



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 : _____

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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,
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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 Analyzaz | 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 (dB μ V/m) | Antenna and Cable factor (dB) | Average Factor (-dB) | Field Strength (dB μ V/m) | Limit at 3m (dB μ V/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

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| 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 *****