

A112~114, Qinye Business Center, Xin'an Sixth Road, 82th District,

Bao'an, Shenzhen, China. Telephone: +86-755-29451282, Fax: +86-755-22639141

Report No.: EBO1603097-E305

Page 1 of 20

FCC REPORT

Applicant: EKEN GROUP LIMITED

Address of Applicant: Room 2511-2512, Meilan Business Center, Qianjin Two Road,

XiXiang, Baoan District, ShenZhen, China

Equipment Under Test (EUT)

Product Name: 2.4G REMOTE CONTROLLER

Model No.: RM1, RM2, RM3, H2R, H3R, H8R, H9R, H9+R, G2R, G3R,

G9R, W8R, W9R, N9R, K2R, K3R, K8R, K9R

FCC ID: 2ADDG-RM1

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.249:2014

Date of sample receipt: March 28, 2016

Date of Test: March 28, 2016 To April 15, 2016

Date of report issued: April 15, 2016

Test Result: PASS *

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

Authorized Signature:

Kevin Yu Laboratory Manager

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 and does not permit the use of the EBO product certification mark. 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. Any mention of EBO International Electrical Approvals or testing done by EBO International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by EBO International Electrical Approvals in writing.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only."



Report No.: EBO1603097-E305 Page 2 of 20

2 Version

Version No.	Date	Description
00	April 15, 2016	Original

Prepared By:	Jason	Date:	April 15, 2016
	Project Engineer	_	
Check By:	Cerry	Date:	April 15, 2016



Report No.: EBO1603097-E305 Page 3 of 20

3 Contents

			Page
1	COVI	ER PAGE	1
2	VER	RSION	2
3	CON	NTENTS	3
4	TES	T SUMMARY	4
	4.1	MEASUREMENT UNCERTAINTY	4
5	GEN	NERAL INFORMATION	5
	5.1 5.2	CLIENT INFORMATIONGENERAL DESCRIPTION OF EUT	5
	5.3 5.4	TEST MODE DESCRIPTION OF SUPPORT UNITS	5
	5.4 5.5	TEST FACILITY	
	5.6	TEST LOCATION	
	5.7	OTHER INFORMATION REQUESTED BY THE CUSTOMER	
6	TES	T INSTRUMENTS LIST	7
7	TES	T RESULTS AND MEASUREMENT DATA	8
	7.1	ANTENNA REQUIREMENT:	8
	7.2	RADIATED EMISSION METHOD	
	7.2.1	· · · · · · · · · · · · · · · · · · ·	
	7.2.2	-1	
	7.2.3 7.3	3 Bandedge emissions	
8		T SETUP PHOTO	
•	0		10
9	EUT	CONSTRUCTIONAL DETAILS	17



Report No.: EBO1603097-E305

Page 4 of 20

4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	N/A
Field strength of the fundamental signal	15.249 (a)	Pass
Spurious emissions	15.249 (a) (d)/15.209	Pass
Band edge	15.249 (d)/15.205	Pass
20dB Occupied Bandwidth	15.215 (c)	Pass

Pass: The EUT complies with the essential requirements in the standard.

Remark: Test according to ANSI C63.4 2014 and ANSI C63.10 2013.

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes		
Radiated Emission	9kHz ~ 30MHz	± 4.34dB	(1)		
Radiated Emission	30MHz ~ 1000MHz	± 4.24dB	(1)		
Radiated Emission	1GHz ~ 26.5GHz	± 4.68dB	(1)		
AC Power Line Conducted Emission 0.15MHz ~ 30MHz ± 3.45dB (1)					
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.					



