

EMI TEST REPORT**SAMSUNG ELECTRONICS CO., LTD.**Product : **Handheld PC**Model No.: **eGO-note**FCC ID : **A3LS100**DATE : **November 20, 1998****SAMSUNG Reference NO. : 981137**

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.

1. Applicant Name : SAMSUNG ELECTRONICS CO., LTD.
(Company name & Address) 416 Maetan 3 Dong, Paldal-Ku,
Suwon City, Kyungki Do, Korea,
441-742

2. Identification of tested device

2.1 FCC ID : A3LS100
2.2 Device Name : Handheld PC
2.3 Brand (Trade Name) : SAMSUNG
2.4 Model Number : eGO-note

3. Test Procedure and Items

3.1 AC Powerline Conducted Emissions Measurement : ANSI C63.4-1992
3.2 Radiated Emissions Measurement : ANSI C63.4-1992

4. Issued Date : November 20, 1998

TESTED BY :No-Cheon, PARK / Test Engineer**APPROVED BY :**T. J. Shin
Taek-Jeong, SHIN / Manager of EMC Lab.

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1. General Information

1.1 Production Description

The Samsung Handheld PC Model eGO-note(FCC ID:A3LS100) is based on the powerful Toshiba 32bit MIPS processor (CPU 148MHz) and has internal clock speeds of 32.786kHz, 9.216, 6, 12, and 6MHz.

It can be operated from rechargeable battery pack or by AC 100~240V Free-voltage AC Adapter. See attached eGO-note User's Guide for more information.

1.2 Grants

N / A

1.3 Test System Details

The FCC IDs for all equipment plus descriptions of all cables used with the tested system (including inserted cards which have grant) are:

FCC ID	DESCRIPTION	MODEL No.	CABLE TYPE
A3LS100	EUT	eGO-note	-
A3LCST768	External Monitor	CST7687L	shielded
E2XSEM-K15Z	Keyboard	SEM-K15Z	Unshielded
EW425-1040D	Serial Mouse	25-1040D	Unshielded
GJJS965C0	PS/2 Mouse	SMB-300	Unshielded
N/A	AC Adapter	AD-2010	Unshielded(with Ferrite bead)
N/A	TelePhone	SSP-2501	Unshielded
N/A	Microphone	YMC-2511	shielded
DSI16XU222	Inkjet Printer	2225C	Shielded
N/A	Port Replicator	SPR-100E	-
N/A	USB Ter. Cable	-	Unshielded Cable
N/A	Loud Speaker	BS-211	Unshielded Cable

1.4 Test Methodology

Both radiated and conducted tests were performed according to the procedure in ANSI C63.4. Radiated testing was performed at an antenna-to-EUT distance of three meters.

1.5 Test Facility

All test described in this report were performed by :

SAMSUNG ELECTRONICS CO., LTD.
EMC TESTING LABORATORY
416 Maetan 3 Dong, Paldal-Ku,
Suwon City, Kyungki Do, Korea, 441-742
Open field test site (3 meter) and Shielded Room.

This test facility has been filed in FCC under the criteria in ANSI C63.4-1992.

2. SYSTEM TEST CONFIGURATION

2.1 Justification

The system was configured for testing in typical fashion (as a customer would use it). The EUT has internal clock speeds of 32.786kHz, 9.216, 6, 12, and 6MHz.

The EUT was investigated while operating at all speeds. The highest speed of 148MHz CPU was used for final testing as it was found to cause worst case emissions. And the EUT has LCD display of 8.2" .

The EUT's video circuitry is capable of operating at a maximum non-interlaced resolution of 640x480 pixels. The EUT was observed while scrolling a continuous stream for capital "H's" in the 640x480 mode(both LCD display and External Monitor).

Comparing the test results with port replicator and without port replicator. The test result with port replicator was found the worst case emissions. And so the final testing was performed with port replicator.

The EUT was tested with a port replicator(SCR-100E). Samsung does intend to market this as a separate unit. Therefore this device will not be supplied with this computer.

The EUT was tested with a Samsung AC Adapter Model number AD-2010. Further details of cabling and configuration are shown in the test system configuration.

2.2 Video Mode Justification

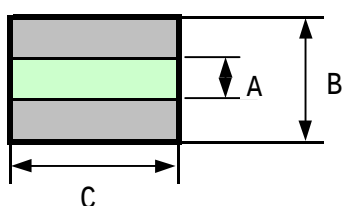
The system was tested in 640x480 highest resolution mode. Since the 640x480 resolution mode(LCD & External Monitor both in use) was found to be worst case, this mode was used to collect the included data.

