

**NF VALIDATION 16140**

**AFNOR Certification validation of the method**  
**mericon Salmonella spp**  
**for the detection of *Salmonella* spp**  
*Protocol for food and feed products and environmental samples*

**SUMMARY REPORT – July 2013**

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Only some assays reported in this document are covered by the accreditation of the Section Laboratory of COFRAC. They are identified by the symbol (\*).

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## **1. Introduction**

### **1.1. History of the method**

The method *mericon Salmonella* spp has been certified NF Validation by AFNOR Certification in February 2013 for the detection of *Salmonella* spp in food and feed products and environmental samples.

### **1.2. Validation referential**

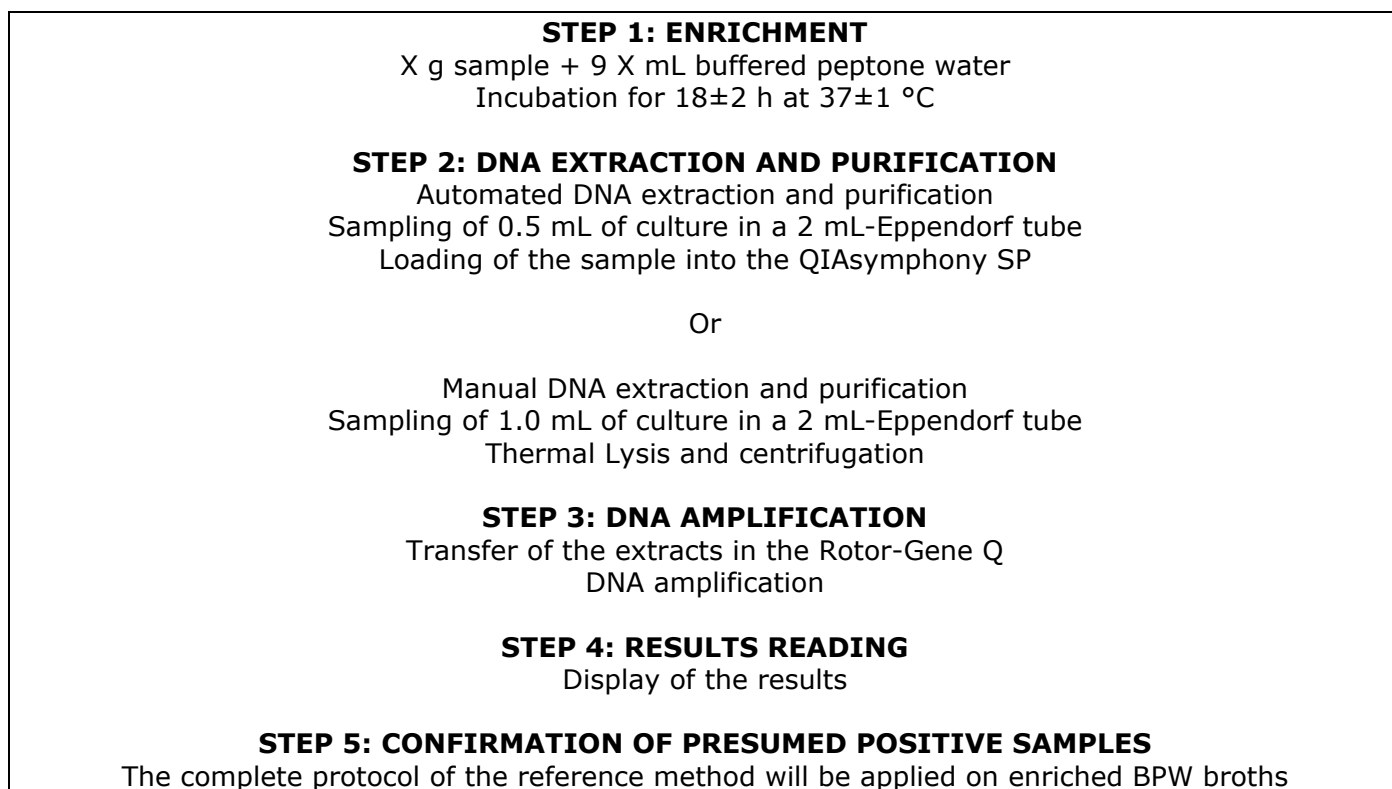
The aim of this validation study is to evaluate the performance of the alternative method against the reference method ISO 6579 (2002). It consists in a preliminary study and a collaborative study.

### **1.3. Alternative method**

- **Principle of the assay**

*mericon* Pathogen Detection Assays are a ready-to-use system for the detection of specific DNA fragments from pathogens in food, animal feed, and environmental samples using real-time polymerase chain reaction (PCR). The Multiplex PCR Master Mix included in each kit contains QIAGEN proprietary technology including HotStarTaq Plus DNA Polymerase, patented multiplex PCR technology such as Factor MP, and fast cycling technology including Q-Bond<sup>®</sup>. Multiplex PCR Master Mix is also highly tolerant to PCR inhibitors. The analytical procedure of these protocols allows the user to perform analysis in accordance with local official requirements.

The protocol of the alternative method is shown in figure 1.



**Figure 1:** alternative method protocol for all food, feed and environmental samples

All the initial suspensions were made at 1/10<sup>th</sup> in buffered peptone water for the alternative method. For the reference method, dilutions were made according to the recommendations of ISO 6887 standard (parts 1 to 5).

- **Other validation**

The *mericon Salmonella* spp kit has been AOAC-RI certified in 2012 (License n°: 071204).

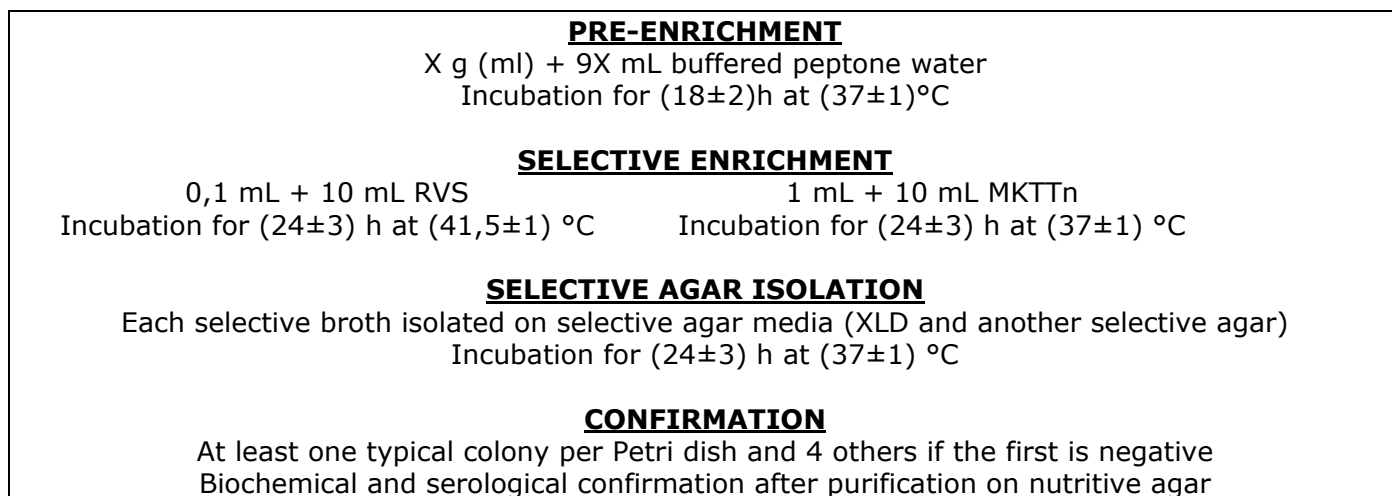
### **1.4. Scope of application**

The alternative method was tested for all food and feed products and environmental samples.

### **1.5. Reference method (\*)**

The NF EN ISO 6579 (2002) standard: Horizontal method for the detection of *Salmonella spp* has been applied.

The protocol of this method is presented in figure 2.



**Figure 2:** reference method protocol

## **2. Methods comparison study**

### **2.1. Relative accuracy, relative specificity and relative sensitivity**

The relative accuracy is the degree of correspondence between the response obtained by the reference method and the response obtained by the alternative method on identical samples.

The relative specificity is the ability of the alternative method to not detect the target microorganism when it is not detected by the reference method.

The relative sensitivity is the ability of the alternative method to detect the analyte when it is detected by the reference method.

The objective of this study is to evaluate the performance of both methods on contaminated and non-contaminated samples.

#### 2.1.1. Number and nature of samples

The following categories are studied: meat products, dairy products, seafood and vegetable products, egg products, feedstuffs, environmental samples.

A total number of 397 samples was analysed. Types of products are indicated in table 1.

<b>Category</b>	<b>Type</b>	<b>Number of positive<sup>a</sup></b>	<b>Number of negative</b>	<b>Total</b>
<b>Meat products</b>	Raw poultry products	10	10	<b>20</b>
	Raw meat products	11	13	<b>24</b>
	Delicatessen, others	18	16	<b>34</b>
	<b>Total</b>	<b>39</b>	<b>39</b>	<b>78</b>
<b>Dairy products</b>	Raw milk cheese	14	14	<b>28</b>
	Milks and pasteurized cheese products	10	11	<b>21</b>
	Other dairy products	8	10	<b>18</b>
	<b>Total</b>	<b>32</b>	<b>35</b>	<b>67</b>
<b>Seafood and vegetable products</b>	Raw vegetable products	10	9	<b>19</b>
	Seafood products	13	13	<b>26</b>
	Other vegetable products	10	13	<b>23</b>
	<b>Total</b>	<b>33</b>	<b>35</b>	<b>68</b>
<b>Egg products</b>	Pastries	11	13	<b>24</b>
	Eggs and derived	14	10	<b>24</b>
	Ready to eat meals	7	8	<b>15</b>
	<b>Total</b>	<b>32</b>	<b>31</b>	<b>63</b>
<b>Feedstuffs</b>	Pet food	10	10	<b>20</b>
	Bone meals	10	10	<b>20</b>
	Cattle feed, meat for animals	10	10	<b>20</b>
	<b>Total</b>	<b>30</b>	<b>30</b>	<b>60</b>
<b>Environmental samples</b>	Dusts and residues	7	7	<b>14</b>
	Process waters	10	10	<b>20</b>
	Sampling swabs	13	14	<b>27</b>
	<b>Total</b>	<b>30</b>	<b>31</b>	<b>61</b>
<b>Total number of samples</b>		<b>196</b>	<b>201</b>	<b>397</b>

**Table 1:** nature and number of analysed samples (a=positive results by either method)

### 2.1.2. Artificial contamination of samples

Naturally contaminated samples are seldom available. Therefore, artificial contaminations of food samples were mostly performed. For spikings, several strains were stressed using different treatments and the stress intensity was evaluated (logarithmic difference between enumeration on non selective agar –TSA- and selective agar –ASAP-). Type of treatment and stress intensity are given in appendix 1.

Among positive results, samples spiking was realised on 166 samples so 15.3 % of naturally contaminated samples were analysed.

### 2.1.3. Confirmation protocol

For alternative method, confirmation of presumed positive samples was performed from BPW enriched broths using the complete protocol of the reference method.

### 2.1.4. Results

Raw results are shown in appendix 2.

Each sample was analysed once by the alternative method and once by the reference method. Tables 2 and 3 present paired results of both methods, with the manual and automated protocol of the alternative method.

Category	Response	Reference method <sup>(*)</sup> positive (R+)	Reference method <sup>(*)</sup> negative (R-)
Meat products	Alternative method positive (A+)	PA=35	PD=3
	Alternative method negative (A-)	ND=1 including 0 PPND	NA=39 including 4 PPNA
Dairy products	Alternative method positive (A+)	PA=30	PD=0
	Alternative method negative (A-)	ND=2 including 0 PPND	NA=35 including 4 PPNA
Seafood and vegetable products	Alternative method positive (A+)	PA=32	PD=0
	Alternative method negative (A-)	ND=1 including 0 PPND	NA=35 including 3 PPNA
Egg products	Alternative method positive (A+)	PA=30	PD=0
	Alternative method negative (A-)	ND=2 including 0 PPND	NA=31 including 3 PPNA
Feedstuffs	Alternative method positive (A+)	PA=29	PD=1
	Alternative method negative (A-)	ND=0 including 0 PPND	NA=30 including 2 PPNA
Environmental samples	Alternative method positive (A+)	PA=30	PD=0
	Alternative method negative (A-)	ND=0 including 0 PPND	NA=31 including 1 PPNA
All products	Alternative method positive (A+)	PA=186	PD=4
	Alternative method negative (A-)	ND=6 including 0 PPND	NA=201 including 17 PPNA

**Table 2:** results of relative accuracy with the manual protocol of the alternative method (PA: positive agreement, NA: negative agreement, ND: negative deviation, PD: positive deviation, PP: presumed positive before confirmation, A+: confirmed positive, A-: negative immediately and negative after confirmation when presumed positive)

Category	Response	Reference method <sup>(*)</sup> positive (R+)	Reference method <sup>(*)</sup> negative (R-)
Meat products	Alternative method positive (A+)	PA=35	PD=3
	Alternative method negative (A-)	ND=1 including 0 PPND	NA=39 including 3 PPNA
Dairy products	Alternative method positive (A+)	PA=30	PD=0
	Alternative method negative (A-)	ND=2 including 0 PPND	NA=35 including 0 PPNA
Seafood and vegetable products	Alternative method positive (A+)	PA=33	PD=0
	Alternative method negative (A-)	ND=0 including 0 PPND	NA=35 including 1 PPNA
Egg products	Alternative method positive (A+)	PA=30	PD=0
	Alternative method negative (A-)	ND=2 including 0 PPND	NA=31 including 1 PPNA
Feedstuffs	Alternative method positive (A+)	PA=29	PD=1
	Alternative method negative (A-)	ND=0 including 0 PPND	NA=30 including 1 PPNA
Environmental samples	Alternative method positive (A+)	PA=29	PD=0
	Alternative method negative (A-)	ND=1 including 0 PPND	NA=31 including 1 PPNA
All products	Alternative method positive (A+)	PA=186	PD=4
	Alternative method negative (A-)	ND=6 including 0 PPND	NA=201 including 7 PPNA

**Table 3:** results of relative accuracy with the automated protocol of the alternative method (PA: positive agreement, NA: negative agreement, ND: negative deviation, PD: positive deviation, PP: presumed positive before confirmation, A+: confirmed positive, A-: negative immediately and negative after confirmation when presumed positive)

Four inhibitions occurred with the manual protocol with the samples listed below

- 57: raw pork sausages with herbs
- 93: rosemary
- 281: whole eggs
- 282: egg white

Three inhibitions occurred with the automated protocol with the samples listed below:

- 284: egg powder
- 296: madeleines
- 453: bran

In all cases, a 1/10<sup>th</sup> or 1/50<sup>th</sup> dilution of the DNA extract has removed the inhibition. More PPNA (results presumed positive but not confirmed) are observed with the manual protocol than with the automated protocol. These PPNA concern probably non specific amplicons. It seems that the automated protocol, which includes a more stringent lysis and magnetic bead based protocol, brings less PPNA than the manual protocol.

#### 2.1.5. Calculation of relative accuracy (AC), specificity (SP) and sensitivity (SE)

For all products categories, these results permit to calculate the relative accuracy, relative specificity and relative sensitivity according to NF EN ISO standard (tables 4 and 5).

Category	PA	NA	ND	PD	N	Relative accuracy AC [(PA+NA)/N]	N+ PA+ND	Relative sensitivity SE [PA/N+]	N- NA+PD	Relative specificity SP [NA/N-]
Meat products	35	39	1	3	78	94.9%	36	97.2%	42	92.9%
Dairy products	30	35	2	0	67	97.0%	32	93.8%	35	100%
Seafood and vegetable products	32	35	1	0	68	98.5%	34	94.1%	35	100%
Egg products	30	31	2	0	63	96.8%	32	93.4%	31	100%
Feedstuffs	29	30	0	1	60	98.3%	29	100%	31	96.8%
Environmental samples	30	31	0	0	61	100%	30	100%	31	100%
All products	186	201	6	4	397	97.5%	192	96.9%	205	98.0%

**Table 4:** relative accuracy, relative specificity and relative sensitivity of alternative method with manual protocol (PA: positive agreement, NA: negative agreement, ND: negative deviation, PD: positive deviation, AC = (PA+NA)/N x 100%, SE = PA/N+ x 100%, SP = NA/N- x 100%, N+ = PA+ND and N- = NA+PD)

Category	PA	NA	ND	PD	N	Relative accuracy AC [(PA+NA)/N]	N+ PA+ND	Relative sensitivity SE [PA/N+]	N- NA+PD	Relative specificity SP [NA/N-]
Meat products	35	39	1	3	78	94.9%	36	97.2%	42	92.9%
Dairy products	30	35	2	0	67	97.0%	32	93.8%	35	100%
Seafood and vegetable products	33	35	0	0	68	100%	33	100%	35	100%
Egg products	30	31	2	0	63	96.8%	32	93.4%	31	100%
Feedstuffs	29	30	0	1	60	98.3%	29	100%	31	96.8%
Environmental samples	29	31	1	0	61	98.4%	30	96.7%	31	100%
All products	186	201	6	4	397	97.5%	192	96.9%	205	98.0%

**Table 5:** relative accuracy, relative specificity and relative sensitivity of alternative method with automated protocol (PA: positive agreement, NA: negative agreement, ND: negative deviation, PD: positive deviation, AC = (PA+NA)/N x 100%, SE = PA/N+ x 100%, SP = NA/N- x 100%, N+ = PA+ND and N- = NA+PD)

Criteria values in percent are shown in table 6.

	Alternative method (both protocols)
Relative accuracy	97.5 %
Relative sensitivity	96.9 %
Relative specificity	98.0 %

**Table 6:** AC, SE and SP in percent for alternative method

Sensitivity of both methods was recalculated considering all confirmed positive (including alternative method positive deviations). Results are shown in table 7.

	Alternative method (both protocols) (PA+PD)/(PA+PD+ND)	Reference method (PA+ND)/(PA+PD+ND)
Sensitivity	96.9%	98.0%

**Table 7:** sensitivity of both methods including all confirmed positive



### 2.1.6. Analysis of discordant results

Disagreements are examined according to annex F of NF EN ISO 16140 standard, with Y as the number of discordant results and m as the smallest of the two values of PD and ND. This analysis is presented in table 8.

	<b>Alternative method (manual and automated protocols)</b>
<b>Y = PD + ND</b>	Y = 4 + 6 = 10
<b>m</b>	4
<b>M (for 9 ≤ Y ≤ 11)</b>	1
<b>Conclusion</b>	m > M the methods are not different at α = 0.05

**Table 8:** statistical analysis of discordant results

The mericon *Salmonella* spp kit and the reference method NF EN ISO 6579 can be statistically considered as equivalent.

- **Negative deviations**

-Manual protocol: samples number: 17 / 66 / 249 / 254 / 258 / 303:

-Automated protocol: samples number: 54 / 193 / 194 / 247 / 249 / 436:

The reference method gave a positive result while the alternative method gave a negative result. The confirmation of the broth of the alternative method (which is given by the reference method) showed the presence of *Salmonella* in the sample. In all cases, the strain or the serovar tested were detected during other analyses.

- **Positive deviations**

-Samples number: 11 / 15 / 30 / 468:

The alternative method gave a positive result while the reference method result was negative. For samples 11 and 15, typical colonies were obtained from the reference method agar media, their confirmations gave *Citrobacter freundii* group 2 and *Proteus mirabilis*.

The confirmation of the alternative method gave a negative result. Several streakings from the selective broths (RVS / MKTTn) were applied on different selective media (XLD / Hektoen and C8-esterase media). Some of the typical colonies that were isolated were confirmed as *Salmonella* spp.

## 2.2. Relative detection level

The objective of this study is to determine the level of contamination for which less than 50% of the responses obtained are positive and that for which more than 50% of the responses obtained are positive.

### 2.2.1. Matrices

Six couples "matrix-strain" were studied in parallel with the reference method and the alternative method for all categories. The total viable count of each matrix was enumerated.

Characteristics of the strain and the matrix are shown in table 9.

Matrix	Strain	ISHA code	Origin
Minced meat	<i>S. Typhimurium</i>	SAL.1.133	Raw minced meat
Raw milk	<i>S. Newport</i>	SAL.1.98	Raw milk cheese
Raw fish	<i>S. London</i>	SAL.1.80	Shelled winkle
Egg	<i>S. Enteritidis</i>	SAL.1.48	Egg product
Cat food	<i>S. Infantis</i>	SAL.1.69	Bone meal
Process water	<i>S. Mbandaka</i>	SAL.1.85	Young guinea fowl

**Table 9:** "matrix-strain" couples of the relative detection level study

### 2.2.2. Spiking protocol

Six levels of contamination were tested including the negative control.

Six replicates for each level of contamination were inoculated and analysed by the reference method

and the alternative method. As the two methods have a common step, 6 test portions of 25 g were prepared for each level of contamination and individually inoculated with a calibrated bacterial suspension.

### 2.2.3. Results

Raw results are presented in appendix 3.

Tables 10 and 11 present the relative detection level for each method.

Strain	Matrix	Relative detection level according to Spearman-Kärber method (cells in 25 g)		
		Reference method (*)	Alternative method (manual)	Alternative method (automated)
S. Typhimurium	Minced meat	1.330 [0.822 ; 2.150]	1.330 [0.822 ; 2.150]	1.330 [0.822 ; 2.150]
S. Newport	Raw milk	0.917 [0.541 ; 1.556]	1.101 [0.619 ; 1.960]	0.917 [0.541 ; 1.556]
S. London	Raw fish	1.211 [0.908 ; 1.616]	1.211 [0.908 ; 1.616]	1.211 [0.908 ; 1.616]
S. Enteritidis	Egg	0.656 [0.447 ; 0.964]	/	0.656 [0.447 ; 0.964]
		1.165 [0.793 ; 1.711]	1.165 [0.793 ; 1.711]	/
S. Infantis	Cat food	0.392 [0.231 ; 0.665]	0.435 [0.245 ; 0.775]	0.455 [0.244 ; 0.850]
S. Mbandaka	Process water	1.021 [0.695 ; 1.500]	1.021 [0.695 ; 1.500]	1.021 [0.695 ; 1.500]

**Table 10:** relative detection level (3 significant numbers)

Strain	Matrix	Relative detection level according to Spearman-Kärber method (cells in 25 g)		
		Reference method (*)	Alternative method (manual)	Alternative method (automated)
S. Typhimurium	Minced meat	1.3 [0.8 ; 2.2]	1.3 [0.8 ; 2.2]	1.3 [0.8 ; 2.2]
S. Newport	Raw milk	0.9 [0.5 ; 1.6]	1.1 [0.6 ; 2.0]	0.9 [0.5 ; 1.6]
S. London	Raw fish	1.2 [0.9 ; 1.6]	1.2 [0.9 ; 1.6]	1.2 [0.9 ; 1.6]
S. Enteritidis	Eggs	0.7 [0.4 ; 1.0]	/	0.7 [0.5 ; 1.0]
		1.2 [0.8 ; 1.7]	1.2 [0.8 ; 1.7]	/
S. Infantis	Cat food	0.4 [0.2 ; 0.7]	0.4 [0.2 ; 0.8]	0.5 [0.2 ; 0.9]
S. Mbandaka	Process water	1.0 [0.7 ; 1.5]	1.0 [0.7 ; 1.5]	1.0 [0.7 ; 1.5]

**Table 11:** relative detection level (1 significant number)

The alternative and the reference method show similar detection levels. The detection limit obtained with reference and alternative method (both protocols) is comprised between 0.2 and 2.2 cells per 25 g.

### 2.3. Inclusivity / exclusivity (selectivity)

The objective of this study is to test:

- the inclusivity: the detection of the target microorganism from a wide range of strains,
- the exclusivity: the lack of interference from a relevant range of non-target microorganisms.

53 strains of *Salmonella* spp and 30 non-target strains were tested.

#### 2.3.1. Test protocols

##### • **Inclusivity**

Each *Salmonella* strain was cultivated twice before inoculation in pre-warmed BPW (about 1 to 100 CFU/225 mL). The complete manual protocol of alternative method was applied with the minimum time of incubation planned for the short protocol (8 hours). This short protocol was not tested for the other parameters of the validation.

##### • **Exclusivity**

Each non-target strain was cultivated twice before inoculation in growth medium (Trypticase Soy Broth) with a level of contamination expected to occur in the food matrices (about 10<sup>5</sup> CFU/mL). After 20 hours of incubation, the mericon *Salmonella* test was performed with the manual protocol.

### 2.3.2. Results

Results are shown in appendix 4.

- **Inclusivity**

53 Salmonella strains were tested and detected.

- **Exclusivity**

30 non-target strains were tested. No cross reaction was observed.

### 2.3.3. Conclusion

The selectivity of the method is satisfactory. No cross reactions was observed with non-target strains.

### **3. Collaborative study**

#### **3.1. Collaborative study implementation**

##### 3.1.1. Participating laboratories

The collaborative study was realized by the expert laboratory and thirteen participating laboratories.

##### 3.1.2. Salmonella spp absence in the matrix

Before spiking, the absence of *Salmonella* spp was verified in the batch of minced meat used according to the reference method.

