



Xonar D2

7.1 Channel Audio Card

192KHz/24Bit DuplexHD™

Featuring Dolby® and DTS® Technologies for Home Entertainment

RMAA Test Guide

Revision: 1.0

Date: Jul. 10, 2007

The Xonar D2 driver CD includes RightMark Audio Analyzer (RMAA) v5.6, 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 D2 audio card.

1. Setting Up Xonar D2 Audio Card

Open the Xonar D2 Audio 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.



- Go to the Mixer Recording page and select "ALT" as the recording source. Click "Reset" to make sure the recording volume is on the default highest level (0dB). This is actually a high-quality onboard loop-back path from the Line-out directly to the Line-In. This allows you to get realistic output and input quality ratings for the Xonar D2 audio card.



Note: You may also choose to use an external 3.5mm 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)



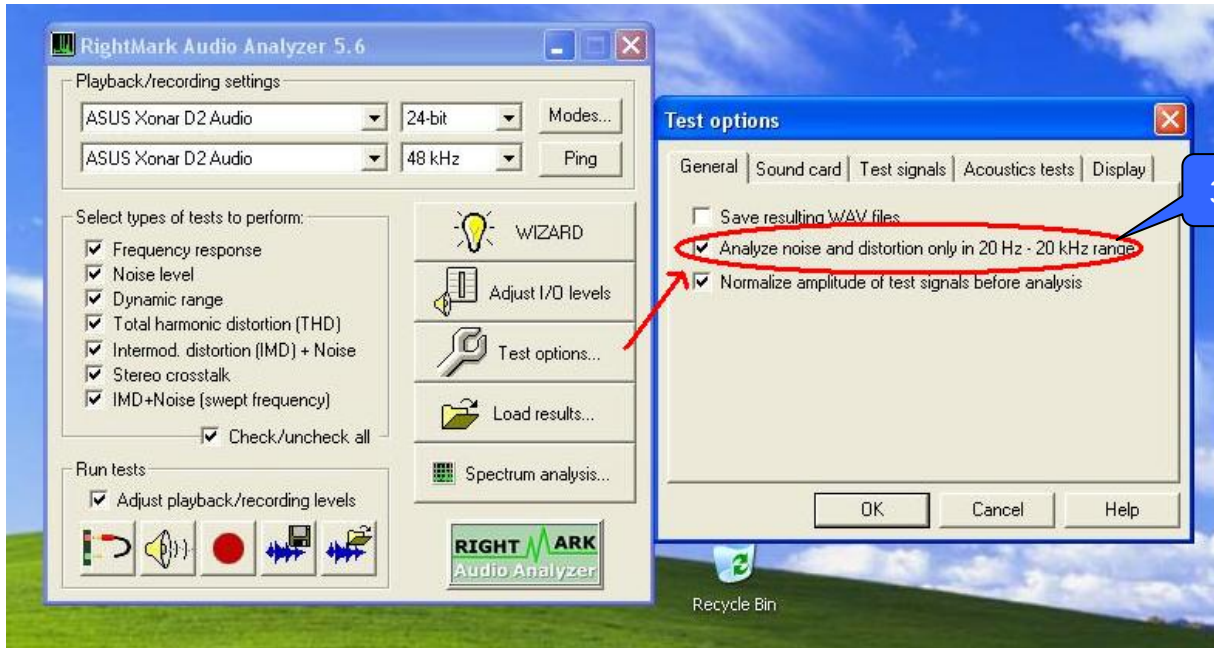
2. Configuration and Test with RMAA

Start RMAA and follow the setup procedure below.

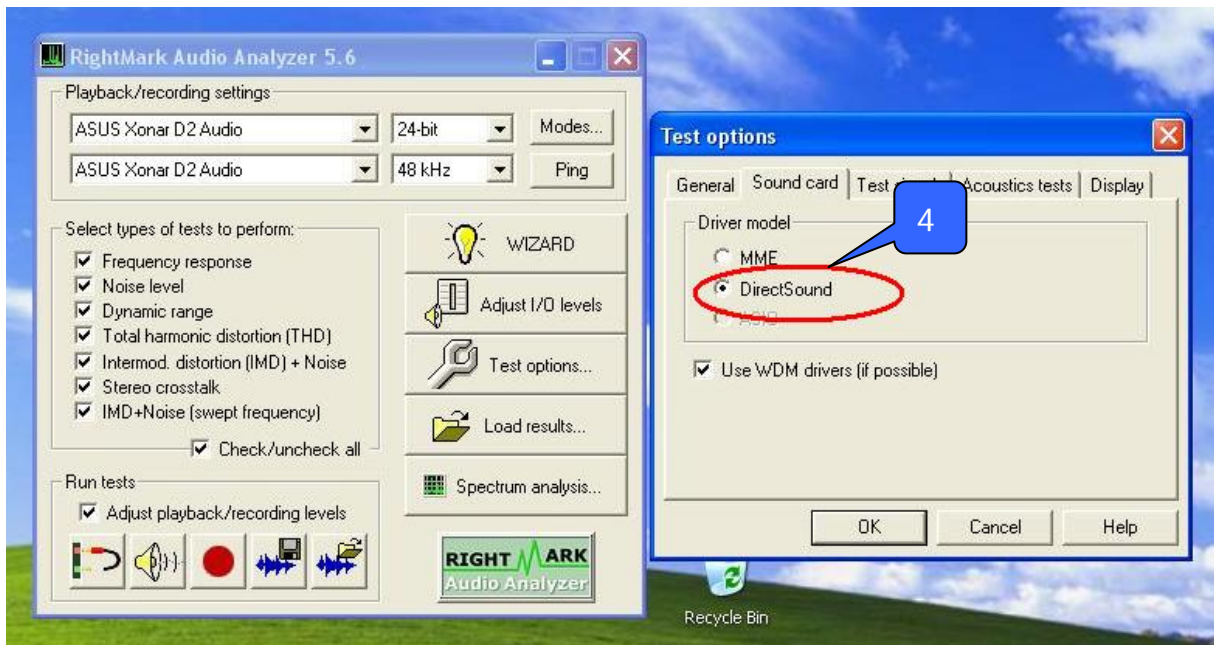
1. Select both of the playback/recording devices as "ASUS Xonar D2 Audio".
2. Select 24bit and 48KHz for the test signals. (If you change the format here, please remember to go back to set the same sample rate output in the Xonar D2 Audio Center)



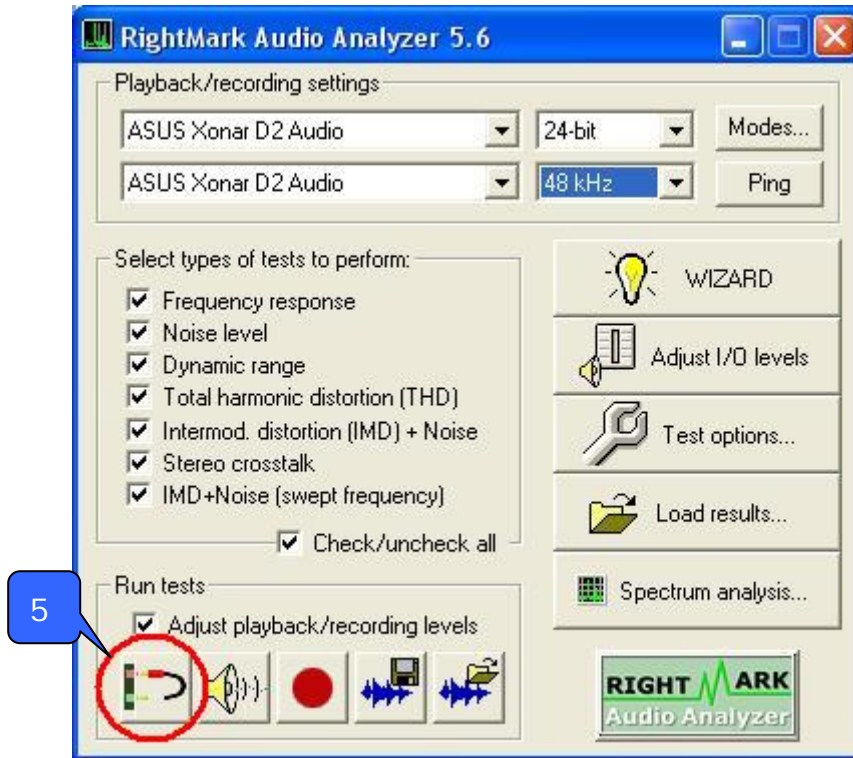
3. Click the "Test options" button in RMAA and check "Analyze noise and distortion only in 20Hz-20KHz range" (audio in-band for human hearing) in the General tab.



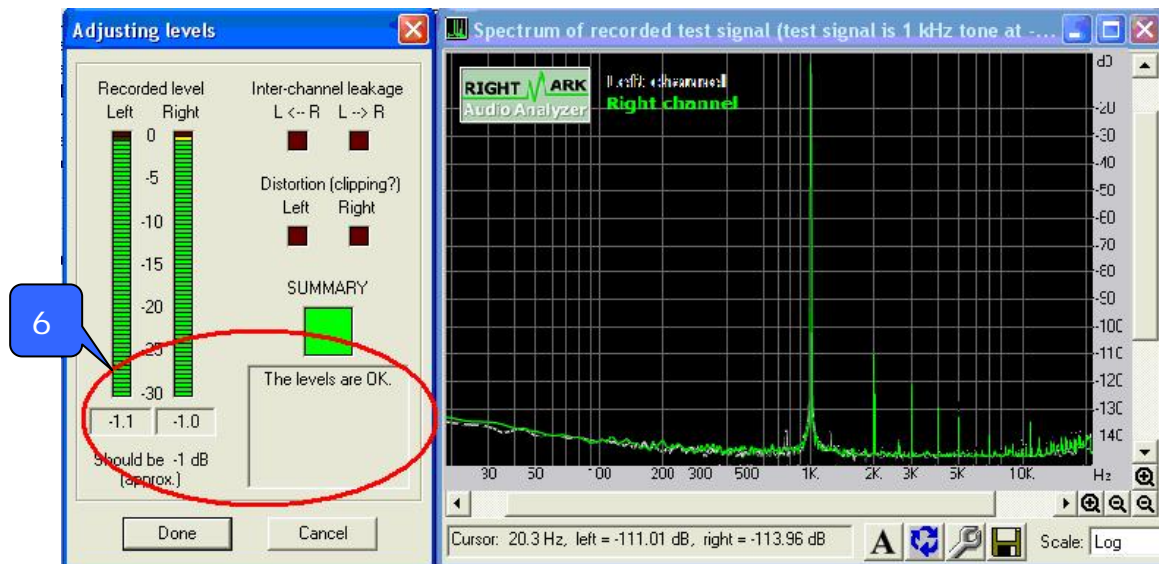
- Go to the Sound Card tab and select "DirectSound" as the Driver Model (because Windows MME mode doesn't support high-resolution 24bit audio playback and would get redundant data manipulation from Windows OS.)



- Click [loop-back mode test button](#) .



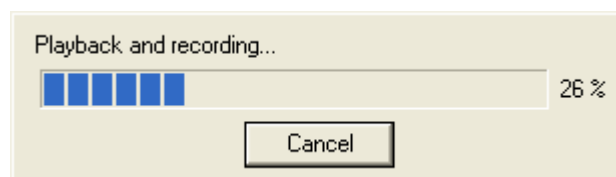
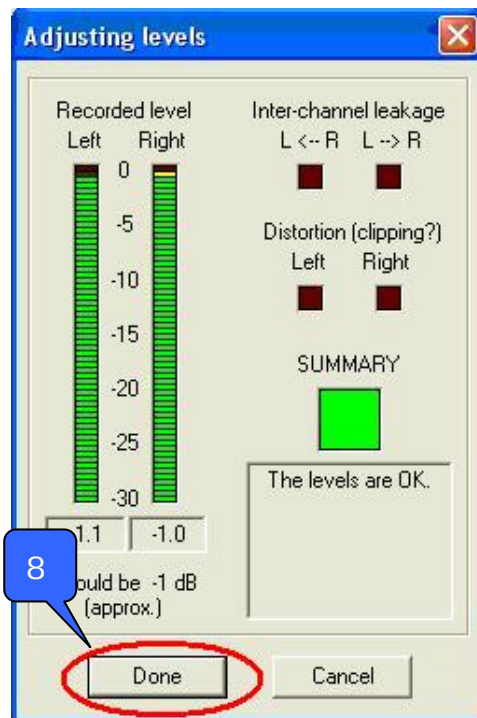
6. Check that the Adjusting level window shows that the levels are OK (the level meter will be green).



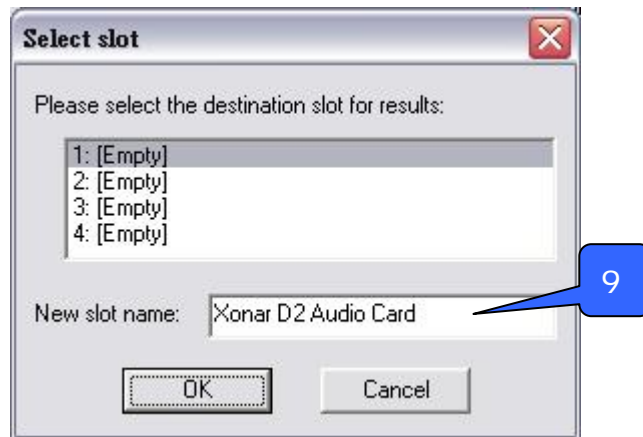
7. If the recording volume level is not high enough, please check and make the **WAVE and Master Volume have been at the maximum level**; Instead, if the recording volume level is too high, please lower the WAVE and Master volumes gradually until the level is ok.



8. Begin the test by clicking the “Done” button. If you cannot get the level to be “OK” after the previous step, click “Done” anyways and proceed.



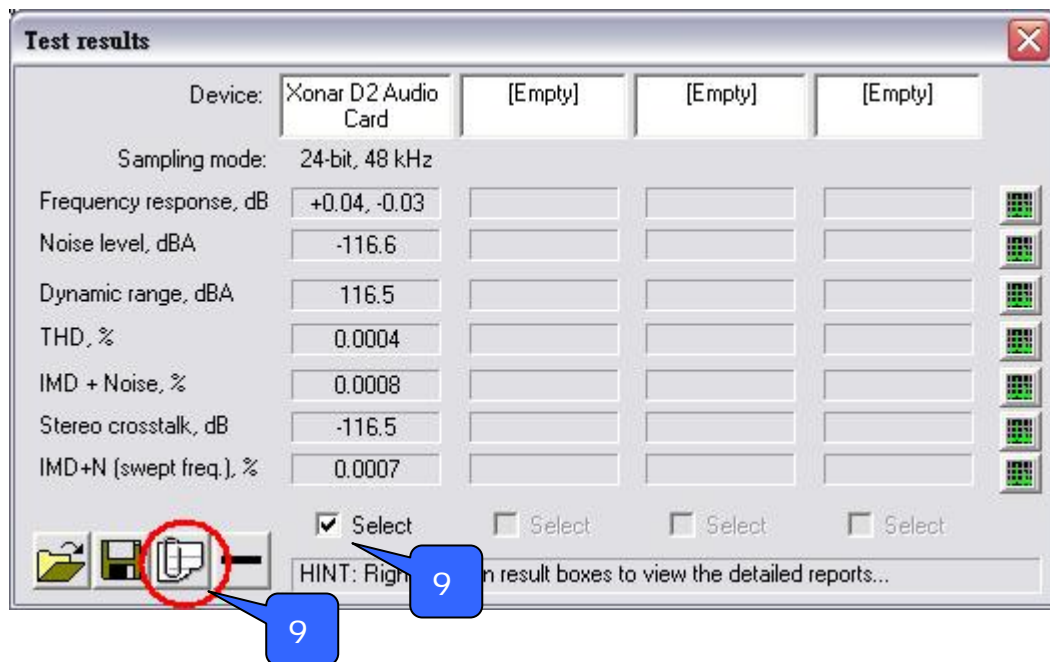
9. Enter "Xonar D2 Audio Card" in the New slot name and select one Empty slot. Then click "OK".



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



to "Make html report".



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



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 D2 audio 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.

