



**CENTRE OF TESTING SERVICE  
INTERNATIONAL**

**OPERATE ACCORDING TO ISO/IEC 17025**

# **FCC ID TEST REPORT**

**TEST REPORT NUMBER : CGZ3120314-00177-EF**



**CENTRE OF TESTING SERVICE CO., LTD.**

Building F, Dachuang industrial park, No.379, Zhongshan Dadao,  
Guangzhou, China.



<b>TEST REPORT For FCC ID</b>	
<b>47 CFR PART 15 OCT, 2012</b>	
<b>Report Reference No.</b> .....	CGZ3120314-00177-EF
<b>Date of issue</b> .....	20 February 2013
<b>Testing Laboratory Name</b> .....	<b>CETRE OF TESTING SERVICE CO., LTD</b>
<b>Address</b> .....	Building F, Dachuang industrial park, No.379, Zhongshan Dadao, Guangzhou, China.
<b>Testing location/ procedure</b> .....	Full application of Harmonised standards <input checked="" type="checkbox"/> Partial application of Harmonised standards <input type="checkbox"/> Other standard testing method <input type="checkbox"/>
<b>Applicant's name</b> .....	Horizon Hobby
<b>Address</b> .....	4105 Fieldstone Road,Champaign,IL 61822,USA
<b>Test specification</b> .....	
<b>Standard</b> .....	<b>47 CFR PART 15 OCT, 2012</b>
<b>Test Report Form No.</b> .....	CTSEMC-1.0
<b>TRF Originator</b> .....	CENTRE OF TESTING SERVICE CO., LTD
<b>Master TRF</b> .....	Dated 2009-01
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<b>Test item description</b> .....	Transmitter
<b>Trade Mark</b> .....	/
<b>Manufacturer</b> .....	Horizon Hobby
<b>Model/Type reference</b> .....	HBZ4771, HBZ4772, HBZ4773, HBZ4774, HBZ4775, HBZ4776
<b>Ratings</b> .....	4xStandard AAA Batteries
<b>Operating Frequency</b> .....	26.995~27.255MHz/ FM
<b>Result</b> .....	<b>PASSED</b>

Compiled by:

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Vincent yao / Manager

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## FCC ID -- TEST REPORT

<b>Test Report No. :</b> <b>CGZ3120314-00177-EF</b>	<u>20 February 2013</u> Date of issue
---	--

Type / Model.....	HBZ4771, HBZ4772, HBZ4773, HBZ4774, HBZ4775, HBZ4776
EUT.....	transmitter
<b>Applicant</b> .....	Horizon Hobby
Address.....	4105 Fieldstone Road,Champaign,IL 61822,USA
Telephone.....	+1-2174033542
Fax.....	/
Contact.....	Mr.Henry Lin
<b>Manufacturer</b> .....	Horizon Hobby
Address.....	4105 Fieldstone Road,Champaign,IL 61822,USA
Telephone.....	+1-2174033542
Fax.....	/
Contact.....	Mr.Henry Lin
<b>Test report holder</b> .....	Horizon Hobby
Address.....	4105 Fieldstone Road,Champaign,IL 61822,USA
Telephone.....	+1-2174033542
Fax.....	/
Contact.....	Mr.Henry Lin

The test report merely corresponds to the test sample.  
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## 1 TEST STANDARDS

The tests were performed according to following standards:

- 47 CFR PART 15 OCT, 2012
- ANSI C63.4-2009

## 2 SUMMARY

### 2.1 GENERAL REMARKS

Date of receipt of test sample	14 March 2012
Testing commenced on	28 March 2012~20 February 2013
Testing concluded on	20 February 2013

### 2.2 FINAL ASSESSMENT

The FCC requirements pertaining to the technical standards and tested operation modes are

- - fulfilled.
- **not** fulfilled.

The equipment under test

- - fulfils the FCC requirements cited on page1.
- **does not** fulfil the FCC requirements cited on page 1.

## 3 EQUIPMENT UNDER TEST

### 3.1 Power supply system utilised

Power supply voltage :  4xStandard AAA Batteries

### 3.2 Short description of the Equipment under Test (EUT)

Number of tested samples: 1  
Serial number: Prototype

### 3.3 EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

- TX-Y position
- TX-Z position
- - TX-X position

Operation mode 1: TX -X position (26.995MHz, 27.145MHz,27.255MHz)

Note: X position of EUT is the worst case, so only these test results be recorded in the test report.

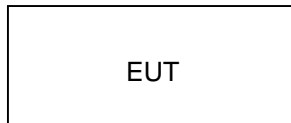


### 3.4 EUT configuration

#### 3.4.1. Description of configuration (EUT)

Description	:	Losi AM27 MHz
Model Number	:	HBZ4771, HBZ4772, HBZ4773, HBZ4774, HBZ4775, HBZ4776
Operation frequency	:	26.995MHz, 27.145MHz,27.255MHz
Modulation Technology	:	FM modulation

#### 3.4.2. Tested Supporting System Details



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## 4 TEST ENVIRONMENT

### 4.1 Address of the test laboratory

Building F, Dachuang industrial park, No.379, Zhongshan Dadao, Guangzhou, China

Tel: +86-20-85543113 (32 lines)

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### 4.2 Test facility

The test facility is recognized, certified, or accredited by the following organizations:

#### CNAS-Lab Code: L3394

CENTRE OF TESTING SERVICE CO., LTD has been assessed and proved to be in compliance with CNAS-CL01: 2006 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

#### IC-Registration No.: 8374A

The 3m Alternate Test Site of CENTRE OF TESTING SERVICE CO., LTD has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 8374 on June 6, 2011 .

#### FCC-Registration No.: 971995

CENTRE OF TESTING SERVICE CO., LTD, EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration No.791995, July 13,2012.

### 4.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35 ° C
Humidity:	25~75 %
Atmospheric pressure:	86~106 kPa

### 4.4 Definitions of symbols used in this test report

- - The black square indicates that the listed condition, standard or equipment is applicable for this report.
- - The empty square indicates that the listed condition, standard or equipment is **not** applicable for this report.

### 4.5 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the CTS quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

#### 4.6 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	±1.22dB	(1)
Power disturbance	30MHz~300MHz	±1.38dB	(1)
Radiation emission (3m)	30MHz~300MHz	±3.14dB	(1)
	300MHz~1000MHz	±3.18dB	(1)

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 5 Summary of standards and results

### 5.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION		
Description of Test Item	Standard	Results
Conducted Emission Test	FCC Part 15 C: 15.107 ANSI C63.4-2009	N/A
Radiated Emission Test	FCC Part 15 C: 15.227 and 209 ANSI C63.4-2009	PASSED
20 dB Bandwidth	FCC Part 15 C: 15.227 ANSI C63.4-2009	PASSED
N/A is an abbreviation for Not Applicable.		

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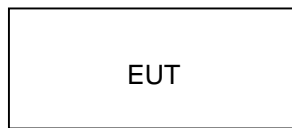


## 6 Power Line Conducted Emission Test

### 6.1. Test Equipment

Conducted Disturbance					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESHS10	842884/012	2012/12
2	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	832479/025	2012/12
3	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	832479/026	2012/12
4	Pulse Limiter	ROHDE & SCHWARZ	ESHSZ2	100301	2012/12
5	EMI Test Software	ROHDE & SCHWARZ	ESK1	N/A	2012/12

### 6.2. Block Diagram of Test Setup



*(EUT: Transmitter)*

### 6.3. Power Line Conducted Emission Test Limits

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. \* Decreasing linearly with logarithm of frequency.  
 2. The lower limit shall apply at the transition frequencies.

### 6.4. Test Procedure

The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N.#2). This provides a 50 ohm coupling impedance for the EUT. Please refer the block diagram of the test setup and photographs. The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#1). Power on the PC and let it work normally, we use a keyboard test soft ware, let EUT working in test mode, then test it. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC Part 15C on Conducted Emission Test.

### 6.5. Power Line Conducted Emission Test Results

**Not Applicable (The EUT power supply by 4xStandard AAA Batteries)**

## 7 Radiated disturbance (electric field)

### 7.1. Test Equipment

Radiated disturbance (electric field)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100868	2012/12
2	Biconical Antenna	ROHDE & SCHWARZ	HK116	100221	2012/12
3	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2012/12
4	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2012/12
5	Loop Antenna	A.R.A	PLA-1030/B	1030	2012/12
6	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2012/12

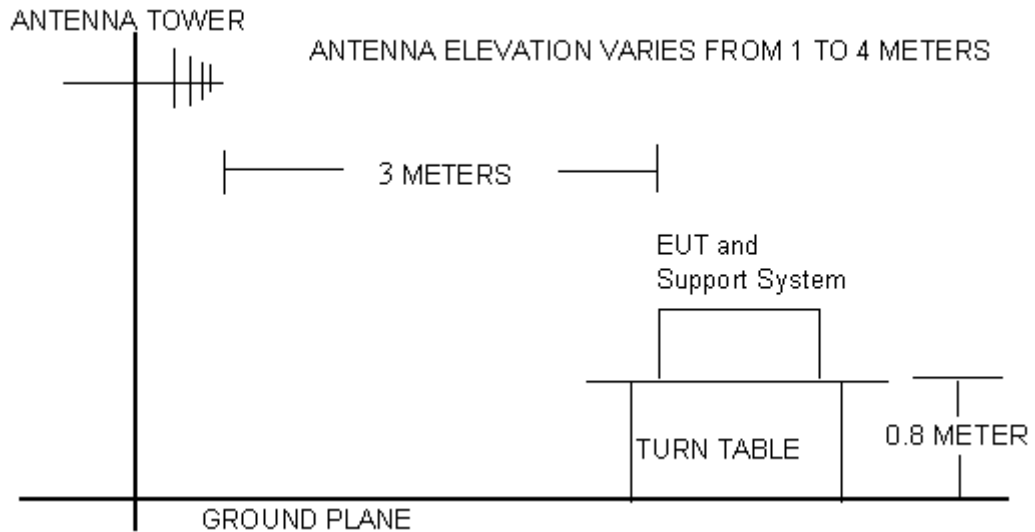
### 7.2. Block Diagram of Test Setup

#### 7.2.1 Block Diagram of connection between EUT and simulators



*(EUT: Transmitter)*

### 7.2.2 Anechoic Chamber Setup Diagram



### 7.3. Radiated Emission

#### LIMIT

The field strength of any emission within this band shall not exceed 10,000 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in Section 15.35 for limiting peak emissions apply.

The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in Section 15.209.

1. Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (mV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

**Remark:** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

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2. In the above emission table, the tighter limit applies at the band edges.

Frequency (Hz)	Field Strength ( $\mu\text{V}/\text{m}$ at 3-meter)	Field Strength ( $\text{dB}\mu\text{V}/\text{m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

3. Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (Hz)	Field Strength ( $\mu\text{V}/\text{m}$ at meter)	Measurement Distance (meter)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 - 88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

\*\* Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

## 7.4. Test Procedure

- The EUT is placed on a turntable, which is 0.8m above ground plane.
- The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- EUT is set 3m away from the receiving antenna (below 30MHz use loop antenna and above 30MHz use Log per Antenna), which is varied from 1m to 4m to find out the highest emissions.
- Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- Set the spectrum analyzer in the following setting as:
  - Below 1GHz:
    - RBW=100kHz / VBW=100kHz / Sweep=AUTO
  - Above 1GHz:
    - PEAK: RBW=VBW=1MHz / Sweep=AUTO
    - AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
- Repeat above procedures until the measurements for all frequencies are complete.

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## 7.5.TX Radiated Emission Test Results

**PASSED.**

The frequency range from 9KHz to 30MHz,30MHz to 230MHz, 230MHz to 1000MHz is investigated.  
Please see the following pages.

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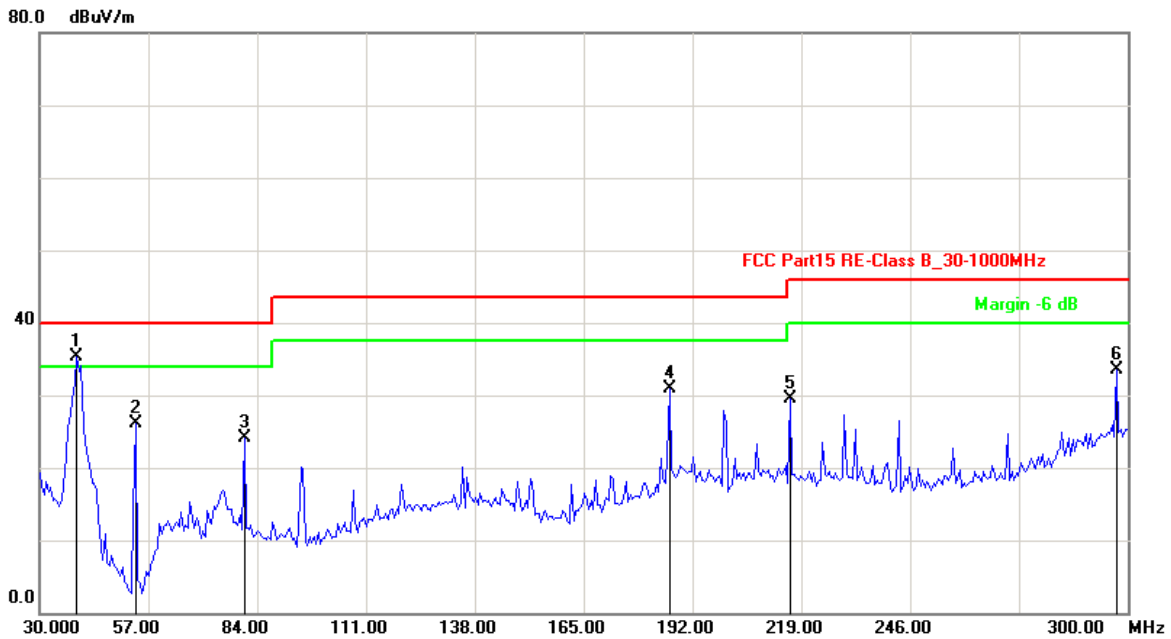
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EUT	transmitter
Firm Name	Horizon Hobby
Operating Condition	4xStandard AAA Batteries
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test Date:	28 March 2012~20 February 2013
Operator	<b>Duke</b>
MODEL NO	HBZ4771 (26.995MHz)

