THESIS SUPERVISOR'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**IoT Router Testbed**
Author's name:	**Nicola Zaru**
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Telecommunication Engineering
Thesis supervisor:	Ing. Bc. Marek Neruda, Ph.D.
Supervisor's department:	Department of Telecommunication Engineering

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment **challenging**

How demanding was the assigned project?

To fulfill the goal of the assigned project, student had to: 1. get familiar with the HW board and 2. communication technologies for the IoT including BLE, LoRa, NB-IoT, sensor/actuator network, 3. design and 4. realize a workplace for testing operational parameters of these technologies, 5. storing data in local and cloud database.

Fulfilment of assignment **fulfilled**

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.

All available IoT router technologies with the selected operational parameters of transmission channel were successfully tested, including storing data in both databases, i.e. all necessary functions were programmed and tested for its functionality. Moreover, student tested board performance.

Activity and independence when creating final thesis **A - excellent.**

Assess whether the student had a positive approach, whether the time limits were met, whether the conception was regularly consulted and whether the student was well prepared for the consultations. Assess the student's ability to work independently.

Student worked independently with a positive approach and had relevant questions in relevant time. Time limits were met.

Technical level **A - excellent.**

Is the thesis technically sound? How well did the student employ expertise in his/her field of study? Does the student explain clearly what he/she has done?

Technically, the thesis reaches a good level. Individual thoughts and steps are explained mostly clearly. Some results can be described in deep, e.g. average throughput vs increased throughput in comparison with the case.

Formal level and language level, scope of thesis **B - very good.**

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?

The thesis is well organized into chapters and sufficiently extensive. English is clear, satisfactory and understandable. Other comments: In Introduction: Node-RED should be written instead of Node-red (also page 15). A space is missing between the word and the bracket with reference number, e.g. page 5. Fig. 4.10 and 4.9 are the same. Caption of the Fig. 46 is on the separate page. 0.735 Kbyte/sec cannot be found in Fig. 4.27 (there is kbit/s). Table 4.61 should be 4.6. It should be nice to discuss measured throughput of the NB-IoT. Fig. 4.51 and 4.52 should be mentioned in the text. "miniPCIe slot can probably handle also different modules than two mentioned. "SX1301 or SX1308 IC see Fig.2.", it should be Fig. 3.8 Units should be unified, e.g. s vs sec.

Selection of sources, citation correctness **B - very good.**
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?
Thesis contains 42 sources relevant to the topic. It follows the standard. I suggest to use different source than Wikipedia in future work since it does not have to be reliable source of information. It is clear, the work is student`s original work. Ref. 15 cannot be verified.

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.
I`d like to appreciate the student's skillfulness. He is able to get familiar with HW, understand technical background of several technologies and prepare a functional testbed.

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

Summarize your opinion on the thesis and explain your final grading.

Nicola Zaru has an active approach to solving problems, his skills are at a very high level, he is capable of get familiar with several communication technologies including LoRa, NB-IoT, IQRF, BLE, etc. and he is capable of implementing and testing these technologies on the given hardware.

The grade that I award for the thesis is **A - excellent.**

Date: **18.8.2020** Signature: