

8. RMAA Test Guide

The Xonar HDAV 1.3 driver CD includes RightMark Audio Analyzer (RMAA), popular software intended for testing the quality of audio equipment, be it a sound card, portable MP3 player, consumer CD/DVD player, or a speaker system. The measurements are conducted by playing and recording test signals, and using frequency analysis algorithms. The following provides a step-by-step loop-back test guide for your Xonar HDAV 1.3 card.

8.1 Setting Up Xonar HDAV 1.3 Card

Open the Xonar HDAV Center. Use the settings below:

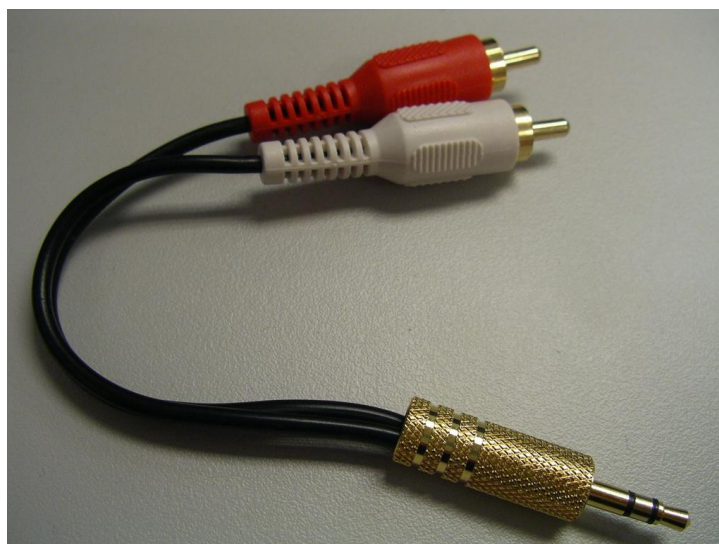
1. Select the sample rate you will be using with RMAA (here we set 48KHz for testing 48KHz/24bit signals).
2. Set analog output to 2-speaker mode (to get rid of any channel processing over RMAA stereo signals in the driver)
3. Turn off all sound effects including Dolby, DTS, 7.1 speaker shifter, EQ, Environment, etc. A quick way to do so is to enable the "Hi-Fi mode" button in the Audio Center.



4. Go to the Mixer Recording page and select "Line In" as the recording source. Click "Reset" to make sure the recording volume is on the default highest level (0dB). This allows you to get realistic output and input quality ratings for the Xonar HDAV 1.3 card.



Note: You should use an external line cable as follows (as short as possible) to connect the Front-Out jack to the Line-In jack for loop-back testing. In that case, please select "Line In" as the recording source on the mixer page.



