

# UV Test Project Planning



## Project Planning

Customer	Building Address	Project Name	Project ID
JP Health Club	3289 West St. Mesa, AZ	UV Verification in Reception	1645

Test Number	Test Type	Sprayer
1	UV	eSprayer 65 psi

Test Area	Ceiling Height	No. of OP	No. of SP
179 ft <sup>2</sup>	10 ft	1	1

Tag Series	Scenarios	Survey Date	ACH Setting	Interval Count	Interval Duration
S1/R1	1	2-18-26	UV	4	5 min

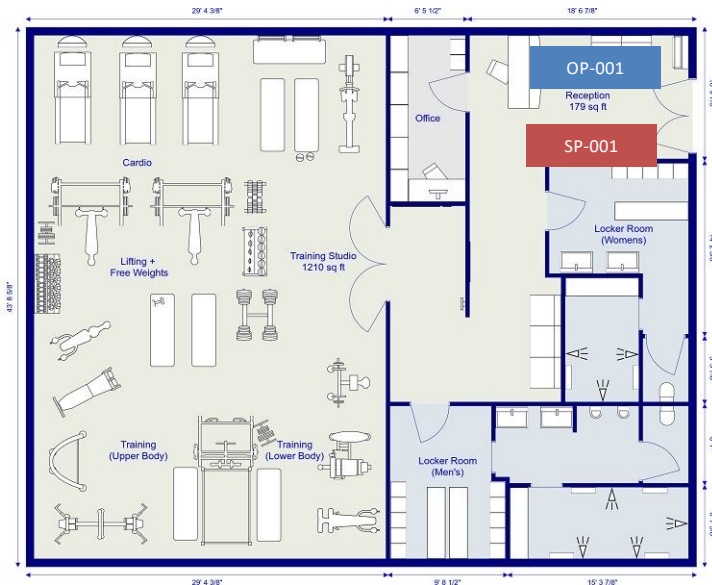
Comments	
Start Time: 0800	Doors Open; In/Out Traffic

Scenario 1				
Description	OP Name	Tags	Tag Lot Number	Samples
Normal Ops	OP-001	R1/S1	20250725	SN-001 to SN-004

HVAC ACH	PEC ACH	ACH PASS/FAIL
5	0	5

# Test Set-Up

1. Verify the location
2. Measure the area and ceiling height (+/-) 10%
3. Make sure you have the correct Tag, number of tags, eSprayers and Air Samplers



Area (sqft)	Air Samplers	eSprayers	Wireless Remotes
<2,000	1	1	0
2,001 to 4,000	1	2	2
4,001 to 6,000	2	3	3
6,001 to 8,000	2	4	4

## Test Set-Up

4. Pressurize eSprayer to 65 psi
5. Place eSprayer on floor under or close to a Supply (NEVER) under a Return!
6. Place 4-C Air Sampler face in the opposite direction of the eSprayer at least 3-5 feet from the ground
7. Turn the Air Sampler Interval Knob to UV ACH



