

RESPONSE OF ZEE ENTERTAINMENT ENTERPRISES LIMITED

TO

**CONSULTATION PAPER ON THE TELECOMMUNICATION
(BROADCASTING AND CABLE) SERVICES DIGITAL ADDRESSABLE
SYSTEMS AUDIT MANUAL**

ISSUED BY TRAI ON 29TH MARCH 2019



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Introduction:

At the outset, we are thankful to the Telecom Regulatory Authority of India (TRAI) for having taken the initiative to propose an Audit Manual for Digital Addressable Systems relating to Audit of Distributor Operating Platforms (DPO's), which needs to be addressed on an urgent basis, especially as the implementation of New Tariff Order regime across the country has been completed.

To ensure the realization of legitimate subscription dues of the broadcasters in the digital regime wherein there has been a paradigm shift in the new tariff regime, and keeping in view the mode, and manner of availing the channels by the DPOs/subscribers in the said regime, it is imperative to have correct monthly subscriber reports from the SMS systems of the digital distribution platforms.

In digital regime the subscription revenue is contingent on two elements – (1) the rate of the channel, and (2) the number of subscribers availing that channel. While the rates of the channels are declared by the broadcasters universally as stipulated in the regulations, the channel subscription by the viewers is a variable component. The addressable systems can be manipulated to under report the channel subscriptions and this in turn directly and adversely affects the subscription revenue of the broadcasters. It is a generally known fact that most of the DPOs, especially in the digital cable sector are not furnishing the regular monthly subscribers reports at all. This blatant non-compliance to submit the reports exists despite the same being specifically and clearly laid out in the interconnect regulations and in the contractual agreements between these DPOs and the broadcasters. To ensure the authenticity and accuracy of the subscribers' reports, a robust technical and commercial audit process need to be in place which will not only safeguard the commercial interests of the broadcasters but will also effectively deter the distribution platforms which under report the subscriptions numbers and fail to comply with the regulatory obligations.

The objective of such audit is to ensure that the retransmission is done in digital form and addressable manner, this in turn poses a risk to the revenues of the broadcaster in case a "rogue" DPO or LCO decides to indulge in providing a localised feed in analogue mode or/and unencrypted form. Unless there is a stringent framework involving huge penalties for every act of non-compliance or violation of the regulations, Rogue DPO's will always find it convenient and beneficial to hide the actual number of subscribers by finding ways and means to by-pass the addressability recoded in the CAS and SMS.

Other instances in which the audit process can be bypassed is enumerated by the following example : A rogue DPO ,which has deployed a manipulated system in order to under report

may keep on resisting the audit exercise throughout the year and at the fag-end of the year (after temporarily correcting the manipulated system) may get the audit done, thus making it possible to hide the irregularities in the system and conceal the quantum of under reporting in the entire period prior to the audit exercise. In both situations mentioned herein above, the interest of the broadcaster is adversely affected.

Keeping into consideration the concerns elaborated above it is necessary to deal with the issue of scheduling of the Audits together with a detailed Audit manual in place. A clearly defined process should be in place for scheduling the Audit of rogue DPO's on the collective requests of the Broadcasters. Furthermore, the Audit of these rogue DPO's should be completed within the first 4 months, after empanelment of Auditors while the audits of the rest of the DPO's can be spread throughout the remaining duration of the year.

Having stated the above, we will now proceed to give our response to various questions outlined in the said Consultation Paper.

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)?

Response: As per clause 10(7) of the Regulation, the Audit of addressable systems of DPO can be conducted by the broadcaster before providing signals. The objective of this Audit is to validate and verify if the systems of the DPO are compliant, in terms of schedule III of the regulations. Once the signals have been provided by the broadcaster, in terms of the provision of Audit contained in clause 15(2) of the regulations the broadcaster can cause another audit if in the opinion of a broadcaster, at any point in time thereafter, the addressable system of the DPO do not meet the requirements as specified in schedule III. It is therefore evident that the certificate issued by the empanelled Auditor under clause 10(7) of the regulation pertains to the configuration of CAS, SMS and other related systems installed/operationalised at the DPO on the date of such Audit (usually the start of DPO operations, when signals are requested from the broadcaster), any subsequent changes in these systems shall automatically make such certification null and void and liable for requisite reverifications in order to check compliance to the schedule III of regulation.

