

FCC – Test Report

Date: 2011-08-16

No. 55627-1

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LABORATORY - REPORT

APPLICANT:

EB BRANDS (HK)

ADDRESS:Unit 705 & 706, Enterprise Square, Phase 1
Tower III, 9 Sheung Yuet Road
Kowloon Bay, Kowloon
Hong Kong**DATE OF SAMPLE RECEIVED:** 2011-07-04**DATE OF TESTING:** 2011-07-27 to 2011-08-04**DESCRIPTION OF SAMPLE:**

Product: Atom Racers
Model number: 6379
Product class: Low Power Communication Device - Transmitter
FCC ID number: XRB6379RE49TX
Rating: DC 3V (AA size battery x 2)

CONDITION OF TEST SAMPLE: The received sample was under good condition.**INVESTIGATIONS REQUESTED:** Measurements to the relevant clauses of F.C.C. Rules and Regulations Part 15 Subpart C - Intentional Radiators.**RESULTS:** See the attached 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.Stephen C.N. Wong
Technical Manager

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Test Location

International Electrical Certification Centre Ltd.
Units 602-605, 31 Lok Yip Road, On Lok Tsuen, Fanling, N.T., Hong Kong
Tel : +852 23052570
Fax : +852 27564480
Email : info@iecc.com.hk

Summary of Test Results**Radiated Emission:**

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

Conducted Emission:

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

Measurement of Emissions within Band Edges

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

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TEST EQUIPMENT LIST

Equipment	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Date
Test Receiver	Rohde & Schwarz	ESCS 30	100388	11/11/2010	10/11/2011
Antenna	Schaffner	CBL6111C	2791	30/09/2010	29/09/2012
Antenna Mast System	Schwarzbeck	AM9104	--	--	--
Turntable with Controller	Drehtisch	DT312	--	--	--
Spectrum Analyzer with Q. Peak	Advantest	R3132	140101852	09/08/2011	08/08/2012

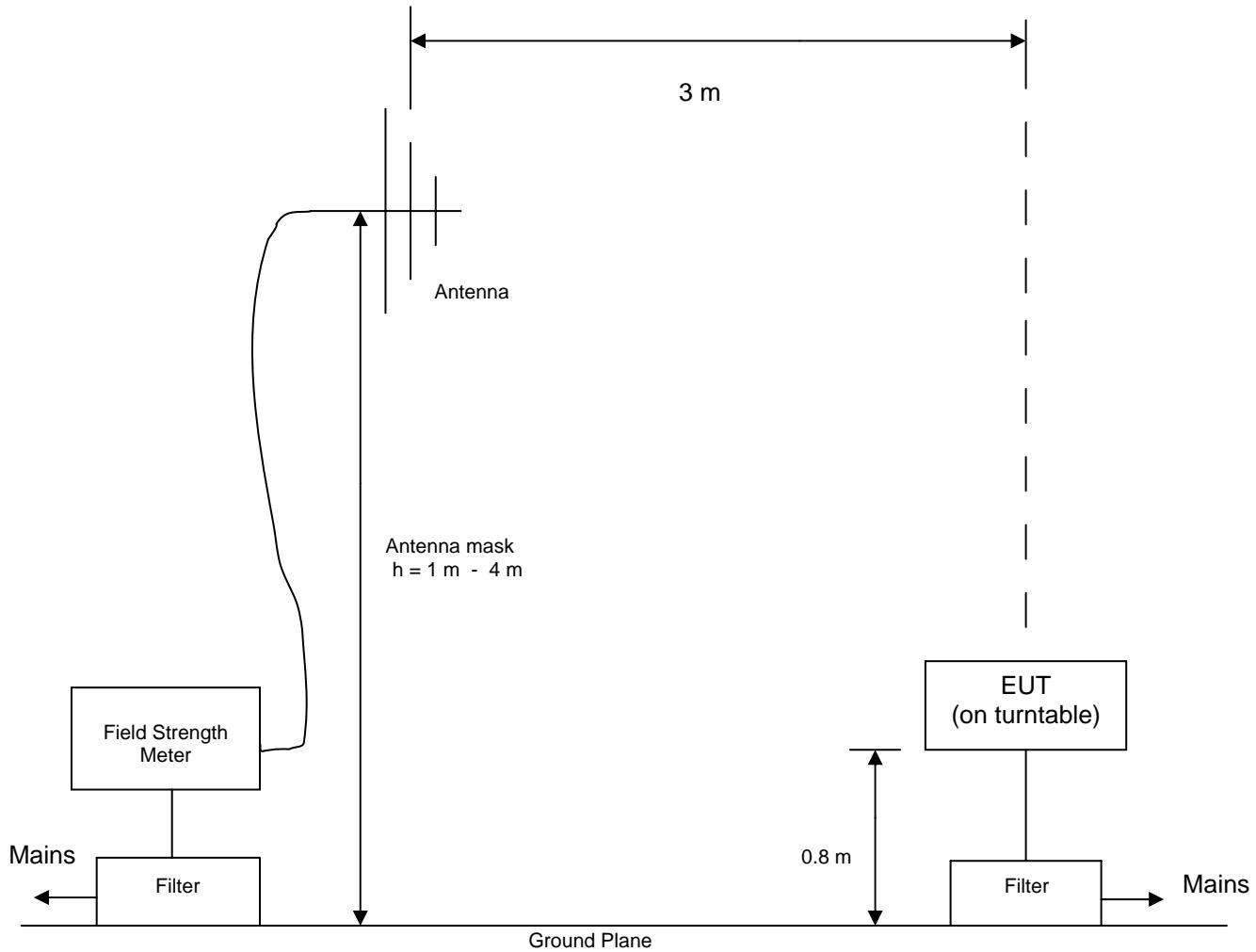
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Radiated Emission Test Setup (3 m diatance) (> 30MHz)



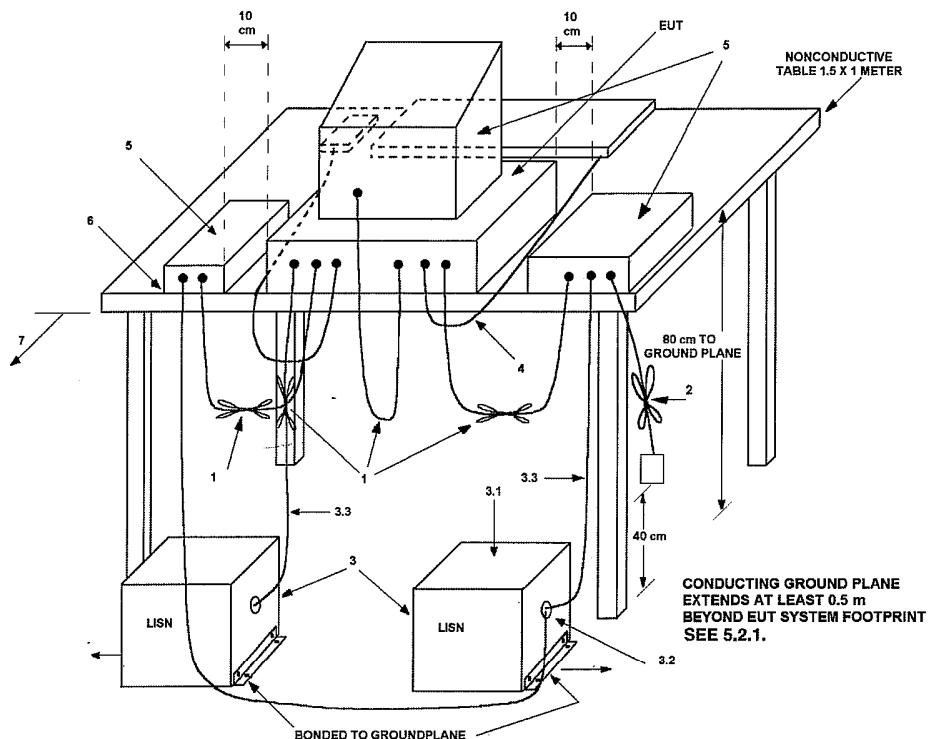
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Conducted Emission Test Setup



LEGEND:

- 1) Interconnecting cables that hang closer than 40 cm to the groundplane shall be folded back and forth in the center forming a bundle 30 to 40 cm long (see 6.1.4 and 11.2.4).
- 2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m (see 6.1.4).
- 3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50Ω . LISN can be placed on top of, or immediately beneath, reference groundplane (see 5.2.3 and 7.2.1).
 - 3.1) All other equipment powered from additional LISN(s).
 - 3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
 - 3.3) LISN at least 80 cm from nearest part of EUT chassis.
- 4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use (See 6.2.1.3 and 11.2.4).
- 5) Non-EUT components of EUT system being tested (see also Figure 13).
- 6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop (see 6.2.1.1 and 6.2.1.2).
- 7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the groundplane (see 5.2.2 for options).

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Test Procedure

Radiated Emission :

The EUT was tested according to ANSI 63.4-2003 for the requirements of FCC Part 15 Subpart C Section 15.209 and 15.235.

During the test, the sample was placed on a turn table and operated with new batteries. The table is 0.8 meter above the reference ground plane on the Open Aera Test Site and can rotate 360 degrees to determine the position of the maximum emission level. A broad-band antenna for the frequency range 30 - 1000 MHz, connected with 10 meters coaxial cable to the test receiver was used for measurement. The antenna is capable of measuring both horizontal and vertical polarizations. The antenna was raised from 1 to 4 meters to find out the maximum emission level from the EUT.

An initial pre-scan was performed to find out the maximum emission level of the sample placed at 3 orthogonal planes. Final measurement (30 MHz –1000 MHz) was then performed to record the data for the emissions under worst-case condition for combination of the antenna orientation / height and turn table position.

Note : 1. Fundamental emission for this pulse modulated device was measured with the peak detector function of the test receiver and was properly adjusted for the duty cycle correction factor as pulse desensitization to calculate the average emission value.

2. The Open Aera Test Site located at IECC was placed on file with the FCC Pursuant to Section 2.948 of the FCC Rules (FCC Registration No. : 97774).

Conducted Emission :

Not Applicable

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Test Results**Radiated Emission :**

Test Requirement: FCC Part 15 Subpart C Section 15.209 and 15.235
Test Method: ANSI C63.4 : 2003
Deviations from Standard Test Method: Nil
Frequency Range: 30MHz – 1000MHz
Measurement Distance: 3 m
Detector: Peak (for fundamental frequency)
Quasi-Peak (for frequencies outside the operation band)

Refer to page 9-13 for measurement data.

Conducted Emission :

Not Applicable

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Radiated Emission

Measurement of Radiated Emissions
FCC Part 15 Subpart C (15.235)

IECC Ref:	55627-1	Test Equipment
Model:	6379	Receiver: Rohde & Schwarz ESCS 30
Applicant:	EB BRANDS (HK)	Antenna: Schaffner CBL6111C
Sample No.:	1	
Set under test:	Atom Racers	
Connected sets:	-	
Operating mode:	Operate (forward)	

Radiation Measurement

a. Fundamental Frequency

Frequency (MHz)	Maximum Test Result (dB(μV/m))		FCC Limit (dB(μV/m))	
	Peak	Average *	Peak	Average
49.86	68.4	44.2	100	80

Note : (1) The above peak value is the maximum value of the measurement in 3 orthogonal planes

(2) * Calculation for radiation (average) :

Formula :

$$\text{Duty cycle} = (N1L1 + N2L2 + \dots + Nn-1Ln-1 + NnLn) / 100 \text{ or } T$$

where N1 is number of type 1 pulse, L1 is length of type 1 pulse, etc.
T is the period of the pulse train (if less than 100 ms)

According to the time domain plots shown in page 11 & 12 :

$$\text{Duty cycle of the EUT} = (4 \times 1.54 + 10 \times 0.52) / 18.48 = 0.615$$

$$\begin{aligned} \text{Av correction factor} &= 20 \times \log(0.615) \text{ dB} \\ &= -4.2 \text{ dB} \end{aligned}$$

$$\text{Radiation (average)} = \text{Radiation (peak)} + \text{Av correction factor}$$

$$\begin{aligned} \text{Radiation (average) of the EUT} &= 48.4 - 4.2 \text{ dB} \\ &= 44.2 \text{ dB} \end{aligned}$$

b. The measured radiation outside the operation band were checked and found to comply with 15.235(b).
(refer to page 12 and 13 for measurement data)

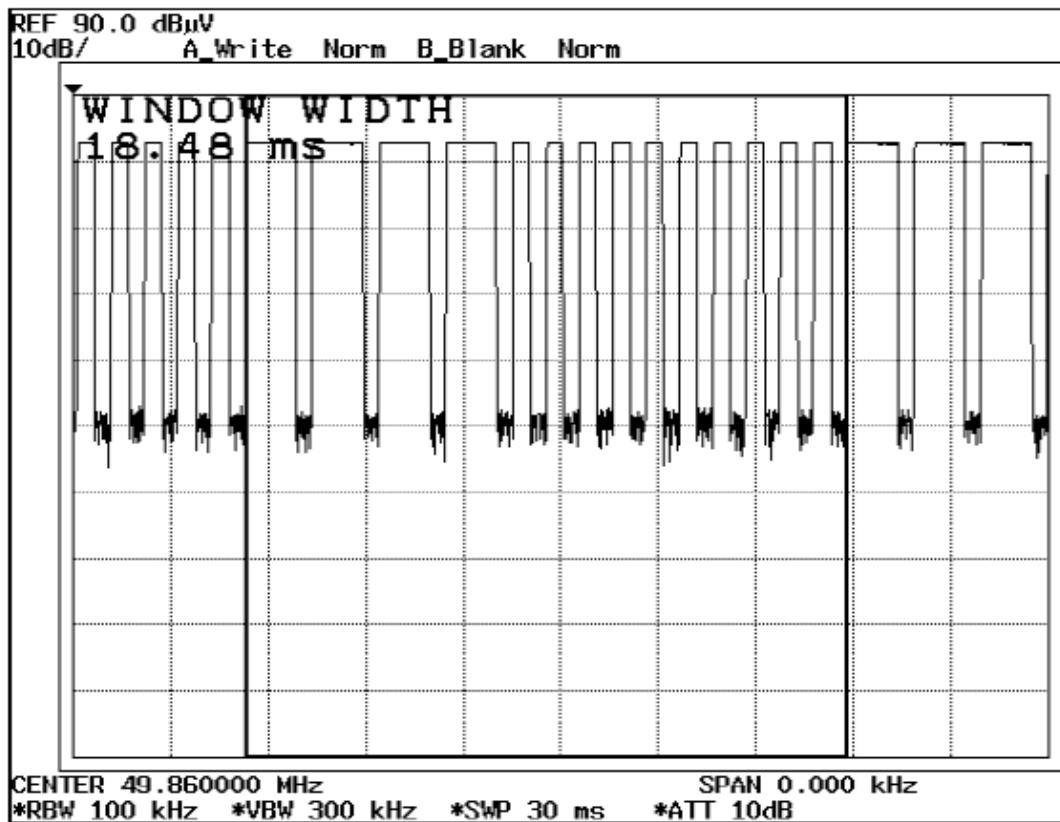
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Radiated Emission

Transmitter Emission - Time Domain Plots

Pulse cycle period = 18.48 ms

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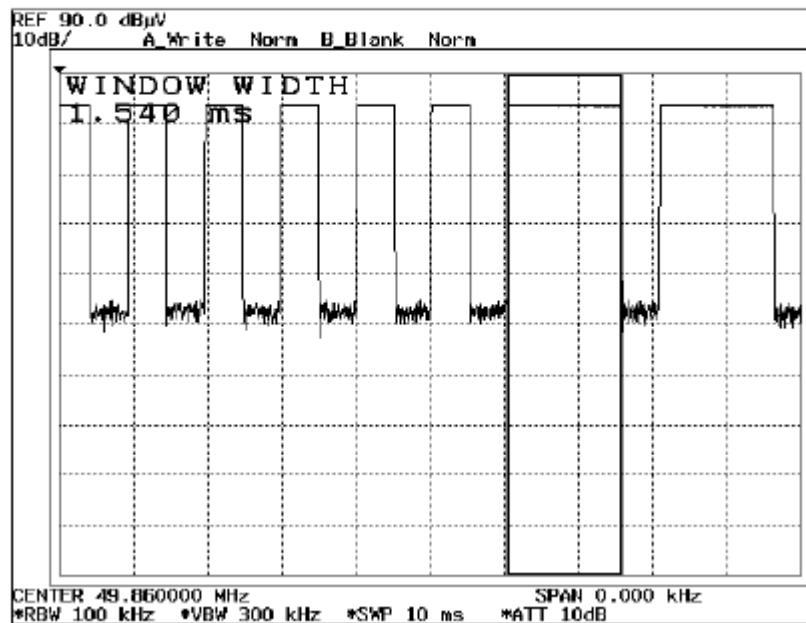
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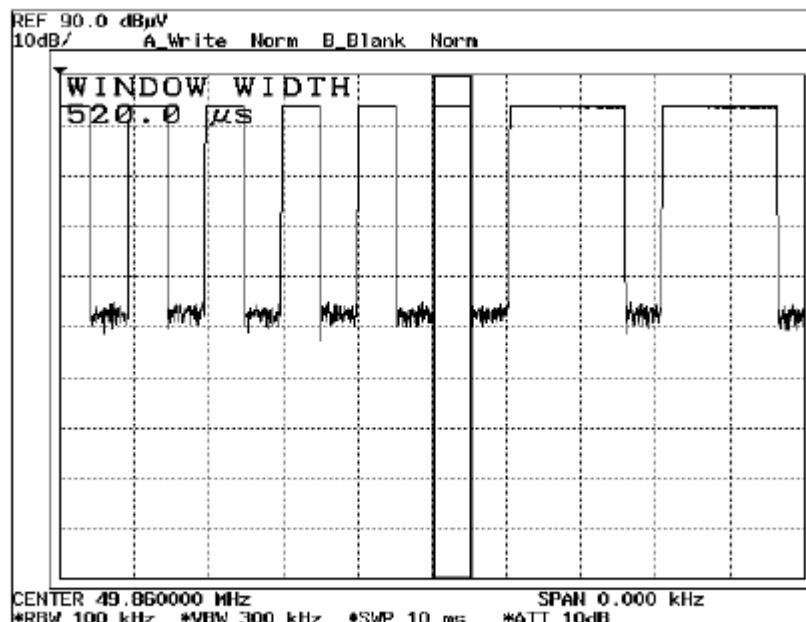
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Radiated Emission

Transmitter Emission - Time Domain Plots



Pulse width = 1.54 ms (total number of pulse : 4)



Pulse width = 0.52 ms (total number of pulse : 10)

Operator : KT

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Interference Radiation

Measurement of Radiated Emissions

Acc: FCC Part 15 Subpart C (15.235 & 15.209)

IECC Ref:	55627-1	Test Equipment
Model:	6379	Receiver: Rohde & Schwarz ESCS 30
Applicant:	EB BRANDS (HK)	Antenna: Schaffner CBL6111C
Sample No.:	1	
Set under test:	Atom Racers	
Connected sets:	-	
Operating mode:	Operate (forward)	

Frequency (MHz)	Horz. Reading dB(µV)	Vert. Reading dB(µV)	Corr. Factor (dB)	Horiz. Test Result dB(µV/m)	Vert. Test Result dB(µV/m)	Limit dB(µV/m)
30	< 16	< 16	20.5	< 36.5	< 36.5	40.0
99.7	< 16	< 16	12.0	< 28.0	< 28.0	43.5
149.6	< 16	< 16	13.4	< 29.4	< 29.4	46.0
199.4	17	< 16	10.9	27.9	< 26.9	46.0
249.3	22.5	< 16	14.8	37.3	< 30.8	46.0
299.2	< 16	< 16	15.8	< 31.8	< 31.8	46.0
349	21	< 16	17.0	38.0	< 33.0	54.0
500	< 16	< 16	20.6	< 36.6	< 36.6	46.0
700	< 16	< 16	23.8	< 39.8	< 39.8	46.0
1000	< 16	< 16	28.0	< 44.0	< 44.0	54.0

Note : 1. Unless otherwise indicated, the recorded readings are in quasi-peak values.
 2. The above results were the worst case results with the sample positioned in all 3 axis during the test.
 The sample was positioned vertically and horizontally on the table for vertical and horizontal measurement respectively. The antenna of the sample was fully extended during the test.

Operator : KT

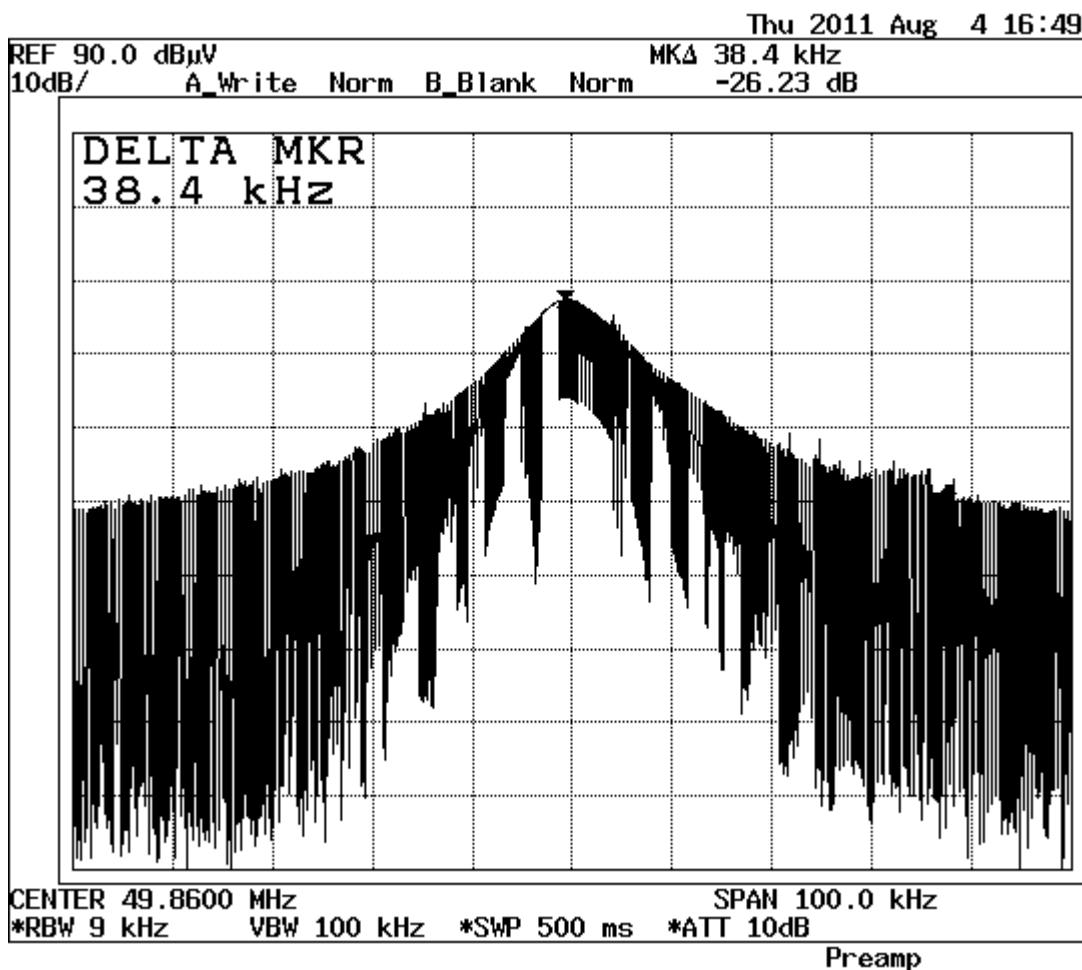
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Measurement Data of Emissions within Band Edges



