

**1. Order No. G-45-2018-02471**

**2. Client**

2.1 Name : Samsung Electronics Co., Ltd.

2.2 Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea

2.3 Date of Receipt : July 31, 2018

**3. Use of Report : Validation**

**4. Test Sample : Smart Speaker (Model Name: SM-V510)**

**5. Date of Test : September 12, 2018**

**6. Test Method Used : FCC Part 15 Subpart B, ANSI C 63.4:2014**

**7. Testing Environment : Temp. (Minimum 21.4 °C, Maximum 22.7 °C) ,**

Humidity (Minimum 45.0 % R.H., Maximum 49.0 % R.H.)

Atmospheric Pressure : (Minimum 100.7 kPa, Maximum 100.7 kPa)

**8. Test Results : Complied**

**9. Measurement Uncertainty : Refer to attachment**

The confidence level is about 95 %,  $k = 2$

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full.

Affirmation	Tested by	Technical Manager
	Name : Clark Lee (Signature)	Name : Paul Kang (Signature)

The above test report is the accredited test results by Korea Laboratory Accreditation Scheme, which signed the ILAC-MRA.

**September 20, 2018**

**Accredited by KOLAS Republic of KOREA**  
**SGS Korea Co., Ltd. Gunpo Laboratory**  
 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807

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## Revision History

Revision	Report Number	Description
0	F690501/RF-EMC003887(G)	Initial
1		
2		

## 1. General Information

### 1.1 Client Information

Applicant : Samsung Electronics Co., Ltd.  
 - Address of Applicant : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea

Manufacturer : Samsung Electronics Co., Ltd.  
 - Address of Manufacturer : 516229 China Guangdong Province Huizhou City Chenjiang Town Samsung Electronics Huizhou Co. Ltd

### 1.2 Test Laboratory

Name and Address : SGS Korea Co., Ltd.  
 - Giheung 1 Laboratory : 35, Giheungdanji-ro 121beon-gil, Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea  
 - Giheung 2 Laboratory : 23, Giheungdanji-ro 24beon-gil, Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea  
 - Gunpo Laboratory : 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, 15807, Republic of Korea.

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 Fax : + 82 31 427 2370  
 e-mail : [paul.kang@sgs.com](mailto:paul.kang@sgs.com)

### 1.3 General Information of E.U.T.

Classification	Description
Product Name	Smart Speaker
Model Name	SM-V510
Serial No.	-
EMI Classification	Class B
Internal Clock Frequency	26 MHz
Test Voltage	120 V~, 60 Hz
Rated Voltage	110 – 220 V~, 50/60 Hz, 2.83 A
Operating Temperature	(-)20 °C ~ (+)60 °C
H/W Version	REV.01
S/W Version	V510.001

### 1.4 Operating Modes and Conditions

Operating Mode	Percussor
1) Standby	Standby Status

### 1.5 Auxiliary Equipments

Description	Model	Serial No.	Manufacturer
-	-	-	-

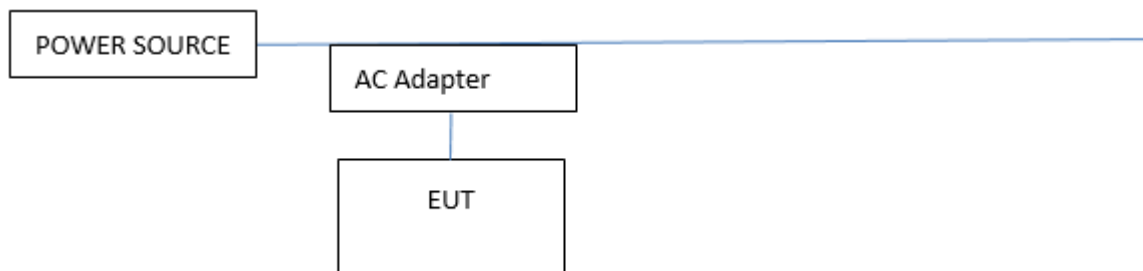
### 1.6 Cable List

Start		END		Cable Spec.		Used core
Name	I/O Port	Name	I/O Port	Length	Shield	
AC Adapter	AC IN	POWER SOURCE	AC OUT	-	-	-
EUT	Port IN	AC Adapter	Port OUT	1.8	Shield	No.

### 1.7 System Configurations

Description	Model	Serial No.	Manufacturer
Lux Amp Board	40-LUXAMP-C0C1G-SA	-	-
Lux Amp Board2	40-LUXAMP-CNC1G-SA	-	-
Microphone Board	SM-V510_SUB_MIC_0.4	-	-
Main Board	SM-V510_MAIN_0.6	-	-
Sub Amp Board	SM-V510_SUB_REV0.5_AMP	-	-
Power Board	-	-	-
AC Adapter	-	-	-

### 1.8 Test System Layout



### 1.9 Modifications

- There was no modified item during the test.

### 1.10 Applicable Standards for Testing

Standards	Status	Deviation
FCC Part 15 Subpart B	Applicable	No Deviation

### 1.11 Summary of Test Results

Test Item	Standards	Results
Conducted Emission	ANSI C 63.4:2014 FCC Part 15 Subpart B	Complied
Radiated Emission	ANSI C 63.4:2014 FCC Part 15 Subpart B	Complied

Note : Test methods of all test items are performed according to the basic standards in this table.

