

ISO/TS 17503:2015-11 (E)

Statistical methods of uncertainty evaluation - Guidance on evaluation of uncertainty using two-factor crossed designs

Contents		Page
Foreword		iv
Introduction		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Symbols	2
5	Conduct of experiments	4
6	Preliminary review of data -- Overview	4
7	Variance components and uncertainty estimation	4
7.1	General considerations for variance components and uncertainty estimation	4
7.2	Two-way layout without replication	5
7.2.1	Design	5
7.2.2	Preliminary inspection	5
7.2.3	Variance component estimation	5
7.2.4	Standard uncertainty for the mean of all observations	6
7.2.5	Degrees of freedom for the standard uncertainty	6
7.3	Two-way balanced experiment with replication (both factors random)	7
7.3.1	Design	7
7.3.2	Preliminary inspection	7
7.3.3	Variance component extraction	7
7.3.4	Standard uncertainty for the mean of all observations	8
7.3.5	Degrees of freedom for the standard uncertainty	9
7.4	Two-way balanced experiment with replication (one factor fixed, one factor random)	10
7.4.1	Design	10
7.4.2	Preliminary inspection	10
7.4.3	Variance component extraction	11
7.4.4	Standard uncertainty for the mean of all observations	11
7.4.5	Degrees of freedom for the standard uncertainty	12
8	Application to observations on a relative scale	12
9	Use of variance components in subsequent measurements	12
10	Alternative treatments	13
10.1	Restricted (or residual) maximum likelihood estimates	13
10.2	Alternative methods for model reduction	13
11	Treatment with missing values	13
Annex A (informative) Examples		14
Bibliography		19