SGS-CSTC Standards Technical Services Ltd.

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

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FCC REPORT

Application No. :	SZEM1205002508ET(SGS HK NO.: HKHL1205001551EL)
Applicant:	Silverlit Toys Manufactory Ltd.
Product Name:	Spider-Man R/C Lizard Chaser Sub
Model No.(EUT):	85446
FCC ID:	OYK-TX027145-1207
Standards:	FCC CFR Title 47 Part 15 (2011)
Date of Receipt:	2012-05-14
Date of Test:	2012-05-18 to 2012-05-22
Date of Issue:	2012-10-09
Test Result:	**PASS ***

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

Authorized Signature:

Jack Zhang
EMC Laboratory Manager

2 Test Summary

Test Item	Test Requirement	Test method	Result
Radiated Emission (25MHz to 1GHz)	FCC CFR Title 47 Part 15C Section 15.227	ANSI C63.10（2009）	PASS
Occupied Bandwidth	FCC CFR Title 47 Part 15C Section 15.215	ANSI C63.10（2009）	PASS

3 Contents

4 General Information

4.1 Client Information

Applicant:	Silverlit Toys Manufactory Ltd.
Address of Applicant:	17th Floor, World Trade Centre, 280 Gloucester Road, Causeway Bay, Hong Kong

4.2 General Description of EUT

Name:	Spider-Man R/C Lizard Chaser Sub
Model No.:	85446
Sample Type:	Portable production
Operation Frequency:	27.145MHz
Channel Number:	1
Antenna Type:	Dedicated
Power Supply:	3.0V DC (1.5V x 2 "AA" Size Batteries)

4.3 Test Environment and Mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	50 % RH
Atmospheric Pressure:	1006 mbar
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode.

4.4 Description of Support Units

The EUT has been tested independent unit.

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.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.6 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, Full-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, G-416, T-1153 and C-2383 respectively.
- **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 No.: 556682.
- **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.

4.7 Deviation from Standards

None.

4.8 Abnormalities from Standard Conditions

None.

4.9 Other Information Requested by the Customer

None.

4.10 Test Instruments List

RE in Chamber					
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Due date (yyyy-mm-dd)**
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	2013-06-10
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2013-05-17
3	EMI Test software	AUDIX	E3	SEL0050	N/A
4	Coaxial cable	SGS	N/A	SEL0028	2013-05-29
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2012-10-29
6	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2012-10-29
7	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2013-05-17
8	Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	2012-10-28

RF conducted					
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Due date (yyyy-mm-dd)**
1	Spectrum Analyzer	Rohde & Schwarz	FSP 30	SEL0154	2012-10-23
2	Coaxial cable	SGS	N/A	SEL0028	2013-05-29

General used equipment					
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Due date (yyyy-mm-dd)**
1	Humidity/ Temperature Indicator	Shanghai	ZJ1-2B	SEL0102 to SEL0103	2012-10-27
2	Humidity/ Temperature Indicator	Shanghai	ZJ1-2B	SEL0101	2012-10-27
3	Barometer	ChangChun	DYM3	SEL0088	2013-05-17

5 Test Result & Measurement Data

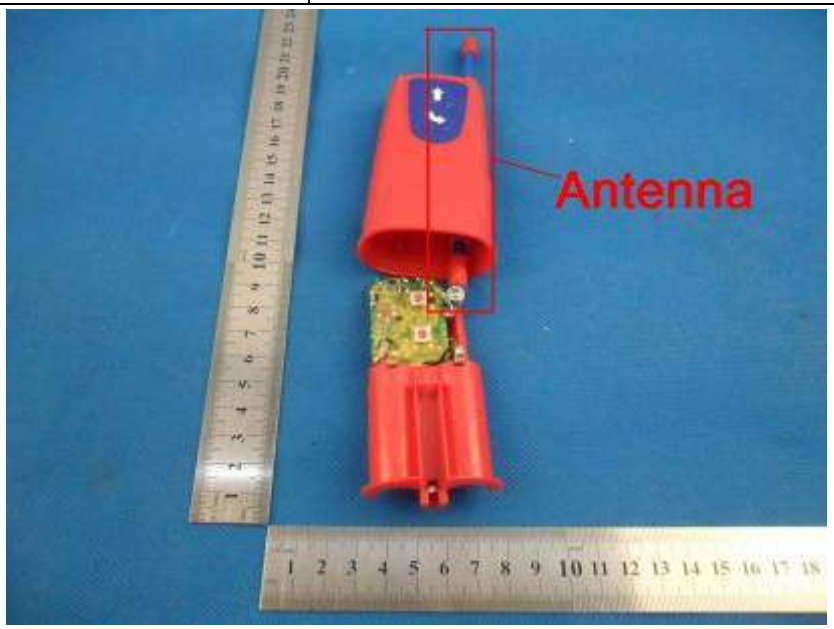
5.1 Antenna requirment

Standard requirement:	FCC Part15 C Section 15.203

15.203 Requirement:

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.

