

EMC TEST REPORT

For

Lamp Speaker

Model Number: DUO

FCC ID: UUWDUO

Report Number : WT068002500

| | | |
|-----------------|---|--|
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TEST REPORT DECLARATION

Applicant : Original Acoustics Inc.
 Address : LiHeng Industry District, QingXi Town, Dongguan, Guangdong, China
 Manufacturer : Original Acoustics Inc.
 Address : LiHeng Industry District, QingXi Town, Dongguan, Guangdong, China
 EUT Description : Lamp Speaker
 Model Number DUO
FCC ID Number UUWDUO

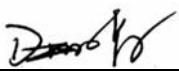
Test Standards:

FCC Part 15 15.249 :2005

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the maximum emissions from the EUT. Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.249.

The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

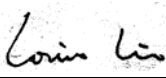
Tested by:


 (Dewelly Yang)

Date:

2006.12.14

Checked by:


 (Louis Lin)

Date:

2006.12.14

Approved by:


 (Peter Lin)

Date:

2006.12.14

1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

| Test Items | FCC Rules | Test Results |
|-----------------------|-----------|--------------|
| Conducted Disturbance | 15.207 | Pass |
| Radiated disturbance | 15.249 | Pass |
| Band Edges | 15.249 | Pass |
| Antenna Requirement | 15.203 | Pass |

2. GENERAL INFORMATION

2.1. Report information

- 2.1.1. This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.
- 2.1.2. The sample/s mentioned in this report is/are supplied by Applicant, SMQ therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.
- 2.1.3. Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through SMQ, unless the applicant has authorized SMQ in writing to do so.

2.2. Laboratory Accreditation and Relationship to Customer

The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at Bldg. of Metrology & Quality Inspection, Longzhu Road, Nanshan District, Shenzhen, Guangdong, China. At the time of testing, Laboratory is accredited by the following organizations:

China National Accreditation Committee for Laboratories (**CNAL**) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is L0579.

The Laboratory is listed in the United States of American Federal Communications Commission (**FCC**), and the registration number are **97379**(open area test site) and **274801**(semi anechoic chamber).

The Laboratory is listed in Voluntary Control Council for Interference by Information Technology Equipment (**VCCI**), and the registration number are **R-1974**(open area test site) , **R-1966**(semi anechoic chamber), **C-2117**(mains ports conducted interference measurement) and **T-180**(telecommunication ports conducted interference measurement).

The Laboratory is registered to perform emission tests with Industry Canada (**IC**), and the registration number is **IC4174**.

TUV Rhineland accredits the Laboratory for conformance to IEC and EN standards, the registration number is **E2024086Z02**.

Measurement Uncertainty

2.3. Measurement Uncertainty

Conducted Disturbance : 9kHz~30MHz 3.5dB

Radiated Disturbance: 30MHz~1000MHz 4.5dB
1GHz~18GHz 4.6dB

3. PRODUCT DESCRIPTION

3.1. EUT Description

| | | |
|---------------------|---|--|
| Description | : | Lamp Speaker |
| Manufacturer | : | Original Acoustics Inc. |
| Model Number | : | DUO |
| | | Adapter: M/N: AD1605C |
| Input Power | : | Input: 100-240VAC 0.3A 47-63Hz Output: DC5.0V 500mA |
| Operate Frequency | : | 2412-2467MHz |
| Modulation | | DSSS |
| Antenna Designation | : | fixed |

3.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: UUWDUO filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules.

3.3. Block Diagram of EUT Configuration



3.4. Operating Condition of EUT

Mode 1:ch1 (2412MHz)
Mode2: ch3 (2452MHz)
Mode3:ch4 (2467MHz)

The Transmitter was operated in the normal operating mode(input music max=0.5V).

3.5. Special Accessories

Not available for this EUT intended for grant.

3.6. Equipment Modifications

Not available for this EUT intended for grant.

3.7. Support Equipment List

Table 2 Support Equipment List

| Name | Model No | S/N | Manufacturer | Used “ √ ” |
|---------|----------|------|--------------|---------------|
| speaker | DPL923VD | ---- | thomson | ✓ |

3.8. Test Conditions

Date of test: Dec.12-13,2006

Date of EUT Receive: Dec.12,2006

Temperature: 22-24 °C

Relative Humidity: 50-53%

4. TEST EQUIPMENT USED

Table 3 Test Equipment

| No. | Equipment | Manufacturer | Model No. | Last Cal. | Cal. Interval |
|-----------|--------------------------|--------------------|-----------|--------------|---------------|
| SB2603 | EMI Test Receiver | Rohde & Schwarz | ESCS30 | Jan.26, 2006 | 1 Year |
| SB3321 | AMN | Rohde & Schwarz | ESH2-Z5 | Jan.26, 2006 | 1 Year |
| SB2604 | AMN | Rohde & Schwarz | ESH3-Z5 | Jan.26, 2006 | 1 Year |
| SB3612 | Audio generator | KENWOOD | AD-203D | Jun.21, 2005 | 1 Year |
| SB3436 | EMI Test Receiver | Rohde & Schwarz | ESI26 | Jan.26, 2006 | 1 Year |
| SB3440 | Bilog Antenna | Chase | CBL6112B | Jan.26, 2006 | 1 Year |
| SB3435 | Horn Antenna | Rohde & Schwarz | HF906 | Jan.26, 2006 | 1 Year |
| SB3435/01 | Amplifier(1-18 GHz) | Rohde & Schwarz | --- | Jan.26, 2006 | 1 Year |
| SB3435/02 | Amplifier(18-40 GHz) | Rohde & Schwarz | --- | May.06, 2006 | 1 Year |
| SB3435/03 | Horn Antenna | Rohde & Schwarz | AT4560 | May.06, 2006 | 1 Year |
| SB3612 | Audio generator | KENWOOD | AD-203D | Jun.21, 2005 | 1 Year |
| SB3450/01 | 3m Semi-anechoic chamber | Albatross Projects | 9X6X6 | Jan 26,2006 | 1 Year |

5. CONDUCTED DISTURBANCE TEST

5.1. Test Standard and Limit

5.1.1. Test Standard

FCC Part 15 15.207 :2005

5.1.2. Test Limit

Table 4 Conducted Disturbance Test Limit (Class B)

| Frequency | Maximum RF Line Voltage (dB μ V) | |
|---------------|--------------------------------------|---------------|
| | Quasi-peak Level | Average Level |
| 150kHz~500kHz | 66 ~ 56 * | 56 ~ 46 * |
| 500kHz~5MHz | 56 | 46 |
| 5MHz~30MHz | 60 | 50 |

③ Decreasing linearly with logarithm of the frequency

③ The lower limit shall apply at the transition frequency.

5.2. Test Procedure

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver (R&S Test Receiver ESCS30) is used to test the emissions form both sides of AC line. According to the requirements in Section 7 and 13 of ANSI C63.4-2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

The bandwidth of EMI test receiver is set at 9kHz.

5.3. Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

5.4. Test Data

The emissions don't show in below are too low against the limits. Refer to the test curves .
Working mode: Ch1 (the worst case)

Table 5 Conducted Disturbance Test Data

Model: DUO

Mode: 1

| Line | | | | | | | |
|--------------------|------------------------------|-------------------------|-----------------------------------|------------------------|-------------------------|-----------------------------------|------------------------|
| Frequency (MHz) | Correction Factor (dB) | Quasi-Peak | | | Average | | |
| | | Reading (dB μ V) | Emission Level (dB μ V) | Limits (dB μ V) | Reading (dB μ V) | Emission Level (dB μ V) | Limits (dB μ V) |
| 0.333 | 10.1 | 40.0 | 50.1 | 59.3 | 22.2 | 32.3 | 49.3 |
| 0.415 | 10.2 | 37.3 | 47.5 | 57.5 | 18.3 | 28.5 | 47.5 |
| 0.571 | 10.1 | 38.8 | 48.9 | 56 | 19.8 | 29.9 | 46 |
| 0.618 | 10.1 | 38.3 | 48.4 | 56 | 18.7 | 28.8 | 46 |
| 0.810 | 10.1 | 36.9 | 47.0 | 56 | 16.9 | 27.0 | 46 |
| 1.120 | 10.2 | 36.3 | 46.5 | 56 | 16.9 | 27.1 | 46 |

REMARKS: 1. Emission level(dBuV)=Read Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB) =LISN Factor (dB) + Cable Factor (dB)+Limiter Factor(dB)
 3. The other emission levels were very low against the limit.

