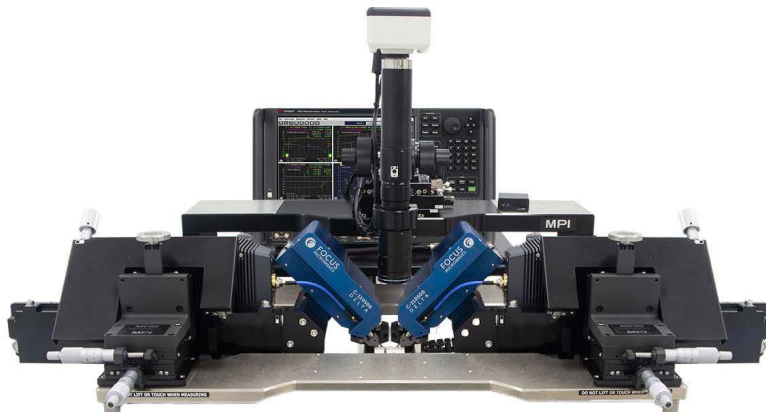


On Wafer 110 GHz Load Pull for 5G Applications

Keysight Technologies
and Focus Microwaves

Perform mmWave load pull up to 110 GHz
with confidence



mmWave on wafer load pull has always been a challenge for both test and design engineers as the inherent loss at high frequencies would limit the tuning and dynamic range on any load pull system. Keysight and Focus have collaborated to develop a turn key solution which solves those problems making now possible to perform high frequency fundamental and harmonic load pull up to 110 GHz with great accuracy. Combined with Keysight's very small footprint N5290A 110 GHz PNA-X, Focus Microwaves DELTA tuners offer a very simple and efficient system which elegantly integrates on wafer....

DELTA tuners for on-wafer measurements

Focus Microwaves' new DELTA series of electro-mechanical tuners is designed specifically for high frequency on wafer measurements. The tuner's low profile allows it to be placed within the wafer perimeter and allows for a direct connection between the probe tip and the tuner, eliminating all possible insertion loss between the DUT and the tuner. This revolutionary new tuner design enables the engineer to achieve optimum tuning range, with a tuner whose footprint and weight has been dramatically reduced.

- On wafer load pull measurements up to 110 GHz
- Measure and optimize key non-linear parameters
- Perform both scalar and vector load pull
- Uses Keysight N5290A 900 Hz to 110 GHz PNA mm-Wave system
- Uses Keysight U8489A DC to 120 GHz USB thermocouple power sensor
- Focus 110 GHz DELTA fundamental and harmonic tuners
- Focus Device Characterization Software to control instrumentation and collect data
- Measure multiple parameters over multi-octaves of frequency

On wafer 110 GHz load pull for 5G applications

The PNA-X Series of microwave network analyzers are the culmination of Keysight Technologies, Inc. 40-year legacy of technical leadership and innovation in radio frequency (RF) network analysis. More than just a vector network analyzer, the PNA-X is the world's most integrated and flexible microwave test engine for measuring active devices like amplifiers, mixers, and frequency converters.

The Focus Device Characterization Suite (FDCS) includes several software products aimed at characterizing transistor devices. The Load Pull Explorer software package (LPEX) is a load pull characterization and test software. Advanced software routines used for tuner control/calibration, driver based instrument communication, and reference plane de-embedding. Standard frequency based, time domain based (vector receiver based) measurements are supported. Additionally, hybrid active injection load pull now allows a combination of active injection and passive load pull.

System Components

Keysight Technologies

N5291A	900 Hz to 120 GHz PNA mm-Wave system
N5291A-201	2 port with N5222B 26.5 GHz PNA
S93080A-1FP	Frequency-offset measurements, fixed perpetual license
N5292A-400	Test set 4-port
U8489A	DC to 120 GHz USB thermocouple power sensor

Focus Microwaves

Tuner - select from:

C-110240	Fundamental wideband impedance tuner: 24-110 GHz
L-110240	2 Harmonic wideband impedance tuner: 24-110 GHz
M-110240	3 Harmonic wideband impedance tuner: 24-110 GHz

Plus

FDCS	Focus Device Characterization Software
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Other options are available; contact Focus Microwaves Sales for more details

To learn how this solution can address your specific needs please contact Keysight's solutions partner, Focus Microwaves
www.keysight.com/find/focusmw



Keysight & Solution Partners
Accelerating Innovation Together

Keysight and its Solutions Partners work together to help customers meet their unique challenges, in design, manufacturing, installation or support. To learn more about the program, our partners and solutions go to

www.keysight.com/find/solutionspartner

Focus Microwaves is an innovative engineering company. Founded in 1987 by Dr. Christos Tsironis, Focus is the pioneer of most existing electro-mechanical tuner families. Focus Microwaves Group is based on the engineering and manufacturing skills of its highly motivated and experienced engineers.

www.focus-microwaves.com

For information on Keysight Technologies' products, applications and services, go to

www.keysight.com

To learn more about WaferPro Express latest release, go to

www.keysight.com/find/eesof-wafer-pro-express

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