

Hervé GUIDETTI

09/10/1972, 47 years old

✉ herve.guidetti@free.fr

☎ +33.6.06.72.44.37

📍 370 rue Louis Pasteur

73490 La Ravoire, FRANCE



RF ENGINEER

20 years in RF electronics (among which 10 years in medical field)

SKILLS

Electronics / RF :

- Design of multiband antennas : electromagnetic simulations *CST, HFSS*
- Design of RF stages (RX/TX) in discrete components *Qucs, CST*
- Electronic boards design and prototyping *Kicad, Zuken Cadstar*
- Instrumentation, RF characterization *(VNA, Spectrum, BER) & In-vivo measurements*
- Embedded coding (Assembly / C) *µP Microchip & TI*
- Develop software tools for instrumentation use *Visual Basic*

Management :

- Sub-contractor technical management, Project follow-up , planning, customer / supplier relationship

Languages :

- *ENGLISH* Fluent, *ITALIAN* good basis

PROFESSIONAL EXPERIENCE

detailed in page 2 ...

Since 2017 : **RF Consulting and expertise**

Different customers both in medical field area (cardiac, urology, bones, ...) as well as in industrial field (objects tracking using UWB, ...). Depending the projects, I bring my expertise, on one hand, to start-up companies in order to define their RF system dealing with specific constraints (RF budget links, Use Cases, frequency bands of interest, constraints relative to required European or worldwide standards, solutions propositions for customer requirements) and also to study and design different stages (RF hardware, antennas, diversity schemes, ...).

On another hand, I bring also my expertise to more matured companies that have already some products architectures but which need improvements or new designs.

2006 - 2017 : **LIVANOVA – SORIN Cardiac Rythm Management (CRM)**, Meylan (38)

Integrated in the RF team (4 people) which is part of an ASIC team, I'm in charge of **designing radiofrequencies systems blocks (RX, TX, Antennas)** for active cardiac implantable devices (pacemakers, defibrillators) & external products (home monitor, hospital programmer). Then I've been working with development teams (HW, SW, Mechanical teams in Paris and Torino) to specify RF parameters for the industrial process. During product production, I'm in charge of the RF support as well as the RF expertise of some post-surgery cases.

- RF development of the 1st and 2nd SORIN radiofrequency platforms (implantable devices + external product), from first prototypes to manufactured products
- RF design of implantable connectors for new clinical needs (DF4, IS4)
- Specifications of the in-lab anechoic chamber

September 1998 – October 2006: **ATRAL SA (Groupe HAGER)**, Crolles (38)

Integrated in the RF team (4 people), I'm in charge of **radiofrequency circuits development** for wireless home security systems, driven by strong technical and economical constraints.

- Investigations, simulations, development, qualification and manufacturing support of TX/RX systems (433MHz/869MHz), short range link, low data rate, ultra-low power consumption.
- Design of twinband antennas (433MHz/869MHz)

March - September 1997 : **GEC PLESSEY Semiconductors**, Lincoln (England).

I've completed my engineering school training period in a small RF team. The training concern was concerning the development of RF antennas for automotive security alarms, in the 2.45GHz frequency band (simulations, prototyping, characterization and embedded tests)

EDUCATION

1997 : Engineering Degree in the ENSEA (Ecole Nationale Supérieure de l'Electronique et de ses Applications) - Cergy-Pontoise (95). **Specialization in microwave telecommunications** : TX/RX systems, hyperfrequency, digital communications, Integrated circuits technologies on silicon/GaAs, MMIC

1991 - 1994 : Preparatory classes for engineering schools - Vaucanson high school (38)

1991 : Baccalaureate E (Math & Technics) - Mention AB - Monge high school (73)

HOBBIES

Mountain guide trainee (in current training period)

Nordic skiing instructor trainee (in current training period)

Wild Nature Photography

Sports : Biking, running, skiing, fishing

DETAILED PROFESSIONAL EXPERIENCE

LIVANOVA – SORIN CRM (Meylan), R&D – ASIC-RF department

RF development of the first SORIN radiofrequency system

I've been hired in SORIN for the development of the 1st RF system (cardiac implantable device & Home monitor).

For the cardiac implantable device, the idea was to integrate the RF sub-system in the last generation of implantable defibrillator. I've then contributed to the following items :

- Design of the twinband antenna system, in first collaboration with CEA/LETI from Grenoble : EM simulations, prototyping,, characterization
- Design of the RF TX/RX electronics module
- Design of the interconnection feed thru between HW & cardiac leads : EM simulations, characterisation

For the Home Monitor, it was a brand new product; the decision has been to collaborate with a sub-contractor (Selco/Eolane) for the development of the electronics board except for the RF : indeed, SORIN wanted to keep RF design control in-house.

