

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.



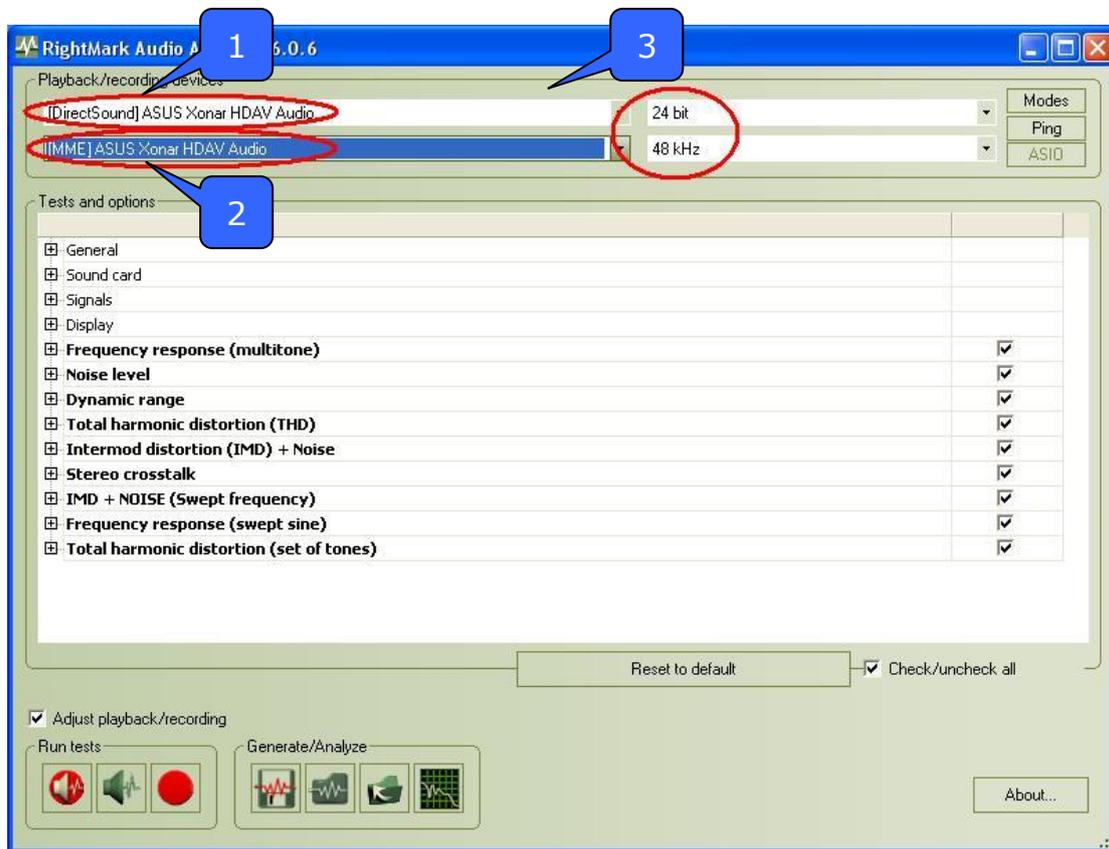
5. Click "Reset" on the playback volume mixer page to keep the volume setting on default.
6. Turn the master volume to the MAX level (0dB)



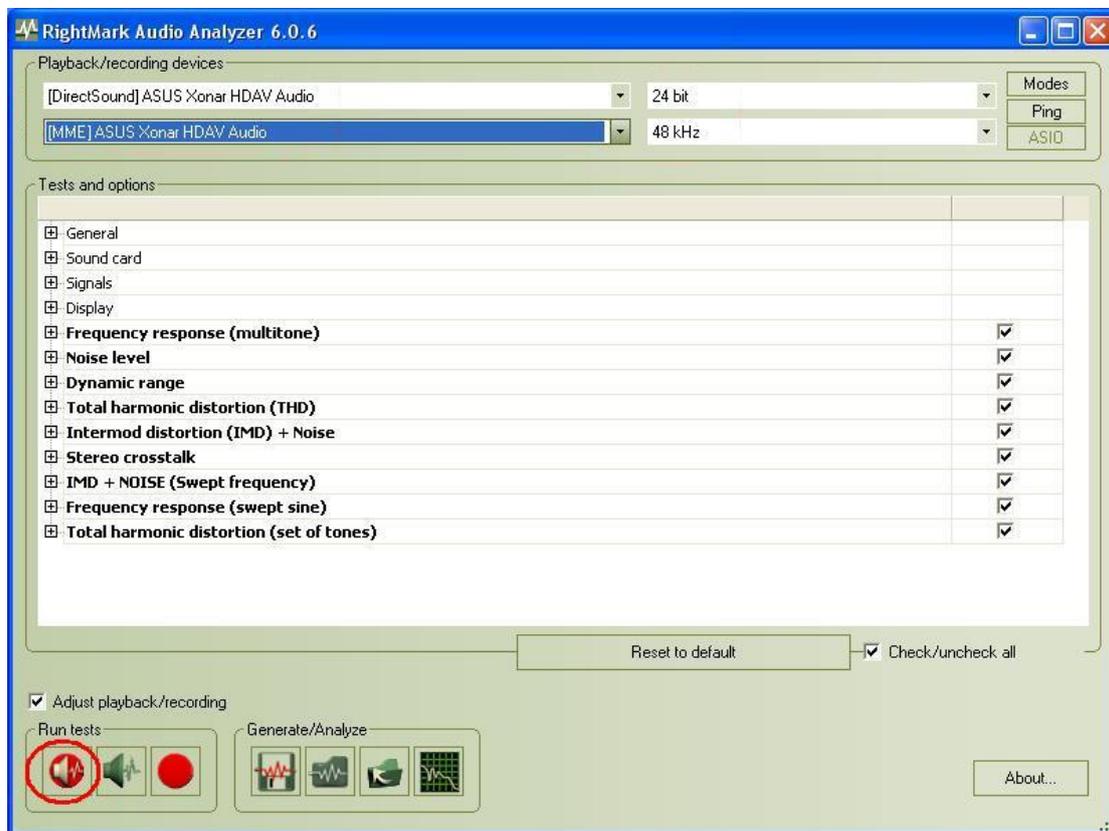
8.2 Configuration and Test with RMAA

Start RMAA and follow the setup procedure below.

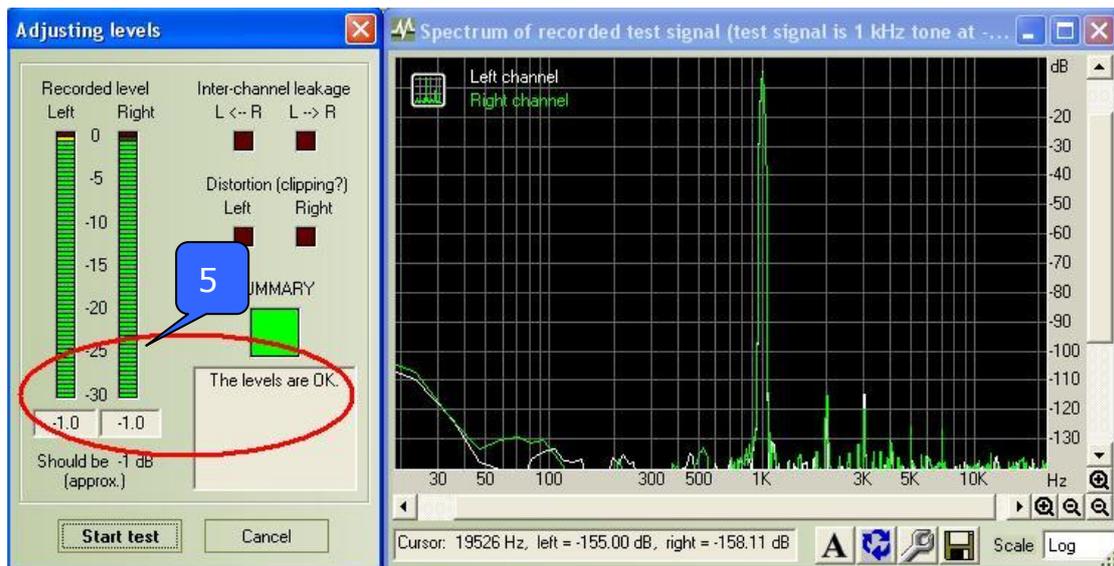
1. Select playback devices as "[DirectSound] ASUS Xonar HDAV Audio". (because Windows MME mode doesn't support high-resolution 24bit audio playback and the data may be manipulated by Windows so that the real hardware quality can not be measured properly.)
2. Select recording devices as "[MME] ASUS Xonar 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).

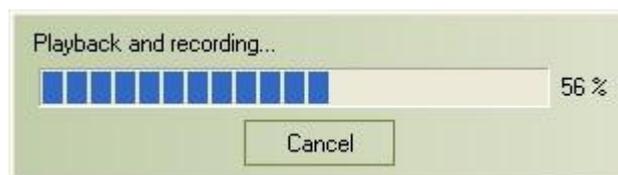
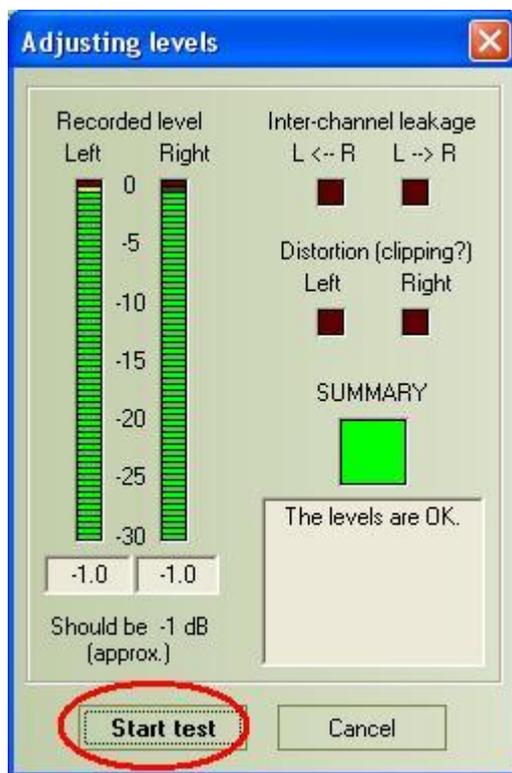


6. If the recording volume level is not high enough, please check and make the WAVE and Master Volume have been at the maximum level; Instead, if the recording volume level is too high, please lower the WAVE and Master volumes gradually until the level is ok.

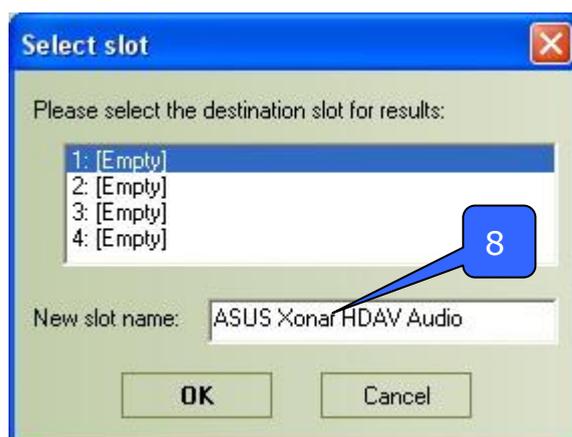


7. Begin the test by clicking the "Start test" button. If you cannot get the level to be "OK" after the previous step, click "Start test" anyways and proceed.

