

The Sound and the Fury

By William Lumpkins

We at *IEEE Consumer Electronics Magazine* had a musical time evaluating the iRig KEYS PRO keyboard from IK Multimedia (<http://www.ikmultimedia.com/products/irigkey-sprog>). IK Multimedia started out as two Italian engineers, Enrico Lori (CEO) and Davide Barbi (CTO), who worked in a music studio trying to solve a problem that did not really exist but they hoped would make their lives easier: *Could we emulate electronic circuits using DSP algorithms and feed an audio signal through the computer and get the same sound?* This became their first product, called the “Abbey Road Console,” and with it, the little Italian startup launched into their successful music engineering business.

At 23.2-in wide and 7.5-in tall, the iRig KEYS PRO is a compact full-size keyboard (sounds like an oxymoron). It offers full-size, velocity-sensitive keys, allowing for a realistic playing feel. With its 37-key (three-octave) keyboard, you can play legitimate two-handed parts. The keyboard comes with cables for iOS devices such as the Apple iPhone, iPad, iPod Touch, and Mac as well as Microsoft-based personal computers (PCs). The iRig KEYS PRO is equally useful as a portable MIDI keyboard or studio controller. Connect it to your Mac or PC for use with your computer-based software instruments and carry it easily around with you to use



FIGURE 1. Testing the iRig KEYS PRO.

whenever and wherever you want with your portable Apple products.

I had my resident pianist, Sonoko Sanitate, test the iRig KEYS PRO (as I have no musical talent); see Figure 1. She stated, “I liked the lightweight feel of the keyboard. It was wonderful to use, but after a few hours, the battery on the iPad was so low that I had to unplug and recharge it (the iPad) to play it again.” As Sonoko noted, the keyboard draws power from the host device; for a PC, this is not a problem, but for a mobile device, you are restricted to the power capability of the mobile battery. Hopefully, in future modules, it will have the option for a secondary power source. She did tell me that she appreciated the fact that the keyboard includes modulation and pitch-bend wheels, which are normally only found on expensive models of professional keyboards. It is also equipped with an expansion jack, allowing you to connect a sustain pedal, for an even more realistic piano playing experience, or an expression pedal for controlling continuous parameters such as volume, tremolo, vibrato, and rotary speaker speed. The list



FIGURE 2. The iRig KEYS PRO. (Photo courtesy of IK Multimedia.)

price of the iRig KEYS PRO is US\$149 on its Web site, though I found it as low as US\$84.99 on Amazon.com (Figure 2).

BLUETOOTH 4.0 “PRESENCE” SENNHEISER EAR PIECE

I was able to review one of the new Bluetooth 4.0 ear pieces from Sennheiser called “Presence.” As you all know, BLE, otherwise known as Bluetooth low energy or Bluetooth 4.0, is the latest iteration of the 802.15.4 Bluetooth protocol. BLE devices have



FIGURE 3. The Sennheiser Bluetooth 4.0 “Presence” ear piece. (Photo courtesy of Sennheiser.)



FIGURE 4. The Presence with ear hook. (Photo courtesy of Sennheiser.)

the distinct advantage of allowing extended range or low power consumption at standard Bluetooth 2.1 range. Sennheiser was founded in 1945 as Laboratorium Wennebostel by Prof. Dr. Fritz Sennheiser in Germany and is known the world over for its professional-grade microphones and high-end headsets. It has grown worldwide into a €584.4 million (2012) business. I received the Presence demo unit in its standard paper and plastic packaging. My young son James helped me by opening the package for me. When he tried to pull out the Presence, the ear hook detached. My son sheepishly apologized for breaking it. I pointed out that it was okay, as it is supposed to come off; it is a feature, not a bug. Just to prove to him that it was alright, I attempted to put the ear hook back on it (see Figure 3). After about 30 min and

hundreds of pounds of exertion/pressure, I gave up. Perhaps it was a bug; I could never get it back on. The instructions stated that there were optional ear sleeves, which I attached. It connected quite easily. It took me a moment, but I figured out how they fit in my ear (see Figure 4).

I found connecting to my Apple iPhone was painless; the ear piece even communicated to me that it was pairing, which I found oddly reassuring—the female voice sounded a lot like my car’s global positioning system voice, which was slightly unsettling and yet comforting in a bizarre way. The Presence technical documentation states that it can function up to 25 m away (about 82 ft) from the host device; I took it out to 100 ft (30.48 m) and was able to carry on a conversation. As the battery became low, it started to cut out after about 10 h, and when I reached my phone, I noticed that a low battery indicator on the iPhone for the ear piece had begun to blink (I had been working away in the garden, with my cell phone on my home office desk). The Presence states that it incorporates SpeakFocus and WindSafe technologies for providing clearer sound under noisy conditions; I tested this by riding my bicycle with my iPhone in my jacket pocket and having a conversation with my friend in California. He did not seem to notice any wind, but he did

hear the train as it rumbled by me as I waited at the train crossing. Overall, I am impressed with the Sennheiser Presence, and I may have to look into purchasing some of their audio headsets for the new metal detector that I bought for my kids recently. The Presence is listed for US\$179.95 online at Sennheiser, but I found it for US\$137.99 on some discount shopping sites.

