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Texas Instruments

TAS5100EVM Data Report

Audio Performance & Efficiency

February 2002

TAS5100EVM Specifications

General Test Conditions		Notes
Power Supply:	23 volt DC	Laboratory Power Supply (EA-PS 7065-10A)
Load Impedance:	6Ω	
S/PDIF Sampling Frequency	44.1kHz	

Electrical Data		Notes/Conditions
Continuous Output Power:	2x30 watts	<0.09% THD+N, 1kHz, $T_{AMBIENT}$ = 25°C
Output Stage Efficiency:	90%	P_{OUT} = 2x30W
Total Board Idle Power Consumption:	2.8 watts	
Rated Load Impedance:	4-8 ohms	
Maximum Peak Current:	>7 amperes	1kHz burst
Damping factor:	15	1kHz, Load: 8Ω

Coaxial S/PDIF Input		Notes/Conditions
THD+N, 1 watt :	0.034%	1kHz
THD+N, 30 watt:	0.079%	1kHz
Dynamic Range, A-weighted:	93dB	Ref: rated power, AES17 filter
Channel separation:	70dB	1kHz, P_{OUT} = 30W
Frequency Response:	20Hz – 20kHz	+0.5dB –0.1dB, 25 watt

Analog Line Input		Notes/Conditions
THD+N, 1 watt:	0.030%	1kHz
THD+N, 30 watt:	0.080%	1kHz
Dynamic Range, A-weighted:	91 dB	Ref: rated power, AES17 filter
Channel separation:	70dB	1kHz, P_{OUT} = 30W
Frequency Response:	35Hz – 20kHz	+/-0.5dB, 25 watt
Sensitivity:	2.25V_{RMS}	30W
Input Impedance:	10 kohms	1kHz

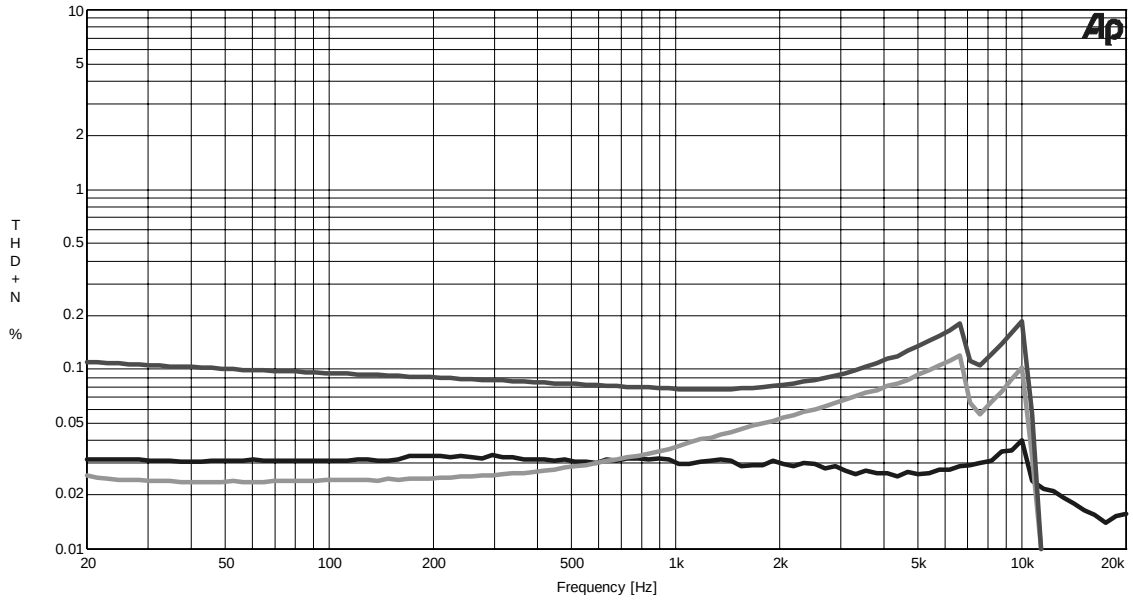
Analog Line Output		Notes/Conditions
Maximum Output Voltage:	0.71V_{RMS}	
Output Impedance:	75 ohms	1kHz

Physical Specifications		
PCB Dimensions:	85x130 mm (3.35x5.12”)	Height x Width
Aluminum Plate Dimension:	115x160 mm (4.52x6.30”)	Height x Width
Board weight:	0.15 kg (0.33 lb)	Components + PCB
Total weight:	0.25 kg (0.55 lb)	Components + PCB + Mechanics

Note: All electrical and audio specifications are typical values.

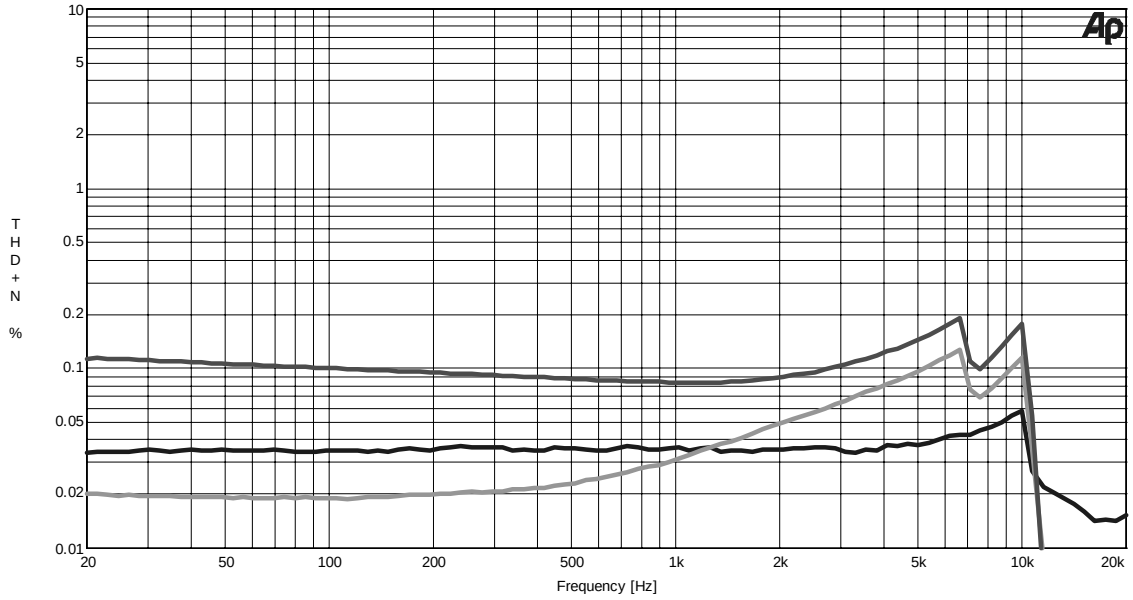
THD+N versus Frequency

Left Channel



Comments:	**Blue: 1 watt**	**Green: 10 watts**	**Red: 30 watts**	Sample frequency: 44.1kHz
	Power supply: 23 volt DC	Load: 6 ohms	Filter: AES17	TAS3002: Bypassed, Coaxial Input

