

Produkte **Products**

Seite 1 von 10 Prüfbericht - Nr.: 14039636 001 Page 1 of 10 Test Report No.: Auftraggeber: Guangdong Songyang Plastic Toys Co., Ltd Client: HuaiNan a section 324 National Highway Lianxia Town Chenghai, Shantou P.R.China Gegenstand der Prüfung: Short Range Device - Radio Control Toy Transmitter (2.4GHz) Test Item: Bezeichnung: Please refer to "Models" on Serien-Nr.: Engineering sample Serial No.: Identification: page 3 A000194859-001 Wareneingangs-Nr.: Eingangsdatum: 06.05.2015 Receipt No.: Date of Receipt: Zustand des Prüfgegenstandes bei Anlieferung: Test sample received is not damaged and Condition of test item at delivery: suitable for testing. Prüfort: TÜV Rheinland Hong Kong Ltd. Testing Location: 8/F, First Group Centre, 14 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong Global United Technology Services Co., Ltd. 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, China Prüfgrundlage: FCC Part 15 Subpart C Test Specification: ANSI C63.4-2009 Prüfergebnis: Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben Test Results: genannter Prüfgrundlage. The above mentioned product was tested and passed. Prüflaboratorium: TÜV Rheinland Hong Kong Ltd. 8 - 10/F., Goldin Financial Global Square, 7 Wang Tai Road, Kowloon Bay, Testing Laboratory: Kowloon, Hong Kong geprüft/ tested by: kontrolliert/ reviewed by: Joey Leung Sharon Li 08.06.2015 08.06.2015 Project Engineer Department Manager Name/Stellung Datum Unterschrift Datum Name/Stellung Unterschrift Date Name/Position Signature Date Name/Position Signature Sonstiges: FCCID: 2AEXV13809671876 Other Aspects Abkürzungen: P(ass) entspricht Prüfgrundlage Abbreviations: P(ass) passed entspricht nicht Prüfgrundlage F(ail) F(ail) failed not applicable N/A nicht anwendbar N/A N/T N/T nicht getestet 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

duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.



Table of Content

	P	Page
Cover Page		1
Table of Content		2
Appendix 4 – Product documentation	15 pages	2
Product information		3
Manufacturers declarations		3
Product function and intended use		3
Submitted documents		3
Special accessories and auxiliary equipment		3
Independent Operation Modes		4
Related Submittal(s) Grants		4
List of Test and Measurement Instruments		5
Results FCC Part 15 – Subpart C		6
Subclause 15.207 – Disturbance Voltage on AC Mains	N/A	6
Subclause 15.205 - Restricted bands - Spurious Emissions - Band edge	Pass	6
Subclause 15.215 (c) – 20 dB Bandwidth	Pass	7
Subclause 15.249 (a) – Field Strength of Fundamental and Harmonics	Pass	7
Subclause 15.249 (d) – Emissions radiated outside of the specified frequency ba	ands . Pass	9
Appendix 1 – Test Results	3 pa	iges
Appendix 2 – Test Setup Photos	3 ра	iges
Appendix 3 – Photo documentation	7 pa	iges
Appendix 4 – Product documentation	15 pa	iges
Appendix 5 – RF Exposure Information	2 pa	iges



Product information

Manufacturers declarations

	Transmitter
Operating frequency range	2405 - 2475 MHz
Type of modulation	GFSK
Number of channels	27
Type of antenna	Wire Antenna
Power level	fix
Connection to public utility power line	No
Nominal voltage	6.0 V

Product function and intended use

The equipment under test (EUT) is a radio control toy transmitter operating at 2.4GHz. It is powered by batteries only.

