

NCC RF Test Report

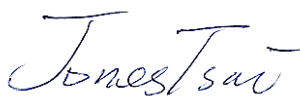
EQUIPMENT : Bluetooth Earphone
BRAND NAME : Bang & Olufsen
MODEL NAME : E8 Earbud R
MARKETING NAME : Beoplay E8
STANDARD : NCC LP0002 (2016-08-23)
APPLICANT / : 遠寬電信股份有限公司
MANUFACTURER : 新北市新店區安興路 127 號 10 樓
Bang & Olufsen a/s
Peter Bangs Vej 15, DK-7600 Struer,
Denmark

This is a variant report. The product was received on Nov. 30, 2017 and testing was completed on Dec. 05, 2017. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

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Page Number : 1 of 12

Report Issued Date : Dec. 19, 2017

Report Version : Rev. 01

Report Template No.: BU5-TRLP0002BT Version 2.1



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
TR762745-05A	Rev. 01	Initial issue of report	Dec. 19, 2017

SUMMARY OF TEST RESULT

Report Section	NCC Rule	Description	Limit	Result	Remark
-	3.10.1.6(1)(A)	Number of Channels	$\geq 15\text{Chs}$	Not Required	-
-	3.10.1.6(1)(A)	Hopping Channel Separation	$\geq 2/3$ of 20dB BW	Not Required	-
-	3.10.1.6(1)(A)	Dwell Time of Each Channel	$\leq 0.4\text{sec}$ in 31.6sec period	Not Required	-
-	3.10.1.6(1)(A)	20dB Bandwidth	N/A	Not Required	-
-	-	99% Bandwidth	-	Not Required	-
-	3.10.1.6(1)(A)	Peak Output Power	$\leq 125\text{ mW}$	Not Required	-
-	LP0002 3.10.1.5	Conducted Band Edges	$\leq 20\text{dBc}$	Not Required	-
-	LP0002 3.10.1.5	Conducted Spurious Emission	$\leq 20\text{dBc}$	Not Required	-
-	LP0002 3.10.1.5	Radiated Band Edges and Radiated Spurious Emission	LP0002 3.10.1.5	Not Required	-
-	LP0002 2.11	Receiver Radiated Emission	LP0002 2.8	Not Required	-
3.1	LP0002 2.3	AC Conducted Emission	LP0002 2.3	Pass	Under limit 10.20 dB at 0.150 MHz
-	LP0002 2.2 3.10.1.3 3.10.1.4	Antenna Requirement	N/A	Not Required	-

Note:

- Not required means after assessing, test items are not necessary to carry out.
- This is a variant report by second PCB adding 2nd battery. All the test cases were performed on original report which can be referred to Sporton Report Number TR762745A. Based on the original report, only worst case was verified.



1 General Description

1.1 Applicant

遠寬電信股份有限公司
新北市新店區安興路 127 號 10 樓

1.2 Manufacturer

Bang & Olufsen a/s
Peter Bangs Vej 15, DK-7600 Struer, Denmark

1.3 Product Feature of Equipment Under Test

Bluetooth and NFMI

Product Specification subjective to this standard	
Antenna Type	Bluetooth: Monopole Antenna NFMI: Coil Antenna

1.4 Modification of EUT

No modifications are made to the EUT during all test items.

1.5 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No.
	CO05-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

1.6 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ NCC LP0002 (2016-08-23)
- ♦ ANSI C63.10-2013

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2 Test Configuration of Equipment Under Test

