EMC TEST REPORT For FCC

Test Report No.	:	KES-E1-17T0321
Date of Issue	:	May. 10, 2017
Product name	:	Air Purifier
Model/Type No.	:	HEXTIO
Variant Model	:	-
Applicant	:	INBair Co., Ltd
Applicant Address	:	15 Beotkkot-ro 12-gil, Geumcheon-gu, Seoul, Korea
Manufacturer	:	INBair Co., Ltd
Manufacturer Address	:	15 Beotkkot-ro 12-gil, Geumcheon-gu, Seoul, Korea
Equipment authorization	:	☐ **Declaration of Conformity** ☒ **Verification** ☐ **Certification**
Date of Receipt	:	Apr. 06, 2017
Test date	:	Apr. 22, 2017
Test Results	:	☒ **In Compliance** ☐ **Not in Compliance**

Tested by

Dae Hyun, Kim
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

REPORT REVISION HISTORY

Date	Test Report No.	Revision History
May. 10, 2017	KES-E1-17T0321	Issued

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1.0 General Product Description

Main Specifications of EUT are:

Item	Specification
Description	Air Purifier
Brand	Hextio
Model	H-100
Elec. Power	DC 12V 1.5A 15watt
Net Dimension	330 x 128 x 108 mm
Gross Dimension	396 x 195 x 158 mm
Net Weight	1.4Kg
Gross Weight	2.0Kg

1.1 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

Voltage ☐ 100 Vac ☒ 120 Vac ☐ 24 Vac ☐ 2.4 V Battery

Frequency ☐ 50 Hz ☒ 60 Hz ☐ Hz

1.2 Variant Model Differences

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
Air Purifier	HEXTIO	-	INBair Co., Ltd	E.U.T

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
AC ADAPTER	DZ015DL120150F	-	KEERDA®	-
REMOTE CONTROLLER	-	-	INBair Co., Ltd	-

1.6 External I/O Cabling

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
Air Purifier (E.U.T)	WIRE	AC ADAPTER	WIRE	1.7	U

* Unshielded = U, Shielded = S

1.7 EUT Operating Mode(s)

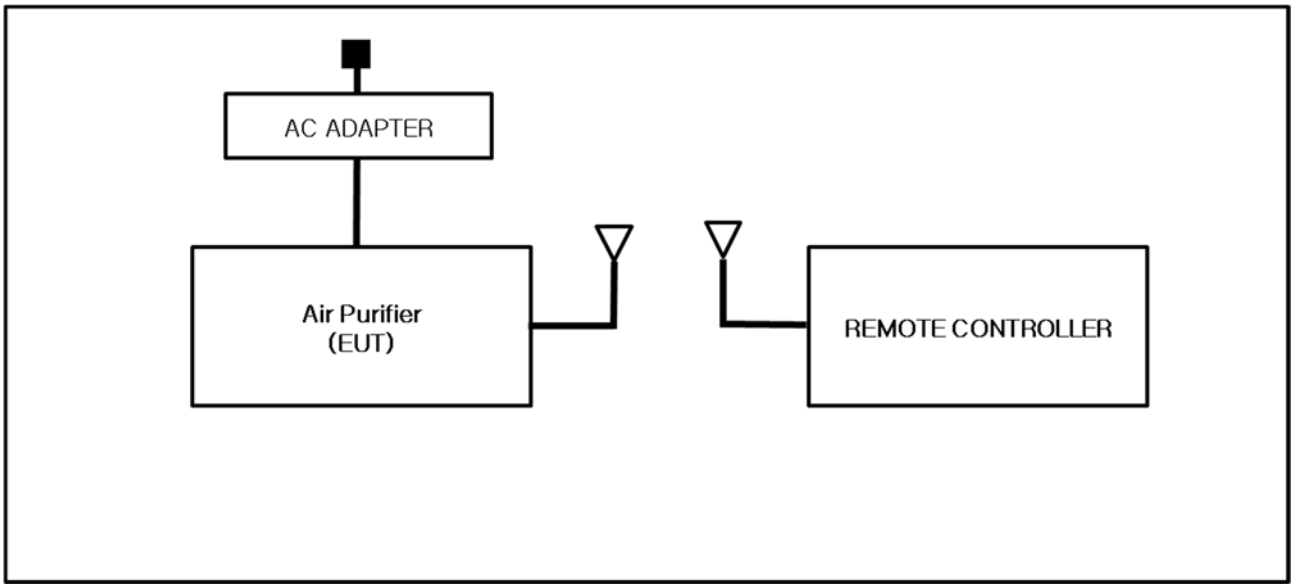
Equipment under test was operated during the measurement under the following conditions:

Test mode	operating
OP	Continuous operating.

