FCC TEST REPORT

REPORT NO.: RF90040201
MODEL NO.: GL2411EU
GL2411IU
RECEIVED: April 2, 2001
TESTED: April 12, 2001

APPLICANT: Global Sun Technology Inc.

ADDRESS: No.13, Tung Yuan Road, Jung Li Industrial Park, Jung Li City, Tao Yuan Hsien, Taiwan, R.O.C.

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: 13-1, Lane 19, Wen Shan 3rd St., Kweishan, Taoyuan Hsien, Taiwan, R.O.C.

Accredited Laboratory

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1 CERTIFICATION

PRODUCT :	Wireless USB Adapter
BRAND NAME :	GSTec
MODEL NO. :	GL2411EU GL2411IU
APPLICANT :	Global Sun Technology Inc.
STANDARDS :	47 CFR Part 15, Subpart C (Section 15.247), ANSI C63.4-1992
SITE REGISTERATION NO. :	90422 (FCC) IC 3789-5 (Canada IC)

We, **Advance Data Technology Corporation**, hereby certify that two samples GL2411EU and GL2411IU, of the designation has been tested in our facility on April 13, 2001.

The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions herein specified.

Tested by : Steven Lu , Date: April 16, 2001
Steven Lu

Prepared by : Demi Chen , Date: April 16, 2001
Demi Chen

Approved by : Alan Lane , Date: April 16, 2001
Dr. Alan Lane, Manager

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2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 15, Subpart C			
STANDARD PARAGRAPH	**TEST REQUIREMENTS**	**RESULT**	**REMARK**
15.107	AC Power Conducted Emissions Spec.: 48dBuV	Yes	Minimum passing margin is –6.73dBuV At 14.31800MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Spec.: min. 500Khz	Yes	10.02MHz > 500 kHz
15.247(b)	Maximum Peak Output Power Spec.: max. 30dBm	Yes	17.82dBm < 30dBm
15.247(c)	Transmitter Radiated Emissions Spec.: Table 15.209	Yes	Minimum passing margin is –6.5dBuV At 540.02 MHz
15.247(d)	Power Spectral Density Spec.: max. 8dBm	Yes	-11.96dBm < 8 dBm
15.247(c)	Band Edge Measurement	Yes	N/A
15.247(e)	Processing Gain of Direct Sequence Spread Spectrum System Spec.: min. 10 dB	Yes	N/A

NOTE:

The receiver portion of the EUT has been tested in ADT. The test result has been verified to comply with FCC Part 15, Subpart B, Class B – Computing Devices (FCC DoC). The engineering test report can be provided upon FCC requests.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless USB Adapter
MODEL NO.	GL2411EU, GL2411IU
POWER SUPPLY	5VDC from PC
DATA CABLE	1.5m (Nonshielded)
I/O PORTS	NA
MODULATION TYPE	CCK, BPSK, QPSK
RADIO TECHNOLOGY	DSSS
TRANSFER RATE	1/2/5.5/11Mbps
FREQUENCY RANGE	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11
OUTPUT POWER	18dBm
ANTENNA TYPE	Monopole Antenna
ASSOCIATED DEVICES	NA

Note:1.The EUT has two selections on the antenna. For model GL2411EU, the monopole antenna is installed outside the housing of the product, but for model GL2411IU, the monopole antenna is installed inside the housing.

2.Except power port, only USB port is provided in this product.

3.For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

3.2 DESCRIPTION OF TEST MODES

Eleven channels are provided in this EUT.

Channel	Frequency	Channel	Frequency
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

The testing has been carried out on both models.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Wireless USB Adapter, according to the specifications of the manufacturers, it must comply with the requirements of the following standards:

FCC CFR 47 Part 15, Subpart C. (15.247)

All tests have been performed and recorded as per the above standards.

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	PRINTER	HP	2225C+	3123S97230	DSI6XU2225
2	MODEM	ACEEX	1414	980020503	IFAXDM1414
3	NOTEBOOK	CELVO	3300C	N3000C3C0057S	L4PK3100CX13

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.2m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core.
2	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
3	NA

NOTE: All power cords of the above support units are non shielded (1.8m).

4 TEST PROCEDURES AND TEST RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.45 – 30	48	-	48	-

Notes:

1.The lower limit shall apply at the transition frequencies.

2.All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESHS30	828109/007	July 6, 2001
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	839135/006	July 9, 2001
ROHDE & SCHWARZ 4-wire ISN	ENY41	837032/016	Nov. 28, 2001
ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/016	Dec. 3, 2001
EMCO-L.I.S.N. (for peripheral)	3825/2	9204-1964	July 9, 2001
Software	Cond-V2e	NA	NA
RF cable (JYEBAO)	RG-58A/U	Cable-C02.01	July 9, 2001
HP Terminator (For EMCO LISN)	11593A	E1-01-298	Feb. 20, 2002
HP Terminator (For EMCO LISN)	11593A	E1-01-299	Feb. 20, 2002
Shielded Room	Site 2	ADT-C02	NA
VCCI Site Registration No.	Site 2	C-240	NA

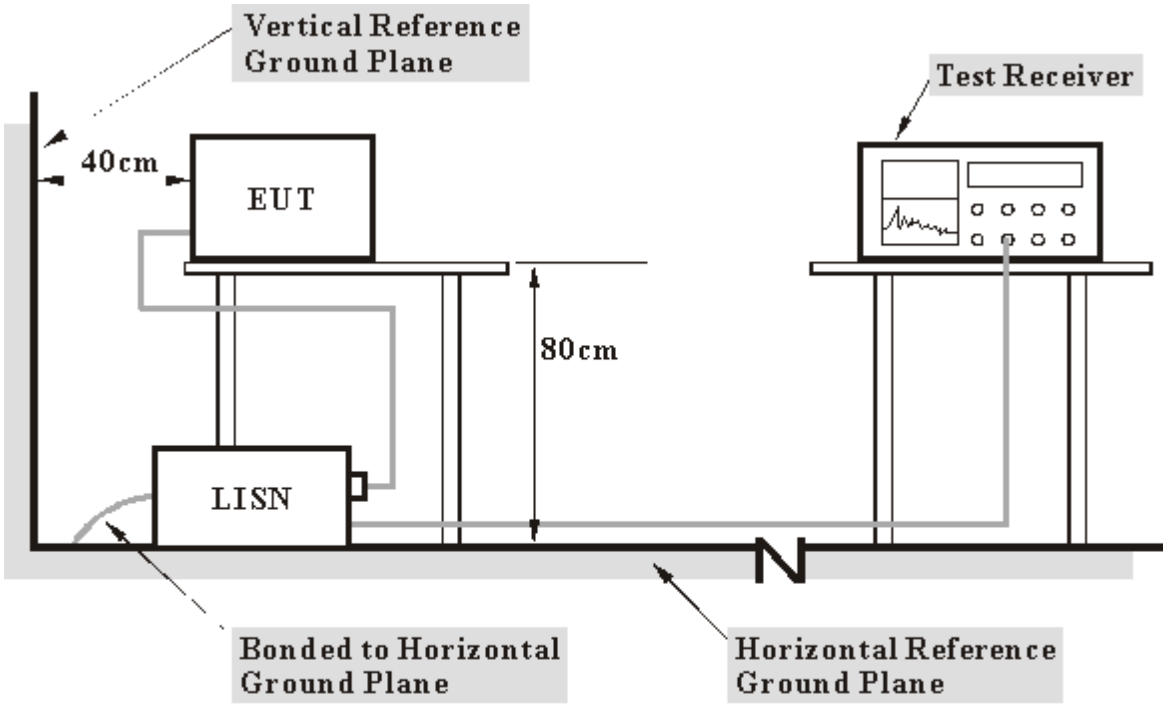
Notes: 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.

2.The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

4.1.3 TEST PROCEDURES

1. Place the EUT at 0.4 meter away from the conduction wall of the shielded room.
2. Connect the EUT to the power mains through a Line Impedance Stabilization Network (LISN).
3. Connect the other support units to the other LISN too.
4. Make sure the 50Ω/ 50μH coupling impedance is provided to the measurement instrument by the LISNs.
5. Measure the maximum conducted interference on both lines of the power mains connects to the EUT, within frequency range 450KHz ~ 30MHz.
6. The emission level under limit by 10dB is not needed to be reported.

4.1.4 TEST SETUP



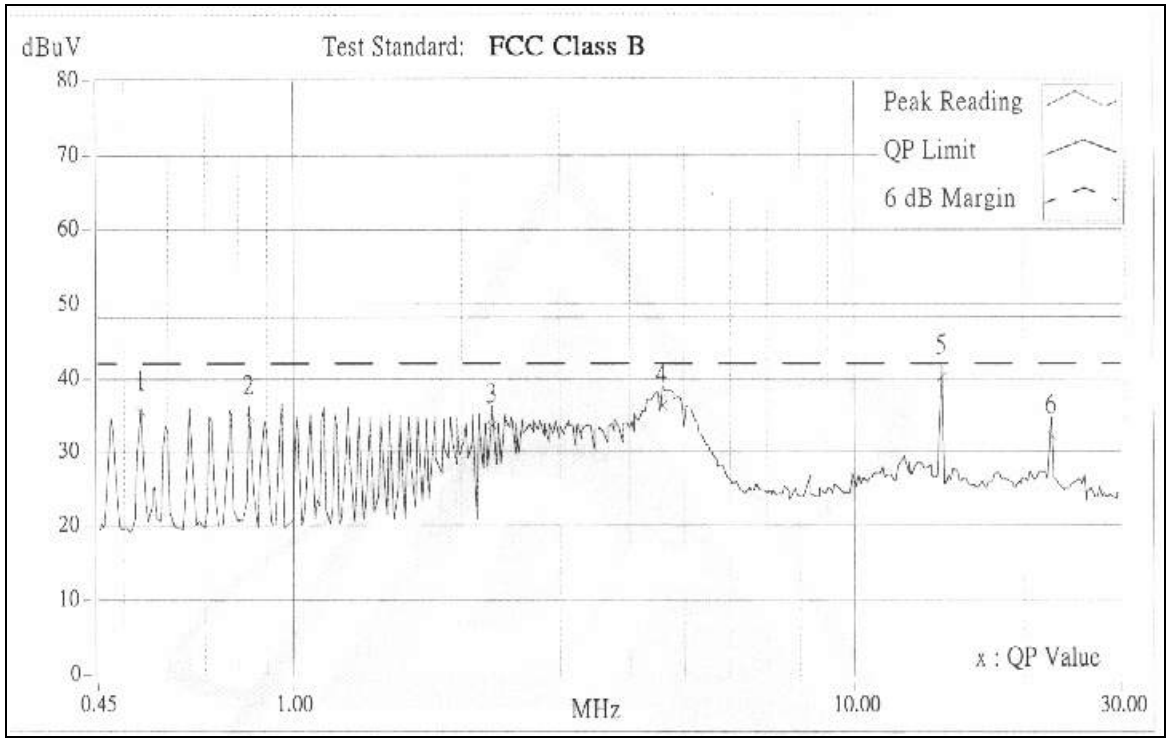
Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

For the actual test configuration, please refer to the related Item in this test report (**Photographs of the Test Configuration**).

4.1.5 TEST RESULTS

EUT	Wireless USB Adapter	**Model**	GL2411EU
Channel	Channel 1	**Phase**	L
Environmental Conditions	20℃, 60%RH	**Tested By**	Steven Lu

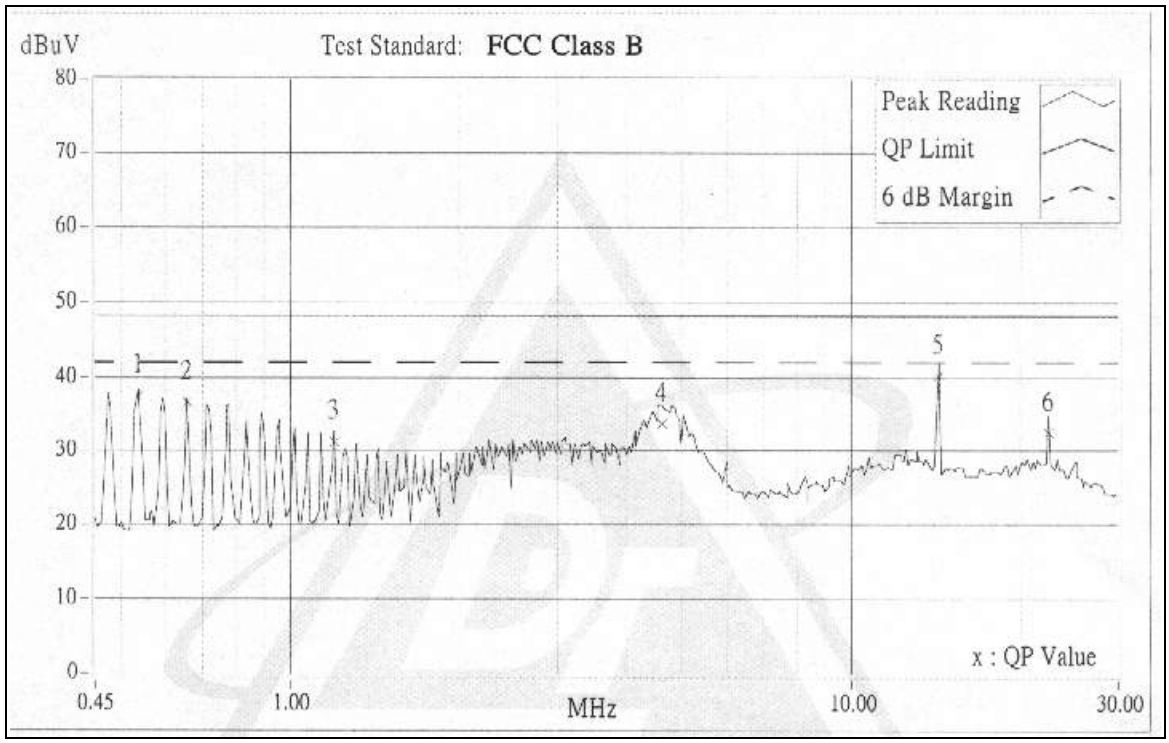
No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.53700	0.20	35.53	-	35.73	-	48.00	-	-12.27	-
2	0.83400	0.20	34.84	-	35.04	-	48.00	-	-12.96	-
3	2.26800	0.23	33.55	-	33.78	-	48.00	-	-14.22	-
4	4.53900	0.43	36.32	-	36.75	-	48.00	-	-11.25	-
5	14.31800	0.96	40.21	-	41.17	-	48.00	-	-6.83	-
6	22.56800	1.25	32.29	-	33.54	-	48.00	-	-14.46	-



Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": NA
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value
6. Emission Level = Correction Factor + Reading Value.

EUT	Wireless USB Adapter	**Model**	GL2411EU
Channel	Channel 1	**Phase**	N
Environmental Conditions	20℃, 60%RH	**Tested By**	Steven Lu

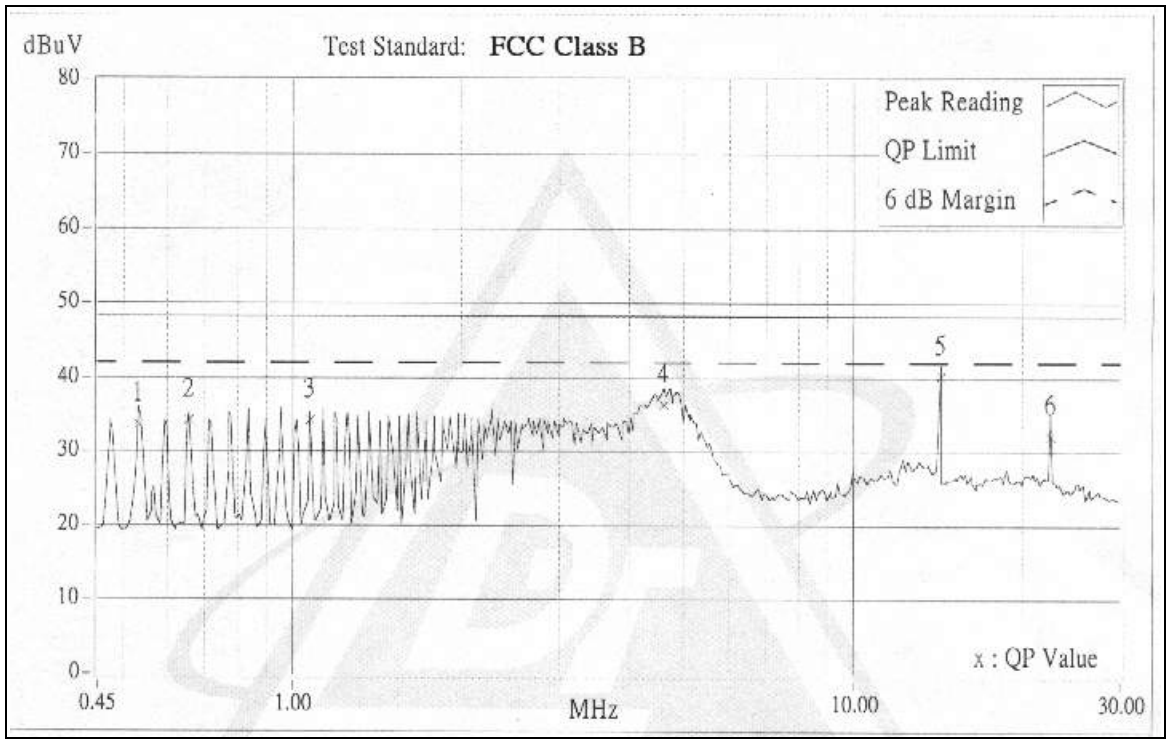
No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.53700	0.20	37.50	-	37.70	-	48.00	-	-10.30	-
2	0.65700	0.20	36.64	-	36.84	-	48.00	-	-11.16	-
3	1.19400	0.20	31.20	-	31.40	-	48.00	-	-16.60	-
4	4.60200	0.42	33.77	-	34.19	-	48.00	-	-13.81	-
5	14.31800	0.86	40.27	-	41.13	-	48.00	-	-6.84	-
6	22.56800	1.15	32.45	-	33.60	-	48.00	-	-14.40	-



Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": NA
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value
6. Emission Level = Correction Factor + Reading Value.

