Sneaky Spy Devices and Defective Detectors: The Ecosystem of Intimate Partner Surveillance with Covert Devices

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CONTENT WARNING:

Descriptions of Domestic Abuse
Descriptions of Surveillance
Intimate Partner Violence (IPV) affects 1 in 3 women worldwide.

Of those, 63% experience tech abuse[^1] [^2]

[^1]: Messing et al., 2020
[^2]: Freed et al., 2018
Anecdotal evidence suggests that abusers are using **covert devices** for intimate partner surveillance (IPS).
What devices are available for abusers to purchase?

How do these covert devices work?

Are they effective at enabling IPS?

Are useful detection tools available for survivors?
What is a covert device?

Hideable

Disguised

Not Covert

Images courtesy of eBay, Amazon
Large scale measurement study of covert devices

Online Crawl → 6,403 Listings → Heuristic Classification → 3,407 Listings → Logistic Classification → 2,248 Listings → Representative Sampling → 168 Listings

Amazon 31%
Home Depot 5%
Best Buy 7%
Walmart 28%
eBay 29%

11 Products
In-Lab Testing (ease of use, effectiveness)

Manual Analysis (technology used, IPS evidence, etc.)
Are covert devices available to abusers?

TACUWA Spy Camera
Hidden Camera WiFi, Smallest HD Mini Spy Cam for Home Security Easy to Use Wireless Indoor Surveillance with Motion Detection Night Vision
Brand: TACUWA
2.8 ★★★★★ 63 ratings
8 answered questions

-26%, $19.99
Typical price: $26.99

iTrackLTE
Versatile Vehicle Tracking Devices for Cheating Wife
iTrack PUCK GPS Tracker

$56.38

Over 50% of devices cost less than $20
Are device sellers **aware** of IPS?

13 (7%) of the devices we analyzed **explicitly advertised** for IPS

Neither Amazon, eBay, nor Walmart forbid devices from promoting IPS

“Best device ever! This little gem has won me tons of arguments and now my husband can no longer do sneaky things behind my back!”
What **types** of devices are there? Are they **effective** at enabling IPS?

Data Collected

- Video: 38%
- Audio: 33%
- Location: 29%

Communication Technology

- Local Storage: 35%
- WiFi: 29%
- 4G: 30%
- Bluetooth: 3%
- Unclear: 3%

These devices are **easy to set up and use** and **effective at recording sensitive information**
Covert devices are available, cheap, and effective.

Are useful detection tools available for survivors?
None of the commercial detectors could detect devices
Are academic device detection systems any better?

I Always Feel Like Somebody’s Sensing Me! A Framework to Detect, Identify, and Localize Clandestine Wireless Sensors

Akash Deep Singh, University of California, Los Angeles; Luis Garcia, University of California, Los Angeles, and USC ISI; Joseph Noor and Mani Srivastava, University of California, Los Angeles

SnoopDog
• Requires user tuning to detect
• Tuning requires knowledge of the presence of devices

Lumos: Identifying and Localizing Diverse Hidden IoT Devices in an Unfamiliar Environment

Rahul Anand Sharma, Elahe Soltanaghaei, Anthony Rowe, and Vyas Sekar, Carnegie Mellon University

Lumos
• Did not work in lab setting
• Still a prototype

Both systems are inappropriate for survivors
What do we need to **empower survivors**?

**Usable and effective**
techniques to detect **diverse**
devices

**Policies that prohibit** the
sale of devices that
advertise IPS

**Guidelines for developers**
to design devices that **resist**
IPS use

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- GitHub Repo