Table 6 Conducted Disturbance Test Data

Model: Bluecheck

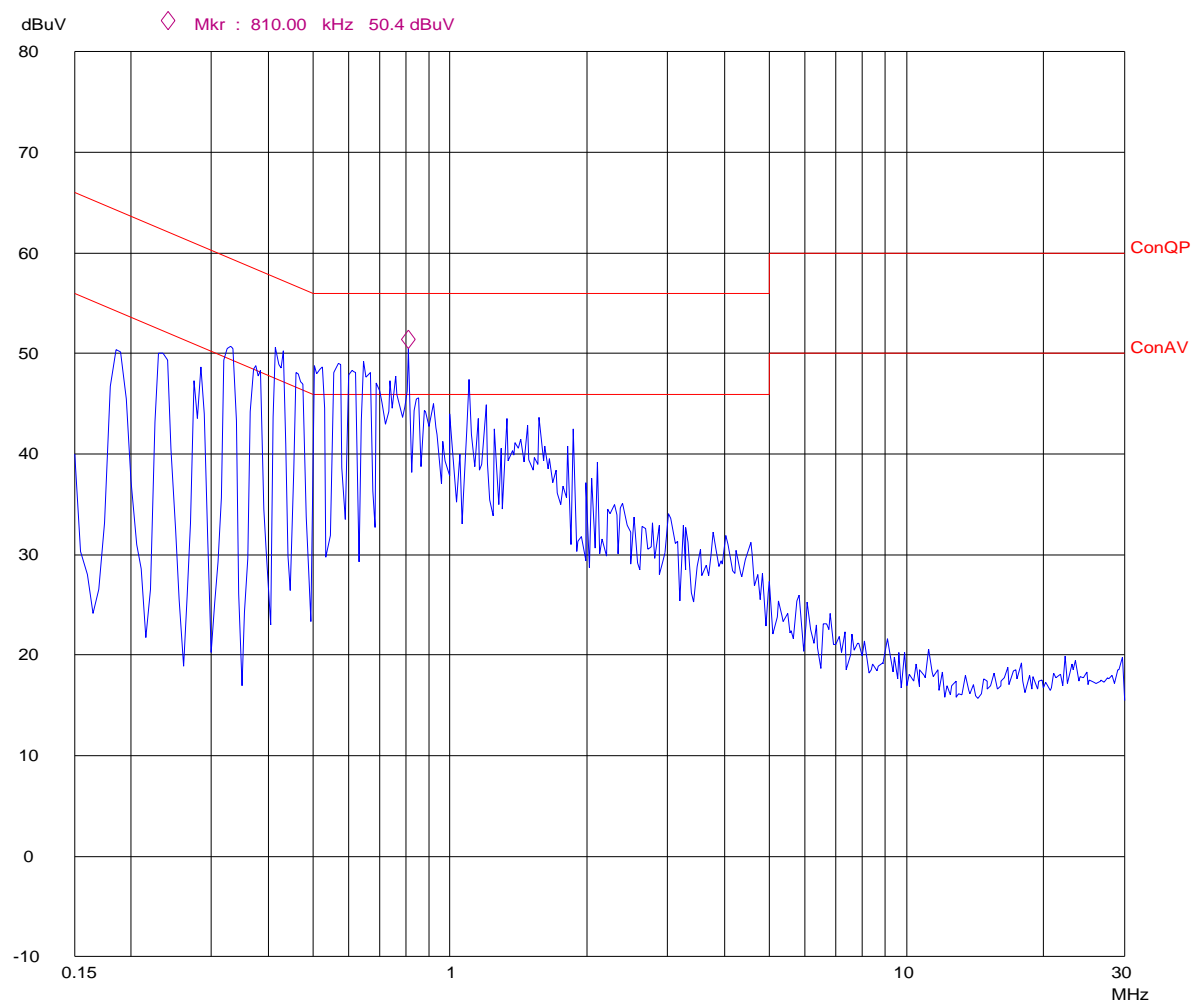
Mode: 4

| Neutral | | | | | | | |
|--------------------|------------------------------|-------------------|-----------------------------|------------------|-------------------|-----------------------------|------------------|
| Frequency (MHz) | Correction Factor (dB) | Quasi-Peak | | | Average | | |
| | | Reading (dBμV) | Emission Level (dBμV) | Limits (dBμV) | Reading (dBμV) | Emission Level (dBμV) | Limits (dBμV) |
| 0.162 | 10.2 | 40.8 | 51.0 | 65.3 | 10.7 | 20.9 | 55.3 |
| 0.373 | 10.1 | 41.5 | 51.6 | 58.4 | 29.4 | 39.5 | 48.4 |
| 0.562 | 10.1 | 40.9 | 51.0 | 56 | 28.2 | 38.3 | 46 |
| 0.700 | 10.1 | 39.5 | 49.6 | 56 | 24.4 | 34.5 | 46 |
| 0.936 | 10.1 | 36.4 | 46.5 | 56 | 21.1 | 31.2 | 46 |
| 1.350 | 10.2 | 35.8 | 46.0 | 56 | 19.9 | 30.1 | 46 |

REMARKS: 1. Emission level(dBuV)=Read Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB) =LISN Factor (dB) + Cable Factor (dB)+Limiter Factor(dB)
 3. The other emission levels were very low against the limit.

