NO.L3098

FCC TEST REPORT

For Electromagnetic Interference of

Report Reference No. ..... :	14FAB03052 11
Date of issue ..... :	2014-04-23
Testing Laboratory..... :	ATT Product Service Co., Ltd.
Address ..... :	No. 3, ChangLianShan Industrial Park, ChangAn Town, DongGuan City, GuangDong, China.
Applicant's name ..... :	Viditar Inc.
Address ..... :	3108 Industrial Terrace Austin, TX78758 USA
Manufacturer ..... :	Season Components Company Ltd.

Test specification:

Test item description..... :	Livid Guitar Wing
Trade Mark ..... :	--
Model/Type reference ..... :	Livid USB Receiver 1
Ratings ..... :	I/P:5Vdc/12mAw
	O/P:--

Responsible Engineer

Bin Jiang

（Bin Jiagn/ Engineer）

Approved by

（Tomy Wu /EMC Manager）

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1. CERTIFICATION

Testing Laboratory.....:	ATT Product Service Co., Ltd.
Address.....:	No. 3, ChangLianShan Industrial Park, ChangAn Town, DongGuan City, GuangDong, China.
Applicant's name .....:	Viditar Inc..
Address.....:	3108 Industrial Terrace Austin, TX78758 USA
Manufacturer .....:	Same as applicant
Address……:	Same as applicant
Factory……:	Season Components Company Ltd.
Address……:	Jun Da Lu,DongKeng,Dongguan,Guangdong,China
Test specification:	
Test item description.....:	Livid Guitar Wing
Trade Mark .....:	--
Model/Type reference .....:	Livid USB Receiver 1
Test Sample:	Livid USB Receiver 1
Ratings.....:	I/P: 5Vdc/12mA
	O/P:--
Tested Power:	AC 120V 60Hz
Standards .....:	FCC Part 15 Subpart B

The device described above was tested by ATT Product Service Co., Ltd to determine the maximum emission levels emanated from the device and severity levels of the device endure and its performance criterion. The measurement results are contained in this test report and ATT Product Service Co., Ltd assumes full responsibility for the accuracy and completeness of these measurements. This report shows the EUT is technically compliance with the Part 15 Subpart B, ANSI C63.4 official requirements. This report applies to the above sample only and shall not be reproduced in part without written approval of ATT Product Service Co., Ltd.

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
(1)FCC Part 15 B	Conducted Emission	Clause 15.107	PASS	
	Radiated Emission	Clause 15.109	PASS	

2.1 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %.

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U，(dB)	NOTE
C01	ANSI	150 KHz ~ 30MHz	2.44	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U，(dB)	NOTE
R03	ANSI	30MHz ~ 200MHz	V	3.42	
		30MHz ~ 200MHz	H	3.52	
		200MHz ~ 1,000MHz	V	3.52	
		200MHz ~ 1,000MHz	H	3.54	

2.2 DESCRIPTION OF TEST MODES AND ASSISTANT EQUIPMENT FOR TEST

2.2.1 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	data communication with PC mode

For Conducted Test	
Final Test Mode	Description
Mode 1	data communication with PC mode

For Radiated Test	
Final Test Mode	Description
Mode 1	data communication with PC mode

2.3 EQUIPMENT USED DURING TESTING:

Product Type*	Device	Manufacturer	Model No.	Comments
AE1	PC	Lenovo	E R500	FCC DOC
AE2	Keyboard	Lenovo	LXH-JME2209U	FCC DOC
AE3	Mouse	Lenovo	MOEUUO	FCC DOC
AE4	Printer	EPSON	P952B	FCC DOC

*Note: Use abbreviations:

