

Prüfbericht - Nr.: 14008249 001		Seite 1 von 11	
Test Report No.		Page 1 of 11	
Auftraggeber: Applicant	Union Best Enterprise Ltd. Unit D, 7/F. Good Year Industry Building 119-121 How Ming Street Kwun Tong, Kowloon Hong Kong		
Gegenstand der Prüfung: Test item	Superregenerative Receiver		
Bezeichnung: Identification	Refer to page 6.	Serien-Nr.: Serial No.	Engineering sample
Wareneingangs-Nr.: Receipt No.	041104067	Eingangsdatum: Date of receipt	06.11.2004
Prüfört: Testing location	TÜV Rheinland Hong Kong Ltd. Unit 8, 25 th Floor, Skyline Tower, 39 Wang Kwong Road, Kowloon Bay Kowloon, Hong Kong Hong Kong Productivity Council HKPC Building, 78 Tat Chee Avenue, Kowloon, Hong Kong		
Prüfgrundlage: Test specification	FCC Part 15, Subpart B		
Prüfergebnis: Test Result	Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben genannter Prüfgrundlage. The above mentioned product was tested and passed .		
geprüft / tested by:		kontrolliert / reviewed by:	
15.12.2004	Prudence Poon	15.12.2004	Thomas Berns
Datum Date	Name Name	Unterschrift Signature	Unterschrift Signature
Sonstiges: FCCID: SSC-DBU600WSR Other Aspects			
Abkürzungen: OK, Pass, P = entspricht Prüfgrundlage Fail, F = entspricht nicht Prüfgrundlage N/A = nicht anwendbar NT = nicht getestet		Abbreviations: OK, Pass, P = passed Fail, F = failed N/A = not applicable NT = not tested	
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicate in extracts. This test report does not entitle to carry any safety mark on this or similar products.			

Test Summary

Spurious Radiated Emissions

Result: Pass

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General Remarks

Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix 1: Test Results

Appendix 2: Test Setup

Appendix 3: EUT External Photo

Appendix 4: EUT Internal Photo

Appendix 5: FCCID Label, Block Diagram, Schematics and User manual.

List of Test and Measurement Instruments

Kind of Equipment	Manufacturer	Type	S/N
Test Receiver	Rohde & Schwarz	ESVS30	842807/009
Biconical Antenna	Rohde & Schwarz	HK116	841489/015
Log.-Periodic Antenna	Rohde & Schwarz	HL223	841516/017
Double Ridge Horn Antenna	EMCO	3115	9002-3351
Double Ridge Horn Antenna	EMCO	3115	9002-3347
Signal Generator	Rohde & Schwarz	SMY 01	844146/024

General Product Information

Product Function and Intended Use

The equipment under test (EUT) is a RC door chime operating at 433.920 MHz.

After our construction checking and declaration by the manufacturer, it is deemed that U-601, U-632AW, U-632BW, U-635W and are identical in PCB layout and function, they only differ in cosmetic design. Model U-639W and U-639F provide in addition flash light function. Hence the representative model: U-639F was chosen to conduct all testing.

FCCID: SSC-DBU600WSR

Model	Product description
U-601	Alarm and vibration function
U-632AW	Alarm only
U-632BW	Alarm only
U-635W	Alarm only
U-639W	Alarm with flash light
U-639F	Alarm with flash light

Circuit Description

The Q1 and the associated circuit act as superregenerative receiver. Q2, Q3, Q4 and the associated circuit act as amplifier. U2 and the associated circuit act as a Decode. Q5, Q6, Q7 and the associated circuit act as a Speaker Control and amplifier. Q11 is a LED Flash Control. SW1 is a lower volume, sound louder or vibrate (Electronic Flash) selector switch. Q8 Q9, Q10 and the associated circuit act as control and amplifier for vibrate motor (Electronic Flash). M1 is a Vibrate motor.

UY1 and the associated circuit act as pulse oscillator (13KHz) for electronic flash set up and electronic flash time control generator. T1 is a step up transformer.

QY2, QY3 is pulse amplifier for set up.

QY1 and the associated circuit act as flash lamp control switch.

ET3 is storage energy capacitance for flash lamp.

Ratings and System Details

	Receiver
Frequency range	: 433.920MHz
Number of channels	: 1
Type of antenna	: Integral antenna
Power supply	: Battery operated 3.0V
Ports	: none
Protection Class	: III

Independent Operation Modes

The basic operation modes are:

- **Door Chime** : Light and alarm function selection (Light function is for some models only)

For further information refer to User Manual

Submitted Documents

The submitted documents are listed as follow:

- Circuit diagram
- Block diagram
- User manual
- Label artwork

Related Submittal(s) Grants

This is a single application for certification of the Receiver.

