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› AURSINC ZA-048 LDPA Log-Periodic Dipole Array Antenna User Manual

AURSINC ZA-048

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Model: ZA-048

1. INTRODUCTION

The AURSINC ZA-048 is a compact Log-Periodic Dipole Array (LDPA) antenna designed for a wide frequency range of 400MHz to 8GHz. It is optimized for use with spectrum analyzers such as the tinySA ULTRA, providing directional signal reception for various radio frequency applications. Its design prioritizes portability and broad frequency coverage.

This manual provides essential information for the proper setup, operation, and maintenance of your ZA-048 antenna.

2. PACKAGE CONTENTS

- ZA-048 Log-Periodic Dipole Array Antenna (1 unit)
- *Note: tinySA ULTRA spectrum analyzer is NOT included.*

3. SETUP INSTRUCTIONS

Follow these steps to set up your ZA-048 antenna:

1. **Unpack the Antenna:** Carefully remove the ZA-048 antenna from its packaging. Inspect for any visible damage.
2. **Attach to Spectrum Analyzer:** Connect the antenna's SMA connector to the RF input port of your compatible spectrum analyzer (e.g., tinySA ULTRA). Ensure a secure connection.
3. **Mounting Options:**
 - **Handheld Use:** The antenna can be held directly for portable signal tracing.
 - **Tripod Mounting:** Utilize the integrated mounting point to attach the antenna to a standard tripod for stable, fixed-location measurements.



Figure 3.1: The ZA-048 antenna connected to a tinySA Ultra spectrum analyzer, mounted on a tripod for stable operation.

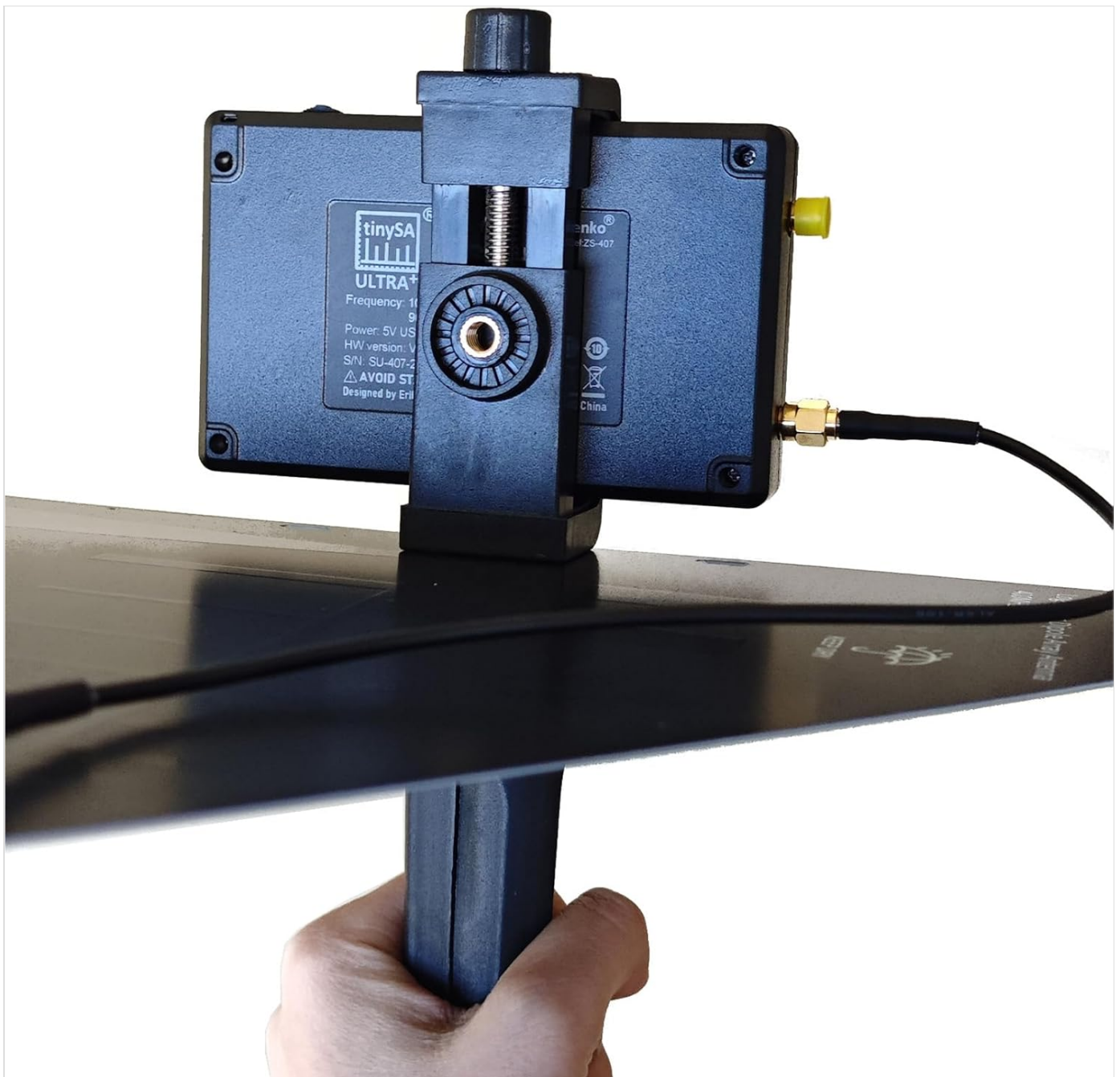


Figure 3.2: Handheld operation of the ZA-048 antenna with a tinySA Ultra spectrum analyzer for portable signal detection.

