

Report No. : FG09-121EAL (1/15)

EMI Test report

CATEGORY : EN55022(2006), +A1 / CISPR 22(2005), +A1 ; Class B
AS/NZS CISPR22 (2006)
FCC Part-15 (2008)
VCCI (2009)
EN301 489-17 V1.3.2, EN301 489-1 V1.8.1

MANUFACTURER : FUJITSU LIMITED
4-1-1, Kamikodanaka, Nakahara-ku, Kawasaki 211-8588 JAPAN

PRODUCT TYPE : Personal computer T900

Grouping model: TH900
AC Adapter SEE100P2-19.0 SEE120P2-19.0 SEC100P3-19.0
ADP-80NBA
Port Replicator ZPR0030
Wireless LAN 622AN.HMWG AR5B97 AR5BHB92
Bluetooth module EYSMJNCS

TEST SITE : FUJITSU GENERAL EMC LABORATORY
1116, Suenaga, Takatsu-ku, Kawasaki 213-8502 JAPAN

DATE TESTED : November 6, 2009 23°C 40%

TESTED BY : Hiroyuki Aikawa

EUT conforms to the above mentioning all regulations.

APPROVED BY :  DATE : November 10, 2009
for Hiroyuki Shimano, President

FUJITSU GENERAL EMC LABORATORY LIMITED

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※ The description of the EUT and the system configuration in this report are provided by the client.



Product Service



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1. Description of EUT

The EUT: T900 is personal computer using CPU; Core i7 M620 2.67 GHz microprocessor. The EUT has a 13.3 inch WXGA LCD, a DVD-super multi drive and a system disk (160 GB×1). The EUT has the interface for IEEE1394③, RGB⑩, DVI, HDMI, Mic-in②, Phone-out②, Line-out②⑤, LAN⑦, Modem⑥, USB×6①⑤⑩⑪⑫⑬⑭⑮⑯⑰⑱⑲⑳㉑, PC card slot, Memory card slot, Smart card slot, Bluetooth and wireless LAN.

The following type code is given according to the market.

Type code	Market
T900	Commercial
TH900	Consumer

The following wireless LAN module type codes are given according to the Antenna and Manufacturer.

Type	Communication method	Antenna	Manufacturer
622AN.HMWG	IEEE802.11a/ b/ g/ n	2 antennas	Intel
AR5B97	IEEE802.11b/ g/ n	2 antennas	Atheros
AR5BHB92	IEEE802.11a/b/ g/ n	2 antennas	Atheros

Internal clock frequency : 4.000 MHz, 14.318 MHz, 24.576 MHz, 25.000 MHz, 33.300 MHz, 48.000 MHz, 96.000 MHz, 100.000 MHz, 266.000 MHz

Input power : AC 100 V-240 V, 50 / 60 Hz, Single-phase 2 wires

The EUT is intended to use generally in the residential / domestic area or commercial and light industrial area; category class B.

1.1 Test system configuration

The measurement was performed using T900 with internal wireless LAN module; any one of 622AN.HMWG, AR5B97 or AR5BHB92, Bluetooth module, external Port Replicator; ZPR0030 and all related equipments as the maximum personal computer systems shown in figure-1.

This measurement was performed using worst case optional components determined by pretest results.

The EUT was selected from the pre-production line.

1.2 Operating condition

The following EUT and dependent devices were tested using "EMC32.exe", "CRTU" or "ART.exe" and "Blue test" program under continuous operating condition to obtain maximum emission.

- | | | |
|-----------------------|---------------|--|
| ① PC-1 | LCD-1: | Displaying "H" character on screen (Maximum contrast / Luminescence Display resolution 1280×800 / Refresh rate 60Hz) |
| | LAN: | Continuous transmission and receiving ping command (1000 M Max) |
| | Modem: | Downloading the data file, transmission and receiving ping command (56 k Max) |
| | HDD-1: | Reading / writing the test data |
| | Wireless LAN: | Continuous transmission of the RF signal |
| | Bluetooth: | Continuous transmission of the RF signal |
| | DVD: | Playing the test disk |
| | CAMERA: | Monitoring the picture of web camera |
| ② Express card: | | Reading / writing the test data |
| ③ SD memory card: | | Reading / writing the test data |
| ④ LCD-2: | | Displaying "H" character on screen (Maximum contrast / Luminescence) |
| ⑤ Headset: | | Connecting only |
| ⑥ USB mouse: | | Connecting only |
| ⑦ USB memory(USB2.0): | | Reading / writing the test data (480 M Max) |
| ⑧ HDD-2(IEEE1394): | | Reading / writing the test data (400 M Max) |
| ⑨ PC-2: | | Continuous transmission and receiving ping command (1000 M Max) |
| ⑩ PC-3: | | Downloading the data file, transmission and receiving ping command (56 k Max) |

2. EMI test results summary

Applied standard: EN55022 (2006), +A1 (2007)

Limit value: Class B

The test samples met the class B limit of EN55022(2006), +A1 / CISPR22(2005), +A1 and applicable below regulations as shown the following highest 6 points of each emission profiles.

