Report No.: 150129061GZU-002
Issued: 2015-5-11

TEST REPORT

Applicant Name & Address	:	Central Aquatics(a division of Central Garden and Pet Company) 5401 West Oakwood Park Dr. Franklin, WI 53132 USA
Sample Description		
Product	:	Color Changing Accent Light
FCC ID		2AD8Y-15693
Model No.	:	15691,15692,15693
Electrical Rating	:	AC 120V/60Hz
Date Received	:	29 January 2015
Date Test Conducted	:	29 January 2015 – 28 April 2015
Test standards	:	**FCC Part 15: 2014 Subpart B**
Test Result	:	Pass
Conclusion	:	The submitted samples complied with the above rules/standards.
Remark	:	None.

**********End of Page**********

Prepared and Checked By:

Sky Zhu

Sky Zhu
Engineer
Intertek Guangzhou

Approved By:

Helen Ma ***Signature***

Helen Ma
Team Leader
Intertek Guangzhou
11 May 2015 ***Date***

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Tel / Fax: 86-20-8213 9688/86-20-3205 7538

CONTENT

1 TEST RESULTS SUMMARY

Classification of EUT: Class B

Test Item	Standard	Result
Conducted disturbance voltage at mains ports	**FCC Part 15: 2013, Subpart B**	**Pass**
Radiated emission (30 MHz–1 GHz)	**FCC Part 15: 2013, Subpart B**	**Pass**
Radiated emission (Above 1 GHz)	**FCC Part 15: 2013, Subpart B**	**Pass**
Remark: Reference publication is used for methods of measurement: ANSI C63.4:2009		

Remark: 1. The symbol "N/A" in above table means Not Applicable.
2. When determining the test results, measurement uncertainty of tests has been considered.

2 Test Results Conclusion

(with Justification)

RE: EMC Testing Pursuant to FCC Part 15, Subpart B Performed on the Color Changing Accent Light, Models: 15691, 15692, 15693.

All models are identical except the long of the product.

We tested the Color Changing Accent Light, Model: 15693, to determine if it was in compliance with the relevant FCC rules as marked on the Test Results Summary. We found that the unit met the requirement of FCC Part 15, Subpart B when tested as received. The worst case's test data was presented in this test report.

An un-modulated CW signal at the operating frequency of the EUT is supplied to the EUT for all measurements.

The receiver type of the EUT is super heterodyne.

Conclusion:
The sample as received complied with the FCC Part 15 requirement.

The production units are required to conform to the initial sample as received when the units are placed on the market.

3 LABORATORY MEASUREMENTS

Configuration Information

Equipment Under Test (EUT):	Color Changing Accent Light
Model:	15693
Serial No.	Not Labeled
Support Equipment:	N/A
Rated Voltage:	120V/60Hz
Condition of Environment:	Temperature : 22~28°C Relative Humidity: 35~60% Atmosphere Pressure 86~106kPa

Notes:
1. The EMI measurements had been made in the operating mode producing the largest emission in the frequency band being investigated consistent with normal applications.
An attempt had been made to maximize the emission by varying the configuration of the EUT.

2. Test Sites:
Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
All tests were performed at:
Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD Guangzhou, China
Except Radiated Disturbance was performed at:
Room 101, Block A, No.11 Jing Ye San Street，Yu Shu Industrial Park, Guangzhou Science City, GETDD Guangzhou