YELLOW JACKET

The Yellow Jacket iPhone 4/4S case (Figure 5) has been the most controversial product that I have reviewed so far for *IEEE Consumer Electronics Magazine*. “The inventor of Yellow Jacket is a former soldier in the U.S. Army who conceived the idea as an immediately accessible form of protection after being robbed at gunpoint and realizing in these traumatic moments the only form of defense is that which is within reach” (see more at <http://www.yellowjacketcase.com/about#story>). The Yellow Jacket is the brainchild of two startup legends from Baton Rouge, Louisiana, Seth Froom (inventor) and Sean Simone (CEO). Seth and Sean used the crowd funding site <http://www.indiegogo.com> and were an instant success with their promo video.

The Yellow Jacket case is multifunctional. It is a hardened case to help protect your hefty investment in the Apple product line. I personally dropped an



FIGURE 5. The Yellow Jacket iPhone case. (Photo courtesy of Yellow Jacket LLC.)



FIGURE 6. Yellow Jacket sparking. (Photo courtesy of Yellow Jacket LLC.)



FIGURE 7. Apotop's Wi-Copy DW-21.

iPhone 4 from 10 ft off my balcony and did not hear the glass shattering that I would normally hear. I do not recommend this test; I used a phone that had been water damaged. The secondary feature of the phone is its ability to act as a backup battery. I tested the battery backup feature, and I was able to get a full charge from a severely depleted battery, though the stun gun effect did not work (which makes perfect sense.) Finally, the Yellow Jacket can act as a stun gun (electroshock) 650,000 V (fully charged, really low amperage of 800 μ A) in the right circumstance (Figure 6).

Yellow Jacket as a personal protection device may protect the owner more in the psychological sense versus the actual physical sense. I let a few different ladies



FIGURE 8. The DW-21 features a USB connection.

in my life borrow the Yellow Jacket for a week at a time and tell me about their personal experiences. The general response that I received was that they felt safer having it in their possession, though they had some inherent fears about using it in the rain as well as what would happen if they inadvertently activated the device by mistake while rummaging around in their purses. I had the opportunity to take the device to a few local elementary schools in my area for career day, as an example of what an electrical engineer might create. All of the teachers (mostly females) thought it was wonderful and wanted to purchase one. All of the children wanted one as well, though mostly they wanted it so they could electroshock their friends or siblings.

This brought up an interesting sociological discussion among the children. The older children found that even though it says that you must be 18 years old to purchase the Yellow Jacket, as long as they had a working credit card they could purchase one. They worried what would happen if “a bad man purchased one to hurt a woman.” This is a good point, but really, you can hurt anyone with about anything from a steak knife to a stun gun purchased at a retail store.

Everyone agreed that it was a “cool” device; I was asked if it worked on an iPhone 5, and sadly it does not. Hopefully, the Yellow Jacket makers will come out with an iPhone 5 and Galaxy 5 version soon. It is illegal (as are any stun guns) in the following states in the United States: Hawaii, Illinois, Massachusetts, New Jersey, New York, Rhode Island, Wisconsin, all of the U.S. Virgin Islands as well as a few counties and cities in various states where it is legal overall. Make sure to check with your city if you plan to purchase one. The following countries also ban electroshock devices: Argentina, Australia, Austria, Belgium, Canada, China, Denmark, Hong Kong, India, Italy, Japan, Kenya, New Zealand, Norway, Sweden, Switzerland, and the United Kingdom.

By the way, it was a fun prop for Halloween; I went as a crazy iPhone user. It was great to scare people with the zapping prongs. (Don't tell the Yellow Jacket makers—I may have voided

my warranty). The Yellow Jacket case retails for US\$99.

