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Our purpose, mission statement, this current edition, archived editions and other relative information is posted on our website. We've had over 21,200 different visitors since we started the website on July 1st, 2000. .

Thanks to our regulars and welcome to the new folks.
This is YOUR forum!

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Reader comments

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RE: **Tech Notes 103**
From: Pete Putman

All good stuff. Here are some short observations about some of the news items:
(1) 'Going out to the movies' is not likely to fade out any time soon. It's hard to replace the social experience, particularly among teenagers who 'chill' and hang out with friends at theaters to get out of the house.

What will drive more people to give up on theaters and watch movies at home is bad manners - people talking throughout a film, using cell phones during a screening, and making excessive noise - high concession prices, and dirty theaters. But dinner and a movie is still a nice way to break cabin fever. It's more analogous to attending live theater, and that's not in any danger of disappearing.

(2) 'Interactive TV' is a waste of product development time and money. Watching TV is a passive activity - you turn it on, and it entertains you. Ditto movies. Surfing the net and commanding your TV to do anything other than change channels requires too much work for folks who have had a long day at work

and just want to be entertained, or who have settled down from dinner and only have enough inclination to push remote buttons.

I see now that many 'convergence' companies are finally figuring this out after spending a great deal of money to prove their point. Video on demand (VOD) most closely fits the existing 'passive' TV viewing paradigm, and requires no more energy than pushing buttons on a remote. A program is a channel is a file.....

If what everyone claims about the so-called demand for interactive TV was true, why aren't PVRs (TiVo, SONICblue) selling in the millions already?

(3) Hollywood mandated copy protection - Hollywood and other entertainment industries still haven't learned that you can't sell a lot of product if you make it more difficult to obtain. And if you don't sell product, you can't make any money.

I do not think most of these copy protection schemes will come to fruition. Of those that do, many will be circumvented in short order. It's simply human nature (witness the black magic marker trick to circumvent Sony copy protection on CDs in Europe).

In a free market, there is always someone else willing to provide products or services if the demand exists. If content providers make the purchase/rental and viewing of/listening to their content too difficult for consumers, their efforts will backfire on them. Someone else will step in to fill the void. The lure of $$ always wins out in this case.

As for me - I'll just shut off the electronics and curl up with a good book if things get to the point of absurdity.

Pete Putman

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Subject: **The BNC Connector**
By: Larry Bloomfield

I never cease to be amazed at the number of definitions I hear and see when it comes to one of our industry's most common connectors, the BNC. They range from British Naval Connector, Bayonet Nut Connector, to Bayonet Neill- Concelman, the latter being the correct definition.

One of the most popular of the coaxial connectors, the BNC was developed in the late 1940's toward the end of WWII. The name BNC stands for Amphenol engineer, Carl Concelman and Bell Labs engineer, Paul Neill who co-invented the BNC connector: ergo the (B)ayonet (N)eill (C)oncelman connector. Bayonet describes the interface coupling mechanism, while Neill and Concelman were the inventors of the N and C connectors.

The BNC is essentially a miniature version of the C connector which is a Bayonet version of the N connector. BNC connectors are available in both 50 and 75 ohm versions, both versions will mate together. The 50 ohm connector, used primarily for RF, is designs operate up to a frequency of 4 GHz. The 75 ohm version is usually used for video applications and cable television. BNC connectors are used in many applications, some of which are flexible networks, instrumentation and computer peripheral interconnections.

The TNC version is a threaded model: the (T)hreaded (N)eill (C)oncelman connector.

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Subject: **Australian teleport breakthrough**
By Dr David Whitehouse BBC News Online science editor

It is a long way from Star Trek, but teleportation - the disembodiment of an object in one location and its reconstruction in another - has been successfully carried out in a physics lab in Australia.

Scientists at the Australian National University (ANU) made a beam of light disappear in one place and reappear in another a short distance away.

The achievement confirms that in theory teleportation is possible, at least for sub-atomic particles; whether it can be done for larger systems, such as atoms, remains to be seen.

The more likely applications will come in telecommunications, enabling much faster transfer of data and the use of encryption that can never be broken.

Will we ever be able to teleport humans?

Teleportation has been one of the hottest topics among physicists working in quantum mechanics - the study of the fundamental structure of matter.

Some 40 labs around the world are currently trying to teleport a laser beam after pioneering work in 1998

at the California Institute of Technology showed it should be possible.

(For more on this subject, visit: http://news.bbc.co.uk/hi/english/sci/tech/newsid_2049000/204 9048.stm

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Subject: **Dish (Echostar) & Direct TV Merger**
By Roy Trumbull

When mergers take place that require government approval, documents are posted that give a rare view into an otherwise private world. The FCC has a trove of such documents on its web site concerning the DBS merger.

Dish Network has 6 million subscribers and Direct TV has 10.3 million. According to the financial page, the ripe fruit has already been shaken from the tree. Signing up new subscribers for the merged system will be costly.

The primary sixty one page document with all the signatures is a fine example of how lawyers can observe the formalities and still say nothing. There are many promises but they all lack specifics. The engineering exhibit is a bit more forthcoming.

The mega-headache is that the set top boxes for the two systems aren't compatible. Many of Echostar's birds have low power transponders. The high powered ones most used across the US are at 110 and 119 degrees WL. To get local programming from Dish Network requires an additional dish pointed at either 61.5 or 148 degrees WL. Fewer than 5% of their subscribers have installed a second receive dish.

