



# Topics on Digital TV Sets in Japan

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*DiBEG*



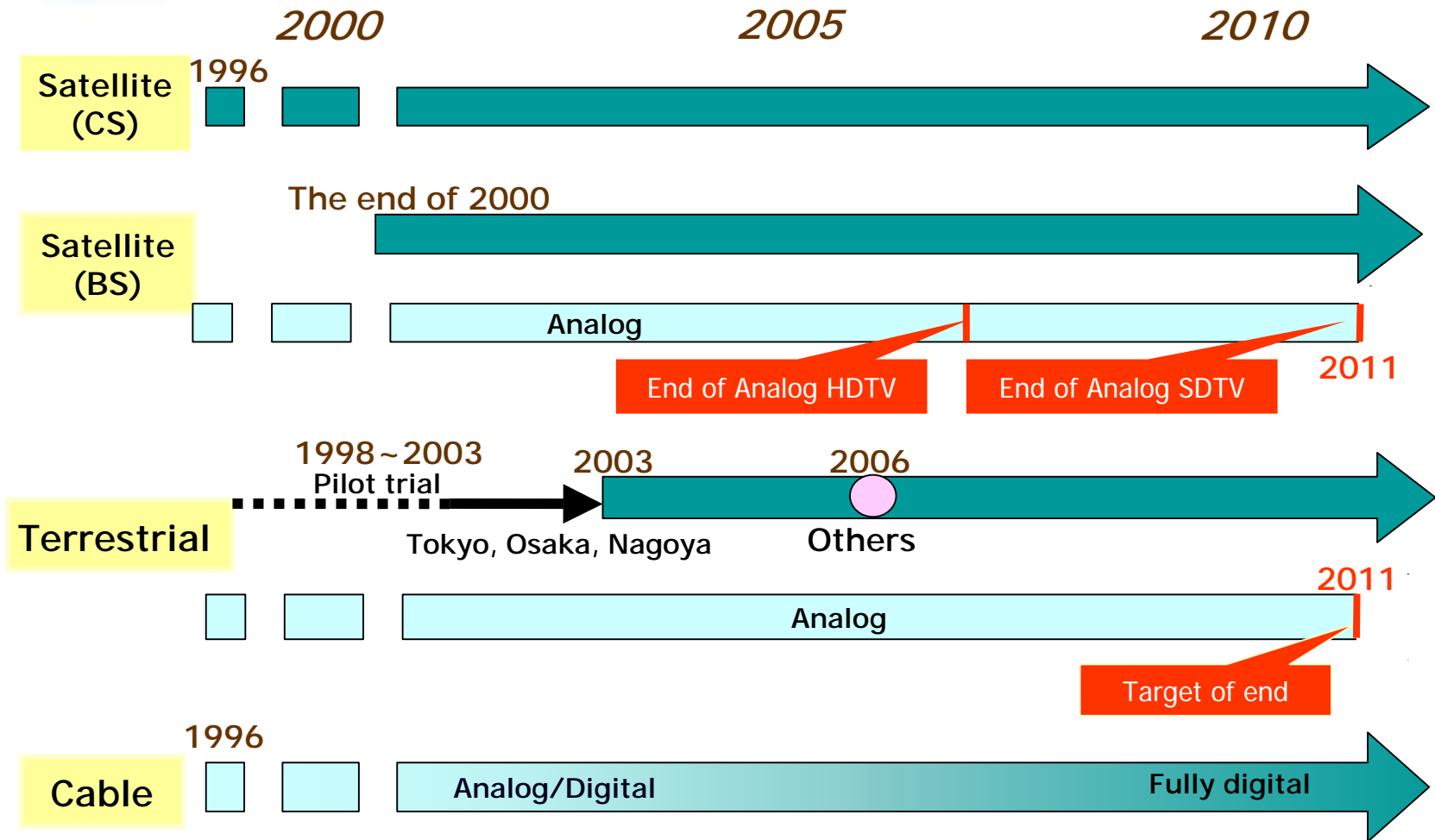


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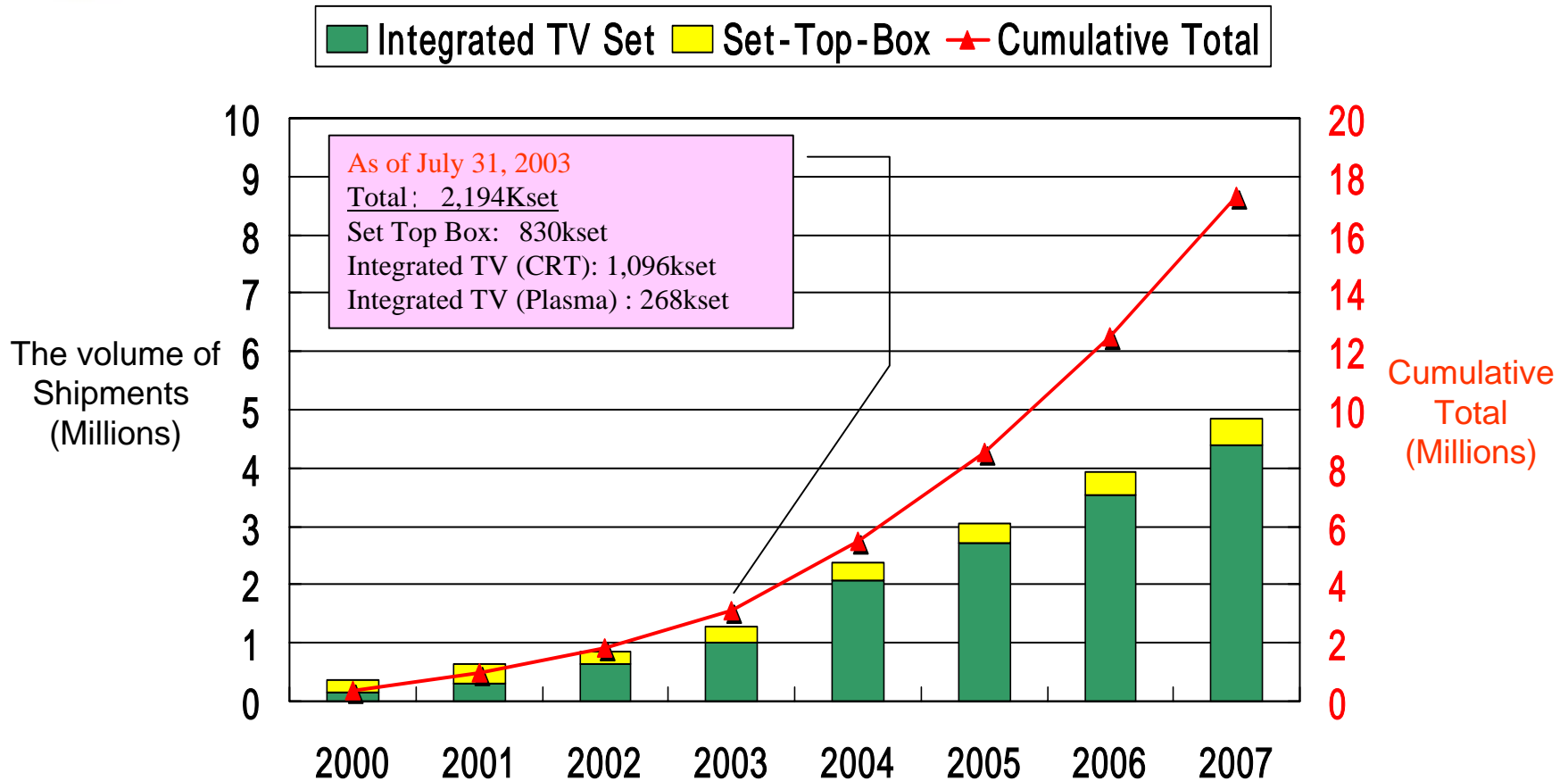


