prana

OF THE STANDARD 13141-8:2014

01 TESTING LABORATORY «IMQ»

IMQ: certification, testing, inspection and audit services

IMQ SpA was created in 1999 on behalf of the "Istituto Italiano del Marchio di Qualità", an independent non-commercial association founded in 1951 by a group of major Italian scientific and technical organizations working in the electrotechnical sector.

With almost 70 years of experience, IMQ is the ideal partner for companies, organizations and professionals who aim to increase their value by certifying the safety, quality and performance of their work and products.

The company offers certification, testing, inspection and audit services to support all major industry and service sectors.

HVACR: IMQ company servic confirm efficiency and acoustics, product performance for international markets and for the purpose of **Eurovent** certification

In the HVAC industry, performance and energy efficiency are increasingly important drivers of purchasing decisions.

Being able to guarantee the efficiency and low environmental impact of your products is one of the most effective ways to gain market share.

IMQ is one of the leading players in the HVAC industry. In particular, IMQ offers testing, product certification, including certifications required for international markets, certification of industry specialists and certification of management systems.

The IMQ test laboratory is the first and only laboratory in Italy for testing the performance and acoustics of air conditioning and ventilation equipment for domestic, commercial, public and industrial use.

DC0005PRD/000/CERT

CERTIFICATO DI ACCREDITAMENTO

Accreditation Certificate

ACCREDITAMENTO N. / *ACCREDITATION N.*: **0005PRD** REV. **000**

EMESSO DA / *ISSUED BY*: **DIPARTIMENTO CERTIFICAZIONE E ISPEZIONE**

SI DICHIARA CHE / *WE DECLARE THAT*: **IMQ S.p.A.**

SEDE PRINCIPALE/HEADQUARTER:
- Via Quintiliano, 43 20138 - MILANO (MI) - Italia

È CONFORME AI REQUISITI DELLA NORMA: UNI CEI EN/ISO/IEC 17065:2012

MEETS THE REQUIREMENTS OF THE STANDARD: EN/ISO/IEC 17065:2012

QUALE ORGANISMO DI: **Certificazione di Prodotto/Servizio/Processo**
(così come dettagliato negli Allegati al presente Certificato)

AS BODY FOR THE: ***Certification of Product/Service/Process***
(as stated in the Annexes to this Certificate)

Data di 1ª emissione
1st issue date
10-03-1993

Data di revisione
Review date
01-01-2023

L'accreditamento attesta la competenza, l'imparzialità e il costante e coerente funzionamento dell'Organismo relativamente al campo di accreditamento riportato negli allegati al presente certificato di accreditamento.

Il presente Certificato non è da ritenersi valido se non accompagnato dai relativi Allegati e può essere sospeso, revocato o ridotto in qualsiasi momento nel caso di inadempienza accertata da parte di ACCREDIA.

La vigenza dell'accreditamento può essere verificata sul sito WEB (www.accredia.it) o richiesta direttamente al Dipartimento di competenza. Il QRcode consente di accedere direttamente al sito www.accredia.it per verificare la validità del certificato di accreditamento rilasciato al CAB.

La data di revisione riportata sul certificato corrisponde alla data di delibera del pertinente Comitato Settoriale di Accreditamento. L'atto di delibera, firmato dal Presidente di ACCREDIA, è scaricabile dal sito www.accredia.it, sezione 'Documenti'. ACCREDIA è l'Ente Unico nazionale di accreditamento designato dal governo italiano, in applicazione del Regolamento Europeo 765/2008.

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MD-17-DC Rev. 04

ACCREDIA
Dipartimento
Certificazione e Ispezione

SEDE LEGALE
Via Guglielmo Saliceto, 7/9
00161 Roma
T +39 06 8440991
F +39 06 8841199
accredia.it / info@accredia.it
C.F. / P. IVA 10566361001

SEDE OPERATIVA E AMMINISTRATIVA
Via Tonale, 26
20125 Milano
T +39 02 2100961
F +39 02 21009637
milano@accredia.it

02 OVERVIEW OF THE STANDARD 13141-8:2014

2.1. SCOPE OF APPLICATION

The standard EN 13141-8:2014 describes methods and requirements related to laboratory tests of aerodynamic, thermal, electrical and acoustic parameters of ductless supply and exhaust systems installations for residential premises.

