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Report No.: SZEMO10040187101

Page: 1 of 17

# FCC REPORT

**Application No. :** SZEMO100401871RF  
**Applicant:** Mattel Asia Pacific Sourcing Ltd.  
**Product Name:** SONIC SLAM  
**Operation Frequency:** 2465MHz  
**FCC ID:** PIYT7003  
**Standards:** FCC CFR Title 47 Part 15 Subpart C Section 15.249: 2008  
**Date of Receipt** 14 April 2010  
**Date of Test** 14 April to 10 May 2010  
**Date of Issue** 12 May 2010

<b>Test Result :</b>	<b>PASS *</b>
----------------------	---------------

\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



2010. May

Jack Zhang  
Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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## 2 Contents

	Page
1 COVER PAGE .....	1
2 CONTENTS .....	2
3 TEST SUMMARY .....	3
4 GENERAL INFORMATION.....	4
4.1 CLIENT INFORMATION.....	4
4.2 GENERAL DESCRIPTION OF E.U.T. ....	4
4.3 E.U.T OPERATION MODE .....	5
4.4 TEST FACILITY .....	5
4.5 TEST LOCATION .....	5
4.6 OTHER INFORMATION REQUESTED BY THE CUSTOMER .....	5
4.7 TEST INSTRUMENTS LIST: .....	6
5 TEST RESULTS AND MEASUREMENT DATA.....	7
5.1 ANTENNA REQUIREMENT:.....	7
5.2 RADIATED EMISSION.....	8
5.2.1 Duty cycle:.....	10
5.2.2 Field Strength Of The Fundamental Signal.....	11
5.2.3 Spurious Emissions.....	12
5.2.4 Band edge (Radiated Emission).....	14
5.2.5 20dB Bandwidth.....	16-17

### 3 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Passed
Field strength of the fundamental signal	15.249 (a)	Passed
Spurious emissions	15.249/15.209	Passed
20dB Occupied Bandwidth	15.215 (c)	Passed

*Remark: Passed: The EUT complies with the essential requirements in the standard.*

*Failed: The EUT does not comply with the essential requirements in the standard.*

## 4 General Information

### 4.1 Client Information

Applicant:	Mattel Asia Pacific Sourcing Ltd.
Address of Applicant	13/F., South Tower, World Finance Centre, Harbour City, Tsimshatsui, Kowloon, Hong Kong
Manufacturer:	Dongguan Radica Games Manufactory Co., Ltd
Address of Manufacturer:	Long Yan Management Area, Humen Town, Dongguan City, Guangdong Province.

### 4.2 General Description of E.U.T.

Product Name:	SONIC SLAM
Trade Name:	N/A
Item No.:	T7003
Country of Origin:	China
Labeled Age Grading:	6+
Operation Frequency:	2465MHz
Channel numbers:	1
Antenna Type:	Integral
Power supply:	3X1.5V(AAA)=4.5V

**4.3 E.U.T Operation mode**

<b>Operating Environment:</b>	
Temperature:	24.0 °C
Humidity:	52 % RH
Atmospheric Pressure:	1008 mbar
<b>Test mode:</b>	
Normal operation mode:	Keep the EUT in operation mode
Transmitting mode:	Keep the EUT in transmitting mode with modulation.

**4.4 Test Facility**

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

**CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

**VCCI**

The 3m Semi-anechoic chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2197 and C-2383 respectively.

Date of Registration: September 29, 2008. Valid until September 28, 2011.

**FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen 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 556682, June 27, 2008.

**Industry Canada (IC)**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1.

**4.5 Test Location**

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

**4.6 Other Information Requested by the Customer**

None.

