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## VOIP Testing & TALAN™

With the release of REI's TALAN (Telephone and Line Analyzer), one of the most common questions is, "Can I use the TALAN for testing VOIP telephone systems?" The answer is a qualified "YES". This article is intended to address that question.

VOIP or Voice Over Internet Protocol is growing in popularity in modern telephony. VOIP takes voice information and converts it into data packets which can be transmitted over any data network such as a company's LAN or the Internet. While there are many advantages to a VOIP system, there are also many vulnerabilities.



The TALAN is primarily designed to test digital telephone systems, and one of the built-in tests involves digital demodulation for digital phone systems to see if the phone system is passing audio when it shouldn't. The TALAN can demodulate an estimated 80% of the world's digital telephone systems. However, while the TALAN does not currently have the ability to demodulate the RTP (Real-time Transport Protocol) packets which carry audio in a VOIP telephone system, there is a great deal of useful testing that can still be performed on VOIP phone systems using the TALAN (including tests that previously didn't exist until the TALAN).

(continued page 2)

## Spanish TSCM Course Offered

Due to demand from REI's Spanish-speaking customers, REI is offering the TSE-101 Technical Security Equipment Course in Spanish via interpreter October 9-12, 2007 at REI's Center for Technical Security (Tennessee USA). The Central and South American TSCM community is growing, and the need for TSCM training in Spanish is becoming more prevalent. As REI's training center continues to grow and expand, we are excited to offer the TSE-101 course in Espanol.

This four (4) day course will be taught via a Spanish interpreter and will introduce and familiarize the technical security specialist with various TSCM equipment operations/capabilities, and basic TSCM sweep procedures.

### Course Topics include:

- Purpose, use, and methodology of various TSCM equipment,
- Overview of technical threats,
- Classroom equipment training, plus hands-on exercises on the operation of the CPM-700 Broadband Receiver, ORION NLJD, and OSCOR Spectrum Analyzer
- Complex transmitters and their detection.

For more information, or to register for this Spanish TSCM course, click below:

[http://www.reiusa.net/downloads/Espanol\\_Training\\_Flyer.pdf](http://www.reiusa.net/downloads/Espanol_Training_Flyer.pdf)

For more information on REI's Center for Technical Security and other TSCM training courses offered at REI, click below:

<http://www.research-electronics.com/downloads/TSCMTraining.pdf>

Or contact Pamela McIntyre at:

[pamela@reiusa.net](mailto:pamela@reiusa.net)





# Georgia D.O.C. Implements ORION™



Cellular phones continue to be one of the most dangerous forms of prison contraband, allowing inmates to bypass internal security measures creating a security risk that can reach beyond prison walls. Correctional authorities have indicated that cellular phones have become more valuable inside a prison than drugs or other contraband, and are often referred to as the new prison cash because inmates can sell minutes or cellular phone use to other inmates.

The Georgia Department of Corrections joins other State Correctional agencies and private prison management companies by implementing ORIONs to detect

and locate contraband cell phones in correctional facilities. Feedback from the Georgia Department of Corrections has been very positive indicating that they have located multiple contraband cell phones as well as other electronic contraband using the ORION.

For additional information on the ORION NLJD for locating and detecting cell phones in prisons...

visit:

[http://www.reiusa.net/system/products/NJE-4000/NLJD\\_Prison\\_2007.pdf](http://www.reiusa.net/system/products/NJE-4000/NLJD_Prison_2007.pdf)



## VOIP Testing & TALAN™ ... (continued from page 1)

Additionally, it is important to understand that there are free shareware programs available to demodulate a VOIP phone call. REI's DTC-210 Digital Telephone Security Course includes specific instruction for common shareware programs for VOIP demodulation, as well as TALAN testing for VOIP.

