

FCC – Test Report

Date: 2011-05-18

No. 55399-1

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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: 2011-04-20
DATE OF TESTING: 2011-05-05 to 2011-05-13

DESCRIPTION OF SAMPLE:
Product: Atom Racers
Model number: 6379
Product class: Low Power Communication Device - Transmitter
FCC ID number: XRB6379RE27TX
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: Not Applicable
Test data: Not Applicable

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
Loop Antenna	Rohde & Schwarz	HFH2-Z2	871336/48	17/11/2009	16/11/2012
Antenna (30 - 1000MHz)	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	20/05/2010	19/08/2011

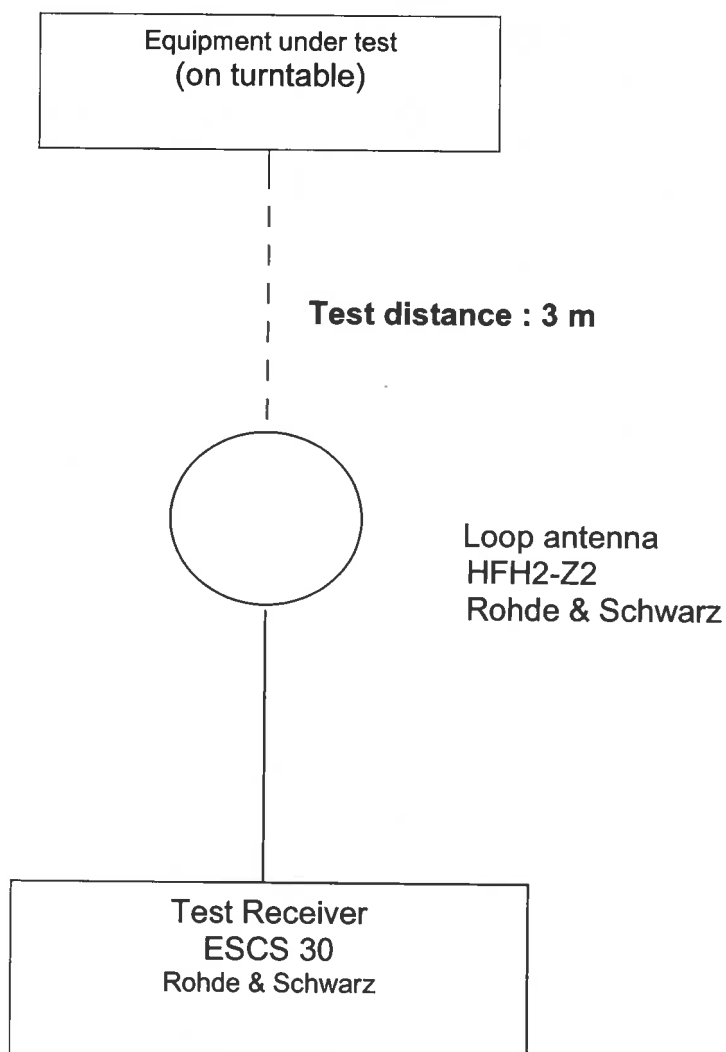
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Radiated Emission Test Setup (9kHz – 30MHz)



