

DIF Q&A

On the Industry Voluntary Agreement to improve the energy consumption of Complex Set Top Boxes

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1) **What is the Industry Voluntary Agreement?**

Under the Ecodesign Directive (2005/32/EC) framework for Energy-using Products (EuP), ecodesign requirements are set by "Implementing Measures" specific to each product group. The alternative to an implementing measure can be a self-regulatory instrument, such as an industry voluntary agreement. Legislation for Simple STBs has already been adopted (107/2009) and will come into force in February 2010. Ecodesign requirements are also due to be set for Complex STBs under the Ecodesign Directive and the preparatory study for this product group was published in December 2008, under Lot 18.

The "Industry Voluntary Agreement to improve the energy consumption of Complex Set Top Boxes", the "VA", promotes greater energy savings than those proposed in the Lot 18 preparatory study. If adopted, the VA will come into force on the 1st July 2010, a year sooner than any proposed legislation could come into force.

The VA for Complex STBs provides a more suitable alternative to mandatory legislation since, in addition to its greater energy savings, it also allows for flexible and rapid adaptation to technological developments and market sensitivities. It permits the Industry to develop products that minimise energy consumption whilst at the same time maintaining a good customer experience. In addition, self-regulatory initiatives can have a positive impact on practices beyond the boundaries of Europe, allowing for a global approach to energy efficiency.

2) What is a Complex STB and what differentiates it from a Simple STB?

A Complex Set Top Box (CSTB) is a standalone device equipped to allow conditional access that is capable of receiving, decoding and processing data from digital broadcasting streams and related services, and providing output audio and video signals.

Under the Ecodesign Directive, ecodesign requirements and energy consumption targets should be set taking into account the intended use of the product group in question and should not have a negative impact on the product's functionality. A CSTB incorporates a great deal of functionality not present in Simple STBs, including (but not limited to) the ability to schedule recordings, the ability to record remotely, the ability to push VOD content to customers, the ability to maintain up to date complex viewing (conditional access) criteria¹ and an ability to maintain large schedule tables, distribute content to other devices within the home, provide high-speed internet access. These, and other functional capabilities, would be seriously compromised and adversely affect the customer experience for the vast majority of CSTBs, if they were to be treated identically to Simple STBs.

3) How was the VA developed?

Development of the VA for CSTBs was open to all interested parties and followed a transparent process and timetable agreed by all active participants. Meetings and conference calls were typically held on a bi-monthly basis throughout 2009, with considerable e-mail and electronic correspondence between meetings. The VA was continuously developed throughout the process and all elements of the VA were agreed by consensus.

Support and feedback was also provided by the European Commission (DG TREN) throughout this process. Service Providers, Equipment Manufacturers, Software Providers, Conditional Access Providers and Component Manufacturers representing a large majority of the CSTB industry have participated and been kept informed.

4) What are the objectives?

The overall objective of the VA is to further reduce the energy consumption of CSTBs with a view to maximising the environmental benefits from improved design. The VA delivers an industry-wide commitment and sets out the means by which the signatories will commit to achieving such rapid and effective implementation while continuing to invest in and develop sustainable and appropriate "best of class" CSTB products.

¹ In order to receive conditional access entitlements a CSTB must be either powered ON or in an active standby state. If a box does not regularly receive a refreshed entitlement message, the entitlements will expire and the user will lose access to all premium channels and services, i.e. other than those which are unencrypted and free to air. Leaving a box in passive standby or off prevents such entitlements being received.

5) Who has participated and who has provided indicative support?

The following is an indicative list of companies and organisations that have participated and been kept fully informed on the development of the VA:

ADB, Broadcom, Austar, BSkyB, BT, Canal Plus, Cisco, Deutsche Telekom, European Commission, Echostar, Foxtel, Intel, Liberty Global, Microsoft, Motorola, NDS, Pace, Sky Deutschland (Premiere AG until 9 July 2009), Sagem, Samsung, Sogecable, Sky Italia, STMicroelectronics, Swisscom, Tatung, Telecom Italia, Telenet, Thomson, UK Market Transformation Programme, UPC, Virgin Media, Viasat, ZetaCast.