EUT Antenna:



5.2 Radiated Emissions

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.227</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10: 2009</td></tr>
<tr><td>Measurement Distance:</td><td>3m (Semi-Anechoic Chamber)</td></tr>
<tr><td>ERP Limit:</td><td>Carrier Power will not exceed 80dBuV/m at 3m (Average).</td></tr>
<tr><td>Out of Band Emissions Limit:</td><td>Out of band emissions shall not exceed:
<table>
<tr><th>Frequency</th><th>Field strength (microvolt/meter)</th><th>Limit (dBuV/m)</th><th>Remark</th><th>Measurement distance (m)</th></tr>
<tr><td>0.009MHz-0.490MHz</td><td>2400/F(kHz)</td><td>-</td><td>-</td><td>300</td></tr>
<tr><td>0.490MHz-1.705MHz</td><td>24000/F(kHz)</td><td>-</td><td>-</td><td>30</td></tr>
<tr><td>1.705MHz-30MHz</td><td>30</td><td>-</td><td>-</td><td>30</td></tr>
<tr><td>30MHz-88MHz</td><td>100</td><td>40.0</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>88MHz-216MHz</td><td>150</td><td>43.5</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>216MHz-960MHz</td><td>200</td><td>46.0</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>960MHz-1GHz</td><td>500</td><td>54.0</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>Above 1GHz</td><td>500</td><td>54.0</td><td>Average</td><td>3</td></tr>
</table>
Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.</td></tr>
<tr><td>Receiver Setup:</td><td>
<table>
<tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Remark</th></tr>
<tr><td>0.009MHz-0.090MHz</td><td>Peak</td><td>10kHz</td><td>30kHz</td><td>Peak</td></tr>
<tr><td>0.009MHz-0.090MHz</td><td>Average</td><td>10kHz</td><td>30kHz</td><td>Average</td></tr>
<tr><td>0.090MHz-0.110MHz</td><td>Quasi-peak</td><td>10kHz</td><td>30kHz</td><td>Quasi-peak</td></tr>
<tr><td>0.110MHz-0.490MHz</td><td>Peak</td><td>10kHz</td><td>30kHz</td><td>Peak</td></tr>
<tr><td>0.110MHz-0.490MHz</td><td>Average</td><td>10kHz</td><td>30kHz</td><td>Average</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100kHz</td><td>300kHz</td><td>Quasi-peak</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average</td></tr>
</table>
</td></tr>
</table>

Test Procedure:	a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. g. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case. Only the test worst case mode is recorded in the report.
Test Setup:	

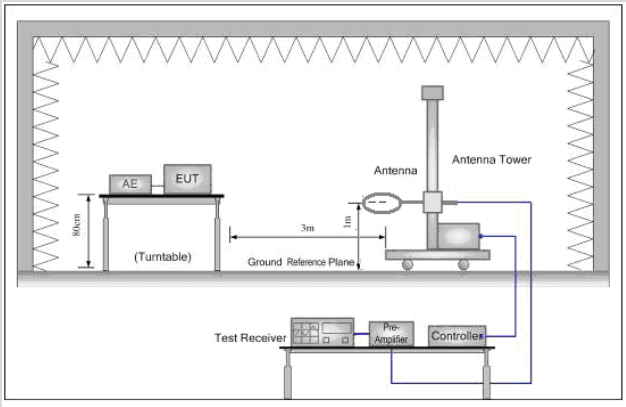


Figure 1. Below 30MHz

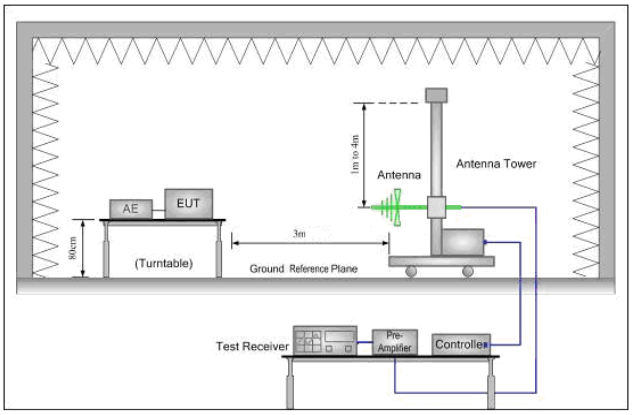


Figure 2. 30MHz to 1GHz

Test Mode:	Transmitting mode
Instruments Used:	Refer to section 4.10 for details
Test Result:	Pass

27.145MHz Mode

Test Procedure: For testing performed with the loop antenna, testing was performed in accordance to ANSI C63.10: 2009. The center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane.

