Telecom Regulatory Authority of India

Consultation Paper

on

The Telecommunication (Broadcasting and Cable) Services
Digital Addressable Systems
Audit Manual

29th March 2019

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Written Comments on this Consultation Paper on Audit Manual are invited from the stakeholders by 22nd April, 2019 and counter-comments by 29th April, 2019. Comments and counter-comments will be posted on TRAI's website www.trai.gov.in . The comments and counter-comments may be sent, preferably in electronic form, to Sh. Anil Kumar Bhardwaj, Advisor (B&CS), Telecom Regulatory Authority of India, on the e-mail:- advbcs-2@trai.gov.in or sapna.sharma@trai.gov.in For any clarification/ information, Sh. Anil Kumar Bhardwaj, Advisor (B&CS) may be contacted at Tel. No.: +91-11-23237922, Fax: +91-11-23220442.

1 BACKGROUND & INTRODUCTION

1.1   Keeping in view the implementation of Digital Addressable Systems (DAS) and effectively utilizing its benefits, Telecom Regulatory Authority of India (TRAI) after due consultation process brought out a common regulatory framework for digital addressable systems on 3rd March 2017. This framework comprises of Interconnection Regulations, Quality of Service Regulations and Tariff Order for providing broadcasting services relating to television through digital addressable system.

1.2   The Interconnection regulations namely the Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) Regulations, 2017 dated 3rd March 2017 (herein after the Interconnection Regulations, 2017) cover technical and commercial arrangements between Broadcaster & Distributor and Distributor & Local Cable Operators (LCOs) for providing television services to the consumers.

1.3   This draft Audit Manual is a preparatory work before issuing the final Audit Manual and has no direct bearing on any ongoing litigations.

1.4   In the DAS based TV services value chain, a broadcaster uplinks signals of pay television channel to satellite in encrypted form. The distributor receives the signals from the satellite and decodes them using the decoder provided by the broadcaster. After processing and merging the TV Channel signals of multiple broadcasters the distributor encrypts the combined signals and retransmits it further, either directly or through local cable operator, to customer. The distributor could be a Multi-System Operator (MSO), a Direct to Home operator (DTH), a Head-end in The Sky operator (HITS) or IPTV operator.

1.5   The Interconnection Regulations, 2017 provides for the Audit initiated by the Distribution Platform Operator (DPO) vide sub-Regulation (1) of Regulation 15 or by the Broadcaster vide sub-Regulation (7) of Regulation 10 and sub-Regulation (2) of Regulation 15. The Audit of the systems of DPO is necessary to ensure that the equipment and the software (including configuration of systems) comply with the extant regulatory framework. The new framework envisages that the DPO gets its systems audited every year so as to ensure compliance. Further there is a provision for Audit caused by a Broadcaster, before the provisioning of signals to a new MSO.

Technical Audit

1.6   Regulation 10 (7) of the above mentioned Regulation specifies that if a broadcaster, before providing signals of television channels, is of the opinion that the addressable system, being used by the distributor for distribution of television channels, does not meet the requirements specified in the Schedule III of the Regulation, it may, cause audit of the addressable system of the distributor by M/s. Broadcast Engineering Consultants India Limited, or any other auditor empanelled by the Authority for conducting such audit and provide a copy of the report prepared by the auditor to the distributor. This audit is generally called technical audit.

1.7   The Technical audit is commissioned by the broadcaster to satisfy itself that the distributor, to whom it is likely to provide television signal, meets the addressable system requirements. This Audit verifies whether the distributors' network is sufficiently robust to prevent any revenue leakage in terms of piracy and under reporting of subscribers. As such the audit fees of this audit is borne by the broadcaster.

Subscription Audit

1.8   Regulation 15 of the Interconnection regulations, 2017 specifies that every distributor of television channels shall, once in a calendar year, cause audit of its subscriber management system, conditional access system and other related systems by an auditor to verify that the monthly subscription reports made available by the distributor to the broadcasters are complete, true and correct, and issue an audit report to this effect to each broadcaster with whom it has entered into an interconnection agreement. This audit is generally called subscription audit.

1.9   The subscription audit's focus is on ascertaining the subscriber numbers being reported by distributors to broadcaster. The regulation permits variation in the reported figure of subscribers by distributor to broadcaster only less than zero point five (0.5 %) percent of the billed amount which shall not require any revision of the invoices already issued and paid.

1.10   Regulation 15 of the Interconnection Regulations, 2017 further specifies that in cases, where a broadcaster is not satisfied with the audit report received under sub-regulation (1) or, if in the opinion of a broadcaster the addressable system being used by the distributor does not meet requirements specified in the Schedule III, it shall be permissible to the broadcaster, after communicating the reasons in writing to the distributor, to audit the subscriber management system, conditional access system and other related systems of the distributor of television channels, not more than once in a calendar year. The Authority may empanel auditors for the purpose of such audit, and it shall be mandatory for every broadcaster to cause audit, from anyone of such empanelled auditors. Therefore, the Audit under Regulation 15 of the

Interconnection Regulations, comprises of both the Subscription and the Technical Audit.

1.11   The audit fee for the subscription audit commissioned by the distributor as part of yearly audit is payable by the distributor, whereas the audit fee for subscription audit commissioned by a broadcaster to re-verify the addressable system requirements, is payable by the broadcaster.

1.12   The Telecommunication (Broadcasting and Cable) Service Interconnection (Addressable Systems) Regulations, 2017, are accessible on TRAI website www.trai.gov.in.

1.13   Accordingly, the Authority had issued a consultation paper on 'Empanelment of Auditors for Digital Addressable Systems' on December 22, 2017. As a matter of practice and following a transparent process an open house discussion (OHD) on the above-mentioned consultation paper was convened on 12.4.2018 in Delhi. A large number of stakeholders participated and gave valuable suggestions in the said open house discussions. One of the suggestions received from some stakeholders was to develop a comprehensive audit manual for auditors to audit digital addressable systems. The suggestion was well appreciated by all other stakeholders as well as by TRAI. It was mentioned that the main objective behind developing a comprehensive audit manual is to create a common framework and uniformity in the technical and subscription audit process for all digital addressable systems used in the broadcasting sector. Further, it was also suggested that in addition to other aspects the said audit manual may consist of a well-defined   audit   procedure,   check   list   of   all   the equipment/software/accessories,   etc.   used   in   the   digital addressable system and code of ethics for auditors. This audit manual will bring uniformity and also become a well-accepted tool

to develop a transparent methodology to do audit which will further build up trust and confidence among all stakeholders. In turn, this may result in reducing disputes among the stakeholders arising during provisioning of TV channel or at the time of renewal of Interconnection agreements, etc.

1.14 With the initiative of the Authority, in order to incorporate views/inputs and addressing the concerns of all stakeholders a committee was formed to prepare and submit draft manual to the Authority. The committee had representatives from the following firm/organisations/associations:

- Broadcast Engineering Consultants India Limited (BECIL)
- Indian Broadcasting Foundation (IBF)
- News Broadcasting Association (NBA)
- All India Digital Cable Federation (AIDCF)
- M/s Tata Sky Ltd.
- M/s Dish TV India Ltd.
- M/s Bharti Telemedia Ltd.
- M/s Sun Direct TV Pvt. Ltd.

1.15 The committee held several meetings in TRAI. These meetings were facilitated by the Authority. After extensive deliberations, the industry reached consensus on most of the issues barring few issues and submitted a draft audit manual to the Authority. The Authority would like to place on record the extensive work done by the committee and also on arriving at a consensus. This draft audit manual is the revised version of the said report. The Authority has incorporated few corrections/changes wherever deemed necessary.

1.16 Audit manual addresses issue of audit in terms of Regulations 10 and 15 of the Interconnection Regulations dated 3rd March 2017.

A Broadcaster may separately audit additional parameter(s), in case Interconnect Agreement between a DPO and a Broadcaster have additional stipulations that require checking/ verification (eg., stipulations pertaining to offering of discounts, territory, etc.), based on their mutual agreement.

1.17 This audit manual may be reviewed periodically, owing to the technological/ techno-commercial changes, market development and changes in the systems.

1.18 This consultation paper is being issued to seek comments of the stakeholders on the Telecommunications (Broadcasting and Cable) Services, Digital Addressable Systems Audit Manual. Stakeholders may provide their comments preferably in electronic form to Mr. Anil Kumar Bhardwaj Advisor on email advbcs-2@trai.gov.in with cc to sapna.sharma@trai.gov.in latest by 22nd April 2019 and counter-comments latest by 29th Aril 2019.

1.19 Any/ all the comments should be supported with reasoning and the explanation. Stakeholders should provide necessary evidence/ data points to support the comment/ counter-comment. In case an alternate rendition of any para/ item in the audit manual is proposed, the comment should provide exact alternate language and the reason behind proposed change.

2 DEFINITIONS

2.1 In this manual, unless the context otherwise requires:-

(a) "Act" means the Telecom Regulatory Authority of India Act, 1997 (24 of 1997);

(b) "active subscriber" for the purpose of these regulations, means a subscriber who has been authorized to receive signals of television channels as per the subscriber management system and whose set top box has not been denied signals;

(c)   "addressable system" means an electronic device (which includes hardware and its associated software) or more than one electronic device put in an integrated system through which transmission of programmes including re-transmission of signals of television channels can be done in encrypted form, which can be decoded by the device or devices at the premises of the subscriber within the limits of the authorization made, on the choice and request of such subscriber, by the distributor of television channels;

(d)   "a-la-carte" or "a-la-carte channel" with reference to offering of a television channel means offering the channel individually on a standalone basis;

(e)   "Authority" means the Telecom Regulatory Authority of India established under sub-section (1) of section 3 of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997);

(f)   "average active subscriber base" means the number arrived by averaging the active subscriber base count in the manner specified in the Schedule VII;

(g)   "bouquet" or "bouquet of channels" means an assortment of distinct channels offered together as a group or as a bundle and all its grammatical variations and cognate expressions shall be construed accordingly;

(h)   "broadcaster" means a person or a group of persons, or body corporate, or any organization or body who, after having obtained, in its name, downlinking permission for its channels, from the Central Government, is providing programming services;

(i)   "broadcaster's share of maximum retail price" with reference to a pay channel or a bouquet of pay channels means any fee payable by a distributor of television channels to a broadcaster for signals of pay channel or bouquet of pay channels, as the case may be, and for which due authorization has been obtained by such distributor from that broadcaster;

(j)   "broadcasting services" means the dissemination of any form of communication like signs, signals, writing, pictures, images and

sounds of all kinds by transmission of electro-magnetic waves through space or through cables intended to be received by the general public either directly or indirectly and all its grammatical variations and cognate expressions shall be construed accordingly;

(k) "cable service" or "cable TV service" means the transmission of programmes including retransmission of signals of television channels through cables;

(l) "cable television network" or "cable TV network" means any system consisting of a set of closed transmission paths and associated signal generation, control and distribution equipment, designed to provide cable service for reception by multiple subscribers;

(m) "carriage fee" means any fee payable by a broadcaster to a distributor of television channels only for the purpose of carrying its channels through the distributor's network, without, specifying the placement of such channels onto a specific position in the electronic programme guide or, seeking assignment of a particular number to such channels;

(n) "compliance officer" means any person designated so, who is capable of appreciating requirements for regulatory compliance under these regulations, by a service provider;

(o) "direct to home operator" or "DTH operator" means any person who has been granted licence by the Central Government to provide direct to home (DTH) service;

(p) "direct to home service" or "DTH service" means re-transmission of signals of television channels, by using a satellite system, directly to subscriber's premises without passing through an intermediary such as local cable operator or any other distributor of television channels;

(q) "distribution fee" means any fee payable by a broadcaster to a distributor of television channels for the purpose of distribution of pay channel or bouquet of pay channels, as the case may be, to subscribers and it does not include carriage fee;

