RECONOCIMIENTO DE LA EQUIVALENCIA DEL CERTIFICADO DE ACREDITACION

San José, 20 de marzo del 2025

Ref. No. ECA-RECA-M046-2025
Sustituye al ECA-RECA-046-2026

A QUIEN CORRESPONDA:

La suscrita: **Jennifer Rojas Leiva, Especialista Departamento de Servicios de Equivalencia del Ente Costarricense de Acreditación,** por este medio hace constar que: En respuesta a la solicitud de reconocimiento de la equivalencia del certificado de acreditación número **RECA-2025-721**, del Organismo de Evaluación de la Conformidad ***AGQ Costa Rica S.A.*** con sede en **50 metros norte y 75 metros oeste de la Escuela República Dominicana, San Francisco de Dos Ríos, San José, 10106, Costa Rica**, presentada el 18 de febrero de 2025, basado en la norma[i] **ISO/IEC 17025:2017 Requisitos generales para la competencia de los laboratorios de ensayo y calibración. Requisitos**, emitido por el Organismo de Acreditación **International Accreditation Service, Inc** vigente al día de hoy y sujeta a las decisiones del Organismo de Acreditación.

En los folios 05 al 14 se describe el alcance del laboratorio de ensayo *AGQ Costa Rica S.A.* cubiertas por el alcance de la norma ISO/IEC 17025:2017 Requisitos generales para la competencia de los laboratorios de ensayo y calibración. Requisitos.

ECA reconoce la equivalencia del certificado de acreditación TL-1036 el cual fue otorgado de manera similar en cumplimiento a los estándares aceptados internacionalmente y adoptados por los Organismos de Acreditación firmantes del Acuerdo de Reconocimiento Multilateral.

Adicionalmente, ECA informa que el Organismo de Acreditación **International Accreditation Service, Inc** es signatario del Acuerdo de Reconocimiento Multilateral con [ii]**Cooperación Internacional de Acreditación de Laboratorios, ILAC**, en el alcance **ISO/IEC 17025:2017 Requisitos generales para la competencia de los laboratorios de ensayo y calibración. Requisitos.**

El reconocimiento de la equivalencia del certificado de acreditación se otorga por un periodo de **73 días** calendario. Desde el **20.03.2025** y hasta el **01.06.2025**, siendo que el ECA no puede dar fe de la validez o mantenimiento de los alcances reconocidos posterior a este plazo.

Se extiende la presente certificación a solicitud expresa de **AGQ Costa Rica Sociedad Anónima,** el día veinte de marzo del año dos mil veinticinco, para efectos ADMINISTRATIVOS, JUDICIALES o ambos, **con 14 folios que corresponden a este certificado de reconocimiento, al certificado y alcance de acreditación**. ***El presente reconocimiento de la equivalencia del certificado de acreditación tiene validez con su correspondiente alcance de la acreditación.***

Notas:

1. Una vez vencida la vigencia del plazo del reconocimiento de la equivalencia del certificado de acreditación, el ECA no garantiza que la acreditación del OEC emitida por un OA se mantenga vigente.

2. El interesado en solicitar el reconocimiento de la equivalencia del certificado de acreditación, debe mantener informado al ECA sobre los cambios en el estatus de la acreditación de origen.

3. Todo interesado se compromete a cumplir continuamente con los requisitos para el reconocimiento de la equivalencia del certificado de acreditación establecidos por el ECA, para las áreas en las cuales se busca el reconocimiento. Esto incluye adaptarse a los cambios que ECA publique con versiones posteriores.

