

Analysis Report



Data

Test name:

2019-10_INT_21_KITS_ISGLOBAL_OUTDOOR

Number of devices tested:

28

Test dates:

2019-10-17 02:00:00+02:00 - None

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Disclaimer

The methods used in this analysis are subject to the low amount of devices tested, and in general, a *common sense* approach is applied. This means that the plots indicate only trends and highlight some (but not all) potential faulty devices.

Below, the confidence intervals used are those of the normal distribution (meaningful for sample numbers >30) and of the t-student distribution.

Conclusions are derived by analysing the data further and testing the devices for longer periods if needed. Please, also note that statistical significance cannot be inferred from these amounts of devices, so some assumptions for normality have to be accepted. Comments and further discussion are always welcome.

Finally, the individual sensors components integrated in the Smart Citizen hardware have their own accuracies and dispersions, for which Smart Citizen cannot assume any liability other than trying to work with the most appropriate selection. The tests we perform are aimed to determine and assume any failures in the sensors and their integration within the Smart Citizen hardware. For more information, please check the [official documentation](#) and the datasheets of each of the sensors.

Warnings

All devices show similar amounts of data. No data loss concern

Conclusions

- Sensor from previous iterations: 10167, 10173, 10174
- PM: 10320, 10324, 10331, 10317 and 10174 show erratic PM sensor behaviour. Replaced and tested for longer (from 2019-10-28 14h to end)
- From these replaced kits, the results are:
 - 10320: OK
 - 10324: OK
 - 10174: OK
 - 10317 - Replaced again 29/10 at 19h
 - 10331: OK
- eCO2: 10167, 10174 (two sensors from previous batch) take some time to stabilise CO2 readings. When done so, they match the rest of the batch
- Temperature and humidity: sensor 10321 was disconnected from 2019-10-18 - Readings match
- One sensor from this batch is replaced by another due to an urgent delivery for another project. The sensor 10310 is out, and the 10388 in.
- One extra sensor is added from previous tested batches (9974)

Time Series Plots

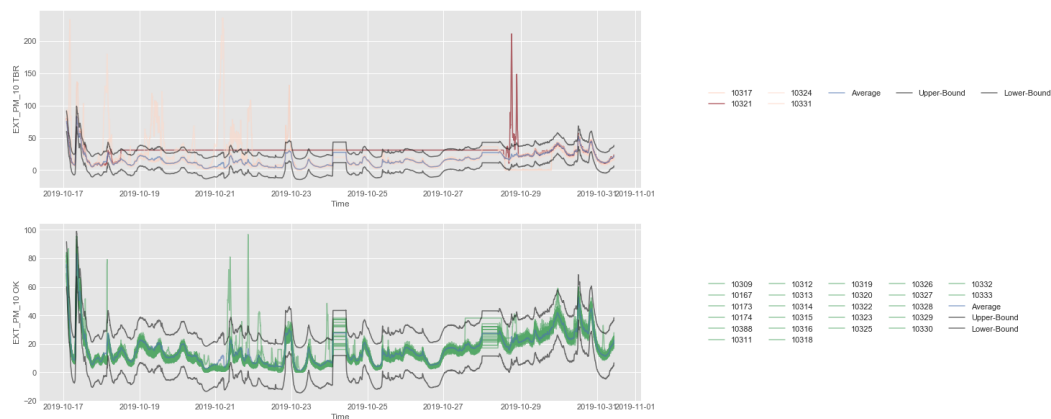
Min Date available: 2019-10-17 02:00:00+02:00

Max Date available: 2019-10-31 10:43:00+01:00

(1/10) - EXT_PM_10

Using t-student Distribution

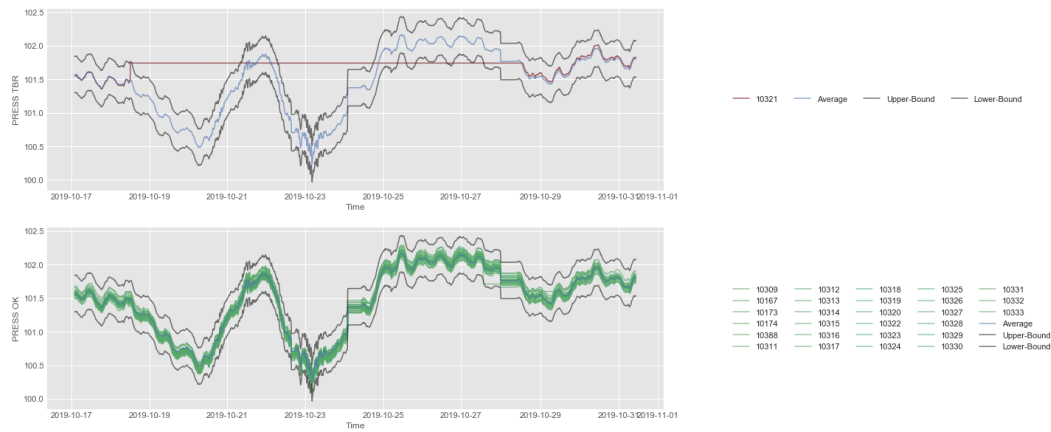
WARNING: Device 10317 out of 3% limit - 9.4% out
WARNING: Device 10321 out of 3% limit - 46.6% out
WARNING: Device 10324 out of 3% limit - 7.1% out
WARNING: Device 10331 out of 3% limit - 7.9% out



