STC Test Report

Date : 2012-12-11

No. : MH187557

Applicant (SZN008):	Philips Consumer Lifestyle 5/F, Philips Electronics Building 5 Science Park East Avenue, Hong Kong Science Park, Shatin, New Territories, Hong Kong
Manufacturer:	Philips Consumer Lifestyle 5/F, Philips Electronics Building 5 Science Park East Avenue, Hong Kong Science Park, Shatin, New Territories, Hong Kong
Description of Sample(s):	Product: portable speaker Brand Name: PHILIPS Model Number: SBT30/37 FCC ID: BOUSBT30
Date Sample(s) Received:	2012-11-26
Date Tested:	2012-11-28
Investigation Requested:	Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2011 and ANSI C63.4: 2009 for FCC Certification.
Conclusion(s):	The submitted product COMPLIED with the customer requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.
Remark(s):	For additional model(s) details, see page 3

Dr. LEE Kam Chuen
Authorized Signatory
ElectroMagnetic Compatibility Department
For and on behalf of
The Hong Kong Standards and Testing Centre Ltd.

10 Dai Wang Street, Taipo Industrial Estate, N.T., Hong Kong
Tel: (852) 2666 1888 Fax: (852) 2664 4353 E-mail: hkstc@hkstc.org Homepage: www.stc-group.org

General Details

Test Laboratory

The Hong Kong Standards and Testing Centre Ltd.
EMC Laboratory
10 Dai Wang Street, Taipo Industrial Estate
New Territories, Hong Kong

Equipment Under Test [EUT]
Description of Sample(s)

Product:	portable speaker
Manufacturer:	Philips Consumer Lifestyle
Factory:	Shenzhen 3nod Electronics Co., Ltd 3NOD High-Tech Park 15# Zhongfu Road Tangxiayong Village, Industrial Zone Songgang Town, Baoan District, Shenzhen City, China
Brand Name:	PHILIPS
Model Number:	SBT30/37
Additional Model Number:	SBT30KHA/37, SBT30ORG/37, SBT30BLU/37, SBT30GRN/37, SBT30PNK/37
Input Voltage:	USB Input: 5.0Vd.c. rechargeable battery3.7Vx1Pc model: PL503035 (500mA) Additional model: 503035-500mAh-1C-1S (500mA)

Description of EUT Operation

The Equipment Under Test (EUT) is a Philips Consumer Lifestyle, portable speaker with bluetooth 2.1+EDR. modulation by IC; and type is GFSK, π/4 DQPSK , 8DPSK modulation.

Date of Order

2012-11-26

Submitted Sample(s):

1 Sample

Test Duration

2012-11-28

Country of Origin

China

Technical Details

Investigations Requested

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2011 Regulations and ANSI C63.4:2009 for FCC Certification.

Test Standards and Results Summary Tables

EMISSION Results Summary						
Test Condition	Test Requirement	Test Method	Class / Severity	Test Result		
				Pass	Fail	N/A
Radiated Spurious Emissions	FCC 47CFR 15.209	ANSI C63.4:2009	N/A	☒	☐	☐

Note: N/A - Not Applicable

Test Results

Emission

Radiated Emissions

Test Requirement:	FCC 47CFR 15.209
Test Method:	ANSI C63.4:2009
Test Date:	2012-11-28
Ambient Temperature:	23 °C
Relative Humidity:	57 %
Atmospheric Pressure (kPa):	101
Mode of Operation:	Bluetooth mode (Tx mode) with charge

Test Method:

