



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AR0058699(4) Date : 17 Oct 2013

Application No. : LR034601(3)

Applicant : 4F,-4, No.669 Jingping Rd., Zhonghe City, TaiPei county 235
Taiwan R.O.C, Taiwan

Client : Asian Express Holdings Limited
Rm804 Sino Centre,582-592 Nathan Road,
Mongkok, Kowloon, Hong Kong.

Sample Description : One(1) item of submitted sample stated to be Zephyrus / Quad Copter
of Model No. PL-1180
Sample registration No. : RR037918-001, RR040762-001 and RR041740-001
Radio Frequency : 2417MHz – 2458 MHz Transmitter
Rating : 6 x 1.5V AA size batteries
No. of submitted sample : One (3) piece (s)

Date Received : 11 Sep 2013, 27 Sep 2013, 09 Oct 2013

Test Period : 23 Sep 2013 to 16 Oct 2013.

Test Requested : FCC Part 15 Certificate

Test Method : 47 CFR Part 15 (10-1-12 Edition)
ANSI C63.4 – 2009

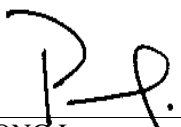
Test Engineer : Mr. LEUNG Shu-kan, Ken

Test Result : See attached sheet(s) from page 2 to 36.

Conclusion : The submitted sample was found to comply with requirement of FCC Part 15
Subpart C.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____


Mr. WONG Lap-pong, Andrew
Assistant Manager
Electrical Division

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1 General Information

1.1 General Description

The equipment under test (EUT) is a transmitter for quadrocopter. The EUT is power by 6 x 1.5V AA size batteries. It operates at 2417MHz – 2458 MHz. There are buttons and joysticks on the EUT. When the buttons are pressed or the joysticks are moved, the EUT will transmit radio control signal to receiver.

The brief circuit description is listed as follows:

- IC1 and its associated circuit act as MCU
- IC2, IC3, IC4 and its associated circuit act as power
- IC1 (module), IC2 (module) and its associated circuit act as RF module
- S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, RW1, RW2 and its associated circuit act as copter control



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1.2 Location of the test site

FCC Registered Test Site Number: 552221

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2009. A Semi-Anechoic Chamber Testing Site is set up for investigation and located at:

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
Hong Kong.

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2009. A shielded room is located at :

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
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1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due Date	Calibration Period
EMI Test Receiver	R&S	ESCI	100152	08 Jul 2014	1 Year
Spectrum Analyzer	R&S	FSP30	100628	15 Aug 2014	1 Year
Broadband Antenna	Schaffner	CBL6112B	2692	16 Jan 2014	1 Year
Loop Antenna	EMCO	6502	00056620	15 Sep 2014	1 Year
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-531	09 Oct 2014	1 Year
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170442	16 May 2015	2Years
Broadband Pre-Amplifier	Schwarzbeck	BBV 9718	9718-119	09 Oct 2014	1 Year
Broadband Pre-Amplifier	Schwarzbeck	BBV 9719	9719-010	16 May 2015	2Years
Coaxial Cable	Schaffner	RG 213/U	N/A	28 May 2014	1 Year
Coaxial Cable	Suhner	RG 214/U	N/A	28 May 2014	1 Year
Coaxial Cable	Suhner	Sucoflex_102	N/A	09 Oct 2014	1 Year



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1.4 Measurement Uncertainty

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

Radiated emissions

Frequency	Uncertainty (U_{lab})
30MHz ~ 200MHz (Horizontal)	4.83dB
30MHz ~ 200MHz (Vertical)	4.84dB
200MHz ~1000MHz (Horizontal)	4.66dB
200MHz ~1000MHz (Vertical)	4.65dB

Conducted emissions

Frequency	Uncertainty (U_{lab})
150kHz~30MHz	3.02dB



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2 Description of the radiated emission test

2.1 Test Procedure

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2009.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 1m and 0.8m high above the ground. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

For below 30MHz, a loop antenna with its vertical plane is placed 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1 m above the ground.

For 30MHz to 1GHz, broadband antenna with its vertical and horizontal plane is placed 3m from the EUT and rotated about its vertical and horizontal axis for maximum response at each azimuth about the EUT. And the reference point of antenna shall be 1 m above the ground.

For above 1GHz, horn antenna with its vertical and horizontal plane is placed 3m from the EUT and rotated about its vertical and horizontal axis for maximum response at each azimuth about the EUT. Preamplifier and High Pass filter was used for measurements. The reference point of antenna shall be 1 m above the ground.

The device was rotated through three orthogonal to determine which attitude and configuration produce the highest emission during measurement for Radiated Emission measurement.



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2.2 Test Result

Peak Detector data were measured unless otherwise stated.

“#” means emissions appear within the restricted bands shall follow the requirement of section 15.205.

The frequencies from fundamental up to that tenth harmonics were investigated, and emissions more 20dB below limit were not reported. Thus, those highest emissions were presented in next page (section 2.3).

It was found that the EUT meet the FCC requirement.



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2.3 Radiated Emission Measurement Data

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	28	° C
Relative humidity:	60	%

Detector: Quasi-peak

RBW: 120kHz

VBW: 300kHz

Testing frequency range: 9kHz to 25GHz

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
264.760	V	9.4	15.0	24.4	46.0	- 21.6
288.060	V	9.7	15.0	24.7	46.0	- 21.3
303.980	V	9.1	15.9	25.0	46.0	- 21.0
360.000	V	11.6	15.9	27.5	46.0	- 18.5
384.010	V	10.5	15.9	26.4	46.0	- 19.6
415.990	V	9.3	20.3	29.6	46.0	- 16.4
447.970	V	10.5	20.3	30.8	46.0	- 15.2
496.020	V	12.1	20.3	32.4	46.0	- 13.6
560.003	V	9.2	23.2	32.4	46.0	- 13.6
591.002	V	9.1	23.2	32.3	46.0	- 13.7

Remark: Other emissions more than 20dB below the limit are not reported.



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2.3 Radiated Emission Measurement Data

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	28	° C
Relative humidity:	60	%

Detector: Peak RBW: 1MHz VBW: 3MHz

Testing frequency range: 9kHz to 25GHz

Channel	Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Transducer Factor (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
00	2417.021	V	99.7	- 6.3	93.4	114.0	- 20.6
	#4834.040	H	48.1	2.4	50.5	74.0	- 23.5
	#7251.057	V	42.4	10.8	53.2	74.0	- 20.8
	9668.162	V	36.0	13.6	49.6	74.0	- 24.4
39	2437.014	V	100.1	- 6.3	93.8	114.0	- 20.2
	#4874.040	H	47.5	2.4	49.9	74.0	- 24.1
	#7311.055	V	38.4	10.8	49.2	74.0	- 24.8
	9748.086	H	35.5	13.6	49.1	74.0	- 24.9
78	2458.007	V	100.1	- 6.3	93.8	114.0	- 20.2
	4916.039	V	46.8	2.4	49.2	74.0	- 24.8
	7374.065	V	38.8	10.8	49.6	74.0	- 24.4
	9832.092	H	34.9	13.6	48.5	74.0	- 25.5

Remark: Peak measurement values are lower than average limit, therefore average measurement is not necessary.

Other emissions more than 20dB below the limit are not reported.



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3 Description of the Line-conducted Test

3.1 Test Procedure

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2009. The EUT was setup as described in the procedures, and both lines were measured.

3.2 Test Result

No measurement is required as the EUT is a battery-operated product.

3.3 Graph and Table of Conducted Emission Measurement Data

Not Applicable



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4 Photograph

4.1 Photographs of the Test Setup for Radiated Emission and Conducted Emission

For electronic filing, the photos are saved with filename TSup1.jpg to TSup6.jpg.

4.2 Photographs of the External and Internal Configurations of the EUT

For electronic filing, the photos are saved with filename ExPho1.jpg to ExPho2.jpg and InPho1.jpg to InPho11.jpg.



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5 Supplementary document

The following document were submitted by applicant, and for electronic filing, the document are saved with the following filenames:

Document	Filename
ID Label/Location	LabelSmp.jpg
Block Diagram	BlkDia.pdf
Schematic Diagram	Schem.pdf
Users Manual	UserMan.pdf
Operational Description	OpDes.pdf

5.1 Bandwidth

The plot saved in TestRpt2.pdf shows the fundamental emission is confined in the specified band. It shows the 20dB bandwidth met the 15.215 requirement for frequency band 2400 to 2483.5 MHz.

5.2 Duty cycle

Not Applicable

5.3 Transmission time

Not Applicable

5.4 Power Spectral Density

Not Applicable

5.5 Average on time

Not Applicable



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6 Appendices

A1	Photos of the set-up of Radiated Emissions	3	pages
A2	Photos of External Configurations	1	page
A3	Photos of Internal Configurations	6	pages
A4	ID Label/Location	1	page
A5	Band Edge	1	page
A6	Block Diagram	1	page
A7	Schematics Diagram	2	pages
A8	User Manual	6	pages
A9	Operation Description	1	page



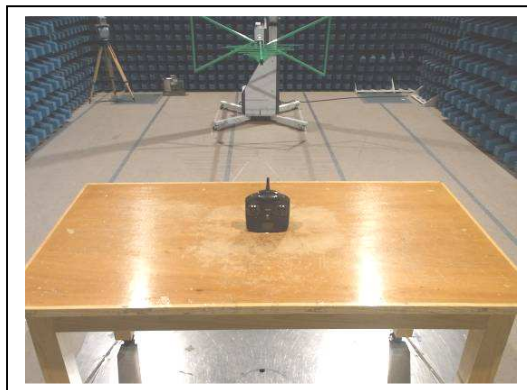
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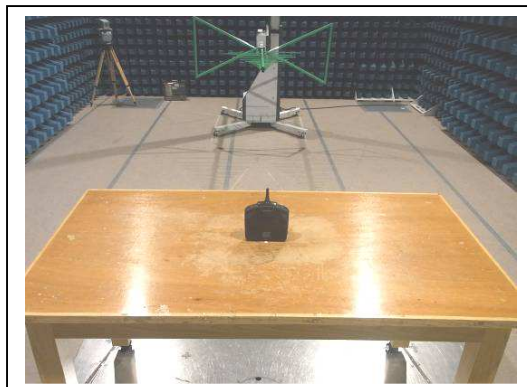
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A1. Photos of the set-up of Radiated Emissions



(Front view, 30MHz – 1GHz)



(Back view, 30MHz – 1GHz)

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Mr. LEUNG Shu-kan, Ken

Reviewed by:

Mr. WONG Lap-pong, Andrew

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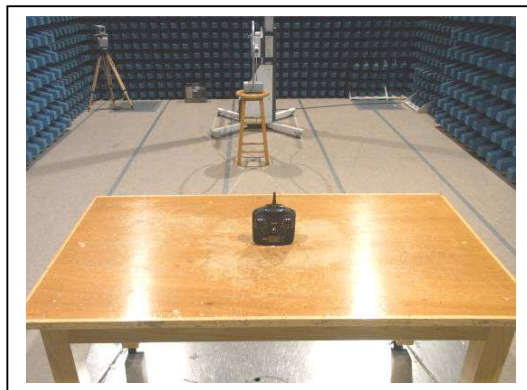
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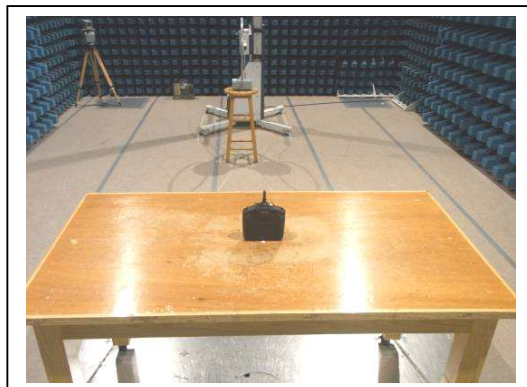
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A1. Photos of the set-up of Radiated Emissions



(Front view, 9KHz – 30MHz)



(Back view, 9KHz – 30MHz)

