



FCC CFR47 PART 15 DIGITAL DEVICE

TEST REPORT

FOR

4 PORTS USB HUB

MODEL: UH204

PRODUCT FAMILY: WL104

FCC ID: PHSUH204001

REPORT NUMBER: 00E9188

ISSUE DATE: FEBRUARY 20, 2001

Prepared for

WELLAND INDUSTRIAL CO., LTD.
NO. 426, CHUNG CHENG NORTH ROAD,
SAN CHUNG CITY, TAIPEI HSIEN,
TAIWAN, R. O. C.

Prepared by

COMPLIANCE ENGINEERING SERVICES, INC.
No. 199, CHUNG SHENG ROAD
HSIN TIEN CITY, TAIPEI, TAIWAN R.O.C.
TEL: (02) 2217-0894
FAX: (02) 2217-1254



FCC, VCCI, CISPR, CE
UL, CSA, TÜV, VDE

U.S.A. : P.O.BOX 612650, SAN JOSE, CA 95161-2650
TAIPEI : P.O.BOX 17-82, HSIN TIEN, TAIWAN, R.O.C.

TABLE OF CONTENTS

1.	VERIFICATION OF COMPLIANCE.....	1
2.	PRODUCT DESCRIPTION.....	2
3.	TESTED SYSTEM DETAILS.....	2
4.	TEST FACILITY.....	3
5.	ACCREDITATION AND LISTING.....	3
6.	MEASUREMENT INSTRUMENTATION.....	3
7.	MEASURING INSTRUMENT CALIBRATION.....	3
8.	UNITS OF MEASUREMENT.....	4
9.	ANTENNAS.....	4
10.	CLASSIFICATION OF DIGITAL DEVICE.....	4
11.	RADIATED EMISSION LIMITS.....	5
12.	CONDUCTED EMISSION LIMITS.....	6
13.	CONDUCTED EMISSION TEST PROCEDURE.....	6
14.	RADIATED EMISSION TEST PROCEDURE.....	6
15.	AMBIENT CONDITIONS.....	7
16.	SYSTEM TEST CONFIGURATION.....	7
17.	EQUIPMENT MODIFICATIONS.....	8
18.	EUT SETUP PHOTOS.....	9
19.	TEST EQUIPMENT LIST.....	11
20.	CORRECTION FACTOR.....	12
21.	TEST RESULT SUMMARY.....	14
APPENDICES		16
. EXTERNAL I/O CABLE CONSTRUCTION DESCRIPTION		
. CONFIGURATION BLOCK DIAGRAM		
. CONDUCTED EMISSION PLOT		
. RADIATED EMISSION DATA		

1. VERIFICATION OF COMPLIANCE



COMPANY NAME: WELLAND INDUSTRIAL CO., LTD.
NO. 426, CHUNG CHENG NORTH ROAD,
SAN CHUNG CITY, TAIPEI HSIEN,
TAIWAN, R. O. C.

CONTACT PERSON: RONNY HWANG / R&D MANAGER

TELEPHONE NO: (02)2981-0400

MODEL NO/NAME: UH104

PRODUCT FAMILY: WL104

DATE TESTED: DECEMBER 20 & DECEMBER 21, 2000

TYPE OF EQUIPMENT:	INFORMATION TECHNOLOGY EQUIPMENT (ITE)
MEASUREMENT DISTANCE:	() 3 METER (x) 10 METER
TECHNICAL LIMIT:	CLASS B
FCC RULES:	PART 15
MEASUREMENT PROCEDURE	ANSI C63.4:92 / EN55022
EQUIPMENT AUTHORIZATION PROCEDURE	CERTIFICATION
MODIFICATION MADE ON EUT	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
DEVIATIONS FROM MEASUREMENT PROCEDURE	<input type="checkbox"/> YES (refer to section 21 for comments) <input checked="" type="checkbox"/> NO
RADIATED EMISSION TEST RESULT	-1.25dB @ 47.974 MHz/VERTICAL
CONDUCTED EMISSION TEST RESULT	-17.69dB @ 20.924 MHz/L2

The above equipment was tested by Compliance Engineering Services, Inc. for compliance with the requirements set forth in the FCC CFR 47, PART 15. The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved By

Acknowledged By

RICK YEO / EMC MANAGER
COMPLIANCE ENGINEERING SERVICES

RONNY HWANG / R&D MANAGER
WELLAND INDUSTRIAL CO., LTD.

2. PRODUCT DESCRIPTION

CHASSIS TYPE	PLASTIC
LIST OF EACH OSC. OR XTAL. FREQ. (FREQ.>=1 MHz)	6MHz
POWER REQUIREMENTS	DC 5V

Model Differences:

For our marketing needs, product has been required to two model numbers list on our original files. Those model's schematic diagrams, lay out, manual, ...etc. are the same.

Model Name	Differences	Tested (Checked)
UH204	ORIGINAL MODEL NAME	<input checked="" type="checkbox"/>
WL104	ADDED FOR MARKETING PURPOSES	<input type="checkbox"/>

3. TESTED SYSTEM DETAILS

The Model names for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

External Peripheral Devices

Device Type	Manufacturer	Model Number	Serial No.	FCC ID / DoC
PS/2 KEYBOARD	ACER	6311-TW4C	N/A	DOC
PS/2 MOUSE	LOGITECH	M-S34	LZE92901135	DZL211029
USB MOUSE	LOGITECH	M-BB48	LZA00354416	DOC
HOST COMPUTER	VIVA	VIVA 686-350	HS-12	DOC
MONITOR	SAMSUNG	SyncMaster 980P	N/A	DOC
MODEM	DISCOVERY	2496CF	9150080073	I972496AF
PRINTER	PANASONIC	KX-P1080i	N/A	ACJ5Z6KX-PI080I
USB MOUSE	ADOMAX	AM-900U	N/A	DOC
USB MOUSE	QTRONIX	N/A	N/A	DOC
USB MOUSE	MONTEREY	MS11	N/A	DOC

4. TEST FACILITY

The open area test sites and conducted measurement facilities used to collect the radiated data are located at No. 199, Chung Sheng Road, Hsin Tien City, Taipei, Taiwan R.O.C. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5. ACCREDITATION AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code:SL2-IN-E-0005 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by BSMI or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (reference no: 31040/SIT(1300F2))

6. MEASUREMENT INSTRUMENTATION

Radiated emissions were measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, ridged waveguide, liner horn. EMI receivers were used for line conducted readings, spectrum analyzers with pre-selectors and quasi-peak detectors were used to perform radiated measurements. Receiving equipment (i.e., receiver, analyzer, quasi-peak adapter, pre-selector) and LISNs conform to CISPR specification for "Radio Interference Measuring Apparatus and Measurement Methods," Publication 16.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

7. MEASURING INSTRUMENT CALIBRATION

The measuring equipment which was utilized in performing the tests documented herein has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment which is traceable to recognized national standards.

8. UNITS OF MEASUREMENT

Measurements of radiated interference are reported in terms of dB(uV/m) at a specified distance. The indicated readings on the spectrum analyzer were converted to dB(uV/m) by use of appropriate conversion factors. Measurements of conducted interference are reported in terms of dB(uV).

The field strength is calculated by adding the Antenna Factor and Cable Factors, then by subtracting the Amplifier Gain from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

AG = Amplifier Gain

Assume a receiver reading of 52.5 dBuV is obtained. The Antenna Factor of 7.4dB/m and a Cable Factor of 1.1dB is added. The Amplifier Gain of 29 dB is subtracted, giving a field strength of 32 dBuV/m. The 32 dBuV/m value was mathematically converted to its corresponding level in uV/m.

$$FS = 52.5 + 7.4 + 1.1 - 29 = 32 \text{ dBuV/m}$$

$$\text{Level in uV/m} = \text{Common Antilogarithm} [(32 \text{ dBuV/m})/20] = 39.8 \text{ uV/m}$$

9. ANTENNAS

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 10 meters from the leading edge of the turn table.

10. CLASSIFICATION OF DIGITAL DEVICE

Class A includes digital devices that are marketed for use in commercial, industrial or business environments, excluding devices which are marketed for use by the general public or are intended to be used in the home.

Class B includes digital devices that are marketed for use in residential environments, notwithstanding use in commercial, business and industrial environments.

Note: The responsible party may also qualify a device intended to be marketed in a commercial, business or industrial environment as Class B device, and in fact is encouraged to do so provided the device complies with the technical specifications for a Class B digital device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B digital device, regardless of its intended use.

11. RADIATED EMISSION LIMITS

FCC PART 15 CLASS B

MEASURING DISTANCE OF 3 METER		
FREQUENCY RANGE (MHz)	FIELD STRENGTH (Microvolts/m)	FIELD STRENGTH (dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

FCC CLASS B ALTERNATIVE DISTANCE (CISPR 22:1993)

MEASURING DISTANCE OF 10 METER		
FREQUENCY RANGE (MHz)	FIELD STRENGTH (Microvolts/m)	FIELD STRENGTH (dBuV/m)
30-88	30	29.5
88-216	45	33.0
216-960	60	35.6
960-1000	150	43.5
ABOVE 1000	150	43.5

Note: Limits extrapolated 20dB/decade

FCC PART 15 CLASS A

MEASURING DISTANCE OF 10 METER		
FREQUENCY RANGE (MHz)	FIELD STRENGTH (Microvolts/m)	FIELD STRENGTH (dBuV/m)
30-88	90	39.1
88-216	150	43.5
216-960	210	46.4
Above 960	300	49.5

12. CONDUCTED EMISSION LIMITS

CLASS B

FREQUENCY RANGE	FIELD STRENGTH (Microvolts)	FIELD STRENGTH (dBuV)
450kHz-30MHz	250	48

CLASS A

FREQUENCY RANGE	FIELD STRENGTH (Microvolts)	FIELD STRENGTH (dBuV)
450kHz-1.705MHz	1000	60
1.705MHz - 30MHz	3000	69.54

13. CONDUCTED EMISSION TEST PROCEDURE

The EUT is located so that the distance between the boundary of the EUT and the closest surface to the LISN is 0.8m.

EUT test configuration is according to Section 7 of ANSI C63.4/1992.

Conducted disturbance shall be measured between the phase lead and the ground, and between the neutral lead and the ground. The frequency 0.450 - 30 MHz shall be investigated.

Set the EMI receiver to PEAK detector setting and sweep continuously over the frequency range to be investigated. Set resolution bandwidth to 9kHz minimum. Connect EMI receiver input cable to LINE 1 RF measurement connection on the LISN. Connect a 50ohm terminator to the unused RF connection on the LISN. For each mode of EUT operation, maximize emissions readings by manipulating cable and wire positions. Record the configuration for each EUT power cord which produces emissions closest to the limit. Repeat the same procedure for LINE 2 of each EUT power cord.