## EMISSION

### 2.1 Test Results

Test Items	Basic Standards	Test Results
Conducted Emission	ANSI C 63.4:2014 FCC Part 15 Subpart B	<b>Complied</b>
Radiated Emission	ANSI C 63.4:2014, FCC Part 15 Subpart B	<b>Complied</b>

### 2.2 Test Method and Limits

#### 2.2.1 Test Method

Test Items	Measuring Frequency Range	RBW	Measuring Distance
Conducted Emission	0.15 MHz ~ 30 MHz	9 kHz	-
Radiated Emission	30 MHz ~ 1 GHz	120 kHz	10 m&3 m
	Above 1 GHz	1 MHz	3 m

#### 2.2.2 Test Limits

##### -Conducted Emission Limits at Mains Port

Frequency Range	Limits( dB( $\mu$ V) )		Class
	Quasi-peak	Average	
0.15 MHz ~ 0.5 MHz	79	66	<b>Class A</b>
0.5 MHz ~ 30 MHz	73	60	
0.15 MHz ~ 0.5 MHz	66 to 56	56 to 46	<b>Class B</b>
0.5 MHz ~ 5 MHz	56	46	
5 MHz ~ 30 MHz	60	50	

Note : The lower limit shall apply at the transition frequencies. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

##### -Radiated Emission Limits below 1 GHz

Frequency Range	Limits( dB( $\mu$ V/m) )		Class
	Quasi-peak		
30 MHz ~ 88 MHz	39.1		<b>Class A</b>
88 MHz ~ 216 MHz	43.5		
216 MHz ~ 960 MHz	46.4		
960 MHz ~ 1 GHz	49.5		
30 MHz ~ 88 MHz	40		<b>Class B</b>
88 MHz ~ 216 MHz	43.5		
216 MHz ~ 960 MHz	46		
960 MHz ~ 1 GHz	54		

##### -Radiated Emission Limits above 1 GHz (3m method)

Frequency Range	Limits( dB( $\mu$ V/m) )		Class
	Average	Peak	
Above 1 GHz	59.5	79.5	<b>Class A</b>
Above 1 GHz	54	74	<b>Class B</b>





## 2.4 Radiated Emission

The initial preliminary exploratory scans were performed at 3 m distance over the measuring frequency range(30 MHz to 1 GHz) using a max hold mode incorporating a Peak detector and using the software of EP5RE(Version Ver3.10.20 from TOYO). The final test data was measured using a Quasi-Peak detector below 1 GHz at 3 m distance. Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency.

### 2.4.1 Test Equipments

Description	Model No.	Manufacturer	S/N	Cal Due. Date
Signal Conditioning Unit	SCU 18	R & S	10117	2019.08.07
Test Receiver	ESU26	R & S	100109	2019.02.07
Bilog Antenna (RRA)	VULB9163	SCHWARZBECK	01126	2020.02.13
Amplifier	8447F	HP	2944A03909	2019.08.07

Note : Only the calibration period of Antennas is 2 years but the period of every equipment is 1 year.

### 2.4.2 Test Site

3m SEMI-ANECHOIC CHAMBER Gunpo Laboratory (Below 1 GHz)

### 2.4.3 Environment Conditions and data

#### - Below 1 GHz

Temperature : (minimum 21.4, maximum 22.1) °C

Humidity : (minimum 45.0, maximum 47.0) %R.H.

Atmospheric Pressure : (100.7) kPa

Test Date : September 12, 2018

#### - Below 1 GHz (3 m method)

Freq. (MHz)	Level (dB(μV))	Pol. (H/V)	A (°)	H (cm)	AF (dB/m)	CL (dB)	Amp. (dB)	Result (dB(μV/m))	Limit (dB(μV/m))	Margin (dB)
48.47	32.00	H	63	100	13.48	1.25	27.80	18.93	40.00	21.07
57.12	33.30	V	237	100	12.44	1.34	27.79	19.29	40.00	20.71
175.18	43.30	V	175	100	8.97	2.27	27.45	27.09	43.50	16.41
224.24	39.60	H	193	100	11.89	2.54	27.25	26.78	46.00	19.22
402.44	37.10	H	193	100	16.47	3.43	27.92	29.08	46.00	16.92
414.73	38.80	V	175	100	16.74	3.44	28.02	30.96	46.00	15.04

Measurement Uncertainty (Horizontal) : 5.31 dB (The confidential level is about 95%, k=2)

Measurement Uncertainty (Vertical) : 5.73 dB (The confidential level is about 95%, k=2)

Note 1: • AF = Antenna Factor                      • CL = Cable Loss                      • Amp = Amplifier Gain  
           • POL H = Horizontal                    • POL V = Vertical                    • A : Angle  
           • H : Height                                • Margin = Limit – Result            • Result = Level + AF + CL – Amp

## See Appendix B (Radiated Emission)

2.5 Photographs of Conducted Emission

[Front]



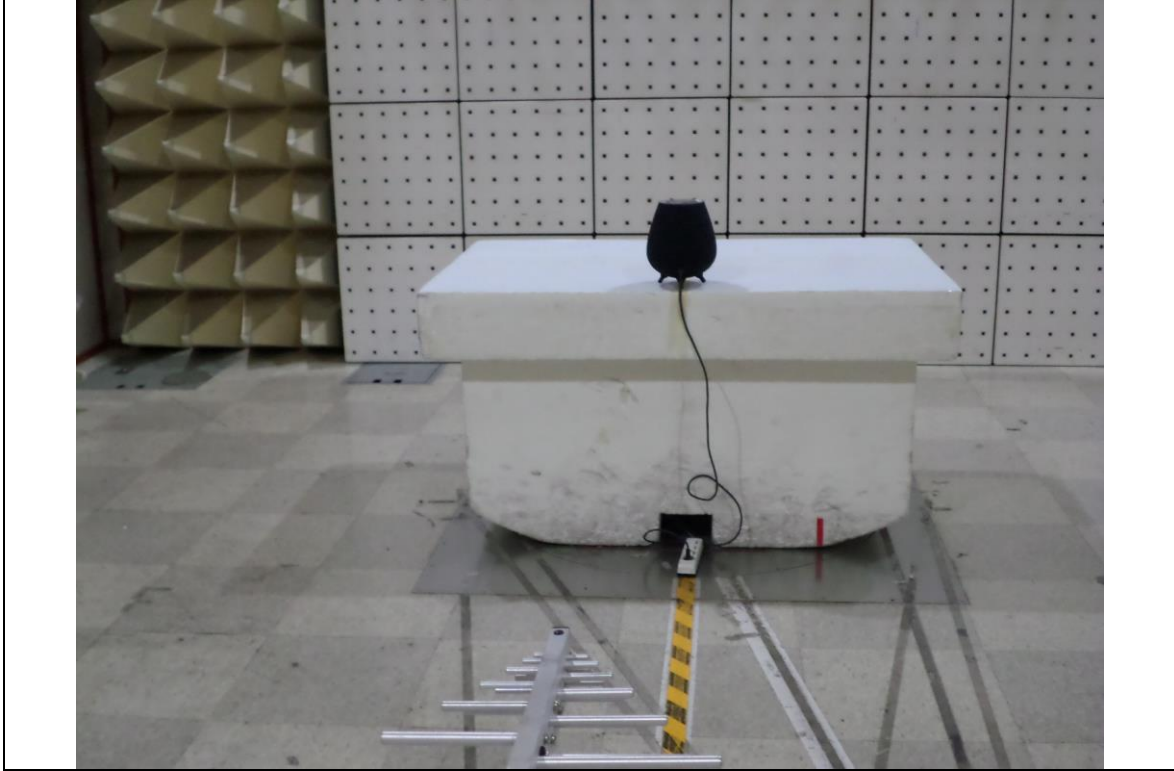
[Rear]



