CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2015
DateRun:	05/20/2015
Experimenters:	James Keats
ClientType:	Cleaning Equipment Mfr
ProjectNumber:	Project #1
Substrates:	Vinyl Composite Tiles
PartType:	Coupon
Contaminants:	Food
Cleaning Methods:	Mechanical Agitation
Analytical Methods:	Visual
Purpose:	Evaluate beginning, middle, and end effectiveness of iRobot cleaning pad.

Experimental Procedure:

Apply soil to 4' X 4' clean vinyl floor, spreading 1g of soil onto even numbered tiles with a swab and odd tiles by dripping 1g of soil onto them (16g per floor). Allow the floor to dry for at least 24h. Attach a cleaning pad to the Braava unit and completely fill with water. Then place the Braava unit onto the floor. Turn on the Braava unit, and begin the cleaning cycle. At intervals of 30 seconds for the first trial, or 10 seconds for the second, take a picture of the floor. Once the cycle is complete, empty any water still in the Braava unit and dispose of the pad.

Pictures are taken periodically to compare effectiveness of cleaning pad over time. This will allow beginning, middle, and end cleaning to be visually evaluated.

To evaluate total soil removal, a visual observation will be made. This observation will be an estimation of the % soil removed from each tile by comparing before and after pictures of the floor.

Tile numbers

4	5	6	7
3	14	15	8
2	13	16	9
1	12	11	10

Results:

The floor was soiled and cleaned two times, each cleaning referred to as a trial.

- Found that the Braava unit stopped its cleaning cycle after ~8 minutes which was before cleaning the entire floor. All observers except observer 4 agreed that sections of the floor were significantly dirty.
- Immediately conducting a second run on the previously cleaned floor resulted in excess water being left on the floor.
    - This may have been because the wet floor care pad was completely soaked and therefore could not absorb more water.
- Waiting 40 minutes before conducting a second run resulted in less excess water. A picture from this run are below.

Figure 1: Image of water collecting on floor on second cleaning cycle.

- Pad seemed to clean consistently across entire floor.
- Preceding spray of liquid improved soil removal.

Percent removal Trial 1

Observer 1

90%	70%	100%	80%
50%	100%	100%	90%
90%	100%	100%	100%
60%	90%	60%	10%

Observer 2

CLEANING LABORATORY EVALUATION SUMMARY

90%	80%	95%	90%
85%	100%	100%	95%
95%	100%	100%	95%
80%	100%	80%	90%

Observer 3

90%	70%	100%	90%
80%	100%	100%	90%
90%	100%	100%	100%
50%	100%	75%	40%

Observer 4

99%	98%	100%	98%
97%	100%	100%	99%
98%	100%	100%	100%
95%	99%	97%	97%

Observer 4 rated cleanliness based on the percent of the tile that was not covered with contaminant (Ex: 95% means that 5% of the tile was covered in contaminant.)

Summary:

Substrates:	Vinyl Composite Tiles				
Contaminants:	Food				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
iRobot	iRobot Braava unit	100	0.00	☑	

Conclusion:

The Braava unit required two cleaning cycles to clean the entire floor.

Pad seemed clean consistently across entire floor.

Changes to testing method

- Along with being asked to evaluate % contaminant removed, observers will also be asked to rate the overall cleanliness of the floor from 1-5 (1 being completely clean). This will provide an overall evaluation of the cleanliness of the floor.
- Instead of placing the Braava unit onto a random spot on the floor, it should instead be placed in the corner of tile 1.

Manual wipe tests will be conducted with paper towels and water in order to provide a comparison to the Braava unit. The time it takes to clean the floor will be recorded. Once cleaned, the floor will be evaluated with the same visual method mentioned earlier in this report.