STC Test Report

Date : 2007-10-09
No. : MH181854

Applicant (STD003): Guangzhou Hua Du Koda Electronics Co., Ltd.
33, Hongmian Road, Xinhua Industrial Park, Xinhua Town,
Hua Du District, Guangzhou City, China

Manufacturer: Guangzhou Hua Du Koda Electronics Co., Ltd.
33, Hongmian Road, Xinhua Industrial Park, Xinhua Town,
Hua Du District, Guangzhou City, China

Description of Samples:

Product:	Home Theatre System
Brand Name:	KODA
Model Number:	BT900
FCC ID:	VNOBT900

Date Samples Received: 2007-08-15

Date Tested: 2007-08-31

Investigation Requested: Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2006 and ANSI C63.4:2003 for FCC Certification.

Conclusions: The submitted product COMPLIED with the 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.

Remarks: ----

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

CONTENT:

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 Homepage: www.hkstc.org E-mail: hkstc@hkstc.org

1.0 General Details

1.1 Test Laboratory

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

1.2 Applicant Details

Applicant

Guangzhou Hua Du Koda Electronics Co., Ltd.
33, Hongmian Road, Xinhua Industrial Park, Xinhua Town,
Hua Du District, Guangzhou City, China

Manufacturer

Guangzhou Hua Du Koda Electronics Co., Ltd.
33, Hongmian Road, Xinhua Industrial Park, Xinhua Town,
Hua Du District, Guangzhou City, China

1.3 Equipment Under Test [EUT]

Description of Sample

Model Name:	Home Theatre System
Manufacturer:	Guangzhou Hua Du Koda Electronics Co., Ltd.
Brand Name:	KODA
Model Number:	BT900
Input Voltage:	117Va.c.

1.3.1 Description of EUT Operation

The Equipment Under Test (EUT) is a Guangzhou Hua Du Koda Electronics Co., Home Theatre System; the transmission signal is frequency hopping with channel frequency range 2402.3-2480.3MHz.

1.4 Date of Order

2007-08-15

1.5 Submitted Sample(s):

1 Sample

1.6 Test Duration

2007-08-31

1.7 Country of Origin

China

2.0 Technical Details

2.1 Investigations Requested

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 Regulations and ANSI C63.4:2003 for FCC Certification.

2.2 Test Standards and Results Summary Tables

EMISSION
Results Summary

Test Condition	Test Requirement	Test Method	Class / Severity	Test Result	
				Pass	Fail
Field Strength of Fundamental & Harmonics Emissions	FCC 47CFR 15.249	ANSI C63.4:2003	N/A	☒	☐
Radiated Emissions	FCC 47CFR 15.209	ANSI C63.4:2003	N/A	☒	☐
Conducted Emissions on AC, 0.15MHz to 30MHz	FCC 47CFR 15.207	ANSI C63.4:2003	N/A	☒	☐

Note: N/A - Not Applicable

3.0 Test Results

3.1 Emission

3.1.1 Radiated Emissions

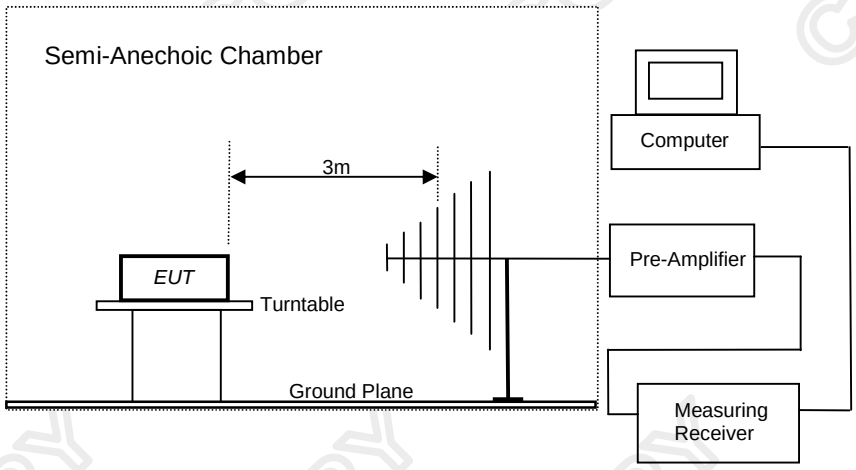
Test Requirement:	FCC 47CFR 15.249
Test Method:	ANSI C63.4:2003
Test Date:	2007-08-31
Mode of Operation:	Bluetooth Mode & Audio Input Mode

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, rotated about all 3 axis (X, Y & Z) and considered 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 HKSTC with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756.