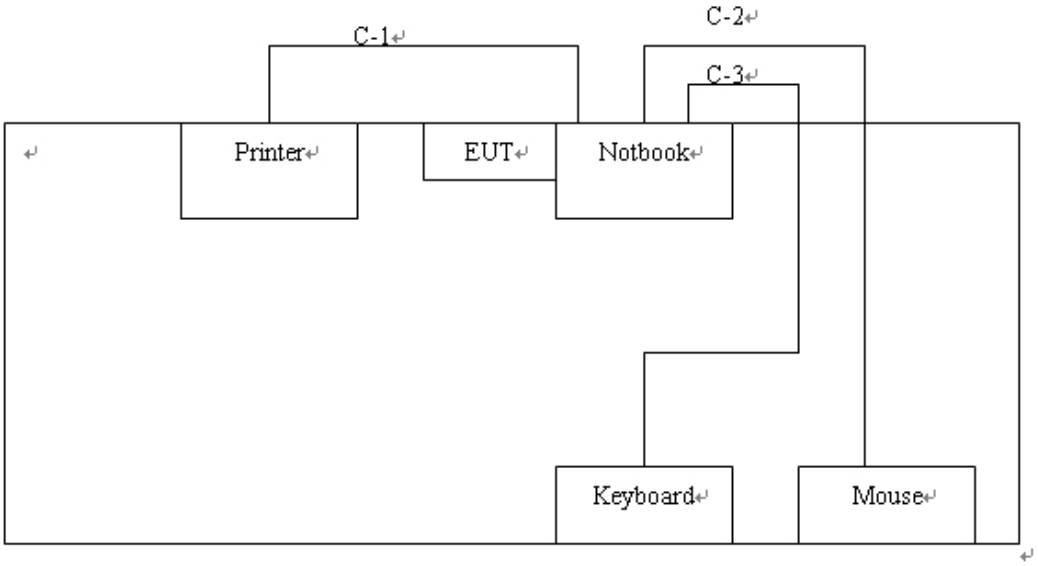
EUT - Equipment Under Test,

AE - Auxiliary/Associated Equipment, or

SIM - Simulator (Not Subjected to Test)

CABL – Connecting cables

2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

3.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Pulse Limiter	MTS-systemtechnik	MTS-IMP-136	261115-010-0024	12/21/2014
2	EMI Test Receiver	R&S	ESCI	101308	12/21/2014
3	LISN	AFJ	LS16	16011103219	12/21/2014
4	LISN	SCHWARZBECK	NSLK 8127	8127-432	12/22/2014

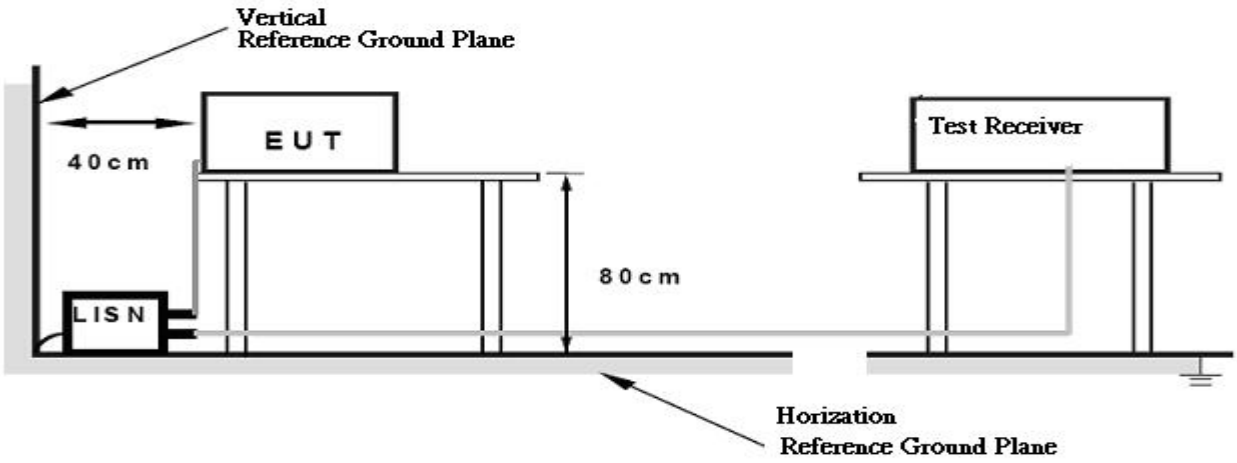
3.1.3 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal reference ground plane and 0.4meters from vertical reference ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. 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.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation

3.1.5 TEST SETUP



3.1.6 EUT OPERATING CONDITIONS

The EUT exercise program used during radiated and/or conducted emission measurement was designed to exercise the various system components in a manner similar to a typical use.