(r) "distribution platform" means distribution network of a DTH operator, multi- system operator, HITS operator or IPTV operator;

(s) "distributor of television channels" or "distributor" means any DTH operator, multi-system operator, HITS operator or IPTV operator;

(t) "electronic programme guide" or "EPG" means a program guide maintained by the distributors of television channels that lists television channels and programmes, and scheduling and programming information therein and includes any enhanced guide that allows subscribers to navigate and select such available channels and programmes;

(u) "free-to-air channel" or "free-to-air television channel" means a channel which is declared as such by the broadcaster and for which no fee is to be paid by the distributor of television channels to the broadcaster for signals of such channel;

(v) "head end in the sky operator" or "HITS operator" means any person permitted by the Central Government to provide head end in the sky (HITS) service;

(w) "head end in the sky service" or "HITS service" means transmission of programmes including retransmission of signals of television channels—

    (i) to intermediaries like local cable operators or multi-system operators by using a satellite system and not directly to subscribers; and

    (ii) to the subscribers by using satellite system and its own cable networks;

(x) "interconnection" means commercial and technical arrangements under which service providers connect their equipments and networks to provide broadcasting services to the subscribers;

(y) "interconnection agreement" with all its grammatical variations and cognate expressions means agreements on interconnection providing technical and commercial terms and conditions for distribution of signals of television channel;

(z)   "internet protocol television operator" or "IPTV operator" means a person permitted by the Central Government to provide IPTV service;

(aa)   "internet protocol television service" or "IPTV service" means delivery of multi-channel television programmes in addressable mode by using Internet Protocol over a closed network of one or more service providers;

(bb)   "local cable operator" or "LCO" means a person registered under rule 5 of the Cable Television Networks Rules, 1994;

(cc)   "maximum retail price" or "MRP" for the purpose of these regulations, means the maximum price, excluding taxes, payable by a subscriber for a-la-carte pay channel or bouquet of pay channels, as the case may be;

(dd)   "multi-system operator" or "MSO" means a cable operator who has been granted registration under rule 11 of the Cable Television Networks Rules, 1994 and who receives a programming service from a broadcaster and re-transmits the same or transmits his own programming service for simultaneous reception either by multiple subscribers directly or through one or more local cable operators;

(ee)   "network capacity fee" means the amount, excluding taxes, payable by a subscriber to the distributor of television channels for distribution network capacity subscribed by that subscriber to receive the signals of subscribed television channels and it does not include subscription fee for pay channel or bouquet of pay channels, as the case may be;

(ff)   "pay broadcaster" means a broadcaster which has declared its one or more channels as pay channel to the Authority under the provisions of applicable regulations or tariff order, as the case may be;

(gg)   "pay channel" means a channel which is declared as such by the broadcaster and for which a share of maximum retail price is to be paid to the broadcaster by the distributor of television channels and for which due authorization needs to be obtained

from the broadcaster for distribution of such channel to subscribers;

(hh) "programme" means any television broadcast and includes-
(i) exhibition of films, features, dramas, advertisements and serials;
(ii) any audio or visual or audio-visual live performance or presentation,

and the expression "programming service" shall be construed accordingly;

(ii) "QoS Regulations" means the Telecommunication (Broadcasting and Cable) Services Standards of Quality of Service and Consumer Protection (Addressable Systems) Regulations, 2017;

(jj) "reference interconnection offer" or "RIO" means a document published by a service provider specifying terms and conditions on which the other service provider may seek interconnection with such service provider;

(kk) "service provider" means the Government as a service provider and includes a licensee as well as any broadcaster, distributor of television channels or local cable operator;

(ll) "set top box" or "STB" means a device, which is connected to or is part of a television receiver and which enables a subscriber to view subscribed channels;

(mm) "subscriber" for the purpose of these regulations, means a person who receives broadcasting services, from a distributor of television channels, at a place indicated by such person without further transmitting it to any other person and who does not cause the signals of television channels to be heard or seen by any person for a specific sum of money to be paid by such person, and each set top box located at such place, for receiving the subscribed broadcasting services, shall constitute one subscriber;

(nn) "subscriber management system" means a system or device which stores the subscriber records and details with respect to name, address and other information regarding the hardware

being utilized by the subscriber, channels or bouquets of channels subscribed by the subscriber, price of such channels or bouquets of channels as defined in the system, the activation or deactivation dates and time for any channel or bouquets of channels, a log of all actions performed on a subscriber's record, invoices raised on each subscriber and the amounts paid or discount allowed to the subscriber for each billing period;

(oo) "tariff order" means the Telecommunication (Broadcasting and Cable) Services (Eighth) (Addressable Systems) Tariff Order, 2017;

(pp) "television channel" means a channel, which has been granted permission for downlinking by the Central Government under the policy guidelines issued or amended by it from time to time and reference to the term 'channel' shall be construed as a reference to "television channel".

2.2 All other words and expressions used in this manual but not defined, and defined in the Act and rules and regulations made thereunder or the Cable Television Networks (Regulation) Act, 1995 (7 of 1995) and the rules and regulations made there under, shall have the meanings respectively assigned to them in those Acts or the rules or regulations, as the case may be.

3 GENERAL GUIDELINES FOR CONDUCTING AUDITS

3.1 Roles and Responsibilities in Auditing

3.1.1 The Audits are to be carried out in the following cases:

   a. Pre-signal audit as per Regulation 10(7) of the Interconnection Regulations, also referred to as Technical Audit.
   b. A separate commercial audit under Regulation 15 of the Interconnection Regulations, which comprises of both Subscriber and Technical Audit.

3.1.2 The Auditors' main role and responsibility is to carry out the above technical and subscription audits in an objective, transparent and

impartial manner as per the Interconnection Regulations, 2017. While conducting audits at new head-ends seeking signals that has no active subscribers/live customer, auditor may issue only provisional certificates valid only for six (6) months for such new head-ends. It is incumbent upon the Auditor to revalidate such head-end system again within 6 (six) months from the commercial launch of the services. The final certificate may be issued, only after ascertaining full compliance with Schedule III, of the Interconnection Regulations, 2017.

3.1.3 Each DPO should cause an audit and provide audit report as per Clause 15(1) of Interconnect Regulations, 2017. As the implementation of the New Regulations has been completed on 28th December 2018, all the DPOs must initiate their Audit as soon as possible. If a Broadcaster is not satisfied with the Audit Report based on the Audit caused by DPO, such Broadcaster may initiate an audit as per the provision vide Regulation 15(2).

3.1.4 Once an interconnect agreement has been signed between a Broadcaster and DPO, if any changes, modification and alterations are made to the configuration or version of the addressable system (CAS, SMS and other related systems[1]) of the DPO and/or distribution network of DPOs ("Changes"), then these should be notified within seven (7) days to the relevant Broadcasters. DPO to provide an undertaking that the changes do not in any way compromise the system and the set-up and all the equipment including software meets the statutory compliance requirements. In such cases, the Broadcaster may, if deemed necessary cause action as per clause 10 (7) of the Interconnect Regulations 2017.

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[1] 'Other related system' means any related component which has commercial implication or affects technical compliance of the DAS system.

3.1.5 Issue for Consultation

Q1. Whether it should be mandatory for every DPO to notify the broadcasters (whose channels are being carried by the DPO) for every change made in the addressable system (CAS, SMS and other related systems[1])?

3.1.6   The DPO shall extend the following support to the Auditor:

    a.   DPO shall provide access to CAS, SMS servers and related addressable system to the auditor[2].

    b.   Auditor can demand specific data, logs and reports and the DPO shall extract the data in front of the auditor and provide the same. DPO shall ensure that no STB/VC is left out from the database.

    c.   A screen shot of the Queries that are run can be provided as long as any confidential data of DPO is masked by the DPO before handing over to the auditor or before inclusion in any report.

    d.   Auditor (and Broadcaster representative in case of audit initiated by Broadcaster's challenge) should be physically present during the extraction of CAS & SMS data.

Before submission of final report, a draft report should be shared with the Auditee for giving opportunity to provide clarifications, if any. The final report can be shared after incorporating the Auditees comments. The DPO shall give their comments within seven (7) days failing which the auditor will finalise the report i.e. If no comments are received by the Auditor from the concerned DPO within seven (7) days, the Auditor will finalise his/her report.

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[2] The Auditor must ensure that the live systems/ operations of the DPO are not disturbed. The Auditor must ask DPO to extract the data in front of the Auditor from the live systems. The Auditor shall work on the data so extracted, in a non-intrusive manner. In no case, the Auditor should disturb the live operations/ systems or cause any disruption whatsoever.

3.2 Data Handling

For proper data handling, the following procedure shall be followed:

- The Auditor shall be provided with a new or formatted PC/Laptop by the DPO for the purpose of data collection and report generation from SMS and CAS servers. Auditor may use his/her own laptop in case DPO is unable to provide the PC/laptop. (Laptop configuration and/or any software requirements are as per Annexure 1)

- The Auditor may also ask the DPO to provide for requisite Database software to be installed on such PC/ laptop to run processing application(s).

- The Auditor will not copy/ retrieve/ take-out any data outside the DPO's premises without an explicit consent of DPO.

- The Auditor must save all the relevant data files in a password protected folder/ file(s) on the PC/ Laptop of the DPO. It is the duty of the DPO to maintain and keep these files safe for a period of at-least two years from the date of the Audit.

- The Auditor may prepare a comprehensive Audit report and certified copy(ies) of Audit Report relevant for each of the Broadcaster, who is providing signals to the DPO.

3.2.1 Issues for Consultation

Q2. Whether the Laptop is to be necessarily provided by the Auditee DPO or the Audit Agency may also provide the Laptop? Please provide reasons for your comment.

Q3. Whether the Configuration of Laptop vide Annexure 1 is suitable? If not, please provide alternate configuration with reasons thereof.

3.3 Due Professional Care

During the audit, the auditor should prepare the report in accordance with standardized procedure (SoP) as enumerated in the Audit manual. The auditor must assure herself/ himself of adequate knowledge of techno-commercial and technical arrangements, DAS equipment and the extant legal and regulatory framework.

3.4 **Confidentiality**

The auditor must always protect the confidentiality. Auditor(s) must take all reasonable measures to assure that the audit report is kept confidential.

4 GUIDELINES FOR CONDUCTING TECHNICAL AND SUBSCRIPTION AUDITS

4.1 Scope of Work for Audit

The intent of the audit is to ensure that:
- All the equipment and systems deployed are fully compliant with the regulatory requirements
- Veracity of system configuration and authenticity of various techno-commercial parameters including subscription report.

The audit shall include the following:
 i. Head-end[3] Audit
 ii. CAS/ DRM audit
 iii. SMS audit including subscriber report
 iv. CAS and DRM integration with SMS
 v. STB audit
 vi. Network Audit4
 vii. Anti-piracy measures
 viii. Physical verification & checking of Broadcasters' Integrated Receiver Decoders (IRDs)
 ix. TS recording at field – TS recording information from IBF/NBA. In the event of challenge audit caused by any broadcaster, such TS recordings shall be necessarily provided by the broadcaster challenging the audit.
 x. Seeking ground sample information from IBF/NBA: DPO will inform IBF and NBA the date on which audit will be conducted at least 10 days in advance. IBF/NBA may provide ground sample information which shall be checked by the Auditor.

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[3] To check all the Head-ends including the Head-end for Backup or mini Head-ends (if any)
[4] To include a self-declaration by the DPO of the Network Configuration and Territory / Areas covered by each head-end.

4.1.1 Issue for Consultation

Q4.Do you agree with the provisions regarding seeking of TS recording and ground sample information from IBF/ NBA for verification/ checking by the Auditor?

