

CDC Vitamin D Standardization-Certification Program (CDC VDSCP)

Certified Total 25-hydroxyvitamin D Assays

From 2019 Q4 and forward

(UPDATED 04/2026)

CDC VDSCP started quarterly certification from November 2019 shipment.

See <https://www.cdc.gov/clinical-standardization-programs/media/pdfs/2024/04/CDC-Certified-Vitamin-D-Procedures-508.pdf> for previous list of certified assays.

- The following assays have successfully met the performance criterion of $\pm 5.0\%$ mean bias when compared to the CDC reference measurement procedure and an overall imprecision of $<10\%$. **Only data for total 25-hydroxyvitamin D was used for certification.**
- It is not the intent of the CDC VDSCP to certify each lot of reagents. Participants are awarded certificates for successfully meeting bias and imprecision criteria using specific methods that consist of different reagent and calibrator lots.
- Analytical performance in the CDC VDSCP is assessed using human serum. Measurement procedures may have different accuracy and precision with other specimen types, such as plasma.
- Certification is valid for one quarter from the certification date. It is the responsibility of the participant to ensure that the results of the assay remain consistent, between lots, and over the measurement range reported.
- The analytical performance evaluation used in certification is for testing performed in patient care. Therefore, this certification does not imply suitability of a participant as a calibration laboratory or the procedure as a metrological reference measurement procedure.

Each table includes information about certified assays including participant name, measurement principle, assay identifier, certification measurement range, certification date, individual samples pass rate and contact information.

“Assay identifier” is an internal code used by the participant to represent the assay used for certification.

“Assay Measurement range” is the assay’s reported analytical measurement range (AMR) and is not the certification range.

“Certification Measurement Range” is the concentration range the of the samples used for VDSCP certification.

“Certification date” includes historical certification information and gaps between years do not always indicate the assay’s failure to meet certification criteria.

“Individual samples pass rate” is the percentage of individual samples out of the 40 provided that met certification criteria of $\pm 5\%$ bias. This information was provided starting February 2017.

Note: The $\pm 5\%$ mean bias used for certification can be considered the allowable calibration bias. Certification indicates that the assay is calibrated to meet those limits. Due to differences in test selectivity, measurements on individual samples can exceed the calibration bias. Therefore, the individual sample pass rate provides some information about the selectivity of a test that meets the calibration criteria.

Table 1: Currently Certified Assays

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Abbott GmbH Longford, Ireland	Chemiluminescence Immunoassay	ALINITY 25-OH Vitamin D (List Number 08P45)	8.5 - 385.5	12.1 - 208	Q4 2025	23	Conor Gray conor.gray@abbott.com
				12.1 - 208	Q3 2025	20	
				12.1 - 208	Q2 2025	22	
				12.1 - 208	Q1 2025	25	
				12.1 - 183	Q4 2024	22	
				12.1 - 183	Q3 2024	28	
				12.1 - 182	Q2 2024	30	
				12.1 - 182	Q1 2024	25	
				12.1 - 182	Q4 2024	25	
				16.1 - 305	Q3 2021	32	
				17.4 - 149	Q2 2021	45	
				16.7 - 149	Q1 2021	42	
				13.1 - 183	Q1 2020	25	
				13.1 - 183	Q4 2019	32	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Abbott GmbH Longford, Ireland	Chemiluminescence Immunoassay	ARCHITECT 25-OH Vitamin D (List Number 5P02)	8.5 - 389.8	17.4 - 208	Q4 2025	35	Conor Gray conor.gray@abbott.com
				17.4 - 208	Q3 2025	40	
				17.4 - 208	Q2 2025	42	
				16.7 - 208	Q1 2025	45	
				16.7 - 182	Q4 2024	38	
				16.7 - 182	Q3 2024	32	
				16.1 - 182	Q2 2024	32	
				16.1 - 158	Q1 2024	30	
				16.1 - 208	Q3 2021	32	
				16.1 - 123	Q2 2021	40	
				13.1 - 136	Q1 2021	38	
				13.1 - 149	Q4 2020	38	
				12.1 - 220	Q3 2020	35	
				12.1 - 220	Q2 2020	28	
				12.1 - 220	Q1 2020	28	
				12.1 - 220	Q4 2019	35	
Affimedix, Inc. Hayward, CA	Sandwich ELISA	MicrO - D™ 25-OH Vitamin D (total)	4.2 - 375	16.1 - 175	Q4 2019	35	Kevin Wang Kwang@affimedix.com