Test Set-up and Operation Mode

Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

Test Operation and Test Software

Test operation should refer to test methodology.

- There was no special software to exercise the device.

Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

- none

Countermeasures to achieve EMC Compliance

The test sample, which has been tested, contained the noise suppression parts as described in the Circuit Diagram or the Technical Construction File. No additional measures were employed to achieve compliance.

Test Methodology

Radiated Emission

The radiated emission measurements were performed according to the procedures in ANSI C63.4-2003.

The equipment under test (EUT) was placed at the middle of the 80 cm height turntable, and the turntable is 3 meters far from the measuring antenna. During the testing, the EUT was operated standalone and arranged for maximum emissions. The EUT was tested in three orthogonal planes.

The investigation is performed with the EUT rotated 360°, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained.

All radiated tests were performed at an antenna to EUT with 3 meters distance, unless stated otherwise in section 7.1.1 and 7.1.2 of this test report.

Field Strength Calculation

The field strength at 3 m was established by adding the meter reading of the spectrum analyzer to the factors associated with antenna correction factor, cable loss, preamplifiers and filter attenuation.

The equation is expressed as follow:

$$FS = R + AF + CF + FA - PA$$

Where FS = Field Strength in dBuV/m at 3 meters.

R = Reading of Spectrum Analyzer in dBuV.

AF = Antenna Factor in dB.

CF = Cable Attenuation Factor in dB.

FA = Filter Attenuation Factor in dB.

PA = Preamplifier Factor in dB.

$$\text{System Factor} = CF + FA - PA.$$

FA and PA are only be used for the measuring frequency above 1 GHz.

Test Results

Spurious Radiated Emissions

Section 15.109

RESULT:

Pass

Test Specification : FCC Part 15 Section 15.109
 Test Method : ANSI 63.4-2003
 Measurement Location : Semi Anechoic Chamber
 Measurement Distance : 3m
 Detector Function : Quasi Peak
 Measurement BW : 100 kHz
 Supply Voltage : DC 3V
 Measuring Frequency Range : 30-4500MHz

Polarization: Vertical

Frequency	Reading	Antenna Factor	System Factor	Field strength at 3m	Limit at 3m	Delta to Limit
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
42.5	0.73	14.25	0.42	15.40	40.00	-24.60
118.52	1.20	12.20	0.80	14.20	43.50	-29.30
440.24	18.10	16.50	1.90	36.50	46.00	-9.50
875.36	0.25	22.30	2.65	25.20	46.00	-20.80
1320.72	36.94	24.90	-34.34	27.50	54.00	-26.50
1760.96	37.57	26.50	-33.27	30.80	54.00	-23.20
2201.20	35.50	28.00	-32.30	31.20	54.00	-22.80
2641.44	35.77	28.88	-31.15	33.50	54.00	-20.50
3092.20	36.63	30.00	-29.73	36.90	54.00	-17.10

For test results refer to Appendix 1.

Polarization: Horizontal

Frequency	Reading	Antenna Factor	System Factor	Field strength at 3m	Limit at 3m	Delta to Limit
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
35.54	0.50	16.10	0.40	17.00	40.00	-23.00
110.24	2.80	11.60	0.80	15.20	43.50	-28.30
440.24	14.40	16.50	1.90	32.80	46.00	-13.20
880.48	0.70	22.50	2.70	25.90	46.00	-20.10
1320.72	36.94	24.90	-34.34	27.50	54.00	-26.50
1760.96	37.57	26.50	-33.27	30.80	54.00	-23.20
2201.20	35.50	28.00	-32.30	31.20	54.00	-22.80
2641.44	35.77	28.88	-31.15	33.50	54.00	-20.50
3032.80	35.93	30.00	-29.73	36.20	54.00	-17.80

For test results refer to Appendix 1.

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The field strength of radiated emissions from unintentional radiators at a distance of 3 meters :

Frequency (MHz)	Field strength (microvolts/meter)	Field strength (dB μ V/m)	Measurement distance (meters)
30-88	100	$20 \cdot \log(100) = 40.0$	3
88-216	150	$20 \cdot \log(150) = 43.5$	3
216-960	200	$20 \cdot \log(200) = 46.0$	3
Above 960	500	$20 \cdot \log(500) = 54.0$	3