## Origin and Sample Point Placement

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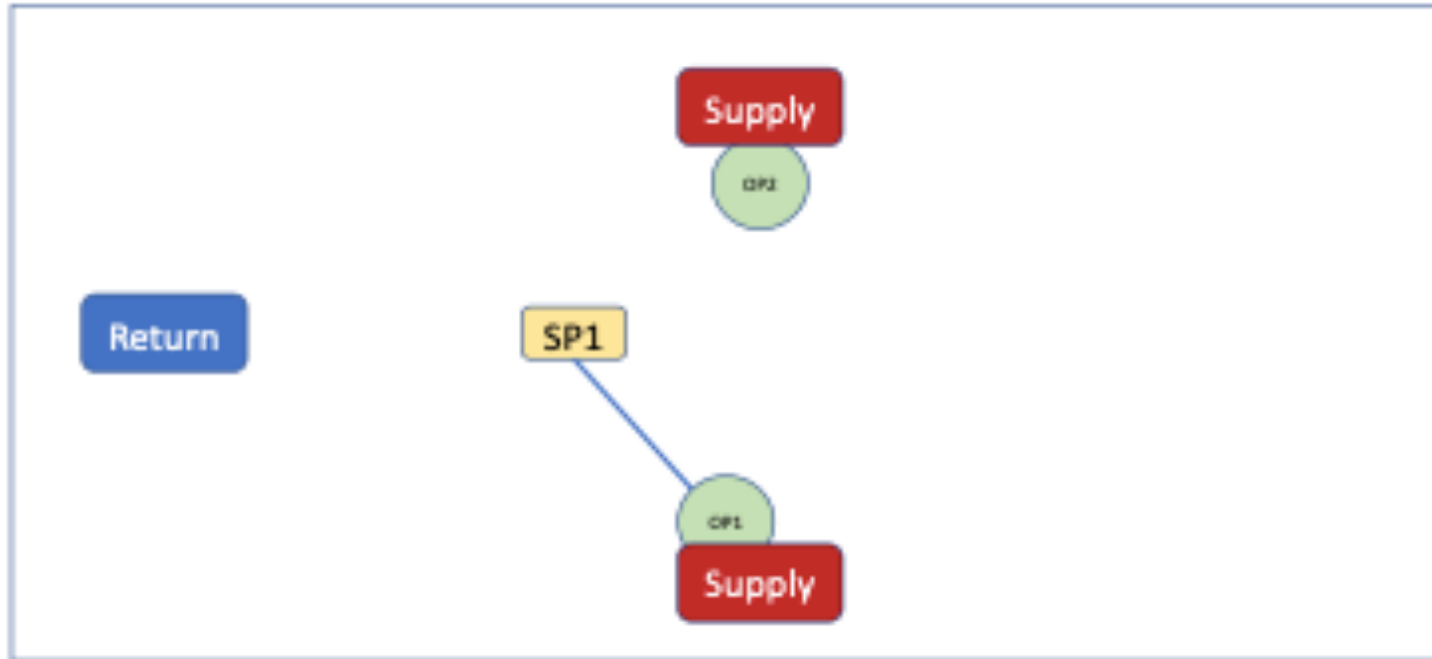
- **Origin Point Placement**

- Origin Point locations for (placement of the eSprayer) should be under or close to a HVAC Supply, if one is present in the test location
- eSprayer should be placed on the floor and not on desks, chairs, etc...
- **Caution:** If eSprayer is placed under a HVAC Return the DNA Tag will most likely be “sucked up” and result in a “invalid” test result

- **Sample Point Placement**

- Sample Point locations (placement of the 4-Channel Air-Sampler) should be under or close to a HVAC Return if one is present in the test location
  - The 4-Channel Air-Sampler placed opposite of the eSprayer and pointing (sample cassettes) in the direction of a HVAC Return
  - Air Samplers should be placed at least four-feet from the ground
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## Positioning of eSprayer and Air Sampler