2.2. TESTING OF AERODYNAMIC PARAMETERS INCLUDES:

- Internal leakage test and mixing
- External leakage test
- Airflow
- Airflow sensitivity to the pressure
- Air tightness

2.3. TESTING OF THERMAL PARAMETERS INCLUDES:

- Temperature ratio (Temperature ratio) on productivity, which is close to 70% of maximum (reference) at temperatures of +7/+20 ^{o}C (Mandatory)

- Temperature ratio in the reference mode at other temperature values (Voluntary)

- Temperature ratio in other modes and at other temperature values (Voluntary)

- Resistance to freezing (frost protection) at temperatures of -15/+20 ^{o}C, with the use of additional heating or other methods of preventing freezing.

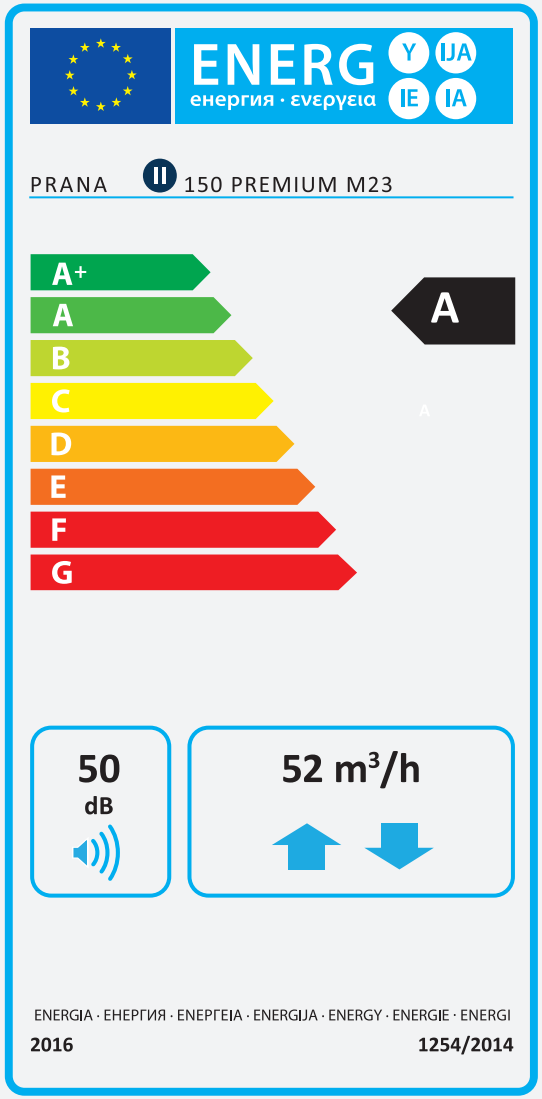
2.4. TESTING OF ELECTRICAL PARAMETERS INCLUDES:

- Measurement of electrical consumption of the device
- Calculation of the SPI coefficient (Wh/m3/h) in the operating mode of the reference

2.5. TESTING OF ACOUSTIC PARAMETERS INCLUDES:

- Sound power & sound pressure levels.

03 ENERGY LABEL



I. Name of the supplier or trade mark

II. Model

III. Energy efficiency class according to **COMMISSION DELEGATED REGULATION (EU) No 1254/2014** is determined by the formula:

$$SEC = t_a \cdot pef \cdot q_{net} \cdot MISC \cdot CTRL^x \cdot SPI - t_h \cdot \triangle T_h \cdot \eta_h^{-1} \cdot c_{air} \cdot (q_{ref} - q_{net} \cdot CTRL \cdot MISC \cdot (1 - \eta_t)) + Q_{defr}$$

