

MUAYENE RAPORU

Kuruluş : MORZON BİLİŞİM SAN. TIC. LTD. ŞTİ.
Organization
Adresi : Cumhuriyet Mah. Kartal Cd. No:49 D:6 Kartal İstanbul
Address
Temiz Oda/Bölge Tanımı : Ofis odası / HV EU
Definition of Clean Room/Zone
Muayene Tarih(ler)i : 02.11.2020
Inspection Date(s)
Muayene Rapor No : VD.TEO.1120.1243.3.1
Inspection Report Nr
Yayın Tarihi : 05.11.2020
Date of Issue
Toplam Sayfa Adedi : 3 (Kapak ve Ekler Hariç)
Number of Pages **Ekler:**Kullanılan Cihazların Kalibrasyon Sertifikaları,DPC Cihazı Çıktısı

Yukarıda bilgileri verilmiş kuruluşa ait temiz oda/bölge ve/veya tesisatında aşağıda listelenmiş deneyler ilgili referans standartlarına göre gerçekleştirilerek muayenesi yapılmıştır. Muayene sonuçları, metodları, uygunluk ve varsa metotlardan sapmalar bu sertifikanın devamı niteliğindeki muayene raporlarında belirtilmiştir.

The clean room/zone and/or installations which belongs to the organization stated above is inspected through the tests according to respective reference standard stated below. Inspection results, methods, conformity and, if any, departures are given in the corresponding inspection report(s) which is/are complementary part(s) of this certificate.

Yapılan Deneyler Conducted Tests

No	Deney Adı Test	Bölüm Part	Deney Yöntemi Test Method	Yapılan Conducted
1	HVAC PQ Testleri		EN ISO 14644-1	√



Muayene Uzmanı
Inspector
Mümin KAYIŞ

Onay
Approved by
Kartal Selçuk ATAN

Uluslararası Laboratuvar Akreditasyon Birliği (International Laboratory Accreditation Cooperation - ILAC) Karşılıklı Tanınma Anlaşması

Universal Sertifikasyon ve Gözetim Hizmetleri Tic. Ltd. Şti.

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Rapor No:VD.TEO.1120.1243.3.1

Report Nr:

H.Muayene Sonuçları
H.1. Partikül Sayım Testi

H.1.1. DPC Cihazı Bilgileri H.1.1. DPC Device Information			
Marka ve Modeli Brand and Model	LASAIR III 5100	Seri No Serial Number	104197
Örnekleme Kap. (l/dak) Sampling Flow (l/min)	100	Kanal Eşikleri (µm) Channel Tresholds (µm)	0.3-25
Not: DPC cihazı örnekleme kapasitesi tek numune hacmine eşit ya da daha büyükse numune alma süresi 1 dakika olarak belirlenir. Sampling duration is determined as 1 minute, if DPC sampling flow rate is equal or bigger than single sample volume.			

H.1.2. Değerlendirmeye Alınan Partikül Boyutları H.1.2. Assessed Particle Size Ranges			
1. Çap, D ₁ (µm) 1st Diameter, D ₁ (µm)	0,5	2. Çap, D ₂ (µm) 2nd Diameter, D ₂ (µm)	5,0

H.1.3. Alınan Numune Sonuçları H.1.3. Sampling Results	
Numune Alma Yeri Sayısı Number of Sampling Location	EN 14644-1:2015 Tablo A:1

MM 05.11.2020

Rapor No:VD.TEO.1120.1243.3.1

Report Nr.:

H.1.4. Temiz Odalar Sınıflandırma Sonuçları									
<i>H.1.4. Clean Rooms Classification Results</i>									
Ölçüm Noktası Sampling Location No.	D ₁	Ölçülen Measured		D ₂	Ölçülen Measured		Kabul Kriteri Acc.Criteria	UYGUNLUK Confirmity	
								UYGUN Confirm	U.DEĞİL N.C.
P1	0,5	Ortalama Mean	30886686	5	Ortalama Mean	34633	N/A	N/A	N/A
P2	0,5	Ortalama Mean	30001478	5	Ortalama Mean	33211			
P3	0,5	Ortalama Mean	28888954	5	Ortalama Mean	32026			
P4	0,5	Ortalama Mean	28944500	5	Ortalama Mean	31218			
P5	0,5	Ortalama Mean	28586432	5	Ortalama Mean	30952			
P6	0,5	Ortalama Mean	28258062	5	Ortalama Mean	30436			
HV EU (16,2 m ²)	0,5	Maksimum Maximum	30886686	5	Maksimum Maximum	34633			
		Ortalama Mean	29261018		Ortalama Mean	32079			
		Std.Sapma St.Deviation	989014		Std.Sapma St.Deviation	1582			

Açıklamalar: HV EU cihazını çalıştırmadan önce odadaki 0,5 ve 5 m partikül değerleri yukarıdaki gibidir. Tablodaki değerlere göre oda içerisinde hava temizleyici cihaz çalıştırılmadan önce partikül değerleri ISO 9 sınıfına karşılık gelmektedir.

