Prüfbericht - Nr.: *Test Report No.:*	**14029863 001**	**Seite 1 von 8** *Page 1 of 8*

Auftraggeber: *Client:*	**CHENGHAI UDIRC TOYS CO.,LTD** **Dengfeng Industrial Zone,Chenghai District** **Shantou City** **Guangdong** **China**
Gegenstand der Prüfung: *Test Item:*	**Short Range Device - Radio Control Toys Transmitter (2.4GHz)**
Bezeichnung: *Identification:*	**Please refer to "Models" on page 5**
Serien-Nr.: *Serial No.:*	**Engineering sample**
Wareneingangs-Nr.: *Receipt No.:*	**00120524008-001**
Eingangsdatum: *Date of Receipt:*	**24.05.2012**
Zustand des Prüfgegenstandes bei Anlieferung: *Condition of test item at delivery:*	Test samples received are sufficient for testing and not damaged.
Prüfort: *Testing Location:*	**Shenzhen Emtek Co., Ltd.** Bldg. 69, Majialong Industry Zone, Nanshan District, ShenZhen, Guangdong, 518052 P.R. China
Prüfgrundlage: *Test Specification:*	**FCC Part 15 Subpart C** **ANSI C63.4-2003** **CISPR 22:1997**
Prüfergebnis: *Test Results:*	**Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben genannter Prüfgrundlage.** The above mentioned product was tested and **passed**.
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland Hong Kong Ltd.** 8 - 10/F., Goldin Financial Global Square, 7 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong

geprüft/ *tested by:*

Datum *Date*	Name/Stellung *Name/Position*	Unterschrift *Signature*
29.05.2012	Joey Leung Test Engineer	Joey Leung

kontrolliert/ *reviewed by:*

Datum *Date*	Name/Stellung *Name/Position*	Unterschrift *Signature*
29.05.2012	Sharon Li Section Manager	

Sonstiges: **FCCID: ZKW20110520002**
Other Aspects

Abkürzungen:				*Abbreviations:*			
	P(ass)	=	*entspricht Prüfgrundlage*		*P(ass)*	=	*passed*
	F(ail)	=	*entspricht nicht Prüfgrundlage*		*F(ail)*	=	*failed*
	N/A	=	*nicht anwendbar*		*N/A*	=	*not applicable*
	N/T	=	*nicht getestet*		*N/T*	=	*not tested*

Table of Content

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Product information

Manufacturers declarations

	Transmitter
Operating frequency range	2405 - 2475 MHz
Type of modulation	FSK
Number of channels	11
Type of antenna	Integral
Power level	fix
Connection to public utility power line	No
Nominal voltage	V_{nor}: 6.0 V

Product function and intended use

The equipment under test (EUT) is a radio control toy transmitter operating at 2.4GHz. It transmits on one of the 11 channel only and channel number was decided during frequency binding procedure with associated receiver. The transmitter is powered by batteries only.

FCCID: ZKW20110520002

Models	Product description
U816, U816A, U817, U817A, U818, U818A, U819, U819A, U820, U820A, U821, U821A, U822, U822A, U823, U823A, U825, U825A, U826, U26A, U827, U827A, U828, U828A, U829, U829A, U830, U830A, U831, U831A, U832, U832A, U833, U833A, U835, U835A, U836, U836A, U837, U838, U838, U839, U840, U841, U842, U843, U845, U846, U847, U8, U8A, U9, U9A, U10, U10A, U11, U11A, U12, U12A, U13, U13A, U15W, U16, U16A, U16C, U16W, U17C, U18 , U18A, U18C, U18W, U19, U19A, U19C, U19W, U20, U20A, U20C, U20W, U21, U21A, U21C, U21W, U22, U22A, U22C, U22W, U23, U23A, U23C, U23W, U25, U25A, U25C, U25W, U26, U26A, U26C, U26W, U27, U27A, U27C, U27W, U28, U28A, U28C, U28W, U29, U29A, U29C, U29W, U30, U30A, U30C, U30W, U31, U31A, U31C, U31W, U32, U32A, U32C, U32W, U33, U33A, U33C, U33W, U35, U35A, U35C, U35W, U36, U36A, U36C, U36W, U37, U37A, U37C, U37W, U38, U38A, U39, U40, U41, U42, U43, U45, U46, U47, U48, U49, U50	Radio Control Toy Helicopter

Submitted documents

Circuit Diagram
Block Diagram
Bill of material
User manual
Rating Label

List of Test and Measurement Instruments

Shenzhen EMTEK Co., Ltd. (Registration number: 709623)

Equipment	Manufacturer	Type	S/N	Due Date
EMI Test Receiver	Rohde & Schwarz	ESU26	LR114196	May 29, 2013
Pre-Amplifier	HP	8447D	2944A07999	May 29, 2013
Bilog Antenna	Schwarzbeck	VULB9163	142	May 29, 2013
Loop Antenna	ARA	PLA-1030/B	1029	May 29, 2013
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	May 29, 2013
Horn Antenna	Schwarzbeck	BBHA 9120	D143	May 29, 2013
Cable	Schwarzbeck	AK9513	ACRX1	May 29, 2013
Cable	Rosenberger	N/A	FP2RX2	May 29, 2013
Cable	Schwarzbeck	AK9513	CRPX1	May 29, 2013
Cable	Schwarzbeck	AK9513	CRRX2	May 29, 2013

Results FCC Part 15 – Subpart C

Subclause 15.207 – Disturbance Voltage on AC Mains	**N/A**
There is no AC power input or output ports on the EUT.	

