

NEW

ACOUSTICAL GUIDE

ACOUSTIC RESEARCH REPORT ON
STRUCTURAL CONCRETE BY

AcoustiTECH
PERFORMANCE CREDIBILITY EXPERTISE



Final report

R&D Project
Date: April 27th, 2018



PREPARED BY

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TABLE OF CONTENTS

INTRODUCTION & REFERENCES	P.4
BARE CONCRETE – AIIC 28	P.6
DOUBLE GLUE DOWN	
ACOUSTITECH AD-844MS + CORK 6mm + PLYWOOD CORE FLOORING - AIIC 49	P.8
ACOUSTITECH AD-844MS + CORK 6mm + PINE FILLETED CORE FLOORING - AIIC 49	P.10
REGUPOL PU350 + RUBBER 2mm (Regupol) + PLYWOOD CORE FLOORING - AIIC 49	P.12
REGUPOL PU350 + RUBBER 2mm (Regupol) + PINE FILLETED CORE FLOORING - AIIC 50	P.14
REGUPOL PU350 + RUBBER 5mm (Regupol) + PLYWOOD CORE FLOORING - AIIC 50	P.16
REGUPOL PU350 + RUBBER 5mm (Regupol) + PINE FILLETED CORE FLOORING - AIIC 50	P.18
REGUPOL PU350 + RUBBER 10mm (Regupol) + PLYWOOD CORE FLOORING - AIIC 50	P.20
REGUPOL PU350 + RUBBER 10mm (Regupol) + PINE FILLETED CORE FLOORING - AIIC 50	P.22
ACOUSTITECH AD-844MS + TEXTILE 3.3mm (AcoustiTECH) + PLYWOOD CORE FLOORING - AIIC 51	P.24
ACOUSTITECH AD-844MS + TEXTILE 3.3mm (AcoustiTECH) + PINE FILLETED CORE FLOORING - AIIC 52	P.26
FLOATING	
ACOUSTITECH VP + LAMINATE FLOORING - AIIC 54	P.28

INTRODUCTION

AcoustiTECH is a North American leader in acoustic solutions and has quickly become the reference standard in the industry. For 25 years, AcoustiTECH has teamed up with architects, builders, general contractors, acoustic consultants and other stakeholders to help them achieve their vision by providing proven acoustical solutions and expertise. AcoustiTECH looks at the specific requirements of each individual project, evaluates the requirements, determines the needs and provides personalized solutions. AcoustiTECH's approach is unique, efficient and reliable.

We possess our own acoustic laboratory that we use for our research and development in order to recommend the best acoustic solutions by type of structure. Thousands of tests have been performed including over 600 on structural concrete assemblies.

The principal objective of creating this document is for the professionals to compare and choose from different assemblies and technologies the ones that suit their needs the best. The most interesting and popular assemblies have been selected and compared side by side in the same environment, built and tested by the same professional using the same flooring materials.

It is important to note that the quality of construction can affect the performance. Indeed, construction standards and assemblies recommendations must be followed in order to reach the seeking performance.

REFERENCE BY TERRITORY

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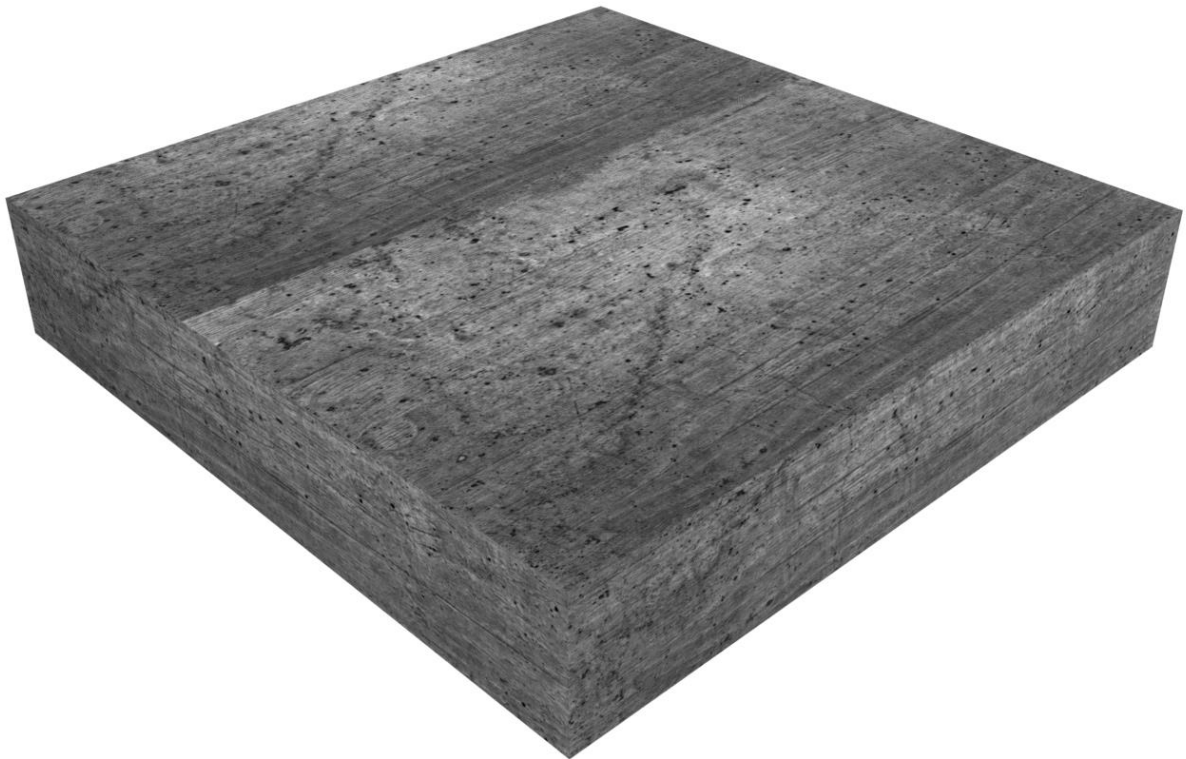
WESTERN CANADA / USA

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TEST REPORTS

BARE CONCRETE

AIIC 28



Project : Double-glued down comparative study - Concrete structure

Test : Bare slab

Description :

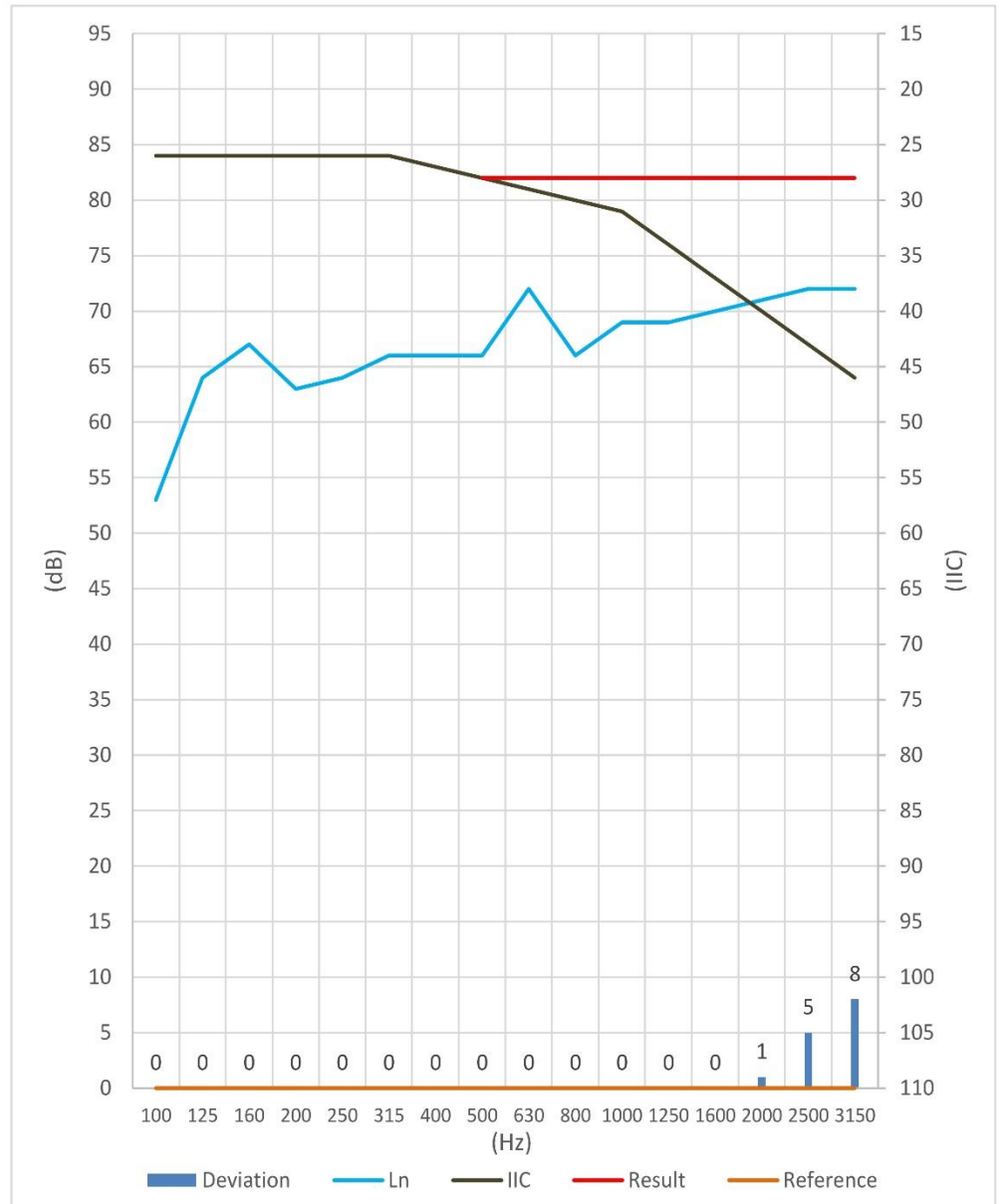
Emitting surface (m ²)	16,8
Emitting volume (m ³)	41
Tested surface (m ²)	2,5
Receiving surface (m ²)	16,5
Receiving volume (m ³)	40

Results :

AIIC	28
Defavorable deviations	14

Assembly description

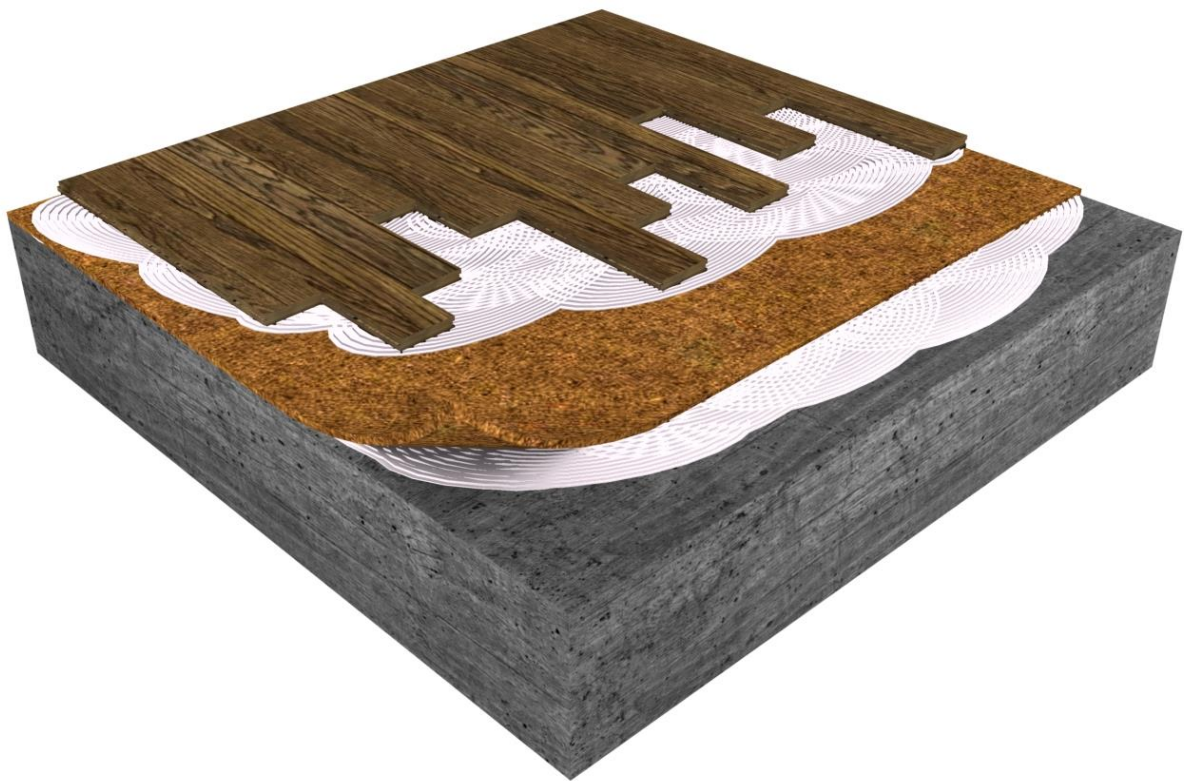
Concrete slab 8" (200mm)
Visible concrete



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	53	64	67	63	64	66	66	66	72	66	69	69	70	71	72	72
IIC	84	84	84	84	84	84	83	82	81	80	79	76	73	70	67	64
T20	1,95	1,74	1,46	0,98	0,84	0,67	0,6	0,5	0,45	0,45	0,39	0,38	0,26	0,23	0,2	0,17
L2	57,8	67,69	69,97	64,68	64,84	65,73	66,36	65,16	70,82	65,19	67,11	67,06	67,2	67,43	67,31	66,71
T30	1,94	1,57	1,35	0,95	0,8	0,64	0,62	0,5	0,44	0,48	0,45	0,43	0,31	0,26	0,22	0,19
B2	19,79	26,22	19,66	16,04	16,59	11,1	11,85	9,73	9,23	12,5	9,88	7,93	7,66	12,94	6,88	6,59
Deviation	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	8

AcoustiTECH AD-844MS
CORK (6mm)
AcoustiTECH AD-844MS
Plywood core engineered flooring

AIIC 49



Project : Double-glued down comparative study - Concrete structure

Test : Cork 6mm+12mm Plywood core Engineered

Description :

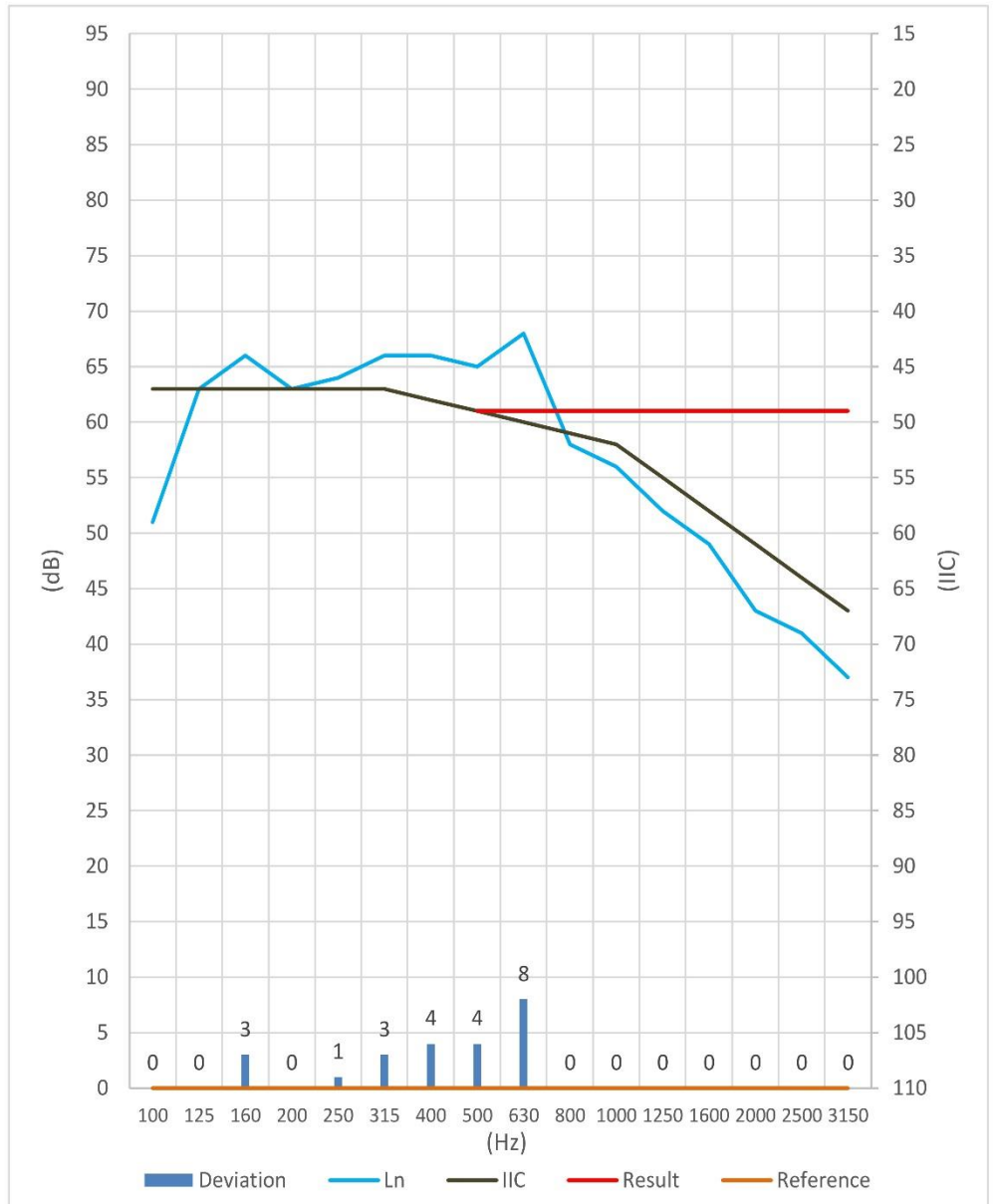
Emitting surface (m ²)	16,8
Emitting volume (m ³)	41
Tested surface (m ²)	2,5
Receiving surface (m ²)	16,5
Receiving volume (m ³)	40

Results :

AIIIC	49
Defavorable deviations	23

Assembly description

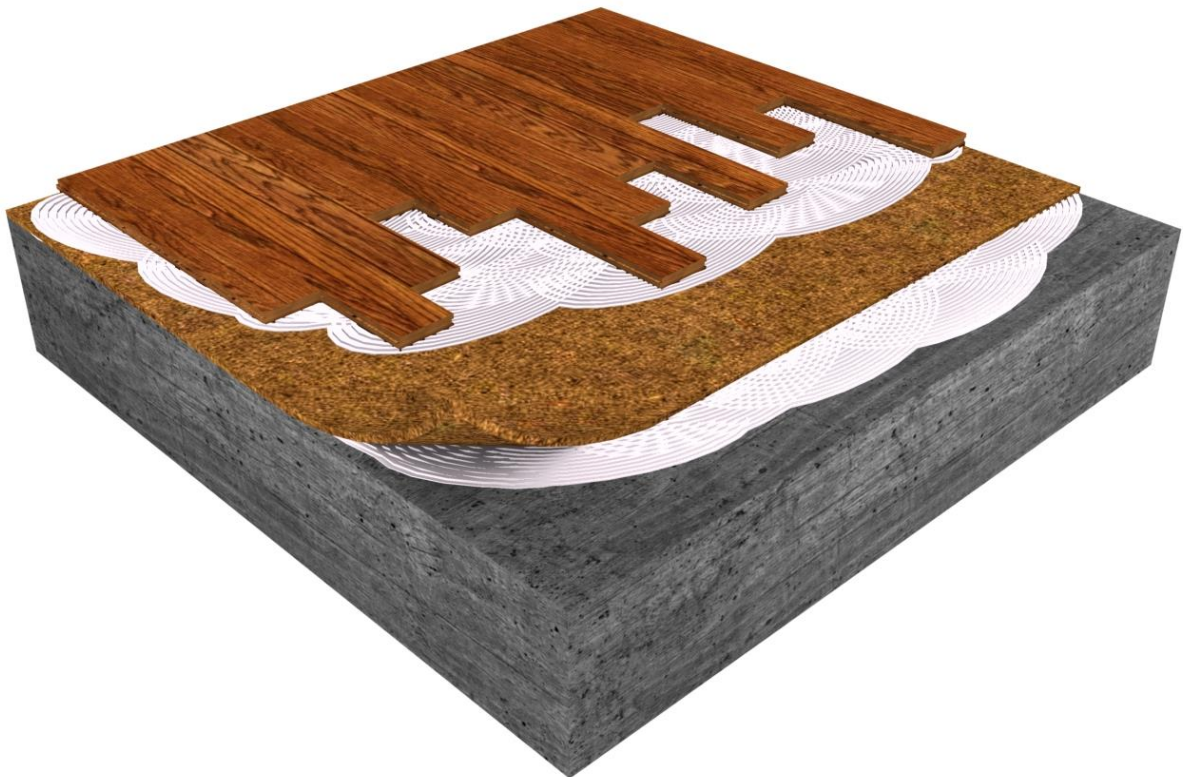
Concrete slab 8" (200mm)
Visible concrete



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	51	63	66	63	64	66	66	65	68	58	56	52	49	43	41	37
IIC	63	63	63	63	63	63	62	61	60	59	58	55	52	49	46	43
T20	1,95	1,74	1,46	0,98	0,84	0,67	0,6	0,5	0,45	0,45	0,39	0,38	0,26	0,23	0,2	0,17
L2	56,12	66,73	69,02	64,79	65,35	66,21	65,88	64,33	66,21	56,88	54,83	49,97	45,98	39,58	35,93	31,39
T30	1,94	1,57	1,35	0,95	0,8	0,64	0,62	0,5	0,44	0,48	0,45	0,43	0,31	0,26	0,22	0,19
B2	19,79	26,22	19,66	16,04	16,59	11,1	11,85	9,73	9,23	12,5	9,88	7,93	7,66	12,94	6,88	6,59
Deviation	0	0	3	0	1	3	4	4	8	0	0	0	0	0	0	0

AcoustiTECH AD-844MS
CORK (6mm)
AcoustiTECH AD-844MS
Pine filleted core engineered flooring

AIIC 49



Project : Double-glued down comparative study - Concrete structure

Test : Cork 6mm+19mm Pine filleted core Engineered

Description :

Emitting surface (m ²)	16,8
Emitting volume (m ³)	41
Tested surface (m ²)	2,5
Receiving surface (m ²)	16,5
Receiving volume (m ³)	40

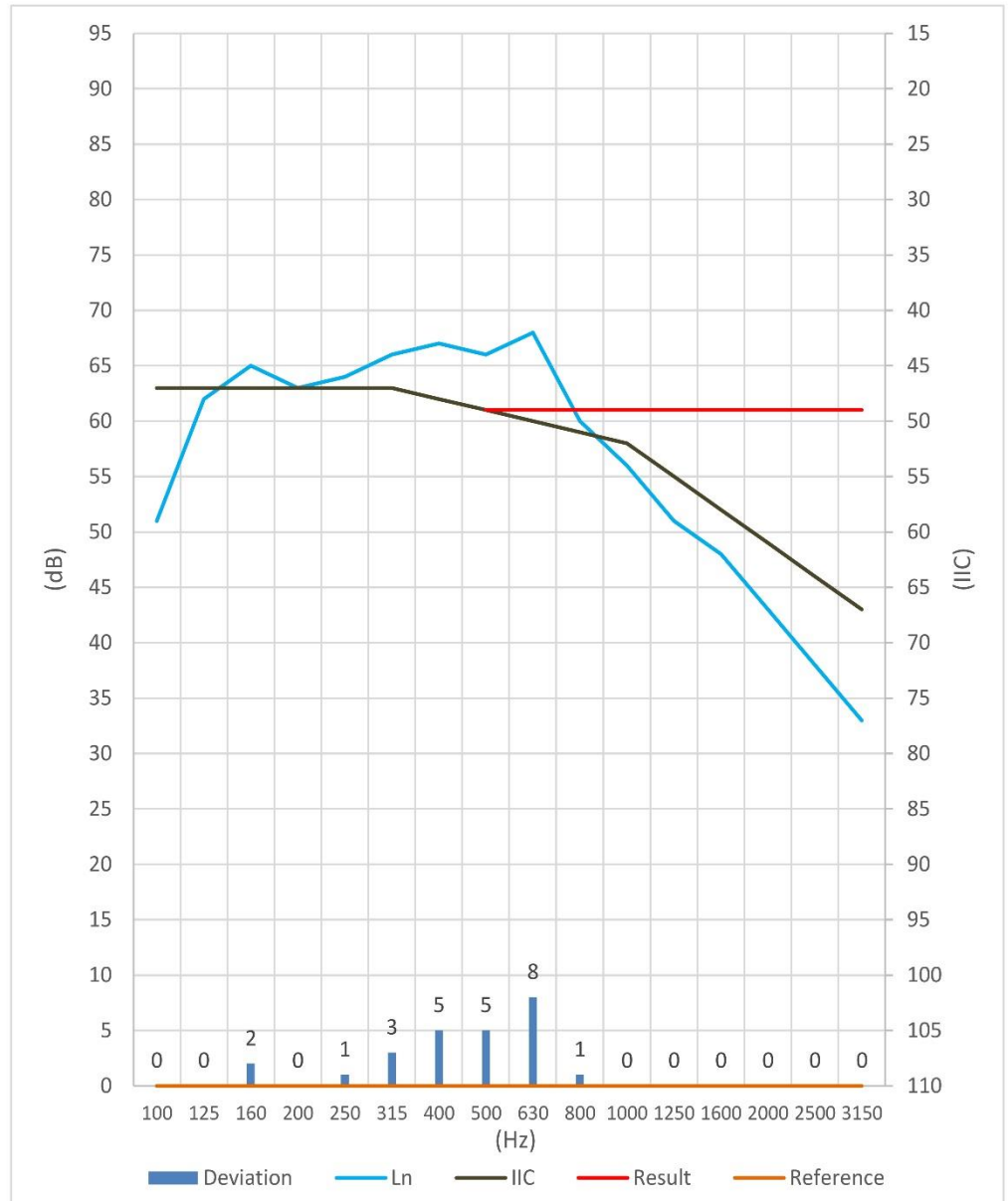
Results :

AIIC	49
Defavorable deviations	25

Assembly description

Concrete slab 8" (200mm)

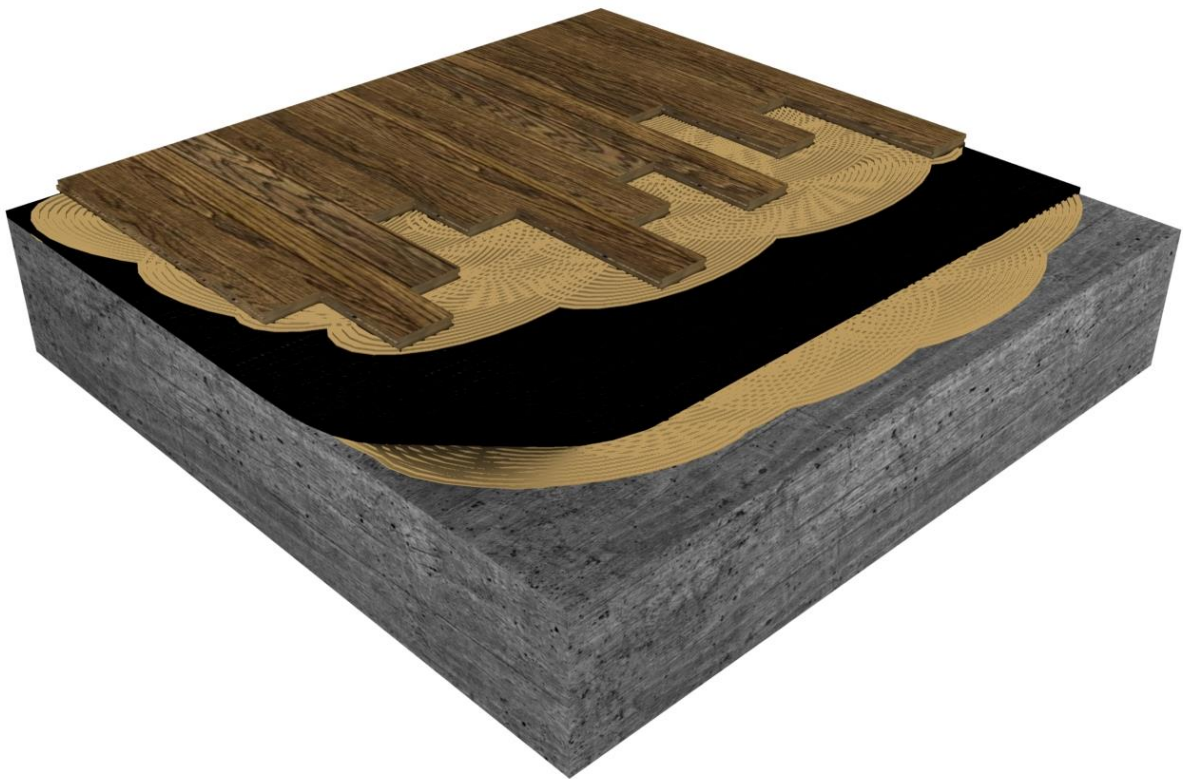
Visible concrete



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	51	62	65	63	64	66	67	66	68	60	56	51	48	43	38	33
IIC	63	63	63	63	63	63	62	61	60	59	58	55	52	49	46	43
T20	1,95	1,74	1,46	0,98	0,84	0,67	0,6	0,5	0,45	0,45	0,39	0,38	0,26	0,23	0,2	0,17
L2	55,98	66,28	68,53	64,65	65,07	66,48	66,69	64,74	66,73	58,49	54,85	49,18	44,5	39,52	33,63	27,68
T30	1,94	1,57	1,35	0,95	0,8	0,64	0,62	0,5	0,44	0,48	0,45	0,43	0,31	0,26	0,22	0,19
B2	19,79	26,22	19,66	16,04	16,59	11,1	11,85	9,73	9,23	12,5	9,88	7,93	7,66	12,94	6,88	6,59
Deviation	0	0	2	0	1	3	5	5	8	1	0	0	0	0	0	0

Regupol PU350
Regupol Sonus (2mm)
Regupol PU350
Plywood core engineered flooring

AIIC 49



Project : Double-glued down comparative study - Concrete structure

Test : Regupol Sonus 2mm+12mm Plywood core Engineered

Description :

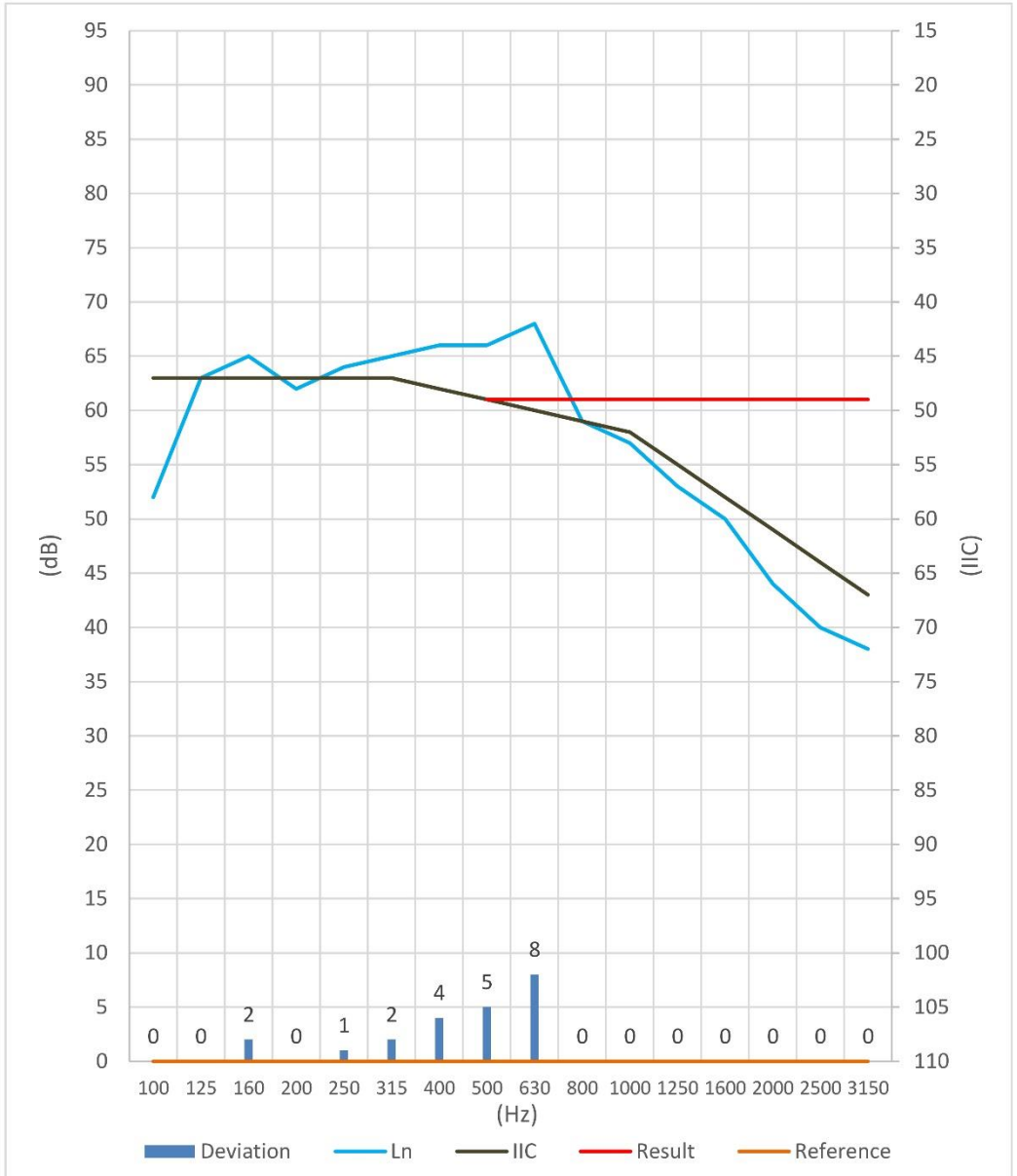
Emitting surface (m ²)	16,8
Emitting volume (m ³)	41
Tested surface (m ²)	2,5
Receiving surface (m ²)	16,5
Receiving volume (m ³)	40

Results :

AIIIC	49
Defavorable deviations	22

Assembly description

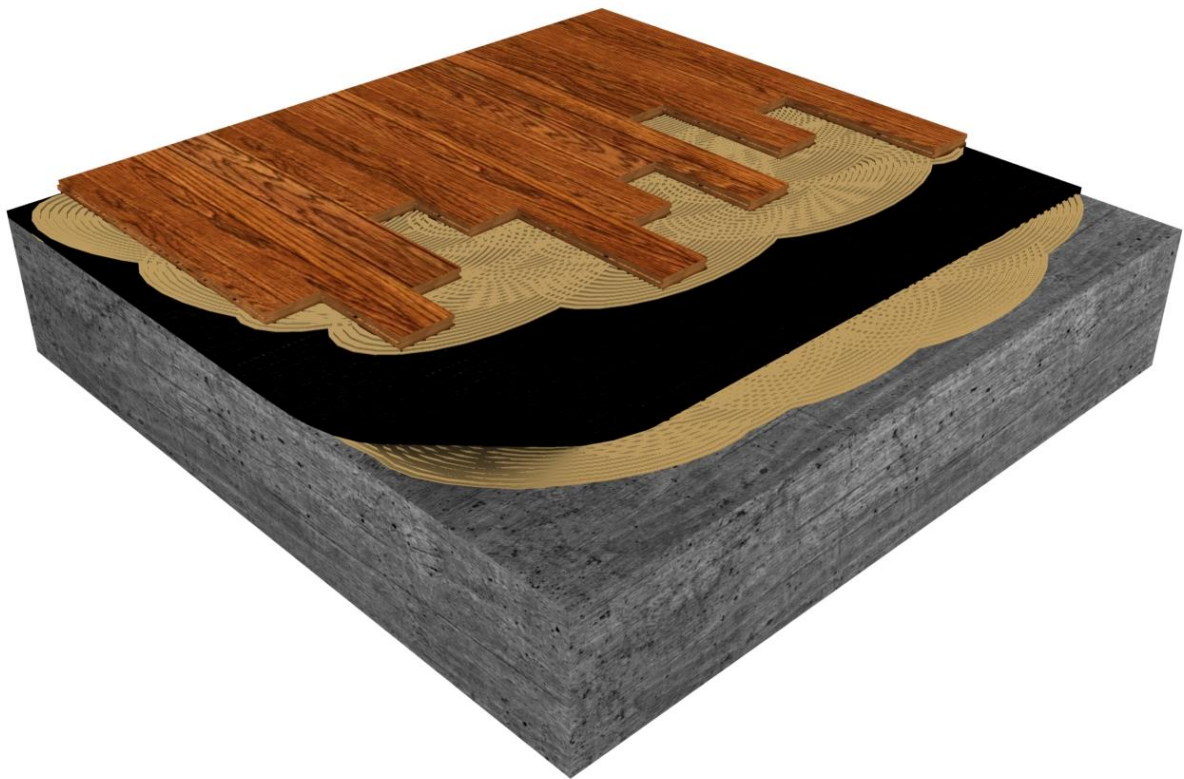
Concrete slab 8" (200mm)
Visible concrete



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	52	63	65	62	64	65	66	66	68	59	57	53	50	44	40	38
IIC	63	63	63	63	63	63	62	61	60	59	58	55	52	49	46	43
T20	1,95	1,74	1,46	0,98	0,84	0,67	0,6	0,5	0,45	0,45	0,39	0,38	0,26	0,23	0,2	0,17
L2	56,35	67,11	68,03	63,41	64,79	65,04	65,38	64,57	66,64	57,97	55,81	51,25	46,47	39,95	35,81	32,74
T30	1,94	1,57	1,35	0,95	0,8	0,64	0,62	0,5	0,44	0,48	0,45	0,43	0,31	0,26	0,22	0,19
B2	19,79	26,22	19,66	16,04	16,59	11,1	11,85	9,73	9,23	12,5	9,88	7,93	7,66	12,94	6,88	6,59
Deviation	0	0	2	0	1	2	4	5	8	0	0	0	0	0	0	0

Regupol PU350
Regupol Sonus (2mm)
Regupol PU350
Pine filleted core engineered flooring

AIIC 50



Project : Double-glued down comparative study - Concrete structure

Test : Regupol Sonus 2mm+19mm Pine filleted core Engineered

Description :

Emitting surface (m ²)	16,8
Emitting volume (m ³)	41
Tested surface (m ²)	2,5
Receiving surface (m ²)	16,5
Receiving volume (m ³)	40

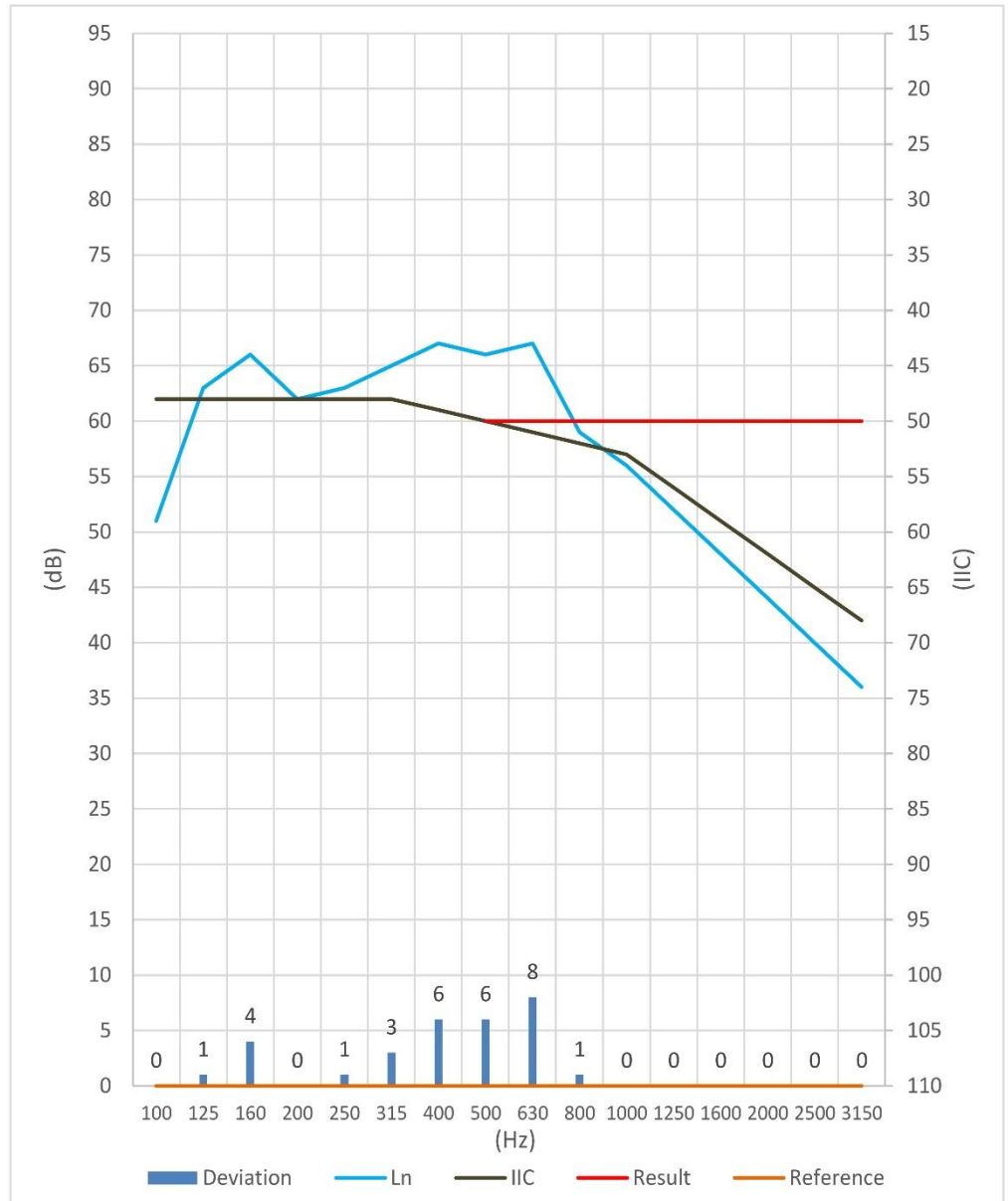
Results :

AIIC	50
Defavorable deviations	30

Assembly description

Concrete slab 8" (200mm)

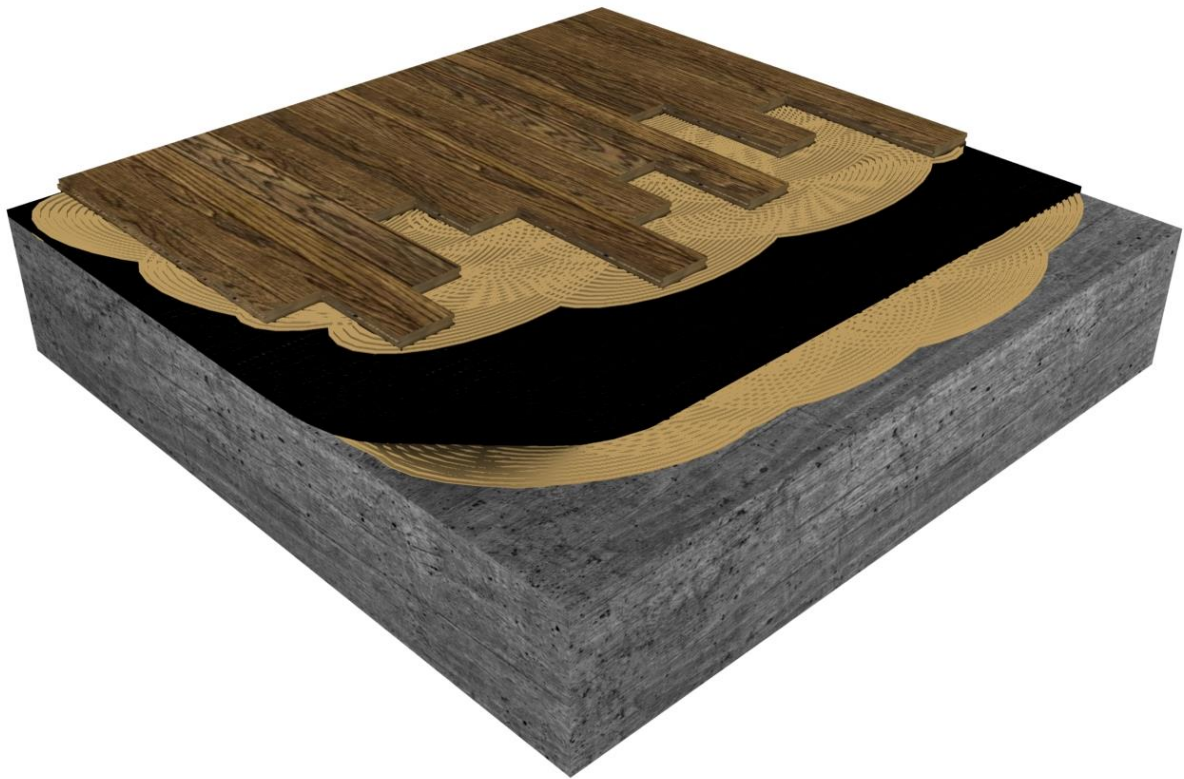
Visible concrete



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	51	63	66	62	63	65	67	66	67	59	56	52	48	44	40	36
IIC	62	62	62	62	62	62	61	60	59	58	57	54	51	48	45	42
T20	1,95	1,74	1,46	0,98	0,84	0,67	0,6	0,5	0,45	0,45	0,39	0,38	0,26	0,23	0,2	0,17
L2	55,76	67,03	69,16	63,5	63,78	65,28	66,51	65,1	65,85	57,97	54,83	50,36	44,94	39,86	35,16	30,3
T30	1,94	1,57	1,35	0,95	0,8	0,64	0,62	0,5	0,44	0,48	0,45	0,43	0,31	0,26	0,22	0,19
B2	19,79	26,22	19,66	16,04	16,59	11,1	11,85	9,73	9,23	12,5	9,88	7,93	7,66	12,94	6,88	6,59
Deviation	0	1	4	0	1	3	6	6	8	1	0	0	0	0	0	0

Regupol PU350
Regupol Sonus (5mm)
Regupol PU350
Plywood core engineered flooring

AIIC 50



Project : Double-glued down comparative study - Concrete structure

Test : Regupol Sonus 5mm+12mm Plywood core Engineered

Description :

Emitting surface (m ²)	16,8
Emitting volume (m ³)	41
Tested surface (m ²)	2,5
Receiving surface (m ²)	16,5
Receiving volume (m ³)	40

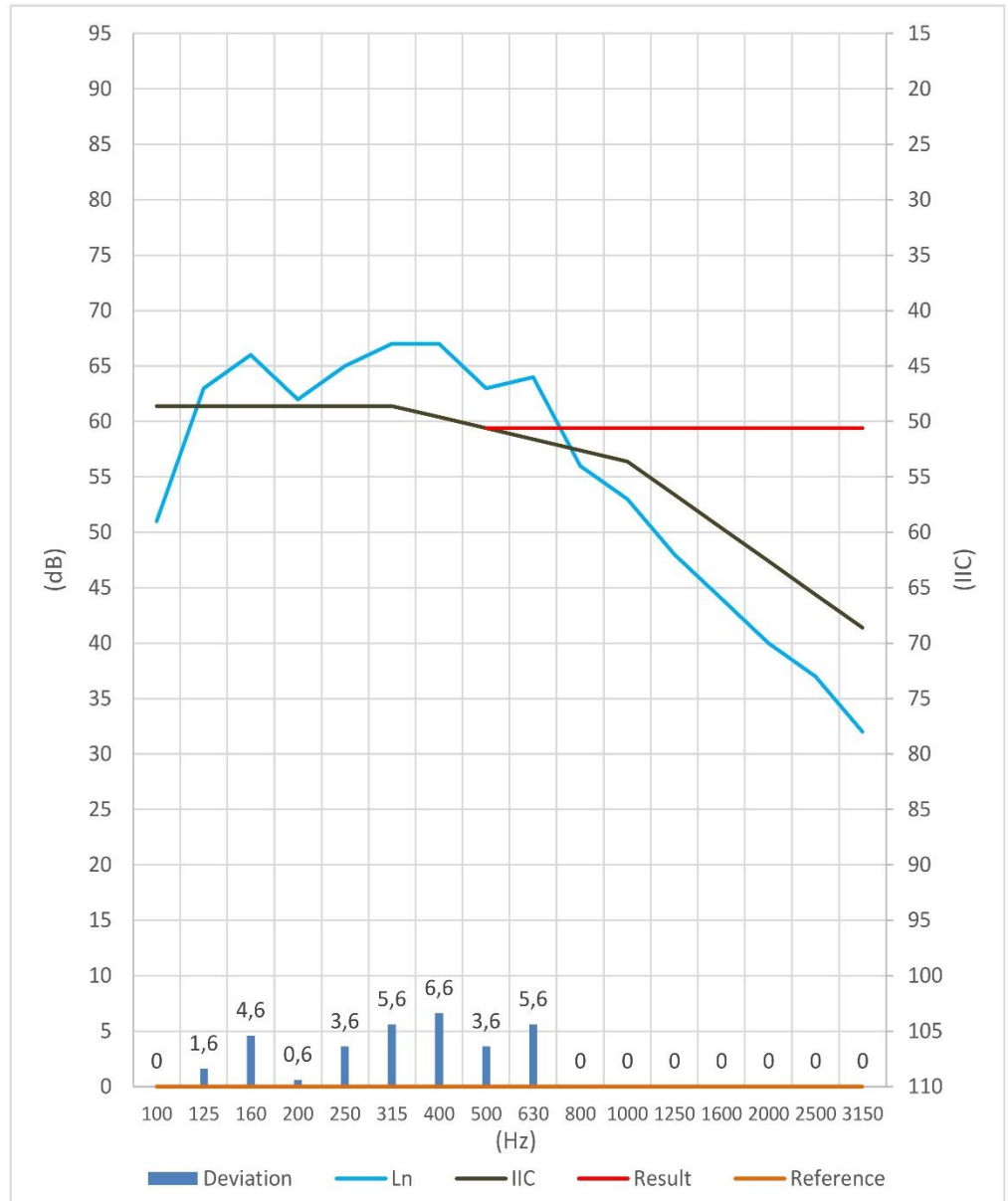
Results :

