

FCC Part 1.1310, 2,1091 and ISED TEST REPORT

Report Number	568/23/03826/FCC	Rev. 00
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OBJECT	Compliance to FCC Part 1.1310, 2,1091 and ISED RSS-102 Issue 6	
CUSTOMER	SIA ASPIRED	
EQUIPMENT UNDER TEST	Air quality monitor	
MODEL	AIRVALENT	

SUMMARY

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Verified by (Name + Signature)	ANDREA CUPIDO <i>Lab Manager</i>	
Approved and issued by (Name + Signature)	ALESSANDRO ZUCCATO <i>Lab Director</i>	

History sheet of test Report

Report Number	Rev.	Date	Description of modification
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1 OBJECT OF THE TESTS

The objective of the tests is prepared, in accordance with FCC Part 1.1310, 2,1091 and ISED RSS-102 Issue 6 , to evaluate RF exposure compliance of radiocommunication apparatus.

2 IDENTIFICATION

2.1 Laboratory

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FCC Designation

number: IT0016
 ISED CAB Identifier: IT0007

2.2 Customer

Customer: SIA ASPIRED
 Street: Ganibu street 99, Ventspils, Latvia, LV-3601
 City: Ventspils
 Phone: +37120289889
 Refer to : Ms Dana Klestrova

3 EQUIPMENT UNDER TEST (EUT)

3.1 EUT identification (declared under responsibility of the customer)

EUT Description: Air quality monitor
 Model: AIRVALENT
 Code: AIRVALENT
 Serial N°: AA-GA-92
 Software release: v1.35
 Size: 50 x 50 x 14 [mm]
 Manufacturer: Aspired Ltd.
 Supply voltage: +5 Vdc
 Rated Electrical Power: 1 W
 Rated input current: 200 mA
 FCC ID: 2BDSL-AIRV1 & IC: 31681-AIRV1

3.1.1 EUT classifications

The manufacturer declared the following classification:

Object	Descriptions
Operating Frequency	2402 – 2480 MHz
Equipment type	Bluetooth Low Energy
Channel spacing	1 MHz
Number of Channels	40
Antenna Type	Integrated antenna
Antenna Peak Gain	1.6 dBi
Frequency Hopping Spread Spectrum	NO
Listen Before Talk	YES
Extreme Temperature Range	0°C ÷ +40°C
Receiver category	Category 2
Manufacturer declaration	03710LP
The type of modulation used by the equipment	<input type="checkbox"/> FHSS <input checked="" type="checkbox"/> other forms of modulation
Adaptive / non-adaptive equipment	<input checked="" type="checkbox"/> non-adaptive Equipment <input type="checkbox"/> adaptive Equipment without the possibility to switch to a non-adaptive mode <input type="checkbox"/> adaptive Equipment which can also operate in a non-adaptive mode

3.1.2 EUT additional information

Object	Descriptions
Classification of installation and use	<input type="checkbox"/> Stand-alone <input checked="" type="checkbox"/> Combined Equipment (Equipment where the radio part is fully integrated within another type of equipment) <input type="checkbox"/> Plug-in radio device (Equipment intended for a variety of host systems) <input type="checkbox"/> Other
Means for connection to the supply:	<input type="checkbox"/> Supply cord fitted with a plug <input type="checkbox"/> Supply cord without plug (for permanently connection to fixed wiring) <input checked="" type="checkbox"/> Appliance inlet <input type="checkbox"/> Appliance provided with a set of terminals allowing the connection of cables or fixed wiring
Date of receipt of test item	2023-12-07
Date(s) of performance of tests	See the data specified in test results details

3.2 EUT cables

None

3.3 EUT Auxiliary Equipments (AEs)

None

3.4 EUT Sampling and adopted criteria

Equipment used for testing was selected by the customer. Sampling criteria adopted by the customer is unknown to Kiwa Creiven laboratory.