4 TEST RESULTS

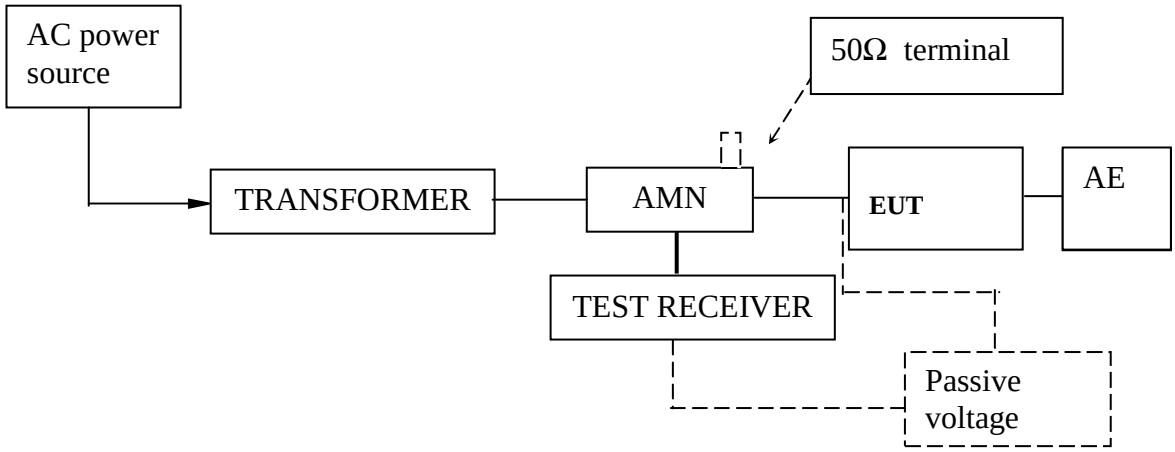
4.1 Conducted Disturbance Voltage at mains ports

Test Result: Pass

4.1.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer	Cal.Date	Due Date
EM004-04	EMC shield Room	8m×3m×3m	Zhongyu	2015-2-10	2016-2-10
EM080-05	EMI receiver	ESCI	R&S	2014-8-4	2015-8-4
EM006-05	LISN	ENV216	R&S	2014-12-12	2015-12-12
EM084-02	SIGNAL Generator	SML02	R&S	2014-6-9	2015-6-9

4.1.2 Block Diagram of Test Setup



4.1.3 Test Setup and Procedure

Test was performed according to ANSI C63.4: 2009. The EUT was set to achieve the maximum emission level. The mains terminal disturbance voltage was measured with the EUT in a shielded room. The EUT was connected to AC power source through an Artificial Mains Network which provides a 50Ω linear impedance Artificial hand is used if appropriate (for handheld apparatus). The load/control terminal disturbance voltage was measured with passive voltage probe if appropriate.

The table-top EUT was placed on a 0.8m high non-metallic table above earthed ground plane(Ground Reference Plane).And for floor standing EUT, was placed on a 0.1m high non-metallic supported on GRP. The EUT keeps a distance of at least 0.8m from any other of the metallic surface. The Artificial Mains Network is situated at a distance of 0.8m from the EUT.

During the test, mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m.

The bandwidth of test receiver was set at 9 kHz. The frequency range from 150 kHz to 30MHz was checked.

4.1.4 Limit

Class B

Frequency range MHz	**AC mains terminals** dB (uV)	
	Quasi-peak	Average
0.15 to 0.5	66 to 56	56 to 46
0.5 to 5	56	46
5 to 30	60	50
Note 1: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz. Note 2: The lower limit is applicable at the transition frequency.		

4.1.5 Test Data

At main terminal: Pass

Test Voltage: AC120 V, 60 Hz

Tested Wire: Live **Operation Mode: Receiving mode**

EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC15QP
Trace2:	FCC15AV
Trace3:	---

TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	202 kHz	56.35	L1	-7.17
2	Average	202 kHz	45.16	L1	-8.36
2	Average	534 kHz	37.11	L1	-8.88
2	Average	334 kHz	39.45	L1	-9.89
2	Average	402 kHz	35.56	L1	-12.24
2	Average	670 kHz	29.62	L1	-16.38
1	Quasi Peak	334 kHz	42.97	L1	-16.38
1	Quasi Peak	270 kHz	44.70	L1	-16.41
1	Quasi Peak	402 kHz	40.74	L1	-17.06
2	Average	270 kHz	33.60	L1	-17.51
2	Average	938 kHz	23.31	L1	-22.68
2	Average	1.878 MHz	5.19	L1	-40.80

