

Report No.: EM/2010/10101-01

**Issue Date: May. 05, 2010** 

**Page 1 of 15** 

# **FCC CERTIFICATION** COMPLIANCE REPORT

Test Report No. : EM/2010/10101-01

**Applicant** : Dynastream Innovations

**Address of Applicant** : 228 River Avenue, Cochrane AB, Canada, T4C 2C1

Manufacturer : Garmin Taiwan

Address of Manufacturer: No. 68 Jangshu 2nd Road shirj, Taipei county, Taiwan

**Equipment Under Test (EUT):** 

Name: 2.4G USB Stick **Brand Name: Dynastream** 

Model No.: USB2 Added Model(s): N/A

**Standards** : FCC Part 15:2008, Subpart B, Class B

Date of Receipt: Jan. 18, 2010

**Date of Test** : Jan. 18 ~ 22, 2010 Date of Issue : May. 05, 2010

Test Result: **PASS** 

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

#### Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report shall not be reproduced except in full, without the written approval of the laboratory. 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.

Test By:	Mark Liu	Date	May. 05, 2010
-	Mark Liu(Engineer)		
Prepared By:	Alex Chen (Project-Engineer)	Date 	May. 05, 2010
Approved By	Int	Date	May. 05, 2010
-	Ion Lin(Assistant Manager)	<u> </u>	



Report No.: EM/2010/10101-01

**Issue Date: May. 05, 2010** 

Page 2 of 15

# **Contents**

1. GENERAL INFORMATION	3
1.1 Applicant & Manufacturer Information	3
1.2 GENERAL DESCRIPTION OF EUT	3
1.3 DETAILS OF EUT	3
1.4 Operation Procedure	3
1.5 DESCRIPTION OF SUPPORT UNITS	3
1.6 Modification List	3
1.7 Cable List	3
1.8 Test Set-Up Configuration	4
1.9 Measurment Procedure	5
1.10 Standards Applicable for Testing	5
1.11 SUMMARY OF RESULTS	5
2. RADIO DISTURBANCE	6
2.1 Test Results	6
2.2 Frequency Range	6
2.3 LIMITS OF CONDUCTED AND RADIATED EMISSION	6
2.3.1 LIMIT OF CONDUCTED EMISSION OF FCC PART 15, SUBPART B/CISPR 22	6
2.3.2 LIMIT OF RADIATED EMISSIONS OF FCC PART 15, SUBPART B/CISPR 22	7
2.4.Test of Conducted Emission	8
2.4.1 Test Equipments	8
2.4.2 TEST SITE	8
2.4.3 OPERATING ENVIRONMENT	8
2.4.4 Measurement Data	9
2.5 Test of Radiated Emission	11
2.5.1 Test Instruments	11
2.5.2 Test Site	11
2.5.3 OPERATING ENVIRONMENT	11
2.5.4 Measurement Data (10m Method)	12



Report No.: EM/2010/10101-01

**Issue Date: May. 05, 2010** 

**Page 3 of 15** 

# 1. General Information

## 1.1 Applicant & Manufacturer Information

Applicant: Dynastream Innovations

Address of Applicant: 228 River Avenue, Cochrane AB, Canada, T4C 2C1

Manufacturer: Garmin Taiwan

Address of Manufacturer: No. 68 Jangshu 2nd Road shiri, Taipei county, Taiwan

## 1.2 General Description of EUT

Name: 2.4G USB Stick Brand Name: Dynastream

Model No.: USB2 Added Model(s): N/A Model Difference: N/A

#### 1.3 Details of EUT

Tested Power Supply: From PC Modes/Function: Operation Mode. Worst case: Operation Mode..

## 1.4 Operation Procedure

- 1. Set up EUT with support units and turn on the power of all equipment.
- 2. Pre-test the EUT in all modes by each model, then figure the worst case out.
- 3. Tests under the normal operation pattern.

## 1.5 Description of Support Units

PRODUCT	MANUFACTURER	MODEL NO.	SERIAL NO.
Notebook	IBM	T43	L3LKVL9
Printer	HP	DJ3820	CN34L181B1
USB Mouse	HP	M-UAE96	390938-001

#### 1.6 Modification List

No modification by SGS Taiwan Electronics & Communication Laboratory.