EN301 489-1 V1.8.1 for EN301 489-17 V1.3.2

Australia, New Zealand: AS/NZS CISPR22(2006)

U.S.A.: FCC Part-15(2008), Canada: ICES-003 Issue4(2004)

Japan: VCCI(2009)

The test result is effective in only the EUT.

2.1 Radiated emission (30 MHz to 1,000 MHz) : Measured at 10 m distance

2.1.1 Wireless module; 622AN.HMWG

< AC 230 V / 50 Hz single phase >

Freq. (MHz)	pol.	Noise level (QP; dB μ V/m)	Class B limit (QP; dB μ V/m)	Margin (dB)
120.00	Vert	25.7	30.0	4.3
228.43	Horiz	28.5	30.0	1.5
612.00	Horiz	31.9	37.0	5.1
612.00	Vert	34.5	37.0	2.5
960.00	Horiz	33.5	37.0	3.5
960.00	Vert	35.5	37.0	1.5

< AC 120 V / 60 Hz single phase >

Freq. (MHz)	pol.	Noise level (QP; dB μ V/m)	Class B limit (QP; dB μ V/m)	Margin (dB)
120.00	Vert	26.3	30.0	3.7
228.43	Horiz	28.7	30.0	1.3
612.00	Horiz	31.0	37.0	6.0
612.00	Vert	34.2	37.0	2.8
960.00	Horiz	33.5	37.0	3.5
960.00	Vert	35.5	37.0	1.5

• Limit value ; CISPR22(2005), +A1

• Measurement uncertainty : ± 3.2 dB (K=2, 95 %)

2.1.2 Wireless module; AR5B97

< AC 230 V / 50 Hz single phase >

Freq. (MHz)	pol.	Noise level (QP; dB μ V/m)	Class B limit (QP; dB μ V/m)	Margin (dB)
120.00	Vert	26.0	30.0	4.0
228.43	Horiz	26.8	30.0	3.2
612.00	Horiz	32.7	37.0	4.3
612.00	Vert	33.8	37.0	3.2
960.00	Horiz	33.0	37.0	4.0
960.00	Vert	34.8	37.0	2.2

• Limit value ; CISPR22(2005), +A1

• Measurement uncertainty : ± 3.2 dB (K=2, 95 %)

2.1.3 Wireless module; AR5BHB92

< AC 120 V / 60 Hz single phase >

Freq. (MHz)	pol.	Noise level (QP; dB μ V/m)	Class B limit (QP; dB μ V/m)	Margin (dB)
120.00	Vert	27.4	30.0	2.6
228.43	Horiz	26.8	30.0	3.2
612.00	Horiz	33.3	37.0	3.7
612.00	Vert	34.6	37.0	2.4
960.00	Horiz	33.0	37.0	4.0
960.00	Vert	35.0	37.0	2.0

- Limit value ; CISPR22(2005), +A1
- Measurement uncertainty : ± 3.2 dB (K=2, 95 %)

2.2 Over 1 GHz Radiated emission : Measured at 3 m distance

2.2.1 1 GHz to 13.35 GHz for FCC

2.2.1.1 Wireless module; 622AN.HMWG

< AC 120 V / 60 Hz single phase >

Freq. (GHz)	Pol	Noise level (dB μ V/m)		Class B limit (dB μ V/m)		Margin (dB)	
		Peak	A V	Peak	A V	Peak	A V
1.3678	Horiz	57.7	44.3	74.0	54.0	16.3	9.7
1.5183	Vret	54.5	41.7	74.0	54.0	19.5	12.3
1.6778	Vert	57.5	44.1	74.0	54.0	16.5	9.9
1.7411	Vert	52.1	42.9	74.0	54.0	21.9	11.1
2.5770	Vert	53.5	40.2	74.0	54.0	20.5	13.8
2.7386	Vert	53.5	40.3	74.0	54.0	20.5	13.7

- Limit value ; FCC Part-15 (2008)

2.2.1.2 Wireless module; AR5BHB92

< AC 120 V / 60 Hz single phase >

Freq. (GHz)	Pol	Noise level (dB μ V/m)		Class B limit (dB μ V/m)		Margin (dB)	
		Peak	A V	Peak	A V	Peak	A V
1.4492	Vert	51.7	41.4	74.0	54.0	22.3	12.6
1.6750	Vert	59.9	46.4	74.0	54.0	14.1	7.6
1.6756	Horiz	60.1	46.1	74.0	54.0	13.9	7.9
1.7388	Vert	55.6	46.1	74.0	54.0	18.4	7.9
2.5767	Vert	53.9	40.8	74.0	54.0	20.1	13.2
2.7363	Vert	53.6	40.5	74.0	54.0	20.4	13.5

- Limit value ; FCC Part-15 (2008)