# Schedule of Digital Broadcasting in Japan



# Volume of Shipments of Digital TV Sets and Set-Top-boxes

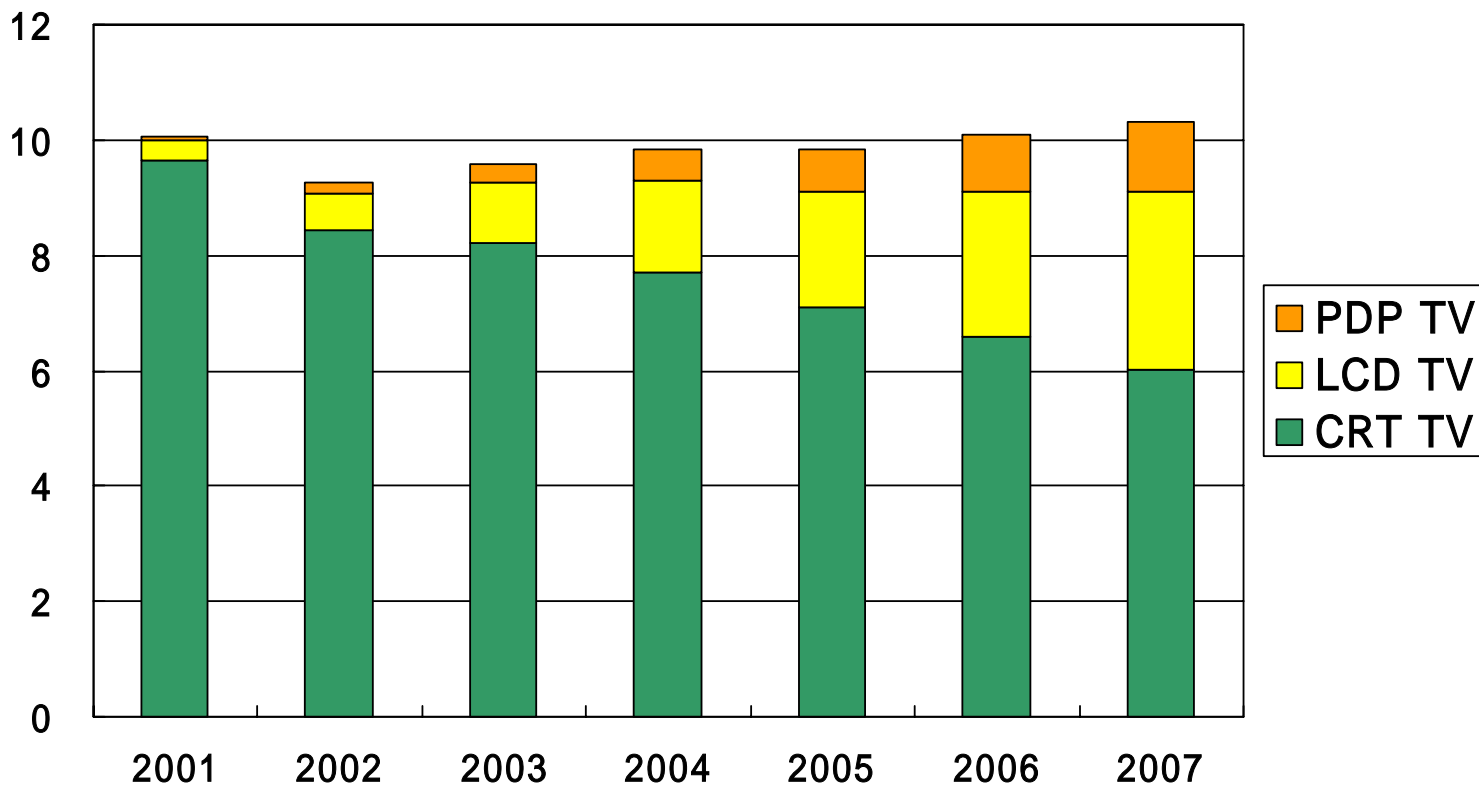
## --Sales Achievements and Projections--



