

Date: 2008-08-25 Page 1 of 20

No. : MH182466

Applicant (STD003): ShenZhen Zhongherong Electric Technology Co., Ltd.

Floor1-3 No. 28 Building Northern Yongfa Tech Area Heyi Village, Jinxiu Road Shajing District Baoan Shenzhen, China

Manufacturer: ShenZhen Zhongherong Electric Technology Co., Ltd.

Floor1-3 No. 28 Building Northern Yongfa Tech Area Heyi Village, Jinxiu Road Shajing District Baoan Shenzhen, China

Description of Samples: Product: 2.4G Transmitter

Brand Name: ESKY Model Number: EK2-0406H

FCC ID: WIC-SZESKY002

Date Samples Received: 2008-08-06

Date Tested: 2008-08-07

Investigation Requested: Perform ElectroMagnetic Interference measurement in

accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2007 and ANSI C63.4:2003 for FCC Certification.

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: ----

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



Date : 2008-08-25 Page 2 of 20

No. : MH182466

CONTENT:

	Cover	Page 1 of 20
	Content	Page 2-3 of 20
1.0 1.1	General Details Test Laboratory	Page 4 of 20
1.2	Applicant Details Applicant Manufacturer	Page 4 of 20
1.3	Equipment Under Test [EUT] Description of EUT operation	Page 5 of 20
1.4	Date of Order	Page 5 of 20
1.5	Submitted Sample	Page 5 of 20
1.6	Test Duration	Page 5 of 20
1.7	Country of Origin	Page 5 of 20
<u>2.0</u>	Technical Details	
2.1	Investigations Requested	Page 6 of 20
2.2	Test Standards and Results Summary	Page 6 of 20
<u>3.0</u>	Test Results	
3.1	Radiated Emission	Page 7-14 of 20
3.2	Conducted Emission	Page 15 of 20



Date: 2008-08-25 Page 3 of 20

No. : MH182466

Appendix A

List of Measurement Equipment Page 16 of 20

Appendix B

Duty Cycle Correction During 100 msec Page 17-18 of 20

Appendix C

Photographs Page 19-20 of 20



Date: 2008-08-25 Page 4 of 20

No. : MH182466

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

ShenZhen Zhongherong Electric Technology Co., Ltd. Floor1-3 No. 28 Building Northern Yongfa Tech Area Heyi Village, Jinxiu Road Shajing District Baoan Shenzhen, China

Manufacturer

ShenZhen Zhongherong Electric Technology Co., Ltd. Floor1-3 No. 28 Building Northern Yongfa Tech Area Heyi Village, Jinxiu Road Shajing District Baoan Shenzhen, China



Date: 2008-08-25 Page 5 of 20

No. : MH182466

1.3 Equipment Under Test [EUT] Description of Sample

Product: 2.4G Transmitter

Manufacturer: ShenZhen Zhongherong Electric Technology Co., Ltd.

Brand Name: ESKY
Model Number: EK2-0406H

Input Voltage: 12Vd.c. ("AA" size battery x 8)

1.3.1 Description of EUT Operation

The Equipment Under Test (EUT) is a ShenZhen Zhongherong Electric Technology Co., Ltd., 2.4G Transmitter, the transmission signal is Fixed, point-to-point operation with channel frequency range 2.410-2.473 GHz.

1.4 Date of Order

2008-08-06

1.5 Submitted Sample(s):

1 Sample

1.6 Test Duration

2008-08-07

1.7 Country of Origin

China



Date : 2008-08-25 Page 6 of 20

No. : MH182466

2.0 <u>Technical Details</u>

2.1 Investigations Requested

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2007 Regulations and ANSI C63.4:2003 for FCC Certification.

2.2 Test Standards and Results Summary Tables

EMISSION Results Summary								
Test Condition	Test Condition Test Requirement Test Method Class / Test Result							
			Severity	Pass	Fail	N/A		
Field Strength of Fundamental & Harmonics Emissions	FCC 47CFR 15.249	ANSI C63.4:2003	N/A					
Radiated Emissions	FCC 47CFR 15.209	ANSI C63.4:2003	N/A	\boxtimes				

Note: N/A - Not Applicable



Date: 2008-08-25 Page 7 of 20

No. : MH182466

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: 2008-08-07

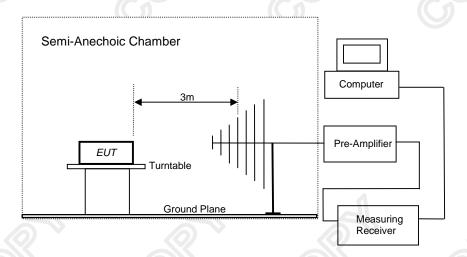
Mode of Operation: Communication mode (Tx unit)

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.

* 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.

Test Setup:





Date : 2008-08-25 Page 8 of 20

No. : MH182466

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
	[millivolts/meter]	[microvolts/meter]
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24-24.25 GHz	250	2500

Results of Communication mode (Tx, Lowest Channel Frequency): Pass

Results of Coll	Results of Communication mode (1x, Lowest Channel Frequency): Pass						
	Field Strength of Fundamental Emissions						
			Peak Value				
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field	
	Level @3m	Factor	Strength	Strength		Polarity	
MHz	$dB\mu V/m$	$dB\mu V/m$	$dB\mu V/m$	$\mu V/m$	μV/m		
2410.8	59.9	34.9	94.8	54,954.1	500,000	Horizontal	
* 4817.6	30.0	42.1	72.1	4,027.2	5,000	Horizontal	
7232.4		<u> </u>			50,000	Vertical	
9643.2					50,000	Vertical	
* 12054.0					5,000	Vertical	
14464.8	Emi	issions detect	ed are more t	han	50,000	Vertical	
16875.6	2	20 dB below the FCC Limits				Vertical	
* 19286.4	5,000					Vertical	
21697.2			50,000	Vertical			
24108.0		50,000					

Field Strength of Fundamental Emissions						
Average Value						
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field
	Level @3m	Factor	Strength	Strength		Polarity
MHz	$dB\mu V/m$	dBμV/m	dBμV/m	$\mu V/m$	μV/m	
2410.8	39.9	34.9	74.8	5,495.4	50,000	Horizontal
* 4817.6	10.0	42.1	52.1	402.7	500	Horizontal

Remarks:

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.

No further spurious emissions found between lowest internal frequency and 30MHz. Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB

1GHz to 18GHz 5.1dB

The Hong Kong Standards and Testing Centre Ltd.

^{*:} Denotes restricted band of operation.



Date : 2008-08-25 Page 9 of 20

No. : MH182466

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
	[millivolts/meter]	[microvolts/meter]
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24-24.25 GHz	250	2500

Results of Communication mode (Tx, Middle Channel Frequency): Pass

Results of Communication mode (Tx, Middle Channel Frequency): Pass							
	Field Strength of Fundamental Emissions						
			Peak Value				
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field	
	Level @3m	Factor	Strength	Strength		Polarity	
MHz	$dB\mu V/m$	dBμV/m	$-dB\mu V/m$	uV/m	μV/m		
2440.8	59.9	34.9	94.8	54,954.1	500,000	Horizontal	
* 4817.8	29.4	42.1	71.5	3,758.4	5,000	Horizontal	
7322.4		<u> </u>		A	50,000	Vertical	
9763.2					50,000	Vertical	
* 12204.0					5,000	Vertical	
14644.8	Emi	issions detect	ed are more t	han	50,000	Vertical	
17085.6	2	20 dB below the FCC Limits				Vertical	
* 19526.4			5,000	Vertical			
21967.2			50,000	Vertical			
24408.0 50,000						Vertical	

Field Strength of Fundamental Emissions						
Average Value						
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field
	Level @3m	Factor	Strength	Strength		Polarity
MHz	$dB\mu V/m$	$dB\mu V/m$	dBμV/m	uV/m	μV/m	•
2440.8	39.9	34.9	74.8	5,495.4	50,000	Horizontal
* 4817.8	9.4	42.1	51.5	375.8	500	Horizontal

Remarks:

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.

No further spurious emissions found between lowest internal frequency and 30MHz. Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB

1GHz to 18GHz 5.1dB

The Hong Kong Standards and Testing Centre Ltd.

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Date : 2008-08-25 Page 10 of 20

No. : MH182466

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
	[millivolts/meter]	[microvolts/meter]
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24-24.25 GHz	250	2500

Results of Communication mode (Tx, Highest Channel Frequency): Pass

	Field Strength of Fundamental Emissions						
	Peak Value						
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field	
	Level @3m	Factor	Strength	Strength		Polarity	
MHz	$dB\mu V/m$	$dB\mu V/m$	$dB\mu V/m$	uV/m	μV/m		
2472.9	59.6	35.0	94.6	53,703.2	500,000	Horizontal	
* 4937.8	27.1	42.3	69.4	2,951.2	5,000	Horizontal	
7418.7		4		<u> </u>	50,000	Vertical	
9891.6					50,000	Vertical	
* 12364.5					5,000	Vertical	
14837.4	Emi	issions detect	ed are more t	han	50,000	Vertical	
17310.3	2	0 dB below th	ne FCC Limit	ts	50,000	Vertical	
* 19783.2					5,000	Vertical	
22256.1			50,000	Vertical			
24729.0		50,000 Vertical					

Field Strength of Fundamental Emissions						
Average Value						
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field
	Level @3m	Factor	Strength	Strength		Polarity
MHz	$dB\mu V/m$	$dB\mu V/m$	$dB\mu V/m$	uV/m	μV/m	•
2472.9	39.6	35.0	74.6	5,370.3	50,000	Horizontal
* 4937.8	7.1	42.3	49.4	295.1	500	Horizontal

Remarks:

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.

No further spurious emissions found between lowest internal frequency and 30MHz. Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB

1GHz to 18GHz 5.1dB

The Hong Kong Standards and Testing Centre Ltd.

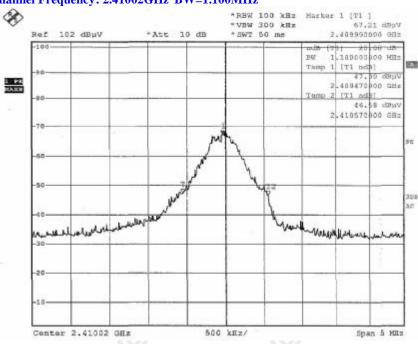
^{*:} Denotes restricted band of operation.

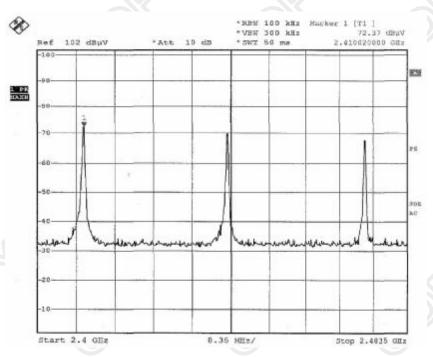


Date : 2008-08-25 Page 11 of 20

No. : MH182466

Lowest Channel Frequency: 2.41002GHz BW=1.100MHz





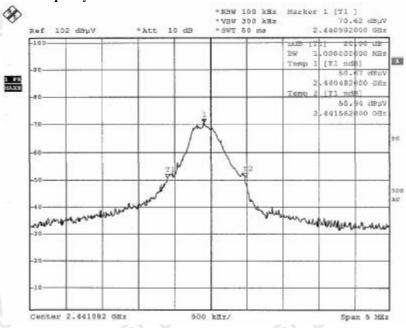
The Hong Kong Standards and Testing Centre Ltd.

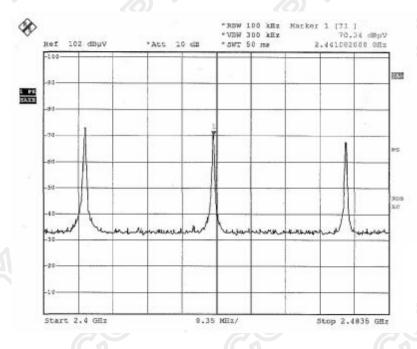


Date: 2008-08-25 Page 12 of 20

No. : MH182466

Middle Channel Frequency: 2.441082GHz BW=1.080MHz





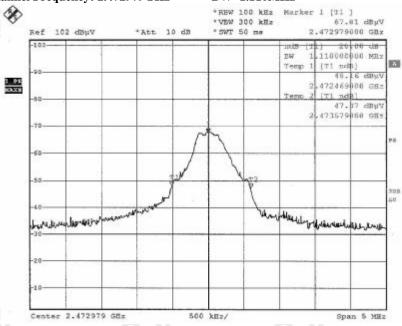
The Hong Kong Standards and Testing Centre Ltd.

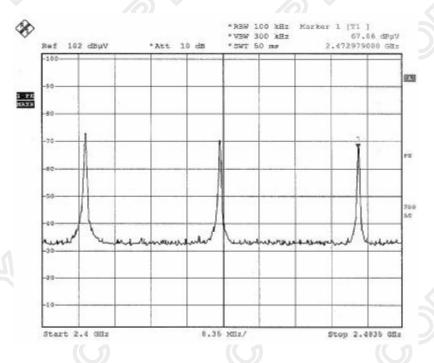


Date : 2008-08-25 Page 13 of 20

No. : MH182466

Highest Channel Frequency: 2.472979GHz BW=1.110MHz





The Hong Kong Standards and Testing Centre Ltd.