EUT	Wireless USB Adapter	Model	GL2411EU
Channel	Channel 6	Phase	L
Environmental Conditions	20℃, 60%RH	Tested By	Steven Lu

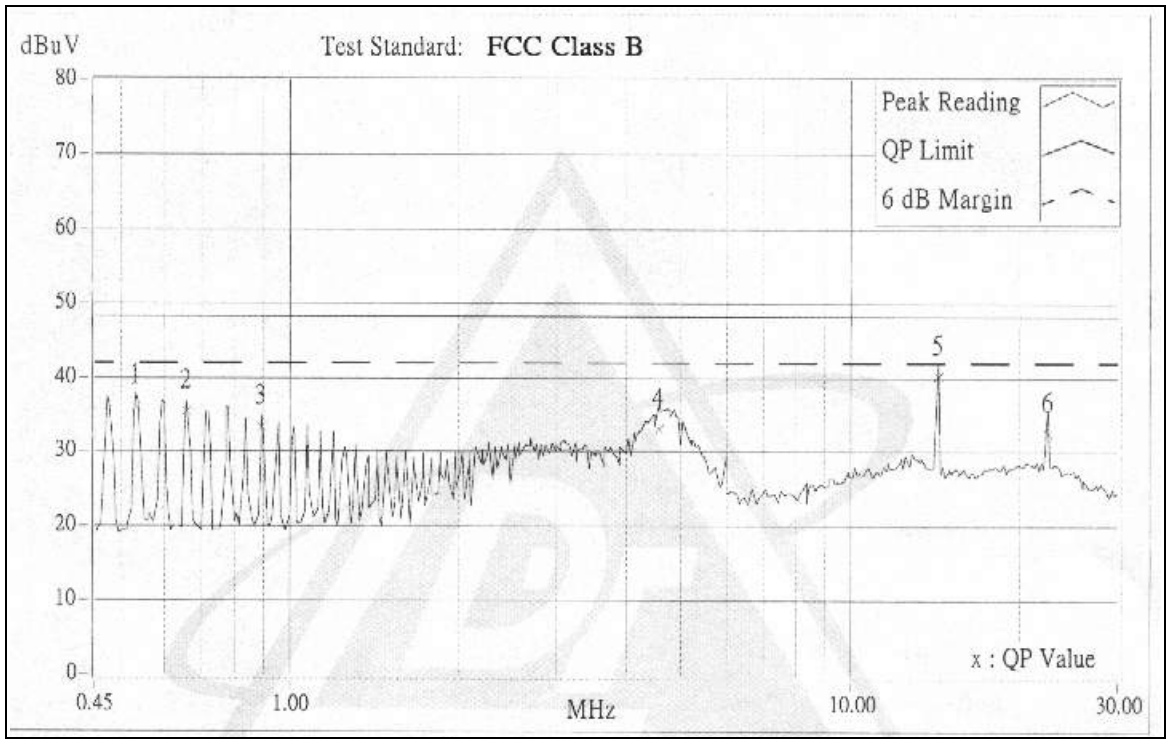
No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.53400	0.20	33.51	-	33.71	-	48.00	-	-14.29	-
2	0.65700	0.20	34.32	-	34.52	-	48.00	-	-13.48	-
3	1.07400	0.20	34.25	-	34.45	-	48.00	-	-13.55	-
4	4.60200	0.43	36.24	-	36.67	-	48.00	-	-11.33	-
5	14.31800	0.96	40.13	-	41.09	-	48.00	-	-6.91	-
6	22.56800	1.25	32.25	-	33.50	-	48.00	-	-14.50	-



Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": NA
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value
6. Emission Level = Correction Factor + Reading Value.

EUT	Wireless USB Adapter	Model	GL2411EU
Channel	Channel 6	Phase	N
Environmental Conditions	20℃, 60%RH	Tested By	Steven Lu

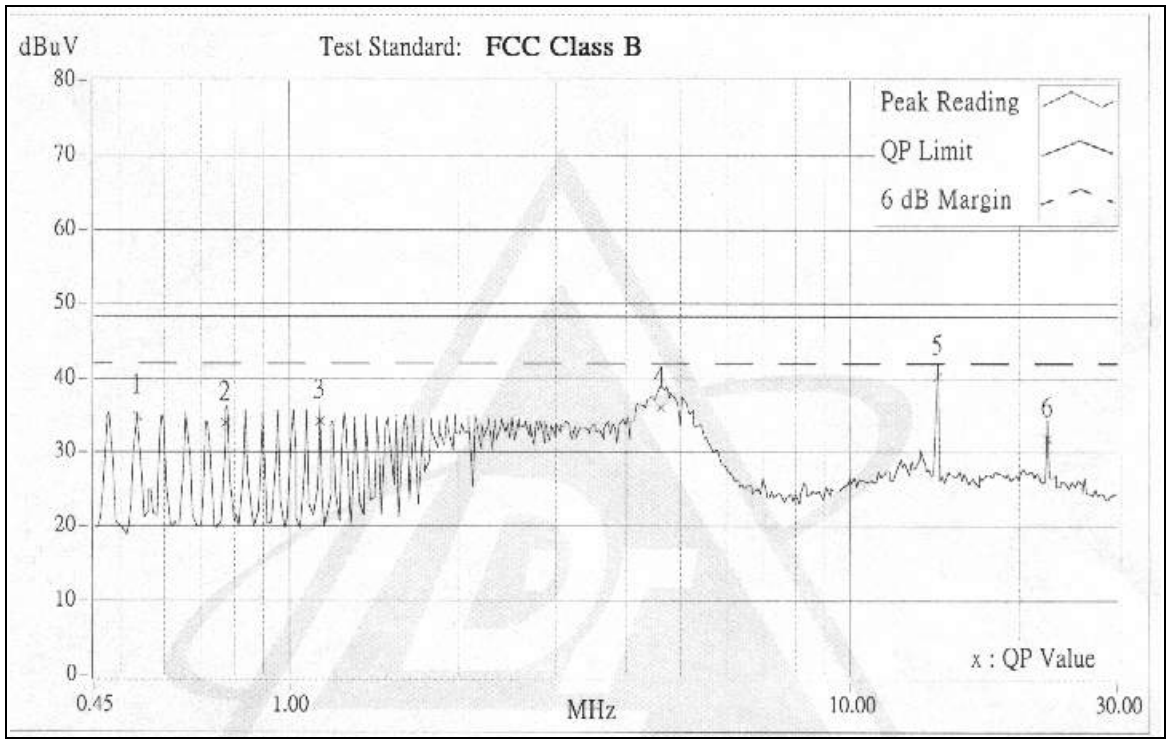
No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.53400	0.20	35.96	-	36.16	-	48.00	-	-11.84	-
2	0.65400	0.20	35.38	-	35.58	-	48.00	-	-12.42	-
3	0.89400	0.20	33.28	-	33.48	-	48.00	-	-14.52	-
4	4.53900	0.42	33.01	-	33.43	-	48.00	-	-14.57	-
5	14.31800	0.86	40.23	-	41.09	-	48.00	-	-6.91	-
6	22.56800	1.15	32.45	-	33.60	-	48.00	-	-14.40	-



Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": NA
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value
6. Emission Level = Correction Factor + Reading Value.

