RF Exposure Evaluation Report

Product	:	ePaper
Trade mark	:	Qbic
Model/Type reference	:	EP-0400, EP-04XXXXXXX (X=A~Z, a~z, 0~9, "-" or blank, any character for marketing purpose)
Serial Number	:	N/A
Report Number	:	EED32P80539202
FCC ID	:	2AF82-EP0400
Date of Issue	:	May 30, 2023
Test Standards	:	47 CFR Part 1.1307 47 CFR Part 1.1310 47 CFR Part 2.1091 47 CFR Part 2.1093 447498 D04 Interim General RF Exposure Guidance v01
Test result	:	PASS

Prepared for:

Qbic Technology Co., Ltd.
26 F.-12, No. 99, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221416, Taiwan, China

Prepared by:

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Date: May 30, 2023

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2 Version

Version No.	Date	Description
00	May 30, 2023	Original

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4 General Information

4.1 Client Information

Applicant:	Qbic Technology Co., Ltd.
Address of Applicant:	26 F.-12, No. 99, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221416, Taiwan, China
Manufacturer:	Qbic Technology Co., Ltd.
Address of Manufacturer:	26 F.-12, No. 99, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221416, Taiwan, China
Factory 1:	Jiangxi Xingtai Technology Inc.
Address of Factory 1:	Jizhou District industrial park, Ji'an, Jiangxi, China
Factory 2:	Qbic Technology Co., Ltd.
Address of Factory 2:	26 F.-10, No. 99, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221416, Taiwan, China
Factory 3:	Lih Rong Electronic Enterprise Co., Ltd.
Address of Factory 3:	No. 486, Sec. 1, Wanshou Rd., Guishan Dist., Taoyuan City 333026, Taiwan, China
Factory 4:	Lih Rong Electronic Enterprise Co., Ltd
Address of Factory 4:	No. 1, Gaoxia Rd., Zhongli Dist., Taoyuan City 320030, Taiwan, China

4.2 General Description of EUT

Product Name:	ePaper
Model No.(EUT):	EP-0400, EP-04XXXXXXX (X=A~Z, a~z, 0~9, "-" or blank, any character for marketing purpose)
Test Model No.:	EP-0400
Trade Mark:	Qbic

4.3 Product Specification subjective to this standard

For BLE	
Frequency Range:	2402MHz~2480MHz
Modulation Type:	GFSK
Test Power Grade:	Default
Test Software of EUT:	Direct Test Mode
Antenna Type:	FPC Antenna
Antenna Gain:	0.46dBi
Power Supply:	DC 3V
Max Conducted Peak Output Power:	1.13dBm
	The Max Conducted Peak Output Power data refer to the report EED32P80539201
For NFC	
Operation Frequency:	13.56MHz
Modulation Type:	ASK

Antenna Type:	PCB antenna
maximum Field Strength (E) @3m:	51.95 dBμV/m
	The maximum Field Strength data refer to the report EED32P80539203

Sample Received Date:	Apr. 19, 2023
Sample tested Date:	Apr. 19, 2023 to May 12, 2023

Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.
Model No.: EP-0400, EP-04XXXXXXX (X=A~Z, a~z, 0~9, "-" or blank, any character for marketing purpose)
Only the model EP-0400 was tested. They have same electrical, PCB and layout, only the model names are different for marketing requirements.

4.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

5 SAR Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold Pth (mW).
This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by Formula

$$P_{\text{th}}\,(\text{mW}) = \begin{cases} ERP_{20\text{ cm}}(d/20\text{ cm})^{x} & d \le 20\text{ cm} \\ ERP_{20\text{ cm}} & 20\text{ cm} < d \le 40\text{ cm} \end{cases}$$

where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\text{ cm}}\sqrt{f}}\right)$$

and f is in GHz, d is the separation distance (cm), and ERP20cm is per Formula (B.1).

$$P_{\text{th}}\,(\text{mW}) = ERP_{20\text{ cm}}\,(\text{mW}) = \begin{cases} 2040f & 0.3\text{ GHz} \le f < 1.5\text{ GHz} \\ 3060 & 1.5\text{ GHz} \le f \le 6\text{ GHz} \end{cases} \qquad (\text{B.1})$$

The 1 mW Blanket Exemption of § 1.1307(b)(3)(i)(A) applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power of no more than 1 mW, regardless of separation distance.

5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

5.1.3 EUT RF Exposure Evaluation

For Stand alone:

For BLE

Frequency (MHz)	Max. Conducted Output power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (mW)	Limit (mW)	Result
2480	1.13	0.46	1.59	-0.56	0.879	3060	PASS

Note：

① EIRP=conducted power + antenna gain；

② ERP=EIRP-2.15

③ Only the worst case data was recorded in the report.

For NFC:

Frequency (MHz)	maximum Field Strength (E) @3m (dBμV/m)	EIRP (dBm)	EIRP (mW)	Limit (mW)	Result
13.56	51.95	-43.35	0.00004624	1	PASS

The maximum Field Strength of the transmitter was 51.95 dBμV/m at 3m which equals 0.00004624mW, which is well below the exemption limit of 1mW.

Note：

① EIRP (dBm) = E(dBμV/m) -95.3

*** End of Report ***