Test Result:

Intentional emission

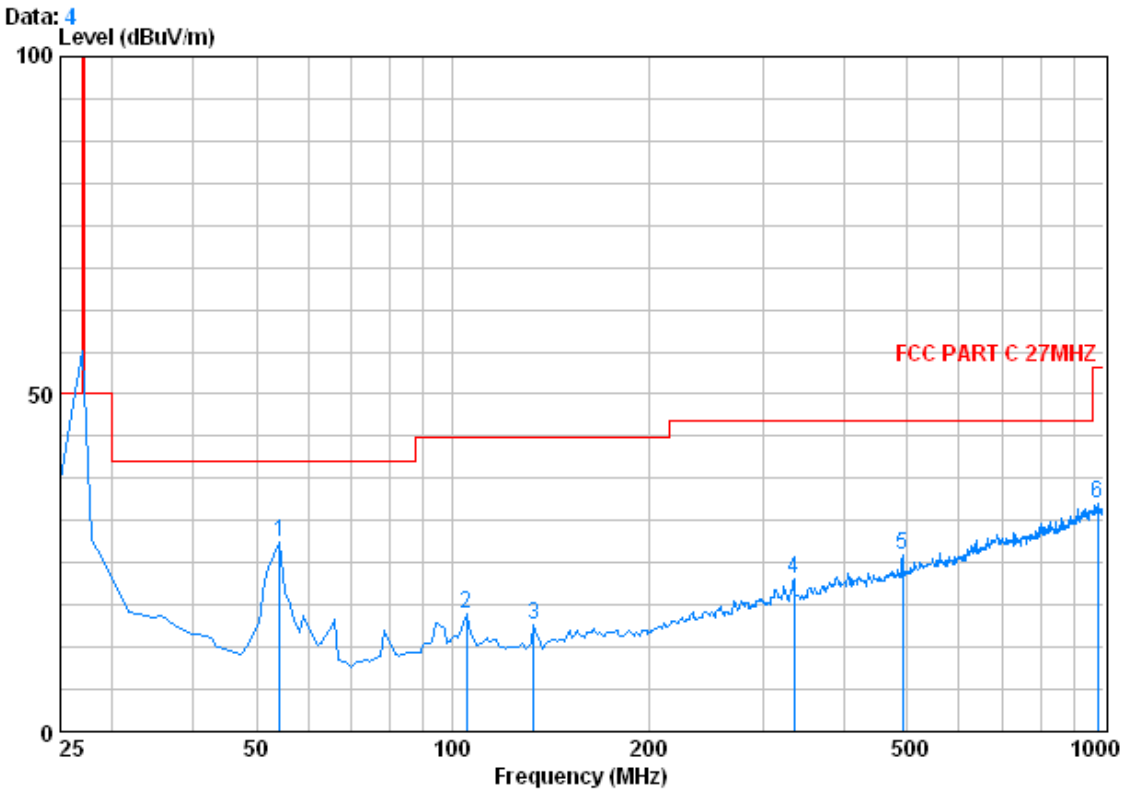
Test Frequency (MHz)	Peak (dBμV/m)		Average Limits (dBμV/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
27.145	56.25	47.56	80.00	23.75	32.44

Remark:

As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.