Right Channel

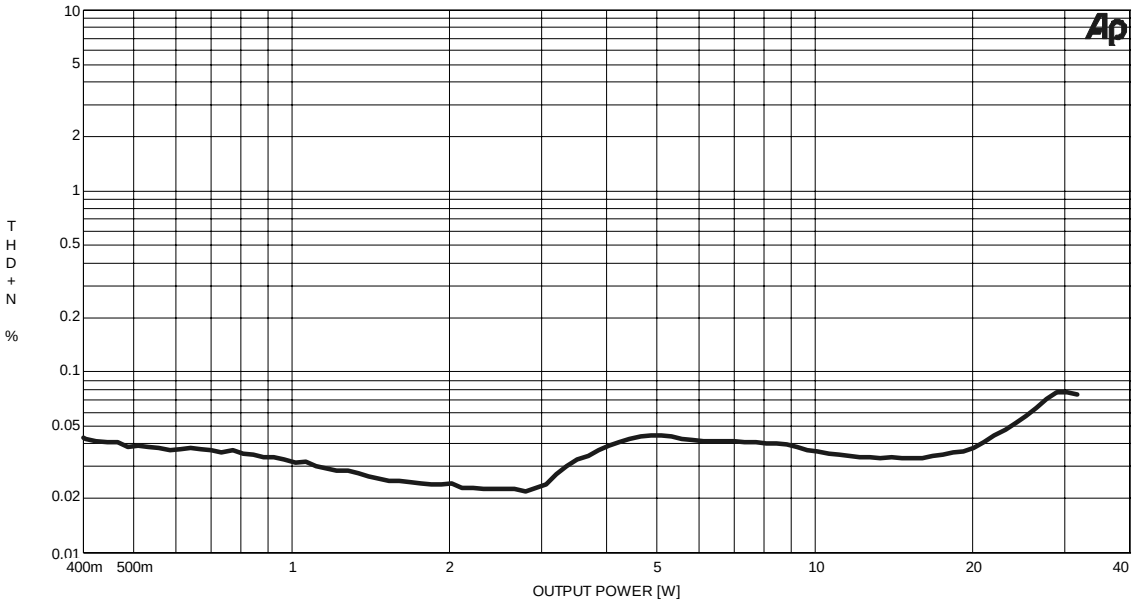


Comments:	**Blue: 1 watt**	**Green: 10 watts**	**Red: 30 watts**	Sample frequency: 44.1kHz
	Power supply: 23 volt DC	Load: 6 ohms	Filter: AES17	TAS3002: Bypassed, Coaxial Input

Note: THD+N at high frequencies depends on the output-filter coil material.

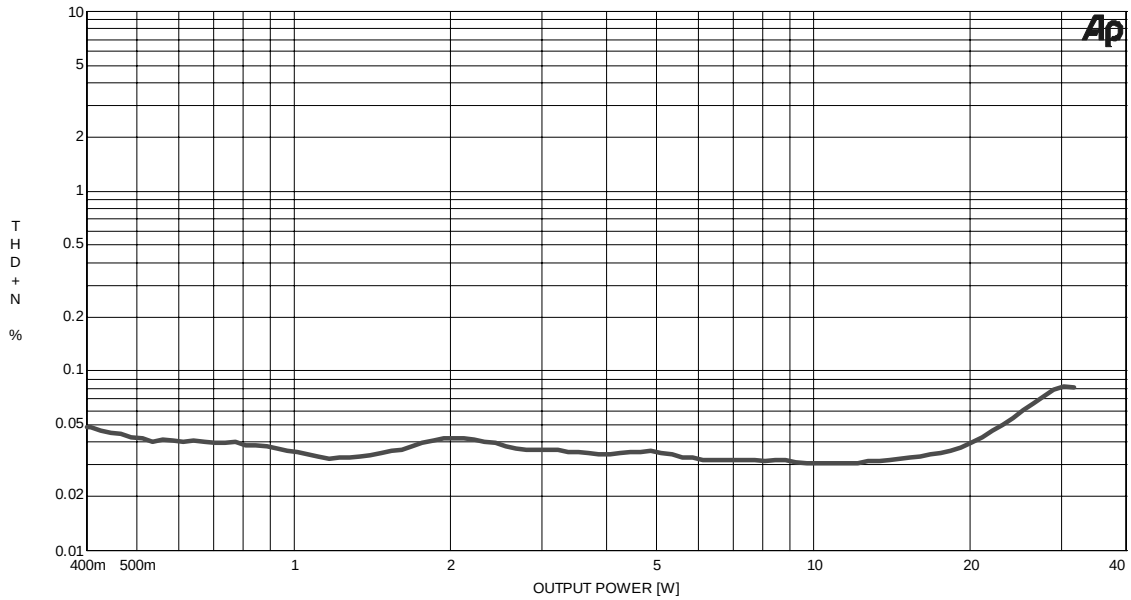
THD+N versus Power

Left Channel



Comments:	Power supply: 23 volt DC	Load: 6 ohms	Filter: AES17
	Input signal: 1kHz	Sample frequency: 44.1kHz	TAS3002: Bypassed, Coaxial Input