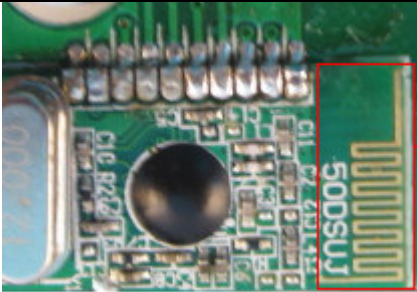
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4.7 Test Instruments list:

RE in Chamber						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	16-06-2009	15-06-2010
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	12-12-2009	11-12-2010
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A
4	Coaxial cable	SGS	N/A	SEL0028	18-06-2009	17-06-2010
6	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0014	12-08-2009	11-08-2010
7	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0005	12-08-2009	11-08-2010
8	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	12-08-2009	11-08-2010
9	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	18-06-2009	17-06-2010
10	Pre-amplifier (1-18GHz)	Rohde & Schwarz	AFS42-00101 800-25-S-42	SEL0081	18-06-2009	17-06-2010
11	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	SEL0080	18-06-2009	17-06-2010
12	Band filter	Amindeon	82346	SEL0094	18-06-2009	17-06-2010

## 5 Test results and Measurement Data

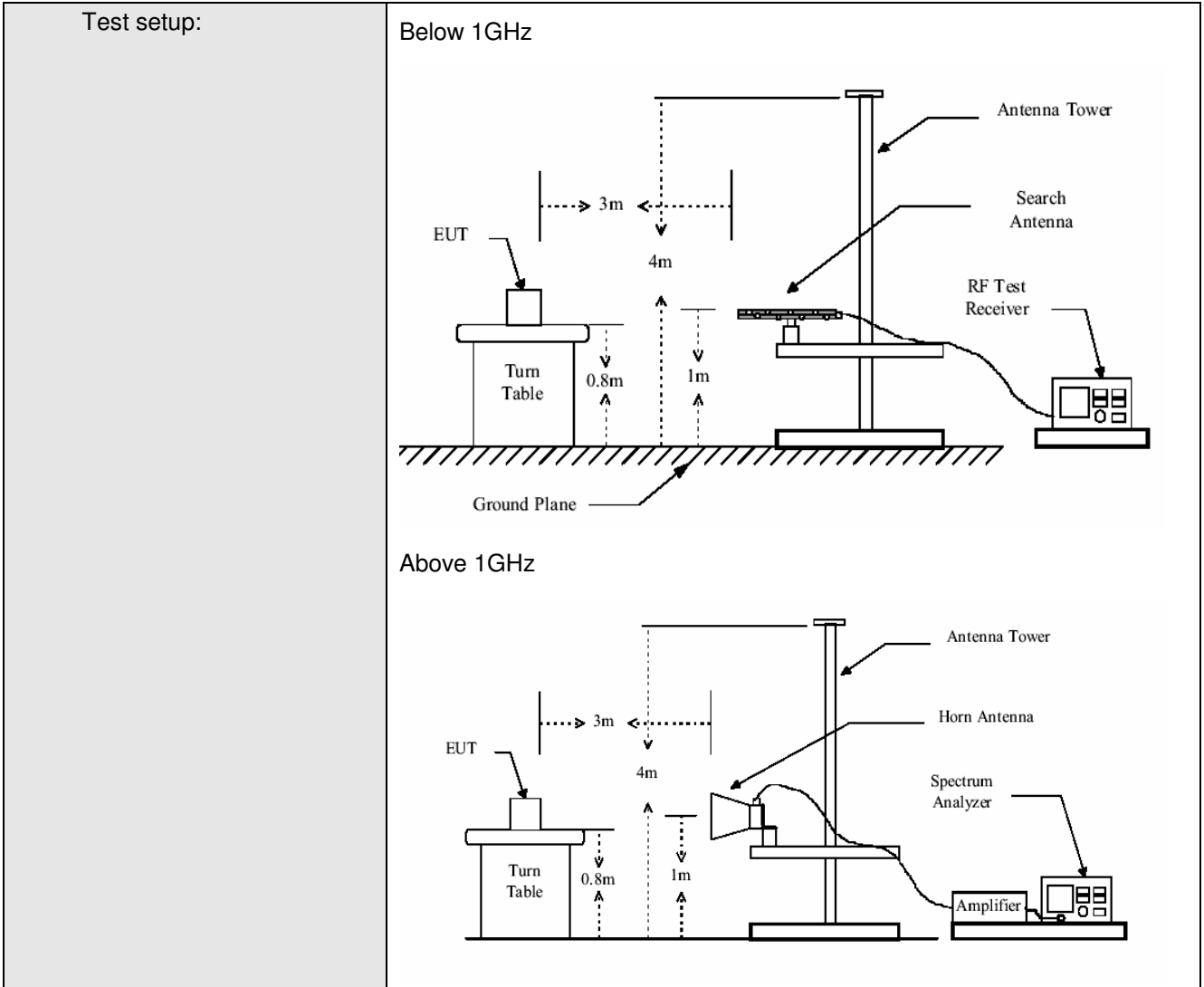
### 5.1 Antenna requirement:

<b>Standard requirement:</b>	FCC Part15 C Section 15.203
<p>15.203 requirement:  <i>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</i></p>	
<b>E.U.T Antenna:</b>	
 <p style="text-align: right;"><b>Antenna</b></p>	

**5.2 Radiated Emission**

Test Requirement:	FCC Part15 C Section 15.249, 15.209 and 15.205			
Test Method:	ANSI C63.4: 2003			
Test Frequency Range:	30MHz to 25GHz			
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)			
Receiver setup:	Frequency	Detector	RBW	VBW
	30MHz-1GHz	Quasi-peak	100KHz	300KHz
	Above 1GHz	Peak	1MHz	3MHz
Limit: (Field strength of the fundamental signal)	Frequency	Limit (dBuV/m @3m)	Remark	
	2400MHz-2483.5MHz	94.0	Average Value	
		114.0	Peak Value	
Limit: (Spurious Emissions)	Frequency	Limit (dBuV/m @3m)	Remark	
	30MHz-88MHz	40.0	Quasi-peak Value	
	88MHz-216MHz	43.5	Quasi-peak Value	
	216MHz-960MHz	46.0	Quasi-peak Value	
	960MHz-1GHz	54.0	Quasi-peak Value	
	Above 1GHz	54.0	Average Value	
74.0		Peak Value		
Test Procedure:	<p>1. The EUT is placed on a turntable, which is 0.8m above ground plane.</p> <p>2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.</p> <p>3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.</p> <p>4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.</p> <p>5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.</p> <p>6. Repeat above procedures until the measurements for all frequencies are complete.</p> <p>7. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.</p> <p>In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.</p>			
Test Instruments:	Refer to section 4.7 for details			
Test mode:	Normal operation mode			
Test results:	Passed			





**Note:**

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Preamplifier Factor}$$

Measurement Data

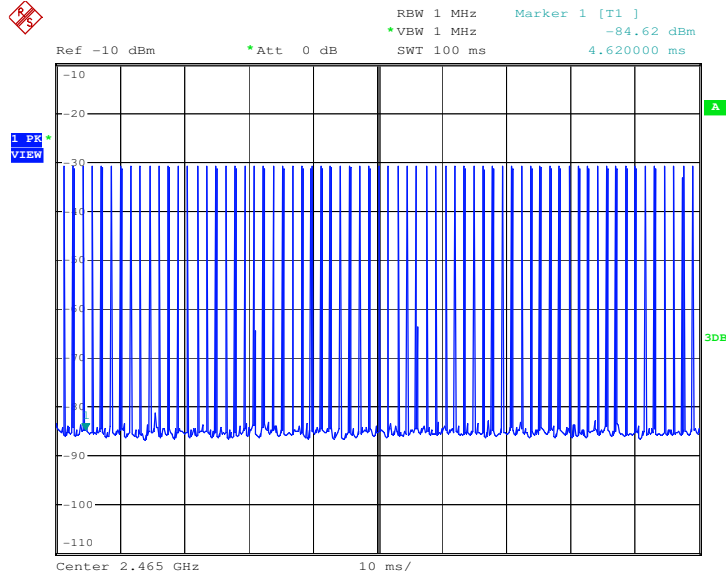
**5.2.1 Duty cycle:**

Test plot:

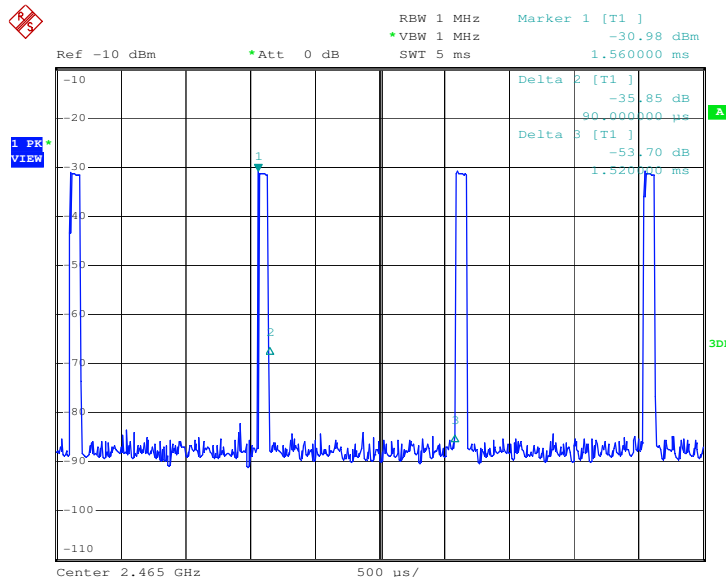
Average level=Peak level +20log(Duty cycle),

Duty cycle= T on time / T period= T on time/100ms

Duty factor=20log(Duty cycle) =-24.55



Date: 13.MAY.2010 14:06:45



Date: 13.MAY.2010 14:07:44

Note:

For the average limit is 20dB below PK limit, and from the above plots, the duty factor is 24.55dB>20dB, so when all of the emissions comply with PK limit, all levels were deemed to comply with the average limit.

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**5.2.2 Field Strength Of The Fundamental Signal**

**Peak value:**

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2465	6.70	30.25	39.61	84.00	81.34	114	-32.66	Vertical
2465	6.70	30.25	39.61	88.00	85.34	114	-28.66	Horizontal

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**5.2.3 Spurious Emissions**

**30MHz~1GHz**

Test mode: Normal operation mode

**QP value:**

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
98.870	1.19	9.06	27.89	35.23	17.59	43.50	-25.91	Vertical
226.910	1.56	11.56	27.02	32.45	18.55	46.00	-27.45	Vertical
273.470	1.78	12.78	26.82	32.16	19.90	46.00	-26.10	Vertical
412.180	2.25	16.35	27.45	31.68	22.83	46.00	-23.17	Vertical
684.750	2.87	21.48	27.33	31.54	28.56	46.00	-17.44	Vertical
935.980	3.64	23.30	26.43	31.86	32.37	46.00	-13.63	Vertical
191.020	1.39	10.11	27.20	34.65	18.95	43.50	-24.55	Horizontal
226.910	1.56	11.56	27.02	41.69	27.79	46.00	-18.21	Horizontal
273.470	1.78	12.78	26.82	43.28	31.02	46.00	-14.98	Horizontal
334.580	2.01	15.04	26.98	42.73	32.80	46.00	-13.20	Horizontal
454.860	2.43	17.03	27.58	36.16	28.04	46.00	-17.96	Horizontal
924.340	3.63	23.30	26.43	33.66	34.16	46.00	-11.84	Horizontal

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Report No.: SZEMO10040187101

Page: 13 of 17

Above 1GHz					
Test mode:	Transmitting	Test Frequency:	2465MHz	Remark:	Peak

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3091	7.47	32.02	39.86	42.66	42.29	74.00	-31.71	Vertical
5471	12.23	35.14	41.67	43.10	48.80	74.00	-25.20	Vertical
7766	14.01	37.57	39.56	40.14	52.16	74.00	-21.84	Vertical
10435	14.26	38.18	36.54	37.69	53.59	74.00	-20.41	Vertical
12322	17.71	39.30	39.41	37.61	55.21	74.00	-18.79	Vertical
17167	19.62	42.74	39.49	37.15	60.02	74.00	-13.98	Vertical
3210	7.00	32.19	39.37	40.75	40.57	74.00	-33.43	Horizontal
4876	10.36	34.34	39.89	39.95	44.76	74.00	-29.24	Horizontal
5471	12.23	35.14	41.67	40.53	46.23	74.00	-27.77	Horizontal
7766	14.01	37.57	39.56	40.94	52.96	74.00	-21.04	Horizontal
12730	17.14	39.54	39.20	38.70	56.18	74.00	-17.82	Horizontal
17235	19.67	42.80	39.53	37.59	60.53	74.00	-13.47	Horizontal

