



# **RED4S\_FF**

## **User's Manuals**

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## 1 Pin Description

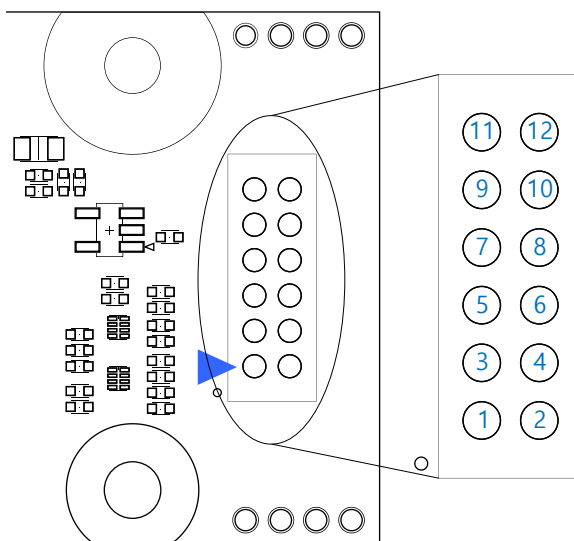


Figure 1 Pin map of RED4S\_FF

### 1.1 RED4S\_FF Pin Description

No.	Pin Name	Description
1,2,6,11,12	GND	GND
3	RXD	UART Rx(3.3V)
4	VCC50	VCC 5.0V : supply power to RED4S_FF
5	TXD	UART Tx(3.3V)
7,10	NC	No connection
8	VIO	Supply power to Level shifter IC (3.3V)
9	CSE	Chip select enable(3.3V)

## 2 Operation Method

### 2.1 Power Supply

DC power to operate RED4S\_FF is to supply for internal LDO.

### 2.2 UART

The serial interface is assigned with two wires. RS232\_TX is for receiving command from host and RS232\_RX is for transmitting response to host. Pin connection is shown as below figure.

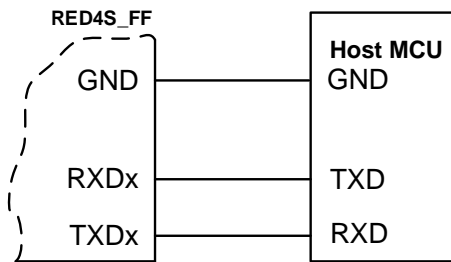


Figure 2 Host MCU Connection

### 2.3 RF connector

RF connector is optimized with 50ohm impedance. Connector's part number is DF11-12DP-2DSA(Hirose co.,LTD)

### 2.4 GUI Control

The RED Utility helps the user to start working with RED DK RFID reader quickly. Follow below steps to run GUI. Windows Start button → Program Menu → RED Utility\_vX.X.X