Test Setup:



Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [microvolts/meter]	Field Strength of Harmonics Emission [microvolts/meter]
902-928	50,000 [Average]	500 [Average]
2400-2483.5	50,000 [Average]	500 [Average]

Results of Bluetooth Mode (2402.3MHz): Pass

Field Strength of Fundamental Emissions
Peak Value

	Frequency MHz	Measured Level @3m dBμV/m	Correction Factor dBμV/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
	2402.3	47.5	39.0	86.5	21,134.9	50,000	Vertical
*	4804.6	**No Emission Detected**				500	Vertical
	7206.9					500	Vertical
	9609.2					500	Vertical
*	12011.5					500	Vertical
	14413.8					500	Vertical
	16816.1					500	Vertical
*	19218.4					500	Vertical
	21620.7					500	Vertical
	24023.0					500	Vertical

Field Strength of Fundamental Emissions
Average Value

Frequency MHz	Measured Level @3m dBμV/m	Correction Factor dBμV/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
2402.3	47.3	39.0	86.3	20,653.8	50,000	Vertical

Remarks:

*: Denotes restricted band of operation.
Measurements were made using a peak detector. Any emission less than 1000 MHz 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.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB
1GHz to 18GHz 5.1dB

Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [microvolts/meter]	Field Strength of Harmonics Emission [microvolts/meter]
902-928	50,000 [Average]	500 [Average]
2400-2483.5	50,000 [Average]	500 [Average]

Results of Bluetooth Mode (2441.3MHz): Pass

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dBμV/m	Correction Factor dBμV/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
2441.3	47.2	39.0	86.2	20,417.4	50,000	Vertical
* 4882.6	**No Emission Detected**				500	Vertical
* 7323.9					500	Vertical
9765.2					500	Vertical
* 12206.5					500	Vertical
14647.8					500	Vertical
17089.1					500	Vertical
* 19530.4					500	Vertical
21971.7					500	Vertical
24413.0					500	Vertical

Field Strength of Fundamental Emissions Average Value						
Frequency MHz	Measured Level @3m dBμV/m	Correction Factor dBμV/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
2441.3	47.2	39.0	86.2	20,417.4	50,000	Vertical

Remarks:

*: Denotes restricted band of operation.
Measurements were made using a peak detector. Any emission less than 1000 MHz 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.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB
1GHz to 18GHz 5.1dB

Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [microvolts/meter]	Field Strength of Harmonics Emission [microvolts/meter]
902-928	50,000 [Average]	500 [Average]
2400-2483.5	50,000 [Average]	500 [Average]

Results of Bluetooth Mode (2480.3MHz): Pass

Field Strength of Fundamental Emissions
Peak Value

	Frequency MHz	Measured Level @3m dBμV/m	Correction Factor dBμV/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
	2480.3	46.0	39.0	85.0	17,782.8	50,000	Vertical
*	4960.6	**No Emission Detected**				500	Vertical
	7440.9					500	Vertical
	9921.2					500	Vertical
*	12401.5					500	Vertical
	14881.8					500	Vertical
	17362.1					500	Vertical
*	19842.4					500	Vertical
*	22322.7					500	Vertical
	24803.0					500	Vertical