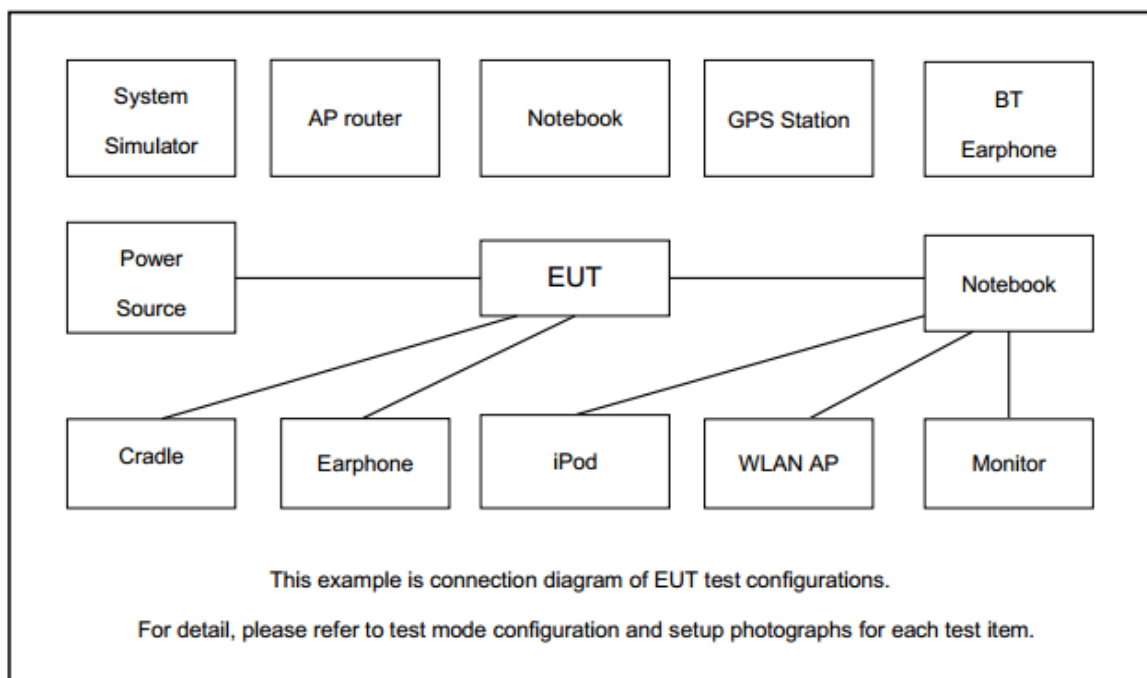
2.1 Test Mode

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz).
- b. AC power line Conducted Emission was tested under maximum output power.

The following summary table is showing all test modes to demonstrate in compliance with the standard.

Summary table of Test Cases	
AC Conducted Emission	Mode 1 :EUT (L+R) put in the docking (Charging from Notebook via USB Cable)

2.2 Connection Diagram of Test System





2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
2.	Notebook	DELL	Latitude E6320	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	iPod	Apple	A1199	FCC DoC	Shielded, 1.0 m	N/A

3 Test Result

3.1 AC Conducted Emission Measurement

3.1.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

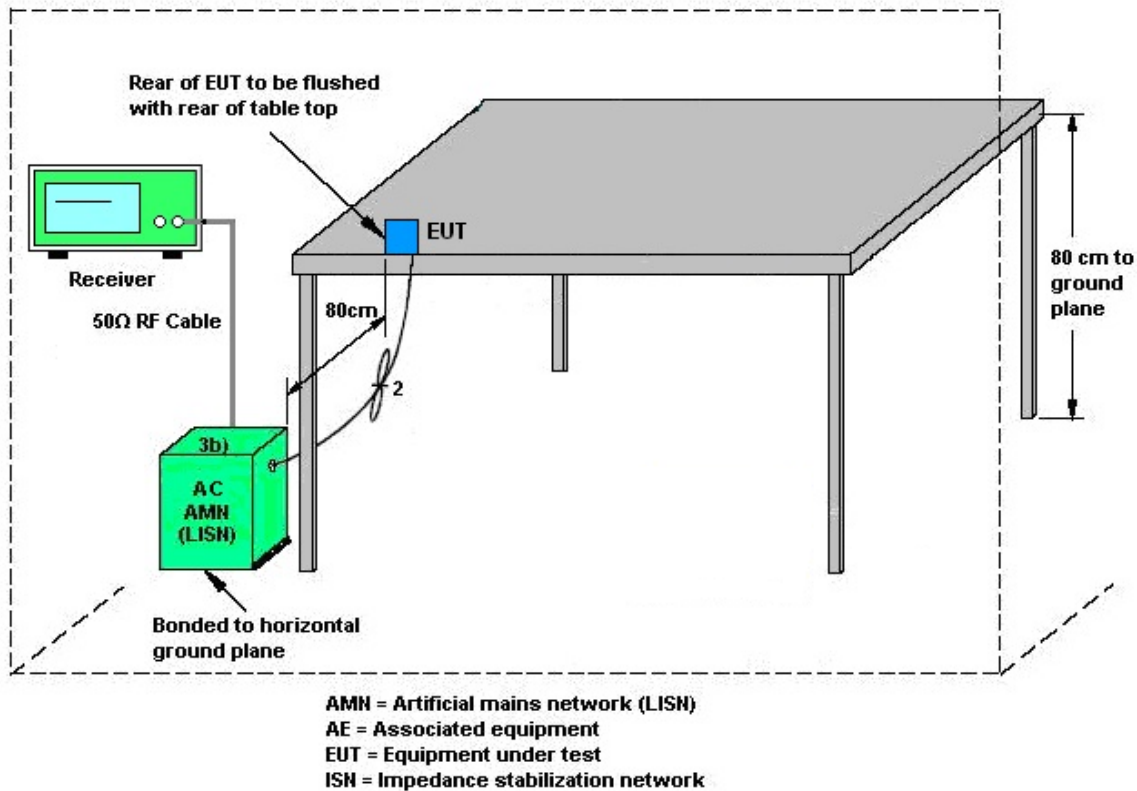
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode.

