F C C -

TEST REPORT

REPORT NO.: 31558A/2/400F

FCC listed testlab
acc. to Section 2.948 of the FCC - Rules

in compliance with the requirements of
ANSI C63.4 - 1992

Product	**:**	Speed Boat
Product Class	**:**	Low Power Communication Device Transmitter
Model	**:**	90415
Applicant	**:**	ECHO TOYS LTD

TABLE OF CONTENTS

LABORATORY - REPORT

APPLICANT:	ECHO TOYS LTD
ADDRESS:	Room 1108 Peninsula Centre 67 Mody Road Tsimshatsui East, Kowloon HONG KONG
DATE OF SAMPLE RECEIVED:	2002-08-26
DATE OF TESTING:	2002-08-28

DESCRIPTION OF SAMPLE:

Product:	Speed Boat
Product class:	Low Power Communication Device Transmitter
Model number:	90415
Rating:	DC 9V ('6F22' Size Battery x 1)
Country of Origin:	P.R. CHINA

INVESTIGATIONS REQUESTED:	Measurements to the relevant clauses of F.C.C. Rules and Regulations Part 15 Subpart C - Intentional Radiators
RESULTS:	See the attached test sheets
CONCLUSIONS	From the measurement data obtained, the tested sample was considered to have COMPLIED with the requirements for the relevant clauses of Federal Communications Commission Rules as specified above.

_____

Authorized Signature

Remark: Purpose of those tests in this report is to provide the applicant with the necessary test data of their device for the submission to FCC with application for Equipment Authorization under the FCC Equipment Authorization Program. The tests themselves are not Approval Tests

Summary of Test Results

Interference Radiation:

Test result: O.K.
Test data: See attached data sheet

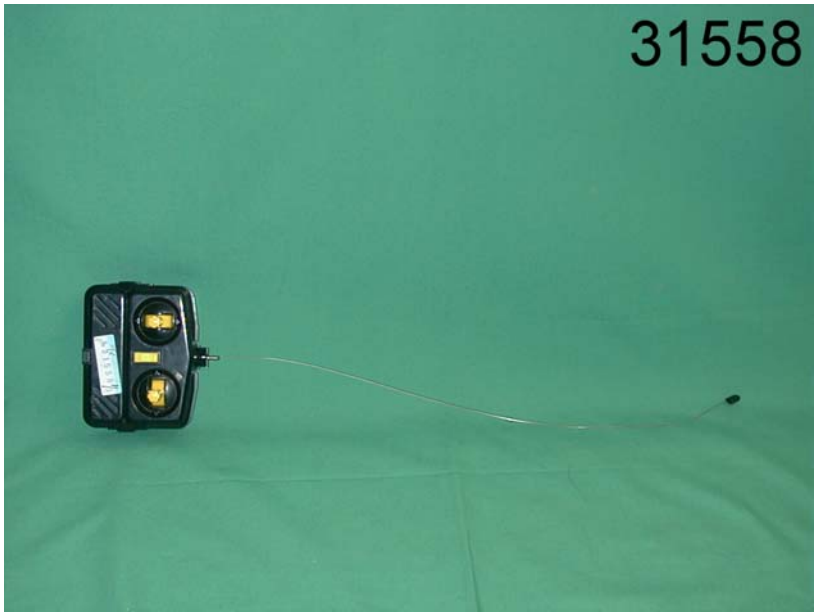
Interference Voltage:

Test result: N.A.
Test data: N.A.