EUT	Wireless USB Adapter	**Model**	GL2411EU
Channel	Channel 11	**Phase**	L
Environmental Conditions	20℃, 60%RH	**Tested By**	Steven Lu

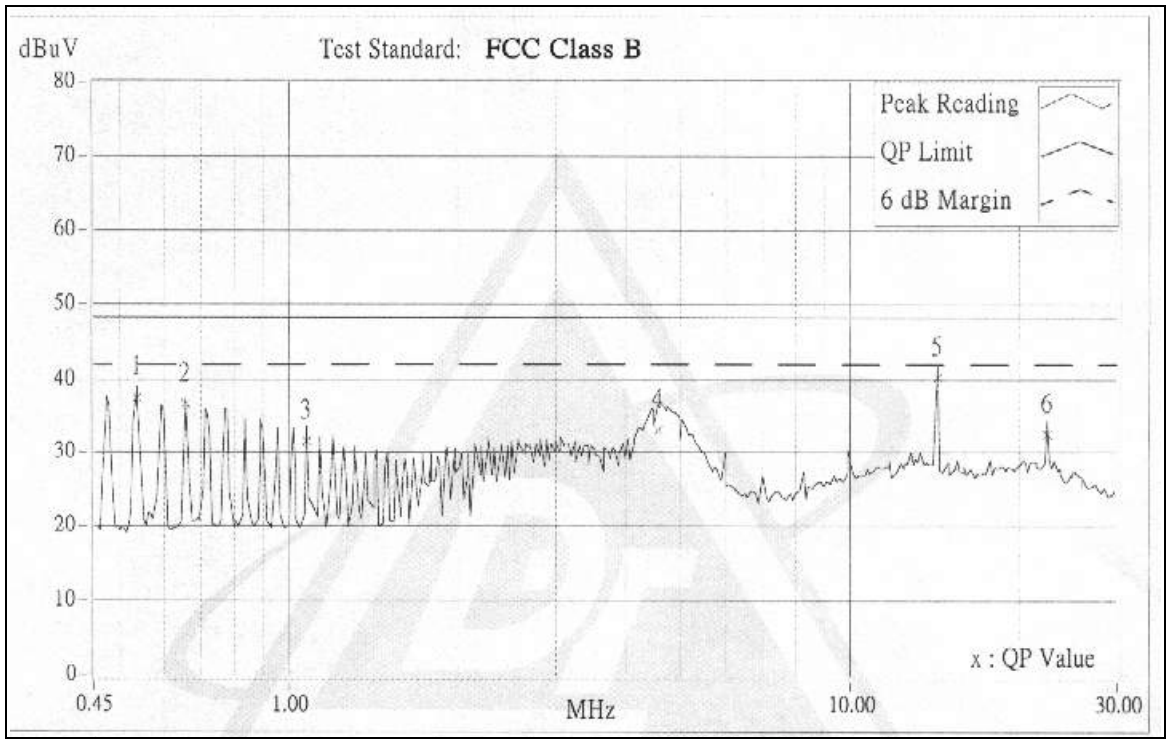
No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.53700	0.20	34.71	-	34.91	-	48.00	-	-13.09	-
2	0.77400	0.20	33.90	-	34.10	-	48.00	-	-13.90	-
3	1.13400	0.20	34.20	-	34.40	-	48.00	-	-13.60	-
4	4.60200	0.43	35.92	-	36.35	-	48.00	-	-11.65	-
5	14.31800	0.96	40.11	-	41.07	-	48.00	-	-6.93	-
6	22.57100	1.25	31.89	-	33.14	-	48.00	-	-14.86	-



Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": NA
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value
6. Emission Level = Correction Factor + Reading Value.

EUT	Wireless USB Adapter	Model	GL2411EU
Channel	Channel 11	Phase	N
Environmental Conditions	20℃, 65%RH	Tested By	Steven Lu

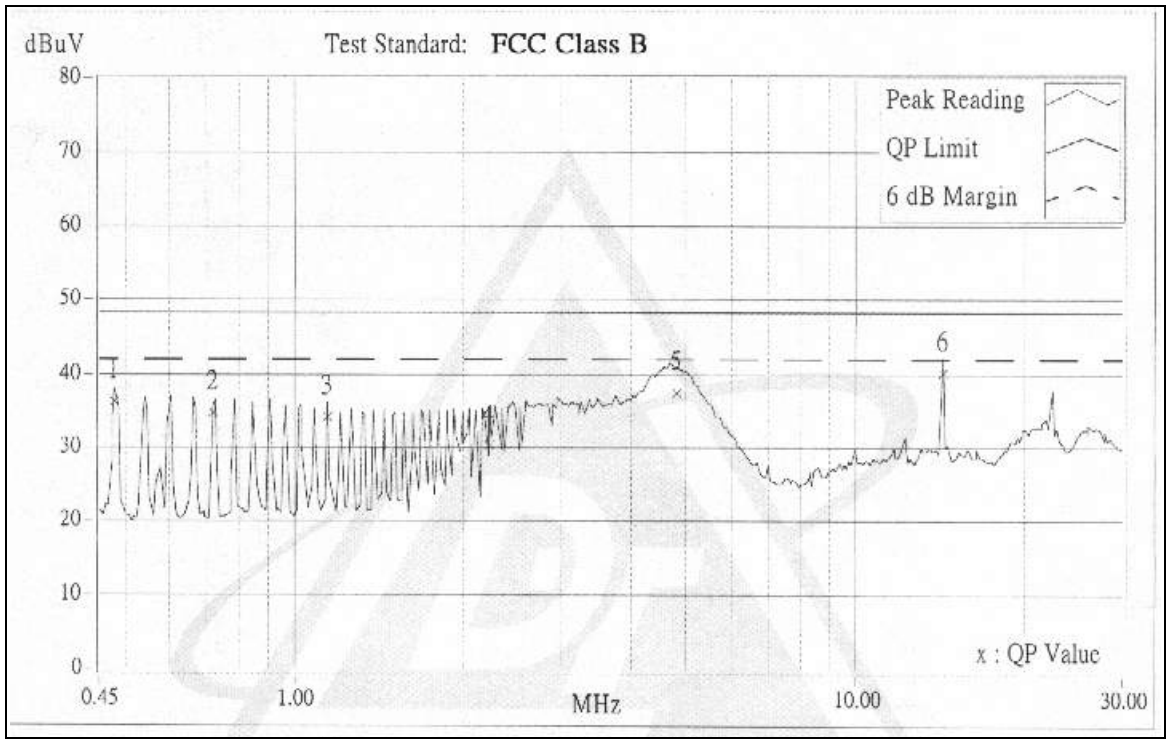
No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.53700	0.20	37.36	-	37.56	-	48.00	-	-10.44	-
2	0.65700	0.20	36.58	-	36.78	-	48.00	-	-11.22	-
3	1.07700	0.20	31.47	-	31.67	-	48.00	-	-16.33	-
4	4.54500	0.42	33.07	-	33.49	-	48.00	-	-14.51	-
5	14.31800	0.86	40.17	-	41.03	-	48.00	-	-6.97	-
6	22.56800	1.15	32.55	-	33.70	-	48.00	-	-14.30	-



Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": NA
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value
6. Emission Level = Correction Factor + Reading Value.

EUT	Wireless USB Adapter	Model	GL2411IU
Channel	Channel 1	Phase	L
Environmental Conditions	20℃, 60%RH	Tested By	Steven Lu

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.48000	0.20	36.19	-	36.39	-	48.00	-	-11.61	-
2	0.72000	0.20	34.92	-	35.12	-	48.00	-	-12.88	-
3	1.14300	0.20	34.14	-	34.34	-	48.00	-	-13.66	-
4	2.22900	0.22	30.29	-	30.51	-	48.00	-	-17.49	-
5	4.81038	0.44	37.53	-	37.97	-	48.00	-	-10.03	-
6	14.31800	0.96	40.10	-	41.06	-	48.00	-	-6.94	-



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4. The emission levels of other frequencies were very low against the limit.
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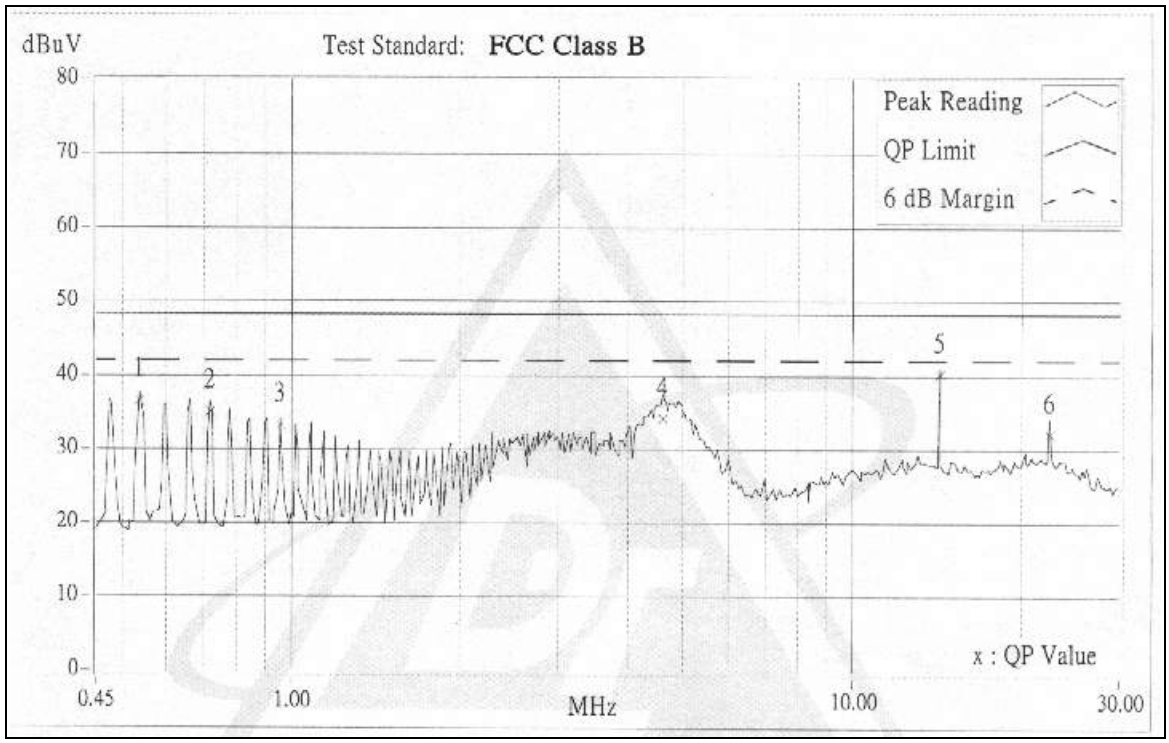
EUT	Wireless USB Adapter	Model	GL2411IU
Channel	Channel 1	Phase	N
Environmental Conditions	20℃, 60%RH	Tested By	Steven Lu

