



September 10, 2009

**Shenzhen Aodee Electronic Co., Ltd.**  
**17th floor, Luban Building, Hongli West Road**  
**Shenzhen, GuangDong**  
**China**

**Dear Anselm Lee,**

Enclosed you will find your file copy of a Part 15 Certification (FCC ID: WWKAODEE0AR255).

For your reference, TCB review normally takes 1 week. Approval will then be granted when no query is sorted.

Please contact me if you have any questions regarding the enclosed material.

Sincerely,

A handwritten signature in black ink, appearing to read "Shawn Xing", with a long horizontal flourish extending to the right.

Shawn Xing  
Assistant Manager

Enclosure



**Shenzhen Aodee Electronic Co., Ltd.**

Application  
For  
Certification  
**(FCC ID: WWKAODEE0AR255)**

Superregenerative Receiver

Sample Description: Super Switch  
Model: AR255

*Billy Li*

SZ09070328-1

Billy Li

September 10, 2009

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
- This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results referenced from this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.
- For Terms And Conditions of the services, it can be provided upon request.
- The evaluation data of the report will be kept for 3 years from the date of issuance.

TRF No.: FCC 15C\_RX-Sra  
FCC ID: WWKAODEE0AR255

**Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch**

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# INTERTEK TESTING SERVICES

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## LIST OF EXHIBITS

### *INTRODUCTION*

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<i>EXHIBIT 2:</i>	System Test Configuration
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# INTERTEK TESTING SERVICES

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## MEASUREMENT/TECHNICAL REPORT

**Shenzhen Aodee Electronic Co., Ltd. - MODEL: AR255**  
**FCC ID: WWKAODEE0AR255**

This report concerns (check one:) Original Grant  Class II Change  
\_\_\_\_\_

Equipment Type: Superregenerative Receiver

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Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes \_\_\_\_\_ No

If yes, defer until: \_\_\_\_\_  
date

Company Name agrees to notify the Commission by: \_\_\_\_\_  
date

of the intended date of announcement of the product so that the grant can be issued on that date.

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Transition Rules Request per 15.37? Yes \_\_\_\_\_ No

If no, assumed Part 15, Subpart B for unintentional radiator - the new 47 CFR [10-1-08 Edition] provision.

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Report prepared by:

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Intertek Testing Services Shenzhen Ltd.  
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# INTERTEK TESTING SERVICES

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## INTERTEK TESTING SERVICES

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### List of attached file

Exhibit type	File Description	filename
Test Report	Test Report	report.pdf
Operation Description	Technical Description	descri.pdf
Test Setup Photo	Radiated Emission	radiated photos.pdf
Test Setup Photo	Conducted Emission	conducted photos.pdf
External Photo	External Photo	external photos.pdf
Internal Photo	Internal Photo	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Test Report	Stabilization Waveform	superreg.pdf
Cover Letter	Letter of Agency	agency.pdf
Equipment List	Test Equipment List	equipment list.pdf

# **INTERTEK TESTING SERVICES**

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## **EXHIBIT 1**

### **GENERAL DESCRIPTION**

## INTERTEK TESTING SERVICES

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### 1.0 General Description

#### 1.1 Product Description

The equipment under test (EUT) is a receiver for a Super Switch operating at 315 MHz. The EUT is power by AC 120V, 60Hz. The main function of the receiver is controlled to ON / OFF the power by the transmitter.

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

#### 1.2 Related Submittal(s) Grants

This is a single application for certification of a receiver. The transmitter, associated with this receiver, has FCC ID: WWKAODEE0AT258 and has been filed at the same time.



## INTERTEK TESTING SERVICES

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### 1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). Radiated emission measurement was performed in Semi-Anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the Semi-Anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

### 1.4 Test Facility

The Semi-Anechoic chamber and shield room used to collect the radiated data and conducted data is **Interterk Testing Services Shenzhen Ltd. Kejiyuan Branch** and located at 6F, Block D, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China. This test facility and site measurement data have been fully placed on file with the FCC.

