



Hong Kong

## FCC – Test report

Report Number : **60/760.11.188.02** Date of Issue: 08<sup>th</sup> April 2013

Model : Kalenji CW 500 Play SD, On miles 700, TW Personal Coach

Product Type : Digital HRM Watch

Applicant : Dayton Industrial Co., Ltd.

Address : 2-12 Kwai Fat Road, 11-A Kwai Chung, New Territories, Hong Kong

Production Facility : Kendy Enterprise Ltd.

Address : 2-12 Kwai Fat Road, 11-A Kwai Chung, New Territories, Hong Kong

Test Result :  **Positive**     **Negative**

Total pages including Appendices : 22

*TÜV SÜD Hong Kong Ltd. is a subcontractor to TÜV Product Service, GmbH according to the principles outlined in ISO 17025.*

*TÜV SÜD Hong Kong Ltd. reports apply only to the specific samples tested under stated test conditions. Construction of the actual test samples has been documented. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. The manufacturer/importer is responsible to the Competent Authorities in Europe for any modifications made to the production units which result in non-compliance to the relevant regulations. TÜV SÜD Hong Kong Ltd. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV SÜD Hong Kong Ltd. issued reports.*

*This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval.*



Hong Kong

## 1. Table of Contents

1. Table of Contents .....	2
2. Details about the Test Laboratory .....	3
3. Description of the Equipment Under Test .....	4
4. Summary of Test Standards .....	5
5. Summary of Test Standards and Results .....	6
6. General Remarks.....	7
7. Emission Test Results .....	8
7.1 Radiated Emission Test .....	8
7.2 20dB Bandwidth measurement .....	12
7.3 Bandedge measurement.....	14
8. System Measurement Uncertainty .....	16
9. Appendix A .....	17
Photographs of EUT	
10. Appendix B .....	21
Test setup photos	
11. Appendix C .....	22
Declaration letter of EUT	



Hong Kong

## 2. Details about the Test Laboratory

### Details about the Test Laboratory

#### Test site 1

Company name: TÜV SÜD HONG KONG LTD.  
3/F, West Wing, Lakeside 2,  
10 Science Park West Avenue,  
Science Park, Shatin  
HK.

Telephone: 852 2776 1323

Fax: 852 2776 1372

#### Test site 2

Company name: TMC-Telecommunication Metrology Center of M.I.I.T  
No 52 Hua Yuanbei Road, Haidian District, Beijing, P.R.China



Hong Kong

### 3. Description of the Equipment Under Test

#### Description of the Equipment Under Test

Product:	Digital HRM Watch
Model no.:	Kalenji CW 500 Play SD, On miles 700, TW Personal Coach
Serial number:	NIL
Options and accessories:	NIL
Rated Voltage:	3.0 VDC
Rated Current:	NIL
Rated Power:	NIL
Frequency:	NIL
RF Transmission Frequency:	2450MHz
No. of Operated Channel:	1
Modulation:	GFSK
Antenna gain:	0 dBi
Description of the EUT:	Battery operated – 1 x3V CR2032 button cell



Hong Kong

#### 4. Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C, Intentional Radiators, 10-1-12 Edition	PART 15 – RADIO FREQUENCY DEVICES Subpart C – Intentional Radiators



Hong Kong

## 5. Summary of Test Standards and Results

Emission Tests					
Test Condition	Pages	Test site	Test Result		
			Pass	Fail	N/A
Radiated Emission (47 CFR 15.249, 15.209, 15.109)	8	Site 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducted Emission (47 CFR 15.207)	NIL	NIL	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
20dB Bandwidth (47 CFR 15.215)	16	Site 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bandedge Emission (47 CFR 15.249)	18	Site 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Report Number: **60/760.11.188.02**

TÜV SÜD HONG KONG LTD., 3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.  
Tel: +852-2776 1323 Fax: +852-2776 1206

Page 6 of 22

Rev. no.: 2.1



## 6. General Remarks

### Remarks

This submittal(s) (test report) is intended for FCC ID: O4GSUZANE complies with the FCC Part 15, Subpart C Rules.

All the configurations of the product were tested and only the worst test results are listed in the report.

Client informs that the On miles 700 and TW Personal Coach have the same technical construction including circuit, PCB layout, components and component layout, all electrical construction and basic mechanical construction, with Digital HRM Watch, Kalenji CW 500 Play SD. The difference lies in the outlook of different models. (Client's confirmation letter shown at appendix C)

EMC tests were performed on model Kalenji CW 500 Play SD.

### SUMMARY:

All tests according to the regulations cited on page 5 were

- - Performed
- - **Not** Performed

The Equipment Under Test

- - **Fulfills** the general approval requirements.
- - **Does not** fulfill the general approval requirements.

Sample Received Date: 23<sup>rd</sup> January 2013


Testing Start Date: 23<sup>rd</sup> January 2013

Testing End Date: 08<sup>th</sup> March 2013

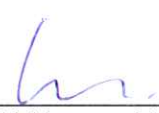
- TÜV SÜD HONG KONG LTD. -

Reviewed by:

Prepared by:

  
Edmond FUNG  
EMC Test Engineer



  
CHAN Kwong Ngai  
EMC Test Engineer

Report Number: **60/760.11.188.02**

TÜV SÜD HONG KONG LTD., 3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.  
Tel: +852-2776 1323 Fax: +852-2776 1206

Page 7 of 22

Rev. no.: 2.1



Hong Kong

## 7. Emission Test Results

### 7.1 Radiated Emission Test (Fundamental)

Date of test : 05<sup>th</sup> March 2013

Test requirement : FCC Part 15

Test method : ANSI C63.4:2009

Operating mode : Transmit mode

Frequency channel : 2450MHz

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency (MHz)	Polarity (H/V)	Read Level (dBμV)	Corr. (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
2450.000	V	50.3	1.8	52.1	114.0	-61.9	Peak
2450.000	V	46.8	1.8	48.6	94.0	-45.4	Average
2450.000	H	48.2	1.8	50.0	114.0	-64.0	Peak
2450.000	H	46.0	1.8	47.8	94.0	-46.2	Average

Remark: The EUT was placed on the top of the turntable in test site area.  
The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.  
For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable. The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.  
Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.  
Adjust the emission and slightly height of the antenna to locate the position with maximum reading.





Hong Kong

### Radiated Emission Test (Spurious Emission)

Date of test : 05<sup>th</sup> March 2013  
 Test requirement : FCC Part 15  
 Test method : ANSI C63.4:2009  
 Antenna polarity : Horizontal  
 Operating mode : Transmit mode  
 Frequency channel : 2450MHz  
 Remarks : NIL

Test Result
<input checked="" type="checkbox"/> Passed
<input type="checkbox"/> Not Passed

Frequency (MHz)	Read Level (dBμV)	Corr. (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
70.800	55.2	-38.1	17.1	40.0	-22.9	Quasi-Peak
91.800	52.8	-36.7	16.1	43.5	-27.4	Quasi-Peak
319.100	51.6	-33.5	18.1	46.0	-27.9	Quasi-Peak
417.260	48.4	-30.7	17.7	46.0	-28.3	Quasi-Peak
564.560	50.3	-28.8	21.5	46.0	-24.5	Quasi-Peak
750.140	47.7	-25.4	22.3	46.0	-23.7	Quasi-Peak
6302.250	28.1	7.1	35.2	74.0	-38.8	Peak
6302.250	16.3	7.1	23.4	54.0	-30.6	Average
10514.000	29.1	10.1	39.2	74.0	-34.8	Peak
10514.000	14.4	10.1	24.5	54.0	-29.5	Average
16780.000	32.1	14.3	46.4	74.0	-27.6	Peak
16780.000	11.2	14.3	25.5	54.0	-28.5	Average

Remark: “\*” means the emission(s) appear within the restricted bands shall follow the requirement of section 15.205.  
 The EUT was placed on the top of the turntable in test site area.  
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.  
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.  
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.  
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.  
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.



