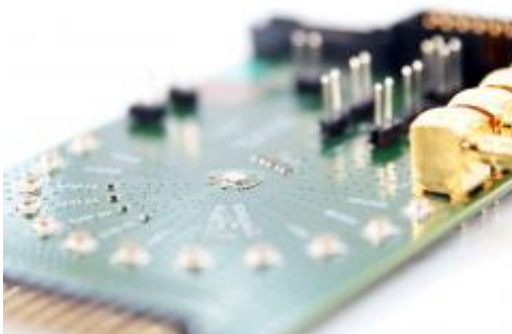


Imec, Renesas and M4S report a single-chip reconfigurable multi-standard wireless transceiver in 40nm CMOS

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Test board of the multi-standard wireless transceiver

At today's International Solid State Circuit Conference, Imec and its research partners Renesas Technology Corp. and M4S present a complete transceiver with RF, baseband and data converter circuits in 40nm low-power CMOS. The fully reconfigurable transceiver is compatible with various wireless standards and applications, including the upcoming mobile broadband 3GPP-LTE standard.

The trend in wireless communication where terminals give their users ubiquitous access to a multitude of services drives the development of reconfigurable radios in deep-submicron CMOS. This is enhanced with the advent of 3GPP-LTE, a standard that is inherently so flexible that a reconfigurable radio is its most economical implementation. The single-

chip reconfigurable transceiver developed by imec, Renesas and M4S provides an answer to this need.

The flexible receiver, including analog-to-digital converter, is fully software configurable across all channels in the frequency bands between 100MHz and 6GHz. Its properties such as the RF carrier frequency, channel bandwidth, noise figure, linearity and filter characteristics can be adapted to the requirements of the communication standard that is used. It combines high sensitivities with low phase noise and high linearity. These can be traded for lower power consumption depending on the needs of a particular standard.

The flexible transmitter reaches low out-of-band noise, targeting SAW-less 3GPP-LTE operation. The transceiver integrates this multi-standard programmability in an extremely small chip area of only 5mm² while achieving state-of-the-art performance and power consumption for each covered standard. Therefore, it is competitive to recent single mode radios in mobile devices -- handsets, smart phones, PDAs, PC cards, USB dongles, etc.

In a next phase of imec's 'green radio' research program, the focus will be on further reducing the bill of materials and [energy consumption](#) by continuing the research on digitally-inspired SAW-less transceivers and power efficient transmitters.

“We are excited that together with our reconfigurable radio program partners Renesas and M4S, we have reached this great achievement with the conception of a low-cost, low-power reconfigurable transceiver for next-generation [mobile broadband](#) communications;” said Liesbet Van der Perre, director green radios program at [imec](#). “We are looking forward to continue the collaboration towards next generation wireless.”

Source: Renesas

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