

Lexmark Inkjet Printer

PRINTER PARTS LIST

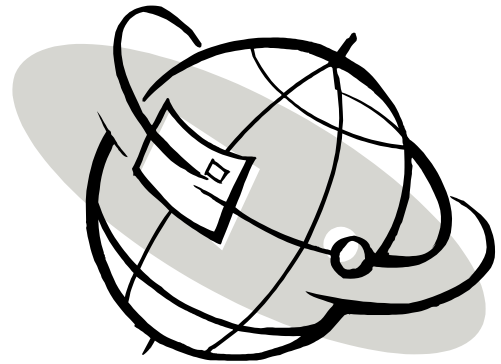
BJ4530F01BK2
 BJ4500G04CL1
 LEXMARK 3013164
 ATMEL AL250F641
 SAMSUNG K4H511638F
 9AC5S5TC 79078A2
 SMSC USX2014-NU-03 A0928-
 AF7007
 WM8196SCDS
 AZ358M
 AZ324M
 2512
 TIANBO HJR-4102E
 386M E1 934J53
 82154 we-MIDCOM HH938LF1
 LX1021874

Inkjet Printer

Inkjet printing is a type of computer printing that recreates a digital image by propelling droplets of ink onto paper, plastic, or other substrates

Thanks to the popularity of home computers and digital cameras, more people have printing machines in their homes than ever before—and most of them are inkjet printers.

Before setting to work we located which parts of the printer we wanted to focus on. After that we started to get to work straight away. There were only few screw on the outside. After removing all the screw, the tabs on the back were unhooked. We removed the drive belt by pressing on a tensioner on the other side of the printer. We then started to open all screws to remove all parts while examining them



In all we removed more than 110 screws. We also got stepper and DC motors, along with many shafts, rods, plastic parts, gears, circuit boards.

We reached out to the community, and asked them if they have any printers laying around, which they want to recycle. We want to open it for our Electronics Online Challenge Sponsored by Texas Instruments.

We got one **Lexmark Inkjet Printer & Scanner.**



Why we choose Inkjet printer

Inkjet printer uses expensive cartridges, and whenever we have to print lot of prints for our school projects, we often found our printer running out of them.

We wanted to understand how the inkjet printer works, and how they consume ink. In future we want to come

up with the easy alternatives.



Most important thing we learned

Do not to mess with large capacitors, especially near the plug. These can have high voltage even when not plugged in.
Don't mess with the ink.

How Inkjet printer works

A inkjet printer receives control info from PC, or may process the printout in its onboard electronics. Either way, rollers advance a page from your paper tray under a sliding printhead/cartridge assembly. Then, the printhead stepper motor kicks in, drawing the assembly on a sliding rod to its starting position, usually via a belt.

The printhead is composed of microscopic nozzles anywhere from dozens to literally

thousands—are outlets for incredibly tiny ink chambers, which are fed by the cartridge's reservoirs. Microscopic droplets, measured in millionths of a millionth of a liter, fire through the nozzles.

Most inkjets use "thermal" technology in which a tiny resistor in an ink chamber is pulsed, as needed, with intense current, superheating the ink and vaporizing part of the droplet. The result: Terrific pressure blasts it out the

nozzle and onto your page.

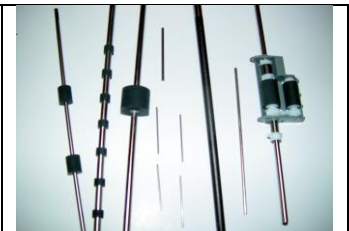
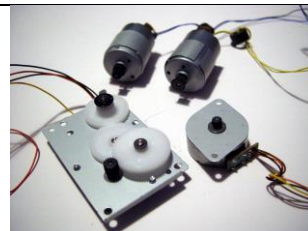
Capillary action then draws new ink into the chamber. Your text and images are built up, line by line, as the printhead assembly tracks across the page.

