## Document Title

**EK5133-G2 Series User Manual**

## Revision History

| Rev. No. | History | Issue Date | Remark |
|---|---|---|---|
| 0.0 | Preliminary | July. 28, 2020 | |
| 0.1 | Add data rate 2M,1M | August.10, 2020 | |



**Important Notice**:
AMICCOM reserves the right to make changes to its products or to discontinue any integrated circuit product or service without notice. AMICCOM integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life-support applications, devices or systems or other critical applications. Use of AMICCOM products in such applications is understood to be fully at the risk of the customer.

## Table of contents

1. Introduction ..... 3
2. Software Install/Uninstall ..... 3
    2.1 Software Install/Uninstall ..... 3
    2.2. Driver Install ..... 3
3. Hardware Description ..... 4
    3.1 Evaluation board ..... 4
    3.2 The pin definition of A01/A02 ..... 5
    3.3 The pin definition of F07 ..... 5
    3.4 The pin definition of J3 ..... 5
    3.5 PA/LNA setting ..... 5
    3.6 REGIPA setting ..... 6
    3.7 EV Board Schematic ..... 6
4. Software Introduction ..... 7
    4.1 Using the EK5133-G2 Series software ..... 7
    4.2 Pull-down menu ..... 8
        4.2.1 File menu options ..... 8
        4.2.2 Help menu options ..... 8
    4.3 Register Map (Read Only) Tab ..... 9
    4.4 Quick config. Tab ..... 10
5. Setup Configuration install ..... 12
6. References ..... 12

# 1. Introduction

This document describes how to use the EK5133-G2 Series. The software enables you to develop and debug firmware and prototype peripheral hardware for wireless applications based on the A5133 Series RF chip.

# 2. Software Install/Uninstall

The software is used to program the A5133 series device on the evaluation board. By using this software the designer of the radio system can easily evaluate the performance of RF IC in the early stage of the design process. It is further a useful tool during the generation of the configuration data and for finding optimized external component values.

### 2.1 Software Install/Uninstall

The software is written to run under Win 7 or Win 10 operating system. There should be a USB port in the target PC for the device control.

**To install EK5133-G2 Series:**

1) Start Windows, if you have not already done so.
2) Place the CD-ROM disk into the CD-ROM drive.
3) Select “Install EK5133-G2 Series” item to setup program.

Notes: Administrator privilege is required for installing the EK5133-G2 Series program on Win 7, Win10. If the user doesn't have the administrative right, this program may be not work while controlling the device with the USB port.

**To uninstall EK5133-G2 Series:**

1 Click the [Start] button under Windows.
2 Select “Control Panel” in Setup.
3 Double-click Add/Remove Programs.
4 Click Install/Uninstall. Then select EK5133-G2 Series from the list of programs that can be automatically removed.
5 Click the [Remove...] button to uninstall EK5133-G2 Series.

### 2.2. Driver Install

This software should be install PL2303 USB to Bridge (HX) install shield driver. The Wizard will guide you to complete the installation.

# 3. Hardware Description

### 3.1 Evaluation board

The Evaluation board provides two main functions. First, the I/O pin function of A5133 series can be set and measured on the evaluation board. Another, user can use EK5133-G2 Series software installed on PC to evaluate the A5133 The RF module is plugged into connector J2 on the evaluation board. The connector J1 should be connected to PC's USB port by USB cable. This evaluation board is shown in the Figure 1.

The following describe the function of key parts on the evaluation board (Figure 1)

1. USB B Type female connector (J1): It should be connected to PC's USB port by USB cable
2. RF Module connector: Plug RF module into RF module connector on the evaluation board.
3. Jumper J21: REGIPA. Please see below table 3.6 for detail description.
4. Jumper J10,J15: PA & LNA On/Off . Please see below table 3.5 for detail description.
5. I/O pin connector (J3): Please see below table 3.4 for detail description.
6. Jumper J7, J22: RF module supply voltage, I/O driving select. Select system +3.3V on board or extern power.
7. Jumper J8: EK Board power supply select. Select USB power supply or J6 Jack power supply.
8. Power supply (J6): Power supply is fed to the evaluation board through J6 and input range is DC +5.5V to +7V