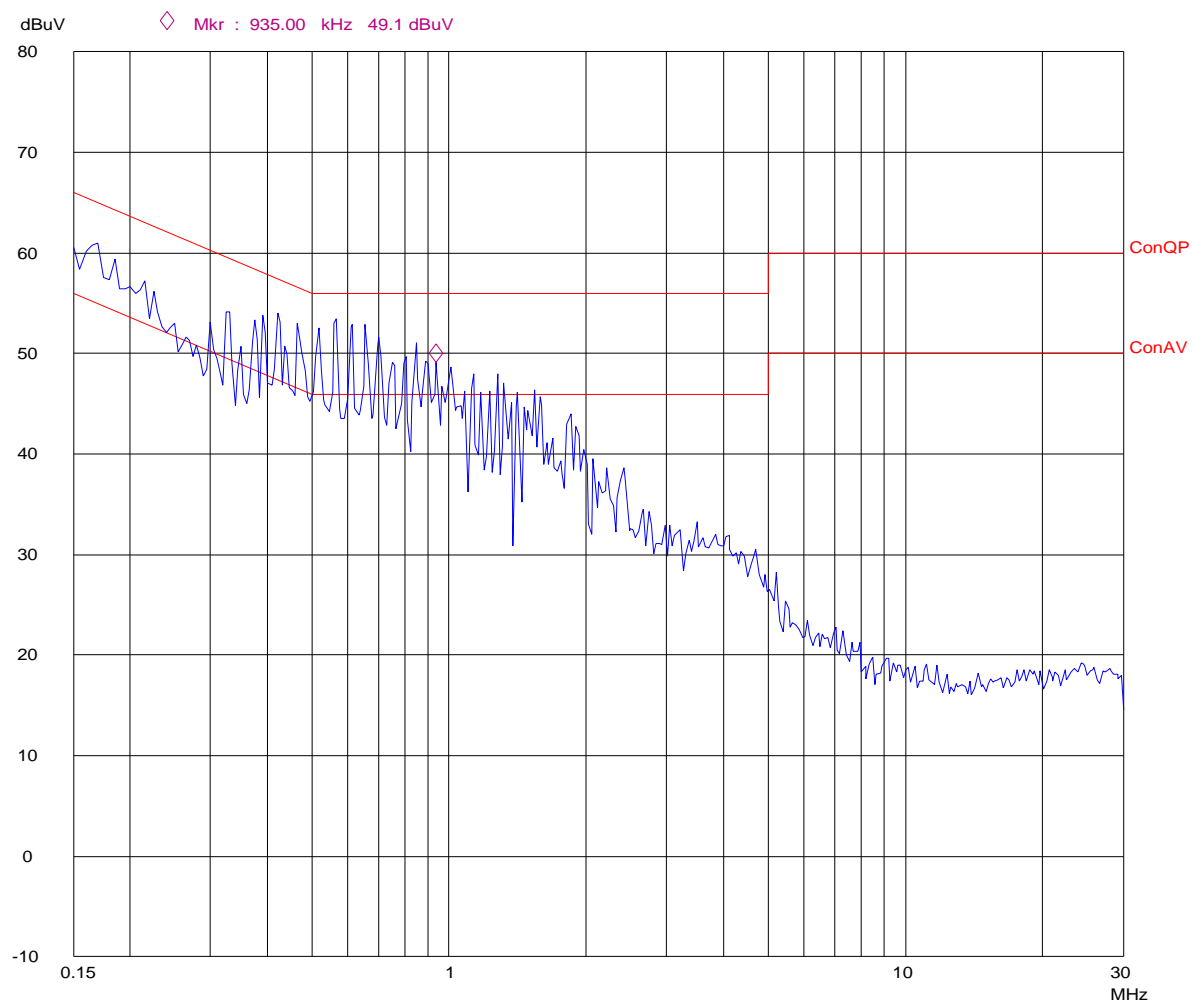
Conducted Disturbance

EUT: M/N:DUO
Op Cond: Tx ch1
Test Spec: L
Comment: AC 120V/60Hz



Conducted Disturbance

EUT: M/N:DUO
Op Cond: Tx ch1
Test Spec: N
Comment: AC 120V/60Hz



6. RADIATED DISTURBANCE TEST

6.1. Test Standard and Limit

6.1.1. Test Standard

FCC Part 15 15.249:2005

6.1.2. Test Limit

Table 7 Radiated Disturbance Test Limit

| FREQUENCY MHz | FIELD STRENGTHS LIMITS ($\mu\text{V/m}$) | FIELD STRENGTHS LIMITS dB ($\mu\text{V/m}$) |
|------------------|--|--|
| Fundamental | 50000 | 94.0 |
| Harmonics | 500 | 54.0 |
| 30 ~ 88 | 100 | 40.0 |
| 88 ~ 216 | 150 | 43.5 |
| 216 ~ 960 | 200 | 46.0 |
| 960 ~ | 500 | 54.0 |

* The lower limit shall apply at the transition frequency.

* The test distance is 3m.

6.2. Test Procedure

The EUT is placed on a turntable, which is 0.8 meter above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 8 and 13 of ANSI C63.4-2003.

The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. All readings above 1 GHz are AV and Peak values with a resolution bandwidth of 1 MHz.

Measurements were made at 3 meters

6.3. Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

6.4. Test Data

Emissions don't show below are too low against the limits, the test curves are shown in the APPENDIX I

Table 8 **General Radiated Emission Data**

| Model number: DUO Test Mode: ch1 | | | | | | | |
|-------------------------------------|--------------|----------------------------|-----------------|-----------------------|--------------------------------|------------------------|------|
| Frequency (MHz) | Polarization | Reading Value (dB μ V) | Cable loss (dB) | Antenna Factor (dB/m) | Emission Level dB (μ V/m) | Limits dB (μ V/m) | Note |
| 211.192 | V | 28.2 | 2.6 | 10.04 | 40.8 | 43.5 | ---- |
| 422.406 | V | 22.8 | 3.3 | 17.01 | 43.1 | 46.0 | --- |
| 442.366 | V | 22.2 | 3.4 | 16.86 | 42.5 | 46.0 | --- |
| 464.644 | V | 23.1 | 3.6 | 17.4 | 44.1 | 46.0 | |
| 442.335 | H | 20.8 | 3.4 | 16.86 | 41.1 | 46.0 | |
| 464.614 | H | 22.7 | 3.6 | 17.4 | 43.7 | 46.0 | ---- |
| 491.514 | H | 22.2 | 3.7 | 17.63 | 43.5 | 46.0 | ---- |
| 506.853 | H | 22.7 | 3.7 | 17.63 | 44.0 | 46.0 | ---- |

REMARKS: 1. Emission level(dBuV/m)=Read Value(dBuV) + antenna factor(dB/m)+cable loss(dB)
2. The other emission levels were very low against the limit.

Table 9 **General Radiated Emission Data**

| Model number: DUO Test Mode: ch3 | | | | | | | |
|-------------------------------------|--------------|----------------------------------|------------------------------|-----------------------------|--------------------------------------|---------------------------|------|
| Frequency (MHz) | Polarization | Reading Value (dB μ V) | Correction Factor (dB) | Antenna Factor (dB/m) | Emission Level dB (μ V/m) | Limits dB (μ V/m) | Note |
| 464.614 | V | 23.5 | 3.6 | 17.4 | 44.5 | 43.5 | ---- |
| 549.125 | V | 21.3 | 3.9 | 18.71 | 43.9 | 46.0 | --- |
| 464.624 | H | 24.8 | 3.6 | 17.4 | 45.8 | 46.0 | ---- |
| 844.757 | H | 19.5 | 5 | 20.45 | 44.9 | 46.0 | ---- |

REMARKS: 1. Emission level(dBuV/m)=Read Value(dBuV) + antenna factor(dB/m)+cable loss(dB)
2. The other emission levels were very low against the limit.

Table 10 **General Radiated Emission Data**

| Model number: DUO Test Mode: ch1 | | | | | | | |
|-------------------------------------|--------------|----------------------------------|------------------------------|-----------------------------|--------------------------------------|---------------------------|------|
| Frequency (MHz) | Polarization | Reading Value (dB μ V) | Correction Factor (dB) | Antenna Factor (dB/m) | Emission Level dB (μ V/m) | Limits dB (μ V/m) | Note |
| 393.205 | V | 23.4 | 3.2 | 16.49 | 43.1 | 46.0 | ---- |
| 422.406 | V | 22.7 | 3.3 | 17.01 | 43.0 | 46.0 | --- |
| 442.355 | V | 22.2 | 3.4 | 16.86 | 42.5 | 46.0 | --- |
| 380.142 | H | 21.7 | 3.2 | 16.14 | 41.0 | 46.0 | |
| 393.195 | H | 20.9 | 3.2 | 16.49 | 40.6 | 46.0 | |
| 422.376 | H | 20.8 | 3.3 | 17.01 | 41.1 | 46.0 | ---- |
| 442.376 | H | 20.9 | 3.4 | 16.86 | 41.2 | 46.0 | ---- |
| 846.782 | H | 15.3 | 5 | 20.45 | 40.7 | 46.0 | ---- |

REMARKS: 1. Emission level(dBuV/m)=Read Value(dBuV) + antenna factor(dB/m)+cable loss(dB)
 2. The other emission levels were very low against the limit.

