



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

TEST REPORT

Report No. : AJ005914-001 Date : 2007 April 23

Application No. : LG231028(5)

Applicant : TECHNICAL (HK) MANUFACTURING LIMITED
UNIT 3908-13, COSCO TOWER,
183 QUEEN'S ROAD CENTRAL,
HONG KONG

Sample Description : One(1) submitted sample(s) stated to be RF Meat Thermometer
of Model No. TT072
Radio Frequency : 433.920MHz Transmitter
Rating : 2 x 1.5V AAA size batteries
No. of submitted sample : Two (2) piece(s) ***

Date Received : 2007 January 08

Test Period : 2007 January 08 – 2007 March 27

Test Requested : FCC Part 15 Certification.

Test Method : 47 CFR Part 15 (10-1-05 Edition)
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.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Danny Chui
Deputy Manager - EL. Division

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1 General Information

1.1 General Description

The equipment under test (EUT) is a transmitter for RF Meat Thermometer. It operates at 433.920MHz and the oscillation of radio control is generated by a crystal. The EUT is power by 2 x 1.5V "AAA" size batteries. When it switched on, it can measure the temperature through the "Probe 1" and "Probe 2" and transmit the radio signal to receiver.

The brief circuit description is listed as follows:

- TM8726 and associated circuit act as encoder.
- Q2, X3 and associated circuit act as oscillator.
- Q3 and associated circuit act as RF amplify.

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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,
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1.3 List of measuring equipment

| Equipment | Manufacturer | Model No. | Serial No. |
|-------------------|--------------|-----------|------------|
| EMI Test Receiver | R&S | ESCI | 100152 |
| Broadband Antenna | Schaffner | CBL6112B | 2692 |
| Spectrum Analyzer | R&S | FSP 30 | 100628 |
| Horn Antenna | Schwarzbeck | 9120D | 9120D-531 |
| Pre-Amplifier | Schwarzbeck | 9718 | 9718-119 |

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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.

“#” means 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) |
|--------------------|-------------------|------------------------------------|-------------------------------------|---------------------------|-------------------------------------|-------------------------------|----------------|
| 433.994 | H | 56.8 | 17.9 | -15.8 | 58.9 | 72.8 | -13.9 |
| 867.990 | H | 27.5 | 22.7 | -15.8 | 34.4 | 52.8 | -18.4 |
| #1301.981 | H | 9.3 | 28.2 | -15.8 | 21.7 | 54.0 | -32.3 |
| 1735.985 | H | 19.4 | 30.6 | -15.8 | 34.2 | 54.0 | -19.8 |
| 2169.972 | H | 29.6 | 0.5 | -15.8 | 14.3 | 54.0 | -39.7 |
| 2603.957 | H | 28.0 | 1.1 | -15.8 | 13.3 | 54.0 | -40.7 |
| 3037.950 | H | 28.9 | 1.5 | -15.8 | 14.6 | 54.0 | -39.4 |
| 3471.946 | H | 29.0 | 1.3 | -15.8 | 14.5 | 54.0 | -39.5 |
| #3905.935 | H | 28.2 | 4.0 | -15.8 | 16.4 | 54.0 | -37.6 |
| #4339.940 | H | 27.5 | 5.4 | -15.8 | 17.1 | 54.0 | -36.9 |

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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 InPho2.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.jpg |
| 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. The bandwidth requirement is $0.25\% \times 433.994 = 1.085\text{MHz}$

5.2 Duty cycle

The duty cycle is simply the on-time divided by the period:

The duration of one cycle = 100ms

Effective period of the cycle = $(0.6 \times 27)\text{ms}$
= 16.2ms

Duty Cycle = $(16.2 / 100)\text{ms}$
= 0.162

Therefore, the average factor is found by $20 \log_{10} 0.162 = -15.8\text{dB}$

5.3 Transmission time

Duration of each transmission = 326.0ms

The duration of each transmission is confined within 1 second, and required silent period is at lease 10 seconds or 30 times the duration of transmission according to section 15.231(e). The plot on saved in Test Rpt4.pdf shows the EUT meets the relevant 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 | 1 | page |
| A4. | ID Label/Location | 1 | page |
| A5. | Bandwidth Plot | 1 | page |
| A6. | Average Factor | 2 | pages |
| A7. | Transmission Time | 1 | page |
| A8. | Block Diagram | 1 | page |
| A9. | Schematics Diagram | 2 | pages |
| A10. | User Manual | 9 | pages |
| A11. | Operation Description | 1 | page |

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

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