

Prüfbericht - Nr.: 14030897 001

Test Report No.:

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Auftraggeber: Shengdeli Plastic Toys Factory
Client: FENG XIANG ROAD, XINNING
CHENGHAI, SHANTOU CITY
GUANGDONG PROVINCE
CHINA

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

Bezeichnung: Please refer to "Models" on
Identification: page 5 **Serien-Nr.:** Engineering sample
Serial No.:

Wareneingangs-Nr.: 00120830039-001 **Eingangsdatum:** 30.08.2012
Receipt No.: Date of Receipt:

Zustand des Prüfgegenstandes bei Anlieferung: Test sample(s) is/are not damaged and
Condition of test item at delivery: suitable for testing.

Prüfort: Shenzhen Emtex Co., Ltd.
Testing Location: Bldg. 69, Majialong Industry Zone, Nanshan District, ShenZhen, Guangdong,
518052 P.R. China

Prüfgrundlage: FCC Part 15 Subpart C
Test Specification: ANSI C63.4-2003
CISPR 22:1997

Prüfergebnis: Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben
Test Results: genannter Prüfgrundlage.
The above mentioned product was tested and **passed**.

Prüflaboratorium: TÜV Rheinland Hong Kong Ltd.
Testing Laboratory: 8 - 10/F., Goldin Financial Global Square, 7 Wang Tai Road, Kowloon Bay,
Kowloon, Hong Kong

geprüft/ tested by:

kontrolliert/ reviewed by:

10.09.2012 Joey Leung
Test Engineer



10.09.2012

Sharon Li
Section Manager



Datum
Date

Name/Stellung
Name/Position

Unterschrift
Signature

Datum
Date

Name/Stellung
Name/Position

Unterschrift
Signature

Sonstiges: FCCID: P9413825832779
Other Aspects

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.
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	2403 - 2475 MHz
Type of modulation	FSK
Number of channels	37
Type of antenna	Integral
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 37 channel only and channel number was decided during frequency binding procedure with associated receiver. The transmitter is powered by batteries only.

FCCID: P9413825832779

Models	Product description
2011A-1, 2011A-2, 2011A-3, 2011A-4, 2011A-5, 2011A-6, 2011A-7, 2011A-8, 2011A-9, 2011A-10, 2011A-11, 2011A-12, 2011A-13, 2011A-14, 2011A-15, 2011A-16, 2011A-17, 2011A-18, 2011A-19, 2011A-20, 2011A-21, 2011A-22, 2011A-23, 2011A-24, 2011A-25, 2011A-26, 2011A-27, 2011A-28, 2011A-29, 2011A-30, 2011B-1, 2011B-2, 2011B-3, 2011B-4, 2011B-5, 2011B-6, 2011B-7, 2011B-8, 2011B-9, 2011B-10, 2011B-11, 2011B-12, 2011B-13, 2011B-14, 2011B-15, 2011B-16, 2011B-17, 2011B-18, 2011B-19, 2011B-20, 2012A-1, 2012A-2, 2012A-3, 2012A-4, 2012A-5, 2012A-6, 2012A-7, 2012A-8, 2012A-9, 2012A-10, 2012A-11, 2012A-12, 2012A-13, 2012A-14, 2012A-15, 2012A-16, 2012A-17, 2012A-18, 2012A-19, 2012A-20, 2012A-21, 2012A-22, 2012A-23, 2012A-24, 2012A-25, 2012A-26, 2012A-27, 2012A-28, 2012A-29, 2012A-30, 2012A-31, 2012A-32, 2012A-33, 2012A-34, 2012A-35, 2012A-36, 2012A-37, 2012A-38, 2012A-39, 2012A-40, 2012A-41, 2012A-42, 2012A-43, 2012A-44, 2012A-45, 2012A-46, 2012A-47, 2012A-48, 2012A-49, 2012A-50, 2012B-1, 2012B-2, 2012B-3, 2012B-4, 2012B-5, 2012B-6, 2012B-7, 2012B-8, 2012B-9, 2012B-10, 2012B-11, 2012B-12, 2012B-13, 2012B-14, 2012B-15, 2012B-16, 2012B-17, 2012B-18, 2012B-19, 2012B-20, 2012B-21, 2012B-22, 2012B-23, 2012B-24, 2012B-25, 2012B-26, 2012B-27, 2012B-28, 2012B-29, 2012B-30, 2012B-31, 2012B-32, 2012B-33, 2012B-34, 2012B-35, 2012B-36, 2012B-37, 2012B-38, 2012B-39, 2012B-40, 2012B-41, 2012B-42, 2012B-43, 2012B-44, 2012B-45, 2012B-46, 2012B-47, 2012B-48, 2012B-49, 2012B-50, 2012C-1, 2012C-2, 2012C-3, 2012C-4, 2012C-5, 2012C-6, 2012C-7, 2012C-8, 2012C-9, 2012C-10, 2012C-11, 2012C-12, 2012C-13, 2012C-14, 2012C-15, 2012C-16, 2012C-17, 2012C-18, 2012C-19, 2012C-20, 2012C-21, 2012C-22,	Radio Control Toy Car

