

U3851A: RF Microwave Circuit Design, Simulation and Measurement Courseware, 5G NR n3

RF circuit design, with elements of 5G New Radio n3

RF and microwave engineering covers the physical layer of wireless communication, and is incorporated into almost everything that transmits or receives a radio wave, such as mobile phones, radios and WLAN. Emerging trends such as 5G and microwave sensing imaging drive rapid innovations in the technology landscape and imposes new requirements on RF components, resulting in design challenges such as increased integration and exponential demands on performance. The increasing complexity brought about by these trends means many companies will need additional expertise to execute the technology in the design of their devices.

To prepare industry-ready students, Keysight's RF Microwave Teaching Solution focuses on the complete RF circuit design flow, from design specifications and simulation to prototype building and validation, operating on the 5G New Radio Band n3 downlink frequency. This gives students a solid foundation in RF microwave fundamentals and paves the way for them to specialize in more advanced wireless applications in areas such as 5G and IoT.

Designed to work hand-in-hand with industry-standard test and measurement instruments and electronic design automation (EDA) software, the RF Microwave Teaching Solution provides students the engineering essentials, practical skills and real-world application knowledge that will make them highly sought after by the industry.

Courseware contents

- Training Kit
 - RF education hardware kit (1)
 - Kit controller (2)
 - RF adapters, splitter
 - Cables (RF, power, LAN, BNC)
 - Power adapter and carry case
- Editable lab sheets and model answers (3)
 - Problem-based assignments
- Covers 50 hours of lab sessions

RF Microwave Teaching Solution

Lab Courseware

List of Lab Sheets:

- Lab 1 - Transmission Lines
- Lab 2 - Filter
- Lab 3 - Low Noise Amplifiers
- Lab 4 - Driver and Power Amplifiers
- Lab 5 - Oscillator and Synthesizers
- Lab 6 - Mixers
- Lab 7 - 5G Receiver Design, Simulation and Measurement

Reference Lab Solutions

Required Keysight Instruments:

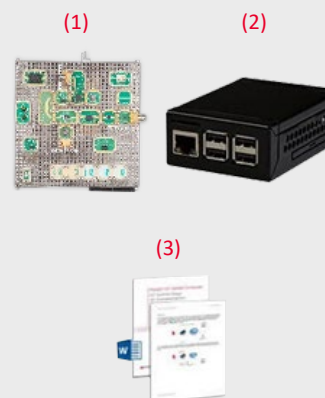
- Signal Generator: N5171B
- Spectrum Analyzer: N9000B CXA Analyzer
- Network Analyzer: N9917A FieldFox VNA
- Noise Source: 346B Noise Source
- Power Supply: E36312A
- Oscilloscope: DSOX1102G
- Calibration Kit: 85521A

Required Design and Automation Software:

- PathWave ADS, Genesys, EMPro and SystemVue
- FieldFox Data Link software

Optional Software:

- PathWave BenchVue

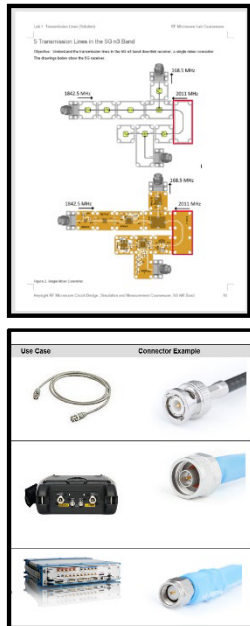


More Information:
www.keysight.com/find/rfuw



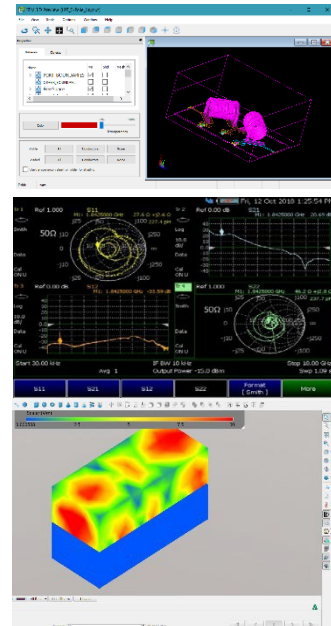
Learning outcomes: Industrial experience

Design Specifications



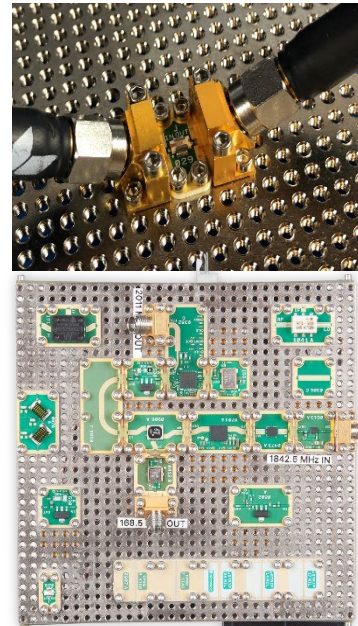
Learn and understand the fundamentals of the transmission specification, which is crucial for component design

Design and Simulation



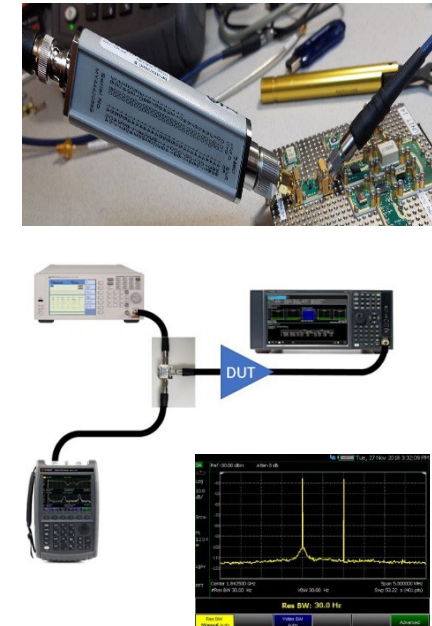
Design and simulate using industrial design and automation software such as PathWave ADS, PathWave Genesys, PathWave EMPro, PathWave SystemVue and FieldFox Data Link software

Prototype Building



Experience the prototype building of RF receiver system at the 5G New Radio band

Design Verification



Evaluate system design and validate the 5G receiver design module with Keysight instruments

Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at www.keysight.com.

This information is subject to change without notice. © Keysight Technologies, 2019 – 2023,
Published in USA, April 13, 2023, 5992-3687EN