Measurement of Emissions within Band Edges

Test result: O.K.
Test data: See attached data sheet

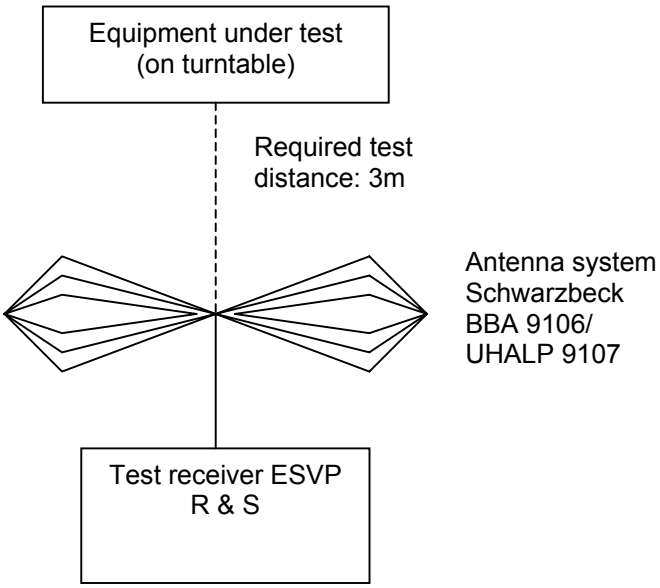
PHOTOGRAPH OF THE SAMPLE



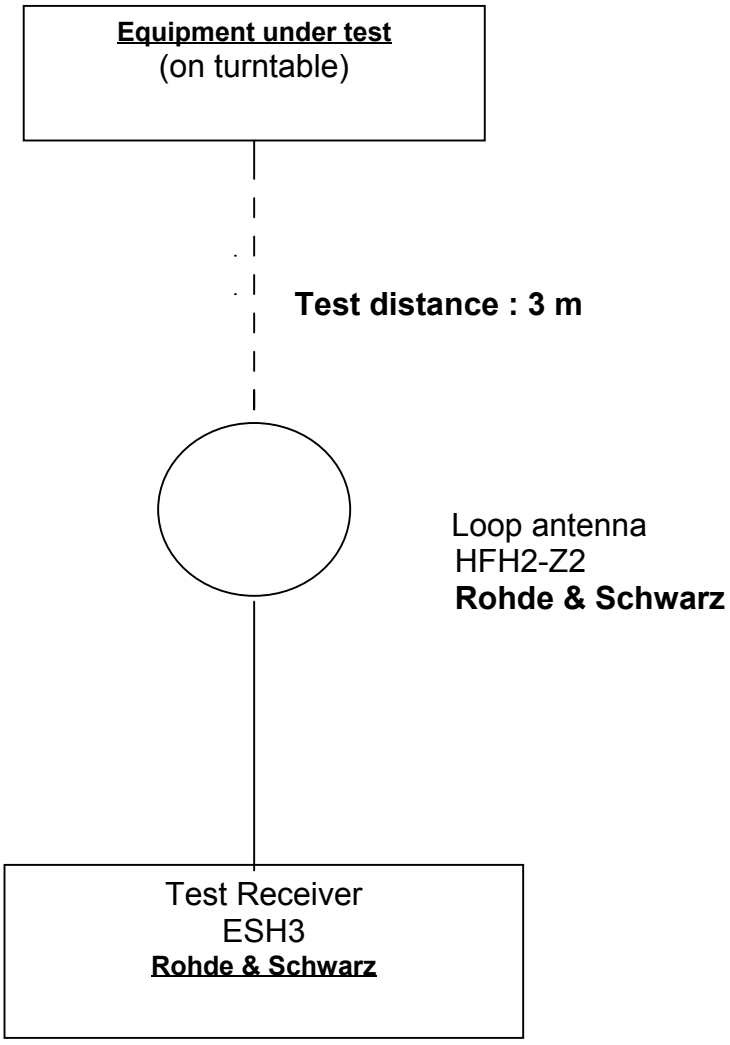
TEST EQUIPMENT LIST

Equipment	Manufacturer	Model	Serial No.	Remark
Test Receiver	Rohde & Schwarz	ESH 3	863497/015	10KHz – 30MHz
Test Receiver	Rohde & Schwarz	ESVP	860688/022	25MHz – 1,300 MHz
Artificial Mains Network (LISN)	Schwarzbeck	NSLK 8127	--	2 x 10A, 50Ω, 50μH 10KHz-30MHz
Antenna System	Schwarzbeck	BBA 9106 / UHALP 9107	--	30MHz – 1000MHz
Antenna Mast System	Schwarzbeck	AM9104	--	Max. 4 meters height
Spectrum Analyzer with Q. Peak	Tektronix	2712	B023006	9KHz – 1.8GHz
Interface for Spectrum 2712	Tektronix	TD3F14A	--	
Loop Antenna	Rohde & Schwarz	HFH2-Z2	871336/48	9KHz-30MHz
Test Receiver	Rohde & Schwarz	ESH 3	892580/006	10KHz – 30MHz
Test Receiver	Rohde & Schwarz	ESVP	863512/012	25MHz – 1,300 MHz
Impulse Limiter	Rohde & Schwarz	ESH-3-Z2	--	
Antenna System	Schwarzbeck	BBA 9106 / UHALP 9107	--	30MHz – 1000MHz
Signal Generator	Rohde & Schwarz	SWS 2	879113/42	100KHz – 1040 MHz
Digital Multimeter	Tektronix	DM2510G	DM-2510GTW10555	10KHz – 30MHz
Turntable with Controller	Drehtisch	DT312	--	ϕ120 cm

Radiated Emission Test Procedure (> 30MHz)



Radiated Emission Test Procedure (9kHz – 30MHz)



Interference Radiation

Measurement of Radiated Emissions
Acc: FCC Part 15 Subpart C

IECC Ref: 31558A/2/400F
Model: 90415
Applicant: ECHO TOYS LTD

Ser.Nr.: 1

Set under test: Speed Boat
Connected sets: -
Operating mode: Transmitter - Power "On"

Test Equipment
Receiver: ESVP Rohde & Schwarz
Antenna: Schwarzbeck BBA 9106 and UHALP 9107

	Frequency (MHz)	Horz. Reading dB(µV)	Vert. Reading dB(µV)	Antenna Factor (dB)	Horiz. Test Result dB(µV/m)	Vert. Test Result dB(µV/m)	Limit dB(µV/m)
Peak	49.86	49	56.5	11.7	61	68	100.0
Av.	49.86	40.5	46.5	11.7	52	58	80.0
Harm. 2	99.72	< 16	< 16	10.3	< 26	< 26	43.5
Harm. 3	149.58	< 16	< 16	15.0	< 31	< 31	43.5
Harm. 4	199.44	< 16	< 16	16.5	< 32	< 32	43.5
Harm. 5	249.3	< 16	< 16	17.7	< 34	< 34	46.0
Harm. 6	299.16	< 16	< 16	20.0	< 36	< 36	46.0
Harm. 7	349.02	< 16	< 16	17.4	< 33	< 33	46.0
Harm. 8	398.88	< 16	< 16	18.3	< 34	< 34	46.0
Harm. 9	448.74	< 16	< 16	19.0	< 35	< 35	46.0
Harm. 10	498.6	< 16	< 16	19.7	< 36	< 36	46.0
Harm. 11	548.46	< 16	< 16	20.2	< 36	< 36	46.0
Harm. 12	598.32	< 16	< 16	20.9	< 37	< 37	46.0
Harm. 13	648.18	< 16	< 16	21.6	< 38	< 38	46.0
Harm. 14	698.04	< 16	< 16	22.4	< 38	< 38	46.0
Harm. 15	747.9	< 16	< 16	23.0	< 39	< 39	46.0
Harm. 16	797.76	< 16	< 16	23.7	< 40	< 40	46.0
Harm. 17	847.62	< 16	< 16	24.3	< 40	< 40	46.0
Harm. 18	897.48	< 16	< 16	25.0	< 41	< 41	46.0
Harm. 19	947.34	< 16	< 16	25.7	< 42	< 42	46.0

Remark: All frequencies in the required range have been scanned and only those significant and representative readings are reported above.
All emissions not reported above are all well below the limit.

Note: Unless otherwise indicated, the recorded readings are in quasi-peak values.

Notes for Radiation Measurement

1. **Measurement facility:**
   Measurement facility located at Fanling (Hong Kong), placed on file with the FCC Pursuant to Section 2.948 of the FCC Rules.

2. **Distance between the EUT and measuring antenna:**
   3 meters.

3. **Measuring instrumentations:**
   Rohde & Schwarz ESVP Test Receiver (20 - 1300 MHz) with a CISPR weighting QP detector, 6 dB bandwidth set at 120 KHz.
   In the frequency range above 1000 MHz Spectrum Analyzer FMSM26 and Analyzer Display Unit FSA-D are used, bandwidth set at 100 kHz.

4. **Measuring antenna:**
   Broad-band antenna for the frequency range 30 - 300 MHz and frequency range 300 - 1000 MHz, connected with 10 meters coaxial cable. Cable loss of the coaxial cable included in the Antenna Factor for measurement data. The antennas are capable of measuring both horizontal and vertical polarizations.