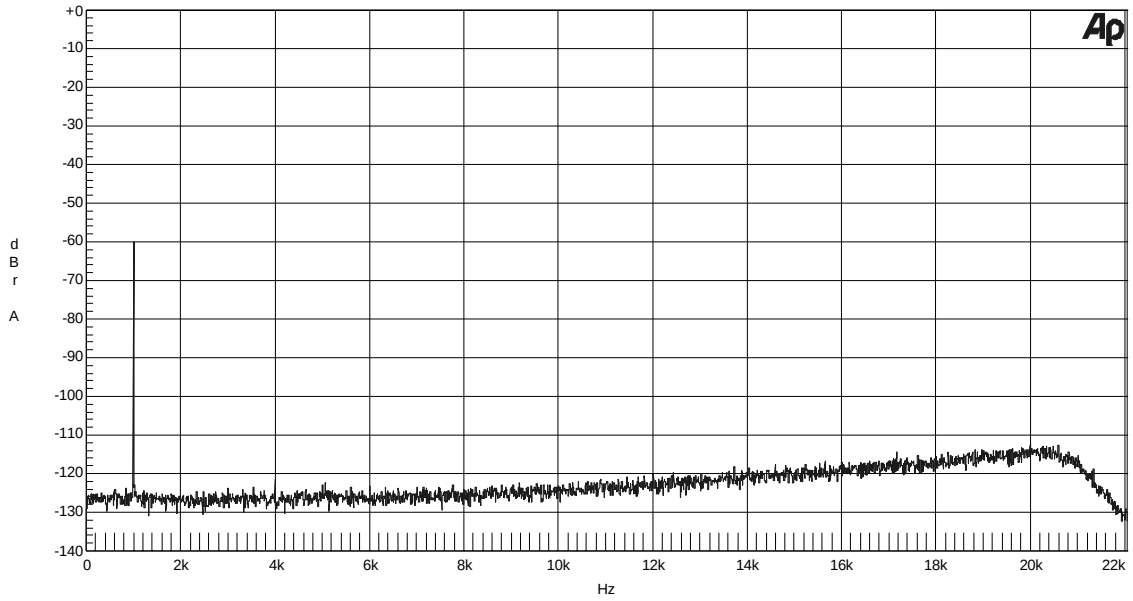
Right Channel



Comments:	Power supply: 23 volt DC	Load: 6 ohms	Filter: AES17
	Input signal: 1kHz	Sample frequency: 44.1kHz	TAS3002: Bypassed, Coaxial Input

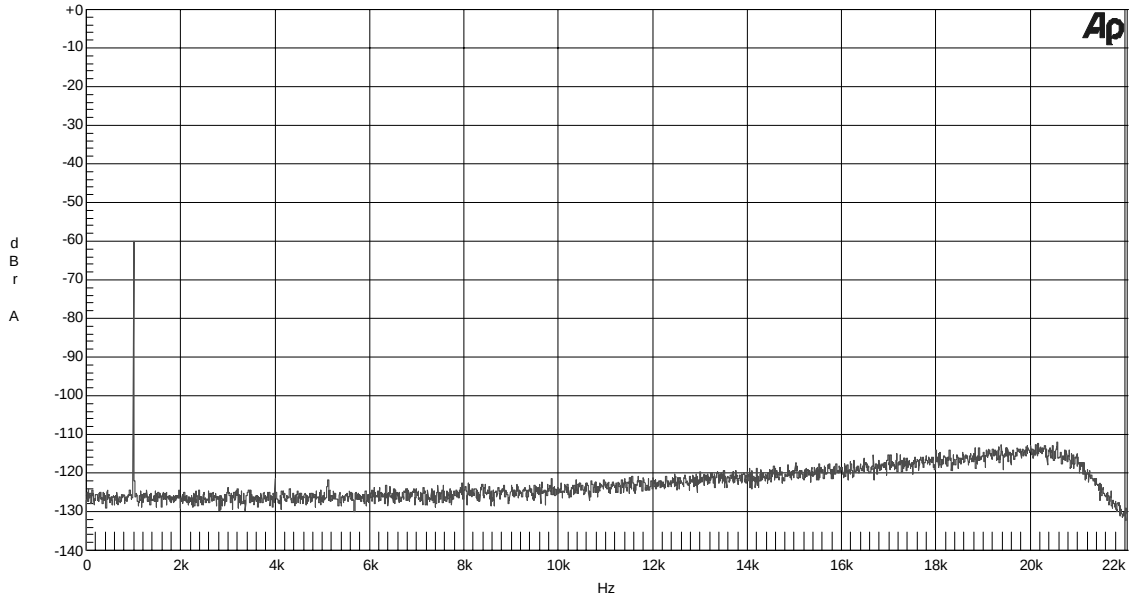
FFT with –60dB input signal

Left Channel



Comments:	Power supply: 23 volt DC	Load: 6 ohms	Filter: AES17	TAS3002: Bypassed, Coaxial Input
	Input signal: 1kHz	Sample frequency: 44.1kHz	FFT size: 16k	Reference: 13.7 volt = full scale

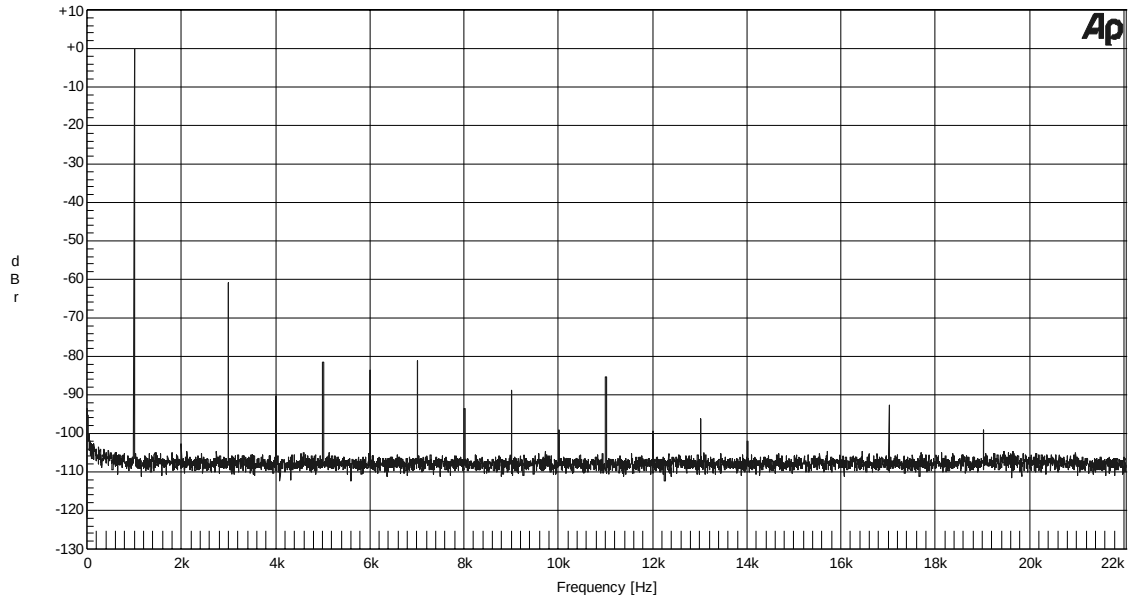
Right Channel



Comments:	Power supply: 23 volt DC	Load: 6 ohms	Filter: AES17	TAS3002: Bypassed, Coaxial Input
	Input signal: 1kHz	Sample frequency: 44.1kHz	FFT size: 16k	Reference: 13.7 volt = full scale

