Watermark Criteria for Videos

1. Image Quality Assessment

The watermarked video clips should be encoded using the MPEG-4 part 10 (H.264) or MPEG-2 codec. The size of the encoded bit stream should be less than 1/100 that of the original video clip. The original unwatermarked video clips should also be encoded using the same parameters. Both sets of clips should then be decoded, and the PSNR (peak signal to noise ratio) should be calculated for each pair. The bit rate of the original video clip should be 1.2 Gbps, and the average size of the coded video stream should be less than 12 Mbps.

2. Tolerance Assessment

After the watermarked video clips are encoded as described above, they should be decoded, converted from digital to analogue, and then converted from analogue to digital. All of the embedded information should be detectable in the digitalized video. The analogue output of video equipment can be used as the digital video input to the analogue video conversion.

3. Amount of Data (Information) to be Embedded

The amount of data embedded into each 15-second clip should comprise 16 bits.

4. Embedding and Detecting of Additional Information

No additional information is allowed at the detection.

5. Video Clips

The video clips should come from the ITE/ARIB Hi-Vision Test Sequence 1st Edition: numbers 2, 8, 20, 23, and 46.