

Produkte
Products



Prüfbericht - Nr.: 14028302 001 <i>Test Report No.:</i>		Seite 1 von 9 <i>Page 1 of 9</i>	
Auftraggeber: <i>Client:</i>		Double Horse Toys Industry Co., Ltd Donghu Industrial Park Chenghai Shantou City Guangdong China	
Gegenstand der Prüfung: <i>Test Item:</i>		Short Range Device - Radio Control Toys 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>	00111021106-001	Eingangsdatum: <i>Date of Receipt:</i>	21.10.2011
Prüfört: <i>Testing Location:</i>	TÜV Rheinland Hong Kong Ltd. 8/F., Niche Centre, 14 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong Shenzhen Emtek Co., Ltd. Bldg. 69, Majialong Industry Zone, Nanshan District, ShenZhen, Guangdong, 518052 P.R. China		
Prüfgrundlage: <i>Test Specification:</i>	FCC Part 15 Subpart C ANSI C63.4-2003 CISPR 22:1997		
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:	
07.11.2011	Joey Leung Test Engineer		07.11.2011
			Thomas Berns 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: U2N13715931879	
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	2405 - 2480 MHz
Type of modulation	FSK
Number of channels	16
Type of antenna	Integral
Length of antenna	11.5cm
Power level	fix
Connection to public utility power line	No
Nominal voltage	V _{nom} : 9.0 V

Product function and intended use

The equipment under test (EUT) is a radio control toy transmitter operating at 2.4GHz. It transmits on one of the 16 channel only and channel number was decided during frequency binding procedure with associated receiver. The transmitter is powered by batteries only.

FCCID: U2N13715931879

Model	Product description
9074, 9051, 9050, 9053, 9099, 9097, 9059, 9098, 9100, 9101, 9102, 9103, 9104, 9105, 9106, 9107, 9108, 9109, 9110, 9111, 9112, 9113, 9114, 9115, 9116, 9117, 9118, 9119, 9120, 9121, 9122, 9123, 9124, 9125, 9126, 9127, 9128, 9129, 9130, 9131, 9132, 9133, 9134, 9135, 9136, 9137, 9138, 9139, 9140	Radio Control Toy Helicopter

Submitted documents

- Circuit Diagram
- Block Diagram
- Bill of material
- User manual
- Rating Label

List of Test and Measurement Instruments

Shenzhen EMTEK Co., Ltd. (Registration number: 709623)

Equipment used	Manufacturer	Model No.	S/N	Due Date
3m Fully anechoic chamber	TDK	9m*6m*6m	EE001	25-Mar-2012
EMI Test Receiver	Rohde & Schwarz	ESU26	LR114196	29-May-2012
Pre-Amplifier	HP	8447D	2944A07999	29-May-2012
Bilog Antenna	Schwarzbeck	VULB9163	142	29-May-2012
Loop Antenna	ARA	PLA-1030/B	1029	29-May-2012
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	29-May-2012
Horn Antenna	Schwarzbeck	BBHA 9120	D143	29-May-2012
Cable	Schwarzbeck	AK9513	ACRX1	29-May-2012
Cable	Rosenberger	N/A	FP2RX2	29-May-2012
Cable	Schwarzbeck	AK9513	CRPX1	29-May-2012
Cable	Schwarzbeck	AK9513	CRRX2	29-May-2012

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 – Band edge compliance of 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 : 9.0VDC, 6x1.5V 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:	There is no peak found in the restricted bands. For test protocols refer to Appendix 1, page 4-7.

