

## I. IDENTIFICATION DATA

<b>Thesis title:</b>	<b>Hardware Acceleration of Channel Decoding in Software Defined 5G Base Station</b>
<b>Author's name:</b>	<b>Jaroslava Fiedlerova</b>
<b>Type of thesis :</b>	master
<b>Faculty/Institute:</b>	Faculty of Electrical Engineering (FEE)
<b>Department:</b>	Department of Radioelectronics
<b>Thesis reviewer:</b>	Marco Mezzavilla
<b>Reviewer's department:</b>	New York University, Electrical Engineering

## II. EVALUATION OF INDIVIDUAL CRITERIA

<b>Assignment</b>	<b>challenging</b>
<i>How demanding was the assigned project?</i>	
Challenging task in a very timely area.	

<b>Fulfilment of assignment</b>	<b>fulfilled with minor objections</b>
<i>How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.</i>	
The end goal, i.e., a performance comparison of two 5G NR PHY acceleration approaches, has been achieved. However, some odd behaviors (malfunctioning of the accelerators with low MCS values) could not be properly justified.	

<b>Methodology</b>	<b>partially applicable</b>
<i>Comment on the correctness of the approach and/or the solution methods.</i>	
The student implemented a straightforward method to compare the T1/T2 accelerators.	

<b>Technical level</b>	<b>B - very good.</b>
<i>Is the thesis technically sound? How well did the student employ expertise in the field of his/her field of study? Does the student explain clearly what he/she has done?</i>	
This is a very technical topic. The student demonstrated solid understanding.	

<b>Formal and language level, scope of thesis</b>	<b>C - good.</b>
<i>Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?</i>	
The overall structure is good. The language can be improved.	

<b>Selection of sources, citation correctness</b>	<b>B - very good.</b>
<i>Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?</i>	
Yes.	

<b>Additional commentary and evaluation (optional)</b>
<i>Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.</i>
This is a very good thesis on an extremely important topic. I enjoyed reviewing it, and learning about some technical details that were properly discussed and elaborated by the student. As mentioned, some plots raised some doubts about the actual implementation of these accelerators. However, the actual implementation was not the scope of this thesis. So, I do not consider it as critical. Being able to explain that odd behavior would have surely been a plus. The main takeaway is clear and compelling.

### III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

This is a very good thesis on an extremely important topic. I enjoyed reviewing it, and learning about some technical details that were properly discussed and elaborated by the student. As mentioned, some plots raised some doubts about the actual implementation of these accelerators.

Figure 4.1: Why is the T1 processing time lower than the T2? Table 3.1 seems to indicate quite the opposite.

Figure 4.2: Why is the performance so low when offloading with MCS values below 6? Do you have an intuition? Could it be linked with the fact that HARQ is not enabled?

Table 4.5: If HARQ is enabled for the software implementation, but it is not enabled for the T2 offload, then this table does not provide a fair comparison.

Being able to explain these odd behaviors would have surely been a plus. However, the main takeaway remains clear and compelling.

The grade that I award for the thesis is **B - very good**.

Date: **22.6.2023**

Signature: *Marco Mezzavilla*