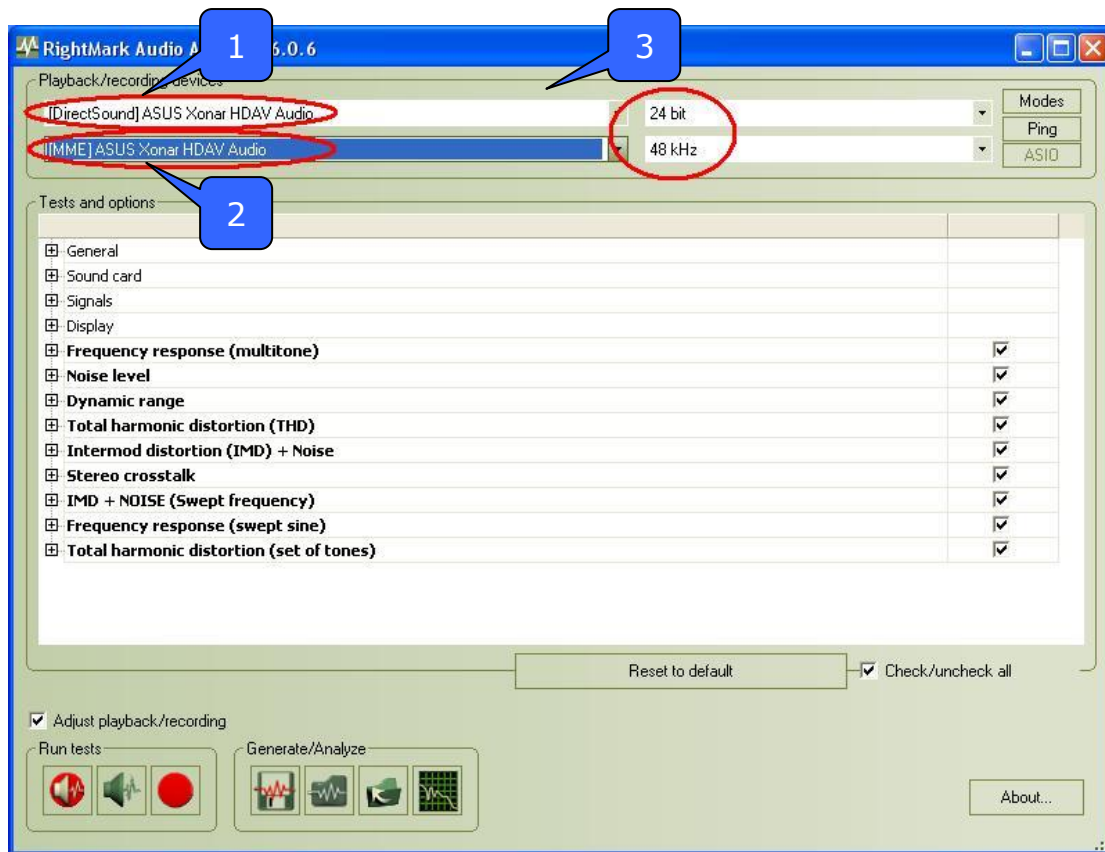
5. Click "Reset" on the playback volume mixer page to keep the volume setting on default.
6. Turn the master volume to the MAX level (0dB)



