

External Quality Assessment Scheme

## Tumour Markers Round 2, 2020

### Specimens

Please find enclosed 2 serum samples S001 and S002, each 2 mL. Samples are liquid human serum pools and no preservatives are added.

### Caution

Quality control specimens derived from human blood must be handled with the same care as patient samples, i.e. as potential transmitters of serious diseases. The specimens are found to be HBsAg, HCVAb and HIVAgAb negative when tested with licensed reagents, but no known test method can offer complete assurance that the specimens will not transmit these or other infectious diseases.

### Examinations

Please see page 2.

### Storage and use

Samples S001 and S002 are ready to use. Please analyse the samples as soon as possible. If you analyse the samples later than on the day of the sample arrival, please divide the sera into aliquots for the determinations and freeze immediately (-20 °C). Please, avoid several freeze-thaw cycles. A little before analysing thaw and mix the samples well. Analyse as patient samples.

### Result reporting

Please enter the results and methods via LabScala. If you can't find your instrument or reagent from the registry, please contact the EQA Coordinator.

NB! Starting from Round 1, 2020, Thyroglobulin antibodies are reported as quantitative results and the Anti-Müllerian hormone has been transferred to its own product (2703 Anti-Müllerian Hormone).

S001: LQ741220021



S002: LQ741220022



2020-05-11

### INSTRUCTIONS

Product no. 2700,2700S  
LQ741220021-22 /FI

Subcontracting: Sample  
preparation

If the kit is incomplete or contains  
damaged specimens, please report  
immediately to [info@labquality.fi](mailto:info@labquality.fi).

The results should be  
reported no later than  
**June 4, 2020.**

### Inquiries

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## Tumour Markers

### Examinations

AFP

B2-microglobulin

Ovary antigen (CA 125)

Breast antigen (CA 153)

Gut antigen (CA 199)

CEA

Enolase (neuron specific)

Ferritin

hCG total (free+intact)

hCG intact

hCG free  $\beta$  subunit

HE-4

PSA

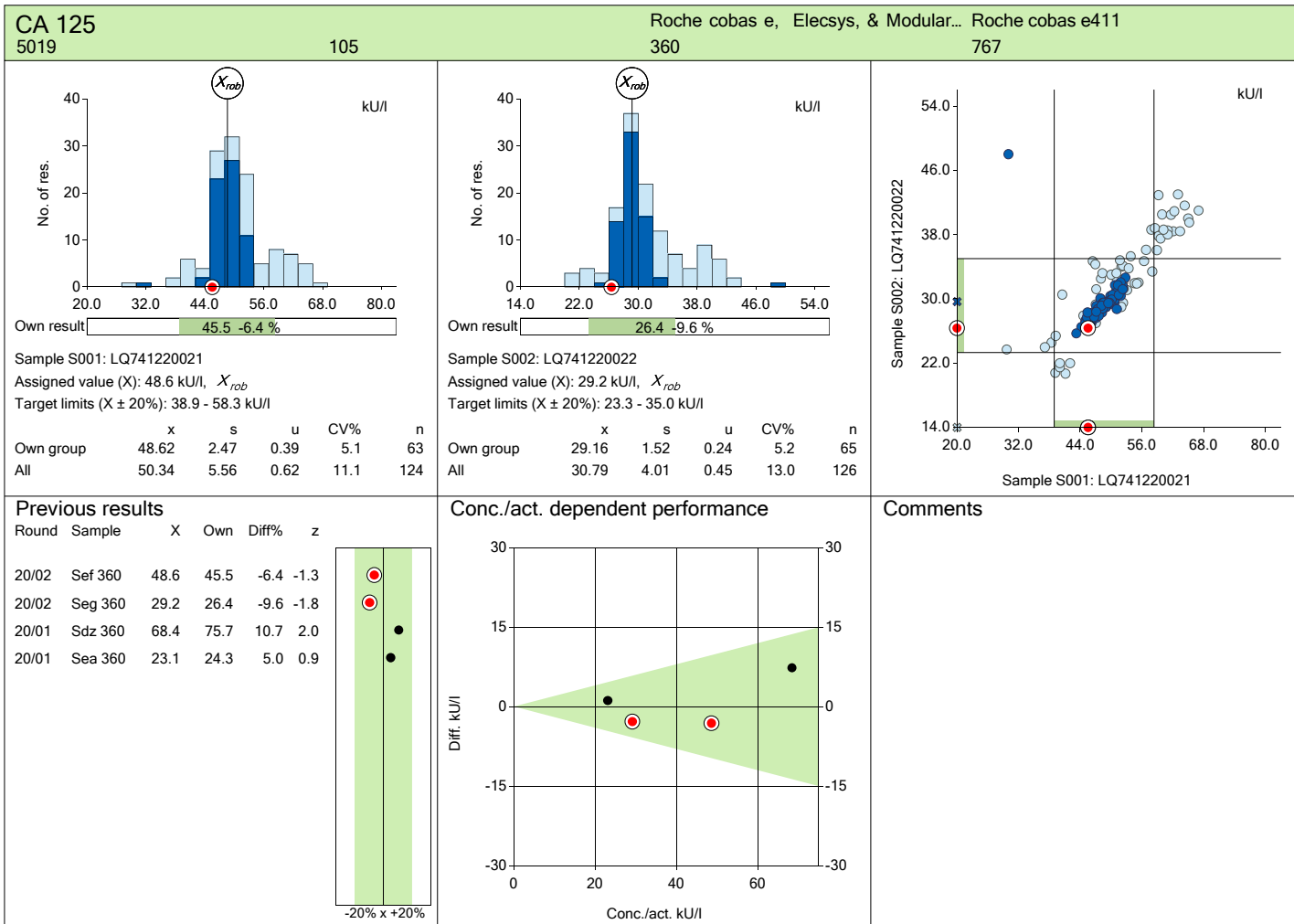
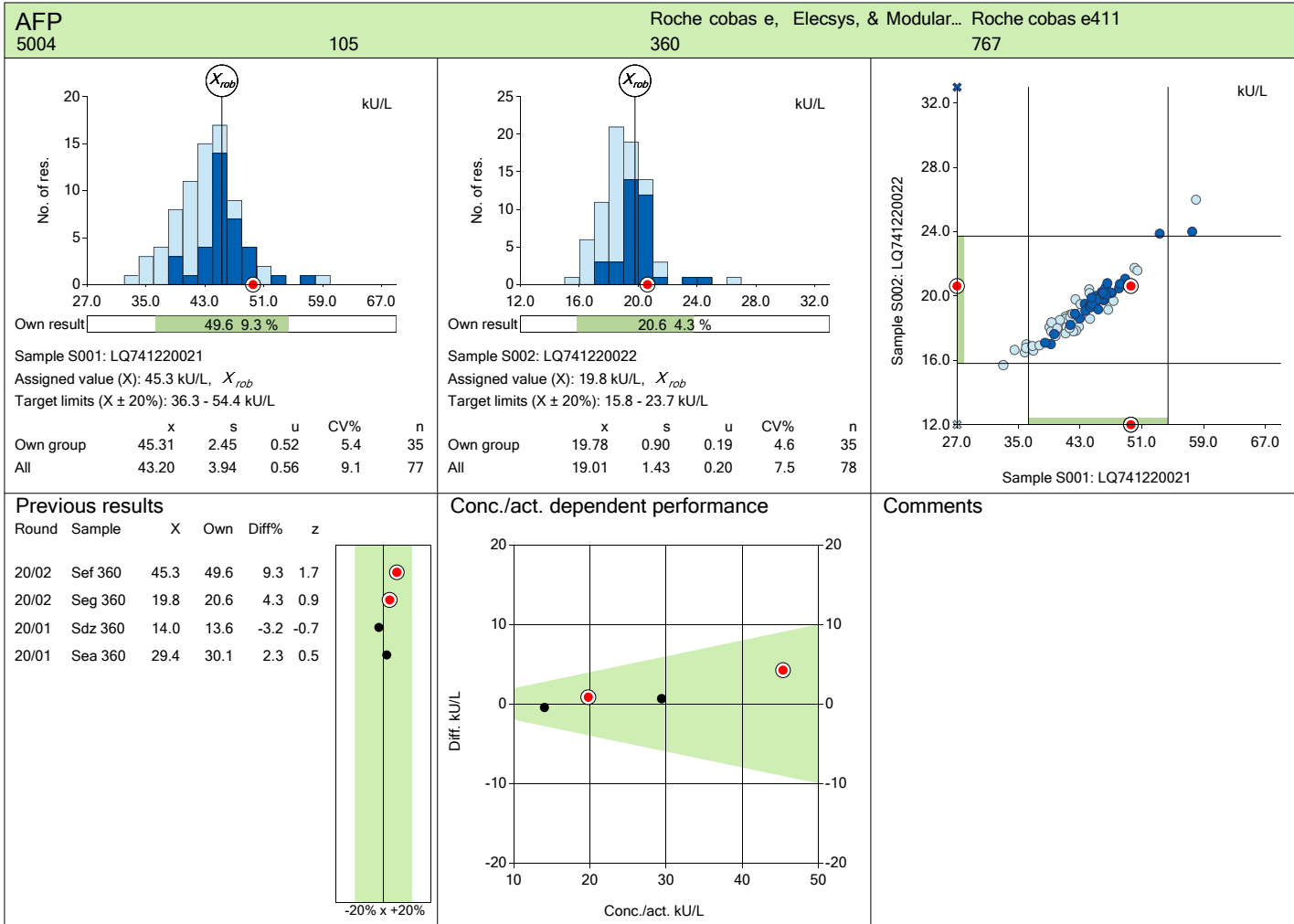
PSA, complexed

