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Applicant (HEY001): Heng Yu Electronic Manufacturing Co., Ltd.

Room 3-5, 15/F., Nan Fung Comm'l Centre, 19 Lam Lok

Street, Kowloon Bay, Hong Kong

Manufacturer: Heng Ke Electronic Information System (Zhu Hai) Co., Ltd.

Heng Ke Campus, Jin Hai Avenue, San Zao, Jin Wan District,

Zhuhai, Guang Dong, PRC 519040, China.

Description of Sample(s): Submitted sample(s) said to be

Product: Wireless Keyboard

Brand Name: Heng Yu Model Number: K82G

FCC ID: XENK82GKB

Date Sample(s) Received: 2011-11-22

Date Tested: 2011-12-09

Investigation Requested: Perform ElectroMagnetic Interference measurement in

accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2010 and ANSI C63.4:2009 for FCC Certification.

Conclusion(s): The submitted product <u>COMPLIED</u> 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.

Remark(s): ---

Dr. LEE Kam Chuen
Authorized Signatory
ElectroMagnetic Compatibility Department
For and on behalf of

The Hong Kong Standards and Testing Centre Ltd.



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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

Heng Yu Electronic Manufacturing Co., Ltd. Room 3-5, 15/F., Nan Fung Comm'l Centre, 19 Lam Lok Street, Kowloon Bay, Hong Kong

Manufacturer

Heng Ke Electronic Information System (Zhu Hai) Co., Ltd. Heng Ke Campus, Jin Hai Avenue, San Zao, JinWan District, Zhuhai, Guang Dong, PRC 519040, China.



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1.3 Equipment Under Test [EUT] Description of Sample(s)

Product: Wireless Keyboard

Manufacturer: Heng Yu Electronic Manufacturing Co., Ltd.

Brand Name: Heng Yu Model Number: K82G

Input Voltage: 4.5Vd.c. ("AAA" size battery x 3)

1.3.1 Description of EUT Operation

The Equipment Under Test (EUT) is a wireless keyboard which will transmit RF signal to a USB dongle when the keys was / were pressed and would receive the f feedback RF signal from the USB dongle to maintain the communication. The EUT was set to on mode during test.

1.4 Date of Order

2011-11-22

1.5 Submitted Sample(s):

1 Sample

1.6 Test Duration

2011-12-09

1.7 Country of Origin

China



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2.0 Technical Details

2.1 Investigations Requested

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2010 Regulations and ANSI C63.4:2009 for FCC Certification.

2.2 Test Standards and Results Summary Tables

EMISSION Results Summary										
Test Condition	Test Requirement	Test Method	Class /	Test I	Result					
			Severity	Pass	Fail					
Field Strength of Fundamental & Harmonics Emissions	FCC 47CFR 15.249	ANSI C63.4:2009	N/A							
Radiated Emissions	FCC 47CFR 15.209	ANSI C63.4:2009	N/A							

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 C63.4:2009
Test Date: 2011-12-09
Mode of Operation: Tx mode

Test Method:

The sample was placed 0.8m above the ground plane of semi-anechoic Chamber*. 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.

Remark: 3 orthogonal axis apply to hand-held device only.

* Semi-anechoic chamber located on the G/F of The Hong Kong Standards and Testing Centre Ltd. with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756.



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Spectrum Analyzer Setting:

9KHz – 30MHz (Pk & Av) RBW: 10kHz

VBW: 30kHz Sweep: Auto

Span: Fully capture the emissions being measured

Trace: Max. hold

30MHz – 1GHz (QP) RBW: 120kHz

VBW: 120kHz Sweep: Auto

Span: Fully capture the emissions being measured

Trace: Max. hold

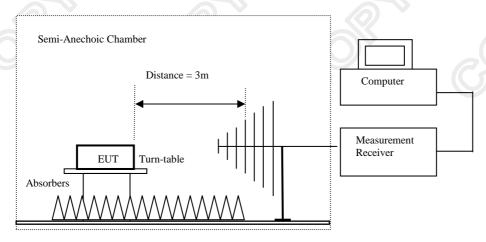
Above 1GHz (Pk & Av) RBW: 3MHz

VBW: 3MHz Sweep: Auto

Span: Fully capture the emissions being measured

Trace: Max. hold

Test Setup:



Ground Plane

Absorbers placed on top of the ground plane are for measurements above 1000MHz only.



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

Frequency Range of Fundamental	Field Strength of Fundamental Emission	Field Strength of Harmonics Emission
[MHz]	[microvolts/meter]	[microvolts/meter]
902-928	50,000 [Average]	500 [Average]
2400-2483.5	50,000 [Average]	500 [Average]

Results of Tx mode: Pass

	Field Strength of Fundamental Emissions										
Peak Value											
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field					
	Level @3m	Factor	Strength	Strength		Polarity					
MHz	dBμV/m	dΒμV/m	dΒμV/m	μV/m	μV/m						
2433.3	61.7	28.0	89.7	30,549.2	50,000	Horizontal					
* 4866.6	6.8	34.5	41.3	116.1	5,000	Horizontal					
* 7299.9	3.6	39.5	43.1	142.9	5,000	Horizontal					

	Field Strength of Fundamental Emissions										
Average Value											
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field					
	Level @3m	Factor	Strength	Strength		Polarity					
MHz	dBμV/m	dBμV/m	dBμV/m	μV/m	μV/m						
2433.3	41.7	28.0	69.7	3,054.9	50,000	Horizontal					
* 4866.6	-3.8	34.5	30.7	34.3	5,000	Horizontal					
* 7299.9	-3.1	39.5	36.4	66.1	5,000	Horizontal					



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Field Strength of Harmonics Emission Peak Value										
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field				
	Level @3m	Factor	Strength	Strength		Polarity				
MHz	dBμV/m	dBμV/m	dBμV/m	μV/m	μV/m					
9733.2			5,000	Horizontal						
* 12166.5					5,000	Horizontal				
14599.8	En	nissions detect	ed are more the	nan	5,000	Horizontal				
* 17033.1		20 dB below t	he FCC Limit	S	5,000	Horizontal				
* 19466.4					5,000	Horizontal				
21899.7					5,000	Horizontal				
24333.0					5,000	Horizontal				

Field Strength of Harmonics Emission Average Value										
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field				
	Level @3m	Factor	Strength	Strength		Polarity				
MHz	dBμV/m	dBμV/m	dBμV/m	μV/m	μV/m					
9733.2		<u> </u>			5,000	Horizontal				
* 12166.5					5,000	Horizontal				
14599.8	En	nissions detect	ed are more t	han	5,000	Horizontal				
* 17033.1	:	20 dB below t	he FCC Limit	s	5,000	Horizontal				
* 19466.4					5,000	Horizontal				
21899.7		5,000	Horizontal							
24333.0					5,000	Horizontal				

Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

Denotes restricted band of operation.

Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

: 30MHz to 1GHz 5.2dB Calculated measurement uncertainty 1GHz to 18GHz 5.1dB



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Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Field strength [microvolts/meter]	Measurement distance [meters]
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above960	500	3

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Results of Tx on mode (9k - 30MHz): PASS

	Field Strength of Spurious Emissions									
Peak Value										
Frequency	Measured	Correction	Field	Field	Limit	E-Field				
	Level	Factor	Strength	Strength		Polarity				
MHz	dΒμV	dB/m	$dB\mu V/m$	$\mu V/m$	$\mu V/m$					
4	Emissions detected are more than 20 dB below the FCC Limits									

	Field Strength of Spurious Emissions Average Value								
Frequency	Measured	Correction	Field	Field	Limit	E-Field			
	Level	Factor	Strength	Strength		Polarity			
MHz	dΒμV	dB/m	$dB\mu V/m$	$\mu V/m$	μV/m	n			
	Emissions detected are more than 20 dB below the FCC Limits								

Results of Tx on mode (30MHz - 1000MHz): PASS

Field Strength of Spurious Emissions											
	Qusai-Peak Value										
Frequency	Measured	Correction	Field	Field	Limit	E-Field					
	Level	Factor	Strength	Strength		Polarity					
MHz	dΒμV	dB/m	dBμV/m	$\mu V/m$	μV/m						
33.40	0.3	17	17.3	7.3	40.0	Horizontal					
82.70	0.2	8.9	9.1	2.9	40.0	Horizontal					
192.00	14.2	11.3	25.5	18.8	43.5	Horizontal					
217.30	0.3	12.7	13.0	4.5	46.0	Vertical					
313.40	0.2	15.9	16.1	6.4	46.0	Horizontal					
473.10	0.1	19.7	19.8	9.8	46.0	Horizontal					



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Results of Tx on mode (Above 1000MHz): PASS

		Field Streng	th of Spuriou	ıs Emissions						
Peak Value										
Frequency	Measured	Correction	Field	Field	Limit	E-Field				
	Level	Factor	Strength	Strength		Polarity				
MHz	dΒμV	dB/m	dBμV/m	μV/m	μV/m					
	Emissions detected are more than 20 dB below the FCC Limits									

Field Strength of Spurious Emissions						
Average Value						
Frequency	Measured	Correction	Field	Field	Limit	E-Field
	Level	Factor	Strength	Strength		Polarity
MHz	dΒμV	dB/m	$dB\mu V/m$	$\mu V/m$	$\mu V/m$	
Emissions detected are more than 20 dB below the FCC Limits						

Remarks:

Correction Factor includes Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz 5.1dB

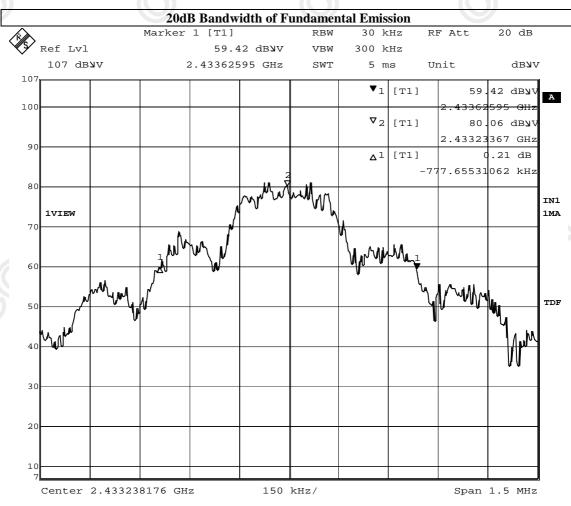


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Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range		20dB Bandwidth		
	[MHz]	[kHz]		
	2433.2	777.7		

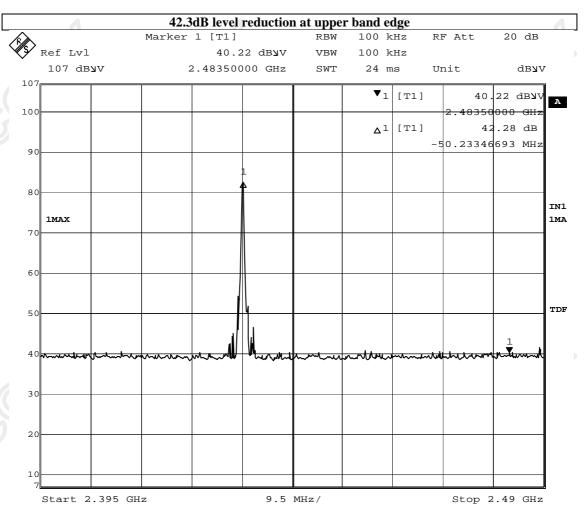


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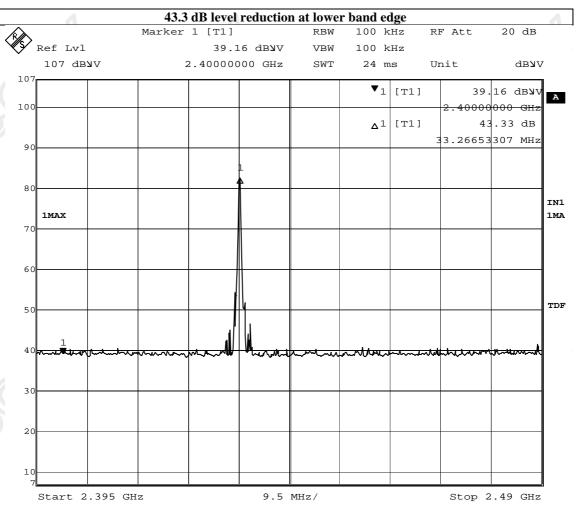


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Appendix A

List of Measurement Equipment

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM020	HORN ANTENNA	EMCO	3115	4032	2009/09/02	2011/09/02
EM215	MULTIDEVICE CONTROLLER	EMCO	2090	00024676	N/A	N/A
EM216	MINI MAST SYSTEM	EMCO	2075	00026842	N/A	N/A
EM217	ELECTRIC POWERED TURNTABLE	EMCO	2088	00029144	N/A	N/A
EM218	ANECHOIC CHAMBER	ETS-Linggren	FACT-3		2008/12/01	2011/12/01
EM174	BICONILOG ANTENNA	EMCO	3142B	1671	2010/02/09	2012/02/09
EM229	EMI Test Receiver	R&S	ESIB40	100248	2010/11/02	2011/11/02
EM022	LOOP ANTENNA	EMCO	6502	1189-2424	2009/07/26	2011/07/26

