FACULTY
OF INFORMATION
TECHNOLOGY
CTU IN PRAGUE

Review report of a final thesis

Reviewer:	Ing. Alexandru Moucha, Ph.D.
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Thesis title:	4G Testing Network for IoT Device Penetration Testing Support
Branch / specialization:	Computer Security and Information technology
Created on:	9 June 2023

Evaluation criteria

1. Fulfillment of the assignment

▸ [1] **assignment fulfilled**
  [2] assignment fulfilled with minor objections
  [3] assignment fulfilled with major objections
  [4] assignment not fulfilled

In my opinion the topic is extremely interesting and actual. Although 5G is buzzing with new network architectures, 4G LTE is still widely spread and used and very reliable, with 5G still advertised as the future technology.

2. Main written part   98 / 100 (A)

The high grade reflects the quality of thinking and presentation as well as the excellent English (I would qualify it as at "native" level). Excellent text and explanations, all in a logical manner, with clear definitions.

3. Non-written part, attachments   92 / 100 (A)

Based on the description, the work is oriented towards building a testing platform rather than a series of security tests by themselves. Nevertheless, I gladly would have seen a demo, which I did not. I totally understand that the project will yield its value in the future, once it is put to work, in penetration testing of 4G LTE.

4. Evaluation of results, publication outputs and awards   90 / 100 (A)

For the moment I do not think the project contains publishable results, as they have to be generated by the tests which will be done using the testing platform built by this project. Nevertheless, I would strongly suggest to the student to continue his studies and expand this project into a diploma thesis, which will contain the sets of tests. Those most probably will yield publishable results.

The overall evaluation   97 /100 (A)

Excellent work, as an engineering work should look like.

Questions for the defense

I do not have questions but I have a mention. In the text there is a confusion between an anechoic room and a Faraday cage / tent. The difference between them, which makes an anechoic chambre much more expensive and rigid (mechanically, in structure) is the fact that besides creating an EM barrier, the anechoic chambre creates no reflexions due to the pyramid absorbers on the walls, ceiling and floor. Thus, a Faraday tent / cage creates an EM barrier while an anechoic room creates conditions equivalent to free space (the emitted signals do not return); the walls of a Faraday tent create reflexions of the signal (even though rather small, being essentially a 2D set of dipole antennas with coupled impedance to cancel out the signals). For this project, obviously, the tent was suitable. For testing antennas on space-probes an anechoic chambre would be necessary.

Instructions

Fulfillment of the assignment

Assess whether the submitted FT defines the objectives sufficiently and in line with the assignment; whether the objectives are formulated correctly and fulfilled sufficiently. In the comment, specify the points of the assignment that have not been met, assess the severity, impact, and, if appropriate, also the cause of the deficiencies. If the assignment differs substantially from the standards for the FT or if the student has developed the FT beyond the assignment, describe the way it got reflected on the quality of the assignment's fulfilment and the way it affected your final evaluation.

Main written part

Evaluate whether the extent of the FT is adequate to its content and scope: are all the parts of the FT contentful and necessary? Next, consider whether the submitted FT is actually correct – are there factual errors or inaccuracies?

Evaluate the logical structure of the FT, the thematic flow between chapters and whether the text is comprehensible to the reader. Assess whether the formal notations in the FT are used correctly. Assess the typographic and language aspects of the FT, follow the Dean's Directive No. 52/2021, Art. 3.

Evaluate whether the relevant sources are properly used, quoted and cited. Verify that all quotes are properly distinguished from the results achieved in the FT, thus, that the citation ethics has not been violated and that the citations are complete and in accordance with citation practices and standards. Finally, evaluate whether the software and other copyrighted works have been used in accordance with their license terms.

Non-written part, attachments

Depending on the nature of the FT, comment on the non-written part of the thesis. For example: SW work – the overall quality of the program. Is the technology used (from the development to deployment) suitable and adequate? HW – functional sample. Evaluate the technology and tools used. Research and experimental work – repeatability of the experiment.

Evaluation of results, publication outputs and awards

Depending on the nature of the thesis, estimate whether the thesis results could be deployed in practice; alternatively, evaluate whether the results of the FT extend the already published/known results or whether they bring in completely new findings.

The overall evaluation

Summarize which of the aspects of the FT affected your grading process the most. The overall grade does not need to be an arithmetic mean (or other value) calculated from the evaluation in the previous criteria. Generally, a well-fulfilled assignment is assessed by grade A.