

FROM ANALOGUE AND DSD MASTERS

AUDIOPHILE SPEAKER SET-UP

2^xHD
FUSION



GREAT SAMPLING TRACKS INCLUDED

1 ALBUM PRESENTATION 0:58

The following selection of music and test tracks will help you optimize the placement of your speakers and obtain their full potential of imaging and bass response.

A selection of various styles of music on tracks 2 to 42 was chosen as a reference for timbre, dynamics & depth-of-field.

Tracks 33 to 47 were recorded with two, 2xHD-Omni microphones. These tracks have very large bandwidths; from 20 Hz to 50 kHz with extreme dynamics. Please refer to these tracks each time before and after changing the position of your speakers, in order to obtain live but balanced sound and imaging. You can put any track in repeat mode while setting up your speakers in order to facilitate your work.

WARNING: Tracks 43 to 47 have extreme dynamics and a very low bass extension, so please make sure to listen to them at medium volume.

- 2 Jazz ensemble - Pink Panther theme 3:54
- 3 Jazz vocal - Everybody Loves Somebody Sometime - Holly Cole 2017 4:25
- 4 Blues vocal - Sonny Boy Williamson 4:47
- 5 Jazz trio - early Bill Evans 5:14
- 6 Good Morning Heartache - Robert Len 3:42
- 7 Jazz Session 3:47
- 8 Bouzouki music - Greek Tycoon 3:14
- 9 Bach Cello Suite (excerpt) 2:27
- 10 Debussy String Quartet in G Minor 3:46

- 11 Piano live concert Chopin 2:17
- 12 Vocal quartet - J'entends la chanson des filles 1:12
- 13 Baroque ensemble violin, flute, harpsichord - Bach Brandenburg Concerto (excerpt) 5:28
- 14 Jazz ensemble (trumpet solo) 1:28
- 15 Lieder Recital live - soprano & piano 2:20
- 16 Harp music - live recording 3:36
- 17 Sonata for Cello solo Op. 24 No. 3 - (excerpt) Paul Hindemith 1:41
- 18 Guitar - Concert hall 1:10
- 19 Bassoon 1 - Concert hall 0:22
- 20 Bassoon 2 - Concert hall 0:40
- 21 Violin - Concert hall 2:00
- 22 Duduk - Concert hall 0:59
- 23 Bawu - Concert hall 0:52
- 24 Trumpet - Concert hall 0:47
- 25 Flugelhorn - Concert hall 1:06
- 26 Symphony Orchestra live - Violin concerto (excerpt) Sibelius 6:40
- 27 Symphony Orchestra - Dance of the Knights Prokofiev 2:09
- 28 Symphony Orchestra - live - España Chabrier 0:44
- 29 Symphony Orchestra - Pictures at an Exhibition (excerpt) Mussorsky 1:14
- 30 Rite of Spring (Excerpt) Stravinsky 4:58
- 31 Organ music - live Messaien 1:30

32 EXTREME DYNAMICS 0:38

Tracks 33 to 47 have very large bandwidths; from 20 Hz to 50 kHz with extreme dynamics. Please refer to these tracks each time before and after changing the position of your speakers, in order to obtain live but balanced sound and imaging. You can put any track in repeat mode while setting up your speakers in order to facilitate your work.

WARNING: These tracks 43 to 47 have extreme dynamics and a very low bass extension, so please make sure to listen to them at medium volume.

33 Percussion 1 0:58

34 World Music 1 - accordion, double bass, guitar & flute 1:02

35 World Music 2 - accordion, double bass, guitar & flute 0:58

36 Percussion 2 1:47

37 Percussion 3 1:09

38 Percussion 4 0:42

39 Percussion 5 1:39

40 Percussion 6 1:05

41 Percussion 7 1:26

42 STEP 1: INSTRUCTIONS FOR SPEAKER PLACEMENT: BASS 2:07

This step includes diffusion / imaging /and corner treatment.

The goal is to find maximum bass pressure from your speakers. Tracks #43 to 47 will assist you.

On track 43, you'll hear a deep bass sound produced by a djembe drum and on tracks 44 to 47, you'll hear an octobass. At a height of almost 11.5 ft., the octobass is the largest double-bass in existence - there are only 6 in the world. This instrument produces extreme low bass extension harmonics: down to 20 Hz with a peak at 28 Hz.

SPEAKER PLACEMENT: It's important to not turn on your subwoofer before completing steps 1 and 2 of the speaker placement.

To produce a well-balanced sound, you must first find the best spot for your speakers from which they'll reproduce the deepest and strongest bass sound possible. There are only a few places in a room where this can be found. Start by placing the speakers directly against the wall to give you a reference of how much bass is available from your speakers. Use tracks 43 to 47 as a reference.

Next, start moving the speakers forward inch-by-inch. Listen to them at each stop, until you find the best bass response. Once you found your preferred bass sound, make a mark on the floor using masking tape or other means. Make sure that both speakers are the same distance from the back wall. (illustration 1)

43 Djembe - extreme bass 1:30

44 Octobass - 28 Hz, 56 Hz 0:27

45 Octobass - 42 Hz, 84 Hz 0:26

46 Octobass - 28 Hz to 224 Hz 0:32

47 Octobass - 36 Hz, 56 Hz, 112 Hz, 224 Hz 0:27

48 STEP 2: THE TOE-IN 1:33

DISTANCE BETWEEN THE SPEAKERS AND THEIR ANGLE (the 'the toe-in'). The distance between the speakers will affect the amount of bass that you hear, so you need to try to find the right distance between the two speakers. The ideal listening position- called the sweet spot - is sitting at the apex of a triangle where the distance from the sweet seat to each speaker equals 1.2 times the distance between the speakers. That's called the 1.2 rule. In other words, if the two speakers are 10 ft. Apart, then the listener should be 12 ft. from each speaker. (illustration 2)

In general, the wider the space between the speakers, the more toe-in you should try. Another general rule is that the listener should be able to see the inner side of the speakers. (illustration 3A & 3B)

Once this is completed you have found your ideal sweet spot. You're ready to do step 3. But for nearfield listening with small speakers, the listener and the speakers should form a perfect triangle.

Generally nearfield conditions will benefit from very low room coloration, flat frequency response, and a small sound stage. (illustration 4)

49 STEP 3: LEVELLING YOUR SPEAKERS 0:27

After finding the correct position for your speakers, the last step is to make sure that they are level. You do this by placing a level on the top of your speakers. If the top is not flat, place it beneath them (the illustration will help you). Once they are level, make sure that they are stable. (illustration 5)

50 ANGLE 0:44

After leveling the speakers, listen to tracks 2 to 15 as a reference. If your seating position is very low, unscrew the rear legs of your speakers in order to put them at an angle that would compensate. (illustration 6A)

On the other hand, if your seat is higher than normal, reverse the procedure by unscrewing the front legs. (illustration 6B)

Make sure to listen to reference tracks 2 to 15 before and after each trial. Once you find the best angle, make sure that both speakers are stable and at the same height.

51 STEP 4: SUBWOOFER PLACEMENT AND PHASING 1:01

There are two subwoofer placements that can work. One will provide the deepest bass possible in the room; the other will have the best phase integrity. The first placement is in one of the corners behind the speakers. This will provide the longest wavelength, therefore the deepest bass response. (illustration 7, option 1)

Most subs have 3 knobs: phasing, crossover and volume. The phasing knob is marked 0 (in phase) to 180 (out of phase). You must find the right degree of phasing between the sub and the main speakers by turning the knob in increments and listening to the results. The goal is to find maximum bass pressure. Use tracks 43 to 47 for this step. (illustration 8)

52 CROSSOVER SETTING 0:48

Next, you'll need to fine-tune the subwoofer's crossover and volume settings. A basic rule is to start the crossover setting at the lowest frequency possible without having a frequency hole between the sub and the main speakers. Start the crossover at around 28 Hz or its lowest setting with a volume that matches your speakers. Then slowly turn the frequency selection knob until you reach the most pleasing and natural sound.

Using the sub's volume control, adjust the amount of volume that's suitable for your room. Use tracks 3 & 6 to help you find the ideal balance for your sub.

53 SUBWOOFER SECOND OPTION 0:20

The second option which requires two subs is to put one sub per channel next to the exterior side of each speaker (illustration 7, option 2). In this case, the source point and phase are improved but the wavelength will be reduced as opposed to the results of option 1.

54 STEP 5: CORNER TREATMENT, IMAGING AND DIFFUSION 0:54

A basic rule for your room acoustics is to have the first reflection treated by using sound diffusers. The diffuser's dimension should be at least 2 feet square, and 7 to 9 inches thick. A thinner diffuser will be less efficient.

In order to find the desired position for the diffusers, you'll need a mirror and another person to help you.

This person moves the mirror along the side wall between the speaker and you sitting in the sweet spot. (illustration 9) Once you see the speaker in the mirror, that'll be the right place for the location of the center of the diffuser. The same technique will apply if you decide to put a diffuser on the ceiling. (illustration 10)

55 CORNERS ABSORBERS 0:13

Another basic rule is to treat the two corners behind your speakers with sound absorbers. (illustration 11)

Both the diffusers and sound absorbers are easily available commercially.

56 ROOM CHALLENGES 0:32

Some rooms are unfortunately not perfectly suited for a flawless listening sweet spot. They may have an opening to a dining room or den from the right or left wall, or an opening in the back, behind the speakers. Windows or an overly high ceiling are also inhibiting factors.

So the next procedures will help you to improve a less than perfect situation. (illustration 12)

57 PRECISE LOCATION AND DEPTH OF FIELD 0:36

The following series of tracks will help you identify precise location and depth of field:

- | | | | |
|----|------------------------|----|---|
| 58 | Center, 8 ft. 0:49 | 66 | Mid-right, 28 ft. 0:34 |
| 59 | Mid-left, 11 ft. 0:37 | 67 | Right, 30 ft. 0:35 |
| 60 | Left, 18 ft. 0:45 | 68 | Octobass solo 1:28 |
| 61 | Mid-right, 11 ft. 0:46 | 69 | Introducing 2xHD Audiophile High-Res System Test album 0:23 |
| 62 | Right, 18 ft. 0:43 | | |
| 63 | Left, 30 ft. 0:38 | | |
| 64 | Mid-left, 28 ft. 0:28 | | |
| 65 | Center, 28 ft. 0:39 | | |

Produced by René Laflamme and André Perry

Text scripted and spoken by Yaël Brandeis

2xHD mastering: René Laflamme, 2xHD Executive Producer: André Perry

Album cover & insert artwork: André Perry

Illustrations: Jean-Luc Bonin

Photos A: René Laflamme, Photos B: Constantin Kekemenis, Photos C: André Thériau

Graphics: Sylvie Labelle



Tracks 1, 8, 9, 17 to 25, 32 to 35, 41, 42 to 69 recorded by René Laflamme

Tracks 2, 7, 10 to 16, 26 to 31, 36 to 40, 43 recorded by Jean de la Durantaye

Track 3 recorded by George Seara

Track 4 recorded by Ivar Rosenberg

Track 5 recorded by Hans Georg Brunner-Schwer and Joachim Ernst Bernent

Track 6 recorded by Robert Len

Tracks 9, 17-25, 58-68 were recorded by René Laflamme at the *Maison symphonique de Montréal*, residence of the *Orchestre Symphonique de Montréal (OSM)* and known as one of the world's great halls.

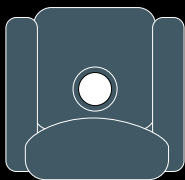
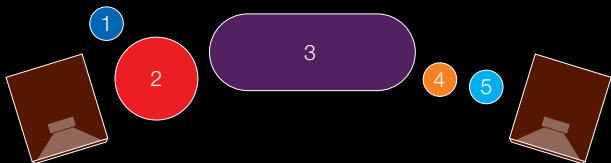
SNC-Lavalin was responsible for the design and construction of the facility, while Jack Diamond of Diamond Schmitt Architects was the lead architect on the project. SNC-Lavalin assumed the operation of the facility following its inauguration in September 2011.

AUDIOPHILE SPEAKER SET-UP

ILLUSTRATIONS

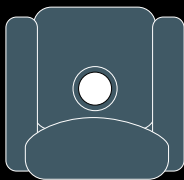
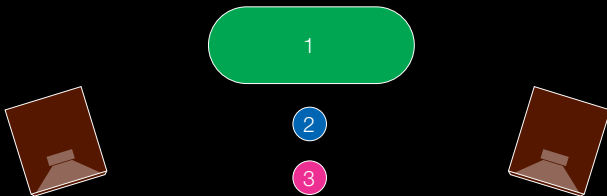
The background is a dark, textured surface, possibly a close-up of a material like leather or a fine-grained stone. Overlaid on this are several concentric, semi-transparent circular lines that create a sense of depth and movement. The lines are slightly offset from each other, giving the impression of a spiral or a series of overlapping rings. The overall aesthetic is modern and sophisticated.

INSTRUMENT PLACEMENT



1 bass 2 drums 3 brass 4 trumpet 5 saxophone

TRACK
02



1 piano 2 doublebass 3 voice

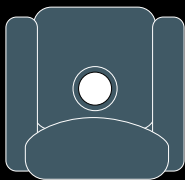
TRACK
03



1

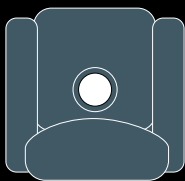
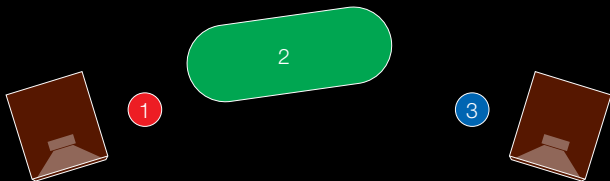
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3



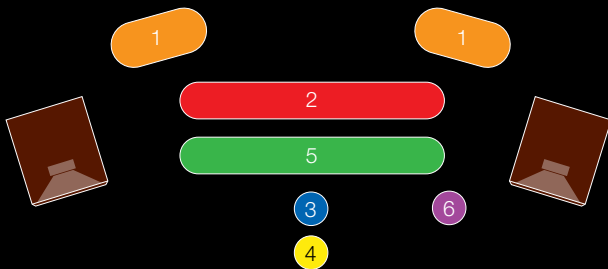
1 guitar 2 drums 3 voice & harmonica

TRACK
04



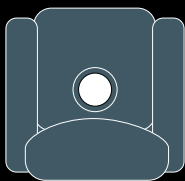
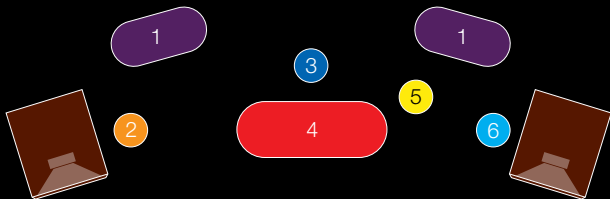
1 drums 2 piano 3 doublebass

TRACK
05



1 brass 2 drums 3 bass 4 flugelhorn 5 piano 6 electric guitar

TRACK
06



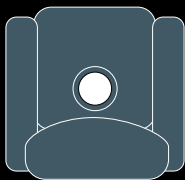
1 brass 2 trumpet 3 bass 4 drums 5 flute 6 saxophone

TRACK
07



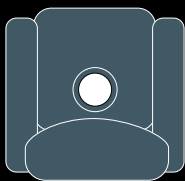
1

2



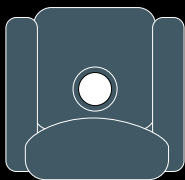
1 guitar 2 bouzouki

TRACK
08



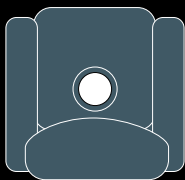
1 cello

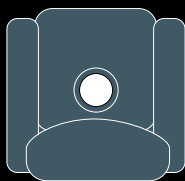
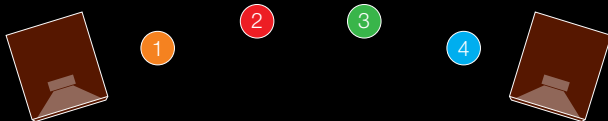
TRACK
09



1 violins 2 alto 3 cello

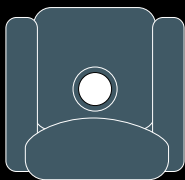
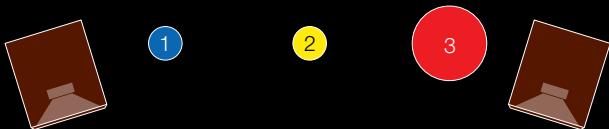
TRACK
10





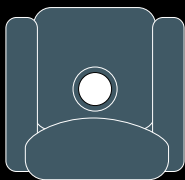
1 tenor 2 soprano 3 mezzo-soprano 4 baritone

TRACK
12



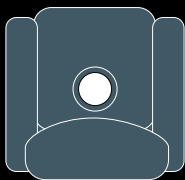
1 violin 2 flute 3 harpsichord

TRACK
13



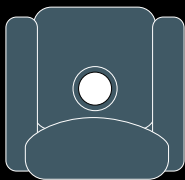
1 trumpet 2 drums 3 bass 4 piano

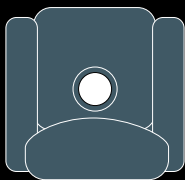
TRACK
14



1 piano 2 soprano

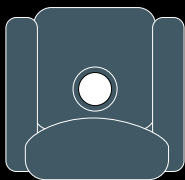
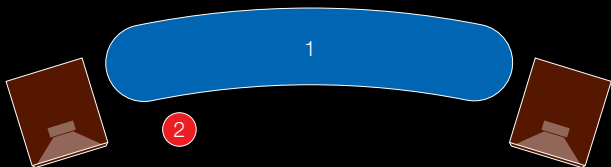
TRACK
15





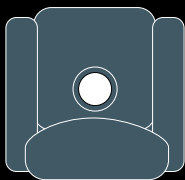
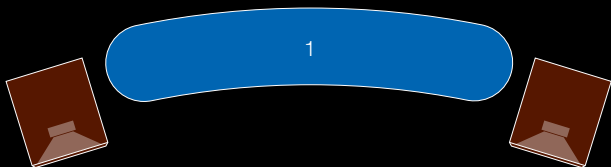
1 various solo instruments

TRACKS
17-25



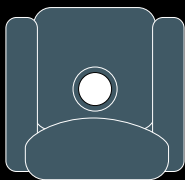
1 orchestra 2 solo violin

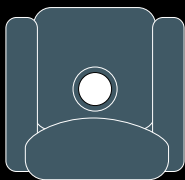
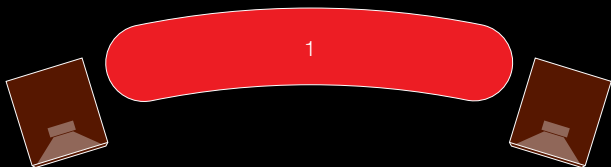
TRACK
26

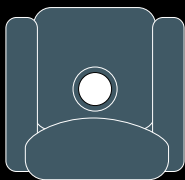
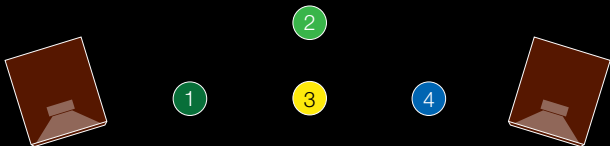


1 orchestra

TRACKS
27-30







1 guitar 2 accordion 3 flute 4 doublebass

TRACKS
34-35

30'

28'

28'

28'

30'

18'

11'

8'

11'

18'



TRACKS
58-67



SPEAKER PLACEMENT

wall



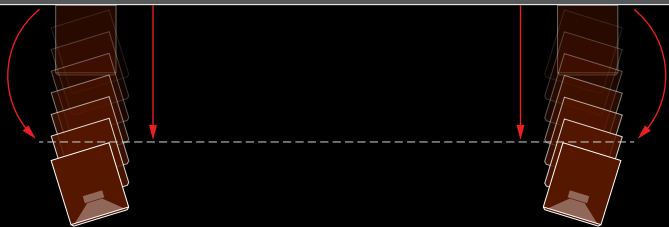
*bass frequency
waveform*

Use track 3 and tracks 43 to 47 as reference bass tracks

ILL.
1A

NARR.
TRACK
42

wall

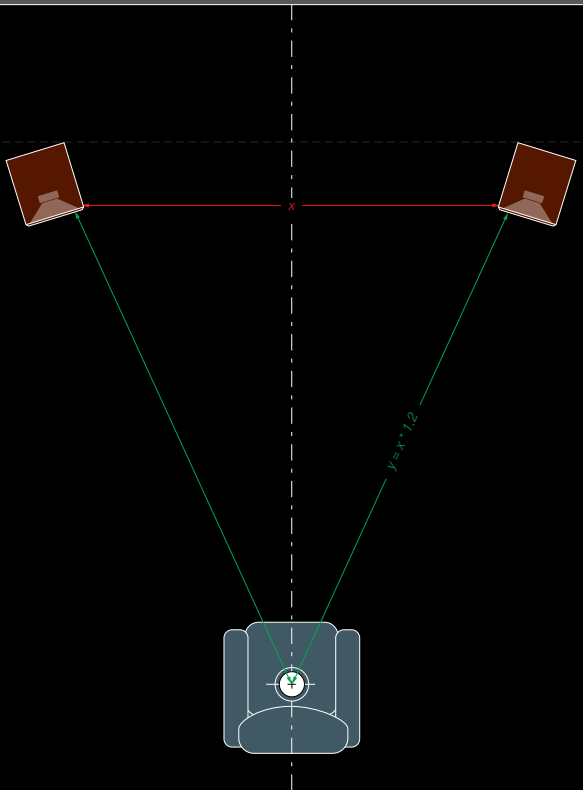


ILL.
1B

Use track 3 and tracks 43 to 47 as reference bass tracks

NARR.
TRACK
42

wall

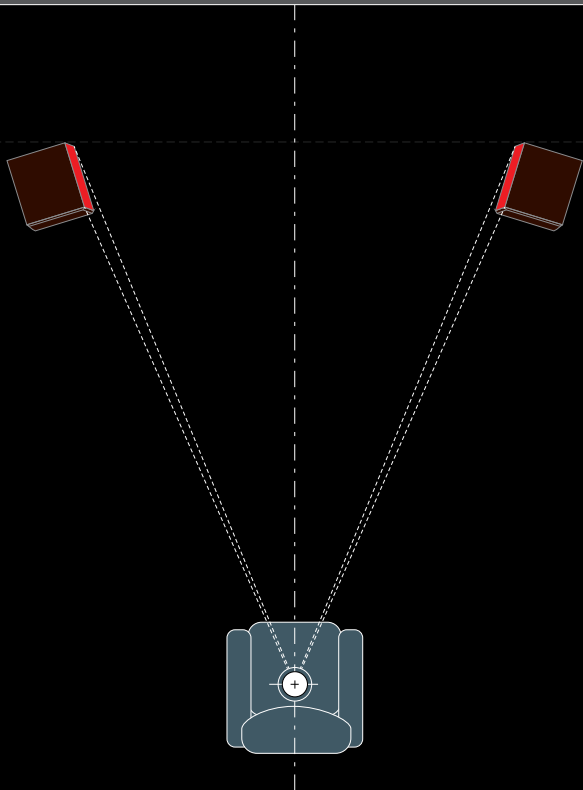


Use track 3 and tracks 43 to 47 as reference bass tracks

ILL.
2

NARR.
TRACK
48

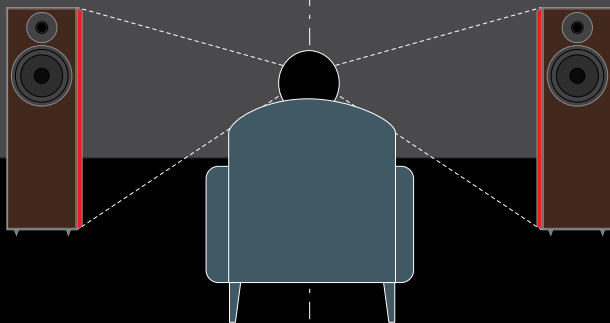
wall



Top view

ILL.
3A

NARR.
TRACK
48

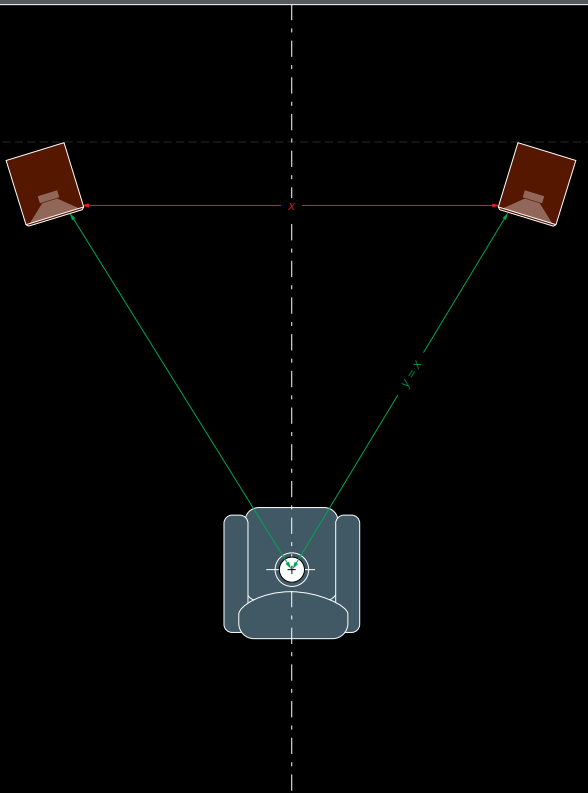


Front view

ILL.
3B

NARR.
TRACK
48

wall



Nearfield listening

ILL.
4

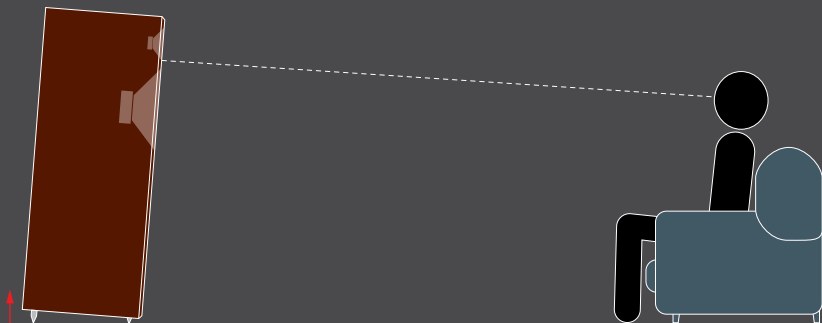
NARR.
TRACK
48



Use tracks 2 to 15 as a reference

ILL.
5

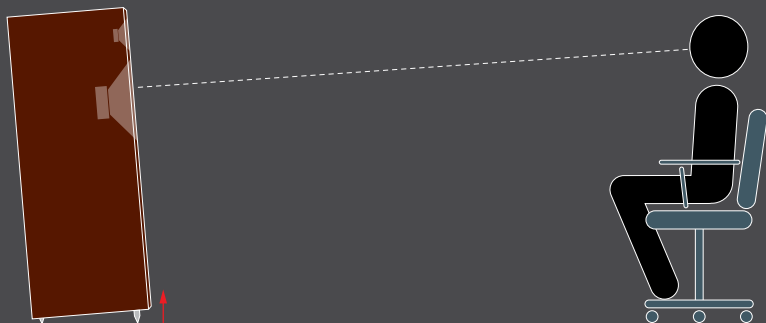
NARR.
TRACK
49



