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The Transistor Radio Launches the Portable Electronic Age

On this day in 1954, the commercial introduction of the a new device revolutionized consumer electronics forever

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Texas Instruments' Regency TR-1, the first commercial transistor radio, on display at the American History Museum. Photo courtesy museum

For the first 50 years after its invention, the radio was essentially a piece of furniture. Families sat huddled around a wooden appliance, which used a large amount of energy and was too fragile to be carried around because of the breakable vacuum tubes inside.

Then, on this day in 1954, the nature of consumer electronics changed forever: listeners could carry around a small device and enjoy their music on the go. Before the Walkman, the iPod or the iPhone, it all started with the introduction of the first commercial transistor radio, currently on display at the American History Museum.

The research that led to the transistor replacing the vacuum tube was based on work done during World War II, says Harold Wallace, a curator at the museum. “There was a tremendous push during the war to reduce the size and power consumption of vacuum tubes,” he says, particularly because the receivers used in radio-controlled bombs depended on vacuum tube technology. “Not long after the war ended, the transistor was developed at Bell Labs, in 1947.”

The transistor came to replace the vacuum tube in a wide range of devices. It was smaller, consumed less energy and was much more durable. Although it was initially just used for military applications, engineers and businessmen quickly recognized the potential of the transistor to revolutionize radio receiver technology.

The original transistors had used a substance called germanium as the conducting material, and though it worked well in lab settings, it proved too fragile for everyday use. Executives at Texas Instruments, one of the companies licensed the patent from Bell Labs, were highly motivated to get a practical transistor radio to market before the competition. They pushed engineers to develop an alternate material that could function reliably in a small, portable radio.

“In the spring of 1954, they said, ‘Let’s get a program together and try to make a product—not for a couple of years out, but let’s see if we can get it on the shelves for this Christmas season,’” Wallace says. “The engineers got a crash program together and developed the necessary transistors and circuits, and they actually managed to get it on the shelves for the Christmas season of 1954.”

The Regency TR-1 hit stores on October 18, 1954. It received AM stations and sold for \$50, the equivalent of more than \$400 today. Although a limited number of portable radios using vacuum tubes had been available, the TR-1 immediately transformed the state of consumer radio technology. “The vacuum tube radios were serious battery hogs, and any vacuum tube generates a certain amount of heat when it operates, and you have to be careful not to drop them,” Wallace says. “The TR-1 was much more physically robust, with a lot less to break, and it was much, much better on battery life.”

The museum’s Regency TR-1, currently on display on the second floor, was donated in 1984 by Dr. Willis A. Adcock, who was actually involved in developing the product at Texas Instruments. The museum is also home to a prototype model with a clear case, currently in storage.

Within a few years of the TR-1 launch, dozens of companies licensed Bell Labs’ transistor patent and began manufacturing a wide array of transistor radios. Roughly a decade later, they added FM capabilities, and ever-cheaper import models flooded the markets.

Although portable music technology has, in many ways, advanced dramatically in the years since the TR-1, the ancestor of today’s iPods and iPhones isn’t all that different. At roughly five by four inches, with a sleek plastic case, headphone jack and simple controls, the original transistor radio was simply the first toy you could slip in your pocket and use to listen to music.

About Joseph Stromberg



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