



Shenzhen General Testing & Inspection Technology Co., Ltd.

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Report no.: GTI20150353E

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EMC TEST REPORT

Product name: LED High Bay Light
Trademark: Yaham
Model no.: YHL-ID-100-HB-VE, YHL-ID-120-HB-VE,
YHL-ID-150-HB-VE, YHL-ID-180-HB-VE
Test Standards: J55015: H20
Applicant: Yaham Optoelectronics Co., Ltd.
Address of applicant: Bldg 4, HANS Industrial Park, 128 Chongqing Street Bao'an
District, Shenzhen, Guangdong, P.R.China.
Date of Test Date: Aug.10. 2015
Date of issue: Aug. 14, 2015

Test result:	Pass *
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* In the configuration tested, the EUT complied with the standards specified above



The PSE mark as shown below can be used, under the responsibility of the manufacturer, we confirm that the above-mentioned product meets the requirements stipulated in paragraph 1 of Article 8 of Electrical Appliance and material Safety Law and the requirements defined by the ordinance of the Ministry of Economy, Trade and Industry based on Paragraph 2 of Article 9 of the Laws.

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GENERAL DESCRIPTION OF EUT

Equipment	LED High Bay Light				
Model Name	YHL-ID-180-HB-VE				
Adding model(s)	YHL-ID-100-HB-VE, YHL-ID-120-HB-VE, YHL-ID-150-HB-VE,				
Model difference	Please see model list on page 3				
Manufacturer	Yaham Optoelectronics Co., Ltd.				
Manufacturer Address	Bldg 4, HANS Industrial Park, 128 Chongqing Street Bao'an District, Shenzhen, Guangdong, P.R.China.				
Product Description	The EUT is a LED High Bay Light. <table><tr><td>Operating frequency:</td><td>N/A</td></tr><tr><td>Connecting I/O port:</td><td>N/A</td></tr></table> Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as a Lighting and similar Equipment. More details of EUT technical specification, please refer to the User's Manual.	Operating frequency:	N/A	Connecting I/O port:	N/A
Operating frequency:	N/A				
Connecting I/O port:	N/A				
Power Rating	Please see model list on page 3				

Testing Engineer :

:

(Mart Xiong)

Reviewed By:

:

(Tony Wang)

Approved Signatory :

:

(Walter Chen)

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Model List:

Model No.	Input Volt/ Frequency	Current	Power	IP	Dimension (L/W/H)	Weight	Driver Model	Output of Driver	Qty of Driver	Qty of LED	LED Part No.	Color Temp
YHL-ID-10 0-HB-VE	100-277 Vac, 50/60Hz	3.1	100	6 5	L220*W220*H195	1.2	HLG-100 H-36A	36VDC 2.65A	1	210	NF2W757	5000
YHL-ID-12 0-HB-VE		3.7	120		L220*W220*H195	1.2	HLG-150 H-36A	36VDC 4.2A	1	250	NF2W757	
YHL-ID-15 0-HB-VE		4.6	150		L280*W280*H260	1.8	HLG-150 H-36A	36VDC 4.2A	1	320	NF2W757	
YHL-ID-18 0-HB-VE		5.6	180		L280*W280*H260	1.8	HLG-185 H-36A	36VDC 5.2A	1	380	NF2W757	

Note:

Yaham Optoelectronics Co., Ltd. (short for Yaham) Declare that the highbays produced by Yaham models No. YHL-ID-100-HB-VE, YHL-ID-120-HB-VE, YHL-ID-150-HB-VE, YHL-ID-180-HB-VE, are using the same electrical principle and physical structure.



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1.TEST SUMMARY

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Limit	Result	Remark
J55015: H20	Conducted Emission	Class B	PASS	
	Radiated Emissions 150KHz to 30MHz	Class B	PASS	
	Disturbance Power 30MHz to 300MHz	Class B	PASS	

NOTE:

- (1) "N/A" denotes test is not applicable in this Test Report
- (2) For client's request and manual description, the test will not be executed

1.1TEST FACILITY

Shenzhen General Testing & Inspection Technology Co., Ltd.

Add. : 1F, 2 Block, Jiaquan Building, Guanlan High-tech Park Baoan District, Shenzhen, Guangdong, China

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U , (dB)	NOTE
GTIC01	ANSI	150 KHz ~ 30MHz	3.2	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	U , (dB)	NOTE
GTIA02	ANSI	150kHz ~ 30MHz	4.7	

C. Disturbance Power Measurement :

Test Site	Method	Measurement Frequency Range	U , (dB)	NOTE
GTIA01	ANSI	30MHz ~ 300MHz	4.2	

2. GENERAL INFORMATION

2.1 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	The normal work

For Conducted Emission Test	
Final Test Mode	Description
Mode 1	The normal work

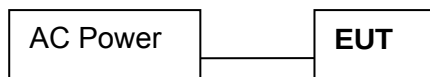
For Radiated Emissions Test	
Final Test Mode	Description
Mode 1	The normal work

For Disturbance Power Measurement Test	
Final Test Mode	Description
Mode 1	The normal work

2.2 DESCRIPTION OF TEST SETUP

EUT was tested in normal configuration (Please See following Block diagrams)