E.U.T Test operating S/W		
Name	Version	Manufacture Company
-	-	-

1.8 Configuration

■ AC Main
□ DC Main



1.9 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less.

1.10 Test Facility

The measurement facility is located at 473-21 Gayeo-ro, Yeoju-si, Gyeonggi-do, 12658, Korea. The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22.

1.11 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	**FCC**	3 & 10 meter Open Area Test Sites and one conducted site to perform FCC Part 15/18 measurements.	
JAPAN	**VCCI**	Mains Ports Conducted Interference Measurement, Telecommunication Ports Conducted Disturbance Measurement and Radiation 10 meter site, Facility for measuring radiated disturbance above 1 GHz	R-4308, C-4798, T-2311, G-914
KOREA	**MSIP**	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	KR0100
Canada	**IC**	3 & 10 meter Open Area Test Sites and one conducted site	4769B-1
Europe	**CE**	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	
International	**KOLAS**	EMI (10 meter Open Area Test Site and two conducted sites) Radio(3 & 10 meter Open Area Test Sites and one conducted site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	KOREA LABORATORY ACCREDITATION SCHEME KOLAS TESTING NO. 489

2.0 Test Regulations

The emissions tests were performed according to following regulations:

☐ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011		
☐ EN 61000-6-1:2007		
☐ EN 61000-6-4:2007 +A1:2011		
☐ EN 61000-6-2:2005		
☐ EN 55011:2007 +A1:2010	☐ Group 1 ☐ Class A	☐ Group 2 ☐ Class B
☐ EN 55014-1:2006 +A2:2011		
☐ EN 55014-2:1997 +A2:2008		
☐ EN 55015:2013		
☐ EN 55032:2015	☐ Class A	☐ Class B
☐ EN 55024:2010		
☐ EN 50130-4:2011 +A1:2014		
☐ EN 61000-3-2:2014		
☐ EN 61000-3-3:2013		
☐ EN 61326-1:2013		

☐ **VCCI V-3 / 2015.04** ☐ Class A ☐ Class B

☐ **AS/NZS CISPR22:2009 +A1:2010** ☐ Class A ☐ Class B

☒ **47 CFR Part 15, Subpart B**

- ☐ CISPR 22:2009 +A1:2010 ☐ Class A ☐ Class B
- ☒ ANSI C63.4-2014 ☐ Class A ☒ Class B

☐ **IC Regulation ICES-003 : 2016**

- ☐ CAN/CSA CISPR 22-10 ☐ Class A ☐ Class B
- ☐ ANSI C63.4-2014

☐ **MEDICAL – Directive 93/42/EEC**

- ☐ EN 60601-1-2 :2007

☐ **RE– Directive 2014/53/EU**

☐ EN 301 489-1 V1.9.2

- ☐ Equipment for fixed use
- ☐ Equipment for vehicular use
- ☐ Equipment for portable use

☐ EN 301 489-3 V1.6.1

☐ EN 301 489-17 V2.2.1

☐ EN 60945:2002

2.1 Conducted Emissions at Mains Power Ports

Test Date
Apr. 22, 2017

Test Location
Electro wave Shieldroom #3

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI Test Receiver	ESR3	R & S	101783	05, 03, 2017
☒	LISN	ENV216	R & S	101137	02, 03, 2018
☐	LISN	ENV216	R & S	101786	05, 02, 2017
☒	PULSE LIMITER	ESH3-Z2	R&S	101914	12, 13, 2107
☒	Shield Room #3	-	SEMITEC	-	-
☒	EMI Test S/W	EMC32	R&S	9.12.00	-

Test Conditions
Temperature: 22,2 ℃
Relative Humidity: 36,4 %

Frequency Range of Measurement
150 ㎑ to 30 ㎒

Instrument Settings
IF Band Width: 9 ㎑

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

2.2 Radiated Electric Field Emissions(Below 1 ㎓)

Test Date
Apr. 22, 2017

Test Location
☐ Open Area Test Site #1 ☒ Open Area Test Site #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI TEST Receiver	ESR3	R&S	101781	05, 03, 2017
☒	Trilog-Broadband Antenna	VULB9163	Schwarzbeck	714	11, 28, 2018
☒	OATS	-	KES	-	-
☒	Antenna Mast	-	DEAIL EMC	-	-
☒	Turn Table	-	DEAIL EMC	-	-
☒	EMI Test S/W	-	-	-	-

Test Conditions
Temperature: 14,4 ℃
Relative Humidity: 36,0 %

Frequency Range of Measurement
30 ㎒ to 1 ㎓

Instrument Settings
IF Band Width: 120 ㎑

Test Results
The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks
See Appendix A for test data.