4.2 **Data Requirements**

   A. Initial Data Request

   DPO to provide following documents to the Auditor (At-least 15 days prior to the Audit)[5]:

   a. Valid DAS license/ permission issued by Ministry of Information and Broadcasting (MIB)
   b. BIS certificates for all makes & models of STB deployed by DPO (applicable for boxes purchased after 2012).
   c. Certificate from all the CAS vendors (Format as in Annexure-2).
   d. Certificate from SMS vendors (Format as in Annexure-3).
   e. Block Schematic of Head-end
   f. Audit Checklist information as prescribed:
      i. Annexure 4[6] - Audit as per clause 10 (7) of Interconnect Regulations
      ii. Annexure 5 – Annual Audit as per clause 15 of Interconnect Regulations

   The auditor shall request IBF / NBA for information referred to in clause 4.1.ix. and 4.1.x. Ten (10) days prior to the commencement of the audit.

   B. Data Requirement During Audit
      I. Walkthrough by Auditor

The Auditor shall understand/verify and document the Customer Life Cycle Management process by performing a walkthrough of all the processes including:

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[5] Auditor must postpone the Audit, in case of non-receipt of any document listed herein. Any postponement to be duly reported to TRAI and Broadcasters.
[6] Required only in cases where broadcaster audit is carried out before providing the signal.

i. Customer acquisition

ii. Provisioning of the subscribers in authentication, billing and SMS system

iii. Scheme / package change request process

iv. Customer Retention process, if any

v. Subscriber Deactivation process

vi. Policy for and count of Demo/ Free/ Testing/ Promotional subscribers

vii. System Configuration and block schematic

viii. Data backup process

ix. Synchronization policy for CAS and SMS Systems

II. Data Extraction[7]:

1) Area wise Active and de-active STB and VC list (from both SMS & CAS system)

2) Package-wise active STB and VC details with city/state (both SMS & CAS system)

3) Month-end active and de-active STB and VC details with city/state (both SMS & CAS)

4) Channel to package mapping along with service ID (with creation, modification[8] and discontinue date) from SMS & CAS

5) Transaction logs and package composition change logs from CAS & SMS server for the audit period.

6) Data dump/ extraction for sample[9] check on Broadcasters' Subscription Report.

7) Current Channel assignments and Composition of Packages

8) Channel composition of packages for historical period (Any changes[10] made during the audit period)

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[7] DPO to extract data in presence of the Auditor and provide on the Audit PC/ Laptop

[8] As per system capability. In case the system does not allow such information, then DPO to provide an undertaking to this effect.

[9] Raw data or data dumps for at least 20 % of the weeks (random Sampling basis) during the audit period. The Broadcasters' report to be regenerated based on this data and compared with the actual reports submitted/sent to the broadcasters.

[10] During the first recorded audit all logs to be provided for preparing a first-time reference document.

9) Transaction logs and package composition change logs (all actions performed for the previous 2 years) like activation, de-activation, suspensions and other commands with date and time stamp

10) Inventory of all the VC/UA/Mac ID from the SMS server for the last 2 years.

11) Inventory of all broadcasters IRDs + VCs installed in the head-ends including cold standby with their serial numbers.

12) To extract the information as below:

a. Number of Subscribers as per table below:

Total No. of registered subscribers	Total No. of Active subscribers	Total No. of temporary suspended subscribers	Total No. of de-activated subscribers	Total No. of Blacklisted STBs in the system

b. Channel and bouquet wise monthly subscription report

Report of TV Channel					
Name of the Broadcaster	Name of TV Channel	Count as on …….	Count as on …….	Count as on …….	Count as on …….

Report of Bouquets						
Name of Broadcaster	Name of Broadcasters' Bouquet	Number of TV Channels in Bouquets	Count as on …….	Count as on …….	Count as on …….	Count as on …….

c. The ageing report for subscription of a channel or bouquet[11].

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[11] Note:

1. The report will be generated in terms of active STBs. Column I will contain the no. of all those active STBs who are subscribing to a particular service till 30 days. The moment some active STBs will have subscription of that particular service for more than 30 days, those STB count will then reflect in column II and so on.
2. The report generation will support both excel and PDF formats.
3. The report should be able to generate data for time period as per requirements (day-wise, week-wise, month-wise, year-wise)
4. Report should have page no in format (1 of n) and providing information regarding the run time, run date and period of report is mandatory.

Period of Report:
Run Time:
Run Date:

S. no.	Package Name/Channel name	0-30 (I)	31-60 (II)	61-90 (III)	91-120 (IV)	>120 Days (V)
1	.	.	.	.	.	.
2	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
n-1	.	.	.	.	.	.
n	.	.	.	.	.	.

III   Guidelines for extraction of above data:

(a) DPO to declare all admin/super admin login access to CAS & SMS servers

(b) DPO to allow auditors[12] to run queries to extract data / logs / reports from live SMS and CAS systems. All extracted Data to be loaded on PC/ Laptop provided for Audit

(c) All data from CAS and SMS server should be extracted in such a manner that no STB/VC is left out from the database. The Auditors should acquaint themselves with the data extraction queries that are run on the live CAS & SMS servers.

(d) Data extraction queries scripts and explanation of terminology used must be preserved.

(e) The auditor should understand what all filters (if any) are being applied to either exclude data of other DPOs, or even exclude data of certain geographical areas that may have a bearing on the overall count of the subscriber numbers.

(f) Auditor should be present in-person during the extraction of CAS & SMS data. Auditor to certify that the Data extraction has been done under his/her supervision.

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[12] In cases where data logs for the audit period are not available on live systems and old data is stored in back-up storage. In such cases, the data logs may be re-created using extraction tools from such back-up.

4.2.1 Issues for Consultation

Q5.Do you agree that Data Dump may be cross-checked with weekly data of sample weeks basis? If yes, do you agree with checking of random 20 % sample weeks? Please support your comments with justification and statistical information.

Q6. Do you agree with the proposed Data extraction methodology? If not, suggest alternates with reasoning thereof.

4.3 Audit Procedure

The scope of work of audit will be as per Schedule III and other related clauses of THE TELECOMMUNICATION (BROADCASTING AND CABLE) SERVICES INTERCONNECTION (ADDRESSABLE SYSTEMS) REGULATIONS, 2017 (No. 1 of 2017). The following points should be checked as per Schedule III of the above-mentioned regulations:

A. Conditional Access System (CAS) and Subscriber Management System (SMS)

Sl. no	Regulatory Provision	Audit Steps
1	Technical Audit of New Head-end: (6) Every distributor of television channels before requesting signals of television channels from a broadcaster shall ensure that the addressable systems to be used for distribution of television channels meet the requirements as specified in the Schedule III. (7) If a broadcaster, before providing	During the audit, Auditor to do following activities at all head-ends of DPO: i) Compliance to para 3.1.2 above. ii) Perform walk-through of all head-end/s of every distribution network of the DPO. iii) Obtain network diagram and validate with the equipment installed in the head-end/s iv) Perform checks on IP configuration to confirm and identify live and proxy servers. This shall include IP credentials of all the servers include MUX. v) Take inventory of all broadcaster IRDs + VCs installed in the head-ends including their serial numbers. Make note of broadcaster IRDs + VCs available but not installed. vi) Check MUX configuration to validate number of Transport Streams ("TS") configured with SID, scrambling status of each SID and ECM and EMM configuration. (MUX-TS Stream-No. of ECM & EMM configured) vii) Take screenshot of all TS streams from MUX

	signals of television channels, is of the opinion that the addressable system, being used by the distributor for distribution of television channels, does not meet the requirements specified in the Schedule III, it may, without prejudice to the time limit specified in sub-regulation (2) of the regulation 3, cause audit of the addressable system of the distributor by M/s. Broadcast Engineering Consultants India Limited, or any other auditor empanelled by the Authority for conducting such audit and provide a copy of the report prepared by the auditor to the distributor:	and compare with results of field TS viii) Take information of QAMs installed and powered to identify streams available for local insertion by LCOs. ix) Obtain record of PSI/SI server to confirm EPG, LCN etc. details x) Check PSI/SI server that it has check EPG push capability Confirm insertion of watermarking network logo for all channels from encoder **Note: Use FTA cable box/ TS analyser to confirm whether all channels are encrypted
2	Every distributor of television channels shall offer necessary assistance to auditors so that audits can be completed in a time bound manner. Regulation clause 15(3)	Support from DPO (or its employee) to the Auditor/ Audit Team for: (a) DPO to declare all admin/super admin login access to CAS & SMS servers, IT systems & head-end equipment to auditors. (b) DPO to allow auditors to run queries to extract data / logs / reports from live SMS and CAS systems. (Auditors to not accept any pre-extracted data/reports from SMS & CAS systems) (c) DPO to allow extracted data / reports / logs to be downloaded to Laptop/ PC provided to the Auditor for detailed analysis. (d) All data from CAS and SMS server should be extracted by auditor in such a manner that no STB/VC is left out from the database. Auditors

should understand the data extraction queries that are run on the live CAS & SMS servers. The auditor to store the record of queries run, in a password protected folder.

(e) Auditor should issue a communication as per Annexure 6 (minimum 7days before the activity) to News Broadcasters' Association and Indian Broadcasting Foundation for nominating an observer for oversight during the data extraction process.

(f) Following data to be extracted[13]:

i. Current Active and De-Active Subscriber count in the network with STBs / VC Location details

ii. Current Active and De-Active subscriber count (Both for A-la-carte channel subscription-wise and Package-wise) along-with details of STBs /VC

iii. Historical month-end active and de-active STB/VC wise subscriber counts for the audit period

iv. Historical month-end active and de-active package and channel-wise subscriber counts along-with details of such STB/VC for the audit period

v. Current and Historical (audit period) Channel composition of packages

vi. Transaction logs and package composition change logs (all actions performed during Audit period) like activation, de-activation, suspensions and other commands with date and time stamp

vii. Inventory of all the VC/UA/Mac ID from the SMS server

| 3 | The distributor of television channels shall ensure that the current version of the CAS, in use, do not have any history of hacking. | i. DPO to declare on its letterhead the no. of CAS systems deployed in each of its distribution networks. It should mention the no. of 'Headend' connected with the said CAS. This declaration is to be signed by the authorized signatory/compliance officer. (Annexure 5[14]) |
| | | ii. DPO to provide certificate from each CAS vendor on CAS vendor letterhead signed by no less than Authorized Signatory/Compliance Officer of the CAS vendor (Issued within last 12 months and |

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[13] All data to be extracted from backend using queries or verify the data obtained from SMS/CAS frontend by writing queries on the backend database after understanding the table structure.

[14] The Initial Data Request format from Auditor to be duly filled in by the DPO and to include an undertaking for authenticity of the information provided.