Direct TV's customers are pointed at 101 degrees WL. A few have a dish that covers both 101 and 119 degrees WL. Even fewer customers are equipped to also receive 110 degrees WL. It appears that Direct TV has more useful transponders that are high power than does Echostar.

The two systems have a programming overlap of 300 channels. Presumably those channels will be freed up for local into local or pay-per-view. It's not enough channels to accommodate all the potential local into local channels.

Both systems are launching spot beam birds that reuse the same frequencies in 5 to 7 ground footprints. That appears to be the preferred method for accomplishing local into local channels. I don't know what the energy budget is to maintain such precise coverage.

National programming will utilize transponders at one orbital location while local and regional programming will come from another. Thus the dual antenna will be the norm for the future.

Based upon my contact with over 6000 viewers back when satellite waivers were required, I found that the average viewer just wanted to get network programming and had no loyalty or interest in local television. It remains to be seen how many DBS customers will install the second dish. The present capacity for SDTV channels is 500 for Dish and 460 for Direct TV assuming a 10:1 compression ratio. Post merger it is projected that the local stations in at least one metro market in each state will be carried. Up to 12 channels total will be reserved for HDTV.

Both Echostar and Direct TV have offered Internet access but so far less than 1% of their subscribers have opted to use it.

Left out of the news headlines is the fact that Direct TV / Hughes owns 81% of PanAmSat and it will be part of the surviving company.

Notes: Presently the only way a viewer in a defined metro market can watch network programming is through his local network affiliate. "Local into local" makes the affiliate available in some local markets via DBS.

A person outside a major market who represents that he can't receive the local affiliate can be granted a waiver to receive a "national" feed of the network. Such feeds come from one of the major cities. Most prized on the west coast are eastern time zone network feeds the push the schedule up by 3 hours.

Many small market affiliates aren't available via local into local and thus must either grant waiver requests or fight a losing battle against their viewers. I believe the rather dubious legal protection provided for the local affiliates under the Satellite Home Viewing Act (SHIVA) as being a pen stroke away from vanishing.

Under the post merger plan, the viewer's will require two dishes to get their networks (local affiliates) and national programming. Since viewers will rebel and write to their congressmen and DBS firms will most likely contribute to their reelection campaigns, I've already cut to the chase and written off local TV via DBS.

One of the major concerns for the future is what happens when the public becomes aware of HDTV? I recall the time at NAB when I was in the HD exhibit area for over an hour and then had to go back to the main hall to meet someone in the Sony booth. The SDTV on the monitors looked awful. Should the public develop a taste for HD, neither cable nor DBS has anywhere near the capacity to carry more that a

few HD channels.

Cable pushes what they call digital cable. Digital cable is merely a way to compress from 8 to 12 SDTV signals into the space normally occupied by one uncompressed TV signal. If HD signals were in the 720P format, the most they could put in a one channel space would be two channels. For 1080i they can get only one channel of HD per channel.

As more bandwidth is required for HD, many of the marginal cable-only channels will disappear and there will be a major lobbying effort to permit cable systems to drop over- the-air channels that aren't significantly viewed.

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Subject: **Calculators**
By Fred Lawrence

Most all broadcast engineers have occasion to convert and calculate from one standard to another; you know feet to meters, etc. These sites have just about every converter and calculator you could possibly want: http://www- sci.lib.uci.edu/HSG/RefCalculators.html

More specific to our industry, try: http://www.sci.lib.uci.edu/HSG/RefCalculators4.html#BROAD

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Subject: **National Translator Association Protests The Loss of Channels 54, 55 and 59**
By: Byron W, St. Clair, President - National Translator Association

The translator world was completely taken aback by the sudden rush by the FCC to auction channels 52 to 59. We had been under the mistaken impression that these channels were safe until the end of the DTV transition at which time those translators still in this band could generally move into the "core". Full service stations with channels in this range are grandfathered on their channels until the end of the transition, but TV translators (and LPTV stations) are classified as secondary and must yield to an auction winner.

By relying on channels in the 52 to 59 range it appeared the loss of channels 60 to 69 would not result in a significant loss of service. But as matters not stand some of these channels will be lost almost immediately.

Beyond loss of analog service there is also the question of new translators to extend and fill in the

coverage of digital primary stations. Without channels 52 to 59 spectrum availability for digital translators will be severely limited.

In cooperation with other interested parties we launched a hurried campaign of calls and letter writing to senators from states with a heavy concentration of translators. Fortunately the House of Representatives had already concluded this was not the optimum time to auction channels 51 to 59 and had passed a bill delaying the auction.

The problem was in the Senate where there was reluctance to delay the auction. It was reported to us that Senator Stevens of Alaska in particular wanted the auction to go forward. He apparently believed local organizations in Alaska will bid for the spectrum and use it to improve communications (presumably data transmission) in remote Alaskan villages. He is apparently so powerful that it is difficult to get anything passed that he does not like and that included the House bill to delay the auction.

We think we helped to get a compromise bill passed, although we were distressed even with the compromise. The bill delays the auction of some of the channels in the fifties. Specifically the auction is delayed except for channels 54, 55 and 59. However, this will break up the band. There are certain to be adjacent channel interference problems to or from the new users and more than three channels will be lost.

If the breaking up of the band and the immediate loss of these three channels is of concern to you write to your senators urging that the auction of all channels in the fifties be delayed. A few bad examples wouldn't hurt.

