Certification of Conformity

Order No.	**:**	**CSTS-C1112-059**
Test Report No.	**:**	**CSTS-A11-FCC0045**
Applicant	**:**	**PHAROBIT CO., LTD.**
Address of Applicant	**:**	**428 Doosan Venturedigm, 126-1, Pyeongchon-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea**

Equipment Under Test (EUT)

Name	**:**	**LED Flashlight DVR**
Model No.	**:**	**GCF-200**

Standards	**:**	**FCC Part 15:2009, Subpart B Class B** **ANSI C63.4:2009**

Date of Receipt : Oct. 18, 2011
Date of Test : Dec. 21, 2011
Date of Issue : Dec. 27, 2011

Test Result :	**PASS**

Kang, Haeng Sun / Test Engineer

Lee, Kyu Hyun / EMC Manager

In the configuration tested, the EUT complied with the standards specified above.

Remarks :
This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.
This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

Contents

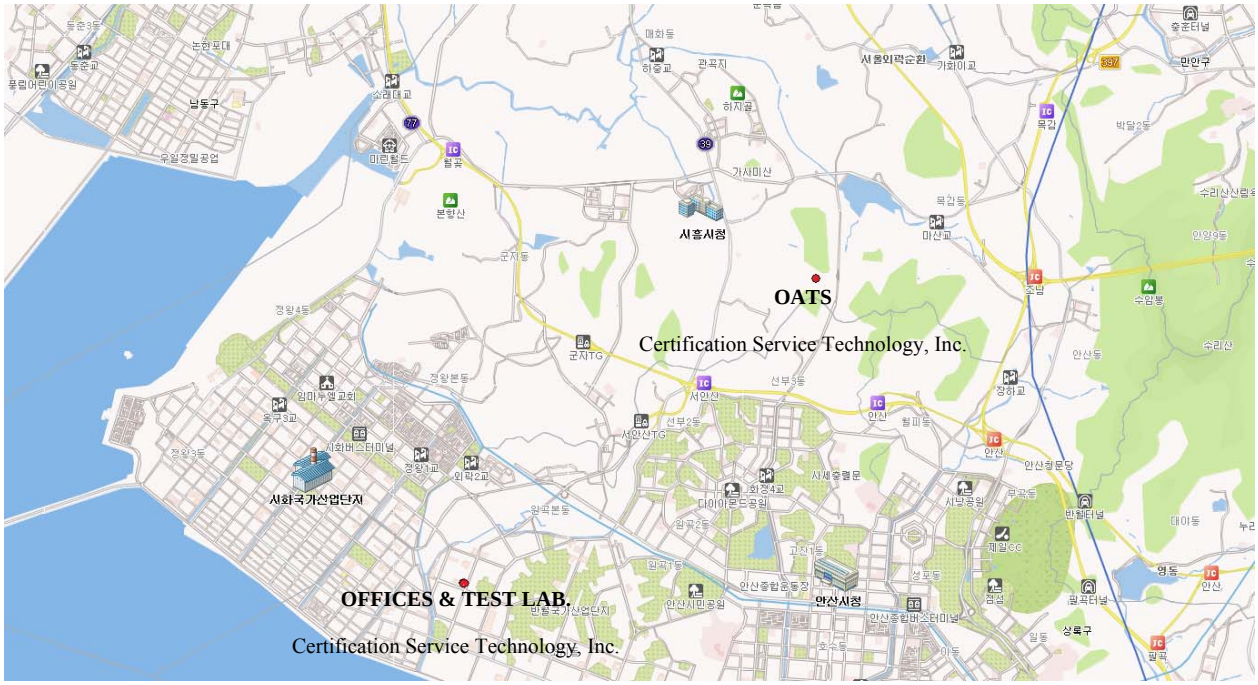
1. General Information

1.1 Information of Test Laboratory.

FCC E-Failing : Registration Number:289252

Name	:	Certification Service Technology, Inc.
Address 3mFullChamber Conducted Emission	:	2F/1055, Shingil-Dong, Danwon-Gu, Ansan-City, Gyeonggi-Do Korea, 425-839
Radiated Emission (OATS)	:	456 Sanhyeun-Dong, Sihung-City, Gyeonggi-Do Korea
Tel/Fax	:	+82-31-493-2001 / +82-31-493-2055

Web site : http://www.cstlab.co.kr E-mail : khlee@cstlab.co.kr

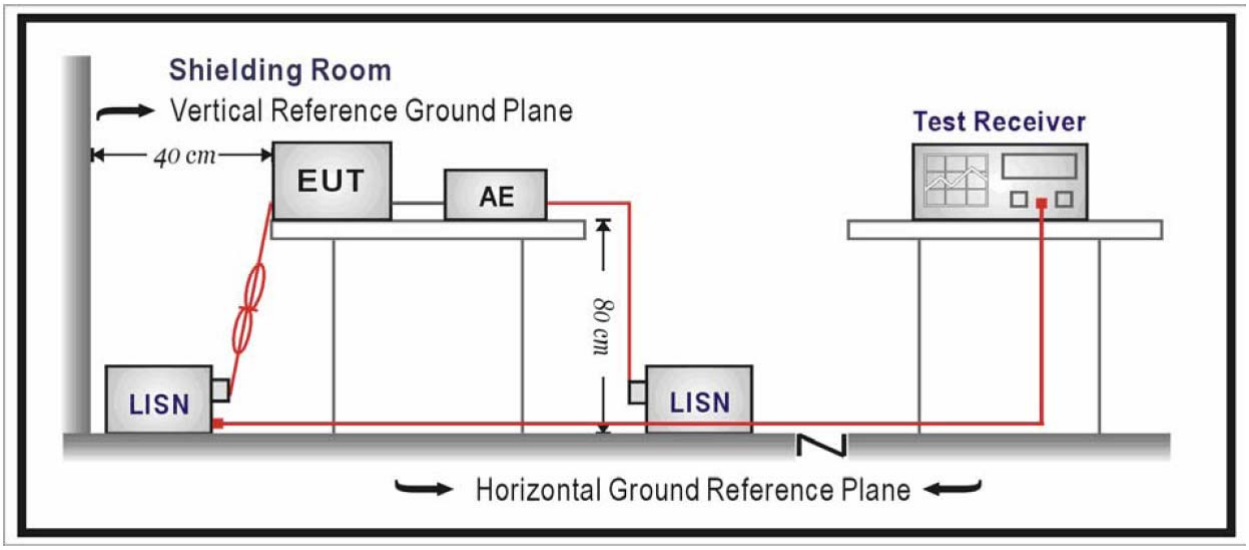


We , Certification Service Technology, Inc. are an independent EMC and RF, Safty consultancy that was established the whole facility in our laboratories. The test facility has been accredited by the following accreditation Bodies in compliance with ISO 17025:

1.2 Description of Test

Conducted Emissions:

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50 uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm/50 uH coupling impedance with 50 ohm termination.(Please refers to the block diagram of the test setup and photographs.)
Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed on conducted measurement.
Conducted emissions were invested over the frequency range from 0.15 MHz to 30 MHz using a receiver bandwidth of 9 kHz.



Limit Of Conducted Emission Of FCC Part 15 Subpart B Section 15.107

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 – 56	56 - 46
0.5 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Radiated Emissions:

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.
The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.
Radiated emissions were invested over the frequency range from 30 MHz to1 GHz using a receiver bandwidth of 120 kHz.
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 measurement range (MHz)
30-88	30
1.705 - 108	1 000
108 - 500	2 000
500 - 1000	5 000
Above 1 000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

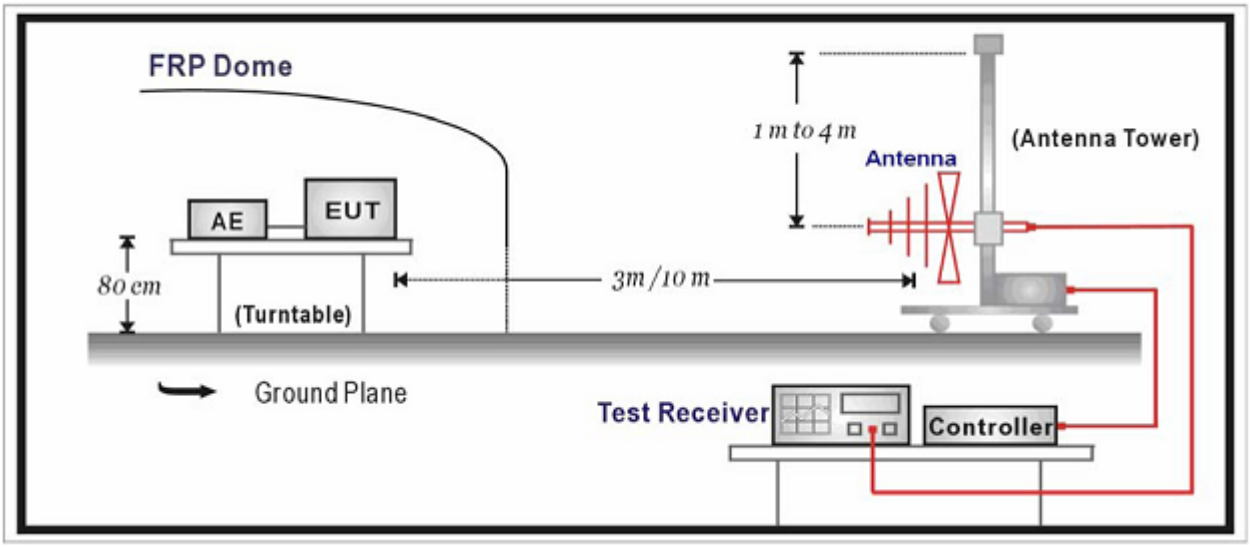
On any frequency or frequencies below or equal to 1 000 MHz, the radiated limits shown are based on measuring equipment employing a quasi-peak detector function and above 1 000 MHz, the radiated limits shown are based measuring equipment employing an average detector function.
When average radiated emission measurement are included emission measurement Above 1 000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.
For class A, the measurement distance between the EUT and antenna is 10 meters for under 1 GHz and above 1 GHz.
For class B, the measurement distance between the EUT and antenna is 10 meters for under 1 GHz and 3 meters for above 1 GHz.
The bandwidth below 1 GHz setting on the field strength meter (LIG Test Receiver ER-265) is 120 kHz and above 1 GHz is 1 MHz.

Limit Of Radiated Emission Of FCC Part 15 Subpart B Section 15.109

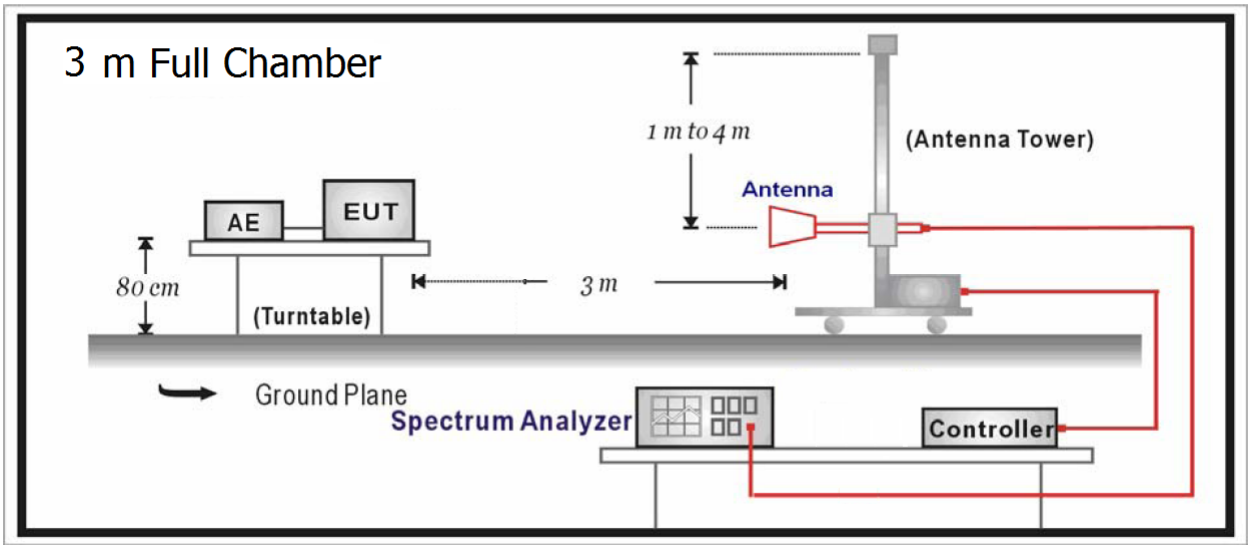
FREQUENCY (MHz)	Class A (at 10 m)* dBuV/m	Class B (at 3 m)* dBuV/m
30-88	39.1	40
88-216	43.5	43.5
216-960	46.4	46
960-	49.5	54

Note) (1) *Detector Function : Quasi-Peak

Below 1 GHz Test Setup:



Above 1 GHz Test Setup:



1.3 Measurement Uncertainty Calculations

Conducted Emissions

*** Conducted Emissions**

Uncertainty of measurement ± 2.78 [dB]

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

*** Radiated Emission**

Uncertainty of measurement

Horizontal polarization : ± 2.98 [dB]

Vertical polarization : ± 2.72 [dB]

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

1.4 Manufacturer Information

Manufacturer	:	PHAROBIT CO., LTD.
Address	:	428 Doosan Venturedigm, 126-1, Pyeongchon-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

1.5 General Description of EUT

Name : LED Flashlight DVR
Model No. : GCF-200
Serial No. : N/A

1.6 Details of EUT

Section		Specification
LED Flashlight DVR	Image Sensor	5 M Pixel Color CMOS Sensor
	LED Lamp	SSC P7 LED
	Display	1.5” TFT LCD
	GPS	SiRF Star IV High Performance GPS Chipset
	Night-Vision	Auto Digital IR-CUT Shift Module (6 EA 850 nm IR LED)
	Waterproof	IP 68 (Max 100 M)
	E-Compass	Magnetic Sensor Type
	Control Switch	Twin Power & Recoding Magnetic Rotary Switch
	Housing	Aircraft Aluminum 6061 t6, Hand Anodizing heat treatment, Pyrex Lens
	White Balance	Auto
	Recording Frame Rate	1 920 x 1 080 (30 fps), 1 280 x720 (30 fps), 848 x 480 (60 fps), 640 x 480 (30 fps)
	Image Resolution	4 000 x 3 000, 3 200 x 2 400, 2 592 x 1 944, 2 048 x 1 536
	Voice Recording	HQ AAC INCORDER (In the Water Cannot be Recoded)
	LED Lamp Life (white)	SSC P7 Provide More than 100 000 Hours of Trouble Free Life. Max 900 Lm (Visual Distance 300 m)
	Brightness	2-Levels of Brightness and SOS Signal
	OSD and System Menu Display	Include Monitoring Viewfinder

	OSD Language Display	Korean, English etc.
	Recording Media	TF Card, Max 32 GB (Max 16 Hr)
	Interface	USB, MINI HDMI, TF Card slot
	Battery Operable	2 x 18 650 LI-ION Battery
	Battery Run Time (MAX)	4.5 Hours Flashlight Only.-3.5 Hours (Camera and Flashlight)
	Size & Weight	375 mm x 80 mm (Max Diameter), 980 g (Without Battery)

1.7 Description of Support Units

Product	Model No.	Serial No.	Manufacturer	Certification
LED Flashlight DVR (EUT)	GCF-200	N/A	PHAROBIT CO., LTD.	N/A
Micro SD Card (EUT)	Micro SD Card 8 GB	1037RE2566K	Kingston	N/A
Personal Computer	DM-V189	ZW7C97AZC9031EH	Samsung Electronics Co., Ltd.	N/A
LCD Monitor	VX2260WM DVT	LP2137-01784900003	ViewSonic	N/A
USB Keyboard	Y-BP62a	N/A	Logitech Inc.	N/A
USB Mouse	M-BP82	N/A	Suzhou logitech electronics Co., Ltd.	N/A

- **1.8 Cable List**

Device From		Device To		Cable Spec	
Name	**I/O Port**	**Name**	**I/O Port**	**Length(m)**	**Shield**
EUT	USB	Personal Computer	USB	1.5	Shielded
	HDMI	LCD Monitor	HDMI	1.8	Unshielded
	Micro SD Card Slot	Micro SD Card	-	-	-
Personal Computer	D-Sub	LCD Monitor	D-Sub	1.8	Shielded
	USB	Keyboard	USB	1.8	Shielded
	USB	Mouse	USB	1.8	Shielded
	AC-IN	AC Line	AC-POWER	2.0	Unshielded
LCD Monitor	AC-IN	AC Line	AC-POWER	2.0	Unshielded

1.9 System Configuration

Description	Model	Serial No.	Manufacturer
Micro SD Card	Micro SD Card 8 GB	1037RE2566K	Kingston
Rechargeable Lithium Battery	N/A	N/A	N/A
Battery	HL-PL551430	N/A	N/A
Button Board	M2-KEY	N/A	N/A
Camera Board	EL0102	N/A	N/A
LCD Board	M2-LCD	N/A	N/A
LCD Panel	N/A	N/A	N/A
LED Board	N/A	N/A	N/A
Main Board	N/A	N/A	N/A
Port Board	M2 USB HDMI	N/A	N/A
Power Board	N/A	N/A	N/A

1.10 Operating Condition

-The EUT was operated in Data UP/Download & Play Music Mode.

And the test engineer observed whether the EUT was operated normally during the test.

