

EMI TEST REPORT

According to FCC Part 15 Subpart B/Class B

Product : Web PAD
Model No. : S200

FCC ID : A3LS200

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3. This test report is to certify that the tested device properly complies with the requirements of FCC Rules and Regulations Part 15 Subpart B Unintentional Radiators.
All tests necessary to show compliance to the requirements were and these results met the specifications requirement.

Date of test : December 5, 2000

Issued Date : December 8, 2000

Tested by:

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NVLAP Code:

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Distribution

This test report has been made available as follows:

CS Management Center, EMC Laboratory	1 original
Computer Division	1 copy

1. General Information

Applicant : Samsung Electronics Co., Ltd.
CS Management Center EMC Test Laboratory
Tel.: +81-(0)31-200-2135 Fax.: +81-(0)31-200-2189

Full Address : 416 Maetan 3 Dong, Paldal-Ku,
Suwon City, Kyungki Do, Korea, 442-742

Kind of Product : **Web PAD**

CONTACT PERSON : Chun Kyu, PARK
TEL. +82-31-200-2135

REGULATION(S) : FCC Part 15 Subpart B, Class B

Model Name : **S200** (Brand Name: SAMSUNG)
IZZI Web (Brand Name: SAMSUNG)

Customer Ref. : Computer Div.
(Contact Person : Byung Hwan, Kim Tel.: +82-(0)31-200-7241)

TEST SITE : Open Field Test Site & Shield Room

TEST SITE ADDRESS : 781-14, Chung-Ri, Dongtan-Myun,
Hwasung-Kun, Kyungki-Do, Korea

416, Maetan-3 Dong, Paldal-Gu
Suwon City, Kyungki-Do, Korea, 442-742

1.1 Product Description

1) Operating Frequency :

200MHz(CPU Speed), 80MHz(DCLK), 40MHz(PCLK)
33.3MHz(PCI Clock), 14.318MHz(SUPERIO_CLK), 14.318MHz(5530CLK)
48MHz(USB CLK), X-TAL(14.318MHz)
X-TAL(24.576MHz), X-TAL(16MHz), X-TAL(11.0592MHz), X-TAL(32.768MHz)

2) Justification

The system was configured for testing in typical fashion use. Cable were attached to each of the available I/O Ports. Where applicable, peripherals were attached to the I/O cables. The mode of operation utilized for testing was selected to best simulate typical EUT use.

3) Description of Testing operating mode

Operating Mode	Operating section of EUT
"H" Pattern display & Read / Write	LCD Screen
	RAM
Network	Windows Ping Test To Access point Device
Audio Output	Audio out to Speaker

4) Tested Resolution :

Tested Video mode	Resolutions	Refresh rates	Colors
LCD(10.4")	800 X 600	60Hz	16bits

5) Assemble Parts

Item	Specification	Remark
CPU	National Semiconductor Geode 200MHz	GX1-200B
Main Memory (RAM)	SAMSUNG, 32MB SDRAM K4S641632D-TL1L	K4S641632D-TL1L
Base Station	SEM,Built in AC-Adaptor (AD-3612) PS/2 Port, USB Port	SBS-200E
IR Keyboard	SEM, IR 86Keys Qwerty Type	CIR9000
Smart Media	SEC, 16MB Smart Media Card	SMFV016S MLL097GAS
LCD	10.4" TFT 800 * 600	LTM10C348S 9YCOG000110
ROM	16MB Disk-On Chip M-Systems	MD-2810-D08-PB
RF-LAN	SEM, Type II PCMCIA Wireless LAN Card Based On 2.4GHz. DSSS(11Mbps) 802.11 Support	SWL-2000N LNKRDA07C97B0 FCC ID : E2XSWL-2000N
BATTERY	SEM, 7.4V / 2P-2S LI-ion Battery	SSB-400EL
AC Adapter	SEC, 36-Watts, AC 100~240V FREE-VOLTAGE	AD-3612

