

**RESPONSE BY  
DISH TV INDIA LIMITED  
TO THE  
CONSULTATION PAPER  
ON  
INTEROPERABILITY OF SET TOP BOX  
DATED 11 NOVEMBER 2019**

Submitted by:

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## **Introduction and general observations:**

The first DTH Services were launched in India in the year 2003 and accordingly BIS had formulated the Technical Specification for an interoperable DTH STB which is to be based on the DBV-S emission standard which uses the MPEG-2 Audio Video Compression (AVC) method.

Subsequently in the year 2012, BIS released a new standard for MPEG-4 based DTH STBs. These MPEG-4 boxes were backward compatible and could decode both MPEG-2 and MPEG-4 coded signals but the MPEG-2 STBs were not forward compatible and hence could not decode MPEG-4 compressed signals thus effectively making the interoperability criterion redundant.

In this regard, it is also important to note that the even TRAI, while giving the comments on certain issues referred to TRAI by Ministry of Information and Broadcasting relating to DTH has opined that reverse compatibility, i.e., the compatibility between MPEG 2 to MPEG 4 is not technically feasible.

It was observed by TRAI that Interoperability is not possible in current DTH environment because every operator is running his services with different coding technique which may not be supported on the boxes from other DTH operators. Also each operator backend system is configured with its own sets of descriptors, Services, packages & Middleware which is not compatible with other DTH operators' configurations.

It is submitted that even Telecom Regulatory Authority of India (TRAI) has also repeatedly observed and recommended that the condition of Technical Interoperability has to be removed from the DTH sector.

In this regard, we would like to bring to your kind attention the TRAI Consultation on "Draft Tariff Order prescribing framework for Commercial Interoperability of Customer Premises Equipment (CPE) in DTH services" issued in March 2015. The TRAI has clearly mentioned the following in the Explanatory Memorandum to the said consultation paper:

*“In DTH services, a subscriber needs Customer Premises Equipment (CPE) to be connected with the television set for reception of programmes as the signal received at his premises is in digital form and encrypted. CPE consists of an outdoor unit comprising a dish antenna, Low Noise Block Converter with Feed-horn (LNBF), cable and connectors. The indoor unit primarily comprises a Set-Top-Box (STB) along with a remote control. Since variegated technologies co-exist, the CPEs deployed by one operator may not be compatible with the network of another operator, hampering migration of the subscriber from one operator to another; in case the subscriber wishes to migrate, he cannot do so without re-investing in another CPE.”*

Similar position has been taken by the TRAI in the Consultation initiated by the TRAI dated 11.04.2013 “[The Telecommunication (Broadcasting and Cable Services (\_\_\_) (The Direct to Home Broadcasting Services) Tariff Order 2013 (No. \_\_ of 2013)]” and “The telecommunication (broadcasting and cable) services (sixth) (the direct to home services) tariff order, 2013 (no. 2 of 2013) dated 27.05.2013”. The TRAI has stated as under:

*“Since variegated technologies co-exist, the CPEs deployed by one operator may not be compatible with the network of another operator, hampering easy migration of the subscriber from one operator to another, in case the subscriber wishes to do so, without re-investing in new CPE.”*

Same opinion was echoed by the TRAI while issuing “The Telecommunication (Broadcasting and Cable) Services (Sixth) (The Direct to Home Services) Tariff Order, 2013 where in the explanatory memorandum attached with the said Tariff Order, TRAI stated as under:

*“Since variegated technologies co-exist, the CPEs deployed by one operator may not be practically compatible with the network of another operator, hampering easy migration of the subscriber from one operator to another, in case the subscriber wishes to do so, without re-investing in new CPE.”*

It is therefore clear from the above that the Technical Interoperability was never put into effect in real terms and the same lost all the relevance which has even been repeatedly admitted by TRAI. It is also important to note that the DTH industry has also been making the demand for removal of the requirement of technical interoperability for a long time, however despite all the requests, the requirement of having as CI slot in the

STBs was never removed. Under these circumstances the DTH operators have been forced to continue providing CI slots even after 16 years of the TRAI first opining that the interoperability was not possible under the prevailing circumstances. It is stated that provision of this facility has cost around \$1-\$2 for each STB and by normal estimates the DTH industry has already spent around 1000 crore for providing this facility despite being aware that it is of no actual use. Apart from the industry incurring this cost, it has also resulted into efflux of foreign currency from the country.