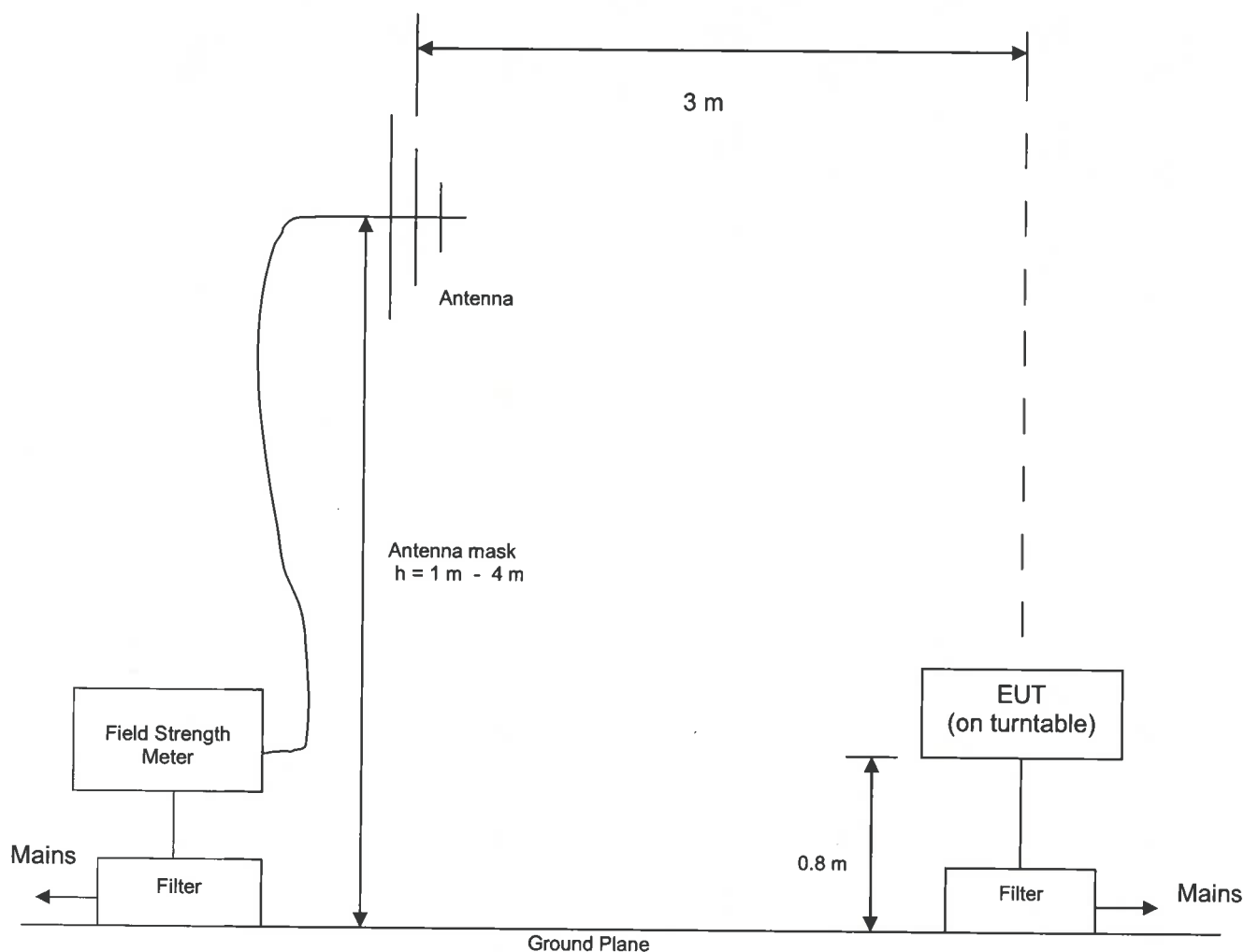
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Radiated Emission Test Setup (3 m distance) (> 30MHz)



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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 15.227.

1. Measurement Frequencies below 30MHz :

During the test, the sample was placed on a turn table and operated under various modes with supply from new batteries. The table is 0.8 meter and can rotate 360 degrees to determine the position of the maximum emission level. A loop antenna for the frequency range 9kHz - 30MHz, connected with 10 meters coaxial cable to the test receiver was used for measurement. The center of the loop was 1 m above the floor, 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.

An initial pre-scan was performed to find out the maximum emission level of the sample placed at 3 orthogonal planes. Final measurement was then performed to record the data for fundamental emission within the operation band and spurious emissions outside the band under worst-case condition for combination of the antenna orientation and turn table position.

Note : 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. Measurement Frequencies 30MHz – 1000 MHz :

During the test, the sample was placed on a turn table and operated with supply from new batteries. The table is 0.8 meter above the reference ground plane on the Open Area 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 : The Open Area 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 15.227
Test Method:	ANSI C63.4 : 2003
Deviations from Standard Test Method:	Nil
Frequency Range:	9kHz – 1000MHz
Measurement Distance:	3 m
Detector:	Peak (for fundamental frequency) Quasi-Peak (for frequencies outside the operation band)

Refer to page 10 - 14 for measurement data.