2.6 Photographs of Radiated Emission

Below 1 GHz

[Front]



[Rear]



### 3. Photographs of EUT

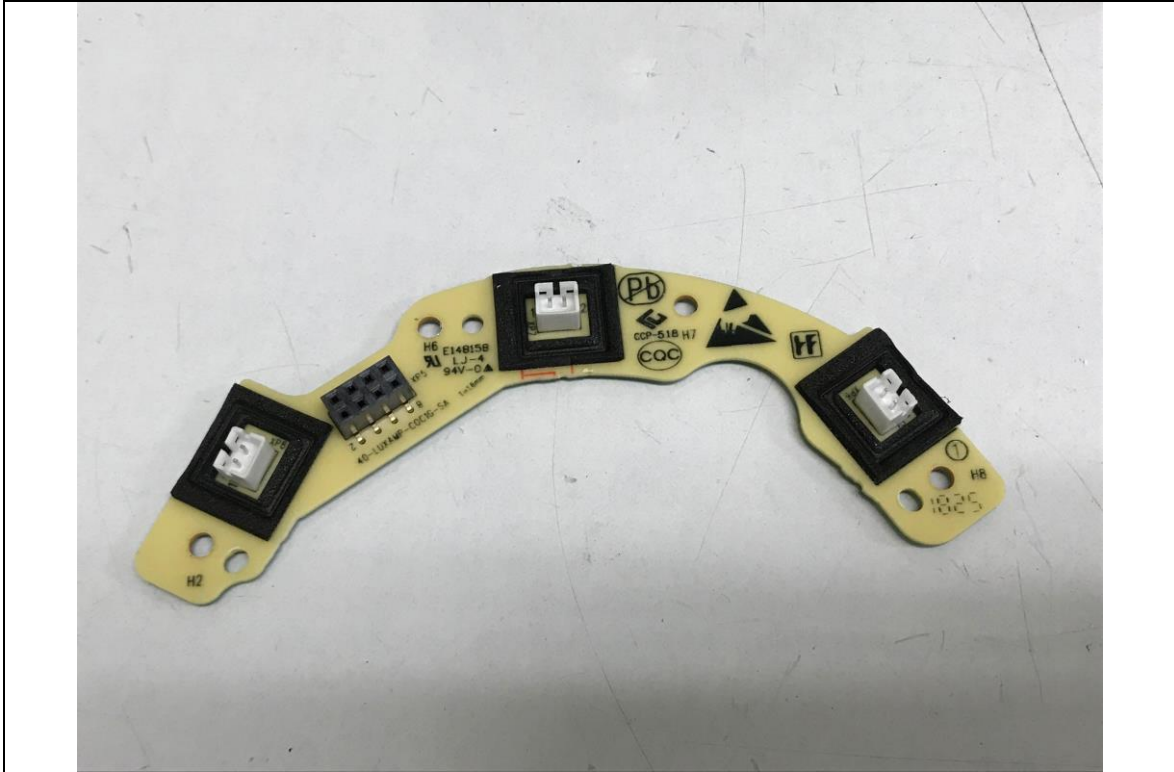
[Front View of EUT]



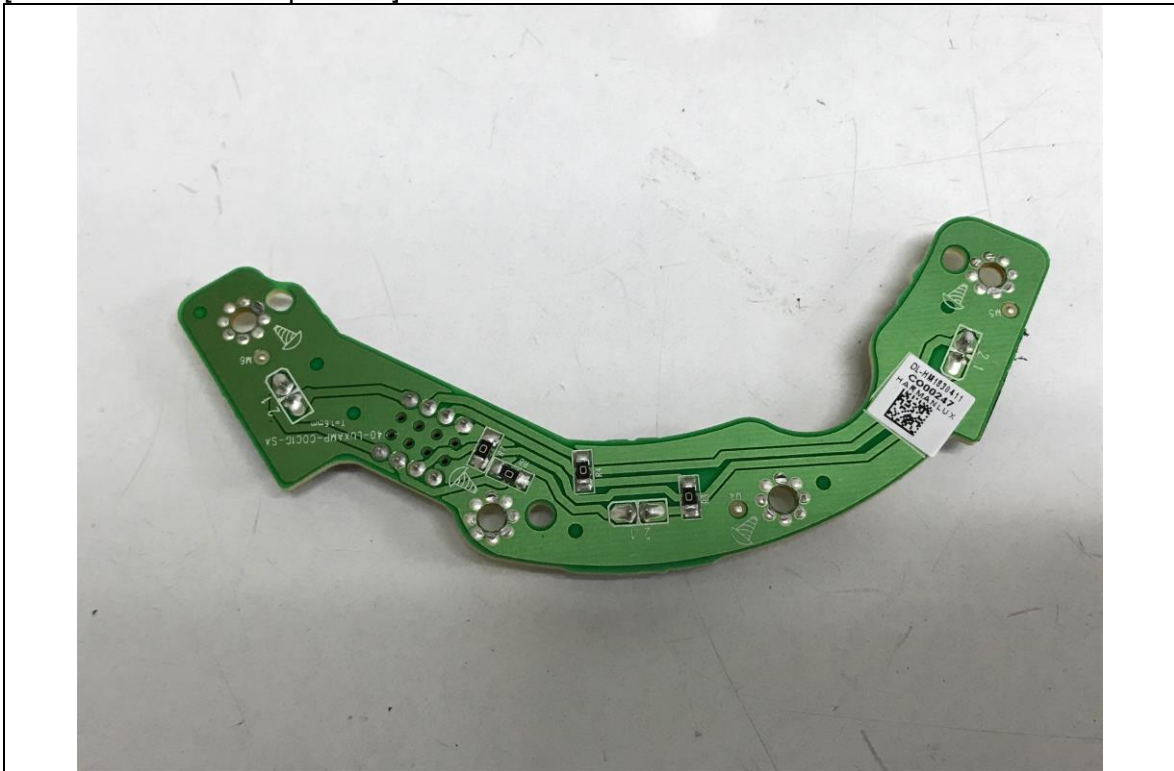
[Rear View of EUT]



