ATTACHMENT 1

HDTV

HDTV is a vital and prominent audio-visual medium. It was developed to evolve television services with more enhanced and affluent image presentation capability.

HDTV features the property of high resolution, which is 1920 x 1080 common image format. It gives viewers not only just the feeling for better quality of the high resolution images but also the strong impression for the beauty, reality, depth and presence of whole images. Because HDTV was developed based on the long-term study on the human perception. Further the high quality multi-channel audio accompanied with HDTV image brings high presence to viewers.

Historically, NHK conducted the study on HDTV starting from the creation of its concept in the 60's to the development of the related technologies.

The Laboratories' aim was to create a system that would give a sense of "being there" – the viewer would feel as if he or she were really at the stadium watching a sporting event, for example. To achieve this, the Laboratories examined questions such as "how big a screen is necessary?", "what is the optimum aspect ratio of the screen?" and "what is the best distance from the television screen?', through a series of visual and psychological tests conducted on test subjects.

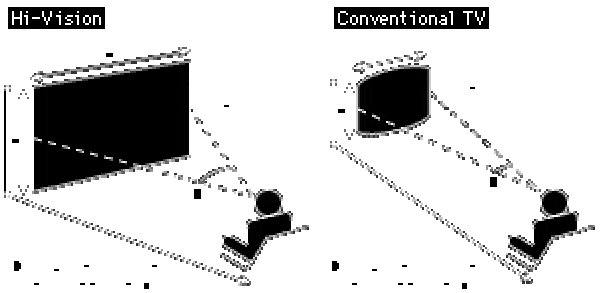
The result of these studies showed that HDTV required a vertical viewing angle of 20 degrees, a horizontal viewing angle of 30 degrees, a viewing distance of 3 times the height of the screen and around 1000 scanning lines. The studies further showed that a field frequency of 60 Hz enabled images to be reproduced smoothly without flickering.

HDTV

Viewing angle: 30 degrees

Convertional TV

Viewing angle: 10 degrees



A brief history of HDTV development is presented below and shows how Japan is by far the most experienced country in HDTV transmission and production of TV programming.

1964

NHK Science & Technical Research Laboratories launches a study on next-generation television systems

1970

HDTV development begins

1984

Development of the MUSE (Multiple Sub-Nyquist Sampling Encoding) system for HDTV broadcasting

March 1985

Experimental broadcasting with MUSE at Tsukuba Science Expo

December 4, 1986

Experimental satellite broadcasting with MUSE using BS-2 (Broadcasting Satellite)

September 1988

MUSE relay transmission of Seoul Olympic Games

June 3, 1989

NHK regular test broadcasting for 1 hour daily on channel BS 11

November 25, 1991

HDTV Promotion Association begins test broadcasting 8 hours daily

November 25, 1994

Test broadcasting 10 hours daily begins through split license among NHK and other 8 commercial broadcasters

April 10, 1995

Test broadcasting extended to 11 hours a day

April 8, 1996

Test broadcasting extended to 13 hours a day (14 hours on Saturdays & Sundays)

July 1996

Live coverage of Atlanta Olympic Games

April 7, 1997
Test broadcasting extended to 14 hours daily
October 6, 1997
Test broadcasting extended to 17 hours daily
February 1998
272 hours of broadcasting of Nagano Winter Olympic Games

June-July 1998
Live coverage of World Cup Soccer France '98

October-November 1998
Space shuttle "discovery" captures images of the earth in HDTV

February 2000
Images of the earth taken from the space shuttle "Endeavor" in HDTV

July 2000
Relay broadcast of the Okinawa Summit in HDTV

July-August 2000
HDTV coverage of the Republican Party convention prior to the presidential elections in the United States

September 2000
Broadcast of the Sydney Olympics in HDTV

December 2000
Start of Digital HDTV Broadcasting

It's time to start new digital broadcasting services with HDTV.
HDTV will remarkably enhance the advantages of the digital broadcasting and viewers will be strongly attracted by the digital broadcasting services featuring HDTV images. Actually HDTV will be main reason for make people pay the relatively high prices digital TV receivers will have when digital TV is introduced.

Japan started digital satellite broadcasting via broadcasting satellite in December 2000. The services feature HDTV programs and multimedia data broadcasting services. Seven HDTV programs are on the air. The 605,000 receivers for the BS digital broadcasting have been sold as of April 30st, 2001. According to a questionnaire to the viewers who have bought the receivers, they are very satisfied with the picture quality of HDTV.

The BS digital broadcasting in Japan also provides multimedia data broadcasting, which adopts the technology derived from the Internet. The receivers equip the browser software for the multimedia data content and display the multimedia information on the HDTV screen. Text and graphics can be displayed with better quality thanks to the high definition screen. In addition, more detailed information can be displayed on the screen and people can find a number of information such as news, weather information and catalogues at a glance.

Another evidence of HDTV is the exhibition at the assembly hall of the United Nations General Assembly held in September 2000. HDTV programs were presented using two 300-inch screens. The leaders of 149 countries watched the presentation and uttered the voice of amazement.

When viewers are watching HDTV programs at home, the receivers with large flat panel display are desirable. Japanese companies have developed the PDP (Plasma Display Panel) for this purpose and shipped them in the market.

Further, to accommodate broadcasting services to various viewing styles, functions of home servers such as time-shift, highlight and bookmark have been investigated and the related technologies have been studied. The home servers will be also used in the HDTV environment and show their ability to the full with HDTV.