2.3 Radiated Electric Field Emissions(Above 1 ㎓)

Test Date
N/A

Test Location
N/A

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	DOUBLE RIDGED HORN ANTENNA	SAS-571	A.H.SYSTEM,INC	781	05, 07, 2017
☐	EMI Test Receiver	ESU26	R&S	100552	04, 24, 2017
☐	Broadband Coaxial Preamplifier	BBV 9718	Schwarzbeck Mess - Elektronik	9718-246	10, 14, 2017
☐	Semi Anechoic Chamber #2	-	SEMITEC	-	
☐	Antenna Mast	-	AUDIX	-	
☐	Turn Table	-	AUDIX	-	
☐	EMI Test S/W	e3	AUDIX	8.083b	

Test Conditions
Temperature: ℃
Relative Humidity: %

Frequency Range of Measurement
1 ㎓ to 6 ㎓

Instrument Settings
IF Band Width: 1 ㎒

Test Results
The requirements are:

☐ PASS
☐ NOT PASS
☒ NOT APPLICABLE

Remarks
N/A

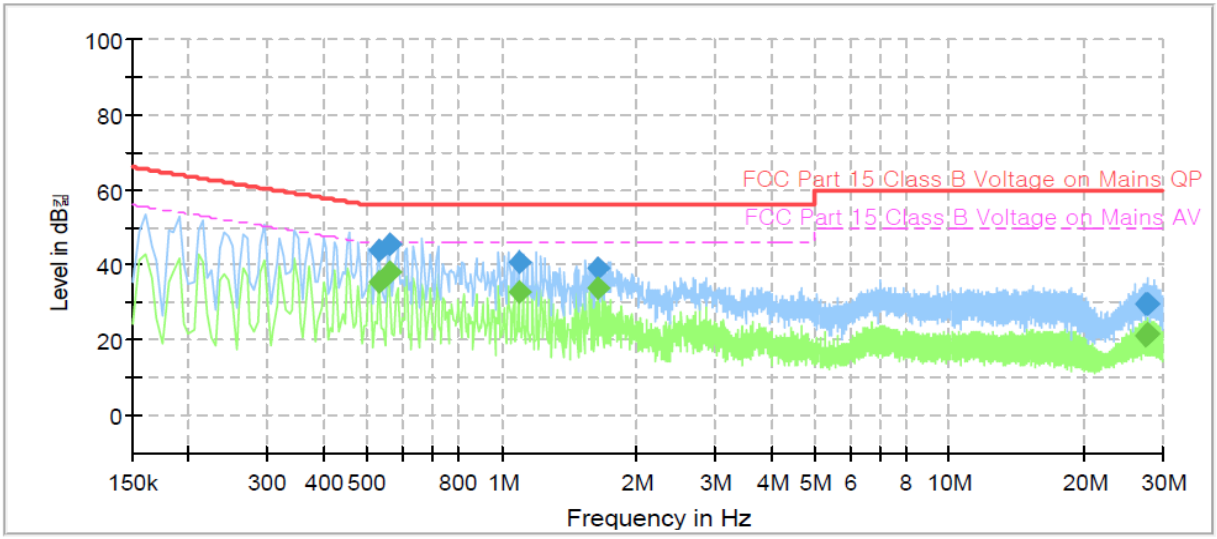
APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

Common Information

Test Description:	Conducted Emission
Model No.:	HEXTIO
Mode	FCC
Operator Name:	KES