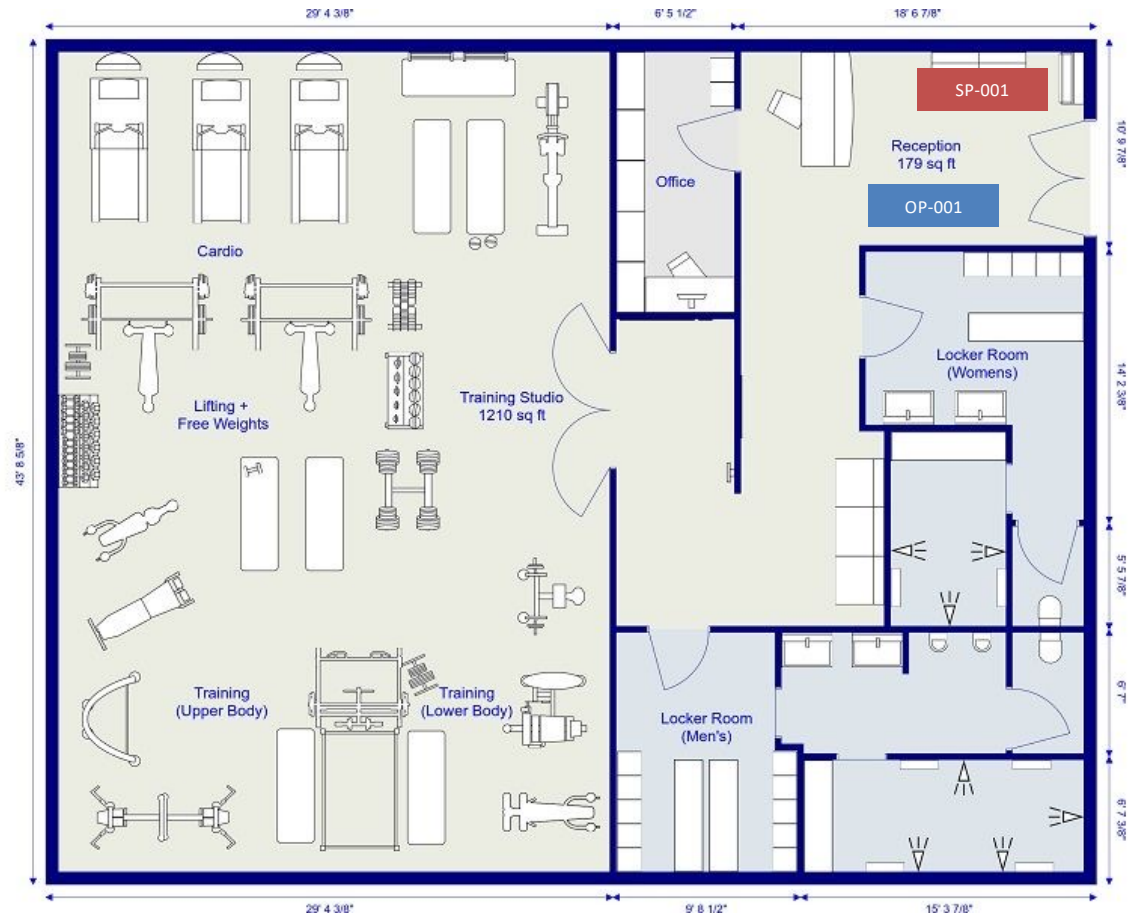
# Manage Origin Points (OPs) and Sample Points (SPs)

