Applying Tech: Wireless Medicine

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How are you influencing wireless medical technology?

William Chan
Engineer, Linemaster Switch Corp.

With the modern medical environment today being full of various electronic apparatus, equipment, and technologies, it has been very challenging for many medical OEMs to find safe and reliable tetherless ways to control their equipment. Linemaster's wireless infrared and radio frequency products have helped to satisfy this OEM need by offering a seamless, high quality, pin-to-pin compatible migration path from wired to wireless foot controls. This translates to the quickest time to market and ease of user adaptation. Such transition is only possible because of our medical grade wireless features that are engineered specifically for critical and demanding medical applications, which makes the decision to go from wired to wireless a safe and easy one.

Donald L. Sweeney
President and Senior EMC Engineer, D.L.S. Electronic Systems Inc.

At D.L.S. Electronic Systems Inc., we influence wireless medical devices by helping to make sure they work when in the field, not interfering with other devices and not being interfered with from other devices. We do this by testing the wireless medical device to see that it meets the regulatory requirements set by the FDA and various world health and safety organizations. In addition, we help develop additional requirements for special cases. For example, one customer made a monitoring device that complied with regulatory requirements but because there were so many of these devices in the hospital, their individual emissions combined and were interfering with a leaky cable receiving antenna. We helped them get their device 20 dB below the limit so they could operate in this environment. (Multiple systems with the same emissions add 20 Log10 of the number of devices in dB. For example, 10 devices can be 20 dB higher than a single device.) At D.L.S., we not only test and consult for EMC and product safety for wireless medical devices; we also problem solve, finding practical, workable solutions.

David Niewolny
Medical Marketing Manager, Freescale Semiconductor

Wireless devices have the ability to become self-contained diagnostic laboratories, communication devices for medical records, and medical therapy devices. One of the biggest challenges facing both the consumer and the clinical wireless healthcare market is large scale adoption. Adoption is limited by the regulatory environment, current product prices, and ease of device use. Semiconductor companies like Freescale are working closely with both healthcare device designers and end customers to break down some of these barriers to adoption. Silicon providers are integrating sensor, analog, CPU, and RF technology into a single IC while, at the same time, lowering power consumption, which is allowing device designers to reduce the size of their device by reducing the component cost and reducing the battery size. These changes also translate into less expensive and easier to use devices, which appeal to both clinicians and consumers alike. A great example of silicon technology driving wireless healthcare innovation can be found by looking at a diabetes care product, the OmniPod, Insulet’s tubeless and wireless insulin pump. Only recently has silicon technology evolved to a point where products like this are now commercially viable. As silicon providers design more integrated, lower power ICs, the door for creating breakthrough wireless medical devices continues to open.

Joe Tillison
Technology Director, Avnet Electronics Marketing

When you think about the technology that influences the marketplace, your first thought probably isn't about your IC distributor. But influence is exactly what we do at Avnet Electronics Marketing. Through a 200+ strong force of degreed field application engineers located across the Americas, Avnet has personal relationships with our engineering customers, and provides them with a supplier-agnostic, trusted advisor viewpoint on the newest technologies and the latest products from every corner of the semiconductor industry. We understand the design engineer's needs and provide development tools and extensive in-person training to help them accelerate their time-to-market. Avnet "gets" electronics design. Case in point: one of the hot wireless technologies getting a lot of interest lately is the new category of personal healthcare products enabled by Bluetooth Low Energy (now being rebranded as Bluetooth Smart). This new, redesigned version of Bluetooth was part of the 4.0 release in 2009, and is optimized for low power and low latency. One of its unique features is that the data services for sensor attributes used in personal medical devices, like glucose meters, blood pressure cuffs, and heart rate monitors, are conveniently incorporated right into the protocol. This makes it easier than ever to wirelessly enable these products, and offer the chic tie-in to mobile device apps. Avnet is helping our customers access the latest wireless technologies, like Bluetooth Smart, and supporting them with ICs and pre-certified modules from the world's leading suppliers.

Anthony J. Kalaijakis
Strategic Medical Marketing Manager, Molex Inc.

The Molex MediSpec portfolio evolved to address the design demands of engineering healthcare products in diagnostic imaging, therapeutic, surgical, patient monitoring, patient care, and healthcare IT applications. We have taken the expertise in cellular and mobile communications and applied it to the field of wireless medical devices. Our company molds complex, 3D electronic circuits for wireless devices capable of transmitting information directly from patients' homes to their doctors' offices and hospitals (a.k.a., telehealth).

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