

# ***FCC TEST REPORT***

UNDER

FCC 15 Subpart C, Paragraph 15.249: 2003

PREPARED FOR :

**Shenzhen Lian Yi Da Science Co., Ltd.**

#2009A, Saige Building, Huaqiang Road North, Shenzhen China.

**FCC ID: RAWLYD203CA**

**EUT: Wireless Camera**

**Model: LYD203CA(LYD), LYD203C(LYD)**

July 8, 2003

**Report Type:** Original Report

**Test Engineer:** Peter Lin

**Test Date:** June 26, 2003



**Review By:** \_\_\_\_\_  
Apollo Liu

PREPARED BY :

**Shenzhen Academy of Metrology & Quality Inspection**

*Longzhu Road, Nanshan*

*FCC Registration Number: 97379*

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## 1. Summary of Test Results

**The EUT has been tested according to the following specifications:**

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.207	Conducted Test	<b>PASS</b>	Complies
FCC Part 15 Subpart C Paragraph 15.249(a) and 15.249(b) Limit	Field Strength of Fundamental	<b>PASS</b>	Minimum passing margin is -0.9 dB at 906.093 MHz Horizontal
FCC Part 15, Paragraph 15.209	Radiated Test	<b>PASS</b>	Meets Class B Limit Minimum passing margin is -1.0 dB at 1811.0 MHz Vertical
FCC Part 15 Subpart C Paragraph 15.249(d) Limit	Measured Band Edges	<b>PASS</b>	Complies.

## 2. Test Statement

### 2. 1 Test Statement

- A. This statement explains the test condition of this project. The EUT was tested under the condition of each test item.
- B. The data shown in this report reflects the worst – case data for the condition as the summary of test result.
- C. EUT conditions.

**Note:** (1)The EUT is a Wireless Camera intends to use in the supermarket, shop, department store, clothes shop, workshop, warehouse, school, office and home or related application.

Frequency Range: 902 ~ 928 MHz; Power Supply: DC 6~12V.

(2)Regarding to the frequency band operation, one channel were selected to perform the test, then shown on this report.

(3) It is acknowledged by Shenzhen Lian Yi Da Science Co., Ltd. that Selling Model No.: LYD203CA, Brand Name: LYD; Model No.: LYD203C, Brand Name: LYD are identical. The Model difference is for marketing purposes only.

### 2. 2 Departure From Document Policies, Procedure or Specifications, The Statement

- 1. Did have Any departure from document policies & procedures or from specifications.

Yes       , No       

If yes , the description as below.

- 2. The report must not be used by the client to claim product endorsement by any agency the government.
- 3. This product is a test sample that was shown as the photos of this test report only.
- 4. The effect that the results relate only to the items tested.

### **3. EUT Modifications**

No modification by Shenzhen Academy of Metrology & Quality Inspection.

## 4. Conducted Power Line Test

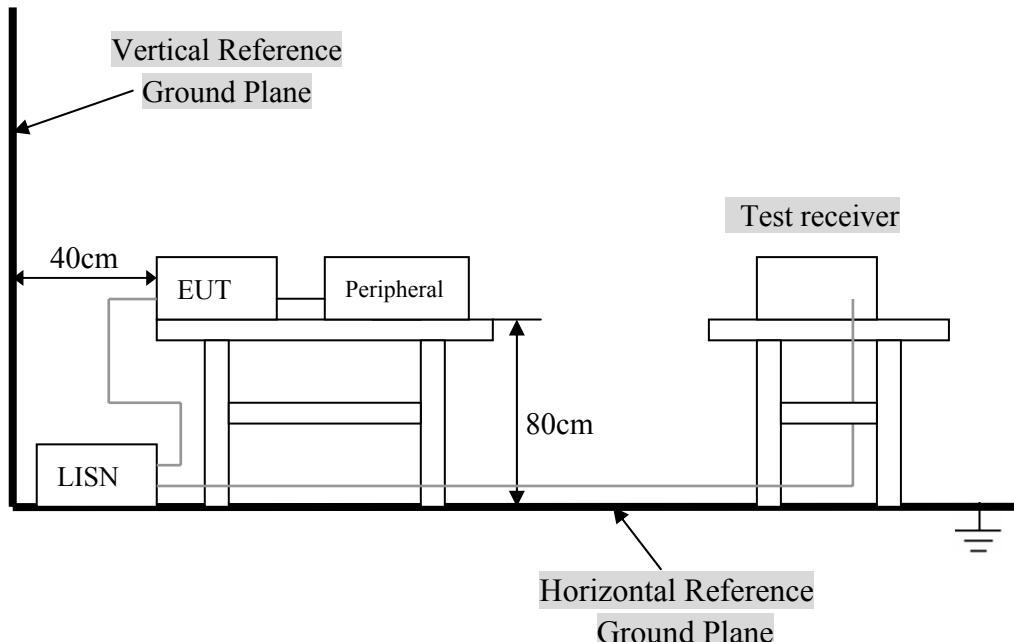
### 4. 1 Test Equipment

Please refer to Section 9 this report.

### 4. 2 Test Procedure

The EUT was tested according to ANSI C63.4 - 2001. The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50 ohm / 50 uHenry as specified by section 5.1 of ANSI C63.4 - 2001. Cables and peripherals were moved to find the maximum emission levels for each frequency.

### 4. 3 Test Setup



**For the actual test configuration, Please refer to the related items – Photos of Testing.**

#### 4.4 Configuration of the EUT

The EUT was configured according to ANSI C63.4-2001. EUT was used DC 8V (Power by Class 2 Adaptor). The operation frequency is from 902MHz~928MHz. Enable the signal transmitted from the external antenna from EUT to receiver. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

#### A. EUT

DEVICE	MANUFACTURER	MODEL #	FCC ID
Wireless Camera	Shenzhen Lian Yi Da Science Co., Ltd.	LYD203CA (LYD); LYD203C (LYD)	RAWLYD203CA

#### B. Internal Devices

DEVICE	MANUFACTURER	MODEL #	FCCID / DoC
N/A			

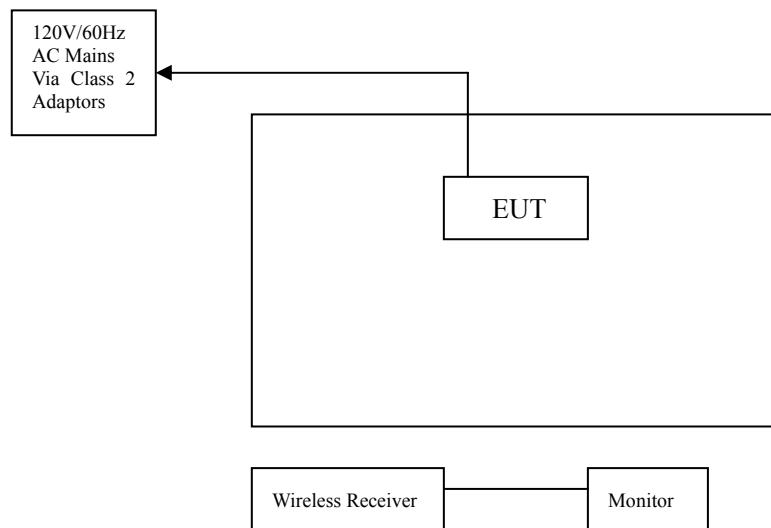
#### C. Peripherals

DEVICE	MANUFAC-TURER	MODEL # SERIAL #	FCC ID/ DoC	CABLE
Monitor	SONY	PVM-14M2U	N/A	Non-shielded, 1.6m
Wireless receiver	Shenzhen Lian Yi Da Science Co., Ltd.	203C	N/A	No-Shielded, 1.6m
AV Cable	N/A	N/A	N/A	No-shielded, 1.5m

#### 4.5 EUT Operating Condition

Operating condition is according to ANSI C63.4 - 2001.

- A. Setup the EUT and simulators as shown on follow.
- B. Enable RF signal and confirm EUT active.
- C. Modulate output capacity of EUT up to specification.



#### 4.6 Conducted Power Line Emission Limits

FCC Part 15 Paragraph 15.207 (dBuV)		
FREQUENCY RANGE (MHz)	CLASS A QP/AV	CLASS B QP/AV
0.15 – 0.5	79/66	66-56/56-46
0.5 – 5.0	73/60	56/46
5.0 - 30	73/60	60/50

**NOTE** : In the above table, the tighter limit applies at the band edges.

#### 4.7 Conducted Power Line Test Result

The frequency spectrum from 0.15 MHz to 30 MHz was investigated. All readings are quasi-peak values with a resolution bandwidth of 9 KHz.

- Temperature : 26 °C
- Humidity : 53 % RH

**Note:** The RF voltage was scanned from 150KHz to 30MHz on each AC lines (hot and neutral) of the EUT and no significant emissions were found in this frequency band.

**Conducted Emission****FCC15 B**

*EUT:* Wireless Camera M/N: LYD203CA

*Manufacturer:* Shenzhen Lian Yi Da Science Co., Ltd.

