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检 测
CNAS L0095

Test Report No.:
FCC2006-0013

TEST REPORT

EUT : Transmitter of HYDROFLY
MODEL/TYPE : MTC9507
CLIENT : MEGATECH INTERNATIONAL INC.
Classification of Test : COMMISSION TEST

Guangzhou Testing & Inspection Institute for Household Electrical Appliances

广州日用电器检测所 GTIHEA

国家日用电器质量监督检验中心

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**Guangzhou Testing & Inspection Institute
for Household Electrical Appliances**

GTIHEA

Test Report No.: FCC2006-0013		Page 2 of 26	
Client	Name: MEGATECH INTERNATIONAL INC. Address: 8300 Tonnelle Ave, North Bergen, NJ07047, USA		
Manufacturer	Name: SHANGHAI C.C. LEE MODEL CO., LTD. Address: HUACHANG INDUSTRIAL DISTRICT, SHANGHAI, P. R. CHINA		
Equipment under Test	Name : Transmitter of HYDROFLY Model/Type : MTC9507 Trade mark : Megatech FCC ID : P4SMTC9507 Serial no. : — Sampling : —		
Date of Receipt.	2006.10.16	Date of Testing	2006.10.16-2006.12.12
Test Specification		Test Result	
FCC PART 15, Subpart C,2005		PASS	
Evaluation of Test Result	This device complies with the requirements of Federal Communications Commission (FCC) Rules and Regulations Part 15. Issue Date:December14,2006		
Tested by:  _____ Zeng Bo Name Signature Reviewed by:  _____ Wang Xiaoyan Name Signature Approved by:  _____ Yang Chunrong Name Signature			
Other Aspects: NONE			

Guangzhou Testing & Inspection Institute
for Household Electrical Appliances



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Abbreviations:OK, Pass = passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested	
This test report relates only to the EUT, and shall not be reproduced except in full, without written approval of GTIHEA.	

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1. General Product Information

Transmitter inputs:

Left-hand stick at middle or back: Stops the motor-model glides/descends;

Left-hand stick forward: Motor runs at high speed-model climbs;

Right-hand stick to right: Model turns right;

Right-hand stick to left: Model turns left;

“Vertical climb” button press: Model climbs rapidly;

For more details: refer to Flight Manual.

1.1 Ratings and System Details

Equipment	Intentional Radiator
Frequency characteristics	27.095 MHz
Modulation Type	Plus
Ratings	$8 \times 1.5V$ DC
Protection class	III
Antenna Type	Telescopic antenna

1.2 Independent Operation Modes

The basic operation modes of the EUT are transmitting. There are two control sticks and one control button which can be operated separately to determine different flying modes of the model.

1.3 Submitted Documents

Operating Instructions and Installation Manual

Structural Parts

Rating Label

Wiring Diagram

Construction Drawing

Photographs of EUT

Material Bill (Parts List)

2. Test Sites

2.1 Test Facilities

The tests and measurements refer to this report were performed by EMC testing Lab. of Guangzhou Testing & Inspection Institute for Household Electrical Appliances.

Add. : 204 Xingang West Road Guangzhou 510300 P.R. China
Telephone : 86-20-84451692
Fax : 86-20-84183160

The EMC testing laboratory has been recognized by China National Commission for Laboratory Assessment, and authorized by Nemko of Norway since 1997(Aut. No. ELA139), and authorized by TÜV Rheinland of Germany since 1998(Aut. No. 9868976-1216), and registered by FCC since 2001(Registered No. 102430).

2.2 Description of Non-standard Method and Deviations

The testing and measurement method used in this report are all the standard method applied, no any non-standard method and deviations from the used standard were used.

2.3 List of Test and Measurement Instruments

Refer to **Appendix A**.

3. Test Set-up and Operation Modes

3.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

3.2 Physical Configuration for Testing

Refer to relative descriptions in this test report.

3.3 Test Operation Mode and Test Software

Refer to **Test Setup** in clause 4.

3.4 Special Accessories and Auxiliary Equipment

None.

3.5 Countermeasures to Achieve EMC Compliance

None.

4. Test Results

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 and ANSI C63.4:2001 for FCC Certification.

Test Standards and Results Summary				
No	Test Condition	Test Requirement	Test Method	Test Result
				Pass Failed N/A
1	Conducted Emissions 0.15MHz to 30MHz	FCC 47CFR 15.207	ANSI C63.4:2003	☐ ☐ ☒
2	Radiated Emissions, 30MHz to 1GHz	FCC 47CFR 15.209	ANSI C63.4:2003	☒ ☐ ☐
3	20dB Bandwidth	FCC 47CFR 15.227	ANSI C63.4:2003	☒ ☐ ☐

Note: N/A - Not Applicable

4.1 Conducted emission (0.15MHz ~ 30MHz)

Results: N/A

Remark:

The EUT is operated by a single source of internal battery power [located in the battery compartment]; therefore power line conducted emission was deemed unnecessary.

4.2 Radiated Emission (30 MHz ~ 1000MHz)

RESULT : **Pass**

Test Setup

Test procedure : ANSI C63.4:2003

Frequency range : 30 MHz-1000 MHz

Limits : Section 15.209 and Section 15.227

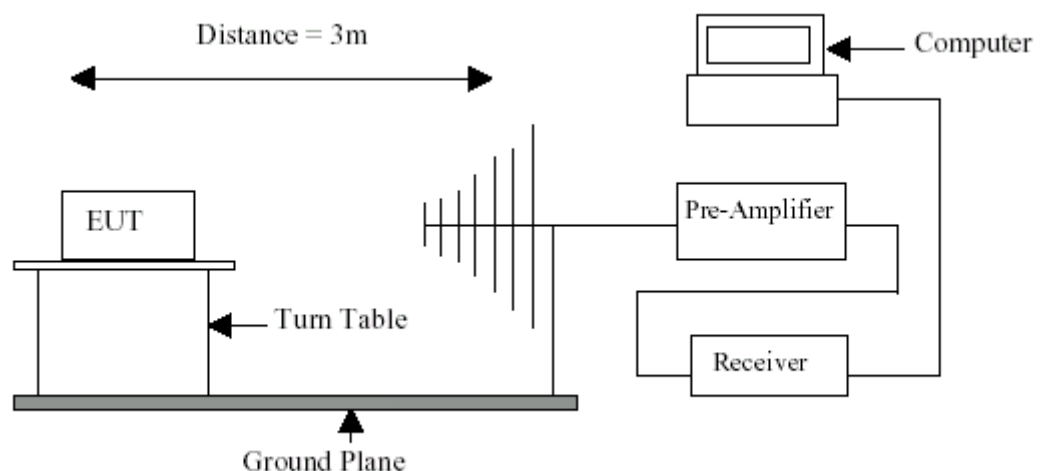
Test Site : 3m Anechoic Chamber (Registration Number: 102430)

Test Method:

The EUT was placed on a wooden turntable, which could rotate from 0° to 360°, 0.8m high above the ground, at a distance of 3m in anechoic chamber, from the receiving broadband antenna, which was mounted on the antenna tower. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results below.

QP readings are recorded except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz, in these three bands AV readings are recorded. The results for emission within the band 26.96-27.28 MHz are AV readings.

Test Setup:



Transducer

Loop Antenna 6502

Freq. (MHz)	Magnetic field Value (dB)	Electric field Value (dB)
0.009	-34.9	16.6
0.010	-35.5	16.0
0.020	-38.1	13.4
0.050	-38.8	12.7
0.075	-38.8	12.7
0.100	-39.0	12.5
0.150	-39.0	12.5
0.250	-39.0	12.5
0.500	-39.1	12.4
0.750	-39.3	12.2
1.000	-38.9	12.6
2.000	-39.2	12.3
3.000	-39.6	12.0
4.000	-39.7	11.8
5.000	-39.9	11.6
10.000	-39.6	11.9
15.000	-40.1	11.4
20.000	-40.6	10.9
25.000	-41.1	10.4
30.000	-41.9	9.6

Broadband antenna, 3141, 3m, 26MHz~2GHz

Freq. (MHz)	3141 Value (dB)	Cable Value (dB)	Total Value (dB)
26	12.0	0.30	12.30
30	8.7	0.35	9.05
60	6.7	0.70	7.40
100	9.8	1.14	10.94
150	9.4	1.38	10.78
200	10.1	1.62	11.72
250	12.1	1.96	14.06
300	14.5	1.96	16.46
350	15.7	2.36	18.06
400	16.1	2.68	18.78
450	16.9	2.79	19.69
500	17.7	2.87	20.57
550	18.8	3.21	22.01
600	19.9	3.55	23.45

Freq. (MHz)	3141 Value (dB)	Cable Value (dB)	Total Value (dB)
650	20.5	3.58	24.08
700	21.8	3.54	25.34
750	21.5	3.89	25.39
800	22.1	4.11	26.21
850	22.4	4.06	26.46
900	22.9	4.20	27.10
950	23.0	4.50	27.50
1000	24.1	4.56	28.66
1300	26.2	5.00	31.20
1700	27.2	6.00	33.20
2000	30.3	7.00	37.30

Note for transducer Factor:

Correction Factor included Antenna Factor and Cable Attenuation. All factors were inputted into the ESI 26 testing receiver, for frequencies between the known sampling points the transducer factor is approximated using modified spline interpolation by software of ESI 26. So, the readings displayed in the graphs are the final testing results we needed without any calculation.

Radiated Emission limits

- a) The field strength of any emission within 26.96-27.28MHz band shall not exceed 10,000 microvolt/meter (80dB μ V/m) at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in section 15.36 for limiting peak emissions apply.
- b) The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in Section 15.209.

Frequency (MHz)	Measurement Distance (meters)	Field strength (microvolt/meter)	Field Strength (dB μ V/m)
<30.0	30	30	49.5(3m)
30-88	3	100	40.0
88-216	3	150	43.5
216-960	3	200	46.0
Above 960	3	500	54.0

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1GHz are based on measurements employing an average detector.

The field strength of emissions appearing within restricted bands of operation shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, Compliance with the emission limits in Section 15.209 shall be demonstrated based on the Average value of the measured emissions.

Test Result:

Test Conditions (for transmitter):

Ambient Temperature : 25 °C/ 25 °C (Before Test/After Test);
 Relative Humidity : 60 %/ 60 % (Before Test/After Test);
 Power Supply : 8×1.5V DC ;
 Operating Mode of the EUT : Transmitting.

Radiated Emissions					
Description	Freq. (MHz)	Detector	Result dB(μV/m)	Limits dB(μV/m)	Limits (μV/m)
Fundamental emission	27.095	PK	80.86	100	100000
Fundamental emission	27.095	AV	79.35	80	10000

Radiated Emissions (QP detector)					
Description	Freq. (MHz)	Antenna Polarity	Result dB(μV/m)	Limits dB(μV/m)	Limits (μV/m)
Spurious emission	<30	--	<30	49.5	298.5
Spurious emission	40.68	H	15.50	40.0	100
Spurious emission	135.48	H	17.95	43.5	150
Spurious emission	198.00	H	17.01	43.5	150
Spurious emission	230.32	H	21.30	46.0	200
Spurious emission	298.04	H	19.50	46.0	200
Spurious emission	975.12	H	25.98	54.0	500
Spurious emission	40.64	V	22.41	40.0	100
Spurious emission	105.88	V	25.21	43.5	150
Spurious emission	121.92	V	30.85	43.5	150
Spurious emission	230.32	V	30.43	46.0	200
Spurious emission	392.88	V	26.85	46.0	200
Spurious emission	960.84	V	25.81	54.0	500

Note 1: According to FCC 47CFR15.35, the limit on the radio frequency emissions as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

