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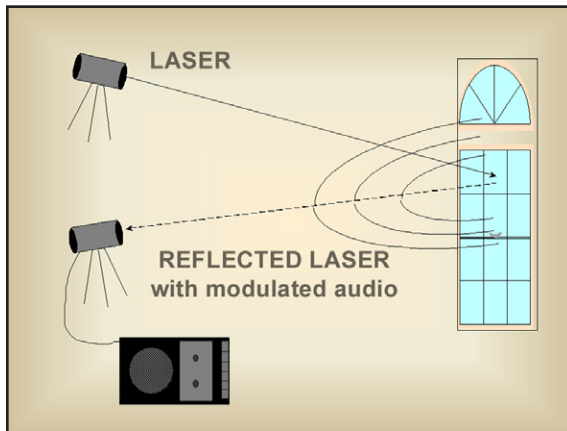
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Laser Listening Device Threats & Audio Noise Masking

The basic concept of a Laser Listening Device (LLD) relies on bouncing a laser off of a reflective surface (typically glass), and then receiving the laser reflection. The theory is that the reflective surface will modulate audio onto the laser reflection, and therefore the audio can be recovered. Many people are concerned about this type of threat because of the fear that it may be easily implemented without having to actually enter the target environment.



To better understand LLD systems, some common questions are presented:

Question: Does the system have to be perfectly perpendicular to the window, does the angle of the LLD system affect performance, and does the transmitter and receiver have to be perfectly aligned?

Answer: A perfect reflection perpendicular to the surface will provide the best performance, however:

1. It is also possible to use other angles, separating the Laser transmitter from the Laser Receiver producing an angular bounce,
2. Additionally, if the glass is dirty or there are other factors that produce diffraction on a window, it is reasonably possible to get enough of the diffracted/scattered signal level at odd angles of alignment, but this is not ideal and is application specific. Performance may be dependent on the cleanliness of the glass, etc.
3. Using a telescope on the laser receiver can greatly increase the performance and increases the possibility of relying on scattering as described above.

Question: What is the quality of the audio from an LLD?

Answer: Quality audio can be retrieved using an LLD system in optimal situations, however in practical "real-world" applications the performance quality is based on many factors. Below are some of the more dominate considerations:

1. Environmental conditions greatly affect performance. Particles blowing through the air create interference noise in the system. For example, if it is raining heavily, the system will not work because the Laser signals are greatly distorted by raindrops. Humidity and air particulates such as pollen, sand,

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Prison Finds Hidden Cellular Phones with REI's ORION

Cellular phones represent the latest epidemic in Prison contraband allowing prisoners to conduct illicit activity while incarcerated. Previous solutions have proven ineffective and/or create other legal problems. REI is addressing this industry need with the ORION Non-Linear Junction Detector as a search tool for locating contraband cellular phones hidden in prison cells.

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NEWS HEADLINES: Eavesdropping, Corporate Espionage, & Information Theft...

"Sony Ericsson files patent for cellphone eavesdropping feature"

engadget.com, November 2, 2005
Source: <http://www.engadget.com>
Article: <http://tinyurl.com/cmm2v>

"Surge in Chinese Spying on British Business: report"

Sino Daily (London AFP), November 11, 2005
Source: <http://www.sinodaily.com>
Article: <http://tinyurl.com/7p4ct>

"Man Accused of Stealing Corning Secrets"

WJLA ABC Washington, October 21, 2005
Former employee charged with stealing trade secrets...
Source: www.wjla.com
Article: <http://tinyurl.com/cbhe3>

"Hyundai falls victim to industrial espionage"

Korean JoonAng Daily, October 25, 2005
Subcontractor leaked crucial information on new cars models to Chinese car manufacturer.
Source: <http://joongangdaily.joins.com/>
Article: <http://tinyurl.com/89jxl>

"Under Sheriff Charged with taping phone conversations..."

ABC12 WJRT Flint MI, November 28, 2005
Source: www.abc12.com
Article: <http://tinyurl.com/7mlmd>

"Dominican Ex-president's house bugged..."

Dominican Today Online, November 22, 2005
Source: www.dominicantoday.com
Article: <http://tinyurl.com/cejua>

"Manchester United hunt for mole who planted bug"

The Scotsman Online, November 13, 2005
Radio transmitter was planted in Manchester United's locker room during a match against Chelsea.
Source: www.scotsman.com
Article: <http://tinyurl.com/azx3q>

"Three Charged in alleged spy plot"

CNN.com, November 15, 2005
Three charged in plot to pass information about US submarines to a foreign government.
Source: www.cnn.com
Article: <http://tinyurl.com/9jgxd>

"Russia jails scientist for spying"

BBC News, November 24, 2005
Source: www.bbc.co.uk
Article: <http://tinyurl.com/chsvl>

"Lawyer: Car Dealership Is Bugged"

Today KTHV Little Rock AR, December 13, 2005
Source: www.todaysthv.com
Article: <http://tinyurl.com/ddact>



NEW Sweep Equipment Cart (SEC-5000)

REI is pleased to announce the new Sweep Equipment Cart (SEC-5000). This cart is designed to handle loads of up to 400 lbs (180 kg), easily handling up to six standard REI equipment cases. Weighing only 25 lbs (12 kg), the cart incorporates four wheels, maximizing maneuverability and stability. The cart also transforms into a mobile "table-top" cart for OSCOR or other equipment, making it very easy to move from one room to another minimizing set-up time. The cart also folds up for space saving storage or transportation. The SEC-5000 Sweep Equipment Cart provides a lightweight solution to easily transport large amounts of sweep equipment and cases.