3.1.4 Test Setup



3.1.5 Test Result of AC Conducted Emission

Please refer to Appendix A.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Dec. 05, 2017	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Sep. 20, 2017	Dec. 05, 2017	Sep. 19, 2018	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 30, 2017	Dec. 05, 2017	Nov. 29, 2018	Conduction (CO05-HY)



5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.70
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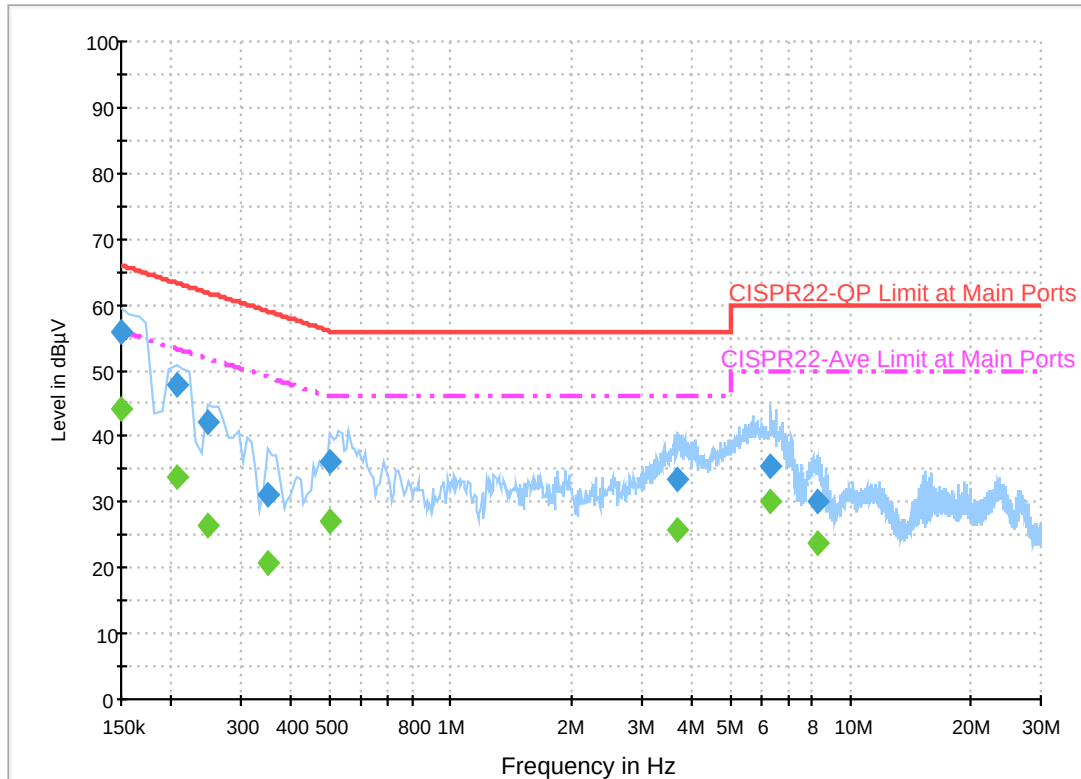
Appendix A. AC Conducted Emission Test Results

Test Engineer :	Shareef Yu	Temperature :	26~27°C
		Relative Humidity :	58~62%

EUT Information

Report NO : 762745-05
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Line

ENV216 Auto Test-L



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	55.8	Off	L1	19.6	10.2	66.0
0.206000	47.9	Off	L1	19.5	15.5	63.4
0.246000	42.1	Off	L1	19.5	19.8	61.9
0.350000	30.9	Off	L1	19.5	28.1	59.0
0.502000	36.0	Off	L1	19.5	20.0	56.0
3.710000	33.4	Off	L1	19.6	22.6	56.0
6.334000	35.4	Off	L1	19.6	24.6	60.0
8.310000	30.1	Off	L1	19.6	29.9	60.0

