TEST REPORT

Your Ref: Date: 19 Nov 2002

Our Ref: 56S020388/01 Page: 1 of 21

DID: 6885 1448 Fax: 6777 6409

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FORMAL REPORT ON TESTING IN ACCORDANCE WITH

FCC Part 15C : 2002

OF A

WIRELESS GAME CONTROLLER
[MODEL : FT-GC1000]
[FCC IDs : QPPFTGC1000 & QPPFTGC1000A]

TEST FACILITY	Telecoms & EMC, Testing Group, PSB Corporation Pte Ltd 1 Science Park Drive, Singapore 118221
FCC REG. NO.	90937 (3m & 10m OATS) 99142 (10m Anechoic Chamber) 871638 (5m Anechoic Chamber)
IND. CANADA REG. NO.	IC 4257 (10m Anechoic Chamber)
PREPARED FOR	FounTech Pte Ltd Blk 1020 Tai Seng Avenue #05-3510, Tai Seng Industrial Estate Singapore 534419 Tel : 65-6280 3506 Fax : 65-6281 7641
JOB NUMBER	56S020388
TEST PERIOD	4 Oct 2002 – 18 Nov 2002

PREPARED BY	**APPROVED BY**
Lim Cher Hwee Engineer	Colin Gan Assistance Vice President

Your product quality and safety mark

ACCREDITED LABORATORY SAC-SINGLAS

LA-2001-0212-A
LA-2001-0213-F
LA-2001-0214-E
LA-2001-0215-B
LA-2001-0216-G
LA-2001-0217-G

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The product was tested in accordance with the customer's specifications.

Test Results Summary

FCC Paragraphs	Descriptions	Pass / Fail
15.207	Conducted Emissions	Pass
15.205	Radiated Emissions (Restricted Band Requirements)	Pass
15.209	Radiated Emissions (Spurious Emissions)	Pass
15.209	Band Edge Radiated Emissions (Spurious Emissions)	Pass
15.249	Radiated Emissions (Fundamental and Harmonics Emissions)	Pass

Notes

1. The conducted emissions, was applied only to the base hub unit which was connected to a playstation. The conducted emissions test was not applicable to the controller unit, which is a battery operated device.

2. Three channels as listed below from base hub and game controller units, which respectively represent the lower, middle and upper of the each unit transmission channels were chosen and tested.

Transmit Channel	Base Hub Frequency (MHz)	Game Controller Frequency (MHz)
Channel 1	902.7	925.5
Channel 5	903.5	926.3
Channel 10	904.5	927.3

3. The EUT is an Class B device when in non-transmitting state and meets the FCC Part15B Class B requirements.

Modifications

No modifications were done.

Description	:	The Equipment Under Test (EUT) is an **Air Style Wireless Game Controller**. The game controller consists of two units, namely the Game controller and the Base Hub. The game controller is a hand held remote controller, which allows users to control the playstation remotely. The base hub, which connected to the playtation acts as a receiving signal unit for the game controller which itself also to transmit the control signal back to the game controller. Please refer to the user manual for details
Manufacturer	:	FounTech Pte Ltd
Model Number	:	FT-GC1000
FCC ID	:	QPPFTGC1000 (Game Controller) QPPFTGC1000A (Base Hub)
Serial Number	:	Nil
Microprocessor	:	FTViPS002BT & FTViMC003B (CPU) FTViWE001QT (RF Controller)

Operating / Transmitting Frequency :

Transmit Channel	Base Hub Frequency (MHz)	Game Controller Frequency (MHz)
Channel 1	902.7	925.5
Channel 2	902.9	925.7
Channel 3	903.1	925.9
Channel 4	903.3	926.1
Channel 5	903.5	926.3
Channel 6	903.7	926.5
Channel 7	903.9	926.7
Channel 8	904.1	926.9
Channel 9	904.3	927.1
Channel 10	904.5	927.3

Clock / Oscillator Frequency :

Base Hub
20MHz (RF controller)
20MHz (CPU)

Game Controller
12MHz (RF Controller)
12MHz (CPU)

Modulation	:	Frequency Shift Keying (FSK)
Pulse Train Cycle	:	285.6μs (Base Hub and Game Controller)
Port / Connectors	:	1 x Base Hub connector
Rated Input Power	:	2 x 1.5 AA batteries (Game Controller) The Base Hub is drawing power from the playstation

SUPPORTING EQUIPMENT DESCRIPTION

Equipment Description (Including Brand Name)	**Model, Serial & FCC ID Number**	**Cable Description** (List Length, Type & Purpose)
Sony Playstation II	M/N : SCPH-30001 S/N : U4473663 FCC ID : DoC	2.0m unshielded power cable 2.4m RCA cable with loaded ferrite
Samsung Colour TV	M/N : CS-5377N S/N : 858631BHB00014W FCC ID : Nil	1.8m unshielded power cable

EUT OPERATING CONDITIONS

The Air Style Wireless Game Controller was powered from 110V, 60Hz mains supply.

Tests	Description Of Operation
1. Conducted Emissions 2. Radiated Emissions	The EUT was exercised by setting both the game controller and base hub to operate in the test mode which allowed a continuous exercising of a loaded game. In the test mode, the game controller is continuously transmitting the signal through the specified channel to the base hub, which is the receiving unit. The base hub did transmit back the control signal to the game controller via the specified channel upon receiving the signal from the game controller. The continuos communication between the two units enables a simulation of game playing scenario. Test Mode Transmit and Receive Frequency List: Game Controller — Tx Frequency (MHz) — Rx Frequency (MHz) Channel 1 — 925.5 — 902.7 Channel 5 — 926.3 — 903.5 Channel 10 — 927.3 — 904.5 Base Hub — Tx Frequency (MHz) — Rx Frequency (MHz) Channel 1 — 902.7 — 925.5 Channel 5 — 903.5 — 926.3 Channel 10 — 904.5 — 927.3

FCC Part 15C (15.207) Conducted Emission Results

Frequency (MHz)	AV Value (dBμV)	AV Margin (dB)	Q-P Value (dBμV)	Q-P Margin (dB)	Line	Channel
0.2374	51.4	-2.1	58.0	-5.5	Neutral	1
0.2993	49.6	-2.1	54.7	-7.0	Neutral	1
0.3153	47.4	-3.8	55.1	-6.1	Live	5
0.4712	33.5	-13.3	42.7	-14.1	Neutral	5
1.2979	18.2	-27.8	42.5	-13.5	Live	10
1.3269	15.0	-31.0	40.6	-15.4	Live	1

Tested By : DP

Notes

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2. The conducted emissions test is only applicable to the base hub unit, which is powered from the playstation.
3. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
4. EMI receiver Resolution Bandwidth (RBW) and Video Bandwidth (VBW) settings:
   9kHz - 30MHz
   RBW: 10kHz VBW: 30kHz
5. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95%, with a coverage factor of 2, in the range 9kHz – 30MHz (Average & Quasi-peak) is ±2.4dB.

Conducted Emissions Setup (Front View)

Conducted Emissions Setup (Rear View)

FCC Part 15C (15.209) Radiated Emission (Spurious Emissions) Results

Test Distance : 3m

Frequency (MHz)	Q-P Value (dBμV/m)	Q-P Margin (dB)	Pol (H/V)	Channel	Height (m)	Azimuth (Degrees)
33.6600	30.2	-9.8	V	CH 10	1.08	225
331.7562	42.1	-3.9	H	CH 10	1.00	321
812.8030	36.2	-9.8	H	CH 10	1.06	195
884.7159	37.5	-8.5	H	CH 1	1.00	189
948.2815	42.1	-3.9	H	CH 10	1.00	170
958.4388	37.2	-8.9	H	CH 10	1.00	169