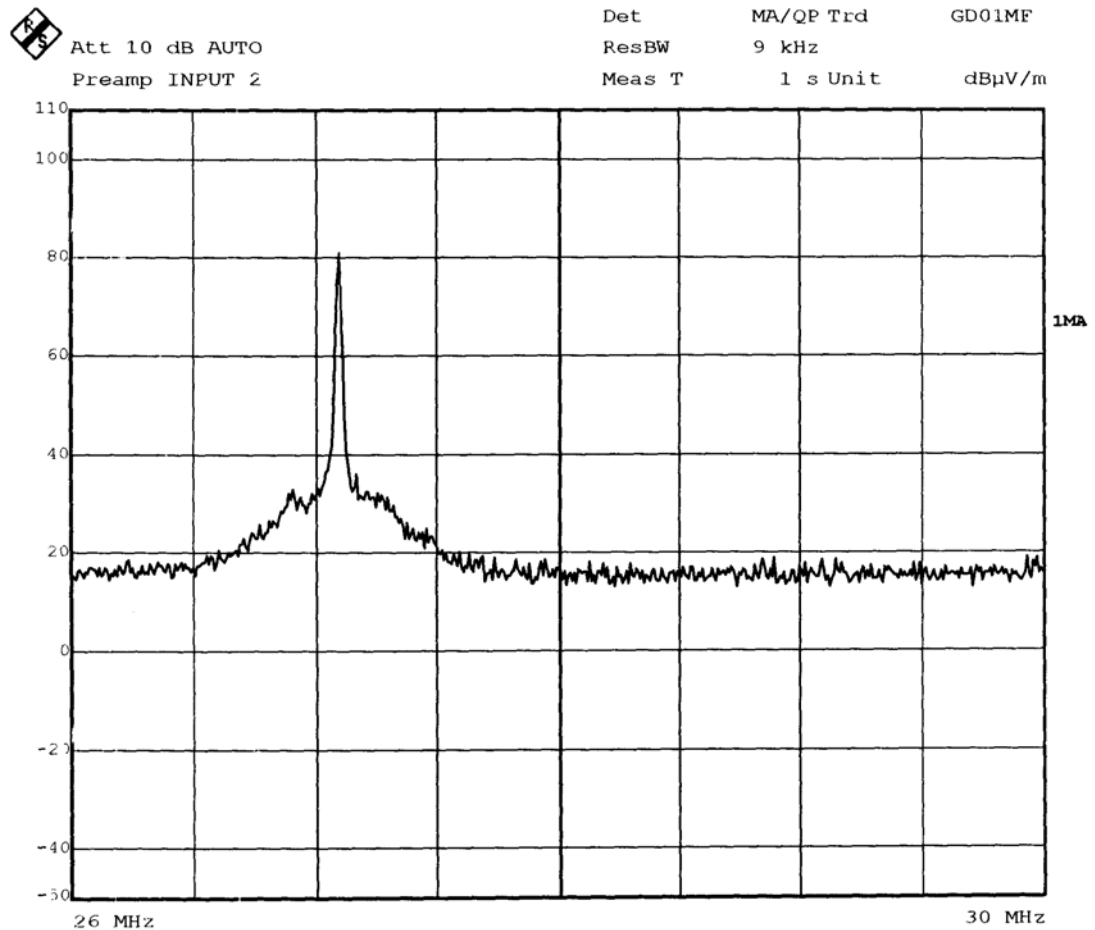
Note 2: Correction Factor including Antenna Factor and Cable Attenuation has been considered in the results.

Calculated measurement uncertainty:

±3.1dB(<30MHz)

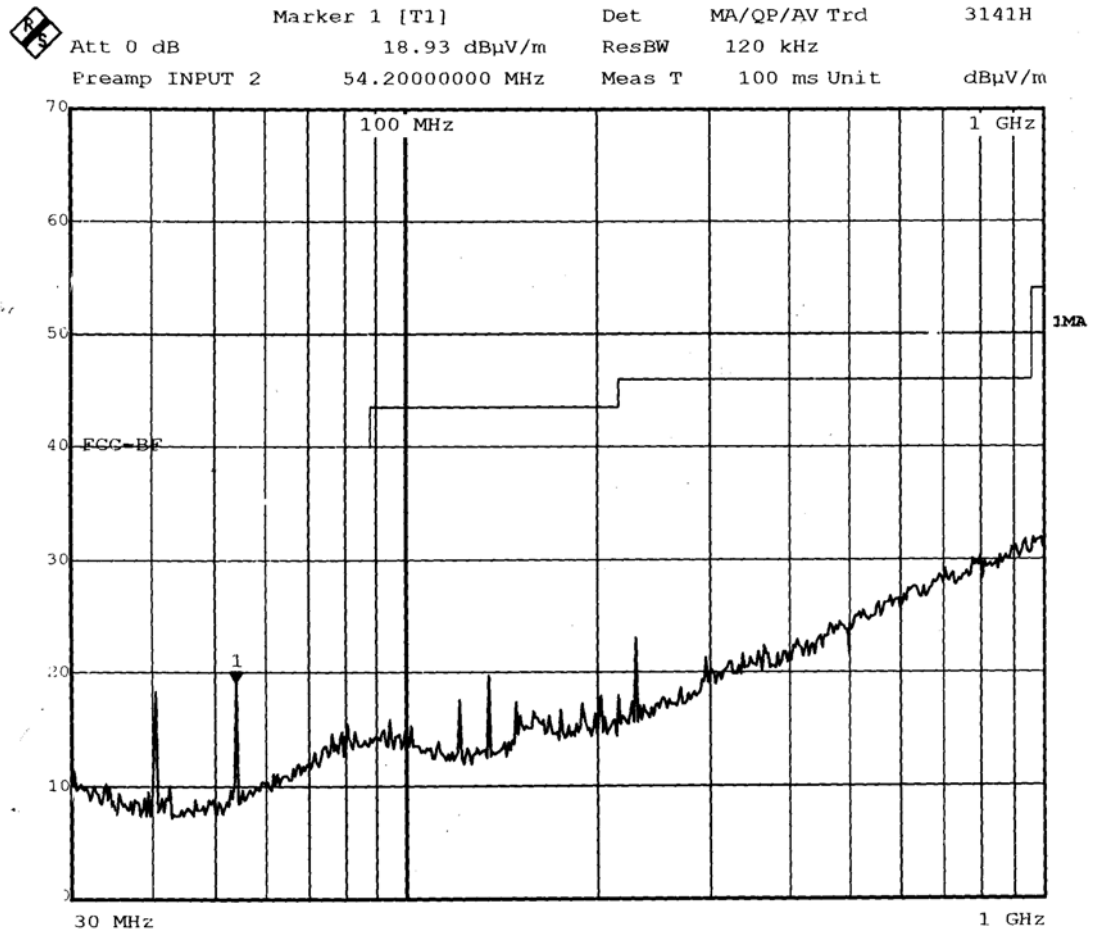
± 5. 9 dB(30MHz~1GHz)