2.3 EUT Exercise Software

The EUT exercise program used during testing was designed to exercise the system in a manner similar to a typical use. This program was contained on the EUT's 64Mbyte FLASH for Data Storage. Once loaded, the program sequentially exercise each system component in turn. The sequence used was : 1) serial "H"s scrolled to the LCD and Monitor; 2) copy series of "H"s characters to mass storage device. 3) print series of H characters to printer. Since the mouse and speaker are strictly input device, no data was transmitted to them during testing. They are, however, continuously scanned for data input activity.

2.4 Special Accessories

The Samsung AC adapter cable has a ferrite bead on the line. The following is ferrite Core specification.

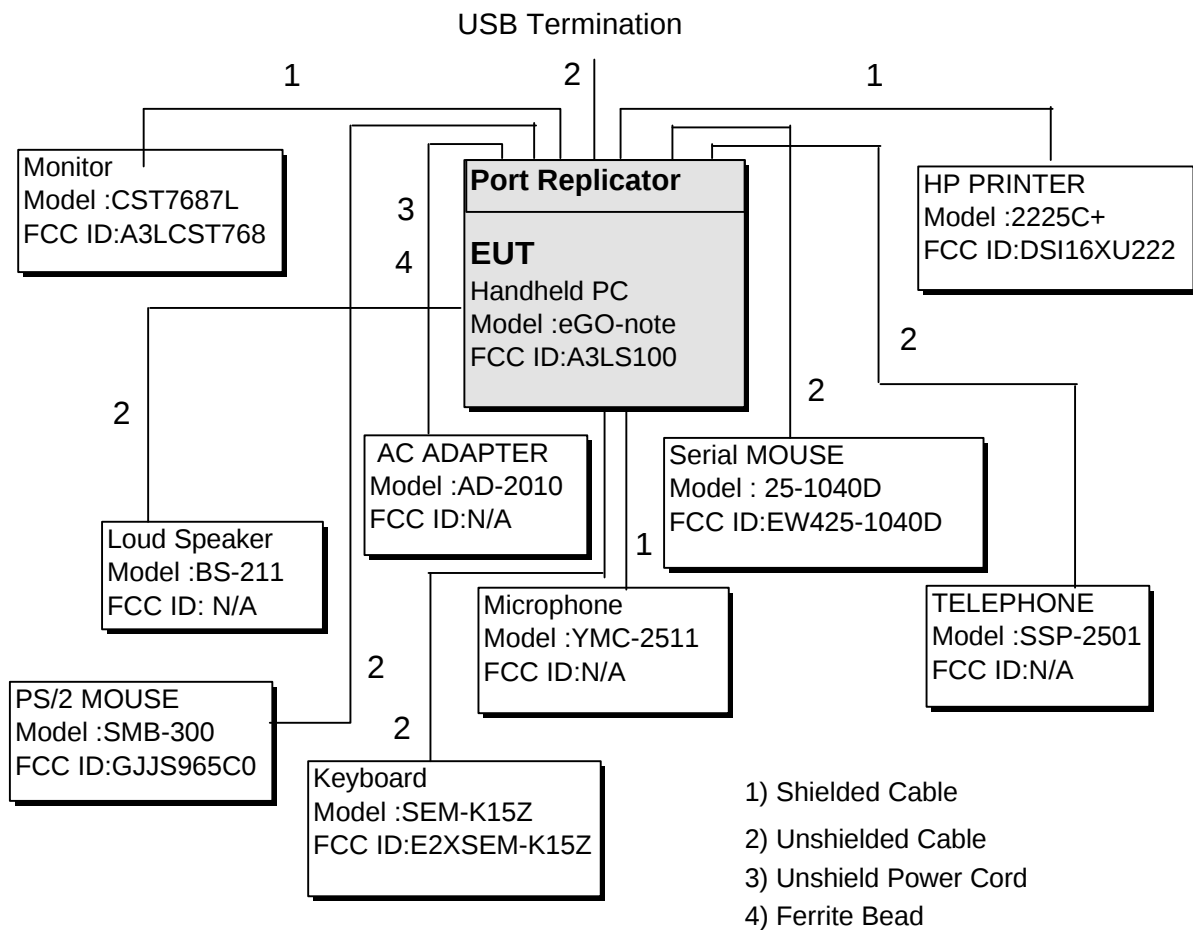


A : 5.0mm
B : 10.0mm
C : 20.0mm

2.5 Equipment Modifications

No equipment modifications were performed during testing.