Source: JEITA Electronics and Statistics Committee AV Forecast Working Group

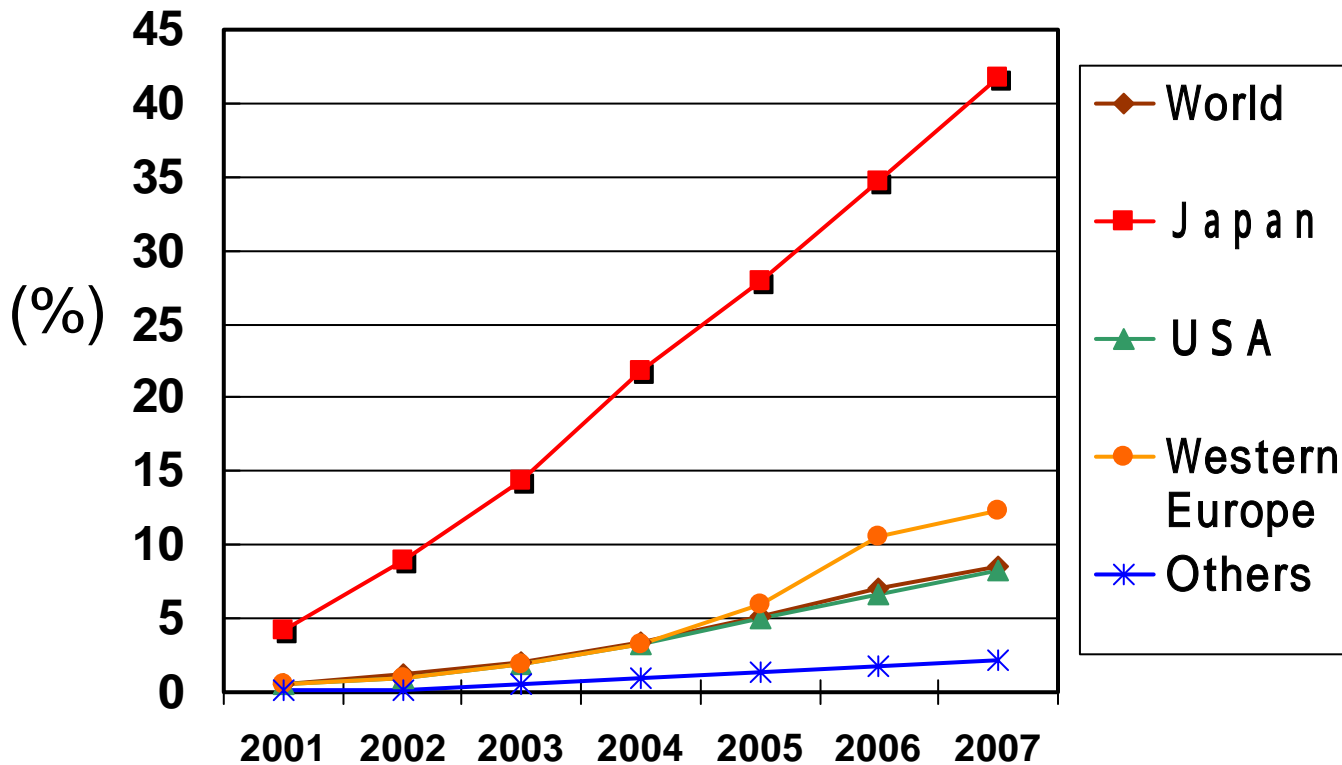


# Ratios between Flat Panel Displays TV and CRT TV



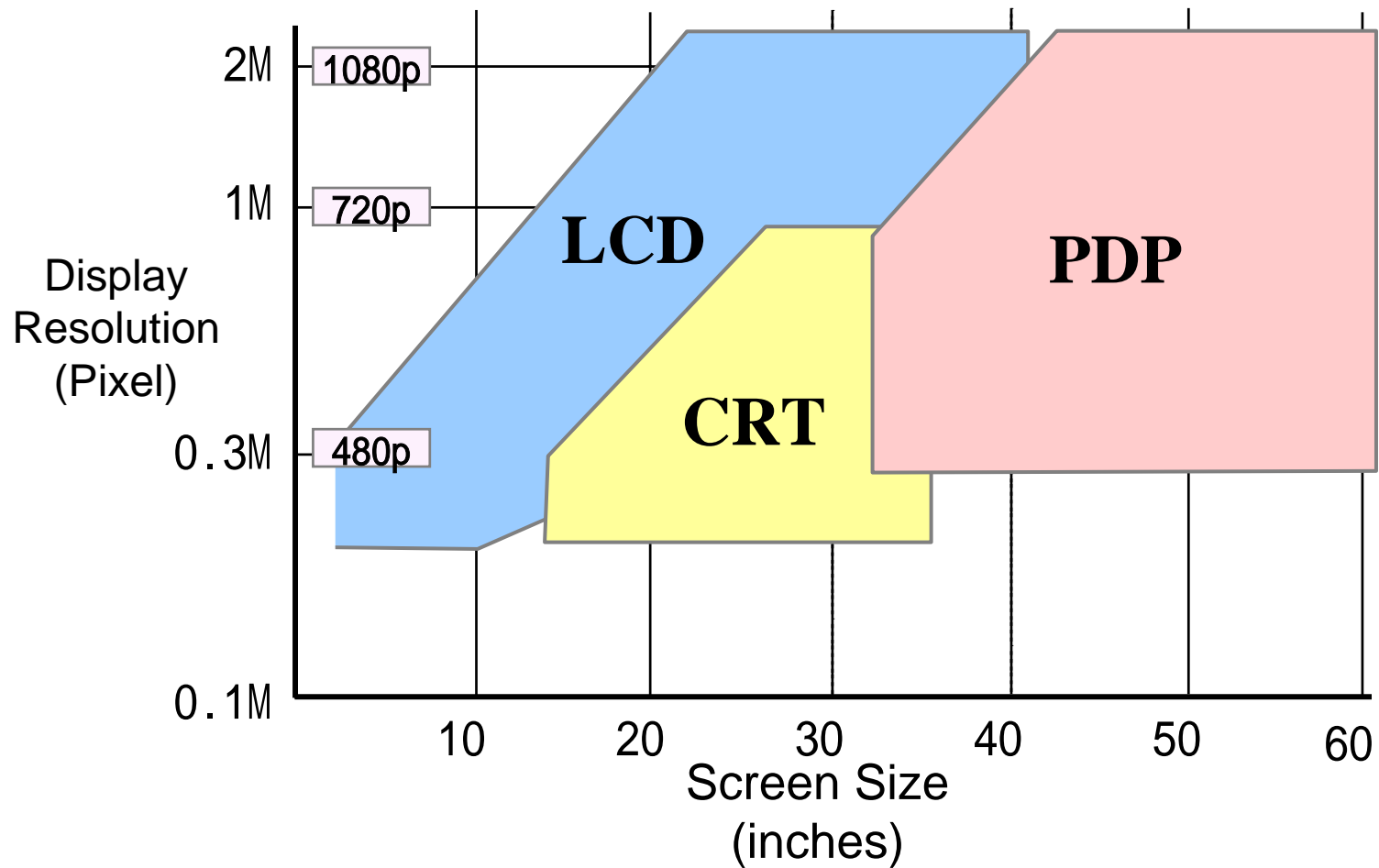
Source: JEITA Electronics and Statistics Committee AV Forecast Working Group