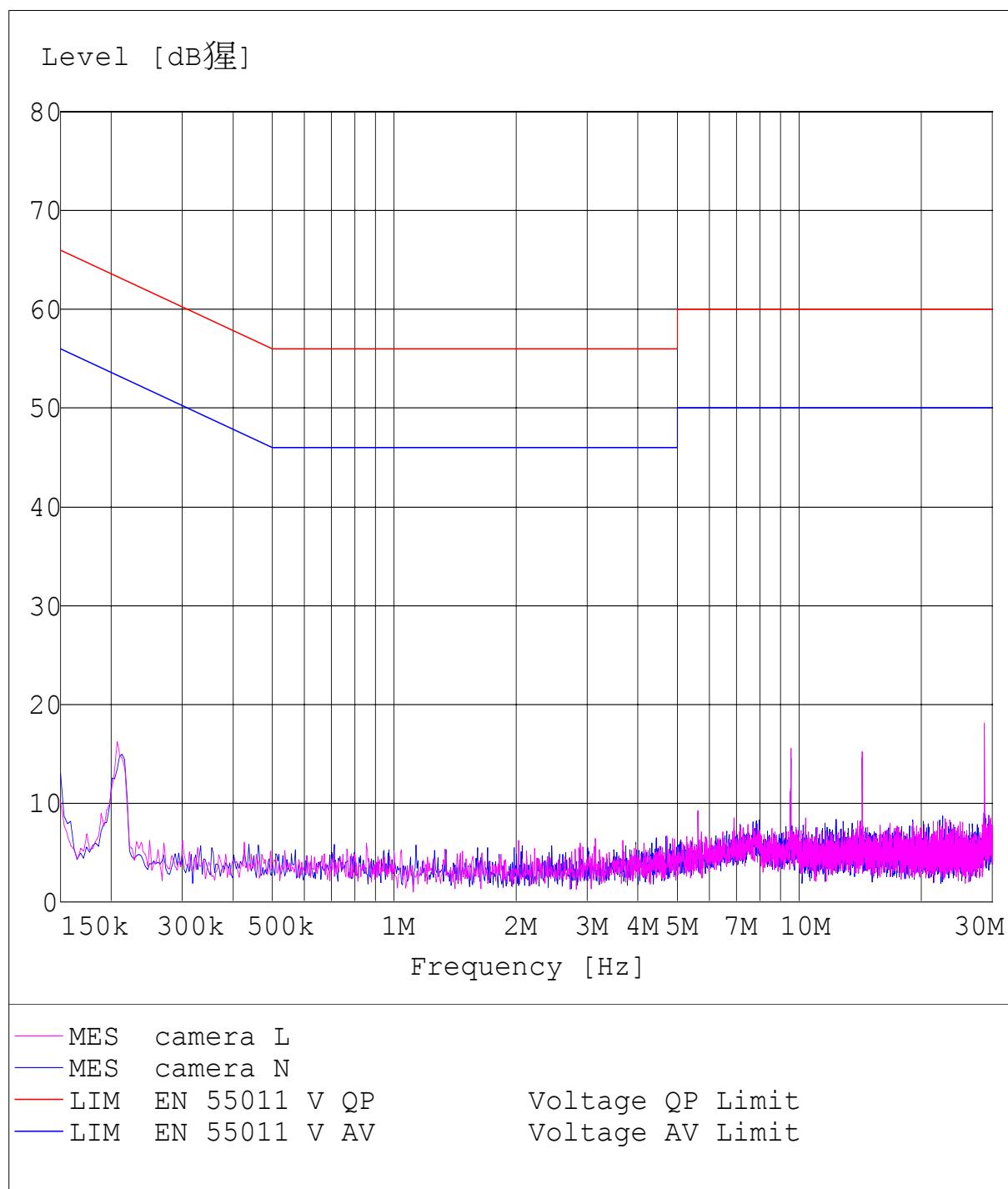
*Operating Condition:* Transmitter

*Test Site:* SMQ EMC Laboratory, SAC

*Operator:* Peter Lin

*Test Specification:* LINE&NEUTRAL

*Comment:*



## 5. Radiated Emission Test

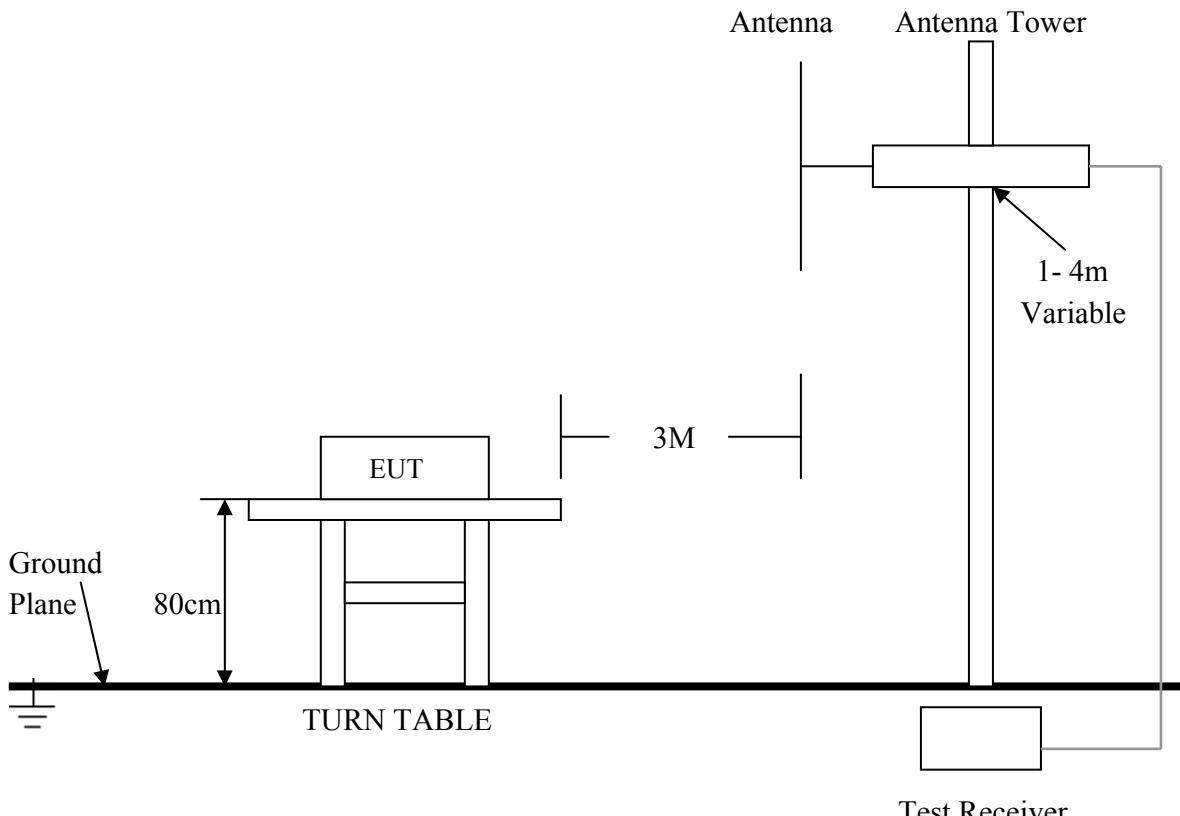
### 5. 1 Test Equipment

Please refer to Section 9 this report.