IV. Sound power level dB (LwA) at reference operating mode

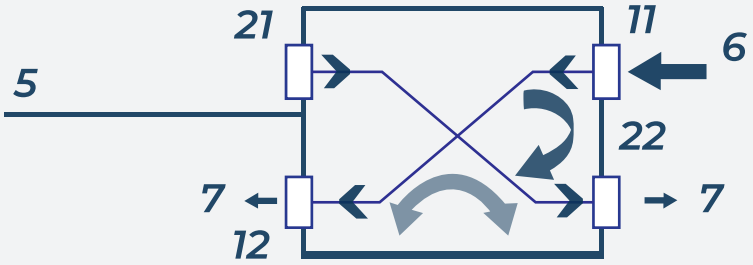
V. Maximum performance of air exchange in the operating mode max

04 LEAKAGES, TIGHTNESS

The level of tightness of the ventilation system is the ratio of the amount of air leakage to the maximum performance of the system, expressed in %.

$$leakage = \frac{leakage\ air}{maximum\ airflow\ rate} \times 100$$

There are **internal leaks** (inside the system between the supply and exhaust) and **external leaks** (leaks through the ventilation system box)



a) internal leakages

21	*outdoor air*
11	*extract air*
22	*supply air*
12	*exhaust air*
5	*deflector*
6	*tracer gas introduction*
7	*tracer gas measurement*

Leakage classes

Class %	Internal leakage %		Outdoor mixing %		Indoor mixing %		Internal leakage at 50 Pa %
U1	≤ 2	and	≤ 2	and	≤ 2	and	≤ 2
U2	≤ 5	and	≤ 5	and	≤ 5	and	≤ 5
U3	≤ 10	and	≤ 10	and	≤ 10	and	≤ 10
Not classified	> 10	or	> 10	or	> 10	or	> 10

The standard EN 13141-8:2014 sets the maximum admissible levels of air leaks for ventilation systems.

PRANA 150 Leakages test result

EXTERNAL LEAKAGES - OVER - PRESSURE - TEST RESULTS	
Pressure	Leak airflow
[Pa]	[m³/h]
50,3	0,9295

EXTERNAL LEAKAGES - UNDER - PRESSURE - TEST RESULTS	
Pressure	Leak airflow
[Pa]	[m³/h]
-49,9	0,8504

INTERNAL LEAKAGES - OVER - PRESSURE - TEST RESULTS	
Pressure	Leak airflow
[Pa]	[m³/h]
20,1	3,456

LEAKAGES		
Test	Pressure	Leak airflow
	[Pa]	[m³/h]
External - over - pressure - 50Pa	50,0	0,9295
External - under - pressure - 50Pa	50,0	0,8504
Internal - over - pressure - 20Pa	20,0	3,456

PRANA 200G Leakages test result

EXTERNAL LEAKAGES - OVER - PRESSURE - TEST RESULTS	
Pressure	Leak airflow
[Pa]	[m³/h]
50,0	0,4382

EXTERNAL LEAKAGES - UNDER - PRESSURE - TEST RESULTS	
Pressure	Leak airflow
[Pa]	[m³/h]
-48,9	0,3487

INTERNAL LEAKAGES - OVER - PRESSURE - TEST RESULTS	
Pressure	Leak airflow
[Pa]	[m³/h]
19,7	4,030

LEAKAGES		
Test	Pressure	Leak airflow
	[Pa]	[m³/h]
External - over - pressure - 50Pa	50,0	0,4382
External - under - pressure - 50Pa	50,0	0,3487
Internal - over - pressure - 20Pa	20,0	4,030

PRANA 200C Leakages test result

EXTERNAL LEAKAGES - OVER - PRESSURE - TEST RESULTS	
Pressure	Leak airflow
[Pa]	[m³/h]
49,9	0,5713

EXTERNAL LEAKAGES - UNDER - PRESSURE - TEST RESULTS	
Pressure	Leak airflow
[Pa]	[m³/h]
-50,1	0,5246

INTERNAL LEAKAGES - OVER - PRESSURE - TEST RESULTS	
Pressure	Leak airflow
[Pa]	[m³/h]
20,0	5,66

LEAKAGES		
Test	Pressure	Leak airflow
	[Pa]	[m³/h]
External - over - pressure - 50Pa	49,9	0,5713
External - under - pressure - 50Pa	50,1	0,5246
Internal - over - pressure - 20Pa	20,0	5,66

