

Produkte
Products



Prüfbericht - Nr.: 14039196 001		Seite 1 von 10 Page 1 of 10	
<i>Test Report No.:</i>			
Auftraggeber: <i>Client:</i>	Shantou Boody Electronic co., Ltd Zhushuyuan Industrial Area Zhuhua Road, Shangdai Chenghai District, Shantou City Shantou, CHINA		
Gegenstand der Prüfung: <i>Test Item:</i>	Short Range Device - Radio Control Toy Transmitter (2.4GHz)		
Bezeichnung: <i>Identification:</i>	Please refer to "Models" on page 3	Serien-Nr.: <i>Serial No.:</i>	Engineering sample
Wareneingangs-Nr.: <i>Receipt No.:</i>	A000189987 (001-003)	Eingangsdatum: <i>Date of Receipt:</i>	23.04.2015
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of test item at delivery:</i>	Test samples received are not damaged and suitable for testing.		
Prüfört: <i>Testing Location:</i>	TÜV Rheinland Hong Kong Ltd. 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: <i>Test Specification:</i>	FCC Part 15 Subpart C ANSI C63.4-2009		
Prüfergebnis: <i>Test Results:</i>	Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben genannter Prüfgrundlage. The above mentioned product was tested and passed .		
Prüflaboratorium: <i>Testing Laboratory:</i>	TÜV Rheinland Hong Kong Ltd. 8 - 10/F., Goldin Financial Global Square, 7 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong		
geprüft/ tested by:		kontrolliert/ reviewed by:	
24.04.2015	Joey Leung Project Engineer	24.04.2015	Benny Lau Project Manager
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>
	 Unterschrift <i>Signature</i>		 Unterschrift <i>Signature</i>
Sonstiges: Other Aspects		FCCID: 2AEFGBOODY88879339	
Abkürzungen:	P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet	Abbreviations:	P(ass) = passed F(ail) = failed N/A = not applicable N/T = 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. <i>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.</i>			

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Product information

Manufacturers declarations

	Transmitter
Operating frequency range	2402 - 2475 MHz
Type of modulation	GFSK
Number of channels	6
Type of antenna	Wire Antenna
Power level	fix
Connection to public utility power line	No
Nominal voltage	9.0 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: 2AEFGBOODY88879339

Models	Product description
FX-1, FX-2, FX-3, FX-4, FX-5, FX-6, FX-7, FX-8, FX-9, FX-10, FX-11, FX-12, FX-13, FX-14, FX-15, FX-16, FX-17, FX-18, FX-19, FX-20, FX-21, FX-22, FX-23, FX-24, FX-25, FX-26, FX-27, FX-28, FX-29, FX-30, FX-31, FX-32, FX-33, FX-34, FX-35, FX-36, FX-37, FX-38, FX-39, FX-40, FX-41, FX-42, FX-43, FX-44, FX-45, D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, D15, D16, D17, D18, D19, D20, D21, D22, D23, D24, D25, D26, D27, D28, D29, D30, D31, D32, D33, D34, D35, D36, D37, D38, D39, D40, D41, D42, D43, D44, D45	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

Independent Operation Modes

The basic operation modes are:

- 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.

List of Test and Measurement Instruments

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

Equipment	Manufacturer	Type	S/N	Cal. interval	Last cal.
3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)	---	1 year	05 Apr 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

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 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 : 9.0VDC, 6 x 1.5V AA size new battery Temperature : 23°C Humidity : 50%		
Requirement: Radiated emissions which fall in the restricted bands, as defined in 15.205 (a), must also comply with the radiated emission limits specified in 15.209(a).		
Results: For test protocols refer to Appendix 1, page 4-7.		
Tx frequency 2402MHz 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 2402MHz 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

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 : 9.0VDC, 6 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)
2402	2401.418	> 2400	2403.210	< 2483.5
2433	2432.440	> 2400	2434.120	< 2483.5
2475	2474.680	> 2400	2476.430	< 2483.5

Subclause 15.249 (a) – Field Strength of Fundamental and Harmonics				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 : 9.0VDC, 6 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 2402MHz		Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m		
2402.335	64.25	114.0 / P		
2402.335	32.26	94.0 / A		
Fundamental Frequency 2402MHz		Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m		
2402.335	63.07	114.0 / P		
2402.335	32.03	94.0 / A		
Harmonics 2402MHz		Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m		
4808.000	61.12	74.0 / P		

4808.000	36.41	54.0 / A
7206.000	54.03	74.0 / P
7206.000	36.82	54.0 / A
Harmonics 2402MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4804.670	60.22	74.0 / P
4804.670	36.51	54.0 / A
7206.000	55.11	74.0 / P
7206.000	39.94	54.0 / A
Fundamental Frequency 2433MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2433.450	65.32	114.0 / P
2433.450	31.45	94.0 / A
Fundamental Frequency 2433MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2433.450	63.95	114.0 / P
2433.450	31.65	94.0 / A
Harmonics 2433MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4866.900	61.14	74.0 / P
4866.900	35.61	54.0 / A
7299.000	51.54	74.0 / P
7299.000	37.04	54.0 / A
Harmonics 2433MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4866.900	60.01	74.0 / P
4866.900	35.22	54.0 / A
7299.000	54.67	74.0 / P
7299.000	37.92	54.0 / A
Fundamental Frequency 2475MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2475.555	67.87	114.0 / P
2475.555	31.90	94.0 / A
Fundamental Frequency 2475MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2475.555	67.57	114.0 / P
2475.555	32.07	94.0 / A
Harmonics 2475MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m

4951.100	59.13	74.0 / P
4951.100	36.60	54.0 / A
7425.000	49.83	74.0 / P
7425.000	37.21	54.0 / A
Harmonics 2475MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4951.000	58.88	74.0 / P
4951.000	32.35	54.0 / A
7426.000	53.94	74.0 / P
7426.000	35.55	54.0 / A

Subclause 15.249 (d) – Emissions radiated outside of the specified frequency bands Pass

Test Specification : ANSI C63.4 - 2009
 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 : 9.0VDC, 6 x 1.5V AA size new battery
 Temperature : 23°C
 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 2402MHz 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 2402MHz 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 2433MHz 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 2433MHz 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