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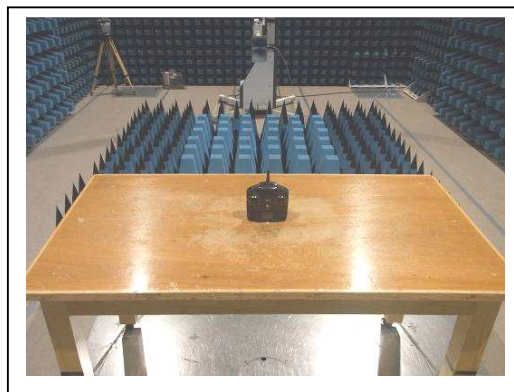
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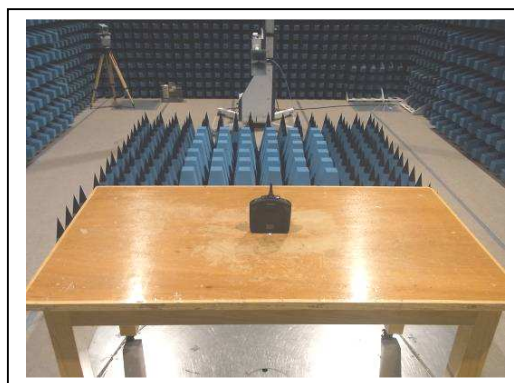
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A1. Photos of the set-up of Radiated Emissions



(front view, 1GHz – 25GHz)



(rear view, 1GHz – 25GHz)

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A2 Photos of External Configurations



(External Configuration 1)



(External Configuration 2)

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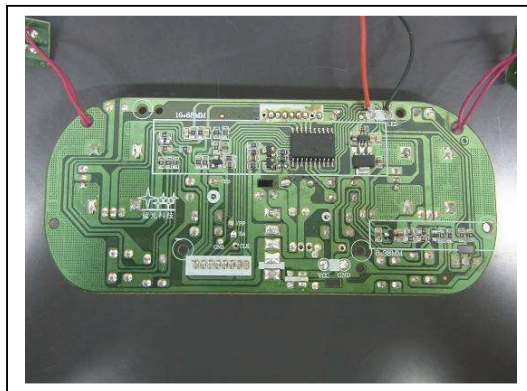
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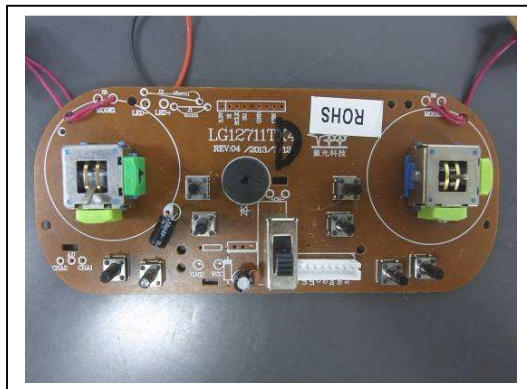
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A3. Photos of Internal Configurations



Internal Configuration 1



Internal Configuration 2

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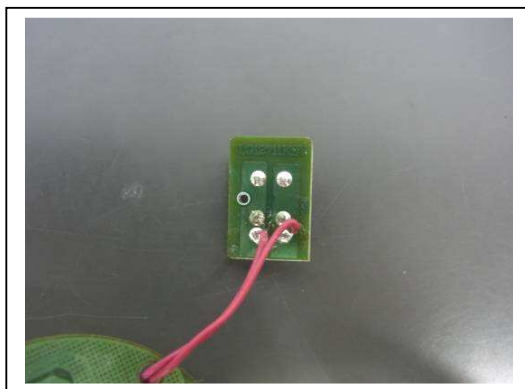
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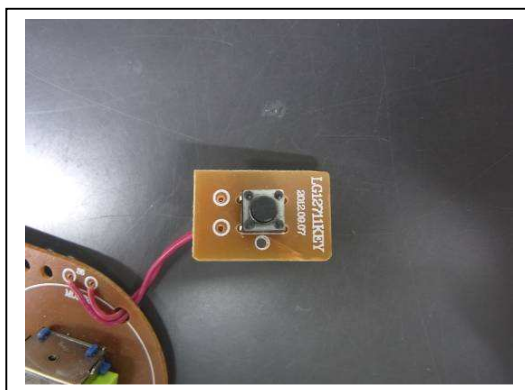
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A3. Photos of Internal Configurations



Internal Configuration 3



Internal Configuration 4

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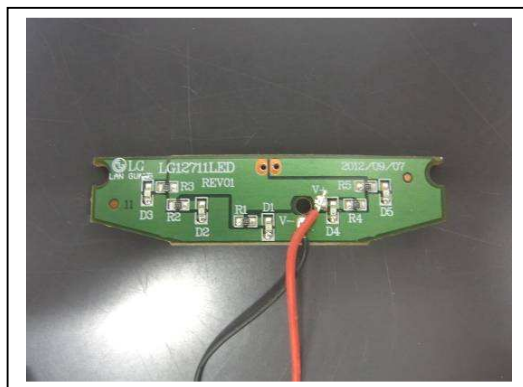
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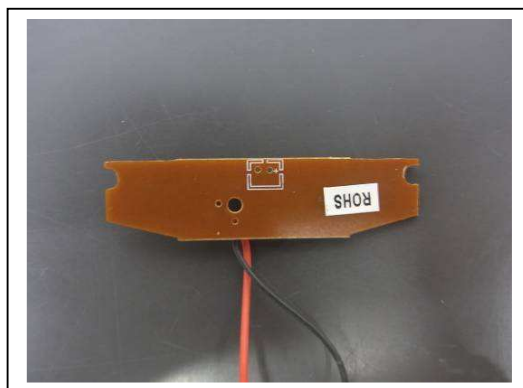
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A3. Photos of Internal Configurations



Internal Configuration 5



Internal Configuration 6

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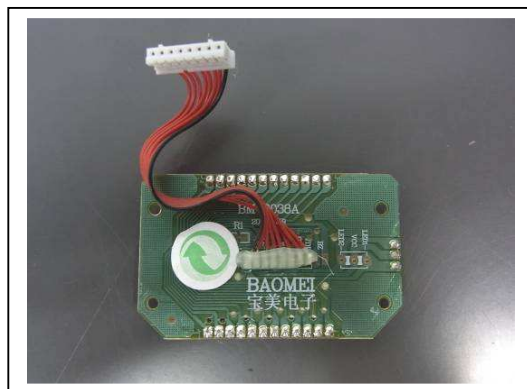
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A3. Photos of Internal Configurations



Internal Configuration 7



Internal Configuration 8

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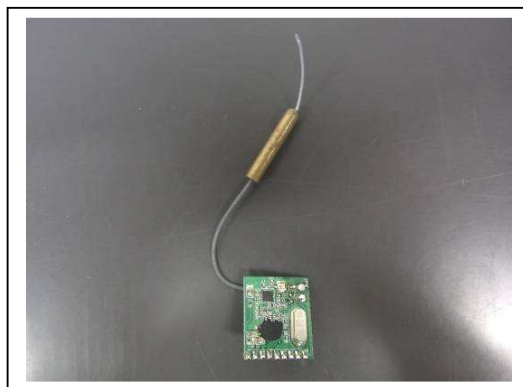
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A3. Photos of Internal Configurations



Internal Configuration 9



Internal Configuration 10

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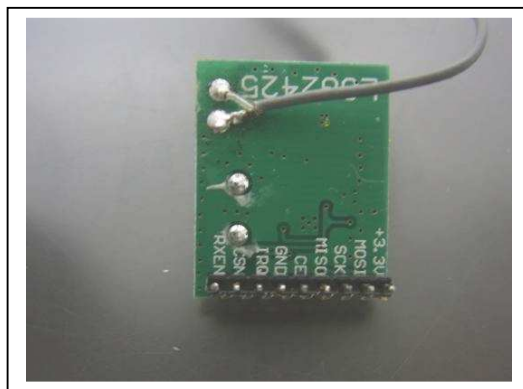
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A3. Photos of Internal Configurations



Internal Configuration 11

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A4. ID Label / Location



ID Label 1

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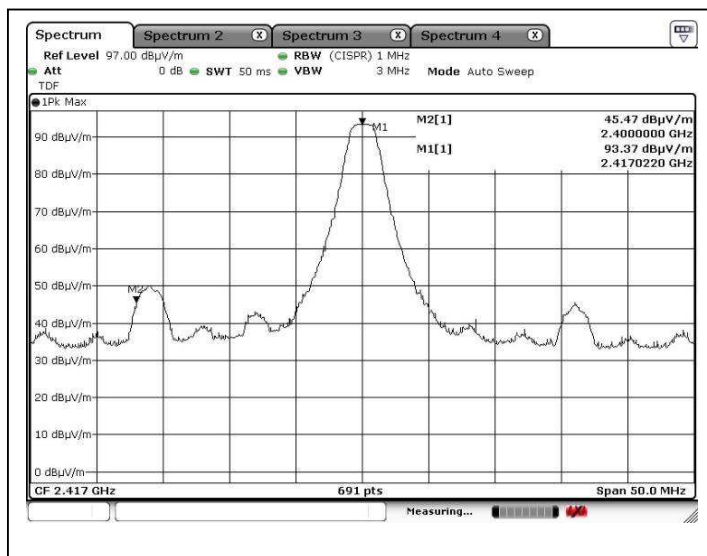
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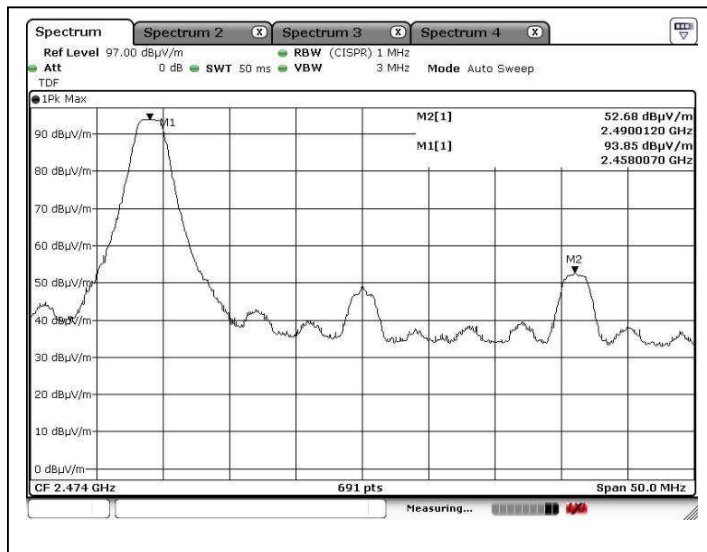
Report No. : AR0058699(4)

Date : 17 Oct 2013

A5. Band Edge



Edge 1



Edge 2

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Reviewed by:
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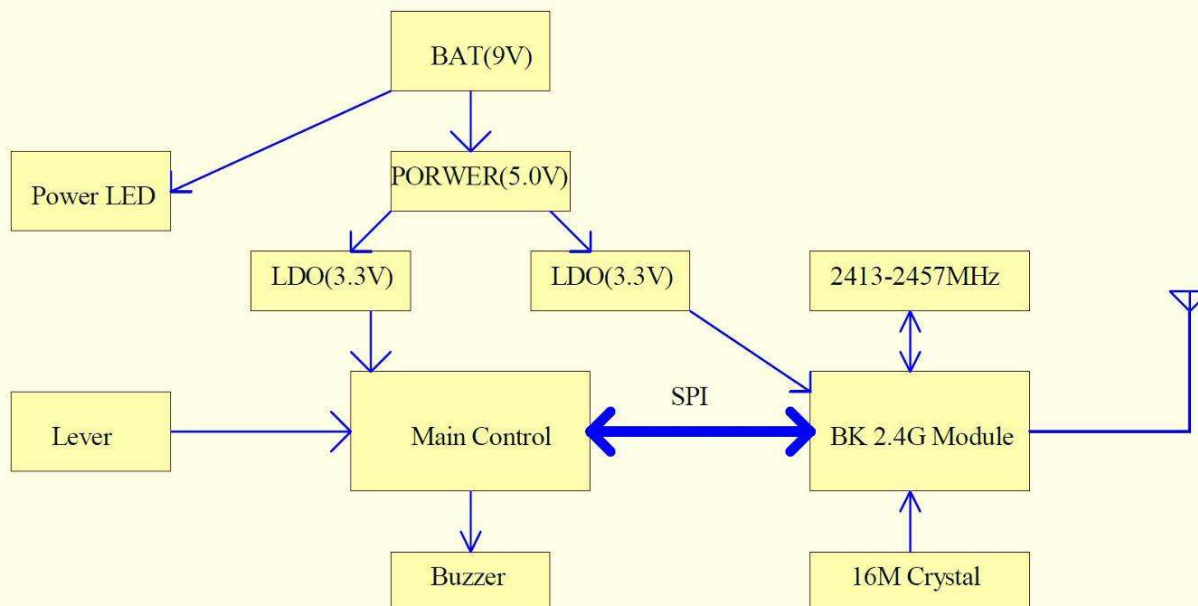
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A6. Block Diagram

Block Diagram(TX)