Table 11 **Fundamental and harmonics Radiated Emission Data**

| Ambient temperature: 24° C | | | | | | |
|----------------------------|----------------------|-------------------------|--------------------------------|--------------|--------------------|-----------------------|
| Relative humidity: 53 % | | | | | | |
| Test mode: 1 (ch4 2412MHz) | | | | | | |
| Frequency GHz | Emission (dBuV/m) | Read Value (dBuV) | Correction Factor (dB/m) | Polarization | Limits (dBuV/m) | Note |
| 2413.450 | 79.0 | 82.7 | -3.7 | H | 94.0 | Fundamental (AV) |
| 2413.450 | 86.6 | 90.3 | -3.7 | H | 114.0 | Fundamental (Peak) |
| 2413.461 | 84.0 | 87.7 | -3.7 | V | 94.0 | Fundamental (AV) |
| 2413.461 | 92.0 | 95.7 | -3.7 | V | 114.0 | Fundamental (Peak) |
| 4827.054 | 53.1 | 50.8 | 2.3 | V | 54.0 | Harmonic (AV) |
| 4827.054 | 49.1 | 46.8 | 2.3 | V | 74.0 | Harmonic (Peak) |
| 7243.637 | 42.1 | 34.0 | 8.1 | V | 54.0 | Harmonic (AV) |
| 7243.637 | 48.4 | 40.3 | 8.1 | V | 74.0 | Harmonic (Peak) |
| 9655.060 | 48.1 | 38.8 | 9.3 | V | 54.0 | Harmonic (AV) |
| 9655.060 | 44.6 | 35.3 | 9.3 | V | 74.0 | Harmonic (Peak) |
| 4824.188 | 45.8 | 43.5 | 2.3 | H | 54.0 | Harmonic (AV) |
| 4824.188 | 43.6 | 41.3 | 2.3 | H | 74.0 | Harmonic (Peak) |

REMARKS: 1. Emission level(dBuV/m)=Read Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)+Amplifier Factor(dB)
 3. The other emission levels were very low against the limit.

Table 12 **Fundamental and harmonics Radiated Emission Data**

| Ambient temperature: 24° C | | | | | | |
|----------------------------|----------------------|-------------------------|--------------------------------|--------------|--------------------|-----------------------|
| Relative humidity: 53 % | | | | | | |
| Test mode: 2 (ch3 2452MHz) | | | | | | |
| Frequency GHz | Emission (dBuV/m) | Read Value (dBuV) | Correction Factor (dB/m) | Polarization | Limits (dBuV/m) | Note |
| 2451.303 | 82.0 | 85.7 | -3.7 | H | 94.0 | Fundamental (AV) |
| 2451.303 | 83.1 | 86.8 | -3.7 | H | 114.0 | Fundamental (Peak) |
| 2451.400 | 88.0 | 91.7 | -3.7 | V | 94.0 | Fundamental (AV) |
| 2451.400 | 92.1 | 95.8 | -3.7 | V | 114.0 | Fundamental (Peak) |
| 4904.208 | 49.1 | 46.8 | 2.3 | V | 54.0 | Harmonic (AV) |
| 4904.208 | 57.5 | 55.2 | 2.3 | V | 74.0 | Harmonic (Peak) |
| 7356.763 | 50.0 | 41.9 | 8.1 | V | 54.0 | Harmonic (AV) |
| 7356.763 | 58.1 | 50.0 | 8.1 | V | 74.0 | Harmonic (Peak) |
| 9808.356 | 48.3 | 39.0 | 9.3 | V | 54.0 | Harmonic (AV) |
| 9808.356 | 56.1 | 46.8 | 9.3 | V | 74.0 | Harmonic (Peak) |
| 4904.168 | 43.7 | 41.4 | 2.3 | H | 54.0 | Harmonic (AV) |
| 4904.168 | 51.0 | 48.7 | 2.3 | H | 74.0 | Harmonic (Peak) |
| 7356.813 | 44.5 | 36.4 | 8.1 | H | 54.0 | Harmonic (AV) |
| 7356.813 | 38.6 | 30.5 | 8.1 | H | 74.0 | Harmonic (Peak) |

REMARKS: 1. Emission level(dBuV/m)=Read Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)+Amplifier Factor(dB)
 3. The other emission levels were very low against the limit.

Table 13 **Fundamental and harmonics Radiated Emission Data**

| Ambient temperature: 24° C Relative humidity: 53 % Test mode: 4(ch4 2467MHz) | | | | | | |
|--|----------------------------|-------------------------|--------------------------------|--------------|--------------------|-----------------------|
| Frequency GHz | Emission AV (dBuV/m) | Read Value (dBuV) | Correction Factor (dB/m) | Polarization | Limits (dBuV/m) | Note |
| 2467.560 | 83.1 | 86.8 | -3.7 | H | 94.0 | Fundamental (AV) |
| 2467.560 | 85.9 | 89.6 | -3.7 | H | 114.0 | Fundamental (Peak) |
| 2467.310 | 87.5 | 91.2 | -3.7 | V | 94.0 | Fundamental (AV) |
| 2467.310 | 90.8 | 94.5 | -3.7 | V | 114.0 | Fundamental (Peak) |
| 4934.550 | 50.1 | 47.8 | 2.3 | V | 54.0 | Harmonic (AV) |
| 4934.550 | 53.9 | 51.6 | 2.3 | V | 74.0 | Harmonic (Peak) |
| 7401.990 | 49.1 | 41.0 | 8.1 | V | 54.0 | Harmonic (AV) |
| 7403.990 | 52.0 | 43.9 | 8.1 | V | 74.0 | Harmonic (Peak) |
| 9869.240 | 48.8 | 39.5 | 9.3 | V | 54.0 | Harmonic (AV) |
| 9869.240 | 51.1 | 41.8 | 9.3 | V | 74.0 | Harmonic (Peak) |
| 4935.420 | 45.5 | 43.2 | 2.3 | H | 54.0 | Harmonic (AV) |
| 4935.420 | 47.5 | 45.2 | 2.3 | H | 74.0 | Harmonic (Peak) |
| 7402.880 | 44.6 | 36.5 | 8.1 | H | 54.0 | Harmonic (AV) |
| 7402.880 | 47.0 | 38.9 | 8.1 | H | 74.0 | Harmonic (Peak) |

REMARKS: 1. Emission level(dBuV/m)=Read Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)+Amplifier Factor(dB)
 3. The other emission levels were very low against the limit.

7. BAND EDGE

7.1. Test Standard and Limit

7.1.1. Test Standard

FCC Part 15 15.249 :2005

7.2. Band Edge FCC 15.249(d) Limit

Emission radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation

7.3. Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instruments. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Measure the highest amplitude appearing on spectral display and set it as reference level. Plot the graph with marking the highest point and edge frequency.
4. Repeat above procedures until all measured frequencies were complete.