3.5 EUT documents

The following documentations have been provide by the customer

Kiwa Creiven document reference	Descriptions
568/23/03709/RED	Reference test report

4 REFERENCE STANDARDS

4.1 Reference standards

DOCUMENT	OBJECT
FCC CFR47	Rule Parts 1.1310, 2,1091
ISED	Rule RSS-102 Issue 6

5 TEST METHOD & TEST RESULT – MPE REQUIREMENTS

5.1 FCC MPE Requirements

The FCC MPE limits from CFR 47 Part 1.1310, 2,1091 are shown in the table below.

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

5.2 ISED MPE Requirements

The ISED MPE limits from RSS-102 Issue 6 are shown in the table below.

Remark: If the operating frequency of the device is between two frequencies located in Table, linear interpolation is applied for the applicable separation distance.

**RF Field Strength Limits for Devices Used by the General Public
(Uncontrolled Environment)**

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-10 ²¹	83	90	-	Instantaneous*
0.1-10	-	0.73/ $f^{0.5}$	-	6**
1.1-10	87/ $f^{0.5}$	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ $f^{0.25}$	0.1540/ $f^{0.25}$	8.944/ $f^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 $f^{0.3417}$	0.008335 f	0.02619 $f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ $f^{1.2}$
150000-300000	0.158 $f^{0.5}$	4.21 x 10 ⁻⁴ $f^{0.5}$	6.67 x 10 ⁻⁵ f	616000/ $f^{1.2}$

Note: f is frequency in MHz.
 *Based on nerve stimulation (NS).
 ** Based on specific absorption rate (SAR).

5.3 Calculation

FCC

In order to perform the MPE assessment, the following equations have been used for the calculations; these equations are accurate in the far-field of an antenna and will over-predict power density in the near field, where they could be used for making a "worst-case" or conservative prediction:

$$\text{Power density: } S[mW/cm^2] = \frac{P_{E.I.R.P.}[mW]}{4\pi R[cm]^2}$$

Where:

S = power density

$P_{E.I.R.P.}$ = Equivalent isotropically radiated power

R = distance to the center of radiation of the antenna (evaluation distance)

ISED

In order to perform the MPE assessment, the following equations have been used for the calculations; these equations are accurate in the far-field of an antenna and will over-predict power density in the near field, where they could be used for making a "worst-case" or conservative prediction:

$$\text{Power density: } S[W/m^2] = \frac{P_{E.I.R.P.}[W]}{4\pi R[m]^2}$$

Where:

S = power density

$P_{E.I.R.P.}$ = Equivalent isotropically radiated power

R = distance to the center of radiation of the antenna (evaluation distance)

5.3 Test result

FCC RF Exposure

RF Mode	Frequency	Evaluation Distance	Antenna Gain	Duty Cycle	EIRP	EIRP	Power density	Limit for uncontrolled Exposure	Distance require to meet uncontrolled Exposure Limit	Result
	MHz	(cm)	(dBi)	(%)	(dBm)	(W)	(mW/cm ²)	(mW/cm ²)	(cm)	
BLE – Bluetooth Low Energy	2402-2480	20	1,6	100	-0,003	0,001	0.000288	1	20	Pass

ISED RF Exposure

RF Mode	Frequency	Evaluation Distance	Antenna Gain	Duty Cycle	EIRP	EIRP	Power density	Limit for uncontrolled Exposure	Distance require to meet uncontrolled Exposure Limit	Result
	MHz	(cm)	(dBi)	(%)	(dBm)	(W)	(W/m ²)	(W/m ²)	(cm)	
BLE – Bluetooth Low Energy	2402-2480	20	1,6	100	-0,003	0,001	0.00288	5,35	20	Pass

PASS= SAR evaluation is not required because the output power value is less than exemption limit.

Note:

*EIRP is the maximum eirp power of this EUT, and the data comes from the RF report for this EUT
(See Par. 3.6 of this test report)