The following companies operating in the EU27 have already provided indicative support for the VA:

ADB	NDS
Amstrad	NXP
Broadcom	Pace
BSkyB	Samsung
BT	SES-Astra
Canal+	Sky Deutschland
Cisco	Sky Italia
Conax	Sogecable
Humax	ST
Intel	Tatung
Irdeto	Telenet
Liberty Global	Thomson
Microsoft	Viasat
Motorola	Virgin Media

6) When will the VA come into force?

The VA will come into force on July 1st 2010 (the "Effective Date"), and it will not have retroactive effect: only individual CSTBs that are placed on the Internal Market for the first time on or after the Effective Date or which are put into service in the Internal Market for the first time on or after the Effective Date will be subject to its provisions. The VA also applies to CSTBs that are manufactured outside the European Community and which are supplied, distributed or used within the European Community.

7) Is Auto Power Down (APD) supported by the VA?

Yes. The APD feature means that the CSTB automatically switches itself into the lowest standby mode, after a period of time in the On mode following the last user interaction, resulting in greatly improved energy savings. APD is encouraged in Tier 1 (from 1st July 2010) and becomes mandatory in Tier 2 (from 1st July 2013).

8) How is energy consumption measured under the VA?

Total Energy Consumption

The VA adopts a "Total Energy Consumption" approach to evaluating the energy savings that a CSTB can make. In this process, the (measured, not theoretical) energy consumed in the "On" and

"Standby" modes are multiplied by the number of hours a defined typical device spends in "On" and in "Standby". The result will be a single energy value representing the energy usage of the device over the course of an entire year, namely its "Total Energy Consumption" (TEC), in KWh.

The calculation is based on the assumption that a standard CSTB will be in "On" mode for 9hrs and in "Standby" for 15 hrs per day. For devices that support APD, an additional allowance is made, and it is assumed that the APD will result in the device being in "On" mode for only 4.5 hrs per day. This approach results in a reliable maximum annual energy consumption figure.

Total Energy Allowance

The TEC of a CSTB is compared to its "Total Energy Allowance" (TEA) to determine its compliance with the VA. The TEA methodology incorporates an allowance for base CSTB functionality, plus allowances for specific, additional functionalities present across a duty cycle.

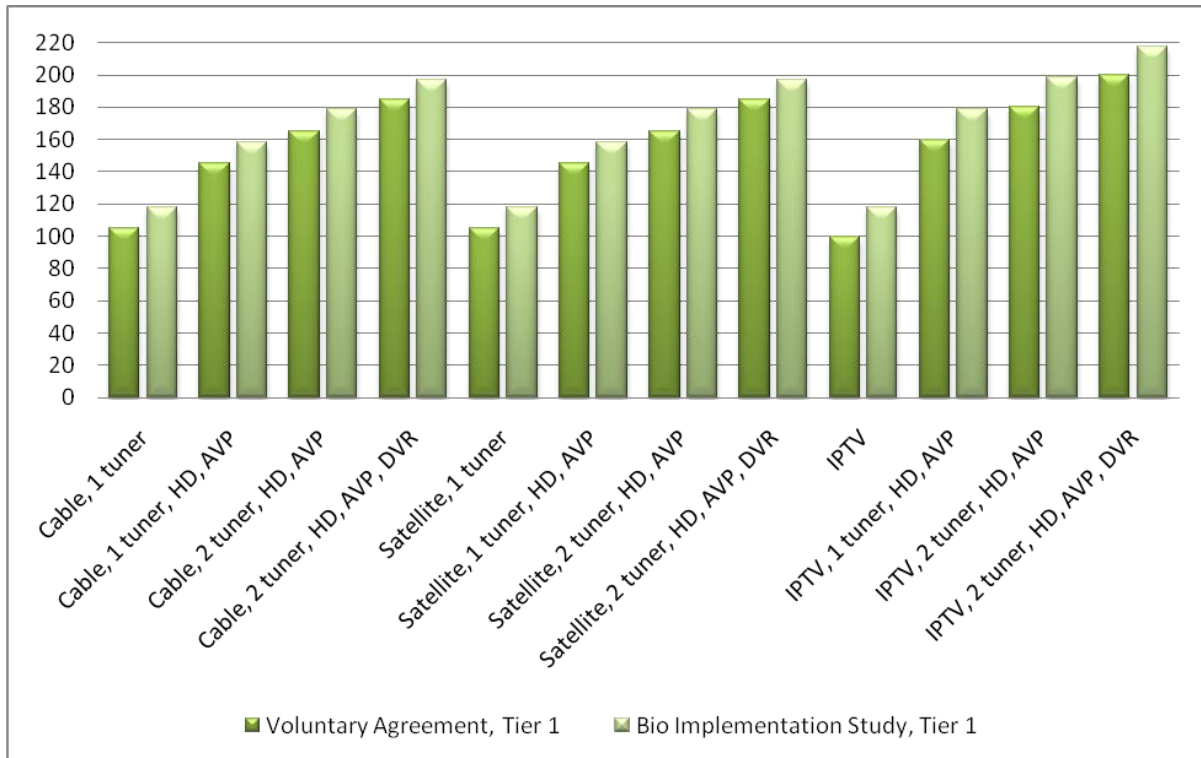
Different CSTBs have different base allowances according to their transmission mode; for example cable and satellite CSTBs have a base allowance of 45 kWh/year, whereas IP and terrestrial CSTBs have a base allowance of 40 kWh/year. Where applicable, additional allowances can be claimed for CSTBs which rely on functionalities with higher consumption patterns, such as DVRs (Digital Video Recorders), Advanced Video and High Definition processing, additional tuners and return paths.

Tier 1 and Tier 2

The VA provides for a reduction in the energy consumption of Complex STBs according to a two tiered approach, to better take into account technological evolution and market developments "Tier 1" will apply from July 1, 2010 and more stringent "Tier 2" energy consumption targets will come into force on July 1, 2013. The energy targets of Tier 2 will apply to both base and additional functionalities and will represent significant improvements over Tier 1.

9) What energy savings does the VA propose?

The following "Total Energy Consumption Comparison" chart for Tier 1 demonstrates that when compared to the Lot 18 Preparatory Study (the assumed benchmark for a legislative approach), the VA delivers greater energy savings across a wide range of applicable devices.



Given that the VA figures would also be delivered one year ahead of any legislative requirements, the VA's positive impact on energy savings is significant.

10) What are the main differences between the absolute energy targets proposed by the VA and those of the Lot 18 Preparatory Study?

In so far as possible, the Voluntary Agreement was drafted in line with the definitions under the Lot 18 Preparatory Study. The Voluntary Agreement is more ambitious than the Preparatory study's total energy allowance targets for a defined product, and it also contains additional definitions. The table below compares the absolute allowances under the VA with those in the Preparatory Study.

Base Functionality	Annual Energy Allowance (KWh/year)	
	Voluntary Agreement Tier 1 (1 st July 2010)	Lot 18 Preparatory Study Tier 1 (2011)
Cable	45	40
Satellite	45	40
IP	40	40
Terrestrial	40	40
Thin-Client/Remote	40	n/d
Additional Functionality		
Advanced Video Processing	20	n/d
High Definition	20	40
Additional Tuners	20	20.4
Digital Video Recorder	20	18.5
Return Path	60	78
Multi-Decode and Display	38	n/d

The VA sets allowances for certain additional functionalities which were not covered by the Lot 18 Preparatory Study:

- **Thin-Client/Remote:** A device which has no capability to interface directly with a service provider, but acts as a decoder for content served from a multi-room capable device which in turn connects with a service provider. The aim here was to cover devices such as DMAs with conditional access capability.
- **Advanced Video Processing:** This allowance was de-coupled from the High Definition allowance in the VA because some operators may still deliver high definition television using standard definition video codecs, such as MPEG-2. Indeed, both scenarios are possible, i.e. HD using MPEG-2 and SD using MPEG-4 AVC.
- **Multi-Decode and Display:** A device which interfaces with a service provider and allow for multiple streams of content to be distributed through a home either directly to display devices or to additional Thin Client devices.

11) What is meant by “Return Path” in the VA?

The return path allowance in the Voluntary Agreement follows the basic definition of the Lot 18 Preparatory Study, which is used as an “indicator” of a certain type of premium complex STB, regardless of the specific technology interface used in the return path. The return path allowance takes into account not only the energy consumption of the modem in the CSTB, but also certain “additional features” such as, but not limited to, functionalities involving home networking.