Transmitting (below 30MHz)



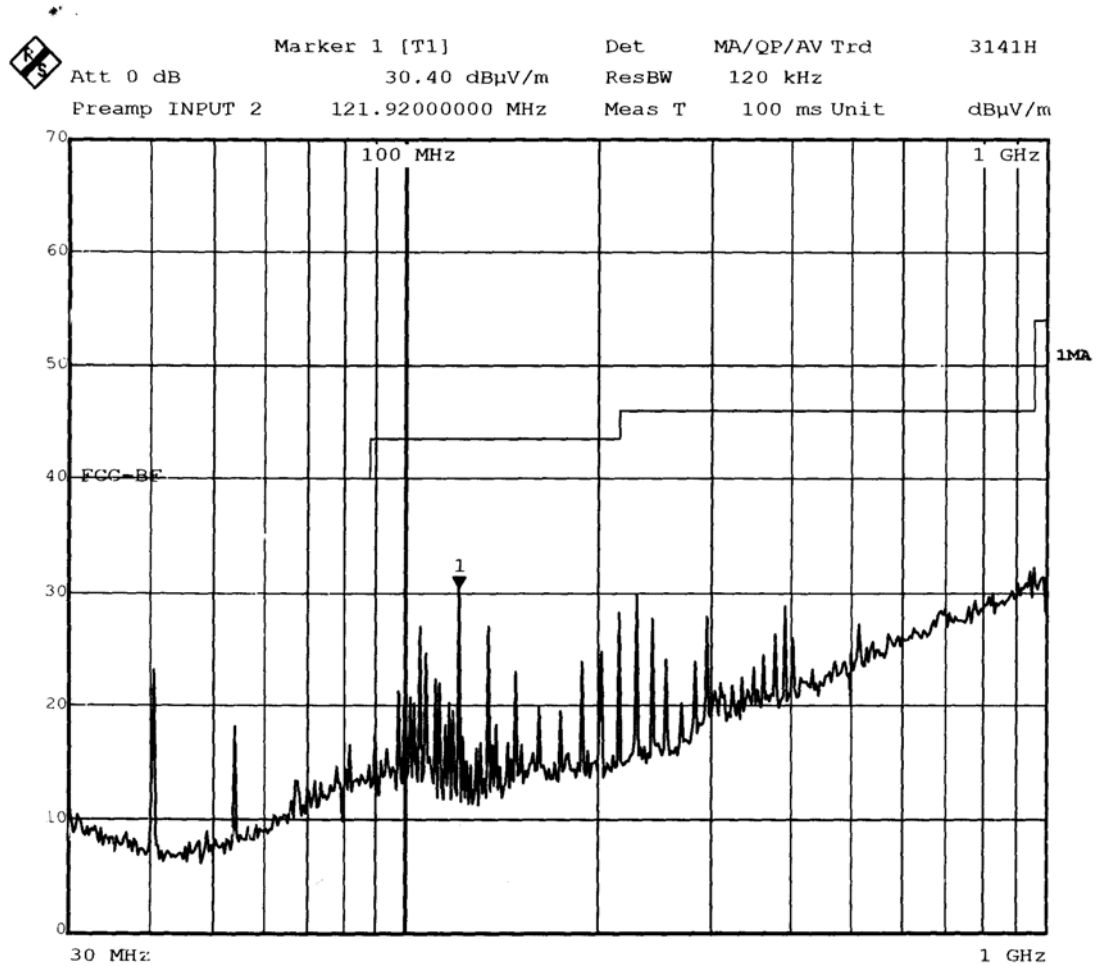
Date: 1.DEC.2006 14:30:55

Scan Graph and Scan Settings (Horizontal)



Date: 1.DEC.2006 08:09:23

Scan Graph and Scan Settings (Vertical)