2.2.2 1 GHz to 6 GHz for EN

2.2.2.1 Wireless module; 622AN.HMWG

< AC 230 V / 50 Hz single phase >

Freq. (GHz)	Pol	Noise level (dB μ V/m)		Class B limit (dB μ V/m)		Margin (dB)	
		Peak	A V	Peak	A V	Peak	A V
1.5178	Vert	54.4	40.4	70.0	50.0	15.6	9.6
1.6746	Horiz	58.4	44.6	70.0	50.0	11.6	5.4
1.6770	Vert	58.4	45.4	70.0	50.0	11.6	4.6
1.7337	Vert	53.5	45.5	70.0	50.0	16.5	4.5
2.5840	Vert	55.1	41.2	70.0	50.0	14.9	8.8
2.7372	Vert	53.7	41.1	70.0	50.0	16.3	8.9

- Limit value ; CISPR22(2005), +A1

2.2.2.2 Wireless module; AR5B97

< AC 230 V / 50 Hz single phase >

Freq. (GHz)	Pol	Noise level (dB μ V/m)		Class B limit (dB μ V/m)		Margin (dB)	
		Peak	A V	Peak	A V	Peak	A V
1.4545	Horiz	52.5	42.9	70.0	50.0	17.5	7.1
1.4582	Vert	53.9	43.8	70.0	50.0	16.1	6.2
1.6756	Horiz	58.8	45.5	70.0	50.0	11.2	4.5
1.6765	Vert	60.1	46.6	70.0	50.0	9.9	3.4
1.7309	Vert	54.7	45.6	70.0	50.0	15.3	4.4
2.7375	Vert	54.8	41.2	70.0	50.0	15.2	8.8

• Limit value ; CISPR22(2005), +A1

2.3 AC power line conducted emission (150 kHz to 30 MHz)**2.3.1 Wireless module; 622AN.HMWG****2.3.1.1 AC Adapter: SEE100P2-19.0**

< AC 230 V / 50 Hz single phase >

Freq. (MHz)	Line #	Noise level (dB μ V)		Class B limit (dB μ V)		Margin (dB)	
		Q P	A V	Q P	A V	Q P	A V
0.161	# 1	60.1	30.7	65.4	55.4	5.3	24.7
0.161	# 2	55.9	33.9	65.4	55.4	9.5	21.5
0.190	# 1	57.4	37.7	64.0	54.0	6.6	16.3
0.190	# 2	56.1	37.4	64.0	54.0	7.9	16.6
1.086	# 1	43.2	32.0	56.0	46.0	12.8	14.0
1.086	# 2	47.2	34.9	56.0	46.0	8.8	11.1

< AC 120 V / 60 Hz single phase >

Freq. (MHz)	Line #	Noise level (dB μ V)		Class B limit (dB μ V)		Margin (dB)	
		Q P	A V	Q P	A V	Q P	A V
0.193	# 1	47.6	37.9	63.9	53.9	16.3	16.0
0.193	# 2	51.4	40.4	63.9	53.9	12.5	13.5
1.025	# 1	37.5	25.6	56.0	46.0	18.5	20.4
1.025	# 2	43.3	32.4	56.0	46.0	12.7	13.6
1.988	# 1	33.5	27.8	56.0	46.0	22.5	18.2
4.893	# 1	36.3	27.2	56.0	46.0	19.7	18.8

< AC 100 V / 50 Hz single phase >

Freq. (MHz)	Line #	Noise level (dB μ V)		Class B limit (dB μ V)		Margin (dB to AV)
		Q P	A V	Q P	A V	
0.192	# 1	47.0		64.0	54.0	7.0
0.192	# 2	50.0		64.0	54.0	4.0
0.325	# 1	39.3		59.6	49.6	10.3
0.936	# 1	36.3		56.0	46.0	9.7
0.936	# 2	38.3		56.0	46.0	7.7
4.891	# 2	35.9		56.0	46.0	10.1

• Limit value; CISPR22(2005), +A1

• Measurement uncertainty : ± 2.8 dB (K=2, 95 %)

2.3.1.2 AC Adapter: SEE120P2-19.0

< AC 230 V / 50 Hz single phase >

Freq. (MHz)	Line #	Noise level (dB μ V)		Class B limit (dB μ V)		Margin (dB)	
		Q P	A V	Q P	A V	Q P	A V
0.209	# 1	48.3	36.4	63.2	53.2	14.9	16.8
0.209	# 2	46.2	32.0	63.2	53.2	17.0	21.2
0.266	# 1	44.4	34.2	61.2	51.2	16.8	17.0
0.984	# 1	43.5	31.0	56.0	46.0	12.5	15.0
1.051	# 1	42.9	30.8	56.0	46.0	13.1	15.2
6.594	# 1	42.0	30.7	60.0	50.0	18.0	19.3

< AC 120 V / 60 Hz single phase >

Freq. (MHz)	Line #	Noise level (dB μ V)		Class B limit (dB μ V)		Margin (dB to AV)
		Q P	A V	Q P	A V	
0.198	# 1	48.1		63.7	53.7	5.6
0.847	# 1	40.8		56.0	46.0	5.2
0.982	# 1	41.2		56.0	46.0	4.8
1.977	# 1	38.4		56.0	46.0	7.6
1.977	# 2	38.4		56.0	46.0	7.6
6.524	# 1	42.4		60.0	50.0	7.6