4. **El dueño del reconocimiento al participar en procesos de licitación, de contratación administrativa o de compras públicas debe informar claramente en su oferta de servicios qué actividades de evaluación de la conformidad tiene reconocidas por ECA y cuáles no, mediante el uso de algún mecanismo para realizar esta diferenciación.**

5. ***Las proveedurías institucionales o dueños del cartel de licitación deben enviar a ECA los documentos presentados por los oferentes y que fueron emitidos por ECA para su verificación. La solicitud de revisión debe enviarse en un oficio formal al correo exoneracion@eca.or.cr***

JENNIFER DE LOS ANGELES ROJAS LEIVA (FIRMA)
PERSONA FISICA, CPF-01-1188-0301.
Fecha declarada: 20/03/2025 04:04:11 PM
Esta es una representación gráfica únicamente,
verifique la validez de la firma.

ECA.
SERVICIOS DE EQUIVALENCIA

Bach. Jennifer Rojas Leiva
Especialista Departamento de Servicios de Equivalencia
Ente Costarricense de Acreditación

cc: Archivo

[i]Norma ISO/IEC 17021, ISO/IEC 17025, ISO/IEC 17065, ISO IEC 17020, ISO/IEC 15189
[ii]IAAC, ILAC, IAF

CERTIFICATE OF ACCREDITATION

This is to attest that

AGQ COSTA RICA S.A.

50 MTS NORTE Y 75 MTS OESTE DE LA ESCUELA REPÚBLICA DOMINICANA
SAN FRANCISCO DE DOS RÍOS, SAN JOSÉ, 10106, COSTA RICA

Testing Laboratory TL-1036

has met the requirements of AC89, *IAS Accreditation Criteria for Testing Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories.* This organization is accredited to provide the services specified in the scope of accreditation.

Effective Date November 21, 2024

International Accreditation Service
Issued under the authority of IAS management

Visit www.iasonline.org for current accreditation information.

SCOPE OF ACCREDITATION

International Accreditation Service, Inc.

3060 Saturn Street, Suite 100, Brea, California 92821, U.S.A. | www.iasonline.org

AGQ COSTA RICA S.A.

www.agqlabs.cr

Contact Name Jeisson Cardenas Miranda **Contact Phone** +506-22861168

Accredited to ISO/IEC 17025:2017 *Effective Date November 21, 2024*

FIELDS OF TESTING	MATERIAL/ MATRIX	DETERMINANT(S)/ ANALYTE(S)	METHOD REFERENCE
FOOD–MICROBIOLOGY	Food, feed and surfaces	Escherichia coli	IT-345 AOAC 991.14, AOAC 998.08, AOAC 986.33, AOAC 989.10.
		Total coliforms	IT-345 AOAC 991.14, AOAC 998.08, AOAC 986.33, AOAC 989.10.
		Fecal coliforms	IT-345 AFNOR 3M01/2-09/89C.
		Staphylococcus aureus	IT-343 AOAC 2003.07, AOAC 2003.08, AOAC 2003.11.
		Aerobic plate count	IT-344 AOAC 990.12.
		Yeast and molds	IT-342 AOAC 997.02.
		Salmonella spp.	IT-392 Vidas ® UP Salmonella SPT.
		Listeria spp. Listeria monocytogenes	IT-393 Vidas ® UP Listeria LPT.
	Granular and liquid sugar. -OR- Granular and liquid sucrose and treated simple syrup.	Mesophilic Total Count	IT-416 ICUMSA GS2/3-41.
		Yeast and Mold	IT-415 ICUMSA GS 2/3-47.
		Thermophilic Acidophilic Bacteria (TAB) & Guaiacol Producing TAB	IT-417 SM-PR-687.
FOOD–INORGANIC	Food, feed	Ash	IT-328 Based on ISO 936, AOAC 942.05
		Moisture	IT-333 Based on AOAC 925.45; ISO 1442
		Crude Protein	IT-335 Based on AOAC 990.3, AOAC 992.15
		Total Fat	IT-332 Based on ISO 1443
		Total dietary fiber	IT-330 Based on AOAC 993.21
		Total sugar	IT-327 Based on BOE- A -1979-21118