Date: 1.DEC.2006 08:22:30

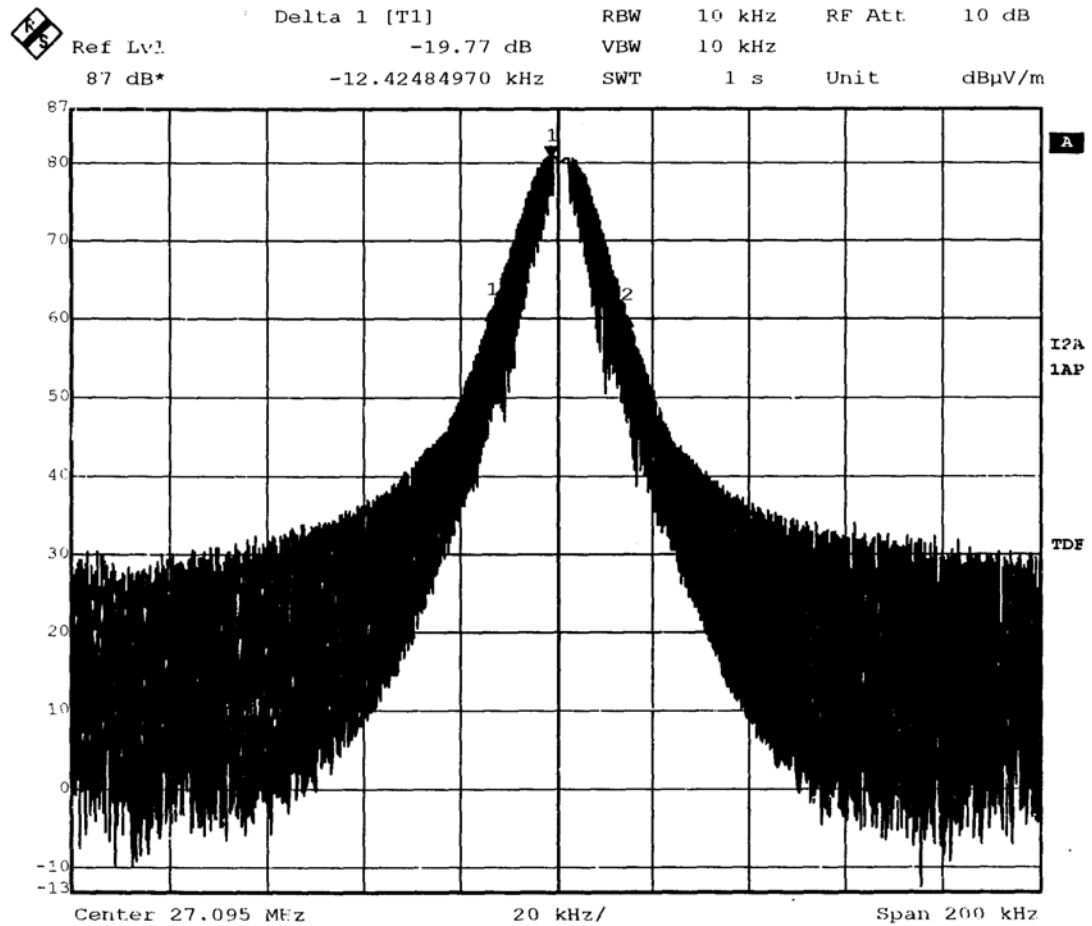
4.3 20dB Bandwidth

Result : **Pass**
Test procedure : ANSI C63.4:2003
Limit : Section 15.215(c)
Test site : 3m Anechoic Chamber (Registration Number:102430)

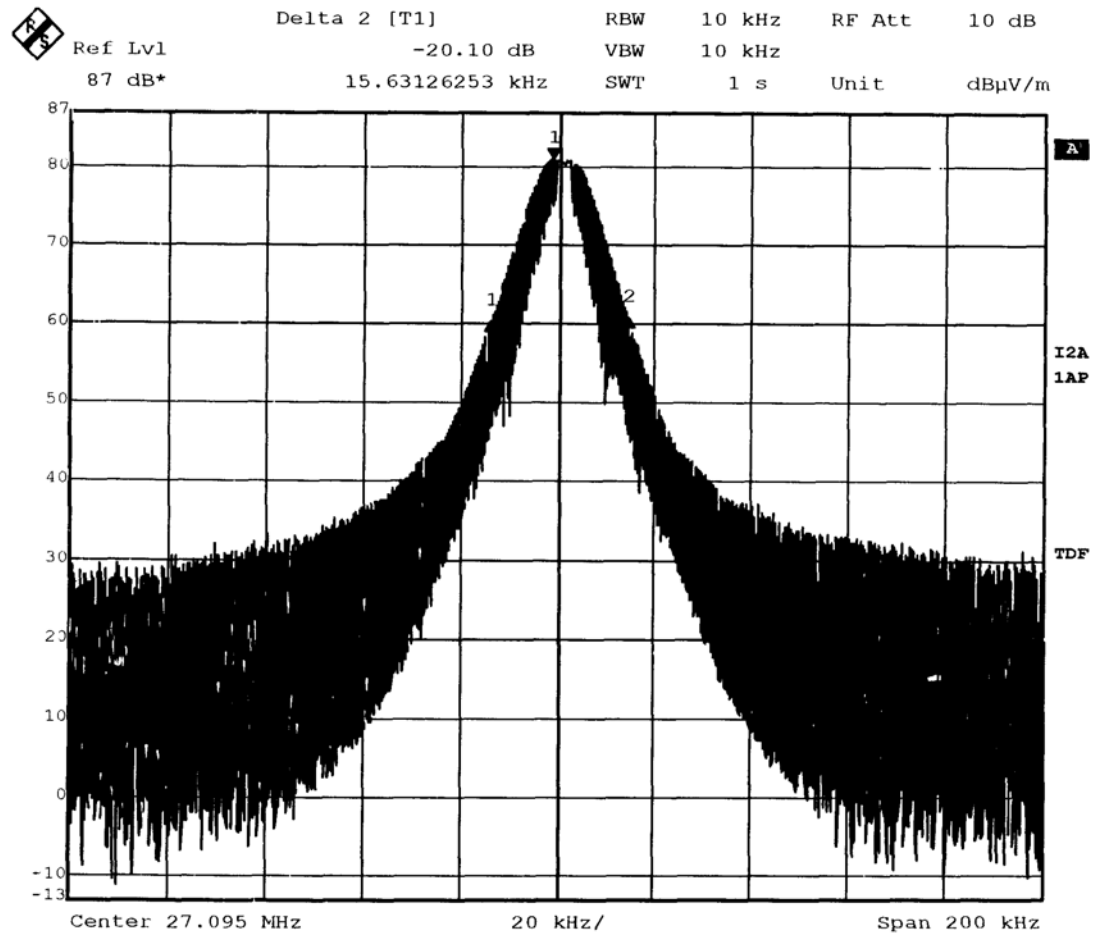
Test setup
Same as 4.2

Ambient Temperature : 25 °C / 25 °C (Before Test/After Test);
Relative Humidity : 60 % / 60 % (Before Test/After Test);
Power Supply : 8×1.5V DC ;
Operating Mode of the EUT : Transmitting.