< AC 100 V / 50 Hz single phase >

Freq. (MHz)	Line #	Noise level (dB μ V)		Class B limit (dB μ V)		Margin (dB to AV)
		Q P	A V	Q P	A V	
0.197	# 1	46.2		63.7	53.7	7.5
0.916	# 1	40.3		56.0	46.0	5.7
1.976	# 1	37.9		56.0	46.0	8.1
1.976	# 2	38.1		56.0	46.0	7.9
6.460	# 1	42.2		60.0	50.0	7.8
6.460	# 2	42.4		60.0	50.0	7.6

• Limit value; CISPR22(2005), +A1

• Measurement uncertainty : ± 2.8 dB (K=2, 95 %)**2.3.1.3 AC Adapter: SEC100P3-19.0**

< AC 230 V / 50 Hz single phase >

Freq. (MHz)	Line #	Noise level (dB μ V)		Class B limit (dB μ V)		Margin (dB)	
		Q P	A V	Q P	A V	Q P	A V
0.190	# 2	55.5	46.2	64.0	54.0	8.5	7.8
0.413	# 2	47.0	31.8	57.6	47.6	10.6	15.8
0.655	# 2	46.4	35.1	56.0	46.0	9.6	10.9
0.749	# 2	46.7	36.2	56.0	46.0	9.3	9.8
1.213	# 2	45.4	34.4	56.0	46.0	10.6	11.6
1.683	# 2	44.4	33.2	56.0	46.0	11.6	12.8

< AC 120 V / 60 Hz single phase >

Freq. (MHz)	Line #	Noise level (dB μ V)		Class B limit (dB μ V)		Margin (dB)	
		Q P	A V	Q P	A V	Q P	A V
0.152	# 2	48.4	34.5	65.9	55.9	17.5	21.4
0.494	# 2	44.2	27.6	56.1	46.1	11.9	18.5
1.015	# 2	40.8	27.4	56.0	46.0	15.2	18.6
1.303	# 2	40.8	28.6	56.0	46.0	15.2	17.4
1.420	# 2	39.3	27.0	56.0	46.0	16.7	19.0
2.218	# 2	38.8	27.3	56.0	46.0	17.2	18.7

< AC 100 V / 50 Hz single phase >

Freq. (MHz)	Line #	Noise level (dB μ V)		Class B limit (dB μ V)		Margin (dB to AV)
		Q P	A V	Q P	A V	
0.422	# 2	39.8		57.4	47.4	7.6
0.609	# 1	40.3		56.0	46.0	5.7
1.020	# 2	39.7		56.0	46.0	6.3
1.433	# 2	40.8		56.0	46.0	5.2
1.433	# 1	38.3		56.0	46.0	7.7
1.729	# 2	39.9		56.0	46.0	6.1

• Limit value; CISPR22(2005), +A1

• Measurement uncertainty : ± 2.8 dB (K=2, 95 %)

2.3.1.4 AC Adapter: ADP-80NB A

< AC 230 V / 50 Hz single phase >

Freq. (MHz)	Line #	Noise level (dB μ V)		Class B limit (dB μ V)		Margin (dB to AV)
		Q P	A V	Q P	A V	
2.413	# 1	36.8		56.0	46.0	9.2
15.259	# 1	42.1		60.0	50.0	7.9
15.259	# 2	42.0		60.0	50.0	8.0
18.713	# 1	46.5		60.0	50.0	3.5
18.713	# 2	46.2		60.0	50.0	3.8
22.413	# 2	40.9		60.0	50.0	9.1

< AC 120 V / 60 Hz single phase >

Freq. (MHz)	Line #	Noise level (dB μ V)		Class B limit (dB μ V)		Margin (dB to AV)
		Q P	A V	Q P	A V	
0.153	# 1	46.9		65.9	55.9	9.0
0.153	# 2	46.7		65.9	55.9	9.2
4.892	# 1	34.1		56.0	46.0	11.9
14.729	# 2	41.6		60.0	50.0	8.4
15.784	# 1	40.3		60.0	50.0	9.7
15.784	# 2	40.2		60.0	50.0	9.8

< AC 100 V / 50 Hz single phase >

Freq. (MHz)	Line #	Noise level (dB μ V)	Class B limit (dB μ V)		Margin (dB to AV)
		Q P	Q P	A V	
0.155	# 1	47.1	65.7	55.7	8.6
0.155	# 2	47.2	65.7	55.7	8.5
14.713	# 2	42.6	60.0	50.0	7.4
14.713	# 2	43.4	60.0	50.0	6.6
18.801	# 1	40.6	60.0	50.0	9.4
18.801	# 2	40.7	60.0	50.0	9.3

• Limit value; CISPR22(2005), +A1

• Measurement uncertainty : ± 2.8 dB (K=2, 95 %)

