

RF Exposure Exemption

Applicant : CATEYE CO., LTD.
 Product Type : Air GPS
 Trade Name : CATEYE
 Model Number : CC-GPS100
 Applicable Standard : 47 CFR § 2.1091
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Taiwan Accreditation Foundation accreditation number: 1330
 Test Firm MRA designation number: TW0010

Note:

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Revision History

Rev.	Issued Date	Revisions	Revised By
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1. General Information

1.1 Reference Applicable Standard

Standard	Description	Version
47 CFR Part §2.1091	Radiofrequency radiation exposure evaluation: mobile devices.	-
47 CFR Part §1.1310	Radiofrequency radiation exposure limits.	-
IEEE C95.1	IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz	1992
KDB 447498 D04	RF exposure procedures and equipment authorization policies for mobile and portable devices	v01

2. Description of Equipment under Test (EUT)

Applicant	CATEYE CO., LTD. 2-8-25, Kuwazu, Higashisumiyoshi-ku, Osaka 546-0041, Japan
Product Name	Air GPS
Trade Name	CATEYE
Model Number	CC-GPS100
FCC ID	ON5-CCGPS100
Frequency Range	Bluetooth : 2402 - 2480 MHz
Supported Modulations	Bluetooth : LE

Note:

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

Antenna Information				
Model	Type	Frequency (MHz)	Type	Max. Gain (dBi)
CC_GPS100	Monopole Antenna	2400 - 2483.5	Monopole Antenna	-2.88
Antenna Diversity	Bluetooth : 1Tx			

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

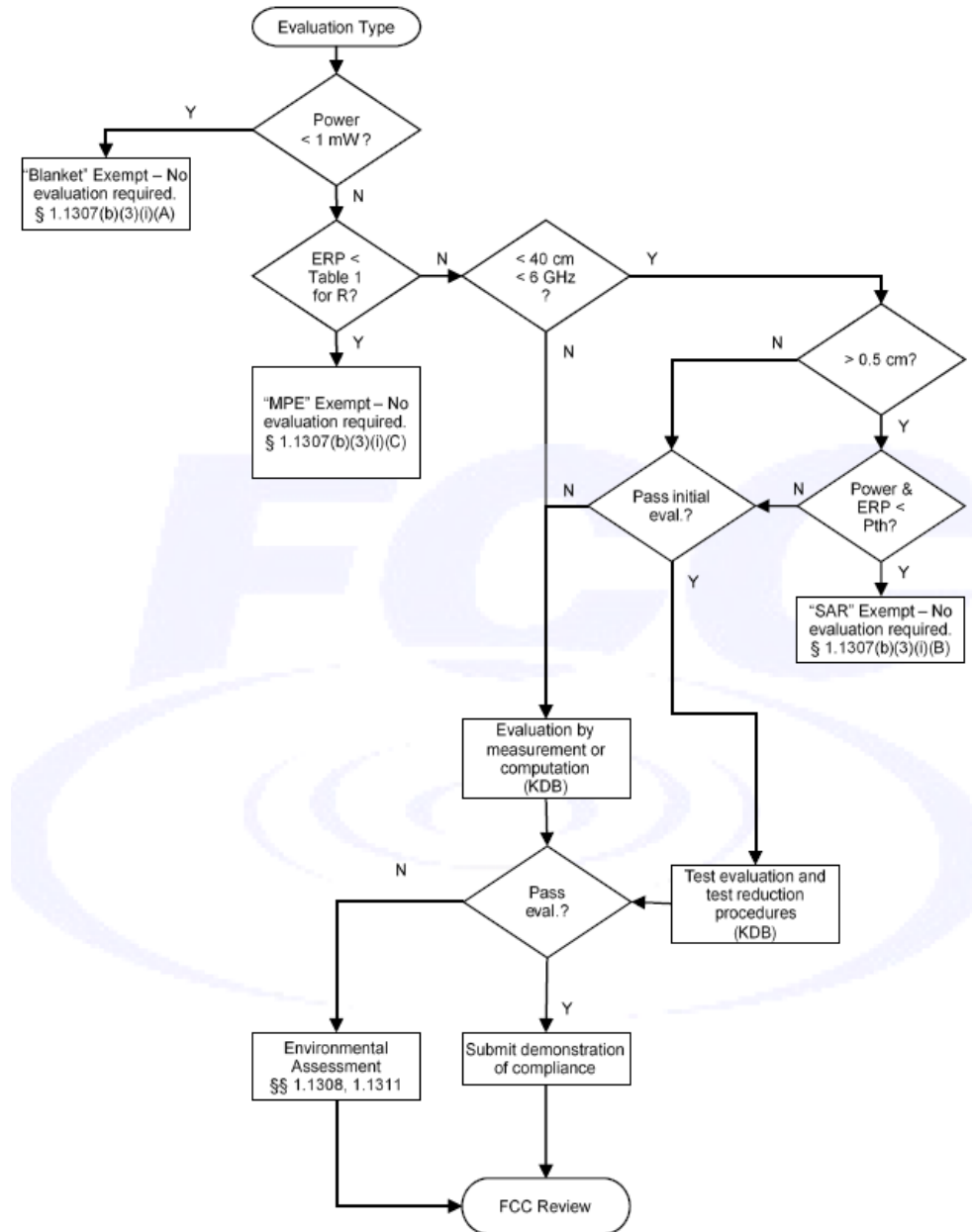
f = frequency in MHz. * = Plane-wave equivalent power density.

4. Exposure Assessment

4.1 MPE 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.” This product is intended to be installed into a vehicle such that the unit is physically secured at one location. In the installation guide supplied with the product,

Client has made the following statement: “IMPORTANT: To meet the FCC’s RF Exposure Guidelines, the antenna should be installed so there is at least 20 cm of separation between the body of the user and nearby persons and the antenna”. Based on the installation of the transceiver and the antenna, the transmitters radiating structure is more than 20 cm from the user. Thus, this product is a “mobile device” as defined in section § 2.1091 paragraph (b).

Exposure Evaluation

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

Where

P: is the input power (W);

G: is the antenna gain;

d : is the distance between antennas and evaluation point (m).

5. Maximum Tune-up Power

Operate Band	Frequency (MHz)	ANT 0
Bluetooth	2402 - 2480	-9.00

6. Result

Band	Freq.(Min)	Freq.(Max)	Distance (cm) [R]	Antenna	Tune-up Power (dBm)	Tune-up Power (mW)	ANT Gain (dBi)	ERP (mW)	1 mW Exemption <§1.1307(b)(3)(i)(A)> Threshold (mW)	1 mW Exemption <§1.1307(b)(3)(i)(A)> considerations
Bluetooth	2402	2480	20.00	ANT 0	-9.00	0.13	-2.88	0.04	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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