



Microtest
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MPE Test Report

Report No.: MTi211123018-01E2

Date of issue: Mar. 03, 2022

Applicant: Membrane Solutions (Nan Tong) Co.,
Ltd.

Product name: Air Purifier

Model(s): MSA3S, P241A

FCC ID: 2A33P-MSA3S

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>



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TEST RESULT CERTIFICATION	
Applicant's name.....	Membrane Solutions (Nan Tong) Co., Ltd.
Address.....	No.197,Ruixing Road ,NETDA Nantong City ,Jiangsu Province ,P .R .China
Manufacturer's Name	Anhui Leking Environment Technology Co., Ltd.
Address.....	58 Fuqiang Road, Jiujiang District, Wuhu, Anhui
Product description	
Product name.....	Air Purifier
Trademark	Membrane Solutions
Model Name	MSA3S
Serial Model	P241A
Standards.....	N/A
Test procedure	KDB 447498 D01 v06
Date of Test	
Date (s) of performance of tests... :	2021-12-24 ~ 2022-03-03
Test Result.....:	Pass
This device described above has been tested by Shenzhen Microtest Co., Ltd. and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.	

Testing Engineer

:

Danny Xu

(Danny Xu)

Technical Manager

:

Leon Chen

(Leon Chen)

Authorized Signatory

:

Tom Xue

(Tom Xue)



1 RF EXPOSURE EVALUATION

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) Radiation as specified in §1.1307(b)

1.1 Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

MPE Calculation Method

Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

π = 3.1415926

R = distance between observation point and center of the radiator in cm(20cm)

P_d the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

1.2 Measurement Result

WIFI:

Operation Frequency: 802.11b/g/n20:2412~2462 MHz

Power density limited: 1mW/ cm²

Antenna Type: PCB Antenna;
 antenna gain: 2dBi

R=20cm

$mW=10^{(dBm/10)}$

antenna gain Numeric= $10^{(dBi/10)}=10^{(2/10)}=1.58$

Channel Freq. (MHz)	modulation	conducted power	Tune-up power	Max		Antenna	Evaluation result at 20cm	Power density Limits
		(dBm)	(dBm)	tune-up power		Gain	Power density(mW/cm2)	(mW/cm2)
		Ant A	Ant A	(dBm)	(mW)	Numeric		
2412	802.11b	16.57	16±1	17	50.118723	1.58	0.01575	1
2437		14.94	14±1	15	31.622777	1.58	0.00994	1
2462		13.04	14±1	15	31.622777	1.58	0.00994	1
2412	802.11g	16.30	16±1	17	50.118723	1.58	0.01575	1
2437		14.76	14±1	15	31.622777	1.58	0.00994	1
2462		12.87	13±1	14	25.118864	1.58	0.00790	1
2412	802.11n H20	16.03	16±1	17	50.118723	1.58	0.01575	1
2437		14.33	14±1	15	31.622777	1.58	0.00994	1
2462		12.47	13±1	14	25.118864	1.58	0.00790	1

Conclusion:

For the max result: $0.01575 \leq 1.0$ for 1g SAR, No SAR is required.

----END OF REPORT----