Fig. 1 Topside of evaluation board

### 3.2 The pin definition of A01/A02

| Pin No. | Pin name | Comment |
|---|---|---|
| 1 | VREG_IN | Chip's Regulator input |
| 2 | GND | GND |
| 3 | CKO | Multi pin CKO |
| 4 | GIO2 | Multi pin IGPIO 2 |
| 5 | GIO1 | Multi pin IGPIO 1 |
| 6 | SDIO | SPI data input/output |
| 7 | SCK | SPI clock |
| 8 | SCS | SPI chip select |
| 9 | GND | GND |
| 10 | XCLK | External crystal source input |

### 3.3 The pin definition of F07

| Pin No. | Pin name | Comment |
|---|---|---|
| 1 | GND | GND |
| 2 | REGIPA | Control A7700 Rx gain select |
| 3 | CKO | Multi pin clock output |
| 4 | GIO2 | Multi pin IGPIO 2 |
| 5 | GIO1 | Multi pin IGPIO 1 |
| 6 | SDIO | SPI data input/output |
| 7 | SCK | SPI clock |
| 8 | SCS | SPI chip select |
| 9 | REGI | Chip's Regulator input |
| 10 | GND | GND |

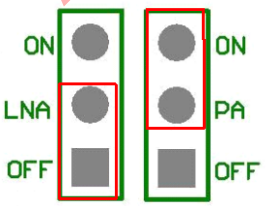
### 3.4 The pin definition of J3

| Pin No. | Pin name | Comment |
|---|---|---|
| 1 | GIO1 | Multi pin GPIO1 |
| 2 | GIO2 | Multi pin GPIO2 |
| 3 | CKO | Multi pin CKO |
| 4 | XO | External crystal source input |
| 5 | GND | GND |
| 6 | - | NC |
| 7 | - | NC |
| 8 | GND | GND |
| 9 | GND | GND |

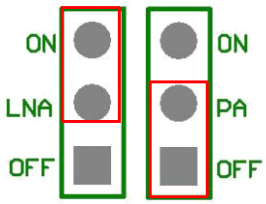
### 3.5 PA/LNA setting

The PA/LNA pin is control TRX switch select.

a) PA On setting



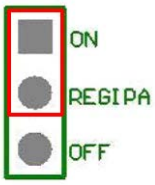

b) LNA On setting



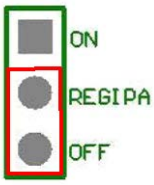
### 3.6 REGIPA setting

The REGIPA pin is control A7700 RX gain select.