Subclause 15.205 – Band edge compliance of radiated emissions	**Pass**
Test Specification : ANSI C63.4 – 2003 Mode of operation : Tx mode Port of testing : Enclosure Detector : Peak RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 6.0VDC, 4x1.5V AA size new battery Temperature : 23ºC Humidity : 50%	
Requirement:	Radiated emissions which fall in the restricted bans, as defined in 15.205 (a), must also comply with the radiated emission limits specified in 15.209(a).
Results:	There is no peak found in the restricted bands. For test protocols refer to Appendix 1, page 4-5.

Subclause 15.215 (c) – 20 dB Bandwidth	**Pass**
Requirement:	The intentional radiators must be designed to ensure that the 20dB bandwidth of the emission, is contained within the frequency band designated in the rule section under which the equipment is operated.
Test Specification : ANSI C63.4 – 2003 Mode of operation : Tx mode Port of testing : Enclosure RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 6.0VDC, 4x1.5V AA size new battery Temperature : 23ºC Humidity : 50%	
Results:	For test protocols refer to Appendix 1, page 2-3.

Frequency (MHz)	**20 dB left (MHz)**	**Limit (MHz)**	**20 dB right (MHz)**	**Limit (MHz)**
2405	2403.45	> 2400	2406.17	< 2483.5
2440	2438.46	> 2400	2441.21	< 2483.5
2475	2472.96	> 2400	2476.25	< 2483.5

Subclause 15.249 (a) – Radiated Emission (Fundamental and Harmonics)		**Pass**
Test Specification : ANSI C63.4 – 2003 Mode of operation : Tx mode Port of testing : Enclosure RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 6.0VDC, 4x1.5V AA size new battery Temperature : 23ºC Humidity : 50%		
Requirement:	The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following limit.	
Results:	PASS	
Fundamental Frequency 2405MHz	Vertical Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
2405.073	98.53	114.0 / P
2405.073	81.34	94.0 / A
Fundamental Frequency 2405MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
2405.053	98.93	114.0 / P
2405.053	80.94	94.0 / A
Harmonics 2405MHz	Vertical Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
4814.102	64.11	74.0 / P
4814.102	45.86	54.0 / A
7211.538	58.76	74.0 / P
7211.538	42.59	54.0 / A
Harmonics 2405MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
4814.102	59.54	74.0 / P
4814.102	41.56	54.0 / A
7211.538	59.63	74.0 / P
7211.538	42.49	54.0 / A
Fundamental Frequency 2440MHz	Vertical Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
2440.022	98.71	114.0 / P
2440.022	80.63	94.0 / A
Fundamental Frequency 2440MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**

2440.046	99.09	114.0 / P
2440.046	81.13	94.0 / A
Harmonics 2440MHz	Vertical Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
4868.590	62.95	74.0 / P
4868.590	45.63	54.0 / A
7320.513	58.55	74.0 / P
7320.513	41.10	54.0 / A
Harmonics 2440MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
4868.590	62.54	74.0 / P
4868.590	45.63	54.0 / A
7320.513	61.55	74.0 / P
7320.513	44.50	54.0 / A
Fundamental Frequency 2475MHz	Vertical Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
2475.108	98.12	114.0 / P
2475.108	80.17	94.0 / A
Fundamental Frequency 2475MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
2475.154	98.72	114.0 / P
2475.154	81.37	94.0 / A
Harmonics 2475MHz	Vertical Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
4950.320	64.35	74.0 / P
4950.320	46.35	54.0 / A
7429.487	59.96	74.0 / P
7429.487	43.06	54.0 / A
Harmonics 2475MHz	Horizontal Polarization	
Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
4950.320	66.62	74.0 / P
4950.320	48.65	54.0 / A
7429.487	57.44	74.0 / P
7429.487	39.76	54.0 / A

Subclause 15.249 (d) – Spurious Radiated Emissions	**Pass**

Test Specification : ANSI C63.4 - 2003
Mode of operation : Tx mode
Port of testing : Enclosure
Detector : Peak
RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz
1 MHz / 3 MHz for f > 1 GHz
Supply voltage : 6.0VDC, 4x1.5V AA size new battery
Temperature : 23ºC
Humidity : 50%

Requirement: Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Results: All three transmit frequency modes comply with the field strength within the restricted bands. There is no spurious found below 30MHz.

Tx frequency 2405MHz — Vertical Polarization

Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
No peak found	---	74.0 / P
No peak found	---	54.0 / A

Tx frequency 2405MHz — Horizontal Polarization

Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
No peak found	---	74.0 / P
No peak found	---	54.0 / A

Tx frequency 2440MHz — Vertical Polarization

Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
No peak found	---	74.0 / P
No peak found	---	54.0 / A

Tx frequency 2440MHz — Horizontal Polarization

Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
No peak found	---	74.0 / P
No peak found	---	54.0 / A

Tx frequency 2475MHz — Vertical Polarization

Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
No peak found	---	74.0 / P
No peak found	---	54.0 / A

Tx frequency 2475MHz — Horizontal Polarization

Freq MHz	**Level dBuV/m**	**Limit/ Detector dBuV/m**
No peak found	---	74.0 / P
No peak found	---	54.0 / A