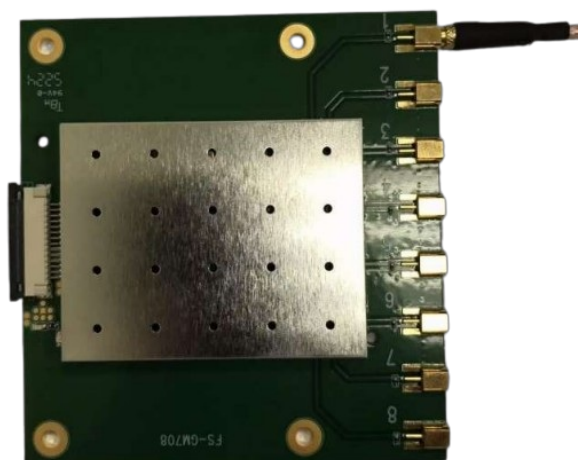


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FAVEPC

FAVEPC FS-GM708-00 8 Port Reader Module



Specifications:

- **Model:** FS-GM708 Evaluation Kit
- **Version:** V1.0

- **Power Input:** DC IN 9~24V B TYPE USB
- **RF Connector:** MMCX
- **Baud Rate:** 921600 (default)
- **RF Output Power Range:** 0 – 33dBm
- **Inventory Time:** 1000ms (default)

Initial setup

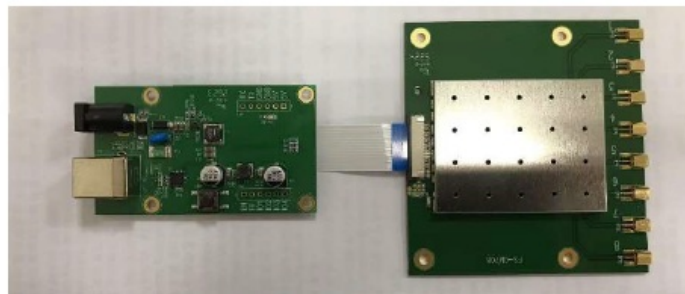
1. Powering the Reader

Plug the power cable in, with the indicator light on & reader is ready. As illustrated below:

2.

DC IN: 9~24V

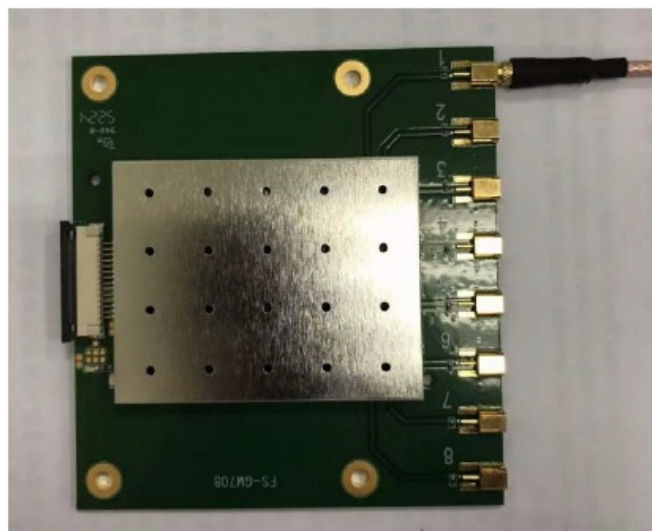
B TYPE USB



MMCX RF
connector

Connecting Antenna to Reader

Connect the antenna with the antenna MMCX port as illustrated below:



3. Connecting Data Line to Reader

You can connect the reader to your PC via B type USB, as illustrated below:

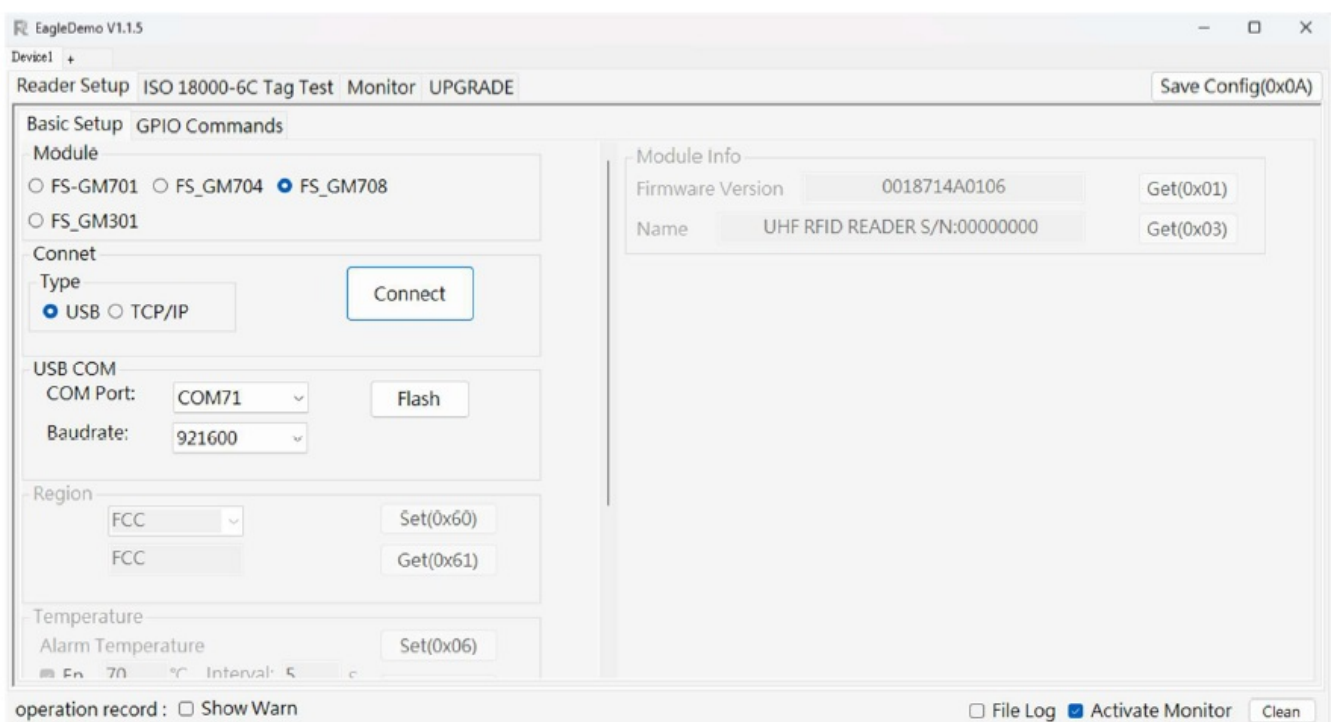


Connect DEMO SW

Double-click EagleDemo.exe to run the software.

Connect

1. Open the software and it will show as below:



2. Please select USB as Connection, Choose the corresponding Serial Port and Baud Rate (default baud rate is 921600). As illustrated below:

Connet
Type
☒ USB ☐ TCP/IP

Disconnect

USB COM
COM Port: COM39
Baudrate: 921600

Flash

3. Click Connect, if it is connected successfully, the FW version will display as below:

operation record :
☐ File Log ☐ Activate Monitor

2023-07-03 02:06:05.954 Connect COM39@921600
2023-07-03 02:06:05.939 GetFirmwareVersion
2023-07-03 02:06:05.971 00 01 40 00 02

4. Text communication with the reader:

Click on Get in Firmware Version or in Reader Region, the following screen displays:

Firmware
01400002
Read

Region
FCC

Set
Get

Run Inventory function

After connecting the reader with PC, we can start go Inventory Run function. Please select ISO 18000-6C tag test as illustrated below:

EagleDemo V1.1.5

Reader Setup **ISO 18000-6C Tag Test** Monitor UPGRADE Save Config(0x0A)

Inventory Tag Operate

Operation

Inventory Abort

Inventory Type

☐ LoopAntenna(0x6E)

