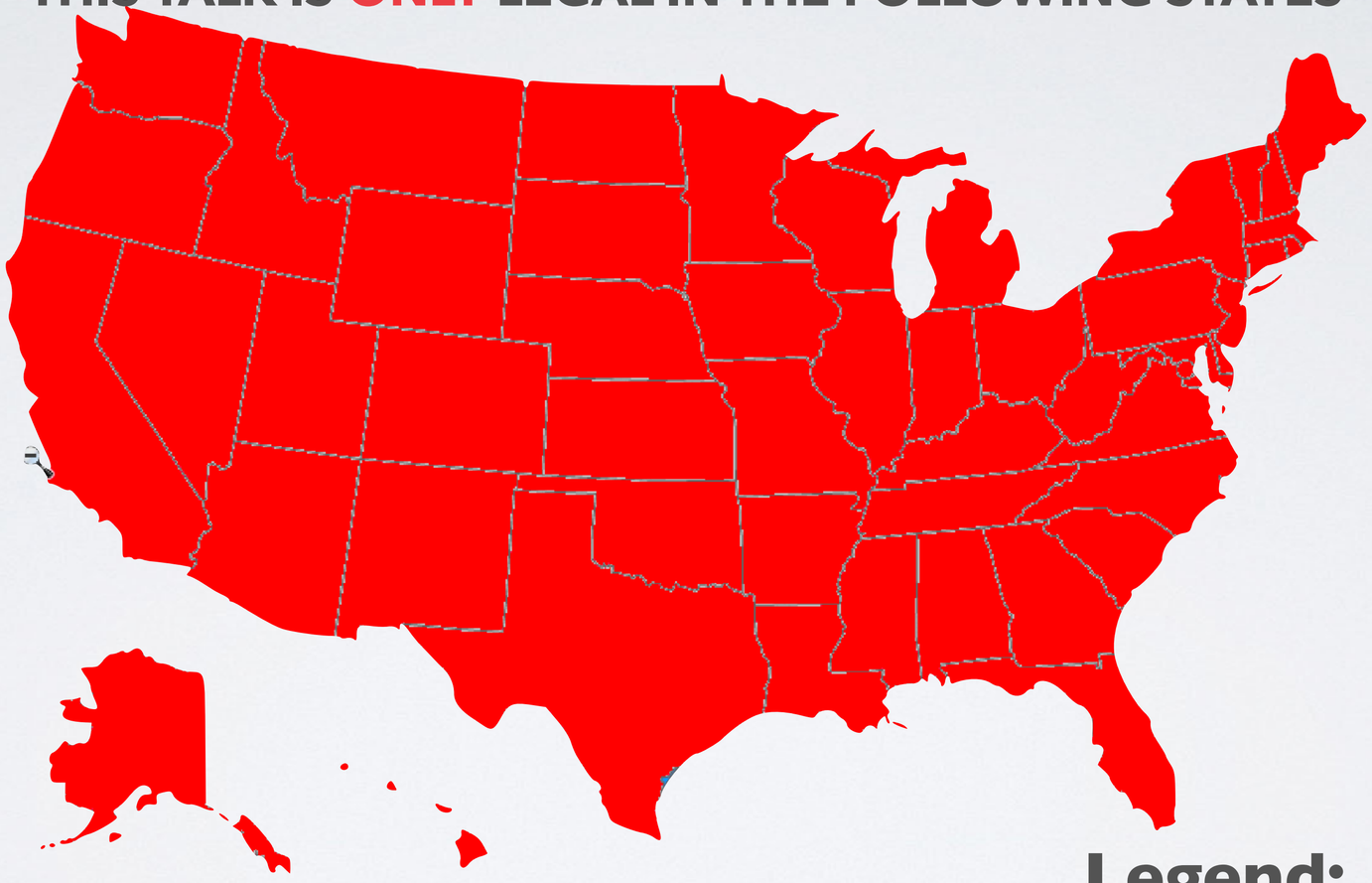


Bill Swearingen / @hevnsnt

WARNING

THIS TALK IS ONLY LEGAL IN THE FOLLOWING STATES



Legend:
RED ILLEGAL
GREEN LEGAL

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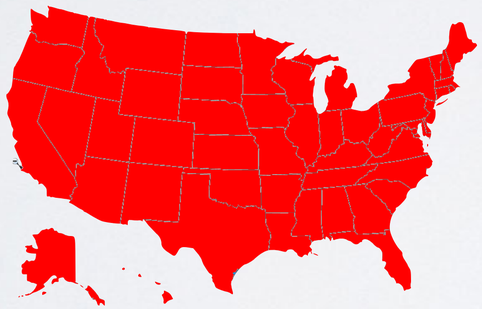


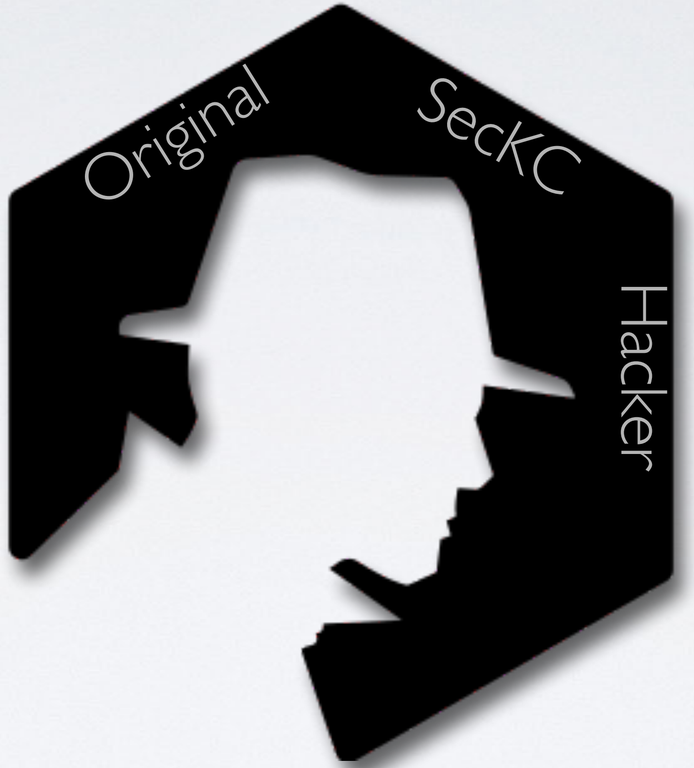
Legend:
RED ILLEGAL
GREEN LEGAL

This talk is rated **R** for:

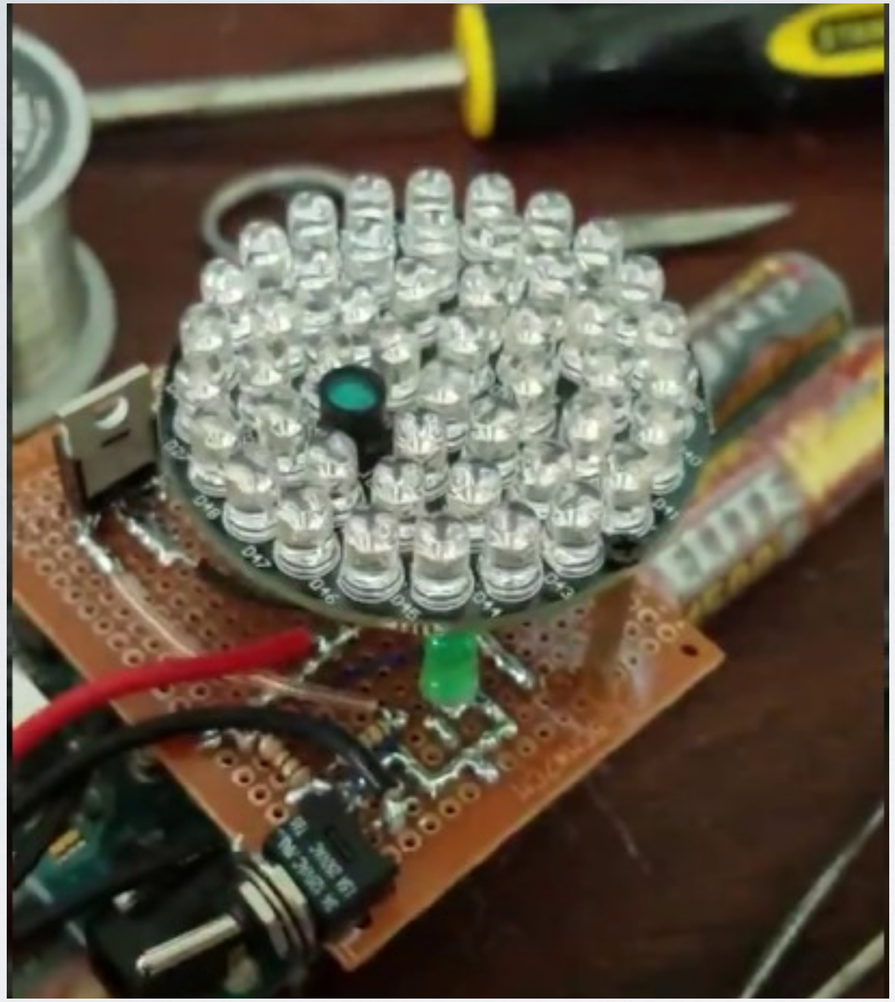
- Super Good Ideas
- Marginal Advice
- Offensive Language
- Brief Nudity