### 5. 2 Test Procedure

1. The EUT was tested according to ANSI C63.4 - 2001. The radiated test was performed at Shenzhen Academy of Metrology and Quality Inspection. This site is on file with the FCC laboratory division, Registration No. 97379.
2. The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2001.
3. The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz. All readings are above 1 GHz , peak values with a resolution bandwidth of 1 MHz . Measurements were made at 3 meters.
4. The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
5. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
6. The antenna polarization: Vertical polarization and Horizontal polarization.

### 5. 3 Radiated Test Setup



For the actual test configuration, please refer to the related items – Photos of Testing.

## 5.4 Configuration of the EUT

Same as section 4.4 of this report

## 5.5 EUT Operating Condition

Same as section 4.5 of this report.

## 5.6 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below :

### A. FCC Part 15 Subpart C Paragraph 15.249(a) Limit

Fundamental Frequency (MHz)	Field Strength of Fundamental (3m)		Field Strength of Harmonics (3m)	
	mV/m	dBuV/m	uV/m	dBuV/m
902~928	50	94	500	54

**Note:**

- (1) RF Voltage (dBuV) = 20 log RF Voltage (uV)
- (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
- (3) The emission limit in this paragraph is based on measurement instrumentation employing an average detector. Measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

### B. Frequencies in restricted band are complied to limit on Paragraph 15.209.

Frequency (MHz)	Distance (m)	Field Strength (dBuV/m)
30 - 88	3	40.0
88 - 216	3	43.5
216 - 960	3	46.0
ABOVE 960	3	54.0

**Note:**

- (1) RF Voltage (dBuV) = 20 log RF Voltage (uV)
- (2) In the Above Table, the tighter limit applies at the band edges.
- (3) Distance refers to the distance in meters between the measuring instrument antenna and the

## 5. 7 Radiated Emission Test Result

### A. Fundamental Radiated Emission Data

Product : Wireless Camera  
 Test Item : Fundamental Radiated Emission Data  
 Test Voltage : DC 8V (Power by Class 2 Adaptor)  
 Test Mode : Normal  
 Temperature : 25 °C  
 Humidity : 56%RH  
 Test Result : PASS

FREQ. (MHz)	EMISSION (dBuV/m)	HORIZ / VERT	LIMITS (dBuV/m)	MARGIN (dB)
906.093	93.1	HORIZ	94.0	-0.9
906.094	82.6	VERT	94.0	-11.4

**Note:** (1) All Readings are Peak value.  
 (2) Emission Level = Reading Level + Probe Factor + Cable Loss.  
 (3) The average measurement was not performed when the peak measured data under the limit of average detection.

### B. General Radiated Emission Data & Harmonics Radiated Emission Data

Product : Wireless Camera  
 Test Item : General Radiated Emission Data & Harmonics Radiated Emission Data  
 Test Voltage : DC 8V (Power by Class 2 Adaptor)  
 Test Mode : Normal  
 Temperature : 25 °C  
 Humidity : 56%RH  
 Test Result : PASS

FREQ. (MHz)	EMISSION (dBuV)	HORIZ / VERT	LIMITS (dBuV/m)	MARGIN (dB)
30.269	21.2	HORIZ	40.0	-18.8
87.269	25.6	VERT	40.0	-14.4
1793.0	52.1	HORIZ	54.0	-1.9
1811.0	53.0	VERT	54.0	-1.0
2718.2	46.3	HORIZ	54.0	-7.7
2719.3	41.2	VERT	54.0	-12.8
3615.1	51.0	HORIZ	54.0	-3.0
3634.2	52.4	VERT	54.0	-1.6
4530.9	43.5	HORIZ	54.0	-10.5
4531.5	45.1	VERT	54.0	-8.9
5436.7	42.6	HORIZ	54.0	-11.4
5435.8	43.9	VERT	54.0	-10.1
6376.1	51.2	HORIZ	54.0	-2.8
6375.0	52.0	VERT	54.0	-2.0

**Note:** (1) All Reading Levels below 1GHz are Quasi-Peak, above are peak and average value.  
 (2) Emission Level = Reading Level + Probe Factor + Cable Loss.

**Radiated Disturbance****FCC15**

EUT: Wireless Camera M/N: LYD203CA

Manufacturer: Shenzhen Lian Yi Da Science Co., Ltd.

