



(51) International Patent Classification:

G02B 27/00 (2006.01) G02B 6/00 (2006.01)
G02B 27/01 (2006.01) G02B 5/18 (2006.01)
G02B 27/42 (2006.01) G02B 27/10 (2006.01)

uso; c/o Dispelix Oy, Metsänneidonkuja 6, 02130 Espoo (FI).

(74) Agent: **SEPPO LAINE OY**; Porkkalankatu 24, 00180 Helsinki (FI).

(21) International Application Number:

PCT/FI2019/050188

(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, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, 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, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(22) International Filing Date:

08 March 2019 (08.03.2019)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

20185295 28 March 2018 (28.03.2018) FI

(71) Applicant: **DISPELIX OY** [FI/FI]; Metsänneidonkuja 6, 02130 Espoo (FI).

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ,

(72) Inventors: **BLOMSTEDT, Kasimir**; c/o Dispelix Oy, Metsänneidonkuja 6, 02130 Espoo (FI). **OLKKONEN, Ju-**

(54) Title: WAVEGUIDE ELEMENT AND WAVEGUIDE STACK FOR DISPLAY APPLICATIONS

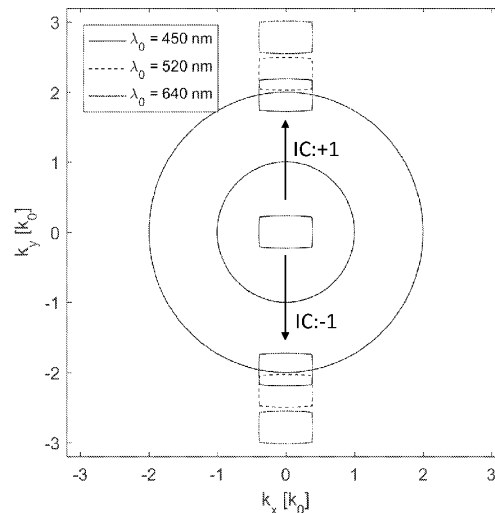


Fig. 1

(57) Abstract: The invention relates to a waveguide display element comprising a waveguide body and an in-coupling grating (21) arranged to the waveguide body. The in-coupling grating (21) is configured to couple incoming light into the waveguide body into two separate directions (26A, 26B) using opposite diffraction orders (IC:+1, IC:-1) for splitting the field of view of the incoming light. Further the in-coupling grating (21) is configured, typically by setting its period suitably short, such that said coupling takes place only at wavelengths below a threshold wavelength residing in the visible wavelength range. The invention also relates to a waveguide stack (51 A, 51 B, 51 C).

[Continued on next page]

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, 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))*