SUBSCRIPTION TELEVISION INDUSTRY

Voluntary Code for Improving the Energy Efficiency of Conditional-Access Set Top Boxes

An industry initiative supported by government under the National Framework for Energy Efficiency

Contents

1. Introduction

1.1 The Code

This document sets out a voluntary industry code of conduct (**Code**) to improve the energy efficiency of conditional-access set top boxes used in the subscription television industry (**CSTBs**). The Annexes form part of the Code.

1.2 Background

(a) In 2004, the Ministerial Council on Energy (**MCE**), comprising the Energy Ministers of all Australian governments, endorsed the National Framework for Energy Efficiency (**NFEE**). The NFEE incorporates a range of programs and initiatives designed to improve energy efficiency, particularly in the residential, commercial and industrial sectors. Representatives drawn from all Australian jurisdictions and, for the purposes of end-use equipment energy efficiency matters, New Zealand, administer the Equipment Energy Efficiency Program (**E_3 Program**)

(b) The Commonwealth of Australia represented by the Department of Environment, Water, Heritage and the Arts (**Department**) manages many of the projects within the E_3 Program under the NFEE on behalf of all jurisdictions. The E_3 Program embraces a range of measures aimed at improving the energy efficiency of appliances and equipment. Measures include:

(i) mandatory minimum energy performance standards (**MEPS**) prescribed under State and Territory legislation;

(ii) mandatory energy efficiency labelling; and

(iii) voluntary measures including industry self-regulation.

(c) Since 2009, standalone set top boxes used to receive and decode free-to-air terrestrial digital television broadcast signals have been subject to MEPS requirements set out in AS/NZS 62087.2.1:2008, which impose maximum power levels for "passive standby", "active standby" and "on" power modes. Compliance with this standard is mandated under parallel State and Territory legislation (see for example, *Energy and Utilities Administration Regulation 2006* (NSW), *Electricity Safety (Equipment Efficiency) Regulations 2009* (Vic) and *Electricity Regulation 2006* (Qld)).

(d) CSTBs are also subject to these MEPS requirements but only in relation to the "active standby" power levels. At the time, the E_3 Program determined that CSTBs would not be subject to MEPS requirements for other power modes on the basis that:

(i) technology used in the subscription television industry does not provide for "passive standby" power mode; and

(ii) noting the MEPS policy to match international best practice regulatory requirements, there are no limits specified in law for "on" power mode for CSTBs used in other countries.

(e) In consultation with industry participants, the E_3 Program determined that the energy efficiency of CSTBs could be improved through a voluntary code of conduct with the subscription television industry based on resident Australian companies agreeing to meet or exceed developing international best practice for CSTBs.

(f) The Code has been developed between FOXTEL Management Pty Ltd and Austar Entertainment Pty Ltd (the initial Signatories) with the involvement of the Department.

(g) The Code is open to Service Providers and other participants in the Australian subscription television industry to join provided they agree to adhere to the Code provisions relevant to them.

(h) The Department supports the Code and views it as an important mechanism for improving the energy efficiency of CSTBs. If the Code is not effective, the Government may seek to use other interventions mentioned in **section 1.2(b)** to assist the industry to more effectively improve the energy efficiency of CSTBs.

1.3 Definitions

Annex F defines terms that are used in the Code.

1.4 Interpretation

(a) In this Code, unless the contrary is expressly provided:

(i) a reference to a person includes any type of entity or body of persons, whether or not it is incorporated or has a separate legal identity, and any executor, administrator or successor in law of the person;

(ii) a reference to the industry is to the Australian subscription television industry;

(iii) a singular word includes the plural, and vice versa; and

(iv) if an example is given of anything, such as by saying it includes something else, the example does not limit the scope of that thing.

(b) The Code is not intended, and should not be interpreted, to adversely affect competition in the industry.

1.5 Communication

All communication to Signatories, Associate Members or the Department in relation to the Code should be addressed and sent to the relevant contact point specified in **Annex J**.

2. Aim

The aim of the Code is to:

(a) voluntarily minimise the overall energy consumption (kWh) used by CSTBs without limiting or impeding the functionality and user convenience of CSTBs;

(b) set voluntary maximum energy consumption targets for CSTBs and associated testing procedures that endeavour to meet or exceed international best practice for equivalent equipment; and

(c) advise the public of the existence and benefits of the Code and the commitments of Signatories to the Code.

3. Standards for CSTBs

3.1 General Principles

The Signatories will use reasonable endeavours to ensure CSTBs comply with the following general principles:

(a) CSTBs will be designed so as to minimise energy consumption while achieving the operational specification;

(b) operating software will take advantage of the power management features built into the hardware so that the CSTB will automatically switch to the lowest power mode appropriate to the functionality required by the End User or Service Provider;

(c) where a CSTB has a function that allows the End User to manually place the device into a low power mode (eg Standby power switch), instructions will be made available on its use to the consumer;

(d) if the CSTB is provided with an external power supply then the total power consumption of the CSTB and external power supply from the mains connection will be measured in compliance with the Code;

(e) whilst adhering to the general principle of designing products to minimise the use of energy, Signatories note that Equipment Manufacturers, Service Providers, Software Providers, Conditional Access Providers and Component Manufacturers are constantly innovating their products in response to developments in service concepts and technologies. Any unanticipated functionality which consumes significant power but which is not listed in Table 3 (Additional Functionalities Allowance) in **Annex B** should be deactivated (if possible) during the measurement process. The test results will explicitly list any functions that were deactivated during testing. Table 3 should be updated at least annually to include any such additional functionalities and an appropriate allowance; and

(f) new CSTBs ordered after the Commencement Date may incorporate APD. If APD is incorporated, the CSTB must automatically switch itself into the lowest standby mode, after a period of time in the On mode following the last user interaction. This period of time shall be set at a default of no more than 4 hours by the Equipment Manufacturer or

Service Provider and may be user adjustable. The CSTB should allow the viewer to continue watching beyond the set period by prompting the viewer to confirm that the CSTB is still in use. The APD feature may be overridden by the End User through a special menu option.

3.2 Maximum Energy Consumption Targets

In addition to the general specifications in **section 3.1**, the Signatories will use reasonable endeavours to ensure that new CSTBs procured from Equipment Manufacturers after the Effective Date do not exceed the voluntary Maximum Energy Consumption Targets.

4. Commitments

4.1 Additional Commitments by Signatories

(a) The Signatories commit to:

(i) informing End Users of energy efficient practices to lower energy consumption when using CSTBs;

(ii) in order to assist in meeting the requirements of **section 3.2**, adding or modifying functional and operational specifications provided to its Suppliers for equipment, software and conditional access systems used in CSTBs; and

(iii) monitoring and reviewing the Code, in accordance with its terms.