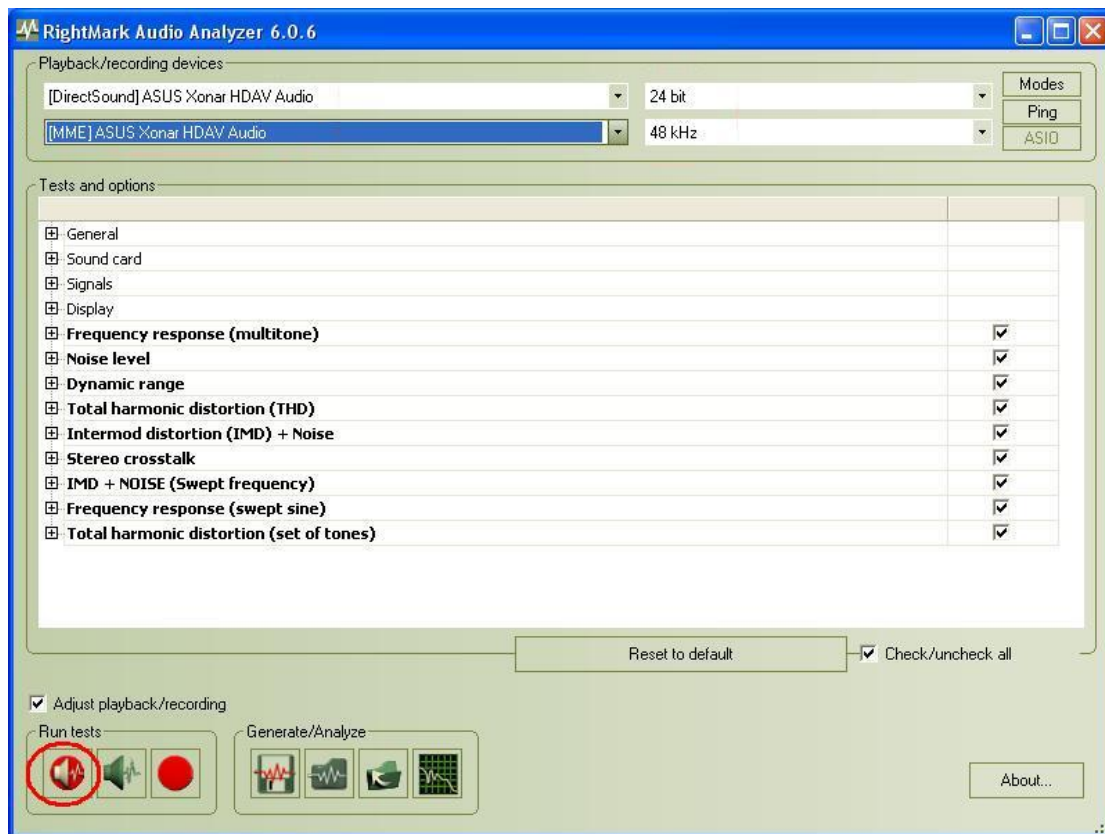
8.2 Configuration and Test with RMAA

Start RMAA and follow the setup procedure below.

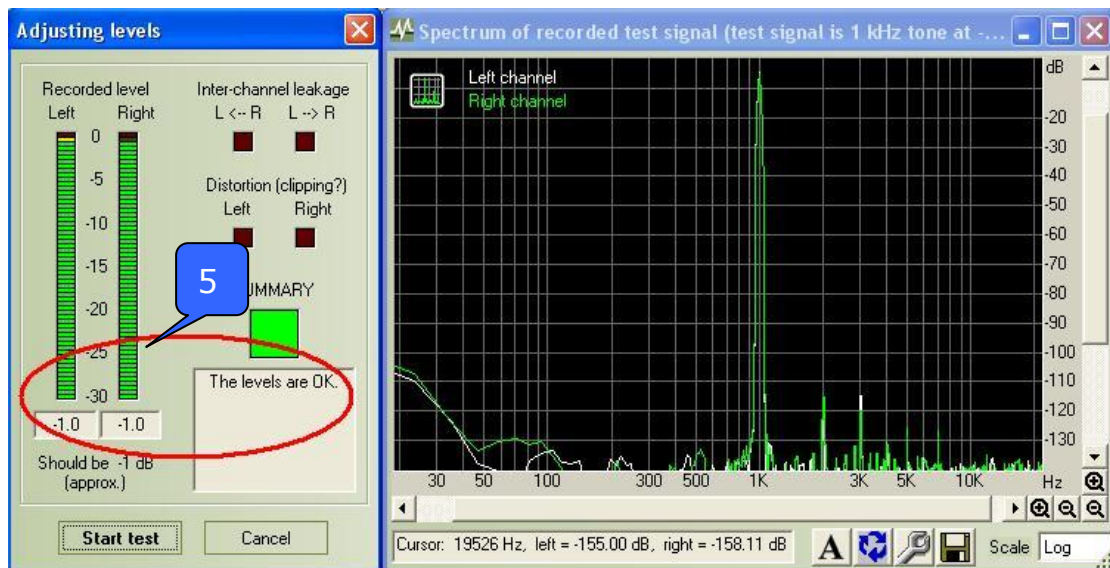
1. Select playback devices as "[DirectSound] ASUS Xonar HDAV Audio". (because Windows MME mode doesn't support high-resolution 24bit audio playback and the data may be manipulated by Windows so that the real hardware quality can not be measured properly.)
2. Select recording devices as "[MME] ASUS Xonar HDAV Audio".
3. Select 24bit and 48KHz for the test signals. (If you change the format here, please remember to go back to set the same sample rate output in the Xonar HDAV Center)



