

Smart Testing 明智之舉

With smart products emerging as an increasingly important product category, Hong Kong's testing and certifications industry is offering innovative new tests and pre-test support to help bring safe, reliable products to market quickly.

By Heath Leisston

智能產品日漸眾多，勢成重要的產品類別，香港的檢測和認證業能提供創新檢測和測試前支援服務，幫助安全可靠的產品盡快推出市場。撰文：Heath Leisston

Over the past several years, a wide variety of “smart” products — products employing networking connectivity and sophisticated functions — have developed across a vast swath of industries, including everything from lighting and personal electronics to infrastructure equipment. In a recent report, research company Gartner forecasts the number of connected devices in use to reach 20.4 billion pieces by 2020. As technology used in these products continues to improve and demand continues to grow, testing and certification organisations are coming up with new ways to ensure the safety and reliability of such products keep pace with their technological development.

Electronic product testing and more

Although smart products are not new to the market, at this time there aren't yet testing or certifications standards that specifically target smart products as a category. However, as with other classes of electronic products, smart products must undergo a number of mandatory regulatory tests, including product safety testing, chemical testing, battery testing, electromagnetic compatibility (EMC) testing, etc. For example, EMC testing ensures that electronic devices don't emit large amounts of electromagnetic interference and that they will function properly in proximity to other electronics.

Besides regulatory tests, smart products are also tested to ensure they comply with industrial standards that are based on how the products will be used or their individual functions. For instance, Bluetooth and Wi-Fi are two common methods of communication

過 去幾年，具備網絡聯繫和先進功能的智能產品如雨後春筍，由照明設備到個人電子器材，以至基礎設施，各行各業紛紛以這門新穎產品作招徠。研究機構Gartner近期一份報告估計，到2020年，具備各項網絡聯繫功能的產品會達到204億件。這些產品使用的技術日益改良，需求日益增加，檢測和認證機構也要提出新的方法，以確保產品的安全性和可靠性能跟上技術發展。

電子檢測及其他

雖然，智能產品在市場上已不是甚麼新事物，但目前仍未就這類產品釐訂一套專用的檢測或認證標準。然而與其他電子產品類別一樣，智能產品須接受若干規定的檢測，包括安全性、化學成分、電池耐用程度、電磁兼容性（EMC）等等。例如電磁兼容性檢測旨在肯定電子器材不會釋放大量電磁干擾，並在接近其他電子產品時能正常運作。



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widely employed in smart products, and products containing the technologies are tested on their coverage, data rate, power consumption, etc. to ensure they meet relevant industrial standards.

In fact, the ability for devices to communicate with one another and for users to communicate with each other through the Internet via a mobile network or fixed connection is what distinguishes a product as a smart product. And this connection to the Internet has created an increase in the demand for certain other types of testing.

“Lately, a growing number of customers have been enquiring about tests focused on cybersecurity. Customers are concerned about whether their data will be kept safe when their products are connected to the Internet,” says Daniel Yau, vice president of Intertek Testing Services HK Ltd. “Since the Internet is a vast and open domain, companies and consumers alike are concerned about where the data is being placed and who has access to it.”

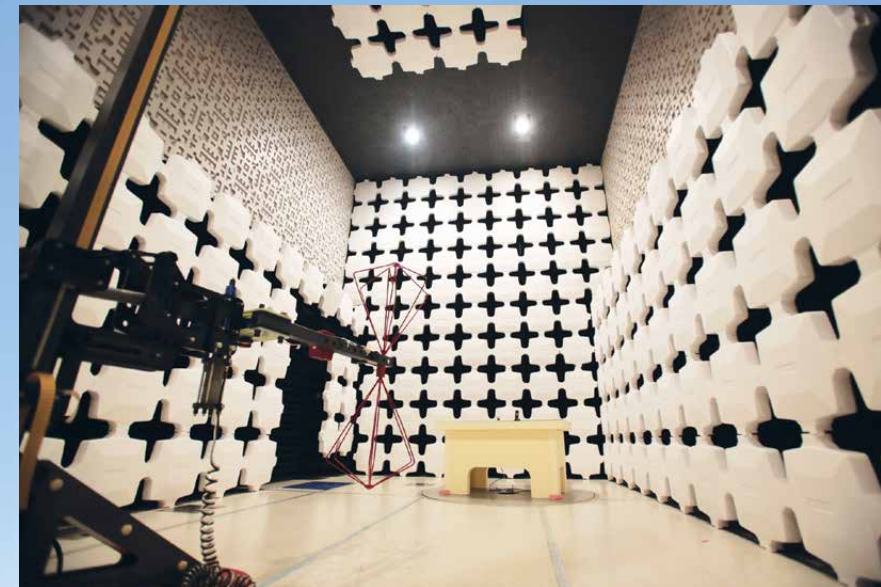
Yau points out that many guidelines and industrial control standards regarding EMC/RF testing have already been introduced. Compared to the physical safety standards developed in the past, new standards for cybersecurity are being developed at a much faster pace, with new updates being released every few months to catch up with the rapid advancement of security threats.