1.2 Tested System Details

	Model	Description	Cable description	Remarks
(1)	SAMSUNG Electronics M/N : S200	Web PAD S/N : -	-	EUT
(2)	SAMSUNG M/N : SBS-200E	Base station S/N : -	-	
(3)	LOGITECH M/N : M-M35	USB Mause S/N : LZE94654007	Shielded Mouse Cable	
(4)	SAMSUNG M/N : YMC-2511	MIKE S/N : -	Shielded Mike Cable	
(5)	SAMSUNG M/N : SEM-A17K	Keyboard KBAR04MT4197	Shielded Mike Cable	
(6)	SAMSUNG M/N : CIR9000	Wireless IR Keyboard KBAR04MT4197	Shielded Mike Cable	
(7)	SAMSUNG M/N:SWL-3000AP	Access Point A0A0000582	-	
(8)	Union Electronics M/N : F2500	Luad Speaker S/N :LTC93500036	Unshielded Cable	

1.3 Configuration of EUT and peripherals

Mark	Item	Model No.	Serial No.	Manufacturer	Remark
A	Web PAD	S200	-	SAMSUNG	EUT
B	Base Station	SBS-200E	N/A	SAMSUNG	*1
C	Loud Speaker	F2500	N/A	Union Electronics	
D	Microphone	YMC-2511	None	SAMSUNG	
E	USB Mouse	M-U48A	LZE94654007	Logitech	
F	Keyboard	SEM-A17K	KBAR04MT4197	SAMSUNG	
G	Wireless IR Keyboard	CIR9000	N/A	SAMSUNG	
H	AC Adapter	AD-3612	N/A	SAMSUNG	
I	Access Point	SWL-3000AP	A0A0000582	SAMSUNG	*2

Remark * 1 : Docking Station (SBS-200E) = Base station

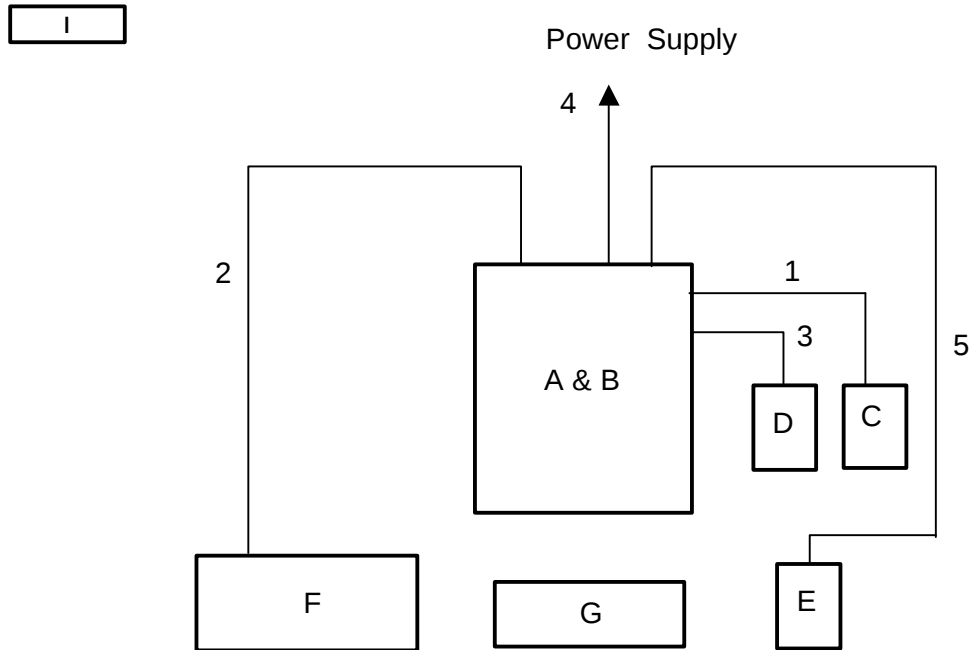
Comparing the test results with Docking(SBS-200E) and without Docking(Used Ext. AC adaptor), the test result with Docking was found the worst case emissions. And so the final testing was performed with Docking. Samsung does intend to market this Docking as a separate unit. Therefore this Docking will not be supplied with the EUT.