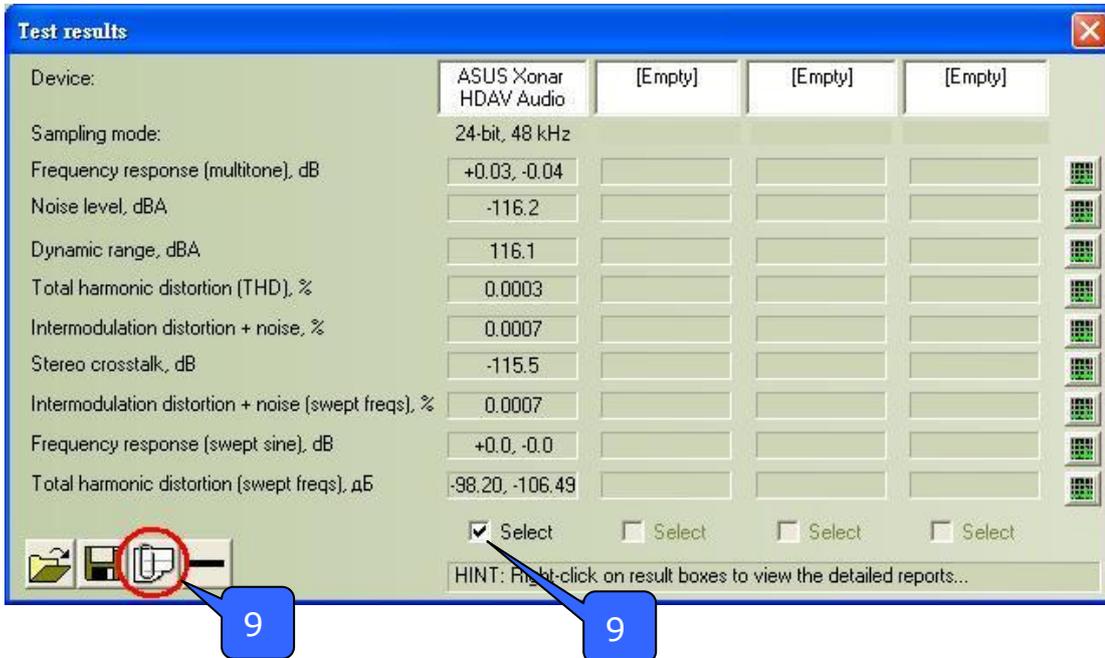
7



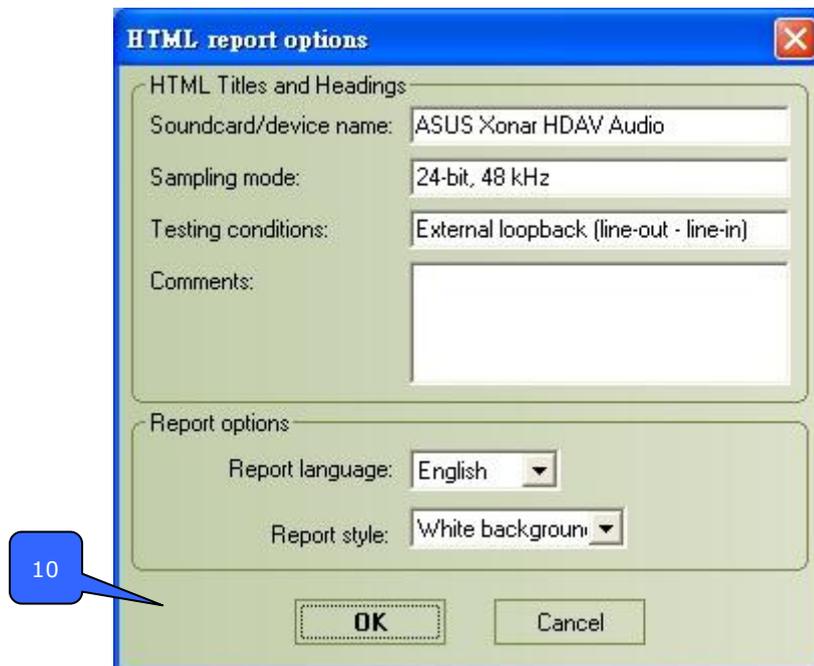
8. Enter "ASUS Xonar HDAV Audio" in the New slot name and select one Empty slot. Then click "OK".