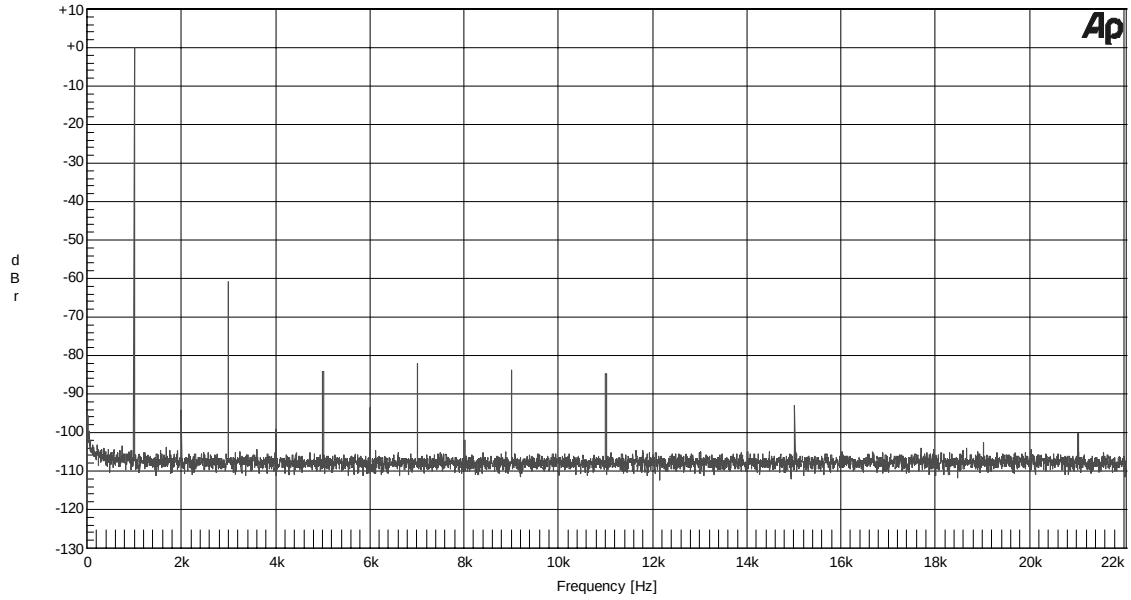
FFT @ 30 watts output power

Left Channel



Comments:	Power supply: 23 volt DC	Load: 6 ohms	Filter: AES17	TAS3002: Bypassed, Coaxial Input
	Input signal: 1kHz	Sample frequency: 44.1kHz	FFT size: 16k	Reference: 13.7 volt = full scale

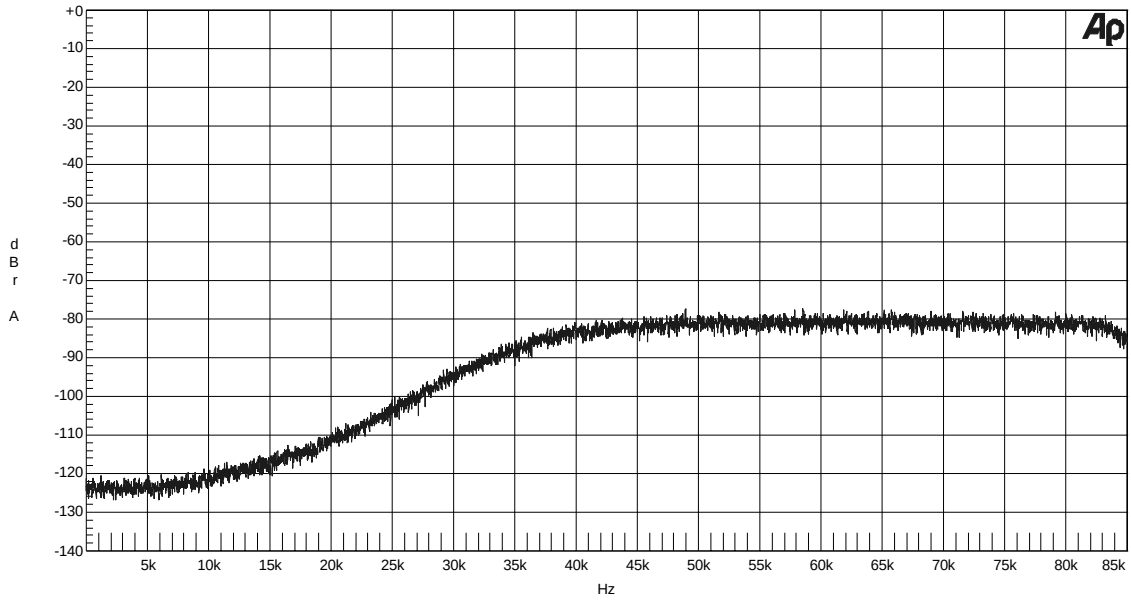
Right Channel



Comments:	Power supply: 23 volt DC	Load: 6 ohms	Filter: AES17	TAS3002: Bypassed, Coaxial Input
	Input signal: 1kHz	Sample frequency: 44.1kHz	FFT size: 16k	Reference: 13.7 volt = full scale