Conducted Emission :

Not Applicable

Radiated Emission

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Measurement of Radiated Emissions
FCC Part 15 Subpart C (15.227)

IECC Ref: 55399-1
 Model: 6379
 Applicant: EB BRANDS (HK)
 Sample No.: 1
 Set under test: Atom Racers
 Connected sets: -
 Operating mode: Operate (forward)

Test Equipment
 Receiver: ESCS 30 Rohde & Schwarz
 Antenna: HFH2-Z2 Rohde & Schwarz

Radiation Measurement (3 m) below 30MHz

a. Fundamental Frequency

Frequency (MHz)	Maximum Test Result (dB(μV/m))		FCC Limit (dB(μV/m))	
	Peak	Average *	Peak	Average
27.145	53.0	48.5	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 :

$$\text{Duty cycle of the EUT} = (4 \times 1.54 + 10 \times 0.50) / 18.81 = 0.593$$

$$\begin{aligned} \text{Av correction factor} &= 20 \times \log(0.593) \text{ dB} \\ &= -4.54 \text{ dB} \end{aligned}$$

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

$$\begin{aligned} \text{Radiation (average) of the EUT} &= 53.0 - 4.54 \text{ dB}(\mu\text{V/m}) \\ &= 48.5 \text{ dB}(\mu\text{V/m}) \end{aligned}$$

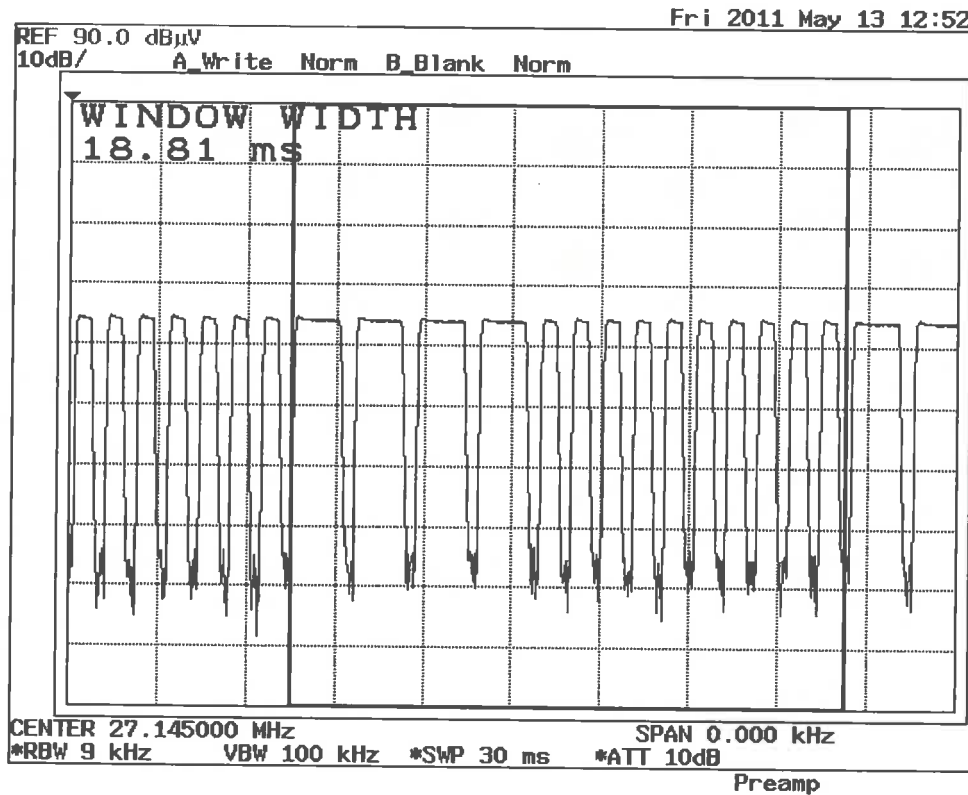
b. The measured radiation outside the operation band were negligible

Radiated Emission

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Transmitter Emission - Time Domain Plots



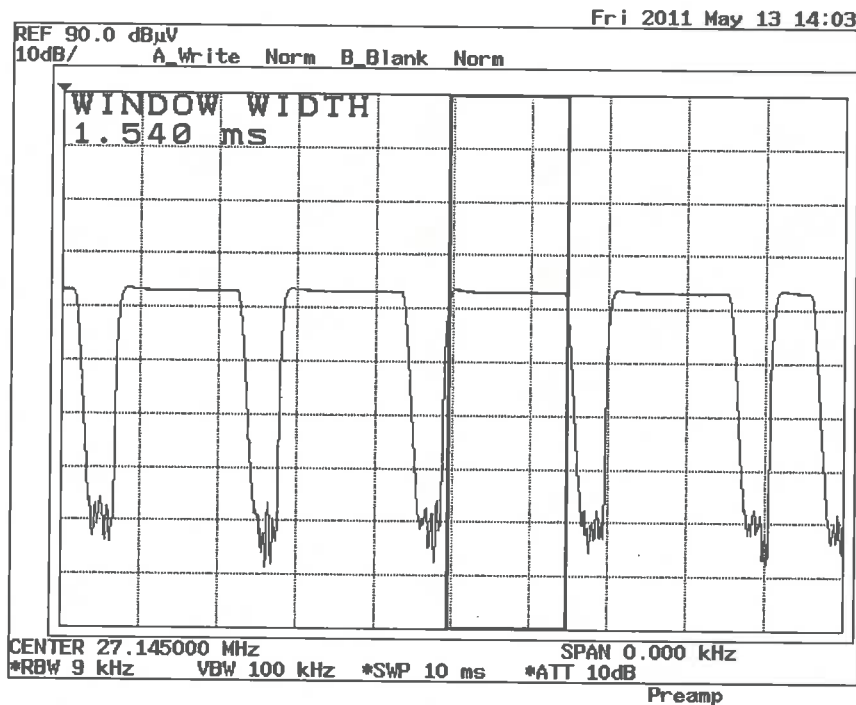
Pulse cycle period = 18.81 ms

Radiated Emission

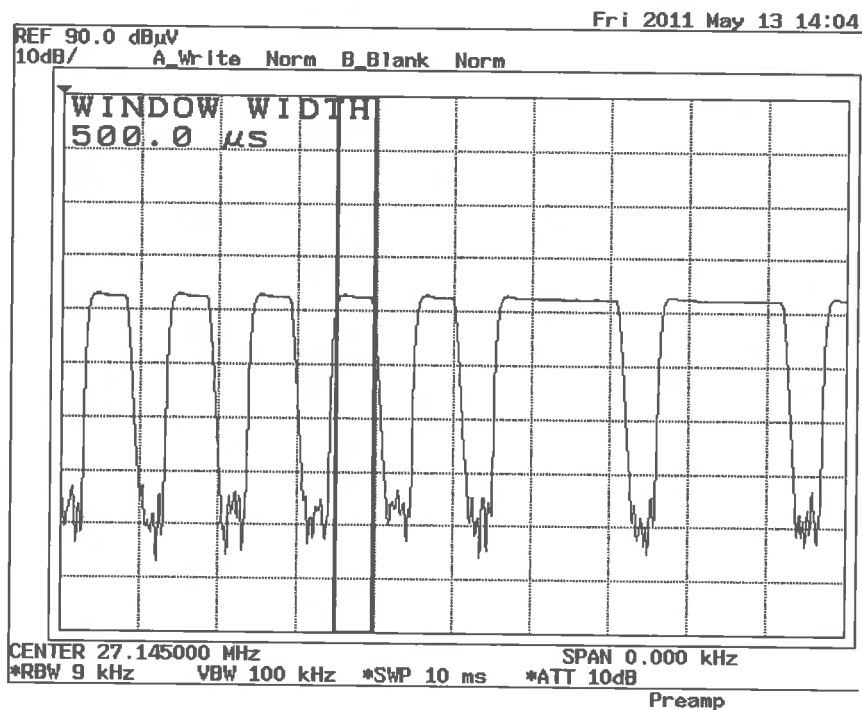
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Transmitter Emission - Time Domain Plots



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



Pulse width = 0.5 ms (total number of pulse : 10)

Operator : KT

Interference Radiation

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Measurement of Radiated Emissions
Acc: FCC Part 15 Subpart C (15.227 & 15.209)

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IECC Ref: 55399-1
 Model: 6379
 Applicant: EB BRANDS (HK)
 Ser.Nr.: --
 Set under test: Atom Racers
 Connected sets: -
 Operating mode: Operate (forward)

Test Equipment
 Receiver: Rohde & Schwarz ESCS 30
 Antenna: Schaffner CBL6111C

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
54.28	< 16	< 16	8.7	< 24.7	< 24.7	43.5
80	< 16	< 16	9.9	< 25.9	< 25.9	46.0
100	< 16	< 16	12.0	< 28.0	< 28.0	46.0
200	< 16	< 16	10.9	< 26.9	< 26.9	46.0
300	< 16	< 16	15.8	< 31.8	< 31.8	46.0
500	< 16	< 16	20.6	< 36.6	< 36.6	54.0
800	< 16	< 16	25.4	< 41.4	< 41.4	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. No significant emission was found during the measurement.