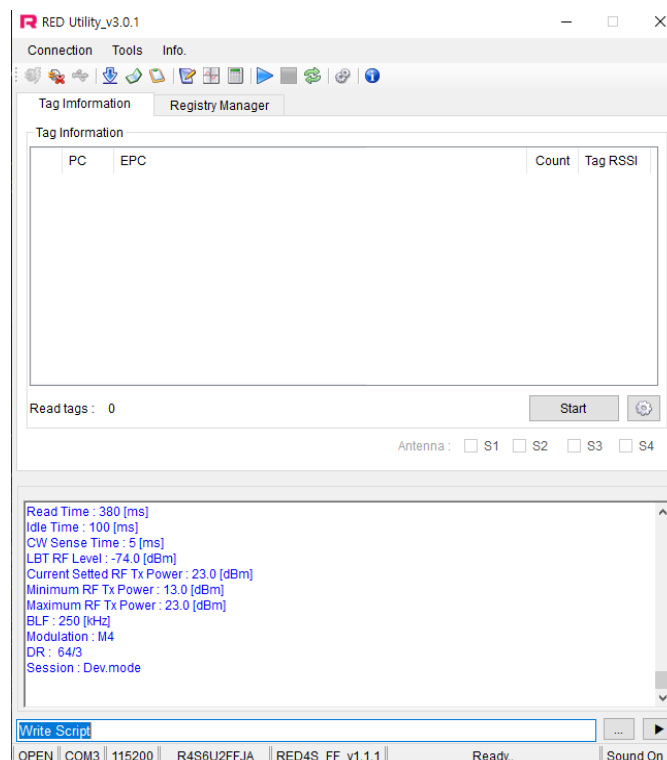


Figure 3 RED Utility\_vX.X.X

### 2.4.1 Mode Change

RED Utility provides two view modes. User can select view mode depending on purpose of use between Basic View Mode and Extended View Mode.

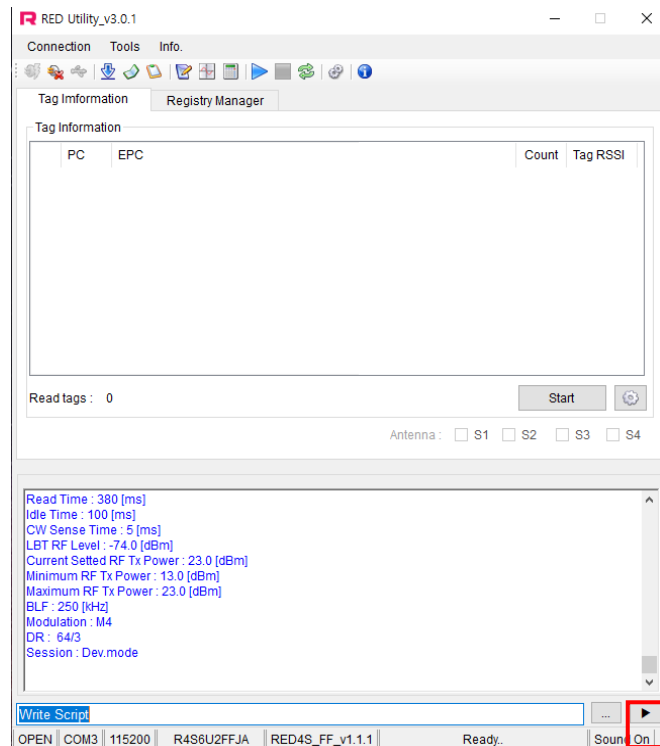


Figure 4 Basic View Mode

To change View Mode, click the extension button marked red in Figure 4 above.

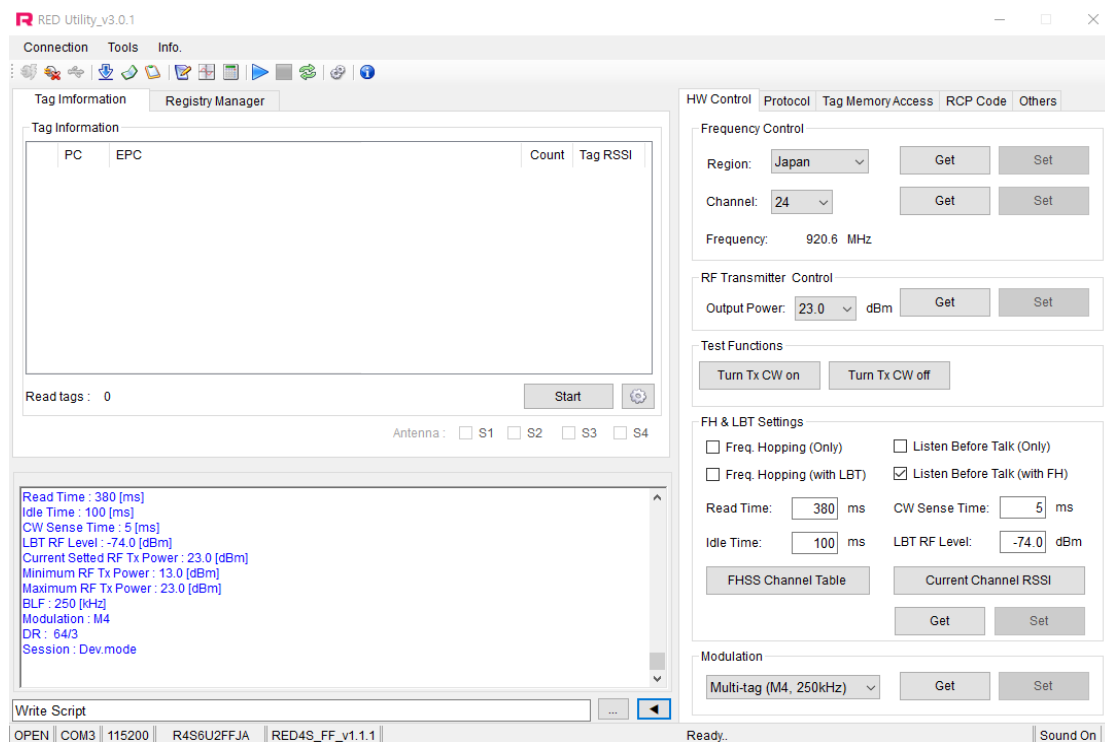


Figure 5 Extended View Mode

Always use Extended View Mode for measurement.

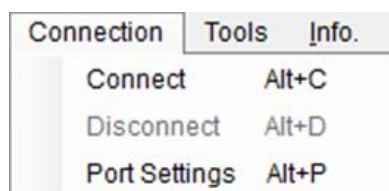
## 2.4.2 RED4S\_FF Connection

If hardware connection is valid, RED utility connect module REDx automatically.

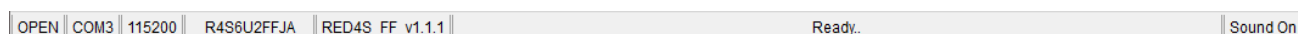
If utility cannot connect hardware, please follow below step

Click "Connection->Connect" to connect to REDx-DK through USB-to-UART at main window

GUI will find the Device and synchronize parameters with REDx module automatically. If the GUI cannot find the device automatically, Click "Connection->Port Setting" and select other Device. Default Baud rate is 115200 bit/s.



If the Device connected successfully, status bar will display "OPEN" state and device number and so on.



## 2.4.3 Hardware Control

Click 'H/W Control Tab.' To control hardware.

### 2.4.3.1 Band(Region) Setting

To select operating band, band setting should be required. Select band in combo box and click Set button to set operating band in group box 'Frequency Control.'



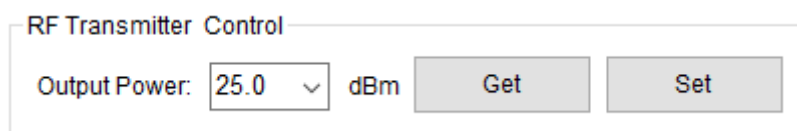
### 2.4.3.2 Power Class Setting

Some countries classify channel number by power class. Click Get button and choose required power class. And then click Set button to set finally.



### 2.4.3.3 Output Power setting

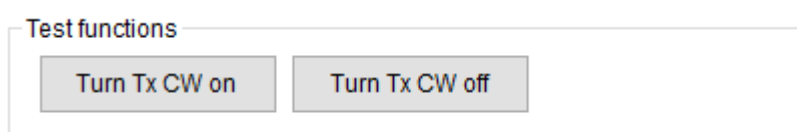
To set RED output power, select the Output Power combo box and click Set button.



### 2.4.3.4 CW (Continuous Wave) setting

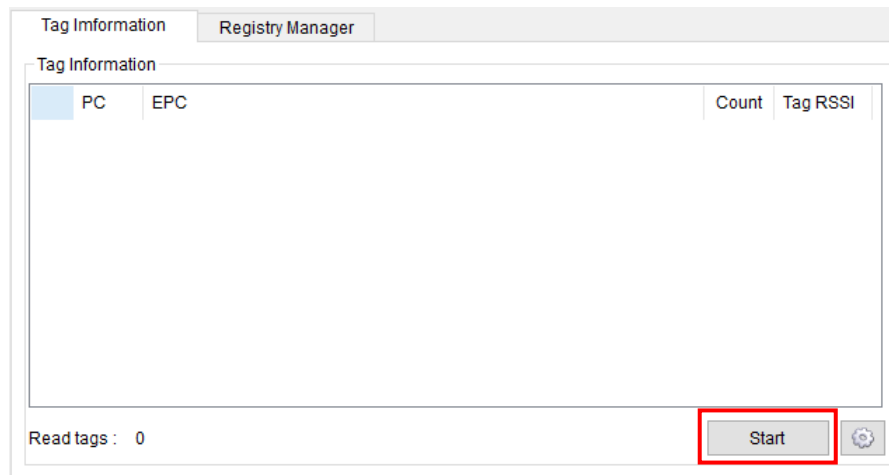
It is only used for hardware debugging.

To set CW on, click Turn Tx CW on button. To set CW off, click Tx CW off button.



#### 2.4.4 Tag Inventory Procedure

Click Start button in Tag Information Tab to read UHF RFID tag with RED Utility.



Click Start button and Tag's EPC information is displayed.



### 3 Specification

No.	Item		Unit	Test Condition	Specification			Remark
					min	Typ.	max	
1	Frequency Range <sup>NOTE1</sup>		MHz		860		960	
2	Tx Max. Power		dBm		13		27	
	Attenuator <sup>NOTE2</sup>		dB			10		
3	Tx Dynamic Range		dB			14		
4	Impedance		Ω		50			
5	DC Power		V			5.0		
6	Operating Temperature		°C		-20		70	
7	Operating Humidity		%		0		90	
8	Current	Power Down	uA	Active current is measured at maximum power with 50ohm load			20	
		Idle					20	
		Active	mA			550		
9	Size		mm	54.0 x 30 x 9.6				
10	Weight		g	8				

NOTE1. Frequency range can be adjusted according to operation region

NOTE2. 10dB attenuator applied between antenna and RED4S module.

- Device Name(Model Name) : RED4S\_FF
- FCC ID: Y3D-RED4SFF
- Name of Grantee: PHYCHIPS Inc.
- Production year, month, date:
- Manufacturer/Country: Korea



## **FCC Information to User**

*This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:*

- (1) the device may not cause interference, and*
- (2) the device must accept any interference, including interference that may cause undesired operation of this device.*

*Caution : Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment*

*This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:*

- Reorient or relocate the receiving antenna.*
- Increase the separation between the equipment and receiver.*
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.*
- Consult the dealer or an experienced radio/TV technical for help.*

### *End Product Labeling*

*The module is labeled with its own FCC. If the FCC ID is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. In that case, the final end product must be labeled in a visible area with the following:*

*“Contains FCC ID: Y3D-RED4SFF”*

### *OEM Responsibilities to comply with FCC*

*The module has been certified for integration into products only by OEM integrators under the following condition:*

- The antenna(s) must be installed such that a minimum separation distance of at least 20 cm is maintained between the radiator (antenna) and all persons at all times.*
- The module is limited to installation in mobile or fixed applications.*
- The transmitter module must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.*
- Separate approval will be required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations other than supplied antennas.*

*As long as the two condition above is met, further transmitter testing will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).*

*In the event that these conditions cannot be met, then the FCC authorizations are no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product including this module and obtaining separate FCC authorizations.*

- This device is intended only for OEM integrators*
- For OEM integration only – device cannot be sold to general public.*

- *Manual Information to the End User*  
The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

*This module has to install the input the 5.0V, cause there is a regulator in the device.*

*This device may only operate using an antenna of a type and maximum (or lesser) gain approved by Phychips. Antenna types not included in the list, having a gain grater than the maximum gain indicated for that type, are strictly prohibited for use with this transmitter.*

*Note*

	<i>Peak Gain</i>	<i>Part Name</i>
<i>ANT</i>	<i>-4.47 dBi</i>	<i>KSA-890MS3226A</i>