

FastChecker FC01

Operation Manual



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1. Description of the Equipment

The equipment has the following components:

- 1 FC01 unit
- 1 SMA Antenna
- 1 USB Cable
- 1 10 dB Attenuator
- 1 Flash Drive with Operational Software and Drivers
- 1 Carry on Case

FC01 was designed to evaluate the performance of UHF Tags.

2. Installation

Make sure to stop all running programs and virus protection of your computer. Also make sure that if this is not the first installation you have to stop any FastChecker service that is possible previous running in your computer.

Connect the FC01 through the computer using the USB cable. Make sure you have your USB port able to do software and drivers installation – in case there is a restriction contact you computer IT administrator.

For the installation you will need the software that is in the furnished Flash Drive. You may check if you are installing the last version of the software by accessing www.getfastTag.com. In case your software version is not the last one you can do a download and continue the installation.

You can complete the installation after reading and accepting the terms and conditions to use the software.

After the installation is completed run the FastChecker icon that will be at your desktop.

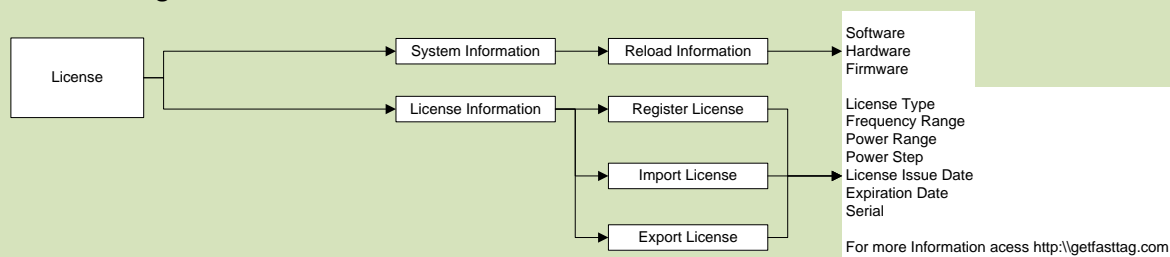
Run the FastChecker icon and get through the software to get the license validation.

You will have to use the key that you received in a separate shipment in order to generate your license.

Go to Auto License and input the key and the software will generate your license.

It is possible to install your FC01 equipment in several computers using your generated license file. You can export your license file to use in different computers.

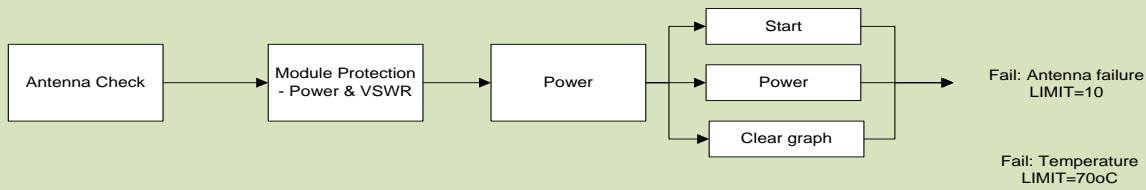
The following information is available from now on:



3. Checking the Antenna connection and performance

The antenna check function allows you to verify if the antenna is properly installed and if the equipment is ready to work. The maximum limit acceptable is 10. Over that point the equipment will stop operating in order to prevent damage from high VSWR and Power.

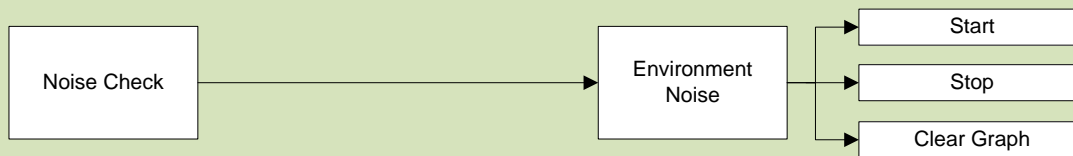
After installing the supplied antenna to the FC01 you can test it and get some other information as described below:



You can also use a different antenna but it must be a broadband and also with a low VSWR in order to not cause the operation for a value over 10.

