PCB Factory Test for the Air To All PAPR Version 2

The PAPR factory test is firmware that exercises the PAPR PCB in order to verify that the PCB is working properly. The test is intended for use at the factory, after the PCB is manufactured, but before the PAPR is assembled.

To test a PAPR board

- program the board's microcontroller with the Factory Test firmware
- plug a fan and a buzzer into the board
- power the board with a power supply capable of various voltages between 12V and 24V
- perform each action in the following table, and verify that the expected result happens

The beginning and end of each test is signaled by a quick sequence of LEDs. After you see the end signal, you can move on to the next test.

	Action	***Expected result***	***What is tested***
1	Press POWER ON button, hold for 1 second	All 7 LEDs flash several times, fan comes on at minimum speed. Power consumption is less than 0.05 Amps.	Power On button, power circuitry, LEDs, fan drive
2	Press and release FAN DOWN button	All LEDs flash, one at a time, left to right.	Fan Down button, LEDs
3	Press and release FAN UP button	Buzzer beeps several times.	Fan Up button, buzzer
4	Press and release FAN UP button	Fan runs at maximum speed for several seconds, then returns to minimum speed. No LEDs are lit.	Fan Up button, fan drive, fan sensor
5	Press and release FAN UP button	Fan runs at medium speed for several seconds, then returns to minimum speed. No LEDs are lit.	Fan Up button, fan drive, fan sensor
6	Press and release FAN UP button	Fan runs at minimum speed for several seconds. No LEDs are lit.	Fan Up button, fan drive, fan sensor
7	Press and release FAN UP button. Slowly vary the input voltage between 12V and 24V.	The 7 LEDs display the input voltage: 1 LED = 12V …. 7 LEDs = 24V Verify that the LEDs show the correct value as you vary the voltage. The test ends after 10 seconds.	Fan Up button, battery sensor
8	Press POWER OFF button, hold for 1 second	The buzzer and all LEDs come on briefly. Then the buzzer, all LEDs, and the fan stop. Power consumption becomes 0.	Power Off button, power circuitry, power monitor.

Notes:

If any LEDs flash during the fan tests 4, 5, and 6, this indicates a fan sensor error.

Except where noted, the fan should be running at minimum speed for the entire duration of these tests.