Hong Kong

### Radiated Emission Test (Spurious Emission)

Date of test : 05<sup>th</sup> March 2013  
 Test requirement : FCC Part 15  
 Test method : ANSI C63.4:2009  
 Antenna polarity : Vertical  
 Operating mode : Transmit mode  
 Frequency channel : 2450MHz  
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency (MHz)	Read Level (dBµV)	Corr. (dB)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
48.840	53.3	-34.8	18.5	40.0	-21.5	Quasi-Peak
51.900	57.4	-34.9	22.5	40.0	-17.5	Quasi-Peak
*257.780	54.5	-35.1	19.4	46.0	-26.6	Quasi-Peak
490.940	57.7	-30.6	27.1	46.0	-18.9	Quasi-Peak
662.720	58.1	-27.6	30.5	46.0	-15.5	Quasi-Peak
2651.000	32.4	2.3	34.7	74.0	-39.3	Peak
2651.000	18.8	2.3	21.1	54.0	-32.9	Average
6301.375	28.2	7.1	35.3	74.0	-38.7	Peak
6301.375	15.7	7.1	22.8	54.0	-31.2	Average
10564.000	29.1	10.1	39.2	74.0	-34.8	Peak
10564.000	13.3	10.1	23.4	54.0	-30.6	Average
16773.000	33.1	14.3	47.4	74.0	-26.6	Peak
16773.000	12.8	14.3	27.1	54.0	-26.9	Average

Remark: "\*" means the emission(s) appear within the restricted bands shall follow the requirement of section 15.205.  
 The EUT was placed on the top of the turntable in test site area.  
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.  
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.  
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.  
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.  
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.



Hong Kong

## Test Equipment List

DESCRIPTION	Type No.	Serial No.	Calibrated until
Antenna	VULB9163	9163 330	2014.02.24
Antenna	3164-05	85724	2014.02.17
Loop Antenna	6512	29604	2013.09.24
Spectrum Analyzer	FSP 40	100378	2013.12.22
EMI Test Receiver	ESCI	100701	2013.08.03
Spectrum Analyzer	FSV40	100903	2014.01.26
Test Cable	SUCOFLEX 104	MY2320/4	2014.02.17
Amplifier	150A250	326446	2014.03.17
Temp. & Humid. Chamber	FACT5-2.0	4166	2013.11.21

Report Number: **60/760.11.188.02**

TÜV SÜD HONG KONG LTD., 3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.  
Tel: +852-2776 1323 Fax: +852-2776 1206

Page 11 of 22

Rev. no.: 2.1



## 7.2 20dB Bandwidth measurement

Date of test : 05<sup>th</sup> March 2013

Test requirement : FCC Part 15

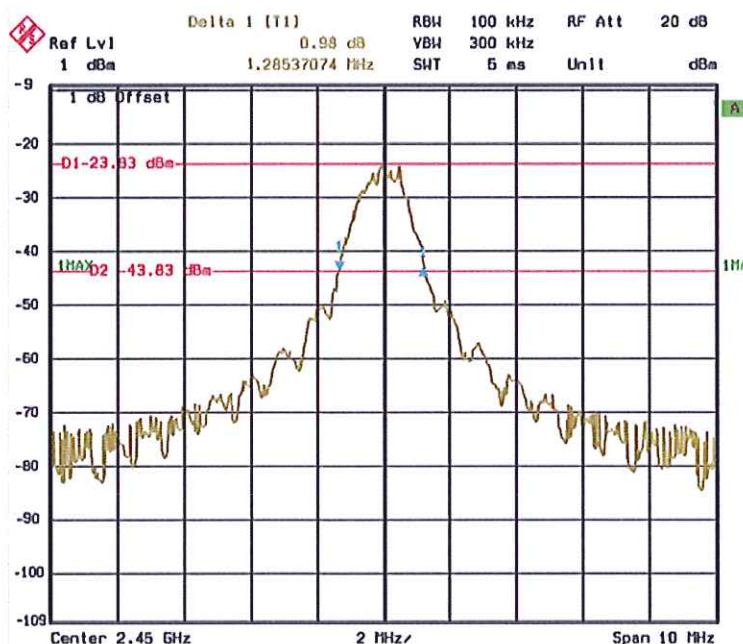
Test method : ANSI C63.4:2009

Operating mode : Transmit mode

Frequency channel : 2450MHz

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



20dB Bandwidth (MHz)	Limit
1.285	-

Remark:

Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel

RBW ≥ 1% of the 20 dB bandwidth

VBW ≥ RBW Sweep = auto

Detector function = peak

Trace = max hold

The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation.



Hong Kong

## Test Equipment List

### 20dB Bandwidth measurement

DESCRIPTION	Type No.	Serial No.	Calibrated until
Antenna	VULB9163	9163 330	2014.02.24
Antenna	3164-05	85724	2014.02.17
Loop Antenna	6512	29604	2013.09.24
Spectrum Analyzer	FSP 40	100378	2013.12.22
EMI Test Receiver	ESCI	100701	2013.08.03
Spectrum Analyzer	FSV40	100903	2014.01.26
Test Cable	SUCOFLEX 104	MY2320/4	2014.02.17
Amplifier	150A250	326446	2014.03.17
Temp. & Humid. Chamber	FACT5-2.0	4166	2013.11.21

Report Number: **60/760.11.188.02**

TÜV SÜD HONG KONG LTD., 3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.  
Tel: +852-2776 1323 Fax: +852-2776 1206

Page 13 of 22

Rev. no.: 2.1



### 7.3 Bandedge measurement

Date of test : 25<sup>th</sup> January 2013

Test requirement : FCC Part 15

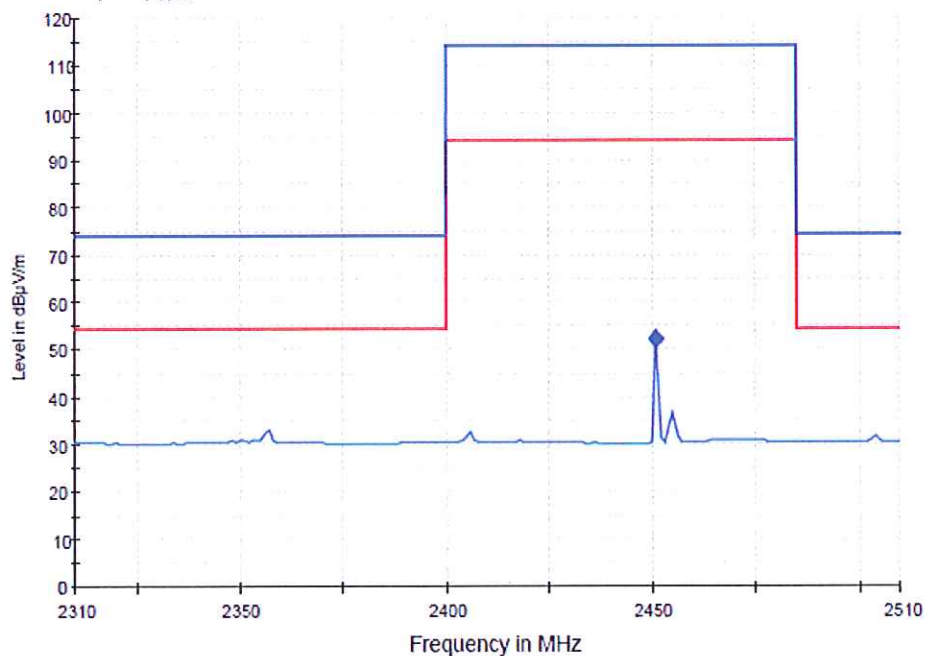
Test method : ANSI C63.4:2009

Operating mode : Transmit mode

Frequency channel : 2450MHz

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Frequency (MHz)	Test result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
2361.000	33.6	74.0	-40.4	Peak
2361.000	20.1	54.0	-33.9	Average
2503.000	31.3	74.0	-42.7	Peak
2503.000	18.9	54.0	-35.1	Average