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
ARUP Laboratories, Inc. Salt Lake City, UT	LC/MS/MS†	25-Hydroxyvitamin D2 and D3 by Tandem Mass Spectrometry, Serum	2.5 - 249.6	12.1 - 181	Q4 2025	50	Kayla West Kayla.west@aruplab.com 801-583-2787 x2893
				16.1 - 181	Q3 2025	55	
				16.7 - 181	Q2 2025	42	
				18.1 - 181	Q1 2025	38	
				16.7 - 157	Q4 2024	40	
				16.7 - 149	Q3 2024	42	
				12.1 - 208	Q2 2024	28	
				12.1 - 157	Q2 2023	50	
				12.1 - 142	Q1 2023	50	
				12.1 - 139	Q4 2022	65	
				12.1 - 162	Q3 2022	65	
				16.1 - 305	Q2 2022	48	
				16.1 - 305	Q1 2022	55	
				16.1 - 305	Q4 2021	60	
				16.7 - 305	Q3 2021	50	
				16.7 - 135	Q2 2021	65	
				16.1 - 135	Q1 2021	62	
				16.1 - 149	Q4 2020	65	
				16.1 - 149	Q3 2020	78	
				16.1 - 149	Q2 2020	65	
				18.1 - 183	Q1 2020	65	
				19.7 - 183	Q4 2019	60	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
AUTOBIO DIAGNOSTICS CO., LTD. Zhengzhou, China	Chemiluminescence Immunoassay	AutoLumo 25-OH Vitamin D Total Assay	11.25 - 375	13.1 - 140	Q2 2020	26	Zhang Yujiao zhangyujiao@autobio.com.cn 86-371-66785303
Boditech Med Inc. South Korea	Fluorescence Immunoassay	Boditech Med Ichroma Vitamin D 25(OH)D2/D3	20 - 175	22.0 - 158 22.0 - 158 22.0 - 158 22.2 - 162 22.0 - 162 22.0 - 162 22.0 - 158 22.6 - 157 22.0 - 157 22.0 - 162 22.0 - 162 22.6 - 139 22.6 - 123 22.6 - 183 22.0 - 183 12.1 - 183 12.1 - 183 12.1 - 183 12.1 - 183	Q4 2025 Q3 2025 Q1 2025 Q4 2024 Q2 2024 Q1 2024 Q3 2023 Q2 2023 Q1 2023 Q3 2022 Q2 2022 Q3 2021 Q2 2021 Q1 2021 Q4 2020 Q3 2020 Q2 2020 Q1 2020 Q4 2019	33 40 28 48 28 32 20 22 21 29 32 32 42 38 38 36 28 25 22	Jieun Lee lje@boditech.co.kr 82-70-4264-7575

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Boditech Med Inc. South Korea	Fluorescence Immunoassay	Boditech Med AFIAS Vitamin D 25(OH)D2/D3	20 - 175	22.0 - 157	Q4 2025	28	Jieun Lee lie@boditech.co.kr 82-70-4264-7575
				22.2 - 162	Q1 2025	40	
				22.2 - 162	Q4 2024	55	
				28.5 - 162	Q3 2024	55	
				22.0 - 162	Q3 2022	10	
				28.5 - 157	Q3 2021	40	
				28.5 - 140	Q2 2021	38	
				12.1 - 140	Q1 2021	31	
				12.1 - 135	Q4 2020	31	
				12.1 - 140	Q3 2020	24	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
CCR Laboratory University of Maryland Clinical Pathology Baltimore, MD	LC/MS/MS†	Total 25 OH-Vitamin D 10 – 400 nmol/mL	10 - 400	12.1 - 211	Q4 2025	48	Dr. Show-Hong Duh sduh@umm.edu (410) 328-5705
				12.1 - 211	Q3 2025	50	
				12.1 - 211	Q2 2025	48	
				12.1 - 211	Q1 2025	35	
				16.1 - 162	Q3 2024	32	
				16.7 - 162	Q2 2024	50	
				16.7 - 162	Q1 2024	50	
				12.1 - 208	Q4 2023	48	
				12.1 - 208	Q3 2023	50	
				12.1 - 208	Q2 2023	38	
				12.1 - 208	Q1 2023	48	
				22.0 - 162	Q4 2022	38	
				12.1 - 162	Q3 2022	38	
				12.1 - 162	Q2 2022	42	
				12.1 - 162	Q1 2022	32	
				12.1 - 162	Q4 2021	38	
				16.7 - 158	Q3 2021	42	
				17.4 - 140	Q2 2021	50	
				16.7 - 183	Q1 2021	50	
				13.1 - 183	Q3 2020	38	
				13.1 - 183	Q2 2020	35	
				13.1 - 149	Q1 2020	42	
				13.1 - 136	Q4 2019	52	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Covance Central Laboratory Services, Inc. Indianapolis, IN	LC/MS/MS†	Total 25 Hydroxy-Vitamin D2/D3	1.25 - 1,996.80	16.1 - 208	Q1 2022	92	Cristina Hedin cristina.hedin@covance.com (317) 273-7842
				16.1 - 208	Q4 2021	95	
				16.1 - 157	Q3 2021	80	
				16.1 - 135	Q2 2021	75	
				12.1 - 183	Q1 2021	72	
				12.1 - 183	Q4 2020	62	
				12.1 - 183	Q3 2020	78	
				12.1 - 183	Q2 2020	82	
				16.1 - 140	Q1 2020	82	
				18.1 - 140	Q4 2019	90	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Centre Hospitalier Universitaire de Liège Sart-Tilman, Belgium	LC/MS/MS ⁺	25(OH)D3+25(OH)D2+C3-epimer+24,25(OH)2D	3.7 - 624	16.7 - 181	Q4 2025	87	Prof. Etienne Cavalier etienne.cavalier@chu.ulg.ac.be +32 4 3668822
				16.7 - 181	Q3 2025	85	
				16.1 - 181	Q2 2025	70	
				16.1 - 181	Q1 2025	70	
				16.1 - 208	Q4 2024	70	
				16.1 - 208	Q3 2024	75	
				22.6 - 208	Q2 2024	88	
				17.4 - 208	Q1 2024	88	
				17.4 - 162	Q4 2023	78	
				17.4 - 182	Q3 2023	72	
				16.7 - 182	Q2 2023	70	
				16.7 - 182	Q1 2023	62	
				16.7 - 182	Q4 2022	70	
				16.7 - 157	Q3 2022	72	
				18.1 - 162	Q2 2022	70	
				18.1 - 162	Q1 2022	68	
				21.5 - 162	Q4 2021	70	
				21.5 - 162	Q3 2021	80	
				21.5 - 128	Q2 2021	85	
				12.1 - 136	Q1 2021	92	
				12.1 - 149	Q4 2020	92	
				12.1 - 149	Q3 2020	85	
				12.1 - 198	Q2 2020	75	
				18.1 - 198	Q1 2020	62	
				18.1 - 198	Q4 2019	57	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Department of Obstetrics and Gynaecology, The University of Hong Kong Hong Kong, China	Immunoassay	ARCHITECT® 25-OH Vitamin D Assay	8.5 - 389.8	12.1 - 182 16.1 - 182 18.1 - 182 16.1 - 158 16.1 - 158 17.4 - 208 17.4 - 182 16.1 - 158	Q4 2024 Q3 2024 Q2 2024 Q1 2024 Q4 2023 Q3 2022 Q2 2022 Q4 2021	23 28 32 32 32 38 40 38	Raymond Li raymondli@hku.hk 85222554517