For more information visit the National Translator Association web site at www.TVFMtranslators.com.

Byron W. St. Clair

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Subject: **Hollywood Has a Setback in Controls for Digital TV**
From a story by Amy Harmon

Hollywood studios seeking to impose electronic controls on digital television broadcasts suffered a setback recently as a coalition of technology and consumer electronics companies supporting their efforts crumbled in a cross- industry power struggle.

A long-awaited report that the studios hoped would provide the consensus necessary for anti-piracy legislation and that members of Congress hoped would jump-start the stalled rollout of digital television

instead disclosed a host of dissenting opinions.

Hollywood executives have long maintained that they will not release their most valuable programming in digital format until they can ensure that viewers cannot copy those programs to the Internet. Makers of digital television sets blame the shortage of programming for slow sales of the devices, which are in fewer than a million homes.

The Broadcast Protection Discussion Group was formed last November to try to arrive at a proposal for a technological standard that consumer electronics and computer makers could build into their machines to protect digital broadcasts. And if there was general agreement on one point at the end of the months-long process, it was that such protection remained a worthwhile goal.

"The key agreement was that digital television should be protected from unauthorized redistribution," said Andrew G. Setos, president of engineering for the News Corporation's Fox Group and co-chairman of the group. "Hopefully work will now start on getting it memorialized as a federal mandate."

The studios and their trade group, the Motion Picture Association, sought to portray the report as a positive step forward that could still quickly result in legislation, or a Congressional directive to the Federal Communications Commission to supervise the regulation. But technology and consumer electronics executives said it was far too soon to think about adopting a voluntary standard, much less legislating one.

"May I say quickly that there is no consensus embodied in that report," said Tom Patton, vice president for government relations at Royal Philips Electronics. "None."

Philips, along with several other consumer electronics companies, complained that the studios' proposal would prevent consumers who use an updated device to record a program from watching it on one of the 30 million DVD players that are in homes today because the program would be scrambled.

The dissenters in the consumer electronics industry were also joined by Microsoft in objecting to the degree of control that the studios wanted to exert over which technologies would be deemed to meet their copy-protection standards.

"They were proposing criteria that were largely subjective," said Andy Moss, director of technical policy for Microsoft.

The basic idea is that broadcasters would include a digital "flag" in each broadcast, which would be detected by the technology in the devices and scrambled upon receipt. Digital programs that include the

flag could be moved electronically between devices in the home, but not transmitted to the Internet.

Some device makers and computer manufacturers have been lukewarm to the concept, arguing that the expense and effort it requires would not prevent Hollywood's material appearing on the Internet.

And the Electronic Frontier Foundation, a civil liberties group that participated in the discussions, argued that preventing consumers from e-mailing an excerpt of a show over the Internet violated fair use rights under copyright law.

But the central stumbling block to arriving at a broad agreement on the proposal may simply have been a bid by the studios for too much control over carrying it out. Microsoft, Philips and Zenith all have copy-protection plans of their own that they would like to market to device makers. The studios, however, appear to favor one system developed by a group of companies that include Intel, Toshiba and Matsushita. Zenith is a subsidiary of LG Electronics.

Disenchanted by the informal discussion process, which did not involve clear procedures for resolving disputes or voting rules, several representatives from technology and consumer electronics companies said they would prefer any future discussions to take place in a forum sanctioned by the government.

That will almost certainly be one subject of debate when the House Energy and Commerce Committee holds an industry discussion on digital television next week.

"Frankly we're surprised," said Ken Johnson, a spokesman for Representative Billy Tauzin, the Louisiana Republican who leads the committee. "When we looked at the report we said, `Boy, we've got a lot of work to do.' "

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Subject: **FCC Launches Effort to Free Spectrum**
From: a story by Roy Mark

The Federal Communications Commission (FCC) recently approved (June 13, 2002) the first step in the process of commercializing the upper millimeter-wave spectrum, a move designed to open the airwaves to multi-gigabit-per-second Internet speeds. The proceeding, which could take up to a year to complete, is designed to examine the commercial development and growth of spectrum in the 71-76 GHz, 81-86 GHz and 92-95 GHz bands.

Specifically, the FCC is seeking comments on its proposed new rules to allow use of these spectrum

bands for a broad range of new fixed wireless services including high-speed wireless local networks, broadband access systems for the Internet and point-to-point communications.

The FCC decision comes just days after the agency was the subject of critical attacks by both the House and the Senate for not freeing up enough spectrum for cutting edge applications and nine months after Loea Communications Corp., a subsidiary of Trex Enterprises Corp. of Calif., filed a petition with the FCC requesting the establishment of service rules for the licensed use of the 71-76 GHz and 81-86 GHz bands. The space has been previously used by the military and ham radio operators.

The technology is point-to-point fixed wireless that can communicate up to 10 miles and at a data rate of 1.25 Gbps (approximately 800 T1 lines). Loea is also working on its next generation of product with a projected data rate of 12.5 Gbps.

FCC Commissioner Kathleen Q. Abernathy was generally enthusiastic in her support for the FCC decision, but warned at least some of the spectrum must be shared with the military.

"Commercial operations also must share these new bands with federal government spectrum users," she said. "However, we have an obligation to ensure that our new licensees are not ultimately surprised to learn that the nature of the federal government uses in a band preclude commercial development."

