European Code of Conduct for Broadband Equipment

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European Code of Conduct: what is it?

- Code of Conduct:
  a voluntary commitment of individual companies, with the **aim of reducing energy consumption of products and/or systems** through the setting of agreed targets in a defined development timescale.
- Targets could expressed in **maximum allowed power consumption** for the different operational modes or based on indicators (e.g. W, KWh/m2) or benchmarking.
- Energy consumption levels are complemented **by general commitments of power and energy management**, switching off components not needed, and reducing energy consumption where possible.

European Code of Conduct: what is it?

- There are 4 Codes of Conduct in operation:
  - Digital TV Service Systems (set-top boxes);
  - External Power Supplies;
  - UPS;
  - Broadband Equipment;
- And one under development
  - Data centers

EU Code of Conduct: Basic Mechanisms

- Stage 1: Identify priority products/system and set up working groups, involving all relevant stakeholders.
- Stage2: Improved energy efficiency criteria (must be more than BaU!) and CoC roadmap.
- Stage 3: Achieved outcome, agreed with stakeholders.
- Stage 3: Continuous review to identify best practices.

N.B. very important for fast changing technology such as Set Top Boxes, Data Centers and Broadband Equipment. Difficult to use standardization and legislation

Why a Code of Conduct for Broadband Equipment?

- Broadband equipment will contribute to the electricity consumption in European Community depending on the penetration level, the specifications of the equipment and the requirements of the service provider, a total European consumption of up to 50 TWh per year can be estimated for the year 2015.
- With the general principles and actions resulting from the implementation of this Code of Conduct the (maximum) electricity consumption could be limited to 25 TWh per year, this is equivalent to 5,5 Millions tons of oil equivalent (TOE) and to total saving of about € 7,5 Billions per year.

Aim of the Code of Conduct for Broadband Equipment

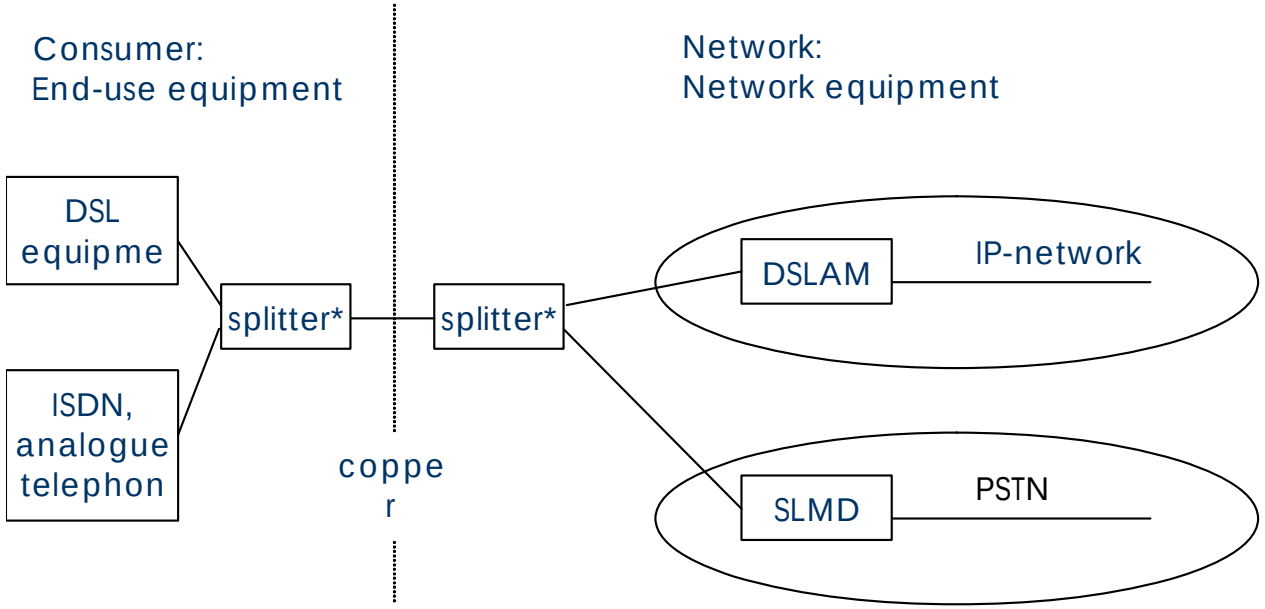
To reduce energy consumption of broadband communication equipment without hampering the fast technological developments and the service provided

General Principles

- Equipment is designed to achieve reduced power consumption targets on the whole system as well as individual components.
- Control systems are specified on the presumption that hardware has power management built in, and the hardware will automatically switch to the state with the lowest possible power consumption.
- Any external power supplies used for end-use equipment shall be in accordance with the EU Code of Conduct for External Power Supplies.
- End-use equipment is designed on the assumption that the equipment may be physically disconnected from the mains supply by the consumer.
- Broadband Network equipment should be designed to fulfil the environmental specifications of Class 3.2 for indoor use and even more extended environmental conditions than Class 3.2 for use at remote sites according to the ETSI Standard. It should be preferably cooled with fresh air. The COP 'Coefficient Of Performance' of new site cooling systems,, should be more than 10.
- VDSL2 Network equipment should use a low power state (L2) and a standby state (L3) when relevant standards and definitions will be available.

