

Purple B Mockup Review

Touchless Handle



Touchless Handle is a
gesture-based way to quickly
operate a **bathroom stall door**.

what it is

a **gesture-based, hands-free** way to operate a **bathroom stall door**

who's buying it

facilities departments

market

automatic restroom amenities

sink faucet: \$200-350

paper towel dispensers: \$50-200

stall doors: \$200-400

Touchless Handle | Product Contract

what it is

a **gesture-based**, hands-free way to operate a **bathroom stall door**

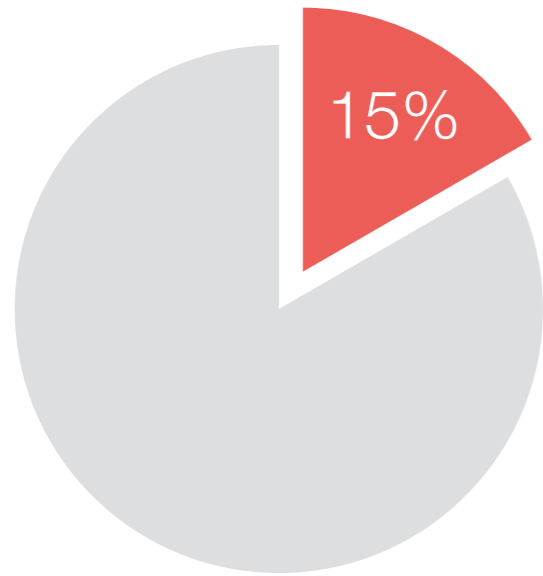
who's buying it

facilities departments (~\$100)

market

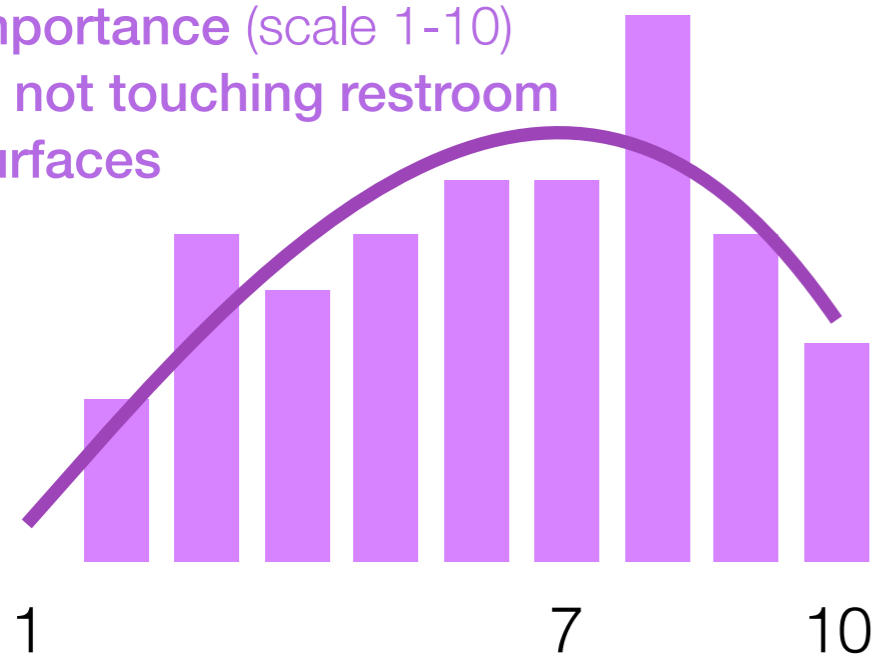
automatic restroom amenities

Customer Needs	Product Attributes	Engineering Specs
can be retrofit to existing doors	fastener types size & weight	mounts with conventional fasteners no power connection under 5 lbs no door or hinge replacement
battery life on par with other restroom devices	battery life	1 month minimum battery life
can be cleaned regularly	water resistance	splash proof (IPX3) chemical resistant
fast operation	operating speed	2 seconds time to open/close door
safe	can't injure user	low voltage door detects collisions
manual override	doesn't prevent manual opening of door	has manual override