Final_Result

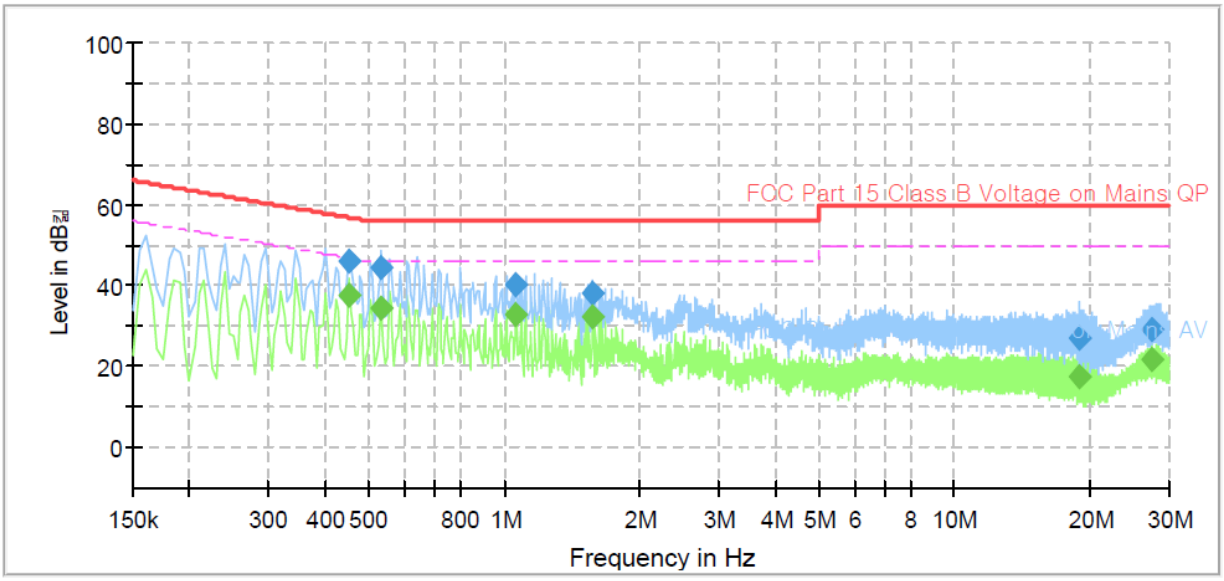
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.530000	---	35.55	46.00	10.45	1000.0	9.000	L1	20.5
0.530000	44.19	---	56.00	11.81	1000.0	9.000	L1	20.5
0.560000	---	38.22	46.00	7.78	1000.0	9.000	L1	20.5
0.560000	45.72	---	56.00	10.28	1000.0	9.000	L1	20.5
1.090000	---	32.71	46.00	13.29	1000.0	9.000	L1	20.1
1.090000	40.59	---	56.00	15.41	1000.0	9.000	L1	20.1
1.650000	---	34.07	46.00	11.93	1000.0	9.000	L1	19.9
1.650000	39.11	---	56.00	16.89	1000.0	9.000	L1	19.9
27.555000	---	21.43	50.00	28.57	1000.0	9.000	L1	20.3
27.555000	29.55	---	60.00	30.45	1000.0	9.000	L1	20.3
27.800000	---	21.55	50.00	28.45	1000.0	9.000	L1	20.3
27.800000	29.53	---	60.00	30.47	1000.0	9.000	L1	20.3

♦ Calculation
QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]
QuasiPeak / CAverage : The Final Value
Reading Value : Not shown in the table.
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

[NEUTRAL]

Common Information

Test Description:	Conducted Emission
Model No.:	HEXTIO
Mode	FCC
Operator Name:	KES



Final_Result

Frequency (MHz)	QuasiPeak (dB?V)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.450000	---	37.83	46.88	9.05	1000.0	9.000	N	20.6
0.450000	46.14	---	56.88	10.74	1000.0	9.000	N	20.6
0.535000	---	34.68	46.00	11.32	1000.0	9.000	N	20.5
0.535000	44.42	---	56.00	11.58	1000.0	9.000	N	20.5
1.065000	---	32.76	46.00	13.24	1000.0	9.000	N	20.1
1.065000	40.42	---	56.00	15.58	1000.0	9.000	N	20.1
1.570000	---	32.38	46.00	13.62	1000.0	9.000	N	19.9
1.570000	38.26	---	56.00	17.74	1000.0	9.000	N	19.9
18.925000	---	17.76	50.00	32.24	1000.0	9.000	N	20.1
18.925000	27.02	---	60.00	32.98	1000.0	9.000	N	20.1
27.410000	---	21.65	50.00	28.35	1000.0	9.000	N	20.3
27.410000	28.95	---	60.00	31.05	1000.0	9.000	N	20.3

♦ Calculation
QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]
QuasiPeak / CAverage : The Final Value
Reading Value : Not shown in the table.
Corr. : Correction values (LISN FACTOR + (Cable Loss + Pulse Limiter FACTOR))

Radiated Electric Field Emissions(Below 1 ㎓)

Frequency	Amplitude	ANT Polar. (H/V)	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[㎒]	[dB㎶]		[m]	ANT. [dB/m]	Cable [dB]	[dB㎶/m]	[dB㎶/m]	[dB]
127.93	8.30	V	1.00	8.30	2.56	19.16	43.50	24.34
191.77	12.80	V	1.00	10.74	3.12	26.66	43.50	16.84
191.98	13.20	H	4.00	10.77	3.12	27.09	43.50	16.41
288.00	11.60	V	1.10	13.20	4.01	28.81	46.00	17.19
320.01	10.30	H	3.90	13.86	4.16	28.32	46.00	17.68
351.98	10.90	H	4.00	14.56	4.26	29.72	46.00	16.28

