5G!Drones Feasibility Tests - Athens Trials

Location: Cosmote-OTE Academy (5GENESIS Athens platform), Greece
Date: 21 October 2020
Participants: CAFA Tech (EST), NCSR "DEMOKRITOS" (GRE), COSMOTE (GRE), Robots Expert (FIN), INFOLYSiS (GRE)

On 21st October 2020, 5G!Drones partners successfully completed feasibility test related to the 5G!Drones Use Case #4 scenario (Connectivity during crowded events) at Cosmote-OTE Academy premises, in Athens, Greece.

Figure 1 – 5G!Drones team at Cosmote Academy

The Use Case #4 description states that the video stream is transmitted from the stadium of Egaleo to the Cosmote Private edge server, where the video server and CAFA Tech video analytics process and stream the video. At Cosmote-OTE Academy, a Control Room was also setup from where all activities of the day were managed.

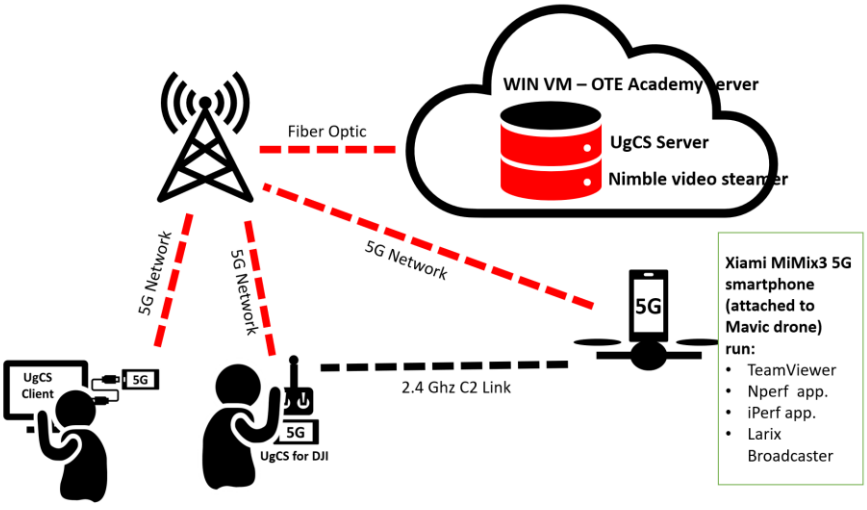

Figure 2 – CAFA Tech drone Mavic 5G flight plan at Cosmote Academy

In specific, the following activities were performed and tested during the day:

1. Set up of video server and C2 software UGCS into COS Private cloud server (as described in UC4 description).
2. Manual (only vertical) flights for conducting 5G QoS measurements with IPerf and NPerf and NetMonitor application. 5G smartphone Xiaomi was attached to CAFA Tech DJI Mavic Platinum drone. Measurements conducted thanks to Teamviewer application running in onboard 5G smartphone and it was controlled by COSMOTE team in Control Room via Teamviewer. 5G QoS measurements performed at levels: 5m, 10m, 15m, 20m, 25m, 30m, 35m.
3. Manual flight (vertical flight from same position as 1st flight) for conducting video streaming over 5G using Larix Broadcaster application in 5G smartphone Xiaomi which was attached to CAFA Tech DJI Mavic Platinum drone. Larix Broadcaster streams video to video server in Cosmote private cloud and users in Control Room see video stream on the laptop screen using CAFA video player 5GDrones/direct. Laptop was connected to Cosmote Wifi. Latency was 1.7 seconds mainly due to LarixBroadcaster packet preparation protocol.

Figure 3 – 5G smartphone Xiaomi attached on CAFA Tech drone Mavic

4. Automated 5G drone flight take off. CAFA Tech DJI Mavic Platinum drone flight over 5G: 5G smartphone Xiaomi was attached to Remote Controller and C2 software was run in Cosmote Private cloud server which sent mission to the drone and get telemetry from the drone over 5G. The second 5G smartphone Xiaomi was attached onboard the drone and NetMonitor application logged and saved 5G QoS signal strenghts. At same time LarixBroadcaster was run and streams video to Command Center. Flight route: take off and climbing to altitude 30m and then circle flight with diameter 40m.
5. Speed tests were also performed against LBO (not against Ookla general servers in Greece).

Figure 4 – CAFA Tech drone Mavic 5G flight

In specific, on October 21, measurements of the 5G coverage area were performed during different flights at a different height from ground level up to 35m, where the coverage area of the 5G test network was available. Measurements taken at different altitudes using iPerf and nPerf applications and recorded. The gNB was located at 2nd floor at 7m AGL and was directed to south. nPerf measurements results are shown in **Figure 5**.

Figure 5 – OTE Acedemy-Speedtest with nPerf at levels 0-5-8-12-15-20-30 meter

Video from the Athens trials at OTE-Cosmote academy are available at the 5G!Drones YouTube channel here