

# FCC Test Report (DoC)

**Application No.:** 59257 (HKES130600128101)  
**Applicant:** 01 POWER LIMITED  
**Product Information:**  
Product Description: USB Tray Hub  
Model: 4372  
**Requirement:** CFR 47 FCC PART 15 SUBPART B, 2012  
**Date of Receipt:** 2013-06-07  
**Date of Test:** 2013-07-15  
**Date of Issue:** 2013-07-16

<b>Test Result :</b>	<b>PASS*</b>
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\* In the configuration tested, the EUT complied with the standards specified above

Authorized Signature:



**LOKE Sai Kit, Wilson**  
**Senior Manager**



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## 2 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Conducted Emission (150KHz to 30MHz)	FCC PART 15, SUBPART B: 2012	ANSI C63.4:2009	Class B	PASS
Radiated Emission (30MHz to 1GHz)	FCC PART 15, SUBPART B: 2012	ANSI C63.4:2009	Class B	PASS
Radiated Emission above 1 GHz	FCC PART 15, SUBPART B: 2012	ANSI C63.4:2009	Class B	N/A <sup>1)</sup>
<b>Remark :</b> 1) Please refer to section 6.3 of this report for explanation.				

### 3 Contents

	Page
<b>1 COVER PAGE .....</b>	<b>1</b>
<b>2 TEST SUMMARY .....</b>	<b>2</b>
<b>3 CONTENTS .....</b>	<b>3</b>
<b>4 GENERAL INFORMATION.....</b>	<b>4</b>
4.1 CLIENT INFORMATION.....	4
4.2 GENERAL DESCRIPTION OF EUT .....	4
4.3 DETAILS OF EUT .....	4
4.4 DESCRIPTION OF SUPPORT UNITS .....	4
4.5 STANDARDS APPLICABLE FOR TESTING.....	5
4.6 TEST LOCATION .....	5
4.7 TEST FACILITY .....	5
4.8 DEVIATION FROM STANDARDS.....	5
4.9 ABNORMALITIES FROM STANDARD CONDITIONS .....	5
4.10 DECLARATION OF FAMILY GROUPING .....	5
4.11 ABBREVIATIONS .....	5
<b>5 EQUIPMENTS USED DURING TEST.....</b>	<b>6</b>
<b>6 TEST RESULTS.....</b>	<b>7</b>
6.1 CONDUCTED EMISSIONS MAINS TERMINALS, 150KHZ TO 30MHZ.....	7
6.1.1 EUT Operation.....	7
6.1.2 Test Setup and Procedure .....	8
6.1.3 Measurement Data .....	9
6.2 RADIATED EMISSIONS, 30MHZ TO 1GHZ .....	11
6.2.1 EUT Operation.....	11
6.2.2 Test Setup and Procedure .....	12
6.2.3 Measurement Data .....	13
6.3 RADIATED EMISSIONS ABOVE 1 GHZ.....	14
<b>7 PHOTOGRAPHS .....</b>	<b>15</b>
7.1 CONDUCTED EMISSION TEST SETUP .....	15
7.2 RADIATED EMISSION TEST SETUP .....	15
7.3 EUT CONSTRUCTIONAL DETAILS .....	16

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## 4 General Information

### 4.1 Client Information

Applicant: 01 POWER LIMITED  
Address of Applicant: Rm 517, 5/F Kwong Loong Tai Bldg  
1016-1018 Tai Nan West Street, Lai Chi Kok  
Kowloon, Hong Kong

### 4.2 General Description of EUT

EUT Name: USB Tray HUB  
Model: 4372  
Serial No.: --

### 4.3 Details of EUT

Power Supply: DC 5V (USB power)  
Cable: Provided with USB cable  
Function: USB HUB

### 4.4 Description of Support Units

The EUT has been tested with a personal computer system :

Description	Manufacturer	Model No.	Serial No.	Data Cable	Power Cable
Personal Computer	DELL	OPTIPLEX 755	E191 (reference no.)	N/A	1.5m
Monitor	DELL	SP2208WFPt	DT09068168F B	VGA	1.5m
Printer	Hewett Packard	C3990A	JPZT098822	LPT	1.5m
Universal Programmer	Qian LongSheng	QL-2006	201105116086	COM/USB <sup>1)</sup>	1.5m (DC)
Keyboard	Lenovo	KB1021	0000319	USB <sup>2)</sup>	N/A
Ethernet router	Net Screen	NS-5GT-103	006402200400 2202	LAN	1.8m (DC)

Note: For the cable detail please refer to below table.