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Subject: **Broadcasters Approach Court on Must-Carry**
From: Richard Wilson, Capps Broadcast Group, Pendleton, OR.

*(**Ed note:** Perhaps other states have such a program)*

I stumbled across a neat little program from the Oregon Office of Energy that helps business to upgrade older equipment that is energy inefficient. How, you ask? It allows you to replace equipment with new technology, and if it provides at least a 10% energy savings, you can qualify for a tax rebate of up to 35% of the cost of the transmitter! Pretty simple, and it may be the added push you need to get Management on board! As an example, I am replacing a Bauer 707 with a new transmitter, and we will be getting about $3,000 in tax credits to use against the cost of the transmitter. The new transmitter also saves a little over 50% on the cost of electricity, has no tube costs, and with all things rolled together will pay for itself in 3 1/2 years. the current cost to operate the Bauer (tubes & electricity) is about $2,900/yr, a new solid state transmitter will be $790/yr. YOU can get more information by calling the Oregon Office of Energy at 1-800-221-8035 or visit www.energy.state.or.us They also have programs on upgrading building lighting,etc. that might work for your studios! I will be happy to provide details on

how I applied, and the processes I went through. Good Luck!

Richard Wilson

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Subject: **Media layoffs drop**
From a story by John M. Higgins of Broadcasting & Cable

There's no repeat of the carnage in media employment seen one year ago, with media companies announcing layoffs of just 829 workers last month, according to a tracking study. Outplacement firm Challenger, Gray and Christmas Inc. said the May pace was a gratifying 88 percent slide from the 6,483 workers fired during the bloody month of May 2001. However, last month's pace was also 40 percent more than the 595 layoffs in April. The tracking study's media category includes broadcast, cable, radio, advertising, entertainment and print, but excludes Internet-related cuts.

A different look came from the U.S. Bureau of Labor Statistics, although its most recent data only cover March. The BLS said that in March, ad agencies' employment dropped dramatically, off 10 percent from the same period in 2001.

Radio stations' employment actually increased 0.7 percent, while TV stations' fell 2.7 percent.

Cable systems -- hiring at which has remained strong throughout the recession -- posted a 9.2 percent increase in hiring.

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Subject: **What you should know about wireless phone service**
From: FCC Consumer Information fcc-consumer-info@info.fcc.gov

The FCC has released a new eight-page booklet, "What You Should Know About Wireless Phone Service," that answers many of the questions consumers have when they consider getting a cell phone. The booklet explains the sometimes confusing issues of coverage, pricing and handsets.

The new booklet explains the "bucket" of minutes concept, how roaming works, the difference between analog and digital, and addresses many more topics of interest to consumers.

The booklet is available on the FCC Web site at: http://www.fcc.gov/cgb/wirelessphone.pdf

Copies are also available through the FCC's Consumer Center at 1-888-225-5322 (voice) and 1-888-835-5322 (TTY).

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Subject: **IBM nanotechnology creates 1-terabit memory**
From a story by R. Colin Johnson of EE Times

IBM Corp. has developed a prototype terabit memory that stores a trillion bits of data, or twenty times more than a current disk drive, in a square inch. Created with micromachining techniques, IBM said the Millipede non- volatile memory is only the beginning of even denser memories.

The Millipede chip uses silicon micromachining techniques to precisely move a silicon substrate coated with a thin- film polymer beneath an array of 1,024 parallel activated 20-nanometer read/write heads, which were also etched from silicon.

While other memory technologies are reaching the end of their usefulness, IBM Nobel laureate Gerd Beinnig of the Millipede project said nanotechnology is in its infancy, and is good for another "thousandfold increase in data- storage density," which would lead to petabit-sized devices.

"We believe that the Millipede device is a good match for mobile devices like cell phones," said Peter Vettiger, Millipede project leader with IBM Research. "Someday our prototypes may lead to replacement chips you can plug into the same sockets as current flash memory chips, but with incredible storage capacity and only about 100 milliwatts power consumption."

Stressing that the Millipede is a prototype, Vettiger said it will be two years before he can refine the chip to a point where it could even be considered for manufacturing. IBM stated its commitment to nanotechnology in 2000, and said memory was the main strategic goal of its research.

The terabit densities displayed by IBM's Millipede chip, currently using 1,024 tips or heads in a 3-mm square area, will be increased to 4,096 tips in a 7-mm square area by early next year, according to Vettiger. Capacities could eventually reach 15 gigabytes per chip, more than a tenfold increase over current predictions for flash memory capacities, Vettiger said.

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Subject: **How did we get here?**
From: Mark Aitken, Director, Advanced Technology, Sinclaire Broadcast Group

Once again, our expert agency (the FCC) that deals with the "hard" issues of spectrum management have to let Congress call the play. The FCC is an expert agency without experts! Most importantly, it is an agency that has allowed itself get into this mess. I remember well the first time I visited the FCC as a 'new' employee of this fine Broadcast firm. I will never forget...(fuzzy remembrances merge into a Nightmare...)

SBG: "How did we get here? We think the FCC should do something! This standard does not work except for 30 foot directional antennas with rotators!"

FCC OET: "We gave Broadcasters what they asked for. We knew it wouldn't work except for that application. Don't blame us. We gave you what you wanted."

SBG: "We WANTED a system that replicated our existing service. Who said we wanted this?"

FCC OET: "The NAB."

Oh yeh! That's it! NAB knows EXACTLY what we want. (NOT!)