23

Slides available now at



bit.ly/23police





MIRT

Swearingen says he tested his proof-of-concept device on the streets of Kansas City with complete success before disassembling it to avoid trouble. "I take the freeway to work," he says. "There are no traffic signals." He criticizes

* This is not my MIRT



* This is not me

HACKER

HA/KC/ER

HA/KC/ER

Excerpt from the Hacker's Manifesto : The Mentor - Phrack Volume One, Issue 7, Phile 3 of 10

HA/KC/ER

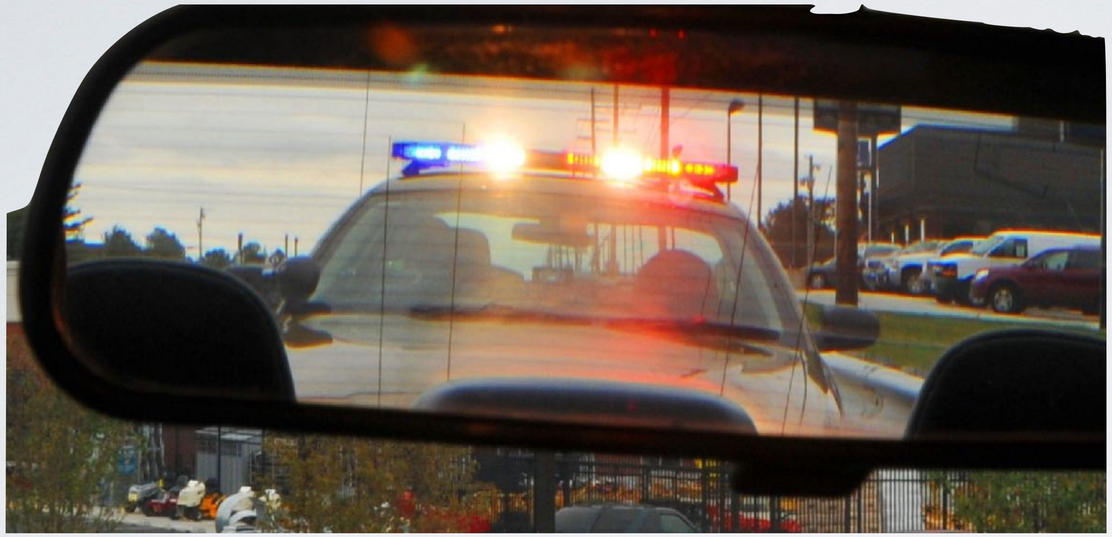


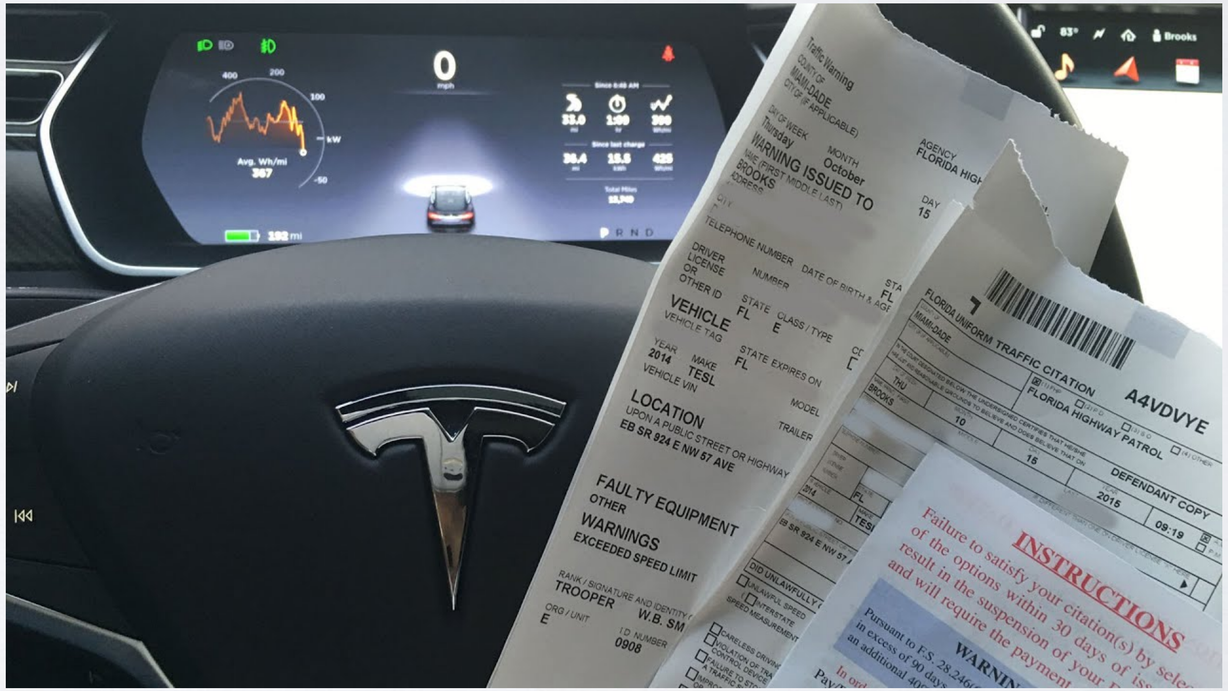
Are you a cop?





* This is not my car





*** This is not my problem**

WHAT IS RADAR?



IN THE 90s

MY DAD

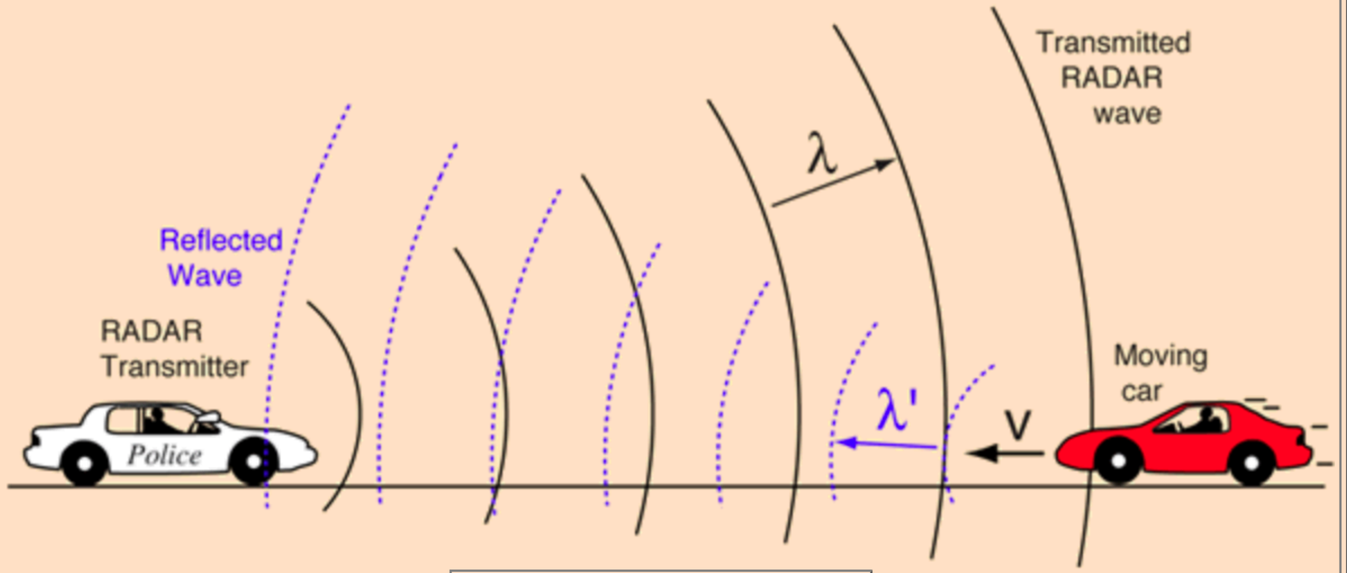
* This is not my dad

The Doppler Effect



Police RADAR

RADAR speed detectors bounce microwave radiation off of moving vehicles and detect the reflected waves. These waves are shifted in frequency by the Doppler effect, and the beat frequency between the directed and reflected waves provides a measure of the vehicle speed.