(2/10) - PRESS

Using t-student Distribution

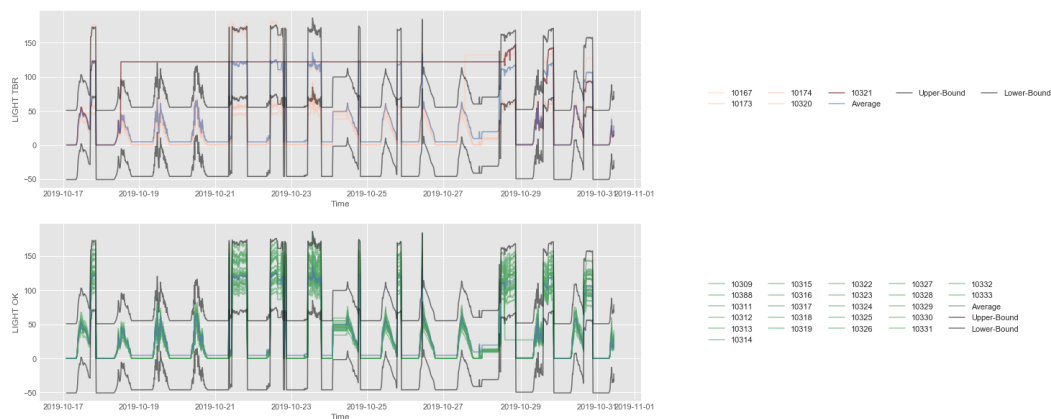
WARNING: Device 10321 out of 3% limit - 48.9% out



(3/10) - LIGHT

Using t-student Distribution

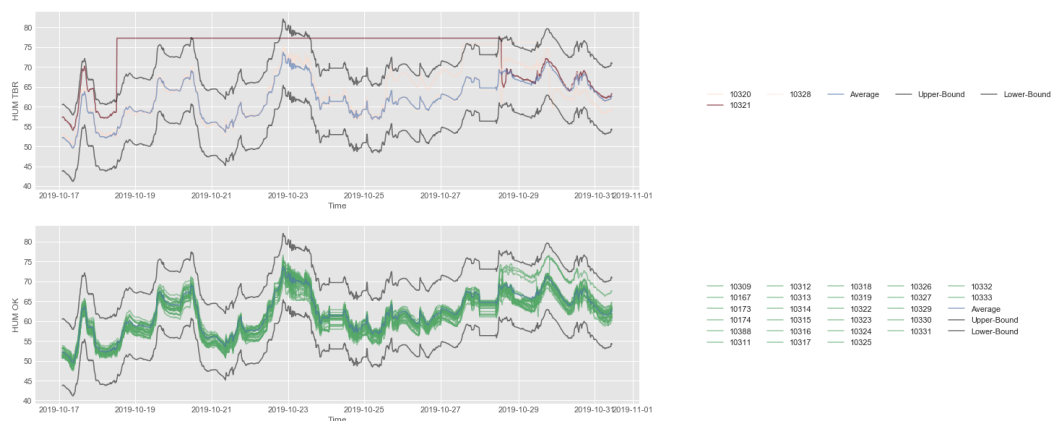
WARNING: Device 10167 out of 3% limit - 8.6% out
 WARNING: Device 10173 out of 3% limit - 10.7% out
 WARNING: Device 10174 out of 3% limit - 12.0% out
 WARNING: Device 10320 out of 3% limit - 9.6% out
 WARNING: Device 10321 out of 3% limit - 60.1% out