##### 3.1.3. Strain stability in the matrix

The strain stability in the minced meat matrix was evaluated for 3 days at  $(5\pm 3)^{\circ}\text{C}$ . The strain used was *Salmonella* Enteritidis (ISHA code: SAL.1.50), a wild strain isolated from beef meat.

The detection of *Salmonella* spp was realized after inoculation of about 10 cells in 25 g of minced meat. An enumeration of *Salmonella* spp was also performed on XLD after inoculation of 130 cells in 25 g of minced meat. The samples were analysed at D0, D+1, D+2 and D+3 by reference method and alternative method. The results are summarized in table 12.

Day	Enumeration (CFU/g)	Alternative method	Reference method (*)
D0	130	Presence in 25 g	Presence in 25 g
D+1	100	Presence in 25 g	Presence in 25 g
D+2	130	Presence in 25 g	Presence in 25 g
D+3	100	Presence in 25 g	Presence in 25 g

**Table 12:** results of the stability study of the strain SAL.1.50 in minced meat

The results show that the *Salmonella* strain used is stable for 3 days at  $(5\pm 3)^{\circ}\text{C}$  in the minced meat.

##### 3.1.4. Samples preparation and spiking

The matrix was inoculated with the target strain suspension to obtain 3 contamination levels:

- L0: 0 cell in 25 g
- L1: 5 cells in 25 g
- L2: 25 cells in 25 g

The matrix was distributed at 25 g in sterile bags. Every bag was individually spiked and homogenized. Eight samples per level, per laboratory and per method were prepared. Each laboratory received 24 samples to analyse, 1 sample to quantify the endogenous microflora and 1 water sample containing a temperature probe.

The results of the enumerations of the TVC, the target levels and the real levels of contamination are presented in table 13.

Matrix	TVC (CFU/g)	Target level (cells/25 g)	Real level (cells/25 g)	Confidence interval
Minced meat	$5,2 \cdot 10^6$	0	0	0
		5	4	[ 0 ; 8 ]
		25	32	[ 21 ; 44 ]

**Table 13:** target level, real level and TVC of the matrix

##### 3.1.5. Samples labeling

The labelling of the bags was realized as follows:

- a code to identify the laboratory: from A to M (cf. table 14),
- a code to identify each sample, only known by the expert laboratory.

The samples and the temperature control vial (water sample with a temperature probe) were stored at  $5^{\circ}\text{C}$  before shipping.

Contamination level	Sample code
L0	1/2/7/11/14/15/18/20
L1	3/4/10/13/16/17/21/24
L2	5/6/8/9/12/19/22/23

**Table 14:** sample code by contamination level

### 3.1.6. Samples shipping and reception

The samples were shipped in a coolbox on Monday the 19<sup>th</sup> of November 2012. The coolboxes were received the 20<sup>th</sup> of November for all laboratories.

The control temperature was recorded upon receipt of the package and the temperature probe sent to the expert laboratory. The samples were analysed on the 21<sup>h</sup> of January 2012 by thirteen participating laboratories.

The expert laboratory concurrently analysed a set of samples under the same conditions with both methods.

## **3.2. Results**

### 3.2.1. Temperature and state of the samples

The temperature readings upon reception and the state of the samples are shown in table 15.

Laboratory	Temperature (°C)	State of the samples
A	3.9	Correct
B	2.5	Correct
C	1.5	Correct
D	9.0	Correct
E	4.0	Correct
F	2.0	Correct
G	5.9	Correct
H	4.2	Correct
I	0.5	Correct
J	2.9	Correct
K	3.5	Correct
L	2.4	Correct
M	4.7	Correct

**Table 15:** temperature and state of the samples upon reception

The temperature measurements are inferior to 8.4°C for 12 laboratories. For 1 laboratory (D), the temperature at reception was at 9.0°C. However the temperature probes indicated correct mean temperatures between the shipping and the reception of the coolbox for this laboratory.

The analysis of thermal profiles is shown in table 16.

Laboratory		A	B	C	D	E	F	G	H	I	J	K	L	M
Temperature (°C)	Mean	1.9	0.2	-0.1	1.1	1.5	1.9	1.3	1.9	0.1	0.0	1.0	1.0	0.0
	Standard deviation	1.0	0.6	0.3	0.5	0.3	0.4	0.1	0.1	0.4	0.0	0.3	0.3	0.6

**Table 16:** data of the temperature probes for the transportation time of samples

The thermal profiles analysis indicates for all laboratories mean temperatures comprised between - 0.1 and 1.9°C.

### 3.2.2. Total viable counts

For the whole laboratories, the total viable counts at 30°C vary between 1200 and 1.2x10<sup>8</sup> CFU/g. Results of each laboratory are given in appendix 5.

### 3.2.3. Expert laboratory results

The results obtained by the expert laboratory are summarized in table 17. Raw results used are presented in appendix 6.

Contamination level	Alternative method	Reference method
<b>L0</b>	<b>0/8</b>	<b>0/8</b>
<b>L1</b>	<b>8/8</b>	<b>8/8</b>
<b>L2</b>	<b>8/8</b>	<b>8/8</b>

**Table 17:** positive results obtained by expert laboratory by both methods

The results are consistent with those expected.

### 3.2.4. Collaborating laboratories results

Raw results are shown in appendix 7.

#### • **Alternative method results**

Laboratory	Contamination level		
	L0	L1	L2
A	0/8	8/8	8/8
B	0/8	7/8	8/8
C	0/8	8/8	8/8
D	0/8	8/8	8/8
E	0/8	7/8	8/8
F	0/8	8/8	8/8
G	0/8	8/8	8/8
I	0/8	8/8	8/8
K	0/8	8/8	8/8
L	0/8	8/8	8/8
M	0/8	7/8	8/8
<b>Total</b>	<b>0/88</b>	<b>85/88</b>	<b>88/88</b>

**Table 18:** alternative method positive results for all laboratories

#### • **Reference method results**

Laboratory	Contamination level		
	L0	L1	L2
A	0/8	8/8	8/8
B	0/8	7/8	8/8
C	0/8	8/8	8/8
D	0/8	8/8	8/8
E	0/8	7/8	8/8
F	0/8	8/8	8/8
G	0/8	8/8	8/8
I	0/8	8/8	8/8
K	0/8	8/8	8/8
L	0/8	8/8	8/8
M	0/8	7/8	8/8
<b>Total</b>	<b>0/88</b>	<b>85/88</b>	<b>88/88</b>

**Table 19:** reference method positive results for all laboratories

#### • **Results analysis**

Results are consistent with those expected for 11 laboratories. Laboratories H and J obtained some inhibitions for their PCR run.

#### Laboratory H:

The lab obtained high Ct values for the internal control: only 2 values on 24 samples were inferior to 33. This led to 9 inhibitions during the PCR run (6 L0 samples, 1 L1 sample and 2 L2 samples). The lab did not proceed to the dilution of the extracts but another analysis was performed (extraction from broths stored at 4°C and amplification) on 3 samples which were in disagreement with the reference method regardless the internal control values.

Finally, all positive results and 2 negative results are consistent with the reference method but 6 negative results were inhibited. For these 6 samples, internal control Ct values are comprised between 33.30 and 34.69 and there are no Ct values (e.g. no amplifications) for the sample channel.

#### Laboratory J:

The lab obtained 9 internal control Ct values superior to 33 and an absence of Ct for 2 internal controls. This led to 10 inhibitions. Among the 14 non inhibited samples, 12 results are consistent with the reference method. The 2 discordant results correspond to 2 L1 samples which are not detected by the alternative method and detected by the reference method.

According to these facts, as the inhibited samples were not diluted to be re-analyzed, the expert laboratory proposes to exclude the results of these two laboratories of the statistical analysis of the results.

Inhibitions occurred with four other laboratories (C, F, K and Expert). When these labs applied the dilution protocol on the extracts, the inhibitions were lifted.

Final analysis was consequently conducted using data supplied by eleven laboratories. The results are summarized in tables 7 and 8.

Comments: some laboratories found typical colonies on the reference method agar media, which were not confirmed as *Salmonella*. The identifications of these colonies gave the following species: *Citrobacter freundii*, *Kluyvera ascorbata* and *Hafnia alvei*.

- **Specificity and sensibility calculations**

The specificity and sensibility calculations of both methods are presented in table 20, with the low critical value (LCL). Formulas used are:

For level L0,  $SP = [1 - (FP/N-)] \times 100\%$ ,

N-: total number of L0 tests

FP: number of false positive

For levels L1 and L2,  $SE = (TP/N+) \times 100\%$ ,

N+: total numbers of L1 or L2 tests

TP: number of true positive

Specificity / sensitivity	Alternative method	LCL	Reference method	LCL
<b>SP (level L0)</b>	100%	98%	100%	98%
<b>SE (level L1)</b>	96.6%	93%	96.6%	93%
<b>SE (level L2)</b>	100%	98%	100%	98%
<b>SE (level L1+L2)</b>	98.3%	96%	98.3%	96%

**Table 20:** specificity (SP), sensitivity (SE) and LCL of alternative and reference method

- **Relative accuracy calculation**

Pairs of results of the different levels of contamination are presented in table 21.

Level	Alternative method	Reference method		
		RM+	RM-	Total
<b>L0</b>	<b>AM+</b>	PA=0	PD=0	0
	<b>AM-</b>	ND=0	NA=80 with 6 PPNA	88
	<b>Total</b>	0	88	85
<b>L1</b>	<b>AM+</b>	PA=85	PD=0	85
	<b>AM-</b>	ND=0	NA=3	3
	<b>Total</b>	85	3	88
<b>L2</b>	<b>AM+</b>	PA=88	PD=0	88
	<b>AM-</b>	ND=0	NA=0	0
	<b>Total</b>	88	0	88
<b>L0+L1+L2</b>	<b>AM+</b>	PA=173	PD=0	173
	<b>AM-</b>	ND=0	NA=91	91
	<b>Total</b>	173	91	264

**Table 21:** tests results for both methods (PA: positive agreement, NA: negative agreement, ND: negative deviation, PD: positive deviation, PP: presumed positive before confirmation)

Relative accuracy values of the different contamination levels are presented in table 22 with their LCL. Formula used is the following:

$$AC = (PA+NA)/N \times 100\%, \quad PA: \text{number of positive agreements}$$

$$NA: \text{number of negative agreements}$$

Level	Relative accuracy (AC)	LCL (Low Critical Value)
L0	100%	98%
L1	100%	98%
L2	100%	98%
L1+L2	100%	98%
Total	100%	98%

**Table 22:** relative accuracy values (AC) and LCL of alternative method

- **Discordant results analysis**

Discordant results are analysed according to the annex F of ISO 16140 standard. The total number of discordant results is given by the following formula:  $Y = PD + ND$ .

In the present case,  $Y = 0$ , so  $Y < 6$ , no tests are available. The methods are considered as equivalent.

### **3.3. Interpretation**

#### **3.3.1. Accordance**

The accordance is the percentage chance of finding the same result (i.e. both negative or both positive) from two identical test portions analysed in the same laboratory, under repeatability conditions (i.e. one operator using the same apparatus and same reagents within the shortest feasible time interval).

To derive the accordance from the results of an interlaboratory study, the probability that two samples give the same result is calculated for each participating laboratory in turn, and this probability is then averaged over all laboratories. Values of accordance are shown in table 23.

Level	Alternative method	Reference method
L0	100%	100%
L1	94.0%	94.0%
L2	100%	100%

**Table 23:** accordance by level and method

Calculations of accordance by level and method are presented in appendix 8.

#### **3.3.2. Concordance**

The concordance is the percentage chance of finding the same result for two identical samples analysed in two different laboratories.

To calculate the concordance from the results of an interlaboratory study, take in turn each replicate in each participating laboratory, pair it with identical results of all the other laboratories. The concordance is the percentage of all pairings giving the same results on all the possible pairings of data. Values of concordance are shown in table 24.

Level	Alternative method	Reference method
L0	100%	100%
L1	93.3%	93.3%
L2	100%	100%

**Table 24:** concordance by level and method

Calculations of concordance by level and method are presented in appendix 9.



### 3.3.3. Concordance odds ratio

If the concordance is smaller than the accordance, it indicates that two identical samples are more likely to give the same result if they are analysed by the same laboratory than if they are analysed by different ones, suggesting that there can be variability in performance between laboratories. Unfortunately, the magnitude of the concordance and accordance is strongly dependent on the level of accuracy, making it difficult to assess easily the degree of between-laboratory variation.

It is therefore helpful to calculate the concordance odds ratio (COR) defined as follows:

$COR = \frac{\text{accordance} \times (100 - \text{concordance})}{\text{concordance} \times (100 - \text{accordance})}$ .

Values of COR for both methods are shown in table 25.

A value for the odds ratio of 1.00 would be expected if accordance and concordance were equal, and the larger the odds ratio is, the more inter-laboratory variation is predominant. Nevertheless, values above 1.00 can occur by chance variation, and so a statistical significance test should be used to confirm whether the evidence for extra variation between laboratories is convincing. The "exact test" is the best recommended test for this. The philosophy behind such tests is that the probabilities of occurrence are calculated for all sets of replicate results that could have produced the overall numbers of positives and negatives.

Level	Alternative method			Reference method		
	Accordance	Concordance	COR	Accordance	Concordance	COR
<b>L0</b>	100	100	1.0	100	100	1.0
<b>L1</b>	94.0	93.3	1.1	94.0	93.3	1.1
<b>L2</b>	100	100	1.0	100	100	1.0

**Table 25:** COR values for each method by contamination level

### 3.3.4. AC, SP, SE comparison

Table 26 summarizes the values obtained for AC, SP and SE parameters for the preliminary study and the interlaboratory study.

Parameter	Preliminary study	Interlaboratory study
<b>AC</b>	97.5%	100%
<b>SP</b>	98.0%	100%
<b>SE</b>	96.9%	98.3%

**Table 26:** AC, SP and SE comparison between preliminary and interlaboratory study

The values obtained during the collaborative study are slightly better than those obtained during the preliminary study, probably because of the greater variety of samples and strains tested during the preliminary study.

The sensitivity of both methods is recalculated in table 27 by including all confirmed positive results.

Alternative method (PA+PD)/(PA+PD+ND)	Reference method (PA+ND)/(PA+PD+ND)
<b>100%</b>	<b>100%</b>

**Table 27:** sensitivity recalculated by both methods

#### **4. Practicability**

The practicability was evaluated according to the 13 criteria defined by AFNOR Technical Committee.

1- Mode of packaging of test components

2- Volume of reagents

3- Storage conditions of components and shelf-life of unopened products

4- Modalities after first use

6- Reagents ready to use or for reconstitution

5- Equipment and specific local requirements

Among the required equipment:

-Incubator capable of maintaining 37°C ± 1 °C

-Sample bags

-Balance

-Stomacher machine

#### DNA extraction – automated workflow

QIASymphony® *mericon* Bacteria Kit

Catalog no.	931156
Number of reactions	360
Reagent Cartridge*	2
Piercing Lid	2
TopElute Fluid	60 ml
Reuse Seal Set <sup>†</sup>	2
Product Insert	1

#### DNA extraction – manual workflow

*mericon* DNA Bacteria Kit (100)

Catalog no.	69525
Number of preps	100
Fast Lysis Buffer	1 x 25 ml
Pathogen Lysis Tubes L	-
Product Insert	1

#### Real-time PCR - automated and manual workflows

<i>mericon</i> Salmonella spp	(24)	(96)
Number of reactions	24	96
Yellow <i>mericon</i> Assay*	2 x 12 reactions	1 x 96 reactions
Red Positive Control DNA	20 reactions	20 reactions
QuantiTect® Nucleic Acid Dilution Buffer	1.5 ml	1.5 ml
RNase-Free Water	1.9 ml	1.9 ml
Blue Multiplex PCR Master Mix <sup>†</sup>	2 x 130 µl	1040 µl
50x ROX Dye Solution	45 µl	45 µl
Product Insert	1	1

## Automated workflow

### **For sample preparation**

- QIASymphony SP instrument (cat. no. 9001297)
- QIASymphony *mericon* Bacteria Kit (cat. no. 931156)

### **Accessories and adapters for the QIASymphony SP**

- Reagent Cartridge Holder (2) (cat. no. 997008)
- Insert, 2.0ml v2, sample carrier. (24), Qsym (cat. no. 9242083)
- Cooling Adapter, EMT, v2, Qsym (cat. no. 920730)

### **Consumables for the QIASymphony SP**

- Sample Prep Cartridges, 8-well (cat. no. 997002)
- 8-Rod Covers (cat. no. 997004)
- Microtubes 2 ml, PP, without lids (Sarstedt, cat. no. 72.608)
- Filter-Tips, 1500 µl (cat. no. 997024)
- Elution Microtubes CL with cap strips (cat. no. 19588)
- Tip disposal bags (cat. no. 9013395)

### **For assay set-up**

- QIASymphony AS instrument (cat. no. 9001301)
- *mericon* Salmonella spp Kit (cat. nos. 290013 or 290015)

### **Accessories and adapters for the QIASymphony AS**

- Cooling Adapter, Reagent Holder 1, Qsym (cat. no. 9018090)

### **For use with the Rotor-Gene Q 72 Rotor-Disc (cat. no. 9018899)**

- Adapter 2 x Rotor-Disc, Qsym (cat. no. 9242204)
- Rotor-Disc 72 Loading Block (cat. no. 9018910)
- Rotor-Disc 72 (cat. no. 981303 [240]/981301 [24])
- Rotor-Disc Heat Sealing Film (cat. no. 981604 [600]/981601 [60])
- Rotor-Disc Heat Sealer (cat. no. 9018898 [110 V]; cat. no. 9019725 [230 V])
- Rotor-Disc 72 Locking Ring (cat. no. 9018900)

### **Consumables for the QIASymphony AS**

- Filter-Tips, 200 µl (cat. no. 990332)
- Filter-Tips, 50 µl (cat. no. 997120)
- Micro tubes 2 ml, PP, without lids (Sarstedt, cat. no. 72.608)
- Tip disposal bags (cat. no. 9013395)

## Manual workflow

### **For sample preparation**

- *mericon* DNA Bacteria Kit (cat. no. 69514)
- Vortexer
- Microcentrifuge tubes with screw caps (2 ml)
- Microcentrifuge with rotor for 1.5 ml or 2 ml tubes
- Thermomixer or heating block suitable for 1.5 or 2 ml tubes and capable of attaining a temperature of 100°C. Alternatively, a water bath may be used
- Pipets and pipet tips

### **For assay set-up**

- Pipets and filter pipet tips

### **For use with the Rotor-Gene Q 72 Well Rotor (cat. no. 9018903)**

- Loading Block, RG Strip Tubes 72, Qsym (cat. no. 9018091 or 9018092)
- Strip Tubes and Caps, 0.1 ml (cat. no. 981103)
- Rotor-Gene 72 Locking Ring (cat. no. 9018904)

## Real-Time PCR

- Rotor-Gene Q instrument
- Rotor-Gene Q software version 2.02, or higher

### 7- Training period for operator with no experience with the method

One day of formation is required for technicians with microbiology and molecular biology knowledge for the manual protocol.

For the automated protocol, two days of formation seem to be necessary.

### 8- Handling time and flexibility of the method in relation to the number of samples

Tables 28, 29, 30, 31.

Step	Alternative method		Reference method	
	1 analysis	20 analyses	1 analysis	20 analyses
Sample enrichment (BPW)	7	80	7	80
Second enrichment	/	/	1	16
mericon extraction	10 (7)	15 (30)	/	/
mericon detection	30 (20)	30 (60)	/	/
Isolation on selective agar media	/	/	2	20
Reading	/	/	1	10
Total	47 (34)	125 (170)	11	126

**Table 28:** practicability, time for negative results ( )=manual workflow

Step	Alternative method		Reference method	
	1 analysis	20 analyses	1 analysis	20 analyses
Sample enrichment (BPW)	7	80	7	80
Second enrichment	1	8	1	16
mericon extraction	10 (7)	15 (30)	/	/
mericon detection	30 (20)	30 (60)	/	/
Second enrichment	1	8	/	/
Isolation on selective agar media	1	12	2	20
Confirmation	1	10	1	10
Total	51 (38)	163 (208)	11	126

**Table 29:** practicability, time for positive results ( )=manual workflow

### 9- Time required for results

Step	Alternative method	Reference method
Sample enrichment (BPW)	J0	J0
Selective enrichment (RVS and MKTTn)	/	J1
mericon extraction	J1	/
mericon detection	J1	/
Isolation on selective agar media	/	J2
Reading	/	J3
Total	J1	J3

**Table 30:** practicability, delay for negative results

Step	Alternative method	Reference method
Sample enrichment (BPW)	J0	J0
Selective enrichment (RVS and MKTTn)	/	J1
mericon extraction	J1	/
mericon detection	J1	/
Selective enrichment (RVS and MKTTn)	J1	/
Isolation on selective agar media	J2	J2
Reading and purification	J3	J3
Confirmation	J5	J5
Total	J5	J5

**Table 31:** practicability, delay for positive results

10- Operator qualification

Identical as necessary for the reference method

11- Steps common with the reference method

The enrichment step is common to alternative and reference methods.

12- Traceability of analysis results

Usual traceability applied in a laboratory

13- Maintenance by laboratory

It's important to follow the maintenance operations recommended by the manufacturer.

## **5. Conclusions**

- **Methods comparison study**

The performances of the mericon *Salmonella* spp kit for the detection of *Salmonella* spp are comparable to those of the method NF EN ISO 6579. This study concerned 397 samples of six categories of products (meat, dairy, egg, seafood and vegetable, feedstuffs and environmental products).

Values obtained for the 3 criteria with both protocols are the following:

- relative accuracy: 97.5%
- relative sensitivity: 96.9%
- relative specificity: 98.0 %

Ten discordant results were observed, corresponding to six negative deviations and four positive deviations. Statistical tests applied on the data showed that there were no differences between reference and alternative method.

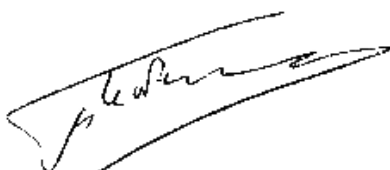
The relative level of detection of the alternative method and the reference method was evaluated for all categories. The results are comparable because the detection limit of the both methods varies from 0.2 to 2.2 cells per 25 g.

The study of the practicability of the alternative method shows a simple, fast and easy-to-use method, with negative results obtained the day after the preparation of the initial suspension.

The specificity of the method is satisfactory. No cross reactions were observed with non-target strains.

- **Interlaboratory study**

The results obtained for the 11 selected laboratories showed that the values of relative accuracy, relative sensitivity and relative specificity obtained during the collaborative study are comparable to those obtained during the preliminary study. The variability of the alternative method, demonstrated by the calculations of accordance, concordance and concordance odds ratio, is similar to that of the reference method.