Speed detection calculation

Index

Traveling wave concepts

HyperPhysics***** Sound

R Nave

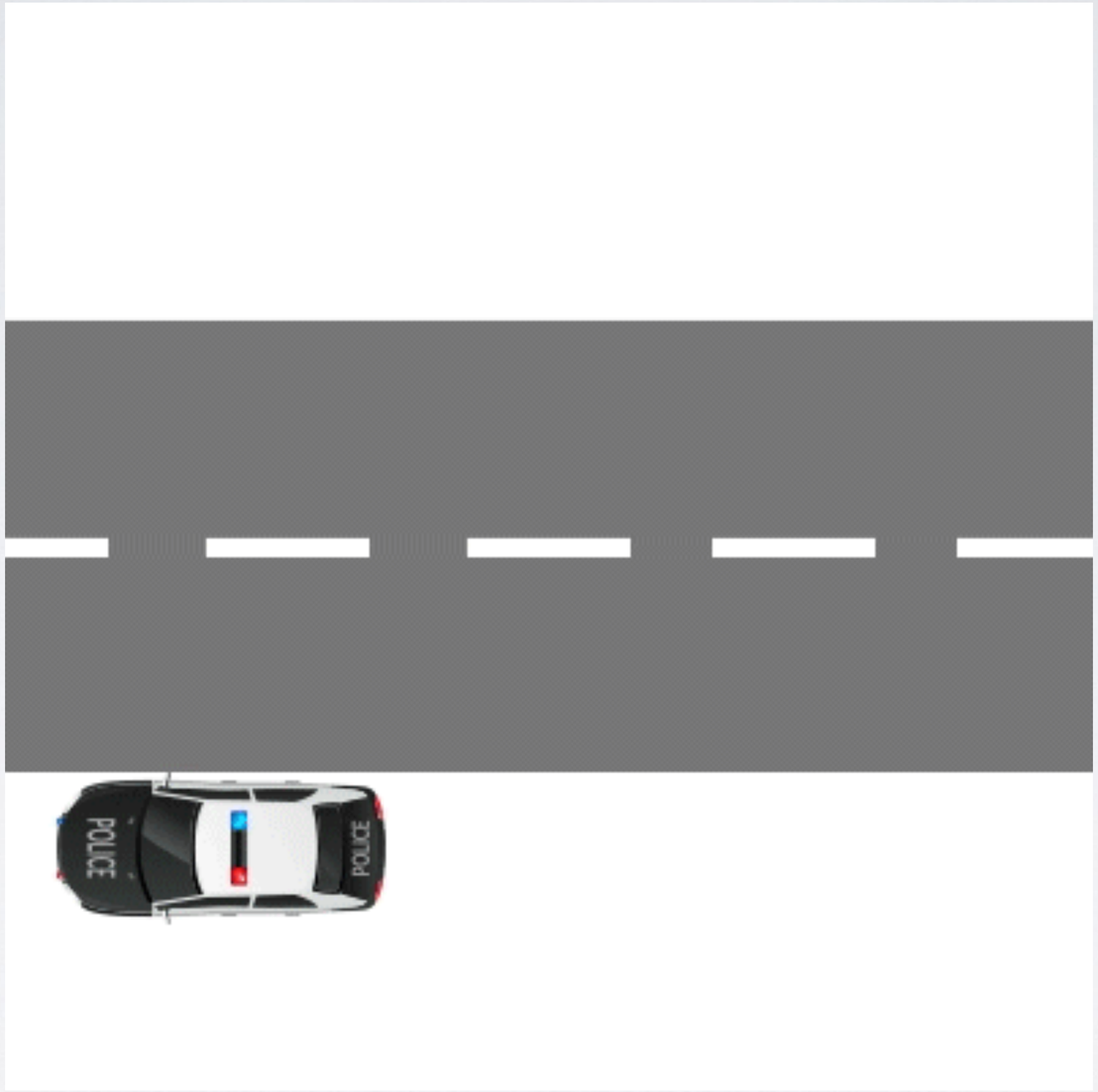
Go Back

*Where c is the speed of light

$$\frac{\Delta f}{f} = \frac{2v_{\text{target}}}{c}$$

http://hyperphysics.phy-astr.gsu.edu/hbase/Sound/radar.html


freegifmaker.me


POLICE
POLICE



- **X Band** is in the **8.0 to 12.0 GHz range**
  (*most common is 10.5 in the US / 9.4-10.6 in EU*)
- **K Band** is in the **18 to 26.5 GHz range**
  (*most common is 24.12 - 24.17 in the US / 24.12 - 25.15 in EU*)
- **Ka Band** is in the **26.5 to 40 GHz range**
  (*most common is 33.8, 34.6, 34.7, 35.5, 35.7 GHz in the US / 34.0, 34.3, 35.5 in EU*)
- **Ku Band** is in the 12 to 18 GHz range
  (*Ku is not used in the US, most common is 13.45 in Europe*)

From: https://www.vortexradar.com

LIVE


OMG A COP
Setup Menu
Range
Units
Auto Clear
Peak Mode
Recall Speed
Self Test

DEMO



- **X Band** is in the **8.0 to 12.0 GHz range**
  (*most common is 10.5 in the US / 9.4-10.6 in EU*)
- **K Band** is in the **18 to 26.5 GHz range**
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From: https://www.vortexradar.com



$$\frac{\Delta f}{f} = \frac{2v_{\text{target}}}{c}$$

Defeat X band radar at **10.500002031 25Ghz**
Defeat K band radar at **24.120004666071 43Ghz**
Confuse? Ka band radar at **33.800006538690 47Ghz**

