

GZCR2103000006AT

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FCC ID: 2ACIX-PAN

Evaluation REPORT

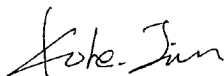
Application No.: GZCR2103000006AT
Applicant: B & W Group Ltd
Address of Applicant: Dale Road, Worthing, West Sussex BN11 2BH, United Kingdom
Manufacturer: B & W Group Ltd
Address of Manufacturer: Dale Road, Worthing, West Sussex BN11 2BH, United Kingdom
Factory: Guoguang Electric Co., Ltd.
Address of Factory: No.8 Jinghu Road, Xinya Street, Huadu Reg, Guangzhou, China

Equipment Under Test (EUT):
EUT Name: Wireless Active Soundbar
Model No.: Panorama 3
Trade mark: Bowers & Wilkins

Standard(s) : 47 CFR Part 1, subpart I 1.1310
Date of Receipt: 2021-03-09
Date of Test: 2021-03-19 to 2021-03-28
Date of Issue: 2021-04-16

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.



Kobe Jian
 EMC Laboratory Manager




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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2021-04-16		Original

Authorized for issue by:				
Tested By		 _____ Curry Wu/Project Engineer		
Reviewed By		 _____ Ricky Liu/Reviewer		



1 General Information

1.1 Details of E.U.T.

Operation	2402MHz to 2480MHz
Frequency:	5150MHz to 5250MHz
	5250MHz to 5350MHz
	5470MHz to 5725MHz
	5725MHz to 5800MHz
Modulation Type:	BT Classic: GFSK, p/4DQPSK, 8DPSK
	BLE: GFSK
	802.11b: DSSS (CCK, DQPSK, DBPSK)
	802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
	IEEE 802.11a: OFDM(BPSK/QPSK/16QAM/64QAM)
Antenna type:	IEEE 802.11n: OFDM(BPSK/QPSK/16QAM/64QAM)
	IEEE 802.11ac: OFDM (BPSK/QPSK/16QAM/64QAM/256QAM)
	Integral Antenna
Antenna gain:	Antenna1: 6.9dBi for 5G band, 4.4dBi for 2.4G band
	Antenna2: 5.2dBi for 5G band, 2.7dBi for 2.4G band
Software version	Two antennas support MIMO synchronous transmission.
Hardware version	SUE V0.19
Sample NO.	BW_ALBD_MAIN_PV
	A3



RF Exposure Compliance Requirement

1. Standard requirement

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

(a) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S)(mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	F/300	6
1500-100000	--	--	5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S)(mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	F/1500	30
1500-100000	--	--	1.0	30

Note: f=frequency in MHz;

*Plane-wave equivalent power density.



2. MPE Calculation Method

$$E (V/m)=(30 \cdot P \cdot G)^{0.5} / d \quad \text{Power Density: } Pd(W/m^2)=E^2/377$$

E=Electric Field (V/m)

P=Peak RF output Power (W)

G=EUT Antenna numeric gain (numeric)

d= Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = (30 \cdot P \cdot G) / (377 \cdot d^2)$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained.

3. Calculated Result and Limit

The device can not transmit Bluetooth ,2.4G WIFI or 5G WIFI synchronously.

The max conducted power list below:

Conducted power for Bluetooth classic:

Test Mode	Antenna	Channel	Result[dBm]
DH5	Ant1	2402	7.12
		2441	6.88
		2480	6.56
2DH5	Ant1	2402	6.21
		2441	5.98
		2480	5.72
3DH5	Ant1	2402	6.62
		2441	6.35
		2480	6.09

The antenna gain is 4.4 dBi

Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
2402	2.754	7.12	5.152	0.0028231	1	Complies
2442	2.754	6.88	4.875	0.00267	1	Complies
2480	2.754	6.56	4.529	0.00248	1	Complies



Conducted power for Bluetooth low energy:

Test Mode	Antenna	Channel	Result[dBm]
BLE	Ant1	2402	3.03
		2442	3.15
		2480	2.84

Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
2402	2.754	3.03	2.009	0.0011008	1	Complies
2442	2.754	3.15	2.065	0.00113	1	Complies
2480	2.754	2.84	1.923	0.00105	1	Complies

Max conducted power for 2.4G WIFI is the MIMO Mode:

Test Mode	Antenna	Channel	ANT1 [dBm]	ANT2 [dBm]	Result[dBm] total power ant1+ant2 [dBm]
11N20	MIMO	2412	11.13	12.75	15.025
		2442	11.93	12.50	15.235
		2462	11.62	11.90	14.773
11N40	MIMO	2422	11.28	13.49	15.534
		2442	12.07	13.23	15.699
		2452	11.80	13.02	15.463

The antenna directional gain is 6.6dBi:

Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
2422	4.571	15.534	35.760	0.0325177	1	Complies
2442	4.571	15.699	37.145	0.03378	1	Complies
2452	4.571	15.463	35.180	0.03199	1	Complies



Max conducted power for UNII :

Start Frequency (MHz)	Stop frequency (MHz)	Conducted power(W)	Conducted power(dBm)	Mode
5180	5240	0.0176	12.463	N20 5180
5190	5230	0.0199	12.99	AC 40 5190
5210	5210	0.0479	16.801	AC 80 5210
5260	5320	0.0155	11.901	A 20 5320
5270	5310	0.0161	12.077	AC 40 5270
5290	5290	0.0144	11.585	AC 80 5290
5500	5700	0.0212	13.264	N 20 5700
5510	5670	0.0201	13.022	AC 40 5670
5530	5610	0.0159	12.011	AC 80 5610
5745	5825	0.0220	13.417	N20 5745
5755	5795	0.0235	13.719	N40 5755
5775	5775	0.0213	13.292	AC 80 5775

The antenna directional gain is 9.1dBi:

Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
5180	8.128	12.463	17.632	0.0285115	1	Complies
5190	8.128	12.99	19.907	0.03219	1	Complies
5210	8.128	16.801	47.874	0.07741	1	Complies
Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
5320	8.128	11.901	15.492	0.0250507	1	Complies
5270	8.128	12.077	16.132	0.02609	1	Complies
5290	8.128	11.585	14.405	0.02329	1	Complies
Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
5700	8.128	13.264	21.203	0.0342862	1	Complies
5670	8.128	13.022	20.054	0.03243	1	Complies
5610	8.128	12.011	15.889	0.02569	1	Complies



Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
5745	8.128	13.417	21.963	0.0355157	1	Complies
5755	8.128	13.719	23.545	0.03807	1	Complies
5775	8.128	13.292	21.340	0.03451	1	Complies

Conclusion:

The device meets the maximum permissible exposure requirement, not need SAR test.