



NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

FINAL

**GUIDELINES FOR DESIGNATION OF VEHICLE EXHAUST EMISSION TESTING
CENTRES**

JUNE, 2023

Foreword

The Government of Kenya is committed to ensuring a clean and healthy environment for its citizenry as enshrined in the Constitution of Kenya, 2010 and the Environmental Management and Coordination Act, 1999.

As Kenya develops guided by Vision 2030, it only remains sustainable if the wellbeing of the people and quality of the environment is enhanced. A healthy and productive population is important in supporting the achievement of Vision 2030. To this end, the Government has formulated and operationalized the Environmental Management and Coordination (Air Quality) Regulations, 2014 to control air pollution noting the rapid industrialization and economic growth in the country.

The Air Quality Regulations among other interventions provide for control of emissions from mobile sources (vehicles, aircrafts, ships and trains). The Regulations requires commercial vehicles to undergo annual emission testing while private vehicles to undergo biennial emission testing in accordance with East African Standard (KS EAS) 1047.

In order to operationalize the emission testing regime, NEMA through a multiagency taskforce has developed the Criteria for Designation of Vehicle Exhaust Emission Testing Centres. The Criteria provides basic requirements for the centres, testing equipment and recognized testing procedures in accordance with KS 2499, KS EAS 1047 and internationally recognized best practices. It is envisaged that development of the Criteria will facilitate emission testing and monitoring in the country and go along away in improving the quality of our environment.

I recognize the efforts of NEMA and the lead agencies as stewards in safeguarding the quality of the environment for a healthy population.

This guidance may be updated from time to time as the vehicle emissions testing and monitoring programs evolve with increased knowledge, technological advancement and the experience of the users.

Mr. Emilio N. Mugo
Chairman-NEMA Board of Management

Acknowledgement

This Guidelines for Designation of Motor Vehicle Emission Testing Centres was developed as part of the strategies to regulate emissions from mobile sources of air pollution.

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I wish to extend my sincere appreciation to the NEMA Board of Management and NEMA Management who offered guidance and financial support throughout the entire process.

I urge the designated centres to make use of the Guidelines provided to strengthen vehicle emission testing and monitoring program within the country.

Mamo B. Mamo, EBS
Director General

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Abbreviations and Acronyms

CO ₂	Carbon dioxide
CO	Carbon monoxide
DOSHS	Directorate of Occupational Safety and Health Services
EAS	East African Standard
EMCA, 1999	Environmental Management and Coordination Act, 1999
EPRA	Energy and Petroleum Regulatory Authority
HC	Hydrocarbons
IBPs	International Best Practice
IRA	Insurance Regulatory Authority
ISO	International Standards Organization
KAA	Kenya Airports Authority
KCAA	Kenya Civil Aviation Authority
KEBS	Kenya Bureau of Standards
KMA	Kenya Maritime Authority
KNBS	Kenya National Bureau of Statistics
KPA	Kenya Ports Authority
KRA	Kenya Revenue Authority
KRC	Kenya Railways Corporation
KS	Kenya Standard
LPG	Liquified Petroleum Gas
NEMA	National Environment Management Authority
NHIF	National Hospital Insurance Fund
NSSF	National Social Security Fund
NTSA	National Transport and Safety Authority
NO _x	Nitrogen Oxides
OBD II	On - Board Diagnostic II
OSHA	Occupational Safety & Health Act
PM	Particulate Matter
SO _x ,	Sulphur Oxides
UNEP	United Nations Environmental Programme
WHO	World Health Organization

Operational Definition of Terms

Authority	Means National Environment Management Authority established under section 7 of EMCA, 1999.
Equipment	Means Tool or devise used for testing emissions from mobile sources
Internationally Recognized Best Practice	Means a document, method, procedure, standard, rules or guidelines that have been developed through the consensus of experts from different countries, is approved and published by a globally recognized body, applied worldwide and is approved by NEMA in consultation with KEBS
Facility	Means designated emissions testing centres for motor vehicles, trucks, motor cycles, three-wheelers (<i>tuk tuks</i>), ships, boats, trains, aircrafts, and mobile cranes among others. This may be stationary or mobile.