Massy, 2012, the 31<sup>st</sup> of July  
François Le Nestour  
*Innovation Biology Manager*

## Appendix 1 - Bacterial stress and artificial contaminations

### Meat products

Sample	Strain code	Strain	Origin	Treatment	Stress intensity
53 / 54 / 113	SAL.1.8	Salmonella Arizonae	Duck	52°C for 45 min	1,5
55 / 56	SAL.1.101	Salmonella Orion	Duck	(freezing at -20°C / thawing amb. Temp.)x2	0,8
57 / 58 / 59 / 97	SAL.1.57	Salmonella Hadar	Poultry escalope	(freezing at -20°C / thawing amb. Temp.)x2	0,6
60 / 61	SAL.1.158	Salmonella Virchow	11337 (intox)	52°C for 45 min	2,3
62 / 63	SAL.1.183	Salmonella Typhimurium variant monophasique (S.1 1,4,[5],12:-:y)	Pork "à la tahitienne"	55°C for 45 min	1,5
64 / 65	SAL.1.50	Salmonella Enteritidis	Meat	(-80°C for 20 min / 56°C for 20 min)x2	0,7
95 / 114 / 126 / 132	SAL.1.84	Salmonella Manhattan	Bovine industry	(-80°C for 20 min / 56°C for 20 min)x2	0,7
96 / 100 / 125	SAL.1.6	Salmonella Arizonae	Dried sausage	52°C for 45 min	2,2
98 / 99	SAL.1.29	Salmonella Derby	Pork	(-80°C for 20 min / 56°C for 20 min)x2	0,8
124 / 127 / 128	SAL.1.169	Salmonella Kedougou	Pork	(-80°C for 20 min / 56°C for 20 min)x2	0,9
325	SAL.1.21	Salmonella Bredeney	Chicken	(-80°C for 20 min / 56°C for 20 min)x2	0,8

### Dairy products

Sample	Strain code	Strain	Origin	Treatment	Stress intensity
199 / 200 / 201 / 202 / 203	SAL.1.195	Salmonella Montevideo	Dairy product	52°C for 45 min	
183 / 184 / 185 / 186	SAL.1.121	Salmonella salamae	Raw milk	56°C for 20 min + 3 days at 4°C	1,2
187 / 188 / 189 / 190	SAL.1.163	Salmonella Infantis	Milk	(-80°C for 15 min / 50°C for 15 min)x2	0,9
191 / 192 / 193 / 194	SAL.1.43	Salmonella Dublin	Milk	56°C for 20 min	0,4
195 / 196 / 197 / 198	SAL.1.198	Salmonella Anatum	Dairy product	52°C for 45 min	0,7
252 / 253 / 254 / 255	SAL.1.63	Salmonella Idikan	Workshop	52°C for 45 min	1,2
258	SAL.1.196	Salmonella Montevideo	Dairy product	(-80°C for 15 min / 50°C for 15 min)x2	1,1
260	SAL.1.197	Salmonella Dublin	Dairy product	(freezing at -20°C / thawing amb. Temp.)x2	1,3
489	SAL.1.191	Salmonella Enteritidis	Cantal cheese	(freezing at -20°C / thawing amb. Temp.)x2	0,9
370 / 371 / 483 / 484 / 485	SAL.1.178	Salmonella Cerro (6,14,18;z4,z23:-)	Dairy industry environment	(freezing at -20°C / thawing amb. Temp.)x2	0,6

### Seafood and vegetables products

Sample	Strain code	Strain	Origin	Treatment	Stress intensity
102 / 115 / 117	SAL.1.72	Salmonella Kaneshie	Vegetables	(freezing at -20°C / thawing amb. Temp.)x2	0,7
120 / 122 / 131 / 133 / 134 / 135	SAL.1.51	Salmonella Enteritidis	Mussels	(freezing at -20°C / thawing amb. Temp.)x2	0,8
103 / 118 / 129	SAL.1.13	Salmonella Brandenburg	Zucchini gratin	(freezing at -20°C / thawing amb. Temp.)x2	0,6
105 / 116 / 121	SAL.1.75	Salmonella Kottbus	Mixed vegetables	(freezing at -20°C / thawing amb. Temp.)x2	1,0
237	SAL.1.186	Salmonella Regent	Fish bread	(-80°C for 15 min / 50°C for 15 min)x2	0,7
238 / 240	SAL.1.187	Salmonella (S.IIIb 61:k:1,5,7)	Cooked shrimps	-80°C for 10 min + 55°C for 30 min	1,2
285 / 286 / 287	SAL.1.45	Salmonella Dugbe	Vegetables	-80°C for 10 min + 55°C for 30 min	1,1
288 / 289 / 291	SAL.1.70	Salmonella Javiana	Dried mushrooms	-80°C for 10 min + 55°C for 30 min	0,6
292 / 294 / 295	SAL.1.126	Salmonella Senftenberg	Soy oilcake	-80°C for 10 min + 55°C for 30 min	0,9

### Eggs products

Sample	Strain code	Strain	Origin	Treatment	Stress intensity
296 / 297 / 298 / 481 / 482	SAL.1.48	Salmonella Enteritidis	Egg product	-80°C for 10 min + 55°C for 30 min	0,6
106 / 108 / 111 / 137	SAL.1.190	Salmonella Enteritidis	Pastry swab	-20°C 3 days + 10 min at 50°C	0,7
107 / 109 / 110	SAL.1.182	Salmonella Typhimurium variant	Tiramisu	-20°C 3 days + 10 min at 50°C	0,7
112 / 134	SAL.1.87	Salmonella Mikawasima	Fruit salad	-20°C 3 days + 10 min at 50°C	1,2
245 / 246 / 247	SAL.1.52	Salmonella Enteritidis	Pastry swab	-80°C for 10 min + 55°C for 30 min	1,0
248 / 249	SAL.1.53	Salmonella Enteritidis	Pastry swab	-80°C for 10 min + 55°C for 30 min	1,6
299 / 300 / 301	SAL.1.192	Salmonella Livingstone	Liquid egg	-80°C for 10 min + 55°C for 30 min	1,7
302 / 303 / 304	SAL.1.193	Salmonella Livingstone	Liquid egg	-80°C for 10 min + 55°C for 30 min	3,1
305 / 306	SAL.1.76	Salmonella Kottbus	Raw turkey stew	-80°C for 10 min + 55°C for 30 min	2,3
329 / 330 / 331	SAL.1.71	Salmonella Bazenheid	Kebab	-80°C for 10 min + 55°C for 30 min	0,5
376 / 377	SAL.1.155	Salmonella Virchow	CIP 105355	-80°C for 10 min + 55°C for 30 min	0,9

### Feed products

Sample	Strain code	Strain	Origin	Treatment	Stress intensity
454 / 455 / 456 / 457	SAL.1.69	Salmonella Infantis	Bone meal	56°C for 30 min	1,2
458 / 459 / 460 / 461	SAL.1.126	Salmonella Senftenberg	Soy oilcake	56°C for 30 min	1,3
462 / 466 / 467	SAL.1.123	Salmonella Schwarzengrund	Bone meal	56°C for 30 min	0,8
463 / 464 / 465	SAL.1.74	Salmonella Kedougou	Bone meal	56°C for 30 min	0,7
468 / 595 / 596 / 597	SAL.1.173	Salmonella Gallinarum	Poultry breeding	56°C for 30 min	0,5
576 / 598 / 599 / 600	SAL.1.114	Salmonella Poona	Feed workshop environment	56°C for 30 min	1,0

### Environmental samples

Sample	Strain code	Strain	Origin	Treatment	Stress intensity
416 / 418 / 419	SAL.1.202	Salmonella Dublin	Dairy industry environment	(-80°C for 20 min / 56°C for 20 min)x2	2,7
390 / 393	SAL.1.78	Salmonella Livingstone	Production workshop environment	(-80°C for 20 min / 56°C for 20 min)x2	0,8
394 / 395 / 396 / 397	SAL.1.96	Salmonella Muenchen	Production workshop environment	(-80°C for 20 min / 56°C for 20 min)x2	0,8
398 / 399 / 410 / 411	SAL.1.127	Salmonella Tennessee	Production workshop environment	(-80°C for 20 min / 56°C for 20 min)x2	1,0
412 / 413 / 414 / 415	SAL.1.113	Salmonella Plymouth	Production workshop environment	(-80°C for 20 min / 56°C for 20 min)x2	0,9
430 / 431 / 432	SAL.1.99	Salmonella Ohio	Production workshop environment	(-80°C for 15 min / 56°C for 15 min)x2	1,9
433 / 434 / 435	SAL.1.116	Salmonella Rissen	Production workshop environment	(-80°C for 15 min / 56°C for 15 min)x2	1,8
436 / 437 / 438 / 439	SAL.1.161	Salmonella Worthington	Production workshop environment	(-80°C for 15 min / 56°C for 15 min)x2	0,7

## **APPENDIX 2**

### **RELATIVE ACCURACY, RELATIVE SENSITIVITY, RELATIVE SPECIFICITY**

#### **RAW RESULTS**

Legend:

- a: level determined by 5 enumerations
- NC: naturally contaminated
- + / Pos: positive result
- / Neg: negative result
- /: test non realized
- ∅: absence of Ct or absence of colonies
- =: positive or negative agreement
- PA: positive agreement
- NA: negative agreement
- ≠: positive or negative deviation
- PD: positive deviation
- ND: negative deviation
- FN: false negative result
- PP: presumed positive before confirmation
- Abs: absence of Salmonella in 25 g
- Pres: presence of Salmonella in 25 g
- Inh: inhibition of the PCR reaction
- A / B / C: level of annex flora, from high to low
- 1 / 2 / 3: level of typical flora, from high to low



N°	Ref	Sample	Cont.(a)	Reference method					Result	Alternative method										Concordance	
				RVS		MKTTn		Conf.		Manual protocol				Automated protocol				MR/MAm	MR/MAa		
				XLD	HK	XLD	HK			Ct Inh	Ct Res	Test result	Conf.	Final result	Ct Inh	Ct Res	Test result			Conf.	Final result
1	25	Raw chicken leg	/	-	-	-	-	/	Abs	31,43	Ø	Neg	/	Abs	30,01	Ø	Neg	/	Abs	=NA	=NA
2	26	Neck skin of chicken	/	-	-	-	-	/	Abs	30,91	Ø	Neg	/	Abs	29,70	Ø	Neg	/	Abs	=NA	=NA
3	27	Neck skin of chicken	/	Ø	Ø	Ø	Ø	/	Abs	37,41	Ø	Neg	/	Abs	31,81	Ø	Neg	/	Abs	=NA	=NA
4	28	Raw chicken breast	/	-	-	-	-	/	Abs	30,87	Ø	Neg	/	Abs	30,42	Ø	Neg	/	Abs	=NA	=NA
5	35	Raw turkey breast	/	-	-	-	-	/	Abs	35,61	Ø	Neg	/	Abs	30,36	Ø	Neg	/	Abs	=NA	=NA
6	37	Raw minced meat	/	-	-	-	-	/	Abs	33,35	Ø	Neg	/	Abs	30,29	Ø	Neg	/	Abs	=NA	=NA
7	38	Raw meat	/	-	-	-	-	/	Abs	30,94	Ø	Neg	/	Abs	30,46	Ø	Neg	/	Abs	=NA	=NA
8	40	Raw turkey escalope	/	+	+	-	-	-	Abs	32,17	Ø	Neg	/	Abs	30,44	Ø	Neg	/	Abs	=NA	=NA
9	41	Raw chicken liver	/	Ø	Ø	B	A	/	Abs	29,81	Ø	Neg	/	Abs	30,10	Ø	Neg	/	Abs	=NA	=NA
10	42	Raw poultry sausages	/	+	-	+	-	-	Abs	28,79	Ø	Neg	/	Abs	29,89	Ø	Neg	/	Abs	=NA	=NA
11	43	Raw spiced merguez	/	-	-	+	-	-	Abs	28,49	Ø	Neg	/	Abs	30,58	Ø	Neg	/	Abs	=NA	=NA
12	44	Raw pork sausages with herbs	/	-	-	-	-	/	Abs	28,69	35,65	Pos	-	Abs	30,04	Ø	Neg	/	Abs	=NA(PP)	=NA
13	45	Carpaccio parmesan & olives	/	Ø	Ø	B	B	/	Abs	29,90	Ø	Neg	/	Abs	29,98	Ø	Neg	/	Abs	=NA	=NA
14	46	Carpaccio tapenade & tomatoes	/	-	-	-	-	/	Abs	30,27	Ø	Neg	/	Abs	30,25	Ø	Neg	/	Abs	=NA	=NA
15	47	Raw minced meat	/	-	-	-	-	/	Abs	29,42	Ø	Neg	/	Abs	30,11	Ø	Neg	/	Abs	=NA	=NA
16	48	Frozen chopped steak	/	-	-	-	-	/	Abs	29,33	Ø	Neg	/	Abs	29,87	Ø	Neg	/	Abs	=NA	=NA
17	49	Frozen beef patties	/	-	-	-	-	/	Abs	28,89	Ø	Neg	/	Abs	30,14	Ø	Neg	/	Abs	=NA	=NA
18	50	Frozen minced beef and tomatoes	/	-	-	-	-	/	Abs	28,83	Ø	Neg	/	Abs	29,94	Ø	Neg	/	Abs	=NA	=NA
19	51	Raw minced veal	/	-	-	+	+	-	Abs	34,52	Ø	Neg	/	Abs	29,65	37,52	Pos	-	Abs	=NA	=NA(PP)
20	52	Raw halal chopped steak	/	-	-	-	-	/	Abs	29,84	Ø	Neg	/	Abs	29,80	Ø	Neg	/	Abs	=NA	=NA
21	53	Raw turkey escalope	SALI.8 <1	+	+	+	+	-	Abs	24,68	Ø	Neg	/	Abs	30,04	31,89	Pos	-	Abs	=NA	=NA(PP)
22	67	Cut smoked veal	/	Ø	Ø	Ø	Ø	/	Abs	30,26	Ø	Neg	/	Abs	30,05	Ø	Neg	/	Abs	=NA	=NA
23	68	Sliced chorizo	/	Ø	Ø	Ø	Ø	/	Abs	29,81	Ø	Neg	/	Abs	30,61	Ø	Neg	/	Abs	=NA	=NA
24	69	Sliced smoked poultry	/	Ø	Ø	Ø	Ø	/	Abs	30,66	Ø	Neg	/	Abs	29,70	Ø	Neg	/	Abs	=NA	=NA
25	70	Sliced ham	/	Ø	Ø	Ø	Ø	/	Abs	30,65	Ø	Neg	/	Abs	30,55	Ø	Neg	/	Abs	=NA	=NA
26	72	Garlic dry sausage	/	Ø	Ø	Ø	Ø	/	Abs	31,46	Ø	Neg	/	Abs	29,96	Ø	Neg	/	Abs	=NA	=NA
27	85	Peking duck	/	-	-	-	-	/	Abs	33,38	Ø	Neg	/	Abs	30,15	Ø	Neg	/	Abs	=NA	=NA
28	86	Raw lamb chop	/	-	-	+	+	-	Abs	32,63	Ø	Neg	/	Abs	30,44	Ø	Neg	/	Abs	=NA	=NA
29	144	Raw Espelette pepper sausage	/	-	-	+	+	-	Abs	30,42	Ø	Neg	/	Abs	30,62	Ø	Neg	/	Abs	=NA	=NA
30	145	Saveloy	/	Ø	Ø	Ø	Ø	/	Abs	28,86	Ø	Neg	/	Abs	30,83	Ø	Neg	/	Abs	=NA	=NA
31	146	Raw merguez	/	-	-	-	-	/	Abs	28,57	Ø	Neg	/	Abs	30,65	Ø	Neg	/	Abs	=NA	=NA
32	147	Raw chipolatas	/	-	-	-	-	/	Abs	30,50	Ø	Neg	/	Abs	30,28	Ø	Neg	/	Abs	=NA	=NA
33	148	Cordon bleu	/	Ø	Ø	Ø	Ø	/	Abs	29,41	37,89	Pos	-	Abs	29,97	Ø	Neg	/	Abs	=NA(PP)	=NA
34	152	Goulash	/	Ø	Ø	Ø	Ø	/	Abs	29,97	Ø	Neg	/	Abs	30,68	Ø	Neg	/	Abs	=NA	=NA
35	156	Minced pork bard	/	-	-	-	-	/	Abs	29,65	Ø	Neg	/	Abs	30,21	Ø	Neg	/	Abs	=NA	=NA
36	308	Round piece of raw beef	/	-	-	-	-	/	Abs	28,71	35,72	Pos	-	Abs	30,26	Ø	Neg	/	Abs	=NA(PP)	=NA
37	309	Raw pork chine	/	-	-	-	-	/	Abs	31,50	Ø	Neg	/	Abs	30,43	37,08	Pos	-	Abs	=NA	=NA(PP)
38	310	Raw pork shoulder	/	-	-	-	-	/	Abs	31,73	Ø	Neg	/	Abs	30,04	Ø	Neg	/	Abs	=NA	=NA
39	316	Lower raw veal	/	-	-	-	-	/	Abs	30,57	36,34	Pos	-	Abs	30,52	Ø	Neg	-	Abs	=NA(PP)	=NA

N°	Ref	Sample	Cont.(a)	Reference method				Conf.	Result	Alternative method								Concordance			
				RVS		MKTn				Manual protocol				Automated protocol				MR/MAM	MR/MAa		
				XLD	HK	XLD	HK			Ct Inh	Ct Res	Test result	Conf.	Final result	Ct Inh	Ct Res	Test result			Conf.	Final result
1	11	Poultry	nc	+	+	+	-	-	Abs	30,28	22,62	Pos	+	Pres	29,35	21,04	Pos	+	Pres	#PD	#PD
2	12	Minced beef meat	nc	+	+	+	+	+	Pres	30,69	22,46	Pos	+	Pres	29,63	24,07	Pos	+	Pres	=PA	=PA
3	13	Minced beef meat	nc	+	+	+	+	+	Pres	30,71	26,12	Pos	+	Pres	30,13	31,41	Pos	+	Pres	=PA	=PA
4	15	Poultry	nc	+	-	+	-	-	Abs	30,05	31,58	Pos	+	Pres	30,22	30,68	Pos	+	Pres	#PD	#PD
5	17	Beef meat	nc	+	+	+	+	+	Pres	36,46	Ø	Neg	+	Abs	29,50	27,17	Pos	+	Pres	#ND(FN)	=PA
6	30	Poultry	nc	-	-	-	-	/	Abs	29,56	30,52	Pos	+	Pres	30,41	32,16	Pos	+	Pres	#PD	#PD
7	36	Beef meat	nc	+	+	+	+	+	Pres	34,19	29,00	Pos	+	Pres	29,43	27,95	Pos	+	Pres	=PA	=PA
8	54	Chicken liver	SAL1.8	+	+	+	+	+	Pres	28,76	28,49	Pos	+	Pres	31,28	Ø	Neg	+	Abs	=PA	#ND(FN)
9	55	Raw poultry sausages	<1	1	1	1	1	+	Pres	27,82	21,18	Pos	+	Pres	30,19	28,18	Pos	+	Pres	=PA	=PA
10	56	Spicy merguez	SAL1.101	+	+	+	+	+	Pres	28,00	21,95	Pos	+	Pres	29,90	25,10	Pos	+	Pres	=PA	=PA
11	57	Raw pork sausages with herbs	9 UFC	1,C	2,C	2,C	1,C	+	Pres	Ø	Ø	Inh	+	Inh	28,87	21,80	Pos	+	Pres	=PA	=PA
12	58	Carpaccio parmesan & olives	12 UFC	2,C	1,C	2,C	2,C	+	Pres	30,05	20,11	Pos	+	Pres	29,46	27,24	Pos	+	Pres	=PA	=PA
13	59	Carpaccio tapenade & tomatoes	SAL1.57	+	+	+	+	+	Pres	31,15	28,68	Pos	+	Pres	29,55	26,94	Pos	+	Pres	=PA	=PA
14	60	Minced meat	12 UFC	2,C	2	2,C	2	+	Pres	28,10	27,92	Pos	+	Pres	29,77	34,08	Pos	+	Pres	=PA	=PA
15	61	Frozen chopped steak	SAL1.158	+	+	+	+	+	Pres	28,23	26,80	Pos	+	Pres	30,39	29,37	Pos	+	Pres	=PA	=PA
16	62	Frozen beef patties	5 UFC	2,C	2,C	3,C	2,A	+	Pres	28,15	24,68	Pos	+	Pres	29,87	26,51	Pos	+	Pres	=PA	=PA
17	63	Frozen minced beef and tomatoes	SAL1.183	+	+	+	+	+	Pres	28,26	26,64	Pos	+	Pres	30,62	36,52	Pos	+	Pres	=PA	=PA
18	64	Raw minced veal	22 UFC	2,C	2,c	1,C	1,C	+	Pres	32,35	28,33	Pos	+	Pres	29,56	24,79	Pos	+	Pres	=PA	=PA
19	65	Raw halal chopped steak	SAL1.50	+	+	+	+	+	Pres	28,54	21,56	Pos	+	Pres	29,88	24,79	Pos	+	Pres	=PA	=PA
20	91	Raw chopped chicken	8 UFC	2,C	3,C	1,C	1,C	+	Pres	29,51	26,44	Pos	+	Pres	30,10	36,88	Pos	+	Pres	=PA	=PA
21	94	Raw chicken kebab	nc	+	+	+	+	+	Pres	30,95	32,61	Pos	+	Pres	30,28	35,76	Pos	+	Pres	=PA	=PA
22	95	Sliced smoked veal	3,C	1,C	1,C	2,A	+	Pres	29,39	21,40	Pos	+	Pres	29,74	23,05	Pos	+	Pres	=PA	=PA	
23	96	Sliced chorizo	SAL1.84	+	+	+	+	+	Pres	28,91	19,94	Pos	+	Pres	29,26	21,46	Pos	+	Pres	=PA	=PA
24	97	Sliced poultry	4 UFC	3,C	3,C	3,A	3,A	+	Pres	28,87	20,33	Pos	+	Pres	29,42	22,18	Pos	+	Pres	=PA	=PA
25	98	Sliced ham	SAL1.6	+	+	+	+	+	Pres	29,60	20,29	Pos	+	Pres	29,36	19,88	Pos	+	Pres	=PA	=PA
26	99	Chicken filet	8 UFC	3,A	3	3,A	3	+	Pres	29,22	25,48	Pos	+	Pres	29,82	21,37	Pos	+	Pres	=PA	=PA
27	100	Turkey escalope	SAL1.29	+	+	+	+	+	Pres	31,94	27,01	Pos	+	Pres	30,01	25,36	Pos	+	Pres	=PA	=PA
28	113	Peking duck	2 UFC	3,A	3,B	3,A	3,C	+	Pres	29,49	26,85	Pos	+	Pres	30,01	30,35	Pos	+	Pres	=PA	=PA
29	114	Raw lamb cutlet	SAL1.84	+	+	+	+	+	Pres	29,87	25,19	Pos	+	Pres	30,34	32,90	Pos	+	Pres	=PA	=PA
30	124	Raw Epelette pepper sausage	4 UFC	3	3	3,C	3	+	Pres	29,25	20,54	Pos	+	Pres	29,48	24,16	Pos	+	Pres	=PA	=PA
31	125	Sausage from Lyon	SAL1.169	+	+	+	+	+	Pres	28,91	multi ct	Pos	+	Pres	29,34	18,62	Pos	+	Pres	=PA	=PA
32	126	Raw merguez	30 UFC	2,C	2,C	2,B	2,B	+	Pres	30,18	30,81	Pos	+	Pres	30,30	33,78	Pos	+	Pres	=PA	=PA
33	127	Raw chipolatas	SAL1.6	+	+	+	+	+	Pres	29,79	22,04	Pos	+	Pres	29,41	24,56	Pos	+	Pres	=PA	=PA
34	128	Cordon bleu	8 UFC	3,C	3,C	3,B	3,B	+	Pres	29,40	20,44	Pos	+	Pres	29,54	19,83	Pos	+	Pres	=PA	=PA
35	132	Homemade goulash	SAL1.169	+	+	+	+	+	Pres	30,38	25,15	Pos	+	Pres	28,63	20,02	Pos	+	Pres	=PA	=PA
36	325	Chicken delicatessen	30 UFC	2	2	2	2	+	Pres	30,10	34,70	Pos	+	Pres	30,92	35,73	Pos	+	Pres	=PA	=PA
37	327	Beef sausage	SAL1.84	+	+	+	+	+	Pres	30,31	39,74	Pos	+	Pres	26,23	31,64	Pos	+	Pres	=PA	=PA
38	367	Duck gizzard	2 UFC	2	2	1	1	+	Pres	30,25	30,71	Pos	+	Pres	30,83	36,24	Pos	+	Pres	=PA	=PA
39	369	Raw duck leg	nc	-	-	+	+	+	Pres	30,29	31,80	Pos	+	Pres	28,36	19,82	Pos	+	Pres	=PA	=PA