14. RADIATED EMISSION TEST PROCEDURE

The EUT and all other support equipment are placed on a wooden table 80 cm above the ground screen. Antenna to EUT distance is either 3 meters or 10 meters (Class B or Class A). During the test, the table is rotated 360 degrees to maximize emissions, and the antenna is positioned from 1 to 4 meters above the ground screen to further maximize emissions. The antenna is polarized in both vertical and horizontal positions.

EUT test configuration is according to Section 8 of ANSI C63.4/1992.

Monitor the frequency range of interest at a fixed antenna height and EUT azimuth. Frequency span should be small enough to easily differentiate between broadcast stations and intermittent ambients. Rotate EUT 360 degrees to maximize emissions received from EUT. If emission increases by more than 1 dB, or if another emission appears that is greater by 1 dB, return to azimuth where maximum occurred and perform additional cable manipulation to further maximize received emission.

Move antenna up and down to further maximize suspected highest amplitude signal. If emission increased by 1 dB or more, or if another emission appears that is greater by 1dB or more, return to antenna height where maximum signal was observed and manipulate cables to produce highest emissions, noting frequency and amplitude.

15. AMBIENT CONDITIONS

The ambient conditions at the time of final tests were as follows:

	Radiated Emission	Conducted Emission
Temperature	20 °C	18 °C
Humidity	81 %	79 %

16. SYSTEM TEST CONFIGURATION

The equipment under test was configured and operated in a manner which tended to maximize its emission characteristics in a typical application. Power and signal distribution, ground, interconnecting cabling and physical placement of equipment simulated the typical application and usage insofar as practicable.

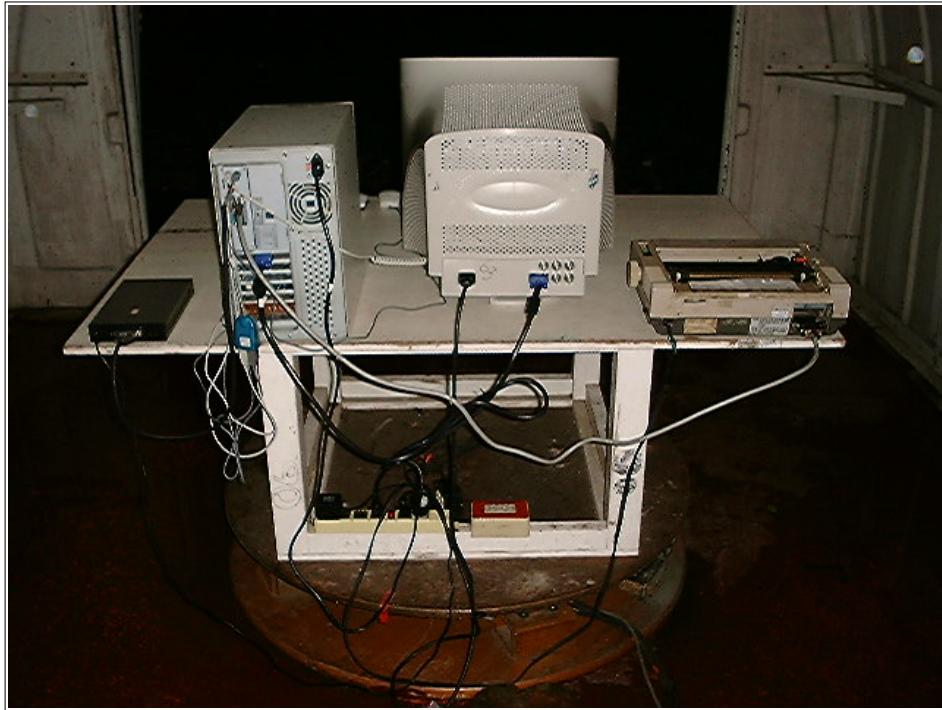
SOFTWARE USED DURING THE TESTS	
Operating System	WINDOWS 98
File Name	WINEMC.EXE
Program Sequence	1. WINDOWS 98 BOOTS SYSTEM. 2. RUN WINEMC.EXE TO ACTIVATE ALL PERIPHERALS AND DISPLAY "H" PATTERN ON MONITOR SCREEN.

17. EQUIPMENT MODIFICATIONS

To achieve compliance to Class B levels, the following change(s) were made during compliance testing:

- Mod.#1 U1 CHIP ALL POWER ADD CL NEAR TO CHIP. (C=0.1 μ , L=120 Ω BEAD)
- Mod.#2 C1, C2, C3, C4, C5, C6, C7, C8 CHANGE TO 47P CAP.
- Mod.#3 R4P6, R4P8 CHANGE TO 120 Ω BEAD ARRAY. (RN1, RN2)
- Mod.#4 AFTER R4P6, R4P8 ADD 47P CAP.
- Mod.#5 R4, R5 CHANGE TO 120 Ω BEAD.
- Mod.#6 C10, C9 CHANGE TO 47P CAP.

18. EUT SETUP PHOTOS



Radiated Emission Setup Photos (Worst Emission Position)



Conducted Emission Setup Photos (Worst Emission Position)

19. TEST EQUIPMENT LIST

Equipment	Manuf.	Model No.	Serial No.	Site	Cal Date	Due Date
EMI TEST DISPLAY	ROHDE & SCHWARZ	DSAI-D 804.8932.52	827832/001	D	11/00	11/01
EMI TEST RF UNIT	ROHDE & SCHWARZ	ESBI-RF/1005.4300.52	827832/003	D	11/00	11/01
AMPLIFIER	T.E.C.	PA-102	43685	D	5/00	5/01
ANTENNA	EMCO	3142	1310	D	06/00	06/01
LISN	EMCO	3825/2	1842	D	1/00	1/01
LISN (EUT)	EMCO	3825/2	1435	D	1/00	1/01
CABLE	TALLEY	HELIX FSJ4-50B	D0301	D	1/00	1/01
CABLE	TIME MICROWAVE	LMR-400-2	D1001	D	1/00	1/01
SPECTRUM ANALYZER	H.P.	8566B	2937A06102	E	12/00	12/01
SPECTRUM DISPLAY	H.P.	85662A	2848A18276	E	12/00	12/01
QUASI-PEAK DETECTOR	H.P.	85650A	2811A01439	E	12/00	12/01
AMPLIFIER	H.P.	8447D B	1644A02328	E	5/00	5/01
ANTENNA	CHASE	CBL6111A	1547	E	1/00	1/01
TEST RECEIVER	ROHDE & SCHWARZ	ESHS20	840455/006	E	2/00	2/01
LISN	SOLAR	8012-50-R-24-BNC	8305114	E	7/00	7/01
LISN (EUT)	FISHER CUSTOM	FCC-LISN-50/250-25-2	107	E	7/00	7/01
CABLE	TIME MICROWAVE	LMR-400-2	E1001	E	1/00	1/01
CABLE	TALLEY	HELIX FSJ4-50B	E0301	E	1/00	1/01
ANTENNA (1-18GHz)	EMCO	3115	5761	D/E	9/00	9/01
AMPLIFIER (1-26GHz)	MITEQ	NSP2600-44	646455	D/E	12/99	12/00
CABLE (1-26.5G)	FLEXCO	FC195	N/A	D/E	3/00	3/01

20. CORRECTION FACTOR

OATS NO. D

FREQ (MHZ)	ANTENNA 3 METER			ANTENNA 10 METER			SITE D
	HORI.	VERT.	CABLE LOSS (dB)	HORI.	VERT.	CABLE LOSS (dB)	AMP GAIN (dB)
30	19.10	19.10	0.60	17.20	17.20	0.71	21.49
35	15.90	15.90	0.58	14.50	14.50	0.69	21.47
40	13.10	13.10	0.58	11.90	11.90	0.71	21.79
45	10.90	10.90	0.69	9.80	9.80	0.81	21.77
50	9.50	9.50	0.76	8.50	8.50	0.86	21.82
60	8.00	8.00	0.81	7.20	7.20	0.96	21.77
70	7.20	7.20	0.86	6.60	6.60	1.01	21.72
80	7.00	7.00	0.88	6.20	6.20	1.11	21.72
90	8.10	8.10	0.97	7.30	7.30	1.17	21.66
100	9.10	9.10	1.02	8.30	8.30	1.19	21.67
120	7.90	7.90	1.14	7.00	7.00	1.37	21.51
125	7.70	7.70	1.09	6.90	6.90	1.34	21.61
140	8.40	8.40	1.19	7.60	7.60	1.47	21.56
150	9.50	9.50	1.24	8.90	8.90	1.49	21.57
160	9.60	9.60	1.32	9.30	9.30	1.55	21.44
175	9.90	9.90	1.32	10.00	10.00	1.60	21.41
180	10.80	10.80	1.40	10.40	10.40	1.60	21.39
200	11.60	11.60	1.52	10.40	10.40	1.75	21.36
250	13.00	13.00	1.78	12.90	12.90	2.03	21.29
300	14.40	14.40	1.98	13.80	13.80	2.26	21.31
400	17.10	17.10	2.52	16.40	16.40	2.72	21.26
500	18.30	18.30	2.82	18.30	18.30	3.00	21.16
600	20.30	20.30	3.20	20.40	20.40	3.40	21.11
700	21.70	21.70	3.46	21.70	21.70	3.66	20.83
800	22.50	22.50	3.74	22.20	22.20	4.02	20.73
900	23.80	23.80	4.09	23.70	23.70	4.30	20.80
1000	24.50	24.50	4.57	24.40	24.40	4.72	20.55
1100	25.50	25.50	4.54	25.40	25.40	4.72	19.79
1200	26.70	26.70	5.08	26.50	26.50	4.93	19.94
1300	26.50	26.50	6.25	26.40	26.40	5.33	20.15
1400	27.80	27.80	5.73	27.70	27.70	5.02	19.29
1500	28.00	28.00	6.33	27.50	27.50	5.74	20.00
1600	28.80	28.80	7.11	28.50	28.50	5.48	20.84
1700	29.50	29.50	8.33	29.10	29.10	5.21	20.54
1800	30.30	30.30	8.76	30.30	30.30	8.22	19.80
1900	30.60	30.60	9.87	30.50	30.50	8.78	19.44
2000	31.30	31.30	8.99	31.10	31.10	8.60	19.95

FREQ (MHZ)	ANTENNA 1 METER			ANTENNA 3 METER			AMP GAIN (dB)
	HORI. (dB)	VERT. (dB)	CABLE LOSS (dB)	HORI. (dB)	VERT. (dB)	CABLE LOSS (dB)	
1000	24.90	24.90	2.46				43.43
1500	24.80	24.80					
2000	26.80	26.80	3.58				
2500	29.10	29.10					
3000	31.50	31.50	4.12				42.39
3500	33.50	33.50					
4000	32.70	32.70	5.20				
4500	32.10	32.10					
5000	33.50	33.50					41.67
5500	33.90	33.90					
6000	35.10	35.10	6.50				
6500	36.20	36.20					
7000	36.00	36.00					41.46
7500	37.50	37.50					
8000	37.60	37.60	7.44				
8500	38.50	38.50					
9000	39.10	39.10					39.07
9500	38.80	38.80					
10000	38.70	38.70	8.56				
10500	38.40	38.40					
11000	39.20	39.20					37.73
11500	39.30	39.30					
12000	40.50	40.50	9.32				
12500	40.20	40.20					
13000	41.10	41.10					39.21
13500	41.30	41.30					
14000	41.80	41.80	10.44				
14500	40.90	40.90					
15000	39.80	39.80					41.40
15500	38.70	38.70					
16000	39.10	39.10	11.74				
16500	41.20	41.20					
17000	42.80	42.80					42.24
17500	44.20	44.20					
18000	45.50	45.50	12.86				
19000			13.33				42.49
21000			14.27				41.66
24000			15.68				41.55
26000			16.58				42.27

21. TEST RESULT SUMMARY

Preliminary Radiated Emission Tests were performed at the 10 meter open area test site. CCS test procedure no:CCSUE2001B and the procedure listed in ANSI C63.4 /1992 section 8.3.1.1. were used. The following preliminary tests were conducted to determine the worst mode of operation and configuration.

Preliminary Radiated Emission Test			
Frequency Range Investigated	30 MHz TO 1000 MHz		
Mode of operation	Date	Data Report No.	Worst Mode
NORMAL MODE	12/20/00	9188D#(02, 03)	<input checked="" type="checkbox"/>

Final Radiated Emission Test was conducted by operating the worst mode as indicated above.

OATS No: D / 10 M	Data Report No. 9188D#(02, 03)	Date 12/20/00	Tested By: BILL HUANG
Six Highest Radiated Emission Readings			
Frequency Range Investigated			30 MHz TO 1000 MHz
Freq (MHz)	Meter Reading (dBuV)	C.F. (dB/m)	Corrected Reading (dBuV/m)
47.974	34.55	-5.80	28.75
120.039	31.45	-7.09	24.36
143.056	31.86	-6.09	25.77
167.178	29.62	-4.28	25.34
229.133	26.27	-1.62	24.65
143.178	30.77	-6.09	24.68

C.F. (Correction Factor) =Antenna Factor + Cable Loss + Attenuator (6dB)
- Amplifier Gain

Corrected Reading = Metering Reading + C.F.

Margin=Corrected Reading - Limits

P=Peak Reading

H=Horizontal Polarization/Antenna

Q=Quasi-peak

V=Vertical Polarization/Antenna

A=Average Reading

Comments: N/A

Preliminary Conducted Emission Tests were performed according to CCS test procedure no:CCSUE2002B and ANSI C63.4/1992 section 7.2.3. The following preliminary tests were conducted to determine the worst mode of operation.

Preliminary Conducted Emission Test			
Frequency Range Investigated	150 kHz TO 30 MHz		
Mode of operation	Date	Data Report No.	Worst Mode
NORMAL MODE	12/21/00	9188D# (21, 11)	<input checked="" type="checkbox"/>

Final Conducted Emission Test was conducted by operating the worst mode as indicated above.

Conducted Room	Data Report No.		Date		Tested By:				
		9188D# (21, 11)		12/21/00		VINCE CHIANG			
Six Highest Conducted Emission Readings									
Frequency Range Investigated			150 kHz TO 30 MHz						
Freq (MHz)	Meter Reading (dBuV)	C.F. (dB)	Corrected Reading (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading Type (P/Q/A)	Line (L1/L2)		
0.150	42.51	0.03	42.54	66.00	-23.46	P	L1		
0.211	38.19	0.03	38.23	63.18	-24.96	P	L1		
20.924	40.45	0.48	40.94	60.00	-19.06	P	L1		
0.150	44.03	0.03	44.06	66.00	-21.94	P	L2		
0.211	38.07	0.03	38.10	63.18	-25.08	P	L2		
20.924	41.82	0.48	42.31	60.00	-17.69	P	L2		

C.F. (Correction Factor)=Insertion Loss + Cable Loss

Corrected Reading = Metering Reading + C.F.

Margin=Corrected Reading - Limits

P=Peak Reading L1=Hot

Q=Quasi-peak L2=Neutral

A=Average Reading

Comments: N/A

APPENDICES

EXTERNAL I/O CABLE CONSTRUCTION DESCRIPTION

CONFIGURATION BLOCK DIAGRAM

CONDUCTED EMISSION PLOT

RADIATED EMISSION DATA

External I/O Cable Construction Description

NO: 1	CABLE Name: 22	Number of I/O ports of this type: 1
I/O Port: PS/2 KEYBOARD	Type of Cable used: Shielded	
Cable Connector Type: Molded	Data Traffic Generated: Yes	
Bundled During Tests: No	Cable Length: 1.8 M	
Remarks: N/A		

NO: 2	CABLE Name: 9	Number of I/O ports of this type: 1
I/O Port: PS/2 MOUSE	Type of Cable used: Un-Shielded	
Cable Connector Type: Molded	Data Traffic Generated: Yes	
Bundled During Tests: No	Cable Length: 1.8 M	
Remarks: N/A		

NO: 3	CABLE Name: 7	Number of I/O ports of this type: 1
I/O Port: USB MOUSE	Type of Cable used: Un-Shielded	
Cable Connector Type: Molded	Data Traffic Generated: Yes	
Bundled During Tests: Yes	Cable Length: 1.8 M	
Remarks: N/A		

NO: 4,5,6	CABLE Name: N/A	Number of I/O ports of this type: 3
I/O Port: USB MOUSE	Type of Cable used: Un-Shielded	
Cable Connector Type: Molded	Data Traffic Generated: Yes	
Bundled During Tests: No	Cable Length: 1.5 M	
Remarks: N/A		

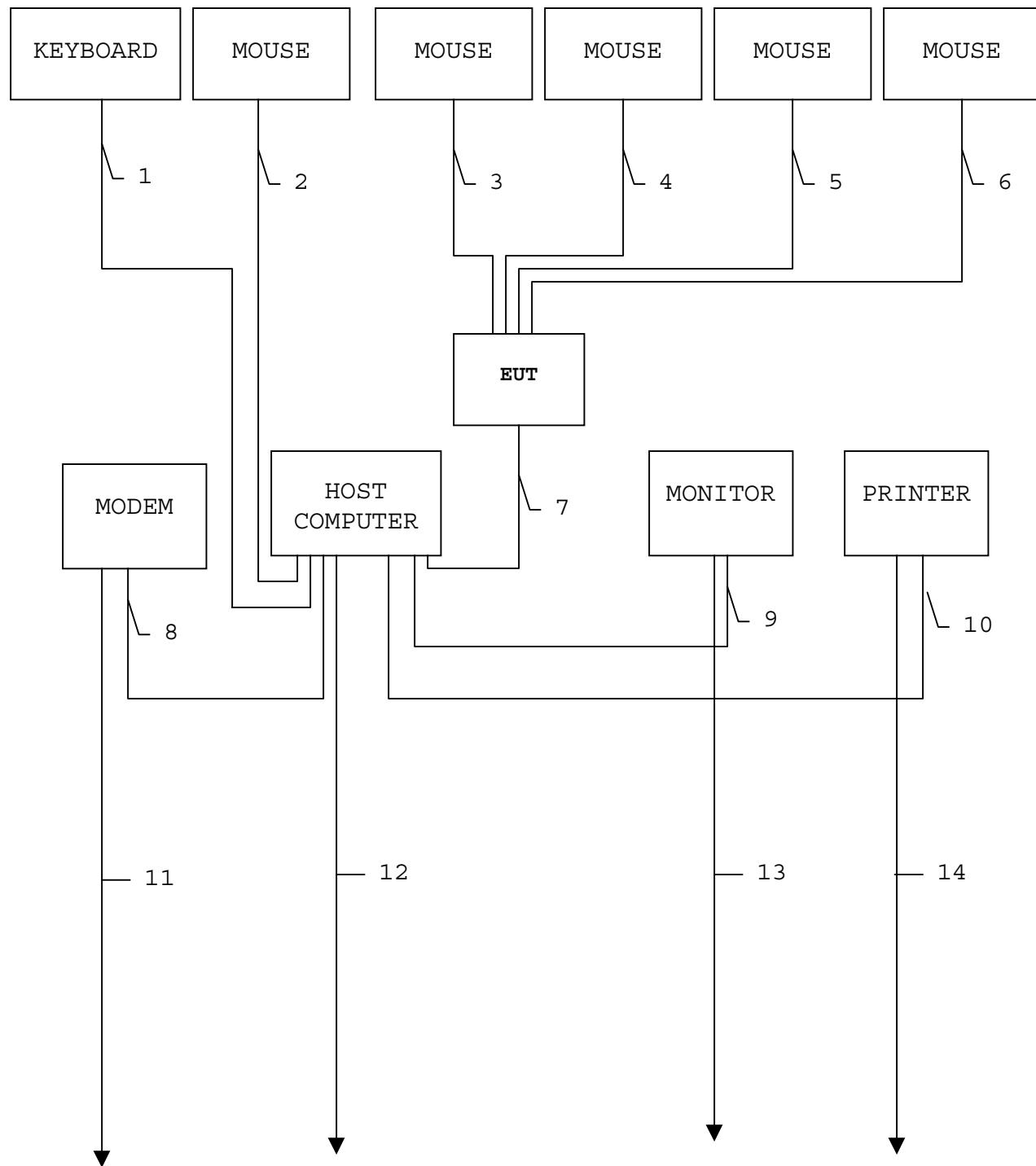
NO: 7	CABLE Name: N/A	Number of I/O ports of this type: 1
I/O Port: USB HUB	Type of Cable used: Shielded	
Cable Connector Type: Molded	Data Traffic Generated: Yes	
Bundled During Tests: No	Cable Length: 0.25 M	
Remarks: N/A		

NO: 8	CABLE Name: 62	Number of I/O ports of this type: 1
I/O Port: SERIAL MODEM	Type of Cable used: Shielded	
Cable Connector Type: Metal	Data Traffic Generated: Yes	
Bundled During Tests: No	Cable Length: 1.0 M	
Remarks: N/A		

NO: 9	CABLE Name: N/A	Number of I/O ports of this type: 1
I/O Port: MONITOR		Type of Cable used: Shielded
Cable Connector Type: Molded		Data Traffic Generated: Yes
Bundled During Tests: Yes		Cable Length: 1.8 M
Remarks: Ferrite bead loaded at both ends.		