4. Click loop-back mode test button



5. Check that the Adjusting level window shows that the levels are OK (the level meter will be green).

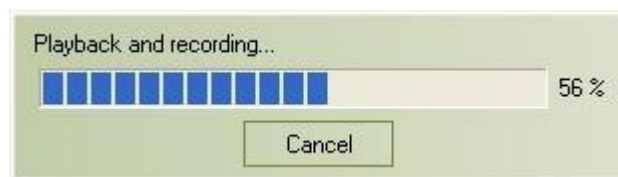
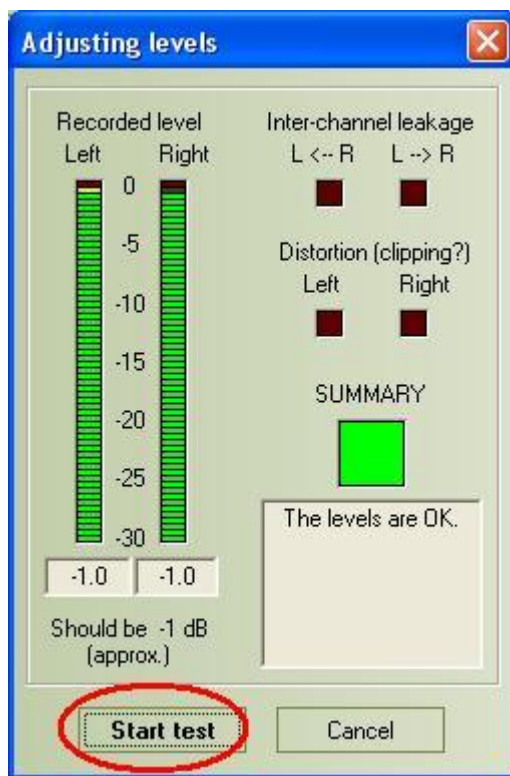


6. If the recording volume level is not high enough, please check and make the WAVE and Master Volume have been at the maximum level; Instead, if the recording volume level is too high, please lower the WAVE and Master volumes gradually until the level is ok.

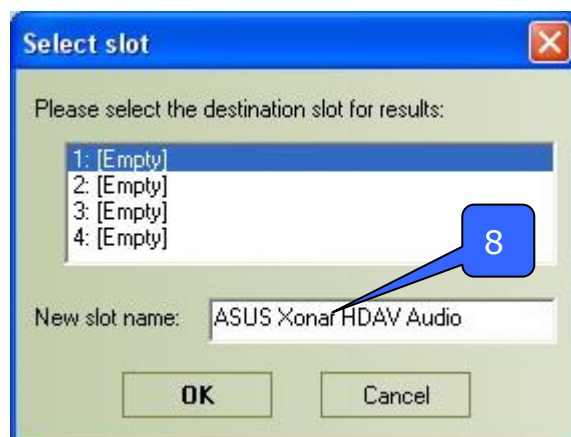



7. Begin the test by clicking the "Start test" button. If you cannot get the level to be "OK" after the previous step, click "Start test" anyways and proceed.

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8. Enter "ASUS Xonar HDAV Audio" in the New slot name and select one Empty slot. Then click "OK".



9. RMAA will pop up the Test results window. You can click the "Select" checkbox and click  to "Make html report".

Test results

Device:	ASUS Xonar HDAV Audio	[Empty]	[Empty]	[Empty]
Sampling mode:	24-bit, 48 kHz			
Frequency response (multitone), dB	+0.03, -0.04			
Noise level, dBA	-116.2			
Dynamic range, dBA	116.1			
Total harmonic distortion (THD), %	0.0003			
Intermodulation distortion + noise, %	0.0007			
Stereo crosstalk, dB	-115.5			
Intermodulation distortion + noise (swept freqs), %	0.0007			
Frequency response (swept sine), dB	+0.0, -0.0			
Total harmonic distortion (swept freqs), dB	-98.20, -106.49			

☒ Select
 ☐ Select
 ☐ Select
 ☐ Select

HINT: Right-click on result boxes to view the detailed reports...

10. Check and key in the report name/options as follows and then click "OK".

HTML report options

HTML Titles and Headings:

Soundcard/device name: ASUS Xonar HDAV Audio

Sampling mode: 24-bit, 48 kHz

Testing conditions: External loopback (line-out - line-in)

Comments:

Report options:

Report language: English

Report style: White background

OK Cancel

8.3 RMAA Testing Results

Open the html file you created and saved in the test above, and it will display the report with both data and plots in your browser. The following report is a sample and you can see how high-fidelity and crystal-clean the Xonar HDAV 1.3 card is for both output and input (one of the world's finest sound cards, it has higher quality than most CE devices.) You can also try testing the performance for other sample rates and bit-depths with the same procedure.

