

Multiband Low Level Intermodulation (IM) Testing

Keysight Technologies and Power Technology Solutions

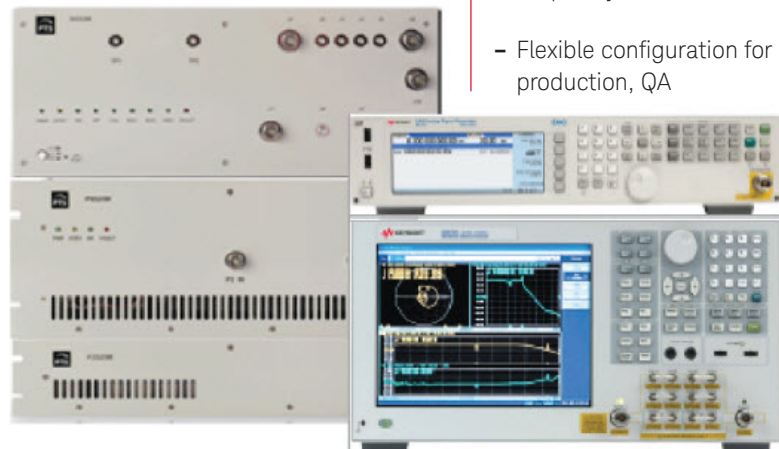
IM characterization of components for Smartphones and Mobile Platforms

Low level intermodulation (IM) products can create critical RF impairments limiting quality of service and capacity of current and next generation mobile communication systems. These impairments affect a variety of architectures including cellular, PCS/4G/LTE and future 5G systems. Multiband operation within handsets are increasingly vulnerable to IM generated interference from sources including carrier aggregation, blocking frequencies and simultaneous WiFi operation. IM generation come from passive intermodulation (PIM) effects generated within antennas, cables and filters or from active components at the transmitter output such as switches and limiters. These IM generation sources are located after the final transmit amplifier and many cannot be removed by filtering.

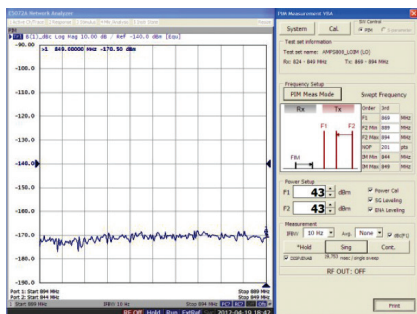
A new PIM/IM test solution from Power Technology Systems (PTS) and Keysight addresses the needs of R&D, component suppliers, manufacturers and QA to simplify the measurement and provide an accurate, traceable calibration process suited to multiband architectures. The solution uses the Keysight E5072A ENA series network analyzer and the N5171B signal generator and includes PTS power amplifiers, switch modules and modular filters with integrated software that can be adapted to multiband architectures.

The test system uses two independent highpower signals (100mW to 20W, typical) that can be applied individually or combined to the device under test. The IM generated distortion products in the system receive band are measured using the high dynamic range available in the E5072A. The signals to be measured are low and require a noise floor in the instrumentation that is at least 10-15 dB better than the device under test. Typically the overall system sensitivity must be better than -140 dBm.

- Low level multiband intermodulation testing covering LTE 500 MHz to 6 GHz
- Supports 5G architecture and higher frequency bands
- Test antennas, cables, connectors, filters, switches, limiters, SAW/FBAR filters, duplexers
- Resolve carrier aggregation interference
- Sensitivity better than -140 dBm
- Uses Keysight ENA network analyzer and EXG signal generators. Compatible with PNA-X Series VNA
- Rapid measurements using built-in frequency offset functions
- Flexible configuration for design, production, QA



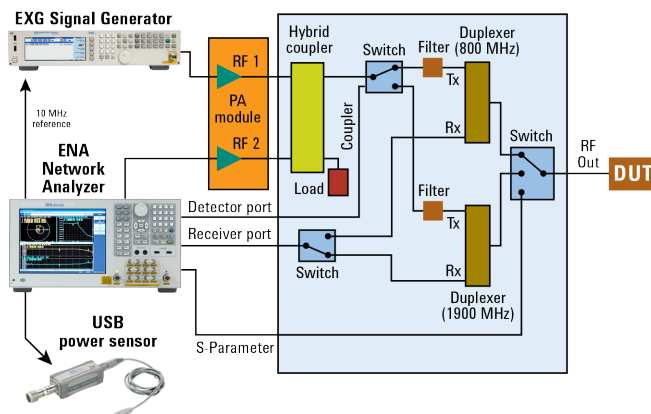
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PIM/IM testing guidelines are defined in the IEC-62037 standard and provide a baseline for measurement methods. This includes both fixed and swept frequency measurements. The new system is compatible with these guidelines and provides both high measurement accuracy and rapid test speed.

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 guidelines. The system can be configured for use in R&D, manufacturing or quality assurance.

With the new multi-band PIM/IM testing system from PTS and Keysight you can achieve accurate and fast IM characterization of your passive components and subsystems



System Components

Keysight Technologies

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

PTS

P0525M	Dual channel PIM test set (AMPS/PCS)
S0525M	Broadband dual channel power amplifier
F2525M	Filter Module (band specific)

To learn how this solution can address your specific needs please contact Keysight's solutions partner, Power Technology Solutions www.keysight.com/find/pts



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Extending our solutions to meet your needs

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