* H : Horizontal, V : Vertical

♦ Calculation
Corrected Amplitude [㏈uV] = Amplitude[㏈uV] + Correction Factor [㏈]
Corrected Amplitude : The Final Value, Amplitude : Reading Value,
Correction Factor : ANT FACTOR + Cable loss

Radiated Electric Field Emissions(Above 1 ㎓)

N/A

♦ Calculation
Correction Factor [㏈] = Ant Factor[㏈/m] + Cable Loss [㏈] – Preamp Factor [㏈]
Corrected Amplitude [㏈uV] = Amplitude[㏈uV] + Correction Factor [㏈]
Corrected Amplitude : The Final Value, Amplitude : Reading Value

Test Setup Photos and Configuration

Conducted Voltage Emissions

Radiated Electric Field Emissions(Below 1 ㎓)

Radiated Electric Field Emissions(Above 1 ㎓)

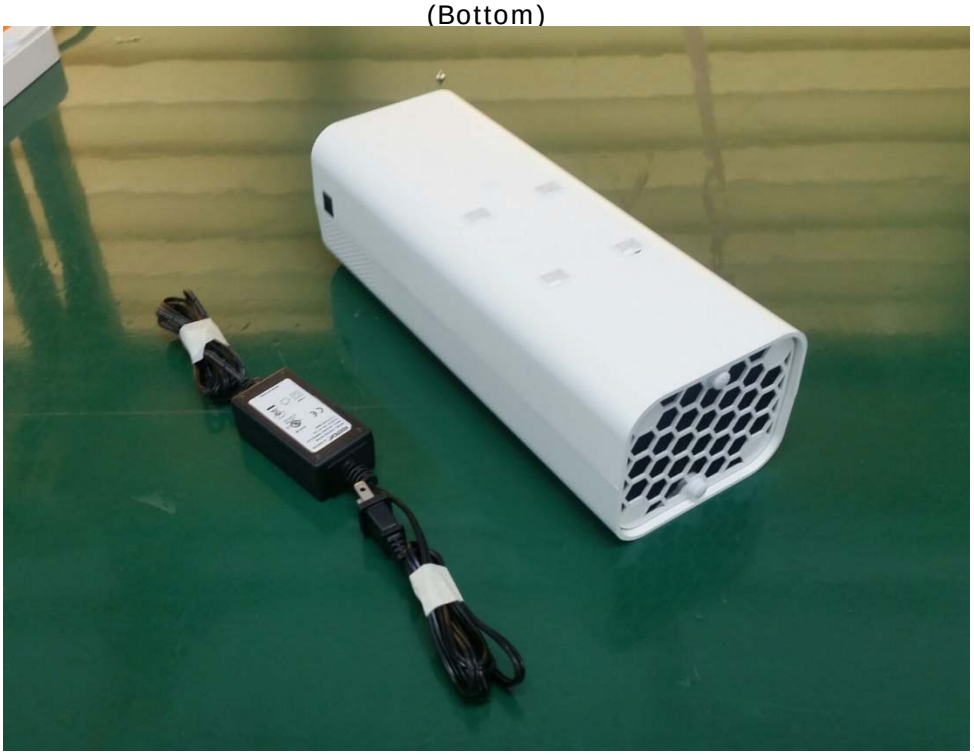
N/A

N/A

EUT External Photographs

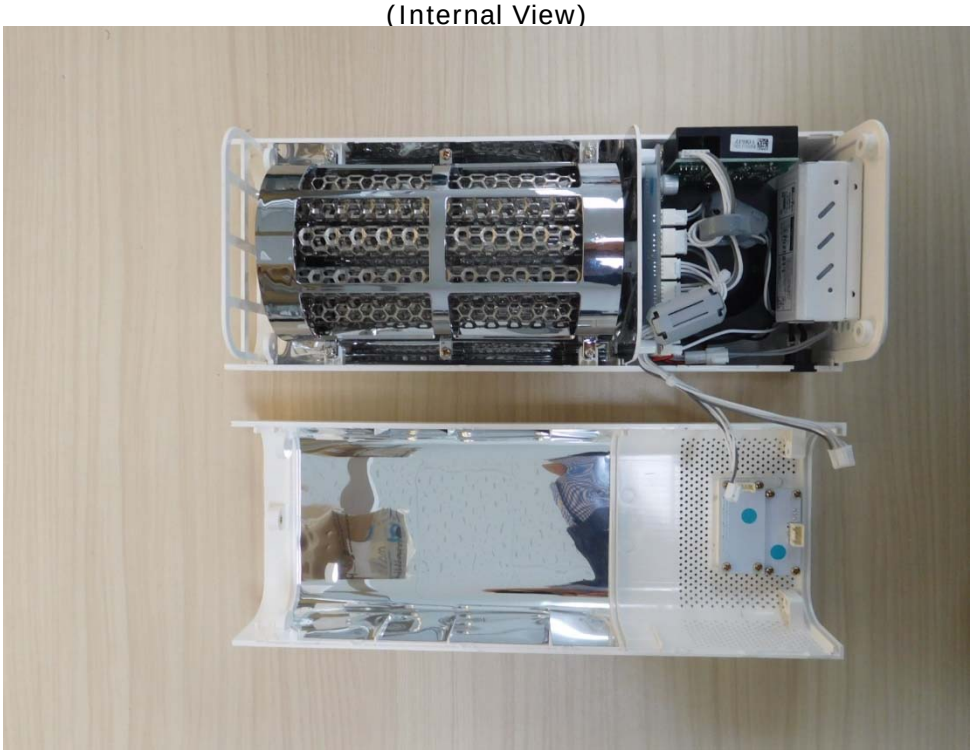
(Top)

(Bottom)



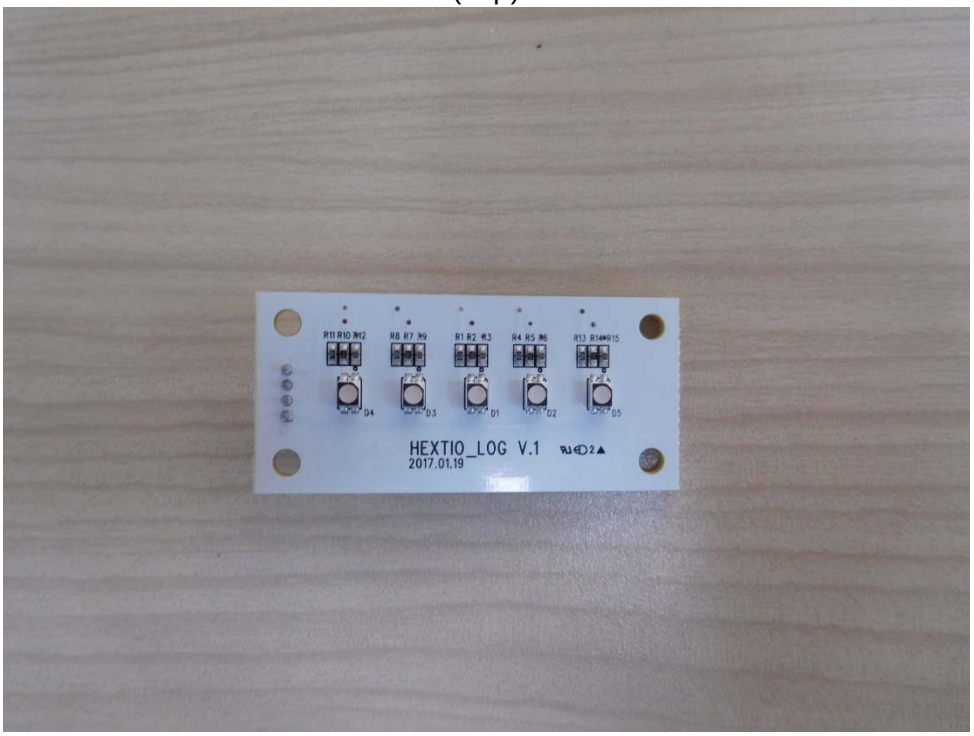
EUT Internal Photographs

(Internal View)



