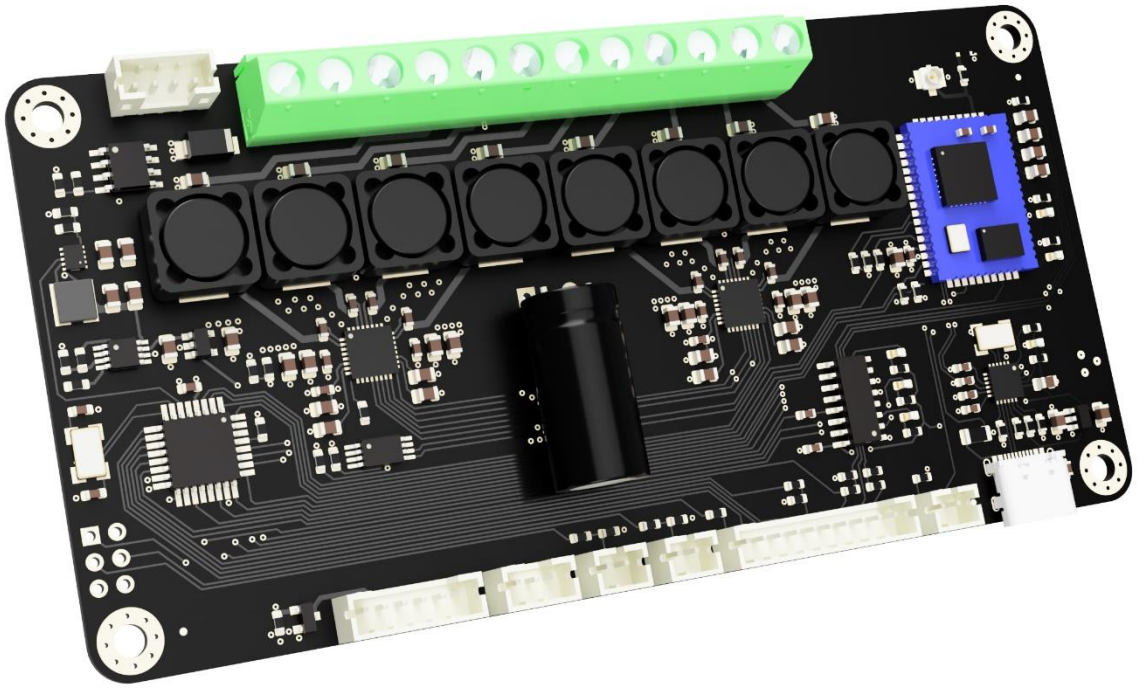
Testplan ZOUDIO AIO438



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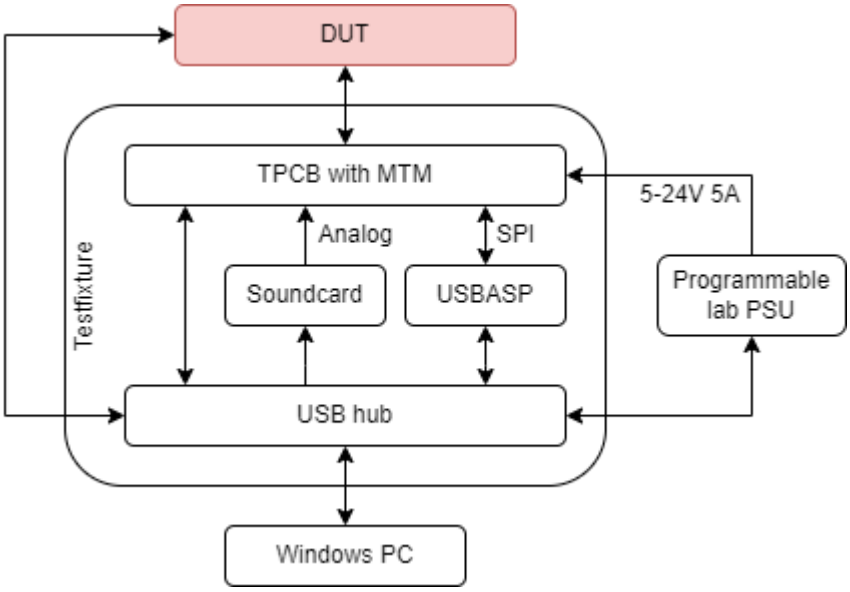
Outline

The AIO438 developed by Zoudio is an all-in-one amplifier with Bluetooth and DSP. The goal of this document is to detail a testplan which is used to program and test the amplifier PCBA after production.

System diagram



Testpoint PCB (TPCB) details

The TPCB is the interface between the testcircuitry and the device under test (DUT). Ingun wireless probes will connect to the DUT to the testpoints on the TPCB. The bottom side of the TPCB contains the following:

- Power input terminal for 5-24V from a lab PSU to power the DUT
- PCI-e slot for a MTM-USBSTEM
- USB-C connector for communication with the MTM module.
- Boost converter to convert the 5V of the USB-C to 6V for use by the USBSTEM.
- 3.5mm jack to receive analog signals and pass them on to the DUT.
- 4 high power resistor banks to simulate a speaker load on all amplifier channels
- Header for USB-ASP programmer

Windows PC details:

The Windows PC runs a combination of the following scripts/programs:

- Avrdude: “A utility to download/upload/manipulate the ROM and EEPROM contents of AVR microcontrollers using the in-system programming technique (ISP).
- Nvscmd: ”A tool is for creating and manipulating images for CSR chips with "Serial Quad I/O (SQI) flash", "Serial Peripheral Interface (SPI) flash" or EEPROM storage attached.
- Acroname BrainStem

TPCB pin mapping:

Pin name	Mapped to
D0	Expansion_power
D1	EQ_SW
D2	TWS_SW
D3	LED_GREEN
D4	LED_RED
D5	ROT_A
D6	ROT_B
D7	ROT_SW
D8	BT_led
D9	n.c.
A0	3V3_main
A1	3V3_usb
A2	3V3_buck

Test routine

Step	Operation type	Assert
Plug in USB on DUT	Manual	
Put DUT in fixture	Manual	
Set lab PSU to 5V, 50mA	PC to PSU	
Enable PSU	PC to PSU	
Measure current draw	PC from PSU	< 1mA
Measure ‘3V3_usb’	PC from MTM, analog read	3.3V +/- 5%
Measure ‘3V3_buck’	PC from MTM, analog read	3.3V +/- 5%
Measure ‘3V3_main’	PC from MTM, analog read	3.3V +/- 5%
Burn bootloader	PC to DUT via USB-ASP using Avrdude	
Flash firmware	PC to DUT via USB using Avrdude	
Flash bluetooth firmware	PC to DUT via USB using Nvscmd	
Check ‘LED_GREEN’	PC from MTM, digital read	LOW
Check ‘LED_RED’	PC from MTM, digital read	LOW
Toggle ‘ROT_SW’	PC to MTM, digital write	
Set factory info	PC to DUT via USB	
Disable DUT	PC to DUT via USB	
Enable Dut	PC to DUT via USB	
Set volume	PC to DUT via USB	0dB
Play sine wave	PC to DUT via soundcard	
Check power consumption	PC from PSU	2.5A +/- 10%
Disable PSU	PC to PSU	
Test finished		