Test Mode:	TX -X position	Result:	<input checked="" type="checkbox"/> - passed
Test point:	Vertical		<input type="checkbox"/> - not passed
Frequency range:	9KHz-30MHz and 30-230MHz and 230-1000MHz		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	26.9950	-31.97	118.45	86.48	100.00	-13.52	peak
2	26.9950	-31.97	103.19	71.22	80.00	-8.78	AVG
3	39.1984	-40.90	76.11	35.21	40.00	-4.79	QP
4	53.8076	-49.66	75.73	26.07	40.00	-13.93	QP
5	80.8617	-38.53	62.60	24.07	40.00	-15.93	QP
6	186.3727	-32.46	63.38	30.92	43.50	-12.58	QP
7	216.1323	-31.57	61.04	29.47	46.00	-16.53	QP
8	297.2946	-25.82	59.29	33.47	46.00	-12.53	QP

Remark:9KHz~30MHz no specific emission form the EUT (Margin > 6dB form the applicable Limit)

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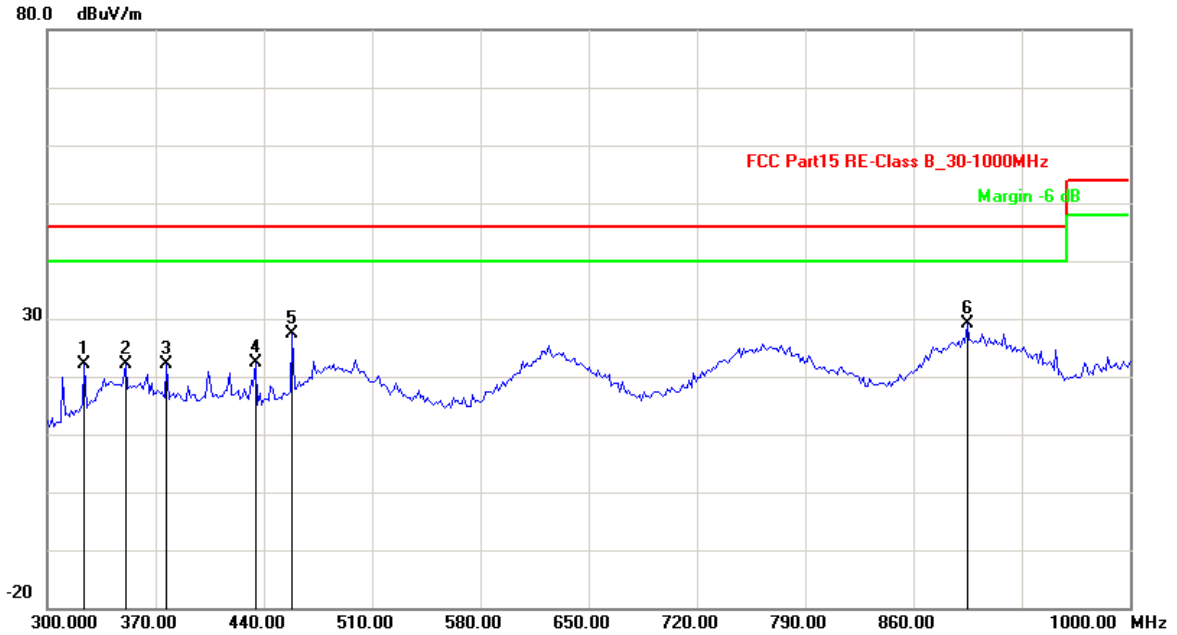
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N o.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	323.8477	-37.07	59.22	22.15	46.00	-23.85	QP
2	350.5010	-33.59	55.75	22.16	46.00	-23.84	QP
3	377.1543	-35.17	57.35	22.18	46.00	-23.82	QP
4	434.6693	-35.99	58.27	22.28	46.00	-23.72	QP
5	458.5170	-33.75	61.04	27.29	46.00	-18.71	QP
6	894.7896	-25.32	54.46	29.14	46.00	-16.86	QP

Note: 1. Emission level=Read level + Factor  
 2. Factor=Antenna factor + Cable loss  
 3. Margin=Level-Limit.

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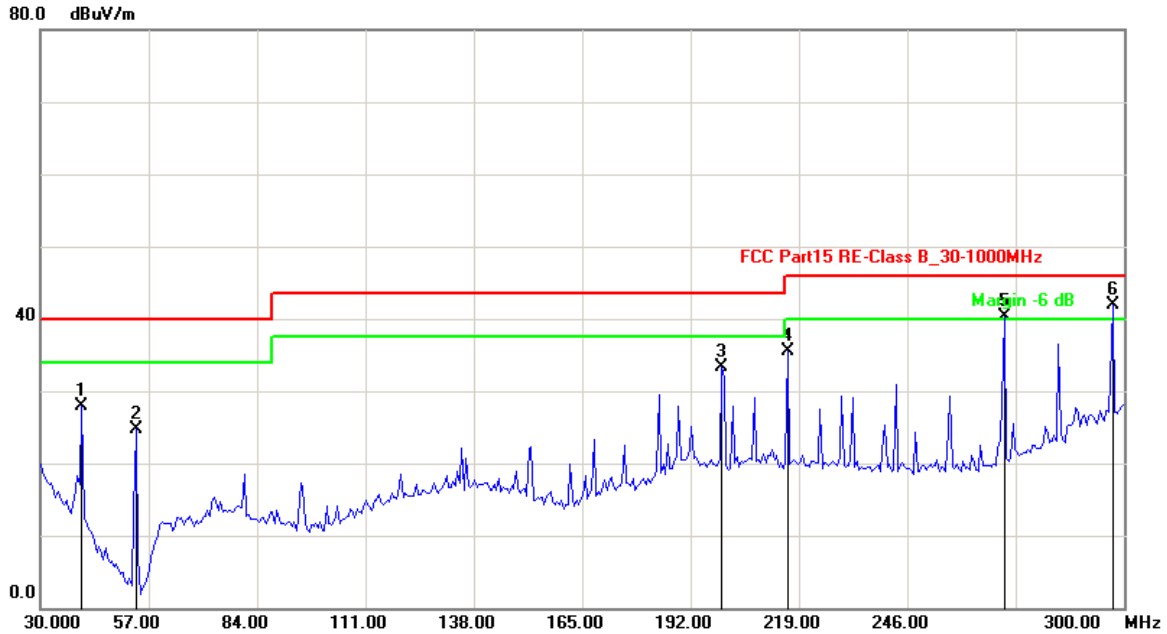
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Test Mode:	TX -X position	Result:	<input checked="" type="checkbox"/> - passed
Test point:	Horizontal		<input type="checkbox"/> - not passed
Frequency range:	9KHz-30MHz and 30-230MHz and 230-1000MHz		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	26.9950	-31.97	111.52	79.55	100.00	-20.45	peak
2	26.9950	-31.97	95.02	63.05	80.00	-16.95	AVG
3	40.2806	-41.67	69.64	27.97	40.00	-12.03	QP
4	53.8076	-49.66	74.33	24.67	40.00	-15.33	QP
5	199.8998	-32.09	65.45	33.36	43.50	-10.14	QP
6	216.1323	-31.57	67.07	35.50	46.00	-10.50	QP
7	270.2405	-31.53	71.90	40.37	46.00	-5.63	QP
8	297.2946	-25.82	67.77	41.95	46.00	-4.05	QP

