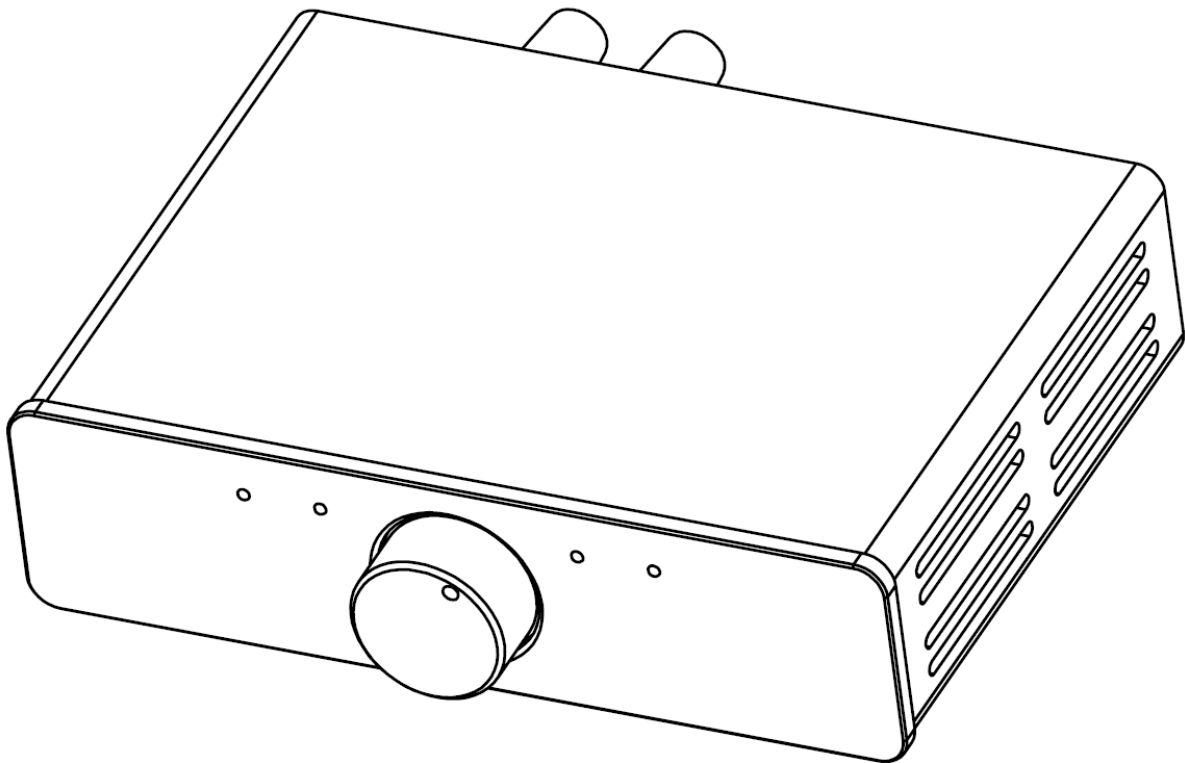


A5/A7/A7 Mono

User Manual



TPA3251/TPA3255 Based

Mono/Stereo Power Amplifier with Post Filter Feedback Design

The contents of this manual may change with the version,
if there is any change without notice,
please go to <https://www.3e-audio.com>
Download the latest version of the manual.

Introduction

Thank you for purchasing A5/A7/A7 mono series amplifier which has latest optimized post filter feedback design, we hope it could bring you more fun to enjoying music!

It is recommended you read this manual first before you starting to use all features of this amplifier.

The A5/A7/A7 mono series amplifier are the first-generation finished amplifier we make that integrated with multi-function that based on user needs like op-amp changeable and auto audio sensing technology which bring more flexibles for various use cases. The A5/A7/A7 mono series amplifier are also use high quality capacitors, inductors and also implemented high quality PCB design to ensure its highest performance.

By including auto audio sensing power on and off automative to reduce power lose for green energy saving and also thermal dissipation, user can easier to use with other DAC source to reduce the complex operation of the whole audio system.

Our engineering team put many efforts on optimizing the post filter feedback design based on Ti's recommendation and achieved a very great performance with 0.0003% THD+N(A-wt) at a typical 5W output, this is the best data based on TPA325x design in the world (as of Oct-2024), in the meanwhile, frequency response also had been extended to 35KHz within 0.5dB deviation.

For some user that used to use their DAC source to fully control the volume, there is an option that we add into this product is volume bypass mode, which disable protentional meter in audio path to fully ensure a pure audio signal chain from the DAC source to the amplifier output till speaker end, achieving the ultimate sound quality experience.

Furthermore, this product support op-amp change to maximum user's diy hobby as they experienced that different op-amp bring them different sound perception, an easier way without opens the chassis is implemented in our design to save user's operation process and also reduce the risk of disassembly, see operation section for detail.

Finally, enhanced design, exceed the edge, enjoy sound with passion are always our mission and we sincerely hope you enjoy our products.

Package List

A5se / A5 / A7se / A7 / A7 Mono	X 1
Power adapter (refer to order SKU)	X 1
Power cable (refer to order SKU)	X 1
User manual	X 1
Warranty card (refer to user manual)	X 1

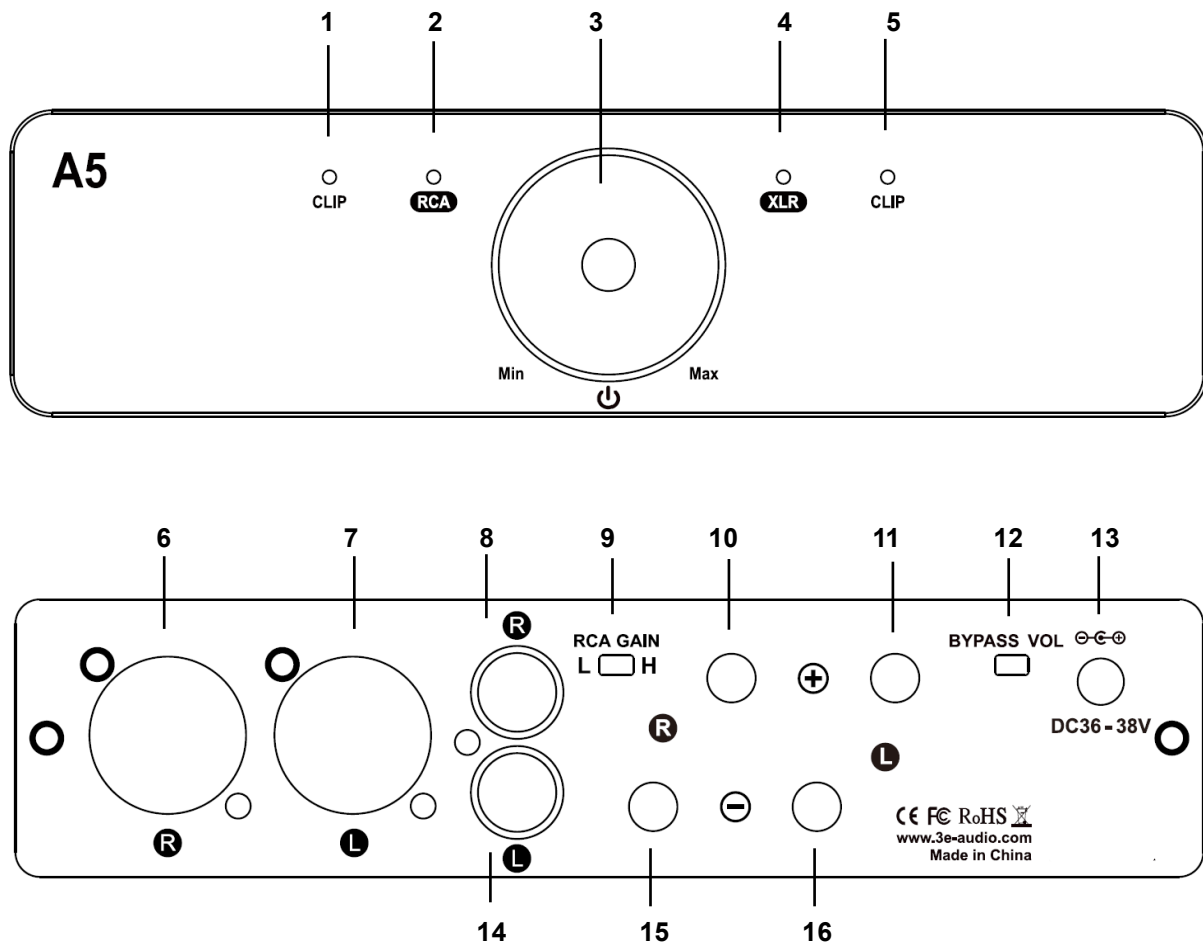
Key Features and Specifications

TPA3251/5 Enhanced PFFB design	<0.0004% THD+N @8Ω 5W	125dB Signal to Noise Rate	Fully Balance Input Ultimate to Output
XLR&TRS/RCA 3x Type Inputs	Various Opamp User Changeable	Vol/Bypass Selectable Input Mode	2 Step Gain Adaptive more RCA Devices
Auto On/Off Smart Power Saving	Ultra Low Noise < 13uVrms 20KHz BW	150W x 2 4Ω 1% THD+N TPA3251	250W x 2 4Ω 1% THD+N TPA3255
Flat Inductor Better THD and Linear	HiFi Audio Cap Elna Silmic II	PBTL Config Best Performance	Clipping LEDs Play Audio Accurately

Size	170mm x 168mm x 46mm					
Weight	800g - 1000g					
Power Supply input	A5se/A5	DC36-38V/5A				
	A7se/A7	DC38V-48V/5A or 10A				
	A7 Mono	DC38V-52V/5A or 9A				
Channel	2.0 / 1.0					
Amplifier chip (standard supply voltage)	A5se	TPA3251 x 1	2.0 - BTL			
	A5	TPA3251 x 2	2.0 - PBTL			
	A7se	TPA3255 x 1	2.0 - BTL			
	A7	TPA3255 x 2	2.0 - PBTL			
	A7 Mono	TPA3255 x 1	1.0 - PBTL			
Signal inputs	RCA (single-end) or XLR/TRS (balance)					
Input impedance	RCA: 10Kohm; XLR/TRS: 20Kohm					
Volume Pot attenuation	-50dB (Typ) at Min position					
Signal outputs	Banana Speaker terminal (BTL output)					
Power on & off	Manual/Auto audio sensing (5 minutes off without audio input)					
Audio sensing threshold	RCA: 2mVrms; XLR/TRS: 4mVrms (1KHz, both channel drive)					
Volume control	Enable/Bypass					
Power Consumption (standard supply voltage)		A5se	A5	A7se	A7	A7Mono
	OFF Mode	< 0.2W	< 0.2W	< 0.4W	< 0.4W	< 0.4W
	ON (no audio)	6W	8W	7W	9W	6W

Model	A5se		A5		A7se		A7		A7 Mono	
	Input Type	Single-end	Balance	Single-end	Balance	Single-end	Balance	Single-end	Balance	
THD+N 5W (@1KHz(A-wt))		0.0004%@4Ω	0.0004%@4Ω	0.0004%@4Ω	0.0004%@4Ω	0.0007%@4Ω	0.0006%@4Ω	0.0007%@4Ω	0.0006%@4Ω	
		0.0005%@8Ω	0.0003%@8Ω	0.0005%@8Ω	0.0003%@8Ω	0.0006%@8Ω	0.0005%@8Ω	0.0006%@8Ω	0.0005%@8Ω	
Signal to Noise Rate (1%THD+N 1KHz A-wt)		121dB	123dB	123dB	125dB	122dB	124dB	123dB	126dB	
Dynamic Rate (1%THD+N 1KHz A-wt)		121dB	123dB	123dB	125dB	122dB	124dB	123dB	126dB	
Frequency Response (±0.5dB)		20Hz - 30KHz	20Hz - 30KHz	20Hz - 35KHz	20Hz - 35KHz	20Hz - 30KHz	20Hz - 30KHz	20Hz - 35KHz	20Hz - 35KHz	
		20Hz - 30KHz	20Hz - 30KHz	20Hz - 35KHz	20Hz - 35KHz	20Hz - 30KHz	20Hz - 30KHz	20Hz - 35KHz	20Hz - 35KHz	
Noise (A-wt)		<15uVrms	<13uVrms	<15uVrms	<13uVrms	<20uVrms	<15uVrms	<20uVrms	<15uVrms	
Crosstalk		-90dB	-100dB	-100dB	-110dB	-90dB	-100dB	-110dB	-120dB	
Gain		23dB/26dB	17dB	23dB/26dB	17dB	26dB/29dB	20dB	26dB/29dB	20dB	
Input Sensitivity		1.75Vrms	3.5Vrms	1.75Vrms	3.5Vrms	1.75Vrms	3.5Vrms	1.75Vrms	3.5Vrms	
Output Power (1% THD+N)		140W x 2 @4Ω	150W x 2 @4Ω	150W x 2 @4Ω	230W x 2 @4Ω	230W x 2 @4Ω	250W x 2 @4Ω	480W x 1 @2Ω	260W x 1 @4Ω	
		70W x 2 @8Ω	80W x 2 @8Ω	80W x 2 @8Ω	130W x 2 @8Ω	130W x 2 @8Ω	140W x 2 @8Ω	150W x 1 @8Ω	150W x 1 @8Ω	
Output Power (10% THD+N)		170W x 2 @4Ω	180W x 2 @4Ω	180W x 2 @4Ω	280W x 2 @4Ω	280W x 2 @4Ω	300W x 2 @4Ω	600W x 1 @2Ω	320W x 1 @4Ω	
		90W x 2 @8Ω	100W x 2 @8Ω	100W x 2 @8Ω	170W x 2 @8Ω	170W x 2 @8Ω	180W x 2 @8Ω	200W x 1 @8Ω	200W x 1 @8Ω	
Speaker Impedance		4Ω - 16Ω	2Ω - 16Ω	4Ω - 16Ω	4Ω - 16Ω	4Ω - 16Ω	2Ω - 16Ω	2Ω - 16Ω	2Ω - 16Ω	

