

PCT Recordation of Search History

Case/PCT Application Number: PCT/US20/25042

CLIN Number/Technical Field of PCT Application: 6

Date During Which the Search was Conducted: 26.05.2020-28.05.2020

Date of Completion of Recordation of Search History Form: 28 May 2020 (28.05.2020)

Research Analyst Initials: JM

Search Approval Official (SAO) Initials: BSS

Field of Search/Classification Information:

IPC(8) Classifications: G01S 13/34, 17/34, 17/06, 13/58, 17/58; G02B 6/35; G01N 21/27 (2020.01)

CPC Classifications: G01S 13/343, 17/34, 17/42, 13/584, 13/583, 17/58; G02B 6/3548, 6/354, 6/356, 6/3556, 6/3558, 6/3534, 6/351, 6/35; G01S 17/93; G01N 21/39, 21/276, 21/27

Databases Searched Patent and Non-Patent Literature (NPL), Including Sub-Databases and Files Searched and Search Terms Used:

PatSeer (US, EP, WO, JP, DE, GB, CN, FR, KR, ES, AU, IN, CA, INPADOC Data, RU, AT, CH, TH, BR, PH); Google Scholar; EBSCO; IEEE; KEYWORDS: continuous wave, frequency modulate, FMCW, LIDAR, laser, distance, depth, position, local oscillator, transmit, emit, reflect, echo, mix, 3D, switch, circulator, antenna, optical path, collimate, lens, photodetect

Database Search String Recordation, Including Dates of Searches:

Patent Database Search Strategy/Results:

PatSeer

ID	Search String	Hits	Date
L25	L24 NOT (L22 OR L20 OR L18 OR L16 OR L14 OR L12 OR L10 OR L8 OR L6 OR L4 OR L2 OR L1)	32	28-May-20
L24	TACD:((CONTINUOUS_WAV* OR "CW") w20 (LIDAR OR LASER) AND SPLIT* and ("LO" OR ((LOCAL OR REFERENC*) W3 OSCILLAT*)) and (transmit* or emit*) and ((reflect* or echo*) wp mix* wp (DEPTH OR DISTANCE or position or "3D")) and (switch* and (antenna or optic*_path*))) and (collimat* or lens*) and freq*)	47	28-May-20
L23	L22 NOT (L20 OR L18 OR L16 OR L14 OR L12 OR L10 OR L8 OR L6 OR L4 OR L2 OR L1)	43	28-May-20
L22	TACD:((CONTINUOUS_WAV* OR "CW") w20 (LIDAR OR LASER) AND ("LO" OR ((LOCAL OR REFERENC*) W3 OSCILLAT*)) and (PHOTO_DETECT* OR MIX*) and (DEPTH OR DISTANCE or position or "3D") and ((switch* or optic*_circulat*) W100 (antenna or optic*_path*))) and lens* and freq*)	154	28-May-20
L21	L20 NOT (L18 OR L16 OR L14 OR L12 OR L10 OR L8 OR L6 OR L4 OR L2 OR L1)	52	28-May-20
L20	TACD:((CONTINUOUS_WAV* OR "CW") wp (LIDAR OR LASER) AND ("LO" OR LOCAL_OSCILLAT*) and (PHOTODETECT* OR MIX*) and (DEPTH OR DISTANCE or position or "3D") and ((switch* or optic*_circulat*) WP (antenna or optic*_path*))) and lens* and freq*)	141	28-May-20
L19	L18 NOT (L16 OR L14 OR L12 OR L10 OR L8 OR L6 OR L4 OR L2 OR L1)	3	28-May-20
L18	TACD:((CONTINUOUS_WAV* OR "CW") wp (LIDAR OR LASER) AND ("LO" OR LOCAL_OSCILLAT*) and (PHOTODETECT* OR MIX*) and (DEPTH OR DISTANCE or position) and ((switch* or optic*_circulat*) WP (antenna or optic*_path*))) and lens* and freq*) AND AC:(G01S13/34 OR G01S17/34 OR G01S17/06 OR G01S13/58 OR G01S17/58 OR G02B6/35 OR G01N21/27 OR G01S7/4911 OR G01S7/481 OR G01S7/497 OR G01S7/4913 OR G01S17/88 OR G01S17/95)	20	28-May-20
L17	L16 NOT (L14 OR L12 OR L10 OR L8 OR L6 OR L4 OR L2 OR L1)	6	28-May-20
L16	TACD:((CONTINUOUS_WAV* OR "CW") wp (LIDAR OR LASER) AND ("LO" OR LOCAL_OSCILLAT*) and (PHOTODETECT* OR MIX*) and (DEPTH OR DISTANCE	21	28-May-20