Report No.: EBO1603097-E305 Page 5 of 20

5 General Information

5.1 Client Information

Applicant:	EKEN GROUP LIMITED
Address of Applicant:	Room 2511-2512, Meilan Business Center, Qianjin Two Road, XiXiang,
	Baoan District, ShenZhen, China
Manufacturer:	EKEN GROUP LIMITED
Address of Manufacturer:	Room 2511-2512, Meilan Business Center, Qianjin Two Road, XiXiang,
	Baoan District, ShenZhen, China

5.2 General Description of EUT

2.4G REMOTE CONTROLLER		
RM1, RM2, RM3, H2R, H3R, H8R, H9R, H9+R, G2R, G3R, G9R, W8F W9R, N9R, K2R, K3R, K8R, K9R		
2475MHz		
1		
FSK		
PCB Antenna		
3dBi (declare by Applicant)		
DC 3.0V Button Battery		

5.3 Test mode

Transmitting mode Keep the EUT in continuously transmitting mode	
--	--

Remark: NEW BATTERY IS USED DURING ALL TEST

Per-test mode.

We have verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. which was shown in this test report and defined as follows:

-		-	
Axis	X	Υ	Z
Field Strength(dBuV/m)	95.74	98.32	93.86

Final Test Mode:

According to ANSI C63.10 standards, the test results is the "worst case":

Y axis (see the test setup photo)

5.4 Description of Support Units

None

[&]quot;This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.ebotek.cn and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.ebotek.cn. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only."



Report No.: EBO1603097-E305

Page 6 of 20

5.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• FCC —Registration No.: 600491

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fuly described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 600491, June 28, 2013.

• Industry Canada (IC) —Registration No.: 9079A-2

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, June 26, 2013.

5.6 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China

5.7 Other Information Requested by the Customer

None.



Report No.: EBO1603097-E305 Page 7 of 20

Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	Mar. 27 2016	Mar. 26 2017
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	Spectrum Analyzer	Agilent	E4440A	GTS533	Jun. 30 2015	Jun. 29 2016
4	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Jun. 30 2015	Jun. 29 2016
5	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Jun. 30 2015	Jun. 29 2016
6	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	Jun. 26 2015	Jun. 25 2016
7	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 27 2016	Mar. 27 2017
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial Cable	GTS	N/A	GTS213	Mar. 27 2016	Mar. 27 2017
10	Coaxial Cable	GTS	N/A	GTS211	Mar. 27 2016	Mar. 27 2017
11	Coaxial cable	GTS	N/A	GTS210	Mar. 27 2016	Mar. 27 2017
12	Coaxial Cable	GTS	N/A	GTS212	Mar. 27 2016	Mar. 27 2017
13	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jun. 30 2015	Jun. 29 2016
14	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Jun. 30 2015	Jun. 29 2016
15	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	Jun. 26 2015	Jun. 25 2016
16	Band filter	Amindeon	82346	GTS219	Mar. 27 2016	Mar. 27 2017
17	Power Meter	Anritsu	ML2495A	GTS540	Jun. 30 2015	Jun. 29 2016
18	Power Sensor	Anritsu	MA2411B	GTS541	Jun. 30 2015	Jun. 29 2016



Report No.: EBO1603097-E305

Page 8 of 20

7 Test results and Measurement Data

7.1 Antenna requirement:

Standard requirement: FCC Part15 C Section 15.203

15.203 requirement:

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 use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

E.U.T Antenna:

The antenna is PCB antenna, the best case gain of the antenna is 3dBi



Report No.: EBO1603097-E305 Page 9 of 20

7.2 Radiated Emission Method

1.2 Radiated Emission W	Cillou				
Test Requirement:	FCC Part15 C S	Section 15.20	9		
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	30MHz to 25GH	łz			
Test site:	Measurement D	istance: 3m			
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz- 1GHz	Quasi-pea	120KHz	300KHz	Quasi-peak Value
	Above 1015	Peak	1MHz	3MHz	Peak Value
	Above 1GHz	Peak	1MHz	10Hz	Average Value
Limit:	Freque	ency	Limit (dBuV	/m @3m)	Remark
(Field strength of the	2400MHz-24	183 5MHz	94.0		Average Value
fundamental signal)	2400111112 24	TOO.OWIT IZ	114.	00	Peak Value
Limit:	Freque	ency	Limit (dBuV	/m @3m)	Remark
(Spurious Emissions)	30MHz-8	8MHz	40.0	0	Quasi-peak Value
(0)	88MHz-2		43.5		Quasi-peak Value
	216MHz-9		46.0		Quasi-peak Value
	960MHz-	·1GHz	54.00		Quasi-peak Value
	Above 1GHz		54.00 74.00		Average Value Peak Value
Limit: (band edge)	Emissions 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.				
Test setup:	Below 1GHz	4m 4m 0.8m 1m		Sea Anto	na Tower rch enna
	Above 1GHz				



Report No.: EBO1603097-E305 Page 10 of 20

	Antenna Tower Horn Antenna Spectrum Analyzer Table Amplifier	
Test Procedure:	The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.	
	The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.	
	3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.	
	4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.	
	The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.	
	6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.	
Test Instruments:	Refer to section 6.0 for details	
Test mode:	Refer to section 5.3 for details	
Test results:	Pass	

Measurement data:



Report No.: EBO1603097-E305

Page 11 of 20

7.2.1 Field Strength of The Fundamental Signal

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2475.00	95.26	27.52	5.47	29.93	98.32	114.00	-15.68	Vertical
2475.00	91.30	27.52	5.47	29.93	94.36	114.00	-19.64	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2475.00	87.11	27.52	5.47	29.93	90.17	94.00	-3.83	Vertical
2475.00	83.04	27.52	5.47	29.93	86.10	94.00	-7.90	Horizontal

Remark: RBW 3MHz, VBW 10MHz, peak detector for PK value, RBW 3MHz, VBW 10MHz AV detector for AV value



Report No.: EBO1603097-E305

Page 12 of 20

7.2.2 Spurious emissions

■ Below 1GHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
49.53	41.12	15.28	0.77	30.00	27.17	40.00	-12.83	Vertical
74.14	41.59	9.93	0.98	29.83	22.67	40.00	-17.33	Vertical
146.37	44.74	10.23	1.55	29.43	27.09	43.50	-16.41	Vertical
216.02	44.34	13.07	1.93	29.36	29.98	46.00	-16.02	Vertical
299.32	43.41	15.03	2.35	30.00	30.79	46.00	-15.21	Vertical
492.47	34.53	18.39	3.27	29.32	26.87	46.00	-19.13	Vertical
45.06	30.17	15.55	0.72	30.02	16.42	40.00	-23.58	Horizontal
65.80	39.60	12.30	0.91	29.88	22.93	40.00	-17.07	Horizontal
82.36	43.39	11.43	1.05	29.78	26.09	40.00	-13.91	Horizontal
140.84	48.73	10.20	1.51	29.45	30.99	43.50	-12.51	Horizontal
203.52	49.19	12.67	1.86	29.23	34.49	43.50	-9.01	Horizontal
338.40	41.83	16.05	2.57	29.79	30.66	46.00	-15.34	Horizontal



Report No.: EBO1603097-E305

Page 13 of 20

Above 1GHz

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4950.00	37.12	31.93	8.73	32.16	45.62	74.00	-28.38	Vertical
7425.00	31.70	36.59	11.79	31.78	48.30	74.00	-25.70	Vertical
9900.00	31.36	38.81	14.38	31.88	52.67	74.00	-21.33	Vertical
12375.00	*					74.00		Vertical
14850.00	*					74.00		Vertical
4950.00	41.36	31.93	8.73	32.16	49.86	74.00	-24.14	Horizontal
7425.00	33.44	36.59	11.79	31.78	50.04	74.00	-23.96	Horizontal
9900.00	30.76	38.81	14.38	31.88	52.07	74.00	-21.93	Horizontal
12375.00	*					74.00		Horizontal
14850.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4950.00	26.05	31.93	8.73	32.16	34.55	54.00	-19.45	Vertical
7425.00	20.47	36.59	11.79	31.78	37.07	54.00	-16.93	Vertical
9900.00	19.55	38.81	14.38	31.88	40.86	54.00	-13.14	Vertical
12375.00	*					54.00		Vertical
14850.00	*					54.00		Vertical
4950.00	30.27	31.93	8.73	32.16	38.77	54.00	-15.23	Horizontal
7425.00	22.63	36.59	11.79	31.78	39.23	54.00	-14.77	Horizontal
9900.00	19.27	38.81	14.38	31.88	40.58	54.00	-13.42	Horizontal
12375.00	*					54.00		Horizontal
14850.00	*					54.00		Horizontal

Remark:

- 1. Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 3. "*", means this data is the too weak instrument of signal is unable to test.



