PIM Finder
Quick Start Guide

Passive Intermodulation is a well-known and common issue in cellular communications infrastructure including tower sites, DAS systems, Macro sites, and Micro sites. Measuring PIM within the antenna infrastructure is routine. However, PIM sources can occur externally to the antenna infrastructure and will effect network quality in the same way. Kaelus has introduced a light-weight, easy to use, PIM Finding solution to assist in accurately finding all sources of PIM issues external to the antenna system.

The following steps outline how to set up the iVA and iPA to begin the process of locating PIM that is external to the antenna infrastructure.

Equipment Required

- iPA PIM Analyzer – provides 2 x 20W RF carriers to be transmitted into the antenna system

- iVA Cable & Antenna Analyzer – provides a receiver for measuring the externally generated PIM sources

- Control device with Kaelus Unify app installed, free to download

- Band-Pass Filter – filter passes the low level PIM signals, while rejecting high power downlink signals at the site

- PIM finder Probe – the probe provides the ability to hunt for external PIM sources

- Tablet as control device for mobility

Equipment Setup
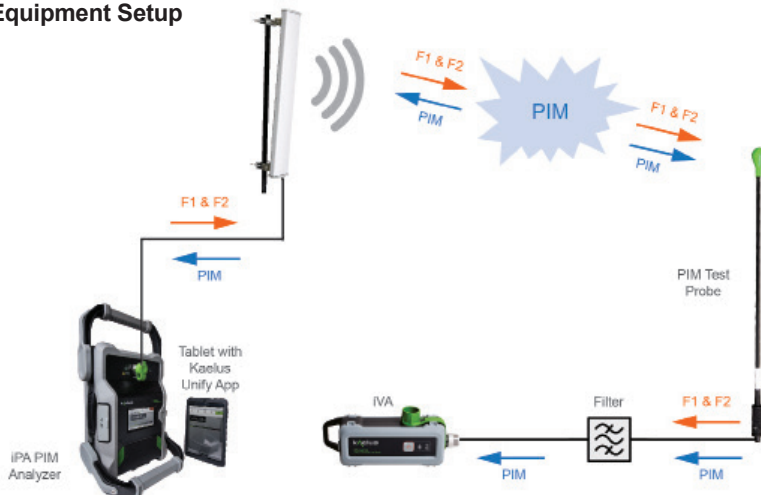
NOTE: Please read the entire Quick Start guide BEFORE starting PIM Finder
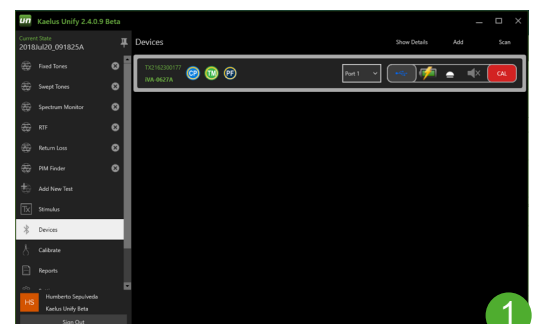

Mode 1: Connect to iVA only
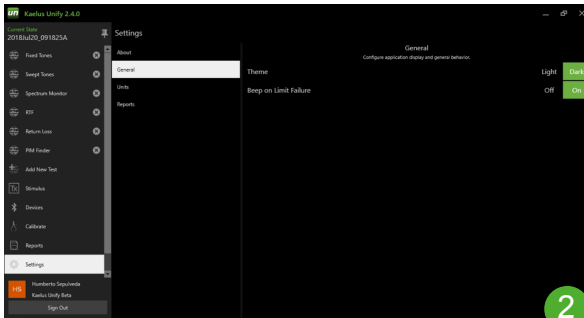iPA is running stand alone.
Use this mode when the iPA is out of range from the tablet.
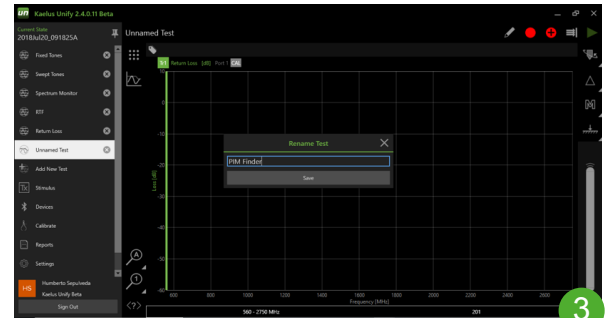
1. Launch Unify on your device, connect to the iVA
   Note: iVA must have PF (PIM Finder) Software option Installed.
   Refer to Kaelus Unify or contact Kaelus to purchase and install PIM Finder option.