Tested Wire: Neutral **Operation Mode: Receiving mode**

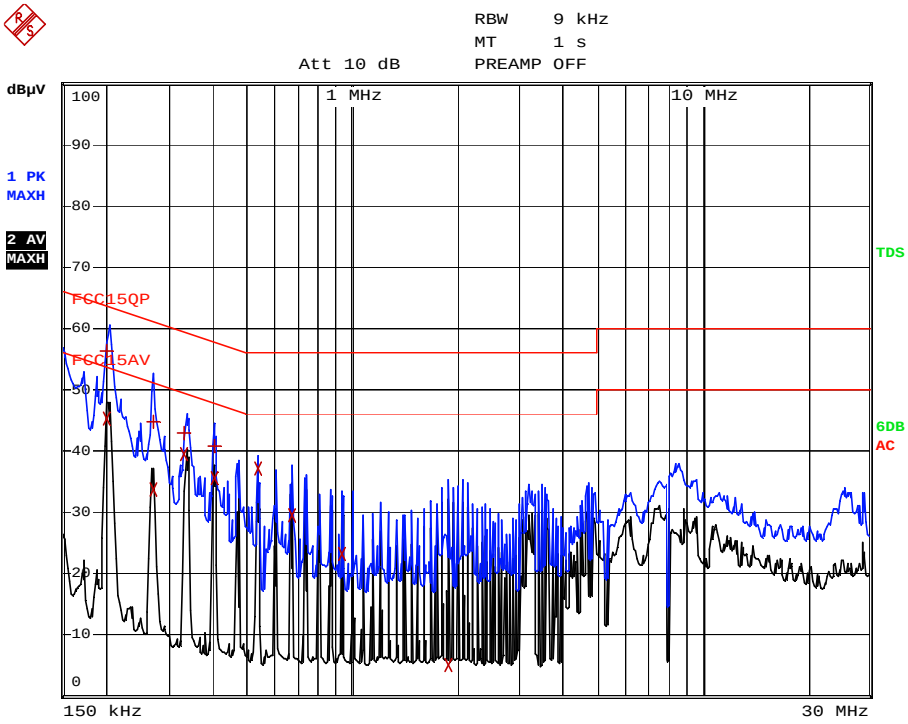
EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC15QP
Trace2:	FCC15AV
Trace3:	---

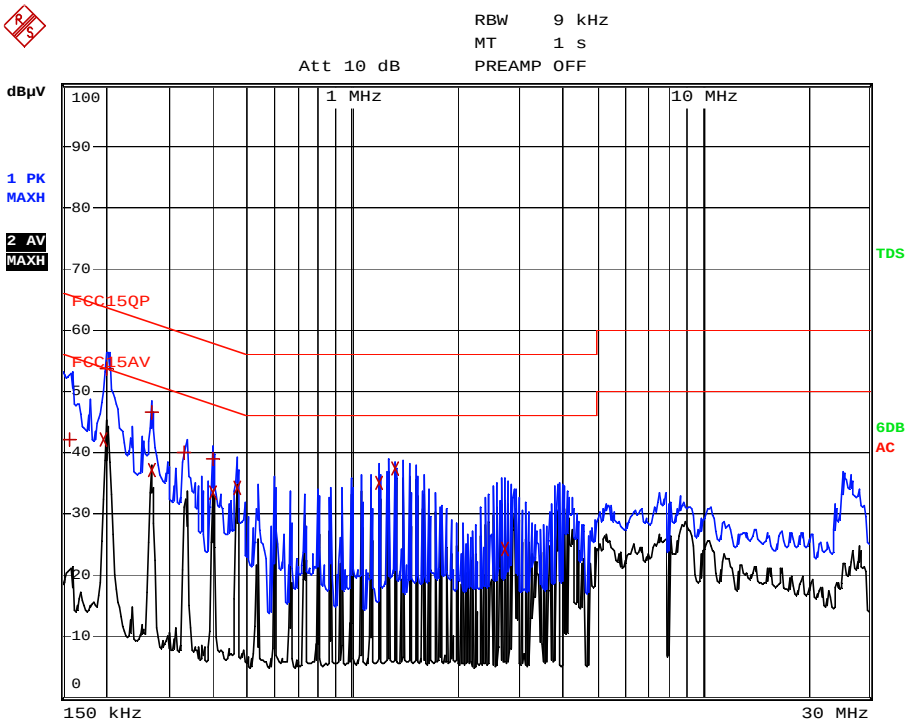
TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
2	Average	1.33 MHz	37.38	L1	-8.61
1	Quasi Peak	202 kHz	53.56	L1	-9.96
2	Average	1.198 MHz	34.90	L1	-11.09
2	Average	198 kHz	42.20	L1	-11.49
2	Average	466 kHz	34.12	L1	-12.45
2	Average	266 kHz	37.02	L1	-14.21
2	Average	398 kHz	33.54	L1	-14.35
1	Quasi Peak	266 kHz	46.50	L1	-14.73
1	Quasi Peak	398 kHz	38.91	L1	-18.98
1	Quasi Peak	334 kHz	39.90	L1	-19.45
2	Average	2.73 MHz	24.30	L1	-21.70
1	Quasi Peak	158 kHz	42.13	L1	-23.43

