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EMI CERTIFICATION REPORT

Applicant:

SAMSUNG ELECTRONICS CO., LTD
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Gyeonggi-do, 442-742, Korea

Date of Issue: June 24, 2011

Test Report No.: HCTE1106FE35

Test Site: HCT CO., LTD.

HCT FRN: 0005-8664-21

FCC ID:

A3LGTS3778

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B
Equipment Type : 850/1900 GSM/GPRS Phone with Bluetooth
Trade Name : SAMSUNG ELECTRONICS CO., LTD
Model(s) : GT-S3778
Port / Connector(s) : USB Data Port / Headset Port

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2003. (See Test Report if any modifications were made for compliance)

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

HCT certifies that no party to application has been subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862

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ATTACHMENT: TEST SETUP PHOTOGRAPHS

1. GENERAL INFORMATION

1.1 Product Description

Equipment Under Test (E.U.T) is **850/1900 GSM/GPRS Phone with Bluetooth, Model: GT-S3778** manufactured by **SAMSUNG ELECTRONICS CO., LTD.**

Its basic purpose is used for communications.

Model (s)	GT-S3778
FCC ID	A3LGTS3778
E.U.T Type	850/1900 GSM/GPRS Phone with Bluetooth
TX Frequency	824.20 MHz to 848.80 MHz (GSM 850) 1 850.20 MHz to 1 909.80 MHz (GSM 1 900)
RX Frequency	869.20 MHz to 893.80 MHz (GSM 850) 1 930.20 MHz to 1 989.80 MHz (GSM 1 900)

1.2 Related Submittal(s) / Grant(s)

Original submittal only.

1.3 Tested System Details

All equipment descriptions used in the tested system (including inserted cards) are:

Device Type	Manufacturer	Model Number	FCC ID / DoC	Connected To
850/1900 GSM/GPRS Phone with Bluetooth	SAMSUNG	GT-S3778	A3LGTS3778	Notebook PC
Notebook PC	SAMSUNG	NT-R519	DoC	E.U.T Notebook PC adaptor
Notebook PC adaptor	DELTA (JIANG SU)	SADP-90EH BAD-9019S	-	Notebook PC
Mouse	Microsoft	Intellimouse optical USB and PS/2 compatible	DoC	Notebook PC
USB cable	-	-	-	E.U.T Notebook PC
Headset	-	-	-	E.U.T
Keypad	-	LK3200	DoC	Notebook PC
Micro SD card (2 GB)	SanDisk	-	-	E.U.T

1.4 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
850/1900 GSM/GPRS Phone with Bluetooth	Headset jack	-	N	(D)1.6
	USB data	Y	Y	(P,D)1.2
Notebook PC	USB (Mouse)	-	Y	(D)1.8
	USB (Keypad)	-	Y	(D)0.6

* The marked "(D)" means the data cable and "(P)" means the power cable.

1.5 Noise Suppression Parts on Cable. (I/O cable)

Product Name	Port	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
850/1900 GSM/GPRS Phone with Bluetooth	Headset jack	N	-	Y	E.U.T End
	USB data	N	-	Y	Both End
Notebook PC	USB (Mouse)	Y	Notebook PC End	Y	Notebook PC End
	USB (Keypad)	N	-	Y	Notebook PC End

1.6 Test Methodology

Both Conducted and Radiated testing was performed according to the procedures in ANSI C63.4/2003. Radiated testing was performed at an antenna to E.U.T distance of 3 m

1.7 Test Facility

The 10 m semi anechoic chamber used to collect the Conducted and Radiated is located at the 105-1, Jangam-Ri, Majang-Myeon, Icheon-Si, Kyoungki-Do, Korea.

Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4. Detailed description of test facilities was submitted to the Commission and accepted dated Sep. 03, 2010 (Registration Number: 90661)

1.8 Frequency Range of Radiated Measurements

An unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a Radiated Emission limit is specified, up to the frequency shown in the following table