FIELDS OF TESTING	MATERIAL/ MATRIX	DETERMINANT(S)/ ANALYTE(S)	METHOD REFERENCE
FOOD–INORGANIC (cont'd.)	Food, feed (cont'd.)	Carbohydrates (US & EU) – by calculation	IT-414 (EU) No1169/2011 UE, Food labeling guide FDA - Carbohydrates (US) and (EU)
		Energy (Calories and kilojoules) (US, EU and MX) - by calculation	IT-414 Based on (EU) No1169/2011 EU, Food labeling guide FDA
		Nutritional and heavy metals: Li, Be, B, Na, Mg, Al, Si, P, S, K, Ca, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Se, Sr, Mo, Ag, Sn, Sb, Ba, Tl, As, Cd, Hg, Pb	IT-334 Metals by ICP-MS Based on AOAC Official Method 2015.01 Heavy Metals in Food, Codex Alimentarius CAC/GL 41, Codex Alimentarius Stan 193-1995
	Granular and liquid sugar. -OR- Granular and liquid sucrose and treated simple syrup.	Chloride	IT-418 by ion chromatography
		Sensory analysis (Appearance, Odor, Odor after acidification, taste	IT-419 SM-PR-420
		Assay (Purity)	IT-420 ICUMSA by Calculated impurity
		Quaternary Ammonium Compounds (QAC)	IT-427 SM-PR-470 by spectrophotometry
		Moisture by Loss on Drying	IT-426 ICUMSA GS 2-15 (2007)
		Day Acid Beverage Floc Test	IT-424 ICUMSA GS40 (2011)
		Insoluble Matter	IT-428 ICUMSA GS2-19 (2007)
		Reducing Sugars	IT-425 ICUMSA GS2-5(2011) by the Knight and Allen EDTA Method
		Colour	IT-423 ICUMSA GS 2-10 (2011)
		Turbidity	IT-430 ICUMSA GS 2-18 (2013)
		Conductivity Ash	IT-421 ICUMSA GS2-17 (2011)
		Refractometric Dry Substance (RDS %)	IT-422 ICUMSA GS 4-13 (2009)
		Sulphite	IT-429 ICUMSA GS 2-33 (2011) by the Rosaniline Colorimetric Method
	Food	Gluten (as gliadin R5)	IT-462 Based on: AOAC 2012.01 / ELISA

FIELDS OF TESTING	MATERIAL/ MATRIX	DETERMINANT(S)/ ANALYTE(S)	METHOD REFERENCE
FOOD–ORGANIC	Food & Feed	CBD, CBDA, delta-8 THC, delta-9 THC, THCA-A, CBD TOTAL, THC TOTAL	IT-444 Based on: AOAC 2018.10 / HPLC-DAD
PRODUCTS-ORGANIC	Cosmetics, Dietary Supplements, Hygienic Products	CBD, CBDA, delta-8 THC, delta-9 THC, THCA-A, CBD TOTAL, THC TOTAL	IT-444 Based on: AOAC 2018.10 / HPLC-DAD
ENVIRONMENTAL–INORGANIC	Ground waters, surface waters, drinking waters, wastewaters, seawaters	Metals: Al, Sb, As, Ba, B, Ca, Cd, Cr, Cu, Pb, Fe, Mg, Mn, Hg, Sn, Ni, Se, Ag, K, Na, V, Zn By calculation: Calcium Hardness, Magnesium Hardness Total Hardness	IT-399 SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 3125 B.; U.S. EPA Method 6020B (SW-846) and 200.8. / ICP-MS
	Soils, sediments, sludges and residues	Metals: Al, Sb, As, Ba, B, Ca, Cd, Cr, Cu, Pb, Fe, Mg, Mn, Hg, Sn, Ni, Se, Ag, K, Na, V, Zn.	IT-399 SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 3125 B.; U.S. EPA Method 6020B (SW-846) and 200.8. / ICP-MS
	Ground waters, surface waters, drinking waters, wastewaters, seawater	Total Suspended Solids	IT-371: SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 2540 D: Gravimetry
		Total Solids	IT-368: SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 2540 B: Gravimetry
		Total Dissolved Solids	IT-369: SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 2540 C Gravimetry
		Settleable Solids by	IT-370: SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 2540 F: Volumetry
		Turbidity	IT-376: SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 2130 B: Nephelometry
		Anionic surfactants as MBAS	IT-375: SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 5540 C: Spectrophotometry
		Sulfide	IT-440 SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 4500 Sulfide. / US EPA Methylene Blue Method. / Method 8131.HACH.