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

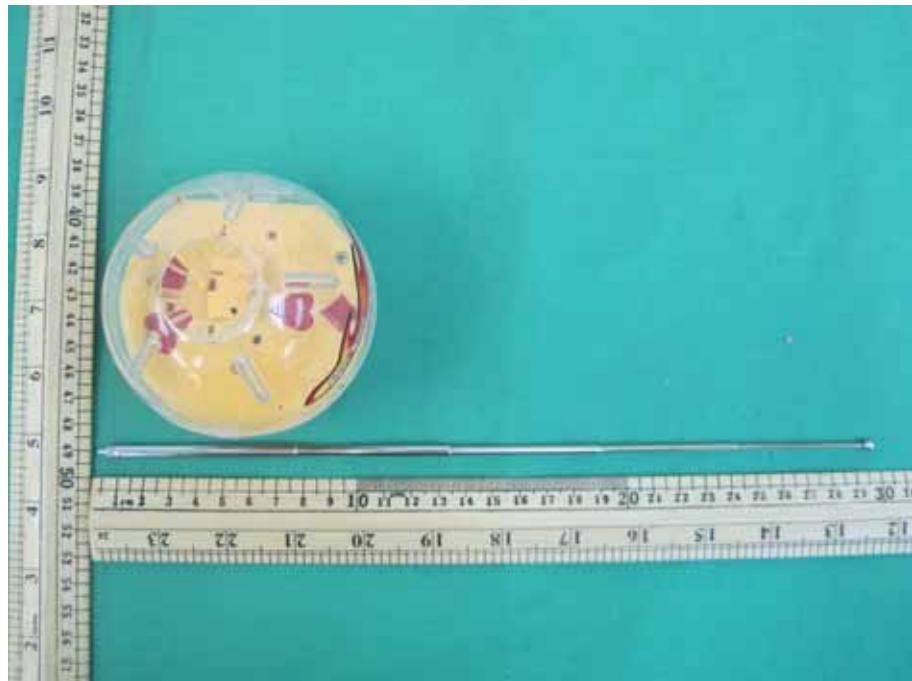
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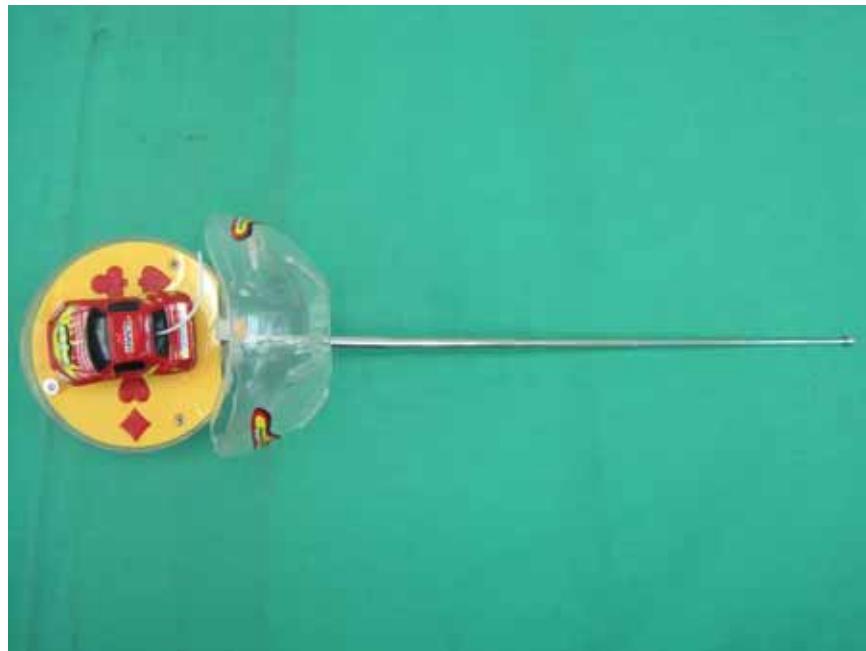
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Photo of Sample



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