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



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



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

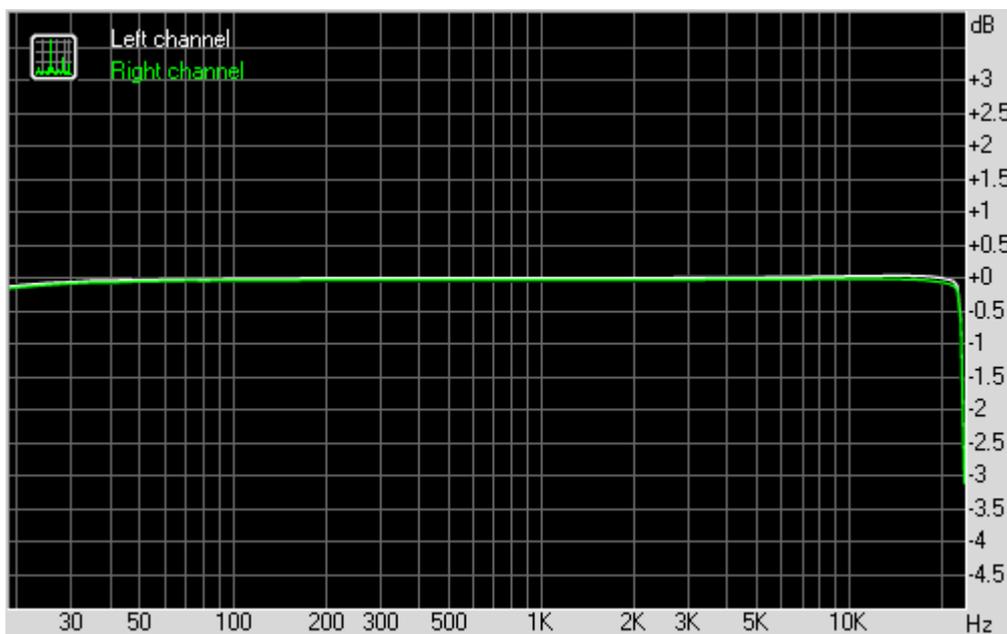
Testing chain: External loopback (line-out - line-in)
Sampling mode: 24-bit, 48 kHz