	(Schedule III A1)		certify current operating version of CAS) (Annexure 2). iii. Auditor to perform TS recording: i) At the Headend; ii) In the field at appropriate place. Auditor to analyze the TS streams to ascertain actual number(s) of CAS running in the network and compare with the declaration made as part of agreement with the broadcaster. Auditor to record discrepancy, if any.
4	The SMS shall be independently capable of generating, recording, and maintaining logs, for the period of at least immediate preceding two consecutive years, corresponding to each command executed in the SMS including but not limited to activation and deactivation commands. **(Schedule III A2)**	a) b) c) d) e) f) g)	To check the availability of logs in SMS for the period of last 2 years and analyze activation, de-activation. Fingerprinting, messaging, blacklisting etc. DPO to certify on its letterhead that there is only one SMS that serves all CAS[15]. DPO to provide declaration from SMS vendor on SMS vendor letterhead of current date signed by no less than Authorized Signatory/Compliance Officer of the SMS vendor (Annexure-3). The above SMS certificate (Annexure-3) should mention DPO name & address matching with name & address mentioned in DPO registration certificate issued by I&B Ministry, Govt. of India. Auditors to check system capability for generating historical transaction logs Auditor to download logs from SMS and check the following: i. Date & time stamp ii. They are in un-editable form (including pdf format). Auditor to check, verify and document whether all the actions, including but not limited to activation, de-activation, package creation, package change/modification, FP insertion, and scroll insertion are being recorded in SMS.
5	It shall not be possible to alter the data and logs recorded in the CAS and the SMS. **(Schedule III A3)**		**CAS:** a) Auditor to verify few entries of CAS (of historical date) with SMS commands b) Auditor to extract historical transaction logs of each CAS for the audit period and reconstruct the reports specified in clause Sch-III (16). c) Auditors to check system capability for generating historical transaction logs d) Auditor to download logs from CAS and check the

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[15] In case any DPO has multiple SMS then they must migrate in single SMS within 90-days. An undertaking to this effect must be submitted to the Auditor signed by the Promoter/ owner/CEO/ CTO of the said DPO.

		following: i. These have date & time stamp ii. They are in un-editable form e) Auditor to extract transaction logs and package composition change logs from CAS for last audit period and recreate as-on-date as well as count in monthly subscriber reports through step-by-step reverse calculation starting from the oldest data by building up to current numbers and tie back with the subscriber reports. f) Auditor to check, verify and document whether all actions, including but not limited to activation, de-activation, package creation, package change/modification, FP insertion, and scroll insertion as initiated by SMS are recorded in CAS.
6	The distributor of television channels shall validate that the CAS, in use, do not have facility to activate and deactivate a Set Top Box (STB) directly from the CAS terminal. All activation and deactivation of STBs shall be done with the commands of the SMS. **(Schedule III A4)**	a) DPO to provide declaration and demonstrate procedures that all activations and deactivations of a Set Top Box (STB) directly from the CAS terminal are not done as a part of normal business operations. All activation and deactivation of STBs is done through SMS, except for internal testing purposes. b) Auditor to, on sample basis, check by trying to activate some STBs directly from the CAS and record the findings. c) Auditor to check that the CAS does not have any access to DPO staff who are involved in business related operation regarding activation and de-activation of STBs.
7	The SMS and the CAS should be integrated in such a manner that activation and deactivation of STB happen simultaneously in both the systems.	a) Auditor should perform simulation testing on one STB of every model deployed as per following process: b) Activate different channels / packages on all test STBs from SMS. c) Check live transaction logs in SMS server and CAS server to confirm the above channel activation reflects in both SMS and CAS logs with same date & time. d) Auditor should perform unique VC Level Reconciliation for the audit period between CAS & SMS databases. VCs active in CAS but not in SMS and similarly VCs active in SMS but not in CAS

	(Schedule III A5)	should be highlighted as discrepancy.
8	The distributor of television channels shall validate that the CAS has the capability of upgrading STBs over-the-air (OTA), so that the connected STBs can be upgraded. **(Schedule III A6)**	a) Auditor to check that the CAS declaration (Annexure-2) confirms the availability of this facility. b) Auditor to verify the feature on test STB and record the findings.
9	The fingerprinting should not get invalidated by use of any device or software. **(Schedule III A7)**	a) Auditor should trigger a fingerprint of 5 minutes duration from SMS/CAS to the test STB. b) The STB should be rebooted, and fingerprint should reappear again automatically. If fingerprint disappears, auditor should take appropriate note. c) DPO declaration should confirm this capability.
10	The CAS and the SMS should be able to activate or deactivate services or STBs of at least 10% of the subscriber base of the distributor within 24 hours. **(Schedule III A8)**	a) Auditor should check CAS declaration (Annexure-2) and SMS declaration (Annexure-3) mentions this capability.
11	The STB and Viewing Card (VC) shall be paired from the SMS to ensure security of the channel. **(Schedule III A9)**	a) Auditor to interchange VC between two STBs of the DPO and confirm that both STBs give error message on-screen. b) Auditor should take screenshot of the error message and include in audit report.
12	The CAS and SMS should be capable of individually addressing	Auditor should: a) Activate fresh STBs individually through SMS and verify whether the same is activated in CAS as well

	subscribers, for the purpose of generating the reports, on channel by channel and STB by STB basis. **(Schedule III A10)**	b) Add existing packages and channels to the test customer created through SMS and verify channels were activated in CAS and are visible on TV monitor c) Remove packages / channels through SMS allotted to the test STB d) After completing all other audit tests deactivate the test STB through SMS e) Extract the logs of SMS and CAS for the day to check whether the above commands activation, deactivation of customer and packages was captured with date and time stamp
13	The SMS should be computerized and capable of recording the vital information and data concerning the subscribers such as: a. Unique customer identification (ID) b. Subscription contract number c. Name of the subscriber d. Billing address e. Installation address f. Landline telephone number g. Mobile telephone number h. E-mail address i. Channels, bouquets and services subscribed j. Unique STB number	To: a) Create two test customers in SMS with names - "AuditTest1Customerddmmmyy", "AuditTest2Customerddmmmyy" b) Allocate fresh hardware and map the test customer to an LCO c) Check whether item "a to k" specified in Sch-III A(11) are getting captured d) Take SMS screenshot such that all items are covered e) Generate SMS customer details report city, district and state wise and check the fields "a to k" are appearing. f) Auditor to deactivate the test subscribers from the SMS and confirm the corresponding STB is deactivated for all channels / services. g) Physically verify CAF/ SAF forms of customers activated in last 6 months with all customers entered in SMS. All mismatches of customers in SMS but no CAF available against that to be reported in Auditor report.

	k. Unique VC number **(Schedule III A11)**	
1 4	The SMS should be capable of: a. Viewing and printing of historical data in terms of the activations and the deactivations of STBs. b. Locating each and every STB and VC installed. c. Generating historical data of changes in the subscriptions for each subscriber and the corresponding source of requests made by the subscriber. **(Schedule III A12)** The SMS should be capable of generating reports, at any desired time about: i. The total number of registered subscribers. ii. The total number of active subscribers. iii. The total number of temporary suspended	a) Auditor should generate all reports city, district and state wise per Schedule III A12 (a to c) and Schedule III A13 (i to x) from the SMS. b) Auditor should ensure each report city, district and state wise has the minimum following information (apart from report wise specific fields): i. DPO Name & address ii. Date & time stamp of report generation c) Auditor to extract historical transactional logs from SMS for audit period and confirm the availability of the data required as per Sch-III A (12) (a), (b) and (c).& A13 d) All data from SMS server should be extracted in such a manner that no STB/VC is left out from the database. The screen shots and explanations of the queries that are run shall be provided after masking customer confidential data of the DPO before handing over to the auditor and such screen shots and explanation should be included in the report. (Refer Initial Data Request para)

	subscribers.	
	iv. The total number of deactivated subscribers.	
	v. List of blacklisted STBs in the system.	
	vi. Channel and bouquet wise monthly subscription report in the prescribed format.	
	vii. The names of the channels forming part of each bouquet.	
	viii. The total number of active subscribers subscribing to a particular channel or bouquet at a given time.	
	ix. The name of a-la carte channel and bouquet subscribed by a subscriber.	
	x. The ageing report for subscription of a particular channel or bouquet. **(Schedule III A13)**	
15	The CAS shall be independently capable of generating, recording, and maintaining logs, for the period of at least immediate preceding two consecutive years, corresponding to	a) Auditor should generate all reports city, district and state wise as per Sch-III A (13) from the CAS. The reports should contain relevant details. b) Auditor should ensure each report has the minimum following information (apart from report wise specific fields): i. DPO Name & address/ Unique Id ii. Date & time stamp of report generation c) Auditor to extract historical transactional logs from CAS for audit period and confirm the

	each command executed in the CAS including but not limited to activation and deactivation commands issued by the SMS. **(Schedule III A14)**	availability of the data required. d) All data from CAS server (CAS servers installed by DPO and it's JVs CAS (including standby headends, mini headends) should be extracted in such a manner that no STB/VC is left out from the database. The screen shots and explanations of the queries that are run shall be provided after masking customer confidential data of DPO before handing over to the auditor and such screen shots and explanations should be included in the report. e) Annexure-2 should mention that CAS logs are available for up to preceding two consecutive years for each command executed in the CAS.
16	As per TRAI regulations, 2017 (NEW)	a) "As on Date" Reconciliation of VC and STB from complete CAS and SMS for the date of Audit. Any discrepancy of VC not active in SMS but found active in CAS, excluding test/monitoring VC/STB, or vice versa should be reported in Actual numbers as well as percentage of the total base. Details of test/monitoring VC/STB should be separately recorded. b) Reconciliation of VC and STB from complete CAS and SMS for the historical months over the audit period. Any discrepancy of VC not active in CAS but found active in SMS, excluding test/monitoring VC/STB, or vice versa should be reported in Actual numbers as well as percentage of the total base. Details of test/monitoring VC/STB should be separately recorded. c) "Transaction log" Reconciliation of VC and STB numbers obtained from logs of complete CAS and Logs of SMS with the subscriber report provided to broadcaster for each month. Any discrepancy should be reported in Actual numbers as well as percentage of the total base. d) Reconciliation of VC and STB from CAS and SMS for each channel for the date of Audit. Any discrepancy should be reported in Actual numbers as well as percentage of the total base e) Reconciliation of VC and STB numbers for each channel obtained from Logs (Transactional logs as well as configuration logs) of complete CAS and SMS Logs with the Broadcasting report of each month of the audit period. Any discrepancy should be reported in Actual numbers as well as percentage of the

channel count reported.

f) Reconciliation of Channels configured for a package in SMS and channel configured for respective package/product in CAS. The report should provide numbers of channels not in CAS for the product which were present in SMS package and vice versa

g) A 3 way reconciliation on channel wise count of Broadcasting report, CAS and SMS should be done at count level for the day of Audit and on sample[16] basis for the audit period and any exception of count should be reported in actual numbers as well as percentage of reported number.

h) Reconciliation of channels/IRD's which have been obtained by DPO but not activated/subscribed by any customer. All such channels where IRD's are active but subscriber count is zero should be reported.

i) Reconciliation of LCN and Genre declared by broadcaster with the actual LCN and genre found during Audit. All mismatches of LCN and genres found during audit to be reported.

 - Auditor to connect STB to DPO signal in headend and Scroll through all channels and make list of genre wise LCN + Channel name against actual channels seen on the screen
 - All mismatches of LCN and genres found during audit to be reported.

j) Report the channels found running in Unencrypted or analogue mode on the day of Audit

k) Auditor to compare the STB/VC field samples, if provided from IBF/NBA[17]. Auditor to compare this sample with VC and STB data extracted during the audit from CAS and SMS. All exceptions to be reported.

l) Auditor to compare TS recording data of DPO's CAS, if provided by IBF/NBA. IBF/NBA to be given at least 10-days prior notification before the start of the audit. IBF/NBA to provide TS recordings for the period under audit. All exceptions to be reported in the audit report.

m) Auditor to highlight critical data not provided by

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[16] Sample as defined in Data Extraction above

[17] DPO to notify IBF/ NBA of proposed audit atleast 10 days prior to the Audit. IBF/ NBA may provide sample data of not more than 100 such STB/ VCs.

| | | DPO or the data which was not available or any other exclusion and limitations. Auditor to provide his assessment whether those exclusions and limitation limit ascertaining of true and correct subscriber count.

n) Auditor to extract reports for the above checks and balances.

o) Auditor to highlight if any free access (to be defined) channels are available

p) Auditor to compare VC's from SMS and compare with the VC's on which payment has been received through prepaid system from the customer in last 6 months. Any cases where payment has been received for the month but No VC appearing in Active SMS data for the month should be reported as exception

p) All cases to be reported after analyzing logs of MUX/Scramblers whenever there were signals running in unencrypted mode during the Audit period.

q) Auditors to report if TS was configured in such a way that local insertion of channel was not possible in an un-encrypted mode during Audit period. |
|---|---|---|
| 1 7 | The CAS shall be able to tag and blacklist VC numbers and STB numbers that have been involved in piracy in the past to ensure that such VC or the STB cannot be re-deployed.