Further, over the years, huge technological advancement have taken place. The DTH operators have already launched connected boxes which are not in compliance with the BIS standards, however the same are being distributed in huge quantities. Another product which has come into distribution is the integrated television (IDTV), for which also no standard exists today.

From the above, it is amply clear that implementation of interoperability through CI slot is not possible, accordingly it is high time that this condition is immediately done away with. It is stated that the Authority/Government should not continue to impose such conditions on the DTH operators which not only is non implementable but also results into incurring huge costs to the industry.

**Q1. In view of the implications of non-interoperability, is it desirable to have interoperability of STBs? Please provide reasoning for your comment.**

DTH and Cable TV ( DAS) ecosystems are today very large legacy and have over 60 million STBs ( DTH) and over 100 Million STBs ( Cable) which have been seeded and working for the past about 15 years.

With the efflux of time these are based on varying technologies commencing with MPEG-2, MPEG-4, MPEG-4-AVC and forthcoming STBs are expected to also include enhanced versions of the protocols, middleware and customer interfaces.

The TRAI envisaged Interoperable STB is not desirable for a number of reasons, apart from the technical factors which are fully elaborated in our response:

- The dynamics of the STB industry and very rapid and enable new product cycles at a relatively low cost and advanced features which will get impeded if an

elaborate mechanism of Interoperability including that of DVB-C and DVB-T has to be gone through. It will increase the cost at the same time disproportionately.

- While Interoperability was taken as a potential way ahead in markets such as USA, the same have been dispensed with. A proposal initiated during the Obama administration, led by former FCC Chairman Tom Wheeler in 2016 had sought the opening up of STBs to new generation operators such as Google, Apple and others. However the impracticability of this suggestion made the FCC reverse the decision in Jan 2017 whereby Federal Communications Commission (FCC) removed its set-top box proposal from circulation, which means commissioners can no longer vote on it.

<https://www.forbes.com/sites/nelsongranados/2017/01/31/why-the-fcc-abandoned-its-set-top-box-proposal/#16a0a7c01e85>

- The TRAI also needs to recognize that with increasing incoming wireless and broadband, Smart sticks for linear and VoD content and Smart TV Apps the entire ecosystem of a TV home has changed and is moving towards a rapid transformation.
- The TRAI cannot simply ignore the rapidly gaining segment of broadband and OTT delivery and the devices including the STBs which come with this. These have their own technologies of DRM and content protection which are based on two way interconnectivity rather than one way DSA and key transfer algorithms. The FCC has also recognized the same and has refrained from mandating one segment of the market which is traditional and has legacy devices against another which is growing at over 20% per annum.
- We believe that it is an appropriate time for TRAI to take approach similar to FCC and EC and look at the ecosystem of Broadband based STBs vis-à-vis DTH or cable delivered devices. Both are moving towards IP and with common architecture and a vibrant TV ecosystem can only be furthered with an integrated view.
- We do not believe that a static technologically tested devices such as done by C-DoT can have any standing in the rapidly changing environment of induction of new technical features almost by the day.

**Q2. Looking at the similar structure of STB in cable and DTH segment, with difference only in the channel modulation and frequency range, would it be desirable to have universal interoperability i.e. same STB to be usable on both DTH or Cable platform? Or should there be a policy/ regulation to implement interoperability only within a platform, i.e. within the DTH network and within the Cable TV segment? Please provide your comment with detailed justifications.**

We would like to state that the structure of STBs in the Cable and DTH segments is significantly different and this does not warrant any interoperability to be mandated between the Cable and DTH. DTH STBs have multiple functions which would become redundant in cable based STBs and vice versa:

- (i) DTH STBs have a DVB-S/S2 receiver along with a LNB interface ( The Tuner) whereas this section is not needed in a Cable STB. Moreover there are many variants of the DVB-S/S2 tuner and LNB controller in the STB:
  - (a) Universal LNB control with frequency and/ or Voltage control of polarization or the Hi/Lo Band
  - (b) Dual inputs for two polarizations
  - (c) Multiple satellite/ Multiple tuner inputs
  - (d) Higher order Mod-cods for higher modulation schemes
- (ii) In relation to the decoding the chipsets can have MPEG-2 decoding. MPEG-4 decoding, H.265-AVC decoding, or higher / evolved versions for decoding
- (iii) Chipsets can have dual functionality of IP based decoding in addition to MPEG-4 etc.

The Cable STBs on the other hand need a completely different type of Interface. In order which can involve decoding and support of very high order QAM modulations ranging from 16 QAM to 256 QAM or even higher for fiber based delivery.

