


Produkte  
Products

<b>Prüfbericht - Nr.:</b> 14029142 001 <i>Test Report No.:</i>		Seite 1 von 8 Page 1 of 8	
<b>Auftraggeber:</b> <i>Client:</i>	Stadlbauer Marketing + Vertrieb GmbH Rennbahn Allee1 5412 Puch, Salzburg Austria		
<b>Gegenstand der Prüfung:</b> <i>Test Item:</i>	Short Range Device - Radio Control Toys Transmitter (2.4GHz)		
<b>Bezeichnung:</b> <i>Identification:</i>	900004	<b>Serien-Nr.:</b> <i>Serial No.:</i>	Engineering sample
<b>Wareneingangs-Nr.:</b> <i>Receipt No.:</i>	00120214115-002	<b>Eingangsdatum:</b> <i>Date of Receipt:</i>	14.02.2012
<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>	TÜV Rheinland Hong Kong Ltd. 8/F., First Group Centre, 14 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong Hong Kong Productivity Council HKPC Building, 78 Tat Chee Avenue, Kowloon, Hong Kong		
<b>Prüfgrundlage:</b> <i>Test Specification:</i>	FCC Part 15 Subpart C ANSI C63.4-2003 CISPR 22:1997		
<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>		
28.06.2012	Joey Leung Test Engineer		28.06.2012
			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> Other Aspects	FCCID: YFA900004-1		
<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>			

## Table of Content

	<b>Page</b>
<b>Cover Page</b> .....	<b>1</b>
<b>Table of Content</b> .....	<b>2</b>
<b>Product information</b> .....	<b>3</b>
<b>Manufacturers declarations</b> .....	<b>3</b>
<b>Product function and intended use</b> .....	<b>3</b>
<b>Submitted documents</b> .....	<b>3</b>
<b>List of Test and Measurement Instruments</b> .....	<b>4</b>
<b>Results FCC Part 15 – Subpart C</b> .....	<b>5</b>
Subclause 15.207 – Disturbance Voltage on AC Mains..... N/A.....	5
Subclause 15.205 – Band edge compliance of radiated emissions..... Pass.....	5
Subclause 15.215 (c) – 20 dB Bandwidth..... Pass.....	5
Subclause 15.249 (a) – Radiated Emission (Fundamental and Harmonics)..... Pass.....	6
Subclause 15.249 (d) – Spurious Radiated Emissions..... Pass.....	8
<b>Appendix 1 – Test Results</b> .....	<b>7 pages</b>
<b>Appendix 2 – Test Setup Photos</b> .....	<b>2 pages</b>
<b>Appendix 3 – Photo documentation</b> .....	<b>6 pages</b>
<b>Appendix 4 – Product documentation</b> .....	<b>15 pages</b>

## Product information

### Manufacturers declarations

	<b>Transceiver</b>
Operating frequency range	2412 - 2477 MHz
Type of modulation	FSK
Number of channels	16
Type of antenna	Integral
Power level	fix
Connection to public utility power line	No
Nominal voltage	$V_{\text{nor}}$ : 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.

### Submitted documents

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

## List of Test and Measurement Instruments

### Hong Kong Productivity Council (Registration number: 90656)

Equipment used	Manufacturer	Model No.	S/N	Due Date
Semi-anechoic Chamber	Frankonia	Nil	Nil	25-May-13
Test Receiver	R & S	ESU40	100190	26-May-13
Bi-conical Antenna	R & S	HK116	100242	05-May-13
Log Periodic Antenna	R & S	HL223	841516/020	06-May-13
Coaxial cable 50ohm	Rosenberger	RTK081-05S-05S-10m	LA2-001-10M / 001	15-Nov-13
Microwave amplifier 0.5-26.5GHz, 25dB gain	HP	83017A	3950M00241	03-Oct-13
High Pass Filter (cutoff freq. =1000MHz)	Trilithic	23042	9829213	28-Oct-13
Horn Antenna	EMCO	3115	9002-3351	11-May-13
Active Loop Antenna	EMCO	6502	9107-2651	19-Apr-13
FSP 30 Spectrum Analyser	R & S	FSP 30	100286	17-Sep-12

## Results FCC Part 15 – Subpart C

<b>Subclause 15.207 – Disturbance Voltage on AC Mains</b>	<b>N/A</b>
There is no AC power input or output ports on the EUT.	

<b>Subclause 15.205 – Band edge compliance of 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 from batteries 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).
<b>Results:</b>	There is no peak found in the restricted bands. For test protocols refer to Appendix 1, page 4-7.

<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 for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 6.0VDC from batteries Temperature : 23°C Humidity : 50%				
<b>Results:</b>	For test protocols refer to Appendix 1, page 1-3.			
<b>Frequency (MHz)</b>	<b>20 dB left (MHz)</b>	<b>Limit (MHz)</b>	<b>20 dB right (MHz)</b>	<b>Limit (MHz)</b>
2412	2411.51	> 2400	2412.72	< 2483.5
2452	2451.50	> 2400	2452.75	< 2483.5
2477	2476.47	> 2400	2477.72	< 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 from batteries 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 2412MHz		Vertical Polarization
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
2412.09	95.7	114.0 / P
2412.09	54.6	94.0 / A
Fundamental Frequency 2412MHz		Horizontal Polarization
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
2412.09	91.4	114.0 / P
2412.09	54.3	94.0 / A
Harmonics 2412MHz		Vertical Polarization
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
4824.35	58.7	74.0 / P
4824.35	33.9	54.0 / A
7236.53	63.3	74.0 / P
7236.53	36.8	54.0 / A
Harmonics 2412MHz		Horizontal Polarization
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
4824.26	57.8	74.0 / P
4824.26	33.9	54.0 / A
7236.39	62.5	74.0 / P
7236.39	36.7	54.0 / A
Fundamental Frequency 2452MHz		Vertical Polarization
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
2452.08	94.2	114.0 / P
2452.08	54.5	94.0 / A
Fundamental Frequency 2452MHz		Horizontal Polarization
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>

2452.08	92.3	114.0 / P
2452.08	54.4	94.0 / A
Harmonics 2452MHz Vertical Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
4904.29	62.8	74.0 / P
4904.29	34.4	54.0 / A
7356.44	63.5	74.0 / P
7356.44	37.0	54.0 / A
Harmonics 2452MHz Horizontal Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
4904.16	60.5	74.0 / P
4904.16	34.1	54.0 / A
7356.25	61.1	74.0 / P
7356.25	36.7	54.0 / A
Fundamental Frequency 2477MHz Vertical Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
2477.15	94.9	114.0 / P
2477.15	54.6	94.0 / A
Fundamental Frequency 2477MHz Horizontal Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
2477.15	90.7	114.0 / P
2477.15	54.4	94.0 / A
Harmonics 2477MHz Vertical Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
4954.16	59.2	74.0 / P
4954.16	34.2	54.0 / A
7431.25	58.4	74.0 / P
7431.25	36.5	54.0 / A
Harmonics 2477MHz Horizontal Polarization		
<b>Freq MHz</b>	<b>Level dBuV/m</b>	<b>Limit/ Detector dBuV/m</b>
4954.4	60.5	74.0 / P
4954.4	34.1	54.0 / A
7431.49	56.5	74.0 / P
7431.49	36.2	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 from batteries 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.		
<b>Results:</b> All three transmit frequency modes comply with the field strength within the restricted bands. There is no spurious found below 30MHz.		
Tx frequency 2412MHz		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 2412MHz		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 2452MHz		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 2452MHz		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 2477MHz		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 2477MHz		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