Well, I will be getting about my real job. For the last week I was preparing "The Situation Room", getting ready for the 44 Auction. Analyzing the markets, and getting ready to make good on spending hard money. My guess is that the FCC will NEVER (in my lifetime) get back any of their much wanted spectrum until some true experts are allowed to stick their noses under the tent, and allow some much needed fresh air to enter the rarefied atmosphere that exists there.

http://www.reuters.com/printerfriendly.jhtml? type=technologynews&StoryID=1108427

Mark A. Aitken

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Subject: **GPS vs WWVB stuff**
From: Burt I. Weiner, K6OQK

For my applications, that are "time of Day" related, the WWVB clocks are generally fine. For network timing and frequency reference the GPS clocks are the better devices. There are several GPS "clocks"

available. Some are for time only while others are "Time and Frequency" devices.

The biggest problem with WWVB devices is "Diurnal Shift". This is where the terminator, the division between day and night passes between the WWVB transmitter and the receive antenna. During that period of time when part of the path is day and part is night there is considerable phase jitter on the WWVB signal, very much like an AM signal during critical hours. Since the WWVB, 60 KHz signal is the reference, the jitter is passed onto the output frequency of the WWVB referenced frequency standard. Where the WWVB signal is used for Time of Day the phase shift, jitter and other signal anomalies can cause the signal to fluctuate enough that the clock cannot be set or updated. Depending on the duration of this unstable period and the ability of the clocks internal reference to "stay put" the clock can drift accordingly.

If you are able to look at the WWVB 60 KHz signal out of a receiver, such as one of the Spectra-Coms, you will notice that the signal has to levels. As I recall they are about 10 dB apart. This is the data string that is sent one piece at a time at 1 second intervals. The dips are the "second" markers but the duration of the dips, long or short, makes up the data string that tells the clock the date and time. This is coincidental with the 100 Hz tones heard on the WWV signal as data. If the clock's receiver cannot properly decode the level difference the clock cannot update or set itself.

Again, for most of my needs the WWVB Time of Day clocks are more than sufficient. They seem to be stable enough that even if they don't get set for a couple of days they are sufficient enough for program timing issues. The reason I personally like the Junghams is that it is only a clock. No Bells and whistles. My only complaint about it is that if you hold the light button, conveniently located on top, down for about 5 seconds, that's a command for the clock to search for the signal and reset itself. During that time it clears itself out and the time goes to 00:00:00. This has been a thrilling experience when talent sets something on top of the clock. I think I'm going to disconnect the light buttons and do the reset a different way such as a hidden switch that take a paper clip or pen to push.

Many years ago I had the brilliant idea that it would sure be nice if there was a 10 MHz reference transmitted by satellite. I had the opportunity to play with this idea. I connected on of my better references to an uplink as if it were a 10 MHz video sub-carrier. However, I was disappointed to discover that there was enough phase jitter in the recovered 10 MHz when referenced to the original signal to make the idea useless.

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Subject: **De-Icing Technology Uses RF**
From: Robert Gonsett, W6VR - CGC Communicator #517

A "new" de-icing technology for cars, airplanes, sidewalks, etc. is claimed in the May 17 Kiplinger Letter. Antennas that are built into vehicles and pavements emit radio waves that melt ice similar to the way microwaves defrost food. It is said that RF deicers will show up in some 2004 car models courtesy of Ice Engineering. All it takes is lots of power, added weight and fundamental answers to human exposure to RF concerns.

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Subject: **Industry's First Single Chip MPEG-4 DVD Decoder**
From: A Sigma Designs press release

Launched by Sigma Designs; Sigma enters the consumer DVD decoder market and continues to set the mark for MPEG-4 firsts.

Sigma Designs, Inc. recently announced the industry's first single chip MPEG-2/MPEG-4 DVD decoder, and the company's entry into the consumer DVD player market.

Sigma's new decoder chip, the EM8500, is the industry's first complete DVD decoder chip that provides decoding of full resolution MPEG-4 content and high definition progressive output, as well as a host of premium features designed to propel next generation progressive DVD players. Sigma Designs showcased its EM8500-based DVD player at the Computex show in Taiwan.

With the proliferation of new standards, file formats and downloaded media from the Internet, users are now demanding more from their DVD players. Originally DVD players needed only to support standard MPEG-2 DVD video and CD audio, whereas next generation DVD players will provide more universal media support for video, audio and images, including:

-- Playing MPEG-4 based movies and video libraries that have been downloaded or encoded from a user's own sources -- stored on a CD.

-- Watching movies and images in progressive format, scaled to high definition for a premium entertainment experience on HDTV-ready televisions.

-- Listening to MP3 or Windows Media Audio (WMA) based music and audio libraries.

-- Viewing PictureCD-based digital photographs, stored on a CD in high definition format.

"MPEG-4 technology is currently finding widespread usage within many types of consumer devices, including DVD players," stated Dr. Masao Sugimoto, Executive Corporate Engineering Advisor of Pioneer Corporation and President of e-Box Corporation. "High Definition DVD playback is an excellent application for MPEG-4 and will be considered for standardization by the DVD Forum."

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Subject: **In the news**
By: Larry Bloomfield

I'm not sure if all the links to the following stories are still good, but if you can get through, most of these stories are quite interesting.