Remark:9KHz~30MHz no specific emission form the EUT (Margin > 6dB form the applicable Limit)

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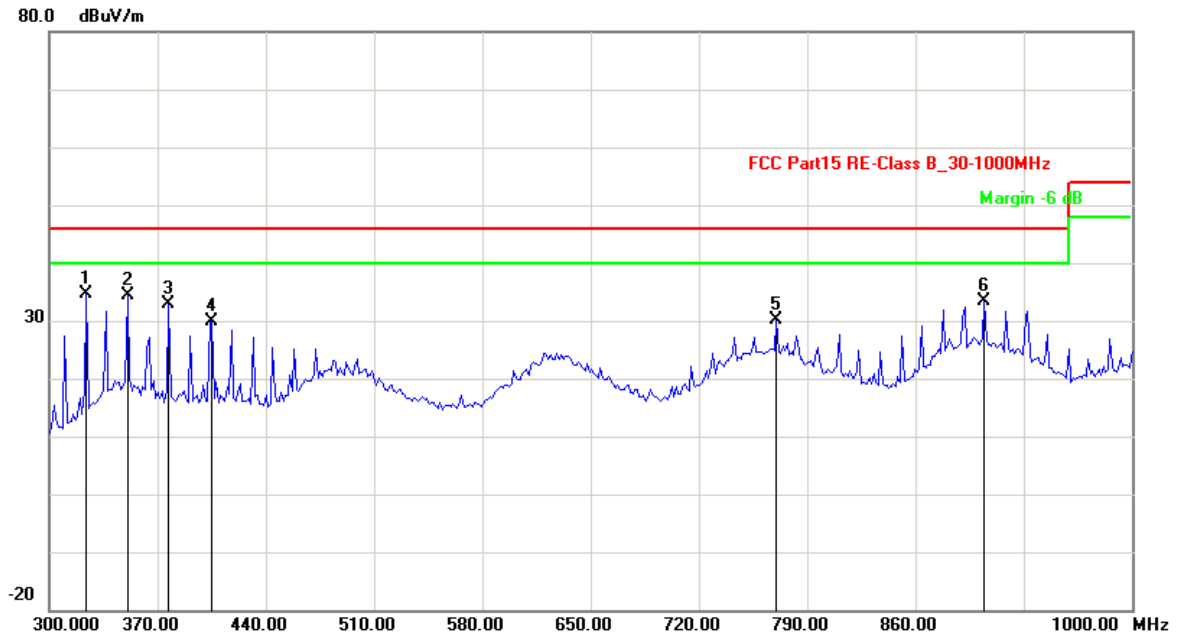
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No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	323.8477	-37.07	71.65	34.58	46.00	-11.42	QP
2	350.5010	-33.59	68.02	34.43	46.00	-11.57	QP
3	377.1543	-35.17	67.95	32.78	46.00	-13.22	QP
4	405.2104	-35.23	65.14	29.91	46.00	-16.09	QP
5	769.9399	-26.69	56.77	30.08	46.00	-15.92	QP
6	904.6092	-25.27	58.57	33.30	46.00	-12.70	QP

Note: 1. Emission level=Read level + Factor  
 2. Factor=Antenna factor + Cable loss  
 3. Margin= Level- Limit.

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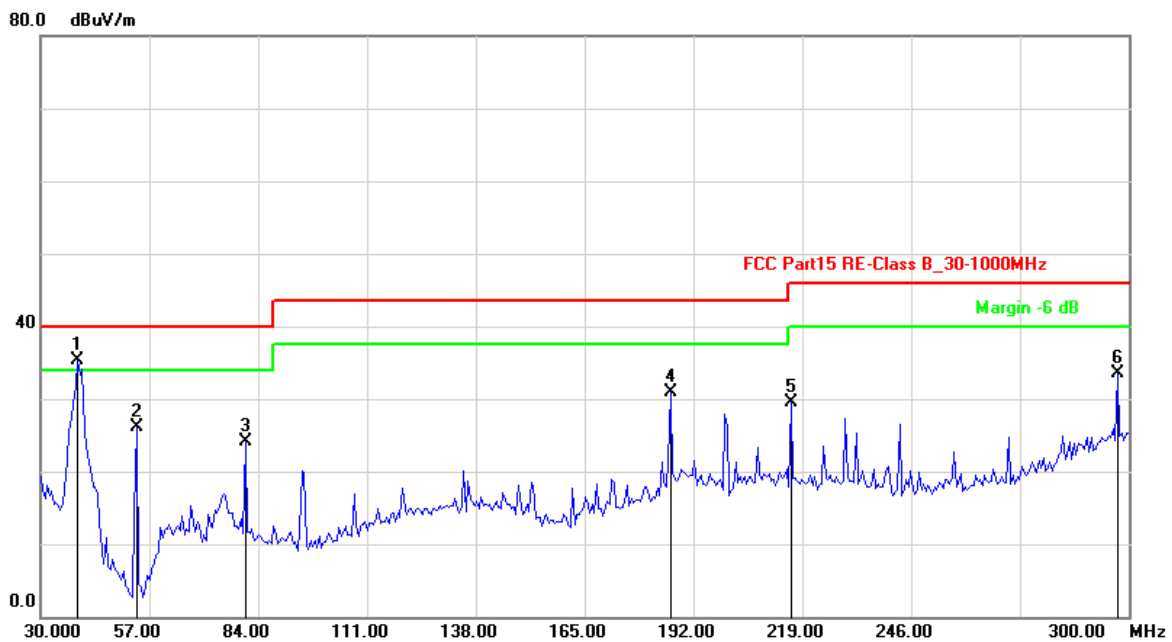
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EUT	transmitter	
Firm Name	Horizon Hobby	
Operating Condition	4xStandard AAA Batteries	
Test Condition	Ambient Temperature: 25°C Humidity: 56%	
Test Date:	28 March 2012~20 February 2013	
Operator	Duke	
MODEL NO	HBZ4774 (17.145MHz)	
Test Mode:	TX -X position	Result: <input checked="" type="checkbox"/> - passed <input type="checkbox"/> - not passed
Test point:	Vertical	
Frequency range:	9KHz-30MHz and 30-230MHz and 230-1000MHz	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	27.1450	-32.02	116.18	84.16	100.00	-15.84	peak
2	27.1450	-32.02	102.60	70.58	80.00	-9.42	AVG
3	39.1984	-40.90	77.29	36.39	40.00	-3.61	QP
4	74.3687	-38.48	71.07	32.59	40.00	-7.41	QP
5	196.6533	-31.81	70.59	38.78	43.50	-4.72	QP
6	217.2144	-31.62	70.87	39.25	46.00	-6.75	QP
7	271.8637	-31.15	70.88	39.73	46.00	-6.27	QP
8	298.9178	-25.60	63.56	37.96	46.00	-8.04	QP

Remark:9KHz~30MHz no specific emission form the EUT (Margin > 6dB form the applicable Limit)

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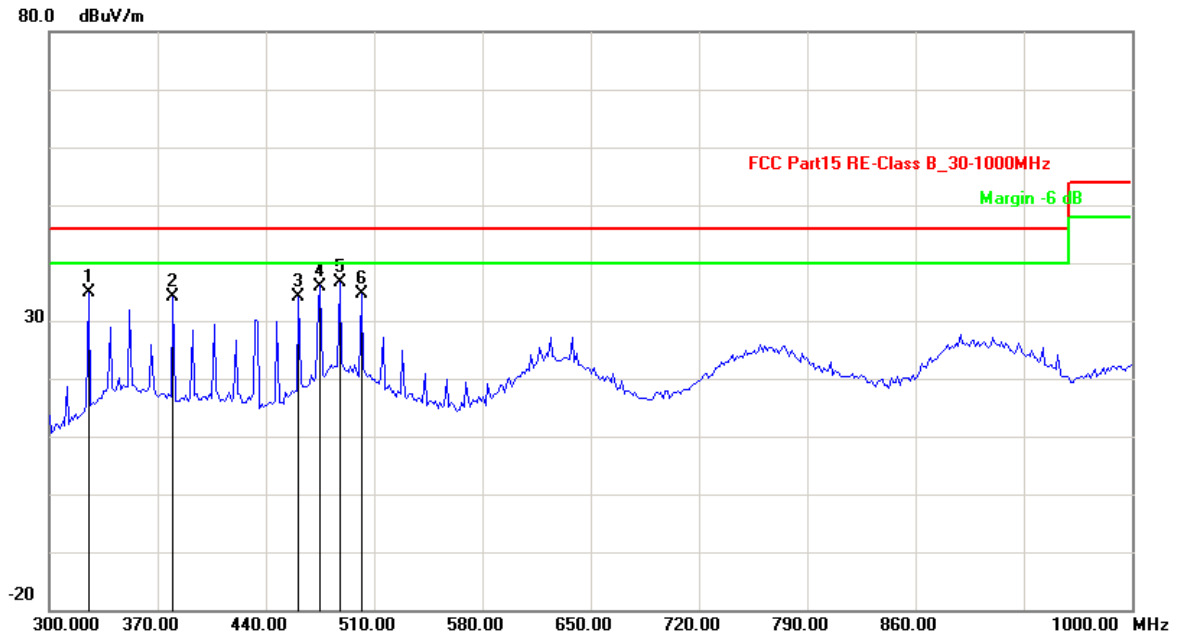
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N o.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	325.2505	-36.74	71.54	34.80	46.00	-11.20	QP
2	379.9599	-35.39	69.43	34.04	46.00	-11.96	QP
3	461.3226	-33.31	67.40	34.09	46.00	-11.91	QP
4	475.3507	-30.89	66.89	36.00	46.00	-10.00	QP
5	487.9760	-30.30	67.04	36.74	46.00	-9.26	QP
6	502.0040	-30.92	65.51	34.59	46.00	-11.41	QP

- Note: 1. Emission level=Read level + Factor  
 2. Factor=Antenna factor + Cable loss  
 3. Margin=Level-Limit.

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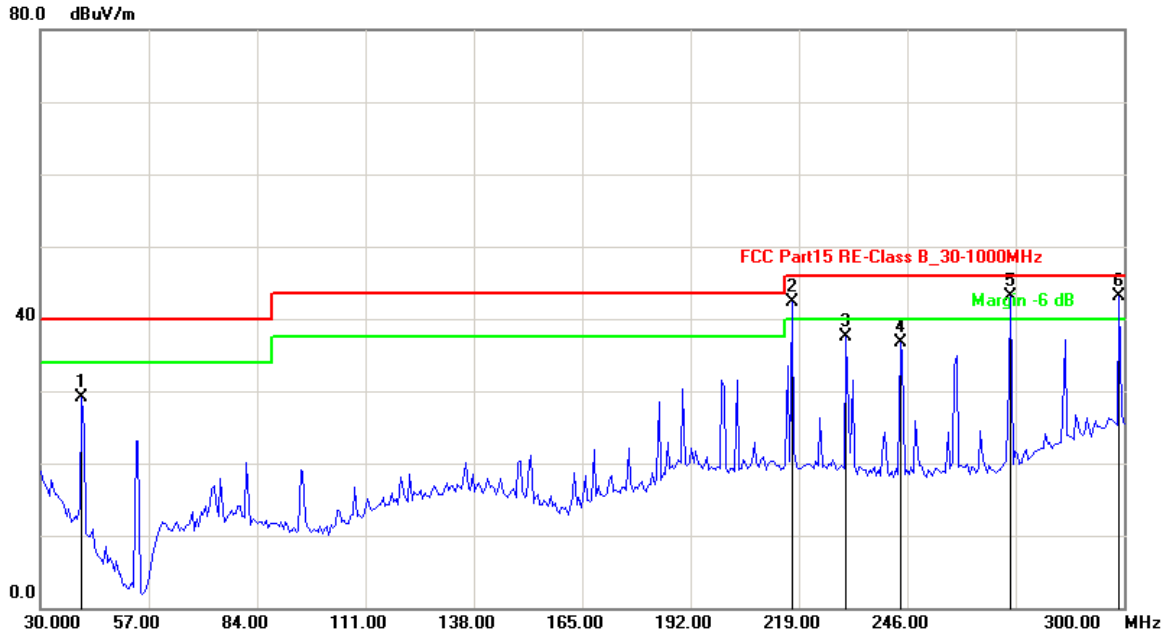
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Test Mode:	TX -X position	Result:	<input checked="" type="checkbox"/> - passed
Test point:	Horizontal		<input type="checkbox"/> - not passed
Frequency range:	9KHz-30MHz and 30-230MHz and 230-1000MHz		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	27.1450	-32.02	109.67	77.65	100.00	-22.35	peak
2	27.1450	-32.02	96.20	64.18	80.00	-15.82	AVG
3	40.2806	-41.67	70.68	29.01	40.00	-10.99	QP
4	217.2144	-31.62	73.99	42.37	46.00	-3.63	QP
5	230.7415	-31.70	69.25	37.55	46.00	-8.45	QP
6	244.2685	-32.56	69.19	36.63	46.00	-9.37	QP
7	271.8637	-31.15	74.24	43.09	46.00	-2.91	QP
8	298.9178	-25.60	68.65	43.05	46.00	-2.95	QP

