HIGH DEFINITION TV

THE UPCOMING SWITCH TO ALL DIGITAL BROADCASTS

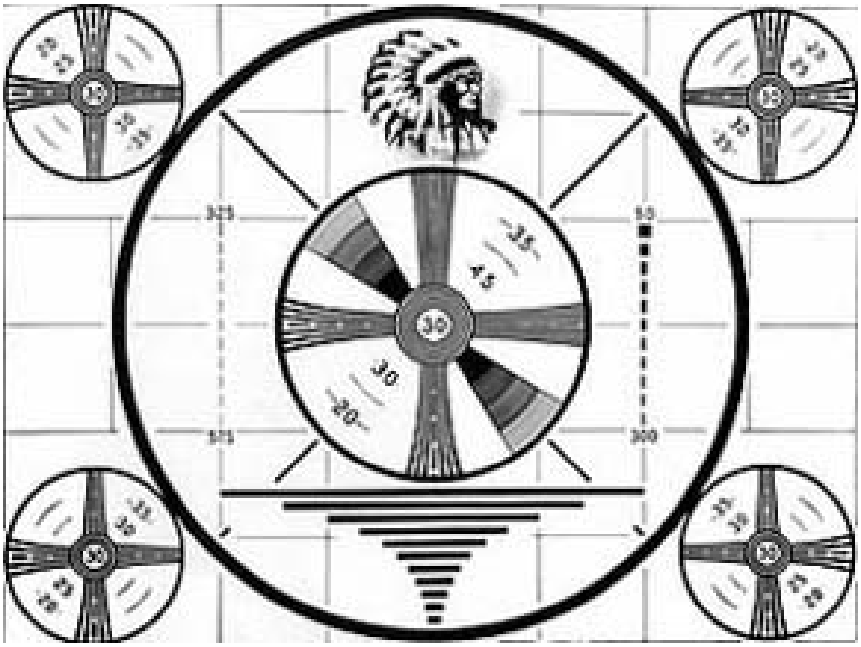
The following outline is a brief overview of television in the United States.

HISTORY:

- The USA began experimenting with video broadcasts in the late 1920's
- During the mid to late 1930's some standards were established
- In the early 1940's we adopted the NTSC standard of 525 lines for broadcast with an aspect ratio of 4:3 (640 x 480) analog
- The "National Television System Committee" remains in use until 2/17/09
- During WW II TV took a back seat to the war effort and resumed in 1945
- Many changes were made to the frequency bands for TV, FM and ham bands.
- The radio spectrum 50-54 MHz (6M) (ch.1 TV) was given to the hams in 1945 along with the 2M band 144-148 MHz. (from 2 ½ meter)
- If you owned an FM radio in the 42-50 MHz band you lost out in 1946 when the band plan was changed to the current 88-108 MHz
- The FCC and broadcasters want to avoid this today by offering coupons for the digital conversion.

An early B & W TV

The famous Indian test pattern:



- Every TV in those days had a locking channel selector with a fine tuning knob so the signal could be maximized. Also the brightness & contrast were used to sharpen the test pattern.
- Shows were done live and broadcasts were done only a few hours a day.
- RCA (symbol was the dog NIPPER) owned NBC and CBS paved the way to early TV shows.
- As the medium became more popular large metropolitan markets ran out of VHF channels. Due to skip conditions at various times of the year, channel re-assignment became a problem as you might be picking up 2 channels in different locations. Interference was a problem unless you had a directional antenna.
- In 1952 the FCC opened up a new band of channels (14-83) in the UHF band. UHF tuners were poor at best as they had to span from 470-890 MHz.
- The new channels were assigned to smaller markets and really lacked support for many years.
- As technology improved the UHF tuner was brought up to standards equal to the VHF counter part.
- Color broadcasting had some early experimentation in several countries, but was poor at best. Rotating color wheels (red, green, & blue) were used at both ends and it was not compatible with B & W sets.
- During its campaign for FCC approval, CBS gave the first demonstrations of color television to the American general public, showing an hour of color

programs daily Mondays through Saturdays, beginning Jan. 12 1950, and running for the remainder of the month, over WOIC in Washington D. C., where they could be viewed on eight 16-inch color receivers in a public building. Due to high public demand, the broadcasts were resumed February 13–21, with several evening programs added.

The NBC Peacock test pattern

- The FCC formally approved the CBS system as the U.S. color broadcasting standard on October, 11, 1950.
- An unsuccessful lawsuit by RCA delayed the world's first network color broadcast until June 25, 1951, when a musical variety special titled simply *Premiere* was shown over a network of five east coast CBS affiliates.
- CBS had problems with their standard as only 200 sets had been shipped, and only 100 sold, when CBS pulled the plug on its color television system on Oct.20, 1951 and bought back all the CBS color sets it could to prevent lawsuits by disappointed customers.
- Starting before CBS color even got on the air, the U.S. television industry, represented by the NTSC, worked in 1950–1953 to develop a color system that was compatible with existing black and white sets and would pass FCC quality standards, with RCA developing the hardware elements.