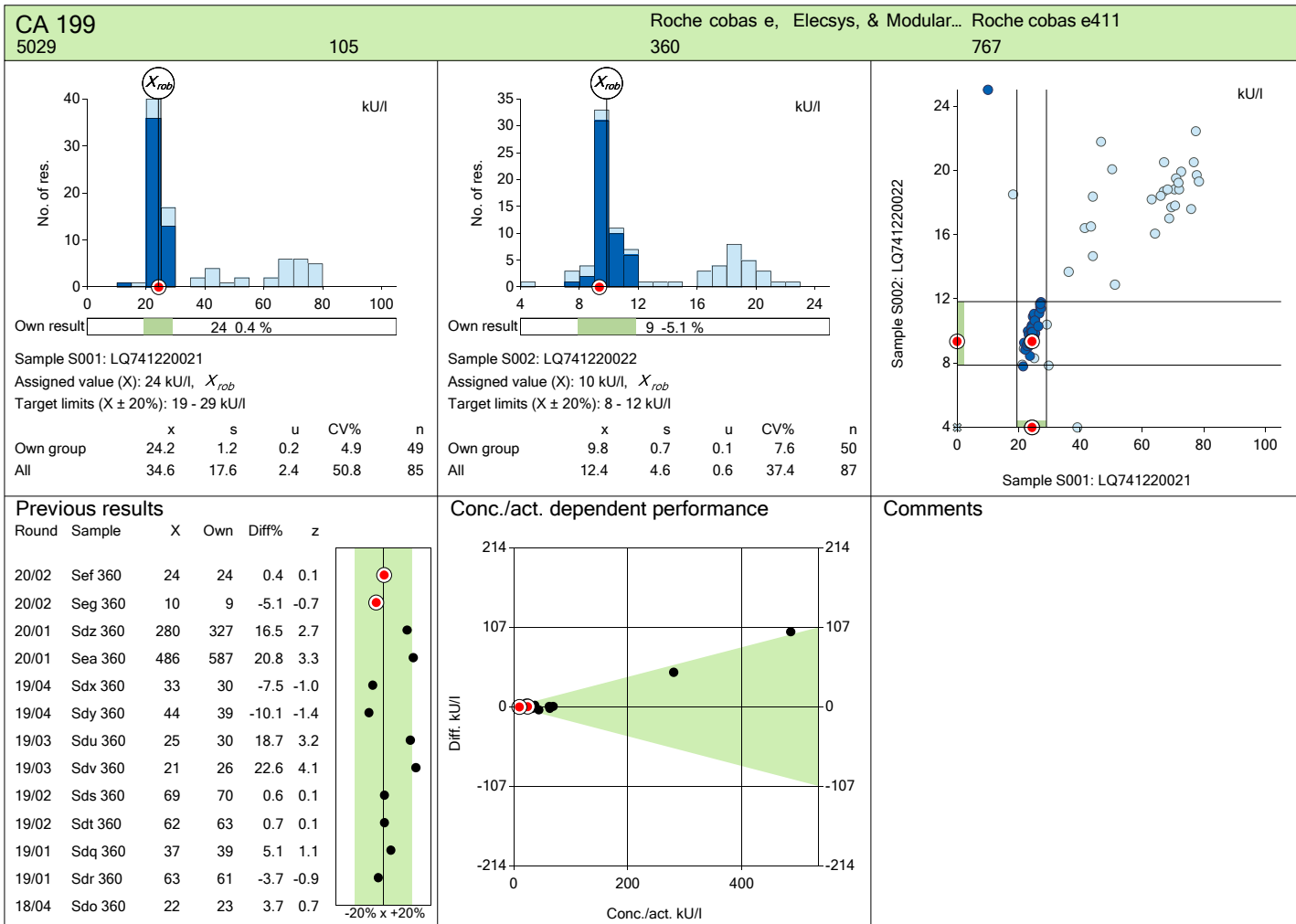
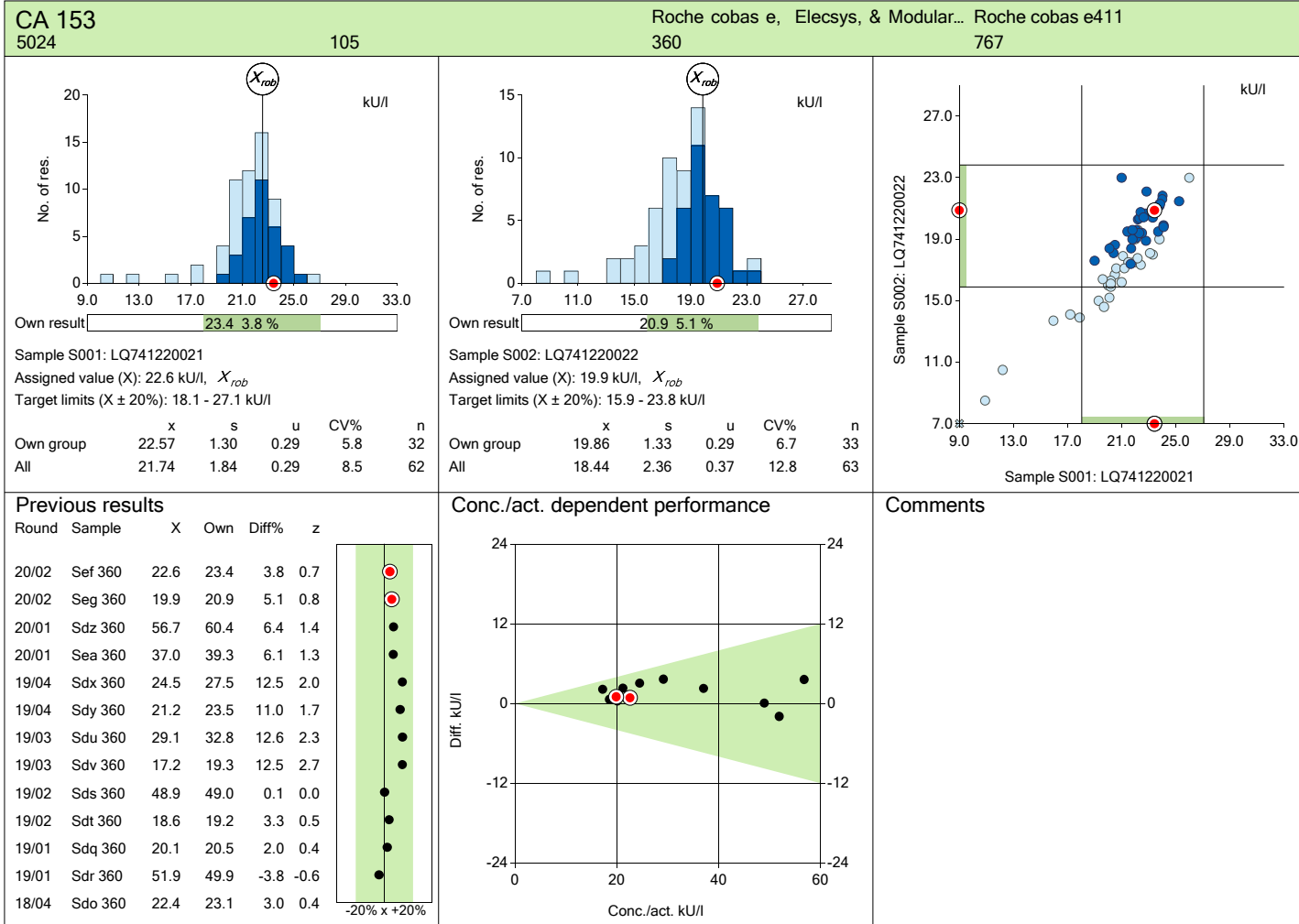
PSA free

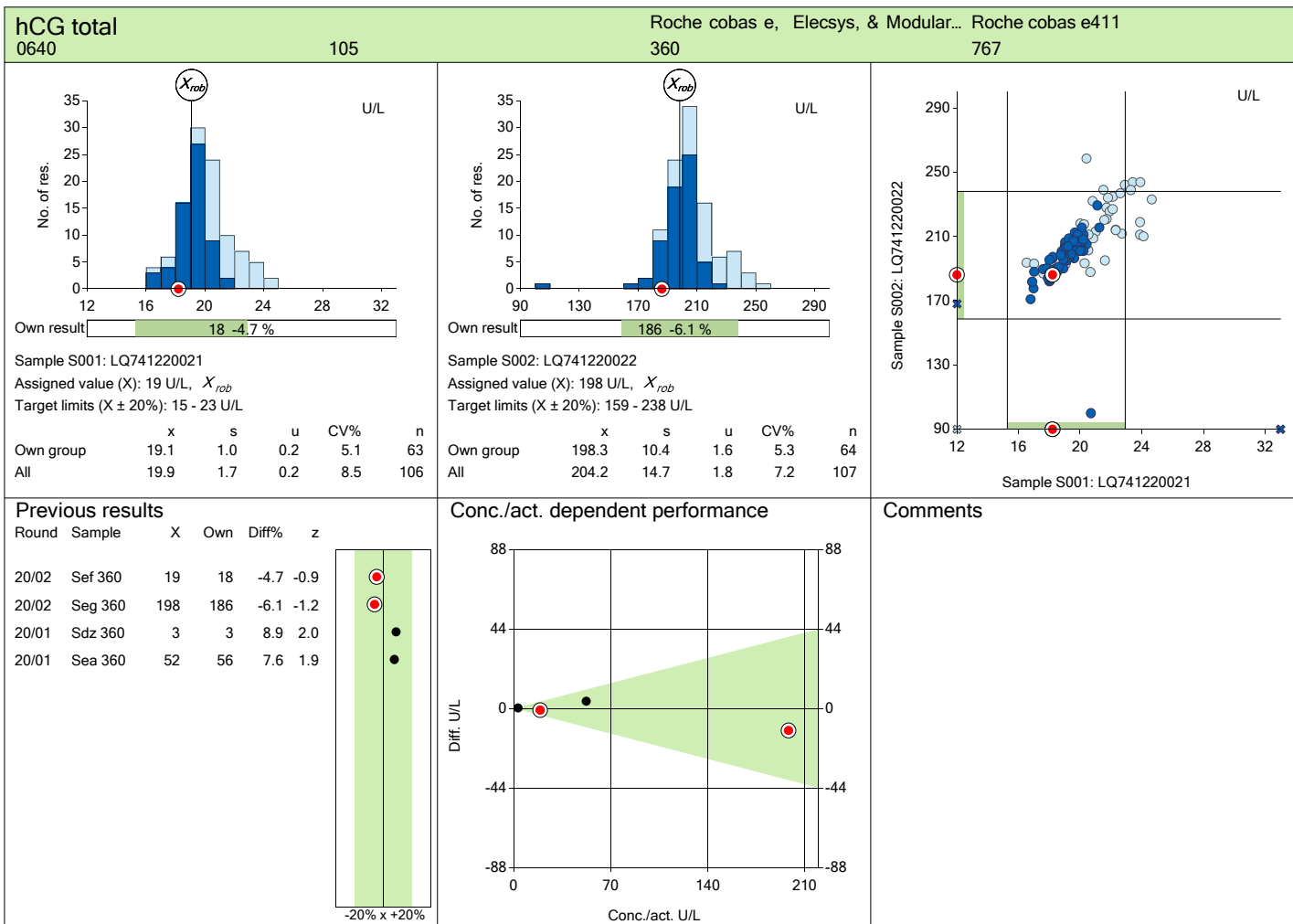
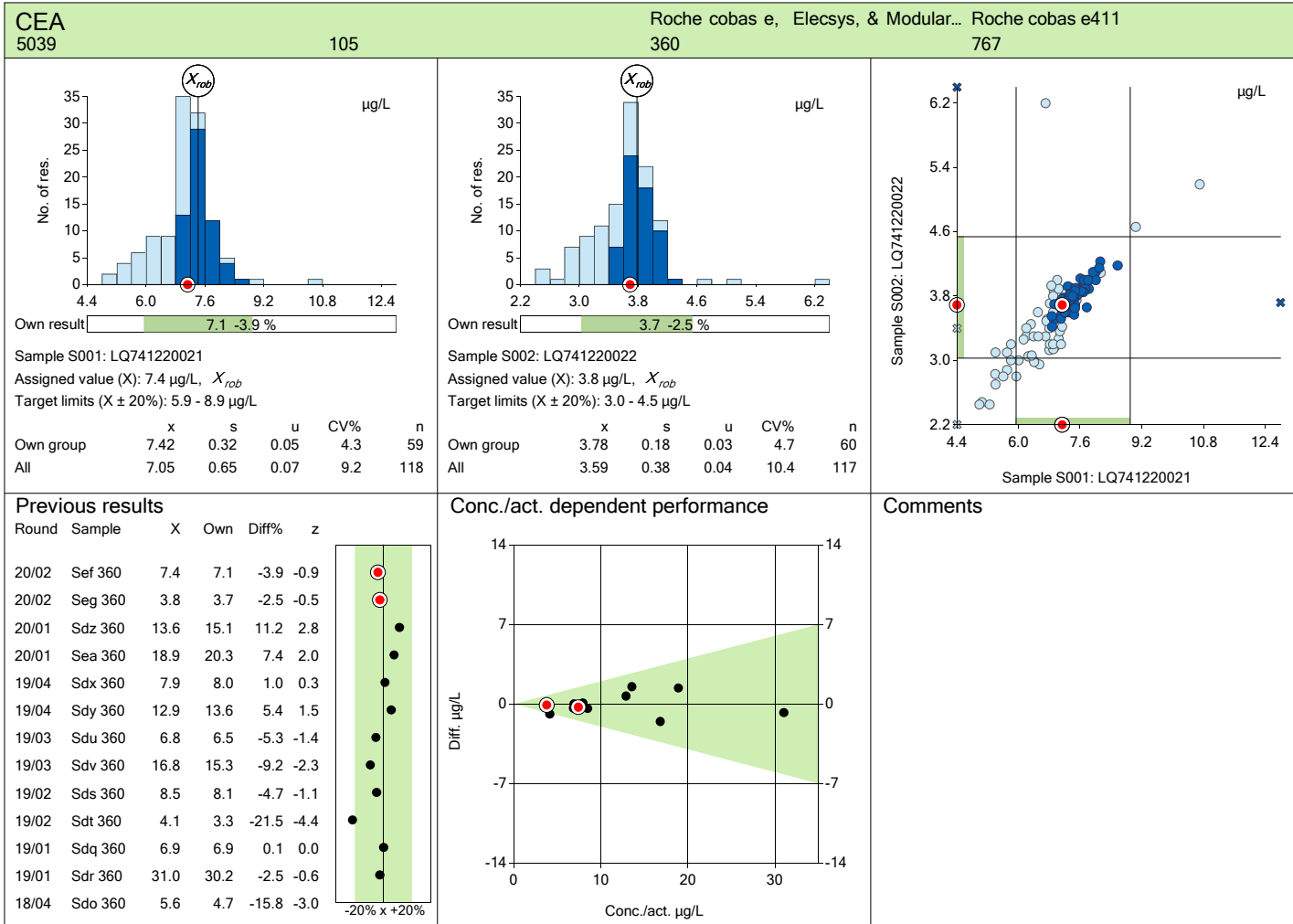
PSA free/total

