

# CTS (NINGBO) TESTING SERVICE TECHNOLOGY INTERNATIONAL

**OPERATE ACCORDING TO ISO/IEC 17025** 

# **EMC TEST REPORT**

TEST REPORT NUMBER: CGZ3161206-02365-E



CTS (Ningbo) Testing Service Technology Co., Ltd.

Fl.1 & 8 West, Bldg. B, No. 66, Qingyi Rd., Hi-Tech Zone, Ningbo, Zhejiang, China





Trade Mark	YJ-FC30W900 AC 220V/50Hz, 30W(A)	
Manufacturer  Model/Type reference  Ratings	YJ-FC30W900 AC 220V/50Hz, 30W(A)	
Manufacturer  Model/Type reference	YJ-FC30W900	
Manufacturer		
rade Mark		
Tuesta Mauli	Aglare	
Test item description		
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Master TRF	Dated 2009-01	
TRF Originator	CTS (Ningbo) Testing Service Te	chnology Co., Ltd.
Test Report Form No	CTSEMC-1.0	
Standard	AS/NZS CISPR 15 : 2011	
Test specification:		
Address	Factory A, Supply and Marketing Guanlan Avenue, Guanlan Town, Guangdong, China	
Applicant's name	Shenzhen Aglare Lighting Co., Lt	d.
	GZ test site: A101, No.65, Zhuji F Guangzhou, Guangdong, China. Full application of Harmonised sta Partial application of Harmonised Other standard testing method □	andards ■ standards □
•	CTS (Ningbo) Testing Service	
Date of issue	08 December 2016	
Report Reference No		
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Limits and methods of measure		winting of algorithms limbting and

Kate zhang / File administrators

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# **EMC--TEST REPORT**

Test Report No. :	CGZ3161206-02365-E	08 December 2016  Date of issue

Type / Model	YJ-FC30W900
EUT	LED DRIVER
Applicant	Shenzhen Aglare Lighting Co., Ltd.
Address	Factory A, Supply and Marketing Cooperative Industrial Park, Guanlan Avenue, Guanlan Town, Bao'an District, Shenzhen City, Guangdong, China
Telephone	+86-755-88868631
Fax	+86-755-27659398
Contact	Cheng Jun
Manufacturer	1
Address	1
Telephone	1
Fax	
Contact	I
Factory	
Address	1
Telephone	1
Fax	1
Contact	1

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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# 1 TEST STANDARDS

The tests were performed according to following standards:

AS/NZS CISPR 15:2011 Limits and methods of measurements of radio disturbance characteristics of electrical lighting and similar equipment.

# 2 SUMMARY

## 2.1 GENERAL REMARKS

Date of receipt of test sample	06 December 2016
Testing commenced on	06~07 December 2016
Testing concluded on	08 December 2016

# 2.2 FINAL ASSESSMENT

The EMC requirements pertaining to the technical standards and tested operation modes are

_ '	fu	lfil	led

□ - **not** fulfilled.

The equipment under test

- fulfils the EMC requirements cited on page 1.
- does not fulfil the EMC requirements cited on page 1.

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# 3 EQUIPMENT UNDER TEST

3.1 Power supply system utilise	3.1	Power	supply	system	utilise
---------------------------------	-----	-------	--------	--------	---------

Power supply voltage: ■ AC 240V/50Hz □ Other (Specified blank below)

# 3.2 Short description of the Equipment under Test (EUT)

Number of tested samples: 1 Serial number: Prototype

# 3.3 EUT operation mode

Normal

Operating Mode:	Normal
Emissions tests	: According to AS/NZS CISPR 15, searching for the highest disturbance

# 3.4 EUT configuration

(The CDF filled by the applicant can be viewed at the test laboratory.)

The following peripheral devices and interface cables were connected during the measurement:

Not Applicable

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## 4 TEST ENVIRONMENT

# 4.1 Address of the test laboratory

GZ test site: A101, No.65, Zhuji Road, Tianhe District, Guangzhou, Guangdong, China

Tel: +86-20-85543113 (32 lines) Fax: +86-20-38780406

# 4.2 Test facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L3394

CTS (Ningbo) Testing Service Technology Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01: 2006 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

# IC-Registration No.: 8374A

The 3m Alternate Test Site of CTS (Ningbo) Testing Service Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 8374A on May 22, 2014.

# FCC-Registration No.: 971995

CTS (Ningbo) Testing Service Technology 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 No.971995, July 13, 2012.