“If a product has Internet connectivity, it will have a lot more functionality, but the risk of exposure to harm will also be much higher as a result. While that Internet connection might seem to be an intangible thing, the potential amount of damage that it can do is absolutely higher than the amount of damage that might arise from a physical hazard,” Yau says.

An ounce of prevention

With all of the potential risks to smart devices, it is essential that everything be done correctly from the very beginning. While testing and certification is usually conducted after a product has been produced, manufacturers can actually submit prototypes of their products for pre-testing in order to identify any issues during the early stages of development.

“Usually, the first prototype won't pass testing and certification. A company might think that their first prototype is the best one possible, but in reality it might not even be able to pass the EMC test,” says Angel Wong, senior consultant, Electronics Testing and Reliability at the Hong Kong Productivity Council (HKPC).



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除了監管當局要求的測試，智能產品也要按其使用情況或功能通過檢測證明符合業界標準。例如智能產品廣泛採用藍牙和Wi-Fi通訊，須就這兩項技術接受接收範圍、數據容量、耗電量等的檢測，以確保符合相關業界標準。

所謂智能產品，是指能夠通過流動網絡或固網連接，實行器材與器材，或使用者與使用者之間的通訊。隨著產品與互聯網的聯繫不斷增加，市場對另類型測試的需求亦有所增加。

天祥公證行有限公司副總裁丘國強說：「近期愈來愈多客戶查詢有關網絡安全檢測的問題。他們憂慮當產品與互聯網接通時，數據會欠缺安全。因互聯網是個公開領域，無論企業還是消費者都關心他們的資料放在甚麼地方，有甚麼人能取得這些資料。」



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Hong Kong Productivity Council (HKPC) 香港生產力促進局

With the idea that product development and testing are interrelated, some testing and certification organisations offer a sleuth of productisation and pre-testing support services to assist companies in successfully bringing a product concept to life. These organisations work together with companies on product design, technology support, prototyping, pre-testing and, eventually, testing and certification as well. This is a boon for businesses, especially for smaller ones and start-ups.

“By making use of a pre-test, companies will be able to save on later costly testing fees. If their prototypes fail the pre-test, companies can go back to address the issues without having to waste money and time preparing all the paperwork for the actual testing and certification procedure before the product is actually ready,” says Wong.

Development and demand

Industry experts believe it will take some time to develop international testing and certification standards specifically for smart products. However, there are a number of existing regulatory and industrial tests for some of the technologies used in smart products that can provide smart product manufacturers with a good start.

“Rather than performing tests on individual products, it is easier at present to test the systems they contain. This might sound a bit vague, but smart products themselves are still evolving and growing.

丘國強指出，業界已引入多項EMC/RF測試的指引和監控標準，相對於過往訂立的實體安全標準，新的網絡保安標準訂立速度更快，而且每幾個月便更新一次，以跟上急速發展的安全威脅。

他說：「產品如果可連接互聯網，功能會大為增加，但遇上侵擾的風險也更大。網絡聯繫看似無形，但可帶來的潛在損害會比實體產品引致的大得多。」

預防勝於治療

智能產品既然潛伏不少風險，有必要一開始便確保沒有差池。產品通常是在製造出來之後才接受檢測和認證，廠商其實也可以把產品原型送交預先檢測，以便在開發初期察覺問題所在，予以調整。

香港生產力促進局（生產力局）電子測試及可靠性高級顧問黃婉儀說：「第一個原型一般較難通過測試，公司總是認為原型已做到最好。但在現實中，可能連電磁兼容性測試也通過不到。」