3.1.7 **TEST RESULTS**

EUT：	Livid Guitar Wing	**Model No. ：**	Livid USB Receiver 1
Temperature：	26℃	**Relative Humidity：**	48 %
Pressure：	1008 hPa	**Test Power ：**	AC 120V/60Hz
Test Mode ：	data communication with PC mode		

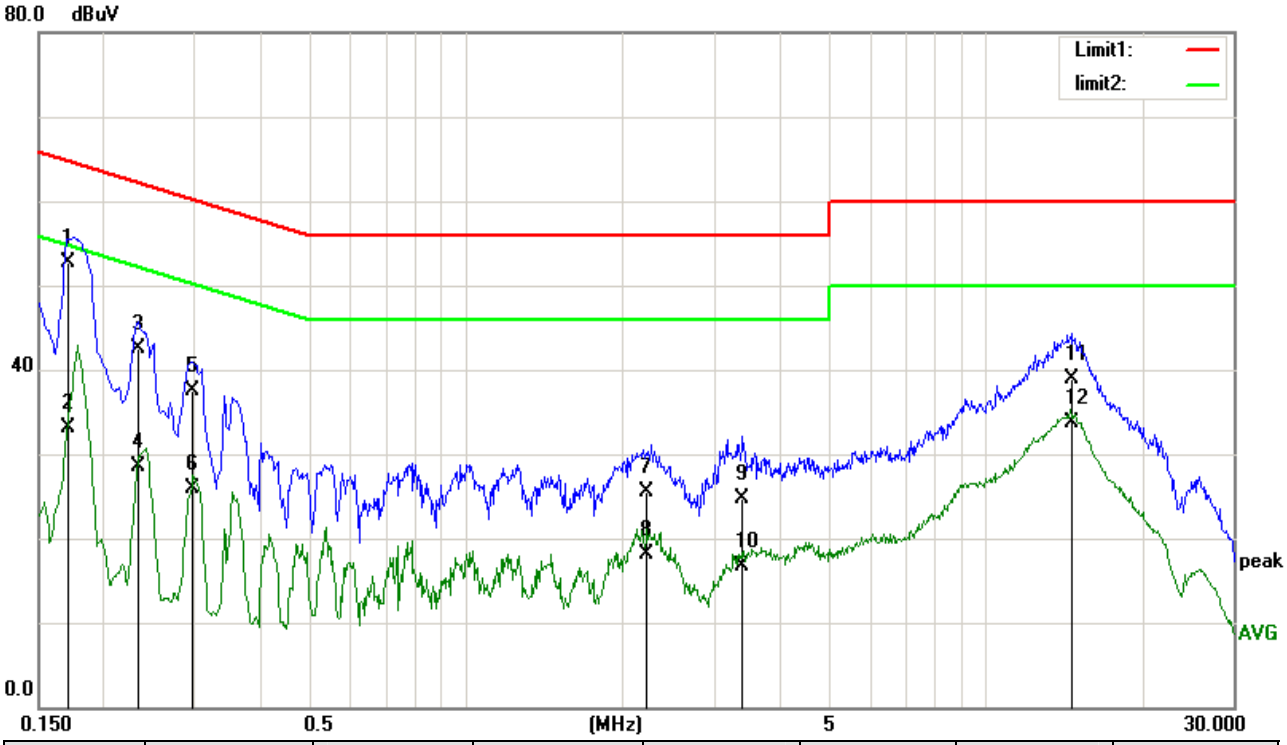
Remark

(1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz；SPA setting in RBW=10KHz,VBW =10KHz, Sweep. Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=1MHz,VBW=10Hz, Sweep. Time =0.3 sec./MHz.

(2) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a " * " marked in AVG Mode column of Interference Voltage Measured.

