

Diploma Project Academic Year 2019/2020

Project code: 201901

Project Title (English):

5G Planning Process for Dense Urban Areas

Project Title (Arabic):

تخطيط شبكات الجيل الخامس للمناطق الحضرية عالية الكثافة

Project Advisor:

Name: Prof. Hesham El-Badawy

email: heshamelbadawy@nti.sci.eg

Overview:

5G technology from the performance point of view by illustrating 5G network capabilities to the operators and to the end users in terms of throughput, capacity, coverage, energy efficiency, connectivity, and latency.

5G networks need to fulfill a number of new performance targets since they target diverse use cases that can be categorized into three different areas:

- Extreme mobile broadband (eMBB) for high data rates and capacity for smartphones, tablets, and laptops. That is the traditional use case of mobile broadband networks.
- Massive Machine Type Communication (mMTC) for tens of billions of connected devices like sensors and control units.

Project Objectives:

- What is the potential traffic level that would trigger the need to be deployed in Dense Urbans?
- Which frequency carrier will be suited enough to accommodate the desired traffic demand, and/or the coverage needs?
- What is the cumulative performance/cost of covering different proportions of the desired dense urban (as an Area Under Test)?
- What are the investment costs per user/operator?

Project Outcomes:

- 5G deployment scenarios
- 5G Planning Process: Coverage and Capacity
- 3GPP based propagation model
- Capacity vs Coverage Planning Process

Project Requirements:

- Performance Analysis Methodologies
- Network Planning Process