REYAX
TECHNOLOGY CORPORATION, LTD

01-OCT-2024 56312E33

RYRR30D

Application Notes

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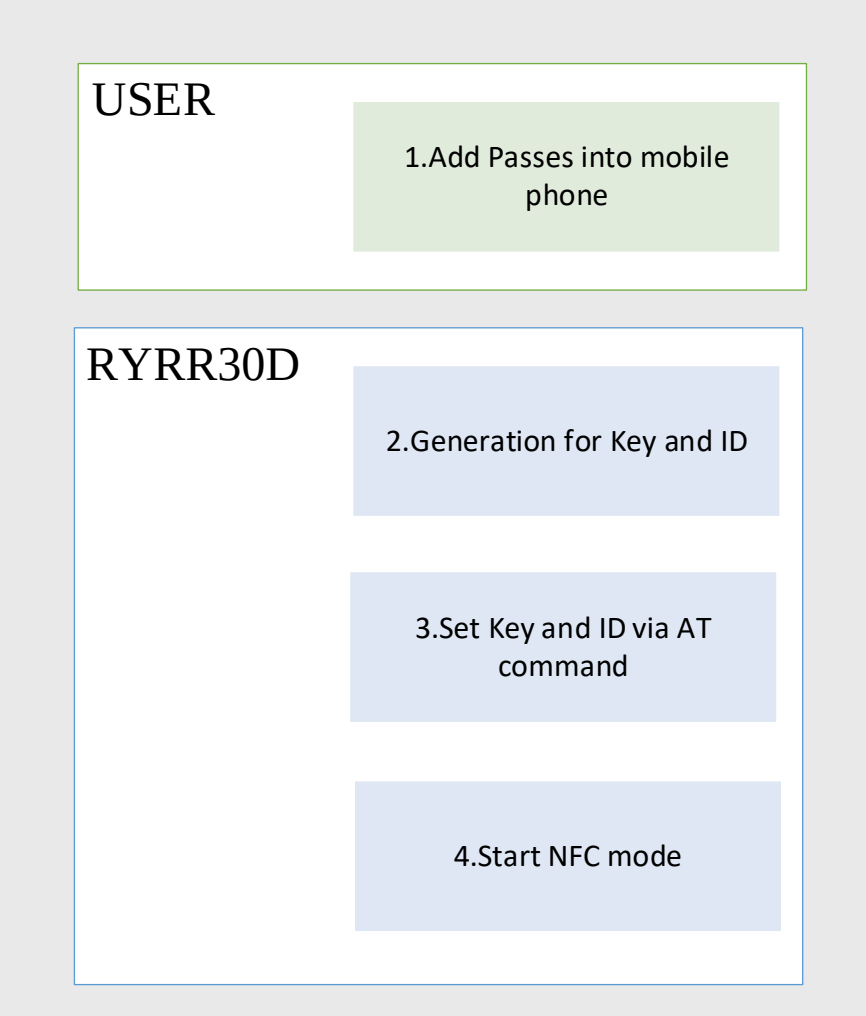
Represented by:

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1. How to Configure RYRR30D reader

This section provides an overview of the steps required to configure a RYRR30D. The RYRR30D supports both UART interface

1.1. Basic Configuration for UART



(1) Obtain the pass from the the card issuing organization and install it on your mobile phone. Refer to Section 2: **How to Add Pass into mobile phone** for the installation method.

(2) Convert the credentials and APPLE Merchant ID/Google Collector ID provided by the card issuing organization into Key and ID. Refer to Section 3: **How to Generation for Key and ID** for the conversion method.

(3) Use AT command to issue the Key and ID into the module. Refer to Section 4: **Set Key and ID Into RYRR30D through UART interface** for the method.

(4) Set the RYRR30D to NFC mode using the command "AT+MODE=2".

(5) You can now start reading the pass using the RYRR30D.

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2. How to Add a Pass to mobile phone

2.1. Add a pass into APPLE wallet

A. Scan the QR code to download the pass.

*Please obtain it from your pass vendor, or contact REYAX

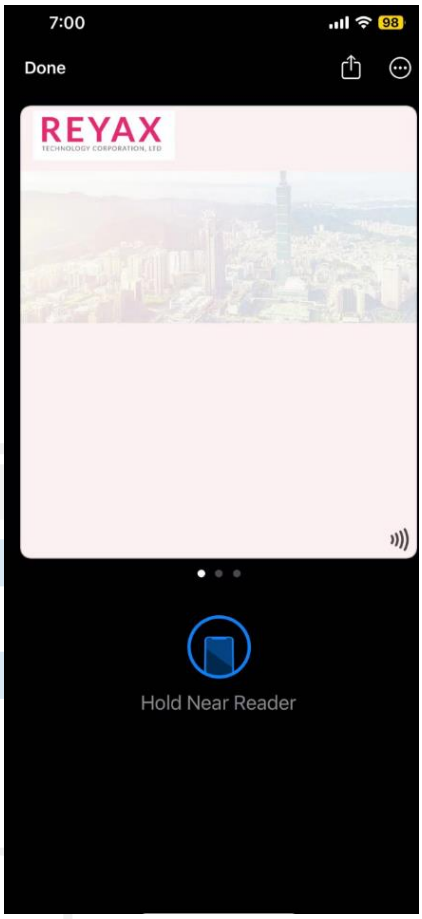
B. The webpage will automatically link to the APPLE wallet APP. And Click the “Add” button.



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C. Open the APPLE wallet APP  or double-click the side button (power key) to check pass.

D. Once the installation is complete, you can start using the APPLE PASS.



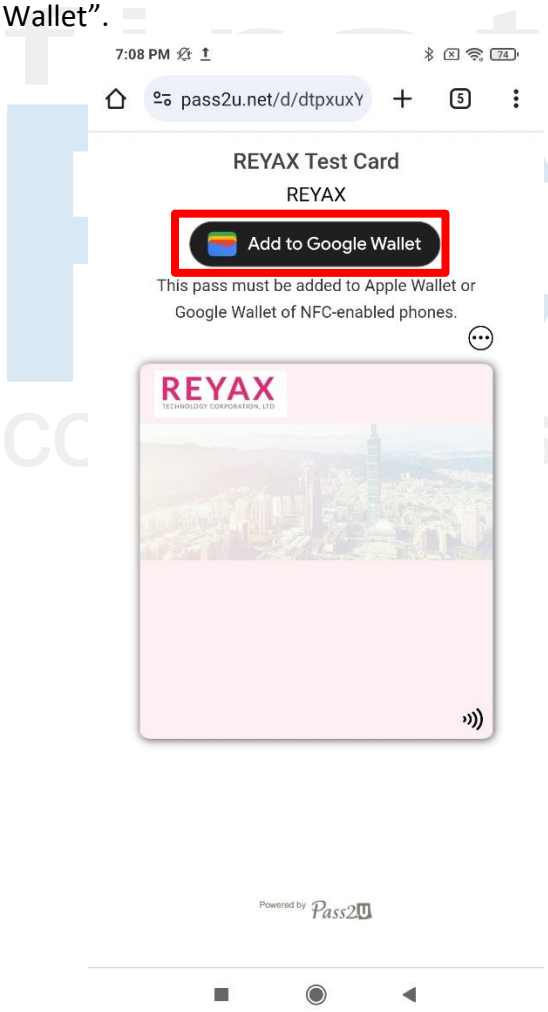
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2.2. Add a pass to Google Pay

A. Download Google Pay from the Play Store or via [link].
   * If you have already downloaded it, can skip this step.

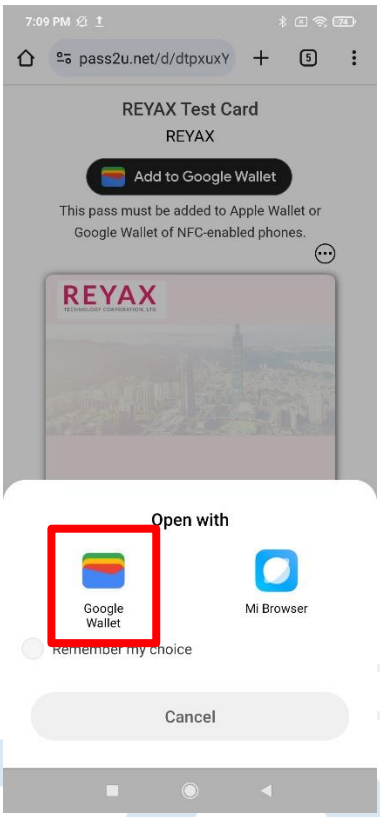
B. Scan the QR code to download the Google pass.
   *Please obtain it from your pass vendor, or contact REYAX