Remark: Use the following spectrum analyzer settings:  
 Span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation  
 RBW ≥ 1% of the span  
 VBW ≥ RBW  
 Sweep = auto  
 Detector function = peak  
 Trace = max hold



Hong Kong

## Test Equipment List

### Bandedge measurement

DESCRIPTION	Type No.	Serial No.	Calibrated until
Antenna	VULB9163	9163 330	2014.02.24
Antenna	3164-05	85724	2014.02.17
Loop Antenna	6512	29604	2013.09.24
Spectrum Analyzer	FSP 40	100378	2013.12.22
EMI Test Receiver	ESCI	100701	2013.08.03
Spectrum Analyzer	FSV40	100903	2014.01.26
Test Cable	SUCOFLEX 104	MY2320/4	2014.02.17
Amplifier	150A250	326446	2014.03.17
Temp. & Humid. Chamber	FACT5-2.0	4166	2013.11.21



Hong Kong

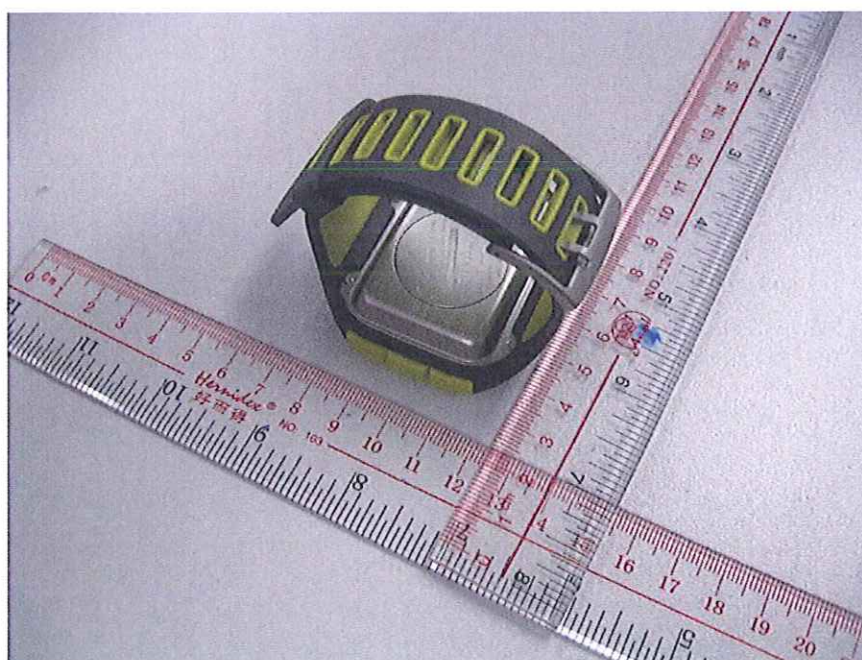
## 8. System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty

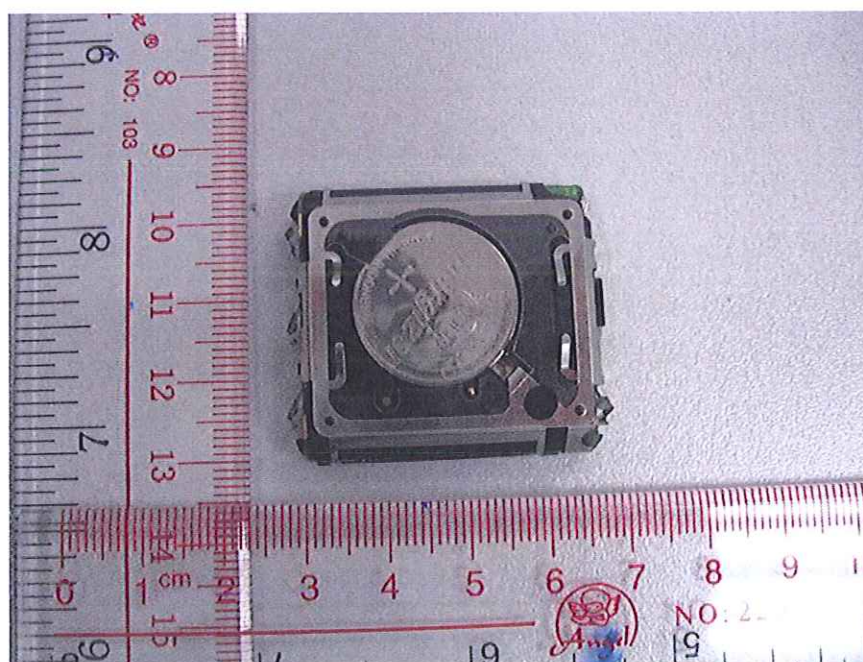
	Items	Extended Uncertainty
RE	Field strength (dB $\mu$ V/m)	U=5.08dB (30MHz-1GHz) U=4.56dB (1GHz-6GHz)
CE	Disturbance Voltage (dB $\mu$ V)	U=2.7dB

## 9. Appendix A



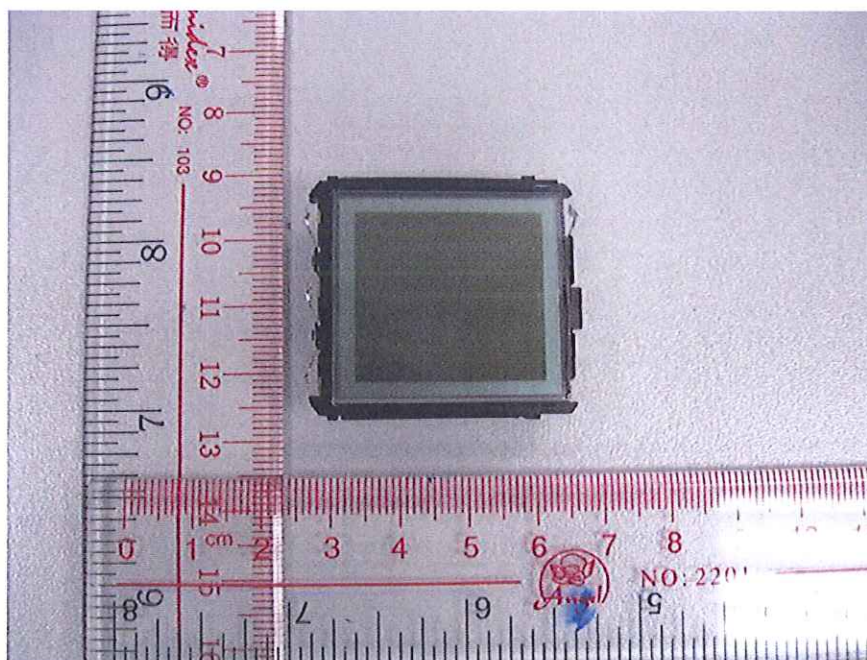
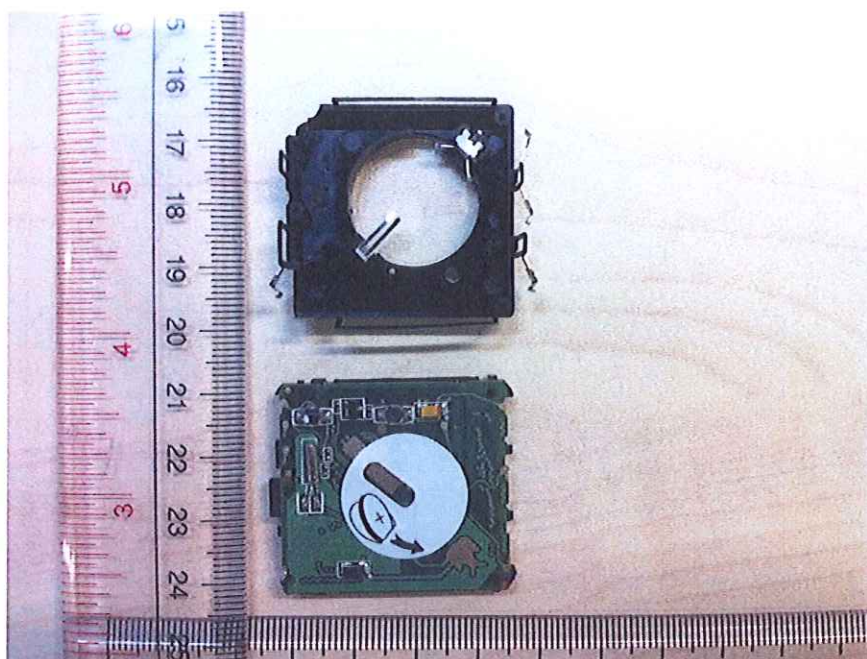