Many people **do not wash their hands** after using the restroom.

importance (scale 1-10)
of not touching restroom
surfaces



People are **interested in a hands-free solution** for bathroom stall doors...



time to open/close door

...as long as **“it just works”**.
(speed, reliability, ease-of-use)

Touchless Handle | **Key Challenges**

1. **Door Opening**
2. **Power Consumption**
3. **Water Resistance**

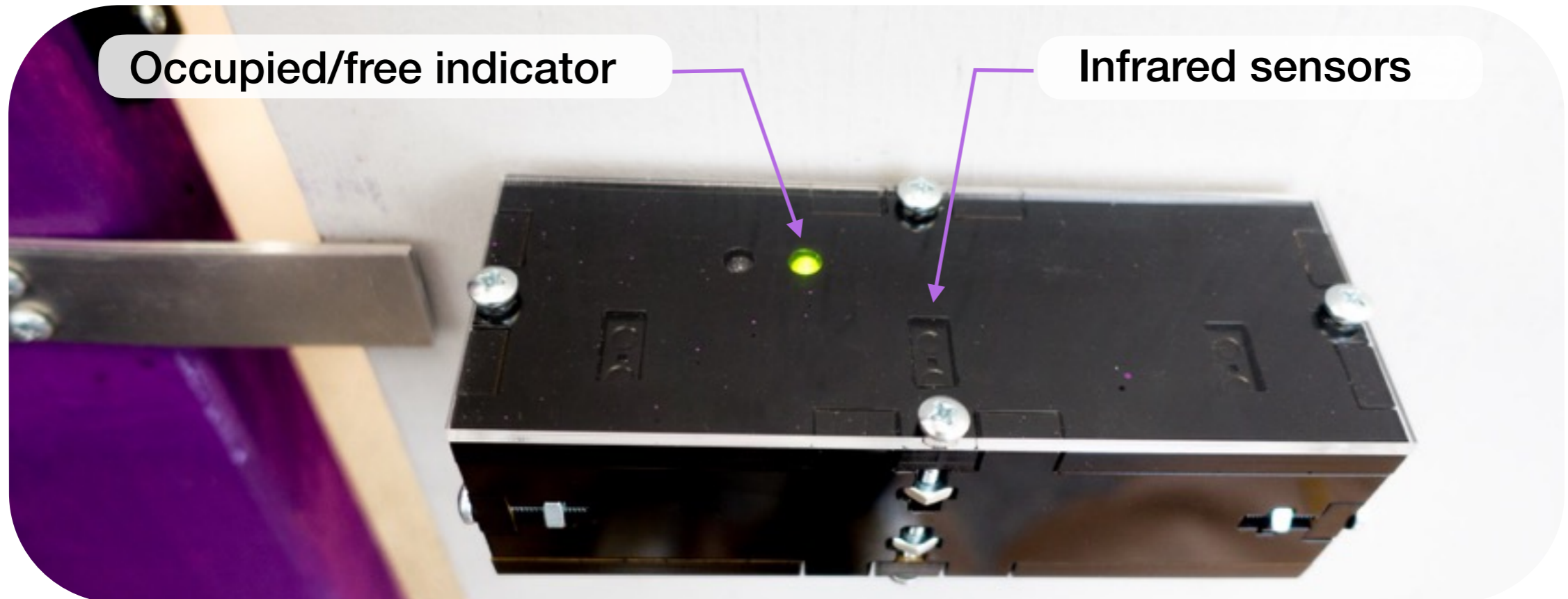
Touchless Handle | Door Opening

2
SEC