7.4. Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

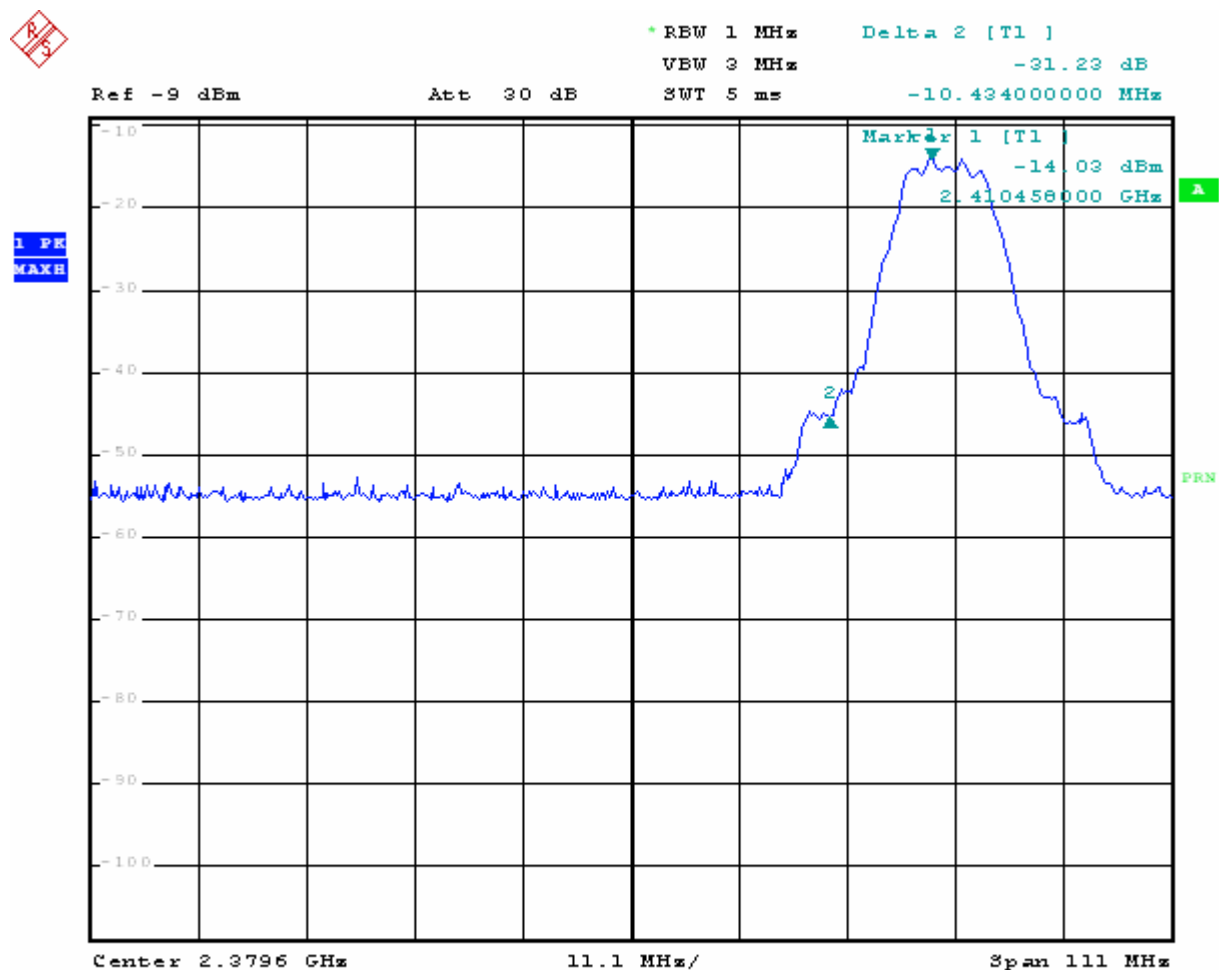
7.5. Test Data

All the emission outside 2400 to 2483.5 MHz is lower than 54 dB (μ V/m).

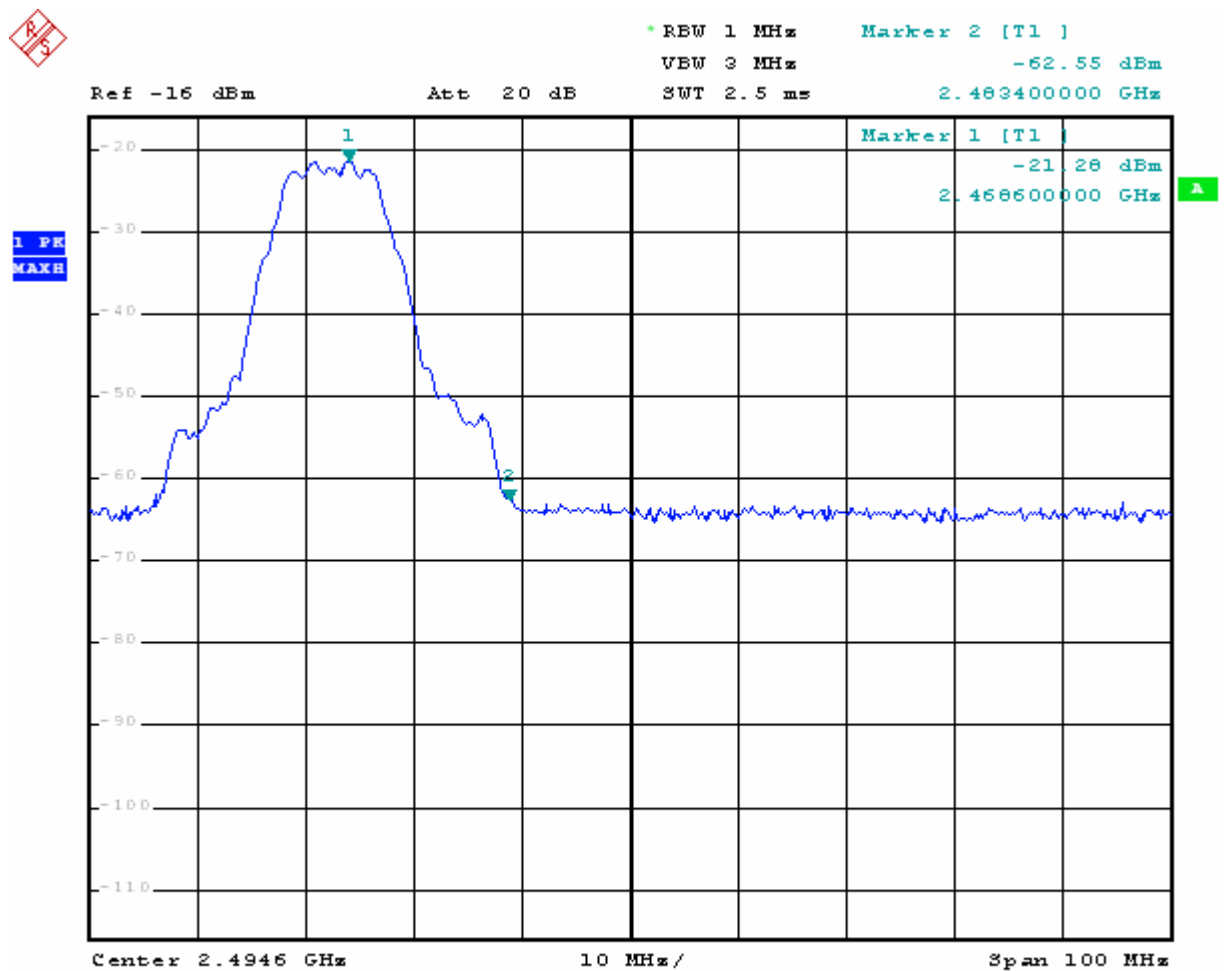
NOTE 1: The band edge emission plot of low frequency shows 31.2 dBc. The emission of carrier strength list in the test result of low frequency is 84.0 dBuV/m (AV), so the maximum field strength in restrict band is $84.0 - 31.2 = 52.8$ dBuV/m which is under 54 dBuV/m limit.

NOTE 2: The band edge emission plot of high frequency shows 41.3 dBc. The emission of carrier strength list in the test result of high frequency is 87.5 dBuV/m (QP), so the maximum field strength in restrict band is $87.5 - 41.3 = 46.2$ dBuV/m which is under 54 dBuV/m limit.

Ch1 2412 MHz



Ch4 2467MHz



8. ANTENNA REQUIREMENT

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

The EUT has a built in antenna which is a short wire solder on the PCB, this is permanently attached antenna and meets the requirements of this section.