05 AIRFLOW: SPEED 1-1 4-4 5-5 +BOOST

Airflow test result PRANA 150

TEST RESULTS					
Id point	Speed	Volume flowrate	p_{e4}	Density	Mass flowrate
	[-]	[m³/h]	[Pa]	[Kg/m³]	[Kg/s]
1	0-5	51,20	0,4	1,169	0,01663
2	0-4A	8,97	15,6	1,169	0,002915
3	0-4A	31,79	-0,3	1,169	0,01032
4	0-4B	7,25	10,1	1,169	0,002353
5	0-4B	24,87	-0,2	1,168	0,00807
6	0-4B	42,21	-19,4	1,168	0,01369
7	0-1	2,06	0,4	1,168	0,000668
8	0-1	4,57	-0,1	1,168	0,001482
9	0-1	31,85	-19,3	1,168	0,01033
10	0-4A	47,20	-19,1	1,168	0,01531
11	1-0	28,72	-19,5	1,167	0,00931
12	1-0	4,99	-0,3	1,167	0,001616
13	5-0	51,44	-0,1	1,167	0,01667
14	5-0	42,35	18,8	1,167	0,01372
15	5-0	60,54	-19,7	1,166	0,01961
16	4-0A	13,29	19,0	1,167	0,00431
17	4-0A	30,78	0,2	1,166	0,00997
18	4-0A	44,19	-19,1	1,166	0,01432
19	4-0B	38,53	-19,3	1,166	0,01248
20	4-0B	25,69	-0,3	1,166	0,00832
21	4-0B	9,29	16,1	1,167	0,003011
22	0-5	35,79	18,8	1,160	0,01153
23	0-5	64,00	-18,9	1,159	0,02060

According to 13141-8:2014, performance measurements take place with variable pressure: -20Ra; 0Ra; +20Ra, or close features with an admissible error

Airflow test result PRANA 200C

TEST RESULTS					
Id point	Speed	Volume flowrate	p_{e4}	Density	Mass flowrate
	[-]	[m³/h]	[Pa]	[Kg/m³]	[Kg/s]
1	5-0	70,66	19,3	1,159	0,02275
2	5-0	87,85	0,1	1,159	0,02828
3	5-0	105,30	-19,3	1,159	0,0339
4	4-0	21,22	19,4	1,159	0,00683
5	4-0	46,93	0,0	1,159	0,01511
6	4-0	66,72	-19,2	1,158	0,02147
7	1-0	n.a.	0,6	n.a.	n.a.
8	1-0	6,14	0,0	1,158	0,001975
9	1-0	44,07	-19,2	1,158	0,01418
10	0-5	67,06	19,3	1,158	0,02158
11	0-5	92,72	0,2	1,158	0,02983
12	0-5	114,34	-19,4	1,158	0,0368
13	0-4	8,55	14,1	1,158	0,002749
14	0-4	48,14	0,2	1,157	0,01548
15	0-4	79,59	-19,2	1,157	0,02558
16	0-1	n.a.	0,3	n.a.	n.a.
17	0-1	55,17	-19,3	1,156	0,01772
18	0-1	6,10	-0,1	1,157	0,001960

According to 13141-8:2014, performance measurements take place with variable pressure: -20Ra; 0Ra; +20Ra, or close features with an admissible error

Boost PRANA 150

TEST RESULTS					
Id point	Speed	Volume flowrate	p_{e4}	Density	Mass flowrate
	[-]	[m³/h]	[Pa]	[Kg/m³]	[Kg/s]
1	0 - BOOST	93,7	-50,5	1,1508	0,02995
2	0 - BOOST	81,7	-20,2	1,1511	0,02612
3	0 - BOOST	68,7	-0,2	1,1511	0,02195
4	0 - BOOST	59,1	20,4	1,1515	0,01891
5	0 - BOOST	41,6	50,2	1,1520	0,01332
6	BOOST - 0	87,1	-50,1	1,1528	0,02788
7	BOOST - 0	75,2	-19,7	1,1534	0,02409
8	BOOST - 0	61,0	0,1	1,1520	0,01951
9	BOOST - 0	32,4	20,3	1,1517	0,01037
10	BOOST - 0	13,7	38,4	1,1504	0,00439