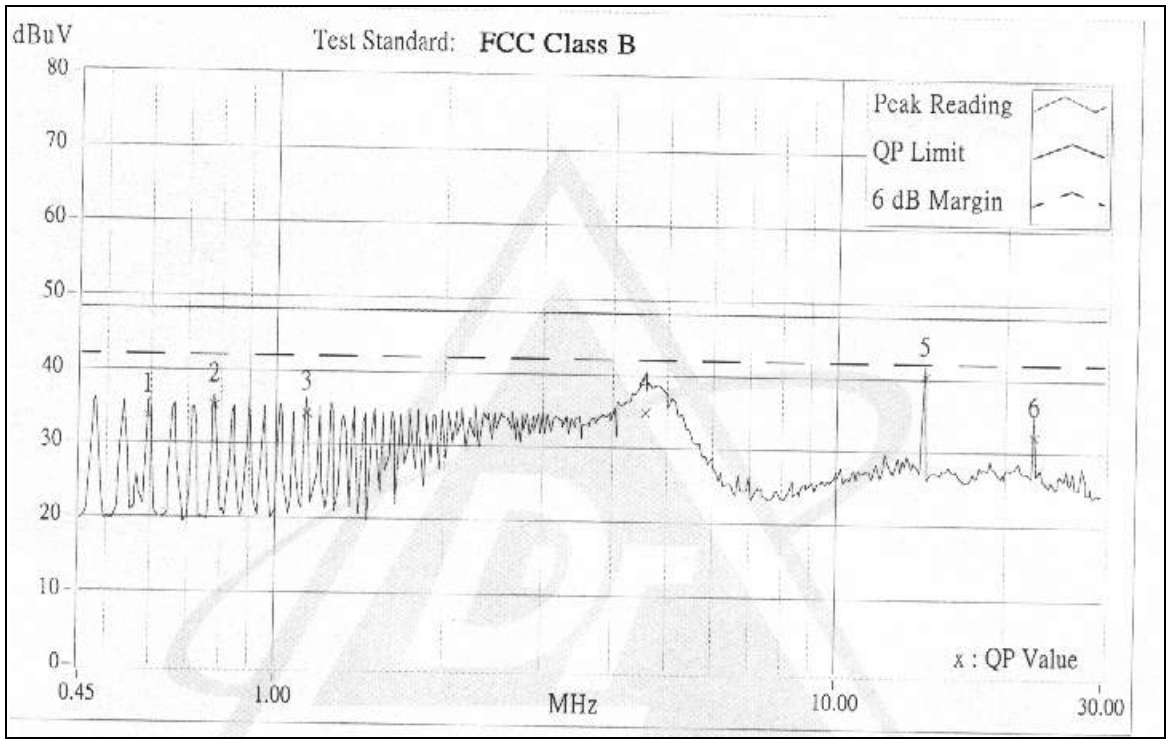
No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.53700	0.20	36.65	-	36.85	-	48.00	-	-11.15	-
2	0.71700	0.20	35.14	-	35.34	-	48.00	-	-12.66	-
3	0.95700	0.20	33.24	-	33.44	-	48.00	-	-14.56	-
4	4.61700	0.42	34.13	-	34.55	-	48.00	-	-13.45	-
5	14.31800	0.86	40.24	-	41.10	-	48.00	-	-6.90	-
6	22.57100	1.15	32.05	-	33.20	-	48.00	-	-14.80	-



Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": NA
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value
6. Emission Level = Correction Factor + Reading Value.

EUT	Wireless USB Adapter	**Model**	GL2411IU
Channel	Channel 6	**Phase**	L
Environmental Conditions	20℃, 60%RH	**Tested By**	Steven Lu

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.59700	0.20	33.59	-	33.79	-	48.00	-	-14.21	-
2	0.77700	0.20	35.15	-	35.35	-	48.00	-	-12.65	-
3	1.13700	0.20	34.30	-	34.50	-	48.00	-	-13.50	-
4	4.55400	0.43	34.85	-	35.28	-	48.00	-	-12.72	-
5	14.31800	0.96	40.13	-	41.09	-	48.00	-	-6.91	-
6	22.56800	1.25	32.23	-	33.48	-	48.00	-	-14.52	-



Remarks:
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3. "-": NA
4. The emission levels of other frequencies were very low against the limit.
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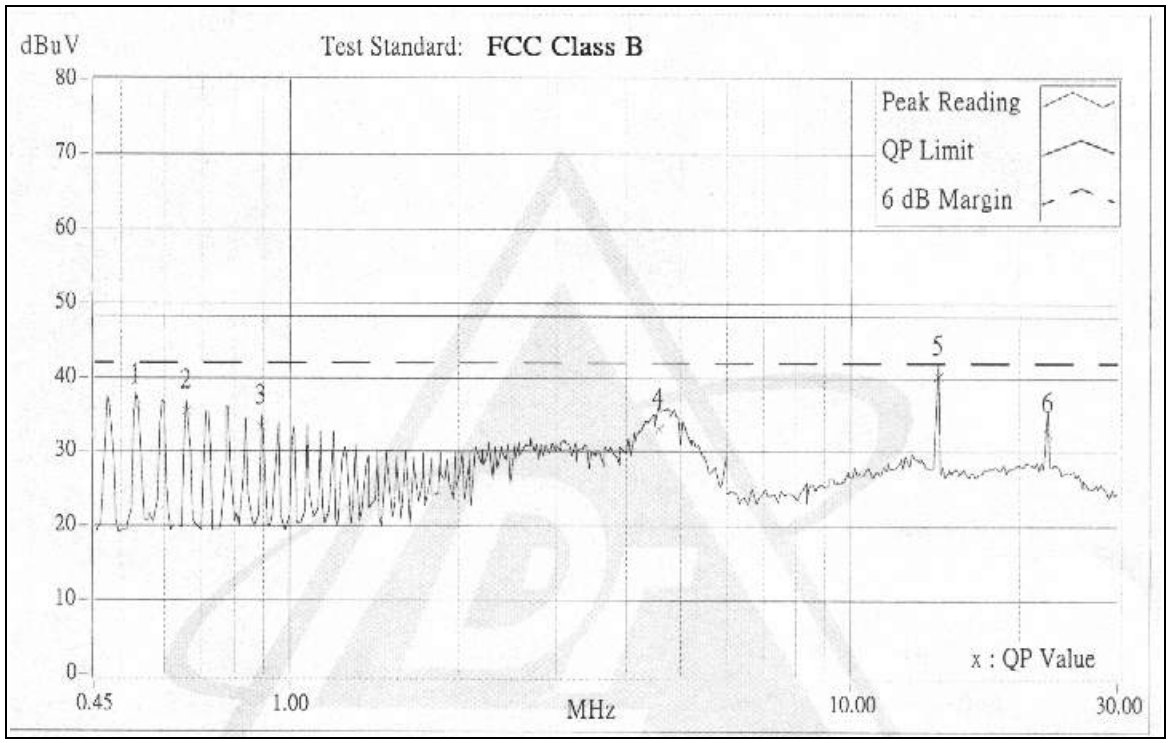
6. Emission Level = Correction Factor + Reading Value.