4.1.6 Emission Curve

Tested Wire: Live



Tested Wire: Neutral



4.1.7 Measurement Uncertainty

Uncertainty: 2.58 dB at a level of confidence of 95%

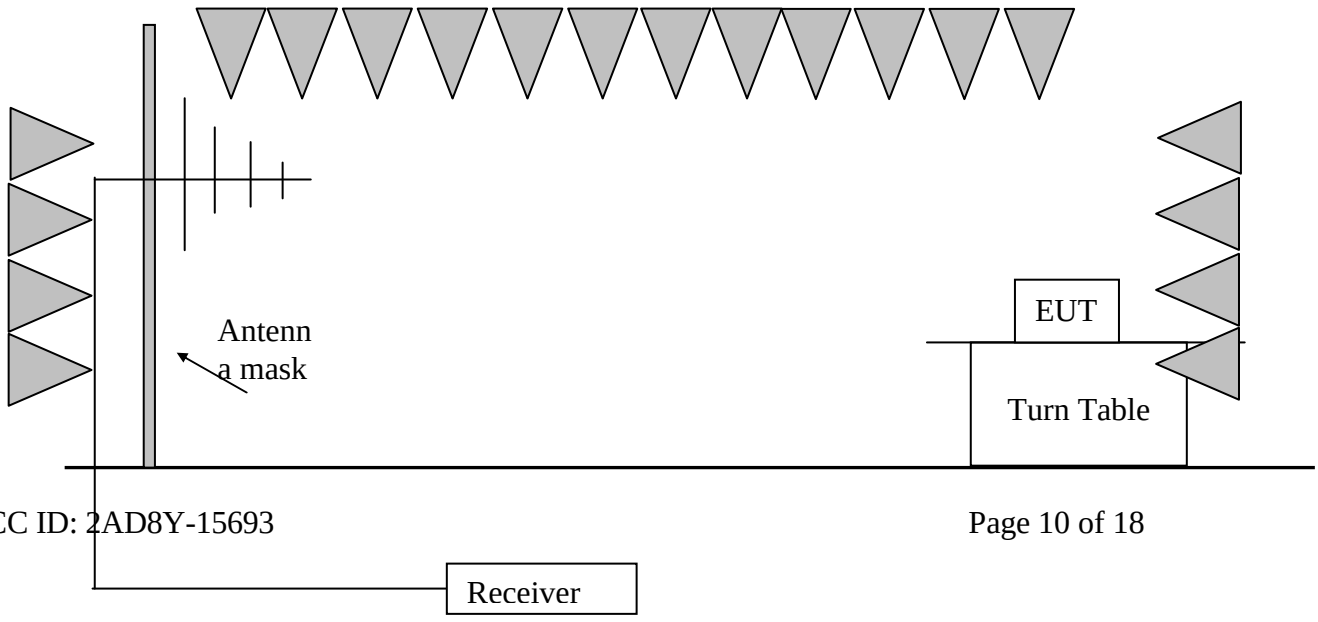
4.2 Radiated Emission (30 MHz -1000 MHz)