APPENDIX I TEST PHOTO

Photo 1 Conducted Emission Test

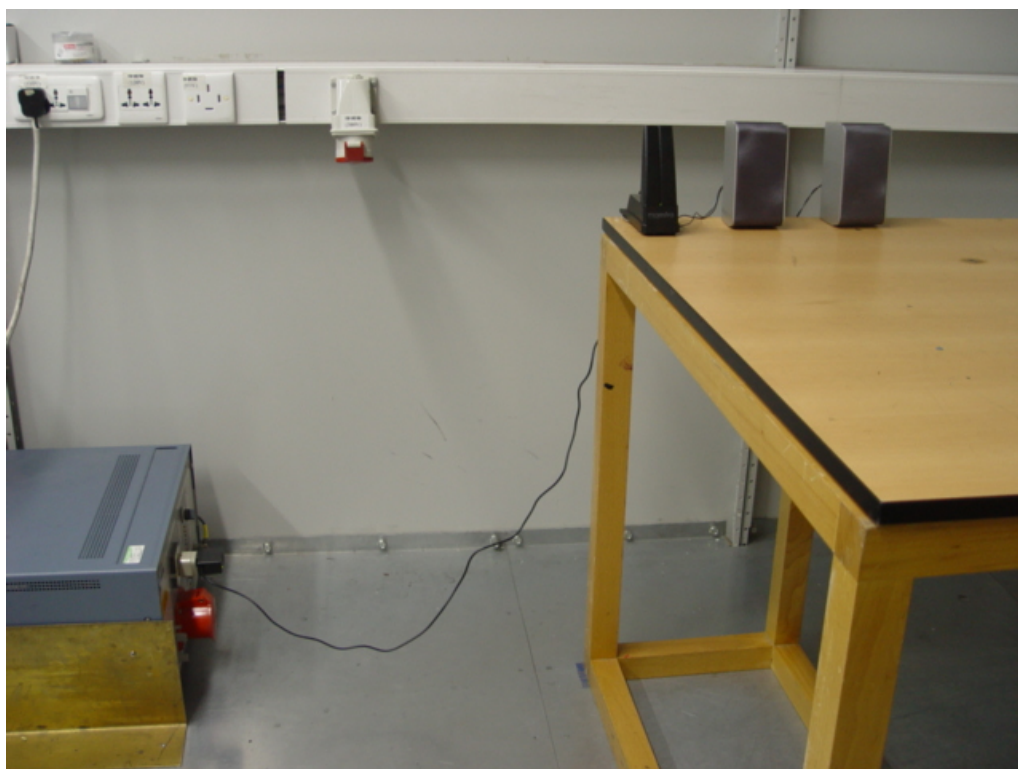


Photo 2 Conducted Emission Test



Photo 3 Radiated Emission Test

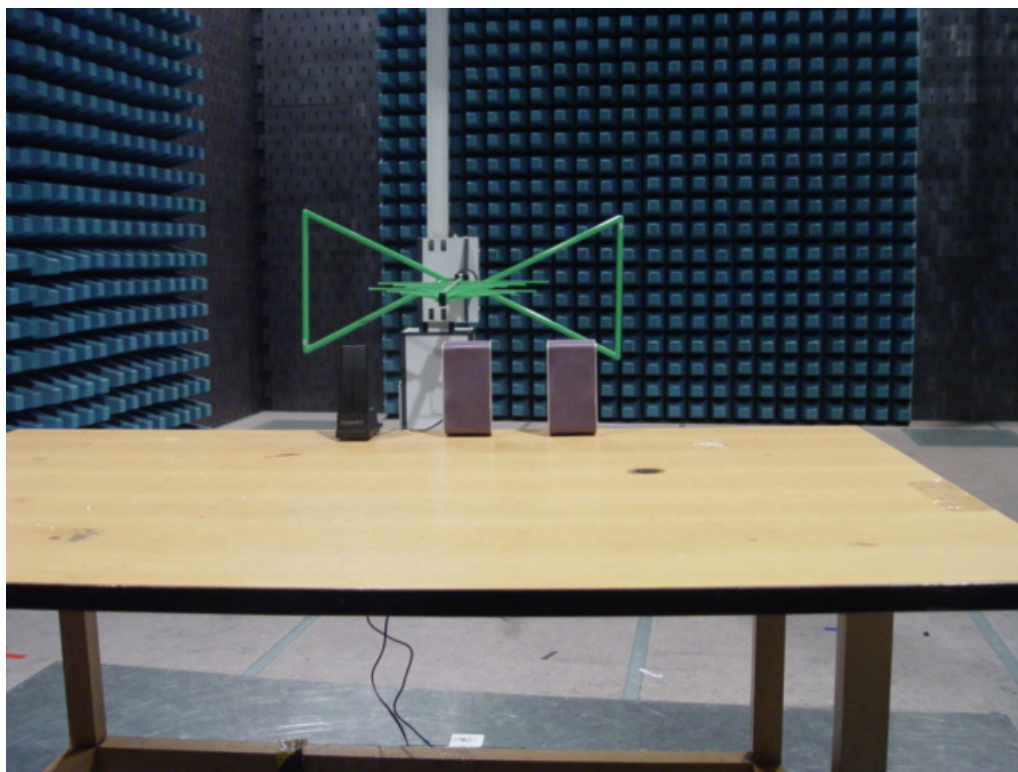