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
DiaSorin Stillwater, MN	Chemiluminescence Immunoassay	LIAISON® 25 OH Vitamin D TOTAL Assay	10 - 375	16.1 - 181	Q4 2025	25	Cole Gilman cole.gilman@diasorin.com (651) 351-5933
				16.7 - 183	Q3 2025	22	
				16.1 - 181	Q2 2025	25	
				16.1 - 182	Q1 2025	32	
				16.1 - 182	Q4 2024	25	
				16.1 - 182	Q3 2024	25	
				17.4 - 182	Q2 2024	28	
				12.1 - 208	Q1 2024	25	
				12.1 - 208	Q4 2023	30	
				12.1 - 208	Q3 2023	28	
				16.7 - 157	Q1 2023	22	
				17.4 - 157	Q4 2022	20	
				17.4 - 162	Q3 2022	20	
				17.4 - 305	Q2 2022	22	
				16.7 - 305	Q1 2022	30	
				16.7 - 305	Q4 2021	30	
				16.1 - 305	Q3 2021	30	
				13.1 - 183	Q2 2021	22	
				13.1 - 183	Q1 2021	12	
				13.1 - 183	Q4 2020	10	
				13.1 - 138	Q3 2020	10	
				16.7 - 220	Q2 2020	12	
				17.4 - 220	Q1 2020	15	
				17.4 - 220	Q4 2019	28	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Diazyme Laboratories, Inc. Poway, CA	Immunoturbidimetric Assay	Diazyme EZ Vitamin D Total Assay	18.9 - 369	22.0 - 181	Q2 2025	18	Dr. Chao Dou chao.dou@diazyme.com 858-455-4763
				22.0 - 181	Q1 2025	22	
				22.2 - 162	Q4 2024	18	
				32.4 - 182	Q4 2022	12	
				27.5 - 194	Q2 2022	13	
				22.2 - 194	Q1 2022	16	
				21.5 - 194	Q4 2021	8	
				21.5 - 194	Q3 2021	8	
				21.5 - 140	Q2 2021	14	
				16.7 - 140	Q1 2021	11	
				16.7 - 149	Q2 2020	19	
				18.1 - 149	Q1 2020	21	
				19.7 - 136	Q4 2019	18	
Douglass Hanly Moir Pathology Sydney, Australia	LC/MS/MS ⁺	25-Hydroxyvitamin D2 and D3 by Tandem Mass Spectrometry, Serum	3.90 - 600	12.1 - 157	Q4 2024	75	Andy Liu aliu@dhm.com.au +61298555275
				12.1 - 182	Q3 2024	72	
				12.1 - 182	Q2 2024	78	
				12.2 - 208	Q1 2024	70	
				12.1 - 162	Q1 2023	10	
				12.1 - 162	Q4 2022	12	
				16.7 - 194	Q1 2022	42	
				16.7 - 194	Q4 2021	45	
				16.7 - 140	Q2 2021	55	
				13.1 - 183	Q1 2021	55	
				12.1 - 183	Q4 2020	68	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Endocrine Sciences Laboratory, LabCorp Calabasas Hills, CA	LC/MS/MS†	Test Code 500510 (Total)	2.4 - 625	16.7 - 211	Q4-2025	64	Dr. Brett Holmquist Holmgub@labcorp.com (818)867-1362
				16.7 - 211	Q3-2025	62	
				16.7 - 211	Q2 2025	65	
				22.6 - 211	Q1 2025	62	
				22.2 - 157	Q4 2024	78	
				18.1 - 149	Q3 2024	78	
				12.1 - 157	Q2 2024	82	
				12.1 - 158	Q1 2024	80	
				12.0 - 158	Q4 2023	78	
				12.1 - 208	Q3 2023	70	
				12.1 - 208	Q2 2023	68	
				12.1 - 208	Q1 2023	62	
				12.1 - 208	Q4 2022	60	
				12.1 - 149	Q3 2022	60	
				17.4 - 208	Q2 2022	60	
				16.1 - 208	Q1 2022	65	
				16.1 - 208	Q4 2021	70	
				16.1 - 208	Q3 2021	78	
				13.1 - 140	Q2 2021	72	
				13.1 - 149	Q1 2021	68	
				13.1 - 149	Q4 2020	62	
				10.4 - 149	Q3 2020	57	
				10.4 - 175	Q2 2020	65	
				10.4 - 175	Q1 2020	72	
				10.4 - 183	Q4 2019	70	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Fujirebio INC. Tokyo, Japan	Chemiluminescence Enzyme Immunoassay	Lumipulse® G 25-OH Vitamin D	10 - 375	16.1 - 183	Q1 2020	45	Satoshi Saito satoshi.kojima@miraca.com +81-42-645-4742
GC Labs Yongin-si, Gyeonggi-do, Republic of Korea	LC/MS/MS†	Serum Total 25OHD, 25OHD3, 25OHD2 and 3-epi-25OHD3	D3: 0.871- 364 D2: 1.21 - 329 epi: 1.25 - 67	12.1 - 181 12.1 - 181 12.1 - 181 12.1 - 182 12.1 - 182 16.7 - 182 16.7 - 182 16.7 - 157 12.1 - 208 12.1 - 208 12.1 - 208 12.1 - 208 17.4 - 162 17.4 - 149 17.4 - 182	Q4 2025 Q3 2025 Q2 2025 Q1 2025 Q4 2024 Q3 2024 Q2 2024 Q1 2024 Q4 2023 Q3 2023 Q2 2023 Q1 2023 Q4 2022 Q3 2022 Q2 2022	88 88 85 85 82 82 82 85 85 85 82 75 70 68 68	Sung-Eun Cho, M.D., Ph.D. secho1206!!@gclabs.co.kr Jung-Sun Han jshan@gclabs.co.kr

