ruSolut
Data Investigation & Recovery Technology

Product Catalogue

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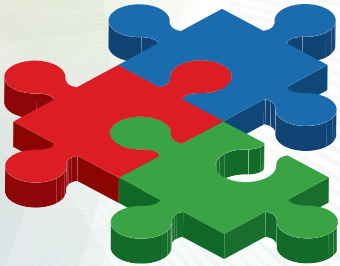
Rusolut
What we do?

We are a team of professionals in the field of digital forensics, data recovery and reverse engineering. Together, we focus on developing technologically advanced and easy-to-use solutions for Data Recovery and Digital Forensics engineers and other experts to make their daily work easier, faster and more effective.

To provide you with maximum benefits and results in the NAND flash data recovery industry, we designed a **Model**, which combines best-of-breed solutions, intensive training classes and professional technical support.

This catalogue demonstrates in detail the main features of each part and explain why it is extremely important to collect all the pieces of the puzzle together for best results.



Let's discover it!

Visual NAND Reconstructor
Technology

This is a universal platform for chip-off data recovery and forensics analysis of any kind of flash devices.

Works with:

- flash drives
- memory cards
- smartphones and tablets
- GPS navigation systems
- multimedia devices
- voice recorders
- other non-standard and monolithic devices

Visual NAND Reconstructor (VNR) includes powerful and flexible data recovery and digital forensic analysis software and a fundamental hardware part.

Visual NAND Reconstructor
Software

Software outstanding features:

- Integrated Online Solution Base
- XOR key synthesis tools powered by Artificial Intelligence
- Digital forensics analysis of vehicle computers, IoT and network devices
- Comprehensive software for logical image reconstruction
- Largest database of non-standard and monolithic devices
- Visual analysis approach
- Built-in Advanced SQLite carving engine
- Built-in JPEG carving engine with file integrity control
- JPEG and office files carver with validity control
- Android data extractor
- Advanced algorithms for error correction in NAND chips
- Intelligent File assembler recovers FRAGMENTED pictures, videos and office files from bits and pieces gathered from full device space

Visual NAND Reconstructor
Starter kit

This is the essential VNR kit which contains VNR Software, VNR Reader and the most widely used adapters.

NAND Reader

Mini USB 2.0 Cable

Adapters:

- TSOP48 ZIF adapter
- TLGA52 ZIF adapter
- TSOP56 adapter
- BGA100 adapter
- BGA152 adapter
- BGA154 adapter
- BGA224 adapter
- Monolith adapter

USB Flash Disk with:

- VNR Software
- Drives
- Database
- Resources

Visual NAND Reconstructor
Adapters

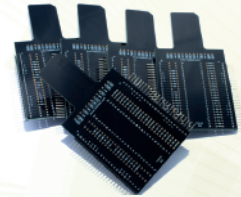
VNR eMMC kit

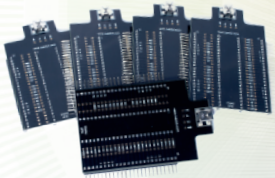
- BGA169eMMC 14x18 adapter
- BGA169eMMC 12x18 adapter
- BGA169eMMC 12x16 adapter
- BGA169eMMC 11.5x13 adapter
- BGA169eMMC 10x11 adapter
- BGA 162 eMMC
- BGA 186 eMMC
- BGA 221 eMMC

VNR Standard kit

- BGA152 adapter
- BGA132 adapter
- BGA100 adapter
- BGA137 adapter
- BGA107 adapter
- LGA60 adapter

Visual NAND Reconstructor





Soldering kit

5 x SD + 5 x UFD Soldering Adapters with outputs for Logic Analyzer

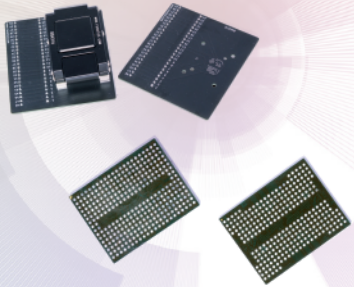
BGA316/BGA272 adapter

BGA316/BGA272 adapter consists of one socket and two boards designed for BGA316 and BGA272 chips.