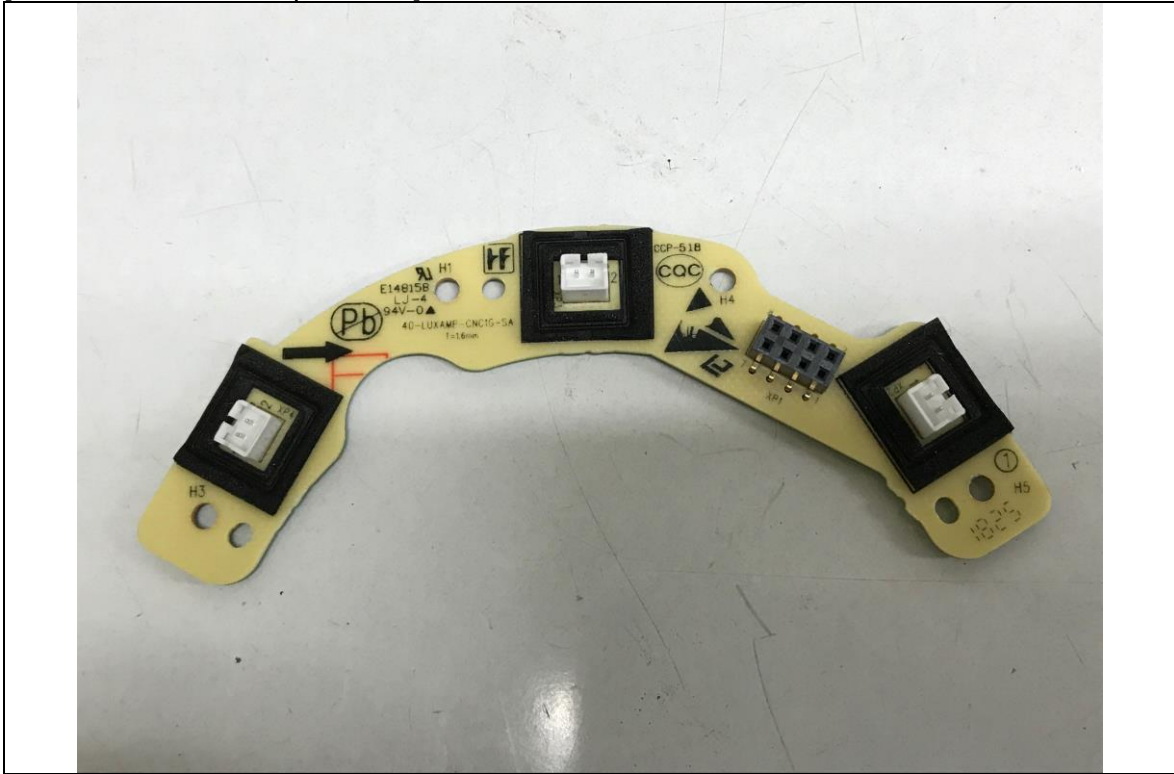
[Front View of Lux Amp Board]



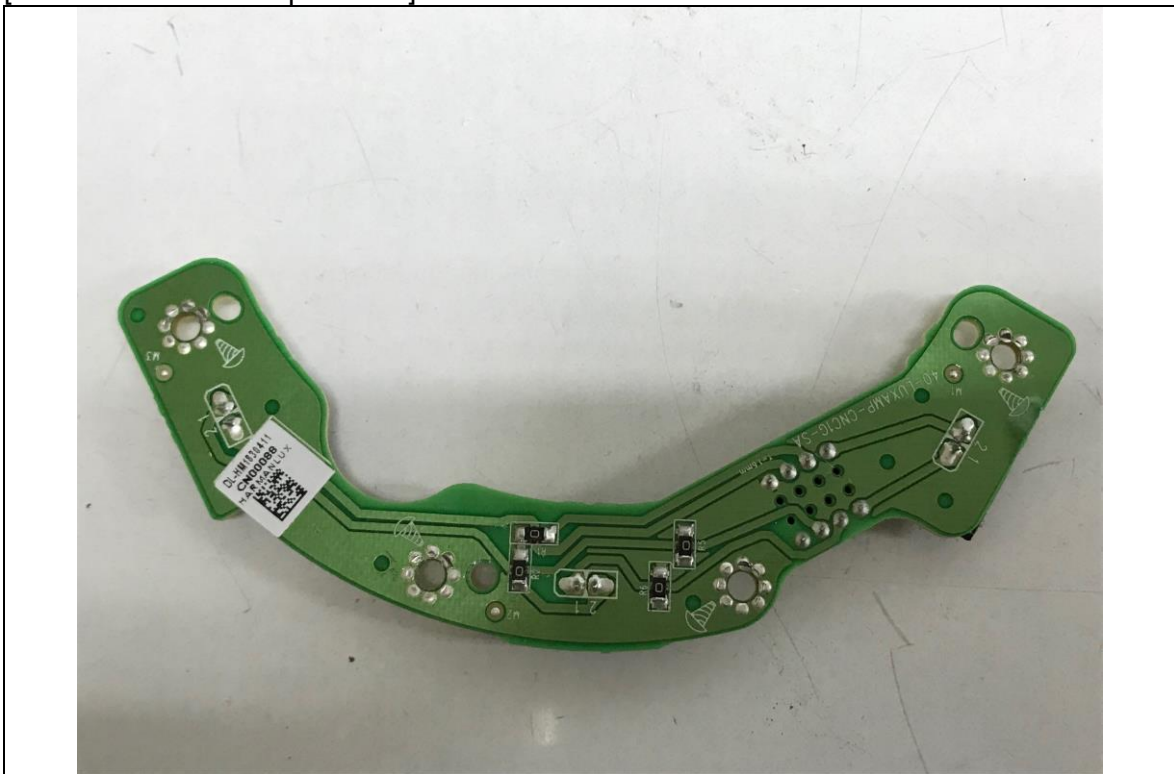
[Rear View of Lux Amp Board]



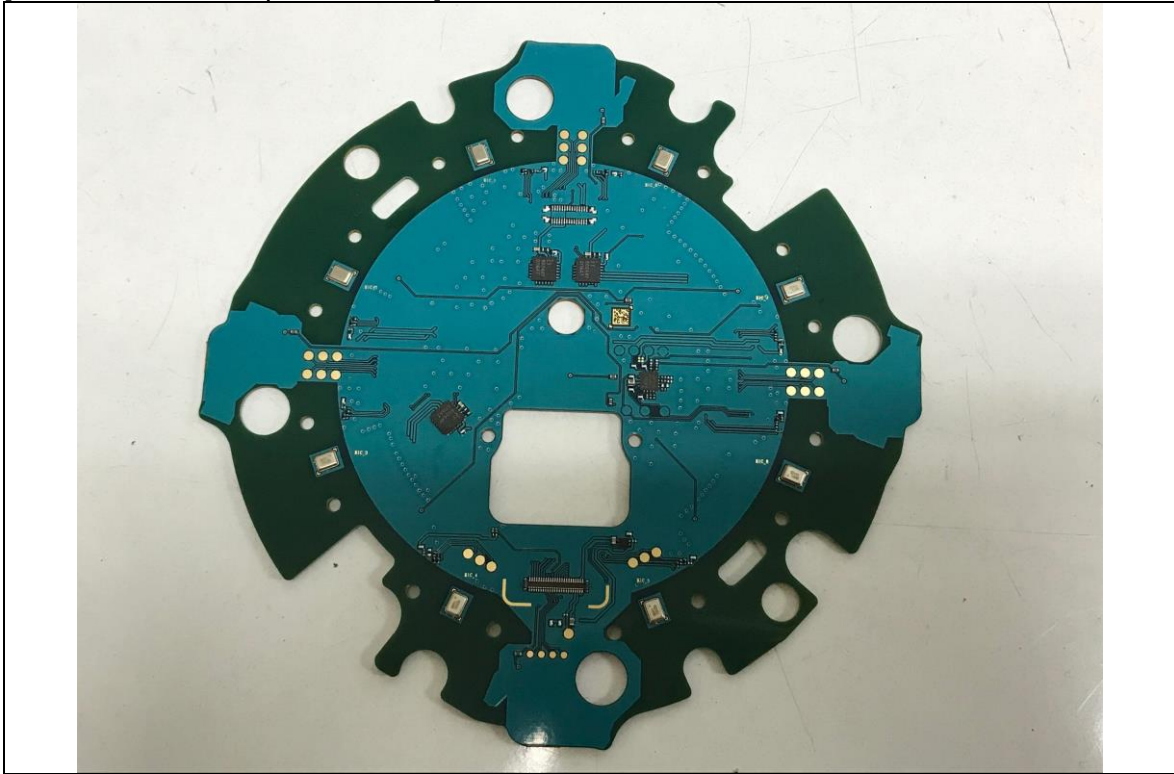
[Front View of Lux Amp Board2]



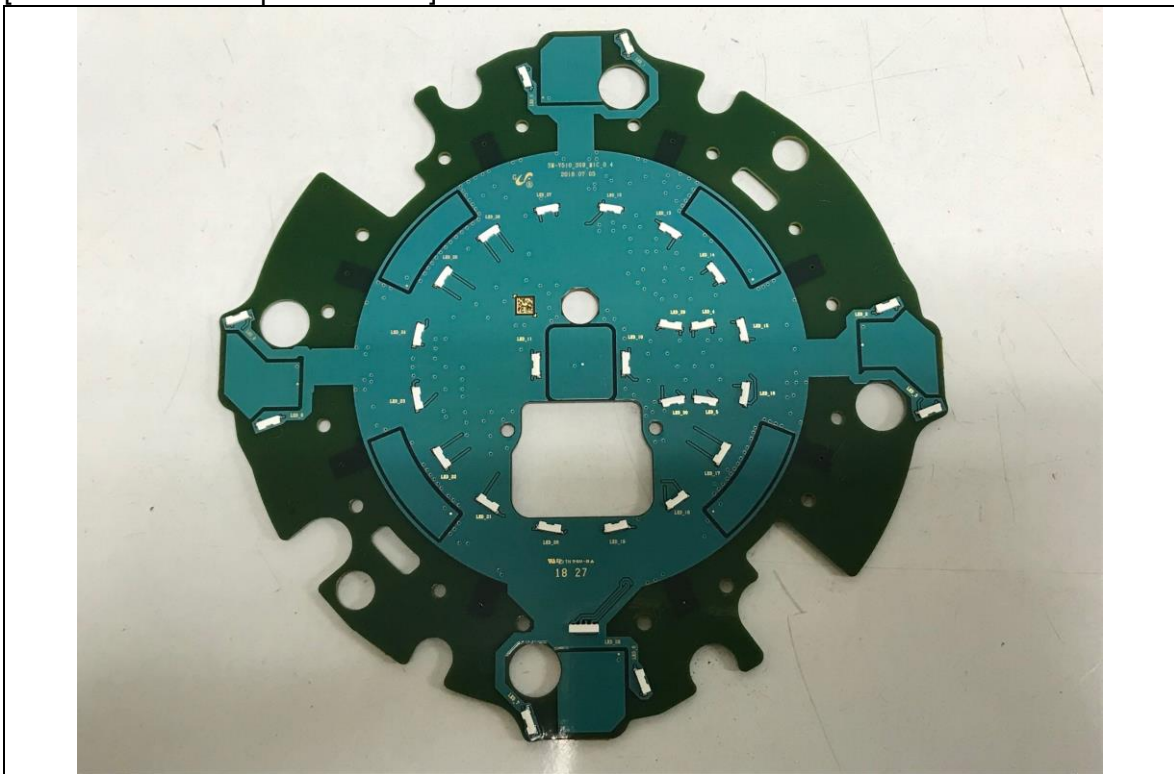
[Rear View of Lux Amp Board2]