Reed Business Information - US has a story on HDTV Confusion by Walter S. Ciciora. Check it out at: http://www.cedmagazine.com/ced/2002/0602/06cic.htm

Broadcasting & Cable's Bill McConnell did a story on the FCC admonishing 50 stations for DTV delays. Check out:
http://www.tvinsite.com/broadcastingcable/index.asp?layout=story&doc_id=89713&display=breakingNews

It says, in part: "Those still failing to go digital after six months will be issued notices of apparent liability for fines and required to meet a series of 30-day construction milestones. If stations fail to offer a digital signal a year after admonishment, the FCC will revoke their digital- TV construction permits."

There is an interesting press release about the CEA objecting to Hollywood's attempts to control consumers' living rooms. This is in line with the earlier story in this Tech-Note. Check it out at: http://www.epulse.org/press/2958.html

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Subject: **PSIP issues**
By: Larry Bloomfield, inspired by a story from Reed Business Information - US

Now that cable MSOs are getting serious about carrying digital TV broadcast stations, we need to examine some of the disagreements between broadcasters; TV set manufacturers and cable operators over the carriage of PSIP. PSIP (Program and System Information Protocol) is an industry standard for digital television that you can download from the ATSC Web site (www.atsc.org). PSIP consists of channel mapping data, program guide data, information about closed captions and content

advisory ratings, and other data related to the current and future programs.

The cable industry doesn't use PSIP. A broadcast station's PSIP data is carried in-band, within the 6 MHz channel. A cable system carries this data out-of-band, in one high- speed data channel covering all of the channels on the cable system. The out-of-band channel is only accessible to cable set-top boxes that include conditional access (descrambling) circuitry. One can't help but ask where in hell the cable industry gets off not carrying the complete signal broadcasters are required to broadcast. Isn't that tantamount to shortchanging the viewer? Why must they reinvent the wheel?

PSIP was covered in the FCC's digital must-carry decision last year. Basically, the FCC said that cable systems must carry the part of PSIP that relates to the current program, but need not carry the part that provides the program guide for future programs. Of course, retransmission consent contracts can specify some other arrangement.

The channel mapping capability in PSIP allows the broadcaster to "brand" his digital channel with the same channel number as his analog channel, even though they are carried on different RF channels. It is being repeated here from previous discussions for those who either forgot or still don't know. So, for example, a broadcaster whose NTSC channel is 4 and digital channel is 28 can call the digital channel 4-1 if it carries a single HD program, or 4-1, 4-2, 4-3 and 4-4 if it carries four SD programs. In the case of the four SD programs, they are said to be carried on "virtual channels."

Some digital TV receivers may need the in-band PSIP data to navigate within each 6 MHz digital channel. Others, however, seem to work just fine without PSIP, or even when the PSIP data is wrong. We know this because some digital TV broadcast stations either haven't been sending PSIP, or have been sending incorrect data.

The cable industry recognized the role of PSIP in an agreement with the Consumer Electronics Association, and agreed to pass through any PSIP data that was delivered within unscrambled channels. But the cable industry did not agree to create PSIP data at each headend. Cable programmers are not expected to deliver PSIP data with cable programming. And that has become a point of dispute between the cable industry, who, at times thinks they are running the broadcast industry, and the TV receiver manufacturers. TV manufacturers want to use PSIP guide data to create electronic program guides that compete with the guides that cable operators provide. They want access to the PSIP program guide data for each channel so that they can plug it into their own program guides. But if the programmers don't supply it, and the cable operator doesn't insert it, then it won't be there.

Then there is a PSIP-related dispute with the broadcasters, dealing with channel numbering. PSIP establishes the concept of virtual channels when multiple SD programs are carried in a single 6-MHz

channel, and requires a broadcaster to use two-part channel numbering to designate them. Digital cable systems also have virtual channels, but cable operators assign a one-part number between 1 and 999 to each virtual channel. The out-of-band channel provides the map between the assigned channel number and the actual RF frequency where the virtual channel is carried. So the whole must-carry fight over channel positioning-whereby a broadcaster can request that his channel is carried on cable on the same channel number as off-air-becomes very murky, partly because cable systems don't support two-part channel numbers, and partly because the broadcaster can designate the first part of the two-part channel number to be the same as his analog channel.

Now, consider a digital TV receiver that does not have access to the out-of-band channel and tries to tune a digital broadcast channel. The first part of the two-part channel number carried within the broadcaster's PSIP data is likely to be wrong when that station is carried on cable, because under must-carry rules, the cable operator need not position the digital channel on its off-air channel number. Moreover, the cable operator can remultiplex several virtual channels from different broadcasters so they are carried in the same 6-MHz channel. Digital TV sets must be smart enough to deal with this.

So the channel number displayed on the TV will probably be different than the one that appears in the newspaper's program guide. At the headend, the cable operator can correct the broadcaster's PSIP data to show the same channel number as the program guide. But broadcasters don't like the idea of cable operators mucking around with their data.

These disputes don't affect a cable operator's ability to carry digital broadcast stations, but they do give broadcasters and TV set manufacturers an additional opportunity to blame the cable industry for the slow rollout of HDTV. So what else is new?

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Subject: **InfoComm 2002**
By: Jim Mendrala

As you all know InfoComm is the largest conference and exhibition for the professional AV marketplace worldwide. This year was no exception. InfoComm had over 500 exhibitors launch some exciting new technologies for the pro-AV market. Even though attendance was slightly down from last year that did not dim the enthusiasm for the brightest, lightest LCD and DLP projectors, the thinnest plasma screens, digital audio systems, video conferencing, control systems, Web streaming and the IT/AV connection.

