FCC MPE Report

Applicant	：	***Uniform Industrial Corp.***
Product Name	：	***BEZEL8-S-UIX Credit card Reader***
Trade Name	：	***UIC***
Model Number	：	***BEZEL8-S-UIX***
Applicable Standard	：	***47 CFR § 2.1091***
Received Date	：	***Nov. 01, 2023***
Issued Date	：	***Dec. 14, 2023***

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Taiwan Accreditation Foundation accreditation number: 1330

Note:
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Approved By :

Ted_Hsieh

Testing Laboratory
1330

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Revision History

Rev.	Issued Date	Description	Revised by
00	Dec. 14, 2023	Initial Issue	Rowan Hsieh

1. General Information

1.1 Reference Applicable Standard

Standard	Description	Version
IEEE C95.1	American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 300 KHz to 100 GHz, New York.	1992
47 CFR § 2.1091	Radiofrequency radiation exposure evaluation: mobile devices.	-
47 CFR § 1.1310	Radiofrequency radiation exposure limits.	-

1.2 Testing Location

Test Facilities

Company Name: Eurofins E&E Wireless Taiwan Co., Ltd.
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Test Site Location

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Laboratory Accreditation

Location	TAF	FCC	ISED
No. 140-1, Changan Street, Bade District, Taoyuan City 334025, Taiwan	Accreditation No.: 1330	Designation No.: TW0010	Company No.: 7381A CAB ID: TW1330
No. 2, Wuquan 5th Rd. Wugu Dist., New Taipei City, Taiwan	Accreditation No.: 1330	Designation No.: TW0034	Company No.: 28922 CAB ID: TW1330

2. Description of Equipment under Test (EUT)

Applicant	Uniform Industrial Corp. 2901 Bayview Dr, Fremont, CA 94538				
Product Name	BEZEL8-S-UIX Credit card Reader				
Trade Name	UIC				
Model Number	BEZEL8-S-UIX				
FCC ID	TFJBEZEL8-S-UIX				
Use Distance	20 cm				
Antenna Information	Antenna	Trade Name	Model No.	Type	Gain
	WLAN 2.4 GHz	M.gear	SRF20231914	PCB Antenna	1.5 dBi
	RFID	UIC	B8-S	Loop Antenna	---

Note:

The above information of DUT was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

2.1 RF Specification

Wi-Fi 2.4G				
Support type:	☒ 802.11b	☒ 802.11g	☒ 802.11n	☐ 802.11ax
Support bandwidth:	☒ 20 MHz	☒ 40 MHz		
RFID				
Operation Frequency	13.56 MHz			
Modulation	ASK			

3. RF Exposure Limit

For devices that operate at larger distances from persons, where there are minimal RF coupling interactions between a device and the user or nearby persons, RF exposure compliance using maximum permissible exposure (MPE) limits is applied. The limits for MPE is listed as below:

Limits for General Population / Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm²)	Averaging Time|E|²,|H|² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824 / f	2.19 / f	(180 / f2)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	F / 1,500	30
1,500-100,000	-	-	1.0	30
Limits for Occupational / Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm²)	Averaging Time|E|²,|H|² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1,842 / f	4.89 / f	(900 / f2)*	6
30-300	61.4	0.163	1.0	6
300-1,500	-	-	F / 300	6
1,500-100,000	-	-	5	6