Field Strength of Fundamental Emissions
Average Value

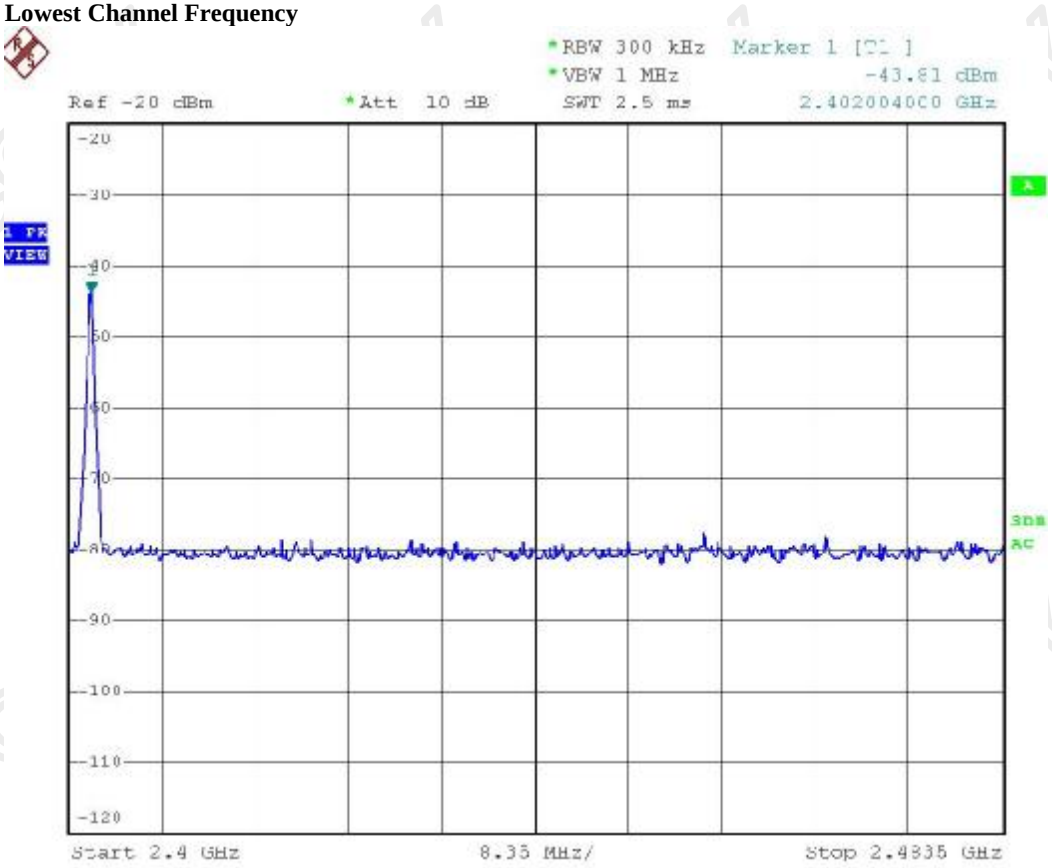
Frequency MHz	Measured Level @3m dBμV/m	Correction Factor dBμV/m	Field Strength dBμV/m	Field Strength μV/m	Limit @3m μV/m	E-Field Polarity
2480.3	46.0	39.0	85.0	17,782.8	50,000	Vertical

Remarks:

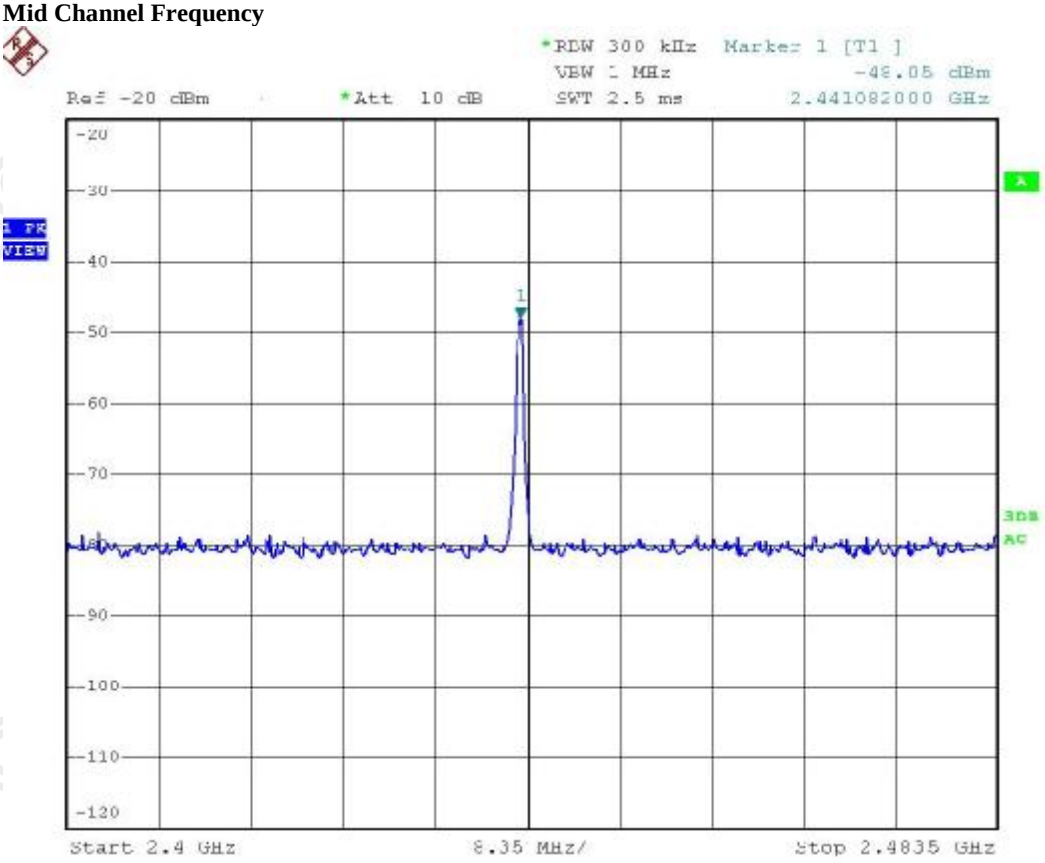
*: Denotes restricted band of operation.
Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB
1GHz to 18GHz 5.1dB

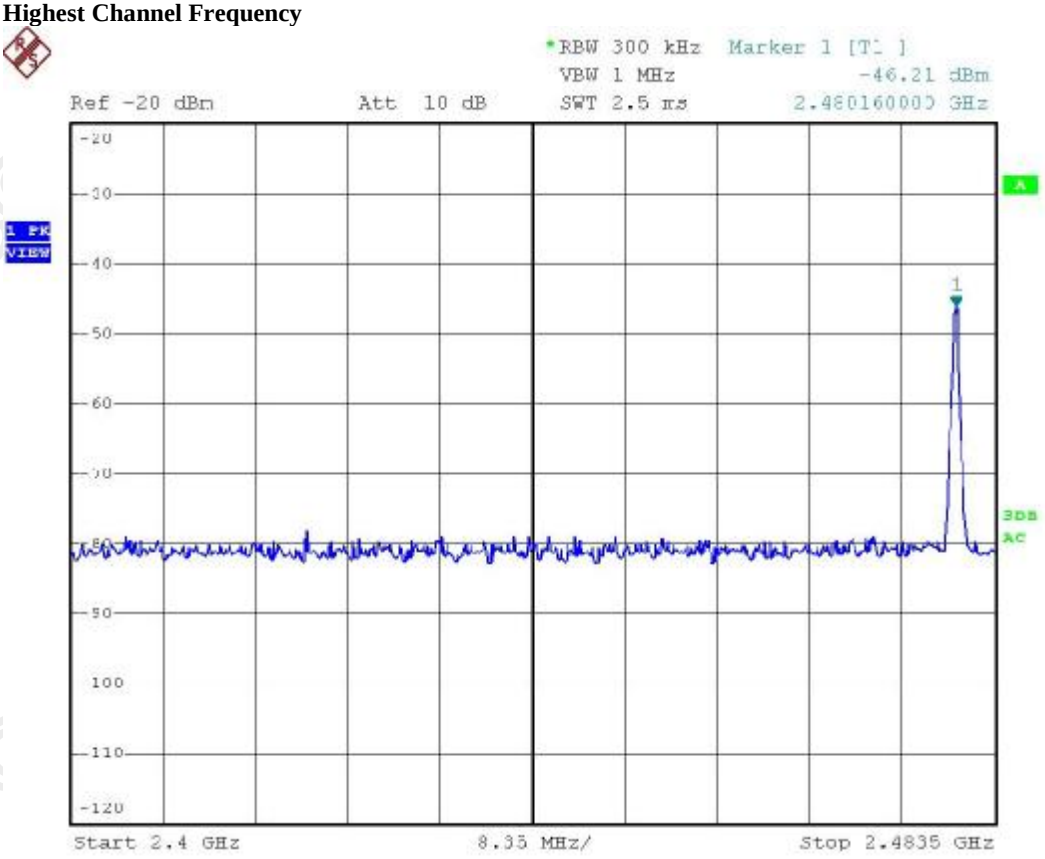
Lowest Channel Frequency



Mid Channel Frequency



Highest Channel Frequency



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

Frequency Range [MHz]	Quasi-Peak Limits [μV/m]
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.

