FCC 47 CFR MPE REPORT

Samsung Electronics Co Ltd

Soundbar

Model Number: HW-Q600C

FCC ID: A3LHWQ600C

Applicant:	Samsung Electronics Co Ltd
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Maximum Permissible Exposure

1. Applicable Standards

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.

1.1. Limits for Maximum Permissible Exposure (MPE)

(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
1500-10000			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
1500-10000			1.o	30

Note: f=frequency in MHz; *Plane-wave equivalent power density

1.2. MPE Calculation Method

$$E\ (V/m) = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } Pd\ (W/m^2) = \frac{E^2}{377}$$

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

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

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

2. Conducted Power Result

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)
GFSK	2402	2.07	1.611
	2441	1.45	1.396
	2480	1.04	1.271
π/4-DQPSK	2402	2.53	1.791
	2441	1.97	1.574
	2480	1.60	1.445
8-DPSK	2402	3.01	2.000
	2441	2.39	1.734
	2480	2.06	1.607
BLE 1M	2402	1.87	1.538
	2440	1.49	1.409
	2480	0.88	1.225
BLE 2M	2402	2.15	1.641
	2440	1.72	1.486
	2480	1.20	1.318

3. Calculated Result and Limit

Mode	Peak output power (dBm)	Target power (dBm)	MAX Target power (dBm)	Antenna gain		Power Density (S) (mW /cm^2)	Limited of Power Density (S) (mW /cm^2)	Test Result
				(dBi)	(Linear)			
GFSK	2.07	2±1	3	4.48	2.805	0.00111	1	Complies
π/4-DQPSK	2.53	2±1	3	4.48	2.805	0.00111	1	Complies
8-DPSK	3.01	3±1	4	4.48	2.805	0.00140	1	Complies
BLE 1M	1.87	1±1	2	4.48	2.805	0.00088	1	Complies
BLE 2M	2.15	2±1	3	4.48	2.805	0.00111	1	Complies

Simultaneous Transmission Analysis Mode:

Module	Result (mW/cm^2)	Limit (mW/cm^2)	Simultaneous Transmissions Result	Simultaneous Transmissions Limit	Total Result
Bluetooth	0.001400	1	0.014544	1	Complies
5G Wireless (WSM520V)	0.013144	1			
1. Simultaneous Transmissions Result= Bluetooth Result(mW/cm^2)/ Limit(mW/cm^2)+ 5G Wireless Result(mW/cm^2)/ Limit(mW/cm^2)					

Note: Device contains another approved Tx modular (WSM520V), so simultaneously transmission RF exposure compliances shall be addressed accordingly for FCC, ISED."

End of Test Report