C. Click “Add to Google Wallet”.

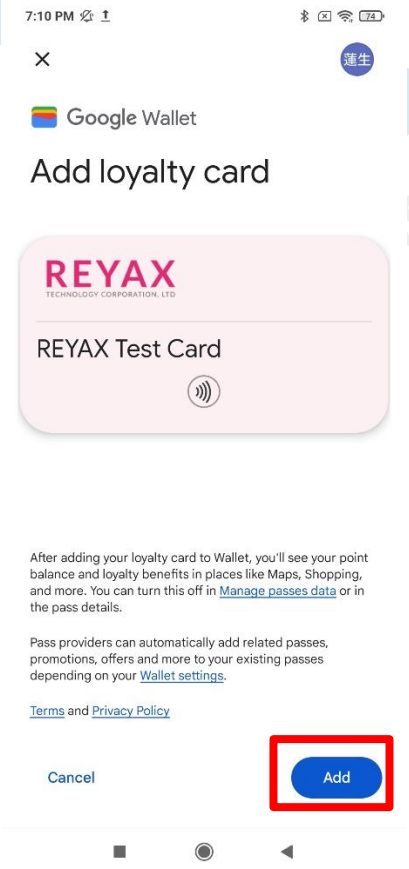


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D. Open with “Google Wallet”

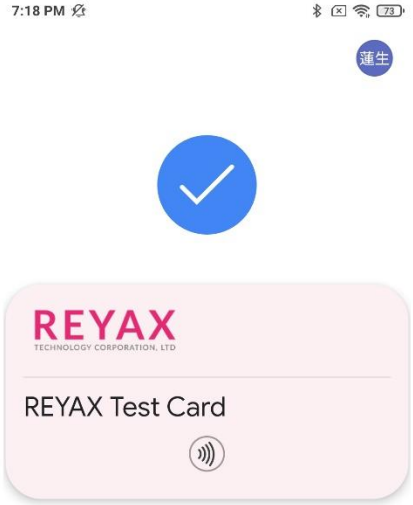


E. Click “Add”.



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F. Once the installation is complete, you can start using the Google PASS.



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3. How To Generation for Key and ID

***Note: The following Key and ID are for demonstration only; please contact the Issuer for more details.**

3.1. About Key and ID of Customer

3.1.1. APPLE Merchant ID and Key

- **APPLE Merchant ID**: The ID will start with “pass.”, followed by the issuer’s company domain name in reverse. The maximum length is 32 bytes.
  Example: If the domain name is “reyax.com”, the Merchant ID is “pass.com.reyax”

- **APPLE Key:** The key cannot be designated by the customer. The customer will receive a file in “.pem” format.

  *** Please contact your pass-issuing organization for detailed instructions.**

3.1.2. Google Collector ID and Key

- **Google Collector ID**: The ID cannot be designated by the customer. The customer will receive a string of numbers.

- **Google Key**: The key cannot be designated by the customer. The customer will receive a file in “.pem” format.
- *** Please contact your pass-issuing organization for detailed instructions.**

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3.2. Generation for Key and ID – APPLE pass

