5G'S IMPACT ON RF FRONT-END MODULE AND CONNECTIVITY FOR CELL PHONES 2018

Market & Technology report - July 2018

How is 5G enabling new business opportunities despite flat mobile growth?

KEY FEATURES

- Market forecast 2017 - 2023, including revenue, players, and volumes
- Current 5G characteristics and future outlook, including carrier aggregation, MIMO, dual connectivity, and new wave form
- Roadmap for technology evolution and future developments
- RF front-end - industry strategy
- Back to basics - a detailed description of RF device functions and their challenges/key characteristics

WHAT'S NEW

- Wi-Fi connectivity market forecast 2017 - 2023
- Mm-wave front-end module market forecast 2017 - 2023

OBJECTIVES OF THE REPORT

- Ecosystem identification and analysis:
  - > Determine market dynamics
  - > Technical market description
  - > Economic requirements, by segment
  - > Key players, by market and analysis
  - > Market size and market forecast in $M and Munits
- Analysis and description of market and technologies involved:
  - > Major players worldwide
  - > Technology identification for different devices and processes
  - > Competing technologies
  - > Main technical challenges
  - > Future direction

5G - WHO HAS THE MOST TO WIN (AND LOSE)?

5G will totally redefine how the radio frequency (RF) front-end interacts in-between the network and the modem. Indeed, new radio frequency bands, sub-6 GHz, and mm-wave (as defined in 3GPP release 15) pose big challenges for the industry. However, with these challenges comes opportunity to disrupt the market's leadership.

On the sub-6 GHz side, the current front-end leaders (Broadcom, Qorvo, Skyworks, and Murata) have already begun adapting to these changes. Broadcom prepared for the arrival of 5G ultra-high band by integrating mid and high bands together. And with its FBAR BAW filter technology, Broadcom also owns the main critical building block for the high and ultra-high frequency bands.

Skyworks is positioned on the 5G ultra-high band market with its newly announced Sky5TM platform. Moreover, the company has already earned some design wins in the high-end segment with its SkyOneR LiTE platform, in addition to the low-end segment with its leading position among Chinese OEMs (Huawei, Oppo, Vivo, Xiaomi).

Qorvo has a similar approach, with a broad product portfolio covering the high-end and low-end segments with its RF FusionTM and RF FlexTM platforms, respectively. Another Qorvo strength is its internal test and packaging capability, which enable quick reaction time and continuous improvement. Notably, Qorvo was the first player to unveil a front-end module for ultra-high band coverage.

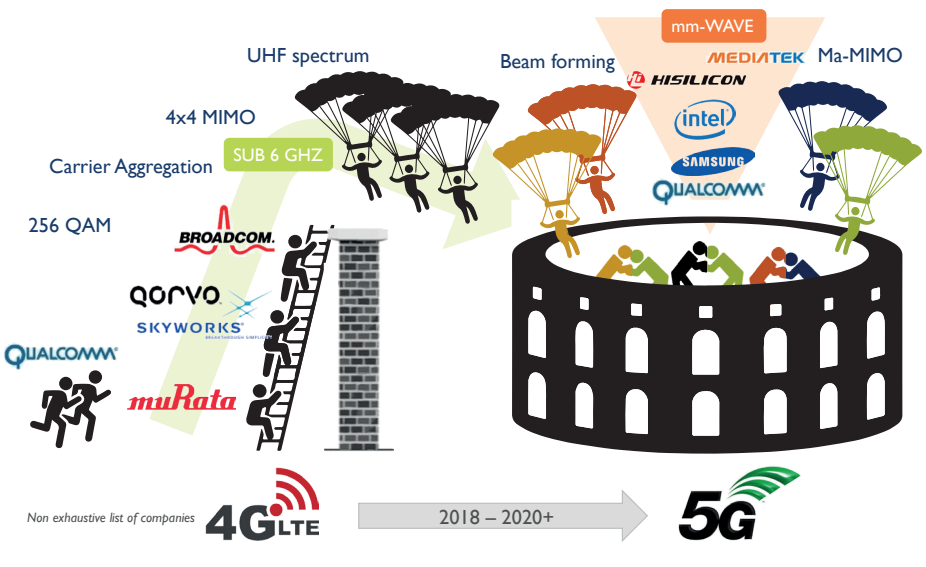
Murata mostly covers the low band, but is very well positioned for the growing, diversity module market.

Qualcomm is the new entrant that brings with it an end-to-end solution from modem to antenna. Also, strategic investment in TDK Epcos' filtering technology has become profitable. The first revenue was generated in the RF front-end segment during 2017. We can expect further revenue to come in the near future. A first mobile phone (i.e. Sony's XZ2) already adopted Qualcomm's complete solution.

Along with sub-6 GHz, the mm-wave front-end module will completely disrupt the front-end industry, representing a completely different technology mindset that could create a new path to high data-rate access. While Qualcomm is one of the new entrants clearly positioned for mm-wave technology, all of the top platform providers (i.e. Intel, Samsung, HiSilicon, and Mediatek) are exploring this new business opportunity.

The sub-6 GHz radio band will always be required for radio coverage and link integrity, but complexity could drop in the sub-6 GHz regime with mm-wave technology's arrival, especially in dense urban areas when the mm-wave network is deployed. The mud fight has already begun.

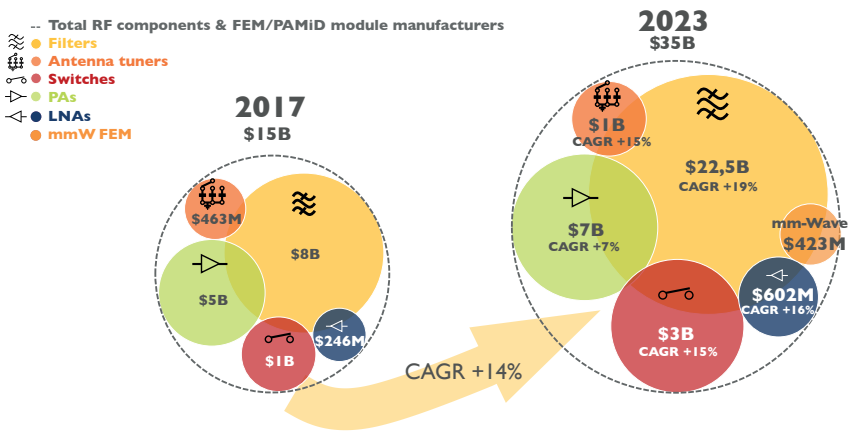
From the lte race to the 5G mud fight



(Yole Développement, July 2018)

5G OFFERS A BIGGER MARKET OPPORTUNITY TO THE RF FRONT-END INDUSTRY…

The mobile handset RF front-end market, along with the WiFi connectivity sector, is expected to reach $35.2B in 2023 at a CAGR of 14%. LTE evolution clearly is the first growth wave (as we stated in our 2017 report), but most of the market opportunities in the mid-term will come from 5G non-stand-alone (NSA) radio, which became prevalent in late December 2017 (as defined in 3GPP during release 15). The need for dual connectivity (i.e. the 5G new radio (NR) band attachment to the LTE) implies evolution on RF front-end architecture and additional components.



(Yole Développement, July 2018)

Not all components will exhibit equal market growth. Filters, which represent the RF front-end industry's biggest market segment, will almost triple from 2017 - 2023. This growth will come mainly from the significant penetration rate of high-quality BAW filters, which will be required for the ultra-high frequency range defined by 5G NR. Another example is co-existence filters for diversity antenna-sharing with Wi-Fi, since rejection band will be critical.

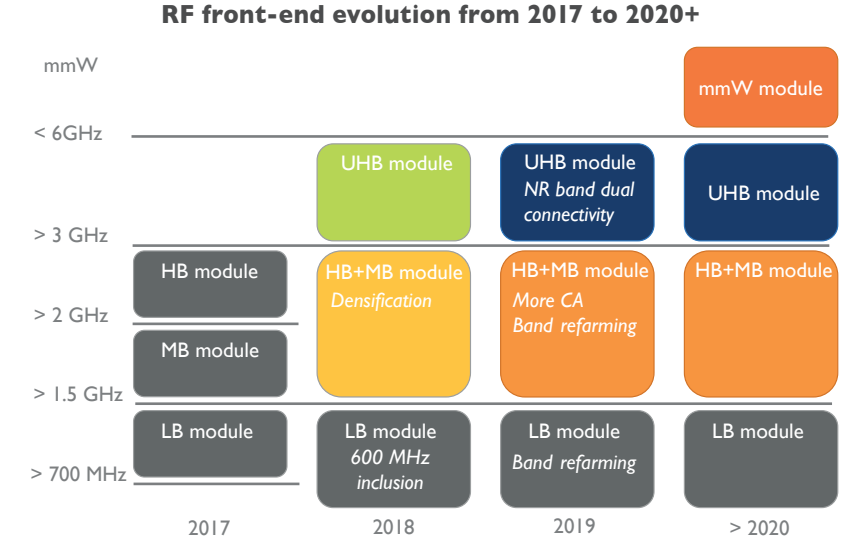
The LNA market is expected to grow at a 16% CAGR with the implementation of the diversity module, along with integration in power amplifier modules for handsets. The switch market will enjoy the same growth due to the addition of a new RF path with 4x4 MIMO implementation, which will lead to more diversity switch needs.