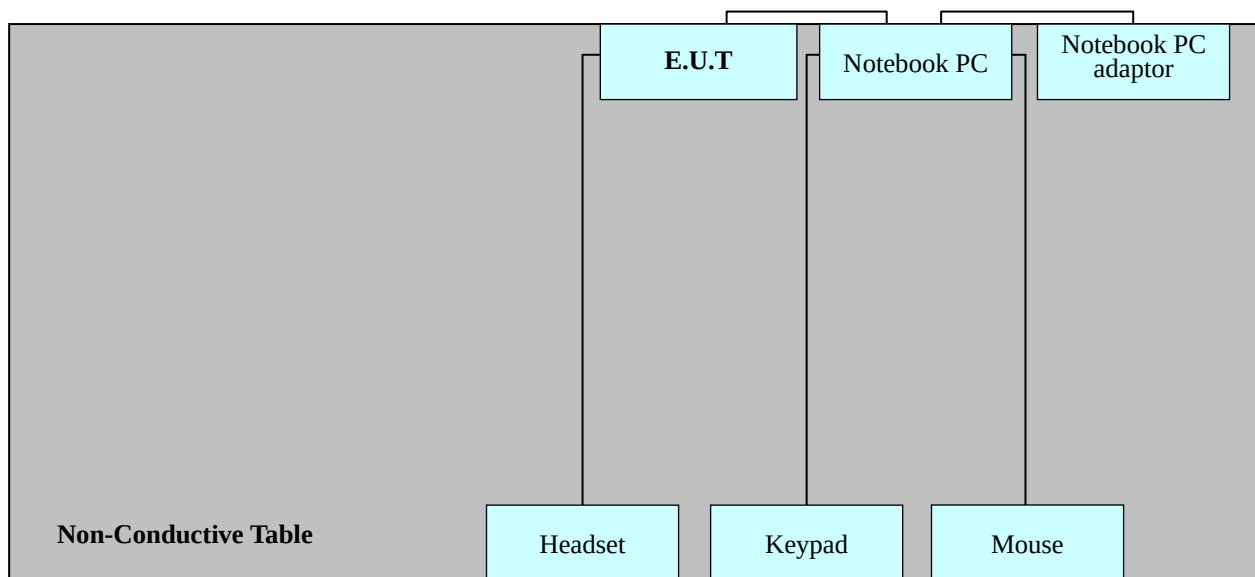
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 to 108	1 000
108 to 500	2 000
500 to 1 000	5 000
Above 1 000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

2. SYSTEM TEST CONFIGURATION

2.1 Configuration of Test System

- Power Line Conducted test : E.U.T was connected to LISN via Notebook PC adaptor.
Preliminary Power Line Conducted Emission tests were performed by using the procedure in ANSI C63.4/2003 7.2.3 to determine the worst operating conditions.
- Radiated Emission test : Preliminary Radiated Emission tests were performed by using the procedure in ANSI C63.4/2003 8.3.1.1 to determine the worst operating condition. Final Radiated Emission tests were performed at 10 m semi-anechoic chamber.

[Configuration of Tested System]



Power Line: 110 VAC

3. PRELIMINARY TEST

3.1 Conducted Emission Test

■ It was tested Data Communication mode, after connecting all peripheral devices.

Operation Mode	The Worst Operating Condition
Data Communication	○

3. 2 Radiated Emission Test

■ It was tested Data Communication mode, after connecting all peripheral devices.

Operation Mode	The Worst Operating Condition
Data Communication	○

4. CONDUCTED AND RADIATED EMISSION TEST SUMMARY

4.1 Conducted Emission Test

The following table shows the highest levels of conducted emissions on both polarization of hot and neutral line.

Limit apply to	: FCC PART 15 Subpart B Class B
Detector	: Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)
Operation Mode	: Data Communication mode
Temperature	: 24.3 °C
Humidity level	: 52.7 %
Test date	: June 23, 2011

※ **NOTE:** Refer to page 10 to page 13 for details.

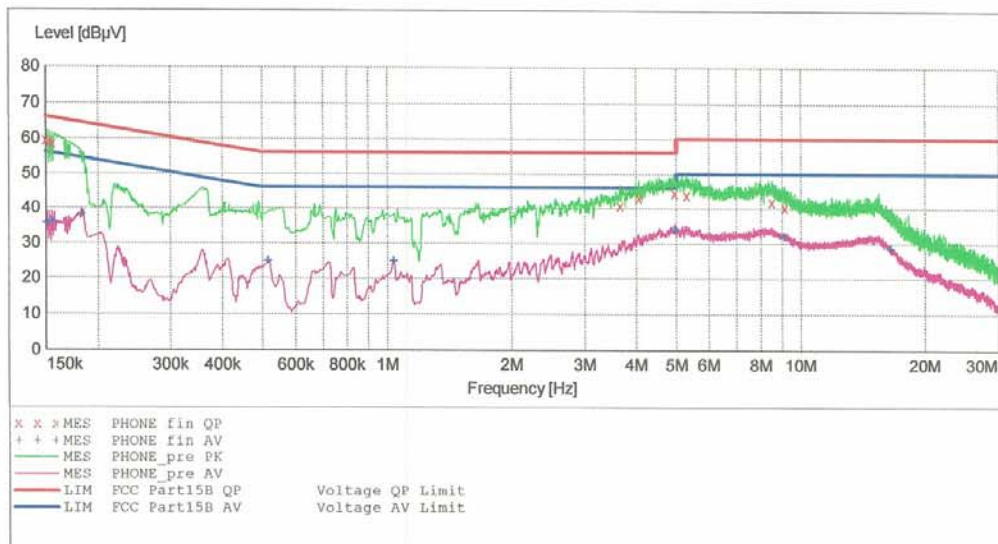
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EUT: GT-S3778
Manufacturer: SAMSUNG
Operating Condition: DATA MODE
Test Site: SHIELD ROOM
Operator: DH-RYU
Test Specification: FCC Part 15B
Comment: H