EMI test wiring diagram



2.3 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	LED High Bay Light	Yaham	YHL-ID-180-HB-VE	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

2.4 MEASUREMENT INSTRUMENTS EQUIPMENTS LIST**2.4.1 CONDUCTED EMISSION**

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	LISN	R&S	ENV216	101112	Jan. 07, 2016
3	50Ω Terminator	N/A	N/A	N/A	Jan. 07, 2016
4	Test Cable	N/A	C01	N/A	Jan. 07, 2016
5	EMI Test Receiver	R&S	ESCI	100920	Jan. 07, 2016

2.4.2 RADIATED EMISSIONS(150KHz to 30MHz)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Large Loop Antenna	Schwarzbeck	RF300	26B0251	Jan.07, 2016
2	EMI Test Receiver	R&S	ESCI	100920	Jan. 07, 2016
3	Test Cable	N/A	C01	N/A	Jan. 07, 2016

2.4.3 DISTURBANCE POWER(30MHz to 300MHz)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Log-Bicon Antenna	Schwarzbeck	CBL6141A	4180	Jan.07, 2016
2	Horn Antenna	Schwarzbeck	BBHA 9120D	648	Jan.07, 2016
3	Pre-Amplifier	HP	8447D	1937A03050	Jan.07, 2016
4	EMI Test Receiver	R&S	ESCI	100658	Jan.07, 2016
5	Antenna Mast	UC	UC3000	N/A	N/A
6	Turn Table	UC	UC3000	N/A	N/A

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	dBuV	
	Quasi-peak	Average
0.15 ~0.50	66 - 56 *	56 - 46 *
0.50 ~2.51	56.00	46.00
2.51 ~3.0	73	63
3.0 ~5.0	56	46
5.0~30	60	50

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

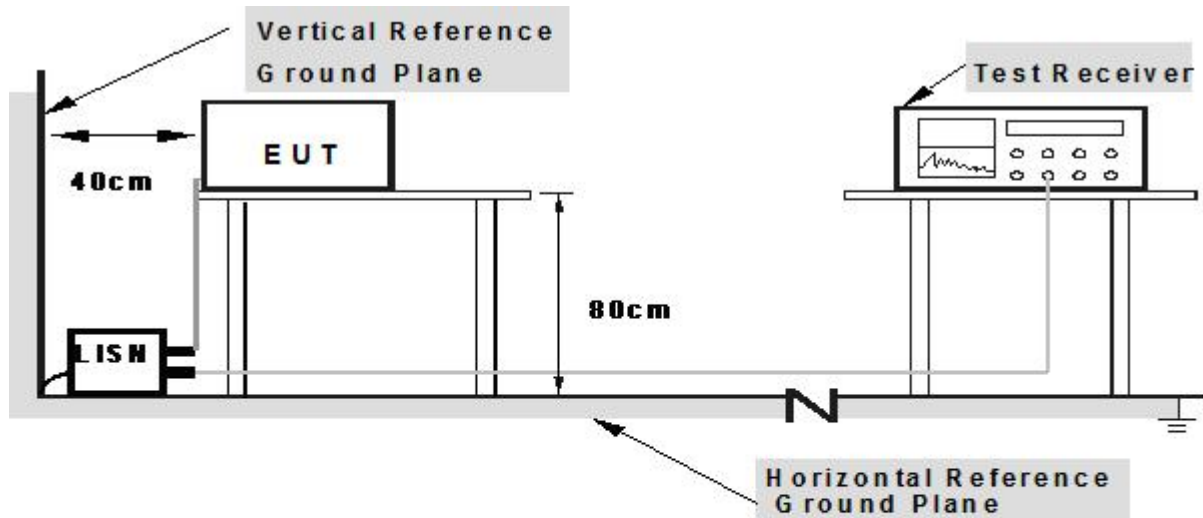
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 TEST SETUP



Note: 1.Support units were connected to second LISN.

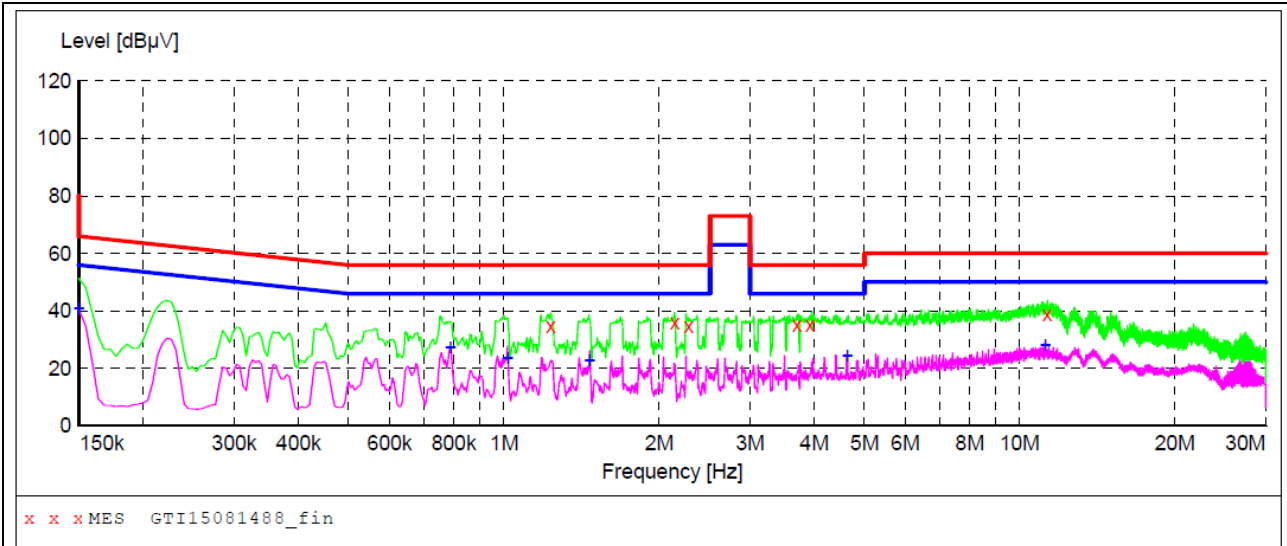
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

