

TEST REPORT

Reference No. : WTS16S1164292-2E
FCC ID..... : XBAFT111
Applicant : Aeon Labs LLC.
Address : 121 Buckingham Drive, Unit 36, Santa Claras, California, United States
Manufacturer : Fantem Technologies (Shenzhen) Co., Ltd.
North,3/F, Yitao Technology Industrial Park, Baihua Yuan Rd.,The
Address : Second Industrial Area,Guangming Sub-districtOffice,Guangming New
District,Shenzhen, Guangdong, China.
Product Name : In-Wall Dimmer, Nano Dimmer
Model No. : FT111-A, ZW111-A
Brand : Fantem, Aeotec
Standards : FCC CFR47 Part 1.1307
Date of Receipt sample..... : Nov. 02, 2016
Date of Test..... : Nov. 19 – 30, 2016
Date of Issue : Dec. 29, 2016
Test Result : Pass
Note..... : This report is for RF Exposure

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:

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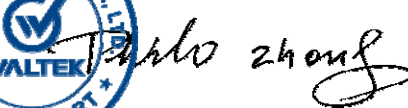
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3 **Revision History**

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTS16S1164292-2E	Nov. 11, 2016	Nov. 12 – 30, 2016	Dec. 29, 2016	original	-	Valid

4 General Information

4.1 General Description of E.U.T.

Product Name:		In-Wall Dimmer, Nano Dimmer			
Model No.:		FT111-A, ZW111-A, the model FT111-A is the test sample.			
Model Differences Description					
Product Name	Model No.	Brand	Power statistic function	NFC	Differences Description
In-Wall Dimmer	FT111-A	Fantem	Yes	Yes	Smart embedded dimmer switch, have power statistic and NFC, and NFC working on passive mode
Nano Dimmer	ZW111-A	Aeotec	Yes	No	Smart embedded dimmer switch, have power statistic
Type of Modulation:		FSK for Z-wave; ASK,2ASK for NFC			
Z-wave Frequency Range:		908.40MHz,908.42MHz			
NFC:		Support, working on passive mode.			
The lowest radio frequency:		13.56MHz			
Antenna installation:		Integrated Antenna for Z-wave			
Antenna Gain:		-3dBi for Z-wave			
Hardware Version:		AA			
Software Version:		V1.01			

4.2 Details of E.U.T.

Technical Data: AC 120V, 60Hz, Max: 1.2A

4.3 Channel List

Z-wave Test Mode			
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
0	908.40	1	908.42

4.4 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 7760A-1**

Waltek Services(Shenzhen) Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files.

Registration number 7760A-1, October 15, 2015.

- **FCC Test Site 1#– Registration No.: 880581**

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory `has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581, April 29, 2014.

- **FCC Test Site 2#– Registration No.: 328995**

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory `has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 328995, December 3, 2014.

5 Equipment Used during Test

5.1 Equipments List

3m Semi-anechoic Chamber for Radiation Emissions Test site 1#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	Spectrum Analyzer	R&S	FSP	100091	Apr.29, 2016	Apr.28, 2017
2	Amplifier	Agilent	8447D	2944A10178	Jan.13, 2016	Jan.12, 2017
3	Active Loop Antenna	Beijing Dazhi	ZN30900A	0703	Oct.17, 2016	Oct.16, 2017
4	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	33 6	Apr.09, 2016	Apr.08, 2017
5	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	Sep.12, 2016	Sep.11, 2017
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Apr.09, 2016	Apr.08, 2017
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Apr.13, 2016	Apr.12, 2017
8	Coaxial Cable (above 1GHz)	Top	1GHz-18GHz	EW02014-7	Apr.13, 2016	Apr.12, 2017
RF Conducted Testing						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMC Analyzer (9k~26.5GHz)	Agilent	E7405A	MY45114943	Sep.12, 2016	Sep.11, 2017
2.	Spectrum Analyzer (9k-6GHz)	R&S	FSL6	100959	Sep.12, 2016	Sep.11, 2017
3.	Signal Analyzer (9k~26.5GHz)	Agilent	N9010A	MY50520207	Sep.12, 2016	Sep.11, 2017

5.2 Description of Support Units

Equipment	Manufacturer	Specification
Light bulb	Waltek Services (Shenzhen) Co., Ltd.	Max. 144W

5.3 Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-6}$
RF Power	± 1.0 dB
RF Power Density	± 2.2 dB
Radiated Spurious Emissions test	± 5.03 dB (30M~1000MHz)
	± 5.47 dB (1000M~25000MHz)
Conducted Spurious Emissions test	± 3.64 dB (AC mains 150KHz~30MHz)

5.4 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

6 RF Exposure

Test Requirement: FCC Part 1.1307

Evaluation Method: FCC Part 2.1091 & KDB 447498 D01 General RF Exposure Guidance v06

6.1 Requirements

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

6.2 The procedures / limit

(0) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength E (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time $ E ^2, H ^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength E (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time $ E ^2, H ^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

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

6.3 MPE Calculation Method

For Z-wave						
Frequency(MHz)	E _{Meas} (dBuV/m)	EIRP(dBm)	EIRP(mW)	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)	Result
908.42	95.96	0.76	1.19	0.000237	0.61	Compliance
$EIRP = E_{Meas} + 20\log(d_{Meas}) - 104.7$, $PD = EIRP / 4\pi d^2$ Where EIRP is the equivalent isotropically radiated power, in dBm E_{Meas} is the field strength of the emission at the measurement distance, in dBuV/m d_{Meas} is the measurement distance, in m d is the minimum mobile separation distance, d=0.2m						

=====End of Report=====