1.11 Standards Applicable for Testing

Table of tests to be carried out under FCC Part 15, Subpart B

Test Standards	Status
FCC Part 15, Subpart B, Class B	A
Deviation from Standard	No Deviation

Note) N/A : Indicates that the test is not applicable
A : Indicates that the test is applicable

Radio Disturbance

2. Radio Disturbance

2.1 Test Results

	Results
Conducted Emission	**PASS**
Radiated Emission	**PASS**

2.2 Frequency Range

Conducted Emission : 150 kHz - 30 MHz
Radiated Emission : 30 MHz - 1 000 MHz, Above 1 000 MHz

2.3 Limits Of Conducted And Radiated Emission

2.3.1 Limit Of Conducted Emission Of FCC Part 15, Subpart B, Section 15.107

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 – 56	56 - 46
0.5 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

2.3.2 Limit Of Radiated Emission Of FCC Part 15, Subpart B, Section 15.109

FREQUENCY (MHz)	Class A (at 10m)	Class A (at 3m) ***	Class B (at 3m)
	dBuV/m	dBuV/m	dBuV/m
30-88	39.1*	49.5*	40*
88-216	43.5*	54.0*	43.5*
216-960	46.4*	56.9*	46*
960- 1000	49.5*	60.0*	54*
Above 1 GHz	49.5**	60.0**	54**

Note) (1) *Detector Function : Quasi-Peak
(2) ** Detector Function : Peak
(3) ***Conversion for at 3m : 20log(10/3)

2.4.Test of Conducted Emission

2.4.1 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Next Calibration	Use
Test Receiver	LIG NEX1	ER-30	L0806A003	Sep. 2012	■
Conducted Cable	N/A	N/A	N/A	N/A	■
LISN	EMCO	3825/2	9006-1666	Mar. 2012	■
LISN	EMCIS	LN2-16	LN10010	Mar. 2012	■
Transient Limiter	HP	11947A	3107A00640	Sep. 2012	■
Shielded Room	BRADEN	N/A	DAC-60-005	-	■

2.4.2 Test Site

Name and address : Certification Service Technology, Inc.
2F/1055, Shingil-Dong, Danwon-Gu, Ansan-City, Gyeonggi-Do
Korea, 425-839

2.4.3 Operation of EUT

Operating Environment

Temperature : 21.1 ℃
Humidity : 49 %R.H.

2.4.4 Measurement Data

Measurment Bandwidth: 9 kHz
Data of Test: Dec. 21, 2011

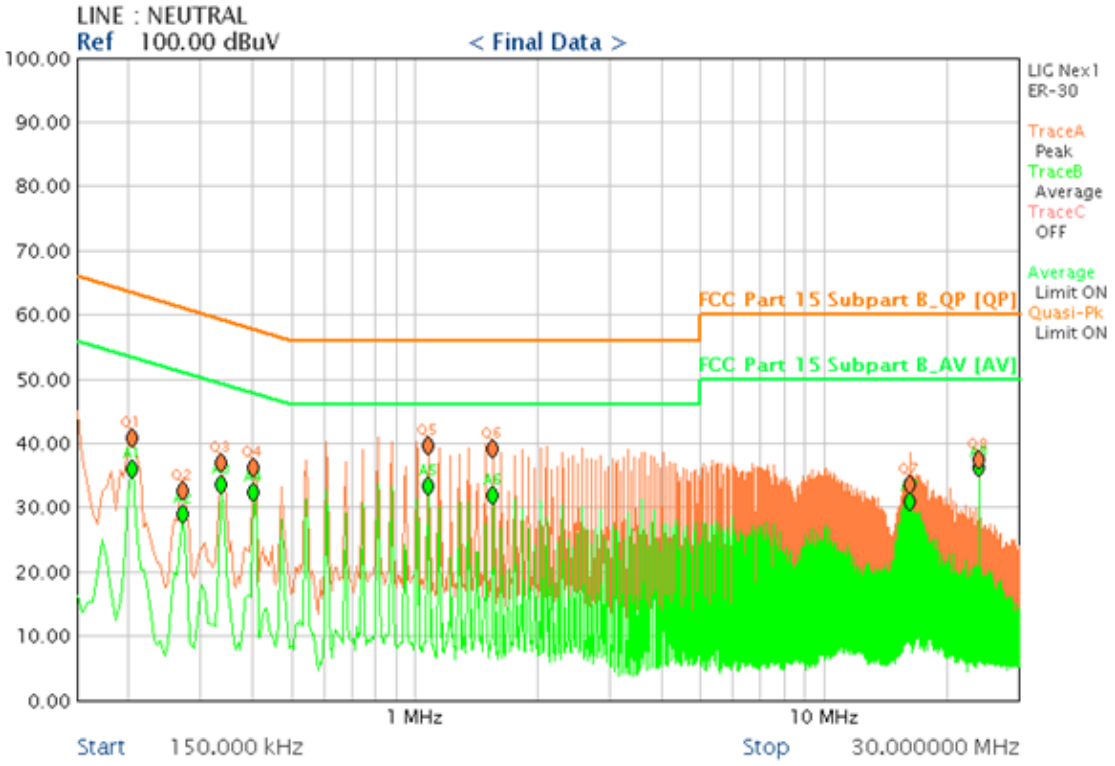
FREQ. (MHz)	FACTOR(dB)		LINE (L/N)	Quasi-Peak			Average		
	LISN	CABLE		Limit (dBuV)	Reading (dBuV)	Reault (dBuV)	Limit (dBuV)	Reading (dBuV)	Reault (dBuV)
0.204	0.17	0.07	L	63.45	44.68	44.92	53.45	35.84	36.08
0.339	0.10	0.05	L	59.23	39.86	40.01	49.23	30.21	30.36
0.406	0.06	0.06	N	57.73	35.88	36.00	47.73	32.04	32.16
0.879	0.05	0.10	L	56.00	37.36	37.51	46.00	27.97	28.12
1.081	0.03	0.11	N	56.00	39.38	39.52	46.00	33.03	33.17
2.368	0.03	0.13	L	56.00	37.58	37.74	46.00	30.52	30.68
16.445	0.26	0.31	L	60.00	34.89	35.46	50.00	32.66	33.23
24.000	1.71	0.42	L	60.00	35.18	37.31	50.00	34.34	36.47

Note:
1. All Reading Levels are Quasi-Peak and average value.
2. Measurement Level(Result) = Reading Level + Correct Factor(Factor)

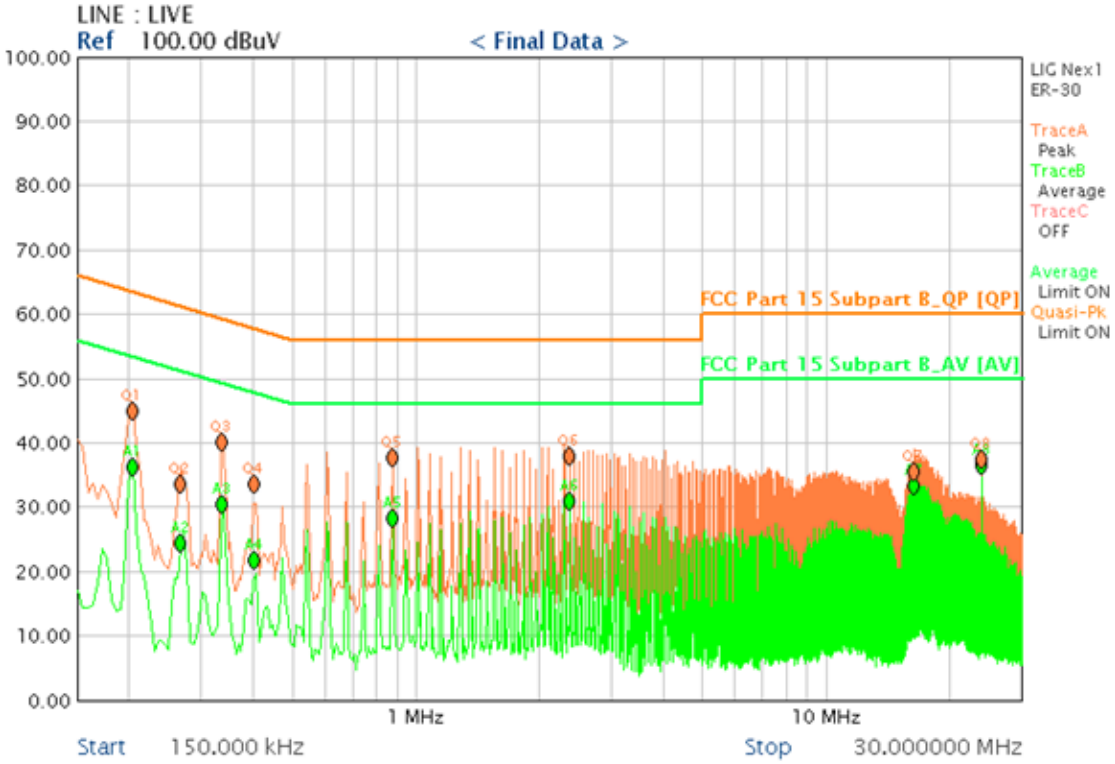
Tested by Kang, Haeng Sun

PLOTS OF EMISSIONS

LINE : NEUTRAL



LINE : LIVE



2.5 Test of Radiated Emission

2.5.1 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Next Calibration	Use
EMI Test Receiver	R&S	ESVS10	833206/010	Apr. 2012	■
BICONICAL ANT.	EMCO	3104C	9012-4380	May. 2012	■
LOGPERIODIC ANT.	EMCO	3146	91071232	May. 2012	■
Open Site	CSTech	N/A	N/A	-	■
Turn Table	DEAIL EMC	D-TT 06	N/A	-	■
Ant. Mast	DEAIL EMC	D-AM 06	N/A	-	■
Controller	DEAIL EMC	D-CTR 06	N/A	-	■
AVR	DEA YOUNG ELECTRIC & TECHNOLOGY CO., LTD	10KVA	307167	-	■

2.5.2 Test Site

Name and address : Certification Service Technology, Inc.
3m Full Chamber : 2F/1055, Shingil-Dong, Danwon-Gu,
Ansan-City, Gyeonggi-Do,Korea, 425-839

2.5.3 Operation of EUT

Operating Environment
Temperature : -5.5 ℃
Humidity : 53 %R.H.

2.5.4 Measurement Data

Measurment Bandwidth : 120 kHz
Data of Test : Dec. 21, 2011

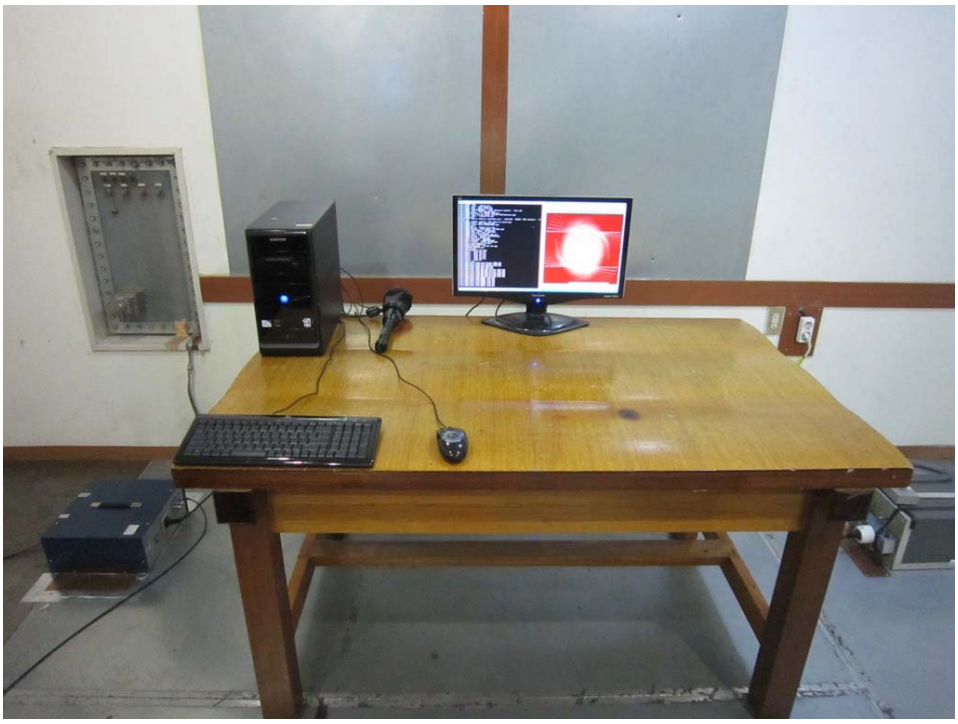
Frequency (MHz)	Reading (dBuV/m)	Pol. (H/V)	Ant. Height (m)	Factor		LIMIT (dBuV/m)	Result (dBuV/m)
				AF (dB)	Cable Loss (dB)		
47.64	21.06	V	1.20	10.67	1.25	40.00	32.98
71.80	21.12	V	1.10	8.22	1.54	40.00	30.88
115.62	20.83	H	2.00	13.27	2.31	43.50	36.41
189.52	14.25	H	2.20	16.51	2.95	43.50	33.71
240.20	20.03	H	2.10	16.17	3.40	46.00	39.60
288.40	16.50	H	2.30	19.66	3.81	46.00	39.97
296.92	15.61	H	2.20	20.45	3.88	46.00	39.94
* Remark : H - Horizontal / V - Vertical							

Note:
1. All Readings below 1 GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Correct Factor = Ant. Gain + Cable loss
3. Measurement Level(Result) = Reading Level + Correct Factor