EUT	Wireless USB Adapter	Model	GL2411IU
Channel	Channel 6	Phase	N
Environmental Conditions	20℃, 60%RH	Tested By	Steven Lu

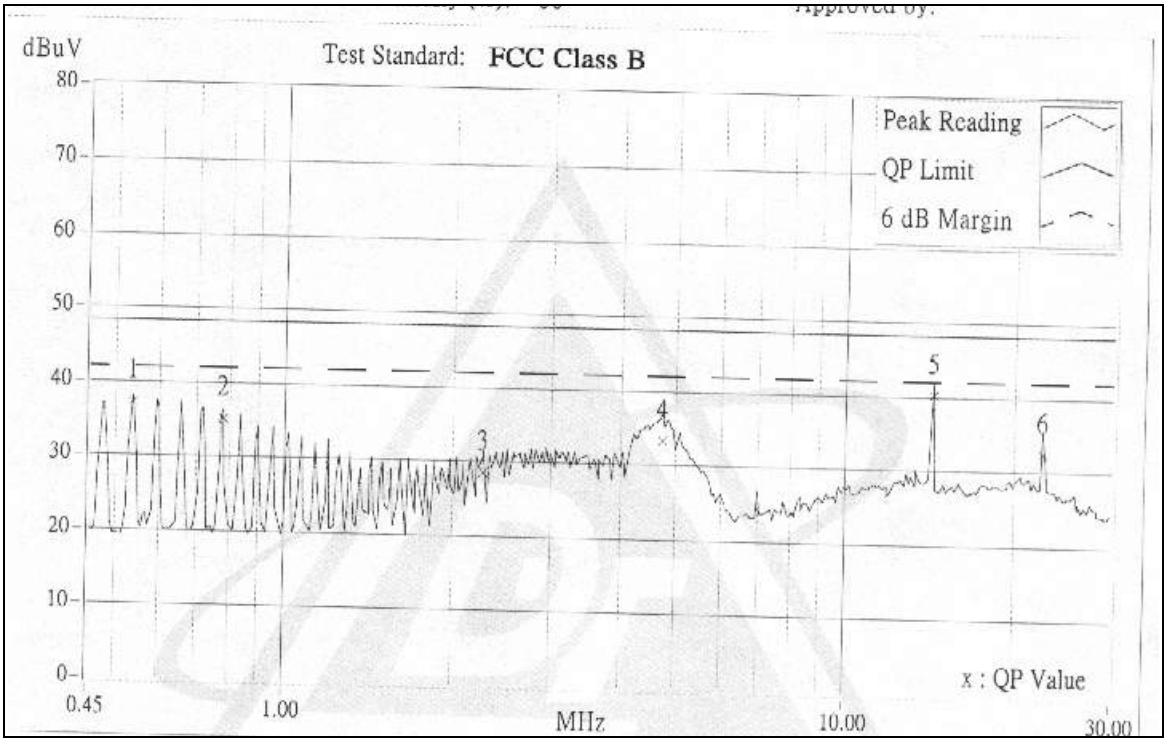
No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.53700	0.20	37.05	-	37.25	-	48.00	-	-10.75	-
2	0.66000	0.20	35.72	-	35.92	-	48.00	-	-12.08	-
3	1.07700	0.20	32.17	-	32.37	-	48.00	-	-15.63	-
4	4.79400	0.43	33.41	-	33.84	-	48.00	-	-14.16	-
5	14.31800	0.86	40.41	-	41.27	-	48.00	-	-6.73	-
6	22.56800	1.15	32.51	-	33.66	-	48.00	-	-14.34	-



Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": NA
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value
6. Emission Level = Correction Factor + Reading Value.

EUT	Wireless USB Adapter	Model	GL2411IU
Channel	Channel 11	Phase	L
Environmental Conditions	20℃, 60%RH	Tested By	Steven Lu

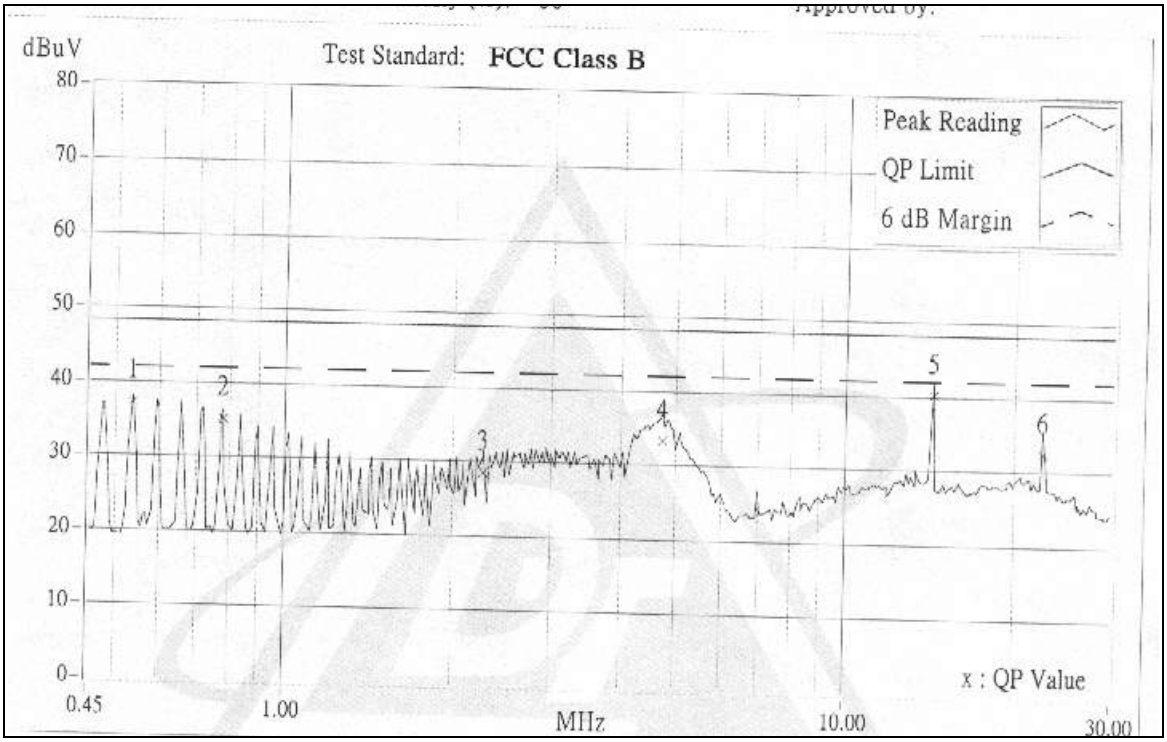
No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.53400	0.20	32.49	-	32.69	-	48.00	-	-15.31	-
2	0.77700	0.20	33.96	-	34.16	-	48.00	-	-13.84	-
3	1.37400	0.20	33.34	-	33.54	-	48.00	-	-14.46	-
4	4.78500	0.44	35.04	-	35.48	-	48.00	-	-12.52	-
5	14.31800	0.96	40.13	-	41.09	-	48.00	-	-6.91	-
6	22.56800	1.25	32.21	-	33.46	-	48.00	-	-14.54	-



Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": NA
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value
6. Emission Level = Correction Factor + Reading Value.

EUT	Wireless USB Adapter	Model	GL2411IU
Channel	Channel 11	Phase	N
Environmental Conditions	20℃, 60%RH	Tested By	Steven Lu

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.53700	0.20	37.32	-	37.52	-	48.00	-	-10.48	-
2	0.77700	0.20	35.09	-	35.29	-	48.00	-	-12.71	-
3	2.26800	0.23	28.72	-	28.95	-	48.00	-	-19.05	-
4	4.72500	0.42	33.31	-	33.73	-	48.00	-	-14.27	-
5	14.31800	0.86	40.17	-	41.03	-	48.00	-	-6.97	-
6	22.56800	1.15	32.51	-	33.66	-	48.00	-	-14.34	-



Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": NA
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value
6. Emission Level = Correction Factor + Reading Value.

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Field strength limits are at the distance of 3 meters, emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field Strength of Fundamental	
	µV/meter	dBµV/meter
30-88	100	40.0
88-216	150	43.5
216-960	200	46.0
Above 960	500	54.0

As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 3m)	
	uV/m	dBuV/m	uV/m	dBuV/m
Above 1000	300	49.5	500	54.0

Note: 1 The lower limit shall apply at the transition frequencies.
2 Emission level (dBuV/m) = 20 log Emission level (uV/m).
3 All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
*HP Spectrum Analyzer	8590L	3544A01176	April 20, 2002
*HP Preamplifier	8447D	2944A08485	Nov. 4, 2001
* HP Preamplifier	8449B	3008A01201	Dec. 13, 2001
* ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Jan. 25, 2002
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 23, 2001
* CHASE BILOG Antenna	CBL6112A	2221	Aug. 4, 2001
* EMCO Turn Table	1060	1115	NA
* SHOSHIN Tower	AP-4701	A6Y005	NA
* Software	AS61D	NA	NA
* ANRITSU RF Switches	MP59B	M35046	Aug. 4, 2001
* TIMES RF cable	LMR-600	CABLE-ST5-01	Aug. 4, 2001
* Antenna (Horn)	BBHA9120-D	D130	July 10, 2001
Open Field Test Site	Site 5	ADT-R05	July 28, 2001
VCCI Site Registration No.	Site 5	R-1039	NA

NOTE: 1.The measurement uncertainty is less than +/- 3.0dB, which is calculated as per the NAMAS document NIS81.

2.The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

3.“*” = These equipments are used for the final measurement.