由於產品開發和檢測相輔相成，因此一些檢測認證機構會提供一系列產品成形和預檢服務，協助公司落實產品意念，成功推出新產品。這些機構人員會與公司合作，提供產品設計、技術支援、原型製造、預先檢測，以至最後的檢驗和認證等服務，這都是公司發展業務的好幫手，對中小企和初創企業幫助尤大。

黃婉儀說：「通過預檢，公司反而可以節省稍後的檢測費用。如果原型未能通過預檢，公司可先行解決問題，免得拿未真正完善的產品去做檢測，浪費準備文件的時間和金錢。」

發展和需求

業內專家相信，還要經過一段日子才可以就智能產品訂定國際性的檢測和認證標準，但目前已有相關規定和行業測試，可用來檢測智能產品使用的技術，為廠商提供一個正確的起點。

香港電子業商會行政總裁衛紹邦說：「目前來說，與其測試個別產品，不如測試這些產品內含的系統。這聽來有點模糊，但智能產品仍在演變和進化，一些測試可能只適用於某一具備特別用途的智能產品。標準化的檢測仍有待釐定。」

市場現有的檢測和服務，對香港廠商有很大幫助，不可或缺。這些服務不但確保產品符合安全及品質標準，亦是廠商邁向國際市場的重要踏腳石。因為當本地產品推出歐美等海外市場時，無可避免必須通過一定的檢測和認證要求。在本地完成檢測和認證，也可以簡化買家的採購程序，以及增加消費者的信心。

Some testing requirements might only be specific to a certain brand with specific applications with their smart products. For the moment, it remains to be seen if and when standardised tests can be applied,” says Basil Wai, CEO of the Hong Kong Electronic Industries Association (HKEIA).

The testing and certification services currently being provided are necessary and beneficial to Hong Kong’s manufacturers. Not only do they ensure the products meet the relevant safety and quality standards, they can also provide a stepping stone for companies seeking to capture a larger market, as they need to pass a number of tests and certification requirements in order to enter overseas markets like the US and Europe. Completing testing and certification locally can also simplify the procurement process for buyers, as well as providing confidence to consumers.

HKEIA encourages Hong Kong businesses to take advantage of testing and certification services as the city continues on its march to become a smart city, which will result in an increase in the number and variety of smart products, ranging from consumer products like wearables and LED lights to industrial solutions like smart parking meters and Internet-of-Vehicles technology. As the number of products increases, so will the demand for testing and certification services for smart products.

“In the next three to five years, there will definitely be more and more demand for testing and certification services. And it won’t simply be on the products. Products with artificial intelligence will become more advanced as machine-to-machine learning becomes more prevalent. So the question is just how big is the risk when products have AI and machine-to-machine learning. Testing and certification bodies will be needed to perform risk evaluations and assessments to answer questions like those in the very near future,” says Intertek’s Yau.

Tested and certified in Hong Kong

Testing and certification services provide quality assurance for goods and services to customers. For more information about Hong Kong’s testing and certification industry, please visit the Hong Kong Council for Testing and Certification website at www.hkctc.gov.hk.

Accreditation helps testing and certification users to identify reliable service providers. To identify reputable testing and certification service providers accredited by the Hong Kong Accreditation Service (HKAS) and the scope of the services they offer, please visit www.hkas.gov.hk.

香港正朝著智能城市的方向邁進，香港電子業商會鼓勵香港企業善用檢測和認證服務，令更多種類的智能產品能夠推出市面，由可穿戴式裝置到LED燈等消費品，以至智能泊車咪表和車聯網，令產品更趨多元化。當產品種類增加，對智能產品的檢測和認證服務需求自然也攀升。

天祥的丘國強說：「未來三至五年，對檢測和認證的需求肯定繼續增長。也不止是產品需要測試，具備人工智能的產品日趨先進，機器學習日趨普遍，嵌入人工智能和機器學習功能的產品會有多大潛在風險，檢測和認證機構需要作出評估，才能提供肯定的答案。」

香港的檢測和認證

檢測及認證服務為客戶提供產品質素保證，欲知更多香港檢測和認證行業的資料，請瀏覽香港檢測和認證局網頁：www.hkctc.gov.hk。

認可資格有助用家識別可靠的檢測和認證服務提供者，欲知更多獲香港認可處認可的檢測和認證服務提供者及其認可範圍的資料，請瀏覽網頁：www.hkas.gov.hk。