Boost PRANA 200C

TEST RESULTS					
Id point	Speed	Volume flowrate	p_{e4}	Density	Mass flowrate
	[-]	[m³/h]	[Pa]	[Kg/m³]	[Kg/s]
1	0 - BOOST	183,7	-50,2	1,1460	0,05847
2	0 - BOOST	157,3	-20,3	1,1433	0,04996
3	0 - BOOST	140,1	-0,1	1,1444	0,04454
4	0 - BOOST	121,3	19,9	1,1457	0,03860
5	0 - BOOST	105,4	44,5	1,1460	0,03356
6	BOOST - 0	141,2	-50,2	1,1442	0,04489
7	BOOST - 0	125,9	-19,9	1,1446	0,04001
8	BOOST - 0	115,7	0,1	1,1446	0,03680
9	BOOST - 0	105,1	20,1	1,1448	0,03341
10	BOOST - 0	101,9	27,3	1,1448	0,03239

06 THERMAL EFFICIENCY

Prana 150, fan speed 1-1, mandatory test, thermal eff 98,5%:

ELECTRICAL QUANTITIES	UNIT	VALUE
Voltage [1]	V	229,7
Current [1]	A	0,12448
Power input	W	4,058

AIR FLOW	UNIT	VALUE
Extract air volume flow, $_{gm11}$ [2]	kg/s	0,001482
Supply air volume flow, $_{gm22}$ [2]	kg/s	0,001616

AIR CONDITIONS AND TEMPERATURE RATIO	UNIT	VALUE
Atmospheric pressure	kPa	99,05
Extract air dry bulb temperature, θ_{11}	°C	19,96
Extract air wet bulb temperature	°C	12,00
Outdoor air dry bulb temperature, θ_{21}	°C	6,97
Supply air dry bulb temperature, θ_{22}	°C	18,71
Extract air wet bulb temperature, θ_{12}	°C	n.a.
Temperature ratio on supply air side, $\eta^{\theta, su(a)}$	-	0,985

TEST RESULTS

Prana 150, fan speed 1-1, optional test -2°C, thermal eff 105%:

ELECTRICAL QUANTITIES	UNIT	VALUE
Voltage [1]	V	229,8
Current [1]	A	0,12489
Power input	W	4,090

AIR FLOW	UNIT	VALUE
Extract air volume flow, $_{gm11}$ [2]	kg/s	0,001482
Supply air volume flow, $_{gm22}$ [2]	kg/s	0,001616

AIR CONDITIONS AND TEMPERATURE RATIO	UNIT	VALUE
Atmospheric pressure	kPa	98,99
Extract air dry bulb temperature, θ_{11}	°C	19,99
Extract air wet bulb temperature	°C	16,04
Outdoor air dry bulb temperature, θ_{21}	°C	-2,03
Supply air dry bulb temperature, θ_{22}	°C	19,23
Extract air wet bulb temperature, θ_{12}	°C	n.a.
Temperature ratio on supply air side, $\eta^{\theta, su}$ [a]	-	1,053

TEST RESULTS

Prana 150, fan speed 1-1, optional test with heater, thermal eff 188%:

ELECTRICAL QUANTITIES	UNIT	VALUE
Voltage [1]	V	229,6
Current [1]	A	0,2513
Power input	W	52,28

AIR FLOW	UNIT	VALUE
Extract air volume flow, $_{gm11}$ [2]	kg/s	0,001482
Supply air volume flow, $_{gm22}$ [2]	kg/s	0,001616

AIR CONDITIONS AND TEMPERATURE RATIO	UNIT	VALUE
Atmospheric pressure	kPa	98,99
Extract air dry bulb temperature, θ_{11}	°C	19,98
Extract air wet bulb temperature	°C	12,09
Outdoor air dry bulb temperature, θ_{21}	°C	7,01
Supply air dry bulb temperature, θ_{22}	°C	29,48
Extract air dry bulb temperature, θ_{12}	°C	n.a.
Temperature ratio on supply air side, $\eta^{\theta, su(a)}$	-	1,889

