

FCC TEST REPORT

REPORT NO.: RF990607E06

MODEL NO.: G-R0001

RECEIVED: June 09, 2010

TESTED: June 09 to 18, 2010

ISSUED: June 21, 2010

APPLICANT: LOGITECH FAR EAST LTD.

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Hsinchu Taiwan, R.O.C.

ISSUED BY: Bureau Veritas Consumer Products Services

(H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

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1 CERTIFICATION

PRODUCT: Logitech Wireless Gamepad

MODEL NO.: Logitech G-R0001

TESTED: June 09 to 18, 2010

TEST SAMPLE: ENGINEERING SAMPLE

APPLICANT: LOGITECH FAR EAST LTD.

STANDARDS: 47 CFR Part 15, Subpart C (Section 15.249)

ANSI C63.4-2003

The above equipment (Model: G-R0001) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Carol Gao, DATE: June 21, 2010

(Carol Liao, Specialist)

TECHNICAL

ACCEPTANCE: June 21, 2010

(Hank Chung, Deputy Manager)

APPROVED BY: , DATE: June 21, 2010

(May Chen, Deputy Manager)



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 Type	Result	Remark				
15.207	Conducted Emission Test	NA	Not Applicable				
15.249	Radiated Emission Test	PASS	Meet the requirement of limit. Minimum passing margin is -7.3dB at 2400.00MHz				
15.249	Conducted - Out Band Measurement	PASS	Meet the requirement of limit				

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

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

Measurement	Value
Radiated emissions (30MHz-1GHz)	3.3 dB
Radiated emissions (1GHz -18GHz)	2.19 dB
Radiated emissions (18GHz -40GHz)	2.56 dB



3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Logitech Wireless Gamepad		
MODEL NO.	G-R0001		
FCC ID	JNZGR0001		
POWER SUPPLY	DC 3V from batteries		
MODULATION TYPE	GFSK		
OPERATING	2405MHz ~ 2474MHz		
FREQUENCY	Z-TOOWI IZ - Z-T TWII IZ		
NUMBER OF CHANNEL	24		
ANTENNA TYPE	PCB strip antenna with 1.79dBi antenna gain		
DATA CABLE	NA		
I/O PORTS	NA		
ASSOCIATED DEVICES	NA		

NOTE:

1. The EUT was pre-tested under the following modes:

Test Mode	Description
Mode A	X-Y plane
Mode B	Z-X plane
Mode C	Z-Y plane

From the above modes, the Radiated emission

below 1GHz> worst case was found in **Mode B** and the Radiated emission<above 1GHz> worst case was found in **Mode**
 A. Therefore only the test data of the modes were recorded in this report.

2. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.



3.2 DESCRIPTION OF TEST MODES

Twenty four channels are provided to this EUT.

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
1	2405	7	2423	13	2441	19	2459
2	2408	8	2426	14	2444	20	2462
3	2411	9	2429	15	2447	21	2465
4	2414	10	2432	16	2450	22	2468
5	2417	11	2435	17	2453	23	2471
6	2420	12	2438	18	2456	24	2474

NOTE:

- 1. Below 1 GHz, the channel 1, 14, and 24 were pre-tested in chamber. The channel 24, worst case one, was chosen for final test.
- 2. Above 1 GHz, the channel 1, 14, and 24 were tested individually.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart C (Section 15.249) ANSI C63.4: 2003

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

NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit.

3.5 CONFIGURATION OF SYSTEM UNDER TEST





4 TEST PROCEDURES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

According to 15.249 the field strength of emissions from intentional radiators operated under these frequencies bands shall not exceed the following:

Fundamental Frequency	Field Strength of Fundamental (dBuV/m)			
(MHz)	Peak	Average		
	114	94		
2400 ~ 2483.5	Field Strength of Ha	rmonics (dBuV/m)		
	74	54		

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
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

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.



4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250253	Aug. 03, 2009	Aug. 02, 2010
Agilent Pre-Selector	N9039A	MY46520311	Aug. 17, 2009	Aug. 16, 2010
Agilent Signal Generator	N5181A	MY49060517	July 20, 2009	July 19, 2010
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 18, 2009	Nov. 17, 2010
Agilent Pre-Amplifier	8449B	3008A02578	July 06, 2009	July 05, 2010
Miteq Pre-Amplifier	AFS33-1800265 0-30-8P-44	881786	NA	NA
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Sep. 30, 2009	Sep. 29, 2010
AISI Horn_Antenna	AIH.8018	0000320091110	Nov. 16, 2009	Nov. 15, 2010
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Sep. 30, 2009	Sep. 29, 2010
RF CABLE	NA	RF104-201 RF104-203 RF104-204	Dec. 24, 2009	Dec. 23, 2010
RF Cable	NA	CHGCAB_001	NA	NA
Software	ADT_Radiated_ V8.7.05	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

- are traceable to NML/ROC and NIST/USA.
 The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 The test was performed in 966 Chamber No. G.
 The FCC Site Registration No. is 966073.
 The VCCI Site Registration No. is G-137.
 The CANADA Site Registration No. is IC 7450G-2.



4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters chamber room. 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 is a broadband antenna, and its 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 10 dB 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 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

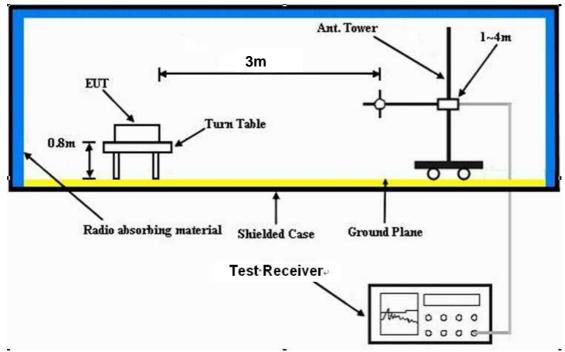
- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
- 2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation



4.1.5 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.1.6 EUT OPERATING CONDITIONS

Set the EUT under transmission condition continuously at specific channel frequency.



4.1.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL	Channel 24	FREQUENCY RANGE	Below 1000MHz	
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak	
ENVIRONMENTAL CONDITIONS	23deg. C, 68%RH 1011 hPa	TESTED BY	Duke Tseng	

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	109.94	15.8 QP	43.5	-27.7	2.00 H	0	4.44	11.36
2	133.15	16.1 QP	43.5	-27.4	2.25 H	360	2.41	13.69
3	146.53	16.8 QP	43.5	-26.7	2.00 H	0	2.55	14.25
4	173.05	20.7 QP	43.5	-22.8	1.00 H	1	6.97	13.73
5	229.07	14.8 QP	46.0	-31.2	2.00 H	80	2.58	12.22
6	448.03	17.9 QP	46.0	-28.1	2.00 H	360	-1.11	19.01
		ANTENNA	POLARITY	/ & TEST DI	STANCE: V	ERTICAL A	T 3 M	
		EMISSION				TABLE		CORRECTION
NO.	FREQ. (MHz)	LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
NO .	FREQ. (MHz)	LEVEL		MARGIN (dB) -14.8	7	ANGLE		FACTOR
	` ,	LEVEL (dBuV/m)	(dBuV/m)	, ,	HEIGHT (m)	ANGLE (Degree)	(dBuV)	FACTOR (dB/m)
1	106.26	LEVEL (dBuV/m) 28.7 QP	(dBuV/m) 43.5	-14.8	HEIGHT (m)	ANGLE (Degree)	(dBuV)	FACTOR (dB/m) 10.84
1 2	106.26 132.32	LEVEL (dBuV/m) 28.7 QP 27.4 QP	(dBuV/m) 43.5 43.5	-14.8 -16.1	1.75 V 1.00 V	ANGLE (Degree) 0 22	(dBuV) 17.86 13.76	FACTOR (dB/m) 10.84 13.64
1 2 3	106.26 132.32 178.27	LEVEL (dBuV/m) 28.7 QP 27.4 QP 23.8 QP	(dBuV/m) 43.5 43.5 43.5	-14.8 -16.1 -19.7	1.75 V 1.00 V 1.00 V	ANGLE (Degree) 0 22 207	(dBuV) 17.86 13.76 10.77	FACTOR (dB/m) 10.84 13.64 13.03
1 2 3 4	106.26 132.32 178.27 193.30	LEVEL (dBuV/m) 28.7 QP 27.4 QP 23.8 QP 22.9 QP	(dBuV/m) 43.5 43.5 43.5 43.5	-14.8 -16.1 -19.7 -20.6	1.75 V 1.00 V 1.00 V 1.75 V	ANGLE (Degree) 0 22 207 0	(dBuV) 17.86 13.76 10.77 11.19	FACTOR (dB/m) 10.84 13.64 13.03 11.71
1 2 3 4 5	106.26 132.32 178.27 193.30 594.05	LEVEL (dBuV/m) 28.7 QP 27.4 QP 23.8 QP 22.9 QP 23.3 QP	(dBuV/m) 43.5 43.5 43.5 43.5 46.0	-14.8 -16.1 -19.7 -20.6 -22.7	1.75 V 1.00 V 1.00 V 1.75 V 1.50 V	ANGLE (Degree) 0 22 207 0 280	(dBuV) 17.86 13.76 10.77 11.19 0.90	FACTOR (dB/m) 10.84 13.64 13.03 11.71 22.40
1 2 3 4 5 6	106.26 132.32 178.27 193.30 594.05 792.05	LEVEL (dBuV/m) 28.7 QP 27.4 QP 23.8 QP 22.9 QP 23.3 QP 24.3 QP	(dBuV/m) 43.5 43.5 43.5 43.5 46.0 46.0	-14.8 -16.1 -19.7 -20.6 -22.7 -21.7	1.75 V 1.00 V 1.00 V 1.75 V 1.50 V 1.00 V	ANGLE (Degree) 0 22 207 0 280 25	(dBuV) 17.86 13.76 10.77 11.19 0.90 -0.71	FACTOR (dB/m) 10.84 13.64 13.03 11.71 22.40 25.01

- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 3. The other emission levels were very low against the limit.
- 4. Margin value = Emission level Limit value.



ABOVE 1GHz DATA

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz	
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	20deg. C, 78%RH 1011 hPa	TESTED BY	Duke Tseng	

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M									
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)		
1	2400.00	66.7 PK	74.0	-7.3	1.00 H	69	35.46	31.24		
2	2400.00	37.6 AV	54.0	-16.4	1.00 H	69	6.36	31.24		
3	*2405.00	95.4 PK	114.0	-18.6	1.00 H	69	64.15	31.25		
4	*2405.00	66.3 AV	94.0	-27.7	1.00 H	69	35.05	31.25		
5	4810.00	50.6 PK	74.0	-23.4	1.00 H	231	11.23	39.37		
6	4810.00	21.5 AV	54.0	-32.5	1.00 H	231	-17.87	39.37		
7	7215.00	56.0 PK	74.0	-18.0	1.00 H	148	12.00	44.00		
8	7215.00	26.9 AV	54.0	-27.1	1.00 H	148	-17.10	44.00		
		ANTENNA	A POLARITY	/ & TEST DI	STANCE: V	ERTICAL A	T 3 M			
NO.	NO. FREQ. (MHz) EMISSION LEVEL (dBuV/m)			MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)		
1	2400.00	65.1 PK	74.0	-8.9	1.24 V	20	33.86	31.24		
2	2400.00	36.0 AV	54.0	-18.0	1.24 V	20	4.76	31.24		
3	*2405.00	92.9 PK	114.0	-21.1	1.24 V	20	61.65	31.25		
4	*2405.00	63.8 AV	94.0	-30.2	1.24 V	20	32.55	31.25		
5	4810.00	55.3 PK	74.0	-18.7	1.02 V	247	15.93	39.37		
6	4810.00	26.2 AV	54.0	-27.8	1.02 V	247	-13.17	39.37		
7	7215.00	56.1 PK	74.0	-17.9	1.00 V	25	12.10	44.00		
	7215.00		54.0	-27.0	1.00 V	25	-17.00	44.00		

- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 3. The other emission levels were very low against the limit.
- 4. Margin value = Emission level Limit value.
- 5. " * ": Fundamental frequency
- The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:
 log (Duty cycle) = 20 log (0.15 ms / 4.3 ms) = -29.15 dB
 Please see page 16 for plotted duty.



EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL	Channel 14	FREQUENCY RANGE	1 ~ 25GHz	
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	20deg. C, 78%RH 1011 hPa	TESTED BY	Duke Tseng	

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M									
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)		
1	*2444.00	94.7 PK	114.0	-19.3	1.00 H	69	63.35	31.35		
2	*2444.00	65.6 AV	94.0	-28.4	1.00 H	69	34.25	31.35		
3	4888.00	53.0 PK	74.0	-21.0	1.00 H	229	13.33	39.67		
4	4888.00	23.9 AV	54.0	-30.1	1.00 H	229	-15.77	39.67		
5	7332.00	56.1 PK	74.0	-17.9	1.00 H	150	11.97	44.13		
6	7332.00	27.0 AV	54.0	-27.0	1.00 H	150	-17.13	44.13		
		ANTENNA	POLARITY	/ & TEST DI	STANCE: V	ERTICAL A	T 3 M			
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)		
1	*2444.00	91.0 PK	114.0	-23.0	1.23 V	19	59.65	31.35		
2	*2444.00	61.9 AV	94.0	-32.1	1.23 V	19	30.55	31.35		
3	4888.00	59.6 PK	74.0	-14.4	1.02 V	240	19.93	39.67		
4	4888.00	30.5 AV	54.0	-23.5	1.02 V	240	-9.17	39.67		
	7000.00	50.0 DI/	74.0	-17.8	1.00 V	25	40.07	44.40		
5	7332.00	56.2 PK	74.0	-17.6	1.00 V	25	12.07	44.13		

- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 3. The other emission levels were very low against the limit.
- 4. Margin value = Emission level Limit value.
- 5. " * ": Fundamental frequency
- 6. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula: 20 log (Duty cycle) = 20 log (0.15 ms / 4.3 ms) = -29.15 dB Please see page 16 for plotted duty.

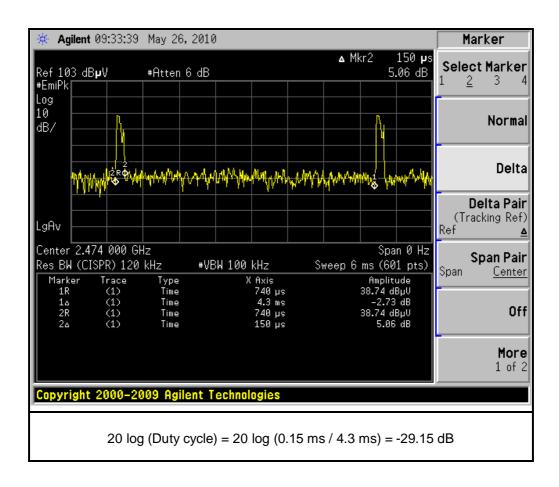


EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL	Channel 24	FREQUENCY RANGE	1 ~ 25GHz	
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	20deg. C, 78%RH 1011 hPa	TESTED BY	Duke Tseng	