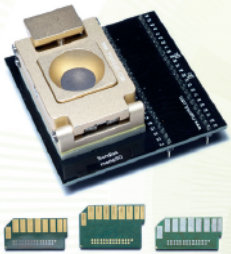
BGA272
Data bus: 2 x double 8-bit
Number of CE/crystals: 2 x 8 CE
Chip size: 14 x 18

BGA316
data bus: 2 x double 8-bit
Number of CE/crystals: 2 x 8 CE
Chip size: 14 x 18

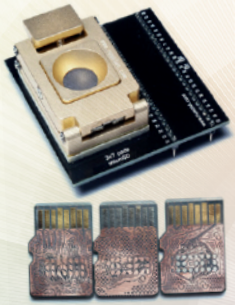
To read the dumps from all CE crystals, rotate the chip 180 degrees inside the socket



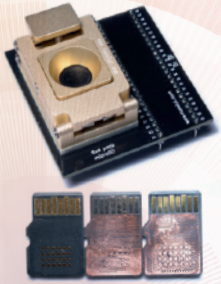
Visual NAND Reconstructor
Monolithic adapters



Sandisk monoSD - NAND adapter designed for damaged SD cards made by Sandisk. Adapter supports 3 different sizes of devices which are common in ~90% of Sandisk SD cards.The databus size is 8 bits.



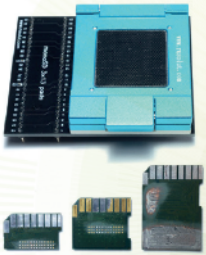
microSD 3x7 pads - NAND adapter designed for damaged microSD cards mainly made by Sandisk. Adapter supports multiple card's pcb designs which are common in ~80% of Sandisk microSD cards. The main criteria is 3 rows of 7 pads on the device. The databus size is 8 bits.



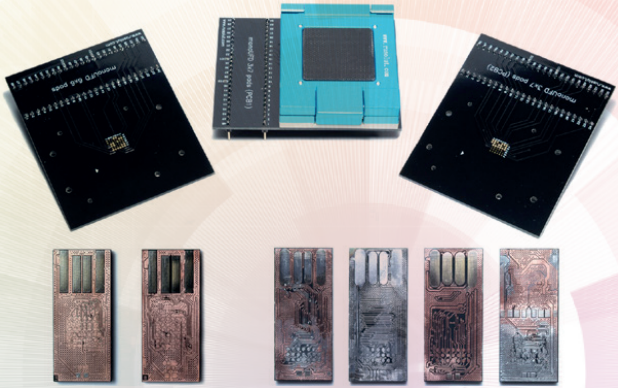
microSD 6x4 pads - NAND adapter designed for damaged microSD cards made by Kingston, Kingmax, Toshiba, Apacer, Goodram and other brands. Adapter supports multiple card's pcb designs with small and large pads. The main criteria is 6 columns of 4 pads on the device. The databus size is 8 bits.

*The appearance of adapters is subject to change without prior notice

Visual NAND Reconstructor
Monolithic adapters



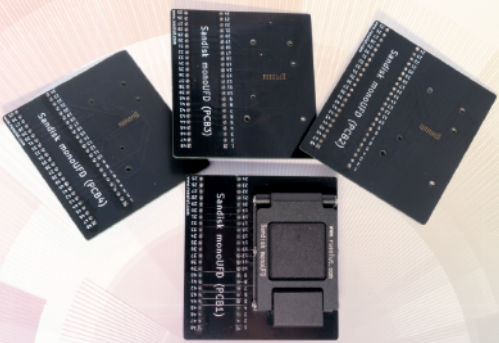
monoSD 3x13 pads - this is designed for monolithic SD cards with a very common pattern of technological pads. Adapter supports three different sizes of device and therefore has three frames in kit. Adapter is designed for single/dual 8-bit databus flash chips.