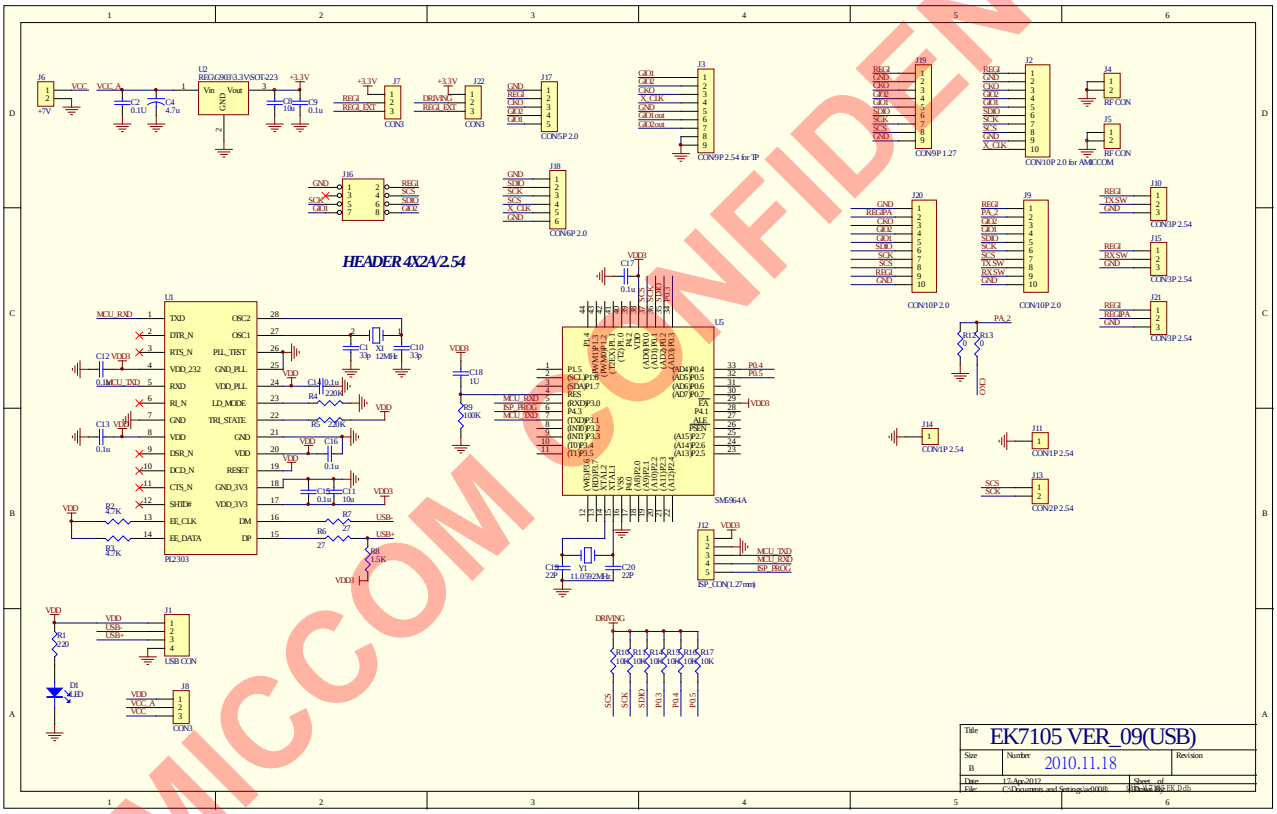
b) High gain mode setting




b) Low gain mode setting




### 3.7 EV Board Schematic



# 4. Software Introduction

### 4.1 Using the EK5133-G2 Series software

The EK5133-G2 Series program Main