3.1.5 TEST RESULTS

EUT :	LED High Bay Light	Model Name. :	YHL-ID-180-HB-VE
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101 Kpa	Test Date :	2015-08-10
Test Mode :	Model 1	Phase :	L
Test Voltage :	AC 100V/60Hz		



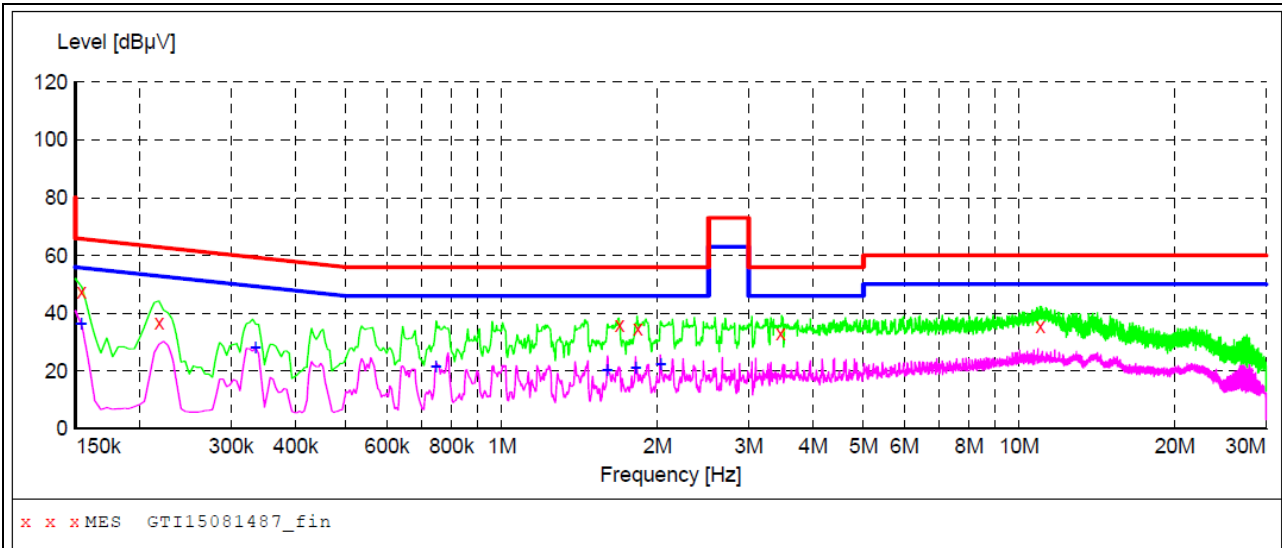
Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. '*' means the worst case

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
1.232000	34.80	8.8	56	21.2	QP	L1	GND
2.144000	36.00	9.6	56	20.0	QP	L1	GND
2.282000	34.80	9.5	56	21.2	QP	L1	GND
3.698000	35.20	9.9	56	20.8	QP	L1	GND
3.920000	35.10	10.0	56	20.9	QP	L1	GND
11.300000	38.60	10.5	60	21.4	QP	L1	GND
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.150000	40.70	10.3	56	15.3	AV	L1	GND
0.788000	27.30	10.3	46	18.7	AV	L1	GND
1.016000	23.60	7.9	46	22.4	AV	L1	GND
1.466000	22.60	10.0	46	23.4	AV	L1	GND
4.634000	24.50	10.2	46	21.5	AV	L1	GND
11.204000	27.90	10.5	50	22.1	AV	L1	GND

S

EUT :	LED High Bay Light	Model Name. :	YHL-ID-180-HB-VE
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101 Kpa	Test Date :	2015-08-10
Test Mode :	Model 1	Phase :	N
Test Voltage :	AC 100V/60Hz		



Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. '*' means the worst case

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.154000	47.50	10.0	66	18.3	QP	N	GND
0.218000	36.90	8.1	63	26.0	QP	N	GND
1.688000	35.90	10.4	56	20.1	QP	N	GND
1.832000	34.50	10.0	56	21.5	QP	N	GND
3.458000	33.20	9.8	56	22.8	QP	N	GND
10.988000	35.70	10.4	60	24.3	QP	N	GND
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.154000	36.20	10.0	56	19.6	AV	N	GND
0.334000	28.00	9.7	49	21.4	AV	N	GND
0.746000	21.50	9.9	46	24.5	AV	N	GND
1.598000	20.20	10.6	46	25.8	AV	N	GND
1.814000	21.30	10.1	46	24.7	AV	N	GND
2.030000	22.50	9.6	46	23.5	AV	N	GND