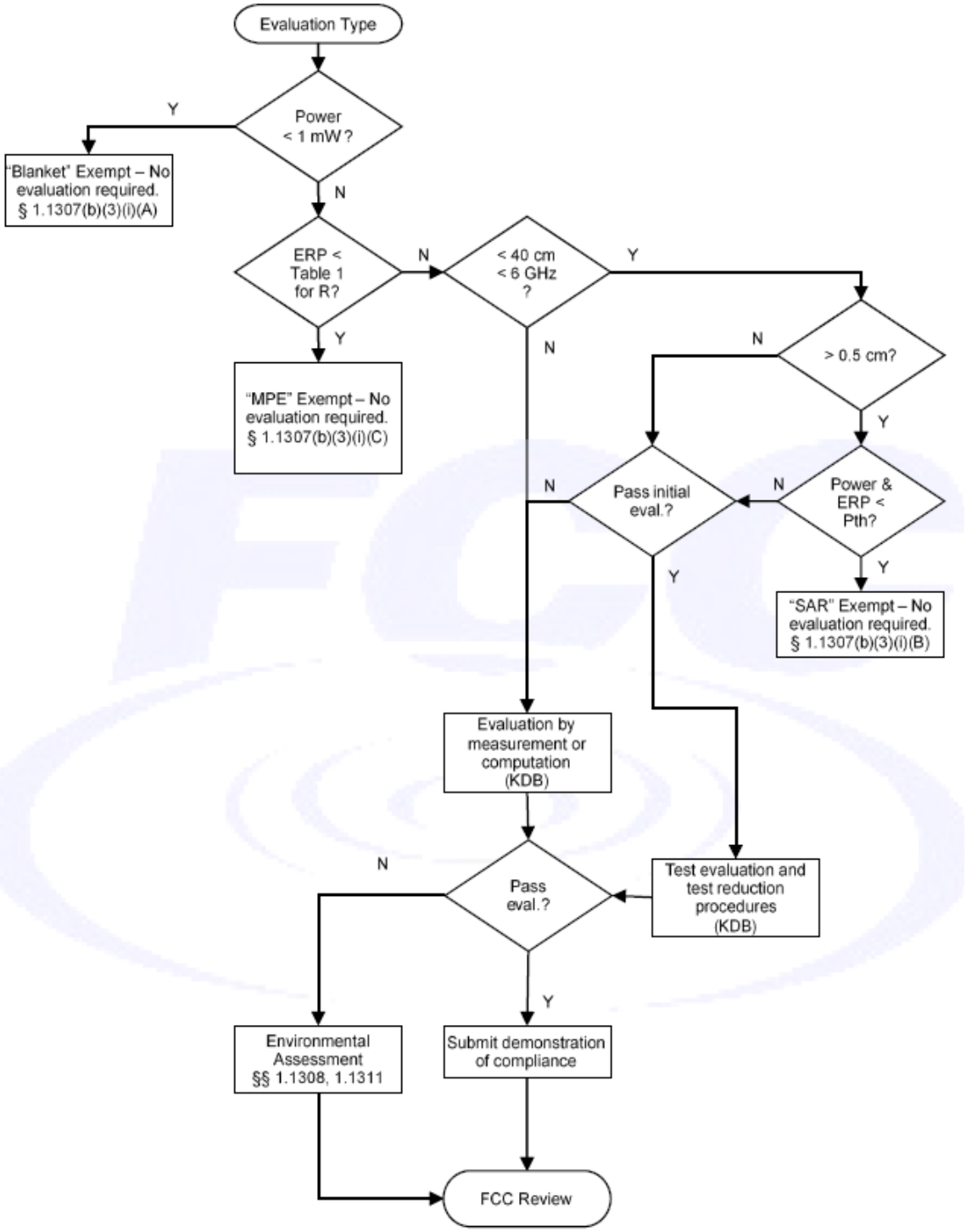
f = frequency in MHz. * = Plane-wave equivalent power density.

4. RF Exposure Assessment

4.1 Exemption Evaluation

Exemption evaluation was performed according to the appendix A and B in KDB447498 D04.

The General Sequence for Determination of Procedure demonstrated in Figure A.1 of KDB447498 D04 was applied.



4.2 Human Exposure Assessment

Due to the design and installation of this product, it is not possible to conduct SAR evaluation. This is because client either manufactures or supplies the antenna(s) that will be used in the installation of this product. Therefore, this product will be evaluated as a mobile device per 47 CFR § 1.1310 titled “Radiofrequency radiation exposure limits”, generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device as “a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter’s radiating structure(s) and the body of the user or nearby persons.”

Exposure evaluation
$$S_{eirp} = \frac{EIRP}{4\pi d^2} = \frac{PG}{4\pi d^2}\left(W/m^2\right)$$ Where S: is the input power (W); G: is the antenna gain; d : is the distance between antennas and evaluation point (m).

5. Maximum Transmitting Mode Evaluation

Antenna transmission description
WLAN 2.4 GHz : 1Tx (Diversity) RFID : 1Tx (Diversity)

6. Result

Band	Frequency (MHz)	Conducted Power (dBm) [P]	ANT Gain (dBi)	Numeric Gain [G]	Power with Duty cycle (mW) [P]x[G]	Power Density (mW/cm^2) [S]	Standalone Limit (mW/cm^2)	Evaluated / Exposure Limit
WLAN 2.4 GHz	2412 - 2472	17.60	1.50	1.41	81.14	0.02	1.00	0.02

Band	Frequency (MHz)	Near-Field Result (dBuV/m)	Power Density (mW/cm^2) [S]	Standalone Limit (W/m^2)
RFID	13.56	94.06	0.0000006756	0.00904

Note:

1. The calculation uses the minimum distance defined by the regulations of 20 cm, which is more conservative than the actual use distance of the product.

2. The maximum power and gain were applied to evaluate MPE.

3. Power density of RFID is converted by the Near-Field radiated test result.

MAX MPE: 0.02 mW/cm^2

Simultaneous Transmitting：

MAX WLAN + NFC

TER: 0.02

7. Conclusion

The result shows that this device is compliance with the exposure limits in 47 CFR §1.1310.

********** End of Report **********