Tested By : DP

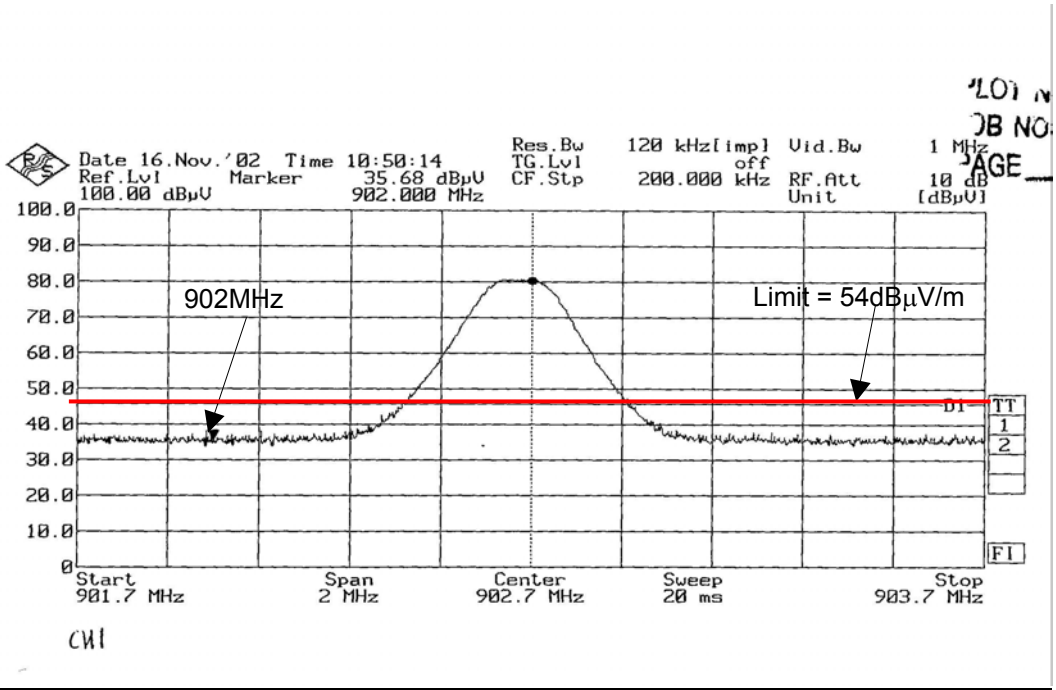
Notes

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. EMI receiver Resolution Bandwidth (RBW) and Video Bandwidth (VBW) settings:
   30MHz - 1GHz
   RBW: 120kHz VBW: 1MHz
   >1GHz
   RBW: 1MHz VBW: 3MHz
4. The upper frequency of radiated emission investigations were according to requirements stated in Section 15.33 (a) for intentional radiators & Section 15.33 (b) for unintentional radiators.
5. The channel in the table refers to the transmit channel for both the game controller and base hub.
6. Radiated Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95%, with a coverage factor of 2, in the range 30MHz – 25GHz (QP only @ 3m & 10m) is ±4.3dB (for EUTs < 0.5m X 0.5m X 0.5m).

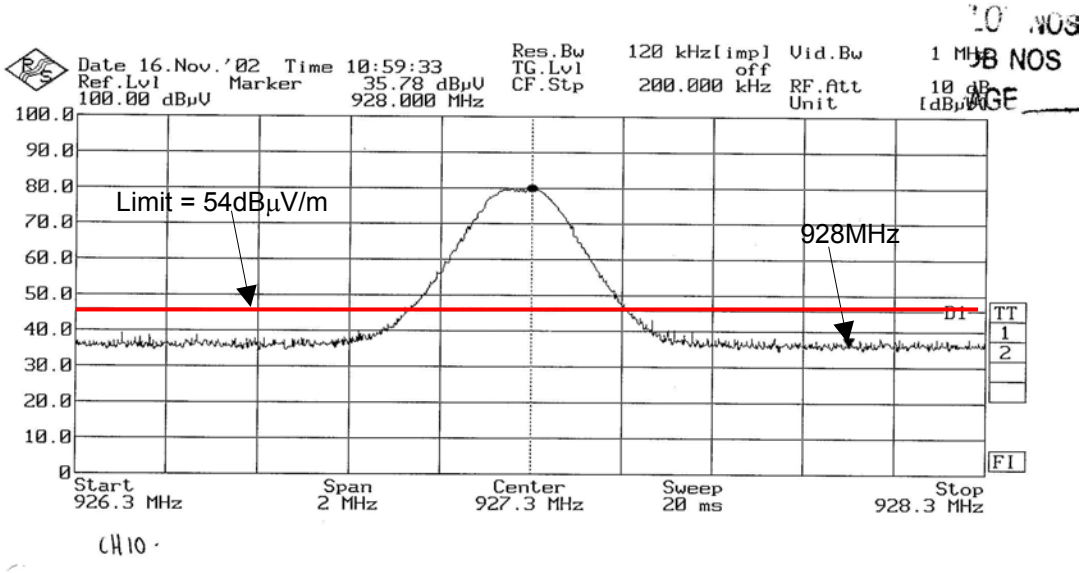
FCC Part 15C (15.209) Band Edge Radiated Emissions (Spurious Emissions) Results

Test Distance : 3m

The plots below show the band edge transmissions for the Base Hub & Game Controller.



Base Hub Transmission at Channel 1 (902.7MHz)



Game Controller Transmission at Channel 10 (927.3MHz)

Tested By : DP

FCC Part 15C (15.209) Band Edge Radiated Emissions (Spurious Emissions) Results

Notes

1. EMI receiver Resolution Bandwidth (RBW) and Video Bandwidth (VBW) settings:
   30MHz - 1GHz
   RBW: 120kHz VBW: 1MHz
   >1GHz
   RBW: 1MHz VBW: 3MHz

FCC Part 15C (15.249) Radiated Emission Results (Fundamental Frequency Radiation)

Test Distance : 3m

Channel / Frequency (MHz)	Q-P Value (dBμV/m)	Q-P Margin (dB)	Pol (H/V)	Height (m)	Azimuth (Degrees)	Unit
1 / 902.7	81.6	-12.4	H	1.01	234	Base Hub
1 / 925.5	79.7	-14.3	H	1.00	258	Game Controller
5 / 903.5	81.2	-12.8	H	1.00	232	Base Hub
5 / 926.3	79.1	-14.9	H	1.00	240	Game Controller
10 / 904.5	81.4	-12.6	H	1.00	236	Base Hub
10 / 927.3	80.0	-14.0	H	1.00	257	Game Controller

Tested By : DP

Notes

1. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
2. EMI receiver Resolution Bandwidth (RBW) and Video Bandwidth (VBW) settings:
   30MHz - 1GHz
   RBW: 120kHz VBW: 1MHz
   >1GHz
   RBW: 1MHz VBW: 3MHz
3. Radiated Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95%, with a coverage factor of 2, in the range 30MHz – 25GHz (QP only @ 3m & 10m) is ±4.3dB (for EUTs < 0.5m X 0.5m X 0.5m).

FCC Part 15C (15.249) Radiated Emission Results (Harmonics Frequency Radiation)

Test Distance : 3m

Frequency (GHz)	Peak Value (dBμV/m)	Average Value (dBμV/m)	Average Margin (dB)	Pol (H/V)	Height (m)	Azimuth (Degrees)	Unit
2708.0870	52.1	34.9	-19.1	H	1.00	332	Base Hub
2776.4870	52.2	35.4	-18.6	H	1.01	168	Game Controller
2710.5140	52.1	34.9	-19.1	H	1.00	135	Base Hub
2778.8600	53.0	35.3	-18.7	H	1.00	239	Game Controller
2713.4204	52.0	34.9	-19.1	H	1.00	134	Base Hub
2781.4230	52.3	35.3	-18.7	V	1.01	248	Game Controller

Tested By : DP

Notes

1. The worst case harmonic emissions were tabulated. The rest of harmonic emissions were found to be insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. EMI receiver Resolution Bandwidth (RBW) and Video Bandwidth (VBW) settings:
   30MHz - 1GHz
   RBW: 120kHz VBW: 1MHz
   >1GHz
   RBW: 1MHz VBW: 3MHz
4. The peak emissions above 1GHz show compliance to the requirement stated in Section 15.35 (b).
5. Radiated Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95%, with a coverage factor of 2, in the range 30MHz – 25GHz (QP only @ 3m & 10m) is ±4.3dB (for EUTs < 0.5m X 0.5m X 0.5m).