(Schedule III A15) | a) Auditor to blacklist one STB & VC of each CAS (separate from test STB & VC) from SMS, and check the status of the STB+VC in CAS
b) Auditor to take logs of black listed STB +VC from CAS
c) Take screenshot of the blacklist screen to record the above and include in the report |
| 1 8 | It shall be possible to generate the following reports from the logs of the CAS:

  a. STB-VC Pairing / De- | a) Auditor should generate all reports as per Sch-III A from the CAS. The reports should contain relevant details
c) Auditor shall keep screenshots of each report with masking of customer confidential data of DPO and include in the report.
d) Auditor to extract historical transactional logs from CAS for audit period and confirm the availability of the data required. |

		Pairing b. STB Activation / De-activation c. Channels Assignment to STB d. Report of the activations or the deactivations of a particular channel for a given period. **(Schedule III A16)**	e) All data from CAS server to be extracted from live servers in such a manner that no STB/VC is left out from the database f) Annexure-2 should mention that CAS logs are available for up to preceding two consecutive years for each command executed in the CAS.
1 9	The SMS shall be capable of generating bills for each subscriber with itemized details such as the number of channels subscribed, the network capacity fee for the channels subscribed, the rental amount for the customer premises equipment, charges for pay channel and bouquet of pay channels along with the list and retail price of corresponding pay channels and bouquet of pay channels, taxes etc. **(Schedule III A17)**	On sample basis, Auditor to verify the Itemized bill generated from the SMS to ensure that it captures all the mentioned details in this clause & record a copy of the bill format & any discrepancy noticed, if any, in the audit report.

2 0	The distributor shall ensure that the CAS and SMS vendors have the technical capability in India to maintain the systems on 24x7 basis throughout the year. **(Schedule III A18)**	a) Auditor to check that the CAS declaration from each CAS vendor (Annexure-2) mentions the availability of this facility. b) Auditor to check that the SMS declaration (Annexure-3) from each SMS vendor mentions the availability of this facility.
2 1	The distributor of television channels shall declare the details of the CAS and the SMS deployed for distribution of channels. In case of deployment of any additional CAS/ SMS, the same should be notified to the broadcasters by the distributor. **(Schedule III A19)**	a) DPO to declare on its letterhead the no. of CAS systems deployed in each of its distribution networks. It should mention the no. of "Headends" connected with the said CAS. This declaration is to be signed by authorized signatory/compliance officer. b) Auditor to confirm changes, if any, in configuration since last audit by performing TS recordings at field locations and if communication was sent to the broadcasters by the DPO at the time the changes were implemented.
2 2	Every distributor of television channels shall declare coverage area of each distribution network as a target market: Provided that it shall be permissible for a distributor to declare, in non-discriminatory manner, any area within the coverage area of distribution network as a target	Declaration of coverage areas of network: a) DPO to provide self-declaration (on DPO letterhead) to auditors of coverage area of each distribution network in terms of cities, town, covered. Auditor to verify such declared areas viz-a-viz with the subscription agreement of the respective broadcaster(s). b) Auditor to list down broadcasters' inventory details for DPO's each distribution network headend. c) Auditor to visit DPO's Digital Sub-headends having multiple Headend(s) and undertake Headend validation as per audit Manual.

	market. Explanation: For the purpose of this regulation, each Head-end or Earth Station, as the case may be, and its associated network used for distribution of signals of television channels shall constitute one distribution network. Regulation Clause 4(3) (New)	d) Auditor to visit 3-4 sample cities/LCOs (last mile) to ascertain whether any additional CAS/SMS is added on the ground but not reflecting at Headend(s)H/E (under declaration) or services are run in unencrypted mode or services are added at LCOs end.
2 3	Every distributor of television channels shall, within seven days from the end of each calendar month, provide, in the format specified in the Schedule VII, complete and accurate monthly subscription report of channels and bouquets of pay channels, to the broadcasters, with whom the written interconnection agreements have been entered into for distribution of channels…. Regulation Clause 14(1) (NEW)	Subscription report details with city/district/state and monthly fee a) Auditor to obtain from broadcaster all subscriber reports submitted by DPO for the audit period. b) Auditor to verify that the subscriber reports comply with the requirements of Schedule-VII of regulation with respect to completeness of information provided and accuracy of data. All variances need to be reported in the audit report.
2	Upon deactivation of any subscriber	Auditor to deactivate the "test subscribers" from the SMS and confirm the corresponding STB is

4	from the SMS, all program/ services shall be denied to that subscriber. **(Schedule III A20)**	deactivated for all channels / services.
2 5	The distributor of television channels shall preserve unedited data of the CAS and the SMS for at least two years. **(Schedule III A21)**	a) In case of distribution platforms operational for less than 2 years, the Auditor to check that the CAS declaration from each CAS vendor (Annexure-2) mentions the CAS is compliant with this requirement. b) In case of distribution platforms operational for less than 2 years, the Auditor to check that the SMS declaration (Annexure-3) from each SMS vendor mentions the SMS is compliant with this requirement. c) Auditor to take declaration from DPO that it has preserved unedited data of the CAS and the SMS for at least two years. d) In addition to above, Auditor to perform steps mentioned in Schedule III A(3)

(B) Fingerprinting:

S. no	TRAI Requirements	Auditor Checklist
1	The distributor of television channels shall ensure that it has systems, processes and controls in place to run fingerprinting at regular intervals **(Schedule III B1)**	a) Auditor to trigger fingerprinting from SMS by inputting start / end time, duration of display, frequency of display and confirming that the fingerprint is seen on the test STB output. b) Auditor to take a screenshot of the fingerprint.
2	The STB should support both visible and covert types of finger printing. **(Schedule III B2)**	a) For visible type of finger printing: same as 1 above b) For covert type: Auditor should ensure this capability is mentioned in STB certificate (Annexure 8) and as well test the same feature during audit..

		c) Auditor should accept any type of covert fingerprinting.
3	The fingerprinting should not be removable by pressing any key on the remote of STB. **(Schedule III B3)** The finger printing should be on the top most layer of the video. **(Schedule III B4)**	**For both Schedule III B (3) & B (4):** a) Auditor should trigger a fingerprint of 5 minutes duration from SMS/ CAS[18] to the test STB. b) While fingerprint is displayed on STB output connected to TV screen, auditor should press every key on the STB remote control and STB front panel. c) Auditor should confirm that no action in b) makes the displayed fingerprint disappear even momentarily for the whole duration of 5 minutes. d) If fingerprint disappears with any key action, this requirement is not complied with.
4	The finger printing should be such that it can identify the unique STB number or the unique VC number. **(Schedule III B5)**	Auditor should trigger fingerprint on two test STBs and confirm the fingerprint displayed are unique to the VCs in the STBs (UA no. in card-less STBs).
5	The fingerprinting should appear on the screens in all scenarios, such as menu, Electronic Program Guide (EPG), Settings, blank screen, and games etc, **(Schedule III B6)**	a) Auditor should trigger 5 minutes fingerprint on test STB and use remote control of STB to navigate to Menu page, EPG page, Settings page, Blank screen and Games page. b) Fingerprint should be displayed on all the above-mentioned pages.
6	The location, font	Auditor should trigger fingerprint on test STB

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[18] Preferably from SMS. Fingerprinting may be performed from CAS if there are system related limitations. DPO to provide an undertaking to this effect

	colour and background colour of fingerprint should be changeable from head end and should be random on the viewing device. **(Schedule III B7)**	multiple times, each time with at least 5 options of location, font colour, and background box colour. The locations of the fingerprint should be seen on random areas of the TV screen to make it unpredictable to viewer.
7	The finger printing should be able to give the numbers of characters as to identify the unique STB and/or the VC. **(Schedule III B8)**	Auditor should trigger fingerprint on two test STBs and confirm the fingerprint displayed are corresponding uniquely to the actual VCs in the STBs (UA no. in cardless STBs).
8	The finger printing should be possible on global as well as on the individual STB basis. **(Schedule III B9)**	a) Auditor should trigger fingerprint to all STBs and confirm fingerprints are displayed on all test STBs b) Auditor should trigger fingerprint to one test STB and confirm it is displayed on the particular STB only.
9	The overt fingerprinting should be displayed by the distributor of television channels without any alteration with regard to the time, location, duration and frequency. **(Schedule III B10)**	a) Auditor should obtain fingerprint schedules from some broadcaster channels distributed by the DPO. b) Auditor should monitor sample channels of those broadcaster on DPO's STB and take screenshot of broadcaster fingerprint seen on TV screen as proof of compliance
10	Scroll messaging should be only	a) Auditor should trigger scroll message of 120 characters[19] from the DPO's SMS or CAS targeted

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[19] In case of systemic limitations, Auditor to verify as per system and make a note of the same.

	available in the lower part of the screen. **(Schedule III B11)**	to all the test STBs. b) The scroll should be displayed as a horizontally moving ticker on the lower part of the TV screen.
11	The STB should have a provision that fingerprinting is never disabled. **(Schedule III B12)**	a) Auditor should trigger a fingerprint of 5 minutes duration from SMS/ CAS[20] to the test STB. b) The STB should be rebooted, and fingerprint should reappear again automatically. If fingerprint disappears, this requirement is not complied with. c) The STB declaration (Annexure-8) should also mention this capability.
12	The watermarking network logo for all pay channels shall be inserted at encoder end only. (Schedule III B13)	To confirm the network logo is inserted from the encoder end only for all channels: a) Auditor should disconnect all test STBs from RF signal and then observe the TV screen. b) If network logo is still visible on TV screen, then the requirement of insertion of network logo at the encoder end is not complied with. c) Screenshot of the observations should be included as part of the audit report.

(C) Set Top Box (STB):

S. no	AI Requirements	Audit Steps
1	All STBs should have a Conditional Access System. **(Schedule III C1)**	a) To inspect all models of STBs (2 units of each make & model) under test and confirm the STB serial no./VC no./UA no. exists in the live CAS database. b) In case of middleware capability, Auditor should also ascertain if the middleware in each model of STB has interactive services capability.
2	The STB should be capable of decrypting the Conditional Access messages inserted by the Head-end.	To perform activation / deactivation of all packages available as on date (starting with base pack) on all models of test STBs and list down reception of all channels as per packages

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[20] Preferably from SMS. Fingerprinting may be performed from CAS if there are system related limitations. DPO to provide an undertaking to this effect

	(Schedule III C2)	
3	The STB should be capable of doing fingerprinting. The STB should support both Entitlement Control Message (ECM) and Entitlement Management Message (EMM) based fingerprinting. **(Schedule III C3)**	a) To trigger fingerprinting on a particular channel and confirm fingerprint is seen on all test STBs on that particular channel only at the same time. This is ECM based fingerprinting. b) To trigger fingerprinting on all channels and confirm fingerprint is seen on all test STBs on all channels at the same time. This is EMM based fingerprinting
4	The STB should be individually addressable from the Head-end. **(Schedule III C4)**	a) To connect all test STBs on RF signal and do auto scan and download all channels and cross check the status of these channels and compare with those authorised on such STBs. The auditors to make note of discrepancy, if any. b) To trigger fingerprint on the test STBs and confirm fingerprint is displayed.
5	The STB should be able to receive messages from the Head-end. **(Schedule III C5)**	a) Auditor should trigger scroll message of 120 characters from the DPO's SMS targeted to all the test STBs. b) The scroll should be displayed in its entirety as a horizontal moving ticker on the lower part of the TV screen.
6	The messaging character length should be minimal 120 characters. **(Schedule III C6)**	a) Auditor should trigger scroll message of 120 characters[21] from the DPO's SMS targeted to all the test STBs. b) The scroll should be displayed in its entirety as a horizontal moving ticker on the lower part of the TV screen.
7	There should be provision for global messaging, group messaging	a) Auditor should trigger scroll to all STBs and confirm it is displayed on all test STBs. b) Auditor should trigger scroll to one test STB and confirm it is displayed on the particular STB

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[21] In case of systemic limitations, Auditor to verify as per system and make a note of the same.

	and the individual STB messaging **(Schedule III C7)**	only.
8	The STB should have forced messaging capability including forced finger printing display. **(Schedule III C8)**	Auditor should trigger scroll messaging from SMS or CAS to all STB in the network which should display the fingerprint as the message. Auditor should take screenshot of the display
9	The STB must be compliant to the applicable Bureau of Indian Standards **(Schedule III C9)**	a) Auditor should take copies of BIS certificates from the DPO for each make & model of STB procured after the BIS standards came into effect. b) The certificates should mention exact STB make & model nos. c) As of the audit date, the certificates should be valid. d) Auditor should confirm validity by cross-checking the certificates from BIS website.
10	The STBs should be addressable over the air to facilitate OTA software upgrade. **(Schedule III C10)**	DPO shall give a declaration on its letterhead mentioning the availability of this facility.
11	The STBs with facilities for recording the programs shall have a copy protection system **(Schedule III C11)**	Auditor to check and report: b) For STBs having recording facility to internal and/or external storage devices such as USB / Hard Disk drives, auditor should check recorded content plays only on the specific STB where content was recorded c) Auditor to check that scheduled fingerprint and scroll messaging is displayed even when stored content is played on the STB. d) Auditor should confirm that recorded content cannot be played if STB is in de-active state

4.3.1 Issues for Consultation

Q7. Do you agree with verification and reporting of City-wise, State-wise and Head-end wise subscription report? Please provide supporting reasons/ information for your comment.

