

# Multiband Passive Intermodulation Testing

## Keysight Technologies and Power Technology Solutions

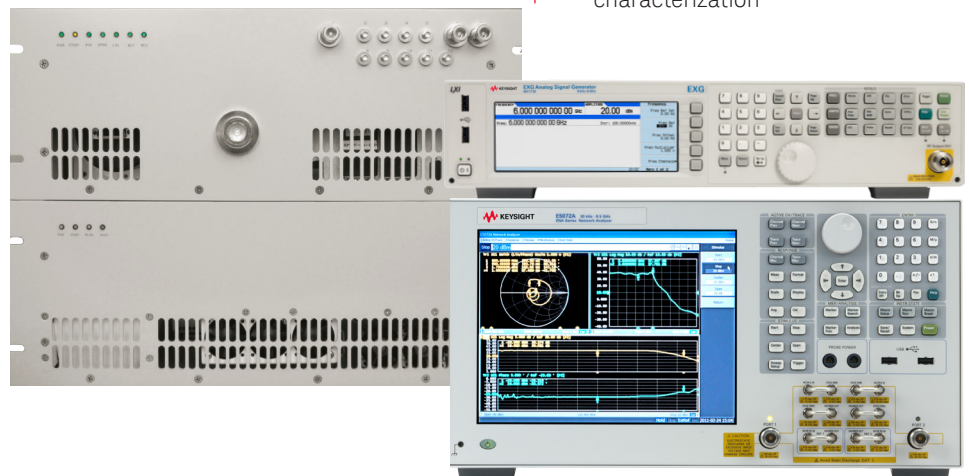
### Accurate and rapid PIM characterization of communications components

Passive intermodulation (PIM) is a critical performance parameter that limits quality of service and capacity of current and new mobile communication systems such as cellular, PCS/4G/LTE and next generation 5G architectures. Passive intermodulation arises at high power levels due to the signal degradation effects of passive elements such as antennas, cables and filters within the transmission system. PIM cannot be removed by filtering alone. The reduction and control of PIM requires an understanding of sources, good design practice and associated manufacturing techniques. The ability to perform accurate and repeatable PIM measurements is key to the successful realization of advanced communication systems.

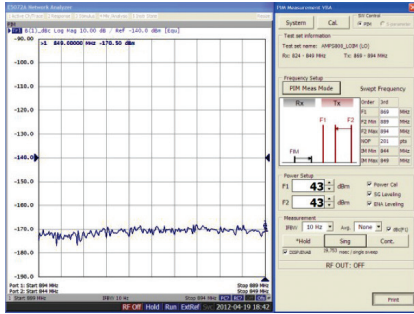
A new PIM test solution from Power Technology Systems (PTS) and Keysight addresses the need of component suppliers, integrators and service providers to measure passive intermodulation effects. The solution uses the Keysight E5072A ENA series network analyzer and the N5171B EXG signal generator to provide multiband PIM testing capabilities. The system integrates intermodulation distortion measurements with S-parameter characterization to fully qualify mobile communications components and sub-systems.

Passive intermodulation testing uses two independent high power (20 W typical) signals in the cellular transmit band of interest. These create intermodulation distortion products in the receive band, which can be measured to characterize the amount of PIM present. The signals to be measured are small and require a noise floor in the test instrument of 10 dB better than the device-under-test. This will typically require sensitivity of better than -173 dBc, which is achieved by using the advanced measurement capabilities of the Keysight ENA.

- Multiband PIM testing covering LTE 500 MHz to 6 GHz. Supports 5G architecture and higher frequency bands
- Test antennas, cables, connectors, filters, arrestors & other components
- Uses Keysight ENA network analyzer and EXG signal generator. Compatible with PNA-X and PXI series VNAs
- Sensitivity better than -173 dBc
- Rapid measurements using built-in frequency offset functions
- Flexible configuration for design, production, QA
- Achieve accurate and rapid PIM characterization



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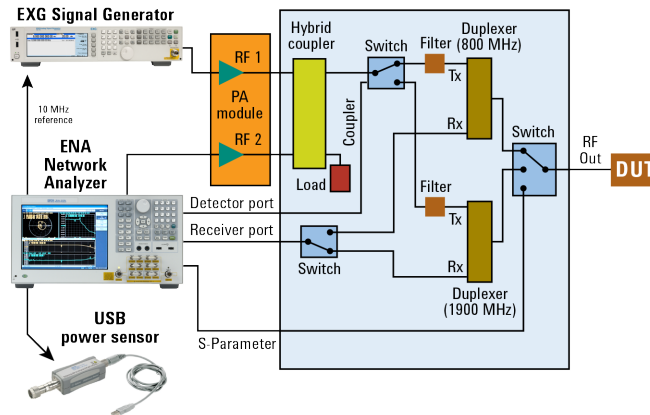


PIM testing guidelines are defined in the IEC-62037 standards. These guidelines include both fixed and swept frequency measurements. The new system is compatible with IEC guidelines and provides both high measurement accuracy and rapid test speeds.

Higher test speeds are achieved through the built-in frequency offset functions in the Keysight network analyzer and signal

generator. The frequency offset functions are set by internal firmware eliminating the need for additional external instruments. This reduces significantly the time required to reconfigure the test system for different frequency bands and allows easy configuration of the system to implement the IEC-62037 tests. The system can be configured for use in design, production or quality assurance.

With the new multiband PIM testing system from PTS and Keysight you can achieve accurate and fast PIM characterization of your passive components and sub-systems.



### System Components

#### Keysight Technologies

N5171B	EXG signal generator
E5072A	ENA series network analyzer
U2001B	USB power sensor

#### PTS

P7022	Dual channel PIM test set (AMPS/PCS)
P8689	Single channel PIM test set (AMPS)

To learn how this solution can address your specific needs please contact

Keysight's solutions partner, Power Technology Solutions [www.keysight.com/find/pts](http://www.keysight.com/find/pts)



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