

VIAVI

Seeker D Lite

Shielding Integrity Testing Kit

A Trilithic Series Leakage Solution

Overview

Mitigation of signal leakage within the subscriber premises is essential for the successful operation of services both inside and outside of the coaxial cable network. This combined with a requirement to simultaneously monitor for signal leakage in both the aeronautical and LTE bands, makes it even more important to thoroughly evaluate the potential for interference within the subscriber premises.

VIAVI has developed a find and fix system for leakage which will comprehensively test the Aeronautical and LTE bands in fully digital, analog, and mixed cable systems. The Seeker D Lite™ system provides installers and repair techs with two different types of tools for finding and fixing leakage in both the Aeronautical and LTE bands.

In-Home Leakage Detector

The Seeker D Lite is a tough, convenient, and flexible leakage test tool. The Seeker D Lite works by measuring tagged RF signals in and around a subscriber's premises.

This leakage detector assists in installation and troubleshooting by verifying that the leakage within the subscriber premises is not great enough to contribute to the cable system's cumulative leakage index (CLI). Leaks can also be important indicators of ingress that can hinder communication on the return band.

The Seeker D Lite works in conjunction with either the CT-4™ Channel Tagger in the headend or the Seeker D Lite Source Transmitter at the ground block.

Key Features

- Dual-mode and dual-frequency in-home leakage detector that accurately monitors leakage in an all-digital system or mixed digital and analog systems
- Provides a cost-effective solution for in-home leakage detection by using existing CT-4 Channel Taggers installed in the headend or by using the Seeker D Lite Source Transmitter
- When Used with the Seeker D Lite Source Transmitter at the Ground Block, the Seeker D Lite Provides an industry leading sensitivity of 0.1 $\mu\text{V}/\text{m}$ for finding the smallest of leaks and accentuating ingress points in the customer premises
- Detects leaks at a low enough level to validate that transmissions from cellular devices in the home do not enter the cable plant and cause potentially harmful interference



Both devices provide an uncompromising tagging solution for active analog or digital systems and can be used to identify and locate all RF leaks in both the Aeronautical and LTE bands.

Advanced, Compact Design

The Seeker D Lite is equipped with built-in, dual-frequency antennas that provide technicians the ability to find even the smallest of VHF or UHF leaks, while easily moving throughout a home. Additionally, an easy-to-read backlit display provides a simultaneous dual-view of both bands, making it even easier to locate leaks when walking through the home.

All of these features combined with a compact design and rugged carrying case make the Seeker D Lite the go-to leakage detector for every technician.

Advanced In-Home Shielding Integrity Testing

Until recently, finding and fixing leakage in the aeronautical band was considered "good enough" for almost all cable operators. But, with increased deployment of off air services by cellular providers and increased bandwidth demands of both the MSOs and cellular providers, keeping the cable plant tight has never been more important. Additionally, the increase in service demands for cellular bandwidth has pushed services into the 700-800 MHz (LTE) band and maybe even lower into the 600 MHz band in the near future.

Until now, leakage detection has focused on the outside plant, but as cellular devices become more prevalent, we need to somehow verify if these devices are causing harmful interference when they are in close proximity to leakage or ingress sources within a home. Since the relative distance between a cell tower and cellular devices determines the transmit level of cellular devices, this can result in cellular devices transmitting their data with a signal strength as high as 3 V/m. Due to this possibility of high transmit level of cellular devices, even the smallest sources of leakage or ingress points within the home can lead to cellular signals causing issues with downstream QAM channels. With this problem in mind, VIAVI has developed the Seeker D Lite Shielding Integrity Testing Kit as a solution for finding the smallest of leaks in the home and to help identify any shielding defects that will allow cellular signals to enter into the cable system.

During an installation or service call, the Seeker D Lite Shielding Integrity Test Kit provides technicians with a way to comprehensively evaluate the customer premises for leakage in both the Aeronautical and LTE bands within fully digital, analog and mixed cable systems, and is the only system available to quickly, easily, and accurately verify that the shielding integrity of in-home wiring meets the needs of today's high-tech world.