Testi Yapan
Test Conducted By

MÜMİN KAYIS
YALIDASYON SORUMLUSU
 05.11.2020

Kontrol Eden:
QC:

KAPTAL SELÇUK ATAN
GENEL MÜDÜR YARDIMCISI
 05.11.2020

Onaylayan:
Approved By:

Rapor No:VD.TEO.1120.1243.3.1

Report Nr:

H.2. Performans Testi Sonuçları

H.2.1. Performans Testi Ölçüm Cihazı Bilgileri

H.2.1 Measurement Device Information

No	Cihaz Tipi Device Type	Marka Brand	Model Model	Seri No Serial No	Kalibrasyon Tarihi Calibration Date
1	Partikül Ölç.Cihazı	Lasair	III 5100	104197	06.01.2020

H.2.2. Ölçüm Şartları

H.2.2. Measurement Conditions

Partikül Boyutu (μm) Particle Size (μm)	0,5	5,0	Numune Yeri Sayısı Sampling Location Number	1
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Ö.Noktası T.Point	Partikül Boyutu Particle Size	İlk Konsantrasyon (/m ³) Initial Concentration (/m ³)	Düşük Konsantrasyon (/m ³) Decayed Concentration (/m ³)	Süre (dak) Time (min)	Kbl.Kriteri Acc.Criteria
HV EU (16,2 m ²)	0,5	27729864	493848	30	N/A
	5,0	31693	1370		N/A

Açıklamalar: HV EU cihazı çalıştırılıp oda içerisinde yapılan partikül ölçüm sonuçları yukarıdaki tabloda verilmiştir. Cihaz 30 dk da oda içerisindeki partikülleri yukarıdaki tabloda bulunan İlk konsantrasyon değerlerinden Düşük konsantrasyon değerlerine kadar temizlediği görülmüştür.

Bu raporda bulunan partikül ölçüm testleri hava temizleme cihazı için herhangi bir uygunluk vermek için değil, bilgi amaçlı olarak cihazın oda içerisinde bulunan partikülleri ne kadar sürede temizlediğini belirlemek için yapılmıştır.

Testi Yapan
Test Conducted By

MÜMİN KAYIŞ
VALİDASYON SORUMLUSU

05.11.2020

Kontrol Eden:
QC:

KARTAL SELÇUK ATAN
GENEL MÜDÜR YARDIMCISI

05.11.2020

Onaylayan:
Approved By:

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: #001
 Room: HV EU

02/11/2020 16:03:04
 02/11/2020 16:04:04 #1
 Sample Status: Valid

μm	Δ (N/m ³)	Σ (N/m ³)
0.5	30852052	30886686
5.0	34633	34633

0.1000 m³ 0.100021 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: #002
 Room: HV EU

02/11/2020 16:04:30
 02/11/2020 16:05:30 #1
 Sample Status: Valid

μm	Δ (N/m ³)	Σ (N/m ³)
0.5	29968266	30001478
5.0	33211	33211

0.1000 m³ 0.099997 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: #003
 Room: HV EU

02/11/2020 16:05:50
 02/11/2020 16:06:50 #1
 Sample Status: Valid

μm	Δ (N/m ³)	Σ (N/m ³)
0.5	28856928	28888954
5.0	32026	32026

0.1000 m³ 0.100014 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: #004
 Room: HV EU

02/11/2020 16:07:11
 02/11/2020 16:08:11 #1
 Sample Status: Valid

μm	Δ (N/m ³)	Σ (N/m ³)
0.5	28913280	28944500
5.0	31218	31218

0.1000 m³ 0.100005 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: #005
 Room: HV EU

02/11/2020 16:08:47
 02/11/2020 16:09:47 #1
 Sample Status: Valid

μm	Δ (N/m ³)	Σ (N/m ³)
0.5	28555480	28586432
5.0	30952	30952

0.1000 m³ 0.100025 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: #006
 Room: HV EU