ASUS Xonar HDAV

RightMark Audio Analyzer test

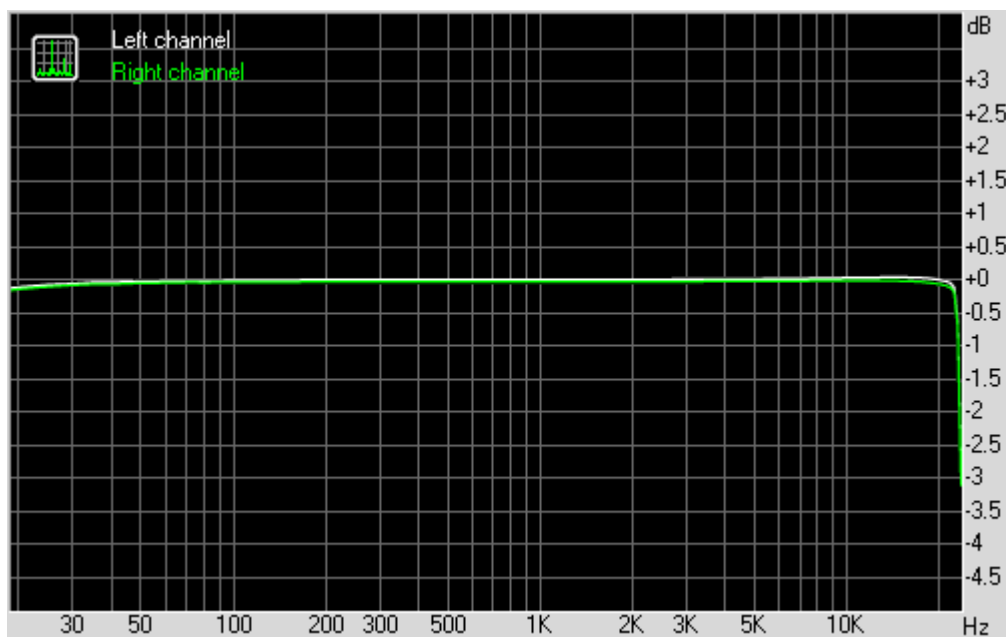
Testing chain: External loopback (line-out - line-in)
Sampling mode: 24-bit, 48 kHz

Summary

Frequency response (from 40 Hz to 15 kHz), dB	+0.03, -0.04	Excellent
Noise level, dB (A)	-116.2	Excellent
Dynamic range, dB (A)	116.1	Excellent
THD, %	0.0003	Excellent
THD + Noise, dB (A)	-103.9	Excellent
IMD + Noise, %	0.0007	Excellent
Stereo crosstalk, dB	-115.5	Excellent
IMD at 10 kHz, %	0.0007	Excellent
General performance		Excellent

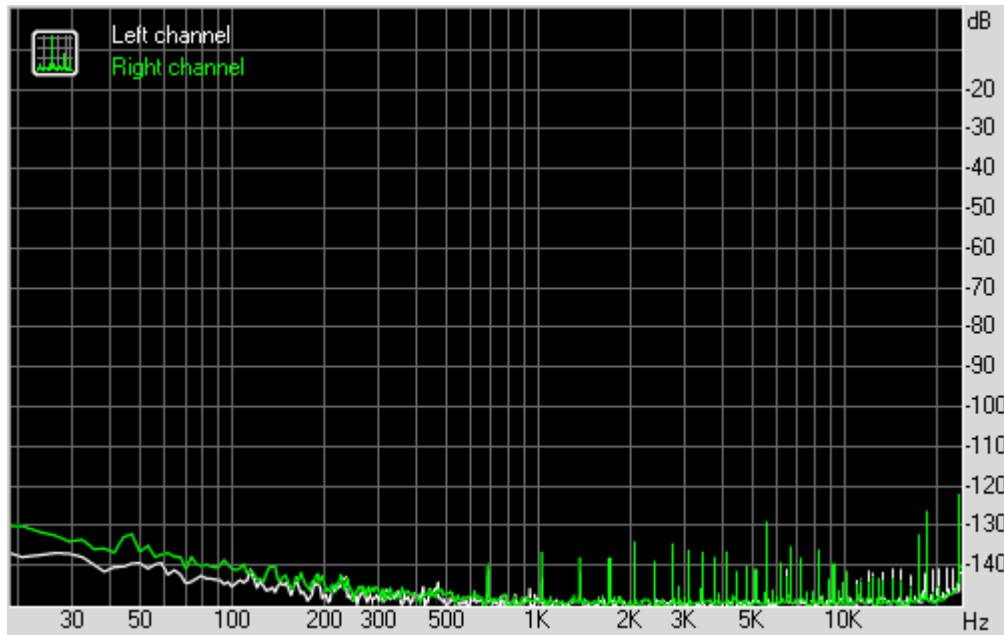
General performance: Excellent

Frequency response



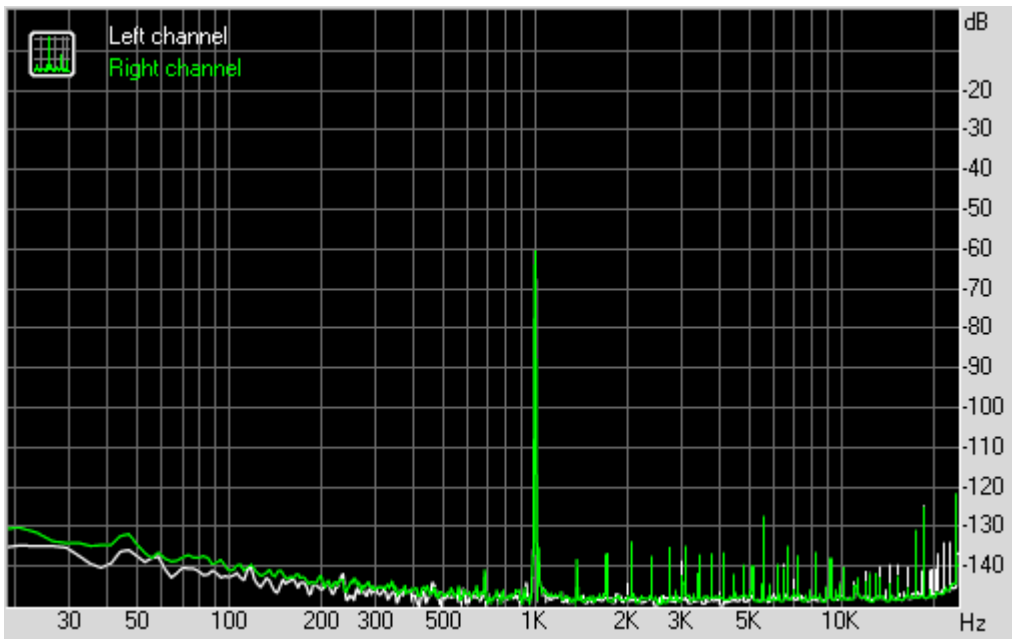
From 20 Hz to 20 kHz, dB	-0.12, +0.03
From 40 Hz to 15 kHz, dB	-0.04, +0.03

Noise level



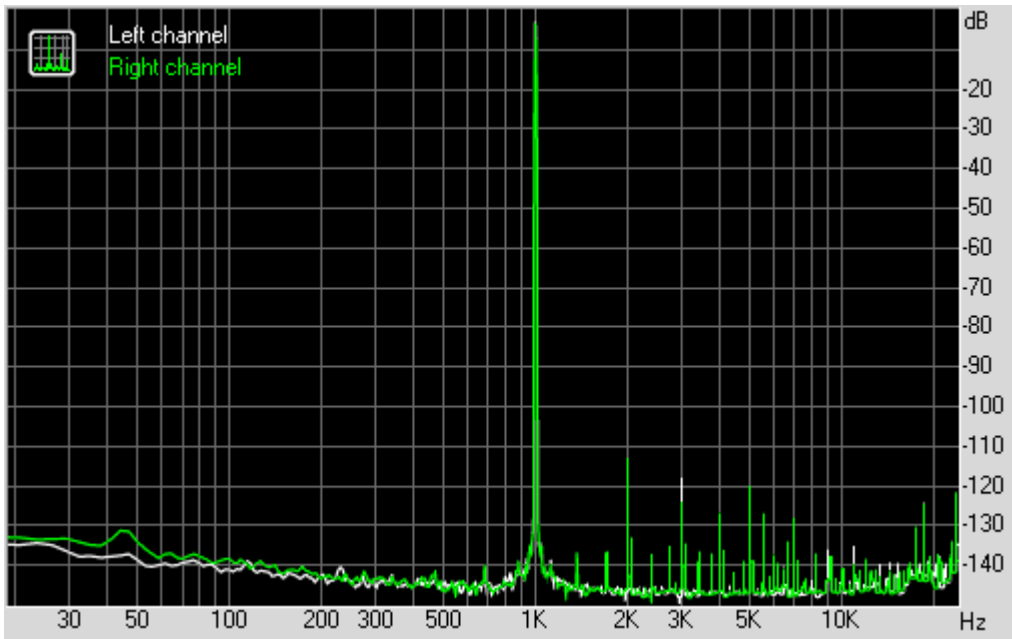
	Left	Right
RMS power, dB	-115.0	-114.3
RMS power (A-weighted), dB	-116.5	-115.9
Peak level, dB FS	-90.3	-89.8
DC offset, %	-0.0	-0.0