1.0 Introduction

Air pollution has become a global challenge as the world is rapidly industrializing with expanding economies as well as a growing population. The problem is worse in developing countries and has posed more health related challenges due to technical and technological gaps. Almost 99% of the global population breathe air that is beyond World Health Organization (WHO) guideline limits and contains high level of pollutants with low and medium income countries suffering from highest exposures (WHO, 2023).

Several studies have shown that air pollution is increasing in Kenya and is contributing to health related complications and premature deaths. According to WHO, approximately 19,000 people die each year in Kenya due to air pollution and the United Nations Environment Program (UNEP) cites 70 per cent pollution levels in Nairobi . The Economic Survey report, 2022 indicated increasing cases of diseases of the respiratory system largely associated with air pollution. According to the statistics, cases handled in 2020 were 16, 562, 227 while in 2021, reported cases were 20, 613,455 indicating an increase by 21.9% (Kenya National Bureau of Statistics, 2022).

Kenya has made commitment to meet the Sustainable Development Goals more specifically on good health and well-being; affordable and clean energy; and climate action. In response as part her commitment and in addressing air pollution in Kenya, the government gazetted the Environmental Management and Coordination (Air Quality) Regulations, 2014 which outlines requirements for stationary and mobile sources of emissions. Further, the Regulations provides standards for priority air pollutants that such controlled facilities must comply with. In addressing pollution from mobile sources, the Regulations make reference to Kenya Standards 1515 that provide vehicular exhaust emission limits. These standards have since been harmonized with other East African member states as KS EAS 1047 that provide the limits from vehicular emissions.

The Authority recognizes the key role of private sector in this process and has considered the designation of qualified firms to undertake emission testing.

As part of the strategies to regulate emission from vehicular sources, NEMA through a Multiagency Taskforce has developed the Guidelines for Designation of Emission Testing Centres for Vehicles that will guide emission testing in Kenya. This Guidelines is applicable to all vehicle categories dependent on gasoline (petroleum and liquefied petroleum gas) and diesel in accordance with KS EAS 1047.

The formulation of this Guidelines has been informed by the provisions and requirements of the following legislations and Kenya Standards namely; the Environmental Management and Coordination Act, 1999; Environmental Management

and Coordination (Air Quality) Regulations, 2014; KS 2499-Road Vehicles-Inspection Centre Evaluation-Code of Practice; KS1515- Road Vehicles-Inspection of road vehicles- Code of practice; and KS EAS 1047-Air quality — Vehicular exhaust emission limits.

The Authority in consultation with the relevant lead agencies shall exercise its regulatory mandate of compliance monitoring and enforcement to ensure quality control and quality assurance.

2.0 Emission Testing Centre

The designated emission testing centre will meet basic requirements as outlined below. These include;

2.1 - Work Area of the Emission Testing Centre

The categorization of the work area of the facility shall be guided by KS 2499 and internationally recognized best practices.

2.2 Scope

The capacity of the vehicle emission testing centre shall be as defined in the scope of KS 2499.

- i. Grade A facility has capacity for all motor vehicles categories
- ii. Grade B facility has capacity for motor vehicles other than goods vehicles or buses of gross vehicle mass exceeding 3.5 Tonnes
- iii. Grade C facility has capacity for examination and testing of motor cycles and three-wheelers
- iv. Mobile emission testing facility as applicable depending on the locality and technological advancement.

2.3 Parameters for Vehicle Emission Testing

In accordance with the Environmental Management and Coordination (Air Quality) Regulations, 2014 the Emission Testing Centre will undertake measurements for priority air pollutants namely;

- i. Carbon monoxide (CO)
- ii. Carbon dioxide (CO₂)
- iii. Nitrogen Oxides (NO_x)
- iv. Sulphur Oxides (SO_x)
- v. Hydrocarbons (C_xH_y)
- vi. Particulate Matter (PM_{2.5} & PM₁₀)
- vii. Volatile Organic Compounds (VOCs)
- viii. Methane (CH₄)

2.4 Equipment for Vehicle Emission Testing

As a minimum, emission testing equipment shall meet the requirements of KS 2499 and internationally recognized best practices. The range of measurement should

conform to the national limits stipulated under section 4.2 of the KS EAS 1047. The emission testing equipment should incorporate web - enabled features. The equipment should be type approved by a nationally recognized body in the country of manufacture.

2.5 Calibration of Equipment

Calibration will be done in accordance with manufacturer's operating manual. The equipment shall be calibrated using a reference standard produced in accordance with ISO 17025.