The antenna tuner market is also expected to record significant growth with 4X4 MIMO technology's penetration. It is worth noting that 4x4 MIMO will be mandatory for 5G.

Power amplifier (PA) will be the sole market to remain almost flat over this period. High-end LTE PA market growth, especially in high and ultra-high band, will compensate for the 2G/3G market's shrinkage (currently, this market is handled by multi-mode multi band (MMMB) PA).

…BUT COMPLEXITY FOR THE RF FRONT-END SHOULD BE EXPECTED TOO

LTE evolution has led to complex architecture in today's mobile phones, mostly due to carrier aggregation. Meanwhile, RF's board area and available antenna space have been reduced, leading to a densification trend with more handset OEMs adopting power amplifier modules and implementing new technics, i.e. antenna-sharing between LTE and WiFi. In the low-frequency band, the inclusion of the 600 MHz band (for which T-Mobile recently acquired licenses) will pose new challenges for low-band antenna design and antenna tuners.



(Yole Développement, July 2018)

5G will add even more complexity, with new radio bands released in ultra-high frequencies (N77, N78, N79). This first field is being addressed by Skyworks and Qorvo via a new product release, as explained in this flyer's first section. Band re-farming (early bands are N41, N71, N28, N66, with more to come) with dual connectivity will also contribute to increasing constraint for the front-end. More densification in front-end modules will be required to enable new band integration, which is the approach followed by Broadcom with its innovative mid/high band module.

Another new 5G requirement will be 4x4 MIMO implementation, which will turn from a "nice to have" luxury on LTE high-end mobile phones to a "must-have" for every 5G handset. This will add a significant amount of RF streams in the handset, and combined with carrier aggregation requirements will lead to more complex specifications for antenna tuners and multiplexers.

Last but not least is the implementation of the mm-wave module into the handset - a topic that poses many challenges, ranging from antenna array integration (taking into account radiating efficiency and hand-blockage effects) to power amplifier efficiency, since antenna gain cannot be too high given the low number of antenna array elements allowable in the handset format. While still at the R&D level, great progress

has been made on these mm-wave front-end silicon-based platforms, demonstrating record power efficiency and noise level improvement. Bulk CMOS is preferred by Qualcomm, with TSMC's 28nm platform. Other possible platforms include SiGe and RFSOI, for example with GLOBALFOUNDRIES' capability.

With this new mm-wave connectivity for cell phones, we are entering an exciting new era of technology competition and breakthrough performance. This will seriously impact RF front-end's bill of materials, and could be useful for reducing overall connectivity cost. Who then will be the first OEM to implement this technology when it's ready? Could it be Chinese OEMs like Huawei and Vivo, with their strong market dynamics and appetite for differentiation/ competition with market leaders like Apple and Samsung? Or will it be the current leaders, who are always first to innovate?

For this latest chapter, let's not forget that Samsung has always been very keen to utilize innovative connectivity solutions: for example, they were the first to implement 4x4 MIMO solutions (on the S7 in 2016).

Get ready to place your bets!

COMPANIES CITED IN THE REPORT (non exhaustive list)

AIROHA, Akoustis, Alcatel, Alcatel-Lucent, Analog Devices Inc. (Hittite), Amazon, Amkor, Apple, ASE Group, ASUS, AT&T, BLU, Broadcom Ltd. (Avago Technologies, Javelin Semiconductor), Brocade, Cavendish Kinetics, Cisco, China Mobile, China Telecom, China Unicom, Coolpad, DelfMEMS, Ericsson, Fujitsu, GLOBALFOUNDRIES, Gartner, Gionee, Google, Facebook, HTC, Huawei (HiSilicon), Infineon, Intel, IPDIA, JCET/STATS ChipPAC, KDDI, KT, Kyocera, Lava, Lenovo, LG, LG U+, MACOM, Marvell, Maxim Integrated, Mediatek, Microsoft, Mitsubishi Electric, Motorola, Murata Manufacturing Company, Nokia, NEC, NTT Docomo, NXP Semiconductors (Freescale), OMMIC, OnePlus, OPPO, Orange, Panasonic, Peregrine Semiconductor/Murata, Primatec, Qorvo (RFMD, Triquint), Qualcomm (RF360), Quantenna, RDA, Realtek, Resonant, Samsung, SKT, Skyworks Solutions Inc. (RFaxis), SoftBank, Soitec, Sony Semiconductor, Sprint, STMicroelectronics, Taiyo Yuden Company Ltd., TDK-EPC (EPCOS), TCL, Telefonica, Telia, Telstra, Towerjazz, TPSCO, TSMC, T-Mobile, USI, UMC, Verizon, Verykool, Vivo, Vodafone, Win Semiconductors Corp., Wilocity, WIPAM, Wisol, WiSpry, Xiaomi, ZTE, and more