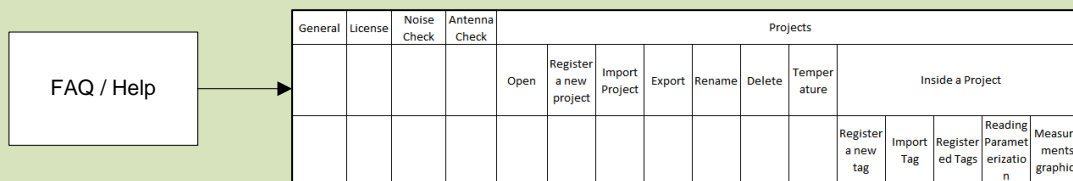
4. Noise Check

You can check the environment noise in that function. This information is good when you operate the FC01 in a noise environment in order to understand the results from your Tags evaluation. The picture below shows the options for that function of the FC01



5. Frequent Questions and Answers

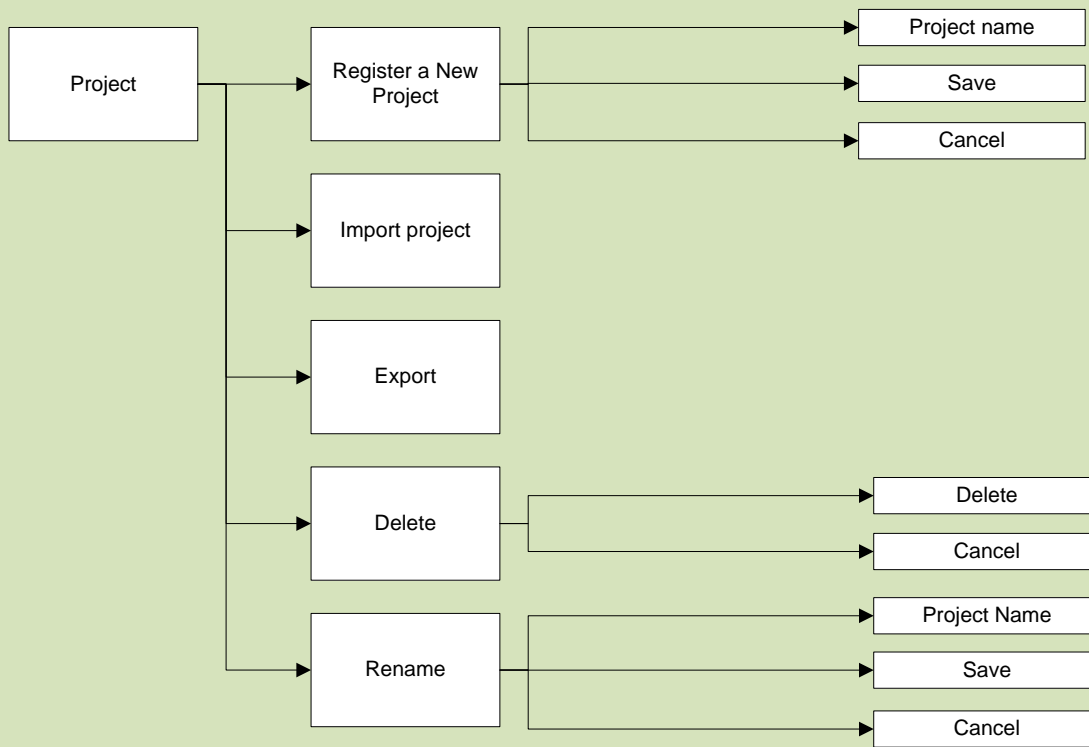
You will find many answers for common questions in a table with more than 70 questions. If your question could not find an answer please contact us at contact@getfasTag.com