AIRC	50,6
Defavorable deviations	31,8

Assembly description

Concrete slab 8" (200mm)

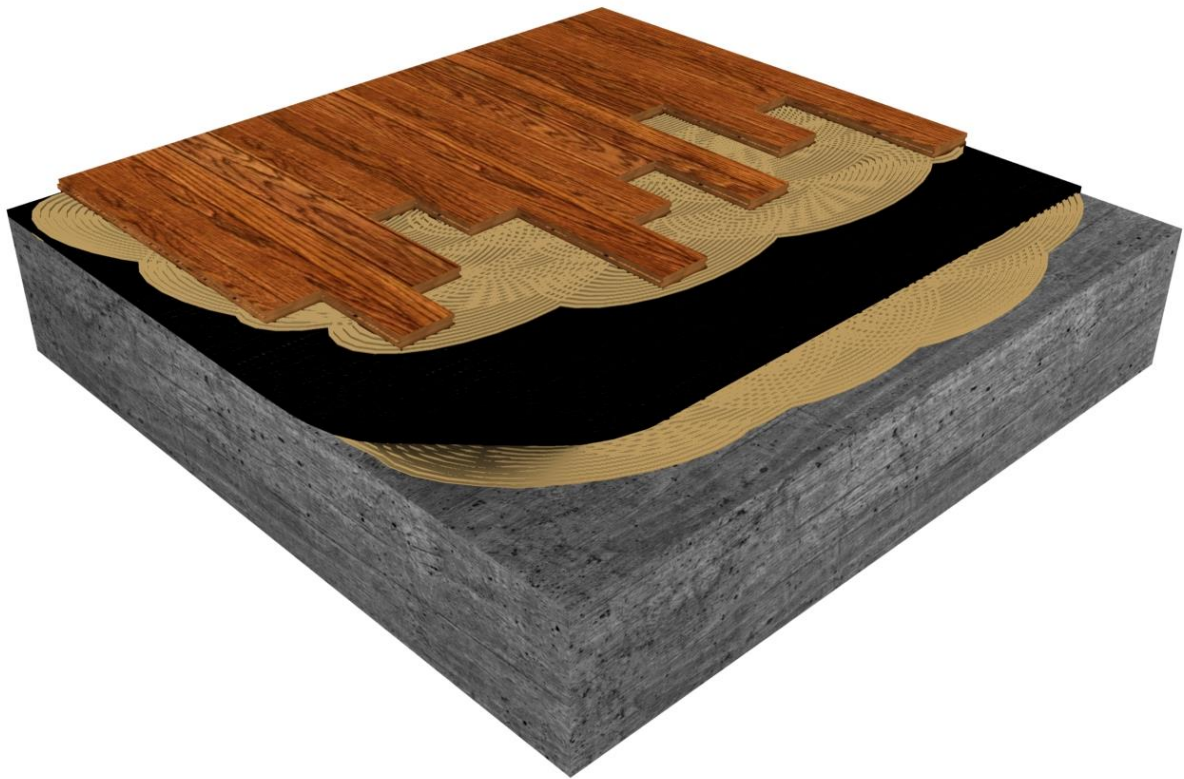
Visible concrete



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	51	63	66	62	65	67	67	63	64	56	53	48	44	40	37	32
IIC	61,4	61,4	61,4	61,4	61,4	61,4	60,4	59,4	58,4	57,4	56,4	53,4	50,4	47,4	44,4	41,4
T20	1,95	1,74	1,46	0,98	0,84	0,67	0,6	0,5	0,45	0,45	0,39	0,38	0,26	0,23	0,2	0,17
L2	56,23	67,07	69,47	64,14	65,84	67,38	66,43	62,09	62,44	54,36	51,18	45,94	41,16	35,72	31,94	26,71
T30	1,94	1,57	1,35	0,95	0,8	0,64	0,62	0,5	0,44	0,48	0,45	0,43	0,31	0,26	0,22	0,19
B2	19,79	26,22	19,66	16,04	16,59	11,1	11,85	9,73	9,23	12,5	9,88	7,93	7,66	12,94	6,88	6,59
Deviation	0	1,6	4,6	0,6	3,6	5,6	6,6	3,6	5,6	0	0	0	0	0	0	0

Regupol PU350
Regupol Sonus (5mm)
Regupol PU350
Pine filleted core engineered flooring

AIIC 50



Project : Double-glued down comparative study - Concrete structure

Test : Regupol Sonus 5mm+19mm Pine filleted core Engineered

Description :

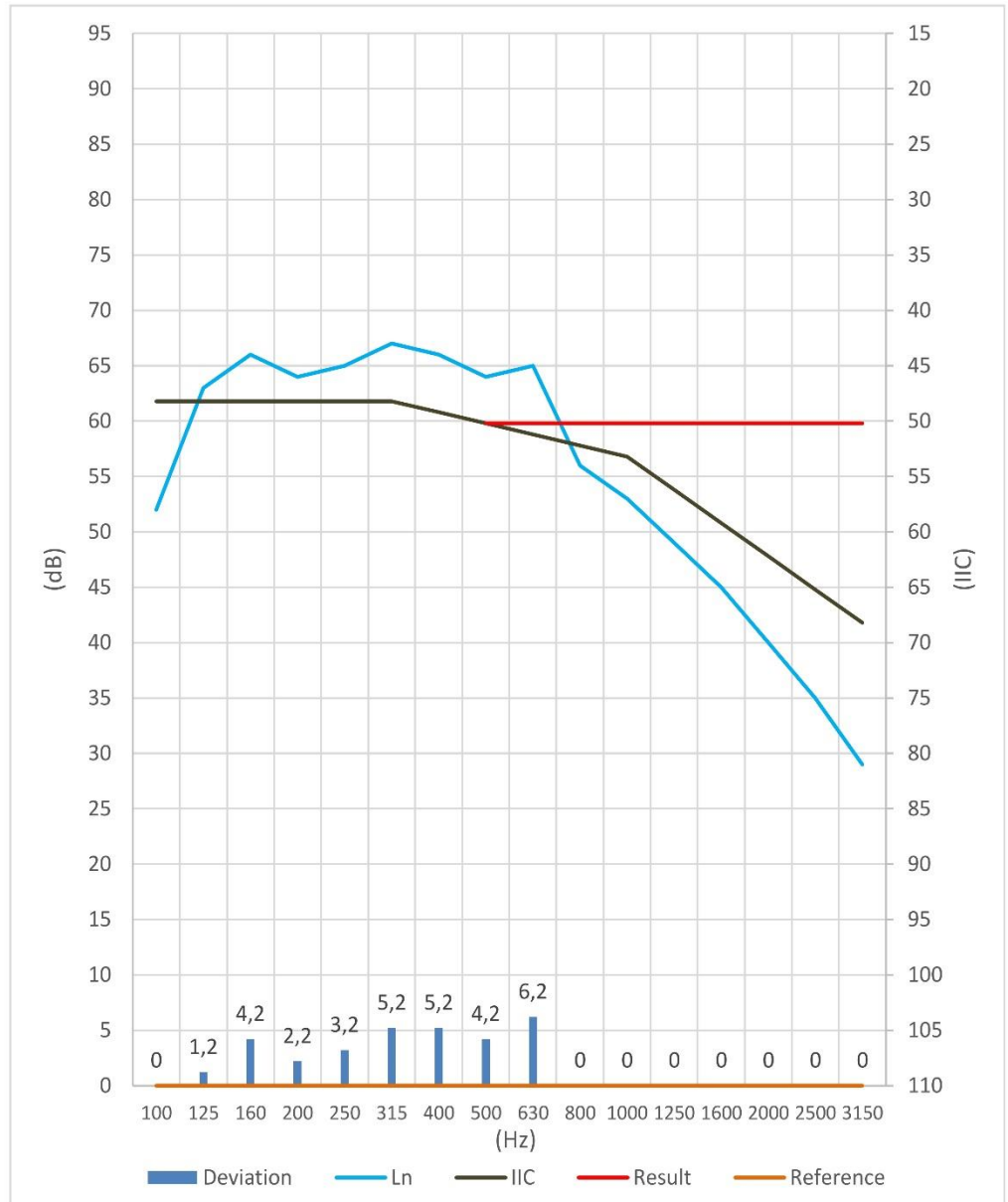
Emitting surface (m ²)	16,8
Emitting volume (m ³)	41
Tested surface (m ²)	2,5
Receiving surface (m ²)	16,5
Receiving volume (m ³)	40

Results :

AIRC	50,2
Defavorable deviations	31,6

Assembly description

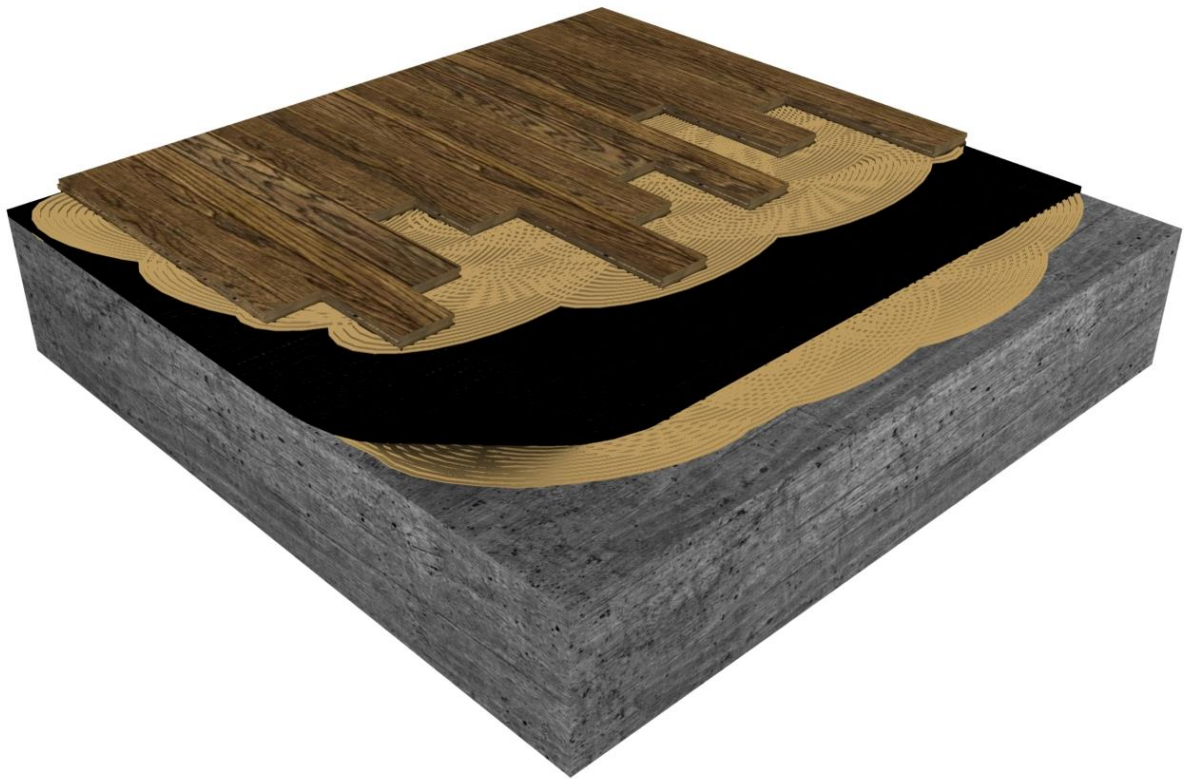
Concrete slab 8" (200mm)
Visible concrete



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	52	63	66	64	65	67	66	64	65	56	53	49	45	40	35	29
IIC	61,8	61,8	61,8	61,8	61,8	61,8	60,8	59,8	58,8	57,8	56,8	53,8	50,8	47,8	44,8	41,8
T20	1,95	1,74	1,46	0,98	0,84	0,67	0,6	0,5	0,45	0,45	0,39	0,38	0,26	0,23	0,2	0,17
L2	56,63	67,19	68,8	65,46	66,24	66,98	65,6	62,75	63,68	54,62	51,53	47,08	41,55	35,8	30,36	23,66
T30	1,94	1,57	1,35	0,95	0,8	0,64	0,62	0,5	0,44	0,48	0,45	0,43	0,31	0,26	0,22	0,19
B2	19,79	26,22	19,66	16,04	16,59	11,1	11,85	9,73	9,23	12,5	9,88	7,93	7,66	12,94	6,88	6,59
Deviation	0	1,2	4,2	2,2	3,2	5,2	5,2	4,2	6,2	0	0	0	0	0	0	0

Regupol PU350
Regupol Sonus (10mm)
Regupol PU350
Plywood core engineered flooring

AIIC 50



Project : Double-glued down comparative study - Concrete structure
Test : Regupol Sonus 10mm+12mm Plywood core Engineered

Description :

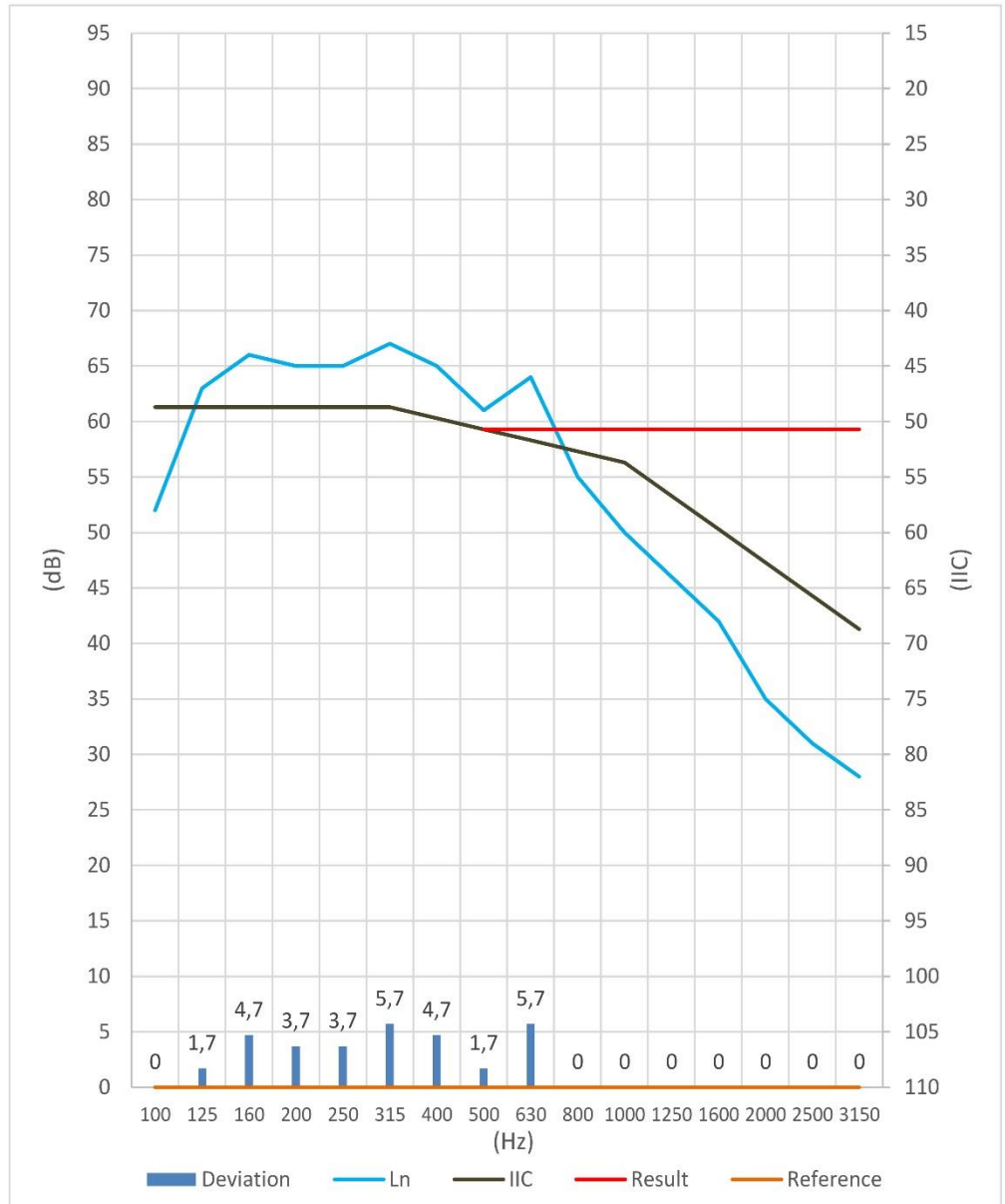
Emitting surface (m ²)	16,8
Emitting volume (m ³)	41
Tested surface (m ²)	2,5
Receiving surface (m ²)	16,5
Receiving volume (m ³)	40

Results :

AIIC	50,7
Defavorable deviations	31,6

Assembly description

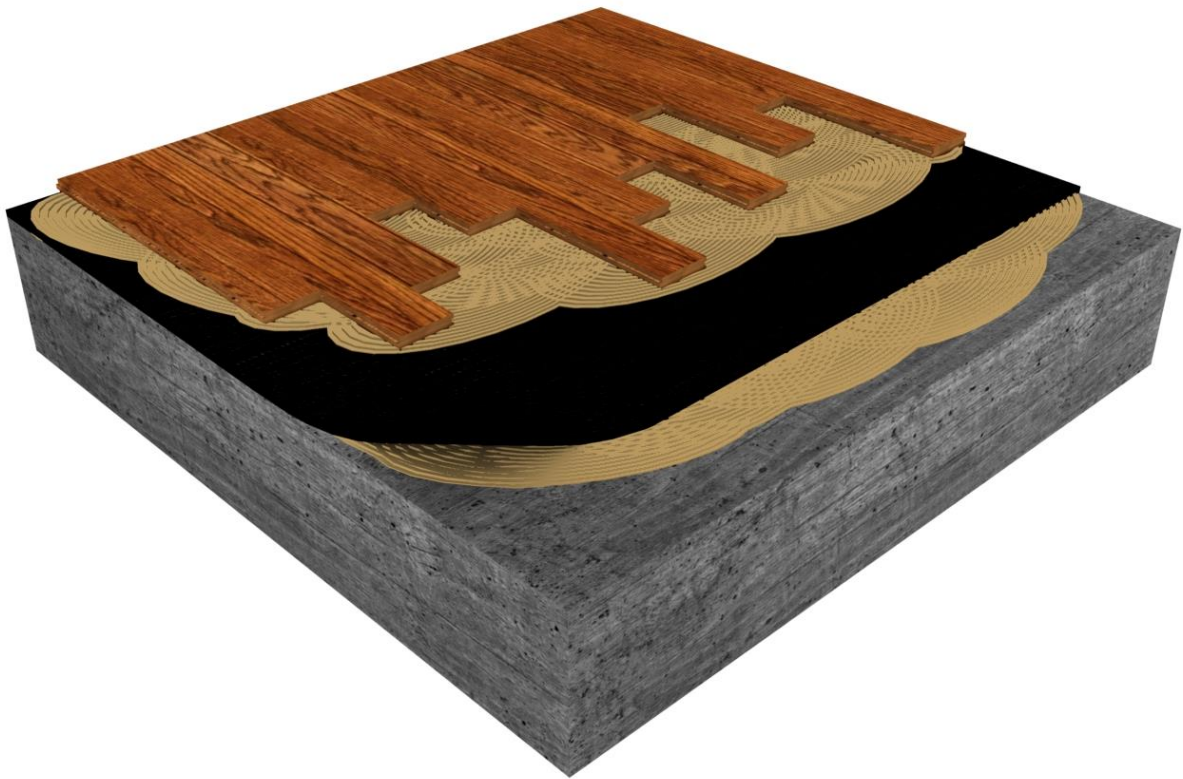
Concrete slab 8" (200mm)
Visible concrete



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	52	63	66	65	65	67	65	61	64	55	50	46	42	35	31	28
IIC	61,3	61,3	61,3	61,3	61,3	61,3	60,3	59,3	58,3	57,3	56,3	53,3	50,3	47,3	44,3	41,3
T20	1,95	1,74	1,46	0,98	0,84	0,67	0,6	0,5	0,45	0,45	0,39	0,38	0,26	0,23	0,2	0,17
L2	56,36	67,36	69,64	66,66	66,47	66,98	64,59	59,76	61,95	53,76	48,85	43,84	38,75	31,39	26,59	22,33
T30	1,94	1,57	1,35	0,95	0,8	0,64	0,62	0,5	0,44	0,48	0,45	0,43	0,31	0,26	0,22	0,19
B2	19,79	26,22	19,66	16,04	16,59	11,1	11,85	9,73	9,23	12,5	9,88	7,93	7,66	12,94	6,88	6,59
Deviation	0	1,7	4,7	3,7	3,7	5,7	4,7	1,7	5,7	0	0	0	0	0	0	0

Regupol PU350
Regupol Sonus (10mm)
Regupol PU350
Pine filleted core engineered flooring

AIIC 50



Project : Double-glued down comparative study - Concrete structure
Test : Regupol Sonus 10mm+19mm Pine filleted core Engineered

Description :

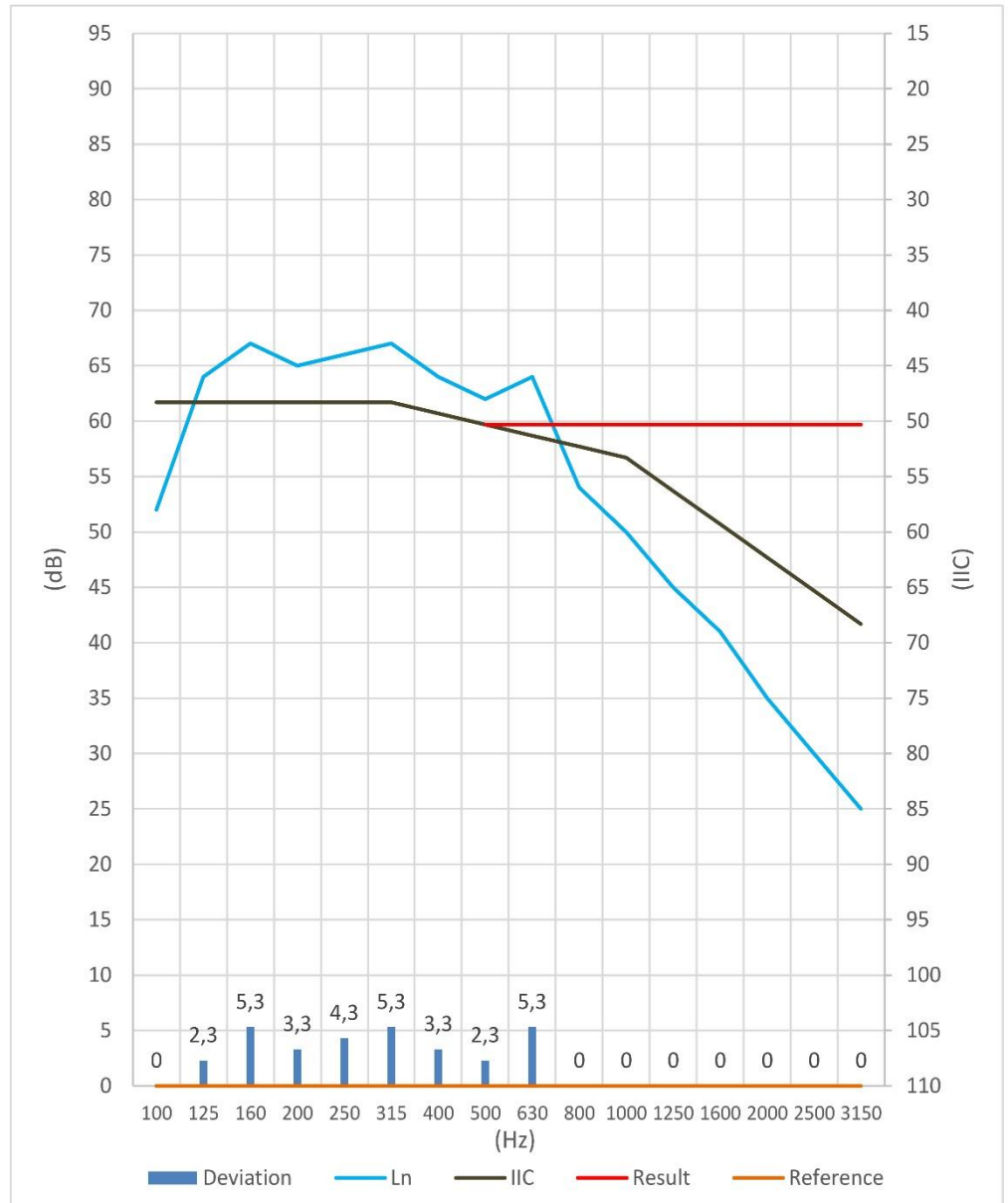
Emitting surface (m ²)	16,8
Emitting volume (m ³)	41
Tested surface (m ²)	2,5
Receiving surface (m ²)	16,5
Receiving volume (m ³)	40

Results :

AIIC	50,3
Defavorable deviations	31,4

Assembly description

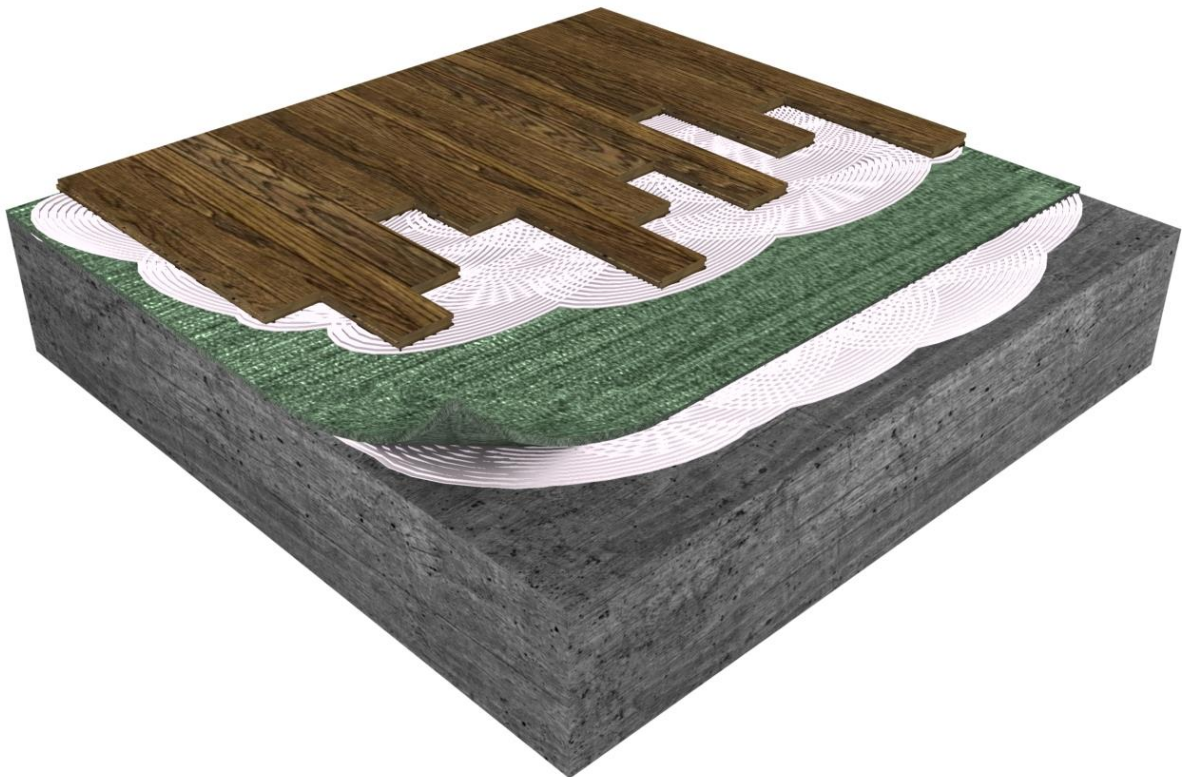
Concrete slab 8" (200mm)
Visible concrete



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	52	64	67	65	66	67	64	62	64	54	50	45	41	35	30	25
IIC	61,7	61,7	61,7	61,7	61,7	61,7	60,7	59,7	58,7	57,7	56,7	53,7	50,7	47,7	44,7	41,7
T20	1,95	1,74	1,46	0,98	0,84	0,67	0,6	0,5	0,45	0,45	0,39	0,38	0,26	0,23	0,2	0,17
L2	56,89	67,52	70,18	67,13	67,15	67,39	63,88	60,53	62,29	52,96	48,95	43,4	37,4	30,69	25,06	19,98
T30	1,94	1,57	1,35	0,95	0,8	0,64	0,62	0,5	0,44	0,48	0,45	0,43	0,31	0,26	0,22	0,19
B2	19,79	26,22	19,66	16,04	16,59	11,1	11,85	9,73	9,23	12,5	9,88	7,93	7,66	12,94	6,88	6,59
Deviation	0	2,3	5,3	3,3	4,3	5,3	3,3	2,3	5,3	0	0	0	0	0	0	0

AcoustiTECH AD-844MS
AcoustiTECH Lead 3.3 (3.3mm)
AcoustiTECH AD-844MS
Plywood core engineered flooring

AIIC 51



Project : Double-glued down comparative study - Concrete structure
Test : AcoustiTECH Lead 3.3+12mm Plywood core Engineered

Description :

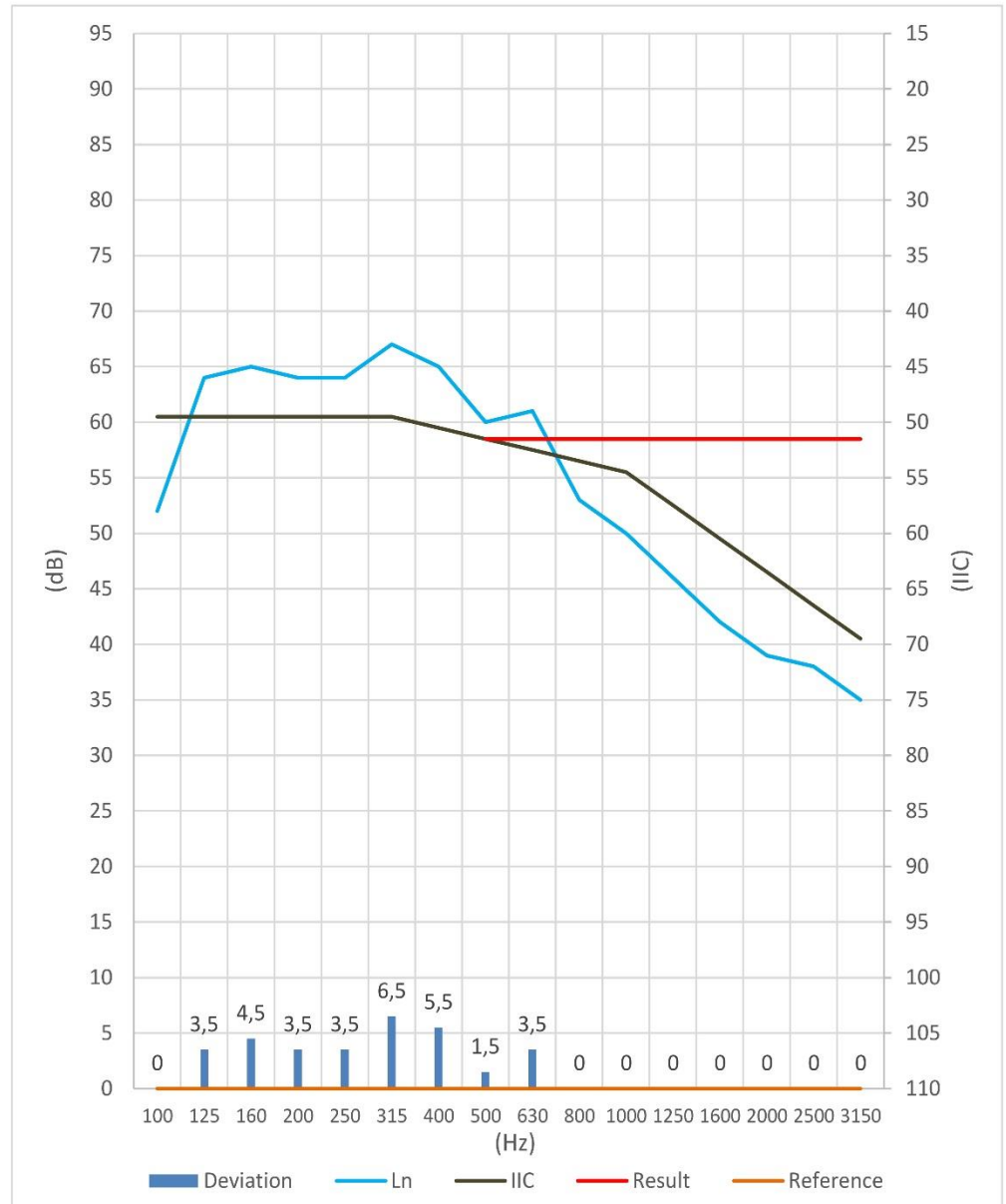
Emitting surface (m ²)	16,8
Emitting volume (m ³)	41
Tested surface (m ²)	2,5
Receiving surface (m ²)	16,5
Receiving volume (m ³)	40

Results :

AIRC	51,5
Defavorable deviations	32

Assembly description

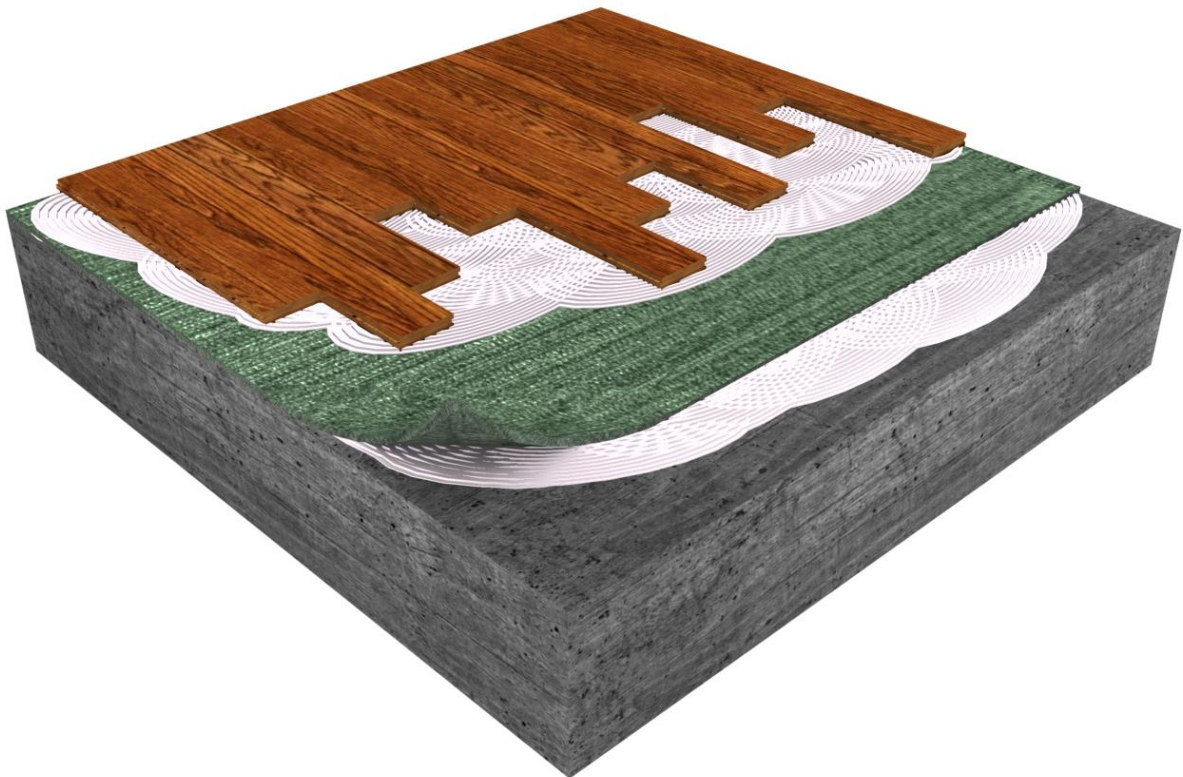
Concrete slab 8" (200mm)
Visible concrete