#### 4.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35 ° C
Humidity:	25~75 %
Atmospheric pressure:	86~106 kPa

# 4.4 Definitions of symbols used in this test report

- - The black square indicates that the listed condition, standard or equipment is applicable for this report.
- The empty square indicates that the listed condition, standard or equipment is **not** applicable for this report.

# 4.5 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the CTS quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

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# 4.6 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	±1.22dB	(1)
Power disturbance	30MHz~300MHz	±1.38dB	(1)
Dediction emission (2m)	30MHz~300MHz	±3.14dB	(1)
Radiation emission (3m)	300MHz~1000MHz	±3.18dB	(1)

<sup>(1)</sup> This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

# **4.7 Test Description**

## 4.7.1 Description of Standards and Results

EMISSION					
Description of Test Item	Standard	Limits	Results		
Conducted disturbance at mains terminals	AS/NZS CISPR 15: 2011		PASSED		
Radiated Electromagnetic Disturbance	AS/NZS CISPR 15: 2011		PASSED		
Radiated Disturbance	AS/NZS CISPR 15: 2011		PASSED		
N/A is an abbreviation for Not Applicable.					

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<sup>(2)</sup> The actual EUT tested items in this test report, only applies to this "measurement uncertainty" in part / all of the corresponding data.





# TEST CONDITIONS AND RESULTS

# 5.1 Conducted disturbance

For test instruments and accessories used see section 6 part 6.3.

## 5.1.1 Description of the test location

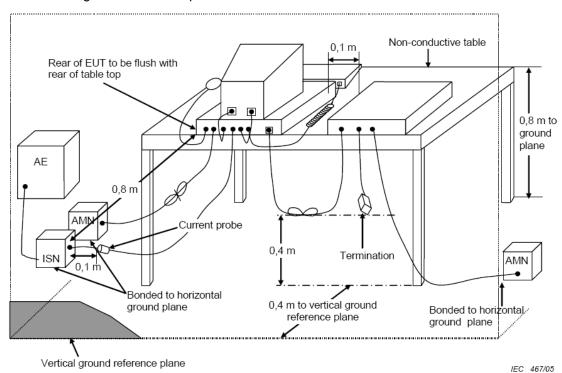
Test location: Shielded room

#### 5.1.2 Description of the test set-up

5.1.2.1 Operating Condition

The EUT is normal during the test, and the results of the maximum emanation are recorded

#### 5.1.2.2 Block Diagram of Test Setup



#### 5.1.3 Limits disturbance

Frequency			At mains terminals (dBμV)		
			Quasi-peak Level	Average Level	
9kHz	~	50kHz	110		
50kHz	~	150kHz	90 ~ 80*		
150kHz	~	0.5MHz	66 ~ 56*	56 ~ 46*	
0.5MHz	~	2.51MHz	56	46	
2.51MHz	~	3.0MHz	73	63	
3.0MHz	~	5.0MHz	56	46	
5.0MHz	~	30MHz	60	50	

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

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## 5.1.4 Test result

The requirements are	Fulfilled
Band width	200Hz for 9KHz to 0.15MHz, and 9kHz for 0.15MHz to 30MHz
Frequency range	9kHz - 30 MHz
Min. limit margin	>10.95 dB at 9kHz - 30 MHz

**Remarks:** The limits are kept. For detailed results, please see the following page(s).

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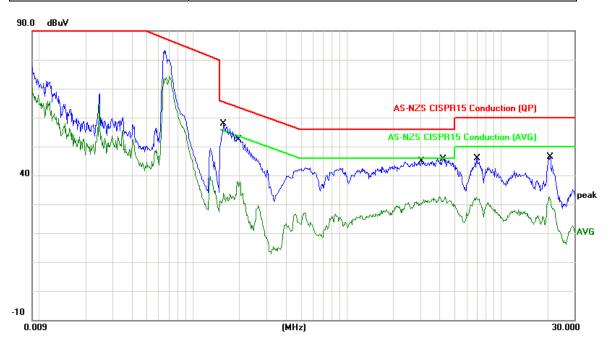
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# 5.1.5 Test protocol

Test point	L	Result:	■ - passed
Operation mode	Normal		□ - not passed
Remarks:			,

EUT	LED DRIVER
Operating Condition	AC 240V/50Hz
Operator	Clark
MODEL NO.	YJ-FC30W900