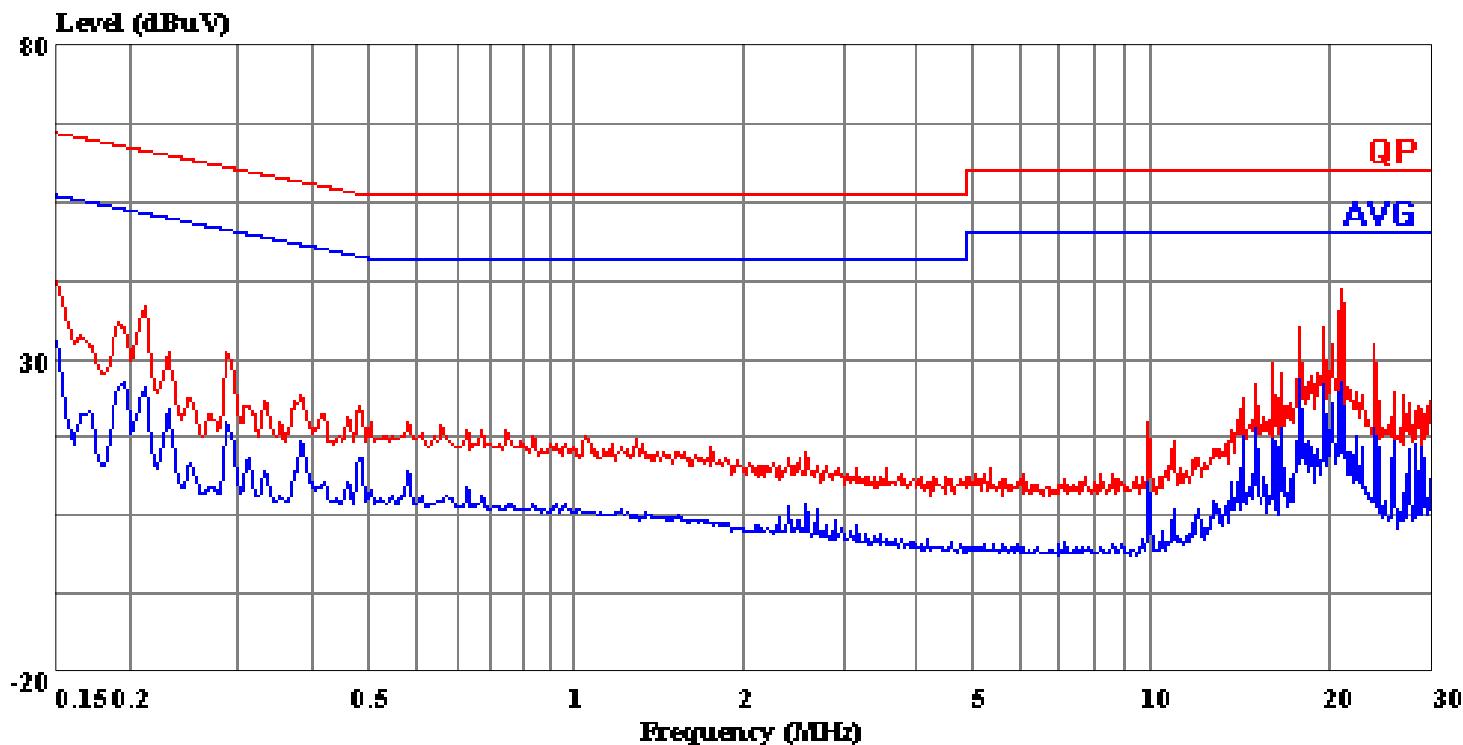
NO: 10	CABLE Name: 60	Number of I/O ports of this type: 1
I/O Port: PARALLEL PRINTER		Type of Cable used: Shielded
Cable Connector Type: Metal		Data Traffic Generated: Yes
Bundled During Tests: No		Cable Length: 1.5 M
Remarks: N/A		

CABLE NO: 11 ~ 14	Number of I/O ports of this type: 4
I/O Port: Power Cord	Connector Type: AC Inlet
Capture Type: Snap-In	Type of Cable used: Un-Shielded
Cable Connector Type: Molded	Cable Length: 1.8 M
Bundled During Tests: No (Radiation), Yes (Line Conduction)	
Remarks: N/A	

Configuration Block Diagram

Data#: 11 File#: 9188d.emi

Date: 2000-12-21 Time: 13:01:21



(CCS D-Site)