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Heartland Assays Ames, IA	LC/MS/MS†	25(OH)D2/D3 via LC/MS/MS	3.75 - 500	17.4 - 208	Q3 2025	50	Drew Makowski Drew.makowski@heartlandassays.com John Rathmacher John.rathmacher@heartlandassays.com
				17.4 - 208	Q2 2025	55	
				16.7 - 208	Q1 2025	62	
				16.7 - 162	Q4 2024	68	
				17.4 - 158	Q3 2023	60	
				12.1 - 158	Q2 2023	50	
				12.1 - 162	Q1 2023	62	
				18.1 - 211	Q2 2022	52	
				22.2 - 211	Q1 2022	48	
				22.2 - 211	Q4 2021	70	
				17.4 - 211	Q3 2021	75	
				17.4 - 132	Q2 2021	67	
				16.7 - 136	Q1 2021	65	
				12.1 - 136	Q4 2020	57	
				12.1 - 136	Q3 2020	65	
				12.1 - 183	Q2 2020	75	
				12.1 - 183	Q1 2020	65	
				13.1 - 183	Q4 2019	68	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Immunodiagnostic Systems (IDS) Tyne and Wear, GB	ELISA	25-Hydroxy Vitamin D EIA	16.3 - 250	16.1 - 157	Q3 2025	20	Heather Pham Heather.pham@idsplc.com
				16.7 - 183	Q2 2025	18	
				16.7 - 183	Q1 2025	18	
				16.7 - 183	Q4 2024	20	
				16.7 - 183	Q3 2024	28	
				16.7 - 157	Q2 2024	33	
				17.4 - 208	Q1 2024	41	
				17.4 - 208	Q4 2023	41	
				16.1 - 208	Q3 2023	33	
				16.1 - 208	Q2 2023	35	
				16.1 - 157	Q1 2023	33	
				16.1 - 157	Q4 2022	33	
				17.4 - 182	Q2 2022	26	
				16.7 - 182	Q1 2022	20	
				16.7 - 182	Q4 2021	18	
				16.7 - 182	Q3 2021	26	
				16.7 - 134	Q2 2021	23	
				16.1 - 220	Q1 2021	29	
				16.1 - 220	Q4 2020	35	
				16.1 - 220	Q3 2020	24	
				16.1 - 220	Q2 2020	29	
				10.4 - 183	Q1 2020	24	
				10.4 - 183	Q4 2019	18	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Immunodiagnostic Systems (IDS) Tyne and Wear, GB	CLIA	IDS 25 VitD ^S	10 - 275	16.1 - 158	Q4 2025	38	Heather Pham Heather.pham@idsplc.com
				12.1 - 142	Q3 2025	42	
				12.1 - 162	Q2 2025	52	
				12.1 - 162	Q1 2025	55	
				12.1 - 162	Q4 2024	45	
				16.7 - 162	Q3 2024	28	
				16.1 - 149	Q2 2024	35	
				16.1 - 149	Q1 2024	35	
				16.1 - 162	Q4 2023	45	
				16.1 - 162	Q3 2023	50	
				12.1 - 162	Q2 2023	45	
				12.1 - 162	Q1 2023	42	
				12.1 - 158	Q4 2022	35	
				12.1 - 149	Q3 2022	28	
				17.4 - 162	Q2 2022	25	
				12.1 - 162	Q1 2022	22	
				12.1 - 162	Q4 2021	30	
				12.1 - 162	Q3 2021	38	
				12.1 - 135	Q2 2021	40	
				16.1 - 136	Q1 2021	45	
				16.1 - 136	Q4 2020	38	
				12.1 - 138	Q3 2020	33	
				10.4 - 183	Q1 2020	24	
				10.4 - 183	Q4 2019	26	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Instituto Nacional de Ciencias Medicas Salvador Zubirán Mexico City, Mexico	CLIA	ARCHITECT® 25-OH Vitamin D Assay	8.5 – 389.8	16.1 - 182	Q4 2022	35	QFB. Alejandra Pacheco Cervantes alepachecoc@hotmail.com
Mayo Clinic Florida Jacksonville, FL	LC/MS/MS†	25 hydroxyvitamin D2 and D3	D2: 5 - 250 D3: 10 - 250	12.1 - 211 16.1 - 211 16.7 - 211 17.4 - 211 17.4 - 149 18.1 - 182 17.4 - 182 17.4 - 182 12.1 - 208 12.1 - 208 12.1 - 208	Q4 2025 Q3 2025 Q2 2025 Q1 2025 Q4 2024 Q3 2024 Q2 2024 Q1 2024 Q4 2023 Q3 2023 Q2 2023	60 65 62 65 52 48 45 48 60 55 55	Charles Barmore barmore.charles@mayo.edu (904) 953-6411
Mayo Medical Laboratories Rochester, MN	LC/MS/MS†	Serum 25 hydroxyvitamin D2 and D3	15 - 740	17.4 - 162 17.4 - 162 17.4 - 157 17.4 - 135 18.1 - 135 16.1 - 149 10.4 - 183 10.4 - 183 10.4 - 183 10.4 - 183	Q1 2022 Q4 2021 Q3 2021 Q2 2021 Q1 2021 Q4 2020 Q3 2020 Q2 2020 Q1 2020 Q4 2019	55 55 50 50 52 55 62 62 67 62	Larry Dodge Dodge.larry@mayo.edu (507) 538-0400 Eric Bro Bro.eric@mayo.edu (507) 266-4348

