

Activity of the Central Office of Measures in Poland during COVID-19 pandemic.

From the very beginning of COVID-19 pandemic GUM provides necessary services, such as calibration, production of reference materials, tests for legal metrology and other key metrological activities. These tasks were carried out in laboratories, in a limited composition and with necessary precautions. On the other hand, works that do not require physical presence at the office of the office were carried out as the part of remote work since the introduction of the epidemic state. We are flexible and our mission is to provide clients with uninterrupted access to our services ...

The priority for GUM is the implementation of services necessary from the economic and industry point of view: calibration, production of certified reference materials, testing of measuring instruments for the purposes of legal metrology and for state entities (Sanepid - Sanitary Inspection), as well as maintenance and distribution of official time in the territory of the Republic of Poland.

Besides all ordinary activities, GUM has been involved in some activities, targeted to COVID-19 fighting:

Works on the contactless stethoscope prototype - cooperation with CBK PAN (Center for Space Research of the Polish Academy for Sciences).

The solution is already implemented and used in GUM for harmonic measurements in high voltage power networks and can be further used e.g. for listening to the lungs at a distance. Both tests, both harmonic and lung, cover the same low frequency range. Equipment: an electret microphone with an amplifier from components of the AVT 1721 set is assembled in the stethoscope. It is a universal microphone amplifier designed to work with popular, two-ended electret microphones. The use of SMD components means that the system is assembled on a miniature circuit board and can be built into virtually any audio device or become part of any new design. This layout was described in the journal *Elektronika for All* (1.2013). The program for recording and analyzing sounds is implemented in the LabVIEW environment. The assumption is: if the doctor's ear can hear even low murmurs of the lungs or heart, then he will definitely hear these sounds electret microphone with amplifier. The main advantage of this solution is that the doctor does not have to use a coverall. The test can be carried out at a distance or behind a special curtain. It would be a very valuable proof of concept to be tested by doctors to evaluate the idea.