



Certificate # 1514.1

PRODUCT ASSURANCE ENGINEERING
COMPLIANCE
EMC TEST REPORT



Test Type: RF Exposure

Product Type: *Wireless Earbud*

Product Name/Number: *Model BL3L*

FCC ID: *A94BL3L*
IC: *3232A-BL3L*

Product Name/Number: *Model BL3L*

Prepared For: *Product Assurance Engineering Department,
Bose Corporation*

Name of manufacturing agency applying for equipment type approval
Bose Corporation

Postal Address of manufacturing Agency
The Mountain
Framingham MA 01701
USA

Test Results: Pass

Applicable Standards: *FCC Part 1 Subpart I
FCC Part 2 Subpart J
ISED RSS-102 ISSUE 5*

Report Number: *EMC.BL3L.2020.143.2*

General Comments/Special Test Conditions:

This report relates only to the items tested. This report covers EMC marking requirements for *Enter product and any special modifications or test conditions.*

	Print Name	Signature	Date
Prepared By:	Chad Bell	<i>Chad Bell</i>	May 27, 2020
Electrical Engineer Review* By:	Bryan Cerqua	<i>Bryan H Cerqua</i>	May 28, 2020

* Since every test result is separately reviewed after its completion, the electrical engineer review indicated above represents a higher-level review to ensure this report lists and contains all applicable and appropriate requirements. If the report carries the "accredited" logo, the reviewer must verify all the tests in this report are covered under the current ISO17025 accreditation. The A2LA-accredited logo must be removed if any of the tests in the report are not performed under the current scope of accreditation. It is the responsibility of the reviewer to ensure the A2LA advertising policy is followed.



PRODUCT ASSURANCE ENGINEERING
COMPLIANCE
EMC TEST REPORT



Table of Contents

Tests Performed (Table of Contents):

Test Report Summary	3
STANDALONE SAR TEST EXCLUSION CONSIDERATIONS	4
FCC	4
Conclusion:	4
ISED CANADA	5
LIMITS:	5
Calculations	6



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PRODUCT ASSURANCE ENGINEERING
COMPLIANCE
EMC TEST REPORT



Test Report Summary

Product Information:

Description

Wireless Earbud. The antenna is an inverted L with a maximum gain of 1.35dBi formed by Laser Direct Sequence on the inside of the top cover of the earbud.

EUT Condition

Product was as built in the factory. And for the conducted measurements the antenna was removed, and coaxial cable was installed in its place. Where necessary USB debug wires were added to allow control of the Radio. Worst case data rate was determined to be 1Mbps.

Setup (Cables and Accessories)

Support Equipment List

Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Bose	S008VU0500160	068170Z50403725AE	N/A

I/O Cable List

Cable No.	Port	# of Identical Ports	Cable Type	Cable Length (m)	Remarks
1	AC In	1	N/A	0	Wall-wart adapter
2	USB	1	Shielded	0.3	Output of AC adapter

Test Objective:

Verify product meets all applicable EMC requirements.

Results:

Product complies with all applicable EMC requirements. All final results represent worst-case emissions and/or immunity.

Conclusions:

The device under test (D.U.T.):

meets all test standards on page 1 of this report.

Affirmation of Test Results:

	Print Name	Signature	Date
Testing Engineer/Technician	Chad Bell	<i>Chad Bell</i>	May 27, 2020



STANDALONE SAR TEST EXCLUSION CONSIDERATIONS

FCC

SAR test exclusion in accordance with KDB 447498.

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$, for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

This test exclusion is applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances > 50 mm are determined by:

- 1) $\{[\text{Power allowed at numeric threshold for 50 mm}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz})/150)]\}$ mW, for 100 MHz to 1500 MHz
 $f(\text{MHz})$ is the RF channel transmit frequency in MHz
- 2) $\{[\text{Power allowed at numeric threshold for 50 mm}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot 10]\}$ mW, for > 1500 MHz and ≤ 6 GHz

Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Separation Distance (cm)	(100 MHz to 6 GHz) 1-g SAR Exclusion Threshold Applies only if: (5m < d <= 50mm) <= 3.0	Limit	Result
8.56	7.2	0.5	2.224	3	PASS

Conclusion:

The computed values are < 3 ; therefore, the device qualifies for Standalone SAR test exclusion



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EMC TEST REPORT



ISED Canada Limits:

Table 1: SAR evaluation — Exemption limits for routine evaluation based on frequency and separation distance^{4,5}

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

The minimum antenna to user distance that will be encountered in normal use is 5 < mm. This results in an exemption limit of 4 mW at 2450 MHz.

Although the maximum target output power (including tune up, etc.) is 6.4 mW, when you factor real use duty cycle and the source-based time average, the target power is 2.62 dBm (1.8 mW EIRP). Therefore, the DUT qualifies for SAR test exclusion.



Certificate # 1514.1

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EMC TEST REPORT



Calculations

Maximum Declared Output Power, including tune up = 8.56dBm (7.2 mW). Peak antenna gain = 1.21 dBi

Max. EIRP = 9.77 dBm (9.5mW)

Actual Use Duty Cycle = 20.984%

Maximum Source based time average EIRP = Max. EIRP – 10*log (1/DCF)

9.77 dBm – 10*log (1/0.20984) = 2.99 dBm (2.0 mW)

2.0 mW is less than the 4 mW limit.

Conclusion:

The computed values are < 4; therefore, the device qualifies for Standalone SAR test exclusion

END OF TEST REPORT