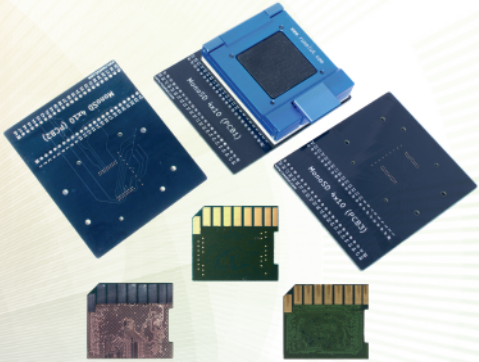
monoUFD 6x6 & 3x7 pads - this is the world's first socket adapter for monolithic USB flash disks. Adapter supports three different pinouts and therefore has three boards and two frames in kit. The socket and frames can be easily swapped between the boards. Adapter is designed for 8-bit single databus flash chips.

Visual NAND Reconstructor

Monolithic adapters



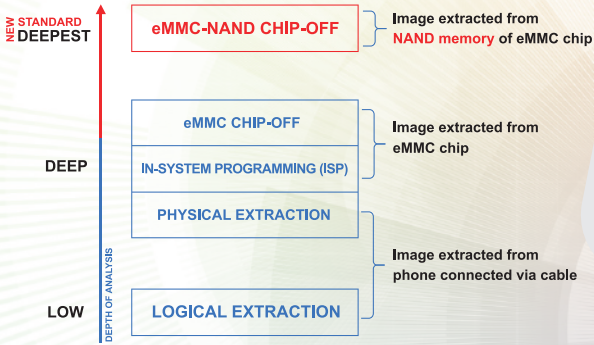
Sandisk monoUFD - this adapter is designed for damaged Sandisk flash drives with both USB 2.0 and 3.0 interfaces. This adapter supports 4 different pinouts and therefore has 4 PCBs and 4 frames. The adapter is designed for devices with single 8-bit data bus. The socket and frames can be easily swapped between the boards, allowing you to change several different devices in a short time.



monoSD 4x10 pads - this adapter is designed for SD cards with columns of pads on sides. It has 3 different boards to support multiple different devices. The PCB1, PCB2 boards have single 8-bit data bus and PCB3 board has dual 8-bit data bus. The PCB2 and PCB3 have additional power (VccQ) which is necessary to improve the quality of NAND reading.

eMMC NAND Reconstructor

Data Recovery Techniques



Until recently, there were two well-known methods in the data recovery world: "via cable/standard interface" and chip-off technique.

Both of them allow to get ~ 95% of actual and deleted data.

The third method of data recovery we developed is data extraction from eMMC memory via NAND interface.

This method makes it possible to obtain the missing 5%.

Our developers have created a new standard of data recovery from eMMC memory via the NAND interface. This revolutionary technology is called ***eMMC NAND RECONSTRUCTOR.***

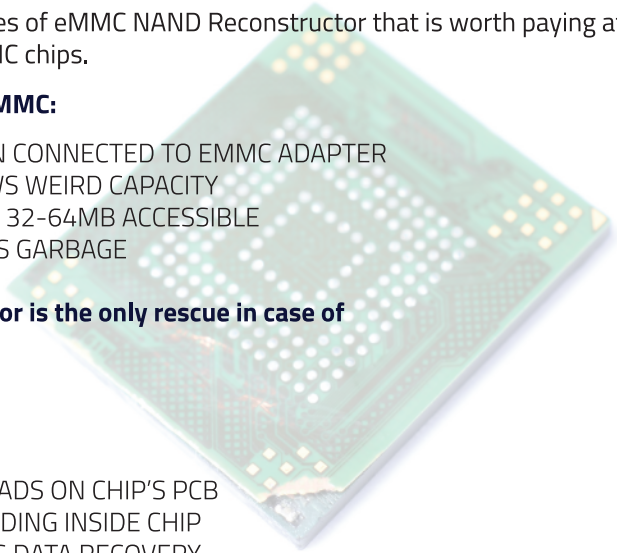
eMMC NAND Reconstructor

The only salvation for the damaged eMMC chips

One of the main advantages of eMMC NAND Reconstructor that is worth paying attention to is supporting dead eMMC chips.