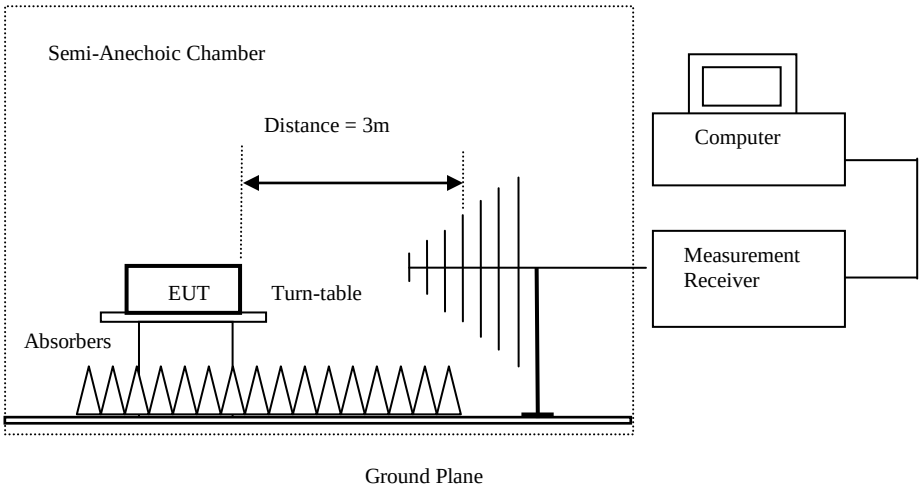
The sample was placed 0.8m above the ground plane of semi-anechoic Chamber*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, onsidered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

* Semi-anechoic chamber located on the G/F of "The Hong Kong Standards and Testing Centre Ltd." with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756.

Spectrum Analyzer Setting:

Above 1GHz – RBW = 1 MHz, VBW= 3MHz, Detector = Peak / Average,
Below 1GHz to 30MHz – RBW = 100kHz, VBW = 300kHz Detector = Quasi-Peak,
Below 30MHz to 9kHz – RBW = 10kHz, VBW = 30kHz Detector = Quasi-Peak,
Sweep = Auto, Span = Fully capture the emissions being measured,
Trace = Max. hold

Test Setup:



Absorbers placed on top of the ground plane are for measurements above 1000MHz only.

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range	Quasi-Peak Limits
[MHz]	[μV/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Result of Tx Mode (2402.0 MHz) (Above 1GHz): Pass (Type of Modulation: GFSK)

Field Strength of Harmonic Emissions PeakValue						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m dBμV/m	Margin dBμV/m	E-Field Polarity
4804.0	5.8	41.5	47.3	74.0	26.7	Horizontal
4804.0	4.3	41.5	45.8	74.0	28.2	Vertical
7206.0	2.2	48.8	51.0	74.0	23.0	Horizontal
7206.0	1.7	48.8	50.8	74.0	23.2	Vertical
Field Strength of Harmonic Emissions AverageValue						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m dBμV/m	Margin dBμV/m	E-Field Polarity
4804.0	-14.2	41.5	27.3	54.0	26.7	Horizontal
4804.0	-15.7	41.5	25.8	54.0	28.2	Vertical
7206.0	-17.8	48.8	31.0	54.0	23.0	Horizontal
7206.0	-18.3	48.8	30.5	54.0	23.5	Vertical

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range	Quasi-Peak Limits
[MHz]	[μV/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Result of Tx Mode (2441.0 MHz) (Above 1GHz): Pass (Type of Modulation: GFSK)

Field Strength of Harmonic Emissions PeakValue						
Frequency MHz	**Measured Level @3m dBμV**	**Correction Factor dB/m**	**Field Strength dBμV/m**	**Limit @3m dBμV/m**	**Margin dBμV/m**	**E-Field Polarity**
4882.0	**13.3**	**41.4**	**54.7**	**74.0**	**19.3**	**Horizontal**
4882.0	**9.7**	**41.4**	**51.1**	**74.0**	**22.9**	**Vertical**
7323.0	**3.5**	**48.7**	**52.2**	**74.0**	**21.8**	**Horizontal**
7323.0	**2.9**	**48.7**	**51.6**	**74.0**	**22.4**	**Vertical**
Field Strength of Harmonic Emissions AverageValue						
Frequency MHz	**Measured Level @3m dBμV**	**Correction Factor dB/m**	**Field Strength dBμV/m**	**Limit @3m dBμV/m**	**Margin dBμV/m**	**E-Field Polarity**
4882.0	**-6.7**	**41.4**	**34.7**	**54.0**	**19.3**	**Horizontal**
4882.0	**-10.3**	**41.4**	**31.1**	**54.0**	**22.9**	**Vertical**
7323.0	**-16.5**	**48.7**	**32.2**	**54.0**	**21.8**	**Horizontal**
7323.0	**-17.1**	**48.7**	**31.6**	**54.0**	**22.4**	**Vertical**