FCCID: 2AEXV13809671876

Models	Product description
X1, X1A, X1B, X1C, X1D, X2, X2A, X2B, X2C, X2D, X3, X3A, X3B, X3C, X3D, X4, X4A, X4B, X4C, X4D, X5, X5A, X5B, X5C, X5D, X6, X6A, X6B, X6C, X6D, X7, X7A, X7B, X7C, X7D, X8, X8A, X8B, X8C, X8D, X9, X9A, X9B, X9C, X9D, X10, X10A, X10B, X10C, X10D, X11, X11A, X11B, X11C, X11D, X12, X12A, X12B, X12C, X12D, X13, X13A, X13B, X13C, X13D, X14, X14A, X14B, X14C, X14D, X15, X15A, X15B, X15C, X15D, X16, X16A, X16B, X16C, X16D, X17, X17A, X17B, X17C, X17D, X18, X18A, X18B, X18C, X18D, X19, X19A, X19B, X19C, X19D, X20, X20A, X20B, X20C, X20D, X21, X21A, X21B, X21C, X21D, X22, X22A, X22B, X22C, X22D, X23, X23A, X23B, X23C, X23D, X24, X24A, X24B, X24C, X24D, X25, X25A, X25B, X25C, X25D, X26, X26A, X26B, X26C, X26D, X27, X27A, X27B, X27C, X27D, X28, X28A, X28B, X28C, X28D, X29, X29A, X29B, X29C, X29D, X30, X30A, X30B, X30C, X30D, X31, X31A, X31B, X31C, X31D, X32, X32A, X32B, X32C, X32D, X33, X33A, X33B, X33C, X33D, X34, X34A, X34B, X34C, X34D, X35, X35A, X35B, X35C, X35D, X36, X36A, X36B, X36C, X36D, X37, X37A, X37B, X37C, X37D, X38, X38A, X38B, X38C, X38D	Radio Controlled Toy

Submitted documents

Circuit Diagram Block Diagram Bill of material User manual Rating Label

Special accessories and auxiliary equipment

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

Nil

Test Report No.: 14039636 001 Date: 08.06.2015 page 3 of 10



Independent Operation Modes

The basic operation mode is transmitting control signal for the RC toy quadcopter.

For further information refer to User Manual

Related Submittal(s) Grants

This is a single application for certification of the transmitter.

Test Report No.: 14039636 001 Date: 08.06.2015 page 4 of 10



List of Test and Measurement Instruments

Global United Technology Services Co., Ltd. (Registration number: 600491)

Equipment	Manufacturer	Туре	S/N	Cal. interval	Last cal.
3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)		2 year	27 Mar 2015
Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)		1 year	N/A
ESU EMI Test Receiver	R&S	ESU26		1 year	27 Jun 2014
Loop Antenna	Zhinan	ZN30900A		1 year	27 Jun 2014
Bi-log Hybrid Antenna	SCHWARZBECK	VULB9163		1 year	08 Mar 2015
Double-ridged horn antenna	SCHWARZBECK	9120D		1 year	08 Mar 2015
RF Amplifier	HP	8347A		1 year	27 Jun 2014
RF Amplifier	HP	8349B		1 year	27 Jun 2014
EMI Test Software	AUDIX	E3		1 year	N/A
Coaxial cable	GTS	N/A		1 year	27 Jun 2014
Coaxial Cable	GTS	N/A		1 year	27 Jun 2014
Thermo meter	N/A	N/A		1 year	27 Jun 2014
Spectrum Analyzer	Rohde & Schwarz	FSP30	100007	1 year	12 Jan 2015

Test Report No.: 14039636 001 Date: 08.06.2015 page 5 of 10



54.0 / A

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 - Restricted bands - Spurious Emissions - Band edge	Pass
Test Specification: ANSI C63.4 – 2009 Mode of operation: Tx mode	

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

Pass

Supply voltage : 6.0VDC, 4 x 1.5V AA size new battery

Temperature : 23°C Humidity : 50%

Tx frequency 2405MHz

2400.000

Results:

Requirement: Radiated emissions which fall in the restricted bands, as defined in 15.205 (a), must also

Vertical Polarization

comply with the radiated emission limits specified in 15.209(a).