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Nutrition Research Division Health Canada Ottawa, Canada	LC-MS/MS†	Serum Total 25OHD, 25OHD3, 25OHD2 and 3-epi-25OHD3	2.5 - 275	16.1 - 182	Q4 2025	82	Dr. Stephen Brooks steve.brooks@hc-sc.gc.ca (603) 957-0932 Kurtis Sarafin kurtis.sarafin@hc-sc.gc.ca (613) 957-0921
				16.1 - 182	Q3 2025	75	
				16.1 - 182	Q2 2025	68	
				16.1 - 181	Q1 2025	68	
				12.1 - 158	Q4 2024	68	
				12.1 - 158	Q3 2024	72	
				12.1 - 158	Q2 2024	70	
				12.1 - 208	Q1 2024	57	
				16.1 - 208	Q4 2023	55	
				16.1 - 208	Q2 2023	57	
				16.7 - 162	Q1 2023	70	
				16.7 - 157	Q4 2022	68	
				16.7 - 149	Q3 2022	75	
				17.4 - 211	A2 2022	72	
				17.4 - 211	Q1 2022	68	
				17.4 - 211	Q4 2021	72	
				18.1 - 211	Q3 2021	78	
				13.1 - 183	Q2 2021	80	
				13.1 - 220	Q1 2021	72	
				13.1 - 220	Q4 2020	62	
				13.1 - 220	Q3 2020	50	
				16.1 - 220	Q2 2020	40	
				16.7 - 140	Q1 2020	45	
				19.7 - 140	Q4 2019	45	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Nutritional Biomarkers Branch CDC Atlanta, GA	LC-MS/MS†	#4027 routine method for serum 25OHD3, 25OHD2, C3-epimer-25OHD3	4 - 430	12.1 - 183	Q4 2025	77	Rosemary Schleicher, PhD RSchleicher@cdc.gov (770) 488-4424
				12.1 - 183	Q3 2025	78	
				12.1 - 157	Q2 2025	80	
				12.1 - 182	Q1 2025	75	
				12.1 - 182	Q4 2024	75	
				16.1 - 182	Q3 2024	78	
				16.7 - 208	Q2 2024	80	
				16.1 - 208	Q1 2024	80	
				12.1 - 208	Q4 2023	80	
				12.1 - 208	Q3 2023	82	
				12.1 - 158	Q2 2023	85	
				12.1 - 139	Q1 2023	90	
				16.7 - 149	Q4 2022	90	
				16.7 - 158	Q3 2022	90	
				16.7 - 158	Q2 2022	90	
				17.4 - 158	Q1 2022	92	
				22.0 - 158	Q4 2021	82	
				17.4 - 157	Q3 2021	78	
				17.4 - 140	Q2 2021	80	
				13.1 - 140	Q1 2021	72	
				13.1 - 140	Q4 2020	80	
				13.1 - 140	Q3 2020	78	
				13.1 - 140	Q2 2020	70	
				19.7 - 140	Q1 2020	65	
				19.7 - 183	Q4 2019	70	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Ortho Clinical Diagnostics Pencoed, Wales, UK	CIA	Vitros	21.6 - 315	36.7 - 181	Q4 2025	18	Aled Yates aled.yates@orthoclinicaldiagnostics.com (+44) 1656 778397
				36.4 - 181	Q3 2025	15	
				36.4 - 181	Q2 2025	10	
				36.4 - 181	Q1 2025	21	
				36.4 - 182	Q3 2023	15	
				36.4 - 162	Q1 2023	23	
				36.4 - 162	Q4 2022	23	
				36.4 - 197	Q3 2022	18	
				36.7 - 211	Q2 2022	13	
				36.7 - 211	Q1 2022	10	
				36.4 - 211	Q4 2021	21	
				36.4 - 211	Q3 2021	21	
				36.4 - 123	Q2 2021	20	
				27.5 - 134	Q1 2021	15	
				22.6 - 136	Q4 2020	15	
				10.4 - 135	Q2 2020	15	
				10.4 - 140	Q1 2020	18	
				19.7 - 220	Q4 2019	22	
Ortho Clinical Diagnostics Pencoed, Wales, UK	CIA	Vitros	18.6 - 375	22.0 - 211	Q4 2025	12	Lydia Thomas lydia.thomas@guidelortho.com (+44) 1656 778513
				10.4 - 135	Q2 2020	15	
				10.4 - 140	Q1 2020	18	
				19.7 - 220	Q2 2-19	22	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Penn State University, Hershey Medical Center, Dept. of Pathology and Laboratory Medicine Hershey, PA	LC/MS/MS†	25OHD2 and 25OHD3 (39D0657304)	9.98 - 399	16.7 - 147	Q4 2019	62	Yusheng Zhu, PhD, DABCC, FAACC yzhu@pennstatehealth.psu.edu (717) 731-5123
PerkinElmer Health Sciences, Inc Hayward, CA	ELISA	25 OH Vitamin D ELISA 80min	4.18 - 375	17.4 - 198	Q4 2019	28	Shawn You Shaofang.you@perkinelmer.com (650) 872-1800
Quest Diagnostics Nichols Institute of Valencia, Inc Valencia, California	LC/MS/MS†	Total 25-Hydroxyvitamin D (Vitamin D2/Vitamin D3)	10 - 1,280	17.4 - 162 16.1 - 182 12.1 - 158 12.1 - 158 12.1 - 123 12.1 - 220 16.7 - 220 16.7 - 220 18.1 - 149 18.1 - 140	Q1 2023 Q1 2022 Q4 2021 Q3 2021 Q2 2021 Q1 2021 Q3 2020 Q2 2020 Q1 2020 Q4 2019	57 25 42 35 42 50 55 65 62 62	Amit Ghoshal PhD Amit.K.Ghoshal@QuestDiagnostics.com (661) 799-6204

