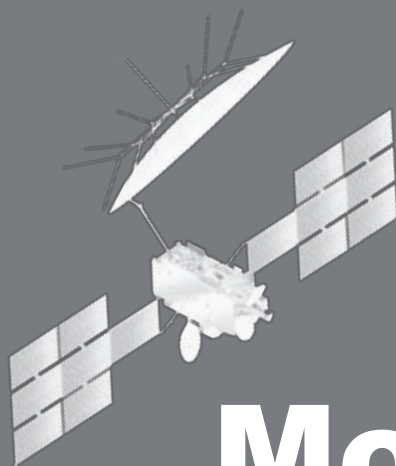
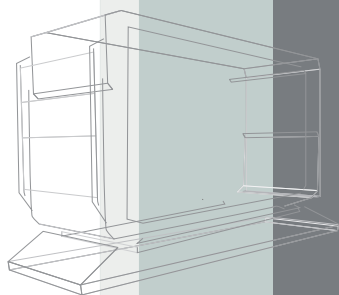


Tune in to Digital Convergence

# DVB-SCENE



# Mobile Multimedia



25

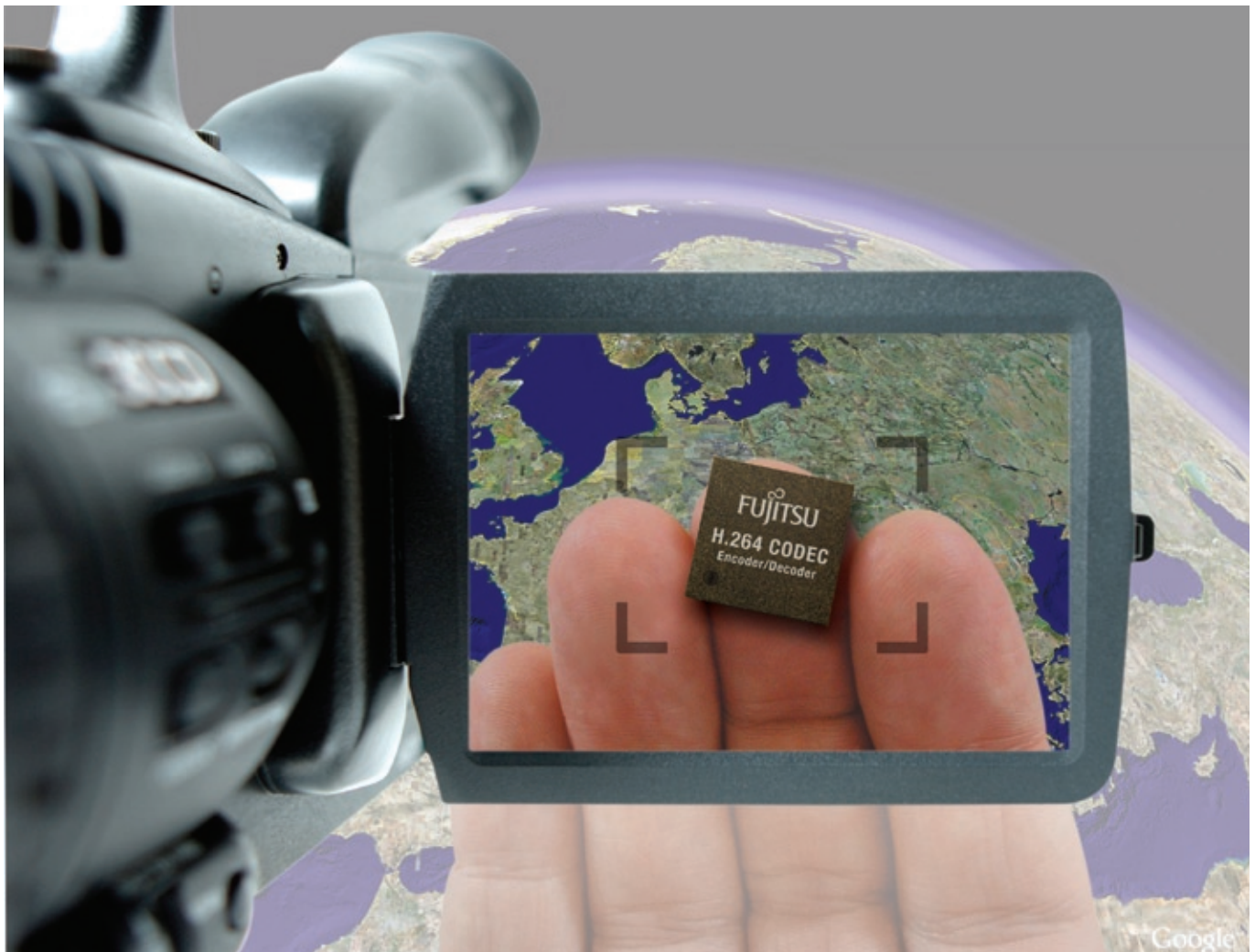


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### This issue's highlights

- > Handsets for DVB-SH
- > WRC-07 Spectrum Issues
- > IPTV Profiles
- > Challenges for Open Internet
- > DTT Evolution in the UK
- > HD in France
- > Market Watch



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# NEW & IMPROVED

## The Evolution of DTT in the UK

Gregory Bensberg, Ofcom

The UK has played a leading role in the development and use of digital terrestrial television (DTT). It launched the world's first DTT service in 1998 and the launch of Freeview in 2002 represented a significant breakthrough in consumer acceptance of the DTT service and brought about a rapid expansion in demand for DTT products. According to the latest Ofcom (the regulator for the UK communications industries) update there were 9.3m DTT homes in the UK in the third-quarter of 2007.

When DTT services were first launched in 1998 each multiplex was only capable of carrying four standard definition services. This meant that the six multiplexes were only able to offer viewers a maximum of 24 services. Due to improvements in MPEG-2 coding the platform is now able to carry over 34 simultaneous television services together with a wide range of radio and interactive streams. It is expected that this number will be further boosted at digital switchover when all six multiplexes are expected to adopt the 64QAM transmission mode (which two multiplexes currently use, the remainder use 16QAM).

However, even with this additional capacity it is obvious that the UK DTT platform will face difficulty in carrying high definition services due to their need for higher bit rates and the use of MPEG-4 coding.

The UK's broadcasters are very keen to have the opportunity to carry HD services on DTT and have been actively lobbying for more capacity to enable this to happen. Ofcom is also very keen to see the DTT platform develop and offer viewers access to a wide range of new services. We are also concerned to see that the platform