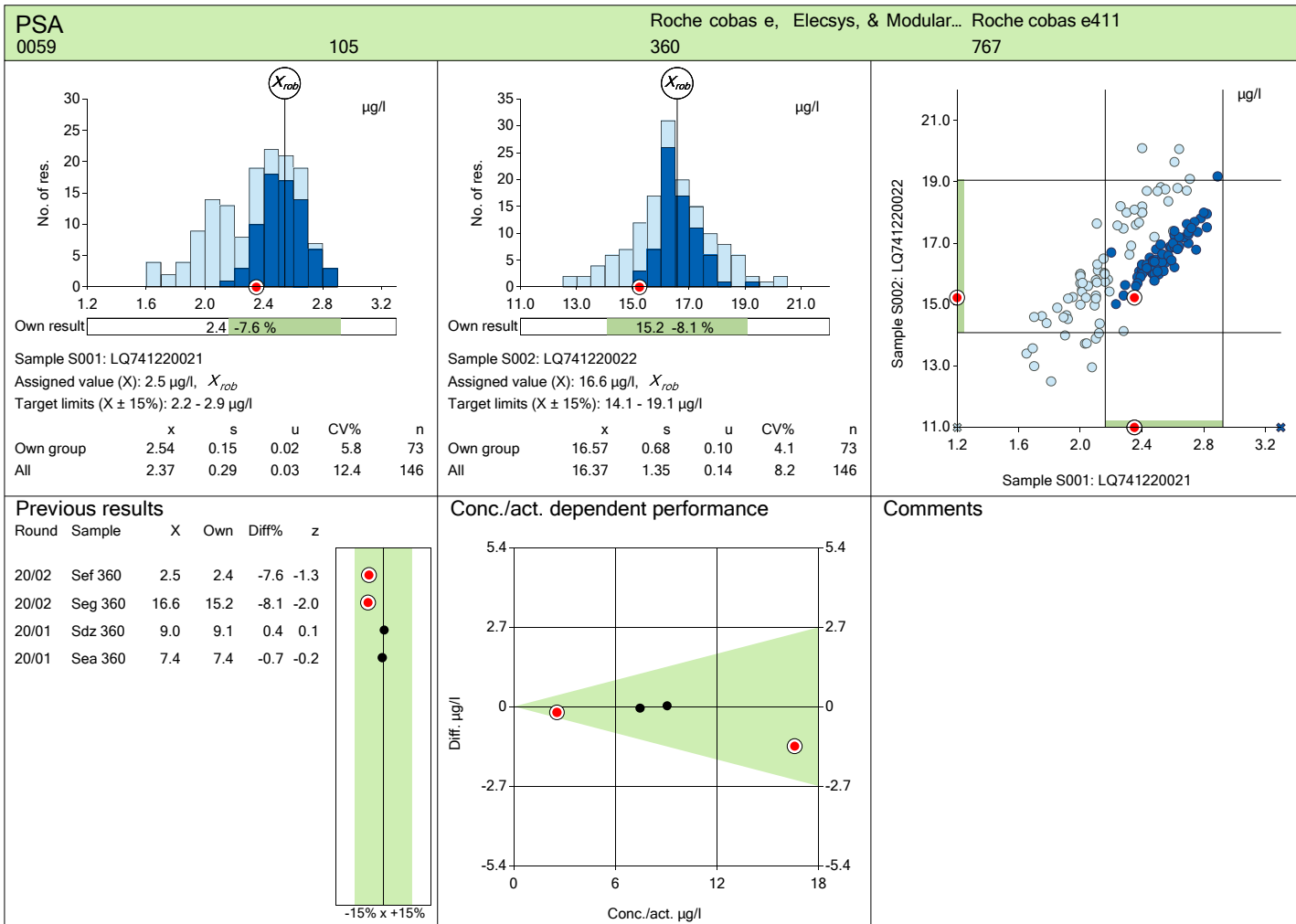
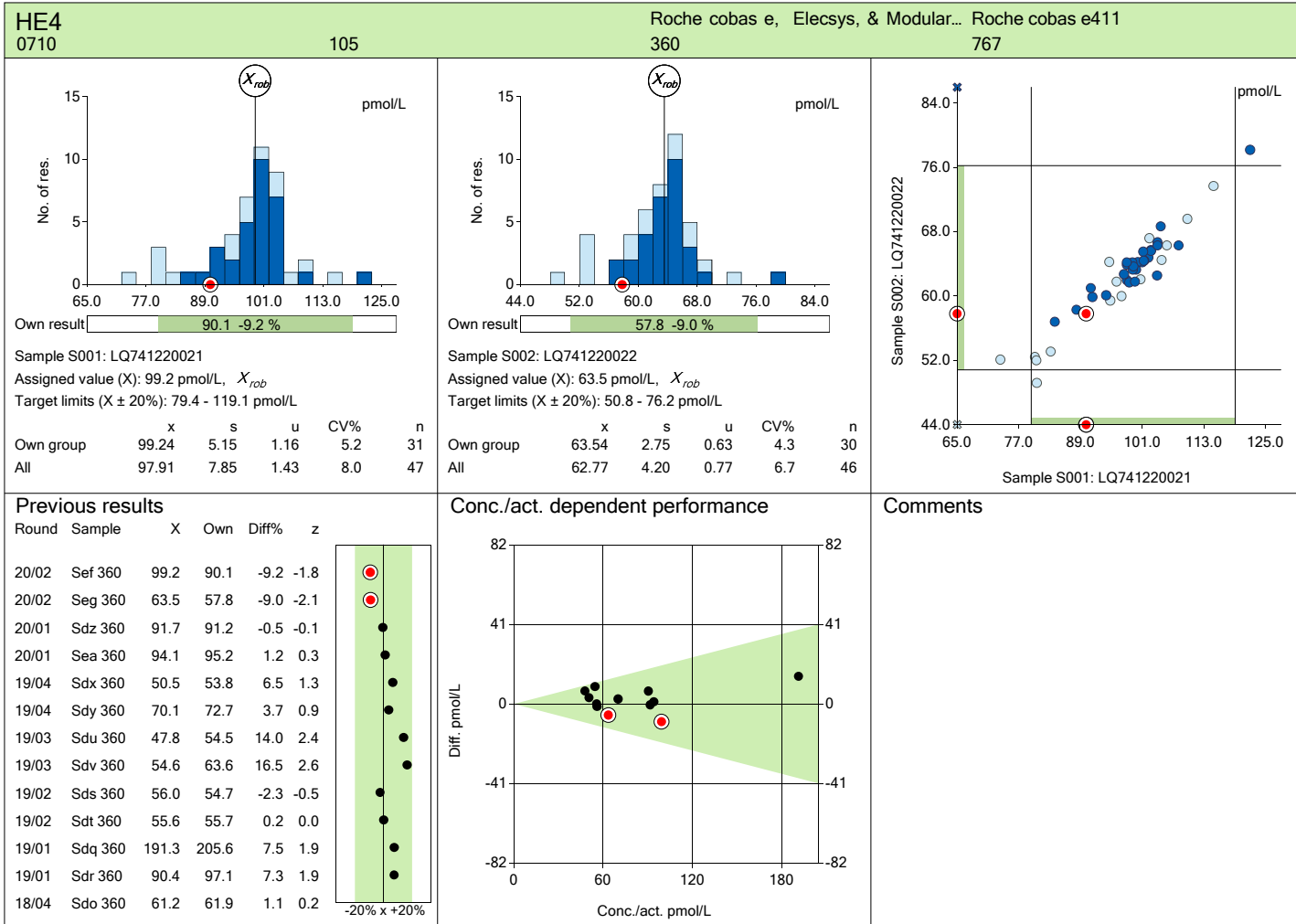
Thyroglobulin

Thyroglob. antibodies









## Participants

168 participants from 17 countries.

