

ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR LOW-POWER, NON-LICENSED TRANSMITTER

Test Report No. : OT-198-RWD-035
AGR No. : A198A-112
Applicant : BLUECOM Co., Ltd.
Address : 116, Venture-ro, Yeonsu-gu, Incheon, 22013, South Korea
Manufacturer : BLUECOM VINA CO., Ltd
Address : C5-4 area, Trang Due, Hai Phong IZ, An Duong Dist, Hai Phong City, Vietnam
Type of Equipment : Bluetooth Headset
FCC ID. : U3WBCS150
Model Name : BCS-150
Serial number : N/A
Total page of Report : 7 pages (including this page)
Date of Incoming : August 06, 2019
Date of issue : August 14, 2019

SUMMARY

The equipment complies with the regulation; **FCC PART 15 SUBPART C Section 15.247**

This test report only contains the result of a single test of the sample supplied for the examination.

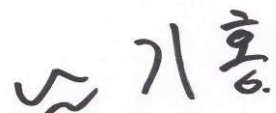
It is not a generally valid assessment of the features of the respective products of the mass-production.

Reviewed by:



Tae-Ho, Kim / Senior Manager
ONETECH Corp.

Approved by:



Ki-Hong, Nam / Chief Engineer
ONETECH Corp.

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Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-198-RWD-035	August 14, 2019	Initial Release	All

1. VERIFICATION OF COMPLIANCE

Applicant : BLUECOM Co., Ltd.
Address : 116, Venture-ro, Yeonsu-gu, Incheon, 22013, South Korea
Contact Person : Ki-eok, Park / Principal Engineer
Telephone No. : +82-32-8100-582
FCC ID : U3WBCS150
Model Name : BCS-150
Brand Name : -
Serial Number : N/A
Date : August 14, 2019

EQUIPMENT CLASS	DSS – PART 15 SPREAD SPECTRUM TRANSMITTER
E.U.T. DESCRIPTION	Bluetooth Headset
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.10: 2013
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SUBPART C Section 15.247 558074 D01 15.247 Meas Guidance v05r02
Modifications on the Equipment to Achieve Compliance	None
Final Test was Conducted On	3 m, Semi Anechoic Chamber

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

2. GENERAL INFORMATION

2.1 Product Description

The BLUECOM Co., Ltd., Model BCS-150 (referred to as the EUT in this report) is a Bluetooth Headset. The product specification described herein was obtained from product data sheet or user's manual.

DEVICE TYPE	Bluetooth Headset	
Temperature Range	-10 °C ~ 50 °C	
OPERATING FREQUENCY	2 402 MHz ~ 2 480 MHz	
MODULATION TYPE	GFSK for 1Mbps, $\pi/4$ -DQPSK for 2Mbps, 8-DPSK for 3Mbps	
RF OUTPUT POWER	1 Mbps	5.56 dBm
	2 Mbps	6.30 dBm
	3 Mbps	6.38 dBm
ANTENNA TYPE	FPCB Antenna	
ANTENNA GAIN	1.57 dBi	
Number of Channel	79	
List of each Osc. or crystal Freq.(Freq. $\geq$ 1 MHz)	16 MHz	
RATED SUPPLY VOLTAGE	DC 3.70 V	

2.2 Alternative type(s)/model(s); also covered by this test report.

-. None

3. EUT MODIFICATIONS

-. None

4. MAXIMUM PERMISSIBLE EXPOSURE

4.1 RF Exposure Calculation

According to the FCC rule 1.1310 table 1B, the limit for the maximum permissible RF exposure for an uncontrolled environment are $f/1500 \text{ mW/cm}^2$ for the frequency range between 300 MHz and 1 500 MHz and 1.0 mW/cm^2 for the frequency range between 1 500 MHz and 100 000 MHz.

The electric field generated for a 1 mW/cm^2 exposure is calculated as follows:

$$E = \sqrt{(30 * P * G) / d}, \text{ and } S = E^2 / Z = E^2 / 377, \text{ because } 1 \text{ mW/cm}^2 = 10 \text{ W/m}^2$$

Where

S = Power density in mW/cm^2 , Z = Impedance of free space, 377Ω

E = Electric field strength in V/m , G = Numeric antenna gain, and d = distance in meter

Combining equations and rearranging the terms to express the distance as a function of the remaining variable

$$d = \sqrt{(30 * P * G) / (377 * 10 S)}$$

Changing to units of mW and cm , using $P (\text{mW}) = P (\text{W}) / 1 000$, $d (\text{cm}) = 0.01 * d (\text{m})$

$$d = 0.282 * \sqrt{(P * G) / S}$$

Where

d = distance in cm , P = Power in mW , G = Numeric antenna gain, and S = Power density in mW/cm^2

4.2 EUT Description

Kind of EUT	Bluetooth Headset
Device Category	☐ Portable (< 20 cm separation) ☐ Mobile (> 20 cm separation) ☒ Others
Exposure Evaluation Applied	☒ MPE ☐ SAR ☐ N/A

4.3 Calculated MPE Safe Distance

According to the procedure, KDB 447498 D01, the standalone SAR test exclusion threshold is

$$[(\text{Max. Power of channel, including tune-up tolerance, mW})/(\text{Min. test separation distance, mm})] \times [\sqrt{f(\text{GHz})}] < 3$$

$$= (4.47/5) \times \sqrt{2.402} = 1.38$$

Conclusion: The SAR test exclusion threshold is less than 3, so the device meets the RF Exposure Requirement and are excluded from SAR Test.

Mode	Frequency (MHz)	Target Power W/tolerance (dBm)	Max tune up power (dBm)	Max tune up power (mW)	Separation distance (mm)	RF exposure
1 Mbps	2 402.00	5.50 ± 0.5	6.00	3.98	5.00	1.23
2 Mbps	2 402.00	6.00 ± 0.5	6.50	4.47	5.00	1.38
3 Mbps	2 402.00	6.00 ± 0.5	6.50	4.47	5.00	1.38



Tested by: Hyung-Kwon, Oh / Assistant Manager