Remark:9KHz~30MHz no specific emission form the EUT (Margin > 6dB form the applicable Limit)

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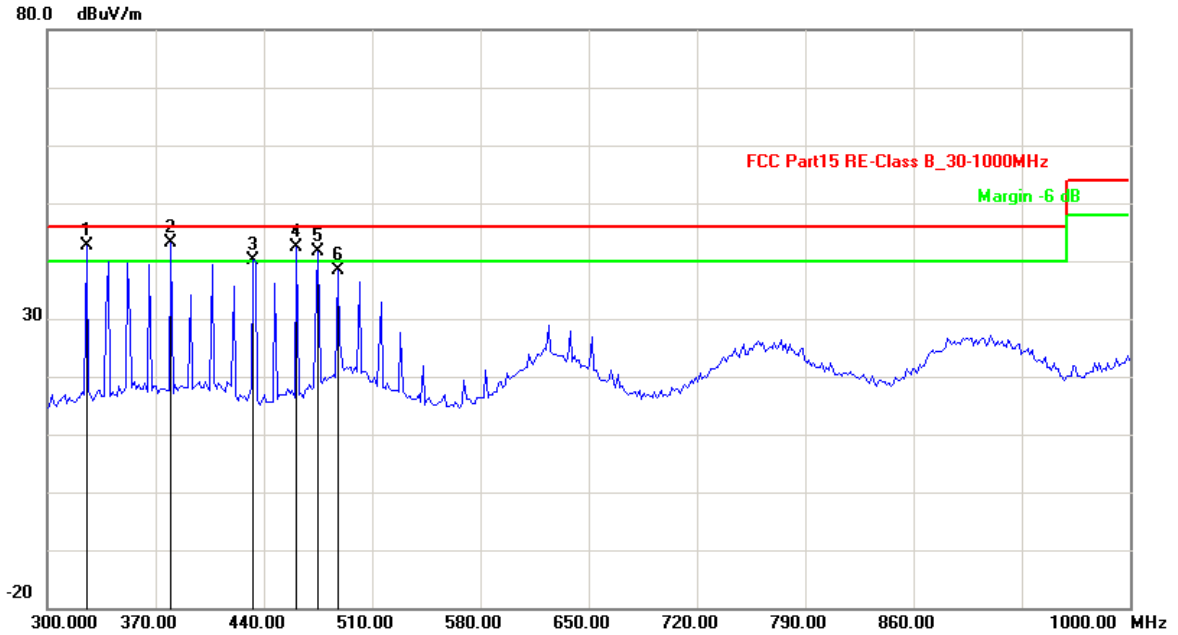
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No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	325.2505	-36.74	79.46	42.72	46.00	-3.28	QP
2	379.9599	-35.39	78.41	43.02	46.00	-2.98	QP
3	433.2665	-35.91	75.96	40.05	46.00	-5.95	QP
4	461.3226	-33.31	75.62	42.31	46.00	-3.69	QP
5	475.3507	-30.89	72.64	41.75	46.00	-4.25	QP
6	487.9760	-30.30	68.77	38.47	46.00	-7.53	QP

Note: 1. Emission level=Read level + Factor  
 2. Factor=Antenna factor + Cable loss  
 3. Margin= Level- Limit.

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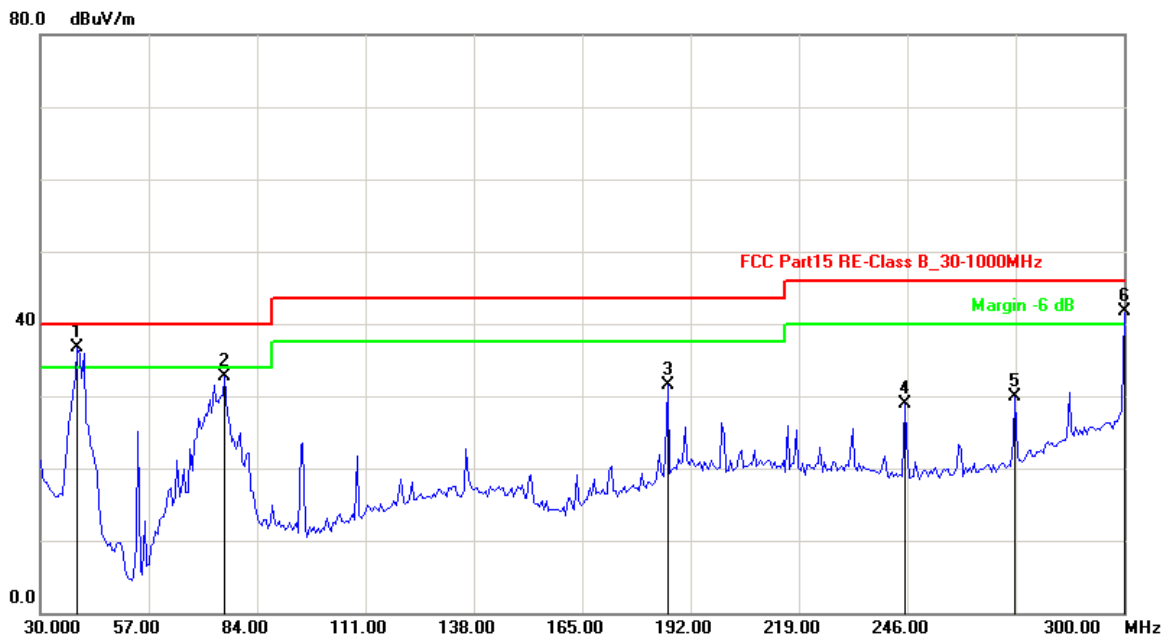
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EUT	transmitter
Firm Name	Horizon Hobby
Operating Condition	4xStandard AAA Batteries
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test Date:	28 March 2012~20 February 2013
Operator	<b>Duke</b>
MODEL NO	HBZ4776 (27.255MHz)

Test Mode:	TX -X position	Result:	<input checked="" type="checkbox"/> - passed
Test point:	Vertical		<input type="checkbox"/> - not passed
Frequency range:	9KHz-30MHz and 30-230MHz and 230-1000MHz		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	27.2550	-32.06	117.85	85.79	100.00	-14.21	peak
2	27.2550	-32.06	103.39	71.33	80.00	-8.67	AVG
3	39.1984	-40.90	77.52	36.62	40.00	-3.38	QP
4	75.9920	-38.29	71.06	32.77	40.00	-7.23	QP
5	186.3727	-32.46	63.89	31.43	43.50	-12.07	QP
6	245.3507	-32.57	61.38	28.81	46.00	-17.19	QP
7	272.9459	-30.89	60.70	29.81	46.00	-16.19	QP
8	300.0000	-25.45	67.24	41.79	46.00	-4.21	QP

Remark:9KHz~30MHz no specific emission form the EUT (Margin > 6dB form the applicable Limit)

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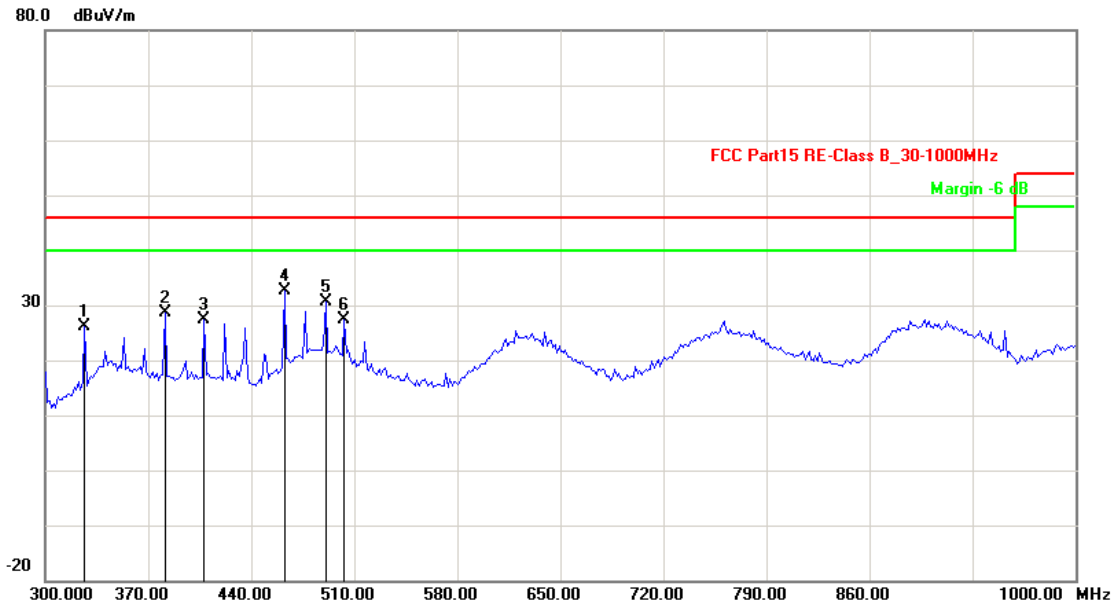
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N o.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	326.6533	-36.42	62.66	26.24	46.00	-19.76	QP
2	381.3627	-35.38	64.10	28.72	46.00	-17.28	QP
3	408.0159	-35.20	62.66	27.46	46.00	-18.54	QP
4	462.7255	-33.07	65.66	32.59	46.00	-13.41	QP
5	490.7816	-30.37	61.08	30.71	46.00	-15.29	QP
6	503.4068	-31.14	58.43	27.29	46.00	-18.71	QP

- Note: 1. Emission level=Read level + Factor
- 2. Factor=Antenna factor + Cable loss
- 3. Margin=Level-Limit.

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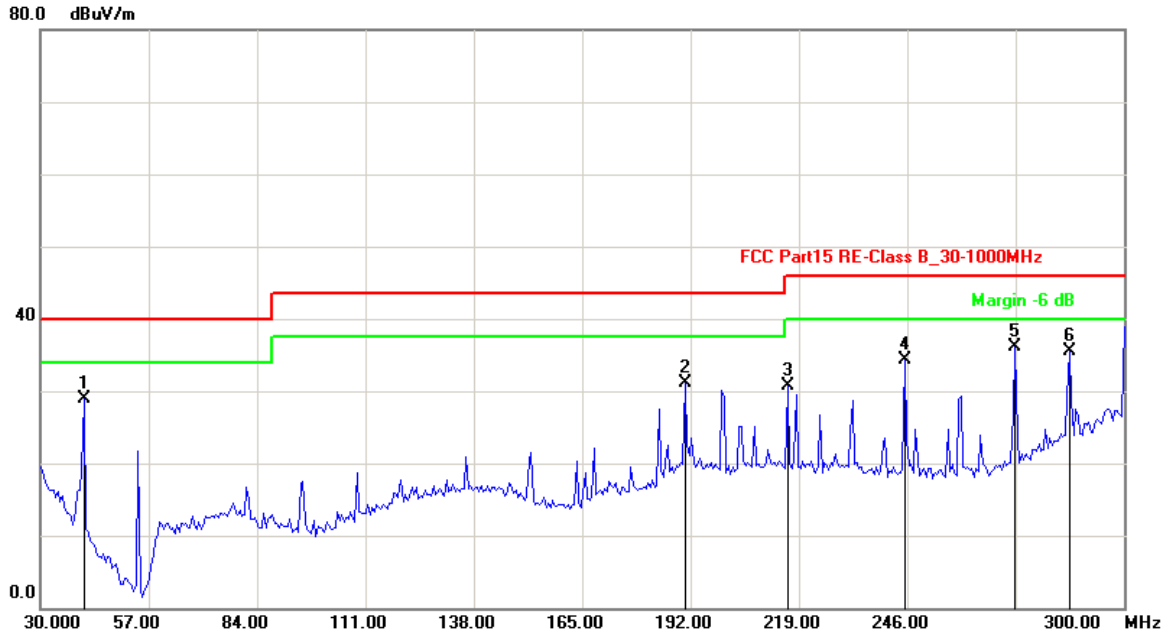
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Test Mode:	TX -X position	Result:	<input checked="" type="checkbox"/> - passed
Test point:	Horizontal		<input type="checkbox"/> - not passed
Frequency range:	9KHz-30MHz and 30-230MHz and 230-1000MHz		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	27.2550	-32.06	110.07	78.01	100.00	-21.99	peak
2	27.2550	-32.06	96.44	64.38	80.00	-15.62	AVG
3	40.8216	-42.00	70.93	28.93	40.00	-11.07	QP
4	190.7014	-31.30	62.34	31.04	43.50	-12.46	QP
5	216.1323	-31.57	62.20	30.63	46.00	-15.37	QP
6	245.3507	-32.57	66.78	34.21	46.00	-11.79	QP
7	272.9459	-30.89	67.00	36.11	46.00	-9.89	QP
8	286.4728	-27.66	63.22	35.56	46.00	-10.44	QP

Remark:9KHz~30MHz no specific emission form the EUT (Margin > 6dB form the applicable Limit)

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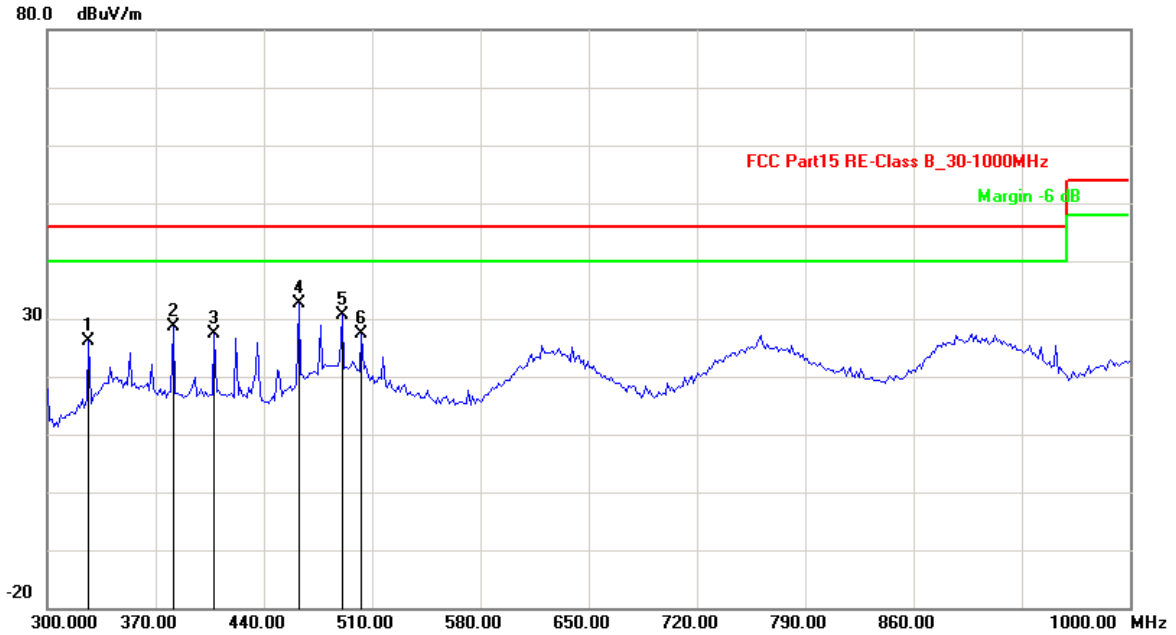
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No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	326.6533	-36.42	62.66	26.24	46.00	-19.76	QP
2	381.3627	-35.38	64.10	28.72	46.00	-17.28	QP
3	408.0159	-35.20	62.66	27.46	46.00	-18.54	QP
4	462.7255	-33.07	65.66	32.59	46.00	-13.41	QP
5	490.7816	-30.37	61.08	30.71	46.00	-15.29	QP
6	503.4068	-31.14	58.43	27.29	46.00	-18.71	QP

Note: 1. Emission level=Read level + Factor  
 2. Factor=Antenna factor + Cable loss  
 3. Margin= Level- Limit.

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## 8 20 dB Bandwidth test

### 8.1. Test Equipment

20 dB Bandwidth test					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	10868	2012/12
2	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2012/12
3	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2012/12
4	Loop Antenna	A.R.A	PLA-1030/B	1030	2012/12

### 8.2. Test Information

EUT:	Transmitter
M/N:	HBZ4771, HBZ4772, HBZ4773, HBZ4774, HBZ4775, HBZ4776
Firm Name:	Horizon Hobby
Power supply:	4xStandard AAA Batteries
Test Condition:	Ambient Temperature: 25°C Humidity: 56%
Test standard:	FCC PART 15C: 15.227
Test mode:	Transmitting, Hopping on
Test Frequency:	26.995MHz, 27.145MHz, 27.255MHz
Test Date:	28 March 2012~20 February 2013
Test By:	<b>Duke</b>

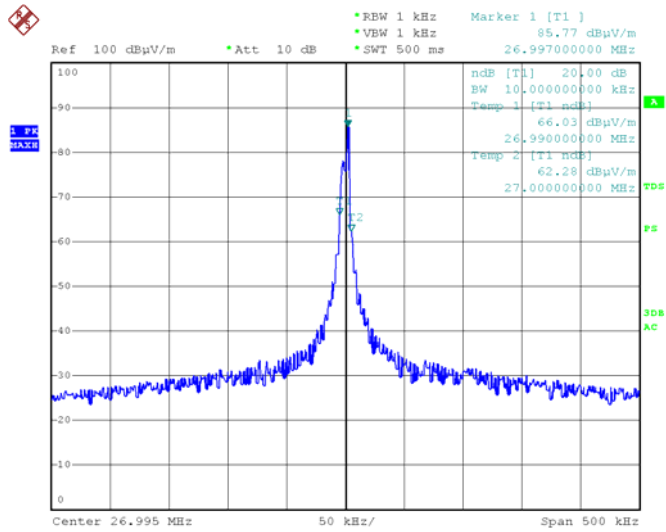
### 8.3. Test Results

**PASSED.**

The testing data was attached in the next pages.

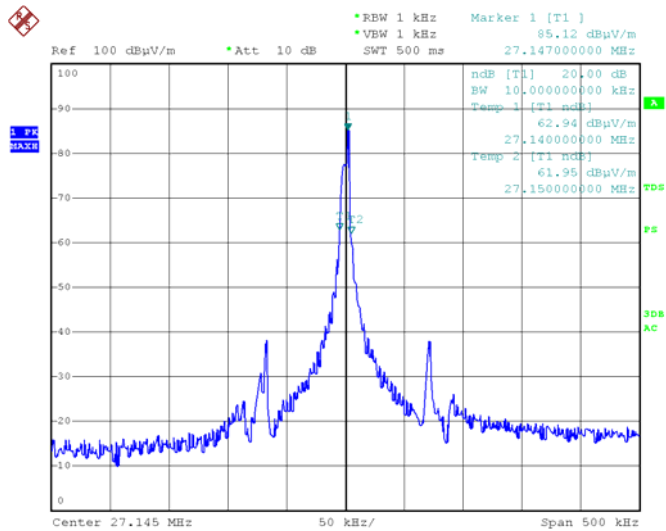
Channel(MHz)	20dB Bandwidth (kHz)	Limit (kHz)	Conclusion
26.995	10	---	PASSED
27.145	10	---	PASSED
27.255	10	---	PASSED

### Test Frequency:26.995 MHz



Date: 19.APR.2012 12:31:29

### Test Frequency:27.145 MHz



Date: 19.APR.2012 12:05:18

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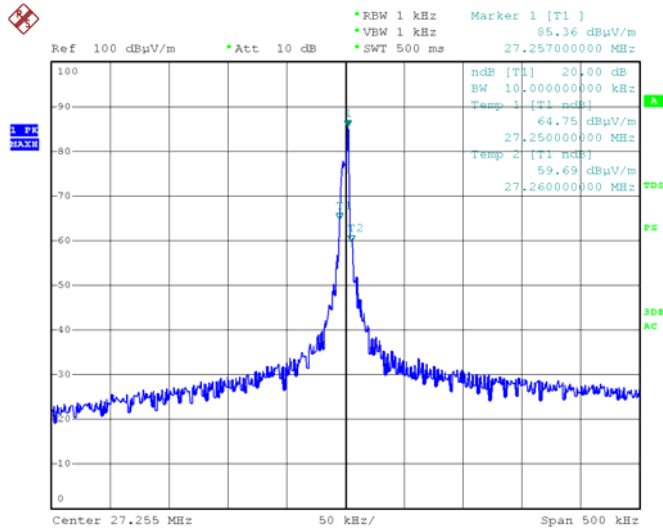
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Test Frequency: 27.255 MHz



Date: 19.APR.2012 12:29:44

## 9 Deviation to test specifications

[ NONE ]

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