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1580	10.82	43.17	53.99	65.56	-11.57	QP
2	0.1580	10.82	21.81	32.63	55.56	-22.93	AVG
3	0.2020	10.83	39.24	50.07	63.52	-13.45	QP
4	0.2020	10.83	25.27	36.10	53.52	-17.42	AVG
5	3.0700	10.99	28.37	39.36	56.00	-16.64	QP
6	3.0700	10.99	19.39	30.38	46.00	-15.62	AVG
7	4.2260	11.04	28.72	39.76	56.00	-16.24	QP
8	4.2260	11.04	19.78	30.82	46.00	-15.18	AVG
9	6.9780	11.16	27.92	39.08	60.00	-20.92	QP
10	6.9780	11.16	20.13	31.29	50.00	-18.71	AVG
11	20.8500	11.05	27.11	38.16	60.00	-21.84	QP
12	20.8500	11.05	18.22	29.27	50.00	-20.73	AVG

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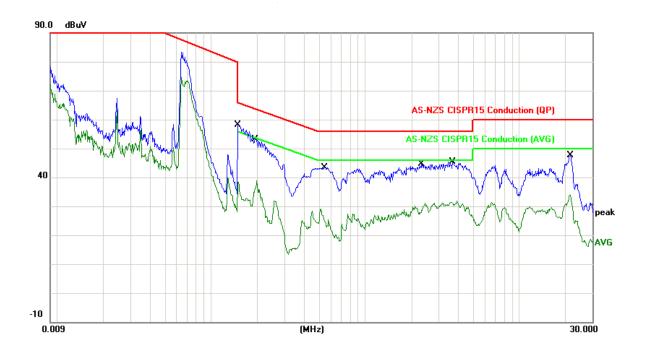
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Test point: Operation mode	N Normal	Result:	■ - passed □ - not passed
Remarks:			'



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	10.80	44.24	55.04	65.99	-10.95	QP
2	0.1500	10.80	24.72	35.52	55.99	-20.47	AVG
3	0.1947	10.81	40.53	51.34	63.83	-12.49	QP
4	0.1947	10.81	27.23	38.04	53.83	-15.79	AVG
5	0.5460	10.90	29.95	40.85	56.00	-15.15	QP
6	0.5460	10.90	14.37	25.27	46.00	-20.73	AVG
7	2.3460	10.94	28.29	39.23	56.00	-16.77	QP
8	2.3460	10.94	17.17	28.11	46.00	-17.89	AVG
9	3.7300	11.00	28.25	39.25	56.00	-16.75	QP
10	3.7300	11.00	19.66	30.66	46.00	-15.34	AVG
11	21.6860	11.03	30.31	41.34	60.00	-18.66	QP
12	21.6860	11.03	21.32	32.35	50.00	-17.65	AVG

Note:Level=Reading+Factor. Margin= Limit-Level

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# 5.2 Radiated disturbance (magnetic field)

For test instruments and accessories used see section 6 part 6.2.

# 5.2.1 Description of the test location

Test location : Shielded room

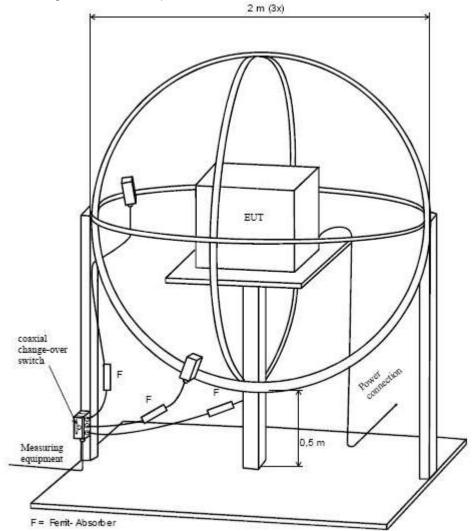
Test disturbance: 2 Meter

## 5.2.2 Description of the test set-up

5.2.2.1 Operating Condition

The EUT is normal during the test, and the results of the maximum emanation are recorded

# 5.2.2.2 Block Diagram of Test Setup



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#### 5.2.3 Limits of disturbance

Frequency		nev	Limits for loop diameter (dBμA)
rrequericy		Ю	2m
9kHz	~	70kHz	88
70kHz	~	150kHz	88 ~ 58*
150kHz	~	2.2MHz	58 ~ 26*
2.2MHz	~	3.0MHz	58
3.0MHz	~	30MHz	22

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

#### 5.2.4 Test result

The requirements are	Fulfilled
Band width	200Hz for 9KHz to 0.15MHz, and 9kHz for 0.15MHz to 30MHz
Frequency range	9kHz - 30 MHz
Min. limit margin MHz	>15.83 dB at 9kHz- 30MHz