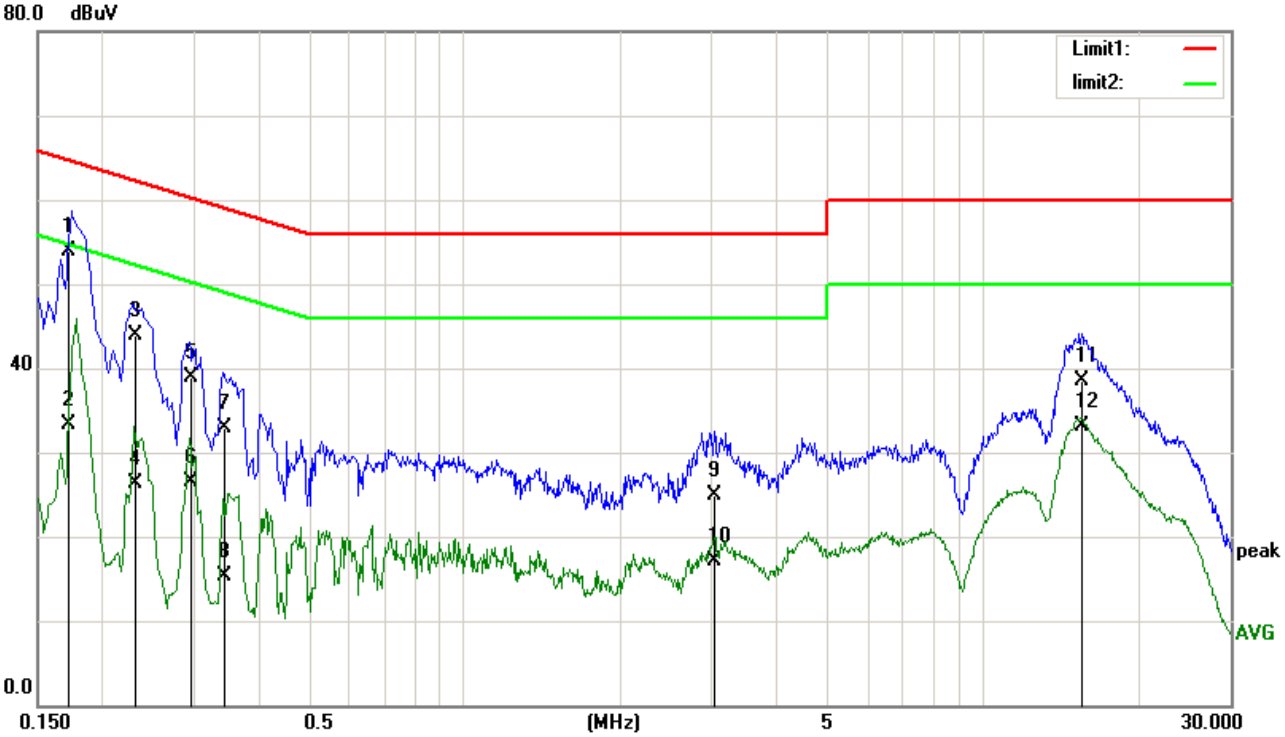
(3) Measuring frequency range from 150KHz to 30MHz.

EUT:	**Livid Guitar Wing**	**Model No.:**	**Livid USB Receiver 1**
Temperature:	**24℃**	**Relative Humidity:**	**55%**
Probe:	**N**	**Test Power:**	**AC 120V/60Hz**
Standard:	**(CE)FCC PART 15 class B_QP**	**Test Result:**	**Pass**
Test Mode:	**data communication with PC mode**	**Test By:**	**Dylan**
Note:			



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1711	41.42	11.32	52.74	64.90	-12.16	QP
2	0.1711	21.74	11.32	33.06	54.90	-21.84	AVG
3	0.2340	31.60	10.89	42.49	62.30	-19.81	QP
4	0.2340	17.58	10.89	28.47	52.30	-23.83	AVG
5	0.2956	26.99	10.47	37.46	60.36	-22.90	QP
6	0.2956	15.40	10.47	25.87	50.36	-24.49	AVG
7	2.2199	15.45	10.12	25.57	56.00	-30.43	QP
8	2.2199	8.06	10.12	18.18	46.00	-27.82	AVG
9	3.3866	14.49	10.14	24.63	56.00	-31.37	QP
10	3.3866	6.65	10.14	16.79	46.00	-29.21	AVG
11	14.6450	28.83	10.17	39.00	60.00	-21.00	QP
12	14.6450	23.60	10.17	33.77	50.00	-16.23	AVG

EUT:	**Livid Guitar Wing**	**Model No.:**	**Livid USB Receiver 1**
Temperature:	**24℃**	**Relative Humidity:**	**55%**
Probe:	**L1**	**Test Power:**	**AC 120V/60Hz**
Standard:	**(CE)FCC PART 15 class B_QP**	**Test Result:**	**Pass**
Test Mode:	**data communication with PC mode**	**Test By:**	**Dylan**
Note:			



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1718	42.63	11.32	53.95	64.87	-10.92	QP
2	0.1718	22.02	11.32	33.34	54.87	-21.53	AVG
3	0.2323	33.04	10.90	43.94	62.36	-18.42	QP
4	0.2323	15.49	10.90	26.39	52.36	-25.97	AVG
5	0.2972	28.39	10.46	38.85	60.32	-21.47	QP
6	0.2972	16.02	10.46	26.48	50.32	-23.84	AVG
7	0.3438	22.43	10.38	32.81	59.11	-26.30	QP
8	0.3438	4.98	10.38	15.36	49.11	-33.75	AVG
9	3.0358	14.71	10.14	24.85	56.00	-31.15	QP
10	3.0358	6.96	10.14	17.10	46.00	-28.90	AVG
11	15.5264	28.40	10.16	38.56	60.00	-21.44	QP
12	15.5264	22.89	10.16	33.05	50.00	-16.95	AVG

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT (Below 1000MHz)

FREQUENCY RANGE OF RADIATED MEASUREMENT (For FCC)

☒FCC Class B Limit at 3m

Frequency	Distance	Field Strength	
MHz	Meter	μV/m	dBμV/m
30 to 88	3	100	40.0
88 to 216	3	150	43.5
216 to 960	3	200	46.0
Above 960	3	500	54.0

3.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Log-Bicon Antenna	SCHWARZBECK	VULB9168	VULB9168-192	12/27/2014
2	Pre-Amplifier	HP	8447F	3113A05680	12/21/2014
3	EMI Test Receiver	R&S	ESCI	101307	12/21/2014
4	Spectrum Analyzer	Agilent	E4407B	US40240708	07/17/2014
5	Horn Antenna	Schwarzbeck	BBHA 9120D	BBHA 9120D 1065	12/21/2014
6	Pre-Amplifier	CY	EMC011830	980136	12/22/2014
7	Turn Table	UC	UC3000	N/A	N/A
8	Antenna Mast	UC	UC3000	N/A	N/A

Remark: ” N/A” denotes No Model No. / Serial No. and No Calibration specified.

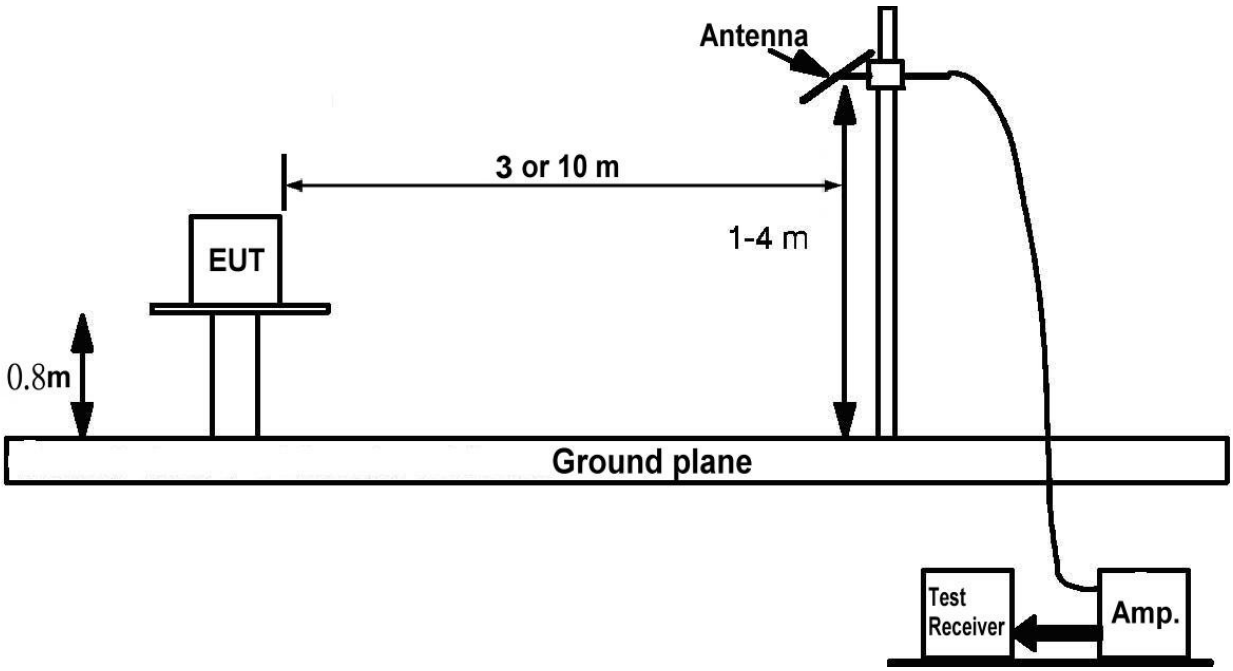
3.2.3 TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m or 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.4 DEVIATION FROM TEST STANDARD

No deviation

3.2.5 TEST SETUP



3.2.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.2** Unless otherwise a special operating condition is specified in the follows during the testing.

Remark: The highest frequency of internal sources of the EUT is less than 108MHz, the measurement shall only be made up to 1 GHz

3.2.7 **TEST RESULTS**

EUT：	Livid Guitar Wing	**Model No. ：**	Livid USB Receiver 1
Temperature：	26 ℃	**Relative Humidity：**	48 %
Pressure：	1009 hPa	**Test Power ：**	AC 120V/60Hz
Test Mode ：	data communication with PC mode		

Remark：

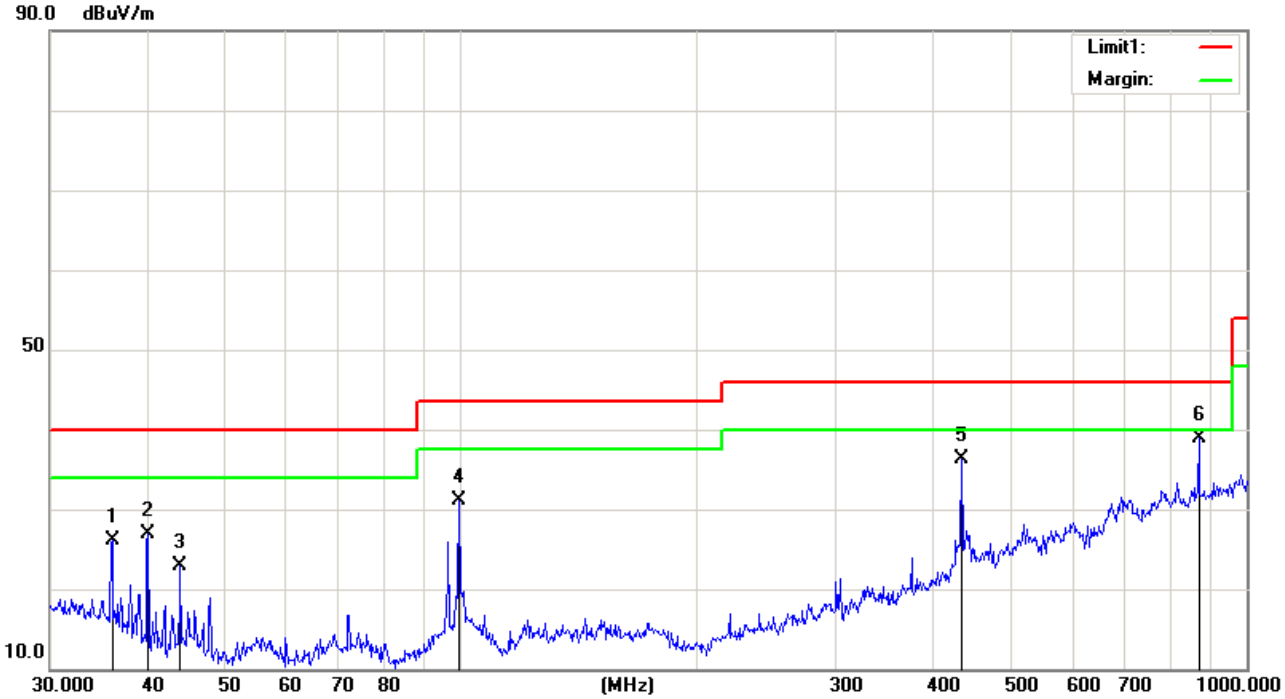
(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Sweep. Time = 0.3 sec./MHz.

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(3) Measuring frequency range from 30MHz to 1000MHz.

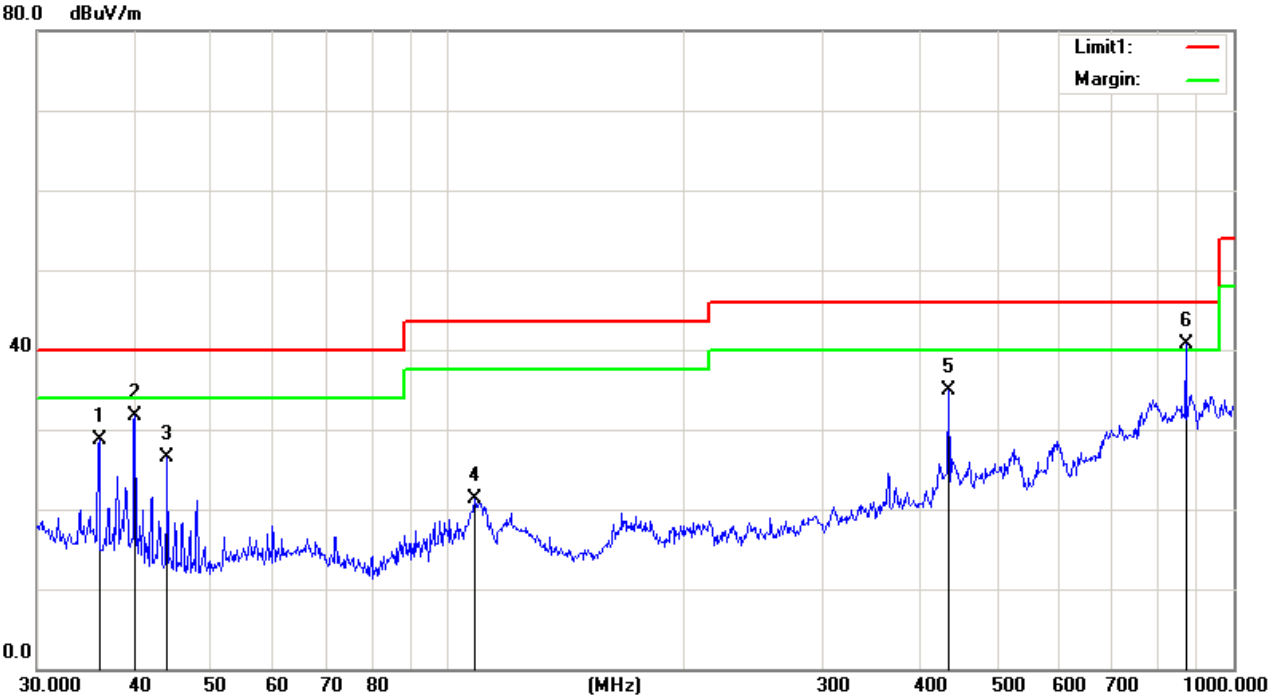
(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.