## Report info

Assigned value (target value) calculation and its uncertainty

Your own result should be compared to others using the same method.

The assigned values ( $X_{rob}$ ) are calculated according to the robust procedure described in the standard ISO 13528 (Statistical methods for use in proficiency testing by interlaboratory comparisons, Annex C, Algorithm A).

The standard uncertainty of the assigned value is expressed as  $1.25 \times$  the standard error of mean (SEM) and marked as "u" in numerical summary. Due to its iterative mode algorithm A adds the uncertainty of the assigned value and with this factor we want to adjust uncertainty accordingly.

In case there are 2-12 results in a method group, the robust calculation is not used but assigned values ( $X_{pt}$ ) are means of the results where results deviating more than  $\pm 3 \times$  standard deviation from the median are removed. The standard uncertainty (u) of the assigned value is reported as standard error of the mean (SEM). Additionally, if the measurement uncertainty of the target value is too large ( $u > 0.1 \times$  maximum allowable error) an automatic text is printed on the report: "The uncertainty of the assigned value is not negligible, and evaluations could be affected."

Please notice also that for groups that have only 1 result only the client's own result is shown. No target value (except for reference method values) is calculated, no target areas are shown.

### Z score

In case there are 2-5 results in a method group, no z-score is calculated, and a text is printed on the report: "Due to the small number of results, the z score is not calculated." In case there are 6-12 results, the report has a text: "Z score is uncertain due to the small number of observations."

Results reported with  $< \text{tai} >$  -signs cannot be included in the statistics.

For information on report interpretation and performance evaluation, please see the "EQAS Interpretation guidelines" in LabScala User instructions (top right corner ?Help link).

## NUMERICAL SUMMARY

## Tumour markers 2020/02

| Analyte                         | Method group                        | x            | med         | s           | CV%         | u           | Min         | Max         | Number     |
|---------------------------------|-------------------------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| <b>Sample S001: LQ741220021</b> |                                     |              |             |             |             |             |             |             |            |
| <b>AFP, kU/L</b>                |                                     |              |             |             |             |             |             |             |            |
|                                 | Abbott Alinity                      | 39.73        | 40.8        | 3.68        | 9.3         | 1.84        | 34.5        | 42.8        | 4          |
|                                 | Abbott Architect                    | 40.71        | 41.1        | 1.65        | 4.0         | 0.57        | 35.8        | 42.4        | 13         |
|                                 | Beckman Coulter Access & Unicel     | 37.68        | 37.7        | -           | -           | -           | -           | -           | 1          |
|                                 | bioMerieux Vidas                    | 44.84        | 44.8        | 7.88        | 17.6        | 5.57        | 39.3        | 50.4        | 2          |
|                                 | Brahms Kryptor                      | 36.00        | 36.0        | -           | -           | -           | -           | -           | 1          |
|                                 | Perkin Elmer Delfia/Auto Delfia     | 36.85        | 36.9        | 0.07        | 0.2         | 0.05        | 36.8        | 36.9        | 2          |
|                                 | Roche cobas e, Elecsys, & Modular E | 45.04        | 45.2        | 2.33        | 5.2         | 0.52        | 38.4        | 57.5        | 31         |
|                                 | Siemens Advia Centaur & Atellica    | 43.90        | 43.9        | 1.21        | 2.7         | 1.46        | 42.4        | 58.0        | 9          |
|                                 | Siemens Dimension & Vista           | 40.00        | 40.0        | -           | -           | -           | -           | -           | 1          |
|                                 | Siemens Immulite 1000, 2000, 2500   | 40.98        | 41.8        | 5.92        | 14.4        | 2.96        | 33.0        | 47.3        | 4          |
|                                 | <b>All</b>                          | <b>43.04</b> | <b>43.0</b> | <b>3.66</b> | <b>8.5</b>  | <b>0.44</b> | <b>33.0</b> | <b>58.0</b> | <b>69</b>  |
| <b>CA 125, kU/l</b>             |                                     |              |             |             |             |             |             |             |            |
|                                 | Abbott Alinity                      | 60.13        | 62.1        | 6.44        | 10.7        | 2.15        | 48.0        | 67.0        | 9          |
|                                 | Abbott Architect                    | 59.18        | 59.6        | 4.25        | 7.2         | 1.37        | 47.1        | 65.2        | 15         |
|                                 | Beckman Coulter Access & Unicel     | 43.44        | 43.4        | 4.19        | 9.7         | 2.96        | 40.5        | 46.4        | 2          |
|                                 | bioMerieux Vidas                    | 35.74        | 38.4        | 5.28        | 14.8        | 3.05        | 29.7        | 39.2        | 3          |
|                                 | Brahms Kryptor                      | 48.30        | 48.3        | -           | -           | -           | -           | -           | 1          |
|                                 | Roche cobas e, Elecsys, & Modular E | 48.59        | 48.4        | 2.51        | 5.2         | 0.42        | 43.2        | 52.8        | 56         |
|                                 | Siemens Advia Centaur & Atellica    | 52.10        | 52.3        | 2.38        | 4.6         | 0.79        | 46.5        | 55.3        | 14         |
|                                 | Siemens Dimension & Vista           | 40.44        | 40.0        | 1.12        | 2.8         | 0.50        | 39.1        | 42.0        | 5          |
|                                 | Siemens Immulite 1000, 2000, 2500   | 47.00        | 47.0        | -           | -           | -           | -           | -           | 1          |
|                                 | <b>All</b>                          | <b>50.28</b> | <b>49.7</b> | <b>5.72</b> | <b>11.4</b> | <b>0.56</b> | <b>29.7</b> | <b>67.0</b> | <b>106</b> |
| <b>CA 153, kU/l</b>             |                                     |              |             |             |             |             |             |             |            |
|                                 | Abbott Alinity                      | 20.37        | 21.1        | 2.19        | 10.8        | 1.27        | 17.9        | 22.1        | 3          |
|                                 | Abbott Architect                    | 21.27        | 20.7        | 1.59        | 7.5         | 0.50        | 19.6        | 23.8        | 10         |
|                                 | Beckman Coulter Access & Unicel     | 12.20        | 12.2        | -           | -           | -           | -           | -           | 1          |
|                                 | bioMerieux Vidas                    | 21.56        | 22.2        | 1.09        | 5.1         | 0.63        | 20.3        | 22.2        | 3          |
|                                 | Brahms Diagnostica RIA              | 22.00        | 22.0        | -           | -           | -           | -           | -           | 1          |
|                                 | Perkin Elmer Delfia/Auto Delfia     | 26.00        | 26.0        | -           | -           | -           | -           | -           | 1          |
|                                 | Roche cobas e, Elecsys, & Modular E | 22.41        | 22.4        | 1.30        | 5.8         | 0.31        | 19.0        | 24.1        | 28         |
|                                 | Siemens Advia Centaur & Atellica    | 20.55        | 20.6        | 0.88        | 4.3         | 0.36        | 19.3        | 21.9        | 6          |
|                                 | <b>All</b>                          | <b>21.79</b> | <b>21.9</b> | <b>1.67</b> | <b>7.7</b>  | <b>0.23</b> | <b>12.2</b> | <b>26.0</b> | <b>53</b>  |
| <b>CA 199, kU/l</b>             |                                     |              |             |             |             |             |             |             |            |
|                                 | Abbott Alinity                      | 68.3         | 69          | 4.2         | 6.1         | 2.1         | 63          | 73          | 4          |
|                                 | Abbott Architect                    | 69.0         | 70          | 7.4         | 10.8        | 2.3         | 51          | 78          | 10         |
|                                 | Beckman Coulter Access & Unicel     | 25.0         | 25          | -           | -           | -           | -           | -           | 1          |
|                                 | bioMerieux Vidas                    | 23.5         | 24          | 2.1         | 8.8         | 1.2         | 21          | 25          | 3          |
|                                 | Brahms Kryptor                      | 24.2         | 24          | 3.7         | 15.2        | 2.6         | 22          | 27          | 2          |
|                                 | Roche cobas e, Elecsys, & Modular E | 24.1         | 24          | 1.2         | 5.0         | 0.2         | 21          | 27          | 44         |
|                                 | Siemens Advia Centaur & Atellica    | 41.4         | 43          | 6.4         | 15.6        | 2.3         | 30          | 50          | 8          |
|                                 | <b>All</b>                          | <b>30.9</b>  | <b>25</b>   | <b>12.1</b> | <b>39.1</b> | <b>1.4</b>  | <b>21</b>   | <b>78</b>   | <b>72</b>  |
| <b>CEA, µg/L</b>                |                                     |              |             |             |             |             |             |             |            |
|                                 | Abbott Alinity                      | 6.78         | 6.9         | 0.40        | 5.9         | 0.15        | 5.9         | 7.2         | 7          |
|                                 | Abbott Architect                    | 6.79         | 6.9         | 0.37        | 5.5         | 0.12        | 6.0         | 7.3         | 15         |
|                                 | Beckman Coulter Access & Unicel     | 6.74         | 6.7         | 0.56        | 8.3         | 0.40        | 6.3         | 7.1         | 2          |
|                                 | bioMerieux Vidas                    | 6.60         | 6.6         | 0.28        | 4.3         | 0.20        | 6.4         | 6.8         | 2          |
|                                 | Roche cobas e, Elecsys, & Modular E | 7.43         | 7.4         | 0.31        | 4.1         | 0.05        | 6.9         | 8.6         | 54         |
|                                 | Siemens Advia Centaur & Atellica    | 5.67         | 5.7         | 0.49        | 8.7         | 0.16        | 5.0         | 6.4         | 15         |
|                                 | Siemens Dimension & Vista           | 6.93         | 6.9         | 0.12        | 1.8         | 0.06        | 6.8         | 7.1         | 4          |