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range	Quasi-Peak Limits
[MHz]	[μV/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Result of Tx Mode (2480.0 MHz) (Above 1GHz): Pass (Type of Modulation: GFSK)

Field Strength of Harmonic Emissions PeakValue						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m dBμV/m	Margin dBμV/m	E-Field Polarity
4960.0	15.0	41.4	56.4	74.0	17.6	Horizontal
4960.0	10.8	41.4	52.2	74.0	21.8	Vertical
7440.0	5.9	48.6	54.5	74.0	19.5	Horizontal
7440.0	4.8	48.6	53.4	74.0	20.6	Vertical
Field Strength of Harmonic Emissions AverageValue						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m dBμV/m	Margin dBμV/m	E-Field Polarity
4960.0	-5.0	41.4	36.4	54.0	17.6	Horizontal
4960.0	-9.2	41.4	32.2	54.0	21.8	Vertical
7440.0	-14.1	48.6	34.5	54.0	19.5	Horizontal
7440.0	-15.2	48.6	33.4	54.0	20.6	Vertical

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range	Quasi-Peak Limits
[MHz]	[μV/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Result of Tx Mode (2402.0 MHz) (Above 1GHz): Pass (Type of Modulation: π/4 DQPSK)

Field Strength of Harmonic Emissions PeakValue						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m dBμV/m	Margin dBμV/m	E-Field Polarity
4804.0	6.0	41.5	47.5	74.0	26.5	Horizontal
4804.0	4.1	41.5	45.6	74.0	28.4	Vertical
7206.0	2.5	48.8	51.3	74.0	22.7	Horizontal
7206.0	1.7	48.8	50.5	74.0	23.5	Vertical
Field Strength of Harmonic Emissions AverageValue						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m dBμV/m	Margin dBμV/m	E-Field Polarity
4804.0	-14.0	41.5	27.5	54.0	26.5	Horizontal
4804.0	-15.9	41.5	25.6	54.0	28.4	Vertical
7206.0	-17.5	48.8	31.3	54.0	22.7	Horizontal
7206.0	-18.3	48.8	30.5	54.0	23.5	Vertical

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range	Quasi-Peak Limits
[MHz]	[μV/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Result of Tx Mode (2441.0 MHz) (Above 1GHz): Pass (Type of Modulation: π/4 DQPSK)

Field Strength of Harmonic Emissions PeakValue						
Frequency	**Measured Level @3m**	**Correction Factor**	**Field Strength**	**Limit @3m**	**Margin**	**E-Field Polarity**
MHz	**dBμV**	**dB/m**	**dBμV/m**	**dBμV/m**	**dBμV/m**	
4882.0	**11.8**	**41.4**	**53.2**	**74.0**	**20.8**	**Horizontal**
4882.0	**11.0**	**41.4**	**52.4**	**74.0**	**21.6**	**Vertical**
7323.0	**4.0**	**48.7**	**52.7**	**74.0**	**21.3**	**Horizontal**
7323.0	**3.1**	**48.7**	**51.8**	**74.0**	**22.2**	**Vertical**
Field Strength of Harmonic Emissions AverageValue						
Frequency	**Measured Level @3m**	**Correction Factor**	**Field Strength**	**Limit @3m**	**Margin**	**E-Field Polarity**
MHz	**dBμV**	**dB/m**	**dBμV/m**	**dBμV/m**	**dBμV/m**	
4882.0	**-8.2**	**41.4**	**33.2**	**54.0**	**20.8**	**Horizontal**
4882.0	**-9.0**	**41.4**	**32.4**	**54.0**	**21.6**	**Vertical**
7323.0	**-16.0**	**48.7**	**32.7**	**54.0**	**21.3**	**Horizontal**
7323.0	**-16.9**	**48.7**	**31.8**	**54.0**	**22.2**	**Vertical**

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range	Quasi-Peak Limits
[MHz]	[μV/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Result of Tx Mode (2480.0 MHz) (Above 1GHz): Pass (Type of Modulation: π/4 DQPSK)

Field Strength of Harmonic Emissions PeakValue						
Frequency	**Measured Level @3m**	**Correction Factor**	**Field Strength**	**Limit @3m**	**Margin**	**E-Field Polarity**
MHz	**dBμV**	**dB/m**	**dBμV/m**	**dBμV/m**	**dBμV/m**	
4960.0	**13.9**	**41.4**	**55.3**	**74.0**	**18.7**	**Horizontal**
4960.0	**11.7**	**41.4**	**53.1**	**74.0**	**20.9**	**Vertical**
7440.0	**4.3**	**48.6**	**52.9**	**74.0**	**21.1**	**Horizontal**
7440.0	**3.5**	**48.6**	**52.1**	**74.0**	**21.9**	**Vertical**
Field Strength of Harmonic Emissions AverageValue						
Frequency	**Measured Level @3m**	**Correction Factor**	**Field Strength**	**Limit @3m**	**Margin**	**E-Field Polarity**
MHz	**dBμV**	**dB/m**	**dBμV/m**	**dBμV/m**	**dBμV/m**	
4960.0	**-8.1**	**41.4**	**33.3**	**54.0**	**20.7**	**Horizontal**
4960.0	**-8.3**	**41.4**	**33.1**	**54.0**	**20.9**	**Vertical**
7440.0	**-15.7**	**48.6**	**32.9**	**54.0**	**21.1**	**Horizontal**
7440.0	**-16.5**	**48.6**	**32.1**	**54.0**	**21.9**	**Vertical**

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range	Quasi-Peak Limits
[MHz]	[μV/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Result of Tx Mode (2402.0 MHz) (Above 1GHz): Pass (Type of Modulation: 8DPSK)

Field Strength of Harmonic Emissions PeakValue						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m dBμV/m	Margin dBμV/m	E-Field Polarity
4804.0	7.0	41.5	48.5	74.0	25.5	Horizontal
4804.0	3.1	41.5	44.6	74.0	29.4	Vertical
7206.0	3.5	48.8	52.3	74.0	21.7	Horizontal
7206.0	2.6	48.8	51.4	74.0	22.6	Vertical
Field Strength of Harmonic Emissions AverageValue						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m dBμV/m	Margin dBμV/m	E-Field Polarity
4804.0	-13.0	41.5	28.5	54.0	25.5	Horizontal
4804.0	-16.9	41.5	24.6	54.0	29.4	Vertical
7206.0	-16.5	48.8	32.3	54.0	21.7	Horizontal
7206.0	-17.4	48.8	31.4	54.0	22.6	Vertical

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range	Quasi-Peak Limits
[MHz]	[μV/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Result of Tx Mode (2441.0 MHz) (Above 1GHz): Pass(Type of Modulation: 8DPSK)

Field Strength of Harmonic Emissions PeakValue						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m dBμV/m	Margin dBμV/m	E-Field Polarity
4882.0	11.1	41.4	52.5	74.0	21.5	Horizontal
4882.0	11.3	41.4	52.7	74.0	21.3	Vertical
7323.0	2.9	48.7	51.6	74.0	22.4	Horizontal
7323.0	2.8	48.7	51.5	74.0	22.5	Vertical
Field Strength of Harmonic Emissions AverageValue						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m dBμV/m	Margin dBμV/m	E-Field Polarity
4882.0	-8.9	41.4	32.5	54.0	21.5	Horizontal
4882.0	-8.7	41.4	32.7	54.0	21.3	Vertical
7323.0	-17.1	48.7	31.6	54.0	22.4	Horizontal
7323.0	-17.2	48.7	31.5	54.0	22.5	Vertical