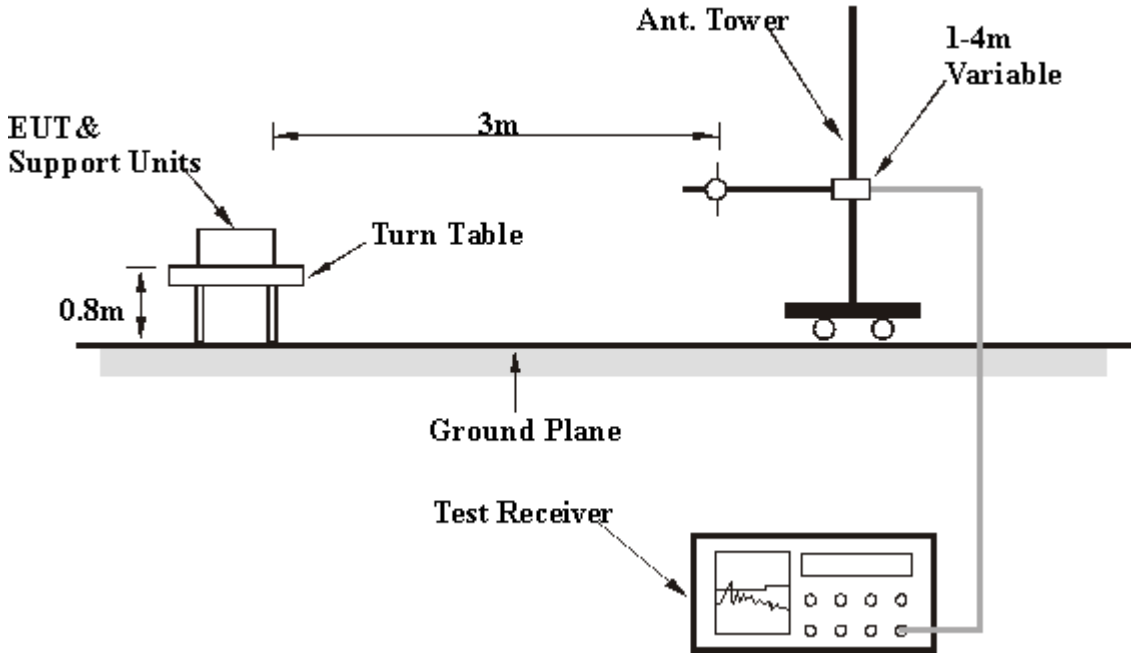
4.2.3 TEST PROCEDURES

1. The EUT was placed on the turn table 0.8 meter above ground in 3 meter open area test site.
2. Set the resolution bandwidth to 120KHz in the test receiver and select Peak function to scan the frequency below 1 GHz.
3. Shift the interference-receiving antenna located in antenna tower upwards and downwards between 1 and 4 meters above ground and find out the local peak emission on frequency domain.
4. Locate the interference-receiving antenna at the position where the local peak reach the maximum emission.
5. Rotate the turn table and stop at the angle where the measurement device has maximum reading
6. Shift the interference-receiving antenna again to detect the maximum emission of the local peak
7. If the reading of the local peak under Peak function is lower than limit by 6dB, then Quasi Peak detection is not needed and this reading should be recorded. And if it is higher than Peak limit, then the test is fail. Others, switch the receiver to Quasi Peak function, set the resolution bandwidth to 100kHz and repeat the procedures C ~ F. If the reading is lower than limit, this reading should be recorded, otherwise, the test is fail.
8. Set the resolution and video bandwidth of the spectrum analyzer to 1MHz and repeat procedures C ~ F for frequency band from 1 GHz to 10 times carrier frequency.
9. If the reading for the local peak is lower than the Average limit, no further testing is needed in this local peak and this reading should be recorded. If it is higher than Average limit but lower than Peak limit, then set the resolution bandwidth to 1MHz and video bandwidth to 300Hz. Repeat procedures C ~ F. If the maximum reading is lower than Average limit, then this reading should be recorded. If it is higher, then the test is fail.

Notes:

1. The frequency range of verification is either from 30 MHz to 1GHz or from 30 MHz up to 10 times carrier frequency of EUT (whichever is the highest frequency range).
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for frequency below 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 300 Hz for frequency above 1GHz.

4.2.4 TEST SETUP



For the actual test configuration, please refer to the related Item in this test report (**Photographs of the Test Configuration**).

4.2.5 TEST RESULTS

Digital Portion

EUT	Wireless USB Adapter	**Model**	GL2411EU
Mode	Channel 1	**Detector Function**	Quasi-Peak
Frequency Range	30-1000 MHz	**Test Distance**	3M
Environmental Conditions	20℃, 60%RH	**Tested By**	Steven Lu

ANTENNA POLARITY: VERTICAL							
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
144.00	14.00	47.60	33.6	43.5	-9.9	110	116
180.30	15.72	47.32	31.6	43.5	-11.9	117	206
216.00	14.75	49.95	35.2	43.5	-8.3	113	247
443.88	7.75	36.75	29.0	46.0	-17.0	108	309
504.02	6.35	42.35	36.0	46.0	-10.0	108	341
600.12	5.75	43.65	37.9	46.0	-8.1	108	341
747.99	3.98	36.58	32.6	46.0	-13.4	121	278

ANTENNA POLARITY: HORIZONTAL							
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
144.00	14.00	41.67	27.7	43.5	-15.8	151	36
180.00	15.72	43.42	27.7	43.5	-15.8	139	261
216.00	14.75	48.40	33.7	43.5	-9.8	175	50
220.00	14.59	45.76	31.2	46.0	-14.8	167	243
360.00	9.51	45.27	35.8	46.0	-10.2	100	256
396.00	8.32	37.63	29.3	46.0	-16.7	165	199
748.00	3.98	36.33	32.3	46.0	-13.7	156	0

Notes: 1 Emission level (dBuV/m) = Reading value (dBuV) - Correction Factor (dB)
2 Correction Factor (dB) = Ant. Factor (dB)+Cable loss (dB)
3 The other emission levels were very low against the limit.
4 Margin value = Emission level - Limit value

EUT	Wireless USB Adapter	**Model**	GL2411IU
Mode	Channel 1	**Detector Function**	Quasi-Peak
Frequency Range	30-1000 MHz	**Test Distance**	3M
Environmental Conditions	20℃, 60%RH	**Tested By**	Steven Lu

ANTENNA POLARITY: VERTICAL							
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
131.97	13.51	49.64	36.1	43.5	-7.4	166	221
144.01	14.00	45.68	31.7	43.5	-11.8	106	160
220.02	14.59	50.54	36.0	46.0	-10.0	100	362
396.02	8.32	43.10	34.8	46.0	-11.2	168	11
439.99	7.80	45.47	37.7	46.0	-8.3	135	332
528.02	6.29	45.35	39.1	46.0	-6.9	114	353
540.02	6.27	45.80	39.5	46.0	-6.5	112	5
747.99	3.98	37.49	33.5	46.0	-12.5	155	184

ANTENNA POLARITY: HORIZONTAL							
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
132.01	13.51	42.24	28.7	43.5	-14.8	163	79
144.02	14.00	44.69	30.7	43.5	-12.8	192	236
180.02	15.72	50.65	34.9	43.5	-8.6	146	272
216.02	14.75	49.76	35.0	46.0	-11.0	144	263
352.00	9.75	48.49	38.7	46.0	-7.3	100	262
396.02	8.32	45.91	37.6	46.0	-8.4	144	205
504.02	6.35	38.44	32.1	46.0	-13.9	159	133
528.02	6.29	37.72	31.4	46.0	-14.6	159	306
748.00	3.98	35.69	31.7	46.0	-14.3	153	211

Notes: 1 Emission level (dBuV/m) = Reading value (dBuV) - Correction Factor (dB)
2 Correction Factor (dB) = Ant. Factor (dB)+Cable loss (dB)
3 The other emission levels were very low against the limit.
4 Margin value = Emission level - Limit value

RF Portion

EUT	Wireless USB Adapter	**Model**	GL2411EU
Mode	Channel 1	**Detector Function**	PK, AV
Frequency Range	Above 1000 MHz	**Test Distance**	3M
Environmental Conditions	20℃, 60%RH	**Tested By**	Steven Lu

ANTENNA POLARITY: Vertical		**Detector Function :**		**6dB Bandwidth : 1MHz**				**Frequency Range : Above 1GHz**	
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2038.2	29.61	18.00	-	47.6	-	74.0	54.0	-26.4	-	110	116
*2412.3	31.04	69.80	63.10	100.8	94.1	-	-	-	-	103	159
4076.2	34.79	10.20	-	45.0	-	74.0	54.0	-29.0	-	108	279
4824.3	36.55	9.60	-	46.1	-	74.0	54.0	-27.9	-	108	240

ANTENNA POLARITY: Horizontal		**Detector Function :**		**6dB Bandwidth:1MHz**				**Frequency Range: Above 1GHz**	
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2038.6	29.61	19.30	-	48.9	-	74.0	54.0	-25.1	-	100	342
*2412.3	31.04	69.36	63.20	100.4	94.2	-	-	-	-	104	290
4076.2	34.79	12.30	-	47.1	-	74.0	54.0	-26.9	-	111	256
4824.3	36.55	10.20	-	46.7	-	74.0	54.0	-27.3	-	100	334

