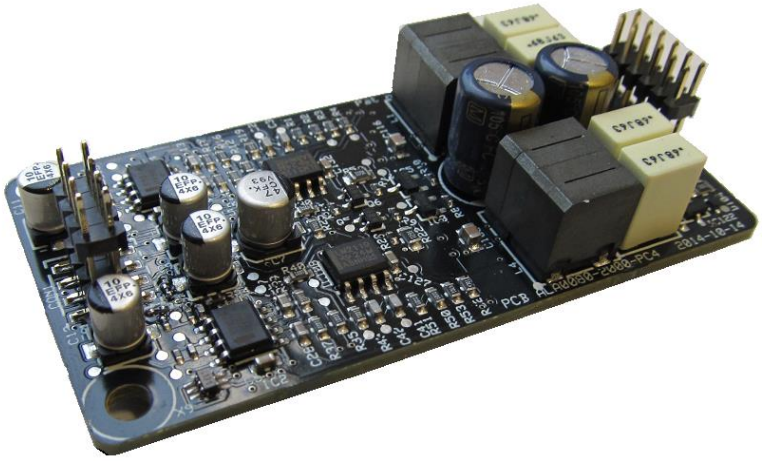
A MEMBER OF THE ETAL GROUP

PRODUCT SPECIFICATION
AUDIO LINE AMPLIFIER ALA0080-2000



FEATURE LIST

- 2x45Wrms into 6Ý @ 1% THD
- Entirely differential patented APC (adaptive pole control) amplifier technology
- 80kHz load independent frequency range (-3dB)
- Very low THD in the audio band
- 115dB dynamic range
- Output impedance <5mΩ @ 100Hz
- Differential inputs with 0.1% resistors for improved CMRR

SCOPE

These technical specifications describes the functionalities and features of the Anaview Audio Line Amplifier ALA0080-2000, capable of delivering up to 2x45W when supplied with a DC source between 12 and 25VDC. Typical applications are networked audio devices, portable audio devices, docking stations, audio receivers, powered speakers and residential audio system.

DISCLAIMER

The data sheet contains specifications that may be subject to change without prior notice. Responsibility for verifying the performance, safety, reliability and compliance with legal standards of end products using this subassembly falls to the manufacturer of said end product.

ANAVIEW products are not authorized for use as critical components in life support devices or life support systems without the express written approval of the president of ETAL Group AB. As used herein:
1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labelling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

ELECTRICAL SPECIFICATIONS

Input specifications:

Supply voltage	VS+: CON2:5, CON2:7 GND: CON2:6, CON2:8 Min: +9VDC(*1) Max: +30VDC Recommended: +12VDC to +25VDC	
nENABLE	Shut down input: CON1:5 "nENABLE" Shut down by: Leave floating Normal operation : Pull down to GND	
IN+	0 – 1.45 Vrms max Balanced audio input, left channel	
IN-	0 – 1.45 Vrms max Balanced audio input, right channel	
Input impedance	**Single ended input signal** +IN_CH1: CON1:8 Signal -IN_CH1: CON1:7 Ground Input impedance = 2.4kΩ +IN_CH2: CON1:2 Signal -IN_CH2: CON1:1 Ground Input impedance = 2.4kΩ	**Balanced input signal** +IN_CH1: CON1:8 Signal -IN_CH1: CON1:7 Signal Input impedance = 2.3kΩ +IN_CH2: CON1:2 Signal -IN_CH2: CON1:1 Signal Input impedance = 2.3kΩ

(*1) ALA0080-2000 need a supply voltage of minimum 11.5VDC to start but won't shut down until the supply voltage drops below 9VDC.

Output specifications @ 12V:

Audio outputs	Typ. cont. output power (*1)	Max output power (*2)	THD
+OUT_CH1: CON2:1,3 -OUT_CH1: CON2:2,4	2x14W 4Ω 2x10W 6Ω 2x8W 8Ω	2x15W 4Ω 2x11W 6Ω 2x9W 8Ω	1%
+OUT_CH2: CON2:9,11 -OUT_CH2: CON2:10,12	2x14W 4Ω 2x10W 6Ω 2x8W 8Ω	2x15W 4Ω 2x11W 6Ω 2x9W 8Ω	1%

Output specifications @ 20V:

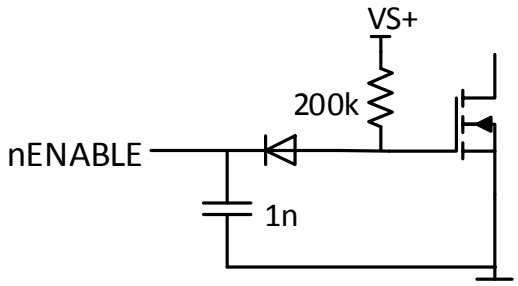
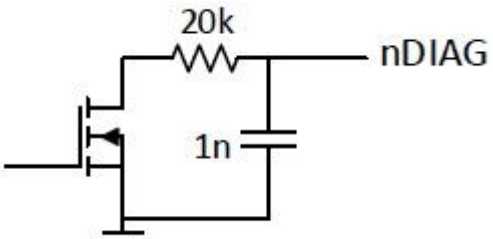
Audio outputs	Typ. cont. output power (*1)	Max output power (*2)	THD
+OUT_CH1: CON2:1,3 -OUT_CH1: CON2:2,4	2x9W 4Ω 2x16W 6Ω 2x20W 8Ω	2x40W 4Ω 2x31W 6Ω 2x23W 8Ω	1%
+OUT_CH2: CON2:9,11 -OUT_CH2: CON2:10,12	2x9W 4Ω 2x16W 6Ω 2x20W 8Ω	2x40W 4Ω 2x31W 6Ω 2x23W 8Ω	1%

Output specifications @ 25V:

Audio outputs	Typ. cont. output power (*1)	Max output power (*2)	THD
+OUT_CH1: CON2:1,3 -OUT_CH1: CON2:2,4	2x11W 6Ω 2x13W 8Ω	2x45W 6Ω 2x35W 8Ω	1%
+OUT_CH2: CON2:9,11 -OUT_CH2: CON2:10,12	2x11W 6Ω 2x13W 8Ω	2x45W 6Ω 2x35W 8Ω	1%

(*1) Typical continuous output power with an ambient temperature of 50°C.
(*2) Maximum output power it the power delivered in the specified load with a maximum of 1% THD

Protections and functions:

<table>
<tr><td>Over temperature protection</td><td colspan="3">Power shut down by over temperature. Outputs float when heat sink temperature reaches >110°C. Output switching resumes about 1s after temperature drops below the threshold.</td></tr>
<tr><td rowspan="3">Under voltage protection</td><td colspan="3">Power shut down by under voltage on VS+ (supply voltage).</td></tr>
<tr><td>Typical threshold</td><td>Shutdown</td><td>Restart</td></tr>
<tr><td></td><td>8.6V</td><td>11.3V</td></tr>
<tr><td>Over current protection</td><td colspan="3">The over current protection is DC input voltage and temperature dependent but will allow full power 4Ω in 50°C ambient without over current protection. The over current protection will protect the amp outputs from short between them and short to DC input.
It will not protect against short to GND.</td></tr>
<tr><td>nENABLE</td><td colspan="3">Shut down input: CON1:5 "nENABLE”
Shut down by: Leave pin floating
Normal operation : Pull down to GND
 
</td></tr>
<tr><td>nDIAG</td><td colspan="3">Status output: CON1:3 "nDIAG”
nDIAG goes low during under voltage and over temperature
 
</td></tr>
</table>

Offset voltage (open inputs)	<5mV typ. (20mV max)
Switching frequency (idle)	300kHz to 500kHz
Switching recidual	500mVrms typ.
Minimum load impedance	4Ω
Recommended load	4Ω to 8Ω with +20V supply voltage 6Ω to 8Ω with +25V supply voltage (*1)
Gain (f =1kHz)	22.7dB typ.
Idle noise	30 uVrms (unweighted) typ.
Upper BW limit (-3dB)	80kHz typ.
Lower BW limit (-3dB)	<5Hz
Output impedance (100Hz)	3mΩ typ. (5mΩ max)
Residual noise vs freq	See Figure 4
THD vs PWR	See Figure 5- 12
THD vs freq	See Figure 13 - 15
Freq response	See Figure 16
Crosstalk	See Figure 17

(*1) ALA0080-2000 will not deliver specified full output power in 4Ω 50°C with +25V supply voltage without going into over current protection. Therefore it is not recommended to use 4Ω load with more than +20V supply voltage even if the amplifier will not take damage from it.