Screen appears whenever you execute the program. The screen is shown below. Refer to the A5133 datasheet for detailed information on the register settings.

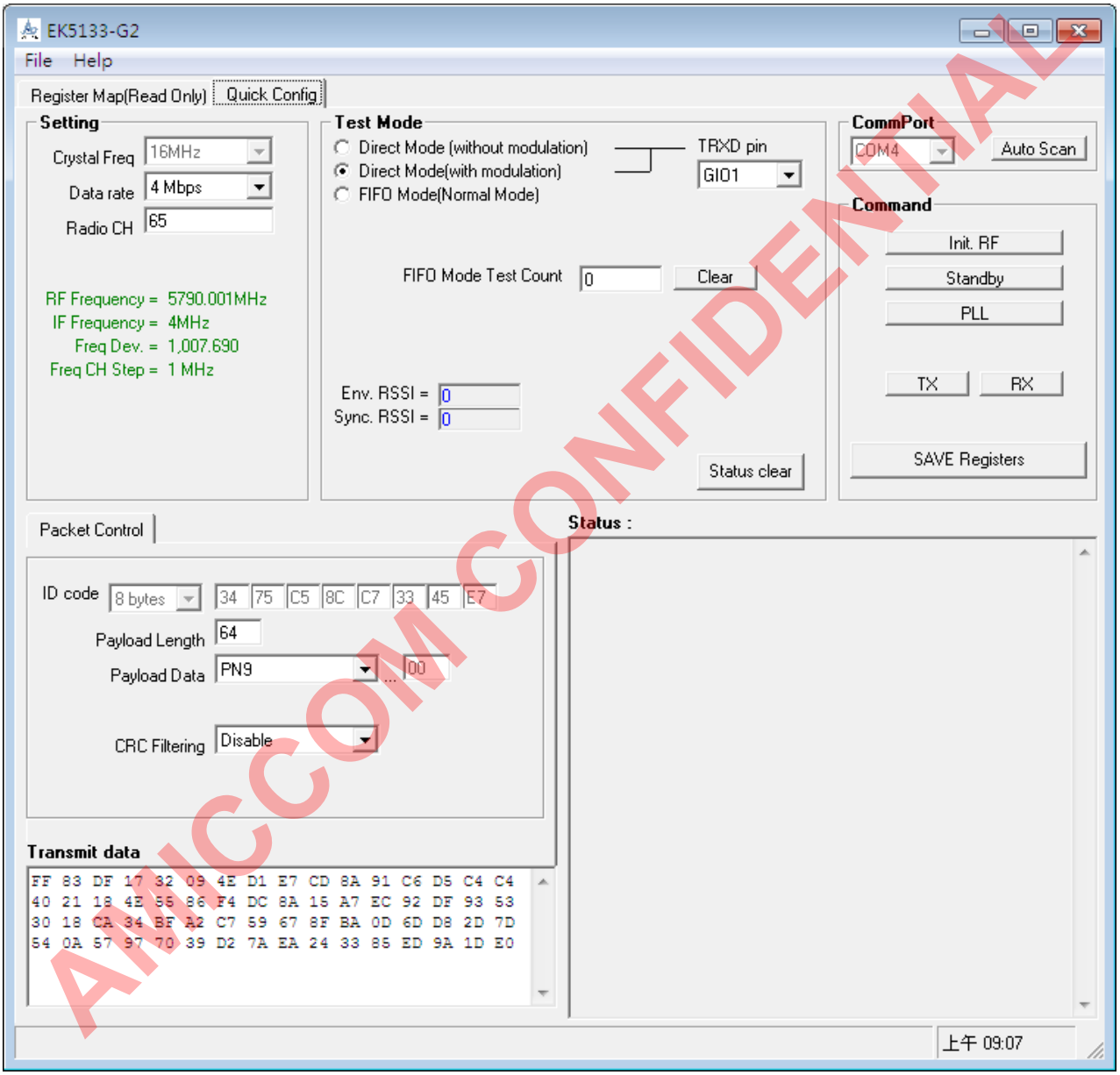
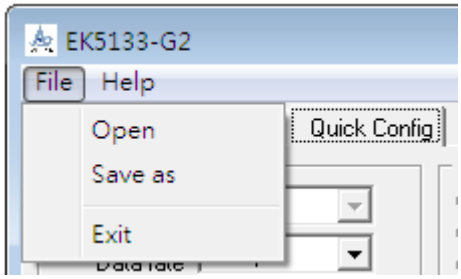