## NUMERICAL SUMMARY

Tumour markers 2020/02, Sample S001: LQ741220021

| Analyte                    | Method group                               | x            | med         | s           | CV%         | u           | Min         | Max          | Number     |
|----------------------------|--------------------------------------------|--------------|-------------|-------------|-------------|-------------|-------------|--------------|------------|
| <b>CEA, µg/L</b>           |                                            |              |             |             |             |             |             |              |            |
|                            | Siemens Immulite 1000, 2000, 2500          | 8.82         | 8.8         | 2.67        | 30.2        | 1.89        | 6.9         | 10.7         | 2          |
|                            | Tosoh AIA                                  | 9.04         | 9.0         | -           | -           | -           | -           | -            | 1          |
|                            | <b>All</b>                                 | <b>7.06</b>  | <b>7.2</b>  | <b>0.64</b> | <b>9.0</b>  | <b>0.06</b> | <b>5.0</b>  | <b>10.7</b>  | <b>102</b> |
| <b>Ferritin, µg/l</b>      |                                            |              |             |             |             |             |             |              |            |
|                            | Abbott Alinity                             | 71.1         | 73          | 3.5         | 4.9         | 1.3         | 63          | 73           | 7          |
|                            | Abbott Architect                           | 70.4         | 72          | 5.3         | 7.5         | 1.8         | 60          | 75           | 13         |
|                            | Beckman Coulter Access & Unicel            | 53.0         | 53          | 5.9         | 11.2        | 4.2         | 49          | 57           | 2          |
|                            | bioMerieux Vidas                           | 66.8         | 67          | 7.3         | 10.9        | 5.2         | 62          | 72           | 2          |
|                            | Roche cobas e, Elecsys, & Modular E        | 79.8         | 79          | 3.7         | 4.6         | 0.7         | 66          | 89           | 42         |
|                            | Roche Cobas Integra                        | 76.6         | 77          | 9.2         | 12.1        | 6.5         | 70          | 83           | 2          |
|                            | Roche Tina-quant                           | 82.0         | 82          | 1.6         | 2.0         | 0.8         | 80          | 84           | 4          |
|                            | Siemens Advia Centaur & Atellica           | 64.4         | 65          | 2.3         | 3.6         | 0.8         | 61          | 68           | 12         |
|                            | Snibe Diagnostic Maglumi                   | 82.6         | 83          | -           | -           | -           | -           | -            | 1          |
|                            | <b>All</b>                                 | <b>74.8</b>  | <b>76</b>   | <b>8.2</b>  | <b>11.0</b> | <b>0.9</b>  | <b>49</b>   | <b>89</b>    | <b>85</b>  |
| <b>hCG free beta, µg/L</b> |                                            |              |             |             |             |             |             |              |            |
|                            | Roche cobas e, Elecsys, & Modular E        | 0.10         | 0.1         | 0.00        | 0.0         | 0.00        | 0.1         | 0.1          | 2          |
|                            | Siemens Immulite 1000, 2000, 2500          | 2.00         | 2.0         | 0.00        | 0.0         | 0.00        | 2.0         | 2.0          | 3          |
|                            | <b>All</b>                                 | <b>1.24</b>  | <b>2.0</b>  | <b>1.18</b> | <b>95.2</b> | <b>0.53</b> | <b>0.1</b>  | <b>2.0</b>   | <b>5</b>   |
| <b>hCG intact, U/L</b>     |                                            |              |             |             |             |             |             |              |            |
|                            | bioMerieux Vidas                           | 17.4         | 17          | -           | -           | -           | -           | -            | 1          |
|                            | Roche cobas e, Elecsys, & Modular E        | 18.9         | 19          | 0.8         | 4.3         | 0.6         | 18          | 20           | 2          |
|                            | <b>All</b>                                 | <b>18.4</b>  | <b>18</b>   | <b>1.2</b>  | <b>6.5</b>  | <b>0.7</b>  | <b>17</b>   | <b>20</b>    | <b>3</b>   |
| <b>hCG total, U/L</b>      |                                            |              |             |             |             |             |             |              |            |
|                            | Abbott Alinity                             | 20.3         | 21          | 2.3         | 11.2        | 1.0         | 17          | 23           | 5          |
|                            | Abbott Architect                           | 19.9         | 20          | 0.9         | 4.6         | 0.3         | 17          | 22           | 15         |
|                            | Beckman Coulter Access & Unicel            | 23.9         | 24          | 0.7         | 2.8         | 0.4         | 23          | 25           | 3          |
|                            | Roche cobas e, Elecsys, & Modular E        | 19.1         | 19          | 0.9         | 4.5         | 0.1         | 17          | 21           | 55         |
|                            | Siemens Advia Centaur & Atellica           | 21.7         | 22          | 1.2         | 5.6         | 0.4         | 20          | 23           | 13         |
|                            | Siemens Immulite 1000, 2000, 2500          | 22.6         | 22          | 1.3         | 5.9         | 0.8         | 22          | 24           | 3          |
|                            | <b>All</b>                                 | <b>19.8</b>  | <b>20</b>   | <b>1.5</b>  | <b>7.8</b>  | <b>0.2</b>  | <b>17</b>   | <b>25</b>    | <b>94</b>  |
| <b>HE4, pmol/L</b>         |                                            |              |             |             |             |             |             |              |            |
|                            | Abbott Alinity                             | 93.24        | 94.8        | 7.74        | 8.3         | 3.46        | 80.1        | 100.7        | 5          |
|                            | Abbott Architect                           | 98.18        | 105.3       | 17.01       | 17.3        | 6.94        | 73.4        | 114.9        | 6          |
|                            | Roche cobas e, Elecsys, & Modular E        | 96.79        | 98.0        | 5.87        | 6.1         | 1.83        | 84.0        | 104.6        | 16         |
|                            | <b>All</b>                                 | <b>96.75</b> | <b>98.0</b> | <b>8.57</b> | <b>8.9</b>  | <b>1.65</b> | <b>73.4</b> | <b>114.9</b> | <b>27</b>  |
| <b>NSE, µg/L</b>           |                                            |              |             |             |             |             |             |              |            |
|                            | Brahms Kryptor                             | 9.80         | 9.8         | -           | -           | -           | -           | -            | 1          |
|                            | DiaSorin Liaison                           | 8.11         | 8.1         | -           | -           | -           | -           | -            | 1          |
|                            | Roche cobas e, Elecsys, & Modular E        | 5.39         | 5.4         | 0.43        | 8.1         | 0.13        | 4.5         | 5.9          | 18         |
|                            | <b>All</b>                                 | <b>5.47</b>  | <b>5.5</b>  | <b>0.51</b> | <b>9.3</b>  | <b>0.11</b> | <b>4.5</b>  | <b>9.8</b>   | <b>20</b>  |
| <b>PSA, µg/l</b>           |                                            |              |             |             |             |             |             |              |            |
|                            | Abbott Alinity                             | 2.19         | 2.1         | 0.18        | 8.0         | 0.05        | 1.9         | 2.5          | 11         |
|                            | Abbott Architect                           | 2.09         | 2.1         | 0.14        | 6.9         | 0.04        | 1.7         | 2.5          | 18         |
|                            | Beckman Coulter PSA, Hybritech calibration | 2.43         | 2.6         | 0.23        | 9.6         | 0.13        | 2.2         | 2.6          | 3          |
|                            | Beckman Coulter PSA, WHO calibration       | 2.08         | 2.1         | 0.06        | 2.7         | 0.04        | 2.0         | 2.1          | 2          |
|                            | bioMerieux Vidas                           | 2.57         | 2.6         | 0.08        | 3.0         | 0.05        | 2.5         | 2.6          | 3          |

## NUMERICAL SUMMARY

Tumour markers 2020/02, Sample S001: LQ741220021

| Analyte                               | Method group | x            | med         | s            | CV%         | u            | Min         | Max         | Number     |
|---------------------------------------|--------------|--------------|-------------|--------------|-------------|--------------|-------------|-------------|------------|
| <b>PSA, µg/l</b>                      |              |              |             |              |             |              |             |             |            |
| Roche cobas e, Elecsys, & Modular E   |              | 2.54         | 2.5         | 0.14         | 5.6         | 0.02         | 2.2         | 2.9         | 65         |
| Siemens Advia Centaur & Atellica      |              | 1.91         | 1.9         | 0.18         | 9.5         | 0.06         | 1.7         | 2.3         | 16         |
| Siemens Dimension & Vista             |              | 2.40         | 2.4         | 0.06         | 2.4         | 0.02         | 2.3         | 2.5         | 8          |
| Siemens Immulite 1000, 2000, 2500     |              | 2.21         | 2.2         | 0.56         | 25.3        | 0.40         | 1.8         | 2.6         | 2          |
| <b>All</b>                            |              | <b>2.35</b>  | <b>2.4</b>  | <b>0.30</b>  | <b>12.6</b> | <b>0.03</b>  | <b>1.7</b>  | <b>2.9</b>  | <b>128</b> |
| <b>PSA free, µg/L</b>                 |              |              |             |              |             |              |             |             |            |
| Abbott Alinity                        |              | 0.184        | 0.18        | 0.009        | 4.9         | 0.003        | 0.17        | 0.20        | 8          |
| Abbott Architect                      |              | 0.169        | 0.17        | 0.010        | 6.1         | 0.003        | 0.16        | 0.19        | 10         |
| Beckman Coulter Access & Unicel       |              | 0.178        | 0.19        | 0.021        | 11.7        | 0.012        | 0.15        | 0.19        | 3          |
| bioMerieux Vidas                      |              | 0.260        | 0.26        | 0.028        | 10.9        | 0.020        | 0.24        | 0.28        | 2          |
| Roche cobas e, Elecsys, & Modular E   |              | 0.190        | 0.19        | 0.008        | 4.4         | 0.002        | 0.16        | 0.62        | 34         |
| Siemens Advia Centaur & Atellica      |              | 0.175        | 0.18        | 0.016        | 9.2         | 0.006        | 0.15        | 0.19        | 7          |
| Siemens Dimension & Vista             |              | 0.180        | 0.18        | 0.000        | 0.0         | 0.000        | 0.18        | 0.18        | 2          |
| Siemens Immulite 1000, 2000, 2500     |              | 0.153        | 0.15        | 0.016        | 10.7        | 0.012        | 0.14        | 0.16        | 2          |
| <b>All</b>                            |              | <b>0.184</b> | <b>0.19</b> | <b>0.015</b> | <b>7.9</b>  | <b>0.002</b> | <b>0.14</b> | <b>0.62</b> | <b>68</b>  |
| <b>PSA free/total, %</b>              |              |              |             |              |             |              |             |             |            |
| Abbott Alinity                        |              | 8.19         | 8.3         | 0.60         | 7.3         | 0.23         | 7.5         | 9.0         | 7          |
| Abbott Architect                      |              | 8.12         | 7.8         | 0.93         | 11.5        | 0.35         | 7.4         | 10.0        | 7          |
| Beckman Coulter Access & Unicel       |              | 8.00         | 8.0         | 0.00         | 0.0         | 0.00         | 8.0         | 8.0         | 2          |
| bioMerieux Vidas                      |              | 9.67         | 9.7         | -            | -           | -            | -           | -           | 1          |
| Calculated                            |              | 7.51         | 7.5         | 0.37         | 5.0         | 0.19         | 7.1         | 8.0         | 4          |
| Roche cobas e, Elecsys, & Modular E   |              | 7.31         | 7.4         | 0.48         | 6.6         | 0.15         | 6.7         | 10.0        | 17         |
| Siemens Advia Centaur & Atellica      |              | 9.61         | 10.0        | 0.64         | 6.7         | 0.37         | 8.9         | 10.0        | 3          |
| Siemens Immulite 1000, 2000, 2500     |              | 6.31         | 6.3         | -            | -           | -            | -           | -           | 1          |
| <b>All</b>                            |              | <b>7.79</b>  | <b>7.6</b>  | <b>0.85</b>  | <b>10.9</b> | <b>0.13</b>  | <b>6.3</b>  | <b>10.0</b> | <b>42</b>  |
| <b>PSA, complexed, µg/L</b>           |              |              |             |              |             |              |             |             |            |
| Siemens Immulite 1000, 2000, 2500     |              | 2.44         | 2.4         | -            | -           | -            | -           | -           | 1          |
| <b>All</b>                            |              | <b>2.44</b>  | <b>2.4</b>  | <b>0.00</b>  | <b>0.0</b>  | <b>0.00</b>  | <b>2.4</b>  | <b>2.4</b>  | <b>1</b>   |
| <b>β-2-Microglob., mg/l</b>           |              |              |             |              |             |              |             |             |            |
| Abbott Architect                      |              | 1.607        | 1.61        | 0.025        | 1.6         | 0.015        | 1.58        | 1.63        | 3          |
| Beckman Coulter AU instruments        |              | 1.585        | 1.59        | 0.092        | 5.8         | 0.065        | 1.52        | 1.65        | 2          |
| Roche Tina-quant                      |              | 1.881        | 1.85        | 0.253        | 13.5        | 0.090        | 1.54        | 2.44        | 8          |
| Siemens Advia Centaur & Atellica      |              | 1.413        | 1.40        | 0.082        | 5.8         | 0.047        | 1.34        | 1.50        | 3          |
| Siemens Immulite 1000, 2000, 2500     |              | 1.660        | 1.70        | 0.140        | 8.4         | 0.057        | 1.40        | 1.78        | 6          |
| Siemens nephelometry                  |              | 1.696        | 1.70        | 0.102        | 6.0         | 0.036        | 1.57        | 1.91        | 8          |
| <b>All</b>                            |              | <b>1.682</b> | <b>1.68</b> | <b>0.165</b> | <b>9.8</b>  | <b>0.030</b> | <b>1.34</b> | <b>2.44</b> | <b>30</b>  |
| <b>Thyroglobulin, µg/L</b>            |              |              |             |              |             |              |             |             |            |
| Abbott Architect                      |              | 14.31        | 14.3        | -            | -           | -            | -           | -           | 1          |
| Brahms Kryptor                        |              | 8.00         | 8.0         | -            | -           | -            | -           | -           | 1          |
| Perkin Elmer Delfia/Auto Delfia       |              | 0.27         | 0.3         | -            | -           | -            | -           | -           | 1          |
| Roche cobas e, Elecsys, & Modular E   |              | 15.15        | 15.2        | 1.04         | 6.9         | 0.30         | 13.0        | 16.9        | 19         |
| Siemens Immulite 1000, 2000, 2500     |              | 3.33         | 3.5         | 0.53         | 16.1        | 0.24         | 2.4         | 3.8         | 5          |
| <b>All</b>                            |              | <b>12.73</b> | <b>14.5</b> | <b>4.72</b>  | <b>37.1</b> | <b>0.91</b>  | <b>0.3</b>  | <b>16.9</b> | <b>27</b>  |
| <b>Thyroglobulin antibodies, kU/L</b> |              |              |             |              |             |              |             |             |            |
| Abbott Alinity                        |              | 43.04        | 43.0        | -            | -           | -            | -           | -           | 1          |
| Abbott Architect                      |              | 48.82        | 47.9        | 2.27         | 4.7         | 0.86         | 46.5        | 52.0        | 7          |
| Beckman Coulter Access & Unicel       |              | 45.60        | 45.6        | -            | -           | -            | -           | -           | 1          |
| bioMerieux Vidas                      |              | 78.90        | 78.9        | -            | -           | -            | -           | -           | 1          |
| Brahms Kryptor                        |              | 130.50       | 130.5       | 3.54         | 2.7         | 2.50         | 128.0       | 133.0       | 2          |
| Roche cobas e, Elecsys, & Modular E   |              | 174.68       | 173.0       | 9.39         | 5.4         | 2.94         | 152.0       | 188.0       | 16         |