Microwave Oven 2.4Ghz = -97,420,118 mph

http://hyperphysics.phy-astr.gsu.edu/hbase/Sound/radar.html


HackRF One
GREAT SCOTT GADGETS
RESET
D1 mini

WE HAVE
A PROBLEM

good idea meter: RED

WE HAVE A PROBLEM

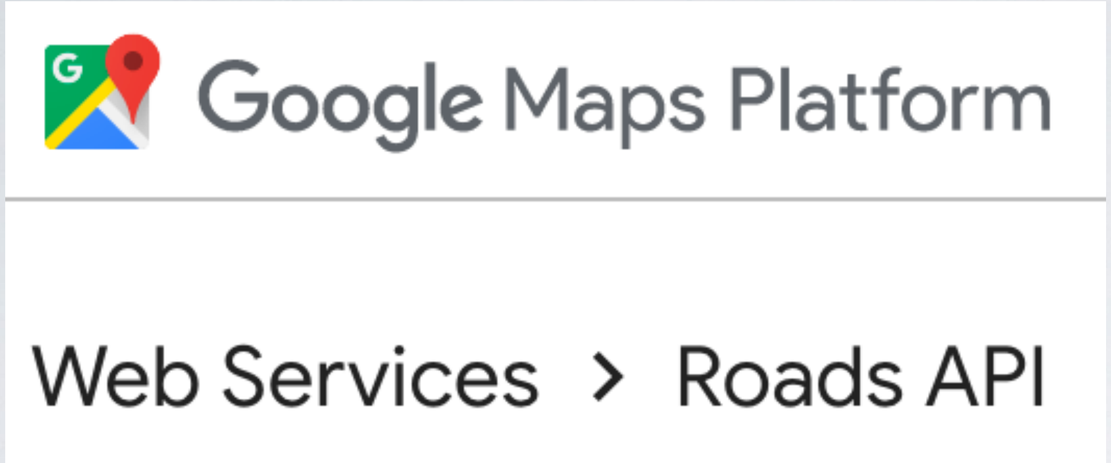


good idea meter: RED



Google Maps Platform

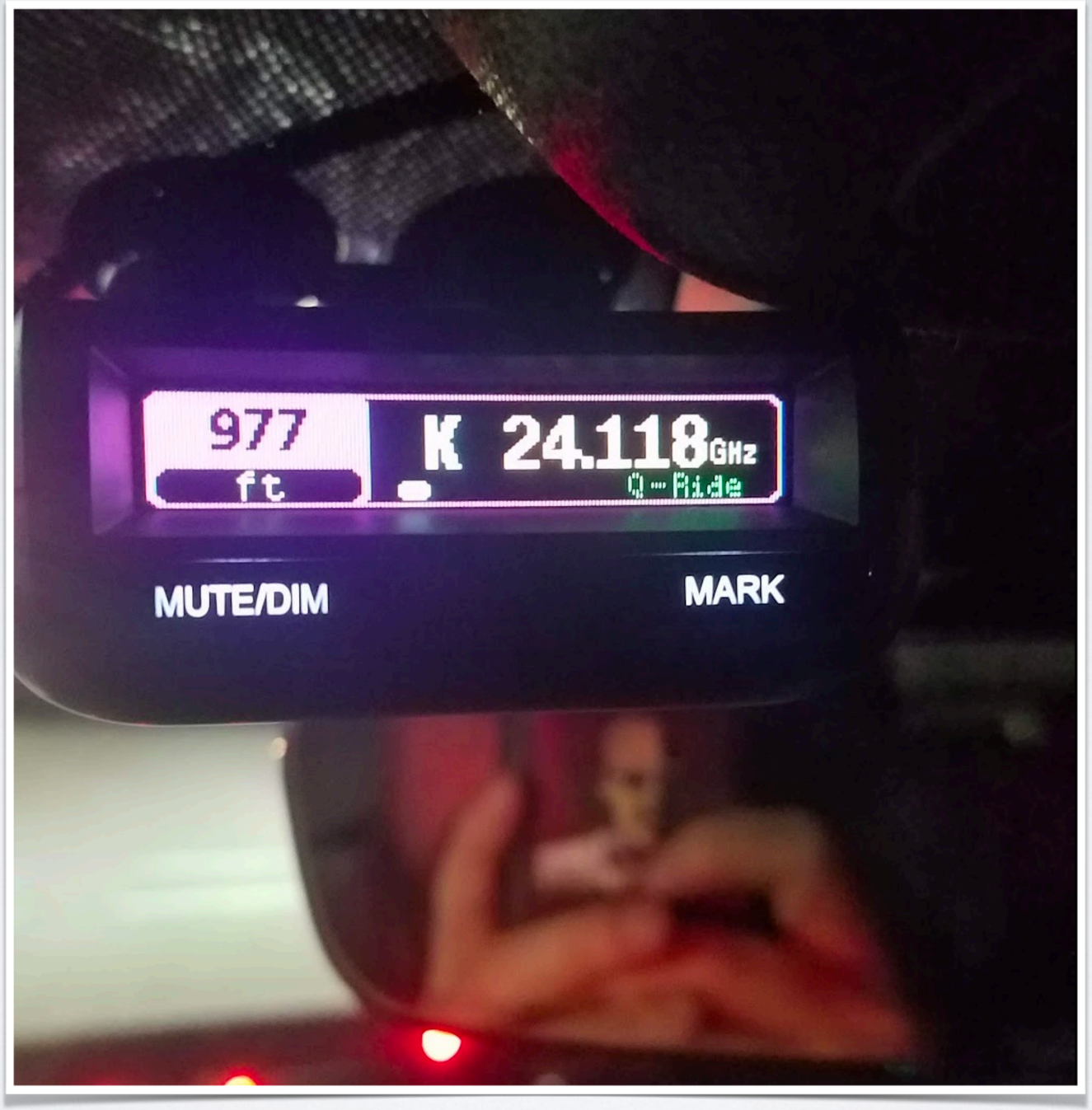
Web Services > Roads API



The Roads API returns the posted speed limit for a given road segment.

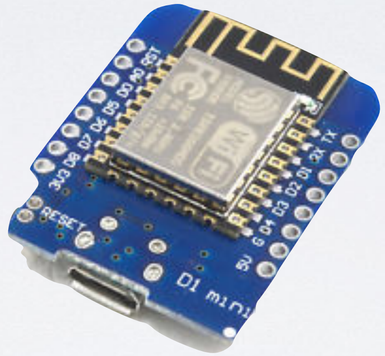
Response


```
{
  speedLimits:
  [
    {
      placeId: "ChIJX12duJAwGQ0Ra0d4Oi4jOGE",
      speedLimit: 105,
      units: "KPH"
    },
    {
      placeId: "ChIJLQcticc0GQ0RoiNZJVa5GxU",
      speedLimit: 70,
      units: "KPH"
    },
    {
      placeId: "ChIJJ4vQRudkJA0RpednU70A-5M",
      speedLimit: 55,
      units: "KPH"
    }
  ],
```


977
ft
K 24.118GHz
Q-Fide
MUTE/DIM
MARK



+



+



good idea meter: RED

PUBLIC NOTICE

FEDERAL COMMUNICATIONS COMMISSION
1919 M STREET, N.W.
WASHINGTON, D.C. 20554

DA 96-2040

News media information 202/418-0500 Fax-On-Demand 202/418-2830 Internet: http://www.fcc.gov ftp.fcc.gov

Released: December 9, 1996

FCC REGULATES RADAR TRANSMITTERS, BUT NOT RADAR DETECTORS

Using a radar jammer is a federal offense that can result in a $50,000 fine and/or five years in prison.



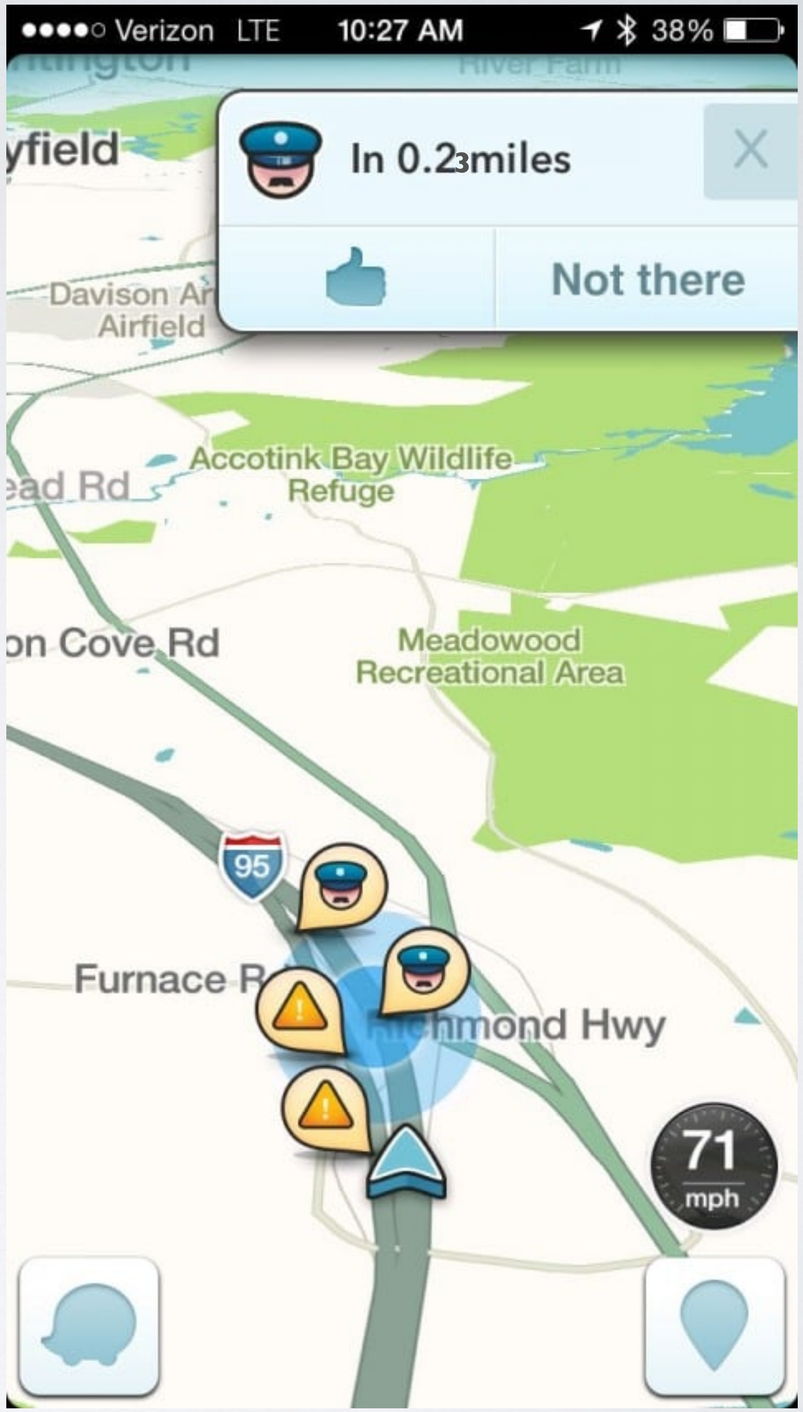
* This is still not me

(LEGAL) EFFECTIVE COUNTERMEASURES

EFFECTIVE COUNTERMEASURES



- Uniden R3 or R7
- Escort Max360
- Radenso Pro M
- Valentine One w/BT





LASER

"The FCC doesn't regulate the light spectrum. That's done by the Food and Drug Administration"