N°	Ref	Sample	Cont.(a)	Reference method					Result	Alternative method										Concordance	
				RVS		MKTTn		Conf.		Manual protocol					Automated protocol					MR/MAm	MR/MAa
				XLD	HK	XLD	HK			Ct Inh	Ct Res	Test result	Conf.	Final result	Ct Inh	Ct Res	Test result	Conf.	Final result		
1	83	Whipped cream	/	-	-	-	-	/	Abs	31,22	Ø	Neg	/	Abs	29,78	Ø	Neg	/	Abs	=NA	=NA
2	159	Gruyère (raw milk)	/	-	-	-	-	/	Abs	31,56	Ø	Neg	/	Abs	32,60	Ø	Neg	/	Abs	=NA	=NA
3	160	Sweet Swiss Emmental (raw milk)	/	-	-	-	-	/	Abs	30,26	33,33	Pos	-	Abs	34,55	Ø	Neg	/	Abs	=NA(PP)	=NA
4	161	Beaufort PDO (raw milk)	/	-	-	-	-	/	Abs	30,39	37,14	Pos	-	Abs	33,22	Ø	Neg	/	Abs	=NA(PP)	=NA
5	162	Comté extra Prestige (raw milk)	/	-	-	-	-	/	Abs	30,35	Ø	Neg	/	Abs	34,92	Ø	Neg	/	Abs	=NA	=NA
6	163	20 month old Comté extra (raw milk)	/	-	-	-	-	/	Abs	30,53	Ø	Neg	/	Abs	34,76	Ø	Neg	/	Abs	=NA	=NA
7	164	Abondance (raw milk)	/	-	-	-	-	/	Abs	31,54	Ø	Neg	/	Abs	38,86	Ø	Neg	/	Abs	=NA	=NA
8	165	Parmigiano Reggiano (raw milk)	/	-	-	-	-	/	Abs	30,76	Ø	Neg	/	Abs	33,65	Ø	Neg	/	Abs	=NA	=NA
9	166	Farmer Cheddar (raw milk)	/	-	-	-	-	/	Abs	30,47	Ø	Neg	/	Abs	33,69	Ø	Neg	/	Abs	=NA	=NA
10	167	Tête de moine (raw milk)	/	-	-	-	-	/	Abs	30,05	39,94	Pos	-	Abs	34,46	Ø	Neg	/	Abs	=NA(PP)	=NA
11	168	Salers (raw milk)	/	-	-	-	-	/	Abs	30,54	Ø	Neg	/	Abs	33,94	Ø	Neg	/	Abs	=NA	=NA
12	169	Brie de Meaux (lait cru)	/	-	-	-	-	/	Abs	30,89	Ø	Neg	/	Abs	33,27	Ø	Neg	/	Abs	=NA	=NA
13	170	Fourme d'Ambert (raw milk)	/	-	-	-	-	/	Abs	30,07	Ø	Neg	/	Abs	33,66	Ø	Neg	/	Abs	=NA	=NA
14	171	Aubrac fresh Tomme (raw milk)	/	-	-	-	-	/	Abs	30,48	Ø	Neg	/	Abs	34,08	Ø	Neg	/	Abs	=NA	=NA
15	172	Roquefort (raw milk)	/	-	-	-	-	/	Abs	31,62	Ø	Neg	/	Abs	33,77	Ø	Neg	/	Abs	=NA	=NA
16	173	Raw milk	/	-	-	-	-	/	Abs	31,48	Ø	Neg	/	Abs	34,45	Ø	Neg	/	Abs	=NA	=NA
17	174	Cream cheese	/	-	-	-	-	/	Abs	35,91	Ø	Neg	/	Abs	33,21	Ø	Neg	/	Abs	=NA	=NA
18	175	Cottage cheese	/	-	-	-	-	/	Abs	33,26	Ø	Neg	/	Abs	35,64	Ø	Neg	/	Abs	=NA	=NA
19	176	Dairy specialty lemon flavored	/	-	-	-	-	/	Abs	30,32	Ø	Neg	/	Abs	32,31	Ø	Neg	/	Abs	=NA	=NA
20	177	Raw milk	/	-	-	-	-	/	Abs	30,64	Ø	Neg	/	Abs	33,26	Ø	Neg	/	Abs	=NA	=NA
21	178	Yogurt	/	-	-	-	-	/	Abs	29,79	Ø	Neg	/	Abs	30,03	Ø	Neg	/	Abs	=NA	=NA
22	179	Cottage cheese with milk mousse	/	-	-	-	-	/	Abs	30,63	Ø	Neg	/	Abs	32,42	Ø	Neg	/	Abs	=NA	=NA
23	199	Cottage cheese	SAL 1.195 6 UFC	-	-	-	-	/	Abs	30,91	Ø	Neg	/	Abs	30,97	Ø	Neg	/	Abs	=NA	=NA
24	224	Goat milk Frico (pasteurized)	/	-	-	-	-	/	Abs	30,98	Ø	Neg	/	Abs	30,13	Ø	Neg	/	Abs	=NA	=NA
25	225	Cut goat milk cheese (pasteurized milk)	/	-	-	-	-	/	Abs	30,18	Ø	Neg	/	Abs	30,31	Ø	Neg	/	Abs	=NA	=NA
26	226	Saint Albray (pasteurized milk)	/	-	-	-	-	/	Abs	30,89	Ø	Neg	/	Abs	30,71	Ø	Neg	/	Abs	=NA	=NA
27	227	Cut sheep milk cheese	/	-	-	-	-	/	Abs	30,74	Ø	Neg	/	Abs	30,05	Ø	Neg	/	Abs	=NA	=NA
28	228	Cut Maroilles (pasteurized milk)	/	-	-	-	-	/	Abs	30,12	Ø	Neg	/	Abs	30,74	Ø	Neg	/	Abs	=NA	=NA
29	229	Cut Munster (pasteurized milk)	/	-	-	-	-	/	Abs	29,42	38,56	Pos	-	Abs	30,27	Ø	Neg	/	Abs	=NA(PP)	=NA
30	230	Cut Tomme (pasteurized milk)	/	-	-	-	-	/	Abs	33,95	Ø	Neg	/	Abs	30,35	Ø	Neg	/	Abs	=NA	=NA
31	231	Full-cream milk powder	/	-	-	-	-	/	Abs	31,05	Ø	Neg	/	Abs	30,03	Ø	Neg	/	Abs	=NA	=NA
32	232	Skimmed milk powder	/	-	-	-	-	/	Abs	30,10	Ø	Neg	/	Abs	29,58	Ø	Neg	/	Abs	=NA	=NA
33	233	Second age milk powder	/	-	-	-	-	/	Abs	30,91	Ø	Neg	/	Abs	30,86	Ø	Neg	/	Abs	=NA	=NA
34	370	Farmer pasteurized full-cream milk	SAL 1.178 <1 UFC	-	-	-	-	/	Abs	34,84	Ø	Neg	/	Abs	31,02	Ø	Neg	/	Abs	=NA	=NA
35	479	Raw milk	/	-	-	-	-	/	Abs	30,28	Ø	Neg	/	Abs	30,31	Ø	Neg	/	Abs	=NA	=NA

N°	Ref	Sample	Cont.(a)	Reference method				Conf.	Result	Alternative method										Concordance	
				RVS		MKTTn				Manual protocol					Automated protocol					MR/MAM	MR/MAa
				XLD	HK	XLD	HK			Ct Inh	Ct Res	Test result	Conf.	Final result	Ct Inh	Ct Res	Test result	Conf.	Final result		
1	183	Gruyère (raw milk)	SAL 1.121 7 UFC	+	+	+	+	+	Pres	29,70	20,13	Pos	+	Pres	32,37	21,58	Pos	+	Pres	=PA	=PA
2	184	Emmental doux Suisse (raw milk)	SAL 1.121 7 UFC	+	+	+	+	+	Pres	29,43	19,48	Pos	+	Pres	33,42	19,88	Pos	+	Pres	=PA	=PA
3	185	Beaufort (raw milk)	SAL 1.121 7 UFC	+	+	+	+	+	Pres	29,95	20,31	Pos	+	Pres	32,40	18,98	Pos	+	Pres	=PA	=PA
4	186	Comté extra prestige (raw milk)	SAL 1.121 7 UFC	+	+	+	+	+	Pres	30,03	multi ct 19,5	Pos	+	Pres	32,12	20,37	Pos	+	Pres	=PA	=PA
5	187	Comté extra Prestige (raw milk)	SAL 1.163 6 UFC	+	+	+	+	+	Pres	29,38	20,16	Pos	+	Pres	32,83	multi ct 18,48	Pos	+	Pres	=PA	=PA
6	188	Abondance (raw milk)	SAL 1.163 6 UFC	+	+	+	+	+	Pres	30,44	multi ct 19,32	Pos	+	Pres	34,88	multi ct 18,88	Pos	+	Pres	=PA	=PA
7	189	Parmigiano (raw milk)	SAL 1.163 6 UFC	+	+	+	+	+	Pres	29,97	multi ct 18,89	Pos	+	Pres	35,09	multi ct 18,44	Pos	+	Pres	=PA	=PA
8	190	Farmer Cheddar (raw milk)	SAL 1.163 6 UFC	+	+	+	+	+	Pres	28,94	22,51	Pos	+	Pres	32,52	20,39	Pos	+	Pres	=PA	=PA
9	191	Tête moine (raw milk)	SAL 1.43 3 UFC	+	+	+	+	+	Pres	29,69	31,51	Pos	+	Pres	32,84	34,10	Pos	+	Pres	=PA	=PA
10	192	Salers (raw milk)	SAL 1.43 3 UFC	+	+	+	+	+	Pres	29,76	27,39	Pos	+	Pres	32,49	27,75	Pos	+	Pres	=PA	=PA
11	193	Brie de meaux (raw milk)	SAL 1.43 3 UFC	+	+	+	+	+	Pres	30,61	35,59	Pos	+	Pres	30,57	∅	Neg	+	Abs	=PA	≠ND(FN)
12	194	Fourme d'Ambert (raw milk)	SAL 1.43 3 UFC	+	+	+	+	+	Pres	29,65	39,81	Pos	+	Pres	30,11	∅	Neg	+	Abs	=PA	≠ND(FN)
13	195	Tomme fraiche de l'Aubrac (raw milk)	SAL 1.198 7 UFC	+	+	+	+	+	Pres	30,55	29,63	Pos	+	Pres	29,74	27,54	Pos	+	Pres	=PA	=PA
14	196	Roquefort (raw milk)	SAL 1.198 7 UFC	+	+	+	+	+	Pres	29,83	27,54	Pos	+	Pres	29,62	25,42	Pos	+	Pres	=PA	=PA
15	197	Raw milk	SAL 1.198 7 UFC	+	+	+	+	+	Pres	30,26	30,41	Pos	+	Pres	30,19	27,79	Pos	+	Pres	=PA	=PA
16	198	Cream cheese	SAL 1.198 7 UFC	+	+	+	+	+	Pres	30,28	21,18	Pos	+	Pres	29,73	multi ct 19,39	Pos	+	Pres	=PA	=PA
17	200	Dairy specialty lemon flavored	SAL 1.195 6 UFC	+	+	+	+	+	Pres	29,10	25,69	Pos	+	Pres	29,84	23,65	Pos	+	Pres	=PA	=PA
18	201	Raw milk	SAL 1.195 6 UFC	+	+	+	+	+	Pres	30,15	34,76	Pos	+	Pres	31,41	30,54	Pos	+	Pres	=PA	=PA
19	202	Nature yoghurt	SAL 1.195 6 UFC	+	+	+	+	+	Pres	30,35	26,66	Pos	+	Pres	30,73	21,41	Pos	+	Pres	=PA	=PA
20	203	Cottage cheese with milk mousse	SAL 1.195 6 UFC	+	+	+	+	+	Pres	30,18	29,74	Pos	+	Pres	31,14	22,32	Pos	+	Pres	=PA	=PA
21	252	Goat milk Frico (pasteurized milk)	SAL 1.63 4 UFC	+	+	+	+	+	Pres	31,29	26,64	Pos	+	Pres	29,41	23,69	Pos	+	Pres	=PA	=PA
22	253	Cut goat milk cheese (pasteurized milk)	SAL 1.63 4 UFC	+	+	+	+	+	Pres	31,28	21,89	Pos	+	Pres	29,39	19,83	Pos	+	Pres	=PA	=PA
23	254	Saint Albay (pasteurized milk)	SAL 1.63 4 UFC	+	+	+	+	+	Pres	33,20	∅	Neg	+	Abs	30,87	36,11	Pos	+	Pres	≠ND(FN)	=PA
24	255	Brique de Brebis	SAL 1.63 4 UFC	+	+	+	+	+	Pres	30,42	31,05	Pos	+	Pres	29,67	31,13	Pos	+	Pres	=PA	=PA
25	258	Tomme de Montagnou (pasteurized milk)	SAL 1.196 1 UFC	+	+	+	+	+	Pres	31,87	∅	Neg	+	Abs	30,30	35,70	Pos	+	Pres	≠ND(FN)	=PA
26	260	Skimmed milk powder	SAL 1.197 5 UFC	+	+	+	+	+	Pres	32,03	23,81	Pos	+	Pres	29,15	22,34	Pos	+	Pres	=PA	=PA
27	371	Frmer cream	SAL 1.178 <1 UFC	+	+	+	+	+	Pres	30,74	20,43	Pos	+	Pres	29,27	19,01	Pos	+	Pres	=PA	=PA
28	483	Powdered lactoserum	SAL 1.178 8 UFC	+	+	+	+	+	Pres	38,31	26,92	Pos	+	Pres	29,44	21,03	Pos	+	Pres	=PA	=PA
29	484	Powdered buttermilk	SAL 1.178 8 UFC	+	+	+	+	+	Pres	29,69	26,06	Pos	+	Pres	29,47	24,30	Pos	+	Pres	=PA	=PA
30	485	Powdered full-cream milk	SAL 1.178 8 UFC	+	+	+	+	+	Pres	30,02	29,85	Pos	+	Pres	30,30	30,19	Pos	+	Pres	=PA	=PA
31	486	Raw milk	nc	+	+	+	+	+	Pres	30,23	34,72	Pos	+	Pres	29,86	33,78	Pos	+	Pres	=PA	=PA
32	489	First age milk powder	SAL 1.191 4 UFC	+	+	+	+	+	Pres	29,62	20,73	Pos	+	Pres	29,33	23,06	Pos	+	Pres	=PA	=PA

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				RVS		MKTTn		Conf.		Manual protocol					Automated protocol					MR/MAm	MR/MAa
				XLD	HK	XLD	HK			Ct Inh	Ct Res	Test result	Conf.	Final result	Ct Inh	Ct Res	Test result	Conf.	Final result		
1	73	Celery remoulade	/	-	-	-	-	/	Abs	30,47	Ø	Neg	/	Abs	29,94	Ø	Neg	/	Abs	=NA	=NA
2	74	Mix with tomatoes salad and red oignons	/	-	-	-	-	/	Abs	33,21	Ø	Neg	/	Abs	30,08	Ø	Neg	/	Abs	=NA	=NA
3	75	Vinaigrette cucumbers	/	-	-	-	-	/	Abs	31,68	Ø	Neg	/	Abs	30,72	Ø	Neg	/	Abs	=NA	=NA
4	76	Potatoes salad	/	-	-	-	-	/	Abs	30,21	Ø	Neg	/	Abs	30,67	Ø	Neg	/	Abs	=NA	=NA
5	77	Vegetables mix with mayonnaise	/	-	-	-	-	/	Abs	30,62	Ø	Neg	/	Abs	30,20	Ø	Neg	/	Abs	=NA	=NA
6	84	Strawberry coulis	/	-	-	-	-	/	Abs	31,70	Ø	Neg	/	Abs	30,16	Ø	Neg	/	Abs	=NA	=NA
7	87	Salad: cauliflower-broccoli-tomato-vinaigrette	/	-	-	-	-	/	Abs	35,12	Ø	Neg	/	Abs	30,84	Ø	Neg	/	Abs	=NA	=NA
8	88	Mushrooms, tomatoes, vinaigrette	/	-	-	-	-	/	Abs	31,03	Ø	Neg	/	Abs	30,51	Ø	Neg	/	Abs	=NA	=NA
9	90	Fried vegetables (asparagus, cabbage, zucchini, eggplant)	/	-	-	-	-	/	Abs	31,59	Ø	Neg	/	Abs	29,93	Ø	Neg	-	Abs	=NA	=NA
10	93	Rosemary	/	-	-	-	-	/	Abs	Ø	Ø	Inh	/	Inh	30,56	Ø	Neg	/	Abs	=NA	=NA
11	117	Green beans	SAL1.72 1 UFC	-	-	-	-	/	Abs	31,34	Ø	Neg	/	Abs	30,15	Ø	Neg	/	Abs	=NA	=NA
12	120	Raw thuna filet	SAL1.51 6 UFC	-	-	-	-	/	Abs	33,22	Ø	Neg	/	Abs	30,44	Ø	Neg	/	Abs	=NA	=NA
13	139	Raw salmon fillet	/	-	-	-	-	/	Abs	34,97	Ø	Neg	/	Abs	29,94	Ø	Neg	/	Abs	=NA	=NA
14	141	Peas carrots	/	-	-	-	-	/	Abs	31,35	Ø	Neg	/	Abs	30,17	Ø	Neg	/	Abs	=NA	=NA
15	142	Frozen breaded fish	/	-	-	-	-	/	Abs	31,22	Ø	Neg	/	Abs	29,80	Ø	Neg	/	Abs	=NA	=NA
16	149	Potatoes zucchini cheese gratin	/	-	-	-	-	/	Abs	30,66	Ø	Neg	/	Abs	30,66	Ø	Neg	/	Abs	=NA	=NA
17	151	Thuna sushi	/	-	-	-	-	/	Abs	29,44	Ø	Neg	/	Abs	30,68	Ø	Neg	/	Abs	=NA	=NA
18	153	Saithe fillet	/	-	-	-	-	/	Abs	33,62	Ø	Neg	/	Abs	30,51	Ø	Neg	/	Abs	=NA	=NA
19	207	Swordfish loin	/	-	-	-	-	/	Abs	30,18	38,77	Pos	-	Abs	30,12	Ø	Neg	/	Abs	=NA(PP)	=NA
20	208	Frozen cod fillet	/	-	-	-	-	/	Abs	29,72	Ø	Neg	/	Abs	29,68	Ø	Neg	/	Abs	=NA	=NA
21	209	Whiting fillet	/	-	-	-	-	-	Abs	33,45	Ø	Neg	/	Abs	30,30	Ø	Neg	/	Abs	=NA	=NA
22	211	Red-mullet fillet	/	-	-	-	-	-	Abs	30,12	Ø	Neg	/	Abs	29,83	Ø	Neg	/	Abs	=NA	=NA
23	212	Trout fillet	/	-	-	-	-	/	Abs	30,37	Ø	Neg	/	Abs	29,39	Ø	Neg	/	Abs	=NA	=NA
24	213	Panga fillet	/	-	-	-	-	/	Abs	31,31	Ø	Neg	/	Abs	30,26	Ø	Neg	/	Abs	=NA	=NA
25	214	Raw prawns	/	-	-	-	-	/	Abs	30,70	Ø	Neg	/	Abs	30,25	Ø	Neg	/	Abs	=NA	=NA
26	215	Frozen seafood cocktail (mussels, shrimp, squid, surimi)	/	-	-	-	-	/	Abs	31,26	38,33	Pos	-	Abs	29,97	Ø	Neg	/	Abs	=NA(PP)	=NA
27	263	Cucumber	/	-	-	-	-	/	Abs	29,87	Ø	Neg	/	Abs	31,64	Ø	Neg	/	Abs	=NA	=NA
28	264	Grated red cabbage	/	-	-	-	-	/	Abs	31,40	Ø	Neg	/	Abs	30,51	38,64	Pos	-	Abs	=NA	=NA(PP)
29	265	Grated carrots	/	-	-	-	-	/	Abs	29,93	39,65	Pos	-	Abs	30,69	Ø	Neg	/	Abs	=NA(PP)	=NA
30	266	Grated celery	/	-	-	-	-	/	Abs	32,83	Ø	Neg	/	Abs	30,50	Ø	Neg	/	Abs	=NA	=NA
31	267	Grated beet	/	-	-	-	-	/	Abs	30,29	Ø	Neg	/	Abs	30,14	Ø	Neg	/	Abs	=NA	=NA
32	272	Grapes	/	-	-	-	-	/	Abs	30,16	Ø	Neg	/	Abs	29,96	Ø	Neg	/	Abs	=NA	=NA
33	273	Strawberries	/	-	-	-	-	/	Abs	30,70	Ø	Neg	/	Abs	30,50	Ø	Neg	/	Abs	=NA	=NA
34	372	Rosemary	/	-	-	-	-	/	Abs	31,09	Ø	Neg	/	Abs	30,35	Ø	Neg	/	Abs	=NA	=NA
35	373	Cocoa butter	/	-	-	-	-	/	Abs	32,56	Ø	Neg	/	Abs	30,03	Ø	Neg	/	Abs	=NA	=NA



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				XLD	HK	XLD	HK			Ct Inh	Ct Res	Test result	Conf.	Final result	Ct Inh	Ct Res	Test result	Conf.	Final result		
1	78	Pear chocolate pie	/	-	-	-	-	/	Abs	30,54	∅	Neg	/	Abs	30,23	∅	Neg	/	Abs	=NA	=NA
2	79	Lemon vanilla pastry	/	-	-	-	-	/	Abs	31,90	∅	Neg	/	Abs	30,26	∅	Neg	/	Abs	=NA	=NA
3	80	Raspberry pie	/	-	-	-	-	/	Abs	31,15	∅	Neg	/	Abs	31,35	∅	Neg	/	Abs	=NA	=NA
4	81	Coffee éclair	/	-	-	-	-	/	Abs	31,02	∅	Neg	/	Abs	30,44	∅	Neg	/	Abs	=NA	=NA
5	82	Vanilla pudding	/	-	-	-	-	/	Abs	31,23	∅	Neg	/	Abs	30,16	∅	Neg	/	Abs	=NA	=NA
6	154	Kiwi apple mano pie	/	-	-	-	-	/	Abs	29,60	∅	Neg	/	Abs	30,65	∅	Neg	/	Abs	=NA	=NA
7	157	Custard for cake filling	/	-	-	-	-	/	Abs	29,41	∅	Neg	/	Abs	29,99	∅	Neg	/	Abs	=NA	=NA
8	180	Custard	/	-	-	-	-	/	Abs	30,43	∅	Neg	/	Abs	33,20	∅	Neg	/	Abs	=NA	=NA
9	181	Pudding with eggs	/	-	-	-	-	/	Abs	30,07	39,92	Pos	-	Abs	31,91	∅	Neg	/	Abs	=NA(PP)	=NA
10	182	Eggs	/	-	-	-	-	/	Abs	30,07	∅	Neg	/	Abs	33,77	∅	Neg	/	Abs	=NA	=NA
11	216	Pastry with custard	/	-	-	-	-	/	Abs	30,34	∅	Neg	/	Abs	29,86	∅	Neg	/	Abs	=NA	=NA
12	217	Pastry with whipped cream	/	-	-	-	-	/	Abs	30,70	∅	Neg	/	Abs	30,66	∅	Neg	/	Abs	=NA	=NA
13	218	Tropézienne	/	-	-	-	-	/	Abs	30,08	∅	Neg	/	Abs	30,47	∅	Neg	/	Abs	=NA	=NA
14	219	Paris-Brest	/	-	-	-	-	/	Abs	30,44	∅	Neg	/	Abs	29,80	∅	Neg	/	Abs	=NA	=NA
15	220	Flan pie	/	-	-	-	-	/	Abs	30,10	∅	Neg	/	Abs	30,24	∅	Neg	/	Abs	=NA	=NA
16	221	Strawberry and custard pie	/	-	-	-	-	/	Abs	30,25	∅	Neg	/	Abs	30,44	∅	Neg	/	Abs	=NA	=NA
17	222	Chocolate éclair	/	-	-	-	-	/	Abs	30,63	∅	Neg	/	Abs	30,30	∅	Neg	/	Abs	=NA	=NA
18	223	Mille feuilles	/	-	-	-	-	/	Abs	30,72	∅	Neg	/	Abs	30,09	∅	Neg	/	Abs	=NA	=NA
19	274	Madeleines	/	-	-	-	-	/	Abs	30,52	∅	Neg	/	Abs	30,19	∅	Neg	/	Abs	=NA	=NA
20	275	Mayonnaise	/	-	-	-	-	/	Abs	37,65	∅	Neg	/	Abs	31,07	∅	Neg	/	Abs	=NA	=NA
21	276	Fresh tagliatelle	/	-	-	-	-	/	Abs	31,06	∅	Neg	/	Abs	33,53	∅	Neg	/	Abs	=NA	=NA
22	277	Tortilla	/	-	-	-	-	/	Abs	30,10	37,75	Pos	-	Abs	30,18	∅	Neg	/	Abs	=NA(PP)	=NA
23	278	Pancakes filled with cooked eggs	/	-	-	-	-	/	Abs	30,19	∅	Neg	/	Abs	30,38	∅	Neg	/	Abs	=NA	=NA
24	279	Homemade caramel pudding	/	-	-	-	-	/	Abs	29,84	∅	Neg	/	Abs	30,76	∅	Neg	/	Abs	=NA	=NA
25	280	Homemade flan pie	/	-	-	-	-	/	Abs	30,96	∅	Neg	/	Abs	31,03	∅	Neg	/	Abs	=NA	=NA
26	281	Whole eggs	/	-	-	-	-	/	Abs	∅	∅	Inh	/	Inh	30,27	∅	Neg	/	Abs	=NA(PP)	=NA
27	282	White of egg	/	-	-	-	-	/	Abs	34,43	38,42	Pos	-	Abs	∅	∅	Neg	/	Abs	=NA	=NA
28	283	Egg yolk	/	-	-	-	-	/	Abs	∅	∅	Inh	/	Inh	32,42	∅	Neg	/	Abs	=NA	=NA
29	284	Egg powder	/	-	-	-	-	/	Abs	30,04	∅	Neg	/	Abs	∅	∅	Neg	/	Abs	=NA	=NA
30	481	Egg yolk powderEgg powder	SAL 1.48 1 UFC	-	-	-	-	/	Abs	30,71	∅	Neg	/	Abs	34,78	∅	Neg	/	Abs	=NA	=NA
31	482	Oeuf entier en poudre	SAL 1.48 1 UFC	-	-	-	-	/	Abs	∅	∅	Neg	/	Abs	31,82	∅	Neg	/	Abs	=NA	=NA
				-	-	-	-	/	Abs	32,52	∅	Neg	/	Abs	30,79	34,52	Pos	-	Abs	=NA	=NA(PP)





