

## CONTENTS

FOREWORD .....	4
INTRODUCTION .....	6
1 Scope .....	7
2 Normative references .....	7
3 Terms and definitions .....	7
4 Test fixture and instrumentation .....	9
5 Specific requirements for equipment categories .....	11
5.1 Specific requirements for all ionization equipment .....	11
5.2 Room ionization .....	12
5.3 Laminar flow hood ionization .....	14
5.4 Work surface ionization .....	16
5.5 Compressed gas ionizers – Guns and nozzles .....	19
Annex A (informative) Theoretical background and additional information on the standard test method for the performance of ionizers .....	21
A.1 Introductory remarks .....	21
A.2 Air ions .....	21
A.3 Mobility and ion current .....	21
A.4 Neutralization current .....	21
A.5 Neutralization rate .....	22
A.6 Ion depletion and field suppression .....	22
A.7 Charged plate monitor and charge neutralization .....	22
A.8 Relationship between charged plate monitor decay time and actual object .....	23
A.9 Offset voltage .....	23
A.10 Preparation of test area .....	23
A.11 Ion transport in airflow .....	24
A.12 Obstruction of airflow around the charged plate monitor .....	24
A.13 Effect of “air blanket” .....	24
A.14 Sources of measurement error .....	25
A.14.1 Typical decay time variability .....	25
A.14.2 Plate isolation .....	25
A.14.3 Charging voltage .....	25
A.14.4 Materials near the plate .....	25
A.14.5 Other field-producing devices in test area .....	25
A.14.6 Effect of offset voltage on decay time .....	25
A.15 Importance of ionization equipment maintenance .....	26
Annex B (normative) Method of measuring the capacitance of an isolated conductive plate .....	27
B.1 Method .....	27
B.2 Equipment .....	27
B.3 Procedure .....	27
B.4 Example .....	27
B.5 Sources of error .....	28
B.5.1 Measuring equipment .....	28
B.5.2 Poor plate isolation .....	28
B.5.3 Objects in the environment .....	29
B.5.4 Stray capacitance .....	29
Annex C (informative) Safety considerations .....	30

C.1	General.....	30
C.2	Electrical.....	30
C.3	Ozone.....	30
C.4	Radioactive.....	30
C.5	X-ray.....	30
C.6	Installation .....	30
	Bibliography.....	31
	Figure 1 – Charged plate monitor components for non-contacting plate measurement .....	10
	Figure 2 – Charged plate monitor components for contacting plate measurement .....	10
	Figure 3 – Conductive plate detail for the non-contacting CPM .....	11
	Figure 4 – Conductive plate detail for the voltage follower CPM.....	11
	Figure 5 – Test locations for room ionization – AC grids and DC bar systems .....	13
	Figure 6 – Test locations for room ionization – Single polarity emitter systems .....	13
	Figure 7 – Test locations for room ionization – Dual DC line systems.....	14
	Figure 8 – Test locations for room ionization – Pulsed DC emitter systems .....	14
	Figure 9 – Test locations for vertical laminar flow hood – Top view .....	15
	Figure 10 – Test locations for vertical laminar flow hood – Side view .....	15
	Figure 11 – Test locations for horizontal laminar flow hood – Top view .....	16
	Figure 12 – Test locations for horizontal laminar flow hood – Side view .....	16
	Figure 13 – Test locations for benchtop ionizer – Top view .....	17
	Figure 14 – Test locations for benchtop ionizer – Side view .....	18
	Figure 15 – Test locations for overhead ionizer – Top view .....	18
	Figure 16 – Test locations for overhead ionizer – Side view .....	19
	Figure 17 – Test locations for compressed gas ionizer (gun or nozzle) – Side view.....	20
	Table 1 – Test set-ups and test locations/points (TP).....	12
	Table B.1 – Example measurement data .....	28