# Ratios of Flat Panel TV sets to All Kinds of TV sets

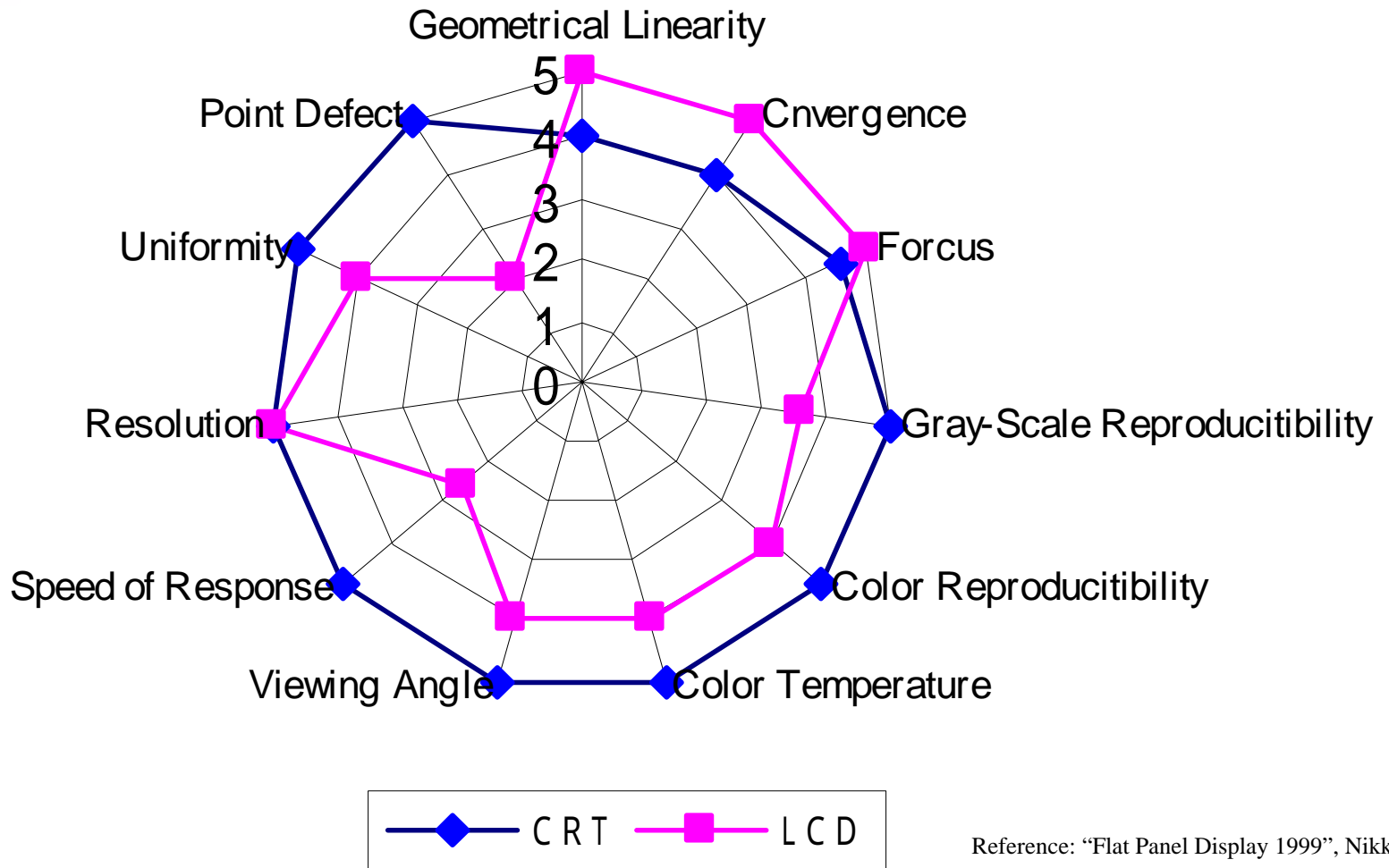


Source: JEITA Electronics and Statistics Committee AV Forecast Working Group

# Co-existence of CRT, PDP, LCD



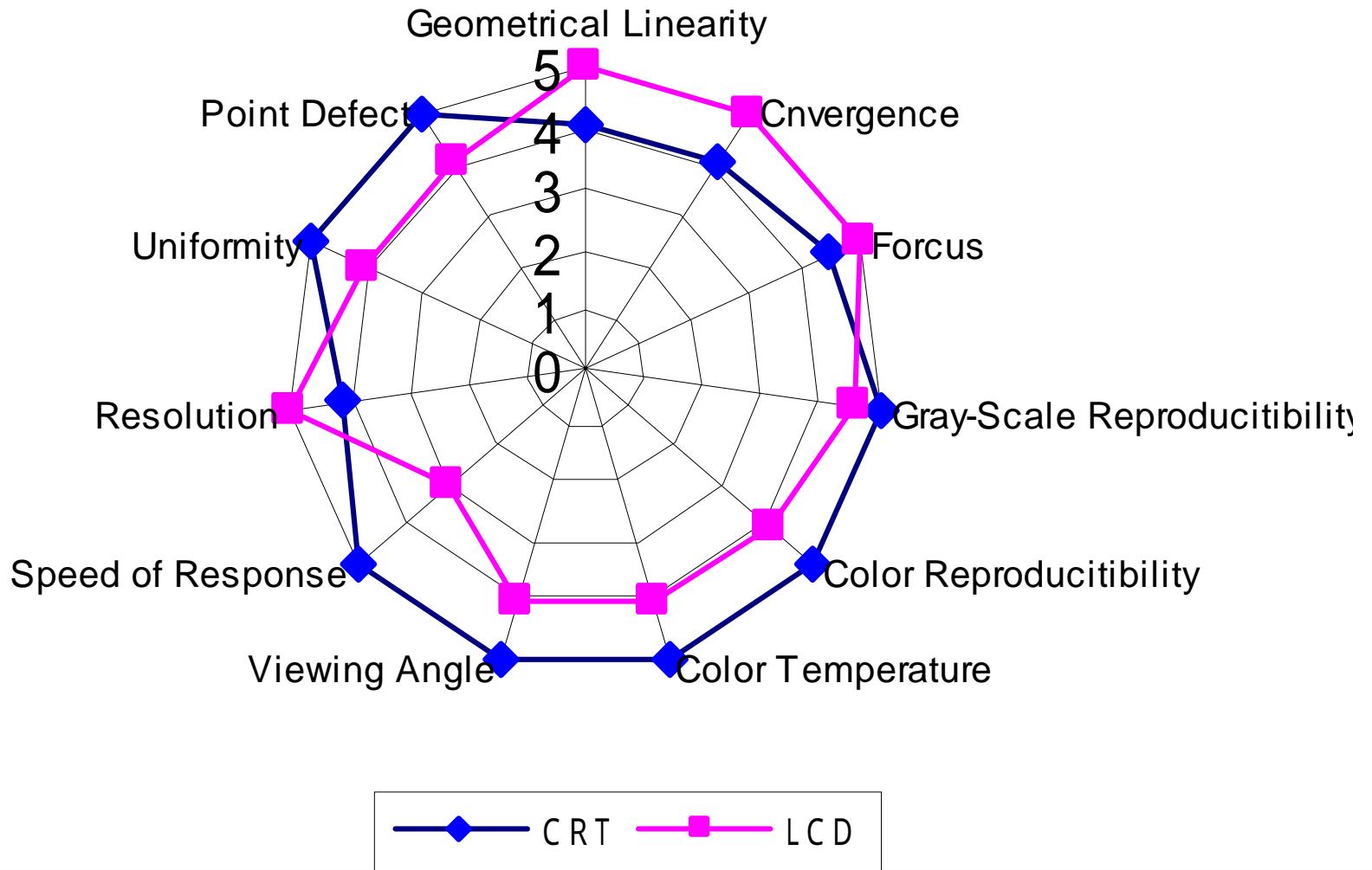
# Comparison of Picture Quality between CRT and LCD (1999)