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				XLD	HK	XLD	HK			Ct Inh	Ct Res	Test result	Conf.	Final result	Ct Inh	Ct Res	Test result	Conf.	Final result		
1	10	Meat for animals	/	- C	- B	- C	- B	/	<b>Abs</b>	31,07	∅	Neg	/	<b>Abs</b>	29,84	∅	Neg	/	<b>Abs</b>	=NA	=NA
2	14	Meat for animals	/	- C	- C	- A	- A	/	<b>Abs</b>	30,38	∅	Neg	/	<b>Abs</b>	29,97	∅	Neg	/	<b>Abs</b>	=NA	=NA
3	16	Meat for animals	/	- A	- A	- B	- A	/	<b>Abs</b>	32,72	∅	Neg	/	<b>Abs</b>	29,96	∅	Neg	/	<b>Abs</b>	=NA	=NA
4	440	Croquettes : Shih Tzu adult	/	- ∅	- ∅	- ∅	- ∅	/	<b>Abs</b>	31,46	∅	Neg	/	<b>Abs</b>	29,03	∅	Neg	/	<b>Abs</b>	=NA	=NA
5	441	Veterinary diet mash for dogs	/	- ∅	- ∅	- ∅	- ∅	/	<b>Abs</b>	30,87	∅	Neg	/	<b>Abs</b>	38,88	∅	Neg	/	<b>Abs</b>	=NA	=NA
6	442	Croquettes :Teckel adult	/	- ∅	- ∅	- ∅	- ∅	/	<b>Abs</b>	31,14	∅	Neg	/	<b>Abs</b>	29,63	∅	Neg	/	<b>Abs</b>	=NA	=NA
7	443	Croquettes : golden retriever adult	/	- ∅	- ∅	- ∅	- ∅	/	<b>Abs</b>	32,85	∅	Neg	/	<b>Abs</b>	31,54	∅	Neg	/	<b>Abs</b>	=NA	=NA
8	444	Croquette : chatons	/	- ∅	- ∅	- ∅	- ∅	/	<b>Abs</b>	33,14	∅	Neg	/	<b>Abs</b>	30,54	∅	Neg	/	<b>Abs</b>	=NA	=NA
9	445	Veterinary diet mash for cats	/	- ∅	- ∅	- ∅	- ∅	/	<b>Abs</b>	30,76	∅	Neg	/	<b>Abs</b>	30,28	∅	Neg	/	<b>Abs</b>	=NA	=NA
10	446	Croquettes : cats adult	/	- ∅	- ∅	- ∅	- ∅	/	<b>Abs</b>	34,34	∅	Neg	/	<b>Abs</b>	30,30	27,49	Pos	-	<b>Abs</b>	=NA	=NA(PP)
11	447	Croquettes dental : feline	/	- ∅	- ∅	- ∅	- ∅	/	<b>Abs</b>	32,81	∅	Neg	/	<b>Abs</b>	29,85	∅	Neg	/	<b>Abs</b>	=NA	=NA
12	448	Rats / mice feed	/	- ∅	- ∅	- ∅	- ∅	/	<b>Abs</b>	35,60	∅	Neg	/	<b>Abs</b>	30,84	∅	Neg	/	<b>Abs</b>	=NA	=NA
13	449	Rabbits feed	/	- ∅	- ∅	- ∅	- ∅	/	<b>Abs</b>	30,31	∅	Neg	/	<b>Abs</b>	30,58	∅	Neg	/	<b>Abs</b>	=NA	=NA
14	450	Alfalfa	/	- ∅	- ∅	- ∅	- ∅	/	<b>Abs</b>	29,70	∅	Neg	/	<b>Abs</b>	30,85	∅	Neg	/	<b>Abs</b>	=NA	=NA
15	451	Grain	/	- C	- C	+ 2,C	+ 2,C	-	<b>Abs</b>	30,76	∅	Neg	/	<b>Abs</b>	30,05	∅	Neg	/	<b>Abs</b>	=NA	=NA
16	452	Soy beans for animals	/	- ∅	- ∅	- ∅	- ∅	/	<b>Abs</b>	31,39	∅	Neg	/	<b>Abs</b>	33,04	∅	Neg	/	<b>Abs</b>	=NA	=NA
17	453	Bran	/	- ∅	- ∅	- ∅	- ∅	/	<b>Abs</b>	31,75	∅	Neg	/	<b>Abs</b>	∅ 30,07	Inh ∅	Inh Neg	/ /	<b>Inh Abs</b>	=NA	=NA
18	471	Oilcake	/	- C	- C	- B	- A	/	<b>Abs</b>	30,30	36,70	Pos	-	<b>Abs</b>	30,18	∅	Neg	/	<b>Abs</b>	=NA(PP)	=NA
19	574	Meat for animals	/	- C	- C	- C	+ 2,C	-	<b>Abs</b>	29,73	∅	Neg	/	<b>Abs</b>	30,17	∅	Neg	/	<b>Abs</b>	=NA	=NA
20	575	Poultry meat for animals	/	- ∅	- ∅	- ∅	- ∅	/	<b>Abs</b>	29,99	∅	Neg	/	<b>Abs</b>	30,31	∅	Neg	/	<b>Abs</b>	=NA	=NA
21	578	Bone meal 1	/	- C	- C	- C	- C	/	<b>Abs</b>	29,98	∅	Neg	/	<b>Abs</b>	30,13	∅	Neg	/	<b>Abs</b>	=NA	=NA
22	579	Bone meal 2	/	- B	- C	- B	- C	/	<b>Abs</b>	28,78	∅	Neg	/	<b>Abs</b>	30,72	∅	Neg	/	<b>Abs</b>	=NA	=NA
23	580	Bone meal 3	/	+ 3,A	+ 3,A	- A	- A	-	<b>Abs</b>	29,28	∅	Neg	-	<b>Abs</b>	30,60	∅	Neg	-	<b>Abs</b>	=NA	=NA
24	581	Bone meal 4	/	- A	- B	- A	- A	/	<b>Abs</b>	29,38	∅	Neg	/	<b>Abs</b>	30,14	∅	Neg	/	<b>Abs</b>	=NA	=NA
25	582	Bone meal 5	/	- B	- B	- B	- B	/	<b>Abs</b>	28,96	∅	Neg	/	<b>Abs</b>	30,38	∅	Neg	/	<b>Abs</b>	=NA	=NA
26	583	Bone meal 6	/	- B	- B	- B	- B	/	<b>Abs</b>	28,87	∅	Neg	/	<b>Abs</b>	32,00	∅	Neg	/	<b>Abs</b>	=NA	=NA
27	584	Bone meal 7	/	+ 3,A	- B	+ 3,B	- B	-	<b>Abs</b>	28,93	∅	Neg	-	<b>Abs</b>	30,44	∅	Neg	-	<b>Abs</b>	=NA	=NA
28	585	Bone meal 8	/	- C	- C	- C	- C	/	<b>Abs</b>	29,30	∅	Neg	/	<b>Abs</b>	30,34	∅	Neg	/	<b>Abs</b>	=NA	=NA
29	586	Bone meal 9	/	- ∅	- ∅	- ∅	- ∅	/	<b>Abs</b>	29,00	∅	Neg	/	<b>Abs</b>	30,07	∅	Neg	/	<b>Abs</b>	=NA	=NA
30	587	Bone meal 10	/	- C	- C	- C	- C	/	<b>Abs</b>	29,73	∅	Neg	/	<b>Abs</b>	30,90	∅	Neg	/	<b>Abs</b>	=NA	=NA

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				XLD	HK	XLD	HK			Ct Inh	Ct Res	Test result	Conf.	Final result	Ct Inh	Ct Res	Test result	Conf.	Final result		
1	454	Croquettes : Shih Tzu adult	SAL 1.69 6 UFC	+	+	+	+	+	Pres	30,22	21,81	Pos	+	Pres	30,00	21,48	Pos	+	Pres	=PA	=PA
2	455	Veterinary diet mash for dogs	SAL 1.69 6 UFC	+	+	+	+	+	Pres	30,28	20,09	Pos	+	Pres	30,20	22,90	Pos	+	Pres	=PA	=PA
3	456	Croquettes :Teckel adult	SAL 1.69 6 UFC	+	+	+	+	+	Pres	29,99	20,81	Pos	+	Pres	30,87	23,44	Pos	+	Pres	=PA	=PA
4	457	Croquettes : golden retriever adult	SAL 1.69 6 UFC	+	+	+	+	+	Pres	30,51	22,39	Pos	+	Pres	29,71	20,52	Pos	+	Pres	=PA	=PA
5	458	Croquette : kittens	SAL 1.126 4 UFC	+	+	+	+	+	Pres	30,61	21,44	Pos	+	Pres	29,74	20,52	Pos	+	Pres	=PA	=PA
6	459	Veterinary diet mash for cats	SAL 1.126 4 UFC	+	+	+	+	+	Pres	30,87	26,36	Pos	+	Pres	29,47	21,96	Pos	+	Pres	=PA	=PA
7	460	Croquettes : cats adult	SAL 1.126 4 UFC	+	+	+	+	+	Pres	33,28	21,96	Pos	+	Pres	31,64	23,18	Pos	+	Pres	=PA	=PA
8	461	Croquettes dental : feline	SAL 1.126 4 UFC	+	+	+	+	+	Pres	31,55	21,88	Pos	+	Pres	29,34	25,26	Pos	+	Pres	=PA	=PA
9	462	Rats / mice feed	SAL 1.123 3 UFC	+	+	+	+	+	Pres	32,36	21,00	Pos	+	Pres	29,34	18,47	Pos	+	Pres	=PA	=PA
10	463	Rabbits feed	SAL 1.74 6 UFC	+	+	+	+	+	Pres	30,32	20,71	Pos	+	Pres	29,78	18,11	Pos	+	Pres	=PA	=PA
11	464	Alfalfa	SAL 1.74 6 UFC	+	+	+	+	+	Pres	29,49	20,40	Pos	+	Pres	29,70	22,95	Pos	+	Pres	=PA	=PA
12	465	Grain	SAL 1.74 6 UFC	+	+	+	+	+	Pres	29,36	multi ct 18,93	Pos	+	Pres	29,37	21,16	Pos	+	Pres	=PA	=PA
13	466	Soy beans for animals	SAL 1.123 3 UFC	+	+	+	+	+	Pres	31,35	32,62	Pos	+	Pres	34,83	34,80	Pos	+	Pres	=PA	=PA
14	467	Bran	SAL 1.123 3 UFC	+	+	+	+	+	Pres	31,28	31,63	Pos	+	Pres	32,90	29,26	Pos	+	Pres	=PA	=PA
15	468	Oilcake	SAL 1.173 3 UFC	-	-	-	-	/	Abs	30,27	33,07	Pos	+	Pres	30,37	35,46	Pos	+	Pres	≠PD	≠PD
16	472	Oilcake	nc	-	-	-	-	+	Pres	29,44	27,17	Pos	+	Pres	30,03	33,33	Pos	+	Pres	=PA	=PA
17	473	Oilcake	nc	-	-	-	-	+	Pres	30,71	30,01	Pos	+	Pres	30,25	34,87	Pos	+	Pres	=PA	=PA
18	576	Meat for animals	SAL 1.114 4 UFC	+	+	+	+	+	Pres	29,24	29,06	Pos	+	Pres	31,44	36,18	Pos	+	Pres	=PA	=PA
19	595	Bone meal 11	SAL 1.173 3 UFC	+	+	+	+	+	Pres	28,65	29,95	Pos	+	Pres	28,51	21,64	Pos	+	Pres	=PA	=PA
20	596	Bone meal 12	SAL 1.173 3 UFC	+	+	+	+	+	Pres	29,09	27,36	Pos	+	Pres	28,76	22,24	Pos	+	Pres	=PA	=PA
21	597	Bone meal 13	SAL 1.173 3 UFC	+	+	+	+	+	Pres	28,64	24,63	Pos	+	Pres	28,51	23,83	Pos	+	Pres	=PA	=PA
22	598	Bone meal 14	SAL 1.114 4 UFC	+	+	+	+	+	Pres	28,49	multi ct 26,96	Pos	+	Pres	29,35	23,89	Pos	+	Pres	=PA	=PA
23	599	Bone meal 15	SAL 1.114 4 UFC	+	+	+	+	+	Pres	29,06	39,90	Pos	+	Pres	29,30	35,37	Pos	+	Pres	=PA	=PA
24	600	Bone meal 16	SAL 1.114 4 UFC	+	+	+	+	+	Pres	29,47	26,81	Pos	+	Pres	29,52	29,40	Pos	+	Pres	=PA	=PA
25	601	Bone meal 17	nc	+	+	+	+	+	Pres	30,38	28,43	Pos	+	Pres	28,87	20,16	Pos	+	Pres	=PA	=PA
26	602	Bone meal 18	nc	+	+	+	+	+	Pres	30,54	27,86	Pos	+	Pres	28,53	24,65	Pos	+	Pres	=PA	=PA
27	603	Bone meal 19	nc	-	-	+	+	+	Pres	30,13	25,50	Pos	+	Pres	28,87	24,58	Pos	+	Pres	=PA	=PA
28	604	Bone meal 20	nc	+	-	+	+	+	Pres	34,61	32,43	Pos	+	Pres	28,93	28,40	Pos	+	Pres	=PA	=PA
29	605	Bone meal 21	nc	+	+	+	+	+	Pres	30,04	20,36	Pos	+	Pres	29,95	25,29	Pos	+	Pres	=PA	=PA
30	606	Bone meal 22	nc	+	+	+	-	+	Pres	29,52	30,50	Pos	+	Pres	29,02	31,44	Pos	+	Pres	=PA	=PA

N°	Ref	Sample	Cont.(a)	Reference method					Result	Alternative method										Concordance	
				RVS		MKTTn		Conf.		Manual protocol					Automated protocol					MR/MAm	MR/MAa
				XLD	HK	XLD	HK			Ct Inh	Ct Res	Test result	Conf.	Final result	Ct Inh	Ct Res	Test result	Conf.	Final result		
1	380	Swab: cutting board	/	-	-	-	-	/	Abs	30,95	Ø	Neg	/	Abs	29,52	Ø	Neg	/	Abs	=NA	=NA
2	381	Swab: dirty oven	/	-	-	-	-	/	Abs	30,27	Ø	Neg	/	Abs	29,91	Ø	Neg	/	Abs	=NA	=NA
3	382	Swab: wall	/	-	-	-	-	/	Abs	29,44	Ø	Neg	/	Abs	29,95	Ø	Neg	/	Abs	=NA	=NA
4	383	Swab: cutting board	/	-	-	-	-	/	Abs	30,62	Ø	Neg	/	Abs	29,83	Ø	Neg	/	Abs	=NA	=NA
5	384	Swab: shelf storage	/	-	-	-	-	/	Abs	29,99	Ø	Neg	/	Abs	30,46	Ø	Pos	-	Abs	=NA	=NA
6	385	Swab: baby bottle	/	-	-	-	-	/	Abs	31,75	Ø	Neg	/	Abs	29,85	Ø	Neg	/	Abs	=NA	=NA
7	386	Swab: cutting board	/	-	-	-	-	/	Abs	29,34	Ø	Neg	/	Abs	30,28	Ø	Neg	/	Abs	=NA	=NA
8	388	Swab: shelf from fridge	/	-	-	-	-	/	Abs	29,87	Ø	Neg	/	Abs	30,45	Ø	Neg	/	Abs	=NA	=NA
9	389	Swab: siphon room for dish preparation	/	-	-	-	-	/	Abs	29,58	Ø	Neg	/	Abs	30,41	Ø	Neg	/	Abs	=NA	=NA
10	400	Sponge: cutting board	/	-	-	-	-	/	Abs	29,03	27,32	Pos	-	Abs	30,21	Ø	Neg	/	Abs	=NA(PP)	=NA
11	401	Sponge: refrigerator butchery	/	-	-	-	-	/	Abs	29,43	Ø	Neg	/	Abs	30,13	Ø	Neg	/	Abs	=NA	=NA
14	404	Sponge: wall of storage room	/	-	-	-	-	/	Abs	29,84	Ø	Neg	/	Abs	30,11	Ø	Neg	/	Abs	=NA	=NA
15	405	Dairy industry dusts	/	A	A	A	A	/	Abs	29,88	Ø	Neg	/	Abs	29,72	Ø	Neg	/	Abs	=NA	=NA
16	406	Dairy industry dusts	/	-	-	-	-	/	Abs	30,28	Ø	Neg	/	Abs	29,61	Ø	Neg	/	Abs	=NA	=NA
17	407	Agro-alimentary dusts	/	-	-	-	-	/	Abs	30,09	Ø	Neg	/	Abs	29,98	Ø	Neg	/	Abs	=NA	=NA
18	408	Agro-alimentary dusts	/	-	-	-	-	/	Abs	30,01	Ø	Neg	/	Abs	29,81	Ø	Neg	/	Abs	=NA	=NA
19	409	Agro-alimentary dusts	/	-	-	-	-	/	Abs	29,99	Ø	Neg	/	Abs	30,04	Ø	Neg	/	Abs	=NA	=NA
20	418	Sponge: shelf	SAL 1.202 3 UFC	-	-	-	-	/	Abs	29,91	Ø	Neg	/	Abs	29,95	Ø	Neg	/	Abs	=NA	=NA
21	419	Sponge: spoon	SAL 1.202 3 UFC	-	-	-	-	/	Abs	29,61	Ø	Neg	/	Abs	29,48	Ø	Neg	/	Abs	=NA	=NA
22	420	Rinsing water	/	-	-	-	-	/	Abs	29,44	Ø	Neg	/	Abs	29,93	Ø	Neg	/	Abs	=NA	=NA
23	421	Ice in food contact	/	-	-	-	-	/	Abs	29,53	Ø	Neg	/	Abs	29,95	Ø	Neg	/	Abs	=NA	=NA
24	422	Rinsing water	/	-	-	-	-	/	Abs	29,40	Ø	Neg	/	Abs	29,79	Ø	Neg	/	Abs	=NA	=NA
25	423	Rinsing water	/	-	-	C	C	/	Abs	29,51	28,09	Pos	-	Abs	30,52	Ø	Neg	/	Abs	=NA(PP)	=NA
26	424	Rinsing water	/	-	-	-	-	/	Abs	29,70	Ø	Neg	/	Abs	29,84	34,62	Pos	-	Abs	=NA	=NA(PP)
27	425	Ice in food contact	/	-	-	-	-	/	Abs	30,07	Ø	Neg	/	Abs	29,85	Ø	Neg	/	Abs	=NA	=NA
28	426	Process water (fish)	/	C	C	B	B	/	Abs	29,24	Ø	Neg	/	Abs	29,28	Ø	Neg	/	Abs	=NA	=NA
29	427	Process water (meat)	/	-	-	-	-	/	Abs	29,18	Ø	Neg	/	Abs	29,78	Ø	Neg	/	Abs	=NA	=NA
30	428	Process water (pastry)	/	-	-	-	-	/	Abs	29,90	Ø	Neg	/	Abs	29,64	Ø	Neg	/	Abs	=NA	=NA
31	429	Ice in food contact	/	-	-	-	-	/	Abs	30,15	Ø	Neg	/	Abs	29,93	Ø	Neg	/	Abs	=NA	=NA

N°	Ref	Sample	Cont.(a)	Reference method					Result	Alternative method										Concordance	
				RVS		MKTTn		Conf.		Manual protocol					Automated protocol					MR/MAM	MR/MAa
				XLD	HK	XLD	HK			Ct Inh	Ct Res	Test result	Conf.	Final result	Ct Inh	Ct Res	Test result	Conf.	Final result		
1	387	Swab: shelf for today's special	nc	+	+	+	+	+	Pres	30,32	37,50	Pos	+	Pres	29,67	36,65	Pos	+	Pres	=PA	=PA
2	390	swab: refrigerator	SAL 1.78 6 UFC	+	+	-	-	+	Pres	30,22	35,49	Pos	+	Pres	30,33	35,59	Pos	+	Pres	=PA	=PA
3	391	Swab : freezer	SAL 1.78 6 UFC	+	+	+	+	+	Pres	33,81	35,38	Pos	+	Pres	29,06	24,90	Pos	+	Pres	=PA	=PA
4	392	Swab : incubator	SAL 1.78 6 UFC	+	+	+	+	+	Pres	28,29	23,74	Pos	+	Pres	29,09	19,08	Pos	+	Pres	=PA	=PA
5	393	Swab: siphon	SAL 1.78 6 UFC	+	-	+	+	+	Pres	29,56	33,25	Pos	+	Pres	30,08	36,90	Pos	+	Pres	=PA	=PA
6	394	Swab: sink	SAL 1.96 5 UFC	+	+	+	+	+	Pres	29,32	28,71	Pos	+	Pres	29,56	30,78	Pos	+	Pres	=PA	=PA
7	395	Swab: shelf	SAL 1.96 5 UFC	+	+			+	Pres	30,77	19,21	Pos	+	Pres	29,67	21,01	Pos	+	Pres	=PA	=PA
8	396	Swab: cutting board	SAL 1.96 5 UFC	+	+	+	+	+	Pres	29,66	multi ct 19,15	Pos	+	Pres	29,00	20,89	Pos	+	Pres	=PA	=PA
9	397	Swab: oven	SAL 1.96 5 UFC	+	+	+	+	+	Pres	29,77	multi ct 18,81	Pos	+	Pres	29,16	19,13	Pos	+	Pres	=PA	=PA
10	398	Swab: pot	SAL 1.127 6 UFC	+	+	+	+	+	Pres	32,32	20,67	Pos	+	Pres	29,05	multi ct 18,78	Pos	+	Pres	=PA	=PA
11	399	Dairy industry dusts	SAL 1.127 6 UFC	+	+	+	+	+	Pres	30,34	19,90	Pos	+	Pres	29,27	19,89	Pos	+	Pres	=PA	=PA
12	410	Dairy industry dusts	SAL 1.127 6 UFC	+	+	-	-	+	Pres	28,95	19,76	Pos	+	Pres	29,32	22,03	Pos	+	Pres	=PA	=PA
13	411	Agro-alimentary dusts	SAL 1.127 6 UFC	+	+	+	+	+	Pres	29,22	multi ct 18,76	Pos	+	Pres	29,85	19,49	Pos	+	Pres	=PA	=PA
14	412	Agro-alimentary dusts	SAL 1.113 4 UFC	+	+	+	+	+	Pres	29,57	multi ct 17,85	Pos	+	Pres	28,90	18,70	Pos	+	Pres	=PA	=PA
15	413	Agro-alimentary dusts	SAL 1.113 4 UFC	+	+	+	+	+	Pres	29,14	multi ct 18,43	Pos	+	Pres	28,80	20,42	Pos	+	Pres	=PA	=PA
16	414	Sponge: dishwasher	SAL 1.113 4 UFC	+	+	+	+	+	Pres	29,43	multi ct 18,52	Pos	+	Pres	28,88	19,95	Pos	+	Pres	=PA	=PA
17	415	Sponge: siphon	SAL 1.113 4 UFC	+	+	+	+	+	Pres	28,95	multi ct 18,69	Pos	+	Pres	29,62	20,97	Pos	+	Pres	=PA	=PA
18	416	Sponge: cutting board	SAL 1.202 3 UFC	+	+	+	+	+	Pres	29,50	37,92	Pos	+	Pres	30,11	34,03	Pos	+	Pres	=PA	=PA
19	430	Rinsing water	SAL 1.99 8 UFC	+	+	+	+	+	Pres	29,71	18,69	Pos	+	Pres	29,19	22,97	Pos	+	Pres	=PA	=PA
20	431	Ice in food contact	SAL 1.99 8 UFC	+	+	+	+	+	Pres	28,89	19,84	Pos	+	Pres	29,25	23,83	Pos	+	Pres	=PA	=PA
21	432	Rinsing water	SAL 1.99 8 UFC	+	+	+	+	+	Pres	29,29	19,04	Pos	+	Pres	29,16	20,80	Pos	+	Pres	=PA	=PA
22	433	Rinsing water	SAL 1.116 7 UFC	+	+	+	+	+	Pres	28,97	23,34	Pos	+	Pres	29,67	27,74	Pos	+	Pres	=PA	=PA
23	434	Rinsing water	SAL 1.116 7 UFC	+	+	+	+	+	Pres	29,46	19,33	Pos	+	Pres	29,12	23,85	Pos	+	Pres	=PA	=PA
24	435	Ice in food contact	SAL 1.116 7 UFC	+	+	+	+	+	Pres	29,49	20,63	Pos	+	Pres	29,47	23,94	Pos	+	Pres	=PA	=PA
25	436	Process water (fish)	SAL 1.161 16 UFC	+	+	+	+	+	Pres	29,69	36,11	Pos	+	Pres	29,53	∅	Neg	+	Abs	=PA	≠ND(FN)
26	437	Process water (meat)	SAL 1.161 16 UFC	+	+	+	+	+	Pres	29,25	20,63	Pos	+	Pres	29,14	22,81	Pos	+	Pres	=PA	=PA
27	438	Process water (pastry)	SAL 1.161 16 UFC	+	+	+	+	+	Pres	28,68	22,49	Pos	+	Pres	29,43	24,68	Pos	+	Pres	=PA	=PA
28	439	Ice in food contact	SAL 1.161 16 UFC	+	+	+	+	+	Pres	29,78	21,04	Pos	+	Pres	28,96	22,15	Pos	+	Pres	=PA	=PA
29	469	Residues from agro-alim. industry	nc	+	+	+	+	+	Pres	30,43	30,39	Pos	+	Pres	31,32	33,65	Pos	+	Pres	=PA	=PA
30	470	Residues from agro-alim. industry	nc	+	+	+	+	+	Pres	29,49	35,29	Pos	+	Pres	30,43	29,93	Pos	+	Pres	=PA	=PA

## **APPENDIX 3**

### **RELATIVE LEVEL OF DETECTION**

#### **RAW RESULTS**

Legend:

- a: level determined by 5 enumerations
- NC: naturally contaminated
- + / Pos: positive result
- / Neg: negative result
- /: test non realized
- Ø: absence of Ct or absence of colonies
- Abs: absence of Salmonella in 25 g
- Pres: presence of Salmonella in 25 g
- Inh: inhibition of the PCR reaction
- A / B / C: level of annex flora, from high to low
- 1 / 2 / 3: level of typical flora, from high to low