#### Cables:

#	Type	Length, m	Shield	Metallic hood	Ferrite
1	VGA	1.8	Yes	No	Yes
2	LPT	1.8	Yes	No	No
3	COM	1.5	Yes	No	No
4	USB <sup>1)</sup>	1.5	Yes	No	No
5	USB <sup>2)</sup>	1.8	Yes	No	No

#### 4.5 Standards Applicable for Testing

CFR 47, FCC Part 15, Oct 2012  
ANSI C63.4:2009

#### 4.6 Test Location

All tests were performed at: -

SGS IECC Limited (Member of the SGS Group (SGS SA))

Units 303-305, 3/F., 31 Lok Yip Road, On Lok Tsuen, Fanling, N.T., Hong Kong

Tel: +852 2305 2570 Fax: +852 2756 4480.

No tests were sub-contracted.

#### 4.7 Test Facility

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

- **FCC – CAB Registration No.: 446297**

Measurement facility located at Fanling (Hong Kong), accredited as a Conformity Assessment Body (CAB) and was designated by FCC to perform compliance testing on equipment subject to Declaration Of Conformity (DOC) and Certification under Part 15 and 18 of the Commission's Rules.

#### 4.8 Deviation from Standards

None.

#### 4.9 Abnormalities from Standard Conditions

None.

#### 4.10 Declaration of Family Grouping

None.

#### 4.11 Abbreviations

N/A: Not Applicable

EUT: Equipment Under Test

## 5 Equipments Used during Test

Conducted Emission				
Equipment	Manufacturer	Model / Serial No.	Cal. Date	Cal. Due Date
Test Receiver	Rohde & Schwarz	ESHS 30 / 839667/002	2012-11-19	2013-11-18
Artificial Mains Network (LISN)	Schwarzbeck	NSLK 8127 / 8127312	2013-04-17	2014-04-16
Impulse Limiter	Rohde & Schwarz	ESH-3-Z2 / 375881052	2013-01-21	2015-01-20

Radiated Emission				
Equipment	Manufacturer	Model / Serial No.	Cal. Date	Cal. Due Date
3m Semi-Anechoic Chamber (pre-test)	--	--	--	--
3m / 10m Open Area Test Site	--	--	2012-02-24	2015-02-23
Test Receiver	Rohde & Schwarz	ESCS 30 / 100388	2012-11-19	2013-11-18
Antenna (30-1000 MHz)	Schaffner	GBL6111C / 2791	2012-10-12	2014-10-11
Coaxial Cable	--	E167	2013-06-28	2014-06-27
Antenna Mast System	Schwarzbeck	AM9104 / -	--	--
Turntable with Controller	Drehtisch	DT312 / -	--	--

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## 6 Test Results

### 6.1 Conducted Emissions Mains Terminals, 150kHz to 30MHz

Test Requirement: FCC Part15 B  
 Test Method: ANSI C63.4  
 Test Date: 2013-07-15  
 Power Supply: AC 120V  
 Frequency Range: 150KHz to 30MHz  
 Class / Severity: Class B  
 Detector: Peak for pre-scan (9kHz Resolution Bandwidth)  
 Quasi-Peak if maximised peak within 6dB of Quasi-Peak limit

Limit:

Frequency range MHz	Class B Limits dB (µV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 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 0.50 MHz.
- 2) The lower limit is applicable at the transition frequency.