TABLE OF CONTENTS (complete content on i-Micronews.com)

RELATED REPORTS

Benefit from our Bundle & Annual Subscription offers and access our analyses at the best available price and with great advantages

- Advanced RF SiP for Cellphone 2017
- Broadcom AFEM-8072
- RF Front End Modules for Cellphones - Patent Landscape Analysis
- RF Acoustic Wave Filters Patent Landscape Analysis

Find all our reports on **www.i-micronews.com**

AUTHORS

As a Technology & Market Analyst, specialized in RF devices & technologies iwithin the Power & Wireless division at Yole Développement (Yole), **Cédric Malaquin** is involved in the development of technology & market reports as well as the production of custom consulting projects. Prior his mission at Yole, Cédric served Soitec. He deeply contributed to FDSOI and RFSOI products characterization. He has also authored or co-authored three patents and five international publications in the semiconductor field. Cédric graduated from Polytech Lille (France) with an engineering degree in microelectronics and material sciences.

Claire Troadec is Director of the Power & Wireless Division at Yole Développement (Yole), part of Yole Group of Companies. These activities are covering power electronics, batteries & energy management, compound semiconductors and emerging materials and RF electronics. Daily interactions with leading companies allow these analysts to collect a large amount of data and cross their vision of market segments' evolution and technology breakthroughs. Prior Yole, she joined NXP Semiconductors and worked for 7 years at the IMEC R&D facility. Claire Troadec holds a Master's degree in Applied Physics specializing in Microelectronics from INSA (Rennes, France).

LINKED REPORT

RF Front-End Module Comparison 2018 - Structural, Process and Cost Report by SystemPlus Consulting

Extensive overview of 40 RF Front-End modules and components found in 10 flagship products, including the Apple Watch Series 3, iPhone 8 and X, Samsung Galaxy S8, Huawei P10, Asus Zenfone4 Pro, Sony XZs and Xiaomi Mi6.

Bundle offer possible, contact us for more information.

Find more details about this report here:

ORDER FORM

5G's Impact on RF Front-End Module and Connectivity for Cell Phones 2018

BILL TO

Name (Mr/Ms/Dr/Pr):

Job Title:

Company:

Address:

City:

State:

Postcode/Zip:

Country*:

*VAT ID Number for EU members:

Tel:

Email:

Date:

PAYMENT

BY CREDIT CARD

◯ Visa ◯ Mastercard ◯ Amex

Name of the Card Holder:

Credit Card Number:

☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

Card Verification Value (3 digits except AMEX: 4 digits):

Expiration date: ☐☐ / ☐☐

BY BANK TRANSFER

BANK INFO: HSBC, 1 place de la Bourse,
F-69002 Lyon, France,
Bank code: 30056, Branch code: 00170
Account No: 0170 200 1565 87,
SWIFT or BIC code: CCFRFRPP,
IBAN: FR76 3005 6001 7001 7020 0156 587

RETURN ORDER BY

- FAX: +33 (0)472 83 01 83
- MAIL: YOLE DÉVELOPPEMENT, Le Quartz, 75 Cours Emile Zola, 69100 Villeurbanne/Lyon - France

SALES CONTACTS

- **Western US & Canada - Steve Laferriere:** **+ 1 310 600-8267** – laferriere@yole.fr
- **Eastern US & Canada - Troy Blanchette:** +1 704 859 0453 – troy.blanchette@yole.fr
- **Europe & RoW - Lizzie Levenez:** + 49 15 123 544 182 – levenez@yole.fr
- **Japan & Rest of Asia - Takashi Onozawa:** **+81 34405-9204**– onozawa@yole.fr
- **Greater China - Mavis Wang:** +886 979 336 809 – wang@yole.fr
- **Specific inquiries:** +33 472 830 180 – info@yole.fr

PRODUCT ORDER - Ref YD18026

Please enter my order for above named report:

☐ **One user license*: Euro 5,990**

☐ **Multi user license: Euro 6,490**

- The report will be ready for delivery from July 11, 2018
- For price in dollars, please use the day's exchange rate. All reports are delivered electronically at payment reception. For French customers, add 20% for VAT

I hereby accept Yole Développement's Terms and Conditions of Sale[1]

