



**AFIL Calibration Meter  
FUNCTIONAL DESIGN  
DOCUMENT**



Measurement Range:	-54dB to +9dB (0.0126 to 14.176 mG) If noise floor allows, -62dB to +9dB desired.
True-RMS Crest Factor:	<3, higher crest factors will result in overflow before +9dB is reached
Resolution:	Levels greater than 0.85mG results in <0.1dB resolution Displayed resolution is 0.1 dB
Detection Type:	True RMS on all features
Sensor:	Pickup Coil
Direction of Sensitivity:	Length-wise of meter's longer dimension and Parallel to meter face ("Y" Axis) (Position noted in Product Image section) Sensor location and direction shown on product label
Calibration:	Calibrated at 1,000 Hz (sine) to read 0 dB at 5.03 mG
Frequency Response:	
Flat Response:	±1dB from 50 Hz to 10,000 Hz
A-Weighted:	Class 2 meter specified in IEC 61672-1
Third-Octave:	Bandpass filters, defined below.
Power Source:	Single 9v Battery and External Power Jack
Headphone Jack:	Output responding to A-Weighted field
Display:	16x2 LCD Character Display
Backlight:	Variable brightness blue LED

## User Interface

User interface is managed via two pushbuttons and one switch.

Button 1 Functions: Power-on, item selection

Button 2 Functions: Value selection, resetting peak readings

Switch Functions: Selects between “Measure” and “Menu” modes

Holding Button 1 for 2 seconds will power the unit on. The unit will remain on until no button presses are received for a predefined time (configurable in the menu). Briefly pressing button 1 cycles through different items, and holding down button 1 for 3 seconds will force the unit to power down.

**Measure Mode** (Button 1 cycles through these)

### **BACKGROUND NOISE / A-WEIGHTED**

125 mS RMS Integration Time, A-Weighted Response

Display Line 1: Current RMS reading

Display Line 2: Maximum RMS reading

Button 2: Hold to reset Maximum RMS reading

### **RMS LEVEL / PEAK / A-WEIGHTED**

125 mS RMS Integration Time and 125mS Detection Time for peak  
A-Weighted Response

Display Line 1: Current RMS reading

Display Line 2: Peak reading

Button 2: Hold to reset Maximum Peak reading

Note: Peak is full-wave

### **FIELD STRENGTH / FLAT RESPONSE**

Display Line 1: Current RMS reading

Display Line 2: Maximum RMS reading

### **FREQUENCY RESPONSE**

**Used with pink noise signal through the loop**

Third Octave Filters (Flat Response).

Display Line 1: Current RMS reading

Display Line 2: Frequency

Button 2: Cycles through third octave filter frequencies:

100 Hertz

200 Hertz

500 Hertz

1000 Hertz

2500 Hertz

5000 Hertz

**Menu Mode** (Button 1 cycles through these) and it is activated by front slide switch

#### **HEADPHONE OUTPUT TYPE**

Changes from A-Weighted to Flat

#### **HEADPHONE VOLUME**

Changes the headphone volume

Button 2: Press to cycle through volume levels available

#### **BACKLIGHT LEVEL**

Changes the backlight level

Button 2: Press to cycle through backlight levels available

#### **POWER DOWN TIME**

Sets the time the unit will remain ON after a button press

Button 2: Press to cycle through None, 5, 10, 20 or 30 minute increments

## **Headphone Jack**

A 1/8" stereo headphone jack is provided to verify operation of the AFIL system. The output corresponds directly to the A-Weighted field oscillations, similar to that of a T-coil in a hearing aide. The volume is configurable in the menu, and the volume will automatically be decreased when the field strength is above +6 dB.

Headphone output can be switched from A-weighted to flat spectrum when used with a spectrum analyzer.

## **Power**

Power is supplied via a standard 9v Alkaline battery. The battery is contained inside the unit and accessed via a snap-on battery door. An external DC power jack is provided (5.1mm center pin positive) and takes precedence over the 9v battery when plugged in. The unit requires 5.8 to 14 volts DC to maintain proper function. Voltages above 14 volts will permanently damage the unit.

## **Dimensions**

Currently the unit dimensions are 5.5 x 3.6 x 1.1", and the box is constructed of black ABS plastic.