#### 6.1.1 EUT Operation

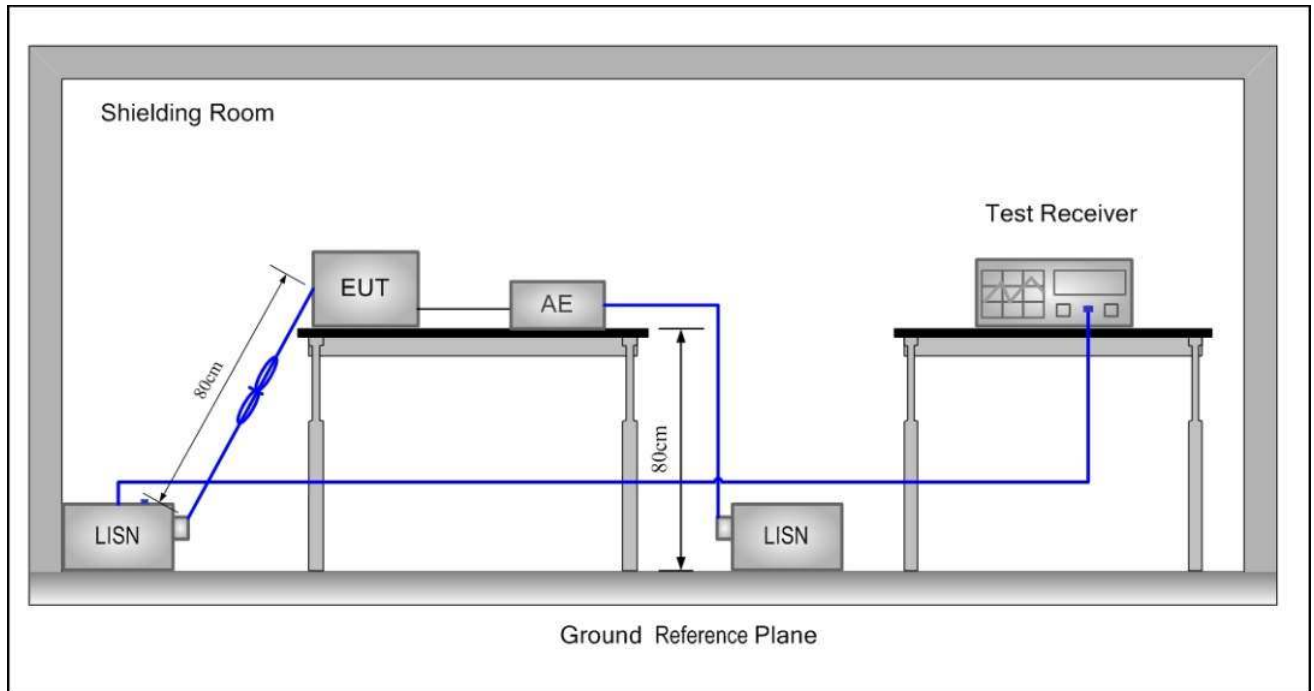
Operating Environment:

Temperature: 22 °C Humidity: 53% RH

EUT Operation: Pre-test with Peak detector with the following mode(s):  
1: Data transfer mode

Final test with Quasi-Peak and Avearge detector with the following mode(s):  
1: Data transfer mode

### 6.1.2 Test Setup and Procedure



1. The mains terminal conducted emission test was conducted in a shielded room.
2. The EUT was connected via the host computer to AC power source through a LISN (Line Impedance Stabilization Network) which provides a  $50\Omega/50\mu\text{H} + 5\Omega$  linear impedance. For Load terminal voltage measurement, a voltage probe was used on the load terminals. Measurement at control terminals were carried out by means of an impedance stabilization network (ISN). The ISN was bounded to ground.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. The EUT kept a distance of at least 0.8m from any other earthed conducting surface. The Artificial Mains Network was situated at a distance of 0.8m from the EUT. The 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.