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Mr. WONG Lap-pong, Andrew



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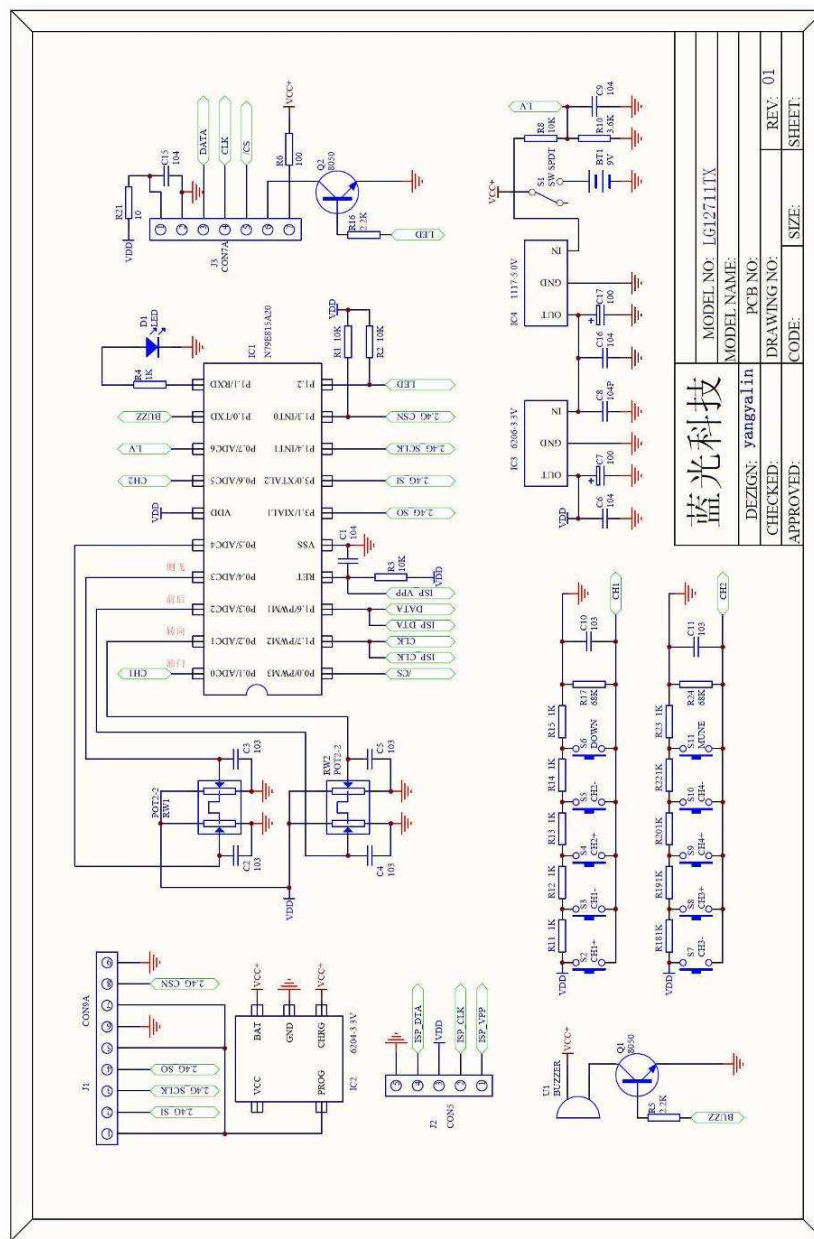
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Report No. : AR0058699(4)

Date : 17 Oct 2013

A7. Schematics Diagram



MODEL NAME:	MODEL NO. LG12711X
PCB NO.:	PCB NO.:
DRAWING NO.:	DRAWING NO.:
CODE:	CODE:
SIZE:	SIZE:
SHEET:	SHEET:

Tested by:

Ken

Mr. LEUNG Shu-kan, Ken

Reviewed by:

AP

Mr. WONG Lap-pong, Andrew

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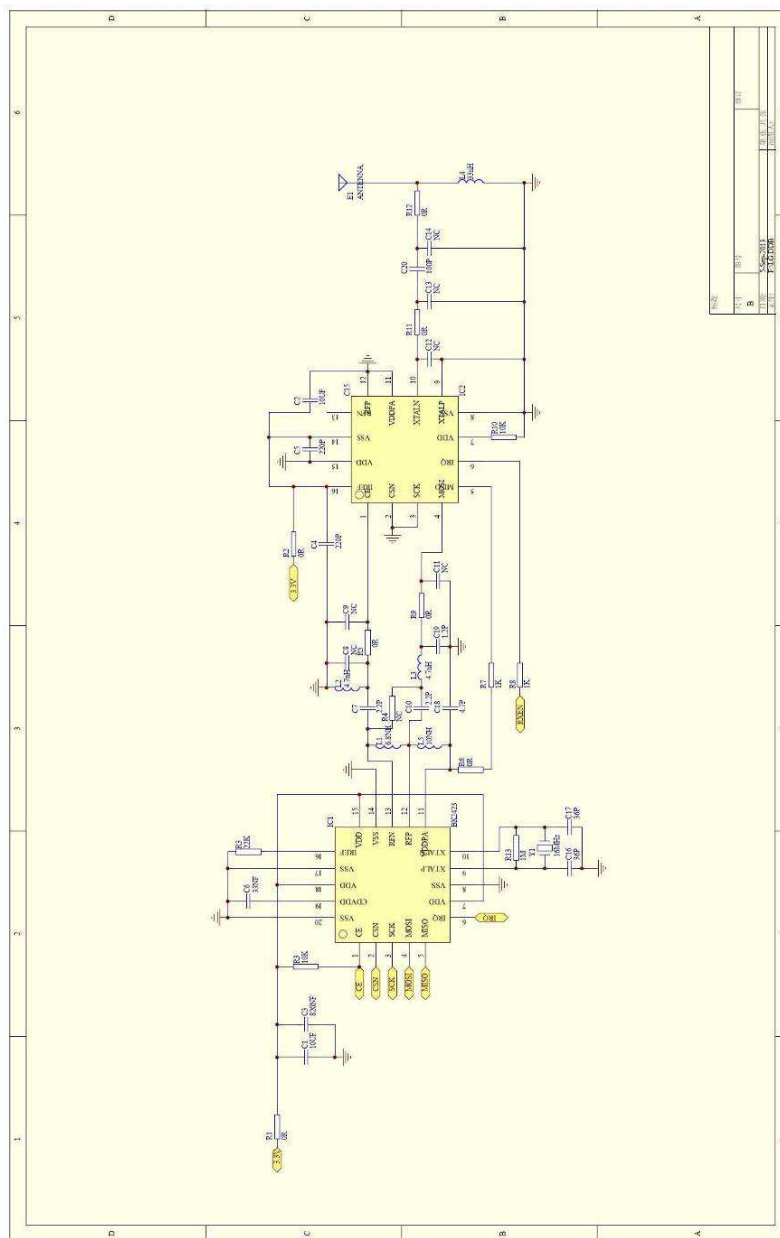
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A7. Schematics Diagram



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Date : 17 Oct 2013

A8. User Manual

PROPEL

PROPEL

ZEPHYRUS™

2.4GHz indoor & outdoor quadcopter



FCC Part 15 B Notice
CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or experienced radio/TV technician for help.