Xonar D2 Audio Card RightMark Audio Analyzer test

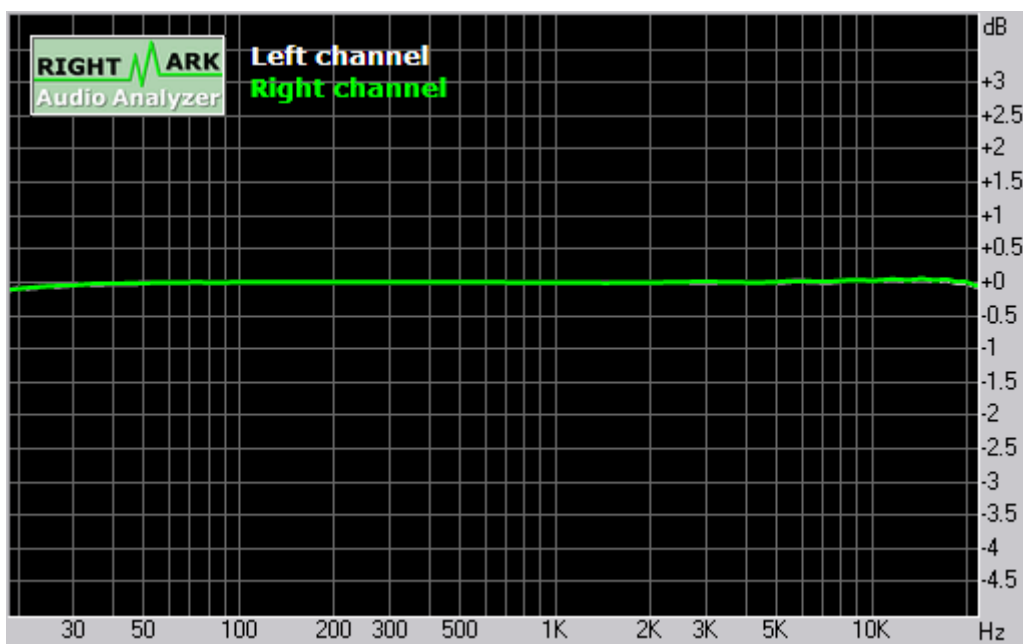
Testing chain: External loopback (line-out - line-in)
Sampling mode: 24-bit, 48 kHz

Summary

Frequency response (from 40 Hz to 15 kHz), dB:	+0.04, -0.03	Excellent
Noise level, dB (A):	-116.6	Excellent
Dynamic range, dB (A):	116.5	Excellent
THD, %:	0.0004	Excellent
IMD + Noise, %:	0.0008	Excellent
Stereo crosstalk, dB:	-116.5	Excellent
IMD at 10 kHz, %:	0.0007	Excellent