FCC Part 15C (15.205) Radiated Emissions (Restricted Band Requirements) Results

EUT Transmit Channel : 1
Test Distance : 3m

Restricted Band (MHz)	Limit (dBμV/m)	Channel 1		
		Frequency (MHz)	PK / Q-P (dBμV/m)	Average (dBμV/m)
37.5 - 38.25	40.0	Nil	-	-
73 – 74.6	40.0	Nil	-	-
74.8 - 75.2	40.0	Nil	-	-
108 - 121.94	43.5	109.2231	28.6 (QP)	-
	43.5	115.0199	29.0 (QP)	-
	43.5	120.8167	31.6 (QP)	-
	43.5	Nil	-	-
123 - 138	43.5	124.6812	33.0 (QP)	-
	43.5	130.4780	31.0 (QP)	-
	43.5	134.3426	31.3 (QP)	-
149.9 - 150.05	43.5	Nil	-	-
156.52475 - 156.52525	43.5	Nil	-	-
156.7 - 156.9	43.5	Nil	-	-
162.0125 - 167.17	43.5	163.3266	25.0 (QP)	-
167.72 - 173.2	43.5	172.9880	23.7 (QP)	-
240 - 285	46.0	242.9602	30.5 (QP)	-
	46.0	258.0079	30.0 (QP)	-
	46.0	269.6015	27.3 (QP)	-
	46.0	279.2629	27.0 (QP)	-
322 - 335.4	46.0	327.6993	28.5(QP)	-
	46.0	331.7620	41.4(QP)	-
399.9 - 410	46.0	Nil	-	-
608 - 614	46.0	611.6100	31.0 (QP)	-
960 - 1240	54.0	982.6100	33.6 (QP)	-
	54.0	996.1400	32.9 (QP)	-
1300 - 1427	54.0	Nil	-	-
1435 - 1626.5	54.0	1474.5180	49.2 (PK)	44.0
1645.5 - 1646.5	54.0	Nil	-	-
1660 - 1710	54.0	1705.1792	44.6 (PK)	-
1718.8 - 1722.2	54.0	Nil	-	-
2200 - 2300	54.0	2293.9587	49.9 (PK)	32.3
2310 - 2390	54.0	2359.2240	52.5 (PK)	44.4
2483.5 - 2500	54.0	Nil	-	-
2655 - 2900	54.0	Nil	-	-
3260 - 3267	54.0	Nil	-	-
3332 - 3339	54.0	Nil	-	-
3345.8 - 3358	54.0	Nil	-	-
3600 - 4400	54.0	Nil	-	-
4500 - 5150	54.0	Nil	-	-
5350 - 5460	54.0	Nil	-	-
7250 - 7750	54.0	Nil	-	-
8025 - 8500	54.0	Nil	-	-
9000 - 9200	54.0	Nil	-	-
9300 - 9500	54.0	Nil	-	-

Notes

1. The Nil in the frequency column indicates no emissions were found in the band of interest and showed compliance to the limits as specified in section 15.209. The emissions were merely the noise floor.
2. EMI receiver Resolution Bandwidth (RBW) and Video Bandwidth (VBW) settings:
   30MHz - 1GHz
   RBW: 120kHz VBW: 1MHz
   >1GHz
   RBW: 1MHz VBW: 3MHz
3. Radiated Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95%, with a coverage factor of 2, in the range 30MHz – 25GHz (QP only @ 3m & 10m) is ±4.3dB (for EUTs < 0.5m X 0.5m X 0.5m).

FCC Part 15C (15.205) Radiated Emissions (Restricted Band Requirements) Results

EUT Transmit Channel : 5
Test Distance : 3m

Restricted Band (MHz)	Limit (dBμV/m)	Channel 5		
		Frequency (MHz)	PK / Q-P (dBμV/m)	Average (dBμV/m)
37.5 - 38.25	40.0	Nil	-	-
73 - 74.6	40.0	Nil	-	-
74.8 - 75.2	40.0	Nil	-	-
108 - 121.94	43.5	109.2200	28.6 (QP)	-
	43.5	115.0200	29.0 (QP)	-
	43.5	117.7998	30.3 (QP)	-
	43.5	Nil	-	-
123 - 138	43.5	124.6812	32.6 (QP)	-
	43.5	130.4800	30.9 (QP)	-
	43.5	134.3400	31.0 (QP)	-
149.9 - 150.05	43.5	Nil	-	-
156.52475 - 156.52525	43.5	Nil	-	-
156.7 - 156.9	43.5	Nil	-	-
162.0125 - 167.17	43.5	163.3300	24.6 (QP)	-
167.72 - 173.2	43.5	172.9900	23.6 (QP)	-
240 - 285	46.0	242.5500	30.0 (QP)	-
	46.0	254.1400	28.6 (QP)	-
	46.0	258.0100	30.6 (QP)	-
322 - 335.4	46.0	331.7580	41.9 (QP)	-
399.9 - 410	46.0	406.7900	30.0 (QP)	-
608 - 614	46.0	611.6100	34.3 (QP)	-
960 - 1240	54.0	982.6100	30.6 (QP)	-
	54.0	996.1400	33.0 (QP)	-
	54.0	1179.5040	47.5 (PK)	44.5
1300 - 1427	54.0	1326.6932	44.6 (PK)	-
1435 - 1626.5	54.0	1474.5191	49.2 (PK)	44.2
1645.5 - 1646.5	54.0	Nil	-	-
1660 - 1710	54.0	Nil	-	-
1718.8 - 1722.2	54.0	1719.1200	44.9 (PK)	-
2200 - 2300	54.0	2250.9960	49.2 (PK)	-
2310 - 2390	54.0	2359.2190	51.9 (PK)	44.1
2483.5 - 2500	54.0	Nil	-	-
2655 - 2900	54.0	Nil	-	-
3260 - 3267	54.0	Nil	-	-
3332 - 3339	54.0	Nil	-	-
3345.8 - 3358	54.0	Nil	-	-
3600 - 4400	54.0	Nil	-	-
4500 - 5150	54.0	Nil	-	-
5350 - 5460	54.0	Nil	-	-
7250 - 7750	54.0	Nil	-	-
8025 - 8500	54.0	Nil	-	-
9000 - 9200	54.0	Nil	-	-
9300 - 9500	54.0	Nil	-	-

Notes

1. The Nil in the frequency column indicates no emissions were found in the band of interest and showed compliance to the limits as specified in section 15.209. The emissions were merely the noise floor.
2. EMI receiver Resolution Bandwidth (RBW) and Video Bandwidth (VBW) settings:
   30MHz - 1GHz
   RBW: 120kHz VBW: 1MHz
   >1GHz
   RBW: 1MHz VBW: 3MHz
3. Radiated Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95%, with a coverage factor of 2, in the range 30MHz – 25GHz (QP only @ 3m & 10m) is ±4.3dB (for EUTs < 0.5m X 0.5m X 0.5m).

FCC Part 15C (15.205) Radiated Emissions (Restricted Band Requirements) Results

EUT Transmit Channel : 10
Test Distance : 3m

Restricted Band (MHz)	Limit (dBμV/m)	Channel 10		
		Frequency (MHz)	PK / Q-P (dBμV/m)	Average (dBμV/m)
37.5 - 38.25	40.0	37.7300	24.3 (QP)	-
73 – 74.6	40.0	Nil	-	-
74.8 - 75.2	40.0	Nil	-	-
108 - 121.94	43.5	109.2200	26.6 (QP)	-
	43.5	118.8800	26.6 (QP)	-
123 – 138	43.5	124.6800	30.6 (QP)	-
	43.5	134.3400	30.3 (QP)	-
149.9 - 150.05	43.5	Nil	-	-
156.52475 - 156.52525	43.5	Nil	-	-
156.7 - 156.9	43.5	Nil	-	-
162.0125 - 167.17	43.5	163.3300	24.7 (QP)	-
167.72 - 173.2	43.5	172.9900	23.7 (QP)	-
240 - 285	46.0	242.5500	30.0 (QP)	-
	46.0	246.4100	25.3 (QP)	-
	46.0	258.0100	30.6 (QP)	-
	46.0	279.2600	26.0 (QP)	-
322 - 335.4	46.0	323.9680	28.1(QP)	-
	46.0	331.7562	42.1(QP)	-
399.9 - 410	46.0	406.7900	31.3 (QP)	-
608 - 614	46.0	611.6100	32.3 (QP)	-
960 - 1240	54.0	982.6100	31.0 (QP)	-
	54.0	996.1400	33.3 (QP)	-
	54.0	1179.5177	47.2 (PK)	42.9
	54.0	1185.2600	42.9 (PK)	-
1300 - 1427	54.0	1398.4100	41.9 (PK)	-
1435 - 1626.5	54.0	1474.5230	49.2 (PK)	44.7
1645.5 - 1646.5	54.0	Nil	-	-
1660 - 1710	54.0	1677.2900	44.6(PK)	-
1718.8 - 1722.2	54.0	Nil	-	-
2200 - 2300	54.0	2223.1100	49.2 (PK)	-
2310 - 2390	54.0	2359.2261	53.5 (PK)	44.1
2483.5 - 2500	54.0	Nil	-	-
2655 - 2900	54.0	Nil	-	-
3260 - 3267	54.0	Nil	-	-
3332 - 3339	54.0	Nil	-	-
3345.8 - 3358	54.0	Nil	-	-
3600 - 4400	54.0	Nil	-	-
4500 - 5150	54.0	Nil	-	-
5350 - 5460	54.0	Nil	-	-
7250 - 7750	54.0	Nil	-	-
8025 - 8500	54.0	Nil	-	-
9000 - 9200	54.0	Nil	-	-
9300 - 9500	54.0	Nil	-	-

