TEELtechnologies

## CHIP OFF 2.0 FORENSICS
WITH CERTIFICATION

Teel Tech Chip-Off 2.0 provides students with a comprehensive education into performing forensics on memory chips used in today's mobile devices and other media.

In depth information about: eMMC, eMCP, and UFS

- Newest BGA chip pinout layouts
- Applying proper techniques for non-heat chip removal
- Pros and cons of physical manipulation caused by heat or friction removal techniques
- Updated heat removal processes
- Introduction to monolithic devices and data recovery techniques
- New tools and techniques for chip-off extraction
- Earn the TeelTech Chip-Off Forensics Certification "TCFC"
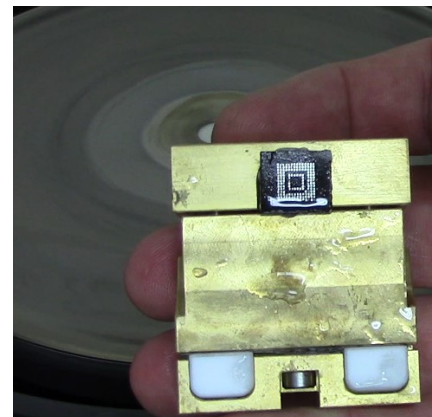
Why take Chip-Off 2.0 Course?
Chip-Off will support the following:

- Damaged or destroyed devices
- Devices unsupported by commercial tools
- Unsupported advanced data extraction methods

This five-day course consists of hands-on practicals and theory presentations that encompass proper and safe chip removal and data extraction. All students receive a Certificate of Attendance, and the opportunity to take the TCFC certification test.

Further analysis of the data will be covered, and students shall use leading forensics software in the class to analyze data.
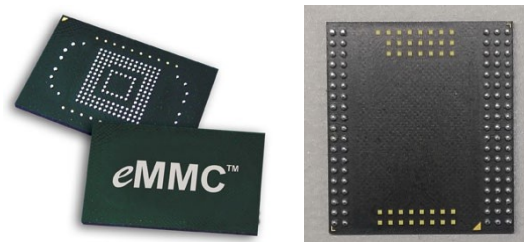
You will also receive a free:

- E-Mate Pro eMMC Tool
- Medusa Pro Box

Courses held throughout the USA, Canada, Europe, APAC and more.

For a complete class schedule, visit TeelTechTraining.com.

Interested in hosting a TeelTech Class? Give us a call at (203) 855-5387 Send us an email at info@teeltech.com

Sign Up Today At:
www.TeelTechTraining.com

Proudly Offered By:

TEELtechnologies   **TEELtechnologies Canada**

Acquire the gear that allows you to perform forensics on memory chips used in today's mobile devices and other media.

Chip-off techniques will support devices that cannot be worked on with commercial tools. A forensics practitioner choose the tools they need for the job whether they are using heat or friction removal methods.

TeelTech Chip-Off Starter Kit

Including:

- Complete JTAG and Chip-off Workbench Gear
- UP828 Chip Reader and Collection of Adapters
- Includes 5 eMMC and 4 eMCP (Now with BGA 221 and 529 eMCP Test Sockets!)
- Infrared Heater and Oven

Part No: AP-CHPSTRT4-TEEL

Adapter Subscription Plan

Customers receive six adapters of choice delivered as needed.

Part No: AP-UPSUB

TeelTech UP & UP Chip Readers

Now With TeelTech's Exclusive UP+UP Software

UP828P Programmer - Latest Up+Up Programmer

Faster Reading of Today's Chips

SD Card Socket Adapters

eMMC / eMCP Test Sockets for Chip Reading

Economical and Easy to Use - Reads Memory Chips found in most smartphones today
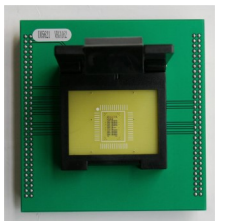
Taught in the TeelTech Chip-off Class

Dediprog NuProg-E Programmer

High Speed Programming

eMMC Support

UFS Support
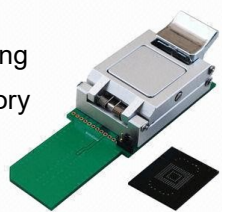
Recommended Adapters

FBGA137P - Current and Burner phones

VBGA162P - MOVINAND/iNAND/EMMC memory

VBGA 529P - Newer smartphones

VGBA221P - eMCP Chips

Necessary tools for best practice in Chip Removal

Ultrapol Basic Polisher
Part No:
AP-UT-ULTRAPOL

Bantam Tools PCB Milling Machine
Part No:
AP-BT-MILLING

T-862 Rework Station
Part No:
AP-T862

T-962 Infrared Reflow Oven
Part No:
AP-T962

Tagarno Digital Microscope
Part No:
AP-TAGMAGFHD-ZIP

Reballer Kit
Part No:
AP-REBALL-KIT

Please Note: Teel Technologies is the Only Authorized Distributer of the UP+UP Equipment in the United States and Canada. Equipment purchased from any other source is likely a knock-off, and / or not warrantied.