2.3.2 Wireless module; AR5B97

< AC 230 V / 50 Hz single phase >

Freq. (MHz)	Line #	Noise level (dB μ V)		Class B limit (dB μ V)		Margin (dB)	
		Q P	A V	Q P	A V	Q P	A V
0.150	# 1	54.0	35.0	66.0	56.0	12.0	21.0
0.191	# 1	52.2	32.8	64.0	54.0	11.8	21.2
0.191	# 2	53.1	39.7	64.0	54.0	10.9	14.3
0.320	# 2	47.2	37.0	59.7	49.7	12.5	12.7
0.384	# 2	45.0	35.0	58.2	48.2	13.2	13.2
1.130	# 2	46.3	30.9	56.0	46.0	9.7	15.1

• Limit value; CISPR22(2005), +A1

• Measurement uncertainty : ± 2.8 dB (K=2, 95 %)

2.3.3 Wireless module; AR5BHB92

< AC 120 V / 60 Hz single phase >

Freq. (MHz)	Line #	Noise level (dB μ V)	Class B limit (dB μ V)		Margin (dB to AV)
		Q P	Q P	A V	
0.194	# 1	49.4	63.9	53.9	4.5
0.194	# 2	50.0	63.9	53.9	3.9
0.255	# 2	45.0	61.6	51.6	6.6
0.909	# 2	41.8	56.0	46.0	4.2
1.003	# 1	38.4	56.0	46.0	7.6
1.025	# 2	42.7	56.0	46.0	3.3

• Limit value; CISPR22(2005), +A1

• Measurement uncertainty : ± 2.8 dB (K=2, 95 %)

2.4 Telecommunication line conducted emission (150 kHz to 30 MHz)

<Telecom port >

Freq. (MHz)	Noise level (dB μ A)	Class B limit (dB μ A)		Margin (dB to AV)
	Q P	Q P	A V	
1.427	48.6	74.0	64.0	15.4
1.527	49.4	74.0	64.0	14.6
1.625	49.1	74.0	64.0	14.9
2.448	53.4	74.0	64.0	10.6
4.895	54.2	74.0	64.0	9.8
7.075	48.5	74.0	64.0	15.5

< LAN port (CP) >

Freq. (MHz)	Noise level (dB μ A)	Class B limit (dB μ A)		Margin (dB to AV)
		Q P	A V	
1.479	14.4	30.0	20.0	5.6
1.520	14.6	30.0	20.0	5.4
4.097	12.2	30.0	20.0	7.8
4.898	15.2	30.0	20.0	4.8
6.144	13.0	30.0	20.0	7.0
17.141	12.4	30.0	20.0	7.6

< LAN port (ISN) >

Freq. (MHz)	Noise level (dB μ A)	Class B limit (dB μ A)		Margin (dB to AV)
		Q P	A V	
1.532	57.0	74.0	64.0	7.0
2.446	53.2	74.0	64.0	10.8
4.892	52.6	74.0	64.0	11.4
7.340	51.6	74.0	64.0	12.4
17.127	51.6	74.0	64.0	12.4
21.792	49.7	74.0	64.0	14.3

• Limit value ; CISPR22(2005), +A1

3. EUT modification under the test

The following countermeasures are added for the radiated emission measurement.

- ① 1 capacitor; C539 15pF was added on the main board.
- ② 3 capacitors; C321, C322, C323 3pF were added on the main board.
- ③ 1 capacitor; 15pF was added in SC_CLK_OZ line on the main board.
- ④ 1 capacitor; 15pF was added in CLK_14_SIO line on the main board.

4. Measurement procedure and test equipment

The measurement was performed without deviation from CISPR22(2005), +A1.

4.1 Radiated emission

4.1.1 Radiated emission (30MHz~1,000MHz)

The radiated emission measurement was performed in the 10 m RF semi-anechoic chamber. The EUT was set on the 80 cm height non-reflective desk (W: 150 cm×D: 100 cm) placed on the turntable. The HUB, TEL, PC-2 and PC-3 were placed at outside of the chamber to make usual install condition at the different place. The maximum noise level in the frequency range from 30 MHz to 1,000 MHz were measured by 10 m method with scanning the antenna height from 1 m to 4 m above the ground plane and rotating the EUT through 360 degrees for both horizontal and vertical polarization.

Preliminary measurement using spectrum analyzer peak detection was performed to arrange the minimum margin spectrum. The settings of the interface cables and the mouse were adjusted to obtain maximum level at the minimum margin spectrum. The final measurement was performed using the RFI receiver (CISPR Quasi-peak, 120 kHz band width) and calibrated broadband antennas or dipole antennas for the main spectrum that was obtained by the preliminary measurement.

Test equipment	Manufacturer	Type	S/N	Cal. Date	Due. Date
Bi Log antenna	Schwarzbeck	VULB9160	3118	2009.05.12	2010.05.12
Dipole antenna	Schwarzbeck	VHA9103	VHA91031573	2008.03.26	2010.03.26
Dipole antenna	Schwarzbeck	UHA9105	UHA91052119	2008.03.26	2010.03.26
Field strength meter	Rohde & Schwarz	ESCS30	849650/001	2009.07.08	2010.07.08
Spectrum analyzer	HP	85422E	3746A00242	2009.07.30	2010.07.30
RF switch	Anritsu	MP59B	M87079	2009.05.02	2010.05.02
RF cable	—	TF0207	—	2009.05.02	2010.05.02
2nd semi-anechoic chamber		Riken eletech	—	2009.03.26	2010.03.26
EMI test program	FGE	Version 1.3			

4.1.2 Over 1 GHz radiated emission

The radiated emission measurement was performed in the 10 m RF semi-anechoic chamber. The EUT was set on the 80 cm height non-reflective desk (W: 150 cm×D: 100 cm) on the turntable. The radiated emission measurement from 1 GHz to 13.35 GHz; Operating rate 2.67 GHz was performed using the spectrum analyzer (Peak detection, 1MHz band width) and the horn antenna that was positioned at 3 m from the EUT for class B. The measurement was performed with both horizontal and vertical polarization, rotating the The measurement was performed with rotating the EUT through 360 degrees and fixing the antenna height to the 1 m for both horizontal and vertical polarization.

The measurement was performed using the RF signal "off" mode of the wireless LAN and Bluetooth.

Test equipment	Manufacturer	Type	S/N	Cal. Date	Due. Date
Horn antenna	Schwarzbeck	BBHA9120D	414	2009.04.22	2010.04.22
Spectrum analyzer	Advantest	U3772	161200140	2009.05.15	2010.05.15
Pre amplifier	HP	8449B	3008A01110	2008.03.26	2010.03.26
2nd semi-anechoic chamber		Riken eletech	—	2009.06.10	2010.06.10

4.2 AC power line conducted emission

The conducted emission measurement was performed in the shielded room. The EUT was set on the 80 cm height non-reflective desk and connected to the 50 Ω /50 μ H artificial mains network: AMN, and operated by AC 100 V/ 50 Hz, AC 120 V/ 60 Hz and AC 230 V/ 50 Hz. Preliminary measurement using spectrum analyzer peak detection was performed in the frequency range from 150 kHz to 30 MHz to arrange the minimum margin spectrum. The setting of the cables was adjusted to obtain maximum level at the minimum margin spectrum. The final measurement was performed using the RFI receiver (CISPR Quasi-peak, 9 kHz band width) and recorded the maximum value in the monitored interval of the main spectrum that was obtained by the preliminary measurement.

Test equipment	Manufacturer	Type	S/N	Cal. Date	Due. Date
AMN for AE	Kyoritsu	KNW-242C	8-1387-6	2009.01.09	2010.01.09
AMN	Kyoritsu	KNW-407	8-823-18	2009.01.09	2010.01.09
Field strength meter	Rohde & Schwarz	ESCS30	849650/003	2009.07.08	2010.07.08
Spectrum analyzer	HP	85422E	3746A00240	2009.07.30	2010.07.30
RF switch	Rohde & Schwarz	PSU	848290/005	2009.04.10	2010.04.10
Band pass filter	Advantest	TR14202	03560025	2009.04.10	2010.04.10
Pulse limiter	Rohde & Schwarz	ESH3-Z2	0357.8810.54	2009.04.10	2010.04.10
RF cable	—	TF0110	—	2009.04.10	2010.04.10
1st shielded room					
EMI test program	FGE	Version 1.3			

4.3 Telecommunication line conducted emission

The conducted emission measurement was performed in the shielded room. The EUT was set on the 40 cm height wooden desk and connected to the impedance stabilization network: ISN(LCL; 80 dB) for telecom port, the current probe for LAN port, and operated by AC 230 V/ 50 Hz. Preliminary measurement using spectrum analyzer peak detection was performed in the frequency range from 150 kHz to 30 MHz to arrange the minimum margin spectrum. The setting of the cables was adjusted to obtain maximum level at the minimum margin spectrum. The final measurement was performed using the RFI receiver (CISPR Quasi-peak, 9 kHz band width),and recorded the maximum value in the monitored interval of the main spectrum that was obtained by the preliminary measurement.

Test equipment	Manufacturer	Type	S/N	Cal. Date	Due. Date
Current probe	Rohde & Schwarz	EZ-17	100007	2009.03.06	2011.03.06
Field strength meter	Rohde & Schwarz	ESCS30	849650/003	2009.07.08	2010.07.08
Spectrum analyzer	HP	85422E	3746A00240	2009.07.30	2010.07.30
RF switch	Rohde & Schwarz	PSU	848290/005	2009.04.10	2010.04.10
Band pass filter	Advantest	TR14202	03560025	2009.04.10	2010.04.10
Pulse limiter	Rohde & Schwarz	ESH3-Z2	0357.8810.54	2009.04.10	2010.04.10
RF cable	-----	TF0110	-----	2009.04.10	2010.04.10
1st shielded room					
EMI test program	FGE	Version 1.3			

5. Test site and traceability

The FUJITSU GENERAL EMC LABORATORY performs the test for VCCI / EN / CISPR regulation and Fujitsu / Fujitsu General internal regulations. The test procedures and test facilities are comply with international standard. The laboratory is filed on VCCI (Japan), accredited from NVLAP (U.S.A.), authorized from TÜV SÜD PS (Germany) and appointed from TÜV Rheinland (Germany).