Dynamic range



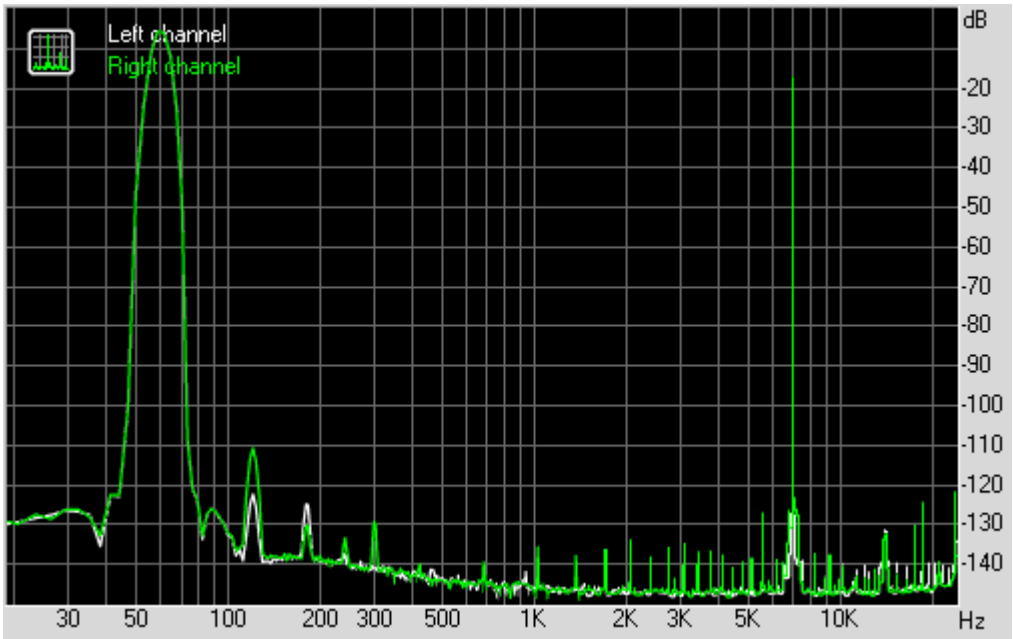
	Left	Right
Dynamic range, dB	+115.1	+114.2
Dynamic range (A-weighted), dB	+116.5	+115.6
DC offset, %	+0.00	-0.00

THD + Noise (at -3 dB FS)