3.2 RADIATED EMISSION MEASUREMENT(150KHz to 30MHz)

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT (150KHz to 30MHz)

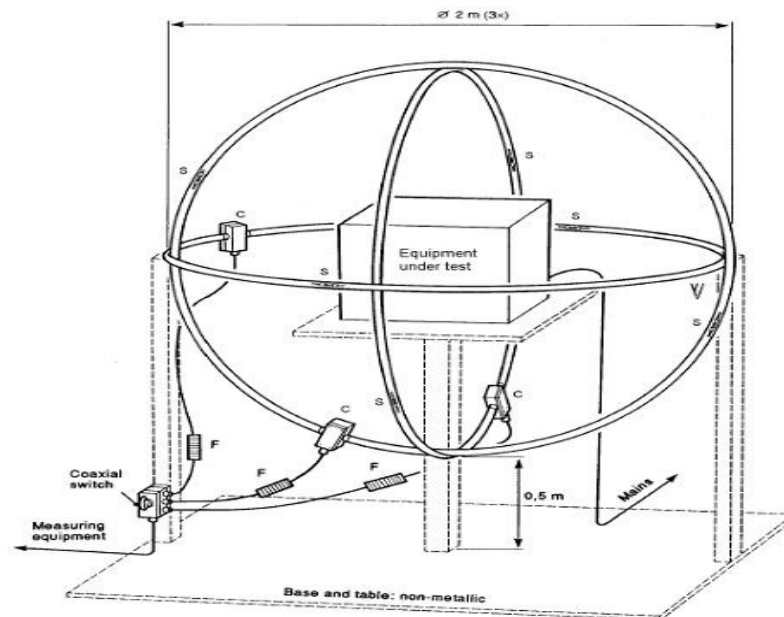
Frequency	☒ 2m	☐ 3m	☐ 4m
	dB(μ A)	dB(μ A)	dB(μ A)
150 KHz ~ 2.2 MHz	58 to 26	50 to 22	45 to 16
2.2MHz ~ 3 MHz	58	51	45
3 MHz ~ 30 MHz	22	15 to 16	9 to 12

Detector: Peak for pre-scan
Quasi-Peak if maximum peak within 6dB of limit

3.2.2 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.1** Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.3 TEST SPECIFICATION



EUT was placed upon a wooden test table which was placed in the center of the test antenna, and operating in the mode as mentioned above. A receiver is used to detect the actual value of each frequency which need to be checked. All three field directions were measured in sequence.

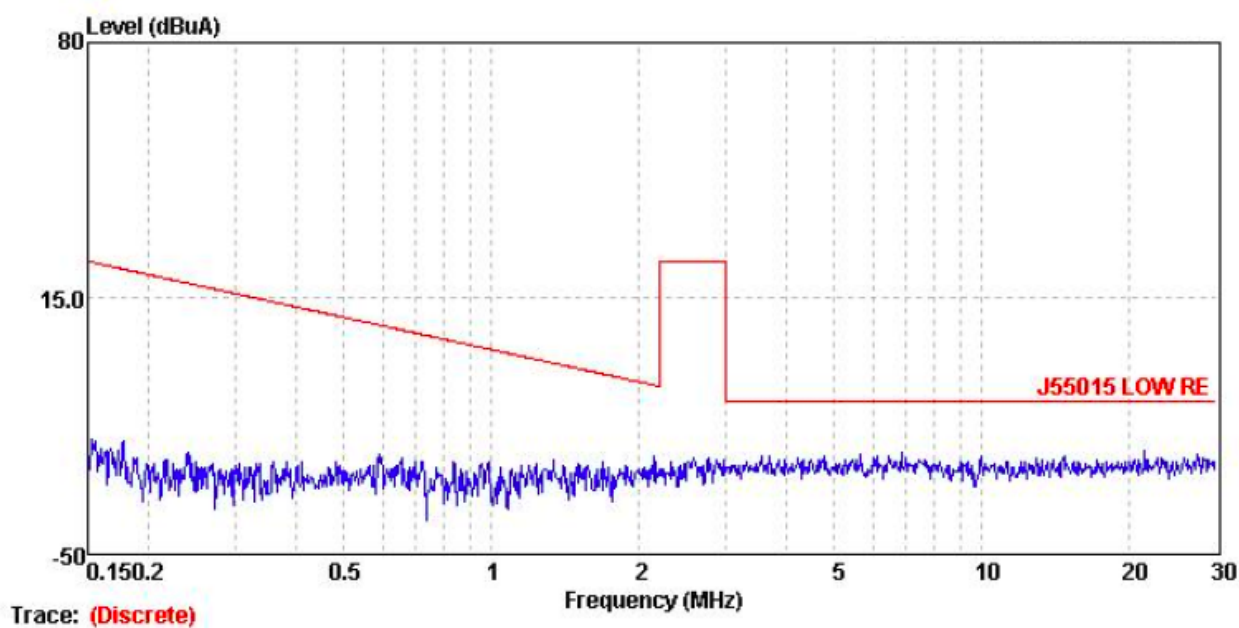
3.2.4 MEASUREMENT DATA

An initial pre-scan was performed using the receiver in peak detection mode. The EUT was measured by 3 antenna position and peak emissions from the EUT were detected within 6dB of the class B limit line.