FIELDS OF TESTING	MATERIAL/ MATRIX	DETERMINANT(S)/ ANALYTE(S)	METHOD REFERENCE
ENVIRONMENTAL–INORGANIC (cont'd.)	Ground waters, surface waters, drinking waters, wastewaters, seawater (cont'd.)	Apparent and true Color	IT-373-SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 2120 B. Color. / Visual comparison
		Electric conductivity	IT-372 SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 2510 B. Conductivity.
		Biochemical oxygen demand (BOD)	IT-366 SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 5210 B 5-day BOD Test.
		Ammonia, Ammoniacal Nitrogen and Ammonium	IT-396 Based on SMEWW-APHA-AWWA-WEF (15th Ed. 1980) 4500 NH3 A. Nitrogen (Ammonia). / U.S. EPA / U.S. EPA Method 350.2: Nitrogen, Ammonia / HACH-Method 8038: Spectrophotometry
		Chromium (VI), Cr (VI)	IT-441 SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 3500-Cr B. Chromium. Colorimetric Method / 8023: US EPA 1,5-diphenylcarbohydrazide – Spectrophotometry
		Total and partial Alkalinity, hydroxide alkalinity. Carbonates and Bicarbonates	IT-413 SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 2320 B. Alkalinity. Tritation Method.
		Phenols (Total Phenols)	IT-431SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 5530 A, B and D. / US EPA Method 420.1: Phenolics / Spectrophotometry
		Salinity	IT-438 SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 2520 B. Salinity. Electrical Conductivity
		Transmitance 254	IT-439 SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 5910 B. UV-Absorbing Organic Constituents. Ultraviolet Absorption

FIELDS OF TESTING	MATERIAL/ MATRIX	DETERMINANT(S)/ ANALYTE(S)	METHOD REFERENCE
ENVIRONMENTAL–INORGANIC (cont'd.)	Ground waters, surface waters, drinking waters, wastewaters, seawater (cont'd.)	UV 254	IT-439 SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 5910 B. UV-Absorbing Organic Constituents. Ultraviolet Absorption
	Ground waters, surface waters, drinking waters, wastewaters	Sulfates, Chlorides, Bromide, Fluoride, Phosphate, Nitrate, Nitrite	IT-380 SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 4110 B / EPA Method 300.0. Ion Chromatography with Chemical Suppression of Eluent Conductivity
	Seawater	Chlorides, Sulfates	IT-380 SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 4110 B / EPA Method 300.0. Ion Chromatography with Chemical Suppression of Eluent Conductivity
	Ground waters, surface waters, drinking waters	TOC (USP)	IT-432 USP method 643.
		TOC	IT-432 Based on: HACH method 10129
	Ground waters, surface waters, wastewaters, seawater	Total COD & Dissolved COD	IT-367: SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 5220 D: Closed reflux, colorimetry
		Oils & Grease	IT-374: SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 5520 B: Liquid-Liquid partition-Gravimetry
	Wastewaters	Spectrophotometric color (Purity)	IT-373 SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 2120 D. Spectrophotometry