Test Result: Pass

4.2.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer	Cal.Date	Due Date
EM030-01	3m Semi-Anechoic Chamber	9×6×6 m3	ETS•LINDGREN	2015-5-3	2016-5-3
EM030-02	Control room for 3m Semi-Anechoic Chamber	4×4×3 m3	ETS•LINDGREN	2015-5-3	2016-5-3
EM031-02	EMI Test Receiver (9 kHz~7 GHz)	R&S ESR7	R&S	2014-6-9	2015-6-9
EM033-01	TRILOG Super Broadband test Antenna（30 MHz-3 GHz）	VULB 9163	SCHWARZBECK	2014-8-30	2015-8-30
EM031-02-01	Coaxial cable	/	R&S	2014-6-9	2015-6-9
EM084-02	SIGNAL Generator	SML02	R&S	2014-6-9	2015-6-9

4.2.2 Block Diagram of Test Setup



4.2.3 Test Setup and Procedure

The measurement was applied in a 3 m semi-anechoic chamber. The EUT and simulators were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turn table rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mask. The antenna moved up and down between from 1meter to 4 meters to find out the maximum emission level.

Broadband antenna was used as receiving antenna. Both horizontal and vertical polarization of the antenna was set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2009 requirement during radiated test. The bandwidth setting on R&S Test Receiver was 120 kHz. The frequency range from 30MHz to 1000MHz was checked

For an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	**Upper Frequency of Radiated Measurement**
Below 1.705 MHz	30MHz
1.705 MHz – 108 MHz	1 GHz
108 MHz – 500 MHz	2 GHz
500 MHz – 1 GHz	5 GHz
Above 1 GHz	5th harmonic of the highest frequency or 40 GHz, whichever is lower.
At transitional frequencies the lower limit applies.	

Remark: Radiated Emission was performed from 30 MHz to 1 GHz.

4.2.4 Limit

Class B limit at 3m test distance:

Frequency range MHz	**Quasi-peak limits** dB (μV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
960 to 1000	54
At transitional frequencies the lower limit applies.	

4.2.5 Test Data

Test Voltage: AC120 V, 60 Hz

Receiver mode

Horizontal

Frequency (MHz)	Read Level (dBuV)	Correction Factor (dB)	Level (dBuV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector Function
58.60	12.20	12.10	24.30	40.00	-15.70	QP
101.00	8.50	13.60	22.10	43.50	-21.40	QP
718.10	16.90	15.40	32.30	46.00	-13.70	QP