Out of Band Emissions

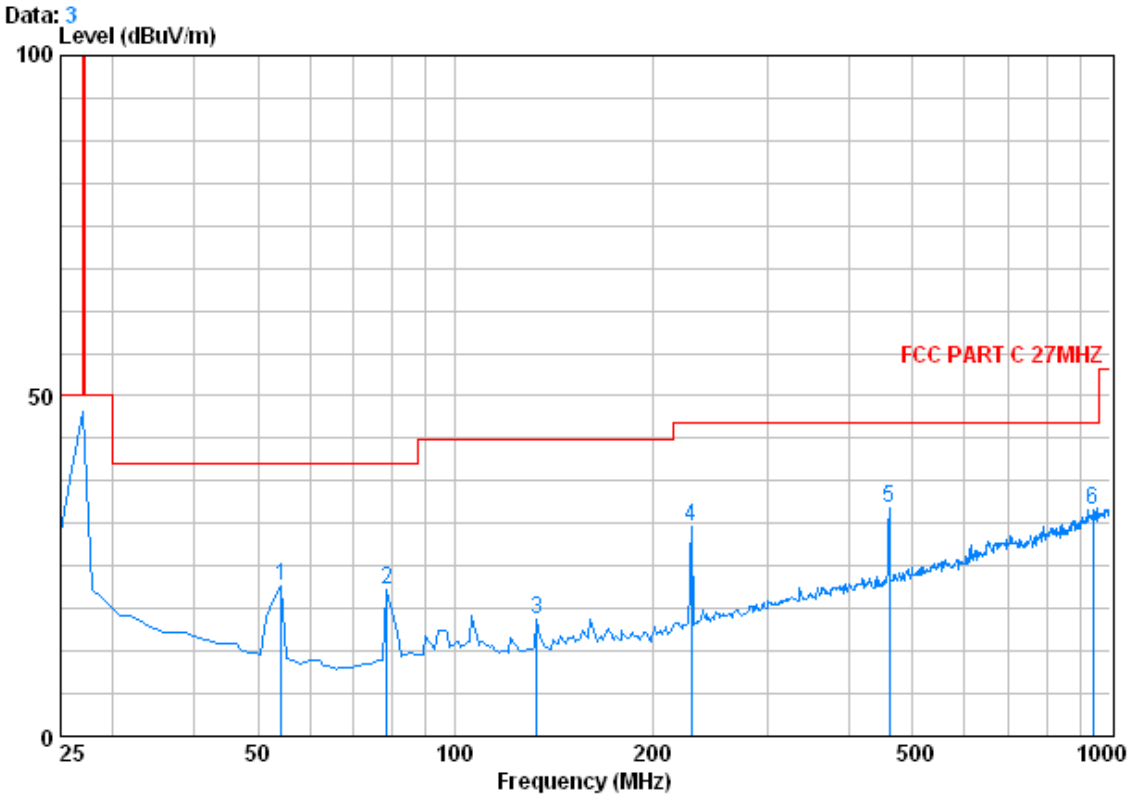
Vertical



Condition : FCC PART C 27MHZ 3m 0042673 VERTICAL
Job No. : 2508ET
test mode : TX ON

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 @	54.250	0.80	7.64	27.28	46.97	28.13	40.00	-11.87
2	104.950	1.21	8.85	27.17	34.54	17.43	43.50	-26.07
3	133.225	1.29	7.84	26.99	33.69	15.83	43.50	-27.67
4	335.050	2.02	15.07	26.68	32.10	22.50	46.00	-23.50
5	491.050	2.56	17.80	27.66	33.38	26.08	46.00	-19.92
6	979.525	3.68	24.04	26.40	32.51	33.83	54.00	-20.17

Horizontal



Condition : FCC PART C 27MHZ 3m 0042673 HORIZONTAL
Job No. : 2508ET
test mode : TX ON

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	54.250	0.80	7.92	27.28	40.55	21.99	40.00	-18.01
2	78.625	1.06	7.61	27.23	40.06	21.50	40.00	-18.50
3	133.225	1.29	7.84	26.99	35.06	17.20	43.50	-26.30
4	229.750	1.57	11.64	26.59	44.19	30.81	46.00	-15.19
5	459.850	2.45	17.22	27.50	41.36	33.53	46.00	-12.47
6	940.525	3.64	23.30	26.58	32.88	33.24	46.00	-12.76

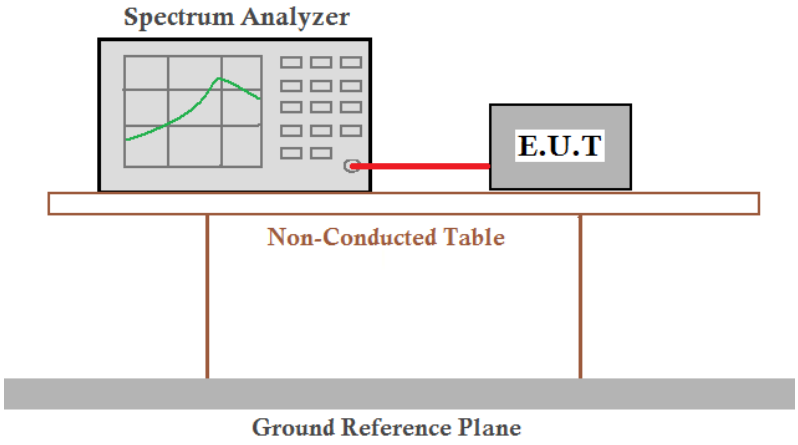
Note:

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

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

The disturbance below 30MHz was very low, and the above frequencies were the highest point could be found when testing, so only the above frequencies had been displayed.

5.3 Occupied Bandwidth

Test Requirement:	FCC Part 15 C Section 15.215 (C)
Test Method:	ANSI C63.10: 2009
Limit:	Operation within the band 26.960 – 27.280 MHz
Requirement :	Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that 20dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equip compliance with the 20dB attenuation specification may base on measurement at the intentional radiator's antenna output terminal unless the intentional radiator uses a permanently attached antenna, in which case compliance shall be.deomonstrated by measuring the radiated emissions.
Test Setup:	
Test Mode:	Transmitting mode
Instruments Used:	Refer to section 4.10 for details
Test Result:	Pass

Test Result: