Alliance Application Sheet

free lg/L-chain, type kappa and lambda / N Latex FLC kappa and lambda

For additional information, limitations and interferences please refer to the Instructions for Use of the analyzer and check current Instructions for Use for reagents, controls and calibrators and tables of assigned/analytical values.

The parameters defined in this application sheet have been developed by Siemens Healthineers to provide optimal product performance with the assay and instrument combination. Any modification to these parameters may affect performance of this and other assays in use on your system and the resulting assay values. It is the responsibility of the user to validate any modifications and their impact on all assay results. Results of this test should always be interpreted in conjunction with the patient's medical history, clinical presentation and other findings.

The application sheet lists all combinations of controls and calibrators for use with the reagent and instrument system; other combinations are not validated or supported by Siemens Healthineers.

Version	02
Release Date	2020-09
Software Version	≥ 1.14
Outside USA	

Materials Required

Product	Order Number
N Latex FLC kappa N FLC KAPPA Number of Tests: 1 x 72	REF OPJA03
N Latex FLC lambda N FLC LAMBDA Number of Tests: 1 x 83	REF OPJB03
N FLC Supplementary Reagent N FLC SUPPLEMENT	REF OPJC03
N FLC Standard SL N FLC STANDARD SL	REF OPJD03
N FLC Control SL1 N FLC CONTROL SL1	REF OPJE03
N FLC Control SL2 N FLC CONTROL SL2	REF OPJF03
Atellica® CH EMPTY P1	REF 11538114[a]

[a] optionally use Atellica® CH EMPTY reagent pack, REF 11097534

For ordering and technical assistance please contact your local Siemens Healthineers Representative.

Additional Notes

Preparation of the Reagents

N Latex FLC kappa

N FLC KAPPA is a liquid reagent and can be used without additional preparation. Shake carefully to mix before first use.

Before use on the Atellica® CH Analyzer, transfer the entire volume of all three N FLC KAPPA vials into well 1 (W1) of the Atellica® CH EMPTY P1 and reseal the container.

Prepare all three N FLC SUPPLEMENT vials according to respective Instructions for Use. Pipette 2.0 mL of N FLC SUPPLEMENT B into a vial of N FLC SUPPLEMENT A and shake gently to mix.

Before use on the Atellica® CH Analyzer, transfer the entire volume of all three prepared N FLC Supplementary Reagent vials into well 2 (W2) of the Atellica® CH EMPTY P1 and reseal the container. Avoid vigorous shaking and foam formation. Do not adjust required fill volumes, otherwise a system error may be generated.

Assay parameters have been predetermined in the instrument software. The reagent pack must be manually loaded on the Atellica® CH Analyzer. Refer to the online help for instructions on loading operator-filled empty reagent packs.

N Latex FLC lambda

N FLC LAMBDA is a liquid reagent and can be used without additional preparation. Shake carefully to mix before first use.

Before use on the Atellica® CH Analyzer, transfer the entire volume of all three N FLC LAMBDA vials into well 1 (W1) of the Atellica® CH EMPTY P1 and reseal the container.

Prepare all three N FLC SUPPLEMENT vials according to respective Instructions for Use. Pipette 2.0 mL of N FLC SUPPLEMENT B into a vial of N FLC SUPPLEMENT A and shake gently to mix.

Before use on the Atellica® CH Analyzer, transfer the entire volume of all three prepared N FLC Supplementary Reagent vials into well 2 (W2) of the Atellica® CH EMPTY P1 and reseal the container. Avoid vigorous shaking and foam formation. Do not adjust required fill volumes, otherwise a system error may be generated.

Assay parameters have been predetermined in the instrument software. The reagent pack must be manually loaded on the Atellica® CH Analyzer. Refer to the online help for instructions on loading operator-filled empty reagent packs.

Performing Calibration

Calibration Material: N FLC Standard SL

Calibration Scheme: Multipoint calibration, 6 levels

Units: mg/L

Use the calibrator according to respective Instructions for Use.

Before use on the Atellica® CH Analyzer, transfer the entire volume of one N FLC STANDARD SL into a labeled 12 × 75 mm round-bottom sample container.

