbers of LCO's and to comply with GST invoicing norms as applicable.	Check the invoicing printouts and generate few sample invoices	Computer systems	Access to data base to take reports	

		SMS Desirable Requirements			
Clause No	Requirement	Test criteria	Tools Required	Dependencies	Approval Criteria
5d	(d) Product(à-la-carte channels and bouquets)-wise Renewal and Reversal setting for the Subscriber Account: Provision to allow renewal of a product to a subscriber after the expiry date of a product, and provision to auto-calculate and refund the amount to a subscriber if he discontinues a product midterm. These requirements may be configurable on selective products, as required by the DPOs as per their business plans.	Check the reports from the SMS , espcially the consumer invoices, create a secnario on the sample STB and run the provisions of the refund, credit etc	Computer systems	Ability to create the credit, refund, in ach case	
5e	(e) Product (à-la-carte channels and bouquets)-wise Reversal setting for LCO Account: Provision to calculate and refund the amount due to LCO, if he or the subscriber discontinues a product midterm.	Check the reports from the SMS , espcially the consumer invoices, create a secnario on the sample STB and run the provisions of the refund, credit etc	Computer systems	Ability to create the credit, refund, in ach case	
5f	(f) Product (à-la-carte channels and bouquets) Tenure-wise LCO and Subscriber Discount Scheme/Free Days Scheme: Provision to create Discount Scheme and Free-day scheme for LCO and Subscriber, based on the duration (Tenure) of the product subscription.	Shoiuld be able to take in the deails, check if few sample cases if avaiable	Computer systems	Checking sample cases	
5g	(g) Calendar/Activity Scheduling: Provision to auto-schedule activities like STB activation/deactivation, à-la-carte channels and bouquets addition/removal, channel/bouquet composition modification, etc.	Should be done of a targetted STBs and scenarios run	STBs connected to the signal	Ability to see the changes on the targetted STB	
5h	(h) Bulk Channel/Bouquet Management: Provision to perform bulk activity of à-la-carte channels and bouquets addition and removal on all or a designated group of STBs.	Create a boquet of channels and then run on a number of the STB for activation and deactivation and in this targetted STB samples also should be tere	STBs connected to the signal	Ability to see the changes on the targetted STB	
5i	(i) Token-number-based reports: Provision to download multiple generated reports with the help of token number, such as audit reports with different intervals.	Generate the reports, check the date and stamp , also ask for some previously generated reports, see the difference and the action taken	Computer systmes	Ability to generate the reports with the time and date stamp	
5j	(j) Third-Party Integration: Provision to support integration with relevant third-party systems, such as, payment gateway integrations, interactive voice response (IVR) Integrations, SMS Gateway Integrations, etc.	Check for the integrations with the third party solutions	Access to the system	Check the working of the thrid party apps	
5k	(k) Bill payment and reconciliation feature: Provision for bill payment and reconciliation (in case a DPO is running service in post-paid mode).				
5l	(l) Generation of Reports: Provision to generate the following reports for operational purpose:				
5l(i)	(i) All, selective and single boxes' current status with their first-time activation date.				
5l(ii)	(ii) Total number of à-la-carte channels and bouquets and STB expiring detail till given future date on the dashboard, according to the permission.				
5l(iii)	(iii) Today's fresh activation count, de-activation count, re-activation count, à-la-carte channels and bouquets addition/ removal count on dashboard, according to the permission.				
5l(iv)	(iv) Total active and inactive subscriber's details with multiple criteria (network-wise, à-la-carte channels and bouquets-wise, state-city wise and broadcaster-wise).				
6	**After-Sales Service Support**: The required software and hardware support should be available to the distributor of the television channels' installations from the SMS vendor's support teams located in India. The support should be such as to ensure the SMS system with 99.99% uptime and availability. The systems should have sufficient provisions for backup systems to ensure quality of service and uptime:	Support office of the SMS provider, location and availability . Is there any proporiatory hardware involved or generic hardware, is system redundant		Availability of the agreements and details	
	Explanation 1:				

	SMS Desirable Requirements				
Clause No	Requirement	Test criteria	Tools Required	Dependencies	Approval Criteria
6(i)	(i) The requirement for hardware support should be applicable, only if the hardware is directly or indirectly provided by the SMS vendor.	Will the hardware support be availabe from the hardware manufactuer and is there a service agreement signed with them ,		Availability of the agreements and details	
6(ii)	(ii) The actual service-level arrangement for the system support shall be governed by the mutual agreement/SLA between the service provider, i.e., SMS vendor and the customer (DPO).	Check the SLA of the service agreement		Availability of the agreements and details	
6(iii)	(iii) The signatories to the said agreement may mutually choose lenient/stringent service-level guarantee."				