In case common STBs are envisaged under interoperability, the cost will go up by 100% over simple STBs and thus there will be no advantage to the customers.

In the pre-consultation paper dated 4<sup>th</sup> April 2016, we had highlighted the same aspects, though these pertained to only DTH:

*“The status today remains the same, i.e. the DTH operators and MSOs in India use different compression, modulation, middleware and encryption systems. These are summarized below for*

DTH operators: DD-Direct: MPEG-2, DVB-S (present), H.264 DVB-S2- Possible future additions Dish TV: MPEG-2, DVB-S for SD, H.264 DVB-S2 for HD Reliance, SUN: DVB-S, H.264 for SD; DVB-S2, H.264 for HD Videocon, Airtel, T-Sky: DVB-S2, H.264, H.265 for 4K/UHD

S.No	DTH Operator	Modulation	Encoding	CA System	Middleware
1	DD-Direct	DVB-S, Future DVB-S2	MPEG-2, H.264( Future)	None, Planned for Future	None
2	Dish TV	DVB-S( SD),DVB-S2(HD)	MPEG-2, H.264( HD)	Conax , Verimatrix ( Planned)	Open TV, WyPlay( Planned)
3	Reliance	DVB-S( SD),DVB-S2(HD)	H.264	Nagra	Nagra
4	SUN	DVB-S( SD),DVB-S2(HD)	H.264	Irdeto	Irdeto
5	Videocon	DVB-S2	H.264, H.265 for 4K/UHD	Irdeto	Irdeto
6	Airtel	DVB-S2	H.264, H.265 for 4K/UHD	Cisco	Cisco
7	Tata Sky	DVB-S2	H.264, H.265 for 4K/UHD	NDS	NDS
	MSO	Modulation	Encoding	CA System	Middleware
1	Siticable	DVB-C (QAM 64)	MPEG-2,4	Conax	NA
2	Hathway	DVB-C (QAM 64)	MPEG-2,4	NDS	NDS
3	DEN	DVB-C (QAM 64)	MPEG-2,4	NDS	NDS
4	Incable	DVB-C (QAM 64)	MPEG-2	Conax	NA
5	DigiCable	DVB-C (QAM 128)	MPEG-2	Irdeto	NA

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There are STBs with HD. UHD or 3D functionalities. The middleware used is different, and the Chipset, Memory Size (Flash & RAM) can vary over a wide range based on the use of active services and middleware planned.

When cable and DTH are combined the situation in terms of possible pricing, development time, testing and validation gets highly aggravated.

**Q3. Should interoperable STBs be made available through open market only to exploit benefits of commoditization of the device? Please elaborate.**

For the reasons elaborated above, we do not recommend that the so called Interoperable STBs be available via-open market as these devices are highly specific for networks for

which they are intended, and the same will remain the case in future if costs are to be contained at current levels or be mandated lower.

As pointed out by us in the pre-consultation paper:

In USA, initially the interoperability was sought to be achieved by mandating the use of Cablecards in each STB. However, as per data provided by TRAI, only 0.45 million Cablecards were sold as against 17.7 Million STBs proprietary to DTH and MSOs as of 2010.

As a matter of record, the last NCTA report to the FCC states, "There have been over 617,000 CableCARDS deployed for use in retail devices by the nine largest incumbent cable operators. By contrast, those nine companies have more than 53,000,000 operator-supplied set-top boxes with CableCARDS currently deployed." This means that only approximately 1% of the CableCARDS deployed are for retail devices, the rest are deployed in cable operator-supplied set-top boxes".

This implies that in order to meet the interoperability requirements of FCC, 53 Million Cable Cards, with a cost of \$2.5 Billion were thrust on the subscribers, even though these subscribers used Cable operator supplied boxes and would not have required to pay \$ 50 each extra just to meet the requirements of the regulator for the "Interoperability". This shows that some notions of customer friendly nature conceived by regulators can in fact be counterproductive unless analysed in proper context.

While interoperability is a desired objective, its practical implementation raises issues of:

- Cost to Customer for Interoperability in terms of royalties and STB cost
- Heightened risk of Piracy
- High operating costs for maintenance of Software stacks, New STB additions & repeated certifications from all vendors

While Dish TV responses to points under consultation are enclosed below, we would like to state that the solution to interoperability does not lie in a downloadable CAS system.



**Q4. Do you think that introducing STB interoperability is necessary with a view to reduce environmental impact caused by e-waste generated by non-interoperability of STBs?**

We think that the e-waste as unused STBs may be termed has been overhyped as the new STBs with so called interoperability will be priced at much higher levels, will require much higher vendor/ DTH or cable operator support and will be difficult to navigate by ordinary customers.