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

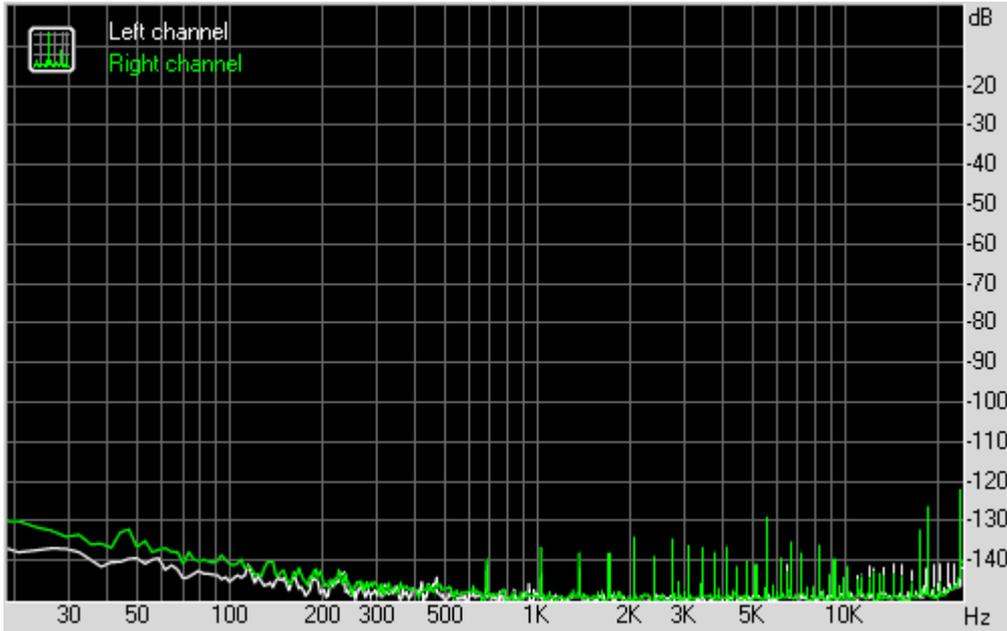
Frequency response



From 20 Hz to 20 kHz, dB -0.12, +0.03

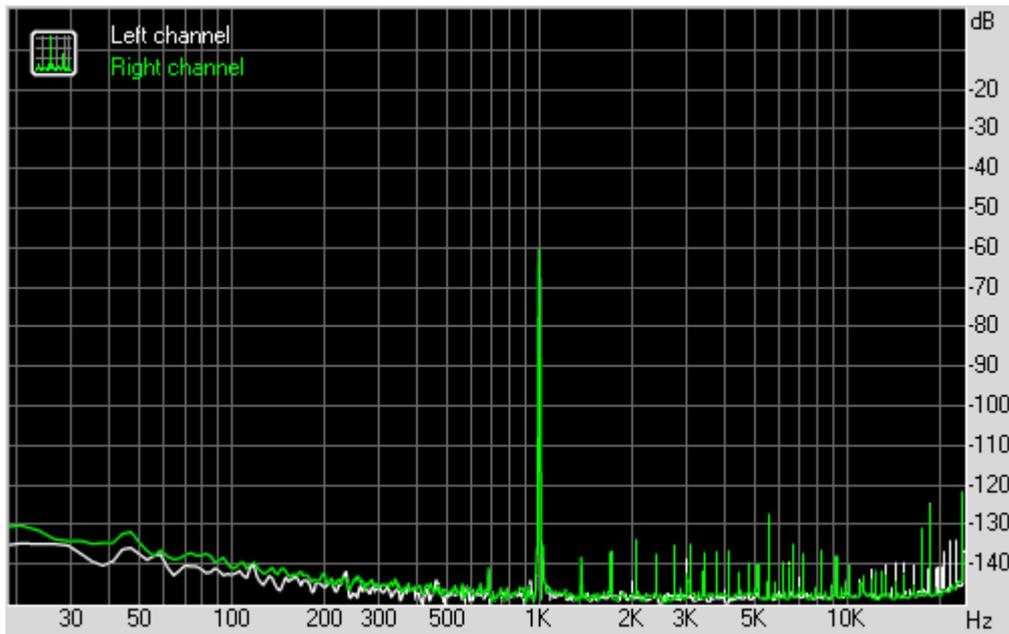
From 40 Hz to 15 kHz, dB -0.04, +0.03

Noise level



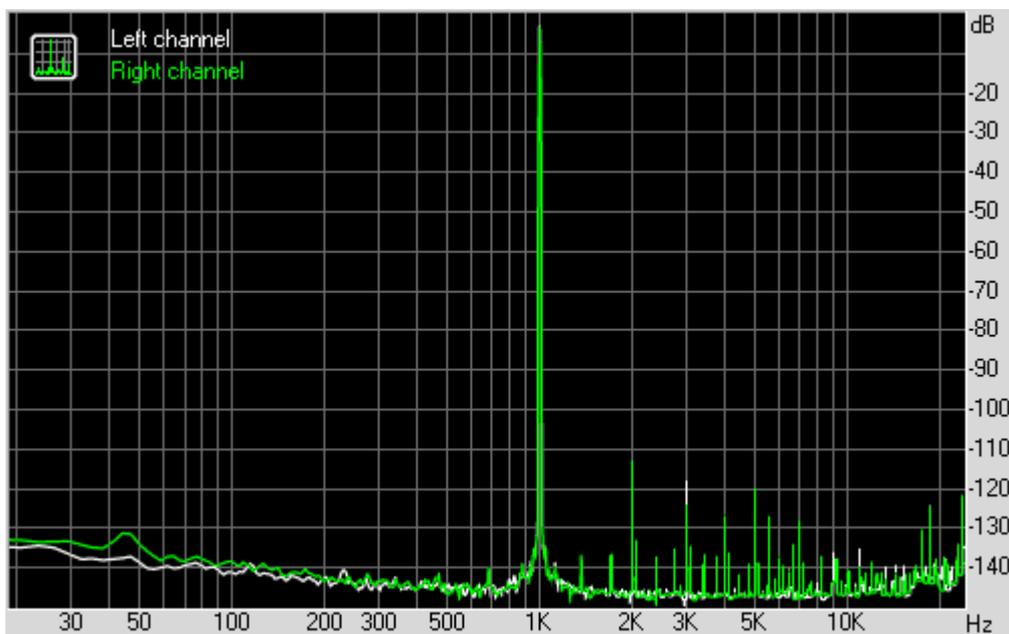
| | Left | Right |
|----------------------------|--------|--------|
| RMS power, dB | -115.0 | -114.3 |
| RMS power (A-weighted), dB | -116.5 | -115.9 |
| Peak level, dB FS | -90.3 | -89.8 |
| DC offset, % | -0.0 | -0.0 |