02/11/2020 16:10:14
 02/11/2020 16:11:14 #1
 Sample Status: Valid

μm	Δ (N/m ³)	Σ (N/m ³)
0.5	28227626	28258062
5.0	30436	30436

0.1000 m³ 0.100012 m³/m

Cleanroom Certification Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019

Batch ID:
 Operator:
 Room: HV EU

02/11/2020 16:04:04
 Certification Standard
 Standard: ISO 14644:2015
 Class: ISO 9
 Particle Sizes: 0.5 μm
 5.0 μm

Certification Results: **PASS**

Sampling Plan

Area	(m ²)	Min	Plan	Actual
Locations/Room:	6	6	6	6
Samples/Location	1	1	1	1
Total Samples	6	6	6	6
Min. Volume: (m ³)	0.1000	0.1000	0.1000	0.1000

Particle Data

	μm	(N/m ³)
Target	0.5	3520000
	5.0	293000
Max	0.5	30886686
	5.0	34633
Mean	0.5	29261018
	5.0	32079
S.D.	0.5	989014
	5.0	1582

Location Averages

Location	#	μm	Σ (N/m ³)
HV EU #001	1	0.5	30886686
		5.0	34633
HV EU #002	1	0.5	30001478
		5.0	33211
HV EU #003	1	0.5	28888954
		5.0	32026
HV EU #004	1	0.5	28944500
		5.0	31218
HV EU #005	1	0.5	28586432
		5.0	30952
HV EU #006	1	0.5	28258062
		5.0	30436

Deleted Samples: 0
M. K. 05.11.2020

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:15:21
 02/11/2020 16:16:21

#1
Valid

µm	Δ (N/m ²)	Σ (N/m ²)
0.5	27698170	27729864
5.0	31693	31693

00:01:00 0.099989 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:16:31
 02/11/2020 16:17:31

#1
Valid

µm	Δ (N/m ²)	Σ (N/m ²)
0.5	25331124	25357446
5.0	26322	26322

00:01:00 0.099991 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:17:41
 02/11/2020 16:18:41

#1
Valid

µm	Δ (N/m ²)	Σ (N/m ²)
0.5	22188082	22208154
5.0	20072	20072

00:01:00 0.100040 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:18:51
 02/11/2020 16:19:51

#1
Valid

µm	Δ (N/m ²)	Σ (N/m ²)
0.5	18955280	18972558
5.0	17278	17278

00:01:00 0.100011 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:20:01
 02/11/2020 16:21:01

#1
Valid

µm	Δ (N/m ²)	Σ (N/m ²)
0.5	15743638	15756677
5.0	13039	13039

00:01:00 0.100009 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:21:11
 02/11/2020 16:22:11

#1
Valid

µm	Δ (N/m ²)	Σ (N/m ²)
0.5	12935320	12946590
5.0	11270	11270

00:01:00 0.100003 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:22:21
 02/11/2020 16:23:21

#1
Valid

µm	Δ (N/m ²)	Σ (N/m ²)
0.5	10473652	10483341
5.0	9688	9688

00:01:00 0.100016 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:23:31
 02/11/2020 16:24:31

#1
Valid

µm	Δ (N/m ²)	Σ (N/m ²)
0.5	8411197	8418997
5.0	7800	7800

00:01:00 0.099999 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:24:41
 02/11/2020 16:25:41

#1
Valid

µm	Δ (N/m ²)	Σ (N/m ²)
0.5	6645652	6651602
5.0	5950	5950

00:01:00 0.099999 m³/m

M. H. 05.11.2020

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:25:51
 02/11/2020 16:26:51 #1

Sample Status: Valid

μm	$\Delta (N/m^3)$	$\Sigma (N/m^3)$
0.5	5238495	5243935
5.0	5440	5440

00:01:00 0.100000 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:27:01
 02/11/2020 16:28:01 #1

Sample Status: Valid

μm	$\Delta (N/m^3)$	$\Sigma (N/m^3)$
0.5	4228829	4233549
5.0	4720	4720

00:01:00 0.099997 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:28:11
 02/11/2020 16:29:11 #1

Sample Status: Valid

μm	$\Delta (N/m^3)$	$\Sigma (N/m^3)$
0.5	3361941	3366151
5.0	4211	4211

00:01:00 0.099984 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:29:21
 02/11/2020 16:30:21 #1

