

GFTVRCE Chameleon Ultra

GFTVRCE Chameleon Ultra NFC Key Fob Emulator

Model: Chameleon Ultra

Brand: GFTVRCE

1. INTRODUCTION

The GFTVRCE Chameleon Ultra is a versatile and portable RFID tool designed for emulation, cloning, and analysis of various RFID tags and cards. Built with an NRF52840 hardware foundation, it offers advanced functionalities for professionals and enthusiasts in RFID technology. This device allows users to create copies of RFID tags, emulate different RFID systems for testing, and identify potential vulnerabilities in RFID-based access control systems.

2. PACKAGE CONTENTS

Upon unboxing your Chameleon Ultra, please verify that all components are present:

- Chameleon Ultra Device
- USB Charging Cable
- Blank RFID Cards (various types)
- Blue Key Fobs (various types)

Video demonstrating the unboxing and package contents of the Chameleon Ultra device.

3. SETUP

To begin using your Chameleon Ultra, follow these initial setup steps:

1. **Charge the Device:** Connect the Chameleon Ultra to a power source using the provided USB cable. The device will indicate charging status via its LED indicators.
2. **Install the Companion App:** Download and install the official Chameleon Ultra companion application on your smartphone. This app is essential for controlling the device and managing RFID data.
3. **Connect via Bluetooth:** Power on the Chameleon Ultra. Open the companion app and follow the on-screen instructions to connect your device via Bluetooth. Ensure Bluetooth is enabled on your

smartphone.



The Chameleon Ultra device, powered on and ready for operation.

4. OPERATING INSTRUCTIONS

4.1. Emulation

The Chameleon Ultra can emulate various RFID tags and systems. This feature is useful for testing RFID readers and systems without needing the physical tag.

- Program the Chameleon Ultra with specific data and commands using the companion app.
- Place the Chameleon Ultra near an RFID reader to emulate the desired tag.

4.2. Cloning

Cloning allows you to create duplicates of existing RFID tags. This is beneficial for replacing lost tags or creating multiple copies.

- Place the original RFID tag on the Chameleon Ultra to read its data.
- Save the read data within the companion app.
- Place a blank, compatible RFID tag on the Chameleon Ultra.
- Use the app to write the saved data to the blank tag, creating a clone.

4.3. Testing

The device can be used to test and validate RFID reader and system behavior under various conditions.

- Emulate tags with weak signals or different frequencies to assess system robustness.
- Identify potential vulnerabilities or weaknesses in RFID systems.

4.4. Reading and Writing ID Cards

The Chameleon Ultra simplifies the process of reading and writing data to ID cards and key fobs.

1. **Connect Device:** Ensure your Chameleon Ultra is connected to the companion app on your phone.
2. **Read ID Card:** Place the ID card or key fob on the back of the Chameleon Ultra device. In the app,

navigate to the 'Read Card' section and tap 'Read' for either HF or LF tag info. The device will read the card's data.

3. **Save Data:** After reading, save the card's data within the app, assigning a name for easy identification.
4. **Prepare for Writing:** Take a blank ID card or key fob that is compatible with the data you wish to write.
5. **Write Data:** In the app, go to the 'Write Card' section. Select the previously saved data. Place the blank card on the back of the Chameleon Ultra and tap 'Write data'.
6. **Verify:** After writing, you can re-read the newly written card to confirm the data was transferred successfully.

Video demonstrating the process of reading, saving, and writing ID card data using the Chameleon Ultra and its companion app.

5. SPECIFICATIONS

Feature	Description
Brand	GFTVRCE
Model	Chameleon Ultra
Color	White
Material	Plastic
Included Components	NFC device, USB cable, blank cards/fobs
Display Type	LCD

6. SUPPORTED FUNCTIONS

6.1. Low Frequency Attack Functions

The Chameleon Ultra supports various low-frequency attack types for analysis and testing.

Card Type	Encoding Type	Whether the hardware supports	Does the software support	Whether the application layer supports	Note
Non <125KHz/ASK/PSK/FSK>	No	No	No	No	Only 125 khz RF, Modulation ASK, FSK and PSK.
EM410x	ASK	Support	Support	Support	
T5577	ASK	Support	Support	Support (Write)	
HID Prox	FSK	Support	Support	Not yet implemented	
Indala	PSK	Support	Support	Not yet implemented	
FDX-B	ASK	Support	Support	Not yet implemented	
Paradox	FSK	Support	Support	Not yet implemented	
Keri	PSK	Support	Support	Not yet implemented	
AWID	FSK	Support	Support	Not yet implemented	
ioProx	FSK	Support	Support	Not yet implemented	
Securakey	ASK	Support	Support	Not yet implemented	
Gallagher	ASK	Support	Support	Not yet implemented	
PAC/Stanley	ASK	Support	Support	Not yet implemented	
Presco	ASK	Support	Support	Not yet implemented	
Visa2000	ASK	Support	Support	Not yet implemented	
Viking	ASK	Support	Support	Not yet implemented	
Noralsy	ASK	Support	Support	Not yet implemented	
NexWatch	PSK	Support	Support	Not yet implemented	
Jablotron	ASK	Support	Support	Not yet implemented	

