MPE Report
RF Exposure Exemption

Applicant	:	Micro-Star Int'l Co., Ltd.
Product Name	:	NFC Module
Trade Name	:	MSI
Model Number	:	PN7150
Applicable Standard	:	47 CFR § 2.1091
Received Date	:	May 15, 2023
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Issued by

Approved By : 

(William Chung)

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Taiwan Accreditation Foundation accreditation number: 1330

Note:
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3.The relevant information is provided by customers in this test report. According to the correctness, appropriateness or completeness of the information provided by the customer, if there is any doubt or error in the information which affects the validity of the test results, the laboratory does not take the responsibility.

Revision History

Rev.	Issued Date	Revisions	Revised By
00	Jun. 08, 2023	Initial Issue	Rowan Hsieh

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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.	-
KDB 447498 D04	RF exposure procedures and equipment authorization policies for mobile and portable devices	v01

1.2 Testing Location

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

Site Address: ■ No. 140-1, Changan Street, Bade District, Taoyuan City 334025, Taiwan (R.O.C.)

Site Address: □ No. 2, Wuquan 5th Rd. Wugu Dist., New Taipei City, Taiwan (R.O.C.)

2. Description of Equipment under Test (EUT)

Applicant	Micro-Star Int'l Co., Ltd. No.69, Lide St., Zhonghe Dist., New Taipei City 235, Taiwan (R.O.C.)
Product Name	NFC Module
Trade Name	MSI
Model Number	PN7150
FCC ID	I4LXP01N
Frequency Range	NFC：13.56 MHz
Supported Modulations	RFID : ASK
Use Distance	20 cm
Module Name	MSI, PN7150

Note:

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

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

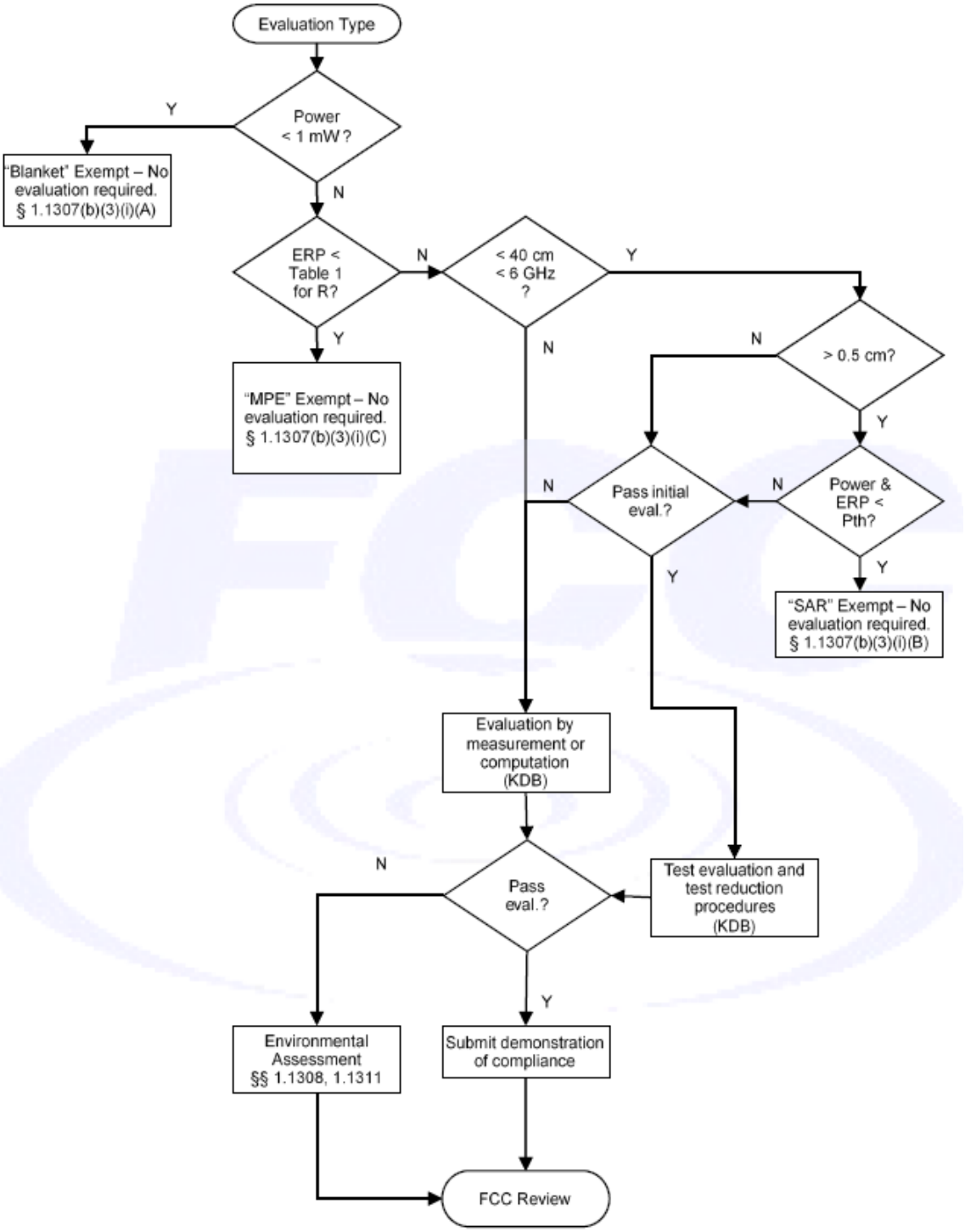
f = frequency in MHz. * = Plane-wave equivalent power density.

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 ERP Power

Band	Frequency Range (MHz)	Max ERP Power (dBm)
NFC	13.56	-72.80

6. Result

Band	Frequency (MHz)	Distance (cm) [R]	Antenna	ERP (dBm)	ERP (W)	ERP (mW)	<§1.1307(b)(3)(i)(A)> 1 mW Exemption Threshold ERP (mW)	<§1.1307(b)(3)(i)(A)> 1 mW Exemption considerations
NFC	13.56 - 13.56	20.00	ANT 0	-72.80	0.000	0.004	1.00	Qualified

Note:

This device is qualified for the 1 mW blanket exemption under §1.1307(b)(3)(i)(A).

7. Conclusion

The result shows that this device is qualified for 1 mW Test Exemption in KDB447498. Therefore, MPE testing is not required.

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