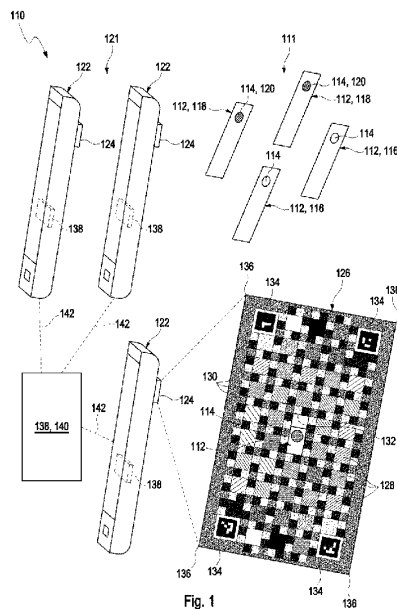




- (51) **International Patent Classification:**  
*G01N 21/84* (2006.01) *G01N 21/93* (2006.01)
- (21) **International Application Number:**  
PCT/EP2023/053168
- (22) **International Filing Date:**  
09 February 2023 (09.02.2023)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**  
22156299.4 11 February 2022 (11.02.2022) EP
- (71) **Applicant (for all designated States except DE, US): F. HOFFMANN-LA ROCHE AG [CH/CH];** Grenzacherstrasse 124, 4070 Basel (CH).
- (71) **Applicant (for DE only): ROCHE DIABETES CARE GMBH [DE/DE];** Sandhofer Strasse 116, 68305 Mannheim (DE).
- (71) **Applicant (for US only): ROCHE DIABETES CARE, INC. [US/US];** 9115 Hague Road, Indianapolis, Indiana 46250 (US).
- (72) **Inventors: BERG, Max;** c/o Roche Diabetes Care GmbH, Sandhofer Strasse 116, 68305 Mannheim (DE). **HAILER, Fredrik;** c/o Roche Diabetes Care GmbH, Sandhofer Strasse 116, 68305 Mannheim (DE). **LIMBURG, Bernd;** c/o Roche Diabetes Care GmbH, Sandhofer Strasse 116, 68305 Mannheim (DE).
- (74) **Agent: RIWOTZKI, Dr. Karsten;** Sandhofer Strasse 116, 68305 Mannheim (DE).
- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.
- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ,

(54) **Title:** METHODS AND DEVICES FOR PERFORMING AN ANALYTICAL MEASUREMENT



(57) **Abstract:** A determination method of determining a dynamic coefficient of variation limit ( $C_{VTR, lim}$ ) for assessing validity of an optical test strip (112) usable for an analytical measurement based on a color formation reaction is disclosed. The method comprises: a) providing a training set (111) of optical test strips (112); b) providing a training set (121) of mobile devices (122); c) providing at least one color reference card (126); d) capturing a training set of images, wherein each image of the training set of images comprises at least a part of at least one reagent test region (114) of an optical test strip (112) of the training set (111) of optical test strips (112) and at least a part of at least one color reference field (128) of the color reference card (126); e) determining a training set of pairs of reagent test region coefficients of variation ( $C_{VTR}$ ) and corresponding minimum color reference field coefficients of variation ( $C_{VRF, min}$ ); and f) deriving a relation for determining the dynamic coefficient of variation limit ( $C_{VTR, lim}$ ) for the respective reagent test region (114) by using the corresponding measured minimum color reference field coefficient of variation ( $C_{VRF, min}$ ), wherein the dynamic coefficient of variation limit ( $C_{VTR, lim}$ ) defines a maximum coefficient of variation ( $C_{VTR, max}$ ) for reagent test regions (114) of non-corrupted optical test strips (116). Further, a measurement method of performing an analytical measurement based on a color formation reaction by using a mobile device (122) having a camera (124) and a processor (138), a determination system (110), a mobile device (122), computer programs and computer-readable storage media are disclosed.

TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

**Published:**

- *with international search report (Art. 21(3))*
- *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*