"If you go and buy a color laser printer from any major laser printer manufacturer and print a page, that page will end up having slight yellow dots printed on every single page in a pattern which makes the page unique to you and to your printer. This is happening to us today. And nobody seems to be making a fuss about it"

Tools Used

A Phillips screwdriver is about as complicated a tool

Parts



Texas Instruments Parts

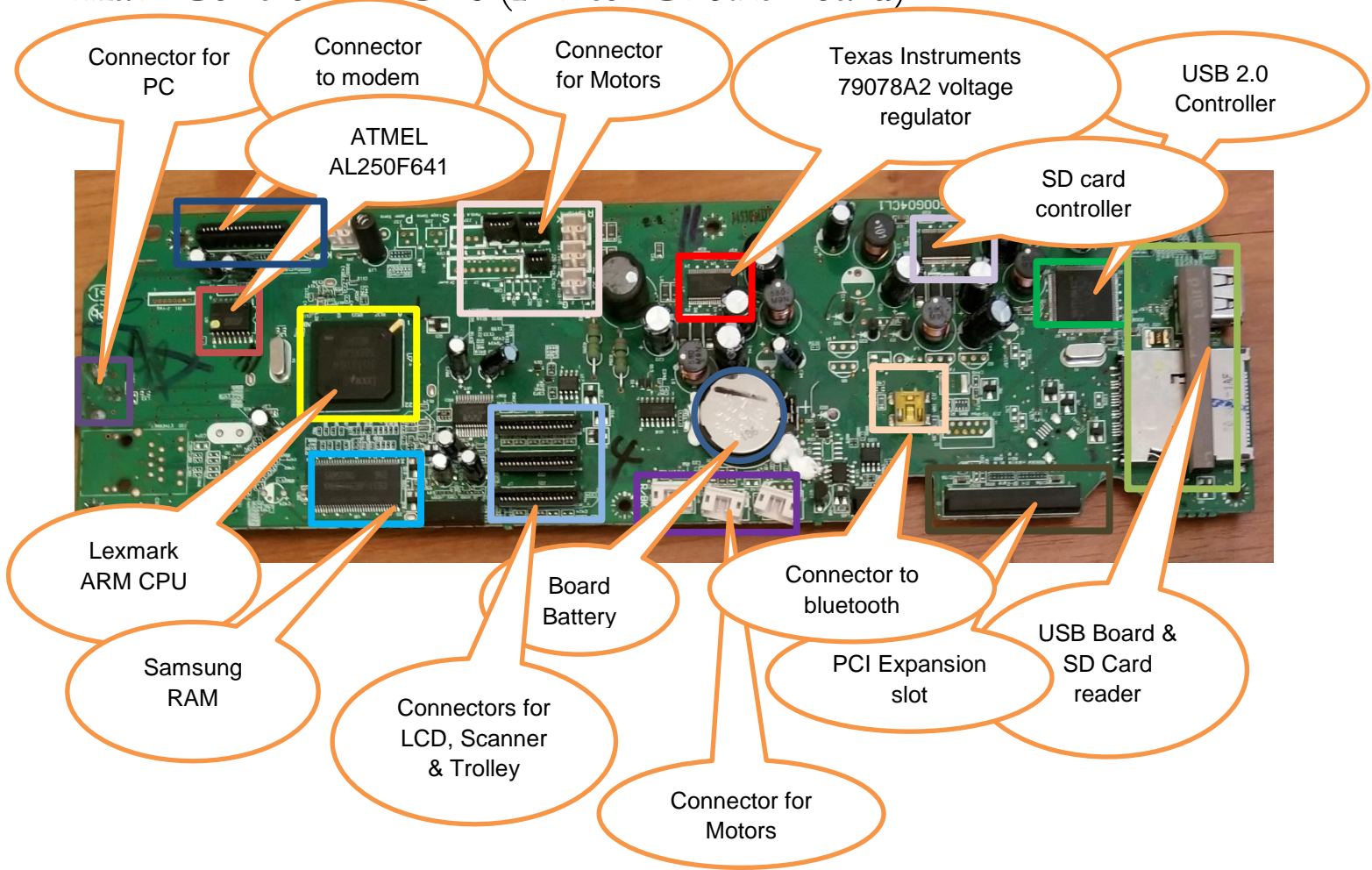
We did find one part made by Texas Instruments.