3.2.1. Generation APPLE key

A. After installing OpenSSL, move the certificate to the OpenSSL folder.
OpenSSL Tool [Download]

B. Open the command prompt and specify the path to OpenSSL\bin

C. Execute the below command through the specified path:
.\openssl.exe ec -in ReyaxAppleKey.pem -pubout -text -noout

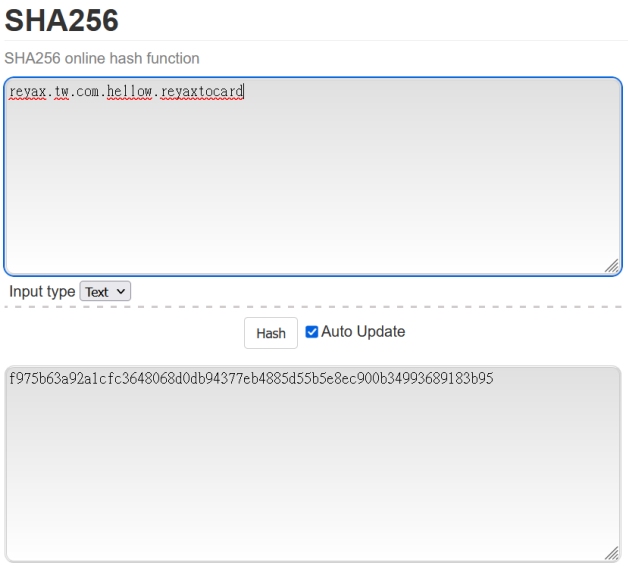
```
C:\Program Files\OpenSSL-Win64\bin>.\openssl.exe ec -in ReyaxAppleKey.pem -pubout -text -noout
read EC key
Private-Key: (256 bit)
priv:
    e9:3d:[redacted]:82:b8:
    b5:a1:[redacted]:dd:ae:
    94:58
pub:
    04:9e:[redacted]:18:15:
    5b:eb:[redacted]:c5:6d:
    ad:c9:[redacted]:97:a1:
    a7:f3:[redacted]:c6:fc:
    49:c3:68:1e:37
ASN1 OID: prime256v1
NIST CURVE: P-256
```

D. Obtain the APPLE key as below:
e93dxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxddae9458

3.2.2. Generate APPLE ID

A. Open SHA256 transfer tool:
https://emn178.github.io/online-tools/sha256.html

B. Given Merchant ID: reyax.tw.com.hellow.reyaxtocard



C. Obtain the APPLE ID as below:
f975b63a92a1cfc3648068d0db94377eb4885d55b5e8ec900b34993689183b95

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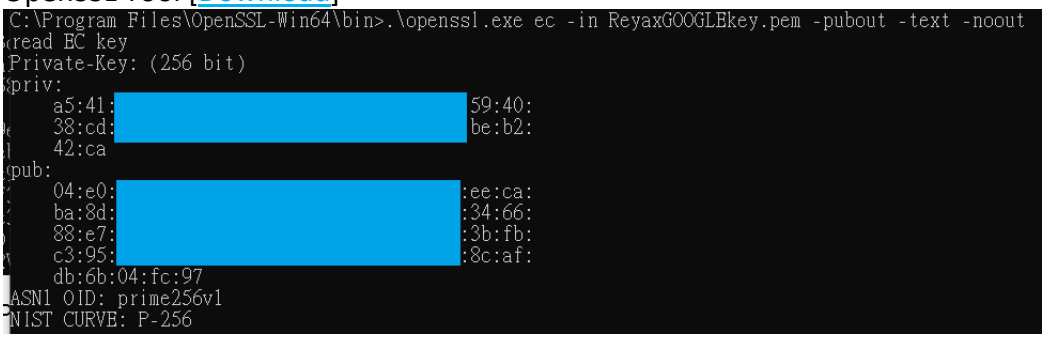
3.3. Generation for Key and ID – Google pass

3.3.1. Generate GOOGLE key

A. After installing OpenSSL, move the certificate to the OpenSSL folder.
OpenSSL Tool [Download]

B. Open the command prompt and specify the path to OpenSSL\bin

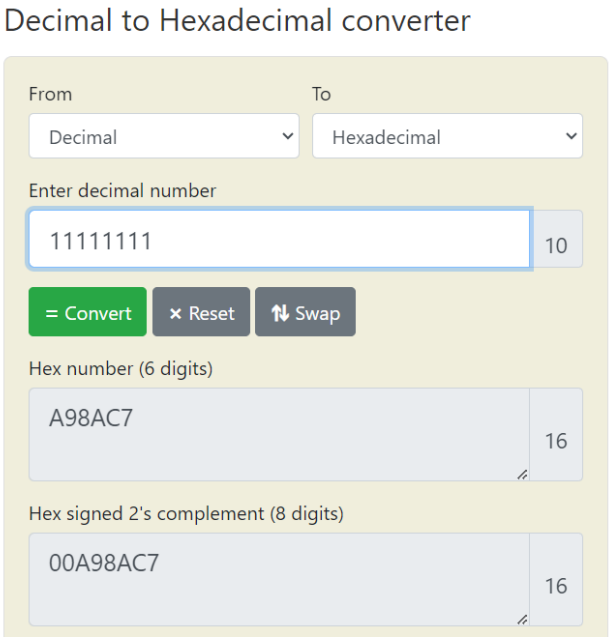
C. Execute the below command through the specified path:
.\openssl.exe ec -in ReyaxGOOGLEkey.pem -pubout -text -noout
OpenSSL Tool [Download]