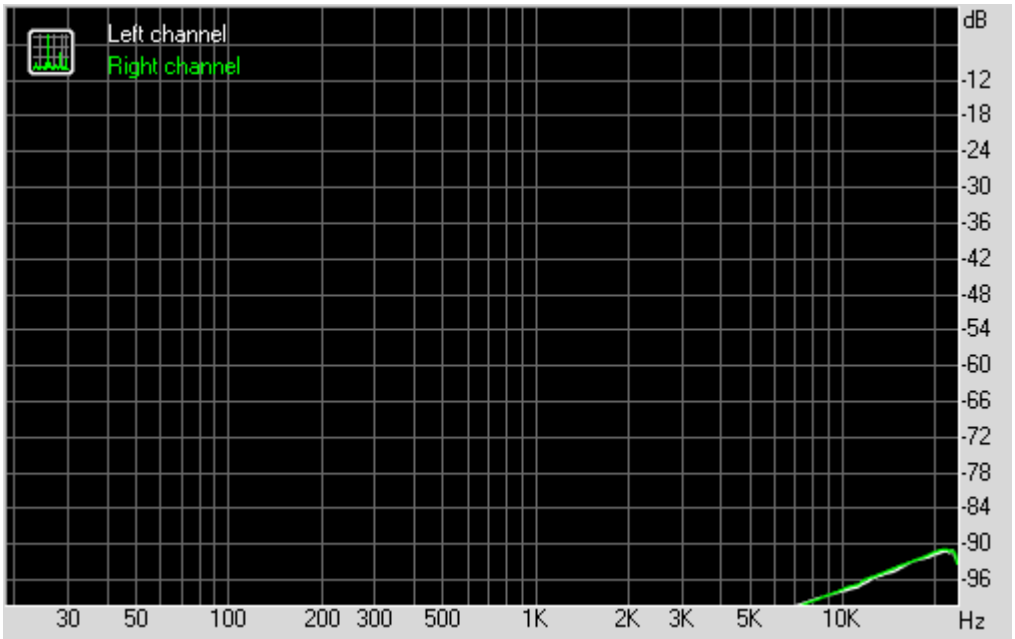
	Left	Right
THD, %	+0.0002	+0.0004
THD + Noise, %	+0.0006	+0.0006
THD + Noise (A-weighted), %	+0.0006	+0.0007

Intermodulation distortion



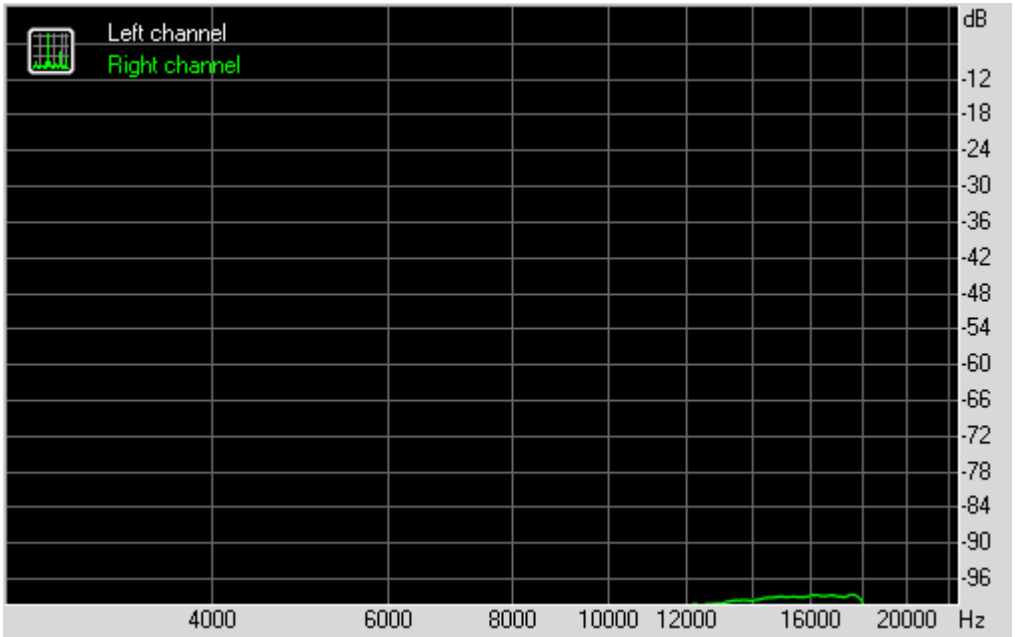
	Left	Right
IMD + Noise, %	+0.0006	+0.0008
IMD + Noise (A-weighted), %	+0.0004	+0.0005

Stereo crosstalk



	Left	Right
Crosstalk at 100 Hz, dB	-112	-110
Crosstalk at 1000 Hz, dB	-115	-114
Crosstalk at 10000 Hz, dB	-97	-97

IMD (swept tones)



	Left	Right
IMD + Noise at 5000 Hz,	0.0006	0.0007
IMD + Noise at 10000 Hz,	0.0005	0.0009
IMD + Noise at 15000 Hz,	0.0005	0.0011

This report was generated by RightMark Audio Analyzer 6.0.6