can evolve to take advantage of technological developments in line with other digital television platforms. With this in mind Ofcom published a consultation last November<sup>1</sup> which proposed a route whereby the UK DTT platform could adopt new transmission and coding technologies which taken together could allow HD services to be launched on DTT as early as 2009. The consultation proposed that one of the multiplexes currently used to carry public service content (and which will be universally available post switchover) will be cleared of all of its existing services and converted to use the emerging DVB-T2 standard. It is expected that these services will be carried on other multiplexes so the

then be available as switchover is rolled out across the rest of the UK, completing with a fourth HD service being available by 2012. Digital switchover can offer the UK an opportunity to manage this change more positively. It is expected that large numbers of UK viewers will be adopting digital television in the coming years and allowing new services to be launched at the time will allow them to make an informed choice over which level of services they want. It is possible that delaying the launch until after switchover could mean that they will have to upgrade their equipment when the new services are launched. Manufacturers and retailers will obviously be key to this upgrade. They

**“...the use of DVB-T2 is expected to result in 30 percent uplift in the capacity of the multiplex.”**

viewers should not see any reduction in their current choice of services. It is also proposed that any services carried on this multiplex will be coded using MPEG-4.

Based upon the latest work being carried out within DVB we expect that the use of DVB-T2 is expected to result in a 30 percent uplift in the capacity of the multiplex. We also expect that the use of MPEG-4 will over time allow a near doubling in the number of services that could be carried compared with the existing MPEG-2 standard.