D. Obtain the GOOGLE key as below:
a541xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxbeb242ca

3.3.2. Generation GOOGLE ID

A. Convert the collector ID from DEC to HEX.
Given collector ID in DEC: 11111111



***Note: If the value of" GOOGLE ID" in Hexadecimal is less than 8 digits(4 bytes), add "0" from the beginning to maintain an 8 digits(4 bytes) string.**

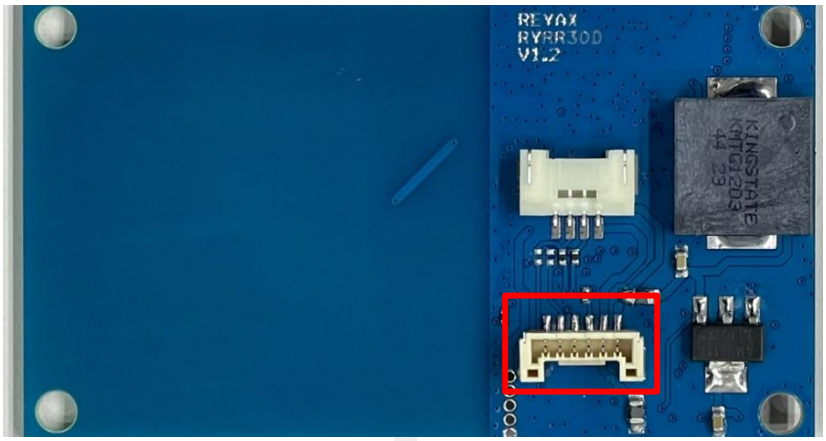
B. Obtain the GOOGLE ID as below:
00A98AC7

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4. Setting Key and ID Into RYRR30D through UART interface

4.1. Connect RYRR30D with the PC using a USB to 3.3V UART bridge (using RYLS135 for reference)

4.1.1. Connect RYRR30D with RYLS135.



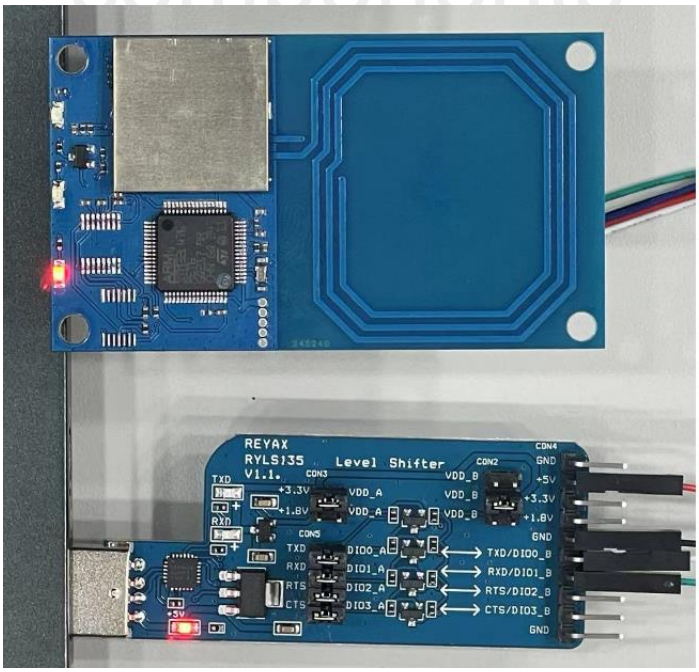
Connect the cable with the following connector.
Connector model name: JWT® A1257WV0-6PS



Red Cable: +5V
Black Cable: GND
White Cable: TXD
Green Cable: RXD

4.1.2. Connect the USB port of RYLS135 with the PC.

The RED LED on the RYRR30D board will flash.