2.6 Test System configuration

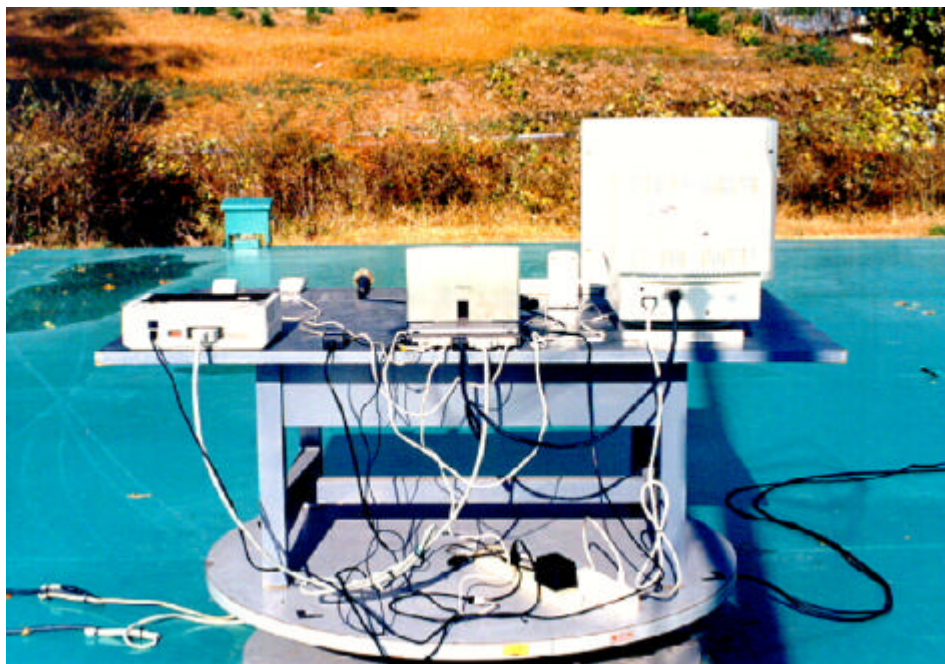


2.7 Photographs

⌚ Radiation(Front View)



⌚ Radiation(Rear View)



Conduction(Front View)



Conduction(Side View)



4. CONDUCTED EMISSION DATA

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

Sample Calculation

Frequency : 0.432 [MHz]
Meter Reading : 35.8 [dBuV]
Factor of LISN : 0.1 [dB]

Then, Result is calculated as follows.

$$35.8 + 0.1 = 35.9 \text{ [dBuV]}$$

Test Data Sheet

Tested Frequency [MHz]	Meter Reading (Quasi-Peak) [A] [dBuV]	LISN Pol. [L1,L2]	Total Loss	Results	Limits [dBuV]	FCC Margin [dB]
			[B]	[A+B]		
			[dB]	[dBuV]		
0.4324	35.8	L2	0.1	35.9	48	12.1
2.9356	35.5	L1	0.1	35.6	48	12.4
3.4614	36.9	L1	0.1	37	48	11
4.7384	38.5	L1	0.1	38.6	48	9.4
5.7957	43.5	L2	0.1	43.6	48	4.4
13.5447	29.2	L1	0.1	29.3	48	18.7