   Loop antenna for the frequency range 9KHz – 30MHz, connected with 10 meters coaxial cable. Cable loss of the coaxial cable included in the measurement data. The center of the loop 1 m above the ground plane, positioned with its plane vertical at the specified distance and rotated about its vertical axis and placed horizontal for maximum response at each azimuth about the EUT.

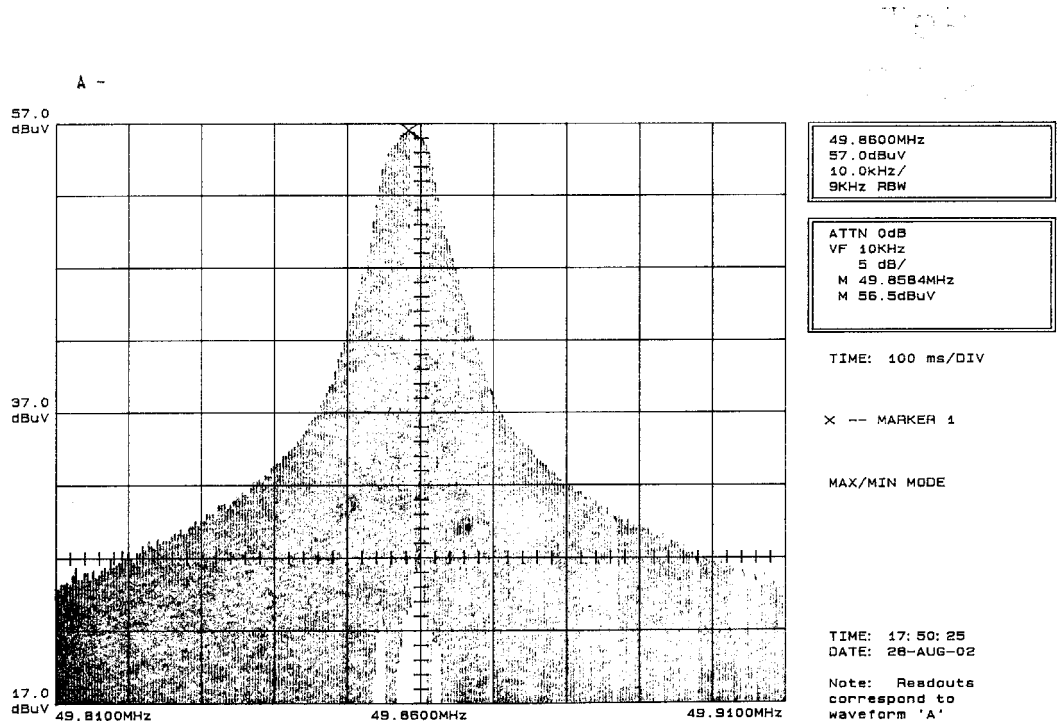
   In the frequnecy range above 1 GHz horn-antenna RGA 50/60 is used.

5. **Frequency range scanned:**
   The frequency range 30 - 5000 MHz has been scanned. Readings of the highest emissions relating to the limit were reported as above.

6. **Arrangement of EUT:**
   During the test, the sample was operated at rated supply voltage and arranged for maximum emissions. To find the maximum emission, the antenna was raised from 1 to 4 meters and was stopped at the maximum emission point.

7. **Measuring Procedure:**
   In accordance with the relevant sections of the American National Standards Institute (ANSI) C63.4-1992 ‘Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9KHz to 40GHz’.

Measurement Data of Emissions within Band Edges



Result : The field strength of any emission within the operation band did not exceed 80 dB(μV/m) for average value or 100 dB(μV/m) for peak value. Refer to page 9 for the recorded value for the emission at the fundamental frequency.

Notes for Measurement of Emissions within Band Edges

1. **Measurement facility:**
   Measurement facility located at Fanling (Hong Kong) placed on file with the FCC Pursuant to Section 2.948 of the FCC Rules.

2. **Measuring instrumentations:**
   Spectrum Analyzer: Tektronix 2712

3. **Frequency range scanned:**
   The frequency range acc. to FCC rules and regulations part 15 subpart C - Intentional Radiators.

4. **Arrangement of EUT:**
   During the test, the sample was operated.

5. **Measuring Procedure:**
   In accordance with the relevant sections of American National Standards Institute (ANSI) C63.4 - 1992 'Methods of Measurement od Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz'.