Available Models

- Seeker D Lite Leakage Detector
P/N TRI-LKG-SEEKER-D-LITE
- Seeker D Lite Source Transmitter
P/N TRI-LKG-SKR-DLITE-SOURCE

Seeker D Lite Includes the Following

- Seeker D Lite Leakage Detector
- Seeker D Lite Protective Carrying Case with Belt Clip
- AC to DC Power Adapter and Battery Charger
- USB Charge and Data Cable (Mini-B Male to Standard-A Male)

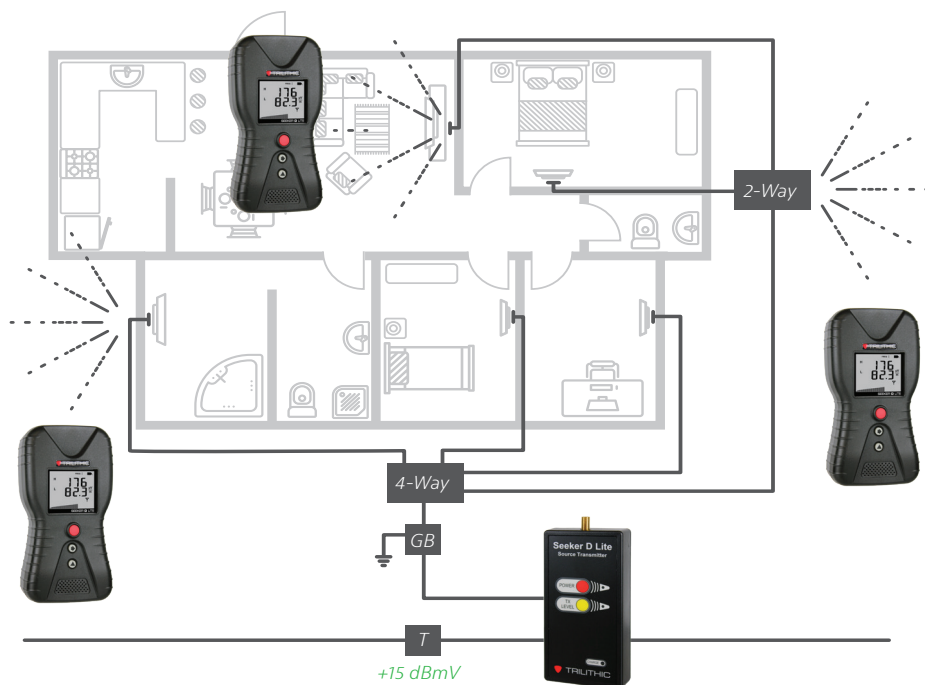
Seeker D Lite Source Transmitter Includes the Following

- Seeker D Lite Source Transmitter
- AC to DC Power Adapter and Battery Charger
- USB Charge and Data Cable (Mini-B Male to Standard-A Male)

This innovative, patented method of in-home leakage detection involves using the Seeker D Lite Source Transmitter to replace the cable service at the subscriber's ground block. The higher levels of the Seeker D Lite Source Transmitter will increase the field strength of the signals radiating out of the customer's home network, providing a higher level of sensitivity to find even the smallest of leaks.

The transmitter injects two carriers into the subscriber network, one between 135–139 MHz and another between 611–615 MHz, supporting testing in both the Aeronautical and LTE bands. The source transmitter signal level is at considerably higher level than typical active plant levels in order to "over-pressurize" the cable system in the home. This approach is similar to pressurizing a water pipe and looking for any sources of water that may point to the location of a defect in the pipe. Using the Seeker D Lite with its source transmitter allows the technician to detect leakage levels at an otherwise unheard of sensitivity down to $0.1 \mu\text{V}/\text{m}$. The user may adjust the output level for home certification, but also has the option to reduce the level should the subscriber network prove to be too porous for pinpointing the location of a leak at the higher transmit level.

The Seeker D Lite provides both a visual readout of the measured levels in $\mu\text{V}/\text{m}$ and a tone proportional to signal strength. To prevent false triggering, the Seeker D Lite utilizes the VIAVI unique channel tagging technique. When checking the integrity of in-home shielding and to provide consistency with leakage levels typically found within the subscriber premises, the levels displayed by the Seeker D Lite have been normalized to represent the value of a leak at typical system levels. This correlation between measured and displayed levels will assist the technician in evaluating the severity and recording of a leak based upon established industry practices.