SUPPORTED FUNCTIONS LOW FREQUENCY ATTACK					
Vulnerability Type	Tag Type	Whether the hardware supports	Does the software support	Whether the application layer supports	Note
Sniffing	125KHz	Support	Support	Not yet implemented	
Brute Force	EM410x ID	Support	Support	Not yet implemented	

SUPPORTED FUNCTIONS LOW FREQUENCY ATTACK					
Card Type	Encoding Type	Whether the hardware supports	Does the software support	Whether the application layer supports	Note
Non <125KHz/ASK/PSK/FSK>	No	No	No	No	Only 125 khz RF, Modulation ASK, FSK and PSK.
Non <125KHz/ASK/PSK/FSK>	No	No	No	No	Only 125 khz RF, Modulation ASK, FSK and PSK.
EM410x	ASK	Support	Support	Support	EM4100 is support(AD 64bit)
T5577	ASK	Support	Support	Not yet implemented	
HID Prox	FSK	Support	Support	Not yet implemented	
Indala	PSK	Support	Support	Not yet implemented	
FDX-B	ASK	Support	Support	Not yet implemented	
Paradox	FSK	Support	Support	Not yet implemented	
Kerl	PSK	Support	Support	Not yet implemented	
AWID	FSK	Support	Support	Not yet implemented	
ioProx	FSK	Support	Support	Not yet implemented	
Securakey	ASK	Support	Support	Not yet implemented	
Gallagher	ASK	Support	Support	Not yet implemented	
PAC/Stanley	ASK	Support	Support	Not yet implemented	
Presco	ASK	Support	Support	Not yet implemented	
Visa2000	ASK	Support	Support	Not yet implemented	
Viking	ASK	Support	Support	Not yet implemented	
Noralsy	ASK	Support	Support	Not yet implemented	
NexWatch	PSK	Support	Support	Not yet implemented	
Jablotron	ASK	Support	Support	Not yet implemented	

Detailed tables outlining the Chameleon Ultra's capabilities for low-frequency RFID attack and analysis, including supported card types and encoding methods.

6.2. High Frequency Reader Functions

The device is capable of reading various high-frequency card types.

**SUPPORTED FUNCTIONS
HIGH FREQUENCY READER**

Card Type	Encoding Type	Whether the hardware supports	Does the software support	Whether the application layer supports	Note
Non <13.56MHz or ISO14443A>	No	No	No	No	NXP RC522 Datasheet
NTAG 21x (210-218)	ISO14443A/106 kbit/s	Support	Support	Not yet implemented	
MIFARE Ultralight	ISO14443A/106 kbit/s	Support	Support	Not yet implemented	
MIFARE Ultralight Ev1	ISO14443A/106 kbit/s	Support	Support	Not yet implemented	
MIFARE Ultralight C	ISO14443A/106 kbit/s	Support	Support	Not yet implemented	
MIFARE Classic 1K/2K/4K (4B/7B)	ISO14443A/106 kbit/s	Support	Support	Support	
MIFARE DESFire	ISO14443A High Rate	Supports low rates, or possibly higher rates	Supports low rates, or possibly higher rates	Not yet implemented	
MIFARE DESFire EV1	ISO14443A High rate	Supports low rates, or possibly higher rates	Supports low rates, or possibly higher rates	Not yet implemented	Backward compatible
MIFARE DESFire EV2	ISO14443A High rate	Supports low rates, or possibly higher rates	Supports low rates, or possibly higher rates	Not yet implemented	
MIFARE PLUS	ISO14443A High rate	Supports low rates, or possibly higher rates	Supports low rates, or possibly higher rates	Not yet implemented	

Table showing the high-frequency RFID card types supported by the Chameleon Ultra for reading, including MIFARE Classic, Ultralight, DESFire, and NTAG.

6.3. High Frequency Attack Functions

The Chameleon Ultra also supports various high-frequency attack types for security testing.