When customers discard STBs they do that for different reasons, and making them pay two or three times the price with a much more complex STB with possibilities of malfunction or difficulties of day to day use should override any considerations of e-waste.

**Q5. Is non-interoperability of STBs proving to be a hindrance in perfect competition in distribution of broadcasting services? Give your comments with justification.**

Interoperability of STBs is not proving to be any hindrance in the general use of STBs which are now priced at very low levels (e.g. Rs 1000). Moreover incentive packages offered by the operators for a one year or two years use defray even these meagre expenses.

It should also be noted that by virtue of NTO the TRAI has already made the distinction between operators minimal in terms of customers gaining any advantage in moving from one operator to another. All prices are now determined solely by operators and the only choice customers have is on the FTA channels, which also are largely common.

**Q.6 How interoperability of STBs can be implemented in Indian markets in view of the discussion in Chapter III? Are there any software based solution(s) that can enable interoperability without compromising content security? If yes, please provide details.**

Having gone through in detail in the discussion presented in the consultation paper we are of a considered view that in view of the new specifications of CI and also the following factors:

- (i) Widely varying STB types, modulation schemes, hardware for one or more tuners,

- (ii) Widely varying features of middleware and distinguishing the users via customer interfaces,
- (iii) Cost advantages of specifically designed STBs for specific networks
- (iv) Ease of software updates and upgradation of features
- (v) Higher security and better control on the CAS and security features
- (vi) Ability to have multiple CAS systems and prevent arm-twisting by specific CAS vendors
- (vii) Ability to introduce new two way or featured STBS

Any idea of Interoperable STBs is highly misplaced and will lead to a very high cost for the customers, apart from frequent malfunctions and difficulty in operations.

We therefore with our wide experience in the industry of over 16 years strongly oppose any move towards interoperable STBs. 'This is not owing to our desire to have any proprietary STBs but our understanding developed over the years of customer abilities to operate these devices, behaviour of CAS and STB vendors, costs involved in the devices and the test cycles.

**Q9. Given that most of the STB interoperability solutions become feasible through a common agency defined as Trusted Authority, please suggest the structure of the Trusted Authority. Should the trusted authority be an Industry led body or a statutory agency to carry out the mandate? Provide detailed comments/ suggestion on the certification procedure?**

As commented by us in detail earlier, technical feasibility does not mean viability of commercial feasibility. Any move towards implementing a solution purely because it is technically feasible (which in our view it is not), is a fallacy if the same is extended as a mandate towards implementation without understanding of its commercial desirability or viability.

Moreover such interoperability is not essential, as we have elaborated below, specifically addressing the new CI specifications.

**MIB and BIS conditions regarding Interoperability:**

In the context of Technical Standards and interoperability, the DTH License Guidelines lays down the following condition w.r.t. the Set Top Box (STB):

**“ARTICLE-7**

**TECHNICAL STANDARDS AND OTHER OBLIGATIONS**

*7.1 The Open Architecture (non-proprietary) Set Top Box, which will ensure technical compatibility and effective interoperability among different DTH service providers, shall have such specifications as laid down by the Government from time to time.*

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The technical specification are framed by Bureau of Indian Standards (BIS). The initial condition for the open architecture for MPEG 2 STBs was prescribed by BIS in 2003 as under:

*“The STB shall be open architecture (non-proprietary) and shall ensure technical compatibility and effective interoperability among different DTH service providers in the country. The interoperability shall be achieved by using common interface complying to EN 50221 ‘Common interface specification for conditional access and other digital video broadcast decoder applications’ and via software download where the software download mechanism shall be transparent, interoperable and available in public domain complying with specification ETSI TS 102006. The STB must have at least one common interface slot complying to EN 50221.’*

For MPEG4 STBs, BIS issued its specifications in the year 2012 which outlined the open architecture as below:

*‘3.1.1 The STB shall be based on an open architecture (non-proprietary) and shall ensure technical compatibility and effective interoperability amongst different DTH service providers in the country. The interoperability shall be achieved by using common interface conforming to EN 50221 ‘Common interface specification for conditional access and other digital video broadcast decoder applications’ including ‘TS 101699 Extensions’ to DVB-CI specification and via software download where the software download mechanism shall be transparent, interoperable and available in the public domain complying with ETSI TS 102006. The STB shall have at least one common interface slot complying to EN 50221.’*

