



BTS Master™ screen displaying PIM on an LTE Uplink

PIM Alert easyTest Tools™ application for Anritsu BTS Master™, Spectrum Master™ and Site Master™

With the deployment of LTE cellular base stations, many national spectral frequency plans have a high density of cellular technologies in adjacent frequency blocks. This regularly results in the generation of passive intermodulation (PIM) products that fall in the receive band of base station receivers.

Passive intermodulation products occur when two high power transmit tones generate intermodulation product (typically 3rd order) that falls in the receiver band. There are many causes of PIM. Internal PIM is typically caused by loose or corroded RF connectors, dirt or metal shavings contaminating the connectors during installation. Damaged antennas can also result in internal PIM. External PIM will occur when the antenna radiates into any device that can act as a diode, introducing high RF noise directly into the antenna's receive path; typically corroded or dissimilar metallic surfaces such as street furniture or corrugated roofing sheets.

The presence of PIM at a cell site will result in degraded performance of the network, reduced receiver sensitivity and more frequent customer complaints. The cell boundary will be smaller, data throughput of the site will be reduced and calls may be dropped. Network monitoring equipment may detect a degradation of these key performance indicators and network maintenance teams need a quick way to identify the cause of the degradation.

The Anritsu easyTest Tools PIM Alert application provides a quick and easy-to-use tool that runs on standard BTS Master and Spectrum Master as well as Site Master instruments with the spectrum analyzer option. The PIM Alert application can be installed in the field from a USB memory stick. Once installed, the application guides the user through a series of steps to display a spectrum of the receiver channel. The presence of PIM in the receiver channel is indicated by a rise in the noise floor, typically with a slope, or alternatively by sharp spikes on the Uplink channel spectrum.

The easyTest Tools application enables a cellular field technician to confirm that site degradation is the result of PIM rather than any other source of interference. A dedicated passive intermodulation (PIM) team can then be called to the site to identify the exact source of the PIM using the Anritsu PIM Master™ and initiate a repair. The PIM Master quickly and accurately identifies PIM internal to the sector, and beyond the sector using its built-in, patented Distance-to-PIM feature. PIM Alert and PIM Master provides carriers and contractors the efficiency needed to quickly identify and repair PIM issues, assuring higher system performance and more satisfied customers.

Key features

- easyTest Tools application
- Guided measurements for ease of use
- Quickly confirms the presence of PIM in cellular base stations
- Runs on BTS Master, Spectrum Master and Site Master (with spectrum analyzer option) product lines

Availability

- Freely available from Anritsu's website