**2021 Patent Infringement Risk Search – Engineering**
**Sample Answer**

[This document exemplifies how to interpret the search request, the preparation and gathering of keywords and patent classes and conducting a sample search including comments of how and why using search statements.]

# 0. The search request as presented to the examinee:

Underwater diving as an activity is seen both as an occupation (e.g. in research and oil and gas industries) and as a popular leisure activity. While sign language / hand signals are a well known way for divers to communicate, newer divers may find the signals hard to remember, and there are circumstances where a quicker or easier means to communicate would be beneficial.

Your client is a manufacturer of diving masks which has developed a scheme for transmitting voice data between a plurality of divers, which transmits the voice data between the divers using LiFi technology.

They want to incorporate this technology into (three different cases for the different time zone regions):

a) SCUBA diving masks
b) Snorkel(l)ing masks
c) handheld device (e.g. torch)

The client has an indemnity agreement in place with a manufacturer of LiFi transceivers e.g. in case of standard essential patents (SEPs), however they are keen to avoid litigation from infringing anybody else's patents relating to the specific application of the LiFi technology in their own products, and as such you have been instructed to carry out a freedom-to-operate search for one of these two product lines. Their current intention is to launch one or both products in France, the UK and the USA.

# 1. Technical Background

## 1.1. Preparation / Background

- technical background (Wikipedia, specialized websites)

As LiFi is a moderately new technology the Examinee would be expected to do some basic research to understand exactly what the technology is, and what else it might be called. Also consider carrying out a quick patent search on LiFi for the same purpose.

Examples for diving equipment and background:

https://en.wikipedia.org/wiki/Diving_equipment#In-water_stabilisation_and_movement

https://en.wikipedia.org/wiki/Scuba_diving

https://en.wikipedia.org/wiki/Snorkeling

- Dates (priority, publication)

As this is an FTO search, patents over 20 years will generally have expired and so date limiting searching may be considered to minimize the number of documents reviewed to only those which are still in force. In some instances, however, an older document may provide some "clearance" and be of use to the attorney reviewing results. Either approach is valid, but this should be considered and discussed.

- Territories

As the client is only interested in certain territories (France, UK and USA) they might consider restricting searching to territories/offices that cover these (FR; UK; US; WO; EP). Covering FR, UK and US only and not EP or WO will be considered lacking and resulting in loss of marks. Some candidates may wish not to limit country coverage for searching in order to uncover any further "leads" for searching and is a valid approach but should be disclosed as intentional by the candidate.

- Registers/databases (Epoline, Inpadoc, Patbase, Espacenet)

Any databases used should give relatively easy access to patent claims.

Some searchers may consider using multiple databases to cover gaps in coverage/translations etc, should they have access to them.

1.2. Scope of search:

• technical area

The examinee should be able to recognise that SCUBA and/or snorkeling masks are generally known and old.

The client has further expressed that they are indemnified with regards to LiFi transceivers broadly and so do not need to search this more broadly.

Therefore the search focus is the implementation of LiFi into a SCUBA and/or Snorkelling mask or underwater propulsion vehicle.

1.3. Description of concepts

As the examinee is only offered one of the alternatives, looking at one of the two distinctly separate mask types they do not need to cover the other mask type to the one that they have selected.

As a freedom-to-operate search, they will however need to cover diving or underwater masks more generally.

Similarly, as well as looking specifically for LiFi, the candidate should recognize that light/optical transmission should be searched as well.

## 2. Classification

[A quick and dirty search e.g. in Espacenet will already reveal first classifications to start from. This can be complemented during the search when reviewing first possible hits.]

- **IPC**

SCUBA:

B63C 11/00 Equipment for dwelling or working underwater; Means for searching for underwater objects (composition of chemical substances for use in breathing apparatus A62D9/00; swimming aids or equipment A63B31/00 A63B35/00; submarines B63G8/00)

B63C 11/02 . Divers' equipment

B63C 11/12.. Diving masks

B63C 11/14 … with forced air supply

B63C 11/18 .. Air supply (for diving masks B63C11/14, B63C11/16; respiratory apparatus in general A62B)

B63C 11/22 ... carried by diver

Snorkeling:

B63C 11/16 - Equipment for dwelling or working underwater; Means for searching for underwater objects - Divers' equipment - Diving masks - with air supply by suction from diver, e.g. snorkels

Torches:

F21V FUNCTIONAL FEATURES OR DETAILS OF LIGHTING DEVICES OR SYSTEMS THEREOF; STRUCTURAL COMBINATIONS OF LIGHTING DEVICES WITH OTHER ARTICLES, NOT OTHERWISE PROVIDED FOR

F21V33/00 Structural combinations of lighting devices with other articles, not otherwise provided for

Diving generally:

B63C 11/12 - Equipment for dwelling or working underwater; Means for searching for underwater objects - Divers' equipment - Diving masks

B63C 11/26 - Equipment for dwelling or working underwater; Means for searching for underwater objects - Divers' equipment - Communication means, e.g. means for signalling the presence of divers