Photo 4 Radiated Emission Test

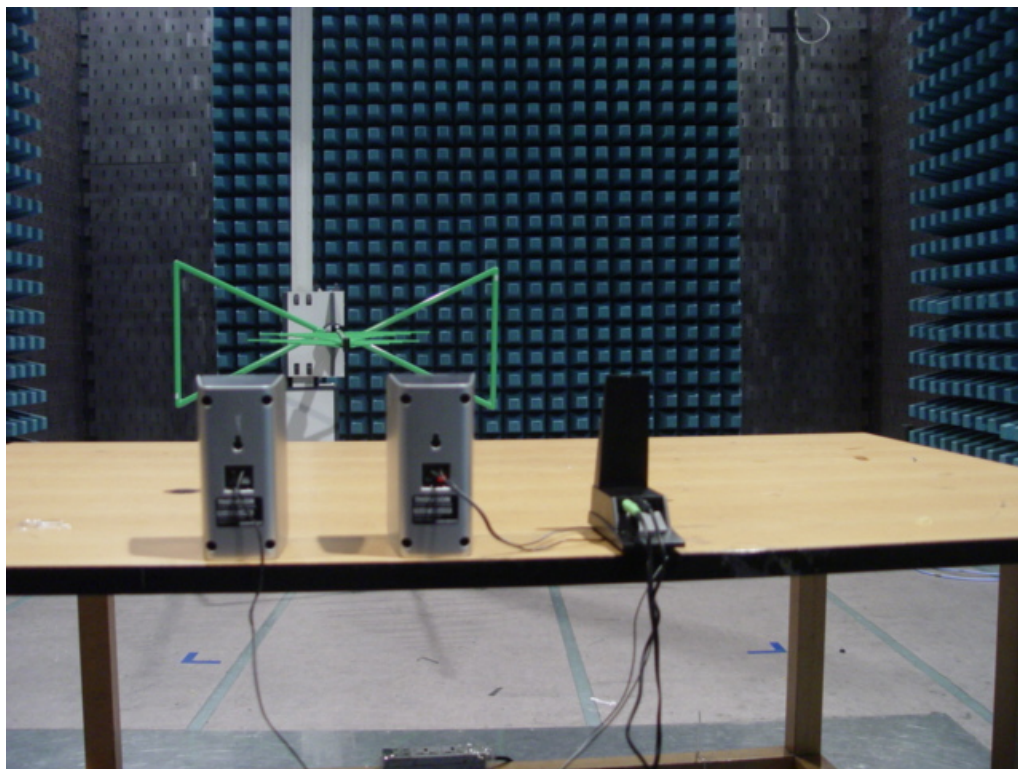


Photo 5 Radiated Emission Test

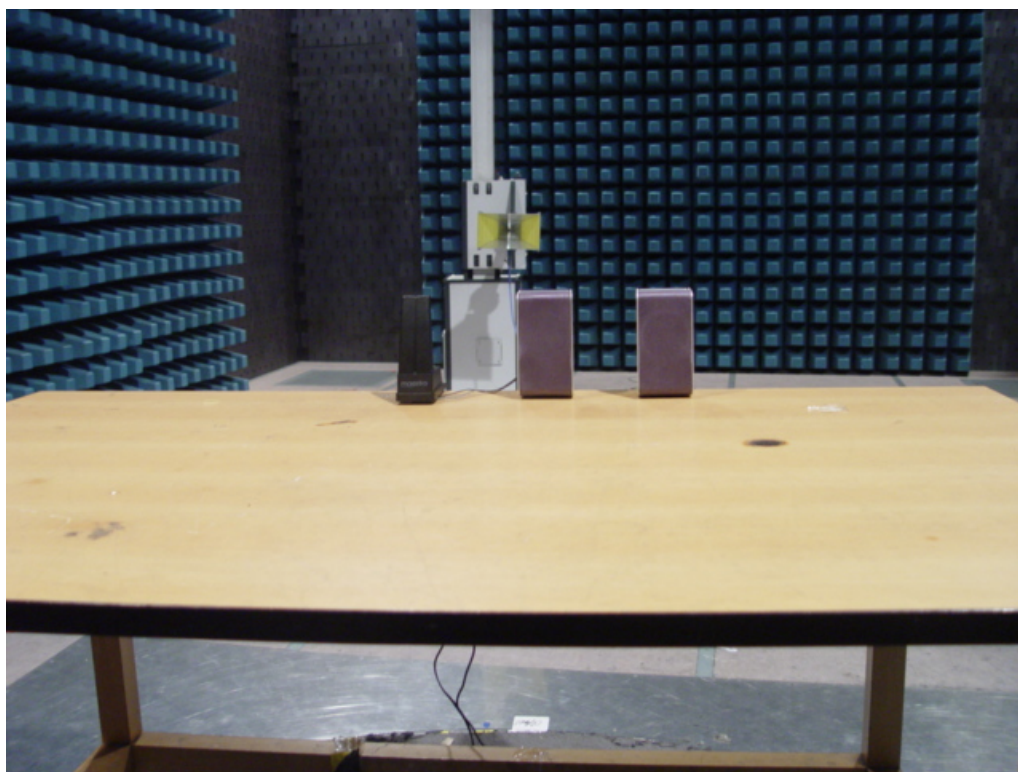
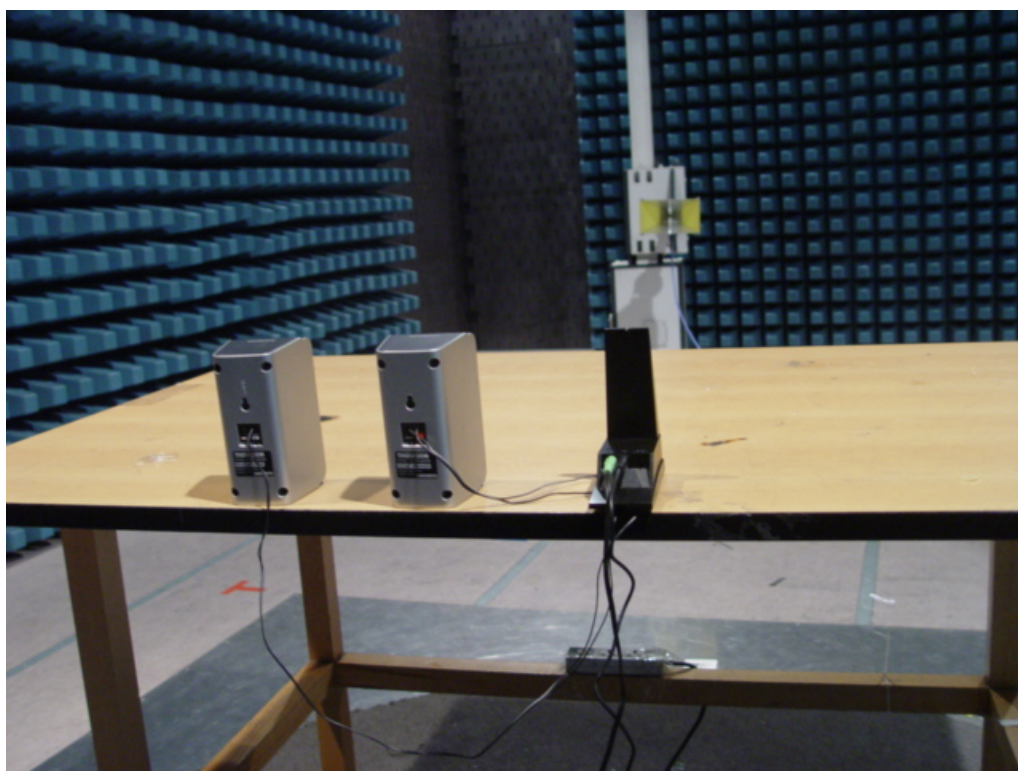