Assay parameters have been predetermined in the instrument software. For further information on loading calibrator and QC material, please refer to the online help.

Calibration Frequency

Perform a calibration if one or more of the following conditions exist:

- When changing lot numbers of primary reagent packs.
- At the end of the lot calibration interval, for a specified lot of calibrated reagent on the system.
- At the end of the pack calibration interval, for calibrated reagent packs on the system.
- When indicated by quality control results.
- After major maintenance or service, if indicated by quality control results.

At the end of the onboard stability interval, replace the reagent pack on the system with a new reagent pack. Recalibration is not required, unless the lot calibration interval is exceeded.

Stability Interval	N Latex FLC kappa	N Latex FLC lambda
Lot Calibration	42 days	42 days
Pack Calibration	14 days	14 days
Reagent Onboard Stability	14 days	14 days

For information about lot calibration and pack calibration intervals, refer to the online help.

Follow government regulations or accreditation requirements for calibration frequency. Individual laboratory quality control programs and procedures may require more frequent calibration.

Preparation of the Controls

For quality control of the N Latex FLC kappa and N Latex FLC lambda, use N FLC CONTROL SL1 and N FLC CONTROL SL2. Use the controls according to respective Instructions for Use.

Before use on the Atellica® CH Analyzer, transfer the entire volume of one N FLC CONTROL SL1 respectively N FLC CONTROL SL2 each into a separate labeled 12 × 75 mm round-bottom sample container.

For further information on loading calibrator and QC material, please refer to the online help.

On-board Stability

Component	Time
N FLC KAPPA	14 days
N FLC LAMBDA	14 days
N FLC SUPPLEMENT	14 days

For information about on-board stability for Calibrators and Controls, please refer to "Atellica Sample Handler Calibrator and QC Storage and Stability" Instructions.

Discard reagents at the end of the onboard stability interval. Do not use products beyond the expiration date printed on the product labeling.

The stability data presented here were established under controlled laboratory conditions. Due to differences in laboratory environmental conditions and reagent vial filling volumes, the on-board stability may deviate from the above-mentioned values.

Assay Procedure

Samples are automatically diluted 1:5 with Atellica® CH Diluent for N FLC KAPPA and N FLC LAMBDA.

The system automatically performs the following steps:

N FLC KAPPA	N FLC LAMBDA
1. For serum/plasma, dispenses 50 µL of primary sample and 200 µL of Atellica® CH Diluent into a dilution cuvette. 2. Dispenses 34 µL of N FLC SUPPLEMENT, 50 µL N FLC KAPPA, and 15 µL of special reagent water into a reaction cuvette. 3. Dispenses 2 µL of pre-diluted sample into a reaction cuvette. 4. Mixes and incubates the mixture at 37 °C. 5. Reports results.	1. For serum/plasma, dispenses 50 µL of primary sample and 200 µL of Atellica® CH Diluent into a dilution cuvette. 2. Dispenses 31 µL of N FLC SUPPLEMENT, 58 µL N FLC LAMBDA, and 10 µL of special reagent water into a reaction cuvette. 3. Dispenses 5 µL of pre-diluted sample into a reaction cuvette. 4. Mixes and incubates the mixture at 37 °C. 5. Reports results.
Time to first result: 9.26 min.	Time to first result: 9.26 min.

If the results obtained are outside the measuring range, the assay can be repeated using a higher or lower dilution of the sample. Refer to Atellica® CH Instruction Manual for information on repeat measurements using other dilutions.

Note

For information about special reagent water requirements, refer to the online help.

Assay Range

The analytical measuring range (AMR) for N Latex FLC kappa on Atellica® CH Analyzer is 3.91 to 60.00 mg/L. For N Latex FLC lambda the AMR is 5.47 to 70.00 mg/L. If samples are above the AMR the system automatically dilutes the initial sample aliquot 1:10 allowing to extend the measuring range up to 600.00 mg/L for N Latex FLC kappa and 700.00 mg/L for N Latex FLC lambda. Samples below the AMR can be re-measured automatically in a 1:1.5 dilution to extend the measuring range down to 1.17 mg/L for N Latex FLC kappa and 1.64 mg/L for N Latex FLC lambda.

