

LiebeWH ADF4351 Development Board (LiebeWHpecgzf0arx2560)

LiebeWH RF Signal Source Generator 35M-4.4GHz ADF4351 Development Board User Manual

Model: ADF4351 Development Board (LiebeWHpecgzf0arx2560)

1. PRODUCT OVERVIEW

The LiebeWH ADF4351 RF Signal Source Generator Development Board is a versatile module designed for generating radio frequency signals. It features a well-designed PCB layout for optimal performance and ease of use. This board is capable of generating signals within a wide frequency range from 35MHz to 4.4GHz.

All control pins are conveniently exposed, allowing for flexible integration and control. The module can be managed using official upper computer software, providing a user-friendly interface for configuration and operation. It comes equipped with a default active crystal oscillator of +/-50ppm 25M, ensuring stable frequency generation. For development and testing, a PDF circuit diagram and an STM32 test program are provided.

Control is facilitated via a three-wire SPI interface, which enables comprehensive functionality including spot frequency sweeping and frequency hopping. The frequency step can be set to 1K, with a low-frequency step capability of 0.1K, depending on the crystal frequency used.

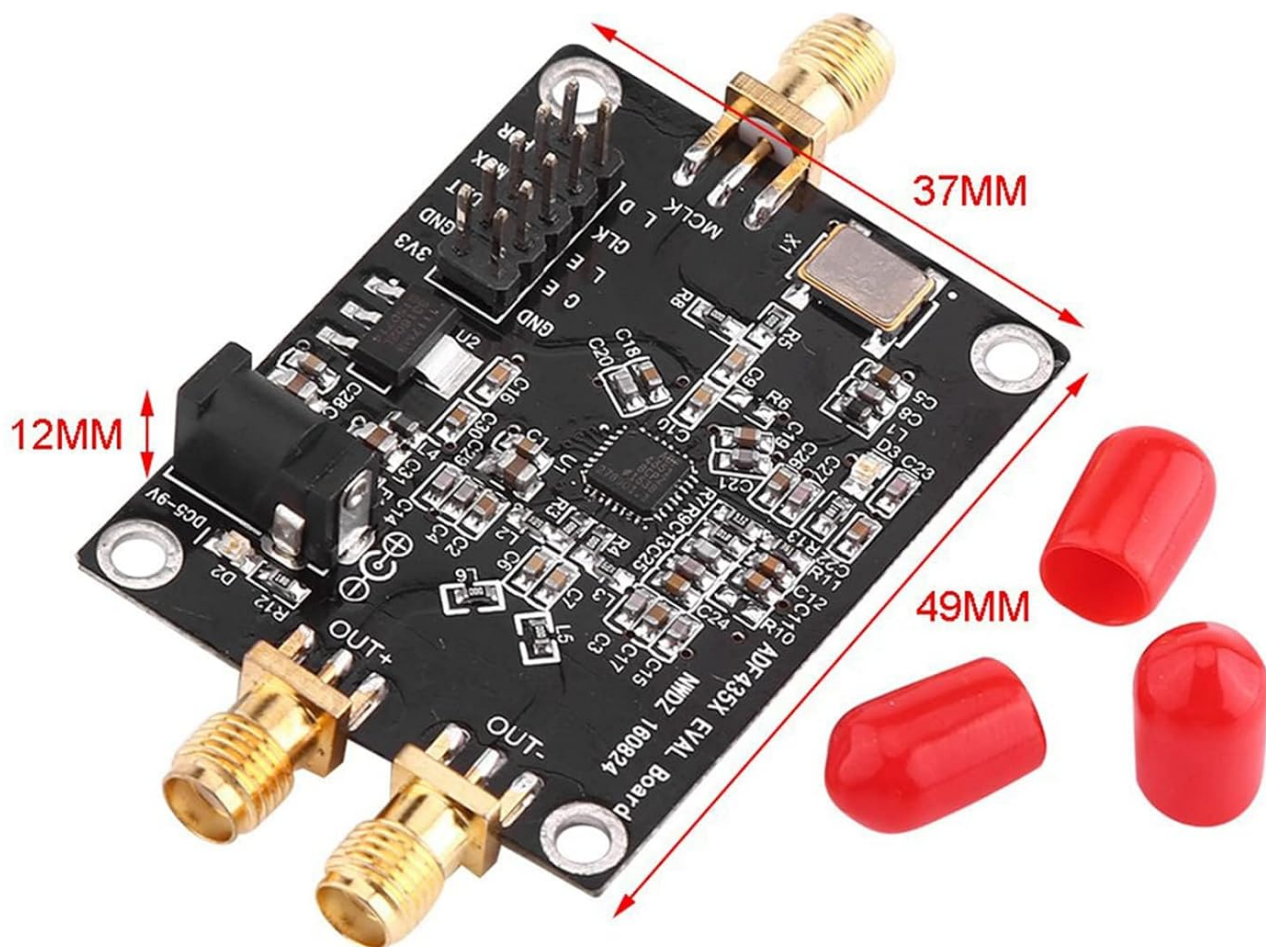


Figure 1: Overview of the ADF4351 Development Board, showing its compact size and main components. Dimensions are approximately 49mm x 37mm, with a height of 12mm for the connector.

2. SETUP INSTRUCTIONS

Before operating the ADF4351 Development Board, ensure all necessary connections are made correctly. This section outlines the basic steps for setting up your module.

2.1 Power Supply Connection

Connect a DC 5-9V power supply to the designated power input pins (DC5-9V). Ensure the polarity is correct to prevent damage to the board. The power input is typically located near the edge of the board.

2.2 Control Pin Connections (SPI)

The module is controlled via a three-wire SPI interface. Connect the control pins to your microcontroller or upper computer interface. The key control pins are:

- **CLK**: Clock signal
- **DAT**: Data input
- **LE**: Latch Enable
- **GND**: Ground
- **3V3**: 3.3V power output (for external components, if needed)
- **MUX**: Multiplexer output
- **PDR**: Power Down Reset

Refer to the provided PDF circuit diagram for detailed pinout information and recommended connection schemes.

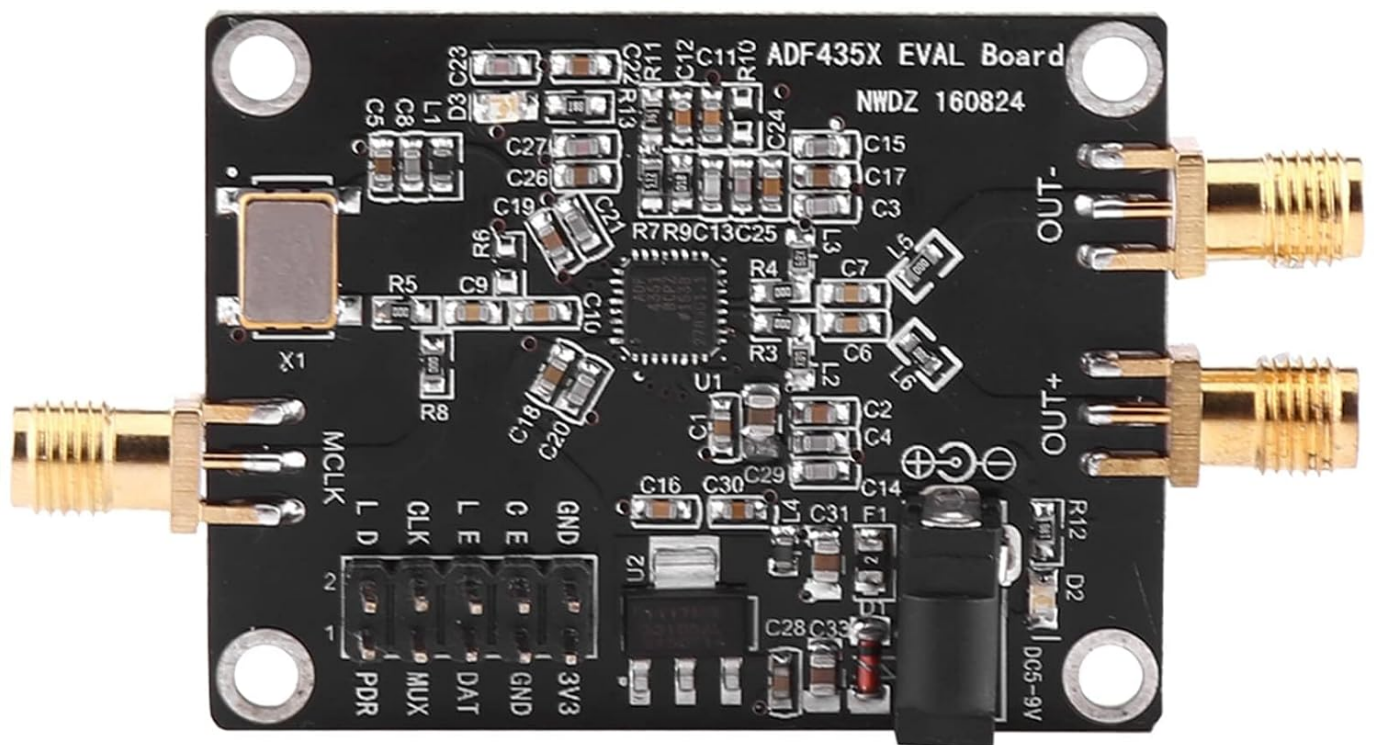


Figure 2: Top-down view of the ADF4351 board, highlighting the control pin header (GND, 3V3, DAT, LE, CLK, MUX, PDR) and the power input (DC5-9V).

2.3 RF Output Connections

Connect your RF measurement equipment or antenna to the SMA output connectors labeled "OUT+" and "OUT-". These are the differential RF outputs of the module.

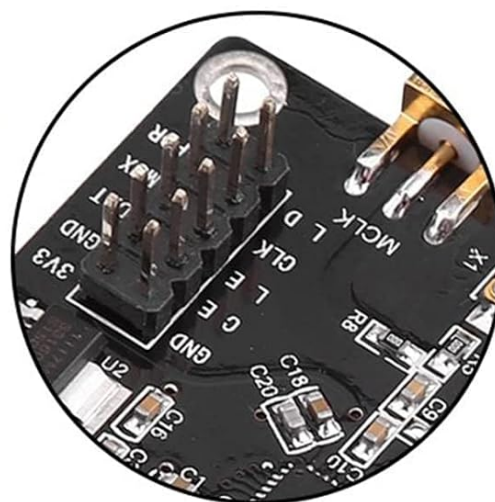
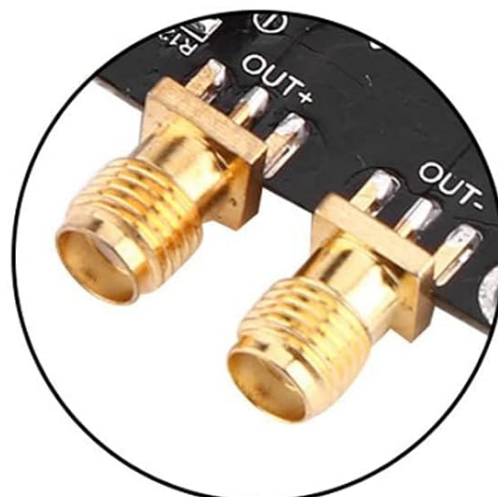
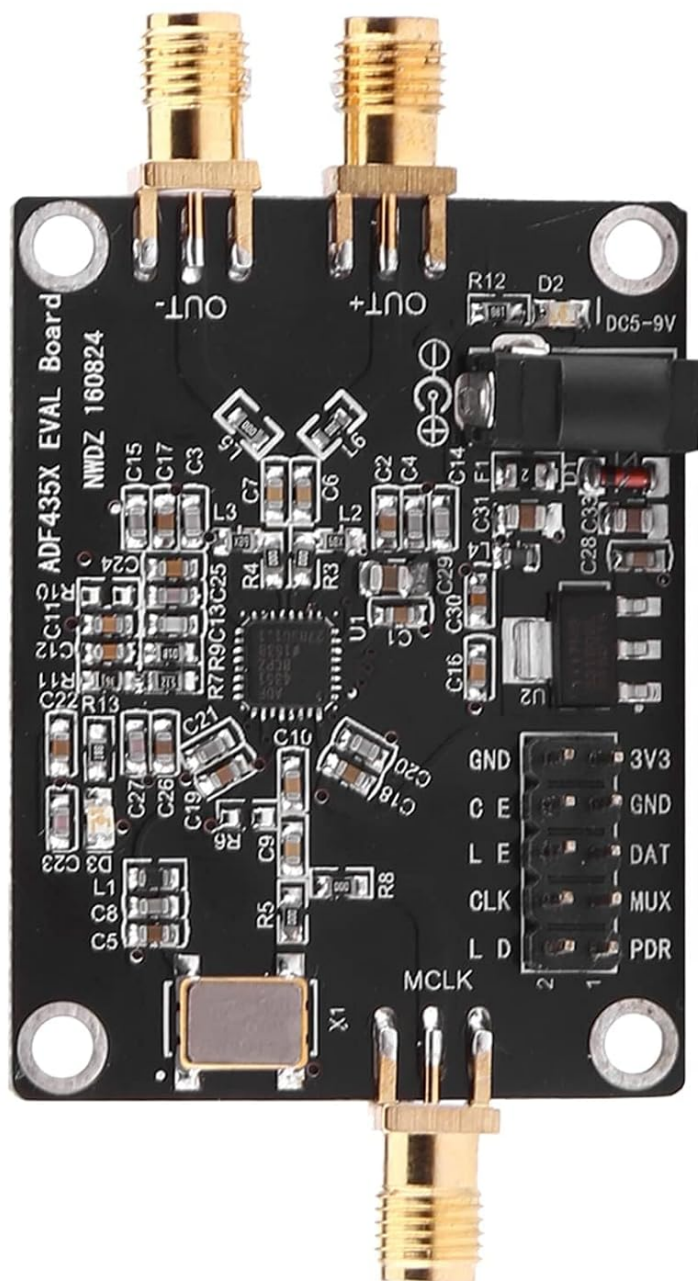


Figure 3: Close-up view of the SMA connectors for RF output (OUT+, OUT-) and the MCLK input.

2.4 MCLK Input

The MCLK (Master Clock) input is used for external clock synchronization if required. Connect your external clock source to the SMA connector labeled "MCLK".

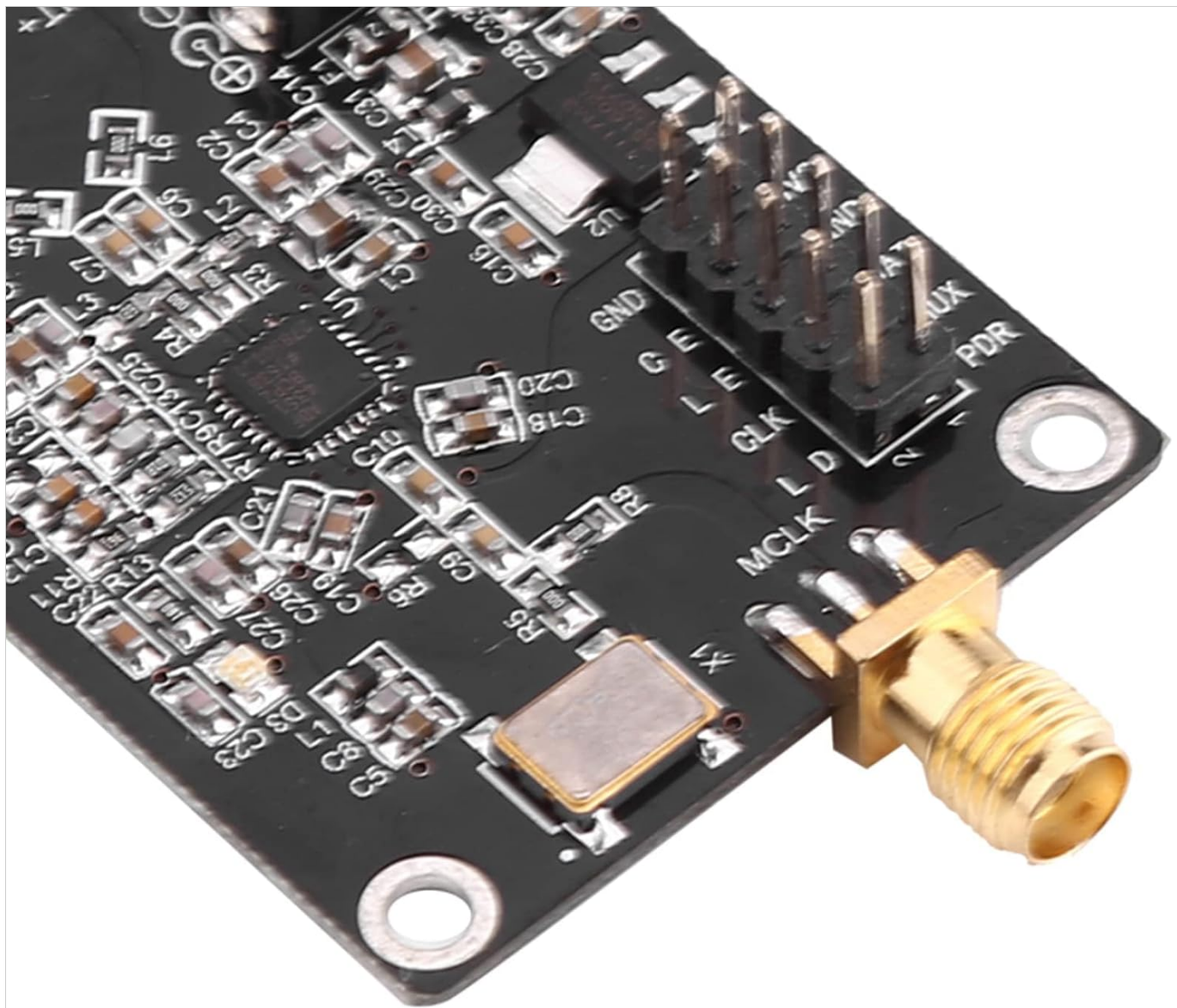


Figure 4: Detailed view of the MCLK SMA input connector.

3. OPERATING INSTRUCTIONS

The ADF4351 Development Board is primarily controlled via software. Follow these steps to operate the module:

3.1 Software Installation

Install the official upper computer software provided by the manufacturer. This software allows you to configure the ADF4351 chip parameters, including frequency, output power, and modulation settings.

3.2 Connecting to Software

Connect the development board to your computer using the appropriate interface (e.g., USB-to-SPI converter, if not directly integrated). Launch the upper computer software and establish communication with the board. Ensure the correct COM port or interface is selected.

3.3 Frequency Generation

Within the software interface, you can set the desired output frequency. The board supports a frequency range of 35MHz to 4.4GHz. You can configure:

- **Spot Frequency:** Generate a single, stable frequency.
- **Frequency Sweep:** Automatically sweep across a defined frequency range.
- **Frequency Hopping:** Quickly switch between multiple predefined frequencies.

The frequency step size can be set to 1K, with a finer resolution of 0.1K for low frequencies, depending on the crystal oscillator's characteristics.

3.4 STM32 Test Program

For users developing with STM32 microcontrollers, a test program is provided. This program demonstrates how to interface with the ADF4351 board using the three-wire SPI protocol and can serve as a starting point for custom applications.

4. MAINTENANCE

The ADF4351 Development Board is designed for durability and requires minimal maintenance. Adhering to the following guidelines will help ensure its longevity and reliable performance:

- **Handling:** Always handle the board by its edges to avoid touching sensitive components or solder joints. Electrostatic discharge (ESD) can damage electronic components, so use appropriate ESD precautions (e.g., anti-static wrist strap) when handling.
- **Cleaning:** Keep the board clean and free from dust and debris. Use a soft, dry brush or compressed air to remove dust. For stubborn dirt, a lint-free cloth lightly dampened with isopropyl alcohol can be used, ensuring the board is completely dry before powering on.
- **Storage:** Store the board in a dry, cool environment, away from direct sunlight and extreme temperatures. If not in use for extended periods, store it in an anti-static bag.
- **Power:** Always use a stable and correctly rated power supply (DC 5-9V). Incorrect voltage or unstable power can lead to malfunction or damage.
- **Connections:** Ensure all connections (power, SPI, RF) are secure and correctly seated before applying power. Loose connections can cause intermittent operation or signal degradation.

5. TROUBLESHOOTING

If you encounter issues with your ADF4351 Development Board, refer to the following troubleshooting tips:

5.1 No Power Indication

- **Check Power Supply:** Verify that the power supply is connected correctly (DC 5-9V) and is providing the specified voltage. Ensure polarity is correct.
- **Power Cable:** Inspect the power cable for any damage or loose connections.

5.2 No RF Output Signal

- **Software Configuration:** Ensure the frequency and output power are correctly configured in the upper computer software.
- **SPI Communication:** Verify that the SPI communication between your controller/computer and the ADF4351 board is established and functioning correctly. Check CLK, DAT, and LE signals.
- **RF Connections:** Confirm that the RF output cables are securely connected to "OUT+" and "OUT-" and to your measurement equipment.

- **MCLK Input:** If using an external MCLK, ensure it is stable and within specifications.

5.3 Unstable Frequency Output

- **Power Supply Stability:** Ensure the power supply is stable and free from ripple.
- **Crystal Oscillator:** The board uses a default +/-50ppm 25M active crystal. If an external clock is used, ensure its stability and accuracy.
- **Environmental Factors:** Extreme temperature fluctuations can affect frequency stability. Operate the board within its specified temperature range.

5.4 Software Communication Errors

- **Driver Installation:** Ensure all necessary drivers for your USB-to-SPI converter or interface are correctly installed.
- **COM Port Selection:** Verify that the correct COM port is selected in the upper computer software.
- **SPI Wiring:** Double-check the three-wire SPI connections for continuity and correct pin assignment.

6. SPECIFICATIONS

Feature	Value
Manufacturer	LiebeWH
Product Dimensions (L x W x H)	4.9 x 3.7 x 1.2 cm
Weight	11 grams
Model Reference	LiebeWHpecgzf0arx2560
Number of Items in Package	1
Batteries Included	No
Batteries Required	No
ASIN	B0B759FL2K
Country of Origin	China
Frequency Range	35MHz - 4.4GHz
Control Interface	3-wire SPI
Crystal Oscillator	+/-50ppm 25M Active Crystal (Default)
Power Input	DC 5-9V

7. WARRANTY AND SUPPORT

For information regarding warranty coverage and technical support for your LiebeWH ADF4351 Development Board, please refer to the following:

- **Return Policy:** The product is subject to a 30-day refund/replacement return policy. Please check the specific terms and conditions at the point of purchase.
- **Spare Parts Availability:** Information regarding the availability of spare parts is currently unavailable.
- **Manufacturer Support:** For further assistance, technical inquiries, or to report issues, please contact LiebeWH

directly through their official channels or the platform where the product was purchased.

- **Documentation:** Additional resources, including the PDF circuit diagram and STM32 test program, are provided to assist with development and integration.

Note: Always retain your proof of purchase for warranty claims.

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question