6. Starting a Project

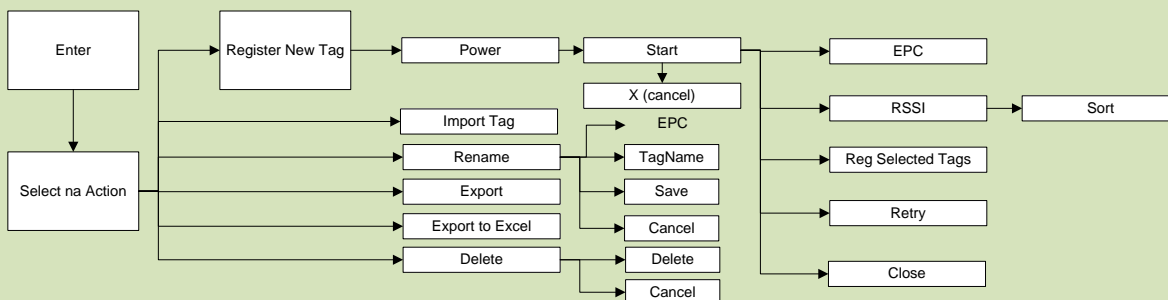
You have to start a project in order to use the FC01. The following picture explains to you the path.

You can create a project and export it to be displayed in any other computer that has the FastChecker installed. So you can send the project metrics to anyone. FastChecker software is easy to download and does not require a license.



7. Selecting an action to perform Tag analysis

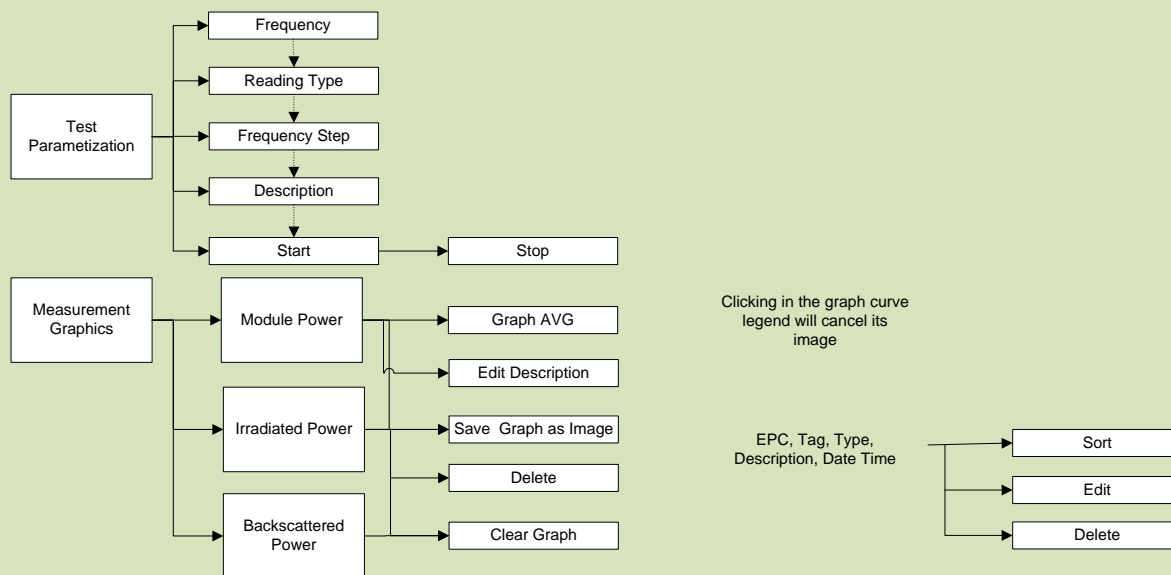
After you had created a Project you have to select an action to continue. In that way you may register a Tag. All options of this section are explained in the picture below:



You can also import or export any already registered Tag.

8. Measuring Tags

This is the main function of the FC01 – measuring the performance of your Tags. The picture below can show the alternatives for this function.



In the website www.getfastTag.com at RFID Education you will find presentations and excel spreadsheets to help you understand the metrics in Tags RFID UHF.

FastChecker FC01 does not deliver to you absolute values of the metrics but give you comparisons between different Tags and also provide you information if the Tag under test is “tuned” to the desired frequency inside a specific country RFID UHF band.

9. Specification / Technical Data

9.1. Introduction

FASTCHECKER FC01 is a laboratory instrument for evaluating the performance of a UHF Tag. It provides important information that is hidden when using a conventional UHF reader.

The FASTCHECKER FC01 is not a traditional RFID reader. It does not perform the functions of a reader and thus cannot operate as such.