VCCI : 1st semi-anechoic chamber(R-753/G-53/C-776), 1st shielded room(C-777)
 Large shielded room(C-778)
 2nd semi-anechoic chamber(R-1460/G-54/C-1547), 2nd shielded room(C-1548)
 3rd shielded room(C-1549)

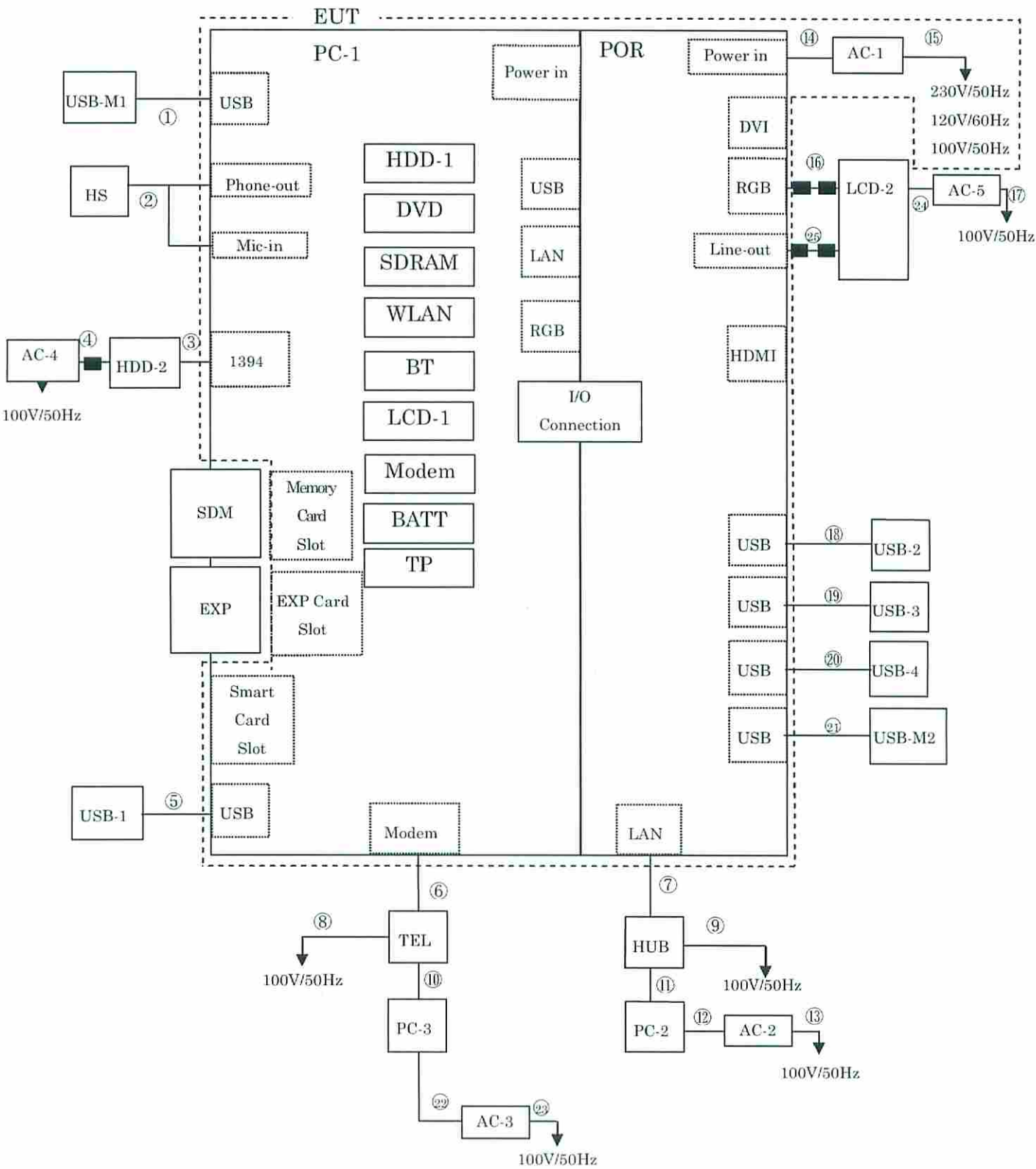
NVLAP : 1998.12.01 Accredited: Lab code 200373-0

TÜV SÜD PS : 1999.01.29 Authorized

TÜV Rheinland Japan : 2005.08.25 Appointed

The measuring equipments were used in the laboratory and test data are traceable to the national or international standard. Each equipment is maintain by periodical calibration and by daily check as a total measurement system to keep those accuracy.

