

## TRAINING

### Portable PIM Test Equipment Training & Certification

For more than a decade Kaelus, formerly Summitek Instruments, has been the market leader in providing simple to operate bench-top PIM test equipment for the factory environment. This equipment has enabled RF equipment manufacturers around the world to quickly and efficiently test their products to ensure low PIM performance.

Recently, Kaelus introduced rugged, portable versions of its PIM test equipment to enable Passive Intermodulation testing to be conducted at the cell site. This new test capability allows network operators to find and resolve construction quality issues that are not visible using standard return loss or “sweep tests.” Cleaning sites to remove PIM sources reduces system noise and improves cell site performance.

Effective PIM testing requires knowledge, practical skills and appropriate tools. Kaelus offers a variety of training options to teach engineers, technicians and installation crews the skills needed to construct and maintain “low PIM” RF infrastructure.











### Who Should Attend Kaelus PIM Test Equipment Training? |

Kaelus now offers “location based” and “on-site” training courses. These training courses provide the skills needed to construct and maintain “low PIM” RF infrastructure.

	Basic Operator Training (Level 0)	Advanced Operator Training (Level 1)
Who should attend:	<ul style="list-style-type: none"> <li>• RF design engineers</li> <li>• RF optimization engineers</li> <li>• Site maintenance technicians</li> <li>• Management</li> <li>• Installation project leaders</li> <li>• Installation technicians</li> <li>• PIM Test Technicians</li> </ul>	<ul style="list-style-type: none"> <li>• Site maintenance technicians</li> <li>• PIM test technicians</li> </ul>
Approximate time to complete:	4 hours	8 hours
Number of students per class:	No limit	9 maximum

**To schedule a training course, or for more information email us at [training@kaelus.com](mailto:training@kaelus.com).**

## PIM Testing Course Comparison |

	Basic Operator Training (Level 0)	Advanced Operator Training (Level 1)
Passive Intermodulation fundamentals <ul style="list-style-type: none"> <li>• PIM sources at a cell site</li> <li>• PIM testing vs. RL testing</li> <li>• Test power level &amp; frequencies</li> </ul>		
Test Equipment overview <ul style="list-style-type: none"> <li>• Safety precautions</li> <li>• Making a measurement</li> <li>• Recording results</li> </ul>		
Test methodology <ul style="list-style-type: none"> <li>• Equipment functional checks</li> <li>• Proper test methods / sequence</li> <li>• Antenna testing procedure</li> </ul>		
Practical exam - Student must demonstrate to instructor: <ul style="list-style-type: none"> <li>• Proper equipment set-up</li> <li>• Proper testing technique</li> <li>• Ability to create reports</li> </ul>		
Written exam - Verifies student understands the course material presented		

For customers with access to a cell site, Kaelus can extend the basic training by one day to include on-site training. This training allows students to practice the new skills they have learned under the supervision of a Kaelus instructor. For this training to be effective, the customer must provide tower climbers / installation professionals, VSWR sweep test equipment and replacement components such as RF connectors, jumper cables and antennas. A maximum class size of 10 is recommended.

## Training Course Logistics |

Training courses can be conducted on-site, or at a Kaelus regional training center. Depending on which training option is selected, Kaelus will provide the appropriate materials before and after the course.

	(Level 0)	(Level 1)
Course materials and logistics:	Trainer will provide: <ul style="list-style-type: none"> <li>• One (1) 20W PIM test set</li> <li>• One (1) Accessory kit</li> <li>• Projector</li> </ul> Customer to provide: <ul style="list-style-type: none"> <li>• Meeting room</li> <li>• Screen or white wall.</li> <li>• Refreshments (if desired)</li> </ul>	Trainer will provide: <ul style="list-style-type: none"> <li>• Three (3) 20W PIM test sets</li> <li>• Three (3) accessory kits</li> <li>• Three (3) mini site simulation kits</li> <li>• Projector</li> <li>• Meeting room</li> <li>• Screen or white wall</li> <li>• Catered lunch</li> </ul>
Upon course completion, student receives:	<ul style="list-style-type: none"> <li>• Electronic Certificate of Attendance (PDF format)</li> </ul>	<ul style="list-style-type: none"> <li>• Certificate of Training</li> <li>• Wallet certification card</li> <li>• Training manual</li> <li>• Equipment operating manuals (on USB drive)</li> </ul>