

I. IDENTIFICATION DATA

Thesis title:	HW for Indoor Visible Light Positioning Testbed
Author's name:	Štěpán Bosák
Type of thesis :	bachelor
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Radioelectronics
Thesis reviewer:	Teli Shivani Rajendra
Reviewer's department:	Department of Radioelectronics

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	challenging
<i>How demanding was the assigned project?</i>	
The thesis is about HW implementation for indoor VLP. The reviewer finds it as a challenging work with respect to its high modulating LED source and the use of LoRaWAN for reliability.	

Fulfilment of assignment	fulfilled with minor objections
<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 overall thesis fulfils the assigned task and primary goals of designing and testing HW for VLP has been achieved. Reviewer finds that Chapter 2.1: modulation methods is over extended. Chapter 2.2 is of more importance as VLP is more about positioning rather than data transmission. Please check on formal text and figure changes. For example: <ul style="list-style-type: none"> - Figure 2.4 shows captured LED at different frequency levels. It would be better to mention in its caption the respective frequency numbers so as to clarify and have a clear comparison. - Figure 3.2 can be enhanced in order to have clear insight on each part of the driver. - A table for key testing/experiment parameters can be drawn in order to list out major values used. 	

Methodology	correct
<i>Comment on the correctness of the approach and/or the solution methods.</i>	
The author provides a good solution to HW implementation of the VLP links for indoor scenarios. There is a question, as the camera is limited by its capture speed and VLP is more about positioning than data transmission, then what is the need to develop higher (10 kHz) modulating driver?	

Technical level	C - good.
<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>	
The thesis is technically sound. The most important part of the HW implementation being LoRa shield and the driver was satisfactorily drawn in to the thesis. However, reviewer finds it difficult to know about the LED array used in the experiments. It would be better to have a separate subsection in Chapter 3 that explains about the LED array, its configuration in figure format and respective parameters.	

Formal and language level, scope of thesis	D - satisfactory.
<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 formalisms and notations are used properly and the thesis is well organized. The thesis can be made more extensive by introducing the recent advancements in the proposed field. The references apart from the online links provided are pretty old works in the field of interest. Reviewer suggests to add and discuss some recent studies in Chapter 1 based on VLP techniques.	

Selection of sources, citation correctness**D - satisfactory.**

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?

The citations apart from online links are pretty old studies within the field. Authors can also improve the state of art/introduction by emphasizing more on advancements in VLP based HW and algorithms.

Additional commentary and evaluation (optional)

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.

The overall quality of the thesis is good with its major novelty in LoRa shield and LED driver design and implementation. The student has skillfully organized his strengths with supportive solutions within the thesis. Some additions mentioned in previous comments would strengthen it more.

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

Questions that should be answered during the presentation and defense of the student's work.

- 1. What is the need of developing high modulating driver when using camera-based links?*
- 2. Parameters such as link span and data throughput should be made clearer with changing setup configurations.*
- 3. Are the proposed LoRa shield and driver compatible to any other light sources or configuration? If not, what changes needs to be done to make so?*

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

Date: **1.6.2020**

Signature: