TÜVRheinland®

Produkte
Products

Prüfbericht - Nr.: *Test Report No.:*	**14017608 001**		**Seite 1 von 11** *Page 1 of 11*
Auftraggeber: *Client:*	**Zaptoys International Ltd.** **Unit 1105, 11/F, Tower II** **South Seas Centre** **T.S.T. East, Kowloon** **Hong Kong**		
Gegenstand der Prüfung: *Test Item:*	**Low Power Transmitter (49.86MHz)**		
Bezeichnung: Identification	**9304A, 9303A, 9474A, 9575A, 9525A, 9500A, 9535A and 9494A**	**Serien-Nr.:** Serial No.	**Engineering sample**
Wareneingangs-Nr.: Receipt No.	**071016011**	**Eingangsdatum:** Date of receipt	**16.10.2007**
Prüfort: *Testing Location:*	**TÜV Rheinland Hong Kong Ltd.** 9th Floor, Oriental News Building, 7 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong **Hong Kong Productivity Council** HKPC Building, 78 Tat Chee Avenue, Kowloon, Hong Kong		
Prüfgrundlage: *Test Specification:*	**FCC Part 15, Subpart C**		
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The test item passed the test specification(s).*		
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland Hong Kong Ltd.** 9th Floor, Oriental News Building, 7 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong		

geprüft / *tested by:*

30.11.2007	Derek Leung Project Manager	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

kontrolliert / *reviewed by:*

30.11.2007	Thomas Berns Manager	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges / *Other Aspects:* **FCCID: NEX-9304A-49TX**

Abkürzungen:				*Abbreviations:*			
	P(ass)	=	*entspricht Prüfgrundlage*		*P(ass)*	=	*passed*
	F(ail)	=	*entspricht nicht Prüfgrundlage*		*F(ail)*	=	*failed*
	N/A	=	*nicht anwendbar*		*N/A*	=	*not applicable*
	N/T	=	*nicht getestet*		*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 duplicate in extracts. This test report does not entitle to carry any safety mark on this or similar products.

Test Summary

Radiated Emission of Carrier Frequency

Result: Pass

Spurious Radiated Emissions

Result: Pass

Bandwidth Measurement

Result: Pass

Content

List of Test and Measurement Instruments

Kind of Equipment	Manufacturer	Type	S/N
Biconical Antenna	Rohde & Schwarz	HK116	841489/015
Log.-Periodic Antenna	Rohde & Schwarz	HL223	841516/017
Spectrum Analyzer	Rohde & Schwarz	FSP30	1093.4495K30
Double Ridge Horn Antenna	EMCO	3115	9002-3347
Test Receiver	Rohde & Schwarz	ESU26	100050

General Product Information

Product Function and Intended Use

The equipment under test (EUT) is a transmitter for a RC toy car operating at 49.86MHz. The EUT has two control rods for commanding the forward, backward, left and right movement of the associated receiver.

FCCID: NEX-9304A - 49TX

Model	Product description
9304A	**Radio Control Toy Transmitter**

Client declared that 9304A, 9303A, 9474A, 9575A, 9525A, 9500A, 9535A and 9494A are identical and only difference is their outlook. 9304A has been chosen as the representative model for the testing in this report.

Independent Operation Modes

The basic operation modes are:

- Remote Control: On and Off

For further information refer to User Manual

Submitted Documents

The submitted documents are listed as follow:

- Circuit diagram
- Block diagram
- User manual
- Label artwork

Related Submittal(s) Grants

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Test Set-up and Operation Mode

Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level.

Test Operation and Test Software

Test operation should refer to test methodology.

- There was no special software to exercise the device.

Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

- none

Countermeasures to achieve EMC Compliance

- none

Test Methodology

Radiated Emission

The radiated emission measurements were performed according to the procedures in ANSI C63.4-2003.

The equipment under test (EUT) was placed at the middle of the 80 cm height turntable, and the turntable is 3 meters far from the measuring antenna. During the testing, the EUT was operated standalone and arranged for maximum emissions. The EUT was tested in three orthogonal planes.

The investigation is performed with the EUT rotated 360° , the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained.

Test Results

Radiated Emission of Carrier Frequency — Subclause 15.235(a)

RESULT: **Pass**

Test Specification	:	FCC Part 15 Subclause 15.235(a)
Test Method	:	ANSI 63.4-2003
Measurement Location	:	Semi Anechoic Chamber
Measurement Distance	:	3m
Detector Function	:	Peak and Average
Measurement BW	:	100 kHz
Supply Voltage	:	DC 9V

Polarization: Vertical

Detector Function	Frequency (MHz)	Electric Field Strength (dBuV/m)	Limit at 3m (dBuV/m)	Delta to Limit (dB)
Peak	49.8589	75.7	100.0	-24.3
Average	49.8589	70.3	80.0	-9.7

Polarization: Horizontal

Detector Function	Frequency (MHz)	Electric Field Strength (dBuV/m)	Limit at 3m (dBuV/m)	Delta to Limit (dB)
Peak	49.8589	67.5	100.0	-32.5
Average	49.8589	61.9	80.0	-18.1

Limit **Subclause 15.235(a)**

Frequency within the band	Peak Emission		Average Emission	
	(microvolt/meter)	dBµV/m	(microvolt/meter)	dBµV/m
49.82-49.90 MHz	100,000	100.0	10,000	80.0

According to section 15.35(b), when average radiated emission measurements are specified in this part, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. Unless otherwise specified, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

Spurious Radiated Emissions — Subclause 15.235(b)

RESULT: **Pass**

Test Specification	:	FCC Part 15 Subclause 15.209
Test Method	:	ANSI 63.4-2003
Measurement Location	:	Semi Anechoic Chamber
Measurement Distance	:	3m
Detector Function	:	Quasi Peak
Measurement BW	:	100 kHz
Supply Voltage	:	DC 9V
Measuring Frequency Range	:	30-1000MHz

Operation mode:

Frequency (MHz)	Polarization	Electric Field Strength (dBuV/m)	Limit at 3m (dBuV/m)	Delta to Limit (dB)
99.718	V	21.4	43.52	-22.12
99.718	H	23.8	43.52	-19.72
199.435	H	22.2	43.52	-21.32

Remark: (1) None of the emissions fall into the restricted band as defined in Section 15.205(a). They comply with the radiated emission limits specified in Section 15.209.
(2) There is no spurious emission found between lowest oscillating frequency in the EUT to 30 MHz.

Limit **Subclause 15.209**

Radiated emissions, which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209.

Limit for Radiated Emission under Section 15.209:

Frequency (MHz)	Field strength (microvolt/meter)	Field strength (dBμV/m)	Measurement distance (meters)
30-88	100	20*log(100) = 40.00	3
88-216	150	20*log(150) = 43.52	3
216-960	200	20*log(200) = 46.02	3
960-2500	500	20*log(500) = 53.98	3

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector and above 1000 MHz are based on the measurements employing an average detector.

Bandwidth Measurement — Subclause 15.235(b)

RESULT: **Pass**

Test Specification	:	FCC Part 15 section 235(b)
Port of Testing	:	Antenna port
Detector Function	:	Peak
Supply Voltage	:	DC 9V

The field strength of any emissions appearing between the band edges and up to 10kHz above and below the band edges is at least 26dB below the carrier. At the lower edge 49.81MHz and upper edge 49.91 MHz are 26.63dB and 27.05dB below the carrier respectively.

For test results refer to Appendix 1.

Limit **Subclause 15.235(b)**

The field strength of any emissions appearing between the band edges and up to 10kHz above and below the band edges shall be attenuated at least 26dB below the level of the unmodulated carrier or to the general limits in Section 15.209, whichever permits the higher emission levels.