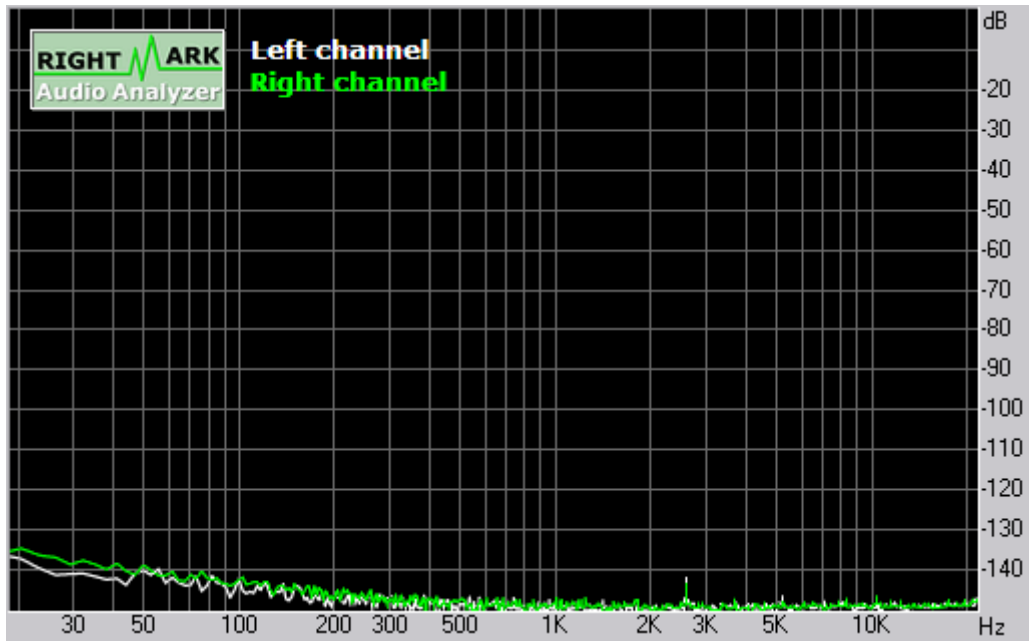
General performance: Excellent

Frequency response



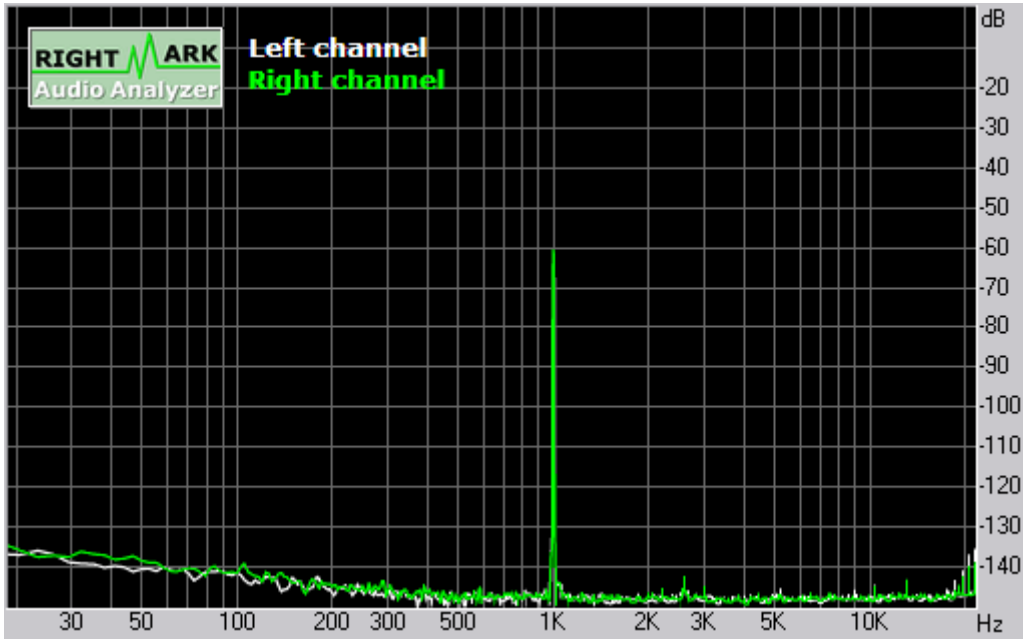
Frequency range	Response
From 20 Hz to 20 kHz, dB	-0.10, +0.04
From 40 Hz to 15 kHz, dB	-0.03, +0.04

Noise level



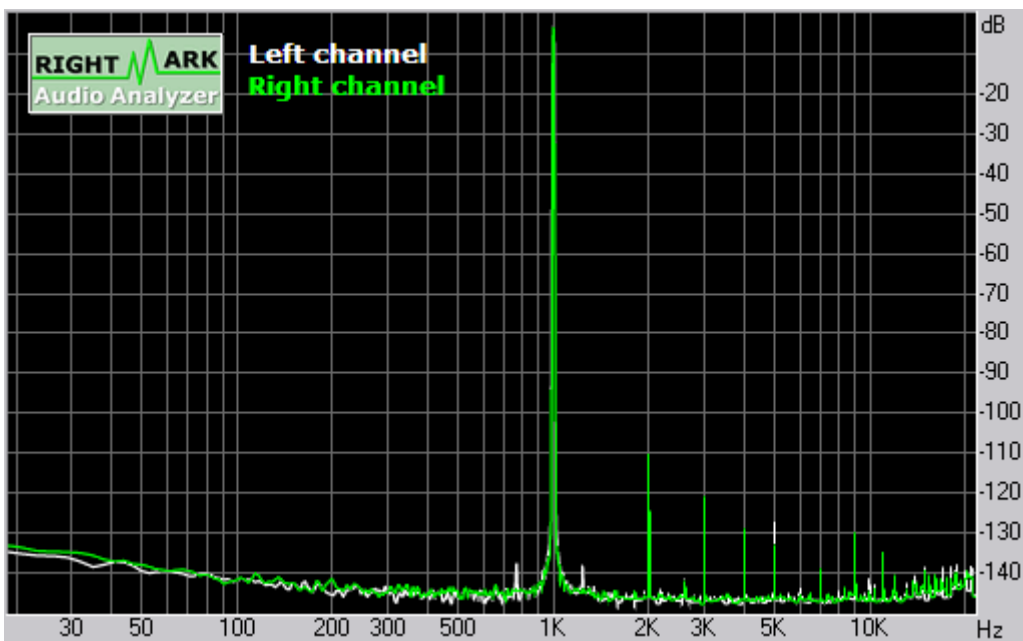
Parameter	Left	Right
RMS power, dB:	-115.5	-115.2
RMS power (A-weighted), dB:	-116.7	-116.5
Peak level, dB FS:	-92.9	-92.4
DC offset, %:	-0.00	-0.00