* 2 : This EUT was tested with wireless network host for communication.
 The test distance was 5m from Access Point(SWL-3000AP) to EUT.

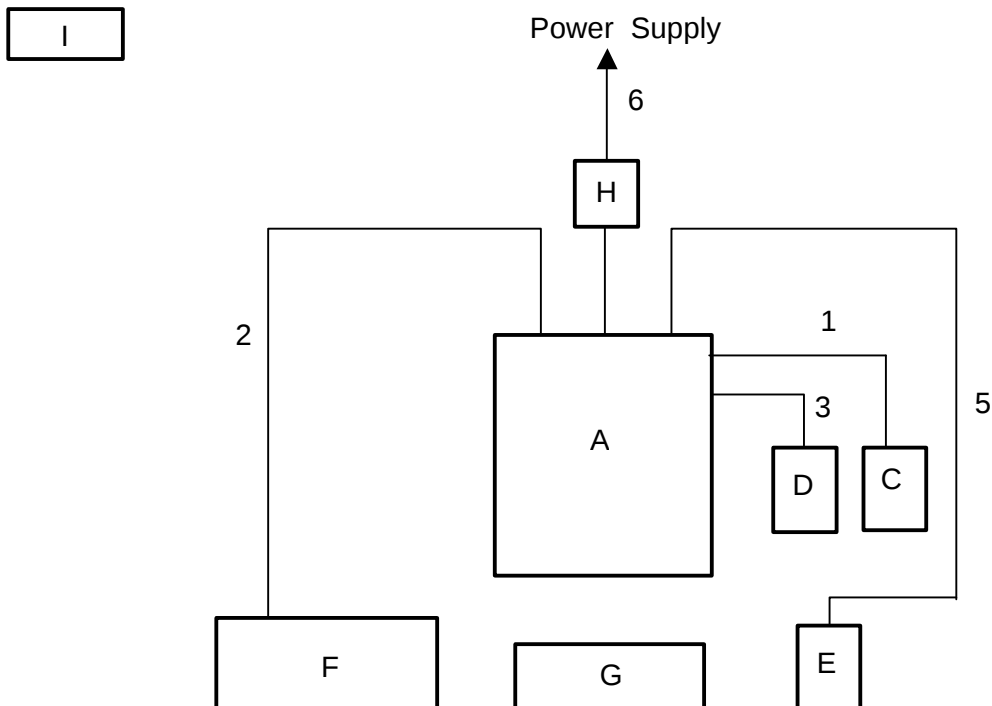
1.4 Used Cable Description

No.	Item	Length[m]	Shielded(Y/N)	Remark
1	Microphone Cable	5	N	
2	PS/2 Keyboard Cable	1.8	N	
3	Loud Sperker	1.2	N	
4	Power Cable	1.7	N	Power supply for Base station
5	USB Mouse cable	1.8	N	
6	Power Cable	1.5	N	Power supply for EUT

1.5 System Block Diagram of Test Configuration(with Docking station)



1.6 System Block Diagram of Test Configuration (with AC adaptor)



2. System Test Configuration

2.1 Configuration of Radiated and Conducted Interference Measurement

* Cabling was taken into consideration and test data was taken under worse case conditions.

1)Conduction(Front View)



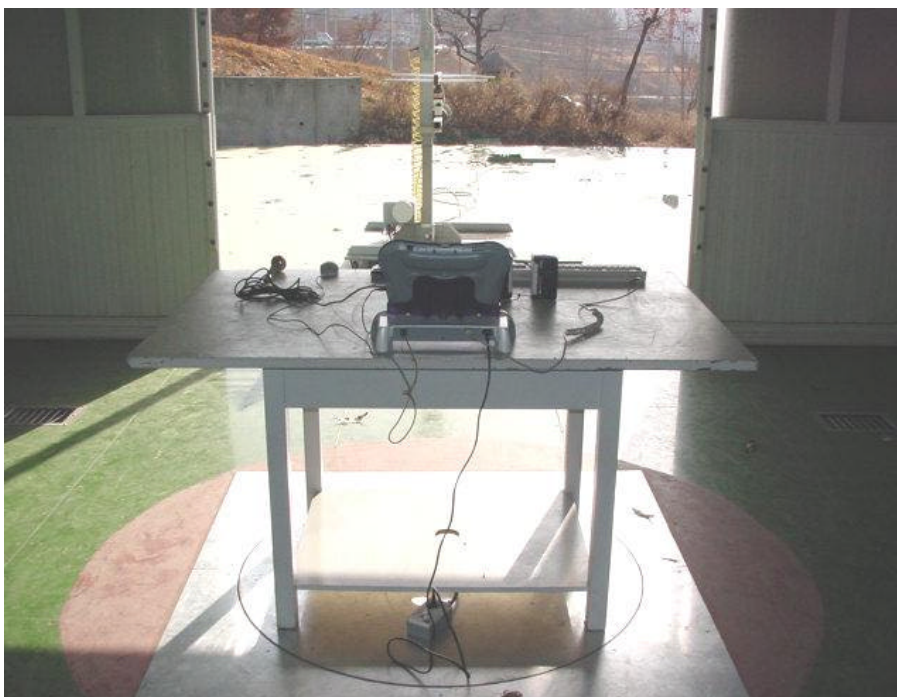
2)Conduction(Rear View)



3) Radiation(Front View)



4) Radiation(Rear View)



2.2 Operation Enviroment

	Conduction	Radiation
Temperature [C] :	25	24
Humidity [%] :	41	38
Power supply	: AC120V/60Hz	AC120V/60Hz

2.3 Test Procedure

2.3.1 Conducted Emissions

Eut was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting ground plane.

The rear of EUT,including peripherals was aligned and flush with rear of tabletop. All other surfaces of tabletop was at least 80cm from any other grounded conducting surface. I/O cables and AC cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane.

Each EUT current-carrying power lead,except the ground(safety) lead, were individually connected through a LISN to the input power source.

All unused 50 ohm connectors of the LISN were resistively terminated in 50 ohm when not connected to the measuring equipment.

2.3.2 Radiated Emissions

Eut was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane.

The rear of EUT, including peripherals was aligned and flush with rear of tabletop.

I/O cables that were connected to the peripherals were bundle in center.

They were folded back and forth forming a bundle 30cm to 40cm long and were hanged 40cm height to the ground plane.

Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

3. Measurement Uncertainty

All data in report are to be traceability to the national or international standards.

3.1 Conducted Emission Test

The measurement uncertainty(with a 95% confidence level)for this test was $\pm 2.2\text{dB}$.

☐ The data listed in this test report may exceed the test limit because it does not have enough margin(more than 2.0dB).

☒ *The data listed in this test report has enough margin, more than 2.0dB.*

3.2 Radiated Emission Test

The measurement uncertainty(with a 95% confidence level)for this test was $\pm 3.4\text{dB}$.

☐ The data listed in this test report may exceed the test limit because it does not have enough margin(more than 2.0dB).

☒ *The data listed in this test report has enough margin, more than 3.4dB.*

4. Conducted Emission Test Data

The initial step in collecting conducted data was to perform a quasi-peak and average scan over the measurement range using a receiver.

The final data represents worst-case emissions.

+ Test Data Sheet

Frequency	Meter Reading [a]	LISN Pol.	Total Loss [b]	Results [a+b]	Limits	Margin (Result - Limits)
[MHz]	[dBuV]	[L,N]	[dB]	[dBuV]	[dBuV]	[dB]
0.5	23.5	L1	0.08	23.58	48	-24.42
0.69	25.2	L2	0.08	25.28		-22.72
0.88	26.9	L1	0.09	26.99		-21.01
1.13	22.9	L1	0.09	22.99		-25.01
1.51	24.5	L1	0.09	24.59		-23.41
3.84	20.2	L2	0.05	20.25		-27.75
4.78	19.8	L1	0.04	19.84		-28.16
6.67	20.6	L2	0.02	20.62		-27.38
8.12	19.9	L2	0	19.9		-28.1
12.78	20.4	L2	0.19	20.59		-27.41
16.06	19.2	L2	0.67	19.87		-28.13
20.08	23.8	L2	0.88	24.68		-23.32
28.11	30	L2	0.28	30.28		-17.72

* QP : Quasi-peak

* Results = Meter Reading(QP) + Total Loss(LISN Insertion loss + Cable loss)

5. Radiated Emission Test Data

The initial step in collecting radiated data was to perform a quasi-peak scan over the measurement range using a receiver.

All modes of operation were investigated and the worst-case emission are reported.

All other emission are non-significant.

The minimum margin to the limit is as follows :

Frequency Range [MHz]	Tested Frequency [MHz]	ANT Pol.	Meter Reading [A] [dBuV/m]	Total Loss [B] [dB]	Antenna Height [Cm]	Turn table Degree [Deg]	Results [A+B] [dBuV/m]	Limits at 3m [dBuV/m]	Margin (Result-Limit) [dB]
30 - 88	33.4	V	13.4	18.5	116	250	31.9	40	-8.1
	54.5	V	12.5	11	118	260	23.5	40	-16.5
	68.5	V	12.9	9.1	115	255	22	40	-18.0
	83.6	H	10.8	9.1	206	187	19.9	40	-20.1
30 - 216	100	H	13.0	9.56	205	188	22.56	43.5	-20.9
	139	V	14.0	9.7	124	235	23.7	43.5	-19.8
216 - 960	238.1	H	17.1	14.4	212	255	31.5	46	-14.5
	271.1	H	15.5	14.9	234	266	30.4	46	-15.6
	315.8	H	16.3	17.1	220	278	33.4	46	-12.6
	344.4	H	16.5	17.4	198	245	33.9	46	-12.1
	447.4	H	14.6	19.1	188	88	33.7	46	-12.3
	497.7	V	12.3	20.8	200	75	33.1	46	-12.9
	559.2	V	14.6	21.9	216	101	36.5	46	-9.5
960 - 2000	-	-	<	-	-	-	-	54	-

* "<" Means equal or less then 5dB

* Receiving Antenna Mode : **Horizontal, Vertical**

* Test distance : 3m (OATS)

* Results = Meter Reading + Total Loss(Antenna factor + Cable loss)

6. Label and Label Location

6.1 Label



6.2 Label Location



7. Test Equipment Used

Equipment	Model No.	Serial No.	Makers	Last calibration and Interval
Spectrum analyzer	8566B	3340A21744	H.P	00/03/15, 12Months
		Firmware versions : Rev.29.9.86		
Quasi-peak adapter	85650A	3303A01784	H.P	99/12/30, 12Months
RF Preselector	85685A	3506A01500	H.P	99/12/30, 12Months
Field strength meter	ESVP	880725/042	R & S	00/01/10, 12Months
	ESS	844861/005	R & S	00/06/23, 12Months
		F/W ver. : Main 1.08, OTP 02.01, GRA 02.03		
L.I.S.N	3825/2	9208-1981	EMCO	00/03/23, 12Months
Bi-conical Antenna	3110B	2012	EMCO	99/12/21, 12Months
Log-periodic Antenna	3146A	1320	EMCO	99/12/21, 12Months
Double ridged Horn Ant.	3115	9505-4441	EMCO	00/05/23, 12Months