APOTOP DW-21

The Wi-Copy (DW-21) from Apotop (Figure 7) is a multifunction Wi-Fi device targeted for the mobile consumer. Apotop, which is an abbreviation for “approaching the top,” is a brand line for Carry Ltd. (www.carry.com.tw/en/), a Taiwanese company that made its business with memory about 20 years ago. The DW-21 has five main functions: external power source, copying files from fixed media to fixed media, streaming a mobile device to up to five devices, acting as a mobile hot spot, and acting as a small router. First, it is an external power source (5,200 mAh), which is roughly 14 h of battery life for an Apple iPod Touch or an Apple iPhone. The DW-21 can be connected through universal serial bus (USB) to a PC or a USB to wall power adapter. While charging, the lightning mark inside of a battery symbol will be lit (red), and when the red led turns off, you will know that the device is fully charged. The small switch at the bottom of the device can be put in the battery position, the second position past the off position. The power symbol will be lit green, and the Wi-Fi indicator light may be lit as well.

The fixed media copy function, allows the copying of files from a USB stick/dongle to a secure digital (SD) card or vice versa (Figure 8). This does require either the Wi-Copy application (app) on either an Apple iOS device or an Android device. The app acts as a bridging controller, while the Wi-Copy is in peer-to-peer mode (sometimes called Adhoc or Wi-Fi direct). The Apple device, in this case an Apple iPad, with the free app loaded and running with the iPad was connected to the Wi-Copy device through Wi-Fi. I selected the movie file from the USB symbol on the iPad inside of the Wi-Copy app, and then clicked the bottom symbol of an arrow leaving a folder symbol in the Wi-Copy app. This provided me the option to move or copy the file to the SD card. I finished the selection, and the file copied from the USB to the SD card. This can

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2014

11–13 April

ICCE-China 2014: 2014 IEEE International Conference on Consumer Electronics-China. Shenzhen, China. <http://icce-china.org/2014/index.html>

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July

ISCE: 2014 International Symposium on Consumer Electronics. Seoul, Korea. <http://isce.ieee-cesoc.org/>

7–10 September

ICCE-Berlin: 2014 International Conference on Consumer Electronics-Berlin. Berlin, Germany. <http://www.icce-berlin.org/2014/>

September

IGIC: 2014 International Games Innovation Conference. <http://ice-gic.ieee-cesoc.org/2010/index.php>

7–10 October

GCCE: 2013 Global Conference on Consumer Electronics. Makuhari Messe, Tokyo, Japan. <http://www.ieee-gcce.org/2014/index.html>

17–19 November

GHTCE: 2013 IEEE Global High Tech Congress on Electronics. Shenzhen, China. <http://www.ghtcongress.org/2013/index.html>



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also be used to transfer images, movies, or data from the mobile device to either a USB or SD media.

The streaming mobile feature is an awesome feature, but there are some caveats with its use. I have used this feature on the plane, deep in the economy section. It allowed my three children to watch the same movie on three Apple iOS devices simultaneously. The trick is, even though the Wi-Copy states that it can support MPEG-4, which it does, the movie format still has to be encoded in a version that the Apple iOS device can view. I had to make sure that the movie that my children wanted to watch was encoded for the Apple devices. For an Android device, life is much easier, as the MPEG-4 encoding is more of a standard versus the proprietary Apple format. The connection process was relatively simple. Just as before, put the device into the Wi-Fi setting (third position to the right from the off selector). Connect to the device through Wi-Fi, then through Wi-Copy

App on the Apple device play the movie, and after you have done this on all three iOS devices, you can relax until the movie is over and the children are clamoring for another. Just make sure the movies are encoded for Apple MPEG format or prepare for the outcry.

The fourth and fifth features are interesting—the device can act as a mobile hotspot or as a personal router. Hotels and other entities that like to sell Wi-Fi will hate what I am about to tell you. As the DW-21 is really a bridging box, a user can connect Ethernet to the back of the DW-21 and then provide a Wi-Fi hot spot, perhaps with the name “Wills_Free_Wifi.” Many hotels provide free wired Ethernet access but charge for Wi-Fi. Another way to accomplish the same thing is for your Apple iOS device connecting through the user’s subscribed cellular service and then connecting to the Wi-Copy device via Wi-Fi, and the Wi-Copy’s Ethernet port being connected to a Hub (basically, sharing free cellular services among multiple user via Ethernet)

can act as a hot spot, thus allowing yourself and your friends access to free Wi-Fi/Ethernet connections. Hopefully, you have an unlimited data plan. (Don’t tell AT&T or Verizon, they may not be happy about this). Another ploy—um, method—would be to connect the Wi-Copy to the hotel lobby free Wi-Fi and create a hotspot, thus extending the range (acting like a repeater). This would be done from your hotel or the hotel next door. (All views in this article are the author’s. IEEE does not condone any questionable use of the products reviewed in this column.)

Overall, this is a great product, though very wild west in all of its possible uses. I have seen the Wi-Copy (DW-21) listed from US\$109.99 to US\$89.99 (Newegg.com).

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