The following quasi-peak measurements were performed on the EUT.

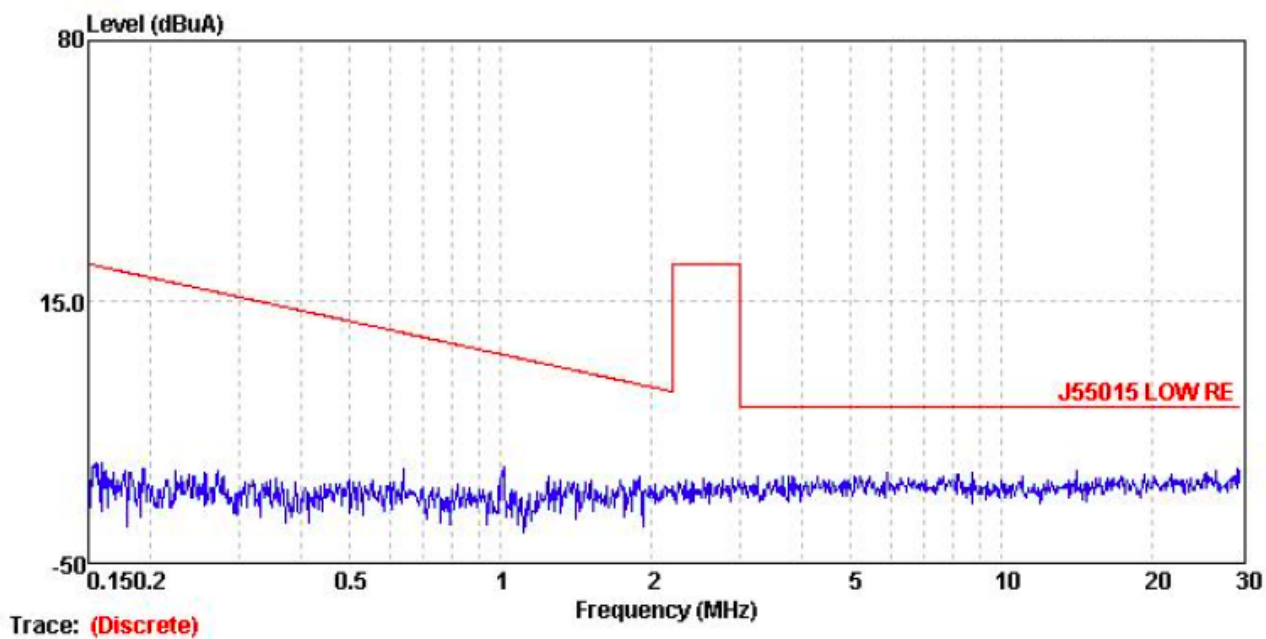
EUT: LED High Bay Light
Manufacturer: YAHAM
Operating Condition: The normal work
Test Site: GTI 3m Chamber
Operator: XU
Test Specification: AC 230V/50Hz
Comment: LOOP X

Data: 12



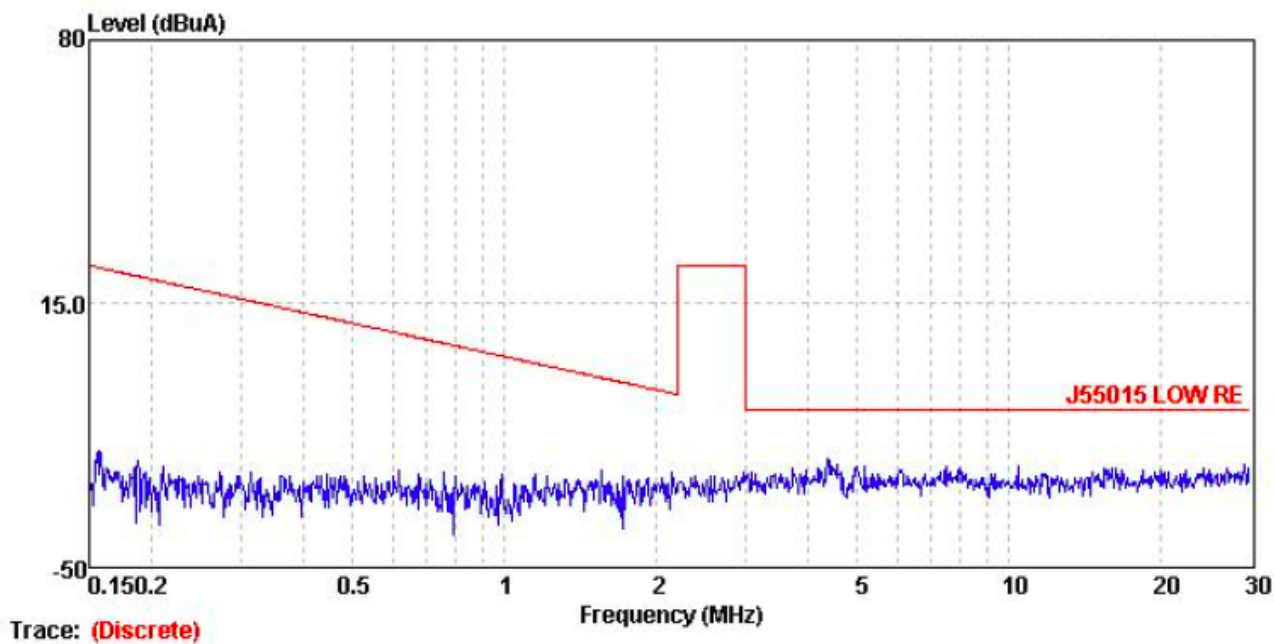
EUT: LED High Bay Light
Manufacturer: YAHAM
Operating Condition: The normal work
Test Site: GTI 3m Chamber
Operator: XU
Test Specification: AC 230V/50Hz
Comment: LOOP Y