(b) The Signatories and the Department will monitor the lifecycle and retirements of CSTBs procured prior to the Effective Date that do not meet the Maximum Energy Consumption Targets. The review will follow the annual reporting process set out in **section 8** of the Code with the overall objective of ensuring that less efficient CSTBs are gradually removed from the CSTB populations deployed by Signatories. If an issue is identified by the Department, the Signatories will negotiate a retirement schedule in the form of **Annex H** which is in line with international best practice and use reasonable endeavours to retire CSTBs during the return and refurbishment process that do not meet the Maximum Energy Consumption Targets at dates specified in the schedule set out in **Annex H**.

4.2 Commitments by Associate Members

In each case to support Service Providers in meeting, and where possible improving upon, the Maximum Energy Consumption Targets:

(a) Component Manufacturers will use reasonable endeavours to design CSTB components which improve functionality and enable component sub-systems to be controlled and operated in the most energy efficient manner;

(b) Conditional Access Providers will use reasonable endeavours to design and develop conditional access systems which enable improved CSTB energy efficiency whilst meeting the functional and operational specifications of Service Providers;

(c) Equipment Manufacturers will use reasonable endeavours to design and manufacture equipment to Service Providers' functional and operational specifications;

(d) Software Providers will use reasonable endeavours to develop software power management applications:

(i) which are consistent with the general specifications for CSTBs set out in **section 3.1**; and

(ii) which enable Service Providers to fully utilise and integrate hardware power management features offered by Equipment Manufacturers and to do so without negatively impacting other CSTB features and functionality; and

(e) Operators will use reasonable endeavours to inform End Users of energy efficient practices to lower energy consumption when using CSTBs.

5. Nature of the Code

5.1 Signatories and Associate Members

(a) The Code is open to Service Providers, Equipment Manufacturers, Software Providers, Conditional Access Providers, Operators and Component Manufacturers.

(b) Service Providers may become Signatories by completing the signing form at **Part A** of **Annex G** and lodging the completed signing form with ASTRA.

(c) Equipment Manufacturers, Software Providers, Conditional Access Providers, Component Manufacturers and Operators may become Associate Members to the Code by signing a form of support in the form set out at **Part B** of **Annex G** and lodging the completed signing form with ASTRA.

(d) Each Signatory agrees to comply with the Code.

(e) Each Associate Member endorses the aim of the code and the principles contained within it and agrees:

(i) to the commitments at section 4.2 of the Code; and

(ii) to provide support to Signatories in meeting their commitments set out in the Code.

5.2 Legal effect

(a) The Code sets out a course of action for the industry to improve the energy efficiency of CSTBs.

(b) The Code is not a commercial agreement and does not in itself create any contractual relationship between Signatories or between Signatories and Associate Members.

(c) The Signatories and Associate Members agree that they will comply with their obligations under the *Competition and Consumer Act 2010*, including in relation to anti-competitive conduct.

6. Code administration

The Signatories agree to assist the Department to conduct activities to confirm compliance with the Code. All Signatories will be treated equally and there shall be no special arrangements for individual Signatories.

6.1 Steering Committee

(a) A Steering Committee consisting of a person nominated by each Signatory is established as the co-ordinating and governing body of the Code.

(b) The Steering Committee will elect, from amongst the members nominated by Signatories, a Chair.

6.2 Steering Committee meetings

(a) The Chair will be responsible for:

(i) convening the Steering Committee meetings at least twice each calendar year (including an annual meeting with the Department to officially review the Code); and

(ii) running meetings of the Steering Committee.

(b) The Chair has no representative function unless delegated by the Steering Committee.

(c) In addition to members, the following persons may attend meetings of the Steering Committee:

(i) any person representing a Signatory;

(ii) any person representing the Department (including a consultant appointed by the Department);

(iii) any person representing an Associate Member;

(iv) a representative of ASTRA; and

(v) any other person who wishes to attend and whose attendance is approved by the Chair.

(d) Attendees at Steering Committee meetings will need to sign a Confidentiality Agreement.

(e) The Department may add items to the agenda and may seek written responses to issues laid before the Steering Committee, where reasonable.

6.3 Steering Committee proceedings

(a) The Steering Committee may:

(i) adopt rules of procedure; and

(ii) delegate any of its powers under the Code to specific individuals or to sub-committees established by the Steering Committee.

(b) The costs of attending the Steering Committee meetings will be borne by each attendee.

(c) The Chair of the Steering Committee will provide the Department with minutes of each Steering Committee meeting within 30 days after the relevant Steering Committee meeting.

7. Code awareness

Each Signatory will use reasonable endeavours to:

(a) promote awareness of the Code among staff and End Users and will encourage vendors and partners in industry to become Associate Members; and

(b) encourage other industry participants to adhere to the Code.

8. Reporting and Monitoring

8.1 Reporting

(a) Each Signatory will:

(i) prepare a written report containing the data set out in **section E1** of **Annex E** for each Reporting Period; and

(ii) submit the report to an independent consultant nominated by the Department and approved by the Signatories (such approval not to be unreasonably withheld or delayed) by 31 March in the following Reporting Period.

(b) The independent consultant will:

(i) compile the data submitted by Signatories pursuant to **section 8.1(a)**; and

(ii) submit a report to the Department containing the information set out in **section E2** of **Annex E**.

(c) The Signatories may require the independent consultant nominated by the Department to sign a confidentiality agreement in relation to any Confidential Information supplied by Signatories pursuant to **section 8.1(b)**.

(d) Notwithstanding the signing of a confidentiality agreement (if any), the Signatories acknowledge that the Department may:

(i) disclose information that is already in the public domain;

(ii) disclose information where disclosure is:

A. to the relevant MCE committee or the Department's advisers or employees for the purposes of the NFEE;

B. required by law; or

C. in response to a request by a House or a Committee of the Parliament of the Commonwealth of Australia;

provided that in each circumstance the Department uses its reasonable endeavours to maintain confidentiality of the information or, where this is not possible, to give the relevant Signatory as much notice as is reasonably practicable or possible before making such disclosure;

(iii) make public statements on the overall performance of the Code but, subject to **section 11(c)**, not the performance of individual Signatories; or

(iv) produce official reports in connection with information provided by Signatories.

8.2 Monitoring

(a) The Department will monitor the effectiveness of the Code and the Signatories will assist the Department by providing the written reports identified in **section 8.1** and briefing the Department on the operation of the Code.

(b) Subject to **section 8.1(d)**, Associate Members and other persons who attend Steering Committee Meetings must obtain the approval of all members of the Steering Committee, not to be unreasonably withheld or delayed, before issuing a press release in relation to the Code.

(c) Signatories may make public statements or issue press releases in relation to the code generally and their own compliance and/or engagement with the Code provided there is no reference to another Signatory's compliance and/or engagement with the Code (directly or by inference). All other public statements or press releases in relation to any other Signatory's compliance and/or engagement with the Code are subject to obtaining the prior approval of that other Signatory, such approval not to be unreasonably withheld.

