

## **2.0. Company Summary**

MFJ Enterprises is a company that specializes in providing amateur radio accessories. MFJ Enterprises has become known as the “Leader in Amateur Radio Accessories” through extensive research and development in addition to customer feedback.

### **2.1. Company Ownership**

MFJ Enterprises is a sole proprietorship owned and operated by Martin F. Jue of Starkville, MS.

### **2.2. Management Team**

The MFJ management team consists of Mr. Martin F. Jue, Mr. Steven Pan, and Mr. Randy Romero. Mr. Martin F. Jue is the President and founder of MFJ Enterprises. Mr. Steven Pan is the Vice President and oversees purchasing for MFJ Enterprises. In addition to his responsibilities at MFJ Enterprises, Mr. Pan oversees and manages operations at hy-gain™, a sister company of MFJ Enterprises. Mr. Randy Romero is the human resources manager whose primary responsibility is employees and legalities.

### **2.3. Company History**

MFJ Enterprises was founded in 1972 by the current owner, Mr. Martin F. Jue. MFJ began in a small hotel room in downtown Starkville, Mississippi. From this one room operation, the first product was developed and sold under the MFJ name, a high selectivity Morse code filter. From the development of this filter, MFJ began to grow into the amateur radio market.

Today, MFJ has expanded its offerings and become known worldwide as the “Leader in Amateur Radio Accessories.” The company offers direct sales to consumers through a mail-order catalog as well as expanding the product line onto the Internet. In addition to these direct sales, MFJ has approximately 200 dealers within the United States and approximately 40 dealers overseas that provide MFJ products to amateur operators.

### **2.4. Company Location**

MFJ Enterprises is located in Starkville, MS and has four locations within the city. The company headquarters are located at 300 Industrial Park Road. Raw materials and heavy machinery including punch presses are located in a facility on Louisville Street. This facility also acts as home to the MFJ engineering department. The MFJ antenna shop, used for building and testing antennas, is located at 308 Industrial Park Road. The high power amplifier division of MFJ Enterprises, AMERITRON™, is located in a building on Willow Road.

## **3.0. Products**

MFJ Enterprises currently offers various products in the amateur radio market. We will be limiting this section to only one of the products currently under development that focuses on the mobile amateur radio market, Memory-Driven Screwdriver Antenna Controller.

This controller is an accessory for the mobile amateur operator to use with a screwdriver antenna. The controller provides ten (10) preset memory buttons for the operator to store positions as well as a 4-digit LED display to show the current number of turns on the antenna. The controller will come with all the necessary instructions to connect to a screwdriver antenna.

### **3.1 Product Description**

The Memory-Driven Screwdriver Antenna Controller is a small device used to operate existing screwdriver antennas. The controller offers a bright red, 4-digit LED display to show the number of turns of the antenna. In addition to the display, the controller offers ten (10) preset memory buttons to store the operator's favorite turn location on the antenna. In addition, the last known turn location is saved automatically without using one of the memory buttons. The cost to manufacture is approximately \$39.00 per controller, and the retail price is approximately \$119.00 per controller. The packaging for the controller is simple, inexpensive, and done in-house.

### **3.2 Competitive Comparison**

Within the mobile operator market, we have two major competitors that offer a controller similar to the basic functionality of ours, High Sierra and TheScrewdriver.com. High Sierra's controller only provides a backlit LCD display and a simple toggle switch to move the antenna up or down. It does not offer any way to save presets. TheScrewdriver.com offers a controller with four (4) buttons and a LED display. These four (4) buttons have access to 99 memory locations, which seems extreme and confusing.

Our controller has found the middle ground by providing programmable memory locations in ten (10) distinct buttons located on the controller itself. By using dedicated buttons, less work is needed to determine which turn locations are stored in which memory buttons.

### **3.4. Sourcing**

The electronic components for the controller come from various electronics suppliers such as Avnet, Future, and Arrow. The PCB supplier for the controller is Advanced Circuits. We also have a supplier for the aluminum used for the controller casing.

### **3.5. Future Products**

Starting with the current antenna controller as a base, many other products can be made with more advanced features. Other controllers can be more automated. One such controller will be able to determine transmitting frequency and automatically move the antenna to the correct position. This can be done using a calibration routine that can allow the controller to extrapolate the position between two frequencies. This is possible since the inductance of the antenna is linear within a given amateur radio band.

A more advanced controller could have sensors in-line with the antenna transmission line. This would allow the controller to read frequency, forward power, and reflected power. With this information, the controller can use the frequency to determine what general area the antenna needs to be moved to and then use the power measurements to calculate SWR and fine tune the antenna to the correct frequency. From this feature, another controller could be fashioned in such a way that a display or interface is not needed. The appropriate connections to the controller would be made and all the tuning automatically done transparent to the user.