Notes

1. The Nil in the frequency column indicates no emissions were found in the band of interest and showed compliance to the limits as specified in section 15.209. The emissions were merely the noise floor.
2. EMI receiver Resolution Bandwidth (RBW) and Video Bandwidth (VBW) settings:
   30MHz - 1GHz
   RBW: 120kHz VBW: 1MHz
   >1GHz
   RBW: 1MHz VBW: 3MHz
3. Radiated Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95%, with a coverage factor of 2, in the range 30MHz – 25GHz (QP only @ 3m & 10m) is ±4.3dB (for EUTs < 0.5m X 0.5m X 0.5m).

Radiated Emissions Setup (Front View)

Radiated Emissions Setup (Rear View)

ANNEX A

TEST INSTRUMENTATION & GENERAL PROCEDURES

3m OATS Test Instrumentation
(Conducted EMI)

Instrument	Model	S/No	Cal Due Date	
R&S Test Receiver (9kHz-30MHz)	ESH3	862301/005	17 Jul 2003	×
R&S Pulse Limiter	ESH3-Z2	357.8810.52	12 Apr 2003	×
EMCO LISN (for EUT) – LISN4	3816/2	9602-1036	14 Jun 2003	×
Solar Electronic Current Probe	6741-1	911317	15 Apr 2003	×
Telecom Impedance Stabilization Network	FCC-TLISN-T4	20084	28 Aug 2003	

5m Anechoic Chamber Test Instrumentation
(RF Radiated EMI)

Instrument	Model	S/No	Cal Due Date	
R&S Test Receiver (20Hz – 26.5GHz) – ESMI2	ESMI	829214/006 829550/001	22 Jul 2003	×
HP Preamplifier (for ESMI2, 0.01-3GHz) – PA8	87405A	3950M00373	16 Apr 2003	×
MITEQ Preamplifier (0.1-26.5GHz) – PA10	NSP2650-N	728230	9 Apr 2003	×
Schaffner Bilog Antenna – BL8	CBL6143	5044	15 May 2003	×
EMCO Horn Antenna – H15	3115	0003-6088	18 Jul 2003	×

CONDUCTED EMISSIONS TEST DESCRIPTION

Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B.

2. The power supply for the EUT was fed through a 50Ω/50μH EUT LISN, connected to filtered mains.

3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.

4. All other supporting equipment were powered separately from another LISN.

Test Method

1. The EUT was switched on and allowed to warm up to its normal operating condition.

2. A scan was made on the NEUTRAL line over the required frequency range using an EMI test receiver.

3. High peaks, relative to the limit line, were then selected.

4. The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10kHz. Both Quasi-peak and Average measurements were made.

5. Steps 2 to 4 were then repeated for the LIVE line.

Sample Calculation Example

At 20 MHz limit = 250 μV = 47.96 dBμV

Transducer factor of LISN, pulse limiter & cable loss at 20 MHz = 11.2 dB

Q-P reading obtained directly from EMI Receiver = 40 dBμV
(Calibrated for system losses)

Therefore, Q-P margin = 40 - 47.96 = -7.96 i.e. **7.96 dB below limit**

RADIATED EMISSIONS TEST DESCRIPTION (5m ANC)

Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m X 1.0m X 0.8m high, non-metallic table as shown in Annex B.

2. The filtered power supply for the EUT and supporting equipment were tapped from the appropriate power sockets located on the turntable.

3. The relevant broadband antenna was set at the required test distance away from the EUT and supporting equipment boundary.

Test Method

1. The EUT was switched on and allowed to warm up to its normal operating condition.

2. A prescan was carried out to pick the worst frequencies.

3. The test was carried out at the selected frequency points obtained from the prescan. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner:

   a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen.
   b. The EUT was then rotated to the direction that gave the maximum emission.
   c. Finally, the antenna height was adjusted to the height that gave the maximum emission.

4. A Quasi-peak measurement was made for that frequency point if it was less than or equal to 1GHz. For frequency point that above 1GHz, both Peak and Average measurements were carried out.

5. Steps 3 and 4 were repeated for the next frequency point, until all selected frequency points were measured.

6. The frequency range covered was from 30MHz to 10GHz, using the Biconical antenna for frequencies up to 200MHz, the Log-periodic antenna for frequencies above 200MHz to 1GHz, and the Horn antenna above 1GHz.

Sample Calculation Example

At 300 MHz limit = 200 μV/m = 46 dBμV/m

Log-periodic antenna factor & cable loss at 300 MHz = 18.511 dB

Q-P reading obtained directly from EMI Receiver = 40 dBμV/m
(Calibrated level including antenna factors & cable losses)

Therefore, Q-P margin = 40 - 46 = -6 i.e. **6 dB below limit**

ANNEX B

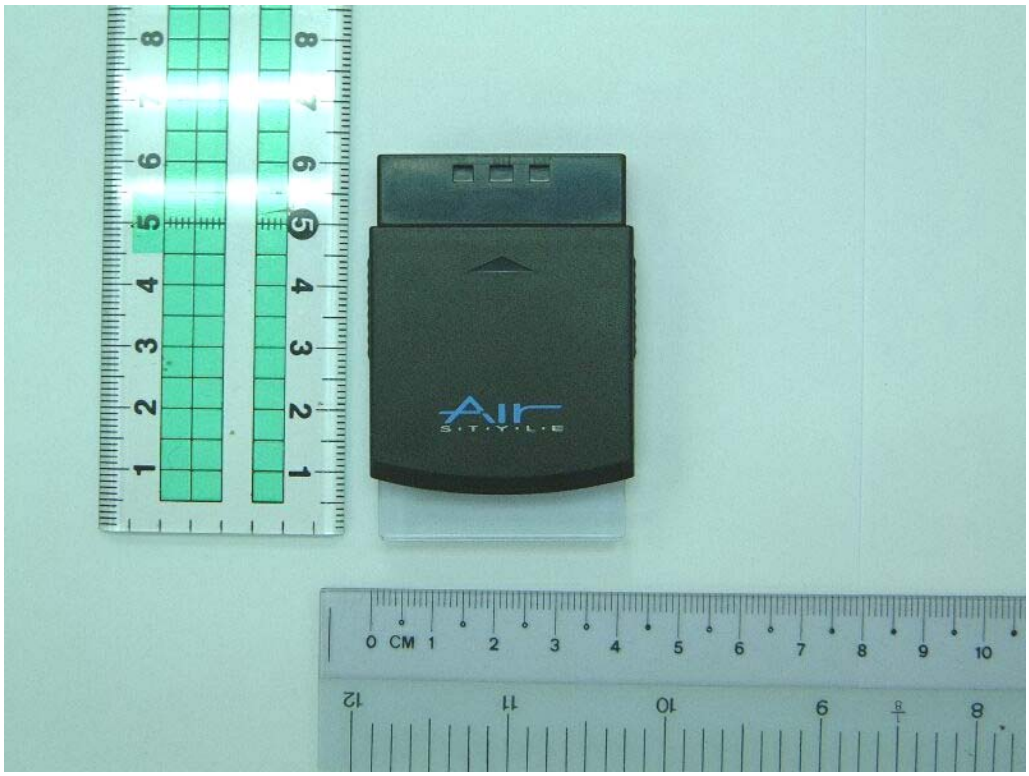
TEST PHOTOGRAPHS / DIAGRAMS

EUT PHOTOGRAPHS

Game Controller - Front View

Game Controller - Rear View

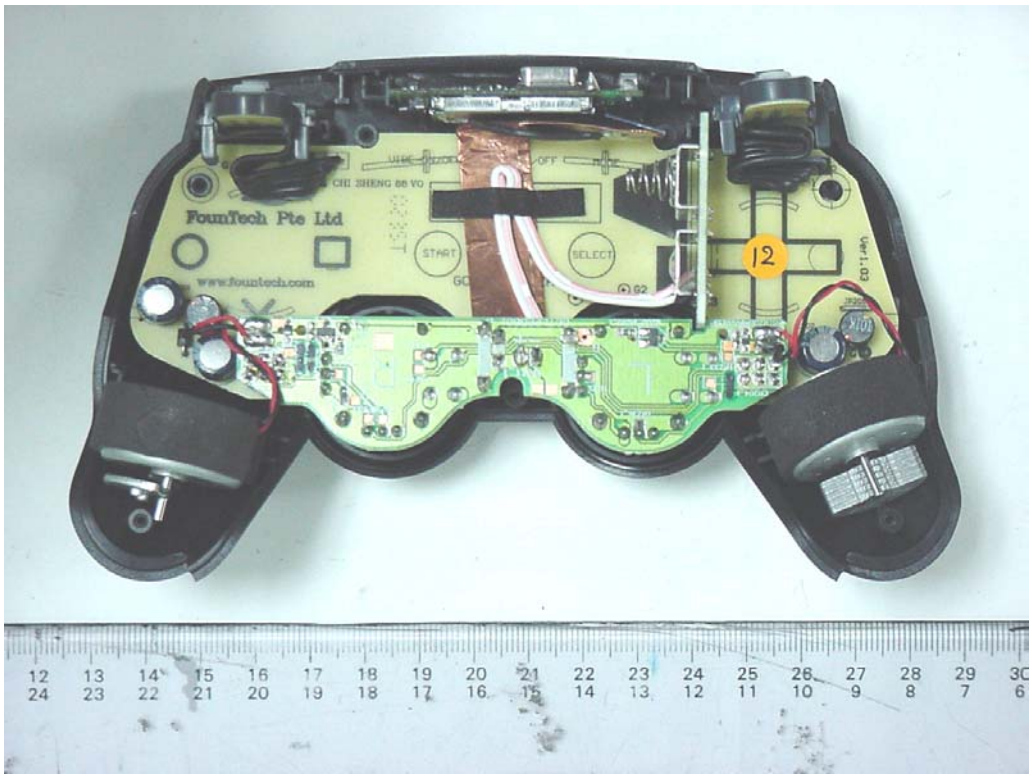
EUT PHOTOGRAPHS



Base Hub – Front View

Base Hub – Rear View

EUT PHOTOGRAPHS

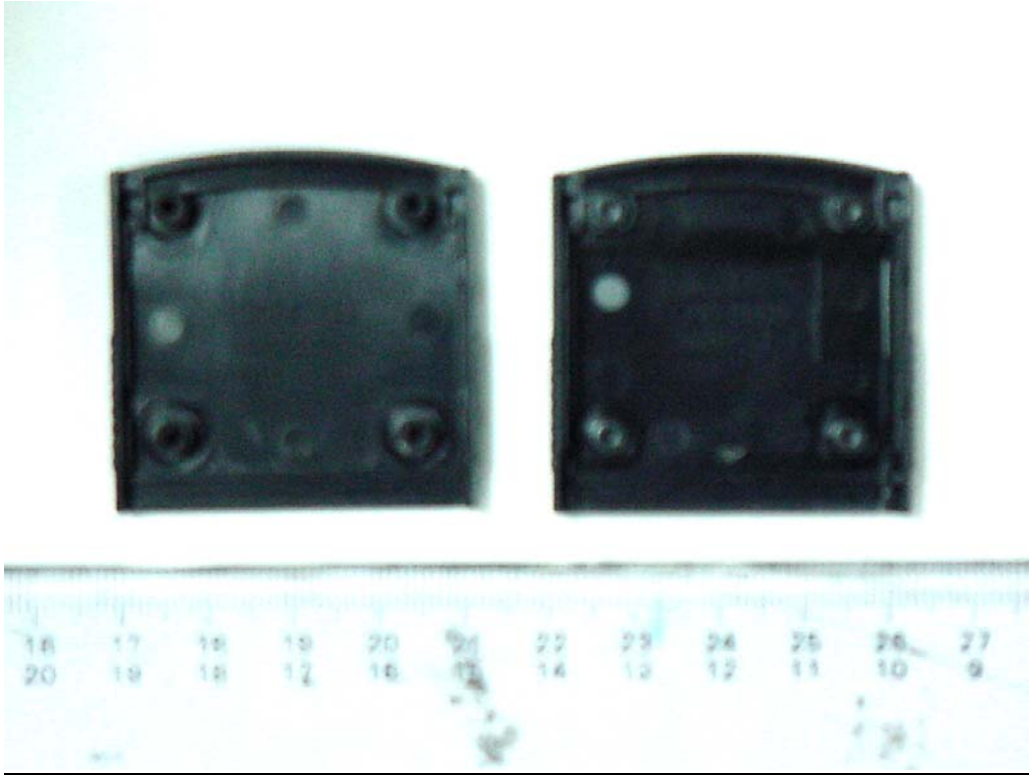


Game Controller – Internal View

Game Controller – Top Housing Internal View

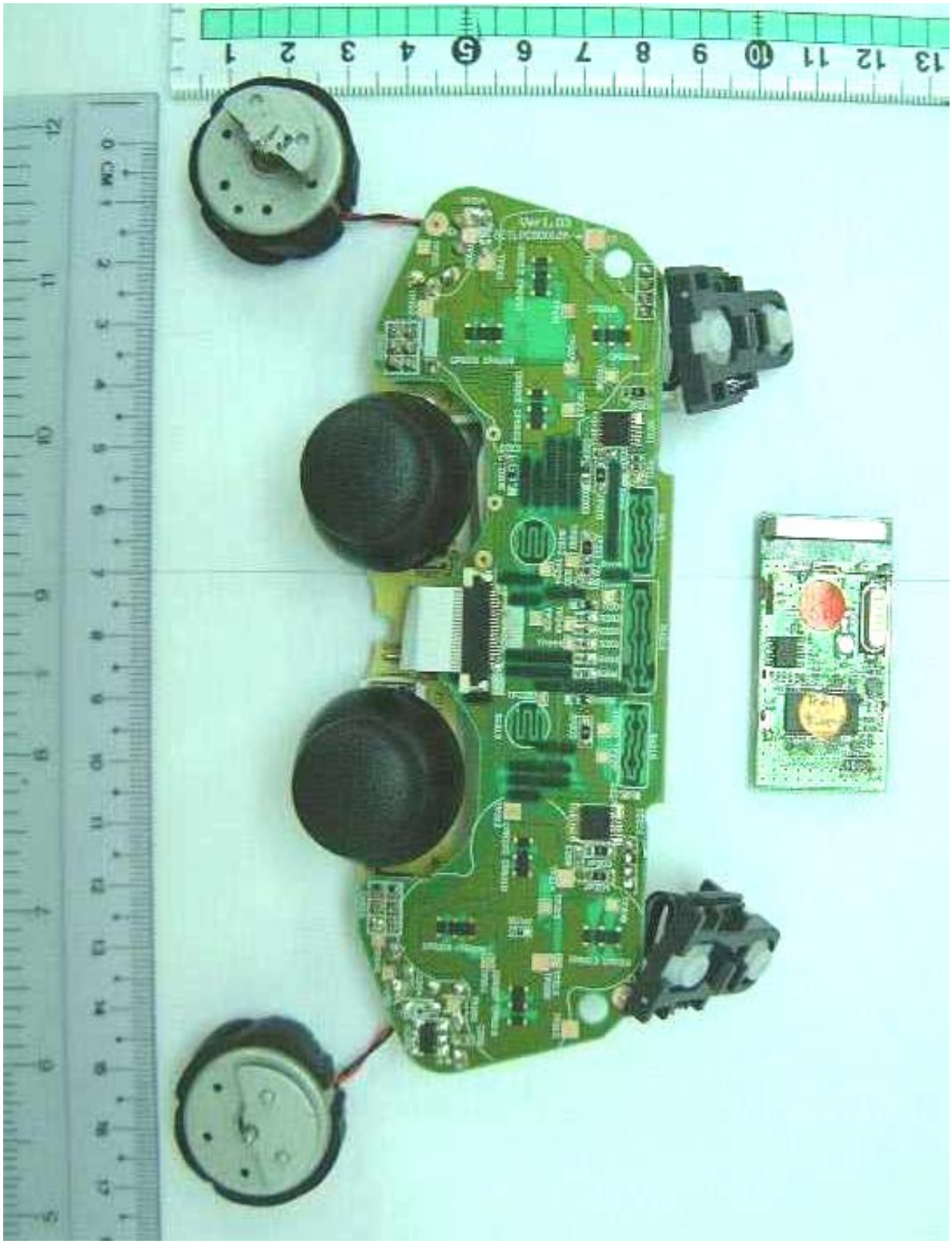
EUT PHOTOGRAPHS

Game Controller – Bottom Housing Internal View



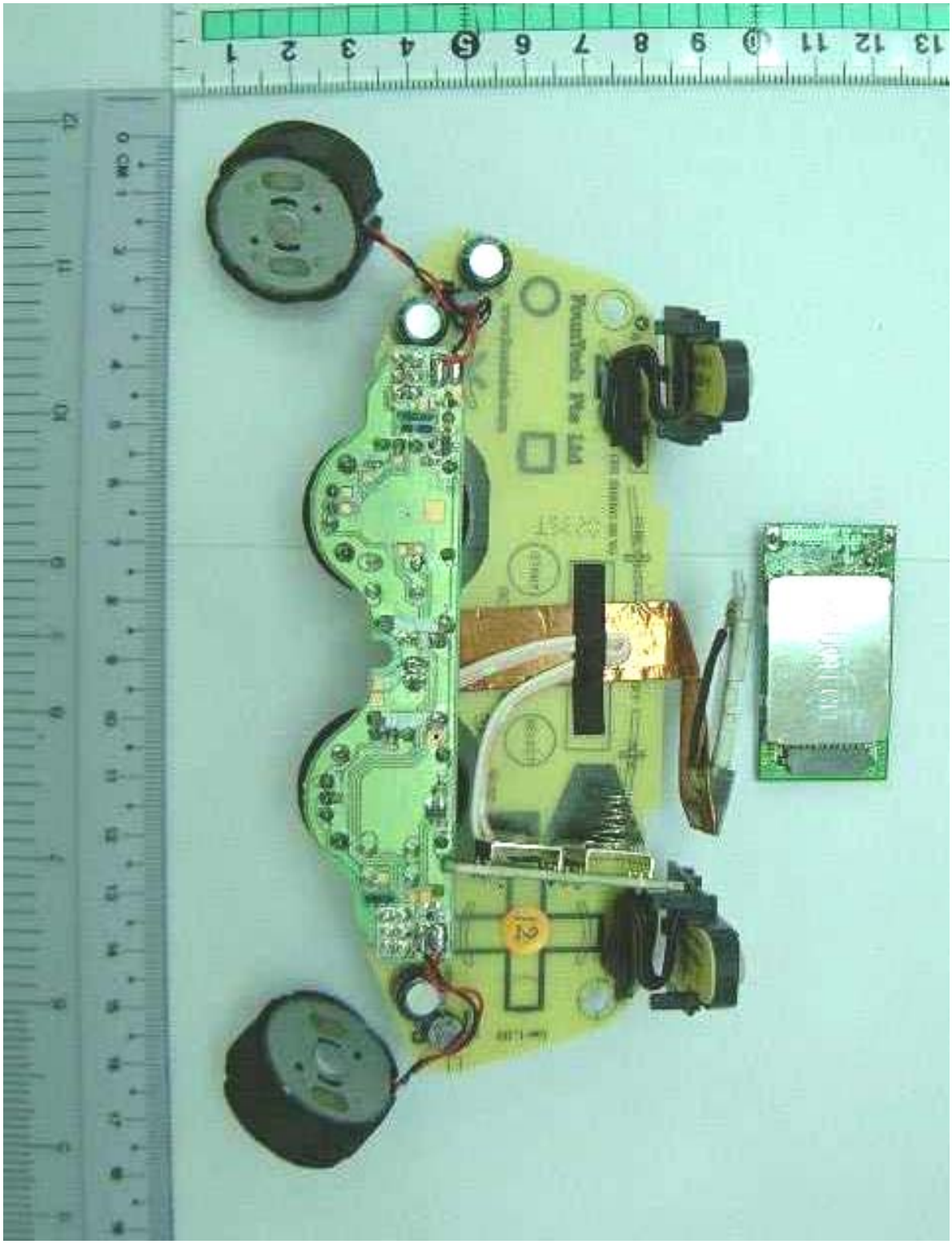
Base Hub – Internal View

EUT PHOTOGRAPHS



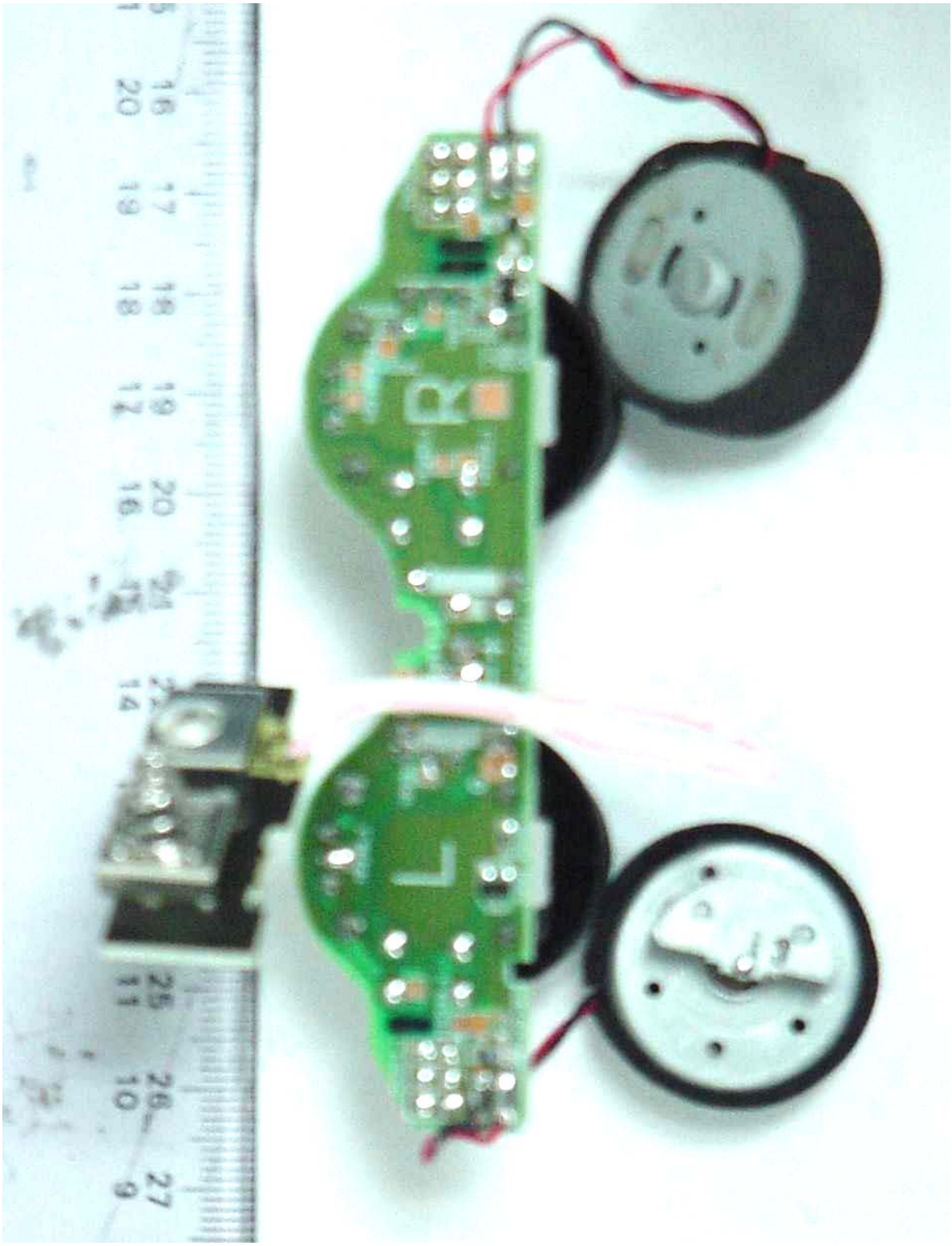
Game Controller – PCB View 1

EUT PHOTOGRAPHS



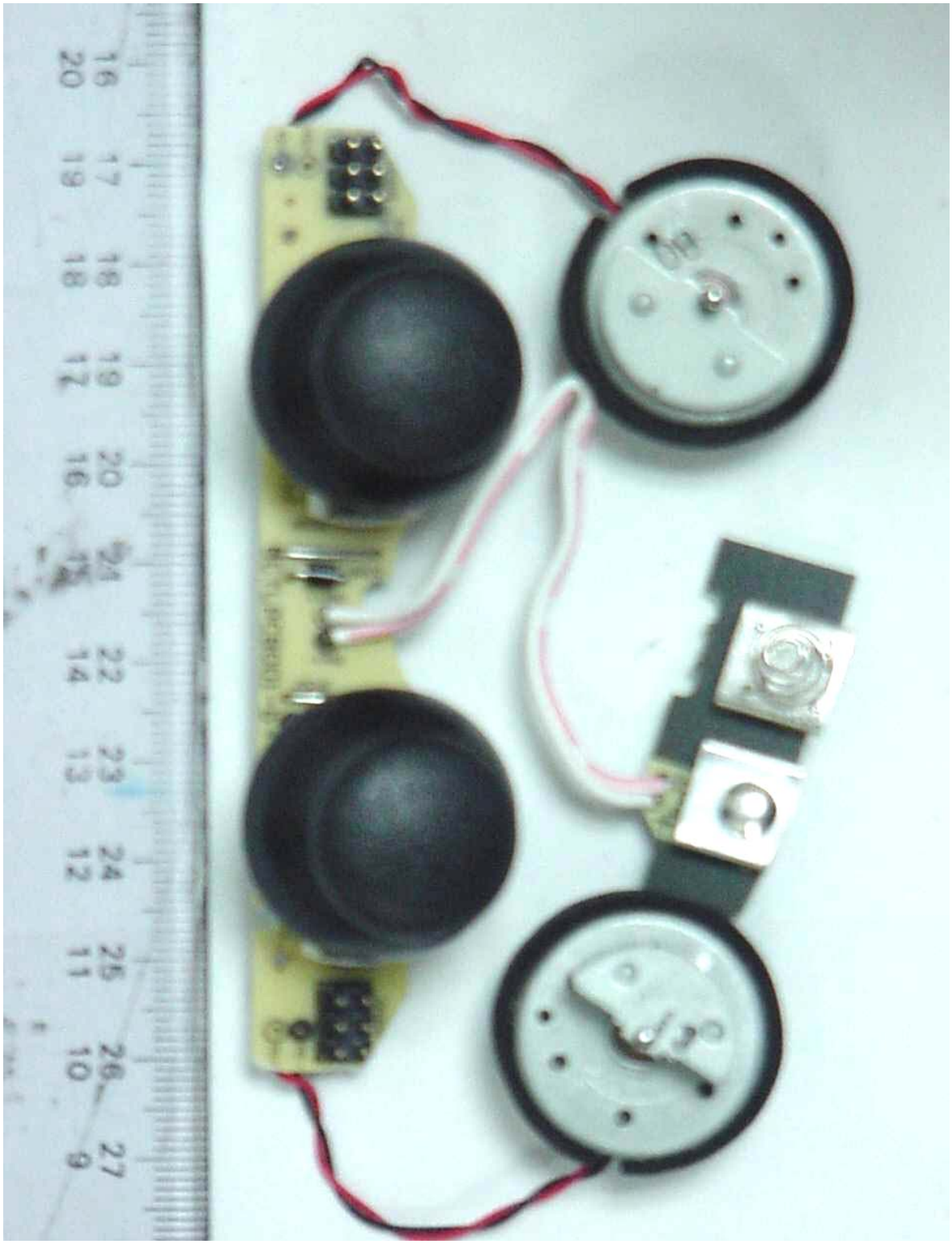
Game Controller – PCB View 2

EUT PHOTOGRAPHS



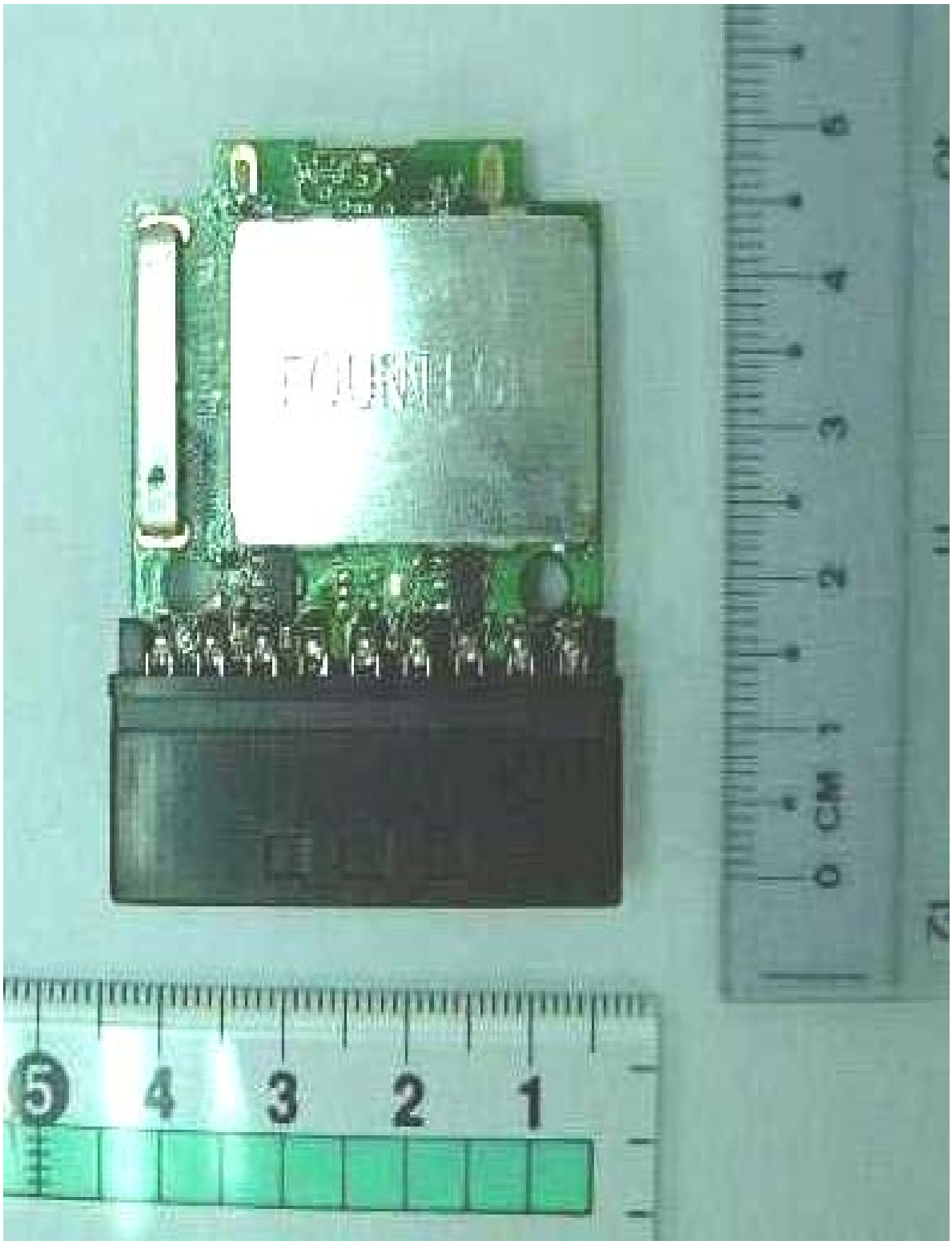
Game Controller – PCB View 3

EUT PHOTOGRAPHS



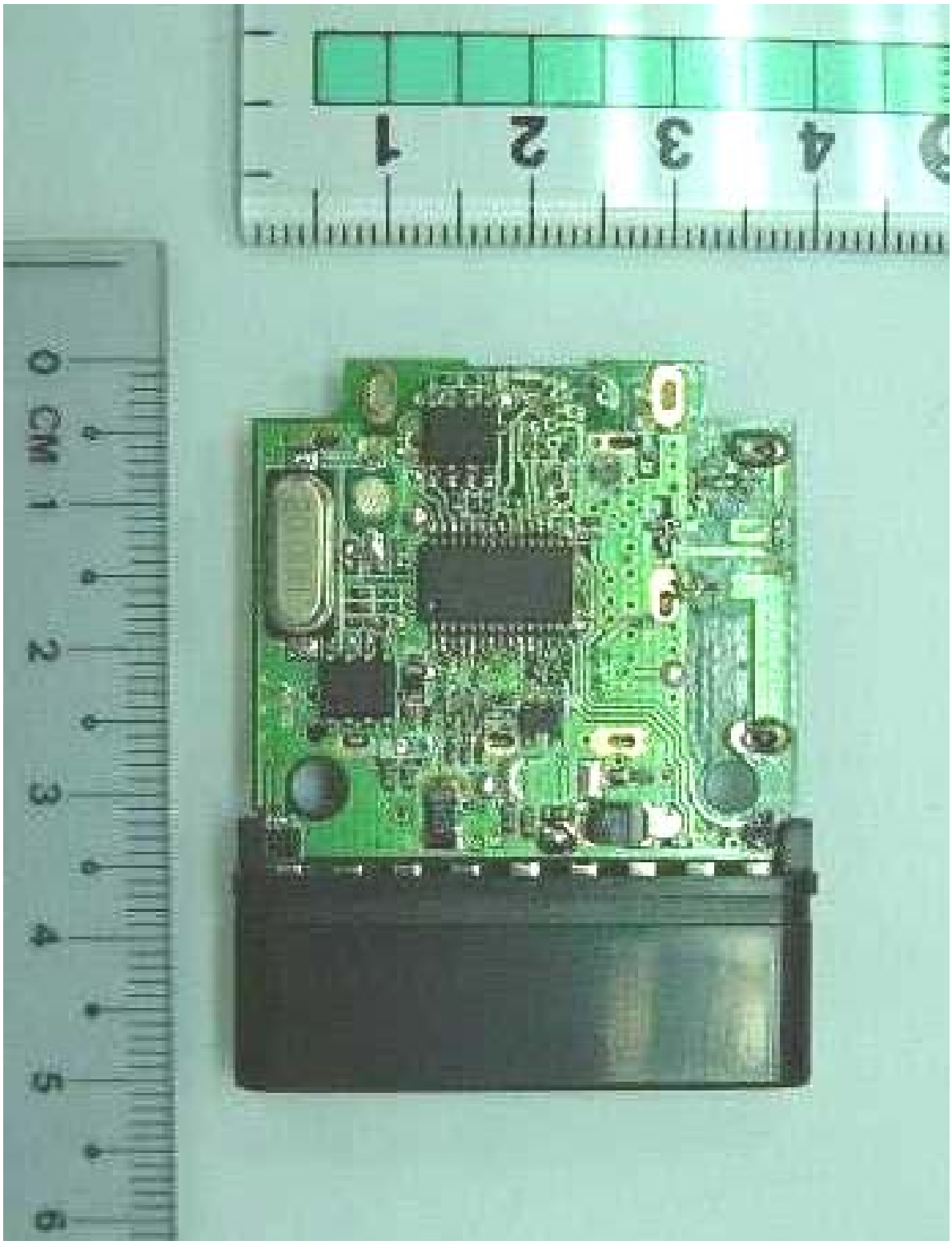
Game Controller – PCB View 4

EUT PHOTOGRAPHS



Base Hub – PCB View 1

EUT PHOTOGRAPHS



Base Hub – PCB View 2

ANNEX C

USER MANUAL
TECHNICAL DESCRIPTION
BLOCK & CIRCUIT DIAGRAMS

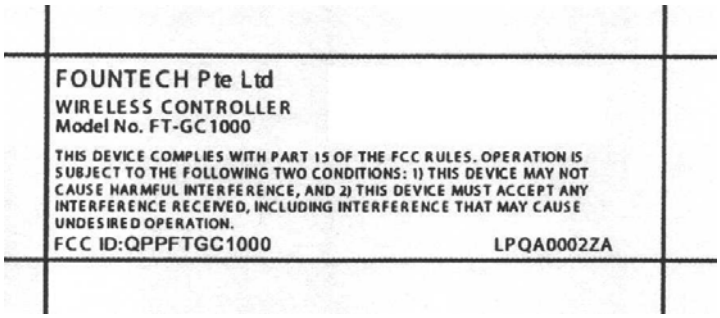
(Please refer to manufacturer for details)

ANNEX D

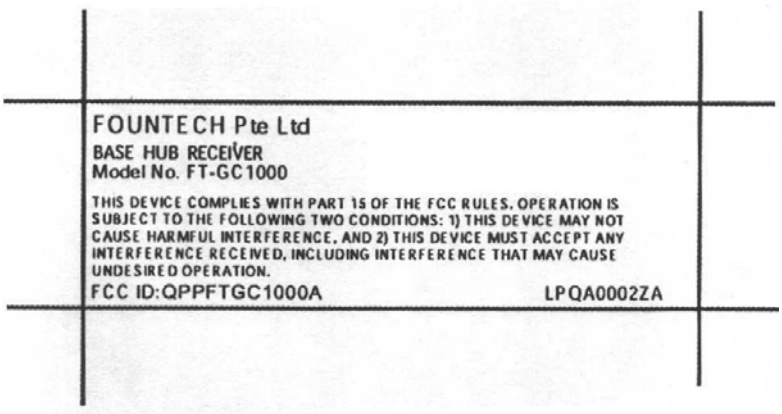
FCC LABEL & POSITION

Labelling requirements per Section 2.925 & 15.19

The label shown will be permanently affixed at a conspicuous location on the device and be readily visible to the user at the time of purchase.

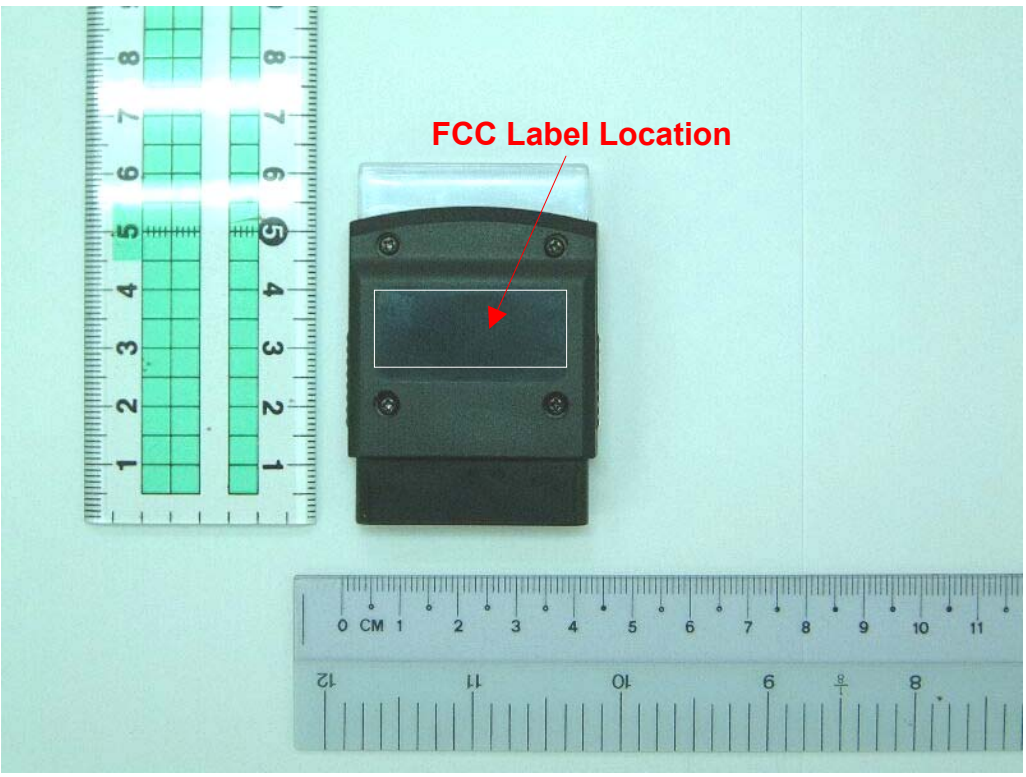


Sample Label- Game Controller



Sample Label- Base Hub

Physical Location of Label on Game Controller



Physical Location of Label on Base Hub