ILL.
6A

Use tracks 2 to 15 as a reference

NARR.
TRACK
50



Use tracks 2 to 15 as a reference

ILL.
6B

NARR.
TRACK
50

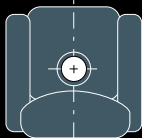
1

2



1

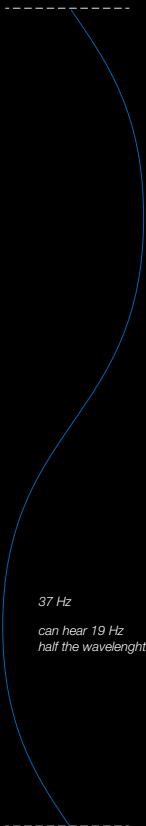
2



ILL.
7

NARR.
TRACK
51

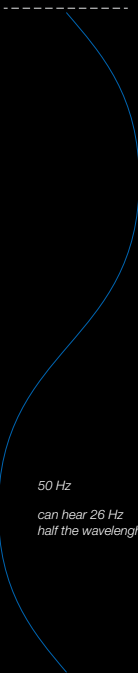
30' room



37 Hz

can hear 19 Hz
half the wavelength

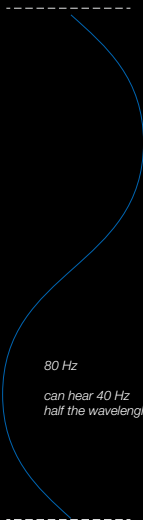
22' room



50 Hz

can hear 26 Hz
half the wavelength

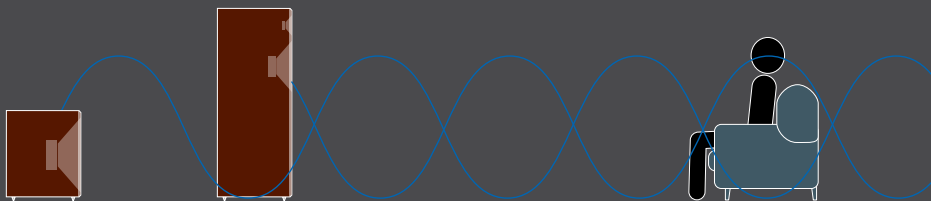
14' room



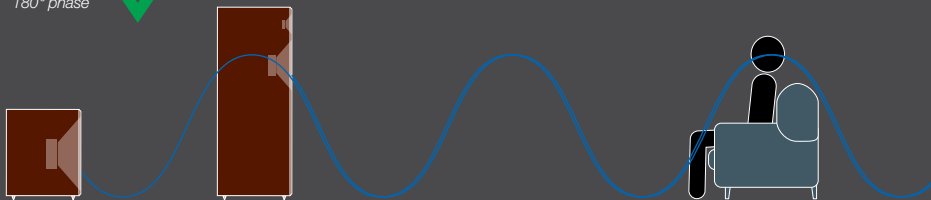
80 Hz

can hear 40 Hz
half the wavelength

0° phase



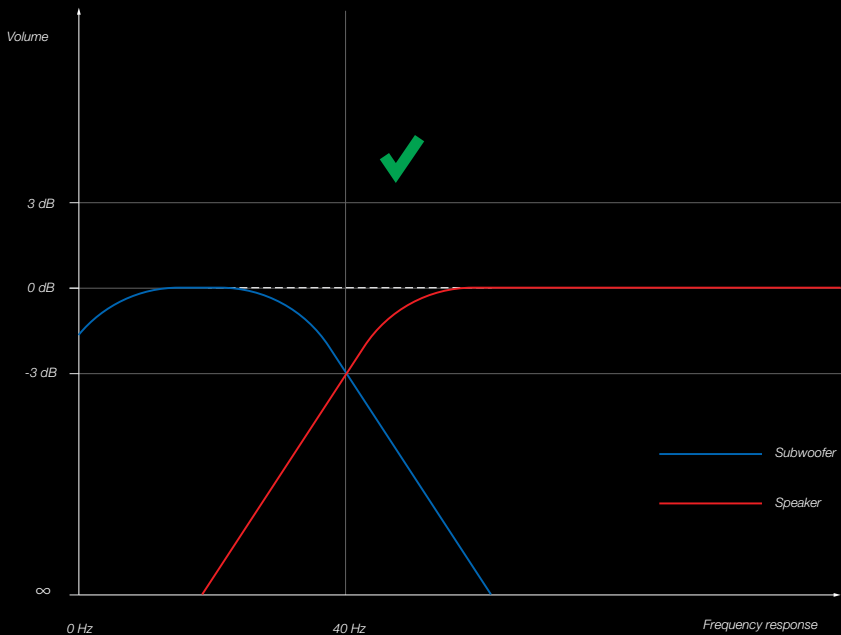
180° phase

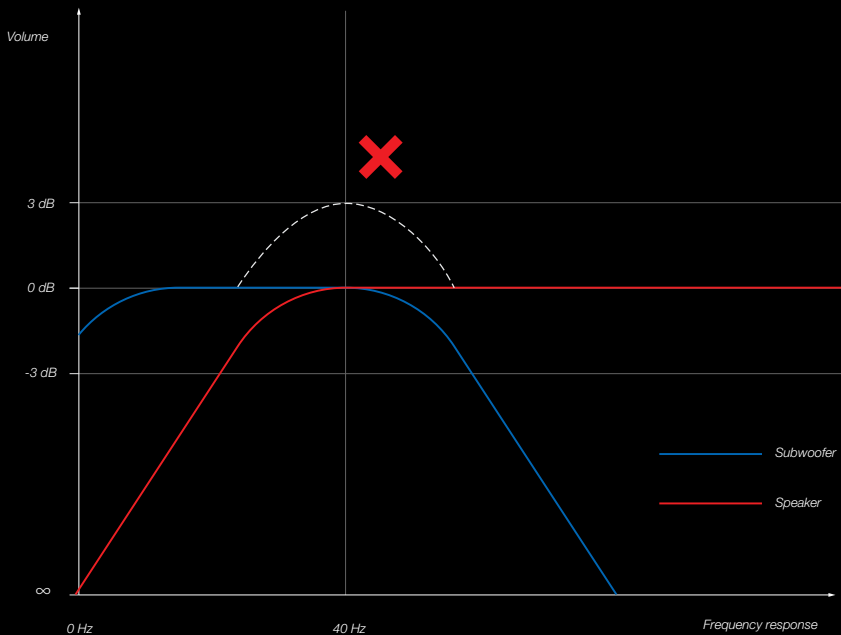


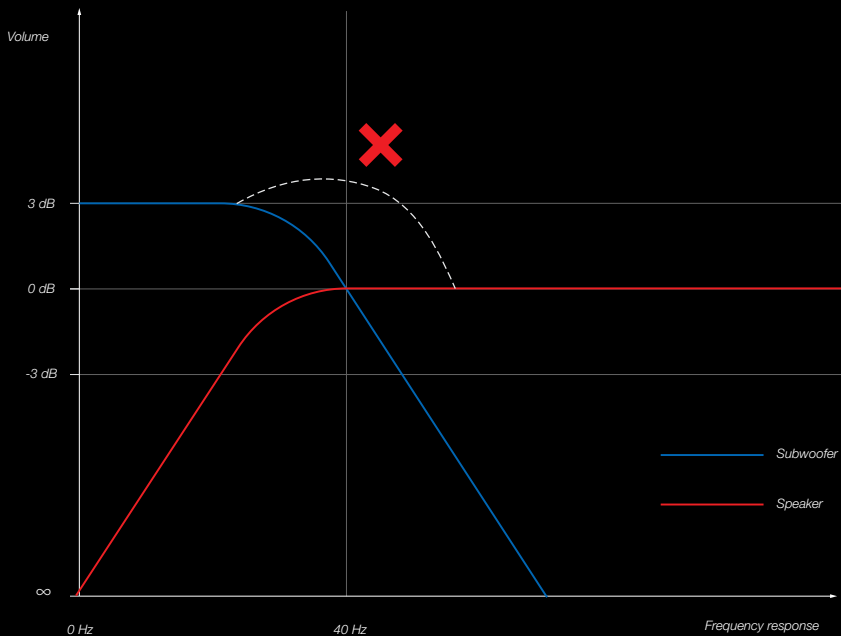
ILL.
8

Use tracks 43 to 47 as a reference

NARR.
TRACK
51

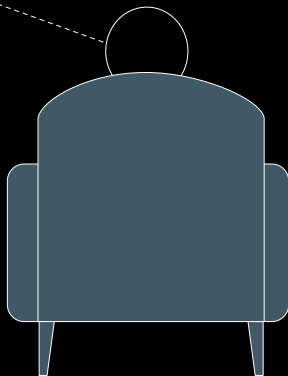






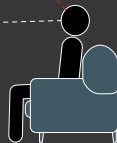


mirror view



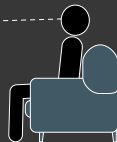
NARR.
TRACK
54

diffuser needed



ILL.
10

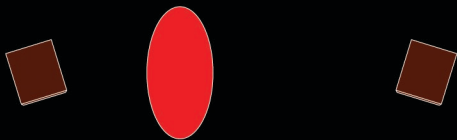
diffuser not needed



NARR.
TRACK
54



NARR.
TRACK
55

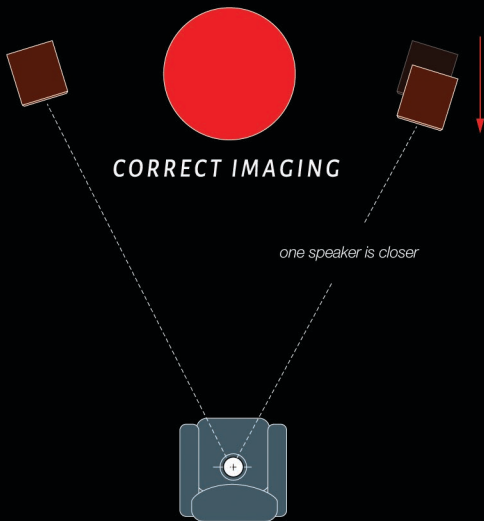


INCORRECT IMAGING



ILL.
12A

NARR.
TRACK
56



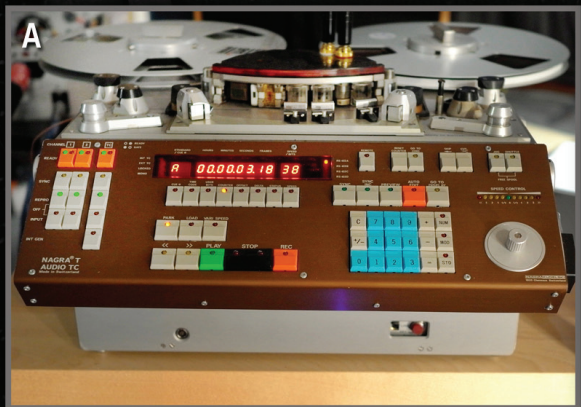
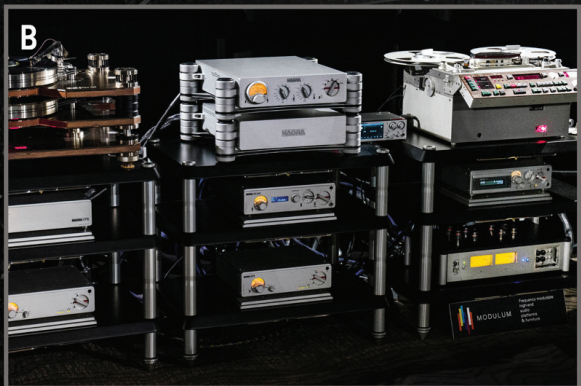
CORRECT IMAGING

one speaker is closer

**REFER TO TR. 3:
YOU SHOULD HEAR THE VOICE AND DOUBLE BASS
IN THE CENTRE**

ILL.
12B

NARR.
TRACK
56





2xHD TUBE MICROPHONES



Tip of the Hat

Frédéric Alarie,
Madeleine Carreau, Eric Chapell,
Marie-Andrée Chevrette,
Jean de la Durantaye,
Yegor Dyachkov, Robert Gariepy,
Mathieu Harel, Nick Doshi,
Robert Len, Nagra Audio,
Daniela Pizzuto, André Thériau.

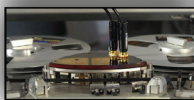


AUDIOPHILE SPEAKER SET-UP

- 1 ALBUM PRESENTATION 0:58
- 2 Jazz ensemble: Pink Panther theme 3:54
- 3 Jazz vocal: 2017 studio recording 4:25
- 4 Blues vocal 4:47
- 5 Jazz trio 5:14
- 6 Digital studio recording 3:42
- 7 Jazz Session 3:47
- 8 Bouzouki music: Greek Tycoon 3:14
- 9 Bach Cello Suite (excerpt) 2:27
- 10 Debussy String Quartet in G Minor 3:46
- 11 Piano live concert Chopin 2:17
- 12 Vocal quartet 1:12
- 13 Baroque ensemble 5:28
- 14 Jazz ensemble (trumpet solo) 1:28
- 15 Lieder Recital live: soprano & piano 2:20
- 16 Harp music, live 3:36
- 17 Sonata for Cello solo 1:41
- 18 Guitar 1:10
- 19 Bassoon 1 0:22
- 20 Bassoon 2 0:40
- 21 Violin 2:00
- 22 Duduk 0:59
- 23 Bawu 0:52
- 24 Trumpet 0:47
- 25 Flügelhorn 1:06
- 26 Symphony Orchestra 1, live (Violin) 6:40
- 27 Symphony Orchestra 2 2:09
- 28 Symphony Orchestra 3, live 0:44
- 29 Symphony Orchestra 4 1:14
- 30 Symphony Orchestra 5 4:58
- 31 Organ music live 1:30
- 32 EXTREME DYNAMICS 0:38
- 33 Percussion 1 2:39
- 34 World Music 1 1:02
- 35 World Music 2 0:58
- 36 Percussion 2 1:47
- 37 Percussion 3 1:09
- 38 Percussion 4 0:42
- 39 Percussion 5 1:39
- 40 Percussion 6 1:05
- 41 Percussion 7 1:16
- 42 STEP 1: SPEAKER PLACEMENT: BASS 2:07
- 43 Djembe; extreme bass 1:30
- 44 Octobass; 28 Hz, 56 Hz 0:27
- 45 Octobass; 42 Hz, 84 Hz 0:26
- 46 Octobass; 28 Hz to 224 Hz 0:32
- 47 Octobass; 36 Hz, 56 Hz, 112 Hz, 224 Hz 0:27
- 48 STEP 2: the TOE-IN 1:33
- 49 STEP 3: LEVELLING 0:27
- 50 ANGLE 0:44
- 51 STEP 4: SUBWOOFER Placement and phasing 1:01
- 52 CROSSOVER SETTING 0:48
- 53 SUBWOOFER SECOND OPTION 0:20
- 54 STEP 5: CORNER TREATMENT AND IMAGING 0:54
- 55 CORNERS ABSORBERS 0:13
- 56 ROOM CHALLENGES 0:32
- 57 PRECISE LOCATION AND DEPTH OF FIELD 0:36
- 58 Center, 8 ft. 0:49
- 59 Mid-left, 11 ft. 0:37
- 60 Left, 18 ft. 0:45
- 61 Mid-right, 11 ft. 0:46
- 62 Right, 18 ft. 0:43
- 63 Left, 30 ft. 0:38
- 64 Mid-left, 28 ft. 0:28
- 65 Center, 28 ft. 0:39
- 66 Mid-right, 28 ft. 0:34
- 67 Right, 30 ft. 0:35
- 68 Octobass solo 1:28
- 69 Introducing 2xHD
Audiophile High Res System
Test album 0:23



THE 2xHD FUSION MASTERING SYSTEM



In the constant evolution of its proprietary mastering process, 2xHD has progressed to a new phase called 2xHD FUSION, integrating the finest analog, with state-of-the-art digital technology.

The mastering chain consists of a selection of high-end vacuum tube equipment. For the recordings on this album, the original ¼" 15 ips NAB and CCIR master tapes were played on a Nagra-T tape recorder, modified with high-end tube playback electronics, wired with OCC silver cable from the playback head direct to a Nick Doshi tube head preamplifier. The Nagra T, with its four direct drive motors, two pinch rollers and a tape tension head, has one of the best transports ever made. A custom-built carbon fiber head block and a head damping electronic system permit 2xHD FUSION to obtain a better resolution and 3D imaging.

The resulting signal is then transferred into high resolution formats by recording it in DSD 11.2 MHz using a Merging Technologies' Horus A to D converter. All analog and digital cables that are used are state of the art. The 2xHD FUSION mastering system is powered by a super capacitor power supply, using a new technology that lowers the digital noise found in the lowest level of the spectrum. A vacuum tube NAGRA HDDac (DSD) is used as a reference digital playback converter in order to A and B with the original analog master tape, permitting the fusion of the warmth of analog with the refinement of digital.

2xHD was created by producer/studio owner André Perry and audiophile sound engineer René Laflamme.

www.2xHD.com
Pure Emotion

This album is complementary to the
2xHD AUDIOPHILE HI-RES SYSTEM TEST
Album