### TALAN testing on a VOIP system

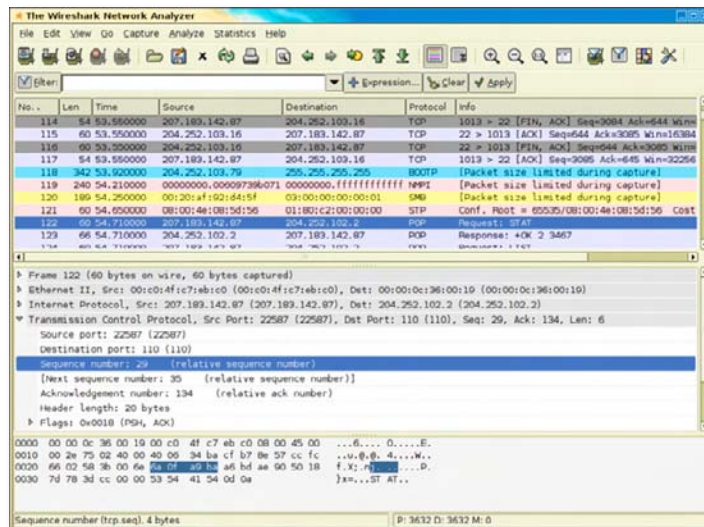
In addition to checking to see if a line is passing audio, there are several other tests that should be performed on VOIP system wiring to evaluate for eavesdropping threats.

### VOIP Analysis Shareware

VOIP analysis software is basically network sniffing software that also provides some demodulation of the VOIP audio protocols. While this capability is not provided in the TALAN, it is readily available and free from the internet. Two examples of programs that perform this function are: "Cain and Able" and "WireShark". These programs run on a PC and provide a quick and easy method to determine if audio is being passed. Both also provide an audio file from the captured conversation packets. These programs generally work very well on most SIP and H.323 VOIP systems.

More info can be found at:

**Cain and Able:** <http://www.oxid.it/>  
**WireShark:** <http://www.wireshark.org/>



(Wireshark screenshot)

These tests include:

- DMM testing including AC and DC voltage, current, and resistance
- Non-Linear Junction Detector testing
- FDR testing
- Audio testing for analog

It is important to understand that a VOIP telephone system has many of the same vulnerabilities as conventional digital and analog phone systems. Hence, the VOIP system should still be tested

for potential threats such as "Hook-Switch bypass", "Hot Mic", analog audio on an unused pair, and all types of conventional telephone tap devices and radio frequency transmitters.

For more information on these types of threats and how to detect them, it is recommended to attend REI's telephone training courses (TCC-110 and DTC-210)...

## VOIP Testing & TALAN™ ... (continued from page 2)

Furthermore, there are some normal TALAN tests that will provide indication that VOIP audio is being passed. The RF Frequency Spectrum response (*figure-1*) of a VOIP telephone system when the phone is on hook and no call is being made. The various spikes at different frequencies indicate that there is some digital traffic being passed along the line simply to maintain the line and phone status. Next, a VOIP phone call is in process (*figure-2*). The volume of packet traffic required to support VOIP

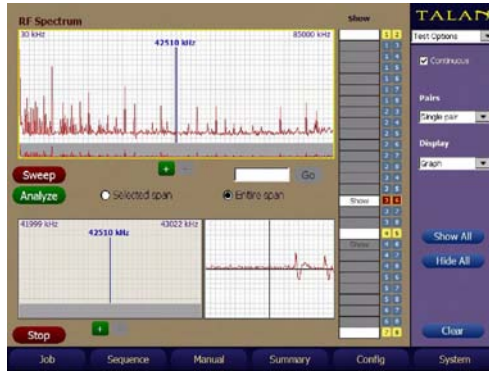


figure-1

audio results in a greatly increased frequency response across the frequency band. This testing only represents a single VOIP telephone system that was tested at REI, and it is anticipated that results will vary depending on the VOIP protocol in use. In most cases, it should not

be difficult to detect the presence of VOIP traffic, even if the system is encrypted, based on the increased RF energy of the packet traffic to support the audio.

Hence, while VOIP demodulation is not currently available in the TALAN, it is important to not overlook the other invaluable tests

on a VOIP phone system within the TALAN's capabilities.

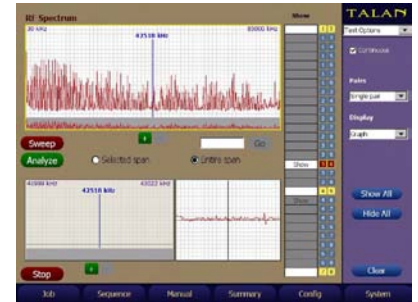


figure-2

For more information on the TALAN and REI's Telephone Security Courses, contact REI at [sales@reiusa.net](mailto:sales@reiusa.net) or visit our website at [www.reiusa.net](http://www.reiusa.net)



## ORION™ Battery Maintenance

Current production ORIONs are shipped with rechargeable NiMH (Nickel-Metal Hydride) batteries, while earlier production ORIONs included NiCad (Nickel Cadmium) batteries. Understanding the proper care for these batteries can extend the life of the batteries, and more importantly prevent damage to your ORION. Also, it is important to realize that rechargeable batteries do NOT last forever, and eventually rechargeable batteries will need to be replaced. The information below is intended to help ORION users maximize battery life, as well as understand when it is time to replace ORION batteries.

### DO'S ... DON'TS

**DO NOT** store batteries in the ORION for long periods of time. Remove the batteries and store them in the foam slots located in the case when not in use.

**DO** use NiCad batteries in the ORION until they are fully discharged (the ORION display will indicate "low battery"), and then recharge the battery. Fully cycling NiCad batteries helps to maintain battery life.

**DO NOT** use batteries showing signs of corrosion on the battery contacts; this can cause damage to the ORION. Batteries showing signs of corrosion should be replaced.

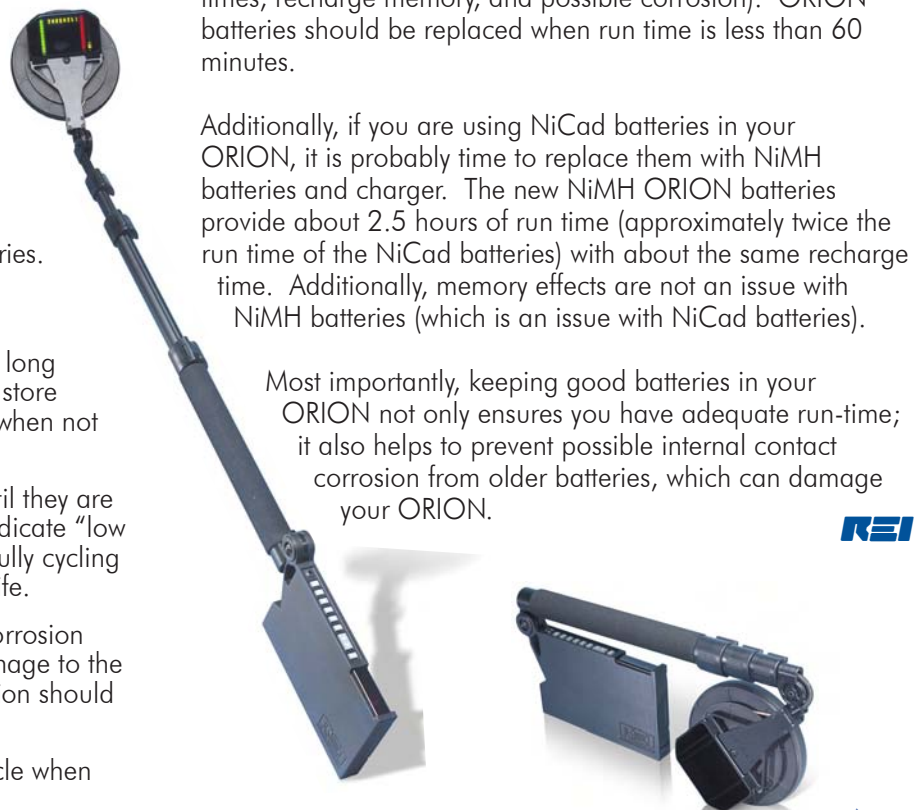
**DO** dispose of batteries properly and recycle when possible; never incinerate batteries.

