



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

**TEST REPORT**

Report No. : AJ005667-001 Date : 2007 April 19

Application No. : LJ205341(4)

Client : FORMATION LTD.  
SUITE 915-918, 9/F., CORPORATION SQUARE  
8 LAM LOK STREET, KOWLOON BAY,  
KOWLOON, HONG KONG.

Sample Description : One(1) submitted sample(s) stated to be Main Unit  
of Model No. TX2500  
Radio Frequency : 433.920MHz Receiver  
Rating : 3 x 1.5V AA size batteries  
: AC 120V to DC 4.5V adaptor  
No. of submitted sample : Two (2) piece(s) \*\*\*

Date Received : 2007 March 16

Test Period : 2007 March 16 – 2007 March 28

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 12.

Conclusion : The submitted sample was found to comply with requirement of FCC Part 15  
Subpart B.

*For and on behalf of*  
CMA Industrial Development Foundation Limited

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

Danny Chui  
Deputy Manager - EL. Division

FCC ID: UU7DCRX1

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### **1 General Information**

#### **1.1 General Description**

The equipment under test (EUT) is a receiver. It operates at 433.920MHz and the oscillation of radio control is generated by a LRC circuit. The EUT is power by 3 x 1.5V AA size batteries or AC 120V to DC 4.5 adaptor. There are five function keys and two LCD display in the EUT. When it switch on and received the radio signal, it will display the outdoor (remote) temperature on LCD.

The brief circuit description is listed as follows:

- TM8706 and associated circuit act as decoder.
- Q1, NJM022D and associated circuit act as receiver and amplifier.
- X2 and associated circuit act as an oscillator for TM8706.
- Q2, RCC IC and associated circuit act as radio control clock controller.

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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
EMI Test Receiver	R&S	ESCS30	100001
Spectrum Analyzer	R&S	FSP30	100628
Broadband Antenna	Schaffner	CBL6112B	2692
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-531
Broadband pre-amplify	Schwarzbeck	BBV9718	9718-119
LISN	R&S	ESH3-Z5	100010
Signal Generator	IFR	2023B	202302/938

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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.

A signal generator was used to radiate an unmodulated continuous wave (CW) signal to the EUT (superregenerative receiver) at its operating frequency in order to “cohere” the characteristic broadband emissions from the receiver.

#### **2.2 Test Result**

All other measurements data were below the limits from 30MHz to 2000MHz. Thus, those highest emission data were presented in table 2.3.

A signal generator was used to radiate an unmodulated continuous wave (CW) signal to the EUT (super-regenerative receiver) at its operating frequency in order to “cohere” the characteristic broadband emissions from the receiver.

The emissions meeting the requirement of section 15.109 are based on measurements employing the CISPR quasi-peak detector below 1000MHz and average detector for frequencies above 1000MHz.

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 B**

Operation Mode: Receiver

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dB $\mu$ V/m)	Antenna and Cable factor (dB)	Field Strength (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
433.162	H	9.5	17.9	27.4	46.0	-18.6
434.725	H	10.4	17.9	28.3	46.0	-17.7
434.911	H	10.0	17.9	27.9	46.0	-18.1
435.092	H	9.5	17.9	27.4	46.0	-18.6
870.938	H	12.1	22.7	34.8	46.0	-11.2
880.241	H	11.8	22.7	34.5	46.0	-11.5
881.044	H	10.9	22.7	33.6	46.0	-12.4
1312.046	V	5.0	26.4	31.4	54.0	-22.6
1312.796	V	7.4	26.4	33.8	54.0	-20.2
1313.147	V	6.5	26.4	32.9	54.0	-21.1

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### **Radiated emission**

**pursuant to**

**the requirement of FCC Part 15 subpart B**

Operation Mode: Standby

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dB $\mu$ V/m)	Antenna and Cable factor (dB)	Field Strength (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
34.520	H	2.1	18.5	20.6	40.0	-19.4
44.996	H	6.4	13.0	19.4	40.0	-20.6
51.234	H	9.7	8.4	18.1	40.0	-21.9
59.680	H	10.4	8.4	18.8	40.0	-21.2
68.458	H	13.7	5.8	19.5	40.0	-20.5
73.690	H	14.3	6.0	20.3	40.0	-19.7
81.117	H	12.8	7.3	20.1	40.0	-19.9

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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**

The receiver mode has been tested and the supply voltage is AC120V to DC4.5V adaptor. It was found that the EUT met the FCC requirement.

#### **3.3 Graph and Table of Conducted Emission Measurement Data**

For electronic filing, the documents are saved with filename TestRpt2.pdf

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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 Tsup5.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 InPho4.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:

<b>Document</b>	<b>Filename</b>
ID Label/Location	LabelSmp.jpg
Block Diagram	BlkDia.pdf
Schematic Diagram	Schem.pdf
Users Manual	UserMan.pdf
Operational Description	OpDes.pdf

#### **5.1 Bandwidth**

N/A

#### **5.2 Duty Cycle Calculation**

N/A

#### **5.3 Transmission Period**

N/A

#### **5.4 Power Spectral Density**

N/A

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### **6 Appendices**

A1	Photos of the set-up of Radiated Emissions	1	page
A2	Photos of the set-up of Conducted Emissions	2	pages
A3	Photos of External Configurations	3	pages
A4	Photos of Internal Configurations	7	pages
A5	ID Label/Location	2	pages
A6	Conducted Emission Measurement Data	2	pages
A7	Block Diagram	1	page
A8	Schematics	3	pages
A9	User Manual	6	pages
A10	Operation Description	1	page

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

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