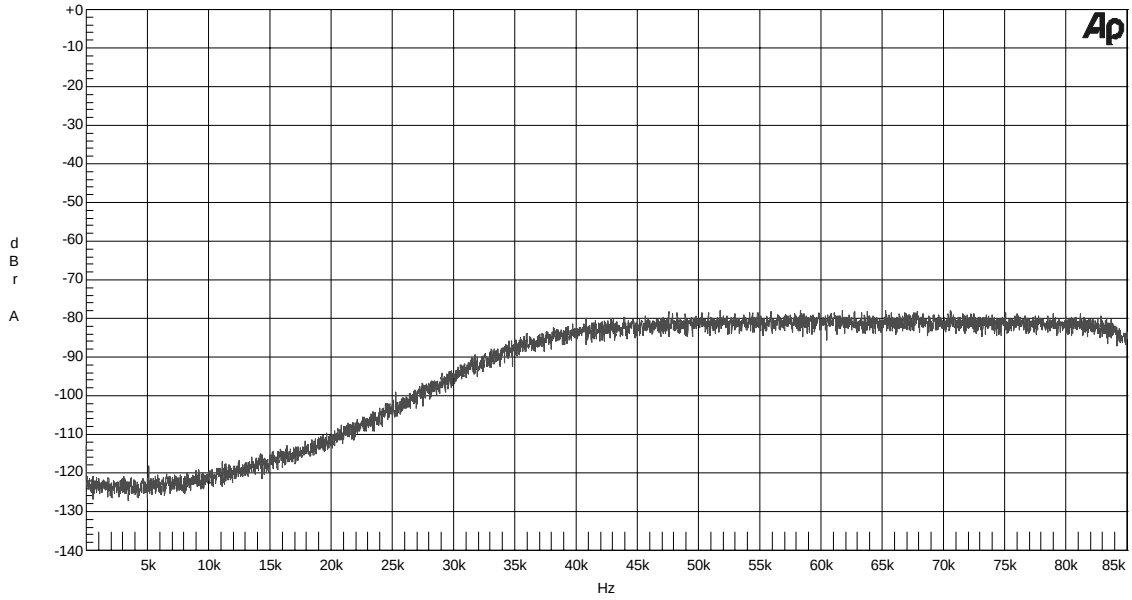
Noise-floor

Left Channel



Comments:	Power supply: 23 volt DC	Load: 6 ohms	FFT size: 16k	Reference: 13.7 volt = full scale
	Input signal: 0Fs	Sample frequency: 44.1kHz		TAS3002: Bypassed, Coaxial Input

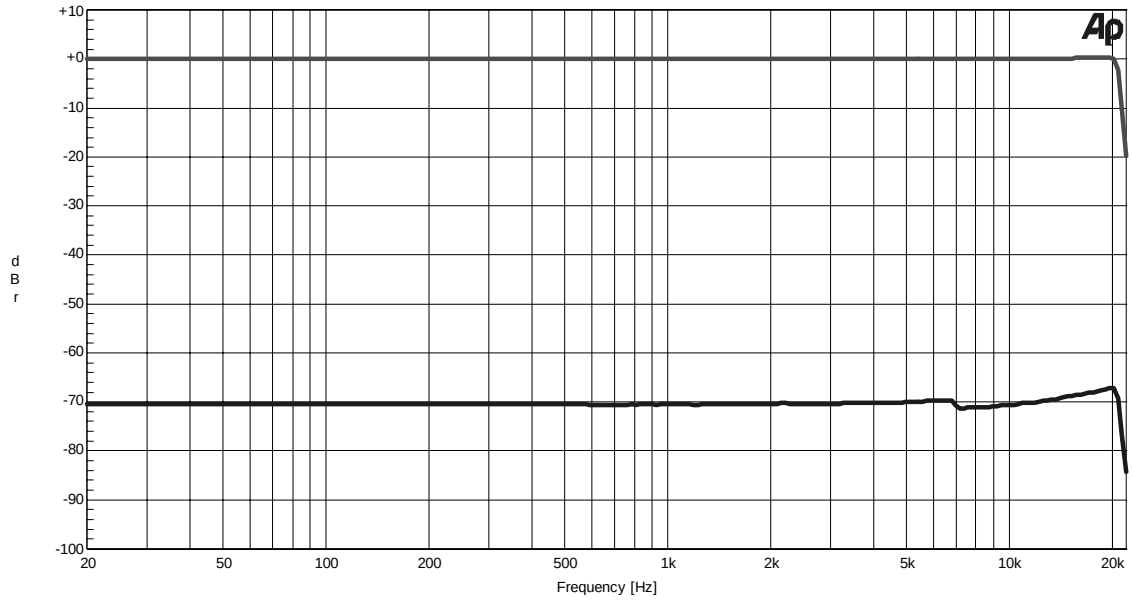
Right Channel



Comments:	Power supply: 23 volt DC	Load: 6 ohms	FFT size: 16k	Reference: 13.7 volt = full scale
	Input signal: 0Fs	Sample frequency: 44.1kHz		TAS3002: Bypassed, Coaxial Input

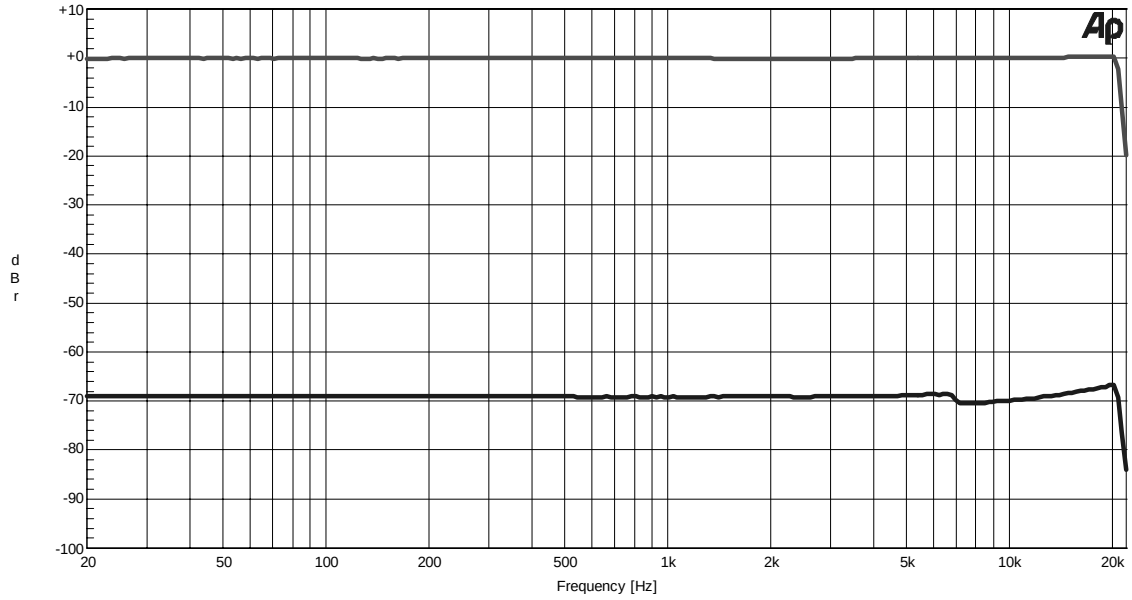
Channel Separation versus Frequency

Left Channel



Comments:	**Blue: Left Output**	**Red: Right Output**		
	Input left channel: 0Fs	Load: 6 ohms	Sample frequency: 44.1kHz	TAS3002: Bypassed, Coaxial Input
	Input right channel: 1Fs	Filter: AES17	Power supply: 23 volt DC	Reference: 13.7 volt = full scale