## NUMERICAL SUMMARY

Tumour markers 2020/02, Sample S001: LQ741220021

| Analyte                               | Method group | x             | med          | s            | CV%         | u            | Min         | Max          | Number    |
|---------------------------------------|--------------|---------------|--------------|--------------|-------------|--------------|-------------|--------------|-----------|
| <b>Thyroglobulin antibodies, kU/L</b> |              |               |              |              |             |              |             |              |           |
| Siemens Advia Centaur & Atellica      |              | 160.50        | 160.5        | -            | -           | -            | -           | -            | 1         |
| Siemens Immulite 1000, 2000, 2500     |              | 36.17         | 36.1         | 2.60         | 7.2         | 1.50         | 33.6        | 38.8         | 3         |
| Snibe Diagnostic Maglumi              |              | 307.10        | 307.1        | -            | -           | -            | -           | -            | 1         |
| <b>All</b>                            |              | <b>122.97</b> | <b>160.5</b> | <b>72.88</b> | <b>59.3</b> | <b>12.69</b> | <b>33.6</b> | <b>307.1</b> | <b>33</b> |

**Sample S002: LQ741220022****AFP, kU/L**

|                                     |  |              |             |             |            |             |             |             |           |
|-------------------------------------|--|--------------|-------------|-------------|------------|-------------|-------------|-------------|-----------|
| Abbott Alinity                      |  | 17.87        | 18.0        | 0.90        | 5.1        | 0.45        | 16.6        | 18.8        | 4         |
| Abbott Architect                    |  | 18.16        | 18.2        | 0.46        | 2.5        | 0.15        | 16.5        | 18.7        | 14        |
| Beckman Coulter Access & Unicel     |  | 16.93        | 16.9        | -           | -          | -           | -           | -           | 1         |
| bioMerieux Vidas                    |  | 19.98        | 20.0        | 2.28        | 11.4       | 1.61        | 18.4        | 21.6        | 2         |
| Brahms Kryptor                      |  | 17.00        | 17.0        | -           | -          | -           | -           | -           | 1         |
| Perkin Elmer Delfia/Auto Delfia     |  | 16.75        | 16.8        | 0.21        | 1.3        | 0.15        | 16.6        | 16.9        | 2         |
| Roche cobas e, Elecsys, & Modular E |  | 19.70        | 19.8        | 0.97        | 4.9        | 0.22        | 17.0        | 24.0        | 31        |
| Siemens Advia Centaur & Atellica    |  | 19.43        | 19.3        | 0.61        | 3.1        | 0.68        | 18.6        | 26.0        | 9         |
| Siemens Dimension & Vista           |  | 18.00        | 18.0        | -           | -          | -           | -           | -           | 1         |
| Siemens Immulite 1000, 2000, 2500   |  | 18.08        | 18.5        | 1.73        | 9.6        | 0.86        | 15.7        | 19.7        | 4         |
| <b>All</b>                          |  | <b>18.96</b> | <b>18.9</b> | <b>1.37</b> | <b>7.2</b> | <b>0.16</b> | <b>15.7</b> | <b>26.0</b> | <b>70</b> |

**CA 125, kU/L**

|                                     |  |              |             |             |             |             |             |             |            |
|-------------------------------------|--|--------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| Abbott Alinity                      |  | 38.67        | 40.5        | 3.55        | 9.2         | 1.18        | 32.5        | 41.6        | 9          |
| Abbott Architect                    |  | 37.49        | 38.1        | 2.53        | 6.7         | 0.82        | 31.2        | 43.0        | 15         |
| Beckman Coulter Access & Unicel     |  | 32.62        | 32.6        | 2.95        | 9.0         | 2.09        | 30.5        | 34.7        | 2          |
| bioMerieux Vidas                    |  | 24.55        | 24.6        | 0.85        | 3.5         | 0.49        | 23.7        | 25.4        | 3          |
| Brahms Kryptor                      |  | 33.20        | 33.2        | -           | -           | -           | -           | -           | 1          |
| Roche cobas e, Elecsys, & Modular E |  | 29.14        | 29.3        | 1.57        | 5.4         | 0.26        | 25.7        | 32.6        | 58         |
| Siemens Advia Centaur & Atellica    |  | 30.78        | 31.2        | 2.10        | 6.8         | 0.70        | 27.0        | 34.0        | 14         |
| Siemens Dimension & Vista           |  | 21.40        | 21.5        | 0.63        | 2.9         | 0.28        | 20.7        | 22.0        | 5          |
| Siemens Immulite 1000, 2000, 2500   |  | 29.30        | 29.3        | -           | -           | -           | -           | -           | 1          |
| <b>All</b>                          |  | <b>30.58</b> | <b>29.7</b> | <b>3.87</b> | <b>12.7</b> | <b>0.37</b> | <b>20.7</b> | <b>43.0</b> | <b>108</b> |

**CA 153, kU/L**

|                                     |  |              |             |             |             |             |             |             |           |
|-------------------------------------|--|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------|
| Abbott Alinity                      |  | 16.43        | 17.5        | 2.20        | 13.4        | 1.27        | 13.9        | 17.9        | 3         |
| Abbott Architect                    |  | 16.81        | 16.8        | 1.38        | 8.2         | 0.44        | 14.6        | 19.0        | 10        |
| Beckman Coulter Access & Unicel     |  | 10.50        | 10.5        | -           | -           | -           | -           | -           | 1         |
| bioMerieux Vidas                    |  | 18.62        | 18.5        | 0.93        | 5.0         | 0.53        | 17.8        | 19.6        | 3         |
| Brahms Diagnostica RIA              |  | 19.00        | 19.0        | -           | -           | -           | -           | -           | 1         |
| Perkin Elmer Delfia/Auto Delfia     |  | 23.00        | 23.0        | -           | -           | -           | -           | -           | 1         |
| Roche cobas e, Elecsys, & Modular E |  | 19.72        | 19.6        | 1.26        | 6.4         | 0.29        | 17.4        | 22.1        | 29        |
| Siemens Advia Centaur & Atellica    |  | 16.42        | 16.5        | 0.89        | 5.4         | 0.36        | 15.0        | 17.5        | 6         |
| <b>All</b>                          |  | <b>18.56</b> | <b>18.8</b> | <b>2.07</b> | <b>11.1</b> | <b>0.28</b> | <b>10.5</b> | <b>23.0</b> | <b>54</b> |