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**EXHIBIT 2**  
**SYSTEM TEST CONFIGURATION**

## **INTERTEK TESTING SERVICES**

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### **2.0 System Test Configuration**

#### 2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (2003).

The device was powered from AC 120V, 60Hz when testing.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. The step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The rear of unit shall be flushed with the rear of the table.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was mounted to a cardboard box, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

#### 2.2 EUT Exercising Software

There was no special software to exercise the device. Once the unit is powered up, it received continuously.

#### 2.3 Special Accessories

There are no special accessories necessary for compliance of this product.

## INTERTEK TESTING SERVICES

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### 2.4 Equipment Modification

Any modifications installed previous to testing by Shenzhen Aodee Electronic Co., Ltd. will be incorporated in each production model sold/leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd Kejiyuan Branch.

### 2.5 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

### 2.6 Support Equipment List and Description

This product was tested in the following configuration:

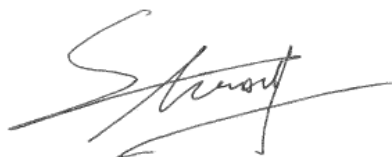
Refer List:

Description	Manufacturer	Model No.
Resistor	Saige	RXG 5000W 8ΩJ

All the items listed under section 2.0 of this report are

*Confirmed by:*

*Shawn Xing*  
*Assistant Manager*  
*Intertek Testing Services Shenzhen Ltd Kejiyuan Branch.*  
*Agent for Shenzhen Aodee Electronic Co., Ltd.*



Signature

September 10, 2009

Date

**INTERTEK TESTING SERVICES**

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**EXHIBIT 3**

**EMISSION RESULTS**

## INTERTEK TESTING SERVICES

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### 3.0 **Emission Results**

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.



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### 3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission  
at  
312.050 MHz

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.doc.



## INTERTEK TESTING SERVICES

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### 3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 3.9 dB

#### **TEST PERSONNEL:**



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*Signature*

Billy Li, Compliance Engineer  
*Typed/Printed Name*

September 10, 2009  
*Date*

## INTERTEK TESTING SERVICES

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Applicant: Shenzhen Aodee Electronic Co., Ltd.

Date of Test: August 10, 2009

Model: AR255

Test Mode: Receive

**Table 1**

### FCC Class B Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	307.700	47.2	20.0	14.0	41.2	46.0	-4.8
H	308.540	47.3	20.0	14.0	41.3	46.0	-4.7
H	309.100	47.3	20.0	14.1	41.4	46.0	-4.6
H	312.050	47.9	20.0	14.2	42.1	46.0	-3.9
H	314.500	47.3	20.0	14.4	41.7	46.0	-4.3
H	617.640	29.3	20.0	20.2	29.5	46.0	-16.5
H	618.570	28.4	20.0	20.2	28.6	46.0	-17.4

- NOTES:
1. Peak Detector Data unless otherwise stated.
  2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
  3. Negative sign in the column shows value below limit.
  4. All emissions below 1000MHz are below the QP limit and all emissions above 1000MHz are below the AV limit.

Test Engineer: Billy Li

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TRF No.: FCC 15C\_RX-SRa  
FCC ID: WWKAODEE0AR255

## INTERTEK TESTING SERVICES

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### 3.4 Conducted Emission Configuration Photograph

Worst Case Conducted Configuration  
at  
24.010 MHz

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

## INTERTEK TESTING SERVICES

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### 3.5 Conducted Emission Data

Judgement: Passed by 20.5 dB margin

#### **TEST PERSONNEL:**



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*Signature*

Billy Li, Compliance Engineer  

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*Typed/Printed Name*

September 10, 2009  

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Date

## INTERTEK TESTING SERVICES

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Applicant: Shenzhen Aodee Electronic Co., Ltd.  
Model: AR255  
Test Mode: Receive

