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What's All This DAB Radio Stuff Anyway?

By Ian Poole

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DAB digital radio is the new medium for sound broadcasting. Now well established in many countries around the world, new DAB radios are hitting the market. While these new radios are still a little more expensive than those that receive the older analogue AM and FM transmissions, they offer the significant improvements that come with DAB digital radio.

Advantages

Possibly the most important advantage for the listener is the near CD audio quality that DAB can bring. Hiss and fading are now a thing of the past. Not only is the quality better but the more stations can be accommodated within the available space and this means that there is a much greater degree of choice.

Another important facility provided by DAB digital radio is its data capability. Data is transmitted alongside the main audio and this can be displayed on a screen that many DAB sets have built in. This may be the title of a song being broadcast, a plot summary for a play, up to the minute sports results, or whatever the broadcaster feels is appropriate. In fact some stations scroll news headlines across the screen, or provide other useful free information including Electronic Programme Guides.

Not only does the system bring many advantages for the listener, but it also helps the broadcaster. Lower power levels are required for the transmitters. This saves considerably on the cost of the electricity. This is particularly important for large national networks like the BBC and others. With transmitters often using 100 kW and more, the costs for running these transmitters are very high. Also by reducing the power consumed, it helps the environment.

Another advantage is that DAB uses what is termed a Single Frequency Network. This means that all transmitters in the same network use the same frequency without interfering with each other. Currently a national network using VHF FM, for example, has to use a number of frequencies so that the transmissions do not interfere. DAB Digital Radio does not need this and the space needed for the broadcasts is much less. This also brings another advantage for the mobile listener because there is no need to retune the receiver onto another frequency when moving out of the coverage area of one

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transmitter into the next.

Technology

DAB Digital Radio works by converting the sounds into a digital format. Once in this format they can be manipulated using digital signal processing techniques to compress and manipulate the signal. Furthermore when the signal is transmitted error correction techniques can be used to ensure that once the data representing the sounds is transmitted, it is received correctly at the receiver.

The sound compression uses techniques that conform to the MPEG standards. Also the radio transmission uses a form of signal modulation known as Coded Orthogonal Frequency Division Multiplex or COFDM. Here the data representing the sounds and the other data to be transmitted is spread across a large number of close spaced radio signals. By spreading the data over a wide

frequency in this way the whole transmission is less susceptible to noise and other forms of interference including fading and multi-path interference.

Multipath interference results when signals are reflected from objects such as hills and buildings and several signals from the transmitter arrive at the receiver, all at slightly different times because they have travelled over slightly different paths and have taken slightly different times to travel. For VHF FM this is a particular problem and often results in the signal becoming distorted. DAB digital radio is able to combine all the signals, and make the overall reception more robust.

Naturally the technology to enable all this to happen makes the radio receivers more complicated. However the improvements in integrated circuit technology in recent years have enabled the required capabilities to be built into a radio for a reasonable cost. It is also expected to fall further as DAB becomes better established.

Summary

DAB Digital Radio is a great improvement over the analogue transmissions that are broadcast. Offering the possibility of better quality audio, accompanying data, push button tuning and no requirement to re-tune when moving from one service area to the next, it certainly provides a considerable improvement over the older analogue broadcasts. By offering all these facilities, it sets DAB digital radio in a position to take over as the new form of broadcasting for the 21st Century.

Ian Poole is an award winning writer and consultant on radio electronics technology. He is also editor at Radio-Electronics.Com (www.radio-electronics.com) an Internet resource of free information, data and articles.

DAB – Whats All The Fuss?

By Mark Barnes

DAB - What is it?

What's All This DAB Radio Stuff Anyway?

DAB is short for 'Digital Audio Broadcasting', and it will completely change the way we listen to radio again.

With traditional analogue signals (such as AM & FM), you are prone to interference and break up in the transmissions, whereas with DAB you get more robust and clear reception in CD like quality, without an hiss or crackling noises.

Also with DAB, there's no more need to tune into your stations, at the touch of a button you can tune into your favourite stations, listed within your DAB set, and instantly you are connected!

How Does DAB Technology Work?

DAB radio works by using MPEG and COFDM technology which converts the music or speech from analogue signal into digital code. This vastly reduces the potential for the broadcast to be corrupted during transmission by weather conditions, and other problems that can degrade the quality of reception.

Interference which disturbs analogue signals (bouncing off obstacles etc) is eliminated with DAB. DAB sets have processors which correct the signal errors providing a better reception overall.

All DAB Radio's have LCD screens allowing the radio station(s) to broadcast information and messages for the listener, as well as displaying current artist names and song titles. In the future, it is believed DAB players will be able to record your favorite shows, and be able to receive much more sophisticated data.

DAB Offers More Choice

DAB is a much more efficient way to broadcast, meaning that there's room for many more stations, both local and national.

In the UK there are currently just over 160 different DAB digital radio stations being broadcast. There are stations for people who like sport, talk radio, comedy, dance music, rock, hip-hop, classical, alternative, world music, garage, jazz, big band, pop, country, soul, disco, oldies and R&B. With digital radio, there's something for everyone.

How Can I Receive DAB?

To receive DAB, you will need a DAB compatible aerial for either your premises or your vehicle, and further to that a DAB compatible player. Once these are installed correctly using the required equipment, you should receive crystal clear audio.

Please note, DAB is currently available to approximately 85% of the UK.

TV Aerials

What's All This DAB Radio Stuff Anyway?

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