Q8. Do you agree with the tests and procedure provided for checking covert and overt fingerprinting? Provide your comments with reasons thereof?

Q9. Any other suggestion/ comments on the provisions of the Audit Manual.

4.4 Format of the Audit Report is annexed as **Annexure 7** with this manual.

5 TIMELINES

The Auditor shall normally complete the audit within 4 weeks and the report should be submitted within 1 week from the end of audit.

6 Summary of Issues for Consultation

Q1. Whether it should be mandatory for every DPO to notify the broadcasters (whose channels are being carried by the DPO) for every change made in the addressable system (CAS, SMS and other related systems[1])?

Q2. Whether the Laptop is to be necessarily provided by the Auditee DPO or the Audit Agency may also provide the Laptop? Please provide reasons for your comment.

Q3. Whether the Configuration of Laptop vide Annexure 1 is suitable? If not, please provide alternate configuration with reasons thereof.

Q4. Do you agree with the provisions regarding seeking of TS recording and ground sample information from IBF/ NBA for verification/ checking by the Auditor?

Q5. Do you agree that Data Dump may be cross-checked with weekly data of sample weeks basis? If yes, do you agree with checking of random 20 % sample weeks? Please support your comments with justification and statistical information.

Q6. Do you agree with the proposed Data extraction methodology? If not, suggest alternates with reasoning thereof.

Q7. Do you agree with verification and reporting of City-wise, State-wise and Head-end wise subscription report? Please provide supporting reasons/ information for your comment.

Q8. Do you agree with the tests and procedure provided for checking covert and overt fingerprinting? Provide your comments with reasons thereof?

Q9. Any other suggestion/ comments on the provisions or methodology proposed in the Audit Manual.

7 GLOSSARY

ASI   ---- Asynchronous Serial Interface

CAG   ---- Conditional Access Gateway

CAS   ---- Conditional Access System (Shall include any means of encryption, such as, DRM, etc.)

CRM   ---- Customer Relations Management

CW   ---- Control Word

DPO   ---- Distribution Platform Operator

DTH   ---- Direct To Home

DAS   ---- Digital Addressable System

ECM   ---- Entitlement Control Message

EMM   ---- Entitlement Management Message

FTA   ---- Free To Air

HITS   ---- Headend In The Sky

HD   ---- High Definition

IF   ---- Intermediate Frequency

IPTV   ---- Internet Protocol TV

IPR   ---- Intellectual Property Rights

IRD   ---- Integrated Receiver & Decoder

LNBC   ---- Low Noise Block down Converter

OSD   ---- On Screen Display

SAF   ---- Subscriber Acquisition Form

SD   ---- Standard Definition

STB   ---- Set Top Box

TRAI   ---- Telecom Regulatory Authority of India

8 ANNEXURES

Particulars	Subscriber base > 50 Lakhs	Subscriber base between 10 Lakh to 50 Lakh	Subscriber base between 1 Lakh to 10 Lakh	Subscriber base less than 1 Lakh
Processor	Intel® Core™ i7	Intel® Core™ i5 or i7	Intel® Core™ i5 or i7	Intel® Core™ i5 or i7
Hard Disk Space available in C drive	1 TB or above	500 GB or above	500 GB or above	1 GB or above
RAM	16 GB or above	16 GB or above	8 GB or above	8 GB or above
Partition in drive	No partition required in the drive, need a single drive	No partition required in the drive, need a single drive	Not Applicable	Not Applicable
Data source location (Local/Server)	RDP	Local or RDP	Local	Local
Operating System – 32 bit / 64 bit	Windows 64bit	Windows 64bit	Windows 64bit	Windows 64bit
Microsoft SQL Server Management Studio & SQL Server Data Tools (SSDT)	Microsoft SQL Server developer edition	Microsoft SQL Server developer edition	Microsoft SQL Server developer edition/Microsoft Access	Microsoft SQL Server Express/ developer edition, Microsoft Access, Microsoft Excel
	(not Express edition)	**(not Express edition)**	**(not Express edition)**	Express edition /Developer
	(any year version of 2012 / 2014 /2016 /2017)	(any year version of 2012 / 2014 /2016 /2017)	(any year version of 2012 / 2014 /2016 /2017)	(any year version of 2012 / 2014 /2016 /2017)
	Complete suite of SSDT or Visual Studio Professional	Complete suite of SSDT or Visual Studio Professional	Complete suite of SSDT or Visual Studio Professional	Complete suite of SSDT or Visual Studio Professional

Data source format	.csv or .txt	.csv or .txt	.csv or .txt	.csv or .txt /excel (.xlsx, .xls)

(On CAS company letterhead)

TO WHOMSOEVER IT MAY CONCERN

This   is   to   certify   that   M/s

_____

address:_____

having   its   DAS   headend   at

_____

has installed Conditional Access System (CAS) from our company for its distribution network.

Date of CAS Installation and operational: _____ CAS Version: _____

CAS ID: _____, Network ID: _____

Location of CAS servers (Database server, ECMG, EMMG): _____

Detail of main and back up CAS servers installed:_____--_____

Server time format:_____

Database detail :_____

Attached schematic diagram of CAS network including ECMG/EMMG & other servers installed in headend/remote/back up headend.

With respect to the CAS installed at above mentioned headend and in terms of Schedule-III of THE TELECOMMUNICATION (BROADCASTING AND CABLE) SERVICES INTERCONNECTION (ADDRESSABLE SYSTEMS) REGULATIONS, 2017 of TRAI, we confirm the following:

1) All activation and deactivation of STBs can be done with the commands of the SMS. – CAS certificate to be in two parts – DPO and CAS vendor
2) The current version of CAS does not have any history of hacking.
3) We have the capability of upgrading of CAS in case it gets hacked.
4) The CAS is currently in use by other pay TV services and it has an aggregate of at least 1 million subscribers in the global pay TV market.
5) It is not possible to alter the data and logs recorded in the CAS.
6) We, the CAS system provider are able to provide monthly and date wise log of   activation and deactivation on a particular

channel or on a particular Bouquet / Subscriber Package.

7) We have the technical capability in India to maintain the CAS system on 24x7 basis through the year.
8) This CAS is capable of individually addressing subscribers, on a channel by channel and STB by STB basis.
9) This CAS is independently capable of generating, recording, and maintaining logs, for the period of at least immediate preceding two consecutive years, corresponding to each command executed in the CAS including but not limited to activation and deactivation commands issued by the SMS.
10) The CAS has the capability of upgrading STBs over-the-air (OTA), so that the connected STBs can be upgraded.
11) The CAS has the capacity to activate or deactivate services or STBs of at least 10% of the subscriber base of this customer's distribution network within 24 hours.

Please find enclosed a sample of transaction logs corresponding to each command executed in the CAS including but not limited to activation and deactivation commands issued by the SMS.

Thanking you,

For (CAS company name)

(Signature)

Name :

Designation : (not below the level of COO or CEO or CTO)

Date :

Company seal :

Date: (within 30 days prior to audit)

(On SMS Company Letter Head)

Date:

TO WHOMSOEVER IT MAY CONCERN

This is to certify that M/s
_____, address:
_____ having its
DAS headend at _____ has
installed Subscriber Management System (SMS) from our company for its
distribution network.

Date of installation of SMS: _____ SMS
Version:_____

 Location of SMS servers: _____

SMS Database detail with number of instances
created:_____

Please find enclosed the schematic diagram of SMS and CAS system(s)
integration.

With respect to the CAS installed at above mentioned headend and in terms of
Schedule-III of THE TELECOMMUNICATION (BROADCASTING AND CABLE)
SERVICES INTERCONNECTION (ADDRESSABLE SYSTEMS) REGULATIONS,
2017 of TRAI, we confirm the following:

1)   The SMS is currently in use by other pay TV services that have an
aggregate of at least 1 million subscribers in the global pay TV market (wherever
applicable)

2)   The SMS has the capacity to activate or deactivate services or STBs of at
least 10% of the subscriber base of the distributor within 24 hours.

3)   We have the technical capability in India to be able to maintain our
systems on 24x7 basis through the year.

4)   We, the SMS system provider are able to provide monthly and date wise
log of activation and deactivation on particular channel or on a particular
Bouquet / Subscriber Package with date/time stamp.

5)   The SMS is capable of individually addressing subscribers, on a channel by channel and STB by STB basis.

6)   This SMS is independently capable of generating log of all activations and deactivations.

7)   The SMS shall be independently capable of generating, recording, and maintaining logs, for the period of at least immediate preceding two consecutive years, corresponding to each command executed in the SMS including but not limited to activation and deactivation commands. (as per period of service)

8)   Please find enclosed sample log of activations & deactivations of a channel generated from this SMS system.

Thanking you,

For (SMS company name)

(Signature)

Name   :

Designation: (not below the level of COO or CEO or CTO)/Authoirzed signatory

Company seal   :

Technical Questionnaire for DAS Headend (Headend, CAS, SMS, STB, Anti piracy & EPG) (to be put in prerequisite of signals)

Headend audit : ....   Date : ....

Address of the headend ....

Headend technical person : ....Contact No. ..

1	No..of SD & HD Channels presently running in the network		**FTA**	**PAY**	**TOTAL**	**Total no. of Transport Stream**
		SD				
		HD				

Sl. No.	CAS Make	Version	For Software based (Cardless)			Server Location
			Encryption Strength	**Key Length**	**Video Scrambling**	
1						
2						

Sl. No.	SMS Make	Version	Date of Installation	Server Location
1				
2				

Sl. No.	STB Make	Model	(HD, SD, PVR)	MPEG 2/4	Card/ Cardless	Embedded CAS Name
1						
2						
3						
4						
5						

A) Conditional Access System (CAS) & Subscriber Management System (SMS)		**Yes/No**
1	Is the SMS computerized and capable to record the vital information and data concerning the subscribers such as:	
	a. Unique Customer Id	
	b. Subscription Contract number	
	c. Name of the subscriber	
	d. Billing Address	
	e. Installation Address	
	f. Landline telephone number	
	g. Mobile telephone number	

	h. Email id		
	i. Service/Package subscribed to		
	j. Unique STB Number		
	k. Unique VC Number		
2	Is the SMS able to undertake the following:		
	a. Viewing and printing historical data in terms of the activations, deactivations etc.		
	b. Location of each and every set top box VC unit		
	c. Is the SMS capable of giving the reporting at any desired time about:		
	i. The total no subscribers authorized (as on any particular date)		
	ii. The total no of subscribers on the network (as on any particular date)		
	iii. The total no of subscribers subscribing to a particular service at any particular date.		
	iv. The details of channels opted by subscriber on a-la carte basis.		
	v. The package wise details of the channels in the package with service ID.		
	vi. The package wise subscriber numbers.		
	vii. The ageing of the subscriber on the particular channel or package		
	viii. The history of all the above mentioned data for the period of the last 2 years		
3	Are SMS and CA integrated for activation and deactivation process from SMS to be simultaneously done through both the systems? Is the CA system independently capable of generating log of all activation and deactivations?		