Frequency Range [MHz]	20dB Bandwidth [KHz]	FCC Limits [MHz]
27.095	20.1+19.7=39.8	within 26.96-27.28



Date: 1.DEC.2006 14:54:19



Date: 1.DEC.2006 14:54:03

5. Photographs of the EUT

5.1 Outlook:

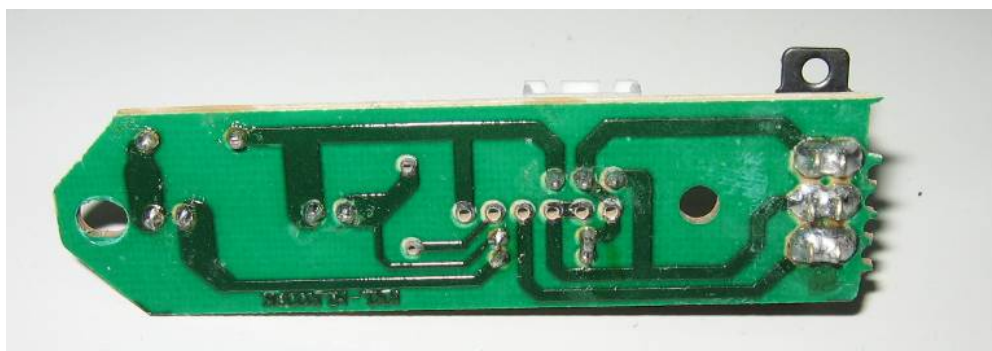
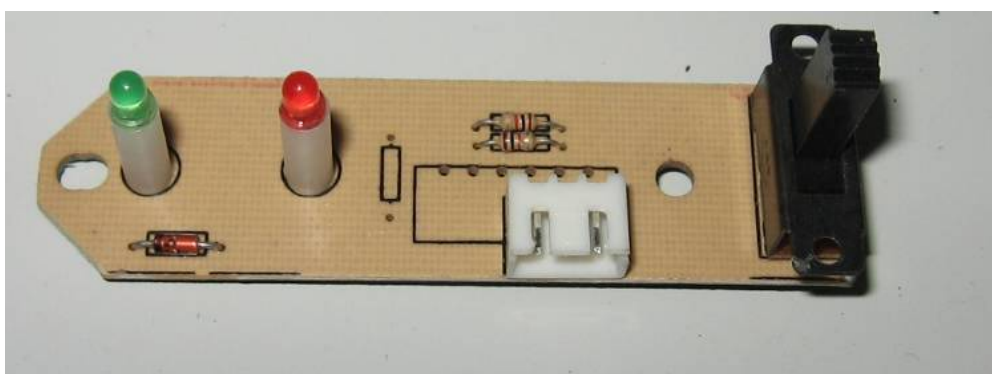
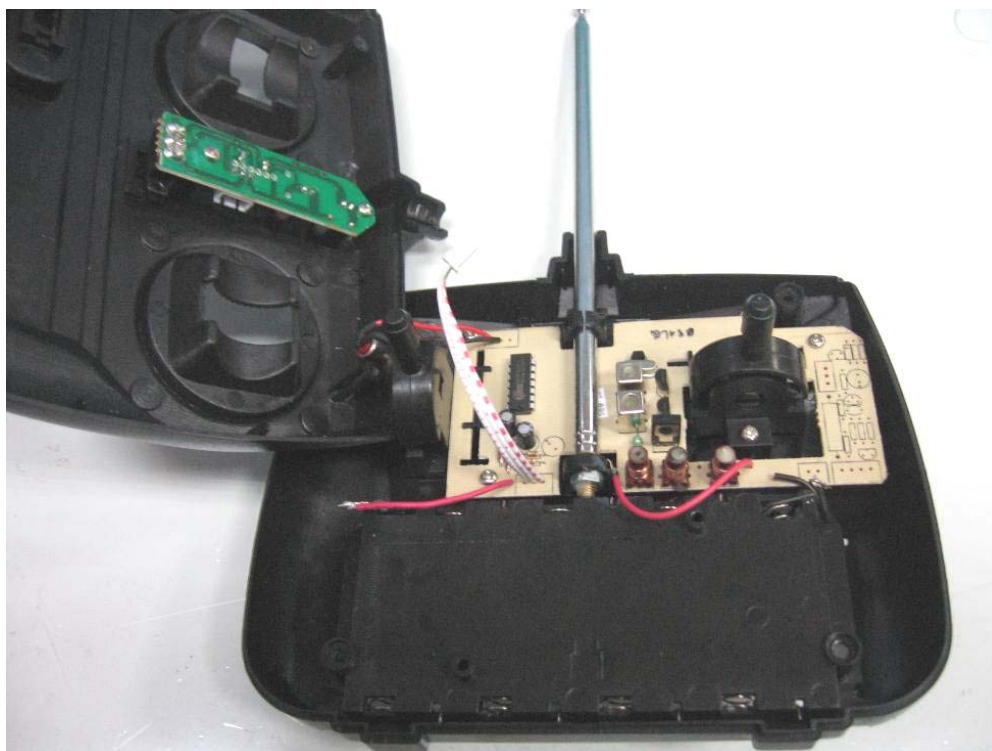
Front View of the EUT