TEST RESULTS

Prana 150, fan speed 4-4 (reference), mandatory test +7°C, thermal eff 53,4%:

ELECTRICAL QUANTITIES	UNIT	VALUE
Voltage [1]	V	229,8
Current [1]	A	0,14011
Power input	W	8,090

AIR FLOW	UNIT	VALUE
Extract air volume flow, $_{gm11}$ [2]	kg/s	0,01032
Supply air volume flow, $_{gm22}$ [2]	kg/s	0,00997

AIR CONDITIONS AND TEMPERATURE RATIO	UNIT	VALUE
Atmospheric pressure	kPa	98,97
Extract air dry bulb temperature, θ_{11}	°C	19,97
Extract air wet bulb temperature	°C	12,06
Outdoor air dry bulb temperature, θ_{21}	°C	7,00
Supply air dry bulb temperature, θ_{22}	°C	14,17
Extract air dry bulb temperature, θ_{12}	°C	98,97
Temperature ratio on supply air side, $\eta^{\theta, su(a)}$	-	0,534

TEST RESULTS

Prana 150, fan speed 4-4 (reference), optional test -2°C, thermal eff 65%:

ELECTRICAL QUANTITIES	UNIT	VALUE
Voltage [1]	V	229,6
Current [1]	A	0,2652
Power input	W	59,19

AIR FLOW	UNIT	VALUE
Extract air volume flow, q_{m11} [2]	kg/s	0,01032
Supply air volume flow, q_{m22} [2]	kg/s	0,00997

AIR CONDITIONS AND TEMPERATURE RATIO	UNIT	VALUE
Atmospheric pressure	kPa	98,91
Extract air dry bulb temperature, θ_{11}	°C	20,00
Extract air wet bulb temperature	°C	15,98
Outdoor air dry bulb temperature, θ_{21}	°C	-1,98
Supply air dry bulb temperature, θ_{22}	°C	12,80
Extract air dry bulb temperature, θ_{12}	°C	n.a.
Temperature ratio on supply air side, $\eta^{\theta, su}$ [a]	-	0,650

TEST RESULTS

Prana 200G, fan speed 1-1, optional test -2ºC, thermal eff 115,8%:

ELECTRICAL QUANTITIES	UNIT	VALUE
Voltage [1]	V	230,8
Current [1]	A	0,12522
Power input	W	3,815

AIR FLOW	UNIT	VALUE
Extract air volume flow, q_{m11} [2]	kg/s	0,002025
Supply air volume flow, q_{m22} [2]	kg/s	0,002561

AIR CONDITIONS AND TEMPERATURE RATIO	UNIT	VALUE
Atmospheric pressure	kPa	98,94
Extract air dry bulb temperature, θ_{11}	ºC	20,01
Extract air wet bulb temperature	ºC	16,00
Outdoor air dry bulb temperature, θ_{21}	ºC	-1,99
Supply air dry bulb temperature, θ_{22}	ºC	18,16
Extract air dry bulb temperature, θ_{12}	ºC	n.a.
Temperature ratio on supply air side, $\eta^{\theta, su}$ [a]	-	1,158

TEST RESULTS

Prana 200C, fan speed 1-1, optional test -2ºC, thermal eff 91,8%:

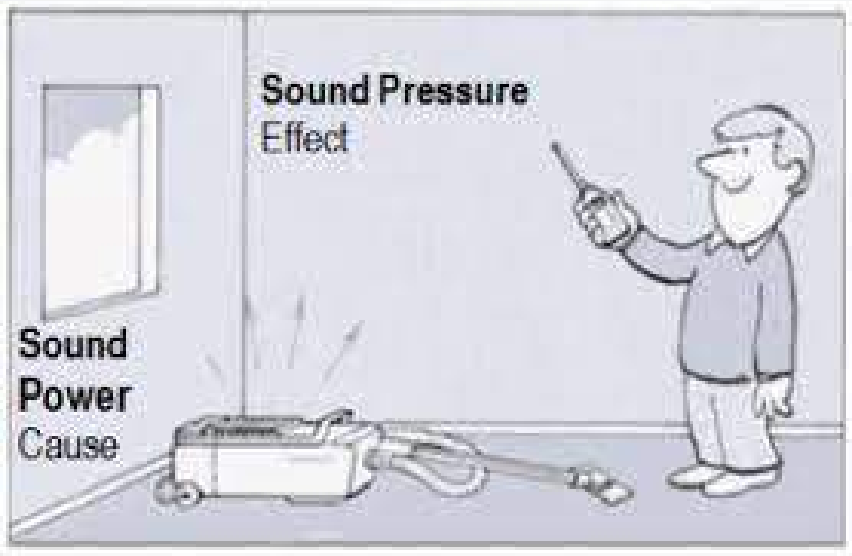
ELECTRICAL QUANTITIES	UNIT	VALUE
Voltage [1]	V	229,7
Current [1]	A	0,12189
Power input	W	3,855

AIR FLOW	UNIT	VALUE
Extract air volume flow, q_{m11} [2]	kg/s	0,001960
Supply air volume flow, q_{m22} [2]	kg/s	0,001975

AIR CONDITIONS AND TEMPERATURE RATIO	UNIT	VALUE
Atmospheric pressure	kPa	98,82
Extract air dry bulb temperature, θ_{11}	ºC	19,99
Extract air wet bulb temperature	ºC	16,01
Outdoor air dry bulb temperature, θ_{21}	ºC	-1,99
Supply air dry bulb temperature, θ_{22}	ºC	18,04
Extract air dry bulb temperature, θ_{12}	ºC	n.a.
Temperature ratio on supply air side, $\eta^{\theta, su}$ [a]	-	0,918

TEST RESULTS

07 NOISE LEVEL



Sound pressure level (Lp)
Sound power level (Lw)

The human ear does not perceive sound power, but sound pressure on the eardrum. In other words, sound power is the cause and sound pressure is the effect.

The sound power is determined by the calculation method, and sound pressure — by the method of measurements. Sound pressure as well depends on the distance to the sound source and acoustics properties of the room.

Test results PRANA 150

Sound power levels of indoor unit under test

FREQUENCY	INDOOR UNIT
Hz	dB
100	38,1
125	35,4
160	41,5
200	50,1
250	50,0
315	44,0
400	40,9
500	43,0
630	44,8
800	42,1
1000	40,0
1250	37,3
1600	34,8
2000	31,3
2500	27,9
3150	26,0
4000	22,4
5000	22,6
6300	19,2
8000	19,2
10000	20,8
Lw	55,5
Lwa	49,9

SOUND PRESSURE EMISSION LEVELS FROM THE SOUND POWER LEVELS @3meters (ISO 11203:1995*) Speed 5-5

FREQUENCY	Lp @3m * INDOOR	Lp @3m * OUTDOOR
Hz	dB	dB
100	26,4	29,9
125	25,6	28,6
160	32,8	31,7
200	40,4	37,2
250	39,1	38,6
315	35,7	34,1
400	37,3	37,6
500	38,2	32,8
630	38,4	33,3
800	37,4	31,1
1000	35,0	33,4
1250	31,9	34,3
1600	29,3	29,8
2000	27,5	29
2500	24,7	30,8
3150	23,6	28,1
4000	21,1	27,3
5000	22,2	26,1
6300	19,3	23,2
8000	17,3	20,3
10000	13,8	16,1
Lp	47,6	45,9
Lpa	44,0	42,7

Lw: global sound power level (dB ref. 1 pW)
Lwa: A-weighted global sound power level (dBA)
Invalid: difference between sound pressure of unit under test andbackground noise doesn't satisfy the requirements of *EN ISO 3741:2010*

Test results PRANA 150

SPEED 4-4 A

FREQUENCY	Lp @3m * INDOOR	Lp @3m * OUTDOOR
Hz	dB	dB
100	20,6	23
125	17,9	21,8
160	23,9	23,6
200	32,6	29,2
250	23,5	31,8
315	26,5	25,2
400	23,4	26,1
500	25,5	20,1
630	27,3	22,3
800	24,6	18,9
1000	22,5	21,0
1250	19,8	22,1
1600	17,3	18,8
2000	13,8	15,7
2500	10,4	16,9
3150	8,5	13,0
4000	4,9	11,3
5000	5,1	8,5
6300	1,7	3,8
8000	1,7	2,1
10000	3,3	3,1
Lp	38,0	36,5
Lpa	32,5	31,1

SPEED 1-1

FREQUENCY	Lp @3m * INDOOR	Lp @3m * OUTDOOR
Hz	dB	dB
100	17,1	n.a.
125	12,4	n.a.
160	8,5	n.a.
200	-1,1	n.a.
250	4,3	n.a.
315	-6,7	n.a.
400	-7,7	n.a.
500	-9,5	n.a.
630	n.a.	n.a.
800	-6,0	n.a.
1000	-8,4	n.a.
1250	-6,6	n.a.
1600	-8,6	n.a.
2000	-7,9	n.a.
2500	-9,4	n.a.
3150	-7,7	n.a.
4000	-5,7	n.a.
5000	-3,3	n.a.
6300	-2,2	n.a.
8000	0,1	n.a.
10000	2,9	n.a.
Lp	19,3	n.a.
Lpa	8,2	n.a.

Lp: global sound pressure level (dB)
Lpa: A-weighted global sound pressure level (dBA)
Note: * testing standard not accredited by Accredia.

Test results PRANA 200G

SOUND POWER levels of outdoor unit under test

FREQUENCY	OUTDOOR UNIT
Hz	dB
100	40,1
125	40,7
160	44,6
200	54,5
250	49,1
315	45,2
400	42,8
500	37,9
630	40,4
800	45,8
1000	36,7
1250	35,5
1600	35,6
2000	30,6
2500	34,7
3150	31,0
4000	28,8
5000	25,4
6300	20,9
8000	18,9
10000	20,7
Lw	57,3
Lwa	50,5

SOUND PRESSURE Speed 1-1

FREQUENCY	Lp @3m * INDOOR	Lp @3m * OUTDOOR
Hz	dB	dB
100	12,3	14,7
125	-5,1	-2,5
160	0,8	0,0
200	3,2	9,0
250	-6,8	-3,2
315	-6,9	-6,3
400	-6,4	-7,1
500	-5,5	-10,8
630	-2,3	-7,3
800	-2,6	1,4
1000	-5,7	-8,5
1250	-4,4	-4,6
1600	-7,2	-9,3
2000	-7,2	-9,5
2500	-8,5	-8,8
3150	-7,4	-7,0
4000	-5,6	-4,7
5000	-3,5	-3,5
6300	-2,3	-2,5
8000	-0,1	-0,4
10000	2,7	2,5
Lp	14,5	16,7
Lpa	8,0	8,5

Test results PRANA 200C

SOUND POWER

FREQUENCY	OUTDOOR UNIT
Hz	dB
100	44,3
125	44,5
160	44,6
200	55,1
250	50,5
315	45,6
400	41,0
500	36,2
630	40,0
800	40,9
1000	38,4
1250	32,8
1600	31,7
2000	32,0
2500	27,8
3150	26,8
4000	24,6
5000	18,4
6300	17,5
8000	18,0
10000	20,2
Lw	**57,8**
Lwa	**49,5**

SOUND PRESSURE on Reference Speed

FREQUENCY	Lp @3m * INDOOR	Lp @3m * OUTDOOR
Hz	dB	dB
100	21,6	26,7
125	19,0	27,0
160	26,3	27,1
200	36,2	37,6
250	34,1	33,0
315	25,8	28,1
400	26,9	23,5
500	27,3	18,7
630	29,7	22,5
800	23,7	23,4
1000	24,5	20,9
1250	21,8	15,3
1600	13,1	14,2
2000	12,1	14,5
2500	3,1	10,3
3150	5,1	9,3
4000	6,6	7,1
5000	3,7	0,8
6300	0,0	-0,1
8000	0,6	0,4
10000	2,9	2,6
Lp	**40,2**	**40,3**
Lpa	**34,1**	**32,0**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