

EMI CERTIFICATION REPORT

Applicant:

SAMSUNG ELECTRONICS CO., LTD
416. Maetan-3dong, Yeongtong-gu, Suwon-si,
Gyeonggi-do, 442-742, Korea

Date of Issue: January 20, 2012

Test Report No.: HCTE1201FE19-1

Test Site: HCT CO., LTD.

HCT FRN: 0005-8664-21

FCC ID:

A3LGTS5270S

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B
Equipment Type : 850/1900 GSM/GPRS Phone with Bluetooth, WLAN and EDGE Rx Only
Model(s) : GT-S5270S
Date of Test : January 12, 2012 – January 14, 2012
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



Report prepared by
: Jeong Hyeon Choi
Test Engineer of EMC Team



Approved by
: Sang Jun Lee
Manager of EMC Team

TABLE OF CONTENTS

	PAGE
1. GENERAL INFORMATION	3
1.1 Product Description	3
1.2 Related Submittal(s) / Grant(s).....	3
1.3 Tested System Details.....	4
1.4 Cable Description	5
1.5 Noise Suppression Parts on Cable. (I/O cable)	5
1.6 Test Methodology	6
1.7 Test Facility	6
1.8 Frequency Range of Radiated Measurements	6
2. SYSTEM TEST CONFIGURATION.....	7
3. PRELIMINARY TEST	8
3.1 Conducted Emission Test	8
3.2 Radiated Emission Test	8
4. CONDUCTED AND RADIATED EMISSION TEST SUMMARY	9
4.1 Conducted Emission Test	9
4.2 Radiated Emission Test	14
5. FIELD STRENGTH CALCULATION	15
6. TEST EQUIPMENT	16
7. CONCLUSION	17

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, WLAN and EDGE Rx Only / Model: GT-S5270S** manufactured by **SAMSUNG ELECTRONICS CO., LTD.**

Its basic purpose is used for communications.

Model (s)	GT-S5270S
FCC ID	A3LGTS5270S
E.U.T Type	850/1900 GSM/GPRS Phone with Bluetooth, WLAN and EDGE Rx Only
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, WLAN and EDGE Rx Only	SAMSUNG	GT-S5270S	A3LGTS5270S	Notebook PC
Notebook PC	SAMSUNG	NT-R519	DoC	E.U.T Notebook PC adaptor
Notebook PC adaptor	DELTA (JIANG SU)	SADP-90FH BAD-9019S	-	Notebook PC
Mouse	PRIMAX ELECTRONICS	MOARUO	DoC	Notebook PC
Headset	-	-	-	E.U.T
USB cable	-	-	-	E.U.T Notebook PC
SD card (2 GB)	SanDisk	-	-	E.U.T
RJ45 cable	-	-	-	Notebook PC
Router	-	HIGATE PLUS K12L012.00	-	Notebook PC Router adaptor
Router adaptor	FAIRONE ELECTRONICS	FLDE0501000K	-	Router
RJ45 Cable	-	-	-	Router Notebook PC

1.4 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
850/1900 GSM/GPRS/WCDMA Phone with Bluetooth, WLAN and EDGE RX Only	Micro USB	Y	Y	(P,D)0.8
	Headset jack	-	N	(D)1.6
Notebook PC	RJ 45	-	N	(D)1.5
	USB (Mouse)	-	Y	(D)1.8

* 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, WLAN and EDGE Rx Only	Micro USB	N	-	Y	Both End
	Headset jack	N	-	Y	E.U.T End
Notebook PC	RJ 45	N	-	N	Both End
	USB (Mouse)	-	-	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 3 m semi anechoic chamber used to collect the test data 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 Mar 02, 2011 (Registration Number: 90661)

1.8 Frequency Range of Radiated Measurements

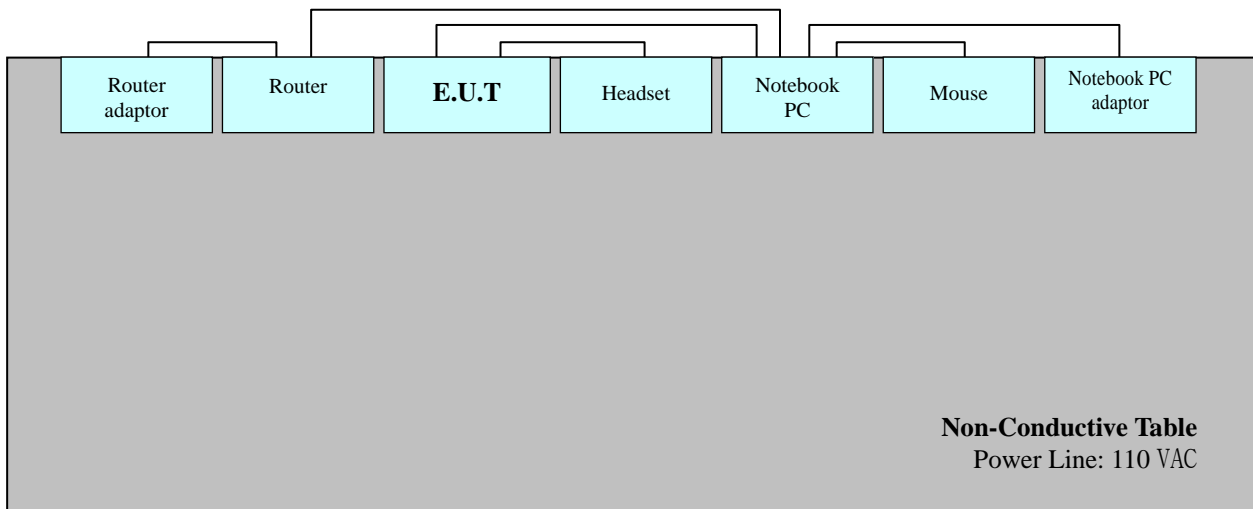
An unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a Radiated Emission limit is specified, up to the frequency shown in the following table