Date of Test: September 10, 2009

**Table 2**

### Conducted Emissions

Live Line Data

Frequency (MHz)	Quasi-Peak		Average	
	Disturbance level dB( $\mu$ V)	Permitted limit dB( $\mu$ V)	Disturbance level dB( $\mu$ V)	Permitted limit dB( $\mu$ V)
0.830	25.3	56.0	22.4	46.0
1.670	25.1	56.0	21.1	46.0
2.540	22.3	56.0	18.7	46.0
12.010	31.6	60.0	27.5	50.0
20.010	33.2	60.0	27.3	50.0
24.010	31.4	60.0	29.5	50.0

Neutral Line Data

Frequency (MHz)	Quasi-Peak		Average	
	Disturbance level dB( $\mu$ V)	Permitted limit dB( $\mu$ V)	Disturbance level dB( $\mu$ V)	Permitted limit dB( $\mu$ V)
0.830	25.2	56.0	22.1	46.0
1.670	25.0	56.0	20.7	46.0
2.540	22.1	56.0	18.4	46.0
12.053	31.5	60.0	27.2	50.0
20.090	33.3	60.0	27.3	50.0
24.012	31.3	60.0	29.1	50.0

Test Engineer: Billy Li

**INTERTEK TESTING SERVICES**

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**EXHIBIT 4**  
**EQUIPMENT PHOTOGRAPHS**

## INTERTEK TESTING SERVICES

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### 4.0 Equipment Photographs

For electronic filing, the photographs are saved with filename: external photos.doc and internal photos.doc.

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**EXHIBIT 5**

**PRODUCT LABELLING**



## INTERTEK TESTING SERVICES

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### 5.0 **Product Labelling**

For electronics filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

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**EXHIBIT 6**

**TECHNICAL SPECIFICATIONS**

## INTERTEK TESTING SERVICES

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### 6.0 Technical Specifications

For electronic filing, the block diagram and schematic of the tested EUT are saved with filename: block.pdf and circuit.pdf respectively.

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**EXHIBIT 7**  
**INSTRUCTION MANUAL**

## INTERTEK TESTING SERVICES

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### 7.0 **Instruction Manual**

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

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**EXHIBIT 8**

**MISCELLANEOUS INFORMATION**

## INTERTEK TESTING SERVICES

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### 8.0 **Miscellaneous Information**

This miscellaneous information includes details of the stabilizing process (including a plot of the stabilized waveform) and the test procedure.

## INTERTEK TESTING SERVICES

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### 8.1 Stabilization Waveform

Previous to the testing, the superregenerative receiver was stabilized as outlined in the test procedure. For the electronic filing, the plot saved with filename: superreg.pdf shows the fundamental emission when a signal generator was used to stabilize the receiver. Please note that the antenna was placed as close as possible to the EUT for clear demonstration of the waveform and that accurate readings are not possible from this plot.



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## INTERTEK TESTING SERVICES

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### 8.2 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch in the measurements of superregenerative receivers operating under the Part 15, Subpart B rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 - 2003. Superregenerative receivers are stabilized prior to measurement by generating a signal well above the receiver threshold whose frequency is tuned until the emissions stabilize into a line spectrum. The signal is usually generated as CW with a R&S SML03 signal generator and a short whip antenna and is at a level of several hundred to several thousand mV/m. Plots of the stabilized signal will be shown. If a modulated signal is used, it will be noted.

The equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the groundplane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjusted through all three orthogonal axis to obtain maximum emission levels. The antenna height and polarization are also varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings.

The frequency range scanned is from 30MHz to 2000MHz. For line conducted emissions, the range scanned is 150 kHz to 30 MHz.

## INTERTEK TESTING SERVICES

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### 8.2 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements were made as described in ANSI C63.4 - 2003.

The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater when frequency is below 1000 MHz. Above 1000 MHz, a resolution bandwidth of 1 MHz is used.

Measurements are normally conducted at a measurement distance of three meters. All measurements are extrapolated to three meters using inverse scaling, unless otherwise reported. Measurements taken at a closer distance are so marked.

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**EXHIBIT 9**

**TEST EQUIPMENT LIST**

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### 9.0 Test Equipment List

For electronic filing, the test equipment list of the tested EUT is saved with filename: equipment list.pdf.