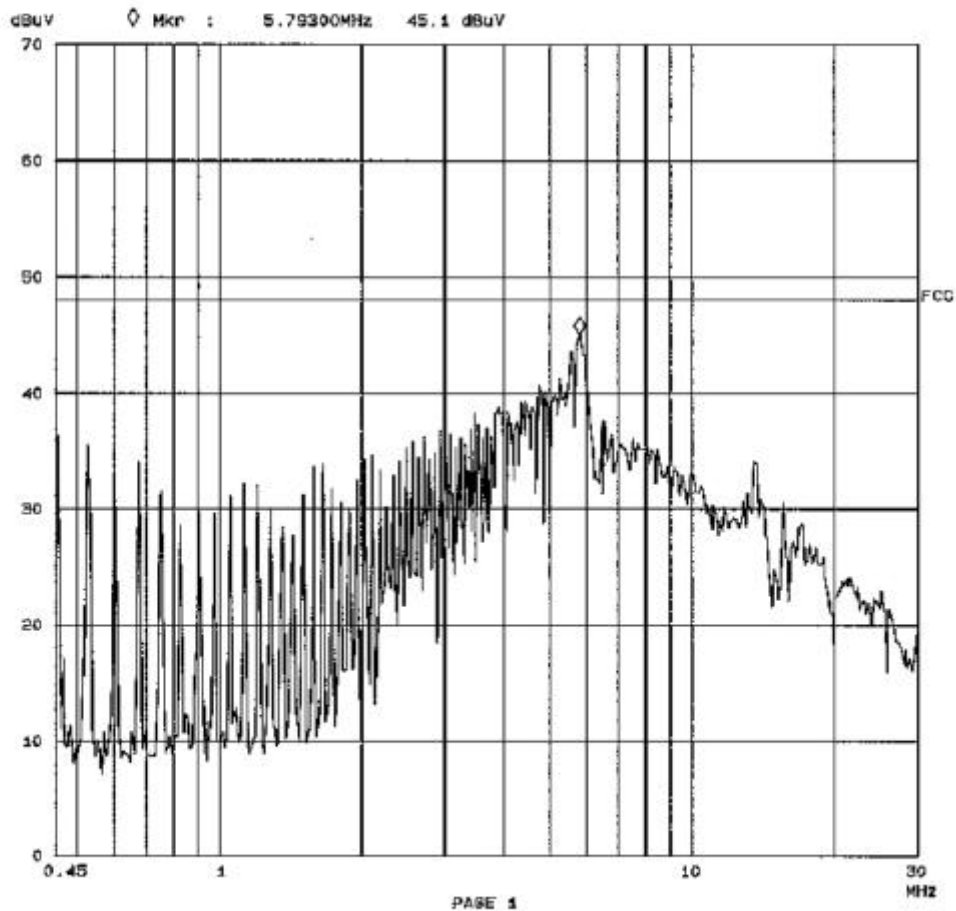
CONDUCTED EMISSION

11. Nov 98 15:18

EUT: e90-note with cradle
Manuf: SAMSUNG
Operator: N.C. PARK
Comment: LIVE

Fast Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Presamp	OpRge
450k	30M	3k	10k	PK	0.05ms	10dB	N OFF	60dB