Tested by Kang, Haeng Sun

3. Photographs of Test

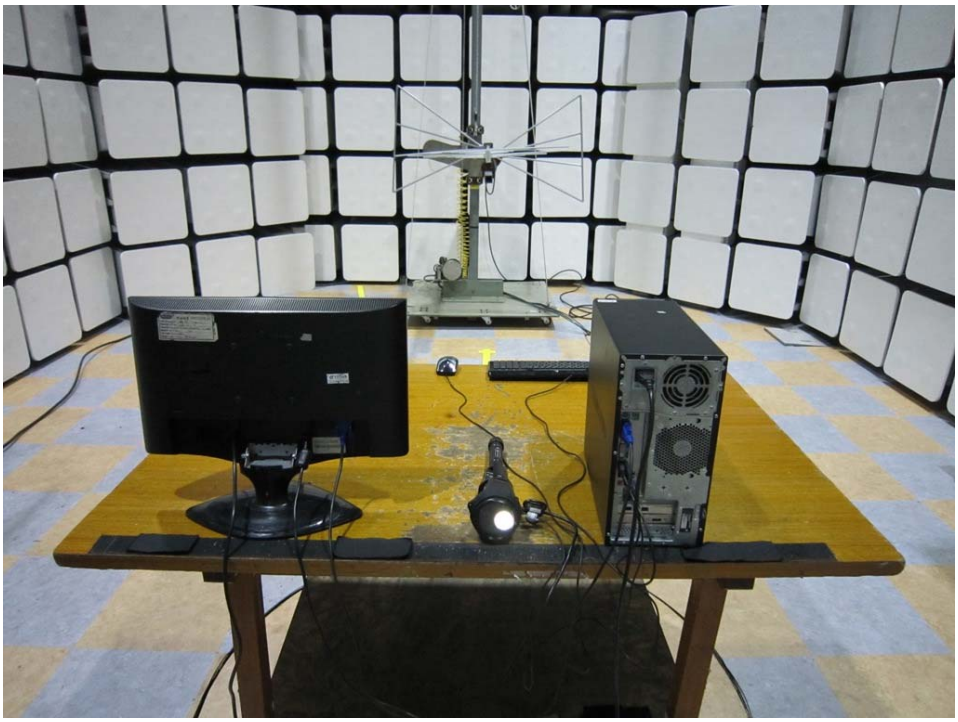
- **Front View of Conducted Emission**



- **Rear View of Conducted Emission**

- **Front View of Radiated Emission**

- **Rear View of Radiated Emission**



4. Photographs of Product

Front View of EUT

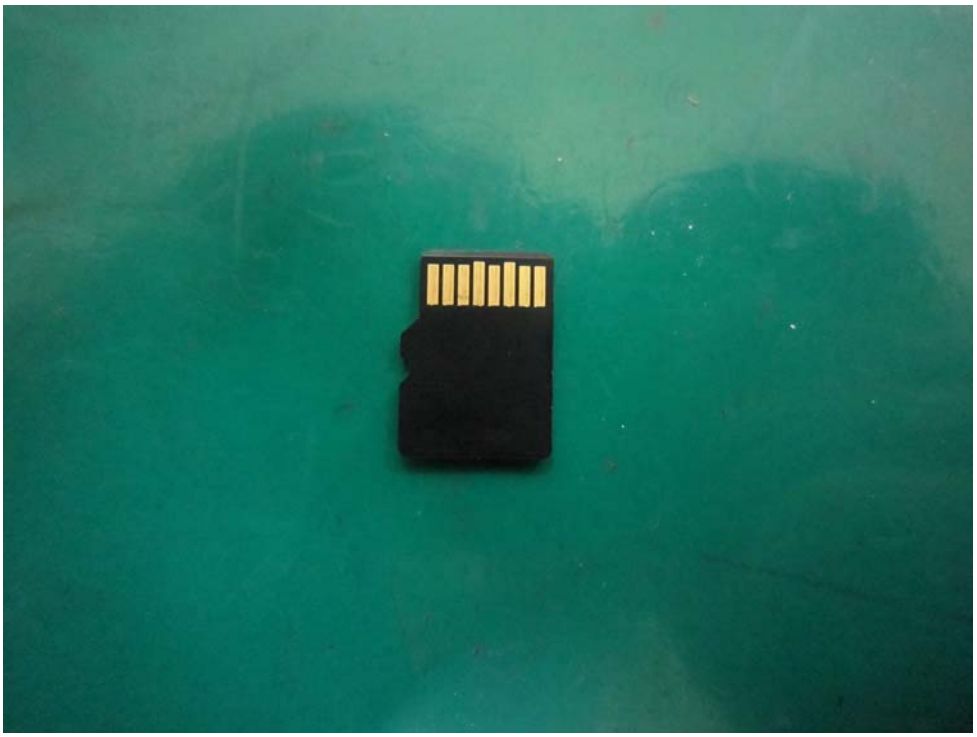
Rear View of EUT

Label Location

Internal

Front View of Micro SD Card

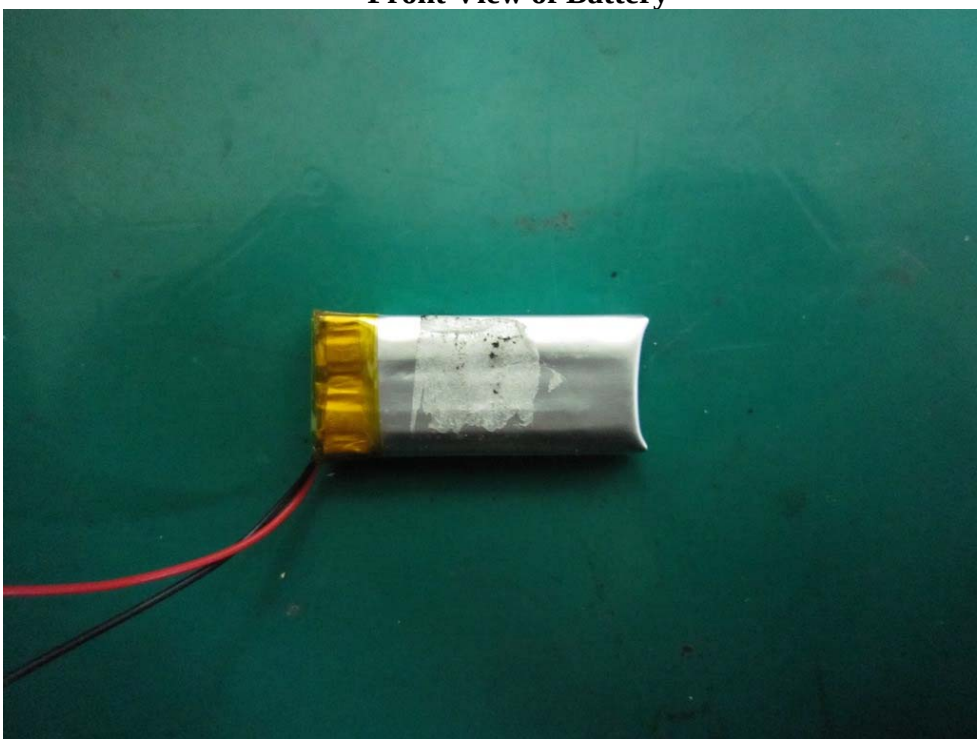
Rear View of Micro SD Card



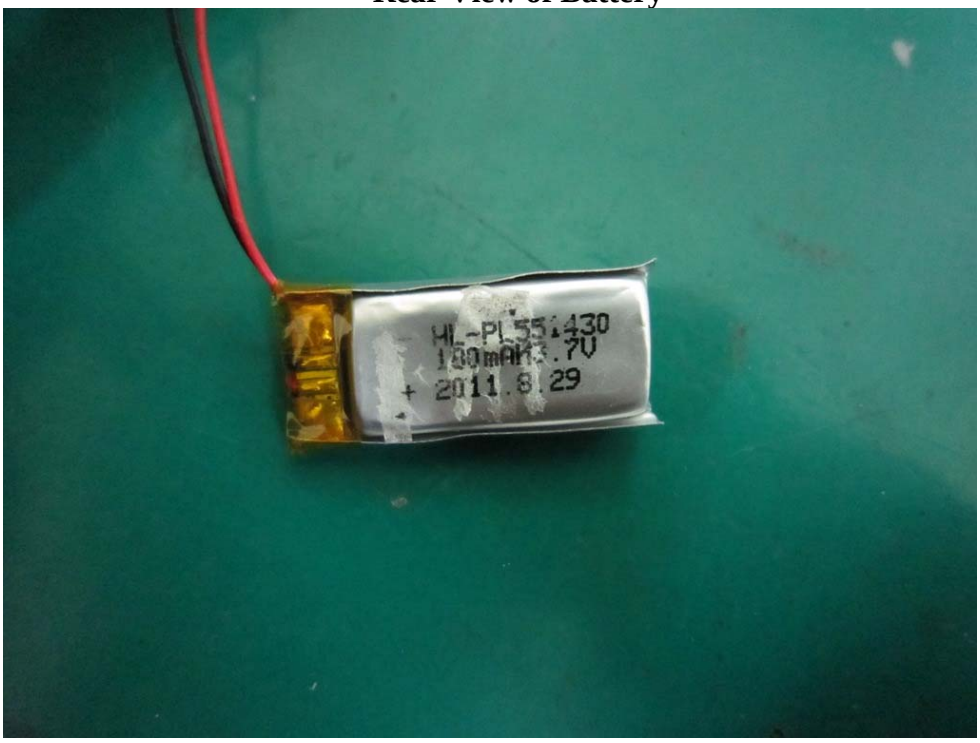
Front View of Rechargeable Lithium Battery

