

RF Exposure Exemption

Applicant : Framery Oy
Product Name : Radar Unit
Trade Name : Framery
Model Number : 9007966
Applicable Standard : 47 CFR § 2.1093
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Taiwan Accreditation Foundation accreditation number: 1330

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Approved By :



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Revision History

<i>Rev.</i>	<i>Issued Date</i>	<i>Description</i>	<i>Revised by</i>
00	Apr. 17, 2024	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.	-
KDB 447498 D04	RF exposure procedures and equipment authorization policies for mobile and portable devices	v01

1.2 Testing Location

Test Facilities

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

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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	Framery Oy Patamaenkatu 7, Tampere 33900, Finland			
Product Name	Radar Unit			
Trade Name	Framery			
Model Number	9007966			
FCC ID	2AX4J9007966			
Supported Wireless Technologies	Tx Frequency		Operating Mode	
	Radar 60 ~ 64 GHz		Pulse	
Antenna Information	Trade Name	Model No.	Type	Gain
	TEXAS INSTRUMENTS	IWR6843AOPEVM	Patch antenna	5.2 dBi

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/cm ²)	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 / f ²)*	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/cm ²)	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 / f ²)*	6
30-300	61.4	0.163	1.0	6
300-1,500	-	-	F / 300	6
1,500-100,000	-	-	5	6

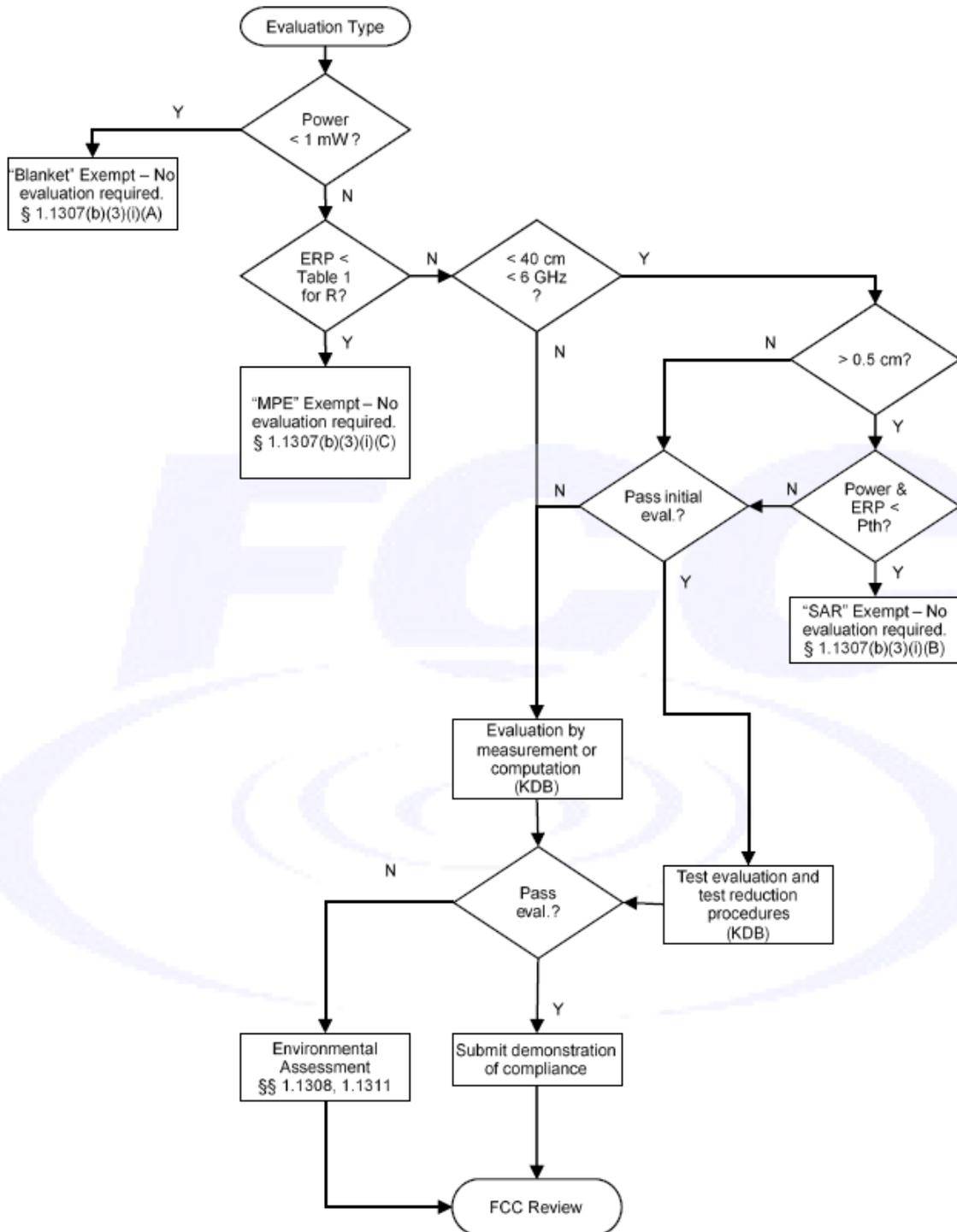
f = frequency in MHz. * = Plane-wave equivalent power density.

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

$$S_{eip} = \frac{EIRP}{4\pi d^2} = \frac{PG}{4\pi d^2} \left(W / m^2 \right)$$

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

Radar : 1TX

6. Result

Band	Frequency (MHz)	Tune-up Power (dBm)	Tune-up Power (mW)	ANT Gain (dBi)	ERP (W)	<§1.1307(b)(3)(i)(C)> Exemption Threshold ERP (W)	<§1.1307(b)(3)(i)(C)> Exemption considerations
Radar	62000	5.73	3.74	5.20	0.00755	0.01131	Qualified

Note:

1. The antenna is located inside the product, and the antenna is about 24.4mm away from the front of the product shell.
2. According to the antenna location, the position of this Antenna will be close to the human use is the front, and the shortest distance from the human body is 24.4mm. Therefore, 24.4mm will be used for evaluation in the calculation of the exemption test.
3. This device is qualified for exemption under § 1.1307(b)(3)(i)(C).

7. Conclusion

The result shows that this device is qualified for MPE-Based Exemption in KDB447498. Therefore, MPE testing is not required.

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