

# MPE TEST REPORT

of

FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID/IC Certification: A3LEO-SB330 / 649E-EOSB330

Equipment Under Test : Wireless Speaker  
Model Name : EO-SB330  
Applicant : SAMSUNG ELECTRONICS CO., LTD.  
Manufacturer : SAMSUNG ELECTRONICS CO., LTD.  
Date of Test(s) : 2013.11.05 ~ 2013.12.09  
Date of Issue : 2013.12.10

In the configuration tested, the EUT complied with the standards specified above.

Tested By:



Date:

2013.12.10

Patrick Kang

Approved By:



Date:

2013.12.10

Feel Jeong

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## 1. General Information

### 1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

- Wireless Div. 3FL, 18-34, Sanbon-dong, Gunpo-si, Gyeonggi-do, Korea 435-040 (Lab)
- 400-2, Gomae-dong, Giheoung-gu, Yongin-si, Gyeonggi-do, Korea, 446-901 (Chamber)

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>.

Telephone : +82 31 428 5700

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### 1.2. Details of Applicant

Applicant : SAMSUNG ELECTRONICS CO., LTD.

Address : 129, Samsung-Ro, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, 433-742, Rep. of Korea

Contact Person : Lim, Yang-Hoon

Phone No. : +82 01 2412 1251

+82 31 301 7404

### 1.3. Description of EUT

<b>Kind of Product</b>	Wireless Speaker
<b>Model Name</b>	EO-SB330
<b>Power Supply</b>	DC 3.70 V
<b>Frequency Range</b>	2 402 MHz ~ 2 480 MHz
<b>Modulation Technique</b>	GFSK, $\pi/4$ DQPSK, 8DPSK
<b>Number of Channels</b>	79
<b>Antenna Type</b>	Internal type
<b>Antenna Gain</b>	1.49 dBi

### 1.4. Test report revision

Revision	Report number	Description
0	F690501/RF-RTL007163	Initial

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## 2. RF Exposure Evaluation

### 2.1. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

According to FCC 1.1310 : The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in §1.1307(b)

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength(V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time
(A) Limits for Occupational /Control Exposures				
300 – 1 500	--	--	F/300	6
1 500 – 100 000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300 – 1 500	--	--	F/1500	6
<b><u>1 500 – 100 000</u></b>	--	--	<b><u>1</u></b>	<b><u>30</u></b>

#### 2.1.1. Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where  $P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

R = distance between observation point and center of the radiator in cm

$P_d$  the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

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### 2.1.2. Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data  
 Test Mode : Normal Operation

### 2.1.3. Output Power into Antenna & RF Exposure Evaluation Distance

#### FHSS: GFSK

Channel	Channel Frequency (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Duty Cycle (%)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
Low	2 402	1.82	1.49	77.45	0.000 330	1
Middle	2 441	0.88	1.49	77.45	0.000 266	1
High	2 480	1.04	1.49	77.45	0.000 276	1

#### FHSS: $\pi/4$ DQPSK

Channel	Channel Frequency (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Duty Cycle (%)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
Low	2 402	-1.42	1.49	77.45	0.000 157	1
Middle	2 441	-2.28	1.49	77.45	0.000 128	1
High	2 480	-2.19	1.49	77.45	0.000 131	1

#### FHSS: 8DPSK

Channel	Channel Frequency (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Duty Cycle (%)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
Low	2 402	-1.41	1.49	77.45	0.000 157	1
Middle	2 441	-2.24	1.49	77.45	0.000 130	1
High	2 480	-2.15	1.49	77.45	0.000 132	1

Note :

- The power density Pd (5th column) at a distance of 20 cm calculated from the friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.

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