4. OPERATING INSTRUCTIONS

The ZA-048 antenna is designed for radio direction finding and general spectrum analysis within its specified frequency range.

1. **Frequency Range:** The antenna operates effectively from 400MHz to 8GHz. For optimal directionality, use within the 1GHz to 8.5GHz range.
2. **Directional Use:** When performing radio direction finding, orient the antenna towards the suspected signal source. The antenna exhibits decent sensitivity for identifying signal source direction, especially when held and rotated.
3. **Spectrum Analyzer Settings:** Configure your spectrum analyzer according to the desired frequency band and measurement parameters. Ensure the input impedance setting matches the antenna's 50 Ω impedance.
4. **Signal Strength Observation:** Observe the signal strength readings on your spectrum analyzer. Peak readings indicate the direction of the strongest signal.

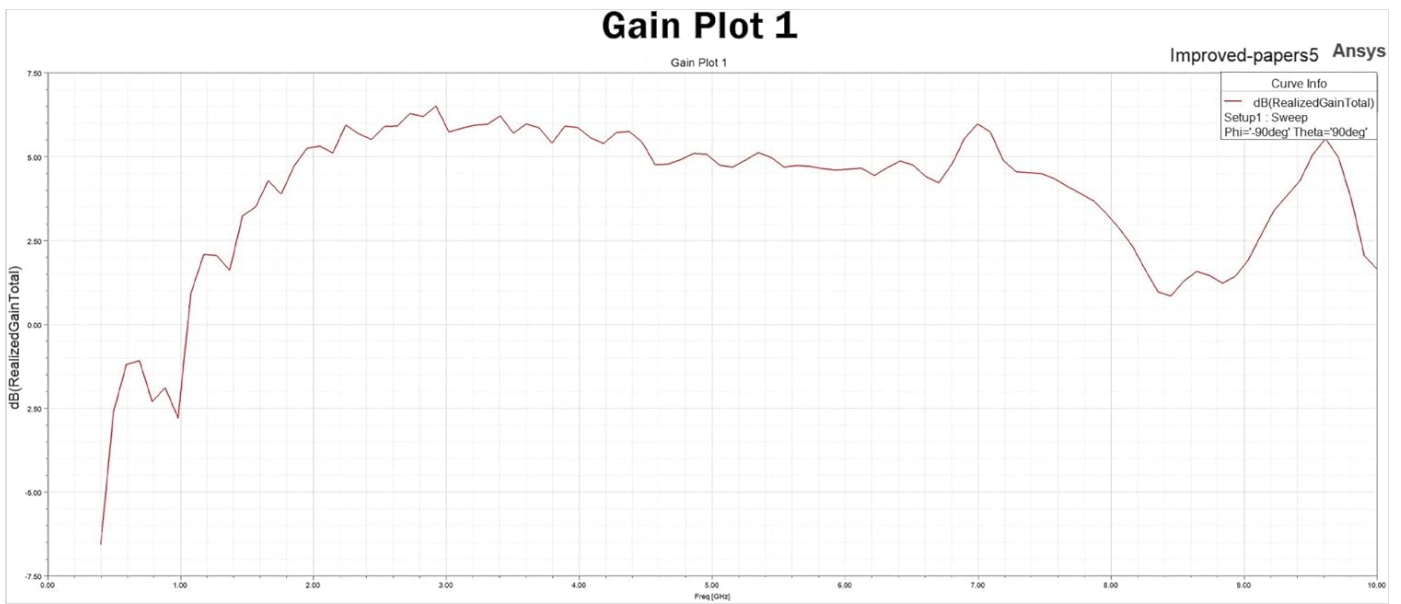


Figure 4.1: S-Parameter Plot illustrating the antenna's return loss performance across its operational frequency range. This graph shows how well the antenna matches a 50Ω source.