It is therefore imperative that any changes/Additions/updates/deletions done in the CAS, SMS or related system, that in anyway change the parameters mentioned in schedule III of the regulations should be duly and timely informed to the broadcaster. On the receipt of such notification and related information , if in the opinion of a broadcaster ,the addressable system of the distributor does not meet the requirements specified in the Schedule III, the broadcaster after communicating the reasons in writing to the distributor, may invoke his right

under the clause 15(2) ,to audit such systems including the subscriber management system, conditional access system and other related systems of the distributor of television channels.

There is very limited information available to the broadcasters regarding the addressable systems deployed by the DPOs after the initial technical (prior to-signals) audit. Broadcaster is dependent on the DPOs for the information regarding the changes in CAS and SMS configurations, therefore it is important that the information related to any new deployments of CAS/SMS systems or additional instances of the existing systems, or any changes in parameters mentioned in schedule III for CAS/SMS & any related system, is timely and duly informed to the broadcasters.

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?

Response: There are multiple Vendors for CAS and SMS system and each system has its own proprietary format and coding of logs and reports. Broadcasters have been conducting audits of DPO's since year 2012 by engaging reputed audit firms which have developed proprietary tools/software's to decode these formats and developed tools to recalculate the correct subscriber base. These firms have designed and built their software by decoding the inherent logic, with a great accuracy for each of these CAS and SMS systems

- a. analysis and evaluation of data takes less time since the formats and codes need not be written from scratch every time and only minor modifications are to be done.
- b. Audit fieldwork and DPO management becomes independent of the capability of the resource at Audit site because of availability of pre-written codes/queries.
- c. Cost of Audit reduces since high cost resources (expert in Data modelling/Data analytics) are not required at each of the audit locations.
- d. Standardization of Audit reports, uniform and credible analysis in each audit, free from any cognitive bias or preferences of the Audit resource(s)

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

Response: Ideally Auditor should be allowed to use his Laptop and proprietary software to carry out Audits however hardware requirements provided in the consultation paper are sufficient from hardware perspective.

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?

Response:

After the signals are provided by the broadcaster, DPO submits monthly subscriber reports from the DPO systems (maintained and controlled by the DPO) with absolutely no accessibility, viewing or controlling rights to the broadcaster. Even during the Audit only those systems are Audited which are self-declared by the DPO's and are eventually made available for data extraction and Audit.

- (a) It is thus extremely important that the Auditor has prior information about CAS systems deployed by the DPO in field to service its customers
- (b) Auditor has requisite details of sample STB/VC numbers (with channels) which are installed/provided by the DPO at customer premises.

It is only by comparing the information of the installed CAS system with the sample STB/VC numbers and the data provided by DPO, that the Auditor can check for completeness and integrity of the data made available for the Audit. A lack of this information will make it difficult to ascertain if data provided during the audit, does not contain dummy information or is incomplete

In reference to the footnote number 17 on page 35 of the consultation paper, it is mentioned that "DPO to notify IBF/ NBA of proposed audit at least 10 days prior to the Audit. IBF/ NBA may provide sample data of not more than 100 such STB/ VCs". We are of a firm opinion that the sample of 100 is very small and does not provide enough inputs for a meaningful Audit. The size of a representative sample should be large enough to represent the following attributes

- i. Each Channel being carried by DPO
- ii. Each City/Area of Operation (Example Andheri, Worli, Palwal etc)
- iii. Each STB type of DPO
- iv. Each CAS deployed by the DPO
- v. Each month under audit

In our view sample size cannot be less than 500 for each audit exercise for an audit period of around one year, however for smaller DPO having presence in single city, IBF/NBA would restrict itself to a lesser sample size. Since field samples do not add to any cost to the DPO, nor considering them in comparative analysis increases the timelines of Audit as such there is no merit in restricting sample size to 100.

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?

Response:

- a. If Audit is done on sample weeks there is a high possibility of manipulation and DPO may exert influence to get only those weeks audited where correct reporting has been done selectively.
- b. It has also mentioned in clause 15(2) "Provided further that if such audit reveals that additional amount is payable to the broadcaster, the distributor shall pay such amount, along with the interest at the rate specified by the broadcaster in the interconnection agreement, within ten days and if such amount including interest due for any period exceed the amount reported by the distributor to be due for such period by two percent or more, the distributor shall bear the audit expenses, and take necessary actions to avoid occurrence of such errors in the future". Therefore, for doing the above-mentioned calculations it is essential and imperative that complete audit is carried out for all the months.
- c. The methodology of audit involves synthesis of subscriber numbers count from systemic logs. All logs in a sequence/event is to be used to create and derive a subscribers' count, no logs can be ignored or omitted in between.
- d. Once the data has been imported into database tables for analysis and to run the database queries it requires only a marginal effort to process and analyse the data for the months in the audit period. In our experience it should not take more than a few additional hours to complete the audit for all months as compared to doing it for sample weeks.

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

Response: Data extraction methodology has been described in detail however we have a few observations on the footnotes

As per foot note number 8 "As per system capability. In case the system does not allow such information, then DPO to provide an undertaking to this effect". As stated earlier in this document, the subscription count for a channel is dependent on the following two factors

- a) Subscriber base of the DPO
- b) Channels subscribed by the subscriber/viewer.

Auditor will have to recreate/re-establish the subscriber number of a channel by checking

- (a) The pack configuration i.e. Package channel mapping
- (b) The changes (additions/deletions) done in the pack
- (c) The effective date of changes done in the packs.

In absence of such information about the above changes done to the packages/packs, rogue DPO may change/alter the channel package mapping before report generation to masquerade the under reporting as in fact true and factual subscription. These changes will never be traceable during Audits if no logs are maintained in the systems or if these logs are not made available to the auditors.

If authority is of opinion that there are technical challenges in the DPO's systems, in such cases a time window of 60 days may be given to the DPOs to get their CAS and SMS updated.

As per foot note number 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"

Response same as provided for Q-5

As per foot note number 10 "During the first recorded audit all logs to be provided for preparing a first-time reference document. "

Ideally all logs should be provided from the start of operations of the DPO (or the date of deployment/operationalization of the addressable systems, as the case maybe) or else the Auditor shall have to rebase his analysis for a given audit duration, on the start and the end dates of a previous audit engagement, by a different auditor/Audit firm.

If all logs are not feasible from sizing perspective, then logs should be provided from start of operations

OR

at least from 28/12/2018

OR

2 years from Audit start date (whichever is older).

In this case logs provided during first recorded audit should be preserved to serve as a reference for subsequent audits.

As per foot note number 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.

This is not acceptable as logs can never be recreated, even the schedule III of the regulations maintains that logs should be uneditable.

However, it is possible that logs are stored in archive but in such cases, logs should be archived in such a way that DPO is not able to access the storage space to undertake any changes or access trail is captured securely. , Even the CAS vendor should not be able to edit such logs and these logs should be time and date stamped for activities such as rewriting or archiving ..

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?

Response: It is important to verify reported numbers during Audit -City-wise, State-wise and Head-end wise.

- a. Most of the subscription related market intelligence is available location wise and it is possible to identify any under reporting by any DPO subscriber number if available at granular level. At national level it is very difficult to pin point if the subscribers counts have been under reported.

For Instance, the Auditor can get to know under reporting done by a rogue DPO for Bangla channel in CR Park of Delhi or Tamil channel in Matunga of Mumbai if location wise count in data is available, in contrast at national level, where data of West Bengal and Tamil Nadu is also included Auditor will not be able to identify any misreporting. Similarly, if a DPO has different head-ends for each of the remote locations, then it would be difficult to under report for any specific headend as compared to a situation where consolidated number is provided for the Audit.

- b. Available Data from BARC shows area wise viewership, anyone analysing city wise/state wise report can find out a major discrepancy / under reporting.