**Remarks:** The limits are kept. For detailed results, please see the following page(s).

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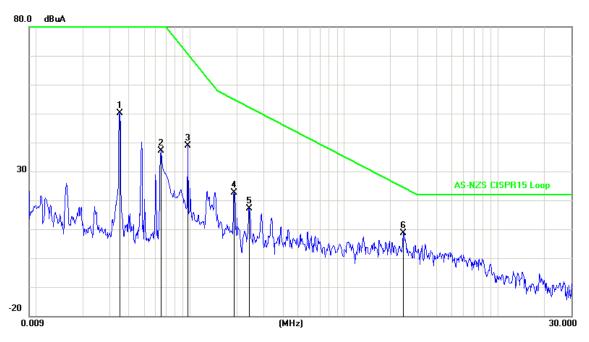
<sup>(2)</sup> Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.



# 5.2.5 Test protocol

Test point	X	Result:	■ - passed
Operation mode	Normal		□ - not passed
Remarks:			'

EUT	LED DRIVER
Operating Condition	AC 240V/50Hz
Operator	Clark
MODEL NO.	YJ-FC30W900



No.	Frequency (MHz)	Factor (dB)	Reading (dBµA)	Level (dBμA)	Limit (dBμA)	Margin (dB)	Det.
1	0.0349	47.84	2.34	50.18	88.00	-37.82	peak
2	0.0646	47.89	-10.88	37.01	88.00	-50.99	peak
3	0.0961	47.64	-8.66	38.98	75.53	-36.55	peak
4	0.1931	47.66	-24.92	22.74	54.96	-32.22	peak
5	0.2424	47.69	-30.57	17.12	52.23	-35.11	peak
6	2.4268	46.32	-37.60	8.72	24.55	-15.83	peak

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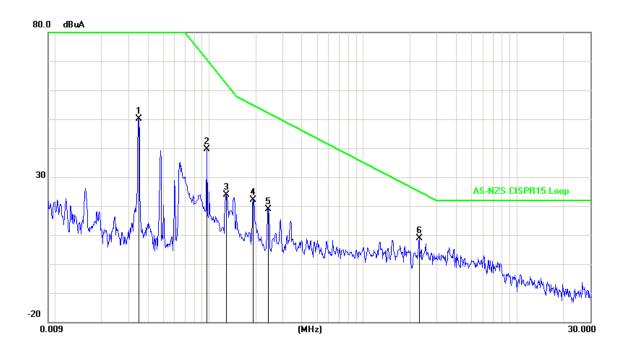
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Test point:	Υ	Result	■ - passed
Operation mode	Normal		□ - not passed
Remarks:			



No.	Frequency (MHz)	Factor (dB)	Reading (dBµA)	Level (dBµA)	Limit (dBµA)	Margin (dB)	Det.
1	0.0349	47.83	2.31	50.14	88.00	-37.86	peak
2	0.0961	48.18	-8.62	39.56	75.53	-35.97	peak
3	0.1288	48.16	-24.34	23.82	64.00	-40.18	peak
4	0.1931	48.11	-26.04	22.07	54.96	-32.89	peak
5	0.2424	48.09	-29.27	18.82	52.23	-33.41	peak
6	2.3115	46.61	-37.85	8.76	25.13	-16.37	peak

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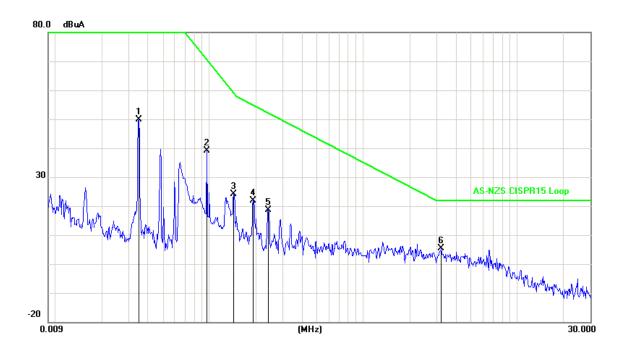
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Test point:	Z	Result:	■ - passed
Operation mode	Normal		□ - not passed
Remarks:			



No.	Frequency (MHz)	Factor (dB)	Reading (dBμA)	Level (dBμA)	Limit (dBμA)	Margin (dB)	Det.
1	0.0349	47.46	2.35	49.81	88.00	-38.19	peak
2	0.0961	47.50	-8.44	39.06	75.53	-36.47	peak
3	0.1442	47.75	-23.61	24.14	59.55	-35.41	peak
4	0.1931	47.79	-25.82	21.97	54.96	-32.99	peak
5	0.2424	47.80	-29.05	18.75	52.23	-33.48	peak
6	3.2235	45.77	-40.27	5.50	22.00	-16.50	peak

Note:Level=Reading+Factor. Margin= Limit-Level Factor=Antenna factor+Cable loss

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# 5.3 Radiated disturbance (Electric field)

For test instruments and accessories used see section 6 part 6.1.

