

Produkte
Products
Prüfbericht - Nr.: 14041371 001
Test Report No.:
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Auftraggeber:
Client:
 Chenghai Udirc Toys Co.,Ltd
 Dengfeng Industrial Zone
 Chenghai District, Shantou
 Guangdong
 China

Gegenstand der Prüfung:
Test Item:
 Short Range Device - Radio Control LCD Display (2.4GHz)

Bezeichnung: <i>Identification:</i>	Please refer to "Models" on page 3	Serien-Nr.: <i>Serial No.:</i>	Engineering sample
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Wareneingangs-Nr.: <i>Receipt No.:</i>	A000242056 (007-009) A000252999 (002-004)	Eingangsdatum: <i>Date of Receipt:</i>	15.08.2015 10.09.2015
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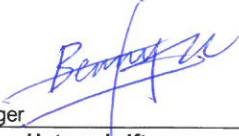
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of test item at delivery:</i>	Test samples received are not damaged and suitable for testing.
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Prüfört:
Testing Location:
 TÜV Rheinland Hong Kong Ltd.
 8/F, First Group Centre, 14 Wang Tai 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:
Test Specification:
 FCC Part 15 Subpart B
 FCC Part 15 Subpart C
 ANSI C63.4-2009

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:			kontrolliert/ reviewed by:		
22.09.2015	Joey Leung Project Engineer		22.09.2015	Benny Lau Senior 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: ZKWFPV15082804

Abkürzungen:	P(ass) = entspricht Prüfgrundlage	Abbreviations:	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	

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.

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Product information

Manufacturers declarations

	Transmitter
Operating frequency range	2421 - 2446 MHz
Type of modulation	GFSK
Number of channels	3
Type of antenna	Integral 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 LCD display operating at 2.4GHz. It is powered by battery only.

FCCID: ZKWFPV15082804

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 LCD Display

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:

- Remote controller provided by client. The FCC ID of that remote controller is ZKWFPV15082802.

Independent Operation Modes

The basic operation modes are

- transmitting control signal for the RC camera;
- display a real time image captured from the associate camera;
- reading data from TF card.

For further information refer to User Manual

Related Submittal(s) Grants

This is a single application for certification of the transmitter.

Remarks

Pre-scan has been conducted to determine the worst-case mode from all possible combinations of available channels. Simultaneous transmission was investigated, no additional spurious emission was found from 9kHz to 25GHz.

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 B

Subclause 15.107 – Conducted Emission on AC Mains	N/A
There is no AC power input or output ports on the EUT.	

Subclause 15.109 – Radiated Emissions		Pass
Test Specification : ANSI C63.4 - 2009 Mode of operation : Video playing mode (RF disabled) Port of testing : Enclosure Frequency range : 30MHz – 1GHz Detector : Peak RBW/VBW : 120 kHz for f < 1 GHz Supply voltage : 3.7VDC, Powered by external source Temperature : 24°C Humidity : 50%		
Requirement: 15.109(a)		
Results: Pass		
Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
143.830	28.78	43.5 / QP
216.024	33.31	46.0 / QP
239.987	34.60	46.0 / QP
263.819	35.20	46.0 / QP
Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
192.419	29.02	43.5 / QP
200.688	34.61	43.5 / QP
216.024	33.45	46.0 / QP
235.816	36.90	46.0 / QP
239.987	36.70	46.0 / QP
263.819	33.50	46.0 / QP

Results FCC Part 15 – Subpart C

Subclause 15.203 – Antenna Information		Pass
Requirement:	No antenna other than that furnished by the responsible party shall be used with the device	
Results:	Permanent attached antenna	
Verdict:	Pass	

Subclause 15.204 – Antenna Information		Pass
Requirement:	Provide information for every antenna proposed for the use with the EUT	
Results:	a) Antenna type: Integral antenna b) Manufacturer and model no: N.A. c) Gain with reference to an isotropic radiator: 2 dBi	
Verdict:	Pass	

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 : 3.7VDC, Powered by external source 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)
2421	2418.460	> 2400	2423.480	< 2483.5
2424	2421.480	> 2400	2426.480	< 2483.5
2446	2443.960	> 2400	2448.960	< 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 : 3.7VDC, Powered by external source 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 2421MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2420.940	72.88	114.0 / P
2420.940	48.31	94.0 / A
Fundamental Frequency 2421MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2419.960	82.46	114.0 / P
2419.960	56.48	94.0 / A
Harmonics 2421MHz 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 2421MHz 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 2424MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2423.040	74.06	114.0 / P
2423.040	49.17	94.0 / A

Fundamental Frequency 2424MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2423.080	82.57	114.0 / P	
2423.080	57.27	94.0 / A	
Harmonics 2424MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4895.320	59.73	74.0 / P	
4895.320	41.73	54.0 / A	
7341.000	53.20	74.0 / P	
7341.000	40.47	54.0 / A	
Harmonics 2424MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4895.320	61.52	74.0 / P	
4895.320	42.52	54.0 / A	
7341.000	53.31	74.0 / P	
7341.000	41.58	54.0 / A	
Fundamental Frequency 2446MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2445.420	72.73	114.0 / P	
2445.420	48.86	94.0 / A	
Fundamental Frequency 2446MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2445.540	82.68	114.0 / P	
2445.540	57.46	94.0 / A	
Harmonics 2446MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4943.560	59.95	4943.560	
4943.560	42.68	4943.560	
7409.000	53.08	7409.000	
7409.000	39.56	7409.000	
Harmonics 2446MHz		Horizontal Polarization	
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 : 3.7VDC, Powered by external source 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 2421MHz 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 2421MHz 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 2446MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2483.500	33.70	74.0 / P
2483.500	22.71	54.0 / A
Tx frequency 2446MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2483.500	33.89	74.0 / P
2483.500	21.89	54.0 / A

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Tx frequency 2446MHz			Vertical Polarization		
Freq MHz		Level dBuV/m		Limit/ Detector dBuV/m	
135.982		33.45		43.5 / QP	
223.733		34.02		46.0 / QP	
272.278		33.49		46.0 / QP	
Tx frequency 2446MHz			Horizontal Polarization		
Freq MHz		Level dBuV/m		Limit/ Detector dBuV/m	
135.982		34.05		43.5 / QP	
223.733		36.94		46.0 / QP	
248.552		35.90		46.0 / QP	