

EPA DTA Workshop Washington DC

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Summary of From Around the World

Activity	Status	Off	Passive Standby	Active Standby	On	Notes
Australia SD (Planned)	Mandatory Oct 2007	N/A	$\leq 1W$ (if On 8W)	8W	8W	Maximum 15W
	Mandatory Oct 2007	N/A	$\leq 2W$ (if On 7W)	7W	7W	Maximum 15W
Australia HD (Planned)	Mandatory Oct 2007	N/A	$\leq 1W$ (if On 15W)	$\leq 12W$	$\leq 15W$	Maximum 22W
	Mandatory Oct 2007	N/A	$\leq 2W$ (if On 14W)	$\leq 11W$	$\leq 14W$	Maximum 22W
Energy Star	Voluntary	N/A	$\leq 7W$	N/A	N/A	
GEEA(Europe)	Voluntary	$\leq 0.5W$	$\leq 1W$	$\leq 7W$		
EC Code	Voluntary	$\leq 1W$	$\leq 6W$ Now $\leq 3W$ From 1/1/06 $\leq 2W$ DTA Now	$\leq 9W$ Now $\leq 6W$ From 1/1/06	N/A $\leq 11W$ DTA Now $\leq 7W$ DTA in 2006	Maximum 15W Single tuner
Korea	Mandatory		$\leq 1W$			
California	Mandatory 2007		$\leq 1W$		$\leq 8W$ DTA's	
China	Mandatory	TBA	1W	9W	9W	SD Spec
IEA	Recommended	$\leq 1W$				

Australian Broadcast Environment

- **Australia has 3 broadcast standards**
 - **Analog (Turn off 2012)**
 - **Digital Standard Definition (MPEG 2)**
 - **Digital High Definition (MPEG 2)**
- **HD Product is 35% of the Market and rising (Correlates with LCD and Plasma sales).**
- **SD Product is 65% of the Market and falling.**
- **Around 14 Million STBs will be needed to convert all TVs to Digital**