**CA 199, kU/L**

|                                     |  |             |           |            |             |            |          |           |           |
|-------------------------------------|--|-------------|-----------|------------|-------------|------------|----------|-----------|-----------|
| Abbott Alinity                      |  | 19.4        | 19        | 1.0        | 5.4         | 0.5        | 18       | 21        | 4         |
| Abbott Architect                    |  | 18.2        | 19        | 2.1        | 11.5        | 0.7        | 13       | 21        | 10        |
| Beckman Coulter Access & Unicel     |  | 8.3         | 8         | -          | -           | -          | -        | -         | 1         |
| bioMerieux Vidas                    |  | 8.9         | 9         | 0.9        | 9.9         | 0.5        | 8        | 10        | 3         |
| Brahms Kryptor                      |  | 10.3        | 10        | 2.0        | 19.2        | 1.4        | 9        | 12        | 2         |
| Roche cobas e, Elecsys, & Modular E |  | 9.8         | 10        | 0.7        | 6.9         | 0.1        | 8        | 12        | 45        |
| Siemens Advia Centaur & Atellica    |  | 14.6        | 16        | 6.1        | 41.5        | 2.1        | 4        | 22        | 8         |
| <b>All</b>                          |  | <b>11.6</b> | <b>10</b> | <b>3.7</b> | <b>32.4</b> | <b>0.4</b> | <b>4</b> | <b>22</b> | <b>73</b> |

**CEA, µg/L**

|                                 |  |      |     |      |      |      |     |     |    |
|---------------------------------|--|------|-----|------|------|------|-----|-----|----|
| Abbott Alinity                  |  | 3.88 | 3.7 | 1.08 | 27.9 | 0.41 | 2.8 | 6.2 | 7  |
| Abbott Architect                |  | 3.52 | 3.5 | 0.21 | 5.9  | 0.07 | 3.3 | 4.0 | 14 |
| Beckman Coulter Access & Unicel |  | 3.24 | 3.2 | 0.25 | 7.9  | 0.18 | 3.1 | 3.4 | 2  |

## NUMERICAL SUMMARY

Tumour markers 2020/02, Sample S002: LQ741220022

| Analyte                    | Method group                        | x            | med         | s           | CV%          | u           | Min         | Max         | Number     |
|----------------------------|-------------------------------------|--------------|-------------|-------------|--------------|-------------|-------------|-------------|------------|
| <b>CEA, µg/L</b>           |                                     |              |             |             |              |             |             |             |            |
|                            | bioMerieux Vidas                    | 3.06         | 3.1         | 0.11        | 3.5          | 0.08        | 3.0         | 3.1         | 2          |
|                            | Roche cobas e, Elecsys, & Modular E | 3.79         | 3.8         | 0.17        | 4.5          | 0.03        | 3.4         | 4.2         | 55         |
|                            | Siemens Advia Centaur & Atellica    | 2.91         | 3.0         | 0.34        | 11.7         | 0.11        | 2.5         | 3.5         | 15         |
|                            | Siemens Dimension & Vista           | 3.19         | 3.2         | 0.03        | 0.9          | 0.02        | 3.1         | 3.2         | 4          |
|                            | Siemens Immulite 1000, 2000, 2500   | 4.18         | 4.2         | 1.44        | 34.4         | 1.02        | 3.2         | 5.2         | 2          |
|                            | Tosoh AIA                           | 4.66         | 4.7         | -           | -            | -           | -           | -           | 1          |
|                            | <b>All</b>                          | <b>3.60</b>  | <b>3.7</b>  | <b>0.39</b> | <b>10.7</b>  | <b>0.04</b> | <b>2.5</b>  | <b>6.2</b>  | <b>102</b> |
| <b>Ferritin, µg/l</b>      |                                     |              |             |             |              |             |             |             |            |
|                            | Abbott Alinity                      | 258.1        | 257         | 10.3        | 4.0          | 3.9         | 248         | 278         | 7          |
|                            | Abbott Architect                    | 248.8        | 253         | 16.7        | 6.7          | 5.6         | 224         | 268         | 14         |
|                            | Beckman Coulter Access & Unicel     | 182.8        | 183         | 35.2        | 19.2         | 24.9        | 158         | 208         | 2          |
|                            | bioMerieux Vidas                    | 221.3        | 221         | 26.4        | 11.9         | 18.7        | 203         | 240         | 2          |
|                            | Roche cobas e, Elecsys, & Modular E | 262.0        | 263         | 13.2        | 5.1          | 2.6         | 216         | 306         | 42         |
|                            | Roche Cobas Integra                 | 271.3        | 271         | 19.6        | 7.2          | 13.8        | 257         | 285         | 2          |
|                            | Roche Tina-quant                    | 271.8        | 273         | 3.6         | 1.3          | 1.8         | 267         | 275         | 4          |
|                            | Siemens Advia Centaur & Atellica    | 221.4        | 218         | 13.2        | 6.0          | 4.6         | 203         | 240         | 13         |
|                            | Snibe Diagnostic Maglumi            | 296.5        | 296         | -           | -            | -           | -           | -           | 1          |
|                            | <b>All</b>                          | <b>253.2</b> | <b>255</b>  | <b>21.5</b> | <b>8.5</b>   | <b>2.3</b>  | <b>158</b>  | <b>306</b>  | <b>87</b>  |
| <b>hCG free beta, µg/L</b> |                                     |              |             |             |              |             |             |             |            |
|                            | Roche cobas e, Elecsys, & Modular E | 0.20         | 0.2         | 0.04        | 20.4         | 0.02        | 0.2         | 0.3         | 4          |
|                            | Siemens Immulite 1000, 2000, 2500   | 2.00         | 2.0         | 0.00        | 0.0          | 0.00        | 2.0         | 2.0         | 3          |
|                            | <b>All</b>                          | <b>0.97</b>  | <b>0.3</b>  | <b>1.09</b> | <b>112.4</b> | <b>0.41</b> | <b>0.2</b>  | <b>2.0</b>  | <b>7</b>   |
| <b>hCG intact, U/L</b>     |                                     |              |             |             |              |             |             |             |            |
|                            | bioMerieux Vidas                    | 188.0        | 188         | -           | -            | -           | -           | -           | 1          |
|                            | Roche cobas e, Elecsys, & Modular E | 196.7        | 197         | 8.2         | 4.2          | 5.8         | 191         | 203         | 2          |
|                            | <b>All</b>                          | <b>193.8</b> | <b>191</b>  | <b>8.7</b>  | <b>4.5</b>   | <b>5.0</b>  | <b>188</b>  | <b>203</b>  | <b>3</b>   |
| <b>hCG total, U/L</b>      |                                     |              |             |             |              |             |             |             |            |
|                            | Abbott Alinity                      | 202.6        | 207         | 11.3        | 5.6          | 5.0         | 188         | 213         | 5          |
|                            | Abbott Architect                    | 203.3        | 204         | 9.6         | 4.7          | 3.1         | 187         | 218         | 15         |
|                            | Beckman Coulter Access & Unicel     | 238.5        | 239         | 5.4         | 2.2          | 3.1         | 233         | 244         | 3          |
|                            | Roche cobas e, Elecsys, & Modular E | 199.1        | 200         | 9.4         | 4.7          | 1.6         | 100         | 229         | 56         |
|                            | Siemens Advia Centaur & Atellica    | 230.1        | 232         | 13.5        | 5.9          | 4.7         | 211         | 258         | 13         |
|                            | Siemens Immulite 1000, 2000, 2500   | 210.7        | 210         | 16.0        | 7.6          | 9.2         | 195         | 227         | 3          |
|                            | <b>All</b>                          | <b>204.3</b> | <b>203</b>  | <b>13.9</b> | <b>6.8</b>   | <b>1.4</b>  | <b>100</b>  | <b>258</b>  | <b>95</b>  |
| <b>HE4, pmol/L</b>         |                                     |              |             |             |              |             |             |             |            |
|                            | Abbott Alinity                      | 60.00        | 61.8        | 4.57        | 7.6          | 2.04        | 52.4        | 64.3        | 5          |
|                            | Abbott Architect                    | 63.03        | 65.4        | 9.07        | 14.4         | 3.70        | 52.0        | 73.7        | 6          |
|                            | Roche cobas e, Elecsys, & Modular E | 62.52        | 62.7        | 3.23        | 5.2          | 1.04        | 56.8        | 68.7        | 15         |
|                            | <b>All</b>                          | <b>62.37</b> | <b>62.4</b> | <b>4.56</b> | <b>7.3</b>   | <b>0.89</b> | <b>52.0</b> | <b>73.7</b> | <b>26</b>  |
| <b>NSE, µg/L</b>           |                                     |              |             |             |              |             |             |             |            |
|                            | Brahms Kryptor                      | 9.70         | 9.7         | -           | -            | -           | -           | -           | 1          |
|                            | DiaSorin Liaison                    | 9.43         | 9.4         | -           | -            | -           | -           | -           | 1          |
|                            | Roche cobas e, Elecsys, & Modular E | 6.01         | 6.2         | 0.60        | 9.9          | 0.18        | 5.0         | 6.7         | 18         |
|                            | <b>All</b>                          | <b>6.13</b>  | <b>6.3</b>  | <b>0.71</b> | <b>11.6</b>  | <b>0.16</b> | <b>5.0</b>  | <b>9.7</b>  | <b>20</b>  |
| <b>PSA, µg/l</b>           |                                     |              |             |             |              |             |             |             |            |
|                            | Abbott Alinity                      | 17.01        | 16.9        | 1.63        | 9.6          | 0.52        | 15.0        | 20.1        | 10         |
|                            | Abbott Architect                    | 15.50        | 15.7        | 0.91        | 5.9          | 0.26        | 13.7        | 17.6        | 19         |