LiFi:

H04B TRANSMISSION

H04B 10/00 Transmission systems employing electromagnetic waves other than radio-waves, e.g. infrared, visible or ultraviolet light, or employing corpuscular radiation

H04B 11/00 Transmission systems employing sonic, ultrasonic or infrasonic waves

H04R 1/00 - Details of transducers, {loudspeakers or microphones}
H04R 1/44 - Details of transducers, loudspeakers or microphones - Special adaptations for subaqueous use, e.g. for hydrophone

• **CPC**

Snorkeling:

B63C 2011/165 - Equipment for dwelling or working underwater; Means for searching for underwater objects - Divers' equipment - Diving masks - with air supply by suction from diver, e.g. snorkels - comprising two or more air ducts leading from the mouthpiece to the air inlet or outlet opening

B63C 11/205 - Equipment for dwelling or working underwater; Means for searching for underwater objects - Divers' equipment - Air supply - from water surface - with air supply by suction from diver, e.g. snorkels

B63C 11/207 - Equipment for dwelling or working underwater; Means for searching for underwater objects - Divers' equipment - Air supply - from water surface - with air supply by suction from diver, e.g. snorkels - with hoses connected to a float

SCUBA:

B63C 11/12 .. Diving masks

B63C 2011/121 ... comprising integrated optical signalling means or displays for data or images [Would be a mistake to focus on; it's focus is displays and only has a handful of relevant results which could also be picked up with other strategies]

B63C 2011/123 ... comprising integrated headlights, spotlights, or the like

B63C 2011/125 ... comprising nose-clips, i.e. pinching devices for closing the user's nose, other than rubber blisters integral with flexible mask elements

B63C 2011/126 ... Diving masks comprising periscopes, mirrors, or the like; Periscopes, mirrors, or the like specially adapted for use with diving masks

B63C 2011/128 ... Straps, or the like for fastening diving masks; Accessories therefor, e.g. buckles

B63C 11/14 ... with forced air supply

Torches:

F21V FUNCTIONAL FEATURES OR DETAILS OF LIGHTING DEVICES OR SYSTEMS THEREOF; STRUCTURAL COMBINATIONS OF LIGHTING DEVICES WITH OTHER ARTICLES, NOT OTHERWISE PROVIDED FOR; Aspects not related to light emission or distribution, e.g. fittings

F21V33/00 Structural combinations of lighting devices with other articles, not otherwise provided for

F21V33/008 . Leisure, hobby or sport articles, e.g. toys, games or first-aid kits; Hand tools; Toolboxes

B63C 2011/121 ... comprising integrated optical signalling means or displays for data or images [2013-01] –

[Both more focussed areas where some LiFi/optical communication in water get placed (would get picked up with higher level classification searching)]

Lifi

H04B TRANSMISSION

H04B 10/00 Transmission systems employing electromagnetic waves other than radio-waves, e.g. infrared, visible or ultraviolet light, or employing corpuscular radiation, e.g. quantum communication

H04B 10/11 . Arrangements specific to free-space transmission, i.e. transmission through air or vacuum

H04B 10/114 .. Indoor or close-range type systems

H04B 10/116 … Visible light communication

H04B10/80 . Optical aspects relating to the use of optical transmission for specific applications, not provided for in groups , e.g. optical power feeding or optical transmission through water

H04B13/00 Transmission systems characterised by the medium used for transmission, not provided for in groups

H04B13/02 . Transmission systems in which the medium consists of the earth or a large mass of water thereon, e.g. earth telegraphy

- **other classification**

**Derwent Manual Codes**

none found

**F-terms [**Not directly relevant as JP is not a territory of interest, however may be of use in family based databases]

**USCla**

398 - Optical communications
398/104 - Underwater (but relevant stuff in other 398 headings)

**FI, Dekla, others** (If any relevant identified): none found

## 3. Concepts / keywords

- **Keywords**

LiFi:

LiFi; Li Fi; Light Fidelity

(light*, optic*, laser%) near (transmit* and receiv*) or communicat*));

VLC (Visible Light Communication)

Telecommunication/wireless:
radio, rf, r f [best to search acronyms with spacing as well as without]
communicat* [worth checking, but gets used in different ways so will pick up lots of noise - something to try in a separate search string]

Snorkel:
Snorkel* [Note that there is also variant "snorkelling"]

Diving generally:
[Dive (or even Diver) truncated is a mistake because of the quantity of irrelevant words starting with these letters. Examinee should recognise this and specifically search the relevant variations]

Dive; Diver; Divers; Diving: underwater; undersea, subsea, frogmen, frogman
["submarine" does in some instances get used as a synonym for underwater]

SCUBA
Self contained underwater breathing apparatus, compressed air, air near supply

Handheld device (e.g. torch)
flashlight; torch; lamp; LED lamp; light source; light emitting device; light emitting diode; lampe sous-marine;

Loudspeaker, speaker, speakerphone, earpiece, microphone

- **fields**

For Freedom-to-operate claims need to be covered

- **special vocabulary**

- **other languages**

With France as one country of interest French keywords should be considered.

Diving:

sous marin*, sousmar*, plong* (e.g. Masque de plongee - diving mask)

- **non-Latin scripts**

As no territories with non-latin alphabets have been requested these need not be considered.

## 4. Search / History (absolutely needs to contain comments!)

- **commented history**

Databases [different databases might be useful depending on the task at hand (e.g. bibliographic vs. fulltext)]

- Derwent World Patent Index
- PatBase
- Orbit.com / FamPat
- national fulltext collections
- web-based (EspaceNet, DepatisNet, USPTO, IPDL, national collections)

- **strategy**

- modularisation
- combination (operators)
- truncation, spelling variants
- sanity checks (checking intermediate results, creating deltas)
- analysing intermediate results (e.g. statistically for classification, sample results for additional keywords)
- citations
- translation
- document delivery

Check against known documents [This was NOT requested and is only added for completeness, if mentioned by examinee it resulted in bonus points]:

FR3079377 A1
WO19185203 A1
WO19185204 A2
US2012180788 AA
FR3096439 (torch/lamp for communication)
US2018062766

One possible example history with comments:

[It is self-evident that there is no such thing as a perfect or THE best search procedure, so the below is just one possible way of successfully approaching the search topic. The extensive commenting (can of course also be done differently with copying from the history), the use of truncation and adjacency operators (e.g. lines 9 and 10) the reduction of jurisdictions to search (line 12), using different language keywords, combination of classification and keywords all demonstrate the mastering of the skills necessary to conduct a successful search.]

34 // SS 33 should be viewed 0

| | | |
|---|---|---|
| 33 | cta 32 and 13 | 1 |
| **32** | **pn=FR3079377** | 1 |
| 31 | // Above: If relevant patent families are identified a citation search is performed using the command CTA | 0 |
| 30 | // SS 28 and 29 should be viewed | 0 |
| 29 | 13 and SPUB=(ft=((((snorkel* or diving or divers or scuba or underwater) w2 mask%) or (masque w5 plongee*)) and (Li_Fi or (light w2 communication) or (light fidelity) or (communication w2 lumineuse)) and (Voice or speak* or speech or voix))) | 5 |
| 28 | 13 and SPUB=(tac=(((snorkel* or diving or divers or scuba or underwater) w2 mask%) or (masque w5 plongee*)) and (Li_Fi or (light w2 communication) or (light fidelity) or (communication w2 lumineuse))) | 3 |
| 27 | // Above: words-words search | 0 |
| 26 | // SS 23 and 25 should be viewed | 0 |
| 25 | 13 and SPUB=(sc=H04B10* and ft=(((snorkel* or diving or divers or scuba or underwater) w2 mask%) or (masque w5 plongee*))) | 5 |
| 24 | // Above: class for LiFi combined with words for snorkelling mask | 0 |
| 23 | 13 and SPUB=(sc=B63C11/12* and ft=(Li_Fi or (light w2 communication) or (light fidelity) or (communication w2 lumineuse))) | 5 |
| 22 | // Above: class for snorkelling mask combined with words for LiFi | 0 |
| 21 | // Above: class-words search | 0 |
| 20 | // SS 19 should be viewed | 0 |
| 19 | 13 and sc=B63C11/12* and sc=H04B10* | 2 |
| 18 | // Above: class-class search - snorkelling mask combined with transmission systems using non-radio waves | 0 |
| 17 | // SS 16 should be viewed | 0 |
| 16 | 13 and cpc=B63C2011/121 | 32 |
| 15 | // Above: The most relevant CPC class - Snorkelling masks with integrated optical signalling means | 0 |
| 14 | //////////////////////////////////////// | 0 |
| 13 | ((cc=(us* or gb* or fr* or ep*) and (apd>1999 or prd>1999 or epr>1999)) or apdwo=2021 or apdwo=2020 or apdwo=2019 or apdwo=2018 or prdwo=2021 or prdwo=2020 or prdwo=2019 or prdwo=2018) and alive=yes | 5,133,554 |
| 12 | // Above: Limitation to countries, years and status | 0 |
| 11 | //////////////////////////////////////// | 0 |
| 10 | ti=li_fi | 356 |
| 9 | ti=(((snorkel* or diving or divers) w2 mask%) or (masque w5 plongee*)) | 713 |
| 8 | // Above: Identification of classes | 0 |
| 7 | //////////////////////////////////////// | 0 |
| 6 | // SS 5 was viewed to identify French search term | 0 |
| 5 | cl=(snorkel* w2 mask) and kd=epb* | 3 |
| 4 | // Above: French words for snorkelling mask is identified | 0 |

| | | |
|---|---|---|
| 3 | //////////////////////////////////////// | 0 |
| 2 | // Search begun 20210223 by examinant | 0 |
| 1 | // Above: Search for infringement/FTO - snorkelling mask | 0 |