#### 5.3.1 Description of the test location

Test location : Semi-Anechoic chamber

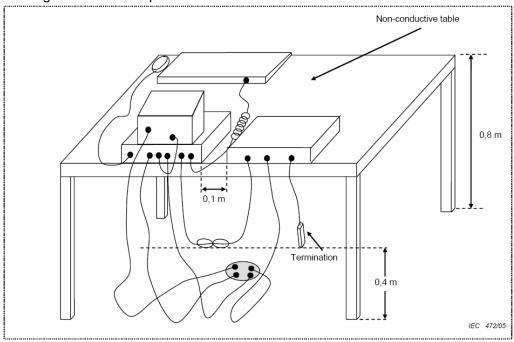
Test disturbance: 3 Meter

## 5.3.2 Description of the test set-up

5.3.2.1 Operating Condition

The EUT is normal during the test, and the results of the maximum emanation are recorded

## 5.3.2.2 Block Diagram of Test Setup



#### 5.3.3 Limits of disturbance

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dBµV/m)
30 ~ 230	3	40
230 ~ 300	3	47

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

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#### 5.3.4 Test result

The requirements are	Fulfilled
Band width	120kHz
Frequency range	30 MHz - 300 MHz
Min. limit margin	>3.04 dB at 30 - 300 MHz

**Remarks:** The limits are kept. For detailed results, please see the following page(s).

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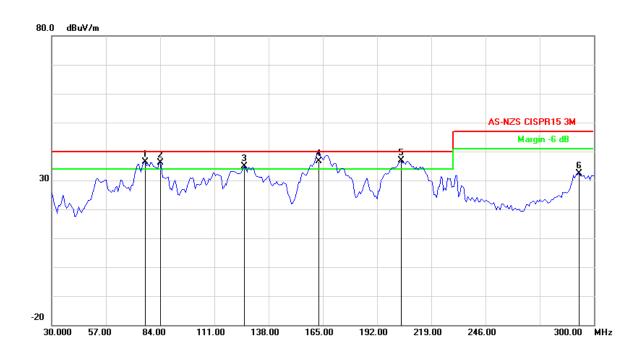
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# 5.3.5 Test protocol

Test point:	Horizontal	Result:	■ - passed
Operation mode	Normal		☐ - not passed
Remarks:			'

EUT	LED DRIVER
Operating Condition	AC 240V/50Hz
Operator	Clark
MODEL NO.	YJ-FC30W900



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	76.5750	-20.23	56.56	36.33	40.00	-3.67	QP
2	84.0000	-19.63	55.82	36.19	40.00	-3.81	QP
3	125.8499	-16.38	51.27	34.89	40.00	-5.11	QP
4	162.9749	-15.97	52.72	36.75	40.00	-3.25	QP
5	204.1500	-11.42	48.38	36.96	40.00	-3.04	QP
6	292.5749	-3.39	35.88	32.49	47.00	-14.51	QP

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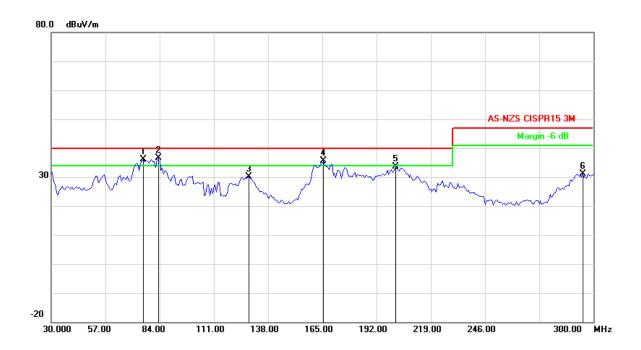
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Test point:	Vertical	Result:	■ - passed
Operation mode	Normal		□ - not passed
Remarks:			