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

Response: We agree with the tests and procedures for checking covert and overt fingerprinting

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

Response:

- a. There should be process of empanelling SMS and CAS vendors. There should also be a process of blacklisting (SMS/CAS) vendors on below mentioned parameters.
 - a. Number of deficiencies above a specific cap, noted in the audit work or during audits
 - b. Repeat deficiencies are observed

- c. CAS/SMS Vendor is found to be facilitating under reporting in any manner.
- b. Audit report format is incomplete as the report does not contain any information on subscriber numbers and can only be used for Audit as per clause 10(7), Please find suggested report format for Audit carried out as per clause 15(2)

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

- 1) _____ has implemented a combined facility for downlink and content aggregation, for digital cable TV services. The facility comprises of:
 - a) <Dish Farm >
 - b) Downlink facility for channel aggregation
 - c) Digital Headend comprising of IRD's, Encoders, QAM
 - d) Modulators etc.
 - e) CAS from M/s _____ for encryption of digital cable
 - f) TV services

- g) Subscriber Management System from M/s _____ for managing digital cable TV operations.
- 2) Number of subscribers, network details etc.
- 3) 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.
- 4) 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:
- a) Signal/ Data acquisition function which is performed by IRD, CI, Encoder etc.
 - b) Signal/ Data processing function which is performed by Multiplexers, Switches, QAM Modulators, Combiners etc.
 - iii. Addressability which is performed by CAS, SMS & STB.
- 5) 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.
- 6) 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.
- 7) _____ 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

Any customer who wishes to subscribe to digital CATV services can approach the authorized LCO providing CATV services in the area or the MSO/ DPO directly. 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. Thereafter, the SMS team authorizes the subscriber. 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 headend 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 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 a particular service at any specific 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
vii.	The ageing of the subscriber (subscription) on a channel or a 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 <u>(Vendor Name)</u> SMS is from <u>(Vendor Name)</u> 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 channel or on a 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 redeployed.	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.
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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/does not meet the SMS requirements as mentioned in TRAI regulations.
- f. The Digital Addressable System of _____ meets/does not meet the CAS requirements as mentioned in TRAI regulations.
- g. The Digital Addressable System of _____ meets/does not meet the STB requirements mandated by TRAI regulations.

Comparison of status of VCs between SMS and CAS

As on audit date (Nov 30, 2018), it was observed that the count of active subscribers as per SMS was **xxxx** and as per CAS was **yyyy**. The count of active VCs in SMS and not in CAS was **aaa** and vice versa was **bb**.

System	Distinct SMS	Distinct CAS	In SMS not in CAS	In CAS not in SMS
Kingvon	100	105	10	5
Gospell	200	210	20	20
Total	300	315	40	65

Comparison of status of VCs with packages/A-la-carte channels between SMS and CAS

As on audit date (Nov 30, 2018), it was observed that the count of active subscribers as per SMS was **pppp** and as per CAS was **rrrr**. The count of active VCs in SMS and not in CAS was **eeee** and vice versa was **gggg**

System	Distinct SMS	Distinct CAS	In SMS not in CAS	In CAS not in SMS
Kingvon	200	220	10	20
Gospell	400	420	15	45
Total	600	640	25	65

Comparison of average count of subscribers in SMS and CAS

We extracted the month-end SMS and CAS data for the audit period (Jan 2018 to Oct 2018) and audit date (Nov 30, 2018). On comparison of average count of subscribers from SMS and average count of CAS, following variances were noted:

Month	Base Data		Difference
	SMS	CAS	CAS-SMS
	(A)	(B)	(B-A)
Oct-18	610	600	-10
Sep-18	605	607	2
Aug-18	600	629	29
Jul-18	610	655	45
Jun-18	610	655	45
May-18	610	655	45
Apr-18	610	655	45
Mar-18	610	655	45
Feb-18	610	655	45
Jan-18	610	600	-10

CAS Wise Bifurcation:

Universe (CAS1)				
Month	SMS	CAS	In SMS not in CAS	In CAS not in SMS
Nov 30, 2018	400	410	5	15
Oct-18	405	420	10	25
Sep-18	0	0	0	0
Aug-18	0	0	0	0

Universe (CAS2)				
Month	SMS	CAS	In SMS not in CAS	In CAS not in SMS
Nov 30, 2018	200	210	5	15
Oct-18	205	220	10	25
Sep-18	205	220	10	25
Aug-18	205	220	10	25

Comparison of status of VCs in extracted month-end and status of VCs constructed through logs for SMS and CAS (Universe)

The status of VCs between month-end data extracted and constructed using transaction logs should be consistent in SMS and CAS. We extracted SMS & CAS month-end data and transaction logs for the audit period (Jun 2018 to Oct 2018). On comparison of counts of active distinct VCs between SMS and CAS extracted month-end and month-end constructed through logs, following variances were noted:

Total Universe (CAS1 + CAS2)								
Month	SMS			CAS			Difference	
	Month-end Extracted	Month-end Constructed through Logs	Difference	Month-end Extracted	Month-end Constructed through Logs	Difference	(D) - (A)	(E) - (B)
	(A)	(B)	(C) = (B) - (A)	(D)	(E)	(F) = (E) - (D)		
18-Oct	605	852	247	605	800	195	0	-52
18-Sep	603	850	247	600	700	100	-3	-150
18-Aug	600	600	0	700	700	0	100	100
18-Jul	600	585	-15	800	700	-100	200	115
18-Jun	600	612	12	300	700	400	-300	88

Channel-wise count of subscribers from extracted SMS, CAS

Following is the tables highlighting the channel wise count of subscribers for each month-end from SMS and CAS

(To be created as separate Annexure for each broadcaster)

SMS (CAS1 + CAS2)					
Channel name	Nov 20, 2018	Oct-18	Sep-18	Aug-18	Jul-18

Star Plus	2,404	1,901	1,936	1,914	1,928
Zee Tv	2,404	1,901	1,936	1,914	1,928
Colours	2,404	1,901	1,936	1,914	1,928
Sony	2,404	1,901	1,936	1,914	1,928
Channel 10	2,404	1,901	1,936	1,914	1,928
Channel 11	2,404	1,901	1,936	1,914	1,928

Comparison of status of VCs in extracted month-end and status of VCs constructed through logs for SMS and CAS (Channel wise)

The status of VCs between month-end data extracted, and constructed using transaction logs should be consistent in SMS and CAS. We extracted SMS & CAS month-end data and transaction logs for the audit period (Jun 2018 to Oct 2018). On comparison of counts of active distinct VCs between SMS and CAS extracted month-end and month-end constructed through logs, following variances were noted: -

(To be created as separate Annexure for each broadcaster for every channel)

Total Universe (CAS1 + CAS2)								
Month	SMS			CAS			Difference	
	Month-end Extracted	Month-end Constructed through Logs	Difference	Month-end Extracted	Month-end Constructed through Logs	Difference	(D) - (A)	(E) - (B)
	(A)	(B)	(C)= (B) - (A)	(D)	(E)	(F)= (E) - (D)		
18-Oct	605	852	247	605	800	195	0	-52
18-Sep	603	850	247	600	700	100	-3	-150
18-Aug	600	600	0	700	700	0	100	100
18-Jul	600	585	-15	800	700	-100	200	115
18-Jun	600	612	12	300	700	400	-300	88

Variance in Package composition from SMS and CAS

The historical composition from SMS and CAS should synchronise. Following is a table highlighting the difference in package composition (count of channels) in SMS and CAS:

CAS1						
Package ID	Package Name	Period	SMS		CAS	
			Count	In SMS not in CAS	Count	In CAS not in SMS

1	PACK DAS IV		1	Channel T	1	Channel A
2	PACK DAS III		1	Channel T	1	Channel B HD

Discrepancies found in Ground samples and Data provided during Audit

Field Samples not found in Audit data	Aug'18	Sep'18	Oct'18	Nov'18
Channel1				
Channel1				

%age Field Samples not found in Audit data (as percentage of channel count as per SMS)	Aug'18	Sep'18	Oct'18	Nov'18
Channel1				

Additional CAS found in TS for which data not provided during Audit

Other Important data not provided

Observation on every exception found to be provided against each Audit step mentioned in section 4.3- Audit procedure

SI No	Regulatory provision	Audit Step	Observation/exception/Non-Compliance
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.	Watermark Logo Not inserted from Headend

Audit Conclusion by _____

The Digital Addressable System (CAS, SMS and STB) available and installed at _____ as on _____ meets/does not meet 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.....

Conclusion:

In view of the above proposed recommendations ,intended to build a robust, transparent and credible Audit frame work, the moot requirement is to ensure that a true and correct reporting, coupled with fact finding audit exercise credibly reveals the actual number of subscribers serviced by a DPO.This shall ensure and safeguard that the revenues payable to the Broadcaster and the tax liability to the Government are in accordance with the size and the volume of the business of the DPO.

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