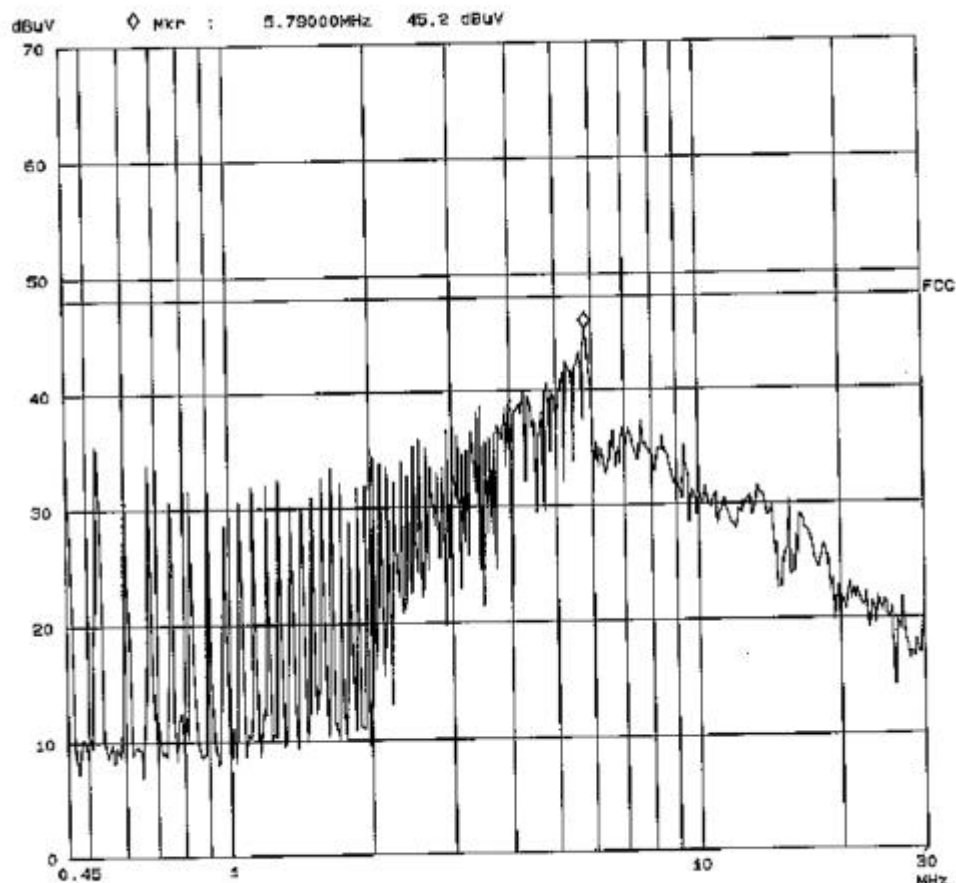


CONDUCTED EMISSION

11. Nov 99 15:30

EUT: ego-note with Cradle
Manuf: SAMSUNG
Operator: N.C.PARK
Comment: NEUTRAL

Fast Scan Settings (1 Range)			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Presamp	OpRgs
450k	30M	3k	10k	PK	0.05ms	10dB	LN OFF	50dB



5. RADIATED EMISSION DATA

The initial step in collecting radiated data was to perform a quasi-peak scan over the measurement range using a spectrum analyzer. All modes of operation were investigated and the worst-case emission are reported. All other emission are non-significant.

Sample Calculation

Frequency : 48.1 [MHz]
Meter Reading : 12.2 [dBuV]
Total of Loss : 9.95 [dB]

Then, Result is calculated as follows.

$$12.2 + 9.95 = 22.15 \text{ [dBuV]}$$

Test Data Sheet

Frequency Range [MHz]	Tested Frequency [MHz]	ANT Pol.	Meter Reading [A] [dBuV/m]	Total Loss [B] [dB]	Results [A+B] [dBuV/m]	FCC Margin [dB]	Limits [3m] [dBuV/m]
30 - 88	48.1	18.1	12.2	9.95	22.15	17.85	40.0
	70.006	H	19.8	9.06	28.86	11.14	
	82.093	H	22.8	9.32	32.12	7.88	
	73.728	H	19.2	9.19	28.39	11.61	
	76.293	H	19.5	9.93	29.43	10.57	
	86.012	H	19.6	9.93	29.53	10.47	
88 - 216	96.214	V	28.8	11.03	39.83	3.67	43.5
	117.285	H	20.4	12.69	33.09	10.41	
	125.097	H	17.0	13.33	30.33	13.17	
	130.332	H	15.4	13.65	29.05	14.45	
	147.462	H	14.1	14.02	28.12	15.38	
	157.501	H	18.5	13.97	32.47	11.03	
216 - 960	221.182	H	13.7	18.03	31.73	14.27	46.0
	238.289	H	23.5	18.47	41.97	4.03	
	294.919	H	19.6	21.64	41.24	4.76	
	368.623	H	23.5	16.67	40.17	5.83	
	442.131	V	18.5	18.67	37.17	8.83	
	515.602	H	17.1	19.92	37.02	8.98	
960 -	960.323	H	<6	27.86	-	-	54.0
	1213.5	H	<6	31.5	-	-	
	1821.32	H	<6	36.4	-	-	

[NOTE] "<" Means equal or less than

Receiving Antenna polarization : **Horizontal, Vertical**

6. LIST OF TEST INSTRUMENT.

Equipment	Model No.	Serial No.	Makers	Calibration Last calibration and Interval
Spectrum analyzer	8566B	3340A21744	H.P	98/ 9/21, 12Months
Quasi-peak adapter	85650A	3303A01784	H.P	98/ 9/21, 12Months
RF Preselector	85685A	3506A01500	H.P	98/ 9/21, 12Months
Field strength meter	ESS	844861/005	R & S	98/ 3/16, 12Months
	ESVP	860688/015	R & S	98/ 9/21, 12Months
Pre-amplifier	8447D	2443A04331	H.P	97/12/22, 12Months
L.I.S.N	3825-2	9208-1981	EMCO	98/ 9/ 5, 12Months
Double Ridged WaveGuide	3115	4028	EMCO	98/10/ 2, 12Months
Bi-conical Antenna	3110B	2012	EMCO	97/12/ 1, 12Months
Log-periodic Antenna	3146A	1320	EMCO	97/12/ 1, 12Months