☒ 0x6D Custom Application

Inventory Quantity

14

Peak Speed(Tag/s) 150 Max Speed(Tag/s): 462 AVG Speed(Tag/s) 132

Command Duration(ms) 696 Total Inventory Duration 0 00:00:05.786

Inventory Stop Condition

☒ Loop Times: 1 ☒ continuous

☐ Conti-Inventory Time: 1000 ms

☐ Warning Occur ☐ 2ndSetting Rest T: 0 ms

Inventory Custom Application

RF Mode: ULTRA FAST MODE 103

Antenna

☒ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8

Power

2800 2800 2800 2800 2800 2800 2800 2800

Inventory Time

1000 1000 1000 1000 1000 1000 1000 1000

Inventory Run

50 50 50 50 50 50 50 50

Inventory parameter (0x64) (0x65)

☐ O Type

☒ dynamic Q ☐ Static Q

Result

Total Tag Count: 769 Min RSSI: -66.6dbm Max RSSI: -34.5dbm Refresh Save Tag

☒ RF_Channel ☒ RSSI ☒ TimeStamp ☒ ANT ID ☐ Phase SetFormat(0x5A) Get Format(0x6B)

#	Date	TCount	PC	EPC	Freq(khz)	Rssi(dBm)	ANT1
1	:22:28:618	288	30 00	31 10 AF EC 28 08 EB C2 01 00 00 01	911750	-5419	288
2	:22:27:932	44	30 00	E0 00 20 11 06 12 00 00 00 00 06 05	921750	-5377	44
3	:22:27:854	35	30 00	E0 00 20 11 06 12 00 00 00 00 06 05	909250	-6209	35
4	:22:27:827	33	30 00	00 00 00 00 36 13 20 19 01 23 03 07	909250	-5551	33
5	:22:27:826	41	30 00	E2 00 20 47 30 13 01 07 16 20 6C E6	909250	-5739	41
6	:22:28:030	50	34 00	30 08 33 02 00 D9 01 40 20 18 07 27	921750	-4813	50
7	:22:28:450	65	34 00	20 18 10 16 08 72 5A 01 11 10 00 FE	905750	-6594	65
8	:22:27:826	31	30 00	E2 00 00 1B 73 12 00 98 20 20 44 71	909250	-6077	31
9	:22:28:104	54	30 00	22 22 22 22 22 22 22 22 22 22 22 22	921750	-6110	54

operation record: ☐ Show Warn ☐ File Log ☒ Activate Monitor Clean

1. Setp1: Enable ANT 1

Check mark the ANT1.

Antenna

☒ 1

power

3000

inventory time

1000

inventory run

0

2. Setp2: Setting RF Output Power

RF Output Power is the strength of RF output signal from antenna port whose unit is dBm.

Antenna

☒ 1

power

3000

inventory time

1000

inventory run

0

The output power range is 0 – 33dBm. Default RF output power is 30dBm .

3. Setp2: Setting Inventory time & Run

Setting Inventory time is mean the running time when start inventory command.

Setting Inventory Run is mean the running once when start inventory command.

Inventory stop if which time or run up to the setting value

Antenna	<input checked="" type="checkbox"/> 1
power	3000
inventory time	1000
inventory run	0

The default inventory time is 1000ms.

The default inventory run is 0, which mean “don’t care”.

4. Setp3: Setting RF-link mode

There is different read speed & sensitivity in different RF-link mode. To more detail, please check the RF-link profile of datasheet.

Select CFG	
RF mode:	ULTRA FAST MODE 103
default RF	ULTRA FAST MODE 103
default Inven	FAST MODE 302
	FAST MODE 120
	FAST MODE 323
<input checked="" type="checkbox"/> RF_Channel	NORMAL MODE 345
<input checked="" type="checkbox"/> TimeStamp	NORMAL MODE 223
	NORMAL MODE 222
	DRM MODE 241
	DRM MODE 244
	ULTRA Sensitivity MODE 285

5. Setp4: Run/Stop Inventory

click Inventory button to Run Inventory function. click Stop button enforce to stop Inventory function.

Operation	Inventory	Abort	Inventory Type	<input type="radio"/> LoopAntenna	<input checked="" type="radio"/> Custom
Inventory Stop Condition	<input checked="" type="radio"/> Loop Times: 1	<input type="checkbox"/> continuous	<input type="radio"/> Conti-Inventory Time: 1000	ms	<input type="checkbox"/> Warning Occur <input type="checkbox"/> 2ndSetting

Operation	Stop	Abort	Inventory Type	<input type="radio"/> LoopAntenna	<input checked="" type="radio"/> Custom
Inventory Stop Condition	<input checked="" type="radio"/> Loop Times: 1	<input checked="" type="checkbox"/> continuous	<input type="radio"/> Conti-Inventory Time: 1000	ms	<input type="checkbox"/> Warning Occur <input type="checkbox"/> 2ndSetting

6. Parameter of AUTO Stop Inventory

Loop time	Inventory stop when reach the setting of command count.
Conti-Inventor y	Inventory stop when reach the setting of Inventory period.

it will no stop if tick continuous

Inventory Stop Condition

☒ Loop Times: 1 ☒ continuous

☐ Conti-Inventory Time: 1000 ms

7. The parameter of Running Inventory

There are 13 parameters when run inventory as shown as following.

Inventoried Quantity	Total number of inventory tags since click Inventory .
Peak Speed	Read Speed of Tag for last one inventory command, unit: Tag/s
Max speed	MAX Read Speed of Tag for total inventory period, unit: Tag/s
AVG speed	AVG Read Speed of Tag for total inventory period, unit: Tag/s
Command Duration	Time between Inventory Command to command, unit: ms
Total Inventory Duration	Total inventory period when click Inventory , unit: ms.
Total Tag Count	Total tags when start Inventory period.
Count	Tag count

EPC	EPC data of tag.
PC	PC data

CRC	CRC data
RSSI	The Tag signal strength at the last inventory command.
Carrier Frequency	Carrier Frequency of tag at the last time.

The screenshot shows the EagleDemo V1.1.5 software interface. The 'Reader Setup' tab is active, and the 'ISO 18000-6C Tag Test' is selected. The 'Inventory' button is highlighted. The 'Inventory Stop Condition' is set to 'Loop Times: 1' and 'continuous'. The 'Inventory Custom Application' is set to 'ULTRA FAST MODE 103'. The 'Inventory Run' parameters are set to 50 for all fields. The 'Inventory parameter (0x64) (0x65)' is set to 'dynamic Q'. The 'Inventory Quantity' is displayed as 14. The 'Peak Speed(Tag/s)' is 150, 'Max Speed(Tag/s)' is 462, and 'AVG Speed(Tag/s)' is 132. The 'Command Duration(ms)' is 696, and 'Total Inventory Duration' is 0 00:00:05.786. The 'Result' section shows 'Total Tag Count: 769', 'Min RSSI: -66.6dbm', and 'Max RSSI: -34.5dbm'. A table of results is displayed below, showing 9 rows of data with columns for #, Date, TCount, PC, EPC, Freq(kHz), Rssi(dBm), and ANT1.

#	Date	TCount	PC	EPC	Freq(kHz)	Rssi(dBm)	ANT1
1	:22:28:618	288	36 00	31 16 AF EC 2B 0B EB C2 01 06 00 01	911750	-5419	288
2	:22:27:932	44	36 00	E0 00 20 11 66 12 00 00 00 00 65	921750	-5377	44
3	:22:27:854	35	36 00	E0 00 20 11 66 12 00 00 00 00 5B	909250	-6269	35
4	:22:27:827	33	36 00	00 00 00 00 36 13 20 19 01 23 03 87	909250	-5551	33
5	:22:27:826	41	36 00	E2 00 20 47 38 13 01 67 16 26 6C E6	909250	-5739	41
6	:22:28:030	50	34 00	30 08 33 E2 D0 D9 01 40 20 18 07 27	921750	-4813	50
7	:22:28:450	65	34 00	20 18 10 16 08 72 5A 01 11 10 00 FE	905750	-6594	65
8	:22:27:826	31	36 00	E2 00 00 18 73 12 00 98 20 20 40 71	909250	-6977	31
9	:22:28:104	54	36 00	22 22 22 22 22 22 22 22 22 22 22	921750	-6110	54

Error Display

ANT error:

The screenshot shows the 'operation record' window. It contains a list of log entries. The entry '2023-09-08 01:37:28.134 CMD 0x6D Status Error:62 01 ERR_OP_STATUS' is highlighted in red, indicating an error. The other entries show successful inventory operations.

```

operation record :
2023-09-08 01:37:17.751 Interval Count1: RFMode:103 ANT1 Set
2023-09-08 01:37:18.456 Stop
2023-09-08 01:37:24.966 Interval Count1: RFMode:103 ANT1 Set
2023-09-08 01:37:25.461 Stop
2023-09-08 01:37:28.121 Interval Count1: RFMode:103 ANT1 Set
2023-09-08 01:37:28.134 CMD 0x6D Status Error:62 01 ERR_OP_STATUS
2023-09-08 01:37:28.135 Stop
  
```

Reason:

1. ANT is Disconnection to ANT port of module
2. VSWR is too large of ANT, it should be lower than 1.3
3. Reflection RF power too large, please check is there some Metal around ANT.

Receiver data time out:

operation record : File Log Activate Monitor

2023-07-03 02:39:54.639 Stop
2023-07-03 02:40:03.688 Interval Count1: RFMode:103 ANT1 Set
2023-07-03 02:40:08.885 Interval Count2: RFMode:103 ANT1 Set
2023-07-03 02:40:14.066 Interval Count3: RFMode:103 ANT1 Set
2023-07-03 02:40:19.265 Interval Count4: RFMode:103 ANT1 Set
2023-07-03 02:40:24.451 Interval Count5: RFMode:103 ANT1 Set
2023-07-03 02:40:32.463 MEX10 SerialReader, message is Receiver TimeOut 3s

Reason:

1. Software CRASH
2. Interface CRASH

FCC Caution

15.105 statement

Federal Communication Commission Interference Statement

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 equipment 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 technician for help.

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

1. This device may not cause harmful interference, and

2. This device must accept any interference received, including interference that may cause undesired operation.

Non-modification Statement:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Validity of using the module certification:

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization. Custom design antennas may be used, however the OEM installer must following the FCC 15.21 requirements and verify if new FCC approval will be necessary.

End product labeling:

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: ZDD-FS-GM701-00".

Information that must be placed in the end user manual:

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. The end user manual shall include all required regulatory information/warning as show in this manual.

Co-location warning:

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

OEM integration instructions:

This device is intended only for OEM integrators under the following conditions:

The antenna must be installed such that 20 cm is maintained between the antenna and users, and the transmitter module may not be co-located with any other transmitter or antenna. The module shall be only used with the external antenna(s) that has been originally tested and certified with this module.

For all products market in US, OEM has to limit the operation channels in Channel 1 to Channel 11 or 3-9 as specified above by the supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

As long as 3 conditions above are met, further transmitter test 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.).

Important Notes:

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. The end user manual shall include all required regulatory information/warning as show in this manual.

Frequently Asked Questions


- **Q: How do I power on the reader?**

A: Plug the power cable into the DC IN port with a power source between 9-24V and connect it via USB.

- **Q: How do I connect the antenna?**

A: Connect the antenna to the antenna MMCX port on the reader.

Documents / Resources

 <small>FS-GM708 Module Evaluation Kit User Manual V1.0</small>	FAVEPC FS-GM708-00 8 Port Reader Module [pdf] User Manual FS-GM708-00, ZDD-FS-GM708-00, ZDDFSGM70800, FS-GM708-00 8 Port Reader Module, FS-GM708-00, 8 Port Reader Module, Reader Module, Module
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References

- [User Manual](#)

FAVEPC

8 Port Reader Module, FAVEPC, FS-GM708-00, FS-GM708-00 8 Port Reader Module, Module, Reader Module, ZDD-FS-GM708-00, ZDDFSGM70800

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