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range	Quasi-Peak Limits
[MHz]	[μV/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Result of Tx Mode (2480.0 MHz) (Above 1GHz): Pass(Type of Modulation: 8DPSK)

Field Strength of Harmonic Emissions PeakValue						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m dBμV/m	Margin dBμV/m	E-Field Polarity
4960.0	11.9	41.4	53.3	74.0	20.7	Horizontal
4960.0	11.0	41.4	52.4	74.0	21.6	Vertical
7440.0	5.5	48.6	54.1	74.0	19.9	Horizontal
7440.0	4.5	48.6	53.1	74.0	20.9	Vertical
Field Strength of Harmonic Emissions AverageValue						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m dBμV/m	Margin dBμV/m	E-Field Polarity
4960.0	-6.1	41.4	35.3	54.0	18.7	Horizontal
4960.0	-9.0	41.4	32.4	54.0	21.6	Vertical
7440.0	-14.5	48.6	34.1	54.0	19.9	Horizontal
7440.0	-15.5	48.6	33.1	54.0	20.9	Vertical

Remarks:

* Denotes restricted band of operation.
Measurements were made using a peak detector. Any emission less than 1000MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz 4.9dB
1GHz to 6GHz 4.02dB
6GHz to 18GHz 4.03dB

Appendix A

List of Measurement Equipment

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM215	MULTIDEVICE CONTROLLER	EMCO	2090	00024676	N/A	N/A
EM216	MINI MAST SYSTEM	EMCO	2075	00026842	N/A	N/A
EM217	ELECTRIC POWERED TURNTABLE	EMCO	2088	00029144	N/A	N/A
EM218	ANECHOIC CHAMBER	ETS-LINDGREN	FACT-3	--	2012/10/25	2013/10/25
EM174	BICONILOG ANTENNA	EMCO	3142B	1671	2012/05/31	2014/05/31
EM229	EMI TEST RECEIVER	R&S	ESIB40	100248	2012/05/03	2013/05/03
EM299	DOUBLE-RIDGED WAVEGUIDE HORN ANTENNA	ETS-LINDGREN	3115	00114120	2012/01/25	2014/01/25

Remarks:-

CM Corrective Maintenance
N/A Not Applicable or Not Available
TBD To Be Determined

Appendix B

Ancillary Equipment

ITEM NO.	DESCRIPTION	MODEL NO.	FCC ID	REMARK
1	DELL COMPUTER	DMC	N/A	N/A
2	DELL MONITOR	E551C	ARSCM356N	RESOLUTION:800x600(DURING TESTING) 1.0M UNSHIEDED POWER CORD CONNECTED TO THE COMPUTER 2.8M SHIELDED CABLE CONNECTED TO THE COMPUTER
3	DELL KEYBOARD	SK-8110	N/A	1.8M SHIELDED COILED CABLE CONNECTED TO THE COMPUTER
4	DELL MOUSE	N/A	N/A	2.4M UNSHIELDED CABLE CONNECTED TO THE COMPUTER
5	LASER PRINTER	HP LaserJet 1020 Plus	N/A	1.8M UNSHIELDED POWER CORD 2.8M SHIELDED CABLE (BUNDLED TO 1M) CONNECTED TO THE COMPUTER