–autoblog.com, 2011


LIGHT





* This is not my car either


Subscribe



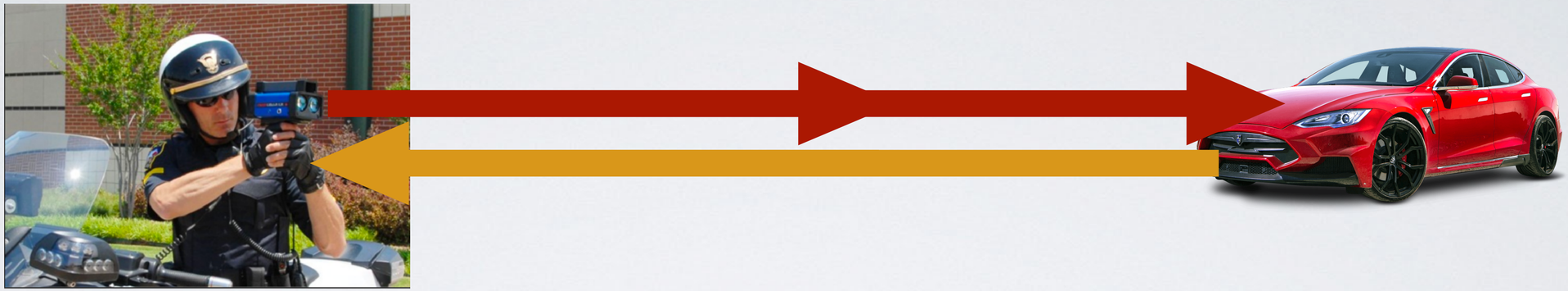
CLASS 1 LASER
904nm (Invisible IR)





DISTANCE

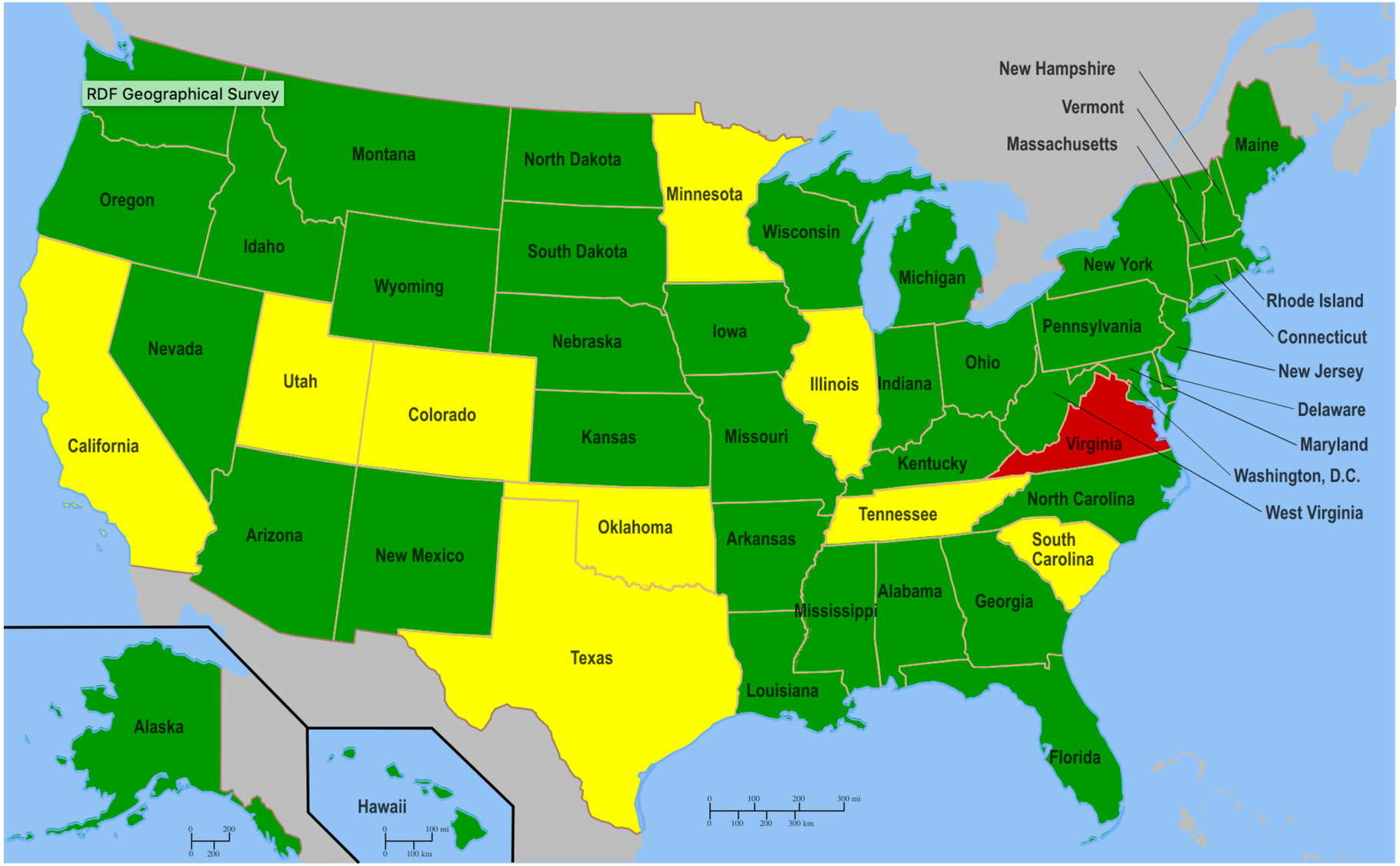
$$\text{Speed} = \frac{\text{distance}}{\text{time}}$$



$$\text{Distance} = \frac{C * T}{2}$$

(MOSTLY-LEGAL) EFFECTIVE COUNTERMEASURES

good idea meter: IDK I AM A METER, NOT A COP



Legend:

RED: ALL COUNTERMEASURES ILLEGAL

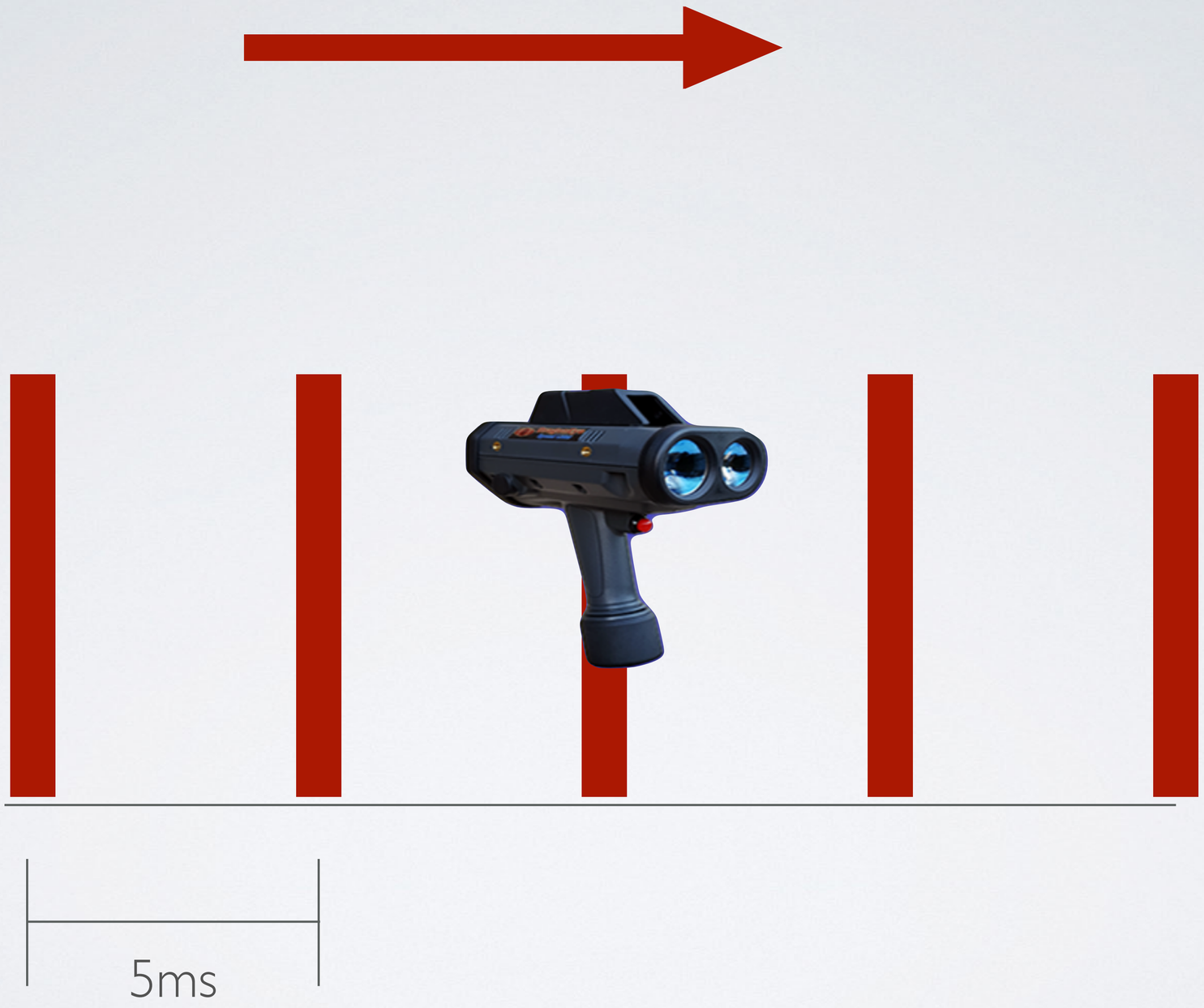
YELLOW: LASER JAMMING ILLEGAL

GREEN: ROCK & ROLL

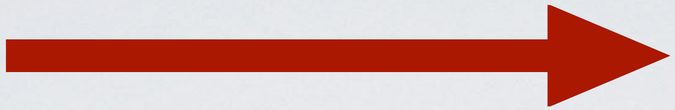
*Luckily nobody is here from the DC Area