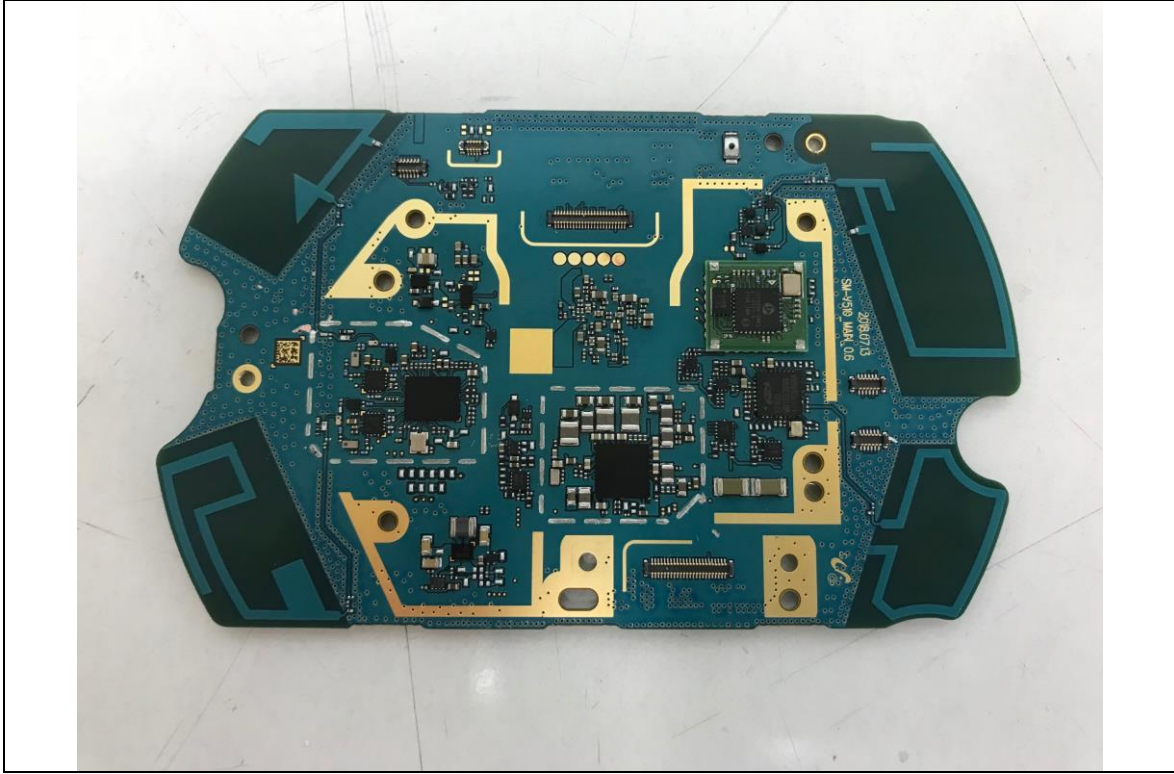
[Front View of Microphone Board]



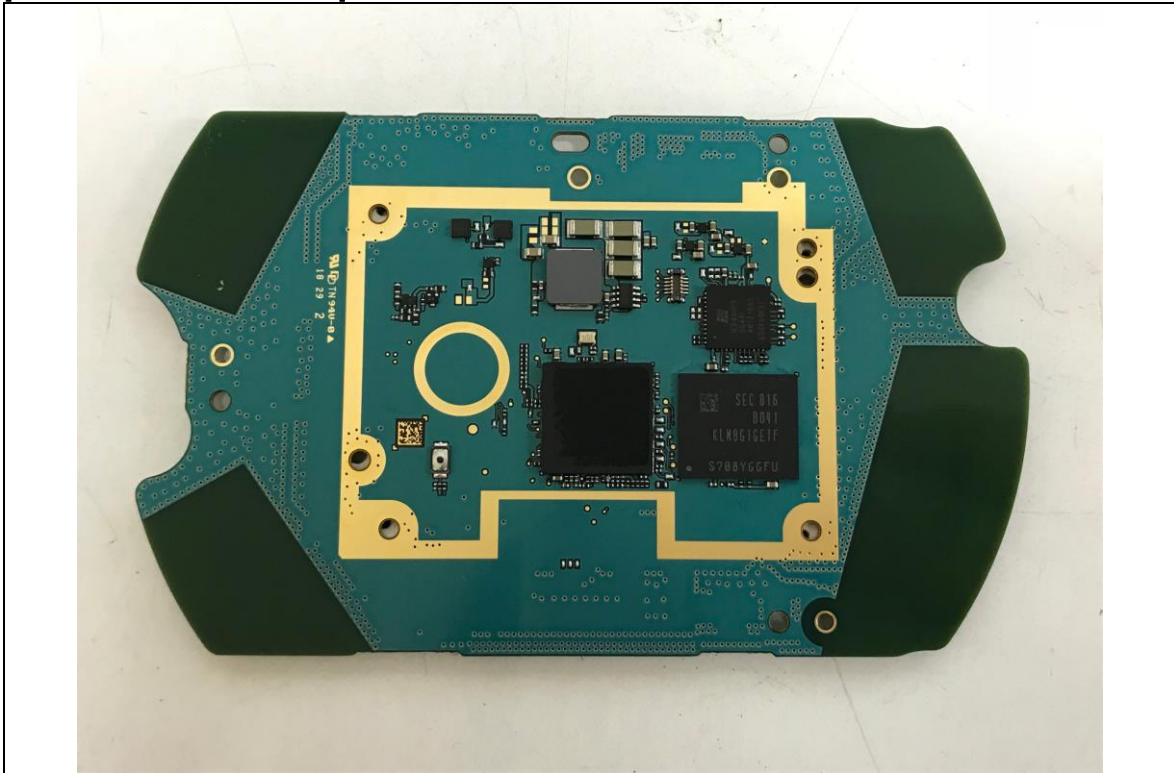
[Rear View of Microphone Board]