Data: 13



EUT: LED High Bay Light
 Manufacturer: YAHAM
 Operating Condition: The normal work
 Test Site: GTI 3m Chamber
 Operator: XU
 Test Specification: AC 230V/50Hz
 Comment: LOOP Z

Data: 14



3.3 DISTURBANCE POWER MEASUREMENT(30MHz to 300MHz)

3.3.1 LIMITS OF DISTURBANCE POWER

Frequency MHz	Limit values Equipment type dB(pW)	
	Quasi	peak Average
30 to 300	45 to 55 note1	35 to 45 note 1

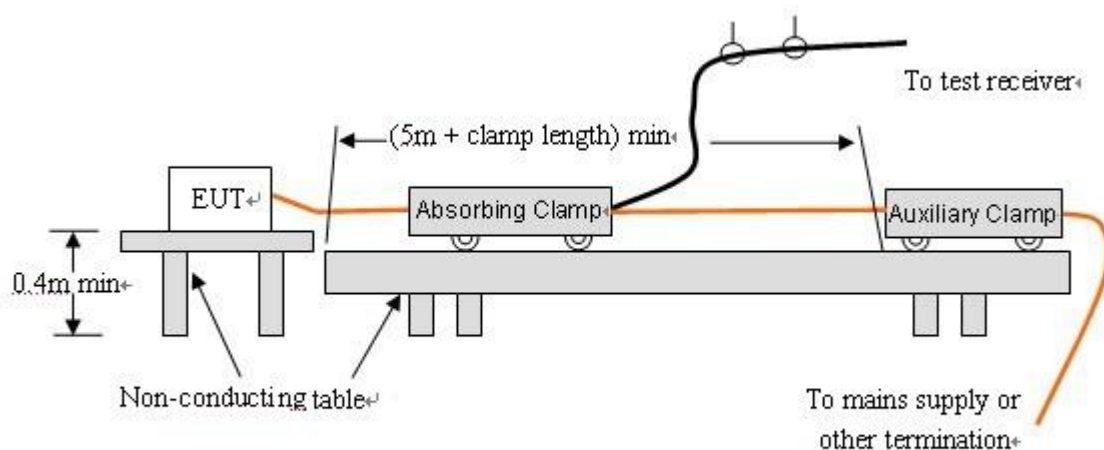
Note1: Increasing linearly with the frequency.

3.3.2 TEST PROCEDURE

- The appliance to be tested is placed on a non-metallic table at least 0,4 m from other metallic objects and the lead to be measured on is stretched in a straight line for a distance sufficient to accommodate the absorbing clamp, and to permit the necessary measuring adjustment of position for tuning. The clamp is placed around the lead so as to measure a quantity proportional to the disturbance power on the lead.
- The absorbing clamp is positioned for maximum indication at each test frequency: the clamp shall be moved along the lead until the maximum value is found between a position adjacent to the appliance and a distance of about a half-wavelength from it.
- The straight portion of the lead to be measured on should therefore be about 6 m long, this being equal to $\lambda_{\max}/2 + 0,6$ m in order to allow at any time the positioning of the absorbing clamp and a possible second clamp for additional isolation.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test setup, please refer to the related Item –EUT Test Photos.