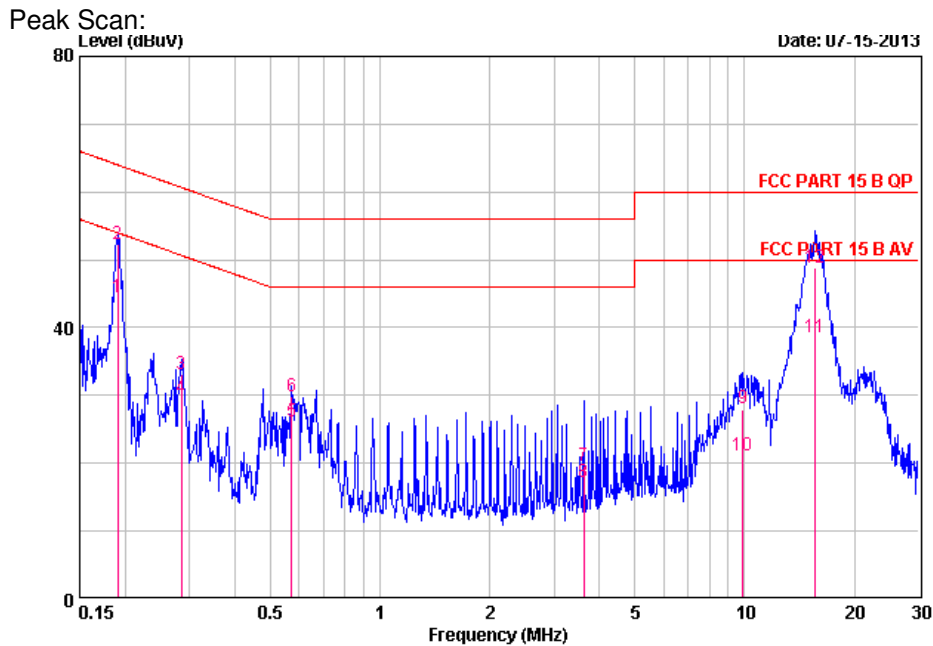
### 6.1.3 Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

The following measurements were performed on **Test the EUT under data transfer operation.:**

#### Live line :



Quasi-peak and Average measurement:

Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.1904	44.81	0.10	-0.48	44.43	64.02	-19.59	AVERAGE
0.1904	52.80	0.10	-0.48	52.42	64.02	-11.60	QP
0.2848	33.57	0.10	-0.47	33.20	60.68	-27.48	QP
0.2848	30.00	0.10	-0.47	29.63	60.68	-31.05	AVERAGE
0.5731	26.43	0.10	-0.48	26.05	56.00	-29.95	AVERAGE
0.5731	30.25	0.10	-0.48	29.87	56.00	-26.13	QP
3.6225	20.22	0.10	-0.60	19.72	56.00	-36.28	QP
3.6225	17.63	0.10	-0.60	17.13	56.00	-38.87	AVERAGE
9.9130	28.67	0.10	-0.57	28.20	60.00	-31.80	QP
9.9130	21.58	0.10	-0.57	21.11	60.00	-38.89	AVERAGE
15.5523	38.97	0.20	-0.58	38.59	60.00	-21.41	AVERAGE
15.5523	49.12	0.20	-0.58	48.74	60.00	-11.26	QP

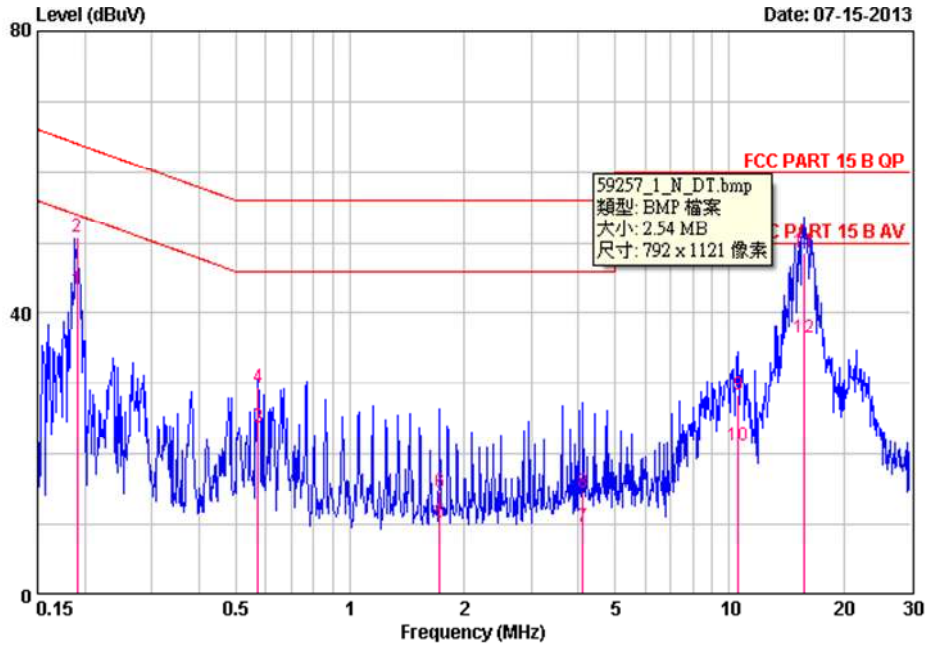
**Level = Read Level + LISN Factor + Cable Loss.**

