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RF EXPOSURE EVALUATION

Applicant : SOLUM CO.,LTD.

Applicant Address : 7F, 2354, Yonggu-daero, Giheung-gu, Yongin-si, Gyeonggi-do,
Republic of Korea

Kind of Product : Newton E-Paper 32"

**Equipment
Model name** : EL315TVW6S

FCC ID : 2AFWN-EL315TVW6S

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	1 842/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/1 500	<30
1,500-100,000			<u>1.0</u>	<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)
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The numeric gain(G) of the antenna with a gain specified in dB is determined by:

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

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 (20 cm = limit for MPE)
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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 (20 cm = limit for MPE)
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RF Exposure Results

Frequency [MHz]	Measured Max Output Power [dBm]	G [dBi]	Power Tolerance [dB]	EIRP [dBm]	EIRP [mW]	Power Density [mW/cm ²]	Limit [mW/cm ²]	R [cm]
SRD	-1.645	4.72	+1.5	4.575	2.867	0.000 6	1.00	20
WLAN 2.4 GHz	17.14	3.46	+1.5	22.10	162.181	0.032 3	1.00	20
WLAN 5 GHz	14.36	5.22	+1.5	21.08	128.233	0.025 5	1.00	20
Combined						0.058 4		

Frequency [MHz]	Measured Max Output Power [dBm]	G [dBi]	Power Tolerance [dB]	EIRP [dBm]	EIRP [mW]	Power Density [mW/cm ²]	Limit [mW/cm ²]	R [cm]
BLE	2.135	4.72	+1.5	8.355	6.847	0.001 4	1.00	0.2
WLAN 2.4 GHz	17.14	3.46	+1.5	22.10	162.181	0.032 3	1.00	20
WLAN 5 GHz	14.36	5.22	+1.5	21.08	128.233	0.025 5	1.00	20
Combined						0.059 2		

Simultaneous transmitter(SRD+ WLAN 2.4 GHz)

Mode	EIRP [mW]	Power Density [mW/cm ²]	Limit
SRD	2.867	-	
WLAN 2.4 GHz	162.181		
Combined	165.048	0.032 9	1

Simultaneous transmitter(SRD+ WLAN 5 GHz)

Mode	EIRP [mW]	Power Density [mW/cm ²]	Limit
SRD	2.867	-	
WLAN 5 GHz	128.233		
Combined	131.100	0.026 1	1

Simultaneous transmitter(BLE+ WLAN 2.4 GHz)

Mode	EIRP [mW]	Power Density [mW/cm ²]	Limit
BLE	6.847	-	
WLAN 2.4 GHz	162.181		
Combined	169.028	0.033 7	1

Simultaneous transmitter(BLE+ WLAN 5 GHz)

Mode	EIRP [mW]	Power Density [mW/cm ²]	Limit
BLE	6.847	-	
WLAN 5 GHz	128.233		
Combined	135.080	0.026 9	1

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