



November 28, 2018

Calibration Tests / Validation Experiments of CASTLE Advanced Technologies and Systems (CATS) product AUM – An indigenously designed and developed Real Time Remote Monitoring Photonic System for Air Quality (Pollution) Monitoring.

**EffecTech, UK is a global leader in Gas Measurements with ISO 17025 accreditation for Calibration and Testing by UKAS, UK.** EffecTech Gases Pvt Ltd. in Tarapore, Maharashtra is a part of the EffecTech Group of Companies.

CATS, a technology company has indigenously designed and developed **AUM (Air Unique-quality Monitoring)** a novel photonic system capable of remotely monitoring the various air quality parameters in real time.

CATS successfully conducted calibration tests of their real time remote monitoring photonic system for various reference gases at different concentrations, provided by EffecTech Pvt Ltd. on the November 27<sup>th</sup> and 28<sup>th</sup> of 2018 at the EffecTech Gases Pvt Ltd Laboratories in Tarapore, India - along with cross validation by standard equipment like Chemo-Luminescence Gas Analyser for NO/NO<sub>x</sub>, NDIR Gas Analyser for CO/CO<sub>2</sub>/CH<sub>4</sub>, Paramagnetic Analyser for O<sub>2</sub> and UV Gas Analyser for SO<sub>2</sub>.

Standard reference gases were appropriately diluted with N<sub>2</sub> to achieve different concentrations of gases for calibrations, testing and evaluation. The following standard reference gases were provided by EffecTech for calibrations and testing.

Standard Air: Mixture of 21% of pure Oxygen with 79% Nitrogen

CO – 200 ppm + balance N<sub>2</sub>

CO<sub>2</sub> – 100 ppm + balance N<sub>2</sub>

SO<sub>2</sub> – 100 ppm + balance N<sub>2</sub>

NO – 150 ppm + balance N<sub>2</sub>

NO<sub>2</sub> – 120 ppm + balance air

VOCs – 100 ppm each of, Benzene + Toluene + Ethyl Benzene + o-Xylene + m-Xylene + balance N<sub>2</sub>

**This is to certify that the necessary calibrations and validations were successfully conducted by CATS for their real time remote monitoring photonic system.**

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