PIXEL PRIORITISATION PROTOCAL TECHNICAL INFORMATION

While conventional microwave systems compress data at a fixed bandwidth with no chance to propagate video when the bandwidth for the channel is lower, the Meridian sends data in such a way that part of the original bandwidth is lost there will be a loss of picture quality. This contrasts the (less attractive) blocking artifacts of MPEG compression in that the artifacts are not as visible and the degradation is basically equivalent to increased snow noise in the picture.

By using Joint Source-Channel Coding (JSCC) instead of conventional data transmission methods which treat each bit as equally important, the Meridian system is able to transmit data rates between 250 and 800 Mbps using a 20 MHz wide 5 GHz channel over short to medium distances.

10-bit per color HD samples can be compressed to about half their original data rate. On a clean 20 MHz wide channel the system is able to transmit a near perfect picture.

Where JSCC really makes a difference is where noise on the channel causes the data rate to drop below half the uncompressed rate. Video components are prioritised according to their relative importance. Most significant bits are more important than least significant bits, lower spatial frequencies are more important than higher frequencies and the luminance components are more important than the chrominance components, and higher priority components receive more error correction than less important components. High priority components are also transmitted using a less complex modulation method—a coarser constellation, for example, is transmitted on frequencies with less noise. As the channel signal-to-noise ratio deteriorates, lower priority components are lost first. Traditional broadcast DTV transmission methods heavily compress the video using complex and expensive encoders before transmitting the data over a system which requires considerable error correction and has little tolerance for loss of data—the “all or nothing” cliff effect.

This system does not use a simple WiFi type protocol. Instead we use MIMO (multiple-input, multiple-out) technology with four antennas to allow “space-time” modulation, enabling higher data rates and a more robust transmission.

This is a truly state-of-the-art technology which uses a method that would have previously been considered impractical, by prioritizing HDTV video components and using the result to hierarchically modulate a MIMO transmitter system in (near enough) real time practical for low to medium distances.

If you have any more questions please e-mail Scott Walker at scott.walker@boxx.tv.

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