Results of Bluetooth Mode: Pass

Radiated Emissions Peak					
Emission Frequency MHz	E-Field Polarity	Level @3m dBμV/m	Limit @3m dBμV/m	Level @3m @3m μV/m	Limit @3m @3m μV/m
128.0	Vertical	24.5	43.5	16.8	150
2483.5	Vertical	39.4	46.0	93.3	200

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB
1GHz to 18GHz 5.1dB

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

Frequency Range [MHz]	Quasi-Peak Limits [μV/m]
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.

Results of Audio Input Mode: Pass

Radiated Emissions Peak					
Emission Frequency MHz	E-Field Polarity	Level @3m dBμV/m	Limit @3m dBμV/m	Level @3m @3m μV/m	Limit @3m @3m μV/m
73.0	Vertical	26.6	40.0	21.4	100
160.0	Vertical	31.1	43.5	35.9	150
176.0	Vertical	33.4	43.5	46.8	150

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB
1GHz to 18GHz 5.1dB

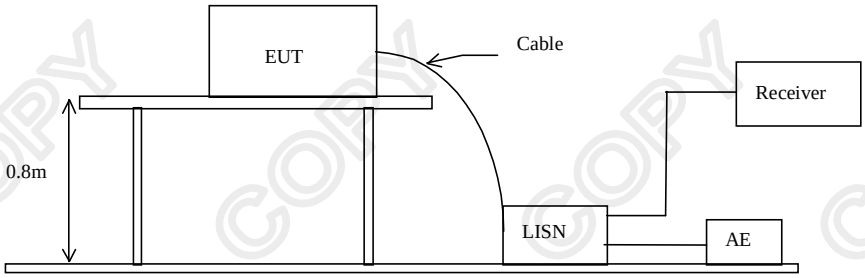
3.1.2 Conducted Emissions (0.15MHz to 30MHz)

Test Requirement:	FCC 47CFR 15.107
Test Method:	ANSI C63.4:2003
Test Date:	2007-08-31
Mode of Operation:	Bluetooth Mode & Audio Input Mode

Test Method:

The test was performed in accordance with ANSI C63.4: 2003, with the following: an initial measurement was performed in peak and average detection mode on the live line, any emissions recorded within 30dB of the relevant limit line were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

Test Setup:



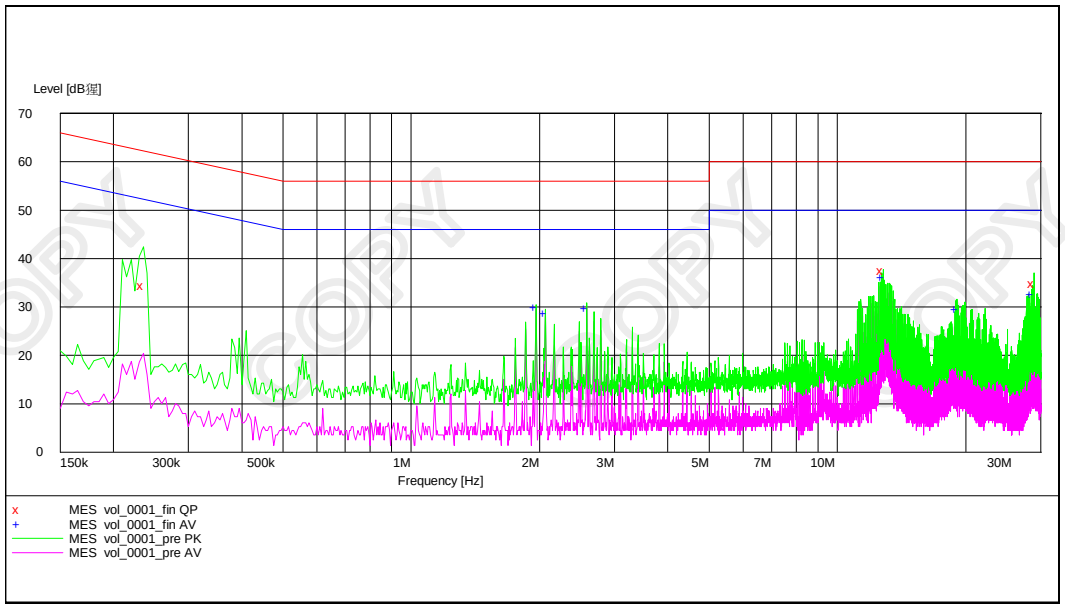
Limit for Conducted Emissions (FCC 47 CFR 15.107):