Dynamic range



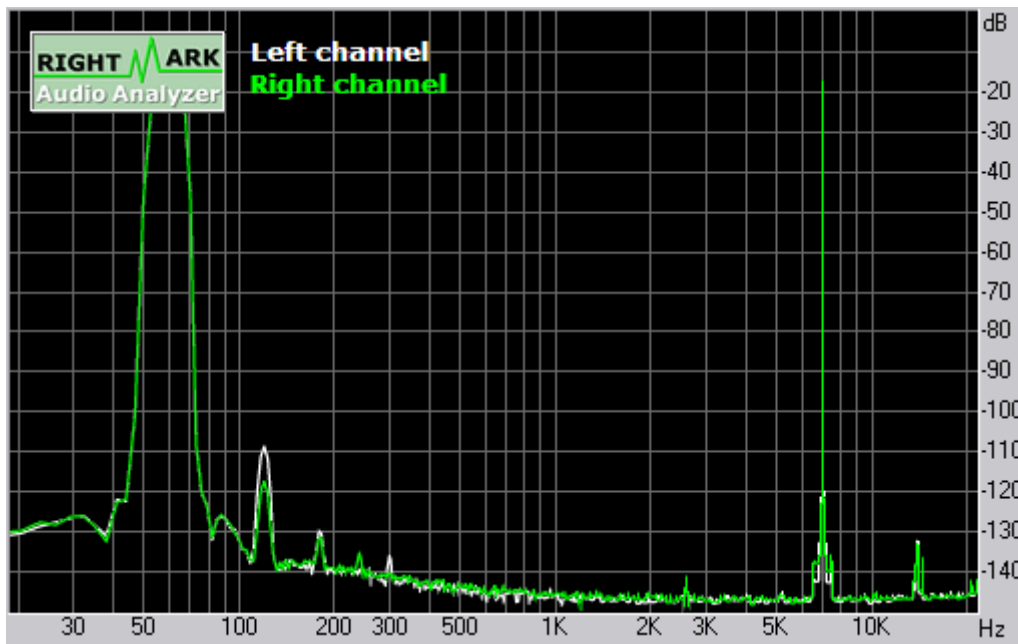
Parameter	Left	Right
Dynamic range, dB:	+115.4	+115.3
Dynamic range (A-weighted), dB:	+116.6	+116.4
DC offset, %:	0.00	-0.00

THD + Noise (at -3 dB FS)