[Front View of Main Board]

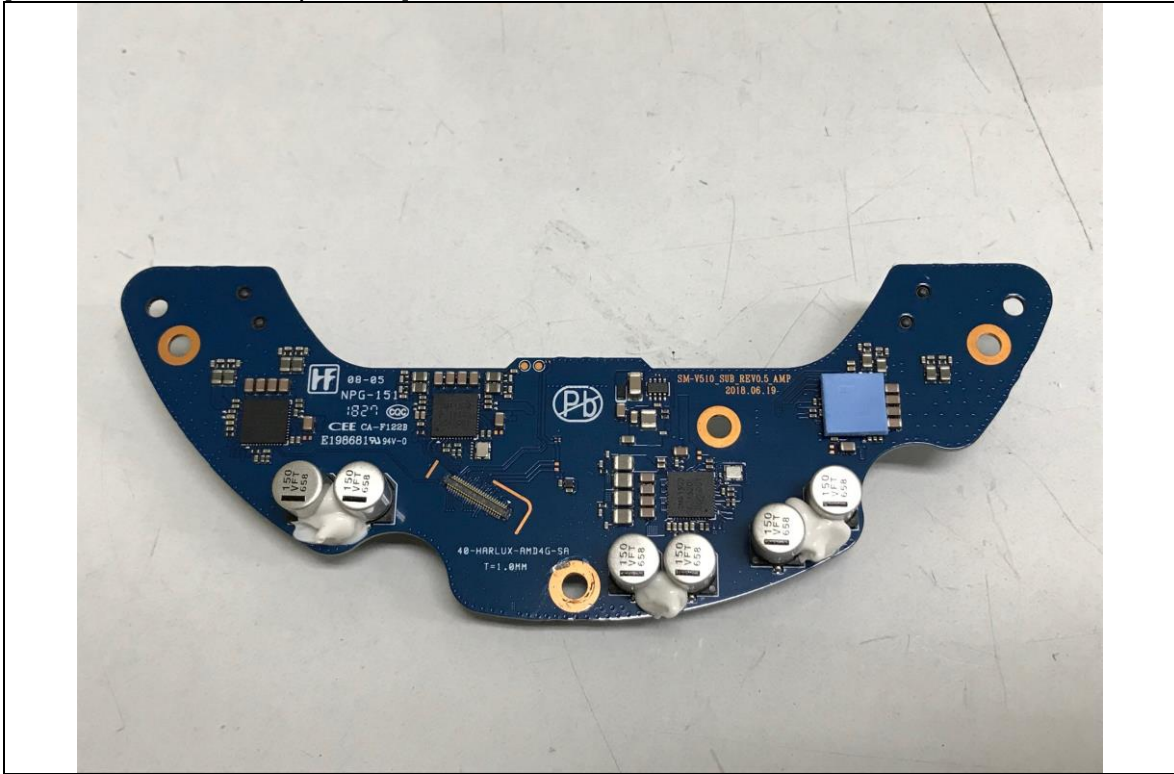


[Rear View of Main Board]