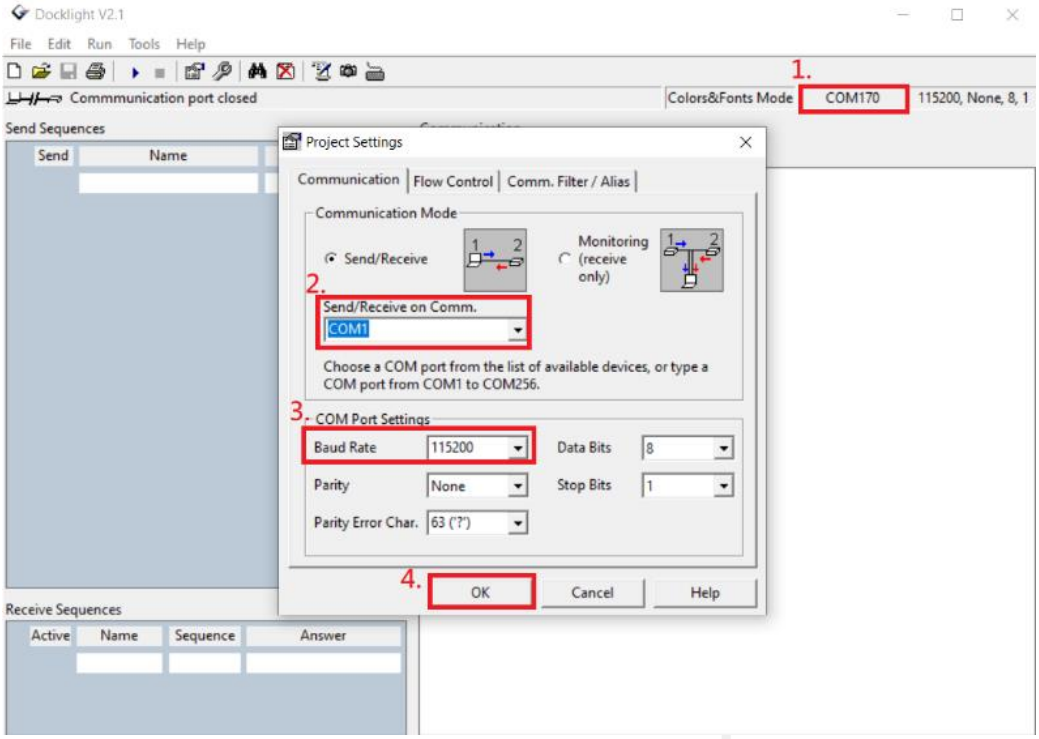
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4.1.3 Launch the application, and double click the Docklight shortcut. 

*Docklight terminal Tool [Download]

4.1.4 Terminal setting.

(1) Double-click the COM port icon.
(2) Choose RYRR30D COM Port.
(3) Set the Baud rate to 115200.
(4) Click “ok”.



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4.1.5 Set KEY and ID (Refer to the AT Command for Key and ID.)

