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Technical Bulletin Oscillator Output level of the Qbox

The Qbox 440 Hertz tone oscillator is intended to be used in pass/fail situations and is not designed to be used as a precise calibration tool. The specification of the tone oscillator's output is:

±2 dB at +4 dBm, with a 2000 Ohm load connected between pins 2 and 3 of an XLR connector”.

The output impedance of the Qbox was designed to be relatively high so the intercom function could be achieved with multiple units chained together. The byproduct of this higher output impedance is that the level of the tone oscillator will be greater (typically 6 dBm) than +4dBm when measured into a 100k Ohm terminating impedance (typical of most dB meters), or less than 4 dBm when connected to input impedances less than 2000 Ohm (typically 0 dBm into 600 Ohm impedances).

If adjustment of the output level of the oscillator is desired, this can be accomplished providing the change in level required is less than 4 dBm. To increase the oscillator level, lower the value of R6 by adding a resistor in parallel on the trace side of the circuit board. Adding an 820k Ohm resistor increases the level approximately 2 dBm. To decrease the level of the oscillator, increase the value of R6 by replacing it with a larger value. Using 44.2 k Ohm 1% resistor decreases the level approximately 2 dBm.

The graphic <http://www.whirlwindusa.com/ftp/Qbox/QboxOscAdj.jpg> shows where to add a resistor in parallel on the trace side of the board, and where R6 is located on the front side of the board.