NOTES:1. Emission level (dBuV/m) = Correction Factor (dB) + Reading value (dBuV).
2. Correction Factor (dB) = Ant. Factor (dB)+Cable loss (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value
5. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

EUT	Wireless USB Adapter	Model	GL2411EU
Mode	Channel 6	Detector Function	PK,AV
Frequency Range	Above 1000 MHz	Test Distance	3M
Environmental Conditions	20℃, 60%RH	Tested By	Steven Lu

ANTENNA POLARITY: Vertical		Detector Function :		6dB Bandwidth:1MHz				Frequency Range: Above 1GHz			
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2063.0	29.69	15.20	-	44.9	-	74.0	54.0	-29.1	-	107	208
*2437.7	31.16	71.25	65.96	102.4	97.1	-	-	-	-	104	243
4126.3	34.90	11.30	-	46.2	-	74.0	54.0	-27.8	-	107	157
4874.2	36.69	9.60	-	46.3	-	74.0	54.0	-27.7	-	101	107

ANTENNA POLARITY: Horizontal		Detector Function :		6dB Bandwidth:1MHz.				Frequency Range: Above 1GHz.			
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2063.0	29.69	17.25	-	46.9	-	74.0	54.0	-27.1	-	100	337
*2437.5	31.16	71.20	64.50	102.4	95.7	-	-	-	-	103	261
4126.3	34.90	13.20	-	48.1	-	74.0	54.0	-25.9	-	103	201
4874.2	36.69	11.36	-	48.0	-	74.0	54.0	-26.0	-	103	137

NOTES:1. Emission level (dBuV/m) = Correction Factor (dB) + Reading value (dBuV).

2. Correction Factor (dB) = Ant. Factor (dB)+Cable loss (dB)

3. The other emission levels were very low against the limit.

4. Margin value = Emission level - Limit value

5. The limit value is defined as per 15.247

6. " * " : Fundamental frequency

EUT	Wireless USB Adapter	Model	GL2411EU
Mode	Channel 11	Detector Function	PK,AV
Frequency Range	Above 1000 MHz	Test Distance	3M
Environmental Conditions	22℃, 60%RH	Tested By	Steven Lu

ANTENNA POLARITY: Vertical		Detector Function :		6dB Bandwidth:1MHz.				Frequency Range: Above 1GHz			
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2088.0	29.81	13.50	-	43.3	-	74.0	54.0	-30.7	-	107	138
*2462.3	31.24	70.2	63.9	101.4	95.1	-	-	-	-	100	220
2483.5	31.31	9.78	-	41.1	-	74.0	54.0	-32.9	-	104	6
4176.0	35.00	10.20	-	45.2	-	74.0	54.0	-28.8	-	106	291
4924.0	36.83	7.69	-	44.5	-	74.0	54.0	-29.5	-	105	160

ANTENNA POLARITY: Horizontal		Detector Function :		6dB Bandwidth:1MHz.				Frequency Range: Above 1GHz			
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2088.0	29.81	12.20	-	42.0	-	74.0	54.0	-32.0	-	111	266
*2462.0	31.24	73.2	67.2	104.4	98.4	-	-	-	-	107	315
2483.5	31.31	9.60	-	40.9	-	74.0	54.0	-33.1	-	121	180
4176.0	35.00	9.20	-	44.2	-	74.0	54.0	-29.8	-	113	9
4924.0	36.83	8.63	-	45.5	-	74.0	54.0	-28.5	-	110	104

NOTES: 1. Emission level (dBuV/m) = Correction Factor (dB) + Reading value (dBuV).

2. Correction Factor (dB) = Ant. Factor (dB)+Cable loss (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value
5. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

EUT	Wireless USB Adapter	**Model**	GL2411IU
Mode	Channel 1	**Detector Function**	PK, AV
Frequency Range	Above 1000 MHz	**Test Distance**	3M
Environmental Conditions	20℃, 60%RH	**Tested By**	Steven Lu

ANTENNA POLARITY: Vertical		**Detector Function :**				**6dB Bandwidth : 1MHz**				**Frequency Range : Above 1GHz**	
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2038.0	29.61	17.20	-	46.8	-	74.0	54.0	-27.2	-	102	8
*2412.0	31.04	70.20	63.90	101.2	94.9	-	-	-	-	104	200
4076.2	34.79	10.23	-	45.0	-	74.0	54.0	-29.0	-	104	333
4824.2	36.55	10.00	-	46.5	-	74.0	54.0	-27.5	-	100	263

ANTENNA POLARITY: Horizontal		**Detector Function :**				**6dB Bandwidth:1MHz**				**Frequency Range: Above 1GHz**	
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2038.0	29.61	20.36	-	50.0	-	74.0	54.0	-24.0	-	111	266
*2412.0	31.04	71.00	64.20	102.0	95.2	-	-	-	-	110	134
4076.2	34.79	11.28	-	46.1	-	74.0	54.0	-27.9	-	113	348
4824.2	36.55	9.50	-	46.0	-	74.0	54.0	-28.0	-	107	234

NOTES:1. Emission level (dBuV/m) = Correction Factor (dB) + Reading value (dBuV).

2. Correction Factor (dB) = Ant. Factor (dB)+Cable loss (dB)

3. The other emission levels were very low against the limit.

4. Margin value = Emission level - Limit value

5. The limit value is defined as per 15.247

6. " * " : Fundamental frequency

EUT	Wireless USB Adapter	Model	GL2411IU
Mode	Channel 6	Detector Function	PK,AV
Frequency Range	Above 1000 MHz	Test Distance	3M
Environmental Conditions	20℃, 60%RH	Tested By	Steven Lu

ANTENNA POLARITY: Vertical		Detector Function :		6dB Bandwidth:1MHz				Frequency Range: Above 1GHz			
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2063.0	29.69	16.20	-	45.9	-	74.0	54.0	-28.1	-	100	29
*2437.9	31.16	70.20	64.80	101.4	96.0	-	-	-	-	103	152
4126.3	34.90	9.50	-	44.4	-	74.0	54.0	-29.6	-	101	291
4876.1	36.71	9.80	-	46.5	-	74.0	54.0	-27.5	-	103	238

ANTENNA POLARITY: Horizontal		Detector Function :		6dB Bandwidth:1MHz.				Frequency Range: Above 1GHz.			
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2063.0	29.69	18.20	-	47.9	-	74.0	54.0	-26.1	-	111	263
*2438.2	31.16	70.25	64.20	101.4	95.4	-	-	-	-	109	188
4126.3	34.90	10.20	-	45.1	-	74.0	54.0	-28.9	-	112	29
4876.2	36.71	10.30	-	47.0	-	74.0	54.0	-27.0	-	105	191

NOTES:1. Emission level (dBuV/m) = Correction Factor (dB) + Reading value (dBuV).

2. Correction Factor (dB) = Ant. Factor (dB)+Cable loss (dB)

3. The other emission levels were very low against the limit.

4. Margin value = Emission level - Limit value

5. The limit value is defined as per 15.247

6. " * " : Fundamental frequency

EUT	Wireless USB Adapter	Model	GL2411IU
Mode	Channel 11	Detector Function	PK,AV
Frequency Range	Above 1000 MHz	Test Distance	3M
Environmental Conditions	22℃, 60%RH	Tested By	Steven Lu

ANTENNA POLARITY: Vertical		Detector Function :		6dB Bandwidth:1MHz.						Frequency Range: Above 1GHz	
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2087.9	29.81	21.00	-	50.8	-	74.0	54.0	-23.2	-	111	168
*2463.2	31.24	70.90	63.90	102.1	95.1	-	-	-	-	108	332
2483.8	31.31	13.58	-	44.9	-	74.0	54.0	-29.1	-	118	149
4176.0	35.00	8.90	-	43.9	-	74.0	54.0	-30.1	-	114	85
4924.0	36.83	9.56	-	46.4	-	74.0	54.0	-27.6	-	111	242

ANTENNA POLARITY: Horizontal		Detector Function :		6dB Bandwidth:1MHz.						Frequency Range: Above 1GHz	
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2088.0	29.81	17.80	-	47.6	-	74.0	54.0	-26.4	-	100	80
*2463.3	31.24	67.20	59.60	98.4	90.8	-	-	-	-	103	258
2483.5	31.31	2.30	-	33.6	-	74.0	54.0	-40.4	-	100	184
4176.0	35.00	13.20	-	48.2	-	74.0	54.0	-25.8	-	101	41
4924.0	36.83	8.70	-	45.5	-	74.0	54.0	-28.5	-	102	162

NOTES: 1. Emission level (dBuV/m) = Correction Factor (dB) + Reading value (dBuV).
2. Correction Factor (dB) = Ant. Factor (dB)+Cable loss (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value
5. The limit value is defined as per 15.247
6. " * " : Fundamental frequency