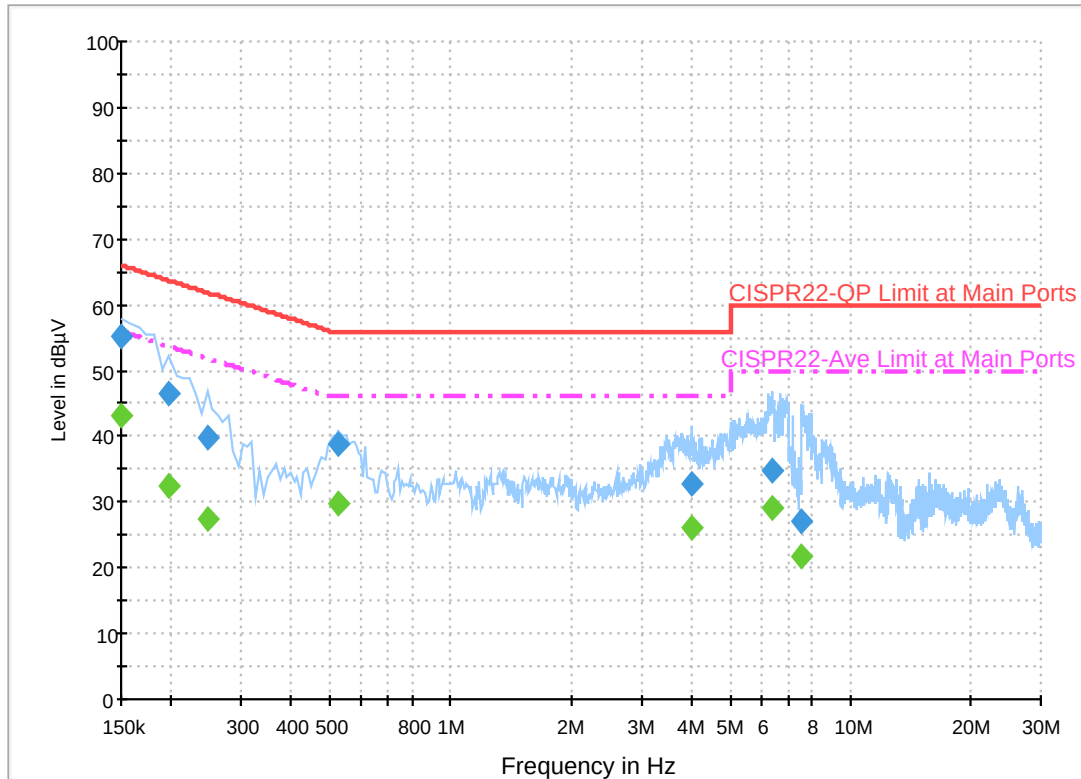
Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	44.1	Off	L1	19.6	11.9	56.0
0.206000	33.7	Off	L1	19.5	19.7	53.4
0.246000	26.4	Off	L1	19.5	25.5	51.9
0.350000	20.7	Off	L1	19.5	28.3	49.0
0.502000	27.1	Off	L1	19.5	18.9	46.0
3.710000	25.7	Off	L1	19.6	20.3	46.0
6.334000	30.1	Off	L1	19.6	19.9	50.0
8.310000	23.8	Off	L1	19.6	26.2	50.0

EUT Information

Report NO : 762745-05
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Neutral

ENV216 Auto Test-N



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	55.0	Off	N	19.5	11.0	66.0
0.198000	46.5	Off	N	19.5	17.2	63.7
0.246000	39.9	Off	N	19.5	22.0	61.9
0.526000	38.8	Off	N	19.5	17.2	56.0
4.006000	32.6	Off	N	19.6	23.4	56.0
6.398000	34.7	Off	N	19.6	25.3	60.0
7.550000	27.2	Off	N	19.6	32.8	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	43.3	Off	N	19.5	12.7	56.0
0.198000	32.5	Off	N	19.5	21.2	53.7
0.246000	27.3	Off	N	19.5	24.6	51.9
0.526000	29.7	Off	N	19.5	16.3	46.0
4.006000	26.1	Off	N	19.6	19.9	46.0
6.398000	29.1	Off	N	19.6	20.9	50.0
7.550000	21.8	Off	N	19.6	28.2	50.0