Taken together we believe that it should be possible to carry three HD services on the multiplex by 2009. Therefore, the upgrade could be adopted in time for digital switchover in the Granada television region (North West England), which is due to take place in late 2009/early 2010. The new services would

will need to develop and launch new products incorporating MPEG-4 (both HD and SD) and DVB-T2 by the end of 2009. We are talking to a wide number of manufacturers and silicon vendors to get a better understanding of any issues and expect that they will be responding to our consultation about these important matters. Overall we believe that our proposals represent a golden opportunity to allow the early launch of the DVB-T2 standard which could result in a transformation in the range and quality of services offered by DTT to viewers.

**Pictured: The UK's Digit AI with the 'digital tick' logo which identifies equipment designed to work before, during and after switchover.**  
Image Credit: VisMedia

<sup>1</sup><http://www.ofcom.org.uk/consult/condocs/dttfuture/?lang=cy>



# FRENCH STYLE

## Introducing HDTV on DTT in France: No Need to Wait for the Digital Dividend

**Alain Komly, Head of DTT and  
Switchover projects, TDF**

There has always been a strong desire to introduce HDTV on the DTT platform in France: programme providers and manufacturers tried to persuade the politicians as early as 2003/04 that the right way to introduce digital TV was to go directly to HDTV with MPEG-4. The final consensus was to launch free-to-air standard definition programmes encoded in MPEG-2 on 30 March, 2005, and pay TV programmes encoded in MPEG-4 a few months later. Three years later, it is obvious that the conditions are very favourable for the introduction of HDTV:

- DTT is a big success in France – 23 percent of the population is now equipped with DTT receivers and a further 1 percent is added each month.
- The flat screen revolution is also underway – more than 2 million HD ready television sets were sold in 2007.
- More and more programmes are produced in HD and all the content providers broadcast HD programmes on satellite.



On 5 March, 2007, a new law, 'TV of the Future', was adopted that concerned the introduction of HDTV on the DTT platform in France. The law clarifies policy goals by setting HDTV as a priority issue. Preference is clearly given to the simulcast of channels broadcast on DTT in standard definition. And, last but not least, the law requires manufacturers to integrate MPEG-4 decoders in all HD television sets no later than 1 December, 2008. Two rounds of HD DTT trials were authorised by the CSA (Conseil supérieur de l'audiovisuel) in 2006/07, in which coding and multiplexing premises were operated by TDF. The transmission was also provided by TDF on available channels in Paris, Lyon, Marseille, and Bordeaux and Rennes for the second trial. Ten different broadcasters were involved in at least one of the trials. For both trials, HD DTT set-top boxes were made available to the public and several thousand were sold (some of the boxes distributed by ISPs could also receive HD DTT). For the first trial, two HDTV services were allowed in one multiplex (broadcasters used different time slots), and three HDTV services were allowed during the second trial. The following conclusions could be drawn from the trials:

- Video quality proved to be very impressive, but some artefacts were noticeable at a coding rate of 10 Mbps (for video only) with actual MPEG-4 real time encoders. Big improvements are still expected.
- Compatibility between coders and decoders was a real issue, and the French HD Forum decided to set up

an HD platform to test a complete system including coding, multiplexing, transmission and HD receivers. The CSA issued a call for tenders on 12 June, 2007 to select three high definition services to be multiplexed and broadcast on the so-called 'multiplex R5'. Multiplex R5 is in fact one of the six DTT networks for which the CSA issued a complete frequency plan for more than 100 stations covering 80 percent of the French population. France 2 was chosen by the French Minister of Communication, Christine Albanel, for the reserved programme service slot for public services, and TF1 and M6 were chosen on 20 November, 2007 for the two other slots.

The launch of the three HD services is expected this June in time for the European football cup, EURO 2008, and the Olympic Games this summer. What's next? The CSA announced that it would like to increase the number of HD services on the DTT platform to eight by the end of this year. This will be done with the existing multiplexes, using MPEG-4 and also a planned second DTT network for broadcasting HD services.

France is strongly committed to introducing HD services on the very popular DTT platform as soon as possible. It is believed that within less than ten years, all programmes will be in high definition for the mutual benefit of consumers, broadcasters and manufacturers.



