A212 PRESENCE TRACKING

Conference room occupancy

A single wall-mounted A212 radar sensor detects, counts and tracks people throughout the room – even when they sit still.

PRESENCE DETECTION

Detection rate

99.8%

of the time people were present

Detection latency

1.7 s

mean, entering to detected

Exit latency

8.3 s

mean, last person leaving to empty

False detection rate

0.00%

of the time the area was empty

PEOPLE COUNTING

Counting accuracy

99.4%

within one (±1)

89%

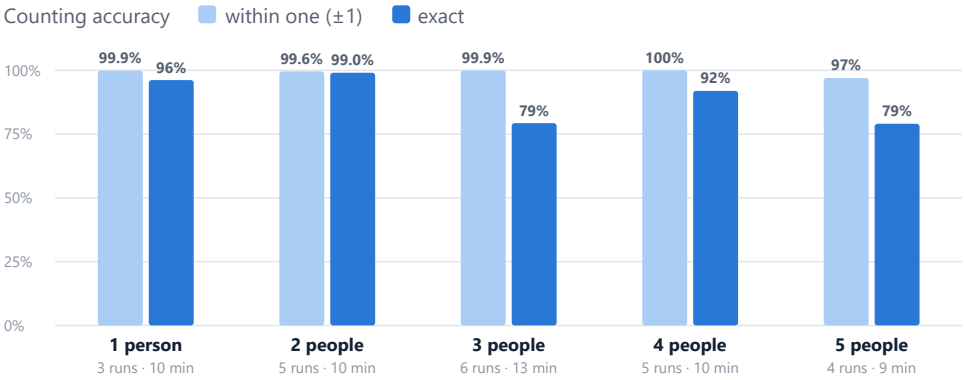
exact

Mean error

−0.07 people

+ is over-, − is undercounting

By number of people in the area



With more than 5 people, performance may be lower, depending on the scenario.

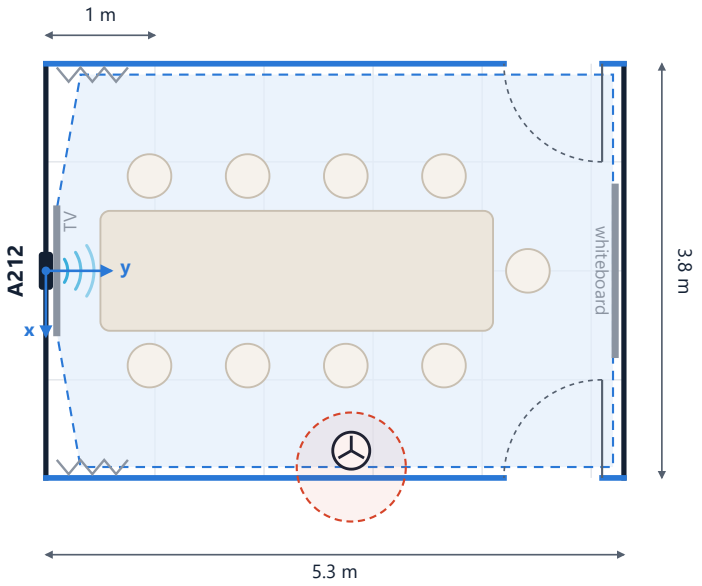
Metrics and definitions

METRIC	DEFINITION	BASIS	RESULT
PRESENCE DETECTION	The presence of one or more people in the area is detected.		
Detection rate	Share of the time with people present in which presence was detected (recall). The first 1.7 s after someone enters the empty area (the mean detection latency) is not scored.	60 min	**99.8%**
Detection latency	Time from a person entering the empty area until presence is detected. Mean over entries.	23 entries	**1.7 s**
Exit latency	Time from the last person leaving until the area is reported empty. Mean over exits.	23 exits	**8.3 s**
False detection rate	Share of the time with the area empty in which presence was detected, scored on recordings of the empty room.	48 h	**0.00%**
PEOPLE COUNTING	The number of people in the area is counted.		
Counting accuracy	Share of the time with people in the area in which the count matches the ground truth. The first 1.7 s after each entry (the mean detection latency) and 8.3 s after each exit (the mean exit latency) are not scored.	53 min	**89%**
Counting accuracy (±1)	Like counting accuracy, but a count within one person of the ground truth is also right; counting 0 while people are present never is.	53 min	**99.4%**
Mean error	Mean of the counted minus the true number of people over the same time as counting accuracy: positive is overcounting, negative undercounting.	53 min	**−0.07 people**

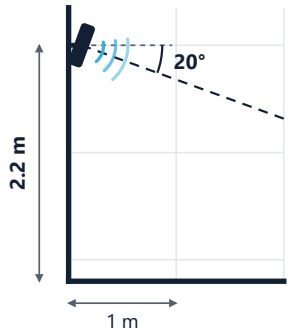
These are the results of this test, not a performance guarantee. In another room, or with another sensor mount, configuration or scenario, results may differ.

How we tested

TOP VIEW



SIDE VIEW



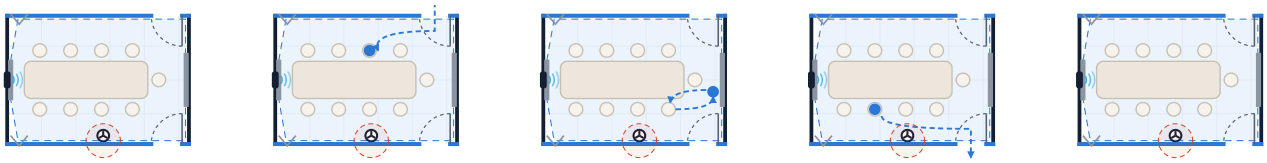
LEGEND

- A212 sensor
- Detection area
- Exclusion zone
- Person
- Glass wall
- Door
- Standing fan
- Curtain

Setup

Room	Conference room, 3.8 × 5.3 m. A standing fan runs at (1.8, 2.8) m the whole time.
Hardware	XE212 (A2 evaluation kit)
Ground truth	People in the detection area, annotated per radar frame from a synchronised camera video.
Software	*Presence Tracking Wall Mount* reference application in Exploration Tool v8.0.0. Default configuration (Exploration Tool preset) with the below modifications:
Sensor installation	2.2 m above the floor, tilted 20° down.
Detection area	−1.8 to 1.8 m in x, 0.1 to 5.2 m in y; −80° to 80° azimuth, −30° to 30° elevation. We recommend a margin of about 10 cm between the detection area and the walls for best performance.
Exclusion zones	x = 1.8 m, y = 2.8 m, radius 0.5 m (fan position, detections inside this circle are ignored). Place an exclusion zone wherever a stationary object that moves is detected as a person, with a radius large enough to cover all of its detections.

Test procedure



1. **Empty room**
   About 10 s, nobody in the room, fan running (it runs the whole test).
2. **Enter and sit**
   1 to 5 people walk in one at a time, ≥ 2 s apart, walk to a chair and sit down.
3. **Whiteboard**
   After ~30 s, one person walks to the whiteboard, writes something and sits down again.
4. **Leave**
   After another ~30 s, people leave one at a time, ≥ 2 s apart.
5. **Empty room**
   About 20 s, nobody in the room after the last person has left, fan running.

Run the same test XE212 (A2 evaluation kit) · *Presence Tracking Wall Mount* reference application in Exploration Tool

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