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.

WARNING!
CHOKING HAZARD - Small parts.
Not suitable for children under 3 years.

Conforms to safety requirements of ASTM, CPSIA and FCC.
©2013 Rooftop Brands™ All rights reserved
Tel: + (1) 949-566-9573 • www.propelrc.com

Made in China

INSTRUCTION BOOKLET

WARNING: Never leave product charging unattended for extended periods of time. Always disconnect Quadcopter from charger immediately after the Quadcopter is fully charged. Please refer to enclosed safety instructions.

PACKAGE CONTAINS:



Quadcopter



2.4G Wireless Controller



Instruction Booklet

Colors and styles may slightly vary.

Tested by:

Mr. LEUNG Shu-kan, Ken

Reviewed by:

Mr. WONG Lap-pong, Andrew

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A8. User Manual

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FEATURES

Built in 3 axis gyroscopic chip keeps the Zephyrus extremely stable in all conditions.
4 channel flight controls allow for incredible manoeuvrability including 360° aerial stunts!
5 speed settings for beginner to advanced quadcopter pilots.
LED directional lights makes the Zephyrus easy to follow.
Replaceable Li-poly battery included.
200 foot range.

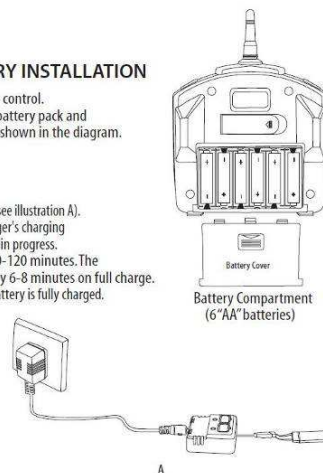
REMOTE CONTROL BATTERY INSTALLATION

1. Slide the battery cover off of the remote control.
2. Install 6"AA" alkaline batteries into the battery pack and then install the pack in the controller as shown in the diagram.
3. Replace the battery cover.

CHARGING THE BATTERY

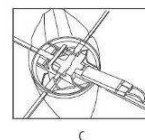
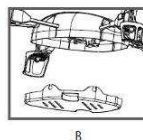
1. Connect the battery to the adaptor as shown (see illustration A).
2. Plug the charger into a wall outlet. The charger's charging indicator lights red to show that charging is in progress.
3. Average charging time is approximately 90-120 minutes. The Quadcopter operates for approximately 6-8 minutes on full charge.
4. The charging indicator turns off when the battery is fully charged.

Note: the adaptor should be periodically examined for conditions that may result in the risk of fire, electric shock, or injury to persons and that, in an event of such conditions, the adaptor should not be used until properly repaired.



QUADROPTER BATTERY INSTALLATION

1. Snap off the cover on the bottom of the quadcopter (see diagram B).
2. Slide the battery in and connect the power cord as shown on diagram C.
3. Replace the bottom cover.



Thank you for purchasing the Zephyrus™ 2.4 G Indoor & Outdoor Quadcopter. Please read this instruction booklet as it contains valuable information on how to properly fly and care for your Quadcopter.

IMPORTANT: ALWAYS DISCONNECT WALL CHARGER AFTER CHARGING. NEVER LEAVE CHARGER CONNECTED TO QUADROPTER BATTERY OVERNIGHT OR FOR EXTENDED PERIODS OF TIME.

A8. User Manual

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Mr. LEUNG Shu-kan, Ken

Reviewed by:

Mr. WONG Lap-pong, Andrew



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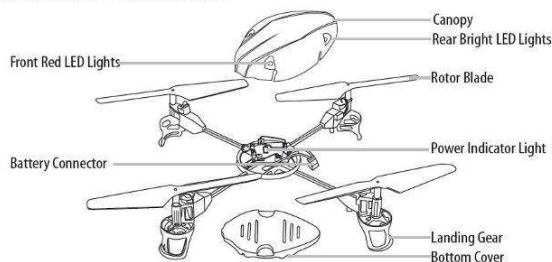
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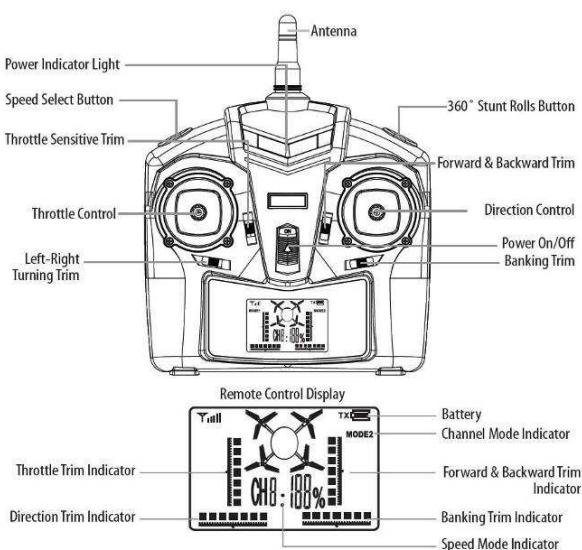
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QUADROCOPTER DIAGRAM



REMOTE DIAGRAM



3

WARNING

DO NOT FLY YOUR ZEPHYRUS IN FOUL WEATHER!