Equipment covered by the Code of Conduct for Broadband Equipment

Equipment both on the consumer side (end-use equipment) and the network side (network equipment), for services providing a two way data rate of 144 kb/s or above.



Equipment covered by the Code of Conduct for Broadband Equipment

End-user equipment associated with broadband distribution for residential customers and SOHO	Network equipment
• DSL modem • Cable modem • PLC modem • (DSL) router with/without WLAN up to 5 ports (1WAN port and 4LAN ports) up to 1000 Mbits/s • Small hubs and switches up to 8 ports (10/100/1000 Mbits/s) • WLAN access points • WiMAX • Small printer server (connected to broadband) • Home gateway • Telephone devices for VoIP (ATA or VoIP-Handset) • Optical network termination (ONT) • Equipment that is a combination of one or more of the equipment above	• DSL port (example: ADSL, ADSL2, ADSL2+, VDSL2) • Combined port (example: MSAN, POTS/ISDN + ADSL2+ etc) • NTBA (ISDN terminator at customer premises) • WiMAX Base Stations • PLC & Cable service provider equipment • Optical line termination (OLT)

Power levels for end-use equipment

Equipment	Tier 1: 1.1.2007- 31.12.2008		Tier 2: 1.1.- 31.12.2009		
	Off	*On*	*Off*	*Low power state*	*On*
ADSL / VDSL-modem powered by USB	0 W	1,5 W	0 W	0,8 W	1,5 W
ADSL-modem (maximum ports or functionalities: 1 DSL, 1 port Ethernet 10/100, 1 USB device 1.1/2.0, Router, NAT,firewall)	0,3 W	6,0 W	0,3 W	2,0 W	4,0 W
VDSL-modem (maximum ports or functionalities: 1 DSL, 1 port Ethernet 10/100/1000, 1 USB device 1.1/2.0, Router, NAT,firewall)	0,3 W	8,0 W	0,3 W	2,0 W	6.0 W
Simple Cable Modem (maximum ports or functionalities: 1 WAN, 1 port Ethernet 10/100, 1 USB device 1.1/2.0, Router, NAT,firewall)	0,3 W	7,0 W	0,3 W	2,0 W	7,0W
Optical Network Termination (maximum ports or functionalities: 1 optical interface, 1 port Ethernet 10/100/1000, 1 USB device 1.1/2.0, Router, NAT,firewall)			0,3 W	TBD	12,0W
WLAN access points with 802.11a/b/g/n standard	0,3 W	6,0 W	0,3 W	2,0 W	6,0 W
VoIP-Device (ATA or VoIP handset)	0,3 W	5,0 W	0,3 W	2,0 W	5,0 W
Additional Colour Display (typically found in VoIP devices) TFT QVGA and VGA	-	+ 3,5 W	-	+ 0,7 W	+ 2,5 W
Small printer server	0,3 W	5,0 W	0,3 W	2,0 W	5,0 W
Small hubs and switches (up to 8 Ethernet 10/100/1000 ports)	0,3 W	5,0 W	0,3 W	2,0 W	5,0 W
Routers up to 9 (1 WAN and 8 LAN) Ethernet 10/100/1000 ports	0,3 W	10,0 W	0,3 W	2,0 W	8,0 W
Each additional function of the following: WLAN 802.11a/b/g, FXO, FXS/VoIP, hub/switch for up to 4 ports, DECT, Bluetooth,		+ 2,0 W			+ 2,0 W
An additional WLAN 802.11n function		+ 3,0 W			+ 3,0 W

Power levels for network equipment

Broadband ports - Full Power Mode L_0

Equipment	Tier 1 (01.01.07)	Tier 2 (01.01.08)	Tier 3 (01.01.2009)
ADSL 2+ (including ADSL and ADSL2 and with transmission power of 19,8 dBm)	1,5 W	1,4W	1,2 W
VDSL2	2,75 W	2,0W	1,6 W

Broadband ports - Low Power State L_2

Equipment	Tier 1 (01.01.07)	Tier 2 (01.01.08)	Tier 3 (01.01.09)
ADSL 2+ (including ADSL and ADSL2)	--	1,1 W	0,8 W
Start-up/Wake up Time from L2 to L0	--	<= 1 sec is acceptable	<= 1 sec is acceptable
VDSL2	--	--	1,2 W

Broadband ports - Standby state L_3

Equipment	Tier 1 (01.01.07)	Tier 2 (01.01.08)	Tier 3 (01.01.09)
ADSL 2+ (including ADSL and ADSL2)	--	0,8 W	0,4 W
Start-up/Wake up Time from L3 to L0	--	Not Specified	<= 3 sec
VDSL2	--	1,0 W	0,8 W

International Collaboration

- European Codes of Conducts aim at harmonising test methods and criteria with international programmes;
- The External Power Supply Code of Conduct use the same test method and similar criteria to the US Energy Star programme;
- We are working with the International Community of Practice for STBs and we contribute with our stakeholder forum to the development of the STB international specifications;
- We are keen to establish an international working group on broadband equipment (DSL and cable modems, router, home networks, home gateways), which is increasing responsible for larger standby consumption in households;

Signatory of the Code of Conduct

- Equipment suppliers
- Equipment purchasers: e.g. Telecom companies
- Only two companies have signed it:
  - Swisscom
  - TDC Services
- In addition, it is important that companies in any case follow the CoC requirements to their best efforts

Thank you!

http://re.jrc.ec.europa.eu/energyefficiency