Remarks:-

CMCorrective Maintenance

N/A Not Applicable TBD To Be Determined



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Appendix B

Ancillary Equipment

ſ	ITEM NO.	DESCRIPTION	MODEL NO.	FCC ID	REMARK
7	1	DELL COMPUTER	DMC	N/A	N/A
	2	DELL MONITOR	E551C	ARSCM356N	RESOLUTION:800x600(DURING TESTING) 1.0M UNSHIEDED POWER CORD CONNECTED TO THE COMPUTER 2.8M SHIELDED CABLE CONNECTED TO THE COMPUTER
	4	DELL MOUSE	N/A	N/A	2.4M UNSHIELDED CABLE CONNECTED TO THE COMPUTER
	5	PARALLEL PRINTER	НР930с	N/A	1.8M UNSHIELDED POWER CORD 2.8M SHIELDED CABLE (BUNDLED TO 1M) CONNECTED TO THE COMPUTER



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Appendix C

Duty Cycle Correction During 100msec

Each function key sends a different series of characters, but each packet period (100msec) never exceeded a series of 15 long (0.511msec) pulses. Assuming any combination of short and long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered (15x0.511msec) per 100msec duty cycle. Figure A through B shows the characteristics of the pulses train for one of these functions.

Remarks:

 $Duty\ Cycle\ Correction = 20 Log\ ((15x0.511ms)/100ms) = -22.3dB$

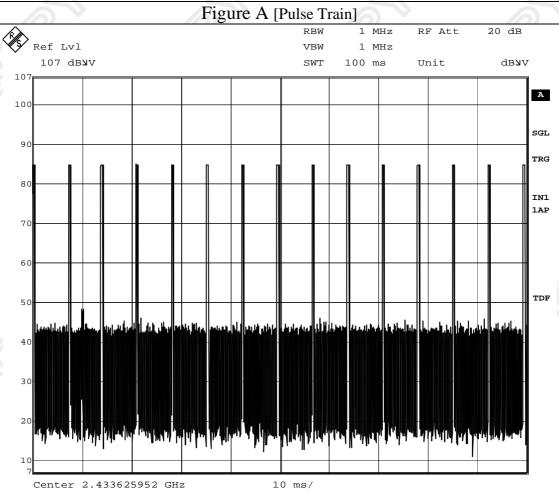
Duty Cycle Correction = -20dB, if the calculation duty cycle correction >-20dB.



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

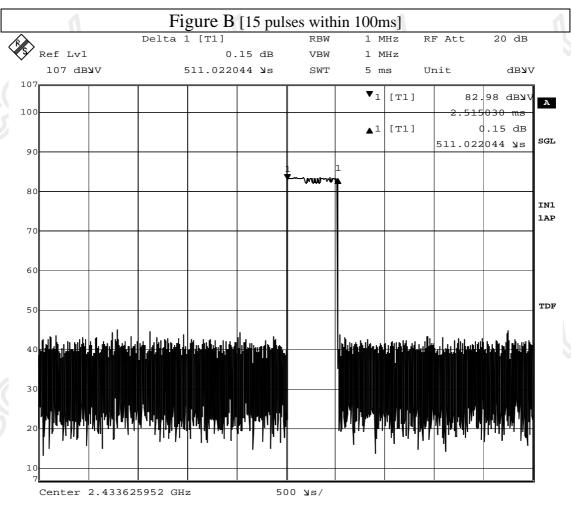


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Appendix D

Photographs of EUT

Front View of the product



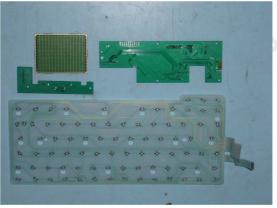
Inner Circuit Top View



Rear View of the product



Inner Circuit Bottom View



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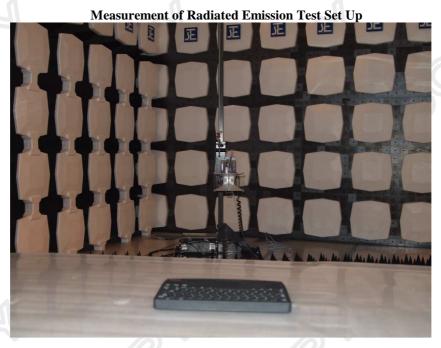
10 Dai Wang Street, Taipo Industrial Estate, N.T., Hong Kong
Tel: (852) 2666 1888 Fax: (852) 2664 4353 Homepage: www.hkstc.org E-mail: hkstc@hkstc.org

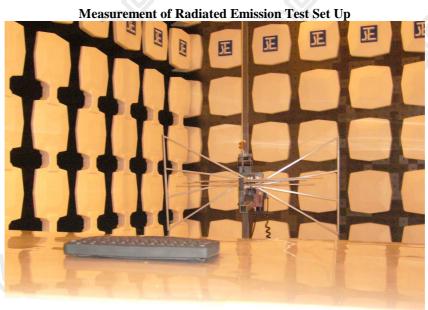


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Photographs of EUT





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

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