## Origin Points

OP-001: Reception

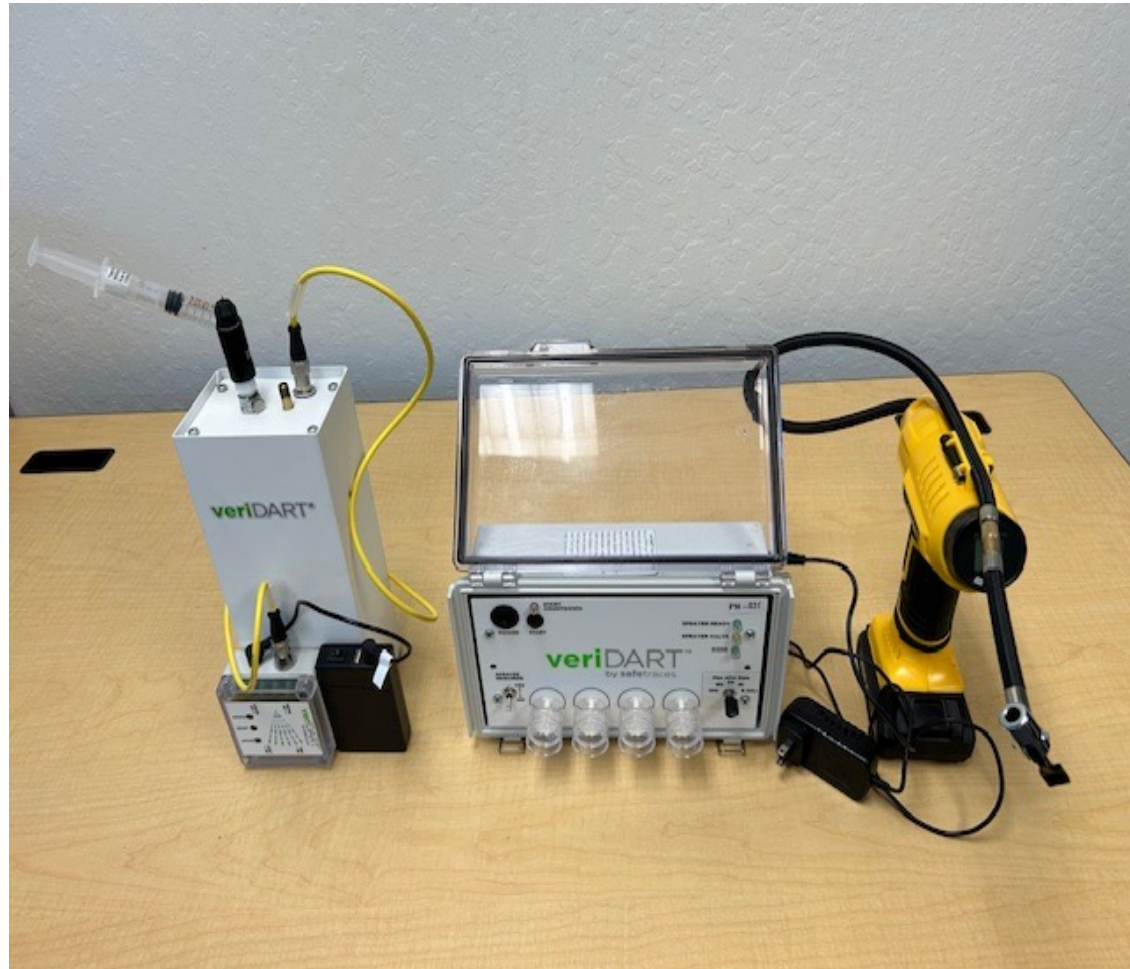
## Sample Points

SP-001: Reception

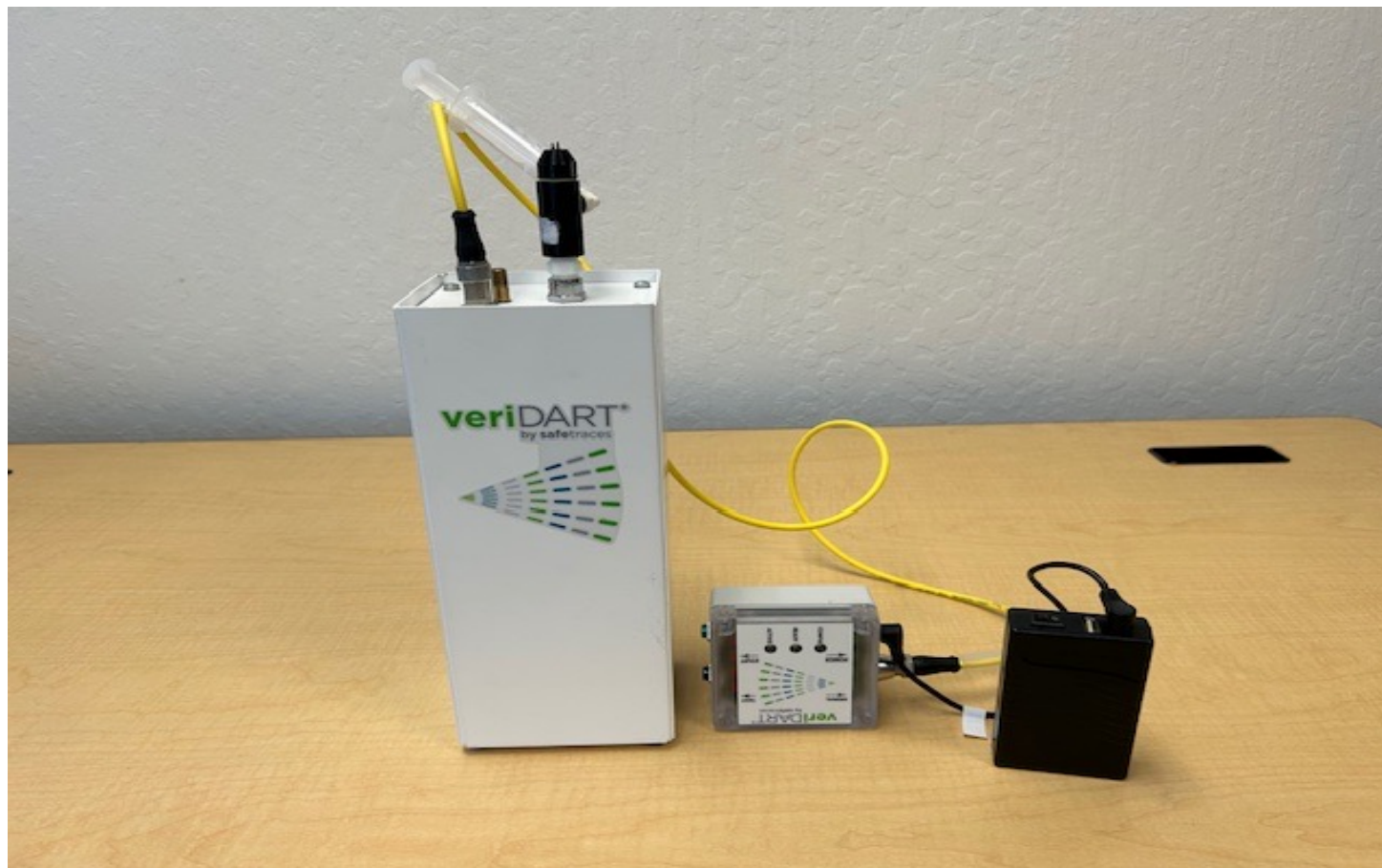


## Equipment Used for UV Test

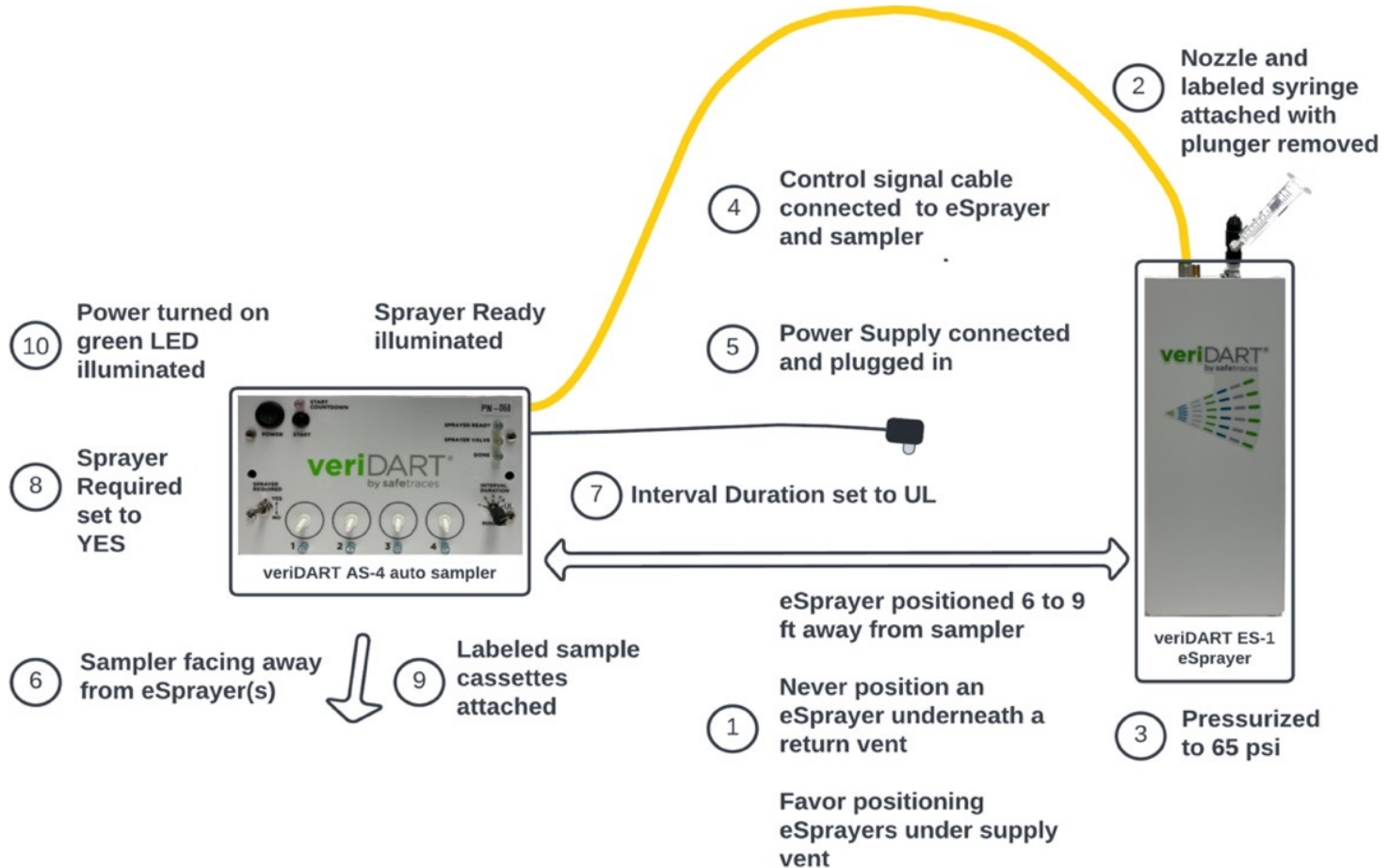
- eSprayer
- Yellow Cable Cord
- Wireless Module
- Lithium Battery
- Battery Cable
- Nozzle
- Syringe
- Power Cord
- Air Compressor
- 4-Channel Air Sampler
- Tags R1/S1