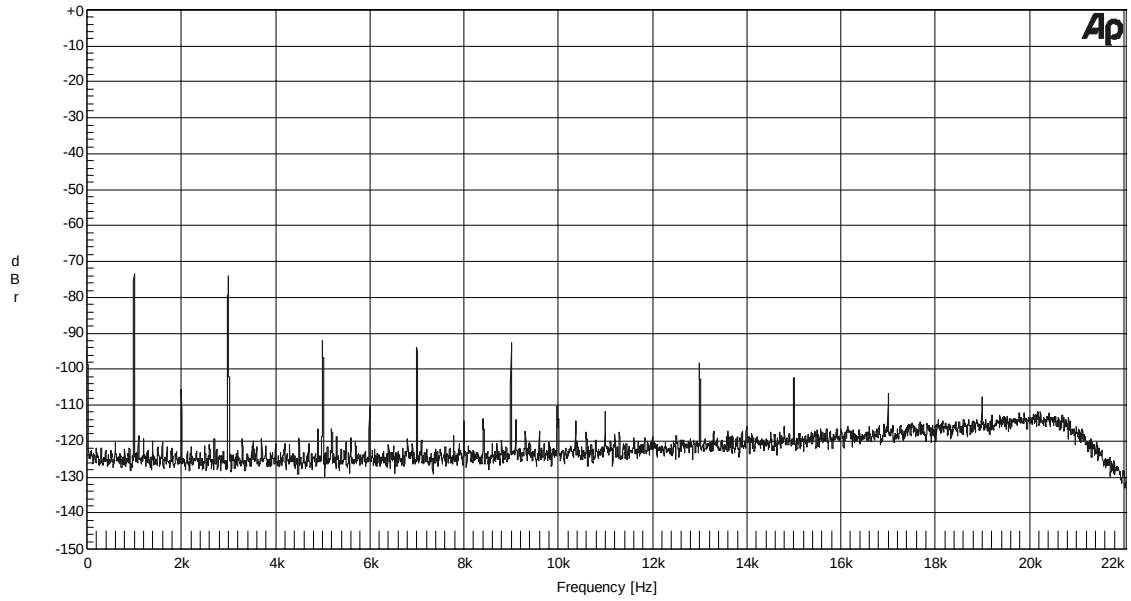
Right Channel



Comments:	**Blue: Right Output**	**Red: Left Output**		
	Input left channel: 1Fs	Load: 6 ohms	Sample frequency: 44.1kHz	TAS3002: Bypassed, Coaxial Input
	Input right channel: 0Fs	Filter: AES17	Power supply: 23 volt DC	Reference: 13.7 volt = full scale

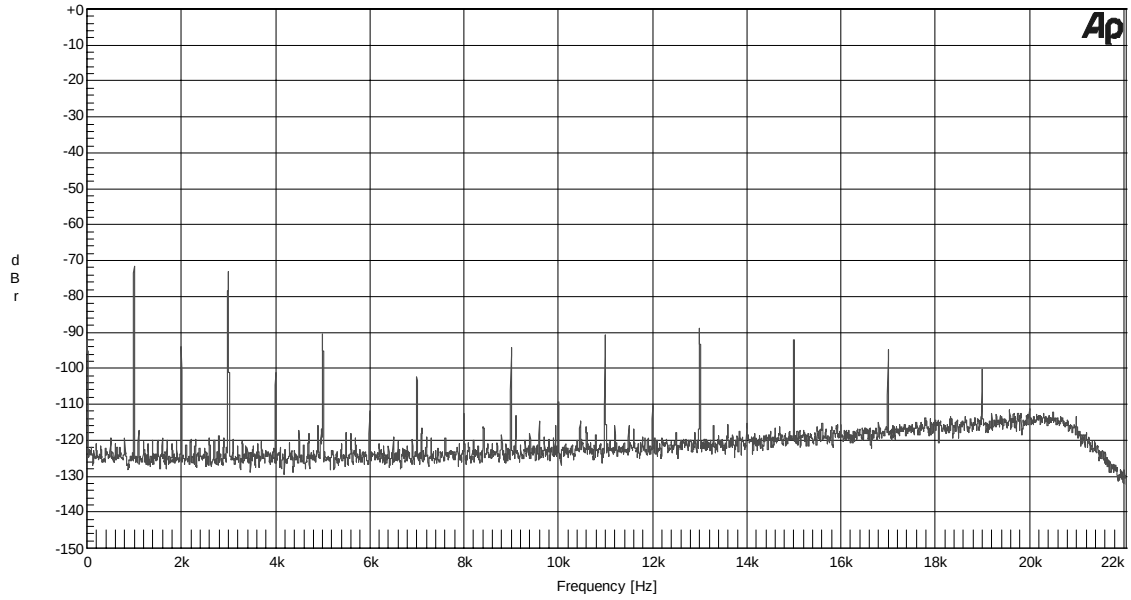
Channel Separation FFT

Left Channel



Comments:	Left input: 0Fs	Load: 6 ohms	Sample frequency: 44.1kHz	TAS3002: Bypassed, Coaxial Input
	Right input: 1kHz, 1Fs	Filter: AES17	Power supply: 23 volt DC	Reference: 13.7 volt = full scale