GENERAL SPECIFICATIONS

Cooling	Convection cooling
Mounting of the unit	See Figure 2. Board outline, dimensions & mounting holes. PCB may be secured to mating PCB using M3 size screws.
Efficiency	See Figure 18
Idle current consumption	60mA typ. With +12V supply voltage 75mA typ. With +20V supply voltage 85mA typ. With +25V supply voltage
Disable current consumption	35mA typ. With +12V supply voltage 47mA typ. With +20V supply voltage 55mA typ. With +25V supply voltage
Manufacturing according to workmanship standard	IPC-A-610, Revision D, February 2005

ENVIROMENTAL CONDITIONS

Humidity	5 – 85% RH non condensing
Ambient Operating Temperature	0°C to +50°C
Storage Temperature	-40°C to +85°C

CONNECTIONS

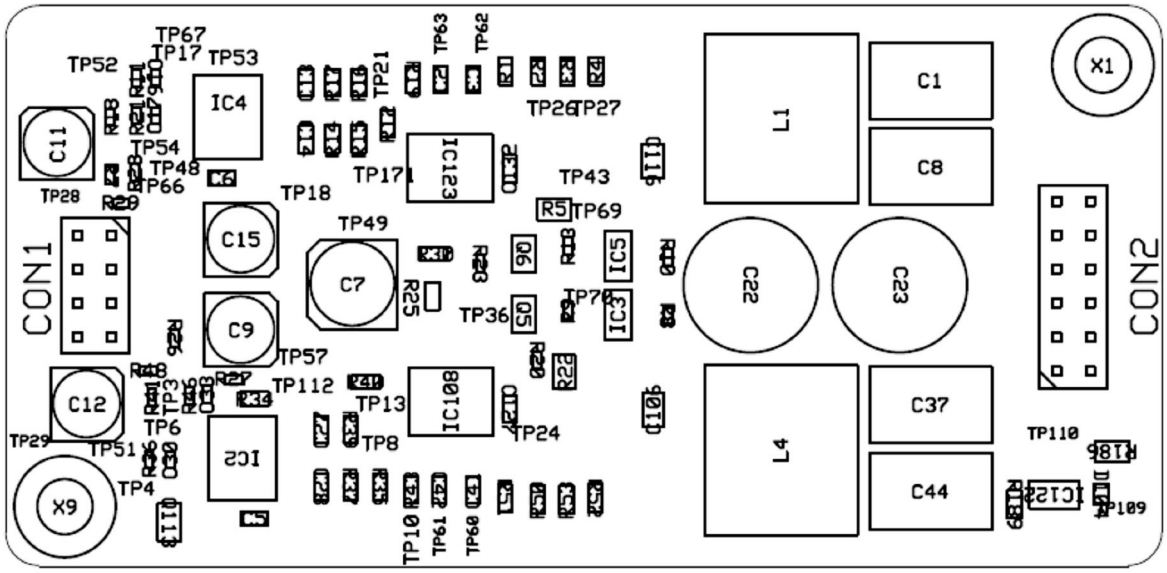


Figure 1. Bottom View, two dual row header connectors, CON1 and CON2

Signal connector	CON1 : 8 pin (2.0mm) dual row vertical header Article number CVILux CB74082V100 **Mating connectors** CVILux CB74082V100 (Through hole) CVILux CB74082M100 (SMD) Pinning: — Description: Pin 1 : -IN_CH2 — Negative input channel 2 Pin 2 : +IN_CH2 — Positive input channel 2 Pin 3 : nDIAG — Status output Pin 4 : GND — GND Pin 5 : nENABLE — Enable input Pin 6 : GND — GND Pin 7 : -IN_CH1 — Negative input channel 1 Pin 8 : +IN_CH1 — Positive input channel 1

Power connector	CON2 : 12 pin (2.0mm) dual row vertical header Article number CVILux CB74122V100 **Mating connectors** CVILux CB74122V100 (Through hole) CVILux CB74122M100 (SMD) Pinning: — Description: Pin 1 : +OUT_CH1 — Positive output Pin 2 : -OUT_CH1 — Negative output Pin 3 : +OUT_CH1 — Positive output Pin 4 : -OUT_CH1 — Negative output Pin 5 : VS+ — Positive supply voltage Pin 6 : GND — GND Pin 7 : VS+ — Positive supply voltage Pin 8 : GND — GND Pin 9 : +OUT_CH2 — Positive output Pin 10 : -OUT_CH2 — Negative output Pin 11 : +OUT_CH2 — Positive output Pin 12 : -OUT_CH2 — Negative output

REGULATIONS AND COMPLIANCES

EMC	Emission	EN 55022:2006+A1:2007+A2:2006 Class "B" FCC part 15 (CISPR22) Class "B" Tested at a level of 1/8 of the max output power.
	Immunity	IEC 61000-4-2 (2008) IEC 61000-4-3 (2006) IEC 61000-4-4 (2004) *Only I/O line applicable IEC 61000-4-6 (2008) *Only I/O line applicable IEC 61000-4-8 (2009)

MECHANICAL OUTLINE

Size (l x w x h)	68x33x18mm, see Figure 2. Board outline, dimensions below. Max component height/lead length on PCB top side: 4.0 mm Max component height/lead length on PCB bottom side: 13.3 mm Max total height including mating connector: 18.5mm
Weight	26g
IP figures, encapsulation IP XY (X=Solids, Y=Liquids)	Open frame
Coloring, design and branding	ALA0080-2000, black PCB

