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RF EXPOSURE EVALUATION

Applicant	**: Haier US Appliance Solutions, Inc.**
Applicant Address	**: Appliance Park AP5-2N-65, Louisville, Kentucky, United States, 40225**
Kind of Product	**: Android Board for GEA LCD products**
Equipment model name	**: SBC001**
FCC ID	**: ZKJ-SBC001**

Standard Requirement

The following RF exposure procedures are applicable :

- FCC Rules
  Part 1.1310 Radiofrequency radiation exposure limits

  Table 1 below sets forth limits for Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields.

Table 1—Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	$*900/f^2$	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	$*180/f^2$	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			**1.0**	30

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

MPE Calculations

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the user. The MPE calculation for this exposure is shown below.

The peak radiated output power (EIRP) is calculated as follows:

EIRP = P + G	Where, P = Power input to the antenna (mW) G = Power gain of the antenna (dBi)

The numeric gain(G) of the antenna with a gain specified in dB is determined by:

$G = Log^{-1}$ (dB antenna gain / 10)

Power density at the specific separation:

$S = PG/(4R^2\pi)$	Where, S = Maximum power density (mW/cm^2) P = Power input to the antenna (mW) G = Numeric power gain of the antenna R = Distance to the center of the radiation of the antenna (20cm = limit for MPE)

Estimated safe separation:

$R = \sqrt{(PG / 4\pi)}$	Where, P = Power input to the antenna (mW) G = Numeric power gain of the antenna R = Distance to the center of the radiation of the antenna (20cm = limit for MPE)

RF Exposure Results

Mode	P		G (dBi)	Power tolerance (dB)	**Power Density (mW/cm²)**	Limit (mW/cm²)	R (cm)
	(dBm)	(mW)					
BT	12.006	25.15	2.17	+2	**0.0082**	1.000	20
BLE	11.976	24.98	2.17	+2	**0.0082**		
WLAN 2.4 GHz	18.880	122.46	5.18 *	+2	**0.0803**		
WLAN 5 GHz	19.530	142.23	6.52 *	+2	**0.1270**		

* Note :
Per KDB 662911, the MIMO directional gain is calculated using the following formula, Where G_N is the gain of the nth antenna and N_{ANT}, the total number of antennas used.

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}] \text{ dBi}$$

Simultaneous transmitter

Mode	MPE ratios	Limit
BT	0.0082	-
BLE	0.0082	
WLAN 2.4 GHz	0.0803	
WLAN 5 GHz	0.1270	
Combined	**0.2237**	1

*MPE ratios = MPE/MPE limit at each frequency