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

- 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 3 m semi-anechoic chamber.

[Configuration of Tested System]



3. PRELIMINARY TEST

3.1 Conducted Emission Test

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

Operation Mode: Data Communication

3. 2 Radiated Emission Test

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

Operation Mode: 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	: 22.1 °C
Humidity level	: 48.5 %
Test date	: January 14, 2012

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

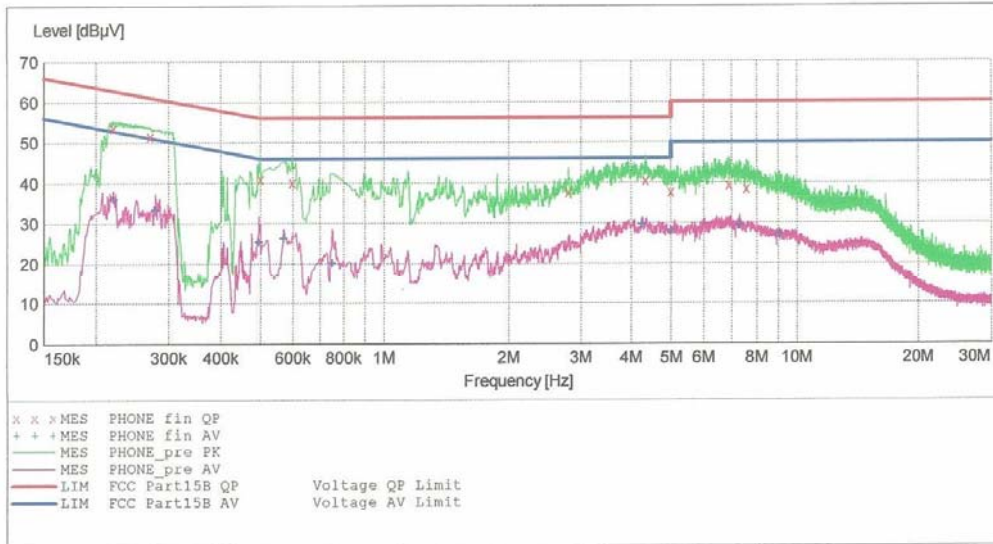
HCT

EMC

EUT: GT-S5270S
 Manufacturer: SAMSUNG
 Operating Condition: DATA MODE
 Test Site: SHIELD ROOM
 Operator: JH CHOI
 Test Specification: FCC PART15 CLASS B
 Comment: H

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

Short Description:	FCC PART 15	CLASS B	Detector	Meas. Time	IF Bandw.	Transducer
Start Frequency	Stop Frequency	Step 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"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.221010	53.60	10.1	63	9.2	---	---
0.271010	51.60	10.1	61	9.5	---	---
0.499010	41.00	10.1	56	15.1	---	---
0.600000	40.10	10.1	56	15.9	---	---
2.808000	37.70	10.3	56	18.3	---	---
4.356000	40.50	10.4	56	15.5	---	---
5.000000	37.70	10.5	56	18.3	---	---
6.904000	39.30	10.8	60	20.7	---	---
7.608000	38.40	10.8	60	21.6	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.221010	35.90	10.1	53	16.9	---	---
0.279010	33.30	10.1	51	17.5	---	---
0.496010	25.30	10.1	46	20.7	---	---
0.572000	26.20	10.1	46	19.8	---	---
0.752000	20.10	10.1	46	25.9	---	---
4.260000	29.50	10.4	46	16.5	---	---
5.000000	28.00	10.5	46	18.0	---	---
7.316000	29.30	10.8	50	20.7	---	---
9.088000	27.00	10.9	50	23.0	---	---