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Roche Diagnostics GmbH Penzberg, DE	ECL binding assay	Elecsys Vitamin D total II	7.38 - 885	16.7 - 208	Q3 2022	28	Christian Vogl christian.vogl.cv1@roche.com +49 8856 60 19758
				16.7 - 182	Q2 2022	20	
				16.1 - 183	Q1 2022	20	
				16.1 - 183	Q4 2021	20	
				22.0 - 183	Q1 2021	42	
				16.7 - 134	Q4 2020	40	
				13.1 - 136	Q3 2020	42	
				13.1 - 198	Q2 2020	38	
				13.1 - 198	Q1 2020	45	
				13.1 - 198	Q4 2019	45	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Roche Diagnostics GmbH Penzberg, DE	ECL binding assay	Elecsys Vitamin D total III	7.5 - 300	16.1 - 208	Q4 2025	35	Christian Vogl christian.vogl.cv1@roche.com +49 8856 60 19758
				12.1 - 208	Q3 2025	38	
				12.1 - 208	Q2 2025	38	
				12.1 - 208	Q1 2025	38	
				16.7 - 162	Q3 2024	38	
				16.7 - 182	Q2 2024	32	
				12.1 - 182	Q1 2024	28	
				12.1 - 182	Q4 2023	22	
				12.1 - 182	Q3 2023	30	
				12.1 - 158	Q2 2023	42	
				17.4 - 158	Q1 2023	40	
				18.1 - 158	Q4 2022	40	
				18.1 - 162	Q3 2022	38	
				17.4 - 208	Q2 2022	28	
				17.4 - 208	Q1 2022	35	
				17.4 - 208	Q4 2021	32	
				12.1 - 208	Q3 2021	22	
				12.1 - 149	Q2 2021	15	
				12.1 - 149	Q4 2020	25	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Roche Diagnostics GmbH Penzberg, DE	LC/MS/MS ⁺	25-Hydroxyvitamin D3 and 25-Hydroxyvitamin D2 in serum	D3: 3.75 - 450 D2: 3.64 - 437	12.1 - 158 12.1 - 158 12.1 - 158 16.1 - 152 16.1 - 182 12.1 - 182 12.1 - 182 12.1 - 182 12.1 - 182 12.1 - 162 17.4 - 182 18.1 - 182 21.5 - 182 16.1 - 182 16.1 - 134 16.1 - 134	Q3 2024 Q2 2024 Q1 2024 Q4 2023 Q3 2023 Q2 2023 Q1 2023 Q4 2022 Q3 2022 Q2 2022 Q1 2022 Q4 2021 Q3 2021 Q2 2021 Q1 2021	62 75 90 90 92 92 90 90 80 70 68 68 72 78 65	Judith Taibon judith.taibon@roche.com 0049 8856 60 12941
Roche Diagnostics GmbH Munich, Germany	LC/MS/MS	Ionify 25-Hydroxy Vitamin D total	5.00 - 375	18.1 - 211 12.1 - 211 12.1 - 211 12.1 - 211 12.1 - 158 16.7 - 149 16.1 - 182 16.1 - 182 16.1 - 182	Q4 2025 Q3 2025 Q2 2025 Q1 2025 Q4 2024 Q3 2024 Q2 2024 Q1 2024 Q4 2023	85 85 80 80 80 75 80 80 80	Dominik Gruber muc.testsidestudy@roche.com 0049 8856 60 13838