Rear View of Rechargeable Lithium Battery

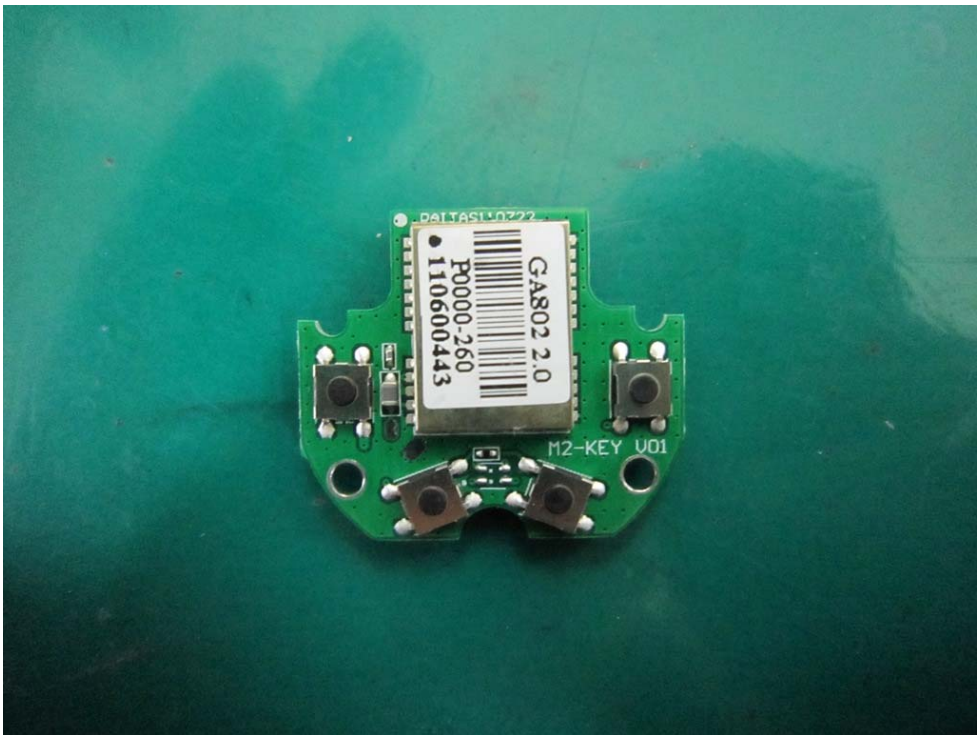
Front View of Battery



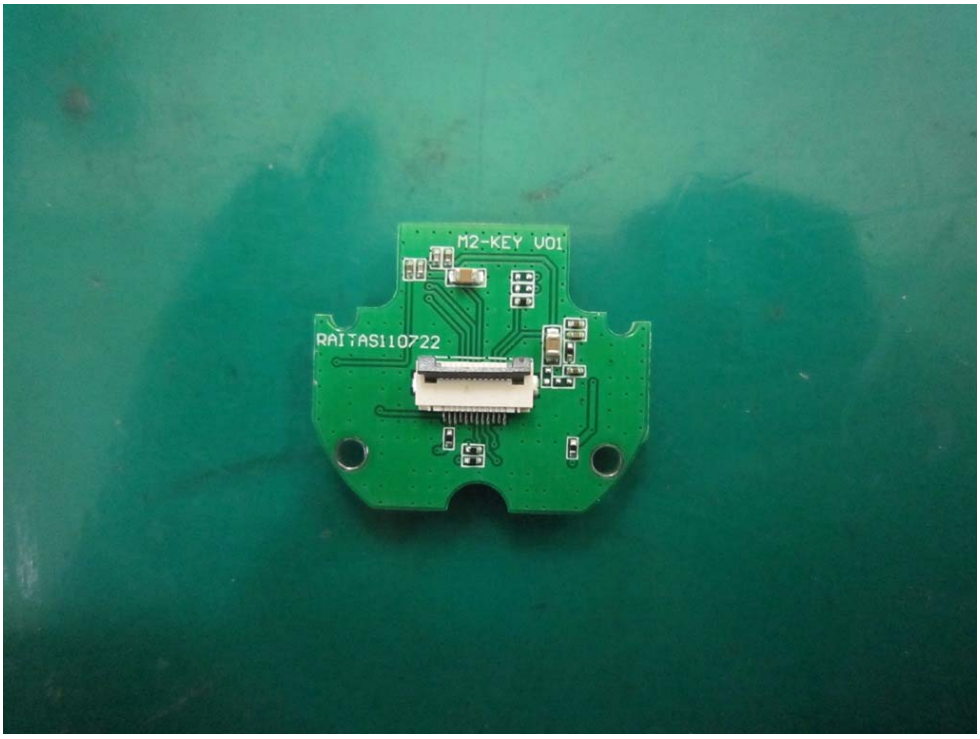
Rear View of Battery



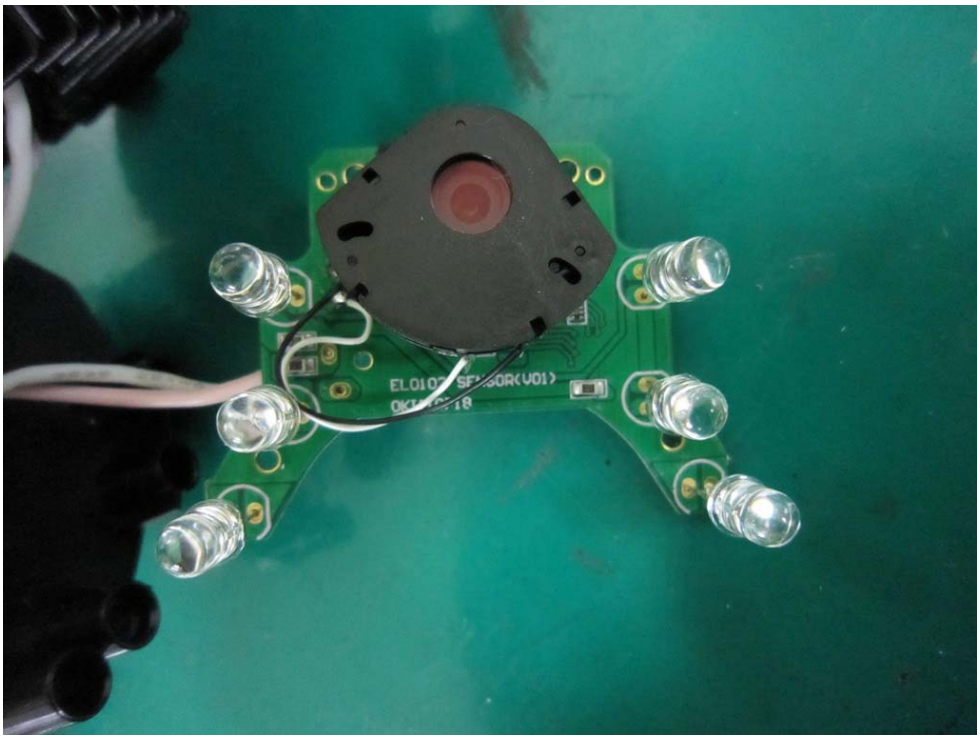
Front View of Button Board



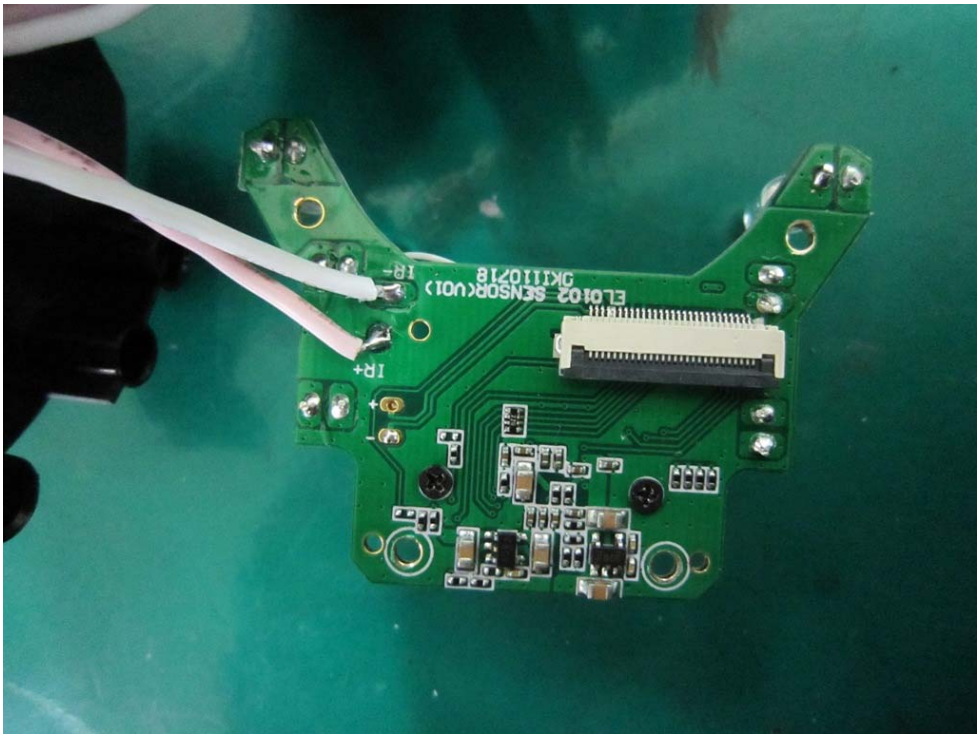
Rear View of Button Board



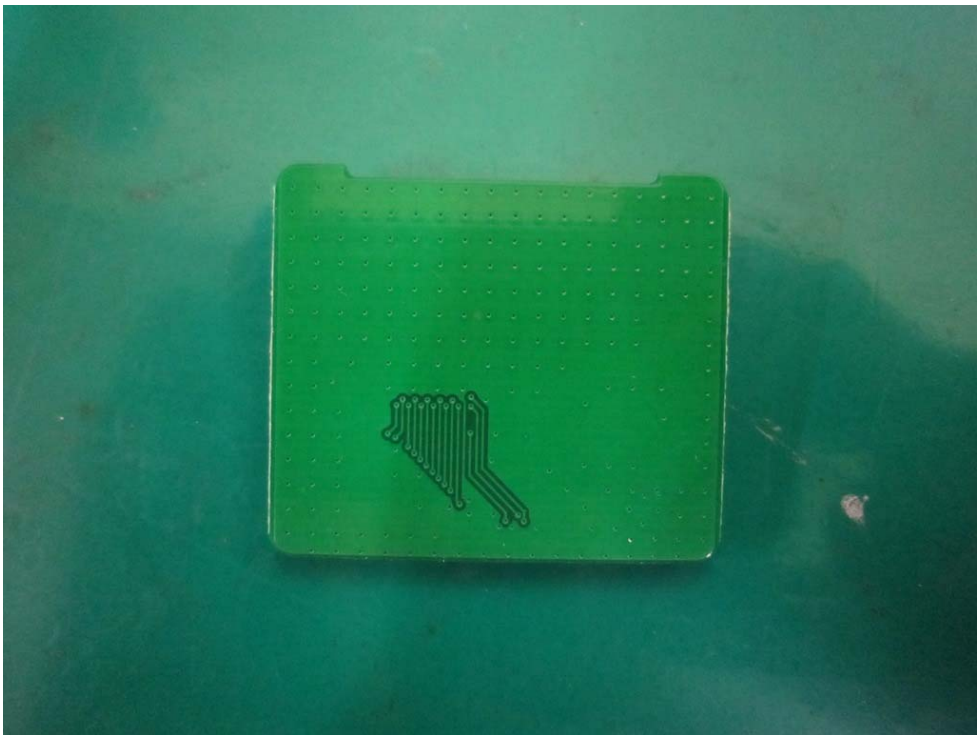
Front View of Camera Board



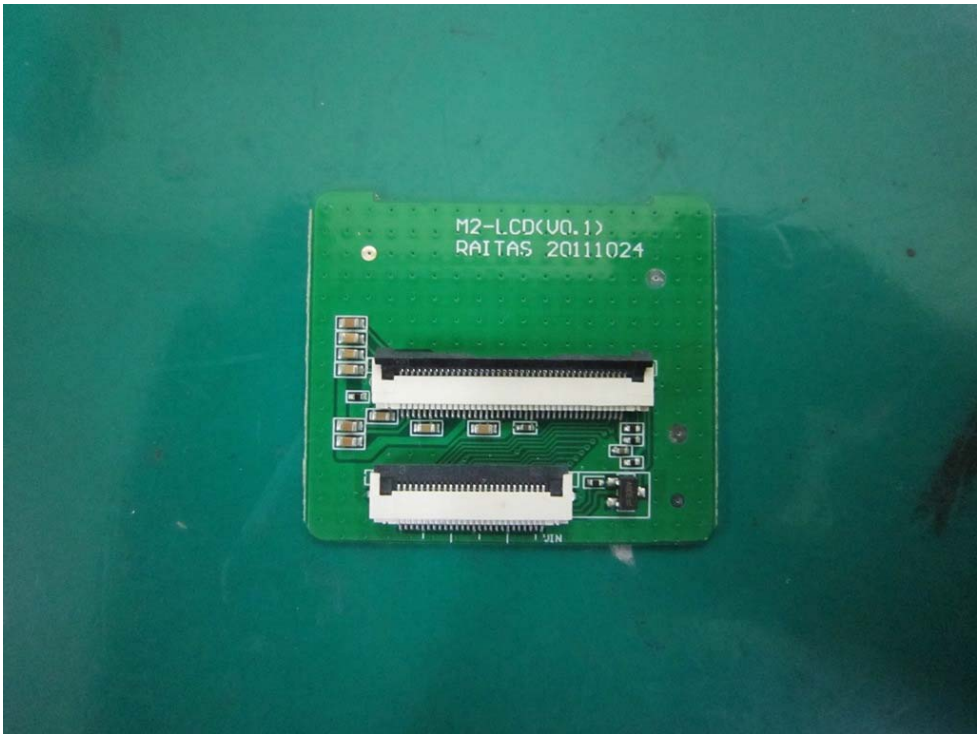
Rear View of Camera Board



Front View of LCD Board



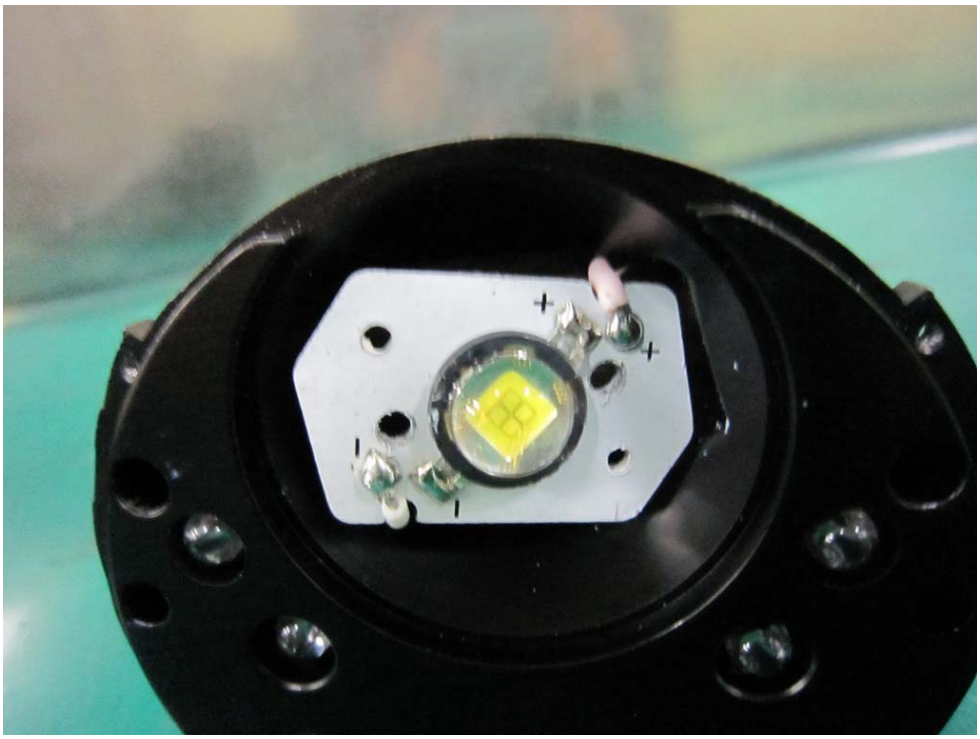
Rear View of LCD Board



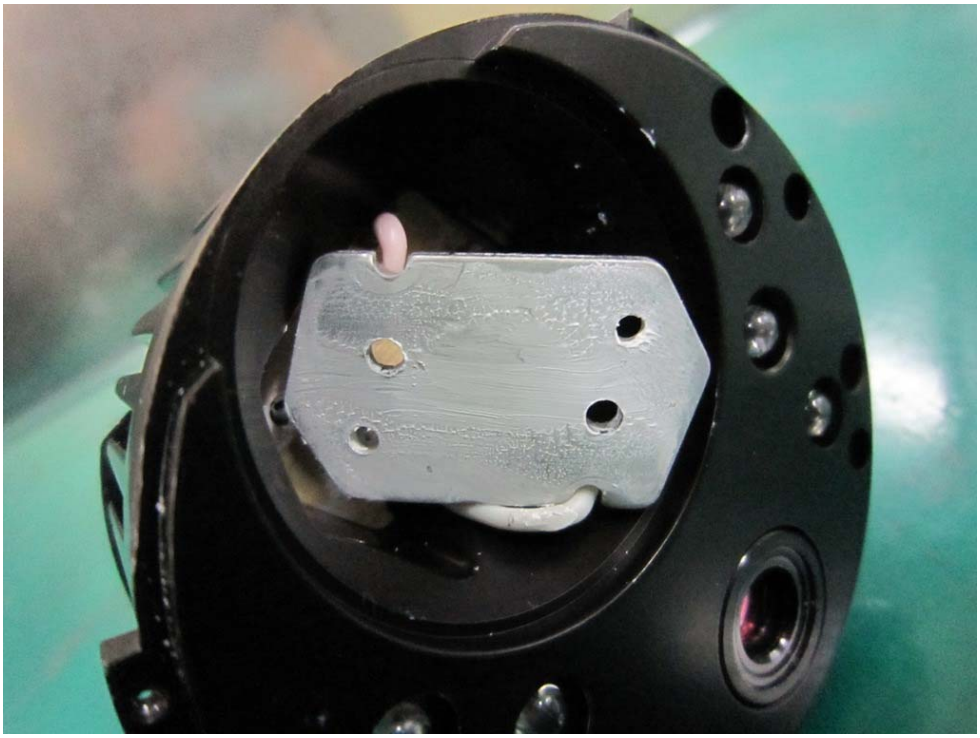
Front View of LCD Panel

Rear View of LCD Panel

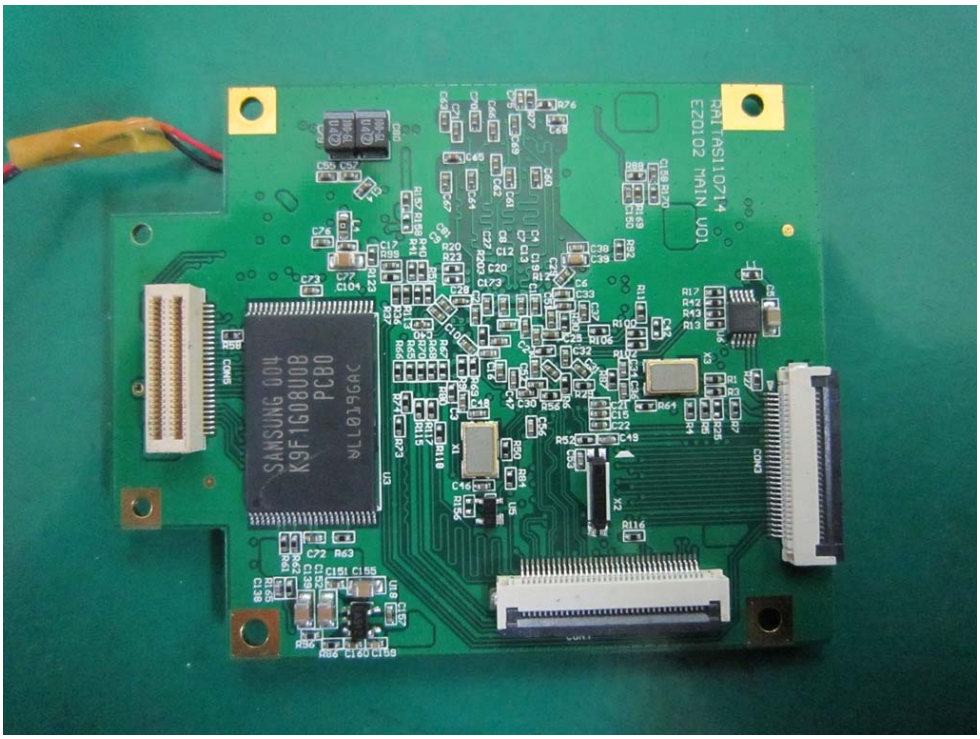
Front View of LED Board