(4/10) - HUM

Using t-student Distribution

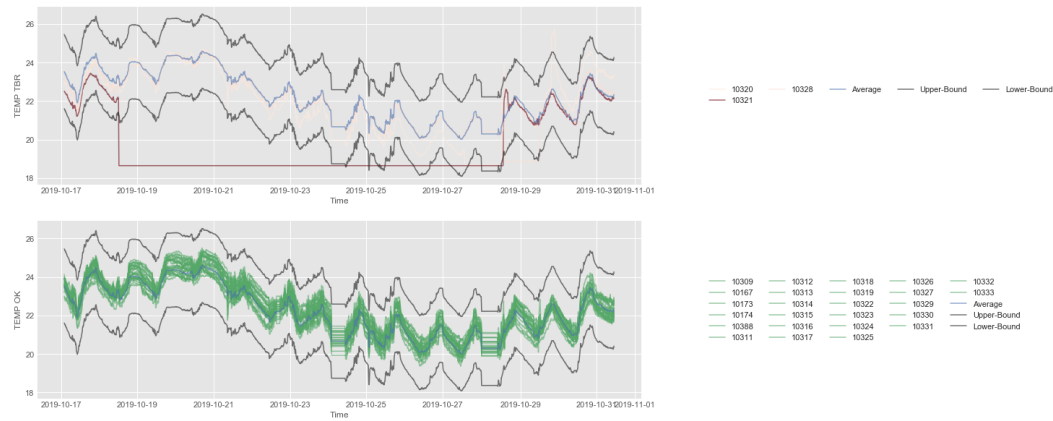
WARNING: Device 10320 out of 3% limit - 6.9% out
 WARNING: Device 10321 out of 3% limit - 64.3% out
 WARNING: Device 10328 out of 3% limit - 4.5% out



(5/10) - TEMP

Using t-student Distribution

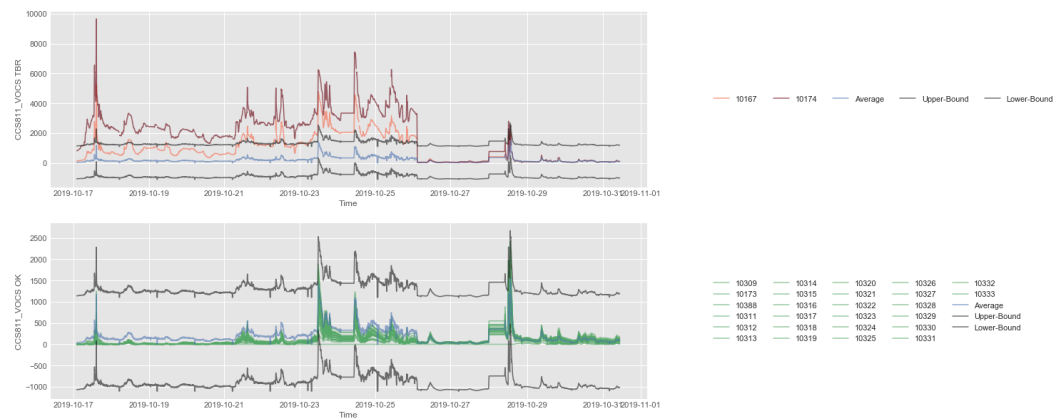
WARNING: Device 10320 out of 3% limit - 3.5% out
WARNING: Device 10321 out of 3% limit - 58.9% out
WARNING: Device 10328 out of 3% limit - 6.3% out



(6/10) - CCS811_VOCS

Using t-student Distribution

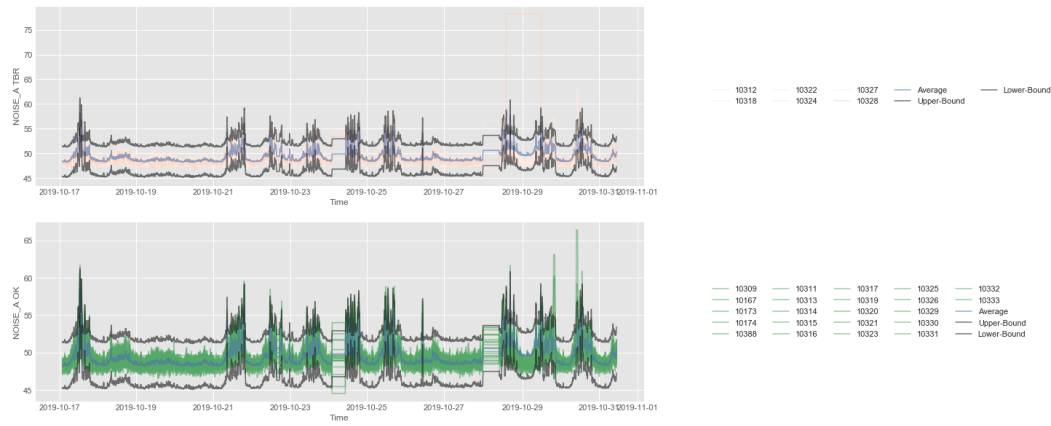
WARNING: Device 10167 out of 3% limit - 25.9% out
WARNING: Device 10174 out of 3% limit - 60.5% out