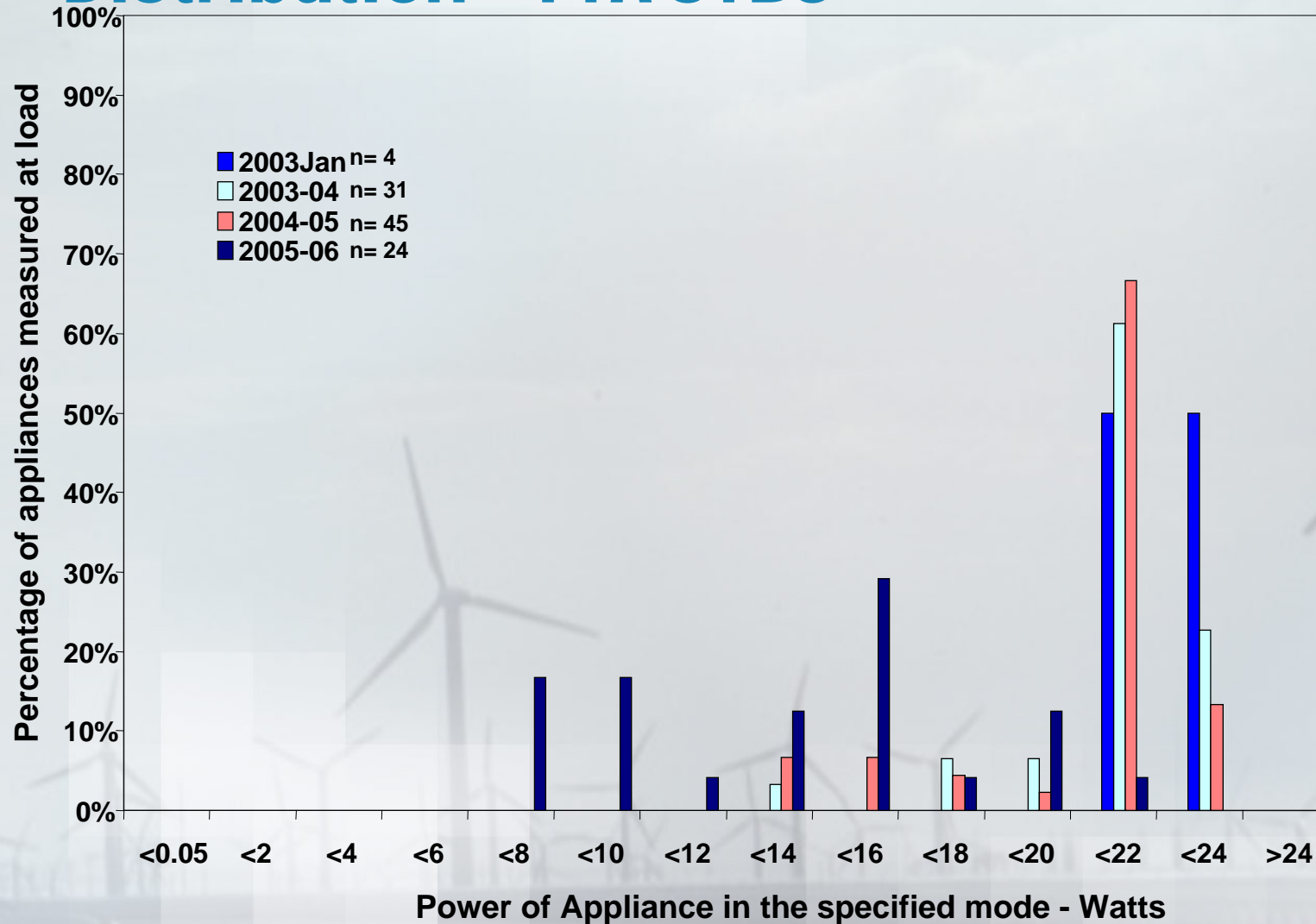
Australian STB Environment

- **Small Volume Compared to Other Countries (Market Saturation 14M)**
- **Early adoption of HD**
 - Limited Receivers
 - Locked into MPEG2 through Legacy
- **Characterized by Reference Designs and Modified Satellite/Cable Designs**
- **Regulatory Environment supported by suppliers**

