Appendix `K'

SPECIFICATION FOR EXPLOSIVE TRACE DETECTORS (ETD).

1. Introduction

The Explosive Trace Detectors are designed to detect nanogram (ng) level of explosive traces. The swipe or vapour mode may be used for collection of samples and analysis. The equipment selected for airport environment shall meet the minimum specifications as given below: The specifications is applicable for both marked and unmarked explosives. The buyer may opt for a better technology and equipment as per their requirement.

1. 1	Detection Capacity	:	Detect explosives such as RDX, PETN, TNT, Dynamite, SEMTEX, C4, HMX, and Ammonium Nitrate etc. with programmable Detection capability.
1.2.	Detection Technology	:	Based on the latest technology in explosive detection.
1.3.	Sensitivity	:	Capable of detection Explosive minimum of 100 ng in operational/ laboratory conditions.
1.4.	Selectivity	:	<2% typical false alarm rate.
1.5.	Analysis Time	:	Approximate 10 Sec per sample.
1.6.	Sample collection		i) Surface wipe for trace particle/using filter/vacuum pump unit. Ii) Air collection for vapour
1.7.	Warm up tome	:	Approx. 20-30 minutes.
1.8.	Power		110/220 V, 50/50 Hz. 30w, Auto Sensing. 12 volt DC
1.9.	Detection mode	:	Explosive mode. Optional - narcotic
1.10.	Signal processing		i) Variable integration time. ii) Plasmagram component iii) Recognition of multiple explosives in particulate /vapour mode.
1.11.	Weight (Hand Unit)	:	Less than 40 kg. (Portable unit)
1.12.	Calibration	:	Automatic calibration.

2. Stages of evaluation

2.1 The test shall be conducted in different stages starting from checking configuration data on technical parameters, system calibration, data collection etc. The proper record of details should be maintained. These stages are:

- Configuration details– checking of technical parameters.
- Operational and environment data
- System calibration
- Threshold verification
- Test article selection
- Pretest activities
- Data collection
- Problem reporting
- Post test activities.

3. Configuration Details

3.1 The detailed unique and complete identification of the ETD system including major components shall be recorded by the committee.

a) Principle of operation
b) Model number(s) equipment tested;
c) Firmware version(s), if applicable.
d) Software version(s); and
e) Serial number(s) of equipment tested;

3.2 The test team will check the details of technical parameters claimed by suppliers are in conformity with the specification issued by the BCAS. The equipment shall meet the specification as given below.

a. Explosives detected i.e. RDX, PETN, TNT, PEK, Sheet explosives, LTPE, Ammonium Nitrate, Gelatin etc
b. Susceptibility to interference (i.e. including specific interference's tending to mask the explosive): minimum
c. Sensitivity/ sensitivity loss: Nanogram level of explosive
d. Response(s) time to the explosives: 6 seconds
e. Sampling methods: swipe and vapour mode
f. False alarm rate: less than 2 %
g. Time taken for recalibration: not more than 2 minutes
h. Warm up time: 20 to 30 minutes
i. Environmental limits: operating temperature – 20 to +50^{o}C, relative humidity 95% non-condensing.
j. Safety factors and regulations: should meet National Safety regulations
k. Human intervention requirements: minimum
l. System design overview: as per specification.
m. Response time and processing rate of the equipment: 10 sec.
n. Physical requirements; and weight less than 40 kg/ portable.
o. Functional and performance capabilities: detect service and commercial explosives as given in the specifications.
p. Supporting data regarding training, maintenance and availability of spares

3.3 Instruction manuals, operation manuals, circuit diagram, and the engineering documents must be included to assist the test and evaluation team in its evaluation of the equipment.

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