Frequency Range [MHz]	Quasi-Peak Limits [dBµV]	Average [dBµV]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

* Decreases with the logarithm of the frequency.

Limits for Conducted Emissions Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.

Results of Bluetooth Mode: PASS



Remarks:
Calculated measurement uncertainty: 3.97dB

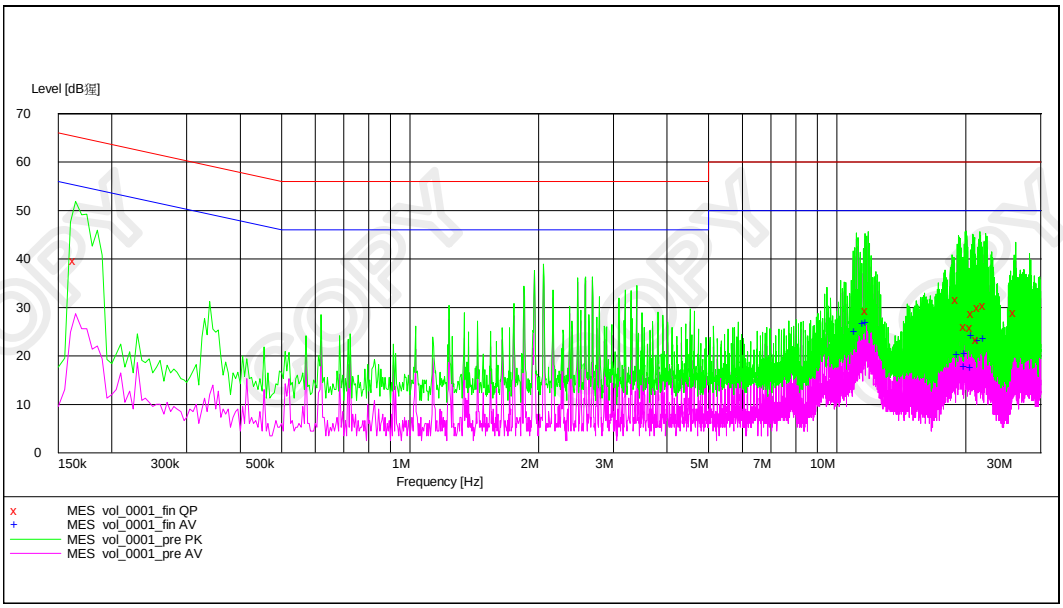
Limit for Conducted Emissions (FCC 47 CFR 15.107):

Frequency Range [MHz]	Quasi-Peak Limits [dBµV]	Average [dBµV]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

* Decreases with the logarithm of the frequency.

Limits for Conducted Emissions Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.

Results of Audio Input Mode: PASS



Remarks:
Calculated measurement uncertainty: 3.97dB

Appendix A

List of Measurement Equipment

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM215	MULTIDEVICE CONTROLER	ETS-Linggren	2090	00024676	N/A	N/A
EM216	MINI MAST SYSTEM	ETS-Linggren	2075	00026842	N/A	N/A
EM217	ELECTRIC POWERED TURNTABLE	ETS-Linggren	2088	00029144	N/A	N/A
EM218	ANECHOIC CHAMBER	ETS-Linggren	FACT-3	--	2006/05/02	2009/05/02
EM219	BICONILOG ANTENNA	ETS-Linggren	3142C	00029071	2006/02/01	2008/02/01
EM181	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB7	100072	2007/03/17	2008/03/17

