



University of Pavia
Ph.D. School in Electronics, Computer Science and Electrical Engineering
Ph.D. School in Microelectronics

SEMINAR

Frequency Converter Characterization with Keysight PNA-X Network Analyzer: from linear measurements (Conversion Gain & Phase) to non-linear KPIs (AM/PM, Spurious & Intermodulation Distortion)

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Room: Magenta

Abstract: In this seminar, the characterization of frequency converters and mixers - by using Keysight PNA and PNA-X series capabilities - will be shown. In particular, Keysight's new DDS source (available since Sept 2020) makes phase and group delay measurements 10 times faster with 30 times less noise in the trace. Further, the DDS has virtually no spurs and very low phase noise, meaning it is easier to see close-in spurious caused by an internal LO to the frequency converter. The non linear key parameters will be addressed and presented. In particular, the agenda of the seminar will follow the steps hereafter presented:

- how the new phase-noise measurement application, utilizing the new DDS synthesizer as an LO, allows to directly measure the phase noise of a frequency converter with an embedded LO.
- how the new DDS system provides an optional 3rd source (up to 13.5 GHz) that can be used to drive an LO of a mixer while 2 tones (combined internally from ports 1 and 3) can be applied to measure IMD.
- the Modulation/Distortion (Mod/Dist) application with measurements on frequency converters.
- the new method of source Digital Pre-Distortion that allows us to create very wideband signals (up to 4 GHz or more), with nearly perfect EVM even when driven at high powers.

Bio: Giulio Campagnaro was born in 1988. He is Application Engineer at Keysight Technologies Italy. He got the Master Degree in Electronic Engineering at University of Rome "Tor Vergata" in April 2013. In the same University he was entitled with a research grant in 2014 working on Satellite datalinks mounted onto an Aerial Vehicle with MBDA (Leonardo group). He joined Keysight for the first time from Jan 2015 to Mar 2016 as R&D Engineer at Keysight Labs Linz (Austria) with focus on Nanoscale characterization of biological and semiconductor samples in the framework of "Maria Curie PhD program". From April 2016 he works as Solutions Engineer for Component Test at Keysight Technologies in Rome, partnering with leading A/D Customers. The main applications with Vector Network Analyzers and Impedance Analyzers include component, antenna and material characterization.

Organizer
Prof. Lorenzo Silvestri

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Seminar in English

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