Texas Instruments
79078A2

**Fixed-voltage
integrated-circuit
voltage regulator.**

This microprocessor provides a constant 5 volts output. A fixed voltage regulator can be a positive voltage regulator or a negative voltage regulator. A positive voltage regulator provides with constant positive output voltage.

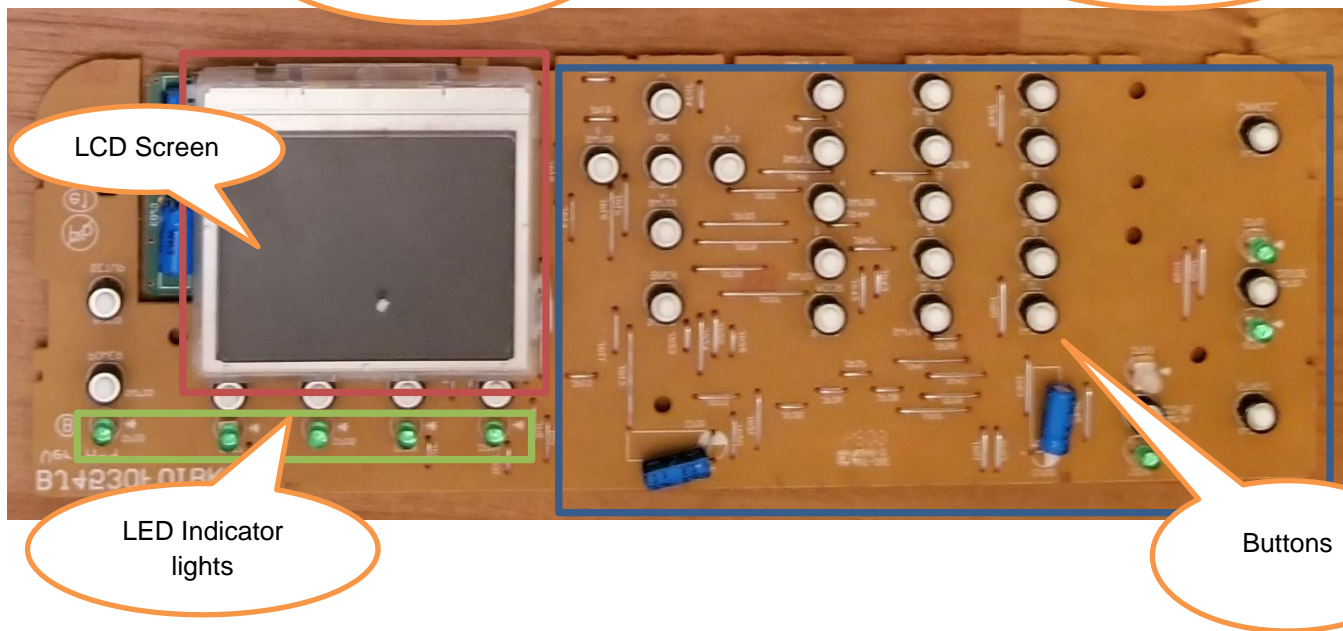
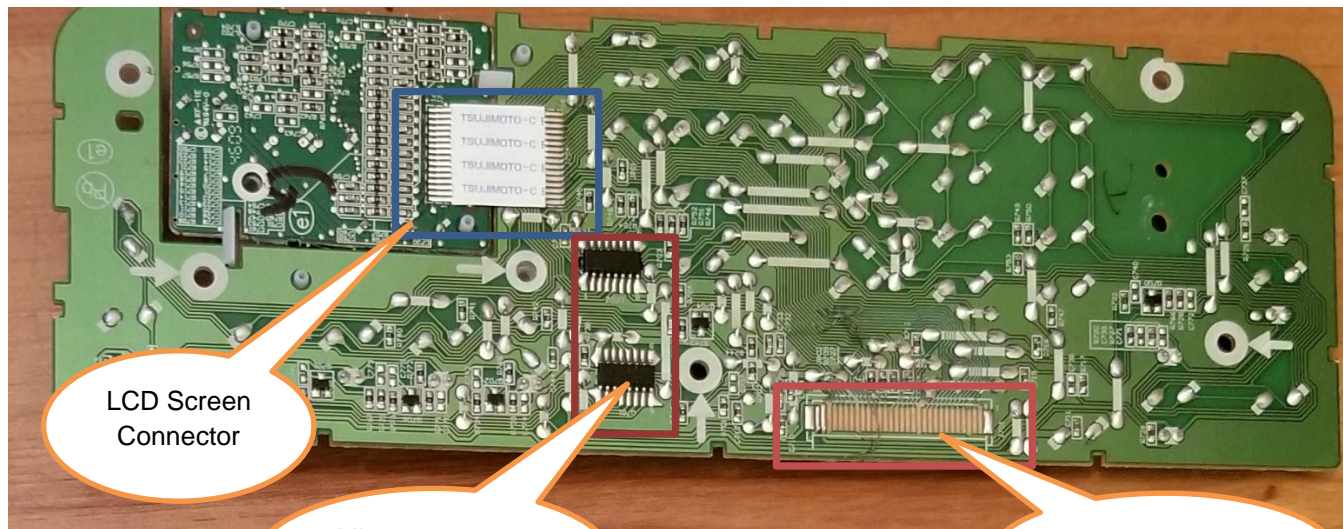
Main Controller PCB's (Printer Circuit Board)