Freq	Level	Limit/ Detector
MHz	dBuV/m	dBuV/m
2400.000	48.97	74.0 / P

34.36

Tx frequency 2405MHz Horizontal Polarization

Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2400.000	49.23	74.0 / P
2400.000	34.24	54.0 / A

Tx frequency 2475MHz Vertical Polarization

Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2483.500	45.76	74.0 / P
2483.500	28.49	54.0 / A
	·	

Tx frequency 2475MHz Horizontal Polarization

TX Hoddoney 2 17 old 12	Tionzoniai i olanzation	
Freq	Level	Limit/ Detector
MHz	dBuV/m	dBuV/m
2483.500	47.07	74.0 / P
2483.500	28.06	54.0 / A

Test Report No.: 14039636 001 Date: 08.06.2015 page 6 of 10



Subclause 15.215 (c) - 20 dB Bandwidth

Pass

Test Specification: ANSI C63.4 - 2009

Mode of operation: Tx mode Port of testing: Enclosure

RBW/VBW : 100 kHz / 300 kHz

Supply voltage : 6.0VDC, 4 x 1.5V AA size new battery

Temperature : 23°C Humidity : 50%

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.

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	2404.500	> 2400	2407.160	< 2483.5
2445	2444.500	> 2400	2447.120	< 2483.5
2475	2473.460	> 2400	2475.770	< 2483.5

Subclause	5.249 (a) - Field Strength of Fundamental and	Harmonics
Subclause	3.243 (a) — Fielu Streliutii di Fullualilelitai allu	Hallionics

Pass

Test Specification: ANSI C63.4 - 2009

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, 4 x 1.5V AA size new battery

Temperature : 23°C 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
2405.500	85.81	114.0 / P
2405.500	65.50	94.0 / A

Fundamental Frequency 2405MHz Horizontal Polarization

Freq	Level	Limit/ Detector
MHz	dBuV/m	dBuV/m
2405.500	85.34	114.0 / P
2405.500	64.25	94.0 / A

Harmonics 2405MHz Vertical Polarization

Freq	Level	Limit/ Detector
MHz	dBuV/m	dBuV/m
4810.500	55.59	

Test Report No.: 14039636 001 Date: 08.06.2015 page 7 of 10



4810.500	37.61	54.0 / A
7215.000	49.22	74.0 / P
7215.000	36.17	54.0 / A
Harmonics 2405MHz	Horizontal Polarization	
Freq	Level	Limit/ Detector
MHz	dBuV/m	dBuV/m
4810.500	53.03	74.0 / P
4810.500	36.87	54.0 / A
Fundamental Frequency 2445MHz	Vertical Polarization	
Freq	Level	Limit/ Detector
MHz	dBuV/m	dBuV/m
2445.400	84.77	114.0 / P
2445.400	64.09	94.0 / A
Fundamental Frequency 2445MHz	Horizontal Polarization	
Freq	Level	Limit/ Detector
MHz	dBuV/m	dBuV/m
2445.400	83.62	114.0 / P
2445.400	63.34	94.0 / A
Harmonics 2445MHz	Vertical Polarization	
Freq	Level	Limit/ Detector
MHz	dBuV/m	dBuV/m
4890.200	52.30	74.0 / P
4890.200	38.39	54.0 / A
7335.000	49.61	74.0 / P
7335.000	36.63	54.0 / A
Harmonics 2445MHz	Horizontal Polarization	
Freq	Level	Limit/ Detector
MHz	dBuV/m	dBuV/m
4890.200	50.86	74.0 / P
4890.200	38.36	54.0 / A
Fundamental Frequency 2475MHz	Vertical Polarization	
Freq	Level	Limit/ Detector
MHz	Level dBuV/m	Limit/ Detector dBuV/m
	Level	
MHz	Level dBuV/m	dBuV/m
MHz 2475.100 2475.100	Level dBuV/m 84.52	dBuV/m 114.0 / P
MHz 2475.100 2475.100 Fundamental Frequency 2475MHz Freq	Level dBuV/m 84.52 64.07 Horizontal Polarization Level	dBuV/m 114.0 / P 94.0 / A Limit/ Detector
MHz 2475.100 2475.100 Fundamental Frequency 2475MHz Freq MHz	Level dBuV/m 84.52 64.07 Horizontal Polarization Level dBuV/m	dBuV/m 114.0 / P 94.0 / A Limit/ Detector dBuV/m
MHz 2475.100 2475.100 Fundamental Frequency 2475MHz Freq MHz 2475.100	Level dBuV/m 84.52 64.07 Horizontal Polarization Level dBuV/m 83.05	dBuV/m 114.0 / P 94.0 / A Limit/ Detector dBuV/m 114.0 / P
MHz 2475.100 2475.100 Fundamental Frequency 2475MHz Freq MHz	Level dBuV/m 84.52 64.07 Horizontal Polarization Level dBuV/m	dBuV/m 114.0 / P 94.0 / A Limit/ Detector dBuV/m
MHz 2475.100 2475.100 Fundamental Frequency 2475MHz Freq MHz 2475.100	Level dBuV/m 84.52 64.07 Horizontal Polarization Level dBuV/m 83.05	dBuV/m 114.0 / P 94.0 / A Limit/ Detector dBuV/m 114.0 / P
MHz 2475.100 2475.100 Fundamental Frequency 2475MHz Freq MHz 2475.100 2475.100 Harmonics 2475MHz Freq	Level dBuV/m 84.52 64.07 Horizontal Polarization Level dBuV/m 83.05 63.07 Vertical Polarization Level	dBuV/m
MHz 2475.100 2475.100 Fundamental Frequency 2475MHz Freq MHz 2475.100 2475.100 Harmonics 2475MHz Freq MHz	Level dBuV/m 84.52 64.07 Horizontal Polarization Level dBuV/m 83.05 63.07 Vertical Polarization Level dBuV/m	dBuV/m
MHz 2475.100 2475.100 Fundamental Frequency 2475MHz Freq MHz 2475.100 2475.100 4475.100 Harmonics 2475MHz Freq MHz 4950.800	Level dBuV/m 84.52 64.07 Horizontal Polarization Level dBuV/m 83.05 63.07 Vertical Polarization Level dBuV/m 53.08	dBuV/m
MHz 2475.100 2475.100 Fundamental Frequency 2475MHz Freq MHz 2475.100 2475.100 Harmonics 2475MHz Freq MHz	Level dBuV/m 84.52 64.07 Horizontal Polarization Level dBuV/m 83.05 63.07 Vertical Polarization Level dBuV/m	dBuV/m

