

SoundBLASTER®

X7

MEET THE
FUTURE OF
AUDIO



PRODUCT EXPERIENCE GUIDE

CREATIVE®

CONTENTS

06 SOUND BLASTER X7: AN OVERVIEW

Get acquainted with the Sound Blaster X7's controls, connectors and connectivity options.

14 EXPERIENCING THE SOUND BLASTER X7

Discover a whole new side of audio using the Sound Blaster X7.

16 ENHANCING AUDIO PLAYBACK

Learn how to easily enhance your audio with the downloadable Sound Blaster X7 Control mobile app and Sound Blaster X7 Control Panel software.

21 APPENDIX

Set up the Sound Blaster X7 for RMAA measurement in real-time 24-bit/192kHz playback and recording using analog inputs and outputs.

SoundBLASTER X7

Combining the full force of an impressive 24-bit/192kHz 127dB DAC, a kick-ass 100-watt audio amplifier, top-notch audiophile grade components and our proprietary audio enhancement technologies, the Sound Blaster X7 is the **biggest, baddest, boldest** Sound Blaster to date! Designed to easily assimilate and connect with a whole range of gaming and entertainment systems, this compact trapezoidal prism fits right into your domain and delivers the most mind-blowing high-resolution audio listening experience.

SoundBLASTER X7



ULTRA HIGH-END SOUND BLASTER
WITH 24-BIT/192kHz HIGH RESOLUTION
127dB USB DAC & AUDIO AMPLIFIER

- Ultra High Fidelity Digital Audio
- Powerful Amplification • Audiophile Experience

SOUND BLASTER X7: AN OVERVIEW

ARCHITECTURE, CONTROLS & CONNECTORS

Beamforming CrystalVoice Microphones

- For crystal clear voice communications

Volume Control Knob

- Adjusts the volume level

Dolby Digital Indicator

- Lights up in white when Dolby Digital decoding is activated

SBX / Call Button & Indicator

- Turn on SBX Pro Studio for intelligent audio processing
- Activate the voice assistant* on your smart device



USB Host Port

- Connect to select smartphones or tablets for high-fidelity audio playback
- Connect to iOS devices using Lightning connector for recording
- Charge select mobile phones and devices!

Power / Bluetooth® Button & Indicator

- Press to switch on
- Press and hold 2 sec for Bluetooth pairing
- Press again to switch off

Dual Headphone Jacks

- Connects to 1/4" (6.5mm) studio-grade headphones and 1/8" (3.5mm) headphones for simultaneous audio listening

Mic In jack

- Connect to a microphone for recording

NFC Sensor

- Just tap for one-touch Bluetooth pairing

2-way Binding Post Terminals

- Connect to passive speakers via bare wires or banana plugs

Impedance Switch

- Select impedance of connected passive speakers (4Ω - 8Ω)



Headphone Stand Slots

- Insert the supplied headphone stand to hang your headphones on

DC-In Port

- Connect to the supplied 24V 2.91A AC/DC power adapter

USB Port

- Listen to high-resolution digital audio playback from PC/Mac

Front RCA Line Out Jack

- Connect to powered analog speakers or A/V receiver

3.5mm Rear Line Out Jack

- Connect to Rear Left or Rear Right inputs on powered analog speakers or A/V receiver

Optical S/PDIF In Jack

- Connect to a game console or TV via optical cable

Optical S/PDIF Out Jack

- Connect to recording devices with optical connectors

RCA Line In Jack

- Connect to line level audio sources.

3.5mm Center / Subwoofer Line Out Jack

- Connect to Centre and Subwoofer inputs on powered analog speakers or A/V receiver

Key Features

- 1x Bluetooth 4.1 Module supporting HFP with HD Voice and A2DP with AAC, aptX and aptX-Low Latency
- 1x USB 2.0 Host port allows direct streaming of high quality, lossless audio from Android and iOS devices
- 4x swappable op-amps for customizable tonality

* For iPhone 4S and above and certain Android/Windows phones only

TECHNOLOGY INSIDE

Audiophile-grade components for superb playback performance

Designed to indulge users with pristine audio quality, the Sound Blaster X7 is packed with the finest of the finest audiophile-grade components that deliver the absolute best audio performance.

- **Burr-Brown PCM1794 D/A Converter**

127dB dynamic range for high-resolution playback of HD audio tracks up to 24-bit/192kHz

- **Burr-Brown PCM4220 A/D Converter**

Delivers high quality, low noise analog line-in audio playback and recording of up to 24-bit/192kHz

- **Texas Instruments TPA6120A2 headphone amplifier**

Supports up to 600Ω impedance – driving all headphones in the market

- **Texas Instruments TPA3116D2 Class-D stereo amplifier**

Efficiently delivers up to 100W power (2 x 50W @ 4Ω)* to passive bookshelf and tower speakers

*100W speaker output requires upgrade to high power adapter (24V 6A)

- **Nichicon “Fine Gold” capacitors**

Offers rich sound in the bass register and clearer highs

127dB
DAC

24-bit
192kHz
STEREO DIRECT

600Ω
AMP

100W
AMP



Intelligent processor for customizable enhancements

A powerful, flexible and programmable SB-Axx1™ multi-core DSP evolves the Sound Blaster X7 into a full-fledged external sound card. Coupled with legendary Sound Blaster technologies and readily available iOS and Android applications, it provides instant access to amazing hardware powered audio processing for audio playback and voice communication.

- **SBX Pro Studio™ technology for incredible audio playback**

The fully customizable SBX Pro Studio suite of technologies enhances audio playback for music, movies and games, giving you unprecedented audio realism.

- **CrystalVoice™ technology for crystal clear voice**

CrystalVoice technology dramatically improves voice pick-up and intelligently removes background interference so that you are heard clearly in a conversation or voice recording.

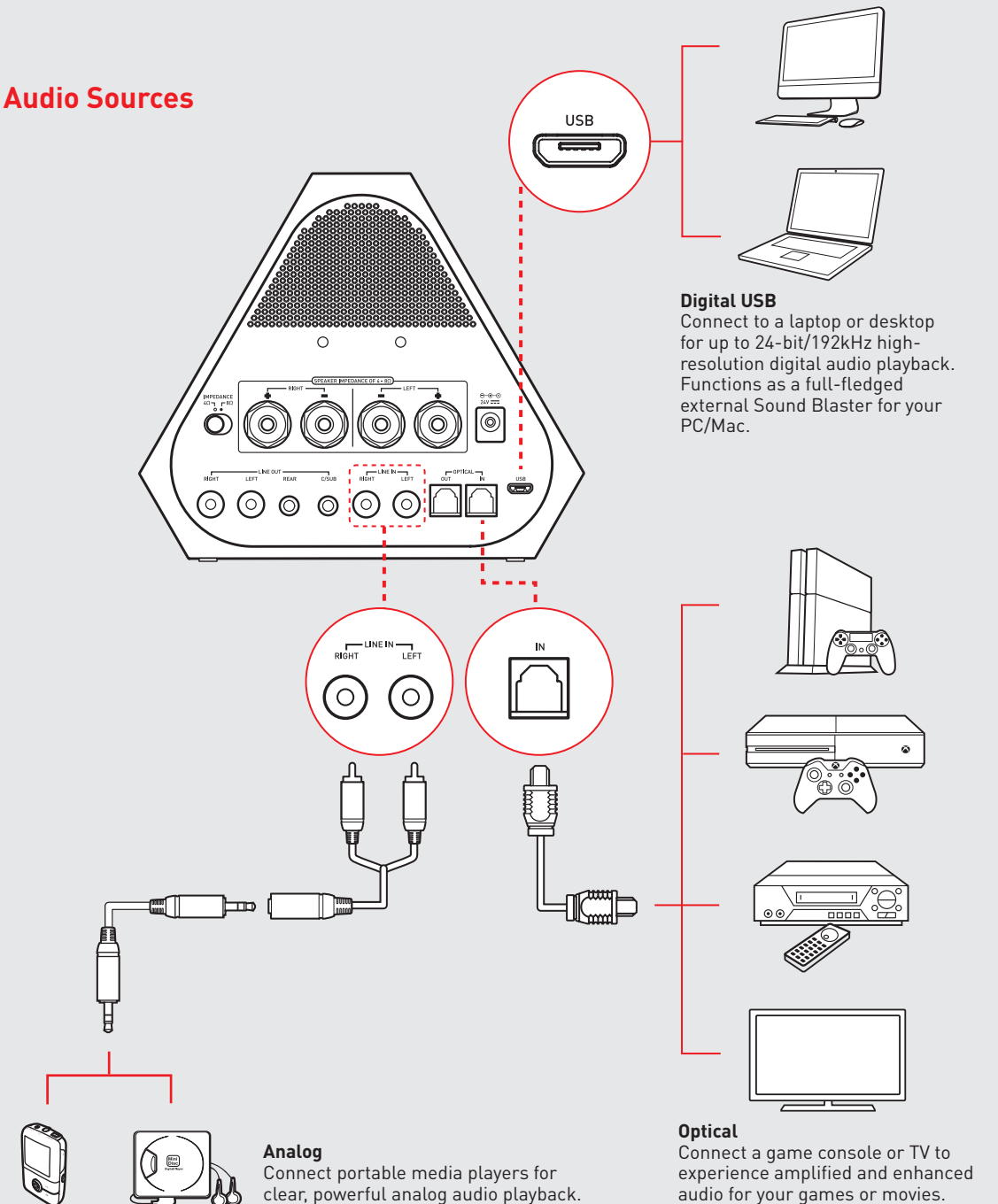


SBX
PRO STUDIO

CRYSTAL
VOICE

CONNECTIVITY

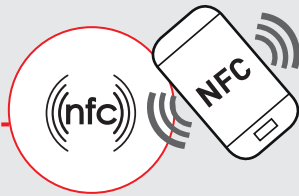
Audio Sources



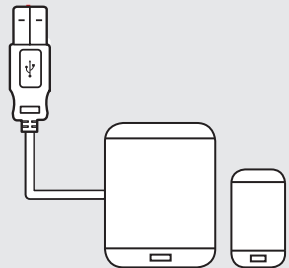
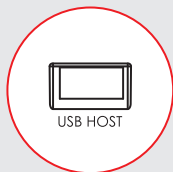
CONNECTIVITY (cont.)

Audio Sources (cont.)

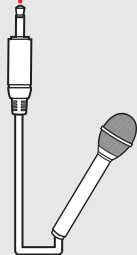
Manual Bluetooth Pairing
Connect to *Bluetooth* devices with robust high-quality low latency aptX® and AAC music streaming.



One-Touch Bluetooth Pairing
NFC Technology allows for one-touch pairing. Simply tap your NFC-enabled device on the Sound Blaster X7 to instantly pair and connect.



USB DAC
Experience pristine powerful audio from select smartphones/tablets* via the USB Host port.



Microphone
Connect your favorite microphone for clearer singing or voice input.



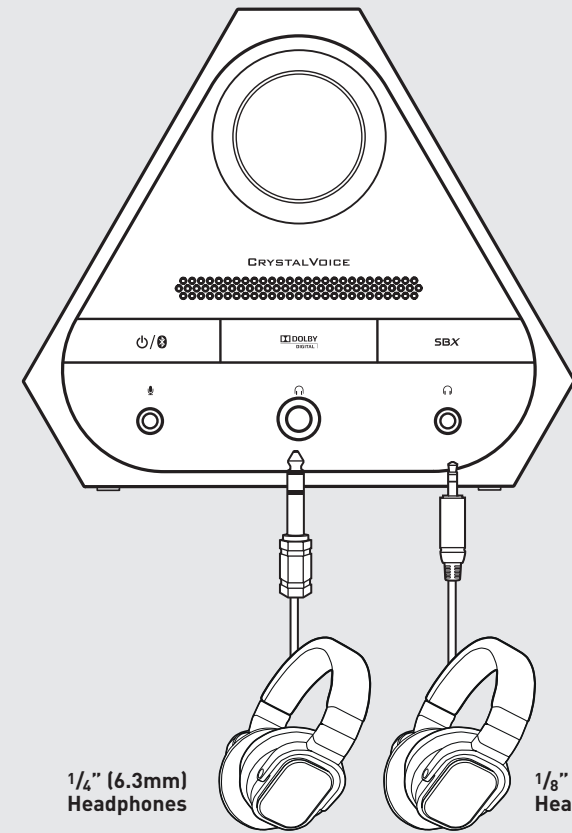
Creative Multipoint lets you connect 2 *Bluetooth* devices simultaneously and easily toggle between them.

*** Compatible with:**

- iOS devices using Lightning connector (iPhone 6⁺, 6 Plus⁺, 5S, 5C, 5, iPad Air, iPad Mini)
- Android devices (Samsung Galaxy S5, S4, Note 3, Note 2; Google Nexus 5, Nexus 7; Sony Xperia Z Ultra; Xiaomi Redmi, Redmi Note, Mi 3; LG G2)

[^] Compatibility tests in progress

Headphones

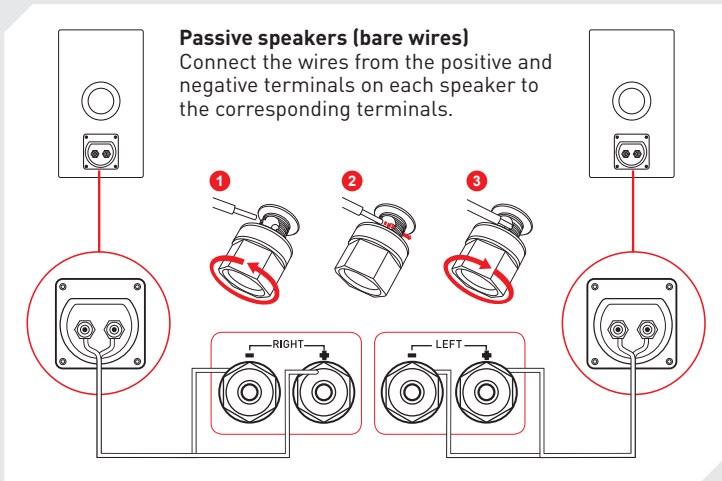


1/4" (6.3mm) Headphones

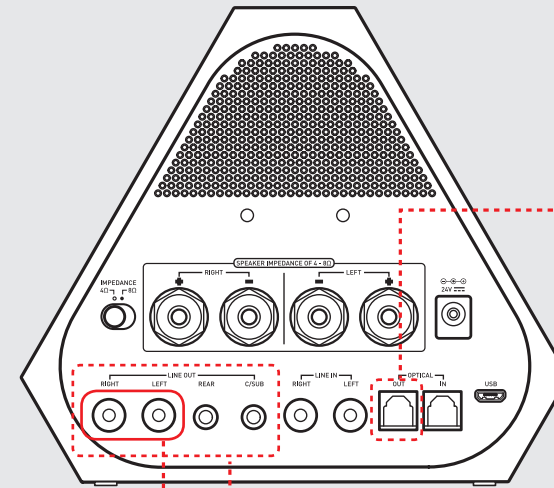
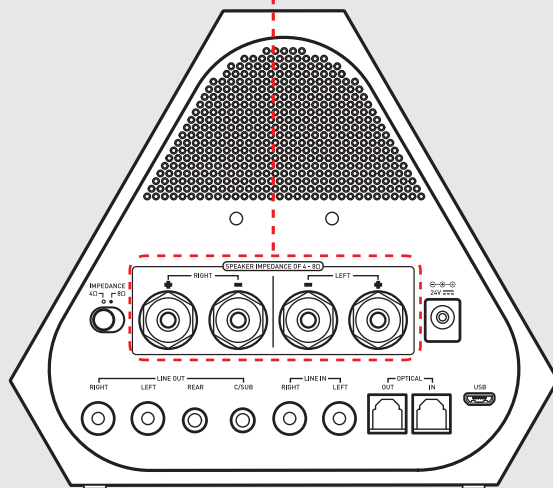
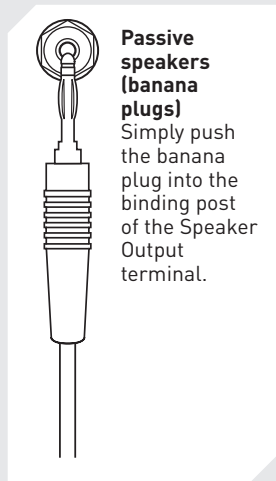
1/8" (3.5mm) Headphones

CONNECTIVITY (cont.)

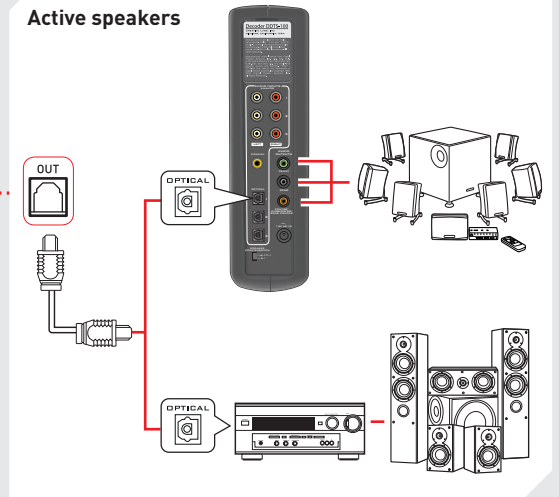
Speaker System



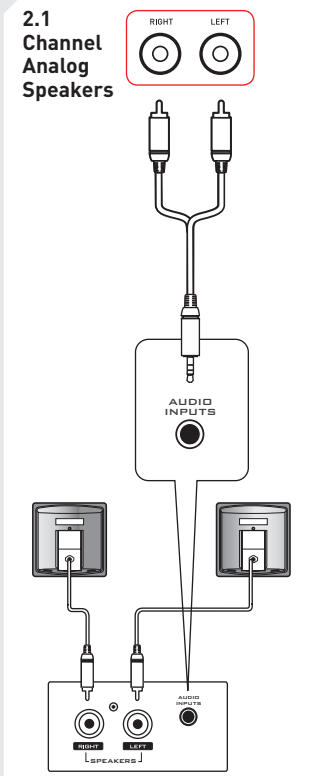
OR



Active speakers

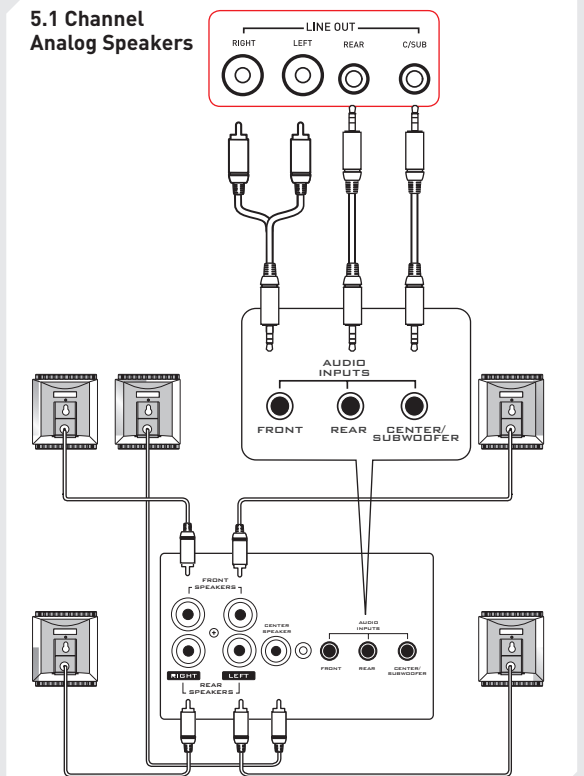


2.1 Channel Analog Speakers



OR

5.1 Channel Analog Speakers



EXPERIENCING THE SOUND BLASTER X7

To truly test the capabilities of the Sound Blaster X7 and the quality of the audio reproduction, our team performs listening tests with a variety of genres and with different pairs of headphones. We do not believe in limiting ourselves to just gaming demos, but to achieve a more critical assessment, we use Industry Reference Tracks for the auditions. For an inclusive listening experience, we also do not confine ourselves to using just our signature Aurvana Headphones, but have included in our tests the Fostex T50RP Critical Listening Headphone as well as the Beyerdynamic DT880 (600 ohms) headphones among others.