Main Controller PCB Board Components

Component Name	Count	Purpose
R - Resistors	132	Adds electrical resistance to the circuit to. They are measured on Ohms
C - Capacitors	620	A component that can store a small charge and discharge quickly. It can be used to remove noise or make a supply voltage more stable.
IC - Integrated Circuit Chips	34	These chips are circuit boards shrunk into a small chip and can have many different uses
L - Ferrite Beads	42	Passive component used to resist changes in the electric current.
J - Connectors	42	Connection points to other boards and components
Y - Oscillators	3	A component that generates a periodic, oscillating signal, usually in the form of a sine wave or square wave. Convert DC signals to AC signals
D - Diode	1	A passive 2 terminal component that only lets current Card Reading 0 flow one direction
BT - Battery	1	Provides power to chips without the need for power from the power supply, or lets them run continuously during power interruption
T - Transformer	0	A component used to raise or lower voltages and current in a circuit.
VR – Voltage Regulator	1	An electromechanical component used to always give a desired voltage out, despite
Q - Transistor	32	A semiconductor used to amplify or switch electronic signals.
SW - Switch	0	Used to detect when the front panel buttons were pressed by connecting a circuit with conductive material on the bottom of the button
PS – Power Supply	4	Supplies a steady source of power to other components on the board.
F - Fuse	8	Is used to prevent dangerous overcurrent

