

Telecommunication Standardization Sector
Study Group 15
Experts Group for ATM Video Coding
(Rapporteur's Group on Part of Q.2/15)

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SOURCE: Tektronix
TITLE: Some Results on Frequency Scalability Experiment I.4
PURPOSE: For Information

1. Introduction

This document presents results of core experiment I.4.2.2 Multichannel scalability for entertainment using Scalable Side Information (SSI) syntax extensions. We also compared the results of full scale coding efficiency using two layer SSI with scale 4 and scale 2 as the lower layer.

2. Simulation Conditions

2.1 Core experiment I.4.2.2:

Resolution scales: 1/4, 1, 1.
Bit rates: 1.5, 3.0, 4.0 mbits/s.
Three layer pyramidal coding scheme, with 3 motion compensation loops.
Rate Control: Macro block rate control, including step 3.
TM4 default mquant and Extended Mquant (EM).
M = 3, N = 15, 4:2:0, 150 frames.
Frame structure, frame motion vectors, frame DCT.
All layers at full temporal resolution.
Lower scale layer reference signal derived from field DCT subsampling.

2.2 Two layers :

Resolution scales: (1/4, 1) and (1/16, 1).
Bit rates: 1.5, 4.0 mbits/s.
Two layer pyramidal coding scheme, with 2 motion compensation loops.
Rate Control: Macro block rate control, including step 3.
TM4 default mquant and Extended Mquant (EM).
M = 3, N = 15, 4:2:0, 150 frames.
Frame structure, frame motion vectors, frame DCT.
All layers at full temporal resolution.
Lower scale layer reference signal derived from field DCT subsampling.

Table 4: Two layer Flower Garden Luminance PSNR

Layer	Scale	Rate	Layer 1 scale	
			Scale 4 (EM)	Scale 2 (EM)
0	8	4.0	26.79	26.34
1	4/2	1.5	28.16	35.37

Table 5: Two layer Football Luminance PSNR

Layer	Scale	Rate	Layer 1 scale	
			Scale 4 (EM)	Scale 2 (EM)
0	8	4.0	30.11	29.84
1	4/2	1.5	28.42	33.37

Table 6: Two layer Bus Luminance PSNR

Layer	Scale	Rate	Layer 1 scale	
			Scale 4 (EM)	Scale 2 (EM)
0	8	4.0	27.93	27.57
1	4/2	1.5	27.23	33.40