



香港標準及檢定中心
Hong Kong Standards and Testing Centre

Date : 2004-12-10
No. : HM152953

TEST REPORT

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Applicant:

Crystal Field Ltd.
Unit 23, 16/F., Goldfield Industrial Centre,
1 Sui Wo Road, Fo Tan, Shatin, N.T., Hong Kong.

Description of Samples:

Model name: Digital Weight Scale With Wireless Display
Model no.: CFS150A
Brand name: N/A
FCC ID: NLHCFS150A

Date Samples Received:

2004-11-23

Date Tested:

2004-12-07

Investigation Requested:

FCC Part 15 Subpart C

Conclusions:

The submitted product COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.

Remarks:

For additional models details, see page 5.

K C Lee, EMC
for Chief Executive

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1.0 General Details

1.1 Test Laboratory

The Hong Kong Standards and Testing Centre Ltd.
EMC Laboratory
10 Dai Wang Street, Taipo Industrial Estate
New Territories, Hong Kong

1.2 Applicant Details
Applicant

Crystal Field Ltd.
Unit 23, 16/F., Goldfield Industrial Centre, 1 Sui Wo Road,
Fo Tan, Shatin, N.T., Hong Kong.

HKSTC Code Number for Applicant

GLT001

Manufacturer

Crystal Field Ltd.
Unit 23, 16/F., Goldfield Industrial Centre, 1 Sui Wo Road,
Fo Tan, Shatin, N.T., Hong Kong.

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**1.3 Equipment Under Test [EUT]
Description of Sample**

Product: Digital Weight Scale With Wireless Display
Manufacturer: Crystal Field Ltd.
Brand Name: N/A
Model Number: CFS150A
Input Voltage: 9Vd.c. ("6F22" size battery x 1)
Additional Product Name: Wireless Digital Shipping Scale, Shipping Scale
Additional Brand Name: JQuality, Royal
Additional Model Number: JQ1300, EX315w

1.3.1 Description of EUT Operation

The Equipment Under Test (EUT) is a Crystal Field Ltd., Digital Weight Scale With Wireless Display. The EUT continues to transmit while button is being pressed, Modulation by IC. and type is pulse modulation.

1.4 Date of Order

2004-11-23

1.5 Submitted Sample(s):

1 Sample per model

1.6 Test Duration

2004-12-07

1.7 Country of Origin

China

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1.8 Additional Information of EUT

User Manual
Part List
Circuit Diagram
Printed Circuit Board [PCB] Layout
Block diagram
FCC ID Label

Submitted

Not Available

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<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
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2.0 Technical Details

2.1 Investigations Requested

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 and ANSI C63.4:2003 for FCC Certification.

2.2 Test Standards and Results Summary Tables

EMISSION Results Summary						
Test Condition	Test Requirement	Test Method	Class / Severity	Test Result		
				Pass	Failed	N/A
Field Strength of Fundamental Emissions & Spurious Emissions	FCC 47CFR 15.249	ANSI C63.4:2003	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducted Emissions on AC, 0.15MHz to 30MHz	FCC 47CFR 15.207	ANSI C63.4:2003	Class B	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Note: N/A - Not Applicable

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3.0 Test Results

3.1 Emission

3.1.1 Radiated Emissions

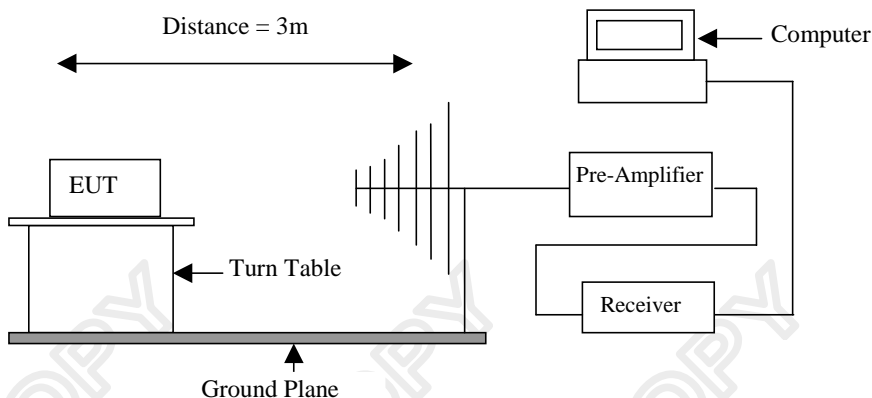
Test Requirement:	FCC 47CFR 15.249
Test Method:	ANSI C63.4:2003
Test Date:	2004-12-07
Mode of Operation:	Tx mode

Test Method:

The sample was placed 0.8m above the ground plane on the OATS *. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

*: OATS [Open Area Test Site] located at HKSTC with a metal ground plane filled with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756.