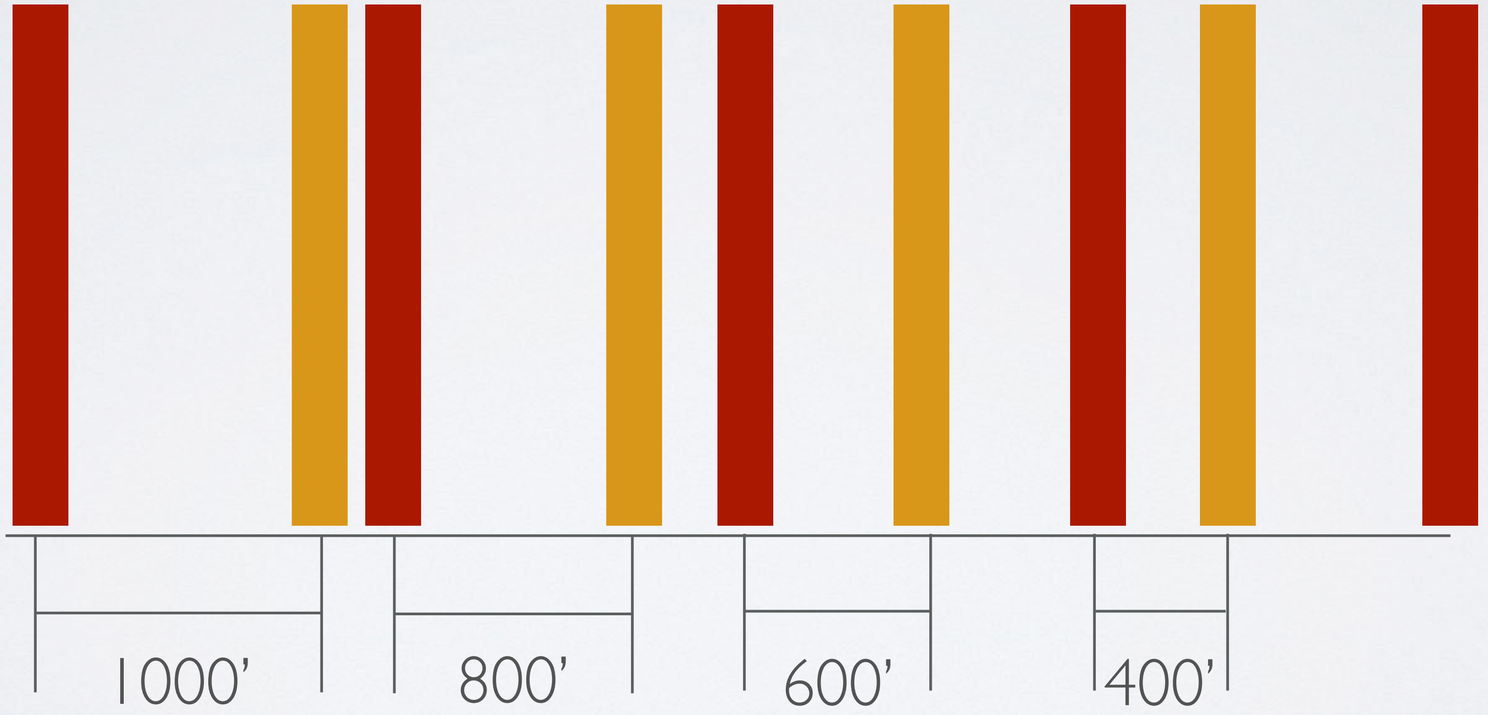
OPTION 1



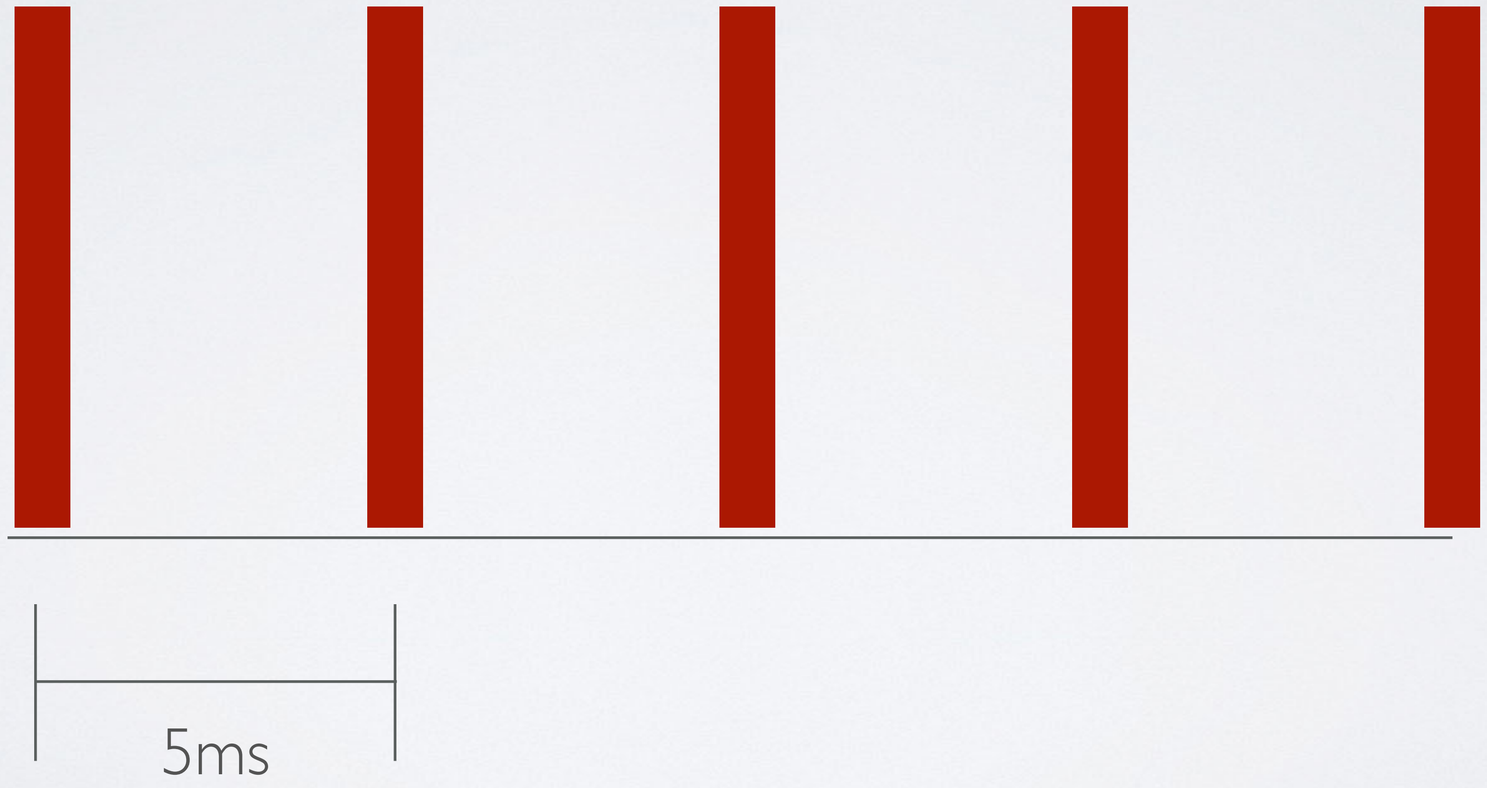

5ms

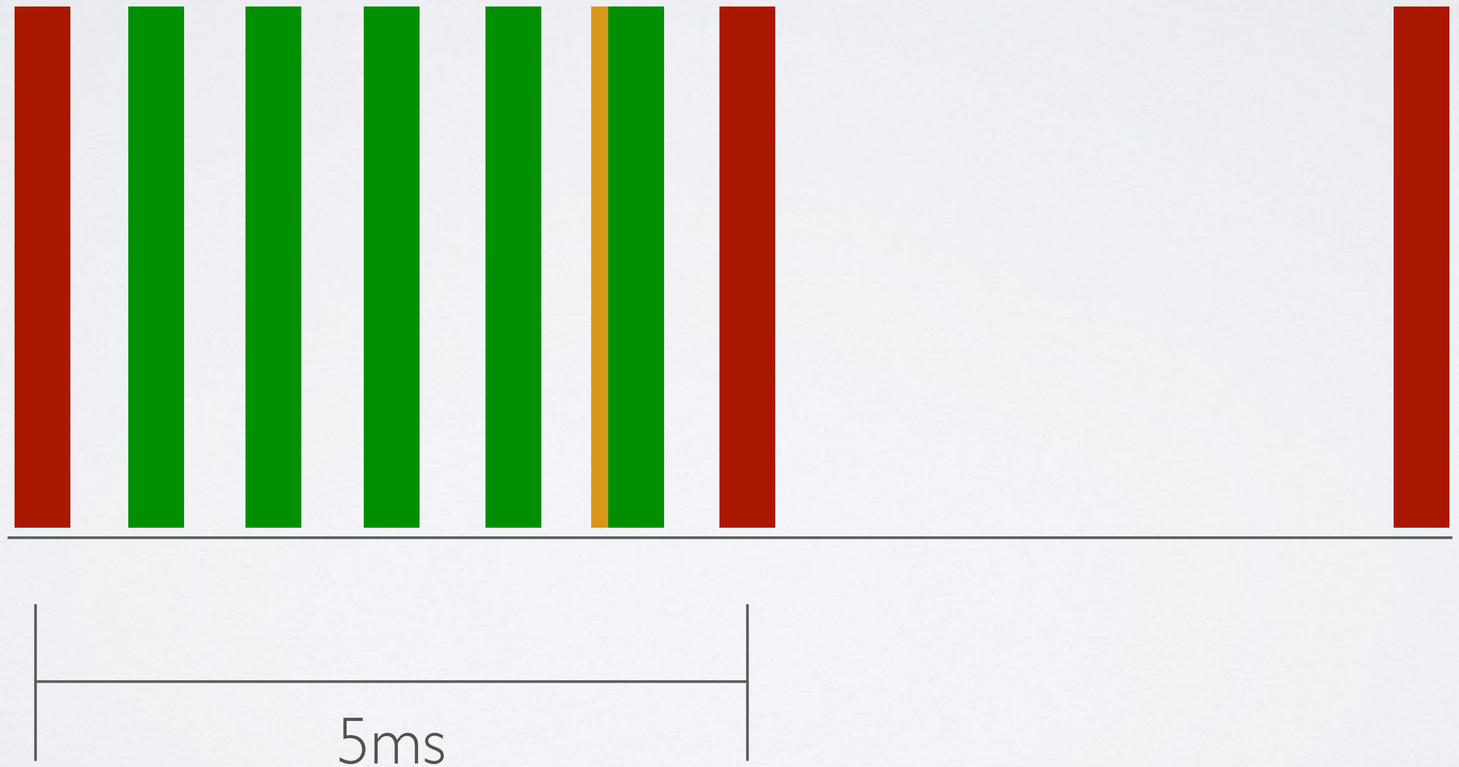


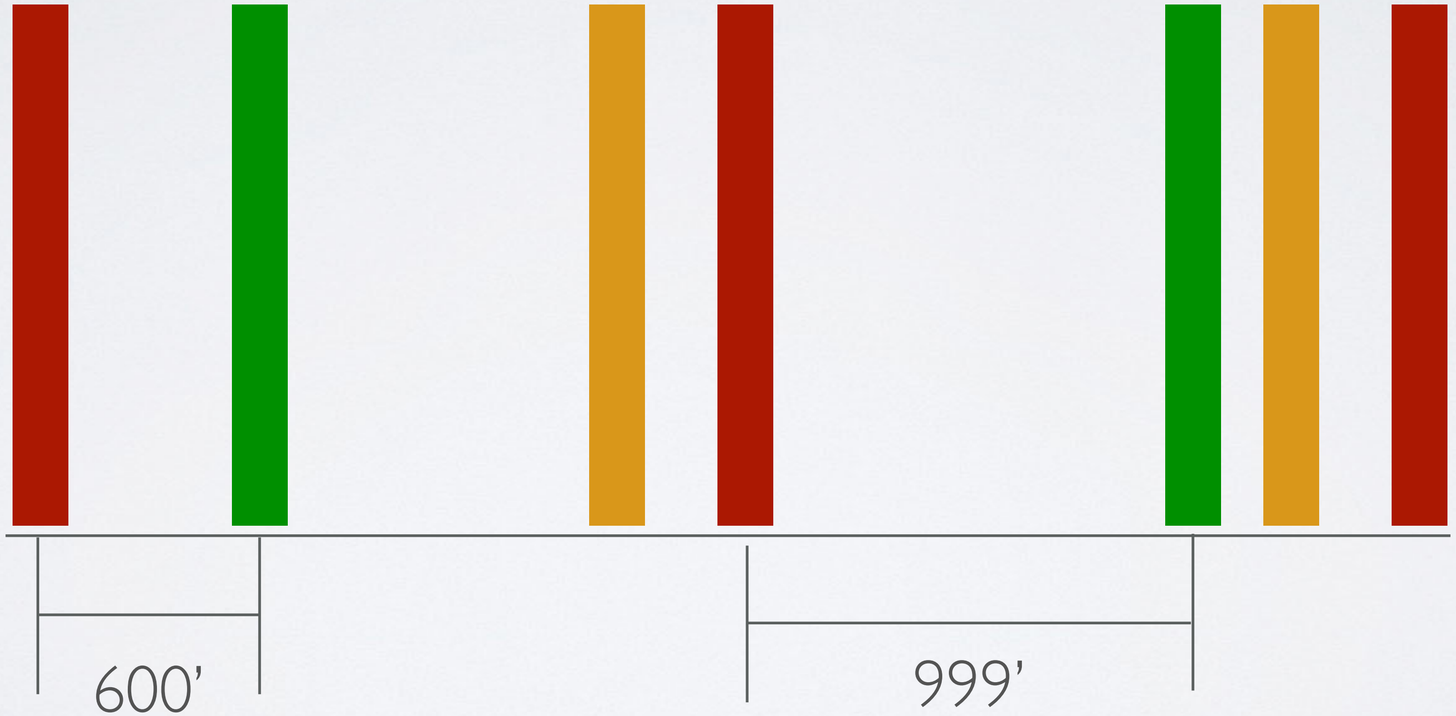


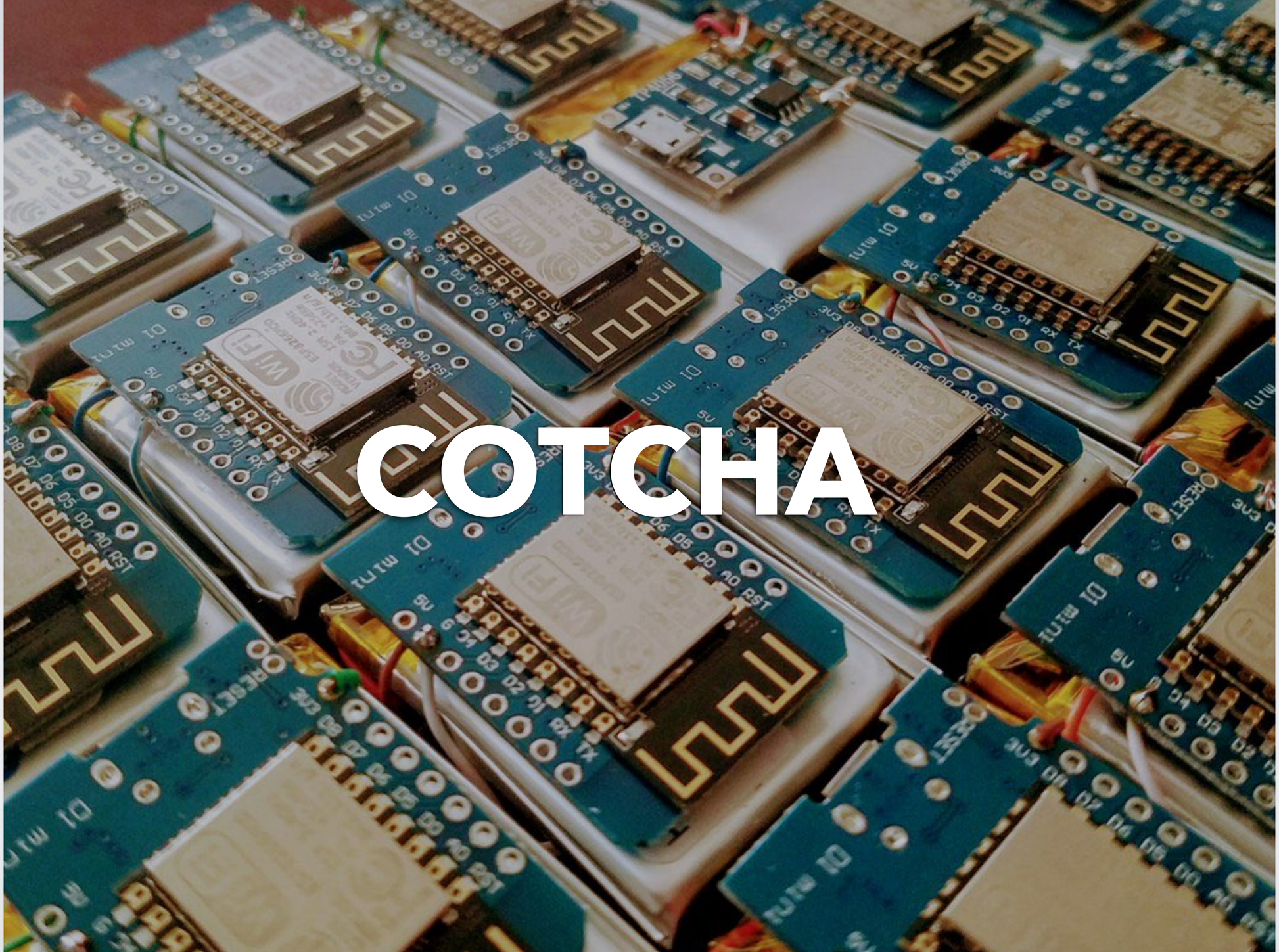

1000’
800’
600’
400’



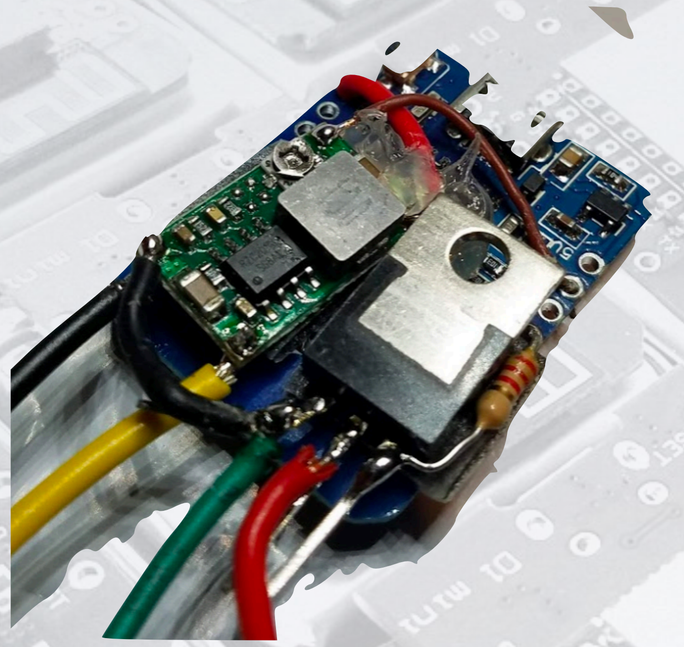

5ms


5ms


600’
999’


COTCHA

NOTCHACOTCHA





- ESP8266 Based Laser Jammer
- 12V Circuitry for Automobile Install
- 940nm Brute Force Mode
- Wireless Connectivity & Android App
- **Legal in SOME STATES!**
- Laser Gun Emulation Mode
- ~~MIRT Mode~~ (good idea meter: **SUPER RED)**

NOTCHACOTCHA

