Limited liability company
* R&D AKUSTIKA *
Acoustics laboratory T - 282

PLANNING OF ROOM ACOUSTIC FINISHING, ROOM ACOUSTIC PARAMETER AND AURALIZATION PROGNOSTICATION.

STANDARD LVS EN ISO 3382-2:2008 +AC:2009

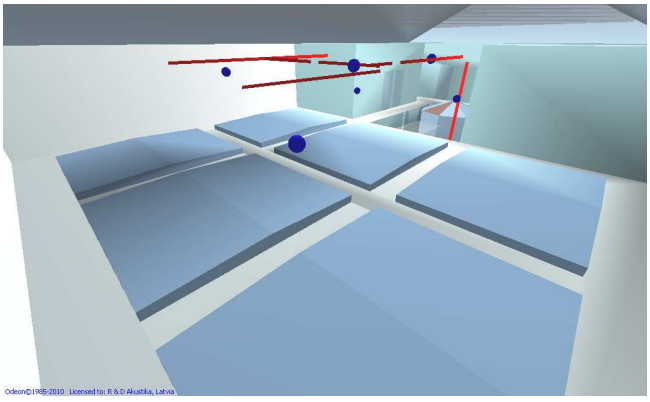
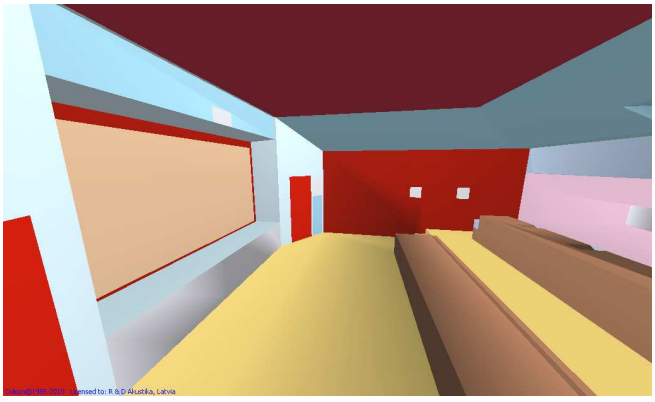
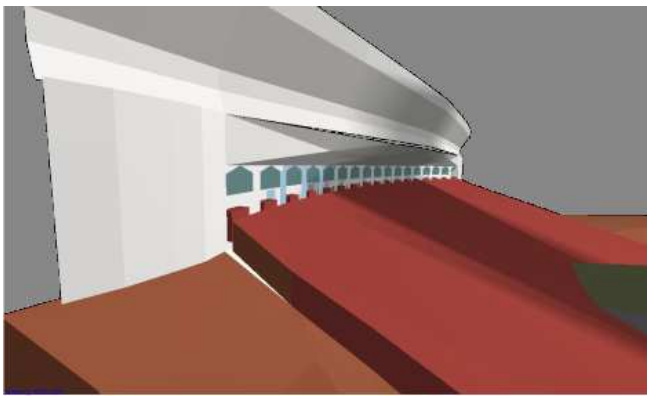
Acoustics. Measurement of room acoustic parameters. Part 2: reverberation time measurements in ordinary rooms (taking into account standard LVS EN ISO 3382-1:2009 :Acoustics. Measurements of room acoustic parameters. Part 1: performance spaces")

Calculable parameters (in octave bands from 63 to 8000 Hz):

- T_{30} – reverberation time at 35dB attenuation, [sec]
- ETD – early reverberation time, [sec]
- C_{80} – ratio between early (< **80 ms**) and late sound energy, [dB]
- D_{50} – ratio between early (< **50 ms**) and late sound energy in observation point, [dB]
- LF, LFC – early (up to **80 ms**) lateral sound energy factor, [%]

Construction standard LBN 016-11 "Building acoustics" limits multiple from measured parameters for rooms intended for various purposes. Thereby it is possible to prognosticate about the accordance of room (or the prospective object) with expected goals (concerts, theatre shows, conferences etc) by comparing calculation results with borderline values. Parameters are prognosticated by calculations, creating mathematical-geometrical model of the room and finishing acoustics, which is processed using acoustic parameter calculation software "Odeon" 2011 actualisation.

Examples of previously done acoustic finishing projects and calculations.