# NO ORDINARY HANDSET

## DVB-SH Devices – The Technical Challenges and Advantages

Herbert Mittermayr, VP Marketing, Alcatel-Lucent Mobile Broadcast

With the testing of DVB-SH currently under way with H3G and RAI in the Turin area, and a recent demonstration of ICO's 'mobile interactive multimedia' (mim) system, using DVB-SH during the International 2008 CES in Las Vegas, the buzz is growing worldwide about the potential of this new hybrid mobile TV solution. This being the case, it is interesting to take a closer look at the development of DVB-SH capable terminals and how they will differ from existing mobile TV handsets. Today, practically all major terminal vendors are evaluating DVB-SH, recognising that they are able to integrate DVB-SH into a 3G terminal while leveraging previous DVB-H

**“...this technology drastically enhances receiver performance...”**

developments. The antenna systems within terminals are working on 2 GHz already, so managing the integration of a TV system at 2.2 GHz is a reasonable objective. To be clear, to benefit from the services linked to DVB-SH and to enhance the user experience, there are a number of novelties in a DVB-SH handset compared to previous mobile TV handsets.

Leading chipset manufacturers like DiBcom and NXP (ex Philips) are providing DVB-SH chipsets, while early movers for handsets within the



Sagem DVB-SH ready handset during the DVB-SH experimentation by Alcatel-Lucent and SFR in Pau (France)

'Unlimited Mobile TV' ecosystem supported by Alcatel-Lucent include Samsung Electronics and Sagem Mobiles.

Sagem Mobiles' VP 3G & Advanced Technologies, Yves Portalier explains that there are two key differences when it comes to DVB-SH: "One is the chipset for DVB-SH, which integrates both DVB-H and DVB-SH technology in order to allow the consumer to access the wide range of networks available. A powerful and newly standardised turbo-decoder is used in the receiver. Another important factor is in the antenna structure of the handset, called antenna diversity. This means including two antennas inside the same device, analysing and combining in real time the signal received by the two different antennas simultaneously: this technology drastically enhances receiver performance in terms of sensitivity. These receivers benefit the terrestrial network link as well as the satellite link. As handsets become smaller, everything also has to be more compact, and this amounts to a lot of

antennas in one set, when you count the multiband GSM, 3G, Bluetooth, Wi-Fi, DVB-H and now DVB-SH with dual antennas. This creates a number of technical challenges when designing handsets for DVB-SH."

In terms of timeline, Sagem Mobiles are being both vigorous and pragmatic. "Our target is to be ready when the market is ready," says Portalier. "We have already experienced mobile TV services on handsets through various consumer tests that have driven us to optimise the user experience. We are developing the latest technologies in order to have them fully optimised when it's time for the product launch. The target is to build terminals that will be compatible with both DVB-H and DVB-SH, giving more flexibility and to be better adapted to the various deployment schedules on the markets. There are some countries that have already launched DVB-H that may launch DVB-SH afterwards. Countries that haven't yet launched mobile TV initiatives could be very interested in DVB-SH because of its capacity



DiBcom DVB-SH receiver prototype



to cover territory quickly with a large network at a reasonable cost, and with the possibility to co-locate DVB-SH repeaters with existing 3G sites making terrestrial deployment cheaper."

While a great deal of attention is being given to handsets, other kinds of terminals are also actively under development. In a demonstration during the CES show, ICO and Alcatel-Lucent delivered mobile high resolution live television programming to DVB-SH monitors provided by Fujitsu located in a moving vehicle. The ICO mim service will address a wide variety of consumers' entertainment, information, and two way communication needs, providing multiple channels of high quality mobile video to portable, larger screen (4.5 to 10 inch) in-headrest displays. Hughes Network Systems will provide the terminals for the ICO mim's alpha trial planned in Las Vegas and Raleigh this year. Other players, such as Archos for multimedia players, or Delphi for GPS devices, are also undertaking DVB-SH developments. DiBcom was first to come up with a DVB-H chip in 2005 that was then mass produced for the commercial launch of mobile TV during the 2006 FIFA World Cup in Italy. The company also led the 'in-car' DVB-T market, working with brands such as Mercedes, Audi, BMW, etc. offering them reliable reception with the use of diversity and the highest Doppler (good TV reception at high speeds). When the 'Unlimited Mobile TV' initiative was launched in France, the company was perfectly positioned to develop a chipset for DVB-SH



