

DECISION RULE – STATE OF CONFORMITY

When the measurement result (a) is evaluated according to a specification, standard or requirement and in any case of a specified legislated maximum limit L_{max} using $U=2*u$ (where **U** is the Expanded Uncertainty determined with a coverage factor $k=2$ for confidence interval equal to 95% and **u** is the combined standard uncertainty), then this is

Considered as **non-compliant** for confidence interval 95% when:

$$a-U > L_{max}$$
$$a+U < L_{min}$$

Considered as **compliant** for confidence interval 95% when:

$$a-U \leq L_{max}$$
$$a+U \geq L_{min}$$

Where:

A = the measurement result

U= the expanded uncertainty of the measurement (for confidence interval equal to 95%)

L_{max} = maximum limit of a legislation or a specification

L_{min} = minimum limit of a legislation or a specification

When the measurement result (a) is evaluated according to a specific value L, then the sample is considered as:

Non-compliant when the value L is beyond the range $a \pm U$

Compliant for confidence interval 95% when $a - U \leq L \leq a + U$

For microbiological testing in particular:

1. When the measurement result (a) is evaluated according to a specification, standard or requirement then it is considered as **non-compliant** for confidence interval 95% when
 - a. $x-U > L_{max}$, in case of a specified legislated maximum limit L_{max} (where U is the expanded uncertainty of the measurement result)
 - b. $x+U < L_{min}$, in case of a specified legislated minimum limit L_{min} (where U is the expanded uncertainty of the measurement result)
2. When the measurement result (a) is evaluated according to a specific value L then it is considered as **compliant** for confidence interval 95% when
3. $x-U \leq L \leq x + U$ (where U is the expanded uncertainty of the measurement result)

When the value L is beyond the range $a \pm U$, then the sample is considered as **non-compliant**.