

# Marstech Limited

11 Kelfield Street, Etobicoke, Ontario, Canada, M9W 5A1  
 Telephone (416) 246-1116, Fax (416) 246-1020

Authorized by:  
 Professional Engineer  
 Ontario

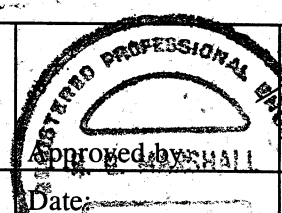
Engineering &  
 Administrative



Testing For FCC  
 Submissions/Verifications

Approved Test Facility



TEST REPORT		
REPORT DATE:	16 August 2002	REPORT NO: 22265D
CONTENTS:	See Table of Contents	
SUBMITTOR:	Smarthome Products Limited Rm B-812, 8/F, Sea View Estate, 2-8 Watson Road North Point, Hong Kong	
SUBJECT:	Model No:	WC133
	FCC ID:	LQP-R604
TEST SPECIFICATION:	FCC 47 CFR Part 15 Subpart "B" for and Unintentional Radiator NOTE: Tests Conducted Are "Type" Tests.	
DATE SAMPLE RECEIVED:	6 August 2002	DATE TESTED: 14 August 2002
RESULTS:	Equipment tested complies with referenced specification.	
ALTERATIONS:	None	
Tested by:	<i>Ed. Chang</i>	 Approved by: <i>Robert G. Marshall</i> Robert G. Marshall, P. Eng. Date: <i>Aug 27/02</i>
	Edward Chang	
THIS REPORT SHALL NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF MARSTECH LIMITED. This report was prepared by Marstech Limited for the account of the "Submittor". The material in it reflects Marstech's judgement in light of the information available to it at the time of preparation. Any use which a Third Party makes of this report, or any reliance on decisions to be made based on it, are the responsibility of such Third Parties. Marstech accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.		

TECHNICAL REPORT - FCC 2.1033(b)

Applicant

Smarthome Products Ltd.  
Rm B-812, 8/F, Sea View Estate, 2-8 Watson Road  
North Point, Hong Kong

FCC Identifier

LQP-R604

Manufacturer

Smarthome Products (Shenzhen) Co. Ltd.  
6 Shi Long Da Dao, Shui Tian Chuen  
Shiyan, Baoan, Shenzhen, PRC

TABLE OF CONTENTS

<u>Exhibit</u>	<u>Description</u>	<u>FCC Ref.</u>	<u>Page</u>
A	Installation and Operating Instructions Furnished to the User	2.1033(b)(3)	Exhibit A Exhibit A(1)
B	Description of Circuit Functions	2.1033(b)(4)	Exhibit B Exhibit B(1)
C	Block Diagram Schematic Diagram	2.1033(b)(5)	Exhibit C Exhibit C(1) Exhibit C(2)
D	Report of Measurements	2.1033(b)(6)	Exhibit D
E	Photographs Label Equipment	2.1033(b)(7)	Exhibit E Exhibit E(1)-1 to -2 Exhibit E(2)-1 to -3

EXHIBIT D

(FCC Ref. 2.1033(b)(6))

"Report of Measurements"

**TABLE OF CONTENTS**

TEST REPORT CONTAINING:

Exhibit D(1)-2

Exhibit D(1)-3 to -5

Exhibit D(1)-6 to -8

Exhibit D(2)

Product Description

Test Facility and Equipment List

Field Strength of Emissions

Test Set-Up Photo

**PRODUCT DESCRIPTION**

The Smarhome Products Ltd. Model WC133 is a wireless door chime receiver operating at 315MHz.

**TEST FACILITY AND EQUIPMENT LIST**

FACILITIES:

Radiated: ANSI C63.4 (FCC OET/55) open field 3 metre test range. This test range is protected from the cold and moisture by a non-conductive enclosure.

Conducted: 2.5m Anechoic Chamber

EQUIPMENT

Anritsu 2601A Spectrum Analyzer  
Advantest R3261A Spectrum Analyzer  
Hewlett-Packard RF generator # 8640 B with an 002 doubler  
A.H. Systems biconical antenna; ..... 20 MHz to 330 MHz  
A.H. Systems log periodic antenna; ..... 300 MHz to 1.8 GHz  
Eaton dipole antennas; T1, T2, T3 ..... 25 MHz to 1.0 GHz  
Roberts dipole antennas; T1, T2, T3 & T4 25 MHz to 1.0 GHz  
Compliance Design P950 Preamp (16 dB) ... 25 MHz to 1.0 GHz

NOTE:

The Anritsu 2601A Spectrum Analyzer and the Advantest R3261A Spectrum Analyzer are calibrated annually, and that calibration is directly traceable to the National Research Council of Canada. (NRC) This equipment is only used by qualified technicians and only for the purpose of EMI measurements. The three metre test range has been carefully evaluated to the ANSI document C63.4 and will be remeasured for reflections and losses every three years.

**ADDITIONAL TEST EQUIPMENT LIST**

1. Spectrum Analyzer: HP 8591EM, S/N 3639A00995, Calibrated April 2002
2. Spectrum Analyzer: ANRITSU 2601A, S/N MT64544, Calibrated May 2002
3. Spectrum Analyzer: IFR AN940, S/N 635001039, Calibrated March 2002
4. Preamp: HP 8449B, S/N 3008A00378, Calibrated August 2002
5. Horn Antenna: Q-PAR 6878/24, S/N 1721, 1.5-18GHz
6. Line Impedance Stabilization Network.: Marstech, Cal. July 2002

FEDERAL COMMUNICATIONS COMMISSION

Laboratory Division  
7435 Oakland Mills Road  
Columbia, MD. 21046

September 20, 2000

Electrohome Electronics Ltd.  
809 Wellington St. N.  
Kitchener, Ontario N2G 4J6  
Canada

Registration Number: 90578

Attention: Gerry Gallagher

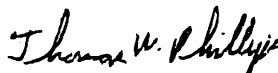
Re: Measurement facility located at Roseville  
3 meter-site  
Date of Listing: September 20, 2000

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that this filing must be updated for any changes made to the facility, and at least every three years from the date of listing the data on file must be certified as current.

If requested, the above mentioned facility has been added to our list of those who perform these measurement services for the public on a fee basis. An up-to-date list of such public test facilities is available on the Internet on the FCC Website at WWW.FCC.GOV, E-Filing, OET Equipment Authorization Electronic Filing.

Sincerely,



Thomas W Phillips  
Electronics Engineer



## **15.109 SPURIOUS RADIATED EMISSIONS**

### **RESULTS**

Model WC133:

Receiver:           **Maximum field strength:       39.98 dB $\mu$ V/M at 314.46 MHz**

### **TEST CONDITIONS**

Equipment Positioning:

Receiver:                       Vertical  
Transmitter:                    N/A

Antenna Polarization:       Horizontal

Measurement Bandwidth:    120KHz

Supply Voltage:

Transmitter:                    N/A  
Receiver:                        2 x 1.5V internal batteries

### **METHODS OF MEASUREMENT**

Receiver:

The EUT was placed on a one meter high non-metallic turntable. The EUT was an unmodified sample, as supplied by the manufacturer. The EUT was set in the receive mode, and the entire spectrum up to 2,000MHz was searched for spurious emissions. All emissions were measured and recorded.

The receive frequency, 315MHz, was measured using an external unmodulated ambient RF carrier signal, tuned across the wideband of the receiver noise. The unmodulated carrier was emanating from an antenna in the proximity of the receiver. Care was taken so as not to overload the receiver, however the carrier level was varied in amplitude and frequency to obtain the highest level of spurious emissions from the receiver. This external signal was set to cause receiver "quieting" or to cohere the superregenerative receiver and cause single discrete noise components to appear. At this point, the largest emission or single frequency component within this band was measured and recorded.

For each of the above conditions, the turntable was rotated through 360 degrees, while the receiving antenna, at three (3) meters from the EUT, was varied in height from 1 to 4 meters, to find the maximum signal strength. The measured level was converted to a field strength using the antenna correction factors and cable losses.

## FIELD STRENGTH OF EMISSIONS

**Test Data:****Pre-Amp: 16 dB**

Emission Frequency MHz	Meter Reading @3m dB $\mu$ V	Antenna	Cable and ACF dB	Field Strength dB $\mu$ V/M	FCC Limit dB $\mu$ V/M	Margin dB	Detector & BW KHz
314.46	18.58	T3 H	21.4	39.98	46	-6.02	QP 120