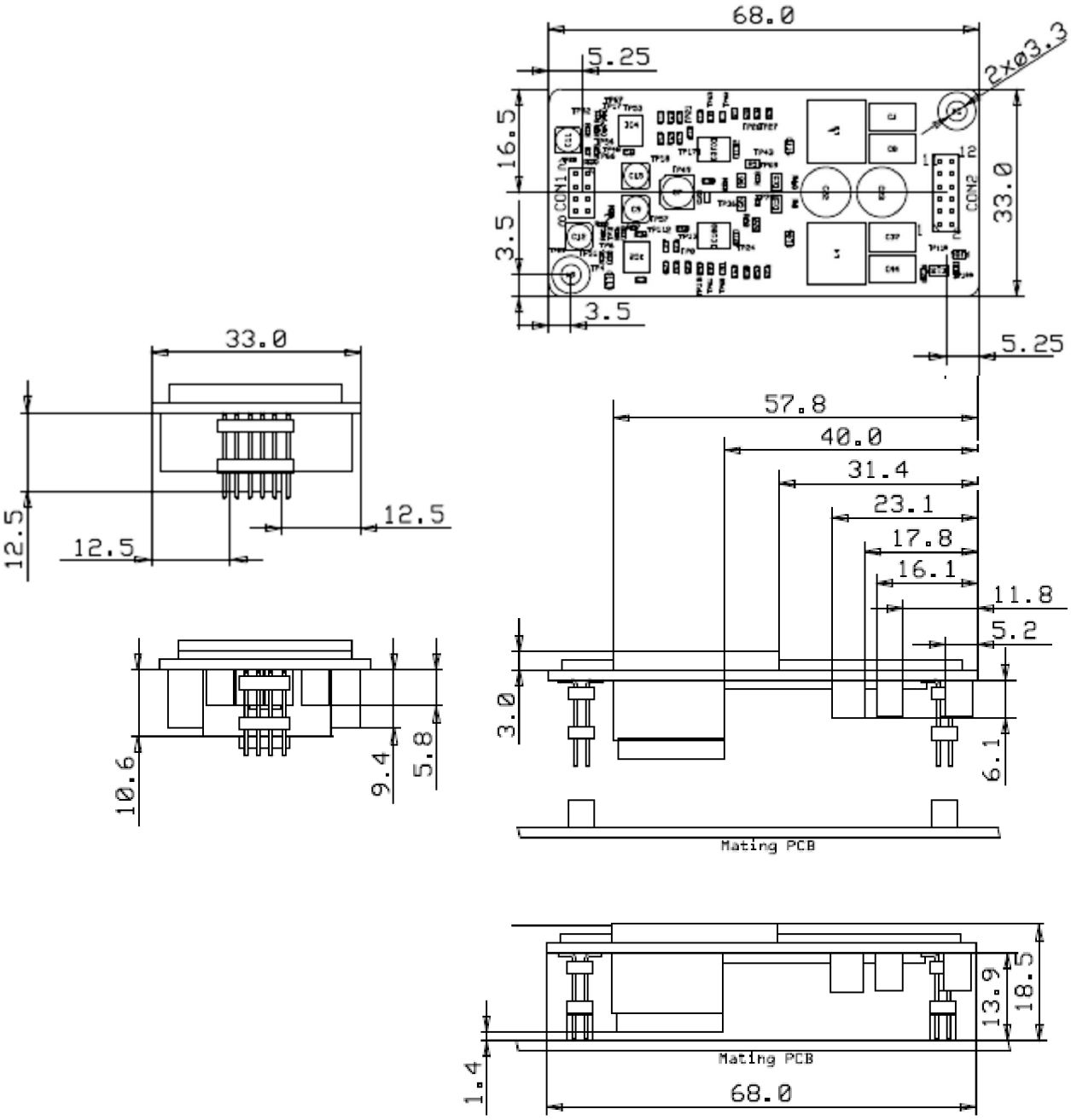


Figure 2. Board outline, dimensions and side views

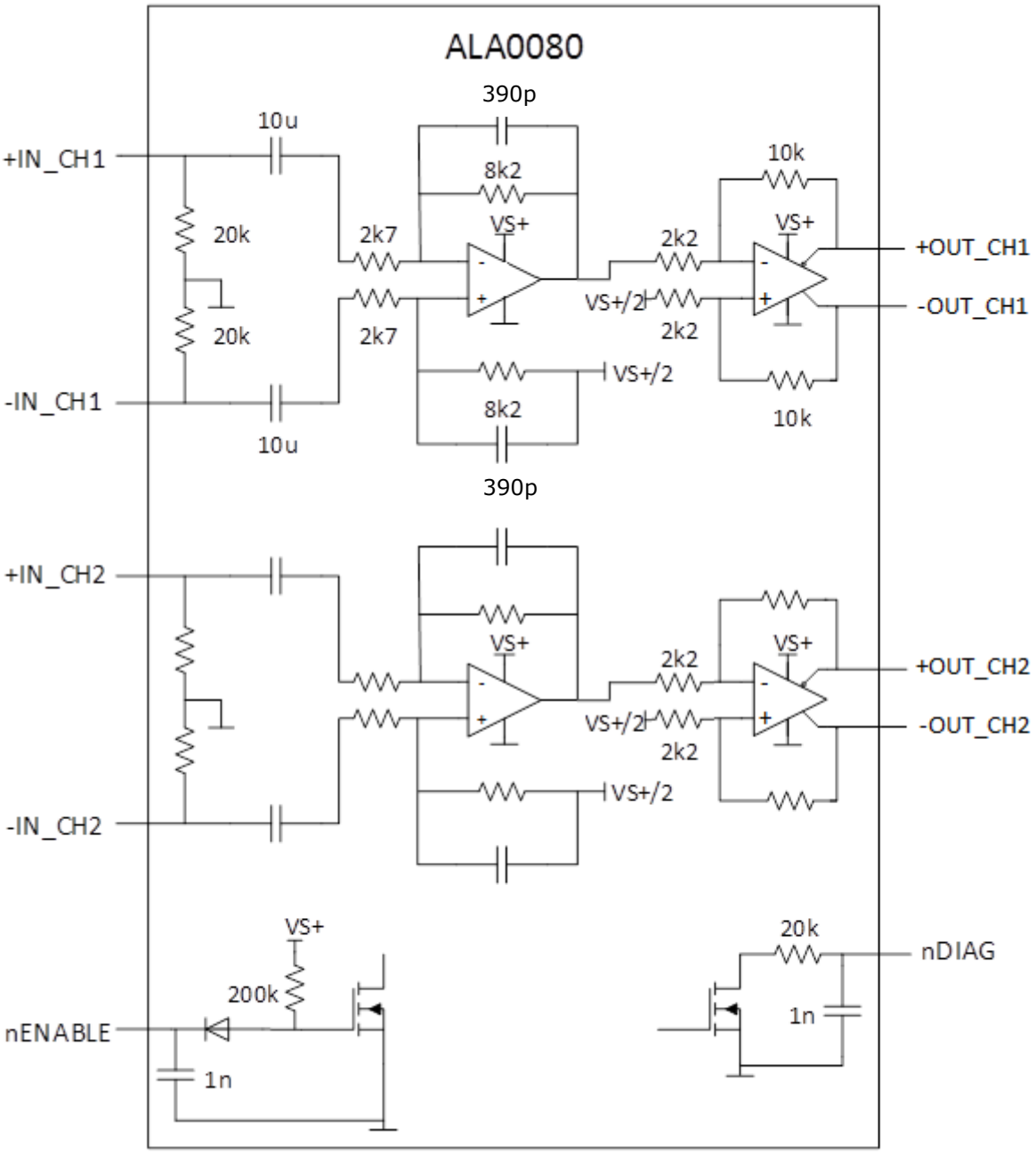
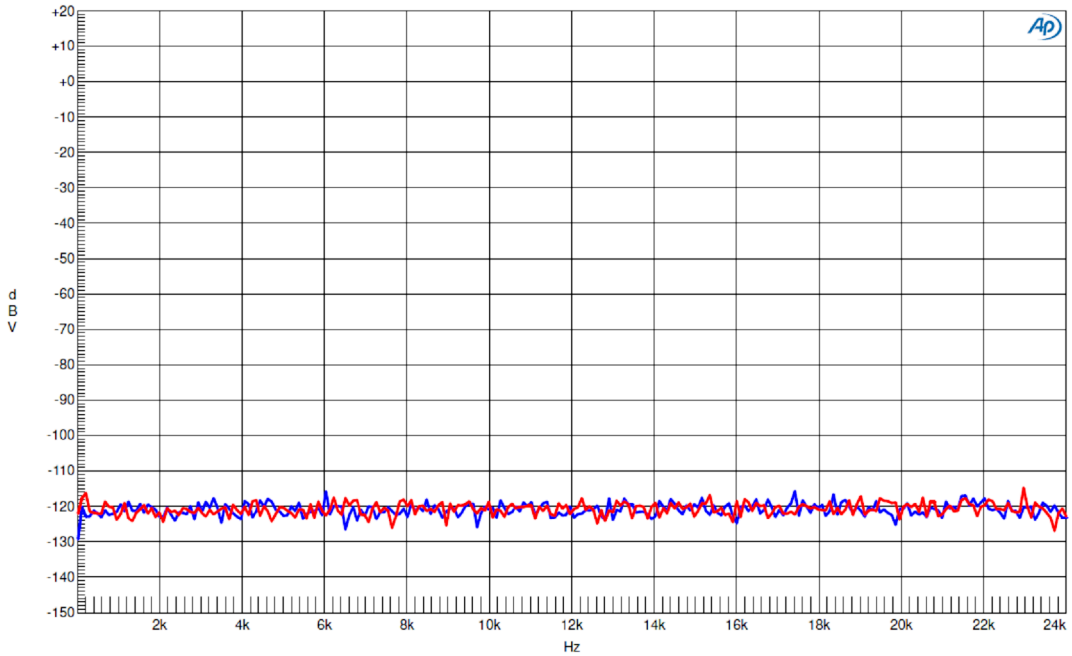


Figure 3. Connection diagram.