Sample Status: Valid

μm	$\Delta (N/m^3)$	$\Sigma (N/m^3)$
0.5	2761890	2765499
5.0	3610	3610

00:01:00 0.100004 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:30:31
 02/11/2020 16:31:31 #1

Sample Status: Valid

μm	$\Delta (N/m^3)$	$\Sigma (N/m^3)$
0.5	2268949	2272509
5.0	3560	3560

00:01:00 0.100001 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:31:41
 02/11/2020 16:32:41 #1

Sample Status: Valid

μm	$\Delta (N/m^3)$	$\Sigma (N/m^3)$
0.5	1819375	1822165
5.0	2790	2790

00:01:00 0.099986 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:32:51
 02/11/2020 16:33:51 #1

Sample Status: Valid

μm	$\Delta (N/m^3)$	$\Sigma (N/m^3)$
0.5	1530859	1533580
5.0	2720	2720

00:01:00 0.099992 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:34:01
 02/11/2020 16:35:01 #1

Sample Status: Valid

μm	$\Delta (N/m^3)$	$\Sigma (N/m^3)$
0.5	1302647	1305107
5.0	2460	2460

00:01:00 0.099991 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
 Serial Number: 104197
 Calibrated: 17/12/2019
 Location: HV EU RCV
 02/11/2020 16:35:11
 02/11/2020 16:36:11 #1

Sample Status: Valid

μm	$\Delta (N/m^3)$	$\Sigma (N/m^3)$
0.5	1097452	1099513
5.0	2060	2060

00:01:00 0.099982 m³/m

M 05.11.2020

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
Serial Number: 104197
Calibrated: 17/12/2019
Location: HV EU RCV

02/11/2020 16:36:21

02/11/2020 16:37:21

#1

Sample Status: Valid

μm	Δ (N/m ³)	Σ (N/m ³)
0.5	929105	931064
5.0	1960	1960

00:01:00 0.100013 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
Serial Number: 104197
Calibrated: 17/12/2019
Location: HV EU RCV

02/11/2020 16:39:51

02/11/2020 16:40:51

#1

Sample Status: Valid

μm	Δ (N/m ³)	Σ (N/m ³)
0.5	623222	624792
5.0	1570	1570

00:01:00 0.100009 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
Serial Number: 104197
Calibrated: 17/12/2019
Location: HV EU RCV

02/11/2020 16:37:31

02/11/2020 16:38:31

#1

Sample Status: Valid

μm	Δ (N/m ³)	Σ (N/m ³)
0.5	851065	853065
5.0	2000	2000

00:01:00 0.099983 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
Serial Number: 104197
Calibrated: 17/12/2019
Location: HV EU RCV

02/11/2020 16:41:01

02/11/2020 16:42:01

#1

Sample Status: Valid

μm	Δ (N/m ³)	Σ (N/m ³)
0.5	566700	567890
5.0	1190	1190

00:01:00 0.100018 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
Serial Number: 104197
Calibrated: 17/12/2019
Location: HV EU RCV

02/11/2020 16:38:41

02/11/2020 16:39:41

#1

Sample Status: Valid

μm	Δ (N/m ³)	Σ (N/m ³)
0.5	709750	711601
5.0	1850	1850

00:01:00 0.099977 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
Serial Number: 104197
Calibrated: 17/12/2019
Location: HV EU RCV

02/11/2020 16:42:11

02/11/2020 16:43:11

#1

Sample Status: Valid

μm	Δ (N/m ³)	Σ (N/m ³)
0.5	519595	520895
5.0	1300	1300

00:01:00 0.100024 m³/m

M. 05.11.2020

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
Serial Number: 104197
Calibrated: 17/12/2019
Location: HV EU RCV

02/11/2020 16:43:21

02/11/2020 16:44:21 #1

Sample Status: Valid

μm	Δ (N/m ³)	Σ (N/m ³)
0.5	544924	546494
5.0	1570	1570

00:01:00 0.100010 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
Serial Number: 104197
Calibrated: 17/12/2019
Location: HV EU RCV

02/11/2020 16:44:31

02/11/2020 16:45:31 #1

Sample Status: Valid

μm	Δ (N/m ³)	Σ (N/m ³)
0.5	489113	490453
5.0	1340	1340

00:01:00 0.099997 m³/m

Final Sample Report

UNIVERSALCERTIFICATION

Instrument ID: Lasair III
Serial Number: 104197
Calibrated: 17/12/2019
Location: HV EU RCV

