

Produkte
Products



Prüfbericht - Nr.: 14034255 001			Seite 1 von 9 Page 1 of 9		
<i>Test Report No.:</i>					
Auftraggeber: <i>Client:</i>		SHANTOU CHENGHAI QINGSONG TOYS INDUSTRY CO.,LTD NO.39, LIANHE ROAD, WAIPU INDUSTRIAL ZONE CHENGHAI, SHANTOU GUANGDONG 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>	00131024075-001	Eingangsdatum: <i>Date of Receipt:</i>	24.10.2013		
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of test item at delivery:</i>		Test sample(s) is/are not damaged and suitable for testing.			
Prüfört: <i>Testing Location:</i>	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 C63.4-2003				
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:			
04.11.2013	Joey Leung Test Engineer		04.11.2013	Mika Chan Project Manager	
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>
Sonstiges: Other Aspects		FCCID: W2U13902709002			
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			
<p>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.</p> <p><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></p>					

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Product information

Manufacturers declarations

	Transmitter
Operating frequency range	2403 - 2473 MHz
Type of modulation	GFSK
Number of channels	24
Type of antenna	Integral
Power level	fix
Connection to public utility power line	No
Nominal voltage	V _{nom} : 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: W2U13902709002

Models	Product description
QS991, QS992, QS993, QS994, QS995, QS996, QS997, QS998, QS999, QS2001, QS2002, QS2003, QS2004, QS2005, QS2006, QS2007, QS2008, QS2009, QS2010, QS2011, QS2012, QS2013, QS2014, QS2015, QS2016, QS2017, QS2018, QS2019, QS2020, QS2021, QS2023, QS2024, QS2025, QS2026, QS2027, QS2028, QS2029, QS5010, QS5012, QS5013, QS5014, QS5016, QS5017, QS5018, QS5019, QS5020, QS6010, QS6020, QS6030, QS6050, QS6060	Radio Control Toy Helicopter

Submitted documents

Circuit Diagram
Block Diagram
Bill of material
User manual
Rating Label

List of Test and Measurement Instruments

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

Equipment	Manufacturer	Type	S/N	Cal. Due date
3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)	---	05 Apr 2015
Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	---	N/A
ESU EMI Test Receiver	R&S	ESU26	---	28 Jun 2014
Loop Antenna	Zhinan	ZN30900A	---	28 Jun 2014
Bi-log Hybrid Antenna	SCHWARZBECK	VULB9163	---	17 Mar 2014
Double-ridged horn antenna	SCHWARZBECK	9120D	---	17 Mar 2014
Horn Antenna	ETS-LINDGREN	3160-09	---	17 Mar 2014
RF Amplifier	HP	8347A	---	28 Jun 2014
RF Amplifier	HP	8349B	---	28 Jun 2014
EMI Test Software	AUDIX	E3	---	N/A
Coaxial cable	GTS	N/A	---	28 Jun 2014
Coaxial Cable	GTS	N/A	---	28 Jun 2014
Thermo meter	N/A	N/A	---	30 Jun 2014
Spectrum Analyzer	Rohde & Schwarz	FSP30	100007	03 Dec 2014

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 next to Band-Edge		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, 4 x 1.5V AA size new battery Temperature : 23°C 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: For test protocols refer to Appendix 1, page 4-7.		
Tx frequency 2403MHz 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 2403MHz 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 2473MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2487.501	52.85	74.0 / P
2487.501	28.70	54.0 / A
2494.171	55.75	74.0 / P
2494.171	27.97	54.0 / A
2495.099	55.91	74.0 / P
2495.099	27.60	54.0 / A
Tx frequency 2473MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2487.849	54.69	74.0 / P
2487.849	29.12	54.0 / A

2494.026	57.03	74.0 / P
2494.026	27.40	54.0 / A
2495.099	56.96	74.0 / P
2495.099	26.85	54.0 / A

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
 Supply voltage : 6.0VDC, 4 x 1.5V AA size new battery
 Temperature : 23°C
 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)
2403	2402.498	> 2400	2404.300	< 2483.5
2443	2442.350	> 2400	2444.320	< 2483.5
2473	2472.400	> 2400	2474.368	< 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, 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 2403MHz Vertical Polarization

Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2402.900	66.63	114.0 / P
2402.900	50.68	94.0 / A

Fundamental Frequency 2403MHz Horizontal Polarization

Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2402.900	66.50	114.0 / P
2402.900	50.61	94.0 / A

Harmonics 2403MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4805.800	53.63	74.0 / P	4805.800	38.09	54.0 / A
7209.100	53.91	74.0 / P	7209.100	38.91	54.0 / A
Harmonics 2403MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4805.800	53.66	74.0 / P	4805.800	40.86	54.0 / A
7209.000	45.88	74.0 / P	7209.000	31.97	54.0 / A
Fundamental Frequency 2443MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2443.041	69.16	114.0 / P	2443.041	55.46	94.0 / A
Fundamental Frequency 2443MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2443.041	70.25	114.0 / P	2443.041	55.81	94.0 / A
Harmonics 2443MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4886.100	54.20	74.0 / P	4886.100	39.45	54.0 / A
7329.000	47.06	74.0 / P	7329.000	33.03	54.0 / A
Harmonics 2443MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4886.000	56.19	74.0 / P	4886.000	42.56	54.0 / A
7329.000	46.94	74.0 / P	7329.000	31.70	54.0 / A
Fundamental Frequency 2473MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2473.120	67.61	114.0 / P	2473.120	52.18	94.0 / A
Fundamental Frequency 2473MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2473.120	68.47	114.0 / P			

2473.120	53.03	94.0 / A
Harmonics 2473MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4964.210	55.88	74.0 / P
4964.210	42.31	54.0 / A
7419.000	47.28	74.0 / P
7419.000	32.64	54.0 / A
Harmonics 2473MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4964.210	60.13	74.0 / P
4964.210	45.99	54.0 / A
7419.000	46.92	74.0 / P
7419.000	34.03	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, 4 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 2403MHz 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 2403MHz 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 2443MHz 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 2443MHz		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 2473MHz		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 2473MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
No peak found	---	74.0 / P	
No peak found	---	54.0 / A	