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	75.9000	-20.28	56.50	36.22	40.00	-3.78	QP
2	83.3250	-19.68	56.40	36.72	40.00	-3.28	QP
3	128.5500	-16.22	46.33	30.11	40.00	-9.89	QP
4	165.6750	-15.98	51.52	35.54	40.00	-4.46	QP
5	201.4499	-11.98	45.69	33.71	40.00	-6.29	QP
6	294.6000	-2.85	34.01	31.16	47.00	-15.84	QP

Note:Level=Reading+Factor. Margin= Limit-Level

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# 6 USED TEST EQUIPMENT

	6.1									
Radia	Radiated disturbance (Electric field)									
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.					
1	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2016/03/24					
2	EMI Test Receiver	ROHDE & SCHWARZ	ESVS 10	842885/001	2016/10/24					
3	Biconical Antenna	ROHDE & SCHWARZ	HK116	100221	2016/03/26					
4	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2016/03/26					
5	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2016/03/26					
6	Pre-Amplifier	EMC	EMC330	980113	2016/03/24					
7	Pre-Amplifier	EMC	EMC012645	980114	2016/03/24					
8	EMI Test Software	Farad	EZ-EMC	N/A	N/A					

6.2									
Radiated Disturbance (Magnetic field)									
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.				
1	Triple-Loop Antenna	ROHDE & SCHWARZ	HM020	100015	2016/10/24				
2	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100868	2016/10/24				
3	EMI Test Software	Farad	EZ-EMC	N/A	N/A				

6.3									
Conducted Disturbance									
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.				
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100868	2016/10/24				
2	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	832479/025	2016/10/24				
3	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z6	100140	2016/10/24				
4	Pulse Limiter	ROHDE & SCHWARZ	ESHS-Z2	100301	2016/10/24				
5	EMI Test Software	Farad	EZ-EMC	N/A	N/A				

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# 7 TEST PHOTOGRAPHS

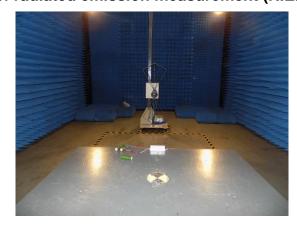
# 7.1. Photo of power line conducted emission measurement (C.E.)



# 7.2. Photo of radiated emission measurement (R.E. Magnetic field)



# 7.3. Photo of radiated emission measurement (R.E. Electric field)



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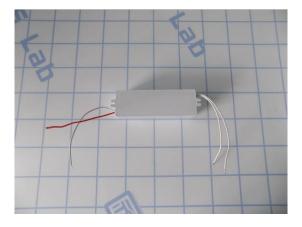




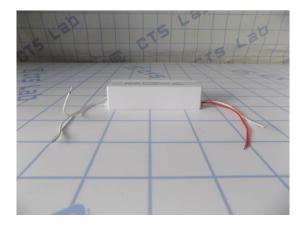
# 8 EXTERNAL AND INTERNAL PHOTOS OF THE EUT



**External view 1** 



**External view 2** 



**External view 3** 

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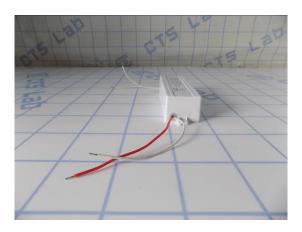
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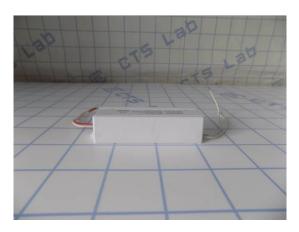
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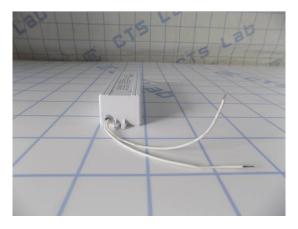




**External view 4** 



**External view 5** 



**External view 6** 

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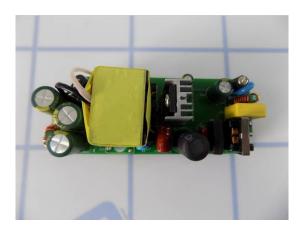
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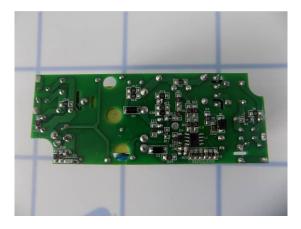




Label



**PCB View 1** 



**PCB View 2** 

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# 9 Manufacturer/ Approval holder Declaration

N/A

Belong to the tested device:

The following identical model(s):

Product description: **LED DRIVER**Model name: **YJ-FC30W900** 

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