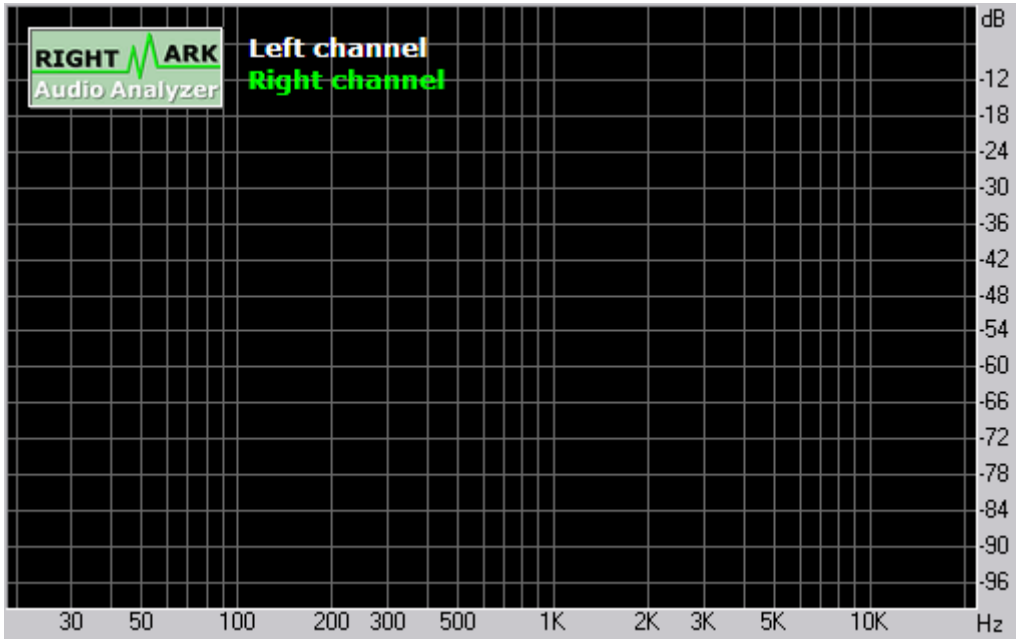
Parameter	Left	Right
THD, %:	0.0004	0.0005
THD + Noise, %:	0.0006	0.0007
THD + Noise (A-weighted), %:	0.0007	0.0008

Intermodulation distortion



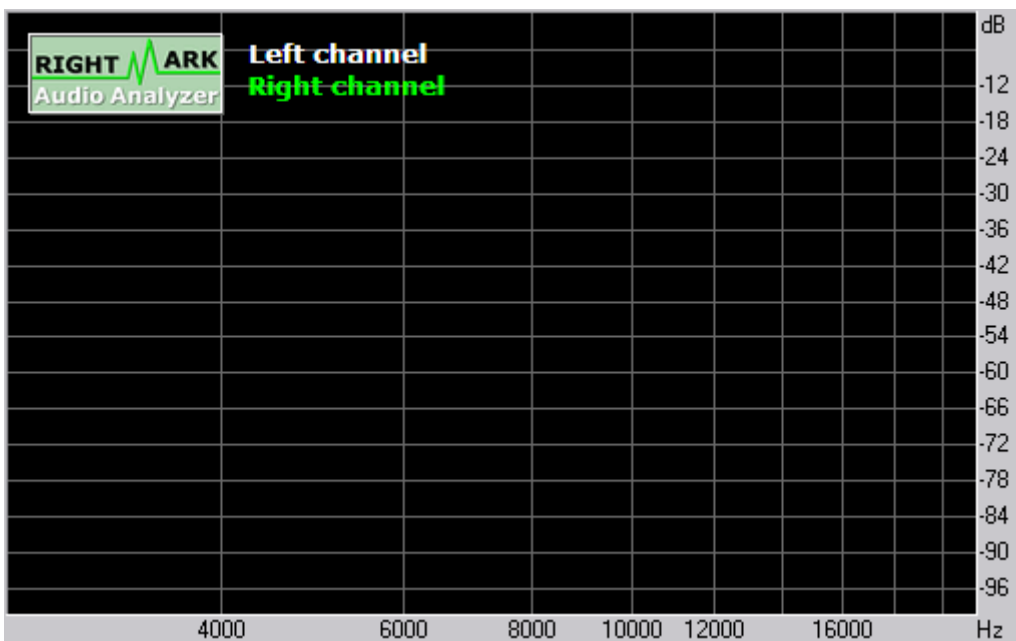
Parameter	Left	Right
IMD + Noise, %:	0.0009	0.0007
IMD + Noise (A-weighted), %:	0.0005	0.0005

Stereo crosstalk



Parameter	L <- R	L -> R
Crosstalk at 100 Hz, dB:	-113	-114
Crosstalk at 1 kHz, dB:	-116	-115
Crosstalk at 10 kHz, dB:	-114	-113

IMD (swept tones)





Parameter	Left	Right
IMD + Noise at 5 kHz, %:	0.0006	0.0008
IMD + Noise at 10 kHz, %:	0.0006	0.0006
IMD + Noise at 15 kHz, %:	0.0008	0.0006

This report was generated by RightMark Audio Analyzer 5.6