Parameter	Clinical Reportable Range (CRR)
FLC kappa	1.17–600.00 mg/L
FLC lambda	1.64–700.00 mg/L

Expected Values

In a confirmation study with ostensibly healthy subjects (n = 155) the following data were obtained:

Parameter	Declared ranges [2.5th–97.5th Percentile]	Coverage of Declared Ranges
FLC kappa	6.70–22.4 mg/L	92.3 %
FLC lambda	8.30–27.0 mg/L	92.9 %
FLC κ/λ ratio	0.31–1.56 Ratio	98.7 %

Reference intervals vary from laboratory to laboratory depending on the population, the technique and reagent lot. Therefore, each laboratory must establish its own reference intervals or verify them whenever one or more of the aforementioned variables are changed.

For more information on establishing reference intervals see CLSI document EP28-A3C[1].

Limitations of the Procedure

Values obtained with different assay methods and systems cannot be used interchangeably.

Performance Characteristics

Note

The values cited for specific performance characteristics of the assays represent typical results and are not to be regarded as specifications for the N Latex FLC kappa and N Latex FLC lambda.

Specificity

Antigen Excess

The N Latex FLC kappa and N Latex FLC lambda method on the Atellica® CH Analyzer show no high-dose hook effect up to an analyte concentration of 30 000 mg/L for both applications.

Sensitivity

Limit of Quantitation (LoQ)

The analytical sensitivity of the assays is established by the lower limit of the reference curve. A typical LoQ for N Latex FLC kappa and N Latex FLC lambda was determined on the Atellica® CH Analyzer in consistency with CLSI guideline EP17-A2[3]. The limit of quantitation is the lowest concentration of analyte that can be quantitatively determined with stated accuracy.

N Latex FLC kappa: 1.037 mg/L

N Latex FLC lambda: 1.661 mg/L

The total error was found to be below 19.10 % for both methods.

Limit of Blank (LoB)

All results measured on blank samples for the LoB study yielded results below the measuring range for both assays.

Limit of Detection (LoD)

Since LoD is calculated using LoB, the Limit of Detection is undetermined.

Precision

The following standard deviations (SD) and coefficients of variation (CV) were obtained (n = 80) with N Latex FLC kappa and N Latex FLC lambda on an Atellica® CH Analyzer.

	N Latex FLC kappa				
	Mean	Repeatability		Within-Lab	
Sample	[mg/L]	SD [mg/L]	CV [%]	SD [mg/L]	CV [%]
Serum lower end reference range	7.82	0.080	1.02	0.135	1.72
Serum upper end reference range	26.61	0.182	0.68	0.354	1.33
Serum pool low	7.72	0.085	1.10	0.148	1.92
Serum pool medium	19.08	0.128	0.67	0.291	1.53
Serum pool high	50.08	0.361	0.72	0.707	1.41
EDTA plasma pool low	7.62	0.088	1.16	0.129	1.69
EDTA plasma pool high	53.84	0.514	0.96	1.097	2.04
N FLC Control SL1	12.14	0.126	1.04	0.180	1.48
N FLC Control SL2	32.07	0.253	0.79	0.365	1.14

	N Latex FLC lambda				
	Mean	Repeatability		Within-Lab	
Sample	[mg/L]	SD [mg/L]	CV[%]	SD [mg/L]	CV [%]
Serum lower end reference range	8.04	0.183	2.27	0.292	3.63
Serum upper end reference range	32.89	0.369	1.12	1.058	3.22
Serum pool low	11.30	0.162	1.44	0.492	4.35
Serum pool medium	20.94	0.242	1.16	0.879	4.20
Serum pool high	60.64	1.042	1.72	2.488	4.10
EDTA plasma pool low	9.22	0.191	2.07	0.355	3.85
EDTA plasma pool high	60.07	0.979	1.63	2.364	3.94
N FLC Control SL1	12.00	0.272	2.27	0.494	4.12
N FLC Control SL2	35.09	0.468	1.33	1.209	3.45

The results were evaluated by analysis of variance on the basis of the recommendation in the CLSI Guidelines EP05-A3[4]

Method Comparison

A study was performed to compare the N Latex FLC kappa and N Latex FLC lambda on the Atellica® CH Analyzer to the N Latex FLC kappa and N Latex FLC lambda on the BN ProSpec® System for the method comparison in accordance with CLSI Guideline EP09-A3[5].