Ref	Sample	Cont.	Reference method				Conf.	Result	Alternative method										Concordance		
			RVS		MKTTn				Manual protocol					Automated protocol					manual	auto	
			XLD	HK	XLD	HK			Ct Inh	Ct Res	Test result	Conf.	Final result	Ct Inh	Ct Res	Test result	Conf.	Final result			
SAL 1.133 Minced meat	0	/	-	-	-	-	/	Abs	30,29	Ø	Neg	/	Abs	30,28	Ø	Neg	/	Abs	MR=0/6		
			C	B	A	A	/	Abs	30,73	Ø	Neg	/	Abs	30,54	Ø	Neg	/	Abs			
			-	-	-	-	/	Abs	30,19	Ø	Neg	/	Abs	29,74	Ø	Neg	/	Abs			
			C	C	A	A	/	Abs	30,68	Ø	Neg	/	Abs	30,68	Ø	Neg	/	Abs			
			-	-	-	-	/	Abs	30,55	Ø	Neg	/	Abs	30,6	Ø	Neg	/	Abs			
			C	C	A	A	/	Abs	30,38	Ø	Neg	/	Abs	30,6	Ø	Neg	/	Abs			
	0,3	0,2	-	-	-	-	/	Abs	30,69	Ø	Neg	/	Abs	30,15	Ø	Neg	/	Abs	MR=0/6		
			-	-	+	-	-	Abs	30,17	Ø	Neg	-	Abs	29,83	Ø	Neg	-	Abs			
			C	C	3,A	A	/	Abs	31,22	Ø	Neg	/	Abs	30,78	Ø	Neg	/	Abs			
			-	-	-	-	/	Abs	30,91	Ø	Neg	/	Abs	30,52	Ø	Neg	/	Abs			
			C	C	A	A	/	Abs	31,41	Ø	Neg	/	Abs	30,57	Ø	Neg	/	Abs			
			B	B	A	A	/	Abs	30,00	Ø	Neg	/	Abs	30,02	Ø	Neg	/	Abs			
	0,6	0,5	-	-	-	-	/	Abs	30,04	Ø	Neg	/	Abs	30,19	Ø	Neg	/	Abs	MR=1/6		
			C	C	B	B	/	Abs	30,22	Ø	Neg	/	Abs	30,15	Ø	Neg	/	Abs			
			-	-	-	-	/	Abs	30,09	Ø	Neg	/	Abs	29,99	Ø	Neg	/	Abs			
			C	C	A	A	/	Abs	30,05	26,64	Pos	+	Pres	30,09	38,35	Pos	+	Pres			
			-	-	-	-	/	Abs	30,61	Ø	Neg	/	Abs	30,09	36,56	Pos	-	Abs			
			B	B	A	A	/	Abs	30,41	Ø	Neg	/	Abs	30,34	Ø	Neg	/	Abs			
	1	0,8	-	-	-	-	/	Abs	30,41	Ø	Neg	/	Abs	30,34	Ø	Neg	/	Abs	MR=2/6		
			+	+	+	+	+	Pres	29,68	23,35	Pos	+	Pres	30,08	33,39	Pos	+	Pres			
			2,C	2,C	1,C	1,C	+	Pres	28,95	24,07	Pos	+	Pres	30,01	34,59	Pos	+	Pres			
			-	-	-	-	/	Abs	30,70	Ø	Neg	/	Abs	30,06	31,6	Pos	-	Abs			
			C	C	B	B	/	Abs	29,74	37,53	Pos	/	Abs	29,76	35,36	Pos	-	Abs			
			B	B	B	B	/	Abs	30,32	Ø	Neg	/	Abs	29,38	Ø	Neg	/	Abs			
	3	3,0	-	-	-	-	/	Abs	30,21	Ø	Neg	/	Abs	30,95	Ø	Neg	/	Abs	MR=5/6		
			+	+	+	+	+	Pres	29,54	27,22	Pos	+	Pres	30,51	28,36	Pos	+	Pres			
			2,C	2,C	3,C	3,C	+	Pres	30,31	25,08	Pos	+	Pres	29,75	35,11	Pos	+	Pres			
			2,B	2,C	2,C	2,C	+	Pres	29,85	22,07	Pos	+	Pres	30,06	29,49	Pos	+	Pres			
			+	+	+	+	+	Pres	30,02	21,02	Pos	+	Pres	31,2	33,63	Pos	+	Pres			
			2,C	2,C	1,C	1,C	+	Pres	30,03	Ø	Neg	/	Abs	30,48	Ø	Neg	-	Abs			
	5	4,6	-	-	-	-	/	Abs	30,03	Ø	Neg	/	Abs	30,48	Ø	Neg	-	Abs	MR=6/6		
			+	+	+	+	+	Pres	29,95	24,89	Pos	+	Pres	29,73	34,04	Pos	+	Pres			
			2,C	2,C	2,C	2,C	+	Pres	29,36	22,56	Pos	+	Pres	30,08	27,51	Pos	+	Pres			
			+	+	+	+	+	Pres	30,03	26,58	Pos	+	Pres	30,61	26,94	Pos	+	Pres			
			+	+	+	+	+	Pres	29,56	25,91	Pos	+	Pres	30,78	26,36	Pos	+	Pres			
			2,C	2,C	2,C	2,C	+	Pres	30,23	33,73	Pos	+	Pres	30,19	25,79	Pos	+	Pres			
				2,C	2,C	1,C	1,C	+	Pres	30,45	34,37	Pos	+	Pres	30,21	28,54	Pos	+	Pres	MA=6/6	MA=6/6
				3,C	3,C	2,C	2,C	+	Pres	30,45	34,37	Pos	+	Pres	30,21	28,54	Pos	+	Pres		
				C	C	A	A	+	Pres	29,87	32,25	Pos	+	Pres	30,09	29,91	Pos	+	Pres		
				+	+	+	+	+	Pres	29,87	32,25	Pos	+	Pres	30,09	29,91	Pos	+	Pres		

Total viable count: 2.8x10<sup>5</sup> CFU/g

Ref	Sample	Cont.	Reference method				Conf.	Result	Alternative method										Concordance						
			RVS		MKTTn				Manual protocol					Automated protocol					manual	auto					
			XLD	HK	XLD	HK			Ct Inh	Ct Res	Test result	Conf.	Final result	Ct Inh	Ct Res	Test result	Conf.	Final result							
SAL 1.98 Raw milk	0	x	-	-	-	-	/	Abs	30,87	∅	Neg	/	Abs	29.64	∅	Neg	/	Abs	MR=0/6						
			C	C	A	A	/	Abs	30,03	38,92	Pos	-	Abs	30.66	∅	Neg	/	Abs							
			-	-	-	-	/	Abs	30,35	∅	Neg	/	Abs	30.57	∅	Neg	/	Abs							
			B	C	A	A	/	Abs	30,27	∅	Neg	/	Abs	31.11	∅	Neg	/	Abs							
			-	-	-	-	/	Abs	30,78	∅	Neg	/	Abs	30.37	35.96	Pos	-	Abs							
			C	C	A	A	/	Abs	30,15	∅	Neg	/	Abs	30.40	∅	Neg	/	Abs							
			-	-	-	-	/	Abs	30,60	∅	Neg	/	Abs	30.11	∅	Neg	/	Abs	MR=1/6						
			C	C	A	A	/	Abs	30,44	∅	Neg	/	Abs	30.09	∅	Neg	/	Abs							
			B	B	A	A	/	Abs	33,72	∅	Neg	/	Abs	30.09	36.09	Pos	-	Abs							
	0.3	0.3		-	-	-	-	/	Abs	31,04	∅	Neg	/	Abs	30.23	∅	Neg	/	Abs	MA=0/6	MA=1/6				
				C	C	A	A	/	Abs	29,80	∅	Neg	+	Abs	29.59	35.81	Pos	+	Pres						
				-	-	-	-	/	Abs	30,26	∅	Neg	/	Abs	30.10	∅	Neg	/	Abs						
				-	-	-	-	/	Abs	30,74	∅	Neg	/	Abs	30.03	∅	Neg	/	Abs	MR=1/6					
				C	B	A	A	/	Abs	30,41	∅	Neg	/	Abs	29.27	∅	Neg	/	Abs						
				-	-	-	-	/	Abs	30,69	∅	Neg	/	Abs	29.60	∅	Neg	/	Abs						
				0.6	0.4		-	-	-	-	/	Abs	30,19	∅	Neg	/	Abs	29.91	∅	Neg	/	Abs	MA=1/6	MA=1/6	
							C	C	A	A	/	Abs	30,85	37,54	Pos	+	Pres	29.89	33.71	Pos	+	Pres			
							+	+	+	+	+	Pres	30,85	37,54	Pos	+	Pres	29.89	33.71	Pos	+	Pres			
	-	-	-				-	/	Abs	30,71	∅	Neg	/	Abs	30.09	∅	Neg	/	Abs	MR=5/6					
	C	C	A				A	/	Abs	30,15	∅	Neg	/	Abs	29.97	∅	Neg	/	Abs						
	+	+	+				-	+	Pres	30,27	∅	Neg	+	Abs	30.08	34.34	Pos	+	Pres						
	1	2					2,C	2,C	3,A	A	/	Abs	29,92	32,81	Pos	+	Pres	29.60	32.23	Pos	+	Pres	MA=4/6	MA=5/6	
							+	+	+	-	+	Pres	31,28	38,53	Pos	+	Pres	30.12	31.52	Pos	+	Pres			
							2,C	2,C	2,A	2,A	+	Pres	29,86	35,56	Pos	+	Pres	30.49	34.13	Pos	+	Pres			
				-	-	-	-	/	Abs	30,35	38,22	Pos	+	Pres	30.59	32.24	Pos	+	Pres	MR=6/6					
				+	+	+	+	+	Pres	30,52	32,96	Pos	+	Pres	30.28	32.61	Pos	+	Pres						
				3,C	3	3<5,A	3<5,A	+	Pres	29,72	31,25	Pos	+	Pres	30.59	31.02	Pos	+	Pres						
				3	3,6		+	+	+	+	+	Pres	29,63	31,6	Pos	+	Pres	29.70	31.01	Pos	+	Pres	MA=6/6	MA=6/6	
							2,C	2,C	3<5,A	3<5,A	+	Pres	30,70	33,02	Pos	+	Pres	30.17	31.99	Pos	+	Pres			
							+	+	+	-	+	Pres	29,59	28,9	Pos	+	Pres	29.50	28.87	Pos	+	Pres			
	-	-	-				-	/	Abs	29,92	32,28	Pos	+	Pres	29.57	32.86	Pos	+	Pres	MA=6/6	MA=6/6				
	3,C	3,C	3<5,A				3<5,A	+	Pres	29,92	32,28	Pos	+	Pres	29.57	32.86	Pos	+	Pres						
	+	+	+				+	+	Pres	29,92	32,28	Pos	+	Pres	29.57	32.86	Pos	+	Pres						

Total viable count: 3.0x10<sup>4</sup> CFU/g

Ref	Sample	Cont.	Reference method				Conf.	Result	Alternative method										Comparison				
			RVS		MKTTn				Manual protocol					Automated protocol					manual	auto			
			XLD	HK	XLD	HK			Ct Inh	Ct Res	Test result	Conf.	Final result	Ct Inh	Ct Res	Test result	Conf.	Final result					
SAL 1.80 fish filet	0	/	-	-	+	+	-	Abs	29,90	∅	Neg	/	Abs	30,48	∅	Neg	/	Abs	MR=0/6				
			C	C	3,C	3,C	-	Abs	29,80	∅	Neg	/	Abs	30,55	∅	Neg	/	Abs					
			+	+	+	+	-	Abs	29,60	∅	Neg	/	Abs	30,18	∅	Neg	/	Abs					
			3,B	3,B	3,B	3,B	-	Abs	29,97	∅	Neg	/	Abs	30,66	∅	Neg	/	Abs					
			+	-	+	+	-	Abs	30,47	∅	Neg	/	Abs	30,61	∅	Neg	/	Abs					
			3		3,B	3,B	-	Abs	29,87	∅	Neg	/	Abs	31,07	∅	Neg	/	Abs					
			-	-	+	-	-	Abs	30,24	∅	Neg	/	Abs	30,14	∅	Neg	/	Abs	MR=0/6				
			C	C	3,C	3,B	-	Abs	29,56	∅	Neg	/	Abs	30,62	∅	Neg	/	Abs					
			+	+	+	+	-	Abs	29,78	∅	Neg	/	Abs	30,48	∅	Neg	/	Abs					
	3<5,B	3,<5	3,C	3,C	-	Abs	29,43	37,81	Pos	-	Abs	30,55	∅	Neg	/	Abs							
	+	+	+	+	-	Abs	30,17	∅	Neg	/	Abs	29,93	∅	Neg	/	Abs							
	3	3	2,C	2,C	-	Abs	29,42	∅	Neg	/	Abs	30,28	∅	Neg	/	Abs							
	0,3	0,3	-	-	+	+	-	Abs	30,00	∅	Neg	/	Abs	30,04	∅	Neg	/	Abs	MR=1/6				
			C	C	3,B	3,B	-	Abs	30,32	∅	Neg	/	Abs	30,41	∅	Neg	/	Abs					
			+	+	+	+	-	Abs	29,77	∅	Neg	/	Abs	30,62	∅	Neg	/	Abs					
			3,C	3,C	3,C	3,C	-	Abs	29,97	33,29	Pos	+	Pres	30,34	37,40	Pos	+	Pres					
			+	-	+	+	-	Abs	29,39	∅	Neg	/	Abs	29,71	∅	Neg	/	Abs					
			3,C	C	2,C	2,C	-	Abs	30,15	∅	Neg	/	Abs	30,33	∅	Neg	/	Abs					
			0,6	0,7	+	+	+	+	-	Abs	30,03	∅	Neg	/	Abs	30,06	∅	Neg	/	Abs	MR=4/6		
					3,C	C	3,B	B	-	Abs	29,30	30,05	Pos	+	Pres	30,01	33	Pos	+	Pres			
					+	+	+	+	+	Pres	29,34	29,58	Pos	+	Pres	30,12	34,34	Pos	+	Pres			
	3,C	3,C			2,C	B	-	Abs	29,60	25,15	Pos	+	Pres	29,80	27,65	Pos	+	Pres					
	+	+			+	+	+	Pres	29,08	27,72	Pos	+	Pres	29,86	30,55	Pos	+	Pres					
	2,C	2,C			2,B	2,C	+	Pres	29,97	33,29	Pos	+	Pres	30,34	37,40	Pos	+	Pres					
	1	1,3			+	+	+	+	-	Abs	29,39	∅	Neg	/	Abs	29,71	∅	Neg	/	Abs	MR=1/6		
					3,C	3,C	3,C	3,C	-	Abs	30,15	∅	Neg	/	Abs	30,33	∅	Neg	/	Abs			
					+	+	+	+	-	Abs	30,03	∅	Neg	/	Abs	30,06	∅	Neg	/	Abs			
			3,C	3,C	3,C	3,C	-	Abs	29,30	30,05	Pos	+	Pres	30,01	33	Pos	+	Pres					
			+	+	+	+	+	Pres	29,34	29,58	Pos	+	Pres	30,12	34,34	Pos	+	Pres					
			2,C	2,C	2,C	2,C	+	Pres	29,60	25,15	Pos	+	Pres	29,80	27,65	Pos	+	Pres					
			3	2,8	+	+	+	+	+	Pres	29,08	27,72	Pos	+	Pres	29,86	30,55	Pos	+	Pres	MR=4/6		
					3,C	3,C	3,C	3,C	+	Pres	29,08	27,72	Pos	+	Pres	29,86	30,55	Pos	+	Pres			
					+	+	+	+	-	Abs	30,12	36,41	Pos	-	Abs	29,81	∅	Neg	/	Abs			
	3,C	3,C			3,C	3,C	-	Abs	30,12	36,41	Pos	-	Abs	29,81	∅	Neg	/	Abs					
	+	+			+	+	+	Pres	29,83	28,65	Pos	+	Pres	30,30	33,11	Pos	+	Pres					
	2,C	2,C			2,C	3,B	+	Pres	29,83	28,65	Pos	+	Pres	30,30	33,11	Pos	+	Pres					
3	2,8	+			+	+	+	+	Pres	29,94	28,2	Pos	+	Pres	30,18	31,30	Pos	+	Pres	MR=6/6			
		2			2	2	2	+	Pres	29,94	28,2	Pos	+	Pres	30,18	31,30	Pos	+	Pres				
		+			+	+	+	+	Pres	28,95	25,05	Pos	+	Pres	30,73	29,8	Pos	+	Pres				
		2	2	2	2	+	Pres	28,95	25,05	Pos	+	Pres	30,73	29,8	Pos	+	Pres						
		+	+	+	+	+	Pres	29,43	27,61	Pos	+	Pres	30,10	32,83	Pos	+	Pres						
		2	2	2	2	+	Pres	29,43	27,61	Pos	+	Pres	30,10	32,83	Pos	+	Pres						
		3	2,8	+	+	+	+	+	Pres	29,47	23,26	Pos	+	Pres	29,87	28,00	Pos	+	Pres	MR=6/6			
				3,C	3,C	2,C	2,C	+	Pres	29,47	23,26	Pos	+	Pres	29,87	28,00	Pos	+	Pres				
				+	+	+	+	+	Pres	28,98	25,08	Pos	+	Pres	29,62	28,45	Pos	+	Pres				

Total viable count: 6.8x10<sup>3</sup> CFU/g



Ref	Sample	Cont.	Reference method				Conf.	Result	Alternative method					Concordance	
			RVS		MKTTn				Manual protocol (DNA extracts diluted at 1/50)						
			XLD	HK	XLD	HK			Ct Inh	Ct Res	Test result	Conf.	Final result		
SAL 1.48 Liquid eggs	0	/	-	-	-	-	/	Abs	33,28	∅	Neg	/	Abs	MR=0/6	
			B	B	B	B	/	Abs	32,12	∅	Neg	/	Abs		
			-	-	-	-	/	Abs	29,68	39,43	Pos	/	Abs		
			B	B	C	B	/	Abs	36,19	∅	Neg	/	Abs		
			-	-	-	-	/	Abs	30,64	∅	Neg	/	Abs		
			B	B	C	C	/	Abs	30,96	∅	Neg	/	Abs		
		0,3	0,4	-	-	-	-	/	Abs	33.16	∅	Neg	/	Abs	MR=1/6
				A	A	C	C	+	Pres	∅	39.61	Pos	+	Pres	
				+	+	+	+	/	Abs	37.75	∅	Neg	/	Abs	
				2B	2B	1C	1C	/	Abs	33.25	∅	Neg	/	Abs	
				-	-	-	-	/	Abs	37.98	∅	Neg	/	Abs	
				A	A	C	C	/	Abs	38.64	∅	Neg	/	Abs	
	0,6		0,4	-	-	-	-	/	Abs	36.10	∅	Neg	/	Abs	MR=3/6
				A	A	A	A	+	Pres	inh	36.43	Pos	+	Pres	
				+	+	+	+	+	Pres	inh	36.52	Pos	+	Pres	
				2A	2A	1C	1C	/	Abs	34.30	∅	Neg	/	Abs	
				-	-	-	-	/	Abs	37.49	∅	Neg	/	Abs	
				A	B	C	C	+	Pres	35.89	36.47	Pos	+	Pres	
		1	1,03	-	-	-	-	/	Abs	36.34	∅	Neg	/	Abs	MR=5/6
				A	A	B	C	+	Pres	36.59	36.91	Pos	+	Pres	
				+	+	+	+	+	Pres	35.16	34.54	Pos	+	Pres	
				1C	2B	1C	1C	+	Pres	30.67	23.80	Pos	+	Pres	
				+	+	+	+	+	Pres	31.24	19.07	Pos	+	Pres	
				1B	1B	1C	1C	+	Pres	30.70	∅	Neg	+	Abs	
	3		2,4	+	+	+	+	+	Pres	29.51	21.52	Pos	+	Pres	MR=6/6
				1C	1A	1C	1A	+	Pres	30.94	23.51	Pos	+	Pres	
				+	+	+	+	+	Pres	29.49	22.38	Pos	+	Pres	
				1B	1B	1B	1B	+	Pres	36.15	30.00	Pos	+	Pres	
				+	+	+	+	+	Pres	31.65	27.06	Pos	+	Pres	
				1A	2A	1B	1B	+	Pres	30.37	22.17	Pos	+	Pres	
		3	2,4	+	+	+	+	+	Pres	36.15	30.00	Pos	+	Pres	MA=6/6
				1B	1B	1B	1A	+	Pres	31.65	27.06	Pos	+	Pres	
				+	+	+	+	+	Pres	30.37	22.17	Pos	+	Pres	
				1B	1B	1B	1A	+	Pres	30.37	22.17	Pos	+	Pres	
				+	+	+	+	+	Pres	30.37	22.17	Pos	+	Pres	
				1B	1B	1B	1B	+	Pres	30.37	22.17	Pos	+	Pres	

Ref	Sample	Cont.	Reference method				Conf.	Result	Alternative method					Concordance	
			RVS		MKTTn				Automated protocol						
			XLD	HK	XLD	HK			Ct Inh	Ct Res	Test result	Conf.	Final result		
SAL 1.48 Liquid eggs	0	/	-	-	-	-	/	Abs	31,59	Ø	Neg	/	Abs	MR=0/6	
			Ø	Ø	Ø	Ø	/	Abs	33,76	Ø	Neg	/	Abs		
			-	-	-	-	/	Abs	31,81	Ø	Neg	/	Abs		
			Ø	Ø	Ø	Ø	/	Abs	32,23	Ø	Neg	/	Abs		
			-	-	-	-	/	Abs	33,04	Ø	Neg	/	Abs		
			Ø	Ø	Ø	Ø	/	Abs	31,87	Ø	Neg	/	Abs		
			-	-	-	-	/	Abs	31,21	Ø	Neg	/	Abs		
			Ø	Ø	Ø	Ø	/	Abs	31,46	21,7	Pos	-	Abs		
	0,3	0,3	+	+	+	+	+	Pres	29,89	multi ct 19,28	Pos	+	Pres	MR=1/6	
			3	3	1	1	/	Abs	29,98	Ø	Neg	/	Abs		
			-	-	-	-	/	Abs	31,74	Ø	Neg	/	Abs		
			Ø	Ø	Ø	Ø	/	Abs	31,45	Ø	Neg	/	Abs		
			-	-	-	-	/	Abs	29,65	21,74	Pos	+	Pres		MR=4/6
			3	3	1	1	+	Pres	30,04	22,18	Pos	+	Pres		
			+	+	+	+	+	Pres	29,82	19,55	Pos	+	Pres		
			3	3	1	1	+	Pres	31,55	Ø	Neg	/	Abs		
	-	-	-	-	/	Abs	32,13	31,89	Pos	+	Pres	MA=4/6			
	Ø	Ø	Ø	Ø	+	Pres	31,53	Ø	Neg	/	Abs				
	+	+	+	+	+	Pres	30,19	multi ct 19,11	Pos	+	Pres		MR=5/6		
	2	2	1	1	+	Pres	29,96	20,52	Pos	+	Pres				
	+	+	+	+	+	Pres	30,88	27,96	Pos	+	Pres				
	2	2	1	1	/	Abs	31,19	Ø	Neg	/	Abs				
	-	-	-	-	+	Pres	29,79	multi ct 19,31	Pos	+	Pres			MA=5/6	
	Ø	Ø	Ø	Ø	+	Pres	29,73	21,73	Pos	+	Pres				
	3	3	1	1	+	Pres	30,09	23,44	Pos	+	Pres	MR=6/6			
	+	+	+	+	+	Pres	29,69	21,81	Pos	+	Pres				
	3	2	2	2	+	Pres	29,59	21,73	Pos	+	Pres				
	+	+	+	+	+	Pres	29,91	21,53	Pos	+	Pres				
	3	3	1	1	+	Pres	30,47	23,27	Pos	+	Pres		MA=6/6		
	2	2	1	1	+	Pres	30,11	22,12	Pos	+	Pres				
	+	+	+	+	+	Pres									
	3	3	1	1	+	Pres									