It serves to make Tag performance comparisons when applied to different products delivering results across the full 800 to 1000 MHz or a limited band of 840 to 960 MHz frequency spectrum. This shows whether the Tag is at its maximum sensitivity within the range that a traditional reader will work out. This cannot be evaluated using a traditional reader - this is the main function of FASTCHECKER FC01.

Easy to connect via a USB cable, its operation is very simple via a computer using the FASTCHECKER FC01 control software.

9.2. Product Marketing

The FASTCHECKER FC01 was developed and is marketed by MB Engenharia (Michel Normanha Bardauil ME) www.mb-engenharia.com through the site www.getfastTag.com. Sales are directed to UHF RFID companies and RFID professionals.

9.3. What are included

- FASTCHEKER FC01 unit
- Wideband Dipole Antenna

- USB Cable
- Flash Drive with FastChecker Software (FC01 software)
- 10 dB Attenuator

9.4. Highlights

- Compact size
- Frequency coverage from 800 to 1000 MHz (*)
- Self-Licensing Function
- Powered by USB port
- RoHs compatible (lead free and other harmful components)
- Antenna Check
- Thermal protection
- Shows the power to reach the operating threshold for each frequency.
- Test plan setup - manually set maximum power and start and end frequencies
- Auto function saves the test data
- Maximum 50% duty cycle during testing

(*) limitations apply for specific country requirements

9.5. Product Operation

For each frequency (*) from 800 to 1000 MHz or from 840 to 960 MHz in 0.25, 1, 5 or 10 MHz jumps it determines the minimum power required for full conversation between the FASTCHECKER FC01 and the Tag using the EPC C1G2 / ISO18000-6C communication protocol.

(*) limitations apply for specific country requirements

As an example, the figure below shows the result of the analysis of 3 different Tags by FASTCHECKER FC01. The graphs show the minimum power required to access the Tag (threshold) as well as the backscattered power value of each of the measurements taken. The execution time of a Tag test is approximately 1 minute.



9.6. Technical Data

Item	Technical Data	Unit
Operation Voltage	5	V _{DC}
Maximum Operation Current	50	mA
Standby Current	≤20	mA
Operation Frequencies (*)	840~960 or extended band 800~1000	MHz
Frequencies Step	0.25 ; 1 ; 5 or 10	MHz
Maximum RF Output Power	25	dBm
Maximum Irradiated Power	27	dBm
Power Step Adjustment	1	dB
Communication Protocol	EPC C1G2/ISO18000-6C	-
Communication Port Control	USB	-
Adjacent Channel Attenuation	≤-40 dB ±1CH ≤-60 dB ±2CH	-
Frequency Stabilization	±10 ppm -25°C~+40°C ±20 ppm 40°C~+60	-
Thermal Protection	70	°C
RF Self Protection (Power + VSWR)	10	-

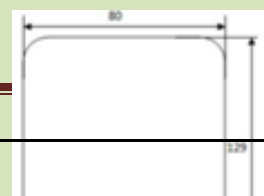
(*) limitations apply for specific country requirements

Operation frequency (*) table (MHz)