Product Overview



- 1 Clipping indication LED – Left channel
- 5 Clipping indication LED – Right channel
- 2 RCA input indication LED
- 4 XLR input indication LED
- 3 Multi-function KEY – Power on & off, input selection, volume control
 - Short press – Input source switch between RCA and XLR
 - Long press (above 2 Seconds) – Power off (standby mode can wake up by audio)
- 6 Balance XLR/6.35mm TRS combo input – Right channel
- 7 Balance XLR/6.35mm TRS combo input – Left channel
- 8 Single-end RCA input – Left channel
- 14 Single-end RCA input – Right channel
- 9 RCA Gain setting (LOW=25dB,HIGH=28.5dB)
- 12 Volume control setting
- 10 R+ speaker output: negative output of Right channel
- 15 R- speaker output: negative output of Right channel
- 11 L+ speaker output: negative output of Left channel
- 16 L- speaker output: negative output of Left channel
- 13 DC Power supply input

Operations

1. Connect the passive speaker to the speaker output terminal (please ensure the priority is correct).
2. Connect the audio source to the RCA or XLR(TRS) input.
3. Connect the power supply (**MUST** within product specification range).
4. select the RCA/XLR mode for desired input source.
5. Turn the volume knob clockwise to adjust to the appropriate volume.

Note:

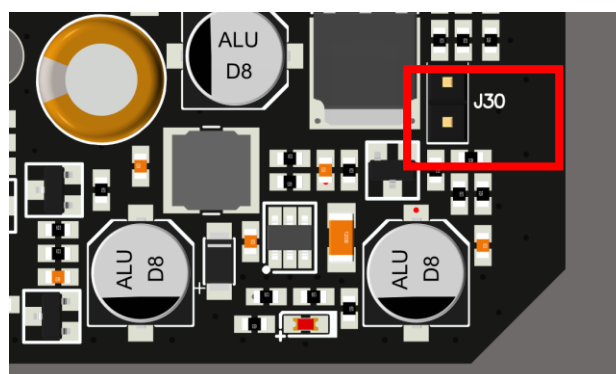
- It is **STRONG** suggest connect power supply cable before power on the device.
- It is suggested to select Bypass/Volume or Gain switch first before power on the unit, either there is slightly pop during switching between two positions.
- product will auto power on when power supply is on.

Op-amp replacement procedure

1. Operation **MUST** in power off mode.
2. Op-amp working voltage should meet 36V(+/-18V) maximum,34V Minimum.
3. Identify the op-amp to be replace and check the electrical parameter is within spec (for example working voltage,2 channel, footprint, etc.).
4. Use tweezer to carefully pluck out the original op-amp, then install new op-amp and keep the orientation is the same (there is Pin 1 mark on the PCB).
5. **MUST** double check the op-amp is correctly installed before power on again.
6. Below op-amp are suggested list for replacement. (may add more in the future)

P/N	Manufacturer	P/N	Manufacturer
OPA1612	Ti	MUSES02	JRC
OPA1656	Ti	MUSES8920	JRC
OPA1602	Ti	NJM4580	JRC
OPA2134	Ti	NJM4556	JRC
NE5532P	Ti	NJM2068	JRC
LME49720	Ti	OP249	ADI
LM4562	Ti	AD827	ADI

7. Op-amp supply voltage equal or lower 30V, a dedicated setting(J30) is **MUST** to set supply voltage to 30V, refer to below picture.



Precautions

- In door use only.
- **MUST** ensure op-amp's oriented is correct when op-amp is change, there is Pin 1 mark in PCB.
- **MUST** make sure op-amp's working voltage can accept 36V.
- Please ensure speaker output connection do not short circuit or connect to ground, improperly connection may cause functional damage of the amplifier.
- Make sure turn off amplifier first whenever you connect or disconnect input or output cables.
- It is suggested to turn off amplifier first before cut off AC power of the adapter.
- Amplifier will generate heat during operation and will dissipation via encloser, this is normally for all audio amplifier and you **MUST** not keep the amplifier in a hot, humid environment or drop it.
- Open the case instantly voids the warranty!
- In case where liquid is spilled into the amplifier, turn off the power immediately and check the device inspected by a professional before further use it again.
- Use 3e audio AC adapter is recommended and make sure DC voltage **MUST** with spec when other type adapter is used by user himself.
- 3e audio accepts no liability for any loss or damage arising directly or in directly from the failure of Amplifier.
- For improvement purpose, specifications subject to changes without prior notice.

Product Warranty

If you have any questions about our product you had received, please contact us within 48 hours customer service. If the product has quality problems and need to be repaired or returned, please fill in this card truthfully.

