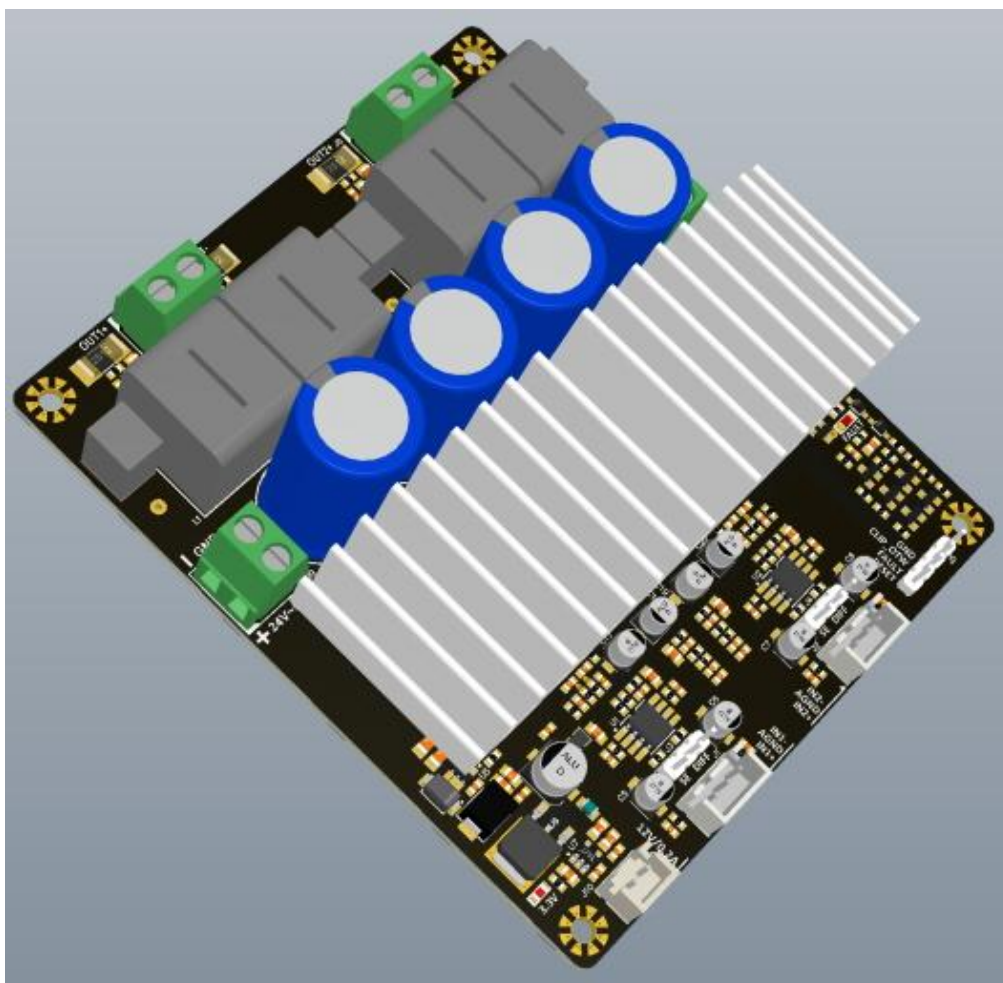


260W x 2 Channel Class D Audio Amplifier Module



Disclaimer

All products, product specifications and data are subject to change without notice to improve reliability, function or design or otherwise.

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1. General Description

EAUMT-0260-2-A is a 2 channel (BTL) high quality class D audio amplifier module base on TPA3255 with customized design and mainly suit for both consumer and professional project.

TPA3255 is a high performance class-D power amplifier that enables true premium sound quality with class-D efficiency. It features an advanced integrated feedback design and proprietary high speed gate driver error correction (PurePath™ Ultra-HD). This technology allows ultra low distortion across the audio band and superior audio quality. The device can drive up to 2 x 315 W into 4-Ω load at 10% THD and 2 x 150W unclipped into 8-Ω load.

In addition to excellent audio performance, TPA3255 achieves both high power efficiency and very low power stage idle losses below 2.5 W. This is achieved through the use of 85 mΩ MOSFETs and an optimized gate driver scheme that achieves significantly lower idle losses than typical discrete implementations.

With improved design to obtain highest performance and lowest noise and distortion, this module provide an excellent audio solution that highly compact and efficiency with state-of-the-art performance.

1.1 Key Features:

- < 85uV Output Noise (AES17,A-weighted)
- 260W @ 1% THD+N, 1kHz, 4Ω
- 315W @ 10% THD+N, 1kHz, 4Ω
- 111dBA dynamic range
- THD+N < 0.01%, 0.3W – 200W, 4Ω
- 90% Efficient Class-D Operation (4 Ω)
- Fully differential layout design for lowest noise and distortion
- Very Compact size(105mm*90mm*38.5mm – L*W*H)
- Additional power ON/OFF reset circuit for Pop noise suppression
- BTL configuration only for best audio performance
- AUX Power Supply Output(12V/0.2A) for DSP Pre Amplifier
- Single supply voltage range 24V~51V(UVP:24V)

1.2 Applications:

- Active Loudspeakers and Power Subwoofers
- Installation audio products
- High-end stereo and multi-channel amplifiers
- Bluetooth & Wi-Fi Audio Product
- Sound bars, Docking, Radios
- Home Theater System & AVR's

2. Audio Specifications

Symbol	Parameter	Conditions	Min	Type	Max	Unit
P_{o.Max}	Output power @ 10%THD+N 20Hz < f < 20kHz (AES17 measurement filter)	RL = 4Ω	-	315	-	W
		RL = 6Ω	-	230	-	
		RL = 8Ω	-	185	-	
P_{o.Type}	Output power @ 1%THD+N 20Hz < f < 20kHz (AES17 measurement filter)	RL = 4Ω	-	260	-	W
		RL = 6Ω	-	180	-	
		RL = 8Ω	-	150	-	
THD+N	THD+N in 4Ω	f = 1kHz, P _o = 1W	-	0.006	0.008	%
V_{noise}	Output referenced idle noise	A-weighted 20Hz < f < 20kHz	-	85	95	uV
A_v	Nominal voltage gain	f = 1kHz	21	21.5	22	dB
F_r	Frequency response	20Hz - 20kHz		+/-0.5	+/-1	dB
Z_{in}	Input impedance	Balance	-	20	-	kΩ
		Unbalance	-	10	-	
Z_o	Output impedance	f = 1kHz		45		mΩ
Z_L	Load impedance range		4	4	8	Ω
D_y	Dynamic range	140W@4Ω,A-weighted	109	111	112	dB
*An Audio Precision AES17 20 kHz 7th order measurement filter is used for measurements. The frequency 6.67 kHz corresponds to the worst-case situation where both 2nd and 3rd harmonics are within the audio band.						