Test Report No.: 14039636 001 Date: 08.06.2015 page 8 of 10



Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4950.800	51.52	74.0 / P
4950.800	36.46	54.0 / A

Subclause 15.249 (d) – Emissions radiated outside of the specified frequency bands Pass				
Detector Frequency range RBW/VBW Supply voltage Temperature	: Tx mode : Enclosure : Peak : 9kHz – 25GHz : 100 kHz / 300 k 1 MHz / 3 MHz	kHz for f < 1 GHz		
Requirement:	be attenuated b	ated outside of the specified frequer by at least 50dB below the level of the on limits in Section 15.209, whichev	e fundamental or to the general	
Results:		it frequency modes comply with the no spurious found below 30MHz.	field strength within the restricte	ed
Tx frequency 2405l	MHz	Vertical Polarization		
Fred MHz	•	Level dBuV/m	Limit/ Detector dBuV/m	
No peak	found		74.0 / P	
No peak	found		54.0 / A	
Tx frequency 2405l	MHz	Horizontal Polarization		
Fred MHz	•	Level dBuV/m	Limit/ Detector dBuV/m	
No peak			74.0 / P	
No peak	found		54.0 / A	
Tx frequency 2445I	MHz	Vertical Polarization		
Fred MHz	Z	Level dBuV/m	Limit/ Detector dBuV/m	
No peak			74.0 / P	
No peak	found		54.0 / A	
Tx frequency 2445l	MHz	Horizontal Polarization		
Fred MHz	2	Level dBuV/m	Limit/ Detector dBuV/m	
No peak			74.0 / P	
No peak	found		54.0 / A	
Tx frequency 2475l	MHz	Vertical Polarization		
Fred MHz		Level dBuV/m	Limit/ Detector dBuV/m	
1711 12	_	4 Du Y/III	u Du Y/III	
No peak			74.0 / P	

Test Report No.: 14039636 001 Date: 08.06.2015 page 9 of 10



www.tuv.com

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

Test Report No.: 14039636 001 Date: 08.06.2015 page 10 of 10