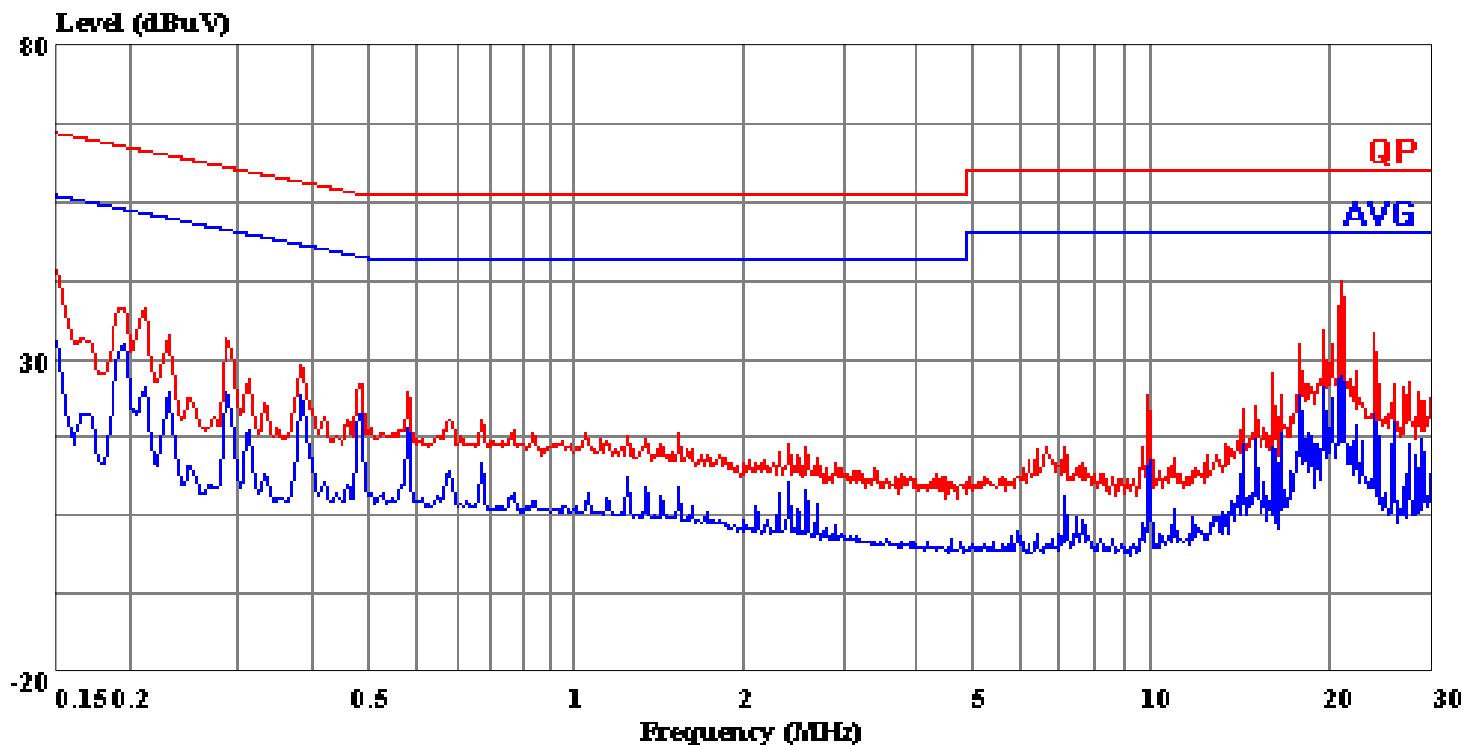
Trace: 10

Ref Trace:

Condition: LINE
Report No. : 00E9188
Test Engr. : VINCE CHIANG
Company : WELLAND INDUSTRIAL CO., LTD.
EUT : UH204
Test Config : EUT/ALL PERIPHERALS (HS-12)
Type of Test: EN55022 CLASS B
Mode of Op. : NORMAL MODE

Data#: 21 File#: 9188d.emi

Date: 2000-12-21 Time: 13:11:55



(CCS D-Site)

Trace: 20

Ref Trace:

Condition: NEUTRAL
Report No. : 00E9188
Test Engr. : VINCE CHIANG
Company : WELLAND INDUSTRIAL CO., LTD.
EUT : UH204
Test Config : EUT/ALL PERIPHERALS (HS-12)
Type of Test: EN55022 CLASS B
Mode of Op. : NORMAL MODE

Data#: 2 File#: 9188d.emi
CCS D-Site

Date: 2000-12-20 Time: 23:37:38

Condition: VERTICAL
Report No. : 00E9188
Test Engr. : BILL HUANG
Company : WELLAND INDUSTRIAL CO., LTD.
EUT : UH204
Test Config : EUT/ALL PERIPHERALS (HS-12)
Type of Test: EN55022 CLASS B
Mode of Op. : NORMAL MODE

Page: 1

Freq	Read		Level	Limit	Over	Remark
	Level	Factor				
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1	47.974	34.55	-5.80	28.75	30.00	-1.25 QP
2	117.961	26.98	-6.99	19.99	30.00	-10.01 Peak
3	120.039	31.45	-7.09	24.36	30.00	-5.64 Peak
4	143.056	31.86	-6.09	25.77	30.00	-4.23 Peak
5	167.178	29.62	-4.28	25.34	30.00	-4.66 Peak
6	192.617	25.76	-3.30	22.46	30.00	-7.54 Peak
7	229.133	26.27	-1.62	24.65	30.00	-5.35 Peak

Data#: **3** File#: 9183f.EMI
CCS E-Site

Date: 2000-12-15 Time: 10:18:37

Condition: VERTICAL
Report No. : 00E9183
Test Engr. : STANLEY CHENG
Company : SAMSUNG ELECTRONICS CO., LTD.
EUT : TT17JS
Test Config : EUT/ALL PERIPHERALS
Type of Test: EN55022 CLASS B
Mode of Op. : 1600X1200 VF=60Hz

Page: 1

Freq	Read		Limit	Over	Remark	
	Level	Factor				
	MHz	dBuV	dB	dBuV/m	dB	
1	65.132	38.80	-16.69	22.11	30.00	-7.89 Peak
2	72.430	42.20	-17.58	24.62	30.00	-5.38 Peak
3	136.694	37.50	-15.56	21.94	30.00	-8.06 Peak
4	168.200	33.30	-11.59	21.71	30.00	-8.29 Peak
5	180.018	35.70	-10.70	25.00	30.00	-5.00 Peak
6	233.210	37.80	-9.73	28.07	37.00	-8.93 Peak
7	283.410	41.20	-8.38	32.82	37.00	-4.18 Peak
8	336.063	36.40	-7.00	29.40	37.00	-7.60 Peak