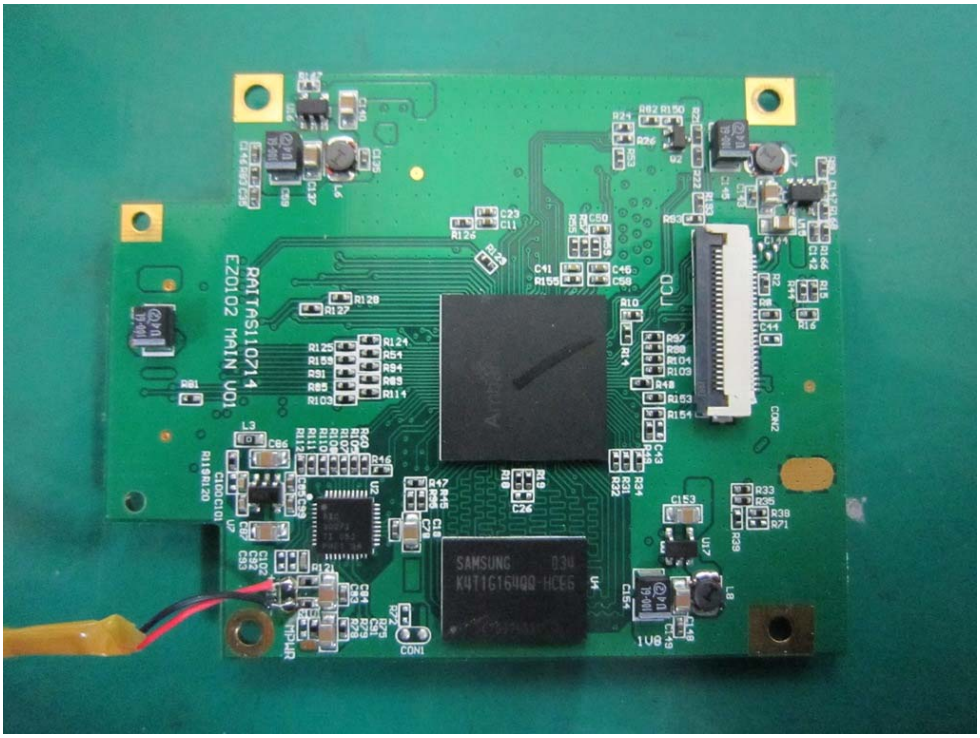
Rear View of LED Board



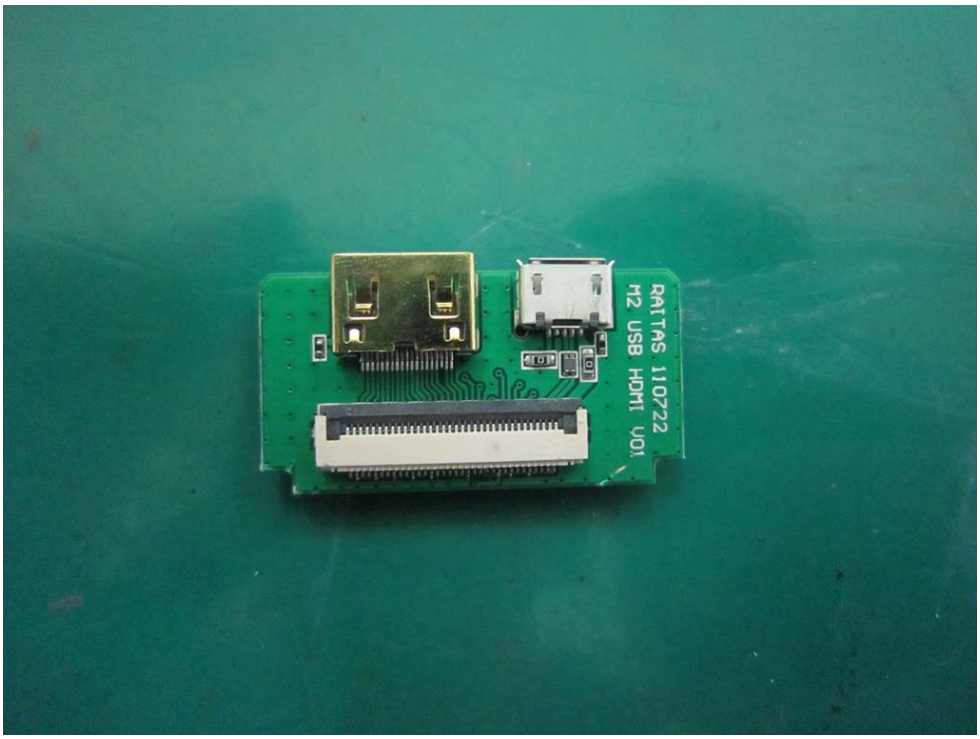
Front View of Main Board



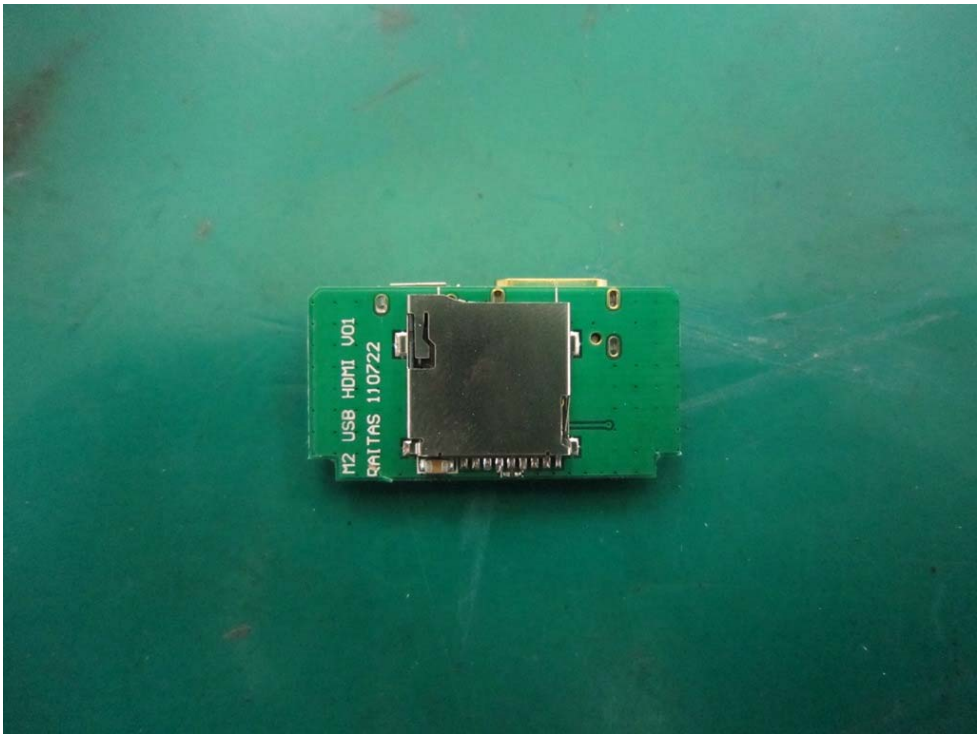
Rear View of Main Board



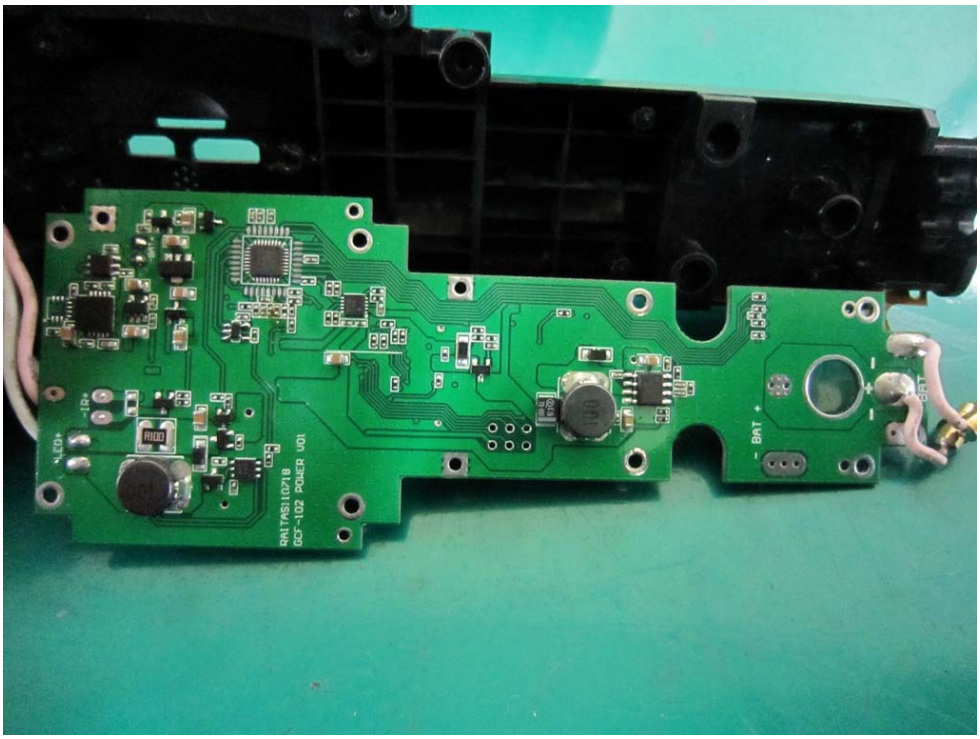
Front View of Port Board



Rear View of Port Board



Front View of Power Board



Rear View of Power Board