Samsung showed it's variety of displays but what caught my eye was the 43" and 50" DLP HDTV set.

The set uses one DMD device along with a color wheel to produce stunning HDTV pictures. The expected MSRP was quoted at $4,500 for the 43" and $5,000 for the 50". The set has both a DirecTV and DTV receiver built in. There was enough light from the DLP engine that there was no need for a high gain screen. The front surface of the screen had a matte finish that didn't reflect your image as you watched the display. The spokesperson for Samsung said that the same sets, but with BNC's, will be available probably sometime next year.

Mitsubishi showed it's variety of 42", 50" and 61" wide Flat Plasma Displays. The displays were all designed to connect to it's outboard HD-5000 tuner via their proprietary MonitorLink connection. The set top-box tuner has DTV and QAM and also the IEEE-1394 connectors with Home Audio Video interoperability (HAVi) software control of the IEEE-1394 system.

JVC demoed its D-ILA projectors. Playback of "The Tonight Show with Jay Leno" in HDTV and film transfered to HDTV and some D-VHS in HDTV looked very good.

The D-VHS at this time only has a SDTV MPEG encoder so it is not capable of recording HDTV except from a previously HDTV MPEG encoded bit stream via a fiber optic connection. A spokesperson for JVC said that maybe next year the D-VHS might be able to record HDTV but they are scared of the major film studios insistance on not being able to record encrypted and copyright protected content. Presently some of the studios are providing encrypted films in HDTV, in the D-VHS format, that are being "cloned" at Laser Pacific. There is one DTV receiver that has the required fiber optic connection but the JVC spokesperson couldn't remeber whose brand it was.

One of the better looking Flat Panel Plasma Displays, in my opinion, was in the JVC booth.

There were a lot of LCD displays some that looked very good both in flat panel and in projectors.

All looked good with HDTV pictures on them but most exhibitors at the show were reluctant to show SDTV on their products. Some resizing engines had some "judder" visible in the video being displayed.

NEC demoonstrated its Tri-Digital Theatre projector with "content" played back from a prototype Sarnoff theater compression system. Even though the system is said to be capable of equal bandwidth RGB encoding the material supplied from the studios and post houses were from HD D-5 tapes in the standard SMPTE 274M video format. Video processed by NEC's new digital decoder greatly improved the HDTV images especially in the sub sampled redish colors without affecting other bright colors.

Also visible at InfoComm was the new wireless systems introduced last year by Texas Instruments. A lot of the projectors now support wireless transmission up to 300 ft. of images. When I asked about video

most will support SDTV but the bit rate seems to fall short of HD capability at this time and no manufacturer I spoke to wanted to demo video. Most said though it was no problem but couldn't show me.

DVI seems to be pretty well entrenched and some products had only DVI interfaces.

In talking with several of the manufacturers about TV it seems that as far as they are concerned HDTV is 1280 x 720 for the home consumer. One manufacturer said that "You can't see the difference between 1920 and 1280 so why bother". It was interesting to note that his home theater display had only 1280 x 720 pixels. Another manufacturer had only an estimated 800 lines of resolution on his consumer HDTV set displaying a 1920 x 1080 image.

From my experience many of the products seen at InfoComm this year will be in the consumer marketplace in about two or three years. HDTV should then be firmly entrenched in the home by 2006. Broadcasters should wake up to the fact that if they drag their feet the movie studios will clean up on the D-VHS and the soon to be marketed HD DVD disks.

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Subject: **HD Discovery Theater To Make It's Debut August 1, 2002**
By: Jim Mendrala

On June 17, 2002 the Dish Network started to show a sneak preview of the upcoming HD Discovery Theater channel. The sneak preview is being televised on the Dish Networks demo channel 9443, which originates from their 61.5-degree satellite over the Atlantic Ocean. The demo is being shown between 3 pm and 3 am PDT. (Also carried on this satellite is the East coast CBS-HD feed from WCBS-DT on channel 9453.)

In addition to a regular "Dish Network 500" dish you need an HDTV satellite receiver and an additional dish pointed at the 61.5-degree satellite. If you live on the east coast you'd probably be watching the 61.5-degree bird.

However if you live on the west coast you would probably have your dish pointed at the 148-degree bird. The 148- degree bird carries the CBS-HD feed from KCBS-DT as well as some of the locals.

Now here comes the rub. The HD satellite receiver, according to Dish Network, because of software, can only support either the 61.5-degree or the 148-degree satellite but not both!

What this means is that if you live on the west coast and have your second dish pointed at the 148-

degree satellite then you will not be able to subscribe to the HD Discovery Theater channel on the proposed new channel 9420. (Of course you won't be able to see the sneak preview either.)

According to the Dish Network on their web site, HD Discovery Theater will only be available by subscription from the 61.5-degree satellite. Rumored from a Dish Network representative is that "maybe the HD Discovery Theatre will be available in about 120 days on the 148-degree satellite as soon as they get another satellite to take over some of the western "locals".

It will be interesting to see how all of this gets worked out. With the merger between Dish Network and DirecTV still pending some believe that the Fed's won't let it happen. But if the Fed's do, then how will all of these satellites in different positions be received? It appears that three dual LNBs are all the present equipment can support.