**SUPPORTED FUNCTIONS
HIGH FREQUENCY ATTACK**

Attack Type	Tag Type	Whether the hardware supports	Does the software support	Whether the application layer supports	Note
Sniffing	No	No	No	No	
MFKEY32 V2	MIFARE Classic	Support	Support	Support	MIFARE Classic Detection
Darkside	MIFARE Classic	Support	Support	Support	Encrypted 4 bit NACK
Nested	MIFARE Classic	Support	Support	Support	PRNG (Distance guess)
StaticNested	MIFARE Classic	Support	Support	Not yet implemented	PRNG (2NT Fast Decrypt)
HardNested	MIFARE Classic	Support	Support	Not yet implemented	No
Relay attack	ISO14443A	Support	Support	Not yet implemented	No

**SUPPORTED FUNCTIONS
HIGH FREQUENCY SIMULATION**

Card Type	Encoding Type	Whether the hardware supports	Does the software support	Whether the application layer supports	Note
Non <13.56MHz or ISO14443A>	No	No	No	No	NRF52 NFC Module
NTAG 21x (210-218)	ISO14443A/106 kbit/s	Support	Support	Not yet implemented	
MIFARE Ultralight	ISO14443A/106 kbit/s	Support	Support	Not yet implemented	
MIFARE Ultralight Ev1	ISO14443A/106 kbit/s	Support	Support	Not yet implemented	
MIFARE Ultralight C	ISO14443A/106 kbit/s	Support	Support	Not yet implemented	
MIFARE Classic1K/2K/4K (4B/7B)	ISO14443A/106 kbit/s	Support	Support	Support	
MIFARE DESFire	ISO14443A High Rate	Only supported Low rate	Only supported Low rate	Not yet implemented	
MIFARE DESFire EV1	ISO14443A High rate	Only supported Low rate	Only supported Low rate	Not yet implemented	Backward compatible
MIFARE DESFire EV2	ISO14443A High rate	Only supported Low rate	Only supported Low rate	Not yet implemented	
MIFARE PLUS	ISO14443A High rate	Only supported Low rate	Only supported Low rate	Not yet implemented	

Table illustrating the high-frequency RFID attack functions supported by the Chameleon Ultra, such as sniffing, MFKEY32 V2, Darkside, Nested, StaticNested, HardNested, and Relay attack.

6.4. Product Comparison Chart

A comparison of the Chameleon Ultra's features and performance against similar RFID products.

SIMILAR RFID PRODUCTS FUNCTION COMPARISON CHART									
	14A Simulation	MIFARE Full Simulation	14A Read	Darkside	Nested	StaticNest	Hardnest	Low Frequency Simulation	Low Frequency Read
ChameleonUltra	✓	✓	✓	✓	✓	✓	✓	✓	✓
ChameleonLite	✓	✓	✗	✗	✗	✗	✗	✓	✗
ChameleonTiny	✓	but slow	UID Only	✗	✗	✗	✗	✗	✗
FlipperZero	✓	but slow	Default Keys Only	✗	✗	✗	✗	✓	✓
Keysy	✗	✗	✗	✗	✗	✗	✗	✓	✓

SIMILAR RFID PRODUCTS COMPARISON CHART						
	Power Consumption of Simulation	Charging Cycle For Daily Use	Battery Reader Read Rate (High Frequency)	AUTH-nt Frame Delay Time	AUTH-nr-ar Frame Delay Time	AUTH-at Frame Delay Time
ChameleonUltra	7mA	6 Months	100%	2244uS	3348uS	5652uS
ChameleonLite	7mA	6 Months	100%	2244uS	3348uS	5652uS
ChameleonTiny	35mA	2 Months	20%	9316uS	5412uS	9380uS
FlipperZero	42mA	1 week	20%	6004uS	8212uS	19156uS
Keysy	X	X	X	X	X	X

Comparison of Chameleon Ultra's features and performance metrics against other RFID tools.

7. MAINTENANCE

Proper maintenance ensures the longevity and optimal performance of your Chameleon Ultra device:

- **Cleaning:** Use a soft, dry cloth to clean the device. Avoid using harsh chemicals or abrasive materials.
- **Storage:** Store the device in a cool, dry place away from direct sunlight and extreme temperatures.
- **Battery Care:** For optimal battery life, avoid fully discharging the device frequently. Charge it regularly, even if not in constant use.
- **Software Updates:** Regularly check for and install firmware updates for the Chameleon Ultra and updates for the companion app to ensure you have the latest features and security enhancements.

8. TROUBLESHOOTING

If you encounter issues with your Chameleon Ultra, try the following troubleshooting steps:

- **Device Not Connecting:** Ensure Bluetooth is enabled on your phone and the Chameleon Ultra is powered on. Try restarting both the device and the app.
- **Reading/Writing Errors:** Ensure the RFID tag or card is correctly positioned on the device. Verify that the tag type is supported by the Chameleon Ultra. Some magic cards may require specific settings or may not be writable.

- **App Issues:** Clear the app's cache or reinstall the app if it's behaving unexpectedly.
- **No Power:** Check the USB cable and power source. Ensure the device is fully charged.

If problems persist, please refer to the support section for further assistance.

9. WARRANTY AND SUPPORT

The GFTVRCE Chameleon Ultra comes with a standard manufacturer's warranty. Please retain your proof of purchase for warranty claims.

For technical support, warranty inquiries, or further assistance, please contact GFTVRCE customer service through the retailer where the product was purchased or visit the official GFTVRCE support website.