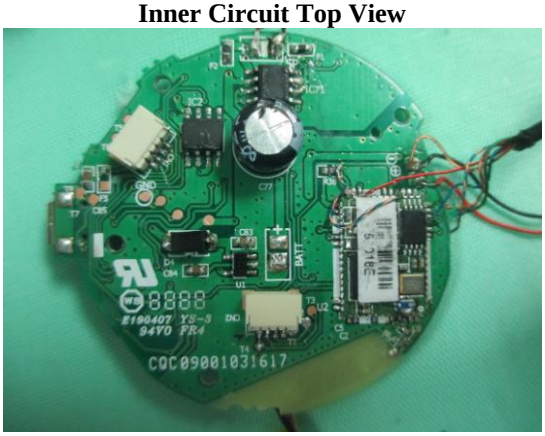
Appendix C

Photographs of EUT

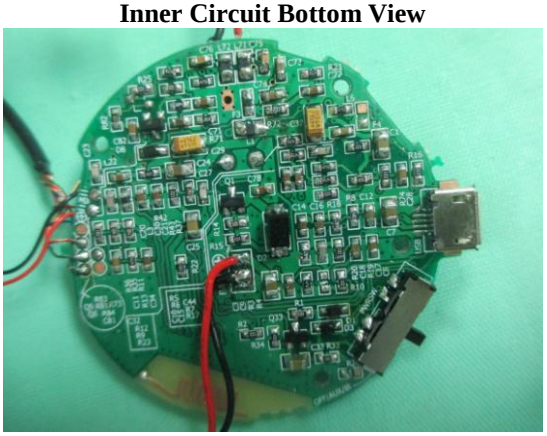
Front View of the product

Rear View of the product

Inner Circuit Top View

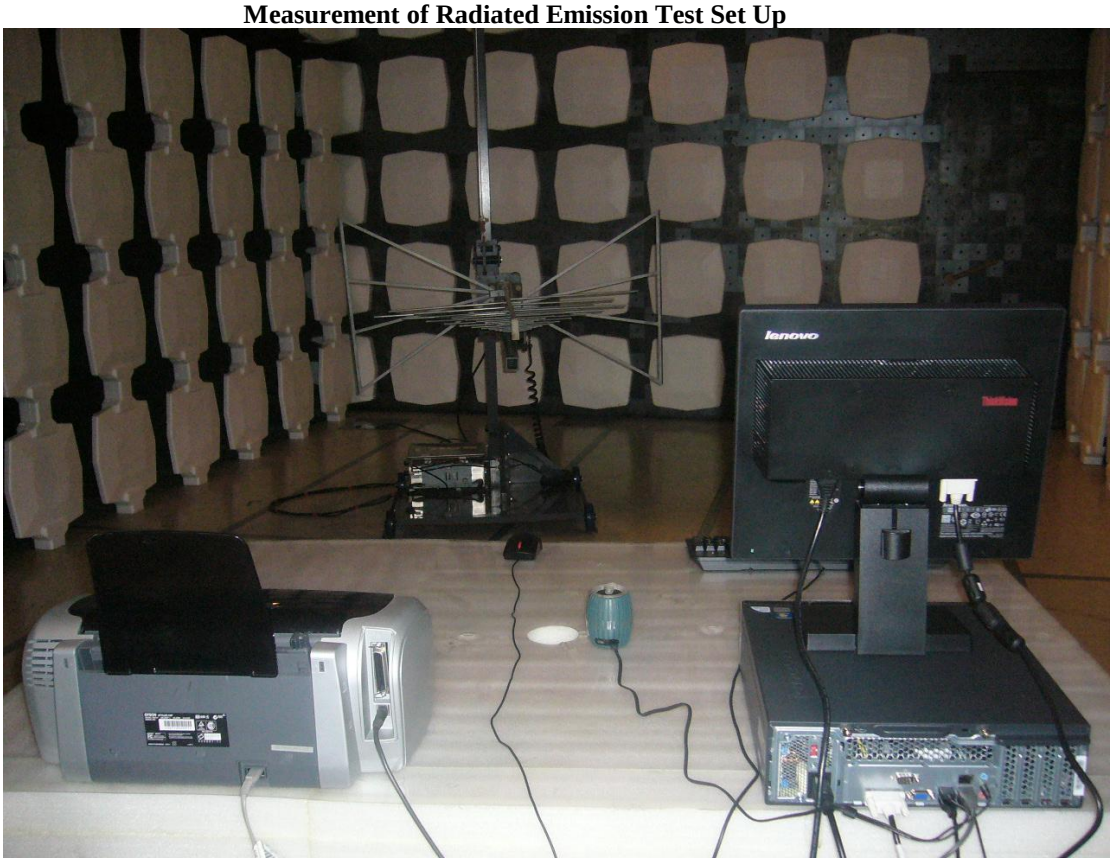


