MEMS Microphone Technology and Patent Infringement Risk Analysis

S1157 (iPhone 5S)  MP45DT01  SR595 (iPhone 5S)  ICS-43432

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Knowmade has developed methodologies to identify patents related to product features.

By combining their technical knowledge, process flow understanding and patent search, System Plus Consulting and Knowmade are able to provide a clear link between patents and marketed products.

In-depth analysis of the links between technology and patents provided in this report will lead to understanding product features and related patents, and to highlight the potential risks of patent infringement.
The Authors

Knowmade

• Headquartered in Sophia Antipolis, France, **Knowmade** is specialized in analysis of patents and scientific research findings. We provide Patent Search, IP landscape, Patent Analysis, Scientific Literature Landscape, State of the art, Technology Scouting, Technology Transfer and Technology Tracking. Our service offer consists of custom studies, analysis reports, on-demand tracking and strategy consulting. Knowmade combines information search services, scientific expertise, powerful analytics and visualization tools, and proprietary methodologies for analyzing patents and scientific information. With a solid focus on Microelectronics, Compound Semiconductors, LED, MEMS, Nanotechnology and Biotechnology, **Knowmade** supports research laboratories, industrial companies and investors in their business development.

System Plus Consulting

• Headquartered in Nantes, France, **System Plus Consulting** is specialized in technology and cost analysis of electronic components and systems in the fields of Integrated Circuits, Power Devices and Modules, MEMS & Sensors, LED, Image Sensors, Packaging including wafer level, Electronic Boards and Systems. The company offers custom reverse costing analyses, standard reverse costing reports and costing tools. These analyses are used by Purchasing Departments to measure their suppliers’ cost structure, R&D Departments to confirm technological choices depending on their impact on costs, and Benchmarking/Marketing Departments to monitor the products on the market.

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**Scope of the Study**

- This report provides a **technology** and **patent infringement** risk analysis of the recent MEMS Microphones supplied by Knowles, STMicroelectronics/Omron, AAC Technologies/Infineon Technologies and InvenSense/Analog Devices.
- This report does not provide detailed claim charts and legal opinions regarding patent infringements. The risks of patent infringement highlighted in this report require more in-depth legal assessments to be confirmed.

**The comparative study is focused on following product features**

- **Process:** Diaphragm Structure, Anti-Sticking Bumps.
- **Design:** Acoustic Holes Shape, Transducer Number & Shape, Stress Relief.
- **Packaging:** Port Structure, Metal/PCB Housing, Embedded Capacitance, RF Protection.
MEMS microphone is a very fast growing market with more than 29% growth in units in 2013-2014, driven by smartphone growth. The mobile phone application dominates the market however tablet market seems very promising with fastest growing.

Knowles is the dominant player with 61% market shares in 2013 and 58% in 2014. A decrease is again expected in the next years with new challengers in the market:

- **InvenSense/(Analog Devices):** InvenSense acquired Analog Devices (ADI) MEMS Microphone business and released HD products recently.
- **AAC Technologies** is a fast Chinese growing company, that has cross licensing agreement with Knowles and acquired MEMSTECH.
- **Infineon Technologies** is the supplier of MEMS dies for most Knowles competitors and has lots of collaborations with Asian MEMS Microphone players.
- **STMicroelectronics** has collaboration with CEA-Leti on R&D projects and also with OMRON for MEMS Microphones.
- **OMRON** is looking at Infineon business model.

The global market share of these 6 players account for more than 80% of market share in 2014. These players are all developing innovative technical and manufacturing solutions, and, in parallel of course, the right patents to protect their inventions. **But what are the similarities and the differences in term of technical and manufacturing choices at the devices level and what is the related patent situation?**
Rationales for Choice (2/2)

This report highlight the risks of patent infringement between Knowles, STMicroelectronics, OMRON Technologies, Infineon Technologies and InvenSense/Analog Devices in the field of MEMS Microphone market. As the MEMS Microphone market is growing very fast, it is the right time now to understand what could happen between these companies and how to differentiate patents and claims compared to the other players.

The S1157, MP45DT01, SR595 and ICS-43432 are on the last MEMS Microphones from Knowles, STMicroelectronics/OMRON, AAC Technologies/Infineon Technologies and InvenSense/Analog Devices/ASE(*) respectively. These devices are contained in different type of applications such as smartphones and tablets. These devices contain an ASIC die and a MEMS die.

(*) Because of a doubt about the involvement of ASE in the package manufacturing of the ICS-43432 MEMS microphone, we have made the decision to not considered this player in this study.

According to similar features between the 4 selected MEMS microphones and revealed by the reverse engineering performed by System Plus Consulting, this report is focused on some aspects related to MEMS die and Packaging. No product features related to the ASIC die have been selected.
Key Features of the Report

- This report provides a deep insight on technology data and manufacturing processes (teardown analysis) of S1157, MP45DT01, SR595 and ICS-43432 components, and comparative studies of product features (similarities & differences).
- It provides patents related to the target product features and held by Knowles, STMicroelectronics, OMRON, AAC Technologies, Infineon Technologies and InvenSense/ADI.
- It provides discussions on the potential patent infringement risks by comparing relevant patent claim elements to the target product features and manufacturing processes.
- This report also provides an extensive Excel database with all patents analyzed in this study (240+ patent families comprising more than of 650 patents). This database allows multi-criteria searches:
  - Patent publication number
  - Hyperlinks to the original documents
  - Priority date
  - Title
  - Abstract
  - Patent Assignees
  - Legal status of the patent

Disclaimer: This report does not provide any insight analyses or counsel regarding legal aspects or the validity of any individual patent. Knowmade and System Plus Consulting are research firms that provide technical analysis and opinions. The research, technical analysis and/or work contained herein is not a legal opinion and should not be construed as such.
Objectives of the Report

• Provide an **overview of technology data and manufacturing process** of MEMS Microphone components S1157, MP45DT01, SR595 and ICS-43432 supplied by Knowles, STMicroelectronics/OMRON, AAC Technologies/Infineon Technologies and InvenSense/Analog Devices respectively.

• Find the technical and manufacturing process **similarities and differences** of S1157 (Knowles), MP45DT01 (STMicroelectronics/OMRON), SR595 (AAC/Infineon) and ICS-43432 (InvenSense/Analog Devices) MEMS Microphone components.

• Identify **key patents** held by Knowles, STMicroelectronics, OMRON, AAC Technologies, Infineon Technologies, InvenSense and Analog Devices, **and related to the target product features and manufacturing processes**.

• Find the **link between patented technological solutions and marketed products**.

• Identify the **potential infringing parties**, and help to find **evidence of use**.

• Identify **potential risks of patent infringement**, and identify the patents which require a more in depth legal assessment.
Methodology

Teardown Analysis
- Package is analyzed and measured.
- The dies are extracted in order to get overall data: dimensions, main blocks, pad number and pin out, die marking.
- Setup of the manufacturing process.

Comparative Study
- The similarities and differences of target of products are identified (product features and manufacturing processes).
- A set of product features and manufacturing processes is selected regarding their interest in terms of IP study.

Patent Search
- Patents are extracted from Questel-Orbit worldwide patent database by using keyword-based queries.
- The selection of relevant patents is done manually by expert review of the subject-matter of inventions.
- The patents are manually categorized regarding the selected product features.

Infringement Risks
- The links between the patented technologies and the target product features are established.
- The potential infringing parties of the target product are identified, and the potential risks of patent infringements are discussed.
Two XXXXX MEMS Microphones manufactured by Company A for consumer applications are contained in the iPhone 5S.

- **First Company A MEMS Microphone**
  - Front facing top microphone: presumably for FaceTime and speakerphone capabilities.
- **Second Company A MEMS Microphone**
  - Rear facing top microphone: partners up with the rear-facing camera for recording video, and is also used for canceling out background noise when on calls.

2 dies
- ✓ MEMS Microphone Ref. YYYY
- ✓ ASIC Microphone

MEMS die from Company A
- Packaging from Company A
- MEMS Microphone supplied by Company A
XXX (iPhone 5S)

2 dies
✓ MEMS Microphone Ref. YYYYY
✓ ASIC Microphone

XXX (iPhone 5S)
• MEMS die from Company A
• Packaging from Company A
• MEMS Microphone supplied by Company A

The XXX from Company A in iPhone 5S:

• Package:
The package structure is a bottom port with a bottom PCB port and metal cap that allows RF protection. Embedded capacitance is contained in the PCB portion.

• MEMS Microphone:
  • Process
  MEMS Microphone uses a floating diaphragm and only supported by posts at the edge of the backplate (Avant design floating structure). The diaphragm is under the backplate with an airgap of 4.65µm. Anti-sticking bumps are present under the diaphragm and under the backplate to prevent the diaphragm from sticking to the substrate/backplate.

  • Design
  MEMS Microphone contains 11, 12, or 13 circular impregnated capillary pipes in parallel. The acoustic holes in the backplate are of sound shape. A stress relief is present on the diaphragm on the backplate.
Note: iPhone 6

Latest Company A microphones integrated in iPhone 6 and 6 Plus use a very close MEMS design/manufacturing process/packaging. Therefore, the conclusion of the report should be the same by using this reference.
## MEMS Microphone Comparison: Process & Design

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<th>Company B</th>
<th>Company C</th>
<th>Company D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product 1</strong></td>
<td><strong>Product 2</strong></td>
<td><strong>Product 3</strong></td>
<td><strong>Product 4</strong></td>
</tr>
<tr>
<td>✓ Round shaped acoustic holes.</td>
<td>✓ 1 rectangular transducer with Corrugation of stress relief on the bottom.</td>
<td>✓ 1 circular transducer.</td>
<td>✓ 1 octagonal transducer with Corrugation of stress relief on the bottom.</td>
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<tr>
<td><img src="image1" alt="Company A Product 1" /></td>
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</tr>
</tbody>
</table>

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MEMS Microphone Comparison: Packaging

**Company 1**
- Botton port package.
- Botton PCB portion and metal cap that allows MP protection.
- Embedded capacitance is contained in the PCB portion.

**Company 2**
- Trip point package.
- PCB top and bottom portions, and overallded cavity that allows MP protection.
- Absence of embedded capacitance in the PCB substrate.

**Company 3**
- BOTTOM port package.
- BOTTOM PCB portion and metal cap that allows MP protection.
- Embedded capacitance contained in the PCB portion.

**Company 4**
- Bottom port package.
- BOTTOM PCB portion and metal cap that allows MP protection.
- Absence of embedded capacitance in the PCB substrate.
| MEMS micro & Patents | Product Features | Company A | Identified | Company B | Identified | Company C | Identified | Company D | Identified |
|----------------------|-----------------|----------|------------|----------|------------|----------|------------|----------|----------|------------|
|                      |                 | Product A | patents     | Product B | patents     | Product C | patents     | Product D | patents   |
| Pressure             | Changing Repetition | ✔️        | 6 relevant patent families | ✔️        | 1 relevant patent family | ✔️        |            | ✔️        |          |
| Pressure             | Repetition of Applicating Stress | ✔️        | 1 related patent family | ✔️        |            | ✔️        |            | ✔️        | 3 relevant patent families |
| Design               | Uncommon Acoustic | ✔️        | Round Shape | ✔️        | Round Shape | ✔️        |            | ✔️        |          |
|                      | Holes Shape     | ▼         |             |           |            |          |            |           |          |
| Design               | Uncommon Frequency | ✔️        | 1 relevant patent family | ✔️        |            | ✔️        | 1 related patent family | ✔️        |          |
|                      | Resonant and Shape | ▼         |             |           |            |          |            |           |          |
| Design               | Resonance of Dynamic | ✔️        | 1 relevant patent family on resonance | ✔️        |            | ✔️        |            | ✔️        |          |
|                      |                | ▼         |             |           |            |          |            |           |          |
Embedded Capacitance in PCB

Patent Identification

TEARDOWN

**Product 1**
- **Design:** Company 1
- **Packaging:** Company 2

The embedded capacitance in the PCB is integrated in the middle of the PCB. The potential capacitance values have been measured and are within the expected range. The capacitance values are crucial for the overall performance of the PCB.

**Package Cross-Section Overview – SEM View**

**PCB Cross-Section – SEM View**

IDENTIFIED PATENT FAMILIES

No Relevant Patent Family on Embedded Capacitance

**Related Patent Families**

**EXAMPLE PATENT** (2014)
- Description:
- Diagram:

**EXAMPLE PATENT** (2007)
- Description:
- Diagram:

```
246 offers many benefits, for example, improved electrical performance, increased packaging density, improved reliability and potential cost reduction.
```

**EXAMPLE PATENT** (2004)
- Description:
- Diagram:
Acoustic Holes Shape & Distribution

Product 1

**Design:** Company 1
**Packaging:** Company 2

Acoustic holes are in hexagonal shape.

**Backplate Overview – SEM View**

**MEMS Backplate – Bottom SEM View**
**Backplate Holes (Hex) – SEM View**

**RELEVANT PATENT FAMILIES**

**Identified Patent Families**

**Relevant Patent Families**

- **[Image](image-url) (2014)**
  - **Infravuo Technologies**
  - The back plate and housing hexagonal structure having a plurality of hexagonal cells.

- **[Image](image-url)**
  - The acoustic holes consist of multiple small holes assumed of polygon, hexagon or circular shape.
Product 1
Design: Company A
Packaging: Company B

The MEMS microphone is constituted with 1 transducer of rectangular shape with 4 corners.

MEMS Die Overview

IDENTIFIED PATENT FAMILIES

No Relevant Patent Family on the transducer configuration used by Company A or B.

Related Patent Family

The vibrating membrane 22 of the acoustic sensor 11 of this embodiment has a base portion shaped

This configuration allows
In this technology and patent infringement risk analysis, we have chosen the 3 following levels for characterizing the potential risk of patent infringement.

- **Unlikely infringement**: Not any elements of the patent’s claims match with the product features being investigated.
- **Likely infringement**: At least one element of the patent’s claims partly matches with the product features being investigated.
- **Highly likely infringement**: At least one element of the patent’s claims is demonstrably present in the product being investigated.
Anti-sticking bumps

Patent Infringement Risk

Company A

Product X

Highly likely infringement

Company B

Granted patent: [Redacted]
Pending patents: [Redacted]

Scope of the secondary claims:
Forming a plurality of bumps over the component bumps, and forming a back plate layer over the plurality of bumps.

Company C

Granted patents: [Redacted]
Pending patent: [Redacted]

Scope of the main claim:
An acoustic sensor comprising: a plurality of types of bumps; and at least one of the component bumps, and the back plate layer.

Highly likely infringement
Anti-sticking bumps

Patent Infringement Risk

Company A

*Product 1*

Company B

*Intellectual Property (IP) rights*

- According to **System Plus**, the ______ component supplied by **Company A** is composed of anti-sticking bumps present ______ to prevent the diaphragm from sticking to the substrate/backplate.

- From **Knowmade** point of view, these anti-sticking bumps ______ used in the ______ component highly likely infringe valid and enforceable patent ______ held by **Company B** and might infringe pending patent applications ______. Indeed, **Company B**’ patents claim ______.
Stress Relief
Patent Infringement Risk

Company A

Product X

The edges of the membrane include corrugations (like waves). The corrugations allow to relieve

Intellectual Property (IP) rights

Company B

Pending patents:

Scope of the main claim:
A microphone comprising: a microphone periphery area comprises

For corrugated membranes, significantly more sensitivity can be
Stress Relief

Patent Infringement Risk

Company A

Product X

Likely infringement

Company B

Intellectual Property (IP) rights

• According to System Plus, the XXXXX component supplied by Company A contains corrugations on the membrane that allow to [insert description].

• From Knowmade point of view, these membrane corrugations used in the XXXXX component might infringe pending patent applications filed by Company B. Indeed, Company B’ patents claim presence of [insert specific details of the patents]. The legal status of Company B’ patents should be kept under surveillance. So, the presence of corrugations provide [insert advantages, including less cited suggestions]. Besides, the use of corrugations might [insert potential advantages in terms of the product].
# Summary of Patent Infringement Risks

**Potential risk of patent infringement:** Unlikely patent infringement / Likely patent infringement / Highly likely patent infringement

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Excel Patent Database
with all patents analyzed in the report

More than 240 patent families composed of more than 650 patents. This database allows multi-criteria searches and includes patent publication number, hyperlinks to the original documents, priority date, title, abstract, patent assignees, legal status for each member of the patent family.

<table>
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ORDER FORM
MEMS Microphone - April 2015
Technology and Patent Infringement Risk Analysis
Knowles - STMicroelectronics - OMRON - AAC Technologies - Infineon Technologies - InvenSense - Analog Devices

SHIP TO
Name (Mr/Ms/Dr/Pr):
Job Title:
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Address:
City:
State:
Postcode/Zip:
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VAT ID Number for EU members:

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To pay your invoice using a check, please mail your check to the following address:
KnowMade S.A.R.L.
2405 route des Dolines, BP 65
06902 Valbonne Sophia Antipolis
FRANCE

Bank Transfer
To pay your invoice using a bank money wire transfer please contact your bank to complete this process. Here is the information that you will need to submit the payment:
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Bank: Banque populaire St Laurent du Var CAP 3000 - Quartier du lac- 06700 St Laurent du Var
IBAN: FR76 1560 7000 6360 6214 5695 126
BIC/SWIFT: CCBPFRPPNCE

Paypal
In order to pay your invoice via PAYPAL, you must first register at www.paypal.com. Then you can send money to the KnowMade S.A.R.L. by entering our E-mail address contact@knowmade.fr as the recipient and entering the invoice amount.

RETURN ORDER BY
E-mail: contact@knowmade.fr
Mail: KnowMade S.A.R.L. 2405 route des Dolines, 06902 Sophia Antipolis, FRANCE

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☐ Bundle with Knowmade and/or System Plus Consulting other related reports (contact us)

For price in dollars, please use the day’s exchange rate.
For French customer, add 20% for VAT.
All reports are delivered electronically in pdf format at payment reception.

I hereby accept Knowmade’s Terms and Conditions of Sale
Signature:
Terms and Conditions of Sales

Definitions
“Acceptance”: Action by which the Buyer accepts the terms and conditions of sale in their entirety. It is done by signing the purchase order which mentions “I hereby accept Knowmade’s Terms and Conditions of Sale”.
“Buyer”: Any business user (i.e. any person acting in the course of its business activities, for its business needs) entering into the following general conditions to the exclusion of consumers acting in their personal interests.
“Contracting Parties” or “Parties”: The Seller on the one hand and the Buyer on the other hand.
“Intellectual Property Rights” (“IPR”) means any rights held by the Seller in its Products, including any patents, trademarks, registered models, designs, copyrights, inventions, commercial secrets and know-how, technical information, company or trading names and any other intellectual property rights or similar in any part of the world, notwithstanding the fact that they have been registered or not and including any pending registration of one of the above mentioned rights.
“License”: For the reports and databases, 2 different licenses are proposed. The buyer has to choose one license:
1. One user license: a single individual at the company can use the report.
2. Multi user license: the report can be used by unlimited users within the company. Subsidiaries are not included.
“Products”: Reports are established in PowerPoint and delivered on a PDF format and the database may include Excel files.
“Seller”: Based in Sophia Antipolis (France headquarters), Knowmade is a technology intelligence company specialized in the research and analysis of scientific and technical information. We provide patent landscapes and scientific state of the art with high added value to businesses and research laboratories. Our intelligence digests play a key role to define your innovation and development strategy.

1. Scope
1.1 The Contracting Parties undertake to observe the following general conditions when agreed by the Buyer and the Seller. ANY ADDITIONAL, DIFFERENT, OR CONFLICTING TERMS AND CONDITIONS IN ANY OTHER DOCUMENTS ISSUED BY THE BUYER AT ANY TIME ARE HEREBY OBJECTED TO BY THE SELLER, SHALL BE WHOLLY INAPPLICABLE TO ANY SALE MADE HERUNDER AND SHALL NOT BE BINDING IN ANY WAY ON THE SELLER.
1.2 This agreement becomes valid and enforceable between the Contracting Parties after clear and non-equivocal consent by any duly authorized person representing the Buyer. For these purposes, the Buyer accepts these conditions of sales when signing the purchase order which mentions “I hereby accept Knowmade’s Terms and Conditions of Sale”. This results in acceptance by the Buyer.
1.3 Orders are deemed to be accepted only upon written acceptance and confirmation by the Seller, within [7 days] from the date of order, to be sent either by email or to the Buyer’s address. In the absence of any confirmation in writing, orders shall be deemed to have been accepted.

2. Mailing of the Products
2.1 Products are sent by email to the Buyer:
- within [1] month from the order for Products already released; or
- within a reasonable time for Products ordered prior to their effective release. In this case, the Seller shall use its best endeavours to inform the Buyer of an indicative release date and the evolution of the work in progress.
2.2 Some weeks prior to the release date the Seller can propose a pre-release discount to the Buyer. The Seller shall by no means be responsible for any delay in respect of article 2.2 above, and including in cases where a new event or access to new contradictory information would require for the analyst extra time to compute or compare the data in order to enable the Seller to deliver a high quality Products.
2.3 The mailing of the Product will occur only upon payment by the Buyer, in accordance with the conditions contained in article 3.
2.4 The mailing is operated through electronic means either by email via the sales department. If the Product’s electronic delivery format is defective, the Seller undertakes to replace it at no charge to the Buyer provided that it is informed of the defective formatting within 90 days from the date of the original downland or receipt of the Product.
2.5 The person receiving the Products on behalf of the Buyer shall immediately verify the quality of the Products and their conformity to the order. Any claim for apparent defects or for non-conformity shall be sent in writing to the Seller within 8 days of receipt of the Products. For this purpose, the Buyer agrees to produce sufficient evidence of such defects.
2.6 No return of Products shall be accepted without prior information to the Seller, even in case of delayed delivery. Any Product returned to the Seller without providing prior information to the Seller as required under article 2.5 shall remain at the Buyer’s risk.
Terms and Conditions of Sales

3. Price, invoicing and payment
3.1 Prices are given in the orders corresponding to each Product sold on a unit basis or corresponding to annual subscriptions. They are expressed to be inclusive of all taxes. The prices may be reevaluated from time to time. The effective price is deemed to be the one applicable at the time of the order.
3.2 Payments due by the Buyer shall be sent by cheque payable to Knowmade, PayPal or by electronic transfer to the following account:
Banque populaire St Laurent du Var CAP 3000 - Quartier du lac- 06700 St Laurent du Var
BIC or SWIFT code: CCBFRPPNCE
IBAN: FR76 1560 7000 6360 6214 5695 126
To ensure the payments, the Seller reserves the right to request down payments from the Buyer. In this case, the need of down payments will be mentioned on the order.
3.3 Payment is due by the Buyer to the Seller within 30 days from invoice date, except in the case of a particular written agreement. If the Buyer fails to pay within this time and fails to contact the Seller, the latter shall be entitled to invoice interest in arrears based on the annual rate Refi of the «BCE» + 7 points, in accordance with article L. 441-6 of the French Commercial Code. Our publications (report, database, tool,...) are delivered only after receipt of the payment.
3.4 In the event of termination of the contract, or of misconduct, during the contract, the Seller will have the right to invoice at the stage in progress, and to take legal action for damages.

4. Liabilities
4.1 The Buyer or any other individual or legal person acting on its behalf, being a business user buying the Products for its business activities, shall be solely responsible for choosing the Products and for the use and interpretations he makes of the documents it purchases, of the results he obtains, and of the advice and acts it deduces thereof.
4.2 The Seller shall only be liable for (i) direct and (ii) foreseeable pecuniary loss, caused by the Products or arising from a material breach of this agreement
4.3 In no event shall the Seller be liable for:
a) damages of any kind, including without limitation, incidental or consequential damages (including, but not limited to, damages for loss of profits, business interruption and loss of programs or information) arising out of the use of or inability to use the Seller’s website or the Products, or any information provided on the website, or in the Products;
b) any claim attributable to errors, omissions or other inaccuracies in the Product or interpretations thereof.
4.4 All the information contained in the Products has been obtained from sources believed to be reliable. The Seller does not warrant the accuracy, completeness adequacy or reliability of such information, which cannot be guaranteed to be free from errors.
4.5 All the Products that the Seller sells may, upon prior notice to the Buyer from time to time be modified by or substituted with similar Products meeting the needs of the Buyer. This modification shall not lead to the liability of the Seller, provided that the Seller ensures the substituted Product is similar to the Product initially ordered.
4.6 In the case where, after inspection, it is acknowledged that the Products contain defects, the Seller undertakes to replace the defective products as far as the supplies allow and without indemnities or compensation of any kind for labor costs, delays, loss caused or any other reason. The replacement is guaranteed for a maximum of two months starting from the delivery date. Any replacement is excluded for any event as set out in article 5 below.
4.7 The deadlines that the Seller is asked to state for the mailing of the Products are given for information only and are not guaranteed. If such deadlines are not met, it shall not lead to any damages or cancellation of the orders, except for non-acceptable delays exceeding 4 months from the stated deadline, without information from the Seller. In such case only, the Buyer shall be entitled to ask for a reimbursement of its first down payment to the exclusion of any further damages.
4.8 The Seller does not make any warranties, express or implied, including, without limitation, those of saleability and fitness for a particular purpose, with respect to the Products. Although the Seller shall take reasonable steps to screen Products for infection of viruses, worms, Trojan horses or other codes containing contaminating or destructive properties before making the Products available, the Seller cannot guarantee that any Product will be free from infection.

5. Force majeure
The Seller shall not be liable for any delay in performance directly or indirectly caused by or resulting from acts of nature, fire, flood, accident, riot, war, government intervention, embargoes, strikes, labor difficulties, equipment failure, late deliveries by suppliers or other difficulties which are beyond the control, and not the fault of the Seller.
6. Protection of the Seller’s IPR
6.1 All the IPR attached to the Products are and remain the property of the Seller and are protected under French and international copyright law and conventions.
6.2 The Buyer agreed not to disclose, copy, reproduce, redistribute, resell or publish the Product, or any part of it to any other party other than employees of its company. The Buyer shall have the right to use the Products solely for its own internal information purposes. In particular, the Buyer shall therefore not use the Product for purposes such as:
   - Information storage and retrieval systems;
   - Recordings and re-transmittals over any network (including any local area network);
   - use in any timesharing, service bureau, bulletin board or similar arrangement or public display;
   - Posting any Product to any other online service (including bulletin boards or the Internet);
   - Licensing, leasing, selling, offering for sale or assigning the Product.
6.3 The Buyer shall be solely responsible towards the Seller of all infringements of this obligation, whether this infringement comes from its employees or any person to whom the Buyer has sent the Products and shall personally take care of any related proceedings, and the Buyer shall bear related financial consequences in their entirety.
6.4 The Buyer shall define within its company point of contact for the needs of the contract. This person will be the recipient of each new report in PDF format. This person shall also be responsible for respect of the copyrights and will guaranty that the Products are not disseminated out of the company.

7. Termination
7.1 If the Buyer cancels the order in whole or in part or postpones the date of mailing, the Buyer shall indemnify the Seller for the entire costs that have been incurred as at the date of notification by the Buyer of such delay or cancellation. This may also apply for any other direct or indirect consequential loss that may be borne by the Seller, following this decision.
7.2 In the event of breach by one Party under these conditions or the order, the non-breaching Party may send a notification to the other by recorded delivery letter upon which, after a period of thirty (30) days without solving the problem, the non-breaching Party shall be entitled to terminate all the pending orders, without being liable for any compensation.

8. Miscellaneous
All the provisions of these Terms and Conditions are for the benefit of the Seller itself, but also for its licensors, employees and agents. Each of them is entitled to assert and enforce those provisions against the Buyer.
Any notices under these Terms and Conditions shall be given in writing. They shall be effective upon receipt by the other Party.
The Seller may, from time to time, update these Terms and Conditions and the Buyer, is deemed to have accepted the latest version of these terms and conditions, provided they have been communicated to him in due time.

9. Governing law and jurisdiction
9.1 Any dispute arising out or linked to these Terms and Conditions or to any contract (orders) entered into in application of these Terms and Conditions shall be settled by the French Commercial Courts of Grasse, which shall have exclusive jurisdiction upon such issues.
9.2 French law shall govern the relation between the Buyer and the Seller, in accordance with these Terms and Conditions.