Report No.: EBO1603097-E305

Page 14 of 20

7.2.3 Bandedge emissions

All of the restriction bands were tested, and only the data of worst case was exhibited.

Test Freque	Test Frequency 2475MHz								
Peak value:									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
2390.00	45.00	27.59	5.38	30.18	47.79	74.00	-26.21	Horizontal	
2400.00	45.73	27.58	5.39	30.18	48.52	74.00	-25.48	Horizontal	
2390.00	45.75	27.59	5.38	30.18	48.54	74.00	-25.46	Vertical	
2400.00	46.42	27.58	5.39	30.18	49.21	74.00	-24.79	Vertical	
Average va	lue:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
2390.00	35.07	27.59	5.38	30.18	37.86	54.00	-16.14	Horizontal	
2400.00	35.40	27.58	5.39	30.18	38.19	54.00	-15.81	Horizontal	
2390.00	35.16	27.59	5.38	30.18	37.95	54.00	-16.05	Vertical	
2400.00	35.71	27.58	5.39	30.18	38.50	54.00	-15.50	Vertical	

Test Frequency	2475MHz
----------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	47.35	27.53	5.47	29.93	50.42	74.00	-23.58	Horizontal
2500.00	46.12	27.55	5.49	29.93	49.23	74.00	-24.77	Horizontal
2483.50	48.55	27.53	5.47	29.93	51.62	74.00	-22.38	Vertical
2500.00	47.32	27.55	5.49	29.93	50.43	74.00	-23.57	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	37.92	27.53	5.47	29.93	40.99	54.00	-13.01	Horizontal
2500.00	35.62	27.55	5.49	29.93	38.73	54.00	-15.27	Horizontal
2483.50	39.31	27.53	5.47	29.93	42.38	54.00	-11.62	Vertical
2500.00	35.72	27.55	5.49	29.93	38.83	54.00	-15.17	Vertical

Remark:

1. Final Level =Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor



Report No.: EBO1603097-E305 Page 15 of 20

7.3 20dB Occupy Bandwidth

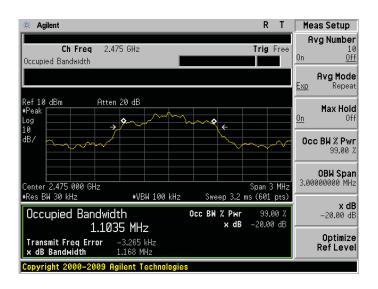
Test Requirement:	FCC Part15 C Section 15.249/15.215			
Test Method:	ANSI C63.10:2013			
Limit:	Operation Frequency range 2400MHz~2483.5MHz			
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane			
Test Instruments:	Refer to section 6.0 for details			
Test mode:	Refer to section 5.3 for details			
Test results:	Pass			

Measurement Data

Measurement Data

Test Frequency	20dB bandwidth(MHz)	Result
2475MHz	1.168	Pass

Test plot as follows:



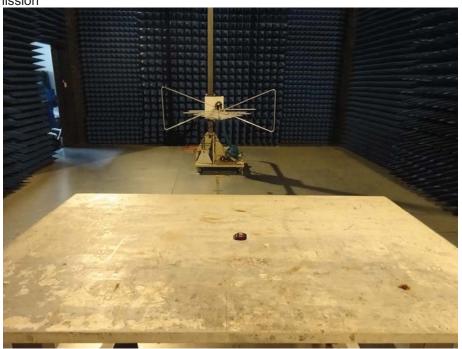


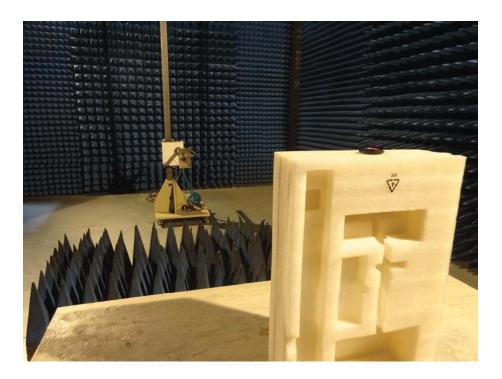
Report No.: EBO1603097-E305

Page 16 of 20

8 Test Setup Photo

Radiated Emission





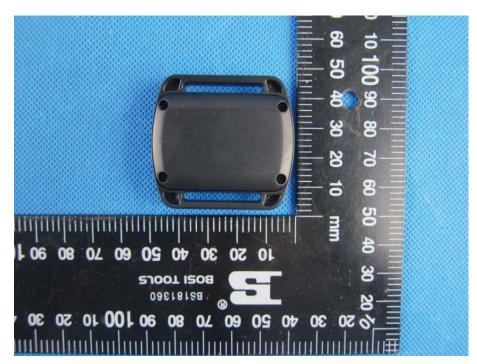


Report No.: EBO1603097-E305

Page 17 of 20

9 EUT Constructional Details



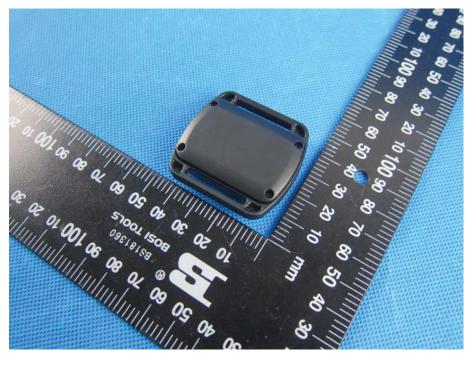




Report No.: EBO1603097-E305

Page 18 of 20

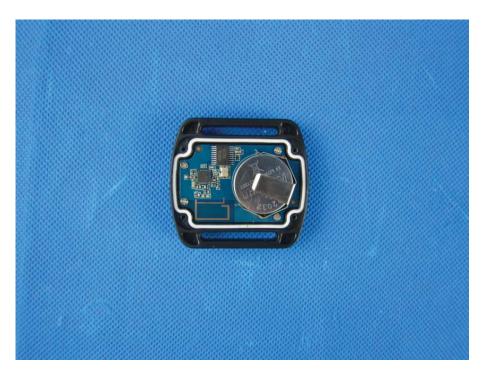


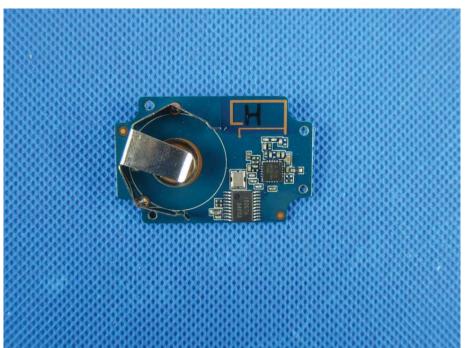




Report No.: EBO1603097-E305

Page 19 of 20

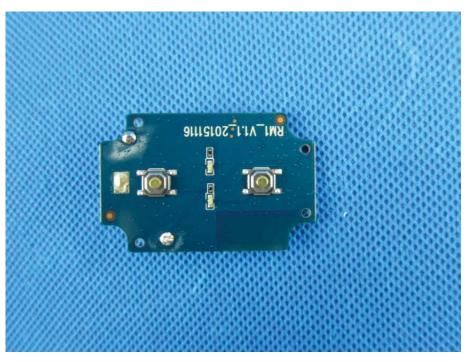






Report No.: EBO1603097-E305

Page 20 of 20



-----End-----