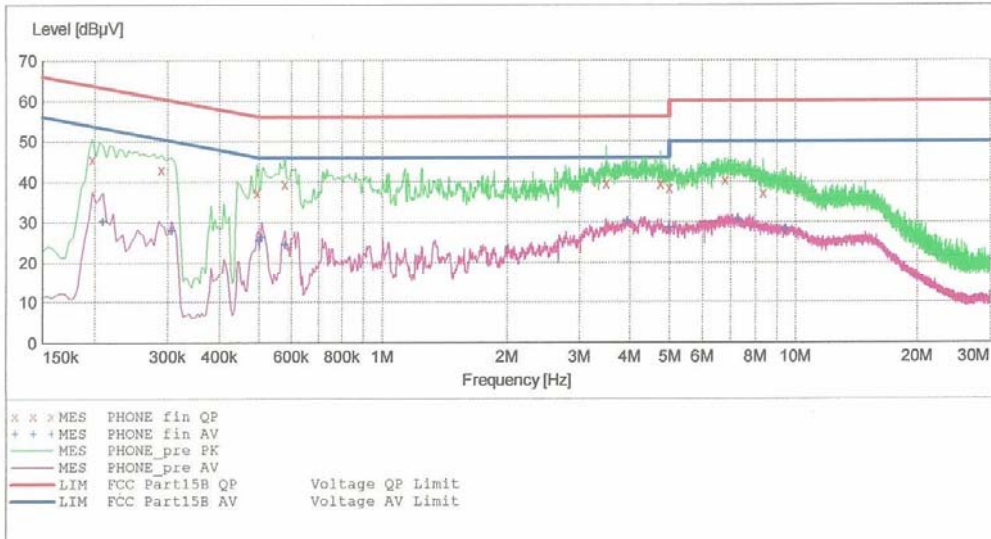
HCT

EMC

EUT: GT-S5270S
 Manufacturer: SAMSUNG
 Operating Condition: DATA MODE
 Test Site: SHIELD ROOM
 Operator: JH CHOI
 Test Specification: FCC PART15 CLASS B
 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"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.198010	45.60	10.3	64	18.1	---	---
0.290010	43.00	10.3	61	17.6	---	---
0.494010	37.30	10.3	56	18.8	---	---
0.580000	39.40	10.3	56	16.6	---	---
3.512000	39.60	10.6	56	16.4	---	---
4.768000	39.50	10.7	56	16.5	---	---
5.000000	38.40	10.7	56	17.6	---	---
6.804000	40.30	10.9	60	19.7	---	---
8.364000	37.20	11.0	60	22.8	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.210010	30.20	10.3	53	23.0	---	---
0.306010	27.90	10.3	50	22.1	---	---
0.500000	25.40	10.3	46	20.6	---	---
0.508000	26.20	10.3	46	19.8	---	---
0.580000	24.30	10.3	46	21.7	---	---
3.968000	30.20	10.6	46	15.8	---	---
5.000000	28.60	10.7	46	17.4	---	---
7.292000	30.70	11.0	50	19.3	---	---
9.500000	28.20	11.0	50	21.8	---	---

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

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

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

Operation Mode : Data Communication mode

Temperature : 22.1 °C

Humidity Level : 46.2 %

Test Date : January 12, 2012

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)			
31.9	17.36	V	1.0	11.09	0.95	40.0	29.4	10.6
80.5	21.31	H	1.2	8.47	1.52	40.0	31.3	8.7
199.5	25.19	V	1.0	9.45	2.46	43.5	37.1	6.4
300.2	22.52	V	1.0	13.42	3.05	46.0	39.0	7.0
529.5	17.05	H	1.0	18.64	4.12	46.0	39.8	6.2
720.0	15.37	H	1.5	21.48	4.85	46.0	41.7	4.3

※ NOTE:

1. Measurement above 1 GHz 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>
<u>Conducted Emission</u>				
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100584	2012.05.03
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ESH3-Z5	100282	2012.02.01
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ENV216	100073	2012.04.01
<input checked="" type="checkbox"/> Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.352	2012.08.01
<u>Radiated Emission</u>				
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	2012.05.26
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU26	100241	2012.08.02
<input type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9160	3125	2013.05.03
<input checked="" type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9160	3301	2012.09.13
<input type="checkbox"/> Antenna master	INNCO Systems	MA4000-EP	MA4000/283	-
<input type="checkbox"/> Turn Table	INNCO Systems	DT3000-3T	DT3000/69	-
<input checked="" type="checkbox"/> Antenna master	HD GmbH	MA240	240/520	-
<input type="checkbox"/> Antenna master controller	HD GmbH	HD100	100/637BJ:00	-
<input checked="" type="checkbox"/> Turn Table	HD GmbH	2090	9702/1224	-
<input checked="" type="checkbox"/> Power Amplifier	Rohde & Schwarz	SCU-18	10094	2012.09.19
<input type="checkbox"/> Communication Antenna	Schwarzbeck	USLP9142	9142-248	-
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	937	2013.10.17
<input type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA9120D	147	2012.09.23

7. CONCLUSION

The data collected shows that the **850/1900 GSM/GPRS Phone with Bluetooth, WLAN and EDGE Rx Only / Model: GT-S5270S, FCC ID: A3LGTS5270S** complies with §15.107 and §15.109 of the FCC rules.