

Texas Instruments Electronic Online Challenge 2018

Texas Instruments OMAP 4 Mobile Computer



Team #: 4001A Team Name: Vexcellence School: Parkland High School

Contributors:

Sahas Veera – 10th grade Arjun Vedantham – 10th grade Zoe Basilone – 10th grade For our online challenge, we selected the Texas Instruments OMAP 4 mobile computer, OMAP, or Open Multimedia Applications Platform, is a series of image and video processors used in Texas Instruments products. Due to the open documentation on these processors provided by Texas Instruments, it was effortless to identify the components inside the device. Additionally, because the product was made in 2011 and is essentially obsolete today, we were able to disassemble it without fully without needing to reassemble it. While disassembling the device, we found that most of the chips and products were produced by Texas Instruments; however, other companies, such as FTDI, Elpida Japan, and Synaptics also contributed essential components. Furthermore, as per the challenge guidelines, safety glasses were worn at all times during the disassembly and any removed components were carefully organized to prevent harm and allow for easy disposal.

In the OMAP 4 mobile computer, we found a total of eleven Texas Instruments processors used for a variety of purposes. The model numbers of the components are as follows: OBAF51WTL16CP754CI, 12CN16KCB3Q3384A (4), OMAP4 UMTS ANT 750-9005-002 REV. A (2), OMAP4 BT WLAN 2.4GHZ & 5GHZ 2311, 05ASZOKMJ244, TWL6040A113A94CW, PTWL60308113ZFC0. All model numbers, quantities of identical processors, and any other information that could be gained directly from the components was noted. As some of these components were obsolete, we were not able to find complete documentation on all of them. However, we were able to identify the purpose of a few semiconductors by what was written on them. For example, the OMAP4 UMTS ANT 750-9005-002 REV. A semiconductors found served the sole purpose of connecting the OMAP 4 to the Universal Mobile Telecommunications System, also known as "3G" data. Meanwhile, other chips like the OMAP4 BT WLAN 2.4GHZ & 5GHZ 2311 served multiple purposes. It not only maintains wireless Bluetooth connections but also allows the OMAP 4 to connect to 2.4GHZ & 5GHZ wireless networks. This is likely the reason that the OMAP4 BT WLAN 2.4GHZ & 5GHZ 2311 was more than two times the size of the OMAP4 UMTS ANT 750-9005-002 REV. A, making it the largest semiconductor in the OMAP 4.

By partaking in the 2018 Texas Instruments Electronics Online Challenge, we discovered the importance and commonplace nature of semiconductors. Although the device we disassembled was designed and produced in 2011, Texas Instruments similar system on a chip technology, which is used in numerous applications, from data processing to automobiles. This proves that semiconductors are a truly universal aspect of technology that is constantly evolving. Finally, this challenge has helped us understand that many of features available on smart devices that surround us today rely fundamentally on semiconductors in order to function.



The OMAP 4 tablet before disassembly

The OMAP 4 after top plastic was removed

Main components of the TI OMAP Mobile computer.

The dual screens are seen to the right, with the main logic board to the left

The disassembly process

Final disassembly