Appendix A

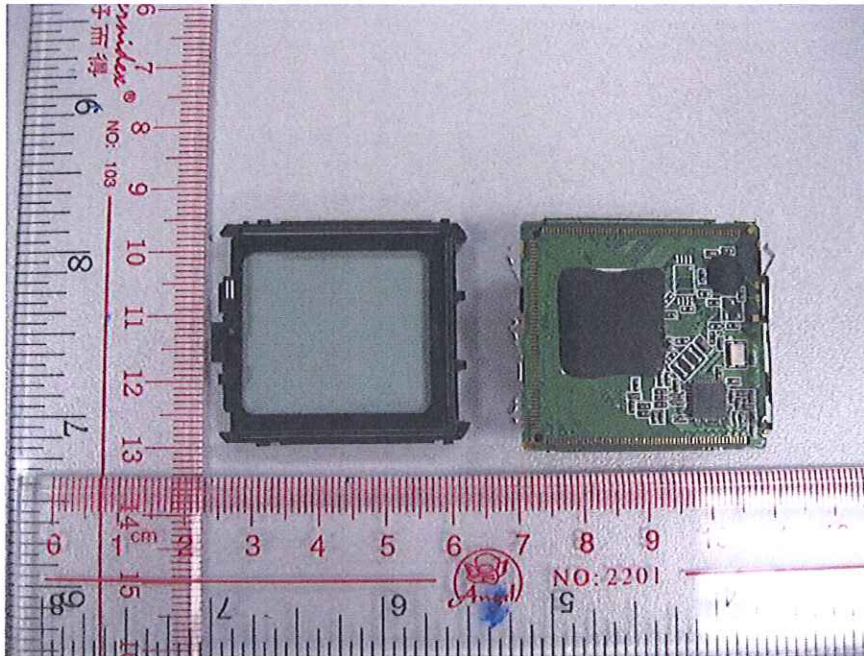




Appendix A



Appendix A





10. Appendix B

Radiated Emission Test





Hong Kong

## 11. Appendix C

### Dayton Industrial Co. Ltd

To: TÜV SÜD HKG Ltd.

Attention: **Ms. Esther Tse**

From: Edward Ko

Fax No: (852) 2480 4627

Date: 20 February, 2013

Total Page (Cover Included): 1

#### Declaration Letter

Subject

We:

Officially notify TÜV SÜD HKG Ltd. that the **TW Personal Coach, On miles 700** have the same technical construction including circuit diagram, PCB Layout, components and component layout, all electrical construction, mechanical construction, and RF communication protocol with **Digital HRM Watch, Kalenji CW 500 Play SD**; The difference lies only in outlook/ color of the different models and some UI interface.

Additional Model : TW Personal Coach, On miles 700

Main Test Model : Kalenji CW 500 Play SD

Product: Digital HRM Watch

Applicant:

**L.F. WONG**

26 February, 2013

(Date)

(Applicant's authorized signature and company Chop)