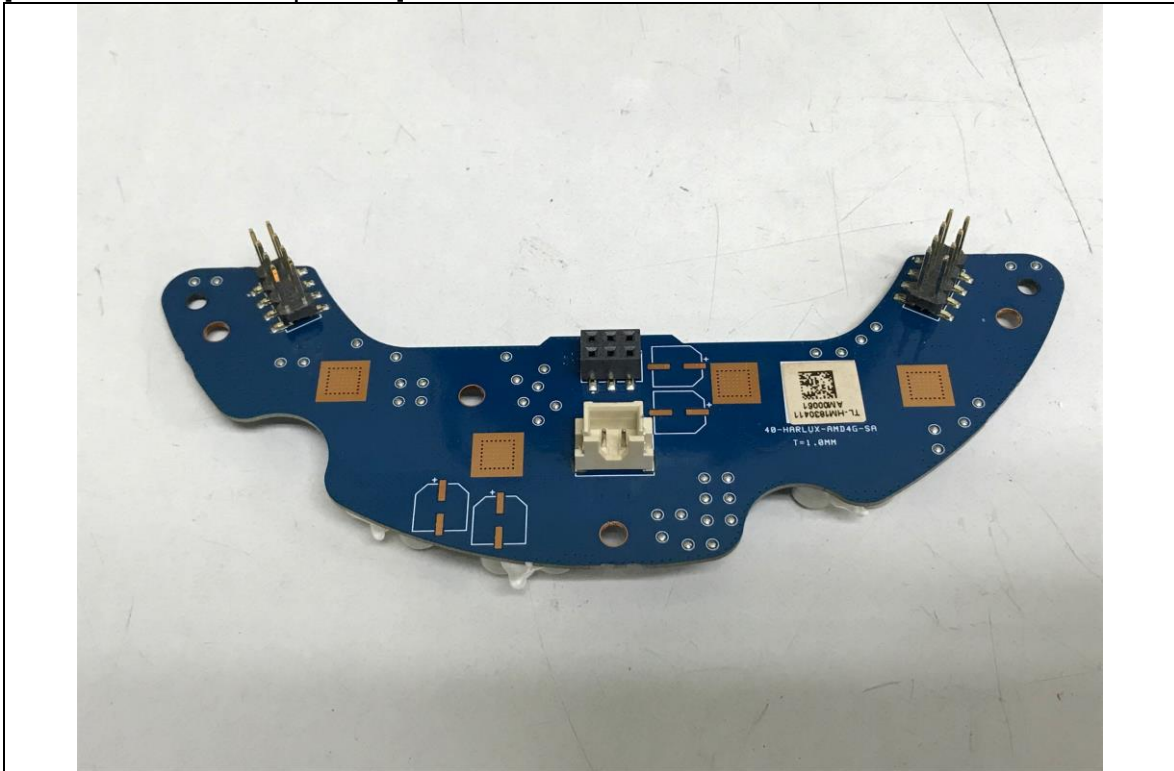




[Front View of Sub Amp Board]



[Rear View of Sub Amp Board]



[Front View of Power Board]



[Rear View of Power Board]



[View of AC Adapter]

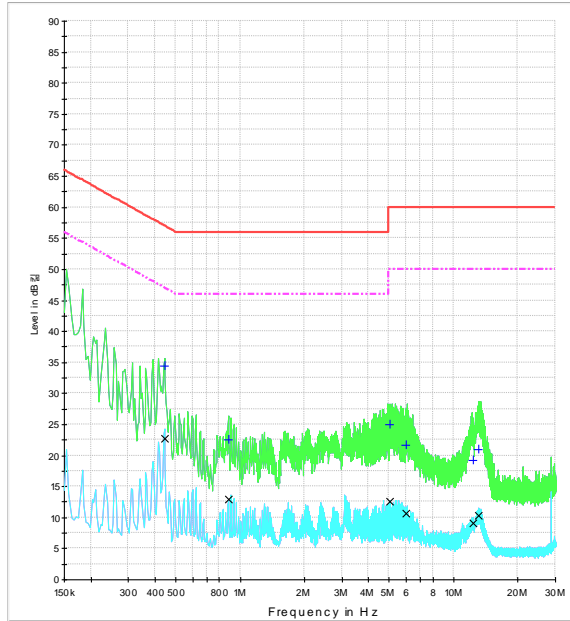


[ Inside of EUT ]

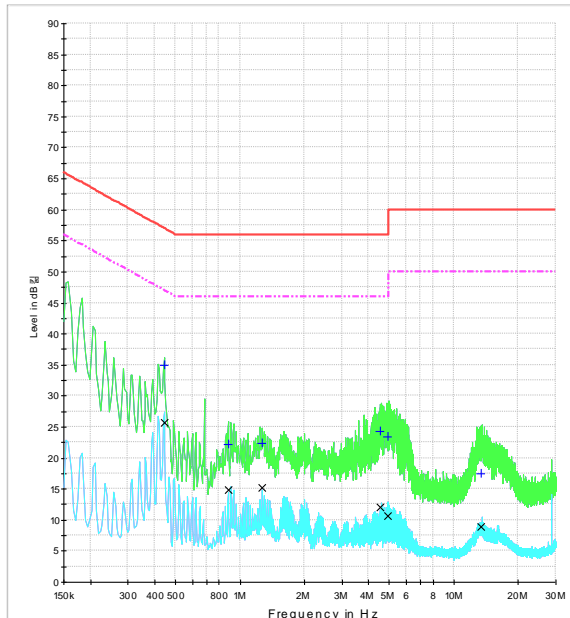


Appendix A: Conducted Emission

<L1>

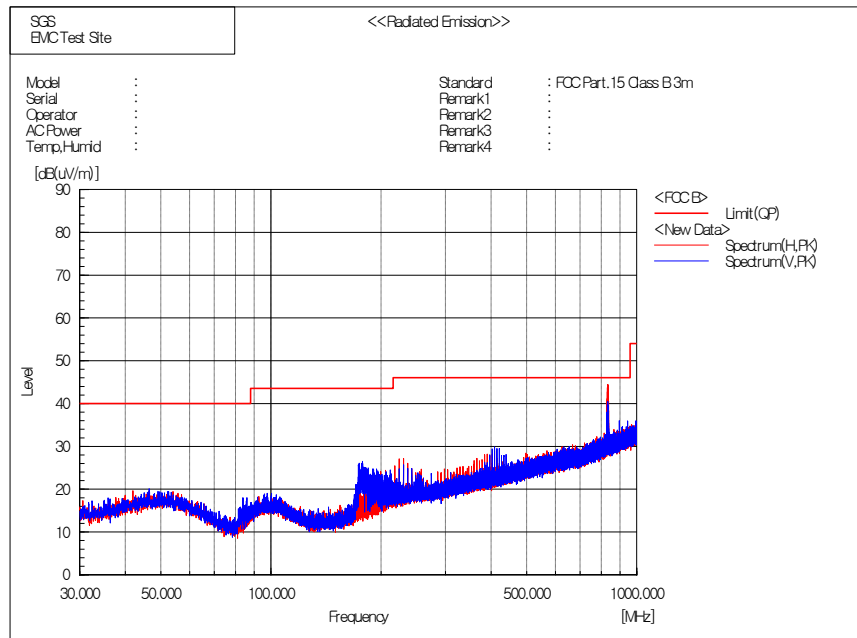


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## Appendix B: Radiated Emission

### Below 1 GHz



- End of the Report -