SO WHERE ARE WE TODAY?

- The old analog NTSC standard clock is ticking away. Currently set for Feb. 17, 2009 when all VHF high power stations have to stop analog broadcasts and go digital.
- What that means if you get local stations from the transmitter direct via a VHF antenna and your TV set only has an NTSC tuner, it will go dark.
- Newer sets have both types of tuner ATSC (digital) and NTSC (analog)
- Don't fear as you can get a $40 voucher for a "converter box" that will down convert all digital signals to your analog set. Hurry as you will need to get the voucher and run to your local electronics store to be ready.
- If you are not using "OTA" signals this change will not affect you.
- Currently we have the following choices to receive TV: cable (coax), FIOS (fiber optics) and satellite from either Dish Network, or Direct TV. They will continue to give you what you have today; however analog signals will start to disappear as more bandwidth is required for new services.

DIGITAL VS HIGH DEF

- Just because your TV has a digital tuner does NOT MEAN you will get high def programming. Many people are fooled and disappointed with their new set.
- HI DEF has an aspect ratio of 16:9 (wide screen) and at least 1280x720 pixels (720P) or 1920 x 1080 (1080 I) or (1080 P)
- What is the difference between "I" & "P"? Interlaced scan is the horizontal painting the screen using odd lines first (1,3,5,7,9 then starting over and filling in 2,4,6,8,10 up to the design of the set. Progressive scan goes in order 1,2,3,4,5, etc. up to the design of the set. This is a much sharper picture over interlace scanning.
- Currently only 720P and 1080I are broadcast for HI DEF regardless of how you receive the signal. The bandwidth is so much greater for 1080p that the current codec's cannot compress the signal for broad cast. YOU MUST HAVE A HI DEF CONVERTER BOX AND SERVICE TURNED ON FROM YOUR PROVIDER with the exception of OTA signals from your antenna. (ATSC TUNER INSTALLED)
- At this time only SONY BLU-RAY DVD has the bandwidth to display 1080P signals although I feel FIOS will be able to do it before the others due to fiber bandwidth. This assumes your set was purchased with a 1080P specification.

OK NOW I AM EXCITED HOW DO I GET STARTED?

- Before running out to the local electronics stores for the big purchase set A BUDGET and determine where the set is going. Is it for a child's room or a kitchen or is it the main TV in the house?

- If it is going to be your main TV spend the extra money and get a set with 1080p to get the "BEST WOW" for the bucks. Any other set you can compromise with a 720p model to save money.
- Who is your service provider and what can they offer in HI DEF programming? Are the local channels included for free?
- Do you want to get the local channels direct?
- How big a screen do I need? The following is a rough guide to viewing distance vs. screen size:
  3 ¾- 6 ¼ f = 30"
  4 ¼- 7 f = 34"
  5 ¼- 8 ¼ f = 42"
  6 ¼- 10 ½ f =50"
  7- 113/4 f =56"
  7 ¾- 13 f = 62"
  8 ¼- 14 ¾ f =70"
- Do I want Plasma or LCD or DLP projection?
- Am I going to use the audio system that is built in or a full home theater audio system with at least Dolby 5.1? (7.1 is the recommended mode for BLU-RAY DVD)
- How do I interconnect all my stuff to the new TV? The following list is in descending order of quality of signal:
  HDMI- V1.3 needed only for BLU-RAY DVD
  HDMI- V1.2 used for all other digital sources both audio & video
  Component video (RGB) analog & spdif optical or coax audio
  S video & red & white stereo audio no HI DEF video is possible
  Composite video & red & white stereo audio no HI DEF video
  RG-6 Quad shield from an outside vhf/uhf antenna up to 1080 I
- What else do I need? I would recommend a UPS system to provide protection to the equipment from power surges and to gracefully allow shut down in a total power failure.

- If you opt for a full home theater sound system, look for the remotes that allow you to program the entire system start up with 1 button push macros.

42 inch Fujitsu plasma monitor

Additional useful information

- http://www.winegard.com/
- http://www.antennaweb.org/aw/Welcome.aspx
- http://www.hometheaterhifi.com/
- http://www.hdmi.org/
- http://www.lyngsat.com/
- http://www.starlink-dss.com/signal_meter.htm
- http://www.al-soft.com/saa/satinfo.shtml
- http://www.lashen.com/
- http://sadoun.com/Sat/Installation/Satellite-Heading-Calculator.htm
- http://www.oppodigital.com/
- http://www.octavainc.com/HDMI%20switch%204port_toslink.htm
- http://www.commandline.net/Radio%20Frequency%20Chart1.htm
- http://www.roxsat.biz/

- http://www.hdmi.org/learningcenter/glossary.aspx#48
- http://www.erightsoft.com/SUPER.html
- http://www.ntia.doc.gov/ntiahome/press/2007/DTVfinalrule_031207.htm
- http://www.logitech.com/index.cfm/harmony_truth_2008/4238&cl=us,en?ci_tag=ht2008_logi-promo-hpmain&WT.ac=mb|4274||hp
- http://www.crutchfield.com/S-PlONIDxsKy2/