

Prüfbericht - Nr.: 14019289 001 <i>Test Report No.:</i>		Seite 1 von 12 Page 1 of 12	
Auftraggeber: <i>Client:</i>		Zaptoys International Ltd. Unit 1105, 11/F, Tower II South Seas Centre T.S.T. East, Kowloon Hong Kong	
Gegenstand der Prüfung: <i>Test Item:</i>		Low Power Transmitter (49.86MHz)	
Bezeichnung: <i>Identification:</i>	9605	Serien-Nr.: <i>Serial No.:</i>	Engineering sample
Wareneingangs-Nr.: <i>Receipt No.:</i>	080714008-1	Eingangsdatum: <i>Date of Receipt:</i>	14.07.2008
Prüfört: <i>Testing Location:</i>		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: <i>Test Specification:</i>		FCC Part 15, Subpart C	
Prüfergebnis: <i>Test Result:</i>		Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). <i>The test item passed the test specification(s).</i>	
Prüflaboratorium: <i>Testing Laboratory:</i>		TÜV Rheinland Hong Kong Ltd. 9th Floor, Oriental News Building, 7 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong	
geprüft / tested by:		kontrolliert / reviewed by:	
29.07.2008	Hugo Wan Project Manager		29.07.2008
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	29.07.2008
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Thomas Berns Manager
Sonstiges / Other Aspects:			
FCCID: NEX-9605-49TX			
Abkürzungen:		Abbreviations:	
P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet		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>			

Test Summary

Radiated Emission of Carrier Frequency

Result: Pass

Spurious Radiated Emissions

Result: Pass

Bandwidth Measurement

Result: Pass

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List of Test and Measurement Instruments

Hong Kong Productivity Council (Registration number: 90656)

Kind of Equipment	Manufacturer	Type	S/N	Cal Due Date
Semi-anechoic Chamber	Frankonia	Nil	Nil	28 Mar 09
Test Receiver	Rohde & Schwarz	ESU26	100050	06 Aug 08
Biconical Antenna	Rohde & Schwarz	HK116	841489/016	08 Mar 09
Log.-Periodic Antenna	Rohde & Schwarz	HL223	841516/020	28 Feb 09
Horn Antenna	EMCO	3115	9002-3351	27 Feb 10
Coaxial Cable 50ohm	Rosenberger	RTK081-05S-05S-10m	LA2-001-10M / 002	15 May 09

General Product Information

Product Function and Intended Use

The equipment under test (EUT) is a transmitter for a RC toy car operating at 49.86 MHz. The EUT has one control rod for commanding the forward, backward movement of the associated receiver. While the left and right signal commands are using a mechanical motion sensor to control.

FCCID: NEX-9605-49TX

Model	Product description
9605	Radio-Controlled Toy Transmitter

Ratings and System Details

		Transmitter
Frequency range	:	49.86MHz
Number of channels	:	1
Type of antenna	:	External telescopic antenna
Power supply	:	Battery operated 9V
Ports	:	none

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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

This is a single application for certification of the transmitter.

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. The test modes were adapted accordingly in reference to the instructions for use.

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.

All radiated tests were performed at an antenna to EUT with 3 meters distance, unless stated otherwise in particular parts of this test report.

Field Strength Calculation

The field strength at 3 m was established by adding the meter reading of the spectrum analyzer to the factors associated with antenna correction factor, cable loss, preamplifiers and filter attenuation.

The equation is expressed as follow:

$$FS = R + AF + CF + FA - PA$$

Where FS = Field Strength in dBuV/m at 3 meters.

R = Reading of Spectrum Analyzer in dBuV.

AF = Antenna Factor in dB.

CF = Cable Attenuation Factor in dB.

FA = Filter Attenuation Factor in dB.

PA = Preamplifier Factor in dB.

FA and PA are only be used for the measuring frequency above 1 GHz.

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 : 120 kHz
 Supply Voltage : DC 9V

Polarization: Vertical

Detector function	Frequency (MHz)	Measured Field strength at 3m (dBμV/m)	Delta to Limit (dB)
Peak	49.860	65.9	-34.1
Average	49.860	61.5	-18.5

Polarization: Horizontal

Detector function	Frequency (MHz)	Measured Field strength at 3m (dBμV/m)	Delta to Limit (dB)
Peak	49.860	46.6	-53.4
Average	49.860	42.0	-38.0

Limit
Subclause 15.235(a)

Frequency within the band	Peak Emission		Average Emission	
	(μV/m)	dBμV/m	(μV/m)	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 : 120 kHz
 Supply Voltage : DC 9V
 Measuring Frequency Range : 30-1000MHz

Polarization: Vertical

Frequency (MHz)	Field strength at 3m (dBuV/m)	Limit at 3m (dBuV/m)	Delta to Limit (dB)
99.721	12.6	43.5	-30.9
*149.581	14.9	43.5	-28.6
199.442	26.6	43.5	-16.9
*249.302	21.5	46.0	-24.5
299.162	15.3	46.0	-30.7
349.023	14.6	46.0	-31.4
398.887	15.6	46.0	-30.4
448.744	16.7	46.0	-29.3
498.604	17.2	46.0	-28.8

Polarization: Horizontal

Frequency (MHz)	Field strength at 3m (dBuV/m)	Limit at 3m (dBuV/m)	Delta to Limit (dB)
99.721	8.5	43.5	-35.0
*149.581	11.7	43.5	-31.8
199.442	19.4	43.5	-24.1
*249.302	12.7	46.0	-33.3
299.162	12.3	46.0	-33.7
349.023	13.8	46.0	-32.2
398.883	15.7	46.0	-30.3
448.744	16.8	46.0	-29.2
498.604	17.1	46.0	-28.9

Remark: (1) '*' indicates the frequency 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 other spurious emission found from 30MHz to 1000MHz.

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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 ($\mu\text{V/m}$)	Field strength (dB $\mu\text{V/m}$)	Measurement distance (m)
30-88	100	$20 \cdot \log(100) = 40.0$	3
88-216	150	$20 \cdot \log(150) = 43.5$	3
216-960	200	$20 \cdot \log(200) = 46.0$	3
960-2500	500	$20 \cdot \log(500) = 54.0$	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 27.55 dB and 27.96 dB 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.