Symptoms of damaged eMMC:

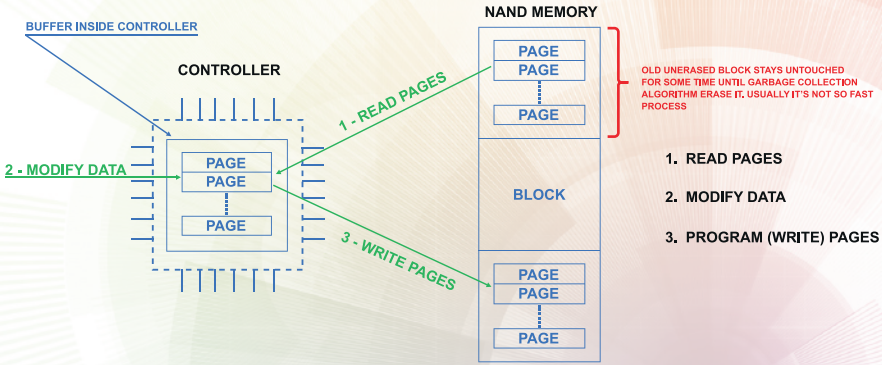
- NOT RECOGNIZED WHEN CONNECTED TO EMMC ADAPTER
- RECOGNIZED BUT SHOWS WEIRD CAPACITY
- RECOGNIZED AND FIRST 32-64MB ACCESSIBLE
- RECOGNIZED BUT READS GARBAGE



eMMC NAND Reconstructor is the only rescue in case of such damages as:

- WATER DAMAGES
- THERMAL DAMAGES
- PHYSICAL DAMAGES
- DAMAGES OF TRACKS/PADS ON CHIP'S PCB
- DAMAGES OF WIRE BONDING INSIDE CHIP
- HUMAN FACTOR DURING DATA RECOVERY

eMMC NAND Reconstructor
Technology

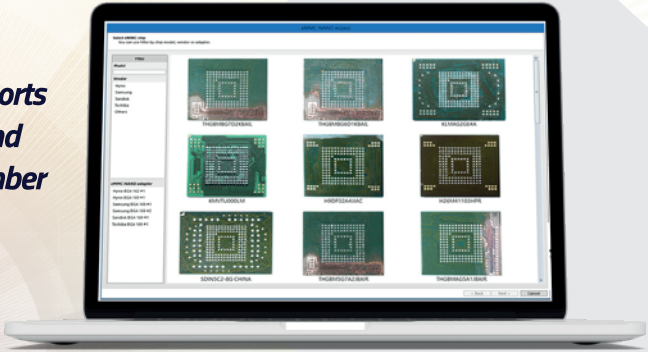


eMMC NAND Reconstructor is the only solution on the market that provides the deepest level of data recovery from areas of eMMC chips that have never been accessible before:

- DATA RECOVERY FROM OVERWRITTEN/GARBAGE BLOCKS OF NAND MEMORY IN EMMC CHIPS
- DATA RECOVERY AFTER FACTORY RESET/FORMAT
- DATA RECOVERY FROM DAMAGED EMMC CHIPS

eMMC NAND Reconstructor
Software

eMMC NAND Reconstructor supports various types of memory chips and therefore it offers the largest number of different interfaces.



Software outstanding features:

- Automatic and semi-automatic logical image reconstruction
- Automatic solutions/resources for chips with instant online synchronization
- Built-in chip reading functions
- Comprehensive and intuitive user interface

eMMC NAND Reconstructor
Who needs it?

This ultimate and revolutionary technology was developed and designed primarily for law enforcement officials.

An absolute must-have for:

- law enforcement authorities
- police units
- investigative offices
- intelligence agencies
- high-tech crime detection units
- detective agencies
- global data recovery corporations
- commercial companies focused on data recovery from eMMC memories
- for those companies that look to the future and want to achieve greater benefits

We have been successfully utilizing Rusolut products in our forensic laboratory. By now VNR is a standard product in mobile communications forensics. Applying the new eMMC module, we are able to read data from memories hitherto considered being defect. That is why our future opportunities in forensic case handling have extended considerably. VNR+eMMC Nand Reconstructor has become indispensable in modern forensic laboratories for mobile communications.