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	52	64	65	64	64	67	65	60	61	53	50	46	42	39	38	35
IIC	60,5	60,5	60,5	60,5	60,5	60,5	59,5	58,5	57,5	56,5	55,5	52,5	49,5	46,5	43,5	40,5
T20	1,95	1,74	1,46	0,98	0,84	0,67	0,6	0,5	0,45	0,45	0,39	0,38	0,26	0,23	0,2	0,17
L2	56,44	67,74	67,82	65,41	65,26	67,21	65,11	58,65	59,27	51,44	48,16	44,51	38,94	35,17	32,95	29,76
T30	1,94	1,57	1,35	0,95	0,8	0,64	0,62	0,5	0,44	0,48	0,45	0,43	0,31	0,26	0,22	0,19
B2	19,79	26,22	19,66	16,04	16,59	11,1	11,85	9,73	9,23	12,5	9,88	7,93	7,66	12,94	6,88	6,59
Deviation	0	3,5	4,5	3,5	3,5	6,5	5,5	1,5	3,5	0	0	0	0	0	0	0

AcoustiTECH AD-844MS
AcoustiTECH Lead 3.3 (3.3mm)
AcoustiTECH AD-844MS
Pine filleted core engineered flooring

AIIC 52



Project : Double-glued down comparative study - Concrete structure

Test : AcoustiTECH Lead 3.3+19mm Pine filleted core Engineered

Description :

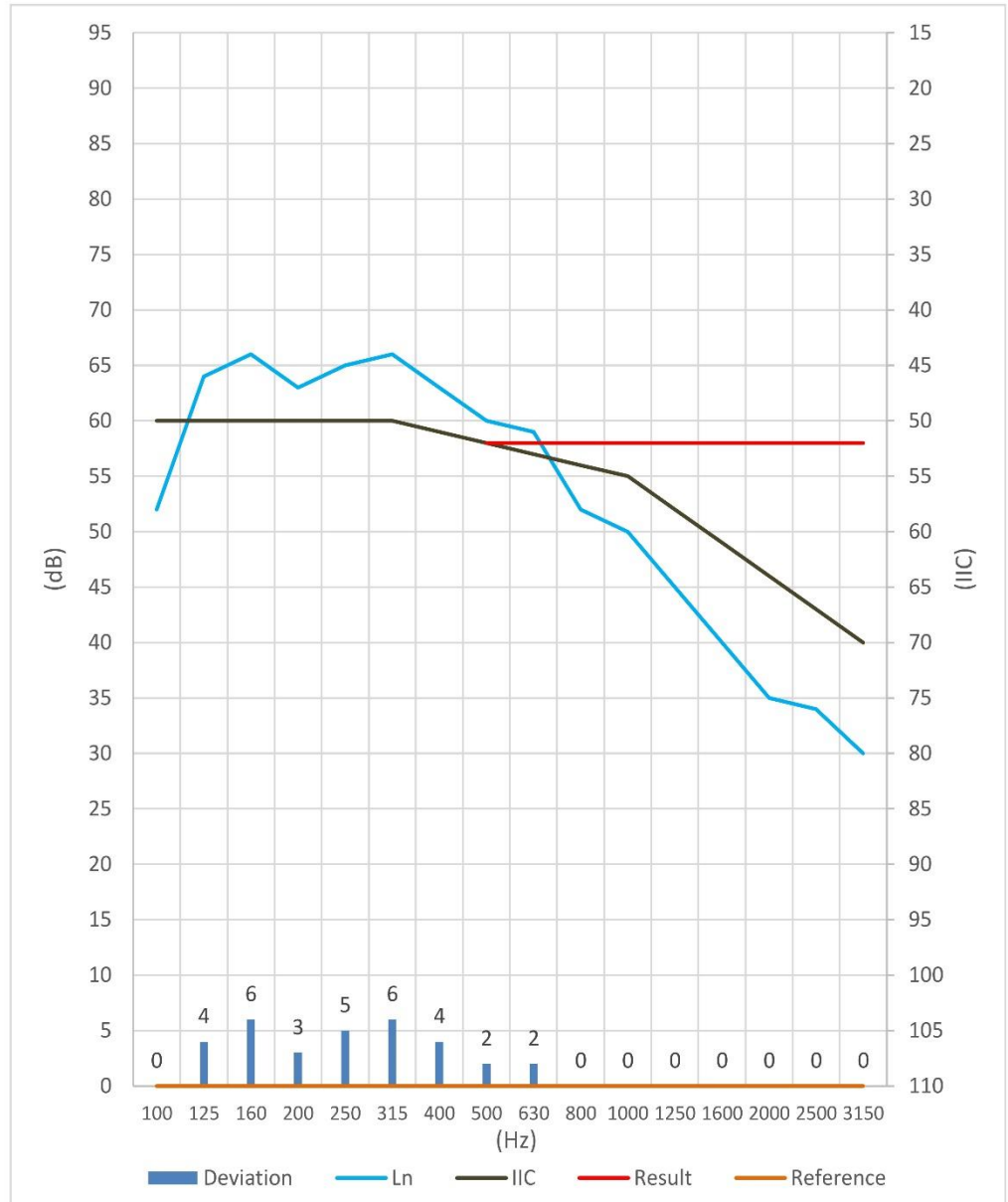
Emitting surface (m ²)	16,8
Emitting volume (m ³)	41
Tested surface (m ²)	2,5
Receiving surface (m ²)	16,5
Receiving volume (m ³)	40

Results :

AIRC	52
Defavorable deviations	32

Assembly description

Concrete slab 8" (200mm)
Visible concrete



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	52	64	66	63	65	66	63	60	59	52	50	45	40	35	34	30
IIC	60	60	60	60	60	60	59	58	57	56	55	52	49	46	43	40
T20	1,95	1,74	1,46	0,98	0,84	0,67	0,6	0,5	0,45	0,45	0,39	0,38	0,26	0,23	0,2	0,17
L2	57,19	67,5	69,12	65,05	66	66,18	63,15	58,54	57,79	50,56	48,21	42,97	37	30,86	29,35	25,19
T30	1,94	1,57	1,35	0,95	0,8	0,64	0,62	0,5	0,44	0,48	0,45	0,43	0,31	0,26	0,22	0,19
B2	19,79	26,22	19,66	16,04	16,59	11,1	11,85	9,73	9,23	12,5	9,88	7,93	7,66	12,94	6,88	6,59
Deviation	0	4	6	3	5	6	4	2	2	0	0	0	0	0	0	0

AcoustiTECH VP (2.2mm) Laminate flooring

AIIC 54



Project : Double-glued down comparative study - Concrete structure
Test : AcoustiTECH VP+floating floor 8mm

Description :

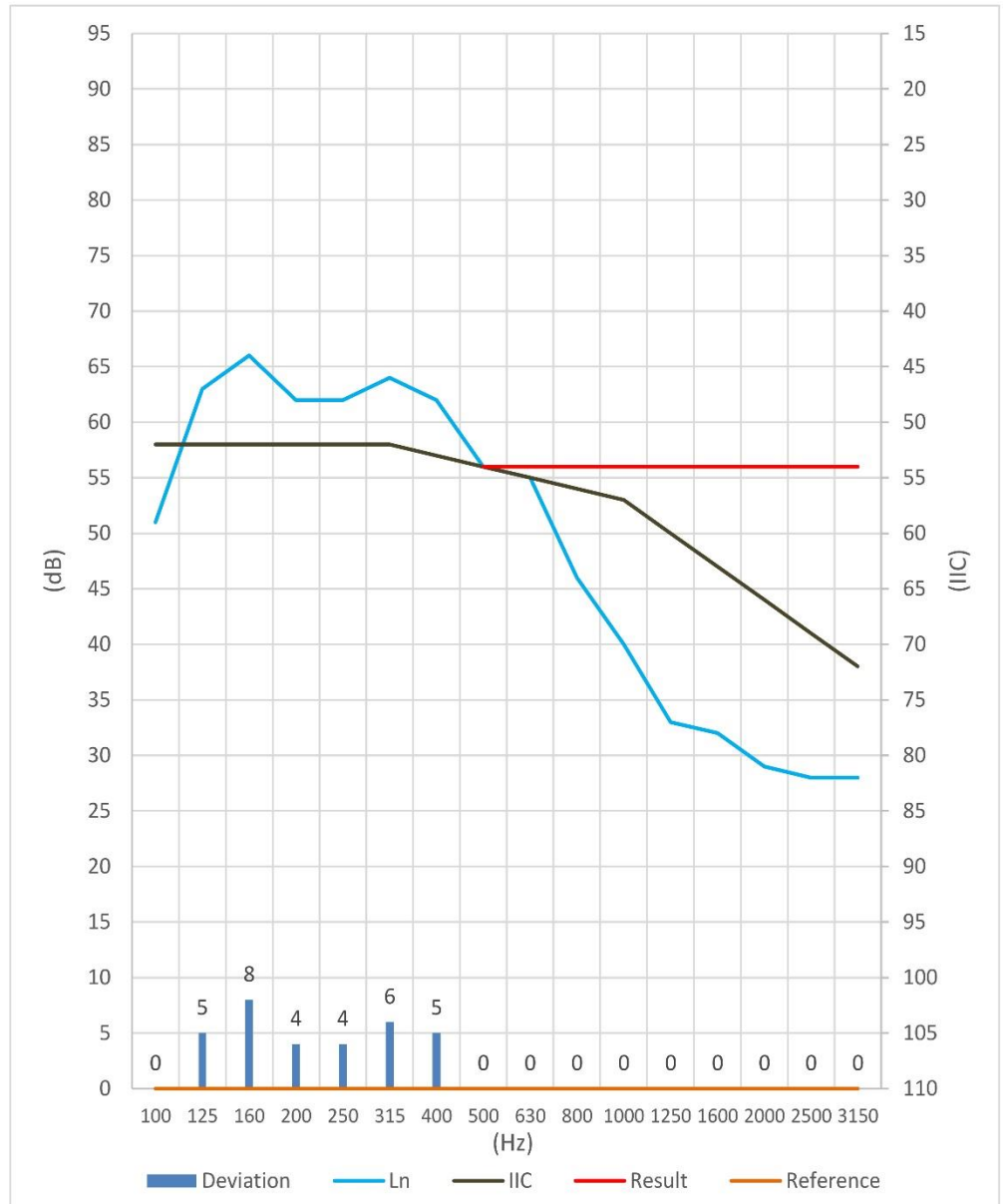
Emitting surface (m ²)	16,8
Emitting volume (m ³)	41
Tested surface (m ²)	2,5
Receiving surface (m ²)	16,5
Receiving volume (m ³)	40

Results :

AiIC	54
Defavorable deviations	32

Assembly description

Concrete slab 8" (200mm)
Visible concrete



Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
Ln	51	63	66	62	62	64	62	56	55	46	40	33	32	29	28	28
IIC	58	58	58	58	58	58	57	56	55	54	53	50	47	44	41	38
T20	1,95	1,74	1,46	0,98	0,84	0,67	0,6	0,5	0,45	0,45	0,39	0,38	0,26	0,23	0,2	0,17
L2	56,24	66,76	68,9	64,11	63,35	64,19	61,77	55,07	53,34	45,01	37,98	31,75	29,27	25,28	23,74	22,84
T30	1,94	1,57	1,35	0,95	0,8	0,64	0,62	0,5	0,44	0,48	0,45	0,43	0,31	0,26	0,22	0,19
B2	19,79	26,22	19,66	16,04	16,59	11,1	11,85	9,73	9,23	12,5	9,88	7,93	7,66	12,94	6,88	6,59
Deviation	0	5	8	4	4	6	5	0	0	0	0	0	0	0	0	0

AcoustiTECH

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