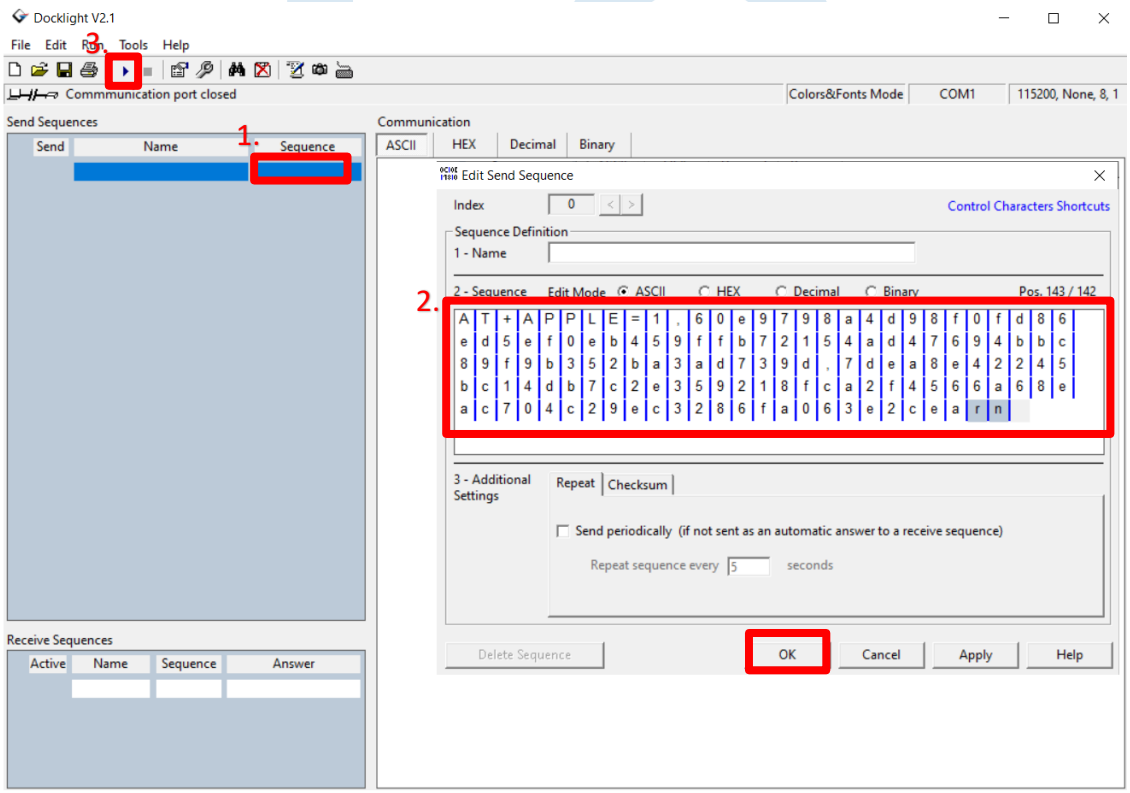
(1) Double-click the command icon.

(2) Set the command sequence and click “ok”.

(Key in “enter” or “\r\n” (0x0D 0x0A) at the end of all AT Commands):
AT+APPLE=<Number>,<ID>,<Key> AT+GOOGLE=<Number>,<ID>,<Key> AT+MODE=2 Example : (The following key and ID are only available for REYAX DEMO PASS) AT+APPLE=1,60e9798a4d98f0fd86ed5ef0eb459ffb72154ad47694bbc89f9b352ba3ad739d,7dea8e42245bc14db7c2e359218fca2f4566a68eac704c29ec3286fa063e2cea AT+GOOGLE=1,051A1F2D,7dea8e42245bc14db7c2e359218fca2f4566a68eac704c29ec3286fa063e2cea AT+MODE=2

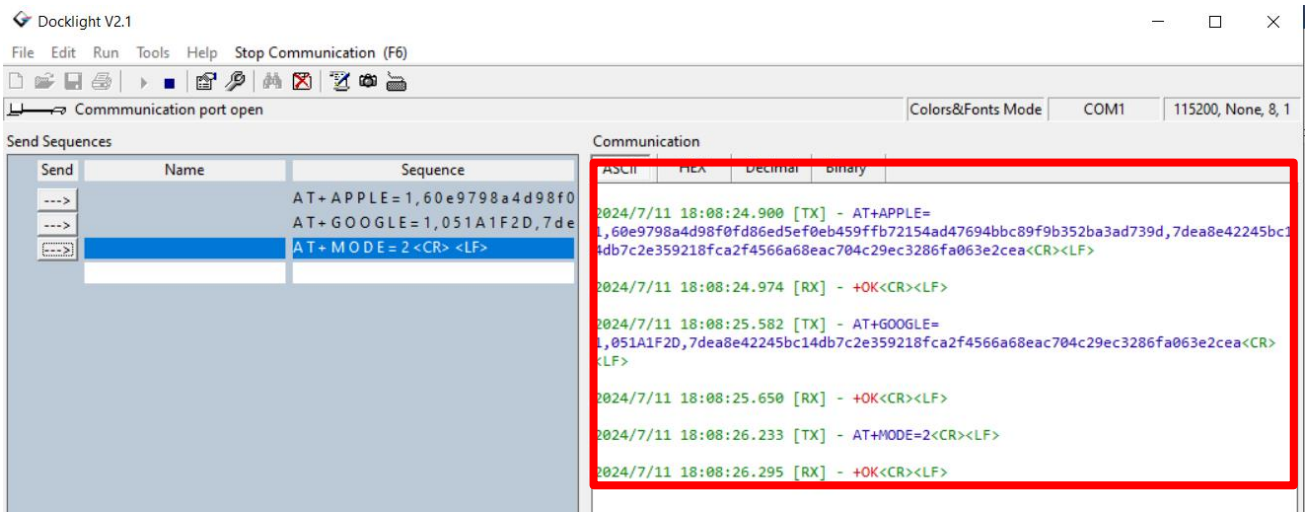
(3) Open com port.

***Note: The Key and ID will be memorized in EEPROM, which cannot be read by any command.**

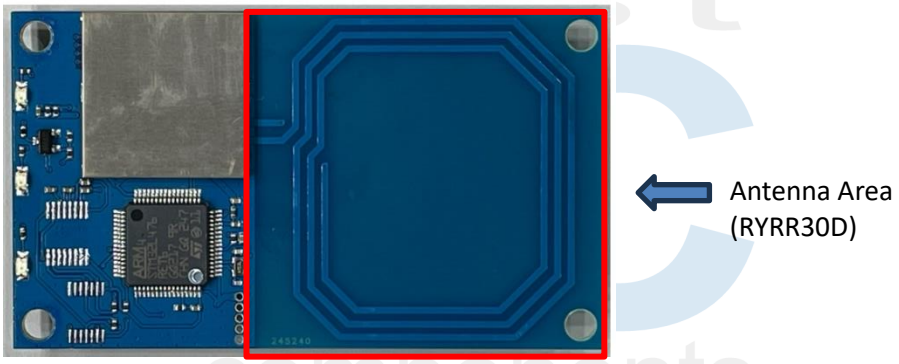


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4.1.6 After issuing the command, the result will be displayed.



4.1.7 Enable NFC on the Phone and bring it close to the RYRR30D antenna area. Wait for 0.5 seconds. The red block is the contact area (antenna area.)



4.1.8 When the phone is close to the contact area. The terminal will show information about specific passes.

APPLE:

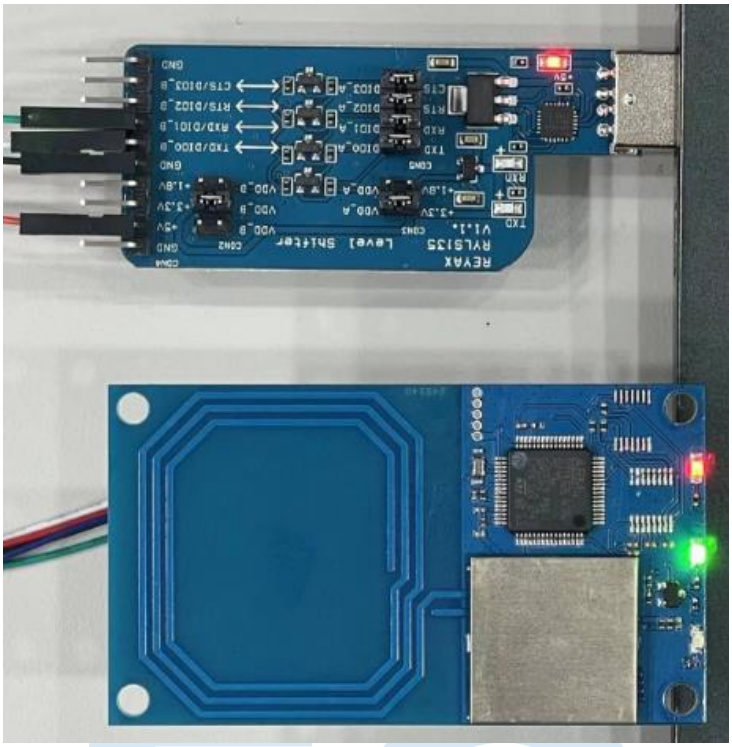
```
2024/7/11 18:09:17.054 [RX] - +APPLE=1,Reyax|RYRR30DTest|88880000<CR><LF>
```

GOOGLE:

```
2024/7/11 18:13:39.584 [RX] - +GOOGLE=1,Reyax|RYRR30DTest|88880000<CR><LF>
```


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4.1.9 If the VAS process is successful, the LED will flash green.



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