	or position) and ((switch* or optic*_circulat*) WP (antenna or optic*_path*)) and lens* and freq*) AND AC:(G01S13/343 OR G01S17/34 OR G01S17/42 OR G01S13/584 OR G01S13/583 OR G01S17/58 OR G02B6/3548 OR G02B6/354 OR G02B6/356 OR G02B6/3556 OR G02B6/3558 OR G02B6/3534 OR G02B6/351 OR G02B6/35 OR G01S17/93 OR G01N21/39 OR G01N21/276 OR G01N21/27)		
L15	L14 NOT (L12 OR L10 OR L8 OR L6 OR L4 OR L2 OR L1)	0	27-May-20
L14	TACD:((CONTINUOUS_WAV* OR "CW") wp (LIDAR OR LASER) AND ("LO" OR LOCAL_OSCILLAT*) and (PHOTODETECT* OR MIX*) and (DEPTH OR DISTANCE or position) and ((switch* or optic*_circulat*) ws (antenna or optic*_path*)) and lens* and freq*) AND AC:(G01S13/343 OR G01S17/34 OR G01S17/42)	6	27-May-20
L13	L12 NOT (L10 OR L8 OR L6 OR L4 OR L2 OR L1)	73	27-May-20
L12	TACD:((CONTINUOUS_WAV* OR "CW") w5 (LIDAR OR LASER) AND ("LO" OR LOCAL_OSCILLAT*) and (PHOTODETECT* OR MIX*) and (DEPTH OR DISTANCE or position) and ((switch* or optic*_circulat*) ws (antenna or optic*_path*)) and lens* and freq*)	81	27-May-20
L11	L10 NOT (L8 OR L6 OR L4 OR L2 OR L1)	13	27-May-20
L10	TACD:((CONTINUOUS_WAV* OR "CW") ws ((FREQ* W4 MODULAT*) OR "FM") ws (LIDAR OR LASER) AND ("LO" OR LOCAL_OSCILLAT*) and (PHOTODETECT* OR MIX*) and (DEPTH OR DISTANCE) and (switch* ws (antenna or optic*_path*)))	22	27-May-20
L9	L8 NOT (L6 OR L4 OR L2 OR L1)	8	27-May-20
L8	TACD:((CONTINUOUS_WAV* OR "CW") ws ((FREQ* W4 MODULAT*) OR "FM") ws (LIDAR OR LASER) AND ("LO" OR LOCAL_OSCILLAT*) wp (PHOTODETECT* OR MIX*) wp (DEPTH OR DISTANCE) and (switch* ws (antenna or optic*_path*)))	10	27-May-20
L7	L6 NOT (L4 OR L2 OR L1)	34	26-May-20
L6	TAC:((CONTINUOUS_WAV* OR "CW") AND ((FREQ* W4 MODULAT*) OR "FM") AND (LIDAR OR LASER) AND ("LO" OR LOCAL_OSCILLAT*) AND (PHOTODETECT* OR MIX*) AND (DEPTH OR DISTANCE))	36	26-May-20
L5	L4 NOT (L2 OR L1)	2	26-May-20
L4	TA:((CONTINUOUS_WAV* OR "CW") AND ((FREQ* W4 MODULAT*) OR "FM") AND (LIDAR OR LASER) AND ("LO" OR LOCAL_OSCILLAT*) AND (PHOTODETECT* OR MIX*) AND (DEPTH OR DISTANCE))	2	26-May-20
L3	L2 NOT L1	1579	26-May-20
L2	INV:(("LIN" W1 "Sen") OR (HOSSEINI W1 Amir) OR	1584	26-May-20

	(MICHAELS W2 (Andrew OR Steil))		
L1	ASN:((OURS_Tech*) OR "OURS Technology")	35	26-May-20

Non-Patent Literature (NPL) Search Strategy/Results:

Google Scholar

STRINGS SEARCHED	DATE
frequency modulation continuous wave LIDAR optical antenna switch local oscillator	26.05.2020
FMCW lidar laser circulator switch LO reflect mix distance	26.05.2020
frequency modulation continuous wave LIDAR emit switch local oscillator echo depth	26.05.2020

EBSCO

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IEEE

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frequency modulation continuous wave LIDAR optical antenna switch local oscillator	26.05.2020
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