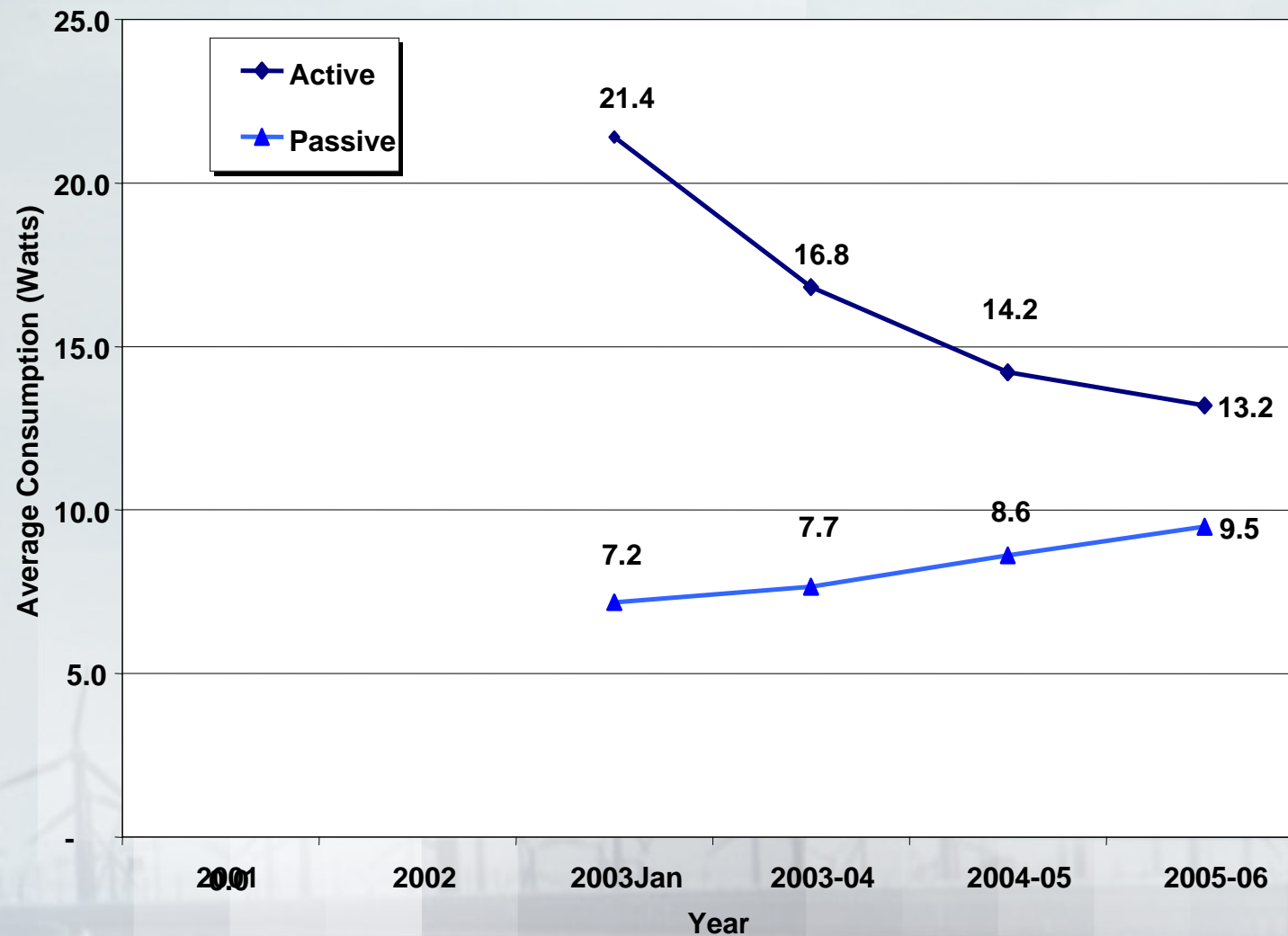
Australian MEPS Development

- **Limits established by Survey, Analysis of available devices and Negotiation with stakeholders.**
- **Compliance by October 2007 means designs must start by October 2006.**
- **Standards limits developed in 2005.**
- **Suppliers have large investment in platform development predominantly Software.**
- **New Platforms need new software i.e. Increased costs.**
- **Must not compromise the role out of DTT**

In-use/Active Standby Power Distribution – FTA STBs



STB Average Power – FTA Latest Survey Results



Typical Platform Power Requirements

Supply Volts	Device	Current mA	Decode	Front End	Misc	Memory
1.2	Decoder	960	1.15			
1.8	Front End	450		0.81		
1.8	Misc	240			0.43	
2.5	Dedoder	425	1.06			
2.5	DDR	900				2.25
2.5	DDR Termination	600				1.50
3.3	Decoder	215	0.71	0.71		
3.3	Front End	95				
3.3	Flash	30			0.10	0.10
3.3	Cable Card	1250				
3.3	Misc	50			0.17	
5	Front End	283		1.42		
5	Cable Card	250				
5	Misc	30			0.15	
5	Misc	20			0.10	
9	Front End	50		0.45		
12	Misc	8			0.10	
30	Front End	5		0.15		
Totals			2.92	3.53	1.04	3.85
					Total	11.35
					Total w PS 85%	13.4

STB MEPS Levels

Product Type	Passive Standby Max Power (W)	Active Standby Max Power (W)	On mode Max Power (W)	Decoder
		MPA/MPL	MPA/MPL	
Proposed Compliance Date	1 October 2007			
STB – FTA Either Option 1 or Option 2	1.0W	8W /15W	8W /15W	SD
	2.0W	7W /15W	7W /15W	SD
STB – FTA Either Option 1 or Option 2	1.0W	12W /19W	15W /22W	HD (MPEG-2)
	2.0W	11W /19W	14W /22W	HD (MPEG-2)
STB – STV	Not applicable	9W /15W	Not applicable	SD
STB – STV	Not applicable	13W /19W	Not applicable	HD (MPEG-2)

- **Definitions**

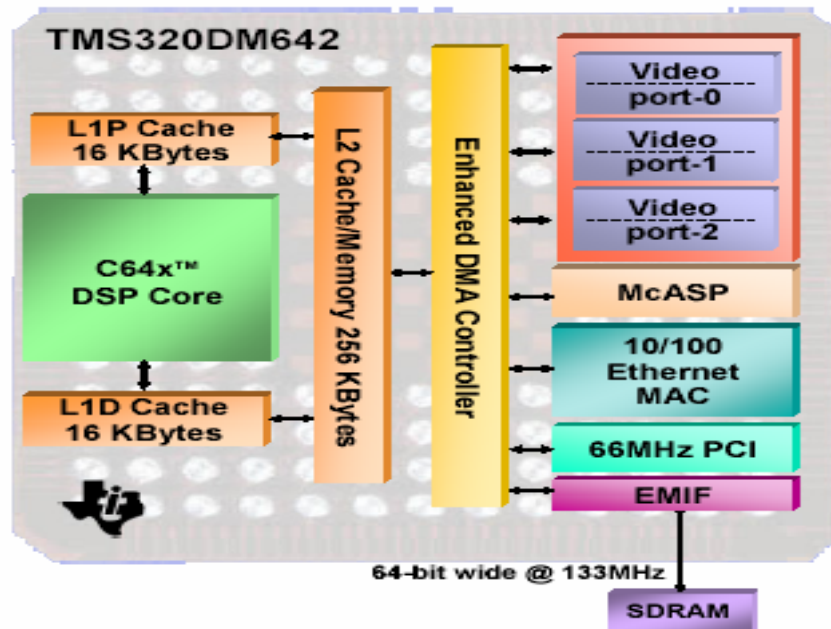
- » **FTA: Free-to-air, STV: Subscription TV**
- » **SD: Standard Definition, HD: High Definition**
- » **MPA: Maximum Platform Allowance**
- » **MPL: Maximum Power Level**

Postscript

- **One designer has achieved 9W with a ST implementation that includes MPEG 4 HD decoding (90nm Technology)**
- **Chip Manufacturers (Broadcom, Zoran and ST Microelectronics) are racing toward 65nm technology and MPEG 4 Decoding.**
- **Lower power solutions are emerging.**

Texas Instruments Solution

TMS320DM642 Block Diagram



720/600/500MHz DSP Core @ 1.4/1.2v

- Industry-leading performance in 0.13 micron copper process

Three Dual-Channel Video Ports

- Two video channels per port - software configurable as input or output
- Video filtering, horizontal scaling
- Glueless interface to video system components
- Support BT656, digital TV formats (SDTV and HDTV), raw video I/O
- 8-bit/10-bit/16-bit/20-bit video support per port

McASP

- Multichannel audio serial port
- Up to 8 stereo lines (16 channels)

10/100 Ethernet MAC

- Connects to IP packet networks

66MHz PCI

- Connects to backplane chassis or PCI bus

23x23sqmm flip-chip BGA package

- Maximizes channel density

OCT 19, 2005

Texas Instruments

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Notes:

- Flash RAM plus 8VSB Tuner 2W
- Current family called DA VINCI (EM6446) Runs at 3W Streaming HD IN/OUT
- Total Solution 5W-6W

● Incorporated in agreed brand new volume production for 9 DVB products for US and other markets, one can be mentioned publicly,

● "Slingbox" DVB Terrestrial receiver with Internet connectivity.