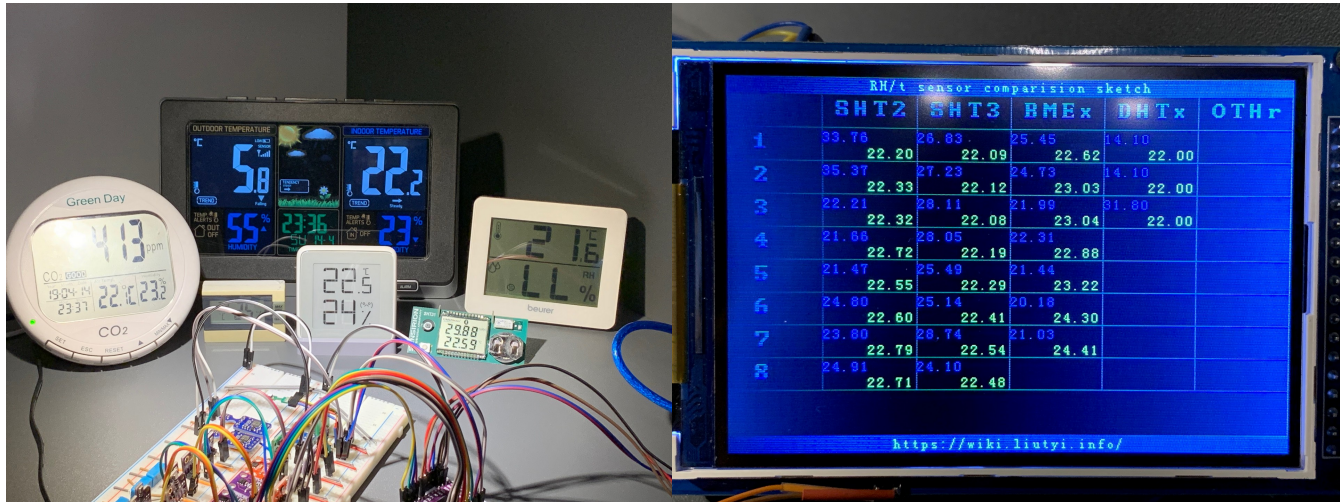


v1 draft multiple humidity sensors comparision

Multiple i2c sensors comparison using [arduino](#) with some consumer devices included in test results. Using SHT85 and GreenDay as "temporary reference devices".



Multiplexer Lines

Line	0x40	0x44	0x5c	0x77	0x41	0x45	0x76	0x70
A	SHT21	SHT30	DHT12	BME680				
B	SHT21	SHT30	DHT12	BME680				
C	HTU21D	SHT31	DHT12	BME280				
D	HTU21D	SHT31	-	BME280				
E	HTU21D	SHT35	-	BME280				
F	SHT20	SHT35	-	BME680				
G	SHT21	SHT31	-	BME680				
H	SHT25	SHT85	-	-				

i2c Scan

```
Port:0 i2c addr 64 i2c addr 68 i2c addr 119
Port:1 i2c addr 64 i2c addr 68 i2c addr 119
Port:2 i2c addr 64 i2c addr 68 i2c addr 118
Port:3 i2c addr 64 i2c addr 68 i2c addr 118
Port:4 i2c addr 64 i2c addr 68 i2c addr 118
Port:5 i2c addr 64 i2c addr 68 i2c addr 92 i2c addr 118
Port:6 i2c addr 64 i2c addr 68 i2c addr 92 i2c addr 118
Port:7 i2c addr 64 i2c addr 68 i2c addr 92
```

Hardware in use

1. [Mega2560 keyestudio](#)
2. [LCD 3.5 inch Arduino Mega2560](#)
3. [DFRobot i2c multiplexer](#) (or compatible [ShangSi MoudleCX TCA9548A i2c multiplexer](#))
4. [Sensors](#) (DHT11, SHT21, SHT20, SHT25, HTU21D, SHT30, SHT31, SHT35, SHT85, BME280, BME680)

Draft sketch

github code: <https://github.com/liutyi/arduino-humidity-sensors-test/blob/master/mega-sd-tft-480x320-i2c-sensors.ino>

Libraries

- UTFT
- Sodaq_SHT2x
- arduino-sht
- DHT12
- Adafruit BME680
- Adafruit BME280
- DFRobot_I2C_Multiplexer

