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| *Title:* | **CE3: Cross-check report by Nokia for F247, F100** | | |
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# Abstract

This contribution presents cross-check results by Nokia for the CE3 tests.

# Introduction

Nokia performed the cross-check for the following tests. All the results are attached in the contribution. The coding efficiency results, encoding/decoding times and the complexity analysis (only number of multiplications are checked) are matching to the cross-check results provided by the proponents.

**Test 2.2. Samsung’s Proposal using 6-tap filter for bi-prediction and 8-tap for uni prediction (JCTVC-F247)**

This proposal uses 6-tap filter to interpolate samples that are bi-predicted and is related to earlier proposals by Sony and Nokia. The main motivation of the proposal is to reduce the worst-case interpolation and memory bandwidth complexity as that happens for bi-predicted PU’s.

The encoder utilizes an 8-tap filter for bi-pred during motion estimation and utilizes a 6-tap filter during motion compensation.

The encoding/decoding times cannot be verified as it wasn’t provided by the proponent.

**Test 4.3., 4.6 Sony’s 8-tap mlmc proposal (JCTVC-F100): Case 3**

This proposal uses shorter tap filters to interpolate sub-pixels closer to the PU boundaries. The main goal is to reduce the number of reference samples to be loaded, and hence reduce the memory bandwidth. To achieve that, the proposal utilizes a non-symmetric 7-tap filter instead of a 8-tap filter for sub-pixels closer to PU boundaries.

Two encoder configurations are tested. In the first configuration both the ME and MC process utilize the same mlmc filter. This represents the theoretical upper-bound performance of the algorithm. Second configuration always utilizes the 8-tap DCT-IF filter during ME but the proposed mlmc filter during motion compensation. This configuration represents a more practical encoder.

The design of the proposal is quite interesting and it seems quite effective to reduce the peak memory bandwidth requirements, without much impact in coding efficiency. Since the design of the proposal is quite different from the current 8-tap separable filters, it is recommended to discuss the following points in more detail:

* Some sub-pixels within the PU are interpolated using different coefficients than other sub-pixels. This might have complexity impact on some architectures.
* Certain half-pixels are interpolated using non-symmetric filter. Similarly this might have more complexity impact on different architectures.

# Patent rights declaration(s)

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