



Prüfbericht - Nr.: 14025621 001 <i>Test Report No.:</i>		Seite 1 von 8 <i>Page 1 of 8</i>	
Auftraggeber: <i>Client:</i>		Stadlbauer Marketing + Vertrieb GmbH Rennbahn Allee1 5412 Puch, Salzburg Austria	
Gegenstand der Prüfung: <i>Test Item:</i>		Short Range Device - Radio Control Toys Transmitter (2.4GHz)	
Bezeichnung: <i>Identification:</i>	900004	Serien-Nr.: <i>Serial No.:</i>	Engineering sample
Wareneingangs-Nr.: <i>Receipt No.:</i>	00101206157-001	Eingangsdatum: <i>Date of Receipt:</i>	06.12.2010
Prüfört: <i>Testing Location:</i>	TÜV Rheinland Hong Kong Ltd. 8/F., Niche Centre, 14 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong Hong Kong Productivity Council HKPC Building, 78 Tat Chee Avenue, Kowloon, Hong Kong		
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. 9-10/F., Emperor International Square , 7 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong		
geprüft/ tested by:		kontrolliert/ reviewed by:	
29.03.2011	Mika Chan Project Engineer	29.03.2011	Sharon Li Assistant Manager
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>
			
		Unterschrift <i>Signature</i>	
Sonstiges: Other Aspects		FCCID: YFA900004	
Abkürzungen:	<i>P(ass)</i> = entspricht Prüfgrundlage <i>F(ail)</i> = entspricht nicht Prüfgrundlage <i>N/A</i> = nicht anwendbar <i>N/T</i> = nicht getestet	Abbreviations:	<i>P(ass)</i> = passed <i>F(ail)</i> = failed <i>N/A</i> = not applicable <i>N/T</i> = 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

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

Product information

Manufacturers declarations

	Transmitter
Operating frequency range	2410 - 2475 MHz
Type of modulation	FSK
Number of channels	66
Type of antenna	Integral
Power level	fix
Connection to public utility power line	No
Nominal voltage	V_{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 transmits on one of the 66 channel only and channel number was decided during frequency binding procedure with associated receiver. The transmitter is powered by batteries only.

Submitted documents

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

List of Test and Measurement Instruments

	Equipment used	Manufacturer	Model No.	S/N	Due Date
<input checked="" type="checkbox"/>	Semi-anechoic Chamber	Frankonia	Nil	Nil	27-Apr-11
<input checked="" type="checkbox"/>	Test Receiver	R & S	ESU26	100050	25-May-11
<input checked="" type="checkbox"/>	Bi-conical Antenna	R & S	HK116	100241	13-Apr-12
<input checked="" type="checkbox"/>	Log Periodic Antenna	R & S	HL223	841516/020	13-Apr-12
<input checked="" type="checkbox"/>	Coaxial cable 50ohm	Rosenberger	RTK081-05S-05S-10m	LA2-001-10M / 001	08-Dec-11
<input checked="" type="checkbox"/>	Microwave amplifier 0.5-26.5GHz, 25dB gain	HP	83017A	3950M00241	03-Oct-11
<input checked="" type="checkbox"/>	High Pass Filter (cutoff freq. =1000MHz)	Trilithic	23042	9829213	30-Oct-11
<input checked="" type="checkbox"/>	Horn Antenna	EMCO	3115	9002-3351	16-Apr-12
<input checked="" type="checkbox"/>	Active Loop Antenna	EMCO	6502	9107-2651	06-Feb-11
<input checked="" type="checkbox"/>	FSP 30 Spectrum Analyser	R & S	FSP 30	100007	16-Sep-12
<input checked="" type="checkbox"/>	EMI Test Receiver	R & S	ESU26	100050	25-May-11
<input checked="" type="checkbox"/>	LISN	R&S	ESH3-Z5	849876/026	21-Dec-11
<input checked="" type="checkbox"/>	Pulse Limiter	R&S	ESH3-Z2	Nil	04-Jun-11

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 : internal batteries has been activated 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 : internal batteries has been activated 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)
2410	2409.658	> 2400	2410.516	< 2483.5
2445	2444.604	> 2400	2445.288	< 2483.5
2475	2474.640	> 2400	2475.210	< 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 : internal batteries has been activated 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 2410MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2410.769	97.91	114.0 / P
2410.705	67.27	94.0 / A
Fundamental Frequency 2410MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2410.705	92.87	114.0 / P
2410.689	65.50	94.0 / A
Harmonics 2410MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
no peak found	---	74.0 / P
no peak found	---	54.0 / A
Harmonics 2410MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4821.009	49.04	74.0 / P
4821.426	35.06	54.0 / A
Fundamental Frequency 2445MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2444.743	96.13	114.0 / P
2444.796	66.65	94.0 / A
Fundamental Frequency 2445MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2444.807	92.28	114.0 / P
2444.871	65.51	94.0 / A
Harmonics 2445MHz		Vertical Polarization

Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
no peak found	---	74.0 / P
no peak found	---	54.0 / A
Harmonics 2445MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4890.032	49.80	74.0 / P
4889.759	35.28	54.0 / A
Fundamental Frequency 2475MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2474.759	95.93	114.0 / P
2474.903	66.77	94.0 / A
Fundamental Frequency 2475MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2474.775	92.67	114.0 / P
2474.823	65.59	94.0 / A
Harmonics 2475MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4949.551	50.06	74.0 / P
4949.711	35.40	54.0 / A
Harmonics 2475MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4949.407	51.94	74.0 / P
4949.695	36.73	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 : internal batteries has been activated 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 2410MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
no peak found	---	74.0 / P	no peak found	---	74.0 / P
no peak found	---	54.0 / A	no peak found	---	54.0 / A
Tx frequency 2410MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
no peak found	---	74.0 / P	no peak found	---	74.0 / P
no peak found	---	54.0 / A	no peak found	---	54.0 / A
Tx frequency 2445MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
no peak found	---	74.0 / P	no peak found	---	74.0 / P
no peak found	---	54.0 / A	no peak found	---	54.0 / A
Tx frequency 2445MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
no peak found	---	74.0 / P	no peak found	---	74.0 / P
no peak found	---	54.0 / A	no peak found	---	54.0 / A
Tx frequency 2475MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
no peak found	---	74.0 / P	no peak found	---	74.0 / P
no peak found	---	54.0 / A	no peak found	---	54.0 / A
Tx frequency 2475MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
no peak found	---	74.0 / P	no peak found	---	74.0 / P
no peak found	---	54.0 / A	no peak found	---	54.0 / A