Operator : KT

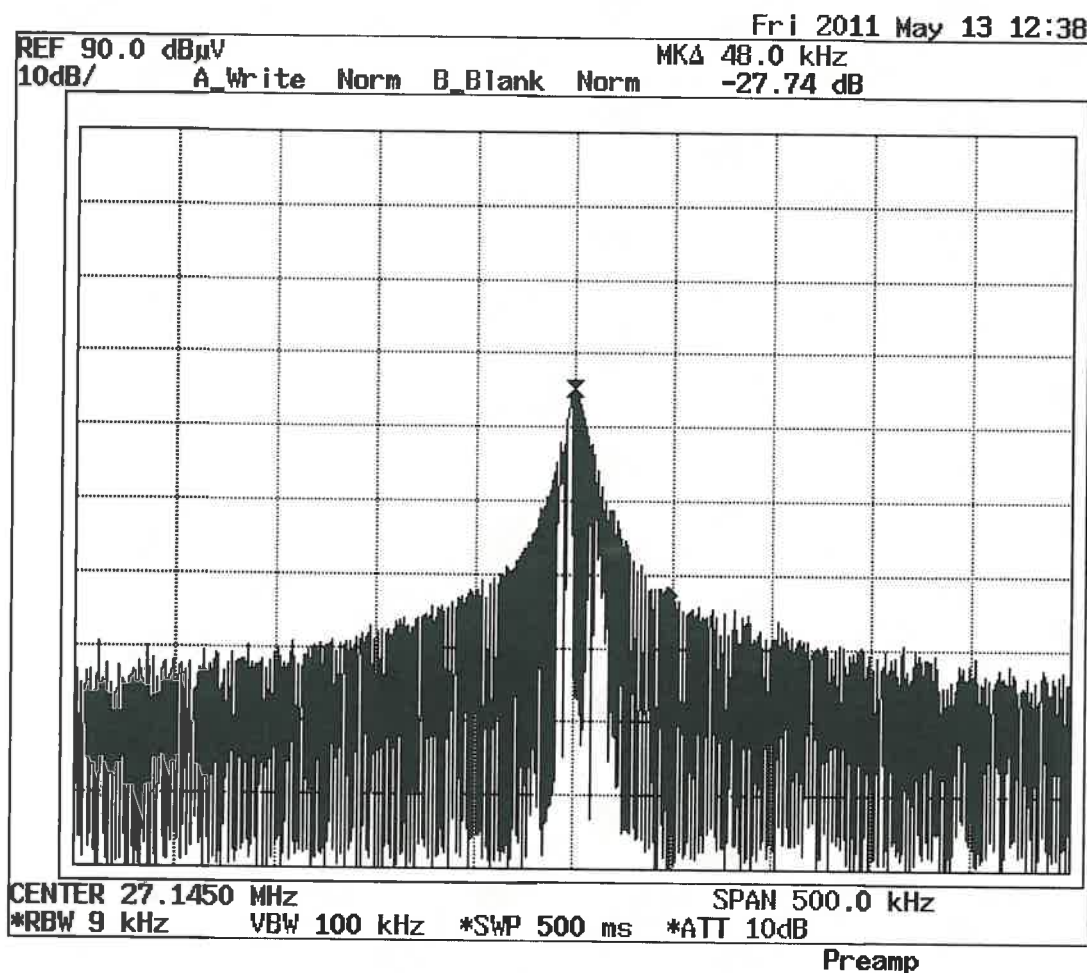
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Measurement Data of Emissions within Band Edges



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 10 for the recorded value for the emission at the fundamental frequency.

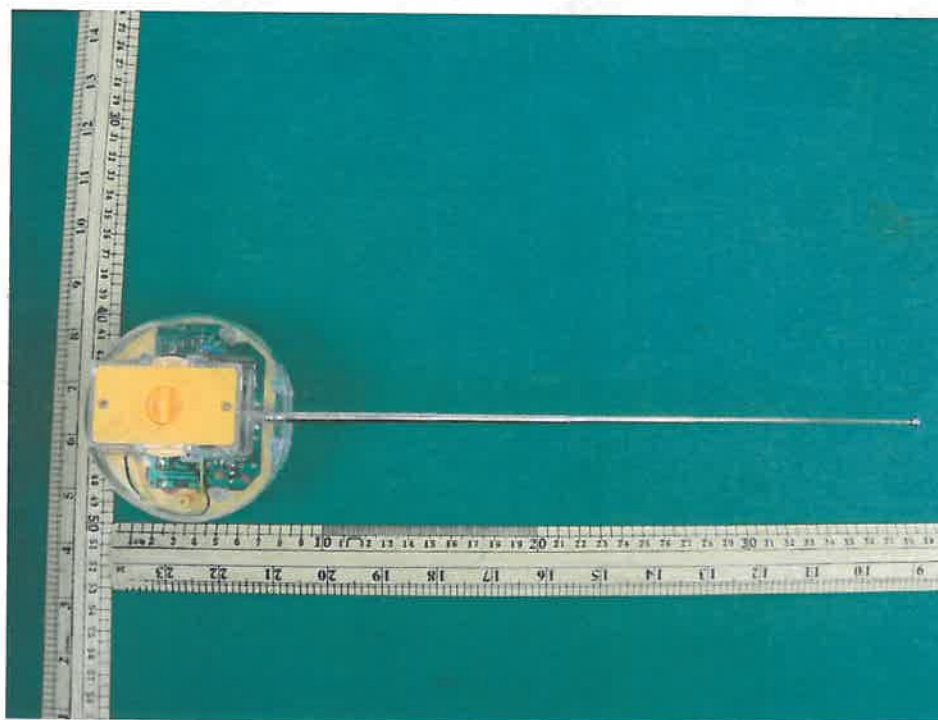
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Photo of Sample



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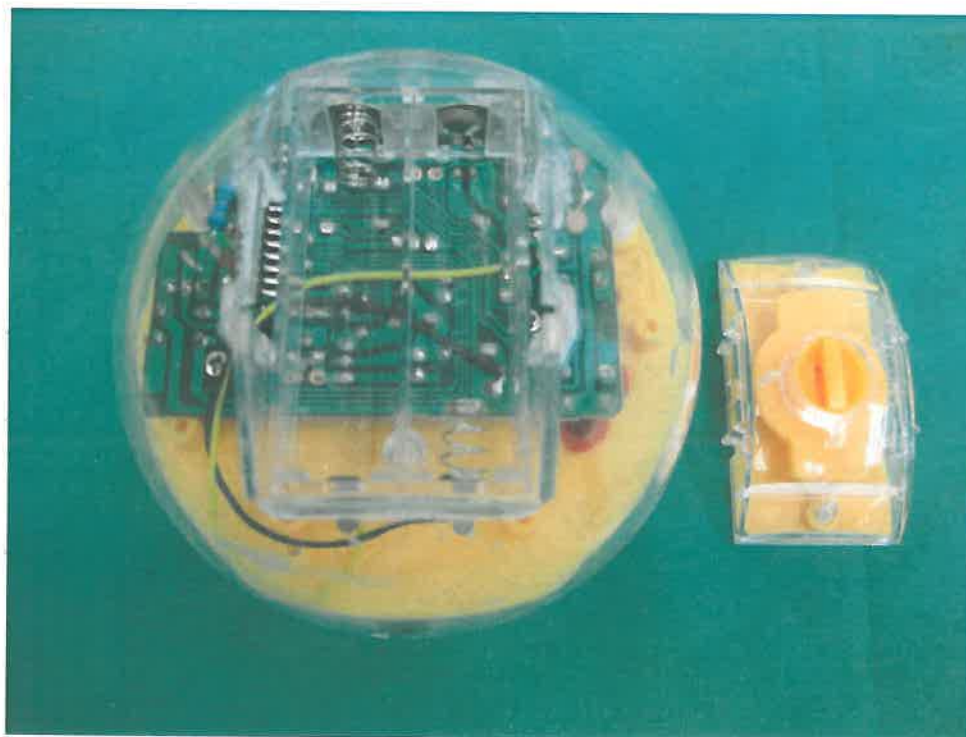


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