DirecTV runs the HDNet on their channel 199

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Subject: **Broadcast/Pro Video Product Sales Slump in 2001, But Ready to Rebound**
From: SCRI

According to a new series of reports being issued by market research firm SCRI International, 2001 saw a decline in sales in nearly all categories of products for the video, film, and broadcast markets. While final figures from the reports, entitled "2001-2002 Broadcast/Pro Video Product Reports", are still being tabulated, the initial figures indicate sales dropped in 2001 from a peak in 2000 in a wide variety of product categories including, nonlinear editing systems, graphics and special effects, cameras, switchers, video monitors, storage, and lighting.

"The good news," however, says SCRI research director Des Chaskelson, "is that reported plans to buy in 2002 are strong, and we expect to see a rebound in 2002."

The reports cover 27 different categories of video and broadcast production equipment. Data for the report was collected via online surveys of more than 1000 US broadcast and pro video facilities working in the following vertical markets: television stations (broadcast and cable), post production facilities (video and film), video production and multimedia facilities, corporate and institutional video facilities (government, educational, medical).

For each product category, the reports show data for overall sales in 2001, plans to buy in 2002 in units

and dollars, and brand shares and breakouts by type.

"One of the key trends we are seeing in both NLEs and graphics workstations," says Chaskelson, "is the move to lower priced, Windows/Mac based systems."

In the NLE product category, products priced under $10,000 accounted for 58% of all NLE sales, while only 26% of the sales came for products priced over $30,000. In the graphics and effects software category, products priced under $5,000 accounted for 77% of all sales, while only 11% of the sales came from products priced over $10,000.

For more information on SCRI's 2001-2002 Broadcast/Pro Video Product Reports, click here or contact info@scri.com

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Parting Shots

By Larry Bloomfield

If this is June 24th, it must be Denver, CO. The Tech-Notes Taste of NAB Road Show is moving right along with only seven venues remaining. Since this is being written very early in the morning, I have no idea what the turnout will be today. As I said in our last Tech-Note, I sincerely hope that those of you who are close to the places we've yet to visit will make an effort to stop by and say hi and scope- out the technology we're bring with us. We continue to have some rather impressive turnouts. We've had far more venues with good turnouts than with poor turnouts

When the trip is over, I'll be writing an assessment of the whole effort. To date, I'm glad I did it, but I'm not sure I'd ever do it again. I'll address why in our next issue.

Our neighbors to the north (Canada) appear to be taking a much more rational approach to the implementation of DTV. The Canadian Radio-television Telecommunications Commission (CRTC) is announcing its regulatory framework for the transition to digital over-the-air television.

The Commission is confident that this regulatory framework will ensure that the transition to digital television happens smoothly and efficiently. By combining market forces and the proper incentives for steady progress, this framework will lead Canada into the future of digital television broadcasting.

Along with this new framework for digital over-the-air services, the CRTC announced a request for public

feedback on proposed policies to govern how digital broadcast services should be distributed by cable, satellite and wireless undertakings.

The recent ruling means consumer demand will fuel the transition rather than an imposed deadline. "We wouldn't want to force Canadians to buy this technology," said Denis Carmel, spokesman for the Canadian Radio-television and Telecommunications Commission.

Unlike here in the US, the incentive for broadcasters to change over will come from consumers who are exposed to over-the-air digital signals in markets such as southern Ontario, Mr. Carmel suggested.

The policy framework will guide broadcasters, distributors and producers through the transition to digital with the aim of ensuring that:

- Canadians will benefit from these technological advances to the fullest possible extent.
- The Canadian broadcasting industry will be encouraged to grow and strengthen.
- The transition will not be slowed by unnecessary regulation.
- The Broadcasting Act's cultural objectives will be maintained.

This framework will allow broadcasters to make the transition to digital voluntarily, without imposed deadlines. Viewers will continue to have access to all of their over-the-air analog services throughout the transition period. Consumers will be able to upgrade their equipment at their own pace and convenience.

The transition will be market-driven. The CRTC will not impose deadlines for the transition. Instead, broadcaster investment and consumer demand will dictate the rate at which the upgrade to digital broadcasting will occur.

Broadcasters will be encouraged to construct new digital transmitters that will provide full off-air coverage to match their existing analog coverage. Broadcasters will also be expected to maintain their existing analog coverage in full throughout the transition period. Canadians will continue to have free universal access to over-the-air television during the transition.

Existing broadcasters will be given the first opportunity to apply for licenses to broadcast digitally, but if they fail to do so in a reasonable amount of time, the CRTC will consider other applicants for the relevant frequencies.

Transitional digital licenses will authorize broadcasters to offer a certain amount of programming not offered on their analog transmitters - up to 14 hours per week - on their digital transmitters, provided that it is high definition and that at least half of it is Canadian.

The CRTC is confident that requiring all of the separate programming to be in high definition will help create consumer demand for the new digital services. And stipulating that at least half of it must be Canadian will assist the country's production industry during the transition to digital.

As further encouragement, all Canadian digital programs aired by licensees between 6 p.m. and 12 p.m. will have to be high-definition where such a version exists. Broadcasters should also ensure that, by the end of December 2007, two thirds of their schedules are available in the high definition format.

The Canadian Radio-television and Telecommunications Commission is an independent public authority that regulates and supervises broadcasting and telecommunications in Canada.

Reference documents: Broadcasting Public Notice CRTC 2002-31
CRTC Public Notice 2001-62

What do you think about all of this?
Let's go to press!

Larry

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Thanks