Bob Greeney also reports on the recent BroadcastAsia98 conference in Singapore. BroadcastAsia is a biennial event of significance to broadcasters in the Asian region.

Testing in Singapore

BroadcastAsia98 was of particular relevance to Australia this year as it covered digital broadcasting developments and implementation plans.

Digital radio

Updates included developments in new digital HF (short wave) broadcasting, and the WorldSpace satellite digital radio system for Asia, Africa and the Americas scheduled to start operating in early 1999.

A full afternoon was devoted to implementation of digital radio services using the Eureka 147 DAB system. This system is expected to be adopted for Australia, using the L-Band (1500 MHz). There were presentations on the implementation of digital radio in China, Singapore, and the UK. A Eureka 147 system was operating test transmissions in the L-Band during BroadcastAsia98.

Digital television

ATSC —in the USA

The Advanced Television Standards Committee (ATSC) is proposing 8-VSB for digital terrestrial television and 16-VSB for delivery of high definition television (HDTV) by cable in the USA. The higher format will deliver up to 38 Mbps of data, twice that of the 8-VSB standard. The ATSC 8-VSB system is designed to operate in a 6 MHz channel and claims to operate in a 7 MHz channel environment also.

The Federal Communications Commission (FCC) adopted the ATSC standard but did not include scanning formats, aspect ratios or the number of lines of resolution to be provided by the system. The FCC allotment of channels was based on replication of analog services. The US uses all their VHF and UHF channels from channels 2–51, and recovered channels 52–69 for use by other services. Of the recovered spectrum, the first 24 MHz will be made available for public safety uses such as emergency services and utilities, and the remaining 36 MHz will auctioned for wireless communications.

Digital television planning is on the basis of a maximum effective radiated power of 1000 kW and minimum of 200 kW for main transmitters, which is typically 12 dB below the power of the analog services.

Transmissions have started in the USA, with 50 per cent replication to be achieved in year 6, 75 per cent by year 7, and 100 per cent by year 8 of the implementation plan, which started in 1997. Stations will be permitted to increase power, change antenna height, and transmitter location, as long as the requested change does not result in more than 2 per cent increase in interference to the population served by another station. Broadcasters are required to return one of their channels, either analog or digital, at the end of the conversion process, scheduled to be in 2006.

HDTV receivers are expected to become available in late 1998, priced from SUS3000 to SUS8000; converter boxes will allowed people to receive the HDTV transmissions and display them in standard format on their analog receivers.

DVB—the European standard

The Digital Video Broadcasting (DVB) standard is claimed to be a fully interoperable member of a family of systems for satellite, cable, microwave and terrestrial delivery of digital television. The DVB standard was developed through international consensus between more than two hundred companies in more than thirty countries. The DVB-T standard is designed to operate in 7 or 8 MHz channels and also in a 6 MHz channel with a consequent reduction in the available data rate.

The DVB terrestrial standard includes high definition television and uses flexibility in its implementation of MPEG-2 to allow transmission of standard definition television, extended and high definition television, as well as data at varying quality and robustness. It performs well in the mobile environment such as in buses and trains, and has been demonstrated in standard definition mode in Germany at up to 275 kph. It is claimed to be immune to multipath interference and able to be received on a set-top antenna. It operates at transmitted power levels around 12 dB less than the analog services.

There are now approximately 8.5 million standard definition DVB television receivers in use, mainly in satellite broadcasting services. High definition television receivers are expected to cost between $3000 and $8000 initially.

DVB uses the same modulation scheme as is used by the Eureka 147 digital radio systems and can be used in single frequency networks to cover large areas.

ISDB

The integrated services digital broadcasting system developed in Japan is similar to the DVB system and is based on the same orthogonal frequency division multiplex techniques. The ISDB system uses a segmented transmission approach which provides for simulcasting of high definition and standard definition services to enhance mobile reception of the signals. This system is still in development and is expected to receive Japanese standards accreditation in late 1999. ISDB is claimed to have the same attributes as the DVB system with improved mobile reception. It will soon undergo optimisation and large scale field trials following completion of the draft standard, and before finalisation of the ISDB standard in 1999.

A Digital Broadcasting Experts Group was founded in Japan in September 1997 to promote the growth of digital television and to exchange technical information.