		CAS	SMS
4	Are SMS & CAS capable of individually addressing subscribers, on a channel by channel and STB by STB basis?		

5	For VC based CAS, is the STB & VC paired from head-end to ensure security?	
6	Is CAS system provider able to provide monthly log of the activations on a particular channel or on the particular package?	
7	Is SMS able to generate itemized billing such as content cost, rental of the equipments, taxes etc?	

		CAS	SMS
8	Do CAS & SMS have provision to tag and blacklist VC numbers and STB numbers that have been involved in piracy in the past to ensure that the VC or the STB can not be redeployed?		

9	Is CAS able to provide reports at any desired time about:	
	a. Active and De-active VC wise details as on date	

		STB1	STB2	STB3	STB4	STB5
	b. Active and De-active VC wise details as on month end for any particular period					
	c. Activation and De-activation logs for VC on a particular channel or on the particular package for any particular period					
10	Is CAS & SMS able to provide reports at any desired time about:	CAS		SMS		
	a. VC wise log of changes in packages/channels for any particular period					
	b. Logs of creation and modification of packages for any particular period					
12	Total No. of STBs deployed in the network presently?	In field SD: In field HD:				

B) Fingerprinting & Scroll messaging		STB1	STB2	STB3	STB4	STB5
		Yes/No				
1	Is FP Facility available (ECM/EMM) a. Visible (Overt)					
	b. Invisible (Covert))?					
2	Is the finger printing removable by pressing any key on the remote control / front panel of STB?					
3	Is the fingerprinting on the top most layer of the video?					
4	Can the Finger printing identify the unique STB number or the unique Viewing Card (VC) number?					
5	Does fingerprinting appear on all the screens of the STB, such as Menu, EPG etc.?					
6	Is the location of the Finger printing changeable from the Headend and random on the viewing device?					
8	Is finger printing possible on global STB basis?					
	Is finger printing possible on individual STB basis?					
9	Is overt finger printing displayed by the MSO without any alteration with regard to the time, location, duration and frequency.					
10	Is the STB capable of doing finger printing and support Entitlement control message (ECM) based finger printing?					
	Is the STB capable of doing finger printing and support Entitlement management Message (EMM) based finger printing?					
11	Is the scroll messaging character length 120 or more?					
12	Does STB has forced messaging capability?					
13	Is there provision for the global messaging, group messaging and the individual STB messaging?					

D) STB	STB1	STB2	STB3	STB4	STB5

		Yes/No				
1	Is Valid BIS certificate of each model of STB available?					
2	Does the STBs with facilities for recording the programs have copy protection system?					
3	Is STB addressable to be upgraded by OTA?					
4	Watermark of the network logo is Encoder or STB generated?					

<div align="right">**Annexure 5**</div>

Initial Questionnaire & Data Request before commencing the Audit

S.No	Area	Data requested	DPO Response
1	**Head End**	**General Details**	
1.1	**Details**	Headend Location	
1.2		Date of establishment of the Headend	
1.3		Number of digital headend/sub Headends with encryption details and areas covered	
2		**Hardware Details (if it is not covered in network diagram of all DHE's)**	
2.1		Details of IRD's with make & model number	
3		**Others**	
3.1		Local Channel detail:(number of local channels)	
3.2		Is a unique LCN defined for each channel(Service ID)	
3.3		Encryption:	
3.4		Transport streams:	
3.5		Number of Transport Streams	
3.6		Watermarking:	
3.7		Is watermark inserted? If yes, from where?	
4		**Features**	
4.1		Make & version number	
4.2		Types of STB's used with make, model number & compatibility with CAS	
4.3		STB-VC ID Pairing details if applicable	
4.4	**Subscriber Management System (SMS)**	Modules in SMS & the activities performed for each of the module	
4.5		Audit/trail/log of all changes for all changes made to the customer account & STB	
4.6		Channels to package mapping	
4.7		Fingerprinting (STB wise, Group/All)	
4.8		Messaging (STB wise, Group/All)	
5		**Reporting**	

5.1		Is reporting module configured to extract the following reports:	
5.2		As on historical date, count and details of STB status (active/deactive) as per the system	
5.3		Count and details of Activation/ deactivation of STBs for a defined period	
5.4		STB/Account wise Package modification report for a defined period	
6		**Features**	
6.1		Number of CA systems installed at the headend & the version of each	
6.2		Number of channels configured on each CAS	
6.3		Channel(SID) to package/product mapping	
6.4		Fingerprinting (STB wise, Group/All)	
6.5	**Conditional Access System (CAS)**	Messaging (STB wise, Group/All)	
6.6		Audit/trail/log of all changes for each CAS	
7		**Reporting**	
7.1		Is reporting module configured to extract the following reports:	
7.2		As on historical date, count and details of active STB status as per the system	
7.3		Activation and deactivation log for each STB/ VC Id	
7.4		Activation and deactivation log of channels and packages for each STB/ VC ID	

Undertaking

I hereby undertake that all the above information provided by me is complete and correct in all respect.

(Signature)

Name   :

Designation: (not below the level of COO or CEO or CTO)/Authoirzed signatory

_____

Company seal   :

To

      News Broadcasters' Association and Indian Broadcasting Foundation

Subject: -   Audit of M/s ... .

I/We, …………….. Auditor, will be auditing the digital addressable systems of M/s ………………… from …………………to………………………at ……………………… You may nominate an observer for oversight during the data extraction process.

AUDIT REPORT

On

"DIGITAL ADDRESSABLE SYSTEM (CAS, SMS & STB)

OF

"_____< NAME OF THE DPO>"

Installed at

_____<ADDRESS OF THE DPO>

PREPARED AND ISSUED BY

_____< Name of the Auditor/ Audit Agency>

FOR

Ascertaining Conformity schedule III of Telecommunication (Broadcasting & Cable) Services Interconnection (Addressable Systems) Regulations 2017, No. 1 of 2017, dated March 3rd , 2017 issued by TRAI

File No: _____   Date:

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1.1 Standard Definitions

2   Digital Addressable System of M/s _____-.

2.1 Brief on System _____.

2.2 Digital Addressable System Infrastructure

2.3 Content Reception at End-User Point

2.4 Customer Acquisition Process

3   Methodology Adopted for Audit

4   Compliance checks with reference to TRAI Regulations

4.1 Conditional Access System (CAS) and Subscriber Management System (SMS)

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4.3 Set Top Box

5   Auditor Findings and Observations with reference to TRAI Regulations:

6   Audit Conclusion by ____

Annexures

6.1 Annexure 1: MSO /DPO Registration Letter from MIB

6.2 Annexure 2: Sample Subscriber Application Form (SAF)

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6.7 Annexure 7: Sample SMS Report- Viewing and Printing Historical Data in Terms of Activations & De-activations

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6.9 Annexure9: The total number of subscribers authorized

6.10   Annexure 10: The total number of subscribers on the network

List of Tables

AUDIT REPORT ON DIGITAL ADDRESSABLE SYSTEM
OF
M/s _____

Introduction

<Brief Introduction of MSO>

Standard Definitions

Digital Addressable System of M/s _____

Brief on M/s _____

M/s _____ has been granted registration as a Multi System Operator (MSO) by Ministry of Information & Broadcasting under Rule 11C of the Cable Television Network (Amendment) Rules, 2012 to operate in pan India DAS notified. **(Annexure-1)**

Offices of the Company:

Registered Office

_____

<address>

Headend Location

_____

<address>

CAS and SMS Server Location

_____

<address>

Digital Addressable System Infrastructure

a) ____ has implemented a combined facility for downlink and content aggregation, for digital cable TV services. The facility comprises of:
   i. <Dish Farm >
   ii. Downlink facility for channel aggregation
   iii. Digital Headend comprising of IRD's, Encoders, QAM Modulators etc.
   iv. CAS from M/s _____for encryption of digital cable TV services
   v. Subscriber Management System from M/s _____ for managing digital cable TV operations.

b) Number of subscribers, network details etc.

c) During the conduct of audit ____ (FTA) and ____ (Pay) encrypted video channels were being turned around at the digital headend of ___. The digital addressable system is capable of managing the entitlements for bouquets as well as a-la-carte channels.

d) Free to Air channels on the Digital Cable TV platform are received from various satellites, signal is processed and encrypted. The Headend facility of _____ has Dish Antenna farm and an IF Router to distribute the signals of each dish Antenna to multiple Satellite decoders/ IRDs. The Signals received from satellites are conditioned for Digital Cable TV platform. This involves the following steps:
   i. Signal/ Data acquisition function which is performed by IRD, CI, Encoder etc.
   ii. Signal/ Data processing function which is performed by Multiplexers, Switches, QAM Modulators, Combiners etc.
   iii. Addressability which is performed by CAS, SMS & STB.

e) The Encryption system (CAS) from M/s _____ is used for content protection with Entitlement Control Messages and Entitlement Management messages features. The Subscriber Authorization System (SAS) is a part of encryption system of _____ and is connected with the SMS.

f) The ____Encryption system is deployed in the Digital CATV platform as CARDED CAS. The viewing rights are controlled by the EMM generated by CAS through SMS.

g) ____ has deployed SMS from M/s _____ installed at headend. The SMS comprises of a Data Base and Application Server which is connected with Conditional Access Gateway at one end and to Database Server on the other end. ECM, EMM and Control Word (CW) information is fed into the MUX through the CAS gateway. SMS of _____ is <integrated> (To Check) with Customized Billing, Inventory & logistics and CAS activations / deactivations logs, along with other functions. (Inference to be recorded).

Content Reception at End-User Point

a) At present only FTA channels are being turned around at the headend. ____ has the necessary infrastructure to retransmit the signals (FTA + Pay Channels) to LCO or directly to customer premises over the HFC network.

b) At the LCO premises signal is received from the digital Headend over the HFC network, through a receiving node. This node is basically a bridge between optical and copper media and converts optical signal to RF signal, which can be retransmitted over RF co-axial network by cable operator to the customer premises.

c) Customer premises equipment (CPE) consists of STB enabled through CA System for de-multiplexing, demodulation & decryption. STB is installed by the LCO at the customer premise after getting request from the customer for subscription of Digital CATV service.