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 for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 9.0VDC, 6x1.5V AA size new battery Temperature : 23°C Humidity : 50%				
Results:	For test protocols refer to Appendix 1, page 1-3.			
Frequency (MHz)	20 dB left (MHz)	Limit (MHz)	20 dB right (MHz)	Limit (MHz)
2405	2404.706	> 2400	2405.060	< 2483.5
2440	2439.724	> 2400	2439.994	< 2483.5
2480	2479.790	> 2400	2480.270	< 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 : 9.0VDC, 6x1.5V 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
2405.000	67.63	94.0 / A
2405.000	81.33	114.0 / P
Fundamental Frequency 2405MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2405.000	67.33	94.0 / A
2405.000	81.34	114.0 / P
Harmonics 2405MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4814.102	41.46	54.0 / A
4814.102	54.22	74.0 / P
Harmonics 2405MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4814.102	49.66	54.0 / A
4814.102	63.03	74.0 / P
7211.538	42.69	54.0 / A
7211.538	55.83	74.0 / P
9608.974	42.86	54.0 / A
9608.974	56.42	74.0 / P
Fundamental Frequency 2440MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2440.000	67.25	94.0 / A
2440.000	81.33	114.0 / P

Fundamental Frequency 2440MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2440.000	65.35	94.0 / A	
2440.000	76.46	114.0 / P	
Harmonics 2440MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4868.590	45.93	54.0 / A	
4868.590	59.88	74.0 / P	
7320.513	42.50	54.0 / A	
7320.513	54.66	74.0 / P	
9772.436	42.89	54.0 / A	
9772.463	57.27	74.0 / P	
Harmonics 2440MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4868.590	46.33	54.0 / A	
4868.590	58.24	74.0 / P	
7320.513	42.50	54.0 / A	
7320.513	54.70	74.0 / P	
9772.436	57.73	54.0 / A	
9772.436	46.19	74.0 / P	
Fundamental Frequency 2480MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2480.000	61.98	94.0 / A	
2480.000	71.87	114.0 / P	
Fundamental Frequency 2480MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2480.000	67.68	94.0 / A	
2480.000	81.37	114.0 / P	
Harmonics 2480MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4950.320	47.05	54.0 / A	
4950.320	56.62	74.0 / P	
7429.487	47.66	54.0 / A	
7429.487	58.26	74.0 / P	
9908.654	46.82	54.0 / A	
9908.654	58.43	74.0 / P	
12415.060	46.46	54.0 / A	
12415.060	56.31	74.0 / P	

Harmonics 2480MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4950.320	43.75	54.0 / A	
4950.320	54.26	74.0 / P	
7429.487	43.26	54.0 / A	
7429.487	52.94	74.0 / P	
9908.654	43.92	54.0 / A	
9908.654	54.01	74.0 / P	

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 : 9.0VDC, 6x1.5V 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 2405MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
255.401	32.45	46.0 / QP
351.779	36.62	46.0 / QP
367.324	37.46	46.0 / QP
415.513	41.27	46.0 / QP
544.535	36.65	46.0 / QP
575.625	37.22	46.0 / QP
20165.060	47.06	54.0 / A
20165.060	48.02	74.0 / P
20838.140	47.74	54.0 / A
20838.140	48.79	74.0 / P
Tx frequency 2405MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
20288.460	47.81	54.0 / A
20288.460	50.08	74.0 / P
21623.390	49.20	54.0 / A
21623.390	49.31	74.0 / P

Tx frequency 2440MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
351.779	39.12	46.0 / QP	
367.324	41.63	46.0 / QP	
415.513	42.73	46.0 / QP	
132.612	41.14	43.5 / QP	
448.157	40.55	46.0 / QP	
575.625	39.31	46.0 / QP	
19200.320	47.55	54.0 / A	
19200.320	49.42	74.0 / P	
23182.690	48.57	54.0 / A	
23182.690	49.55	74.0 / P	
Tx frequency 2440MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
20288.460	48.11	54.0 / A	
20288.460	49.08	74.0 / P	
20995.190	47.36	54.0 / A	
20995.190	48.46	74.0 / P	
Tx frequency 2480MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
384.423	37.14	46.0 / QP	
415.513	38.55	46.0 / QP	
448.157	38.44	46.0 / QP	
480.801	39.37	46.0 / QP	
544.535	39.61	46.0 / QP	
575.625	38.30	46.0 / QP	
24708.330	47.95	54.0 / A	
24708.330	48.51	74.0 / P	
Tx frequency 2480MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
18818.910	46.25	54.0 / A	
18818.910	47.52	74.0 / P	
20288.460	47.21	54.0 / A	
20288.460	47.58	74.0 / P	