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

Document #76
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SOURCE: CHAIRMAN OF THE SPECIALISTS GROUP

TITLE : SECOND REPORT ON REFERENCE SIMULATION

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1. Introduction

In the Torino meeting last September, concerned research organizations were charged to make a reference simulation for simple interframe encoding without quantization to ensure that they are carrying out computer simulation on the same basis (see 4.2(8)/Document #54R).

This document is the second report as a continuation of Document #73.

2. Participation

As of February 28, Chairman received the reports from the following research organizations.

U.S.A.	: AT&T Bell Lab.
Italy	: CSELT
Japan	: FUJITSU, KDD, NEC, NTT
Netherlands	: DNL
U.K.	: BTRL
Sweden	: Swedish Telecom.

3. Results

The test sequence of 'Miss America' was used. Root mean square value of prediction error for each of ten frames is calculated as follows;

$$RMS = \sqrt{SUM / 360 / 288}$$

$$SUM = \sum_{i=1}^{288} \sum_{j=1}^{360} [f(i,j,t) - f(i,j,t-1)]^2$$

f(i,j,t) = pels in the present frame
f(i,j,t-1) = pels in the previous frame

The values of RMS and SUM are shown in Table 1. It should be noted that the RMS values in Document #73 included error of 1 in the last digit of frame NO. 8 and 10.

Table 1 Reference simulation results

FRAME NO.	RMS	SUM
1	69.990696	507896959
2	3.856092	1541664
3	3.692320	1413493
4	3.661021	1389631
5	3.709033	1426318
6	3.904667	1580749
7	4.238153	1862294
8	3.315568	1139753
9	3.710295	1427289
10	3.469252	1247862

4. Comments

There exist some small differences in RMS values from report to report. This may be due to calculation accuracy difference. Since this fact is giving a suggestion to the work of defining the coding algorithm, a comment from Mr. M. Whybray (BTRL) is presented here as a summary;

"The simulation did reveal small calculation inaccuracy occurring if the simulation of squared error terms was made using 'real' variables. Using integers this problem did not occur, but one then has to check for overflows."

5. Conclusion

The object of the reference simulation was achieved. Chairman would like to thank participated organizations for their efforts.