Customer Acquisition

a) Any customer who would wish to subscribe to digital CATV services can approach the authorized LCO providing CATV services in the customer's area or directly to the MSO/ DPO. After filling the SAF (Subscriber Application Form) (along with ID Proof/ Address Proof) and payment, STB would be installed at the customer's premise by the LCO/ technician. The LCO thereafter submits the SAF to _____ along with KYC (know your customer) documents. Then the SMS team will authorize the subscriber formally. A sample SAF is annexed as **Annexure- 2.**

Methodology Adopted for Audit

a) A <Audit Agency Name> Official was deputed to conduct the audit. The audit visit was carried out from 1st November 2017 to 3rd November 2017.

b) As _____ has rolled out its services in _____and having subscriber base/data, the compliance check and technical audit were carried out.

c) The procedures being followed for implementation of CAS and SMS and integration of the same were audited keeping in view the TRAI Regulations.

d) Deployment of Conditional Access System (CAS) by _____ and its provisions as mandated in TRAI regulations were checked and verified.

e) Deployment of Subscriber Management System by _____ and its provisions as mandated in TRAI regulations were checked & verified.

f) Deployment of Set Top Box (STB) by _____ and its provisions as mandated in TRAI regulations were checked & verified.

g) The CAS and SMS as integrated systems were checked against an audit proforma prepared by <Audit Agency> dully filled and signed by _____ **(Annexure-3).** This audit proforma was prepared on the lines of Audit Manual issued by TRAI vide Regulation No 1 of 2017 issued on _____.

h) Based on the observations and findings during the audit, a para-wise compliance to TRAI Regulations has been recorded in Section –4 of the report.

Compliance checks with reference to TRAI Regulations
Conditional Access System (CAS) and Subscriber Management System (SMS)

a) For Digital Addressable System, _____ is using M/s _____ encryption system for content protection. The CA System deployed have the following components to secure any of the end-client applications:

i. ECMG (Entitlement Control Messaging Generator) & EMMG (Entitlement Management Messaging Generator)

ii. CWG (Control Word Generator)

iii. Scrambler

b) The CAS system is integrated with SMS. The OEM of CAS _____ has certified that its CA System does not have any history of hacking, if hacked the systems can be upgraded by updating their software. The CAS deployed is capable of handling at least 1 million subscribers and has the technical capabilities to maintain the system on 24x7 basis and throughout the year. **(Annexure- 4).**

c) The 'SMS' installed by _____ for management of its subscribers database and related parameters is developed by _____ has provision for different applications such as Subscriber Information, Report Generation and activation/deactivation of STBs, logistic management etc. as mentioned below. The SMS deployed is capable of handling at least 1 million subscribers and has the technical capabilities to maintain the system on 24x7 basis and throughout the year. **(Annexure- 5)**

d) SMS has the provision to manage the logistic requirements of STB.

e) The customer care module is yet to be completely implemented in SMS of _____. The customer care is manually managed by _____.

f) The SMS of _____ has the provision of generating itemized bills to the subscribers. A sample bill is attached. **(Annexure-6)**

g) The SMS data base can generate all the reports as mandated in TRAI Regulations.

Following TRAI listed CAS & SMS Requirements were checked:

Table 1: Table Showing Compliance Status of CAS & SMS as per TRAI Regulations

S. No.	Regulation Requirement	Compliance Status
1.	The current versions of the conditional access systems should not have any history of the hacking.	Certificate provided by CAS vendors **(Annexure-4)**
2.	The fingerprinting should not get invalidated by use of any device or software.	Checked and found to be compliant
3.	The STB & VC should be paired from head-end to ensure security.	Checked and found to be compliant
4.	The SMS and CA should be integrated for activation and deactivation process from SMS to be simultaneously done through both the systems. Further, the CA system should be independently capable of generating log of all activations and deactivations.	Checked and found to be compliant.
5.	The CA company should be known to have capability of upgrading the CA in case of a known incidence of the hacking.	Certificate provided by CAS vendors **(Annexure-4)**
6.	The SMS & CAS should be capable of individually addressing subscribers, on a channel by channel and STB by STB basis.	Checked and found to be compliant
7.	The SMS should be computerized and capable to record the vital information and data concerning the subscribers such as: a) Unique Customer Id, b) Subscription Contract no, c) Name of the subscriber, d) Installation Address, e) Landline no., f) Mobile No., g) Email id, h) Service /Package subscribed to, i) Unique STB No., j) Unique VC No.	Checked and found to be compliant
8.	The SMS should be able to undertake the:	
	a) Viewing and printing historical data in terms of the activations, deactivations etc.	Checked and found to be compliant **(Annexure-7)**
	b) Location of each and every set top box/VC unit	Checked and found to be compliant **(Annexure-8)**
	c) The SMS should be capable of giving the reporting at any desired time about:	Checked and found to be compliant
	i. The total number of subscribers authorized	**Annexure- 9**
	ii. The total number of subscribers on the network	**Annexure-10**
	iii. The total number of subscribers subscribing to particular service at any particular date	**Annexure-11**
	iv. The details of channels opted by subscriber on a-la-carte basis	**Annexure-12**
	v. The package wise details of the channels in the package	**Annexure-13**
	vi. The package wise subscriber numbers	**Annexure-14**

S. No.	Regulation Requirement	Compliance Status
	vii. The ageing of the subscriber on the particular channel or package	**Annexure-15**
	viii. The history of all the above mentioned data for the period of the last 2 years	SMS is capable for keeping and maintaining the historical data for last 2 years.
9.	The SMS and CAS should be able to handle at least one million concurrent subscribers on the system.	Certificate provided by CAS vendors **(Annexure-4)** Certificate provided by SMS vendor **(Annexure-5)**
10.	Both CA & SMS systems should be of reputed organization and should have been currently in use by other pay television services that have an aggregate of at least one million subscribers in the global pay TV market.	CAS is from ____ SMS is also from _____ Self-Declaration certificate regarding capability to support 1 million subscribers are provided by CAS & SMS vendor.
11.	The CAS system provider should be able to provide monthly log of the activations on a particular channel or on the particular package.	Checked and found to be compliant **(Annexure-16)**
12.	The SMS should be able to generate itemized billing such as content cost, rental of the equipment, taxes etc.	Checked and found to be compliant **(Annexure-8)**
13.	The CA & SMS system suppliers should have the technical capability in India to be able to maintain the system on 24x7 basis throughout the year.	Self-Declaration certificate regarding technical capability are provided by CAS & SMS vendor. **(Annexure 4 & 5)**
14.	CAS & SMS should have provision to tag and blacklist VC numbers and STB numbers that have been involved in piracy in the past to ensure that the VC or the STB cannot be re-deployed.	Checked and found to be compliant **(Annexure-17 and Annexure-18)**

Finger Printing

a) The Finger Printing facility is available in the CA system deployed. The finger print is randomly or statically placed in the viewer's screen.

b) This facility can be utilized for all customers, group of customers or for individual selected STB. The Finger Print identifies each STB. The finger

printing displays the unique VC no. on the screen and does not interfere with Broadcaster's Finger Printing.

c) Messaging System (handling up to 120 characters) is available in the Conditional Access System deployed by _____. The feature is available in CA System for generating Forced Messaging and Individual Messaging integrated with SMS. As per the TRAI regulations, the On Screen Display (OSD) cannot be disabled at the STB end.

Fingerprinting and OSD Requirements as per TRAI regulations were checked for STBs made available during the conduct of audit and details are given below:

Table 2: Table Showing Compliance Status of Finger Printing as per TRAI Regulations

S. No.	Regulation Requirement	Compliance Status
1.	The finger printing should not be removable by pressing any key on the remote.	Checked & Found to be Compliant
2.	The Finger printing should be on the top most layer of the video.	Checked & Found to be Compliant
3.	The Finger printing should be such that it can identify the unique STB number or the unique Viewing Card (VC) / Chip ID number.	Checked & Found to be Compliant.
4.	The Finger printing should appear on all the screens of the STB, such as Menu, EPG etc.	Checked & Found to be Compliant
5.	The location of the Finger printing should be changeable from the Headend and should be random on the viewing device.	Checked & Found to be Compliant.
6.	The Finger printing should be able to give the numbers of characters as to identify the unique STB and/ or the VC / Chip ID.	Checked & Found to be Compliant
7.	The Finger printing should be possible on global as well as on the individual STB basis.	Checked & Found to be Compliant
8.	The Overt finger printing and On screen display (OSD) messages of the respective broadcasters should be displayed by the service provider without any alteration with regard to the time, location, duration and frequency.	Checked & Found to be Compliant
9.	No common interface Customer Premises Equipment (CPE) to be used.	Checked & Found to be Compliant
10.	The STB should have a provision that OSD is never disabled.	Checked & Found to be Compliant.

Set Top Box

a) At present, the STBs available at _____ for providing the digital cable TV services are given below:
   ➤ Make : Surbhi Satcom Pvt. Ltd. (Model –mBox4C)

b) The STBs of the above mentioned make and model were audited by <Audit Agency> w.r.t TRAI regulations.

c) The STB OEMs have submitted the BIS Compliance certificates as per mandate of TRAI regulations.**(Annexure-19)**

Following TRAI listed STB Requirements were checked:

Table 3:   Table Showing Compliance Status of STBs as per TRAI Regulations

S. No.	Regulation Requirement	Compliance Status
1.	All the STBs should have embedded Conditional Access.	Checked and found to be compliant
2.	The STB should be capable of decrypting the Conditional Access inserted by the Headend.	Checked and found to be compliant
3.	The STB should be capable of doing Finger printing. The STB should support both Entitlement Control Message (ECM) & Entitlement Management Message (EMM) based fingerprinting.	Checked and found to be compliant
4.	The STB should be individually addressable from the Headend.	Checked and found to be compliant
5.	The STB should be able to take the messaging from the Headend.	Checked and found to be compliant
6.	The messaging character length should be minimal 120 characters.	Checked and found to be compliant
7.	There should be provision for the global messaging, group messaging and the individual STB messaging.	Checked and found to be compliant
8.	The STB should have forced messaging capability.	Checked and found to be compliant
9.	The STB must be BIS compliant.	BIS compliant certificates are annexed as **Annexure- 19**
10.	There should be a system in place to secure content between decryption & decompression within the STB.	Checked and found to be compliant
11.	The STBs should be addressable over the air to facilitate Over The Air (OTA) software upgrade.	Checked and found to be compliant

<Name of Audit Agency>Findings and Observations with reference to TRAI Regulations:

a) As mentioned that _____ has not rolled out its services and having no actual subscriber base/data, the compliance check and technical audit were carried out on dummy subscribers' data base.

b) _____ has deployed Conditional Access System from M/s _____ for encrypting the video Channels.

c) _____ has deployed SMS from _____ for managing the digital cable TV operations.

d) The Conditional Access System and Subscriber Management System are integrated with each other.

e) The Digital Addressable System of _____ meets the SMS requirements as mentioned in TRAI regulations.

f) The Digital Addressable System of _____ meets the CAS requirements as mentioned in TRAI regulations.

g) The Digital Addressable System of _____ meets the STB requirements mandated by TRAI regulations.

Audit Conclusion by _____

The Digital Addressable System (CAS, SMS and STB) available and installed at _____ as on _____ **meets** the minimum requirements as specified by TRAI under DAS Schedule – I of Telecommunication (Broadcasting and Cable) Services Interconnection (Digital Addressable Systems) Regulations, No. 1 of 2017, dated March 3, 2017 issued by TRAI.

(Auditors' Name and Signatures)
Date................   Date................

Annexure 8

(On DPO letterhead)

<u>TO WHOMSOEVER IT MAY CONCERN</u>

According to Regulation 10 (6) of the Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) Regulations, 2017, every distributor of TV channels, before requesting signals of TV channels from a broadcaster shall ensure that the addressable systems to be used for distribution of TV channels meet the requirements as specified in the Schedule III of the Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) Regulations, 2017.

In pursuance of the above-mentioned regulatory requirement, we do hereby certify that our addressable system is compliant with the requirements set out in

Schedule III of the Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) Regulations, 2017.

Copies of compliance certificates from the CAS and SMS Vendors in respect of the CAS and SMS installed at our premises, which form part of our addressable system, are attached herewith as Annexure 2 and Annexure 3.

We also certify that CAS does not use facility to activate and deactivate a Set Top Box (STB) directly from the CAS terminal.

We also certify that STB supports both visible (Overt) and covert types of fingerprinting. We also certify that STBs have a provision that fingerprinting is never disabled.

Yours sincerely,

For _____

Signature:

Name:

Designation:
Compliance Officer