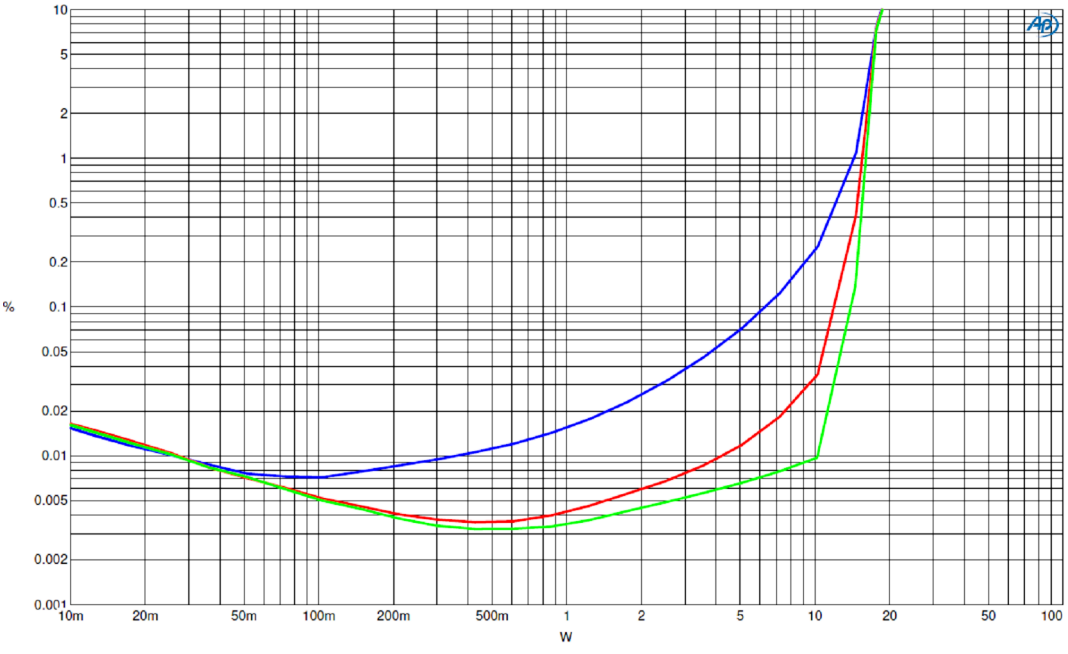
LOAD CONSIDERATION

Connecting different loads	For optimum noise performance when connecting different speakers/loads on the amp channels, the load with highest impedance at 400kHz should be connected to output channel 2 (OUT_CH2).



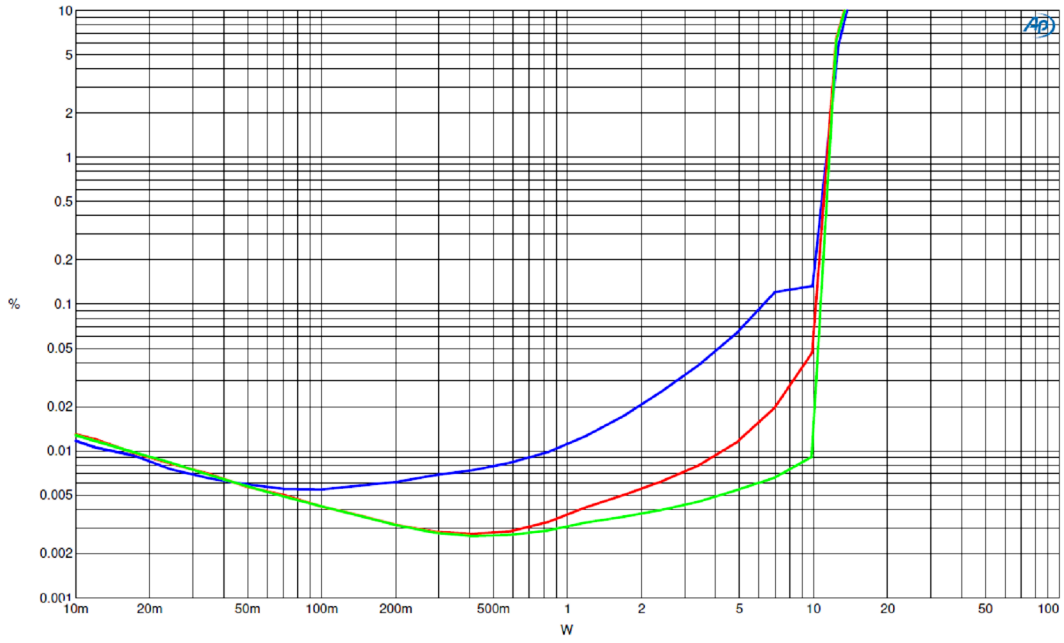
Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Blue	Solid	15	Fft.Ch.1 Ampl	Left	
1	2	Red	Solid	15	Fft.Ch.2 Ampl	Left	

Figure 4. Residual noise.



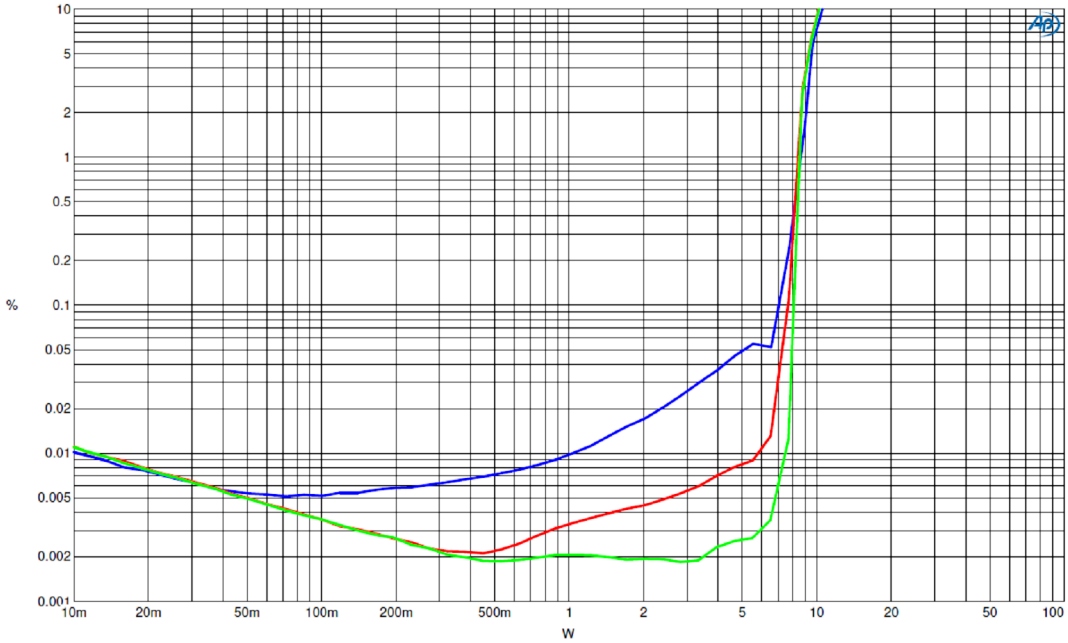
Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	4R, 12V, 6.67kHz
2	1	Red	Solid	15	Anlr.THD+N Ratio	Left	4R, 12V, 1kHz
3	1	Green	Solid	15	Anlr.THD+N Ratio	Left	4R, 12V, 100Hz

Figure 5. THD vs power, 4Ω +12V supply.