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**Neutral line :**

Peak Scan:



Quasi-peak and Average measurement:

Freq MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.1904	43.60	0.10	-0.35	43.35	64.02	-20.67	AVERAGE
0.1904	51.08	0.10	-0.35	50.83	64.02	-13.19	QP
0.5731	24.01	0.10	-0.27	23.84	56.00	-32.16	AVERAGE
0.5731	29.58	0.10	-0.27	29.41	56.00	-26.59	QP
1.7253	10.44	0.10	-0.35	10.19	56.00	-45.81	AVERAGE
1.7253	14.84	0.10	-0.35	14.59	56.00	-41.41	QP
4.1137	9.89	0.10	-0.42	9.57	56.00	-46.43	AVERAGE
4.1137	14.94	0.10	-0.42	14.62	56.00	-41.38	QP
10.5638	28.74	0.11	-0.54	28.31	60.00	-31.69	QP
10.5638	21.55	0.11	-0.54	21.12	60.00	-38.88	AVERAGE
15.7179	48.94	0.20	-0.63	48.51	60.00	-11.49	QP
15.7179	36.83	0.20	-0.63	36.40	60.00	-23.60	AVERAGE

**Level = Read Level + LISN Factor + Cable Loss.**

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## 6.2 Radiated Emissions, 30MHz to 1GHz

Test Requirement: FCC Part15 B  
 Test Method: ANSI C63.4  
 Power Supply: USB DC 5V  
 Test Date: 2013-07-15  
 Frequency Range: 30MHz to 1GHz  
 Measurement Distance: 3m  
 Detector: Peak for pre-scan (120kHz resolution bandwidth)  
 Quasi-Peak if maximised peak within 6dB of limit  
 Class: Class B

Frequency range MHz	Quasi-peak limits dB (µV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960	54

Note: At transitional frequencies the lower limit applies.

### 6.2.1 EUT Operation

Operating Environment:

Temperature: 26 °C Humidity: 56% RH

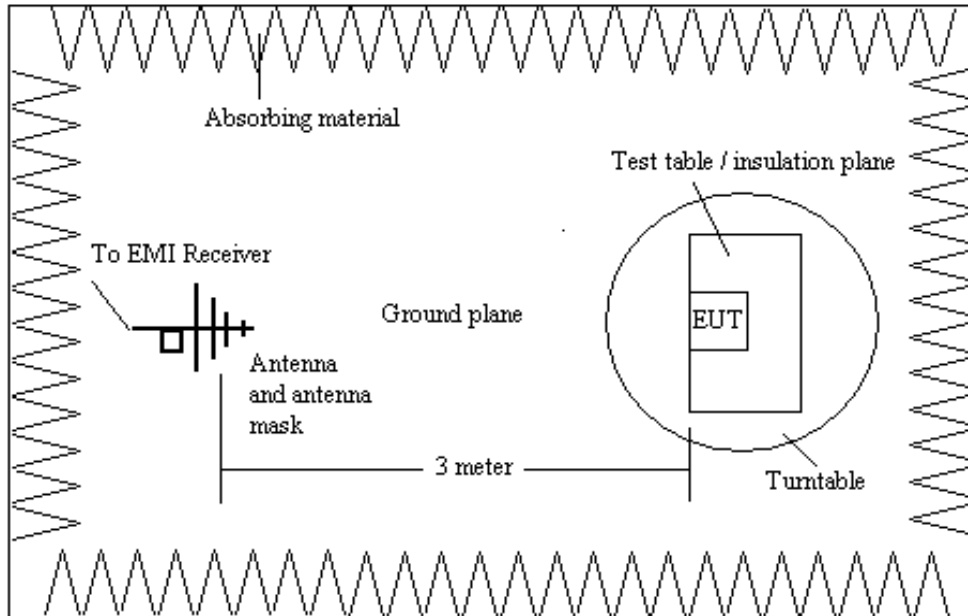
EUT Operation: Pre-test with Peak detector with the following mode(s):

- 1: Operate the EUT under data transfer operation.