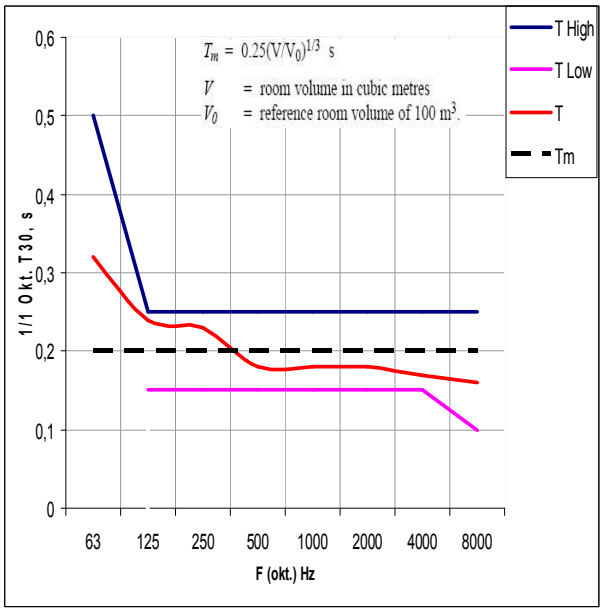





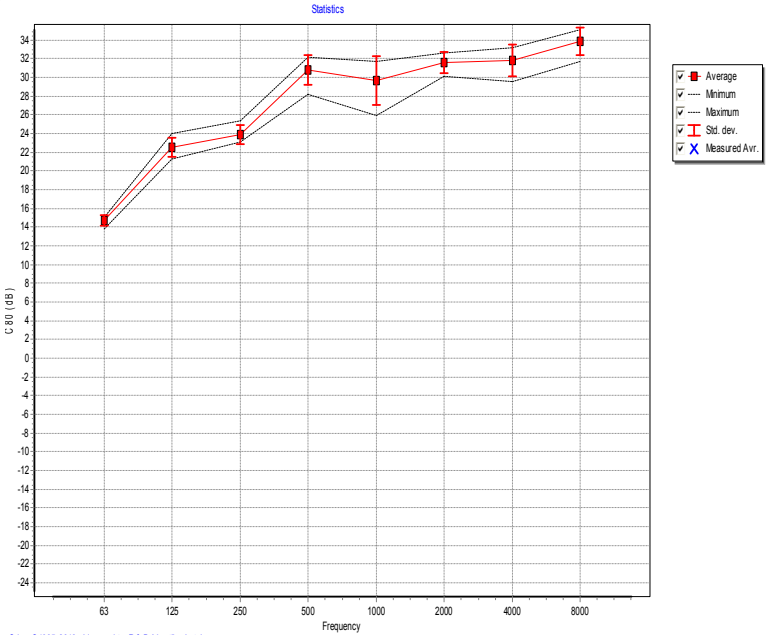
REPUBLIC OF LATVIA, LV - 1067, RĪGA, KURZEMES PROSPEKTS 3, *Registr. Nr. :* **LV 010310045**
Fax. +371 67815008, ☎ **371 67815007** **mob. ☎ +371 29217605 ,** E-mail: rd.akustika@apollo.lv

COMPARISON OF ROOM ACOUSTIC PARAMETER CALCULATIONS AND MEASUREMENTS.

Room acoustic parameter forecast (calculation)

Average reverberation time in room: **T High –** highest recommended allowable limit, **T Low –** lowest allowable limit, **T** – prognosticated reverberation time, **Tm –** normative value





Measurement result example

	f	63	125	250	500	1000	2000	4000	8000	16000 [Hz]
Mikrof. vietas Nr./ Mērījuma Nr. (skat.Pielik.1) →	1./1 mērp.	9,94	16,07	21,21	23,98	20,27	17,51	18,18	17,76	19,54
	1./2 mērp.	9,92	16,38	20,55	19,59	15,03	13,15	13,99	13,59	15,94
	1./3 mērp.	9,87	15,86	20,73	19,89	17,67	16,42	16,19	16,07	17,86
	2./1 mērp.	10,41	11,28	16,99	24,85	18,5	16,49	16,4	18,94	19,73
	3./1 mērp.	13,41	11,16	15,18	25,01	19,37	17,12	17,76	19,67	20,79
	4./1 mērp.	14,92	13,75	21,01	24,14	18,34	18,06	16,98	18,54	18,17
Klausāmās telpas, akustiskā apdares un telpas iekārtojums pabeigts..	5./1 mērp.	12,21	14,5	18,06	20,52	17,37	16,17	16,22	17,55	18,98
	6./1 mērp.	11,12	13,02	19,35	22,97	16,47	16,17	15,96	18,53	21,87
	7./1 mērp.	9,7	15,73	19,68	22,8	17,46	16,03	14,94	16,19	17,56
	8./1 mērp.	11,75	17,66	19,24	22,19	18,87	15,19	16,27	19,12	22,26
	±Stdev	1,76	2,20	1,95	2,01	1,49	1,36	1,22	1,84	1,99
	– C_{80} vid. [dB]	11,325	14,541	19,2	22,594	17,935	16,231	16,289	17,596	19,27

