

48-button remote uses 2.4GHz radio for Smart TV connectivity

ECN Europe

[Qingdao Haier Intelligent Electronics Co., Ltd](#) [1], of Shandong, China, is using [Nordic Semiconductor](#) [2]'s wireless technology in its advanced QWERTY keypad-equipped RF/Infrared (IR) remote control.

The remote is designed for use by consumer electronics (CE) manufacturers of emerging 'connected' products such as Smart TVs. The remote control is equipped with a 48-button QWERTY keypad on one side, and on the other, a conventional 55-button remote control interface. Both sides of the unit are backlit, and a built-in accelerometer detects which side the user is about to access. The product can also be used to control a PC and the QWERTY keypad includes a trackball that can be



used to control the cursor on a PC.

[3]

Traditional remote controls struggle to meet the demands of modern consumers due to limited bandwidth and "one-button-one-operation" interfaces. RF provides sufficient bandwidth for advanced navigation interfaces - such as scroll wheels, touch screens, and track balls - and bi-directional communication required when negotiating the complex user interfaces and menus typical of modern media devices. In addition, the QWERTY keypad is useful for browsing the Internet on the latest generation of Smart TVs and other connected products.

RF eliminates the need for IR's line-of-sight access, allowing devices to be controlled

48-button remote uses 2.4GHz radio for Smart TV connectivity

Published on Electronic Component News (<http://www.ecnmag.com>)

in the presence of obstacles and even interior walls (up to a range of 15m and assuming wall construction materials do not excessively attenuate the RF signals).

In operation, the remote handset utilizes a Nordic nRF24LE1 System-on-Chip (SoC) 2.4GHz ULP transceiver running Haier's own RF protocol software. An nRF24LU1+ System-on-Chip (SoC) 2.4GHz ULP transceiver and USB 2.0 compliant device controller, incorporated into a compact USB dongle, plugs into the host device (the product to be controlled) to form the other node of the wireless link. The Nordic RF technology enables a bi-directional communication link with sufficient bandwidth for rapid screen refresh and seamless navigation.

The nRF24LE1 integrates a proven nRF24L01+ transceiver core, enhanced 8051 microcontroller, 16kbytes of on-chip flash and 1kbytes of SRAM into a single-chip solution. The chip boasts a 2Mbps on-air data rate combined with ultra low power (ULP) operation and advanced power management. The nRF24LU1+ integrates a USB 2.0 compliant device controller, 8 bit application microcontroller, and nRF24L01+ compatible 2.4GHz RF transceiver.

"The general trend for consumer electronics is for them to become 'smart' and customized," says Lily Huang, Haier's Marketing Manager. "Our company wants to tap into this market trend when developing new products. For remote control applications such as web browsing on smart TVs, this means upgrading from IR to RF. Having worked with Nordic Semiconductor before, we knew that the company's RF transceivers offered the low power consumption, low latency and bandwidth we needed for the wireless link in our double-sided RF remote control.

"We also needed to ensure that the RF connectivity co-existed well with Wi-Fi - which is fast becoming a standard fitment in modern media appliances," adds Huang. "Nordic's chips are the perfect choice because they have high interference immunity."

"Nordic's nRF24LE1/nRF24LU1 has been used in millions of wireless desktop peripherals so is a proven solution. Moreover, as Haier excellent new product confirms, it is particularly suitable for RF remote controls," says Ståle "Steel" Ytterdal, Director Sales & Marketing - APAC, Nordic Semiconductor. "Better yet, Nordic's proprietary chips, and supporting tools like reference designs and development kits, are readily available today allowing manufacturers to develop a commercial remote control ahead of the wide availability of standards-based ULP wireless technology."

Source URL (retrieved on 09/22/2014 - 10:53am):

<http://www.ecnmag.com/news/2012/05/48-button-remote-uses-24ghz-radio-smart-tv-connectivity>

Links:

[1] <http://www.haier.com/uk/>

[2] <http://www.nordicsemi.com/>

48-button remote uses 2.4GHz radio for Smart TV connectivity

Published on Electronic Component News (<http://www.ecnmag.com>)

[3] <http://ecneurope.files.wordpress.com/2012/05/220512-nordic.jpg>