

Produkte
Products

Prüfbericht - Nr.: 14041264 001		Seite 1 von 11 Page 1 of 11	
<i>Test Report No.:</i>			
Auftraggeber: <i>Client:</i>	Chenghai Udirc Toys Co.,Ltd Dengfeng Industrial Zone Chenghai District, 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>	A000242056-001 A000252999-001	Eingangsdatum: <i>Date of Receipt:</i>	15.08.2015 10.09.2015
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of test item at delivery:</i>	Test sample received is not damaged and suitable for testing.		
Prüfort: <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:	
16.09.2015	Joey Leung Project Engineer	16.09.2015	Sharon Li Department 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: ZKWFPV15082802	
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	2448 - 2472 MHz
Type of modulation	GFSK
Number of channels	4
Type of antenna	Wire Antenna
Power level	fix
Connection to public utility power line	No
Nominal voltage	3.7 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: ZKWFPV15082802

Models	Product description
U842-1, U842, U842Wifi, U842-2, U842 FPV, U818A, U818A-1, U818A HD, U818AW, U818A WIFI, U818A FPV, U818A-2, U816A, U27, U27-1, U845, U845Wifi, U845A, U845 FPV, U845-1, U846, U839, U39, U841, U841-1, U841W, U829A, U829A FPV, U829AWiFi, U829A-1, U830, U830A, U843, U820, U12, U12A, U13, U13A, U36, U37, U38, U39, U40, U41, U42, U43, U44, U45, U46, U47, U48, U49, U50, U51, U52, U53, U54, U55, U56, U57, U58, U59, U60, U28, U28W, U28-1, U29, U29W, U30, U30-1, U30W, U30F, U30-2, U31, U31-1, U31W, U31F, U31-2, U32, U33, U34, U34-1, U34W, U34F, U34-2, U35, U35-1, U35W, U35F, U35-2	Radio Controlled Quadcopter

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:

- LCD display provided by client. The FCC ID of that LCD display is ZKWFPV15082804.

Independent Operation Modes

The basic operation mode is transmitting control signal for the RC 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)	---	2 year	05 Apr 2015
Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	---	N/A	N/A
ESU EMI Test Receiver	R&S	ESU26	---	1 year	08 Jun 2015
Loop Antenna	Zhinan	ZN30900A	---	1 year	08 Jun 2015
Bi-log Hybrid Antenna	SCHWARZBECK	VULB9163	---	1 year	09 Mar 2015
Double-ridged horn antenna	SCHWARZBECK	9120D	---	1 year	09 Mar 2015
RF Amplifier	HP	8347A	---	1 year	08 Jun 2015
RF Amplifier	HP	8349B	---	1 year	08 Jun 2015
EMI Test Software	AUDIX	E3	---	1 year	N/A
Coaxial cable	GTS	N/A	---	1 year	08 Jun 2015
Coaxial Cable	GTS	N/A	---	1 year	08 Jun 2015
Thermo meter	N/A	N/A	---	1 year	08 Jun 2015
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 15.215 (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 : Internal batteries has been activated 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)
2448	2447.330	> 2400	2448.770	< 2483.5
2456	2455.360	> 2400	2456.760	< 2483.5
2472	2471.320	> 2400	2472.740	< 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 : Internal batteries has been activated 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:	Both transmitter and LCD display are test mode enabled and transmit at all combination of channels simultaneously during testing. Only worst case results are recorded in below table. PASS	
Fundamental Frequency 2448MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2448.070	72.67	114.0 / P
2448.070	47.62	94.0 / A
Fundamental Frequency 2448MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2447.960	80.46	114.0 / P
2447.960	56.41	94.0 / A
Harmonics 2448MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4895.345	60.18	74.0 / P
4895.345	42.18	54.0 / A
7341.000	53.23	74.0 / P
7341.000	41.50	54.0 / A
Harmonics 2448MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4895.345	61.72	74.0 / P
4895.345	42.72	54.0 / A
7341.000	54.28	74.0 / P
7341.000	40.55	54.0 / A
Fundamental Frequency 2456MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2455.970	72.78	114.0 / P
2455.970	48.77	94.0 / A

Fundamental Frequency 2456MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2455.880	81.26	114.0 / P	2455.880	56.25	94.0 / A
Harmonics 2456MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4912.213	57.95	74.0 / P	4912.213	42.60	54.0 / A
7358.000	53.98	74.0 / P	7358.000	41.30	54.0 / A
Harmonics 2456MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4912.213	60.47	74.0 / P	4912.213	42.99	54.0 / A
7358.000	53.13	74.0 / P	7358.000	40.46	54.0 / A
Fundamental Frequency 2472MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2471.010	72.98	114.0 / P	2471.010	48.03	94.0 / A
Fundamental Frequency 2472MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2471.110	78.98	114.0 / P	2471.110	55.03	94.0 / A
Harmonics 2472MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4943.560	59.95	74.0 / P	4943.560	42.68	54.0 / A
7409.000	53.08	74.0 / P	7409.000	39.56	54.0 / A
Harmonics 2472MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4943.560	61.62	74.0 / P	4943.560	41.73	54.0 / A
7409.000	52.10	74.0 / P	7409.000	39.58	54.0 / A

Subclause 15.249 (d) – 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 : Internal batteries has been activated 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:	Both transmitter and LCD display are test mode enabled and transmit at all combination of channels simultaneously during testing. Only worst case results are recorded in below table. PASS	
Tx frequency 2448MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2400.000	35.15	74.0 / P
2400.000	22.10	54.0 / A
Tx frequency 2448MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2400.000	34.67	74.0 / P
2400.000	23.69	54.0 / A
Tx frequency 2472MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2483.500	33.46	74.0 / P
2483.500	23.45	54.0 / A
Tx frequency 2472MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2483.500	33.05	74.0 / P
2483.500	22.06	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 : Internal batteries has been activated 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:	Both transmitter and LCD display are test mode enabled and transmit at all combination of channels simultaneously during testing. Only worst case results are recorded in below table.	
	All three transmit frequency modes comply with the field strength within the restricted bands. There is no spurious found below 30MHz.	
Tx frequency 2448MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
152.130	30.81	43.5 / QP
239.987	36.67	46.0 / QP
263.819	37.30	46.0 / QP
Tx frequency 2448MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
143.830	34.40	43.5 / QP
247.682	36.69	46.0 / QP
272.278	36.63	46.0 / QP
Tx frequency 2456MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
152.130	30.86	43.5 / QP
224.519	33.12	46.0 / QP
272.278	33.81	46.0 / QP
Tx frequency 2456MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
143.830	32.94	43.5 / QP
223.733	35.69	46.0 / QP
239.987	38.14	46.0 / QP

Tx frequency 2472MHz			Vertical Polarization		
Freq MHz		Level dBuV/m		Limit/ Detector dBuV/m	
138.387		31.26		43.5 / QP	
232.532		33.27		46.0 / QP	
263.819		32.28		46.0 / QP	
Tx frequency 2472MHz			Horizontal Polarization		
Freq MHz		Level dBuV/m		Limit/ Detector dBuV/m	
136.939		33.01		43.5 / QP	
224.519		34.19		46.0 / QP	
263.819		34.83		46.0 / QP	