Signature:

**One user license means only one person at the company can use the report.*

[1] *Our Terms and Conditions of Sale are available at* ***www.yole.fr/Terms_and_Conditions_of_Sale.aspx***
The present document is valid 24 months after its publishing date: July 5, 2018

SHIPPING CONTACT

First Name: Last Name:

Email: Phone:

ABOUT YOLE DEVELOPPEMENT

Founded in 1998, Yole Développement has grown to become a group of companies providing marketing, technology and strategy consulting, media and corporate finance services, reverse engineering and reverse costing services and well as IP and patent analysis. With a strong focus on emerging applications using silicon and/or micro manufacturing, the Yole group of companies has expanded to include more than 80 collaborators worldwide covering MEMS and image sensors, Compound Semiconductors, RF Electronics, Solid-state lighting, Displays, Software, Optoelectronics, Microfluidics & Medical, Advanced Packaging, Manufacturing, Nanomaterials, Power Electronics and Batteries & Energy Management.
The "More than Moore" market research, technology and strategy consulting company Yole Développement, along with its partners System Plus Consulting, PISEO and KnowMade, support industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to grow their business.

CONSULTING AND ANALYSIS

- Market data & research, marketing analysis
- Technology analysis
- Strategy consulting
- Reverse engineering & costing
- Patent analysis
- Design and characterization of innovative optical systems
- Financial services (due diligence, M&A with our partner)

More information on www.yole.fr

MEDIA & EVENTS

- i-Micronews.com website & related @Micronews e-newsletter
- Communication & webcast services
- Events: TechDays, forums…

More information on www.i-Micronews.com

REPORTS

- Market & technology reports
- Patent investigation and patent infringement risk analysis
- Teardowns & reverse costing analysis
- Cost simulation tool

More information on www.i-micronews.com/reports

CONTACTS

For more information about :

- Consulting & Financial Services: Jean-Christophe Eloy (eloy@yole.fr)
- Reports: David Jourdan (jourdan@yole.fr) Yole Group of Companies
- Press Relations & Corporate Communication: Sandrine Leroy (leroy@yole.fr)

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 Yole'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, 3 different licenses are proposed. The buyer has to choose one license:

- One user license: one person at the company can use the report.
- Multi-user license: the report can be used by unlimited users within the company. Subsidiaries and Joint-Ventures are not included.
- Corporate license: purchased under "Annual Subscription" program, the report can be used by unlimited users within the company. Joint-Ventures are not included.

"Products": Depending on the purchase order, reports or database on MEMS, CSC, Optics/MOEMS, Nano, bio… to be bought either on a unit basis or as an annual subscription. (i.e. subscription for a period of 12 calendar months). The annual subscription to a package (i.e. a global discount based on the number of reports that the Buyer orders or accesses via the service, a global search service on line on I-micronews and a consulting approach), is defined in the order. Reports are established in PowerPoint and delivered on a PDF format and the database may include Excel files.

"Seller": Based in Lyon (France headquarters), Yole Développement is a market research and business development consultancy company, facilitating market access for advanced technology industrial projects. With more than 20 market analysts, Yole works worldwide with the key industrial companies, R&D institutes and investors to help them understand the markets and technology trends.

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 HEREUNDER 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 Yole'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 incases 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 or automatically online via an email/password. 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 download 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.

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 Yole may offer a pre release discount for the companies willing to acquire in the future the specific report and agreeing on the fact that the report may be release later than the anticipated release date. In exchange to this uncertainty, the company will get a discount that can vary from 15% to 10%.

3.3 Payments due by the Buyer shall be sent by cheque payable to Yole Développement, credit card or by electronic transfer to the following account:
HSBC, 1 place de la Bourse 69002 Lyon France
Bank code: 30056
Branch code: 00170
Account n°: 0170 200 1565 87
BIC or SWIFT code: CCFRFRPP
IBAN: FR76 3005 6001 7001 7020 0156 587

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.

3.4 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 reception of the payment.

3.5 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 sale ability 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.

6.5 In the context of annual subscriptions, the person of contact shall decide who within the Buyer, shall be entitled to access on line the reports on I-micronews.com. In this respect, the Seller will give the Buyer a maximum of 10 password, unless the multiple sites organization of the Buyer requires more passwords. The Seller reserves the right to check from time to time the correct use of this password.

6.6 In the case of a multisite, multi license, only the employee of the buyer can access the report or the employee of the companies in which the buyer have 100% shares. As a matter of fact the investor of a company, the joint venture done with a third party etc..cannot access the report and should pay a full license price.

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 Lyon, 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.