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2. Go to "Settings" – "General" – Enable "Beep on Failure"

3. Set-Up PIM Finder Test. Select "Add New Test"
   A. Rename "Unknown Test". Click on pencil icon.
   B. Rename to "PIM Finder" and Save

4. Select newly created PIM Finder test
   A. Select Traces icon to the left of graph
   B. Enter all required parameters for measurement
   C. Instrument: iVA
   D. Trace Type: PIM Finder
   E. Set serial number of the iVA to Port 1
   F. Stimulus Enter IM3 Frequency: Note: iPA set to fixed tone, IM3 frequency calculated from iPA tones

5. Setup and ensure PIM Finder Limit is enabled
   A. Right click (PC), Long Press (Tablet) "Next Limit" icon
   B. Click "Add Limit"
   C. Label Limit "PIM Finder Limit"
   D. Select "Maximum" from drop down selection
   E. Select "PIM Finder" from drop selection
   F. Ensure "Annotations" are ON
   G. Click "Done"
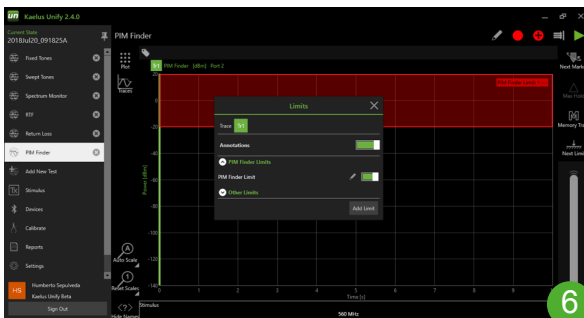
6. Limit line can be adjusted with slider on right bottom of screen
   A. Set limit to desired level.
      NOTE: Starting Limit value should be at least 10dBm lower than your max PIM level on your iPA Analyzer
   B. Level can be adjusted whilst running PIM Finder
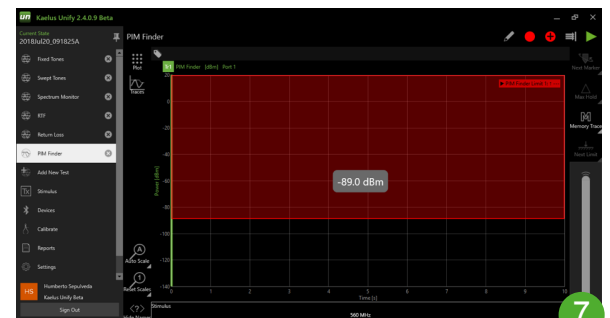
7. Begin PIM Finding
   A. PIM Analyzer RF ON
   B. Trigger measurement in Kaelus Unify (play button)
   C. Use PIM probe to search, find, and identify PIM sources
   D. Adjust Limit value to help narrow down the exact location of external PIM source

Mode 2: Connect to iPA and iVA
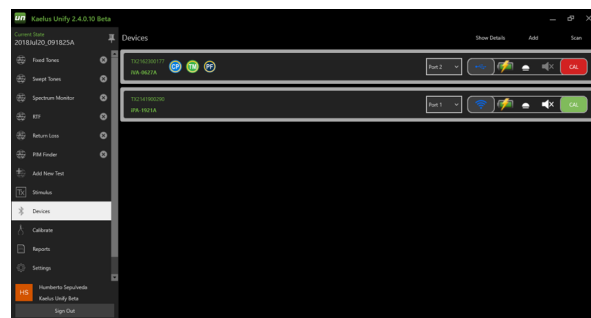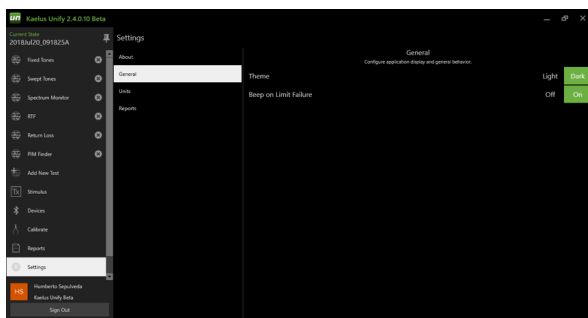Use this mode when connected to the iPA and iVA simultaneously.
Enable Bluetooth and Wi-Fi on your control device
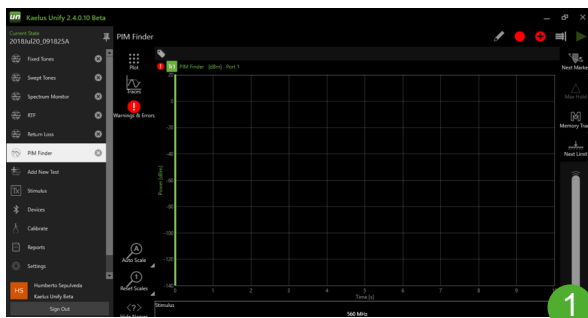On iPA, go to "Settings" – "Network" – "Hotspot" ON – "Wi-Fi" OFF
Connect to the iVA and iPA
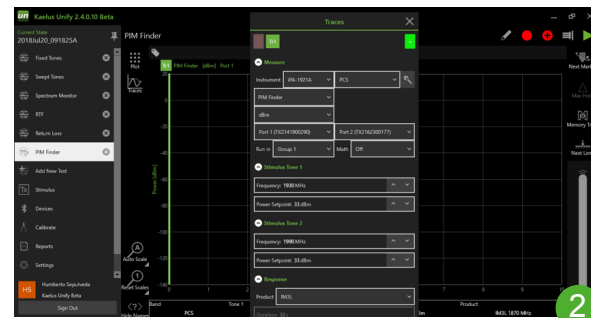Launch Unify
Go to "Settings" – Enable "Beep on Failure"

After connection to both instruments, set the following parameters

1. Choose "PIM finder" Mode. Refer to Mode 1 for setup.

2. Select "Traces" icon and select the instrument to the specific iPA you are using, ensuring that iPA is port 1 and iVA is port 2.

3. Begin PIM Finding
   A. Trigger measurement in Kaelus Unify (play button)
   B. Use PIM probe to search, find, and identify PIM sources
   C. Adjust Limit value to help narrow down the exact location of external PIM source