2012C-23, 2012C-24, 2012C-25, 2012C-26, 2012C-27, 2012C-28, 2012C-29,
2012C-30, 2012C-31, 2012C-32, 2012C-33, 2012C-34, 2012C-35, 2012C-36,
2012C-37, 2012C-38, 2012C-39, 2012C-40, 2012C-41, 2012C-42, 2012C-43,
2012C-44, 2012C-45, 2012C-46, 2012C-47, 2012C-48, 2012C-49, 2012C-50,
2012D-1, 2012D-2, 2012D-3, 2012D-4, 2012D-5, 2012D-6, 2012D-7, 2012D-8,
2012D-9, 2012D-10, 2012D-11, 2012D-12, 2012D-13, 2012D-14, 2012D-15,
2012D-16, 2012D-17, 2012D-18, 2012D-19, 2012D-20, 2012D-21, 2012D-22,
2012D-23, 2012D-24, 2012D-25, 2012D-26, 2012D-27, 2012D-28, 2012D-29,
2012D-30, 2012D-31, 2012D-32, 2012D-33, 2012D-34, 2012D-35, 2012D-36,
2012D-37, 2012D-38, 2012D-39, 2012D-40, 2012D-41, 2012D-42, 2012D-43,
2012D-44, 2012D-45, 2012D-46, 2012D-47, 2012D-48, 2012D-49, 2012D-50,
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2013A-9, 2013A-10, 2013A-11, 2013A-12, 2013A-13, 2013A-14, 2013A-15,
2013A-16, 2013A-17, 2013A-18, 2013A-19, 2013A-20, 2013A-21, 2013A-22,
2013A-23, 2013A-24, 2013A-25, 2013A-26, 2013A-27, 2013A-28, 2013A-29,
2013A-30, 2013A-31, 2013A-32, 2013A-33, 2013A-34, 2013A-35, 2013A-36,
2013A-37, 2013A-38, 2013A-39, 2013A-40, 2013A-41, 2013A-42, 2013A-43,
2013A-44, 2013A-45, 2013A-46, 2013A-47, 2013A-48, 2013A-49, 2013A-50,
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2013B-16, 2013B-17, 2013B-18, 2013B-19, 2013B-20, 2013B-21, 2013B-22,
2013B-23, 2013B-24, 2013B-25, 2013B-26, 2013B-27, 2013B-28, 2013B-29,
2013B-30, 2013B-31, 2013B-32, 2013B-33, 2013B-34, 2013B-35, 2013B-36,
2013B-37, 2013B-38, 2013B-39, 2013B-40, 2013B-41, 2013B-42, 2013B-43,
2013B-44, 2013B-45, 2013B-46, 2013B-47, 2013B-48, 2013B-49, 2013B-50,
2014A-1, 2014A-2, 2014A-3, 2014A-4, 2014A-5, 2014A-6, 2014A-7, 2014A-8,
2014A-9, 2014A-10, 2014A-11, 2014A-12, 2014A-13, 2014A-14, 2014A-15,
2014A-16, 2014A-17, 2014A-18, 2014A-19, 2014A-20, 2014A-21, 2014A-22,
2014A-23, 2014A-24, 2014A-25, 2014A-26, 2014A-27, 2014A-28, 2014A-29,
2014A-30, 2014A-31, 2014A-32, 2014A-33, 2014A-34, 2014A-35, 2014A-36,
2014A-37, 2014A-38, 2014A-39, 2014A-40, 2014A-41, 2014A-42, 2014A-43,
2014A-44, 2014A-45, 2014A-46, 2014A-47, 2014A-48, 2014A-49, 2014A-50,
2014B-1, 2014B-2, 2014B-3, 2014B-4, 2014B-5, 2014B-6, 2014B-7, 2014B-8,
2014B-9, 2014B-10, 2014B-11, 2014B-12, 2014B-13, 2014B-14, 2014B-15,
2014B-16, 2014B-17, 2014B-18, 2014B-19, 2014B-20, 2014B-21, 2014B-22,
2014B-23, 2014B-24, 2014B-25, 2014B-26, 2014B-27, 2014B-28, 2014B-29,
2014B-30, 2014B-31, 2014B-32, 2014B-33, 2014B-34, 2014B-35, 2014B-36,
2014B-37, 2014B-38, 2014B-39, 2014B-40, 2014B-41, 2014B-42, 2014B-43,
2014B-44, 2014B-45, 2014B-46, 2014B-47, 2014B-48, 2014B-49, 2014B-50