Reference: "Flat Panel Display 1999", Nikkei BP



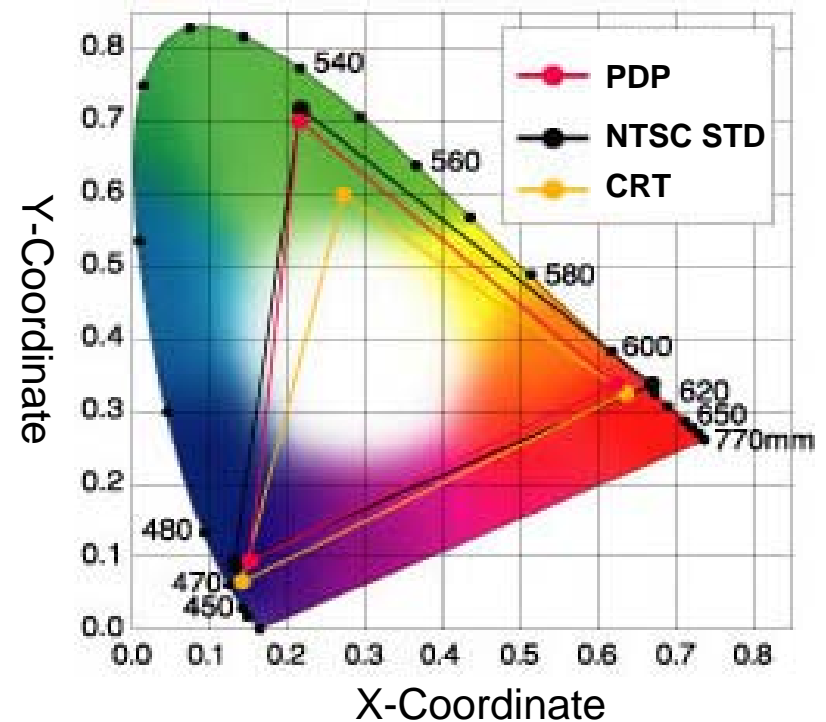
# Comparison of Picture Quality between CRT and LCD (2003)



# Color Reproduction

- Area of color reproduction of CRT is around 70% the area of NTSC standard.
- PDP has wider area of color reproduction than CRT.
- LCD can get same area of color reproduction with CRT by the sacrifice of the brightness.

CIE XY Chromaticity Diagram

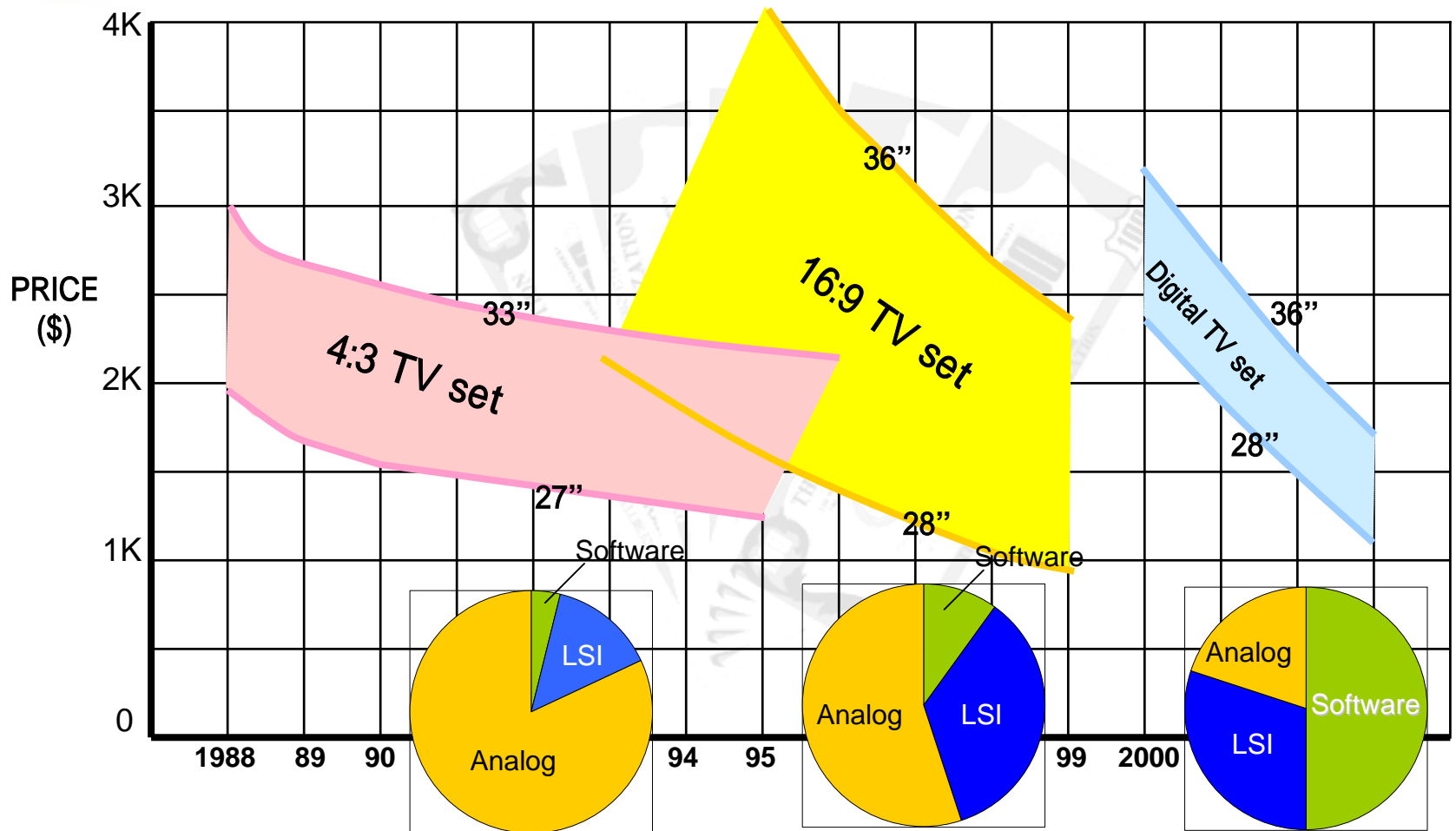


# Comparison of Digital TV sets

	<i>Newest</i> CRT TV set	<i>Newest</i> PDP TV set	<i>Newest</i> LCD TV set
Screen Size (Area ratio)	36 " 16 : 9 (1)	43" 16:9 (1.6)	37" 16:9 (1.2)
No. of Pixel	1080i	1024 x 768	1366 x 768
Peak of brightness	Approx. 450cd/m <sup>2</sup>	Approx. 440cd/m <sup>2</sup>	Approx. 450cd/m <sup>2</sup>
Brightness at full white	Approx. 130cd/m <sup>2</sup>	Approx. 100cd/m <sup>2</sup>	Approx. 450cd/m <sup>2</sup>
Power Consumption	190w	344w	195w
Movie Display			
Weight of the system (Weight of the display)	73.2kg (73.2kg)	40.0kg (34.2kg)	26kg (20kg)
Depth of Display	596mm	98mm	82mm
Price at Mass Sales Store	48 \$/inch	85 \$/inch	122 \$/inch

As of July 15

# Price Down of TV Sets (CRT Type)



- **OLED(Organic Light Emitting Diode)**
  - Expected as next generation display
  - Self-luminous
  - Low power consumption
  - Wide-angle vision
  - High switching-speed
  - Possibility of low-price panel
  - Eastman Kodak and Sanyo developed 15” full-color OLED panel last year.
- **FED(Field Emission Display)**
  - Basic principle is same with CRT
  - Economical advantages for display over 30”
  - Development of cold-cathode is one of key factors

# Toshiba Launched the Sale of New TV Sets

April 21

- Four tuners (ISDB-T, ISDB-S for BS, ISDB-S for CS110, Analog terrestrial ) are installed.
- Equips LAN terminal for interactive TV
- Upgraded software can be installed by a customer .



Reference: [http://www.toshiba.co.jp/about/press/2003\\_04/pr\\_j2101.htm](http://www.toshiba.co.jp/about/press/2003_04/pr_j2101.htm)

# Panasonic Launched the Sale of ISDB-T STB by Subscription

June 4

- Customers who have or will buy Panasonic TV set can buy it.