(d) The Department may, at its cost, instruct an independent auditor to conduct an audit of the information supplied by any Signatory. Signatories agree to provide reasonable assistance to the auditor. The auditor must sign a confidentiality agreement on substantially similar terms to the Confidentiality Agreement.

9. Review and Amendment of Code

9.1 Review

The Chair of the Steering Committee will ensure that at least once each calendar year the Signatories and the Department will meet to review the Code in order to:

(a) evaluate the effectiveness of the Code in achieving the aims set out in **section 2**;

(b) 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 Code; and

(c) set future targets to increase energy savings in accordance with usual product development cycles.

The Department will host one such meeting per annum. Such discussions shall take place on a confidential basis.

9.2 Amending the Code

(a) The Code may be amended following the review of the Code in accordance with **section 9.1** and in accordance with the procedure set out in this **section 9.2**.

(b) A proposed amendment to the Code may be adopted by consensus of all members of the Steering Committee present in a meeting of the Steering Committee provided that there is a Quorum.

(c) Signatories will negotiate in good faith when considering amendments to the Code.

(d) Where there is no consensus on a proposed amendment to the Code, the Chair of the Steering Committee will call for a vote to be made by a subsequent meeting of the Steering Committee. All Signatories will be notified of the details of the next meeting, the proposed amendment(s) and the calling of a vote.

(e) At the next meeting of the Steering Committee, each proposed amendment will be adopted if:

  (i) the meeting is attended by at least one representative of each Signatory; and

  (ii) there is at least agreement of two thirds of the Voting Members.

(f) The Signatories will consult with the Department on proposed amendments to the Code prior to any Steering Committee vote to agree on the amendment.

(g) Once the amendment(s) to the Code has/have been adopted by the Steering Committee:

(i) the Code will be amended with effect from the following anniversary of the Commencement Date or such other date as adopted with the proposed amendment; and

(ii) the amendment(s) will be presented to the Department.

(h) If the Department is not satisfied that the amendment(s) are consistent with the aims set out in **section 2**, the Department may withdraw its support from the Code pursuant to **section 12**.

10. Termination

(a) A Signatory may terminate its Signatory status by giving twenty eight days' written notice to the Chair of the Steering Committee.

(b) The Chair will notify all members of the Steering Committee, the Department and such other persons as the Chair may deem appropriate of the termination.

11. Non-compliance

(a) A Signatory who is found not to comply with the Code will have a period of 3 months to remedy the default or provide a satisfactory remedial plan to the Steering Committee, failing which its Signatory status will be terminated.

(b) The Chair of the Steering Committee, or remaining member of the Steering Committee (as the case may be), will notify the Department of any such termination.

(c) In the event of a significant failure by a Signatory to comply with the Code which has not been remedied as contemplated in **section 11(a)**, the Department may:

(i) refer the failure to the appropriate authorities;

(ii) inform the relevant MCE committee of the failure; and

(iii) make a public statement about that failure.

12. Departmental notification

The Department may withdraw its support for the Code by giving twenty eight days' written notice to the Chair of the Steering Committee. In reaching any decision about its support of the Code, the Department will have regard to, among other things:

(a) the level of compliance of the Signatories with the Code;

(b) the then current Signatories to the Code; and

(c) submissions concerning the operation and effectiveness of the Code.

The Department will not propose regulation to improve the energy efficiency of CSTBs without giving the Signatories as much notice as possible and will use reasonable endeavours to provide at least 12 months notice of such a proposal.

13. Dispute resolution

(a) If a dispute arises between Signatories (**Affected Signatories**) about conduct in connection to the Code, the Affected Signatories will:

(i) document the nature of the dispute in writing;

(ii) use reasonable endeavours to resolve the dispute in good faith.

(b) If the dispute is not resolved within 15 days, the Signatory may commence legal proceedings.

Annex A CSTB Classification of Functionality and Operational Modes

A1. CSTB

A 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. It may have either an internal or else a dedicated, MEPS compliant, external power supply.

The CSTBs subject to this Code are limited to CSTBs supplied to residential End Users.

A2. Base Functionalities of set-top boxes

(a) The TEC base functionality allowances of all CSTBs includes Conditional Access to allow the decoding of standard definition digital video and audio signals. The base functionality of all CSTBs includes the reception of digital TV signals from cable, satellite, IP or terrestrial distribution systems or else Thin-Client functionality, as further specified below.

(b) The classification of each CSTB (as set out below) is distinct and each classification is mutually exclusive.

(i) **Cable CSTB** means a CSTB which is capable of receiving digital television signals from a coaxial or hybrid fibre/coaxial distribution system and deliver them to a consumer display and/or external recording device. If the CSTB meets the definition of a Cable CSTB and the CSTB is capable of receiving a cable service protected by conditional access, the base functionality is defined to be cable, regardless of whether the cable reception is considered the "principal functionality" by the Manufacturer or Service Provider.

(ii) **Satellite CSTB** means a CSTB which is capable of receiving digital television signals from satellites and deliver them to a consumer display and/or external recording device. If the CSTB base functionality is not cable and the CSTB meets the definition of a Satellite CSTB and the CSTB is capable of receiving a satellite service protected by conditional access, the base functionality is defined to be satellite, regardless of whether the satellite reception is considered the "principal functionality" by the Manufacturer or Service Provider.

(iii) **Internet Protocol (IP) CSTB** means a CSTB which is capable of receiving digital television/video signals encapsulated in IP packets and deliver them to a consumer display and/or external recording device. If the CSTB base functionality is not cable or satellite and the CSTB meets the definition of an IP CSTB and the CSTB is capable of receiving an IP service protected by conditional access, the base functionality is defined to be IP, regardless of whether the IP reception is considered the "principal functionality" by the Manufacturer or Service Provider.

(iv) **Terrestrial CSTB** means a CSTB which is capable of receiving digital television signals over the air (OTA) and deliver them to a consumer display and/or external recording device. If the CSTB base functionality is not cable, satellite or IP and the CSTB meets the definition of a Terrestrial CSTB and the CSTB is capable of receiving a terrestrial service protected by conditional access, the base functionality is defined to be terrestrial, regardless of whether the terrestrial reception is considered the "principal functionality" by the Manufacturer or Service Provider.

(v) **Thin-Client/Remote CSTB** means a CSTB that is designed to interface between a Multi-Room CSTB and a TV (or other output device) that has no ability to interface with the Service Provider directly and relies solely on a Multi-Room CSTB for content. Any CSTB that meets the definition of Cable, Satellite, IP or Terrestrial CSTB is not a Thin-Client/Remote CSTB. If the CSTB base functionality is not cable, satellite, terrestrial or IP, and the CSTB otherwise meets the definition of Thin-Client/Remote, the base function is thin-client/remote.

A3. Additional Functionalities of set-top boxes

(a) **Access to Additional RF Channels** provide a second (or more) source of digital media content either from the primary network or a physically separate network; ie. they need not be for the same source media type. Access to Additional RF Channels may be achieved either by additional RF tuners or by providing wideband tuner/s capable of accessing multiple channels simultaneously. Out-Of-Band tuners built in compliance with standards ANSI/SCTE 55-1 2002 and ANSI/SCTE 55-2 2002 and other similar types of technologies are not considered Access to Additional RF Channels for the purposes of this specification. For example, a device with Access to Additional RF Channels has the ability to tune into two or more separate streams of video, audio, Interactive Media, Service Information or EPG data simultaneously and process these streams separately being either physical outputs, picture-in-picture, interactive media, EPG or recording mechanisms). Note that network-based outputs are not covered under this definition but are covered under the definition of a Multi-Room CSTB. The allowance does not apply to additional network based IP inputs such as an additional Ethernet interface.

(b) **Advanced Graphics Processing (OpenGL ES 2.0)** means a CSTB which provides support for advanced 3D graphics acceleration using the OpenGL ES 2.0 standard or higher.

(c) **Advanced Video Processing/Codecs** are advanced methods for video encoding, transcoding and decoding which give video compression efficiencies significantly beyond MPEG 2. Examples include, but are not limited to, H.264/MPEG 4 and SMPTE 421M.

(d) **Digital Video Recorder (DVR)** means a device that stores video in a digital format to a rewritable disk drive or other non-volatile storage media local to the unit. The term covers DVR functions integrated in a STB; it does not include software for personal computers that enables

video capture and playback from the computer's data storage nor does it include server based DVR capabilities. DVR capability may also provide "live pause" functionality. For the DVR energy allowance to be claimed the recording capability must be greater than 15 minutes.

(e) **Digital Modem(DOCSIS 2.0, DSL)** means an allowance for a high speed digital modem contained within the CSTB and used for the purpose of two way communications between the CSTB and the service provider. Examples include DOCSIS 2.0, EURODOCSIS, ADSL, GPRS and WiFi modems. Note in the case of DOCSIS this allowance is limited to DOCSIS 2.0 or earlier versions.

(f) **Digital Modem (DOCSIS 3.0)** means an allowance for a high speed digital modem contained within the CSTB and used for the purpose of two way communications between the CSTB and the service provider, provided by the DOCSIS 3.0 standard.

(g) **Full High Definition (HD) Resolution (1080p)** means any video output with resolutions greater than or equal to 1080p.

(h) **High Definition (HD) Resolution** means any video output with resolutions greater than or equal to 720p or 1080i.

(i) **High Efficiency Video Processing** means video encoding, transcoding and decoding methods which give significantly better video compression efficiencies beyond H.264/AVC (MPEG 4). Examples include but are not limited to H.265/HEVC.

(j) **Home Network Interfaces** such as WiFi, MOCA, etc. allow STBs to interface with external devices through a network. This allowance can be applied only to devices that are NOT Multi-Room CSTBs or Thin-Client/Remote CSTBs (as the network capability of those devices is already accounted for in their allowances).

(k) **Multi-decode** means a Cable CSTB, Satellite CSTB, IP CSTB or Terrestrial CSTB which is capable of decoding more than one content stream. An example of multi-decode functionality is Picture in Picture (PIP).

(l) **Multi-Room CSTB** means a Cable CSTB, Satellite CSTB, IP CSTB or Terrestrial CSTB which is capable of providing independent content to multiple TVs within a single family dwelling. Products handling gateway services to multi-subscriber scenarios are not covered under this specification.

(m) **3DTV (service compatible)** means the production of a 3D video output by processing a 3D difference signal and applying that difference signal to a 2D video signal. Frame compatible 3D processing is excluded from this allowance.

A4. Operational modes and power states

CSTB operational modes and power states are described under IEC 62087 "Methods of Measurement for the power consumption of Audio, Video and Related Equipment". For clarity they are included below:

(a) **Off** means when the appliance is connected to a power source, fulfils no function and cannot be switched into any other mode with the remote control unit, an external or internal signal.

(b) **Passive Standby** means when the appliance is connected to a power source, does not fulfil the main function and can only be switched into another mode with the remote control unit or an internal signal.

(c) **Active Standby (Low)** means when the appliance is connected to a power source, does not fulfil the main function and can be switched into another mode with the remote control unit or an internal signal and can additionally be switched into another mode with an external signal.

(d) **Active Standby (High)** means when the appliance is connected to a power source, does not fulfil the main function and can be switched into another mode with the remote control unit or an internal signal and can be switched into another mode with an external signal and is exchanging/ receiving data with/from an external source or is performing any functions other than its main function.

(e) **On (Play)** means when the appliance is connected to a power source and is playing back a previously recorded programme.

(f) **On (Average)** means when the STB is performing the function of providing a viewer with video and audio from a broadcast, which may or may not be providing time shifting functions.

(g) **On (Record)** means when the appliance is connected to a power source and records a signal from an external or internal source and is providing its main function.

(h) **On (Multifunction)** means when the appliance is performing multiple functions simultaneously.

Note that the Power Measurement Procedure in **Annex D** will determine the energy consumption in "**On**" and "**Standby**" power states which may be variable over time and incorporate one or more of the power states defined above.

A CSTB may not operate in all of the above power states.

Annex B Calculation Of Total Energy Consumption

B1. Overview

(a) The energy consumption shall be calculated and declared taking into account the relevant provisions of this Annex. In this measurement process, the energy consumed in the On and Standby modes will be multiplied by the number of hours a defined typical device spends in On and Standby. The result will be a single energy value representing the energy usage of the device over the course of an entire year: its Total Energy Consumption.

(b) Standby mode measurement should be taken at least 30 minutes after the device enters such a mode.

(c) The *Total Energy Consumption* of a CSTB is compared to its *Total Energy Allowance* to determine its compliance with this Code. The following sections describe the way for determining CSTB yearly energy allowances as well as calculating their Total Energy Consumption.

(d) CSTBs must be tested in accordance with the measurement procedure at Annex D. Annex D will be reviewed from time to time to take account of changes to IEC 62087.

B2. General

(a) The CSTB should be tested as shipped and as normally installed for the end-user. Where the CSTB is capable of supporting a wired or wireless local area network this should be disabled. If it can not be disabled, the CSTB should be operated in the most basic mode required to produce picture and sound from the specified broadcast stream, for one local monitoring point working to the standard of that broadcast stream.

(b) One appropriate digital (test) HD broadcast stream shall be fed into the equipment. If the equipment does not accept HD inputs a standard (SD) stream shall be used.

(c) No peripherals shall be attached except when necessary for feeding the broadcast stream into the equipment and delivering the function(s) as described in this Annex. Where such a peripheral requires power from the CSTB (e.g. a powered antenna for a Terrestrial CSTB or a Low Noise Block (LNB) for a Satellite CSTB) but is not of a unique design specific to the CSTB and essential to make the CSTB function, then the energy required for the peripheral shall not be included in the test measurement.

(d) If the CSTB is provided with an external power supply then the total power consumption of the CSTB and external power supply from the mains connection will be included in the test measurement.

(e) The duration of measurement should be evaluated according to IEC62301.

B3. Calculated Total Energy Consumption criteria

The criterion used in order to assess compliance of CSTBs with this Code is its calculated total energy consumption (TEC - in annual kWh). The criterion is an allowance for base functionality, plus allowances for specific, additional functionalities present across a duty cycle. This duty cycle is further explained in **section B8.1**.

B4. Base Functionality Allowance

The appropriate base functionalities are defined in **section A2**. The corresponding allowances values are given in the Table 2 of **Annex C** (*Maximum Energy Consumption Targets and Time Schedule*).

B5. Additional Functionality Allowance

The appropriate additional functionalities are defined in **section A3**. If applicable, these shall be determined using values from Table 3 of **Annex C**.

B6. Calculating Annual Energy Allowance

To calculate the Code allowance for a given CSTB, take the sum of the base functionality allowance and all applicable additional functionalities allowances (Note that there may not be any additional functions in devices such as standard Cable CSTBs or standard Satellite CSTBs). This sum is the calculated annual kWh limit, or TEC value. This sum equals the maximum amount of energy the box can use in a given year as calculated following the measurement procedure described in this Annex C.

Annual Energy Allowance (kWh/year) = Base Functionality Allowance + Additional Functionalities Allowance

B7. Multi-Room CSTB Functionality Allowance

(a) When using the Multi-Room CSTB additional functionality energy allowance to establish the criteria for a CSTB, the following procedure must be followed. This allowance may only be used for CSTBs that can provide independent content to more than one display device, e.g., TV, portable media player, etc. When utilizing the allowance for a second display, the content provided to the second display must be different to the content provided to the primary display. For the purposes of this specification, TV can be any device capable of streaming and displaying real-time video from the EUT.

(b) Specific requirements for testing Multi-Room CSTBs are as follows:

(i) first, test the Multi-Room CSTB and compare the results to the specification criteria assuming the CSTB will deliver content to only one display device, i.e., do not include the Multi-Room allowance;

(ii) if the CSTB meets the targets, no further measurement is required. If the CSTB does not pass the single display device CSTB test, then determine if it qualifies as a Multi-Room CSTB;

(iii) retest with a second display device running the same test simultaneously with the first;

(iv) add the Multi-Room additional annual energy allowance listed in Table 3 of **Annex C** to the criteria established for the CSTB; then

(v) compare the test results to the Multi-Room criteria to see if the CSTB is compliant with Code. For units that can support a second display device without the need for a thin client, the manufacturer can add in half of the relevant Thin Client allowance (see **section A2**).

B8. Device Total Energy Consumption (TEC) Assessment

In this specification, the energy consumed in the On and Standby modes will be multiplied by the number of hours a defined typical device spends in On and Standby as defined by the duty cycle set out in **section B8.1**. The result will be a single energy value representing the energy usage of the device over the course of an entire year.

B8.1 Duty Cycle for Basic Functionalities

The Base Duty Cycle defines the number of hours during which a CSTB is considered to be working in "On"(=> $T_{On)}$ and "Standby modes" (=> $T_{Standby}$ or T APD).

The duty cycle is dependent on the (optional) availability of the Auto Power Down feature.

Table 1: Base Functionality Duty Cycle

CSTB <u>without</u> APD	**On**	**Standby**	
Daily time duration in this mode	T_{On}= 9h	$T_{Standby}$=15h	
CSTB <u>with</u> APD	**On**	**Standby**	**Standby from APD**
Daily time duration in this mode	T_{On}= 4.5h	$T_{Standby}$=15h	T_{APD} =4.5h

B8.2 Equation 1: Base Assessment

Applies To All Products

Calculate the base energy consumption by multiplying the measured energy consumption as specified in this test procedure by the hours per day values in the equations below.

If the EUT does not include the capability for Auto Power Down, then use the first equation (a). If the product does include Auto Power Down capability, and it meets the requirements in **section 3.1(f)**, then use the second equation (b).

$P_{TV,}$ $P_{Standby}$ and P_{APD} are power levels in watts as measured according to the measurement procedure set out in this Annex B.

(a) Annual energy (kWh/yr) for a product with no Auto Power Down

(b) kWh base = $0.365 \times (T_{On} \times P_{TV} + T_{Standby} \times P_{Standby})$

(c) Annual energy (kWh/yr) for a product with Auto Power Down capability

(d) kWh base = $0.365 \times (T_{On} \times P_{TV} + T_{Standby.} \times P_{Standby\ .} + T_{APD} \times P_{APD)}$

Examples:

(A) The EUT does not have Auto Power Down capability, and the measurements during the measurement procedure are as follows: P_{TV} = 24.0 watts and $P_{Standby}$ = 15.0 watts. The annual energy consumption is then:

$kWh_{Base} = 0.365 * (9 * 24.0 + 15 * 15.0) =$ **161 kWh/yr**

(B) The EUT does have Auto Power Down capability, and the measurements during the measurement procedure are similar to example A: P_{TV} = 24.0 watts, $P_{Standby}$ = 15.0 watts and P_{APD} = 3 watts. The annual energy consumption is then:

$kWh_{Base} = 0.365 * (4.5 * 24.0 + 15 * 15.0 + 4.5 * 3.0) =$ **126.5 kWh/yr**

If the TEC assessed for the product is less than the Annual Energy Allowance calculated in accordance with Annex C below, the product is compliant with the energy consumption targets of the Code.

Annex C Maximum Energy Consumption Targets and Time Schedule

C1. Effective Date

Tier 0 will become effective on the Commencement Date.

Tier 1 will become effective on January 1, 2012.

Tier 2 will become effective on January 1, 2014.

Tier 2a will become effective on January 1, 2016.

C2. Base Functionality Allowance

The Base Functionality Allowance, if applicable, shall be determined using values from Table 2.

Table 2: Base Functionality Annual Energy Allowance

Base Functionality	**Tier 0 Annual Energy Allowance** (*kWh/year*)	**Tier 1 Annual Energy Allowance** *(kWh/year)*	**Tier 2 Annual Energy Allowance** *(kWh/year)*	**Tier 2a Annual Energy Allowance** (*kWh/year*)
Cable (KWh/year)	73	60	50	50
Satellite (KWh/year)	73	60	50	50
IP (KWh/year)	50	45	40	40
Terrestrial (KWh/year)	55	50	45	45
Thin-Client/Remote (KWh/year)	50	45	40	40

C3. Additional Functionalities Allowance

The Additional Functionalities Allowance, if applicable, shall be determined using values from Table 3.

Table 3: Additional Functionalities Annual Energy Allowance

Additional Functionalities	**Tier 0 Annual Energy Allowance** *(kWh/year)*	**Tier 1 Annual Energy Allowance** *(kWh/year)*	**Tier 2 Annual Energy Allowance** *(kWh/year)*	**Tier 2a Annual Energy Allowance** (*kWh/year*)
Access to Additional RF channels[1]	21	21	14	14

[1] For each additional RF channel, and associated components.

Adv. Video Processing[2]	20	20	14	0
DVR	60	32	18	18
Digital Modem (DOCSIS 2.0, DSL)	60	60	35	30
Digital Modem (DOCSIS 3.0)			50	50
Home Network Interface	18	18	18	12
High Definition	35	20	14	14
Multi-Room	44	44	12	6
Multi-Decode			25	25
Full HD (1080p)			20	20
3DTV (service compatible)			20	20
Advanced Graphics Proc (OpenGL ES 2.0)			5	5
High Efficiency Video Processing			20	20

[2] The Adv. Video Processing adder only applies once per box and can not be applied multiple times.

Annex D Measurement Procedure

D1. Overview

(a) The intention of this Section is to define an independent test process to determine the energy consumption of a CSTB under various standardised operating conditions, these are designed to emulate 'real world' viewing habits.

(b) All testing shall be carried out in controlled repeatable conditions, as specified below.

(c) Unless otherwise specified, all commands to the EUT shall be via the supplied remote control.

(d) Except for a smart card or Conditional Access module there shall be no external loads connected to the EUT, unless these are required for the EUT to function, if other external loads are required these shall not measurably increase the load on the EUT e.g. for satellite the LNB supply shall be via a DC block (i.e. powered independently).

(e) All compliance testing shall be carried out on products representative of production units. To provide results that will give an accurate representation of actual deployed usage the software used in the EUT shall be the same as the software used by the product when deployed by the Service Provider.

(f) The compliance testing shall be carried out on one (1) random sample product. If the results show that the product has passed by a margin of greater than 10% then the product is deemed to be compliant. If the product fails then that model does not comply with the Code. If the product passes with a margin of less than 10% then two (2) further random samples shall be taken. If both of these pass then the product shall be deemed to have complied. If any one (1) of the two samples exceeds the limits then the product does not comply.

(g) When testing standard definition operations the audio/video content shall be encoded using a qualifying technology (MPEG2 with scrambling) and typically a sports or film channel.

(h) When an allowance for high definition is taken the audio/video content shall be encoded using a qualifying technology (MPEG2 with scrambling) and typically an HD sports or film channel.

(i) Where an allowance for the Digital Modem is claimed then the EUT must be operated to the highest version of the Digital Modem technology that it is compatible with.

(j) Where the allowance for Advanced Video Processing is taken, then at least 1 test stream shall be encoded using a qualifying technology (e.g. MPEG4, H.264 etc. with scrambling).

(k) Where the energy savings can be influenced by the end user then all measurements shall be made using the factory default settings.

(l) Where the allowance for Multi-Room is claimed then at least one additional display device shall be connected to the EUT when performing the test methods set out at

Sections D5, D6, D7, D8 or D9 of this Annex D and the secondary display device shall render different content than the primary display device being used for the test. The EUT shall provide content to the additional display device for the duration of the test.

(m) Where the allowance for home network interface is claimed then the network interface must be enabled and connected to a standard client or host, but it is not necessary for the network to transfer video or audio data.

D2. General Test Conditions

(a) The general conditions of test are described in IEC 62301 (Household electrical appliances – Measurement of standby power). The main requirements are summarised briefly below.

Table 4: Requirements for Test Conditions

Test Conditions	**Value**
Ambient temperature	23 ± 5 ^{0}C
Air speed close to the unit	≤ 0.5 m/s
Supply voltage	230V ± 1% 50 Hz ± 1%
Supply voltage waveform	Total harmonic content ≤ 2% Crest factor between 1.34 and 1.49
Power level ≥ 0.5W Power level ≤ 0.5W Power ≤10 W Power 10 ≤ 100 W	Uncertainty ≤ 2% at the 95% confidence level Uncertainty ≤ 0.01 W at the 95% confidence level Resolution ≥ 0.01 W Resolution ≥ 0.1 W

(b) Test instruments shall be calibrated annually to traceable national standards to maintain the levels of accuracy above.

D3. Test Method for Standby (user initiated)

(a) The EUT shall be put into its on mode.

(b) If the EUT is capable of scheduling a recording then a recording shall be scheduled two (2) hours in the future.

(c) After five (5) minutes in this mode, the standby or off button on the remote control shall be pressed.

(d) The EUT shall then be left for a maximum of thirty (30) minutes for any housekeeping activities to complete.

(e) At the end of the thirty (30) minutes for housekeeping activities the average energy in watt/hours shall be measured for a period of ten (10) minutes. Based on this ten (10) minute measurement the standby part of the TEC shall be calculated.

(f) If the EUT is fitted with a front panel switch which initiates a different level of energy saving, then the test shall be repeated using the front panel switch to initiate the standby mode, with the test cycle being repeated in accordance with Sections D3. (a) – D3. (e) inclusive of Annex D. If the results are different then the higher value shall be used

D4. Test Method for Auto- Power Down

(a) If the EUT is capable of scheduling a recording then a recording shall be scheduled 6 hours in the future.

(b) The EUT shall be connected either to a live stream or a pre-recorded stream and left until the auto-standby is initiated.

(c) The EUT shall then be left for a maximum of 30 minutes for any housekeeping activities to complete. At the end of the 30 minutes for housekeeping activities the average energy in watt hours shall be measured in accordance with Section D3 above. Based on this measurement the auto-standby part of the TEC shall be calculated.

D5. Test method for On Mode of Standard Definition non-PVR

(a) The EUT shall be connected either to a live stream or a pre-recorded stream.

(b) The EUT shall then be left for a maximum of thirty (30) minutes or until the EUT has stabilised.

(c) The average energy in watt hours shall then be measured for a period of ten (10) minutes.

(d) Based on this ten (10) minute measurement the on-mode part of the TEC shall be calculated.

D6. Test Method for On Mode of High Definition Non-PVR

(a) The EUT shall be connected to, and displaying a stream of high definition content.

(b) The EUT shall then be left for a maximum of thirty (30) minutes or until the EUT has stabilised.

(c) The average energy in watt hours shall then be measured for a period of five (5) minutes (P_HD-NPVR)

(d) Using the standard remote control the EUT shall then be re-tuned to a standard definition channel and the average consumption measured for a further fifteen (15) minutes (P_SD-NPVR).

