
black hat®
ARSENAL
AUGUST 7-8, 2024
MANDALAY BAY/LAS VEGAS

Hands-On RF Hacking

Your Table is Always Ready

Paul Clark

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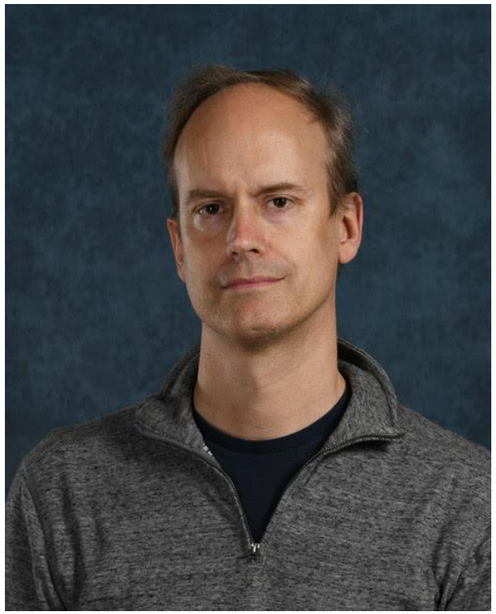


Chief Engineer, Factoria Labs

Electrical Engineer - SDR
Author
Instructor

github.com/paulgclark/burger-pager-bhat

Black Hat History

Trainer, since 2019
Arsenal, since 2022

Restaurant Pager

- Relatively simple protocol
- Unique ID
- Haptic/LED Parameters

Capture

Find the signal

Capture to disk

Demod and Decode

Tune

Demodulate

Estimate timing

Clock sync -> data bits!

Decode Raw Bits

Reverse Protocol

Payloads -> Bit Function

Take over target!

Building a Full System

Software:

- Universal Radio Hacker (URH)
- SDR Drivers

Hardware

- Any TX-capable SDR
- Antenna
- Laptop

Thanks to the efforts of Johannes Pohl and Andreas Noack!
https://github.com/jopohl/urh
(use pipx!)

Universal Radio Hacker: A Suite for Analyzing and Attacking Stateful Wireless Protocols
- 12th {USENIX} Workshop on Offensive Technologies ({WOOT} 18)
- https://www.usenix.org/conference/woot18/presentation/pohl

Step 1 – Find Signal

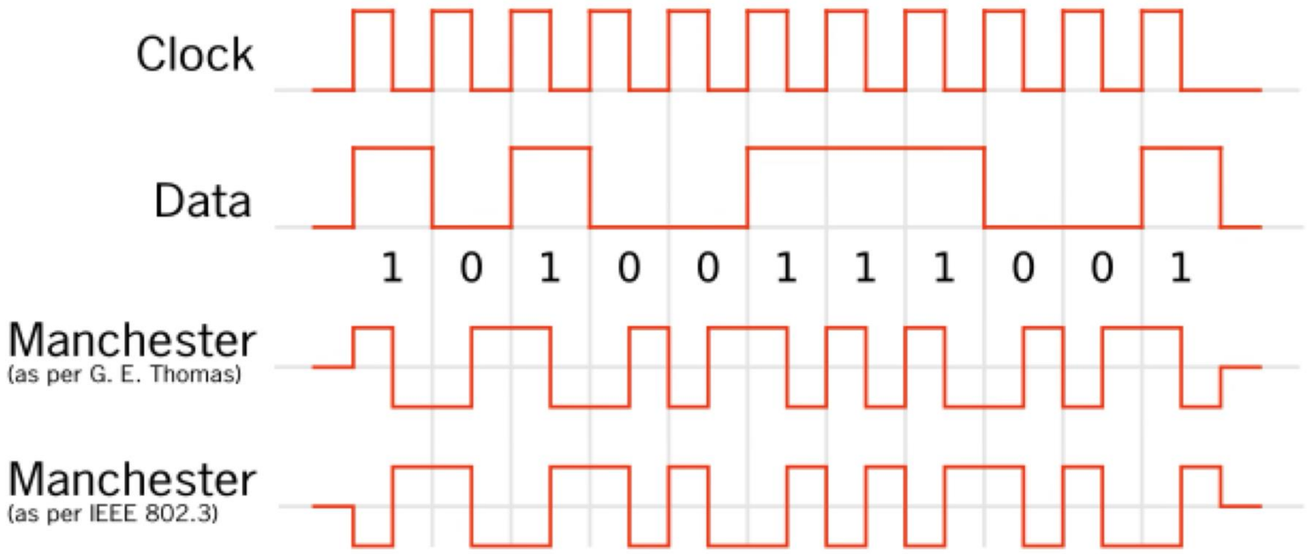
Step 2 - Capture

Step 3 – Demod

Step 4 – Decode

Encoding

- May not see data 1s and 0s
- Repetition -> Timing Errors
- Numerous schemes



Step 5 – ID Payload

Step 6 – Checksum

Step 7 – Takeover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Thank You!
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