Fig. 2 EK5133-G2 Series program main screen

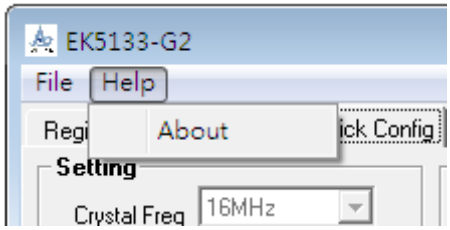
### 4.2 Pull-down menu

#### 4.2.1 File menu options



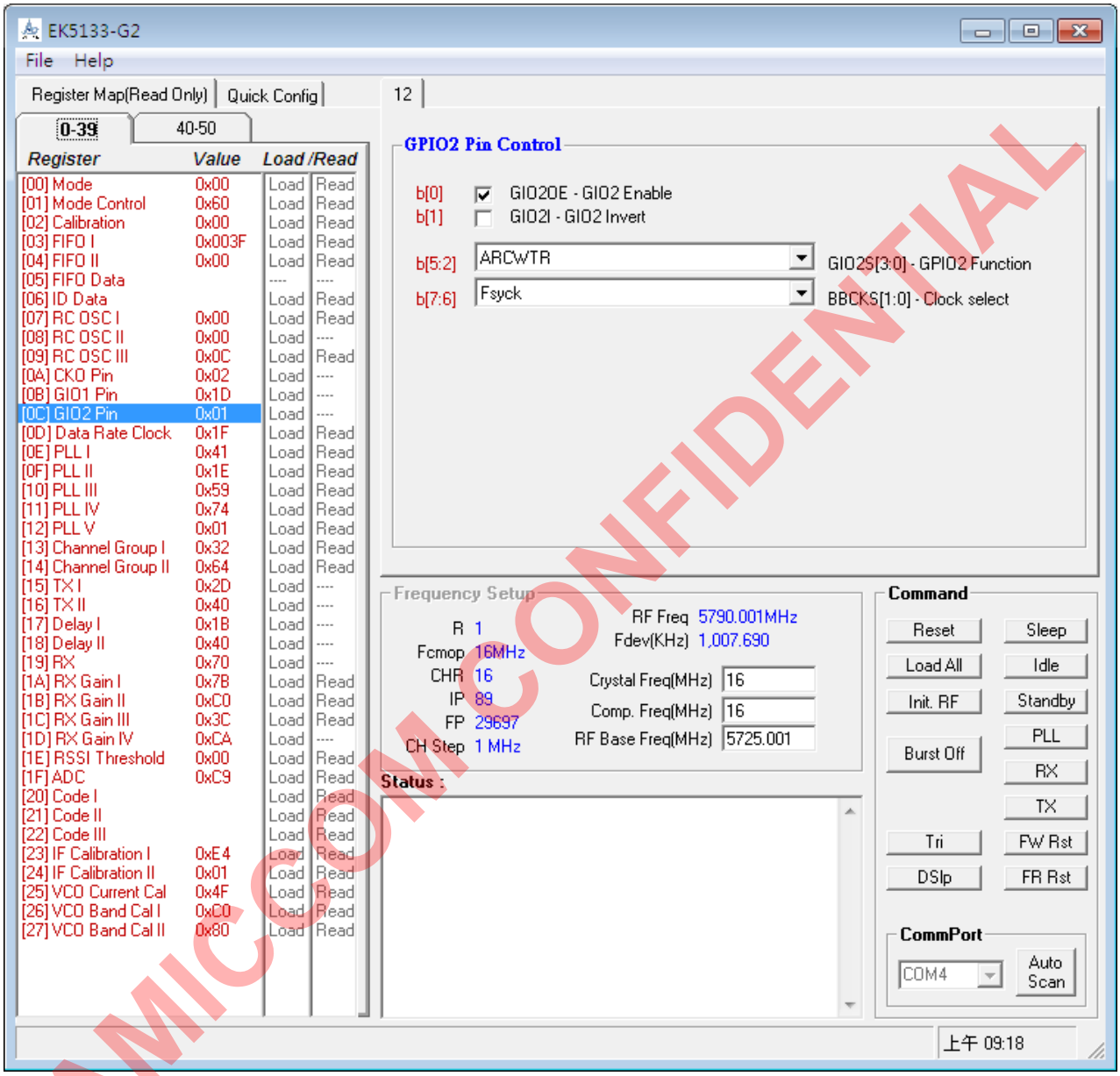

The File menu offers the following commands:
**Open** Reserved.
**Save As** Displays a file selection dialog box that asks you for the name of a CFG-file in which to save the entered system parameters.
**Exit** Exits EK5133-G2 Series program

#### 4.2.2 Help menu options




The help menu provides access to useful information about the product.
**About** brings up a message box with the software revision and copyright information.