FIELDS OF TESTING	MATERIAL/ MATRIX	DETERMINANT(S)/ ANALYTE(S)	METHOD REFERENCE
ENVIRONMENTAL–INORGANIC (cont'd.)	Ground waters, surface waters, drinking waters, wastewaters, seawater, soils, sediments	Total Petroleum Hydrocarbons (TPH): - Gasoline Range Organics (GRO) >C5-C10 - Diesel Range Organics (DRO) >C10-C28 - Oil Range Organics (ORO) >C28-C40 - Sum of fractions Gasoline Range Organics (GRO) >C5-C10, Diesel Range Organics (DRO) >C10-C28 and Oil Range Organics (ORO) >C28-C40; and any possible subfractions between >C5-C40 including kerosene organic range, jet fuel organic range and bunker organic range Emulfiable Hydrocarbons Non-emulfiable Hydrocarbons Emulfiable and Non-emulfiable Total Petroleum Hydrocarbons	IT-381 U.S. EPA Method 8015C Gravimetric / GC-FID / GC-MS
ENVIRONMENTAL–INORGANIC Field sampling and Monitoring	Ground waters, surface waters, drinking waters, wastewaters, seawater	Sampling (Grab and composite):	PICR-211: SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 1060 A, B y C: Collection and Preservation of Samples
		pH	IT-378: SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 4500 H+ B: Electrometry
		Temperature	IT-377: SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 2550
ENVIRONMENTAL–MICROBIOLOGY	Recreational waters, drinking waters	Fecal Coliforms, Total Coliforms, Escherichia coli	IT-340 Based on SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 9222 Membrane Filter Technique; ISO 9308-1:2014 Water quality — Enumeration of Escherichia coli and coliform bacteria
	Ground waters, surface waters, drinking waters, wastewaters, seawater	Total heterotroph count	IT-338 SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 9215 B. Heterotrophic Plate Count

FIELDS OF TESTING	MATERIAL/ MATRIX	DETERMINANT(S)/ ANALYTE(S)	METHOD REFERENCE
ENVIRONMENTAL–MICROBIOLOGY (cont'd.)	Ground waters, surface waters, drinking waters, recreational waters	Pseudomonas	IT-339 SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 9213 E by Membrane Filtration.
ENVIRONMENTAL–SAMPLING	Soil, Sediment, Sludge (Biosolids)	Chemistry and Microbiology parameters	PICR-211. Based on: U.S. EPA. Soil Sampling. Laboratory Services and Applied Science Division. Athens, Georgia, 2020 U.S. EPA. Sediment Sampling. Laboratory Services and Applied Science Division. Athens, Georgia, 2020. U.S. Environmental Protection Agency. POTW Sludge Sampling and Analysis Guidance Document EPA 833-B-89-100, 1989
FOOD–SAMPLING	Food, Feed, Surfaces	Microbiology parameters	PICR-212: ISO 18593:2018, BAM Cap1, CODEX-ALIMENTARIUS
ENVIRONMENTAL–ORGANIC	Ground waters, surface waters, drinking waters, wastewaters, seawater, Soils, sediments	Volatile organic compounds (VOCs) 1,1-dichloropropylene 1,2,3-trichlorobenzene 1,2,3-trichloropropane 1,2,4-trichlorobenzene 1,2,4-trimethylbenzene 1,2-dibromo-3-chloropropane 1,2-dibromoethane 1,2-dichlorobenzene 1,2-dichloroethane 1,2-dichloropropane 1,3,5-trimethylbenzene 1,3-dichlorobenzene 1,3-dichloropropane 1,4-dichlorobenzene 2,2-dichloropropane 2-chlorotoluene 4-chlorotoluene 4-isopropyltoluene Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Carbon Tetrachloride	IT-383. Based on US EPA Method 8260D (GC/MS)