Annex B of the Lot 18 Preparatory Study (Stakeholder Consultation on Typical Power Consumption - page 20) provides:

“Return path should indeed have the same values for DOCSIS cable modems in on mode and active standby, for ADSL modems (IPTV mainly) this is not necessarily the case as there are power saving features in standby (L2 and L3 modes – basically meant for the headend equipment, but also the remote terminal end in principle can power down in these modes). Nevertheless, as cable modems are likely to have the higher market share and as enabled L2 and L3 modes are questionable, both values should be the same. The value is set on a higher level (i.e. +10W) as it is not only the modems as such, which is taken into account here, but also STBs with return path which are a premium segment with additional features (not only the 5W of the modem itself is relevant, the modem/return path rather represents an “indicator” [of] a certain type of complex STB).”

The Lot 18 Preparatory Study contains a list of registered stakeholders in Annex C, which includes all the major STB hardware and software manufacturers as well as service providers and industry associations and NGOs.

12) Is "passive standby" supported by the VA?

The VA simply defines a "standby" mode as being an operational mode in which the CSTB has less energy consumption, capability, and responsiveness than in the full "On" mode and as such the VA does not define, nor differentiate between "passive standby" and "active standby" terminology.

The architecture of most CSTBs assumes that the device spends the majority of its time in a mode whereby certain critical features continue to function. The energy consumption of CSTBs can be reduced significantly, whilst still maintaining some core and essential functionalities in the standby mode, as defined by the VA (i.e. significant power consuming functionalities of the CSTB can be switched off, whilst maintaining other essential and critical background tasks). This is at the heart of the TEC approach to energy savings.

It must be noted that even with an active standby mode, the TEC approach under the VA will produce greater energy savings than those envisaged by the Lot 18 Preparatory Study.

13) Is an "off switch" supported by the VA?

While signatories are free to implement an "off switch", the VA does not mandate such a feature. This is because, in some cases, implementing an "off switch" could potentially have a negative impact on CSTB functionality. For example, in addition to the risk of loss of entitlements, once "off" a CSTB would take unreasonable period of time to re-boot and certain features such as Push VOD may be impaired.

14) How will the VA be governed?

The Steering Committee of VA signatories, in partnership with the European Commission and Member States, shall be invited to monitor the achievements of the objectives set out in the VA. The plan for monitoring and reporting shall be detailed, transparent and objective. It shall remain for the European Commission assisted by the Steering Committee to consider whether the objectives of the VA have been met.

It is expected that each signatory to the VA shall provide information to an Independent Inspector detailing the energy consumption of each type of CSTB it manufactures, supplies, distributes or uses within the European Community. As appropriate the Independent Inspector will be able to conduct audits of the information supplied by any individual signatory, whilst maintaining confidentiality of any potential commercially sensitive information provided.

15) What are the time-scales for any revisions?

While the Tier 2 energy consumption targets will become effective on July 1, 2013, these are provisional targets which may need to be revised at least nine months prior to their entry into force.

The Steering Committee of VA signatories may agree to implement any necessary amendments to the VA, as and when necessary.

In addition, the signatories and the Commission shall meet to discuss the VA, on an annual basis, in order to:

- evaluate the effectiveness of this VA in achieving its objectives as set out at Section 3
- evaluate current and future developments that may influence energy consumption (for example, integrated circuit development, conditional access systems) with a view to agreeing a course of action and/or revising the VA;
- set future targets to increase energy savings.

16) What is the minimum percentage of the market that the VA has to cover?

Each signatory shall ensure that 90% of its CSTBs placed on the Internal Market on or after the Effective Date comply with the VA's requirements.

17) Will all signatories have to comply with the VA?

Yes. The VA sets out a detailed list of commitments (clause 4) which signatories will have to adhere to when placing equipment in the Internal Market, including a commitment to continue to work with the European Commission, Member States' representatives and other interested parties on improving the environmental performance of CSTBs.

18) What are the penalties for the companies that do not comply?

A defaulting signatory to the VA shall forfeit its signatory status. A mechanism shall be developed to remove the signatory status of a defaulting signatory. The signatories will work together to agree this mechanism by 1st January 2011. A defaulting signatory may however, engage in discussions with the European Commission, Member States and other signatories with the intention of meeting its commitments under the VA.

19) Can a non-signatory place a Complex STB on the Internal Market?

Yes, stakeholders which have not signed the VA may place their CSTBs on the Internal Market without having to respect the requirements of this self-regulatory instrument. However, as the VA has been widely endorsed by the Complex STB industry, we do not expect the proportion of non signatory stakeholders to represent more than 10% of the market.