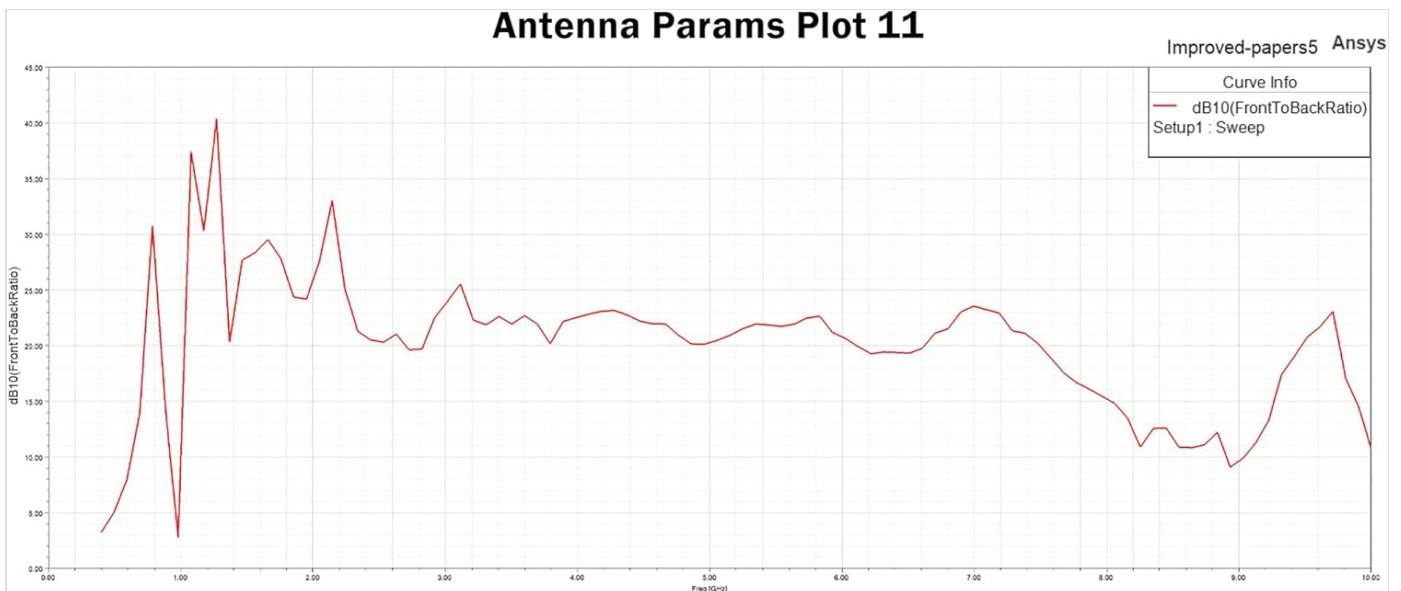


Figure 4.2: Gain Plot displaying the antenna's realized gain in dB across its frequency spectrum. This indicates the antenna's efficiency in converting input power into radio waves in a specific direction.

5. MAINTENANCE

To ensure the longevity and optimal performance of your ZA-048 antenna, follow these maintenance guidelines:

- **Cleaning:** Use a soft, dry cloth to gently wipe the antenna surface. Avoid abrasive cleaners or solvents.
- **Storage:** Store the antenna in a dry environment, away from extreme temperatures and direct sunlight.
- **Handling:** The antenna is constructed on an FR-4 PCB, which is 0.8mm thick and can be flexible. Handle with care to prevent bending or damage.
- **Connection Integrity:** Periodically check the SMA connector for cleanliness and secure attachment.



Figure 5.1: Dimensional overview of the ZA-048 antenna, highlighting its compact size and mounting features.

6. TROUBLESHOOTING

Problem	Possible Cause	Solution
Poor signal reception at low frequencies (below 1GHz)	Reduced directionality and higher VSWR below 1GHz due to compact design.	This is an inherent characteristic of the antenna's optimized design. For critical low-frequency measurements, consider specialized antennas.
Antenna feels fragile or flexible	The antenna is printed on a 0.8mm thick FR-4 PCB for compact size.	Handle with care to avoid excessive bending or physical stress.
Inconsistent readings or poor connection	Loose or dirty SMA connector; damaged cable.	Ensure the SMA connector is clean and securely tightened. Inspect the connecting cable for damage.

7. SPECIFICATIONS

- **Model:** ZA-048
- **Antenna Type:** Log-Periodic Dipole Array (LDPA)
- **Frequency Range:** 400MHz - 8GHz
- **Input Impedance:** 50 Ohms
- **VSWR:** Approximately 2 (above 1GHz), Approximately 4 (400MHz-1GHz)
- **Return Loss:** Approximately 10dB or less (above 1GHz), Approximately 4.5dB or less (400MHz-1GHz)
- **Dimensions:** 27cm x 23cm (approximate, referring to the main board size)

- **Material:** Printed on FR-4 PCB (0.8mm thickness)
- **Compatibility:** Designed for tinySA ULTRA spectrum analyzer and similar devices.

8. WARRANTY AND SUPPORT

The AURSINC ZA-048 antenna comes with a **6-month warranty** from the date of purchase, covering manufacturing defects. For warranty claims or technical assistance, please contact AURSINC customer support.

AURSINC is dedicated to providing professional measurement tools and electronic products. For any questions or concerns, our customer service team is available to assist you.

You can find more information and contact details on the official AURSINC website or through your purchase platform.