User name: _____

Contact number: _____

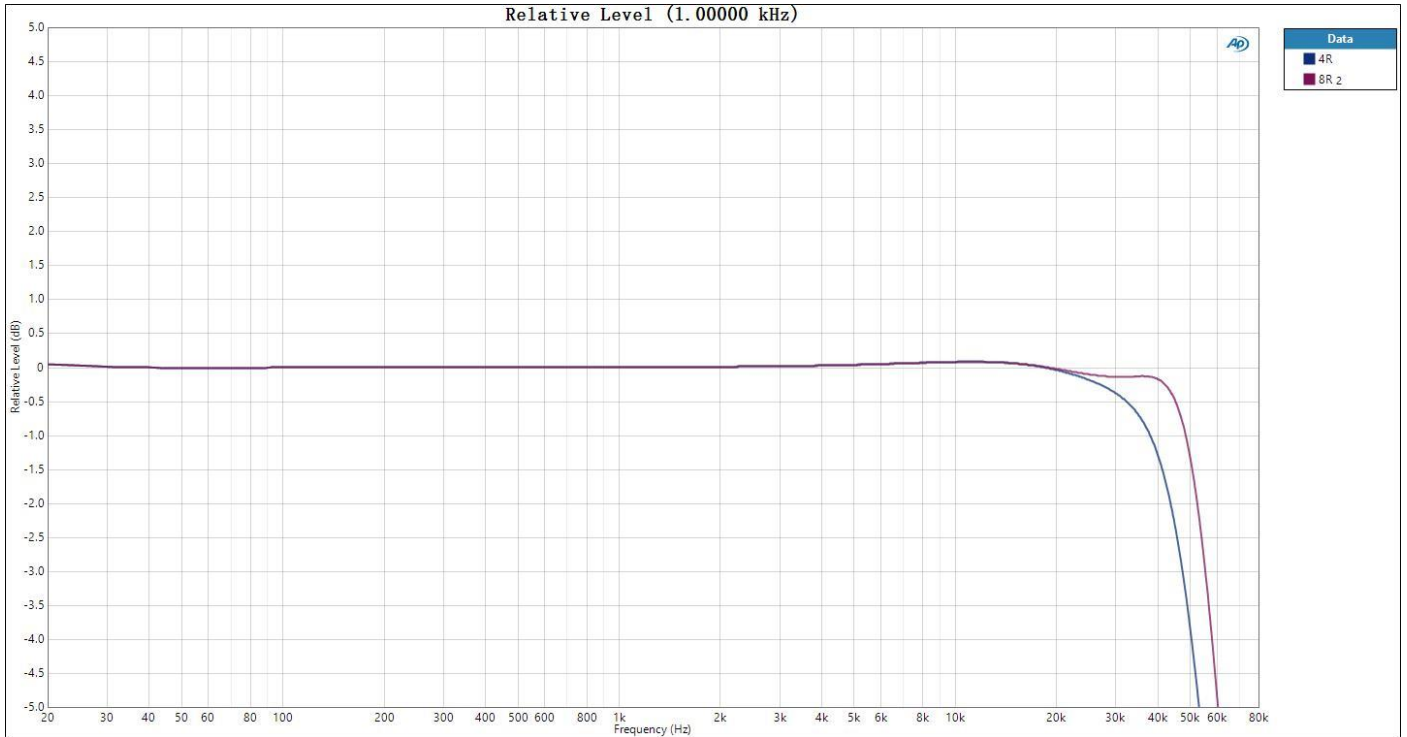
Date of purchase: _____

Product number: _____

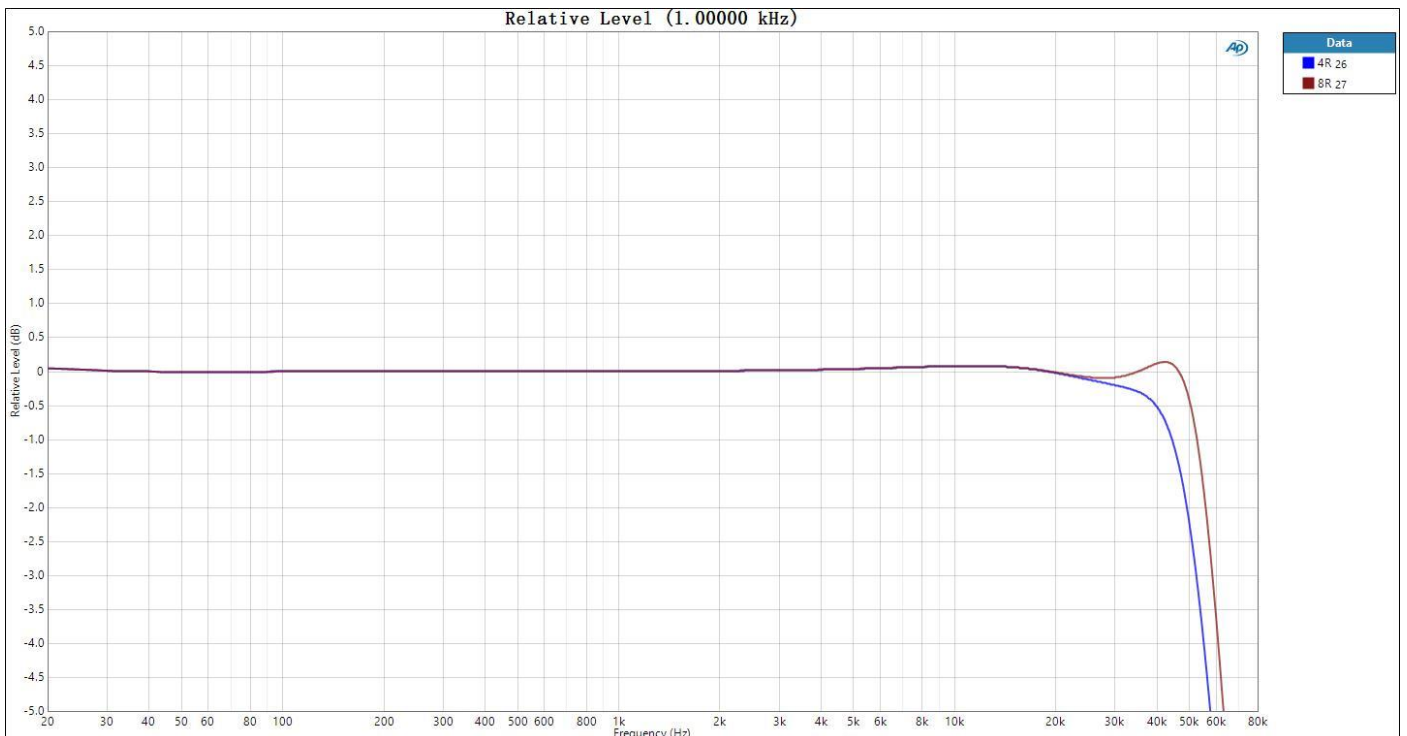
Maintenance failure: _____

The product warranty is 1 year

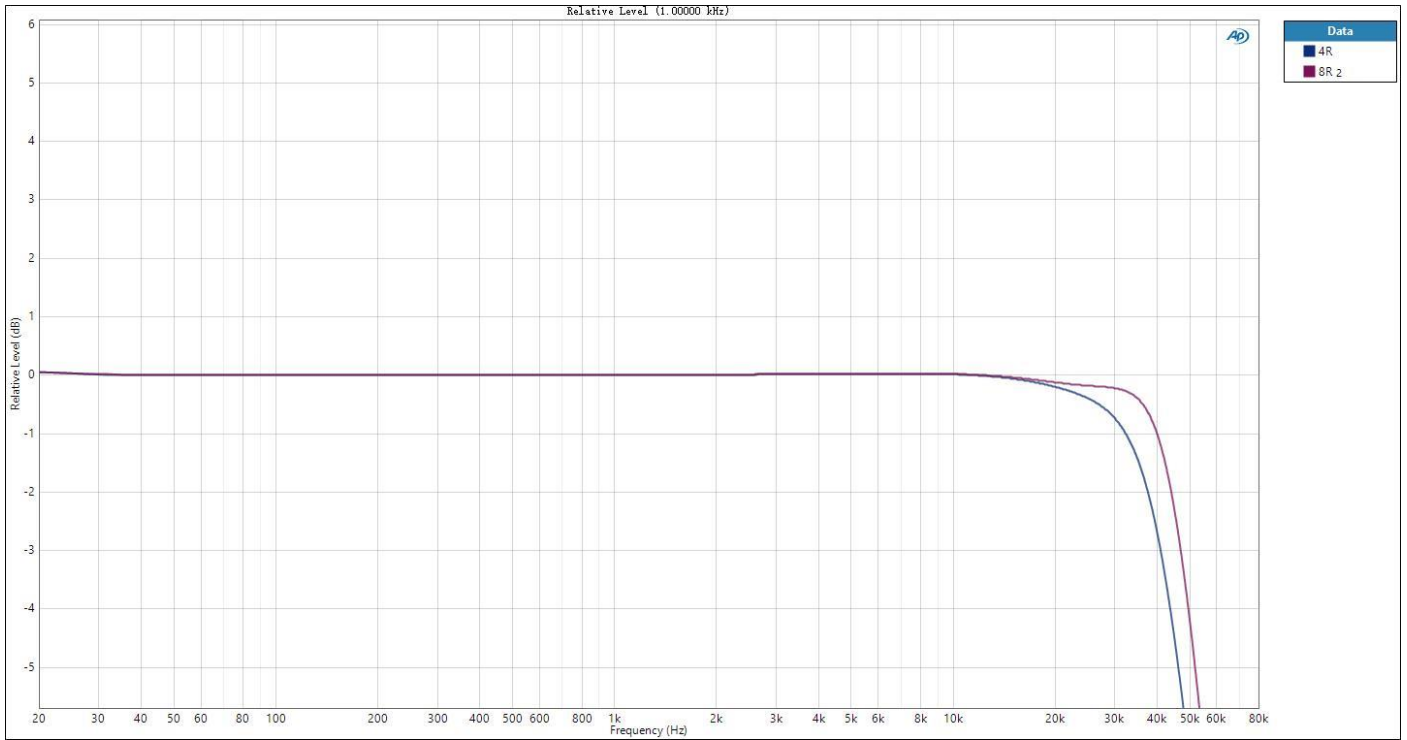
Measurement data



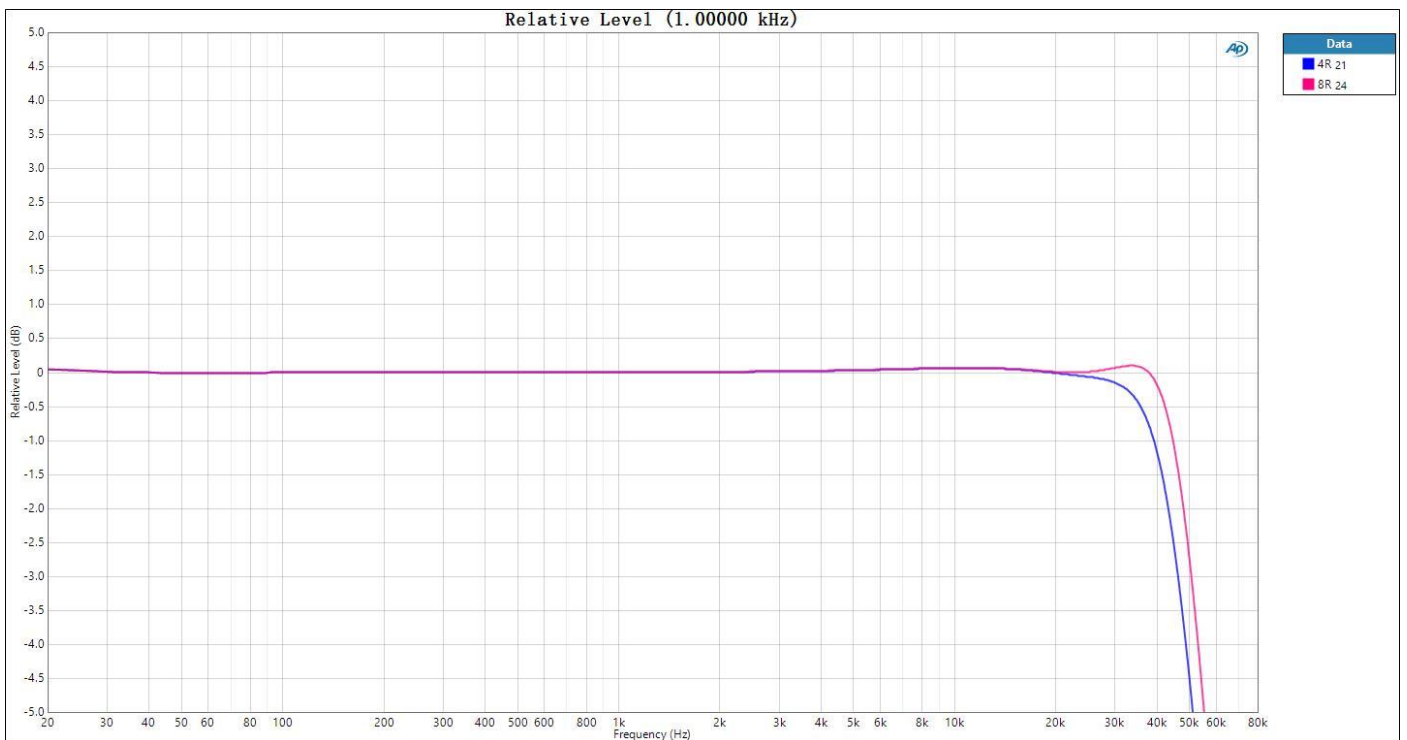
Frequency Response - A5se



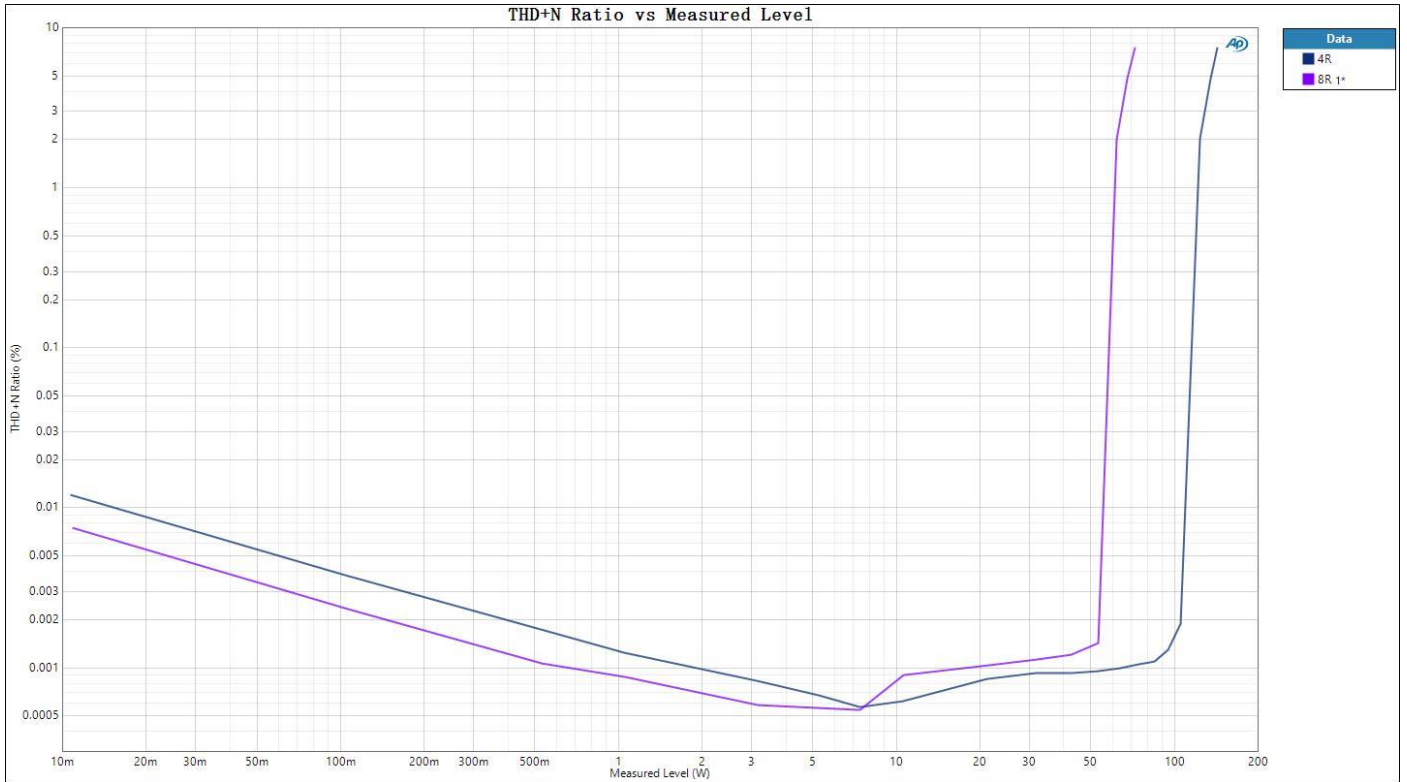
Frequency Response - A5



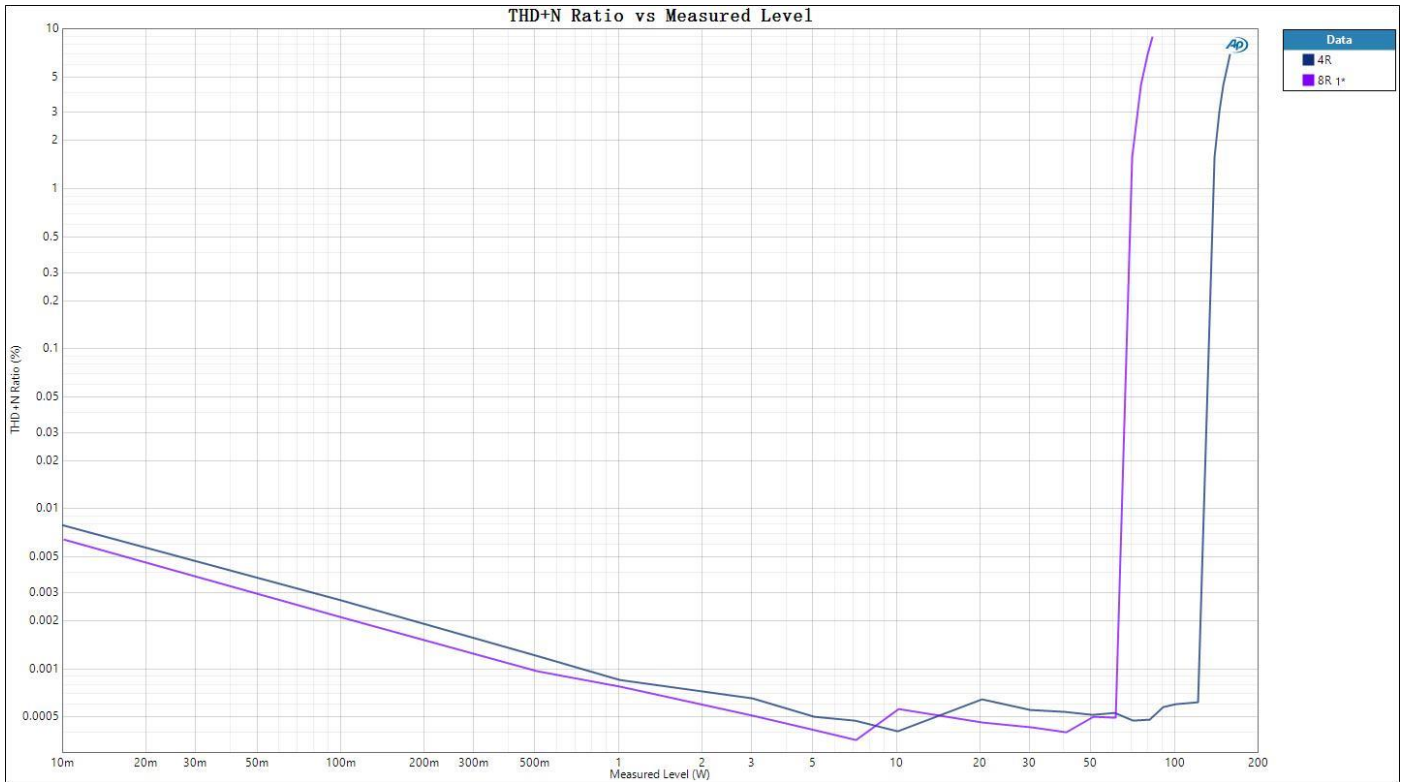
Frequency Response - A7se



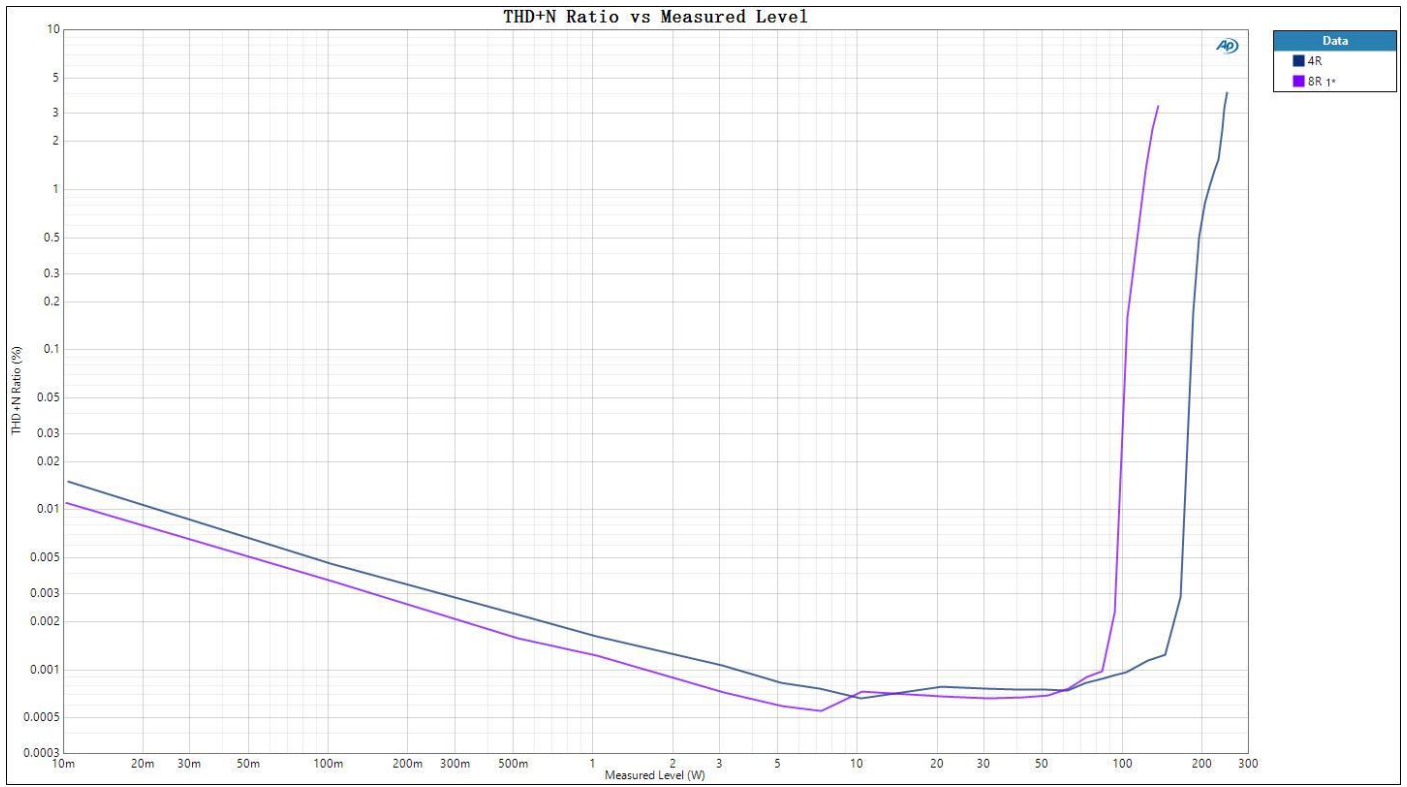
Frequency Response - A7&A7 Mono



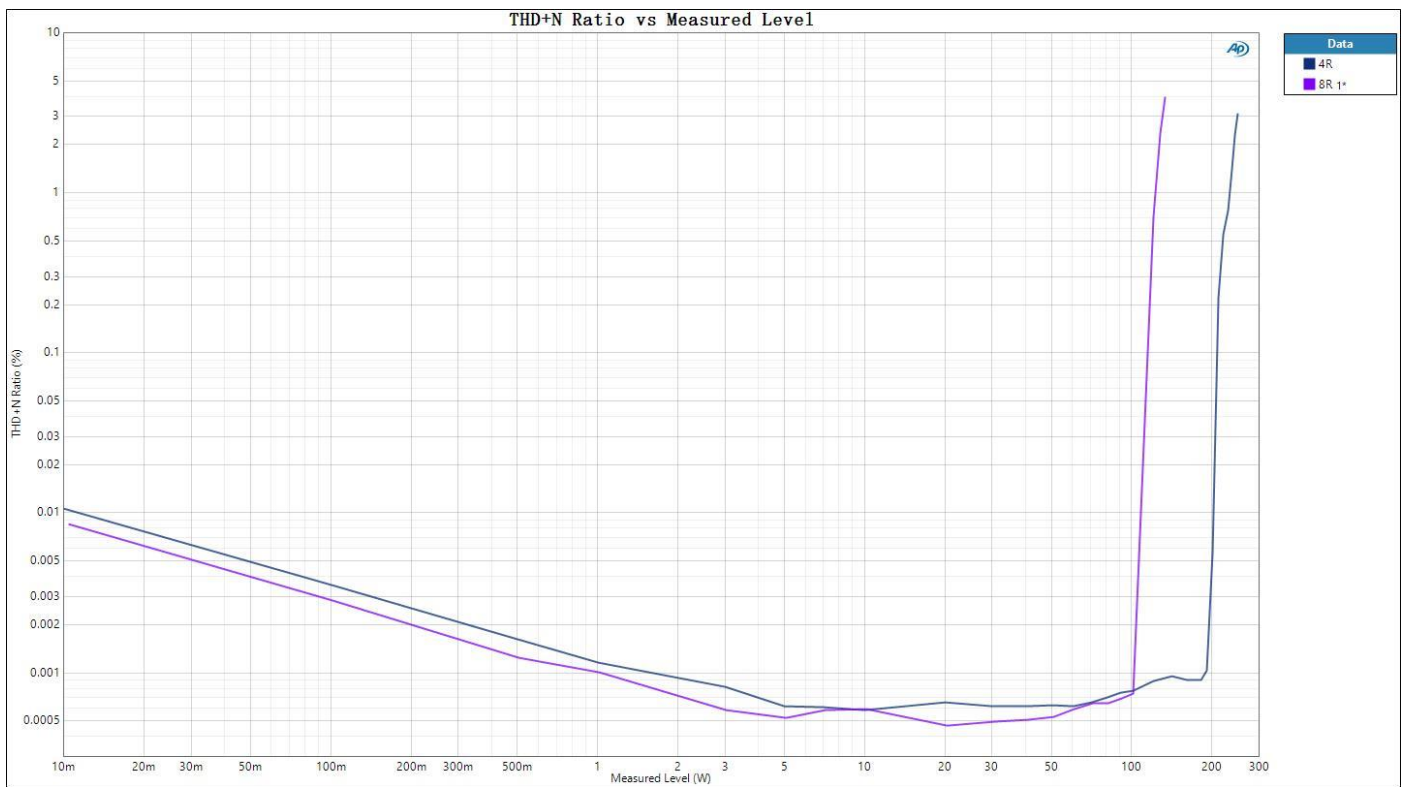
THD+N vs Output Power - A5se



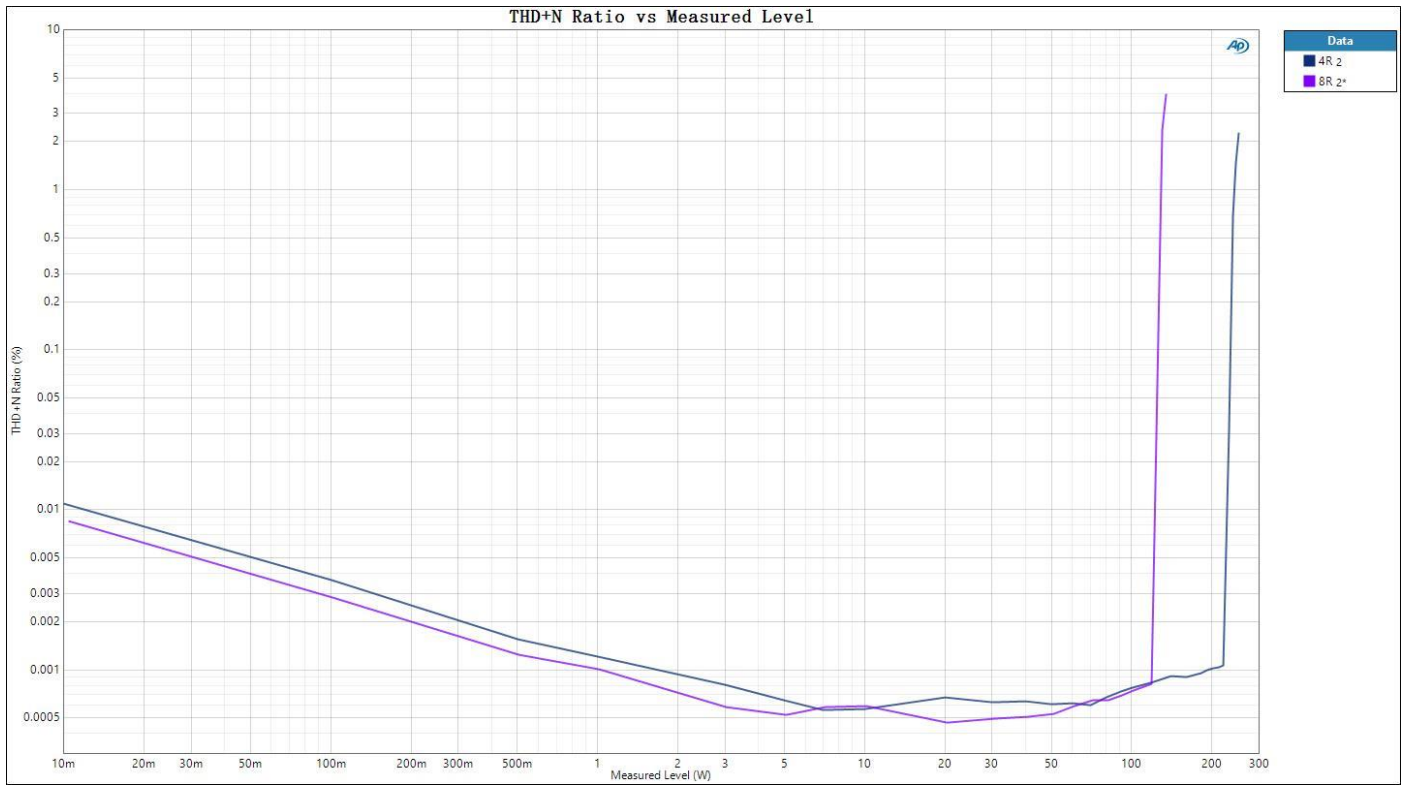
THD+N vs Output Power - A5



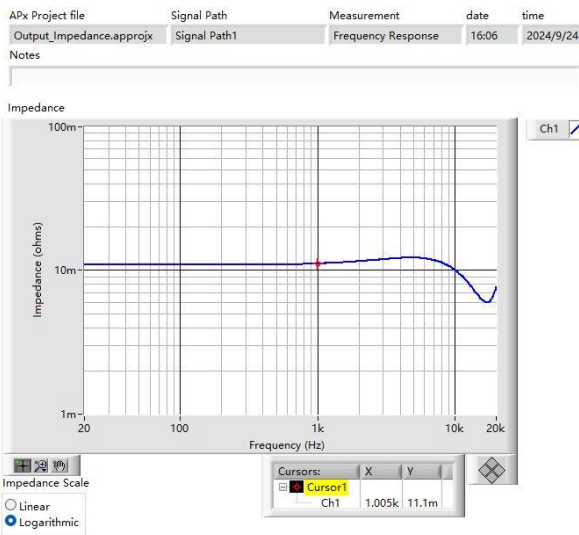
THD+N vs Output Power - A7se



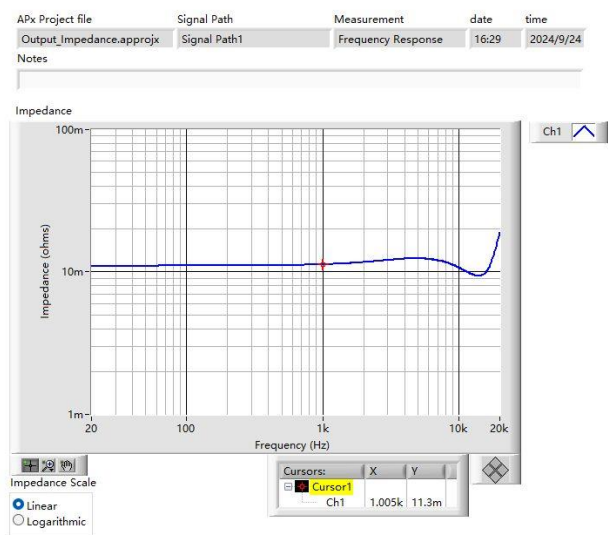
THD+N vs Output Power - A7



THD+N vs Output Power - A7Mono



Output Impedance - A5



Output Impedance - A7