Test Setup:



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Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [Millivolts/meter]	Field Strength of Fundamental Emission [microvolts/meter]
902-928	50	500
2400-2483.5	50	500
5725-5875	50	500
24000-22500	250	2500

Results:

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dBμV/m	Correction Factor dBμV/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
915.0	37.6	26.7	64.3	1,640.6	50,000	Horizontal
1829.9	16.5	34.6	51.1	358.9	5,000	Vertical
2744.9	No Emission Detected				5,000	Vertical
3659.9					5,000	Vertical
4574.9					5,000	Vertical
5489.8					5,000	Vertical
6404.8					5,000	Vertical
7319.8					5,000	Vertical
8234.7					5,000	Vertical
9149.7					5,000	Vertical

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz ±4.1dB
1GHz to 18MHz ±4.4dB

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Result:

Field Strength of Fundamental Emissions						
Average						
Frequency MHz	Measured Level @3m dB μ V/m	Correction Factor dB μ V/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
915.0	33.7	26.7	60.4	1,047.1	50,000	Horizontal
1829.9	12.6	34.6	47.2	229.1	5,000	Vertical
2744.9	No Emission Detected				5,001	Vertical
3659.9					5,002	Vertical
4574.9					5,003	Vertical
5489.8					5,004	Vertical
6404.8					5,005	Vertical
7319.8					5,006	Vertical
8234.7					5,007	Vertical
9149.7					5,008	Vertical

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz ± 4.1 dB
1GHz to 18GHz ± 4.4 dB

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3.1.1 Conducted Emissions (0.15MHz to 30MHz)

Test Requirement:	FCC 47CFR 15.107
Test Method:	ANSI C63.4:2003
Test Date:	N/A
Mode of Operation:	N/A

Results: N/A

The EUT is operated by a single source of internal battery power [located in the battery compartment], therefore power line conducted emission was deemed unnecessary.

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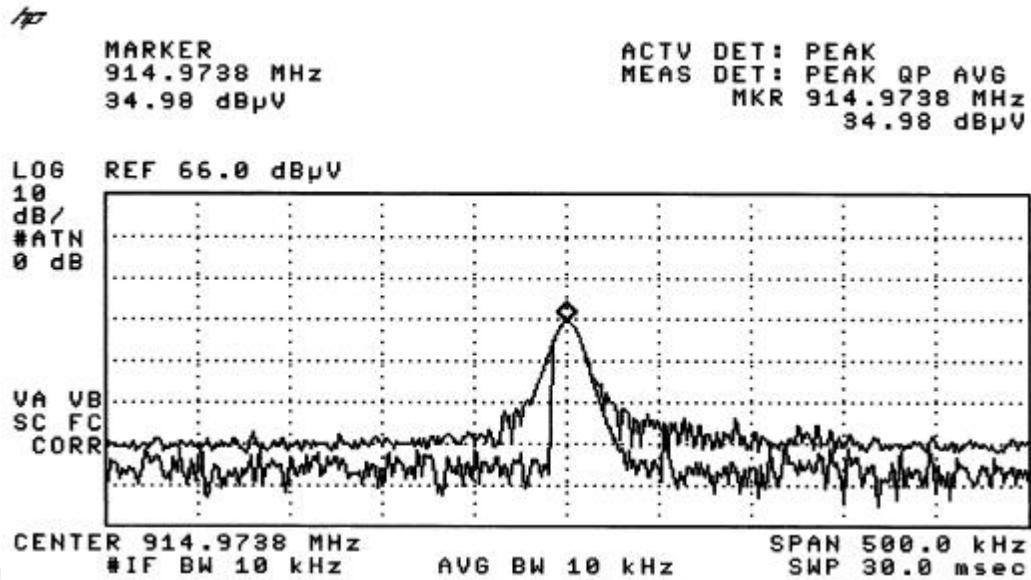
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Limits for 20 dB Bandwidth of Fundamental Emission:

20dB Bandwidth of Fundamental Emission



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Appendix A

List of Measurement Equipment

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL
EM007	SPECTRUM ANALYZER	HEWLETT PACKARD	HP85660B	3144A21192	15/06/04
EM008	SPECTRUM ANALYZER DISPLAY	HEWLETT PACKARD	HP85662A	3144A20514	15/06/04
EM009	QUASI PEAK ADAPTOR	HEWLETT PACKARD	HP85650A	3303A01702	15/06/04
EM010	RF PRESELECTOR	HEWLETT PACKARD	HP85685A	3221A01410	15/06/04
EM011	ATTENUATOR/SWITCH	HEWLETT PACKARD	HP11713A	2508A10595	15/06/04
EM012	PRE-AMPLIFIER	HEWLETT PACKARD	HP8449B	3008A00262	15/06/04
EM013	CONTROLLER (COMPUTER), COLOR MONITOR, KEYBOARD & MOUSE FLOPPY DRIVE	HEWLETT PACKARD HEWLETT PACKARD HEWLETT PACKARD	HP9000 HP A1097C HP9133L	6226A60314 3151J39517 2623A02468	15/06/04
EM020	HORN ANTENNA	EMCO	3115	4032	30/07/03
EM022	LOOP ANTENNA	EMCO	6502	1189-2424	30/07/03
EM072	SIGNAL GENERATOR	HEWLETT PACKARD	8640B	1948A11892	N/A
EM083	HKSTC OPEN AREA TEST SITE	HKSTC	N/A	N/A	08/02/03
EM131	PORTABLE SPECTRUM ANALYSER	HEWLETT PACKARD	8595EM	3710A00155	13/01/04
EM145	EMI TEST RECEIVER	R & S	ESCS 30	830245/021	04/10/04
EM219	BICONOLOG ANTENNA	EMCO	3142C	00029071	28/10/03
EM195	ANTENNA POSITIONING MAST	EMCO	2075	2368	N/A
EM196	MULTI-DEVICE CONTROLLER	EMCO	2090	1662	N/A

Conducted Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL
EM078	VARIAC	SHANGHAI VOLTAGE	TDGC-3/0.5	N/A	CM
EM081	SMALL SCREENED ROOM	MIKO INST HK	N/A	N/A	17/10/03
EM119	LISN	R & S	ESH3-Z5	0831.5518.52	01/10/02
EM127	ISOLATION TRANSFORMER 220 TO 300	WING SUN	N/A	N/A	CM
EM142	PULSES LIMITER	R & S	ESH3Z2	357.8810.52	07/07/03
EM181	EMI TEST RECEIVER	R & S	ESIB7	100072	06/01/04
EM154	SHIELDING ROOM	SIEMENA MATSUSHITA COMPONENTS	N/A	803-740-057- 99A	17/10/03
EM197	LISN	EMCO	4825/2	1193	08/04/03

Remarks:

CM Corrective Maintenance
N/A Not Applicable or Not Available
TBD To Be Determined

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Appendix B

Duty Cycle Correction During 100msec

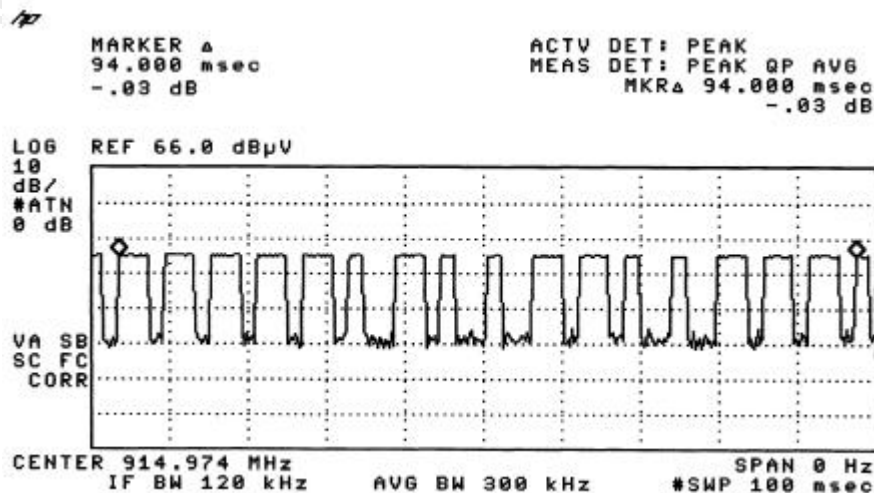
Each function key sends a different series of characters, but each packet period (94msec) never exceeds a series of 16 long (3.75msec) and short (1.75msec) pulses. Assuming any combination of short and long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered $16 \times 3.75 \text{ msec} \text{ per } 94 \text{ msec} = 63.8\%$ duty cycle. Figure A through C show the characteristics of the pulses train for one of these functions.

Remarks:

Duty Cycle Correction = $20\text{Log}(0.638) = -3.9\text{dB}$

The following figures [Figure A to Figure C] showed the characteristics of the pulse train for one of these functions.