02/11/2020 16:45:41

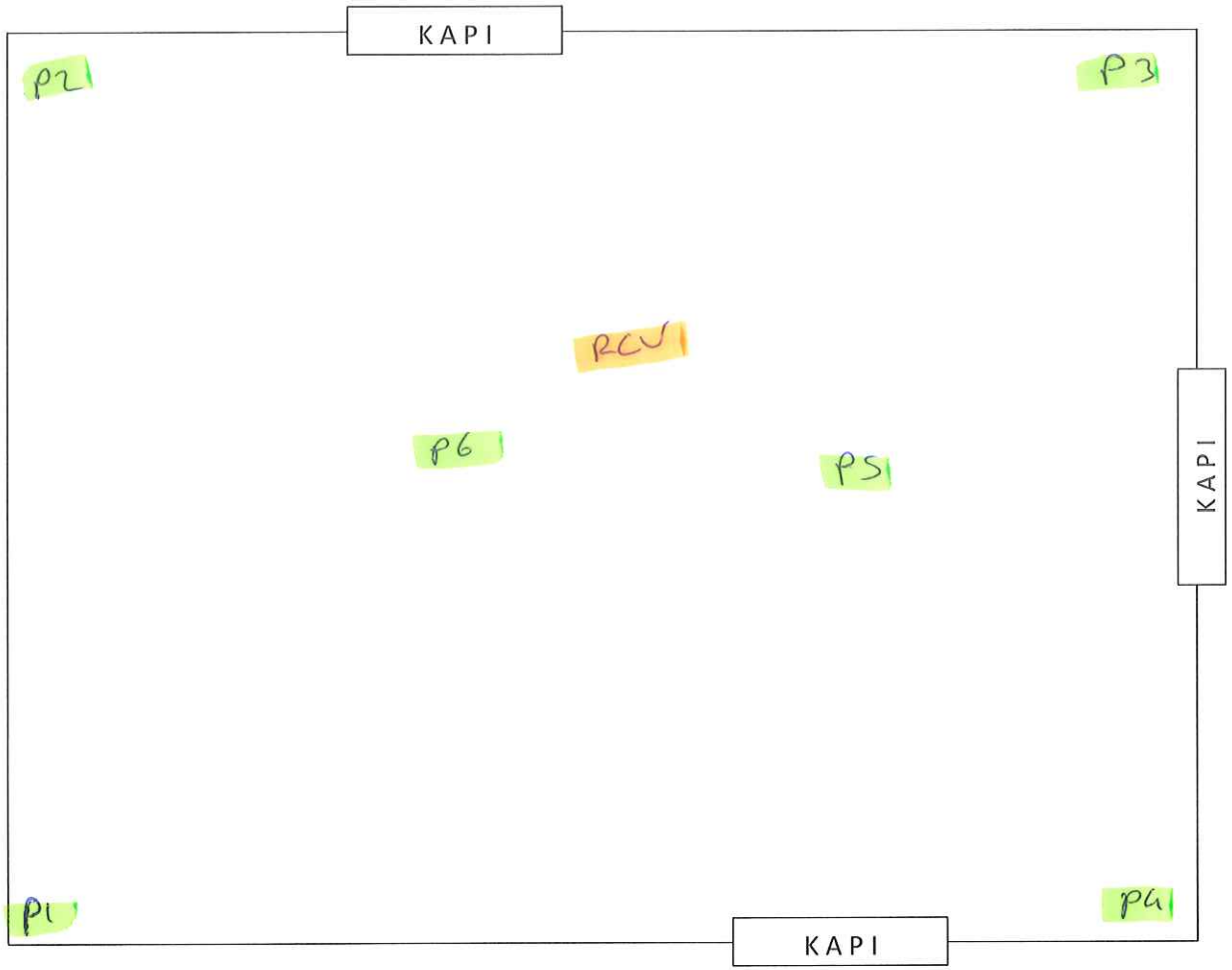
02/11/2020 16:46:41 #1

Sample Status: Valid

μm	Δ (N/m ³)	Σ (N/m ³)
0.5	486210	487340
5.0	1130	1130

00:01:00 0.099988 m³/m

MW 05.11.2020



→ İlk partikül ölçüm noktaları.

→ Performans ölçüm noktası.

MÜMİN KAYIŞ
VALIDASYON SORUMLUSU
05.11.2020