3.0 Quality Management System

This shall be done in accordance with section 5 of KS 2499 and internationally recognized best practices.

4.0 Exhaust Emission Limits

The different types and categories of vehicles shall comply with exhaust emission limits as prescribed in section 4.2 of KS EAS 1047 for referencing the exhaust emission measurements.

5.0 Test Procedure for All Vehicle Categories

The KS EAS 1047 prescribes test procedures for new vehicles and motor cycles under its annex C and those for imported, used and in use gasoline and LPG powered vehicles under annex D. It also prescribes test procedures for imported, used and in use diesel powered vehicles under annex E. The test procedures for in use motor cycles.

The following test procedures shall be applicable;

- i. Chassis Dynamometer Test – Analyses the emissions of a specific vehicle, assesses the emission control performance and tests the emissions of different types of fuel. This test procedure is applicable to all vehicle categories.
- ii. On-road Tail Pipe Measurement or Real Driving Environment – Tail pipe test procedure is applicable for all vehicle categories and performed under actual road conditions using a portable emission monitoring system.
- iii. On-Board Diagnostics System (OBD II) system check – Computer controlled system installed in modern cars that provide continuous monitoring of emissions.

Where there are discrepancies with OBD II tests, tailpipe test results shall be used as a confirmatory test procedure.

The emission testing centres should demonstrate professional competency with the above mentioned test procedures with reference to section 4.2 of the KS EAS 1047.

6.0 Record of Decision

The Record of Decisions shall take the following forms;

- i. Issuance of a compliance certificate for the compliant vehicles
- ii. Issuance of an improvement notice for the non-compliant vehicles in which the compliance period is clearly prescribed
- iii. Declaration of the vehicle as environmentally unfit

- iv. Notification for deregistration and recommendation for scrappage

7.0 Data Sharing and Storage

The emission testing facilities should have a system, which will transmit real time emission data to NEMA. Data shall be managed and processed in line with the Data Protection Act, 2019. The facilities shall maintain and submit results of vehicle tested and submit the same to the Authority on a monthly basis or as may be prescribed when deemed necessary. The data shall include the test results for parameters indicated in sub section 2.3 of this Guidelines, the compliance status with the emission limits and the recommended Record of Decision.

8.0 Personnel

Requirements for personnel will be guided by section 5.5 of KS 2499 and internationally recognized best practices with a view to reorienting the centre's personnel to emission testing expertise.

8.1 Emissions Assessor

The Centre will be operated by at least two (2) competent emissions assessors that meet the basic requirements as outlined herein;

a) Qualification of Emissions Assessor

In addition to KS 2499, the Emissions Assessors will be required to meet the following minimum conditions outlined below;

- i. have a diploma or higher qualification in;
 - a) Mechanical engineering or its equivalent with experience working with automobiles; and
 - b) Chemistry or its equivalent with relevant experience in emissions testing and analysis
- ii. training in environmental health and safety is an added advantage
- iii. training in customer service skills and public relations skills is an added advantage
- iv. proficiency on basic computer programmes and functions with emphasis on Emission data analysis, interpretation and data management
- v. basic knowledge on;
 - a. emissions control devices functions, configuration, identification and inspection
 - b. test equipment operation, calibration and maintenance
 - c. quality control procedures and their purpose

- d. personal safety and health issues related to the inspection process
 - e. the relevant national legislation and standards (EMCA, 1999; Energy Act, 2019; Merchant and Shipping Act, Cap 389; Kenya Railways Corporation Act, Cap 397 (Rev, 2012); NTSA Act, 2012; and Traffic Act, Cap 403, OSHA, 2007), KS 1515 and KS 2499 and OBD II protocols relevant for motor vehicle emission testing.
- vi. possess a valid certificate of good conduct;
 - vii. have certificate of medical fitness from DOSHS
 - viii. possess a valid driving license of at least class E;

9.0 Compliance and Enforcement

The centres shall:

- I. obtain an operational licence from the Authority after every two years;
- II. develop and implement Standard Operating Procedures;
- III. adhere to the Code of Practice as prescribed by the Authority;
- IV. be subjected to periodic proficiency tests as guided by the Authority;
- V. be subjected to surveillance, compliance evaluation inspections and control audits by the Authority; and
- VI. comply with improvement orders any other lawful orders issued by the Authority.