Demo #1: Experience unparalleled realism Hans Zimmer – Modern Warfare 2: Opening Title

What has the award winning German music composer, Mr Hans Zimmer, to do with games? Well, very much! To bring out the realism in games, compelling detailed graphics and captivating audio must go hand in hand. Hans Zimmer's masterpiece in Modern Warfare 2: Opening Title is able to draw out the suspense, fear and heroic spirit of the game. If played on just measly speakers or average headphones, the soundstage and presence will never be felt, let alone London Philharmonic Orchestra's spectacular scoring for this game. However, when played through the Sound Blaster X7, the opening piece creates an ambience that puts you right there in the battlefield! Truly, music stirs the emotions and in this "Opening Title", either courage rises out of you or goosebumps out of fear!



Demo #2: Experience powerful vocals Leona Lewis – Bleeding love

Leona Lewis's *Bleeding Love* is the top selling single world wide in 2008. The pop/R&B ballad showcases Leona's impressive vocal prowess. Accompanied by church organs, synthesized strings, wood block percussions and even a distorted marching drum, this song is brought to a whole new level of rhythm via the Sound Blaster X7. The Sound Blaster X7 is adept to splendid displays of contemporary songs as it is for audiophile music and even music created for games.



Demo #3: Experience compelling movies Dolby Demo – Life of Pi

<http://www.dolby.com/us/en/technologies/dolby-digital-plus/life-of-pi-demo.html>

If you have been watching movies on your tablet or smartphones, you would notice the lack of impact and cinematic audio effects. Let this demo of the award winning Life of Pi show you what the built-in SB-Axx1 multi-core processor on the Sound Blaster X7 can do for your mobile movie experience. Simply push the SBX button on the Sound Blaster X7 to activate Sound Blaster's intelligent processing capabilities and you will be transported into the movie itself! Experience true-to-life surround sound, enhanced movie dialogs and minimized volume level changes, just like in the cinemas. Have absolute audio control over any movie audio using the Sound Blaster Central mobile app (for iOS and Android) or the Sound Blaster Control Panel software (for PC and Mac).



ENHANCING AUDIO PLAYBACK

SOUND BLASTER X7 CONTROL PANEL FOR PC/MAC



The **Sound Blaster X7 Control Panel** software for PC/Mac gives you simplified control and complete configuration of every playback and voice aspect of the Sound Blaster X7. Visit <http://support.creative.com> to download the Sound Blaster X7 Control Panel.

Overview

- 1 **SBX audio settings**
 - Select audio enhancements or modify settings
- 2 **CrystalVoice audio settings**
 - Select voice enhancements or modify settings
 - Choose other VoiceFX effects
- 3 **Scout Mode settings**
 - Activate Scout Mode to enhance audio realism in combat games
 - Assign short-cut keys to activate Scout Mode
- 4 **Speakers/Headphones settings**
 - Configure speakers or headphones
 - Perform speaker calibration
 - Test speaker polarity
- 5 **Cinematic settings**
 - Adjust the dynamic range of the Dolby Digital decoder
- 6 **Mixer settings**
 - Adjust volume levels of playback or recording outputs and channels
- 7 **Equalizer settings**
 - Select a preset equalizer profile
 - Modify equalizer settings
- 8 **Profile selection**
 - Shows the current audio profile loaded
 - Select another profile
 - Import/Export audio profiles



- 9 **Speaker/Headphone selection**
 - Select the audio output to speakers or headphones
- 10 **Volume Level Control**
 - Adjust master volume
 - Mute/unmute the volume

SOUND BLASTER X7 CONTROL APP FOR SMART DEVICES



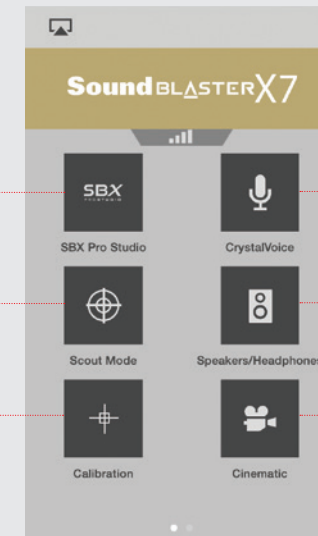
The Sound Blaster X7 comes with an amazing mobile application. **Sound Blaster X7 Control** app supports both iOS and Android, giving you unprecedented audio controls and enhancements right in the palm of your hand!



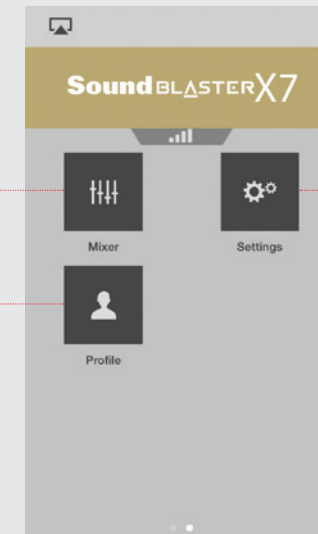
Download free from Apple App Store or Google Play Store.

Overview

- 1 Select or modify SBX audio settings
- 3 Activate Scout Mode to enhance audio realism in combat games
- 5 Calibrate your speakers to make your home theater rumble just right
- 7 Adjust volume levels of playback or recording outputs and channels
- 9 Select, import or export audio profiles



- 2 Select or modify CrystalVoice audio settings
- 4 Configure speakers or headphones
 - Test speaker polarity
- 6 Adjust the dynamic range of the Dolby Digital decoder



- 8 Modify Sound Blaster X7 Control settings

CUSTOMIZING PRE-DEFINED AUDIO PROFILES TO SUIT YOUR NEEDS

A. Music / Movies / Gaming

In the **SBX Pro Studio** menu ❶, select or modify the options as desired.

SBX Surround – Move the slider higher to “open” up a larger sound field and simulate a surround speaker setup. A lower percentage gives a more “centered” audio. SBX Surround can be experienced when you plug in a pair of headphones into the Sound Blaster X7.

SBX Crystalizer – A higher percentage means a larger amount of audio details restored.

SBX Bass – Slide the slider to adjust the enhancement of bass sounds. More harmonic tones will be added the higher you go. You can also adjust the Crossover Frequency to set the transition of bass.

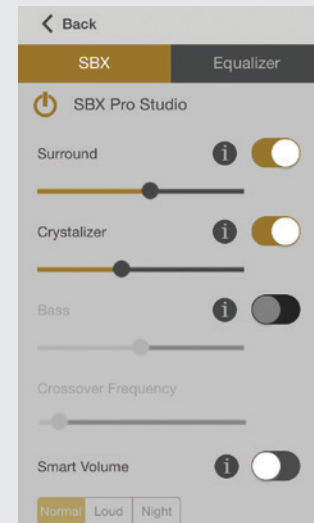
SBX Smart Volume – Activate Smart Volume to normalize volume levels (Normal), pump up the volume (Loud), or reduce loud burst of sounds for those late night sessions (Night). Move the slider to adjust the intensity accordingly.

SBX Dialog Plus – To hear dramatically clearer dialog, slide the slider higher for more voice enhancement.

Sound Blaster X7 Control Panel



Sound Blaster X7 Control



You can also select preset equalizer profiles or configure equalizer settings.

- For **Sound Blaster X7 Control Panel** : Click the **Equalizer** menu ❶.
- For **Sound Blaster X7 Control** : Tap [Equalizer].

B. Voice Communication

In the **CrystalVoice** menu ❷, select or modify the options as desired.

CrystalVoice FX – Select to choose up to 18 different VoiceFX effects to morph your voice instantaneously.

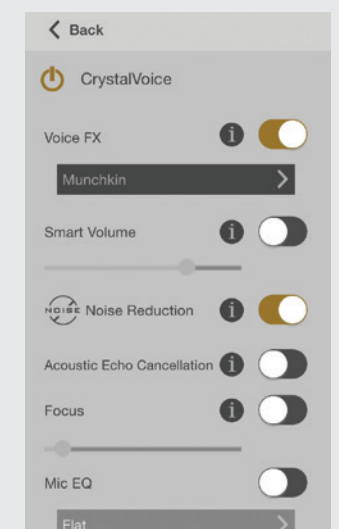
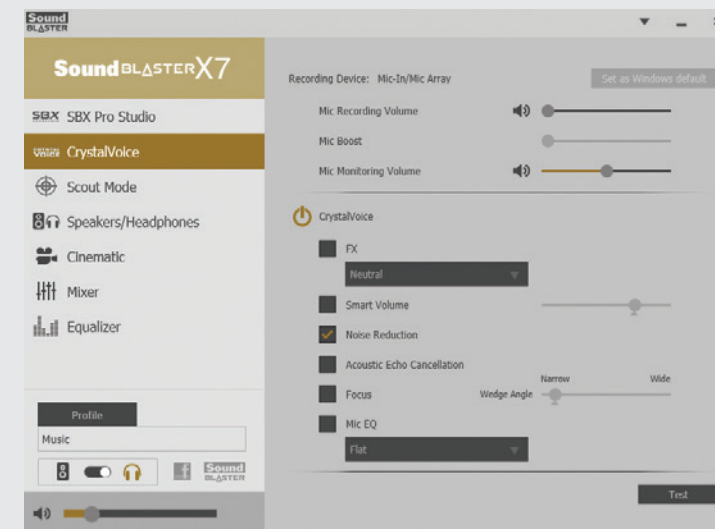
CrystalVoice Smart Volume – Activate Smart Volume to ensure voice volume consistency, regardless of your distance from the microphones. Slide the slider to adjust the level of mic normalization.

CrystalVoice Noise Reduction – Select to reduce unwanted noise from your conversation.


CrystalVoice Acoustic Echo Cancellation – To remove echoes from conversations, enable Acoustic Echo Cancellation.

CrystalVoice Voice Focus – Enable Voice Focus to create an acoustic zone where your voice is picked up clearly while noise outside the zone is suppressed.

Mic EQ – Select to choose a microphone equalizer preset.



CONFIGURING SPEAKERS / HEADPHONES

The **Speakers/Headphones menu**  allows you to configure your speakers and headphones so that you get the best listening experience with the Sound Blaster X7.

• Settings

Configure your speakers or headphones to achieve your preferred listening mode.

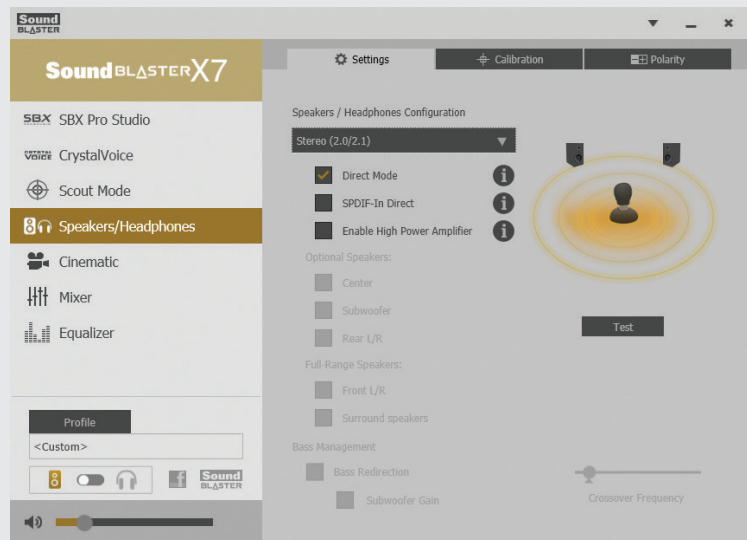
- **Direct Mode:** Bypass all playback, monitoring and microphone effects to listen to audio in its purest form, directly from the source.
- **SPDIF-In Direct:** Enable bit-to-bit input streaming of up to 24-bit/96kHz signals without processing. When turned on, other audio input sources will be disabled.
- **Normal Gain:** Select for headphones with 32 ~ 300 ohm impedance
- **High Gain*:** Select for headphones with 300 ~ 600 ohm impedance

• Calibration

Calibrate your speakers to make your home theater rumble just right.

• Polarity

Test the polarity of your connected speakers to determine any inappropriately wired speakers or out-of-phase speakers.

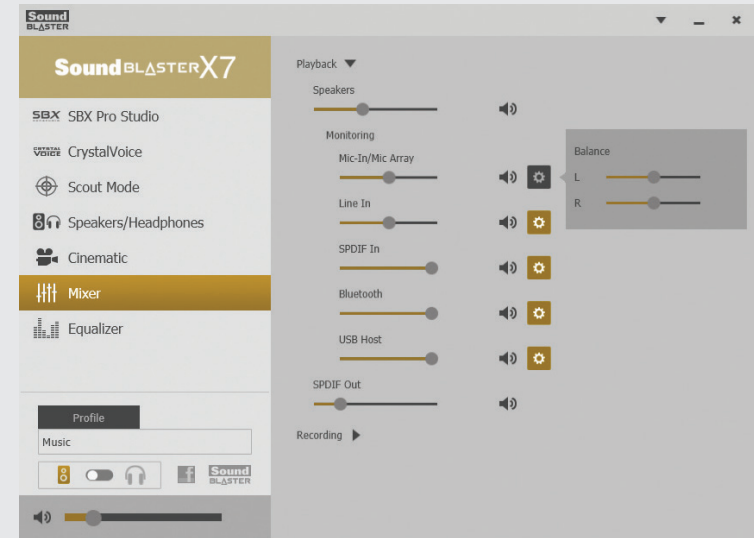


*** WARNING!**
Select the appropriate gain level before connecting your headphones.
High gain may damage your headphones if the impedance does not match.

CONTROLLING AUDIO OUTPUTS AND CHANNELS

A **Mixer** is also available on the Sound Blaster Control Panel software.

It allows you to adjust the volume levels of individual outputs and channels (microphone, headphones, etc).



1. Simply click the Mixer tab on the menu and adjust the volumes using the sliders.
2. Click the gear icon next to the sliders to adjust the left or right balance.

TESTING METHODOLOGY USING RMAA V6.4.0

This document guides you through the set up of your Sound Blaster® X7, for RMAA measurement in real-time 24-bit/192kHz Playback and Recording using the Analog Inputs and Outputs. Comparison charts for results of the 24-bit/44.1kHz, 24-bit/48kHz, 24-bit/96kHz and 24-bit/192kHz. RMAA measurements can also be found at the end of this document. These Analog I/O tests prove that superb quality analog audio inputs and outputs can be achieved by the product's very high quality DAC, ADC and board design.

Setting up Sound Blaster X7 for Analog Measurement

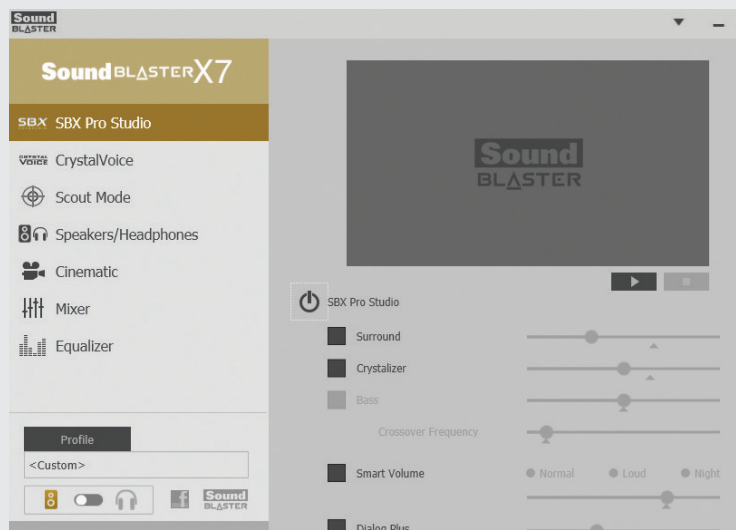
Your Sound Blaster X7 has the unique feature of using hardware digital signal processing to improve audio quality and listening experience. However, such processing is considered “distortion” by tools designed to test for audio precision.

Hence, in order to properly measure the Sound Blaster X7's analog precision, you must first disable all such processing.

The recommended procedure for disabling such processing is as follows.

1. Launch Sound Blaster X7 Control Panel

The Sound Blaster X7 Control Panel is an application designed specifically for input and output configurations of the Sound Blaster X7. Navigate to each of the following menu tabs, SBX Pro Studio, CrystalVoice, Scout Mode, Equalizer, and disable (“Off”) all audio effects from each of these features.



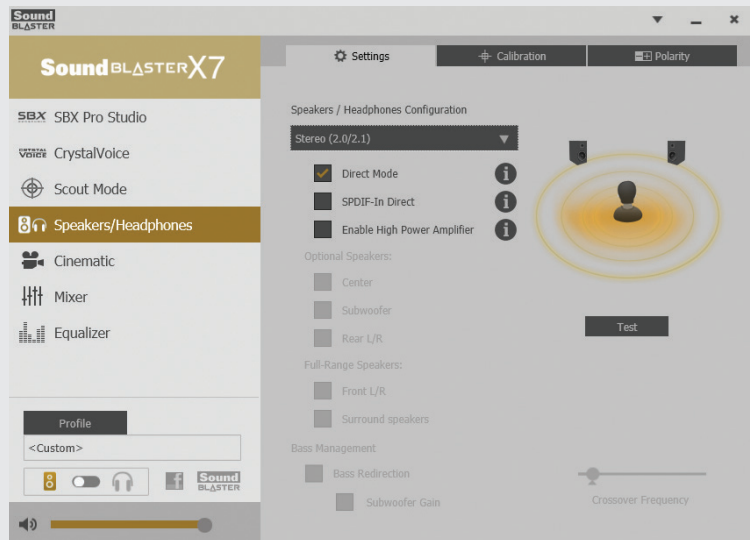
Turn off SBX Pro Studio



Turn off CrystalVoice



Turn off Equalizer



Turn on Direct Mode

2. Cable Loopback Connection and Set Impedance

Use a high quality RCA to RCA audio (stereo) cable; connect the Line output to Line Input for the loopback test. Then set the impedance to 8Ω at the back of Sound Blaster X7.

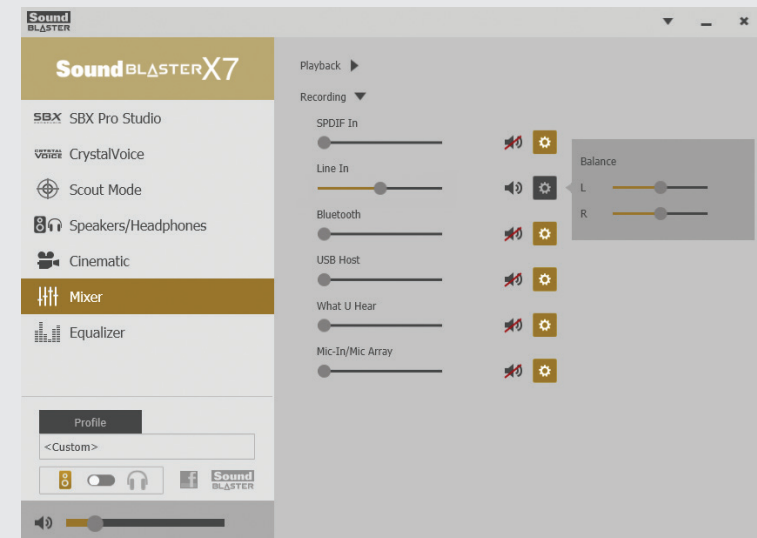


3. Output and Input Setup

- At the Mixer tab, select “Playback” and set the Master Speaker Volume to 100%. Set the rest of the Monitoring source and SPDIF Out to 0% and mute them.



- Select “Recording”, set Line In volume at 50%, set all other Recording inputs to 0% and mute them.



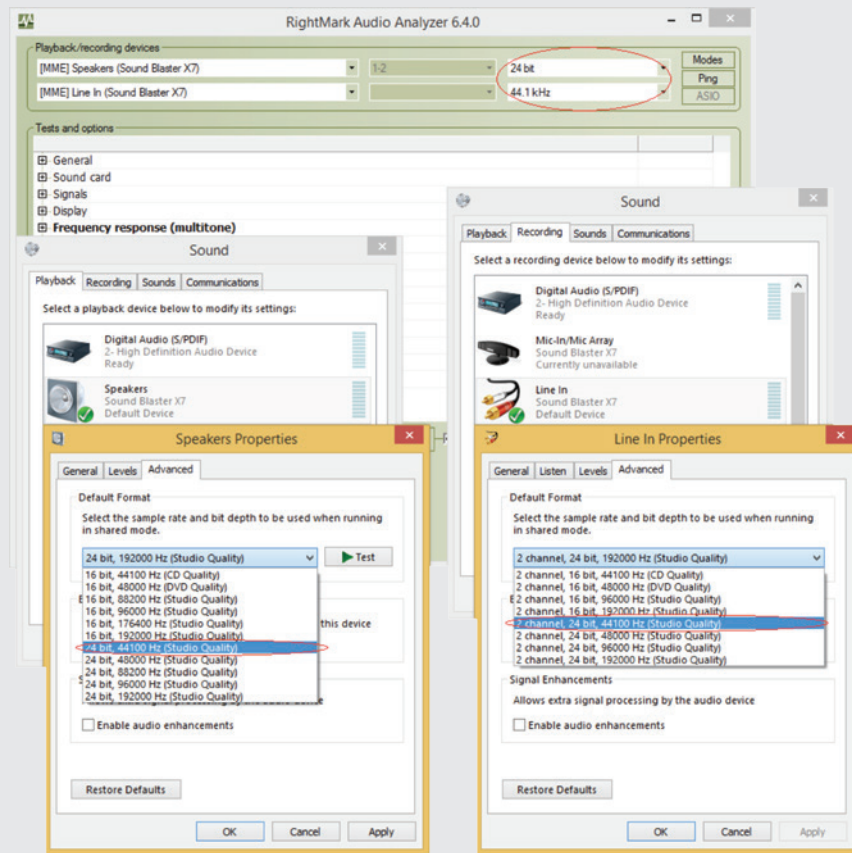
- Your Sound Blaster X7 is now properly set up for Analog measurement.

4. Setting Up RMAA for Analog Measurement:


- Launch RMAA v6.4.0

The latest version of the RMAA software can be downloaded from the following website:
<http://audio.rightmark.org/download.shtml>

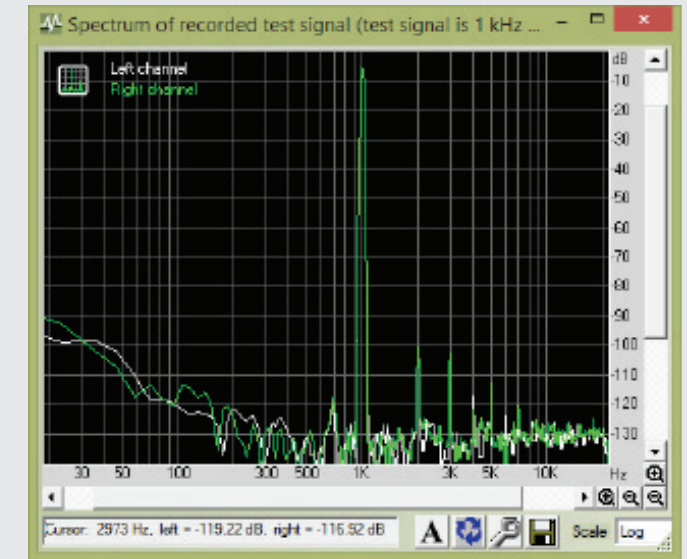
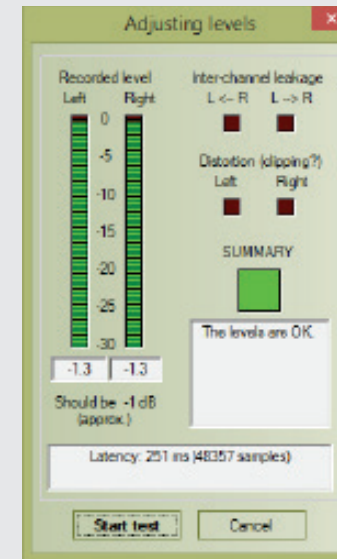
- Select the bit depth and sampling rate you wish to test. Select a matching sample rate for both the Speaker endpoint and Line In endpoint at the audio device properties page.



- Establishing playback and recording levels:

Click on this button  in the Run tests section,

Adjust the Recording Line-In level (@~50%) till the test tones are ~-1dB.



- Repeat the RMAA test with different sample rate such as 24-bit, 44kHz, 24-bit, 48kHz 24-bit, 96kHz or 24-bit, 192kHz.

- Summary of Audio Settings:

- Master Sampling Rate : Matched to the test performed e.g. 192kHz
- Speaker Mode : Stereo (Spk) for Line Out, Direct Mode On
- Master Volume : 100% (0dB)
- Record Source : Line-In @ 50% (~-1dB)
- All Other Inputs : 0% and Muted
- All Monitoring Source : 0% and Muted
- All Audio Effects : OFF
- Impedance Setting : 8Ω

RightMark Audio Analyzer Test Report for Sound Blaster X7 (24-bit, 192 kHz)

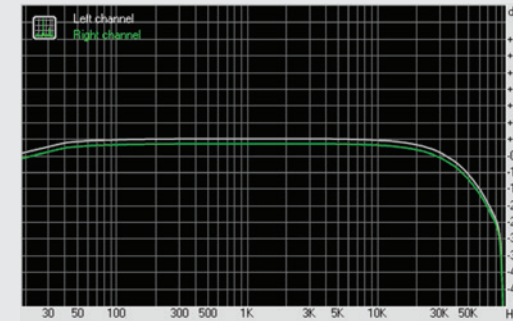
Testing device	Speakers (Sound Blaster X7)
Sampling mode	24-bit, 192 kHz
Interface	MME
Testing chain	External loopback (line-out - line-in)
RMAA Version	6.4.0 PRO

20 Hz - 20 kHz filter	ON
Normalize amplitude	ON
Level change	-0.1 dB / -0.3 dB
Mono mode	OFF
Calibration signal, Hz	1000
Polarity	correct/correct

Summary

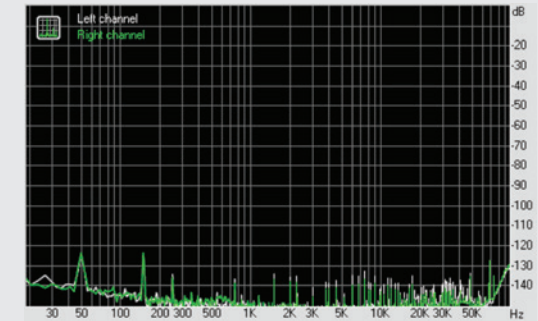
Frequency response (from 40 Hz to 15 kHz), dB	+0.02, -0.11	Excellent
Noise level, dB (A)	-118.5	Excellent
Dynamic range, dB (A)	118.3	Excellent
THD, %	0.0020	Excellent
THD + Noise, dB (A)	-91.7	Very good
IMD + Noise, %	0.0027	Excellent
Stereo crosstalk, dB	-112.4	Excellent
IMD at 10 kHz, %	0.0023	Excellent
GENERAL PERFORMANCE		VERY GOOD

Frequency response



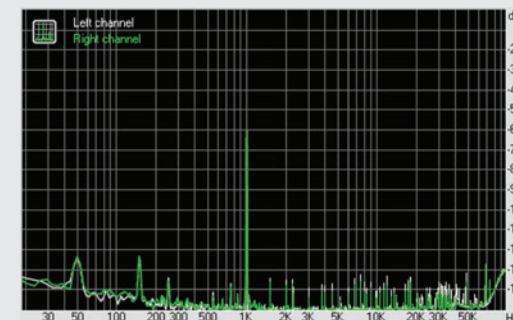
	Left	Right
From 20 Hz to 20 kHz, dB	-0.41, +0.02	-0.56, -0.13
From 40 Hz to 15 kHz, dB	-0.11, +0.02	-0.26, -0.13

Noise level



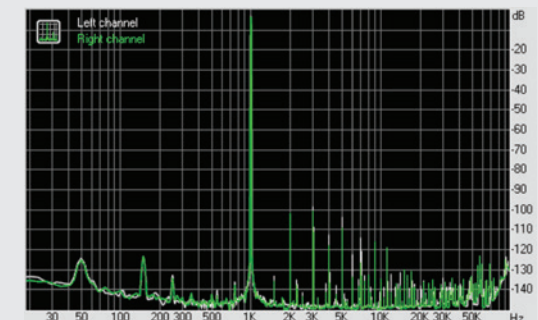
	Left	Right
RMS power, dB	-116.2	-116.7
RMS power (A-weighted), dB	-118.2	-118.9
Peak level, dB FS	-88.7	-88.1
DC offset, %	+0.0	+0.0

Dynamic range



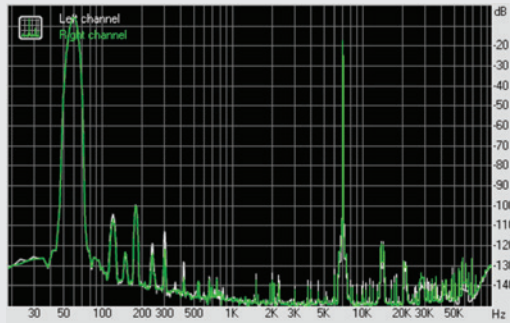
	Left	Right
Dynamic range, dB	+116.3	+116.1
Dynamic range (A-weighted), dB	+118.1	+118.6
DC offset, %	+0.00	+0.00

THD + Noise (at -3 dB FS)



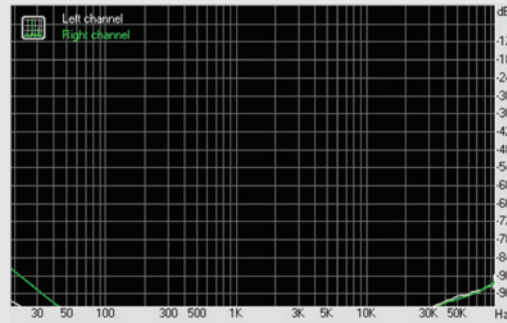
	Left	Right
THD, %	+0.0021	+0.0019
THD + Noise, %	+0.0021	+0.0019
THD + Noise (A-weighted), %	+0.0027	+0.0025

Intermodulation distortion



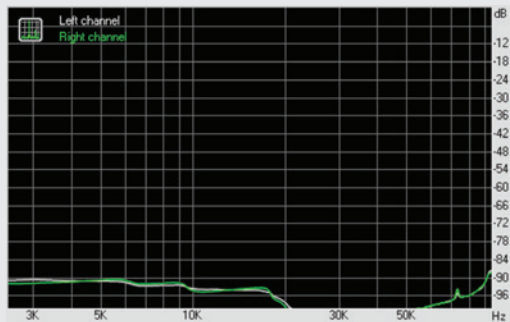
	Left	Right
IMD + Noise, %	+0.0028	+0.0026
IMD + Noise (A-weighted), %	+0.0017	+0.0016

Stereo crosstalk



	Left	Right
Crosstalk at 100 Hz, dB	-104	-106
Crosstalk at 1000 Hz, dB	-112	-111
Crosstalk at 10000 Hz, dB	108	-107

IMD (swept tones)



	Left	Right
IMD + Noise at 5000 Hz,	0.0028	0.0029
IMD + Noise at 10000 Hz,	0.0021	0.0019
IMD + Noise at 15000 Hz,	0.0020	0.0021

RightMark Audio Analyzer
Test Report for Sound Blaster X7 (24-bit, 96 kHz)

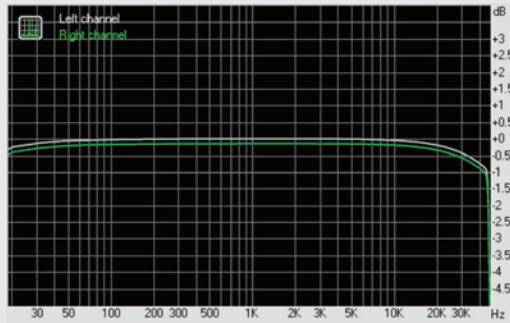
Testing device	Speakers (Sound Blaster X7)
Sampling mode	24-bit, 96 kHz
Interface	MME
Testing chain	External loopback (line-out - line-in)
RMAA Version	6.4.0 PRO

20 Hz - 20 kHz filter	ON
Normalize amplitude	ON
Level change	-0.1 dB / -0.3 dB
Mono mode	OFF
Calibration signal, Hz	1000
Polarity	correct/correct

Summary

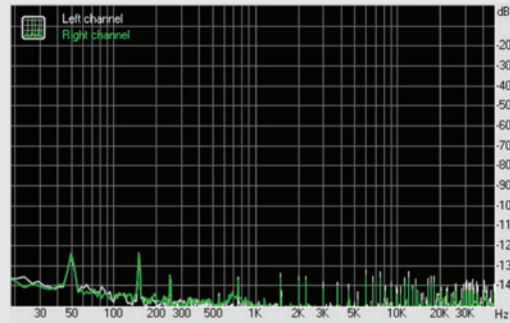
Frequency response (from 40 Hz to 15 kHz), dB	+0.02, -0.09	Excellent
Noise level, dB (A)	-118.5	Excellent
Dynamic range, dB (A)	118.5	Excellent
THD, %	0.0017	Excellent
THD + Noise, dB (A)	-93.0	Very good
IMD + Noise, %	0.0026	Excellent
Stereo crosstalk, dB	-112.8	Excellent
IMD at 10 kHz, %	0.0020	Excellent
GENERAL PERFORMANCE		VERY GOOD

Frequency response



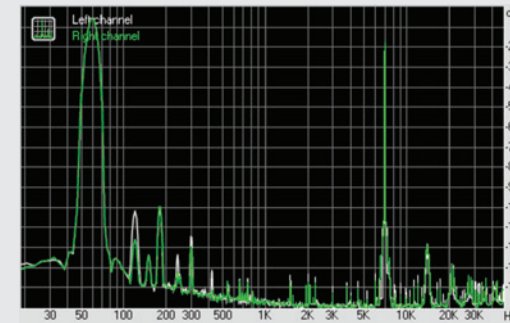
	Left	Right
From 20 Hz to 20 kHz, dB	-0.27, +0.02	-0.41, -0.13
From 40 Hz to 15 kHz, dB	-0.09, +0.02	-0.24, -0.13

Noise level



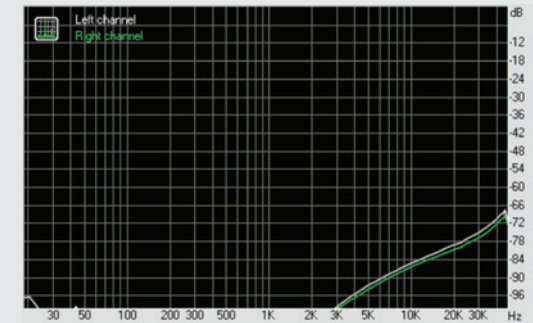
	Left	Right
RMS power, dB	-116.5	-116.6
RMS power (A-weighted), dB	-118.4	-118.7
Peak level, dB FS	-97.3	-98.0
DC offset, %	+0.0	+0.0

Intermodulation distortion



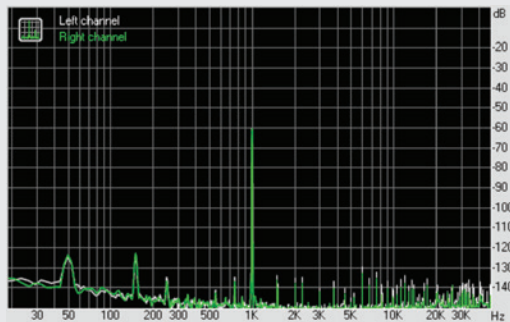
	Left	Right
IMD + Noise, %	+0.0026	+0.0025
IMD + Noise (A-weighted), %	+0.0015	+0.0016

Stereo crosstalk



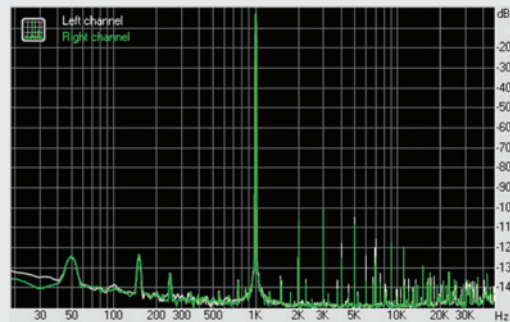
	Left	Right
Crosstalk at 100 Hz, dB	-108	-106
Crosstalk at 1000 Hz, dB	-112	-111
Crosstalk at 10000 Hz, dB	-84	-86

Dynamic range



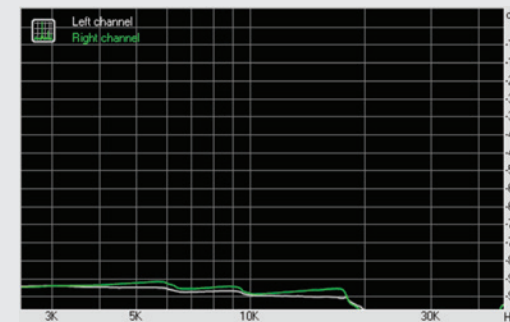
	Left	Right
Dynamic range, dB	+116.3	+116.5
Dynamic range (A-weighted), dB	+118.2	+118.7
DC offset, %	+0.00	+0.00

THD + Noise (at -3 dB FS)



	Left	Right
THD, %	+0.0017	+0.0016
THD + Noise, %	+0.0018	+0.0017
THD + Noise (A-weighted), %	+0.0023	+0.0022

IMD (swept tones)



	Left	Right
IMD + Noise at 5000 Hz,	0.0023	0.0027
IMD + Noise at 10000 Hz,	0.0017	0.0018
IMD + Noise at 15000 Hz,	0.0016	0.0020

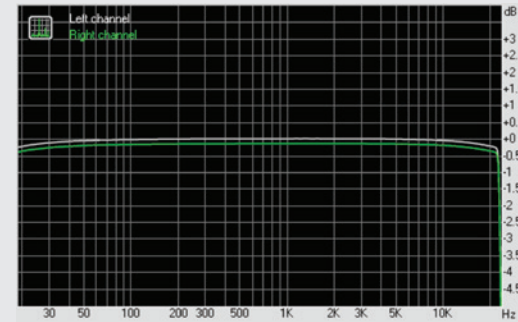
RightMark Audio Analyzer Test Report for Sound Blaster X7 (24-bit, 48 kHz)

Testing device	Speakers (Sound Blaster X7)
Sampling mode	24-bit, 48 kHz
Interface	MME
Testing chain	External loopback (line-out - line-in)
RMAA Version	6.4.0 PRO
20 Hz - 20 kHz filter	ON
Normalize amplitude	ON
Level change	-0.1 dB / -0.3 dB
Mono mode	OFF
Calibration signal, Hz	1000
Polarity	correct/correct

Summary

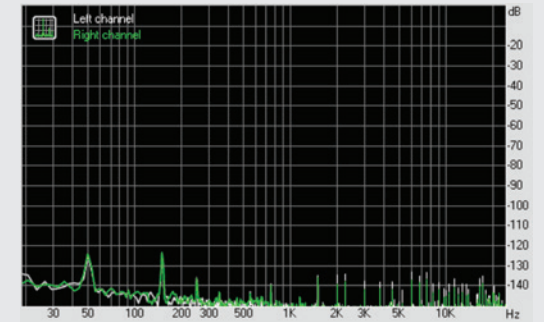
Frequency response (from 40 Hz to 15 kHz), dB	+0.02, -0.11	Excellent
Noise level, dB (A)	-118.8	Excellent
Dynamic range, dB (A)	118.6	Excellent
THD, %	0.0016	Excellent
THD + Noise, dB (A)	-93.3	Very Good
IMD + Noise, %	0.0026	Excellent
Stereo crosstalk, dB	-116.0	Excellent
IMD at 10 kHz, %	0.0019	Excellent
GENERAL PERFORMANCE		EXCELLENT

Frequency response



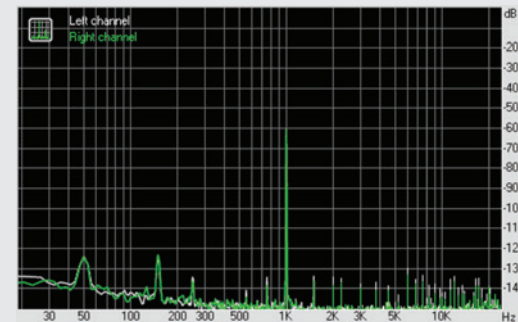
	Left	Right
From 20 Hz to 20 kHz, dB	-0.22, +0.02	-0.37, -0.13
From 40 Hz to 15 kHz, dB	-0.11, +0.02	-0.26, -0.13

Noise level



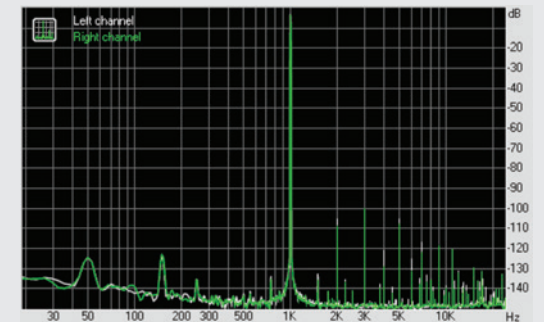
	Left	Right
RMS power, dB	-116.7	-117.0
RMS power (A-weighted), dB	-118.6	-119.1
Peak level, dB FS	-87.6	-92.5
DC offset, %	+0.0	+0.0

Dynamic range



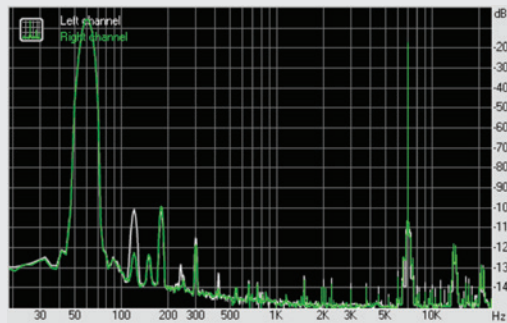
	Left	Right
Dynamic range, dB	+116.4	+116.8
Dynamic range (A-weighted), dB	+118.3	+118.9
DC offset, %	+0.00	+0.00

THD + Noise (at -3 dB FS)



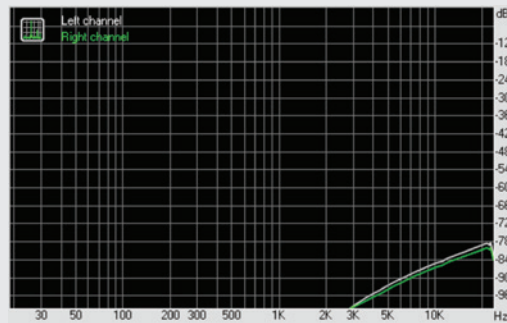
	Left	Right
THD, %	+0.0016	+0.0016
THD + Noise, %	+0.0017	+0.0017
THD + Noise (A-weighted), %	+0.0022	+0.0021

Intermodulation distortion



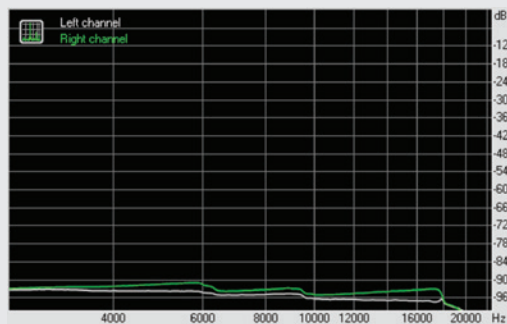
	Left	Right
IMD + Noise, %	+0.0026	+0.0025
IMD + Noise (A-weighted), %	+0.0014	+0.0015

Stereo crosstalk



	Left	Right
Crosstalk at 100 Hz, dB	-113	-113
Crosstalk at 1000 Hz, dB	-116	-114
Crosstalk at 10000 Hz, dB	-84	-86

IMD (swept tones)



	Left	Right
IMD + Noise at 5000 Hz,	0.0021	0.0027
IMD + Noise at 10000 Hz,	0.0015	0.0018
IMD + Noise at 15000 Hz,	0.0014	0.0021

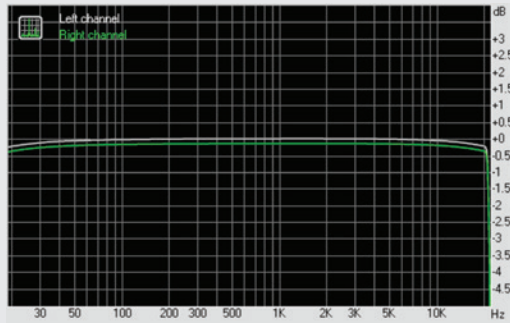
RightMark Audio Analyzer
Test Report for Sound Blaster X7 (24-bit, 44 kHz)

Testing device	Speakers (Sound Blaster X7)
Sampling mode	24-bit, 44 kHz
Interface	MME
Testing chain	External loopback (line-out - line-in)
RMAA Version	6.4.0 PRO
20 Hz - 20 kHz filter	ON
Normalize amplitude	ON
Level change	-0.1 dB / -0.3 dB
Mono mode	OFF
Calibration signal, Hz	1000
Polarity	correct/correct

Summary

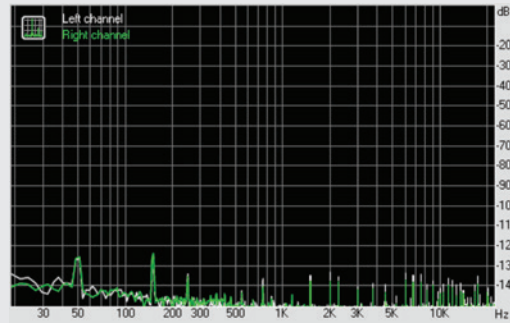
Frequency response (from 40 Hz to 15 kHz), dB	+0.02, -0.11	Excellent
Noise level, dB (A)	-118.8	Excellent
Dynamic range, dB (A)	118.8	Excellent
THD, %	0.0015	Excellent
THD + Noise, dB (A)	-94.1	Very good
IMD + Noise, %	0.0025	Excellent
Stereo crosstalk, dB	-115.7	Excellent
IMD at 10 kHz, %	0.0018	Excellent
GENERAL PERFORMANCE		VERY GOOD

Frequency response



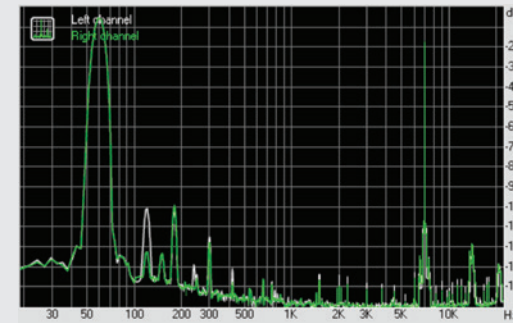
	Left	Right
From 20 Hz to 20 kHz, dB	-0.21, +0.02	-0.36, -0.13
From 40 Hz to 15 kHz, dB	-0.11, +0.02	-0.26, -0.13

Noise level



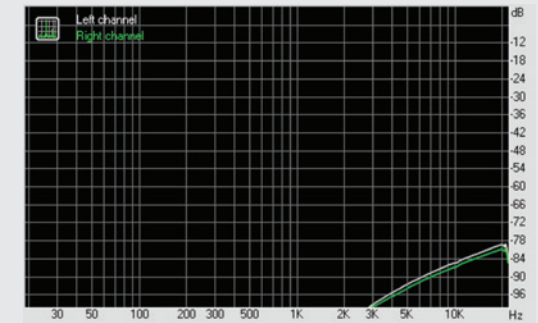
	Left	Right
RMS power, dB	-116.6	-116.9
RMS power (A-weighted), dB	-118.5	-119.2
Peak level, dB FS	-101.5	-100.2
DC offset, %	+0.0	+0.0

Intermodulation distortion



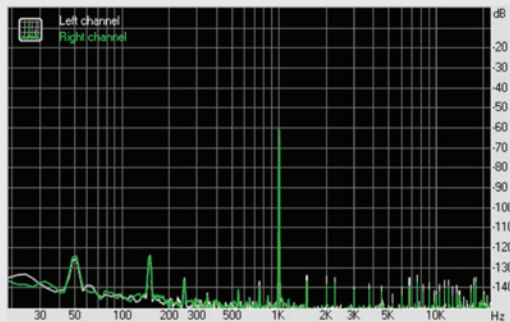
	Left	Right
IMD + Noise, %	+0.0025	+0.0024
IMD + Noise (A-weighted), %	+0.0014	+0.0014

Stereo crosstalk



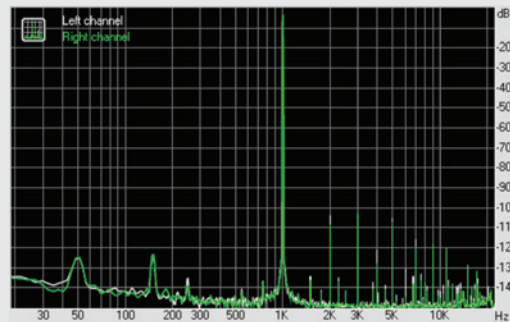
	Left	Right
Crosstalk at 100 Hz, dB	-111	-114
Crosstalk at 1000 Hz, dB	-117	-113
Crosstalk at 10000 Hz, dB	-84	-86

Dynamic range



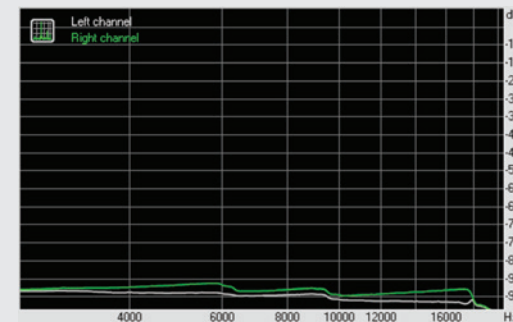
	Left	Right
Dynamic range, dB	+116.7	+116.7
Dynamic range (A-weighted), dB	+118.6	+119.0
DC offset, %	+0.00	+0.00

THD + Noise (at -3 dB FS)



	Left	Right
THD, %	+0.0016	+0.0014
THD + Noise, %	+0.0016	+0.0015
THD + Noise (A-weighted), %	+0.0021	+0.0019

IMD (swept tones)



	Left	Right
IMD + Noise at 5000 Hz,	0.0018	0.0025
IMD + Noise at 10000 Hz,	0.0014	0.0017
IMD + Noise at 15000 Hz,	0.0013	0.0020

Test Comparison Chart

Test	[MME] Speakers (SB X7) 24-bit/192 kHz	[MME] Speakers (SB X7) 24-bit/96 kHz	[MME] Speakers (SB X7) 24-bit/48 kHz	[MME] Speakers (SB X7) 24-bit/44 kHz
Frequency response (from 40 Hz to 15 kHz), dB	+0.02, -0.11	+0.02, -0.09	+0.02, -0.11	+0.02, -0.11
Noise level, dB (A)	-118.5	-118.5	-118.8	-118.8
Dynamic range, dB (A)	118.3	118.5	118.6	118.8
THD, %	0.0020	0.0017	0.0016	0.0015
THD + Noise, dB (A)	-91.7	-93.0	-93.3	-94.1
IMD + Noise, %	0.0027	0.0026	0.0026	0.0025
Stereo crosstalk, dB	-112.4	-112.8	-116.0	-115.7
IMD at 10 kHz, %	0.0023	0.0020	0.0019	0.0018



Technical Specification

GENERAL	
Connection Type (PC Interface)	USB 2.0 HS
Outputs: Speaker/Headphone (Analogue)	Stereo RCA/Headphone (6.5mm), 5.1, passive speakers
Inputs (Analogue)	Line, Mic
Digital Connectivity	Optical In/Out, USB, USB Host
Maximum Playback Quality	24-bit/192kHz
Maximum Recording Quality	24-bit/192kHz
SNR for Playback	127dB (DAC)
Headphone(s) Output	2 (1 x 1/4" & 1 x 1/8")
Charging Output	up to 2.1A
Headphone Amplifier	Up to 600ohms
Digital Amplifier	2 x 50W*
Wireless (Digital RF 2.4GHz)	Bluetooth/NFC
ASIO 2.0 Support	Playback/Record
Additional Features	Work with PC, Mac, iOS, Android devices, Internal Mic Array
	Hardware Accelerated SBX Pro Studio, Built-in Mic
Wireless Connectivity	
Bluetooth	4.1 support LE
Bluetooth Profile	A2DP, HFP, AVRCP
Codec	SBC, AAC, aptX-LL
Multi-point Connectivity	2
NFC Quick Pairing/Connect	Yes
AUDIO ENHANCEMENT TECHNOLOGY	
Virtual 3D Surround (Headphones/Speakers)	Hardware Accelerated
SBX Pro Studio	
Crystallizer	
Speaker Bass	
Smart Volume	
Dialog Plus	
Dolby Digital Decoder	Yes
VOICE ENHANCEMENT TEHCNOLOGY	
Microphone EQ	Yes (12 Presets)
Noise Reduction	CrystalVoice
FX (Voice Effects)	
Smart Volume	
GAMES	
Host OpenAL /EAX 5.0	Yes
Virtual 3D Surround (Headphones)	SBX Pro Studio
Alchemy (DS3D)	Yes



CREATIVE®

Corporate Headquarters

Creative Technology Ltd, 31 International Business Park #03-01 Creative Resource Singapore 609921
Tel: +[65] 6895 4000 Fax: +[65] 6895 4999 Creative Website: www.creative.com
For more details on Sound Blaster products, visit www.soundblaster.com

© 2014 Creative Technology Ltd. All rights reserved. The Creative logo, Sound Blaster, the Sound Blaster logo, SBX Pro Studio, the SBX logo, CrystalVoice and VoiceFX are registered trademarks or trademarks of Creative Technology Ltd. in the United States and/or other countries. Mac and iPhone are trademarks of Apple Inc., registered in the U.S. and other countries. iPad Air and iPad mini are trademarks of Apple Inc. Android is a registered trademark of Google Inc. Windows is a registered trademark of Microsoft Corporation in the United States and/or other countries. aptX is a trademark of CSR plc. The Bluetooth® word mark and logos are owned by Bluetooth SIG, Inc. and any use of such marks by Creative Technology Ltd is under license. All other products are trademarks or registered trademarks of their respective owners. The software for the product may not be used separately from the hardware. Information in this document is subject to change without notice and does not represent a commitment on the part of Creative Technology Ltd.