Cpt Tom Richter, Forensic Department, State Criminal Police Office, Thuringia, Germany

eMMC NAND Reconstructor
Purposes

Works with:

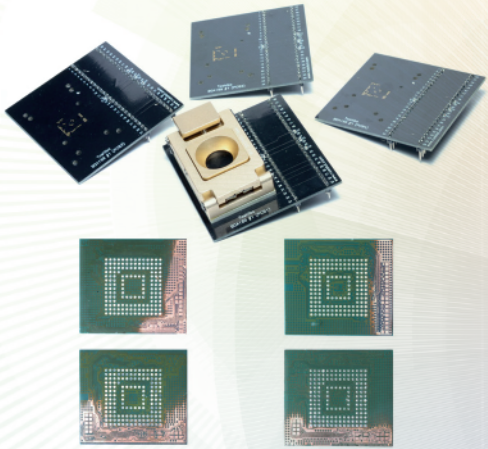
- SMARTPHONES
- TABLETS
- LAPTOPS
- VOICE RECORDERS
- CAMERAS
- MULTIMEDIA PLAYERS
- TV DECODERS/SMART TV
- CAR INFOTAINMENT SYSTEMS
- PLANE/HELICOPTER NAVIGATION AND CONTROL SYSTEMS
- DRONES
- OTHER PORTABLE MEDIA

...AND MUCH MORE...

eMMC NAND Reconstructor works with all supported chipsets regardless of device model and operating system.

eMMC NAND Reconstructor

ADAPTER: Toshiba BGA169 #1



NAND data bus:

- single 8 bits

Chip size:

- 11,5x13

Supported eMMC chips:

- THGBM5G7A2JBAIR
- THGBM5G5A1JBAIR
- THGBMAG5A1JBAIR
- THGBM5G6A2JBAIR
- THGBMBG7D2KBAIL
- THGBMBG7C2KBAIL
- THGBMBG6D1KBAIL
- THGBMHG8C2LBAIL
- TY90HH131625RA

...and others with same technological pads

*The appearance of adapters is subject to change without prior notice

eMMC NAND Reconstructor

ADAPTER: Sandisk BGA169 #1

NAND data bus:

- single 8 bits

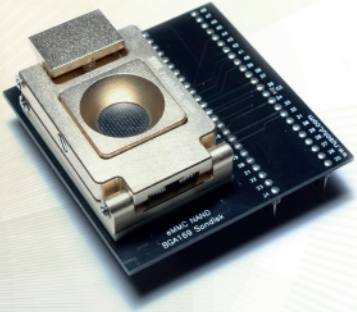
Chip size:

- 11,5x13; 12x16; 14x18

Supported eMMC chips:

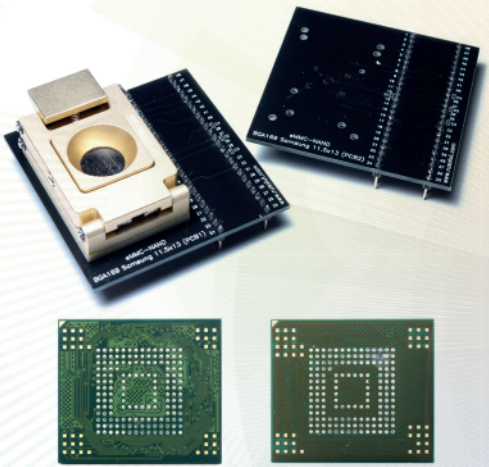
- SDIN7DP2-4G
- SDIN8DE2-8G
- SDIN7DU2-8G
- SDIN5C2-32G
- SD5DH26A-4G
- SDIN5D2-4G
- SDIN7DP4-32G
- SDIN5C2-8G CHINA

...and others with same technological pads



eMMC NAND Reconstructor

ADAPTER: Samsung BGA169 #1



NAND data bus:

- single 8 bits

Chip size:

- 11,5x13

Supported eMMC chips:

- KLMAG2GEAC
- KMVTU000LM
- KLMBG4WEBC
- KLM8G2FE3B
- KLMAG4FE4B

...and others with same technological pads

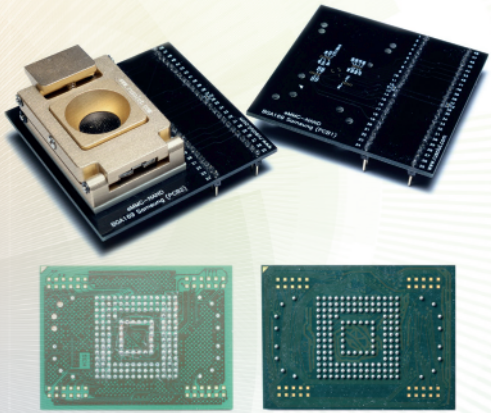
eMMC NAND Reconstructor

ADAPTER: Samsung BGA169 #2

NAND data bus:
- single 8 bits

Chip size:
- 12x16; 14x18

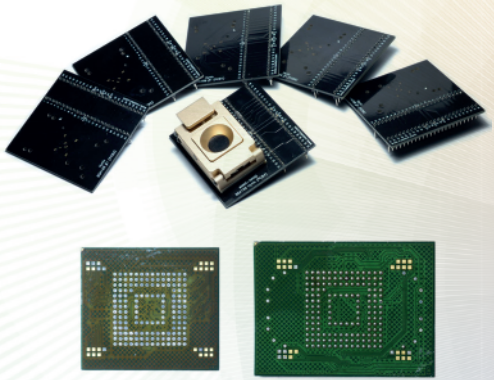
Supported eMMC chips:
- KLMAG2GE4A
- KMV3U000LM
- KLM8G1WE4A
- KLMBG4GE2A
- KLMAG2GE2A



...and others with same technological pads

eMMC NAND Reconstructor

ADAPTER: Hynix BGA169 #1



NAND data bus:

- single / dual 8 bits

Chip size:

- 11,5x13;1 2x16; 14x18

Supported eMMC chips:

- H9DP32A4JJAC
- H26M41103HPR
- H26M52103FMR
- H26M21001ECR
- H26M64003DQR
- H26M64002DQR
- H26M54003EMR
- H26M64103EMR

...and others with same technological pads

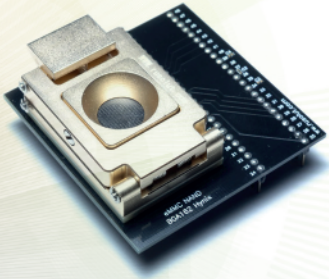
eMMC NAND Reconstructor

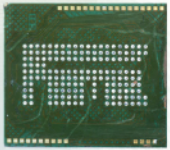
ADAPTER: Hynix BGA162 #1

NAND data bus:
- single 8 bits

Chip size:
- 11,5x13

Supported eMMC chips:
- H9TP32A4GDBC
- H9TP32A8JDMC
- H9TP32A4GDMC
- H9TP32A8JDBC

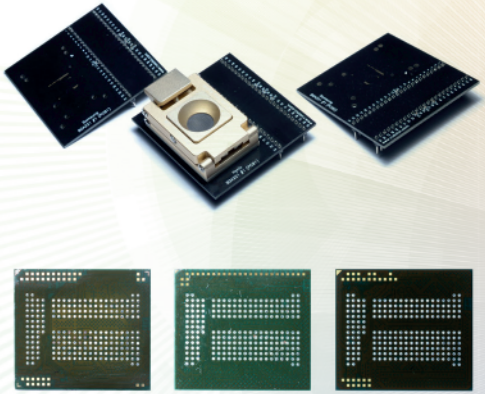




...and others with same technological pads

eMMC NAND Reconstructor

ADAPTER: Samsung BGA221 #1 / Hynix BGA221#1



NAND data bus:

- single 8 bits

Chip size:

- 11,5x13

Supported eMMC chips:

- KMQNW000SM
- KMRNW0001M
- KMFJW0007M
- KMQNW0006A
- H9TQ64A8GTMC
- H9TQ64ABJTMC
- H9TQ17ABJTMC
- H9TQ64AAETMC

...and others with same technological pads

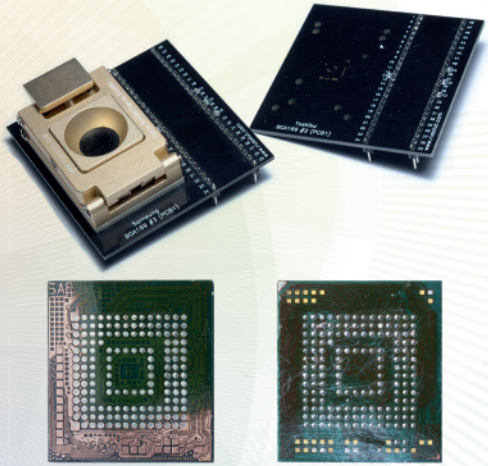
eMMC NAND Reconstructor

ADAPTER: Toshiba BGA169#2 / Samsung BGA169#3

NAND data bus:
- single 8 bits

Chip size:
- 10x11

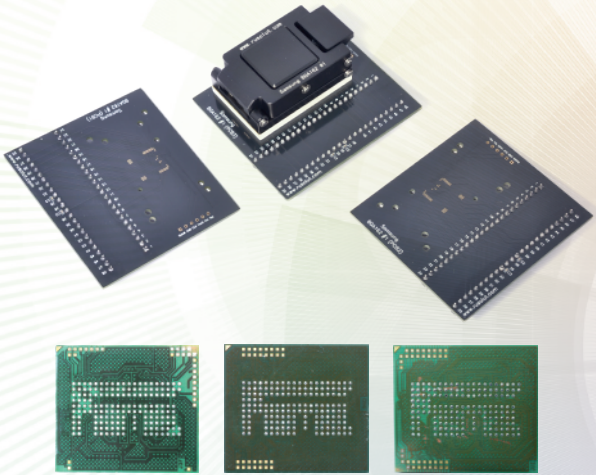
Supported eMMC chips:
- THGBM5G7A4JBA4W
- KLMAG4FEAB
- KLM8G2YE4C (PARTIAL ECC)



...and others with same technological pads

eMMC NAND Reconstructor

ADAPTER: Samsung BGA 162 #1



NAND data bus:

- single 8 bits

Chip size:

- 11,5x13

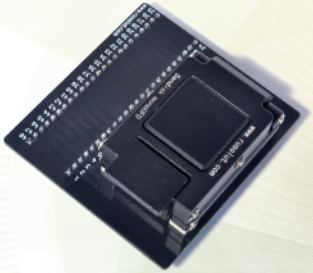
Supported eMMC chips:

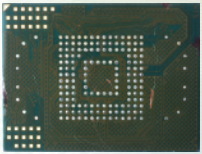
- KMK5U000VM
- KMN5U000FM
- KMN5U000ZM
- KMK5X000VM (PARTIAL ECC)
- KMN5X000ZM (PARTIAL ECC)
- KMN5X000ZA (PARTIAL ECC)

...and others with same technological pads

eMMC NAND Reconstructor

ADAPTER: Samsung BGA 169 #4





NAND data bus:

- dual 8 bits

Chip size:

- 12x16

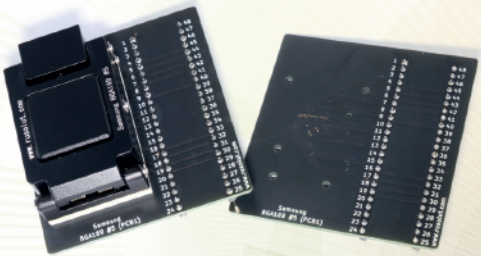
Supported eMMC chips:

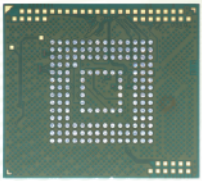
- KMVYL000LM

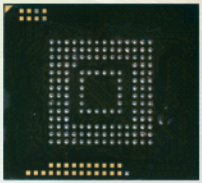
...and others with same technological pads

eMMC NAND Reconstructor

ADAPTER: Samsung BGA 169#5







NAND data bus:
- single 8 bits

Chip size:
- 11,5×13

Supported eMMC chips:
- KMV3W000LM
- KLMAG1JETD (PARTIAL SOLUTION)
- KLMCG2UCTA (PARTIAL SOLUTION)
- KLMDG4UCTA (PARTIAL SOLUTION)

...and others with same technological pads

eMMC NAND Reconstructor
What else?

eMMC NAND Reconstructor works only in couple with Visual NAND Reconstructor Starter kit.

eMMC NAND Reconstructor purchase includes:

1. Basic Package – Software with one eMMC NAND adapter of a choice
2. Full Edition – Software with all available eMMC NAND adapters

You can buy an additional/newly released eMMC NAND adapter at any time.

