RF EXPOSURE EVALUATION

Applicant	ANOTO KOREA Corp.
Applicant Address	501, IRUM building, 225-18, Pangyoyeok-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
FCC ID	ADM-ECHOII
IC	23775-ECHOII
Product Description	Digital Pen
Basic model	echoII
Variant Model name	-
Operating Frequency	2 402 MHz - 2 480 MHz
Antenna type	Chip Antenna
Antenna gain	3.4 dBi
Power Source	DC 3.7 V (Battery)
Number of channels	Bluetooth : 79 Bluetooth LE : 40

** RF Exposure Evaluation**

Exemption Limits for Routine Evaluation

SAR Test Exclusion Thresholds for 100 MHz - 6 GHz and ≤ 50 mm

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table, The equation and threshold in Note 1 must be applied to determine SAR test exclusion.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	*SAR Test Exclusion Threshold* (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

MHz	30	35	40	45	50	mm
150	232	271	310	349	387	*SAR Test Exclusion Threshold* (mW)
300	164	192	219	246	274	
450	134	157	179	201	224	
835	98	115	131	148	164	
900	95	111	126	142	158	
1500	73	86	98	110	122	
1900	65	76	87	98	109	
2450	57	67	77	86	96	
3600	47	55	63	71	79	
5200	39	46	53	59	66	
5400	39	45	52	58	65	
5800	37	44	50	56	62	

Note 1 :
The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by :

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]* [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where
- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 4.1f) is applied to determine SAR test exclusion.

Output Power :

Mode	Frequency (MHz)	Declaration conducted power (dBm)	Power tolerance [dB]	Maximum conducted power (dBm)	Maximum conducted power (mW)	SAR Test Exclusion Threshold (mW)
Bluetooth	2 480	4.50	+ 1.5	6.00	3.981	10
Bluetooth LE	2 480	4.50	+ 1.5	6.00	3.981	10

* Since the actual measured conducted power value is lower than the maximum conducted power value, it was calculated using the output value declared by the customer.

Per FCC KDB 447498 D01v06, the SAR exclusion threshold for distances ≤50mm is defined by the following equation :

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]* [√f(GHz)] ≤ 3.0

Base on the maximum conducted power of the antenna to use separation distance,
SAR was not required;

Bluetooth : [(3.981 / 5) * √2.480] = 1.254 (≤ 3.0)
Bluetooth LE : [(3.981 / 5) * √2.480] = 1.254 (≤ 3.0)

Result : As a result of the calculation above, the SAR test is exempt

Exemption Limits for Routine Evaluation (RSS-102 Issue 5, Section 2.5.1)

SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1.

Table 1: SAR evaluation - Exemption limits for routine evaluation based on frequency and separation distance

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

Result : SAR test is exempt as shown in the table below.

Mode	Frequency (MHz)	Declaration conducted power (dBm)	Power tolerance (dB)	Maximum conducted power (dBm)	Maximum conducted power (mW)	SAR Test Exclusion Threshold (mW)
Bluetooth	2 480	4.50	+ 1.5	6.00	3.981	4
Bluetooth LE	2 480	4.50	+ 1.5	6.00	3.981	4

* Since the actual measured conducted power value is lower than the maximum conducted power value, it was calculated using the output value declared by the customer.