**ICO mim service on a Fujitsu in-car monitor during the International 2008 CES in Las Vegas**

receivers. In an initial phase, DiBcom has been supplying the S-Band tuner to the ecosystem members, enabling trials and the building of related systems and demos. In the meantime, the company has built the 'real' component, including dual tuners and demodulators. This component will be included in upcoming pilot handsets being produced by companies like Sagem and Samsung. "This is a handful", says DiBcom's V.P. of Marketing and Business Development, Azzedine Boubgouira. "It is a highly sophisticated mobile TV component to develop, because to support DVB-SH, the unit has to include antenna diversity. Before, the

way we achieved this was by taking two different complete components, tuner and demodulator, and putting them next to each other at a system level, making them work together in unison to implement this diversity algorithm. For the 'Unlimited Mobile TV' initiative based on DVB-SH, we have made this diversity embedded in one single component, and that's where DiBcom's technical expertise comes into the picture: not only will this chip be the first DVB-SH component, it is also the first all-in-one, quad band, multimode, diversity component, and the most complex mobile TV chip ever built."

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**Dr. Helmut Stein studied Physics and Radio-Astronomy at the University of Bonn, Germany where he received a Ph.D. in Elementary Particle Physics. His professional career started at Robert Bosch. Later he was appointed board member for R&D at Blaupunkt and Nokia with global responsibilities for labs all over the world. In 2001, he joined German pay TV operator Premiere as COO to help restructure the company. He has been on the board of important European research projects like Eureka 95 (HDTV), PALplus (16:9) and a founding member of DVB in 1991/1993. Since then he has been a member of the DVB Steering Board and Chairman of the Promotion and Communication Module (PCM) since its creation. Today he is running his own company ISDM (International Strategies for Digital Media) in Düsseldorf, Germany.**

## In My Opinion – Helmut Stein

# IN THE WIRELESS WORLD

DVB-SCENE : 14

The global world of digital media is characterised by a few mega trends, e.g., Internet, digital broadcasting, virtual reality, etc. But one development had the most direct impact on people's everyday life – wireless technologies. Nobody likes cables and anyone that has installed a cable from the telephone socket in one room to the PC or TV two rooms away knows perfectly well what I mean.

Digital telephone systems for home (DECT) or mobile use (GSM) paved the way into a wireless world. 'Wireless' is also called 'nomadic', 'portable' or 'mobile', mainly depending on the speed of the device in operation. What was DVB's contribution to this

**“...new standards will constantly replace existing ones...”**

development? It really began with DVB-T. Here, interestingly enough, mobile reception was not a part of the commercial requirements of the new system, despite the demand from several companies. At the time mobile reception seemed to be the domain of only mobile telephone operators. That all changed when RTL in Germany (Cologne) decided to put a DVB-T set-top box in a car and, disregarding all scientific concerns, tested the system successfully in both downtown Cologne and on the autobahn. It was also tested at speeds above 200 km/h in a car borrowed from F1 driver Michael Schumacher. Experts quickly judged that DVB-T was very well suited for mobile use which since then many tests have confirmed. Suddenly a robust broadband data transmission system was born to perfectly complement

GSM for push services. In 1999 at the 'Internationale Funkausstellung' (IFA) in Berlin, Nokia presented a prototype of a battery powered DVB-T receiver with a 12 inch LCD screen, a GSM phone and integrated Internet browser, called the Nokia Mediascreen. This device, as a real convergence product, is a milestone that offers a better understanding of how DVB became an important part of the future of mobile communications.