Total viable count: 8.0x10<sup>1</sup> CFU/g

Ref	Sample	Cont.	Reference method				Conf.	Result	Alternative method										Concordance	
			RVS		MKTTn				Manual protocol					Automated protocol					manual	auto
			XLD	HK	XLD	HK			Ct Inh	Ct Res	Test result	Conf.	Final result	Ct Inh	Ct Res	Test result	Conf.	Final result		
SAL 1.85 Process water	0	/	-	-	-	-	/	Abs	29,36	∅	Neg	/	Abs	30,89	∅	Neg	/	Abs	MR=0/6	
			C	C	B	B	/	Abs	30,70	∅	Neg	/	Abs	30,29	∅	Neg	/	Abs		
			-	-	-	-	/	Abs	29,46	38,46	Pos	-	Abs	30,19	∅	Neg	/	Abs		
			B	B	B	B	/	Abs	30,15	∅	Neg	/	Abs	30,13	∅	Neg	/	Abs		
			-	-	-	-	/	Abs	30,09	∅	Neg	/	Abs	30,33	∅	Neg	/	Abs		
			B	B	A	A	/	Abs	29,89	∅	Neg	/	Abs	29,93	∅	Neg	/	Abs		
	0,3	0,3	-	-	-	-	/	Abs	30,32	∅	Neg	/	Abs	29,92	∅	Neg	/	Abs	MR=0/6	
			C	C	B	B	/	Abs	29,71	∅	Neg	/	Abs	30,27	∅	Neg	/	Abs		
			-	-	-	-	/	Abs	29,75	∅	Neg	/	Abs	30,11	∅	Neg	/	Abs		
			B	B	B	A	/	Abs	29,84	∅	Neg	/	Abs	30,32	39,01	Pos	-	Abs		
			-	-	-	-	/	Abs	30,17	36,5	Pos	-	Abs	29,67	∅	Neg	/	Abs		
			C	C	C	C	/	Abs	29,88	∅	Neg	/	Abs	29,99	∅	Neg	/	Abs		
	0,6	0,5	B	B	B	B	/	Abs	29,09	22,04	Pos	+	Pres	29,13	23,54	Pos	+	Pres	MR=2/6	
			-	-	-	-	/	Abs	28,46	∅	Neg	/	Abs	29,5	∅	Neg	/	Abs		
			C	C	B	B	/	Abs	29,30	∅	Neg	/	Abs	29,29	∅	Neg	/	Abs		
			-	-	-	-	/	Abs	29,11	23,48	Pos	+	Pres	29,33	24,54	Pos	+	Pres		
			+ + + +	+ + + +	+ + + +	+ + + +	/	Abs	29,35	∅	Neg	/	Abs	29,16	∅	Neg	/	Abs		
			2,C 2,C 2,C 2,C	2,C 2,C 2,C 2,C	2,C 2,C 2,C 2,C	2,C 2,C 2,C 2,C	/	Abs	29,13	∅	Neg	/	Abs	29,69	∅	Neg	/	Abs		
	1	0,9	-	-	-	-	/	Abs	29,53	27,93	Pos	+	Pres	29,82	31,53	Pos	+	Pres	MR=4/6	
			2,C 2,C 2,C 2,C	2,C 2,C 2,C 2,C	2,C 2,C 2,C 2,C	2,C 2,C 2,C 2,C	/	Abs	30,13	∅	Neg	/	Abs	29,76	∅	Neg	/	Abs		
			-	-	-	-	/	Abs	29,33	25,82	Pos	+	Pres	30,05	27,63	Pos	+	Pres		
			2,C 2,C 2,C 2,C	2,C 2,C 2,C 2,C	2,C 2,C 2,C 2,C	2,C 2,C 2,C 2,C	/	Abs	29,60	∅	Neg	/	Abs	31,09	∅	Neg	/	Abs		
			-	-	-	-	/	Abs	29,77	26,53	Pos	+	Pres	29,76	29,05	Pos	+	Pres		
			B C B B	B C B B	B C B B	B C B B	/	Abs	29,32	24,66	Pos	+	Pres	29,51	23,54	Pos	+	Pres		
	3	2,8	+ + + +	+ + + +	+ + + +	+ + + +	/	Abs	29,55	24,83	Pos	+	Pres	29,61	25,57	Pos	+	Pres	MR=6/6	
			2,C 2,C 2,C 2,C	2,C 2,C 2,C 2,C	2,C 2,C 2,C 2,C	2,C 2,C 2,C 2,C	/	Abs	29,52	22,88	Pos	+	Pres	29,31	24,66	Pos	+	Pres		
			-	-	-	-	/	Abs	29,53	24,91	Pos	+	Pres	29	26,09	Pos	+	Pres		
			2,C 2,C 2,C 2,C	2,C 2,C 2,C 2,C	2,C 2,C 2,C 2,C	2,C 2,C 2,C 2,C	/	Abs	29,35	24,51	Pos	+	Pres	29,73	25,93	Pos	+	Pres		
			+ + + +	+ + + +	+ + + +	+ + + +	/	Abs	29,49	24,79	Pos	+	Pres	29,51	26,11	Pos	+	Pres		
			2,C 2 2,C 2,C	2,C 2 2,C 2,C	2,C 2 2,C 2,C	2,C 2 2,C 2,C	/	Abs	29,91	25,06	Pos	+	Pres	29,54	26,94	Pos	+	Pres		

Total viable count: 2.6x10<sup>4</sup> CFU/g

Ref	Sample	Cont.	Reference method				Conf.	Result	Alternative method										Concordance	
			RVS		MKTn				Manual protocol					Automated protocol					manual	auto
			XLD	HK	XLD	HK			Ct Inh	Ct Res	Test result	Conf.	Final result	Ct Inh	Ct Res	Test result	Conf.	Final result		
SAL 1.69 Feed	0		-	-	-	-	/	Abs	32.47	Ø	-	/	Abs	30.33	Ø	-	/	Abs	MR=0/6	
			Ø	Ø	Ø	Ø	/	Abs	30.65	Ø	-	/	Abs	30.40	Ø	-	/	Abs		
			-	-	-	-	/	Abs	30.77	Ø	-	/	Abs	30.31	Ø	-	/	Abs		
			C	C	A	A	/	Abs	31.40	Ø	-	/	Abs	31.10	Ø	-	/	Abs		
			Ø	Ø	Ø	Ø	/	Abs	25.84	Ø	-	/	Abs	31.04	Ø	-	/	Abs	MA=0/6	MA=0/6
			Ø	Ø	Ø	Ø	/	Abs	30.58	Ø	-	/	Abs	30.86	Ø	-	/	Abs		
			+	+	+	+	+	Pres	29.46	32.74	+	+	Pres	31.01	26.75	+	+	Pres	MR=3/6	
			1	1	1	1	/	Abs	30.82	Ø	-	/	Abs	30.92	Ø	-	/	Abs		
	Ø	Ø	Ø	Ø	/	Abs	30.40	22.50	+	+	Pres	30.09	20.57	+	+	Pres				
	1	1	1	1	+	Pres	27.43	27.90	+	+	Pres	30.28	20.22	+	+	Pres				
	+	+	+	+	+	Pres	27.43	27.90	+	+	Pres	30.28	20.22	+	+	Pres	MA=3/6	MA=3/6		
	2	1	2	1	/	Abs	26.61	Ø	-	/	Abs	31.74	Ø	-	/	Abs				
	-	-	-	-	/	Abs	27.89	Ø	-	/	Abs	30.52	Ø	-	/	Abs				
	Ø	Ø	Ø	Ø	/	Abs	31.06	21.12	+	+	Pres	30.84	24.48	+	+	Pres				
	1	1	1	1	+	Pres	27.94	23.45	+	+	Pres	30.26	21.19	+	+	Pres	MR=4/6			
	1	1	1	1	+	Pres	31.36	22.99	+	+	Pres	30.08	22.18	+	+	Pres				
	1	1	1	1	+	Pres	30.37	29.28	+	+	Pres	29.75	24.49	+	+	Pres				
	1	1	1	1	/	Abs	31.91	Ø	-	/	Abs	30.53	Ø	-	/	Abs				
	B	B	C	C	/	Abs	31.37	Ø	-	/	Abs	30.47	Ø	-	/	Abs	MA=4/6	MA=4/6		
	Ø	Ø	Ø	Ø	/	Abs	33.27	Ø	-	/	Abs	30.67	24.64	+	+	Pres	MR=5/6			
	2	2	1	1	+	Pres	28.76	26.10	+	+	Pres	30.92	24.81	+	+	Pres				
	+	+	+	+	+	Pres	28.47	32.48	+	+	Pres	30.03	23.08	+	+	Pres				
	1	1	1	1	+	Pres	27.06	22.45	+	+	Pres	30.29	24.64	+	+	Pres				
	2	2	1	1	/	Abs	30.07	Ø	-	/	Abs	30.40	Ø	-	/	Abs	MA=4/6	MA=5/6		
	+	+	+	+	+	Pres	27.86	26.63	+	+	Pres	30.32	23.31	+	+	Pres	MR=6/6			
	1	1	1	1	+	Pres	30.26	27.91	+	+	Pres	30.10	21.43	+	+	Pres				
	1	1	1	1	+	Pres	29.92	23.15	+	+	Pres	30.35	22.98	+	+	Pres				
	1	1	1	1	+	Pres	29.43	27.57	+	+	Pres	30.56	27.42	+	+	Pres				
	+	+	+	+	+	Pres	26.77	28.51	+	+	Pres	31.25	28.14	+	+	Pres	MA=5/6	MA=5/6		
	1	1	1	1	+	Pres	26.55	22.69	+	+	Pres	30.57	22.36	+	+	Pres				
	1	1	1	1	+	Pres	29.92	Ø	-	/	Abs	30.47	Ø	-	/	Abs				
	1	1	1	1	+	Pres	30.74	26.17	+	+	Pres	33.76	30.56	+	+	Pres		MR=6/6		
	1	2	1	1	+	Pres	27.39	21.54	+	+	Pres	29.58	26.79	+	+	Pres				
	+	+	+	+	+	Pres	28.61	28.09	+	+	Pres	30.38	21.04	+	+	Pres				
	1	1	1	1	+	Pres	31.27	30.54	+	+	Pres	30.34	24.57	+	+	Pres				
	1	1	1	1	+	Pres	30.87	30.13	+	+	Pres	30.05	23.49	+	+	Pres				
	1	1	1	1	+	Pres	29.29	24.84	+	+	Pres	30.08	23.70	+	+	Pres				
	1	1	1	1	+	Pres										MA=6/6	MA=6/6			
	1	1	1	1	+	Pres														

Total viable count: 1.5x10<sup>2</sup> CFU/g

## **APPENDIX 4 - SELECTIVITY**

### **EXCLUSIVITY**

N°	Code	Microorganism	Origin	Ct inh	Ct res	Confirmation
1	CIT.1.1	<i>Citrobacter freundii</i>	CIP 53.62	29,72	Ø	/
2	CIT.1.2	<i>Citrobacter freundii</i>	ATCC 8090	31,44	Ø	/
3	CIT.2.4	<i>Citrobacter koseri</i>	Effluent secondaire	30,37	Ø	/
4	CIT.2.1	<i>Citrobacter koseri</i>	CIP 72.11	31,53	Ø	/
5	CIT.2.2	<i>Citrobacter diversus</i>	CIP 82.87 T	30,95	Ø	/
6	CIT.2.3	<i>Citrobacter diversus</i>	CIP 82.94	30,51	Ø	/
7	ENTB.1.1	<i>Enterobacter aerogenes</i>	Industrie laitière	30,26	Ø	/
8	ENTB.2.1	<i>Enterobacter cloacae</i>	Eaux usagées	30,11	Ø	/
9	ENTB.3.1	<i>Enterobacter sakazakii</i>	Poudre de lait	30,22	Ø	/
10	ENTB.3.2	<i>Enterobacter sakazakii</i>	CIP 57.33	31,98	Ø	/
11	ESC.1.6	<i>Escherichia coli</i>	Ravioli poulet	30,42	Ø	/
12	ESC.1.3	<i>Escherichia coli</i>	Industrie laitière	29,80	Ø	/
13	ESC.2.1	<i>Escherichia hermanii</i>	CIP 103176	30,48	Ø	/
14	ESC.3.1	<i>Escherichia vulneris</i>	CIP 103177T	32,95	Ø	/
15	HAF.1.1	<i>Hafnia alvei</i>	Taboulé	30,87	Ø	/
16	HAF.1.2	<i>Hafnia alvei</i>	CNRZ 713	29,85	Ø	/
17	KLE.1.1	<i>Klebsiella oxytoca</i>	Salade soja	30,33	Ø	/
18	KLE.2.1	<i>Klebsiella pneumoniae</i>	Pâtisserie	30,38	Ø	/
19	PAN.1.1	<i>Pantoea agglomerans</i>	A181	31,55	Ø	/
20	PRO.1.1	<i>Proteus mirabilis</i>	CIP 103181	29,94	Ø	/
21	PRO.2.1	<i>Proteus vulgaris</i>	Environnement industrie	30,19	Ø	/
22	PSE.1.2	<i>Pseudomonas aeruginosa</i>	Omelette gruyère	30,01	Ø	/
23	PSE.2.2	<i>Pseudomonas fluorescens</i>	CIP102127	30,21	Ø	/
24	SER.1.1	<i>Serratia ficaria</i>	CIP 79.23	31,37	Ø	/
25	SER.2.1	<i>Serratia fonticola</i>	CIP 103580	30,57	Ø	/
26	SER.3.1	<i>Serratia marcescens</i>	Environnement industrie	31,64	Ø	/
27	SHI.1.1	<i>Shigella flexneri</i>	CIP 82.48T	31,00	Ø	/
28	SHI.2.1	<i>Shigella sonnei</i>	ATCC 9290	30,38	Ø	/
29	PROV.1.1	<i>Providencia stuartii</i>	HPA RM	30,53	Ø	/
30	YER 1.1	<i>Yersinia enterocolitica</i>	CIP 80.27	29,83	Ø	/

**INCLUSIVITY**

N°	Code	Microorganism	Origin	Ct inh	Ct res	Confirmation
1	SAL.1.5	<i>Salmonella</i> Anatum	Sesame	30,06	22,64	Positive
2	SAL.1.7	<i>Salmonella arizonae</i> (48 : z4, z23 :-)	Duck	30,00	25,72	Positive
3	SAL.1.8	<i>Salmonella arizonae</i> (18 : z4, z23 :-)	Duck	29,90	25,51	Positive
4	SAL.1.10	<i>Salmonella</i> Braenderup	Workshop environment	30,66	27,63	Positive
5	SAL.1.17	<i>Salmonella</i> Brandenburg	Duck	29,95	23,58	Positive
6	SAL.1.21	<i>Salmonella</i> Bredeney	Raw chicken filet	29,03	25,82	Positive
7	SAL.1.23	<i>Salmonella</i> Cerro	Rabbit meal	30,01	23,47	Positive
8	SAL.1.29	<i>Salmonella</i> Derby	Pork	28,85	24,03	Positive
9	SAL.1.40	<i>Salmonella diarizonae</i> (S.IIIb 38,lv:z53)	Semolina	30,07	25,29	Positive
10	SAL.1.187	<i>Salmonella diarizonae</i> (S.IIIb 61:k:1,5,7)	Fish	30,67	25,86	Positive
11	SAL.1.43	<i>Salmonella</i> Dublin	Milk	29,95	25,31	Positive
12	SAL.1.47	<i>Salmonella</i> Enteritidis	Chicken	29,70	25,73	Positive
13	SAL.1.170	<i>Salmonella</i> Gallinarum	Guinea fowls breeding	30,56	29,91	Positive
14	SAL.1.57	<i>Salmonella</i> Hadar	Poultry escalope	29,79	23,51	Positive
15	SAL.1.60	<i>Salmonella</i> Havana	Workshop environment	28,74	21,64	Positive
16	SAL.1.61	<i>Salmonella</i> Heidelberg	Poultry meat	30,62	29,23	Positive
17	SAL.1.62	<i>Salmonella houtenae</i>	Workshop environment	30,19	26,34	Positive
18	SAL.1.64	<i>Salmonella</i> Indiana	Beef filet	30,05	25,64	Positive
19	SAL.1.163	<i>Salmonella</i> Infantis	Milk	29,95	24,31	Positive
20	SAL.1.169	<i>Salmonella</i> Kedougou	Pork rind	29,99	21,50	Positive
21	SAL.1.76	<i>Salmonella</i> Kottbus	Raw turkey meat	29,82	22,37	Positive
22	SAL.1.78	<i>Salmonella</i> Livingstone	Workshop environment	29,47	22,25	Positive
23	SAL.1.83	<i>Salmonella</i> London	Poultry slaughterhouse	29,20	25,64	Positive
24	SAL.1.84	<i>Salmonella</i> Manhattan	Bovine meat	30,74	22,48	Positive
25	SAL.1.85	<i>Salmonella</i> Mbandaka	Guinea fowl	30,36	23,18	Positive
26	SAL.1.91	<i>Salmonella</i> Montevideo	Beef tartare	30,38	23,33	Positive
27	SAL.1.97	<i>Salmonella</i> Napoli	Duck	30,68	26,51	Positive
28	SAL.1.98	<i>Salmonella</i> Newport	Raw milk cheese	30,12	25,23	Positive
29	SAL.1.101	<i>Salmonella</i> Orion	Duck	30,29	26,50	Positive
30	SAL.1.102	<i>Salmonella</i> Paratyphi A	CIP 55 39	29,55	28,35	Positive
31	SAL.1.110	<i>Salmonella</i> Paratyphi B	Raw chicken filet	29,93	26,12	Positive
32	SAL.1.205	<i>Salmonella</i> Paratyphi C	CIP 106175	30,19	28,36	Positive
33	SAL.1.114	<i>Salmonella</i> Poona	Workshop environment	30,32	20,30	Positive
34	SAL.1.115	<i>Salmonella</i> Regent	Duck	30,26	21,45	Positive
35	SAL.1.116	<i>Salmonella</i> Rissen	Workshop environment	29,86	22,38	Positive
36	SAL.1.120	<i>Salmonella</i> Saint-Paul	Frozen meat	30,13	23,54	Positive
37	SAL.1.121	<i>Salmonella salamae</i>	Raw milk	30,27	19,99	Positive
38	SAL.1.122	<i>Salmonella</i> Schwarzengrund	Raw pork meat	31,56	21,58	Positive
39	SAL.1.129	<i>Salmonella</i> Typhi	CIP 54 136	31,78	20,91	Positive
40	SAL.1.147	<i>Salmonella</i> Typhimurium	Frozen cordon bleu	31,16	23,87	Positive
41	SAL.1.158	<i>Salmonella</i> Virchow	11337 (intox)	30,56	24,52	Positive
42	SAL.1.181	<i>Salmonella bongori</i>	Workshop environment	29,82	23,28	Positive
43	SAL.1.182	<i>Salmonella</i> Typhimurium variant immobile (S.I 1,4,[5],12:-:-)	Tiramisu	29,82	20,68	Positive
44	SAL.1.183	<i>Salmonella</i> Typhimurium variant monophasique (S.I 1,4,[5],12:i:-)	Pork "à la tahitienne"	30,61	26,40	Positive
45	SAL.1.184	<i>Salmonella</i> Typhimurium variant monophasique (S.I 1,4,[5],12:-:1,2)	Hen breeding environment	30,22	33,21	Positive
46	SAL.1.185	<i>Salmonella</i> Blockley	Hen breeding environment	29,32	25,01	Positive
47	SAL.1.25	<i>Salmonella</i> Colindale	Basil	30,85	23,11	Positive
48	SAL.1.63	<i>Salmonella</i> Idikan	Workshop environment	30,09	26,39	Positive
49	SAL.1.87	<i>Salmonella</i> Mikawasima	Fresh fruit salad	30,08	24,57	Positive
50	SAL.1.153	<i>Salmonella</i> Urbana	kanqaroo stew	30,19	26,13	Positive
51	SAL.1.160	<i>Salmonella</i> Westhampton	Turkey	29,92	25,48	Positive
52	SAL.1.70	<i>Salmonella</i> Javiana	Dried mushrooms	30,12	22,88	Positive
53	SAL.1.208	<i>Salmonella indica</i>	Workshop environment	30,17	26,41	Positive

## **Appendix 5 - Total viable counts**

<b>Laboratory</b>	<b>Total viable count (CFU/g)</b>
A	5,1E+07
B	2,3E+07
C	1,9E+07
D	2,9E+07
E	1,6E+04
F	6,6E+07
G	1,2E+03
H	1,2E+08
I	1,0E+08
J	1,4E+07
K	1,8E+07
L	2,6E+07
M	5,0E+04
Expert	8,5E+07

## Appendix 6 - Expert lab raw results

Sample		Alternative method				Reference method					
		Control Ct	Result Ct	Confirmation	Result	RVS		MKTTn		Confirmation	Result
						XLD	HK	XLD	HK		
A	1*	30,23	/	/	A	-	-	-	-	/	A
A	2*	30,46	/	/	A	-	-	-	-	/	A
A	3	32,49	32,45	+	P	+	+	+	+	+	P
A	4	31,50	30,73	+	P	+	+	+	+	+	P
A	5	32,41	28,66	+	P	+	+	+	+	+	P
A	6	32,43	29,02	+	P	+	+	+	+	+	P
A	7	31,08	/	/	A	-	-	-	-	/	A
A	8	32,74	29,22	+	P	+	+	+	+	+	P
A	9	29,89	28,56	+	P	+	+	+	+	+	P
A	10	32,72	31,46	+	P	+	+	+	+	+	P
A	11*	30,56	/	/	A	-	-	-	-	/	A
A	12*	33,53	29,65	+	P	+	+	+	+	+	P
A	13	30,13	31,09	+	P	+	+	+	+	+	P
A	14	31,21	/	/	A	-	-	-	-	/	A
A	15	32,74	/	/	A	-	-	-	-	/	A
A	16	30,97	31,23	+	P	+	+	+	+	+	P
A	17	30,66	31,81	+	P	+	+	+	+	+	P
A	18	32,71	/	/	A	-	-	-	-	/	A
A	19	31,67	29,54	+	P	+	+	+	+	+	P
A	20	32,82	/	/	A	+	-	-	-	-	A
A	21	30,98	29,59	+	P	+	+	+	+	+	P
A	22	34,23	29,87	+	P	+	+	+	+	+	P
A	23	31,31	28,63	+	P	+	+	+	+	+	P
A	24	30,97	29,11	+	P	+	+	+	+	+	P



## Appendix 7 - Raw results

Sample	Alternative method				Reference method					
	Control Ct	Result Ct	Confirmation	Result	RVS		MKTTn		Confirmation	Result
					XLD	HK	XLD	HK		
A 1	28,66	/	/	A	-	-	-	-	/	A
A 2	29,00	/	/	A	-	-	-	-	/	A
A 3	29,78	28,25	+	P	+	+	+	+	+	P
A 4	29,32	29,34	+	P	+	+	+	+	+	P
A 5	28,61	27,91	+	P	+	+	+	+	+	P
A 6	29,22	29,65	+	P	+	+	+	+	+	P
A 7	29,63	/	/	A	-	-	-	-	/	A
A 8	28,74	27,11	+	P	+	+	+	+	+	P
A 9	29,18	29,22	+	P	+	+	+	+	+	P
A 10	29,22	32,24	+	P	+	+	+	+	+	P
A 11	29,03	/	/	A	-	-	-	-	/	A
A 12	29,06	30,34	+	P	+	+	+	+	+	P
A 13	28,78	36,58	+	P	+	+	+	+	+	P
A 14	28,90	/	/	A	-	-	-	-	/	A
A 15	29,86	/	/	A	-	-	-	-	/	A
A 16	28,40	33,04	+	P	+	+	+	+	+	P
A 17	29,20	34,84	+	P	+	+	+	+	+	P
A 18	29,08	/	/	A	-	-	-	-	/	A
A 19	27,91	25,55	+	P	+	+	+	+	+	P
A 20	29,24	/	/	A	-	-	-	-	/	A
A 21	29,00	31,82	+	P	+	+	+	+	+	P
A 22	28,43	30,72	+	P	+	+	+	+	+	P
A 23	28,93	26,53	+	P	+	+	+	+	+	P
A 24	29,74	32,30	+	P	+	+	+	+	+	P

Sample	Alternative method				Reference method					
	Control Ct	Result Ct	Confirmation	Result	RVS		MKTTn		Confirmation	Result
					XLD	HK	XLD	HK		
B 1	29,82	/	/	A	-	-	-	-	/	A
B 2	29,77	/	/	A	-	-	-	-	/	A
B 3	29,54	22,84	+	P	+	+	+	+	+	P
B 4	29,36	29,02	+	P	+	+	+	+	+	P
B 5	29,70	22,97	+	P	+	+	+	+	+	P
B 6	29,09	24,16	+	P	+	+	+	+	+	P
B 7	30,00	/	/	A	-	-	-	-	/	A
B 8	29,89	20,04	+	P	+	+	+	+	+	P
B 9	29,37	18,33	+	P	+	+	+	+	+	P
B 10	30,38	/	/	A	-	-	-	-	/	A
B 11	29,75	/	/	A	-	-	-	-	/	A
B 12	28,77	26,80	+	P	+	+	+	+	+	P
B 13	28,74	25,41	+	P	+	+	+	+	+	P
B 14	29,06	/	/	A	-	-	-	-	/	A
B 15	29,49	/	/	A	-	-	-	-	/	A
B 16	29,27	25,84	+	P	+	+	+	+	+	P
B 17	29,49	21,51	+	P	+	+	+	+	+	P
B 18	30,66	/	/	A	-	-	-	-	/	A
B 19	29,35	22,10	+	P	+	+	+	+	+	P
B 20	30,86	/	/	A	-	-	-	-	/	A
B 21	29,99	21,02	+	P	+	+	+	+	+	P
B 22	29,36	23,16	+	P	+	+	+	+	+	P
B 23	29,27	21,11	+	P	+	+	+	+	+	P
B 24	28,97	25,97	+	P	+	+	+	+	+	P

