A quality of experience evaluation method for an

UAV first person view system

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Abstract—Unmanned Aerial Vehicles (UAV) communication

systems are an increasingly widespread and emerging technology

due to their flexibility, low cost and usability properties. Hence,

the demand for Beyond Visual Line of Sight (BVLOS) cases

that require large data transmission and low latency in cellular

networks are increasingly. In this work, the assembly, integration

and networking of a UAV quadrotor for First Person View (FPV)

system connected by LTE is presented. Different configurations

of the link between the UAV and the Ground Control Station

(GCS) are proposed, such as connection by LTE cloud-based

server, direct LTE connection and direct WiFi connection. With

these configurations, experiments are carried out to characterise

the network metrics that model this service according to the

telemetry, control and video traffic. The main contribution is the

definition of a closed mathematical expression provided to define

the Quality of Experience (QoE) for FPV use cases considering

the video quality in terms of Video Multimethod Assessment

Fusion (VMAF), network latency and video resolution as inputs.

This expression will be applied to lab experiments taking into

account link performance, in which network changes based in

packet loss and latency alterations will be introduced to measure the QoE of the UAV system.