LCD PCB's

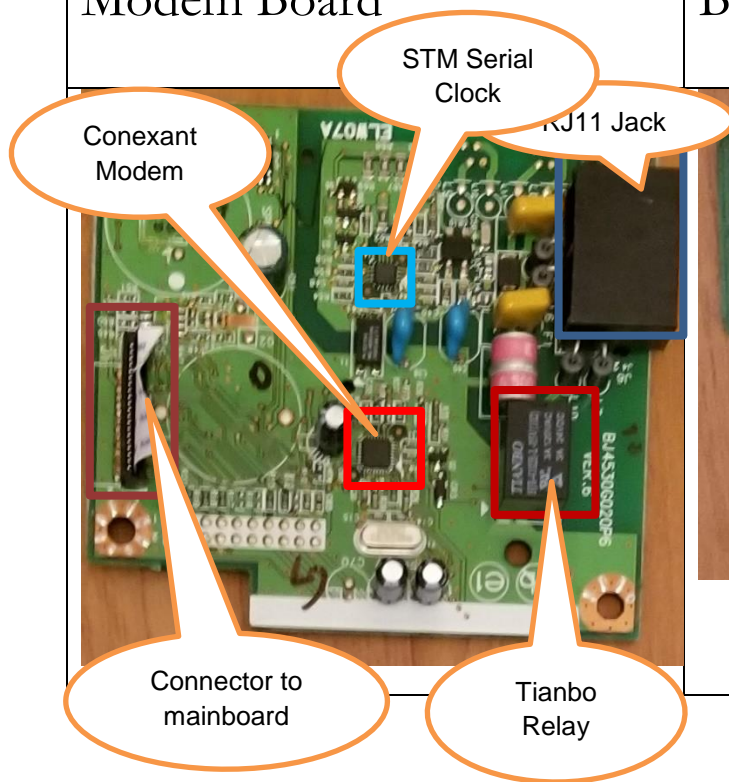


LCD PCB Board Components

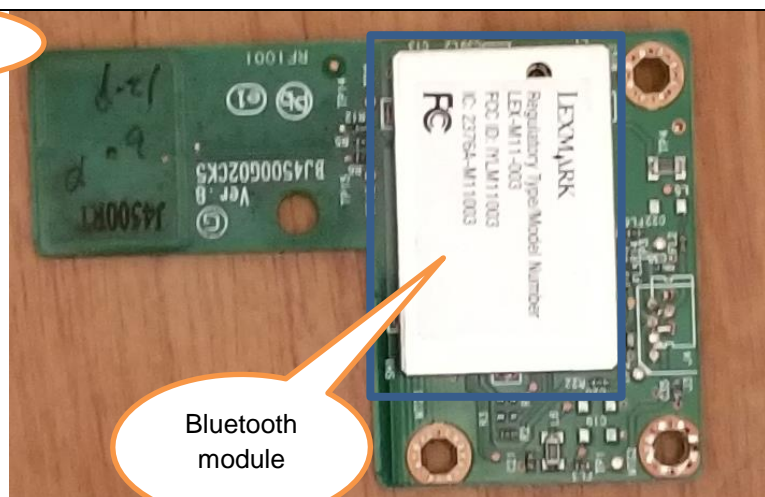
Component Name	Count	Purpose
R - Resistors	110	Adds electrical resistance to the circuit to. They are measured on Ohms
C - Capacitors	70	A component that can store a small charge and discharge quickly. It can be used to remove noise or make a supply voltage more stable.
IC - Integrated Circuit Chips	2	These chips are circuit boards shrunk into a small chip and can have many different uses
L - Ferrite Beads	3	Passive component used to resist changes in the electric current.
J - Connectors	82	Connection points to other boards and components

Y - Oscillators	1	A component that generates a periodic, oscillating signal, usually in the form of a sine wave or square wave. Convert DC signals to AC signals
D - Diode	8	A passive 2 terminal component that only lets current flow one direction
BT - Battery	0	Provides power to chips without the need for power from the power supply, or lets them run continuously during power interruption
T - Transformer	0	A component used to raise or lower voltages and current in a circuit.
VR – Voltage Regulator	1	An electromechanical component used to always give a desired voltage out, despite
Q - Transistor	0	A semiconductor used to amplify or switch electronic signals.
SW - Switch	31	Used to detect when the front panel buttons were pressed by connecting a circuit with conductive material on the bottom of the button
PS – Power Supply	1	Supplies a steady source of power to other components on the board.
F - Fuse	0	Is used to prevent dangerous overcurrent