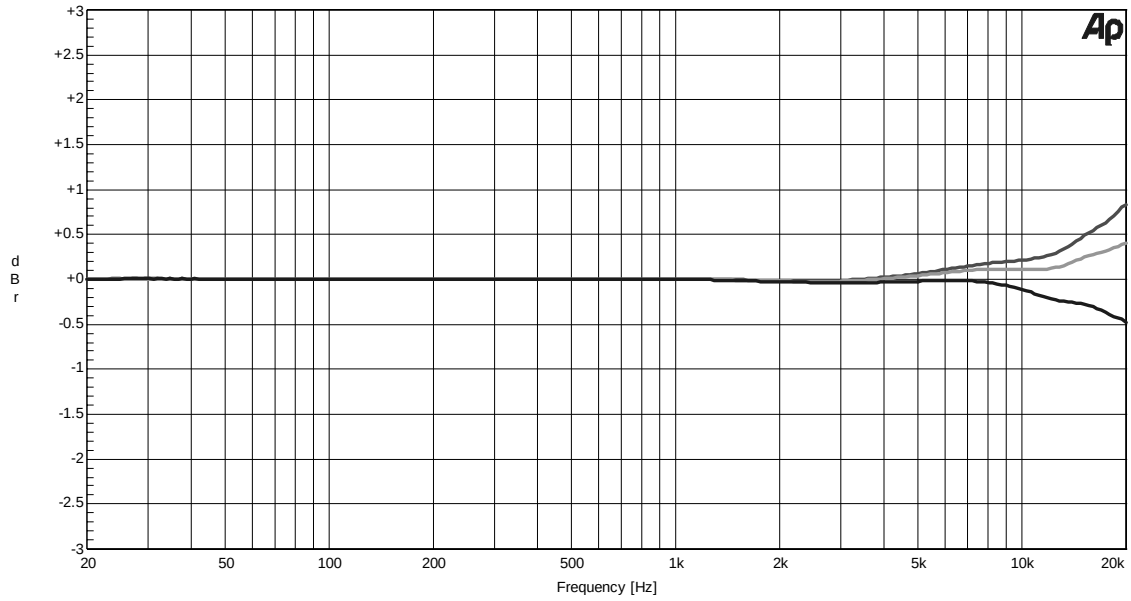
Right Channel



Comments:	Left input: 1kHz, 1Fs	Load: 6 ohms	Sample frequency: 44.1kHz	TAS3002: Bypassed, Coaxial Input
	Right input: 0Fs	Filter: AES17	Power supply: 23 volt DC	Reference: 13.7 volt = full scale

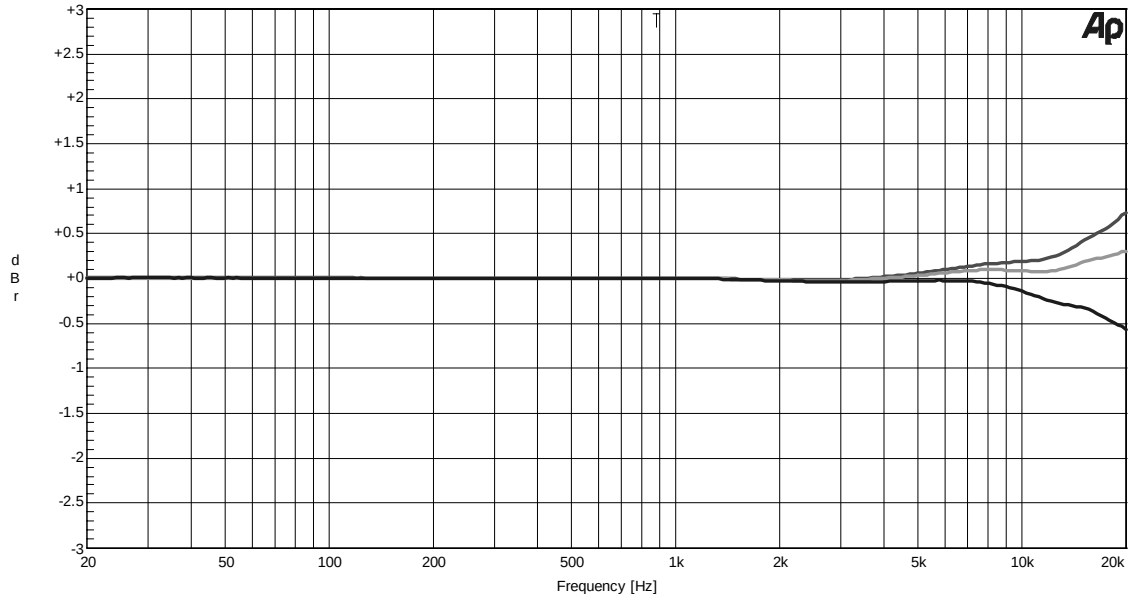
Frequency Response

Left Channel



Comments:	**Blue: 4 ohms load**	**Green: 6 ohms load**	**Red: 8 ohms load**	TAS3002: Bypassed, Coaxial Input
	Input signal: 1kHz	Sample frequency: 44.1kHz	Output Power: 25 watts	Power supply: 23 volt DC

