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How to design and test your own low-cost air quality monitor: Part II

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In the framework of the IoT4AQ project, investigations are being carried out to develop inexpensive and climate adapted air quality monitor. Local parameters including dust concentration levels, weather data, mobile communications systems, and electrical grids have been analysed. Geolocation, data storage and autonomous operation options were studied. IoT components including LCD screens, LEDs, RTC modules, GPRS modules, microcontrollers (Arduino, Raspberry Pi, ESP32, etc.) and various sensors (dust, gas, temperature, relative humidity, etc.) available on market have been assessed and used. The basic design proposed here integrates an Arduino Uno 328 micro-CPU, a Sim card SIM900A and a dust sensor, the PPD42NS. It features low power consumption, low cost (˜100 €), light weight (˜200 g), integrates a battery for autonomous operation and can accommodate more settings. It has been tested and calibrated using a reference device.

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