



Hong Kong

## FCC – Test report

Report Number : **60/760.9.164.01** Date of Issue: 08 December 2009

Model : **BKM1G, BKM2G, BKM3G, BKM1G-SP, BKM2G-SP**

Product Type : **Bike Speed / Cadence Transmitter**

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**

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## 2 Details about the Test Laboratory

### Details about the Test Laboratory

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

Company name: Emitel (Shenzhen) Limited  
Building 2,  
171 Meihua Road,  
Futian District, 518049  
Shenzhen, China



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### 3 Description of the Equipment Under Test

#### Description of the Equipment Under Test

Product: Bike Speed / Cadence Transmitter  
Model no.: BKM1G-L  
Serial number: NIL  
Options and accessories: NIL  
Rated Voltage: 3 V DC  
Rated Current: NIL  
Rated Power: NIL  
Frequency: NIL  
Description of the EUT: EUT size: 1.5 cm x 3 cm x 4.5 cm



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#### 4 Summary of Test Standards and Results

Emission Tests						
Test Condition	Test Requirement	Test Method	Pages	Test Result		
				Pass	Fail	N/A
Radiated Emission (Fundamental & Spurious Emission)	FCC Part 15 Section 15.249 & 15.209	ANSI C63.4:2003	7-14	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducted Emission on AC 150kHz to 30MHz	FCC Part 15 Section 15.207	ANSI C63.4:2003	NIL	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>





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## 5 General Remarks

### Remarks

BKM2G, BKM3G, BKM1G-SP, BKM2G-SP have the same technical construction including circuit diagram, PCB layout, components and component layout, all electrical construction and basic mechanical construction, with Bike Speed / Cadence Transmitter Model BKM1G. The difference lies in the outlook/color of different models. (See Appendix C)

### 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: 24 July 2009

Testing Start Date: 25 July 2009

Testing End Date: 16 November 2009

- TÜV SÜD HONG KONG LTD. -

Reviewed by:

Edmond FUNG  
EMC Test Engineer

Prepared by:



Cheng Kin Yeung  
EMC Test Engineer



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## 6 Emission Test Results

### 6.1 Radiated Emission Test (Fundamental)

Date of test : 06 August 2009

Test requirement : FCC Part 15 Section 15.249

Test method : ANSI C63.4:2003

Operating mode : On mode

Antenna polarity : Horizontal (> Vertical)

Remarks : NIL

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

Field Strength of Fundamental Emissions in Peak Value			
Frequency MHz	Test result dBµV/m	Limit dBµV/m	Margin dB
2457.00	74.2	114.0	-39.8

Field Strength of Fundamental Emissions in Average Value			
Frequency MHz	Test result dBµV/m	Limit dBµV/m	Margin dB
Peak Vaule less than Average limit			

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.



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### Radiated Emission Test (Spurious Emission)

Date of test : 06 August 2009

Test requirement : FCC Part 15 Section 15.249

Test method : ANSI C63.4:2003

Operating mode : On mode

Antenna polarity : Horizontal (> Vertical)

Remarks : NIL

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

**Field Strength of Emissions in Peak Value**

Frequency MHz	Test result dBμV/m	Limit dBμV/m	Margin dB
4914.00	36.5	74.0	-37.5
7371.00	45.7	74.0	-28.3
9828.00	<30	74.0	<-44
12285.00	<30	74.0	<-44
14742.00	<30	74.0	<-44
17199.00	<30	74.0	<-44
19656.00	<30	74.0	<-44
22113.00	<30	74.0	<-44
24570.00	<30	74.0	<-44

**Field Strength of Emissions in Average Value**

Frequency MHz	Test result dBμV/m	Limit dBμV/m	Margin dB
Peak Vaule less than Average limit			

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.





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### Radiated Emission Test 9kHz - 30MHz

Date of test : 06 August 2009  
Test requirement : FCC Part 15 Section 15.209  
Test method : ANSI C63.4:2003  
Operating mode : On mode  
Antenna polarity : Side  
Remarks : NIL

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

Frequency MHz	QP Test result dB $\mu$ V/m	QP Limit dB $\mu$ V/m	Margin dB
No significant emissions above the equipment noise floor were detected			

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.



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**Radiated Emission Test 30MHz - 24570MHz**

Date of test : 06 August 2009

Test requirement : FCC Part 15 Section 15.209

Test method : ANSI C63.4:2003

Operating mode : On mode

Antenna polarity : Horizontal

Remarks : NIL

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

Frequency MHz	QP Test result dBµV/m	QP Limit dBµV/m	Margin dB
No significant emissions above the equipment noise floor were detected			

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.



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## Test Equipment List

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	DUE CAL. DATE
04-02/11-08-001	Spectrum Analyzer	Advantest	U3772	16-04-2010
04-02/03-06-002	Test Receiver	Rohde & Schwarz	ESPI3	16-04-2010
04-02/24-06-001	Biconilog Antenna	EMCO	3142C	08-01-2010
04-02/24-07-001	Bouble-Ridged Waveguide Horn	ETS	3117	04-02-2010
01-02/24-01-008	Pyramid horn antenna	EMCO	3160-09	8 Dec 2010
60-7/62-95-015	Active Loop Antenna	Rohde & Schwarz	HFH2-Z2	01-07-2010

Report Number: 60/760.9.164.01

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

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Rev. no.: 2.0

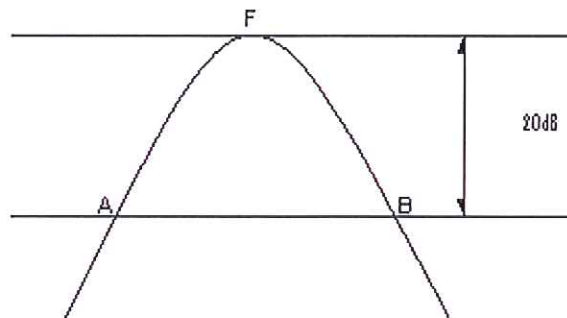
**6.2 20dB Bandwidth measurement**

Date of test : 16 November 2009  
 Test requirement : FCC Part 15 Section 15.249  
 Test method : ANSI C63.4:2003  
 Operating mode : On mode  
 Remarks : NIL

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

Point A = 2455.575  
 Point B = 2458.485  
 Point F = 2457.00  
 $\Delta$  of point A, B = 2.91MHz

Remark: Use the following spectrum analyzer settings:  
 Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel  
 RBW  $\geq$  1% of the 20 dB bandwidth  
 VBW  $\geq$  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. The limit is specified in one of the subparagraphs of this Section.







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### 6.3 Bandedge measurement

Date of test : 16 November 2009  
Test requirement : FCC Part 15 Section 15.249  
Test method : ANSI C63.4:2003  
Operating mode : On mode  
Remarks : NIL

Test Result  
 Passed  
 Not Passed

Frequency (MHz)	Test result (dB $\mu$ V/m)	limit (dB $\mu$ V/m)	Margin (dB)
2400.0	25.8	54	-28.2
2483.5	26.8	54	-27.2

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  $\geq$  1% of the span  
VBW  $\geq$  RBW  
Sweep = auto  
Detector function = peak  
Trace = max hold  
Allow the trace to stabilize. Set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. The marker-delta value now displayed must comply with the limit specified in this Section. Submit this plot. Now, using the same instrument settings, enable the hopping function of the EUT. Allow the trace to stabilize. Follow the same procedure listed above to determine if any spurious emissions caused by the hopping function also comply with the specified limit. Submit this plot.



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## Test Equipment List

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	DUE CAL. DATE
04-02/11-08-001	Spectrum Analyzer	Advantest	U3772	16-04-2010
04-02/03-06-002	Test Receiver	Rohde & Schwarz	ESPI3	16-04-2010
04-02/24-06-001	Biconilog Antenna	EMCO	3142C	08-01-2010
04-02/24-07-001	Bouble-Ridged Waveguide Horn	ETS	3117	04-02-2010

Report Number: 60/760.9.164.01

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

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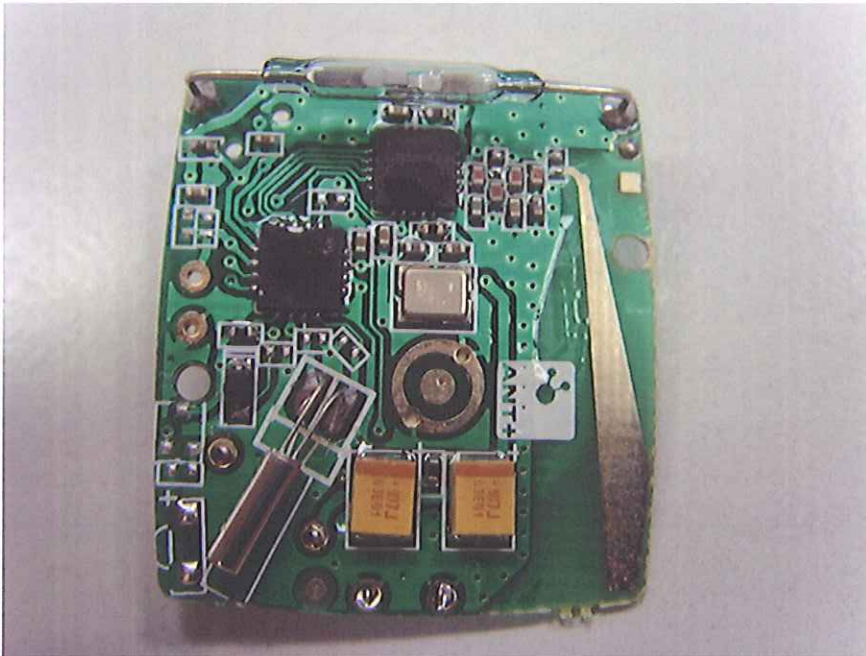
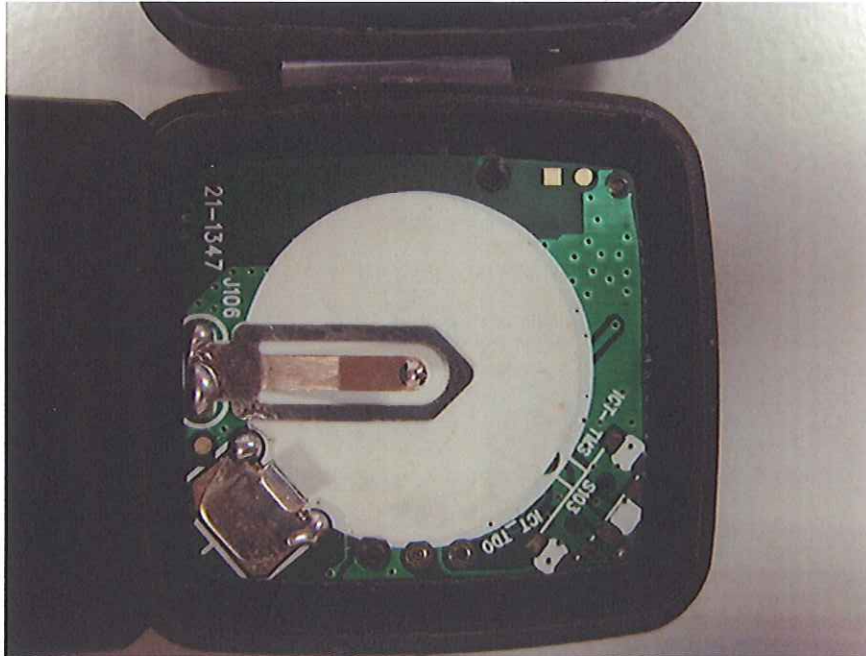
Rev. no.: 2.0

7 Appendix A





## Appendix A



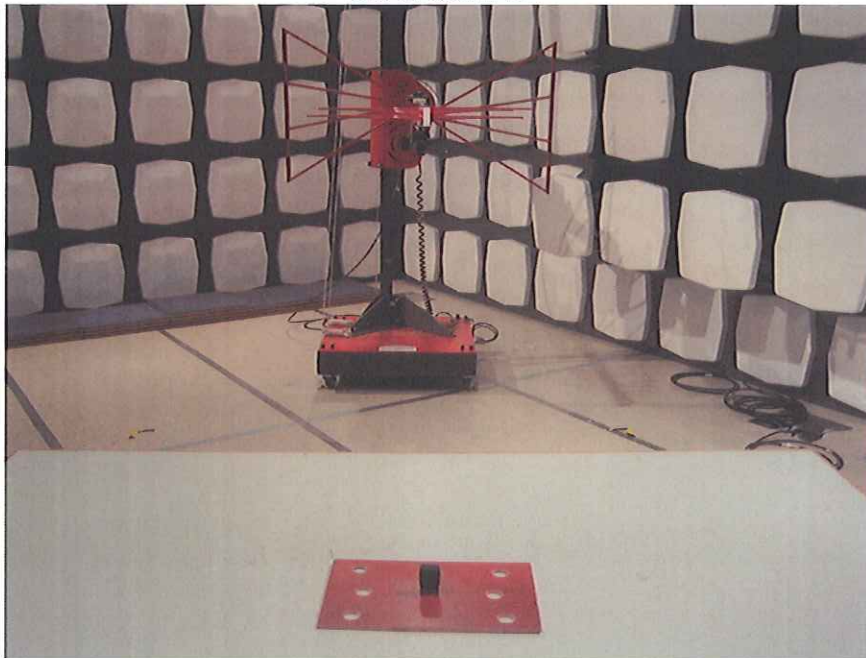


## 8 Appendix B

### Radiated Emission Test Set Up

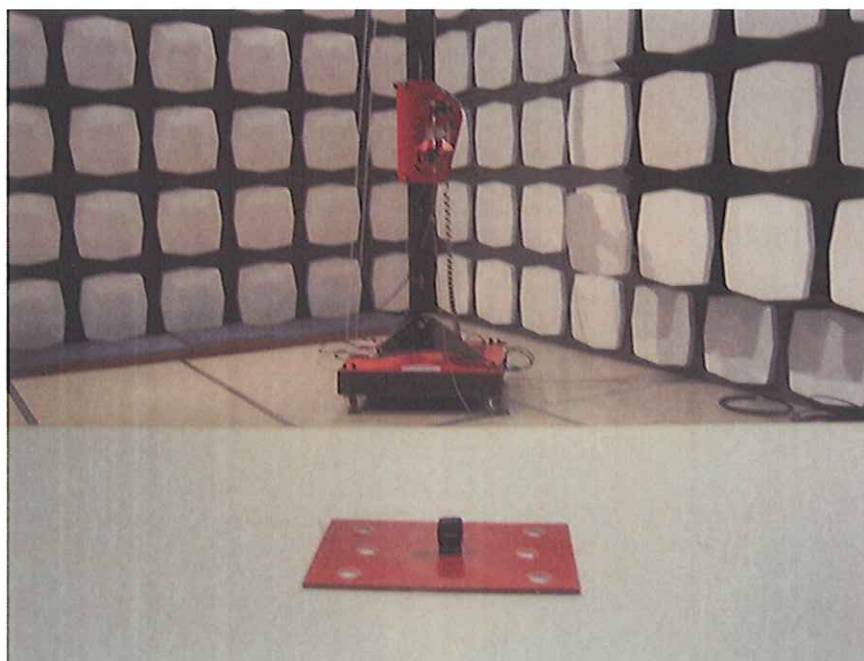


9kHz-30MHz



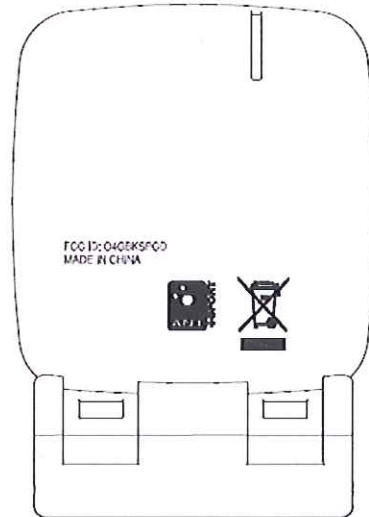
30MHz-1GHz

Appendix B

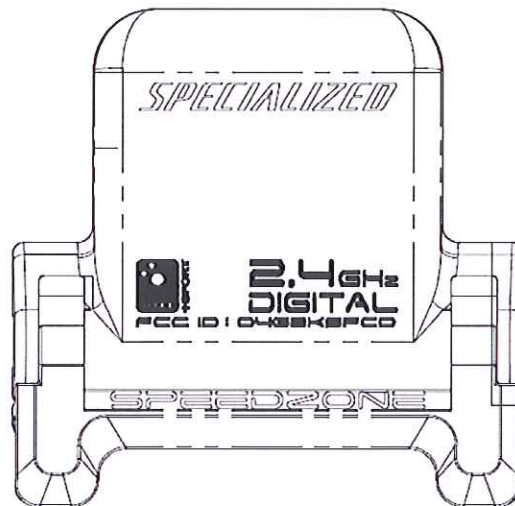


1GHz above

9 Appendix C

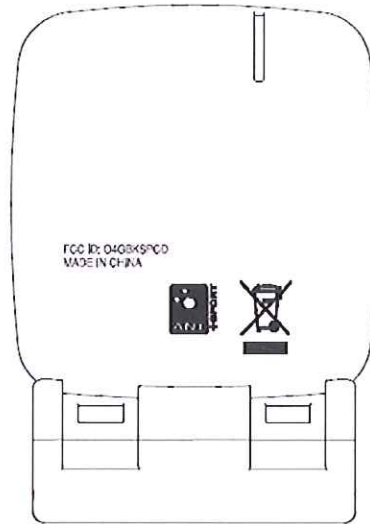


**BKM1G**

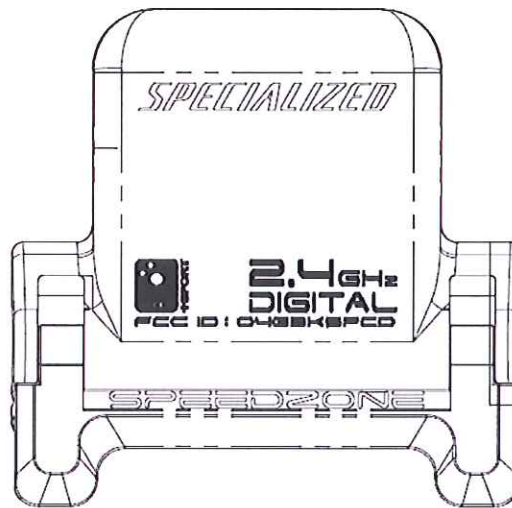


**BKM1G-SP**

## 9 Appendix C



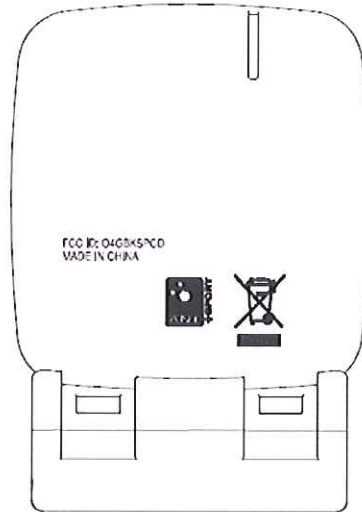
**BKM2G**



**BKM2G-SP**



## Appendix C



# BKM3G



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## Appendix C

To: TUV Hong Kong Ltd.  
We Dayton Industrial Co. Ltd.  
2-12 Kwai Fat Road  
11-A Kwai Chung  
New Territories  
Hong Kong

Officially notify TUV Hong Kong Ltd. That the <MODEL A> have the same technical construction including circuit diagram, PCB layout, components and components layout, all electrical construction with <<MODEL B>>. The different is the outlook / color only.

<<MODEL A>>:  
**BKM1G, BKM2G, BKM3G**

<<MODEL B>>:  
**BKM1G-SP, BKM2G-SP**

Applicant, Dayton Industrial Co. Ltd.

16 Oct., 2009

(Date)



(Applicant's authorized signature and company chop)