time to open/close door



comparable motor to that of an automatic paper towel dispenser



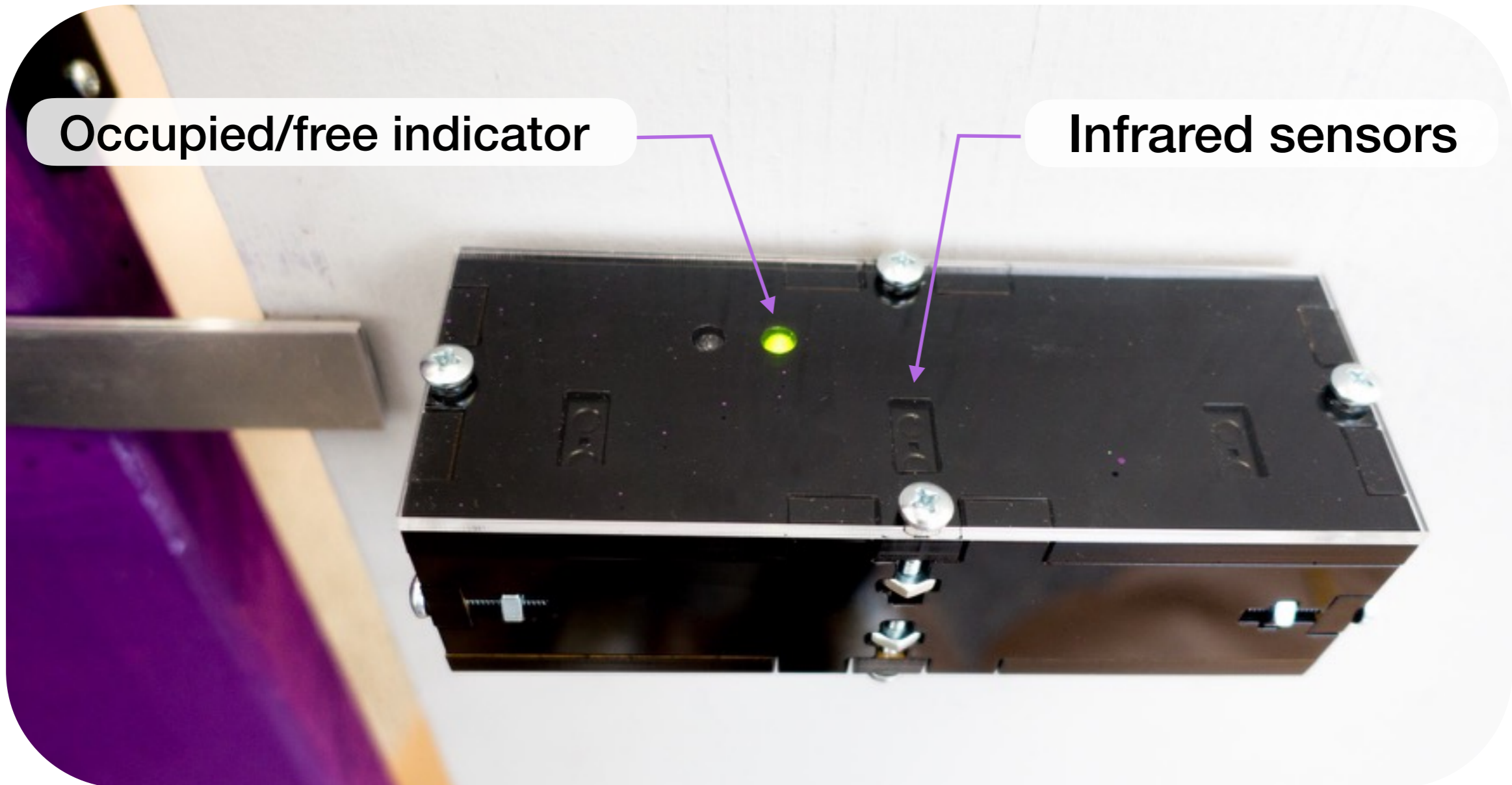
Touchless Handle | Power Consumption Benchmarking



	Automatic paper towel dispenser	Automatic soap dispenser
motor stall torque	1.0 Nm	0.005 Nm
batteries	15 Wh (4 D batteries)	3 Wh (3 AA batteries)

Touchless Handle | Water Resistance

Infrared sensors can operate through a pane of material, providing water-resistance and ID benefits.



Demo

Pappalardo Lab
Wood Shop