Final test with Quasi-Peak detector with the following mode(s):

- 1: Operate the EUT under data transfer operation.

## 6.2.2 Test Setup and Procedure



1. The pre-test of the radiated emissions test was conducted in a semi-anechoic chamber and the final measurement was conducted in the open area test site.
2. Bilog antenna was used for the frequency range from 30MHz to 1GHz
3. The EUT was connected to the host PC which was connected to AC power source through a mains power outlet which was bonded to the ground reference plane; The mains cables shall drape to the ground reference plane. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT with located frequencies.
5. The actual frequencies of maximum emission were confirmed in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.

### 6.2.3 Measurement Data

An initial pre-scan was performed in the 3m chamber using the spectrum analyser in peak detection mode. The EUT was measured by Bilog antenna with 2 orthogonal polarities and frequencies of peak emissions from the EUT were detected within 6dB of the class B limit line. Final measurement was conducted in the open area test site with data as follows:

**Test results on data transfer mode :**

Frequency (MHz)	Antenna Polarization	Trans. (dB/m)	Receiver QP Reading (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)
40.750	V	15.1	21.9	37.0	40.0	-3.0
63.875	H	9.7	28.2	37.9	40.0	-2.1
120.012	H	11.5	29.8	41.3	43.5	-2.2
144.013	H	11.6	29.9	41.5	43.5	-2.0
180.016	H	9.5	30.7	40.2	43.5	-3.3
240.022	H	11.5	24.2	35.7	46.0	-10.3

**Note:**

- 1) All readings are Quasi-Peak values.
- 2) Transducer = Antenna Factor + Cable Loss.

### 6.3 Radiated Emissions above 1 GHz

Test Requirement: FCC Part15 B  
Test Method: ANSI C63.4  
Test Date: Not Applicable

**Remark:**

**There is no need for Radiated Emissions (above 1G) test to be performed on this product in accordance with FCC Part 15 because the highest internal source is less than 108 MHz.**

**For further details, please refer to Subject B section 15.33 (b) (1)of FCC Part 15 which states:**

**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 measurement Range (MHz)
Below 1.705	30
1.705 to 108	1000
108 to 500	2000
500 to 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

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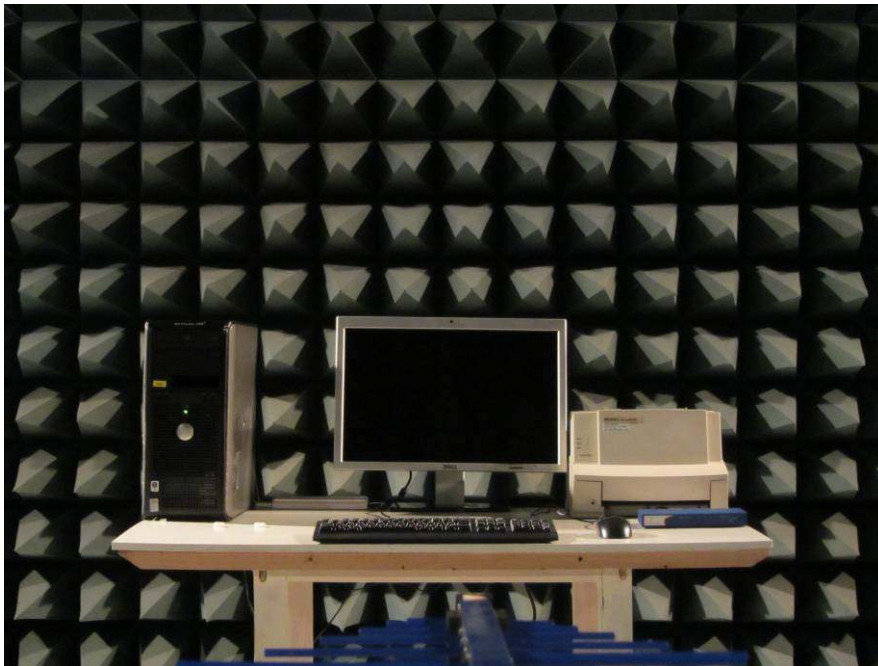


## 7 Photographs

### 7.1 Conducted Emission Test Setup



### 7.2 Radiated Emission Test Setup



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### 7.3 EUT Constructional Details



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