

Prüfbericht - Nr.: 14013078 001		Seite 1 von 12	
Test Report No.		Page 1 of 12	
Auftraggeber: Applicant		Lucky Plastic Factory Ltd. Suite 502, Chinachem Golden Plaza 77 Mody Road T.S.T. East, Kowloon Hong Kong	
Gegenstand der Prüfung: Test item		Low Power Transmitter (27.145MHz)	
Bezeichnung: Identification	9498	Serien-Nr.: Serial No.	Engineering sample
Wareneingangs-Nr.: Receipt No.		060512082	Eingangsdatum: 12.05.2006 Date of receipt
Prüfört: Testing location		TÜV Rheinland Hong Kong Ltd. Unit 8, 25 th Floor, Skyline Tower, 39 Wang Kwong 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		Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben genannter Prüfgrundlage. The above mentioned product was tested and passed .	
geprüft / tested by:		kontrolliert / reviewed by:	
13.06.2006	Hugo Wan Project Engineer	14.06.2006	Johnny Lau Project Manager
Datum Date	Name Name	Unterschrift Signature	Datum Date
			Name Name
			Unterschrift Signature
Sonstiges: FCCID: NEX-9498-27TX Other Aspects			
Abkürzungen:		Abbreviations:	
OK, Pass, P	= entspricht Prüfgrundlage	OK, Pass, P	= passed
Fail, F	= entspricht nicht Prüfgrundlage	Fail, F	= failed
N/A	= nicht anwendbar	N/A	= not applicable
NT	= nicht getestet	NT	= 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

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Appendix 4: EUT Internal Photo	
Appendix 5: FCCID Label, Block Diagram, Schematics and User manual.	

List of Test and Measurement Instruments

Kind of Equipment	Manufacturer	Type	S/N
Test Receiver	Rohde & Schwarz	ESVS30	842807/009
Active Loop Antenna	EMCO	6502	9107-2651
Biconical Antenna	Rohde & Schwarz	HK116	841489/015
Log.-Periodic Antenna	Rohde & Schwarz	HL223	841516/017
Double Ridge Horn Antenna	EMCO	3115	9002-3347
Spectrum Analyzer	Rohde & Schwarz	FSP30	1093.4495K30

General Product Information

Product Function and Intended Use

The equipment under test (EUT) is a transmitter for a RC toy car operating at 27.145 MHz. The EUT has two control buttons for commanding the forward and backward movement of the associated receiver.

FCCID: NEX-9498-27TX

Model	Product description
9498	Radio Control Toy Transmitter

Ratings and System Details

	Transmitter
Frequency range	: 27.145MHz
Number of channels	: 1
Type of antenna	: External Fixed Antenna
Power supply	: Battery operated 9V
Ports	: none
Protection Class	: III

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
- Label artwork
- User manual

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

The test sample, which has been tested, contained the noise suppression parts as described in the Circuit Diagram or the Technical Construction File. No additional measures were employed to achieve compliance.

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 section 7.1.1 and 7.1.2 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 15.227(a)

RESULT:
Pass

Test Specification : FCC Part 15 Subclause 15.227(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
 Tested channel : Nil

Polarization: Vertical

Detector function	Frequency (MHz)	Measured Field strength at 3m (dB μ V/m)	Delta to Limit (dB)
Peak	27.145	48.1	-51.9
Average	27.145	42.9	-37.1

Polarization: Horizontal

Detector function	Frequency (MHz)	Measured Field strength at 3m (dB μ V/m)	Delta to Limit (dB)
Peak	27.145	29.1	-70.9
Average	27.145	23.5	-56.5

Limit
Subclause 15.227(a)

Frequency within the band	Peak Emission		Average Emission	
	(μ V/m)	(dB μ V/m)	(μ V/m)	(dB μ V/m)
26.96-27.28 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 15.227(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
 Tested channel : Nil
 Measuring Frequency Range : 25-1000MHz

Polarization: Vertical

Frequency (MHz)	Field strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Delta to Limit (dB)
54.290	29.30	40.00	-10.70
81.435	12.80	40.00	-27.20
*108.580	11.90	43.52	-31.62
*135.725	10.30	43.52	-33.22
*162.870	10.80	43.52	-32.72
190.015	12.10	43.52	-31.42
217.160	9.10	46.02	-36.92
*244.305	10.40	46.02	-35.62
*271.450	12.70	46.02	-33.32
298.595	14.20	46.02	-31.82

Polarization: Horizontal

Frequency (MHz)	Field strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Delta to Limit (dB)
54.290	14.80	40.00	-25.20
81.435	6.30	40.00	-33.70
*108.580	7.90	43.52	-35.62
*135.725	9.90	43.52	-33.62
*162.870	10.60	43.52	-32.92
190.015	12.50	43.52	-31.02
217.160	9.70	46.02	-36.32
*244.305	10.30	46.02	-35.72
*271.450	11.70	46.02	-34.32
298.595	13.60	46.02	-32.42

Remark: '*' 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.
 There is no spurious emission found between lowest oscillating frequency 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 ($\mu\text{V}/\text{m}$)	Field strength ($\text{dB}\mu\text{V}/\text{m}$)	Measurement distance (m)
30-88	100	$20 \cdot \log(100) = 40.00$	3
88-216	150	$20 \cdot \log(150) = 43.52$	3
216-960	200	$20 \cdot \log(200) = 46.02$	3
960-2500	500	$20 \cdot \log(500) = 53.98$	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

Port of Testing : Antenna Coupler
Detector Function : Peak
Supply Voltage : DC 9V

The field strength of any emissions appearing at the lower edge 26.96 MHz and upper edge 27.28 MHz are 43.16 dB and 40.42 dB below the carrier respectively.

For test results refer to Appendix 1.