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
SCIEX Diagnostics Framingham, MA	LC/MS/MS [†]	Total 25-Hydroxyvitamin D (Vitamin D2/Vitamin D3)	10 - 800	12.1 - 183 19.7 - 183	Q1 2020 Q4 2019	55 52	Theresa Irvine Theresa.Irvine@sciex.com (508) 383-7409
Shenzhen Mindray Bio-medical Electronics Co., Ltd. (Mindray) Shenzhen, China	Chemiluminescence Immunoassay	Mindray 25-OH-Vitamin D Total	10 - 375	12.1 - 208 12.1 - 208 12.1 - 208 12.1 - 208 12.1 - 182 16.7 - 208 16.7 - 208 17.4 - 208 17.4 - 208	Q4 2025 Q3 2025 Q2 2025 Q1 2025 Q4 2024 Q3 2024 Q2 2024 Q1 2024 Q4 2023	57 61 62 55 48 45 46 54 67	Lai Wenquan laiwenquan@mindray.com
Shinjin Medics Inc. Goyang-si, Republic of Korea	Radioimmunoassay	RIAKEY Total 25OH VITAMIN D/ Shinjin medics	6.7 - 250	12.1 - 182	Q2 2024	20	Chang-su Chae cschai@diakey.com Dong-hyun Kim kdh0102@diakey.com

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Siemens Healthcare Diagnostics Tarrytown, NY	Chemiluminescence Immunoassay	ADVIA Centaur® Vitamin D Total assay	10.5 - 375	16.7 - 181	Q4 2025	20	Neil Parker neil.np.parker@siemens-healthineers.com
				16.7 - 181	Q3 2025	20	
				16.7 - 198	Q2 2025	20	
				22.2 - 198	Q1 2025	20	
				18.1 -198	Q4 2024	20	
				16.1 - 198	Q3 2024	18	
				16.1 - 158	Q2 2024	20	
				16.1 - 158	Q1 2024	15	
				16.1 - 162	Q4 2023	20	
				22.2 - 162	Q3 2023	28	
				12.1 - 162	Q2 2023	28	
				12.1 - 162	Q1 2023	28	
				12.1 - 208	Q4 2022	25	
				16.1 - 208	Q2 2022	25	
				16.1 - 208	Q1 2022	23	
				17.4 - 197	Q4 2021	26	
				17.4 - 197	Q3 2021	15	
				13.1 - 135	Q2 2021	18	
				13.1 - 149	Q1 2021	18	
				13.1 - 149	Q4 2020	18	
				13.1 - 149	Q3 2020	20	
				16.1 - 149	Q2 2020	15	
				16.1 - 147	Q1 2020	15	
				17.4 - 183	Q4 2019	22	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Siemens Healthcare Diagnostics Tarrytown, NY	Chemiluminescence Immunoassay	Atellica® IM Vitamin D Total assay	10.5 - 375	18.1 - 182	Q4 2025	30	Neil Parker neil.np.parker@siemens-healthineers.com
				18.1 - 182	Q3 2025	28	
				12.1 - 181	Q2 2025	20	
				12.1 - 181	Q1 2025	18	
				16.1 - 157	Q2 2024	23	
				16.1 - 157	Q1 2024	23	
				16.1 - 158	Q4 2023	33	
				16.1 - 158	Q3 2023	32	
				12.1 - 158	Q2 2023	38	
				12.1 - 158	Q1 2023	35	
				12.1 - 208	Q4 2022	30	
				12.1 - 208	Q3 2022	30	
				17.4 - 208	Q2 2022	32	
				12.1 - 208	Q1 2022	38	
				12.1 - 162	Q4 2021	38	
				12.1 - 162	Q3 2021	36	
				12.1 - 132	Q2 2021	18	
				12.1 - 132	Q1 2021	28	
				12.1 - 132	Q4 2020	31	
				12.1 - 134	Q3 2020	32	
				12.1 - 220	Q2 2020	38	
				16.7 - 220	Q1 2020	35	
				19.7 - 220	Q4 2019	30	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date <i>(active for 1 quarter)</i>	Individual Samples Pass Rate (%)	Participant's Contact Information
Siemens Healthcare Diagnostics Tarrytown, NY	Immunoassay	Atellica® CI Vitamin D Total assay	10.5 - 375	19.7 - 181	Q4 2025	25	Neil Parker neil.np.parker@siemens-healthineers.com
				12.1 - 181	Q3 2025	28	
				12.1 - 181	Q2 2025	20	
				16.1 - 181	Q1 2025	21	
				16.1 - 182	Q4 2024	18	
				12.1 - 182	Q3 2024	23	
				12.1 - 208	Q2 2024	25	
				12.1 - 208	Q4 2023	18	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Siemens Healthcare Diagnostics Glasgow, DE	Chemiluminescence Immunoassay	Dimension®ExL™ Vitamin D Total assay	12.5 - 375	18.1 - 211	Q4 2025	44	Dr. Tie Wei tie.g.wei@siemens-healthineers.com (302) 631-6929 Jie Li jie.l.li@siemens-healthineers.com (302) 631-7708
				17.4 - 211	Q3 2025	50	
				18.1 - 211	Q2 2025	65	
				16.7 - 211	Q1 2025	72	
				16.1 - 183	Q4 2024	67	
				16.1 - 183	Q3 2024	60	
				16.1 - 182	Q2 2024	42	
				16.1 - 182	Q1 2024	35	
				18.1 - 182	Q4 2023	38	
				22.2 - 208	Q3 2023	35	
				22.0 - 208	Q2 2023	44	
				16.7 - 208	Q1 2023	44	
				16.7 - 208	Q4 2022	44	
				16.7 - 157	Q3 2022	41	
				16.7 - 162	Q2 2022	40	
				22.2 - 162	Q1 2022	50	
				18.1 - 162	Q4 2021	45	
				18.1 - 162	Q3 2021	48	
				18.1 - 140	Q2 2021	50	
				16.7 - 140	Q4 2020	38	
				12.1 - 140	Q3 2020	38	
				12.1 - 175	Q2 2020	35	
				10.4 - 183	Q1 2020	38	
				10.4 - 183	Q4 2019	32	