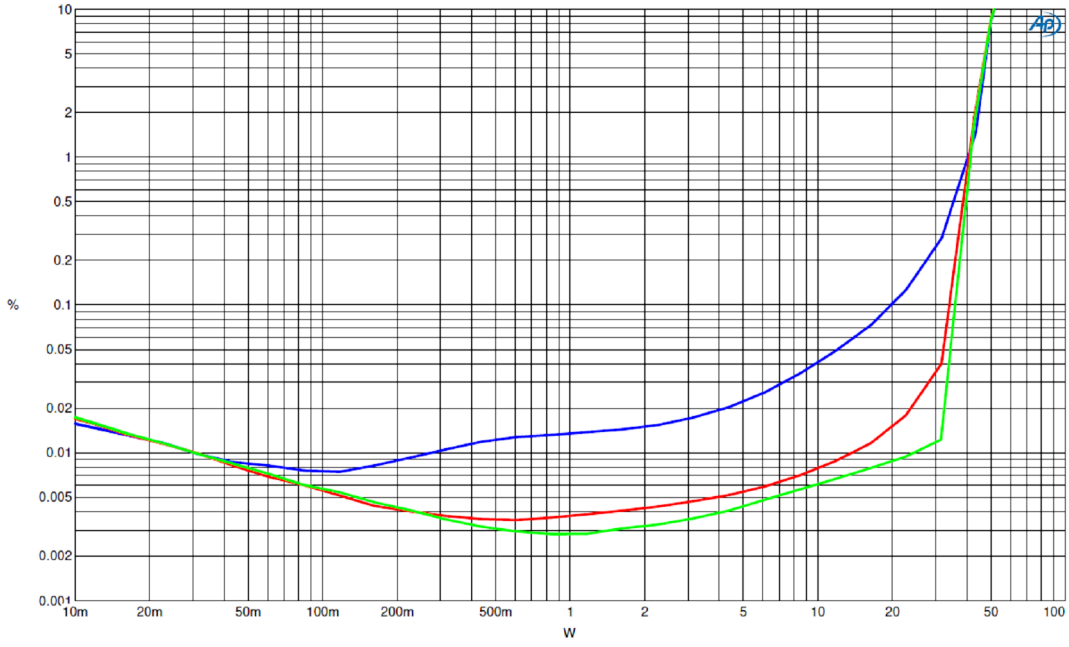
Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	6R, 12V, 6.67kHz
2	1	Red	Solid	15	Anlr.THD+N Ratio	Left	6R, 12V, 1kHz
3	1	Green	Solid	15	Anlr.THD+N Ratio	Left	6R, 12V, 100Hz

Figure 6. THD vs power, 6Ω +12V supply.



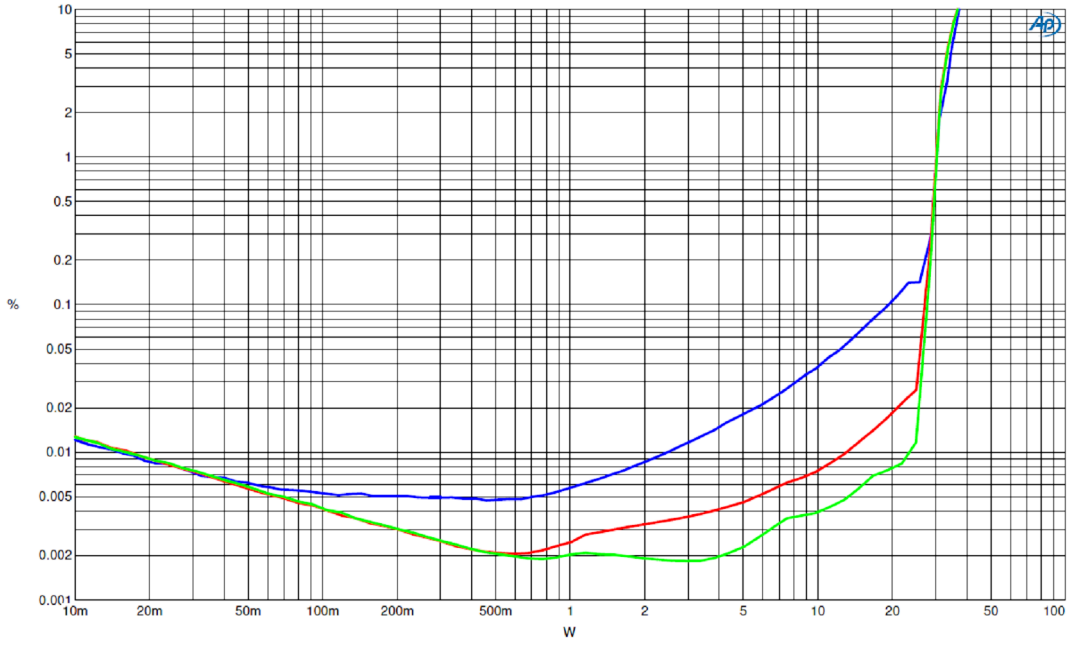
Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	8R, 12V, 6.67kHz
2	1	Red	Solid	15	Anlr.THD+N Ratio	Left	8R, 12V, 1kHz
3	1	Green	Solid	15	Anlr.THD+N Ratio	Left	8R, 12V, 100Hz

Figure 7. THD vs power, 8Ω +12V supply.



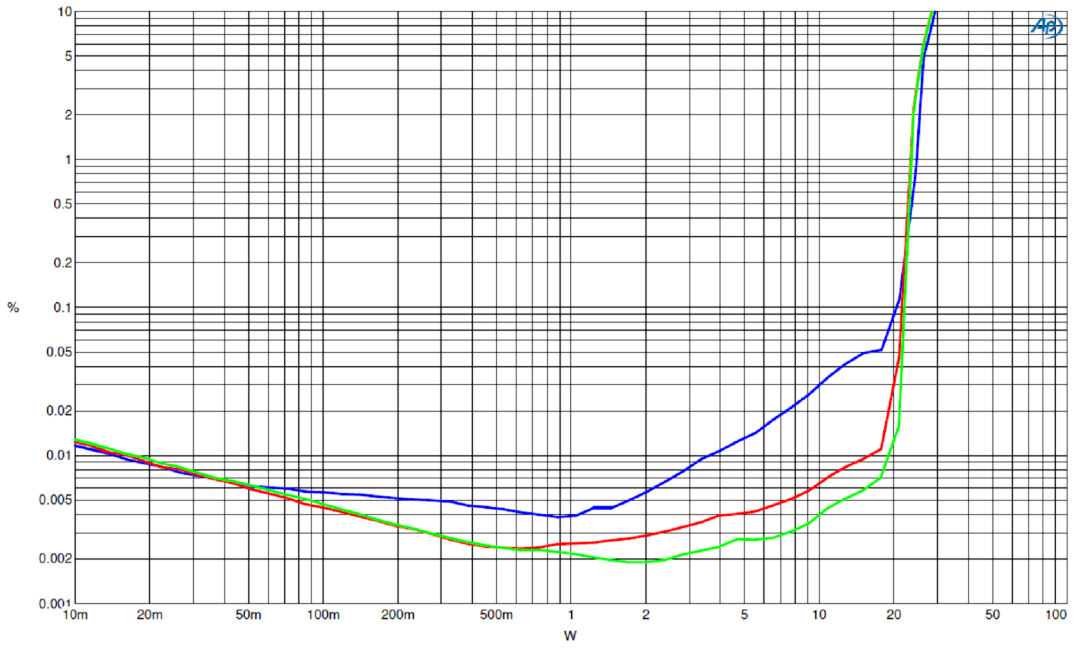
Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	4R, 20V, 6.67kHz
2	1	Red	Solid	15	Anlr.THD+N Ratio	Left	4R, 20V, 1kHz
3	1	Green	Solid	15	Anlr.THD+N Ratio	Left	4R, 20V, 100Hz

Figure 8. THD vs power, 4Ω +20V supply.