SCAN TABLE: "FCC PART 15 B(H)"

Short Description:			FCC PART 15 CLASS B			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
150.0 kHz	500.0 kHz	1.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



MEASUREMENT RESULT: "PHONE_fin_QP"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150010	59.30	10.1	66	6.7	---	---
0.153010	58.90	10.1	66	6.9	---	---
0.155010	58.50	10.1	66	7.2	---	---
3.664000	40.70	10.4	56	15.3	---	---
4.064000	43.10	10.4	56	12.9	---	---
4.964000	44.30	10.5	56	11.7	---	---
5.296000	43.80	10.6	60	16.2	---	---
8.532000	41.90	10.9	60	18.1	---	---
9.168000	40.30	10.9	60	19.7	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.151010	35.50	10.1	56	20.5	---	---
0.155010	35.90	10.1	56	19.8	---	---
0.183010	38.10	10.1	54	16.3	---	---
0.516000	24.90	10.1	46	21.1	---	---
1.040000	24.80	10.1	46	21.2	---	---
4.964000	33.70	10.5	46	12.3	---	---
5.000000	33.80	10.5	46	12.2	---	---
9.136000	31.90	10.9	50	18.1	---	---
16.528000	28.50	11.5	50	21.5	---	---

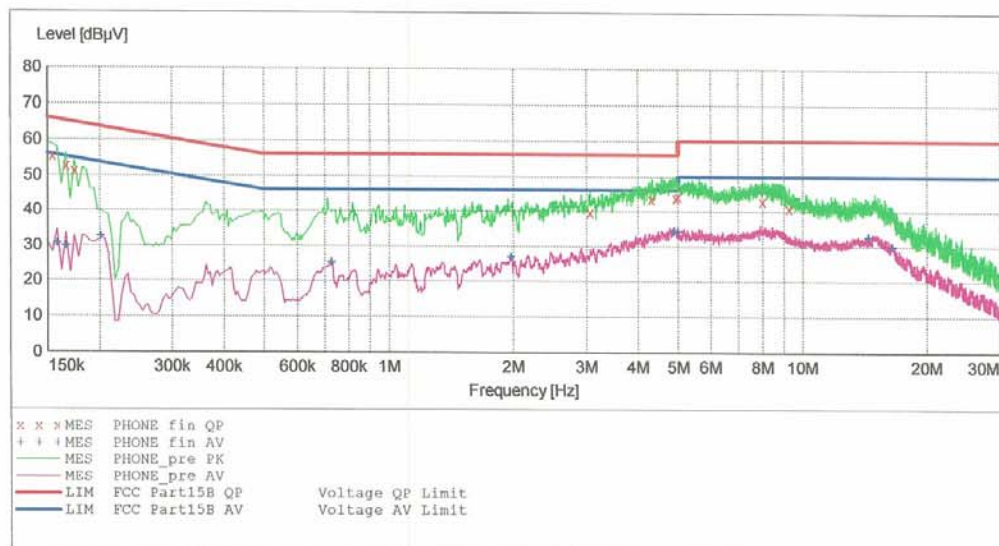
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EMC

EUT: GT-S3778
Manufacturer: SAMSUNG
Operating Condition: DATA MODE
Test Site: SHIELD ROOM
Operator: DH-RYU
Test Specification: FCC Part 15B
Comment: N

SCAN TABLE: "FCC PART 15 B(N)"

Short Description:			FCC PART 15 CLASS B			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



