



3D acoustic impulse response - measurement system



The IRIS room acoustics measurement system, developed by Marshall Day Acoustics, is an integrated hardware and software tool for capturing and analysing room impulse responses in 3D. A compact tetrahedral microphone array is used to capture the sound data which is analysed immediately by powerful and user friendly software.

IRIS plot

- The 3D impulse response data is visualised as an IRIS plot, a colour coded representation of incoming sound rays
- Length indicates relative sound intensity level, angle is the ray direction, and colour represents time of arrival
- 3D rotation and zoom
- Dynamic range and time resolution adjustment
- Specific angle and level information for individual rays
- Broadband and octave band filtered views

Waveform

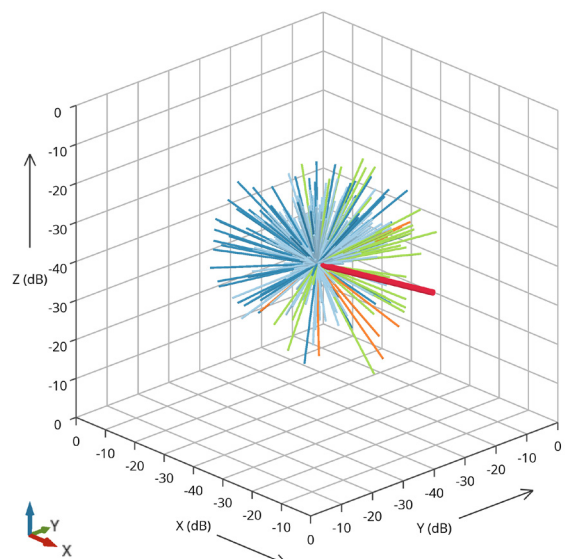
- Traditional omni-directional waveform view
- Interaction between the IRIS plot and waveform view
- Automatic detection of onset time with manual adjustment

Room acoustic parameters

- Standard room acoustic parameters are calculated according to ISO 3382-1:2009
- Results are displayed in graphs and tables

Simplified measurement process

- Integrated software and hardware measurement system
- Reliable, easy to use and efficient
- Ideally suited to time-critical measuring environments

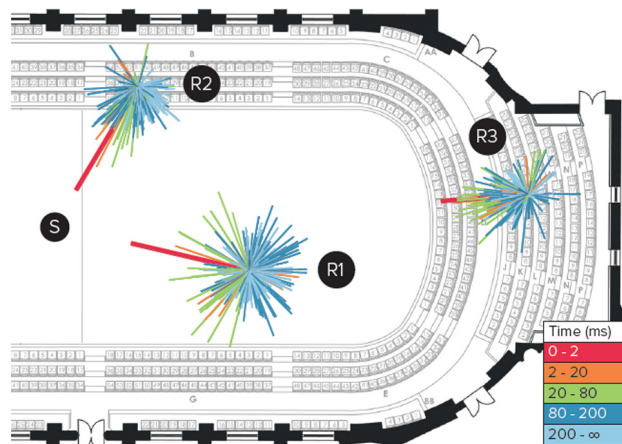


3D Sound Intensity Vectors

See what you have been hearing

The IRIS plot can be used to relate sound rays to physical features of the room, observe the directional distribution of early and late sound energy, and identify surfaces causing problematic rays. The graphical nature of the IRIS plot enables easy comparison between different seats in a room.

Numerical magnitude, direction and time information may be obtained for a comprehensive analysis of individual rays. A standard impulse response waveform is provided, and the timing of individual sound rays from the IRIS plot may be identified in this view.



Elegant measurement process

The IRIS measurement system utilises a compact tetrahedral microphone array. The four channel signal is carried by a single cable to a USB audio interface. All information including level, direction and time is captured with a single sine sweep recording. The system has been designed by practising acousticians for reliable and efficient measurements in realworld situations.

For more information about IRIS visit 01db.com

Measurements

1	Town Hall S1R4
2	Town Hall S1R6
3	Town Hall S1R8

Description
Town Hall S1R4

Source
S1

Receiver
R4

Notes

Results Summary (Average)

EDT (s)	1.97
T20 (s)	2.05
T30 (s)	2.06
G (dB)	-
LF	0.20
GLL (dB)	-
C80 (dB)	0.9
D50	0.40
Ts (ms)	120

Measurement Setup

Time of Measurement	24/01/2013 1:40 p.m.
Receiver Type	TetraMic (2136)
Sweep Range (Hz)	20 to 22000
Sweep Time (s)	30
Sample Rate (Hz)	44100
Audio Device	ASIO Fireface USB

3-D Sound Intensity Vectors
Normalised to broadband direct sound level.

Selected Vector
Magnitude = 0.0 dB
Azimuth = 0.0°
Elevation = 7.4°
Time = 0 ms

Filter
Broadband

Resolution (ms)
2

LF Limit = 500 Hz

Level Reference
 This measurement
 Global (not set)

XY
XZ
YZ

Range (dB)
40

Time Intervals
Music

Align direct sound xy to x-axis

(ms)
0 - 2
2 - 20
20 - 80
80 - 200
200 - Inf (1.23 s)

Waveform
log(p²) Waveform (dB)