EUT:	**Livid Guitar Wing**	**Model No.:**	**Livid USB Receiver 1**
Temperature:	**24℃**	**Relative Humidity:**	**55%**
Probe:	**Horizontal**	**Test Power:**	**AC 120V/60Hz**
Standard:	**(CE)FCC PART 15 class B_QP**	**Test Result:**	**Pass**
Test Mode:	**data communication with PC mode**	**Test By:**	**Dylan**
Note:			



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	36.0007	36.94	-10.76	26.18	40.00	-13.82	QP
2	39.9941	41.19	-14.31	26.88	40.00	-13.12	QP
3	43.9658	36.52	-13.57	22.95	40.00	-17.05	QP
4	99.5279	48.32	-17.13	31.19	43.50	-12.31	QP
5	434.0649	38.84	-2.54	36.30	46.00	-9.70	QP
6	869.1300	33.74	5.07	38.81	46.00	-7.19	QP

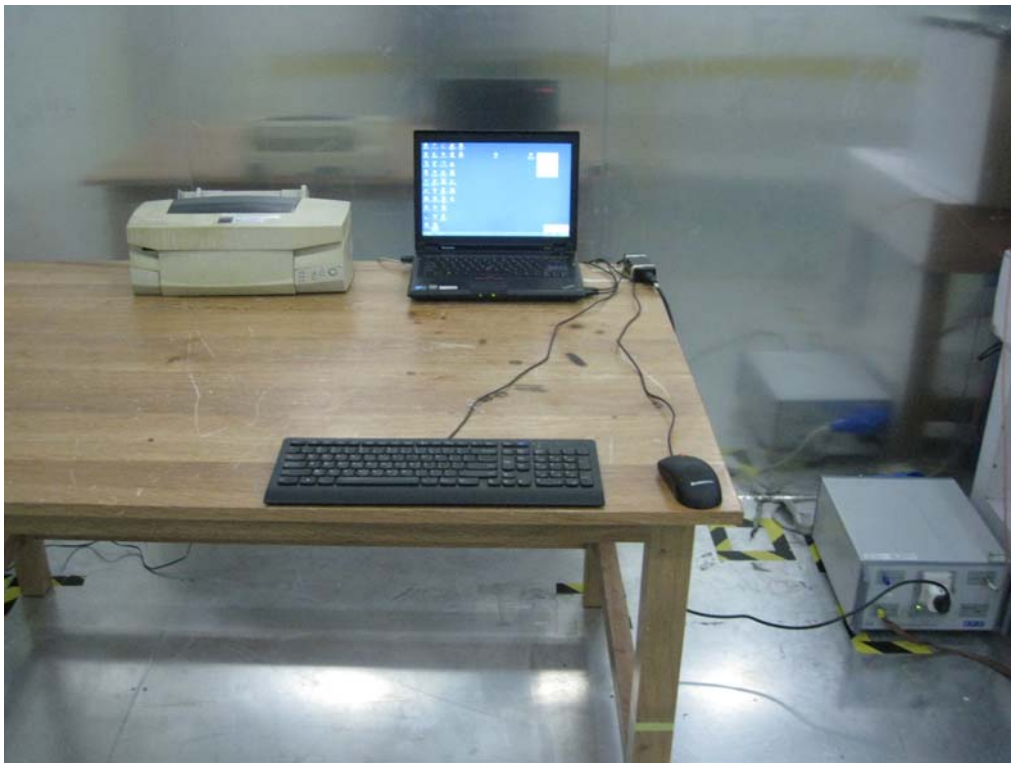
EUT:	**Livid Guitar Wing**	**Model No.:**	**Livid USB Receiver 1**
Temperature:	**24℃**	**Relative Humidity:**	**55%**
Probe:	**Vertical**	**Test Power:**	**AC 120V/60Hz**
Standard:	**(CE)FCC PART 15 class B_QP**	**Test Result:**	**Pass**
Test Mode:	**data communication with PC mode**	**Test By:**	**Dylan**
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	36.0007	40.89	-12.16	28.73	40.00	-11.27	QP
2	39.9941	44.96	-13.32	31.64	40.00	-8.36	QP
3	43.9658	40.63	-14.15	26.48	40.00	-13.52	QP
4	108.2667	33.79	-12.44	21.35	43.50	-22.15	QP
5	434.0649	39.33	-4.35	34.98	46.00	-11.02	QP
6	869.1300	34.67	6.07	40.74	46.00	-5.26	QP

4. EUT TEST PHOTO

Conducted Measurement Photos



Radiated Measurement Photos