3. Board Drawing

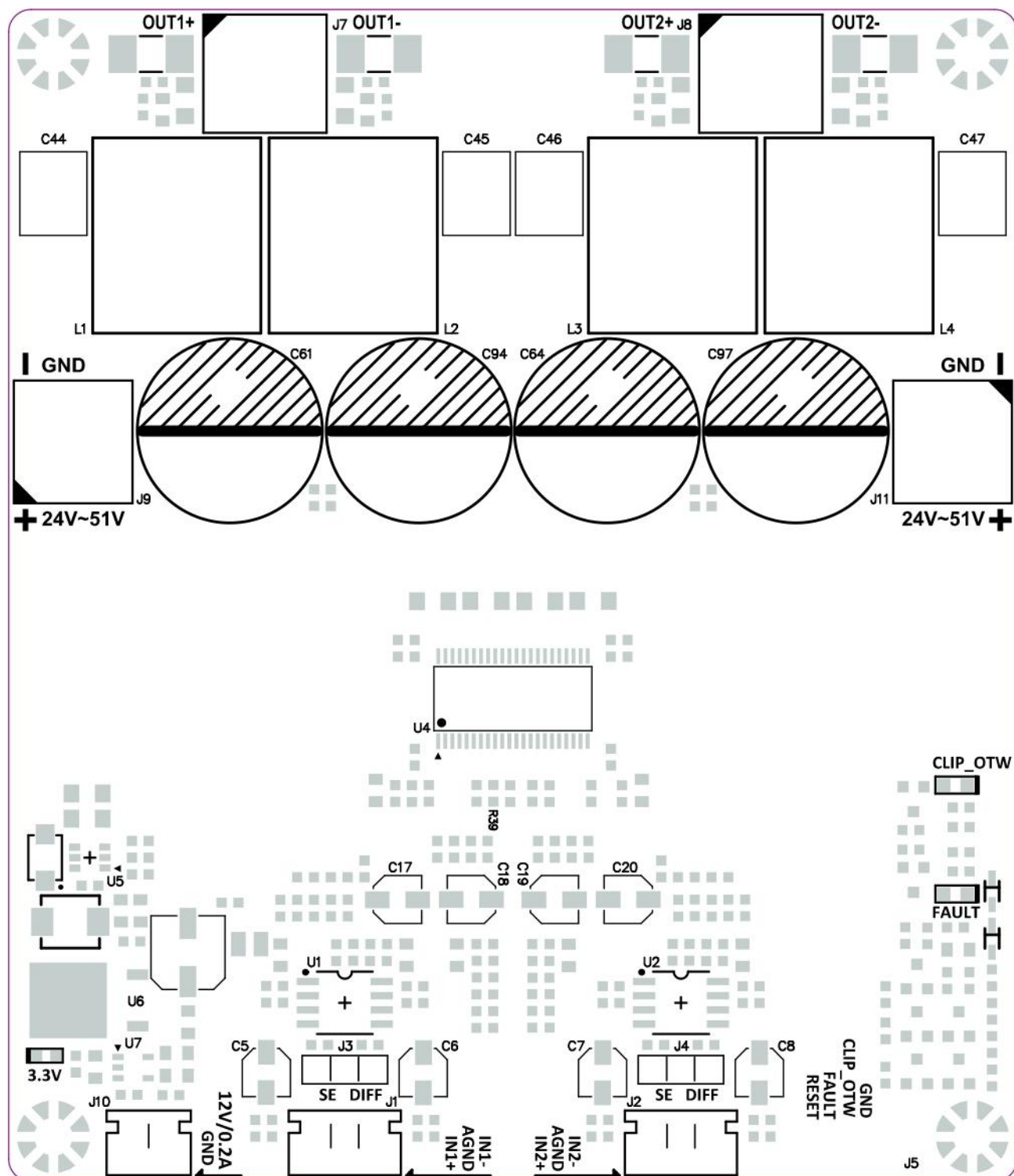


Figure 1: Board Top view

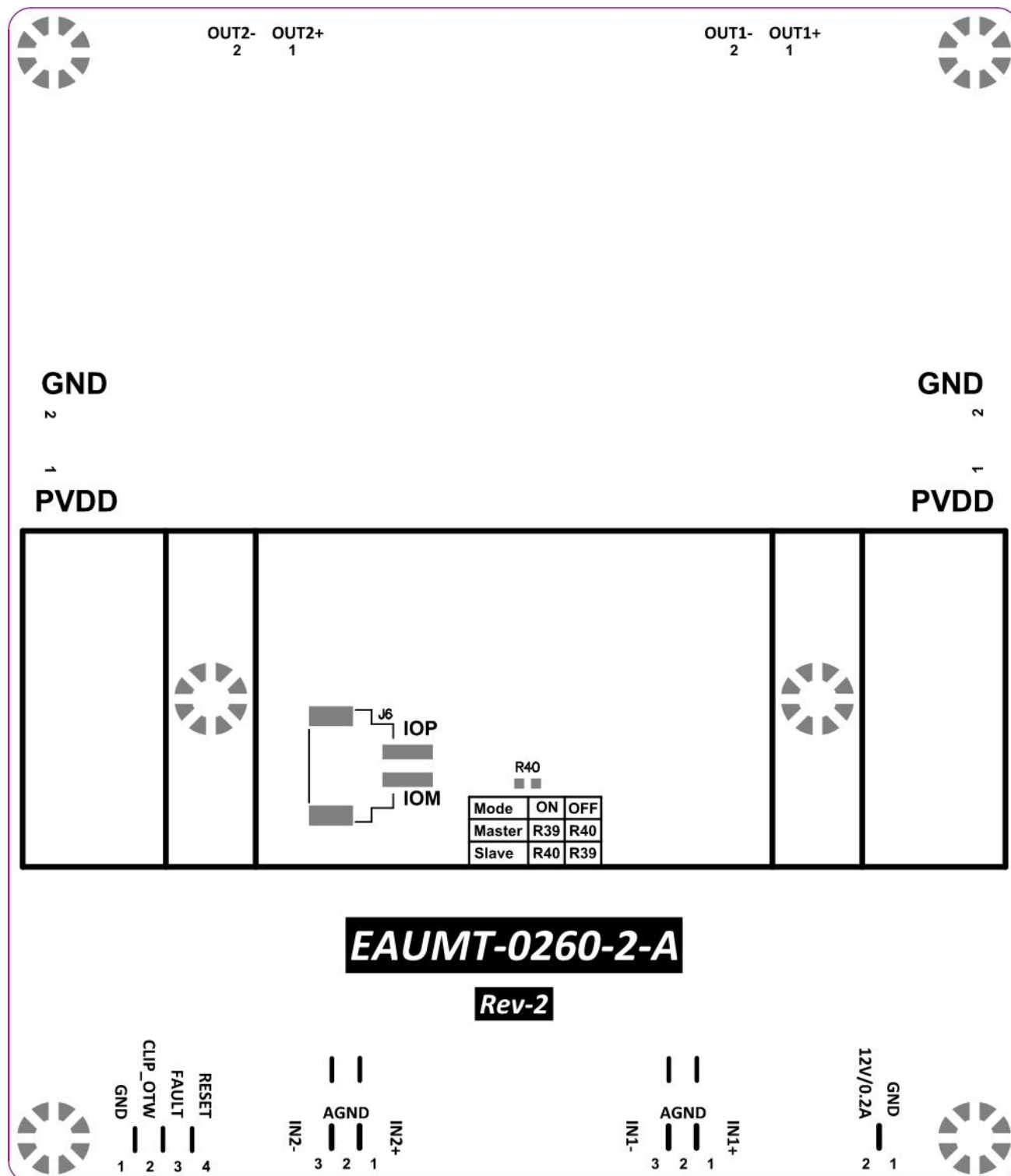


Figure 2: Board Bottom view

4. Connection Diagram

4.1 Input Signal Connector Specification (J1&J2)

Type: JST2.5-3PIN			
PIN	Function	Description	I/O Type
1	IN _x +	Positive input (balanced input or single-end input)	Audio Input
2	AGND	Ground of the input signal	GND
3	IN _x -	Negative input (balanced input)	Audio Input
<i>*x – mean the channel 1~2, same as below</i>			

4.2 Output Speaker Connector Specification (J7&J8)

Type: JST5.0-2PIN			
PIN	Function	Description	I/O Type
1	OUT _x +	Positive output of power amplifier	Output
2	OUT _x -	Negative output of power amplifier	Output

4.3 Power Supply Input connector Specification (J9&J11)

Type: JST5.0-2PIN			
PIN	Function	Description	I/O Type
1	PVDD (24V~51V)	Power supply Input	Input
2	GND	Power supply ground	GND
<i>*Both J9&J11 are same electrical connection and can be used for multi-board in series connection</i>			

4.4 AUX DC 12V Connector Specification (J10)

Type: JST2.5-2PIN			
PIN	Function	Description	I/O Type
1	GND	Power supply ground	GND
2	VCC (12V/0.2A)	Power supply output	Output

4.5 Control Signal Connector Specification (J5)

Type: JST2.54-4PIN			
PIN	Function	Description	I/O Type
1	GND	Control signal ground	GND
2	CLIP_OTW	Clipping and Over-temperature warning, active low	Output/OD
3	FAULT	Shutdown signal, active low	Output/OD
4	RESET	Device reset Input; active low	Input
<i>*OD – Open Drain</i>			

4.6 Oscillator Synchronization Interface (J6)

Type: JST2.5-2PIN			
PIN	Function	Description	I/O Type
1	IOP	Oscillator synchronization positive	Input/Output
2	IOM	Oscillator synchronization negative	Input/Output
<i>*Detail configuration refer to datasheet 10.2.1.2.4 and section 6.Multi Board Configuration</i> <i>*J6 isn't populated default, user should add if multi board are used for setting Master&Slave mode</i>			

5. Typical Performance Characteristics

5.1 Frequency Response

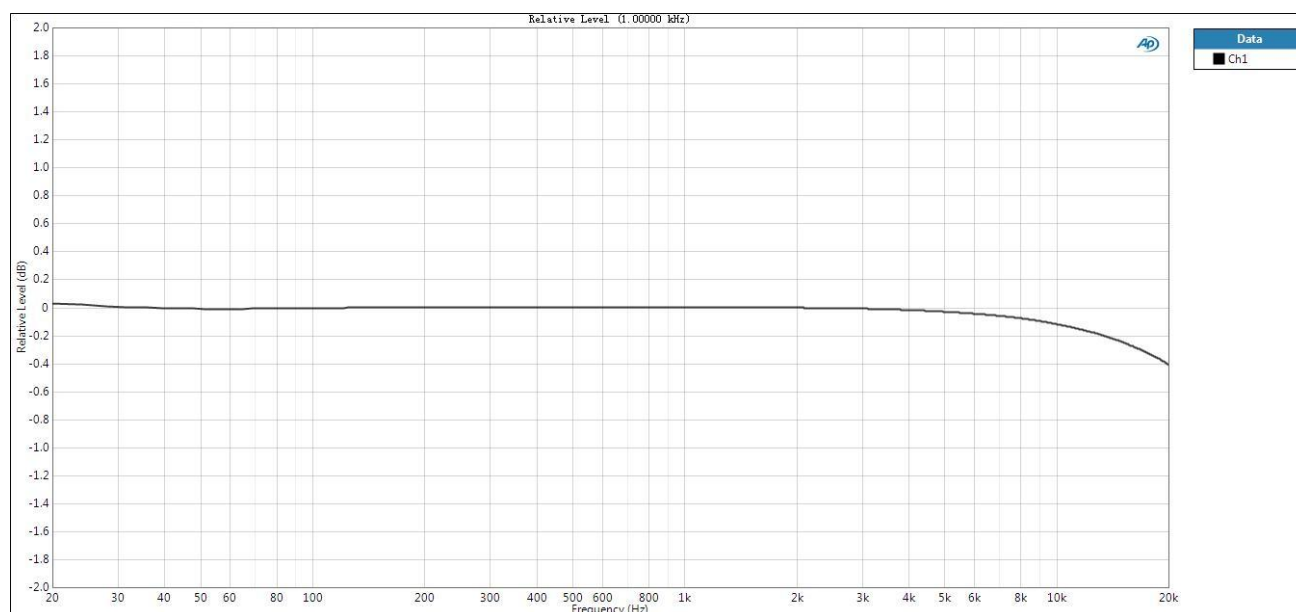


Figure 3: Frequency response in 4Ω

5.2 Output Impedance

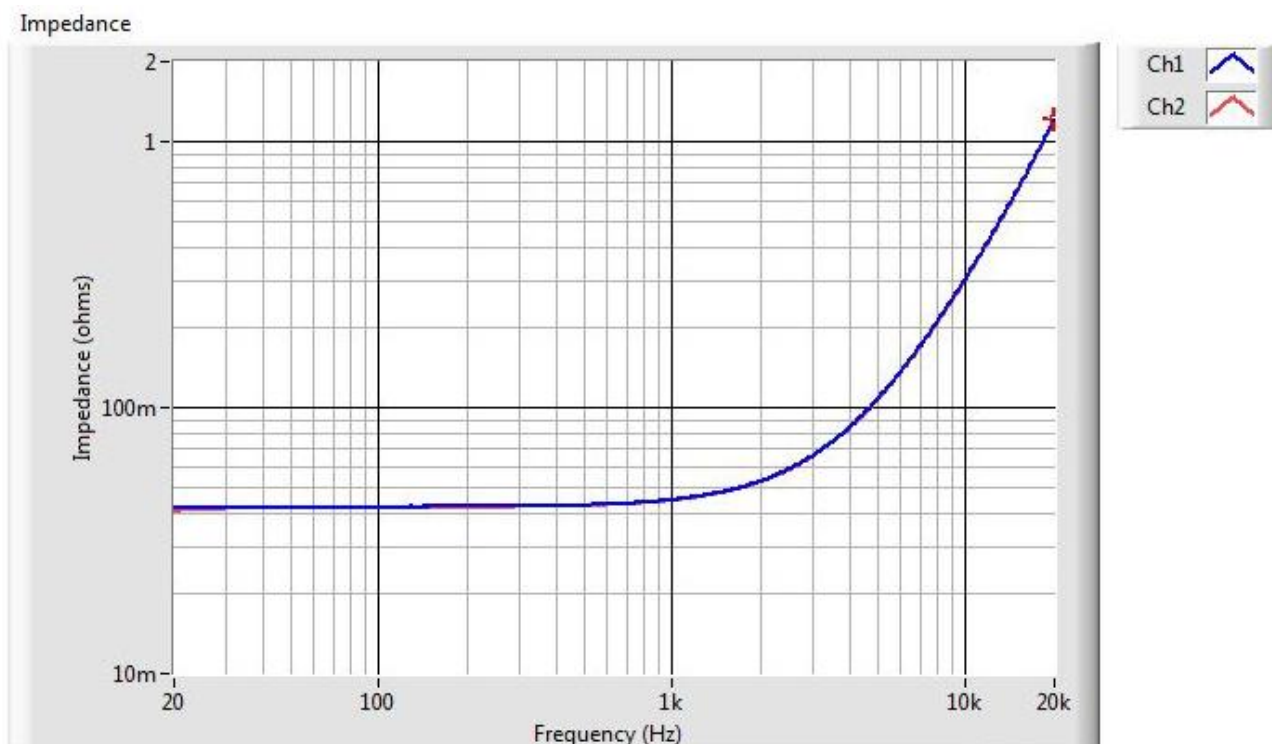


Figure 4: Output Impedance

5.3 Damping Factor

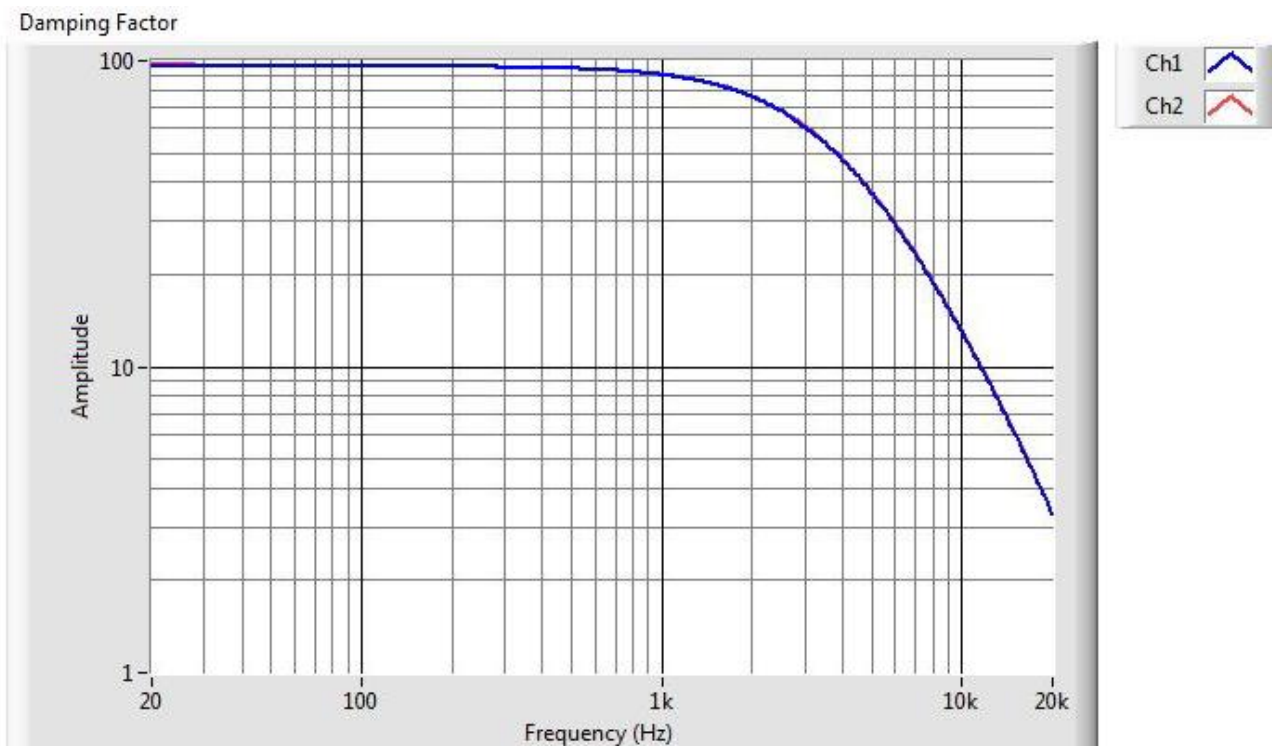


Figure 5: Damping Factor

5.4 THD+N vs Output Power

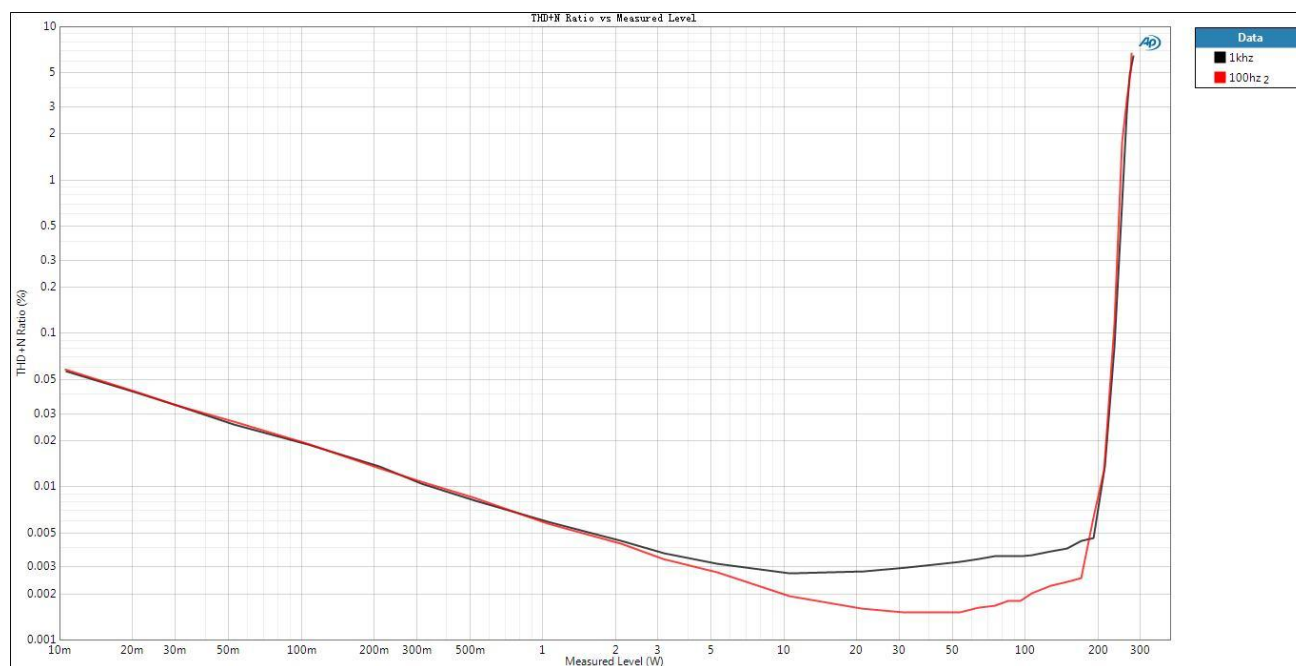


Figure 6: THD+N vs Output Power in 4ohm

5.5 THD+N vs Frequency

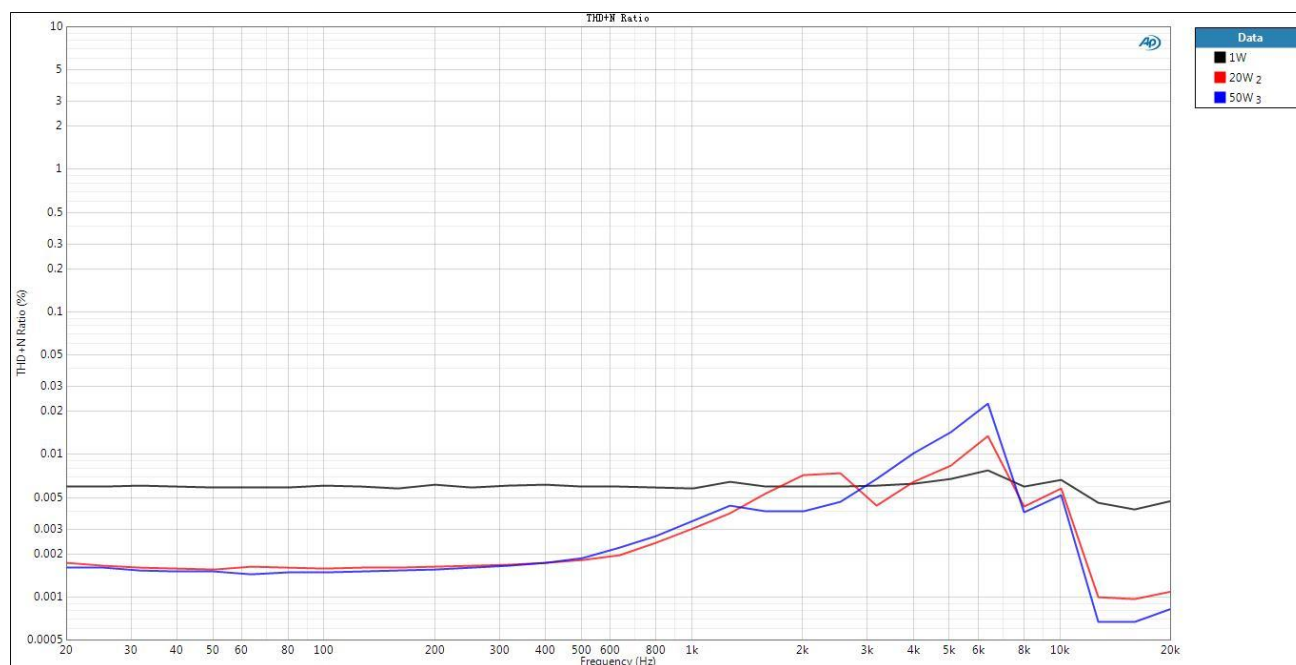


Figure 7: THD+N vs Frequency

6. Multi Board Configuration

It is recommend to set the master/slave mode when doing multi boards configuration, it can reduce interference problems while using radio receiver tuned within the AM band, detail description can refer to datasheet section 10.2.1.2.4.

Please make sure all of these change have been done before power up the boards.

Since the board default setting is master mode, so what you should do is set the other one board in slave mode, you can set slave mode 1 or slave mode 2 with just inverse the polarity.

Besides, remove the resistor **R39** (top side, remove heat-sink) and solder **R40** with one 0ohm 0603 resistor, this also marked on the bottom of the board show as below.

Slave mode 1:(Figure 8)

Connect the master OSC_I/O to the slave OSC_I/O with same polarity (IOP to IOP and IOM to IOM).

Slave mode 2:

Inverse the polarity of OSC_I/O (IOP to IOM and IOM to IOP)

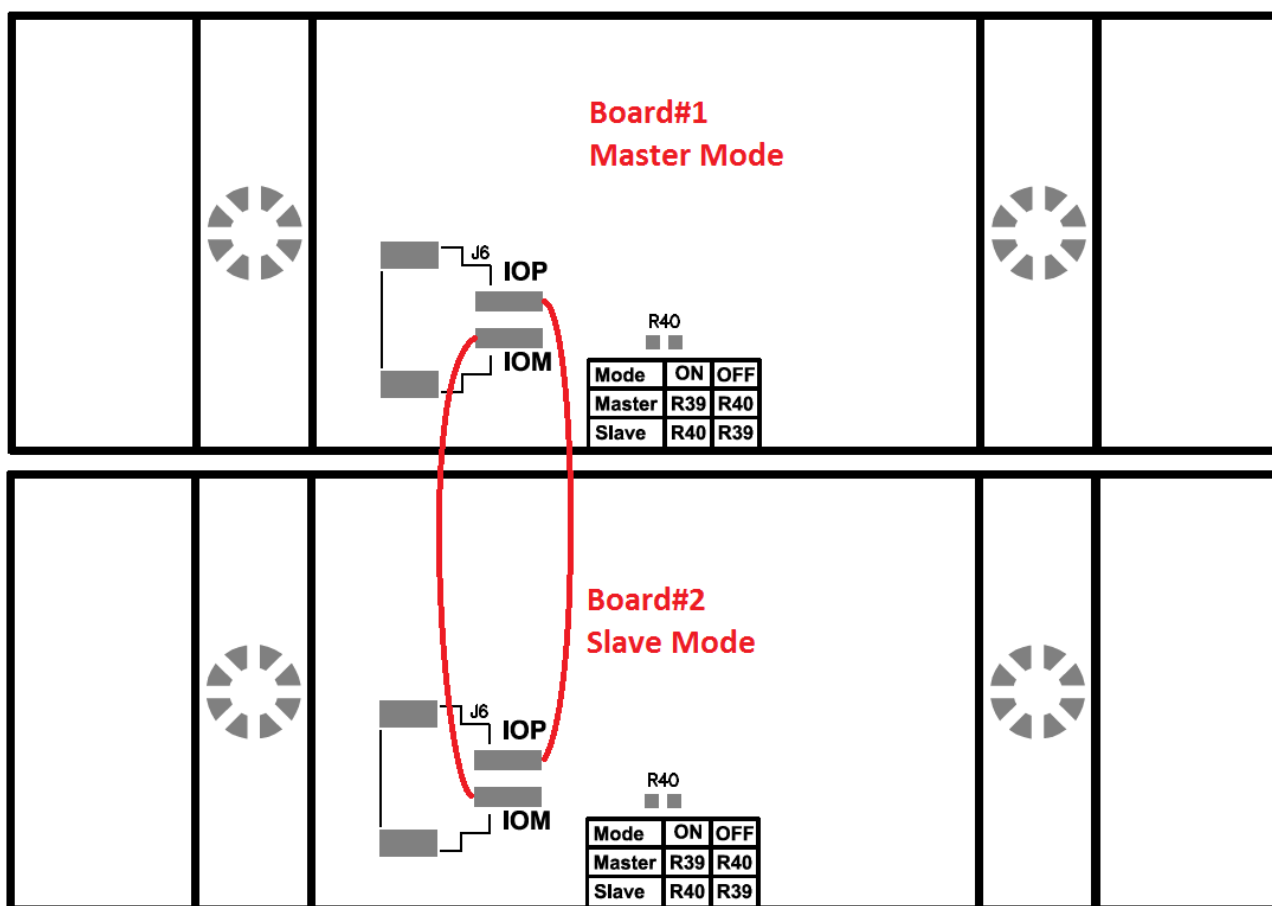


Figure 8: Master/Slave Mode setting

7. Revisions

Revision	Change Logs	Date
1.0	Initial version	Jun,2018