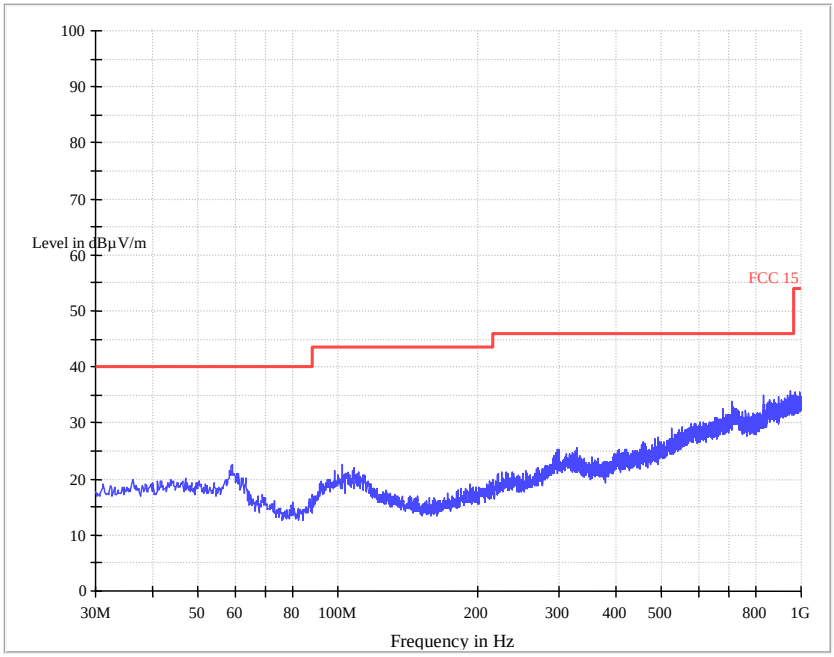
Vertical

Frequency (MHz)	Read Level (dBuV)	Correction Factor (dB)	Level (dBuV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector Function
58.40	14.00	12.10	26.10	40.00	-13.90	QP
96.20	12.40	13.40	25.80	43.50	-17.70	QP
718.10	17.20	15.40	32.60	46.00	-13.40	QP

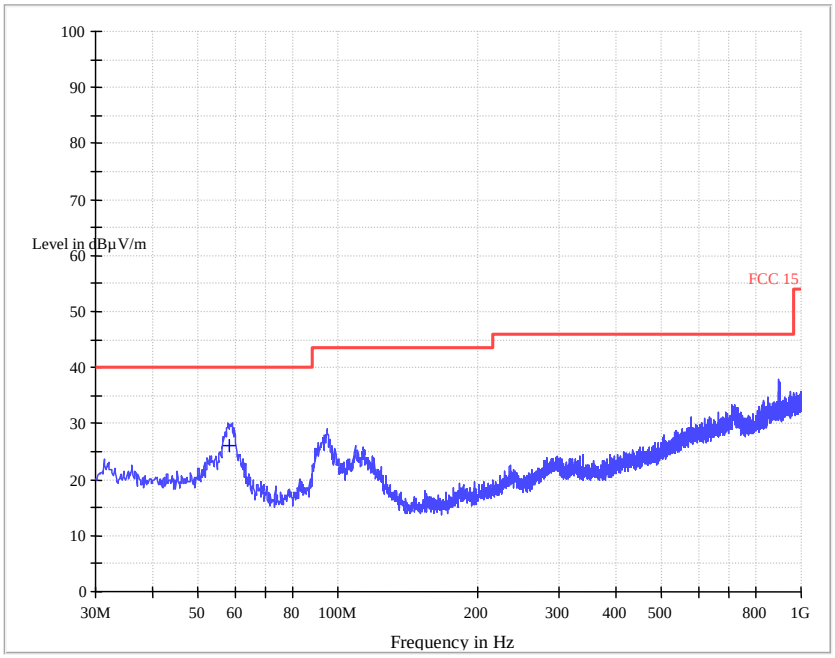
4.2.6 Test Curve

Receiver function:

Horizontal:



Vertical



4.2.7 Measurement uncertainty

Uncertainty: 4.87 dB in the frequency range of 30-1000 MHz at a level of confidence of 95%