- This STB is able to be connected to only Panasonic TV set.
- For ISDB-T and ISDB-S
- The list price is 380\$.
- Delivery start next December.

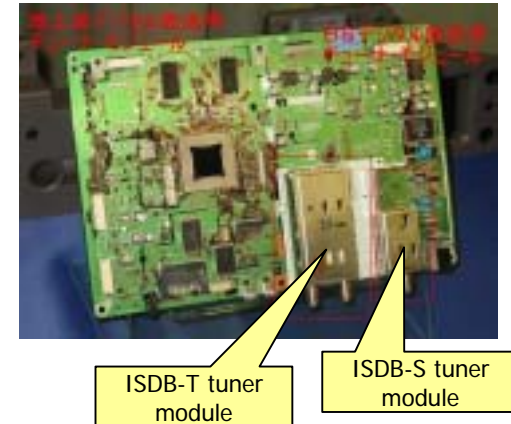


# Sharp Launched the Sales of New LCD TV Sets on July 9

- **LC-37AD1 and LC-37AD2**
  - 37" LCD display
  - For HDTV (1366 × 768 pix)
  - Separated tuner (NTSC analog, ISDB-S and ISDB-T)
- **LC-30AD1 and LC-30AD2**
  - 30" LCD display
  - For HDTV (1280 × 768 pix)
  - Display is provided with tuner
- **LC-22AA1**
  - 22" LCD display
  - For wide TV (854 × 480 pix)



Installed Video processing Board



LC-37AD1 and LC-30AD1



LC-37AD2 and LC-30AD2





# Sanyo Announced the sales of New TV Sets

Aug 6

- PDP(42", 37") and LCD (30")
- Four tuners (ISDB-T, ISDB-S for BS, ISDB-S for CS110, Analog terrestrial ) are installed.
- Pixel
  - PDP 1024 × 1024
  - LCD 1280 × 768
- Sanyo will launch the sales on Oct. 1



<http://www.sanyo.co.jp/koho/hypertext4/0308news-j/0806-2.html>

# Sony announced ISDB-T STB

Aug 7

- For ISDB-T and ISDB-S (BS +CS110)
- Though open-priced, the STB is likely to be sold for about 600\$.
- Sony will launch the delivery on October 21.



# Panasonic Launched the Sale of New TV Sets on Sep. 1

Aug 8

- Three types: TH-36D50 (36"), and TH-32D50(32") and TH-28D50 (28")
- Four tuners (ISDB-T, ISDB-S for BS, ISDB-S for CS110, Analog terrestrial ) are installed.
- Equips LAN terminal (10BASE-T) for **Tnavi**.
- Browser for **Tnavi** is installed.
- EPG for all tuners is installed.



<http://www.sanyo.co.jp/koho/hypertext4/0308news-j/0806-2.html>

# Panasonic Announced the Sale of New PDP and LCD TV Sets

Aug 21

- ISDB-T tuner are installed in 37", 42", 50" PDP TV and 32", 26", 22" LCD TV.
- Panasonic will launch the sales from Sep. to Oct.