From that point onwards mobility became a requirement for a terrestrial broadcast system and DVB developed DVB-H, a system for handheld devices with improved transmission robustness, reduced power consumption and

lower resolution needs according to the requirements of mobile devices. As well as the physical layer, IPDC (IP Datacasting) was included to support services with appropriate software. At the same time, backwards compatibility was engineered so that DVB-H multiplexes could be mixed with DVB-T transmission and also use the main benefits of the system. Now, DVB-SH has become the latest kid on the block for mobile use. Different to the already established DVB-S standard, reception becomes possible by mobile handheld devices, which creates a major change in application. DVB-SH can be received directly from a satellite with a line of sight or by a terrestrial gap filler network using the same S-Band frequencies. With all these standards and the fact that each system is built as a toolbox

where the operator can optimise the transmission parameters for his individual application, DVB has become an integral part of the mobile media landscape.

How will the DVB project develop in the future? First of all, the fundament of all digital developments is still Moore's Law, which predicts a doubling of the number of transistors per area every 18 months. This empirical prediction is expected to last another 8-10 years. As a consequence, increasing computing power will allow further enhancement of existing solutions. On one side, the spectrum efficiency will increase while the A/V codecs will give the same quality with reduced data rates. That's why new standards will constantly replace existing ones always with a better performance. We can expect DVB-T2 with higher data rates, more robust transmission and even better suited for the mobile world. DVB-H might be upgraded in a similar way, where possibly less backwards compatibility will allow more powerful results.

All in all, DVB has found its role in the mobile world. No other standard for mobile TV is part of such a family of solutions that the user can so perfectly tailor for his needs. Furthermore, DVB is ensuring the constant evolution of its standards at a speed that justly reflects the state of the art in technology. The global landscape sees countries in different phases of introduction of digital media standards. The newcomers, of course, always select the latest systems whereas those countries that already have DVB solutions in place can enjoy robust and efficient operation and add new systems at a later stage.





**Tektronix MTM400A MPEG Transport Stream Monitor**

**Tektronix'** MTM400A MPEG Transport Stream Monitor enables broadcasters and network operators to detect signal degradation caused during transmission and distribution and find and diagnose errors more quickly to prevent viewers from experiencing loss of signal. It features a new FlexVuPlus user interface that helps deliver simplified DTV monitoring and diagnostics. [www.tektronix.com](http://www.tektronix.com)

The new **Ateme** Kyron file encoder is an MPEG-4 encoding/transcoding file-to-file solution for VOD assets production. Through the support of all common input files, multi-audio as well as DVB Subtitling/Teletext, it aims to create high-bandwidth efficiency multi-tracks SD/HD contents. Supervision SDK options offer the capability to integrate the encoder into 24/7 automated media management systems. [www.ateme.com](http://www.ateme.com)

The NP5 **Neotion** processor is a genuine environment friendly MPEG-4 processor designed for building a whole range of ultra low-power DVB MPEG-4 receivers. This single chip is also capable of comprising secured silicon based CAS implementation, IP hybrid DLNA capabilities, and SD card based DVR functions. [www.neotion.com](http://www.neotion.com)

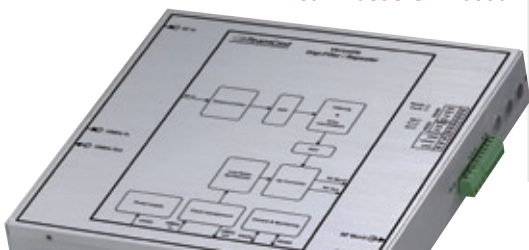


**Neotion NP5 Processor**

**Verimatrix** now supports hybrid DVB-IP STBs utilising ST710x chips, e.g., Tilgin's Mood 400. This enables dual pay TV network reception using a single STB, e.g. DVB-T in combination with broadband IPTV, without smartcards. The company's Video Content Authority System (VCAS) decrypts both DVB-CSA and AES scrambled services. [www.verimatrix.com](http://www.verimatrix.com)

**TeamCast's** GFX-0300 is for applications in multi- and single frequency broadcast networks, including gap filling, network densification, repairing coverage 'holes' and improving in-building reception. Using technology developed by the BBC it is designed for implementing DVB-T and DVB-H On-Channel Repeaters, in 6 or 8 MHz channels, across the entire VHF or UHF bands. [www.teamcast.com](http://www.teamcast.com)