Screen example

RH/t sensor comparision sketch					
	SHT2	SHT3	BMEx	DHTx	OTHR
1	37.04 22.60	31.94 22.53	30.83 22.70	20.10 22.60	
2	38.44 22.67	32.26 22.57	29.92 23.09	20.10 22.60	
3	27.19 22.62	33.14 22.50	26.75 23.34	34.20 22.50	
4	26.84 22.91	33.22 22.54	27.16 23.10		
5	27.00 22.68	30.92 22.49	26.28 23.37		
6	30.19 22.69	30.83 22.52	24.54 24.06		
7	29.51 22.65	34.35 22.60	25.83 23.99		
8	30.28 22.77	29.34 22.35			
https://wiki.liutyi.info/					

~24% RH

~29% RH

~42% RH

Device/sensor	t	RH
Green Day	22.1	23.1%
Xiaomi MHO-C201	22.5	24%
Senserion S.G.	22.59	29.88%
Beurer HM16	21.6	LOW
TFA Spring	22.2	23%
TFA t/RH	22	25%
SHT21 (1)	22.20	33.76%
SHT21 (1)	22.33	35.37%
HTU21D (1)	22.32	22.21%

Device/sensor	t	RH
Green Day	22.1	29.4%
Xiaomi MHO-C201	22.1	31%
Senserion S.G.	22.14	35.58%
Beurer HM16	21.6	LOW
TFA Spring	22.2	28%
TFA t/RH	22	28%
SHT21 (1)	22.13	37.56%
SHT21 (1)	22.21	38.98%
HTU21D (1)	22.10	28.39%

Device/sensor	t	RH
Green Day	22.3	42.4%
Xiaomi MHO-C201	22.5	41%
Senserion S.G.	22.66	46.24%
Beurer HM16	21.8	30%
TFA Spring	22.3	38%
TFA t/RH	22	34%
SHT21 (1)	22.39	46.57%
SHT21 (1)	22.46	47.14%
HTU21D (1)	22.38	42.10%

HTU21D (1)	22.72	21.66%
HTU21D (2)	22.55	21.47%
SHT20	22.60	24.80%
SHT21 (2)	22.79	23.80%
SHT25	22.71	24.91%
SHT30	22.09	26.83%
SHT30	22.12	27.23%
SHT31	22.08	28.11%
SHT31	22.19	28.05%
SHT35	22.29	25.49%
SHT35	22.41	25.14%
SHT31 (2)	22.54	28.74%
SHT85	22.48	24.10%
BME680	22.62	25.45%
BME680	23.03	24.73%
BME280	23.04	21.99%
BME280	22.88	22.31%
BME280	23.22	21.44%
BME680 (2)	24.30	20.18%
BME680 (2)	24.41	21.03%
DHT12	22.00	14.10%
DHT12	22.00	14.10%
DHT12	22.00	31.80%

HTU21D (1)	22.39	28.08%
HTU21D (2)	22.22	28.14%
SHT20	22.28	31.06%
SHT21 (2)	22.17	30.45%
SHT25	22.33	31.17%
SHT30	22.02	32.54%
SHT30	22.09	33.10%
SHT31	21.99	34.06%
SHT31	21.99	34.11%
SHT35	22.04	31.87%
SHT35	22.14	31.53%
SHT31 (2)	22.09	35.21%
SHT85	22.00	30.05%
BME680	22.55	31.35%
BME680	22.88	30.60%
BME280	22.90	27.56%
BME280	22.67	27.99%
BME280	22.94	27.10%
BME680 (2)	23.74	25.61%
BME680 (2)	24.05	25.82%
DHT12	22.10	22.40%
DHT12	22.10	22.40%
DHT12	21.90	34.50%

HTU21D (1)	22.75	41.62%
HTU21D (2)	22.49	41.64%
SHT20	22.58	43.45%
SHT21 (2)	22.64	42.40%
SHT25	22.72	42.95%
SHT30	22.51	44.97%
SHT30	22.53	45.42%
SHT31	22.40	46.15%
SHT31	22.47	46.14%
SHT35	22.55	44.30%
SHT35	22.61	44.02%
SHT31 (2)	22.63	47.17%
SHT85	22.74	41.88%
BME680	22.64	44.04%
BME680	22.93	42.72%
BME280	23.08	40.17%
BME280	22.85	40.79%
BME280	23.11	39.61%
BME680 (2)	24.37	34.78%
BME680 (2)	23.80	36.54%
DHT12	22.30	36.50%
DHT12	22.30	36.50%
DHT12	21.90	43.00%

Draft Results:

Looks like **BME680 (2)** module got some minor internal heating that makes t measurement higher and RH measurements lower. Will probably try to place it with sensor at the bottom next time (with updated test setup). **DHT12** is (as expected) not good at low humidity. Have no explanation of why GY-213V-SHT21 is that inaccurate. Surprized with relatively cheap HTU21 (that is compatible to SHT2x and may be replaced without firmware change) perform so good.