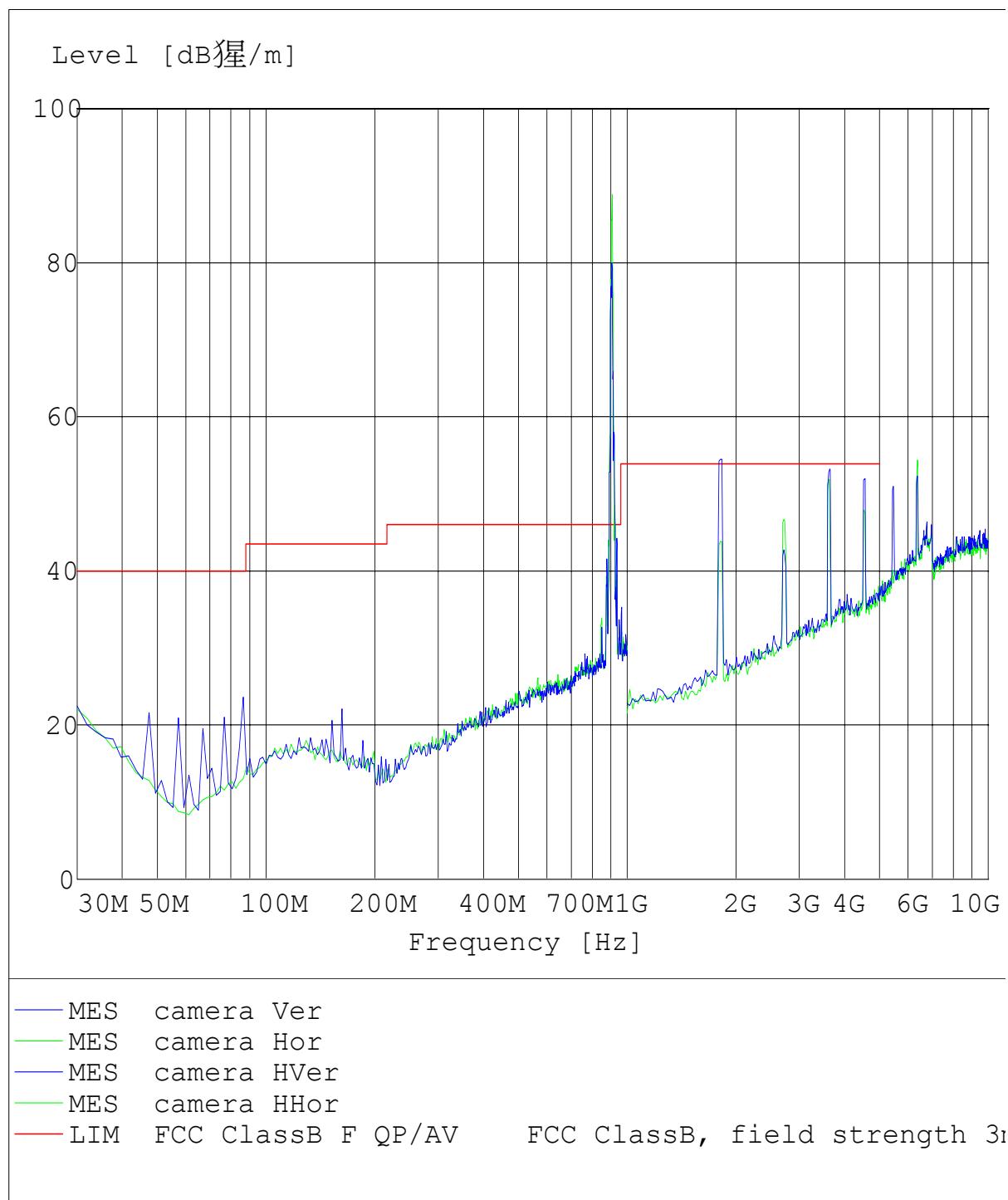
Operating Condition: Transmitter

Test Site: SMQ EMC Laboratory, SAC

Operator: Peter Lin

Test Specification: Vertical &amp; Horizontal

Comment:



## 6. Band Edge

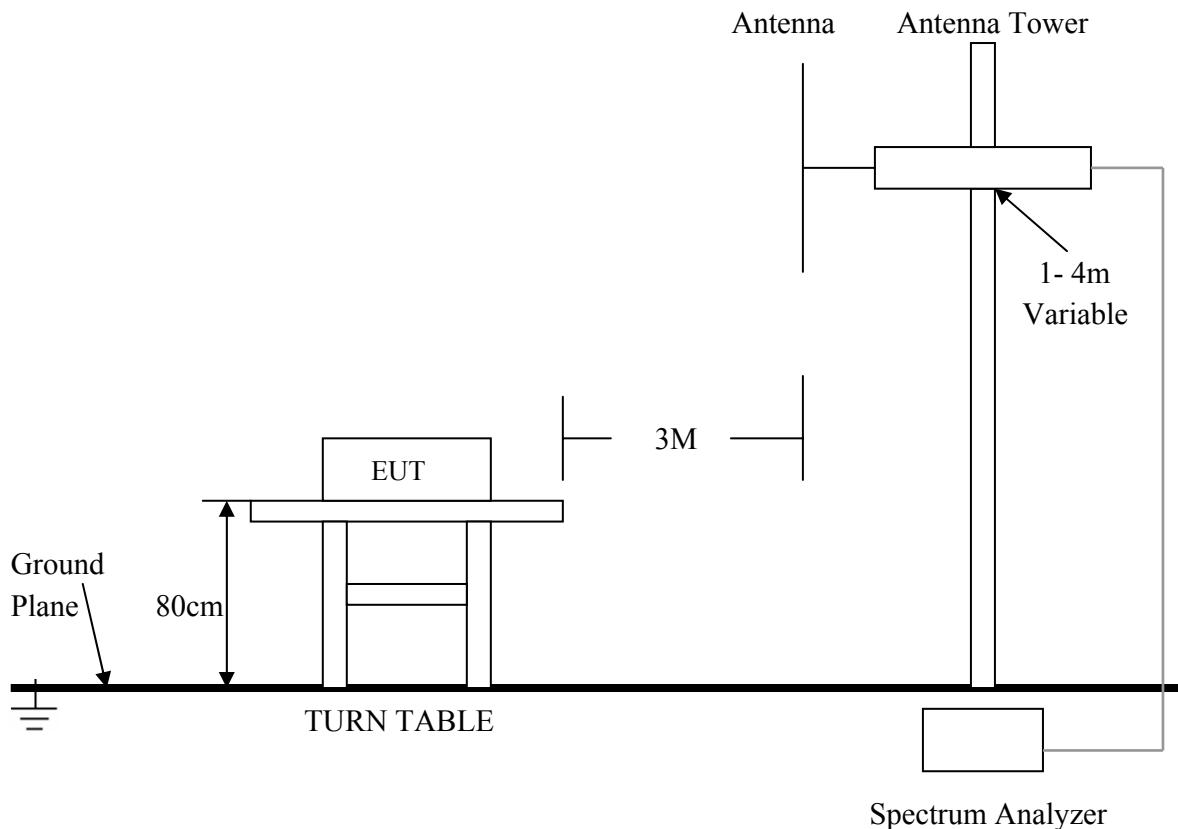
### 6. 1 Test Equipment

Please refer to Section 9 this report.

### 6. 2 Test Procedure

1. The EUT was tested according to ANSI C63.4 - 2001. The radiated test was performed at Shenzhen Academy of Metrology & Quality Inspection. This site is on file with the FCC laboratory division, reference 97379.
2. The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2001.
3. A small sample of the transmitter output was fed into the spectrum analyzer and the attached plot was printed. The vertical scale is set to -10dBm per division. The horizontal scale is set to 5 KHz per division.

### 6. 3 Radiated Test Setup



**For the actual test configuration, please refer to the related items – Photos of Testing**

## 6.4 Configuration of the EUT

Same as section 4 . 4 of this report

## 6.5 EUT Operating Condition

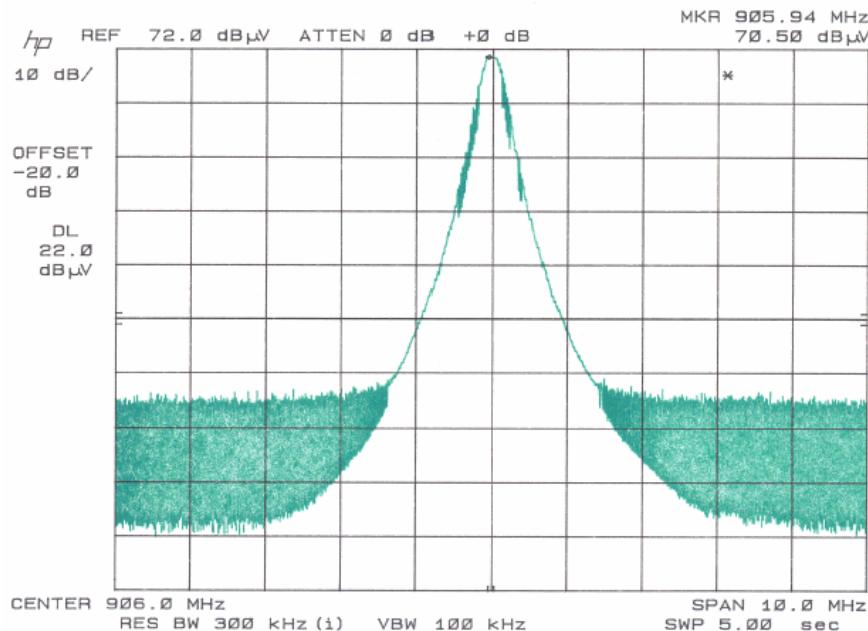
Same as section 4 . 5 of this report.

## 6.6 Band Edge FCC 15.249(d) Limit

The field strength of any emissions appearing outside the band edges and up to 10 KHz above and below the band edges shall be attenuated at least 50 dB below the level of the carrier or to the general limits of 15.249.

## 6.7 Band Edge Test Result

Product : Wireless Camera  
Test Item : Occupied Bandwidth  
Test Mode : Normal Operation  
Temperature : 25 °C  
Humidity : 56%RH



**Note:** (1) The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in Section 15.209.  
(2) The average measurement was not performed when the peak measured data under the limit of average detection.

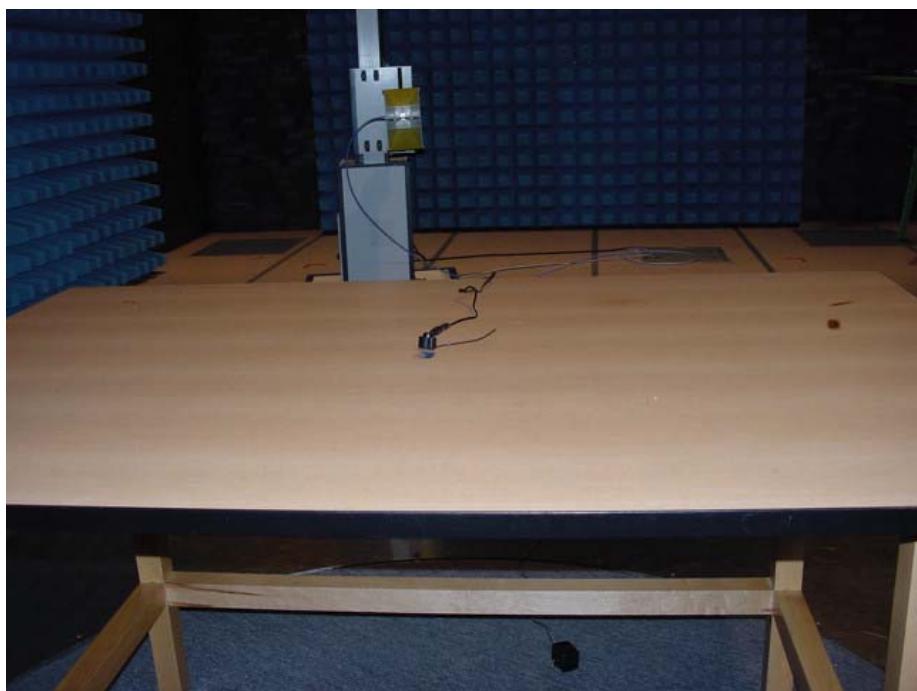
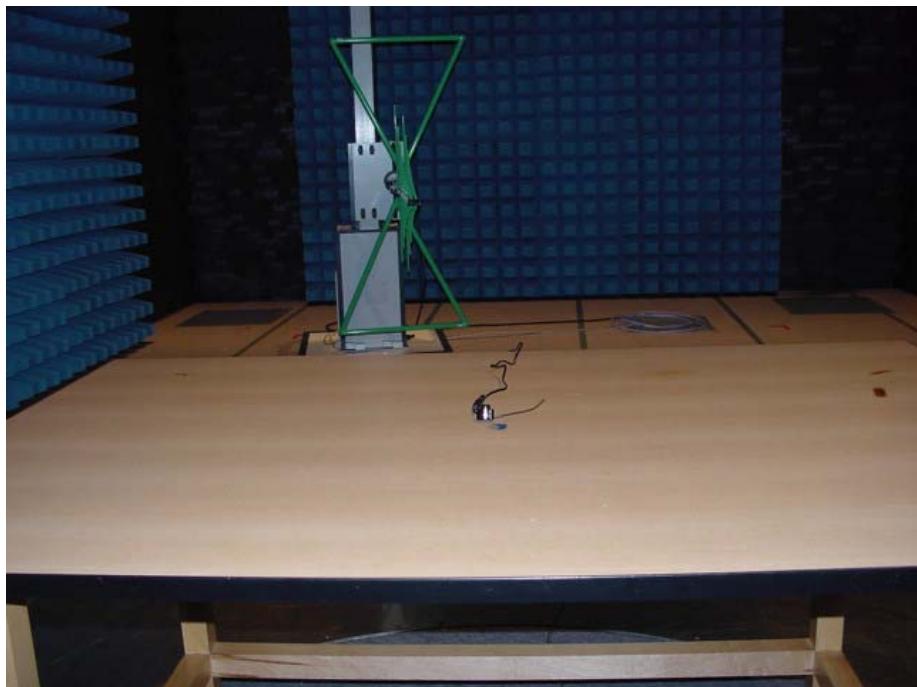
## 7. Photos of Testing

### 7.1 EUT Test Photographs

Conducted emission test view



Radiated emission test view



## 7.2 EUT Detailed Photographs

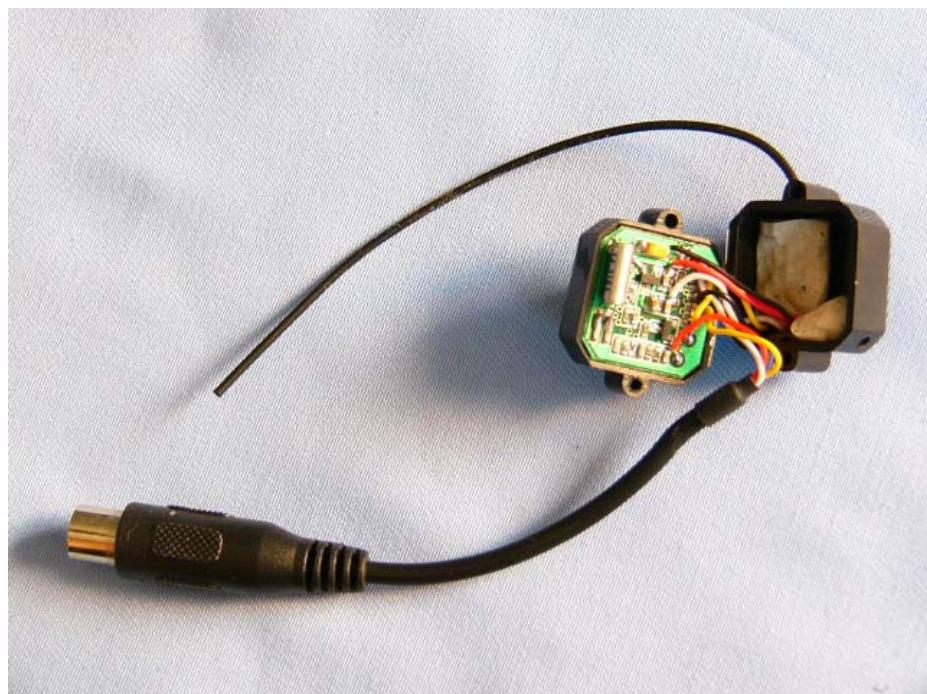
(1) EUT top view



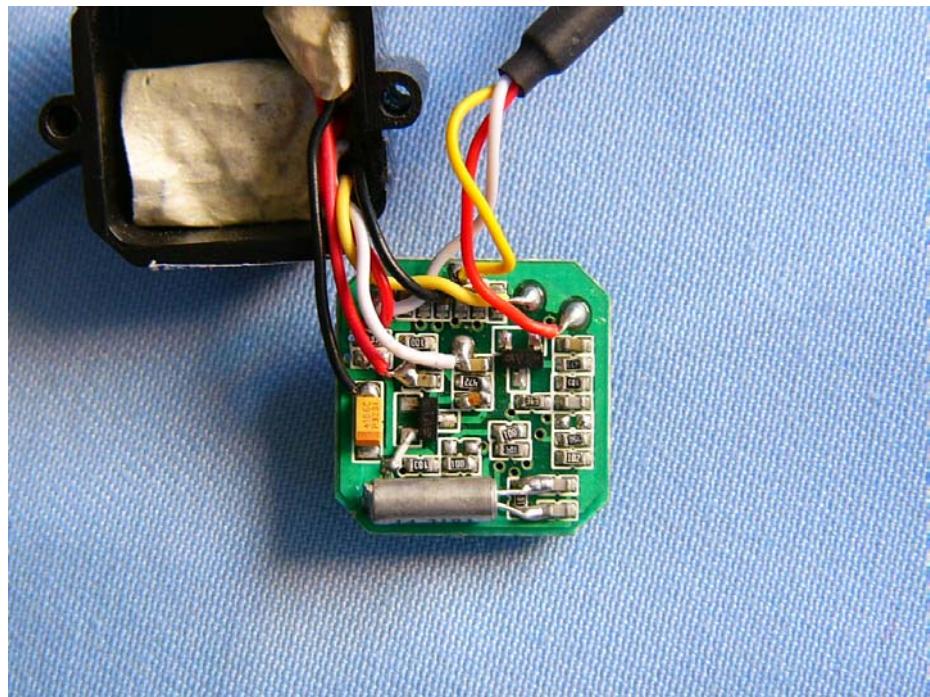
(2) EUT bottom view



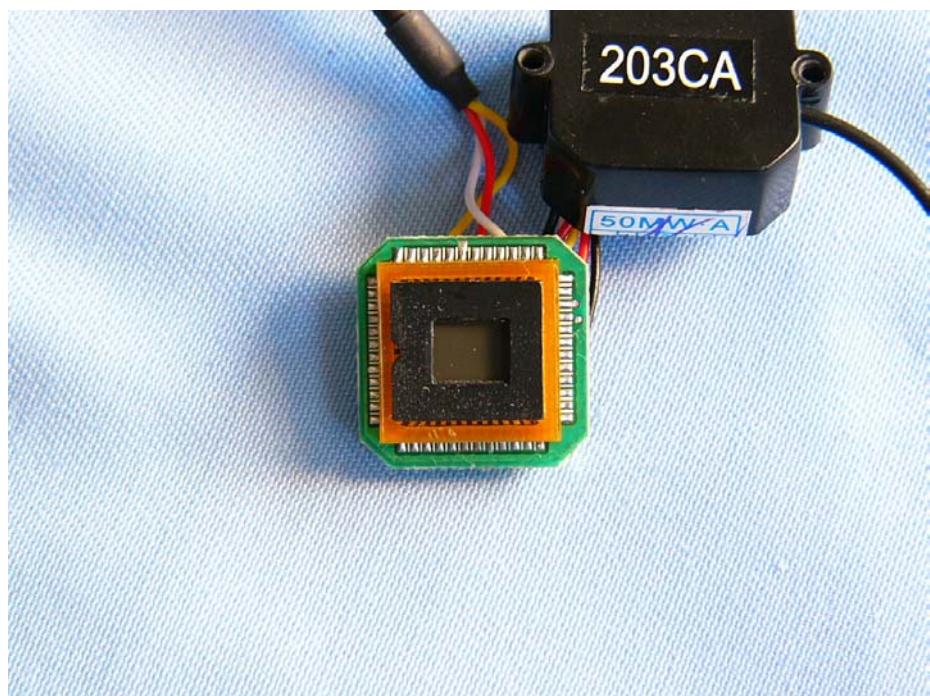
(3) EUT inside whole view



(4) Main board component side



(5) Main board solder side



## 8. FCC ID Label

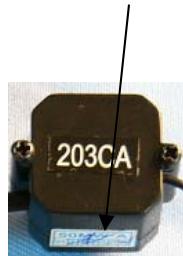
FCC ID: RAWLYD203CA

**This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.**

The Label must not be a stick-on paper label. The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

### Proposed Label Location on EUT

EUT Bottom View/Proposed FCC Mark Location



## 9. Test Equipment

The following test equipments were used during the radiated & conducted emission test:

Equipment/ Facilities	Manufacturer	Model #	Serial No.	Date of Cal.	Due Date
EMI Test Receiver	Rohde & Schwarz	ESCS30	100003	Feb 27, 2003	Feb 27, 2004
AMN	Rohde & Schwarz	ESH3-Z5	100002	Feb 01, 2003	Feb 01, 2004
LISN	Kyoritsu	KNW-407	8-1441-8	Feb 23, 2003	Feb 23, 2004
EMI Test Receiver	Rohde & Schwarz	ESI26	838786/013	Feb 01, 2003	Feb 01, 2004
Spectrum Analyzer	HP	8564E	1000018	Feb 01, 2003	Feb 01, 2004
Bilog Antenna	Chase	CBL6112B	2591	Feb 01, 2003	Feb 01, 2004
Horn Antenna	Rohde & Schwarz	HF906	100014	Feb 01, 2003	Feb 01, 2004
3m Semi-Anechoic Chamber	Albatross Projects	9mX6mX6m	N/A	Feb 01, 2003	Feb 01, 2004