Seeker D Lite Specifications

Operation	
Frequency Range	Low Band: 135–139 MHz High Band: 610.5–615 MHz Adjustable in 12.5 kHz Steps via Seeker Setup Software
Frequency Settings	10 user-adjustable operating frequencies, selectable on front panel Set using the configuration methods listed below
Receiver Sensitivity	-115 dBmV
Calibrated Level Range	20 to 2000 μ V/m scaled to match an analog carrier or QAM carrier when used with CT-4 channel tagger in the headend 0.1 to 20 μ V/m scaled to match an analog carrier or QAM carrier when used with Seeker D Lite Source Transmitter in the home
Level Accuracy	\pm 2.0 dB
Automatic Noise and Overbuild Discrimination	Internal circuitry discriminates between leaks and noise Overbuild discrimination provided by the CT-4 channel tagger installed in hub or headend or the Seeker D Lite Source Transmitter in the home
Physical	
Construction	Plastic housing, with form fit case produced with ballistic nylon for protection
Control	Front panel rubber keypad
Display	Dual numerical readout of detected low and high band leakage within sensitivity range
Speaker	Tone is present if leakage amplitude exceeds squelch setting and digital tag is detected Pitch is proportional to strength of leak
Dimensions (H x W x D)	7.50 x 3.25 x 1.50 in (191 x 83 x 38 mm)
Weight	1.0 lbs (454 grams)
Available Interface Types	
Antenna	Internal dual band
USB	Mini-B Port for charging and configuration using Seeker Setup Software
Battery and Power	
Operating Time	8 hours plus, dependent on use
Charge Time	10 hours
Battery	Single 2600 mAh @ 3.7V Li-Ion internal battery, factory replaceable
Power Adapter	Input: 100 to 240 VAC ~ 50 to 60 Hz, 0.3A Max Output: 5 VDC, 1.0A
Environmental Specifications	
Storage and Operating Temperature	Storage: -40° to +70° C (-40° to 158° F) Operating: -20° to +50° C (-4° to 122° F)

Seeker D Lite Source Transmitter Specifications

Operation	
Source Frequencies	Low Band: 135–139 MHz High Band: 611–615 MHz
Modes of Operation	High Output Low Output
Low Output Mode Launch Amplitude	Low Band: -3.25 dBmV High Band: -4.25 dBmV
High Output Mode Launch Amplitude	Low Band: 16.75 dBmV High Band: 15.75 dBmV
Level Stability	±1.5 dB over entire temperature range
Physical	
Construction	Plastic housing
Control	Front panel keypad constructed from water resistant membrane
Indicators	Front panel ON/OFF, Output Level and Charge LEDs
Dimensions (H x W x D)	7.50 x 3.25 x 1.50 in (191 x 83 x 38 mm)
Weight	0.85 lbs (380 grams)
Available Interface Types	
RF Output Port	Replaceable F-Type connector
USB	Mini-B Port for charging
Battery and Power	
Operating Time	8 hours plus, dependent on use
Charge Time	10 hours
Battery	Single 2600 mAh @ 3.7V Li-Ion internal batteries, factory replaceable
Power Adapter	Input: 100 to 240 VAC ~ 50 to 60 Hz, 0.3A Max Output: 5 VDC, 1.0A
Environmental	
Storage and Operating Temperature	Storage: -40° to +70° C (-40° to 158° F) Operating: -20° to +50° C (-4° to 122° F)

Compatible Channel Taggers

- CT-4 Headend Channel Tagger
P/N TRI-LKG-CT4
- Seeker D Lite Source Transmitter
P/N TRI-LKG-SKR-DLITE-SOURCE

Available Software

- Seeker Setup Configuration Software
P/N TRI-LKG-SW-SEEKER-PC

Optional Accessories

- CL-9 Vehicle Power Adapter with USB cable
P/N TRI-ACCY-USBPWR-VEH-WCBL
- CL-9 Vehicle Power Adapter without USB cable
P/N TRI-ACCY-USBPWR-VEH
- Mini-USB Power/Data Cable (I/O-20)
P/N TRI-ACCY-USBPWR-CBL
- Euro Power Adapter
P/N TRI-ACCY-USBPWR-EUR-PLUG
- UK Power Adapter
P/N TRI-ACCY-USBPWR-UK-PLUG
- Australian Power Adapter
P/N TRI-ACCY-USBPWR-AUS-PLUG