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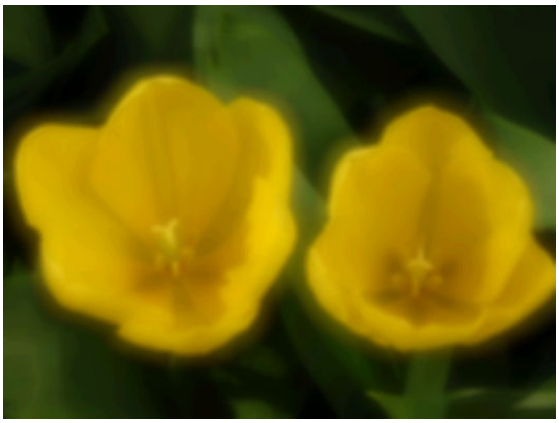
The Comparison of the High Definition TV Showroom Solutions

Nowadays, the resolution of the HDTV is up to 1920 x 1080 with 16 million pixels. But the High Definition TV showroom solution is far from the high quality that the TV can show due to the limitation of the audio/video transmitting equipment. It is a very important method to attract customers to transmit the high definition audio/video signal to multiple HDTV without compression and without losing its quality.
The traditional YPbPr or YUV are for the interleaved signal which is designed based on the CRT analog television. In order to be compatible with the traditional analog TV, most of the new HDTVs keep the YPbPr or YUV interface.

To use YPbPr or YUV, HD source, such as Blu-Ray player, needs to convert the digital video and audio to analog signal, i.e., D/A conversion; HDTV will need to convert the YPbPr or YUV to digital signal, i.e., A/D conversion. In the process of the two conversions, lots of audio/video information gets lost. Moreover, the effective bandwidth of the YPbPr or YUV is abou 120 MHz, the result is about 70% video compression. The two videos below are equivalent to the video before and after the two conversions.



The two pictures did not show significant difference on the CRT or low contrast LCD HDTV. However, on high quality HDTV, the difference in color and the details of the image is significant. For the analog signal, its signal to noise ratio will be significantly decreased with the distance, and the results are the loss of color and details.
The YUV signal needs 3 coaxial cables, and the two tracks of stereo audio reqires two more coax cable. As a result, each television needs 5 coaxial cables. Along with the digital HDTV popularization, the YUV interface will be eliminated very soon. US will terminate the support for the YUV interface in 2009.

The YUV analog HDTV distribution equipment in the showrooms of the electronics retail stores will retire soon. The full digital distribution equipment will provide much higher quality video and audio to attract the customers and promote the sales of the HDTV.

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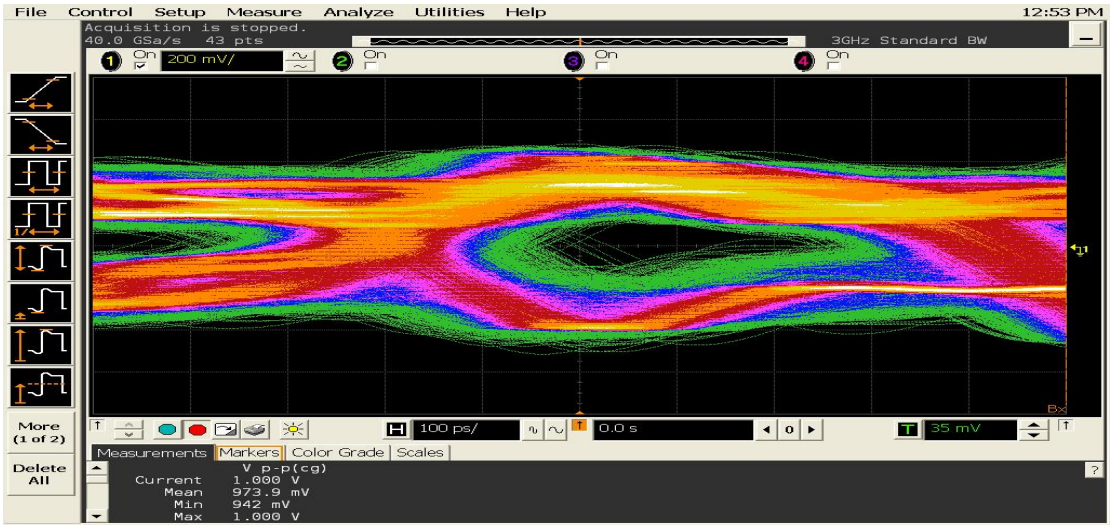
HDMI is a standard interface designed for the digital HDTV with high definition video and eight sound tracks of 3D surround sounds with no quality loss and no compression interface. HDMI DA or splitters can distributes one HDTV source to multiple HDTVs simultaneously, but it requires HDMI cables. To connect multiple HDTV, multiple DA or splitters need to be daisy-chained through long HDMI cables. There is a technical limitation of the length of HDMI cables due to the data rate is about 4.8Gpbs total. Usually HDMI cable below 6 feet works fine, with the increase of the length of the HDMI cable, the bit-error-rate, the diameter, weight and price will increase significantly. Below are the 3 feet and 33 feet HDMI cables.

The delicate contacts in the HDMI connector are very easy to be damaged by the weight of the long HDMI cable. In the HDMI cable, there are 4-pair twin-axle cable for transmitting video signal and other wires for control signals, such as High-Bandwidth Digital Content Protection (HDTV). The control signals are designed only for short distance. Long HDMI cable will lead to unstable results of the control signal, thus lead to blinking images on the screen. And the daisy-chained signal will lead to clock jitter accumulation and the bit-error-rate increments. Please refer to the eye-pattern below taken from two stages of HDMI splitters and 20-feet HDMI cable.



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Obonok Technologies provides the stable and easy to deploy full digital HDTV showroom solution for HDTV manufacturers and retailers. It demonstrates the high quality of the HDTV, and helps attract customers and promote the HDTV sales. This solution is based on multiple Obonok patent pending technologies; it uses single Cat5e/Cat6 cable to support long distance transmission of high definition video, eight sound track 3D surround sound and control signal. The system uses the most advanced ani-jitter and dynamic balance equalization technologies to distribute the HDMI signals to large scale of HDTVs up to 300 without degradation of the quality of HDMI signals. Please refer to the following eye-pattern taken from the output of the 4th daisy-chained receiver located 150 feet away.

Summary of the three methods:

5-cable analog YPbPr + stereo distribution	HDMI cable distribution	Obonok HD showroom system
1080i analog signal	Full digital signal	Full digital signal
Poor video signal	Unstable HDMI signals	High quality HDMI signal
Support multiple TVs	Support limited number of TVs	Support up to 300 HDTVs
The quality of signal depends on distance	Limited distance	Support any size showroom
Designed for low resolution home or showroom solution	Designed for full digital HD solution for home	Designed for full digital HDTV showroom solution
Will be eliminated soon	Hard to promote	Support any size show room
Hard to deploy with 5 cables	Hard to deploy with bulky cables	Easy to deploy with single Cat5e/Cat6 cable

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