

RF Exposure Report

FCC ID: 2BBQK-HESTON60

Applicant: Marshall Group AB

Address: Centralplan 15 111 20 Stockholm Sweden

Manufacturer: Marshall Group AB

Address: Centralplan 15 111 20 Stockholm Sweden

Product(s): TV SOUNDBAR

Brand: Marshall, *Marshall*

Test Model(s): HESTON 60

Series Model(s): N/A

Test Date: Apr. 10, 2025 ~ Apr. 29, 2025

Issued Date: Apr. 30, 2025

Issued By: Hwa-Hsing (Dongguan) Testing Co., Ltd.

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Jiang Town, Dongguan City, People's Republic of China

Test Firm Registration No.: 915896

Standards: FCC Part 2(Section 2.1093)
KDB 447498 D01 General RF Exposure Guidance v06

The above equipment has been tested by **Hwa-Hsing (Dongguan) Testing Co., Ltd.**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

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Release control record

Issue No.	Reason for change	Date Issued
25030607-SE-US-01	Original Release	Apr. 30, 2025

1 General Information**1.1 General Description of EUT**

Product(s)	TV SOUNDBAR
Test Model(s)	HESTON 60
Sample No.	HS25030607-S002, HS25030607-S003
Series Model(s)	N/A
Status of EUT	Engineering Prototype
Power Supply Rating	100-240V ~ 50/60Hz, 30W
Modulation Type	GFSK for DTS
Transfer Rate	1Mbps, 2Mbps
Operating Frequency	2402 ~ 2480MHz
Number of Channel	40 for DTS 1Mbps 37 for DTS 2Mbps
Maximum Output Power (Peak)	5.86dBm for DTS
Antenna Type and Antenna Gain	Internal Antenna, 2.45dBi
Antenna Connector	I-PEX
Accessory Device	NA
Cable Supplied	AC Cable: Detachable, Unshielded, 200cm; HDMI Cable: Detachable, Unshielded, 150cm

Note:

1. Please refer to the EUT photo document (Reference No.: 25030607-01&02) for detailed product photo.
2. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

Hwa-Hsing (Dongguan) Testing Co., Ltd. is not responsible for the accuracy of the information provided by the manufacturer.

2 RF exposure limit

Limits for maximum permissible exposure (MPE)

Limits for general population / uncontrolled exposure				
Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Average time (minutes)
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

Note: F = Frequency in MHz

2.1 MPE calculation formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

Where:

Pd = power density in mW/cm²

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

Classification:

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user.

3 Calculation SAR test exclusion thresholds

The antennas provided to the EUT, please refer to the following table:

Function	Transmit and Receive Chain	Antenna Gain (dBi)	Maximum Power		Distance (cm)	Power density (mW/cm ²)	Limit (mW/cm ²)
			(dBm)	(mW)			
BLE	1TX,1RX	2.45	5.86	3.855	20	0.001348	1.0

The EUT had been contain another wiress module(FCC ID:2AJYB-ST1955) .

Wireless Function	Frequency Band (MHz)	Antenna	Gain(dBi)	Maximum Conducted Power(mW)
Bluetooth	2402~2480	1	3.5	3.98
BLE	2402~2480	1	3.5	4.27
WIFI2.4G	2412~2462	1	3.5	87.12
WIFI2.4G	2412~2462	2	3.5	99.31
WIFI5G	5180~5825	1	4	31.65
WIFI5G	5180~5825	2	4	32.35

Function	Max power (dBm)	Antenna gain (dBi)	Antenna	Distance (cm)	Power density (mW/cm ²)	Limit (mW/cm ²)
Bluetooth	6.00	3.5	1	20	0.001773	1.0
BLE	6.30	3.5	1	20	0.001900	1.0
WIFI2.4G	19.40	3.5	1	20	0.038791	1.0
WIFI2.4G	19.97	3.5	2	20	0.044231	1.0
WIFI5G	15.00	4	1	20	0.015803	1.0
WIFI5G	15.10	4	2	20	0.016171	1.0

Note: The above wireless function can be transmission simultaneous.

Worst situation is $(0.001348/1) + (0.001773 /1) + (0.001900 /1)+ (0.038791 /1) + (0.044231 /1) + (0.015803 /1) + (0.016171 /1) = 0.120017$, which is less than the limit.

Note: The above wireless function can not be transmission simultaneous.

Conclusion:

Therefore, the worst-case situation is 0.120017 mW/cm², which is less than “1”. This confirmed that the device compliance with FCC 1.1310 MPE limit.

Appendix – Information on the Testing Laboratories

We, [Hwa-Hsing \(Dongguan\) Testing Co., Ltd.](#), A global provider of TESTING and CERTIFICATION services for consumer products, electronic products and wireless information technology products. Adhering to the core values "HONEST and TRUSTWORTHY, OBJECTIVE and IMPARTIALITY, RIGOROUS and AFFICIENT", commitment to provide professional, perfect and efficient comprehensive ONE-STOP solution of TESTING and CERTIFICATION services for Manufacturers, Buyers, Traders, Brands, Retailers. Assist client to better manage risk, protect their brands, reduce costs and cut time to over 150 markets in global. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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