The results from the Passing-Bablok regression analysis are summarized in the following table:

Parameter	Passing-Bablok Regression	Correlation- coefficient [r]	n
FLC kappa	0.942 x –0.075 mg/L	0.982	167
FLC lambda	0.927 x –0.067 mg/L	0.977	170
FLC κ/λ ratio	1.03 x –0.013 Ratio	0.971	163

Interference Studies

The N Latex FLC kappa and N Latex FLC lambda applications were evaluated for interference on the Atellica® CH Analyzer according to CLSI Guideline EP07-A2[2]. Following concentrations of listed endogenous substances were found to cause no interference up to the indicated concentration:

	N FLC KAPPA	N FLC LAMBDA
Interferent	**No interference up to**	**No interference up to**
Hemoglobin	1 100 mg/dL	820 mg/dL
Bilirubin (unconjugated)	65 mg/dL	65 mg/dL
Bilirubin (conjugated)	65 mg/dL	65 mg/dL
Triglycerides	1 115 mg/dL	734 mg/dL
Total Protein	120 g/L	120 g/L
Rheumatoid Factor	888 IU/mL	798 IU/mL

References

1. CLSI. Defining, Establishing, and Verifying Reference Intervals in the Clinical Laboratory, Approved Guidline – Third Edition. CLSI document **EP28-A3C** [ISBN 1-56238-682-4]. CLSI, 950 West Valley Road, Suite 2500, Wayne, PA 19087 USA, 2010.
2. CLSI. Interference testing in clinical chemistry; Approved Guideline – Second Edition. CLSI document **EP07-A2** [ISBN 1-56238-584-4]. CLSI, 940 West Valley Road, Suite 1400, Wayne, PA 19087-1898 USA; 2005.
3. CLSI. Evaluation of Detection Capability for Clinical Laboratory Measurement Procedures; Approved Guideline – Second Edition. CLSI document **EP17-A2** [ISBN 1-56238-795-2]. CLSI, 950 West Valley Road, Suite 2500, Wayne, PA 19087 USA, 2012.
4. CLSI. Evaluation of Precision of Quantitative Measurement Procedures; Approved Guideline – Third Edition. CLSI document **EP05-A3** [ISBN 1-56238-968-8)] CLSI, 950 West Valley Road, Suite 2500, Wayne, PA 19087 USA, 2014.
5. CLSI. Measurement Procedure Comparison and Bias Estimation Using Patient Samples; Approved Guideline – Third Edition. CLSI document **EP09-A3** [ISBN 1-56238-887-8]. CLSI, 950 West Valley Road, Suite 2500, Wayne, PA 19087 USA, 2013.

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Tab. I Symbol Names of Required Materials

Symbol names are depicted onto the reagent labels and are not translatable. In the following table symbol names and corresponding product names in the language of this Application Sheet are listed.

Symbol Name	Localized Name	REF	SMN
N FLC CONTROL SL1	N FLC Control SL1	OPJE03	10482441
N FLC CONTROL SL2	N FLC Control SL2	OPJF03	10482442
N FLC STANDARD SL	N FLC Standard SL	OPJD03	10482440
N FLC SUPPLEMENT	N FLC Supplementary Reagent	OPJC03	10482439
• N FLC SUPPLEMENT A	• N FLC Supplementary Reagent A		
• N FLC SUPPLEMENT B	• N FLC Supplementary Reagent B		
N FLC KAPPA	N Latex FLC kappa	OPJA03	10482437
N FLC LAMBDA	N Latex FLC lambda	OPJB03	10482438