Dynamic range



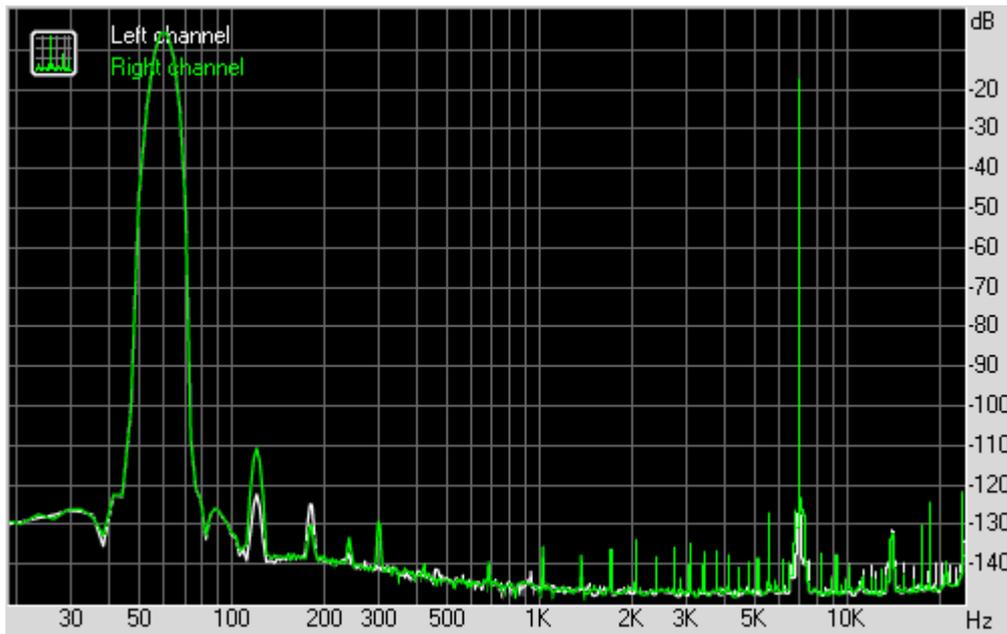
| | Left | Right |
|--------------------------------|--------|--------|
| Dynamic range, dB | +115.1 | +114.2 |
| Dynamic range (A-weighted), dB | +116.5 | +115.6 |
| DC offset, % | +0.00 | -0.00 |

THD + Noise (at -3 dB FS)



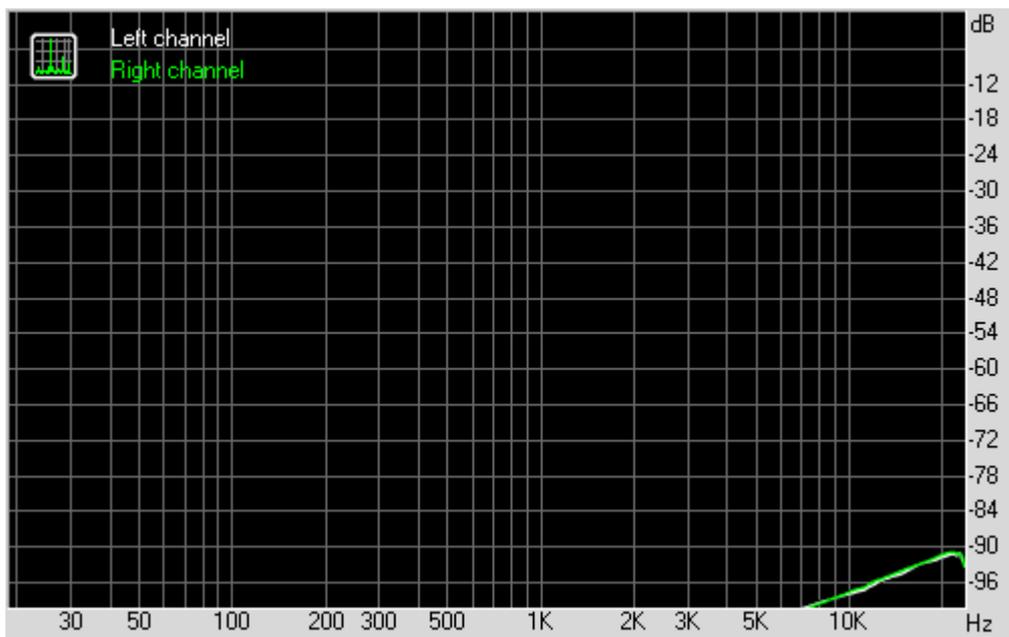
| | Left | Right |
|-----------------------------|---------|---------|
| THD, % | +0.0002 | +0.0004 |
| THD + Noise, % | +0.0006 | +0.0006 |
| THD + Noise (A-weighted), % | +0.0006 | +0.0007 |

Intermodulation distortion



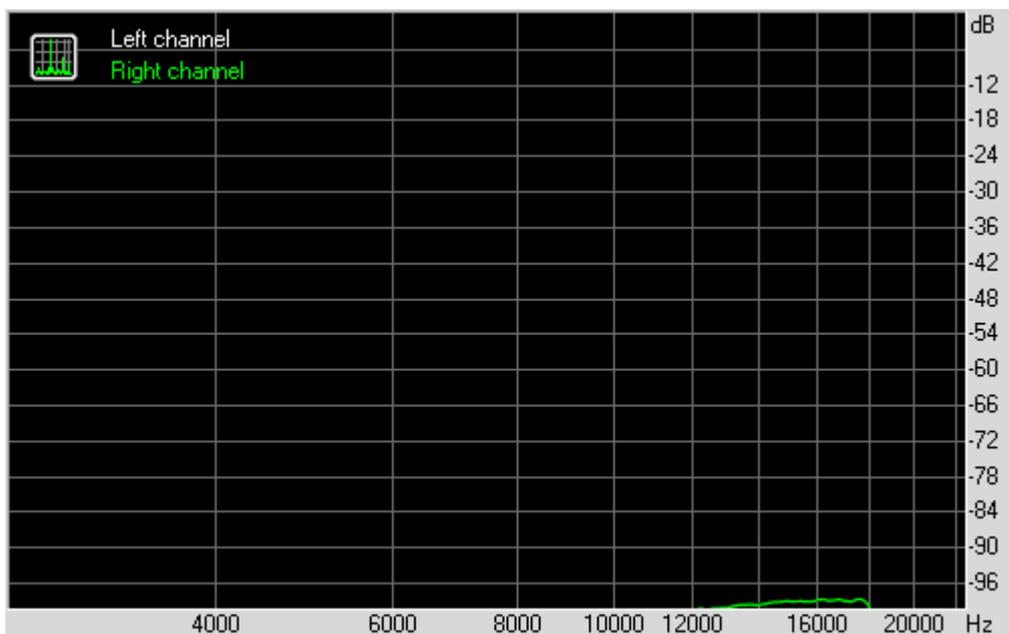
| | Left | Right |
|-----------------------------|---------|---------|
| IMD + Noise, % | +0.0006 | +0.0008 |
| IMD + Noise (A-weighted), % | +0.0004 | +0.0005 |

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