Figure-1 System configuration and cables



Main EUT

Code	Name	Type	S/N	Product
PC-1	Personal computer	T900	Pre-production sample	Fujitsu

Related EUT

POR	Port Replicator	ZPR0030	-----	Fujitsu
AC-1	AC adapter	SEE100P2-19.0	-----	Fujitsu
		SEE120P2-19.0	-----	Fujitsu
		SEC100P3-19.0	-----	Fujitsu
		ADP-80NB A	-----	Fujitsu

Included device; PC-1

Code	Name	Type	S/N	Product
HDD-1	160GB HDD	MJA2160BH	-----	Fujitsu
DVD	DVD-Super Multi	GSA-T50N	-----	Hitachi-LG Data
SDRAM	2048 MB	M471B2874DZ1×2	-----	Samsung
WLAN	Wireless LAN	622AN.HMWG	-----	Intel
		AR5B97	-----	Atheros
		AR5BHB92	-----	Atheros
		EYSMJCS	-----	TAOYO YUDEN
BT	Bluetooth	HV133WX1-100	-----	BOE-HYDIS
LCD-1	13.3 inch WXGA	MDC1.5 modem Model:D40	-----	Agere
Modem	Modem	FPCBP155 10.8V 5200mA/h	-----	Fujitsu
BATT	Battery (6 cell)	CNF911421005130L	-----	Chicony
WCA	Web-camera	SU5E-13W08AS-01X	-----	Wacom
TP	Touch panel			

Assisted equipment

Code	Name	Type	S/N	Product
LCD-2	LCD display	H22-1W WBZA-H	YE1C017616	FSC
		P19-1	YEGA217491	FSC
HDD-2	Herd disk drive	Stragebird 40 GB	0004374	FSC
HS	Head set	GN 501FSC	-----	FSC
PC-2	Personal computer	FMV	-----	Fujitsu
PC-3	Personal computer	FMV	-----	Fujitsu
TEL	Telephone line emulator	TEL101	-----	ASCII
HUB	Switching Hub	ETG-SH-8	VD7000010513N	I·O DATA
AC-2	AC adapter	FMV-AC322	-----	Fujitsu
AC-3	AC adapter	FMV-AC322	-----	Fujitsu
AC-4	AC adapter	ACTN-21	-----	Sunfone
AC-5	AC adapter	0218B1260	-----	Shin International
USB-1	USB Mouse	M-BT69e	HCA52701556	FSC
USB-2	USB Mouse	M-BJ69e	HCA52701562	FSC
USB-3	USB Mouse	M-BJ69e	HCA52701578	FSC
USB-4	USB Mouse	M-BJ69e	HCA52701600	FSC
USB-M1	USB memory	Easy Disk 256MB	-----	I·O DATA
USB-M2	USB memory	Easy Disk 256MB	-----	I·O DATA
EXP	EXP card adapter	HEX-S1G	-----	HAGIWARA
SDM	SD memory card	128 MB	-----	Panasonic

Cables SLD: Shielded NSLD: Non-shielded CAX: Coaxial

Connector MC: Metal NMC: Non-metal PMC: Point contact metal

No.	I/O Port	Name	Type	Length	Cable type
①	USB	USB cable	----	1.0 m	SLD, MC
②	Phone-out / Mic-in	Headset cable	----	2.2 m	NSLD, MC
③	1394	IEEE1394 cable	----	1.0 m	SLD, MC
④	----	AC adaptor cable	----	1.8 m	NSLD, NMC with core * 1
⑤	USB	USB mouse cable	----	1.9 m	SLD, MC
⑥	Modem	Modular cable	----	20.0 m	NSLD, NMC
⑦	LAN	LAN cable	----	20.0 m	SLD, MC
⑧	----	AC power cable	----	2.0 m	2P-NSLD
⑨	----	AC power cable	----	2.0 m	2P-NSLD
⑩	----	Modular cable	----	2.0 m	NSLD, NMC
⑪	LAN	LAN cable	----	1.0 m	SLD, MC
⑫	----	AC adaptor cable	----	1.8 m	2P NSLD, NMC
⑬	----	AC power cable	----	2.0 m	2P-NSLD
⑭	----	AC adaptor cable	----	1.8 m	NSLD, NMC
⑮	----	AC power cable	----	2.0 m	2P-NSLD
		AC power cable	----	3.0 m	3P-NSLD
⑯	RGB	RGB cable	----	1.8 m	SLD, MC with fixed core
⑰	----	AC power cable	----	2.0 m	3P-NSLD
⑱	USB	USB mouse cable	----	1.9 m	SLD, MC
⑲	USB	USB mouse cable	----	1.9 m	SLD, MC
⑳	USB	USB mouse cable	----	1.9 m	SLD, MC
㉑	USB	USB cable	----	1.0 m	SLD, MC
㉒	----	AC adaptor cable	----	1.8 m	2P NSLD, NMC
㉓	----	AC power cable	----	2.0 m	2P-NSLD
㉔	----	AC adaptor cable	----	2.0 m	2P-NSLD
㉕	Line-out	Line out cable	----	1.5 m	NSLD, MC with fixed core

* 1: KITAGAWA industry Co.,Ltd; TFT-72SK