Date: 2008-08-25 Page 14 of 20

No. : MH182466

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency	Field Strength	Measurement Distance
[MHz]	[microvolts/meter]	[meter]
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

^{**} Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Radiated Emissions Peak									
Emission	E-Field	Level	Limit	Level	Limit				
Frequency	Polarity	@3m	@3m	@3m	@3m				
MHz		dBμV/m	dBμV/m	$\mu V/m$	μV/m				
	Emissions detect	ed are more th	an 20 dB below t	he FCC Limits					

Remarks:

No further spurious emissions found between lowest internal frequency and 30MHz.

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB

1GHz to 18GHz 5.1dB



Date : 2008-08-25 Page 15 of 20

No. : MH182466

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	2006/07/11	2009/07/11
EM215	MULTIDEVICE CONTROLER	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		2006/05/02	2009/05/02
EM174	BICONILOG ANTENNA	EMCO	3142C	00029071	2008/01/24	2009/01/24
EM181	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB7	100072	2008/06/16	2009/06/16
EM022	LOOP ANTENNA	EMCO	6502	1189-2424	2006/07/26	2009/07/26

Remarks:-

CM Corrective Maintenance

N/A Not Applicable or Not Available

TBD To Be Determined



Date: 2008-08-25 Page 16 of 20

No. : MH182466

Appendix B

Duty Cycle Correction During 100msec

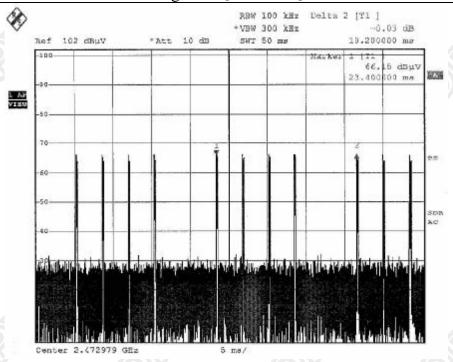
Each function key sends a different series of characters, but each packet period (18.2msec) never exceeds a series of 4 long (0.24msec) or 4 short (0.2msec) pulses. Assuming any combination of short and long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered 4x0.24msec per 18.2msec=0.052% duty cycle. Figure A through C show the characteristics of the pulses train for one of these functions.

Remarks:

Duty Cycle Correction = 20Log(0.052) =-25.6dB (-20dB used as field strength of fundamental emissions calculation)

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

Figure A [Pulse Train]





Date: 2008-08-25 Page 17 of 20

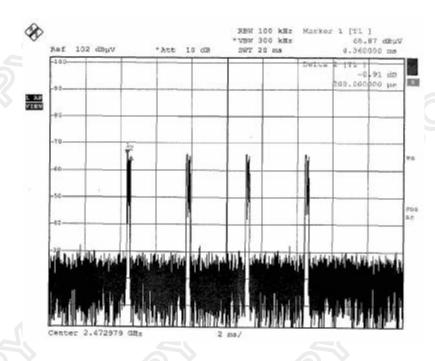
No. : MH182466

Figure C [Short Pulse]



Date: 2008-08-25 Page 18 of 20

No. : MH182466



The Hong Kong Standards and Testing Centre Ltd.



Date : 2008-08-25 Page 19 of 20

No. : MH182466

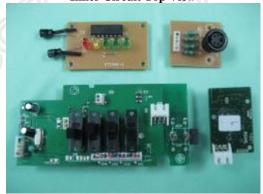
Appendix C

Photographs of EUT

Front View of the product



Inner Circuit Top View



Rear View of the product



Inner Circuit Bottom View

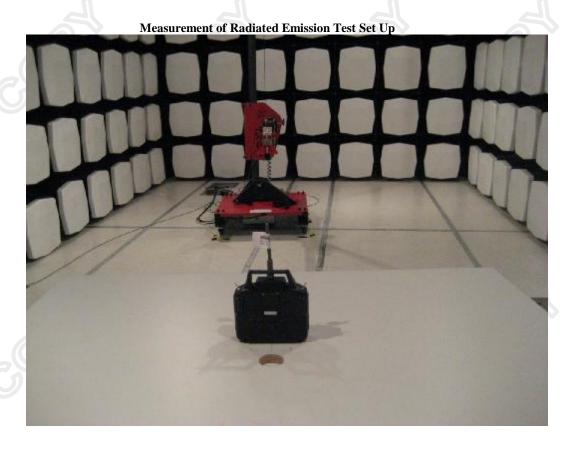




Date : 2008-08-25 Page 20 of 20

No. : MH182466

Photographs of EUT



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