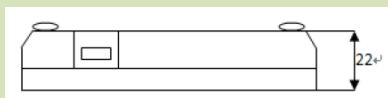
800,00	810,00	820,00	830,00	840,00	850,00	860,00	870,00	880,00	890,00	900,00	910,00	920,00	930,00	940,00	950,00	960,00	970,00	980,00	990,00	1000,00
800,25	810,25	820,25	830,25	840,25	850,25	860,25	870,25	880,25	890,25	900,25	910,25	920,25	930,25	940,25	950,25	960,25	970,25	980,25	990,25	
800,50	810,50	820,50	830,50	840,50	850,50	860,50	870,50	880,50	890,50	900,50	910,50	920,50	930,50	940,50	950,50	960,50	970,50	980,50	990,50	
800,75	810,75	820,75	830,75	840,75	850,75	860,75	870,75	880,75	890,75	900,75	910,87	920,75	930,75	940,75	950,75	960,75	970,75	980,75	990,75	
801,00	811,00	820,25	830,25	841,00	851,00	861,00	871,00	881,00	891,00	901,00	911,16	921,00	931,00	941,00	951,00	961,00	971,00	981,00	991,00	
801,25	811,25	820,25	830,25	841,25	851,25	861,25	871,25	881,25	891,25	901,25	911,45	921,25	931,25	941,25	951,25	961,25	971,25	981,25	991,25	
801,50	811,50	820,25	830,25	841,50	851,50	861,50	871,50	881,50	891,50	901,50	911,74	921,50	931,50	941,50	951,50	961,50	971,50	981,50	991,50	
801,75	811,75	820,25	830,25	841,75	851,75	861,75	871,75	881,75	891,75	901,75	912,03	921,75	931,75	941,75	951,75	961,75	971,75	981,75	991,75	
802,00	812,00	820,25	830,25	842,00	852,00	862,00	872,00	882,00	892,00	902,00	912,32	922,00	932,00	942,00	952,00	962,00	972,00	982,00	992,00	
802,25	812,25	820,25	830,25	842,25	852,25	862,25	872,25	882,25	892,25	902,25	912,61	922,25	932,25	942,25	952,25	962,25	972,25	982,25	992,25	
802,50	812,50	820,25	830,25	842,50	852,50	862,50	872,50	882,50	892,50	902,50	912,90	922,50	932,50	942,50	952,50	962,50	972,50	982,50	992,50	
802,75	812,75	820,25	830,25	842,75	852,75	862,75	872,75	882,75	892,75	902,75	913,19	922,75	932,75	942,75	952,75	962,75	972,75	982,75	992,75	
803,00	813,00	820,25	830,25	843,00	853,00	863,00	873,00	883,00	893,00	903,00	913,48	923,00	933,00	943,00	953,00	963,00	973,00	983,00	993,00	
803,25	813,25	820,25	830,25	843,25	853,25	863,25	873,25	883,25	893,25	903,25	913,77	923,25	933,25	943,25	953,25	963,25	973,25	983,25	993,25	
803,50	813,50	820,25	830,25	843,50	853,50	863,50	873,50	883,50	893,50	903,50	914,06	923,50	933,50	943,50	953,50	963,50	973,50	983,50	993,50	
803,75	813,75	820,25	830,25	843,75	853,75	863,75	873,75	883,75	893,75	903,75	914,35	923,75	933,75	943,75	953,75	963,75	973,75	983,75	993,75	
804,00	814,00	820,25	830,25	844,00	854,00	864,00	874,00	884,00	894,00	904,00	914,64	924,00	934,00	944,00	954,00	964,00	974,00	984,00	994,00	
804,25	814,25	820,25	830,25	844,25	854,25	864,25	874,25	884,25	894,25	904,25	914,93	924,25	934,25	944,25	954,25	964,25	974,25	984,25	994,25	
804,50	814,50	820,25	830,25	844,50	854,50	864,50	874,50	884,50	894,50	904,50	915,22	924,50	934,50	944,50	954,50	964,50	974,50	984,50	994,50	
804,75	814,75	820,25	830,25	844,75	854,75	864,75	874,75	884,75	894,75	904,75	915,51	924,75	934,75	944,75	954,75	964,75	974,75	984,75	994,75	
805,00	815,00	820,25	830,25	845,00	855,00	865,00	875,00	885,00	895,00	905,00	915,80	925,00	935,00	945,00	955,00	965,00	975,00	985,00	995,00	
805,25	815,25	820,25	830,25	845,25	855,25	865,25	875,25	885,25	895,25	905,25	916,09	925,25	935,25	945,25	955,25	965,25	975,25	985,25	995,25	
805,50	815,50	820,25	830,25	845,50	855,50	865,50	875,50	885,50	895,50	905,50	916,38	925,50	935,50	945,50	955,50	965,50	975,50	985,50	995,50	