PREPARING FOR FLIGHT

- Verify that there are 6 "AA" batteries inside the remote control unit and the Quadcopter has been fully charged.
 - Make sure your Quadcopter and controller are turned on.
 - Make sure to be in a large space with an open radius of at least 50 feet.
 - Make sure the empty space has no obstacles and river. Set your Quadcopter on a clean flat surface before take-off.
- DO NOT ATTEMPT TO FLY YOUR ZEPHYRUS IF THERE IS RAIN, SNOW, HEAVY WINDS, THUNDER OR LIGHTNING OUTDOORS. IT COULD DAMAGE YOUR PRODUCT AND POSSIBLY EVEN CAUSE BODILY HARM.**

SYNCING YOUR QUADROCOPTER

Your Zephyrus™ utilizes an automatic 2.4G channel selection system that allows up to 8 people to fly side by side in the same wireless range.

For One Person Play:

1. Before starting, make sure that the power on both your controller and Quadcopter are in the OFF position. Make sure that there are no other 2.4G devices in the area as well.
2. Turn ON the Quadcopter and set it down on a flat surface. The red LED indicators inside the Quadcopter body should flash.
3. ON the remote, pull the throttle all the way down, then turn ON your remote. The remote will beep in 3-5 seconds. When you hear a long beep, the red LED light should turn on. This indicates that your Quadcopter and remote have successfully synced. Should this not happen, repeat all steps again.

For Multi Person Play:

4. Before starting, make sure that the power on all Quadcopters and Controllers are in the OFF position. Make sure that there are no other 2.4G devices in the area as well.
5. Each person will have to sync their Quadcopter individually at a different time to avoid interference. Follow steps 1 to 3 above making sure to keep away from other people while also making sure that no one else is syncing at the same time.
6. After syncing a player's Quadcopter, it should be left ON until all players have synced their Quadcopters.
7. Should there be a mistake/interference, all players must turn off their controllers and Quadcopters and start the process all over again.

FLYING TIPS

- It is recommended that you operate the Quadcopter in a wide space. The ideal space should have a 200 foot radius.
- Parental guidance or adult supervision is suggested at all times.
- If you are flying the Quadcopter with others, make sure all spectators are behind you.
- For best performance, it is recommended that you operate the Quadcopter in zero wind conditions. Wind can greatly affect the performance of the Quadcopter.

4

Tested by:

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Reviewed by:

Mr. WONG Lap-pong, Andrew

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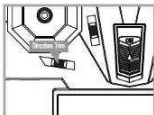
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A8. User Manual

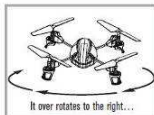
UNDERSTANDING TRIM ADJUSTMENTS

Turn Left/Right Trim

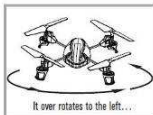
- If your Quadcopter nose rotates to the left or right uncontrollably, you may need to utilize the DIRECTION TRIM buttons.
- If your Quadcopter over rotates CLOCKWISE (to the right), push and release the DIRECTION TRIM button repeatedly to left side until the turning stops and proper flight is maintained.
- If your Quadcopter over rotates COUNTER-CLOCKWISE (to the left), push and release the DIRECTION TRIM button to right side in the same manner until the problem is resolved.
- From time to time you may have to adjust the DIRECTION TRIM to left and right to ensure the Quadcopter will fly straight and respond accurately to control commands.



Direction Trim Controls



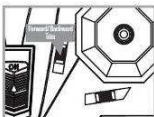
Push to left



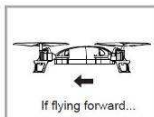
Push to right

Forward/Backward Trim

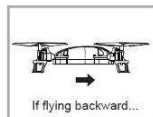
- If your Quadcopter is moving forwards or backwards automatically, you may need to adjust the FORWARD/BACKWARD TRIM buttons.
- If your Quadcopter flies forward, push and release the FORWARD/BACKWARD TRIM button back/down repeatedly until the moving stops and proper flight is maintained.
- If your Quadcopter flies backwards, push and release the FORWARD/BACKWARD TRIM button forward/up in the same manner until the problem is resolved.
- From time to time you may have to adjust the FORWARD/BACKWARD TRIM to ensure the Quadcopter will hover in mid-air and respond accurately to your commands.



Forward/Backward Trim Controls



Push down to go backward



Push up to go forward

Banking Left/Right Trim

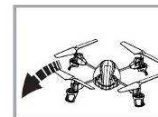
- If your Quadcopter is not steadily hovering and is banking to the left or right automatically, you may need to adjust the BANKING TRIM buttons.
- If your Quadcopter banks to the left, push and release the BANKING TRIM button repeatedly to the right until the banking stops and proper flight is maintained.
- If your Quadcopter banks to the right, push and release the BANKING TRIM button to the left in the same manner until the problem is resolved.
- From time to time you may have to adjust the BANKING TRIM to left/right to ensure the Quadcopter will steadily hover in mid-air and respond accurately to your commands.



4 CH Left/Right Banking Controls



Push to right to increase right banking sensitivity



Push to left to increase left banking sensitivity

Throttle Sensitivity Trim

- If you find the throttle is too sensitive when you fly the Quadcopter, you may need to utilize the Throttle sensitivity trim.
- Push the Throttle sensitivity trim button back to lower the sensitivity of the throttle. Push the Throttle sensitivity trim button forward to increase the sensitivity of the throttle. The middle position is recommended for beginners.

NOTE: The use of the Trim buttons are accompanied with a Beep tone. A single long Beep indicates the product is center trimmed. Continuous long Beeps indicate the product is trimmed to the maximum on a particular side.

SPEED SELECT BUTTON

The Quadcopter has 5 speed settings, the initial setting is 20%. Press the SPEED SELECT button on the top left of the remote control and your Quadcopter will change to 40%, 60%, 80% and 100% speed.

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Tested by:

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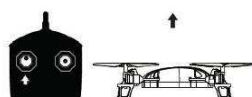
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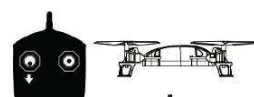
A8. User Manual

FLIGHT CONTROL

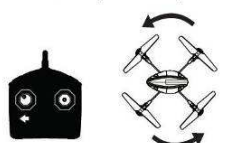
Below is a list of basic flight functions for your long-range remote control Quadcopter. While learning to fly your Quadcopter it is best to start with a large space until you get used to the basic controls. As you master flying your Quadcopter you can move to more advanced maneuvering techniques. Practice makes perfect! When you have these basic steps down you can move to the next level.



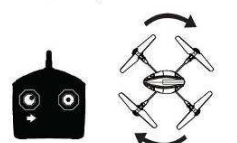
Move the Throttle up to increase the speed and the Quadcopter will rise up.



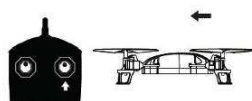
Move the Throttle down to decrease the speed and the Quadcopter will descend.



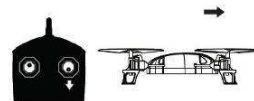
Move the Throttle left and the Quadcopter will turn left.



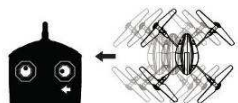
Move the Throttle right and the Quadcopter will turn right.



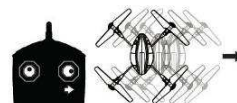
Move the Direction Control up and the Quadcopter will move forward.



Move the Direction Control down and the Quadcopter will move backward.



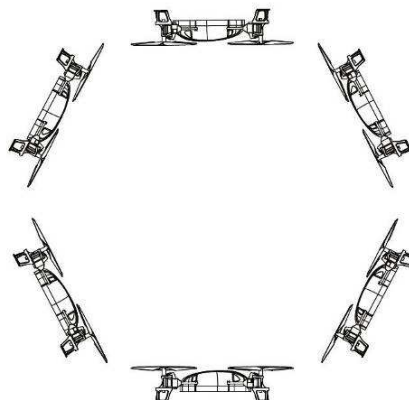
Move the Direction Control left and the Quadcopter will bank to the left.



Move the Direction Control right and the Quadcopter will bank to the right.

360° STUNT ROLLS

The 360° Stunt Rolls will only work when the speed is set to 80% or 100%. After setting the speed at 80% or 100%, press the Stunt Rolls button, the Quadcopter will do a 360° stunt roll in mid-air.



Tested by:

Mr. LEUNG Shu-kan, Ken

Reviewed by:

Mr. WONG Lap-pong, Andrew



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Report No. : AR0058699(4)

Date : 17 Oct 2013

A8. User Manual

TROUBLESHOOTING

Before sending your Quadcopter in for repair, please check for a solution below.

Problem	Possible Cause(s)	Solution
Controller not responding	Weak Batteries; No Batteries	Install new batteries in controller
Quadcopter does not respond properly to the controller	Controller is switched OFF Low Battery power in Quadcopter or Controller Quadcopter and Controller not properly synced	Switch ON Controller Ensure Quadcopter battery is fully charged and replace controller batteries Refer to the SYNCING YOUR QUADROPTER section
Quadcopter loses connection with controller	Quadcopter Out of Range Low Battery power in Quadcopter or Controller	Fly Quadcopter closer and within maximum range Ensure Quadcopter battery is fully charged and replace controller batteries
Quadcopter does not fly well	Quadcopter not Trimmed Blade, Rotor or other parts may be damaged Flying in Inclement Weather	Refer to Understanding Trim Adjustments Check and repair/replace damaged parts Stop flying and wait until the weather improves

QUADROPTER WARNING:

The Quadcopter is designed for INDOOR & OUTDOOR USE. The Quadcopter blades revolve at high speeds and can cause damage to the user, spectators and animals. Stand away from the Quadcopter to reduce the risk of getting into the flight path. Warn spectators that you will be flying your Quadcopter so that they are aware of its position. Before flight, inspect the rotor blades to make certain that the blades are securely fastened to the Quadcopter.

WARNING!

- Choking/Cutting Hazard. Small Parts/Sharp Rotor Blades.
- Keep hands, hair and loose clothing away from the propeller when the power switch is turned to the ON position.
- Turn off the transmitter and Quadcopter power switches when not in use.
- The included charger is built specifically for the Quadcopters Li-Poly battery. Do not use it to charge any other battery.
- New alkaline batteries are recommended for maximum performance.
- Parental supervision recommended when flying Quadcopter.

BATTERY WARNINGS

RECHARGEABLE BATTERY:

This Quadcopter uses a Li-Poly rechargeable battery. If battery no longer stays charged, dispose of battery properly according to local disposal requirements.

CONTROLLER BATTERIES:

Remote control requires 6 "AA" batteries (not included). Please read the important battery safety warning below.

- Do not mix alkaline, standard (carbon-zinc) and rechargeable batteries (Nickel Metal Hydride).
- Do not mix old and new batteries.
- Non-rechargeable batteries are not to be recharged.
- Rechargeable batteries are to be removed from the item before being charged (if removable).
- Rechargeable batteries are only to be charged under adult supervision.
- Exhausted batteries should be removed immediately and must be recycled or disposed of properly according to state or local government ordinances and regulations.
- The supply terminals are not to be short-circuited.
- Only batteries of the same or equivalent type as recommended are to be used.
- Batteries are to be inserted with the correct polarity (see inside booklet for diagram).
- Do not dispose batteries in a fire - batteries may leak or explode.

CARE AND MAINTENANCE

- Always remove the batteries from the wireless infrared remote control when it is not being used for an extended period of time.
- To clean, gently wipe the remote control and Quadcopter with a clean damp cloth.
- Keep the toy away from direct heat or sunlight.
- Do not submerge the toy into water. This can damage the unit beyond repair.
- Parental guidance recommended when installing or replacing the batteries.

9

10

Tested by:

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TEST REPORT

Report No. : AR0058699(4)

Date : 17 Oct 2013

A9. Operation Description

Technical Description

The equipment under test (EUT) is a 2.4GHz transceiver with 44 channels operating at 2417 - 2458 MHz. It is powered by 9V DC (6x 1.5V "AA" batteries).

Channel List

2417 2418 2419 2420 2421 2422 2423 2425 2426 2427 2428 2429 2430 2431 2433 2434
2435 2436 2437 2438 2432 2433 2434 2435 2436 2437 2438 2439 2441 2443 2444 2445
2446 2447 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458

Modulation Type: GFSK

Antenna Type: Coaxial shielded antenna

TX FUNCTION:

The functions of TX main ICs are mentioned as below.

- 1) **Main Control** is MCU for system and gaming control.
- 2) **POWER** is LDO.
- 3) Peripheral ten keys as the direction of the stability of the regulation and rudder adjustment.
- 4) MCU features can be an external drive speakers transmit sound I / O ports, and a low battery warning function.
- 5) LED power indicator represents only
- 6) **BK 2.4G Module** is 2.4GHz RF block.communication with **Main Control** by spi and deliver RF signal
- 7) **16M Cystal** is crystal oscillator which provide 16MHz clock to **BK 2.4G Module**

***** End of Report *****

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