17

Document #413
December, 1988

CCITT SGXV
Working Party XV / 1
Specialists Group on Coding for Visual Telephony

SOURCE : JAPAN
TITLE : Evaluation Results of RM 6
PURPOSE : Information

1. Introduction

In this document, the evaluation results of RM 6 coding simulation using some types of zone plates are informed.

2. Evaluation method

We designed three types of zone plates (ver. 1, ver. 2, ver. 3) for the evaluation. Each zone plate has an exponential characteristics in horizontal and constant in vertical. The phase changes cyclically. DC level is constant in horizontal and quadratic in vertical. The amplitude of each zone plate changes along sine curve in temporal. The detailed characteristics are as follows:

luminance $Z_Y(x, y, t) = A * \cos\Phi + B, \quad 0 \leqq Z_Y \leqq 255$
chrominance $Z_C(x, y, t) = 128$

Where x, y are defined as $(x; y) \fallingdotseq$ (horizontal pixel position, vertical pixel position) and at the left upper corner, (x, y) is set as $(0, 0)$. t is a time parameter [sec.].

[ver. 1] ..... Still picture
$\Phi = \{exp(x / 100) + 0.1\} * \pi$
$A = 64$
$B = 160 - (288 - y)^2 / 640$

[ver. 2] ..... Moving picture (frame rate : 10 *frame / sec*)
$\Phi = \{exp(x / 100) + 0.5 * t\} * \pi$
$A = 64 + 32 * sin(0.5 * \pi * t)$
$B = 160 - (288 - y)^2 / 640$

[ver. 3] ..... Moving picture (frame rate : 10 *frame / sec*)
$\Phi = \{exp(x / 100) + t\} * \pi$
$A = 64 + 32 * sin(\pi * t)$
$B = 160 - (288 - y)^2 / 640$

[ver. 4] ..... Still picture (Circular, frame rate : 10 *frame / sec*)
$\Phi = \{(x - 179)^2 / 300 + (y - 143)^2 / 300 + 1\} * \pi$
if $\Phi > \pi$ [*rad. / pixel*] *then* $\Phi = \pi$ [*rad.*]
$A = 128$
$B = 128$

3. Evaluation results

The evaluation results are shown in the graph and VTR. From the results, it is noticed that :

- Amplitude (*A*) and SNR are strongly correlative each other.
- Some blocking artifacts are observed in the lower spatial frequency areas.

Zone Plate coding results