### When to Replace ORIONs Batteries?

Rechargeable batteries typically only last about 3 years, and then battery performance begins to degrade (diminished run times, recharge memory, and possible corrosion). ORION batteries should be replaced when run time is less than 60 minutes.

Additionally, if you are using NiCad batteries in your ORION, it is probably time to replace them with NiMH batteries and charger. The new NiMH ORION batteries provide about 2.5 hours of run time (approximately twice the run time of the NiCad batteries) with about the same recharge time. Additionally, memory effects are not an issue with NiMH batteries (which is an issue with NiCad batteries).

Most importantly, keeping good batteries in your ORION not only ensures you have adequate run-time; it also helps to prevent possible internal contact corrosion from older batteries, which can damage your ORION.



REI

## 2007 REI TRAINING CALENDAR

### TECHNICAL SECURITY EQUIPMENT COURSE (TSE 101)

Oct. 16-19; Nov. 06-09; Dec. 04-07  
Spanish Course — Oct. 9-12

### TELEPHONE SECURITY COUNTERMEASURES COURSE (TCC 110)

Oct. 16-19; Nov. 06-09; Dec. 04-07

### TECHNICAL SURVEILLANCE COUNTERMEASURES COURSE (TSCM 201)

Oct. 22-26; Nov. 12-16; Dec. 10-14

### EQUIPMENT CERTIFICATION COURSE (ECC 240)

Oct. 29 - Nov. 02

### DIGITAL TELEPHONE SECURITY COURSE (DTC 210)

Oct. 22-26; Nov. 12-16; Dec. 10-14



Questions, comments,  
or to add someone to the  
REI Quarterly Newsletter  
mailing list, please e-mail:  
[newsletter@reiusa.net](mailto:newsletter@reiusa.net)

## ◆ IN THE NEWS ◆

### SPY TACTICS NOTHING NEW... NEW ENGLAND PATRIOTS VIDEO CAPER...

*MiamiHerald.com*

September 16, 2007

Source: [www.miamiherald.com](http://www.miamiherald.com)

Article: [http://www.miamiherald.com/sports/columnists/greg\\_cote/story/239426.html](http://www.miamiherald.com/sports/columnists/greg_cote/story/239426.html)

### MCLAREN FINED \$100M IN F1 SPYING SCANDAL...

*USA Today Online*

September 13, 2007

Source: [www.USAtoday.com](http://www.USAtoday.com)

Article: [http://www.usatoday.com/sports/motor/formula1/2007-09-13-mclaren-spying\\_N.htm?csp=34](http://www.usatoday.com/sports/motor/formula1/2007-09-13-mclaren-spying_N.htm?csp=34)

### SPY SHOP OWNER TALKS ABOUT LAWRENCE CO. SCANDAL... SMALL TOWN SPYING.

*WHNT News Channel 19 Alabama*

September 17, 2007

Source: <http://www.whnt.com>

Article: <http://www.whnt.com/global/story.asp?s=7089366>

### THEFT OF LOSS OF CONFIDENTIAL INFORMATION: A GRAVE DANGER TO BUSINESSES, EMPLOYEES, AND CUSTOMERS...

*Yahoo Finance Press Release (PRNewswire)*

September 18, 2007

Source: [www.PRNewsire.com](http://www.PRNewsire.com)

Article: <http://biz.yahoo.com/prnews/070918/aqtu049.html?.v=25>

### DUMPSTER FULL OF SENSITIVE INFORMATION DISCOVERED

*LasVegasNow.com*

September 18, 2007

Source: [www.lasvegasnow.com](http://www.lasvegasnow.com)

Article: <http://www.lasvegasnow.com/global/story.asp?s=7091061>

### SENTENCING SET IN CORNING INC. SPY CASE

*Star-Gazette News*

September 15, 2007

Source: [www.stargazettenews.com](http://www.stargazettenews.com)

Article: <http://www.stargazettenews.com/apps/pbcs.dll/article?AID=/20070915/BUSINESS/709150321>



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