



**CMA Testing  
and Certification  
Laboratories**  
廠商會檢定中心

## **TEST REPORT**

Report No. : AF018976-001 Date : 2005 August 19  
Application No. : LF213631(5)  
Client : Asia Global Corporation Limited  
Flat M, 3/F, Kaiser Estate Phase 3  
11 Hok Yuen Street, Hung Hom  
Kowloon, Hong Kong  
Sample Description : One(1) submitted sample stated to be Weather Station of Model No. P13809  
Rating : 2 x 1.5V AAA size batteries  
No. of submitted sample : Four (4) set(s)\*\*\*  
Date Received : 2005 July 18  
Test Period : 2005 July 18 – 2005 August 17  
Test Requested : FCC Part 15 Certification  
Test Method : FCC Rules and Regulations Part 15 – July 2004  
ANSI C63.4 – 2003  
Test Result : See attached sheet(s) from page 2 to 11.  
Conclusion : The submitted sample was found to comply with requirement of FCC Part 15  
Subpart C tests.

*For and on behalf of*  
CMA Testing and Certification Laboratories

Authorized Signature : \_\_\_\_\_

Daisy Chui  
EMC Engineer - EL. Division

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FCC ID : THKP13809-1

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### **1 General Information**

#### **1.1 General Description**

The equipment under test (EUT) is a transmitter for Weather Station operating at 433.9MHz and is controlled by a crystal. The EUT is powered by 2 x 1.5V AAA size battery. It senses temperature and humidity and transmits the data to the receiver in modulated radio signal. The transmission is periodic and occurs once every 2 minutes.

The brief circuit description is listed as follows :

- RF module and associated circuit act as modulator and are for transmission
- U1 and associated circuit act as encoder
- Q1, Q2, R7, R8, R9 and associated circuit act as voltage regulator
- RT and associated circuit act as temperature sensor
- S2, Q101, TLC555 and associated circuit act as humidity sensor



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### **1.2 Location of the test site**

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003. 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 – 2003. A shielded room is located at :

Ground Floor, Yan Hing Centre,  
9 – 13 Wong Chuk Yeung Street,  
Fo Tan, Shatin,  
New Territories,  
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### **1.3 List of measuring equipment**

Equipment	Manufacturer	Model No.	Serial No.	Calibration Certification No.
EMI Test Receiver	R&S	ESCS30	100001	S43284
Broadband Antenna	Schaffner	CBL6112B	2692	CA3025
Signal Generator	IFR	2023B	202302/938	S43098
LISN	R&S	ESH3-Z5	100038	S43377
LISN	R&S	ESH3-Z5	100010	S43101
Pulse Limiter	R&S	ESH3-Z2	100001	S43325
Biconical Antenna	R&S	HK116	837414/004	2GB05000535-0001
Loop Antenna	EMCO	6502	00056620	49906
Horn Antenna	EMCO	3115	9002-3351	9002-3351
Spectrum Analyzar	R&S	FSP30	100416	20-102273



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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 – 2003.

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.

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

#### **2.2 Test Result**

Peak Detector data was measured unless otherwise stated.

Radiated emission measurements were performed according to the requirement of Section 15.231(e).

\* Emissions appearing within the restricted bands shall follow the requirement of Section 15.205.

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**

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV/m)	Antenna and Cable factor (dB)	Average Factor (-dB)	Field Strength (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
433.908	H	51.8	17.7	0.0	69.5	72.9	-3.4
867.820	H	24.7	22.5	0.0	47.2	52.9	-5.7
* 1301.696	H	22.0	28.4	0.0	50.4	54.0	-3.6
1736.664	H	18.6	30.7	0.0	49.3	54.0	-4.7
2169.540	H	18.6	27.6	0.0	46.2	54.0	-7.8
2603.501	H	16.7	28.6	0.0	45.3	54.0	-8.7
3037.381	V	17.0	30.1	0.0	47.1	54.0	-6.9
3471.310	H	12.5	30.1	0.0	42.6	54.0	-11.4
* 3905.160	H	12.2	31.1	0.0	43.3	54.0	-10.7
* 4339.093	H	12.6	32.4	0.0	45.0	54.0	-9.0



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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 – 2003. 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 Conduction Emission**

For electronic filing, the photos are saved with filename TSup1.jpg to TSup2.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 InPho7.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.pdf
Block Diagram	BlkDia.pdf
Schematic Diagram	Schem.pdf
Users Manual	UserMan.pdf
Operational Description	OpDes.pdf

#### **5.1 Bandwidth**

The plot on saved in TestRpt2.pdf shows the fundamental emission is confined in the specified band.

$$\begin{aligned}\text{Bandwidth requirement} &= 433.9\text{MHz} \times 0.25\% \\ &= 1.085\text{MHz}\end{aligned}$$

#### **5.2 Duty Cycle**

The plot on saved in TestRpt3.pdf shows that pulse operation was not employed for the first 200ms of the transmission. The duty cycle is 100% during this period and thus the average factor is zero.

$$\text{Duty Cycle} = 100\%$$

Therefore, the average factor is found by  $20 \log_{10} (1) = 0\text{dB}$

#### **5.3 Transmission time**

$$\text{Duration of each transmission} = 297.0 \text{ ms}$$

The duration of each transmission is confined within 1 second, and required silent period is at least 10 seconds or 30 times the duration of transmission according to section 15.231(e). The 150-second plot on saved in TestRpt4.pdf shows the EUT has an at least 30-second silent period and thus met the FCC requirements.



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### **6 Appendices**

A1	Photos of the set-up of Radiated Emissions	1 page
A2	Photos of External Configurations	1 page
A3	Photos of Internal Configurations	4 pages
A4	Bandwidth Plot	1 page
A5	Average Factor	1 page
A6	Transmission silent period	1 page
A7	ID Label/ Location	1 page
A8	Block Diagram	1 page
A9	Schematics	1 page
A10	User Manual	1 page
A11	Operation Description	1 page

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