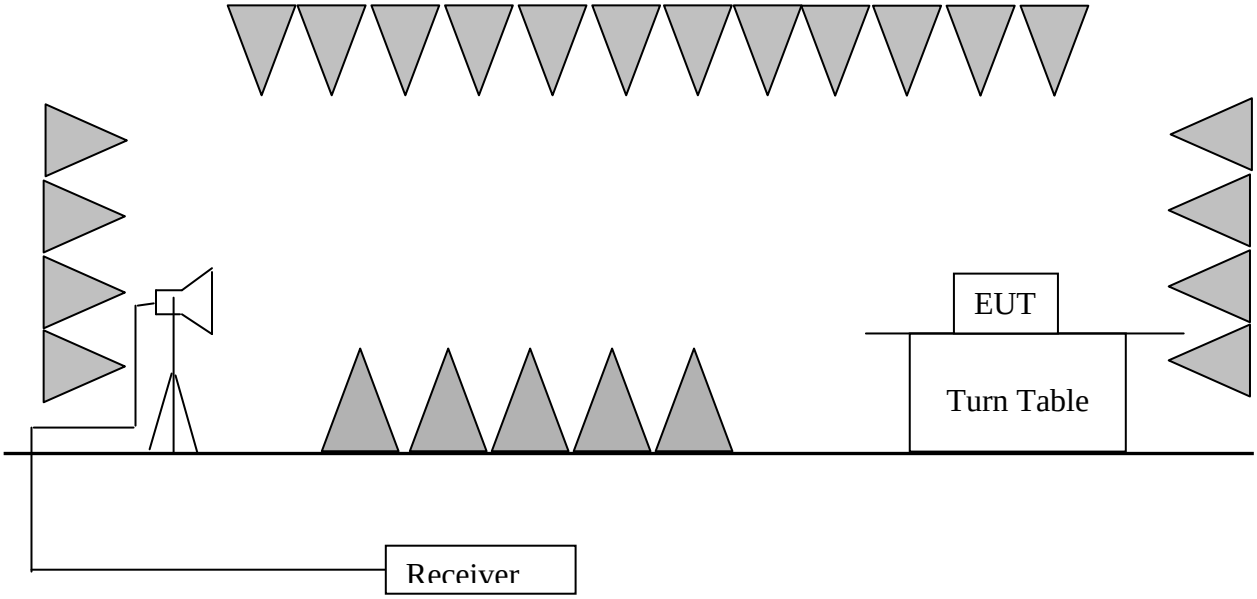
4.3 Radiated Emission above 1 GHz

Test Result: Pass

4.3.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer	Cal.Date	Due Date
EM030-01	3m Semi-Anechoic Chamber	9×6×6 m3	ETS•LINDGREN	2015-5-3	2016-5-3
EM030-02	Control room for 3m Semi-Anechoic Chamber	4×4×3 m3	ETS•LINDGREN	2015-5-3	2016-5-3
EM031-02	EMI Test Receiver (9 kHz~7 GHz)	R&S ESR7	R&S	2014-6-9	2015-6-9
EM033-01	TRILOG Super Broadband test Antenna（30 MHz-3 GHz）	VULB 9163	SCHWARZBECK	2014-8-30	2015-8-30
EM031-03	Signal and Spectrum Analyzer (10 Hz~40 GHz)	R&S FSV40	R&S	2014-6-9	2015-6-9
EM033-02	Bouble-Ridged Waveguide Horn Antenna (800 MHz-18 GHz)	R&S HF907	EM033-02	2014-5-30	2015-5-30
EM031-02-01	Coaxial cable	/	R&S	2014-6-9	2015-6-9
EM084-02	SIGNAL Generator	SML02	R&S	2014-6-9	2015-6-9

4.3.2 Block Diagram of Test Setup



4.3.3 Test Setup and Procedure

The measurement was applied in a semi-anechoic chamber with absorbing material placed on the ground. The EUT were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turntable varied every 30 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna pole. The antenna was set as same as the height of the radiation centre of the EUT.
Horn antenna was used as receiving antenna. Both horizontal and vertical polarization of the antenna was set on measurement. In order to find the maximum emission, all of the interface cables were manipulated during radiated test.

For an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest Frequency Generated or Used in Device	**Upper Frequency of Radiated Measurement**
Below 1.705 MHz	30MHz
1.705 MHz – 108 MHz	1 GHz
108 MHz – 500 MHz	2 GHz
500 MHz – 1 GHz	5 GHz
Above 1 GHz	5th harmonic of the highest frequency or 40 GHz, whichever is lower.
At transitional frequencies the lower limit applies.	

Remark: Radiated Emission was performed from 1 GHz to 2 GHz since the highest frequency generated from the EUT was 433 MHz.

4.3.4 Limit

Class B limit at 3m test distance:

Frequency range MHz	Linear Average Detector dB (μV/m)	Peak Detector dB (μV/m)
> 1000	54	74
At transitional frequencies the lower limit applies.		

4.3.5 Test Data

Receiver mode

Horizontal

Frequency (GHz)	Read Level (dBuV)	Correction Factor (dB)	Level (dBuV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector Function
1.53	47.70	-12.60	35.10	54.00	-18.90	Peak
1.73	45.80	-10.30	35.50	54.00	-18.50	Peak
1.89	43.80	-8.10	35.70	54.00	-18.30	Peak

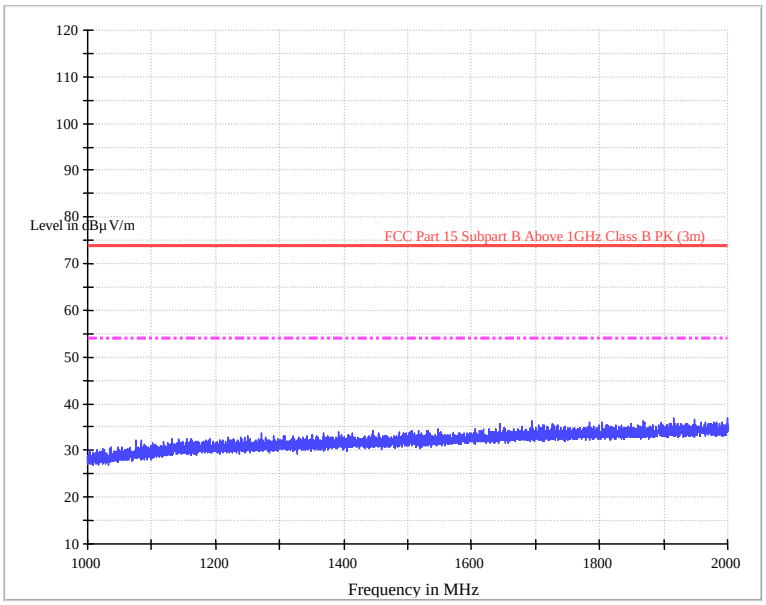
Vertical

Frequency (GHz)	Read Level (dBuV)	Correction Factor (dB)	Level (dBuV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector Function
1.22	45.60	-13.20	32.40	54.00	-21.60	Peak
1.55	45.80	-11.90	33.90	54.00	-20.10	Peak
1.82	44.00	-8.00	36.00	54.00	-18.00	Peak

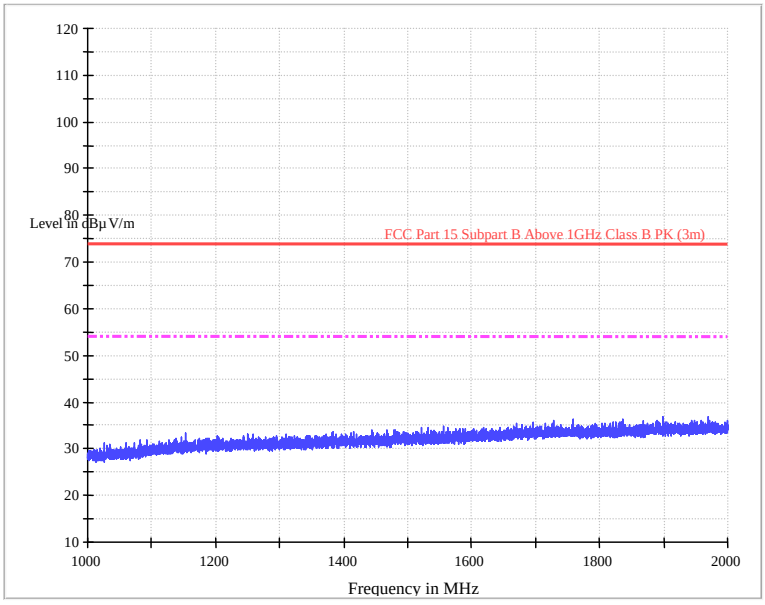
Remark: The measured PK value is below AV limit so the result is pass.

4.3.6 Test Curve

Horizontal



Vertical



4.3.7 Measurement uncertainty

Measurement uncertainty is under consideration according to CISPR 16-4-2:2003.