#### 1.7 Cable List

Cable Type	Length	Shield
N/A	N/A	N/A

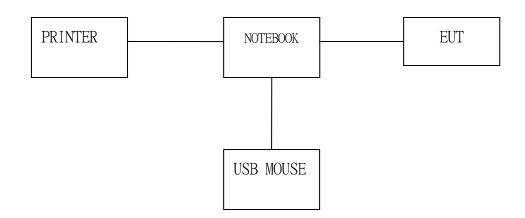


Report No.: EM/2010/10101-01

**Issue Date: May. 05, 2010** 

Page 4 of 15

# 1.8 Test Set-Up Configuration





Report No.: EM/2010/10101-01

Issue Date: May. 05, 2010

**Page 5 of 15** 

#### 1.9 Measurment Procedure

Conducted Emission Testing was performed according ANSI C63.4:2003 in a shielded room with peripherals placed on a table, 0.8m high over a metal floor. It was located more than required distance away from the shielded room wall.

Radiated Emission Testing was performed according to ANSI C63.4:2003 at the open field test site. The EUT was placed in a 0.8m high table along with the peripherals. The turn table was separated from the antenna distance 10meters. Cables were placed in a position to produce maximum emissions as determined by experimentation, and operation mode was selected for maximum.

The frequencies and amplitudes of maximum emission were measured at varying azimuths, antenna heights and antenna polarities. Reported are maximized emission levels.

# 1.10 Standards Applicable for Testing

Table of tests to be carried out under FCC Part 15, Subpart B

Test Standards	Status
FCC Part 15, Subpart B	Applicable
Deviation from Standard	No Deviation

## 1.11 Summary of Results

Hightest Emission					
Standard	Test Type	Result	Phase/Polar.	Frequency(MHz)	Margin(dB)
FCC Part 15 Subpart B	Conducted Emission	PASS	Line	3.1200	-11.91 (QP)
			Neutral	3.1200	-11.41(QP)
Class B/CISPR 22	Radiated Emission	PASS	Ver.	116.2500	-5.26(QP)



Report No.: EM/2010/10101-01

Issue Date: May. 05, 2010

Page 6 of 15

# 2. Radio Disturbance

#### 2.1 Test Results

	Results
Conducted Emission	Pass
Radiated Emission	Pass

# 2.2 Frequency Range

Conducted Emission : 150 kHz - 30 MHz : 30 MHz – 40 GHz Radiated Emission

## 2.3 Limits Of Conducted And Radiated Emission

# 2.3.1 Limit Of Conducted Emission Of FCC Part 15, Subpart B/CISPR 22

FREQUENCY	Class A (dBuV)		Class B	(dBuV)
(MHz)	Quasi - peak	Average	Quasi - peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Note: (1) The lower limit shall apply at the transition frequencies.

- (2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.
- (3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected there to, shall not exceed the level of field strengths specified above.



Report No.: EM/2010/10101-01

**Issue Date: May. 05, 2010** 

Page 7 of 15

## 2.3.2 Limit Of Radiated Emissions Of FCC Part 15, Subpart B/CISPR 22

#### **FCC Limit:**

Detector Function: Quasi - Peak

FREQUENCY	Class A (at 10m)	Class B (at 3m)
(MHz)	dBuV/m	dBuV/m
30~88	39	40
88~216	43.5	43.5
216~960	46.44	46
Above 960	49.54	54

Detector Function: Peak, Average

FREQUENCY	Class A (dBuV) (at 3m)		Class B (dE	BuV) (at 3m)
(MHz)	Peak	Average	Peak	Average
Above 1000	79.3	59.3	73.9	53.9

## **CISPR Limit:**

Detector Function : Quasi – Peak

FREQUENCY	Class A (at 10m)	Class B (at 10m)
(MHz)	dBuV/m	dBuV/m
30-230	40	30
230-1000	47	37

Detector Function: Peak, Average - Class A

Frequency range	Average Limit	Peak Limit
GHz	dB(μV/m)	dB(μV/m)
1 to 3	56	76
3 to 6	60	80

Detector Function: Peak, Average - Class B

Frequency range	Average Limit	Peak Limit		
GHz	dB(μV/m)	dB(μV/m)		
1 to 3	50	70		
3 to 6	54	74		

Note: The lower limit applies at the transition frequency.