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M									
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)		
1	*2474.00	93.4 PK	114.0	-20.6	1.00 H	70	61.97	31.43		
2	*2474.00	64.3 AV	94.0	-29.7	1.00 H	70	32.87	31.43		
3	2483.50	61.0 PK	74.0	-13.0	1.00 H	70	29.54	31.46		
4	2483.50	31.9 AV	54.0	-22.1	1.00 H	70	0.44	31.46		
5	4948.00	53.1 PK	74.0	-20.9	1.00 H	200	13.18	39.92		
6	4948.00	24.0 AV	54.0	-30.0	1.00 H	200	-15.92	39.92		
7	7422.00	56.0 PK	74.0	-18.0	1.00 H	156	11.78	44.22		
8	7422.00	26.9 AV	54.0	-27.1	1.00 H	156	-17.32	44.22		
	ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M									
		ANTENNA	A POLARITY	Y & TEST DI	STANCE: V	ERTICAL A	T 3 M			
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	STANCE: V ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	T 3 M RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)		
NO .	FREQ. (MHz) *2474.00	EMISSION LEVEL	LIMIT		ANTENNA	TABLE ANGLE	RAW VALUE	FACTOR		
	, ,	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	FACTOR (dB/m)		
1	*2474.00	EMISSION LEVEL (dBuV/m) 89.5 PK	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	FACTOR (dB/m) 31.43		
1 2	*2474.00 *2474.00	EMISSION LEVEL (dBuV/m) 89.5 PK 60.4 AV	LIMIT (dBuV/m) 114.0 94.0	MARGIN (dB) -24.5 -33.6	ANTENNA HEIGHT (m) 1.20 V 1.20 V	TABLE ANGLE (Degree) 20 20	RAW VALUE (dBuV) 58.07 28.97	FACTOR (dB/m) 31.43 31.43		
1 2 3	*2474.00 *2474.00 2483.50	EMISSION LEVEL (dBuV/m) 89.5 PK 60.4 AV 57.6 PK	LIMIT (dBuV/m) 114.0 94.0 74.0	-24.5 -33.6 -16.4	ANTENNA HEIGHT (m) 1.20 V 1.20 V 1.20 V	TABLE ANGLE (Degree) 20 20 20	RAW VALUE (dBuV) 58.07 28.97 26.14	FACTOR (dB/m) 31.43 31.43 31.46		
1 2 3 4	*2474.00 *2474.00 2483.50 2483.50	EMISSION LEVEL (dBuV/m) 89.5 PK 60.4 AV 57.6 PK 28.5 AV	LIMIT (dBuV/m) 114.0 94.0 74.0 54.0	-24.5 -33.6 -16.4 -25.5	ANTENNA HEIGHT (m) 1.20 V 1.20 V 1.20 V	TABLE ANGLE (Degree) 20 20 20 20	RAW VALUE (dBuV) 58.07 28.97 26.14 -2.96	FACTOR (dB/m) 31.43 31.43 31.46 31.46		
1 2 3 4 5	*2474.00 *2474.00 2483.50 2483.50 4948.00	EMISSION LEVEL (dBuV/m) 89.5 PK 60.4 AV 57.6 PK 28.5 AV 60.7 PK	LIMIT (dBuV/m) 114.0 94.0 74.0 54.0 74.0	-24.5 -33.6 -16.4 -25.5 -13.3	ANTENNA HEIGHT (m) 1.20 V 1.20 V 1.20 V 1.20 V 1.01 V	TABLE ANGLE (Degree) 20 20 20 20 20 21 20 21	88.07 28.97 26.14 -2.96 20.78	FACTOR (dB/m) 31.43 31.43 31.46 31.46 39.92		

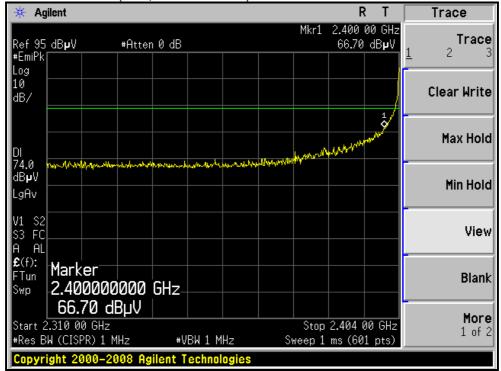
- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 3. The other emission levels were very low against the limit.
- 4. Margin value = Emission level Limit value.
- 5. " * ": Fundamental frequency
- 6. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:
 20 log (Duty cycle) = 20 log (0.15 ms / 4.3 ms) = -29.15 dB
 Please see page 16 for plotted duty.



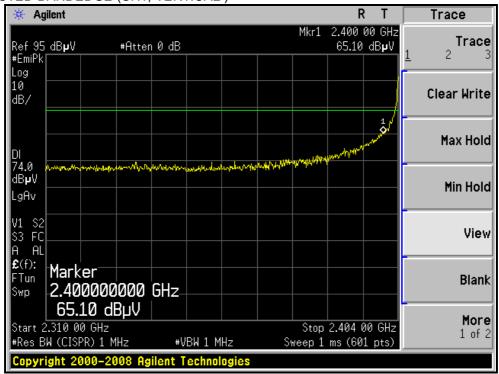








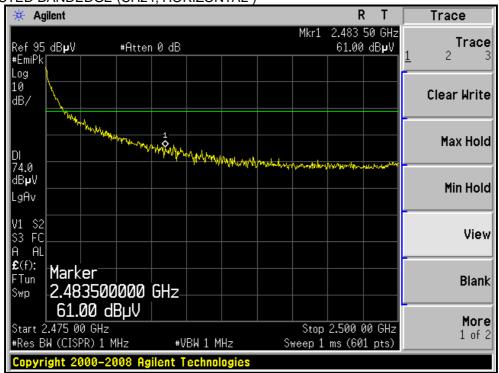
RESTRICTED BANDEDGE (CH1, VERTICAL)



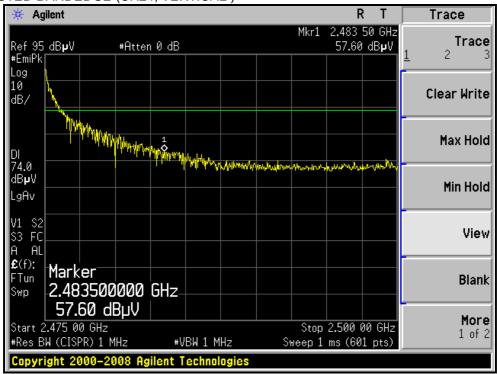
^{*} The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle). And it meets the requirement of limit.



RESTRICTED BANDEDGE (CH24, HORIZONTAL)



RESTRICTED BANDEDGE (CH24, VERTICAL)



^{*} The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle). And it meets the requirement of limit.



4.2 CONDUCTED - OUT BAND MEASUREMENT

4.2.1 LIMITS OF CONDUCTED - OUT BAND MEASUREMENT

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.		CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100036	Dec. 18, 2009	Dec. 17, 2010

NOTE:

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

4.2.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency span from band edge. The band edges was measured and recorded.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

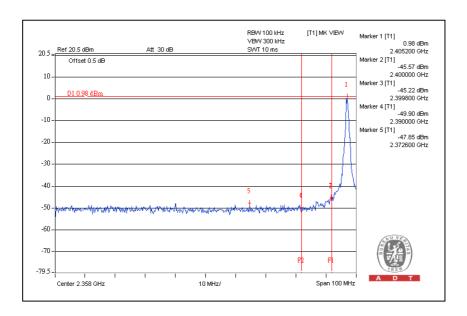
4.2.5 EUT OPERATING CONDITION

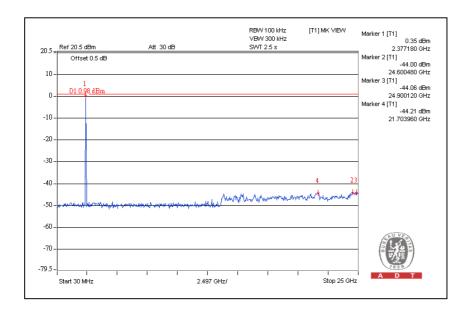
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.



4.2.6 TEST RESULTS

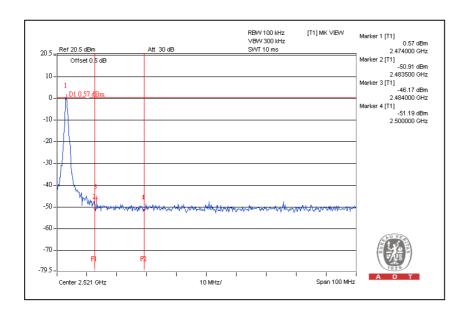
Emissions radiated outside of the specified frequency bands, please refer below pages for met the requirement of the general radiated emission limits in § 15.209. CH1

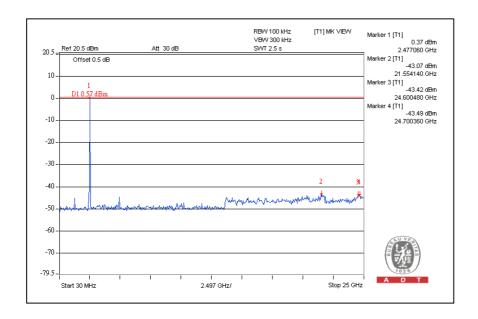






CH24







5 INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025:

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab: Hsin Chu EMC/RF Lab:

Tel: 886-2-26052180 Tel: 886-3-5935343 Fax: 886-2-26052943 Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:

Tel: 886-3-3183232 Fax: 886-3-3185050

Email: service@adt.com.tw
Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.



6 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.
--- END ---