(e) The average HD non PVR watt/hours = ¼ P_HD-NPVR + ¾ P_SD-NPVR

(f) Based on this twenty (20) minute measurement the on-mode part of the TEC shall be calculated

Note: it is expected that as the quantity of High Definition content increases later versions of this document will require a higher ratio of HD content.

D7. Test method for On Mode of Standard Definition PVR

(a) The EUT shall be connected either to a live stream or a pre-recorded stream.

(b) The EUT shall then be left for a maximum of thirty (30) minutes or until the EUT has stabilised.

(c) The EUT shall then be operated in accordance with Table 5. For typical 2 tuner EUT this means 1 channel will be viewed whilst a second is recorded, for a 6 tuner EUT 1 channel will be viewed and 5 recorded.

(d) For the purposes of this test where there is more than 1 tuner the viewed channel shall be different to the recorded channels.

Table 5a: Normal Operation Duty Cycle – Single Tuner

Viewing	**Recording**	**Duration**
1	0	10
1	1	10

Table 5b: Normal Operation Duty Cycle – Dual Tuners

Active Tuners	**Viewing**	**Recording**	**Duration**
1	1	0	10
2	1	1	10

Table 5c: Normal Operation Duty Cycle – Multi-tuners

Active Tuners	**Viewing**	**Recording**	**Duration**
1	1	0	5
2	1	1	10
3+	1	All -1	5

(e) The average energy in watt/hours shall then be measured for each period. Based on this 20 minute measurement the on-mode part of the TEC shall be calculated.

D8. Test Method for On Mode of High Definition PVR

(a) The EUT shall be connected either to a live stream or a pre-recorded stream.

(b) The EUT shall then be left for a maximum of 30 minutes or until the EUT has stabilised.

(c) The EUT shall then be operated in accordance with Table 6. For typical 2 Tuner EUT this means 1 channel will be viewed whilst a second is recorded, for a 6 tuner EUT 1 channel will be viewed and 5 recorded.

(d) For the purposes of this test where there is more than 1 tuner the viewed channel shall be different to the recorded channels.

Table 6a: Normal Operation Duty Cycle – Single Tuner

Viewing HD	**Viewing SD**	**Recording HD**	**Recording SD**	**Duration**
1	0	0	0	5
0	1	0	0	5
1	0	1	0	5
0	1	0	1	5

Table 6b: Normal Operation Duty Cycle – Dual Tuner

Active Tuners	**Viewing HD**	**Viewing SD**	**Recording HD**	**Recording SD**	**Duration**
1	1	0	0	0	5
2	0	1	0	1	5
2	1	0	0	1	5
2	0	1	1	0	5

Table 6c: Normal Operation Duty Cycle – Multi Tuner

Active tuners	**Viewing HD**	**Viewing SD**	**Recording HD**	**Recording SD**	**Duration**

1	1	0	0	0	5
2	0	1	1	0	5
3	1	0	2	0	5
n > 3	0	1	2	All remaining	5

For example if 5 tuners are fitted then the final test shall be view 1 SD channel, record 2 HD channels and record 2 SD channels.

(e) The average energy in watt/hours shall then be measured for each period. Based on this 20 minute measurement the on-mode part of the TEC shall be calculated.

Annex E Reporting Requirements

(**Sections 8.1(a)** and **(b)**)

E1. Reports to be submitted by Signatories

Signatories will provide the following data in reports submitted to the independent consultant pursuant to **section 8.1(a)(ii)**:

(a) name of the Signatory and/or authorised representative;

(b) Reporting Period;

(c) new CSTB model type(s) procured by the Service Provider during the Reporting Period;

(d) existing CSTB model type(s) in service during the Reporting Period;

(e) energy consumption in the Reporting Period per CSTB model reported under (c) and (d), measured in TEC and in accordance with the test procedure set out in **Annex D**;

(f) number of each Category of CSTB in service as at the beginning and end of the Reporting Period;

(g) net decrease (if any) in the number of each Category of CSTB in service as at the end of the Reporting Period; and

(h) details of all disputes referred to in **section 13** or complaints made about the Signatory's compliance with the Code during the Reporting Period.

Category of CSTB means, for the purposes of reporting under this Annex and as at the Commencement Date, the categories of:

(a) a CSTB without DVR functionality; and

(b) a CSTB with DVR functionality.

The relevant categories will be reviewed as part of the general review of the Code and updated from time to time.

E2. Information to be provided to the Department

Business As Usual modelling based on aggregated information from Signatories will be made available to the Department by the Independent Consultant within 4 months of the end of each Reporting Period. The first model will be supplied within 16 months of the Commencement of the Code incorporating information reported by Signatories at the end of the first Reporting Period under the Code.

Annex F General Definitions

(**Section 1.3**)

Access to Additional RF Channels has the meaning given in **section A3** of **Annex A.**

Advanced Graphics Processing (OpenGL ES 2.0) has the meaning given in **section A3** of **Annex A.**

Advanced Video Processing has the meaning set out in **section A3** of **Annex A**.

Associate Member means an Equipment Manufacturer, Component Manufacturer, Conditional Access Provider, Software Provider or Operator who has endorsed the principles set out in the Code and indicated their support for the Code by signing a form of support in the form set out in **Part B** of **Annex G** in accordance with **section 5.1(c)**.

ASTRA means the Australian Satellite Television and Radio Association.

Auto-Power-Down or "**APD**" means the capability to automatically switch from the On mode to a standby mode after a period of time without user input, generally based on the amount of time the unit has remained "idle" from last active use, i.e., user input such as channel change, volume change, menu access, etc.

Cable CSTB means a cable complex set top box as more particularly defined in **section A2** of **Annex B**.

Category of CSTB has the meaning set out in **Annex E**.

Code means this voluntary code of conduct for energy efficiency of digital set top boxes.

Commencement Date means 1 January 2010.

Common Interface means an interface connector provided in a STB for a Common Interface Module and complying with EN 50221 or DVB-CI specification.

Common Interface Module is a device which is inserted into a Common Interface in a STB and is commonly used to provide Conditional Access functionality.

Component Manufacturer means a person that is responsible for designing and manufacturing components that will be used by an Equipment Manufacturer to build a product.

Conditional Access means the encryption, decryption, and authorization techniques employed to make access to content conditional upon prior authorisation.

Conditional Access Provider means a person that supplies the encryption, decryption, and authorization techniques employed to protect content from unauthorized viewing.

Confidentiality Agreement means an agreement substantially in the form of **Annex I**.

Confidential Information means information that:

(a) is by its nature confidential;

(b) is designated by a Signatory as confidential; or

(c) the recipient knows or ought to know is confidential.

CSTB has the meaning given in **section A1** of **Annex A**.

Defaulting Signatory means a Signatory that has failed to comply with its commitments under the Code.

Department means the Department of Water, Heritage and the Arts, or any successor department from time to time.

Digital Modem (DOCSIS 2.0, DSL) has the meaning given in section **A3** of **Annex A**.

Digital Modem (DOCSIS 3.0) has the meaning given in section **A3** of **Annex A**.

DOCSIS/EURODOCSIS (Data Over Cable Service Interface Specification) is an international standard which defines interface requirements for high-speed data over HFC cable networks.

DSL (Digital Subscriber Line) is a family of technologies that provides high speed digital data transmission over POTS.

DVR has the meaning given in section **A3** of **Annex A**.

Effective Date means the relevant effective date for each Tier target as specified in **Annex C**.

End User means a person that uses a CSTB. An End User includes:

(a) a subscriber to content services provided by a Service Provider who acquires a CSTB as part of the subscription; and

(b) any other person who uses a CSTB.

Equipment Manufacturer means a person who uses a component or components made by a Component Manufacturer, and is responsible for designing, developing and/or manufacturing a CSTB with a view to supplying it to a Service Provider for distribution in Australia.

Equipment Under Test or "**EUT**" means the equipment being tested.

Full High Definition (HD) Resolution (1080p) has the meaning given in **section A3** of **Annex A.**

GPRS (General Packet Radio Service) is a high speed packet data service implemented on a GSM mobile phone network.

HD Resolution or "**High Definition Resolution**" has the meaning given in **section A3** of **Annex A**.

High Efficiency Video Processing has the meaning given in **section A3** of **Annex A.**

IEC means the International Electro technical Commission.

IEC 62087 means the document entitled "Methods of Measurement for the power consumption of Audio, Video and Related Equipment.

IEC 62301 means the document entitled "Household electrical appliances - Measurement of standby power"

IP CSTB has the meaning given in **section A2** of **Annex A**.

LNB means low noise block down converter.

Maximum Energy Consumption Targets means the targets specified in **Annex C**.

MCE means the Ministerial Council on Energy referred to in **section 1.2(a)**.

Multi-decode has the meaning given in **section A3** of **Annex A.**

Multi-Room CSTB has the meaning given in **section A3** of **Annex A**.

On means the operational mode in which the CSTB is at least actively performing its base functionality. Note that the energy consumption in "On" mode might be variable over time and dependant on the real functionality requested from the CSTB user. The measurement procedure for the "On" power state is described in **Annex D**.

Operator means a person that, whether by cable, satellite, terrestrial or telecommunications, provides video (and possibly other) content to subscribers with whom it has an ongoing contractual relationship and supplies CSTBs to End Users but does not procure CSTBs direct from Manufacturers. An Operator does not include a Service Provider.

Out-Of-Band Tuners means tuners used to gain access to data channels outside of the audio/video source signal. These may facilitate two-way communication and allow the box to send diagnostic information back to the Service Provider as well as enabling pay-per-view content and other rich media interactive content.

PVR has the same meaning as DVR.

Quorum means two thirds of the Voting Members being present at a meeting of the Steering Committee.

Reporting Period means a year ending on 31 December.

Satellite CSTB has the meaning given in **section A2** of **Annex A**.

SD means Standard Definition.

Service Provider means a person that, whether by cable, satellite, terrestrial or telecommunications, provides video (and possibly other) content to subscribers with whom it has an ongoing contractual relationship. A Service Provider in the context of the Code is limited to a Service Provider that contracts with an Equipment Manufacturer for the supply of CSTBs according to a particular specification and supplies CSTBs to End Users**.**

Signatory means a Service Provider who has agreed to be bound by the Code and has completed and lodged a signing form in the form set out in **Part A** of **Annex G**, in accordance with **section 5.1(b)**.

Simple STB means a standalone device which, irrespective of the interfaces used, has the primary function of converting standard-definition (SD) or high-definition (HD), free-to-air digital broadcast signals to analogue broadcast signals suitable for analogue television or radio, and has no 'conditional access' (CA) function. For example, a STB that has an unpopulated

Common Interface socket is a Simple STB. A STB that has a Common Interface socket which is populated with an active Common Interface Module is a CSTB.

Software Provider means a person who is responsible for producing the middleware and/or the operational software for the CSTB

Standards means the specifications set out in **section 3** of the Code.

Standby means the operational mode in which the CSTB has less energy consumption, capability and responsiveness than in "on" mode. Note that the energy consumption in "Standby" mode might be variable over time and dependant on the real functionality requested from the CSTB user. The measurement procedure for the "Standby" power state is described in **Annex D**.

STB means set top box.

Steering Committee means the committee described in **section 6.1**.

Supplier means any person that supplies equipment, software or conditional access systems to a Service Provider for use in CSTBs.

Terrestrial CSTB has the meaning given in **section A2** of **Annex A**.

Thin-Client/Remote CSTB has the meaning given in **section A2** of **Annex A**.

Tier means a tier specified in **Annex C**.

Total Energy Consumption or "**TEC**" means an assessment tool used in this specification that provides flexibility to approach the issue of energy efficiency while retaining a comparable metric to assess performance. In this specification, efficiency criteria are noted in terms of calculated energy use over a year for a typical user (kWh/yr) rather than energy (watts) for On and Standby modes.

Tuner means a tuner in the conventional sense. i.e. a tuner is a device or component that has the capability to demodulate physical transmissions from the DTV network at the electrical and mechanical level, corresponding to the OSI Physical Layer 1. Examples include DVB-S, DVB-T, DVB-C, DVB-H, ITU G.992.x (G.DMT etc), IEEE 802.16 (WiMAX). A tuner may also incorporate functionality from higher OSI layers (for example Ethernet), but to be classified as a "tuner" for the purposes of this code it must provide OSI Layer 1 functionality and be used for the purpose of reception of digital media (DTV) content. A "Digital Modem" and an "Out-of-Band Tuner" is not considered a tuner for the purposes of this code – see separate definitions. For the avoidance of doubt an Ethernet connector is not a tuner as it does not provide OSI layer 1 functionality.

TWh means terawatt hours.

Voting Member means the members of the Steering Committee nominated by a Signatory that is a Service Provider.

3DTV (service compatible) has the meaning given in section **A3** of **Annex A**

Annex G Signing Form

PART A - Signatories

(**Section 5.1(b)**)

See separate document

Part B - Associate Members

(**Section 5.1(c)**)

See separate document

Annex H Schedule of retirement for CSTBs

(**Section 4.1(b)**)

To be negotiated where required.

Annex I Confidentiality Agreement

(**Section 6.2(d)**)

See separate document

Annex J Communication

(**Section 1.5**)

J1. Service Provider Contact Points

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:

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J3. Department Contact Points

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J4. Independent Consultant

(**Section 8.1(a)(ii)**)

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