Training classes

In order to take full advantage of technology, the user should expand technological background and boost some skills. We are convinced that the purchase of the best-of-breed product is only the first step. We have developed training programs that not only describe the technology and recovery process in general, but also give participants real implements for their future work.

The most popular question from our customers is: "I purchased your solution, but I don't feel 100% confident in my efficiency while using it. How can you help me?

We are ready to help you with great pleasure!
Today we offer the following training programs:

- **Chip-Off StartUp Training**
- **Chip-Off Advanced Training**
- **Monolith Pinout Discovery Training**

We conduct classes in Regular Groups according to the regular training schedule and offer Closed-Door classes. Regular Groups are conducted in English and they are attended by students from all over the world. Trainings are conducted Online or On-Site at our headquarters in Warsaw, Poland.

Closed-Door classes take place at times and dates convenient for the students. You can invite a live interpreter, choose a location and only your group participates in the training.

Training classes
Why should attend?

If you need to:

- understand technology at your fingertips
- get inspired by Rusolut developers, experts and speakers at many international conferences
- discover new possibilities for tasks that have not been solved before
- get some useful tips and real tools for future work
- get real benefits from the results of your work
- charge with positive energy to like-minded specialists
- get an individual approach and help during training
- receive the original certificate of completion

you are very welcome to attend Rusolut training classes!

Technical Support

This is the final piece of the puzzle to get a complete picture – **Technical Support services.**

Our aim is not only to develop and provide our customers with purpose-built solutions, but also to make the usage easy and efficient. That is why engineers from Rusolut Support Team do their best to help you with any technical questions.

Types of subscription
Premium Support - if you own VNR only
Priority Support - if you own VNR and eMMC NAND Reconstructor. At a time of purchase, eMMC NAND Reconstructor is permanently linked to VNR reader with the serial number provided by the customer. The only available type of subscription for eMMC NAND Reconstructor owners is Priority Support subscription.

Technical Support
What is included?

Premium/Priority Support subscription includes:

Personal help
We are always ready to help you with any complicated cases and guide you through the data recovery process. Technical support is provided through the Help Center portal:
https://support.rusolut.com

Software updates
Access to the latest VNR Software updates – Premium Support
Access to the latest VNR and eMMC NAND Reconstructor Software updates – Priority Support

Every day, our engineers research new flash storage devices and their configurations to keep Rusolut technologies at the highest level and follow the market demand. Using the latest software and databases is the only way to recover data from new flash memory devices quickly and efficiently.

Resources database updates
To follow the dynamically developing market of flash devices, new resources such as NAND chip configs, XOR keys, monolithic chip pinouts, solutions for devices are regularly updated.

Knowledge base
We regularly publish scientific articles to share the latest information with our users. Knowledge Base contains tips and guidelines on the latest features and how to use them correctly.
https://support.rusolut.com/portal/kb

Technical Support
What is included?

Free video materials
We successively share with you specially prepared videos that describe the most important issues regarding hardware as well as software and its latest updates:
https://www.youtube.com/rusolut

Lifetime warranty
The warranty covers:
Visual NAND Reconstructor
1-year warranty for reader and 1-month warranty for adapters.

eMMC NAND Reconstructor
1-year warranty for eMMC NAND adapters

Warranty is automatically extended +1 year each time when Premium/Priority Support subscription is renewed - only if the interval between the expiration date and the renewal date does not exceed 1 month.

Please check technical support conditions for more details: **https://rusolut.com/support/**

CONTACT US

General questions: **info@rusolut.com**
Commercial questions: **sales@rusolut.com**
Technical support: **https://support.rusolut.com**

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