805,75	815,75	820,25	830,25	845,75	855,75	865,75	875,75	885,75	895,75	905,75	916,67	925,75	935,75	945,75	955,75	965,75	975,75	985,75	995,75	
806,00	816,00	820,25	830,25	846,00	856,00	866,00	876,00	886,00	896,00	906,00	916,96	926,00	936,00	946,00	956,00	966,00	976,00	986,00	996,00	
806,25	816,25	820,25	830,25	846,25	856,25	866,25	876,25	886,25	896,25	906,25	917,25	926,25	936,25	946,25	956,25	966,25	976,25	986,25	996,25	
806,50	816,50	820,25	830,25	846,50	856,50	866,50	876,50	886,50	896,50	906,50	917,54	926,50	936,50	946,50	956,50	966,50	976,50	986,50	996,50	
806,75	816,75	820,25	830,25	846,75	856,75	866,75	876,75	886,75	896,75	906,75	917,83	926,75	936,75	946,75	956,75	966,75	976,75	986,75	996,75	
807,00	817,00	820,25	830,25	847,00	857,00	867,00	877,00	887,00	897,00	907,00	918,12	927,00	937,00	947,00	957,00	967,00	977,00	987,00	997,00	
807,25	817,25	820,25	830,25	847,25	857,25	867,25	877,25	887,25	897,25	907,25	918,41	927,25	937,25	947,25	957,25	967,25	977,25	987,25	997,25	
807,50	817,50	820,25	830,25	847,50	857,50	867,50	877,50	887,50	897,50	907,50	918,70	927,50	937,50	947,50	957,50	967,50	977,50	987,50	997,50	
807,75	817,75	820,25	830,25	847,75	857,75	867,75	877,75	887,75	897,75	907,75	918,99	927,75	937,75	947,75	957,75	967,75	977,75	987,75	997,75	
808,00	818,00	820,25	830,25	848,00	858,00	868,00	878,00	888,00	898,00	908,00	919,28	928,00	938,00	948,00	958,00	968,00	978,00	988,00	998,00	
808,25	818,25	820,25	830,25	848,25	858,25	868,25	878,25	888,25	898,25	908,25	919,57	928,25	938,25	948,25	958,25	968,25	978,25	988,25	998,25	
808,50	818,50	820,25	830,25	848,50	858,50	868,50	878,50	888,50	898,50	908,50	919,86	928,50	938,50	948,50	958,50	968,50	978,50	988,50	998,50	
808,75	818,75	820,25	830,25	848,75	858,75	868,75	878,75	888,75	898,75	908,75	920,15	928,75	938,75	948,75	958,75	968,75	978,75	988,75	998,75	
809,00	819,00	820,25	830,25	849,00	859,00	869,00	879,00	889,00	899,00	909,00	920,44	929,00	939,00	949,00	959,00	969,00	979,00	989,00	999,00	
809,25	819,25	820,25	830,25	849,25	859,25	869,25	879,25	889,25	899,25	909,25	920,73	929,25	939,25	949,25	959,25	969,25	979,25	989,25	999,25	
809,50	819,50	820,25	830,25	849,50	859,50	869,50	879,50	889,50	899,50	909,50	921,02	929,50	939,50	949,50	959,50	969,50	979,50	989,50	999,50	
809,75	819,75	820,25	830,25	849,75	859,75	869,75	879,75	889,75	899,75	909,75	921,31	929,75	939,75	949,75	959,75	969,75	979,75	989,75	999,75	

(*) limitations apply for specific country requirements

9.7. Dimensional

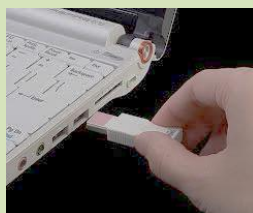


- Dimension(Length X Width X Height) : 129x80x22mm
- Weight : 280g



9.8. Interface

Pin	Signal name	Signal Direction	Function/compatibility description	Remark
1	VCC	Input	USB supply	
2	GND	Input	USB supply	
3	USB_D+	Bi-direction	USB connect computer	
4	USB_D-	Bi-direction	USB connect computer	
5	GPIO1	Bi-direction	Connect LED, Red	Computer control
6	GPIO2	Bi-direction	Connect to buzzer	Computer control



9.9. Environmental

No	Item	Technical data	Unit	Remark
1	Working temp.	-20~+70	°C	
2	Storage temp.	-40~+85	°C	
3	Relative humidity	5%~95%	RH	Non-condensation



9.10. IP Rating

IP54 - Protected from limited dust ingress and spray of water from any direction.

9.11. Drop Test



No damage after 10 free falls at 1m high on a carpet floor with no antenna and cable attached to product.