EUT Internal View – LED Board

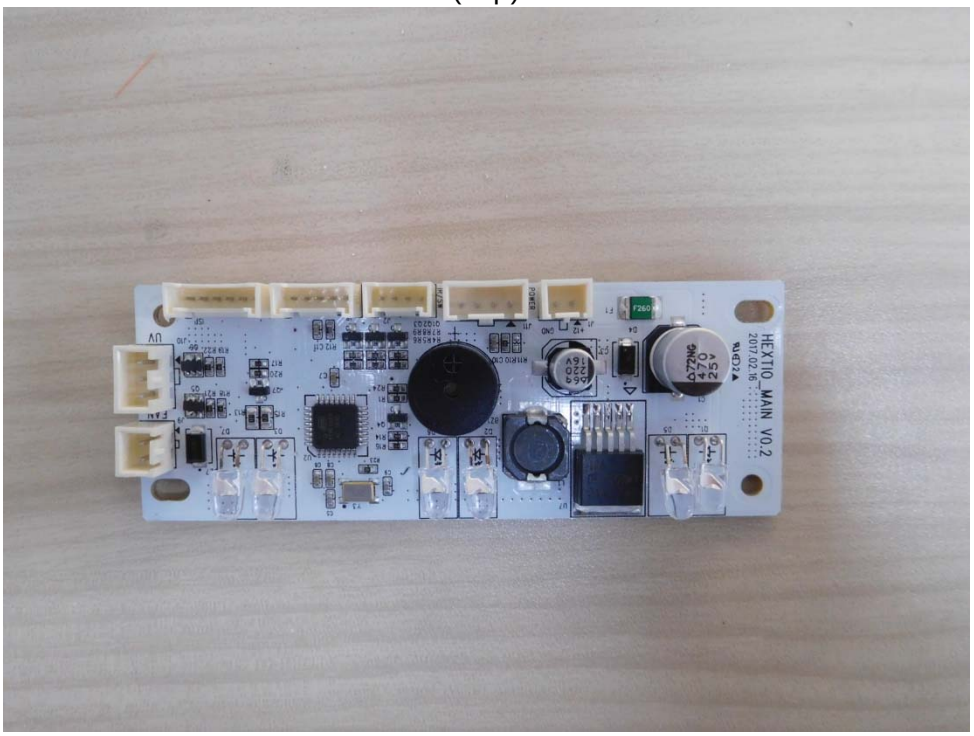
(Top)



(Bottom)

EUT Internal View – Main Board

(Top)



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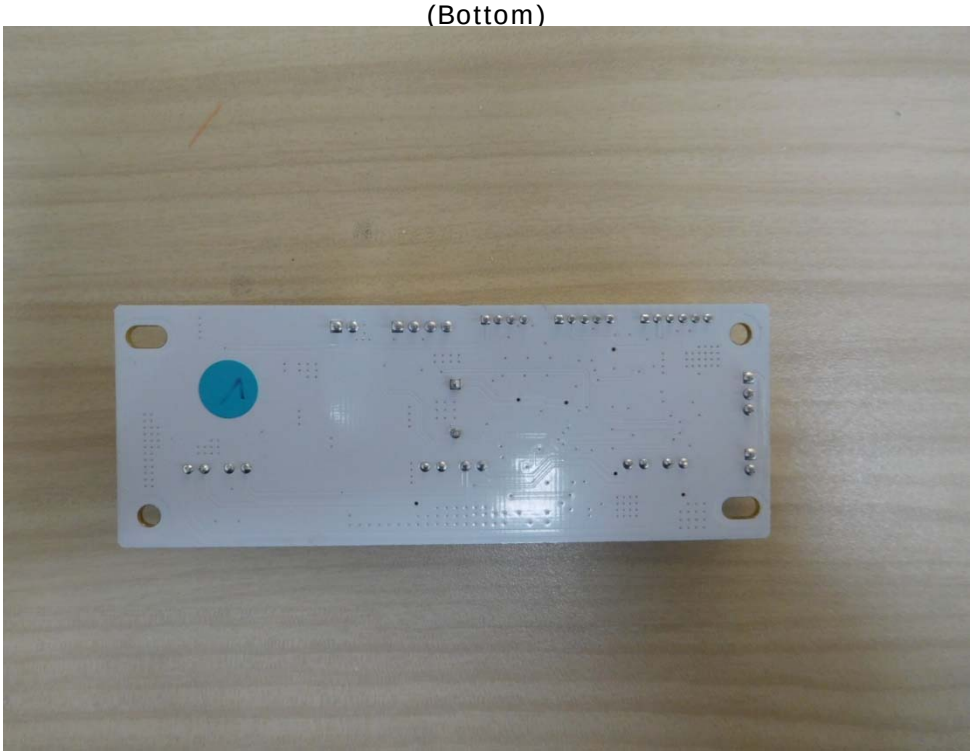