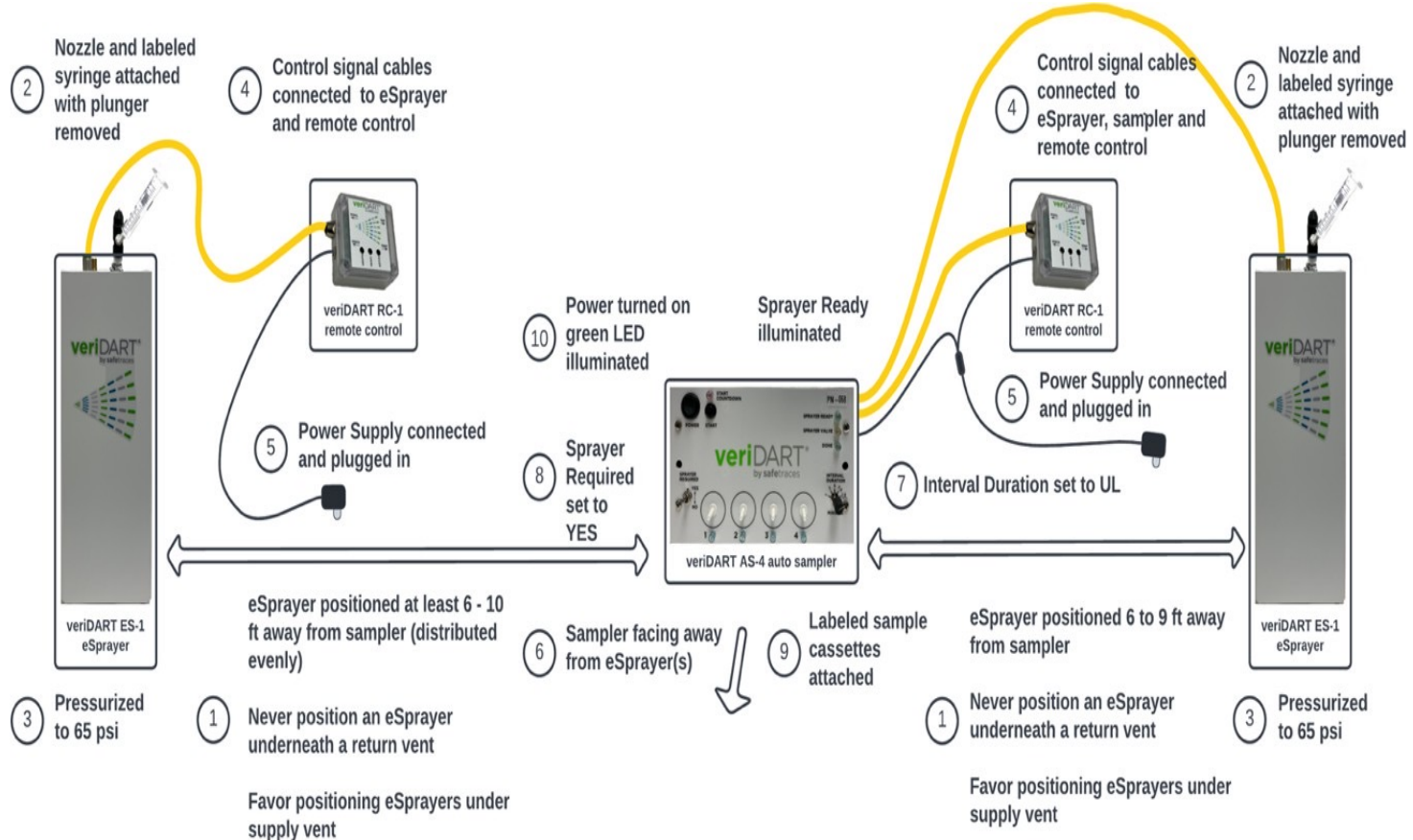
## Alternative Equipment Set-Up for Tag Release of any Test