I've then participated in the following items :

- Definition of the product with Marketing team (form-factor, use cases, power supply, media for transferring data to service center, etc...)
- Design the twinband antenna system with some strong constraints of polarization and space diversities (IFA 400MHz / Monopole & PIFA 2.45GHz) : EM simulations, prototyping, characterization

- Design and validation of the RF electronics architecture (schematic, layout, measurements)

For both of these products, I've written the industrial tests specifications and I've performed their RF support once in production and on the field. Also, I've defined the global RF tests coverage specifications and I was actor of these RF system tests, which have taken place either in lab (internally or in an external certified one), or in some dedicated areas (for animal in-vivo tests or for human corpses) or else in hospital environment.

Technical environment : Antennas, Electronics, Mecatronics, Industrial tests, In-vivo system tests

Development of a radiofrequency module for implantable medical device – 400MHz / 2.45GHz

To start the development of SORIN first radiofrequency system, the RF chipset (ZLK70101) had already been selected by a deep analysis of different documents (datasheets, design manual) and standards as well as by some measurements using development kits. With the manufacturer collaboration, I've performed the co-design of a small electronics module (14 x 8mm). It has consisted in gathering both modelization results using EM simulation tools and measurements (impedance, output power, sensitivity) which have lead to a reliable model for impedance matching

I finished the project by industrial test specifications and support during their implementation.

Technical environment : EM modelization ,RF measurements, lab & industrial tests

Development of new connectors (DF4 & IS4 standards) with RF compatibility

Since to the introduction of new international standards for cardiac leads connectivity, SORIN has had to develop some new connectors for implantable devices that need to be RF compliant. I was in charge of the development of the RF antenna system and in particular for IS4 project, I've supervised a sub-contractor who was working full-time in our site. Many investigations have been performed using our EM simulation tools ; then these solutions have been prototyped to verify consistency with simulation results (impedance, radiated gains, metal inserts impacts, cardiac leads influence, ...). They have been fully validated and have become industrial solutions which are currently on the field.

On IS4 project, due to a stretch project planning, EM simulation use was very benefit because on one hand we could have used the previous experience and results of the first RF implantable devices that we developed a few years ago. On the other hand, we have been able to explain some unexpected behaviors highlighted in the past during practical RF performances tests in-vivo conditions

Technical environment : Antennas, EM simulation, RF measurements

Specifications of the anechoic chamber

In 2008, SORIN CRM decided to invest in an anechoic chamber for RF measurements in Meylan site. I was in charge of the planning, the cost and the technical specifications. One year later, the anechoic chamber was installed and ready for first measurements. Today, it represents our referential for radiated measurements since for example it is been used to characterize periodically some implantable "golden" devices for manufacturing. I'm in charge of its maintenance as well as the instruments one coupled to it.

Technical environment : RF measurements and metrology

ATRAL SA (Groupe HAGER), Crolles (38), R&D – RF team

Development of the front-end of a twin band receiver (433/869MHz)

ATRAL has decided to launch a new alarm system platform whose one RF particularity was to use 4 communication frequencies : 2 in 433MHz and 2 others in 869MHz ISM frequency bands. In order to ensure an ultra-low power consumption for the RX part (1mA/3V in permanent mode), we decided to design a hybrid structure receiver, based on a combination of both superheterodyne and super-regenerative. I've been in charge of the development of the superheterodyne front-end that has to output a intermediate frequency of 45MHz to the super-regenerative receiver first stage, which latter was designed by a RF team colleague.

That design has been completed with discrete components ; design blocks were filters, LNAs and LOs (Colpits and Pierce models). These blocks have been designed with respect to the product specifications (selectivity, sensitivity, IPx, power consumption, ...). Since that receiver was implemented in the alarm central units, I've participated in their RF validation, especially in the lab GTEM cell. Then, I've written industrial tests specifications and support the product in manufacturing, as well as the technical expertise on the field.

Technical environment : RX design, measurements, industrial tests

Design of twinband antennas (433/869MHz)

I've designed the 433MHz monoband antenna of the first RF lightning command device. It was a meander type that was using an hybrid process (3D + pcb printed). A severe RF constraint was the EMC (main supply) and the associated test conditions.

Also, I've designed the twin band antenna (433/869MHz) of a keyboard for home alarm. The antenna was a "twin meander" printed on a pcb.

Technical environment : Antennas, EM simulations, RF radiated measurements

GEC PLESSEY Semiconductors, Lincoln (England), 6 months training period

The training period was lasting 6 months; the subject was to develop RF antennas for automotive security alarms. The RF team was very small (only my training teacher) because the other RF guys were working on a future automotive anti-collision radar using 77GHz millimeter waves.

I've performed a deep bibliographic research first which had allowed me to select some antenna topologies. Then, I've started some simulation work using HFSS tool and I was able to prototype internally some antenna pcbs thanks to the availability of a printed circuit board machine. Then I've contributed to the prototype characterization in the anechoic chamber as well as to the embedded tests inside a car which was dedicated R&D trials.

The training period has ended with a solution that was a patches antennas network.