Figure A [Pulse Train]



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Figure B [Long Pulse]

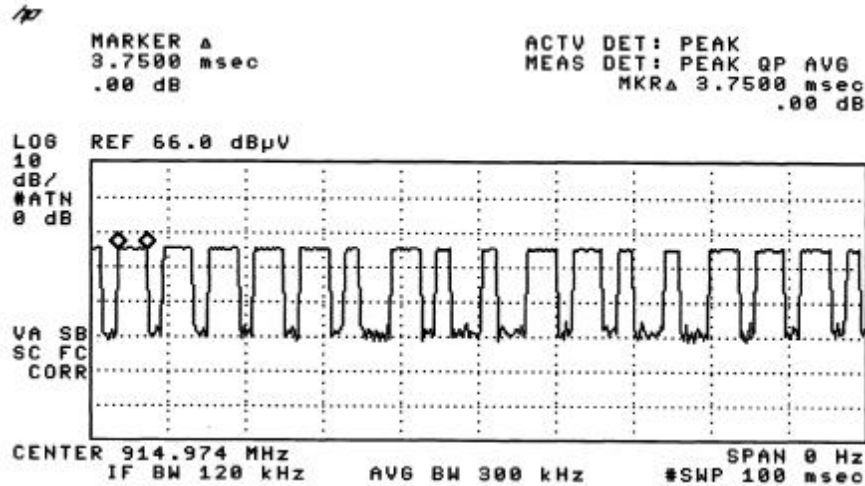
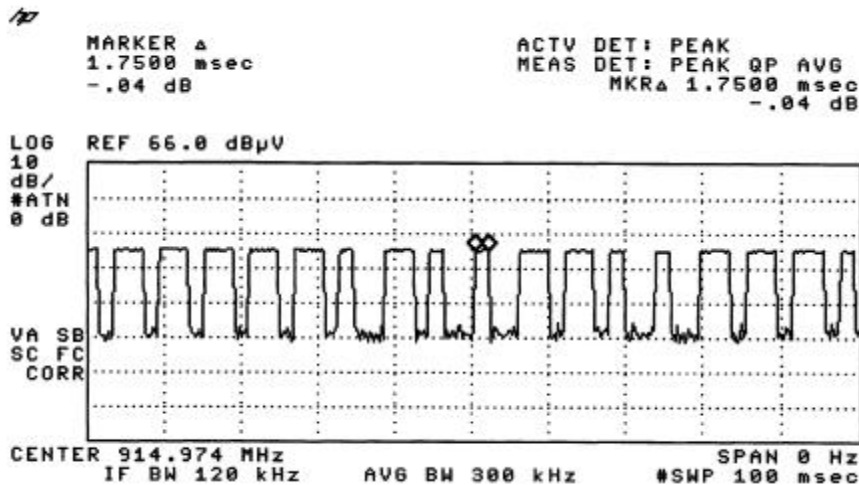


Figure C [Short Pulse]



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Appendix C

Photographs of EUT

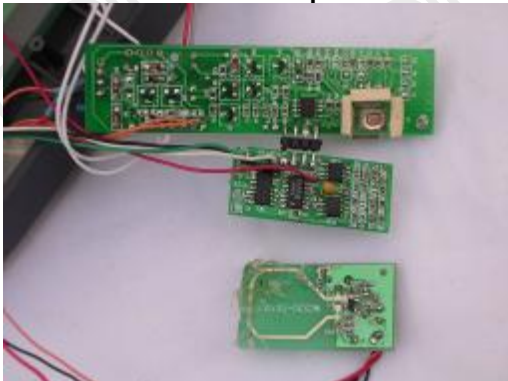
Front View of the product



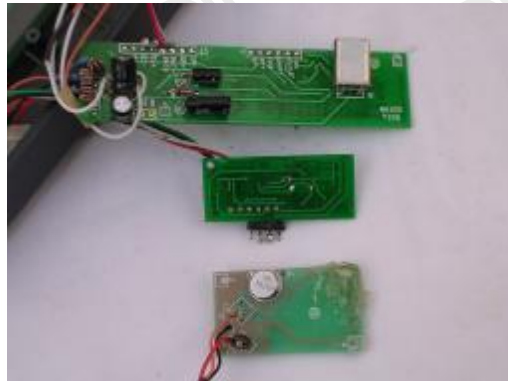
Rear View of the product



Inner Circuit Top View



Inner Circuit Bottom View



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Photographs of EUT

Measurement of Radiated Emission Test Set Up



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