Report No.: EM/2010/10101-01

Issue Date: May. 05, 2010

**Page 8 of 15** 

## 2.4.Test of Conducted Emission

## 2.4.1 Test Equipments

Description	Manufacturer	Model No.	Serial No.	Last Calibration	Next Calibration
				Date	Date
<b>EMI Test Receiver</b>	ROHDE&SCHWARZ	ESCS 30	828985/004	Sep. 15, 2009	Sep. 14, 2010
Coaxial Cables	N/A	WK CE Cable	N/A	Nov. 28, 2009	Nov. 27, 2010
L.I.S.N	Rolf-Heine	NNB-2/16Z	99012	Feb. 01, 2010	Feb. 01, 2011
L.I.S.N	FCC	FCC-LISN-50/250-25-2-01	04034	Feb. 01, 2010	Feb. 01, 2011

#### 2.4.2 Test Site

SGS Taiwan LTD. Electronics & Communication Laboratory No.134, Wu Kung Road. Wuku Industrial Zone, Taipei County 248, Taiwan (R.O.C.)

# 2.4.3 Operating Environment

Temperature: 23 degree C Humidity: 56 %RH

Atmospheric Pressure: 992 mBar



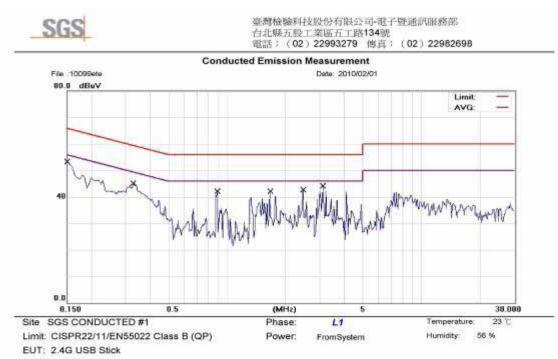
Report No.: EM/2010/10101-01

Issue Date: May. 05, 2010

**Page 9 of 15** 

#### 2.4.4 Measurement Data

L:



M/N;		
Note:	Operation	Mode

No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over		
		MHz	dBuV.	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	53.14	0.10	53.24	66.00	-12.76	QP.	
2		0.3300	45.07	0.06	45.13	59.45	-14.32	QP	
3		0.8900	42.09	0.06	42.15	56.00	-13.85	QP	
4		1.6700	41.94	0.08	42.02	56.00	-13.98	QP	
5		2.4600	42.68	0.09	42,77	56.00	-13.23	QP	
6		3.1200	43.99	0.10	44.09	56.00	-11.91	QP	

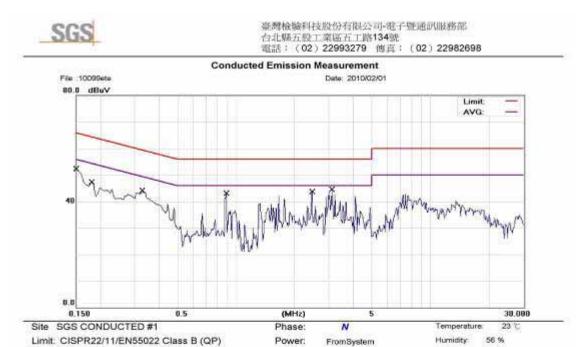


Report No.: EM/2010/10101-01

Issue Date: May. 05, 2010

Page 10 of 15

N:



EUT: 2.4G USB Stick

Note: Operation Mode

No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over		
2000		MHz	dBuV.	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	52.14	0.10	52.24	66.00	-13.76	QP	
2		0.1800	47.17	0.08	47.25	64.49	-17.24	QP	
3		0.3300	44.07	0.06	44.13	59.45	-15.32	QP	
4		0.8900	43.09	0.06	43.15	56.00	-12.85	QP	
5		2.4600	43.68	0.09	43.77	56.00	-12.23	QP	
6		3.1200	44.49	0.10	44.59	56.00	-11.41	QP	



Report No.: EM/2010/10101-01

Issue Date: May. 05, 2010

Page 11 of 15

# 2.5 Test of Radiated Emission

## 2.5.1 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Last Calibration	Next Calibration
				Date	Date
<b>EMI Test Receiver</b>	ROHDE&SCHWARZ	ESCI	100335	Feb. 05, 2009	Feb. 04, 2010
RF-Amplifier	Agilent	8447D	2944A09469	Nov. 28, 2009	Nov. 27, 2010
Broadband Antenna	SCHWAZBECK	VULB9160	9160-3224	Mar. 11, 2009	Mar. 10, 2010
Coaxial Cables	N/A	OS RE Cable	N/A	Nov. 28, 2009	Nov. 27, 2010
Antenna Master	HD GmbH	MA 240	240/515	N/A	N/A
Turn Table	HD GmbH	DT420	420/542	N/A	N/A
Controller	HD GmbH	HD 100	100/589	N/A	N/A

#### Above 1G

ADOVE TO						
Description	Manufacturer	Model No.	Serial No.	Last Calibration	Next Calibration	
				Date	Date	
EMI Test Receiver	ROHDE&SCHWARZ	ESCS 30	828985/004	Sep. 15, 2009	Sep. 14, 2010	
Spectrum Analyzer	ROHDE&SCHWARZ	FSP 40	100034	Feb. 12, 2009	Feb. 11, 2010	
Broadband Antenna	SCHWAZBECK	VULB9160	3136	Nov. 19, 2009	Nov. 18, 2010	
RF-Amplifier	Agilent	8447D	1937A02834	Nov. 28, 2009	Nov. 27, 2010	
Antenna Master	HD GmbH	MA240-N	240/657	N/A	N/A	
Turn Table	HD GmbH	DS420	420/542	N/A	N/A	
Controller	HD GmbH	HD 100	100/803	N/A	N/A	
CCD Video Camera System	N/A	VCS-04	N/A	N/A	N/A	
	N/A	CM-314DH	N/A	N/A	N/A	

## 2.5.2 Test Site

SGS Taiwan LTD. Electronics & Communication Laboratory No.134, Wu Kung Road. Wuku Industrial Zone, Taipei County 248, Taiwan (R.O.C.)

## 2.5.3 Operating Environment

Temperature: 24 degree C Humidity: 57 %RH

Atmospheric Pressure: 996 mBar



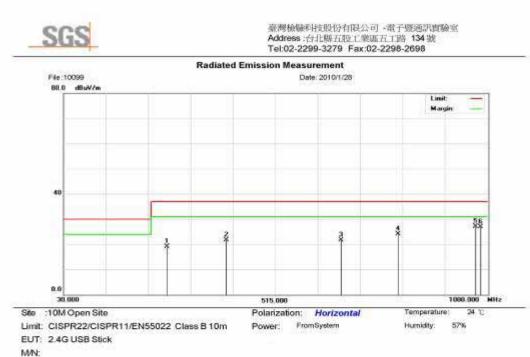
Report No.: EM/2010/10101-01

**Issue Date: May. 05, 2010** 

Page 12 of 15

#### 2.5.4 Measurement Data

Date of Test : Jan. 28, 2010



Note: Operationmode

No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuVlm	dBu/V/m	dB	Detector	Comment
1	- 2	265.5000	40.06	-20.98	19.08	37.00	-17.92	QΡ	- Naucinos
2		402.5500	40.83	-19.09	21.74	37.00	-15.26	QP	
3		665.2500	32.01	-10.24	21.77	37.00	-15.23	QP	
4	- 3	796.2300	33.42	-9.26	24.16	37.00	-12.84	QP	
5		972.7200	33.11	-5.99	27.12	37.00	-9.88	QP	
6	-8	984.6200	32.43	-5.49	26.94	37.00	-10.06	QP	



Report No.: EM/2010/10101-01

1000.000 MHz

24.10

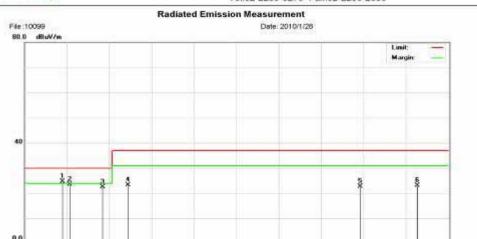
Humidity:

**Issue Date: May. 05, 2010** 

Page 13 of 15



臺灣檢驗科技股份有限公司 -電子號通訊實驗室 Address:台北縣五股工業區五工路 134號 Tel:02-2299-3279 Fax:02-2298-2698



515,000

Power:

Polarization:

Vertical

FromSystem

Site :10M Open Site

Limit: CISPR22/CISPR11/EN55022 Class B 10m

EUT: 2.4G USB Stick

M/N:

Note: Operationmode

No.	Mk	. Freq.	Reading Level	Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB	dBuV/m	dBu/V/m	dB	Detector	Comment	
1		116.2500	43.63	-18.89	24.74	30.00	-5,26	QP	- November	
2	- 1	134.0800	39.43	-15.85	23.58	30.00	-6.42	QP		
3	- 3	208.5500	40.00	-17.42	22.58	30.00	-7.42	QP		
4		266.3700	39.25	-15.89	23.36	37.00	-13.64	QP		
5		796.8500	32.38	-9.58	22.80	37.00	-14.20	OP		
6	-8	928.2200	31.35	-8.26	23.09	37.00	-13.91	QP		



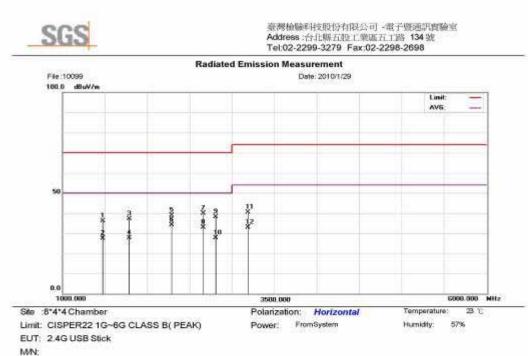
Report No.: EM/2010/10101-01

**Issue Date: May. 05, 2010** 

Page 14 of 15

#### Above 1G-

Date of Test : Jan. 29, 2010



Note: Operationmode

No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dS	dBuV/m	dBuWm	dB	Detector	Comment
1	- 8	1464.300	45.23	-9.07	36.16	70.00	-33.84	peak	That I had a
2	- 9	1464.300	36.52	-9.07	27.45	50.00	-22.55	AWG	
3	18	1781.500	44.26	-7.17	37.09	70.00	-32.91	peak	
4		1781.500	34.92	-7.17	27.75	50.00	-22.25	AVG	
5		2278.500	44.08	-5.09	38.99	70.00	-31.01	peak	
6	*	2278.500	39.14	-5.09	34.05	50.00	-15.95	AVG	
7	- 8	2655.750	43.62	-3.73	39.89	70.00	-30.11	peak	
8	- 3	2655.750	36.55	-3.73	32.82	50.00	-17.18	AWG	
9	-3	2810,550	41.09	-3.03	38.06	70.00	-31.94	peak	
10	- 1	2810.550	30.55	-3.03	27.52	50.00	-22.48	AWG	
11	-6	3180.750	41.72	-1.45	40.27	74.00	-33.73	peak	
12		3180,750	34.26	-1.45	32.81	54.00	-21.19	AVG	



Report No.: EM/2010/10101-01

6000.000 MHz

23.10

57%

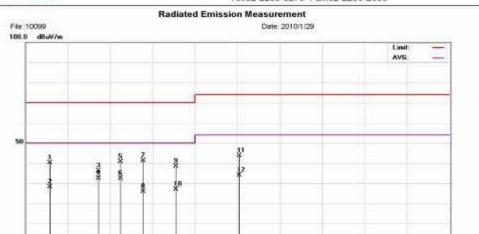
Humidity:

**Issue Date: May. 05, 2010** 

Page 15 of 15



臺灣檢驗科技股份有限公司 -電子號通訊實驗室 Address:台北縣五股工業區五工路 134號 Tel:02-2299-3279 Fax:02-2298-2698



Polarization:

Power:

Vertical

From System

1000.000 Site :8\*4\*4 Chamber

Limit: CISPER22 1G~6G CLASS B( PEAK)

EUT: 2.4G USB Stick

M/N:

Note: Operationmode

No.	Mk.	Freq.	Reading Level	Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuVlm	dBu/V/m	dB	Detector	Comment
1	- 8	1285.600	50.60	-10.58	40.02	70.00	-29.98	peak	TAMALON III
2	- 5	1285.600	38.66	-10.58	28.08	50.00	-21.92	AVG	
3	- 13	1852.700	42.83	-6.77	36.06	70.00	-33.94	peak	
4		1852.700	39.20	-6.77	32.43	50.00	-17.57	AVG	
5	-3	2120.520	46.20	-5.57	40.63	70.00	-29.37	peak	
6		2120.520	38.06	-5.57	32.49	50.00	-17.51	AVG	
7	- 8	2382.300	45.92	-4.77	41.15	70.00	-28.85	peak	
8	- 3	2382.300	30.66	4.77	25.89	50.00	-24.11	AVG	
9		2767.500	41.56	-3.23	38.33	70.00	-31.67	peak	
10	3	2767.500	30.03	-3.23	26.80	50.00	-23.20	AVG	
11	- 8	3522.630	44.26	-0.57	43.69	74.00	-30.31	peak	
12		3522.630	34.53	-0.57	33.96	54.00	-20.04	AVG	