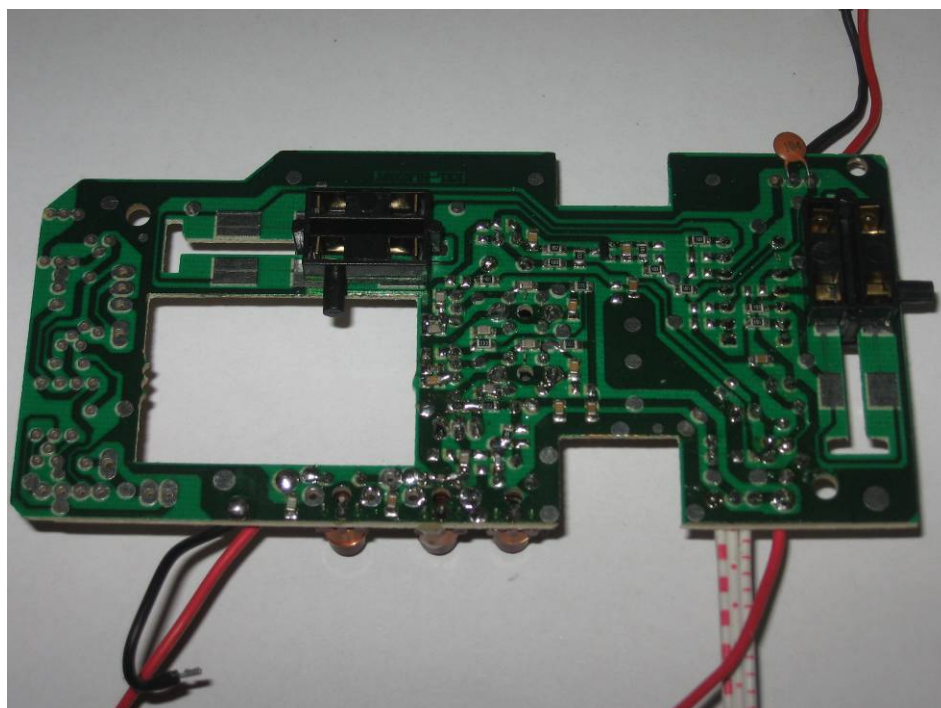
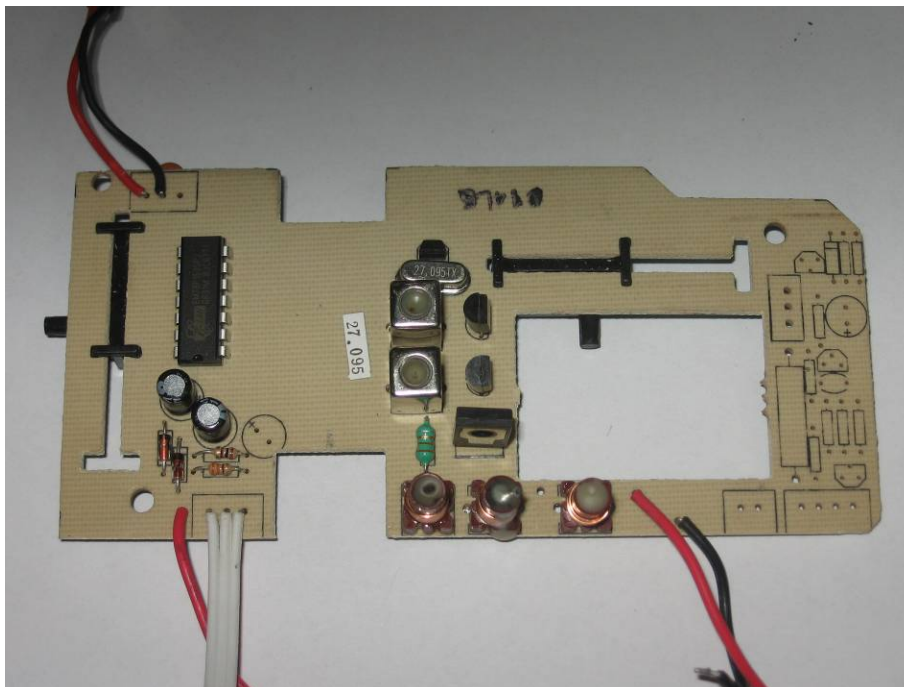


Rear View of the EUT



5.2 Structure and internal wires:





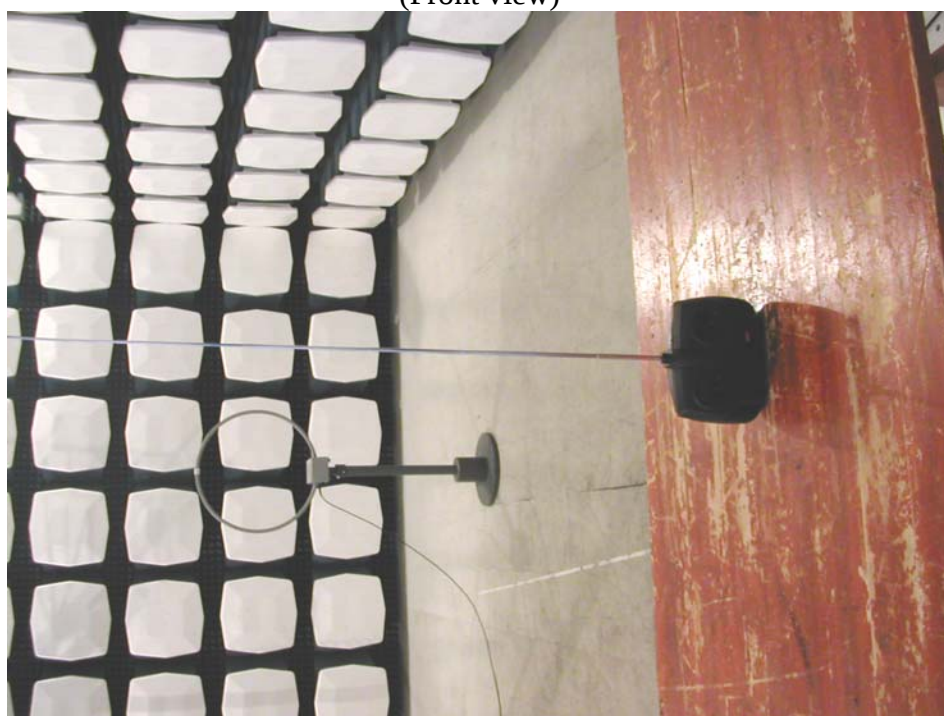
5.3 Nameplate:



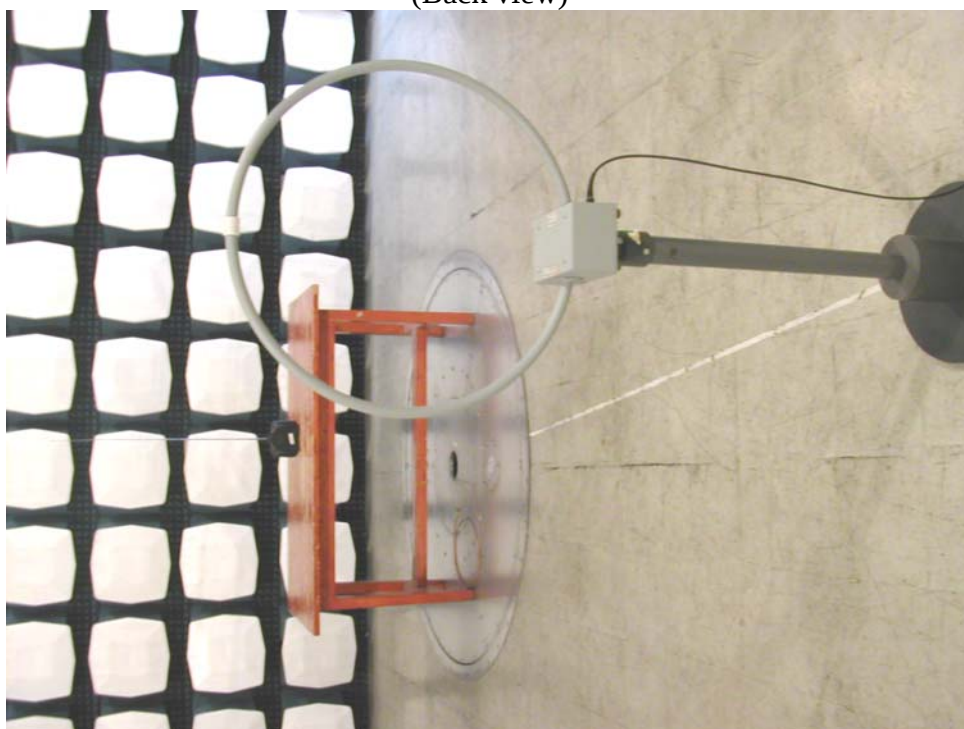
6. Photograph of the test set up

Emission below 30 MHz

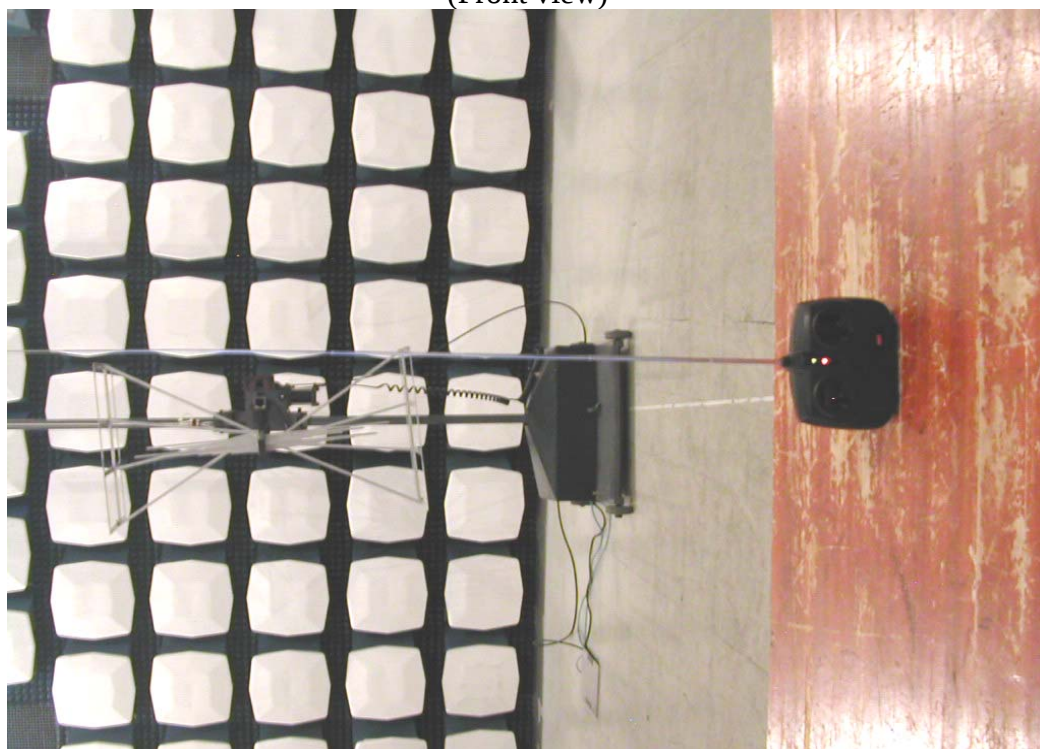
(Front view)



(Back view)



Spurious Emission (30 MHz-1000 MHz)
(Front view)



Spurious Emission (30 MHz-1000 MHz)
(Back view)



Appendix A

Test Equipment	Mature Date of Calibration	Type/Model	Serial No.	Manufacturer
EMI Testing Receiver	2007.10.12	ESI26	834000/009	R & S
Loop Antenna	2007.03.01	6502	9906-3292	EMCO
Broadband Antenna	2007.06.04	3141	1178	EMCO

End of Document