



Produkte  
Products

<b>Prüfbericht - Nr.:</b> 14033258 001 <i>Test Report No.:</i>		Seite 1 von 9 <i>Page 1 of 9</i>	
<b>Auftraggeber:</b> <i>Client:</i>		GUANGDONG SYMA MODEL AIRCRAFT INDUSTRIAL CO., LTD NO.2 WEST XINGYE ROAD LAIMEI INDUSTRIAL AREA, CHENGHAI SHANTOU, GUANGDONG CHINA	
<b>Gegenstand der Prüfung:</b> <i>Test Item:</i>		Short Range Device - Radio Control Toy Transmitter (2.4GHz)	
<b>Bezeichnung:</b> <i>Identification:</i>	Please refer to "Models" on page 3	<b>Serien-Nr.:</b> <i>Serial No.:</i>	Engineering sample
<b>Wareneingangs-Nr.:</b> <i>Receipt No.:</i>	00130808168-001	<b>Eingangsdatum:</b> <i>Date of Receipt:</i>	08.08.2013
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of test item at delivery:</i>		Test sample(s) is/are not damaged and suitable for testing.	
<b>Prüfört:</b> <i>Testing Location:</i>	Shenzhen Emtek Co., Ltd. Bldg. 69, Majialong Industry Zone, Nanshan District, ShenZhen, Guangdong, 518052 P.R. China		
<b>Prüfgrundlage:</b> <i>Test Specification:</i>	FCC Part 15 Subpart C ANSI C63.4-2003		
<b>Prüfergebnis:</b> <i>Test Results:</i>	Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben genannter Prüfgrundlage. The above mentioned product was tested and <b>passed</b> .		
<b>Prüflaboratorium:</b> <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		
<b>geprüft/ tested by:</b>		<b>kontrolliert/ reviewed by:</b>	
19.08.2013	Joey Leung Test Engineer	19.08.2013	Sharon Li Section Manager
<b>Datum</b> <i>Date</i>	<b>Name/Stellung</b> <i>Name/Position</i>	<b>Unterschrift</b> <i>Signature</i>	<b>Datum</b> <i>Date</i>
			
			<b>Name/Stellung</b> <i>Name/Position</i>
			<b>Unterschrift</b> <i>Signature</i>
<b>Sonstiges:</b> <i>Other Aspects</i>	FCCID: QV7-GC887552-5		
<b>Abkürzungen:</b>	P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet	<b>Abbreviations:</b>	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

	<b>Transmitter</b>
Operating frequency range	2404 - 2479 MHz
Type of modulation	GFSK
Number of channels	16
Type of antenna	Integral
Power level	fix
Connection to public utility power line	No
Nominal voltage	V <sub>nom</sub> : 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: QV7-GC887552-5

<b>Models</b>	<b>Product description</b>
F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12, F13, F14, F15, F16, F17, F18, F19, F20, F21, F22, F23, F24, F25, F26, F27, F28, F29, F30	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	Manufacturer	Type	S/N	Due Date
EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	May 29, 2014
Pre-Amplifier	HP	8447D	2944A07999	May 29, 2014
Bilog Antenna	Schwarzbeck	VULB9163	142	May 11, 2014
Loop Antenna	Schwarzbeck	FMZB 1519	012	May 11, 2014
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	May 11, 2014
Horn Antenna	Schwarzbeck	BBHA 9120	D143	May 11, 2014
Cable	Schwarzbeck	AK9513	ACRX1	May 11, 2014
Cable	Rosenberger	N/A	FP2RX2	May 29, 2014
Cable	Schwarzbeck	AK9513	CRPX1	May 29, 2014
Cable	Schwarzbeck	AK9513	CRRX2	May 29, 2014
Pre-Amplifier	A.H.	PAM-0126	1415261	May 29, 2014
Spectrum Analyzer	Rohde & Schwarz	FSP30	100007	Sept 16, 2013



<b>Subclause 15.215 (c) – 20 dB Bandwidth</b>		<b>Pass</b>		
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%			
<b>Results:</b>	For test protocols refer to Appendix 1, page 2-3.			
Frequency (MHz)	20 dB left (MHz)	Limit (MHz)	20 dB right (MHz)	Limit (MHz)
2404	2403.650	> 2400	2404.010	< 2483.5
2445	2443.688	> 2400	2443.980	< 2483.5
2479	2479.190	> 2400	2479.490	< 2483.5

<b>Subclause 15.249 (a) – Radiated Emission (Fundamental and Harmonics)</b>		<b>Pass</b>		
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.			
<b>Results:</b>	PASS			
Fundamental Frequency 2404MHz		Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m		
2403.846	90.14	114.0 / P		
2403.846	87.73	94.0 / A		
Fundamental Frequency 2404MHz		Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m		
2403.782	80.20	114.0 / P		
2403.782	79.79	94.0 / A		

Harmonics 2404MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4808.102	57.05	74.0 / P	
4808.102	43.11	54.0 / A	
7211.538	61.73	74.0 / P	
7211.538	48.43	54.0 / A	
Harmonics 2404MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4808.102	52.82	74.0 / P	
4808.102	40.30	54.0 / A	
7211.538	61.25	74.0 / P	
7211.538	47.42	54.0 / A	
Fundamental Frequency 2445MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2444.846	88.46	114.0 / P	
2444.846	87.62	94.0 / A	
Fundamental Frequency 2445MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2444.846	89.93	114.0 / P	
2444.846	89.61	94.0 / A	
Harmonics 2445MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4886.590	54.67	74.0 / P	
4886.590	40.43	54.0 / A	
7320.513	61.99	74.0 / P	
7320.513	45.94	54.0 / A	
Harmonics 2445MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
4886.590	55.30	74.0 / P	
4886.590	40.73	54.0 / A	
7320.513	61.50	74.0 / P	
7320.513	48.05	54.0 / A	
Fundamental Frequency 2479MHz		Vertical Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2479.359	89.00	114.0 / P	
2479.359	88.23	94.0 / A	
Fundamental Frequency 2479MHz		Horizontal Polarization	
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	
2479.359	89.63	114.0 / P	

2479.359	88.93	94.0 / A
Harmonics 2479MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4950.320	53.51	74.0 / P
4950.321	40.25	54.0 / A
7429.487	60.40	74.0 / P
7429.487	46.05	54.0 / A
Harmonics 2479MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4950.320	54.59	74.0 / P
4950.320	40.15	54.0 / A
7429.487	62.06	74.0 / P
7429.487	48.16	54.0 / A

<b>Subclause 15.249 (d) – Spurious Radiated Emissions</b>		<b>Pass</b>
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 2404MHz 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 2404MHz 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 2445MHz Vertical Polarization		



<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
No peak found	---	74.0 / P
No peak found	---	54.0 / A
Tx frequency 2445MHz Horizontal Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
No peak found	---	74.0 / P
No peak found	---	54.0 / A
Tx frequency 2479MHz Vertical Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
No peak found	---	74.0 / P
No peak found	---	54.0 / A
Tx frequency 2479MHz Horizontal Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
No peak found	---	74.0 / P
No peak found	---	54.0 / A