

	TRIANGLE: 5G Applications and Devices Benchmarking	
	Experiment Overview	

## DualRoC: Dual Radio-over-Copper Remotization for Multi-RAT Centralized-RAN Architecture in 5G Deployments

**Motivation** – Next generation (5G and beyond) communication networks are expected to incorporate the pre-existing LTE and WiFi connectivity of all the interconnected devices with multiple available interfaces, guaranteeing high-rate/low-latency communications. In this context, Dual-RoC is the integration of Multi Radio Access Technology (RAT) into a copper-based Centralized Radio Access Network (C-RAN) architecture.

### Key Objectives

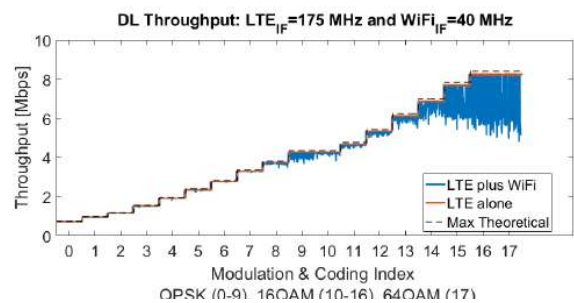
The objective of Dual-RoC Experiment is thus to experimentally observe and demonstrate the feasibility of the interplay between an all-analog C-RAN architecture based on LAN cables and Multi-RAT.

### How Does It Work?

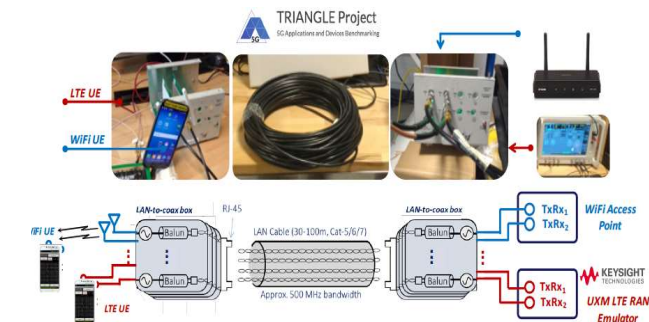
For Dual-RoC, the TRIANGLE testbed has been used in the typical device-testing configuration, with the only

### Key Results

Dual-RoC demonstrates the feasibility of carrying both MIMO LTE and WiFi signals over the same LAN cable using an all-analog relaying by a purposely selected mapping of IF frequencies onto the cable twisted pairs, iii) the performance degradation experienced for high




MCS and high IF is mainly due to the low signal power received at the user device due to the attenuation introduced by the analog relay over cable



difference that a 4-pairs RJ45 Cat-5e LAN cable has been inserted between the RF output ports of the UXM and the RF connections at the device to show the performance degradation introduced by the all-analog relaying over copper. The adaptation between RF connections and LAN cable is performed by the so-called LAN-to-coax boxes, which have been developed to enable Dual-RoC.

### Testbed Components Used

UXM RAN Emulator	Test Automation Platform (TAP
Wi-Fi Access Points	TestelDroid
TACS4 Performance Tool	Android UEs

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**Experimenter's Impression:** “Thanks to the experiment I conducted within Triangle, it was possible to bring the academy closer to the industry, thus bridging the gap between theory and practice and getting unique results!