Inner Circuit Bottom View



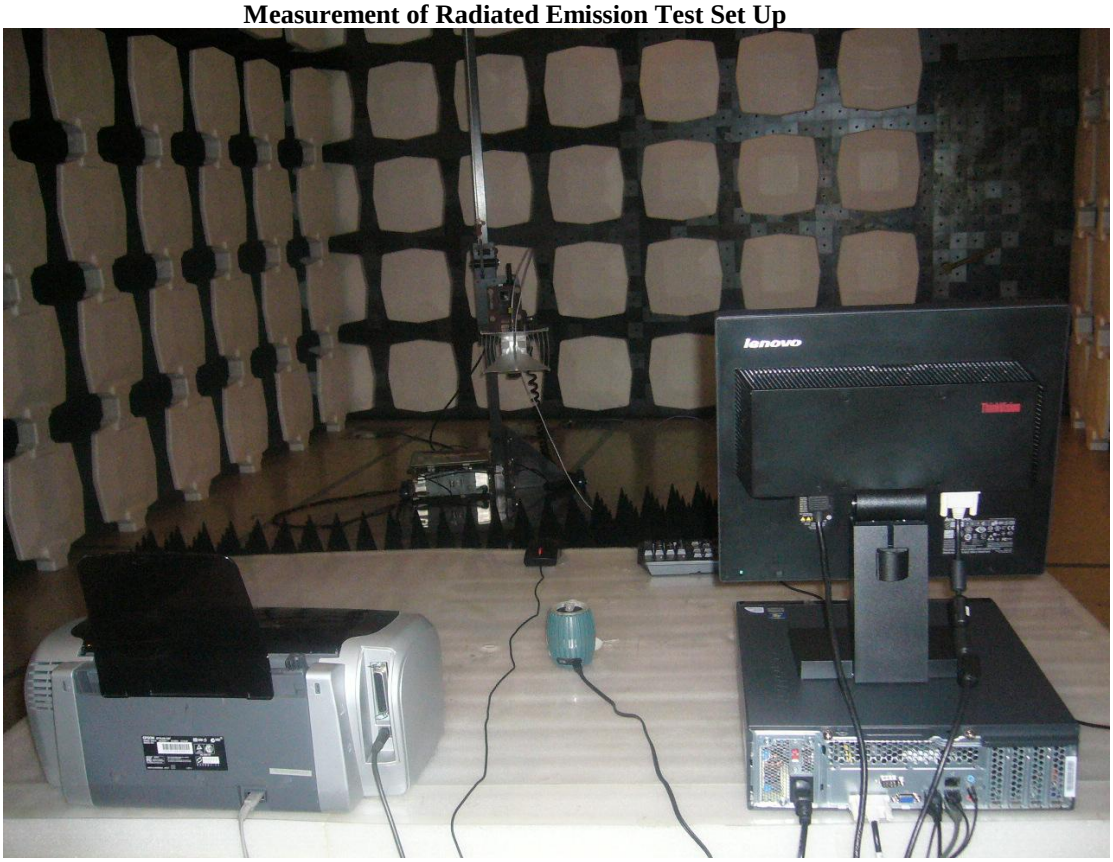
Photographs of EUT

Measurement of Radiated Emission Test Set Up



Photographs of EUT

Measurement of Radiated Emission Test Set Up



******* End of Test Report *******