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Shenzhen New Industries Biomedical Engineering Co., Ltd (SNIBE) Shenzhen, China	LC/MS/MS ⁺	25-OH Vitamin D	12 - 250	12.1-149	Q2 2023	65	Xiaopeng (Sean) Wang Xiaopeng.wang@snibe.cn
Shenzhen New Industries Biomedical Engineering Co., Ltd (SNIBE) Shenzhen, China	Chemiluminescence Immunoassay	Maglumi 25-OH Vitamin D	7.5 - 375	12.1 - 158 12.1 - 208 12.1 - 208 12.1 - 208 16.7 - 208 12.1 - 149 22.0 - 230	Q4 2024 Q3 2024 Q2 2024 Q1 2024 Q4 2023 Q4 2022 Q4 2019	75 72 78 62 56 32 28	Jinyun Yuan jinyun.yuan@snibe.cn Xiaopeng (Sean) Wang Xiaopeng.wang@snibe.cn
Shenzhen New Industries Biomedical Engineering Co., Ltd (SNIBE) Shenzhen, China	Chemiluminescence Immunoassay	MAGLUMI X8 25-OH Vitamin D	1.5 - 375	16.1 - 182 16.1 - 182 16.1 - 182	Q4 2025 Q3 2025 Q2 2025	82 35 48	Jinyun Yuan jinyun.yuan@snibe.cn Xiaopeng (Sean) Wang Xiaopeng.wang@snibe.cn

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Thermo Fisher Scientific Vantaa, Finland	LC/MS/MS†	Thermo Scientific™ Cascadion™ SM 25-Hydroxy Vitamin D	8.24 - 649.3	16.1 - 149 16.1 - 157 16.1 - 157 18.1 - 157 18.1 - 157 18.1 - 149 18.1 - 149 13.1 - 135 13.1 - 147 13.1 - 147 13.1 - 220 16.1 - 220	Q3 2022 Q2 2022 Q1 2022 Q4 2021 Q3 2021 Q2 2021 Q1 2021 Q4 2020 Q3 2020 Q2 2020 Q1 2020 Q4 2019	80 85 82 82 82 80 80 75 78 75 75 80	Sirpa Riistama-Laari Sirpa.riistama-laari@thermofisher.com +358 103292215

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
Tosoh Corporation Tokyo, Japan	Enzyme Immunoassay	ST AIA-PACK 25-OH Vitamin D	10 - 375	16.7 - 158	Q4 2025	13	Dr. SachiYuki Hasegawa sachiYuki-hasegawa-de@tosoh.co.jp Hisao Tsukamoto hisao-tsukamoto-rn@tosoh.co.jp +81-467-76-5384
				16.7 - 142	Q3 2025	12	
				16.7 - 149	Q2 2025	12	
				17.4 - 149	Q1 2025	18	
				17.4 - 149	Q4 2024	15	
				16.1 - 182	Q3 2024	20	
				16.1 - 182	Q2 2024	22	
				12.1 - 208	Q2 2023	18	
				16.1 - 162	Q1 2023	13	
				16.1 - 149	Q4 2022	15	
				16.1 - 182	Q3 2022	12	
				12.1 - 181	Q3 2021	15	
				12.1 - 128	Q2 2021	22	
				12.1 - 149	Q1 2021	20	
				16.7 - 149	Q4 2020	20	
				16.7 - 183	Q3 2020	18	
				16.7 - 198	Q2 2020	12	
				19.7 - 198	Q1 2020	20	
				19.7 - 198	Q4 2019	28	
University Hospital – Biochemistry Laboratory Grenoble, France	LC/MS/MS†	LC/MS/MS† assay 2D LC METHODE	4 - 360	13.1 - 183	Q1 2020	72	Anne Sophie Gauchez ASGauchez@chu-grenoble.fr SGazzah@chu-grenoble.fr

Participant	Measurement Principle	Assay Identifier	Assay Measurement Range (nmol/L)	Certification Measurement Range (nmol/L)	Certification Date (active for 1 quarter)	Individual Samples Pass Rate (%)	Participant's Contact Information
University of Minnesota, Molecular Epidemiology and Biomarker Research Laboratory (MEBRL) Minneapolis, MN	LC/MS/MS†	25-Hydroxy Vitamin D2 and D3	5.3 - 1,240	12.1 - 197 16.1 - 197 16.1 - 197 16.1 - 149 13.1 - 136 12.1 - 140 12.1 - 183	Q2 2022 Q4 2021 Q3 2021 Q2 2021 Q1 2021 Q2 2020 Q4 2019	40 52 52 60 55 42 45	Dr. Myron Gross gross001@umn.edu (612) 624-5417
Waters Technologies Wexford, Ireland	LC/MS/MS†	Total 25-Hydroxyvitamin D (Vitamin D2/Vitamin D3)	20 - 750	12.1 - 208 22.0 - 162 27.5 - 211 22.2 - 211 22.2 - 211 22.0 - 211 22.0 - 140 13.1 - 140 13.1 - 140 13.1 - 140	Q3 2023 Q3 2022 Q2 2022 Q1 2022 Q4 2021 Q3 2021 Q2 2021 Q1 2021 Q4 2020 Q3 2020	85 50 57 60 57 57 65 60 60 55	Norma Breen Norma_Breen@waters.com 00353 (0)53-9160514

† LC/MS/MS – Liquid Chromatography Tandem Mass Spectrometry

* Certification is only provided for serum. No assessment was performed in plasma.