Chip-Off 2.0 Course Outline

This training provides the students with a full perspective of the Chip-off process as it relates to Advanced Mobile Forensics techniques. This new version 2.0 training will explore new techniques on the market; handling of new types of Flash Memory;

Students are provides with in depth powerpoint to take home as a reference as well as clear concise videos of the process they are taught.

Day 1
Hands on Practical's for Heat Removal/Cleaning/Tinning of chips

Chip-off Introduction

- When should one consider the Chip-off process
- Mobile Device Force Acquisition Continuum
- Supported devices
- Overview of real cases
- What you may encounter in Chip-off dumps

Chip-off Heat Process

- Disassembly of the cell phone and considerations
- References and training for cell phone disassembly
- Heat/Non-Heat shield removal
- Removing chip Upper/Lower heat source
- Removing chips Lower heat source
- Removing chip T862
- When to and not to use these heat chip removal/cleaning processes
- Preparing the chip for Tinning or 2 Stage Reballing
- Tinning of BGA chips
- Review of videos of each process

Day 2
Hands on Practical's for Heat Removal Process and Reballing

Characteristics of Flash memory

- Types of Chip you will encounter and what is to come
- What is Flash Memory
- How is the data stored in the memory
- Wear Levelling-Garbage Collection-FTL-Trim and their affects
- Transition through NOR-NAND-eMMC-eMCP-UFS
- Controller functions related to Flash Memory
- Quick look at SSD type storage

UP828 UP828P Programmers

- Getting to know the software/hardware interface
- Installation process
- What are the differences between UP828 and UP828P
- Adapters and how they work
- Importance of the Checksum Hash values
- Errors you will encounter and how to trouble shoot them
- Quick look at decoding to data

2 Stage Reballing of BGA Chips

- Tools and kit you will need
- Low heat solder paste
- Stage 1 reballing of the chip
- Overview of BGA Stencils
- Stage 2 reballing of the chip
- When and why to use each reballing stage

Chip-Off 2.0 Course Outline Continued

Day 3

Hands on Practical's for Heat and Non-Heat Processes

Non-Heat Milling BGA Chips

- Overview of the process and video
- The right and wrong equipment for this process
- Pros and Cons of the Milling process
- Some training locations will feature a Milling machine for use

Non-Heat Polishing Process

- Overview of the process
- Two reasons to use the Polishing Process
- Polishing surfaces – When and why to use them
- Polishing Fixtures – How to use them
- Adhesives – When to use what type
- Polishing epoxy only
- Polishing PCB with cut out chip
- Video review and discussion of each process

Day 4

Hands on Practical's for Heat/Non-Heat Processes and Package on Package chips

Medusa eMMC Box

- Overview of the Medusa Pro Box
- Installation process
- ISP-eMMC Functions

Alternative Reading Tools

- SD or USB eMMC type Adapters
- Advantages and when to use the eMMC SD adapters
- How to use them properly forensically
- E-Mate eMMC Pro kit
- Read through ISP Flasher Box
- Read through USB cable
- Bus Modes and how they can help
- In-System-programming direct solder to chip
- Other programmers for Mobile Phones
- Other programmers for Memory devices

Package on Package

- Reviewing phones that use POP chipsets
- Why is POP used
- Removing POP chips
- Splitting POP style chips
- Review Videos of the processes

Day 5

Hands on Practical's for all processes taught in this class

Dediprog UFS Programmer

- A look at the UFS chips
- Understanding BGA95 and BGA153 differences
- Overview of the hardware and adapters
- Installation of the software
- LUN's and other partitions in UFS style chips
- Looking at and reading the LUN's and RPMB partitions
- Parsing out the recovered data

Resources and DataSheets

- Resources to help you with your Chip-off adventures
- Reference material
- Decoding the number on the chips
- How to find out what adapter you need
- How to find out what chip you have
- What can you gleam from the chip datasheets
- Best/Safe places to get Datasheets

Certification Process

- Test phone provided to use any process from class
- Must provide instructor with bin dump and decoded data
- Successful students receive Teel Tech Chip-off 2.0 Certification