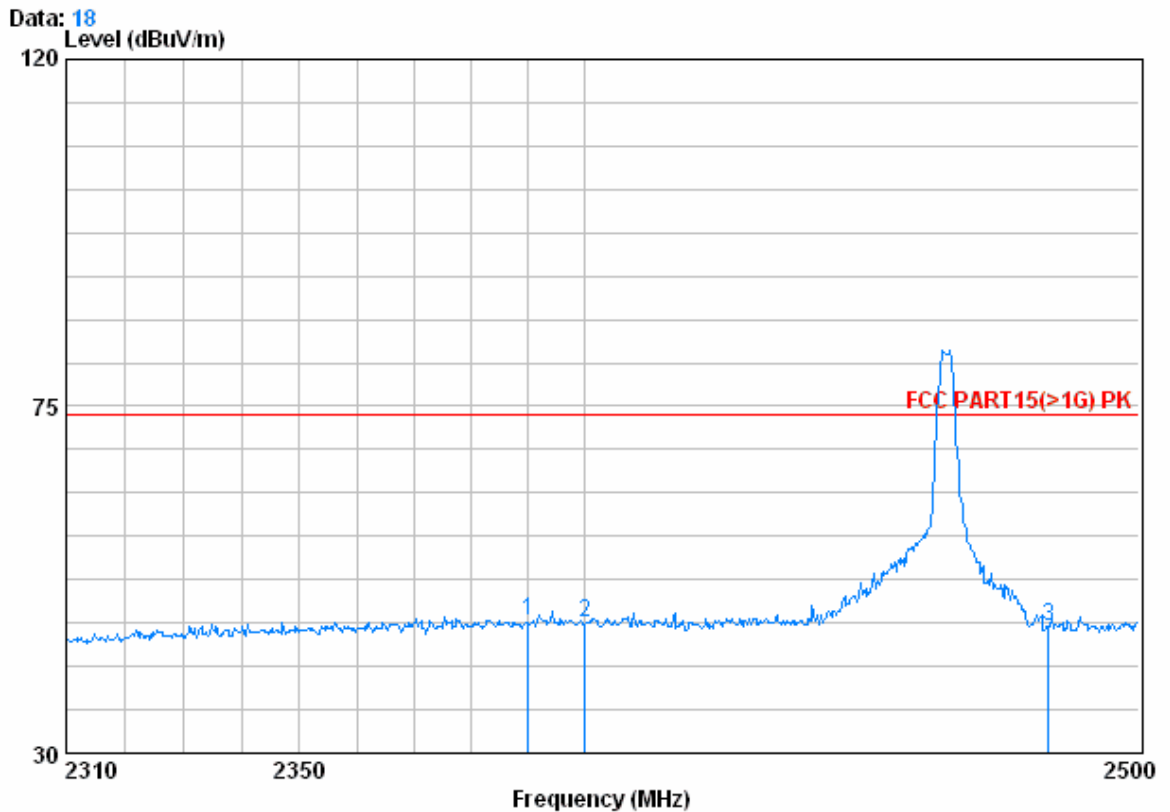
Above 1GHz					
Test mode:	Transmitting	Test Frequency:	2465MHz	Remark:	AV

Frequency (MHz)	PK Level (dBuV/m)	Duty factor (dB)	AV Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
12322	55.21	-24.55	30.66	54.00	23.34	Vertical
17167	60.02	-24.55	35.47	54.00	18.53	Vertical
12730	56.18	-24.55	31.63	54.00	22.37	Horizontal
17235	60.53	-24.55	35.98	54.00	18.02	Horizontal

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5.2.4 Band edge (Radiated Emission)					
Test mode:	Transmitting	Test Frequency:	2465MHz	Remark:	Peak

Vertical:



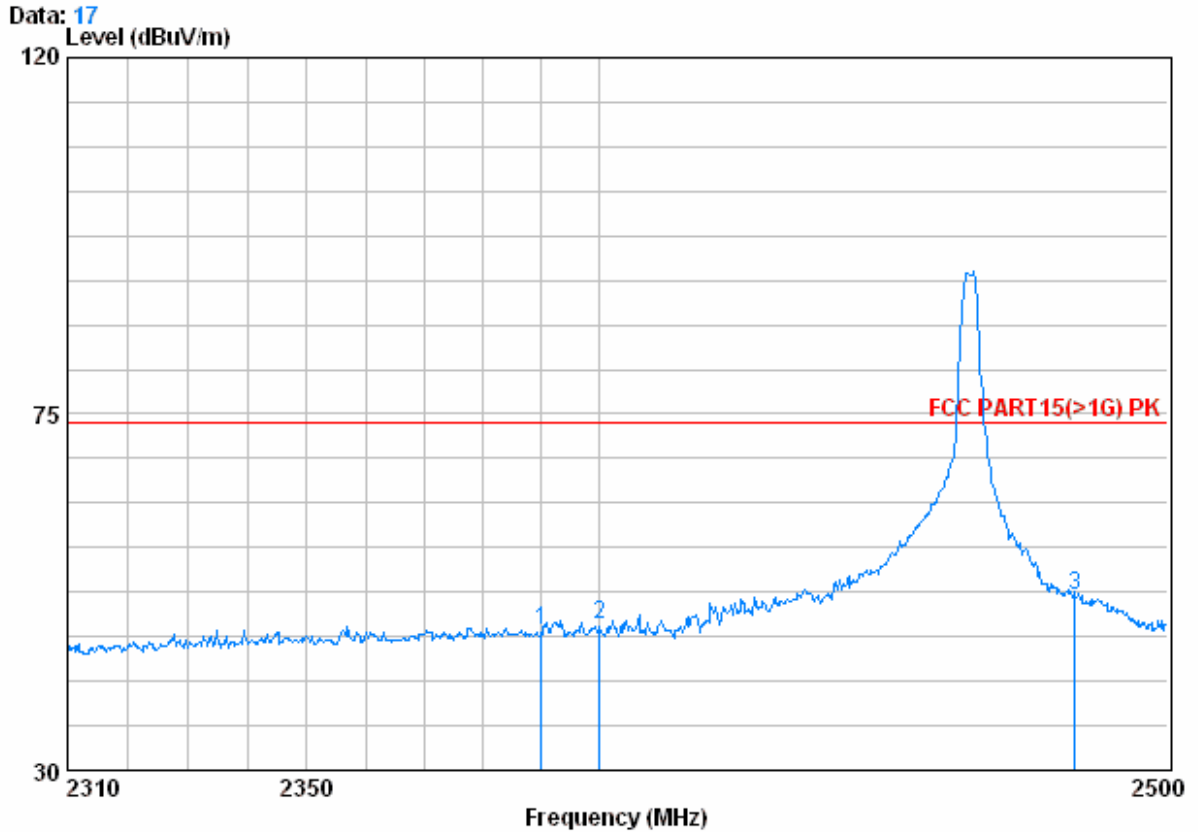
Condition : FCC PART15(>1G) PK 3m ANT3117(>1G) VERTICAL  
 EUT :  
 Job No. : 1871ET  
 MODE : Bandedge

	Freq	CableAntenna Preamp			Read	Limit			Over
		Loss	Factor	Factor	Level	Level	Line	Limit	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 @	2390.000	6.28	29.98	39.03	49.92	47.16	74.00	-26.84	
2 @	2400.000	6.34	30.03	38.87	49.37	46.87	74.00	-27.13	
3 @	2483.500	6.22	30.32	39.53	49.48	46.49	74.00	-27.51	

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Horizontal:

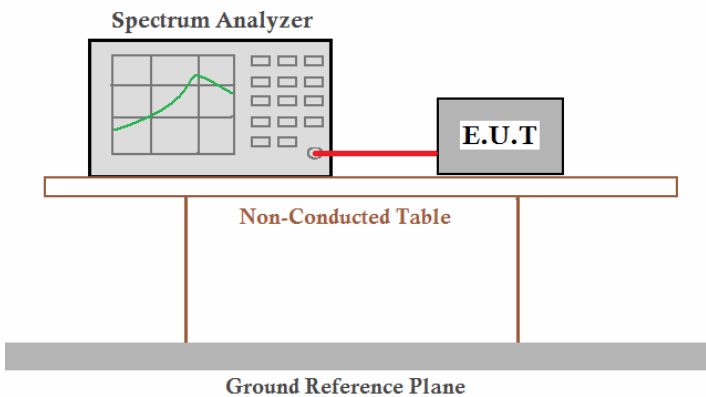


Condition : FCC PART15(>1G) PK 3m ANT3117(>1G) HORIZONTAL  
 EUT :  
 Job No. : 1871ET  
 MODE : Bandedge

	Freq	Cable Loss	Antenna Factor	Preamplifier	Read Level	Limit	Over
	MHz	dB	dB/m	Factor	dBuV	Line	Limit
				dB	dBuV/m	dBuV/m	dB
1	2390.000	6.28	29.98	39.03	50.40	74.00	-26.36
2	2400.000	6.34	30.03	38.87	50.84	74.00	-25.66
3 @	2483.500	6.22	30.32	39.53	54.98	74.00	-22.01

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**5.2.5 20dB Bandwidth**

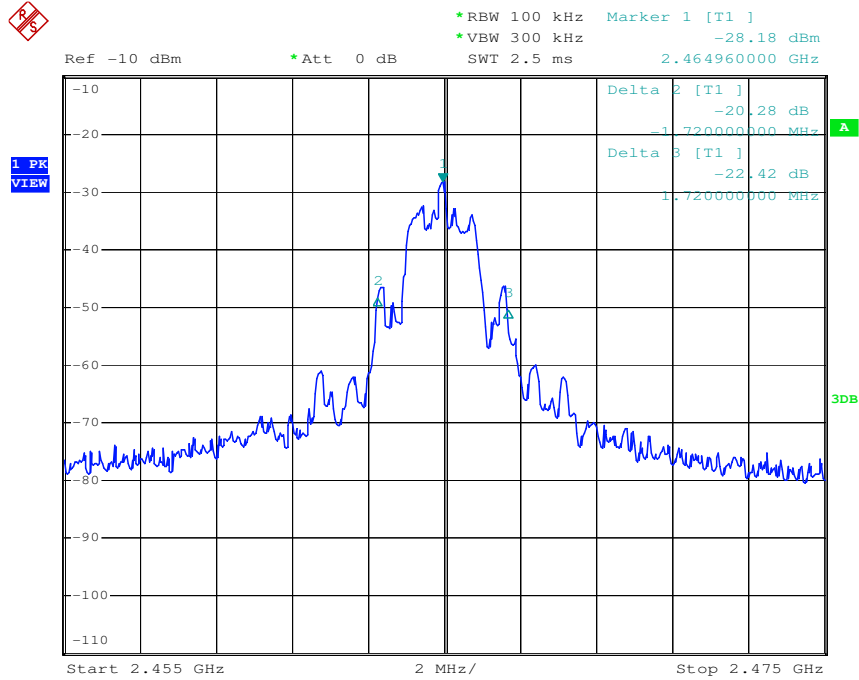
Test Requirement:	FCC Part15 C Section 15.249/15.215
Test Method:	ANSI C63.4:2003
Limit:	Operation Frequency range 2400MHz-2483.5MHz
Test Procedure:	<ol style="list-style-type: none"> <li>1. According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT.</li> <li>2. Set the EUT to proper test channel.</li> <li>3. Max hold the radiated emissions, mark the peak power frequency point and the -20dB upper and lower frequency points.</li> <li>4. Read 20dB bandwidth.</li> </ol>
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p>
Test Instruments:	Refer to section 4.7 for details
Test mode:	Normal operation mode
Test results:	Passed

**Measurement Data**

Test Frequency	20dB bandwidth (MHz)	Results
2465MHz	3.44	Pass



Test plot as follows:



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