IS

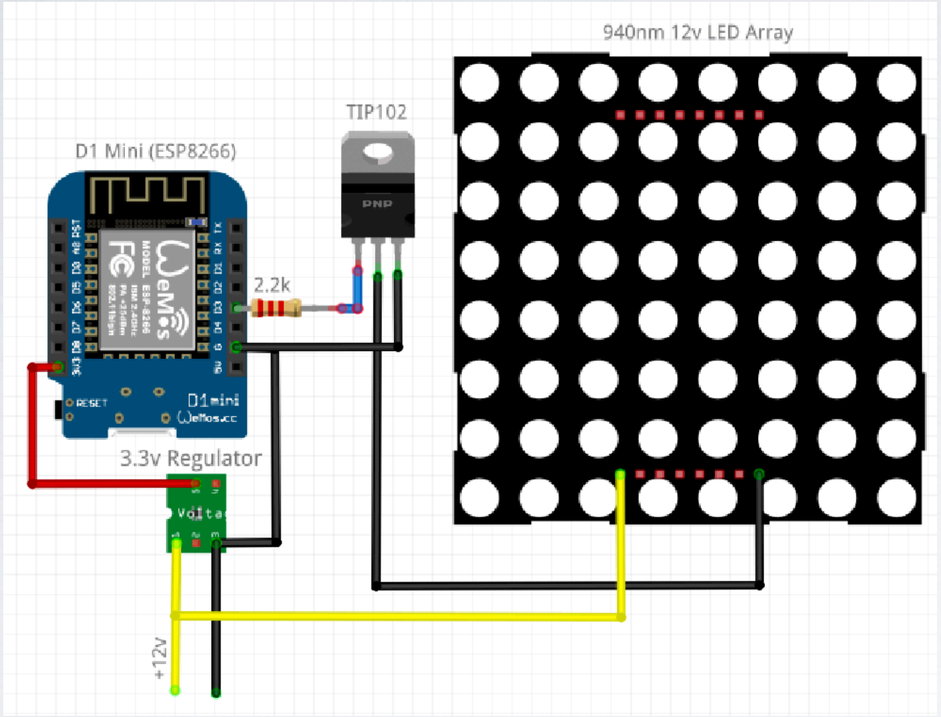
FREEDOM

AMERICA!



*EXCEPT VIRGINIA

NOTCHACOTCHA



- D1 Mini (esp8266) : $1.50
- 2.2k Resistor : $0.03
- 3.3v Voltage Regulator : $0.54
- TIP102 Transistor : $0.08
- 940nm LED Array : $6.00

$8.15

bill of materials, code, and several other bad ideas at github.com/hevnsnt/NOTCHACOTCHA

This is only round one



Bill Swearingen / &bill / @hevnsnt

Slides available now

bit.ly/23police

Super duper thanks to:

@VortexRadar

thejunkyardmessiah

www.rdforum.org

kickass

@sec_kc / @networkgeek / @seckcory / @surbo

~#RexKC sucks and #23isReal~