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	Manufacturer	Type	S/N	Due Date
EMI Test Receiver	Rohde & Schwarz	ESU26	LR114196	May 29, 2013
Pre-Amplifier	HP	8447D	2944A07999	May 29, 2013
Bilog Antenna	Schwarzbeck	VULB9163	142	May 29, 2013
Loop Antenna	ARA	PLA-1030/B	1029	May 29, 2013
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	May 29, 2013
Horn Antenna	Schwarzbeck	BBHA 9120	D143	May 29, 2013
Cable	Schwarzbeck	AK9513	ACRX1	May 29, 2013
Cable	Rosenberger	N/A	FP2RX2	May 29, 2013
Cable	Schwarzbeck	AK9513	CRPX1	May 29, 2013
Cable	Schwarzbeck	AK9513	CRRX2	May 29, 2013

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, 6F22 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 2475MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2484.478	68.98	74.0 / P
2484.478	51.48	54.0 / A
2485.721	59.80	74.0 / P
2485.721	41.78	54.0 / A
Tx frequency 2475MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2484.240	63.47	74.0 / P
2484.240	45.48	54.0 / A
2486.065	47.76	74.0 / P
2486.065	31.38	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 for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz			
Supply voltage	: 9.0VDC, 6F22 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	2402.028	> 2400	2405.544	< 2483.5
2441	2440.472	> 2400	2443.448	< 2483.5
2475	2474.272	> 2400	2477.784	< 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, 6F22 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
2403.023	74.51	114.0 / P
2403.023	56.34	94.0 / A
Fundamental Frequency 2403MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2403.023	76.11	114.0 / P
2403.023	57.54	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
4805.859	57.74	74.0 / P	4805.859	39.63	54.0 / A
4805.859	39.63	54.0 / A	7211.538	59.64	74.0 / P
7211.538	59.64	74.0 / P	7211.538	41.39	54.0 / A
7211.538	41.39	54.0 / A	Harmonics 2403MHz		
Harmonics 2403MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4805.859	62.16	74.0 / P	4805.859	43.83	54.0 / A
4805.859	43.83	54.0 / A	7211.538	58.31	74.0 / P
7211.538	58.31	74.0 / P	7211.538	39.99	54.0 / A
7211.538	39.99	54.0 / A	Fundamental Frequency 2441MHz		
Fundamental Frequency 2441MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2440.910	76.15	114.0 / P	2440.910	57.35	94.0 / A
2440.910	57.35	94.0 / A	Fundamental Frequency 2441MHz		
Fundamental Frequency 2441MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2440.910	76.22	114.0 / P	2440.910	57.65	94.0 / A
2440.910	57.65	94.0 / A	Harmonics 2441MHz		
Harmonics 2441MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4868.590	61.77	74.0 / P	4868.590	43.73	54.0 / A
4868.590	43.73	54.0 / A	7320.513	56.72	74.0 / P
7320.513	56.72	74.0 / P	7320.513	38.80	54.0 / A
7320.513	38.80	54.0 / A	Harmonics 2441MHz		
Harmonics 2441MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4868.590	62.07	74.0 / P	4868.590	44.03	54.0 / A
4868.590	44.03	54.0 / A	7320.513	56.90	74.0 / P
7320.513	56.90	74.0 / P	7320.513	39.00	54.0 / A
7320.513	39.00	54.0 / A	Fundamental Frequency 2475MHz		
Fundamental Frequency 2475MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2475.154	76.25	114.0 / P	2475.154	58.27	94.0 / A
2475.154	58.27	94.0 / A	Fundamental Frequency 2475MHz		
Fundamental Frequency 2475MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2475.154	76.40	114.0 / P	2475.154	76.40	114.0 / P

2475.154	58.57	94.0 / A
Harmonics 2475MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4950.320	66.65	74.0 / P
4950.320	48.65	54.0 / A
7429.487	58.25	74.0 / P
7429.487	40.46	54.0 / A
Harmonics 2475MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4950.320	54.65	74.0 / P
4950.320	36.65	54.0 / A
7429.487	59.13	74.0 / P
7429.487	41.16	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 : 9.0VDC, 6F22 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 2441MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
443.4936	26.89	46.0 / QP
468.3654	29.30	46.0 / QP

491.6827	27.56	46.0 / QP
516.5545	26.50	46.0 / QP
539.8718	28.42	46.0 / QP
552.3076	29.65	46.0 / QP
No peak found	---	74.0 / P
No peak found	---	54.0 / A
Tx frequency 2441MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
252.292	21.73	46.0 / QP
275.609	25.66	46.0 / QP
298.926	25.42	46.0 / QP
323.798	21.69	46.0 / QP
420.176	25.68	46.0 / QP
443.494	24.08	46.0 / QP
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
275.609	29.17	46.0 / QP
816.571	27.05	46.0 / QP
No peak found	---	74.0 / P
No peak found	---	54.0 / A