Modem Board







Bluetooth Board

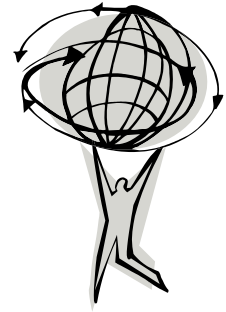


Modem and Bluetooth PCB Board Components

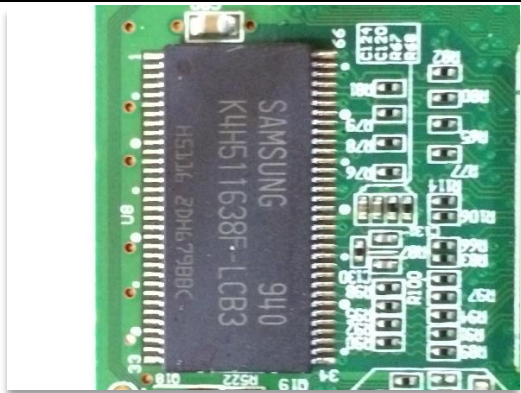
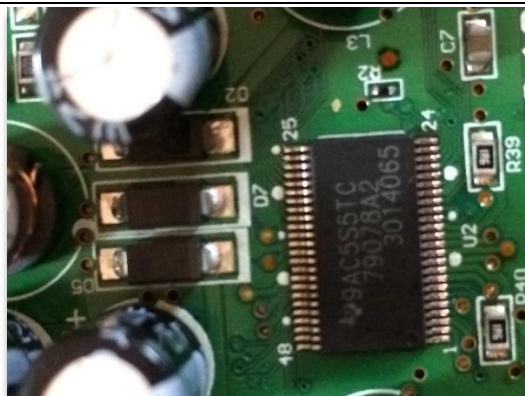

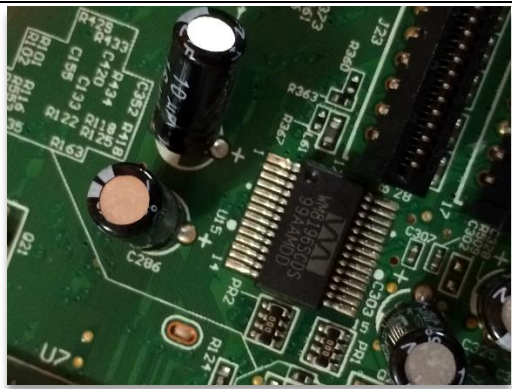
Component Name	Count	Purpose
R - Resistors	150	Adds electrical resistance to the circuit to. They are measured on Ohms
C - Capacitors	137	A component that can store a small charge and discharge quickly. It can be used to remove noise or make a supply voltage more stable.
IC - Integrated Circuit Chips	8	These chips are circuit boards shrunk into a small chip and can have many different uses
L - Ferrite Beads	11	Passive component used to resist changes in the electric current.
J - Connectors	9	Connection points to other boards and components
Y - Oscillators	3	A component that generates a periodic, oscillating signal, usually in the form of a sine wave or square wave. Convert DC signals to AC signals
D - Diode	16	A passive 2 terminal component that only lets current Card Reading 0 flow one direction
BT - Battery	0	Provides power to chips without the need for power from the power supply, or lets them run continuously during power interruption
T - Transformer	1	A component used to raise or lower voltages and current in a circuit.
VR – Voltage Regulator	2	An electromechanical component used to always give a desired voltage out, despite
Q - Transistor	6	A semiconductor used to amplify or switch electronic signals.
SW - Switch	0	Used to detect when the front panel buttons were pressed by connecting a circuit with conductive material on the bottom of the button
PS – Power Supply	0	Supplies a steady source of power to other components on the board.
F - Fuse	0	Is used to prevent dangerous overcurrent



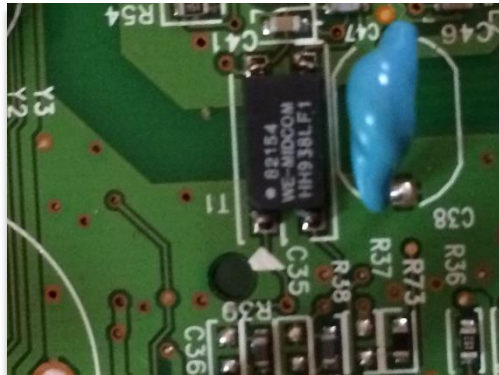

Parts

Part Number	Description	Picture
BJ4530F01BK2	LCD Board Is used to display output on Screen.	
BJ4500G04CL1	Lexmark Pro 705 Printer Genuine Main System Board Formatter Board For V515W All-in-one Wireless Printer / Lexmar The main System Board	
LEXMARK 3013164	Lexmark Logic control microprocessor, this processor is designed based on ARM specifications. The main microprocessor for the printer	
ATMEL AL250F641	8-bit Microcontroller Application Note - Atmel Corporation 0940B-AVR-05/02. Implementation. The application defines an 8-byte ring buffer (R0 - R7) which always holds the data in the current averaging window. The filter routine calculates the sum of the window and computes the average, which is	