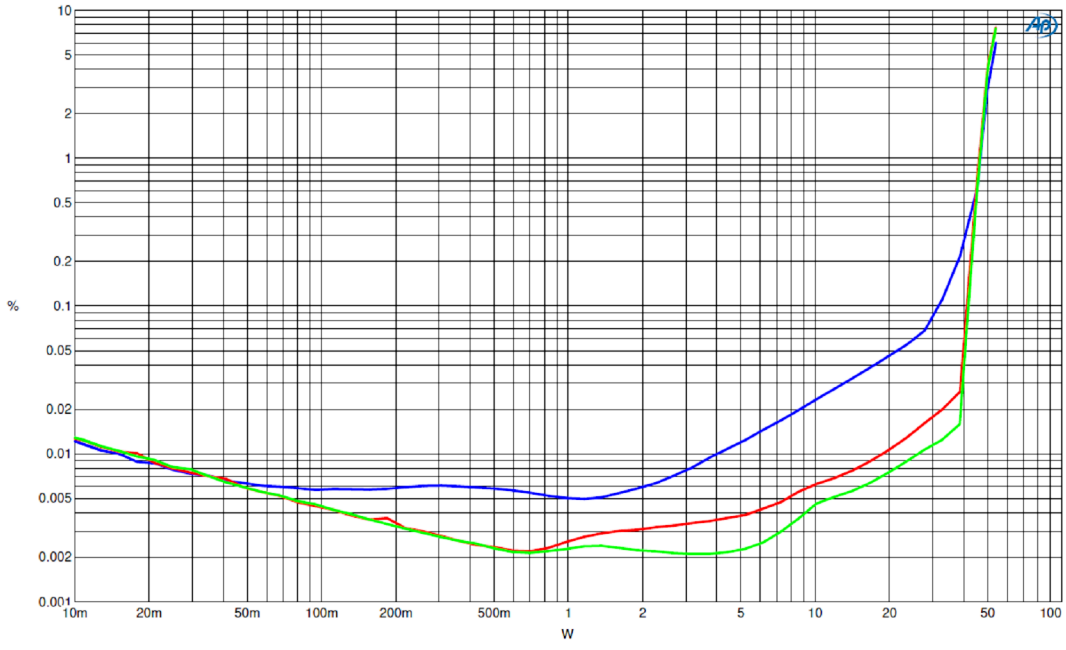
Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	6R, 20V, 6.67kHz
2	1	Red	Solid	15	Anlr.THD+N Ratio	Left	6R, 20V, 1kHz
4	1	Green	Solid	15	Anlr.THD+N Ratio	Left	6R, 20V, 100Hz

Figure 9. THD vs power, 6Ω +20V supply.



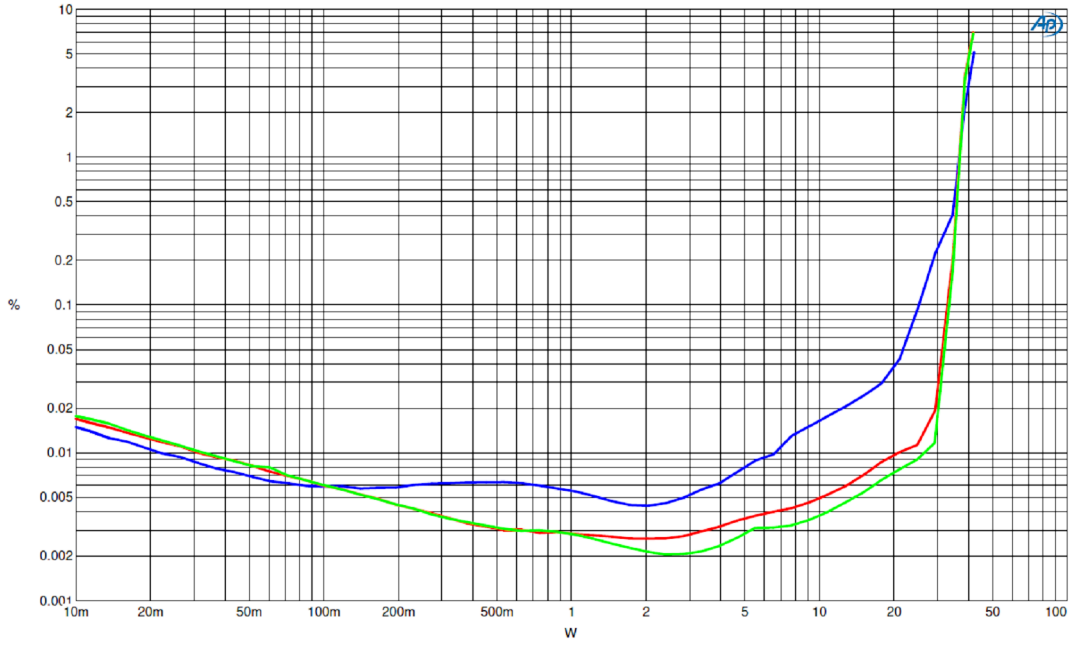
Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	8R, 20V, 6.67kHz
2	1	Red	Solid	15	Anlr.THD+N Ratio	Left	8R, 20V, 1kHz
3	1	Green	Solid	15	Anlr.THD+N Ratio	Left	8R, 20V, 100Hz

Figure 10. THD vs power, 8Ω +20V supply.



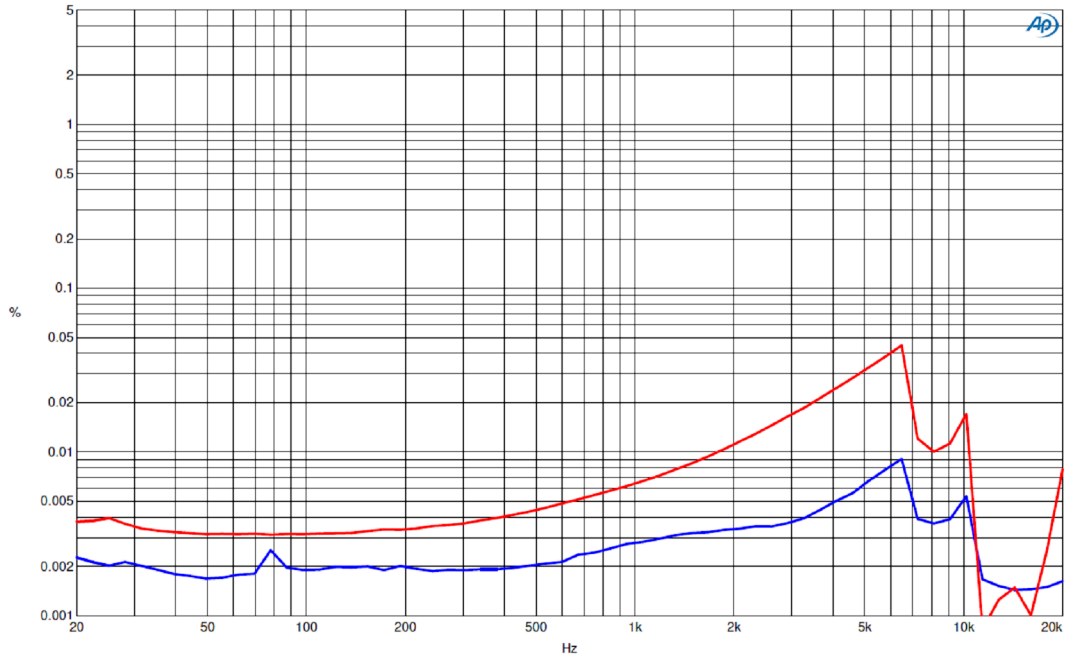
Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	6R, 25V, 6.67kHz
2	1	Red	Solid	15	Anlr.THD+N Ratio	Left	6R, 25V, 1kHz
3	1	Green	Solid	15	Anlr.THD+N Ratio	Left	6R, 25V, 100Hz

Figure 11. THD vs power, 6Ω +25V supply.



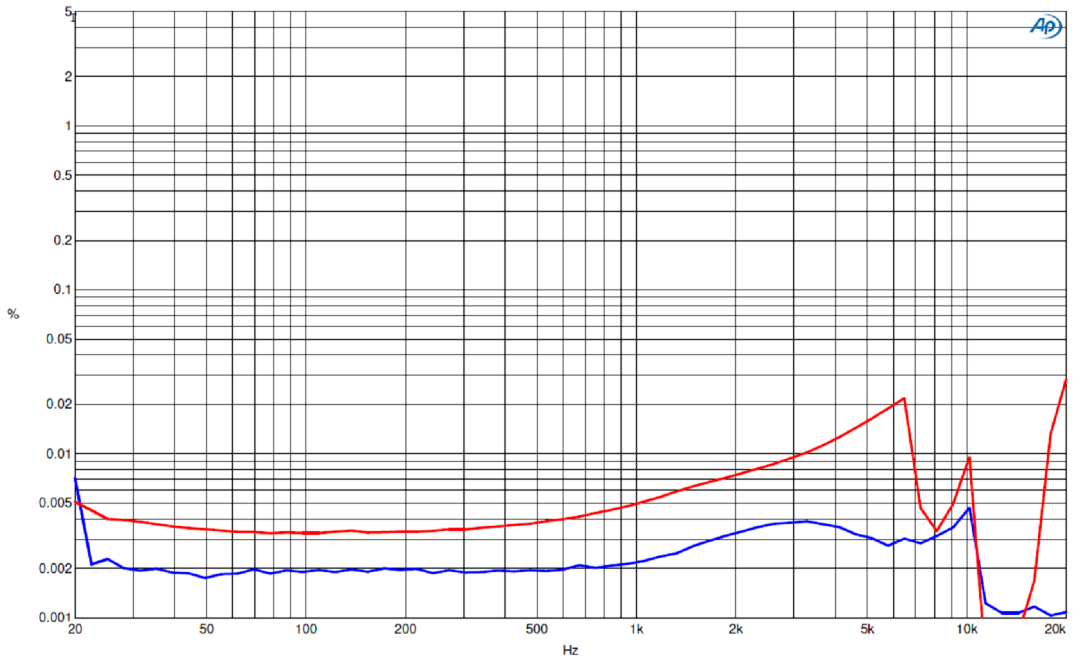
Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	8R, 25V, 6.67kHz
2	1	Red	Solid	15	Anlr.THD+N Ratio	Left	8R, 25V, 1kHz
3	1	Green	Solid	15	Anlr.THD+N Ratio	Left	8R, 25V, 100Hz

Figure 12. THD vs power, 8Ω +25V supply.



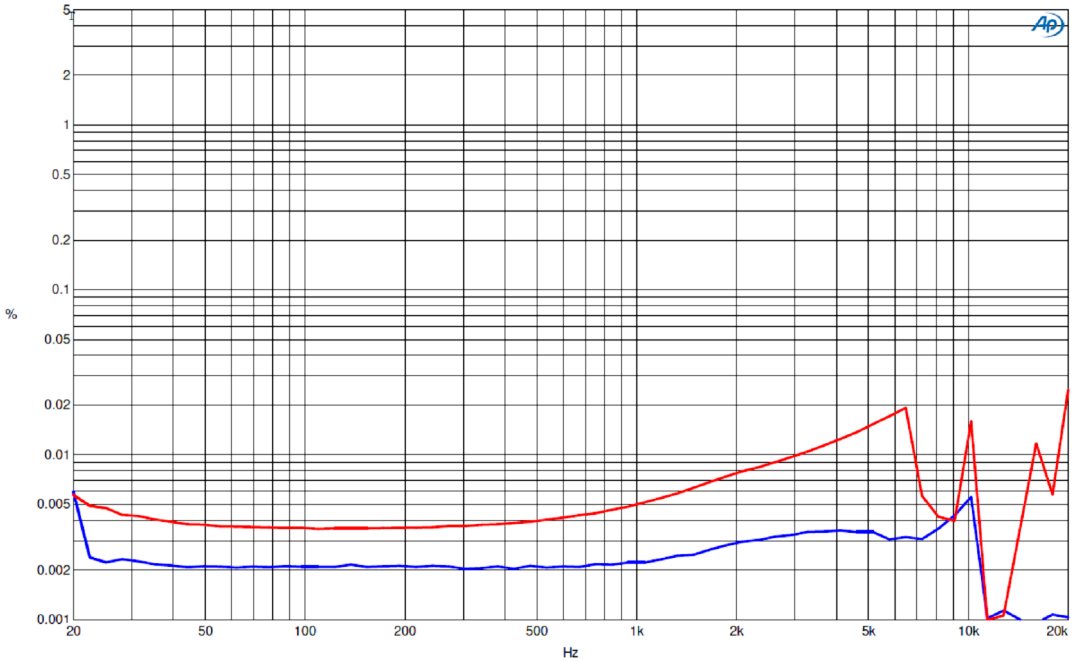
Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	4R, 20V, 1W
2	1	Red	Solid	15	Anlr.THD+N Ratio	Left	4R, 20V, 10W

Figure 13. THD+N vs frequency, 4Ω +20V supply.



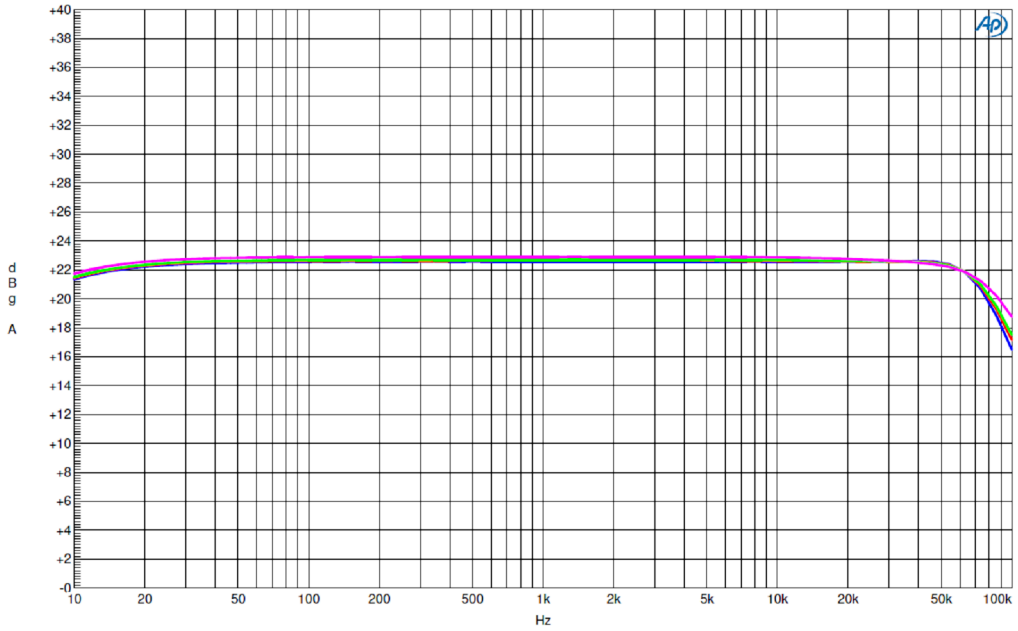
Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	6R, 25V, 1W
2	1	Red	Solid	15	Anlr.THD+N Ratio	Left	6R, 25V, 10W

Figure 14. THD+N vs frequency, 6Ω +25V supply.



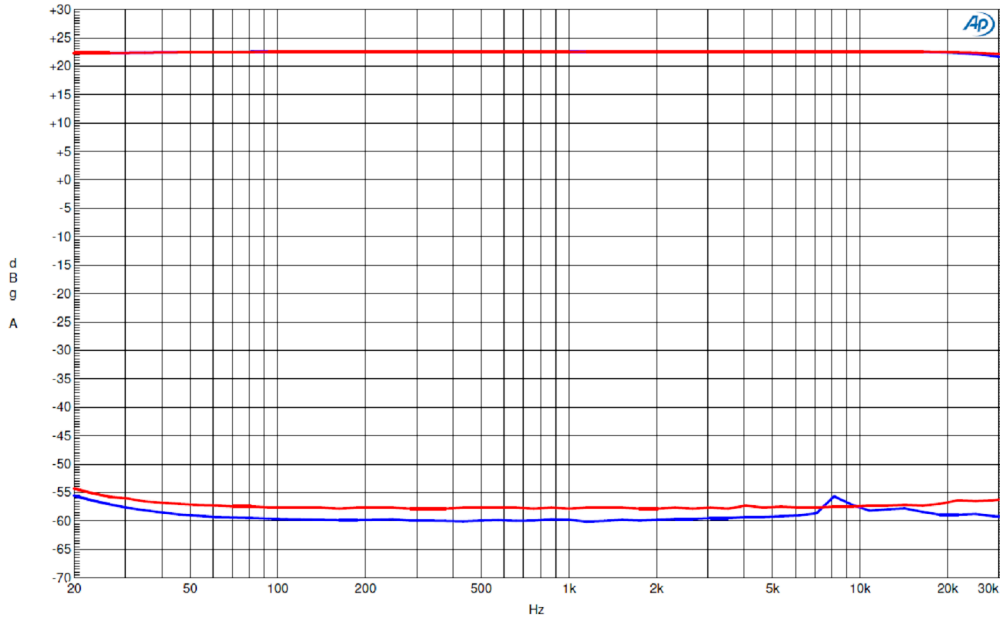
Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	8R, 25V, 1W
2	1	Red	Solid	15	Anlr.THD+N Ratio	Left	8R, 25V, 10W

Figure 15. THD+N vs frequency, 8Ω +25V supply.



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Blue	Solid	15	Anlr.Level A	Left	4R
2	1	Red	Solid	15	Anlr.Level A	Left	6R
3	1	Green	Solid	15	Anlr.Level A	Left	8R
4	1	Magenta	Solid	15	Anlr.Level A	Left	open

Figure 16. Frequency responses 4ohms, 6ohms, 8ohms, open circuit.



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Blue	Solid	15	Anlr.Level A	Left	10W, 4R, Channel 1
1	2	Blue	Solid	15	Anlr.Level B	Right	Channel 2
2	1	Red	Solid	15	Anlr.Level A	Left	1W, 4R, Channel 1
2	2	Red	Solid	15	Anlr.Level B	Right	Channel 2

Figure 17. Inter channel crosstalk

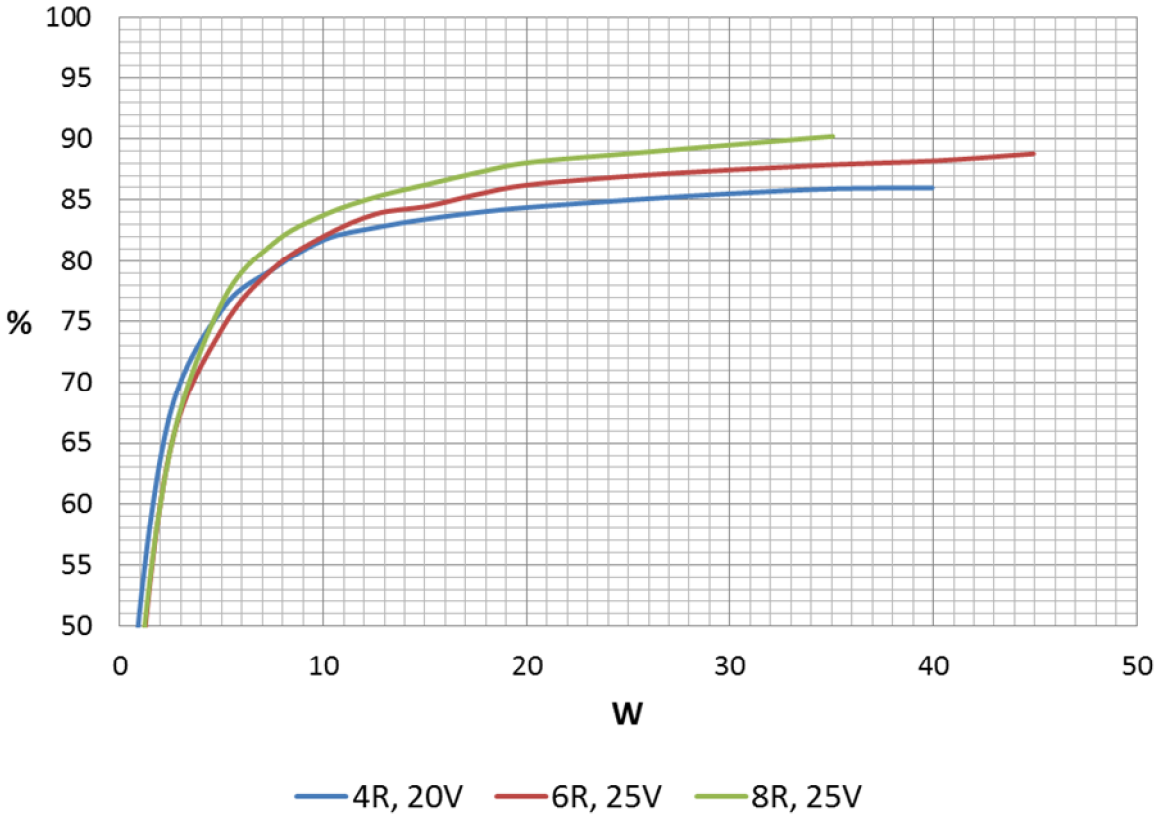


Figure 18. Typical efficiency, both channels powered.

REVISION LOG

Rev.	Date	Item	Sign
PA1	2015-02-11	Preliminary release revision	JN
A	2015-06-02	Official release	RK

ANAVIEW CONTACT INFORMATION

For further information about Anaview's products and technology please contact:
Email: info@anaview.com
Website: www.anaview.com

ETAL Group AB
Fagerstagatan 3
SE-163 53 SPÅNGA
SWEDEN