FIELDS OF TESTING	MATERIAL/ MATRIX	DETERMINANT(S)/ ANALYTE(S)	METHOD REFERENCE
ENVIRONMENTAL–ORGANIC (cont'd.)	Ground waters, surface waters, drinking waters, wastewaters, seawater, Soils, sediments (cont'd.)	Chlorobenzene Chloroform Cis-1,2-dichloroethylene Dibromochloromethane Dibromomethane Ethylbenzene Hexachlorobutadiene Isopropylbenzene Methyl T-butyl Ether M-xylene Naphthalene N-butylbenzene N-propylbenzene O-xylene P-xylene Sec-butylbenzene Styrene Tert-butylbenzene Tetrachloroethylene Toluene Trans-1,2-dichloroethylene Trichloroethylene Ethanol Sum of Xylenes (Total Xylenes) Sum of BTEX (Total BTEX) Sum of Trihalomethanes (Total THM) Sum of VOCs (Total VOCs)	IT-383. Based on US EPA Method 8260D (GC/MS) (cont'd.)
		Polycyclic aromatic hydrocarbons (PAHs) Acenaphthene Acenaphthylene Anthracene Benz(a)anthracene Benz[a]pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Chrysene Dibenz(a,h)anthracene Fluoranthene Fluorene Indeno(1,2,3-cd) pyrene Naphthalene Phenanthrene Pyrene Sum of HAPs (Total HAPs)	IT-382 Based on: SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 6440 Polynuclear Aromatic Hydrocarbons / US EPA Method 8270E (SW-846 GC/MS-MS)

FIELDS OF TESTING	MATERIAL/ MATRIX	DETERMINANT(S)/ ANALYTE(S)	METHOD REFERENCE
ENVIRONMENTAL–ORGANIC (cont'd.)	Ground waters, surface waters, drinking waters, wastewaters, seawater, Soils, sediments (cont'd.)	Pesticides residues (PRs) Sum of Organochlorines (Total Organochlorines) Sum of Organophosphates (Total Organophosphates) Sum of Carbamates (Total Carbamates) Sum of Pesticides Residues (Total Pesticides Residues)	IT-447 Based on US EPA Method 8270E (SW-846 GC/MS-MS) / SMEWW-APHA-AWWA-WEF (24th Ed. 2023) 6630C y 6410B (GC-MS-MS)
	Ground waters, surface waters, drinking waters, wastewaters, seawater, Soils, sediments, sludges and residues	Polychlorinated biphenyls (PCBs) (PCB-180) 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB-138) 2,2',3,4,4',5'-Hexachlorobiphenyl (PCB-153) 2,2',4,4',5,5'-Hexachlorobiphenyl (PCB-101) 2,2',4,5,5'-Pentachlorobiphenyl (PCB-52) 2,2',5,5'-Tetrachlorobiphenyl (PCB-118) 2,3',4,4',5-Pentachlorobiphenyl (PCB-28) 2,4,4'-Trichlorobiphenyl Sum of PCBs (Total PCBs)	IT-446 Based on: US EPA Method 8082A (GC/MS-MS)
ENVIRONMENTAL–SAMPLING	Air (Emission fluxes from surfaces)	Greenhouse gases (methane, carbon dioxide and nitrous oxide)	PICR-213 Based On: International Hydropower Association (IHA). (2010). GHG Measurement Guidelines for Freshwater Reservoirs. Derived from: the UNESCO/IHA Greenhouse Gas Emissions from Freshwater Reservoirs Research Project: International Hydropower Association (IHA) / USDA Agricultural Research Service, 2010. Sampling Protocols. Chapter 3, Chamber-Based Trace Gas Flux Measurements / Flux chamber

FIELDS OF TESTING	MATERIAL/ MATRIX	DETERMINANT(S)/ ANALYTE(S)	METHOD REFERENCE
ENVIRONMENTAL – ORGANICS	Air (Emission fluxes from surfaces)	Methane	IT-467 In-house method based on: Sousa et al. (2019). Conjunctive use of in situ gas sampling and chromatography with geospatial analysis to estimate greenhouse gas emissions of a large Amazonian hydroelectric reservoir (2019), Science of The Total Environment, Volume 650, Part 1, 10 February 2019, Pages 394-407. / Wang (2010). Simultaneous Analysis of Greenhouse Gases by Gas Chromatography, Agilent Application, Environmental, 5990-5129EN. / Gas chromatography (FID)