Photo 6 Radiated Emission Test



APPENDIX II EUT PHOTO

Photo 1 Appearance of EUT



Photo 2 Appearance of EUT

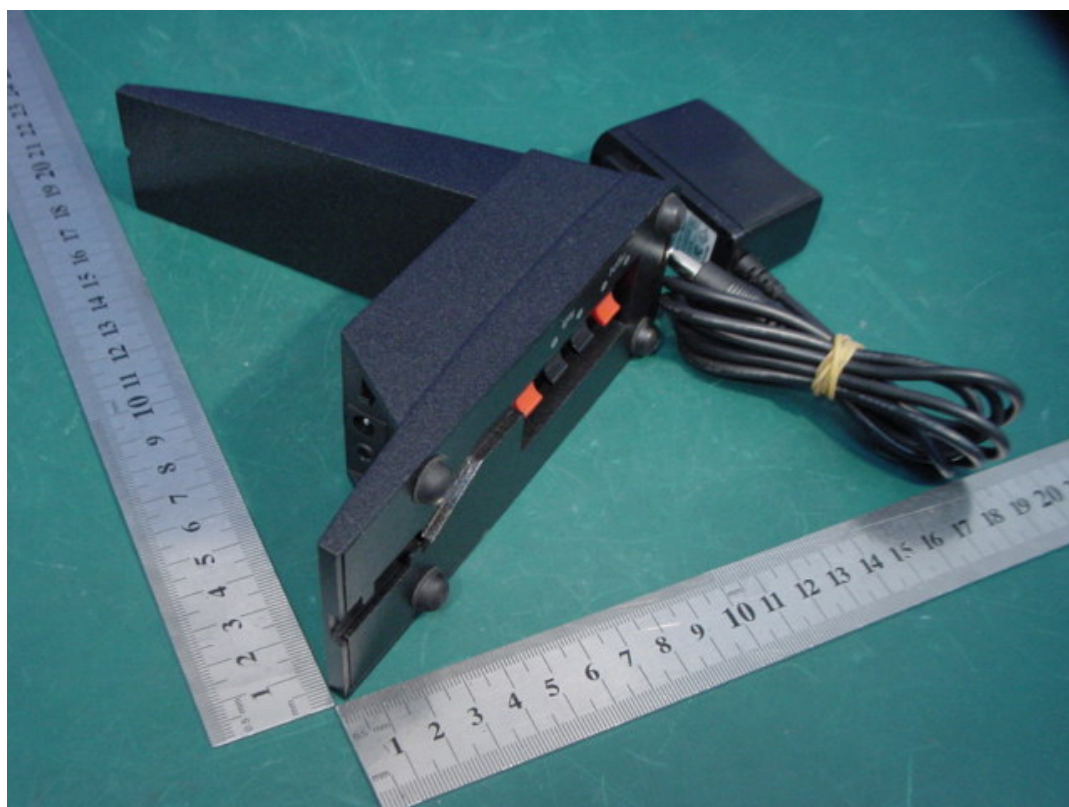


Photo 3 Inside of EUT

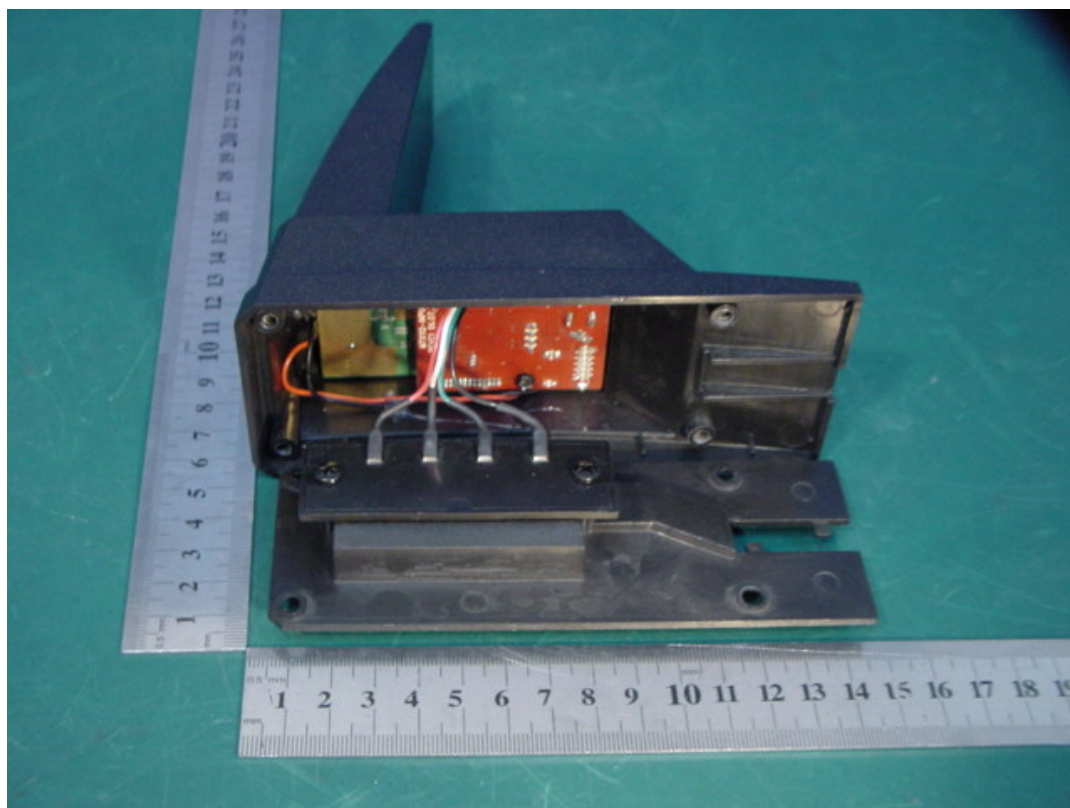


Photo 4 Inside of EUT

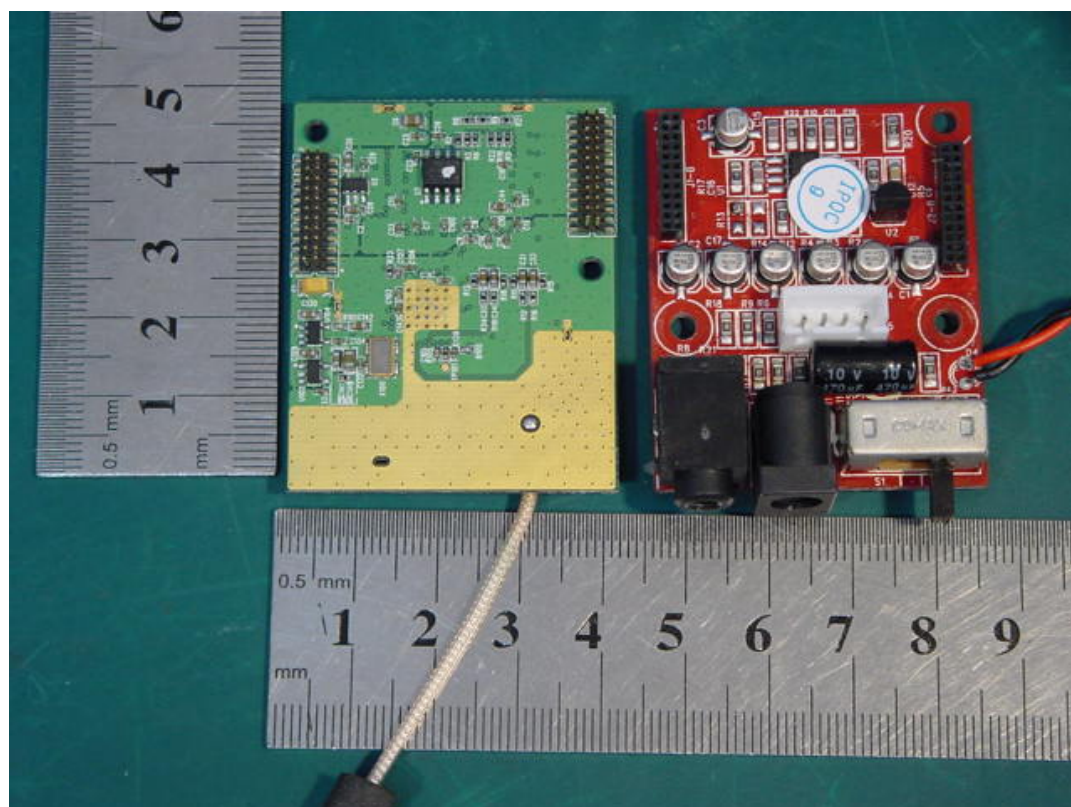


Photo 5 Inside of EUT

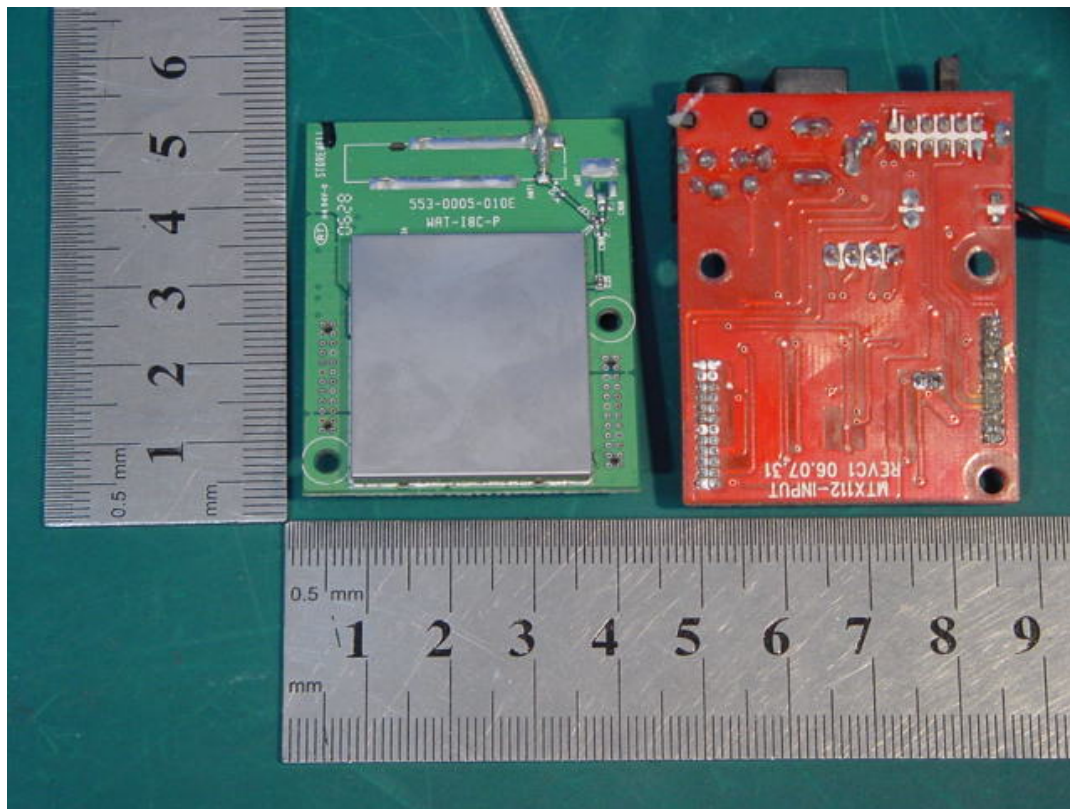


Photo 6 Inside of EUT

