



Digital Terrestrial Television Broadcasting System in Malaysia

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EVEN though colour TV was introduced almost 50 years ago, the world could not decide on a single system. This has resulted in the usage of three major colour TV systems, namely, the National Television Systems Committee (NTSC), Phase Alternating Line (PAL) and Sequential Colour with Memory (SECAM). These different standards, being incompatible, have created communication difficulties between nations. Multi-standard hardware is necessary to translate from one standard to the other.

These colour TV systems are analogue and are prone to problems such as multipath interference, ghosting (multiple images) and noise. They are also inefficient in terms of Radio Frequency (RF) spectrum as more and more TV channels crowded the air waves. Analogue TV broadcast also cannot send multimedia information and can no longer perform efficiently in the digital era.

Digital technology was then developed to replace these analogue systems. However, the international community again could not agree to a common standard and four systems emerged, namely, the Advanced Television Systems Committee (ATSC) from the United States, Digital Video Broadcast – Terrestrial (DVB-T) from Europe, Integrated Services Digital Broadcast – Terrestrial Wideband (ISDB-T) from Japan and Digital Terrestrial Television Multimedia Broadcast (DTMB) from China [1].

Digital TV is a multibillion dollar industry and, as such, the wrong choice of standards would set back a nation's progress in terms of finance and technical knowhow. The more advanced nations have already begun Digital Terrestrial Television (DTTV)

services and some of them have shutdown their analogue transmitters as analogue broadcasting is too costly to maintain.

A number of Asian nations such as Singapore have already chosen DVB-T and started a mobile Digital Television Service. On September 2006, Radio and Television Malaysia (RTM) started a pilot service using DVB-T in the Klang Valley. DTTV transmission would be extended to other parts of Malaysia in the next decade. The experience of Malaysia in choosing and implementing DTTV can be used by other developing countries which have not yet done so.

It must also be emphasised that choosing a standard is a lengthy and complicated process as the standards are continually evolving with improvements. The ATSC, DVB-T and ISDB standards were designed a decade ago. Since then, there have been tremendous advances in video and audio compression techniques or source coding, channel coding or error correction coding and in modulation techniques. The Chinese DTMB standard was completed in 2007 and has taken advantage of these developments. In the meantime, the ATSC and DVB systems have improved in performance and now the second generation DVB-T2 system has been introduced.

BENEFITS OF DIGITAL VIDEO BROADCASTING-TERRESTRIAL (DVB-T)

DVB-T uses coded orthogonal frequency division multiplex (COFDM) and its benefits can be summarised as below:

- Elimination of multipath interference that results in ghosting or multiple images. This is an unwelcome factor that presently many viewers

in built up areas in the cities have to put up with.

- Enabling stable transmission to portable sets and, in certain situations, mobile reception
- Noise free reception
- Capable of multimedia transmission
- RF Spectrum Efficiency as a single DVB-T transmitter can broadcast six programs on a single frequency. At present, six separate analogue transmitters are needed
- Power Energy Efficiency as a DVB-T transmitter consumes about 1/4 of the power needed by an analogue transmitter which provides the same coverage.
- Transmission of HDTV signals which is not practical if analogue TV is used.

DIGITAL TV RECEPTION

There are basically two ways to receive digital terrestrial TV

- Set Top Box (STB)
This is basically an inexpensive decoder that costs about RM200 to RM350 which converts the incoming digital TV signal to an analogue PAL signal suitable for existing TV sets. There is no need to discard these sets.
- Integrated Digital TV Sets (IDTV)
This is a TV set with a built-in digital decoder that would cost slightly higher than the present analogue TV sets on the market. The choice would depend on the viewer's convenience as both methods have their own advantages.

HIGH DEFINITION TV (HDTV)

The present Digital TV broadcasts are usually in Standard Definition TV (SDTV) format consisting of 625

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TV lines. However, due to viewers demand for higher picture resolution and the advent of the Blu-Ray disc, it is expected that HDTV with 1080 TV lines and surround sound would be broadcast in the future.

HDTV transmission requires that viewers purchase a suitable HD display unit as the present TV sets are for Standard Definition only. It is encouraging to note that LCD/Plasma Displays are now affordable as prices have been dropping over the past few years.

ANALOGUE SWITCH OFF

It is expected that most advanced countries would shut down their analogue transmitters within a decade and their citizens have been duly advised to change to digital reception.

However, there are still many countries who are conducting pilot services and there would still be analogue TV transmissions for quite some time.

CONCLUSION

Digital Terrestrial TV broadcasts are being planned and are expected to be implemented in the next decade. Thus viewers should be aware of the changes that would have to be made in the future. ■

REFERENCE

- [1] Jeewa, V. "Digital terrestrial television for Malaysia", 4th National Conference of Telecommunication Technology, 2003.

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