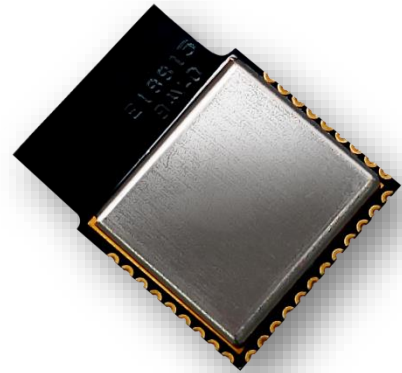


# RYWB116

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## Client Mode User Guide



## 1. SOFTWARE INSTALLATION

[1] Hercules: <https://www.hw-group.com/>

[2] RS232 terminal (Below operation is using Docklight): <https://docklight.de/>

## 2. RYWB116 SETUP AND CONNECTION

### 1. UART Baud Rate Setting

When the RYWB116 module is powered on, use Docklight to set the required UART Baud Rate, then transmit 1C (Hex code). When the module sends back, transmit 55 (Hex code). When the module sends back again, transmit 31 (Hex code). (As shown in the screenshot below)

The screenshot shows the Docklight V2.1 interface for a project named '20190325\_PowerSave\_RS9116'. The 'Send Sequences' table is as follows:

Send	Name	Sequence
1C	<FS>	
55	U	
31		
reset	at+rsi_reset<CR> <LF>	
opermode	at+rsi_opermode=0,5,4,2147483648,524288<CR> <LF>	
band	at+rsi_band=0<CR> <LF>	
feat_frame	at+rsi_feat_frame=0,1,0,0,1,49<CR> <LF>	
init	at+rsi_init<CR> <LF>	
scan	at+rsi_scan=0<CR> <LF>	
psk	at+rsi_psk=1,1234567890<CR> <LF>	
join	at+rsi_join=Reyax_sheng,0,2,2,2,1000,0,0<CR> <LF>	
ipconf	at+rsi_ipconf=1,0,0,0<CR> <LF>	
ltcp	at+rsi_ltcp=5001,5,0<CR> <LF>	
psm2	at+rsi_pwmde=2,1,1<CR> <LF>	
test	at+rsi_snd=1,14,0,0,This is a test<CR> <LF>	
fw	at+rsi_fwversion?<CR> <LF>	
0	0	

The 'Communication' window shows the following log:

```

2019/5/3 12:48:04.030 [TX] - <FS>
2019/5/3 12:48:04.069 [RX] - U
2019/5/3 12:48:05.263 [TX] - U
2019/5/3 12:48:05.277 [RX] - <CR><LF>
WELCOME TO REDPINE SIGNALS<CR><LF>
BootLoader Version 1.0<CR><LF>
<CR><LF>
1 Load Default Wireless Firmware<CR><LF>
A Load Wireless Firmware (Image No : 0-f)<CR><LF>
B Burn Wireless Firmware (Image No : 0-f)<CR><LF>
5 Select Default Wireless Firmware (Image No : 0-f)<CR><LF>
K Check Wireless Firmware Integrity (Image No : 0-f)<CR><LF>
7 Enable GPIO Based Bypass Mode<CR><LF>
8 Disable GPIO Based Bypass Mode<CR><LF>
Q Update KEY<CR><LF>
Z JTAG Selection<CR><LF>
2019/5/3 12:48:06.221 [TX] - 1
2019/5/3 12:48:06.233 [RX] - 1<CR><LF>
Loading...<CR><LF>
Loading Done<CR><LF>