Line Conducted

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM119	LISN	ROHDE & SCHWARZ	ESH3-Z5	0831.5518.52	2007/07/15	2008/07/15
EM181	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB7	100072	2007/03/17	2008/03/17
EM154	SHIELDING ROOM	SIEMENA MATSUSHITA COMPONENTS	N/A	803-740-057-99A	2006/01/12	2008/01/12

Remarks:-

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

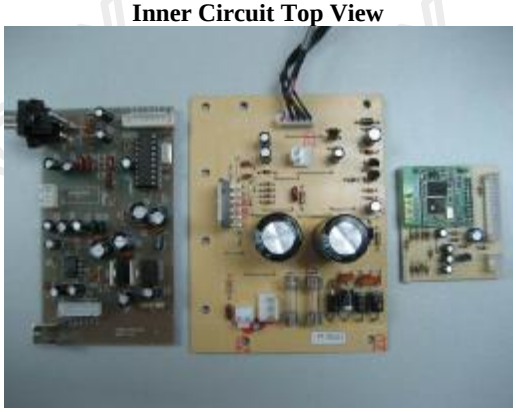
Appendix B

Photographs of EUT

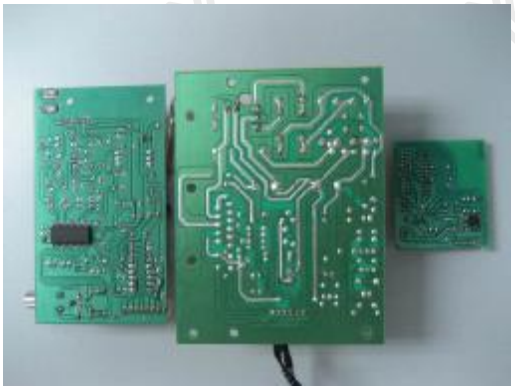
Front View of the product

Rear View of the product

Inner Circuit Top View

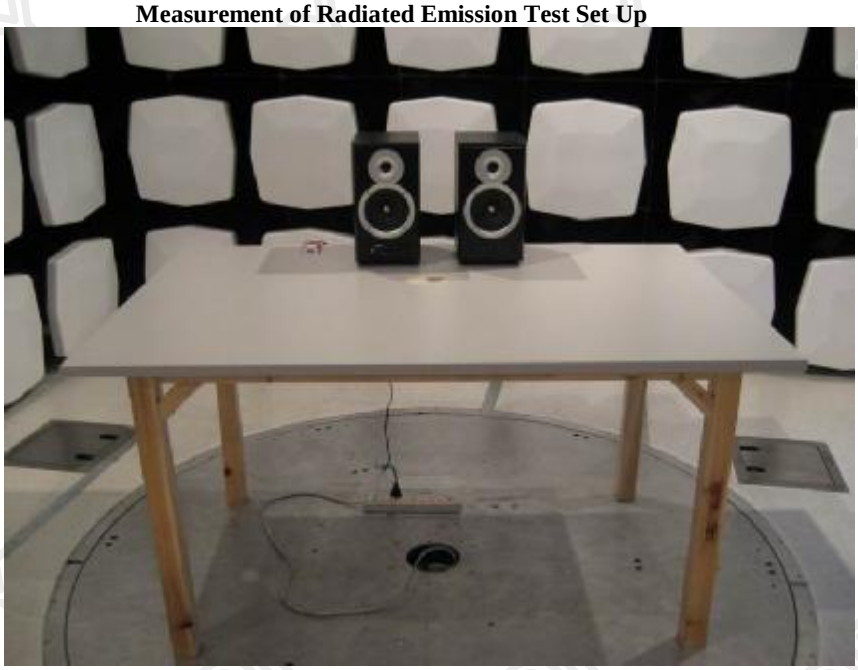


Inner Circuit Bottom View



Photographs of EUT

Measurement of Radiated Emission Test Set Up



Photographs of EUT

Measurement of Conducted Emission Test Set Up

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

The Hong Kong Standards and Testing Centre Ltd.
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