**TeamCast's GFX-0300**



The Epsilon Board Model EBO3 from **Spectracom** is a compact OEM board designed for transmitter synchronisation of digital broadcast signals particularly for single frequency networks. The EBO3 offers accurate, stable and reliable time and frequency synchronisation by generating synchronised 1PPS and 10 MHz references from GPS. EBO3 includes remote IP management. [www.spectracomcorp.com](http://www.spectracomcorp.com)



**Spectracom Epsilon Board**

**Motorola** announced its mobile TV DVB-H compatible DH01 device at CES in January. The lightweight, pocket sized personal media player allows consumers to watch live TV, on-demand clips and programmes saved on a DVR whilst on the go via its high quality 4.3 inch Wide Quarter Video Graphics Array Screen. [www.motorola.com](http://www.motorola.com)



**Motorola Mobile TV DH01**

**ProTelevision** announces the Q2 release of the Adaptive Precorrector function PT2754 for the PT2090 Digital Repeater. PT2754 facilitates fast and trouble free installation of new repeater sites and it eliminates the need for later manual realignment if the HPA/filter characteristic changes over time (fully automatic and continuous precorrection of HPA and antenna-filter/combiner characteristics). [www.protelevision.com](http://www.protelevision.com)



**Rohde & Schwarz Broadcast Test Transmitter R&S SFE100**

**Rohde & Schwarz** launches the R&S SFE100, a new single standard broadcast test transmitter, with models available for all common digital and analogue TV standards as well as a number of sound broadcasting standards. The compact and reliable instrument can be equipped with a power amplifier for production test systems. [www.rohde-schwarz.com](http://www.rohde-schwarz.com)

**Scientific Atlanta** is shipping its new MPEG-4/MPEG-2, DVB-S/S2 Advanced Program Receiver Model D9854. It provides satellite bandwidth efficiency improvements, with HD-SDI, ASI or IP outputs and supports PowerVu and DVB Common Interface based decryption and many other features suitable for digital turnaround, programme

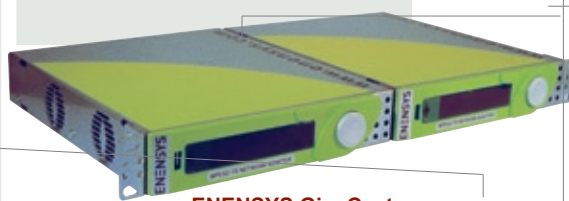
distribution, decode for re-encode, private networks and monitoring applications. [www.saeurope.com](http://www.saeurope.com)  
Following successful pre-commercial DVB-SH mobile TV trials in Europe and US, **UDcast** is launching an industrial DVB-H / DVB-SH IP Encapsulator. As the key component of mobile TV head-ends, and featuring the innovative iFEC (interbursts Forward Error Correction) technology, UDcast IPE-10 enables reception of television from satellite on mobile devices. [www.udcast.com](http://www.udcast.com)



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**Comtech EF Data** introduces its next generation Media Router S2, the CMR-5975, which enables DVB-S and DVB-S2 IP based multimedia content to be delivered over satellite and distributed to remote devices connected via an Ethernet LAN. The CMR-5975 provides a DVB-S or S2 input and Ethernet output. [www.comtechefdata.com](http://www.comtechefdata.com)

The **Pixelmetrix** DVStation-Mini TSP is a cost effective way for terrestrial, cable and satellite operators to maintain visibility of network quality and performance. Designed with portability in mind, it has a rugged shock mounted hard drive in a compact 1RU chassis. It provides comprehensive TS monitoring and is optimised for remote site deployment. [www.pixelmetrix.com](http://www.pixelmetrix.com)



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**UBS GPS Receiver**



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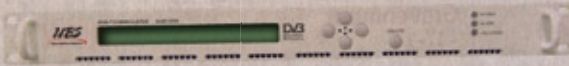
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