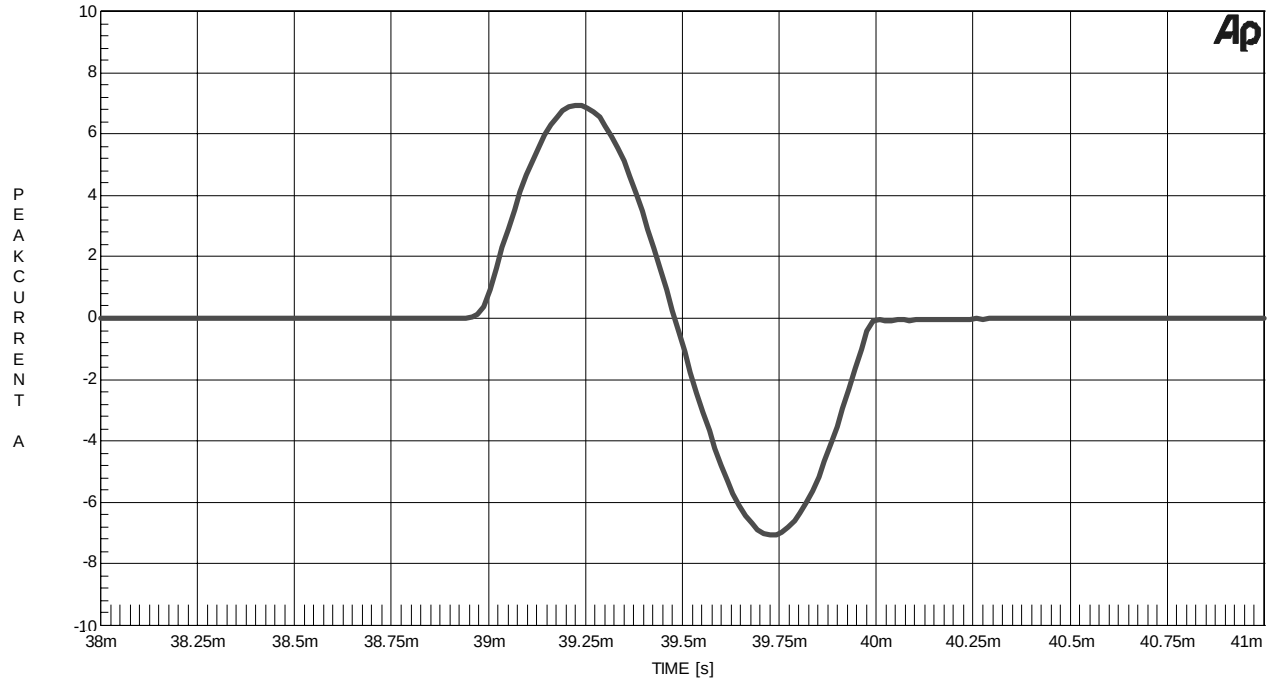
Right Channel



Comments:	**Blue: 4 ohms load**	**Green: 6 ohms load**	**Red: 8 ohms load**	TAS3002: Bypassed, Coaxial Input
	Input signal: 1kHz	Sample frequency: 44.1kHz	Output Power: 25 watts	Power supply: 23 volt DC

Peak Current

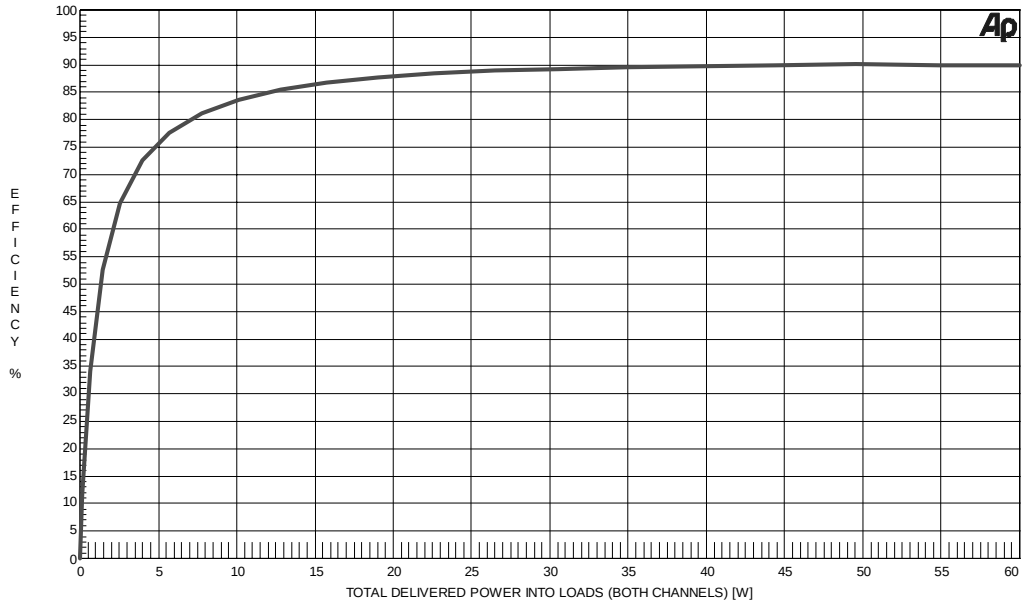
Left Channel



Comments:	Input signal: 1kHz	Sample frequency: 44.1kHz	TAS3002: Bypassed, Coaxial Input
	Load: 1 ohms	Power supply: 23 volt DC	

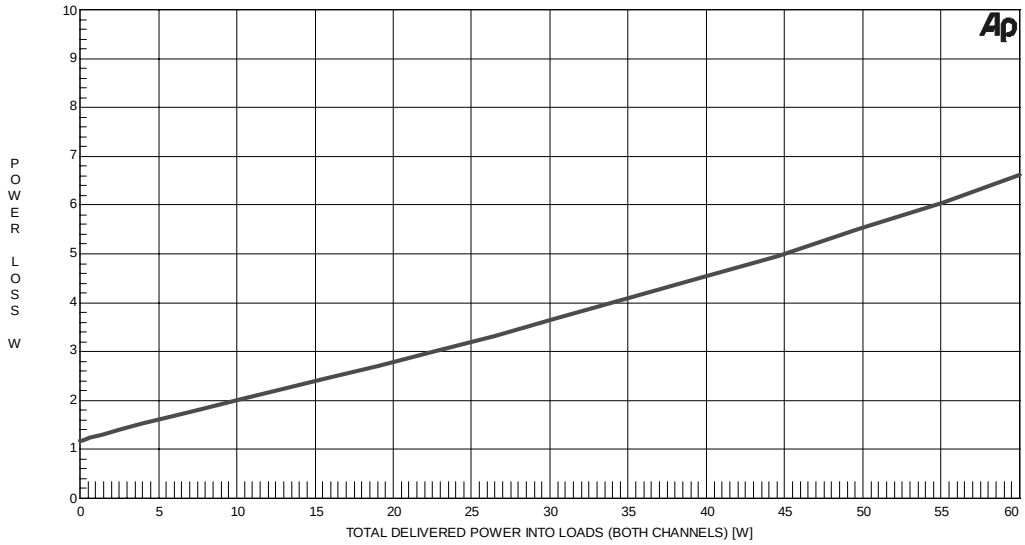
Efficiency & Power Loss

Amplifier Efficiency versus Total Delivered Power



Comments: Input signal: 1kHz Sample frequency: 44.1kHz Loads: 6 ohms Power supply: 23 volt DC

Power Losses in Amplifier versus Total Delivered Power



Comments: Input signal: 1kHz Sample frequency: 44.1kHz Loads: 6 ohms Power supply: 23 volt DC

Output Stage Idle Loss:	1.2 watt
Control Section Idle Loss:	1.6 watt
Total Idle Power Consumption:	2.8 watts

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