MEASUREMENT RESULT: "PHONE_fin_QP"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.154010	55.40	10.3	66	10.4	---	---
0.166010	52.70	10.3	65	12.5	---	---
0.174010	51.20	10.3	65	13.6	---	---
3.068000	39.60	10.5	56	16.4	---	---
4.328000	43.50	10.6	56	12.5	---	---
4.956000	43.80	10.7	56	12.2	---	---
5.000000	44.20	10.7	56	11.8	---	---
8.016000	42.90	11.0	60	17.1	---	---
9.296000	40.90	11.0	60	19.1	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.158010	30.50	10.3	56	25.0	---	---
0.166010	29.70	10.3	55	25.5	---	---
0.202010	32.40	10.3	54	21.2	---	---
0.728000	25.20	10.4	46	20.8	---	---
1.980000	26.80	10.4	46	19.2	---	---
4.896000	34.10	10.7	46	11.9	---	---
5.000000	34.20	10.7	46	11.8	---	---
14.444000	32.50	11.3	50	17.5	---	---
16.516000	29.80	11.5	50	20.2	---	---

4.2 Radiated Emission Test

The following table shows the highest levels of Radiated Emissions on both polarization of horizontal and vertical.

Limit Apply to : FCC PART 15 Subpart B Class B

-For measurement below 1 GHz

Detector : Quasi-Peak (6 dB Bandwidth: 120 kHz)

Operation Mode : Data Communication mode

-For measurement above 1 GHz

Setting : Peak mode: Detector- Peak(RBW: 1 MHz / VBW: 1 MHz)

: Average mode: Detector- Peak (RBW: 1 MHz / VBW: 10 Hz)

Temperature : 24.5 °C

Humidity Level : 51.0 %

Test Date : June 22, 2011

Frequency (MHz)	Reading (dBuV)	Polarity (H/V)	Antenna Height (m)	Correction Factor		Limit (dBuV/m)	Level (dBuV/m)	Margin (dB)
				Antenna (dB/m)	Cable (dB)			
78.1	10.32	H	2.5	8.79	1.49	40.0	20.6	19.4
139.8	9.21	H	2.5	12.55	2.04	43.5	23.8	19.7
258.0	12.33	H	1.2	12.06	2.81	46.0	27.2	18.8
378.8	14.89	H	1.0	15.17	3.44	46.0	33.5	12.5
799.2	4.08	H	2.0	22.68	5.14	46.0	31.9	14.1
960.0	2.87	H	1.0	24.36	5.67	46.0	32.9	13.1

※ NOTE:

1. Measurement above 1 GHz was performed from 1 GHz to the 5th harmonic of highest fundamental frequency. The highest fundamental frequency is GSM 1 900 center frequency.
2. For measurement above 1 GHz, Emission noise was not founded over the ambient noise.

5. FIELD STRENGTH CALCULATION

The field strength is calculated by adding the antenna factor and cable factor.
The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF$$

Where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

Assume a receiver reading of 21.5 dB μ V is obtained. The antenna factor of 7.4 dB/m and a cable factor of 1.1 dB are added. The 30 dB μ V/m value is mathematically converted to its corresponding level in μ V/m.

$$FS = 21.5 + 7.4 + 1.1 = 30 \text{ dB}\mu\text{V/m}$$

[Radiated Emission Limits]

Frequency of Emission (MHz)	Field Strength	
	μ V/m	dB μ V/m
30 to 88	100	40.0
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

6. TEST EQUIPMENT

<u>Type</u>	<u>Manufacturer</u>	<u>Model Number</u>	<u>Serial Number</u>	<u>Next CAL Date</u>
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Conducted Emission

☒ EMI Test Receiver	Rohde & Schwarz	ESCI	100033	2012.02.15
☒ LISN	Rohde & Schwarz	ESH3-Z5	100282	2012.02.01
☐ LISN	Rohde & Schwarz	ENV216	100073	2012.04.01
☒ Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.352	2011.10.25

Radiated Emission

☐ EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	2011.10.29
☒ EMI Test Receiver	Rohde & Schwarz	ESU26	100241	2011.09.01
☒ Trilog Antenna	Schwarzbeck	VULB9160	3125	2013.05.03
☒ Antenna master	INNCO Systems	MA4000-EP	MA4000/283	-
☒ Turn Table	INNCO Systems	DT3000-3T	DT3000/69	-
☒ Communication Antenna	Schwarzbeck	USLP9142	9142-248	-
☒ Horn Antenna	Schwarzbeck	BBHA 9120D	-	2012.04.13
☒ Power Amplifier	Rohde & Schwarz	SCU-18	10094	2011.09.29
☐ Base Station	Rohde & Schwarz	CMU 200	1100000802	2012.02.16

7. CONCLUSION

The data collected shows that the **850/1900 GSM/GPRS Phone with Bluetooth, Model: GT-S3778, FCC ID: A3LGTS3778** complies with §15.107 and §15.109 of the FCC rules.