## NUMERICAL SUMMARY

Tumour markers 2020/02, Sample S002: LQ741220022

| Analyte                                    | Method group | x            | med         | s            | CV%         | u            | Min         | Max         | Number     |
|--------------------------------------------|--------------|--------------|-------------|--------------|-------------|--------------|-------------|-------------|------------|
| <b>PSA, µg/l</b>                           |              |              |             |              |             |              |             |             |            |
| Beckman Coulter PSA, Hybritech calibration |              | 17.71        | 18.4        | 1.49         | 8.4         | 0.86         | 16.0        | 18.8        | 3          |
| Beckman Coulter PSA, WHO calibration       |              | 13.91        | 13.9        | 0.23         | 1.7         | 0.16         | 13.7        | 14.1        | 2          |
| bioMerieux Vidas                           |              | 18.04        | 17.3        | 1.40         | 7.7         | 0.81         | 17.2        | 19.7        | 3          |
| Roche cobas e, Elecsys, & Modular E        |              | 16.62        | 16.5        | 0.67         | 4.0         | 0.10         | 15.0        | 19.2        | 65         |
| Siemens Advia Centaur & Atellica           |              | 14.53        | 14.6        | 0.88         | 6.1         | 0.28         | 13.0        | 15.7        | 16         |
| Siemens Dimension & Vista                  |              | 18.17        | 18.1        | 0.36         | 2.0         | 0.13         | 17.7        | 18.7        | 8          |
| Siemens Immulite 1000, 2000, 2500          |              | 14.95        | 15.0        | 3.46         | 23.2        | 2.45         | 12.5        | 17.4        | 2          |
| <b>All</b>                                 |              | <b>16.34</b> | <b>16.3</b> | <b>1.30</b>  | <b>8.0</b>  | <b>0.11</b>  | <b>12.5</b> | <b>20.1</b> | <b>128</b> |
| <b>PSA free, µg/L</b>                      |              |              |             |              |             |              |             |             |            |
| Abbott Alinity                             |              | 2.180        | 2.22        | 0.138        | 6.3         | 0.049        | 1.97        | 2.32        | 8          |
| Abbott Architect                           |              | 1.998        | 1.99        | 0.151        | 7.6         | 0.046        | 1.78        | 2.28        | 11         |
| Beckman Coulter Access & Unicel            |              | 1.858        | 1.76        | 0.184        | 9.9         | 0.106        | 1.74        | 2.07        | 3          |
| bioMerieux Vidas                           |              | 2.635        | 2.64        | 0.021        | 0.8         | 0.015        | 2.62        | 2.65        | 2          |
| Roche cobas e, Elecsys, & Modular E        |              | 1.964        | 1.97        | 0.132        | 6.7         | 0.028        | 1.70        | 2.24        | 34         |
| Siemens Advia Centaur & Atellica           |              | 1.880        | 1.81        | 0.189        | 10.0        | 0.071        | 1.68        | 2.12        | 7          |
| Siemens Dimension & Vista                  |              | 1.930        | 1.93        | 0.042        | 2.2         | 0.030        | 1.90        | 1.96        | 2          |
| Siemens Immulite 1000, 2000, 2500          |              | 1.750        | 1.75        | 0.071        | 4.0         | 0.050        | 1.70        | 1.80        | 2          |
| <b>All</b>                                 |              | <b>1.981</b> | <b>1.97</b> | <b>0.181</b> | <b>9.1</b>  | <b>0.022</b> | <b>1.68</b> | <b>2.65</b> | <b>69</b>  |
| <b>PSA free/total, %</b>                   |              |              |             |              |             |              |             |             |            |
| Abbott Alinity                             |              | 12.44        | 13.0        | 0.84         | 6.7         | 0.32         | 11.3        | 13.2        | 7          |
| Abbott Architect                           |              | 13.31        | 13.0        | 1.00         | 7.5         | 0.38         | 12.1        | 14.8        | 7          |
| Beckman Coulter Access & Unicel            |              | 12.00        | 12.0        | 1.41         | 11.8        | 1.00         | 11.0        | 13.0        | 2          |
| bioMerieux Vidas                           |              | 15.20        | 15.2        | -            | -           | -            | -           | -           | 1          |
| Calculated                                 |              | 11.70        | 11.7        | 0.37         | 3.2         | 0.19         | 11.4        | 12.0        | 4          |
| Roche cobas e, Elecsys, & Modular E        |              | 11.71        | 11.8        | 0.78         | 6.6         | 0.23         | 10.7        | 13.9        | 18         |
| Siemens Advia Centaur & Atellica           |              | 13.19        | 13.0        | 0.79         | 6.0         | 0.46         | 12.5        | 14.1        | 3          |
| Siemens Immulite 1000, 2000, 2500          |              | 10.30        | 10.3        | -            | -           | -            | -           | -           | 1          |
| <b>All</b>                                 |              | <b>12.22</b> | <b>12.0</b> | <b>1.11</b>  | <b>9.1</b>  | <b>0.17</b>  | <b>10.3</b> | <b>15.2</b> | <b>43</b>  |
| <b>PSA, complexed, µg/L</b>                |              |              |             |              |             |              |             |             |            |
| Siemens Immulite 1000, 2000, 2500          |              | 15.60        | 15.6        | -            | -           | -            | -           | -           | 1          |
| <b>All</b>                                 |              | <b>15.60</b> | <b>15.6</b> | <b>0.00</b>  | <b>0.0</b>  | <b>0.00</b>  | <b>15.6</b> | <b>15.6</b> | <b>1</b>   |
| <b>β-2-Microglob., mg/l</b>                |              |              |             |              |             |              |             |             |            |
| Abbott Architect                           |              | 1.595        | 1.60        | 0.007        | 0.4         | 0.005        | 1.59        | 1.60        | 2          |
| Beckman Coulter AU instruments             |              | 1.515        | 1.52        | 0.064        | 4.2         | 0.045        | 1.47        | 1.56        | 2          |
| Roche Tina-quant                           |              | 1.881        | 1.84        | 0.281        | 14.9        | 0.099        | 1.50        | 2.49        | 8          |
| Siemens Advia Centaur & Atellica           |              | 1.380        | 1.37        | 0.083        | 6.0         | 0.048        | 1.31        | 1.47        | 3          |
| Siemens Immulite 1000, 2000, 2500          |              | 1.623        | 1.66        | 0.137        | 8.5         | 0.056        | 1.45        | 1.79        | 6          |
| Siemens nephelometry                       |              | 1.676        | 1.67        | 0.079        | 4.7         | 0.028        | 1.60        | 1.84        | 8          |
| <b>All</b>                                 |              | <b>1.657</b> | <b>1.67</b> | <b>0.176</b> | <b>10.6</b> | <b>0.033</b> | <b>1.31</b> | <b>2.49</b> | <b>29</b>  |
| <b>Thyroglobulin, µg/L</b>                 |              |              |             |              |             |              |             |             |            |
| Abbott Architect                           |              | 10.42        | 10.4        | -            | -           | -            | -           | -           | 1          |
| Brahms Kryptor                             |              | 7.00         | 7.0         | -            | -           | -            | -           | -           | 1          |
| Perkin Elmer Delfia/Auto Delfia            |              | 1.20         | 1.2         | -            | -           | -            | -           | -           | 1          |
| Roche cobas e, Elecsys, & Modular E        |              | 12.83        | 13.1        | 1.10         | 8.6         | 0.31         | 10.8        | 14.5        | 20         |
| Siemens Immulite 1000, 2000, 2500          |              | 4.52         | 4.7         | 1.00         | 22.1        | 0.45         | 3.4         | 5.9         | 5          |
| <b>All</b>                                 |              | <b>10.95</b> | <b>12.2</b> | <b>3.65</b>  | <b>33.3</b> | <b>0.69</b>  | <b>1.2</b>  | <b>14.5</b> | <b>28</b>  |
| <b>Thyroglobulin antibodies, kU/L</b>      |              |              |             |              |             |              |             |             |            |
| Abbott Alinity                             |              | 19.61        | 19.6        | -            | -           | -            | -           | -           | 1          |
| Abbott Architect                           |              | 19.08        | 19.0        | 0.99         | 5.2         | 0.37         | 17.9        | 20.7        | 7          |

## NUMERICAL SUMMARY

Tumour markers 2020/02, Sample S002: LQ741220022

| Analyte                               | Method group | x            | med         | s            | CV%         | u           | Min         | Max         | Number    |
|---------------------------------------|--------------|--------------|-------------|--------------|-------------|-------------|-------------|-------------|-----------|
| <b>Thyroglobulin antibodies, kU/L</b> |              |              |             |              |             |             |             |             |           |
| Beckman Coulter Access & Unicel       |              | 10.80        | 10.8        | -            | -           | -           | -           | -           | 1         |
| bioMerieux Vidas                      |              | 23.90        | 23.9        | -            | -           | -           | -           | -           | 1         |
| Brahms Kryptor                        |              | 26.00        | 26.0        | 2.83         | 10.9        | 2.00        | 24.0        | 28.0        | 2         |
| Roche cobas e, Elecsys, & Modular E   |              | 44.85        | 44.3        | 5.05         | 11.3        | 1.58        | 37.0        | 53.8        | 16        |
| Siemens Advia Centaur & Atellica      |              | 59.10        | 59.1        | -            | -           | -           | -           | -           | 1         |
| Siemens Immulite 1000, 2000, 2500     |              | 20.00        | 20.0        | -            | -           | -           | -           | -           | 1         |
| Snibe Diagnostic Maglumi              |              | 85.27        | 85.3        | -            | -           | -           | -           | -           | 1         |
| <b>All</b>                            |              | <b>35.44</b> | <b>40.3</b> | <b>16.37</b> | <b>46.2</b> | <b>2.94</b> | <b>10.8</b> | <b>85.3</b> | <b>31</b> |

## Participants

129 participants from 15 countries.

## Report info

Assigned value (target value) calculation and its uncertainty

Your own result should be compared to others using the same method.

The assigned values (Xrob) are calculated according to the robust procedure described in the standard ISO 13528 (Statistical methods for use in proficiency testing by interlaboratory comparisons, Annex C, Algorithm A).

The standard uncertainty of the assigned value is expressed as 1.25 x the standard error of mean (SEM) and marked as "u" in numerical summary. Due to its iterative mode algorithm A adds the uncertainty of the assigned value and with this factor we want to adjust uncertainty accordingly.

In case there are 2-12 results in a method group, the robust calculation is not used but assigned values (Xpt) are means of the results where results deviating more than +/- 3\*standard deviation from the median are removed. The standard uncertainty (u) of the assigned value is reported as standard error of the mean (SEM). Additionally, if the measurement uncertainty of the target value is too large ( $u > 0.1 * \text{maximum allowable error}$ ) an automatic text is printed on the report: "The uncertainty of the assigned value is not negligible, and evaluations could be affected."

Please notice also that for groups that have only 1 result only the client's own result is shown. No target value (except for reference method values) is calculated, no target areas are shown.

## Z score

In case there are 2-5 results in a method group, no z-score is calculated, and a text is printed on the report: "Due to the small number of results, the z score is not calculated." In case there are 6-12 results, the report has a text: "Z score is uncertain due to the small number of observations."

Results reported with < tai > -signs cannot be included in the statistics.

For information on report interpretation and performance evaluation, please see the "EQAS Interpretation guidelines" in LabScala User instructions (top right corner ?Help link).

External Quality Assessment Scheme

## Tumour markers Round 2, 2020

### Specimens

Sample S001 (LQ741220021) and Sample S002 (LQ741220022) were unprocessed human sera spiked with sera having elevated levels of tumour markers or purified individual components. No preservatives were added.

Based on the previous tests and the results of this round, the samples are homogeneous, stable and suitable for the external quality assessment scheme.

The materials were sent without temperature control packaging.

### Report info

Please see the description of the data analysis on the last page of the laboratory-specific histograms and Numerical Summary reports.

### Comments - Expert

It is important to read the Final report first, because it contains important information of the samples and results in each round.

The mean concentrations of the CA-markers were in the range of the common upper reference limit of about 20-35 kU/L. It is to be noticed that the range of the reported results for each marker group is quite much higher, being two-fold or more.

### End of report

2020-07-01

### FINAL REPORT

Product no. 2700, 2700S

Subcontracting: Sample preparation

|              |            |
|--------------|------------|
| Samples sent | 2020-05-11 |
| Round closed | 2020-06-04 |
| Final report | 2020-07-01 |

### Request for correction

Typing errors in laboratory's result forms are on laboratory's responsibility. Labquality accepts responsibility only for result processing. Requests must be notified by writing within three weeks from the date of this letter.

### Authorized by

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### Expert

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