### 4.3 Register Map (Read Only) Tab

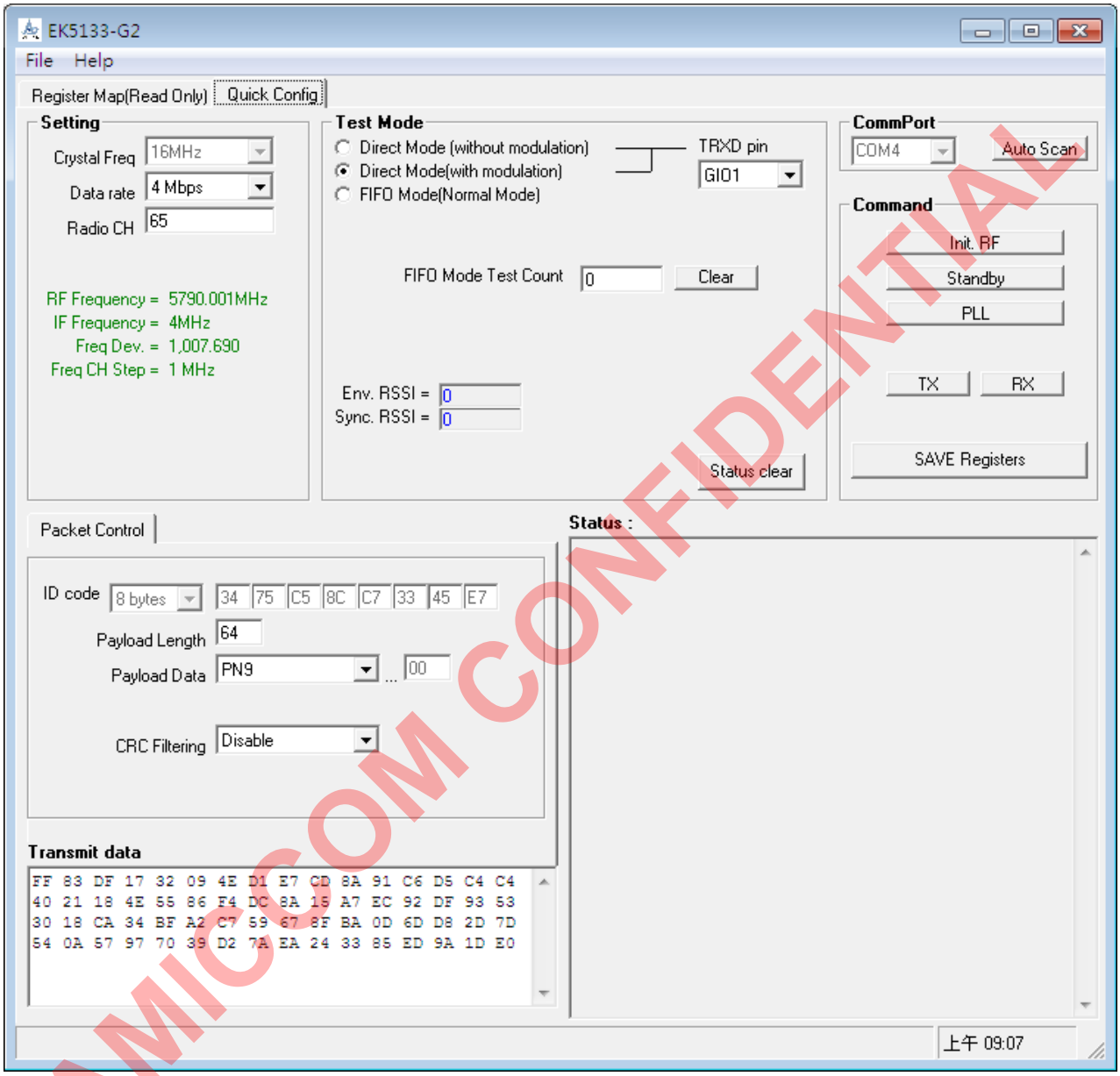





**Register list**

The register tab only shows the value that the EK5133-G2 Series is sending to the device, you can't change any parameter or button in the tab. When you change the different parameter value in Quick Config.Tab, the specified register in register Tab will change automatically.

### 4.4 Quick config. Tab






**Setting**

**Crystal Freq**

The crystal frequency of your module board is 16 MHz.

Do not change the crystal frequency parameter when using this module unless the crystal is being replaced.

**Data rate**

The data rate can be set between 4Mbps, 2Mbps, 1Mbps.

**Radio CH**

The A5133 series can operate at frequencies between 5725~5850 MHz ISM band. Enter the desired Channel number to set RF frequency.

**Test Mode**
The test mode can be set in direct mode (without modulation), direct mode(With modulation) or FIFO mode.
Note: Select “Direct mode (with modulation)” option, Program set GIO1 or GIO2 pin by TRXD pin option to transmit/receive data.

**Comm Port**
Pressing “Auto Scan” button, the program can scan available comm. port. If device detected, the button back color becomes orange.

**Command**
Pressing “Init RF” button, the program can initial A5133 series RF module automatically. If initial RF succeeds, the button back color becomes orange.
Pressing “Standby” button, the program can set the A5133 series RF module in Standby mode. The button back color becomes green.
Pressing “PLL” button, the program can set the A5133 series RF module in PLL mode. The button back color becomes green.
Pressing “TX” button, the program can set the A5133 series RF module in TX mode. The button back color becomes green.
Pressing “RX” button, the program can set the A5133 series RF module in RX mode. The button back color becomes green.

**Save Registers**
After completing the test, you may press “Save Register” button to save all register values in *.txt file.

**Status**
Status Info is shown on the text screen. The user can view message.

**Packet Setting**
**TX Payload Length:** The payload length default set 64 bytes.

**Payload Data:**
User can be set TX FIFO data pattern. In “Payload data” option, you can set in one of four modes.
Choosing ”Fill PN9”, it will display PN9 code in the Transmit data field.
Choosing ”Fix Hex”, it will display the fixed value in the Transmit data field.
Choosing ”Customized Hex”, you need enter 1~64 bytes value (Hex value) in the Transmit data field.
Choosing “Sequence pattern”, the program can automatically update value with a sequence pattern to transmit a packet.

# 5. Setup Configuration install

**Installation procedures**
Step 1: Connect USB cable between PC and EK5133 Board. Plug A5133 series RF module on EK5133's socket.
Step 2: Enable EK5133-G2 Series program.
Step 3: Select "Quick config." Tab
Step 4: Pressing "Auto Scan" button to scan available Comm. Port.
Step 5: Pressing "Init. RF" button to initial RF module. If initial success, the button back color becomes orange and RF module setup into Standby state with "Standby" button back color becomes green.
Step 6: Or press "PLL" button to set RF module into PLL state.

**Setup TX:**
Step 1: Press "TX" button to set RF module into TX state.

**Setup RX:**
Step 1: Press " RX" button to set RF module into RX state.

# 6. References
[1] Refer to the A5133 series datasheet for detailed information on the register settings