```

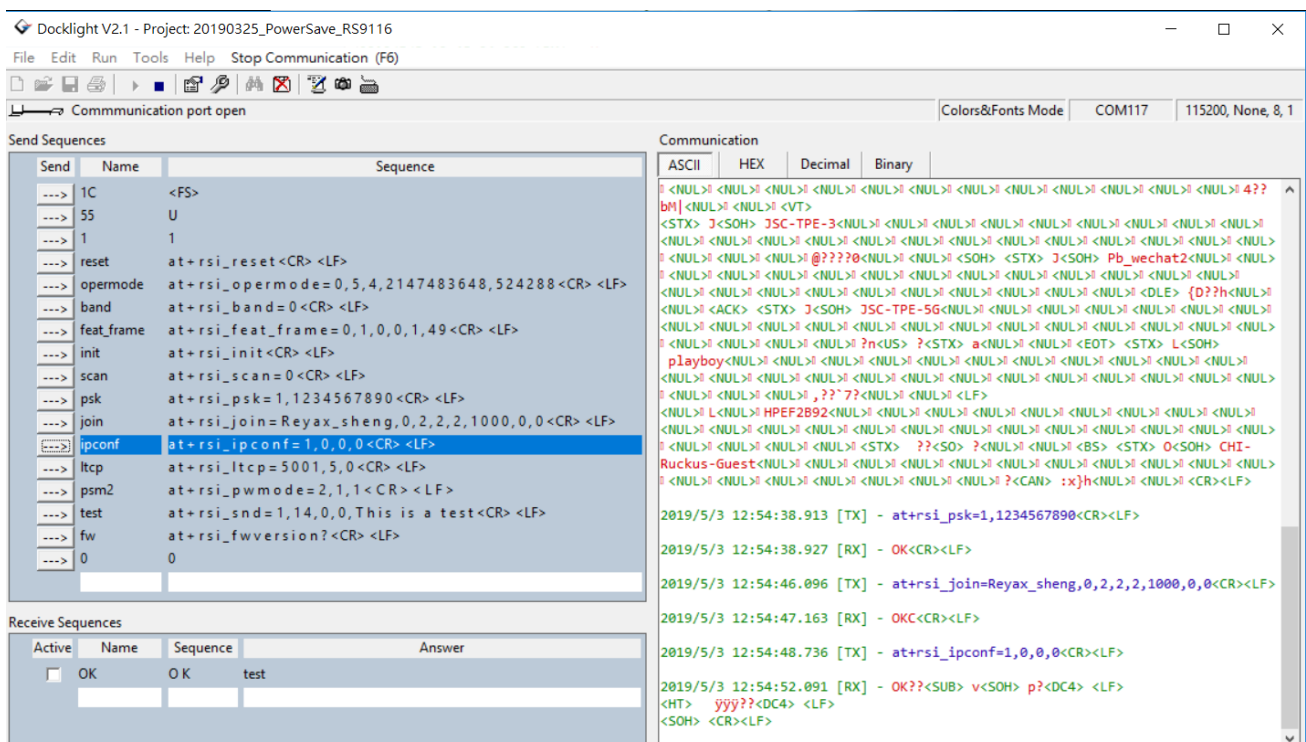
The 'Receive Sequences' table is as follows:

Active	Name	Sequence	Answer
<input type="checkbox"/>	OK	OK	test

## 2. Associate to an Access Point (with WPA2-PSK security) as a client

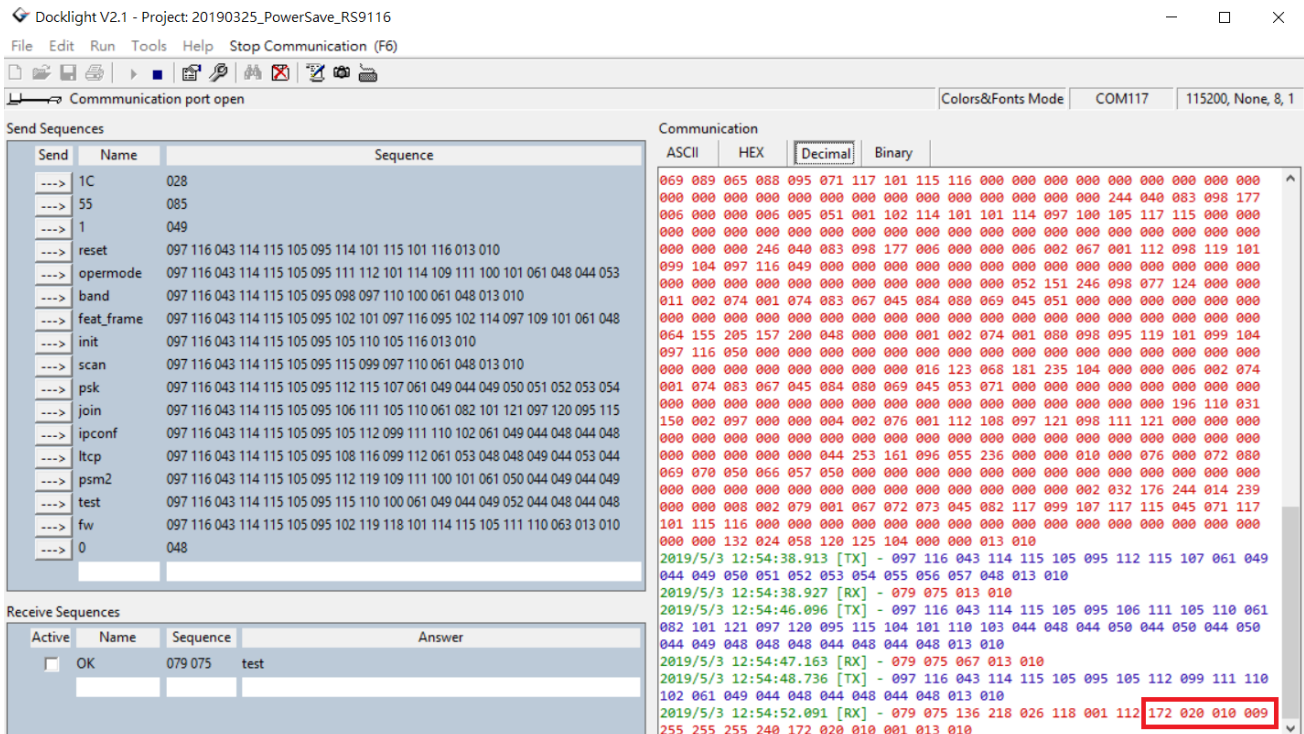
Input commands into Docklight in the following order:

- (1) `at+rsi_opermode=0,5,4,2147483648,524288`
- (2) `at+rsi_band=0`
- (3) `at+rsi_feat_frame=0,1,0,0,1,49`
- (4) `at+rsi_init`
- (5) `at+rsi_scan=0`
- (6) `at+rsi_psk=1,<your password>`
- (7) `at+rsi_join=<your ssid>,0,2,2,2,1000,0,0`
- (8) `at+rsi_ipconf=1,0,0,0`



### 3. OPEN TCP SOCKET TO TRANSMIT DATA

(1) Switch the display of Docklight to Decimal (DHCP IP will be obtained after Ipconfig and displayed in Decimal.)

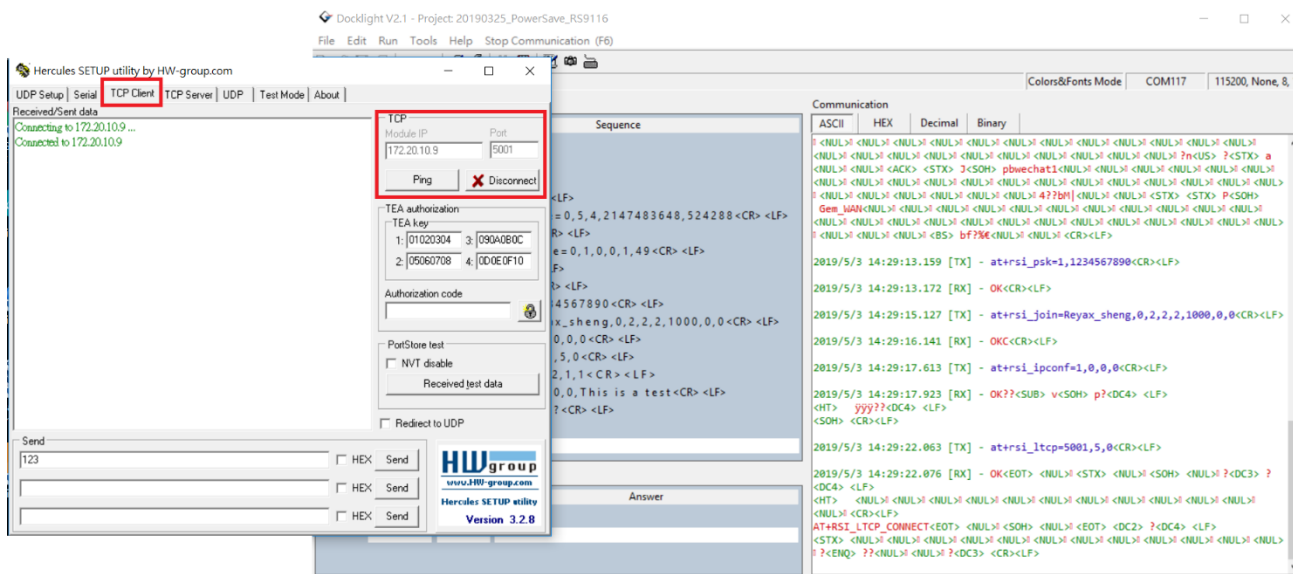


(2) The module obtains DHCP IP: Ex. 172.20.10.9(Decimal).  
 (3) Input below command into Docklight and open TCP socket port 5001.

```
at+rsi_ltcp=5001,5,0
```

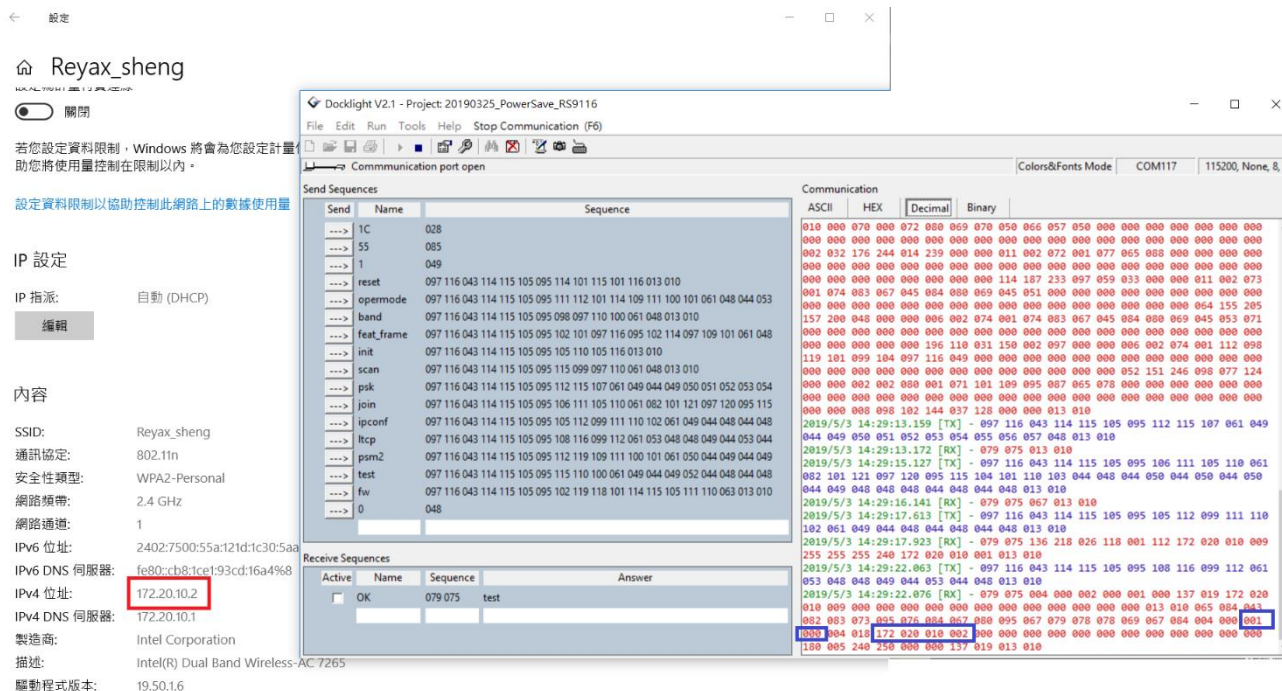
(4) Open Hercules as a Server on the computer to enable the data transmission between Hercules SERVER and RYWB116 CLIENT.

(5) After inputting DHCP IP and TCP socket port of the module into Hercules, click “Connect”.



(6) When TCP connection is successful, the module will reply socketDescriptor and Server IP. (As shown in the screenshot below in Decimal)

socketDescriptor = 1, Server IP = 172.20.10.2



(7) Input “123” into Hercules and click “Send”. When the module receives the data, it will reply:

`AT+RSI_READ 123` (As shown in the screenshot below, “123” is the data transmitted by Hercules.)

(8) Input below command into Docklight to transmit data from the module.

`at+rsi_snd=1,14,0,0,This is a test`

1= socketDescriptor(to identify which IP is connected from)

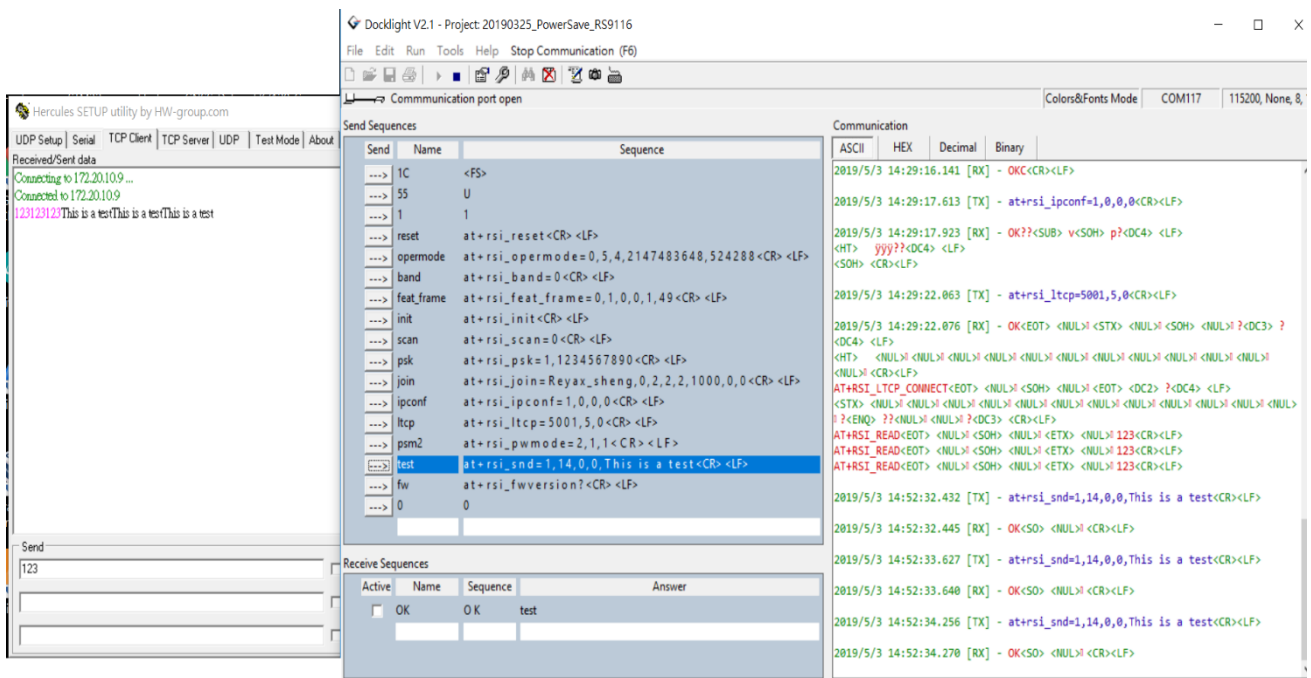
14= Data size

0= TCPsocket

0= TCPsocket

This is a test =Data (size =14)

The module will reply “OK” upon successful transmission and Hercules will receive the data: This is a test (As shown in the screenshot below)





## 4. TRANSMIT DATA IN POWER SAVE MODE WITH RYWB116\_EVB

The power consumption before entering Power save Mode:



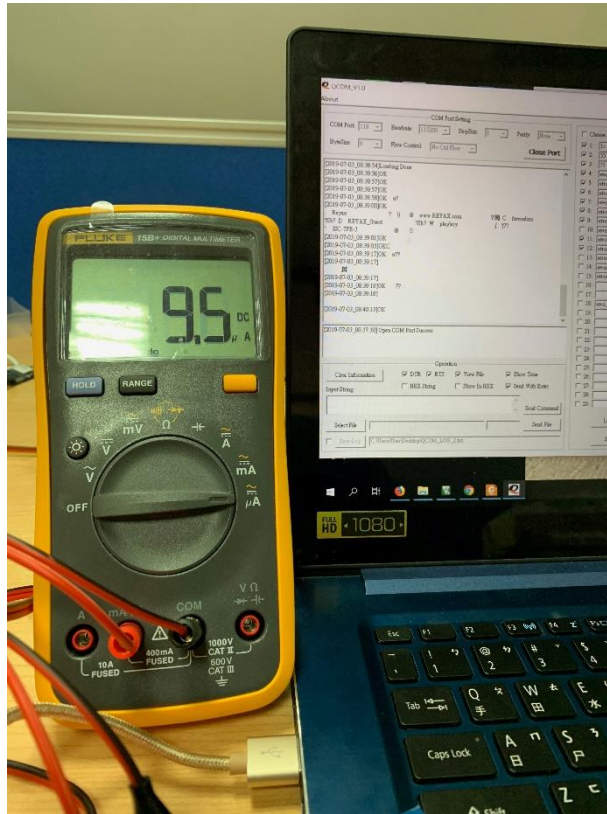
(1) Input below command into Docklight to enter Power save Mode 2.

*at+rsi\_pwmode=2,1,1*

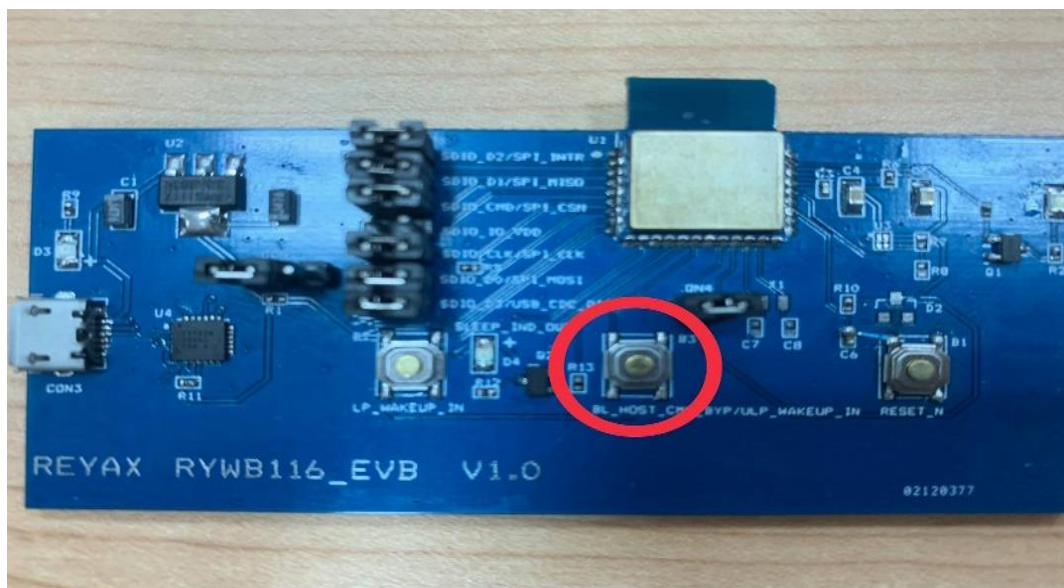
(The LED will flash when entering Power save Mode successfully.)



The power consumption after entering Power save Mode:



- (2) Data can be sent from Server to the module in Power save Mode at any time.
- (3) Press the button "ULP\_WAKEUP\_IN" continuously to send data from the module to Server.





## 5. TURN OFF POWER SAVE MODE WITH RYWB116\_EVB

(1) Press the button “ULP\_WAKEUP\_IN” continuously and input below command into Docklight to turn off Power save Mode.

```
at+rsi_pwm=0
```

(2) The LED will be light continuously when Power save Mode is turned off successfully.



## 6. TRANSMIT DATA IN POWER SAVE MODE WITH RYWB116\_LITE

(1) Input below command into Docklight to enter Power save Mode 2.

```
at+rsi_pwmode=2,1,1
```

(2) Data can be sent from Server to the module in Power save Mode at any time.

(3) WUP pin needs to be pulled high (3.3v) to wake up the module in order that the module can send data to Server.



## 7. TURN OFF POWER SAVE MODE WITH RYWB116\_LITE

- (1) Pull high WUP pin to 3.3v and input below command into Docklight to turn off Power save Mode.

```
at+rsj_pwmode=0
```

- (2) Power save Mode will be disabled after the module replies "OK".



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