PDP TV



Tuner and MPEG-2 Decoder

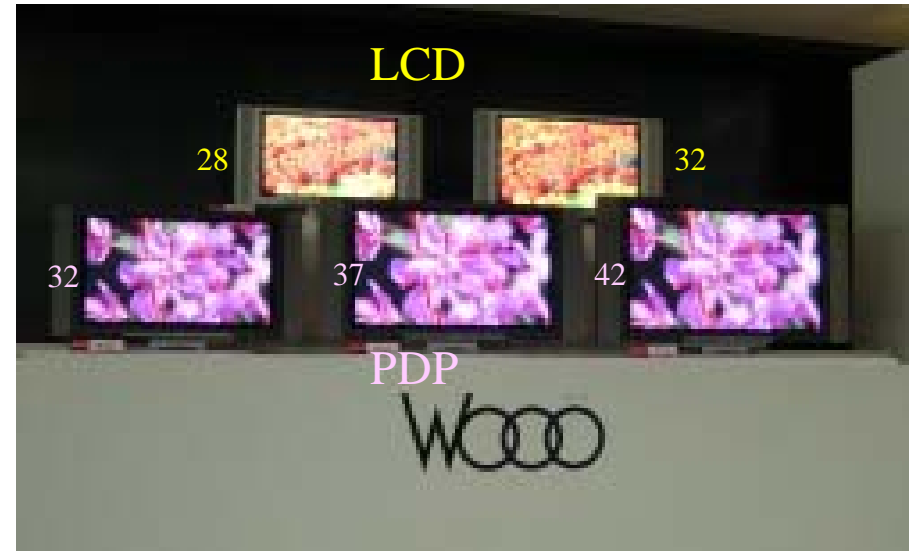


LCD TV

# Hitachi Announced the Sale of New PDP and LCD TV Sets

Aug 20

- ISDB-T tuner are installed in 37", 42", 50" PDP TV and 32", 26", 22" LCD TV.
- Hitachi will launch the sales on Sep 25.



# Sony Announced the Sale of New Digital TV Sets

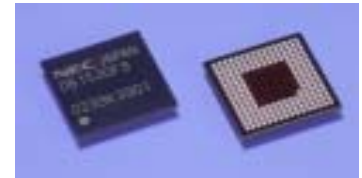
Aug 28

- New models
  - PDP 61", 50", 42" 9models
  - LCD 42", 37", 32" 3models
  - CRT 28", 32", 28" 3models
- Sony will launch the sales of the digital TV sets next Oct. And next Nov.



July 10

- One-segment demodulator LSI announced last Oct. is installed in 3G cellular phone.
- Specifications;
  - UHF13 ~ 62ch
  - Multiplexing; MPEG-2 TS
  - Video coding; MPEG-4 simple profile \*
  - Video resolution; SQVGA  
4:3(160x120pix), 16:9(160x90), 15f/s
  - Audio coding; MPEG-2 AAC LC profile
  - Software for EPG and data broadcasting is not installed yet.
- NEC has a plan to demonstrate at Telecom2003 next Oct.

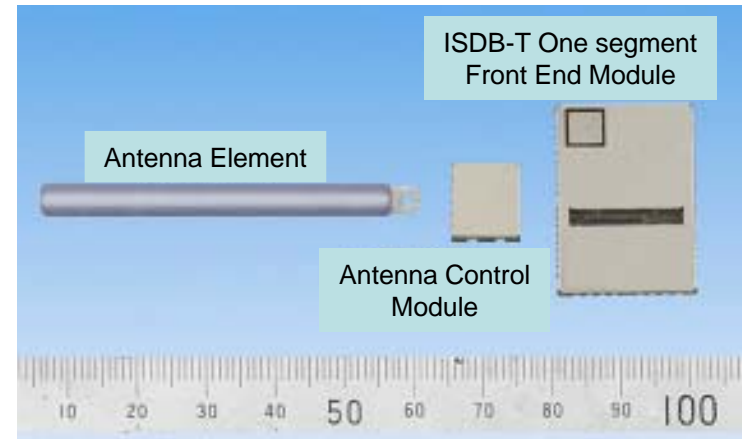


\* Video coding system for ISDB-T one-segment broadcasting has not been decided yet. NEC temporarily used MPEG-4 SP for this demonstration.

# ISDB-T One Segment Front-End Module and Antenna

July 17

- Panasonic announced ISDB-T one-segment front-end module for cellular phone and PDA.
- RF tuner circuit and OFDM demodulator are installed in this module.
- Specifications;
  - Size; 20mm × 28mm × 2mm
  - VHF 7ch, UHF13 ~ 53ch
  - Length of the antenna; 50mm
  - Power Consumption; 200mW
  - Modulation; DQPSK and QPSK and 16QAM
- Product sample will be shipped from this autumn.





# Prototype of Cellular Phone with a ISDB-T one-segment receiver

- Sanyo announced one-segment receiver installed in cellular phone.
- Specifications;
  - Diversity reception
  - UHF13 ~ 53ch
  - Multiplexing; MPEG-2 TS
  - Video coding ; MPEG-4 Simple profile L1\* , QVGA 15f/s
  - Audio coding; MPEG-2 AAC LC profile
  - Display; 176x200pix organic LE panel
  - Recordable on flash memory 128MB=30min
  - Weight; 150g
  - 960mAh lithium ion battery;
    - 420hours stand-by mode or 90minuites TV reception
- Sanyo has a plan to demonstrate at CEATEC JAPN2003 next Oct.



\* Video coding system for ISDB-T one-segment broadcasting has not been decided yet. Sanyo temporarily used MPEG-4 SP for this demonstration.



# Conclusions

- The sales of Digital TV receivers reached two millions and will increase rapidly around 2006 in Japan.
- Ratio of Flat Panel Display in Japan is larger than its in other country.
- LCD is increasing in screen size.
- Digital TV sets depreciates faster than analog TV set.
- Development cost of digital TV set is much higher than analog TV set . Cost for VLSI and software is major portion of the development cost.
- Developments of ISDB-T one-segment receiver were announced recently in Japan. Mobile TV will be launched in the beginning of 2006.



# Obrigado!



<http://www.dibeg.org/>