(7/10) - NOISE_A

Using t-student Distribution

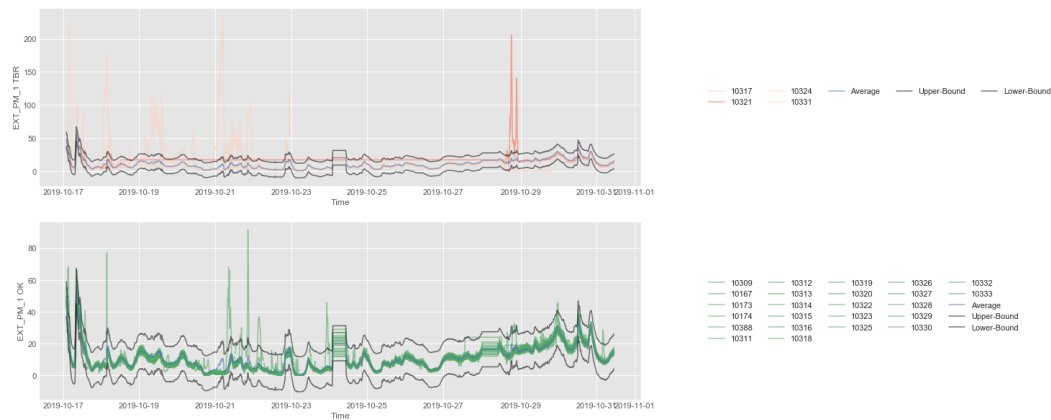
WARNING: Device 10312 out of 3% limit - 3.0% out
WARNING: Device 10318 out of 3% limit - 3.0% out
WARNING: Device 10322 out of 3% limit - 3.1% out
WARNING: Device 10324 out of 3% limit - 3.3% out
WARNING: Device 10327 out of 3% limit - 3.1% out
WARNING: Device 10328 out of 3% limit - 8.9% out



(8/10) - EXT_PM_1

Using t-student Distribution

WARNING: Device 10317 out of 3% limit - 9.3% out
 WARNING: Device 10321 out of 3% limit - 24.4% out
 WARNING: Device 10324 out of 3% limit - 8.7% out
 WARNING: Device 10331 out of 3% limit - 8.4% out



(9/10) - EXT_PM_25

Using t-student Distribution

WARNING: Device 10317 out of 3% limit - 9.4% out
 WARNING: Device 10320 out of 3% limit - 3.1% out
 WARNING: Device 10321 out of 3% limit - 39.8% out
 WARNING: Device 10324 out of 3% limit - 7.8% out
 WARNING: Device 10331 out of 3% limit - 8.0% out



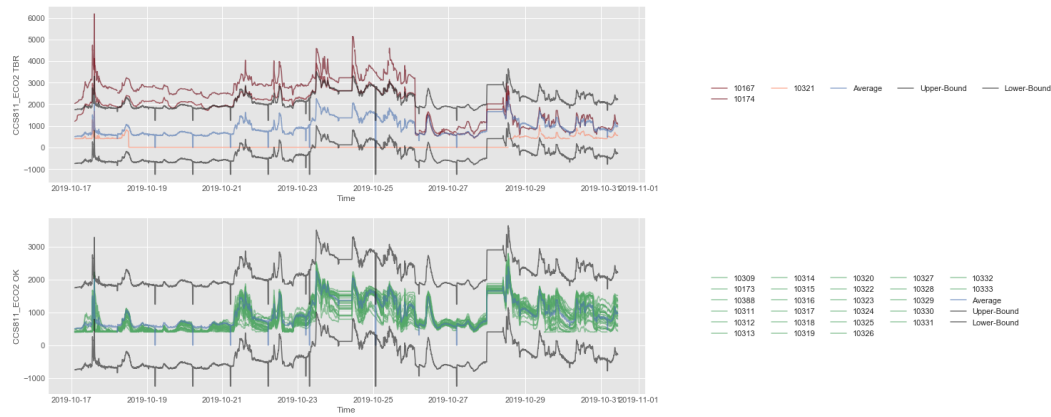
(10/10) - CCS811_ECO2

Using t-student Distribution

WARNING: Device 10167 out of 3% limit - 48.4% out

WARNING: Device 10174 out of 3% limit - 61.5% out

WARNING: Device 10321 out of 3% limit - 20.7% out



Summary

	Dispersion	Total Number of devices	TBR Number of devices	OK Number of devices
EXT_PM_10	5.741838	28.0	4.0	24.0
PRESS	0.098176	28.0	1.0	27.0
LIGHT	18.353811	28.0	5.0	23.0
HUM	3.025744	28.0	3.0	25.0
TEMP	0.697115	28.0	3.0	25.0
CCS811_VOCS	398.825901	28.0	2.0	26.0
NOISE_A	1.109071	28.0	6.0	22.0
EXT_PM_1	3.993156	28.0	4.0	24.0
EXT_PM_25	4.949502	28.0	5.0	23.0
CCS811_ECO2	452.093823	28.0	3.0	25.0
BATT	NaN	NaN	NaN	NaN