## Equipment Connections for Small UV Test



## Equipment Connections for Large UV Test



**Best Practice:** After set-up Run a mock test to ensure proper set-up and readiness.

- ❑ When using the Wireless Module ALWAYS start the test by pressing the “Start” button on the module, NOT on the Auto-Air Sampler.
- ❑ **Caution:** DO NOT USE TAGS FOR THE MOCK TEST!!

## Example UV Test Set-Up



## Best Practices

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- Get a cart to help carry the equipment
  - After measuring the “area” verify the amount of equipment needed to complete the testing (see slide 3)
  - If the ceiling height is greater than 12 ft add 1-OP for each additional 12 ft. For example, if the ceiling height is 24 ft add two addition OPs
  - Verify the 4-Channel air-sampler interval setting (ACH) selection is on UV ACH
  - Verify the locations of HVAC supply and returns for equipment positioning
  - Do not pre-label the sample cassettes
  - Make sure the sample cassettes are snugly attached to the air sampler
  - Listen for the “click” sound of the “nozzle” when attaching to the eSprayer
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## Best Practices

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- Wear gloves when handling Tags
- Make sure the “plunger” is removed from the syringe
- Remove pelican, unused equipment, supplies, etc. before starting the test
- After the test verify the “Done” green light is visible
- Verify the sample number label on each sample cassette are in the correct order before removing from the air sampler
- Document all changes on the “Project Configuration” form

# UV Test Results Visualization

UV Off eACH	UV On eACH MS2 Scaled	UV On eACH Flu-A Scaled*	UV On eACH TB Scaled*	UV On eACH SARS-Covid-2 Scaled*
3.15	10.17	39.29	63.12	110.29

*\*Scaled values are derived from Kowalski, W.J. (2009) Ultraviolet Germicidal Irradiation Handbook: UVGI for Air and Surface Disinfection. Springer, New York.*

Base CFM (UV Off)	Max Occupancy (UV Off)	Scaled* CFM (UV On)	Max Occupancy (UV On)	Net Occupancy Gain
0	1	410	10	9

*ASHRAE 241 requires a minimum MERV 11 filter to be calculated in ECAi  
Occupancy is based on ASHRAE 241 Standard included, Residential: Dwelling Unit  
\*Scaled values are to MS2 bacteriophage virus analogous to ASHRAE 241 appendix A*

What does “UV On eACH MS2 Scaled” mean?

Why are the four scaled results different?