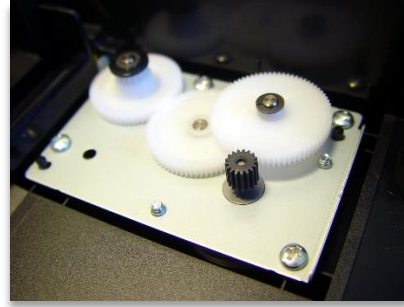
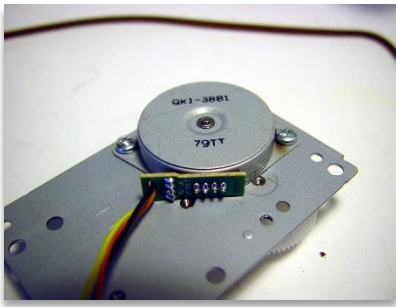


"I am an all-surface wallpaper man that retired to become a printer"

Part Number	Description	Picture
SAMSUNG K4H511638F	512Mb F-die DDR SDRAM Manufacturer – Samsung Consumer device memory	
9AC5S5TC 79078A2	Texas Instruments 79078A2 Fixed-voltage integrated-circuit voltage regulator.	
SMSC USX2014-NU-03 A0928-AF7007	NBFM Multi-channel UHF Transceiver USB 2.0 Hi-Speed 4-Port Hub Controller 36-Pin VQFN from Kynix Semiconductor Hong Kong Limited.IC Chips	
WM8196SCDS	WM8196SCDS/V Cirrus Logic Analog to Digital Converters - ADC 16-Bit 12MSPS 3-Channel AFE Mouser Electronics	

	Oscillator	
386M E1 934J53	Microprocessor	
82154 we-MIDCOM HH938LF1	TRANS MODEM CONEXANT SMARTDAA Würth Electronics Midcom	
LX1021874	Information Not Available	

Scanner parts

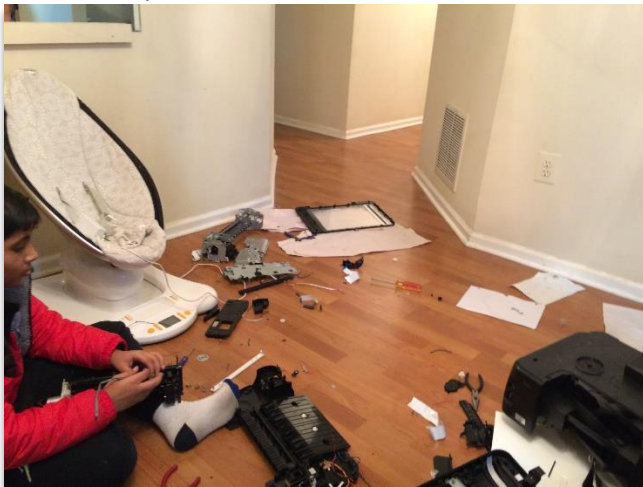


Pictures



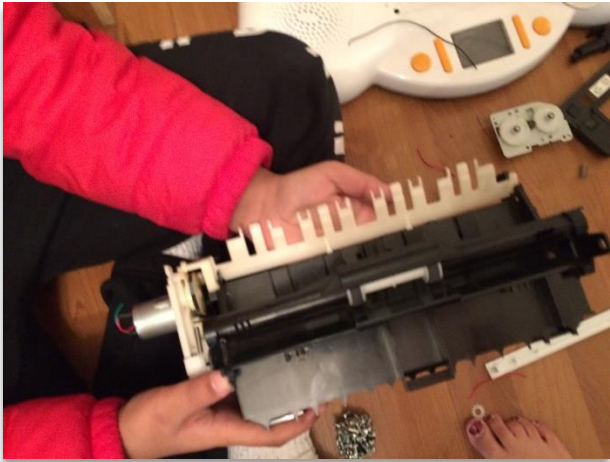
The Broken printer

The parts we researched



We opening the printer

Half way opening the printer



Exploring the part



Cutting the wires