EUT Internal View – Button Board

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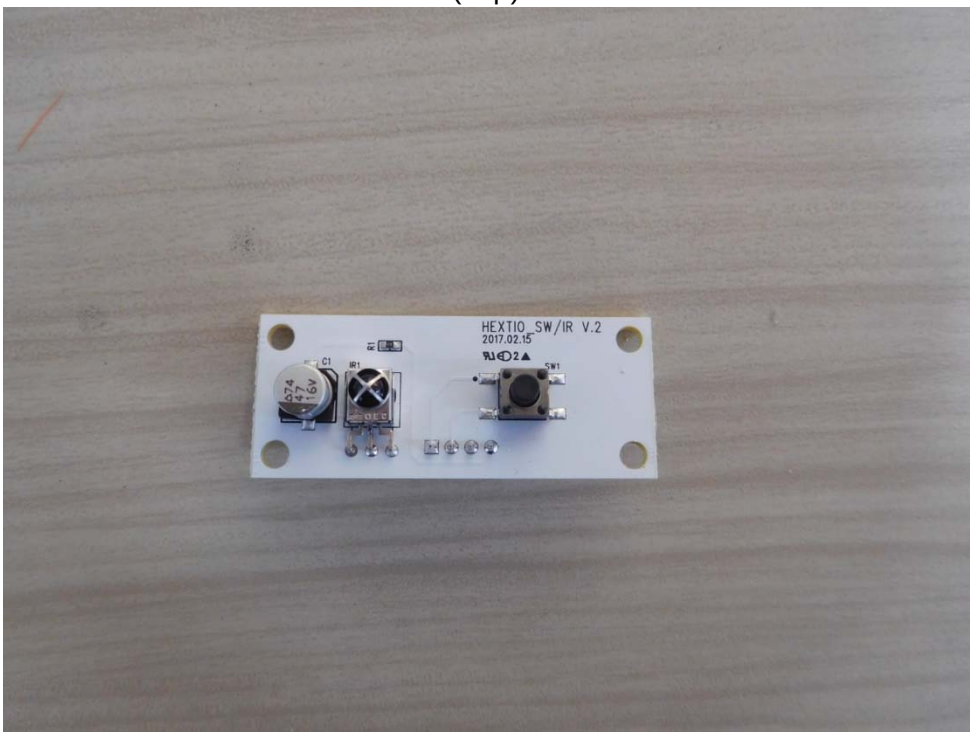
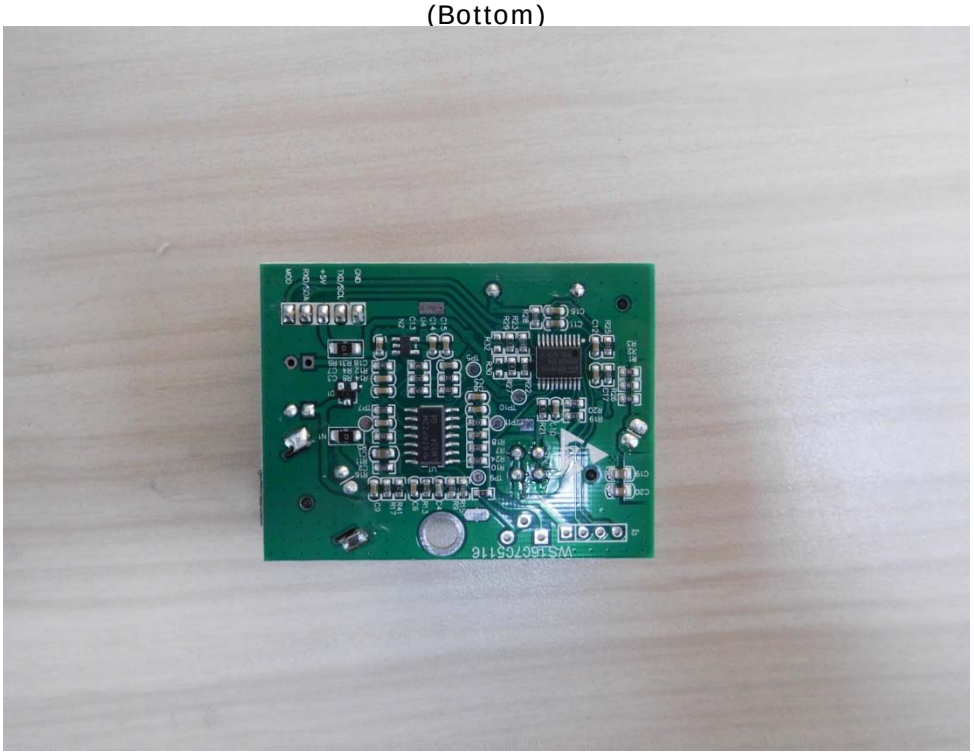


(Bottom)

EUT Internal View – Sub Board

(Top)

(Bottom)



Label Photographs

Trade Name : Air Purifier

Model Number : HEXTIO