3.3.3 TEST SETUP

Disturbance Power Test Set-UP Frequency Below 1GHz

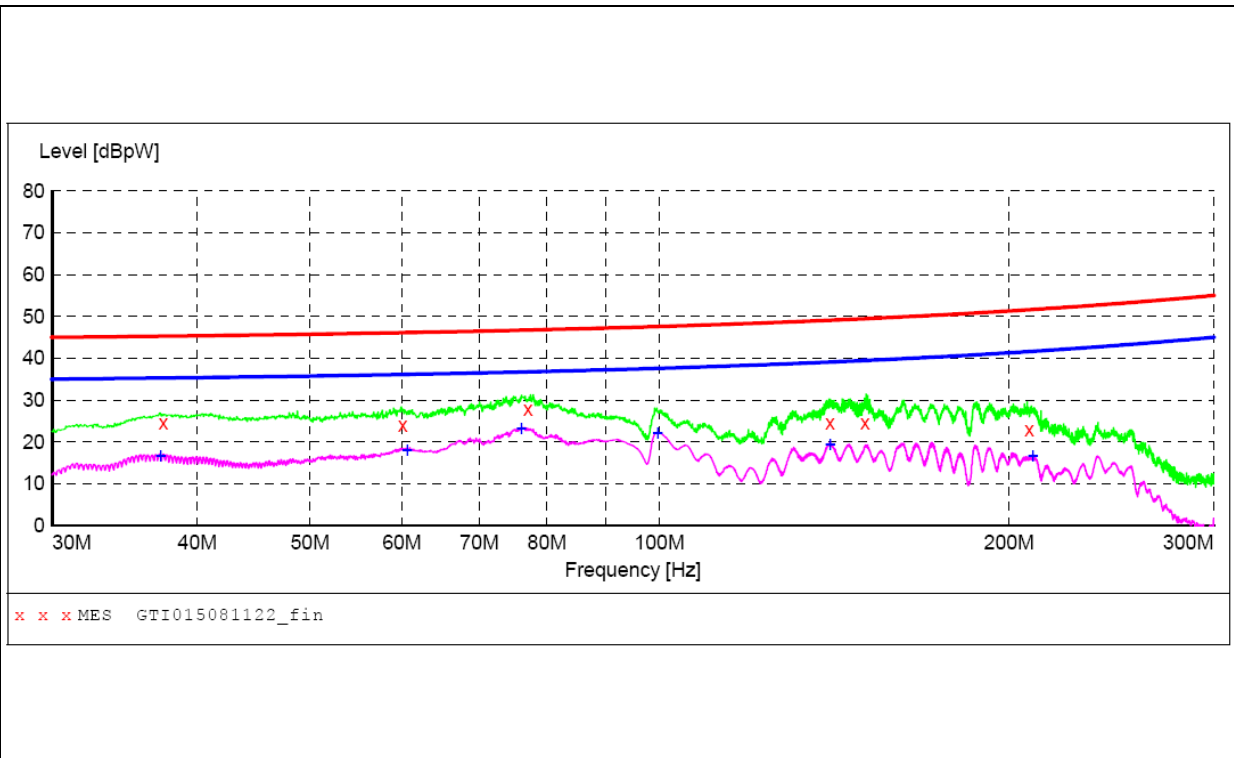


3.3.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

3.3.5 TEST RESULTS (30MHz ~300MHz)

EUT :	LED High Bay Light	Model Name :	YHL-ID-180-HB-VE
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	101 Kpa	Test Date :	2015-08-10
Test Mode :	Full Load	Test Port :	AC Mains
Test Power :	AC 100V/60Hz		

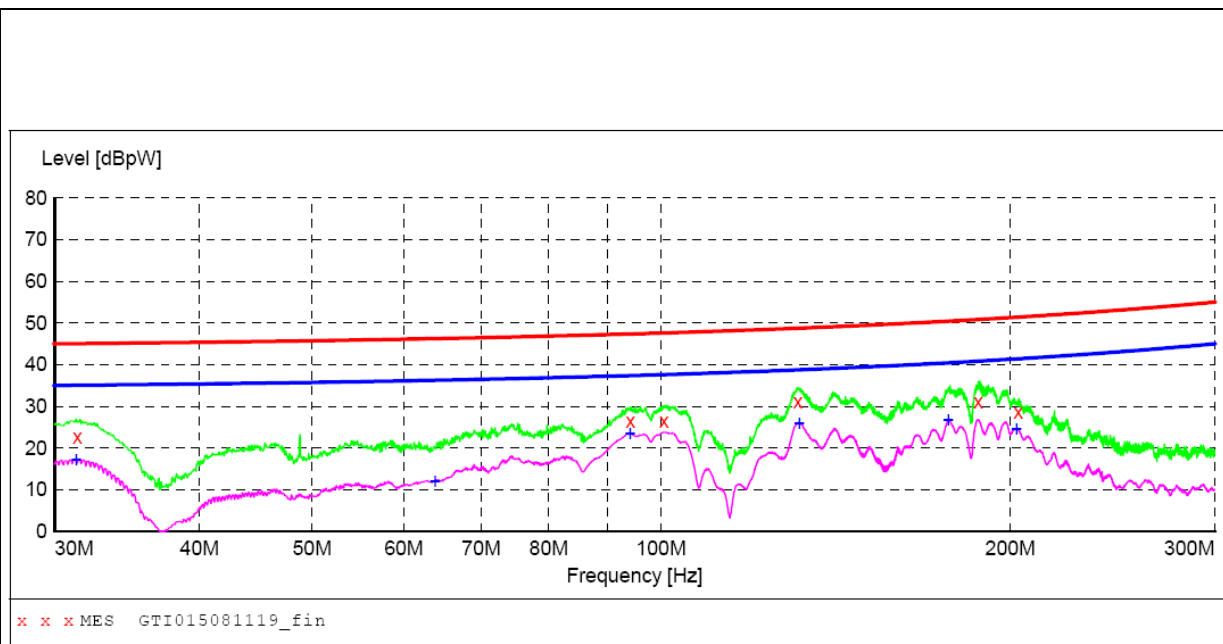


Remark:

1. All readings are Quasi-Peak.
2. Factor = Insertion Loss + Cable Loss.
3. '*' means the worst case

Frequency MHz	Level dBpW	Transd dB	Limit dBpW	Margin dB	Det.
37.380000	24.60	1.9	45	20.7	QP
60.060000	24.10	1.4	46	22.0	QP
76.980000	27.90	-0.3	47	18.8	QP
140.160000	24.70	-0.6	49	24.4	QP
150.240000	24.50	-1.1	50	25.0	QP
208.080000	22.80	-1.9	52	28.8	QP
Frequency MHz	Level dBpW	Transd dB	Limit dBpW	Margin dB	Det.
37.200000	16.50	1.8	35	18.8	AV
60.660000	18.10	1.3	36	18.0	AV
76.080000	23.30	-0.3	37	13.4	AV
99.660000	22.20	0.0	38	15.4	AV
140.280000	19.40	-0.6	39	19.7	AV
209.760000	16.60	-2.1	42	25.1	AV

EUT :	LED High Bay Light	Model Name :	YHL-ID-180-HB-VE
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	101 Kpa	Test Date :	2015-08-10
Test Mode :	Full Load	Test Port :	DC Mains
Test Power :	AC 100V/60Hz		



Remark:

1. All readings are Quasi-Peak.
2. Factor = Insertion Loss + Cable Loss.
3. '*' means the worst case

Frequency MHz	Level dBpW	Transd dB	Limit dBpW	Margin dB	Det.
31.380000	22.50	1.2	45	22.6	QP
94.020000	26.50	-0.1	47	20.9	QP
100.500000	26.40	0.0	48	21.2	QP
131.100000	31.00	1.7	49	17.7	QP
187.560000	31.20	-1.3	51	19.6	QP
203.160000	28.60	-1.5	51	22.8	QP
Frequency MHz	Level dBpW	Transd dB	Limit dBpW	Margin dB	Det.
31.320000	17.10	1.2	35	17.9	AV
63.840000	12.10	1.1	36	24.2	AV
94.020000	23.40	-0.1	37	14.0	AV
131.580000	25.80	1.5	39	13.0	AV
176.880000	26.80	-1.2	40	13.6	AV
202.500000	24.60	-1.4	41	16.8	AV

4. EUT TEST PHOTO

Conducted emission Measurement Photo



Disturbance Power Measurement Photo



4.1 ATTACHMENT PHOTOGRAPHS OF EUT

Photo 1

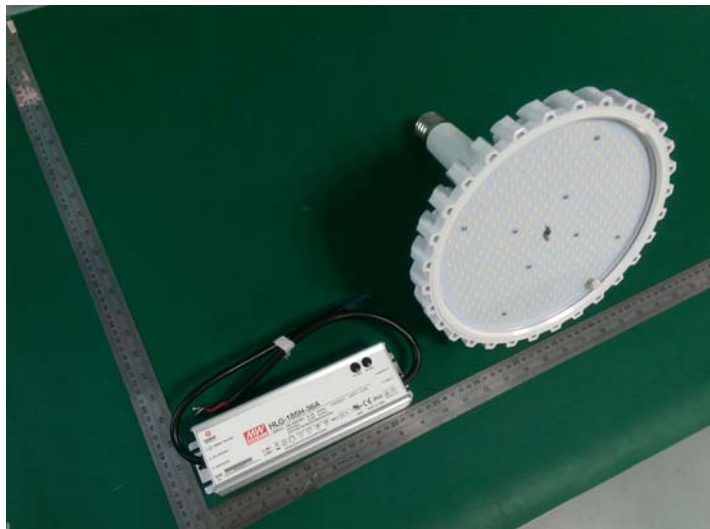


Photo 2



Photo 3

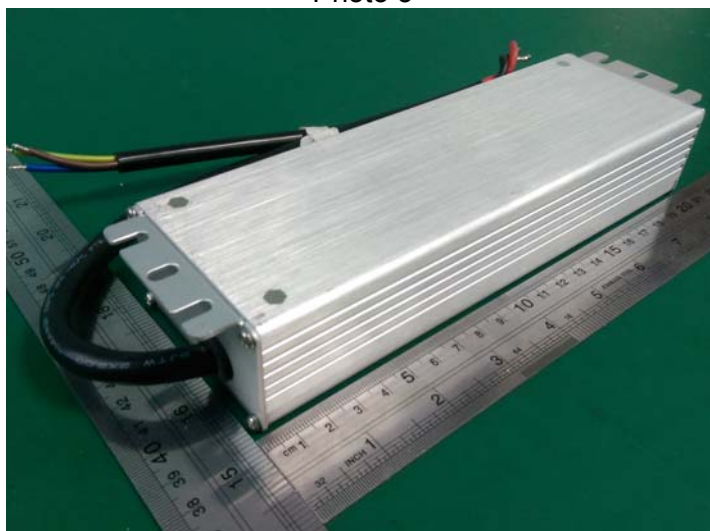


Photo 4



Photo 5



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