RF Exposure Evaluation Declaration

FCC ID:	XR3-MAX2
APPLICANT:	ONYX INTERNATIONAL INC.

Application Type:	Certification
Product:	E-reader
Model No.:	MAX2
Serial No.	Max2 Pro, Max2 Lite
Brand Name:	BOOX
FCC Classification:	Digital Transmission System (DTS) Spread Spectrum Transmitter(DSS)

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(Robin Wu)

ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.01

The test results relate only to the samples tested.
The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.
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Revision History

Report No.	Version	Description	Issue Date	Note
1803RSU003-U4	Rev. 01	Initial report	08-14-2018	Valid

1. Equipment Description

Product Name	E-reader
Model No.	Max2
Serial No.	Max2 Pro, Max2 Lite
Brand Name	BOOX
Wi-Fi Specification	802.11b/g/n-HT20
Bluetooth Specification	v4.1 dual mode
Operating Frequency	2402~2480MHz
Bluetooth Version	v3.0 + HS
Type of modulation	FHSS
Data Rate	1Mbps(GFSK), 2Mbps(Pi/4 DQPSK), 3Mbps (8DPSK)
Antenna Type	PIFA Antenna
Antenna Gain	1.5dBi
Power Tune-up Tolerance	For Wi-Fi: 5.5dBm ± 1.5dBm For Bluetooth: -6.5dBm ± 1.7dBm
Components	
Adapter	M/N: ASSA93w2-050240 INPUT: 100-240V ~ 50/60Hz, 0.5A OUTPUT: 5Vdc, 2.4A

2. RF Exposure Evaluation

2.1. Limits

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: 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 5) in section 4.1 is applied to determine SAR test exclusion.

2.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.
The temperature and related humidity: 18°C and 78% RH.

2.3. Test Result of RF Exposure Evaluation

Product	E-reader
Test Item	RF Exposure Evaluation

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.5dBi for 2.4GHz in logarithm scale.

Output Power into Antenna:

Test Mode	Frequency Band (MHz)	Maximum output power to antenna (mW)	SAR Test Exclusion Threshold (mW)
Wi-Fi	2412 ~ 2480	5.01	10
Bluetooth	2402 ~ 2480	0.33	10

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

$$\frac{Max\ Power\ of\ Channel\ (mW)}{Test\ Separation\ Dist\ (mm)} * \sqrt{Frequency(GHz)} \leq 3.0$$

Based on the maximum conducted power of Wi-Fi and the antenna to use separation distance, Bluetooth SAR was not required;
[(5.01mW/5)* √2.437] = 1.56 < 3.0

Based on the maximum conducted power of Bluetooth and the antenna to use separation distance, Bluetooth SAR was not required;
[(0.33mW/5)* √2.402] = 0.10 < 3.0

The 2.4GHz WLAN and Bluetooth can't transmit simultaneously. Therefore, the Max P_d = 1.56 < 3.0.

Note: When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

The End