Pasūtītājs: "BaltAUDIO"

Parauga iden.Nr.: 459-2

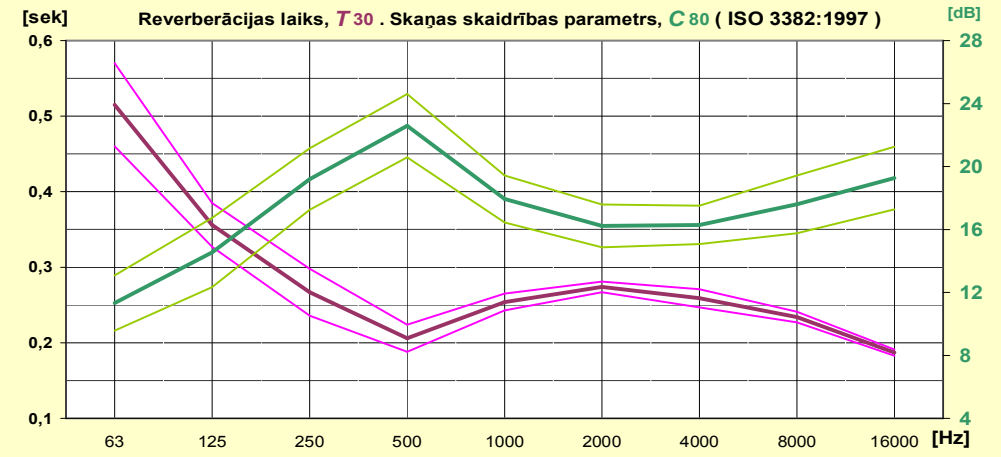
Objekta parametri: V=105 m³ ; (sk.šī pārskata Tabulu 1 un Pielikumu 1)

T [C°]	22±0,5
R [%]	50+4
P [mbar]	±0,7

Paraksts:

/ Udo Ķipēns /

Datums: 2010.13.Jūlijs



Mikrof. vietas Nr./ Mērījuma Nr. (skat.Pielik.1) →	1./1 mērp.	0,54	0,326	0,242	0,179	0,254	0,285	0,25	0,232	0,189
	1./2 mērp.	0,55	0,327	0,242	0,19	0,246	0,273	0,24	0,227	0,187
	1./3 mērp.	0,558	0,323	0,246	0,191	0,243	0,271	0,249	0,228	0,186
	2./1 mērp.	0,561	0,394	0,304	0,206	0,258	0,277	0,258	0,233	0,194
	3./1 mērp.	0,545	0,351	0,29	0,204	0,266	0,263	0,268	0,238	0,192
	4./1 mērp.	0,526	0,344	0,225	0,207	0,262	0,276	0,264	0,226	0,177
Klausāmās telpas, akustiskā apdares un telpas iekārtojums pabeigts..	5./1 mērp.	0,385	0,392	0,28	0,2	0,241	0,28	0,272	0,238	0,188
	6./1 mērp.	0,511	0,34	0,247	0,213	0,263	0,271	0,256	0,237	0,187
	7./1 mērp.	0,518	0,372	0,28	0,223	0,266	0,263	0,255	0,232	0,186
	8./1 mērp.	0,459	0,389	0,316	0,243	0,236	0,281	0,28	0,248	0,185
	±Stdev	0,055	0,029	0,031	0,018	0,011	0,007	0,012	0,007	0,004
	– T_{30} vid. [sek]	0,515	0,356	0,267	0,206	0,254	0,274	0,259	0,234	0,187

Planning of room acoustic finishing, room acoustic parameter and auralization prognostication