For more information on the new SEC-5000 Sweep Equipment Cart, contact REI.



REI TRAINING CALENDAR

- December 12-16
Technical Surveillance
Countermeasures
(TSCM 201)
- January 17-19
Technical Security Equip.
(TSE 101)
- January 23-27
Technical Surveillance
Countermeasures
(TSCM 201)
- January 30 - February 3
Advanced TSCM
Concepts
(ATC 301)
- February 7-9
Technical Security Equip.
(TSE 101)
- February 13-17
Technical Surveillance
Countermeasures
(TSCM 201)
- March 14-16
Technical Security Equip.
(TSE 101)
- March 20-24
Technical Surveillance
Countermeasures
(TSCM 201)
- March 27-31
Equipment Certification
Course
(ECC 240)

Questions, comments,
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dust, smoke, etc... create distortion and audio noise as well.

2. Modern windows are typically double or triple paned. The interior glass pane will be vibrating more from interior noise while the exterior pane will vibrate more from exterior noise (road noise, wind, city noise, etc...) Hence, it is difficult to separate ambient outside noise from the desired audio.

3. The quality of the audio is greatly dependant on the fundamental inertia of the reflective surface. If the glass is "high-rise" building glass and each panel is thick, large, heavy, and well secured, then the inertia of the glass is very high and the ability for a low power audio pressure wave to transfer energy to the glass is very weak. However, a small single glass pane hanging in an interior picture frame old house would be much more susceptible to audio energy.

4. In a tall building, the window will also contain a reasonable amount of structure-born audio. In other words, the building structure will contain audio noise from wind, interior equipment (elevators, machines, etc.), walking, talking, music systems, intercom systems, Heating and Cooling, etc...

Question: What is the best Countermeasure for this threat, will closing the blinds defeat a LLD?

Answer: Simply closing the blinds can diminish the audio leakage onto glass panes as well as keep a laser threat from coming in through a window and bouncing off of an interior surface, however this may not completely prevent retrievable audio from leaking onto the glass.

Properly implemented acoustic noise masking is a very effective countermeasure against LLD threats. The basic concept is to inject audio noise into the glass

so that the glass window will be dominated by masking noise (i.e. white noise) rather than the room audio. Because of the other factors described above, it takes very little noise energy to greatly impact a Laser threat. Gluing a transducer directly to the glass panel provides the most direct impact to the Laser threat. The implementation problem is to determine the power level of the injected noise to be sure to mask a potential threat. REI has developed a simple and inexpensive method of achieving this. It provides the ability to turn a computer (laptop) into an effective audio spectrum analyzer measurement tool to evaluate audio leakage and proper noise levels.

For more information on noise masking against Laser Listening Device, and protection against other types of structure bound audio leakage, see REI's Noise Masking Primer on the web at http://www.reiusa.net/quick/Noise_Primer.



NEW ANG-2200 Noise Masking Package

REI has packaged a common configuration of ANG-2200 components applicable for a typical conference room, providing convenience as well as added savings over buying these components separately. This package includes the following:

- 1 ANG-2200
- 18 TRN-2000 Transducers
- 4 WMT-2000 Window Mounts
- 5 OMS-2000 Omni-Masking Speakers
- 1 ASA-2000 Audio Spectrum Analysis Software & Audio Leakage Probe set.

For more information, contact REI at sales@reiusa.net.



TSCM TIPS

ESD Precaution:

For OSCOR & CPM-700 users, remember that electrostatic discharge (ESD) is much more prevalent during the winter months and can damage your equipment. To prevent ESD on the CPM, use caution when using the chrome, telescoping standard RF antenna (50kHz-3GHz); alternatively use the "hardened" all black European probe which is ESD protected. When using the OSCOR, make sure the OSCOR is plugged into a grounded outlet and touch the chassis of the OSCOR to discharge any potential static energy.



For more information on TSCM and REI equipment, consider REI's Center for Technical Security training courses. Course descriptions and training dates can be found on REI's web site (www.reiusa.net/training) or e-mail sales@reiusa.net.

If you have TSCM sweep tips that you would like to share, please send them to support@reiusa.net.

Continued from Page 1: Prison Finds Hidden Cellular Phones with REI's ORION

The ORION, which responds to electronic components, has conventionally been used to detect and locate hidden eavesdropping devices, and there were some initial concerns about how well the ORION would operate in a prison cell due to the amount of metal (corrosive junctions) in correction facilities. However, after some testing it was obvious that the ORION is very well suited for detecting and locating hidden cellular phones in prisons and correctional facilities. Moreover, several of the ORION's unique features (such as Patented Digital Signal Processing, Patented Pulsed Transmitter, Patented Antenna Design, frequency range, and ease of use) optimize the ORION for detecting and locating cellular phones in prisons.

REI performed an initial test of the ORION at the Riverbend Maximum Security Institution located in Nashville Tennessee, USA. During this initial test of an inmate's prison cell, a "hit" was detected in a large stack of papers on a bookshelf. Upon closer examination, it was determined that the "hit" was not

a cellular phone, but an electronic greeting card that contained semiconductors, proving the ORION's sensitivity was effective in a prison environment.



On a subsequent trials performed by Tennessee Department of Correction (TDOC) prison personnel, the ORION located two cellular phones and three chargers hidden in mattresses and a large laundry cart. Feedback from TDOC personnel stated the ORION would be a valuable tool in controlling cellular phones in prisons.

Since these initial tests, TDOC has purchased multiple units and successfully used the ORION to locate contraband cellular phones and chargers on a large scale across their facilities. We are extremely excited about the new possibilities in controlling cellular phone contraband within prison systems. For more information, contact REI at sales@reiusa.net.