Sample	Alternative method				Reference method					
	Control Ct	Result Ct	Confirmation	Result	RVS		MKTTn		Confirmation	Result
					XLD	HK	XLD	HK		
C 1	31,61	/	/	A	-	-	-	-	/	A
C 2*	32,17	/	/	A	-	-	-	-	/	A
C 3	30,83	34,39	+	P	+	+	+	+	+	P
C 4	30,95	39,86	+	P	+	+	+	+	+	P
C 5*	30,17	25,24	+	P	+	+	+	+	+	P
C 6*	31,14	31,89	+	P	+	+	+	+	+	P
C 7	31,94	/	/	A	-	-	-	-	/	A
C 8*	30,94	32,02	+	P	+	+	+	+	+	P
C 9	29,52	27,40	+	P	+	+	+	+	+	P
C 10*	31,03	33,82	+	P	+	+	+	+	+	P
C 11	32,40	/	/	A	-	-	-	-	/	A
C 12*	31,27	30,33	+	P	+	+	+	+	+	P
C 13*	31,25	39,95	+	P	+	+	+	+	+	P
C 14*	32,89	/	/	A	-	-	-	-	/	A
C 15*	31,93	/	/	A	-	-	-	-	/	A
C 16*	31,04	33,96	+	P	+	+	-	-	+	P
C 17*	31,79	34,84	+	P	+	+	-	-	+	P
C 18	32,02	/	/	A	-	-	-	-	/	A
C 19*	30,77	30,44	+	P	+	+	+	+	+	P
C 20*	31,46	/	/	A	-	-	-	-	/	A
C 21*	30,76	33,60	+	P	+	+	+	+	+	P
C 22*	30,84	30,64	+	P	+	+	+	+	+	P
C 23*	29,77	29,97	+	P	+	+	+	+	+	P
C 24*	30,79	33,35	+	P	+	+	-	+	+	P

Samples with\* diluted at 1/10 because of inhibitions during the first run

Sample	Alternative method				Reference method					
	Control Ct	Result Ct	Confirmation	Result	RVS		MKTTn		Confirmation	Result
					XLD	HK	XLD	HK		
D 1	29,67	/	-	A	-	-	-	+	-	A
D 2	30,10	/	/	A	-	-	-	-	/	A
D 3	29,30	26,14	+	P	+	+	+	+	+	P
D 4	29,62	28,90	+	P	+	+	+	+	+	P
D 5	28,69	24,06	+	P	+	+	+	+	+	P
D 6	29,03	24,24	+	P	+	+	+	+	+	P
D 7	30,10	36,63	-	A(PP)	-	-	-	-	/	A
D 8	28,45	23,79	+	P	+	+	+	+	+	P
D 9	28,73	21,20	+	P	+	+	+	+	+	P
D 10	29,38	29,72	+	P	+	+	+	+	+	P
D 11	30,07	36,74	-	A(PP)	-	-	-	-	/	A
D 12	28,47	26,52	+	P	+	+	+	+	+	P
D 13	29,75	27,24	+	P	+	+	+	+	+	P
D 14	30,51	/	/	A	-	-	-	-	/	A
D 15	29,86	/	/	A	-	-	-	-	/	A
D 16	29,80	29,90	+	P	+	+	+	+	+	P
D 17	29,41	29,06	+	P	+	+	+	+	+	P
D 18	30,15	/	/	A	-	-	-	-	/	A
D 19	29,68	29,25	+	P	+	+	+	+	+	P
D 20	28,69	33,88	-	A(PP)	-	-	-	-	/	A
D 21	29,43	27,28	+	P	+	+	+	+	+	P
D 22	28,79	24,37	+	P	+	+	+	+	+	P
D 23	28,54	26,23	+	P	+	+	+	+	+	P
D 24	30,09	26,73	+	P	+	+	+	+	+	P

Sample	Alternative method				Reference method					
	Control Ct	Result Ct	Confirmation	Result	RVS		MKTTn		Confirmation	Result
					XLD	HK	XLD	HK		
E 1	30,48	/	-	A	+	-	-	-	-	A
E 2	29,98	/	-	A	+	-	-	-	-	A
E 3	30,33	/	-	A	+	-	-	-	-	A
E 4	29,87	29,70	+	P	+	+	+	+	+	P
E 5	29,59	26,18	+	P	+	+	+	+	+	P
E 6	29,07	25,19	+	P	+	+	+	+	+	P
E 7	28,91	39,71	-	A(PP)	+	-	-	-	-	A
E 8	28,82	23,53	+	P	+	+	+	+	+	P
E 9	29,52	25,13	+	P	+	+	+	+	+	P
E 10	29,57	26,52	+	P	+	+	+	+	+	P
E 11	30,36	/	/	A	-	-	-	-	/	A
E 12	29,34	28,13	+	P	+	+	+	+	+	P
E 13	29,03	26,11	+	P	+	+	+	+	+	P
E 14	29,88	/	/	A	+	+	+	-	-	A
E 15	29,75	/	/	A	-	-	-	-	/	A
E 16	30,59	27,24	+	P	+	+	+	+	+	P
E 17	29,75	/	+	P	+	+	+	+	+	P
E 18	29,94	25,42	/	A	+	-	-	-	-	A
E 19	29,68	28,66	+	P	+	+	+	+	+	P
E 20	30,36	/	/	A	+	+	-	-	-	A
E 21	29,34	20,82	+	P	+	+	+	+	+	P
E 22	29,77	24,45	+	P	+	+	+	+	+	P
E 23	30,27	28,76	+	P	+	+	+	+	+	P
E 24	29,23	28,17	+	P	+	+	-	-	+	P

Sample	Alternative method				Reference method					
	Control Ct	Result Ct	Confirmation	Result	RVS		MKTTn		Confirmation	Result
					XLD	HK	XLD	HK		
F 1	31,18	/	/	A	-	-	-	-	/	A
F 2	29,54	/	/	A	-	-	-	-	/	A
F 3	30,52	34,45	+	P	+	+	+	+	+	P
F 4	30,66	31,46	+	P	+	+	+	+	+	P
F 5	31,10	32,19	+	P	+	+	+	+	+	P
F 6	24,90	20,09	+	P	+	+	+	+	+	P
F 7	31,04	/	/	A	-	-	-	-	/	A
F 8	31,39	34,16	+	P	+	+	+	+	+	P
F 9	26,20	21,34	+	P	+	+	+	+	+	P
F 10	29,57	29,88	+	P	+	+	+	+	+	P
F 11	27,68	/	/	A	-	-	-	-	/	A
F 12	28,09	30,55	+	P	+	+	+	+	+	P
F 13	30,89	35,61	+	P	+	+	+	+	+	P
F 14	23,89	/	/	A	-	-	-	-	/	A
F 15	30,38	/	/	A	-	-	-	-	/	A
F 16	/	30,53	+	P	+	+	+	+	+	P
F 17	27,36	24,85	+	P	+	+	+	+	+	P
F 18	23,54	/	/	A	-	-	-	-	/	A
F 19	30,60	31,31	+	P	+	+	+	+	+	P
F 20	30,22	/	/	A	-	-	-	-	/	A
F 21	29,75	25,88	+	P	+	+	+	+	+	P
F 22	30,19	26,71	+	P	+	+	+	+	+	P
F 23	29,91	26,73	+	P	+	+	+	+	+	P
F 24	28,96	27,54	+	P	+	+	+	+	+	P

Sample	Alternative method				Reference method					
	Control Ct	Result Ct	Confirmation	Result	RVS		MKTTn		Confirmation	Result
					XLD	HK	XLD	HK		
G 1	29,88	/	/	A	-	-	+	-	-	A
G 2	29,85	/	/	A	-	-	+	-	-	A
G 3	29,62	29,49	+	P	+	+	+	+	+	P
G 4	29,96	29,68	+	P	+	+	+	+	+	P
G 5	29,92	27,97	+	P	+	+	+	+	+	P
G 6	29,74	30,60	+	P	+	+	+	+	+	P
G 7	29,75	/	/	A	-	-	+	-	-	A
G 8	28,82	24,23	+	P	+	+	+	+	+	P
G 9	29,03	25,29	+	P	+	+	+	+	+	P
G 10	28,89	24,53	+	P	+	+	+	+	+	P
G 11	30,11	/	/	A	+	+	-	-	-	A
G 12	30,03	20,56	+	P	+	+	+	+	+	P
G 13	29,43	27,73	+	P	+	+	+	+	+	P
G 14	30,41	/	/	A	-	-	-	-	/	A
G 15	30,36	/	/	A	-	-	+	-	-	A
G 16	29,95	26,01	+	P	+	+	+	+	+	P
G 17	29,54	24,34	+	P	+	+	+	+	+	P
G 18	31,72	/	/	A	-	-	-	-	/	A
G 19	29,69	21,20	+	P	+	+	+	+	+	P
G 20	30,55	/	/	A	-	-	-	-	/	A
G 21	30,42	30,54	+	P	+	+	+	+	+	P
G 22	29,71	24,18	+	P	+	+	+	+	+	P
G 23	28,71	25,40	+	P	+	+	+	+	+	P
G 24	29,48	25,22	+	P	+	+	+	+	+	P

Sample	Alternative method				Reference method					
	Control Ct	Result Ct	Confirmation	Result	RVS		MKTTn		Confirmation	Result
					XLD	HK	XLD	HK		
H 1	32,95	/	/	A	-	-	-	-	/	A
H 2	33,76	/	/	A	-	-	-	-	/	A
H 3	34,18	34,03	+	P	+	+	+	+	+	P
H 4	33,87	34,15	+	P	-	+	+	+	+	P
H 5	33,46	33,58	+	P	+	+	+	+	+	P
H 6	33,44	29,99	+	P	+	+	+	+	+	P
H 7	34,69	/	/	A	-	-	-	-	/	A
H 8	33,10	31,17	+	P	+	+	+	+	+	P
H 9	33,31	33,48	+	P	+	+	+	+	+	P
H 10	34,33	/	+	A	+	+	+	+	+	P
H 11	32,92	/	/	A	-	-	-	-	/	A
H 12	33,12	39,04	+	P	+	+	+	+	+	P
H 13	33,61	35,30	+	P	+	+	+	+	+	P
H 14	33,54	/	/	A	-	-	-	-	/	A
H 15	33,53	/	/	A	-	-	-	-	/	A
H 16	33,93	34,73	+	P	+	+	+	+	+	P
H 17	33,85	33,70	+	P	+	+	+	+	+	P
H 18	33,30	/	/	A	-	-	-	-	/	A
H 19	33,61	/	+	A	+	+	+	+	+	P
H 20	33,74	/	/	A	-	-	-	-	/	A
H 21	33,22	33,92	+	P	+	+	+	+	+	P
H 22	33,20	/	+	A	+	+	+	+	+	P
H 23	33,27	33,43	+	P	+	+	+	+	+	P
H 24	34,14	33,84	+	P	+	+	+	+	+	P

second try with new extraction for 3 samples ►

Sample	Alternative method				Reference method					
	Control Ct	Result Ct	Confirmation	Result	RVS		MKTTn		Confirmation	Result
					XLD	HK	XLD	HK		
H 1	32,95	/	/	A	-	-	-	-	/	A
H 2	33,76	/	/	A	-	-	-	-	/	A
H 3	34,18	34,03	+	P	+	+	+	+	+	P
H 4	33,87	34,15	+	P	-	+	+	+	+	P
H 5	33,46	33,58	+	P	+	+	+	+	+	P
H 6	33,44	29,99	+	P	+	+	+	+	+	P
H 7	34,69	/	/	A	-	-	-	-	/	A
H 8	33,10	31,17	+	P	+	+	+	+	+	P
H 9	33,31	33,48	+	P	+	+	+	+	+	P
H 10*	31,38	33,23	+	P	+	+	+	+	+	P
H 11	32,92	/	/	A	-	-	-	-	/	A
H 12	33,12	39,04	+	P	+	+	+	+	+	P
H 13	33,61	35,30	+	P	+	+	+	+	+	P
H 14	33,54	/	/	A	-	-	-	-	/	A
H 15	33,53	/	/	A	-	-	-	-	/	A
H 16	33,93	34,73	+	P	+	+	+	+	+	P
H 17	33,85	33,70	+	P	+	+	+	+	+	P
H 18	33,30	/	/	A	-	-	-	-	/	A
H 19*	31,14	37,60	+	P	+	+	+	+	+	P
H 20	33,74	/	/	A	-	-	-	-	/	A
H 21	33,22	33,92	+	P	+	+	+	+	+	P
H 22*	32,47	30,55	+	P	+	+	+	+	+	P
H 23	33,27	33,43	+	P	+	+	+	+	+	P
H 24	34,14	33,84	+	P	+	+	+	+	+	P

Sample	Alternative method				Reference method					
	Control Ct	Result Ct	Confirmation	Result	RVS		MKTTn		Confirmation	Result
					XLD	HK	XLD	HK		
I 1	29,98	/	/	A	-	-	-	-	/	A
I 2	30,41	/	/	A	-	-	-	-	/	A
I 3	30,56	31,05	+	P	+	+	+	+	+	P
I 4	29,90	31,12	+	P	+	+	+	+	+	P
I 5	29,07	25,44	+	P	+	+	+	+	+	P
I 6	29,82	27,47	+	P	+	+	+	+	+	P
I 7	30,06	/	/	A	-	-	-	-	/	A
I 8	29,92	22,61	+	P	+	+	+	+	+	P
I 9	29,56	22,44	+	P	+	+	+	+	+	P
I 10	30,01	30,86	+	P	+	+	+	+	+	P
I 11	30,51	/	/	A	-	-	-	-	/	A
I 12	29,79	27,55	+	P	+	+	+	+	+	P
I 13	30,72	32,44	+	P	+	+	+	+	+	P
I 14	30,06	/	/	A	-	-	-	-	/	A
I 15	29,87	34,18	-	A(PP)	-	+	+	-	-	A
I 16	29,55	25,20	+	P	+	+	+	+	+	P
I 17	29,80	26,00	+	P	+	+	+	+	+	P
I 18	30,06	36,08	-	A(PP)	+	-	+	+	-	A
I 19	29,57	26,24	+	P	+	+	+	+	+	P
I 20	29,76	/	/	A	-	-	+	+	-	A
I 21	29,39	23,58	+	P	+	+	+	+	+	P
I 22	29,07	26,81	+	P	+	+	+	+	+	P
I 23	29,53	28,14	+	P	+	+	+	+	+	P
I 24	29,65	29,23	+	P	+	+	+	+	+	P

Sample	Alternative method				Reference method						
	Control Ct	Result Ct	Confirmation	Result	RVS		MKTTn		Confirmation	Result	
					XLD	HK	XLD	HK			
J	1	36,28	/	/	A	-	-	-	-	/	A
J	2	36,41	/	/	A	-	-	-	-	/	A
J	3	31,76	33,28	+	P	+	+	+	+	+	P
J	4	35,00	/	+	A	+	+	+	+	+	P
J	5	34,89	/	+	A	+	+	+	+	+	P
J	6	31,66	36,94	+	P	+	+	+	+	+	P
J	7	/	/	/	A	-	-	-	-	/	A
J	8	31,53	34,87	+	P	+	+	+	+	+	P
J	9	31,31	30,43	+	P	+	+	+	+	+	P
J	10	32,78	/	+	A	+	+	+	+	+	P
J	11	33,74	/	/	A	-	-	-	-	/	A
J	12	29,60	27,39	+	P	+	+	+	+	+	P
J	13	32,28	/	+	A	+	+	+	+	+	P
J	14	34,27	/	/	A	-	-	-	-	/	A
J	15	39,11	/	/	A	-	-	-	-	/	A
J	16	31,15	38,14	+	P	+	+	+	+	+	P
J	17	33,42	/	+	A	+	+	+	+	+	P
J	18	31,50	/	/	A	-	-	-	-	/	A
J	19	31,07	30,88	+	P	+	+	+	+	+	P
J	20	33,41	/	/	A	-	-	-	-	/	A
J	21	/	31,82	+	P	+	+	+	+	+	P
J	22	31,19	30,72	+	P	+	+	+	+	+	P
J	23	31,98	26,53	+	P	+	+	+	+	+	P
J	24	30,06	32,30	+	P	+	+	+	+	+	P

Sample	Alternative method				Reference method						
	Control Ct	Result Ct	Confirmation	Result	RVS		MKTTn		Confirmation	Result	
					XLD	HK	XLD	HK			
K	1	31,36	/	/	A	-	-	-	-	/	A
K	2	31,13	/	/	A	-	-	-	-	/	A
K	3	29,74	28,87	+	P	+	+	+	+	+	P
K	4	29,73	30,87	+	P	+	+	+	+	+	P
K	5	29,67	23,04	+	P	+	+	+	+	+	P
K	6	30,09	24,12	+	P	+	+	+	+	+	P
K	7	31,04	/	/	A	-	-	-	-	/	A
K	8	31,08	26,32	+	P	+	+	+	+	+	P
K	9	30,48	24,07	+	P	+	+	+	+	+	P
K	10	31,87	35,68	+	P	+	+	+	+	+	P
K	11*	31,67	/	/	A	-	-	-	-	/	A
K	12	29,45	22,81	+	P	+	+	+	+	+	P
K	13	31,46	36,45	+	P	+	+	+	+	+	P
K	14*	31,00	/	/	A	-	-	-	-	/	A
K	15	31,83	36,62	-	A(PP)	-	-	-	-	/	A
K	16	31,46	33,30	+	P	+	+	+	+	+	P
K	17	31,41	31,66	+	P	+	+	+	+	+	P
K	18*	31,76	/	/	A	-	-	-	-	/	A
K	19	30,20	28,70	+	P	+	+	+	+	+	P
K	20*	31,59	/	/	A	-	-	-	-	/	A
K	21*	31,03	35,88	+	P	+	+	+	+	+	P
K	22	30,40	31,90	+	P	+	+	+	+	+	P
K	23	31,27	33,27	+	P	+	+	+	+	+	P
K	24	31,32	35,47	+	P	+	+	+	+	+	P

Samples with\* diluted at 1/10 because of inhibitions during the first run

Sample	Alternative method				Reference method					
	Control Ct	Result Ct	Confirmation	Result	RVS		MKTTn		Confirmation	Result
					XLD	HK	XLD	HK		
L 1	29,96	/	/	A	-	-	-	-	/	A
L 2	29,89	/	/	A	-	-	-	-	/	A
L 3	29,32	23,08	+	P	-	+	+	+	+	P
L 4	30,06	22,68	+	P	+	+	+	+	+	P
L 5	29,49	16,51	+	P	+	+	+	+	+	P
L 6	29,83	26,50	+	P	+	+	+	+	+	P
L 7	30,33	/	/	A	-	-	-	-	/	A
L 8	29,88	23,85	+	P	+	+	+	+	+	P
L 9	29,70	15,47	+	P	+	+	+	+	+	P
L 10	28,98	22,41	+	P	-	+	+	+	+	P
L 11	29,70	/	/	A	-	-	-	-	/	A
L 12	29,70	20,45	+	P	+	+	+	+	+	P
L 13	30,06	25,45	+	P	+	+	+	+	+	P
L 14	29,84	/	/	A	-	-	-	-	/	A
L 15	29,79	/	/	A	-	-	-	-	/	A
L 16	30,27	31,44	+	P	+	+	+	+	+	P
L 17	29,66	23,31	+	P	+	+	+	+	+	P
L 18	29,72	/	/	A	-	-	-	-	/	A
L 19	29,30	25,36	+	P	+	+	+	+	+	P
L 20	29,91	/	/	A	-	-	-	-	/	A
L 21	29,00	23,69	+	P	+	+	+	+	+	P
L 22	28,94	24,34	+	P	+	+	+	+	+	P
L 23	29,25	26,15	+	P	+	+	+	+	+	P
L 24	29,15	22,83	+	P	+	+	+	+	+	P

Sample	Alternative method				Reference method					
	Control Ct	Result Ct	Confirmation	Result	RVS		MKTTn		Confirmation	Result
					XLD	HK	XLD	HK		
M 1	29,88	/	/	A	-	-	-	-	/	A
M 2	29,27	/	/	A	-	-	-	-	/	A
M 3	29,87	/	/	A	-	-	-	-	/	A
M 4	30,01	33,20	+	P	+	+	+	+	+	P
M 5	29,47	31,16	+	P	+	+	+	+	+	P
M 6	29,24	26,05	+	P	+	+	+	+	+	P
M 7	29,97	/	/	A	-	-	-	-	/	A
M 8	29,60	32,86	+	P	+	+	-	+	+	P
M 9	30,40	36,21	+	P	+	+	+	+	+	P
M 10	29,69	29,41	+	P	+	+	+	+	+	P
M 11	29,70	/	/	A	-	-	-	-	/	A
M 12	28,17	23,71	+	P	+	+	+	+	+	P
M 13	28,86	28,10	+	P	+	+	-	+	+	P
M 14	29,55	/	/	A	-	-	-	-	/	A
M 15	29,63	/	/	A	-	-	-	-	/	A
M 16	29,16	30,07	+	P	+	+	-	-	+	P
M 17	30,01	35,47	+	P	+	+	+	+	+	P
M 18	29,66	/	/	A	-	-	-	-	/	A
M 19	28,37	22,33	+	P	+	+	+	+	+	P
M 20	29,60	/	/	A	-	-	-	-	/	A
M 21	29,62	33,06	+	P	+	+	+	+	+	P
M 22	29,86	30,88	+	P	+	+	+	+	+	P
M 23	29,57	28,54	+	P	+	+	+	+	+	P
M 24	28,81	26,97	+	P	+	+	+	+	+	P

## Annex 8 - Accordance calculation

**Both methods**

Number of replicates:

8

Level L0

Laboratory	Number of positive	Probability of positive	Probability of pair of positives	Probability of negative	Probability of pair of negatives	Probability of pair of same results
A	0	0,000	0,000	1,000	1,000	1,000
B	0	0,000	0,000	1,000	1,000	1,000
C	0	0,000	0,000	1,000	1,000	1,000
D	0	0,000	0,000	1,000	1,000	1,000
E	0	0,000	0,000	1,000	1,000	1,000
F	0	0,000	0,000	1,000	1,000	1,000
G	0	0,000	0,000	1,000	1,000	1,000
I	0	0,000	0,000	1,000	1,000	1,000
K	0	0,000	0,000	1,000	1,000	1,000
L	0	0,000	0,000	1,000	1,000	1,000
M	0	0,000	0,000	1,000	1,000	1,000
Mean						100,0%

Level L1

Laboratory	Number of positive	Probability of positive	Probability of pair of positives	Probability of negative	Probability of pair of negatives	Probability of pair of same results
A	8	1,000	1,000	0,000	0,000	1,000
B	7	0,875	0,766	0,125	0,016	0,781
C	8	1,000	1,000	0,000	0,000	1,000
D	8	1,000	1,000	0,000	0,000	1,000
E	7	0,875	0,766	0,125	0,016	0,781
F	8	1,000	1,000	0,000	0,000	1,000
G	8	1,000	1,000	0,000	0,000	1,000
I	8	1,000	1,000	0,000	0,000	1,000
K	8	1,000	1,000	0,000	0,000	1,000
L	8	1,000	1,000	0,000	0,000	1,000
M	7	0,875	0,766	0,125	0,016	0,781
Mean						94,0%

Level L2

Laboratory	Number of positive	Probability of positive	Probability of pair of positives	Probability of negative	Probability of pair of negatives	Probability of pair of same results
A	8	1,000	1,000	0,000	0,000	1,000
B	8	1,000	1,000	0,000	0,000	1,000
C	8	1,000	1,000	0,000	0,000	1,000
D	8	1,000	1,000	0,000	0,000	1,000
E	8	1,000	1,000	0,000	0,000	1,000
F	8	1,000	1,000	0,000	0,000	1,000
G	8	1,000	1,000	0,000	0,000	1,000
I	8	1,000	1,000	0,000	0,000	1,000
K	8	1,000	1,000	0,000	0,000	1,000
L	8	1,000	1,000	0,000	0,000	1,000
M	8	1,000	1,000	0,000	0,000	1,000
Mean						100,0%



## Appendix 9 - Concordance calculation

### Both methods

Level L0	Laboratory	Number of negative	Between-lab pairings with the same results	Total between-lab pairings
	A	8	640	640
	B	8	640	640
	C	8	640	640
	D	8	640	640
	E	8	640	640
	F	8	640	640
	G	8	640	640
	I	8	640	640
	K	8	640	640
	L	8	640	640
	M	8	640	640
	<b>Total</b>		<b>7040</b>	<b>7040</b>
	<b>Concordance</b>			<b>100,0%</b>

Level L1	Laboratory	Number of positive	Between-lab pairings with the same results	Total between-lab pairings
	A	8	616	640
	B	7	546	640
	C	8	616	640
	D	8	616	640
	E	7	546	640
	F	8	616	640
	G	8	616	640
	I	8	616	640
	K	8	616	640
	L	8	616	640
	M	7	546	640
	<b>Total</b>		<b>6566</b>	<b>7040</b>
	<b>Concordance</b>			<b>93,3%</b>

Level L2	Laboratory	Number of positive	Between-lab pairings with the same results	Total between-lab pairings
	A	8	640	640
	B	8	640	640
	C	8	640	640
	D	8	640	640
	E	8	640	640
	F	8	640	640
	G	8	640	640
	I	8	640	640
	K	8	640	640
	L	8	640	640
	M	8	640	640
	<b>Total</b>		<b>7040</b>	<b>7040</b>
	<b>Concordance</b>			<b>100,0%</b>