Subsequently, DVB released latest technical specification under the document **ETSI TS 103605 V1.1.1. (2018-10)** covering Digital Video Broadcast (DVB), Second Generation

Common Interface (CI), Implementation using the Universal Serial Bus (USB). These specifications are available on

[https://www.etsi.org/deliver/etsi\\_ts/103600\\_1036999/103605/01.01.01\\_60/ts\\_103605v010101p.pdf](https://www.etsi.org/deliver/etsi_ts/103600_1036999/103605/01.01.01_60/ts_103605v010101p.pdf)

BIS guideline on DVB-CI specification clearly defined in DVB ETSI TS 103605 V1.1.1. (2018-10) – technical specification document on Digital Video Broadcasting (DVB) as 1<sup>st</sup> Generation CI Interface connector standard as PCMCIA slot and also 2<sup>nd</sup> generation CI Interface using USB Standard-A.

**The DVB Common Interface (DVB-CI) specifications CENELEC EN 50221** and ETSI TS 101699 describe a system whereby a removable Conditional Access CICAM, given the appropriate rights, unscrambles protected content and routes it back to the Host over the same interface.

The 1<sup>st</sup> generation Common interface connector was an industry standard PCMCIA slot (currently implemented in all DTH boxes).

The 2<sup>nd</sup> generation Common interface connector as described in the present document is an industry standard USB Standard-A connector USB 2.0 and USB 3.2.

Therefore, Article 7 Clause 7.1 (DTH License Agreement), basis the DVB specifications laid down in 2018, allow the DTH operators to comply with the interoperability clause by using either 1<sup>st</sup> generation connector interface or 2<sup>nd</sup> generation connector interface i.e. PCMCIA or USB Standard-A (USB 2.0 and USB 3.2 connector)

In view of the above, we suggest as under:

- From the above it is apparently clear that the stipulation of providing interoperability only through CI slots, as provided in the MIB license conditions and BIS standards (before the recent standards laid down by DVB which is the basis for BIS standards) is redundant and useless and accordingly should be immediately removed to ensure that there is no bleeding of foreign currency by the DTH operators.
- Since the DVB standards i.e. ETSI TS 103605 V1.1.1. (2018-10) published by DVB in 2018, which standards are the basis on which BIS lays down its standards for

DTH STBs, allows the STB interoperability to be achieved through 2<sup>nd</sup> generation connector interface i.e. PCMCIA or USB Standard-A (USB 2.0 and USB 3.2 connector) which can be followed by the DTH operator.

- As the regulator and the industry has seen that prescribing of conditions like achieving interoperability through CI slot remained only on paper and could never become a reality, accordingly, before stipulating any other conditions, a proper and thorough trail run and testing should be undertaken. Further, since the broadcast has been moving with a very high pace, any conditions regarding interoperability should be made in such a manner that the same remains relevant with technological changes.

**Q10. What precaution should be taken at planning stage to smoothly adopt solution for interoperability of STBs in Indian market? Do you envisage a need for trial run/pilot deployment? If so, kindly provide detailed comments.**

In our responses we have adequately made it clear that we do not support interoperability being mandated as a necessary condition, just on the fallacious assumption on technical grounds without understanding the complexity, cost and customer impact.

There are also clear examples as country after country beginning with the USA have thought it desirable to let the industry innovate and move ahead with competitive solutions rather than let a mandated decision tie down innovations and new developments.

#### **Need for an Integrated View on Hybrid STBs with OTT and OTT based STBS**

On the other hand we believe that the rapidly growing segment of dual (OTT and DTH/ Cable) and OTT STBs needs to engage the attention of the regulator as these have a CAGR of over 20% and will form more than 50% of the market in 2-3 years. These come with varying technologies, some of which have the potential to bypass the NTO and regulated delivery of permissible TV channels which forms the very fundamental operating principles of the Pay TV industry in India under the Cable TV Acts and the uplink and downlink guidelines.

An integrated understanding of the Uplink/ downlink guidelines and the delivery of these permitted channels along with other content on the same STBs to the same TVs or

to the connected TVs now needs to firm the basis of common understanding in the industry and an integrated NTO instead of regulating different segments under different regulations which are completely disjoint.

India now stands quite apart from the world not only in terms of its highly regulated markets but also inconsistent Tariff guidelines which apply to identical linear services delivered via two different media. With the progression of time this will prove highly detrimental to the entire pay TV industry, the mandates on which the Ministry of I&B works and the revenues of the Government of India, apart from making the use of the new type of Interoperable STBs difficult and incomprehensible for the general public.

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